

R9 Valve

9 mm Miniature Diaphragm Isolation Valve



Markets

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

Typical Applications

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

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.

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: |
| 59 to 122°F (15 to 50°C) |
| 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 \pm 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* | |
| | HOLD | 1.8 | | 1.1 | | 1.2 | | 1.8 | |
| 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 | | | | | | | | | |
| *Requires hit and hold circuit | | | | | | | | | |
| **(Ω \pm 5% @ 68°F, 20°C) | | | | | | | | | |

Wetted Materials

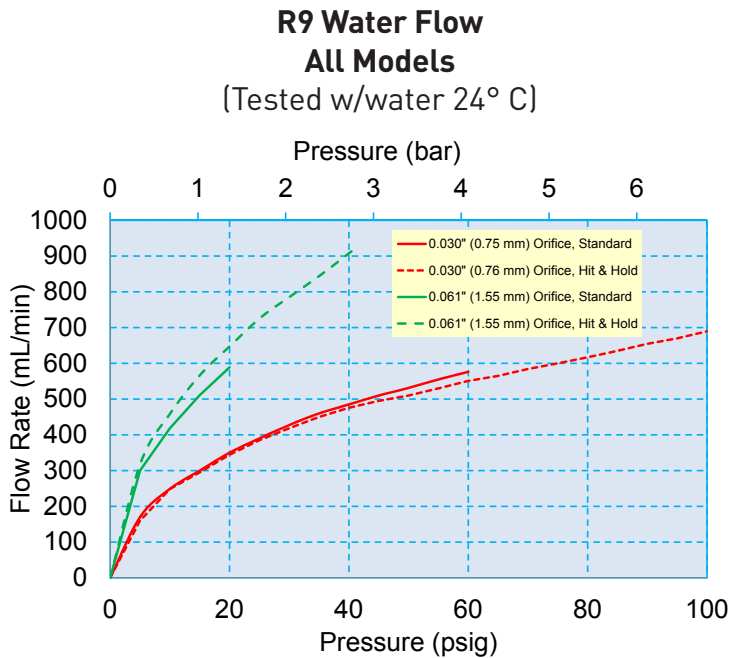
| |
|--------------------------------------|
| Seals: |
| EPDM or FFKM |
| Base: |
| PEEK (polyetheretherketone) |
| 1/4-28 / M6 Sub Base Manifold |
| PEEK (polyetheretherketone) |

Performance Characteristics

| |
|--------------------------------|
| 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)

Locator 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.



1/4 - 28 Ports
 (Threaded Connector)



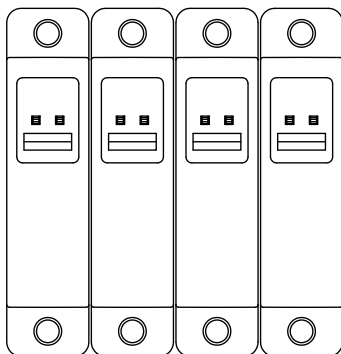
M6 Ports
 (Threaded Connector)

R9 Miniature Diaphragm Isolation Valve

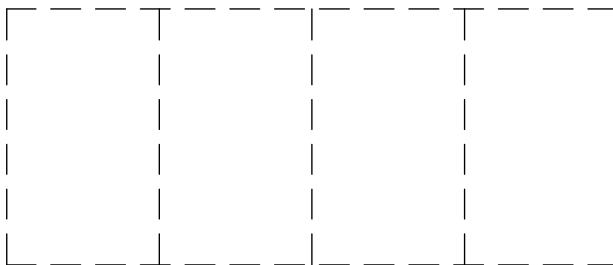


R9

Footprint Comparison to 16 mm Valve

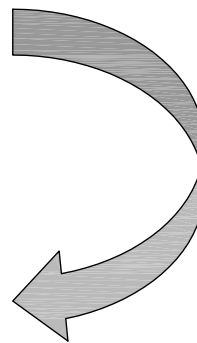


FOOTPRINT OF 4 R9 VALVES



FOOTPRINT OF 4 16mm VALVES

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

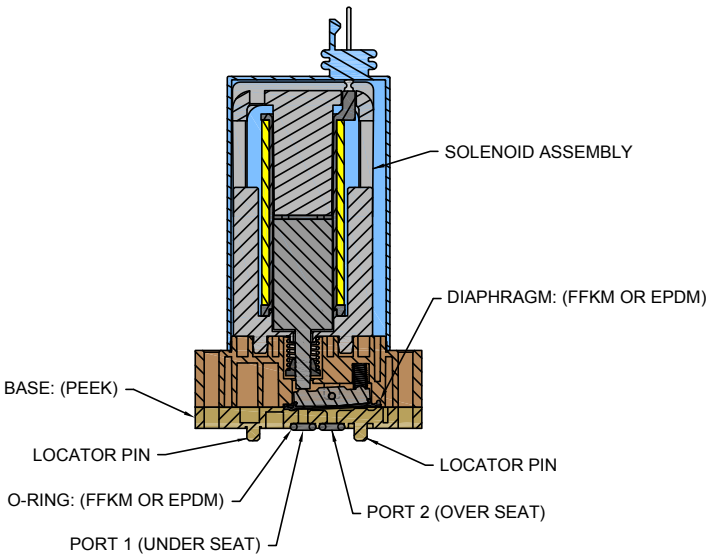


R9 Miniature Diaphragm Isolation Valve

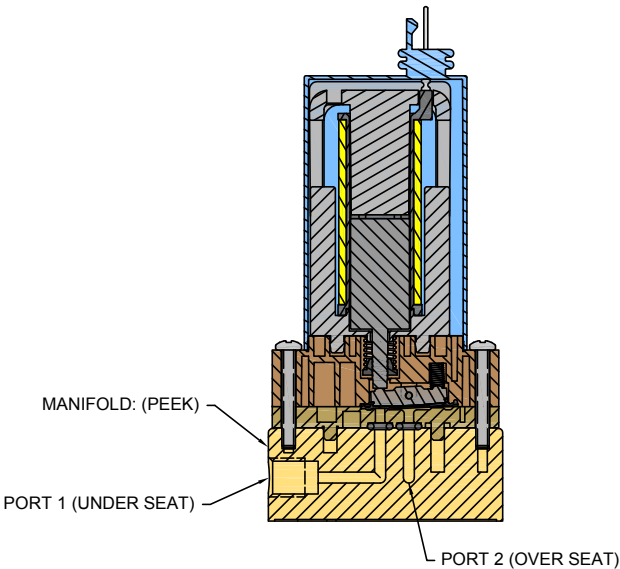
Mechanical Integration

Dimensions

2-Way Cross Section
Wetted Material



2-WAY CROSS-SECTION
WITH 1/4-28 OR M6

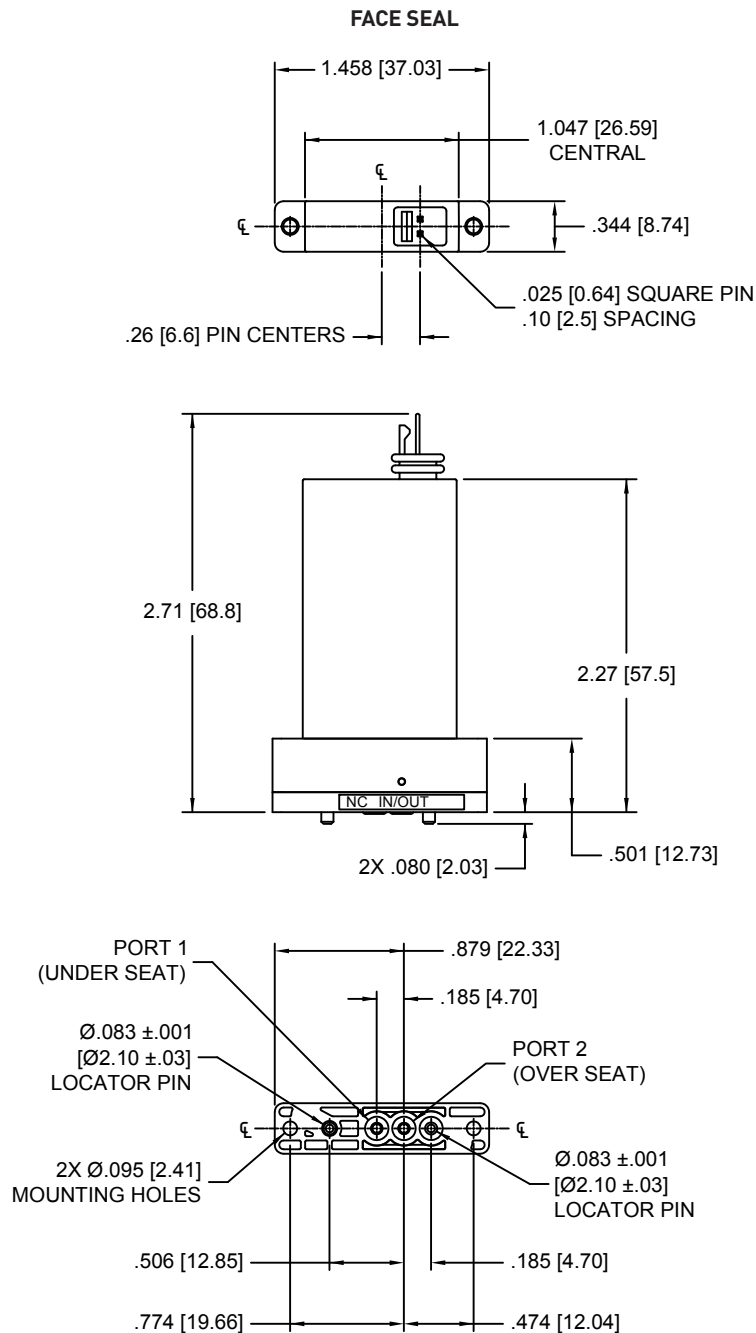


R9 Miniature Diaphragm Isolation Valve

Mechanical Integration

Dimensions

2-Way Dimensions



| UNITS |
|-----------|
| IN. [mm.] |



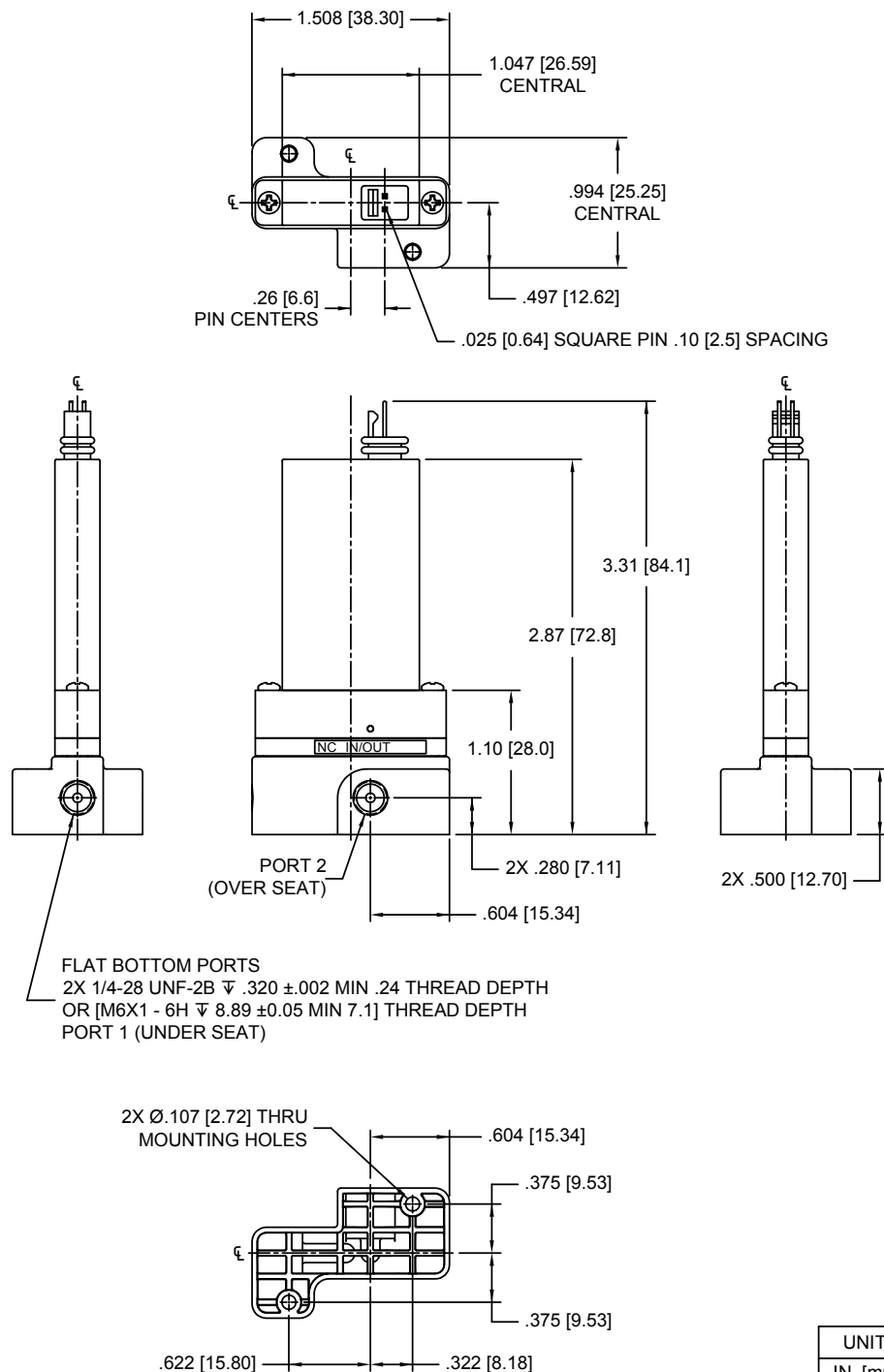
R9 Miniature Diaphragm Isolation Valve

Mechanical Integration

Dimensions

2-Way Dimensions

1/4-28 OR M6 SUB BASE



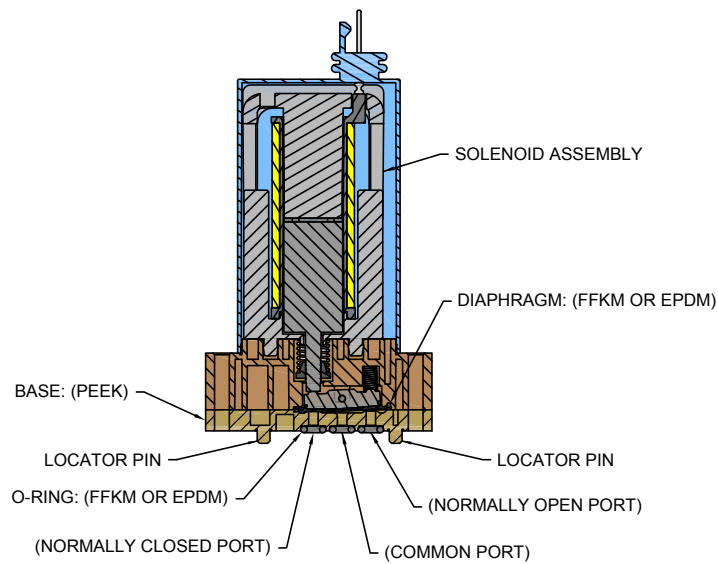
| UNITS |
|-----------|
| IN. [mm.] |

R9 Miniature Diaphragm Isolation Valve

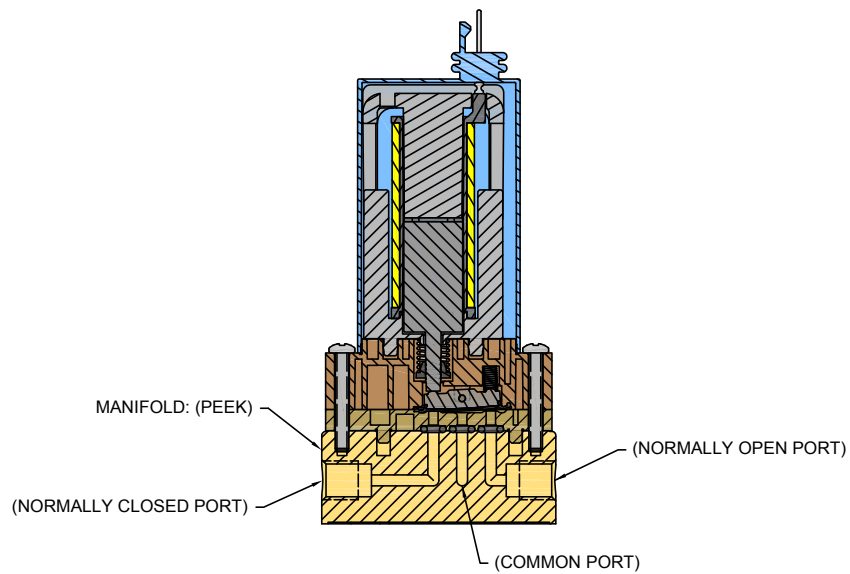
Mechanical Integration

Dimensions

3-Way Cross Section Wetted Material



3-WAY CROSS-SECTION WITH 1/4-28 OR M6

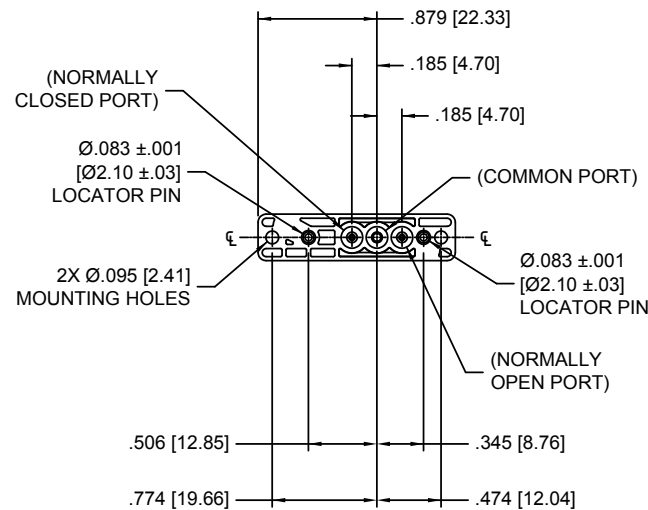
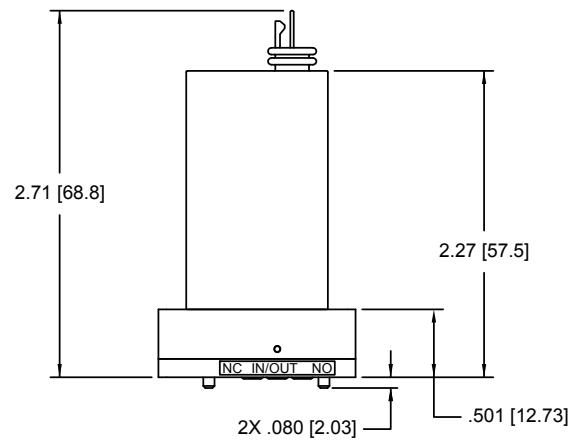
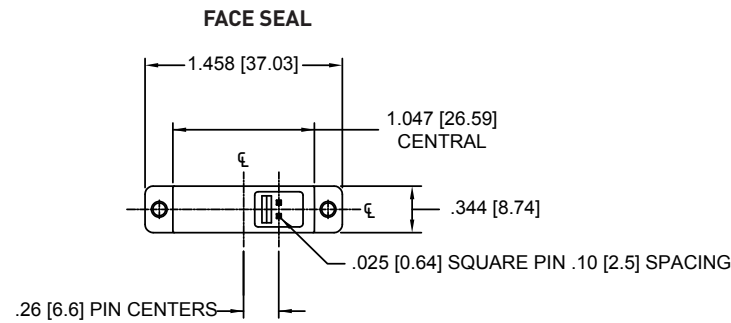


R9 Miniature Diaphragm Isolation Valve

Mechanical Integration

Dimensions

3-Way Dimensions



| UNITS |
|-----------|
| IN. [mm.] |

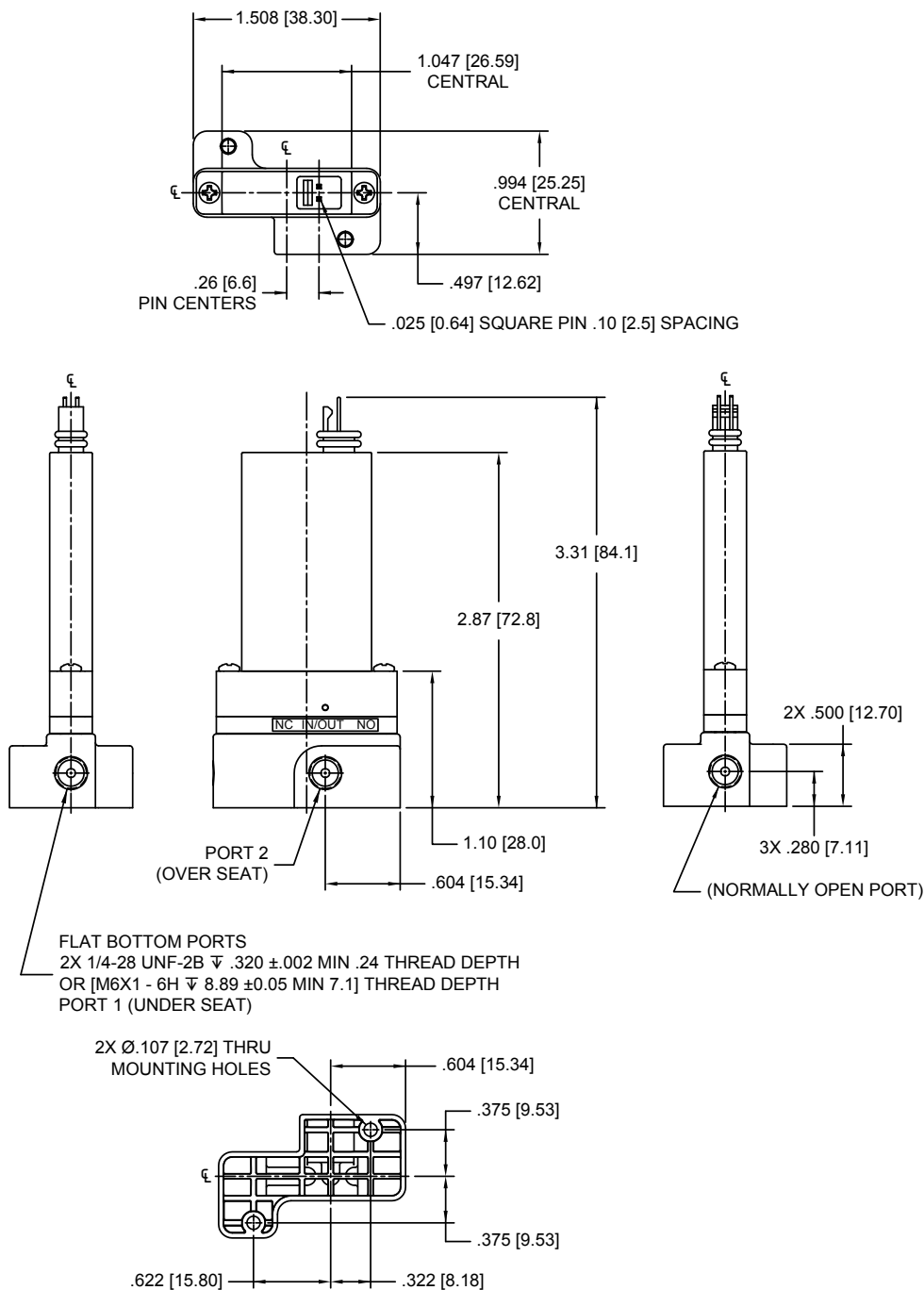
R9 Miniature Diaphragm Isolation Valve

Mechanical Integration

Dimensions

3-Way Dimensions

1/4 -28 OR M6



| UNITS |
|-----------|
| IN. [mm.] |

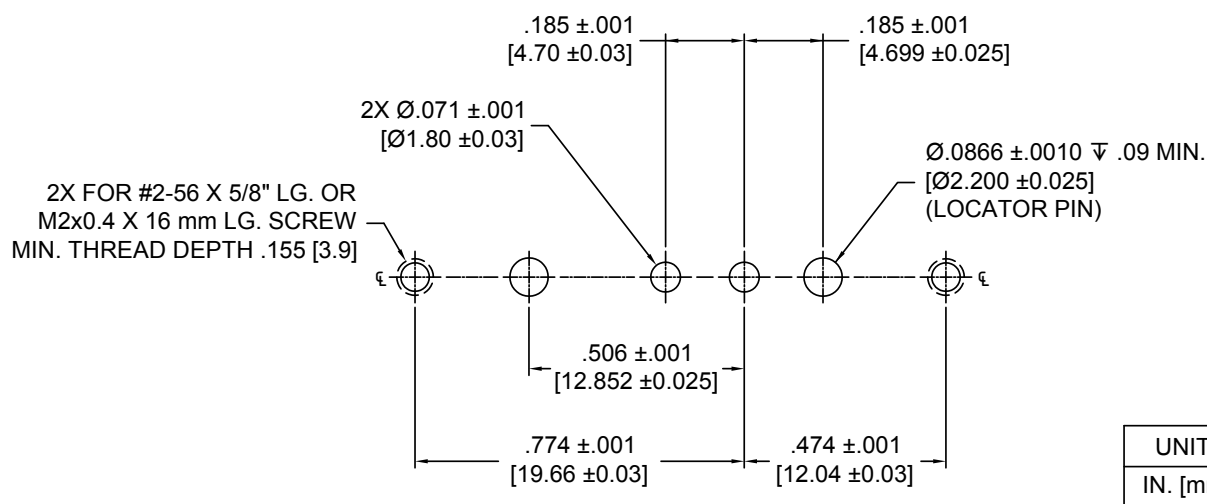


R9 Miniature Diaphragm Isolation Valve

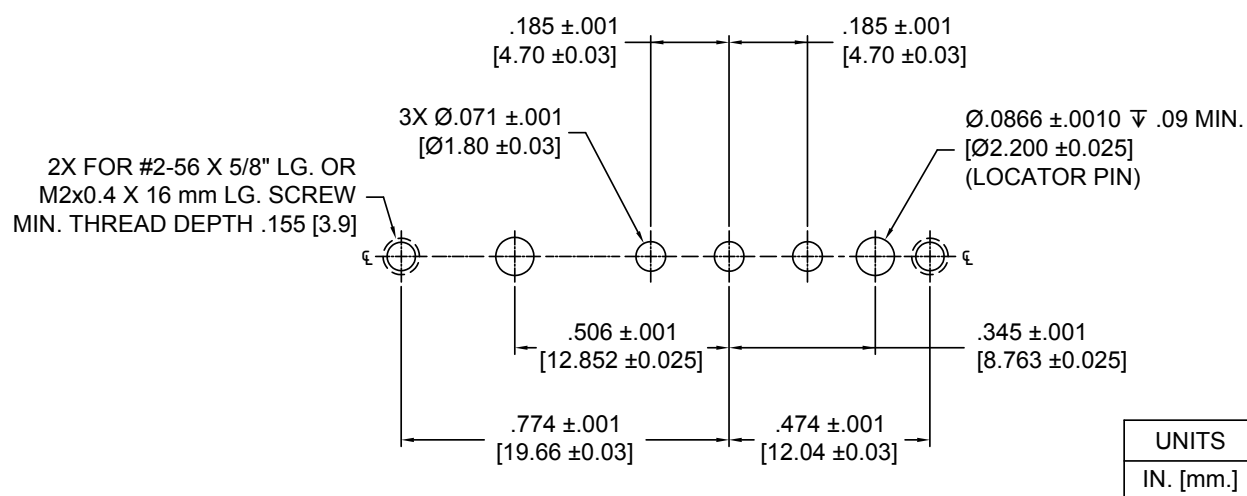
Installation and Use

R9 Manifold Interface Recommended R9 Valve Mounting

R9 2-WAY MANIFOLD INTERFACE



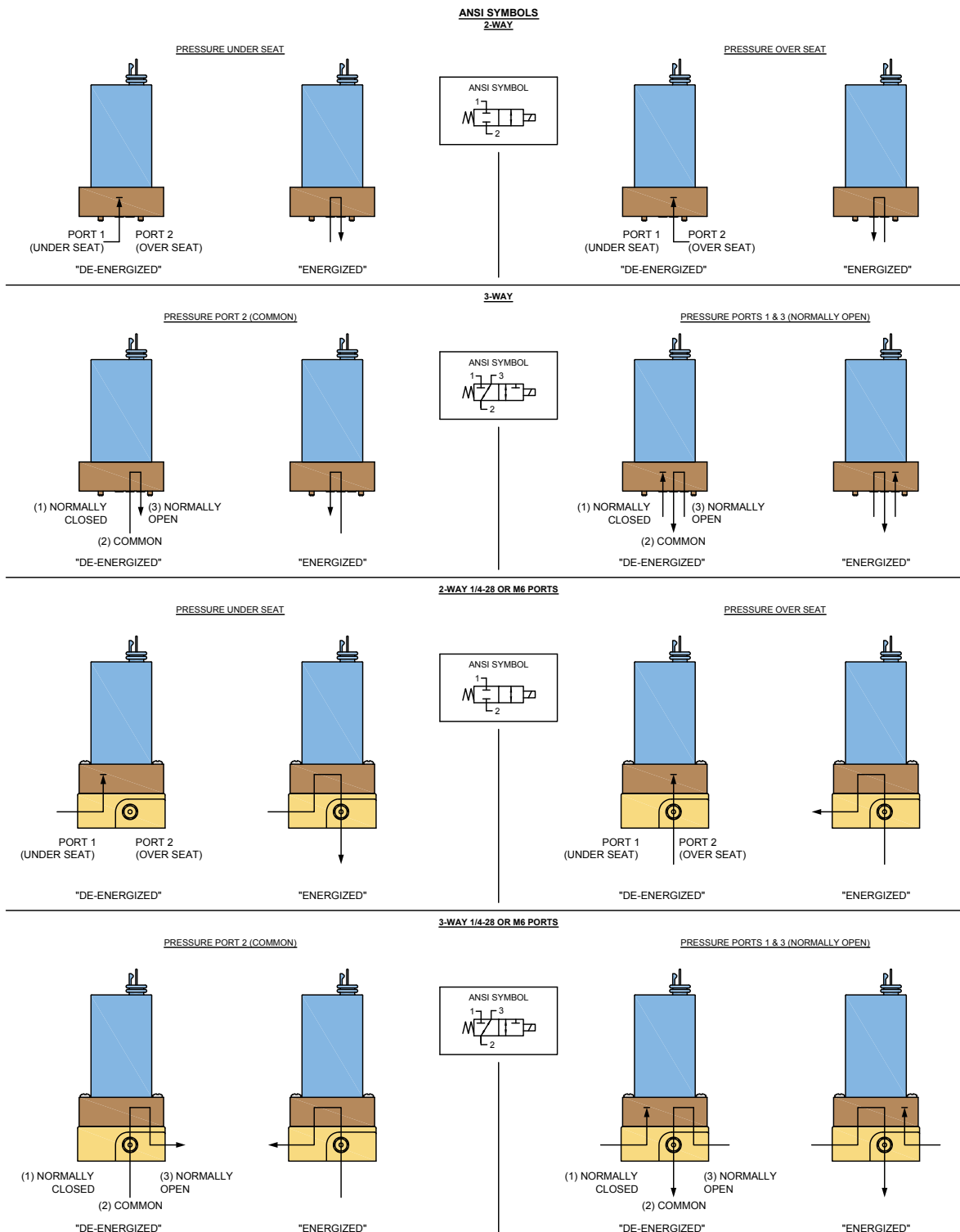
R9 3-WAY MANIFOLD INTERFACE



R9 Miniature Diaphragm Isolation Valve

ANSI Symbols

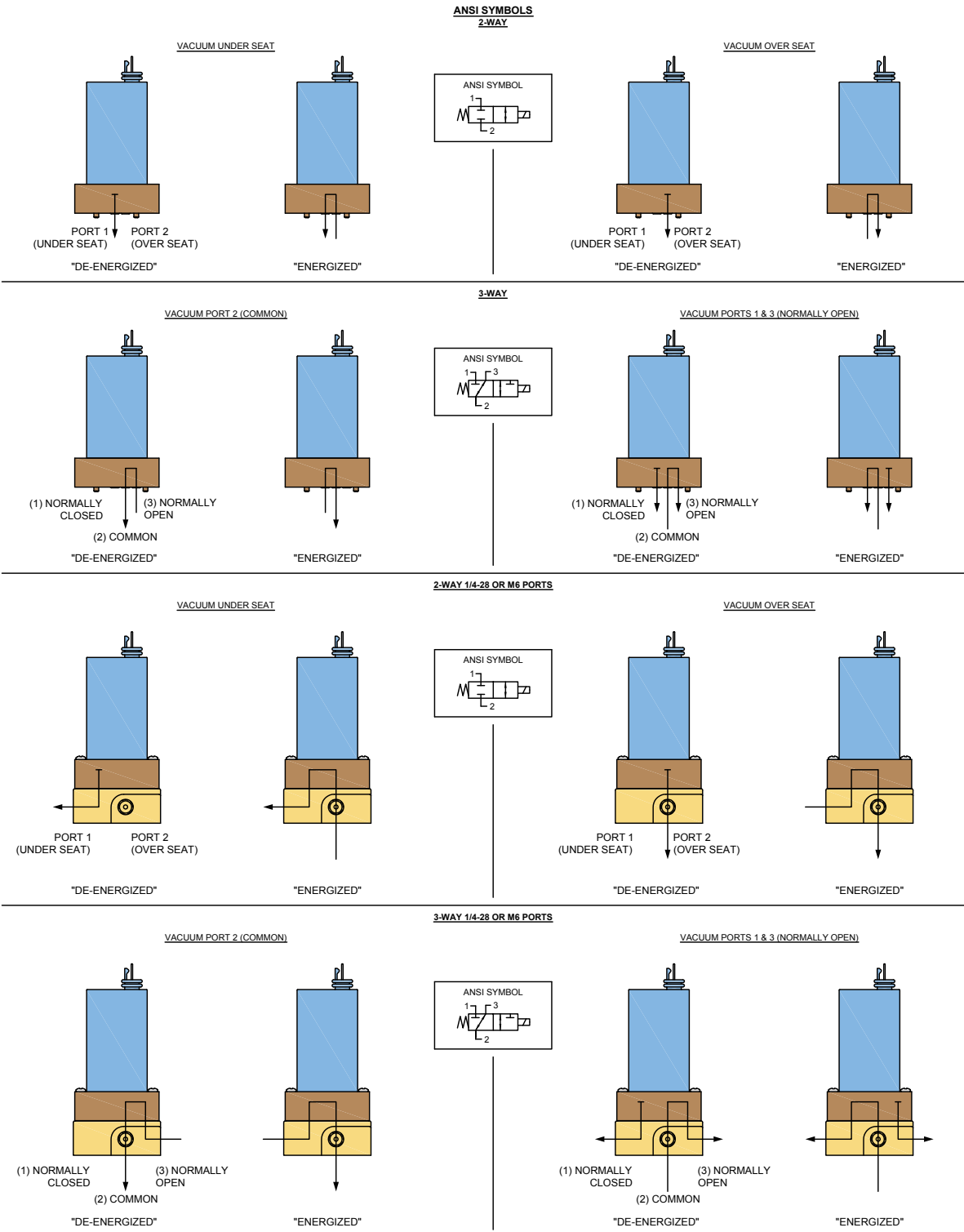
Pressure



R9 Miniature Diaphragm Isolation Valve

ANSI Symbols

Vacuum



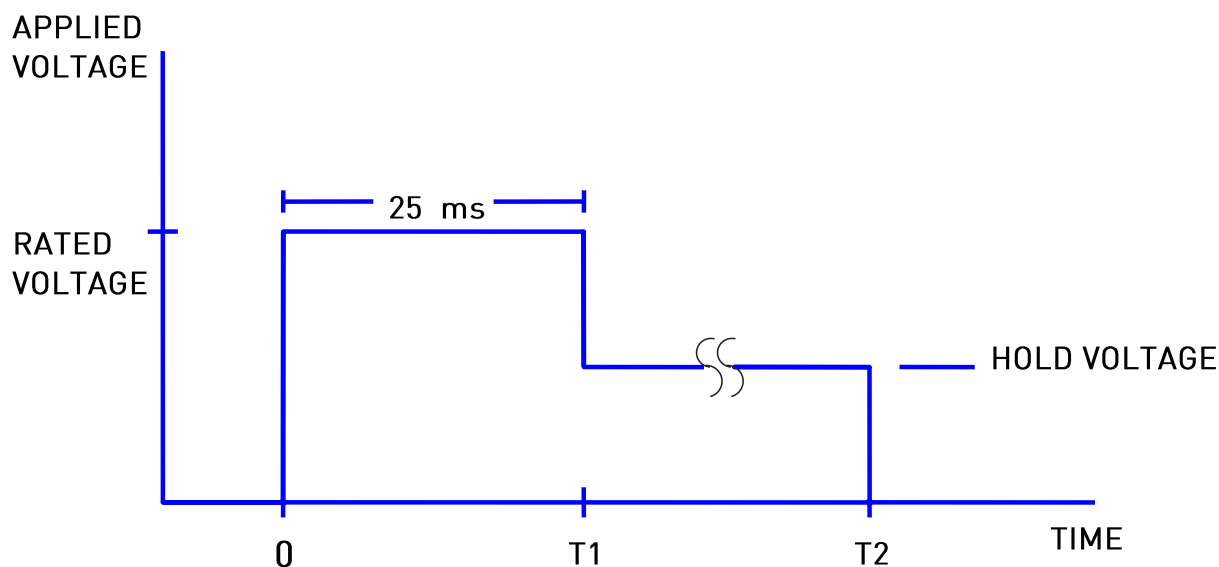
R9 Miniature Diaphragm Isolation Valve

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*

| Chemical | Diaphragm Options | | | Other Wetted Materials |
|----------------------------|-------------------|----|------|------------------------|
| | 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 |

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

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)

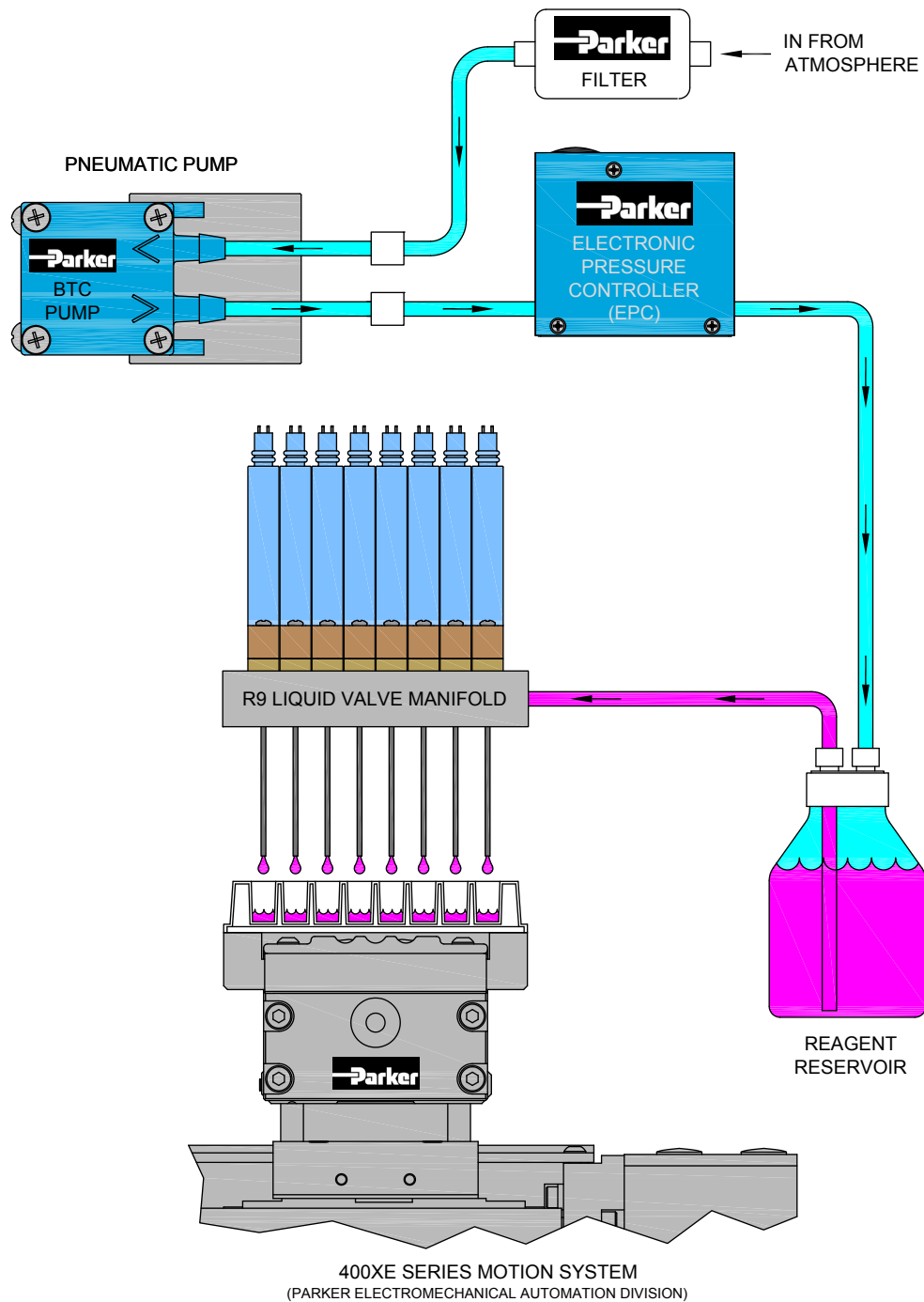
REACH EC 1907/2006



R9 Miniature Diaphragm Isolation Valve

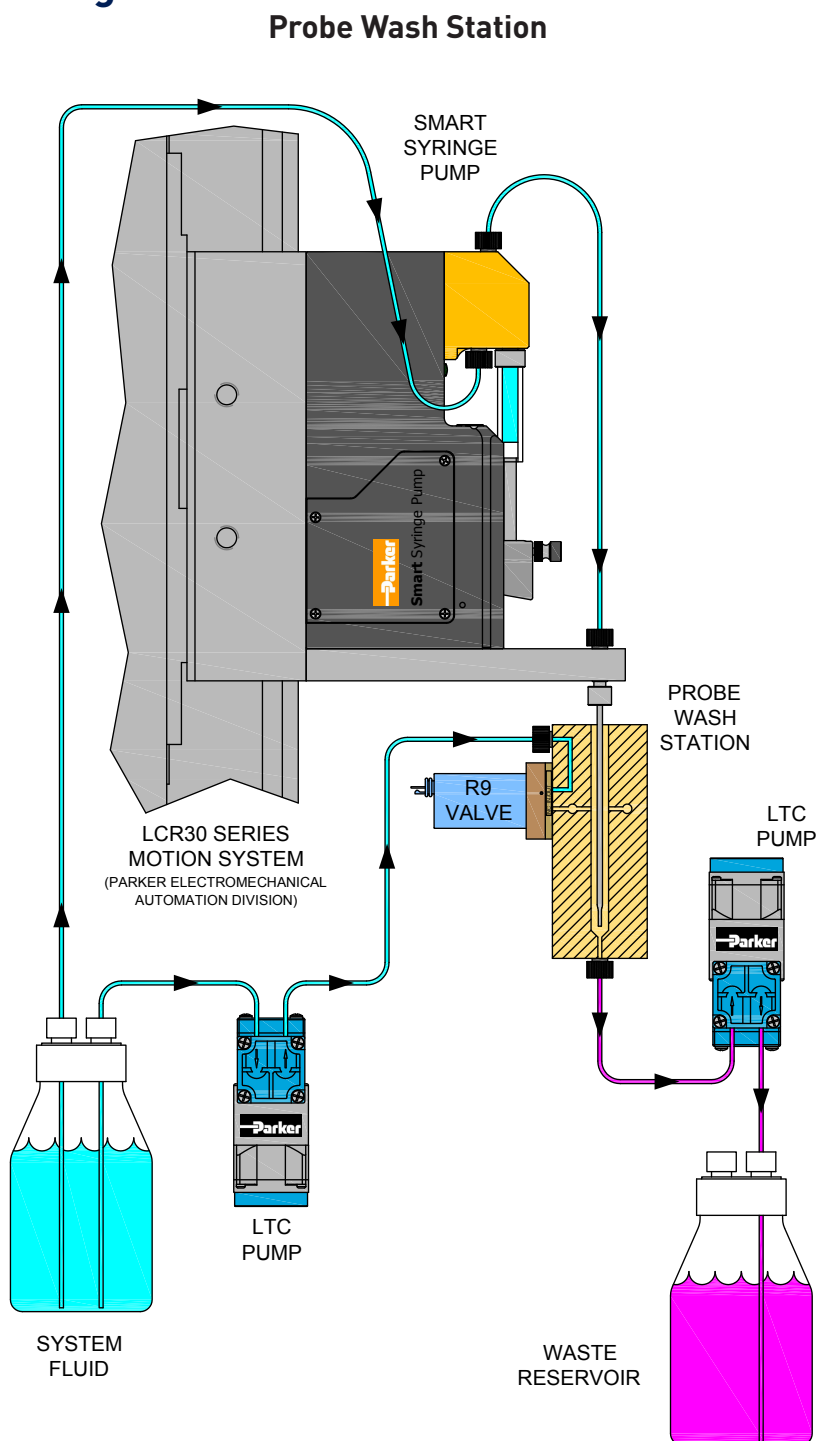
Typical Flow Diagram

9 mm on Center Dispense Application



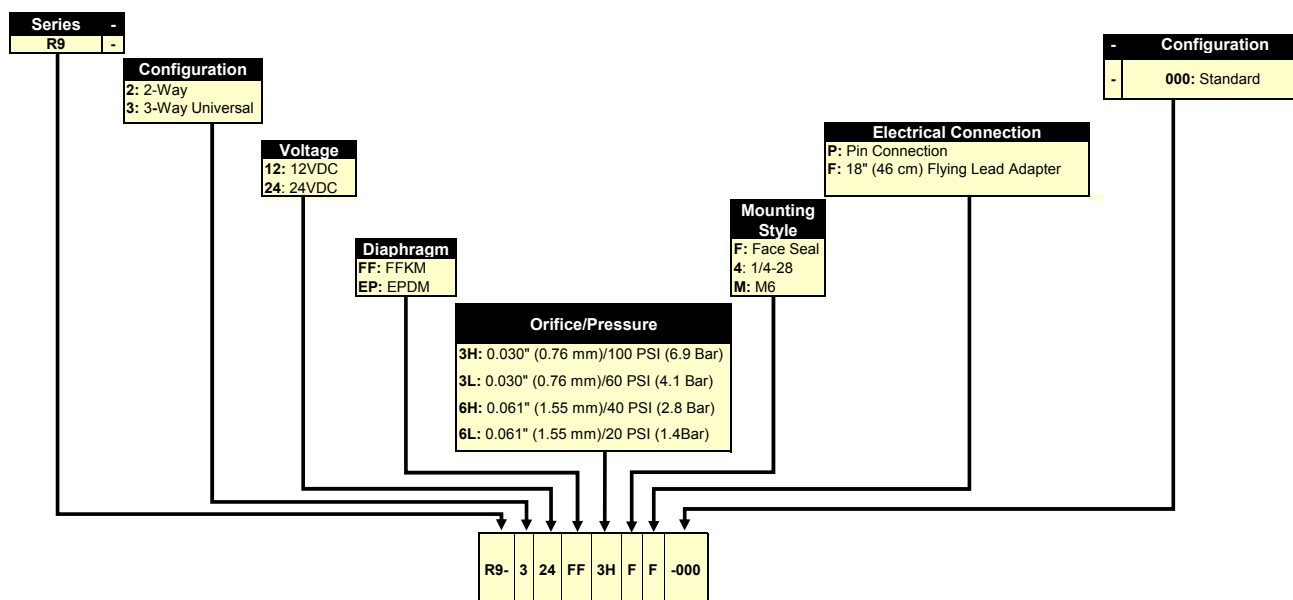
R9 Miniature Diaphragm Isolation Valve

Typical Flow Diagram



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.

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



NOTES
