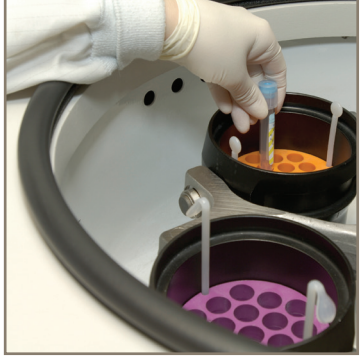

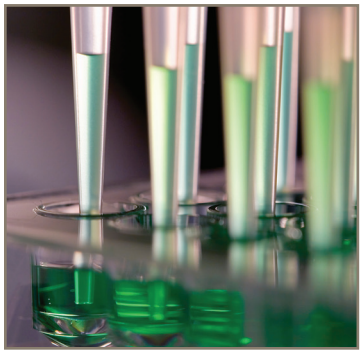

aerospace
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Miniature Liquid Control Valves

Precision Fluidics

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When you partner with the global leader in motion and control technologies, expect to move your business and the world forward. From miniature solenoid valves to highly integrated automation systems, our innovations are critical to life-saving medical devices and scientific instruments used for drug discovery and pathogen detection. Not to mention, critical to decreasing time to market and lowering your overall cost of ownership. So partner with Parker, and get ready to move, well, anything.

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www.parker.com/precisionfluidics 1 603 595-1500

Table of Contents

Ultra Low Carryover

Miniature Liquid Valve

The Ultra Low Carryover Valve features both unrivaled low carryover and the ability to reduce fluidic circuit complexity by replacing multiple valves with a single valve. The valve uses a patent pending new approach to increase throughput and decrease liquid waste by reducing wash times. Additionally, the Ultra Low Carryover Valve offers superior performance as a gradient proportioning valve for HPLC, HbA1c and other life science applications.

Markets

- Clinical Diagnostics
- Analytical Chemistry
- Agent Detection
- Environmental Monitoring

Applications

- Sampling
- Reagent Addition
- Flow Control
- Gradient Proportioning

Features

Best in class low carryover performance

Four modes of operation: flow off, flow channel A, flow channel B, flow channel A + B.

Simplifies OEM instrument design by using fewer valves

Low internal volume of 4.3 µL (diaphragm seal to common port)

CE, IP-54 Rating, REACH and RoHS compliant

Product Specifications

Physical Properties

Valve Type:	
3 Ports with Four Modes	
Media:	
Liquid	
Operating Environment/ Media Temperature:	
15°C to 50°C	
Storage Temperature:	
-20°C to 70°C	
Face Seal Design	
Length:	1.71 in (43.4 mm)
Width:	0.79 in (20.1 mm)
Height:	0.66 in (16.6 mm)
Weight:	1.53 oz (43.5g)
Porting:	Face Seal with Keying Feature
¼ - 28 Design	
Length:	1.71 in (43.3 mm)
Width:	1.19 in (30.2 mm)
Height:	0.66 in (16.6 mm)
Weight:	1.61 oz (45.6g)
Porting:	¼ - 28 Threaded Female

Electrical

Voltage (VDC):	**12**	**24**
Power (Watts):	3.0	3.7
Current (mA):	250	155
Resistance (Ohm):*	48	154

*Ω ± 10% @ 68 °F, 20 °C
Note: For actuation exceeding 100ms Hit & Hold is required.

Electrical Termination:	Leads 4.5 in (114.3 mm) in (6.35 mm) Terminated with Molex Housing #50-57-9402

Wetted Materials*

Seals:	FFKM or EPDM
Body:	PEEK (polyetheretherketone)
Regulatory:	ROHS, REACH IP-54 Ingress Protection
Mounting Options:	Face Seal Design ¼ - 28 Threaded Female Design

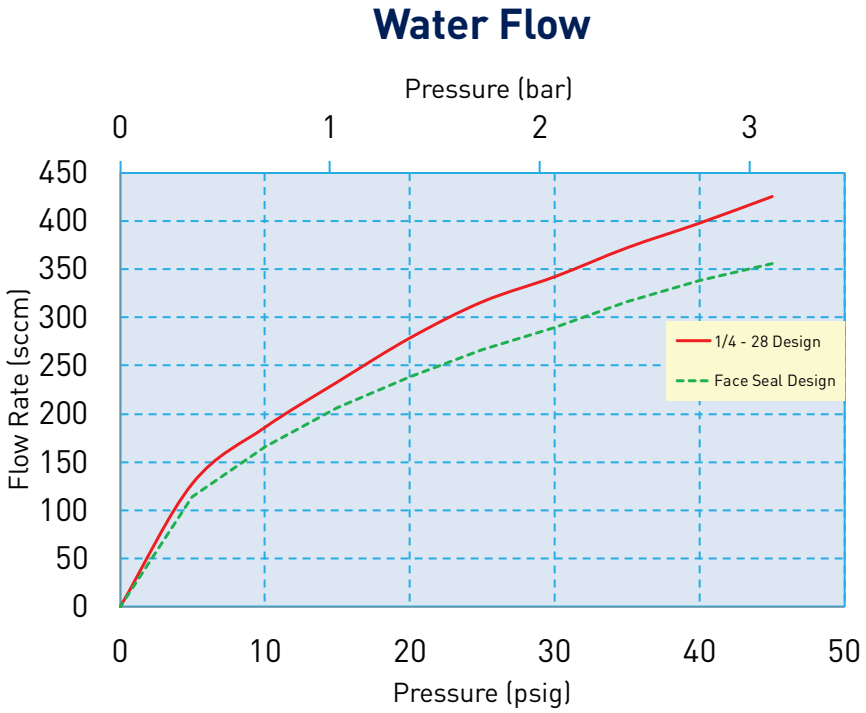
Performance Characteristics

Leak Rate:	
Bubble Tight	
Operating Pressure:	
45 psig (3.1 bar)	
Response Time:	
<25 msec	
Recommended Filtration: 16 µm	
Reliability: 10 Million Cycles	
Face Seal Design	
Internal Volume:	23.2 µL Port-to-Port 13.2 µL Diaphragm seal to common port
Flow Rate:	Water flow of 320 mL/ min @ 45 psig (3.1 bar)
¼ - 28 Design	
Internal Volume:	14.0 µL Port-to-Port 4.3 µL Diaphragm seal to common port
Flow Rate:	Water flow of 395 mL/ min @ 45 psig (3.1 bar)

*Other materials available upon request

Ultra Low Carryover Miniature Liquid Valve

Typical Flow Curve



Electrical Interface

Wire Leads
4.5 in (114.3 mm) ±0.25 in (6.35 mm)
Terminated with Molex Housing #50-57-9402

Liquid Interface

1/4 - 28 Design
(Threaded Connectors)

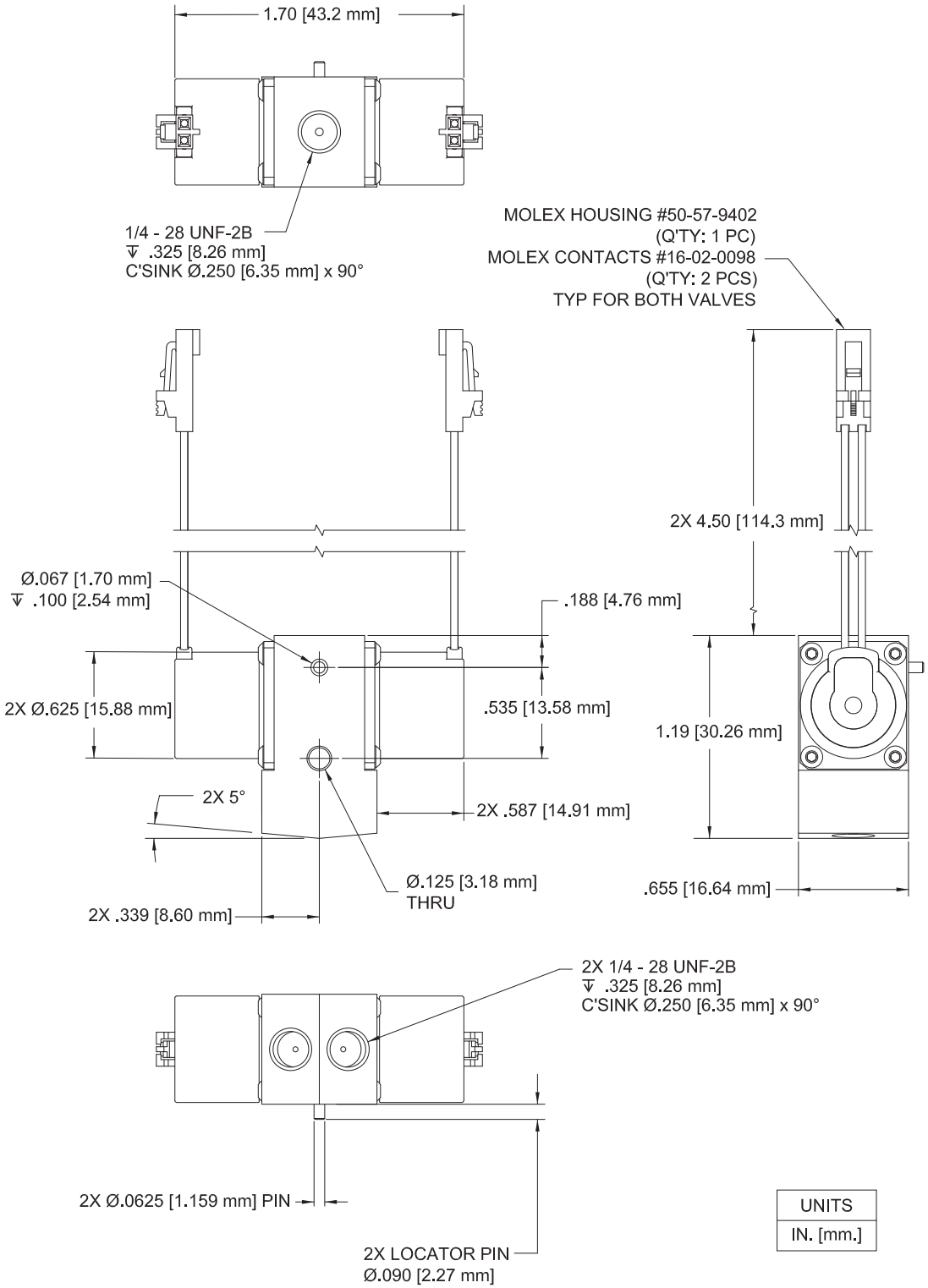
Face Seal Design
(Manifold Mount)

Ultra Low Carryover Miniature Liquid Valve

Mechanical Integration

Dimensions

1/4 - 28 Design

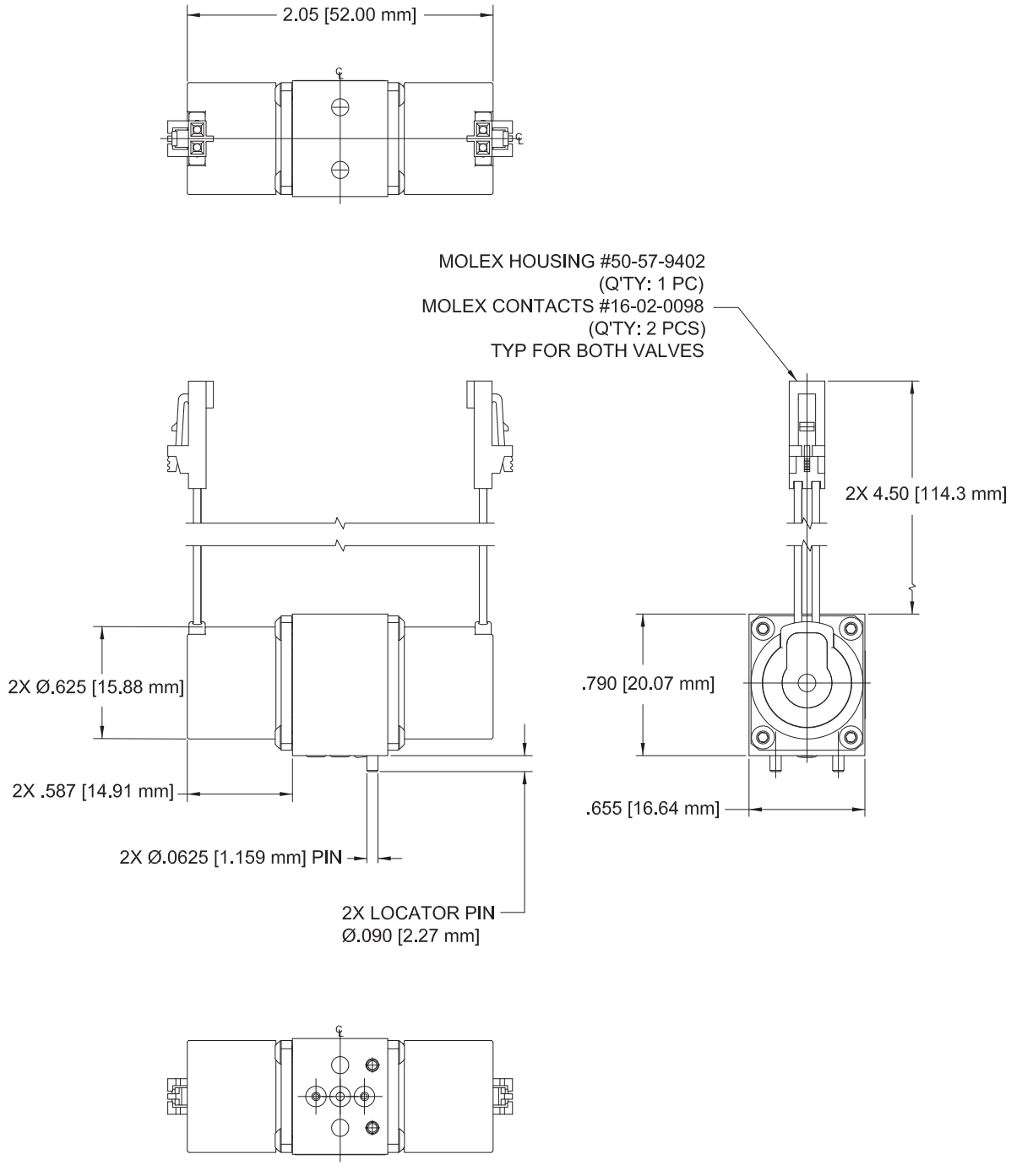


Ultra Low Carryover Miniature Liquid Valve

Mechanical Integration

Dimensions

Face Seal Design

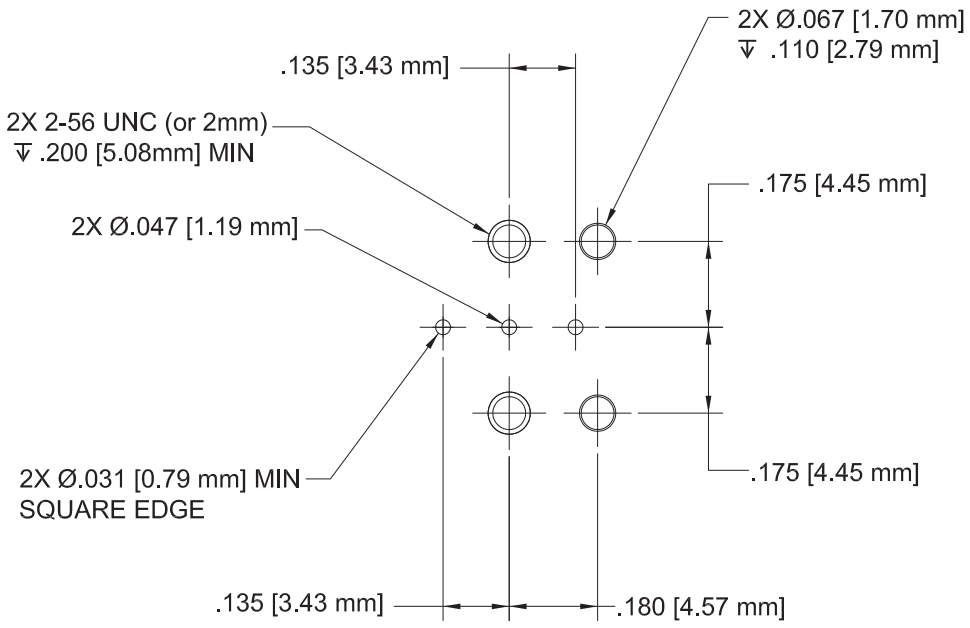


UNITS
IN. [mm.]

Ultra Low Carryover Miniature Liquid Valve

Installation and Use

Manifold Interface



UNITS
IN. [mm.]

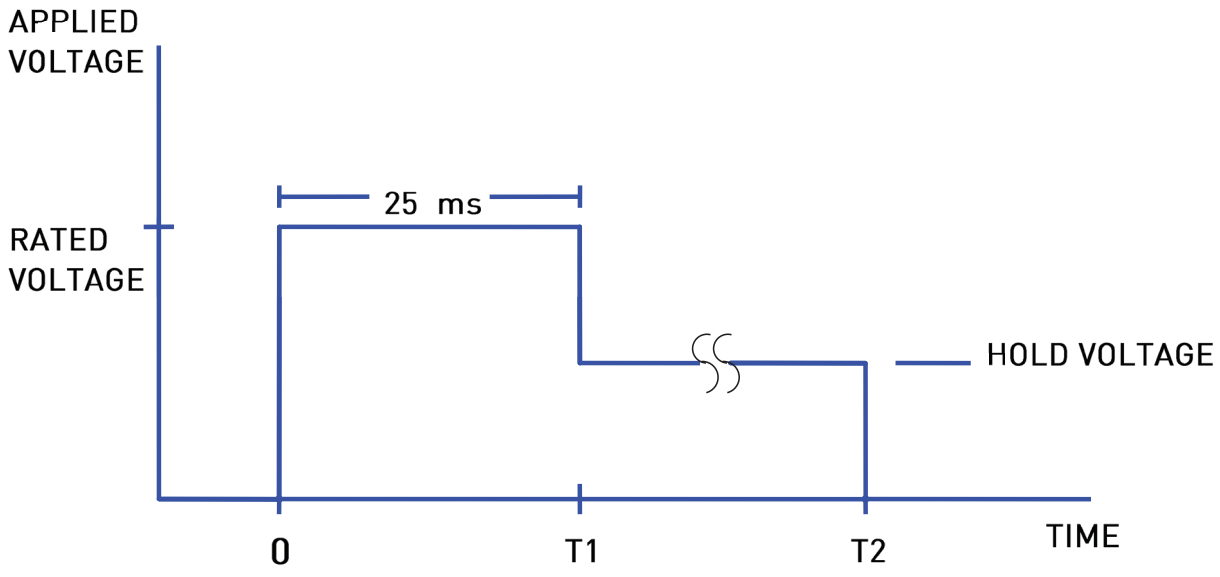
Ultra Low Carryover Miniature Liquid Valve

Hit and Hold Specifications

Hit and Hold is a method for driving valves that can be used to reduce power consumption and heat generation while maintaining valve performance specifications. The valve is "hit" with the full rated voltage for some time period to open it (T1 in the graph) and then "held" open with substantially reduced voltage until the desired pulse length is reached (T2 in the graph). The following table shows the possible holding voltages and power consumption for our standard 12 and 24 VDC solenoids. A hit and hold circuit is required for use with actuation exceeding 100ms.

Rated Voltage (VDC)	Hold Voltage (VDC)	Hold Power
24	12	1.8 watts
12	6	1.5 watts

Note: Other voltages available



Hold Voltage Graph

Ultra Low Carryover Miniature Liquid Valve

Chemical Compatibility Chart

	Diaphragm			Other Wetted Materials
Chemical	FFKM	or	EPDM	PEEK
DI Water	1		1	1
Methanol	1		1	1
Isopropanol	1		1	1
Ethanol	1		1	1
Acetonitrile	1		1	1
Tetrahydrofuran	2		4	1
Toluene	1		4	1
MEK	1		1	1
Organic Acids - Dilute	1		1	1
Non Organic Acids - Dilute	1		1	1
Bases - Dilute	1		1	1
Saline	1		1	1
Bleach 12%	2		1	1
Sodium Hydroxide 20%	1		1	1

Compatibility Legend

1. EXCELLENT
   Minimal or no effect
2. GOOD
   Possible swelling and or loss of physical properties
3. DOUBTFUL
   Moderate or severe swelling and loss of physical properties
4. NOT RECOMMENDED
   Severe effect and should not be considered

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

Regulatory CE
ENG61010 - 1:2010

IP-54 Rating - Contact Factory For Details

RoHS Directive Compliant - Contact Factory For Details

REACH Compliant - Contact Factory For Details

Ultra Low Carryover Miniature Liquid Valve

Ordering Information

1/4 - 28 Design

Face Seal Design

Face Seal Manifold

ULC-	3	24	FF	3	F	F	-000
Series	Configuration	Voltage	Seal Material	Orifice	Mounting	Electrical Connection	Config
ULC-	**3**: 3 - Port / 4 - Mode	**12:** 12 VDC **24:** 24VDC	**FF:** FFKM **EP:** EPDM	**3:** 0.030" (0.76mm)	**F:** Face Seal **4**: ¼ - 28	**F:** Flying leads	**- 000**

Accessories		
Part Number	**Description**	**Comments**
890-001198-001	¼ - 28 Female Threaded Face Seal Manifold, 3 - Port	Allows connection of ¼ - 28 fittings to Face Seal Design
191-000272-001	18-8 Stainless Steel Mounting Screws, #2-56 x 1"	

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 and Media Temperature Range
- Ambient Temperature Range

For more detailed information, visit us on the Web, or call 603-595-1500.

R9 Valve

9 mm Miniature Diaphragm Isolation Valve

The R9 delivers the liquid flow capabilities of a 16 mm valve with a 9 mm envelope. A 44% reduction in width with unrivaled flows and pressures to 100 psi. Designed to offer low carryover performance with particulate and crystallization resistance, this valve is ideally suited for today's demanding liquid handling applications. The R9 supports the performance requirements of current and future laboratory and portable instrumentation.

Markets

- Clinical Diagnostics
- Analytical Chemistry
- Agent Detection
- Environmental Monitoring

Applications

- Sampling
- Reagent Addition
- Flow Control
- Wash
- Waste

Features

- High pressure options available up to 100 PSI (6.9 bar)
- Easy mounting on 9 mm centers side to side, accommodating dispense over 96 well microplates
- Low unswept volume to minimize carryover
- Particulate and crystallization resistant
- 100% tested leak rate ensures a leak tight seal on every valve
- CE, REACH,and RoHS compliant

Product Specifications

Physical Properties

Valve Type:
Diaphragm Rocker Isolation Valve

Valve Configuration:
3-Way Universal
2-Way Normally Closed

Media: Liquids

Operating Environment/ Media Temperature:
EPDM 32 to 122F (0 to 50c)
FFKM High Pressure (100psi, 40psi versions) 50 to 122F(10-50c)
FFKM Standard Pressure (60psi, 20psi versions) 59 to 122F (15-50c)

Storage Temperature:
-4 to 158°F (-20 to 70°C)

Dimensions:
Width: 0.34" (8.7 mm)
Depth: 1.46" (37 mm)
Length: 2.71" (68.8 mm)

Weight:
Face Seal Version: 1.35 oz. (38.4g)
1/4-28 or M6 version: 1.63 oz. (46.1g)

Porting:
Face Seal, 1/4-28 & M6

Internal Volume:
Face Seal: 39.4µL
1/4-28 or M6: 116.6µL

Electrical

Voltage (VDC): 12 and 24 VDC ± 5%

Orifice:		**0.030" (0.76 mm)**				**0.061" (1.55 mm)**			
MAX PRESSURE	**PSI**	Vac to 100*		Vac to 60		Vac to 40*		Vac to 20	
	BAR	Vac to 6.9*		Vac to 4.1		Vac to 2.8*		Vac to 1.4	
POWER (WATTS)		**12V**	**24V**	**12V**	**24V**	**12V**	**24V**	**12V**	**24V**
	HIT	7.1*		4.5	4.8	7.1*		4.5	4.8
	HOLD	1.8		1.1	1.2	1.8		1.1	1.2
Max (mA):		592	296	375	200	592	296	375	200
Resistance: (Ohms):**		20.5	81	32	120	20.5	81	32	120

Connections:
2.54 mm pitch male pins, 18" (46 cm) Flying Lead Connector

*Requires hit and hold circuit
**(Ω±5% @ 68°F, 20°C)

Wetted Materials*

Seals:
EPDM or FFKM

Base:
PEEK (polyetheretherketone)

1/4-28 / M6 Sub Base Manifold
PEEK (polyetheretherketone)

* See Chemical Compatibility Page
Consult factory for other options

Performance Characteristics

Operating Proof Pressure:
Face Seal 200 PSI (13.8 bar)
1/4-28 and M6 150 PSI (10.3 bar)

Leak Rate: Bubble Tight

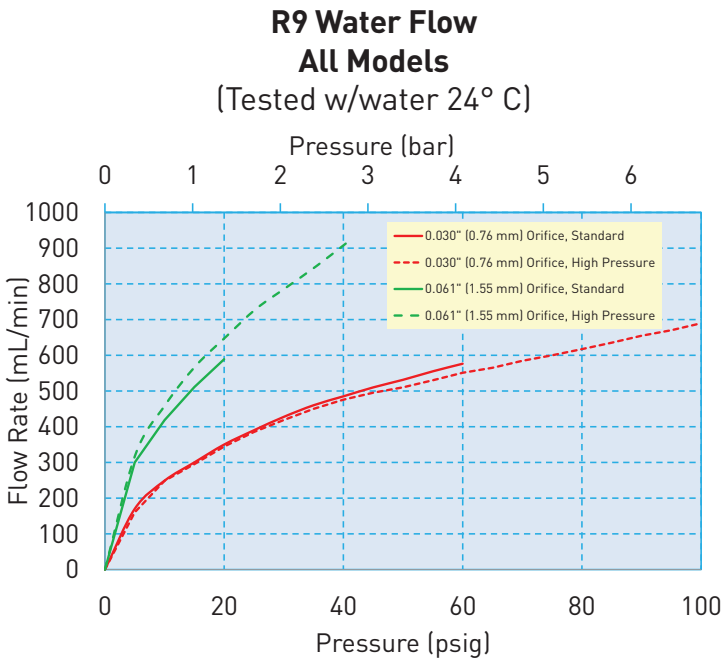
Response Time: 18 msec max

Recommended Filtration: 5 µm

Reliability: 10 Million Cycles

R9 Miniature Diaphragm Isolation Valve

Typical Flow Curve



Electrical Interface

Male Pins
(2.54 mm pitch male pins)

Wire Leads*
18" (46 cm)

*Custom lead length available.

Liquid Interface

Face Seal
(Manifold Mount)

1/4 - 28 Ports
(Threaded Connector)

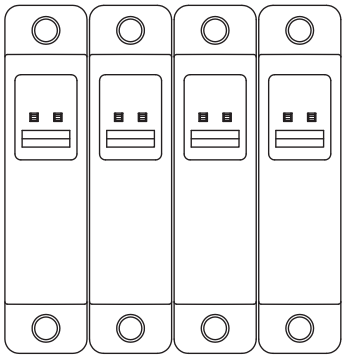
M6 Ports
(Threaded Connector)

Locater pins help prevent mounting the valve backwards and ensure proper alignment of the ports to the fluid passageways in the manifold. Pins prevent a 2-way valve from being mounted in the place of a 3-way valve and vice versa.
Molex® Connector Female P/N 22-01-2027 / Molex® Terminal Crimp Socket P/N 08-52-0105 or P/N 08-52-0106

R9 Miniature Diaphragm Isolation Valve

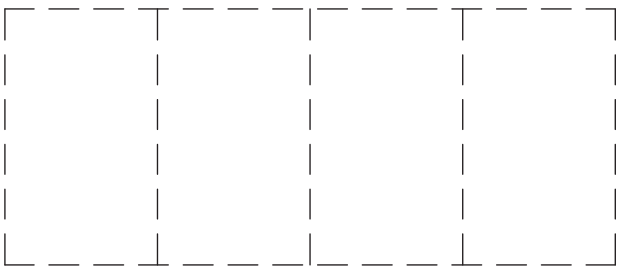
R9

Footprint Comparison to 16 mm Valve



FOOTPRINT OF 4 R9 VALVES

44% REDUCTION IN WIDTH RESULTS IN 39% REDUCTION IN AREA



FOOTPRINT OF 4 16mm VALVES

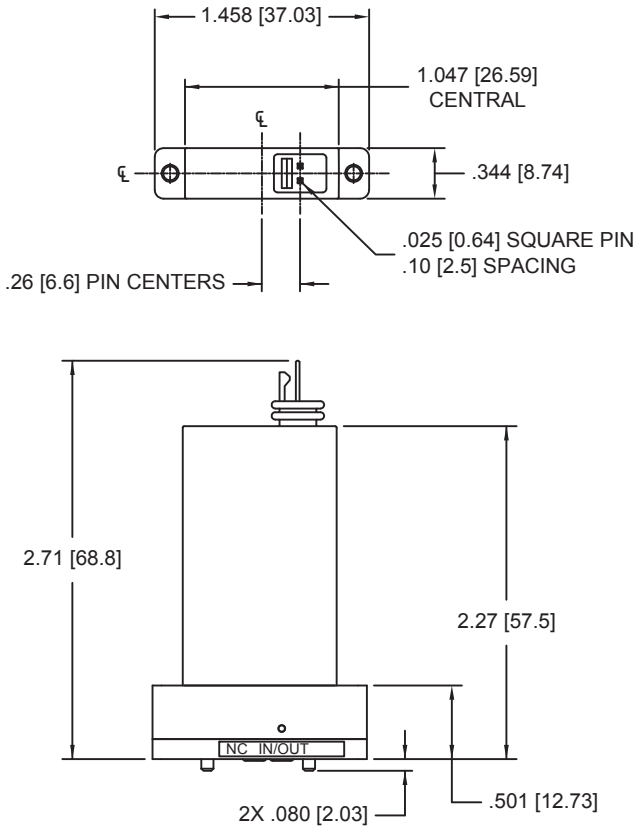
R9 Miniature Diaphragm Isolation Valve

Mechanical Integration

Dimensions

2-Way Dimensions

FACE SEAL



UNITS
IN. [mm.]

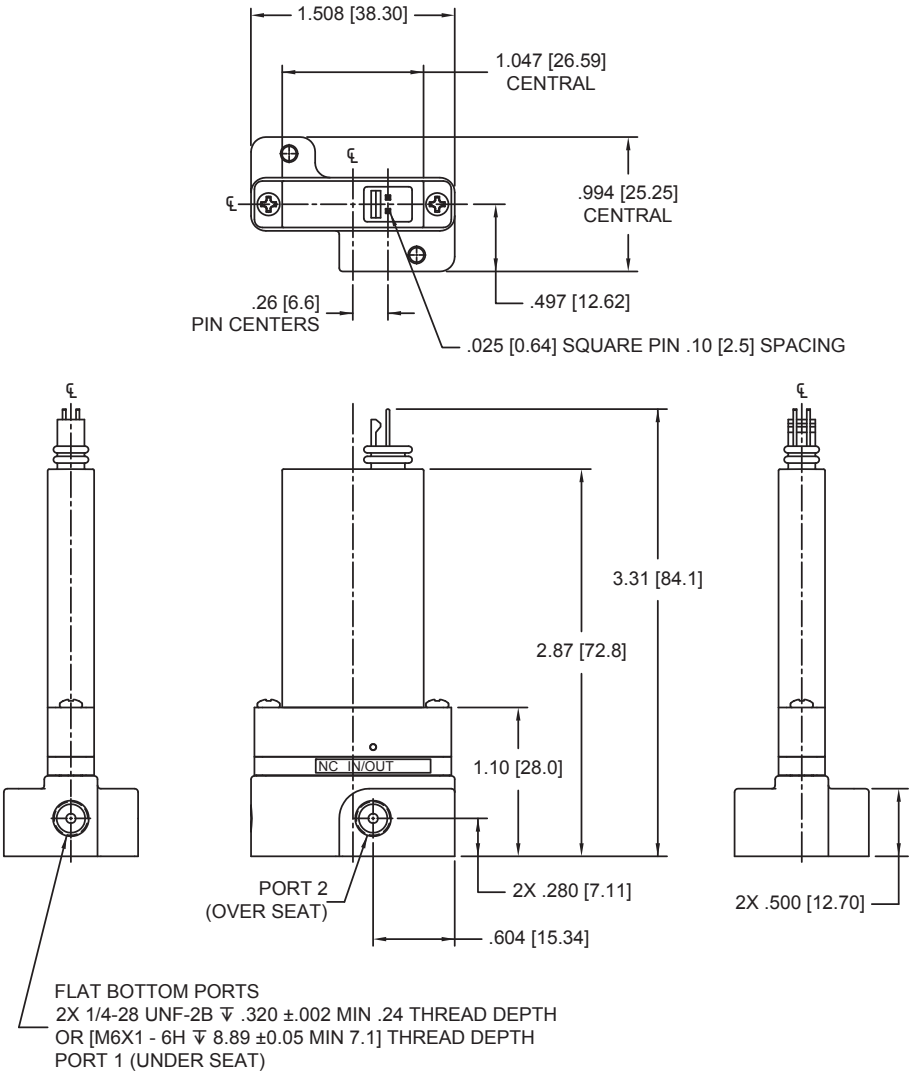
R9 Miniature Diaphragm Isolation Valve

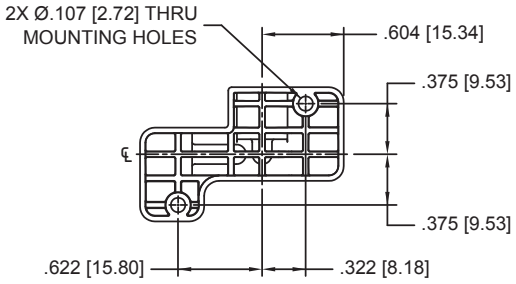
Mechanical Integration

Dimensions

2-Way Dimensions

1/4-28 OR M6 SUB BASE





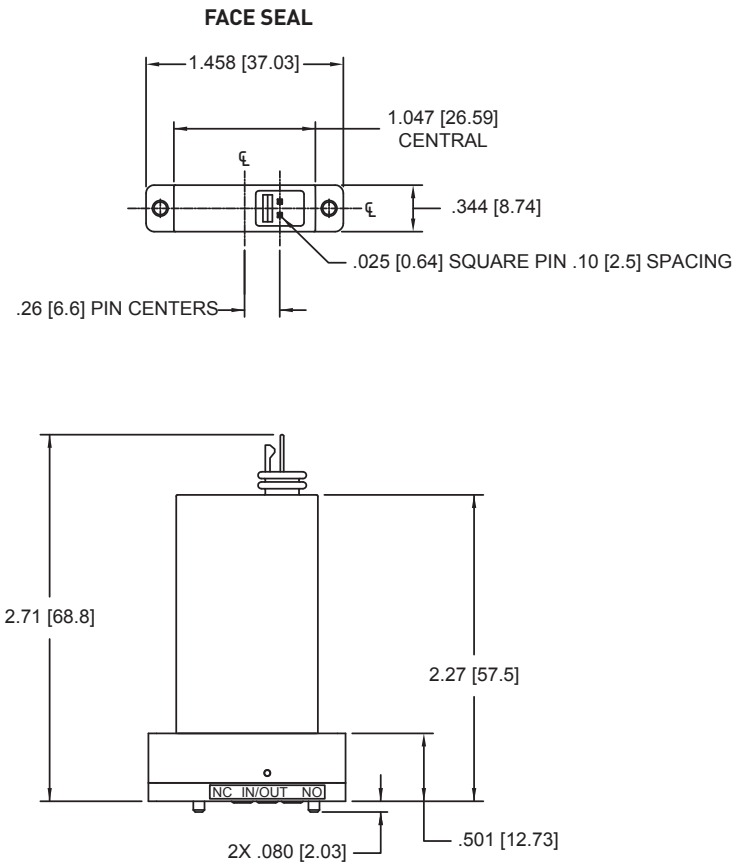
UNITS
IN. [mm.]

R9 Miniature Diaphragm Isolation Valve

Mechanical Integration

Dimensions

3-Way Dimensions



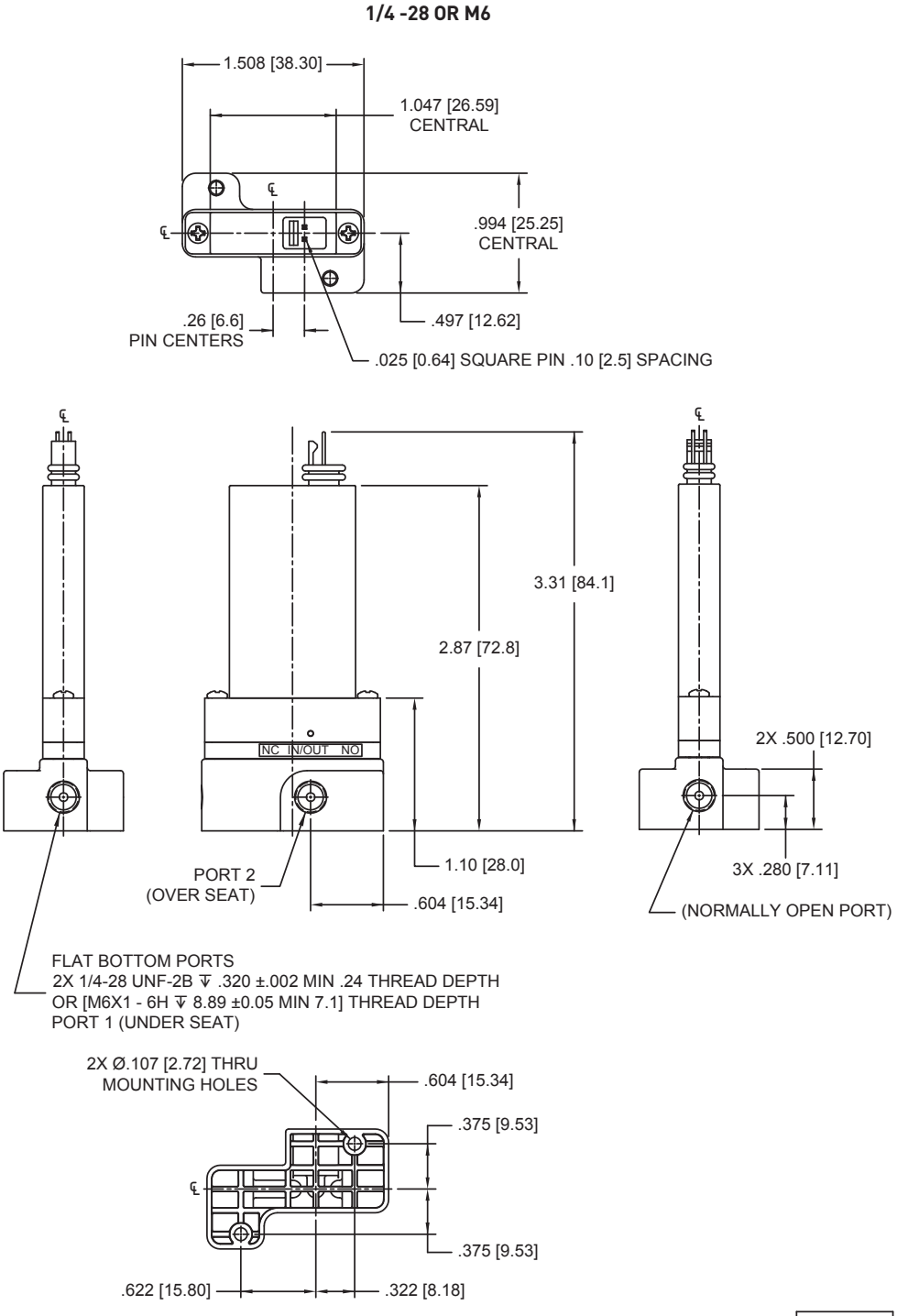
UNITS
IN. [mm.]

R9 Miniature Diaphragm Isolation Valve

Mechanical Integration

Dimensions

3-Way Dimensions



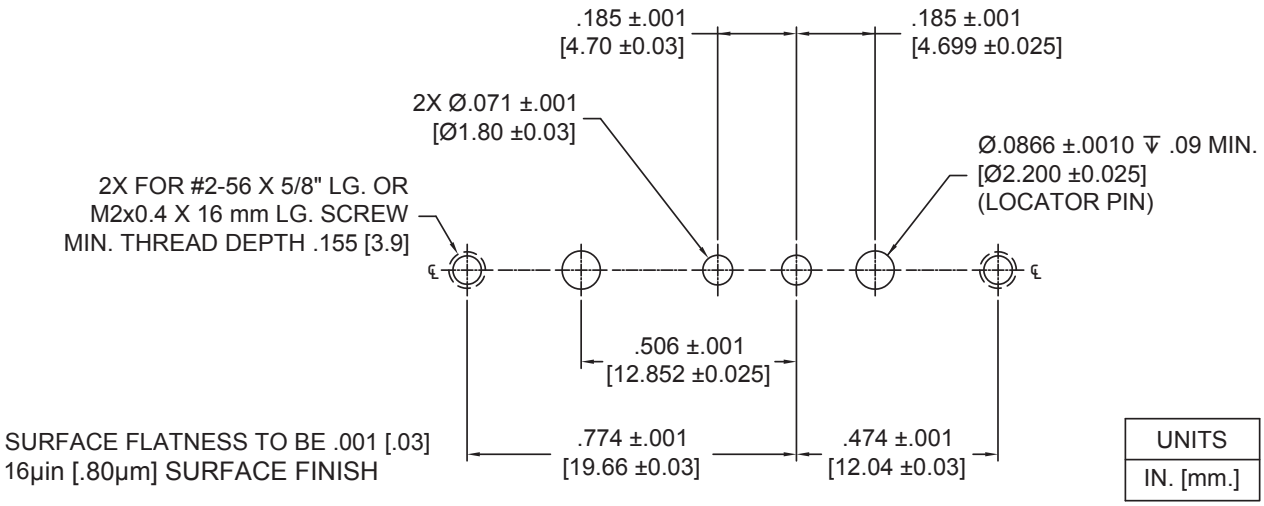
UNITS
IN. [mm.]

R9 Miniature Diaphragm Isolation Valve

Installation and Use

R9 Manifold Interface
Recommended R9 Valve Mounting

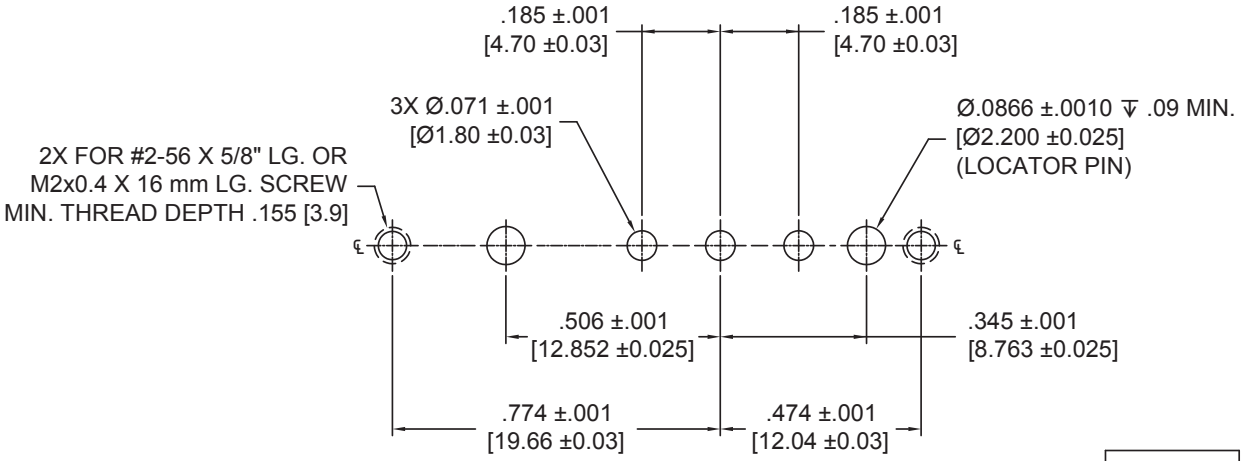
R9 2-WAY MANIFOLD INTERFACE



SURFACE FLATNESS TO BE .001 [.03]
16µin [.80µm] SURFACE FINISH

UNITS
IN. [mm.]

R9 3-WAY MANIFOLD INTERFACE



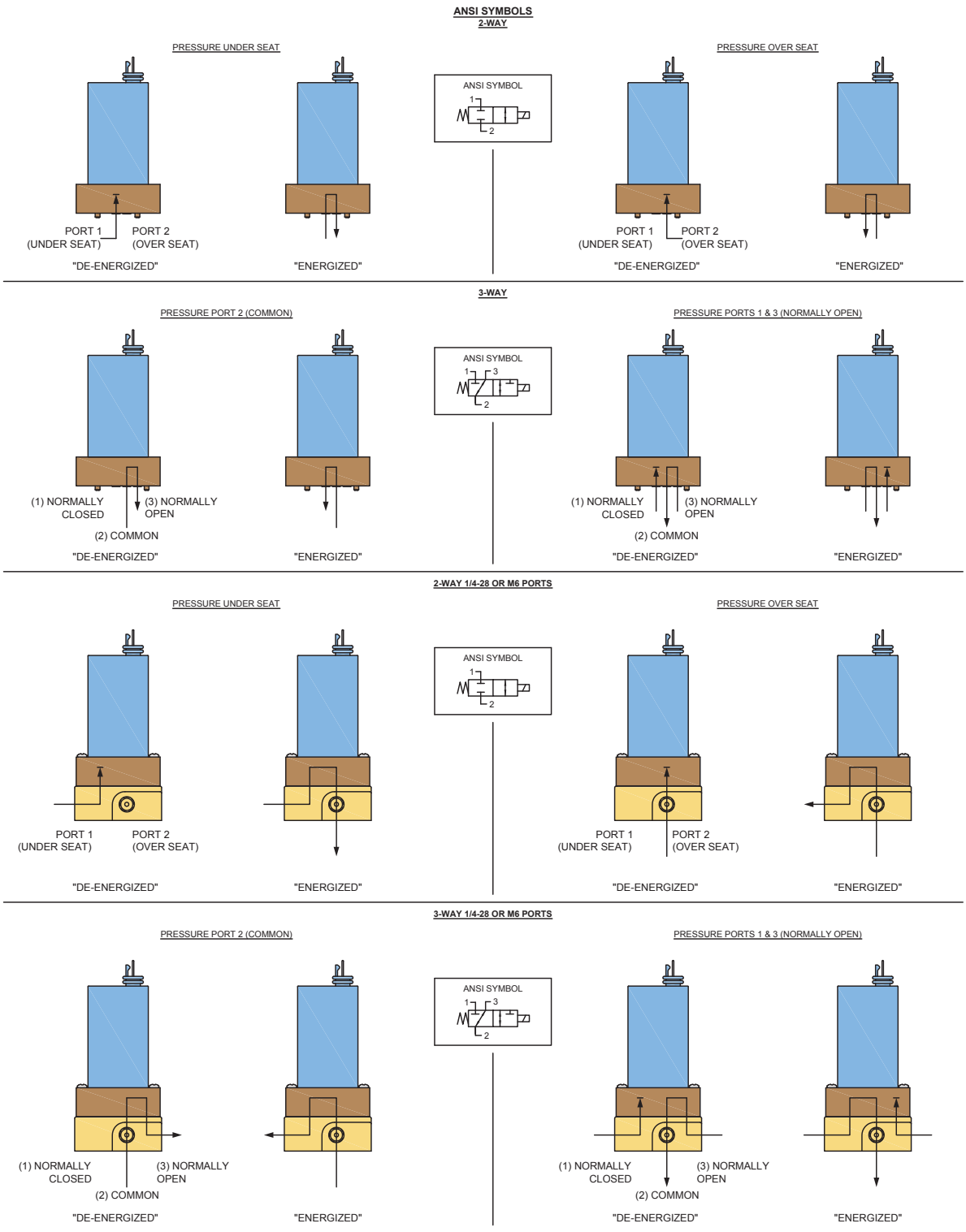
SURFACE FLATNESS TO BE .001 [.03]
16µin [.80µm] SURFACE FINISH

UNITS
IN. [mm.]

R9 Miniature Diaphragm Isolation Valve

ANSI Symbols

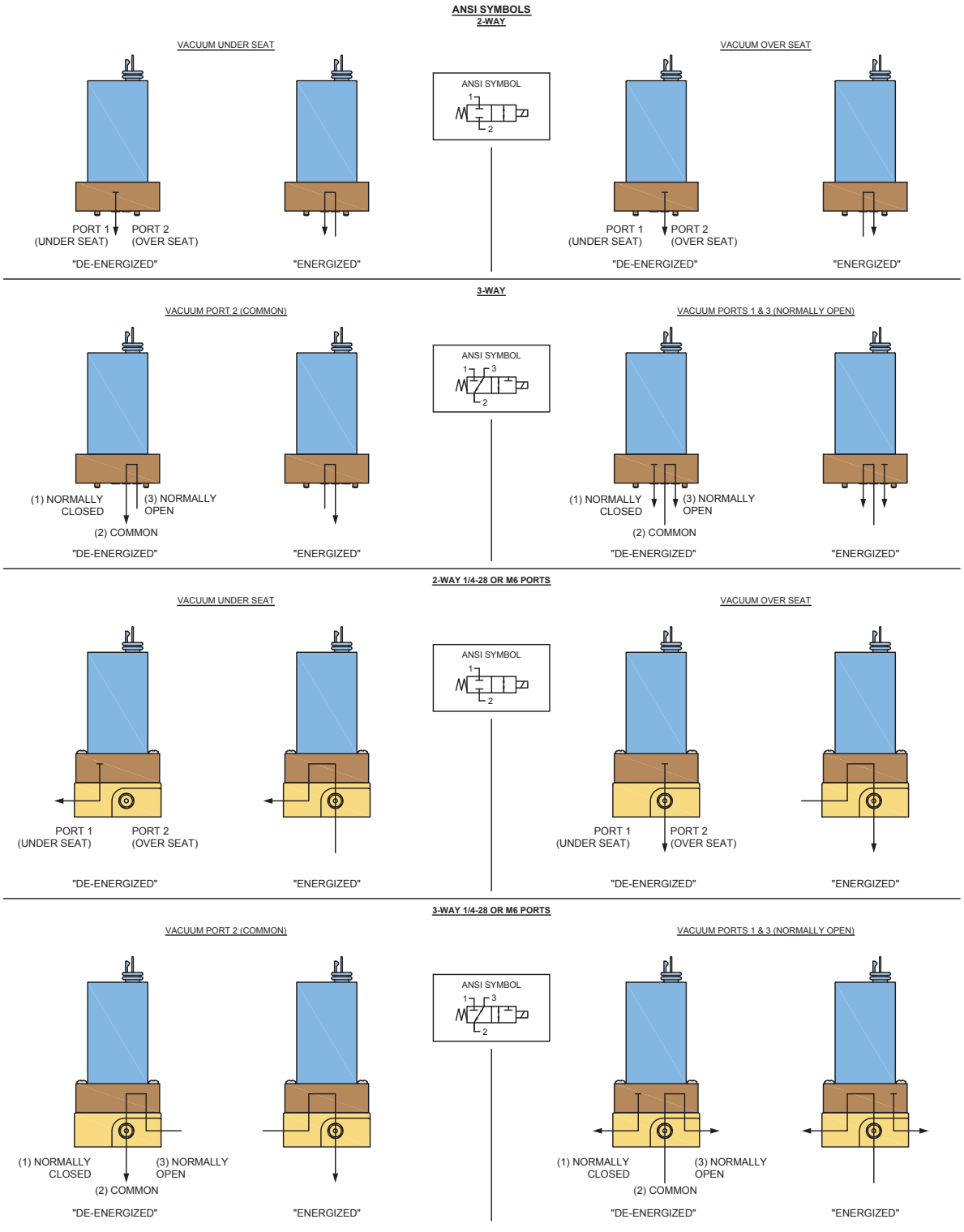
Pressure



R9 Miniature Diaphragm Isolation Valve

ANSI Symbols

Vacuum



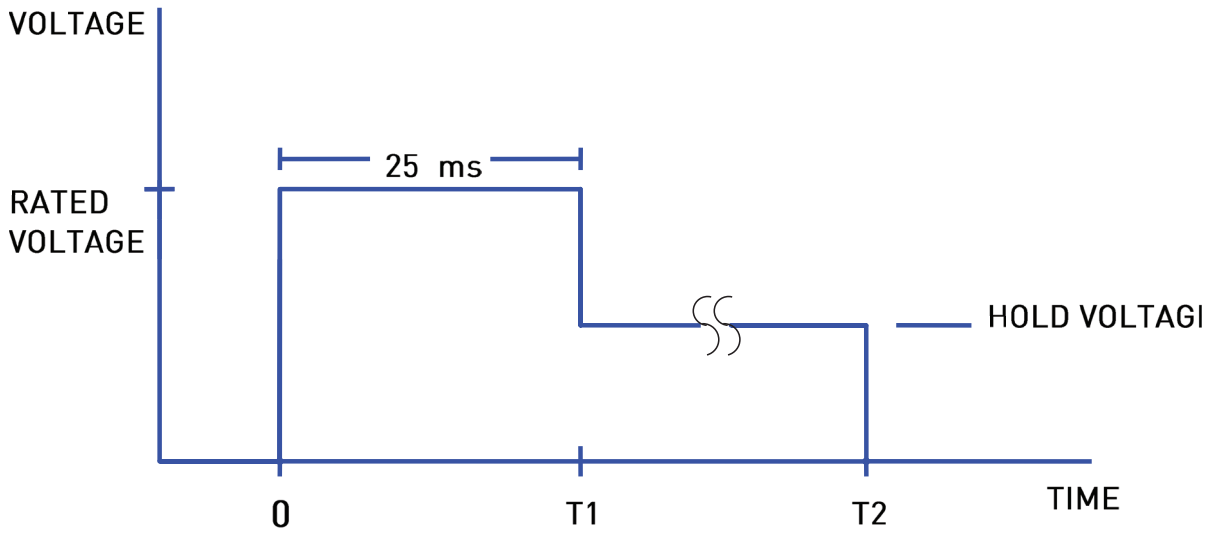
R9 Miniature Diaphragm Isolation Valve

Hit and Hold Specifications

Hit and Hold is a method for driving valves that can be used to reduce power consumption and heat generation while maintaining valve performance specifications. The valve is "hit" with the full rated voltage for some time period to open it (T1 in the graph) and then "held" open with substantially reduced voltage until the desired pulse length is reached (T2 in the graph). The following table shows the possible holding voltages and power consumption for our standard 12 and 24 VDC solenoids. A hit and hold circuit is required for use with the high pressure version.

Rated Voltage (VDC)	High Pressure Versions* 100 PSI (6.9 bar) & 40 PSI (2.8 bar) Max		Standard Versions 60 PSI(4.1 bar) & 20 PSI (1.4 bar)Max	
	Hold Voltage	Hold Power	Hold Voltage	Hold Power
24	12VDC	1.8 watts	12VDC	1.2 watts
12	6VDC	1.8 watts	6VDC	1.1 watts

*Requires hit and hold circuit



Hold Voltage Graph

R9 Miniature Diaphragm Isolation Valve

Chemical Compatibility Chart*

	Diaphragm			Other Wetted Materials
Chemical	FFKM	or	EPDM	PEEK
DI Water	1		1	1
Methanol	1		1	1
Isopropanol	1		1	1
Ethanol	1		1	1
Acetonitrile	1		1	1
Tetrahydrofuran	2		4	1
Toluene	1		4	1
MEK	1		1	1
Organic Acids - Dilute	1		1	1
Non Organic Acids - Dilute	1		1	1
Bases - Dilute	1		1	1
Saline	1		1	1
Bleach 12%	2		1	1
Sodium Hydroxide 20%	1		1	1

Compatibility Legend

1. EXCELLENT
   Minimal or no effect
2. GOOD
   Possible swelling and or loss of physical properties
3. DOUBTFUL
   Moderate or severe swelling and loss of physical properties
4. NOT RECOMMENDED
   Severe effect and should not be considered

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

Regulatory CE
EMC Directive:
IEC61000-4-2: 2008-12 ESD - Criterion A
IEC61000-4-3: 2010-04 Radiated Susceptibility - Criterion A
CISPR11: 2010-05 Radio Frequency Emission - Class B

Low Voltage Directive
IEC61010-1: 3rd 2010-06 Sec. 10.1 Surface temperature limits for protection against burns

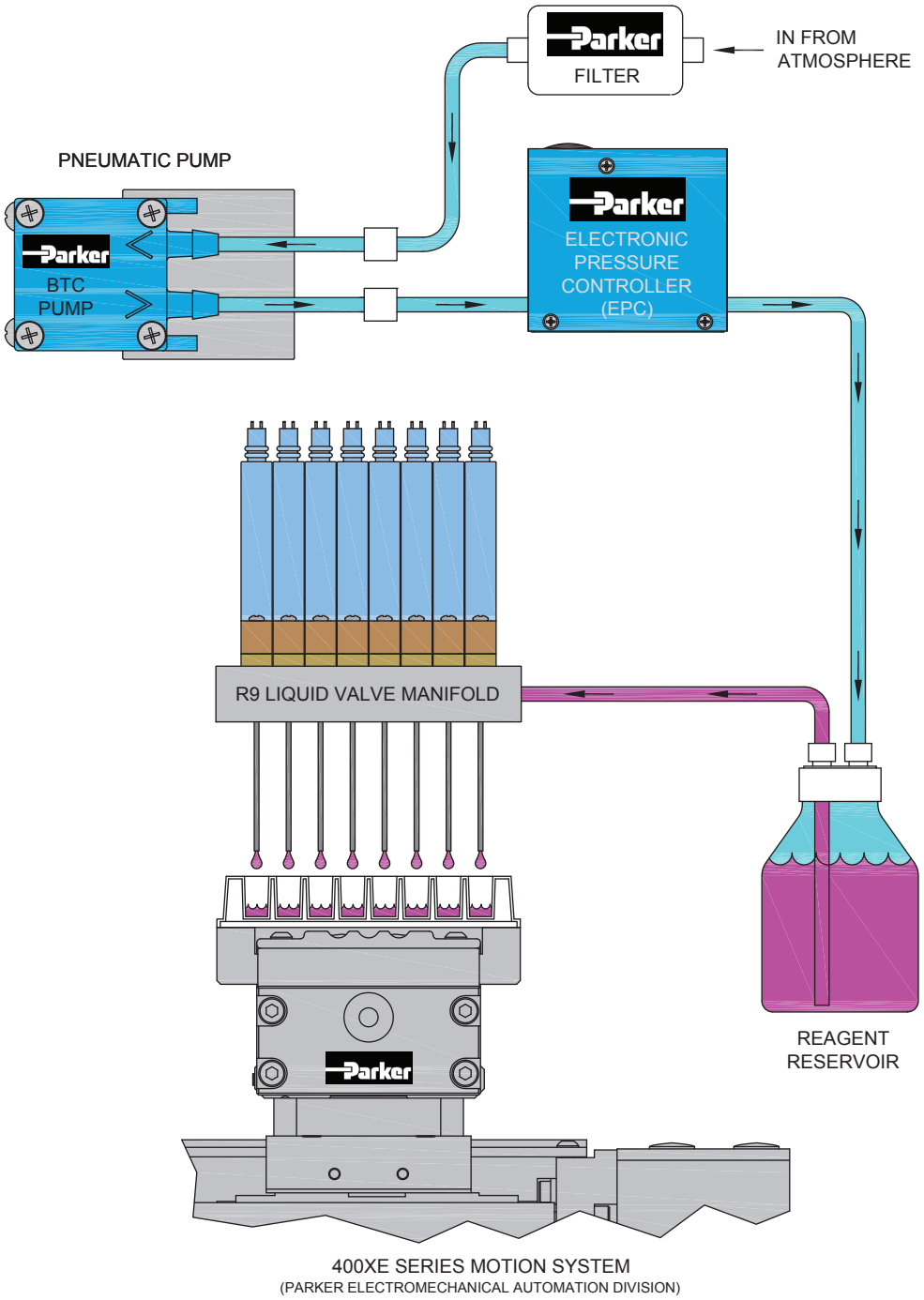
RoHS Directive (2002/95/EC) RoHS

REACH EC 1907/2006 REACH

R9 Miniature Diaphragm Isolation Valve

Typical Flow Diagram

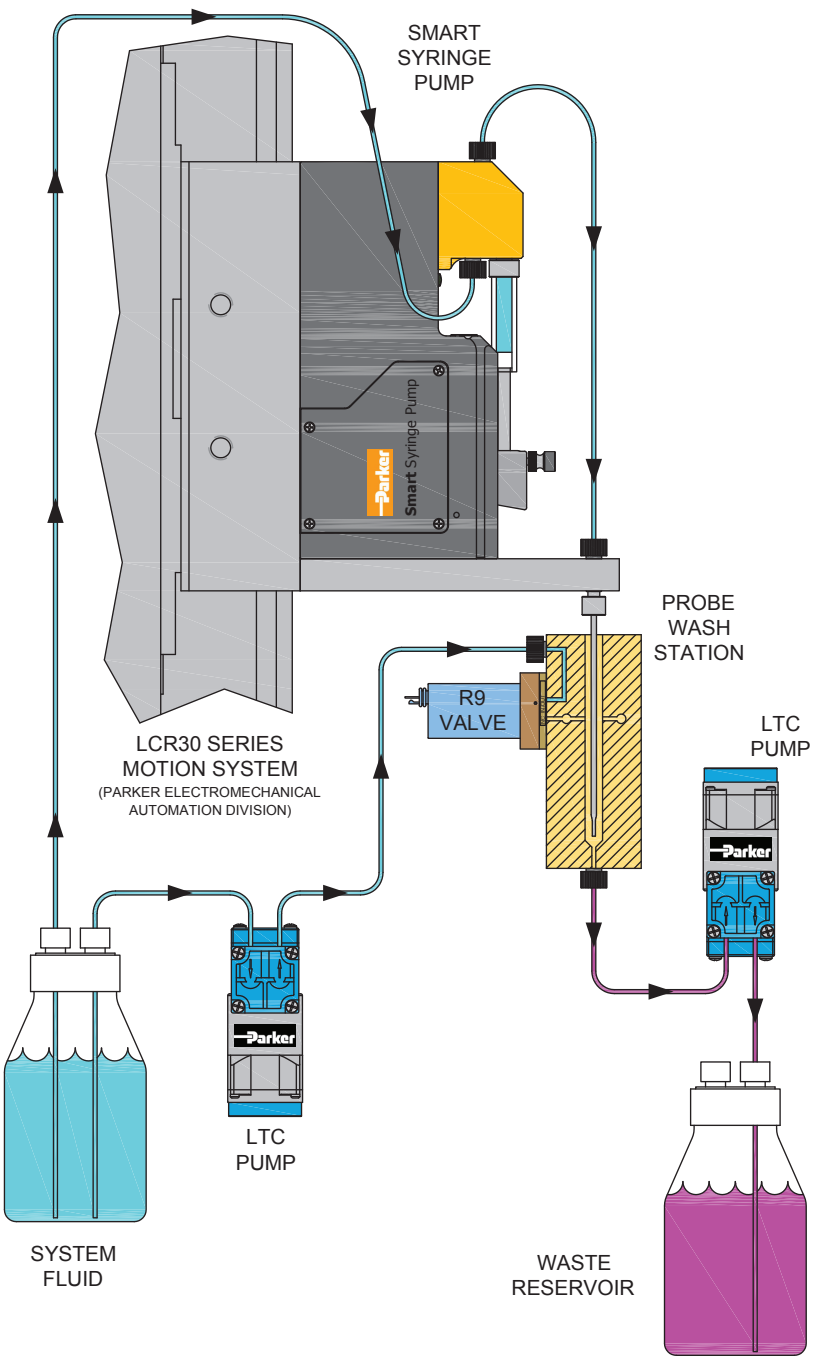
9 mm on Center Dispense Application



R9 Miniature Diaphragm Isolation Valve

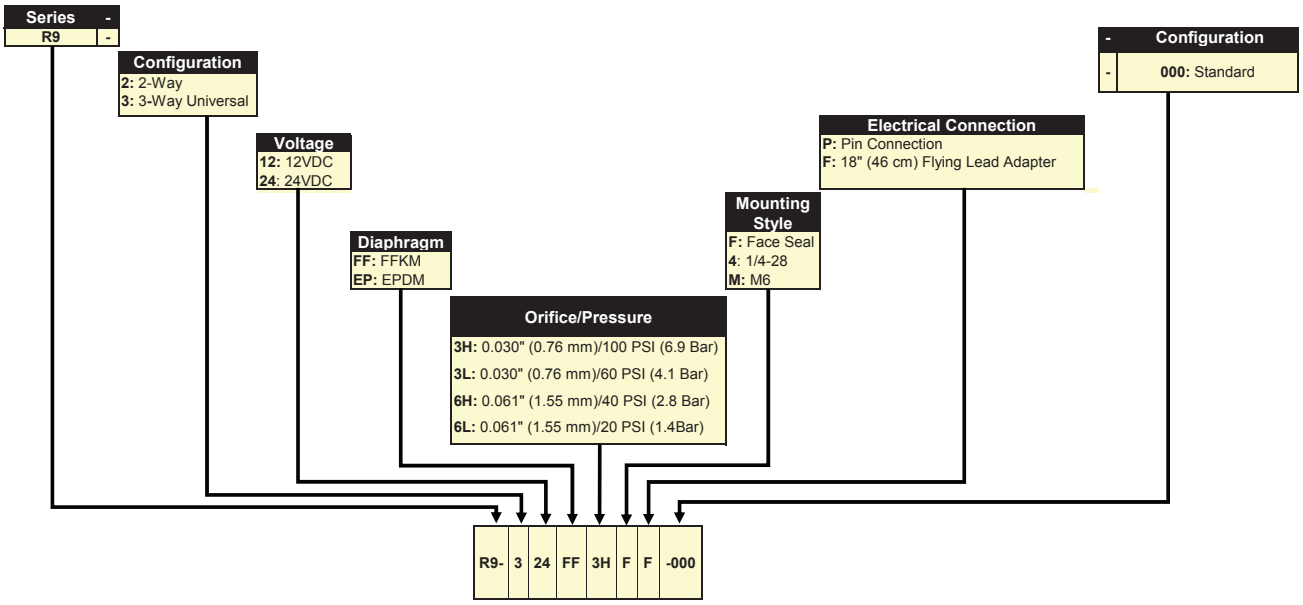
Typical Flow Diagram

Probe Wash Station



R9 Miniature Diaphragm Isolation Valve

Ordering Information



Example Part Number — **Three way, 24 Volt, FFKM Diaphragm/seals, 0.030" (0.76 MM) orifice, 100PSI (6.9 Bar) Max Pressure, Face Seal, 18"(46 cm) flying lead adapter. (Screws sold separately)**

Accessories	
Part Number	**Description**
R9-0003-016	1/4 - 28 Female Threaded Sub Base Manifold, 2-Way
R9-0001-016	1/4 - 28 Female Threaded Sub Base Manifold, 3-Way
R9-0004-016	M6 Female Threaded Sub Base Manifold, 2-Way
R9-0002-016	M6 Female Threaded Sub Base Manifold, 3-Way
LQX-0001-290-001	18" (46 cm) Flying Lead Adapter
M2-0004-630-PNPH	Mounting Screw, SST 18-8, Metric, 16 MM LG (2 Required)
002-0056-625PNPH	Mounting Screw, SST 18-8, 2-56, 5/8" LG (2 Required)
R9-0001-300	FFKM O-Ring
R9-0002-300	EPDM O-Ring

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 and Media Temperature Range
- Ambient Temperature Range

Please click on the Order On-line button (or go to www.parker.com/precisionfluidics/R9) to configure your R9 Miniature Diaphragm Isolation Valve. For more detailed information, visit us on the Web, or call 603-595-1500.

C7 Valve **Miniature Cartridge Liquid Valve**

7 mm Miniature Liquid Cartridge Valve

The Series C7 is a miniature cartridge style solenoid valve with a compact 7 mm diameter. This unique design combines small size, light weight and low power consumption with high flow repeatability and fast response time over an exceptionally long life, up to 130 million cycles. Available in 2-way configurations, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

Markets

- Analytical Chemistry
- Clinical Diagnostics
- Environmental Monitoring
- Print

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 130 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
(For gas performance see the 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: 0.28 in (7 mm)
- Length: 0.79 in (20 mm)

Porting:
- Cartridge Seal

Weight: 0.11 oz (3.1 g)

Internal Volume:
2-Way: 81µL

Orifice		0.012 in (0.3 mm)	0.020 in (0.5 mm)	0.031 in (0.8 mm)	0.039 in (1.0 mm)
Max Vacuum & Pressure	Type	2-Way	2-Way	2-Way	2-Way
	PSI	145	116	73	43.5
	Bar	10	8	6	3
	SCCM (water)	146	260	429	415

Electrical

Voltage (VDC):
12 and 24 VDC ± 5%
(Other voltages available on request.)

Electrical Connections:
3.2 in (80 mm) Flying Leads

Power:
Typical 0.5W - 1.2W
(Please see Table 1 for more details)

Wetted Materials

Body:
Stainless Steel Series 300 and 400

Seals: (Internal and External)
FKM, EPDM
FFKM on request

Performance Characteristics

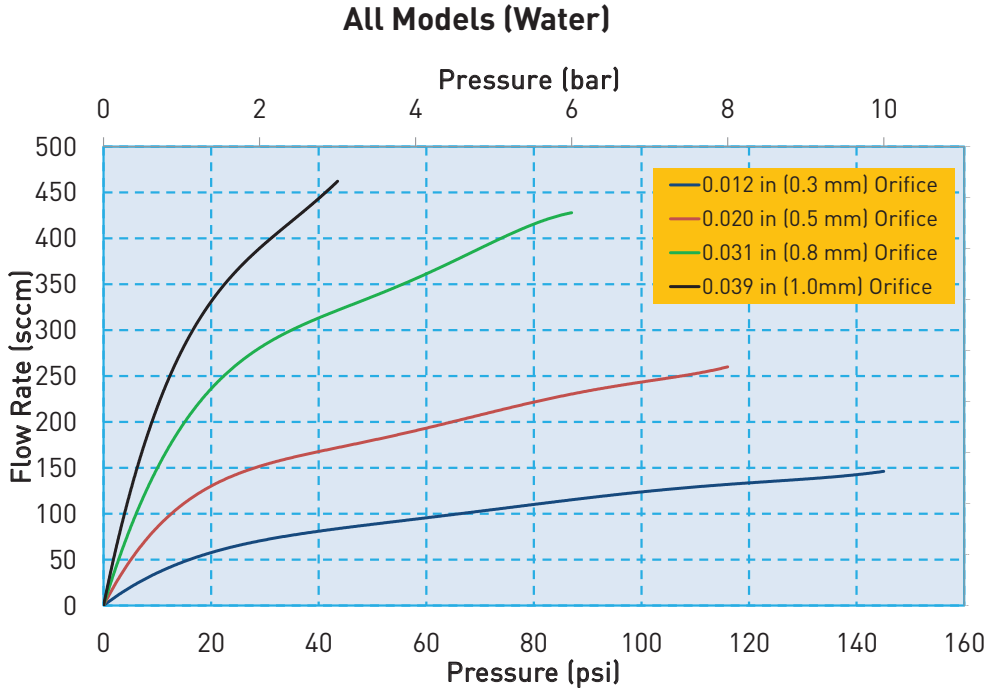
Response:
10 ms Maximum, Cycling

Recommended Filtration:
0.3 mm Orifice
5 µm
0.5 mm, 0.8 mm, & 1.0 mm Orifice
10 µm

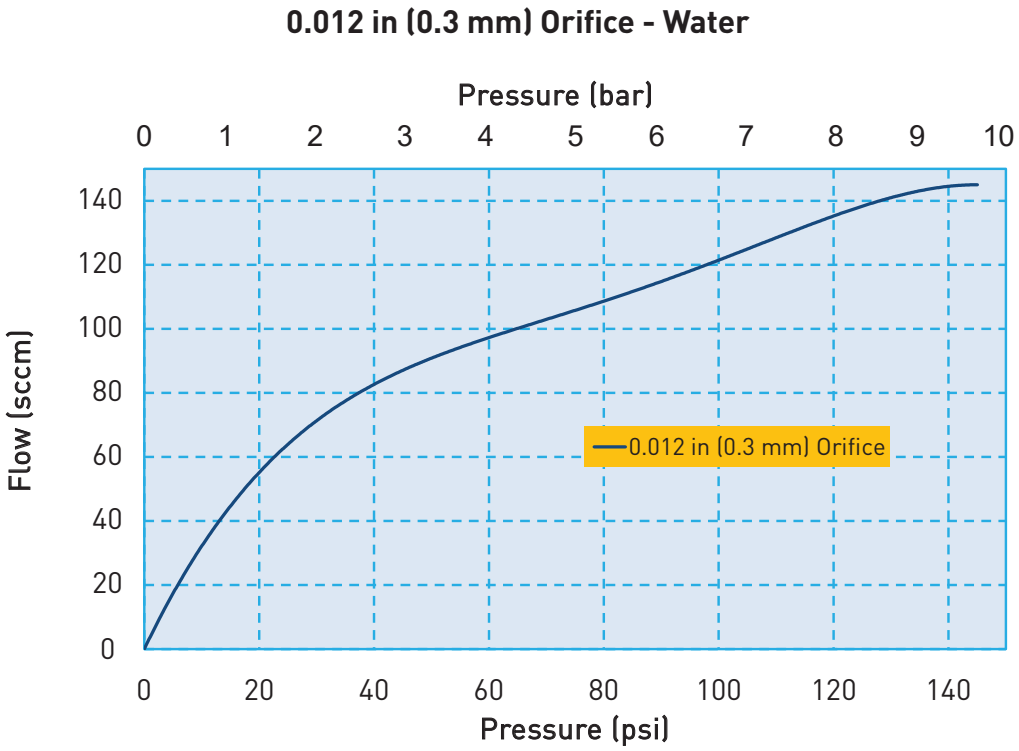
Reliability:
2-Way: 130 Million Cycles
0.90 Reliability Factor
95% Confidence

C7 Miniature Liquid Cartridge Valve

Flow Curve

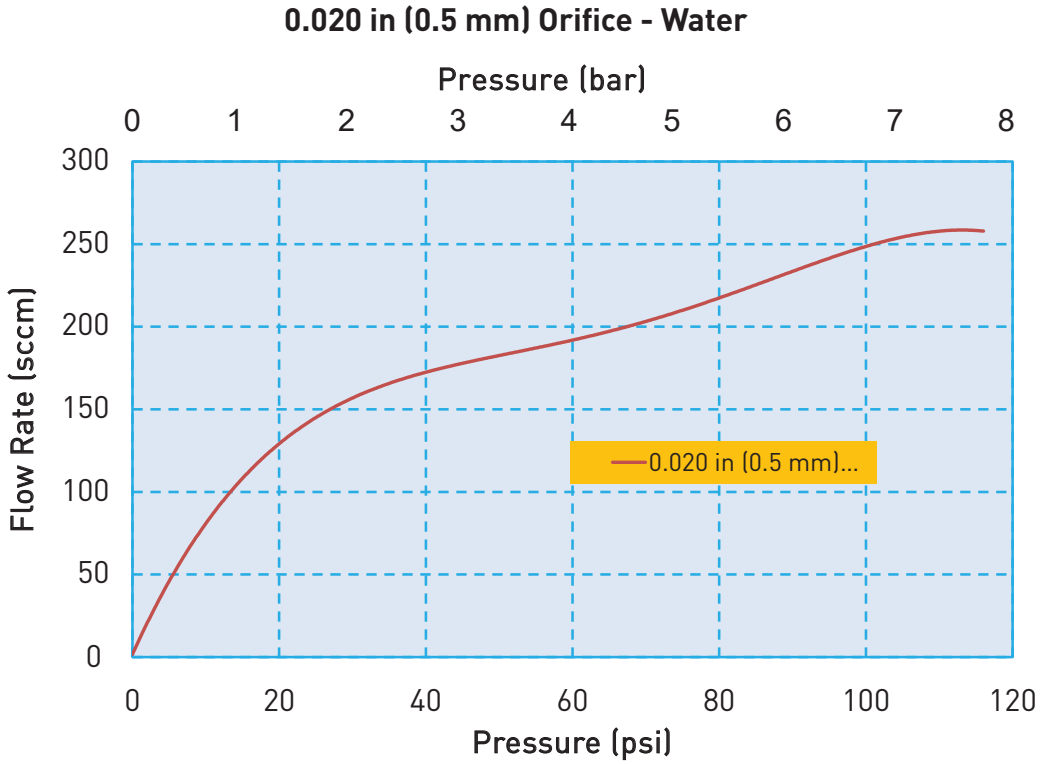


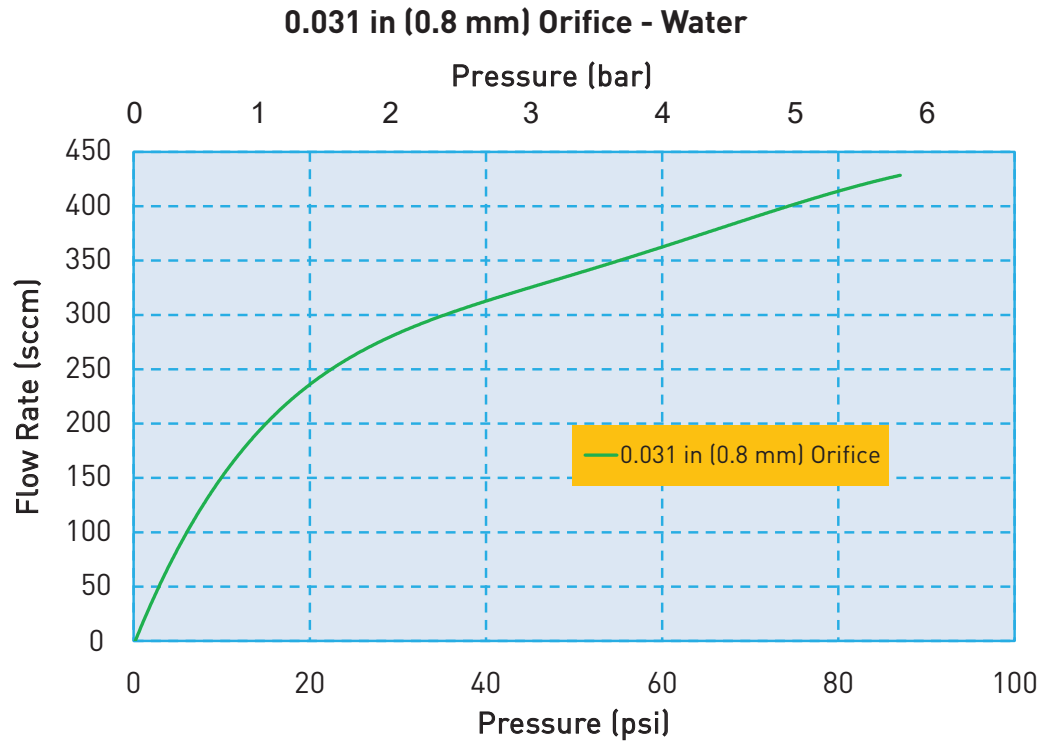
Flow Curve



C7 Miniature Liquid Cartridge Valve

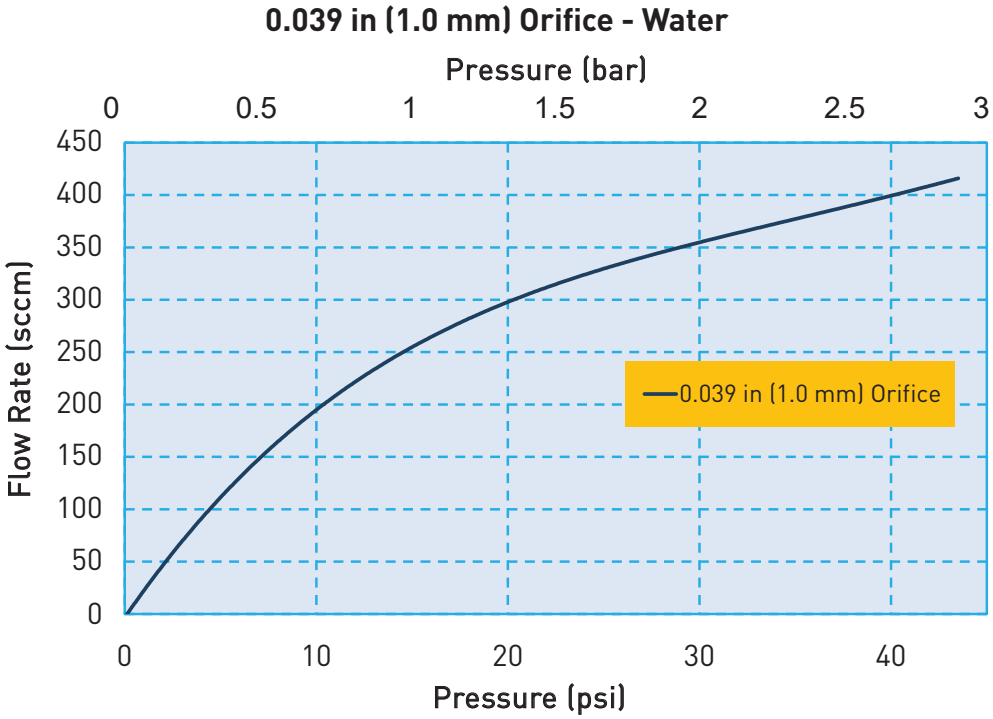
Flow Curve





C7 Miniature Liquid Cartridge Valve

Flow Curve



Electrical Interface

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

C7 Miniature Liquid Cartridge Valve

Electrical Requirements

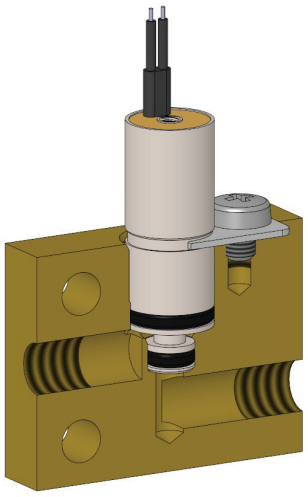
Table 1

Orifice	0.012 in (0.3 mm)		0.020 in (0.5 mm)		0.031 in (0.8 mm)		0.039 in (1.0 mm)	
Valve Type	2-Way		2-Way		2-Way		2-Way	
Voltage (VDC)*	12	24	12	24	12	24	12	24
Power (Watts)	0.5	0.6	1	0.85	1	1.2	1	1.2
Resistance (Ohm)**	288	995	140	700	140	495	140	495

* ± 5%, other voltages available on request

** ±5% @ 68°F, 20°C

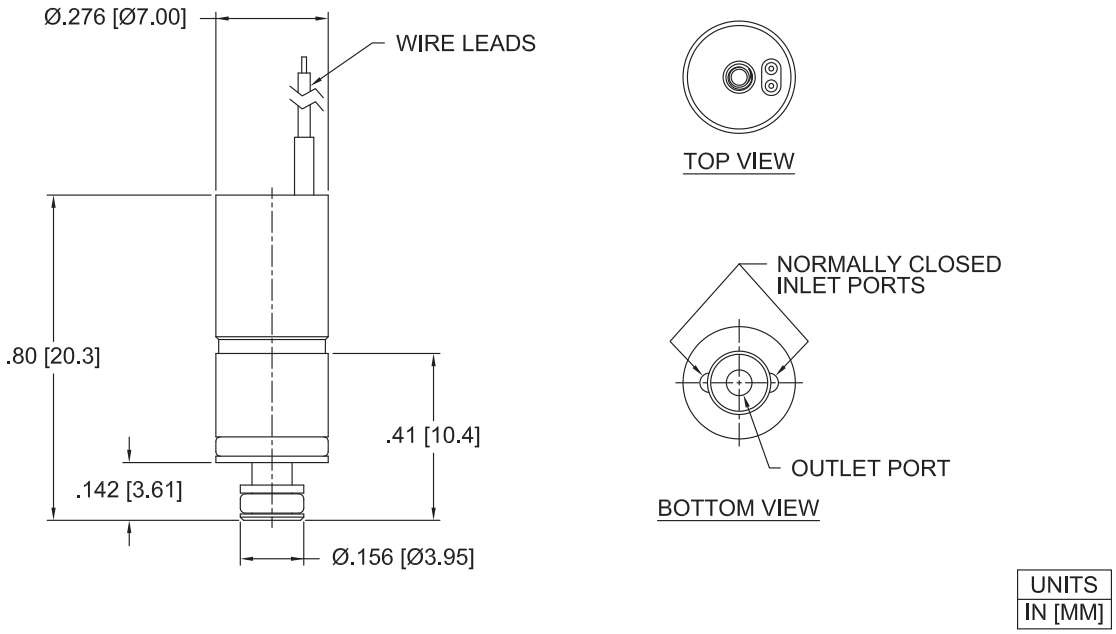
Liquid Interface/Mechanical Integration



C7 Miniature Liquid Cartridge Valve

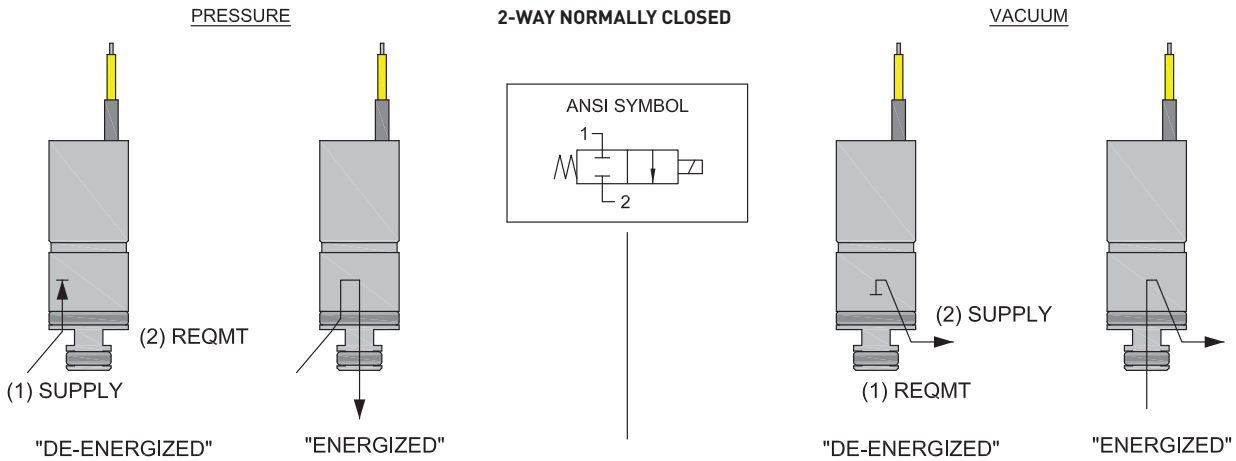
Dimensions

2-Way Valve Configuration



ANSI Symbols

2-Way Normally Closed

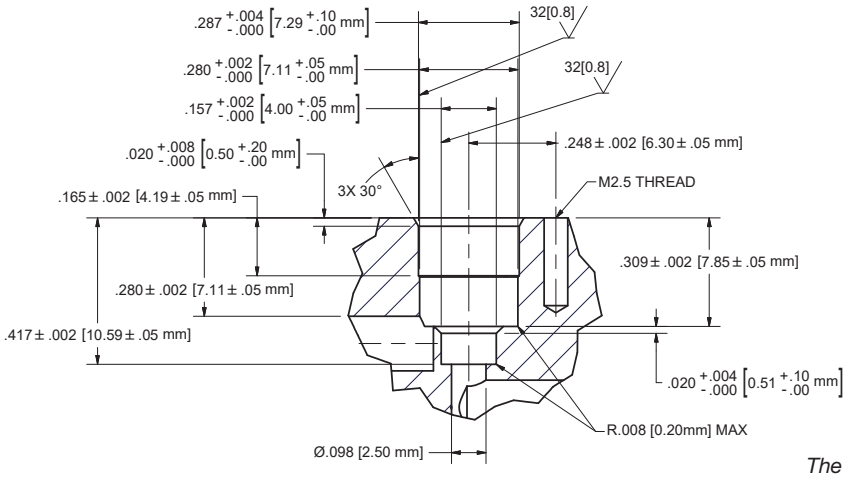


C7 Miniature Liquid Cartridge Valve

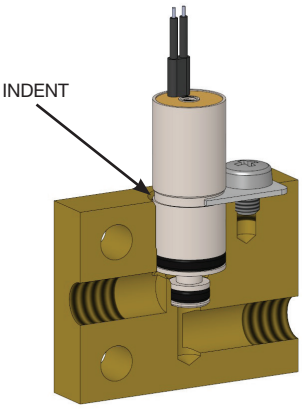
Installation and Use

During installation of the C7 valve, the maximum force allowed to press it into the manifold is: 6.74 lbf (30 N)
Lubrication is recommended (I.E. alcohol or DI water depending on compatibility constraints)

Recommended Valve Manifold Dimensions



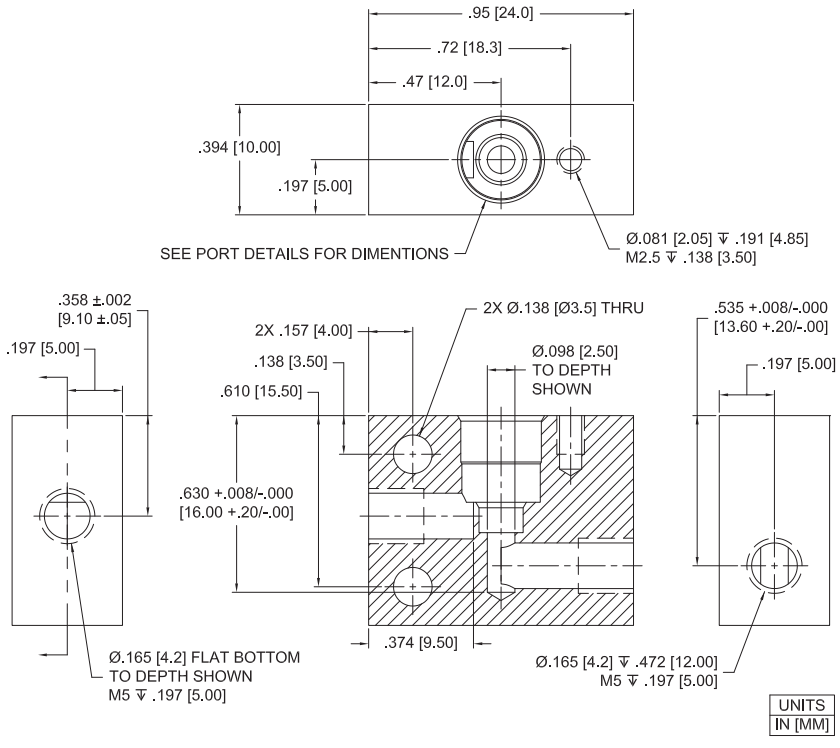
Recommended Valve Mounting



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

C7 Evaluation Manifold Dimensions and Design
C07-MCS



C7 Miniature Liquid Cartridge Valve

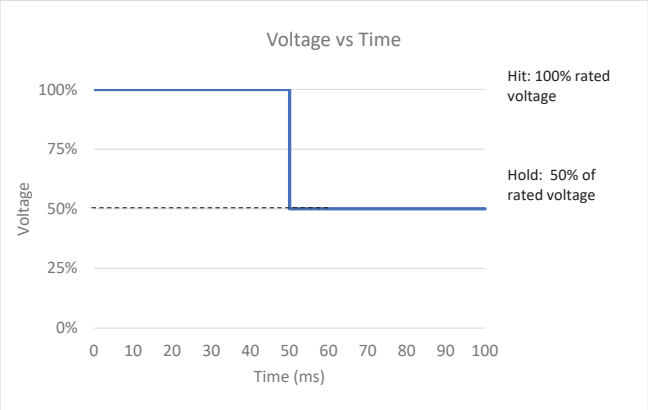
Installation and Use

Optional Reduced Power Control Method

"Hit and Hold" is an optional control method to increase power efficiency for the C7 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.



C7 Hit and Hold Specification	
Hit Voltage Level	Rated Voltage
Hold Voltage Level	50% of Rated Voltage
Minimum Hit Time	50 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**.

C7 Miniature Liquid Cartridge Valve

Chemical Compatibility Chart*

	Seal Options			Other Wetted Materials
Chemical	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

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

Compatibility Legend

1. EXCELLENT
   Minimal or no effect
2. GOOD
   Possible swelling and or loss of physical properties
3. DOUBTFUL
   Moderate or severe swelling and loss of physical properties
4. NOT RECOMMENDED
   Severe effect and should not be considered

Accessories

C7 Evaluation Manifold with clip and screw (Valve not included)
C07-MCS

Replacement Clip for C07-MCS
C07-C

Replacement Screw for C07-MCS
C07-S

Replacement O-Ring for C7 Valve, Large
C07-LG (FKM)
C07-LGE (EPDM)

Replacement FKM O-Ring for C7 Valve, Small
C07-SM (FKM)
C07-SME (EPDM)

C7 Miniature Liquid Cartridge Valve

Ordering Information

Sample Part ID	C07	-	2	24	FK	03	F	F	-	000
Description	**Series**		**Configuration**	**Coil Voltage**	**Elastomer**	**Orifice**	**Mounting Style**	**Electrical Interface**		**Custom**
Options	C07: 7 mm Cartridge Valve		2: 2-Way	12: 12 VDC 24: 24 VDC	EP: EPDM FK: FKM	03: 0.012 in (0.3 mm) 05: 0.020 in (0.5 mm) 08: 0.031 in (0.8 mm) 10: 0.039 in (1.0 mm)	F: Face Seal	F: 3.2 in (80 mm) flying lead		000: Standard

Accessories
C07-MCS: C07 Evaluation Manifold with Clip and Screw, Not supplied with the valve.
C07-C: Replacement Clip used on C07-MCS*
C07-S: Replacement Screw used on C07-MCS*
C07-LG: Spare O-Ring for C07 Valve, FKM, Large**
C07-LGE: Spare O-Ring for C07 Valve, EPDM, Large**
C07-SM: Spare O-Ring for C07 Valve, FKM, Small**
C07-SME: Spare O-Ring for C07 Valve, EPDM, Small**
* Not Supplied with Valve, Replacement Part for C07-MCS ** Supplied with Valve

NOTE: For Evaluation - Please Add C07-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 C7 valve. For CAD models and more detailed information, please visit us on the Web (www.parker.com/precisionfluidics/C7_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.

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.

Markets

- Analytical Chemistry
- Clinical Diagnostics
- Environmental Monitoring
- Print

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	22
	Bar	10	8	4	1.5
	Cv	0.01	0.032	0.058	0.093
	SCCM (water)	400	1160	1670	1640

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

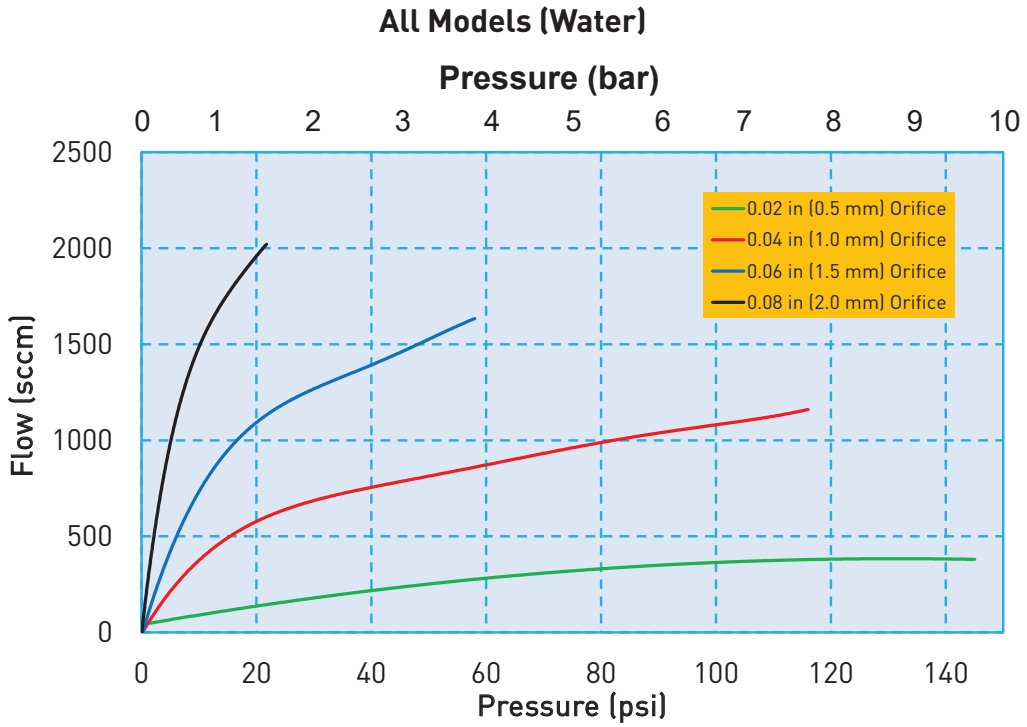
Proof Pressure:
120% of Rated Maximum Pressure

Recommended Filtration:
10 µm

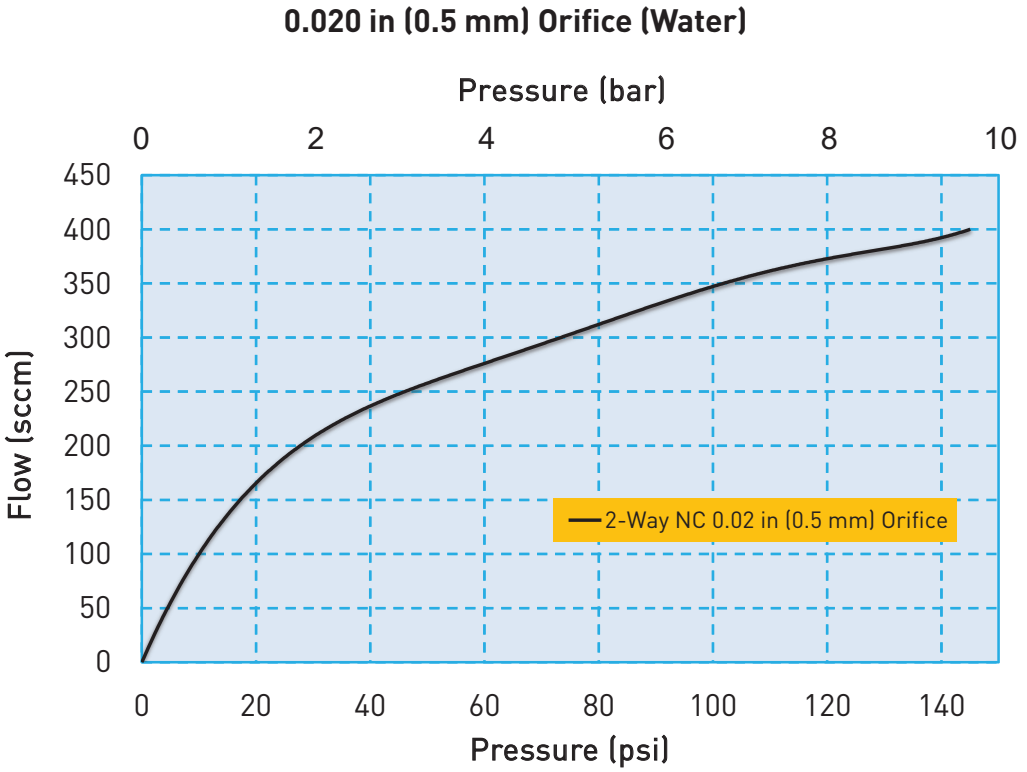
Reliability:
2-Way: 500 Million Cycles
0.90 Reliability Factor
95% Confidence

C15 Miniature Liquid Cartridge Valve

Flow Curve

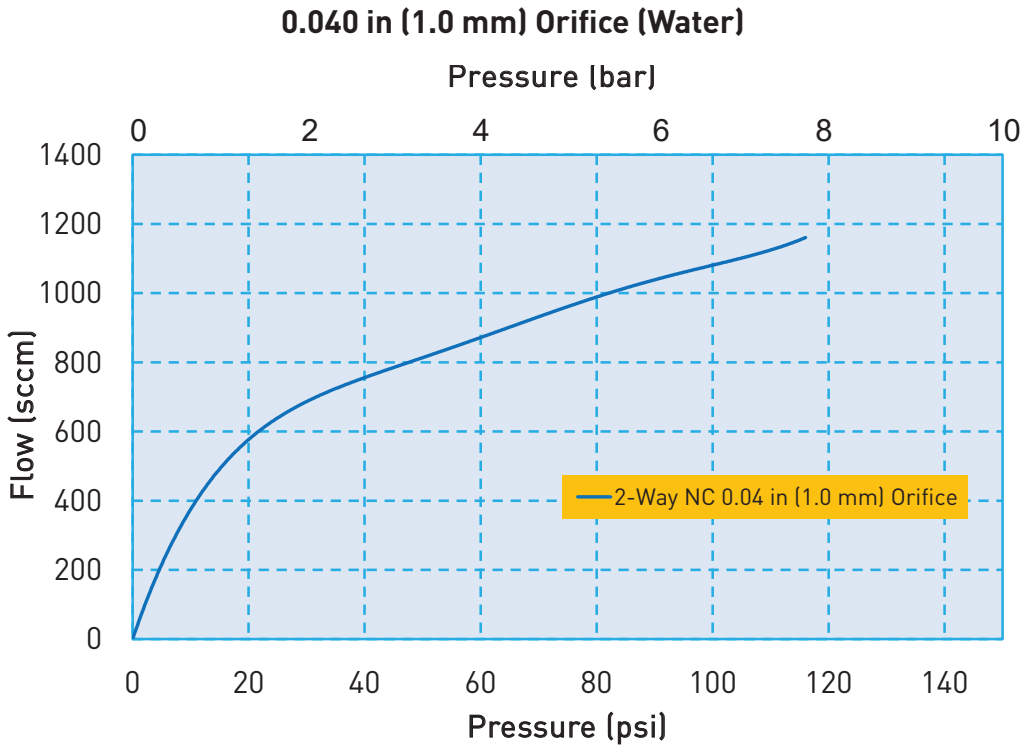


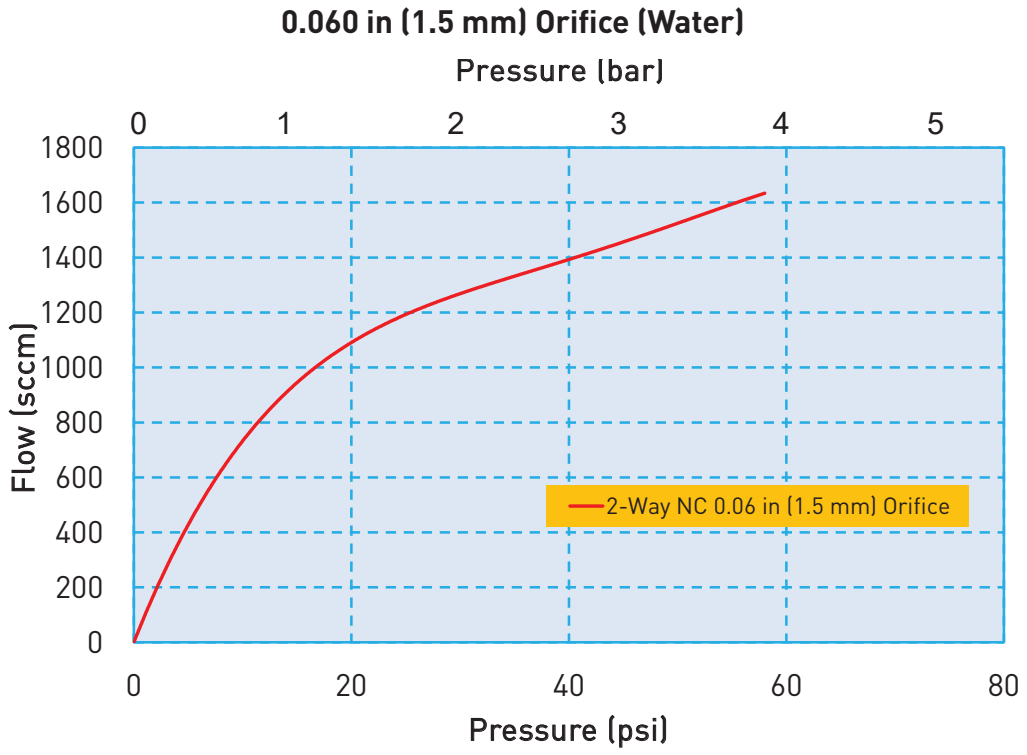
Flow Curve



C15 Miniature Liquid Cartridge Valve

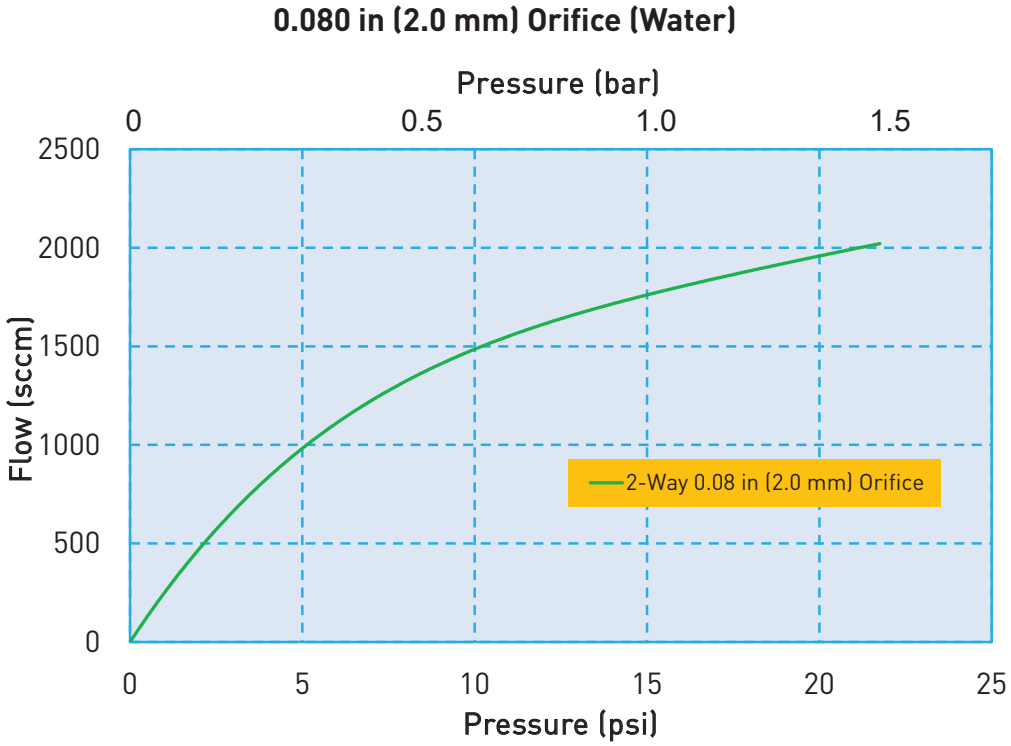
Flow Curve





C15 Miniature Liquid Cartridge Valve

Flow Curve



Electrical Interface

Wire Leads

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

C15 Miniature Liquid Cartridge Valve

Electrical Requirements

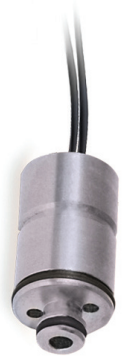
Table 1

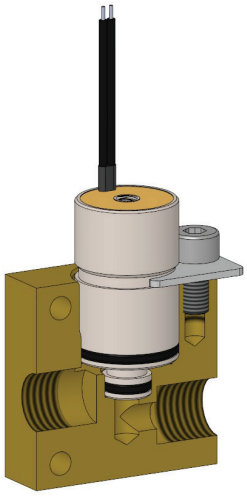
Orifice	0.02 in (0.5 mm)		0.04 in (1.0 mm)		0.06 in (1.5 mm)		0.08 in (2.0 mm)	
Valve Type	2-Way		2-Way		2-Way		2-Way	
Voltage (VDC)*	12	24	12	24	12	24	12	24
Power (Watts)	1.1	1.1	1.7	1.6	1.7	1.6	1.7	1.6
Resistance (Ohm)**	132	525	85	361	85	361	85	361

* ± 5%, other voltages available on request

** ±5% @ 68°F, 20°C

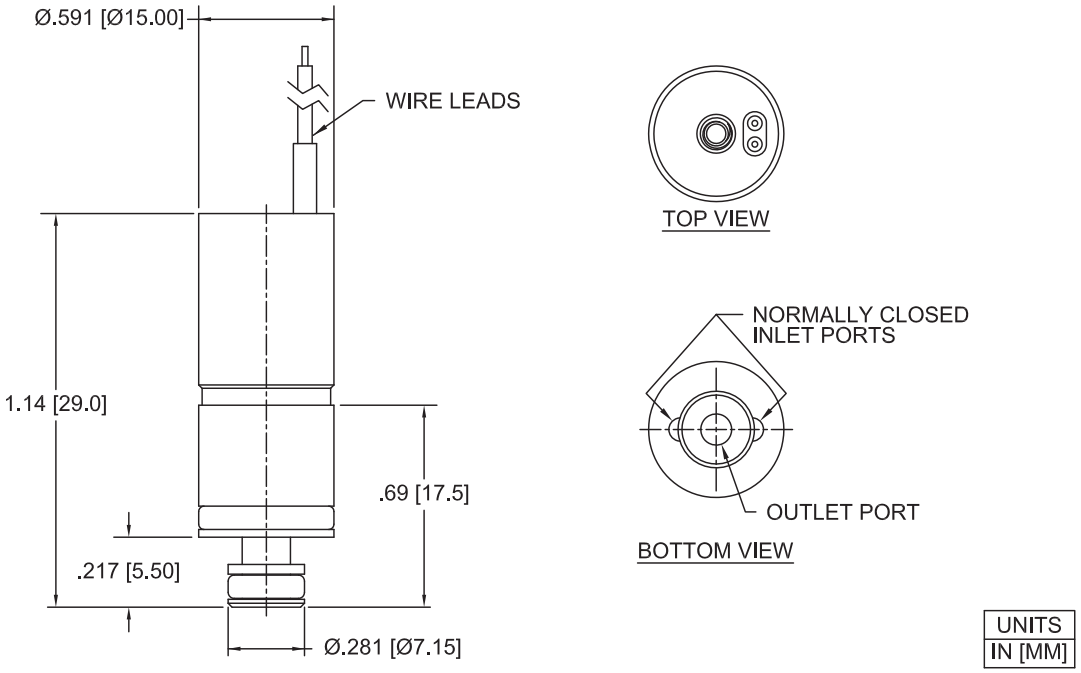
Liquid Interface/Mechanical Integration





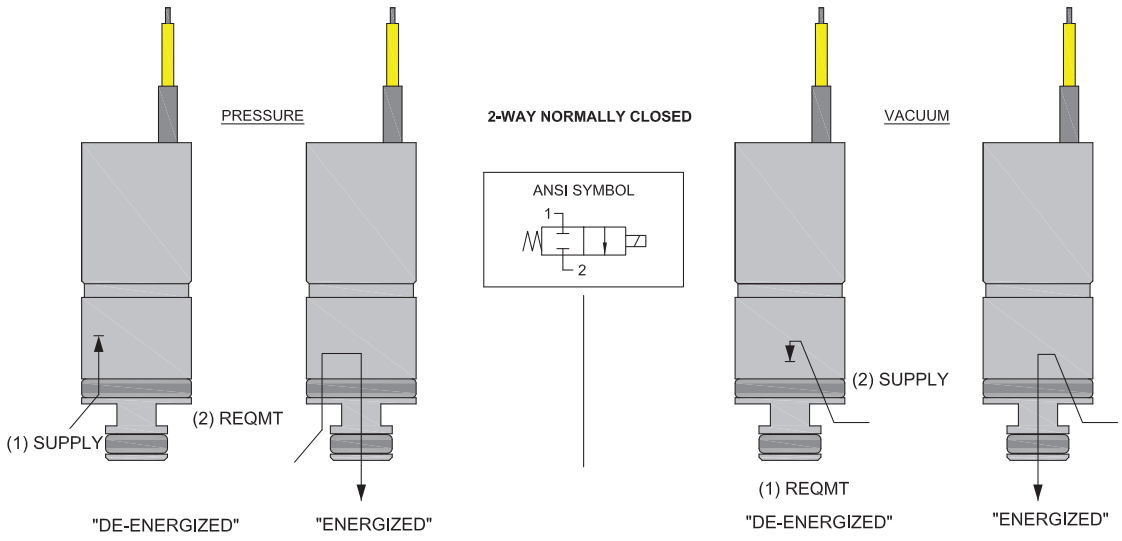
C15 Miniature Liquid Cartridge Valve
Dimensions

2-Way Valve Configuration



ANSI Symbols

2-Way Normally Closed

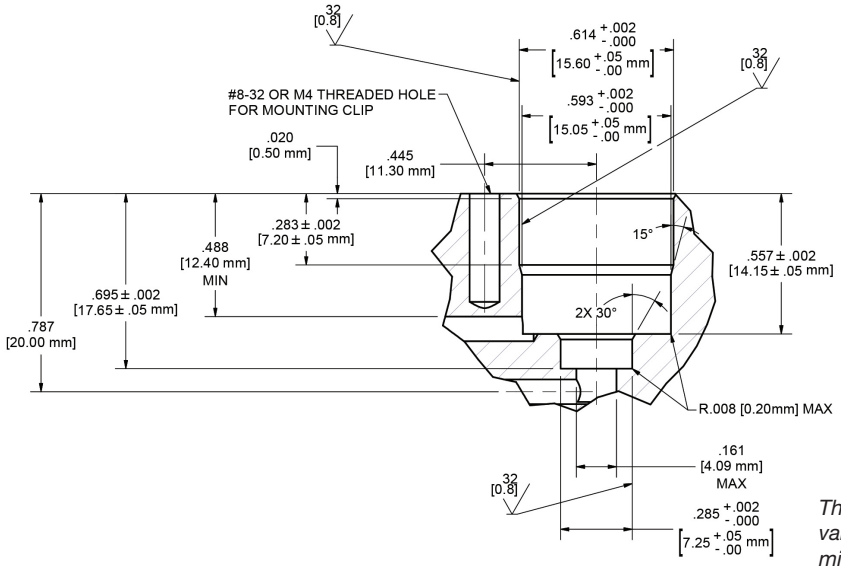


C15 Miniature Liquid Cartridge Valve

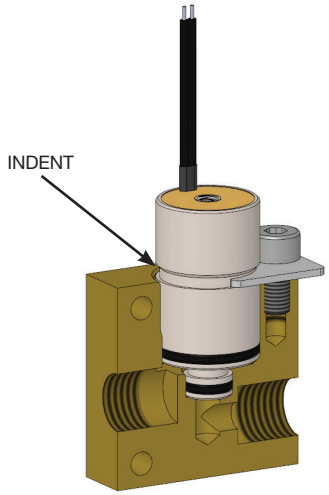
Installation and Use

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



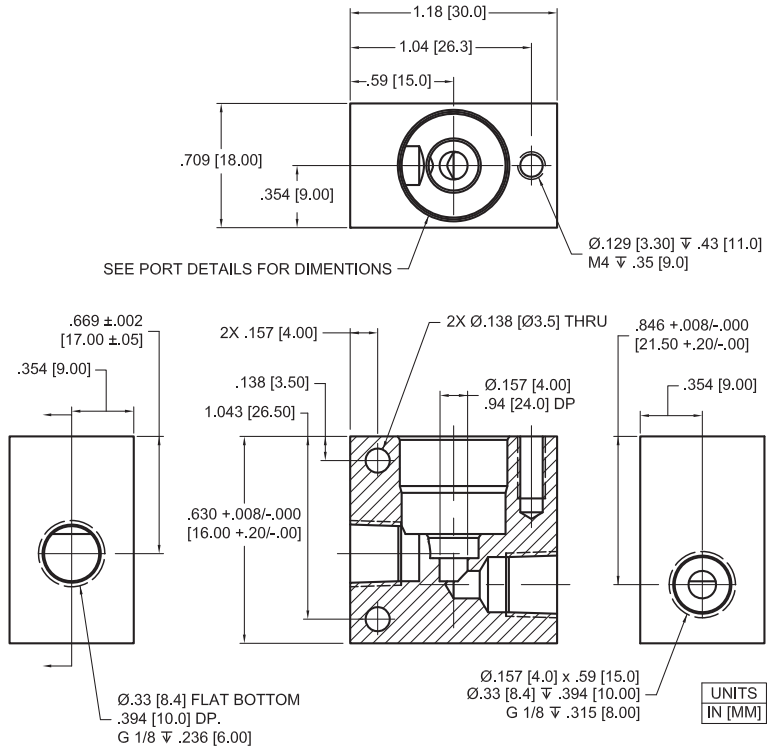
Recommended Valve Mounting



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



C15 Miniature Liquid Cartridge Valve

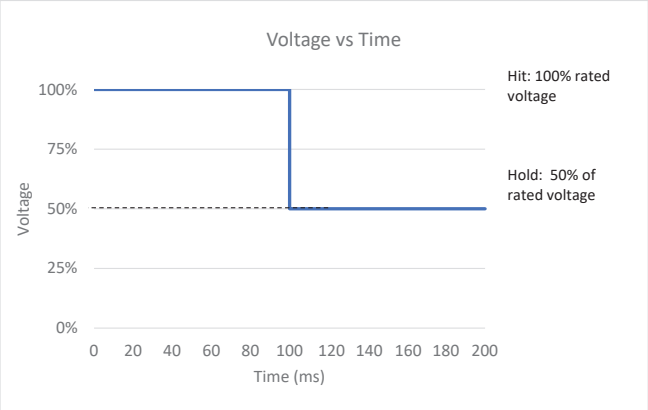
Installation and Use

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*

	Seal Options			Other Wetted Materials
Chemical	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

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

Compatibility Legend

1. EXCELLENT
   Minimal or no effect
2. GOOD
   Possible swelling and or loss of physical properties
3. DOUBTFUL
   Moderate or severe swelling and loss of physical properties
4. NOT RECOMMENDED
   Severe effect and should not be considered

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 (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.

C21 Valve Miniature Cartridge Liquid Valve

21 mm Miniature Liquid Cartridge Valve

The Series C21 is a miniature cartridge style solenoid valve with a compact 21 mm diameter. This unique design combines compact size, light weight and low power consumption with high flow repeatability and fast response time over an exceptionally long life up to 20 million cycles. Available in 2-way configuration, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

Markets

- Analytical Chemistry
- Clinical Diagnostics
- Agent Detection
- Print

Applications

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

Features

- Variety of orifice sizes with pressures up to 145 PSI (10 bar).
- Floating frictionless plunger enables reliable and repeatable operation up to 20 Million cycles.
- Low power design reduces heat and energy consumption.
- Compact reduces space and weight.
- 100% calibrated ensuring minimal valve to valve variation.
- RoHS & REACH compliant.

Product Specifications

Mechanical

Valve Type:
Solenoid Cartridge Valve
2-Way Normally Closed (NC)

Media: Gases* and Liquids
(See more Information 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: 0.83 in (21 mm)
- Length: 1.54 in (39 mm)

Porting:
- Cartridge Seal

Weight: 2.17 oz (60 g)

Internal Volume:
2-Way: 1173µL

Orifice		0.040 in (1.0 mm)	0.080 in (2.0 mm)	0.12 in (3.0 mm)	0.16 in (4.0 mm)
Type		2-Way	2-Way	2-Way	2-Way
Max Vacuum & Pressure	PSI	145	116	58	29
	Bar	10	8	4	2
	Cv	0.03	0.08	0.13	0.18
SCCM (water)		1480	3350	3770	3630

Electrical

Voltage (VDC):
12 and 24 VDC ± 5%
(Other voltages available on request.)

Electrical Connections:
3.2 in (80 mm) Flying Leads

Power:
Typical 2.5W - 2.6W
(Please see Table 1 for more details)

Wetted Materials

Body:
Stainless Steel

Seals: (Internal and External)
FKM, EPDM
FFKM available on request

Performance Characteristics

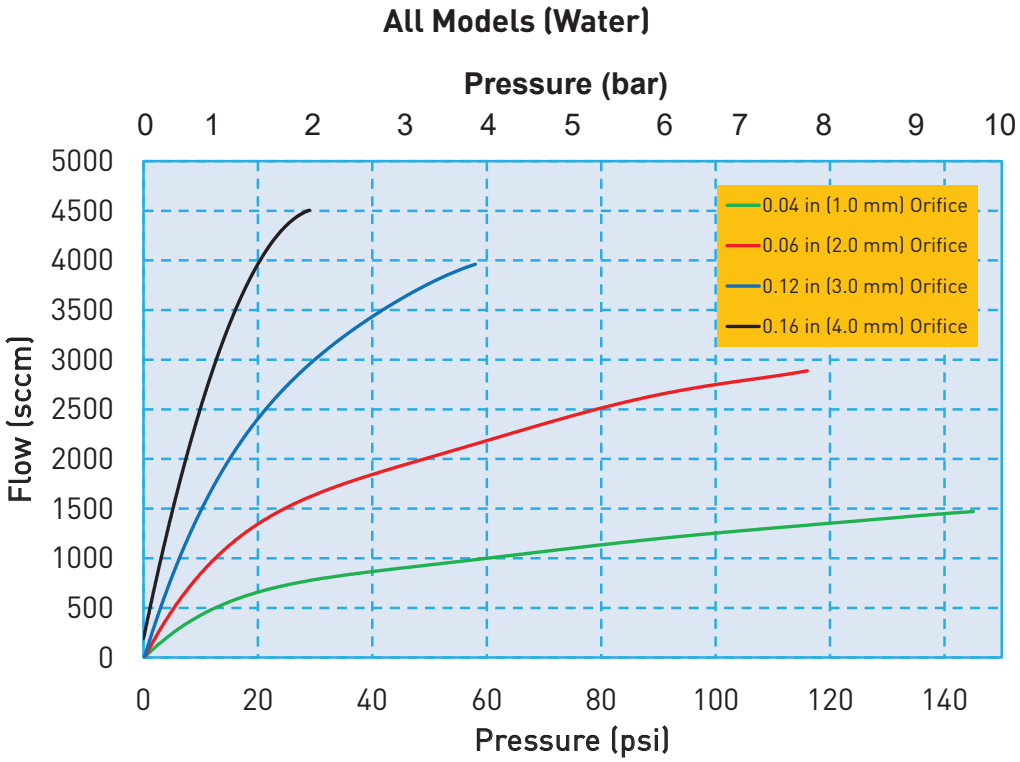
Response:
10 ms Maximum, Cycling

Recommended Filtration:
10 µm

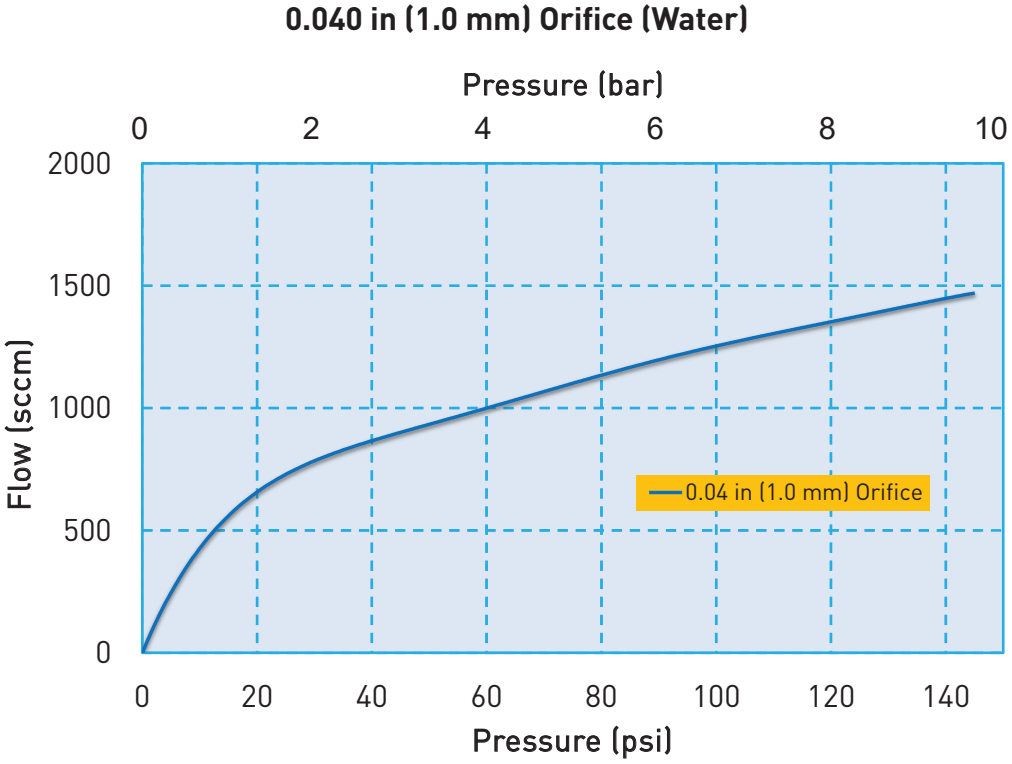
Reliability:
2-Way: 20 Million Cycles
0.90 Reliability Factor
95% Confidence

C21 Miniature Liquid Cartridge Valve

Flow Curve

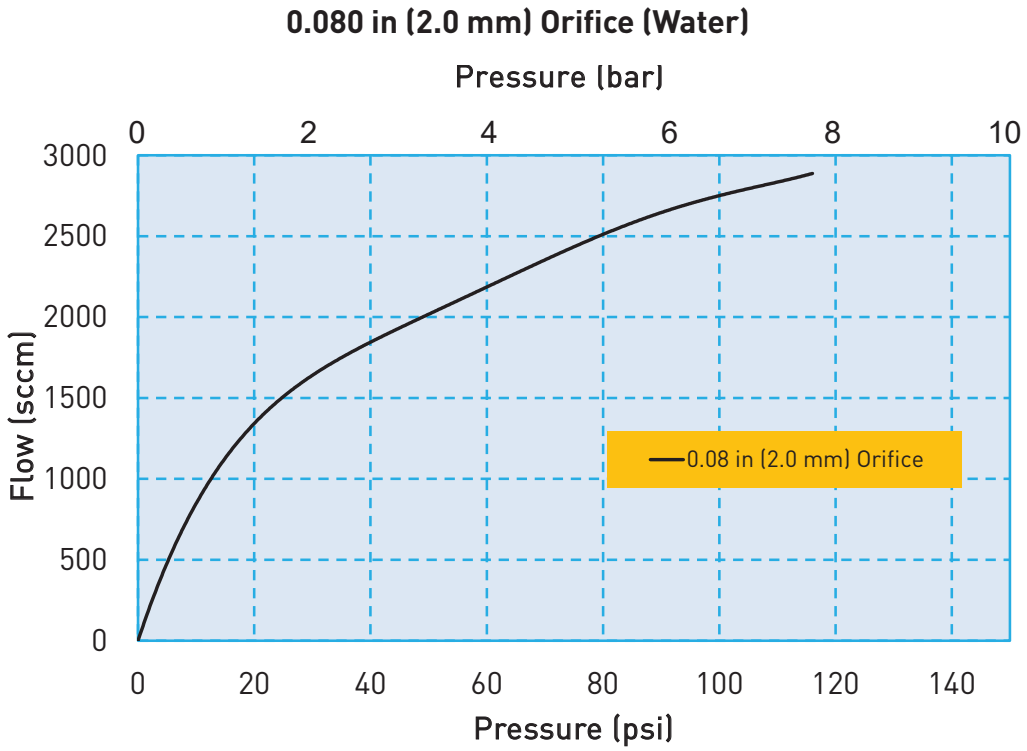


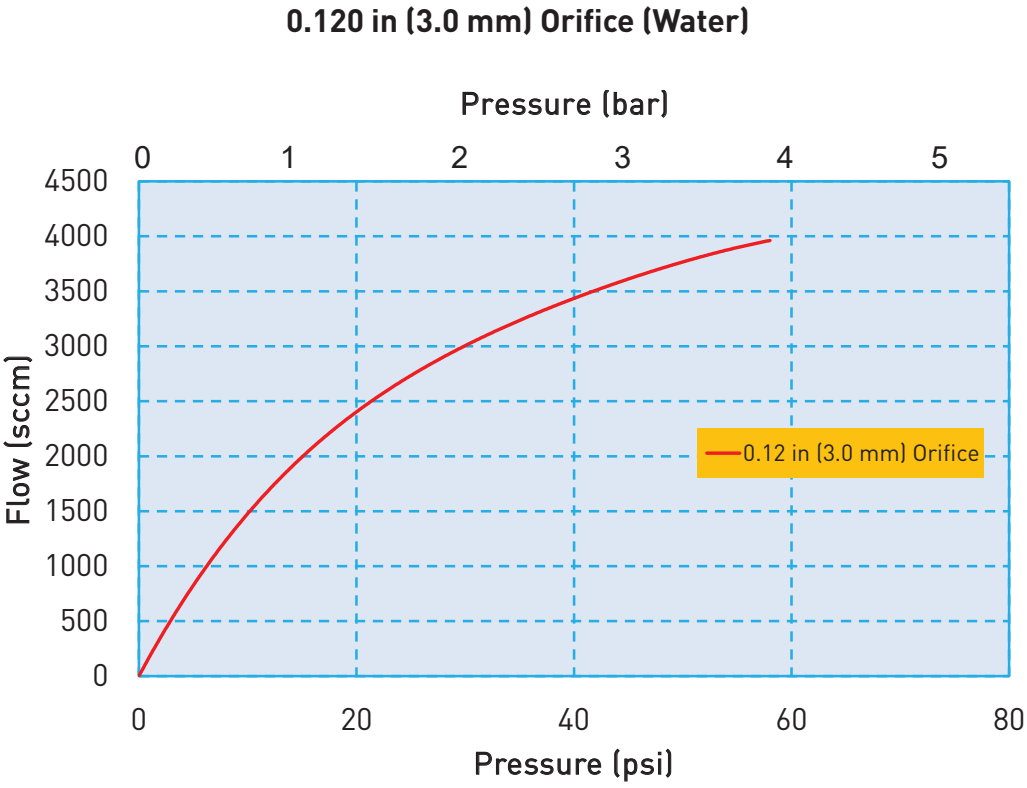
Flow Curve



C21 Miniature Liquid Cartridge Valve

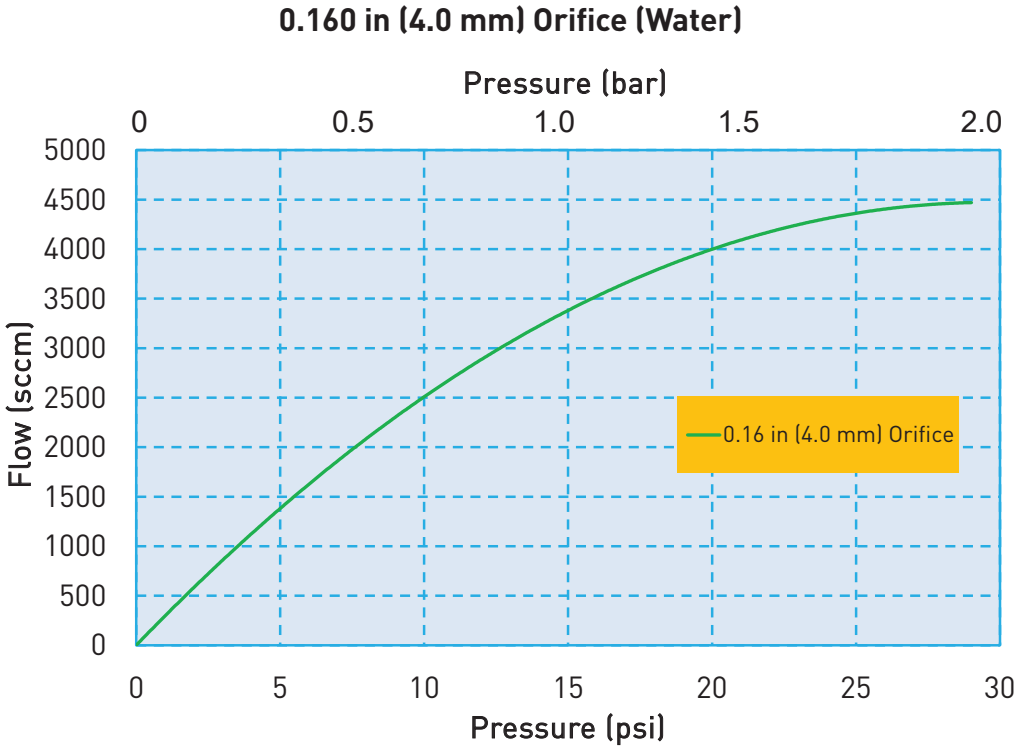
Flow Curve





C21 Miniature Liquid Cartridge Valve

Flow Curve



Electrical Interface

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

C21 Miniature Liquid Cartridge Valve

Electrical Requirements

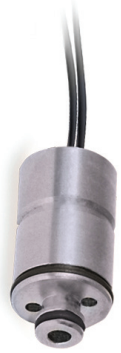
Table 1

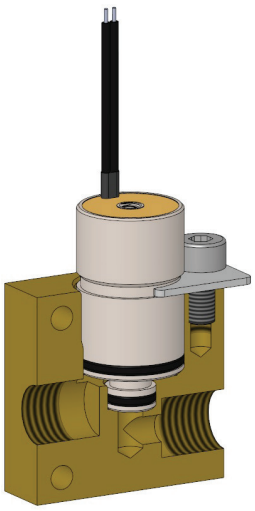
Orifice	0.040 in (1.0 mm)		0.080 in (2.0 mm)		0.12 in (3.0 mm)		0.16 in (4.0 mm)	
Valve Type	2-Way		2-Way		2-Way		2-Way	
Voltage (VDC)*	12	24	12	24	12	24	12	24
Power (Watts)	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5
Resistance (Ohm)**	56	235	56	235	56	235	56	235

* ± 5%, other voltages available on request

** ±5% @ 68°F, 20°C

Liquid Interface/Mechanical Integration

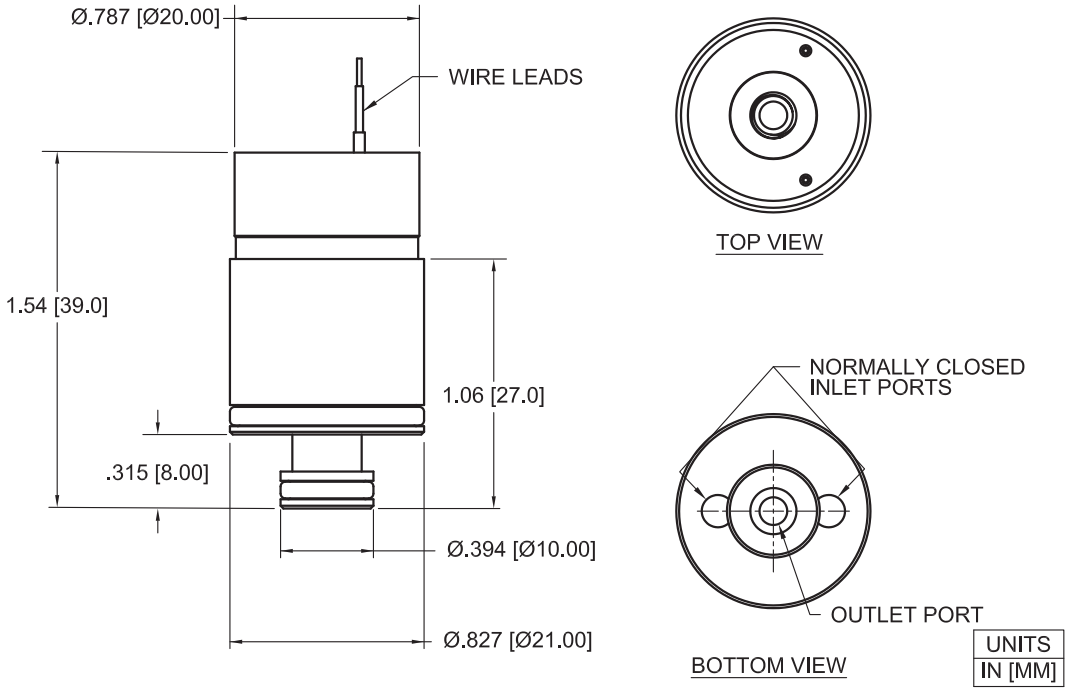




C21 Miniature Liquid Cartridge Valve

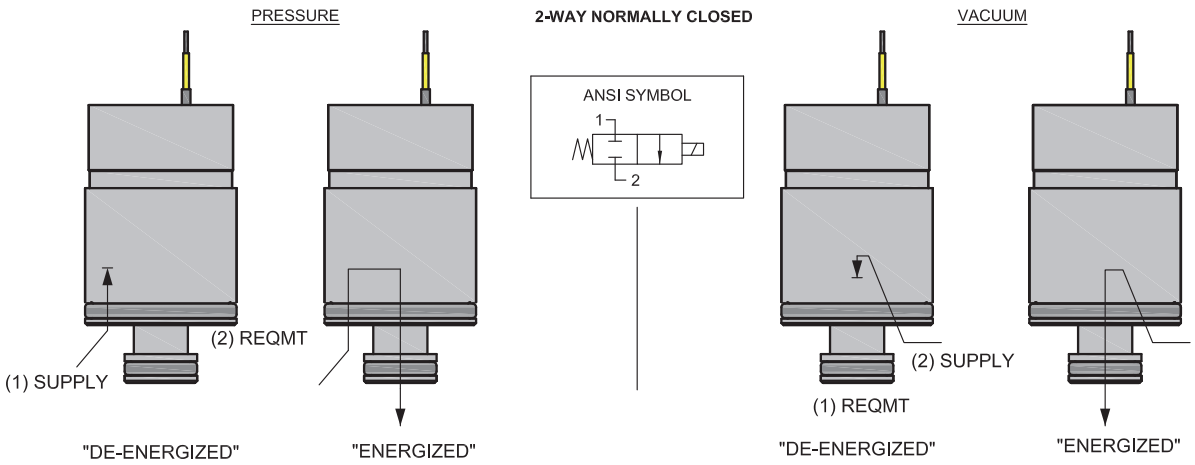
Dimensions

2-Way Valve Configuration



ANSI Symbols

2-Way Normally Closed

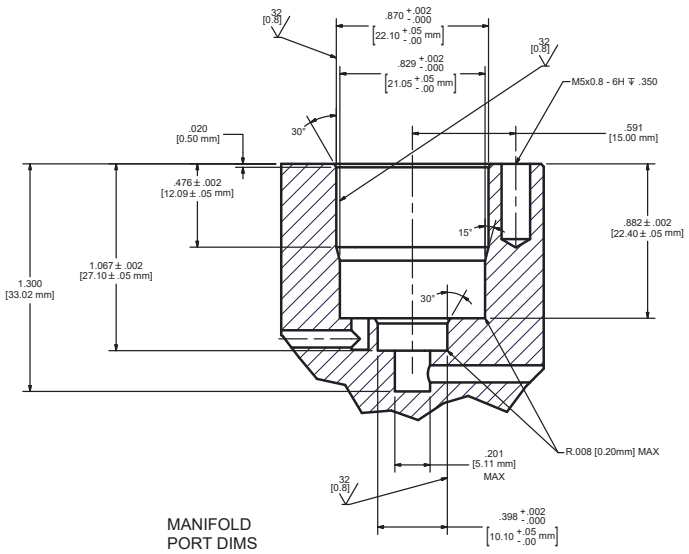


C21 Miniature Liquid Cartridge Valve

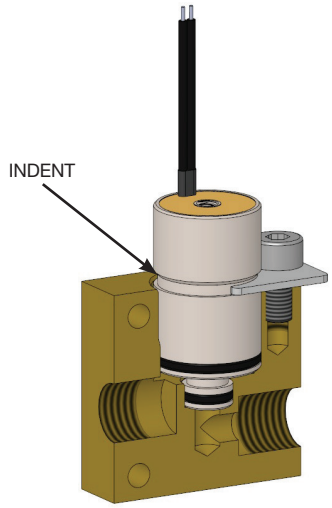
Installation and Use

During installation of the C21 valve, the maximum force allowed to press it into the manifold is: 44.96 lbf (200 N)
Lubrication is recommended (I.E. alcohol or DI water depending on compatibility constraints)

Recommended Valve Manifold Dimensions



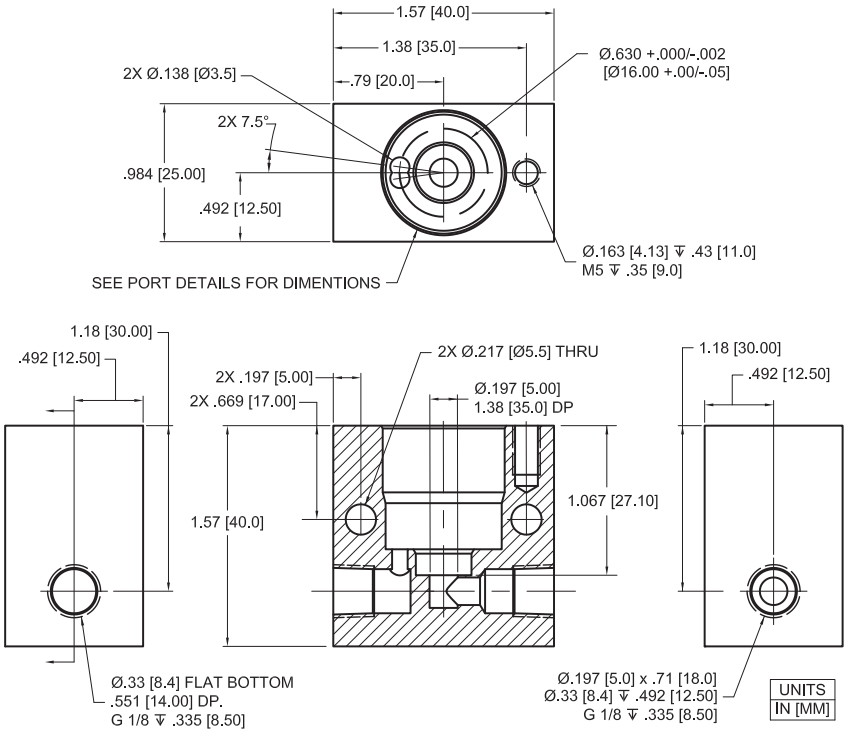
Recommended Valve Mounting



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

C21 Evaluation Manifold Dimensions and Design
C21-MCS



C21 Miniature Liquid Cartridge Valve

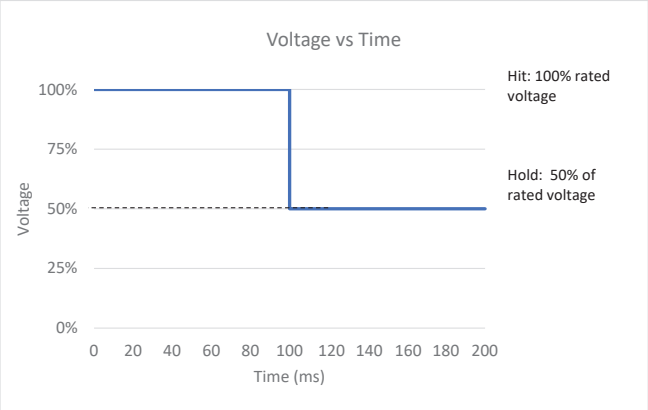
Installation and Use

Optional Reduced Power Control Method

"Hit and Hold" is an optional control method to increase power efficiency for the C21 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.



C21 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**.

C21 Miniature Liquid Cartridge Valve

Chemical Compatibility Chart*

	Seal Options			Other Wetted Materials
Chemical	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

1. EXCELLENT
   Minimal or no effect
2. GOOD
   Possible swelling and or loss of physical properties
3. DOUBTFUL
   Moderate or severe swelling and loss of physical properties
4. NOT RECOMMENDED
   Severe effect and should not be considered

Accessories

C21 Evaluation Manifold with clip and screw (Valve not included)
C21-MCS

Replacement Clip for C21-MCS
C21-C

Replacement Screw for C21-MCS
C21-S

Replacement O-Ring for C21 Valve, Large
C21-LG (FKM)
C21-LGE (EPDM)

Replacement FKM O-Ring for C21 Valve, Small
C21-SM (FKM)
C21-SME (EPDM)

C21 Miniature Liquid Cartridge Valve

Ordering Information

Sample Part ID	C21	-	2	24	FK	10	F	F	-	000
Description	**Series**		**Configuration**	**Coil Voltage**	**Elastomer**	**Orifice**	**Mounting Style**	**Electrical Interface**		**Custom**
Options	C21: 15 mm Cartridge Valve		2: 2-Way	12: 12 VDC 24: 24 VDC	EP: EPDM FK: FKM	10: 0.040 in (1.0 mm) 20: 0.080 in (2.0 mm) 30: 0.12 in (3.0 mm) 40: 0.16 in (4.0 mm)	F: Face Seal	F: 3.2 in (80 mm) flying lead		000: Standard

Accessories

C21-MCS: C21 Evaluation Manifold with Clip and Screw, Not supplied with the valve.

C21-C: Replacement Clip used on C21-MCS*

C21-S: Replacement Screw used on C21-MCS*

C21-LG: Spare O-Ring for C21 Valve, FKM, Large**

C21-LGE: Spare O-Ring for C21 Valve, EPDM, Large**

C21-SM: Spare O-Ring for C21 Valve, FKM, Small**

C21-SME: Spare O-Ring for C21 Valve, EPDM, Small**

* Not Supplied with Valve, Replacement Part for C21-MCS ** Supplied with Valve

NOTE: For Evaluation - Please Add C21-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 C21 valve. For CAD models and more detailed information, please visit us on the Web (www.parker.com/precisionfluidics/C21_LiquidCartridgeValve), call (+1.603.595.1500) or email at ppfinfo@parker.com.

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Series 1 & 2 Miniature Inert PTFE Isolation Valves

2-Way and 3-Way Solenoid Valves

The 2-Way & 3-Way inert Series 1 & 2 valves have been designed for systems where chemical compatibility is most important. The wetted path is isolated from the solenoid and only PTFE and borosilicate glass are in contact with the media passing through the valve. Low internal volume and fast response time ensure repeatable, accurate volumes. Valves will actuate without any pressure or vacuum applied.

Features

- Provides unsurpassed chemical compatibility for a wide range of media with PTFE and borosilicate glass as the only wetted parts
- 100% continuous duty rating in ambient temperatures up to 66°C
- Low power for reduced heat generation and power consumption
- Fast response times for accurate repeatable results
- Direct acting: does not require pressure or vacuum to operate
- 100% tested leak rate provides assurance of a quality seal
- Provides reliable operation for the life of your instrument
- RoHS compliant

Applications

- Reagent Control
- Solvent Management
- Aggressive Liquid Control

Product Specifications

Physical Properties

Valve Type:
Diaphragm Isolation Valve
Valve Configuration:
3-Way (Series 1)
2-Way, Normally Closed (Series 2)
Media:
Liquids
Operating Environment:
40 to 150°F (4 to 66°C)
Dimensions:
Width: 1.0” (25.4 mm)
Height: 2.1” (53.34 mm)
Length: 1.0”(25.4 mm)
Porting:
1/4-28 Threaded Ports
Weight:
2.7 oz (76.5 g)
Internal Volume (µL):
96 (3-Way)
49 (2-Way)

Electrical

Voltage (VDC):	12	24
Power (Watts):	2.5	4.2
Current (mA):	211	173
Resistance (Ohm):	57	139
(Ω±5% @ 70°F, 21.1°C)		
Connections:		
12” Lead Wire Standard		
26 AWG, PTFE Insulated		

Wetted Materials*

Seals:
PTFE
Body Options:
PTFE
All Others:
Borosilicate Glass (3 - Way only)

* See Chemical Compatibility Page
Consult factory for other options

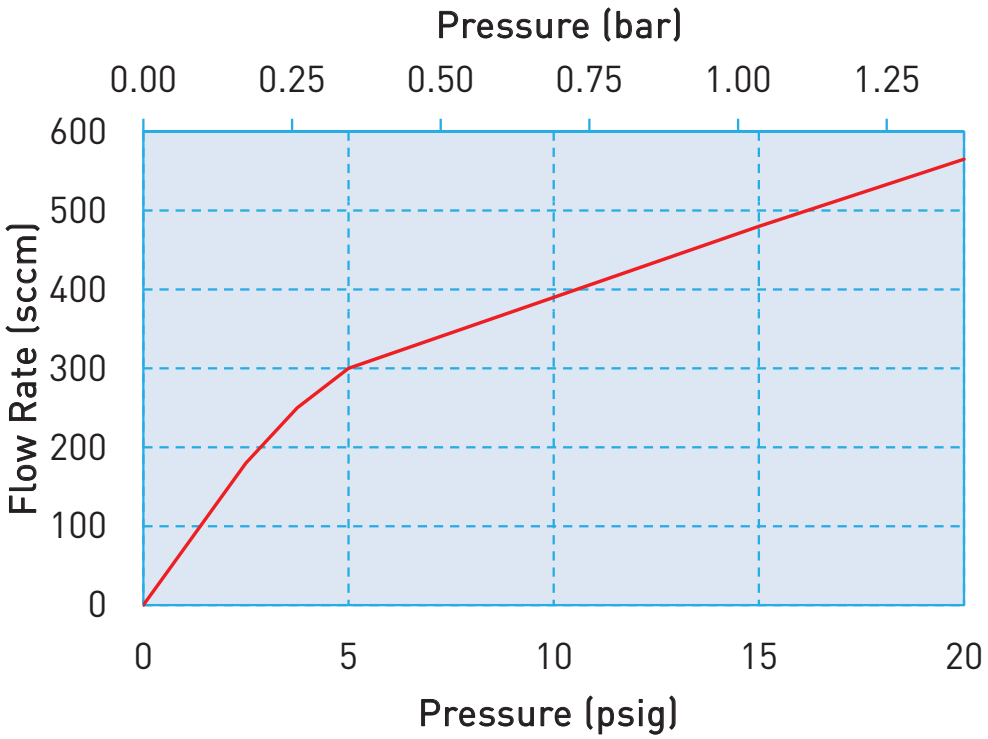
Performance Characteristics

Operating Pressure/ Orifice Diameters:
Vacuum - 20 psig (1.4 bar) / 0.060” (1.52 mm)
Proof Pressure:
1.5X rated pressure
Leak Rate:
Bubble Tight
Response Time:
3-Way: <12 ms cycling
2-Way: <20 ms cycling
Recommended Filtration:
10 µm min
Reliability:
Life Cycle Rating of 10 million (Application dependent)

Series 1 & 2 Miniature Inert PTFE Isolation Valves

Typical Flow Curve

All Models
Orifice: 0.060" (1.52 mm)
(Tested w/water 24° C)

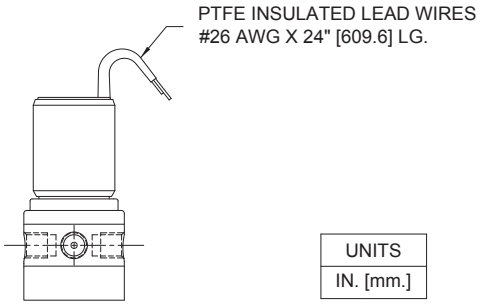


Series 1 & 2 Miniature Inert PTFE Isolation Valves

Electrical Interface

Series 1: 3-Way

Wire leads



UNITS
IN. [mm.]

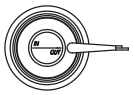
Custom connections available upon request

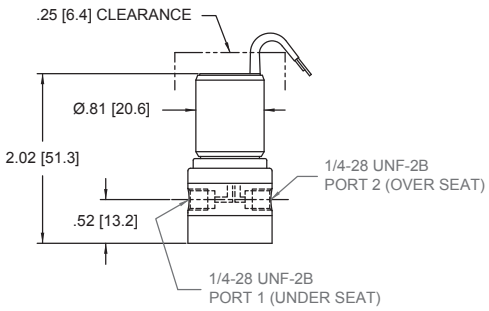
Mechanical Integration

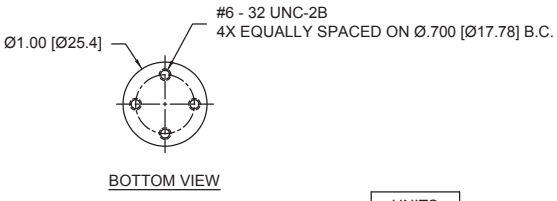
Dimensions

Series 1: 3-Way

3-Way, 0.060" (1.52 mm) Orifice







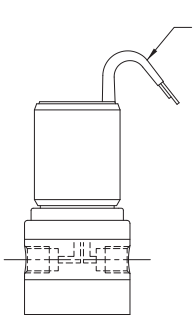
UNITS
IN. [mm.]

Series 1 & 2 Miniature Inert PTFE Isolation Valves

Electrical Interface

Series 2: 2-Way

Wire leads



UNITS
IN. [mm.]

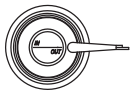
Custom connections available upon request

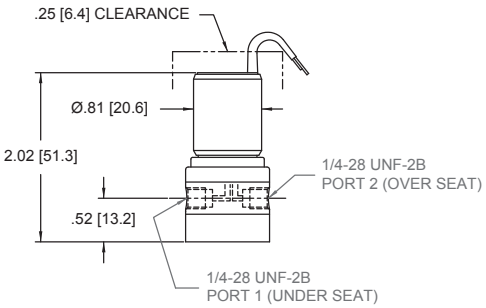
Mechanical Integration

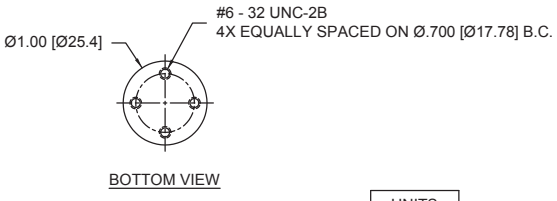
Dimensions

Series 2: 2-Way

2-Way, 0.060" (1.52 mm) Orifice





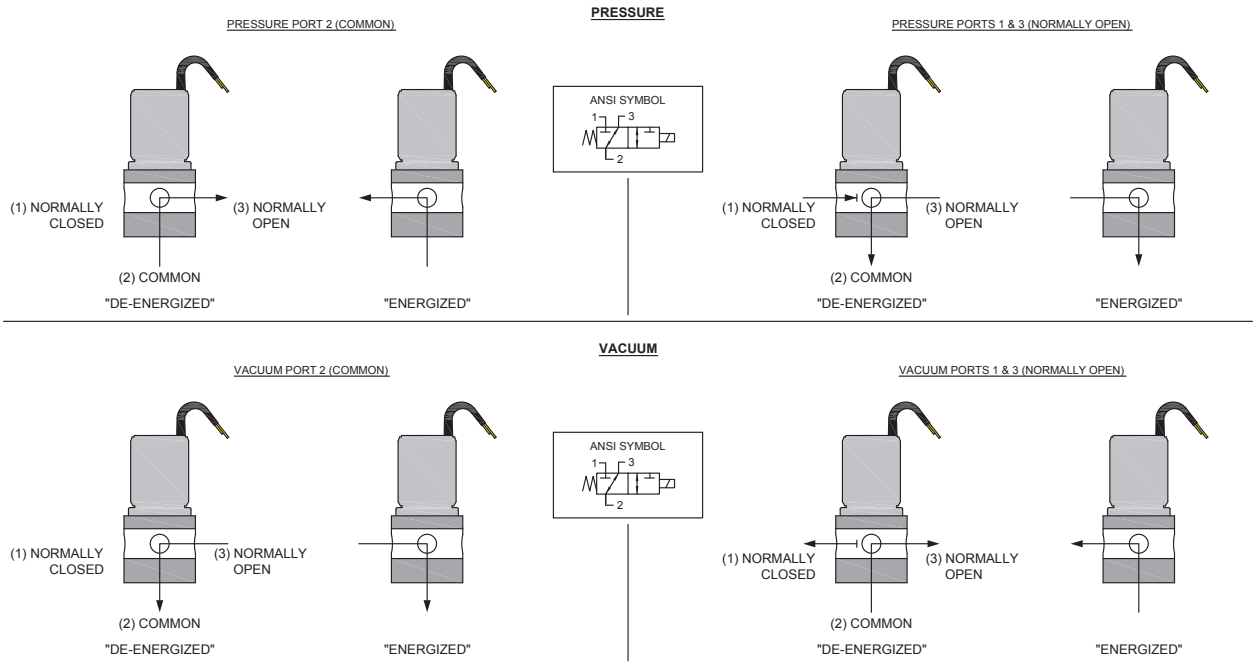


UNITS
IN. [mm.]

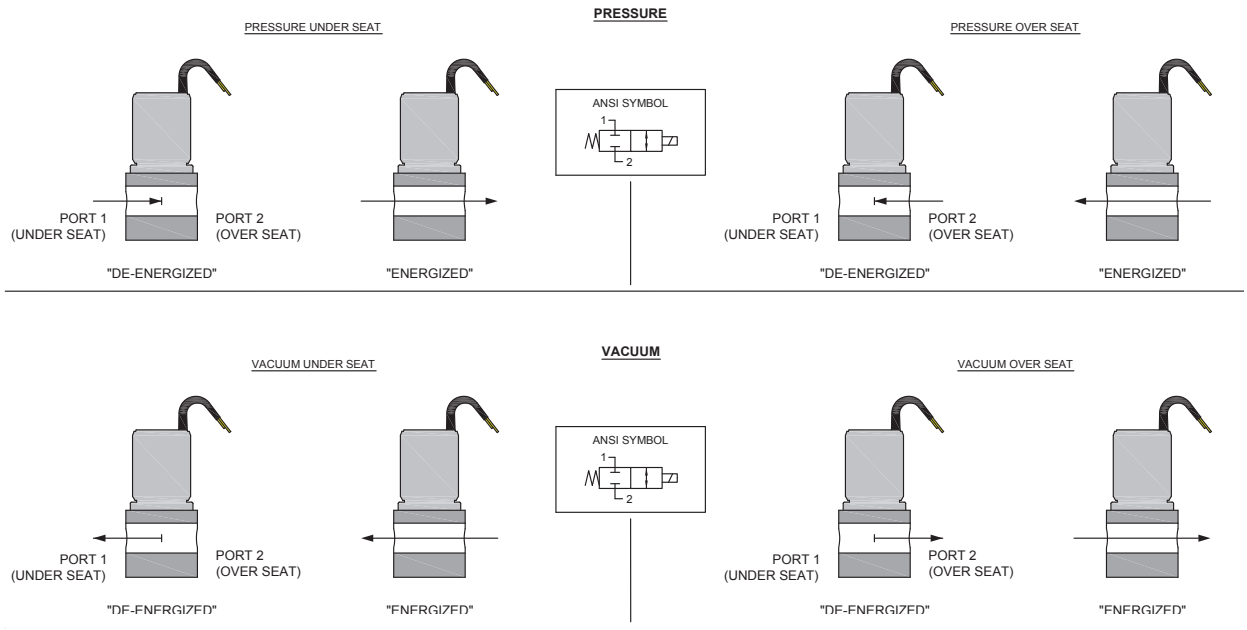
Series 1 & 2 Miniature Inert PTFE Isolation Valves

ANSI Symbols

Series 1



Series 2



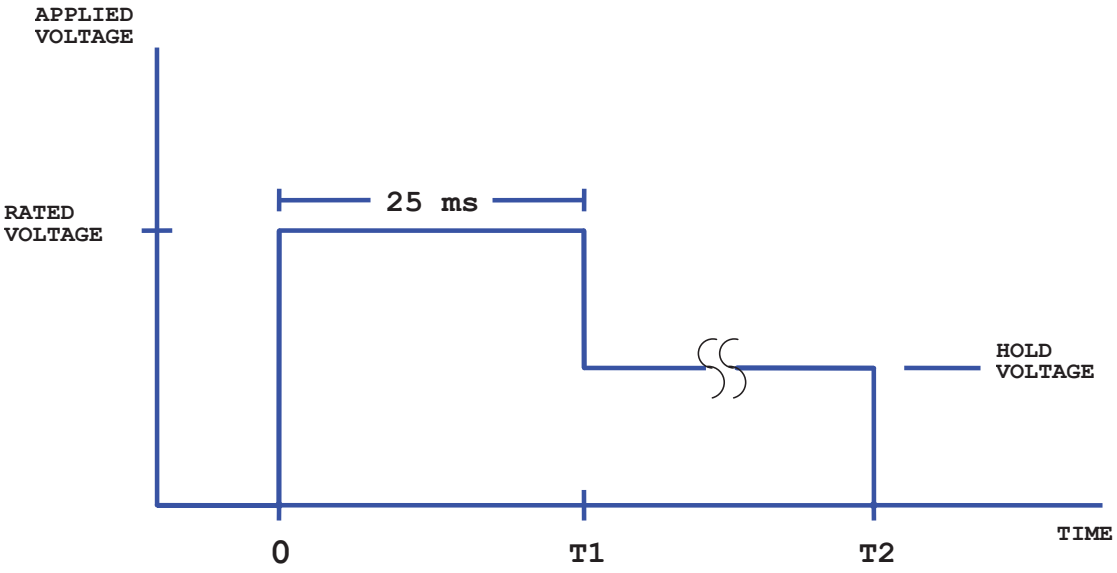
Series 1 & 2 Miniature Inert PTFE Isolation Valves

Hit and Hold Specifications

Hit and Hold is a method for driving valves that can be used to reduce power consumption and heat generation while maintaining valve performance specifications. The valve is "hit" with the full rated voltage for some time period to open it (T1 in the graph) and then "held" open with substantially reduced voltage until the desired pulse length is reached (T2 in the graph). The following table shows the possible holding voltages and power consumption for our standard 12 and 24 VDC solenoids.

Rated Voltage (volts)	*3-way*		*2-way*	
	Hold Voltage	*Hold Power*	*Hold Voltage*	*Hold Power*
24	12 volts	1.04 watts	8 volts	0.46 watts
12	6 volts	0.63 watts	5 volts	0.44 watts

Note: Other voltages available



Hold Voltage Graph

Series 1 & 2 Miniature Inert PTFE Isolation Valves

Chemical Compatibility Chart*

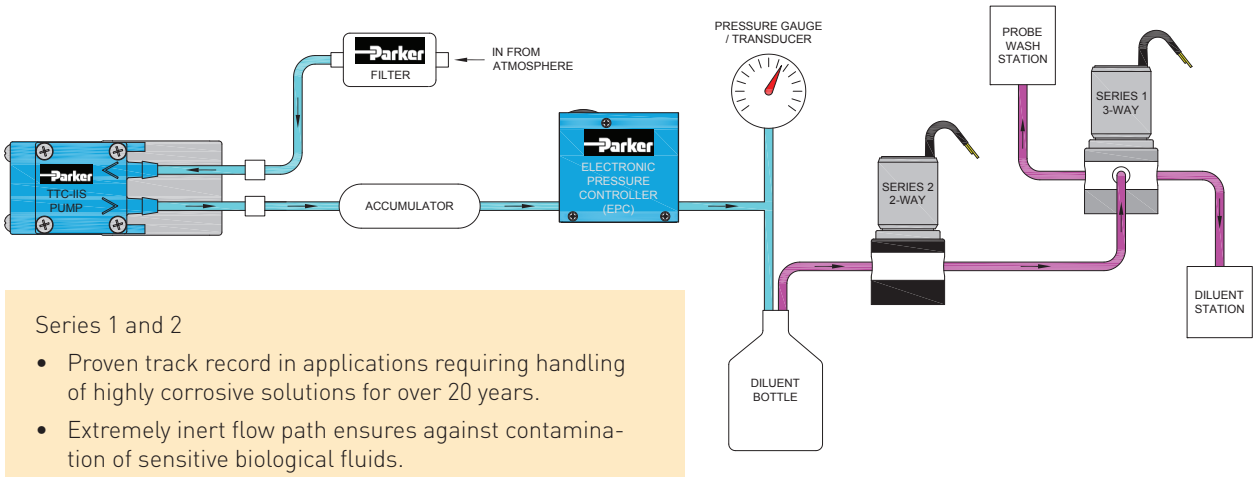
	Diaphragm and Body	Other Wetted Materials
Chemical	PTFE	Borosilicate Glass (3-way version only)
DI Water	1	1
Methanol	1	1
Isopropanol	1	1
Ethanol	1	1
Acetonitrile	1	1
Tetrahydrofuran	1	1
Toluene	1	4
Organic Acids - Dilute	1	1
Non Organic Acids - Dilute	1	1
Bases - Dilute	1	1
Saline	1	1
Bleach 12%	1	1
Sodium Hydroxide 20%	1	4

*The above is an Abbreviated Chemical Compatibility Chart. Please consult factory for a complete list.

COMPATIBILITY LEGEND		
1	EXCELLENT	Minimal or no effect
2	GOOD	Possible swelling and/or loss of physical properties
3	DOUBTFUL	Moderate or severe swelling and loss of physical properties
4	NOT RECOMMENDED	Severe effect and should not be considered

Typical Flow Diagram

Air Pressure Over Reagent



Series 1 and 2

- Proven track record in applications requiring handling of highly corrosive solutions for over 20 years.
- Extremely inert flow path ensures against contamination of sensitive biological fluids.
- Low internal volume reduces carryover and sample/reagent waste.

Highlight test results when available.

Series 1 & 2 Miniature Inert PTFE Isolation Valves

Ordering Information

Orifice Size	Pressure	Seal Material	Valve Type	Voltage	Porting	Part Number
0.060"(1.52mm)	Vac-20psig (1.38 bar)	PTFE	3-Way	12V	1/4"-28	001-0017-900
				24V	1/4"-28	001-0028-900
		PTFE	2-Way NC	12V	1/4"-28	002-0017-900
				24V	1/4"-28	002-0010-900

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 (or go to www.parker.com/precisionfluidics/series1and2) to configure your Series 1 and 2 Miniature Inert PTFE Isolation Valve. For more detailed information, visit us on the Web, or call 603-595-1500.

Series 3 Miniature Inert Valves

2-Way and 3-Way Liquid Solenoid Valve

The Series 3 solenoid valve is constructed of inert materials suitable for liquids including bleach and saline, for applications in analytical chemistry, clinical diagnostics and ink jet printing. These 2-Way and 3-Way valves handle high flow in a small valve with pressures up to 100 psi and no metal-to-metal sliding surfaces, ensuring long life and trouble free operation. Series 3 also offers a higher pressure rating than most diaphragm isolation valves.

Applications

Control of:

- Bleach
- Wash solutions
- Waste removal
- Reagents
- Inks
- Other aggressive media

Features

- Wetted parts are inert plastic (PEEK, PTFE), stainless steel, and elastomer (FKM or EPDM)
- Chemically resistant to moderate acids, bases, bleach and saline
- Leak safe design ensures that fluids are contained within the valve preventing damage to the other components in the instrument
- High flow in small package while providing fast cycle times
- Resistant to crystallization and particulates
- No sliding metal-to-metal surfaces minimizes wear of moving parts
- Direct-acting design does not require pressure or vacuum to operate
- RoHS compliant

Product Specifications

Physical Properties

Valve Type:
Inert Non-Isolation Valve
Valve Configuration:
2-Way Normally Closed, 3-Way
Media: Liquids
Operating Environment:
40 to 150°F (4 to 66°C)
Dimensions: *See page 3*
Porting (Orifice Dependent):
Barbs for 1/16” (1.6 mm) ID tubing Barbs for 1/8” (3.2 mm) ID tubing Barbs for 3/16” (4.8 mm) ID tubing Manifold Mount (Contact factory for options)
Weight:
1.8 - 2.0 oz (51 - 56 g)
Internal Volume (µL):
238 (1/16" Barb Option) 326 (1/8" Barb Option) 516 (3/16" Barb Option) 208 (Manifold Option)

Electrical

Voltage (VDC):	12	24
Power (Watts):	2.5	4.2
Current (mA):	211	173
Resistance (Ohm):	57	139
(Ω±5% @ 70°F, 21.1°C)		
Connections:		
12" Lead Wires Standard 26 AWG, PTFE Insulated		

Wetted Materials*

Seal:
FKM, EPDM
Body:
PEEK
All Others:
PTFE, Stainless Steel

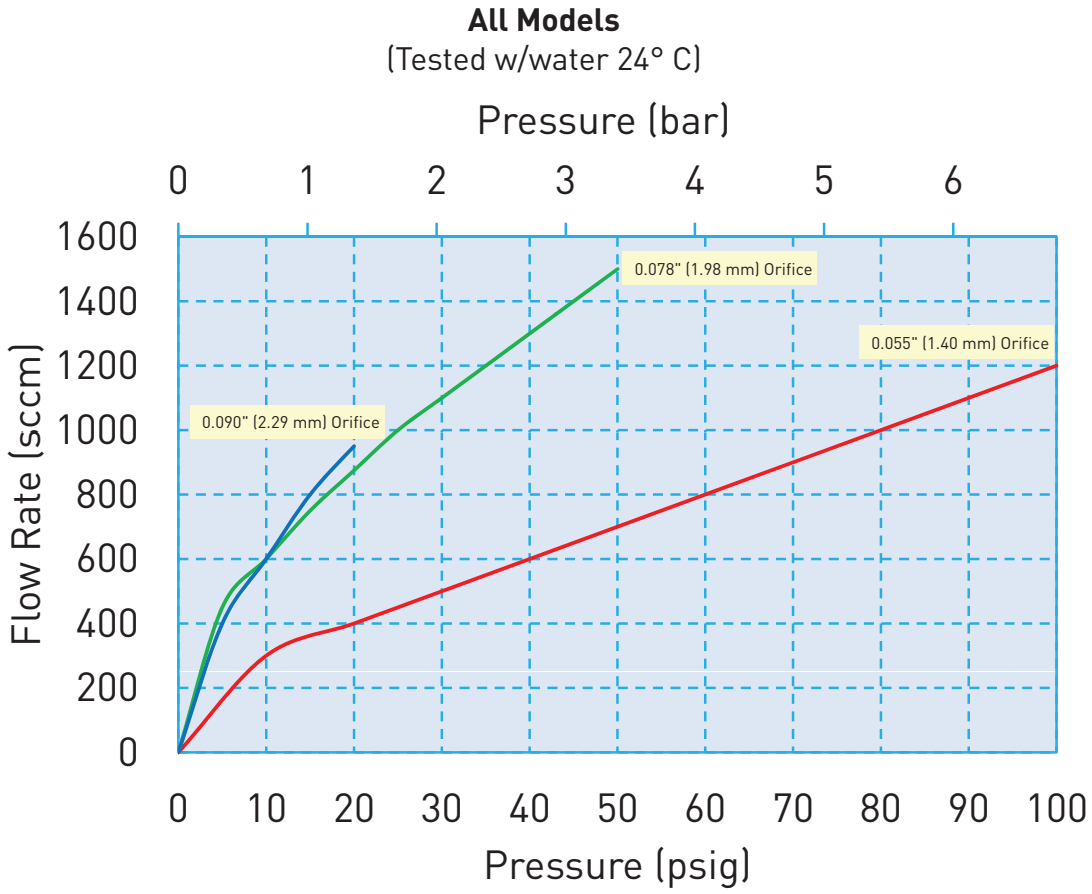
* See Chemical Compatibility Page
Consult factory for other options

Performance Characteristics

Operating Pressure/ Orifice Diameters:
Vac-100 psig (6.89 bar)/ 0.055” (1.40 mm) Vac-50 psig (3.44 bar)/ 0.078” (1.98 mm) Vac-20 psig (1.36 bar)/ 0.090” (2.29 mm)
Proof Pressure:
1.5X rated pressure
Leak Rate:
Bubble Tight
Response Time:
< 12 ms cycling
Recommended Filtration:
40 µm max
Reliability:
Life Cycle Rating of 10 million (Application dependent)

Series 3 Miniature Inert Valves

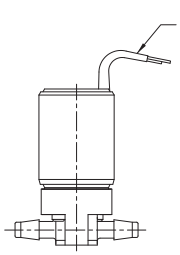
Typical Flow Curve



Series 3 Miniature Inert Valves

Electrical Interface

Wire leads



UNITS
IN. [mm.]

Custom connections available upon request

Liquid Interface

Manifold Mount

Barbed

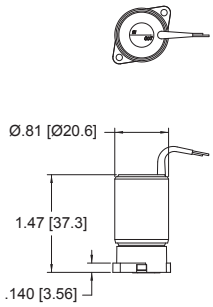
Mechanical Integration

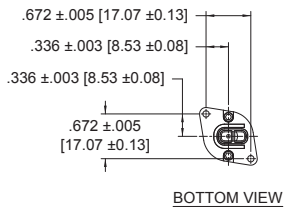
Dimensions

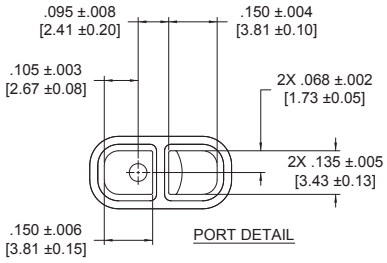
Series 3: 2-Way Manifold Mount

Dimensions

2-WAY, 0.055" (1.40 mm) ORIFICE, MANIFOLD MOUNT







Series 3 Miniature Inert Valves

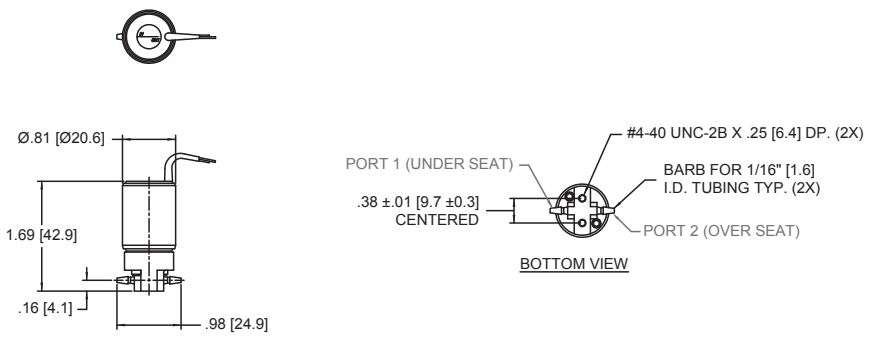
Mechanical Integration

Dimensions

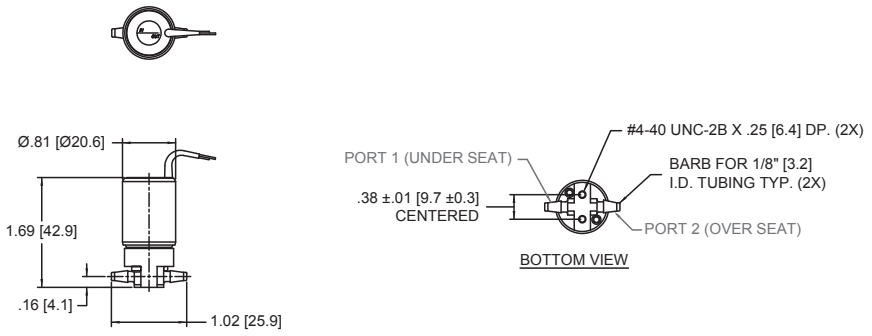
Series 3: 2-Way Barb

Dimensions

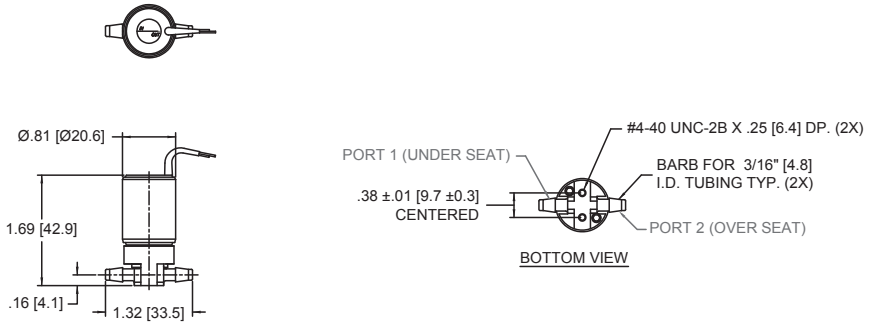
2-WAY, 0.055" (1.40 mm) ORIFICE, 1/16" (1.6 mm) BARB



2-WAY, 0.078" (1.98 mm) ORIFICE, 1/8" (3.2 mm) BARB



2-WAY, 0.090" (2.29 mm) ORIFICE, 3/16" (4.8 mm) BARB



Series 3 Miniature Inert Valves

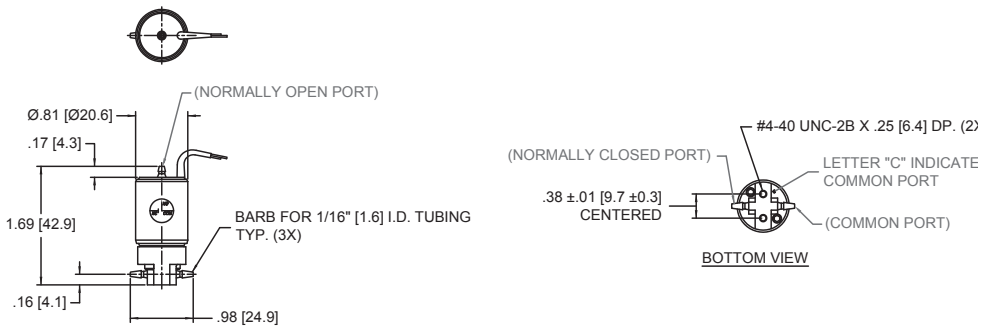
Mechanical Integration

Dimensions

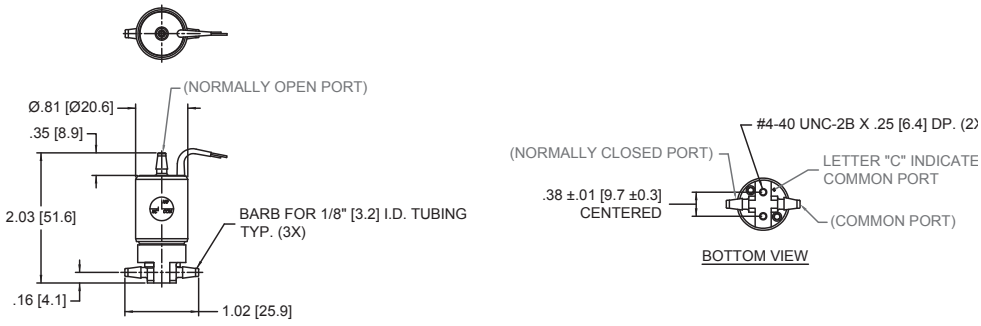
Series 3: 3-Way Barb

Dimensions

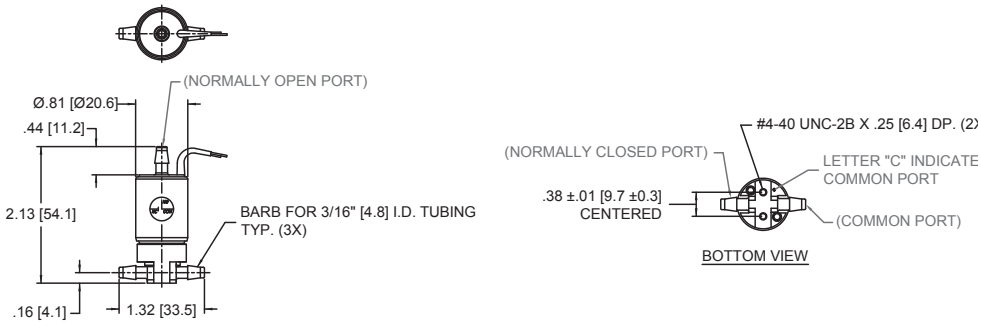
3-WAY, 0.055" (1.40 mm) ORIFICE, 1/16" (1.6 mm) BARB



3-WAY, 0.078" (1.98 mm) ORIFICE, 1/8" (3.2 mm) BARB



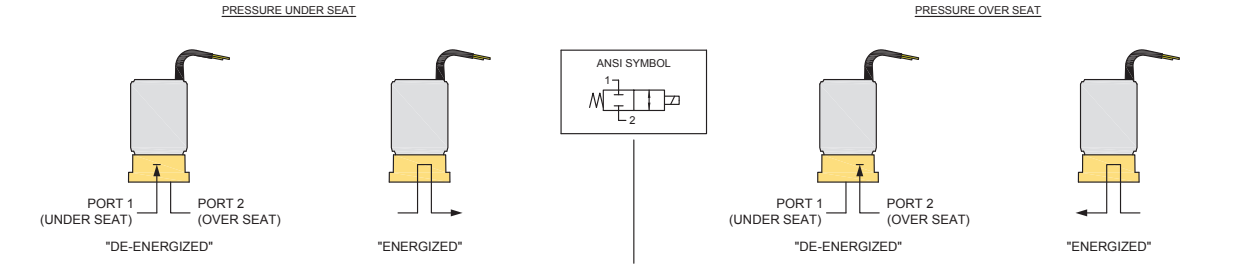
3-WAY, 0.090" (2.29 mm) ORIFICE, 3/16" (4.8 mm) BARB



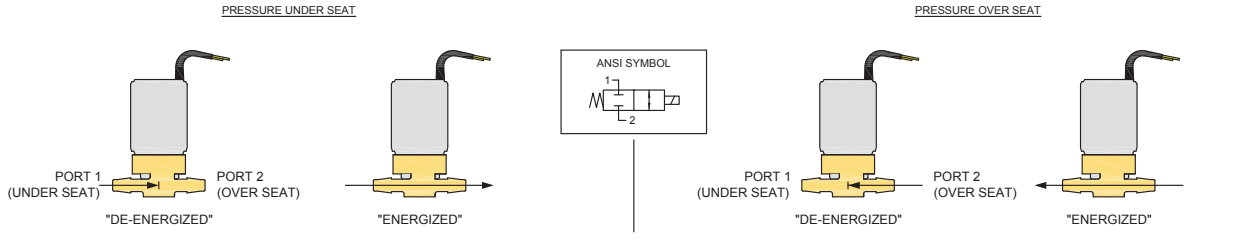
Series 3 Miniature Inert Valves

ANSI Symbols

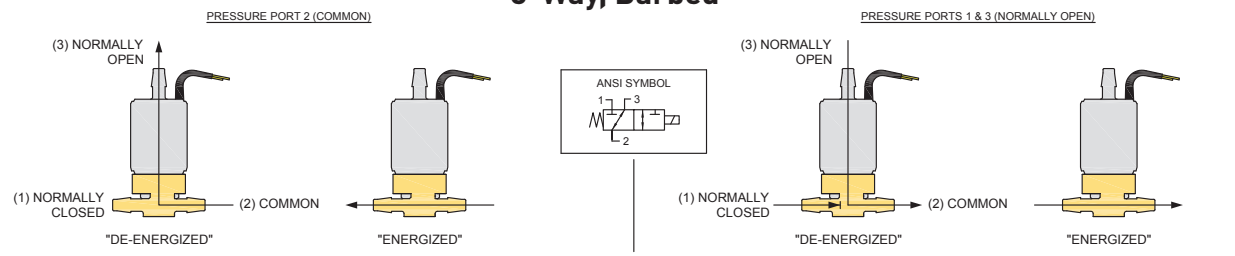
Pressure
2-Way, Manifold Mount



2-Way, Barbed



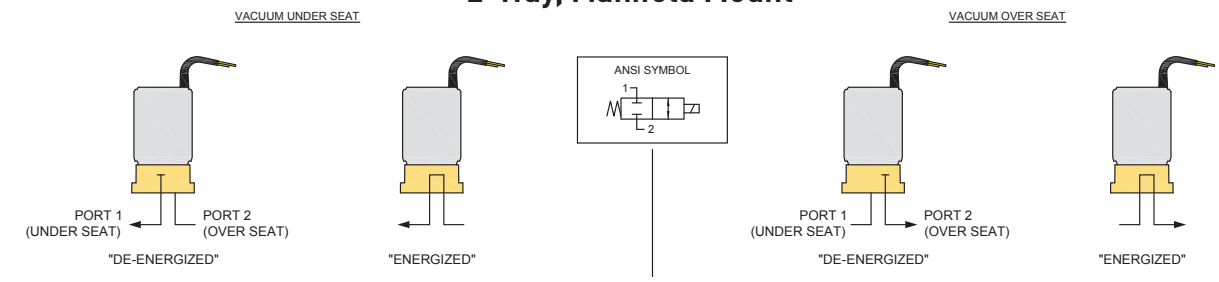
3-Way, Barbed



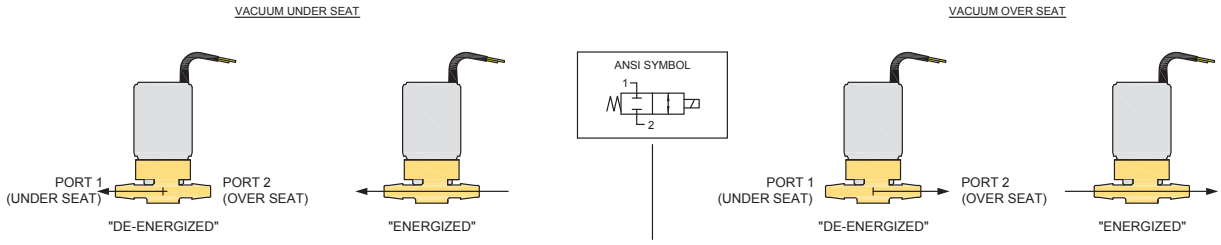
Series 3 Miniature Inert Valves

ANSI Symbols

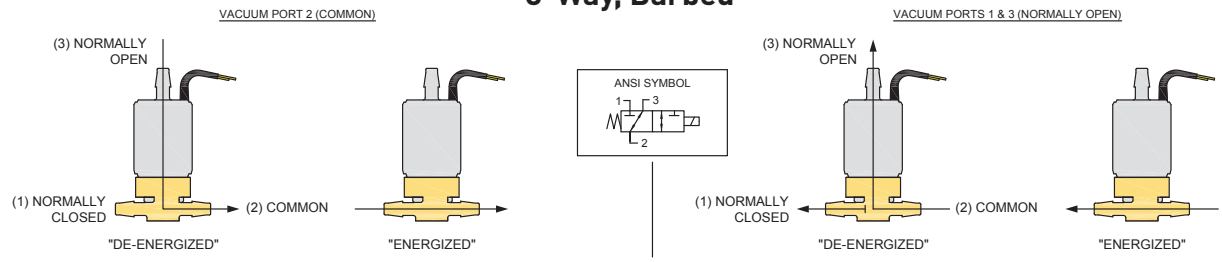
Vacuum
2-Way, Manifold Mount



2-Way, Barbed



3-Way, Barbed



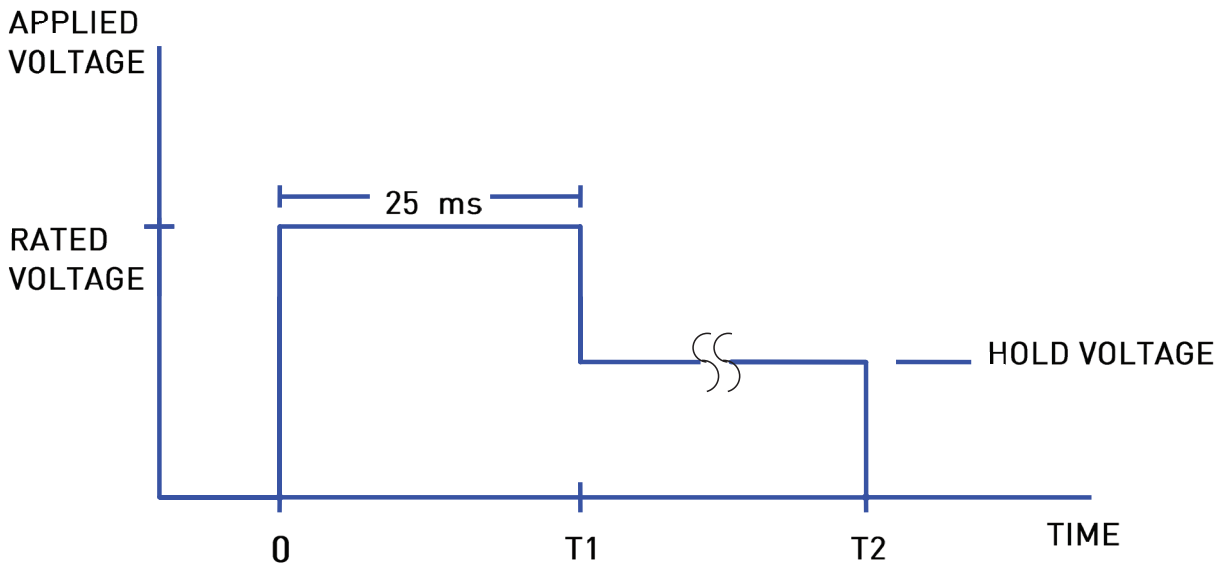
Series 3 Miniature Inert Valves

Hit and Hold Specifications

Hit and Hold is a method for driving valves that can be used to reduce power consumption and heat generation while maintaining valve performance specifications. The valve is "hit" with the full rated voltage for some time period to open it (T1 in the graph) and then "held" open with substantially reduced voltage until the desired pulse length is reached (T2 in the graph). The following table shows the possible holding voltages and power consumption for our standard 12 and 24 VDC solenoids.

Rated Voltage (volts)	*3-way*		*2-way*	
	Hold Voltage	*Hold Power*	*Hold Voltage*	*Hold Power*
24	12 volts	1.04 watts	8 volts	0.46 watts
12	6 volts	0.63 watts	5 volts	0.44 watts

Note: Other voltages available



Hold Voltage Graph

Series 3 Miniature Inert Valves

Chemical Compatibility Chart*

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

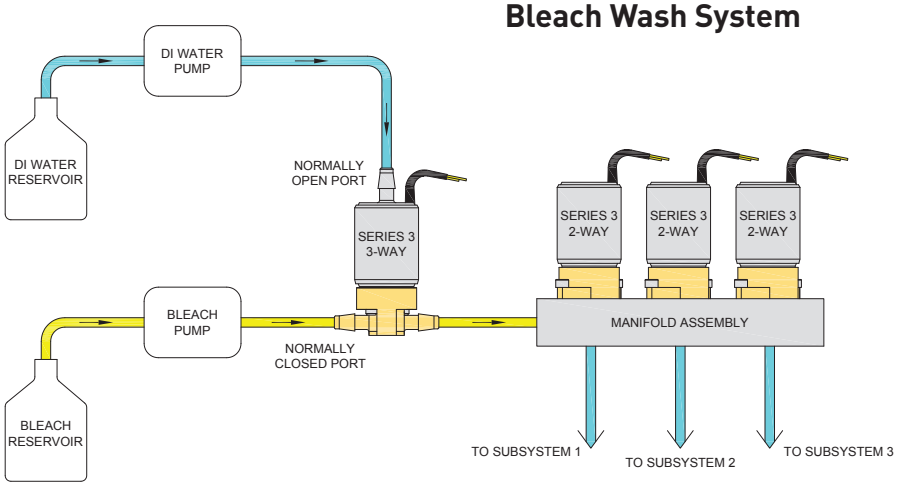
*The above is an Abbreviated Chemical Compatibility Chart and is for reference purposes only. Please consult factory for a complete list.

**See Ordering Information: 1 = Bleach Part Number 2 = Non Bleach Part Number

COMPATIBILITY LEGEND		
1	EXCELLENT	Minimal or no effect
2	GOOD	Possible swelling and/or loss of physical properties
3	DOUBTFUL	Moderate or severe swelling and loss of physical properties
4	NOT RECOMMENDED	Severe effect and should not be considered

Typical Flow Diagram

Bleach Wash System



Proven Performance:

- The Series 3 Bleach Valve has been successfully tested to more than six million cycles with no degradation of components.
- Tested with standard bleach concentration used in IVD instrumentation
- Passed specifications for
  - Response time
  - Internal leakage
  - External leakage

The Series 3 Bleach Valve has a proven track record in Clinical Diagnostic Instrumentation for over 25 years.

Series 3 Miniature Inert Valves

Ordering Information

Orifice Size	Pressure	Valve Type	Seal Material	Bleach Compatible	Voltage	Porting	Part Number
0.055" (1.40 mm)	Vac-100 psig (6.89 bar)	2 Way NC	FKM	Yes	12V	1/16" (1.6 mm) Barb	003-0860-900
						Manifold Mount	003-0872-900
					24V	1/16" (1.6 mm) Barb	003-0861-900
						Manifold Mount	003-0873-900
				No	12V	1/16" (1.6 mm) Barb	003-0137-900
						Manifold Mount	003-0874-900
					24V	1/16" (1.6 mm) Barb	003-0096-900
						Manifold Mount	003-0875-900
			EPDM	No	12V	1/16" (1.6 mm) Barb	003-0218-900
					24V	1/16" (1.6 mm) Barb	003-0264-900
		3 Way	FKM	Yes	12V	1/16" (1.6 mm) Barb	003-0862-900
					24V	1/16" (1.6 mm) Barb	003-0863-900
				No	12V	1/16" (1.6 mm) Barb	003-0130-900
					24V	1/16" (1.6 mm) Barb	003-0194-900
			EPDM	No	12V	1/16" (1.6 mm) Barb	003-0214-900
					24V	1/16" (1.6 mm) Barb	003-0241-900

Orifice Size	Pressure	Valve Type	Seal Material	Bleach Compatible	Voltage	Porting	Part Number
0.078" (1.98 mm)	Vac-50 psig (3.44 bar)	2 Way NC	FKM	Yes	12V	1/8" (3.2 mm) Barb	003-0864-900
					24V	1/8" (3.2 mm) Barb	003-0865-900
				No	12V	1/8" (3.2 mm) Barb	003-0141-900
					24V	1/8" (3.2 mm) Barb	003-0111-900
			EPDM	No	12V	1/8" (3.2 mm) Barb	003-0260-900
					24V	1/8" (3.2 mm) Barb	003-0257-900
		3 Way	FKM	Yes	12V	1/8" (3.2 mm) Barb	003-0866-900
					24V	1/8" (3.2 mm) Barb	003-0867-900
				No	12V	1/8" (3.2 mm) Barb	003-0120-900
					24V	1/8" (3.2 mm) Barb	003-0165-900
			EPDM	No	12V	1/8" (3.2 mm) Barb	003-0356-900
					24V	1/8" (3.2 mm) Barb	003-0258-900

Orifice Size	Pressure	Valve Type	Seal Material	Bleach Compatible	Voltage	Porting	Part Number
0.090" (2.29 mm)	Vac-20 psig (1.36 bar)	2 Way NC	FKM	Yes	12V	3/16" (4.8 mm) Barb	003-0868-900
					24V	3/16" (4.8 mm) Barb	003-0869-900
				No	12V	3/16" (4.8 mm) Barb	003-0175-900
					24V	3/16" (4.8 mm) Barb	003-0359-900
			EPDM	No	12V	3/16" (4.8 mm) Barb	003-0189-900
					24V	3/16" (4.8 mm) Barb	003-0376-900
		3 Way	FKM	Yes	12V	3/16" (4.8 mm) Barb	003-0870-900
					24V	3/16" (4.8 mm) Barb	003-0871-900
				No	12V	3/16" (4.8 mm) Barb	003-0328-900
					24V	3/16" (4.8 mm) Barb	003-0421-900
			EPDM	No	12V	3/16" (4.8 mm) Barb	003-0347-900
					24V	3/16" (4.8 mm) Barb	003-0461-900

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 (or go to www.parker.com/precisionfluidics/s3) to configure your Series 3 Miniature Inert Valve. For more detailed information, visit us on the Web, or call 603-595-1500.

Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

2-Way and 3-Way Solenoid Valve

Series 9 solenoid valves offer outstanding precision control in liquid analysis. Combining high speed, ultra low leak rate, high flow, high pressure and high temperature capability in a small size. This rugged valve operates with extreme repeatability and is constructed of non-corroding, passivated stainless steel. Series 9 coils are rated for continuous duty and are potted to exclude the environment.

Applications

- Process Analysis of Liquids
- High Pressure Liquid Control
- Radioactive Liquids in Medical Imaging
- Cooling Circuits

Features

- Smallest footprint and highest performance in its class
- High speed response times of less than 6 ms
- 100% tested to leak-tight 1 x 10^{-7} cc/sec/atm Helium
- Pressures up to 1250 psi (86.2 bar)
- 100% duty cycle in environmental temperatures of up to 221°F (105°C)
- Available with a variety of fittings, orifices, seals, and voltages to match your application
- RoHS compliant

Product Specifications

Physical Properties

Valve Type:
Inert Non-Isolation Valve
Valve Configuration:
2-Way Normally Closed or 3-Way
Media:
Liquids *(also capable of handling gasses, for details see the Series 9 Gas datasheet)*
Operating Environment:
40 to 221°F (4 to 105°C)
Dimensions:
See pages 4, 5, 6 & 7
Porting (Orifice Dependent):
A-LOK® 1/4 - 28 FNPT
compression fittings, VacuSeal
Weight:
3.1 oz (87.9 g)
[3-Way, 1/8" NPT Body Option]
Internal Volume (µL):
342.7 to 540.6
(Contact factory for details)

Electrical

Voltage (VDC):	12	24
Power (Watts):	12	12
Current (mA):	1000	500
Resistance (Ohm):	12	48
(Ω±5% @ 70°F, 21°C)		
Connections:		
12" Lead Wires Standard		
24 AWG, PTFE Insulated		
(Custom connectors are available)		

Wetted Materials*

Seals:
FKM or FKM & Vespel
Body:
316 Stainless Steel
All Others:
PTFE, Stainless Steel, FKM

* See Chemical Compatibility Page
Consult factory for other options

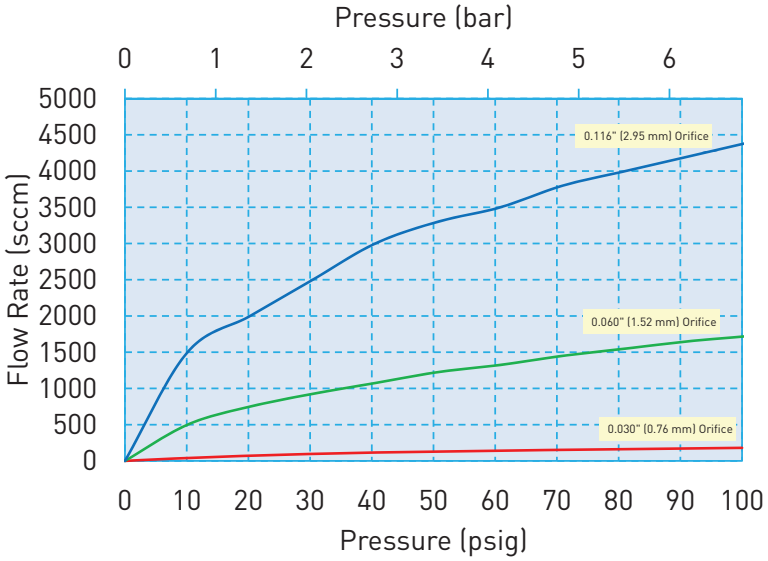
Performance Characteristics

Orifice Diameters/ Operating Pressure:
0.030" (0.76 mm) / 1x10-5 Torr -1250 psig (86.2 bar)
0.060" (1.52 mm) / 1x10-5 Torr - 250 psig (17.2 bar)
0.116" (2.95 mm) / 1x10-5 Torr - 100 psig (6.9 bar)
Proof Pressure:
1.5X rated pressure
Response Time:
<5 ms 0.030" (0.76 mm)
<5 ms 0.060" (1.52 mm)
<6 ms 0.116" (2.95 mm)
Leak Rate:
1 x 10^{-7} cc/sec/atm Helium
Recommended Filtration:
40 µm max

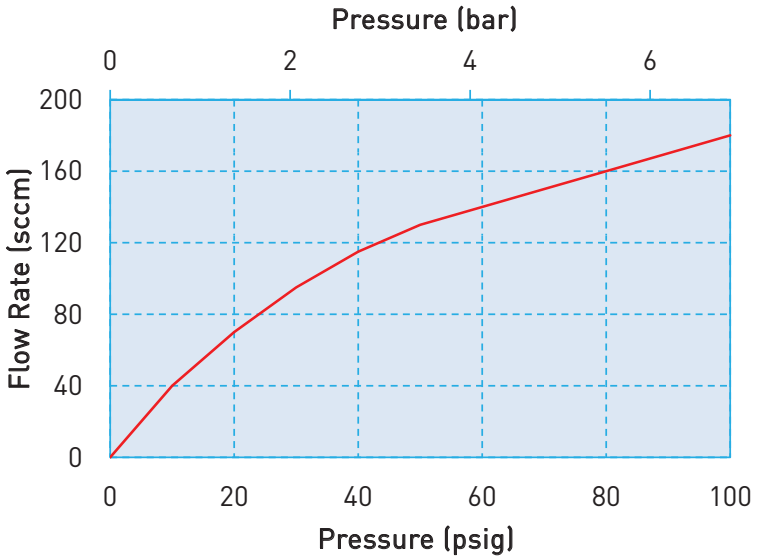
Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

Typical Flow Curve

All Models
(Tested w/water 24° C)

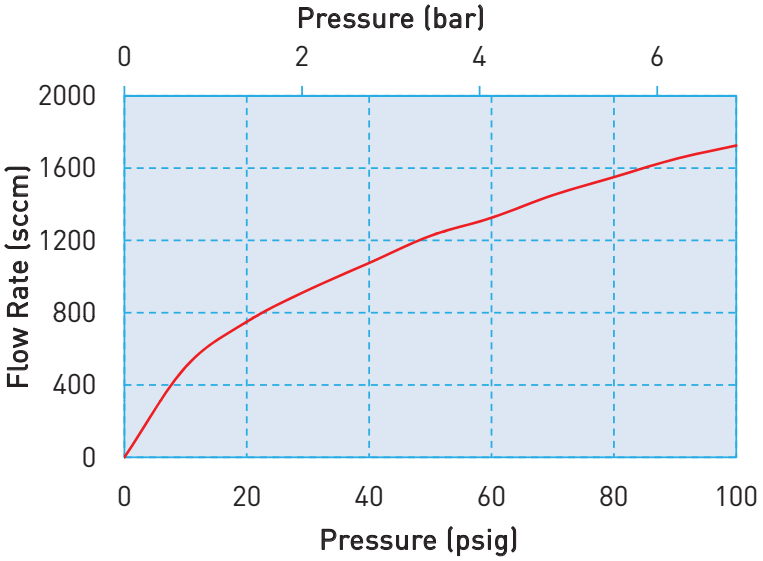


0.030" (0.76 mm) Orifice

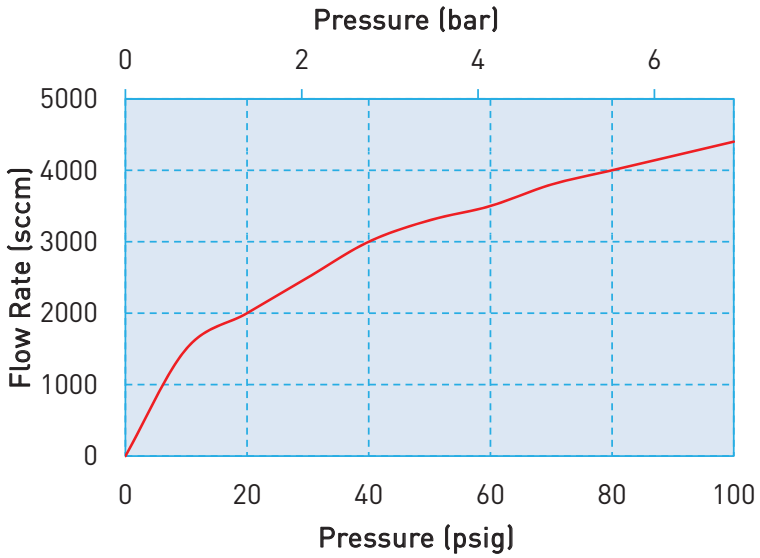


Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

0.060" (1.52 mm) Orifice

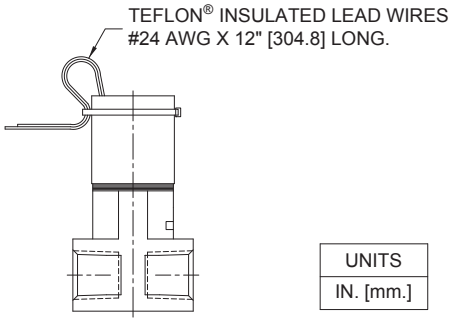


0.116" (2.95 mm) Orifice



Electrical Interface

Wire leads



UNITS
IN. [mm.]

Custom connections available upon request

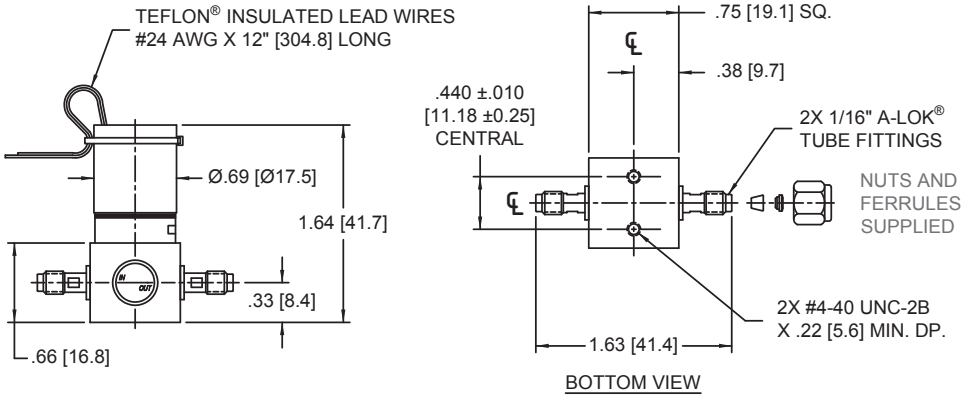
Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

Mechanical Integration

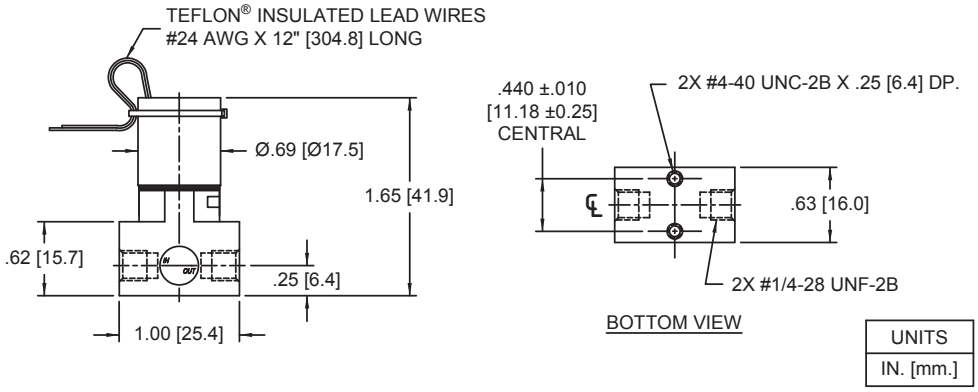
Dimensions

Series 9: 2-Way
Dimensions

2-WAY, 0.030" [0.76 mm] ORIFICE, 1/16" [1.6 mm] A-LOK®



2-WAY, 0.030" [0.76 mm] ORIFICE, 1/4-28 UNF-2B



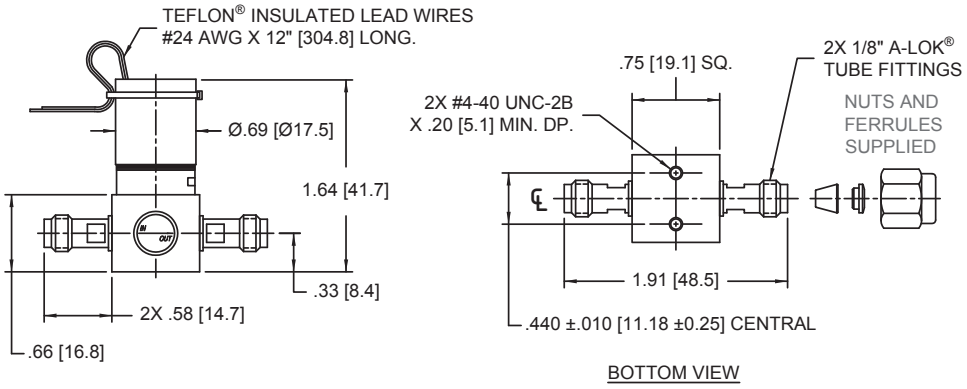
Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

Mechanical Integration

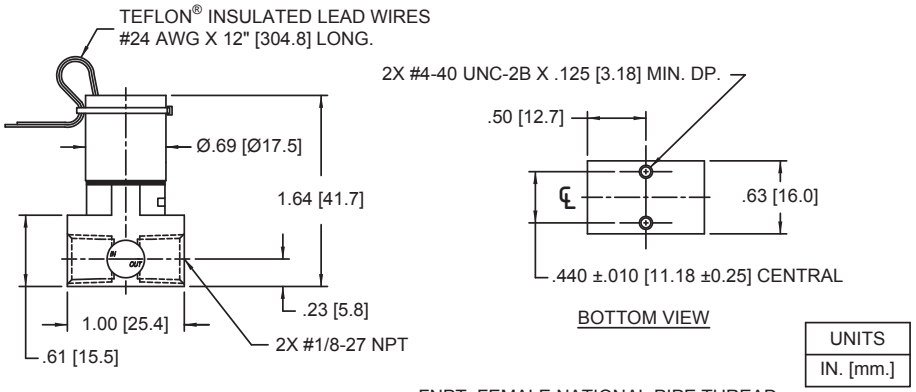
Dimensions

Series 9: 2-Way Dimensions

2-WAY, 0.060" [1.52 mm] ORIFICE, 1/8" [3.18 mm] A-LOK®



2-WAY, 0.060" [1.52 mm] ORIFICE, 1/8" [3.18 mm] FNPT



UNITS
IN. [mm.]

FNPT: FEMALE NATIONAL PIPE THREAD

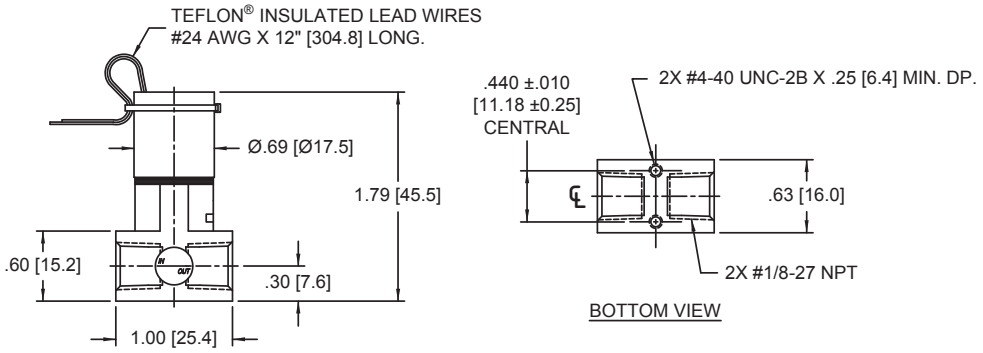
Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

Mechanical Integration

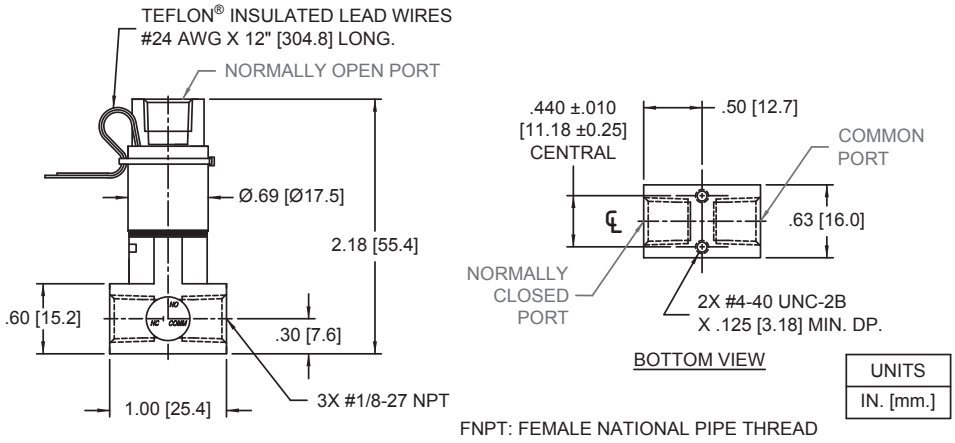
Dimensions

Series 9: 2-Way
Dimensions

2-WAY, 0.116" [2.95 mm] ORIFICE, 1/8" [3.18 mm] FNPT



3-WAY, 0.116" [2.95 mm] ORIFICE, 1/8" [3.18 mm] FNPT



FNPT: FEMALE NATIONAL PIPE THREAD

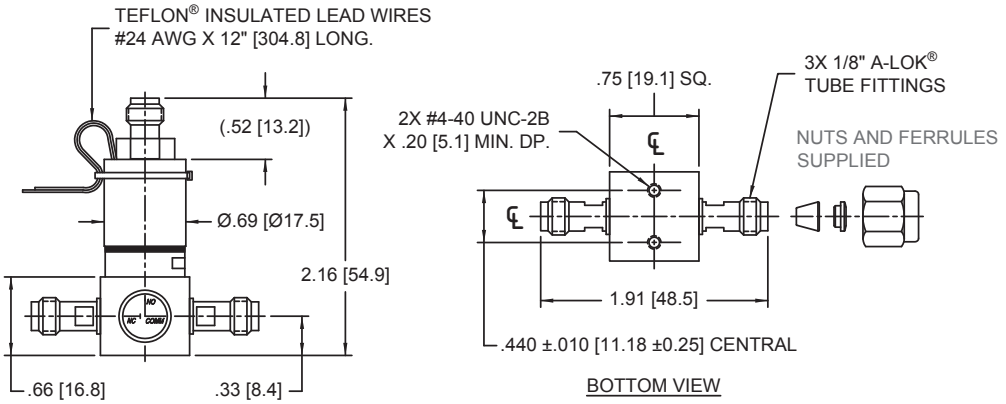
Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

Mechanical Integration

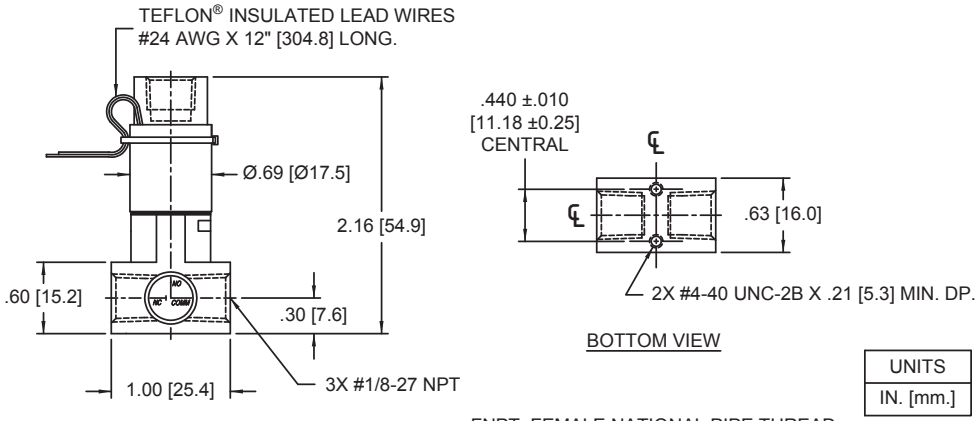
Dimensions

Series 9: 3-Way Dimensions

3-WAY, 0.060" [1.52 mm] ORIFICE, 1/8" [3.18 mm] A-LOK®



3-WAY, 0.060" [1.52 mm] ORIFICE, 1/8" [3.18 mm] FNPT



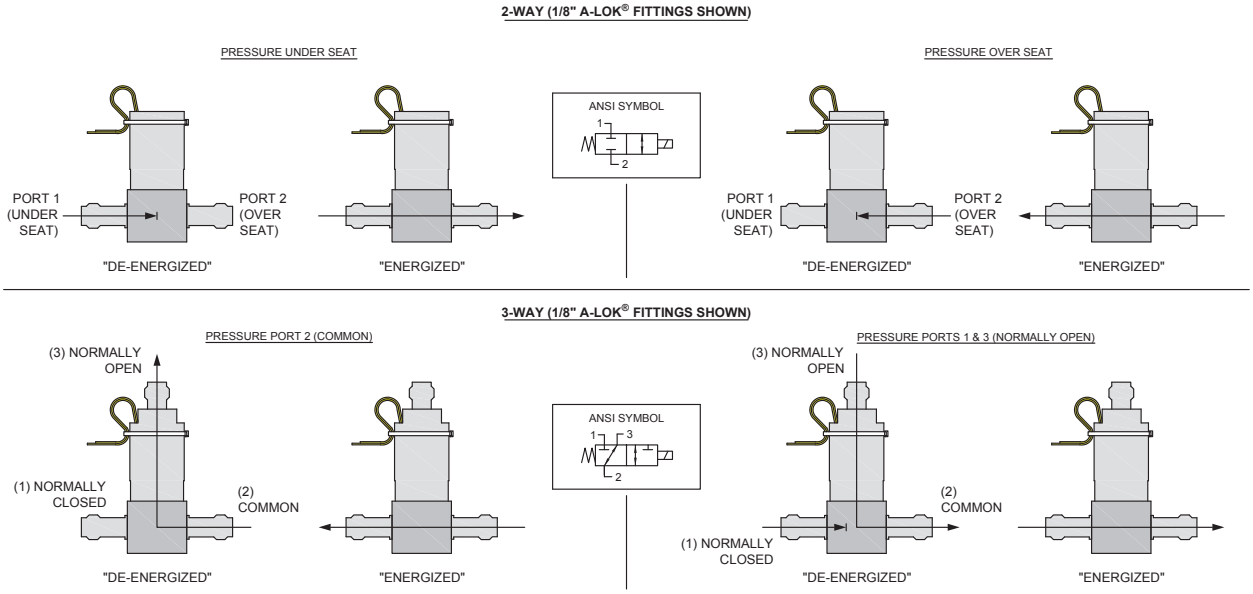
UNITS
IN. [mm.]

FNPT: FEMALE NATIONAL PIPE THREAD

Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

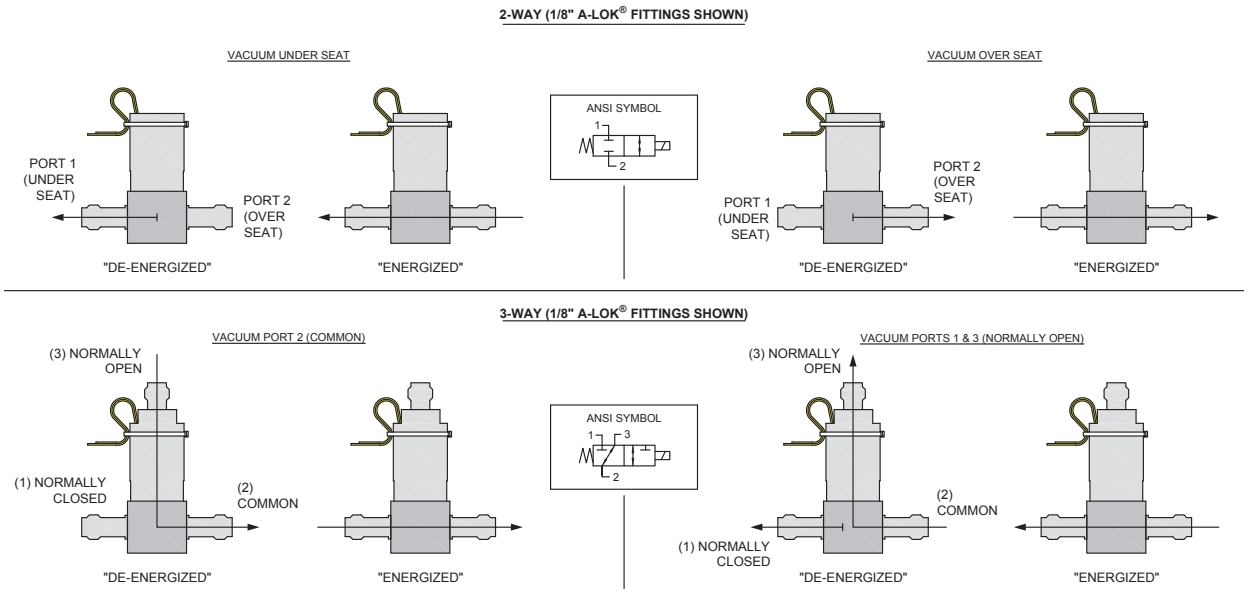
ANSI Symbols

Pressure



ANSI Symbols

Vacuum



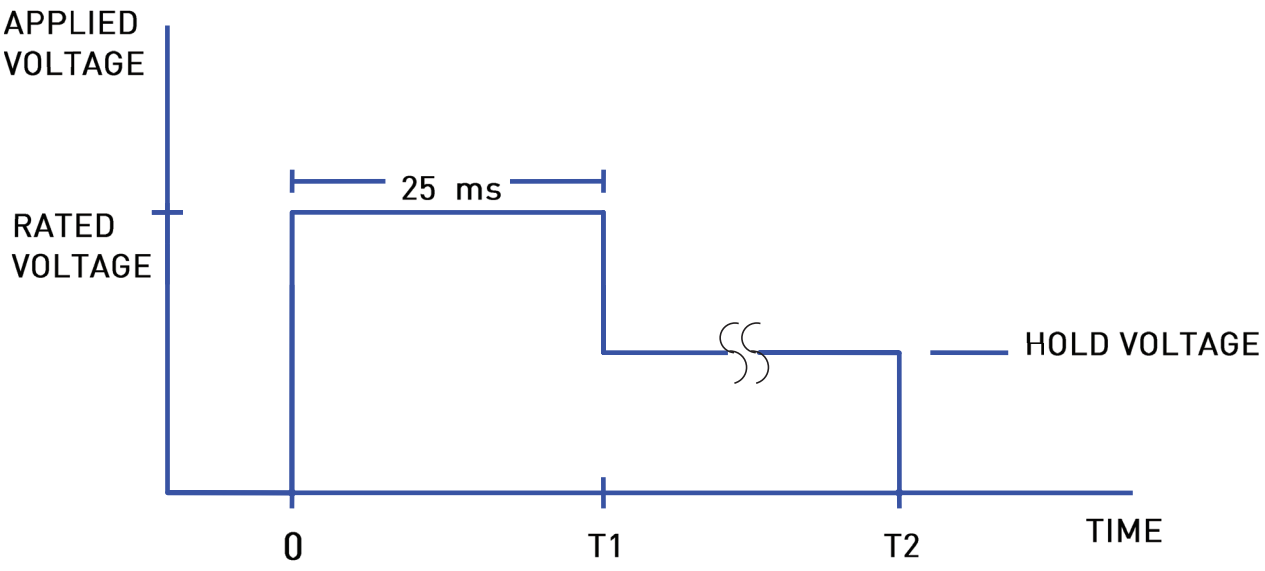
Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

Hit and Hold Specifications (12-Watt coils):

Hit and Hold is a method for driving valves that can be used to reduce power consumption and heat generation while maintaining valve performance specifications. The valve is "hit" with the full rated voltage for some time period to open it (T1 in the graph) and then "held" open with substantially reduced voltage until the desired pulse length is reached (T2 in the graph). The following table shows the possible holding voltages and power consumption for our standard 12 and 24VDC solenoids.

Rated Voltage (volts)	3-way		2-way	
	Hold Voltage	Hold Power	Hold Voltage	Hold Power
24	12 volts	3 watts	5 volts	0.52 watts
12	6 volts	3 watts	5 volts	2.1 watts

Note: Other voltages available



Hold Voltage Graph

Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

Chemical Compatibility Chart*

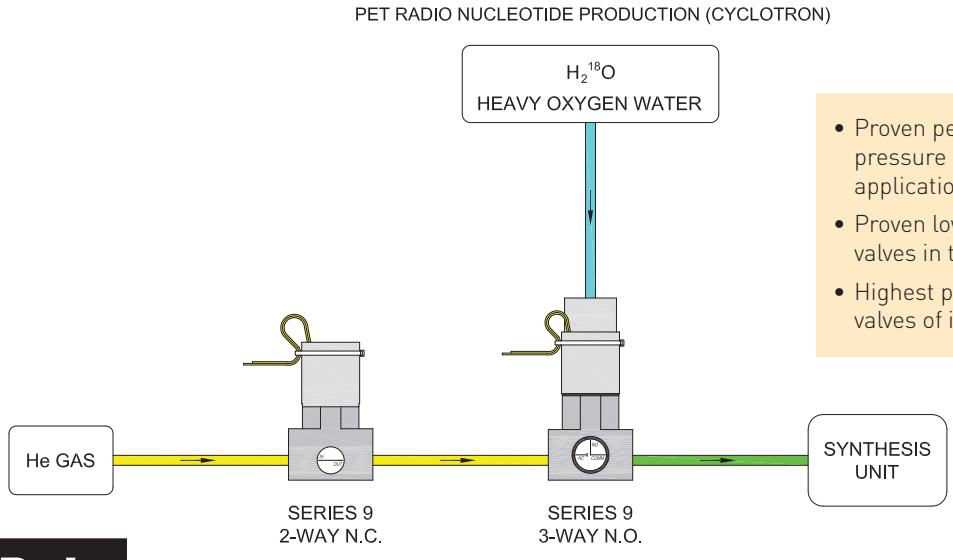
	Seal Options				Other Wetted Materials	
Chemical	FKM and Vespel		or	FKM	PTFE	Stainless Steel
DI Water	1	2		1	1	1
Methanol	4	1		4	1	1
Isopropanol	1	2		1	1	1
Ethanol	3	1		3	1	1
Acetonitrile	4	1		4	1	1
Tetrahydrofuran	4	3		4	1	1
Toluene	2	1		2	1	1
Organic Acids - Dilute	1	1		1	1	1
Non Organic Acids - Dilute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

*The above is an Abbreviated Chemical Compatibility Chart. Please consult factory for a complete list.

COMPATIBILITY LEGEND		
1	**EXCELLENT**	Minimal or no effect
2	**GOOD**	Possible swelling and/or loss of physical properties
3	**DOUBTFUL**	Moderate or severe swelling and loss of physical properties
4	**NOT RECOMMENDED**	Severe effect and should not be considered

Typical Flow Diagram

Typical Sample Control for Mass Spec



- Proven performance in high pressure and low leak applications using liquids
- Proven lowest leak rate among valves in this form factor.
- Highest pressure capacity in valves of its size.

Series 9 Miniature High Speed and Pressure Liquid Dispense Valve

Ordering Information

Orifice Size	Seal Material	Pressure	Valve Type	Voltage	Porting	Part Number
0.030" (0.76 mm)	Vespel, FKM	Vac-1250 psig (86.2 bar)	2-Way NC	12V	1/16"(1.6mm) A-Lok®	009-0100-900
				24V	1/16"(1.6mm) A-Lok®	009-0172-900
				24V	1/4"(6.4mm)-28	009-0272-900

Orifice Size	Seal Material	Pressure	Valve Type	Voltage	Porting	Part Number
0.060" (1.52 mm)	FKM	Vac-250 psig (17.2 bar)	2-Way NC	24V	1/8"(3.2mm) A-Lok®	009-0270-900
				24V	1/8"(3.2mm) FNPT	009-0631-900
		Vac-100psig (6.89 bar)	3-Way	12V	1/8"(3.2mm)FNPT	091-0094-900
				24V	1/8"(3.2mm)A-Lok®	009-0269-900
				24V	1/8"(3.2mm)FNPT	009-0933-900

Orifice Size	Seal Material	Pressure	Valve Type	Voltage	Porting	Part Number
0.116" (2.95 mm)	FKM	Vac-100 psig (6.89 bar)	2-Way NC	24V	1/8"(3.2mm)FNPT	009-0089-900
			3-Way	12V	1/8"(3.2mm) FNPT	009-0207-900
				24V	1/8"(3.2mm) FNPT	009-0143-900

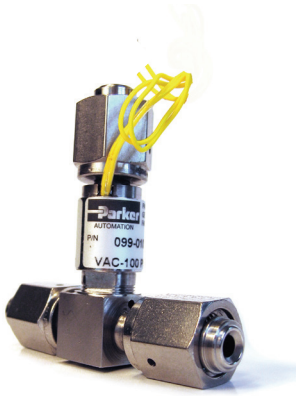
NOTE: In order to provide the best possible solution for your application, please provide the following requirements when contacting Applications Engineering:

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

Please click on the Order On-line button (or go to www.parker.com/precisionfluidics/s9) to configure your Series 9 Miniature High Speed and Pressure Liquid Dispense Valve. For more detailed information, visit us on the Web, or call 603-595-1500.

Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

2- and 3-Way Liquid Solenoid Valve



Series 99 solenoid valves offer outstanding potential for precision control in liquid analysis. Combining high speed, ultra low leak rate, high flow, high pressure and high temperature capability, in a small size. This rugged valve operates with extreme repeatability and is constructed of non-corroding, passivated stainless steel. Series 99 coils are rated for continuous duty and are potted to exclude the environment.

Applications

- Liquid CO_2 Dispense
- Surgical Refrigerant Dispense
- Semiconductor Refrigerant Dispense

Features

- Smallest footprint and highest performance in its class
- 100% duty cycle in environmental temperatures of up to 221°F (105°C)
- High speed response times of less than 5 ms eliminate delays in the system
- 100% tested to leak-tight 1 x 10^{-8} cc/sec/atm Helium
- Pressures up to 1250 PSI (86.2 bar)
- Available with a variety of fittings, orifices, seals, and voltages to match your application
- RoHS compliant

Product Specifications

Physical Properties

Valve Type:
Inert Non-Isolation Valve
Valve Configuration (Type):
2-Way Normally Closed or 3-Way
Media:
Liquids (also capable of handling gasses, for details see the Series 9 Gas datasheet)
Operating Environment:
40 to 221°F (4 to 105°C)
Dimensions:
See pages 4, 5 & 6
Porting (Orifice Dependent):
A-LOK® compression fittings, VacuSeal
Weight:
3.1 oz (88.9 g) [3-Way, 1/8" NPT Body Option]
Internal Volume (µL):
354.5 to 593.8 micro liter (Contact factory for details)

Electrical

Voltage (VDC):	12	24
Power (Watts):	12	12
Current (mA):	1000	500
Resistance (Ohm):	12	48
(Ω±5% @ 70°F, 21°C)		
Connections:		
12" Lead Wires Standard 24 AWG, PTFE Insulated		

Wetted Materials*

Seals:
Vespel & Silver-Plated Nickel or FKM & Silver-Plated Nickel
Body:
316 Stainless Steel
All Others:
PTFE, Stainless Steel, Body, Seals

* See Chemical Compatibility Page
Consult factory for other options

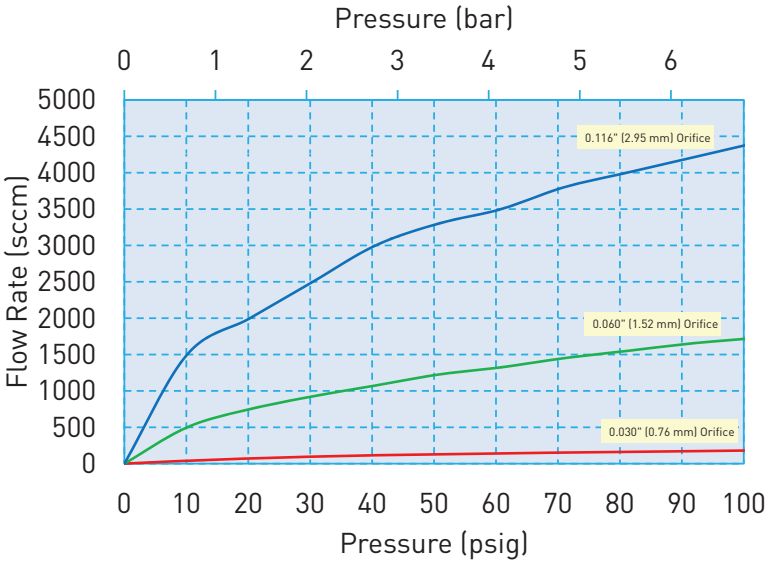
Performance Characteristics

Orifice Diameters/ Operating Pressure:
0.030" (0.76 mm) / 1x10-5 Torr -1250 psig (86.2 bar)
0.060" (1.52 mm) / 1x10-5 Torr - 250 psig (17.2 bar)
0.116" (2.95 mm) / 1x10-5 Torr - 100 psig (6.9 bar)
Proof Pressure:
1.5X rated pressure
Leak Rate:
1 x 10^{-8} cc/sec/atm Helium
Response Time:
<5 ms 0.030" (0.76 mm) <5 ms 0.060" (1.52 mm) <6 ms 0.116" (2.95 mm)
Recommended Filtration:
40 µm max

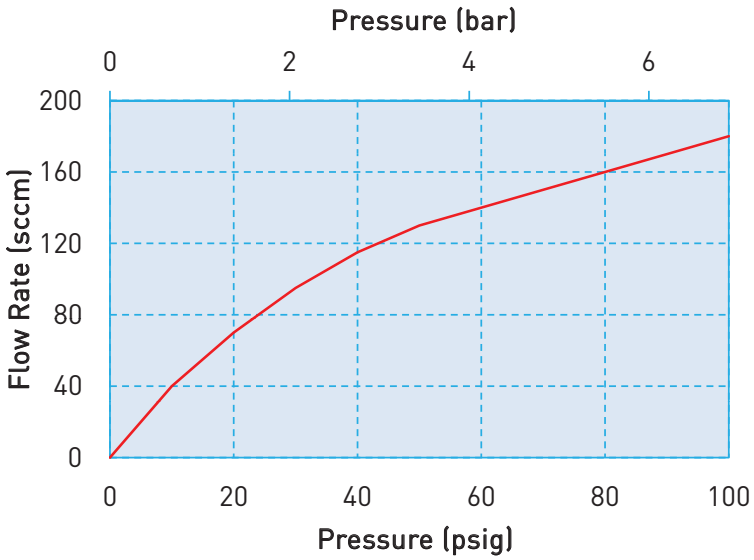
Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

Typical Flow Curve

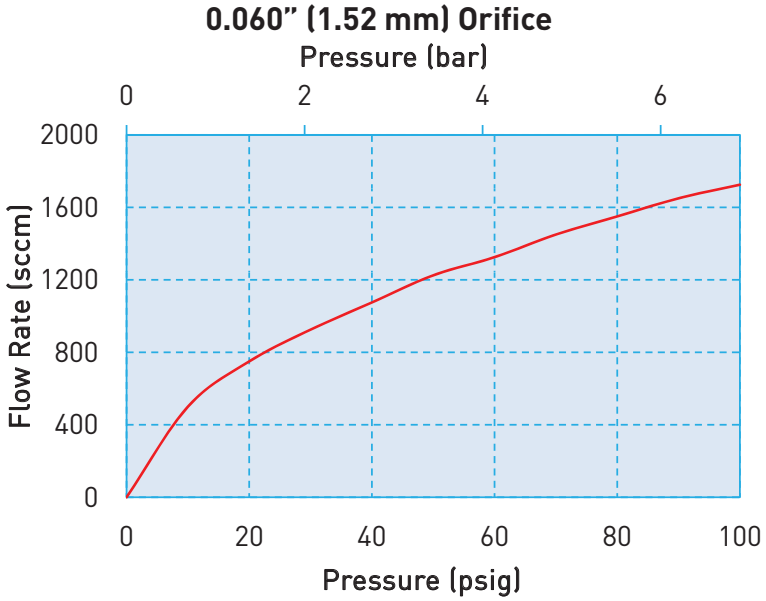
All Models
(Tested w/water 24° C)

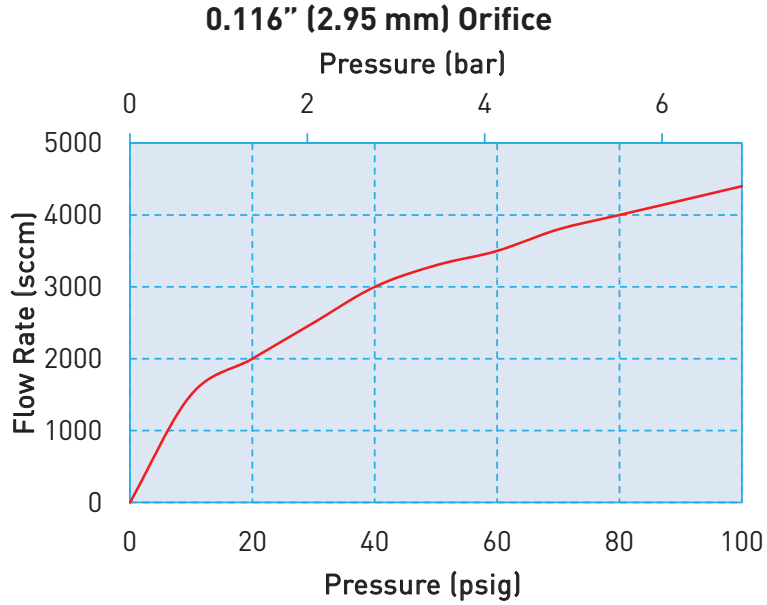


0.030" (0.76 mm) Orifice



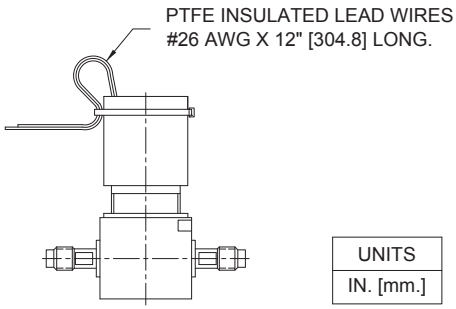
Series 99 Miniature High Speed and Pressure Liquid Dispense Valve





Electrical Interface

Wire leads



UNITS
IN. [mm.]

Custom connections available upon request

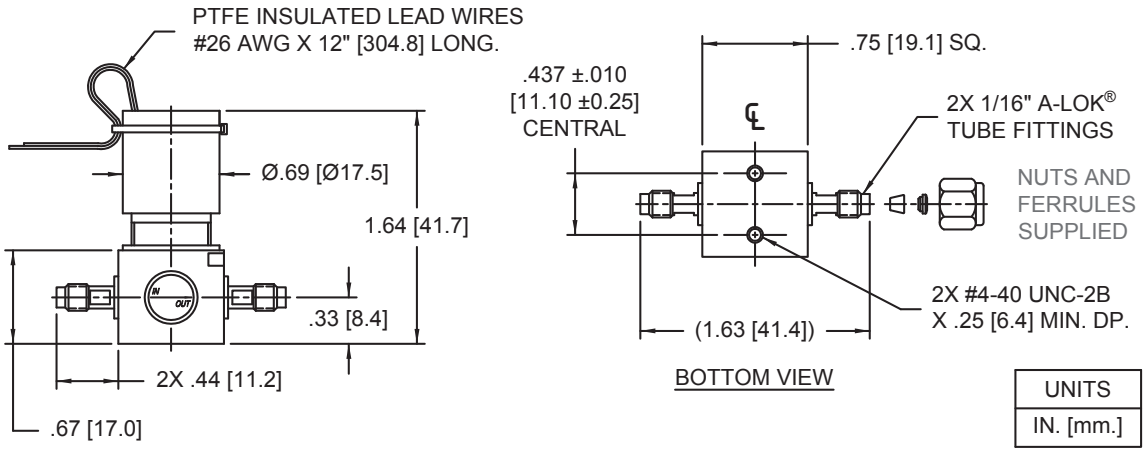
Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

Mechanical Integration

Dimensions

Series 99: 2-Way
Dimensions

2-WAY, 0.030" [0.76 mm] ORIFICE, 1/16" [1.6 mm] A-LOK®



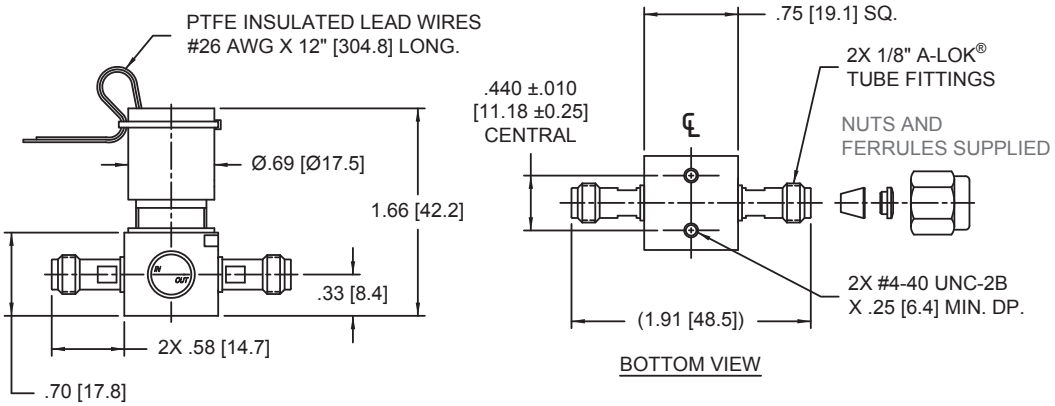
Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

Mechanical Integration

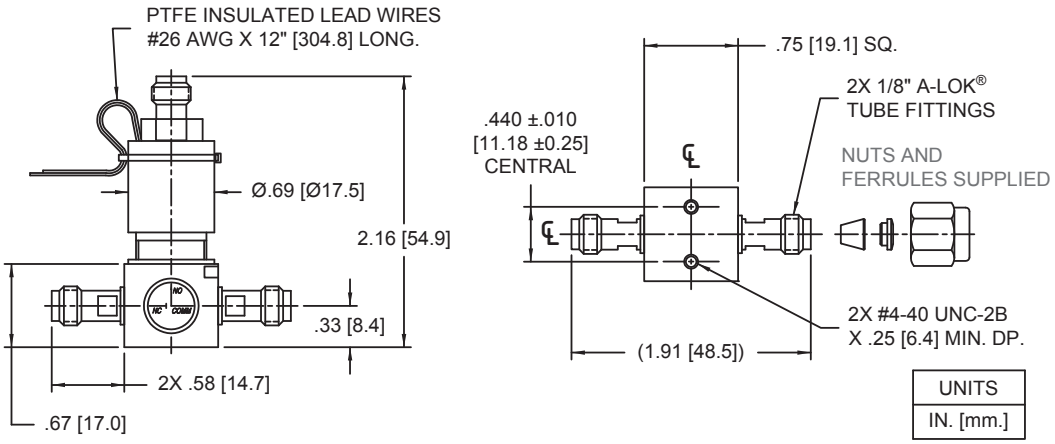
Dimensions

Series 99: 2-Way
Dimensions

2-WAY, 0.060" [1.52 mm] ORIFICE, 1/8" [3.18 mm] A-LOK®



3-WAY, 0.060" [1.52 mm] ORIFICE, 1/8" [3.18 mm] A-LOK®



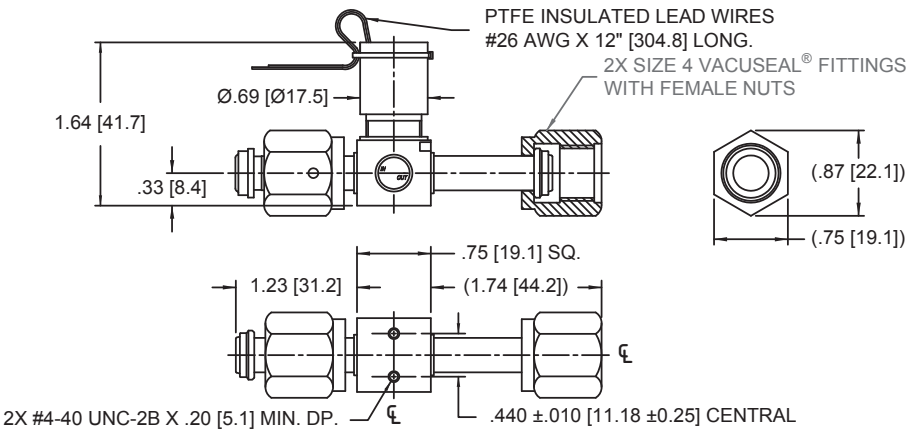
Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

Mechanical Integration

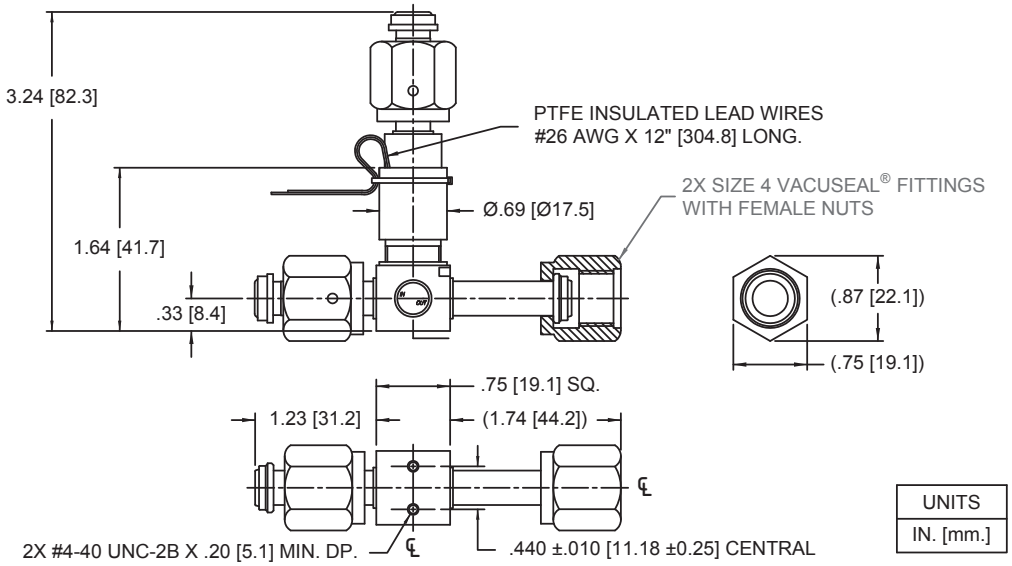
Dimensions

Series 99: 2-Way
Dimensions

2-WAY, 0.116" [2.95 mm] ORIFICE, 1/4" [6.35 mm] VACUSEAL®



3-WAY, 0.116" [2.95 mm] ORIFICE, 1/4" [6.35 mm] VACUSEAL®

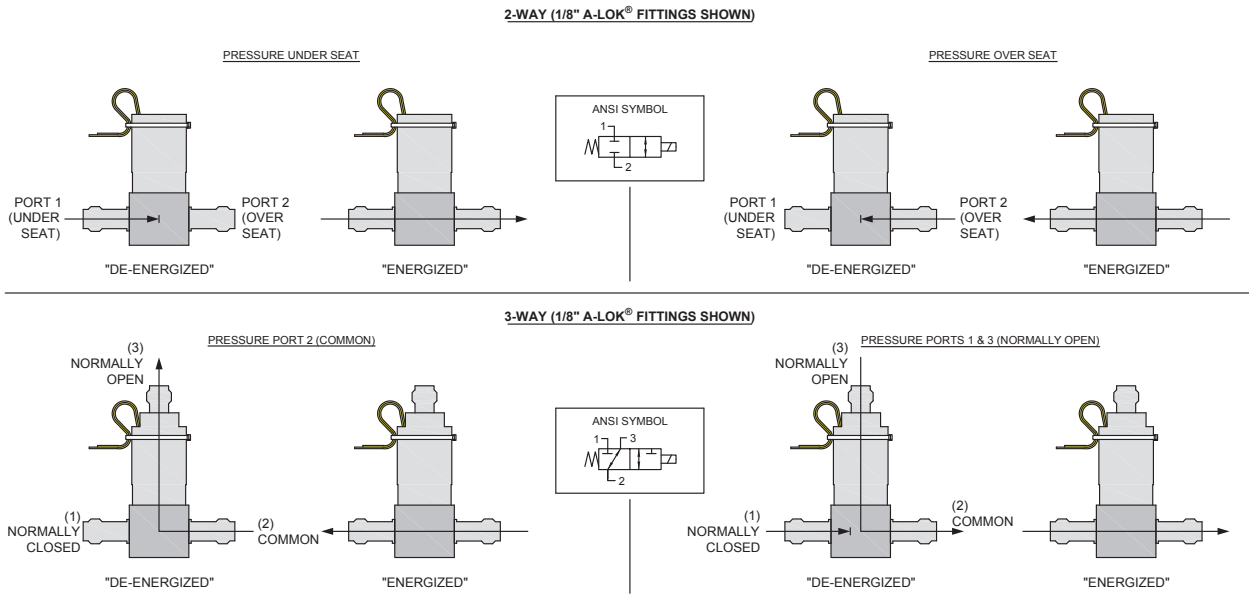


UNITS
IN. [mm.]

Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

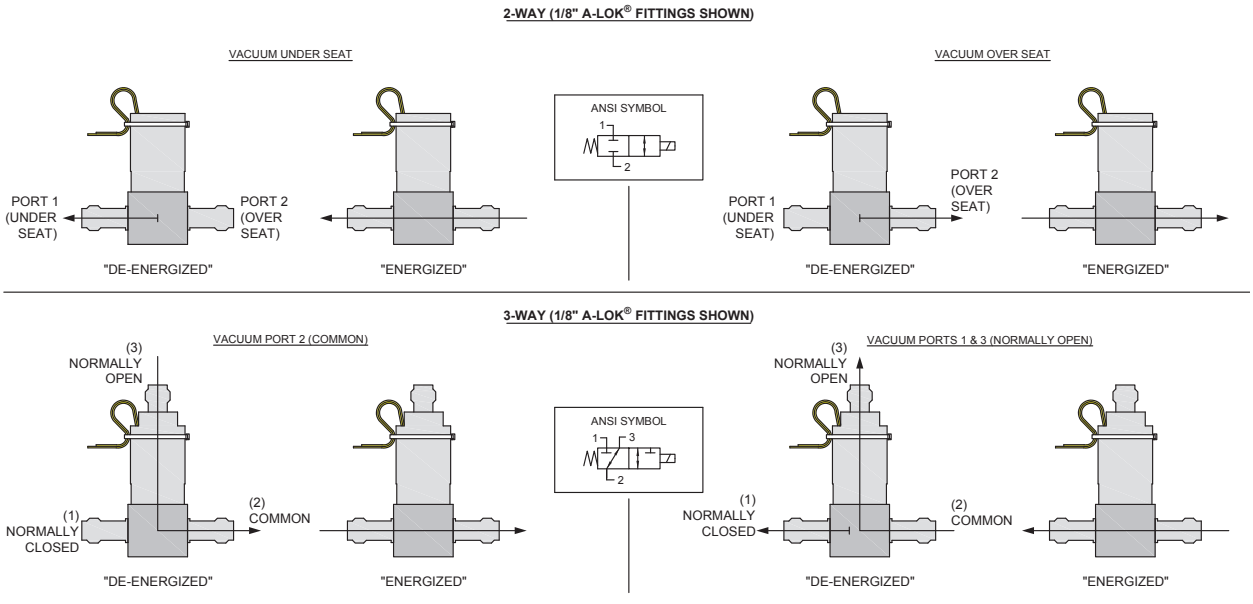
ANSI Symbols

Pressure



ANSI Symbols

Vacuum



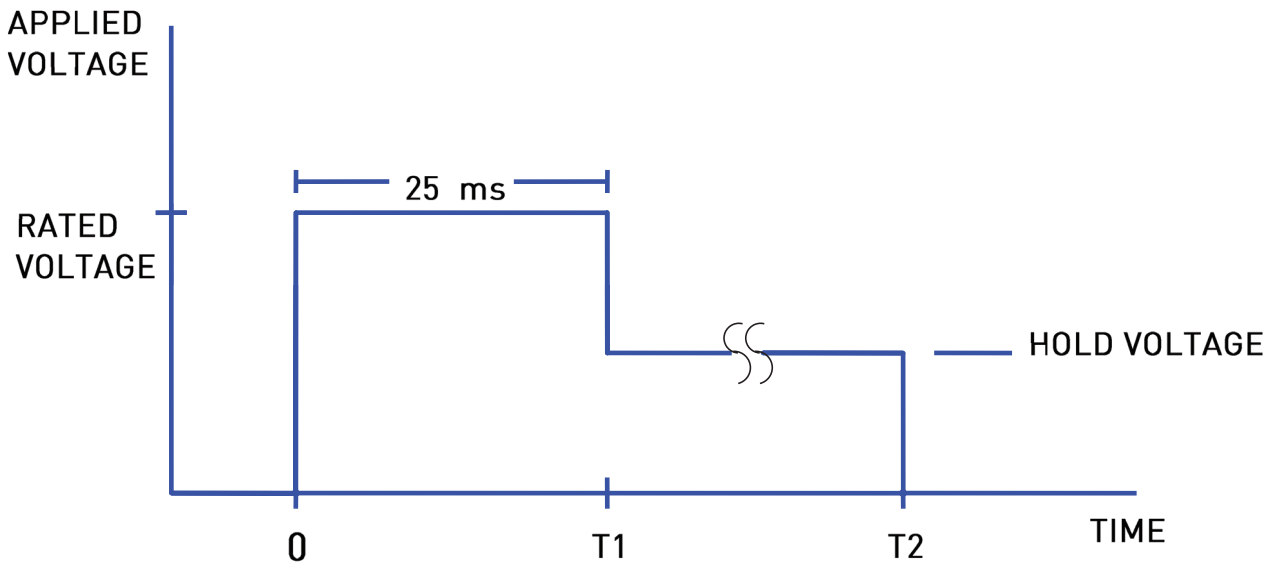
Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

Hit and Hold Specifications (12-Watt coils):

Hit and Hold is a method for driving valves that can be used to reduce power consumption and heat generation while maintaining valve performance specifications. The valve is "hit" with the full rated voltage for some time period to open it (T1 in the graph) and then "held" open with substantially reduced voltage until the desired pulse length is reached (T2 in the graph). The following table shows the possible holding voltages and power consumption for our standard 12 and 24VDC solenoids.

Rated Voltage (volts)	3-way		2-way	
	Hold Voltage	Hold Power	Hold Voltage	Hold Power
24	12 volts	3 watts	5 volts	0.52 watts
12	6 volts	3 watts	5 volts	2.1 watts

Note: Other voltages available



Hold Voltage Graph

Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

Chemical Compatibility Chart*

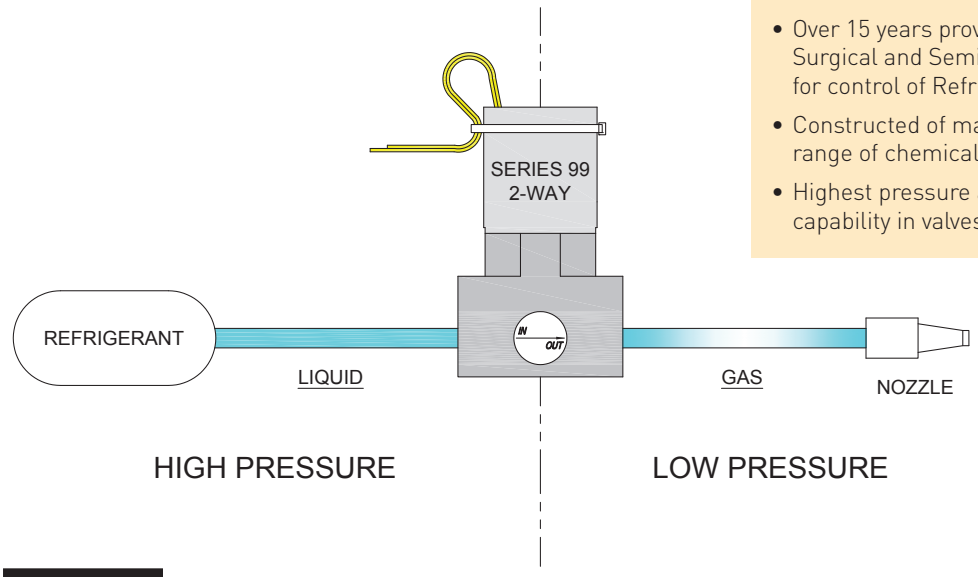
	Seal Options							Other Wetted Materials	
	0.030" (0.76mm) orifice version			or	0.060" (1.52mm) and 0.116" (2.95mm) orifice versions			PTFE	Stainless Steel
Chemical	Vespel	and	Silver Plated Nickel		FKM	and	Silver Plated Nickel		
DI Water	2		1		1		1	1	1
Methanol	1		1		4		1	1	1
Isopropanol	2		1		1		1	1	1
Ethanol	1		1		3		1	1	1
Acetonitrile	1				4			1	1
Tetrahydrofuran	3				4			1	1
Toluene	1		1		2		1	1	1
Organic Acids - Dilute	1		1		1		1	1	1
Non Organic Acids - Dilute	1		1-4		1		1-4	1	1
Bases - Dilute	1		1		1		1	1	1
Saline	1				1			1	1
Bleach 12%	4				1			1	2
Sodium Hydroxide 20%	4		1		2		1	1	1

*The above is an Abbreviated Chemical Compatibility Chart. Please consult factory for a complete list.

COMPATIBILITY LEGEND		
1	**EXCELLENT**	Minimal or no effect
2	**GOOD**	Possible swelling and/or loss of physical properties
3	**DOUBTFUL**	Moderate or severe swelling and loss of physical properties
4	**NOT RECOMMENDED**	Severe effect and should not be considered

Typical Flow Diagram

Typical Sample Control of Refrigerant Dispensing



- Over 15 years proven track record in Surgical and Semiconductor applications for control of Refrigerant Dispensing.
- Constructed of materials to handle wide range of chemicals.
- Highest pressure and temperature capability in valves of its size.

Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

Ordering Information

Orifice Size	Seal Material	Pressure	Valve Type	Voltage	Porting	Part Number
0.030" (0.76mm)	Vespel, Silver Plated Nickel	Vac-1250psig (86.2 bar)	2 Way NC	12V	1/16" (1.6 mm) A-Lok®	099-0051-900
				24V	1/16" (1.6 mm) A-Lok®	099-0340-900

Orifice Size	Seal Material	Pressure	Valve Type	Voltage	Porting	Part Number
0.060" (1.52mm)	FKM,Silver Plated Nickel	Vac-250psig (17.2 bar)	2 Way NC	24V	1/8" (3.2 mm) A-Lok®	099-0080-900
		Vac-100psig (6.89 bar)	3 Way	12V	1/8" (3.2 mm) A-Lok®	099-0075-900
				24V	1/8" (3.2 mm) A-Lok®	099-0135-900

Orifice Size	Seal Material	Pressure	Valve Type	Voltage	Porting	Part Number
0.116" (2.95mm)	FKM,Silver Plated Nickel	Vac-100psig (6.89 bar)	2 Way NC	24V	1/4" (6.4 mm) Female VacuSeal®	099-0167-900
			3 Way	24V	1/4" (6.4 mm) Female VacuSeal®	099-0107-900

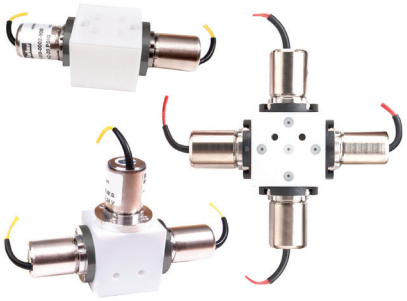
NOTE: In order to provide the best possible solution for your application, please provide the following requirements when contacting Applications Engineering:

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

Please click on the Order On-line button (or go to www.parker.com/precisionfluidics/s99) to configure your Series 99 Miniature High Speed and Pressure Dispense Valve. For more detailed information, visit us on the Web, or call 603-595-1500.

Series 18 Chemically Inert Manifold Liquid Valve

Isolation Manifold



The Series 18 is designed for compact installation in multi-liquid systems. Available with multiple inlets and one outlet (or vice-versa), the Series 18 features all wetted parts of PTFE. Tubing and connections between discrete valves are eliminated and dead volume is reduced. Repeatability and rapid response time make the Series 18 ideally suited for controlling small percentages of low flow liquids.

Applications

- Liquid Chromatography Gradient Generation
- Liquid Selection and Mixing Valve

Features

- Provides unsurpassed chemical compatibility for a wide range of media with all wetted parts of PTFE.
- Low internal volume for reduced delay volume
- 100% continuous duty rating in ambient temperatures up to 66°C
- Low power for reduced heat generation and power consumption
- Fast response times for accurate, repeatable results
- Symmetrical design ensures fluid path length and timing is identical for each fluid channel
- 100% tested tight leak rate provides assurance of a quality seal
- Provides reliable operation for the life of your instrument
- RoHS compliant

Product Specifications

Physical Properties

Valve Type:
Multi Station Diaphragm Isolation Valve

Valve Configuration:
2-Way Normally Closed

Media:
Liquids

Operating Environment:
40 to 150°F (4 to 66°C)

Dimensions:
See pages 3, 4 & 5

Weight:
8 oz (226 g) [2 Station]
10.2 oz (289 g) (3 Station]
12.4 oz (352 g) [4 Station]

Porting:
1/4-28 Threaded ports

Internal Volume (µL):

	Valve	Inlet Path	Outlet Path
2 station	12.6	25.2	42.4
3 station	12.6	25.2	42.4
4 station	12.6	25.2	57.1

Electrical

Voltage (VDC):	9	12	24
Power (Watts):	2.5	2.5	4.2
Current (mA):	273	211	173
Resistance (Ohm):	33	57	139

(Ω±5% @ 70°F, 21°C)

Connections:
12” Lead Wires Standard
26 AWG, PTFE Insulated

Wetted Materials*

Seals:
PTFE

Body:
PTFE

* See Chemical Compatibility Page
Consult factory for other options

Performance Characteristics

Operating Pressure/ Orifice Diameters:
Vacuum - 20 psig (1.4 bar) / 0.060” (1.52 mm)

Proof Pressure:
1.5X rated pressure

Leak Rate:
Bubble Tight

Response Time:
<12 ms

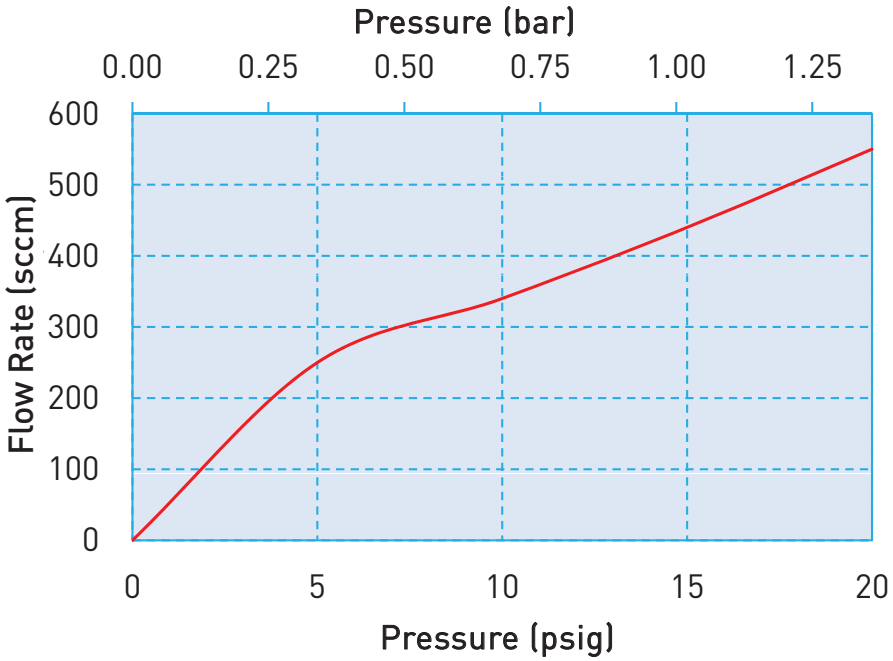
Recommended Filtration:
10 µm max

Reliability:
Life Cycle Rating of 10 million (Application dependent)

Series 18 Chemically Inert Manifold Liquid Valve

Typical Flow Curve

All Models
Orifice: 0.060" (1.52mm)
(Tested w/water 24° C)

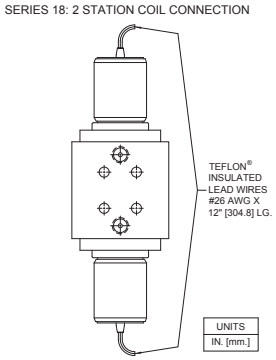


Series 18 Chemically Inert Manifold Liquid Valve

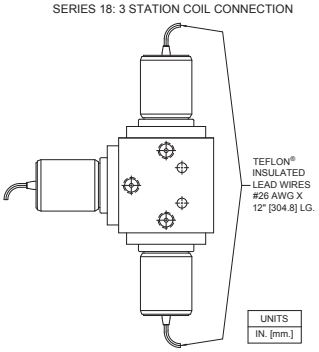
Electrical Interface

Wire leads

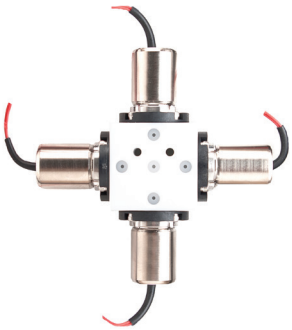
2 Station

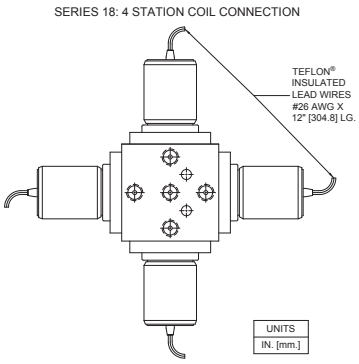


3 Station



4 Station





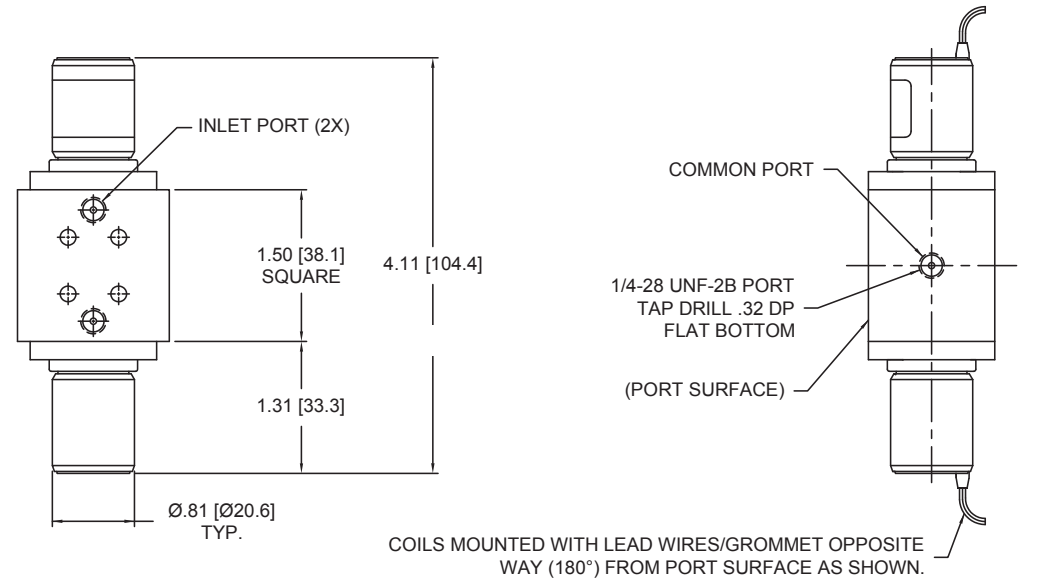
Note: Custom configurations available please contact the factory.

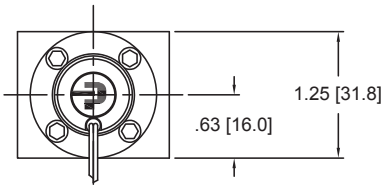
Series 18 Chemically Inert Manifold Liquid Valve

Mechanical Integration

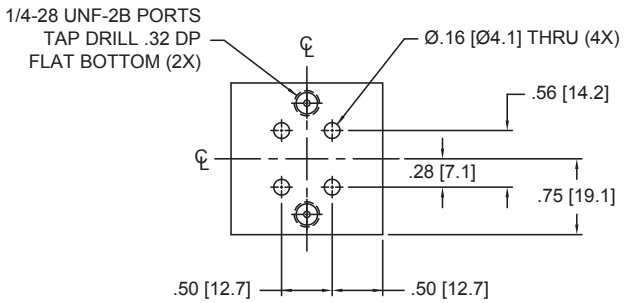
Dimensions

Series 18: 2 Station Dimensions



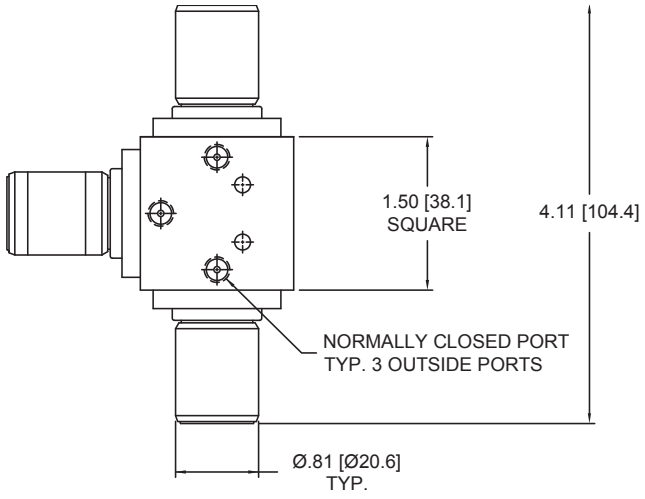


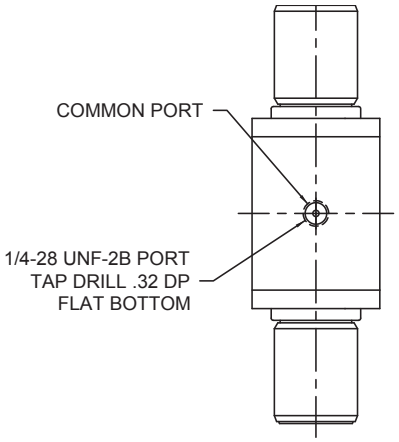
PORT CONFIGURATION VIEW

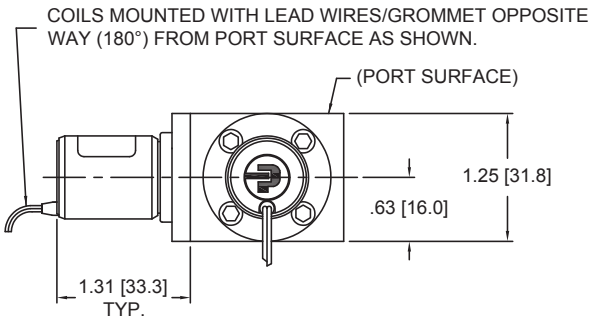


Series 18 Chemically Inert Manifold Liquid Valve

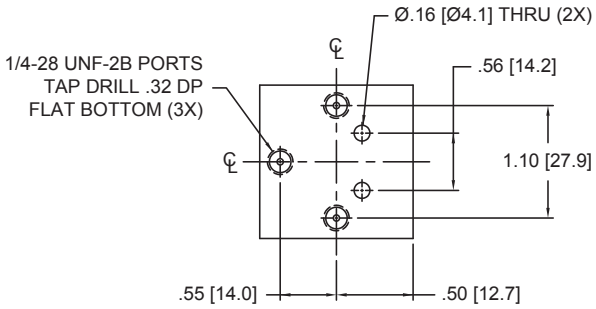
Series 18: 3 Station Dimensions





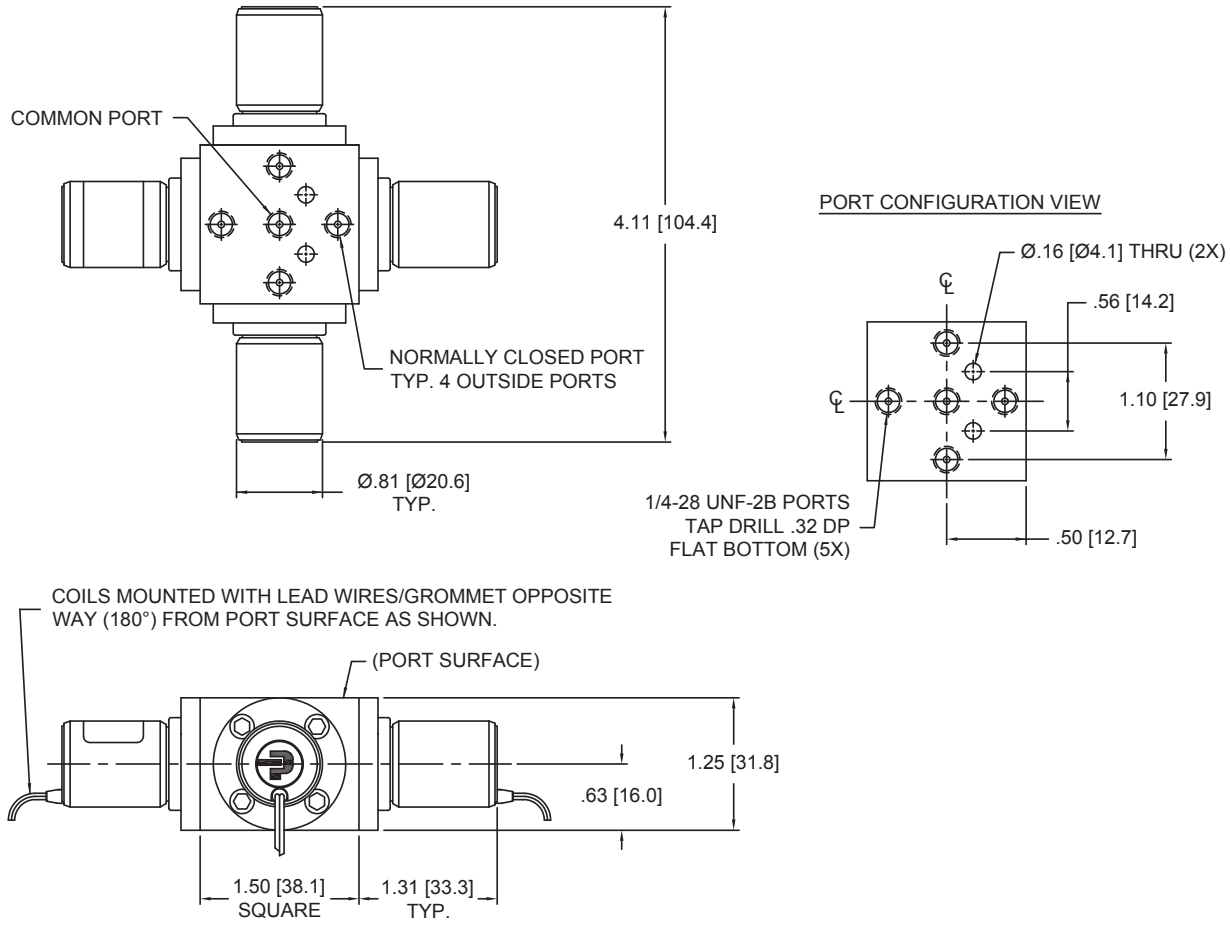


PORT CONFIGURATION VIEW



Series 18 Chemically Inert Manifold Liquid Valve

Series 18: 4 Station Dimensions



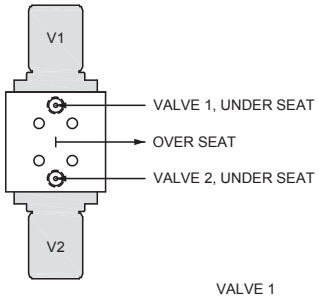
Series 18 Chemically Inert Manifold Liquid Valve

ANSI Symbols

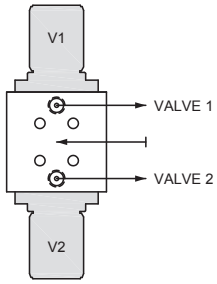
Pressure

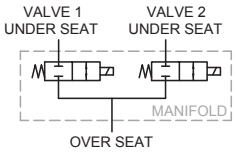
2 STATION, 2-WAY

GRADIENT GENERATION / FLOW MIXING

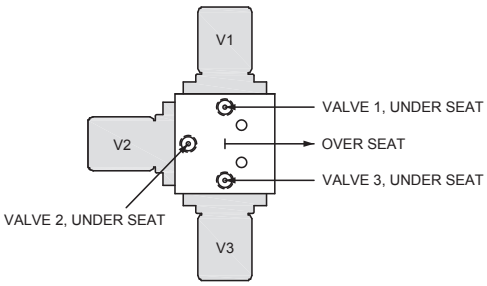


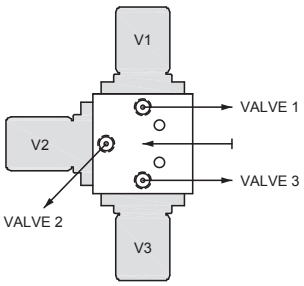
FLOW SELECTION / STREAM SPLITTING

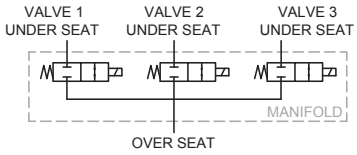




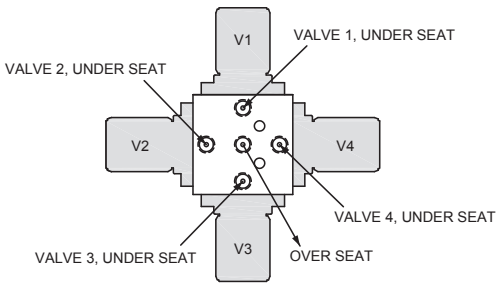
3 STATION, 2-WAY

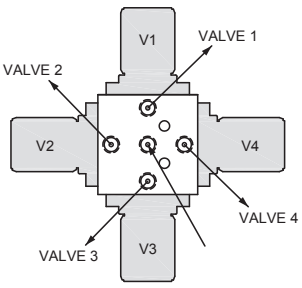


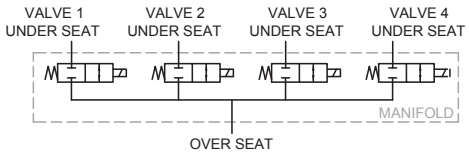




4 STATION, 2-WAY







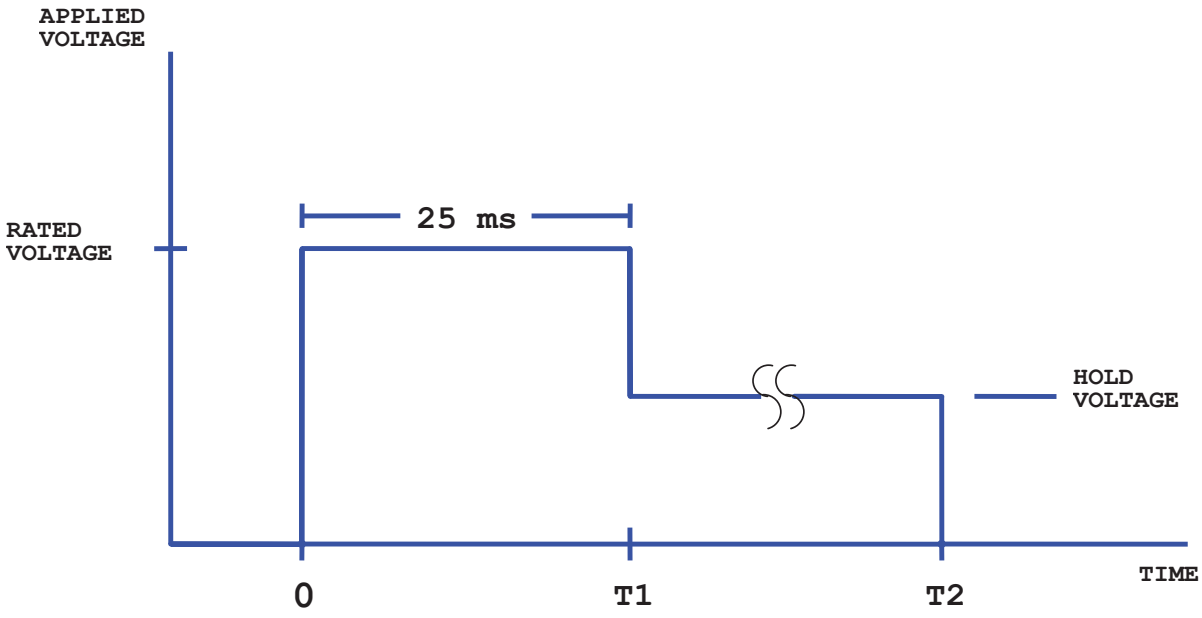
Series 18 Chemically Inert Manifold Liquid Valve

Hit and Hold Specifications:

Hit and Hold is a method for driving valves that can be used to reduce power consumption and heat generation while maintaining valve performance specifications. The valve is "hit" with the full rated voltage for some time period to open it (T1 in the graph) and then "held" open with substantially reduced voltage until the desired pulse length is reached (T2 in the graph). The following table shows the possible holding voltages and power consumption for our standard 12 and 24VDC solenoids.

Rated Voltage (volts)	*Hold Voltage*	*Hold Power*
24	8 volts	0.46 watts
12	5 volts	0.44 watts

Note: Other voltages available



Hold Voltage Graph

Series 18 Chemically Inert Manifold Liquid Valve

Chemical Compatibility Chart*

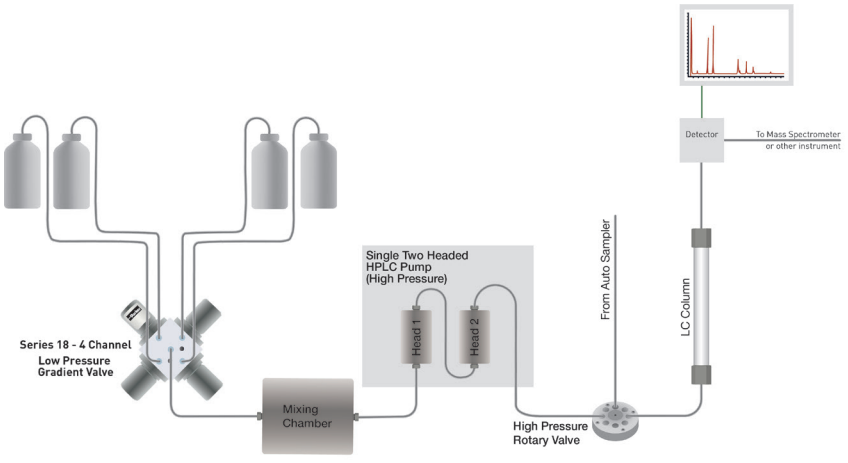
Chemical	Seals and Body TEFLON® (PTFE)
DI Water	1
Methanol	1
Isopropanol	1
Ethanol	1
Acetonitrile	1
Tetrahydrofuran	1
Toluene	1
Organic Acids - Dilute	1
Non Organic Acids - Dilute	1
Bases - Dilute	1
Saline	1
Bleach 12%	1
Sodium Hydroxide 20%	1

* The above is an Abbreviated Chemical Compatibility Chart. Please consult factory for a complete list.

COMPATIBILITY LEGEND		
1	EXCELLENT	Minimal or no effect
2	GOOD	Possible swelling and/or loss of physical properties
3	DOUBTFUL	Moderate or severe swelling and loss of physical properties
4	NOT RECOMMENDED	Severe effect and should not be considered

Typical Flow Diagram

Quaternary Gradient HPLC Flow Diagram



Proven Performance:

- The Series 18 Valve has been successfully tested to more than ten million cycles with no degradation of components afterwards Passing specifications for:
  - Response time
  - Internal leakage
  - External leakage
  - Repeatability
- Can achieve mix ratios from 99:1 to 1:99 with high accuracy and repeatability.
- The Series 18 Valve has a proven track record in Analytical Instrumentation for over 25 years.

Series 18 Chemically Inert Manifold Liquid Valve

Ordering Information

Orifice Size	Pressure	Valve Type	Number of Stations	Voltage	Part Number
0.062"(1.57 mm)	Vac-20 psig (1.38 bar)	2 Way NC	4	9V	018-0301-900
				12V	018-0074-900
				24V	018-0048-900
			3	12V	018-0083-900
				24V	018-0003-900
			2	12V	018-0012-900
				24V	018-0002-900

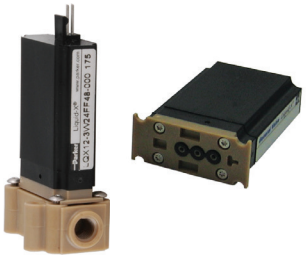
NOTE: In order to provide the best possible solution for your application, please provide the following requirements when contacting Applications Engineering:

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

Please click on the Order On-line button (or go to www.parker.com/precisionfluidics/s18) to configure your Series 18 Chemically Inert Manifold Valve. For more detailed information, visit us on the Web, or call 603-595-1500.

LQX12

12 mm Miniature Diaphragm Isolation Valve



LQX12 is a high-performance 2-way and 3-way universal isolated diaphragm valve. This highly flexible design is 12 mm wide and offers two different elastomer options. LQX12 supports the pressure and flow requirements needed by today's analytical, bio-analytical, and clinical diagnostic OEMs.

Applications

- Clinical Diagnostics Instrumentation
- Hematology
- Automated Slide Stainers
- DNA/RNA Synthesis
- Environmental Analyzers
- VOC/TOC

Features

- EPDM or FFKM elastomers for particulate tolerance and reliability in a wide range of liquid media
- 100% tested leak rate ensures a tight seal on every valve
- 12 mm width allows for reduced system sizes and efficient packaging
- Designed to be manifold mounted side-to-side on 12 mm centers
- Low internal unswept volume to minimize carryover and cross-contamination
- Secure electrical termination to female connectors with friction-locked latching electrical connection
- Optional ¼-28 ported sub-base for stand alone operation or testing
- RoHS compliant

Product Specifications

Physical Properties

Valve Type:
Diaphragm Rocker Isolation Valve
Valve Configuration:
3-Way Universal
2-Way Normally Closed
Media: Liquids
Operating Environment:
32 to 122°F (0 to 50°C)
Storage Temperature:
-40 to 158°F (-40 to 70°C)
Dimensions:
Width: 0.47" (12 mm)
Height: 1.57" (39.88 mm)
Length: 1.16" (29.46 mm)
Weight:
Face seal: 0.86 oz (24.7 g) with 1/4-28 sub-base 1.1 oz (31.7g)
Porting:
Face seal, 1/4-28 sub-base
Internal Volume (µL):
32 manifold interface 61.5 with sub base manifold

Electrical

Voltage (VDC):		
12 and 24 VDC ± 5%		
Power (Watts): 2.0 Max		
	12V	**24V**
Current (mA):	162	76
Resistance (Ohm):	74.2	316
(Ω±5% @ 70°F, 21.1°C)		
Connections:		
2.54 mm pitch male pins		
18" (46 cm) Lead Wire Connector Assembly		
(Accessory, see ordering info.)		

Wetted Materials

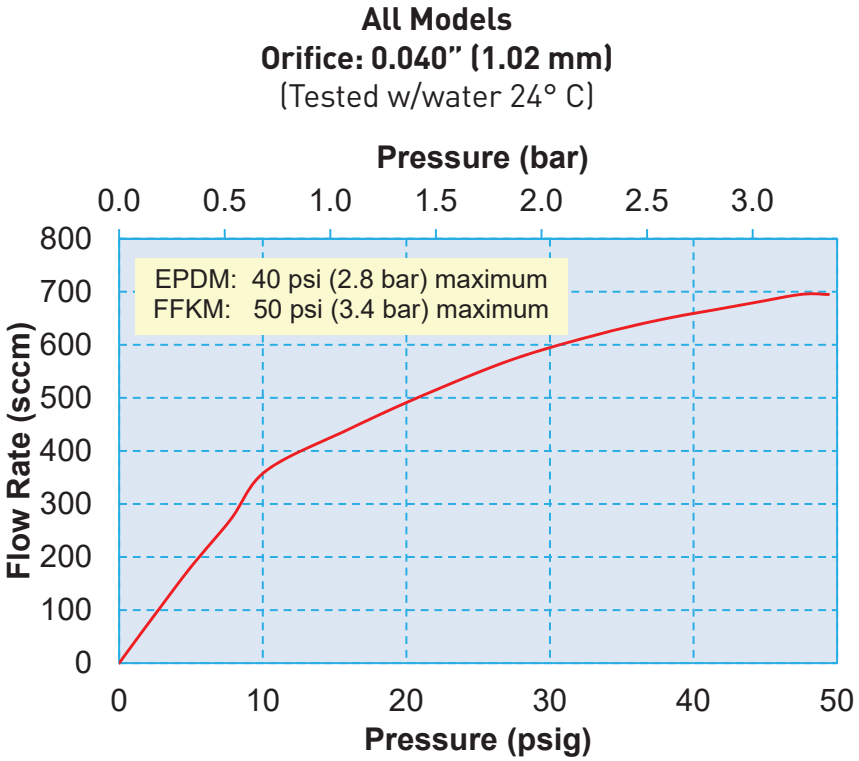
Seals:
EPDM or FFKM
Body:
PEEK (polyetheretherketone)
Manifold:
PEEK (polyetheretherketone)
See Chemical Compatibility Page Consult factory for other options

Performance Characteristics

Operating Pressure/ Orifice Diameters:
Vacuum - 40 psi (2.8 bar), EPDM
Vacuum - 50 psi (3.4 bar), FFKM
0.040" (1.02 mm)
Proof Pressure:
100 psig (6.9 bar)
Leak Rate:
Bubble Tight
Response Time:
20 ms maximum closed - open
Recommended Filtration:
40 micron
Reliability*:
Life Cycle Rating of 10 million (EPDM [pressure and vacuum] and FFKM [pressure])
Life Cycle Rating of 5 million (FFKM [vacuum])
*Application dependent

LQX12 Miniature Diaphragm Isolation Valve

Typical Flow Curve



Electrical Interface

Male Pins

Wire Leads*
18" (46 cm)
*Custom lead length available.

Liquid Interface

1/4" - 28 Ports
(Threaded Connector)

Face Seal
(Manifold Mount)

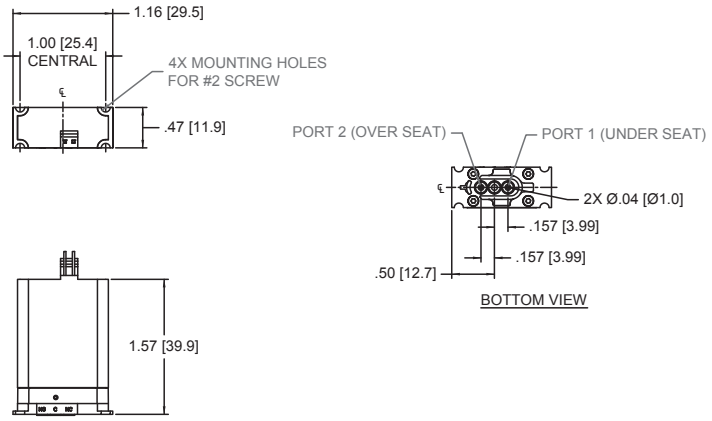
LQX12 Miniature Diaphragm Isolation Valve

Mechanical Integration

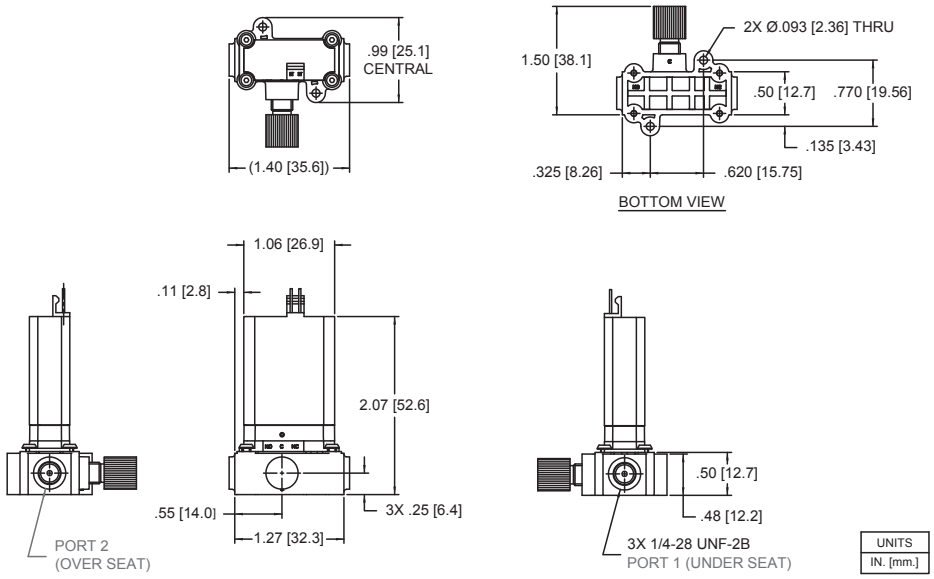
Dimensions

LQX 12: 2 -Way Dimensions

DIMENSIONS:
2-WAY FACE SEAL



2-WAY MANIFOLD 1/4-28 SUB BASE



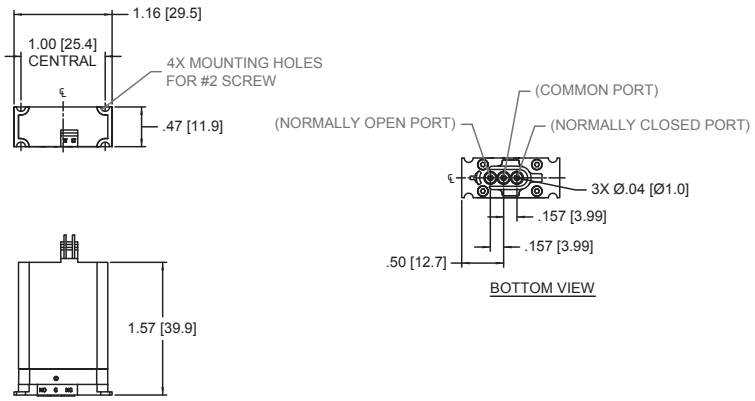
LQX12 Miniature Diaphragm Isolation Valve

Mechanical Integration

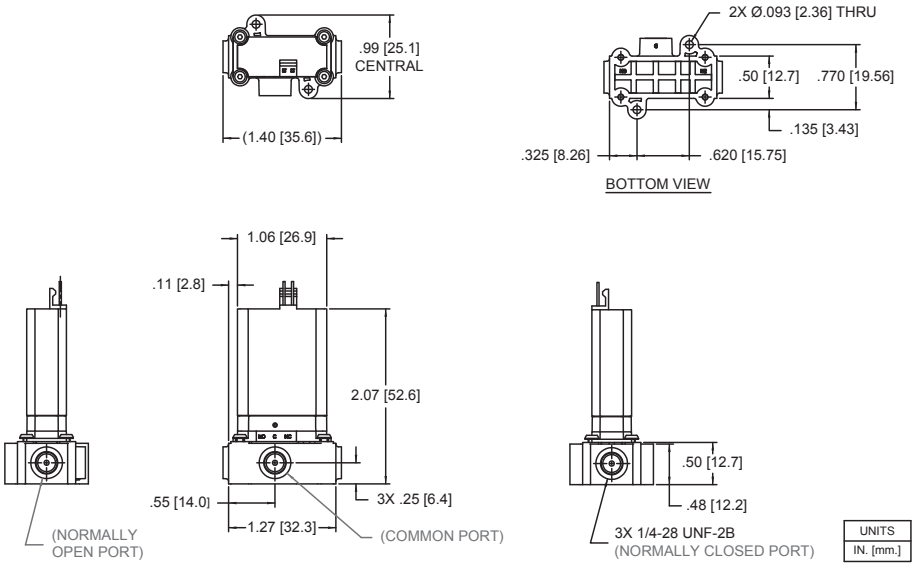
Dimensions

LQX 12: 3 -Way Dimensions

DIMENSIONS:
3-WAY FACE SEAL



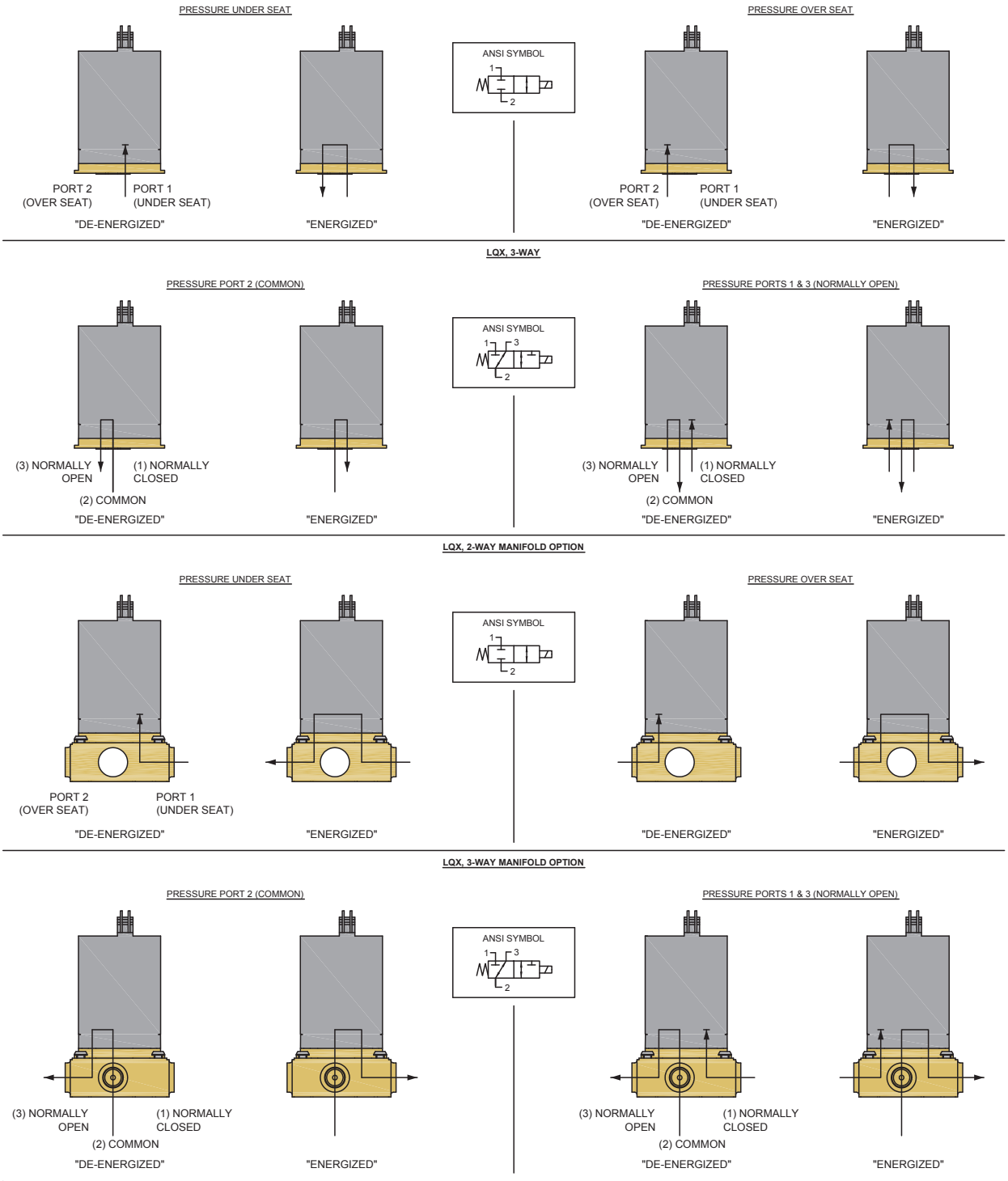
3-WAY MANIFOLD 1/4-28 SUB BASE



LQX12 Miniature Diaphragm Isolation Valve

ANSI Symbols

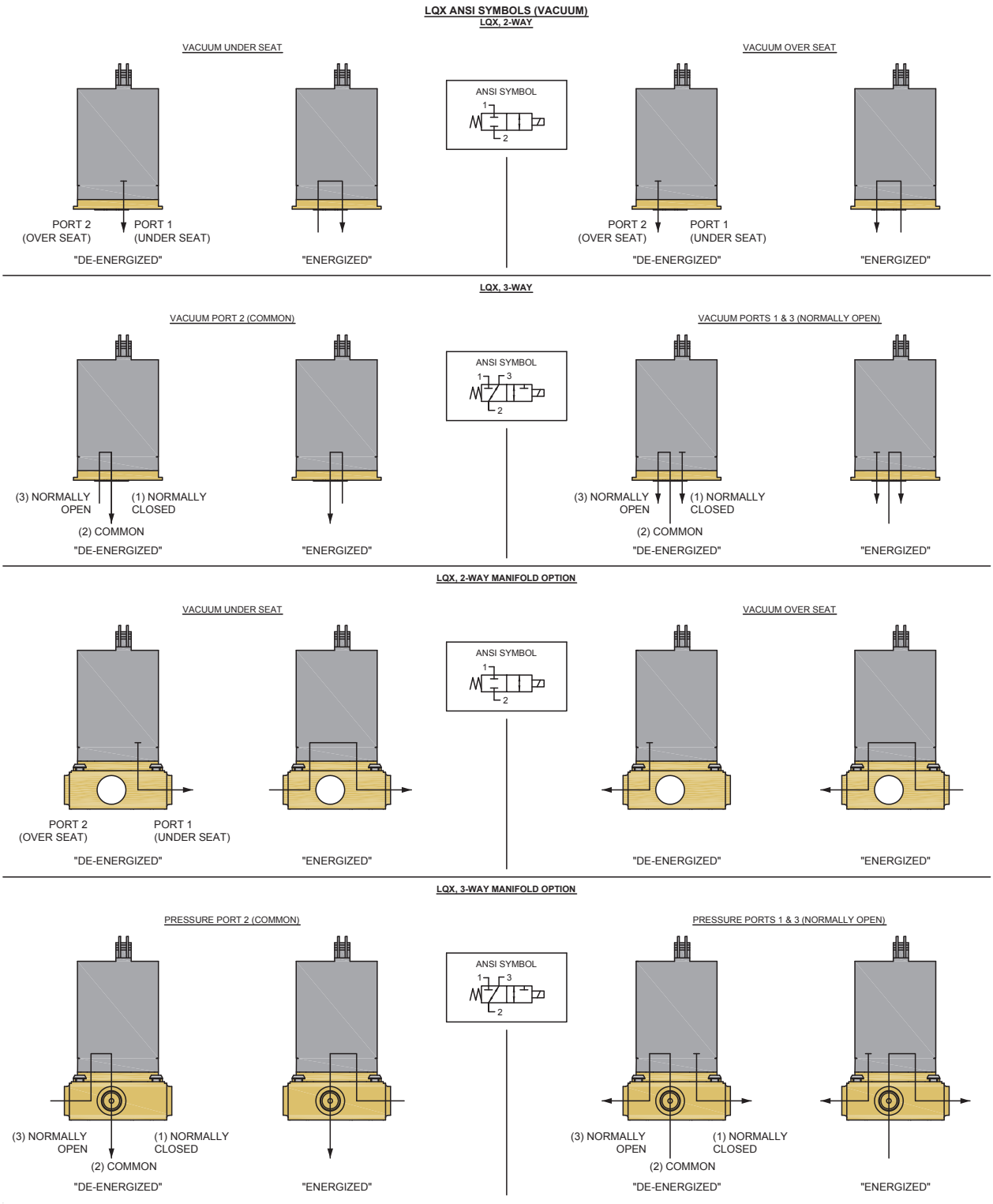
Pressure



LQX12 Miniature Diaphragm Isolation Valve

ANSI Symbols

Vacuum

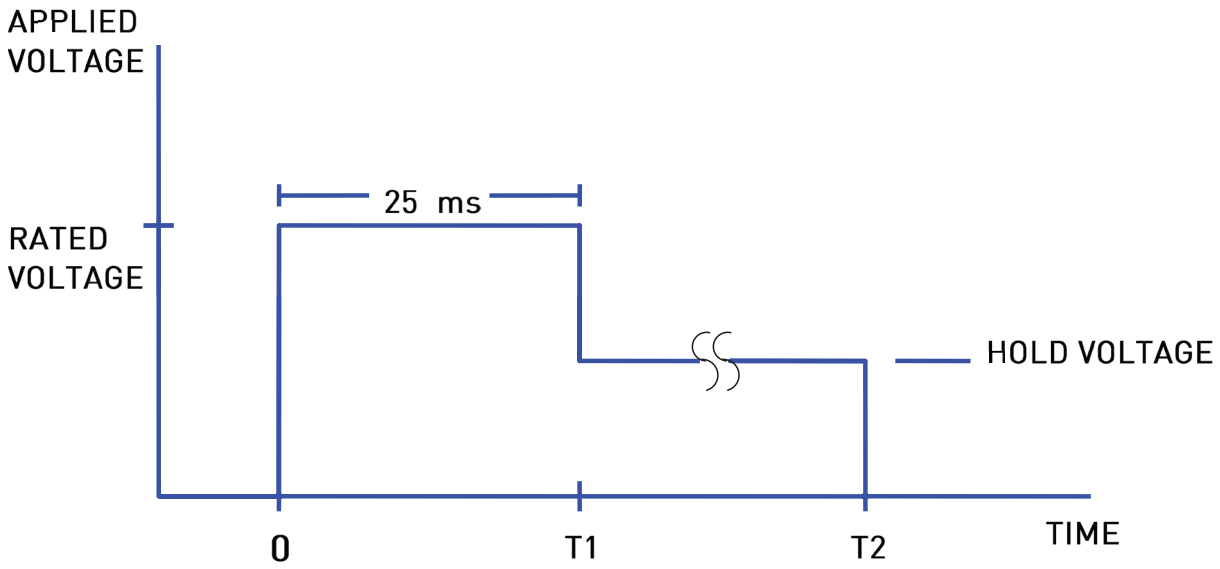


LQX12 Miniature Diaphragm Isolation Valve

Hit and Hold Specifications

Hit and Hold is a method for driving valves that can be used to reduce power consumption and heat generation while maintaining valve performance specifications. The valve is "hit" with the full rated voltage for some time period to open it (T1 in the graph) and then "held" open with substantially reduced voltage until the desired pulse length is reached (T2 in the graph). The following table shows the possible holding voltages and power consumption for our standard 12 and 24 VDC solenoids.

Rated Voltage (VDC)	2-way		3-way	
	Hold Voltage	Hold Power	Hold Voltage	Hold Power
24	8 VDC	0.46 watts	12 VDC	1.04 watts
12	5 VDC	0.44 watts	6 VDC	0.63 watts



Hold Voltage Graph

LQX12 Miniature Diaphragm Isolation Valve

Chemical Compatibility Chart*

	Diaphragm Options			Other Wetted Materials
Chemical	FFKM	or	EPDM	PEEK
DI Water	1		1	1
Methanol	1		1	1
Isopropanol	1		1	1
Ethanol	1		1	1
Acetonitrile	1		1	1
Tetrahydrofuran	1		4	1
Toluene	1		4	1
Organic Acids - Dilute	1		1	1
Non Organic Acids - Dilute	1		1	1
Bases - Dilute	1		1	1
Saline	1		1	1
Bleach 12%	2		1	1
Sodium Hydroxide 20%	1		1	1

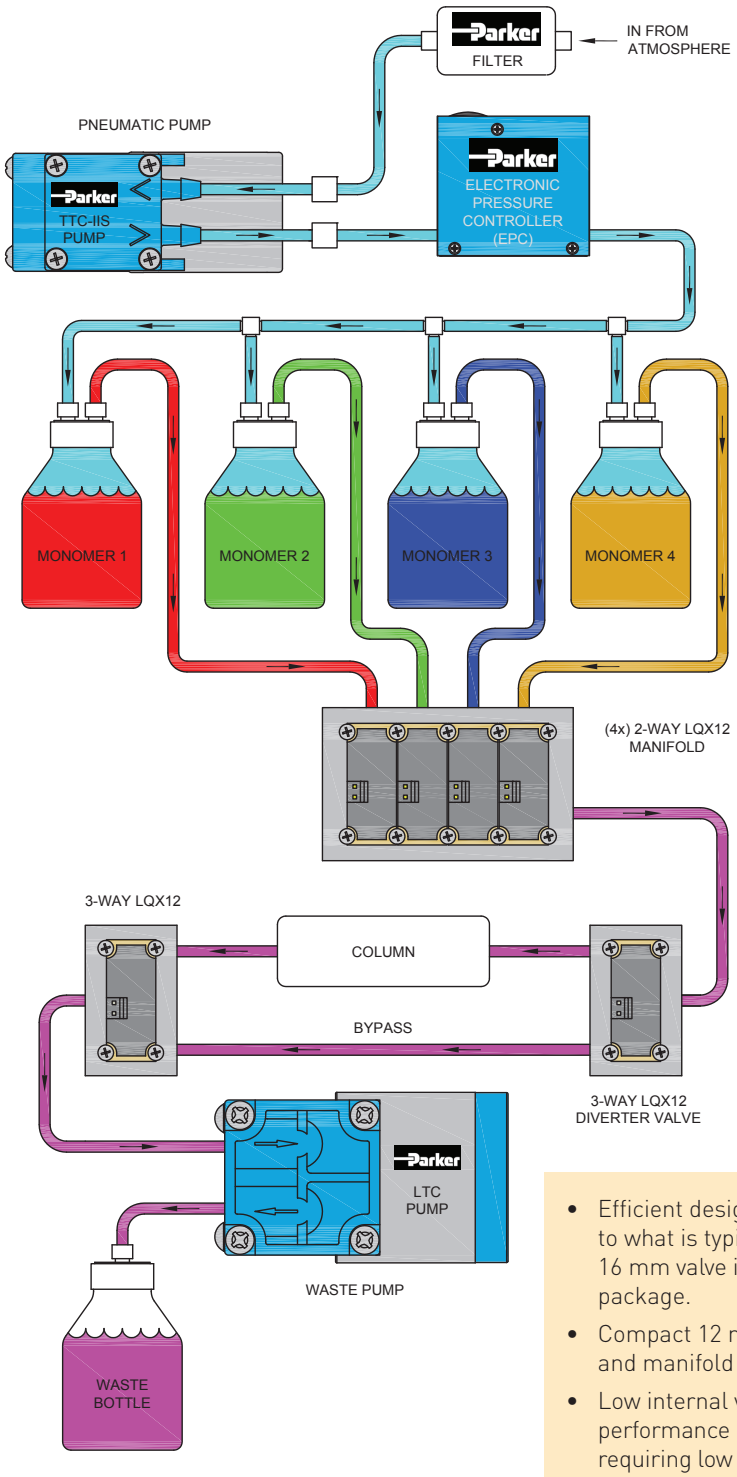
*The above is an Abbreviated Chemical Compatibility Chart. Please consult factory for a complete list.

COMPATIBILITY LEGEND		
1	**EXCELLENT**	Minimal or no effect
2	**GOOD**	Possible swelling and/or loss of physical properties
3	**DOUBTFUL**	Moderate or severe swelling and loss of physical properties
4	**NOT RECOMMENDED**	Severe effect and should not be considered

LQX12 Miniature Diaphragm Isolation Valve

Typical Flow Diagram

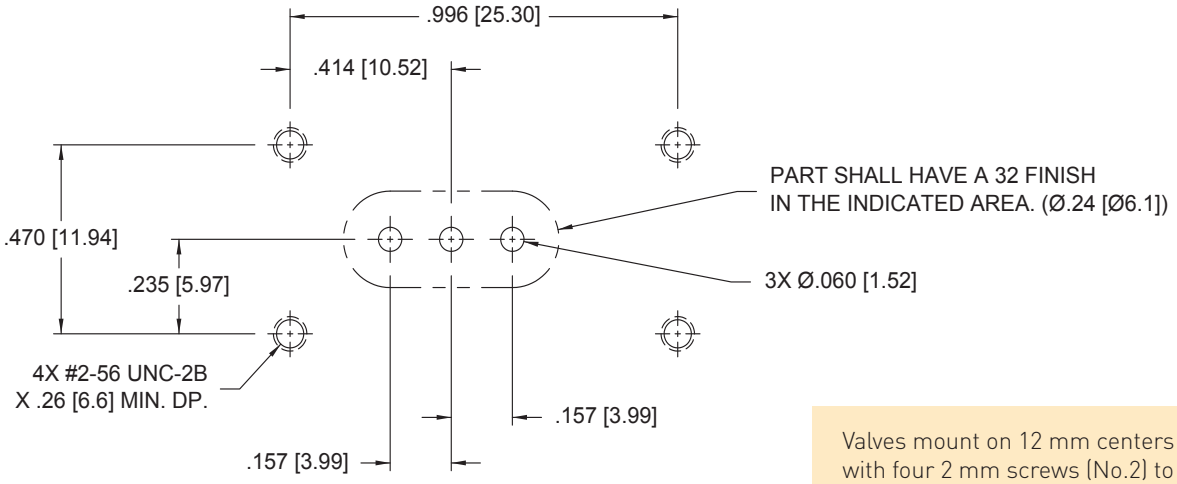
Oligonucleotide Synthesis Application



- Efficient design provides flow close to what is typically expected in a 16 mm valve in a 12 mm wide package.
- Compact 12 mm size saves space and manifold costs
- Low internal volume and high performance is ideal for applications requiring low carryover compared to the industry leading 16 mm valve

LQX12 Miniature Diaphragm Isolation Valve

Recommended LQX Valve Mounting



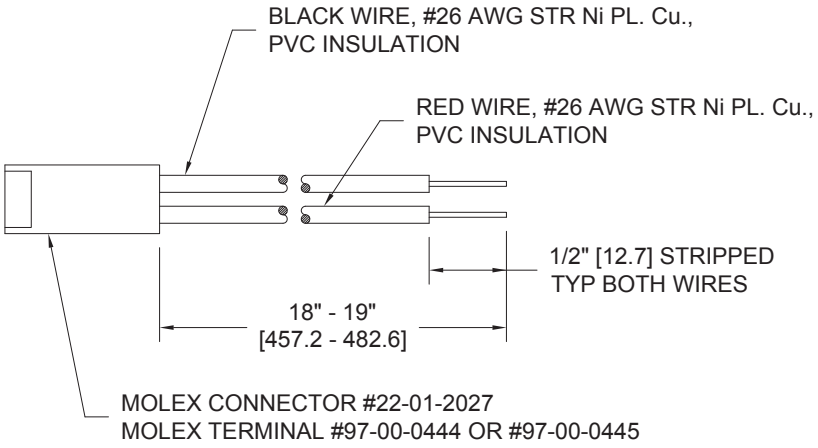
UNITS
IN [MM]

Valves mount on 12 mm centers with four 2 mm screws (No.2) to a maximum torque of 0.11N-m (15 in-oz).

Accessories

LQX12 18" (46 cm) Cable Assembly

LQX-0001-290-001



LQX12 Miniature Diaphragm Isolation Valve

Ordering Information

Valve Type	Seal Material	Pressure	Voltage	Electrical Connection	Porting	Part Number
2- Way NC	FFKM	Vac-50psig (3.4 bar)	12V	2.54mm male pins	Manifold Mount	LQX12-2W12FFFS-000
					1/4 - 28	LQX12-2W12FF48-000
				Flying leads	Manifold Mount	LQX12-2W12FFFS-001
					1/4 - 28	LQX12-2W12FF48-001
			24V	2.54mm male pins	Manifold Mount	LQX12-2W24FFFS-000
					1/4 - 28	LQX12-2W24FF48-000
				Flying leads	Manifold Mount	LQX12-2W24FFFS-001
					1/4 - 28	LQX12-2W24FF48-001
	EPDM	Vac-40psig (2.8 bar)	12V	2.54mm male pins	Manifold Mount	LQX12-2W12EPFS-000
					1/4 - 28	LQX12-2W12EP48-000
				Flying leads	Manifold Mount	LQX12-2W12EPFS-001
					1/4 - 28	LQX12-2W12EP48-001
			24V	2.54mm male pins	Manifold Mount	LQX12-2W24EPFS-000
					1/4 - 28	LQX12-2W24EP48-000
				Flying leads	Manifold Mount	LQX12-2W24EPFS-001
					1/4 - 28	LQX12-2W24EP48-001
3-Way	FFKM	Vac-50psig (3.4 bar)	12V	2.54mm male pins	Manifold Mount	LQX12-3W12FFFS-000
					1/4 - 28	LQX12-3W12FF48-000
				Flying leads	Manifold Mount	LQX12-3W12FFFS-001
					1/4 - 28	LQX12-3W12FF48-001
			24V	2.54mm male pins	Manifold Mount	LQX12-3W24FFFS-000
					1/4 - 28	LQX12-3W24FF48-000
				Flying leads	Manifold Mount	LQX12-3W24FFFS-001
					1/4 - 28	LQX12-3W24FF48-001
	EPDM	Vac-40psig (2.8 bar)	12V	2.54mm male pins	Manifold Mount	LQX12-3W12EPFS-000
					1/4 - 28	LQX12-3W12EP48-000
				Flying leads	Manifold Mount	LQX12-3W12EPFS-001
					1/4 - 28	LQX12-3W12EP48-001
			24V	2.54mm male pins	Manifold Mount	LQX12-3W24EPFS-000
					1/4 - 28	LQX12-3W24EP48-100
				Flying leads	Manifold Mount	LQX12-3W24EPFS-001
					1/4 - 28	LQX12-3W24EP48-101

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 (or go to www.parker.com/precisionfluidics/lqx12) to configure your Liquid X Miniature Diaphragm Isolation Valve. For more detailed information, visit us on the Web, or call 603-595-1500.

LQX12 Miniature Diaphragm Isolation Valve

Ordering Information

Accessories
LQX-0001-290-001: LQX 18" (46 cm) Cable Assembly

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

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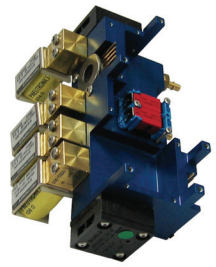
Value Added Application-Specific Solutions

Gassing Control System

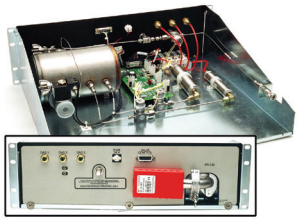


- Mixed gassing logic design includes VSO® proportional valves, X-Valve®, pressure switch, pressure sensors, and PCB interface

Pneumatic Module

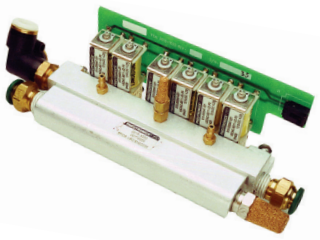
- **Integrated valve manifold**
- **Compact design**
- **Single electrical connection**
- **Valves configured per specifications**

Vacuum Gas Control Module



- Tested to 1 x 10^{-7} cc/sec/atm Helium
- Assembly tested on mass spectrometer

6 Position VSO® Proportional Valve Pneumatic Manifold Assembly



- Quick connect fittings
- Circuit board with mass electrical termination

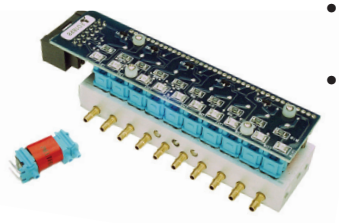
Magnum Manifold Assembly

- **Integrated circuit board with single connection**
- **Compact design**
- **Easily adaptable**
- **2 way and 3 way designs**

8 Position SRS Model Pneumatic Manifold

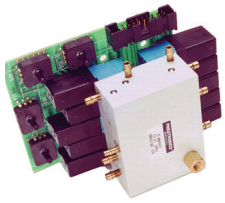
- Integrated circuit board mounting
- Mass electrical termination

10 Position X-Valve® Pneumatic Manifold



- Mixed pneumatic logic design
- Ultra-miniature design with PCB for mass termination

10 Position SRS Model Pneumatic Manifold



- Circuit board with transducers
- Pressed in barbed fittings

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

WARNING

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