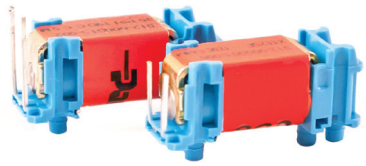
X-Valve®

Miniature Pneumatic Solenoid Valve

8mm Solenoid Valve



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.

Typical Applications

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

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

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 in^3 (0.092 cm^3)

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)

Wetted Materials

Bobbin/Body:

PBT (Polybutylene terephthalate)

Pole & Plunger:

430 FR Series Stainless Steel

Seal (Options):

FKM, EPDM, Silicone

Other:

302 Series Stainless Steel

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 (0.4 bar differential)
6 slpm @ 30 psid (2.0 bar differential)
9 slpm @ 100 psid (6.9 bar differential)

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:

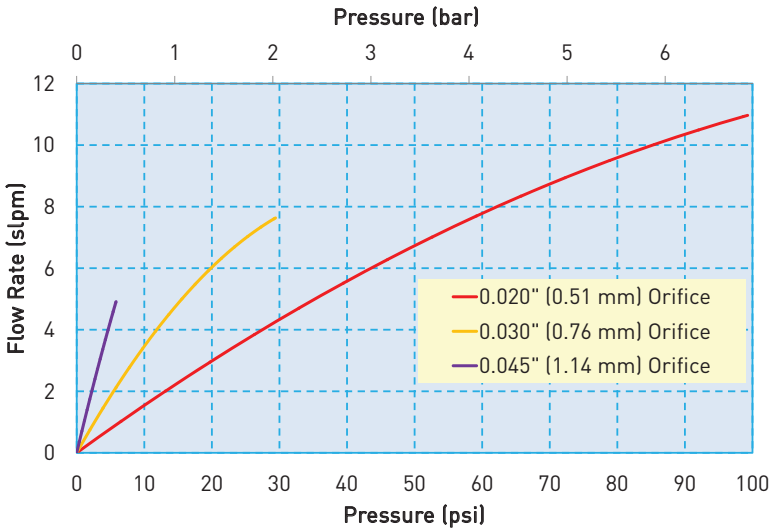
Life Cycle rating of 25 million (worst case tested, no performance degradation)

X-Valve® Miniature Pneumatic Solenoid Valve

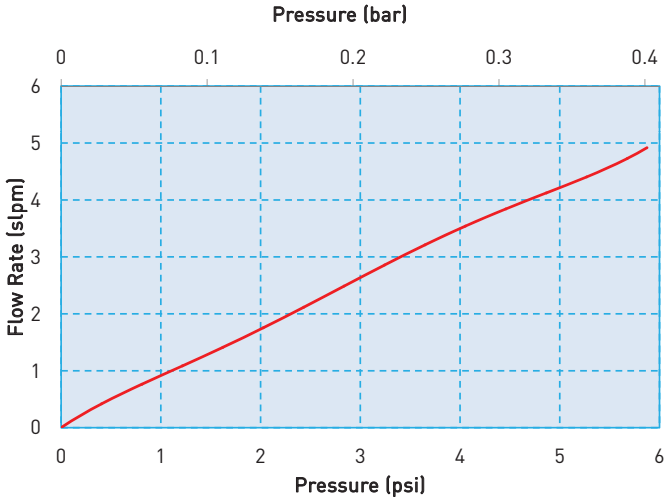
Typical Flow Curve

All Models

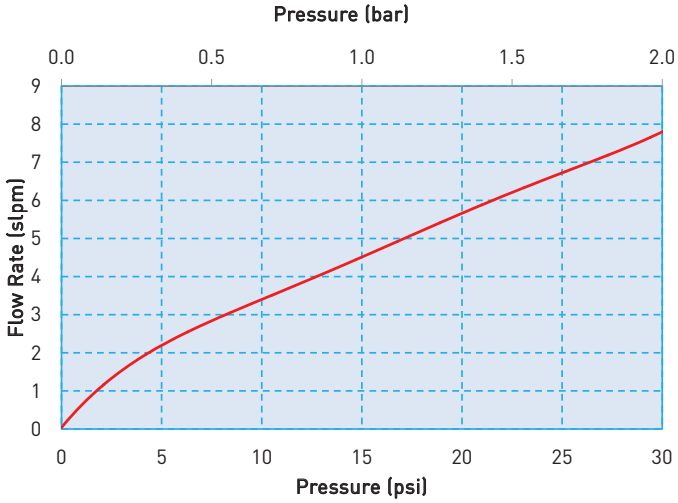
(Tested w/air 24° C)



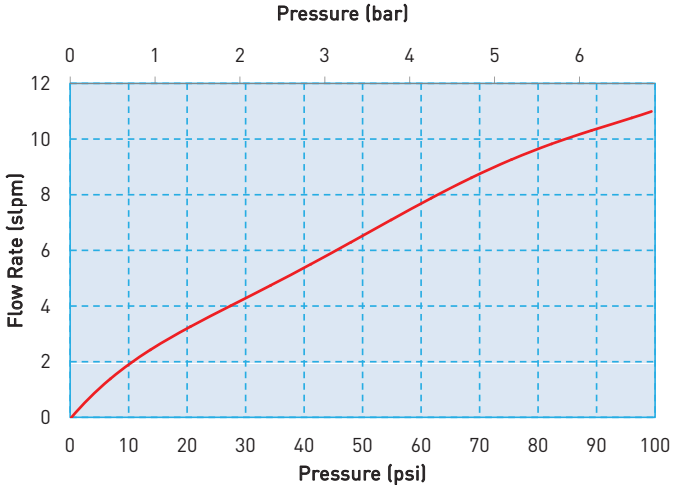
Models 1 and 6 – 0.045" (1.14 mm) Orifice



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

Model No.	Orifice Size	Nominal Cv	Maximum Operating Pressure Differential	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

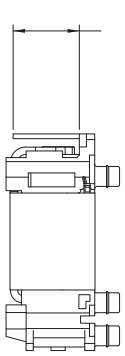
* Proof pressure is 200 psig (13.7 bar)

Pneumatic Interface / Electrical Interface

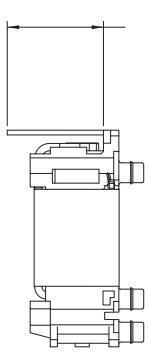
Short Pin
(For Pin/Wire Lead or PCB Terminal Housing Connection)
[Reference Accessories section]

Long Pin
(For Pin/PCB solder mount connection)

Coil Connections



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

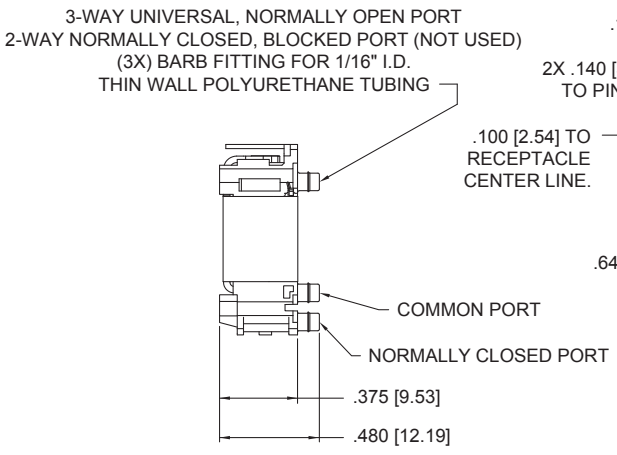


UNITS
IN [MM]

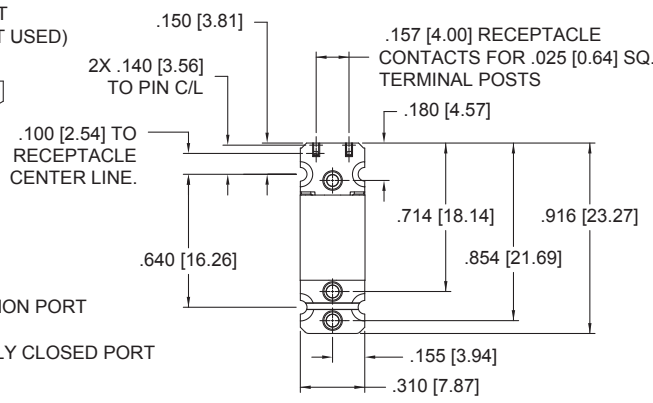
Mechanical Integration

Dimensions

SIDE VIEW



BOTTOM VIEW



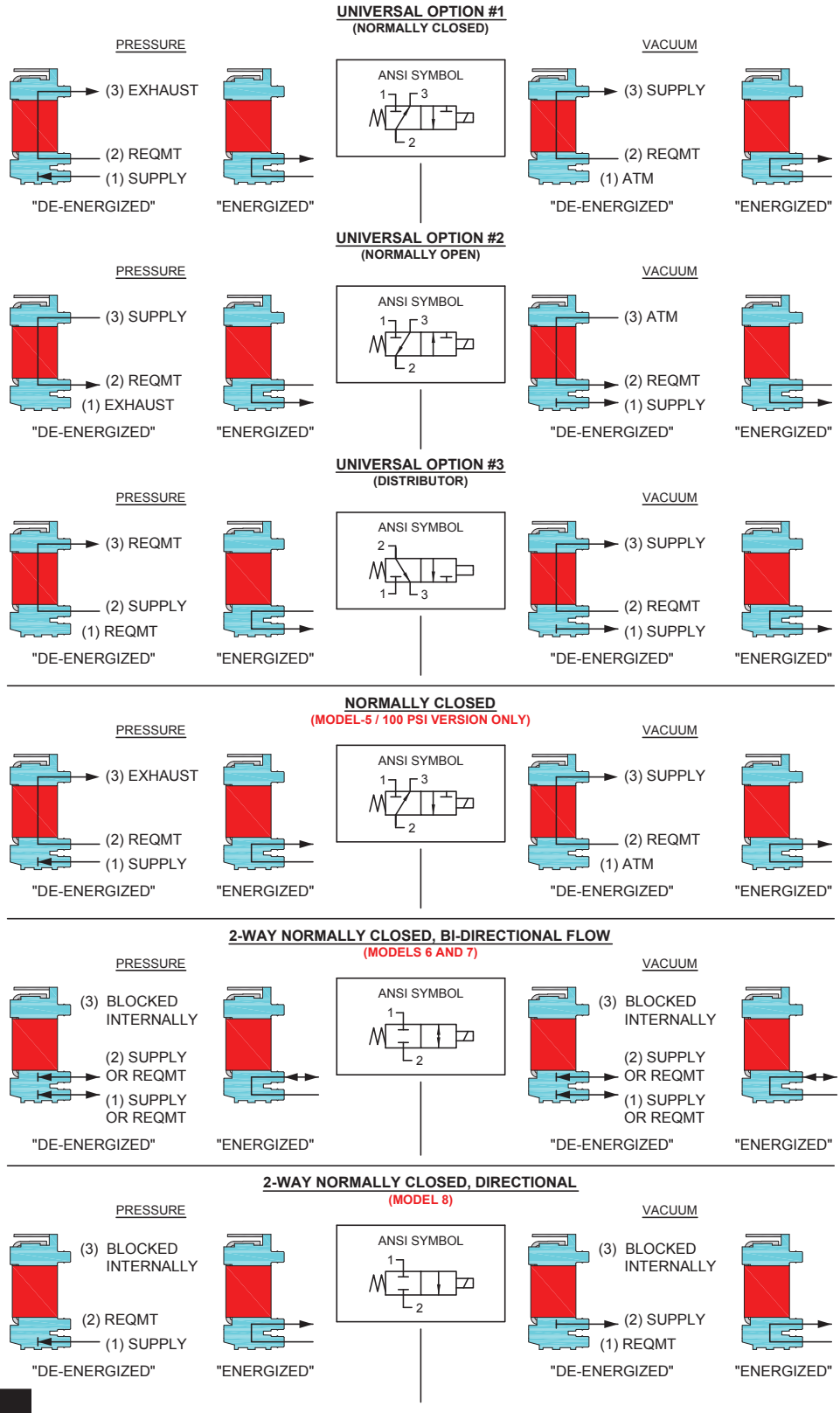
UNITS
IN [MM]

X-Valve® Miniature Pneumatic Solenoid Valve

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

ANSI Symbols

Pneumatic Schematics by Valve Types



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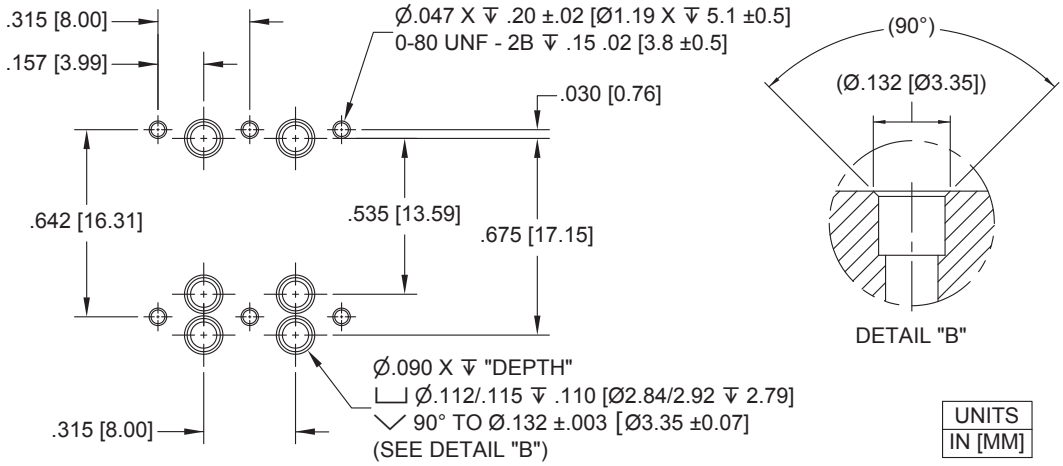
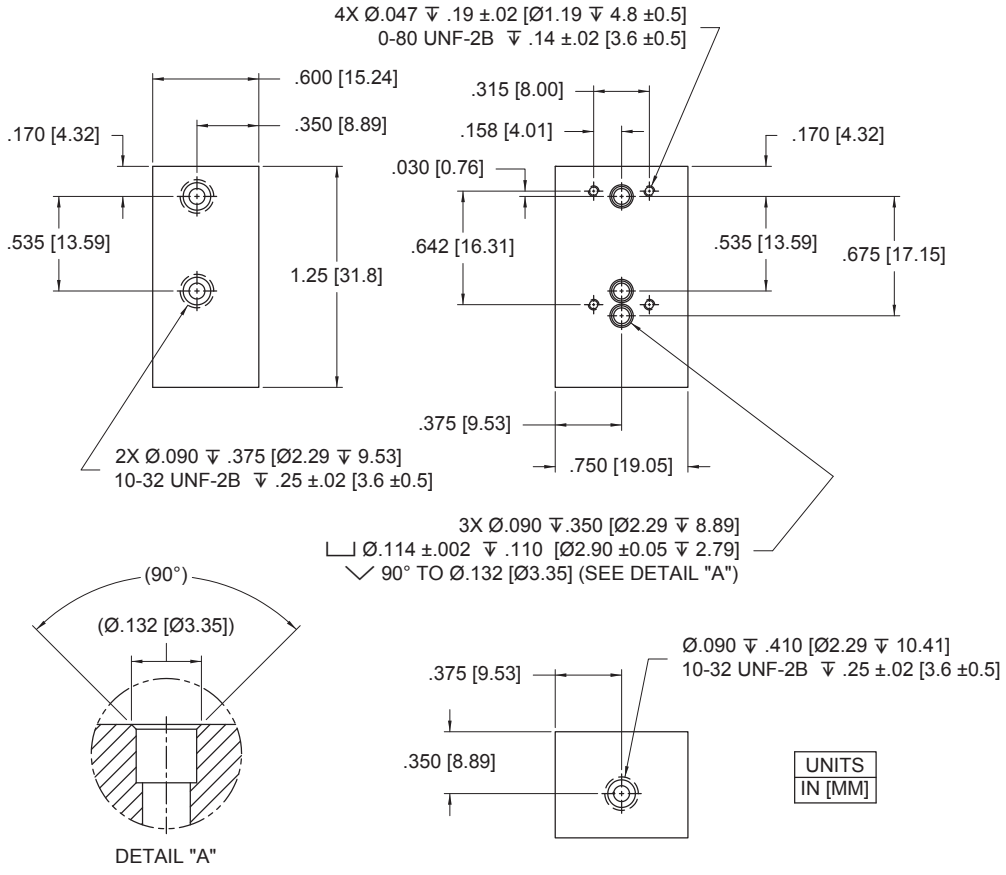
Installation and Use

X-Valve Manifold Mount Diagram

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



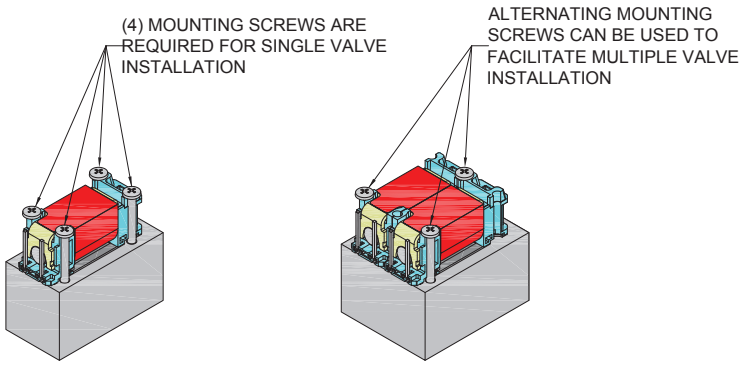
Recommended X-Valve Manifold Dimensions



X-Valve® Miniature Pneumatic Solenoid Valve

Installation and Use

Recommended X-Valve Mounting



Single Station Manifold Mounting

Multiple Station Manifold Mounting

Accessories

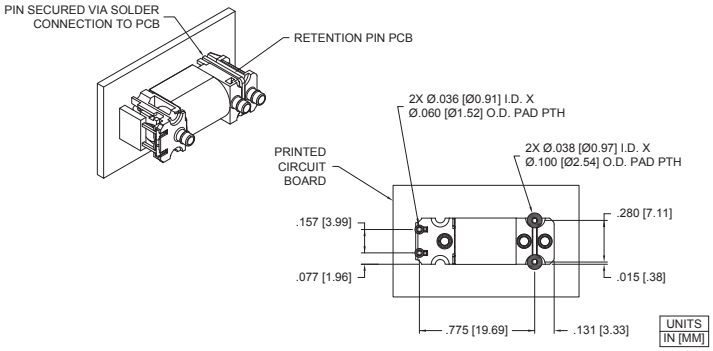
Mounting Options

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



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 [1] 7: 30 psig / 0.030" / 1 Watt / 2-Way NC, Bi-Directional Flow [1] 8: 100 psig / 0.020" / 1 Watt / 2-Way NC, Directional Flow [1] [1] 2-Way NC configurations only available in FKM	03: 3 VDC 05: 5 VDC 12: 12 VDC 24: 24 VDC	S: Short Pins [2] L: Long Pins [3] [2] For Pin/Wire Lead or PCB Terminal Housing Connection [3] For Pin/PCB solder mount connection	F: FKM E: EPDM (6 psig only) S: Silicone (6 psig only)

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 [1]	[1] Not supplied with the valve. Used as a seal between the valve ports and manifold.
290-006061-001: 12" (30.5 cm) Wire Leads [2]	[2] Not supplied with the valve. Used to electrically interface with the valve.
190-006020-001: Retention Pin, PCB [3]	[3] 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 [4]	[4] 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) 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 ppfinfo@parker.com
Visit www.parker.com/precisionfluidics

NOTES