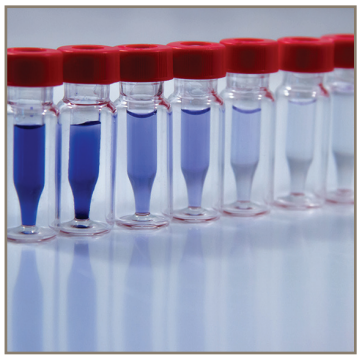
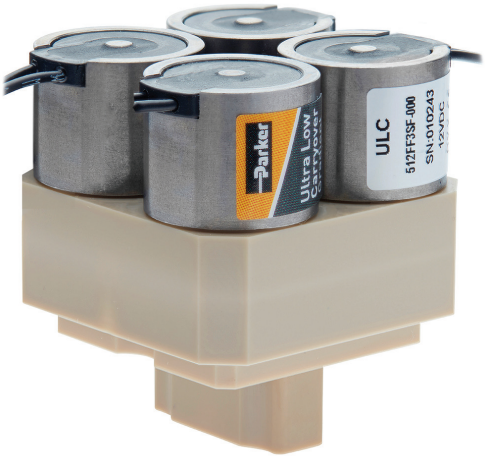
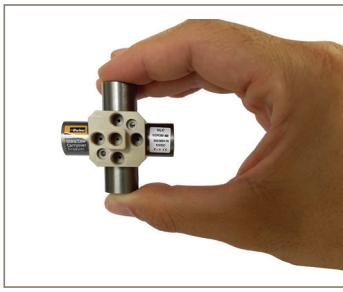




Ultra Low Carryover Gradient Valve

Miniature Liquid Valve



Parker

ENGINEERING YOUR SUCCESS.

Ultra Low Carryover Gradient Valve

Miniature Liquid Valve

The unique features of the Ultra Low Carryover Gradient Valve ensure high accuracy in gradient generation in quaternary HPLC designs. This is accomplished through a combination of quick response times and patented low volume well swept fluidic design. This miniaturized valve enables the reduction of overall instrument size and decreases system dead volume. Exceptional long life and crystallization resistance ensures that the valve will last the life of the instrument.

Markets

- Analytical Chemistry
- Clinical Diagnostics
- Environmental Monitoring

Applications

- HPLC
- HbA1c
- Reagent Selection
- Distribution

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:	
4-Channel & 2-Channel	
Media:	
Liquid	
Operating Environment/ Media Temperature:	
4°C to 50°C (39°F to 122°F)	
Storage Temperature:	
-20°C to 70°C (-4°F to 158°F)	
Weight:	
4-Channel Radial Design	2.56oz (72.5g)
4-Channel Panel Mount	2.45oz (69.5g)
2-Channel Design	1.19oz (33.7g)
Porting:	
1/4-28	
Internal Volume: (seal to common port)	
4-Channel Radial Design	9.4 µL
4-Channel Panel Mount	12.99 µL
2-Channel Design	4.05 µL
Orifice Size:	
.030” (0.76 mm)	

Electrical

Voltage (VDC ±):	12	24
Power (Watts):	3.0	3.0
Current (mA):	250	116
Resistance (Ohm):	48	207

Ω ± 10% @ 68 °F, 20 °C
Note: For actuation exceeding 100ms Hit & Hold is required.

Electrical Termination:	Molex Housing: #50-57-9402 Molex Contacts: #16-02-0098

Wetted Materials*

Seals:	FFKM or EPDM
Body:	PEEK
Regulatory:	RoHS directive (2002/95/EC) and REACH EC 1907/2006
Mounting Options:	1/4-28 Threaded Female Design

*Other materials available upon request

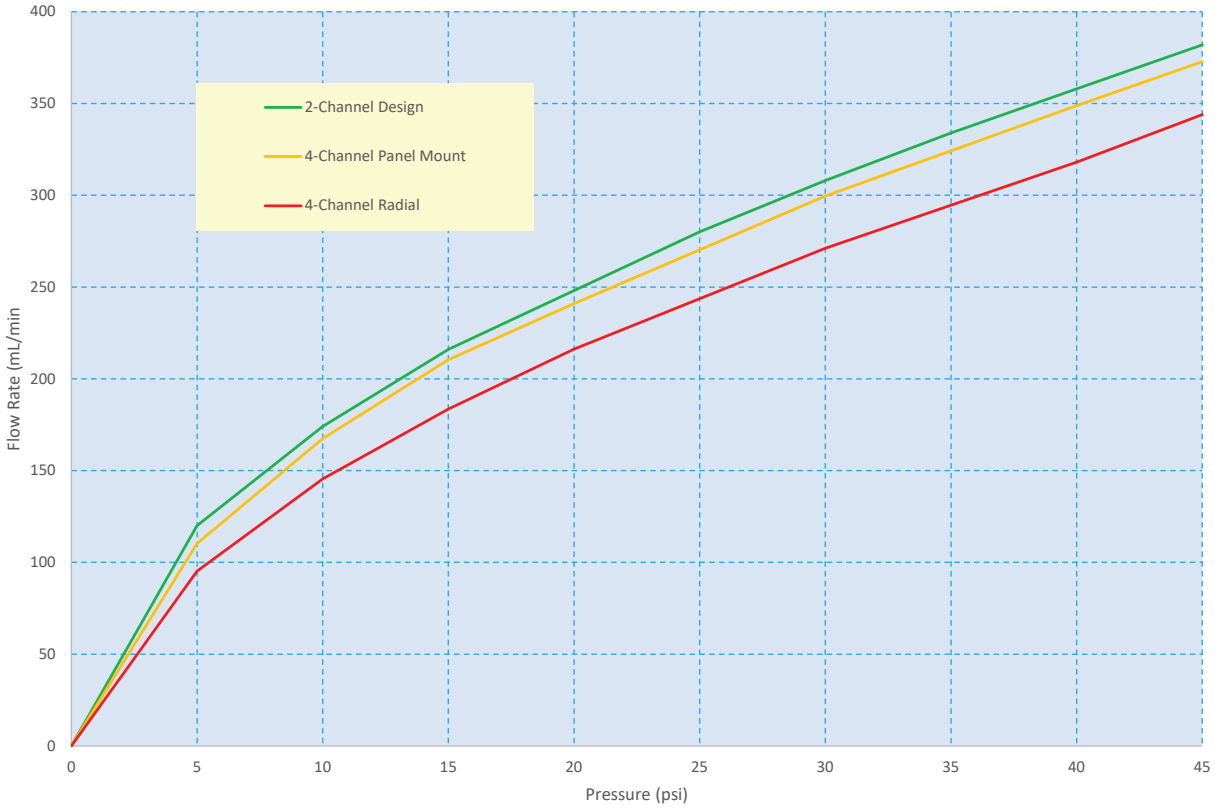
Performance Characteristics

Leak Rate:
0.150 sccm of Air (bubble tight)
Operating Pressure:
45 psig (3.1 bar)
Proof Pressure:
120 psig (8.3 bar)
Response Time:
<2 msec at 2X rated Voltage <10 msec at rated Voltage
Recommended Filtration:
16 µm
Reliability:
50 Million Cycles
Flow Rate:
Minimum water flow of 320 mL/ min @ 45 psig (3.1 bar)

Ultra Low Carryover Gradient Valve Miniature Liquid Valve

Typical Flow Curve

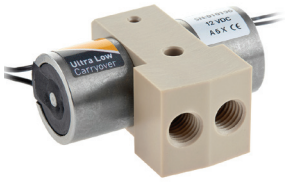
Water Flow



Electrical Interface

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

Liquid Interface



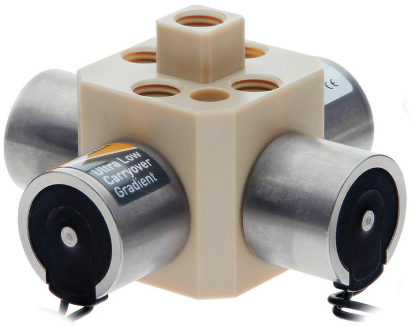
1/4 - 28 Design
(Threaded Connectors)

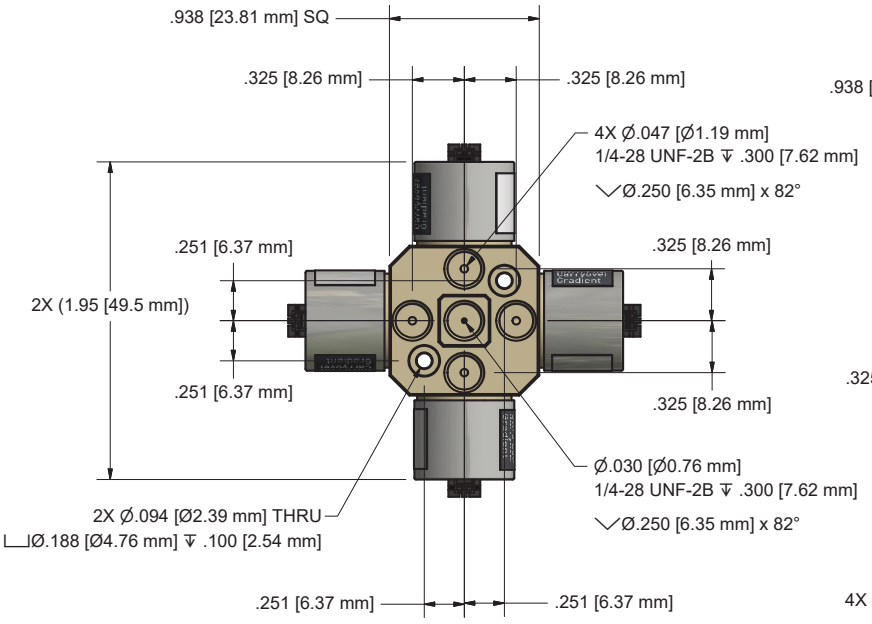
Ultra Low Carryover Gradient Valve Miniature Liquid Valve

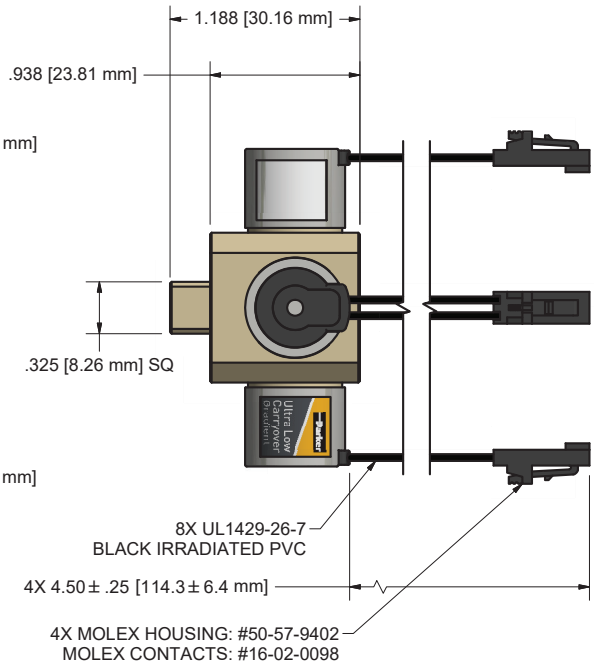
Mechanical Integration

Dimensions

4-Channel Radial Design





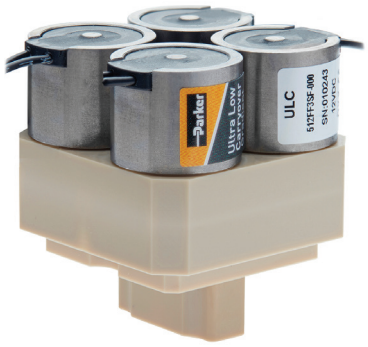


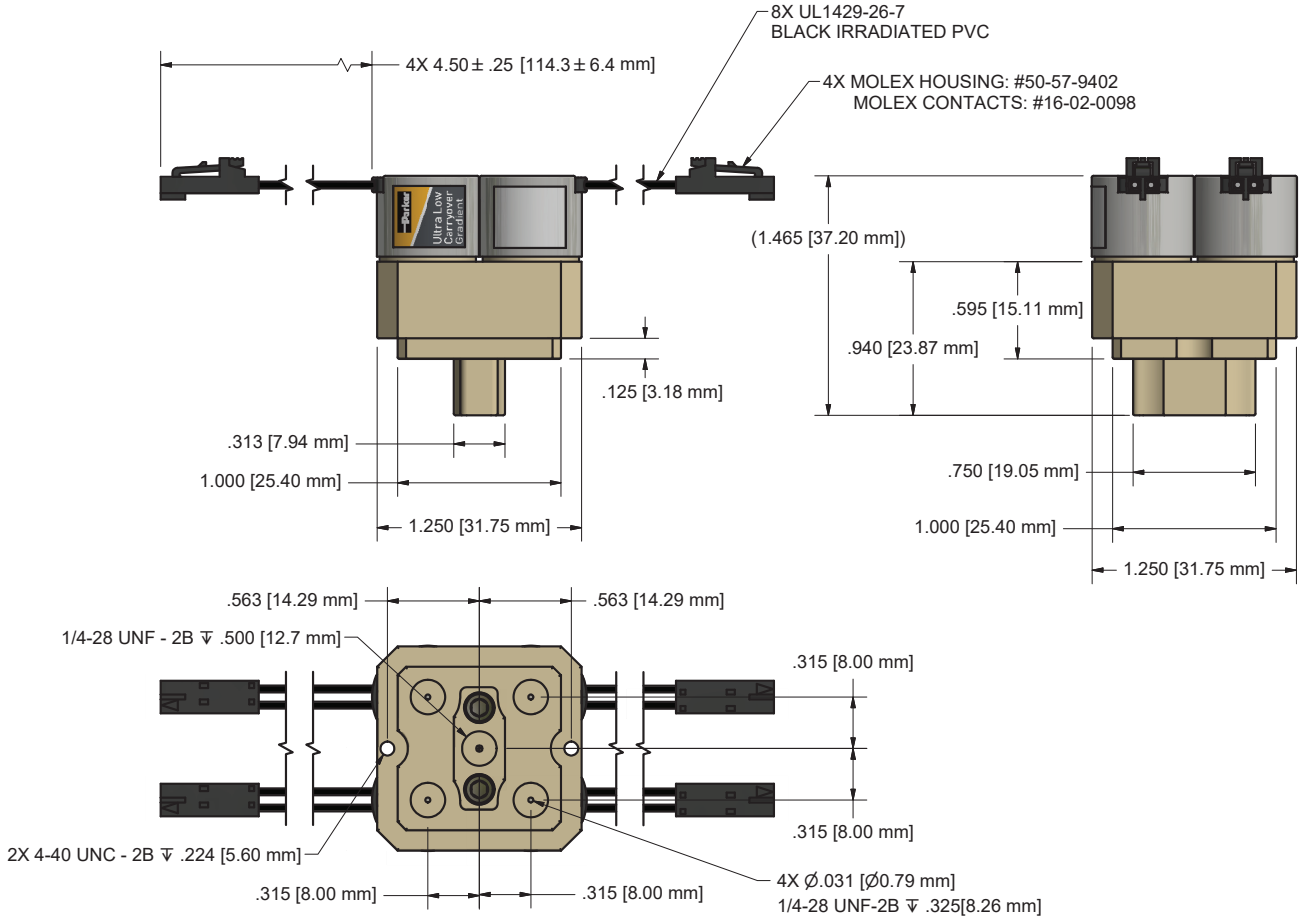
Ultra Low Carryover Gradient Valve Miniature Liquid Valve

Mechanical Integration

Dimensions

4-Channel Panel Mount



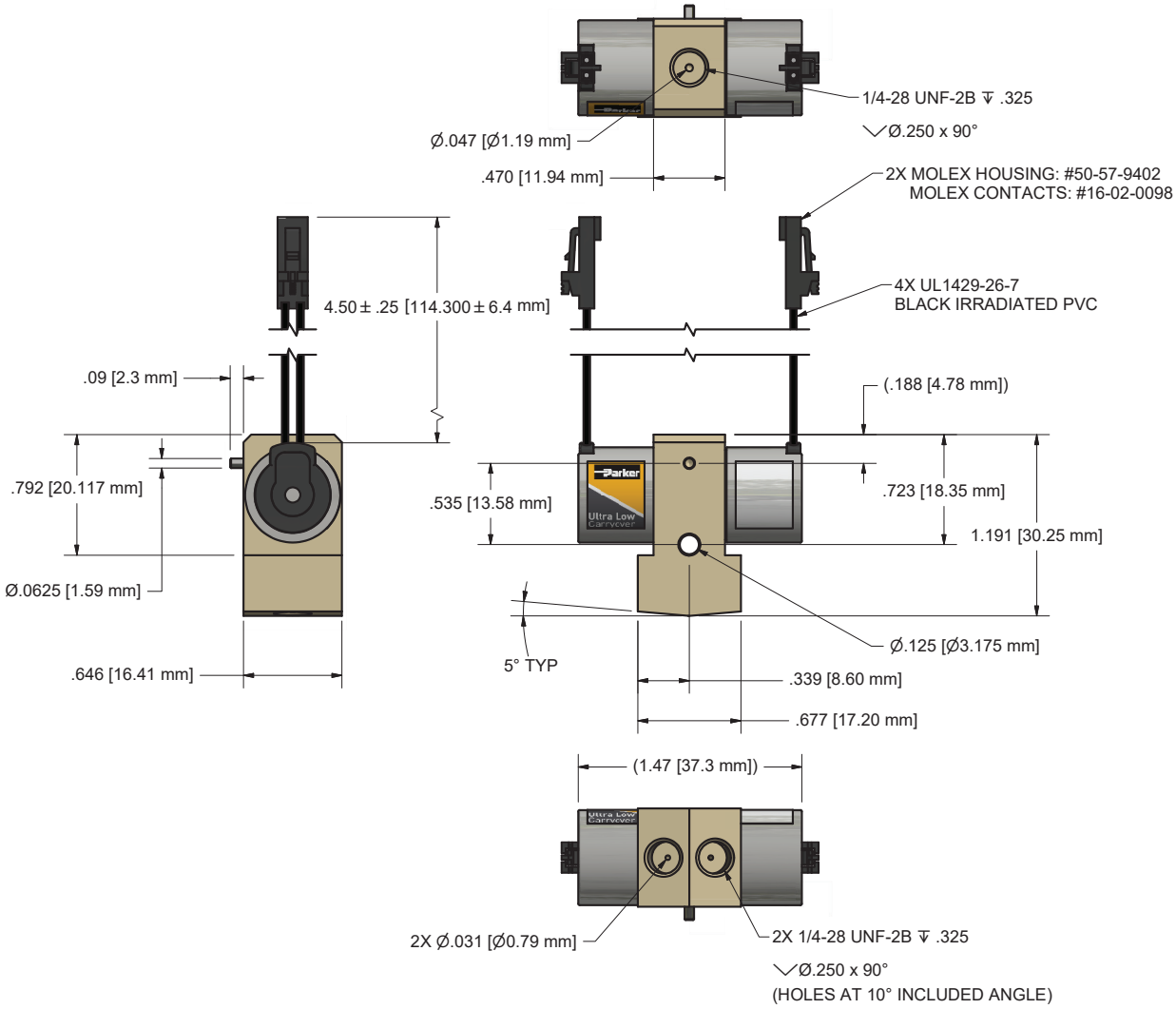


Ultra Low Carryover Gradient Valve Miniature Liquid Valve

Mechanical Integration

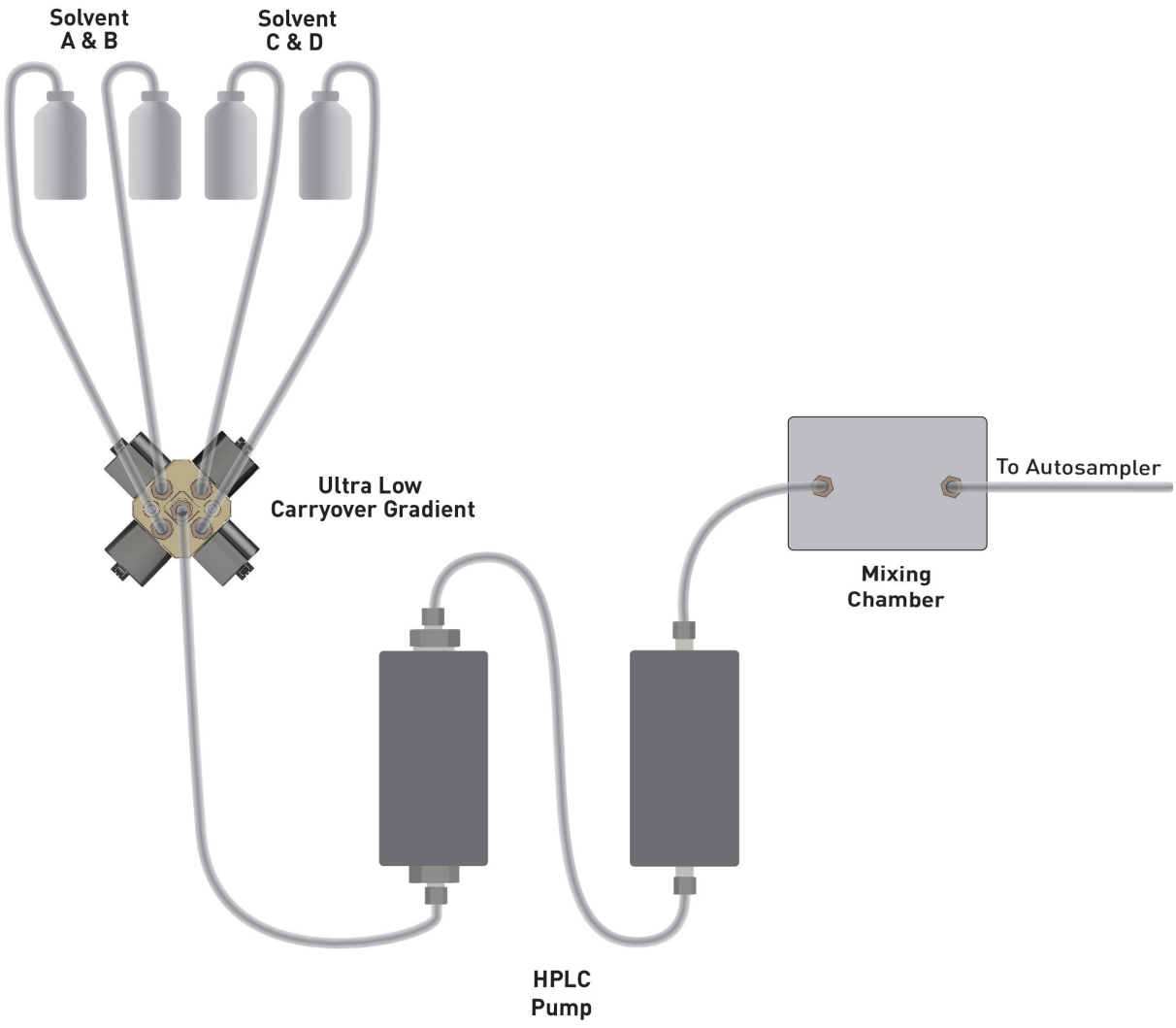
Dimensions

2-Channel Design



Ultra Low Carryover Valve Gradient Miniature Liquid Valve

Typical Flow Diagram

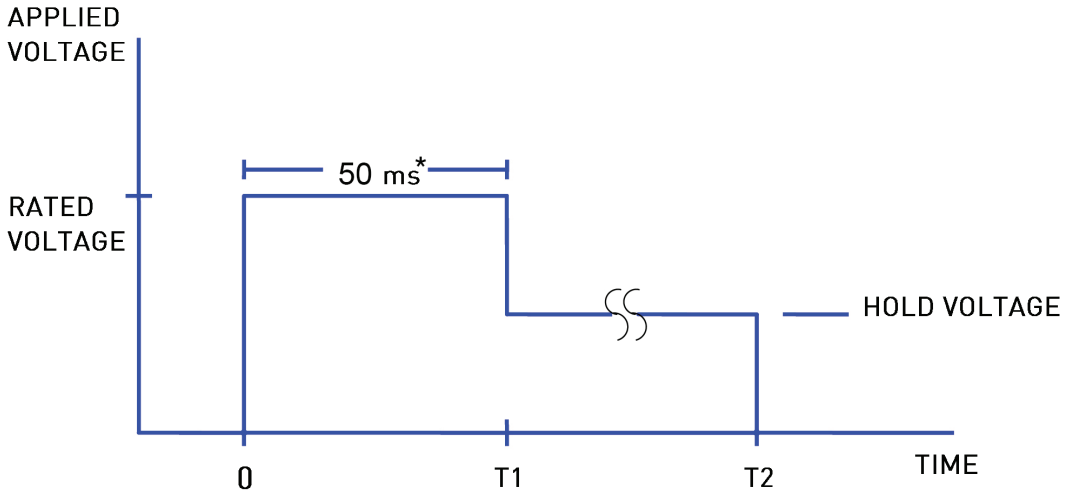


Ultra Low Carryover Gradient Valve Miniature Liquid Valve

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 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 Gradient Valve Miniature Liquid Valve

Chemical Compatibility Chart

	Diaphragm			Other Wetted Materials
Chemical	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	2		4	1
Toluene	1		4	1
MEK	1		1	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 CE

ENG61010 - 1:2010

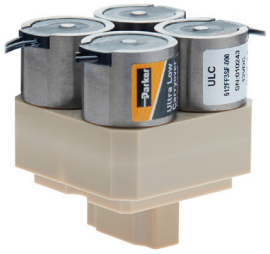
IP-65 Rating - IEC/EN 60529:2013

RoHS Directive Compliant - Contact Factory For Details

REACH Compliant - Contact Factory For Details

Ultra Low Carryover Gradient Valve Miniature Liquid Valve

Ordering Information



4-Channel Panel Mount

4-Channel Radial Design

2-Channel Design

ULC	3	24	FF	3	R	F	-000
Series	**Configuration**	**Voltage**	**Seal Manifold**	**Orifice**	**Mounting**	**Electrical Connection**	**Configuration**
ULC-	3: 2-Channel	12: 12 VDC 24: 24 VDC	FF: FFKM EP: EPDM	3: 0.030" (0.76mm)	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	Description
290-006061-005	19.5 in (495.3mm) Wire Extension with Flying Leads

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

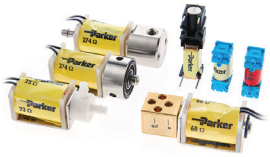
For more detailed information, visit us on the Web, or call 603-595-1500.

Ultra Low Carryover Gradient Valve Miniature Liquid Valve

Serving a broad spectrum of life science, air quality, and process instrumentation OEM fluidic needs

Providing Pressure and Vacuum:
Broad range of diaphragm pumps for Gas

Gas Flow Control:
High to Low Flow Proportional Valves



On/Off & Channel Selection Capabilities:
Gas and Liquid Solenoid Valves

High Precision Thermal Flow Control:
Mass Flow Controllers and Meters

Below are some common specifications that are helpful to have on hand to accelerate your product selection:

- Gas Type
- Maximum Flow Rate
- Inlet and Outlet Pressures
- Operating Temperature
- Standard Reference Conditions
- Process Connection Size and Type
- Set Point Signal
- Digital Communication Protocol Preferences

For more information call **+1 603 595 1500** or email **ppfinfo@parker.com**

Visit **www.parker.com/precisionfluidics**

Recommendations on application design and material selection are based on available technical data and are offered as suggestions only. Each user should conduct their own tests to determine the suitability for their own use. Parker offers no express or implied warranties concerning the form, fit, or function of a product in any application.

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