

# Series 3 Miniature Inert Valves

## 2-Way and 3-Way Liquid Solenoid Valve




### Typical Applications

Control of:

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

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.

### 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

<b>Valve Type:</b>	Inert Non-Isolation Valve
<b>Valve Configuration:</b>	2-Way Normally Closed, 3-Way
<b>Media:</b>	Liquids
<b>Operating Environment:</b>	40 to 150°F (4 to 66°C)
<b>Dimensions:</b>	See page 3
<b>Porting (Orifice Dependent):</b>	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)
<b>Weight:</b>	1.8 - 2.0 oz (51 - 56 g)
<b>Internal Volume (µL):</b>	238 (1/16" Barb Option) 326 (1/8" Barb Option) 516 (3/16" Barb Option) 208 (Manifold Option)

### Electrical

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

### Wetted Materials\*

<b>Seal:</b>	FKM, EPDM
<b>Body:</b>	PEEK
<b>All Others:</b>	PTFE, Stainless Steel

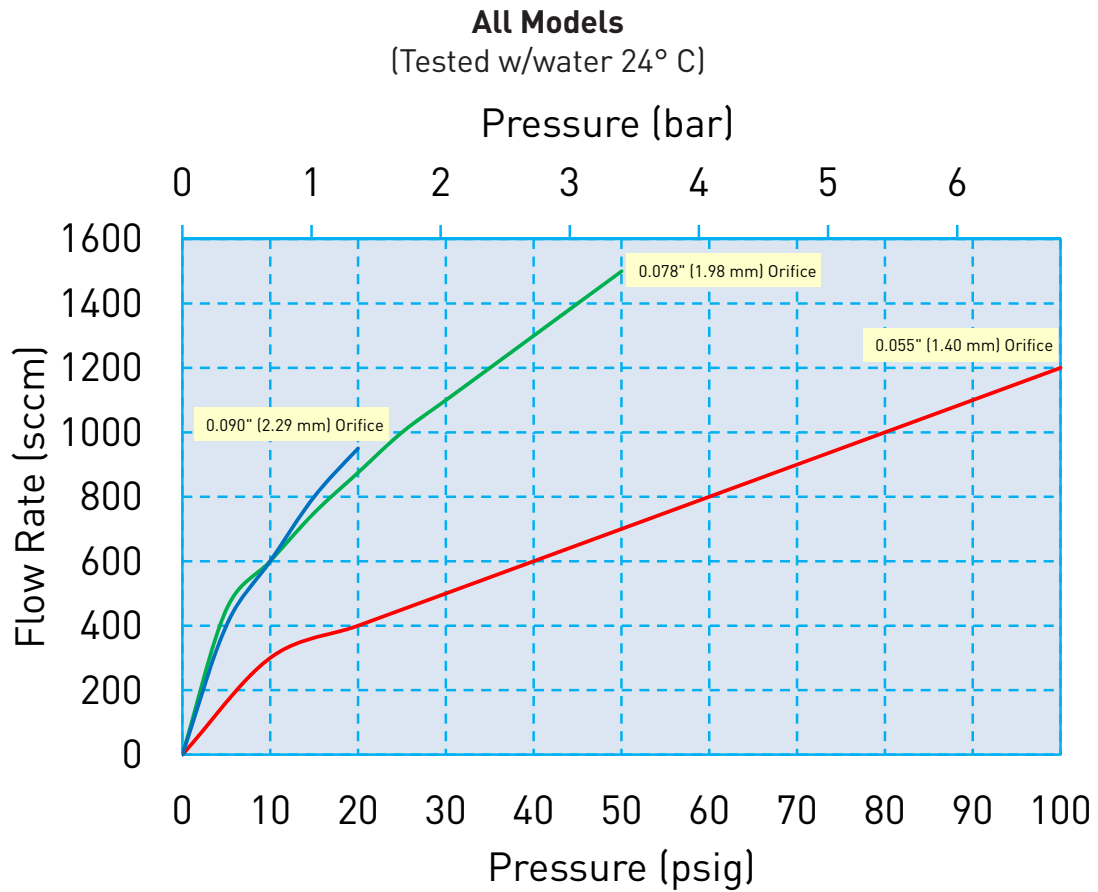
\* See Chemical Compatibility Page  
Consult factory for other options

### Performance Characteristics

<b>Operating Pressure/ Orifice Diameters:</b>	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)
<b>Proof Pressure:</b>	1.5X rated pressure
<b>Leak Rate:</b>	Bubble Tight
<b>Response Time:</b>	< 12 ms cycling
<b>Recommended Filtration:</b>	40 µm max
<b>Reliability:</b>	Life Cycle Rating of 10 million (Application dependent)

## Series 3 Miniature Inert Valves

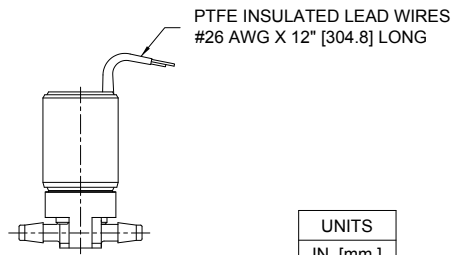
### Typical Flow Curve



# Series 3 Miniature Inert Valves

## Electrical Interface

### Wire leads



UNITS
IN. [mm.]

Custom connections available upon request

## Liquid Interface

### Manifold Mount



### Barbed

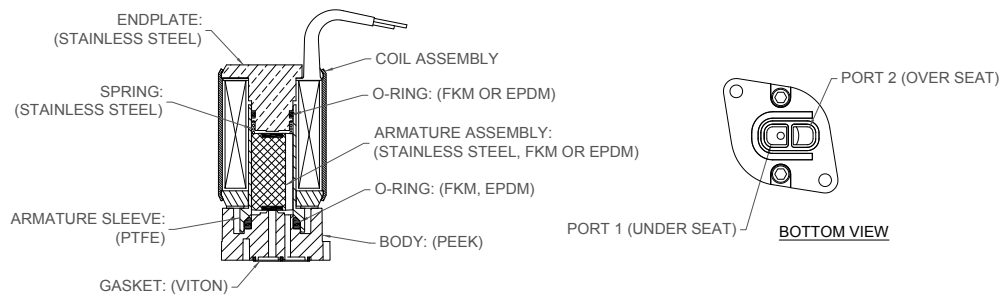


## Mechanical Integration

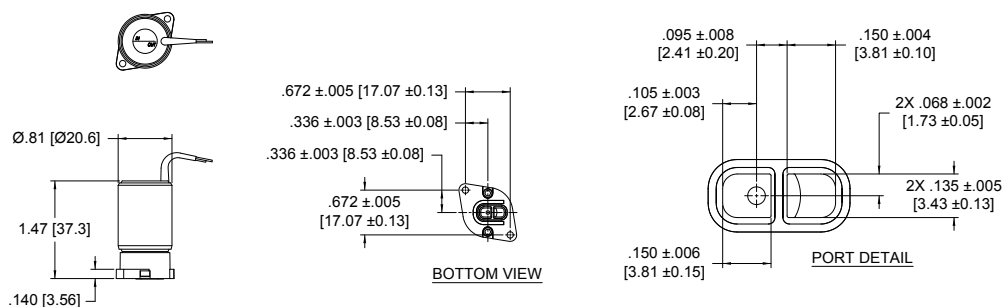
### Dimensions

#### Series 3: 2-Way Cross-Section, Manifold Mount

#### Wetted Material and Dimensions



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

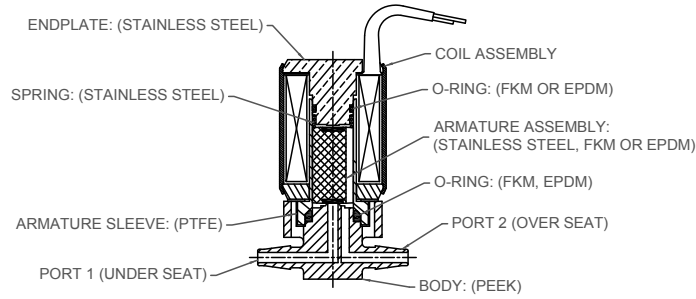


# Series 3 Miniature Inert Valves

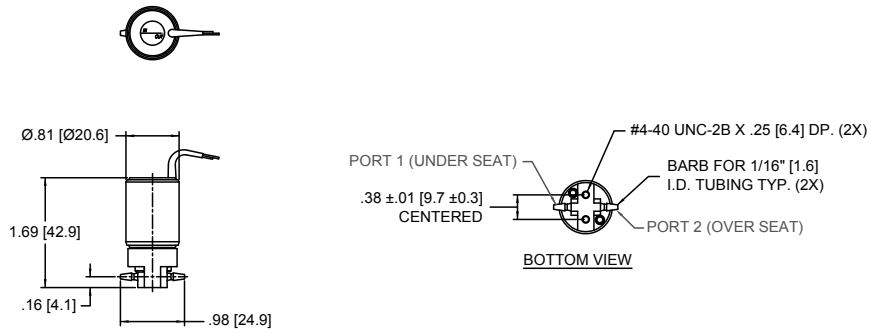
## Mechanical Integration

### Dimensions

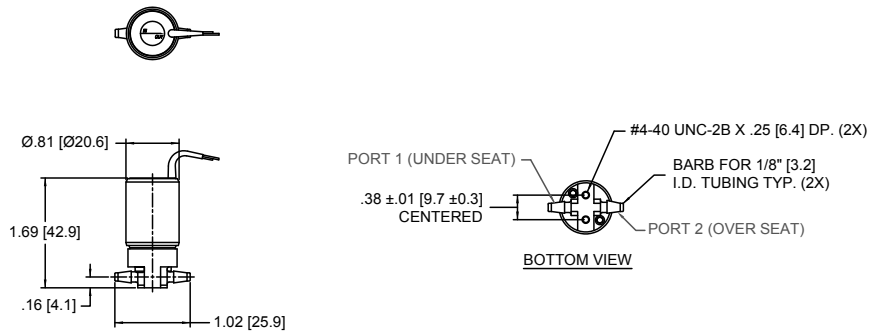
#### Series 3: 2-Way Cross-Section, Barb Wetted Material and Dimensions



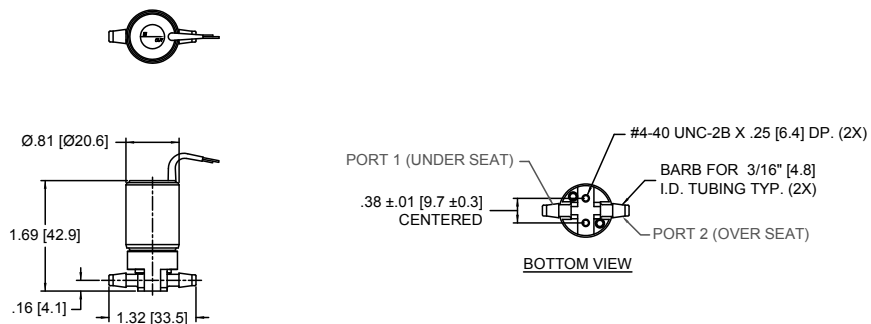
**2-WAY, 0.055" (1.40 mm) ORIFICE, 1/16" (1.6 mm) BARB**



**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**

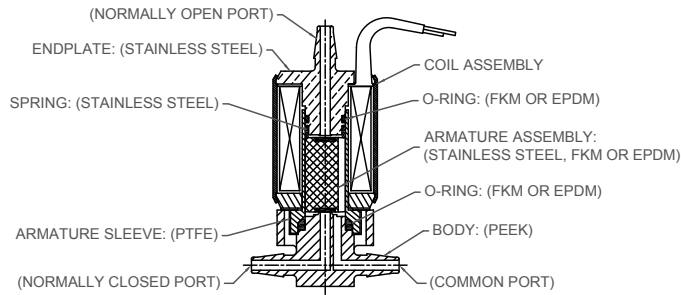


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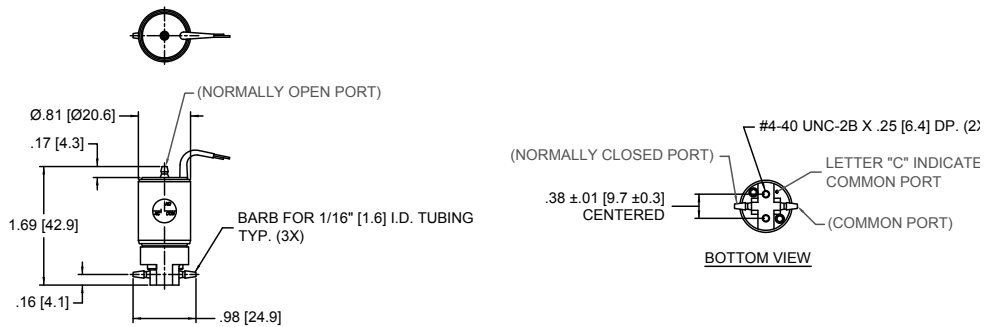
## Mechanical Integration

### Dimensions

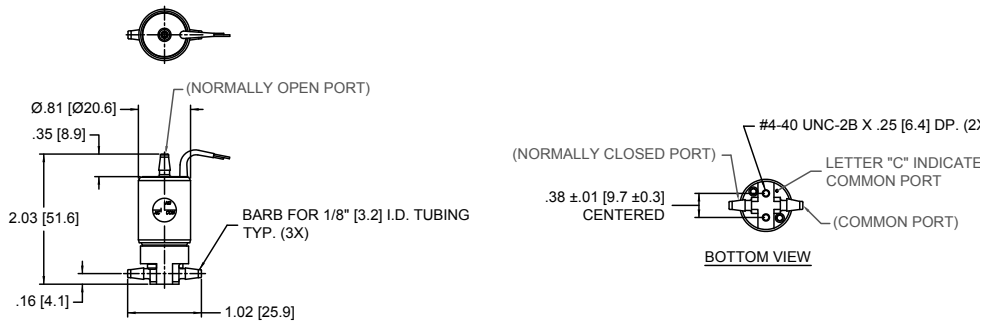
#### Series 3: 3-Way Cross-Section, Barb Wetted Material and Dimensions



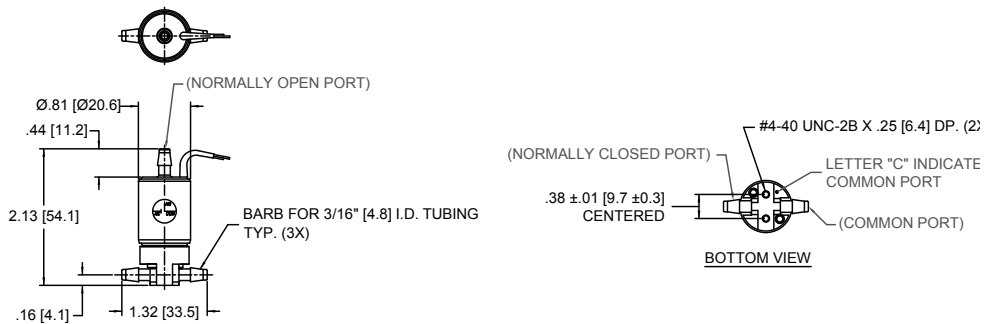
**3-WAY, 0.055" (1.40 mm) ORIFICE, 1/16" (1.6 mm) BARB**



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



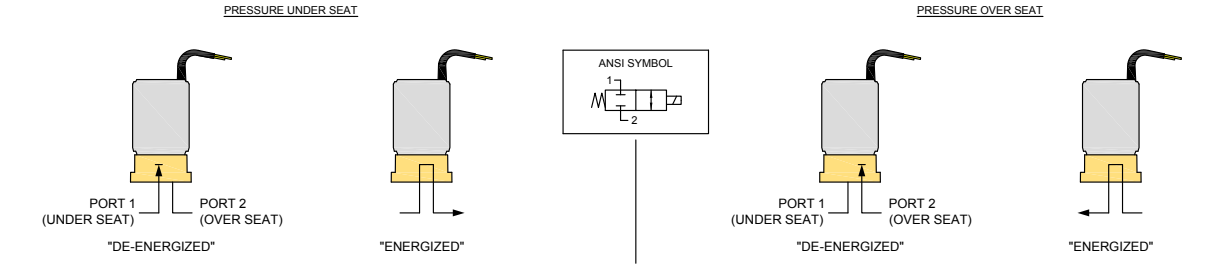
**3-WAY, 0.090" (2.29 mm) ORIFICE, 3/16" (4.8 mm) BARB**



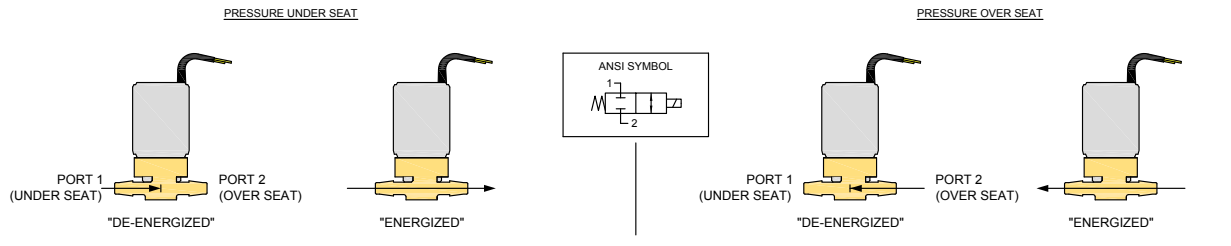
# Series 3 Miniature Inert Valves

## ANSI Symbols

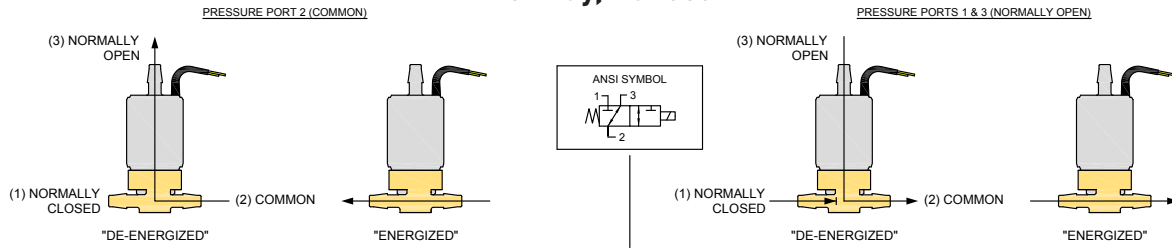
### Pressure 2-Way, Manifold Mount



### 2-Way, Barbed



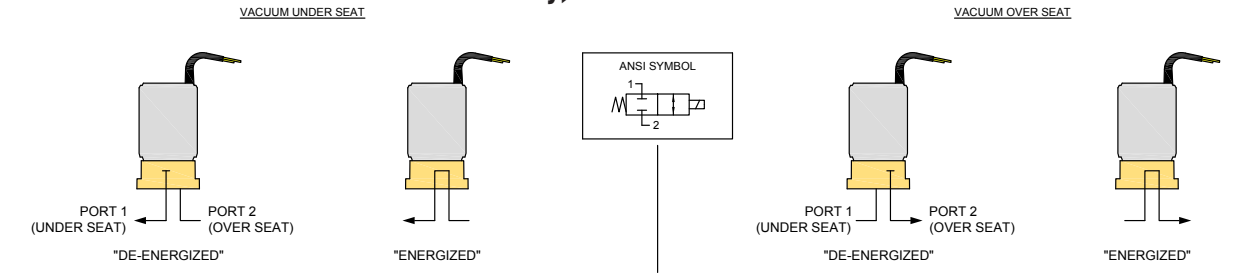
### 3-Way, Barbed



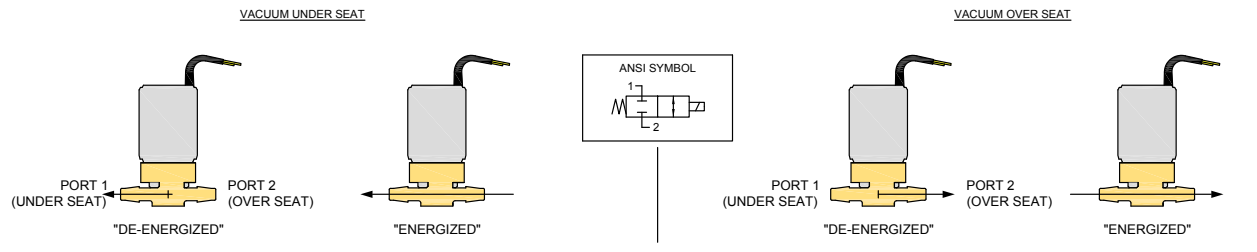
# Series 3 Miniature Inert Valves

## ANSI Symbols

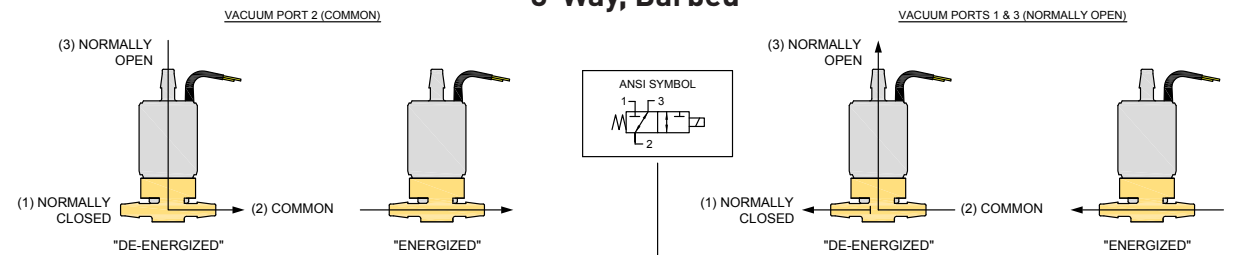
### Vacuum 2-Way, Manifold Mount



### 2-Way, Barbed



### 3-Way, Barbed



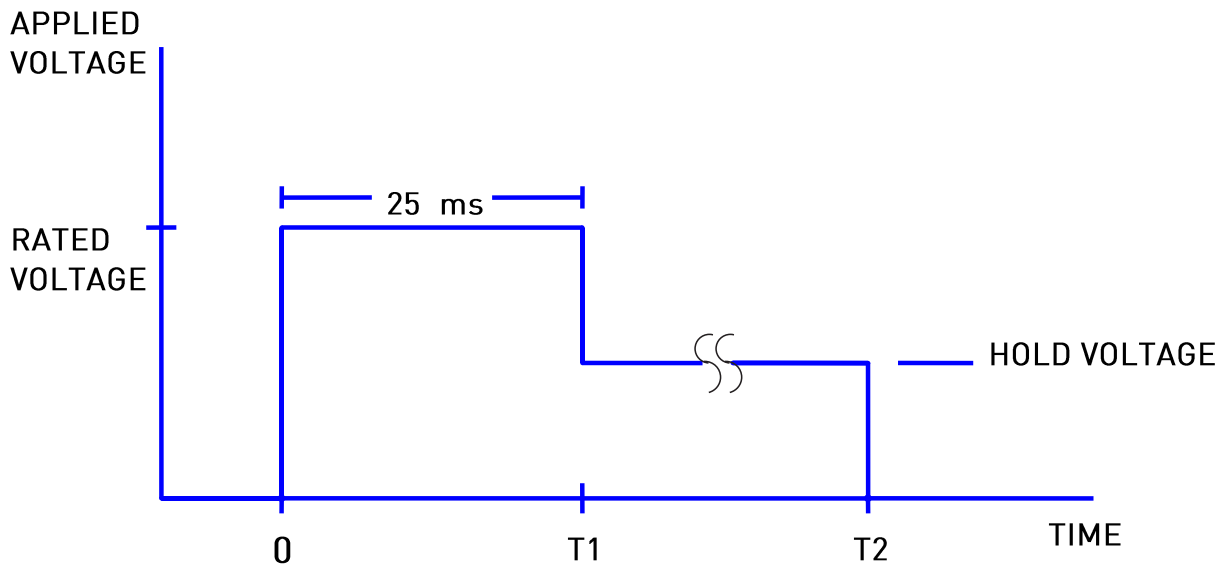
## Series 3 Miniature Inert Valves

### 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\*

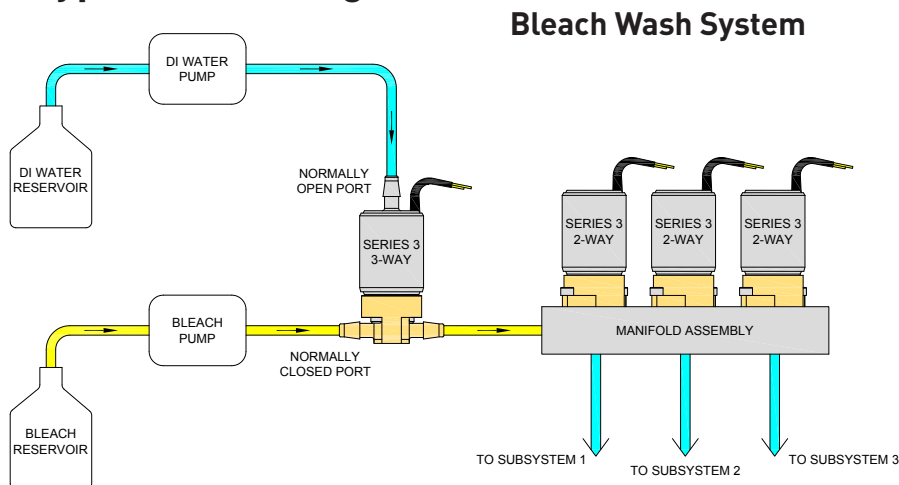
Chemical	Seal Options		Other Wetted Materials
	FKM	or EPDM	PEEK, PTFE & Stainless Steel
DI Water	1	1	1
Methanol	4	1	1
Isopropanol	1	1	1
Ethanol	3	1	1
Acetonitrile	4	1	1
Tetrahydrofuran	4	4	1
Toluene	2	4	1
Organic Acids - Dilute	1	1	1
Non Organic Acids - Dilute	1	1	1
Bases - Dilute	1	1	1
Saline	1	1	1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



#### 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
					No	12V	1/16" (1.6 mm) Barb
				24V			1/16" (1.6 mm) Barb
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
						Manifold Mount	003-0881-900
					24V	1/8" (3.2 mm) Barb	003-0865-900
				Manifold Mount	003-0882-900		
				No	12V	1/8" (3.2 mm) Barb	003-0141-900
						Manifold Mount	003-0883-900
		24V	1/8" (3.2 mm) Barb		003-0111-900		
		Manifold Mount	003-0884-900				
		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
					No	12V	1/8" (3.2 mm) Barb
				24V			1/8" (3.2 mm) Barb
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
					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
					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](http://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.

PPF-MLV-002/US March 2015

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)

