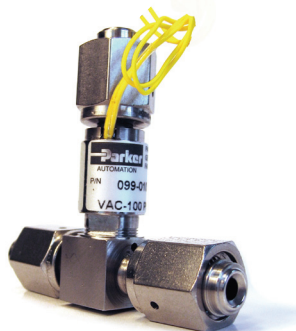


# Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

## 2- and 3-Way Liquid Solenoid Valve




### Typical Applications

- Liquid CO<sub>2</sub> Dispense
- Surgical Refrigerant Dispense
- Semiconductor Refrigerant Dispense

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.

### 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  $1 \times 10^{-8}$  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

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

### Electrical

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

### Wetted Materials\*

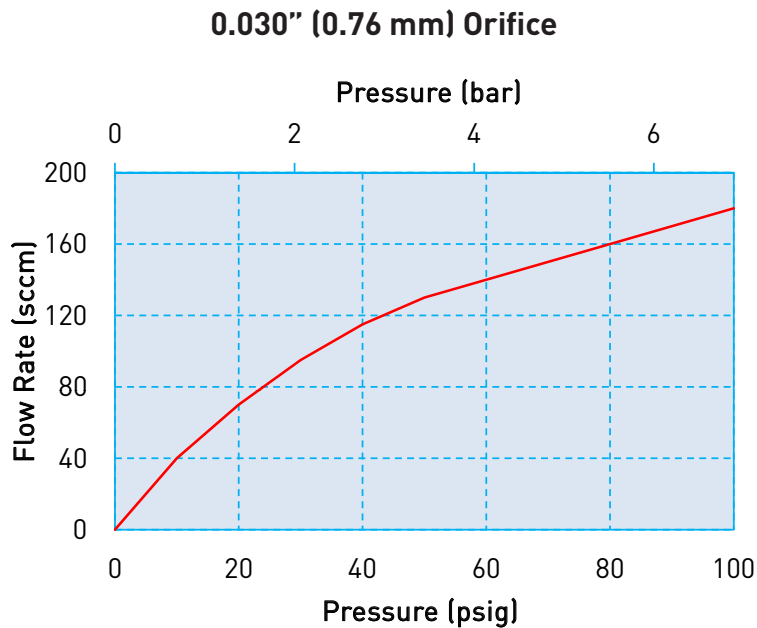
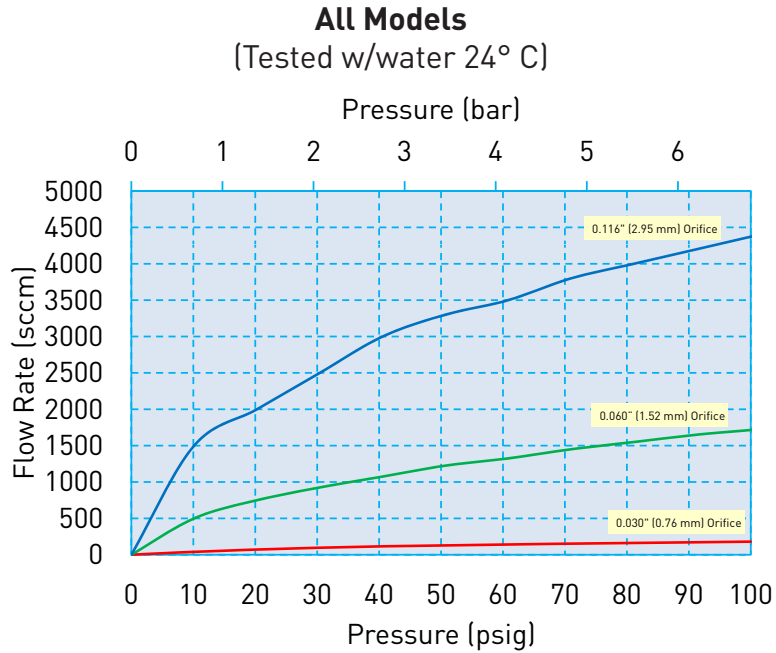
<b>Seals:</b>	Vespel & Silver-Plated Nickel or FKM & Silver-Plated Nickel
<b>Body:</b>	316 Stainless Steel
<b>All Others:</b>	PTFE, Stainless Steel, Body, Seals
* See Chemical Compatibility Page Consult factory for other options	

### Performance Characteristics

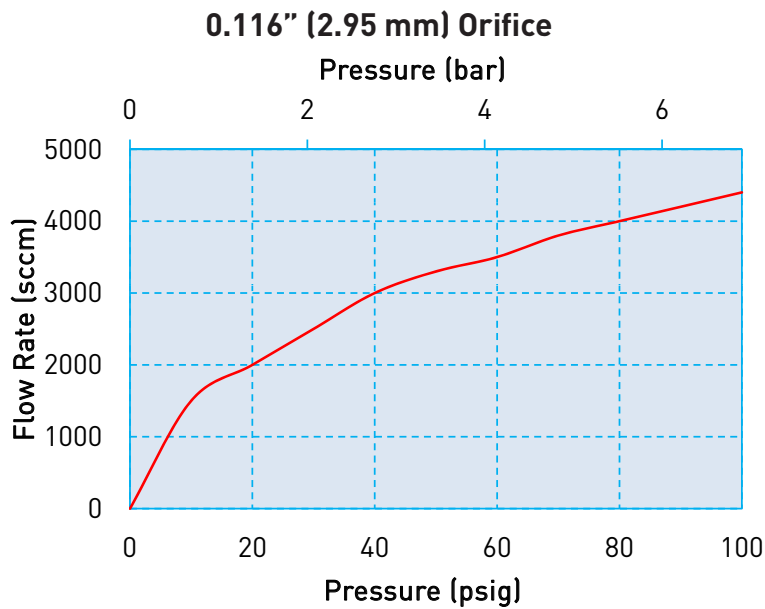
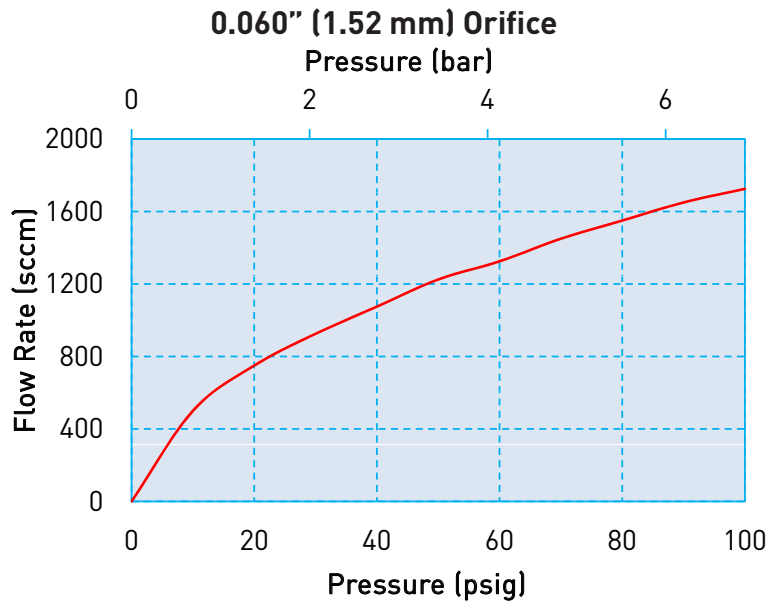
<b>Orifice Diameters/ Operating Pressure:</b>	0.030" (0.76 mm) / 1x10 <sup>-5</sup> Torr -1250 psig (86.2 bar)
	0.060" (1.52 mm) / 1x10 <sup>-5</sup> Torr - 250 psig (17.2 bar)
	0.116" (2.95 mm) / 1x10 <sup>-5</sup> Torr - 100 psig (6.9 bar)
<b>Proof Pressure:</b>	1.5X rated pressure
<b>Leak Rate:</b>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

# Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

## Typical Flow Curve

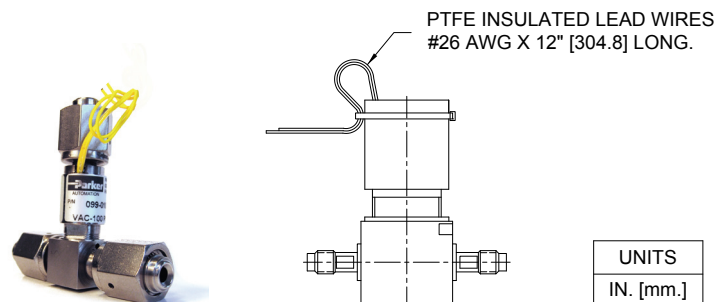


## Series 99 Miniature High Speed and Pressure Liquid Dispense Valve



### Electrical Interface

#### Coil Type: Wire leads



Custom connections available upon request

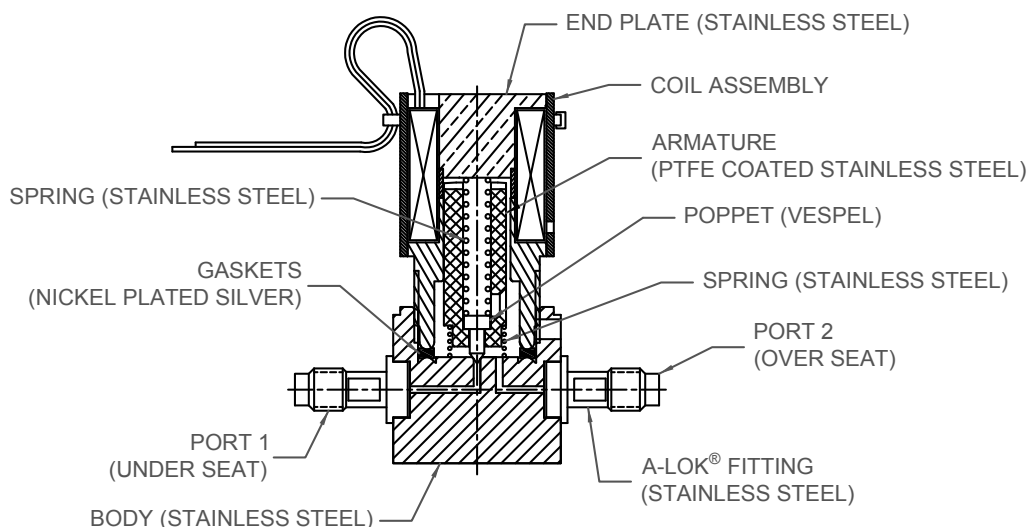


# Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

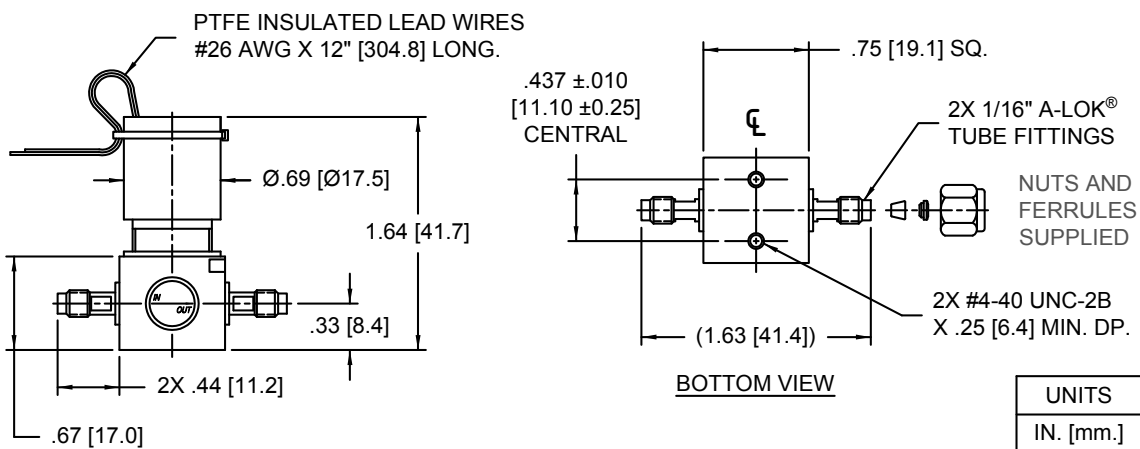
## Mechanical Integration

### Dimensions

#### Series 99: 2-Way Cross-Section Wetted Material and Dimensions



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

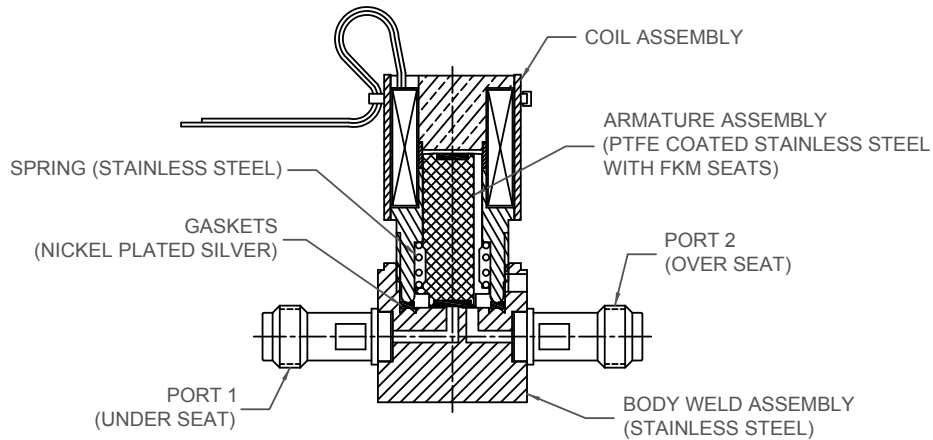


# Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

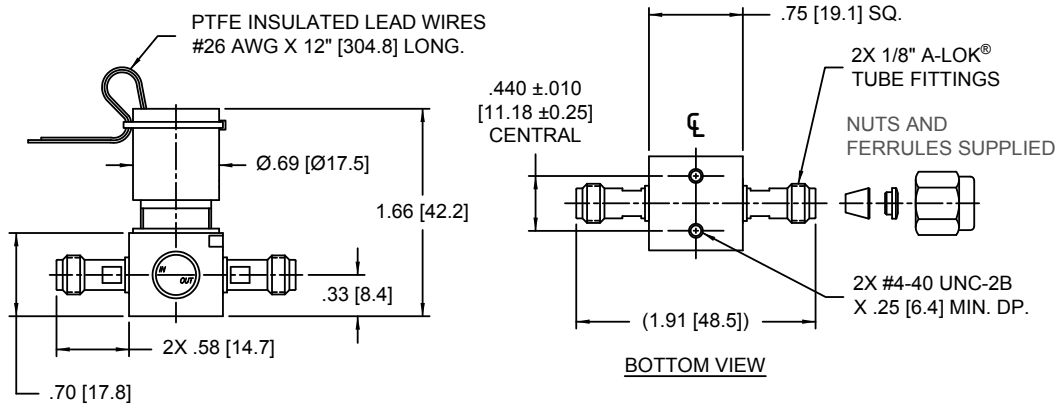
## Mechanical Integration

### Dimensions

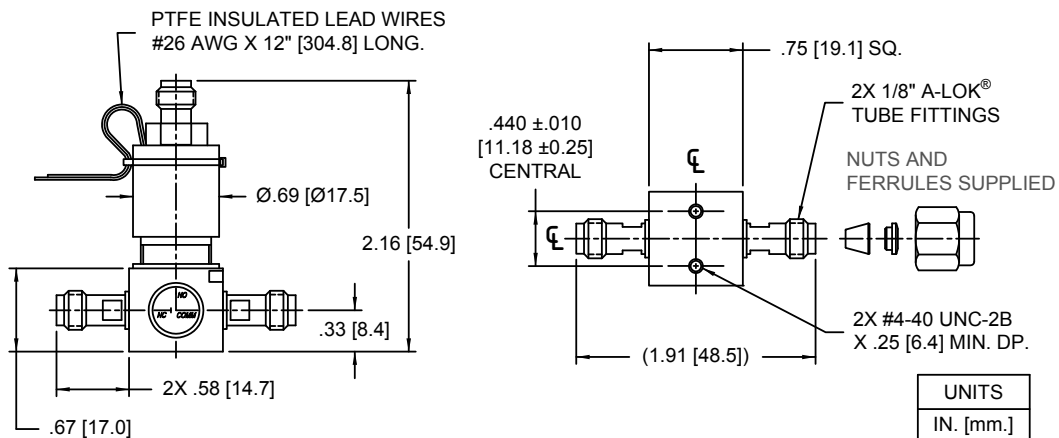
#### Series 99: 2-Way Cross-Section Wetted Material and Dimensions



#### 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®



UNITS
IN. [mm.]

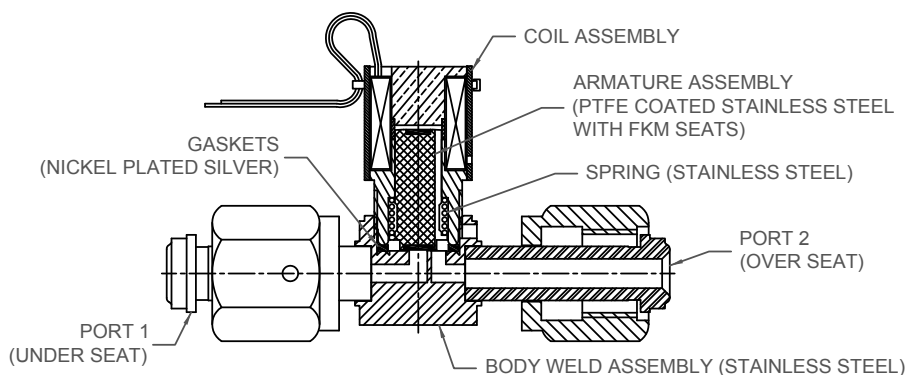


# Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

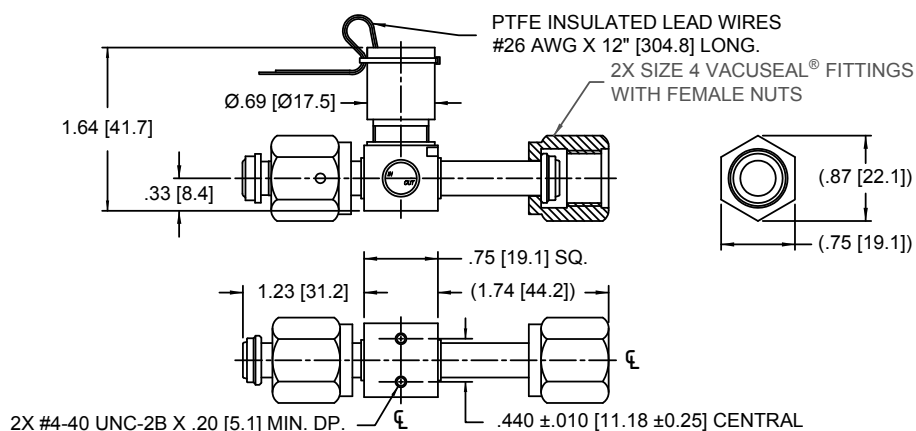
## Mechanical Integration

### Dimensions

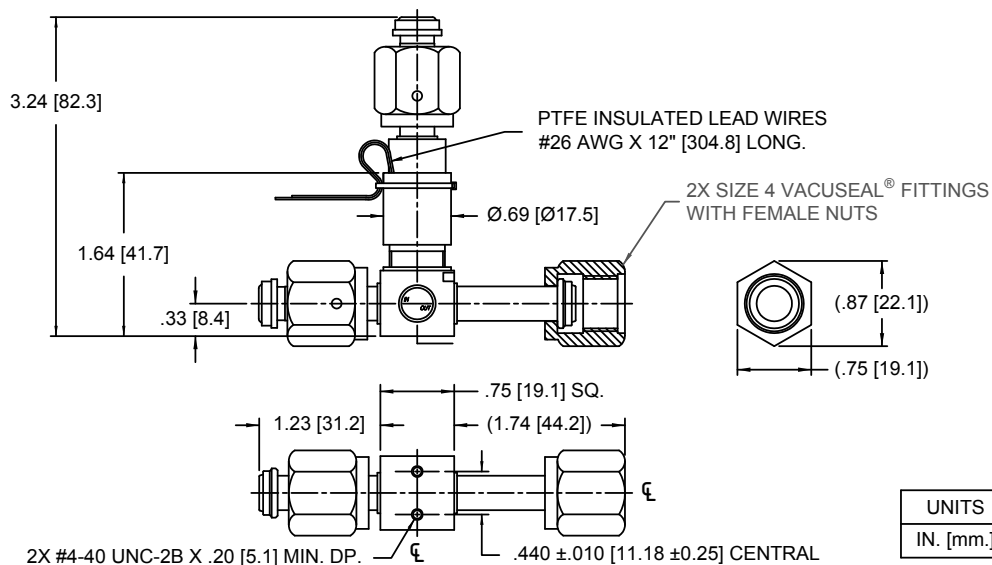
#### Series 99: 2-Way Cross-Section Wetted Material and Dimensions



#### 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®



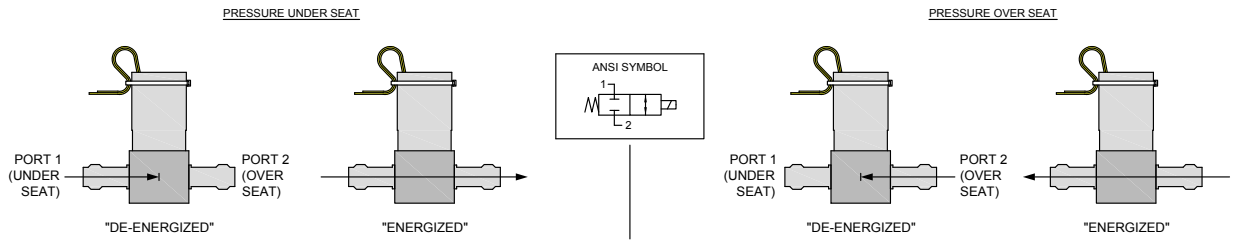
UNITS
IN. [mm.]

# Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

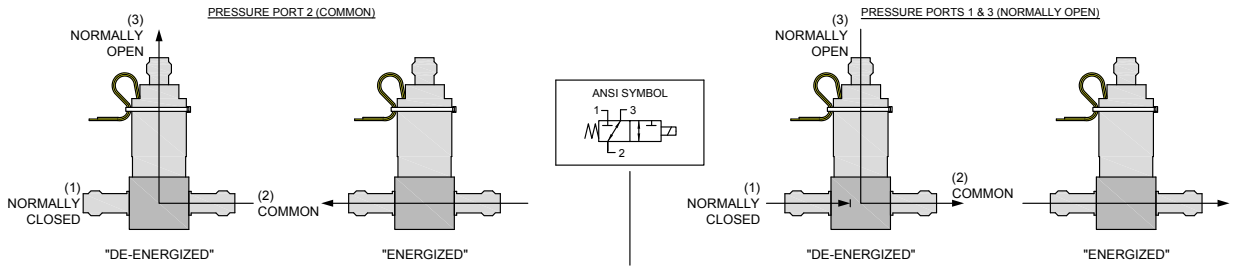
## ANSI Symbols

### Pressure

2-WAY (1/8" A-LOK® FITTINGS SHOWN)



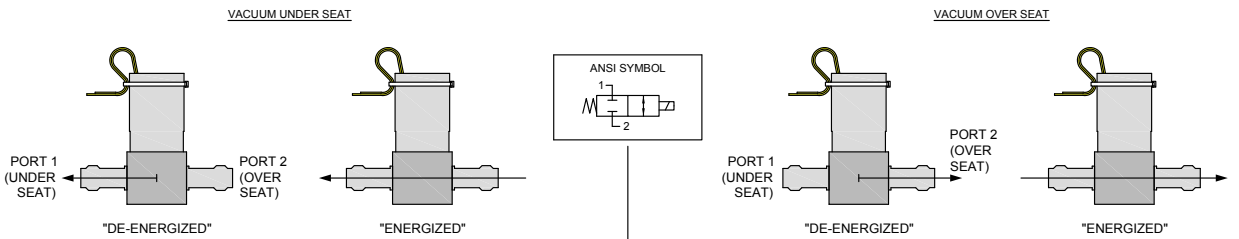
3-WAY (1/8" A-LOK® FITTINGS SHOWN)



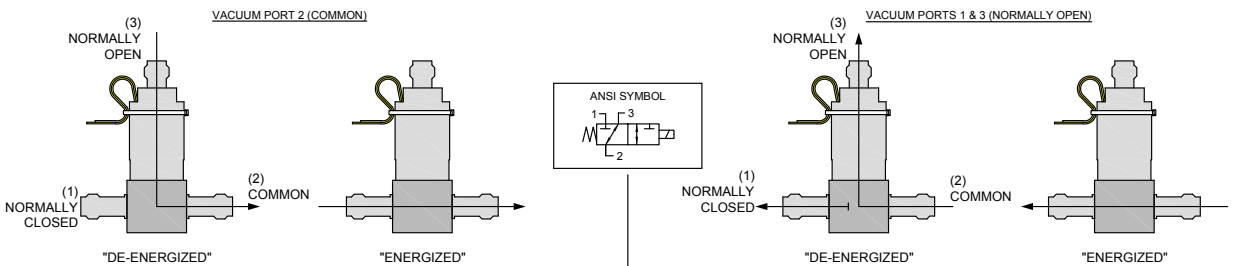
## ANSI Symbols

### Vacuum

2-WAY (1/8" A-LOK® FITTINGS SHOWN)



3-WAY (1/8" A-LOK® FITTINGS SHOWN)



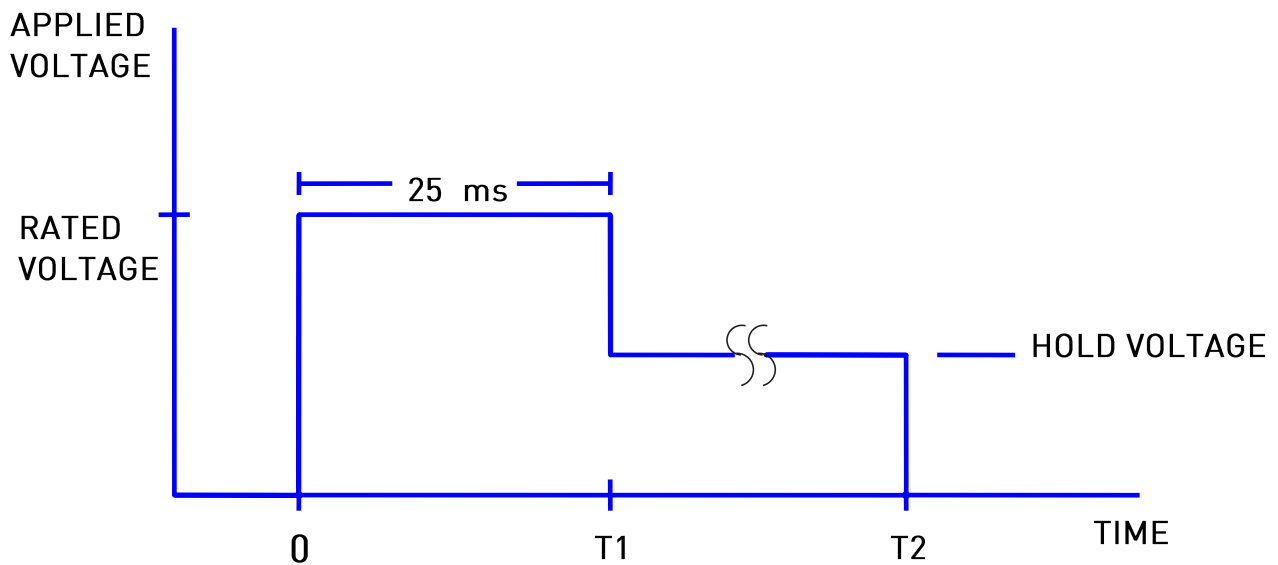
## Series 99 Miniature High Speed and Pressure Liquid Dispense Valve

### 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\*

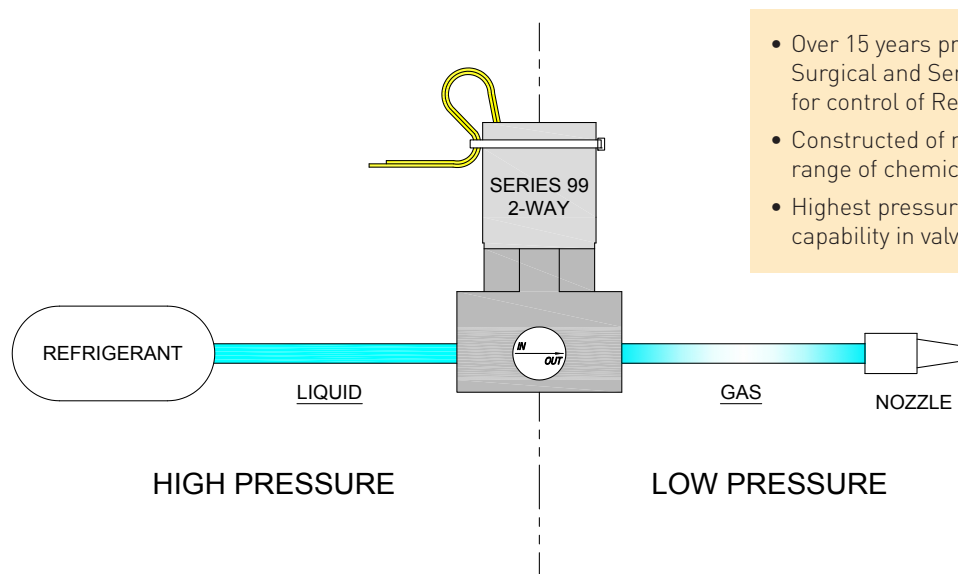
Chemical	Seal Options						Other Wetted Materials		
	0.030" (0.76mm) orifice version			or	0.060" (1.52mm) and 0.116" (2.95mm) orifice versions			PTFE	Stainless Steel
	Vespel	and	Silver Plated Nickel		FKM	and	Silver Plated Nickel		
DI Water	2		1		1		1	1	1
Methanol	1		1		4		1	1	1
Isopropanol	2		1		1		1	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](http://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.

PPF-MLV-002/US September 2014

For more information call +1 603 595 1500 or email [ppfinfo@parker.com](mailto:ppfinfo@parker.com)  
Visit [www.parker.com/precisionfluidics](http://www.parker.com/precisionfluidics)

