The X-Valve® is a miniature pneumatic solenoid valve measuring only 8 mm in width. The compact size, light weight and low power consumption of the X-Valve® is the ideal solution for portable applications and those applications with limited space and available power. The body construction of the X-Valve® is suited for manifold or barbed-tube pneumatic connections and is available in 2-way normally closed and 3-way universal configurations.

**Features**
- Direct PC and side-to-side mounting enables compact and efficient system design
- Large range of pressure options (6, 30 and 100 psi) to meet various application requirements
- Light weight valve construction is ideal for portable applications
- Available low power model (0.5 Watt) for continuous duty applications
- RoHS compliant

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**Typical Applications**
- Portable Equipment
- Blood Pressure Monitoring
- Wound Therapy
- Air and Oxygen Delivery
- Sensor Zeroing

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**Product Specifications**

**Mechanical**

**Valve Type:**
- 3-Way, Solenoid-actuated poppet style
  - Universal (6 psig & 30 psig models)
  - Normally Closed (100 psig model)
- 2-Way Solenoid-actuated poppet style
  - Normally Closed, Bi-Directional Flow
  - (6 & 30 psig models)
  - Normally Closed, Directional Flow
  - (100 psig model)

**Media:** Non-Reactive gases

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

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

**Dimensions:**
- Length: 0.92 in (23.4 mm)
- Width: 0.31 in (7.9 mm)
- Height: 0.48 in (12.2 mm)
  - to Barb End / 0.35 in (8.9 mm)
  - to Manifold Face

**Spacing:**
0.315 in (8 mm) center

**Porting:**
- Barbs for 1/16 in (1.5 mm)
- I. D. Tubing, (1/32 in Wall Max.)
- Manifold Mount (Gasket accessory required, see ordering info)

**Weight:**
0.16 oz (4.5 g)

**Internal Volume:**
0.0056 in³ (0.092 cm³)

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**Electrical**

**Power Options:**
- 0.5 Watt (6 psig model)
- 1.0 Watt (30, 100 psig model)

**Voltage Options:**
3, 5, 12 or 24 VDC

Further power reduction may be achieved through the use of spike and hold or PWM electrical control.

**Electrical Connections:**
PC Pins, 4 mm centers (all models)
Lead Wire/Connector Assembly
(Accessory, see ordering info)

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**Wetted Materials**

**Bobbin/Body:**
PBT (Polybutylene terephthalate)

**Pole & Plunger:**
430 FR Series Stainless Steel

**Seal (Options):**
FKM, EPDM, Silicone

**Other:**
302 Series Stainless Steel

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**Performance Characteristics**

**Leak Rate:** Tested with Air
- <0.016 sccm (6 psig Silicone)
- <0.016 sccm (30 psig FKM)
- <0.16 sccm (6 psig EPDM & FKM)
- <0.2 sccm (100 psig only)

**Response:**
- < 20 ms maximum cycling (FKM, Silicone)
- < 50 ms maximum cycling (EPDM)

**Pressure/Vacuum:**
0 to 6 psid (0.4 bar differential)
0 to 30 psid (2.0 bar differential)
0 to 100 psid (6.9 bar differential)

**Proof Pressure:**
200 psig (13.7 bar)

**Minimum Flow:**
4 slpm @ 6 psid
6 slpm @ 30 psid
9 slpm @ 100 psid

**Orifice Sizes/Equivalent Cv:**
0.045" (1.14 mm) / 0.018
0.030" (0.75 mm) / 0.010
0.020" (0.5 mm) / 0.005

**Reliability:**
Life Cycle rating of 25 million
(worst case tested, no performance degradation)

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X-Valve is a registered trademark of Parker Hannifin Corporation.
**X-Valve® Miniature Pneumatic Solenoid Valve**

**Typical Flow Curve**

All Models
(Tested w/air 24° C)

![Flow Curve Graphs](image)

- Models 1 and 6 – 0.045” (1.14 mm) Orifice
- Models 2 and 7 – 0.030” (0.76 mm) Orifice
- Models 5 and 8 – 0.020” (0.51 mm) Orifice
**X-Valve® Miniature Pneumatic Solenoid Valve**

### Pressure and Flow Capabilities/Power

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Orifice Size</th>
<th>Nominal Cv</th>
<th>Maximum Operating Pressure Differential</th>
<th>Nominal Power Consumption</th>
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<tbody>
<tr>
<td>1 and 6</td>
<td>0.045 in (1.14 mm)</td>
<td>0.018</td>
<td>6 psi (0.4 bar differential)</td>
<td>0.5 Watt</td>
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<tr>
<td>2 and 7</td>
<td>0.030 in (0.76 mm)</td>
<td>0.010</td>
<td>30 psi (2.0 bar differential)</td>
<td>1 Watt</td>
</tr>
<tr>
<td>5 and 8</td>
<td>0.020 in (0.51 mm)</td>
<td>0.005</td>
<td>100 psi (6.9 bar differential)</td>
<td>1 Watt</td>
</tr>
</tbody>
</table>

* Proof pressure is 200 psig (13.7 bar)

### Pneumatic Interface / Electrical Interface

**Short Pin**  
(For Pin/Wire Lead or PCB Terminal Housing Connection)  
[Reference Accessories section]

**Long Pin**  
(For Pin/PCB solder mount connection)

#### Coil Connections

**Electrical Connection Options:**  
Electrical terminals compatible with Molex 51065 series connector or equivalent.

### Mechanical Integration

#### Dimensions

**SIDE VIEW**  
3-WAY UNIVERSAL, NORMALLY OPEN PORT  
2-WAY NORMALLY CLOSED, BLOCKED PORT (NOT USED)  
(3X) BARB FITTING FOR 1/16” I.D. THIN WALL POLYURETHANE TUBING  
COMMON PORT  
NORMALLY CLOSED PORT  
RECEPTACLE CONTACTS FOR .025 [0.64] SQ. TERMINAL POSTS  
.157 [4.00] RECEPTACLE CONTACTS FOR .025 [0.64] SQ. TERMINAL POSTS  
.180 [4.57] TO PIN C/L  
.100 [2.54] TO RECEPTACLE CENTER LINE.

**BOTTOM VIEW**  
.640 [16.26]  
.714 [18.14]  
.854 [21.69]  
.916 [23.27]  
.155 [3.94]  
.310 [7.87]  
.375 [9.53]  
.480 [12.19]  
.41 [10.4] (LONG PIN)  
.28 [7.1] (SHORT PIN)
X-Valve® Miniature Pneumatic Solenoid Valve

ANSI Symbols

Pneumatic Schematics by Valve Types

**Universal Option #1** (NORMALLY CLOSED)

**Pressure**

- (3) Exhaust
- (2) Reqmt
- (1) Supply

- "DE-ENERGIZED"
- "ENERGIZED"

**Vacuum**

- (3) Supply

**Universal Option #2** (NORMALLY OPEN)

**Pressure**

- (3) Supply
- (2) Reqmt
- (1) Exhaust

- "DE-ENERGIZED"
- "ENERGIZED"

**Vacuum**

- (3) ATM

**Universal Option #3** (DISTRIBUTOR)

**Pressure**

- (3) Reqmt
- (2) Supply
- (1) Reqmt

- "DE-ENERGIZED"
- "ENERGIZED"

**Vacuum**

- (3) Supply

**NORMALLY CLOSED** (MODEL 5 / 100 PSI VERSION ONLY)

**Pressure**

- (3) Exhaust
- (2) Reqmt
- (1) Supply

- "DE-ENERGIZED"
- "ENERGIZED"

**Vacuum**

- (3) Supply

**2-Way Normally Closed, Bi-Directional Flow** (MODELS 6 AND 7)

**Pressure**

- (3) Blocked Internally
- (2) Supply or Reqmt
- (1) Supply or Reqmt

- "DE-ENERGIZED"
- "ENERGIZED"

**Vacuum**

- (3) Blocked Internally

**2-Way Normally Closed, Directional** (MODEL 8)

**Pressure**

- (3) Blocked Internally
- (2) Reqmt
- (1) Supply

- "DE-ENERGIZED"
- "ENERGIZED"

**Vacuum**

- (3) Blocked Internally

**Legend:**

- SUPPLY: Pneumatic Source or Supply Pressure
- EXHAUST: Exhaust to Atmospheric Pressure
- REQMT: Customer Requirement or Application
- ATM: Atmospheric Pressure
X-Valve® Miniature Pneumatic Solenoid Valve

Installation and Use

X-Valve Manifold Mount Diagram

Parker Precision Fluidics recommends 3-5 in-oz of torque for the screws

Recommended X-Valve Manifold Dimensions
**X-Valve® Miniature Pneumatic Solenoid Valve**

**Installation and Use**

**Recommended X-Valve Mounting**

- **Single Station Manifold Mounting**
- **Multiple Station Manifold Mounting**

(4) MOUNTING SCREWS ARE REQUIRED FOR SINGLE VALVE INSTALLATION

ALTERNATING MOUNTING SCREWS CAN BE USED TO FACILITATE MULTIPLE VALVE INSTALLATION

**Accessories**

**Mounting Options**

- **Manifold Rubber Gasket (FKM)**
  195-000159-001
  (required for manifold mounting)

- **12” Wire Leads**
  290-006061-001
  (for use with Short Pin valve configuration)

- **Screw 0-80 x 1/2” Binding Head, Phillips**
  191-000100-208
  (see valve mounting recommendations above)

**Retention Pin PCB**

190-006020-001

PIN SECURED VIA SOLDER CONNECTION TO PCB

PRINTED CIRCUIT BOARD

RETENTION PIN PCB

2X Ø.036 [Ø0.91] I.D. X Ø.060 [Ø1.52] O.D. PAD PTH

2X Ø.038 [Ø0.97] I.D. X Ø.100 [Ø2.54] O.D. PAD PTH

.077 [1.96] .015 [0.38]

.071 [1.80]

.131 [3.33]
X-Valve® Miniature Pneumatic Solenoid Valve

Ordering Information

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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 (or go to www.parker.com/precisionfluidics/xvalve) to configure your X-Valve Miniature Pneumatic Solenoid Valve. For more detailed information, visit us on the Web, or call and refer to Specification #790-002166-001 (3-Way, 6 and 30 psig), #790-002241-001 (3-Way, 100 psig), #790-002383-001 (2-Way, 6 psig), #790-002384-001 (2-Way, 30 psig), #790-002385-001 (2-Way, 100 psig) and drawing #890-003090-003 (Standard Pins) and #890-003090-004 (Long Pins).

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

Visit www.parker.com/precisionfluidics

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