

# X-Valve®

## Miniature Pneumatic Solenoid Valve

### 8mm Solenoid Valve



#### Typical Applications

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

#### Product Specifications

##### Mechanical

<b>Valve Type:</b>
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)
<b>Media:</b> Non-Reactive gases
<b>Operating Environment:</b> 32 to 122°F (0 to 50°C)
<b>Storage Temperature:</b> -40 to 158°F (-40 to 70°C)
<b>Dimensions:</b> - 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
<b>Spacing:</b> 0.315 in (8 mm) center
<b>Porting:</b> - Barbs for 1/16 in (1.5 mm) I. D. Tubing, (1/32 in Wall Max.) - Manifold Mount (Gasket accessory required, see ordering info)
<b>Weight:</b> 0.16 oz (4.5 g)
<b>Internal Volume:</b> 0.0056 in <sup>3</sup> (0.092 cm <sup>3</sup> )

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 

#### Electrical

<b>Power Options:</b> 0.5 Watt (6 psig model) 1.0 Watt (30, 100 psig model)
<b>Voltage Options:</b> 3, 5, 12 or 24 VDC Further power reduction may be achieved through the use of spike and hold or PWM electrical control.
<b>Electrical Connections:</b> PC Pins, 4 mm centers (all models) Lead Wire/Connector Assembly (Accessory, see ordering info)

#### Wetted Materials

<b>Bobbin/Body:</b> PBT (Polybutylene terephthalate)
<b>Pole &amp; Plunger:</b> 430 FR Series Stainless Steel
<b>Seal (Options):</b> FKM, EPDM, Silicone
<b>Other:</b> 302 Series Stainless Steel

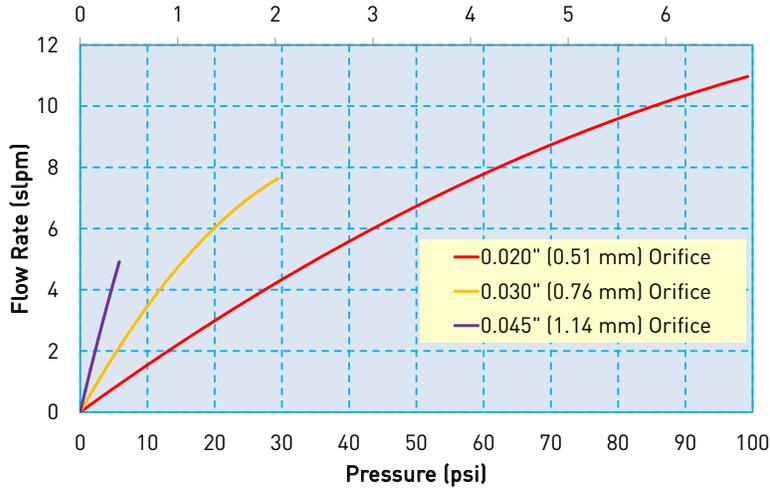
#### Performance Characteristics

<b>Leak Rate: Tested with Air</b> <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)
<b>Response:</b> < 20 ms maximum cycling (FKM, Silicone) < 50 ms maximum cycling (EPDM)
<b>Pressure/Vacuum:</b> 0 to 6 psid (0.4 bar differential) 0 to 30 psid (2.0 bar differential) 0 to 100 psid (6.9 bar differential)
<b>Proof Pressure:</b> 200 psig (13.7 bar)
<b>Minimum Flow:</b> 4 slpm @ 6 psid (0.4 bar differential) 6 slpm @ 30 psid (2.0 bar differential) 9 slpm @ 100 psid (6.9 bar differential)
<b>Orifice Sizes/Equivalent Cv:</b> 0.045" (1.14 mm) / 0.018 0.030" (0.75 mm) / 0.010 0.020" (0.5 mm) / 0.005
<b>Reliability:</b> Life Cycle rating of 25 million (worst case tested, no performance degradation)

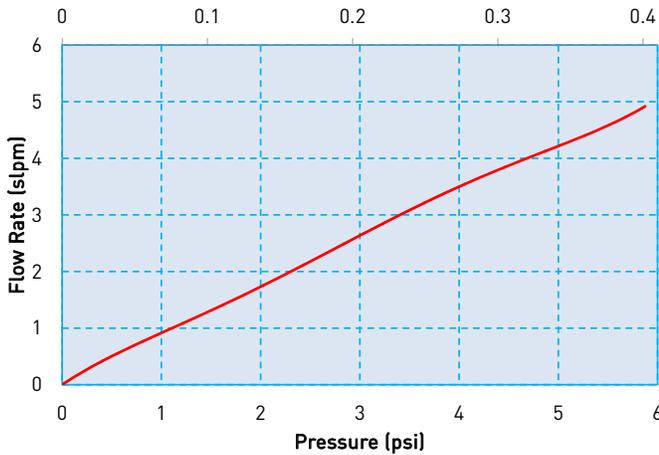
# X-Valve® Miniature Pneumatic Solenoid Valve

## Typical Flow Curve

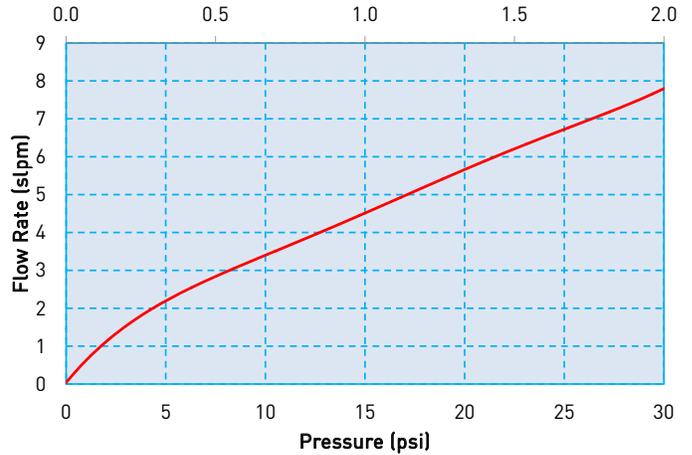
**All Models**  
 (Tested w/air 24° C)  
 Pressure (bar)



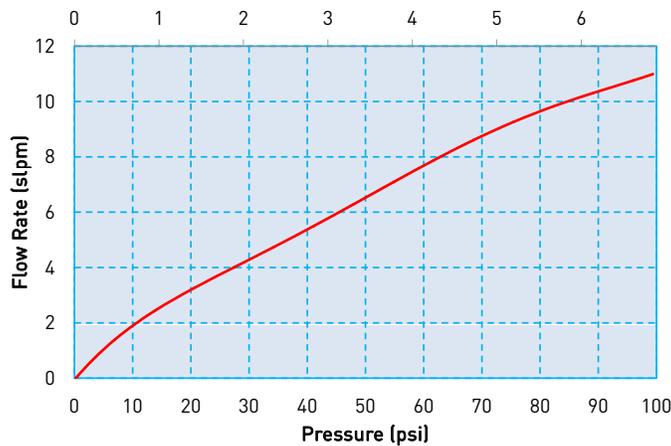
**Models 1 and 6 – 0.045" (1.14 mm) Orifice**  
 Pressure (bar)



**Models 2 and 7 – 0.030" (0.76 mm) Orifice**  
 Pressure (bar)



**Models 5 and 8 – 0.020" (0.51 mm) Orifice**  
 Pressure (bar)



# X-Valve® Miniature Pneumatic Solenoid Valve

## Pressure and Flow Capabilities/Power

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

\* 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]

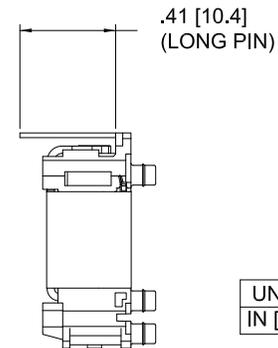
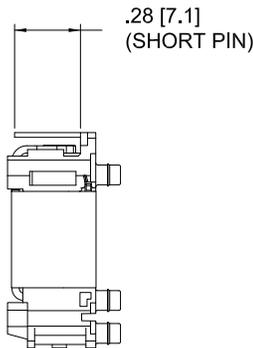


### Long Pin

(For Pin/PCB solder mount connection)



### Coil Connections

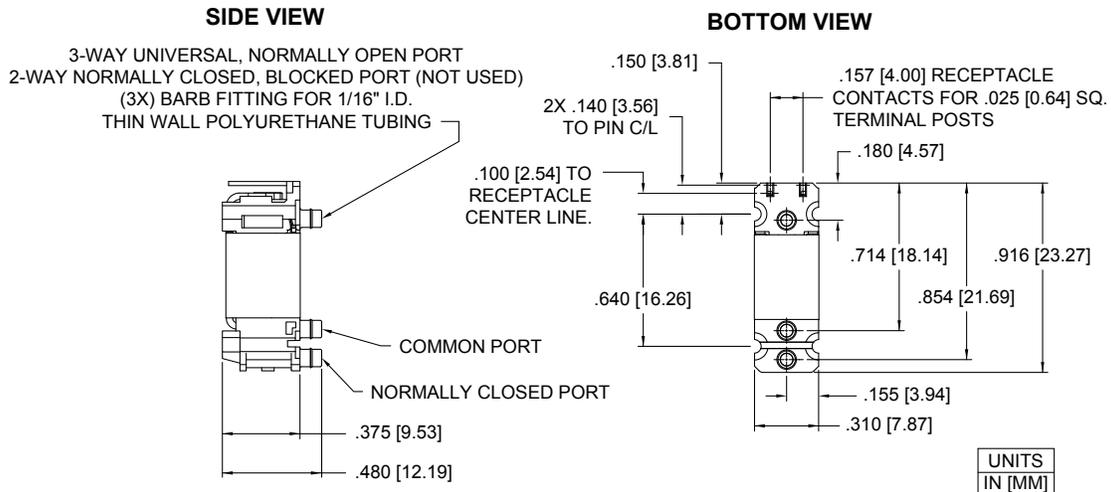


**Electrical Connection Options:**  
Electrical terminals compatible with Molex 51065 series connector or equivalent.

UNITS  
IN [MM]

## Mechanical Integration

### Dimensions

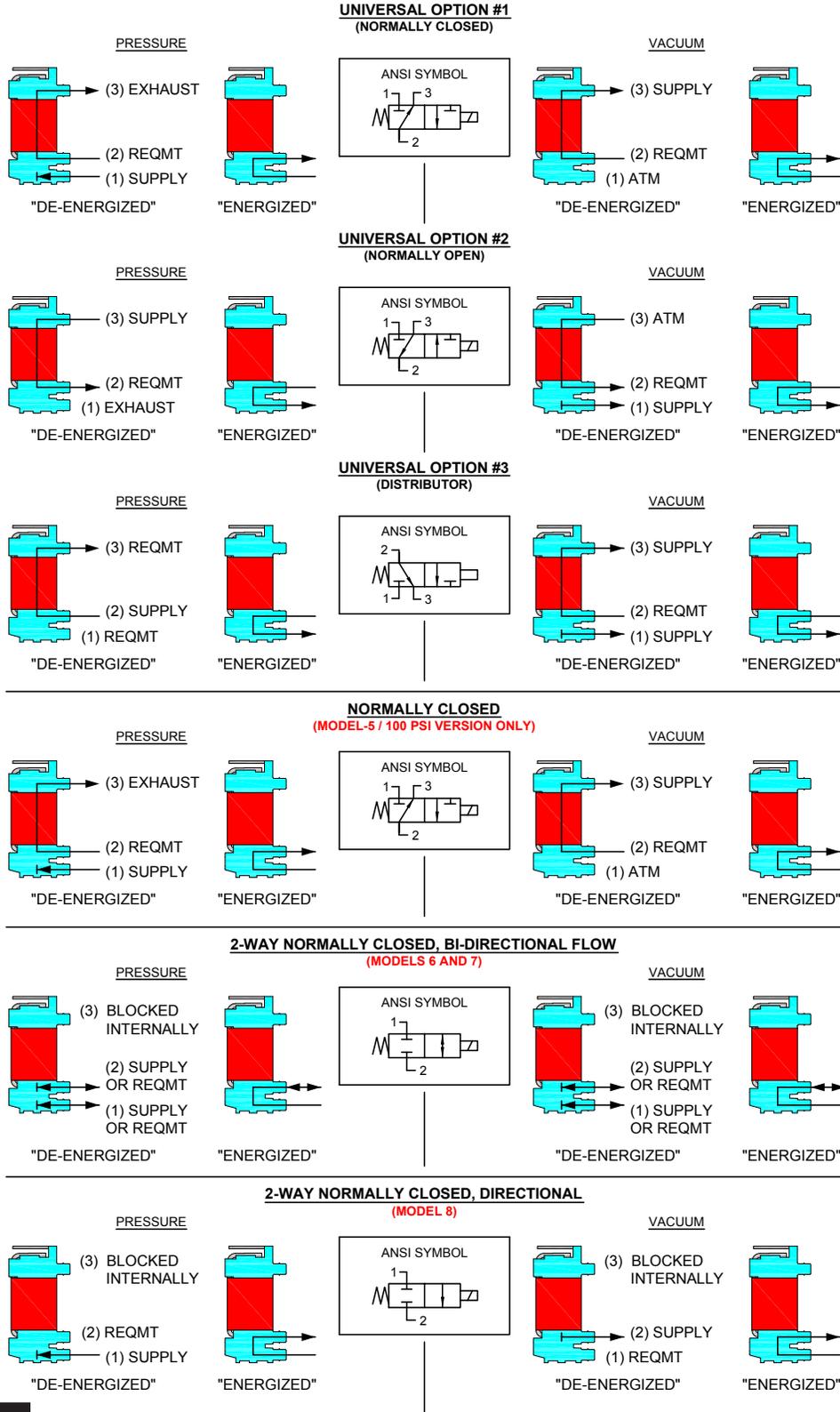


# X-Valve® Miniature Pneumatic Solenoid Valve

## ANSI Symbols

LEGEND:	
SUPPLY:	Pneumatic Source or Supply Pressure
EXHAUST:	Exhaust to Atmospheric Pressure
REQMT:	Customer Requirement or Application
ATM:	Atmospheric Pressure

### Pneumatic Schematics by Valve Types

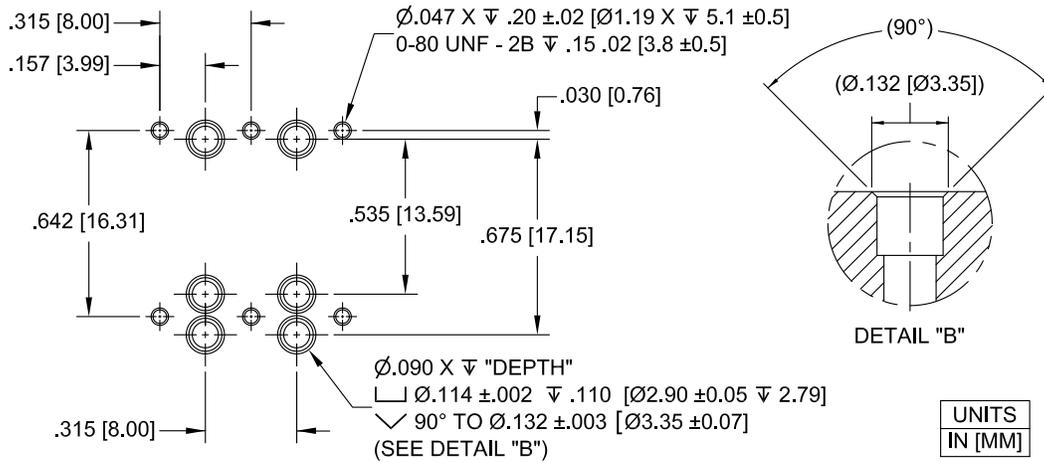


# X-Valve® Miniature Pneumatic Solenoid Valve

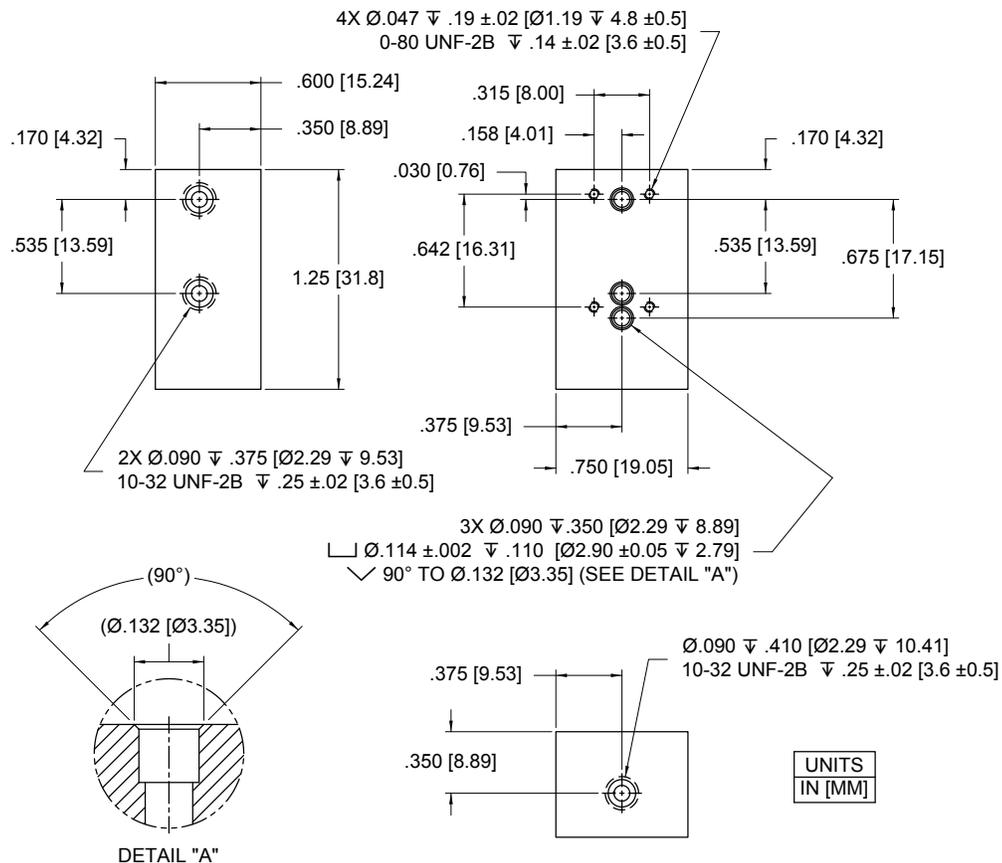
## Installation and Use

### X-Valve Manifold Mount Diagram

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



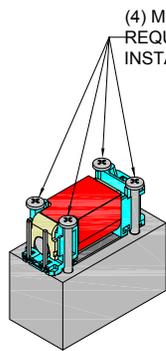
### Recommended X-Valve Manifold Dimensions



# X-Valve® Miniature Pneumatic Solenoid Valve

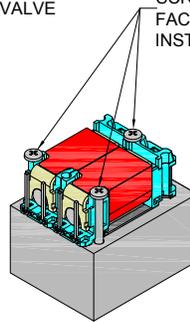
## Installation and Use

### Recommended X-Valve Mounting



**Single Station  
Manifold Mounting**

(4) MOUNTING SCREWS ARE  
REQUIRED FOR SINGLE VALVE  
INSTALLATION



**Multiple Station  
Manifold Mounting**

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)

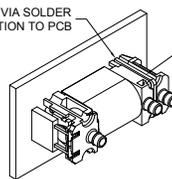


#### Retention Pin PCB

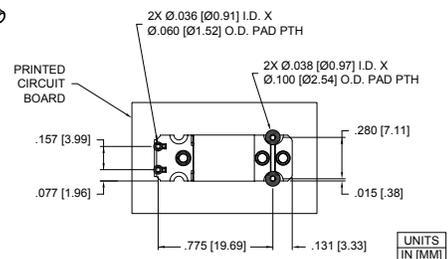
190-006020-001



PIN SECURED VIA SOLDER  
CONNECTION TO PCB



RETENTION PIN PCB



# X-Valve® Miniature Pneumatic Solenoid Valve

## Ordering Information

Sample Product ID	X	1	05	L	F	
Description	Series	Model Number: Pressure / Orifice / Power / Type		Voltage	Electrical Coil Connection	Elastomer
Options	X	1: 6 psig / 0.045" / 0.5 Watt / 3-Way Universal 2: 30 psig / 0.030" / 1 Watt / 3-Way Universal 5: 100 psig / 0.020" / 1 Watt / 3-Way NC only 6: 6 psig / 0.045" / 0.5 Watt / 2-Way NC, Bi-Directional Flow <sup>(1)</sup> 7: 30 psig / 0.030" / 1 Watt / 2-Way NC, Bi-Directional Flow <sup>(1)</sup> 8: 100 psig / 0.020" / 1 Watt / 2-Way NC, Directional Flow <sup>(1)</sup>		03: 3 VDC 05: 5 VDC 12: 12 VDC 24: 24 VDC	S: Short Pins <sup>(2)</sup> L: Long Pins <sup>(3)</sup>	F: FKM E: EPDM (6 psig only) S: Silicone (6 psig only)
		<sup>(1)</sup> 2-Way NC configurations only available in FKM		<sup>(2)</sup> For Pin/Wire Lead or PCB Terminal Housing Connection		<sup>(3)</sup> For Pin/PCB solder mount connection

Product ID Reference	Order Part Number	Product ID Reference	Order Part Number	Product ID Reference	Order Part Number
X-1-03-L-F	912-000001-001	X-1-05-S-F	912-000001-009	X-5-12-S-F	912-000001-019
X-1-12-L-F	912-000001-002	X-1-05-L-F	912-000001-010	X-5-24-S-F	912-000001-020
X-2-12-L-F	912-000001-003	X-2-03-S-F	912-000001-011	X-5-12-L-F	912-000001-021
X-2-24-L-F	912-000001-004	X-2-03-L-F	912-000001-012	X-5-24-L-F	912-000001-022
X-1-03-S-F	912-000001-005	X-5-03-S-F	912-000001-013	X-5-05-L-F	912-000001-031
X-1-12-S-F	912-000001-006	X-5-03-L-F	912-000001-014	X-5-05-S-F	912-000001-032
X-2-12-S-F	912-000001-007	X-1-24-S-F	912-000001-017	X-2-05-L-F	912-000001-033
X-2-24-S-F	912-000001-008	X-1-24-L-F	912-000001-018	X-2-05-S-F	912-000001-034



Product ID Reference	Order Part Number	Product ID Reference	Order Part Number	Product ID Reference	Order Part Number
X-6-03-L-F	912-000007-001	X-6-05-S-F	912-000007-009	X-8-12-S-F	912-000007-019
X-6-12-L-F	912-000007-002	X-6-05-L-F	912-000007-010	X-8-24-S-F	912-000007-020
X-7-12-L-F	912-000007-003	X-7-03-S-F	912-000007-011	X-8-12-L-F	912-000007-021
X-7-24-L-F	912-000007-004	X-7-03-L-F	912-000007-012	X-8-24-L-F	912-000007-022
X-6-03-S-F	912-000007-005	X-8-03-S-F	912-000007-013	X-8-05-L-F	912-000007-031
X-6-12-S-F	912-000007-006	X-8-03-L-F	912-000007-014	X-8-05-S-F	912-000007-032
X-7-12-S-F	912-000007-007	X-6-24-S-F	912-000007-017	X-7-05-L-F	912-000007-033
X-7-24-S-F	912-000007-008	X-6-24-L-F	912-000007-018	X-7-05-S-F	912-000007-034

Accessories	
195-000159-001: Rubber (FKM) Gasket <sup>(1)</sup>	<sup>(1)</sup> Not supplied with the valve. Used as a seal between the valve ports and manifold.
290-006061-001: 12" (30.5 cm) Wire Leads <sup>(2)</sup>	<sup>(2)</sup> Not supplied with the valve. Used to electrically interface with the valve.
190-006020-001: Retention Pin, PCB <sup>(3)</sup>	<sup>(3)</sup> Not supplied with the valve. Used to secure the valve for printed circuit board solder mounting.
191-000100-208: Screw, 0-80 x 1/2", Binding Head, Phillips <sup>(4)</sup>	<sup>(4)</sup> Not supplied with the valve. Four (4) screws are required for single station manifold valve mounting. See Recommended X-Valve Mounting for multiple station mounting screw requirements.

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](http://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).

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For more information call +1 603 595 1500 or email [ppfinfo@parker.com](mailto:ppfinfo@parker.com)  
 Visit [www.parker.com/precisionfluidics](http://www.parker.com/precisionfluidics)



## NOTES

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