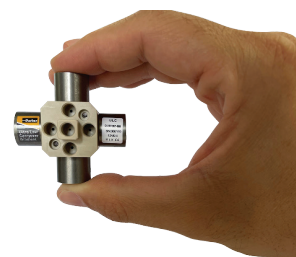


Ultra Low Carryover Valve Series

Miniature Liquid Valves



ENGINEERING YOUR SUCCESS.

Ultra Low Carryover Valve Series Miniature Liquid Valve



Markets

- Analytical Chemistry
- Clinical Diagnostics
- Environmental Monitoring

Applications

- HPLC
- HbA1c
- Reagent Selection/Metering
- Media Distribution

The Ultra Low Carryover valve technology is the optimum solution for meeting the rigorous demands of High-Performance Liquid Chromatography. Whether you are using a single solvent, dual solvents, or a quaternary approach, the ULCO family of valves will ensure that mixing is accurate and precise. The resulting gradient of eluent composition will increase selectivity, sensitivity, and accuracy for the separation and detection of a wide range of chemical compounds. Accomplished through a combination of fast and repeatable response times, extremely low internal volume, and an advanced well-swept design all in an industry-leading miniature package size. Precision Fluidics' ULCO valve product line will increase performance and throughput while enabling the overall reduction of the OEM system footprint.

Features

- Internal volume as low as 4.05 μL (2-channel) and 9.4 μL (4-channel) from seat to port
- Very low response time of 2 ms improves gradient precision
- Patent pending design accelerates change between channels
- 80% smaller and 75% lighter than competing valves
- Minimized pumping volume
- REACH and RoHS compliant



Product Specifications

Physical Properties

| | | |
|---|----------------|--------|
| Valve Type: | | |
| 1-Channel, 2-Channel, & 4-Channel | | |
| Media: Liquid | | |
| Operating Temperature: | | |
| 39°F to 122°F (4°C to 50°C) | | |
| Storage Temperature: | | |
| -4°F to 158°F (-20°C to 70°C) | | |
| Weight: | | |
| 1-Channel | 0.69oz (19.6g) | |
| 2-Channel | 1.19oz (33.7g) | |
| 4-Channel | 2.56oz (72.5g) | |
| Internal Volume (Port-to-Port μL): | | |
| | Face Seal | 1/4-28 |
| 1-Channel | 20.67 | 14.24 |
| 2-Channel | 21.87 | 15.43 |
| 4-Channel | —— | 30.76 |
| Internal Volume (Port-to-Seat μL): | | |
| | Face Seal | 1/4-28 |
| 1-Channel | 11.36 | 4.05 |
| 2-Channel | 12.54 | 5.32 |
| 4-Channel | —— | 9.40 |
| Orifice Size: 0.030" (0.76mm) | | |

Electrical

| | | |
|---|---------------------------|-----|
| Voltage (VDC): | 12 | 24 |
| Power (Watts): | 3.0 | 3.0 |
| Current (mA): | 250 | 116 |
| Resistance (Ohms): | 48 | 207 |
| Electrical Termination | Molex Series: #50-57-9402 | |
| Note: For actuation exceeding 100ms Hit and Hold is required. | | |

Wetted Materials

| |
|---------------------|
| Seals: FFKM or EPDM |
| Body: PEEK |

Regulatory

| |
|--|
| RoHS directive (2002/95/EC) and REACH EC 1907/2006 |
|--|

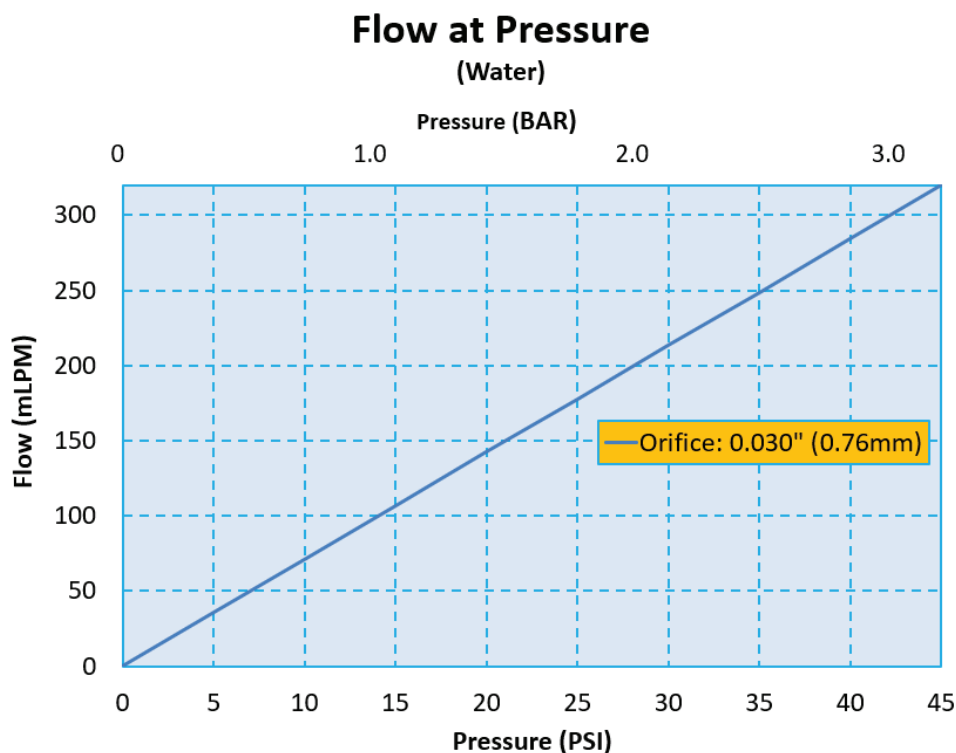
Performance Characteristics

| |
|-----------------------------------|
| Leak Rate: |
| 0.150 sccm of Air |
| Operating Pressure: |
| 45 psig (3.1 bar) |
| Proof Pressure: |
| 120 psig (8.3 bar) |
| Response Time: |
| <2 ms at 2X rated Voltage |
| <10 ms at rated Voltage |
| Recommended Filtration: |
| 16 μm |
| Reliability: |
| 1-Channel & 2-Channel: |
| 10 Million Cycles |
| 0.95 Reliability Factor |
| 95% Confidence Interval |
| 4-Channel: |
| 50 Million Cycles |
| 0.90 Reliability Factor |
| 90% Confidence Interval |



Ultra Low Carryover Valve Series Miniature Liquid Valve

Typical Flow Curve



Electrical Interface

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



Liquid Interface



1-Channel
1/4 - 28 Design
(Threaded Connectors)



2-Channel
1/4 - 28 Design
(Threaded Connectors)



4-Channel
1/4 - 28 Design
(Threaded Connectors)



1-Channel
Face Seal Design



2-Channel
Face Seal Design

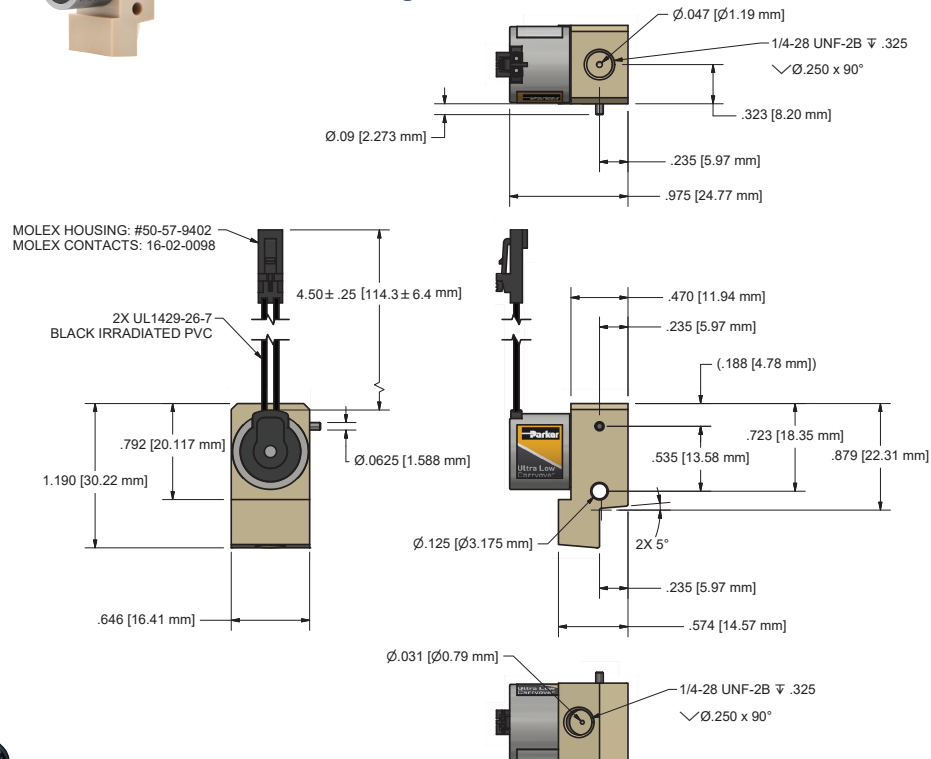


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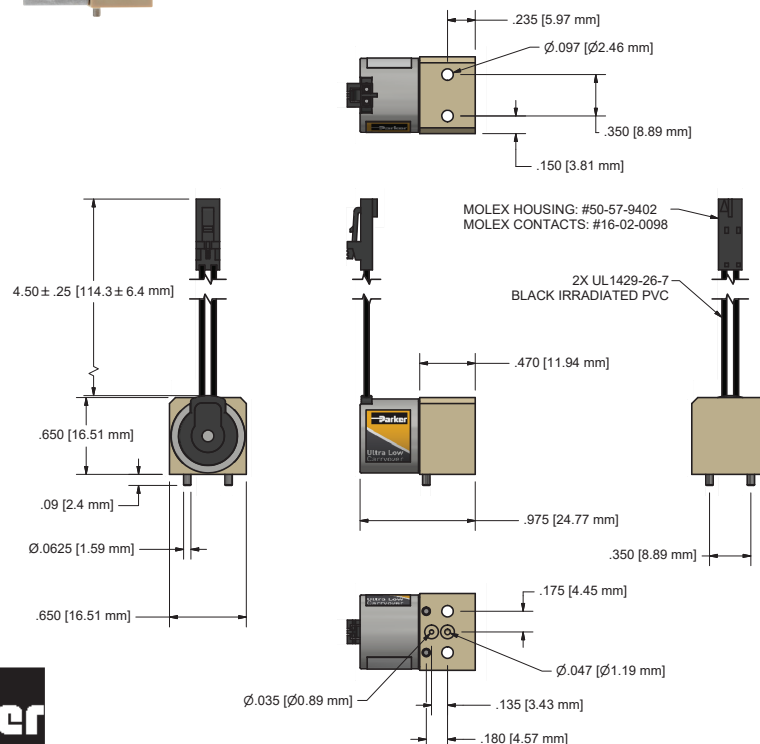
Mechanical Integration Dimensions



1-Channel Design - Face Seal Version



1-Channel Design - Threaded Port Version

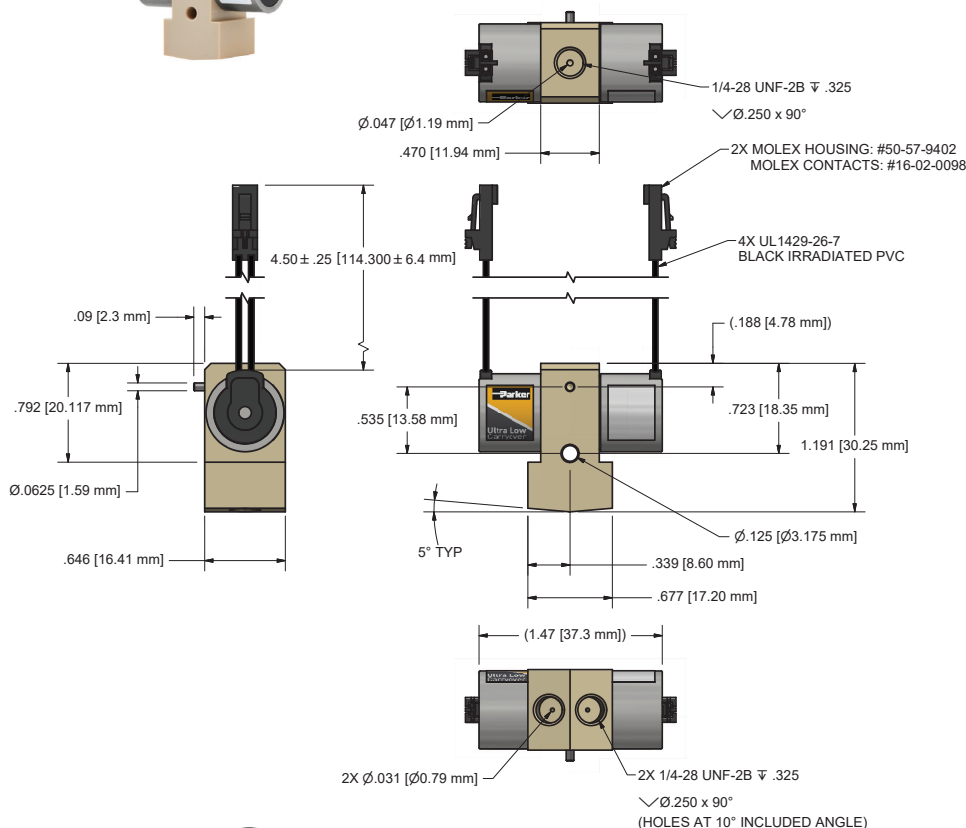


Ultra Low Carryover Valve Series Miniature Liquid Valve

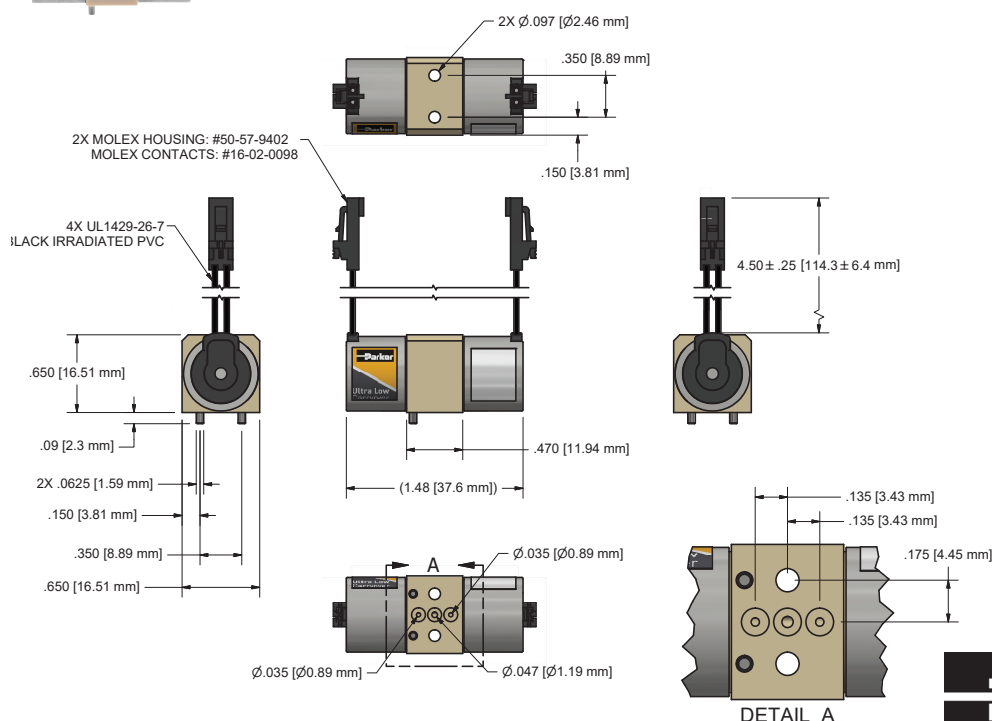
Mechanical Integration Dimensions



2-Channel Design - Face Seal Version



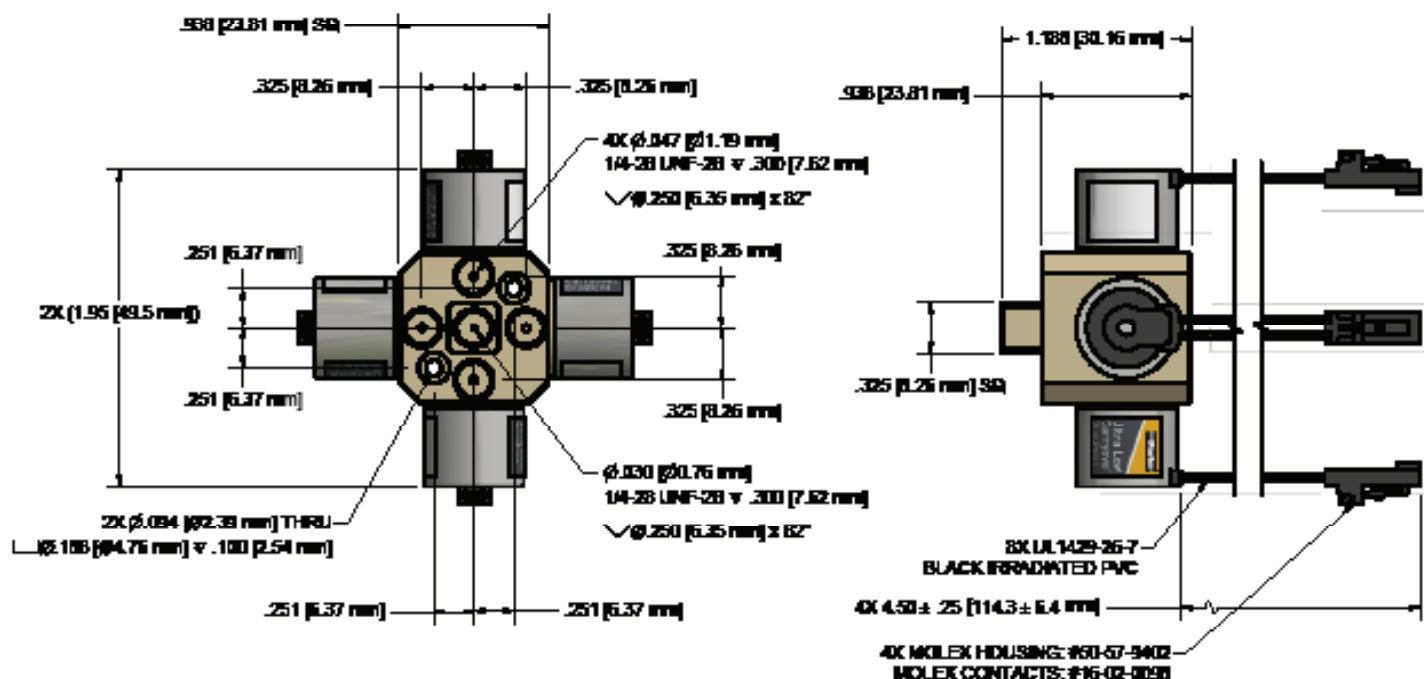
2-Channel Design - Threaded Port Version



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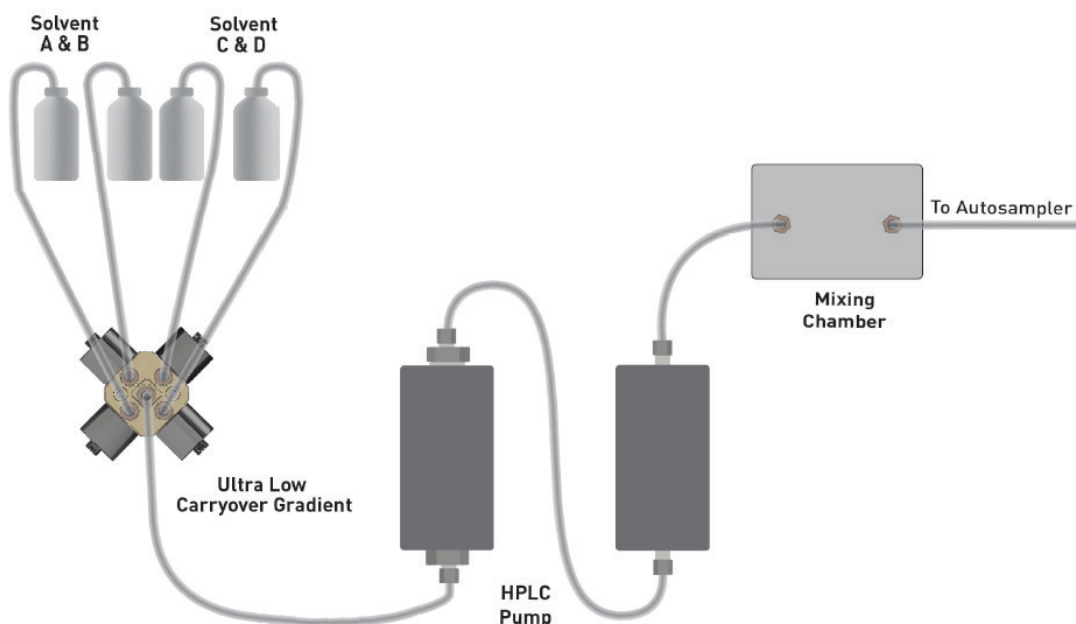
Mechanical Integration Dimensions

4-Channel Radial Design



Ultra Low Carryover Valve Series Miniature Liquid Valve

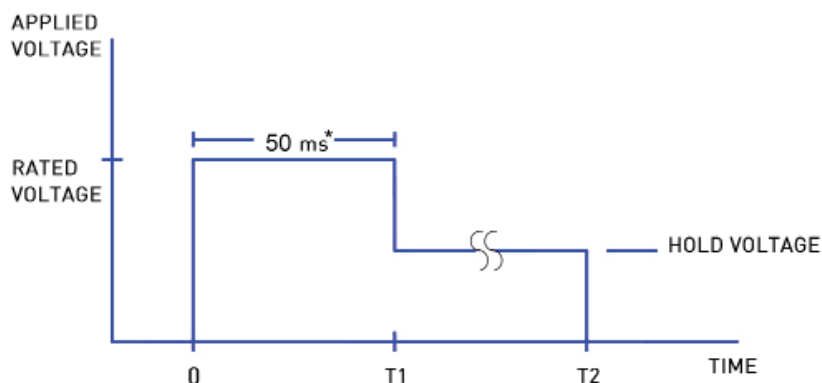
Typical Flow Diagram



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) | Typical Hold Power |
|---------------------|--------------------|--------------------|
| 24 | 12 | 0.75 watts |
| 12 | 6 | 0.70 watts |



Hold Voltage Graph

*50 ms recommended. Hit time shall be greater than 20 ms but not exceed 100 ms.

Ultra Low Carryover Valve Series Miniature Liquid Valve

Ordering Information



1-Channel Design



2-Channel Design



4-Channel Radial Design

| ULC | 3 | 24 | FF | 3 | R | F | -000 |
|--------|----------------|--------------------------|----------------------|-----------------------|--|-----------------------|---------------|
| Series | Configurations | Voltage | Seal Manifold | Orifice | Mounting | Electical Connections | Configuration |
| ULC- | 2: 1-Channel | 12: 12 VDC 24: 24 VDC | FF: FFKM EP: EPDM | 3: 0.030" (0.76mm) | F: Face Seal 4: 1/4 - 28 | F: Latching Connector | -000 |
| ULC- | 3: 2-Channel | 12: 12 VDC 24: 24 VDC | FF: FFKM EP: EPDM | 3: 0.030" (0.76mm) | F: Face Seal 4: 1/4 - 28 | F: Latching Connector | -000 |
| ULC- | 5: 4-Channel | 12: 12 VDC 24: 24 VDC | FF: FFKM EP: EPDM | 3: 0.030" (0.76mm) | S: Panel Mount 1/4-28 R: Radial Body 1/4-28 | F: Latching Connector | -000 |

| Accessories | |
|----------------|---|
| Part Number | Configurations |
| 290-006061-005 | 19.5 in (495.3mm) Wire Extension with Flying Leads |
| 191-000112-417 | 18 - 8 Stainless Steel Mounting Screws, #2-56 x 3/4 |
| 890-001198-001 | 1/4 - 28 Female Threaded Face Seal Manifold |

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.

Ultra Low Carryover Valve Series Miniature Liquid Valve

Scan for more detailed information:



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Miniature Solenoid Valves



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Miniature Liquid Valves



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Customized Systems and Solutions

Our team of experienced engineers and technical support staff is dedicated to helping our customers find the right solutions for their specific needs. We work closely with our customers to understand their unique requirements and provide tailored solutions that meet their exact specifications.

