

Series 9 Miniature High Speed and Pressure Gas Control Valve

2-Way and 3-Way Solenoid Valve



Series 9 solenoid valves offer outstanding potential for precision control in gas analysis. Combining high speed, ultra low leak rate, high flow, and high temperature capability in a small size; this rugged valve operates with extreme repeatability and is constructed of non-corroding, passivated stainless steel.

Features

- Smallest footprint in its class
- 100% duty cycle in environmental temperatures of up to (105°C)
- High speed response times of less than 6 ms eliminate delays in the system
- 100% tested to leak-tight 1×10^8 atm cc/sec Helium
- Pressures up to 1,250 PSI (86.2 bar)
- Available with a variety of fittings, orifices, seals, and voltages to match your application
- Configurations available to handle corrosive gasses
- Hydrocarbon and Lubricant free
- RoHS compliant 

Typical Applications

- Calibrant Gas Control for Mass Spectrometers
- Gas Chromatography
- Process Analysis of Gas
- High Pressure Gas Control

Product Specifications

Physical Properties

Valve Type:
Inert Non-Isolation Valve
Valve Configuration:
2-Way Normally Closed or 3-Way
Media:
Gases
(Capable of handling liquids, for details see the Series 9 Liquid Control datasheet)
Operating Environment:
40 to 221°F (4 to 105°C)
Dimensions:
See pages 4, 5, 6 & 7
Porting:
A-LOK® compression fittings, 1/4-28, 1/8" FNPT
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" Minimum Lead Wires Standard		
24 AWG,PTFE Insulated		
(Custom connectors are available)		

Wetted Materials

Seals:
FKM or FKM & Vespel® (other materials available)
Body:
316 Stainless Steel
All Others:
PTFE, Stainless Steel, FKM
Consult factory for other options

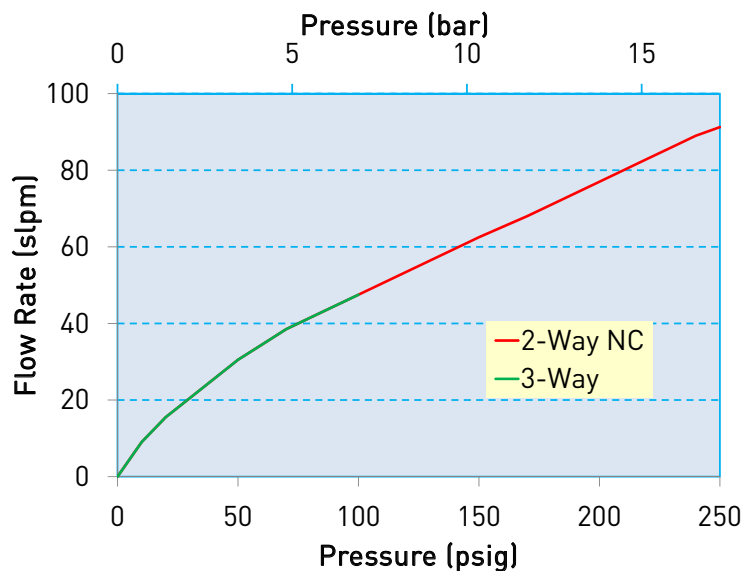
Performance Characteristics

Orifice Diameters/ Operating Pressure:
0.030" (0.76 mm) /
1x10 ⁵ Torr -1250 psig (86.2 bar)
0.060" (1.52 mm) /
2-way
1x10 ⁵ Torr - 250 psig (17.2 bar)
3-way
1x10 ⁵ Torr - 100 psig (6.9 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 atm cc/sec Helium
Recommended Filtration:
40 μm max

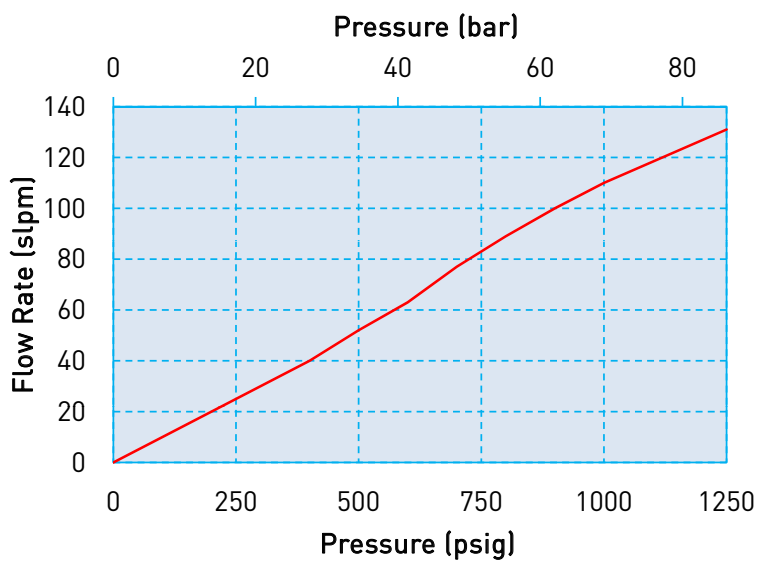
Series 9 Miniature High Speed and Pressure Gas Control Valve

Typical Flow Curve

All Models
(Tested w/air 24° C)

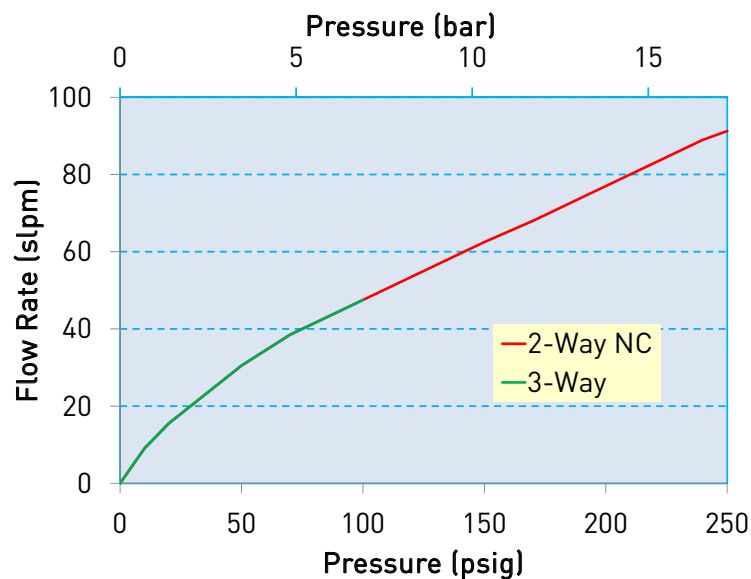


0.030" (0.76 mm) Orifice

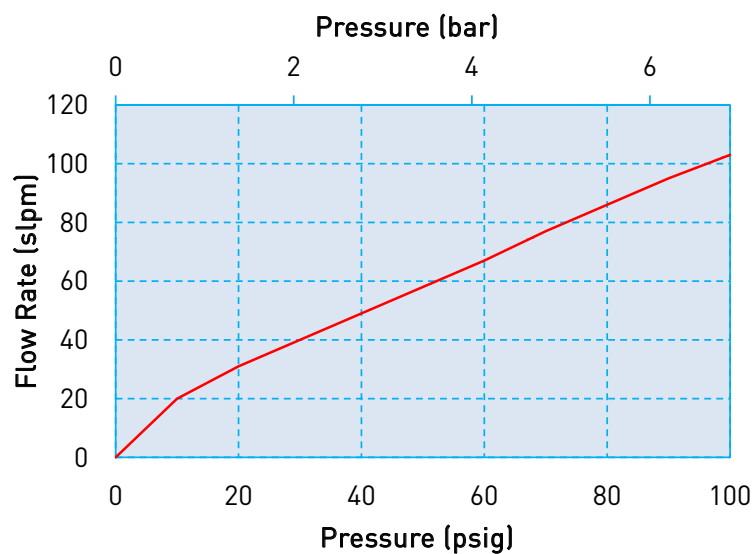


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0.060" (1.52 mm) Orifice

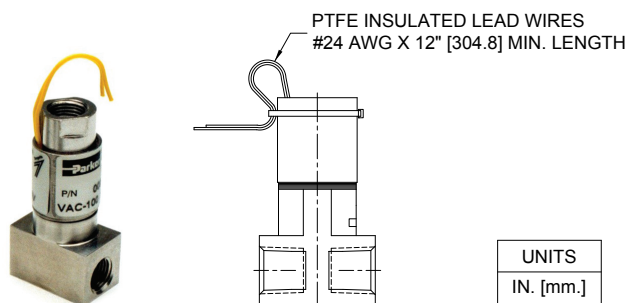


0.116" (2.95 mm) Orifice



Electrical Interface

Coil Type: Wire leads



Custom connections available upon request

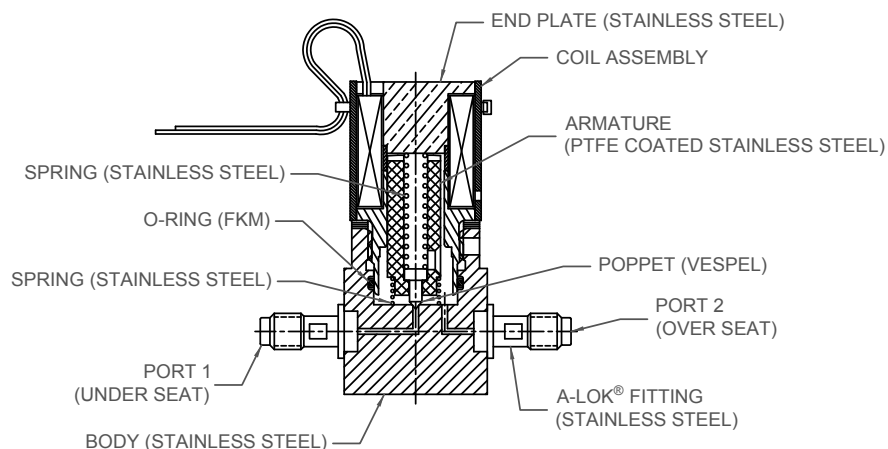


Series 9 Miniature High Speed and Pressure Gas Control Valve

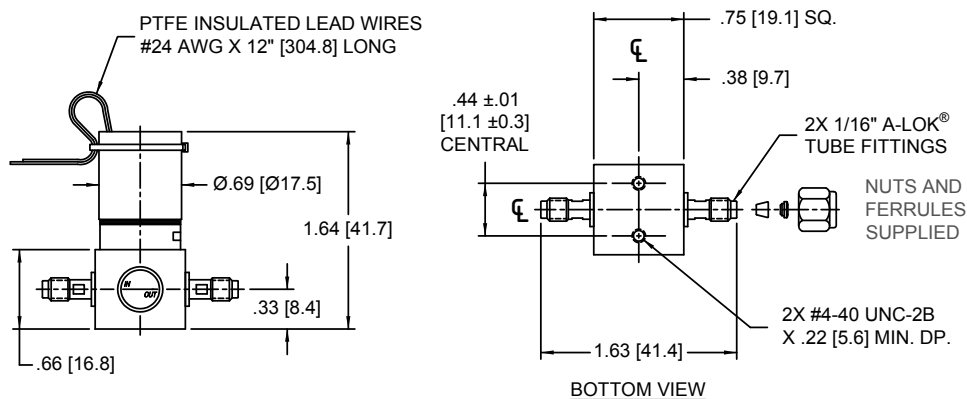
Mechanical Integration

Dimensions

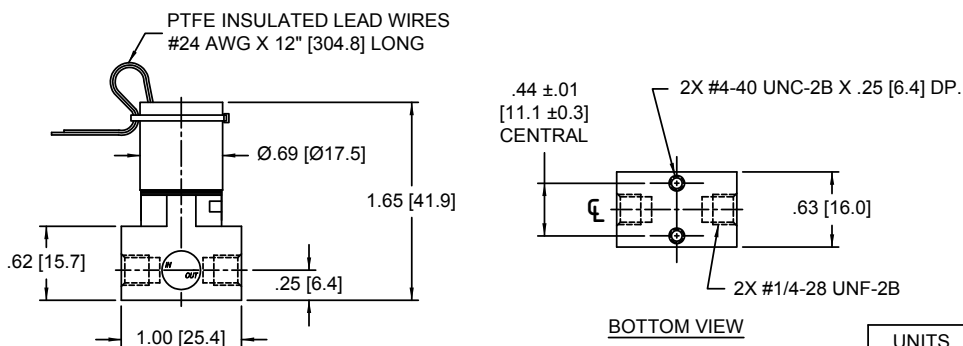
Series 9: 2-Way Cross-Section Wetted Material and Dimensions



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



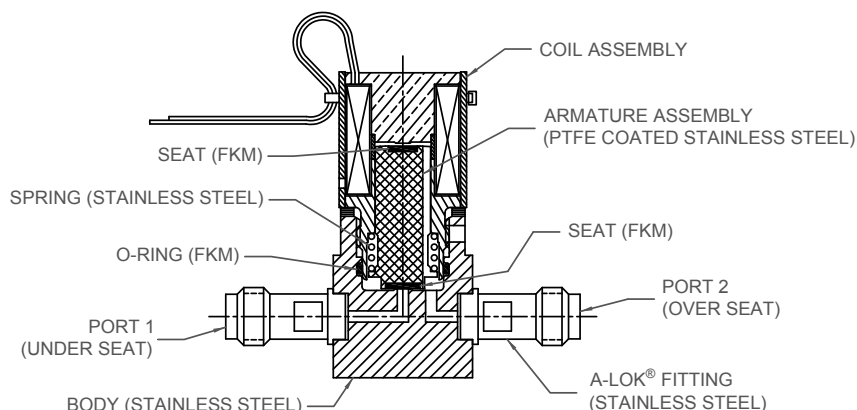
UNITS
IN. [mm.]

Series 9 Miniature High Speed and Pressure Gas Control Valve

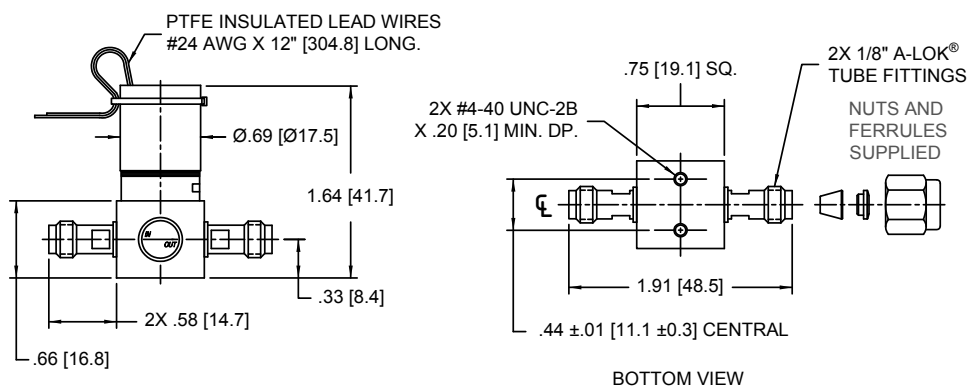
Mechanical Integration

Dimensions

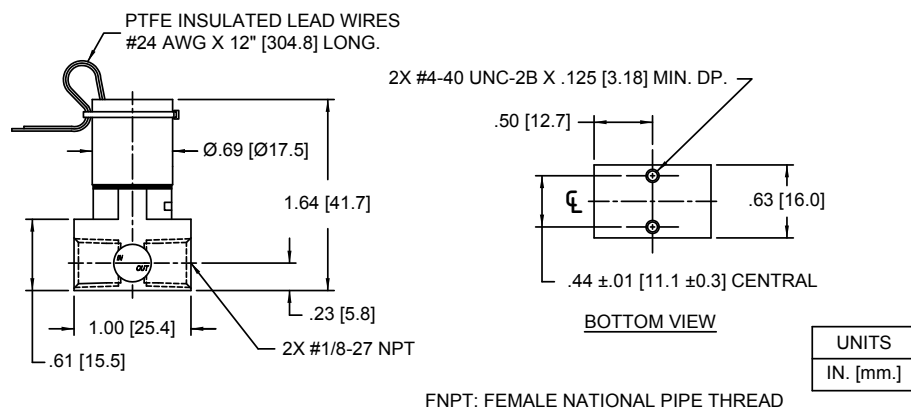
Series 9: 2-Way Cross-Section Wetted Material and Dimensions



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

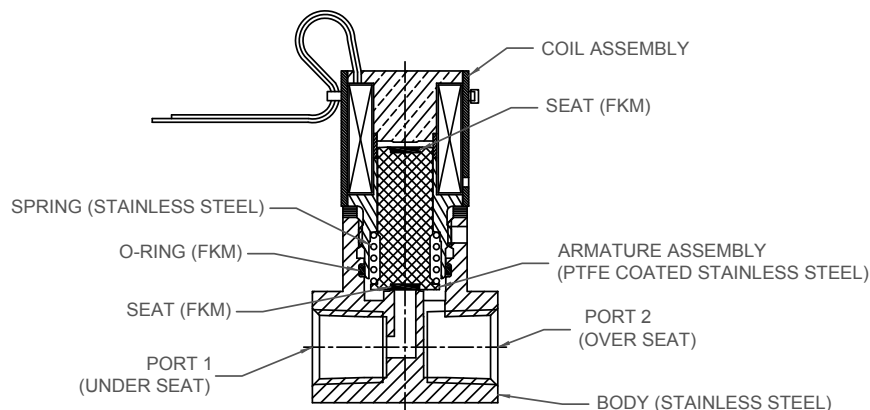


Series 9 Miniature High Speed and Pressure Gas Control Valve

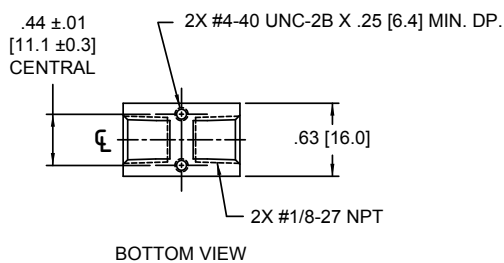
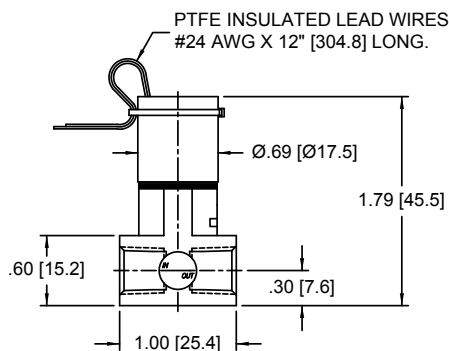
Mechanical Integration

Dimensions

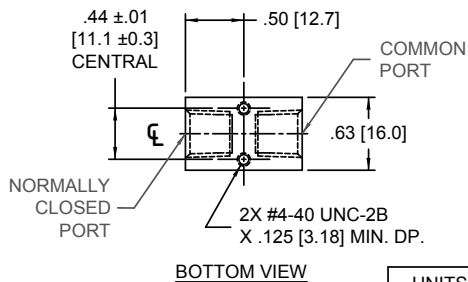
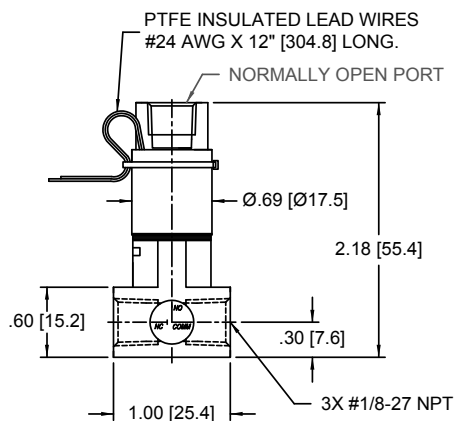
Series 9: 2-Way Cross-Section Wetted Material and Dimensions



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



UNITS
IN. [mm.]

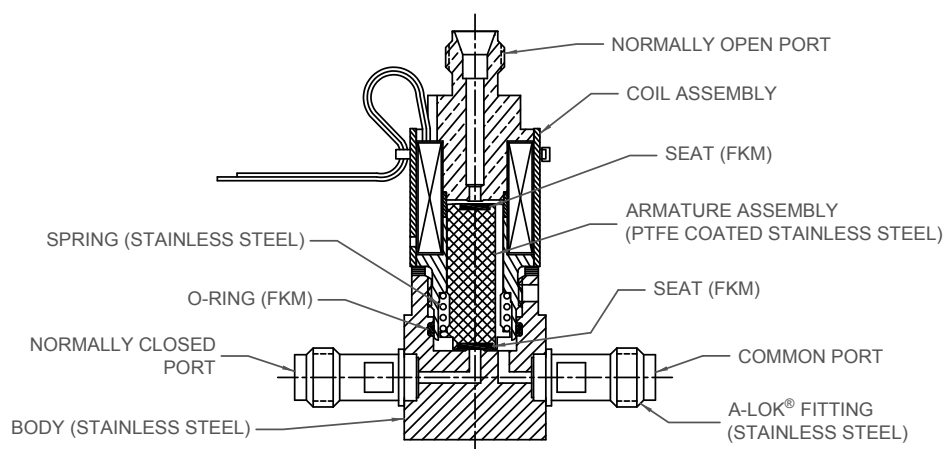
FNPT: FEMALE NATIONAL PIPE THREAD

Series 9 Miniature High Speed and Pressure Gas Control Valve

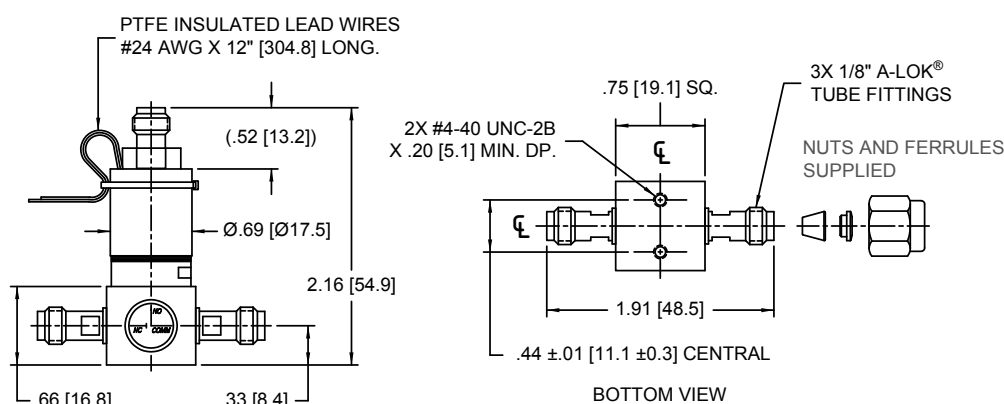
Mechanical Integration

Dimensions

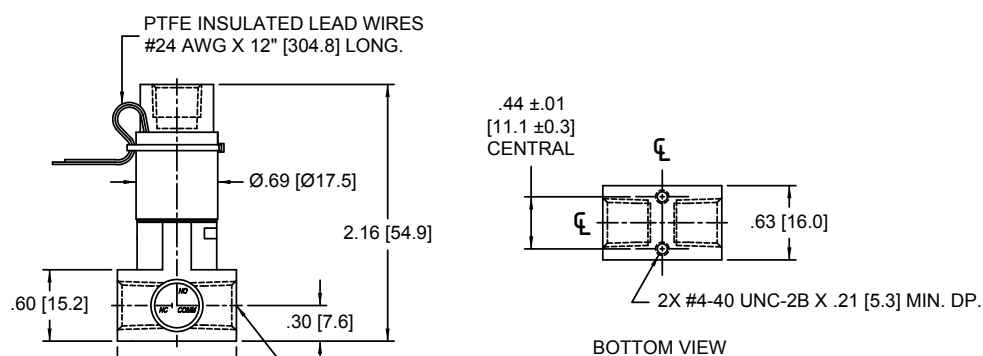
Series 9: 3-Way Cross-Section Wetted Material and Dimensions



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



FNPT: FEMALE NATIONAL PIPE THREAD

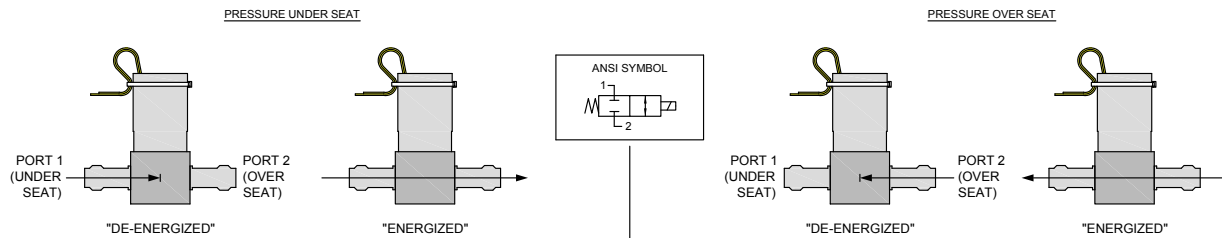
UNITS
IN. [mm.]

Series 9 Miniature High Speed and Pressure Gas Control Valve

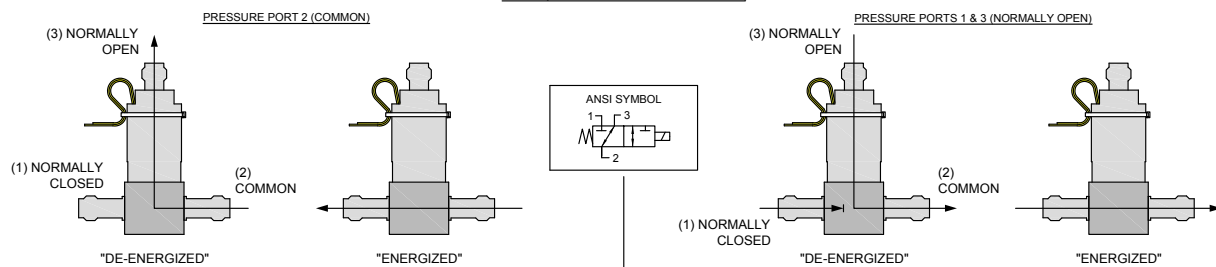
ANSI Symbols

Pressure

2-WAY (1/8" A-LOK® FITTINGS SHOWN)

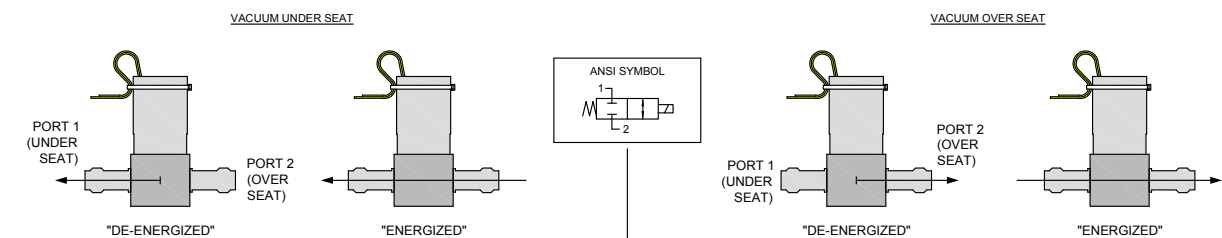


3-WAY (1/8" A-LOK® FITTINGS SHOWN)

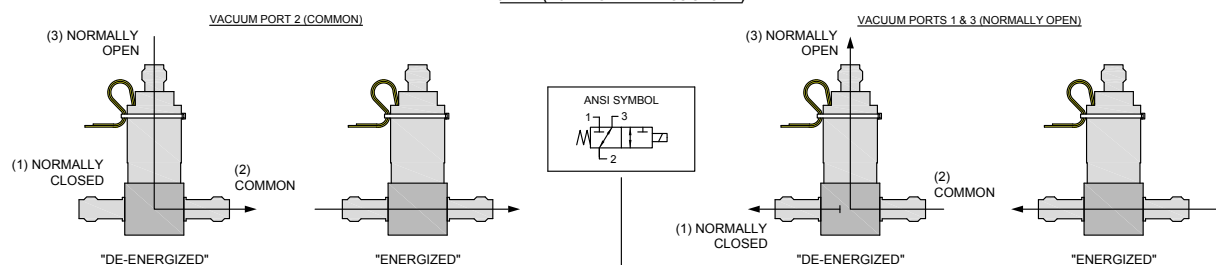


Vacuum

2-WAY (1/8" A-LOK® FITTINGS SHOWN)



3-WAY (1/8" A-LOK® FITTINGS SHOWN)



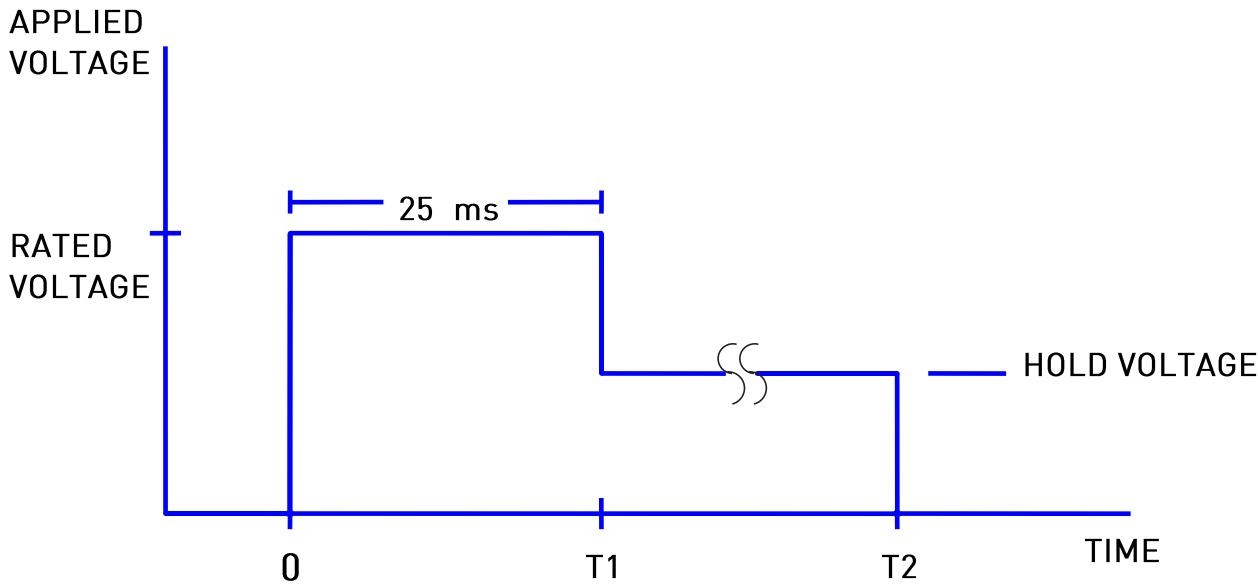
Series 9 Miniature High Speed and Pressure Gas Control Valve

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

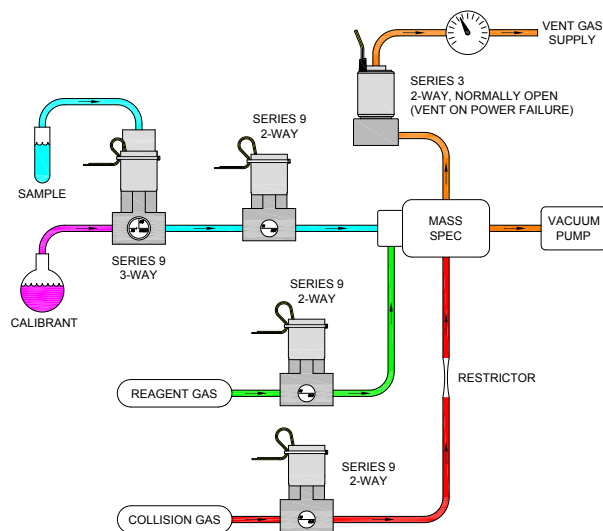


Hold Voltage Graph

Series 9 Miniature High Speed and Pressure Gas Control Valve

Typical Flow Diagram

Gas Control for Mass Spectrometry



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

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 and Media Temperature Range
- 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 Gas Control Valve. For more detailed information, visit us on the Web, or call 603-595-1500.

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



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Visit www.parker.com/precisionfluidics