C Series
Minature Cartridge Valves
Precision Fluidics
When you partner with the global leader in motion and control technologies, expect to move your business and the world forward. From miniature solenoid valves to highly integrated automation systems, our innovations are critical to life-saving medical devices and scientific instruments used for drug discovery and pathogen detection. Not to mention, critical to decreasing time to market and lowering your overall cost of ownership. So partner with Parker, and get ready to move, well, anything.
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The Series C7 is a miniature cartridge style solenoid valve with a compact 7 mm diameter. This unique design combines small size, light weight and low power consumption with high flow repeatability and fast response time over an exceptionally long life, up to 130 million cycles. Available in 2-way and 3-way configurations, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

**Features**
- Variety of orifice sizes with pressures up to 145 PSI (10 bar).
- Floating frictionless plunger enables reliable and repeatable operation up to 130 Million cycles.
- Low power design reduces heat and energy consumption.
- Cartridge configuration enables compact integration saving space and weight.
- Simple mechanical fastening prevents valve being dislodged due to vibration or pressure spikes.
- RoHS & REACH compliant.

**Product Specifications**

**Mechanical**

<table>
<thead>
<tr>
<th>Valve Type:</th>
<th>Solenoid Cartridge Valve</th>
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</thead>
<tbody>
<tr>
<td>2-Way Normally Closed (NC)</td>
<td>3-Way Normally Closed (NC)</td>
</tr>
<tr>
<td><strong>Media:</strong></td>
<td>Gases and Liquids*</td>
</tr>
<tr>
<td>(see details in liquid datasheet)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating Environment:</th>
<th>32°F to 122°F (0°C to 50°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Environment:</td>
<td>-40°F to 158°F (-40°C to 70°C)</td>
</tr>
</tbody>
</table>

| **Dimensions:** | - Diameter: 0.28 in (7 mm) |
| --- | - Length: 0.79 in (20 mm) |

<table>
<thead>
<tr>
<th>Porting:</th>
<th>Cartridge Seal</th>
</tr>
</thead>
</table>

| **Weight:** | 0.11 oz (3.1 g) |

<table>
<thead>
<tr>
<th><strong>Internal Volume:</strong></th>
<th>2-Way: 81μL</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Way: 90μL</td>
<td></td>
</tr>
</tbody>
</table>

**Electrical**

**Voltage (VDC):**
- 12 and 24 VDC ± 5% (Other voltages available on request.)

**Electrical Connections:**
- 3.2 in (80 mm) Flying Leads

**Power:**
- Typical 0.5W - 1.2W (Please see Table 1 for more details)

**Wetted Materials**

**Body:**
- Stainless Steel Series 300 and 400

**Seals:** (Internal and External)
- FKM, EPDM

**Performance Characteristics**

**Response:**
- 10 ms Maximum, Cycling

**Recommended Filtration:**
- 0.3 mm Orifice
  - 5 μm
- 0.5 mm, 0.8 mm, & 1.0 mm Orifice
  - 10 μm

**Reliability:**
- 2-Way: 130 Million Cycles
- 3-Way: 55 Million Cycles
- 0.90 Reliability Factor
- 95% Confidence

*Please contact factory for additional details on liquid compatibility.
C7 Miniature Cartridge Valve

Flow Curve

Flow Curve

0.012 in (0.3 mm) Orifice

Parker
**C7 Miniature Cartridge Valve**

**Flow Curve**

### 0.020 in (0.5 mm) Orifice

- **Pressure (bar):** 0, 1, 2, 3, 4, 5, 6, 7, 8
- **Flow Rate (slpm):** 0, 2, 4, 6, 8, 10, 12, 14, 16

### 0.031 in (0.8 mm) Orifice

- **Pressure (bar):** 0, 1, 2, 3, 4, 5
- **Flow Rate (slpm):** 0, 2, 4, 6, 8, 10, 12, 14, 16
C7  Miniature Cartridge Valve

Flow Curve

0.039 in (1.0 mm) Orifice

Pressure [bar]

0  0.5  1  1.5  2  2.5  3

Flow Rate [slpm]

0  2  4  6  8  10  12  14  16

Pressure [psi]

0  10  20  30  40

2-Way Max Pressure

3-Way Max Pressure

0.039 in (1.0 mm) Orifice

Electrical Interface

Wire Leads

Standard: 3.2 in (80 mm) Wire Leads, stripped at end
C7 Miniature Cartridge Valve

Electrical Requirements

Table 1

<table>
<thead>
<tr>
<th>Orifice</th>
<th>0.012 in (0.3 mm)</th>
<th>0.020 in (0.5 mm)</th>
<th>0.031 in (0.8 mm)</th>
<th>0.039 in (1.0 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve Type</td>
<td>2-Way</td>
<td>3-Way</td>
<td>2-Way</td>
<td>3-Way</td>
</tr>
<tr>
<td>Voltage [VDC]*</td>
<td>12</td>
<td>24</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>0.5</td>
<td>0.6</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Resistance (Ohm)**</td>
<td>288</td>
<td>995</td>
<td>140</td>
<td>495</td>
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</table>

* ± 5%, other voltages available on request
** ±5% @ 68°F, 20°C

Pneumatic Interface/Mechanical Integration
C7 Miniature Cartridge Valve

Dimensions

2-Way Valve Configuration

![Diagram of 2-Way Valve Configuration]

3-Way Valve Configuration

![Diagram of 3-Way Valve Configuration]
C7 Miniature Cartridge Valve

ANSI Symbols

2-Way Normally Closed

3-Way Normally Closed
C7 Miniature Cartridge Valve

Installation and Use

During installation of the C7 valve, the maximum force allowed to press it into the manifold is: 6.74 lbf (30 N)

Lubrication is recommended (I.E. alcohol or DI water depending on compatibility constraints)

Recommended Valve Manifold Dimensions

![Manifold Diagram]

Recommended Valve Mounting

The correct location to use when holding the valve in place in the manifold is the indent at the middle of the valve body. If the top of the valve is used to hold the valve in place, the working pressure the valve will see, can push the valve upward and exceed the maximum insertion force for the valve. This could damage the valve.

Installation and Use

C7 Evaluation Manifold Dimensions and Design

![Diagram of C7 MCS]

C07-MCS

SEE PORT DETAILS FOR DIMENSIONS

UNITS IN [MM]
**C7 Miniature Cartridge Valve**

**Installation and Use**

**Optional Reduced Power Control Method**

“Hit and Hold” is an optional control method to increase power efficiency for the C7 series valves.

Hit and Hold is a common control method used to reduce component power consumption and heat generation without sacrificing performance. The “Hit” or “Spike” state refers to the rated voltage required to actuate the valve. The “Hold” state is a substantial reduction in the rated voltage (normally 50% of the rated voltage) that maintains the valve in an actuated state.

Hit and Hold control can be incorporated using several different approaches, including discrete component circuits or programmable logic. The graph below illustrates a voltage “Hit” and “Hold” control method, however pulse width modulation (PWM) is also an acceptable control method.

This method greatly reduces power consumption because the valve only draws full current for a short period of time making it ideal for applications with sensitive power budgets.

Note: 50% duty cycle is a general recommendation; therefore, it is recommended that specific application testing is completed to verify the proper "hold" requirement. Factors that could impact hit and hold voltage levels include vibration, shock, pressure variation and pressure locations that are driven from specific usage. The hit and hold circuit design, combined with Parker’s valve, need to be validated for each specific application to ensure the valve will actuate under all usage conditions. **Contact Factory for more details.**
C7 Miniature Cartridge Valve

Typical Flow Diagram

Anesthesia Gas Blending Circuit

Accessories

C7 Evaluation Manifold with clip and screw (Valve not included)
- C07-MCS

Replacement Clip for C07-MCS
- C07-C

Replacement Screw for C07-MCS
- C07-S

Replacement FKM O-Ring for C7 Valve, Large
- C07-LG

Replacement FKM O-Ring for C7 Valve, Small
- C07-SM
**C7 Miniature Cartridge Valve**

**Ordering Information**

<table>
<thead>
<tr>
<th>Sample Part ID</th>
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<th>03</th>
<th>F</th>
<th>F</th>
<th>000</th>
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<tbody>
<tr>
<td>Description</td>
<td>Series</td>
<td>Configuration</td>
<td>Coil Voltage</td>
<td>Elastomer</td>
<td>Orifice</td>
<td>Mounting Style</td>
<td>Electrical Interface</td>
<td>Custom</td>
</tr>
<tr>
<td>Options</td>
<td>C07: 7 mm Cartridge Valve</td>
<td>2: 2-Way</td>
<td>12: 12 VDC</td>
<td>EP: EPDM</td>
<td>03: 0.012 in (0.3 mm)</td>
<td>F: Face Seal</td>
<td>F: 3.2 in (80 mm) flying lead</td>
<td>000: Standard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: 3-Way</td>
<td>24: 24 VDC</td>
<td>FK: FKM</td>
<td>05: 0.020 in (0.5 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>08: 0.031 in (0.8 mm)</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>10: 0.039 in (1.0 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**

C07-MCS: C07 Evaluation Manifold with Clip and Screw, Not supplied with the valve.
- C07-C: Replacement Clip used on C07-MCS*  
- C07-S: Replacement Screw used on C07-MCS*  
- C07-LG: Spare O-Ring for C07 Valve, FKM, Large**  
- C07-LGE: Spare O-Ring for C07 Valve, EPDM, Large**  
- C07-SM: Spare O-Ring for C07 Valve, FKM, Small**  
- C07-SME: Spare O-Ring for C07 Valve, EPDM, Small**

* Not Supplied with Valve, Replacement Part for C07-MCS  ** Supplied with Valve

**NOTE: For Evaluation - Please Add C07-MCS To Your Sample Order. All Valves Ship With O-Rings Installed**

**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 to configure your C7 valve. For CAD models and more detailed information, please visit us on the Web [www.parker.com/precisionfluidics/C7_GasCartridgeValve], call [+1 603.595.1500] or email at ppfinfo@parker.com.

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

For more information call +1 603 595 1500 or email ppfinfo@parker.com  
Visit [www.parker.com/precisionfluidics](http://www.parker.com/precisionfluidics)
C7 Valve  
Miniature Cartridge Liquid Valve  
7 mm Miniature Liquid Cartridge Valve

The Series C7 is a miniature cartridge style solenoid valve with a compact 7 mm diameter. This unique design combines small size, light weight and low power consumption with high flow repeatability and fast response time over an exceptionally long life, up to 130 million cycles. Available in 2-way configurations, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

Features
- Variety of orifice sizes with pressures up to 145 PSI (10 bar).
- Floating frictionless plunger enables reliable and repeatable operation up to 130 Million cycles.
- Low power design reduces heat and energy consumption.
- Cartridge configuration enables compact integration saving space and weight.
- Simple mechanical fastening prevents valve being dislodged due to vibration or pressure spikes.
- RoHS & REACH compliant.

Product Specifications

**Mechanical**
- **Valve Type:** Solenoid Cartridge Valve  
  2-Way Normally Closed (NC)  
- **Media:** Gases* and Liquids  
  (For gas performance see the Gas datasheet)
- **Operating Environment:** 32°F to 122°F (0°C to 50°C)
- **Storage Environment:** -40°F to 158°F (-40°C to 70°C)
- **Dimensions:**  
  - Diameter: 0.28 in (7 mm)  
  - Length: 0.79 in (20 mm)
- **Porting:**  
  - Cartridge Seal
- **Weight:** 0.11 oz (3.1 g)
- **Internal Volume:** 2-Way: 81µL

<table>
<thead>
<tr>
<th>Orifice (µm)</th>
<th>0.012 (0.3 mm)</th>
<th>0.020 (0.5 mm)</th>
<th>0.031 (0.8 mm)</th>
<th>0.039 (1.0 mm)</th>
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</thead>
<tbody>
<tr>
<td>Type</td>
<td>2-Way</td>
<td>2-Way</td>
<td>2-Way</td>
<td>2-Way</td>
</tr>
<tr>
<td>PSI</td>
<td>145</td>
<td>116</td>
<td>73</td>
<td>43.5</td>
</tr>
<tr>
<td>Bar</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>SCCM (water)</td>
<td>146</td>
<td>240</td>
<td>429</td>
<td>415</td>
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</table>

**Electrical**
- **Voltage (VDC):** 12 and 24 VDC ± 5%  
  (Other voltages available on request.)
- **Electrical Connections:** 3.2 in (80 mm) Flying Leads
- **Power:** Typical 0.5W - 1.2W  
  (*Please see Table 1 for more details*)

**Performance Characteristics**
- **Response:** 10 ms Maximum, Cycling
- **Recommended Filtration:**  
  - 0.3 mm Orifice  
    5 µm
  - 0.5 mm, 0.8 mm, & 1.0 mm Orifice  
    10 µm
- **Reliability:** 2-Way: 130 Million Cycles  
  0.90 Reliability Factor  
  95% Confidence

**Wetted Materials**
- **Body:** Stainless Steel Series 300 and 400
- **Seals:** (Internal and External)  
  FKM, EPDM  
  FFKM on request

*TPlease contact factory for additional details on gas compatibility.
C7 Miniature Liquid Cartridge Valve

Flow Curve

All Models (Water)

Flow Curve

0.012 in (0.3 mm) Orifice - Water
C7 Miniature Liquid Cartridge Valve

Flow Curve

0.020 in (0.5 mm) Orifice - Water

Pressure (bar)

Flow Rate (sccm)

0 20 40 60 80 100 120

0 250 200 150 100 50 0

0 1 2 3 4 5 6 7 8

0.031 in (0.8 mm) Orifice - Water

Pressure (bar)

Flow Rate (sccm)

0 20 40 60 80 100

0 450 400 350 300 250 200 150 100 50 0

0 1 2 3 4 5 6

0.031 in (0.8 mm) Orifice
C7 Miniature Liquid Cartridge Valve

Flow Curve

0.039 in (1.0 mm) Orifice - Water

Pressure (bar)

Flow Rate (scm)

Pressure (psi)

0 0.5 1 1.5 2 2.5 3

0 50 100 150 200 250 300 350 400

Electrical Interface

Wire Leads

Standard: 3.2 in (80 mm) Wire Leads, stripped at end
C7 Miniature Liquid Cartridge Valve

Electrical Requirements

<table>
<thead>
<tr>
<th>Orifice</th>
<th>0.012 in [0.3 mm]</th>
<th>0.020 in [0.5 mm]</th>
<th>0.031 in [0.8 mm]</th>
<th>0.039 in [1.8 mm]</th>
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</thead>
<tbody>
<tr>
<td>Valve type</td>
<td>2-Way</td>
<td>2-Way</td>
<td>2-Way</td>
<td>2-Way</td>
</tr>
<tr>
<td>Voltage (VDC)*</td>
<td>12</td>
<td>24</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>0.5</td>
<td>0.6</td>
<td>1</td>
<td>0.85</td>
</tr>
<tr>
<td>Resistance (Ohm)**</td>
<td>288</td>
<td>995</td>
<td>140</td>
<td>700</td>
</tr>
</tbody>
</table>

* ±5%, other voltages available on request
** ±5% @ 68°F, 20°C

Liquid Interface/Mechanical Integration
C7 Miniature Liquid Cartridge Valve

Dimensions

2-Way Valve Configuration

anoi Symbols

2-Way Normally Closed

PARKER
**C7 Miniature Liquid Cartridge Valve**

**Installation and Use**

During installation of the C7 valve, the maximum force allowed to press it into the manifold is: 6.74 lbf (30 N)

Lubrication is recommended (I.E. alcohol or DI water depending on compatibility constraints)

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**Recommended Valve Manifold Dimensions**

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**Recommended Valve Mounting**

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The correct location to use when holding the valve in place in the manifold is the indent at the middle of the valve body. If the top of the valve is used to hold the valve in place, the working pressure the valve will see, can push the valve upward and exceed the maximum insertion force for the valve. This could damage the valve.

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**C7 Evaluation Manifold Dimensions and Design**

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**C07-MCS**

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**Units**

IN (IN)

MM (MM)
C7 Miniature Liquid Cartridge Valve

Installation and Use

Optional Reduced Power Control Method

“Hit and Hold” is an optional control method to increase power efficiency for the C7 series valves.

Hit and Hold is a common control method used to reduce component power consumption and heat generation without sacrificing performance. The “Hit” or “Spike” state refers to the rated voltage required to actuate the valve. The “Hold” state is a substantial reduction in the rated voltage (normally 50% of the rated voltage) that maintains the valve in an actuated state.

Hit and Hold control can be incorporated using several different approaches, including discrete component circuits or programmable logic. The graph below illustrates a voltage “Hit” and “Hold” control method, however pulse width modulation (PWM) is also an acceptable control method.

This method greatly reduces power consumption because the valve only draws full current for a short period of time making it ideal for applications with sensitive power budgets.

Note: 50% duty cycle is a general recommendation; therefore, it is recommended that specific application testing is completed to verify the proper “hold” requirement. Factors that could impact hit and hold voltage levels include vibration, shock, pressure variation and pressure locations that are driven from specific usage. The hit and hold circuit design, combined with Parker’s valve, need to be validated for each specific application to ensure the valve will actuate under all usage conditions. Contact Factory for more details.
## C7 Miniature Liquid Cartridge Valve

### Chemical Compatibility Chart*

<table>
<thead>
<tr>
<th>Chemical</th>
<th>FFKM</th>
<th>FKM</th>
<th>EPDM</th>
<th>Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI Water</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Methanol</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ethanol</td>
<td>1</td>
<td>3</td>
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<tr>
<td>Acetonitrile</td>
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<td>4</td>
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<td>Tetrahydrofuran</td>
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<td>Toluene</td>
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<td>4</td>
<td>1</td>
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<tr>
<td>MEK</td>
<td>4</td>
<td>1</td>
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<td>3</td>
</tr>
<tr>
<td>Organic Acids - Dilute</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
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<tr>
<td>Non Organic Acids - Dilute</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Bases - Dilute</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Saline</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bleach 12%</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
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<tr>
<td>Sodium Hydroxide 20%</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**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

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### Accessories

- **C7 Evaluation Manifold with clip and screw (Valve not included)**
  - C07-MCS

- **Replacement Clip for C07-MCS**
  - C07-C

- **Replacement Screw for C07-MCS**
  - C07-S

- **Replacement O-Ring for C7 Valve, Large**
  - C07-LG (FKM)
  - C07-LGE (EPDM)

- **Replacement FKM O-Ring for C7 Valve, Small**
  - C07-SM (FKM)
  - C07-SME (EPDM)

---

*The above is an Abbreviated Chemical Compatibility Chart. Please consult factory for additional information.*
## C7  Miniature Liquid Cartridge Valve

### Ordering Information

<table>
<thead>
<tr>
<th>Sample Part ID</th>
<th>C07</th>
<th>-</th>
<th>2</th>
<th>24</th>
<th>FK</th>
<th>03</th>
<th>F</th>
<th>F</th>
<th>-</th>
<th>000</th>
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</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td><strong>Series</strong></td>
<td><strong>Configuration</strong></td>
<td><strong>Coil Voltage</strong></td>
<td><strong>Elastomer</strong></td>
<td><strong>Orifice</strong></td>
<td><strong>Mounting Style</strong></td>
<td><strong>Electrical Interface</strong></td>
<td><strong>Custom</strong></td>
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<tr>
<td>Options</td>
<td>C07: 7 mm Cartridge Valve</td>
<td>2: 2-Way</td>
<td>12: 12 VDC</td>
<td>EP: EPDM</td>
<td>03: 0.012 in (0.3 mm)</td>
<td>P: Face Seal</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>08: 0.031 in (0.8 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10: 0.039 in (1.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessories

- **C07-MCS:** C07 Evaluation Manifold with Clip and Screw, Not supplied with the valve.
- **C07-C:** Replacement Clip used on C07-MCS*
- **C07-S:** Replacement Screw used on C07-MCS*
- **C07-LG:** Spare O-Ring for C07 Valve, FKM, Large**
- **C07-LGE:** Spare O-Ring for C07 Valve, EPDM, Large**
- **C07-SM:** Spare O-Ring for C07 Valve, FKM, Small***
- **C07-SME:** Spare O-Ring for C07 Valve, EPDM, Small***

* Not Supplied with Valve, Replacement Part for C07-MCS  ** Supplied with Valve  *** Supplied with Valve

### NOTE: For Evaluation - Please Add C07-MCS To Your Sample Order. All Valves Ship With O-Rings Installed

### 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 to configure your C7 valve. For CAD models and more detailed information, please visit us on the Web (www.parker.com/precisionfluidics/C7_LiquidCartridgeValve), call (+1.603.595.1500) or email at ppfinfo@parker.com.

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

C15 Valve  Miniature Cartridge Solenoid Valve
15 mm Miniature Cartridge Valve

The Series C15 is a miniature cartridge style solenoid valve with a unique design that combines small size, light weight and low power consumption with high flow repeatability and fast response time over an exceptionally long life, up to 500 million cycles. Available in 2-way and 3-way configurations, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

Features
- Variety of orifice sizes with pressures up to 145 PSI (10 bar).
- Floating frictionless plunger enables reliable and repeatable operation up to 500 Million cycles.
- Low power design reduces heat and energy consumption.
- Cartridge configuration enables compact integration saving space and weight.
- Simple mechanical fastening prevents valve being dislodged due to vibration or pressure spikes.
- RoHS & REACH compliant.

Features
- Variety of orifice sizes with pressures up to 145 PSI (10 bar).
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- Low power design reduces heat and energy consumption.
- Cartridge configuration enables compact integration saving space and weight.
- Simple mechanical fastening prevents valve being dislodged due to vibration or pressure spikes.
- RoHS & REACH compliant.

Product Specifications

Mechanical

Valve Type:
- Solenoid Cartridge Valve
  - 2-Way Normally Closed (NC)
  - 3-Way Normally Closed (NC)

Media: Gases and Liquids*
(See details in liquid datasheet)

Operating Environment:
- 32°F to 122°F (0°C to 50°C)

Storage Environment:
- -40°F to 158°F (-40°C to 70°C)

Dimensions:
- - Diameter: 0.59 in (15 mm)
- - Length: 1.14 in (29 mm)

Porting:
- - Cartridge Seat

Weight: 0.78 oz (22 g)

Internal Volume:
- 2-Way: 391 µL
- 3-Way: 461 µL

<table>
<thead>
<tr>
<th>Orifice</th>
<th>0.020 in (0.5 mm)</th>
<th>0.040 in (1.0 mm)</th>
<th>0.060 in (1.5 mm)</th>
<th>0.080 in (2.0 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSI</td>
<td>145</td>
<td>145</td>
<td>116</td>
<td>102</td>
</tr>
<tr>
<td>Bar</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Cv</td>
<td>0.01</td>
<td>0.01</td>
<td>0.032</td>
<td>0.028</td>
</tr>
<tr>
<td>SLPM (l/min)</td>
<td>18</td>
<td>18</td>
<td>55</td>
<td>43</td>
</tr>
<tr>
<td>Maximum &amp; Pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electrical

Voltage (VDC):
- 12 and 24 VDC ± 5%
  (Other voltages available on request.)

Electrical Connections:
- 3.2 in (80 mm) Flying Leads

Power:
- Typical 1.1W - 1.7W
  (Please see Table 1 for more details)

Wetted Materials

Body:
- Stainless Steel Series 300 and 400

Seals: (Internal and External)
- FKM, EPDM

Performance Characteristics

Response:
- 10 ms Maximum, Cycling

Proof Pressure:
- 120% of Rated Maximum Pressure

Recommended Filtration:
- 10 µm

Reliability:
- 2-Way: 500 Million Cycles
- 3-Way: 200 Million Cycles
- 0.90 Reliability Factor
- 95% Confidence

*Please contact factory for additional details on liquid compatibility.
C15 Miniature Cartridge Valve

Flow Curve

All Models

Flow Curve

0.020 in (0.5 mm) Orifice
C15 Miniature Cartridge Valve

Flow Curve

**0.040 in (1.0 mm) Orifice**

Pressure (bar)

<table>
<thead>
<tr>
<th>Flow [s.lpm]</th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure [psi]</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

**0.060 in (1.5 mm) Orifice**

Pressure (bar)

<table>
<thead>
<tr>
<th>Flow [s.lpm]</th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure [psi]</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
</tr>
</tbody>
</table>

- **0.04 in (1.0 mm) Orifice**
- **0.06 in (1.5 mm) Orifice**
C15 Miniature Cartridge Valve

Flow Curve

Electrical Interface

Wire Leads
Standard: 3.2 in (80 mm) Wire Leads, stripped at end
C15 Miniature Cartridge Valve

Electrical Requirements

<table>
<thead>
<tr>
<th>Orifice (in (mm))</th>
<th>0.020 (\times) 0.5</th>
<th>0.040 (\times) 1.0</th>
<th>0.060 (\times) 1.5</th>
<th>0.080 (\times) 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve Type</td>
<td>2-Way</td>
<td>3-Way</td>
<td>2-Way</td>
<td>3-Way</td>
</tr>
<tr>
<td>Voltage (VDC)*</td>
<td>12</td>
<td>24</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>1.1</td>
<td>1.7</td>
<td>1.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Resistance (Ohm)**</td>
<td>132</td>
<td>525</td>
<td>85</td>
<td>361</td>
</tr>
</tbody>
</table>

* ± 5%, other voltages available on request
** ±5% @ 68°F, 20°C

Pneumatic Interface/Mechanical Integration
C15 Miniature Cartridge Valve

Dimensions

2-Way Valve Configuration

3-Way Valve Configuration

UNITS
IN [MM]
C15 Miniature Cartridge Valve

ANSI Symbols

2-Way Normally Closed

3-Way Normally Closed
C15 Miniature Cartridge Valve

Installation and Use

During installation of the C15 valve, the maximum force allowed to press it into the manifold is: 22.48 lbf (100 N)
Lubrication is recommended (I.E. alcohol or DI water depending on compatibility constraints)

---

**Recommended Valve Manifold Dimensions**

---

**Recommended Valve Mounting**

---

**C15 Evaluation Manifold Dimensions and Design**

---

The correct location to use when holding the valve in place in the manifold is the indent at the middle of the valve body. If the top of the valve is used to hold the valve in place, the working pressure the valve will see, can push the valve upward and exceed the maximum insertion force for the valve. This could damage the valve.
## C15 Miniature Cartridge Valve

### Installation and Use

#### Optional Reduced Power Control Method

“Hit and Hold” is an optional control method to increase power efficiency for the C15 series valves.

Hit and Hold is a common control method used to reduce component power consumption and heat generation without sacrificing performance. The “Hit” or “Spike” state refers to the rated voltage required to actuate the valve. The “Hold” state is a substantial reduction in the rated voltage (normally 50% of the rated voltage) that maintains the valve in an actuated state.

Hit and Hold control can be incorporated using several different approaches, including discrete component circuits or programmable logic. The graph below illustrates a voltage “Hit” and “Hold” control method, however pulse width modulation (PWM) is also an acceptable control method.

![Voltage vs Time Graph](image)

### C15 Hit and Hold Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hit Voltage Level</td>
<td>Rated Voltage</td>
</tr>
<tr>
<td>Hold Voltage Level</td>
<td>50% of Rated Voltage</td>
</tr>
<tr>
<td>Minimum Hit Time</td>
<td>100 ms</td>
</tr>
<tr>
<td>Maximum Hit Time</td>
<td>N/A</td>
</tr>
<tr>
<td>PWM Frequency (Minimum)</td>
<td>1 kHz</td>
</tr>
<tr>
<td>Hold Nominal Duty Cycle</td>
<td>50%</td>
</tr>
</tbody>
</table>

This method greatly reduces power consumption because the valve only draws full current for a short period of time making it ideal for applications with sensitive power budgets.

Note: 50% duty cycle is a general recommendation; therefore, it is recommended that specific application testing is completed to verify the proper “hold" requirement. Factors that could impact hit and hold voltage levels include vibration, shock, pressure variation and pressure locations that are driven from specific usage. The hit and hold circuit design, combined with Parker’s valve, need to be validated for each specific application to ensure the valve will actuate under all usage conditions. Contact Factory for more details.
C15 Miniature Cartridge Valve

Accessories

C15 Evaluation Manifold with clip and screw (Valve not included)

C15-MCS

Replacement Clip for C15-MCS
C15-C

Replacement Screw for C15-MCS
C15-S

Replacement O-Ring for C15 Valve, Large
C15-LG

Replacement FKM O-Ring for C15 Valve, Small
C15-SM
## Miniature Cartridge Valve

### Ordering Information

<table>
<thead>
<tr>
<th>Sample Part ID</th>
<th>C15</th>
<th>-</th>
<th>2</th>
<th>24</th>
<th>FK</th>
<th>05</th>
<th>F</th>
<th>F</th>
<th>-</th>
<th>000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Series</td>
<td>Configuration</td>
<td>Coil Voltage</td>
<td>Elastomer</td>
<td>Orifice</td>
<td>Mounting Style</td>
<td>Electrical Interface</td>
<td>Custom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td>C15: 15 mm Cartridge Valve</td>
<td>2: 2-Way</td>
<td>12: 12 VDC</td>
<td>EP, EPDM</td>
<td>05: 0.020 in (0.5 mm)</td>
<td>F: Face Seal</td>
<td>F: 3.2 in (80 mm) flying lead</td>
<td>000: Standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: 3-Way</td>
<td>24: 24 VDC</td>
<td>FK: FKM</td>
<td>10: 0.040 in (1.0 mm)</td>
<td>15: 0.060 in (1.5 mm)</td>
<td>20: 0.080 in (2.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessories

- C15-MCS: C15 Evaluation Manifold with Clip and Screw, Not supplied with the valve.
- C15-C: Replacement Clip used on C15-MCS*
- C15-S: Replacement Screw used on C15-MCS*
- C15-LG: Spare O-Ring for C15 Valve, Large**
- C15-SM: Spare O-Ring for C15 Valve, Small**

* Not Supplied with Valve, Replacement Part for C15-MCS  ** Supplied with Valve

**NOTE:** For Evaluation - Please Add C15-MCS To Your Sample Order. All Valves Ship With O-Rings Installed

**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 to configure your C15 valve. For CAD models and more detailed information, please visit us on the Web [www.parker.com/precisionfluidics/C15_GasCartridgeValve], call (+1.603.595.1500) or email at ppfinfo@parker.com.

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

For more information call +1 603 595 1500 or email ppfinfo@parker.com
Visit www.parker.com/precisionfluidics
C15 Valve  
**Miniature Cartridge Liquid Valve**

15 mm Miniature Liquid Cartridge Valve

The Series C15 is a miniature cartridge style solenoid valve with a unique design that combines small size, light weight and low power consumption with high flow repeatability and fast response time over an exceptionally long life, up to 500 million cycles. Available in a 2-way configuration, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

**Features**
- Variety of orifice sizes with pressures up to 145 PSI (10 bar).
- Floating frictionless plunger enables reliable and repeatable operation up to 500 Million cycles.
- Low power design reduces heat and energy consumption.
- Cartridge configuration enables compact integration saving space and weight.
- Simple mechanical fastening prevents valve being dislodged due to vibration or pressure spikes.
- RoHS & REACH compliant.

**Typical Markets**
- Analytical Chemistry
- Clinical Diagnostics
- Environmental Monitoring
- Print

**Typical Applications**
- Reagent Addition
- Wash
- Waste
- Flow Control
- Large format Inkjet systems

**Product Specifications**

**Mechanical**

<table>
<thead>
<tr>
<th>Valve Type:</th>
<th>Solenoid Cartridge Valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Way Normally Closed (NC)</td>
<td></td>
</tr>
<tr>
<td><strong>Media</strong>:</td>
<td>Gases* and Liquids</td>
</tr>
<tr>
<td>(See details in gas datasheet)</td>
<td></td>
</tr>
<tr>
<td><strong>Operating Environment</strong>:</td>
<td>32°F to 122°F (0°C to 50°C)</td>
</tr>
<tr>
<td><strong>Storage Environment</strong>:</td>
<td>-40°F to 158°F (-40°C to 70°C)</td>
</tr>
</tbody>
</table>
| **Dimensions**: | - Diameter: 0.59 in (15 mm)  
- Length: 1.14 in (29 mm) |
| **Porting**: | - Cartridge Seal |
| **Weight**: | 0.78 oz (22 g) |
| **Internal Volume**: | 2-Way: 391 µL |

<table>
<thead>
<tr>
<th>Orifice Type</th>
<th>0.020 in (0.5 mm)</th>
<th>0.040 in (1.0 mm)</th>
<th>0.060 in (1.5 mm)</th>
<th>0.080 in (2.0 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSI</td>
<td>145</td>
<td>116</td>
<td>58</td>
<td>22</td>
</tr>
<tr>
<td>Bar</td>
<td>10</td>
<td>8</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>Cv</td>
<td>0.01</td>
<td>0.032</td>
<td>0.058</td>
<td>0.093</td>
</tr>
<tr>
<td>SCCM (water)</td>
<td>400</td>
<td>1160</td>
<td>1670</td>
<td>1640</td>
</tr>
</tbody>
</table>

**Electrical**

<table>
<thead>
<tr>
<th>Voltage (VDC):</th>
<th>12 and 24 VDC ± 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Other voltages available on request.)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Electrical Connections</strong>:</td>
<td>3.2 in (80 mm) Flying Leads</td>
</tr>
<tr>
<td><strong>Power</strong>:</td>
<td>Typical 1.1W - 1.7W</td>
</tr>
<tr>
<td>(Please see Table 1 for more details)</td>
<td></td>
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</tbody>
</table>

**Wetted Materials**

<table>
<thead>
<tr>
<th><strong>Body</strong>:</th>
<th>Stainless Steel Series 300 and 400</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seals: (Internal and External)</strong></td>
<td>FKM, EPDM</td>
</tr>
<tr>
<td></td>
<td>FFKM available on request</td>
</tr>
</tbody>
</table>

**Performance Characteristics**

<table>
<thead>
<tr>
<th><strong>Response</strong>:</th>
<th>10 ms Maximum, Cycling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proof Pressure</strong>:</td>
<td>120% of Rated Maximum Pressure</td>
</tr>
<tr>
<td><strong>Recommended Filtration</strong>:</td>
<td>10 µm</td>
</tr>
<tr>
<td><strong>Reliability</strong>:</td>
<td>2-Way: 500 Million Cycles</td>
</tr>
<tr>
<td></td>
<td>0.90 Reliability Factor</td>
</tr>
<tr>
<td></td>
<td>95% Confidence</td>
</tr>
</tbody>
</table>

*Please contact factory for additional details on gas compatibility.
Miniature Liquid Cartridge Valve

**Flow Curve**

**All Models (Water)**

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>Flow (sccm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>2</td>
<td>1000</td>
</tr>
<tr>
<td>3</td>
<td>1500</td>
</tr>
<tr>
<td>4</td>
<td>2000</td>
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<tr>
<td>5</td>
<td>2500</td>
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<tr>
<td>6</td>
<td>3000</td>
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<td>7</td>
<td>3500</td>
</tr>
<tr>
<td>8</td>
<td>4000</td>
</tr>
<tr>
<td>9</td>
<td>4500</td>
</tr>
<tr>
<td>10</td>
<td>5000</td>
</tr>
</tbody>
</table>

- 0.02 in (0.5 mm) Orifice
- 0.04 in (1.0 mm) Orifice
- 0.06 in (1.5 mm) Orifice
- 0.08 in (2.0 mm) Orifice

**Flow Curve**

**0.020 in (0.5 mm) Orifice (Water)**

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>Flow (sccm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
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<tr>
<td>4</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>6</td>
<td>120</td>
</tr>
<tr>
<td>7</td>
<td>140</td>
</tr>
<tr>
<td>8</td>
<td>160</td>
</tr>
<tr>
<td>9</td>
<td>180</td>
</tr>
<tr>
<td>10</td>
<td>200</td>
</tr>
</tbody>
</table>

- 2-Way NC 0.02 in (0.5 mm) Orifice
C15 Miniature Liquid Cartridge Valve

Flow Curve

0.040 in (1.0 mm) Orifice (Water)

Pressure [bar]

Flow [sccm]

2-Way NC 0.04 in (1.0 mm) Orifice

0.060 in (1.5 mm) Orifice (Water)

Pressure [bar]

Flow [sccm]

2-Way NC 0.06 in (1.5 mm) Orifice
C15 Miniature Liquid Cartridge Valve

Flow Curve

0.080 in (2.0 mm) Orifice (Water)

Electrical Interface

Wire Leads
Standard: 3.2 in (80 mm) Wire Leads, stripped at end
C15 Miniature Liquid Cartridge Valve

Electrical Requirements

<table>
<thead>
<tr>
<th>Orifice</th>
<th>0.02 in (0.5 mm)</th>
<th>0.04 in (1.0 mm)</th>
<th>0.06 in (1.5 mm)</th>
<th>0.08 in (2.0 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve Type</td>
<td>2-Way</td>
<td>2-Way</td>
<td>2-Way</td>
<td>2-Way</td>
</tr>
<tr>
<td>Voltage (VDC)*</td>
<td>12</td>
<td>24</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>1.1</td>
<td>1.1</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Resistance (Ohm)**</td>
<td>132</td>
<td>525</td>
<td>85</td>
<td>361</td>
</tr>
</tbody>
</table>

* ± 5%, other voltages available on request
** ±5% @ 68°F, 20°C

Liquid Interface/Mechanical Integration
C15 Miniature Liquid Cartridge Valve

Dimensions

2-Way Valve Configuration

Ø 0.591 [Ø 15.00]

WIRE LEADS

1.14 [29.0]

.69 [17.5]

.217 [5.50]

Ø 0.281 [Ø 7.15]

ANSI Symbols

2-Way Normally Closed

PRESURE

(1) SUPPLY

(2) REQMT

"DE-ENERGIZED"

"ENERGIZED"

2-WAY NORMALLY CLOSED

VACUUM

(1) REQMT
(2) SUPPLY

"DE-ENERGIZED"

"ENERGIZED"
C15 Miniature Liquid Cartridge Valve

Installation and Use

During installation of the C15 valve, the maximum force allowed to press it into the manifold is: 22.48 lbf (100 N) Lubrication is recommended (i.e. alcohol or DI water depending on compatibility constraints)

Recommended Valve Manifold Dimensions

Installation and Use

C15 Evaluation Manifold Dimensions and Design
C15 Miniature Liquid Cartridge Valve

Installation and Use

Optional Reduced Power Control Method

“Hit and Hold” is an optional control method to increase power efficiency for the C15 series valves.

Hit and Hold is a common control method used to reduce component power consumption and heat generation without sacrificing performance. The “Hit” or “Spike” state refers to the rated voltage required to actuate the valve. The “Hold” state is a substantial reduction in the rated voltage (normally 50% of the rated voltage) that maintains the valve in an actuated state.

Hit and Hold control can be incorporated using several different approaches, including discrete component circuits or programmable logic. The graph below illustrates a voltage “Hit” and “Hold” control method, however pulse width modulation (PWM) is also an acceptable control method.

This method greatly reduces power consumption because the valve only draws full current for a short period of time making it ideal for applications with sensitive power budgets.

Note: 50% duty cycle is a general recommendation; therefore, it is recommended that specific application testing is completed to verify the proper “hold” requirement. Factors that could impact hit and hold voltage levels include vibration, shock, pressure variation and pressure locations that are driven from specific usage. The hit and hold circuit design, combined with Parker’s valve, need to be validated for each specific application to ensure the valve will actuate under all usage conditions. Contact Factory for more details.
**C15** Miniature Liquid Cartridge Valve

**Chemical Compatibility Chart***

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Seal Options</th>
<th>Other Wetted Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FFKM</td>
<td>FKM</td>
</tr>
<tr>
<td>DI Water</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Methanol</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Ethanol</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Acetonitrile</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tetrahydrofuran</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Toluene</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>MEK</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Organic Acids - Dilute</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Non Organic Acids - Dilute</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bases - Dilute</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Saline</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bleach 12%</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Sodium Hydroxide 20%</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

*The above is an Abbreviated Chemical Compatibility Chart. Please consult factory for additional information.

**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

**Accessories**

- **C15 Evaluation Manifold with clip and screw (Valve not included)**
  - C15-MCS

- **Replacement Clip for C15-MCS**
  - C15-C

- **Replacement Screw for C15-MCS**
  - C15-S

- **Replacement O-Ring for C15 Valve, Large**
  - C15-LG (FKM)
  - C15-LGE (EPDM)

- **Replacement FKM O-Ring for C15 Valve, Small**
  - C15-SM (FKM)
  - C15-SME (EPDM)
### C15 Miniature Liquid Cartridge Valve

#### Ordering Information

<table>
<thead>
<tr>
<th>Sample Part ID</th>
<th>C15</th>
<th>2</th>
<th>24</th>
<th>FK</th>
<th>05</th>
<th>F</th>
<th>F</th>
<th>-</th>
<th>000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td><strong>Series</strong></td>
<td><strong>Configuration</strong></td>
<td><strong>Coil Voltage</strong></td>
<td><strong>Elastomer</strong></td>
<td><strong>Orifice</strong></td>
<td><strong>Mounting Style</strong></td>
<td><strong>Electrical Interface</strong></td>
<td><strong>Custom</strong></td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td>C15: 15 mm Cartridge Valve</td>
<td>2: 2-Way</td>
<td>12: 12 VDC</td>
<td>EP: EPDM</td>
<td>05: 0.020 in (0.5 mm)</td>
<td>F: Face Seal</td>
<td>0:00: Standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24: 24 VDC</td>
<td>Fk: FKM</td>
<td></td>
<td>10: 0.040 in (1.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15: 0.060 in (1.5 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20: 0.080 in (2.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Accessories

**C15-MCS:** C15 Evaluation Manifold with Clip and Screw, Not supplied with the valve.

- **C15-C:** Replacement Clip used on C15-MCS
- **C15-S:** Replacement Screw used on C15-MCS
- **C15-LG:** Spare O-Ring for C15 Valve, FKM, Large**
- **C15-LGE:** Spare O-Ring for C15 Valve, EPDM, Large**
- **C15-SM:** Spare O-Ring for C15 Valve, FKM, Small**
- **C15-SME:** Spare O-Ring for C15 Valve, EPDM, Small**

*: Not Supplied with Valve, Replacement Part for C15-MCS **: Supplied with Valve

**NOTE:** For Evaluation - Please Add C15-MCS To Your Sample Order. All Valves Ship With O-Rings Installed

#### 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 to configure your C15 valve. For CAD models and more detailed information, please visit us on the Web (www.parker.com/precisionfluidics/C15_LiquidCartridgeValve), call (+1.603.595.1500) or email at ppfinfo@parker.com.

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

---

For more information call +1 603 595 1500 or email ppfinfo@parker.com
Visit www.parker.com/precisionfluidics
C21 Valve  Miniature Cartridge Solenoid Valve

21 mm Miniature Cartridge Valve

The Series C21 is a miniature cartridge style solenoid valve with a unique design that combines small size, light weight and low power consumption with high flow repeatability and fast response time over an exceptionally long life, of up to 20 million cycles. Available in 2-way and 3-way configurations, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

**Typical Markets**
- Medical and Analytical Gas Control
- Respiratory & Anesthesia
- Patient Therapy

**Typical Applications**
- Compression Therapy
- Oxygen Concentrators & Conservers
- Negative Pressure Wound Therapy

**Features**
- Variety of orifice sizes with pressures up to 145 PSI (10 bar).
- Floating frictionless plunger enables reliable and repeatable operation of up to 20 Million cycles.
- Low power design reduces heat and energy consumption.
- Cartridge configuration enables compact integration saving space and weight.
- Simple mechanical fastening prevents valve being dislodged due to vibration or pressure spikes.
- RoHS & REACH compliant.

**Product Specifications**

**Mechanical**

<table>
<thead>
<tr>
<th>Valve Type:</th>
<th>Solenoid Cartridge Valve 3-Way</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Way Normally Closed (NC)</td>
<td></td>
</tr>
</tbody>
</table>

**Media:** Gases and Liquids*  
(See more Information in Liquid Datasheet)

**Operating Environment:**  
- 32°F to 122°F (0°C to 50°C)
- -40°F to 158°F (-40°C to 70°C)

**Dimensions:**
- Diameter: 0.28 in (7 mm)
- Length: 0.79 in (20 mm)

**Porting:**
- Cartridge Seal

**Weight:** 2.17 oz (60 g)

**Internal Volume:**
- 2-Way: 1173μL
- 3-Way: 1376μL

**Valve Operation:**

<table>
<thead>
<tr>
<th>Orifice</th>
<th>0.040 in (1.0 mm)</th>
<th>0.080 in (2.0 mm)</th>
<th>0.12 in (3.0 mm)</th>
<th>0.16 in (4.0 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSI</td>
<td>145</td>
<td>145</td>
<td>116</td>
<td>87</td>
</tr>
<tr>
<td>Bar</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Cv</td>
<td>0.03</td>
<td>0.03</td>
<td>0.08</td>
<td>0.07</td>
</tr>
<tr>
<td>SLPM (lpm)</td>
<td>67.5</td>
<td>60</td>
<td>140</td>
<td>90</td>
</tr>
</tbody>
</table>

**Electrical Connections:**
- 3.2 in (80 mm) Flying Leads

**Power:**
- Typical 2.5W - 2.6W  
  (Please see Table 1 for more details)

**Wetted Materials**
- **Body:** Stainless Steel
- **Seals:** (Internal and External) FKM, EPDM

*Please contact factory for additional details on liquid compatibility.
C21 Miniature Liquid Cartridge Valve

Flow Curve

All Models

Pressure (bar)

0 1 2 3 4 5 6 7 8 9 10

Flow Curve

Flow (slpm)

Pressure (psi)

0.08 in (2.0 mm) Orifice

0.12 in (3.0 mm) Orifice

0.16 in (4.0 mm) Orifice

0.04 in (1.0 mm) Orifice

Flow Curve

0.040 in (1.0 mm) Orifice

Pressure (bar)

0 2 4 6 8 10

Flow (slpm)

Pressure (psi)

0 20 40 60 80 100 120 140

Flow (slpm)

0 20 40 60 80 100 120 140

0.04 in (1.0 mm) Orifice
C21 Miniature Cartridge Valve

Flow Curve

0.080 in (2.0 mm) Orifice

0.120 in (3.0 mm) Orifice
C21 Miniature Cartridge Valve

Flow Curve

![Flow Curve Diagram]

Electrical Interface

Wire Leads
Standard: 3.2 in (80 mm) Wire Leads, stripped at end
Miniature Solenoid Valves

C21 Miniature Cartridge Valve

Electrical Requirements

**Table 1**

<table>
<thead>
<tr>
<th>Orifice</th>
<th>0.040 in (1.0 mm)</th>
<th>0.080 in (2.0 mm)</th>
<th>0.12 in (3.0 mm)</th>
<th>0.16 in (4.0 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve Type</td>
<td>2-Way</td>
<td>3-Way</td>
<td>2-Way</td>
<td>3-Way</td>
</tr>
<tr>
<td>Voltage (VDC)**</td>
<td>12</td>
<td>24</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>2.6</td>
<td>2.5</td>
<td>2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>Resistance (Ohm)**</td>
<td>56</td>
<td>235</td>
<td>56</td>
<td>235</td>
</tr>
</tbody>
</table>

* ±5%, other voltages available on request

** ±5% @ 68°F, 20°C

Pneumatic Interface/Mechanical Integration
C21  Miniature Cartridge Valve

Dimensions

2-Way Valve Configuration

3-Way Valve Configuration
C21 Miniature Cartridge Valve

ANSI Symbols

2-Way Normally Closed

3-Way Normally Closed
C21 Miniature Cartridge Valve

Installation and Use

During installation of the C21 valve, the maximum force allowed to press it into the manifold is: 44.96 lbf (200 N)

Lubrication is recommended (i.e. alcohol or DI water depending on compatibility constraints)

**Recommended Valve Manifold Dimensions**

**Recommended Valve Mounting**

The correct location to use when holding the valve in place in the manifold is the indent at the middle of the valve body. If the top of the valve is used to hold the valve in place, the working pressure the valve will see, can push the valve upward and exceed the maximum insertion force for the valve. This could damage the valve.
**C21 Miniature Cartridge Valve**

**Installation and Use**

**Optional Reduced Power Control Method**

“Hit and Hold” is an optional control method to increase power efficiency for the C21 series valves.

Hit and Hold is a common control method used to reduce component power consumption and heat generation without sacrificing performance. The “Hit” or “Spike” state refers to the rated voltage required to actuate the valve. The “Hold” state is a substantial reduction in the rated voltage (normally 50% of the rated voltage) that maintains the valve in an actuated state.

Hit and Hold control can be incorporated using several different approaches, including discrete component circuits or programmable logic. The graph below illustrates a voltage “Hit” and “Hold” control method, however pulse width modulation (PWM) is also an acceptable control method.

![Voltage vs Time Graph](image)

<table>
<thead>
<tr>
<th>C21 Hit and Hold Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hit Voltage Level</strong></td>
</tr>
<tr>
<td><strong>Hold Voltage Level</strong></td>
</tr>
<tr>
<td><strong>Minimum Hit Time</strong></td>
</tr>
<tr>
<td><strong>Maximum Hit Time</strong></td>
</tr>
<tr>
<td><strong>PWM Frequency (Minimum)</strong></td>
</tr>
<tr>
<td><strong>Hold Nominal Duty Cycle</strong></td>
</tr>
</tbody>
</table>

This method greatly reduces power consumption because the valve only draws full current for a short period of time making it ideal for applications with sensitive power budgets.

Note: 50% duty cycle is a general recommendation; therefore, it is recommended that specific application testing is completed to verify the proper “hold” requirement. Factors that could impact hit and hold voltage levels include vibration, shock, pressure variation and pressure locations that are driven from specific usage. The hit and hold circuit design, combined with Parker’s valve, need to be validated for each specific application to ensure the valve will actuate under all usage conditions. Contact Factory for more details.
C21 Miniature Cartridge Valve

Accessories

C21 Evaluation Manifold with clip and screw (Valve not included)
C21-MCS

Replacement Clip for C21-MCS
C21-C

Replacement Screw for C21-MCS
C21-S

Replacement O-Ring for C21 Valve, Large
C21-LG

Replacement FKM O-Ring for C21 Valve, Small
C21-SM
C21 Miniature Cartridge Valve

Ordering Information

<table>
<thead>
<tr>
<th>Sample Part ID</th>
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<th>2</th>
<th>24</th>
<th>FK</th>
<th>10</th>
<th>F</th>
<th>F</th>
<th>000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td>C21: 15 mm Cartridge Valve</td>
<td>2: 2-Way</td>
<td>12; 12 VDC</td>
<td>EP, EPDM</td>
<td>10: 0.040 in (1.0 mm)</td>
<td>F: Face Seal</td>
<td>000: Standard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: 3-Way</td>
<td>24; 24 VDC</td>
<td>Fk: FKM</td>
<td>20: 0.080 in (2.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30: 0.12 in (3.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40: 0.16 in (4.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**

C21-MCS: C21 Evaluation Manifold with Clip and Screw, Not supplied with the valve.

C21-C: Replacement Clip used on C21-MCS*

C21-S: Replacement Screw used on C21-MCS*

C21-LG: Spare O-Ring for C21 Valve, Large**

C21-SM: Spare O-Ring for C21 Valve, Small**

* Not Supplied with Valve, Replacement Part for C21-MCS        ** Supplied with Valve

NOTE: For Evaluation - Please Add C21-MCS To Your Sample Order. All Valves Ship With O-Rings Installed

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 to configure your C21 valve. For CAD models and more detailed information, please visit us on the Web (www.parker.com/precisionfluidics/C21_GasCartridgeValve), call (+1.603.595.1500) or email at ppfinfo@parker.com.

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

For more information call +1 603 595 1500 or email ppfinfo@parker.com
Visit www.parker.com/precisionfluidics
The Series C21 is a miniature cartridge style solenoid valve with a compact 21 mm diameter. This unique design combines compact size, light weight and low power consumption with high flow repeatability and fast response time over an exceptionally long life up to ??? million cycles. Available in 2-way configuration, the valve is manifold mounted utilizing a simple securing system reducing assembly time.

**Features**
- Variety of orifice sizes with pressures up to 145 PSI (10 bar).
- Floating frictionless plunger enables reliable and repeatable operation up to 20 Million cycles.
- Low power design reduces heat and energy consumption.
- Compact reduces space and weight.
- 100% calibrated ensuring minimal valve to valve variation.
- RoHS & REACH compliant.

**Product Specifications**

**Mechanical**
- **Valve Type:** Solenoid Cartridge Valve
  - 2-Way Normally Closed (NC)
- **Media:** Gases* and Liquids
  (See more Information in Gas Datasheet)
- **Operating Environment:**
  - 32°F to 122°F (0°C to 50°C)
- **Storage Environment:**
  - -40°F to 158°F (-40°C to 70°C)
- **Dimensions:**
  - Diameter: 0.28 in (7 mm)
  - Length: 0.79 in (20 mm)
- **Porting:**
  - Cartridge Seal
- **Weight:** 2.17 oz (60 g)
- **Internal Volume:**
  - 2-Way: 1173 µL

**Performance Characteristics**
- **Response:**
  - 10 ms Maximum, Cycling
- **Recommended Filtration:**
  - 10 µm
- **Reliability:**
  - 2-Way: 20 Million Cycles
  - 0.90 Reliability Factor
  - 95% Confidence

**Electrical**
- **Voltage (VDC):**
  - 12 and 24 VDC ± 5%
  (Other voltages available on request)
- **Electrical Connections:**
  - 3.2 in (80 mm) Flying Leads
- **Power:**
  - Typical 2.5W - 2.6W
  *(Please see Table 1 for more details)*

**Wetted Materials**
- **Body:** Stainless Steel
- **Seals:**
  - Internal and External
  - FFKM, EPDM
  - FFKM available on request

*Please contact factory for additional details on gas compatibility.*
C21 Miniature Liquid Cartridge Valve

Flow Curve

All Models (Water)

Pressure (bar)

Flow (sccm)

Flow Curve

0.040 in (1.0 mm) Orifice (Water)

Pressure (bar)

Flow (sccm)

0.04 in (1.0 mm) Orifice
C21 Miniature Liquid Cartridge Valve

Flow Curve

0.080 in (2.0 mm) Orifice (Water)

Pressure (bar)

Flow (sccm)

0 20 40 60 80 100 120 140

0 2000 4000 6000 8000 10000

0 20 40 60 80 100 120 140

0 1 2 3 4 5

0.08 in (2.0 mm) Orifice

0.120 in (3.0 mm) Orifice (Water)

Pressure (bar)

Flow (sccm)

0 2000 4000 6000 8000 10000

0 20 40 60 80 100 120 140

0 1 2 3 4 5

0.12 in (3.0 mm) Orifice
C21 Miniature Liquid Cartridge Valve

**Flow Curve**

0.160 in (4.0 mm) Orifice (Water)

![Flow Curve Graph](image)

**Electrical Interface**

Wire Leads
Standard: 3.2 in (80 mm) Wire Leads, stripped at end
**C21 Miniature Liquid Cartridge Valve**

**Electrical Requirements**

<table>
<thead>
<tr>
<th>Orifice</th>
<th>0.040 in (1.0 mm)</th>
<th>0.080 in (2.0 mm)</th>
<th>0.12 in (3.0 mm)</th>
<th>0.16 in (4.0 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve Type</td>
<td>2-Way</td>
<td>2-Way</td>
<td>2-Way</td>
<td>2-Way</td>
</tr>
<tr>
<td>Voltage (VDC)*</td>
<td>12</td>
<td>24</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>2.6</td>
<td>2.5</td>
<td>2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>Resistance (Ohm)**</td>
<td>56</td>
<td>235</td>
<td>56</td>
<td>235</td>
</tr>
</tbody>
</table>

* ± 5%, other voltages available on request

** ±5% @ 68°F, 20°C

**Liquid Interface/Mechanical Integration**
C21 Miniature Liquid Cartridge Valve

Dimensions

2-Way Valve Configuration

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø.787 [Ø20.00]</td>
<td></td>
</tr>
<tr>
<td>1.54 [39.0]</td>
<td></td>
</tr>
<tr>
<td>.315 [8.00]</td>
<td></td>
</tr>
<tr>
<td>Ø.394 [Ø10.00]</td>
<td></td>
</tr>
<tr>
<td>Ø.827 [Ø21.00]</td>
<td></td>
</tr>
</tbody>
</table>

TOP VIEW

NORMALLY CLOSED
INLET PORTS

OUTLET PORT

BOTTOM VIEW

UNITS
IN [MM]

ANSI Symbols

2-Way Normally Closed

PRESSURE

(1) SUPPLY

"DE-ENERGIZED"

(2) REQMT

"ENERGIZED"

2-WAY NORMALLY CLOSED

ANSI SYMBOL

VACUUM

(1) REQMT

"DE-ENERGIZED"

(2) SUPPLY

"ENERGIZED"
**C21 Miniature Liquid Cartridge Valve**

**Installation and Use**

During installation of the C21 valve, the maximum force allowed to press it into the manifold is: 44.96 lbf (200 N)

Lubrication is recommended (i.e. alcohol or DI water depending on compatibility constraints)

**Recommended Valve Manifold Dimensions**

**Recommended Valve Mounting**

The correct location to use when holding the valve in place in the manifold is the indent at the middle of the valve body. If the top of the valve is used to hold the valve in place, the working pressure the valve will see, can push the valve upward and exceed the maximum insertion force for the valve. This could damage the valve.

**C21 Evaluation Manifold Dimensions and Design**

**C21-MCS**

---

**Parker**
**C21 Miniature Liquid Cartridge Valve**

**Installation and Use**

**Optional Reduced Power Control Method**

"Hit and Hold" is an optional control method to increase power efficiency for the C21 series valves.

Hit and Hold is a common control method used to reduce component power consumption and heat generation without sacrificing performance. The "Hit" or "Spike" state refers to the rated voltage required to actuate the valve. The "Hold" state is a substantial reduction in the rated voltage (normally 50% of the rated voltage) that maintains the valve in an actuated state.

Hit and Hold control can be incorporated using several different approaches, including discrete component circuits or programmable logic. The graph below illustrates a voltage "Hit" and "Hold" control method, however pulse width modulation (PWM) is also an acceptable control method.

![Voltage vs Time](image)

**C21 Hit and Hold Specification**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hit Voltage Level</td>
<td>Rated Voltage</td>
</tr>
<tr>
<td>Hold Voltage Level</td>
<td>50% of Rated Voltage</td>
</tr>
<tr>
<td>Minimum Hit Time</td>
<td>100 ms</td>
</tr>
<tr>
<td>Maximum Hit Time</td>
<td>N/A</td>
</tr>
<tr>
<td>PWM Frequency (Minimum)</td>
<td>1 kHz</td>
</tr>
<tr>
<td>Hold Nominal Duty Cycle</td>
<td>50%</td>
</tr>
</tbody>
</table>

This method greatly reduces power consumption because the valve only draws full current for a short period of time making it ideal for applications with sensitive power budgets.

Note: 50% duty cycle is a general recommendation; therefore, it is recommended that specific application testing is completed to verify the proper "hold" requirement. Factors that could impact hit and hold voltage levels include vibration, shock, pressure variation and pressure locations that are driven from specific usage. The hit and hold circuit design, combined with Parker’s valve, need to be validated for each specific application to ensure the valve will actuate under all usage conditions. Contact Factory for more details.
C21 Miniature Liquid Cartridge Valve

**Chemical Compatibility Chart***

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Seal Options</th>
<th>Other Wetted Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FFKM</td>
<td>FKM</td>
</tr>
<tr>
<td>Di Water</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Methanol</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ethanol</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Acetonitrile</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Tetrahydrofuran</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Toluene</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>MEK</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Organic Acids - Dilute</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Non Organic Acids - Dilute</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bases - Dilute</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Saline</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bleach 12%</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Sodium Hydroxide 20%</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**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

**Accessories**

- **C21 Evaluation Manifold with clip and screw (Valve not included)**
  - C21-MCS

- **Replacement Clip for C21-MCS**
  - C21-C

- **Replacement Screw for C21-MCS**
  - C21-S

- **Replacement O-Ring for C21 Valve, Large**
  - C21-LG (FKM)
  - C21-LGE (EPDM)

- **Replacement FKM O-Ring for C21 Valve, Small**
  - C21-SM (FKM)
  - C21-SME (EPDM)
C21 Miniature Cartridge Valve

Ordering Information

<table>
<thead>
<tr>
<th>Sample Part ID</th>
<th>C21</th>
<th>2</th>
<th>24</th>
<th>FK</th>
<th>10</th>
<th>F</th>
<th>F</th>
<th>000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Series</td>
<td>Configuration</td>
<td>Coil Voltage</td>
<td>Elastomer</td>
<td>Orifice</td>
<td>Mounting Style</td>
<td>Electrical Interface</td>
<td>Custom</td>
</tr>
<tr>
<td>Options</td>
<td>2211</td>
<td>15 mm Cartridge Valve</td>
<td>2: 2-Way</td>
<td>12: 12 VDC</td>
<td>EP, EPDM</td>
<td>0.040 in (1.0 mm)</td>
<td>F: Face Seal</td>
<td>000: Standard</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24: 24 VDC</td>
<td>FK, FKM</td>
<td>0.080 in (2.0 mm)</td>
<td>F: 2.2 in (80 mm) flying lead</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.12 in (3.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.16 in (4.0 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accessories

C21-MCS: C21 Evaluation Manifold with Clip and Screw, Not supplied with the valve.
C21-C: Replacement Clip used on C21-MCS
C21-S: Replacement Screw used on C21-MCS
C21-LG: Spare O-Ring for C21 Valve, FKM, Large**
C21-LGE: Spare O-Ring for C21 Valve, EPDM, Large**
C21-SM: Spare O-Ring for C21 Valve, FKM, Small**
C21-SME: Spare O-Ring for C21 Valve, EPDM, Small**

NOTE: For Evaluation - Please Add C21-MCS To Your Sample Order. All Valves Ship With O-Rings Installed

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 to configure your C21 valve. For CAD models and more detailed information, please visit us on the Web (www.parker.com/precisionfluidics/C21_LiquidCartridgeValve), call (+1.603.595.1500) or email at ppfinfo@parker.com.

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

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