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Miniature Solenoid Valves Precision Fluidics





ENGINEERING YOUR SUCCESS.

Innovative solutions for health care success



ENGINEERING YOUR SUCCESS.

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.



www.parker.com/precisionfluidics 1 603 595-1500

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X-Valve[®] Miniature Pneumatic Solenoid Valve

8 mm Solenoid Valve



Applications

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

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, Bidirectional Flow
- (6 & 30 psig models) - Normally Closed, Directional Flow
- (100 psig model) Media: Non-Reactive gases
- On eventing Freedoarte gas

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)

-Parker

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

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 is a registered trademark of Parker Hannifin Corporation.

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X-Valve® Miniature Pneumatic Solenoid Valve

Pressure (psi)



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X-Valve® Miniature Pneumatic Solenoid Valve

Pressure and Flow Capabilities/Power

Model No.	Orifice Size	Nominal Cv	Maximum Operating Pressure Differential	Power Consumption Nominal
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

or equivalent.



Mechanical Integration Dimensions





З



X-Valve® Miniature Pneumatic Solenoid Valve **ANSI Symbols**

AT KO

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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







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X-Valve® Miniature Pneumatic Solenoid Valve Installation and Use

Recommended X-Valve Mounting



Accessories

Mounting Options

Manifold Rubber Gasket (FKM) 12" Wire Leads 195-000159-001 290-006061-001 (required for manifold mounting) (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	Х	1	05	L	F
Description	Series	Model Number: Pressure / Orifice / Power / Type	Voltage	Electrical Coil Connection	Elastomer
Options	X	 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⁾ 	03: 3 VDC 05: 5 VDC 12: 12 VDC 24: 24 VDC	S: Short Pins ⁽²⁾ L: Long Pins ⁽⁹⁾	F: FKM E: EPDM (6 psig only) S: Silicone (6 psig only)
		⁽¹⁾ 2-Way NC configurations only available in FKM		 For Pin/Wire Lead or PCB Terminal Housing Connection For Pin/PCB solder mount connection 	

Product ID	Order	Product ID	Order	Product ID	Order
Reference	Part Number	Reference	Part Number	Reference	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	Order	Product ID	Order	Product ID	Order
Product ID Reference	Order Part Number	Product ID Reference	Order Part Number	Product ID Reference	Order Part Number
Product ID Reference X-6-03-L-F	Order Part Number 912-000007-001	Product ID Reference X-6-05-S-F	Order Part Number 912-000007-009	Product ID Reference X-8-12-S-F	Order Part Number 912-000007-019
Product ID Reference X-6-03-L-F X-6-12-L-F	Order Part Number 912-000007-001 912-000007-002	Product ID Reference X-6-05-S-F X-6-05-L-F	Order Part Number 912-000007-009 912-000007-010	Product ID Reference X-8-12-S-F X-8-24-S-F	Order Part Number 912-000007-019 912-000007-020
Product ID Reference X-6-03-L-F X-6-12-L-F X-7-12-L-F	Order Part Number 912-000007-001 912-000007-002 912-000007-003	Product ID Reference X-6-05-S-F X-6-05-L-F X-7-03-S-F	Order Part Number 912-000007-009 912-000007-010 912-000007-011	Product ID Reference X-8-12-S-F X-8-24-S-F X-8-12-L-F	Order Part Number 912-000007-019 912-000007-020 912-000007-021
Product ID Reference X-6-03-L-F X-6-12-L-F X-7-12-L-F X-7-24-L-F	Order Part Number 912-000007-001 912-000007-002 912-000007-003 912-000007-004	Product ID Reference X-6-05-S-F X-6-05-L-F X-7-03-S-F X-7-03-L-F	Order Part Number 912-000007-009 912-000007-010 912-000007-011 912-000007-012	Product ID Reference X-8-12-S-F X-8-24-S-F X-8-24-S-F X-8-12-L-F X-8-24-L-F	Order Part Number 912-000007-019 912-000007-020 912-000007-021 912-000007-022
Product ID Reference X-6-03-L-F X-6-12-L-F X-7-12-L-F X-7-24-L-F X-6-03-S-F	Order Part Number 912-00007-001 912-00007-002 912-000007-003 912-000007-004 912-000007-005	Product ID <u>Reference</u> X-6-05-S-F X-6-05-S-F X-7-03-S-F X-7-03-S-F X-7-03-L-F X-8-03-S-F	Order Part Number 912-00007-009 912-00007-010 912-000007-011 912-000007-012 912-000007-013	Product ID <u>Reference</u> X-8-12-S-F X-8-24-S-F X-8-12-L-F X-8-24-L-F X-8-05-L-F	Order Part Number 912-00007-019 912-00007-020 912-00007-021 912-00007-022 912-00007-031
Product ID Reference X-6-03-L-F X-6-12-L-F X-7-12-L-F X-7-24-L-F X-6-03-S-F X-6-03-S-F X-6-12-S-F	Order Part Number 912-00007-001 912-00007-002 912-00007-003 912-00007-004 912-00007-005 912-00007-006	Product ID Reference X-6-05-S-F X-6-05-L-F X-7-03-S-F X-7-03-L-F X-8-03-S-F X-8-03-L-F	Order Part Number 912-00007-009 912-00007-010 912-00007-011 912-000007-012 912-000007-013 912-000007-014	Product ID <u>Reference</u> X-8-12-S-F X-8-24-S-F X-8-12-L-F X-8-05-L-F X-8-05-L-F X-8-05-S-F	Order Part Number 912-000007-019 912-000007-020 912-000007-021 912-000007-021 912-000007-031 912-000007-032
Product ID Reference X-6-03-L-F X-6-12-L-F X-7-12-L-F X-7-24-L-F X-6-03-S-F X-6-12-S-F X-7-12-S-F	Order Part Number 912-00007-001 912-00007-002 912-00007-003 912-00007-004 912-00007-005 912-00007-007 912-00007-007	Product ID Reference X-6-05-S-F X-6-05-S-F X-7-03-S-F X-7-03-L-F X-8-03-S-F X-8-03-S-F X-8-03-L-F X-8-03-L-F X-8-03-L-F X-8-03-L-F X-6-05-L-F	Order Part Number 912-00007-009 912-000007-010 912-000007-011 912-00007-013 912-00007-014 912-00007-014	Product ID Reference X-8-12-S-F X-8-24-S-F X-8-24-L-F X-8-24-L-F X-8-05-L-F X-8-05-S-F X-7-05-L-F	Order Part Number 912-00007-019 912-000007-020 912-00007-021 912-00007-031 912-00007-032 912-00007-033



	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



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Series LX-Valve Miniature Latching Pneumatic Solenoid Valve

8 mm Latching Solenoid Valve



The Series LX-Valve is a miniature latching pneumatic solenoid valve measuring only 8 mm in width. The compact size, light weight, and power saving latching feature of the Series LX-Valve is the ideal solution for portable/battery powered applications. The body construction of the Series LX-Valve is suited for manifold or barbed-tube pneumatic connections and is available in a 2 way configuration.

Markets

- Portable Medical Equipment
- Environmental Monitoring

Applications

• Air & Oxygen Delivery

Features

- Internal latching mechanism enables continuous, power free, operation with minimal/momentary actuation power to change states
- High flow output capability, (11 slpm Minimum @ 15 psid)
- Direct PC mounting and 11.2 mm valve mounting centers enables compact and lightweight system design
- RoHS and Reach compliant 🔬

Product Specifications

Mechanical

Valve Type:

- 2-Way, 2-Position, Directional Flow , Latching
- 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: 0.440 in (11.2 mm) center (Minimum required to ensure proper latching operation)

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 (4.6 g)

Internal Volume:

0.0036 in³ (0.060 cm³)

Electrical

Power Options (Momentary): 0.52 Watt (6 psid model) 0.82 Watt (15 psid model)

Voltage Options:

3, 5, 12 or 24 VDC* *minimum 20 millisecond pulse

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:** FKM **Other:**

302 Series Stainless Steel

Performance Characteristics

Leak Rate: Tested with Air

- < 0.20 sccm Internal
- < 0.016 sccm External
- **Response:**

< 20 ms

Pressure/Vacuum: 0 to 6 psid (0.4 bar differential) 0 to 15 psid (1.03 bar differential)

Proof Pressure: 200 psig (13.79 bar)

Minimum Flow: 6.0 slpm @ 6 psid

(0.4 bar differential) 11.0 slpm @ 15 psid (1.03 bar differential)

Orifice Size/Nominal Cv: 0.045" (1.14 mm) / 0.028

Reliability: Life Cycle rating of 10 million Reliability .95 at 95% CI



Series LX-Valve Miniature Latching Pneumatic Solenoid Valve Typical Flow Curve





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Series LX-Valve Miniature Latching Pneumatic Solenoid Valve Pressure and Flow Capabilities

Model No.	Orifice Size	Nominal Cv	Maximum Operating Pressure Differential	Momentary Power (50 milliseconds)
1	0.045 in (1.14 mm)	0.028	6 psid (0.4 bar differential)	0.52 Watt
2	0.045 in (1.14 mm)	0.028	15 psid (1.03 bar differential)	0.82 Watt

* Proof pressure is 200 psig (13.79 bar)

Safety: Proof Pressure: 200 PSIG (13.79 bar). Tests conducted at this pressure demonstrate that no loss of function or permanent damage occurs when returned within the specified operating pressure range.

Caution: Shock Resistance: This valve may change states when subjected to high shock conditions. (Contact application for more details). Validation testing should be conducted to ensure proper operation in the application.

Electrical Interface

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





.28 [7.11] (SHORT PIN)

Latching X-Valve Coil Connection

Electrical Connection Options:

Electrical terminals compatible with Molex 51065 series connector or equivalent.



Latching X-Valve Polarity View







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Series LX-Valve Miniature Latching Pneumatic Solenoid Valve

Pneumatic Interface/Mechanical IntegrationDimensions

SIDE VIEW

BOTTOM VIEW





ANSI Symbols

Pneumatic Schematics by Valve Types

2-WAY NORMALLY CLOSED, DIRECTIONAL



* THE COIL SYMBOL, 🖾, REPRESENTS A SINGLE VALVE COIL WITH (2) POLARITY OPTIONS. REFERENCE THE "LATCHING X-VALVE POLARITY VIEW" SECTION, OF THIS DOCUMENT, FOR INFORMATION ON POLARITY ORIENTATION RELATIVE TO VALVE STATE.

	LEGEND:
SUPPLY:	Pneumatic Source or Supply Pressure
REQMT:	Customer Requirement or Application



Series LX-Valve Miniature Latching Pneumatic Solenoid Valve Installation and Use



Series LX-Valve Miniature Latching Pneumatic Solenoid Valve Installation and Use

Recommended LX-Valve Mounting

(4) MOUNTING SCREWS REQUIRED FOR VALVE INSTALLATION



Single Station Manifold Mounting





Multiple Station Manifold Mounting

Accessories

Mounting Options

Gasket, Manifold Mount (FKM) 195-000277-001

12" Wire Leads 290-006061-001 (required for manifold mounting) (for use with Short Pin valve configuration)

Screw 0-80 x 1/2" **Binding Head, Phillips** 191-000100-208







Retention Pin PCB 190-006020-001







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Series LX-Valve Miniature Latching Pneumatic Solenoid Valve

Ordering Information

Sample Product ID	LX	1	05	L	F
Description	Series	Model Number: Pressure / Orifice / Type	Voltage ⁽¹⁾	Electrical Coil Connection	Elastomer
Options	LX	1: 6 psid / 0.045"/ 2-Way Directional 2: 15 psid / 0.045" / 2-Way Directional	03: 3 VDC 05: 5 VDC 12: 12 VDC 24: 24 VDC	S: Short Pins ⁽⁹⁾ L: Long Pins ⁽⁹⁾	F: FKM
			⁽¹⁾ Warning: The valve may change states when subjected to high shock conditions. Validation testing shouldbe conducted to ensure proper operation in the application Contact applications for more details.	 For Pin/Wire Lead or PCB Terminal Housing Connection For Pin/PCB solder mount connection 	

Product ID	Order	Product ID	Order	Product ID	Order
Reference	Part Number	Reference	Part Number	Reference	Part Number
LX-1-03-L-F	915-000001-001	LX-1-12-S-F	915-000001-007	LX-2-03-S-F	915-000001-013
LX-1-05-L-F	915-000001-002	LX-1-24-S-F	915-000001-008	LX-2-05-S-F	915-000001-014
LX-1-12-L-F	915-000001-003	LX-2-03-L-F	915-000001-009	LX-2-12-S-F	915-000001-015
LX-1-24-L-F	915-000001-004	LX-2-05-L-F	915-000001-010	LX-2-24-S-F	915-000001-016
LX-1-03-S-F	915-000001-005	LX-2-12-L-F	915-000001-011		
LX-1-05-S-F	915-000001-006	LX-2-24-L-F	915-000001-012		

	Accessories
195-000277-001: Gasket, Manifold Mount (FKM) ⁽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 LX-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/lxvalve) to configure your LX-Valve Miniature Latching Pneumatic Solenoid Valve. For more detailed information, visit us on the Web, or call and refer to Performance Specification #790-002454-001, Outline Drawing #890-003377-001 (Short Pin), Outline Drawing #890-003377-002 (Long Pin).



Miniature Solenoid Valves

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Series MX Miniature Pneumatic Solenoid Valve

10 mm Solenoid-Actuated Poppet Valve



Markets

- Respiratory
- Patient Therapy

Applications

- Oxygen Concentrators
 - Sieve bed switching/equalization •
- Oxygen delivery
- Deep Vein Thrombosis
- Cuff Inflation/Deflation Control
- Negative Pressure Wound Therapy
 High Volume Vacuum/Pressure
 Control

Product Specifications Mechanical

Valve Type:

Solenoid-Actuated Poppet Style

- 2 and 3-Way Normally Closed (NC)
- 2 and 3-Way Normally Open (NO)
- 3-Way Distributor

Media: Non-Reactive gases

Operating Environment:

41 to 122°F (5 to 50°C)

Storage Temperature:

-40 to 158°F (-40 to 70°C)

Dimensions:

- Length: 1.50 in (38.1 mm)
- Width: 0.40 in (10.1 mm)
- Height: 0.62 in (15.7 mm) to Barb End / 0.44 in (11.1 mm) to Manifold Face

Valve to Valve Spacing:

0.400 in (10 mm) center

Porting:

- Barbs for 3/32 in (2 mm) I. D. Tubing
- Manifold Mount
- Weight: 0.3 oz (8.5 g)

Internal Volume:

0.01247 in³ (0.2043 cm³)

Filtration:

40 micron recommended

-Parker

The Series MX is a miniature solenoid valve that delivers high flow at low pressure in a compact, 10 mm wide size. Using hit and hold control, the Series MX miniature solenoid consumes very little power helping medical device manufacturers increase battery life and reduce system weight without sacrificing performance. The universal design supports manifold or barbed-tube mounting and is available in 2-way and 3-way configurations. The Series MX solenoid valve is an ideal solution for portable medical devices with limited space and power.

Features

- Small, 10 mm size enables compact integration and reduces device size
 - Highest flow to power consumption ratio increases device battery life
- Lightweight 0.3 oz (8.5 g) design helps reduce portable device weight
- Universal barbed-tube or manifold mount eases valve integration
- CE and RoHS compliant CE 🚮

Electrical

Power Options (Hit/Hold):

6 psid model (1.0/0.25 Watt) 30 psid model (3.0/0.75 Watts)

Voltage Options:

5, 12 or 24 VDC Series MX Model 7 is not rated for continuous duty and must employ hit and hold control.

Electrical Connections:

2-Pin PCB (for PCB solder connection) 2-Pin Up (for connector interface) 0.30 in (7.6 mm) pin centers (Lead Wire/Connector Assembly available, see ordering information)

Wetted Materials

Body/Plunger: PPE/PA (Polyphenylene Ether/Polyamide) Armature: 430 FR Series Stainless Steel Seal (Options): Silicone (6 PSI Only), FKM Other: 302/304 Series Stainless Steel EPDM (Manifold Gasket)

Performance Characteristics

Leak Rate: Tested with Air <0.2 sccm

Response:

< 20 ms maximum cycling

Pressure/Vacuum:

0 to 6 psid (0.4 bar differential) 0 to 30 psid (2.0 bar differential)

Proof Pressure:

100 psig (6.9 bar)

Typical Flow: 17.5 slpm @ 6 psid (0.4 bar differential) 48 slpm @ 30 psid (2.0 bar differential)

Orifice Sizes/Equivalent Cv: 0.075 in (1.91 mm) / 0.072

Reliability: Life Cycle rating of 25 million (worst case tested)

Series MX Miniature Pneumatic Solenoid Valve Typical Flow Curve



6 PSID Model (Tested w/air 20° C)

30 PSID Model (Tested w/air 20° C)





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Series MX Miniature Pneumatic Solenoid Valve

Pressure and Flow Capabilities

Model No.	Orifice Size	Maximum Operating Pressure Differential	Typical Flow at Rated Pressure	Nominal Cv
7	0.075 in (1.9 mm)	6 psid (0.4 bar)	17.5 slpm	0.062
/	0.075 m (1.4 mm)	30 psid (2.0 bar)	48 slpm	0.072

Electrical Interface

2 Pin-PCB (For Pin/PCB solder mount connection) **2 Pin-Up** (For Pin/Wire Lead or PCB Terminal Housing Connection) [Reference Accessories section]





2 PIN-UP

Coil Connections



2 PIN-PCB

IN [MM]

Electrical Connection Options:

Electrical terminals compatible with Molex 0511910400 (4 Position) Connector and Molex 0508029101 Crimp Terminal or equivalent.



Series MX Miniature Pneumatic Solenoid Valve Electrical Requirements

6 PSI Version

Actuation Voltage Minimum of 50 msec* (VDC ±5%)	Minimum Hold Voltage (VDC)	Hold Power, Typical @ 20°C (Watts)	Resistance @ 20°C (Ohms ±5%)
5	2.5	0.25	24.5
12	6	0.25	145
24	12	0.25	567

* Valve is not rated for continuous duty at rated in-rush voltage. Recommended minimum actuation time is 50 milliseconds. Actuation voltage time must not exceed 20 seconds.

30 PSI Version

Actuation Voltage Minimum of 50 msec* (VDC ±5%)	Minimum Hold Voltage (VDC)	Hold Power, Typical @ 20°C (Watts)	Resistance @ 20°C (Ohms ±5%)			
5	2.5	0.75	8			
12	6	0.75	50			
24	12	0.75	180			

* Valve is not rated for continuous duty at rated in-rush voltage. Recommended minimum actuation time is 50 milliseconds. Actuation voltage time must not exceed 20 seconds.





Series MX Miniature Pneumatic Solenoid Valve Pneumatic Integration



Mounting Requirements

Mounting Screw Sizes (Pan Head Machine Screw)*	Mounting Screw Torque
2-56 x 1/2"	10 to 12 in-oz
M2 x 14 mm	0.07 to 0.08 N-m

*Mounting screws are not provided with the valve. See Accessories



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Series MX Miniature Pneumatic Solenoid Valve ANSI Symbols



Miniature Solenoid Valves



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Series MX Miniature Pneumatic Solenoid Valve

Installation and Use

Hit and Hold Specifications

The Series MX valve is designed for use with "Hit and Hold" control.

Hit and Hold is a common control method used to reduce component power consumption 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 the typical "Hit" and "Hold" control method.



This method greatly reduces power consumption because the valve only draws full current for a short period of time (in this case, a minimum of 50 msec), making it ideal for applications with sensitive power budgets.

Rated voltage must be applied to the Series MX valve for a minimum of 50 msec to ensure full valve actuation in all operating conditions.

Important Note:

The Series MX value is not designed for continuous use at rated voltage. Therefore, rated voltage should not be applied for greater than 20 seconds. Exceeding rated voltage for longer than 20 seconds may adversely affect value performance. **Contact factory for more details.**



Series MX Miniature Pneumatic Solenoid Valve

Installation and Use

Recommended Series MX Mounting



Series MX Manifold Mount Diagram





Series MX Miniature Pneumatic Solenoid Valve Typical Flow Diagram

ELECTRONIC CONTROL CIRCUIT AIR IN COMPRESSOR SERIES MX SERIES MX SERIES MX SERIES MX VALVE VALVE VALVE VALVE SWITCHING SWITCHING VALVE VALVE NITROGEN NITROGEN VENT TO ATM VENT TO ATM MOLECULAR MOLECULAR SIEVE BED (1) SIEVE BED (2) S-11 CROSS OVER VALVE PRODUCT TANK Ш VSO[®] LowPro VALVE OXYGEN OUT PRESSURE REGULATOR

Oxygen Concentrator Application



Miniature Solenoid Valves

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Series MX Miniature Pneumatic Solenoid Valve

Accessories

Manifold Rubber Gasket (EPDM)

00444-05-E099 (required for manifold mounting and supplied with each valve)

12" (30 cm) Wire Leads

290-006061-002 (for use with 2-Pin Up valve configuration) Note: Not Included with valve





Screw 2-56 x 1/2" Pan Head, Phillips 191-000112-008 (see valve mounting requirements above) Note: Not Included with valve



Ordering Information

Sample Produ ID	^{ct} 961	7	1	1	1	1	1	000		
Description	Series	Model Number: Orifice Size	Voltage	Electrical Interface	Туре	Pressure/ Power (Hold)	Elastomer			
Options	961	7: 0.075 " (1.9 mm) Orifice	1: 5 VDC	1: 2 Pin-Up	1: 2-Way NC	1: 6 psig / 0.25 Watt	1: FKM 2: Silicone (6 PSI Only)			
			2: 12 VDC	2: 2 Pin-PCB	2: 2-Way NO	3: 30 psig / 0.75 Watt				
			3: 24 VDC		3: 3-Way NC					
					4: 3-Way NO					
					5: 3-Way Dist					
				Accessories						
Part Number	0	escription	Comments							
00444-05-E099	Manifold R	ubber Gasket, EPDM	Manifold gasket is supplied with each valve. Used as a seal between the valve and manifold.							
290-006061-002	0-006061-002 Cable, 4 Position, 18" Lead			Not supplied with the valve. Used to electrically interface with the 2 Pin-Up configuration valve.						
191-000112-008	Screw 2-5	5 x 1/2" Pan Head	Not supplied	Not supplied with the valve. Two (2) required for each valve.						

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/mxvalve) to configure your Series MX-Model 7 Pneumatic Solenoid Valve. For more detailed information, visit us on the Web, or call and refer to the following documents:

Document:

- Series MX-Model 7 Performance Specification
- 3-Way, 2 Pin-Up Line Drawing
- 2-Way NO, 2 Pin-Up Line Drawing
- 2-Way NC, 2 Pin-Up Line Drawing
- 3-Way, 2 Pin-PCB Line Drawing
- 2-Way NO, 2 Pin-PCB Line Drawing
- 2-Way NC, 2 Pin-PCB Line Drawing

Document Number 790-002435-001 890-003360-001

890-003360-001 890-003360-002 890-003360-003 890-003361-001 890-003361-002 890-003361-003



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C7 Valve Miniature Cartridge Solenoid Valve

7 mm Miniature Cartridge Valve



Markets

- Respiratory and Anesthesia
- Patient Therapy
- Patient Monitoring
- Analytical Chemistry
- Clinical Diagnostics

Applications

- Portable/Transport Ventilators Gas
 Control
- Negative Pressure Wound Therapy
- Air Over Liquid Dispense
- Sidestream CO₂ measurement
- Portable/Hand held environmental monitoring

Product Specifications Mechanical

Valve Type:

and the second
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: 0.28 in (7 mm)
- Length: 0.79 in (20 mm)
Porting:
Cartridge Seal
Weight:
0.11 oz (3.1 g)
Internal Volume:
2-Way 81 µL

3-Way 90 µL

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. 🛛 🛣 📗

	Orifice	0.012 in l	0.012 in (0.3 mm)		(0.5 mm)	0.031 in	0.8 mm)	0.039 in (1.0 mm)		
	Туре	2-Way	3-Way	2 Way	3 Way	2 Way	3 Way	2 Way	3 Way	
~ð	PSI	145	145	116	87	73	36.3	43.5	21.8	
sure	Bar	10	10	8	6	5	2.5	3	1.5	
ax Va Pres	Cv	0.003	0.004	0.007	0.01	0.009	0.014	0.015	0.015	
Σ	SLPM (air)	7	7	14	11	12	10	13	7	

Electrical

FKM, EPDM

Voltage (VDC):						
2 and 24 VDC ± 5%						
Other voltages available on request.)						
Electrical Connections:						
3.2" (80 mm) Flying Leads [28 AWG]						
Power:						
Typical 0.5W - 1.2W						
Please see Table 1 for more details)						
Vetted Materials						
Body:						
Stainless Steel Series 300 and 400						
Seals: (Internal and External)						

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
- 3-Way 55 Million
- 0.90 Reliability Factor
- 95% Confidence

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Flow Curve



Flow Curve

Pressure (bar) Flow Rate (slpm) N C C F G -0.012 in (0.3 mm) Orifice Pressure (psi)

0.012 in (0.3 mm) Orifice















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Flow Curve



Electrical Interface



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

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Electrical Requirements

Table 1

Orifice	0.012 in (0.3 mm)			0.020 in (0.5 mm)			0.031 in (0.8 mm)				0.039 in (1.0 mm)					
Valve Type	2-1	Vay	3-V	Vay	2-V	Vay	3-V	Vay	2-V	Vay	3-1	Vay	2-V	Vay	3-V	Vay
Voltage (VDC)*	12V	24V	12V	24V	12V	24V	12V	24V	12V	24V	12V	24V	12V	24V	12V	24V
Power (Watts)	0.5	0.6	1	1.2	1	0.85	1	1.2	1	1.2	1	1.2	1	1.2	1	1.2
Resistance (Ohm)**	288	995	140	495	140	700	140	495	140	495	140	495	140	495	140	495
* ± 5%, other voltages available on request																
** ±5% @ 68°F, 20°C																

Pneumatic Interface/Mechanical Integration







Dimensions





3-Way





ANSI Symbols

2-Way Normally Closed



3-Way Option





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

32[0.8] .287 +.004 7.29 +.10 mm .280 +.002 7.11 +.05 mm 32[0.8] / .157 +.002 [4.00 +.05 mm] .248 ± .002 [6.30 ± .05 mm] .020 +.008 0.50 +.20 mm -M2.5 THREAD 3X 30° .165±.002 [4.19±.05 mm] -4 .309±.002 [7.85±.05 mm] .280±.002 [7.11±.05 mm] ÷ .417±.002 [10.59±.05 mm] + .020 ^{+.004} [0.51 ^{+.10} mm] R.008 [0.20mm] MAX Ø.098 [2.50 mm] -

INDENT

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 receive, 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 C07-MCS





Miniature Solenoid Valves

Recommended Valve Mounting

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.



C7 Hit and Hold Specification						
Hit Voltage Level	Rated Voltage					
Hold Voltage Level	50% of Rated Voltage					
Minimum Hit Time	50 ms					
Maximum Hit Time	N/A					
PWM Frequency	min. 1 kHz					
Hold Nominal Duty Cycle	50%					

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**.


Typical Flow Diagram



Accessories

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







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



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





Ordering Information

Sample Part ID	C07	- 2	24	FK	03	F	F -	000			
Description	Series	Configuration	Coil Voltage	Elastomer	Orifice	Mounting Style	Electrical Interface	Custom			
Options	C07: 7 mm Cartridge Valve	2: 2-Way 3: 3-Way	12: 12 VDC 24: 24 VDC	EP: EPDM FK: FKM	03: 0.012 in (0.3 mm) 05: 0.020 in (0.5 mm) 08: 0.031 in (0.8 mm) 10: 0.039 in (1.0 mm)	F: Face Seal	F: 3.2 in (80 mm) flying lead	000: Standard			
	· · · · ·			Accesso	ries						
C07-MCS: C07 Evalua	tion Manifold wit	h Clip and Screw, I	Not supplied wi	ith the valve.							
C07-C: Replacement	t Clip used on C	07-MCS*									
C07-S: Replacement	t Screw used on	C07-MCS*									
C07-LG: Spare O-Ring	g for C07 Valve, F	FKM, Large**									
C07-LGE: Spare O-Rir	ng for C07 Valve,	EPDM, Large**									
C07-SM: Spare O-Ring for C07 Valve, FKM, Small**											
C07-SME: Spare O-Ri	ng for C07 Valve	, EPDM, Small**									
		* Not Supplied w	ith Valve, Repla	acement Part f	or C07-MCS ** Suppl	ied 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 (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.





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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.

Markets

- Medical and Analytical Gas Control
- Respiratory & Anesthesia

Applications

- Portable/Transport Ventilators
- Negative Pressure Wound Therapy
- Air Over Liquid Dispense
- Sidestream CO2 measurement
- Portable/Hand held environment monitoring

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. 🔬 🕻

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 Seal
Weight:
0.78 oz (22 g)
Internal Volume:
2-Way: 391 μL
3-Way: 461 µL

Orifice		0.020 in	(0.5 mm)	0.040 in	(1.0 mm)	0.060 in	(1.5 mm)	0.080 in (2.0 mm)		
	Туре	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	
త	PSI	145	145	116	102	58	50.8	21.8	14.5	
cuum	Bar	10	10 8		7	4	3.5	1.5	1	
ax Va Pres	Cv	0.01	0.01	0.032	0.028	0.058	0.048	0.093	0.076	
Σ̈́	SLPM (air)	18	18	55	43	55	41	44	29	

Electrical

Voltage (VDC):
12 and 24 VDC ± 5%
(Other voltages available on request.)
Electrical Connections:
3.2" (80 mm) Flying Leads [24 AWG]
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, CyclingProof Pressure:120% of Rated Maximum PressureRecommended Filtration:10 μmReliability:2-Way: 500 Million Cycles3-Way: 200 Million Cycles0.90 Reliability Factor95% Confidence

*Please contact factory for additional details on liquid compatibility.



Flow Curve



Flow Curve







Miniature Solenoid Valves











Electrical Interface



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



Electrical Requirements

	Tante I															
Orifice	0.020 in (0.5 mm)			n)	0.	040 in	(1.0 mr	n)	0.	060 in	(1.5 mi	m)	0.	080 in	(2.0 mr	n)
Valve Type	2-\	Nay	3-\	Vay	2-\	Vay	3-1	Vay	2-1	Vay	3-Way		2-Way		3-Way	
Voltage (VDC)*	12	24	12	24	12	24	12	24	12	24	12	24	12	24	12	24
Power (Watts)	1.1	1.1	1.7	1.6	1.7	1.6	1.7	1.6	1.7	1.6	1.7	1.6	1.7	1.6	1.7	1.6
Resistance (Ohm)**	132	525	85	361	85	361	85	361	85	361	85	361	85	361	85	361
* ± 5%, other voltages available on request																
					**	±5% ര	68°F, 2	20°C								

Tabla 1

Pneumatic Interface/Mechanical Integration





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Dimensions

2-Way Valve Configuration





C15 Miniature Cartridge Valve **ANSI Symbols**







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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





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 receive, can push the valve upward and exceed the maximum insertion force for the valve. This could damage the valve.

Installation and Use

C15 Evaluation Manifold Dimensions and Design C15-MCS





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.



C15 Hit and Hold Specification								
Hit Voltage Level	Rated Voltage							
Hold Voltage Level	50% of Rated Voltage							
Minimum Hit Time	100 ms							
Maximum Hit Time	N/A							
PWM Frequency (Minimum)	1 kHz							
Hold Nominal Duty Cycle	50%							

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**.



Accessories

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



Replacement Clip for C15-MCS

Replacement Screw for C15-MCS C15-S



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

C15-C

Replacement FKM O-Ring for C15 Valve, Small C15-SM







Miniature Solenoid Valves

Ordering Information

Sample Part ID	C15		2	24	FK	05	F	F	- 000				
Description	Series		Configuration	Coil Voltage	Elastomer	Orifice	Mounting Style	Electrical Interface	Custom				
Options	C15: 15 mm Cartridge Valve		2: 2-Way 3: 3-Way	12: 12 VDC 24: 24 VDC	EP: EPDM FK: FKM	05: 0.020 in (0.5 mm) 10: 0.040 in (1.0 mm) 15: 0.060 in (1.5 mm) 20: 0.080 in (2.0 mm)	F: Face Seal	F: 3.2 in (80 mm) flying lead	000: Standard				
	Accessories												
C15-MCS: C15 Evalua	tion Manifold w	ith	Clip and Screw, I	Not supplied wi	ith the valve.								
C15-C: Replacement	t Clip used on (C1!	5-MCS*										
C15-S: Replacement	t Screw used or	ı C	15-MCS*										
C15-LG: Spare O-Ring for C15 Valve, Large**													
C15-SM: Spare O-Ring	C15-SM: Spare O-Ring for C15 Valve, Small**												
			* Not Supplied w	ith Valve, Repla	acement Part f	or C15-MCS ** Suppl	ied 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.



ORDER

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C21 Valve Miniature Cartridge Solenoid Valve

21 mm Miniature Cartridge Valve



Markets

- Medical and Analytical Gas Control
- Respiratory & Anesthesia
- Patient Therapy

Applications

Compression Therapy

Solenoid Cartridge Valve 2-Way Normally Closed (NC)

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

Operating Environment:

Storage Environment:

Dimensions:

Cartridge Seal

2.17 oz (60 g) Internal Volume:

2-Way: 1173µL

3-Way: 1376µL

Porting:

Weight:

32°F to 122°F (0°C to 50°C)

- Diameter: 0.83 in (21 mm) - Length: 1.54 in (39 mm)

-40°F to 158°F (-40°C to 70°C)

- Oxygen Concentrators & Conservers
- Negative Pressure Wound Therapy

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.

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 Valve Type:

3-Way

Orifice		0.040 in (1.0 mm)		0.080 in	[2.0 mm]	0.12 in (3.0 mm)	0.16 in (4.0 mm)		
Туре		2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	
৵	PSI	145	145	116	87	58	36	29	15	
cuum	Bar	10	10	8	6	4	2.5	2	1	
ax Va Pres	Cv	0.03	0.03	0.08	0.07	0.13	0.11	0.18	0.14	
Σ	SLPM (air)	67.5	60	140	90	124	70	101	55	

Electrical Voltage (VDC):

12 and 24 VDC \pm 5%								
(Other voltages available on request.)								
Electrical Connections:								
3.2" (80 mm) Flying Leads [24 AWG]								
Power:								
Typical 2.5W - 2.6W								
(Please see Table 1 for more details)								
Wetted Materials								
Body:								

Stainless Steel Seals: (Internal and External) FKM, EPDM

Performance Characteristics Response:

10 ms Maximum, Cycling Recommended Filtration:

10 µm

Reliability:

2-Way: 20 Million Cycles3-Way: 20 Million Cycles0.90 Reliability Factor95% Confidence



*Please contact factory for additional details on liquid compatibility.

Flow Curve





0.040 in (1.0 mm) Orifice













Miniature Solenoid Valves



Flow Curve

Electrical Interface



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



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Electrical Requirements

	Table 1															
Orifice	0.040 in (1.0 mm)			0.080 in (2.0 mm)				0	.12 in (3.0 mn	n)	0.16 in (4.0 mm)				
Valve Type	2-V	Vay	3-V	Vay	2-V	Vay	3-V	Vay	2-V	2-Way 3-Way		2-V	Vay	3-Way		
Voltage (VDC)*	12	24	12	24	12	24	12	24	12	24	12	24	12	24	12	24
Power (Watts)	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5	2.6	2.5
Resistance (Ohm)**	56	235	56	235	56	235	56	235	56	235	56	235	56	235	56	235
	* ± 5%, other voltages available on request															
					**	±5% (d	68°F. 2	20°C								

Pneumatic Interface/Mechanical Integration





Dimensions





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ANSI Symbols







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

.870 +.002 2.10 +.05 mr [0.8] .829 + .002 5x0.8 - 6H ∓ .350 21.05 +.05 .020 [0.50 mm] .591 [15.00 mm] T .476±.002 [12.09±.05 mm .002 .05 mm] .882 [22.40 1.067±.002 [27.10±.05 mm² 1.300 [33.02 ---008 [0.20mm] MAJ .201 5.11 mm] MAX 0.8] .398 +.002 MANIFOLD 10.10 + .05 mm PORT DIMS

INDENT

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 receive, can push the valve upward and exceed the maximum insertion force for the valve. This could damage the valve.

Installation and Use

C21 Evaluation Manifold Dimensions and Design C21-MCS





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.



C21 Hit and Hold Specification								
Hit Voltage Level	Rated Voltage							
Hold Voltage Level	50% of Rated Voltage							
Minimum Hit Time	100 ms							
Maximum Hit Time	N/A							
PWM Frequency (Minimum)	1 kHz							
Hold Nominal Duty Cycle	50%							

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**.



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









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Ordering Information

Sample Part ID	C21	- 2	24	FK	10	F	F	- 000					
Description	Series	Configuration	Coil Voltage	Elastomer	Orifice	Mounting Style	Electrical Interface	Custom					
Options	C21: 15 mm Cartridge Valve	2: 2-Way 3: 3-Way	12: 12 VDC 24: 24 VDC	EP: EPDM FK: FKM	10: 0.040 in (1.0 mm) 20: 0.080 in (2.0 mm) 30: 0.12 in (3.0 mm) 40: 0.16 in (4.0 mm)	F: Face Seal	F: 3.2 in (80 mm) flying lead	000: Standard					
	Accessories												
C21-MCS: C21 Evalua	tion Manifold wi	th Clip and Screw,	Not supplied wi	th the valve.									
C21-C: Replacement	t Clip used on C	21-MCS*											
C21-S: Replacement	Screw used on	C21-MCS*											
C21-LG: Spare O-Ring for C21 Valve, Large**													
C21-SM: Spare O-Ring	g for C21 Valve,	Small**											
		* Not Supplied v	vith Valve, Repla	acement Part f	or C21-MCS ** Suppl	ied with Valve							



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.





Series 11 Miniature Pneumatic Solenoid Valve

15 mm Solenoid Valve



Applications

- **Oxygen Conservers**
- **Oxygen Concentrators**
- **Compression Therapy**
- Gas Chromatography
- Insufflators
- Medical & Analytical Gas Control

Product Specifications Mechanical

Valve Type:

Solenoid-actuated poppet style

- 2/3 Port, Normally Closed (NC)
- 2/3 Port, Normally Open (NO)
- 3 Port. Distributor
- 2 Port, Normally Closed (NC) -Universal

Media:

Air, argon, helium, hydrogen, methane, nitrogen, oxygen, & other non-reacting gasses **Operating Environment:** 32 to 158°F (0 to 70°C) **Storage Temperature:** -40 to 158°F (-40 to 70°C)

Dimensions:

- Length: 1.73 in (43.9 mm)
- Width: 0.63 in (15.8 mm)
- Height: 0.67 in (17.0 mm)

Weight:

2.1 oz (60 g)

Internal Volume:

0.026 in³ (0.426 cm³) Filtration:

40 micron (recommended)

Oxygen Clean:

Call For Details

The Series 11 miniature pneumatic solenoid valve is a robust and proven product with a reputation for reliable and consistent performance. The Series 11 miniature solenoid valve is the preferred choice of major OEM's in the medical and analytical market. With valve bodies made from brass or stainless steel, the Series 11 miniature solenoid valve is an ideal solution for general purpose applications and those applications requiring low out-gassing and a bubble-tight seal.

Features

- Proven performance tested to 260 million life cycles
- Wide range of available electrical connections to simplify valve integration and control
- Manifold mount or barbed tube pneumatic configurations available for • added system design flexibility
- Available Analytical and Oxygen Service Clean to minimize contamination
- RoHS compliant 🖌

Electrical

Power Options:

0.5, 1.0, or 2.0 Watts

Voltage Options:

5, 12 or 24 VDC Further power reduction may be achieved through the use of spike and hold or PWM electrical control.

Electrical Connections:

Wire Leads, PC Pins, Solder Tabs, Quick Disconnect Spade

Wetted Materials

Body:

36000 HO2 Brass; 303 Series Stainless Steel Stem Base: 36000 HO2 Brass; 303 Series Stainless Steel **Poppet Options:** FKM All Others: 430 FR Series Stainless Steel 302 Series Stainless Steel

Performance Characteristics

Leak Rate: <0.016 sccm of air 1.0 sccm of air (Model 20 only) **Response:** <30 ms cycling **Pressure:** 0 to 100 psig (6.9 bar) Vacuum: 0-27 in Hg (686 mm Hg) **Orifice Sizes:** 0.030" (0.76 mm) 0.050" (1.27 mm) 0.102" (2.59 mm)





Series 11 Miniature Pneumatic Solenoid Valve

Typical Flow Curve

All models reflect typical flow output capability based on rated pressure

Pressure and Flow Capabilities/Life Requirements

Model No.	Orifice Size	Nominal Cv	Maximum Supply Pressure	Leak Rate (Air)	Power Consumption	Elastomer	Life Requirements (millions of cycles)*
10	0.030 in (0.76 mm)	0.017	100 psi (6.89 bar)	<0.016 sccm	2 Watts	FKM	100
12	0.050 in (1.27 mm)	0.031	50 psi (3.45 bar)	<0.016 sccm	2 Watts	FKM	100
13	0.030 in (0.76 mm)	0.017	50 psi (3.45 bar)	<0.016 sccm	1 Watt	FKM	200
15	0.050 in (1.27 mm)	0.025	25 psi (1.72 bar)	<0.016 sccm	1 Watt	FKM	200
16	0.030 in (0.76 mm)	0.017	25 psi (1.72 bar)	<0.016 sccm	0.5 Watt	FKM	260
18	0.050 in (1.27 mm)	0.021	10 psi (0.69 bar)	<0.016 sccm	0.5 Watt	FKM	260
19	0.050 in (1.27 mm)	0.025	70 psi (4.83 bar)	<0.016 sccm	2 Watts	FKM	20
20	0.102 in (2.59 mm)	0.069	25 psi (1.72 bar)	1.0 sccm	1 Watt	FKM	25

*Life is dependent upon elastomeric material, duty cycle and pressures

For custom requirements please contact Applications Engineering at 603-595-1500 or ppfinfo@parker.com



Series 11 Miniature Pneumatic Solenoid Valve

Pneumatic Interface

Manifold Mount



Mechanical Integration Dimensions





Basic Dimensions, 3-Way Valve Configuration





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Miniature Solenoid Valves

Series 11 Miniature Pneumatic Solenoid Valve Pneumatic Interface



Barb Options

(For 1/16" (1.5 mm) I.D. Tubing) .105 [2.67] - Ø.096 [Ø2.44] .225 [5.72] - Ø.083 [Ø2.11]

1/16" (1.5 mm) Barbs

5/64" (2 mm) Barbs

(For 5/64" (2 mm) I.D. Tubing)



1/8" (3 mm) Barbs

(For 1/8" (3 mm) I.D. Tubing)







*4 PC PIN PCB Interface





Series 11 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



Series 11 Miniature Pneumatic Solenoid Valve Installation and Use

Manifold & O-Ring Dimensions & Design



Accessories

O-Ring (Manifold Seal) Dimensions

(see Accessories table below

for part numbers)

I.D. = Ø.114 ±.005 [Ø2.90 ±0.13] W = .070 ±.003 [1.78 ±0.08] O.D. = Ø.254 [Ø6.45] REFERENCE



Body Standoff 890-000027-001 (2 required for each valve)



Screw 4-40 x 1/2" Pan Head 191-000100-208

(2 required for each valve)





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Series 11 Miniature Pneumatic Solenoid Valve

Ordering Information

Sample Part ID	11	10	3	BV	12	Р	7	7	
Description	Series	Model Number Pressure / Orifice / Power	Туре	Material XX: Body / Poppet & Seal	Voltage	Electrical Coil Connection	Pneumatic Connection Body	Pneumatic Connection Stem	
Options	11	10: 0-100 psi / 0.030" / 2 Watts	1: 2-Way NC	BV: Brass / FKM (2)	5: 5 VDC	F: Wire Leads, 18", No Termination	0: Manifold Mount (3)	0: Manifold Mount (4)	
		12: 0-50 psi / 0.050" / 2 Watts	2: 2-Way NO	SV: Stainless Steel / FKM	12: 12 VDC	P: PC Mount, 4 PC Pins	6: 1/16" (1.5 mm) Barbs	6: 1/16" (1.5 mm) Barbs ⁽⁵⁾	
		13: 0-50 psi / 0.030" / 1 Watt	3: 3-Way NC or Distributor		24: 24 VDC	S: PC Mount, 2 Solder Tabs	7: 5/64" (2 mm) Barbs	7: 5/64" (2 mm) Barbs	
		15: 0-25 psi / 0.050" / 1 Watt	4: 3-Way NO			Q: Quick Connect Spade	8: 1/8" (3 mm) Barbs	8: 1/8" (3 mm) Barbs	
		16: 0-25 psi / 0.030" / 0.5 Watt	6: 2-Way NC Universal (1)						
		18: 0-10 psi / 0.050" / 0.5 Watt							
		19: 0-70 psi / 0.050" / 2 Watts							
		20: 0-25 psi / 0.102" / 1 Watt							
								(4) Type 1 and 6 configurations only	
			⁽¹⁾ Model 20 (0.102" orifice) only available in 2-Way NC Universal configuration	⁽²⁾ Model 20 (0.102" orifice) only available in Brass/FKM configuration			⁽³⁾ Model 20 (0.102" orifice) only available in manifold mount body	⁽⁵⁾ Not available on Models 12, 15, 18 and 19 (0.050" orifice)	
Accessories									
190-007024-001: O-ring, Buna-N * Used as a seal between the manifold and valve body									
190-007024-002: O-ring, FKM * ** Used to create a flush mount between the coil and valve body									
890-000027-001: Body Standoff **									
191-000115-010: Screw, 4-40 x 5/8" Pan Head, Phillips									



- 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/s11) to configure your Series 11 Miniature Pneumatic Solenoid Valve. For more detailed information, visit us on the Web, or call and refer to Performance Spec. #790-002075-001 and #790-002407-001 (Model 20 only) and Drawing #890-003016-001.



Series 25 Miniature Pneumatic Solenoid Valve

15 mm Solenoid Valve



Applications

- Oxygen Conservers and Concentrators
- Sieve Bed Switching
- Anesthesia Delivery
- Compression Therapy
- Gas Chromatography
- Insufflators
- Flow Control/Shut-off

Product Specifications Mechanical

Valve Type:

- 2/3 Port, Direct-acting poppet style
- Normally Closed (NC)
- Normally Open (NO)
- Distributor

Media:

Air, argon, helium, hydrogen, methane, nitrogen, oxygen,

& other non-reacting gasses

Operating Environment:

32 to 158°F (0 to 70°C)

Storage Temperature:

-40 to 158°F (-40 to 70°C)

Dimensions:

- Length: 1.73 in (43.9 mm)
- Width: 0.63 in (15.8 mm)
- Height: 0.67 in (17.0 mm)

Weight:

2.1 oz (60 g)

Internal Volume:

0.026 in³ (0.426 cm³)

Filtration:

40 micron (recommended)

Oxygen Clean:

Call For Details

The Series 25 miniature pneumatic solenoid valve is a robust and proven product with a reputation for reliable and consistent performance. The Series 25 miniature solenoid valve is the preferred choice of major OEM's in the medical and analytical market. With valve bodies made from nickel-plated brass and multiple pneumatic and electrical interface options, the Series 25 miniature solenoid valve is the ideal solution for general purpose applications and those applications requiring low out-gassing and a bubble-tight seal.

Features

- Proven performance tested to 260 million life cycles
- Wide range of available electrical connections to simplify valve integration and control
- Manifold mount or barbed tube pneumatic configurations available or added system design flexibility
- Available Analytical and Oxygen Service Clean to minimize contamination
- RoHS complian 💒

Electrical

Power Options:

0.5, 1.0 or 2.0 Watts

Voltage Options:

5, 12 or 24 VDC

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

Electrical Connections:

Wire Leads, PC Pins, Solder Tabs, Quick Disconnect Spade

Wetted Materials

Body:

36000 HO2 Brass, Nickel Plated Stem Base:

36000 HO2 Brass;

Poppet Options:

FKM

All Others:

430 FR Series Stainless Steel 302 Series Stainless Steel 36000 HO2 Brass, Nickel Plated

Performance Characteristics

Leak Rate:

<0.016 sccm of air (bubble tight) **Response:**

<30 ms cycling

Pressure:

0 to 100 psig (6.9 bar)

Vacuum:

0-27 in Hg (686 mm Hg)

Orifice Sizes:

0.030" (0.76 mm) 0.050" (1.27 mm)





Typical Flow Curve

All models reflect typical flow output capability based on rated pressure

Pressure and Flow Capabilities/Life Requirements

Model No.	Orifice Size	Nominal Cv	Maximum Supply Pressure	Power Consumption	Elastomer	Life Requirements (millions of cycles*)
10	0.030 in (0.76 mm)	0.017	100 psig (6.9 bar)	2 Watts	FKM	100
12	0.050 in (1.27 mm)	0.031	50 psig (3.5 bar)	2 Watts	FKM	100
13	0.030 in (0.76 mm)	0.017	50 psig (3.5 bar)	1 Watt	FKM	200
15	0.050 in (1.27 mm)	0.025	25 psig (1.7 bar)	1 Watt	FKM	200
16	0.030 in (0.76 mm)	0.017	25 psig (1.7 bar)	0.5 Watt	FKM	260
18	0.050 in (1.27 mm)	0.021	10 psig (0.7 bar)	0.5 Watt	FKM	260
19	0.050 in (1.27 mm)	0.025	70 psig (4.8 bar)	2 Watts	FKM	20

*Life is dependent upon elastomeric material, duty cycle and pressures

For custom requirements please contact Applications Engineering at 1-603-595-1500 or ppfinfo@parker.com



Miniature Solenoid Valves

Mechanical Integration Dimensions

.625 [15.88] MAX. .67 [17.0] .305 [7.75] .305 [7.75] 2X 10-32 UNF-2B PORT 2 (OUTLET) X .188 [4.78] DP. 1.785 [45.34] .524 [13.31] .594 [15.09] ð .336 [8.53] .683 [17.35] .194 [4.93] - .31 [7.9] PORT 1 (INLET) .375 [9.53] .125 [3.18] - .155 [3.94] Ø.750 [Ø19.05] .500 [12.70] UNITS 2X 6-32 UNF-2B X .25 [6.35] DP. IN. [mm.]



Basic Dimensions, 2-Way Valve Configuration



Basic Dimensions, 3-Way Valve Configuration



Series 25 Miniature Pneumatic Solenoid Valve

Mechanical Integration Dimensions

Stem Options





(For 1/8" (3 mm) I.D. Tubing) (OPTION #8)





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Electrical Interface





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Series 25 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

www.mfcp.com

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Ordering Information

Sample Part ID	25	10	3	NV	12	Р	5	7
Description	Series	Model Number: Pressure / Orifice / Power	Туре	Material XX: Body / Poppet & Seal	Voltage	Electrical Coil Selection	Pneumatic Connection Body	Pneumatic Connection Stem
Options	25	10: 0-100 psi / 0.030" orifice / 2 Watts	1: 2-Way NC	NV: Nickel-plated Brass / FKM	5: 5 VDC	F: Wire Leads, 18", No Termination	5: 10-32 Female	0: Manifold Mount (2-Way NC Only)
		12: 0-50 psi / 0.050" orifice / 2 Watts	2: 2-Way NO		12: 12 VDC	P: PC Mount, 4 PC Pins		4: 10-32 Male
		13: 0-50 psi / 0.030" orifice / 1 Watt	3: 3-Way NC or Distributor		24: 24 VDC	S: PC Mount, 2 Solder Tabs		5: 10-32 Female
		15: 0-25 psi / 0.050" orifice / 1 Watt	4: 3-Way NO			Q: Quick Connect Spade		6: 1/16" (1.5mm) Barbs*
		16: 0-25 psi / 0.030" orifice / 0.5 Watt						7: 5/64" (2 mm) Barbs
		18: 0-10 psi / 0.050" orifice / 0.5 Watt						8: 1/8" (3 mm) Barbs
		19: 0-70 psi / 0.050" orifice / 2 Watts						
								*1/16" Barbs not available for 0.050" orifice valves

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/s11) to configure your Series 25 Miniature Pneumatic Solenoid Valve. For more detailed information, visit us on the Web, or call and refer to Performance Spec. #790-002075-001 and Drawing #890-003017-001.



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15 mm Solenoid Valve



Applications

- Oxygen Conservers and Concentrators
- Sieve Bed Switching
- Anesthesia Delivery
- Compression Therapy
- Gas Chromatography
- Insufflators
- Flow Control/Shut-off

Product Specifications

Mechanical

Valve Type:

2/3 Port, Direct-acting poppet style

- Normally Closed (NC)
- Normally Open (NO)
- Distributor

Media:

Air, argon, helium, hydrogen, methane, nitrogen, oxygen,

& other non-reacting gasses

Operating Environment:

32 to 158°F (0 to 70°C) Storage Temperature:

-40 to 158°F (-40 to 70°C)

Dimensions:

Length: 1.53 in (38.8 mm) Diameter: 0.75 in (19.0 mm)

Weight:

2.1 oz (60 g)

Internal Volume:

0.026 in³ (0.426 cm³)

Filtration:

40 micron (recommended)

Oxygen Clean:

Call For Details

The Series 26 miniature pneumatic solenoid valve is a robust and proven product with a reputation for reliable and consistent performance. The Series 26 miniature solenoid valve is the preferred choice of major OEM's in the medical and analytical market. With valve bodies made from nickel-plated brass and multiple pneumatic and electrical interface options, the Series 26 miniature solenoid valve is the ideal solution for general purpose applications and those applications requiring low out-gassing and a bubble-tight seal.

Features

- Proven performance tested to 260 million life cycles
- Wide range of available electrical connections to simplify valve integration and control
- Manifold mount body interface simplifies the manifold design and eases valve installation
- Available Analytical and Oxygen Service Clean to minimize contamination
- RoHS compliant 🔬

Electrical

Power Options:

0.5, 1.0 or 2.0 Watts

Voltage Options:

5, 12 or 24 VDC Further power reduction may be achieved through the use of spike and hold or PWM electrical control.

Electrical Connections:

Wire Leads, PC Pins, Solder Tabs, Quick Disconnect Spade

Wetted Materials

- Body:
- 36000 HO2 Brass, Nickel Plated Stem Base: 36000 HO2 Brass; Poppet Options: FKM All Others: 430 FR Series Stainless Steel

302 Series Stainless Steel 36000 HO2 Brass, Nickel Plated

Performance Characteristics

Leak Rate:

<0.016 sccm of air (bubble tight)

Response:

<30 ms cycling

Pressure:

0 to 100 psig (6.9 bar)

Vacuum:

0-27 in Hg (686 mm Hg)

Orifice Sizes:

0.030" (0.76 mm) 0.050" (1.27 mm)



Typical Flow Curve



All models reflect typical flow output capability based on rated pressure

Pressure and Flow Capabilities/Life Requirements									
Model No.	Orifice Size	Nominal Cv	Maximum Supply Pressure	Power Consumption	Elastomer	Life Requirements (millions of cycles*)			
10	0.030 in (0.76 mm)	0.017	100 psig (6.9 bar)	2 Watts	FKM	100			
12	0.050 in (1.27 mm)	0.031	50 psig (3.5 bar)	2 Watts	FKM	100			
13	0.030 in (0.76 mm)	0.017	50 psig (3.5 bar)	1 Watt	FKM	200			
15	0.050 in (1.27 mm)	0.025	25 psig (1.7 bar)	1 Watt	FKM	200			
16	0.030 in (0.76 mm)	0.017	25 psig (1.7 bar)	0.5 Watt	FKM	260			
18	0.050 in (1.27 mm)	0.021	10 psig (0.7 bar)	0.5 Watt	FKM	260			
19	0.050 in (1.27 mm)	0.025	70 psig (4.8 bar)	2 Watts	FKM	20			

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*Life is dependent upon elastomeric material, duty cycle and pressures

For custom requirements please contact Applications Engineering at 1-603-595-1500 or ppfinfo@parker.com

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Mechanical Integration Dimensions

Basic Dimensions, 2-Way Valve Configuration









Miniature Solenoid Valves

Mechanical Integration Dimensions

Stem Options





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Electrical Interface









Miniature Solenoid Valves

PAD Ø.125 [Ø3.18]

.390 [9.91]

COIL CONNECTIONS

ANSI Symbols



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Ordering Information

Sample Part ID	26	10	3	NV	12	Р	4	7
Description	Series	Model Number: Pressure / Orifice / Power	Туре	Material	Voltage	Electrical Coil Selection	Pneumatic Connection Body	Pneumatic Connection Stem
Options	26	10: 0-100 psig / 0.030" orifice / 2 Watts	1: 2-Way NC	NV: Nickel-plated Brass/FKM	5: 5 VDC	F: Wire Leads, 18", No Termination	4: 10-32 Male	0: Manifold Mount
		12: 0-50 psig / 0.050" orifice / 2 Watts	3: 3-Way NC or Distributor		12: 12 VDC	P: PC Mount, 4 PC Pins		(2-Way NC Only)
		13: 0-50 psig / 0.030" orifice / 1 Watt	4: 3-Way NO		24: 24 VDC	S: PC Mount, 2 Solder Tabs		4: 10-32 Male
		15: 0-25 psig / 0.050" orifice / 1 Watt				Q: Quick Connect Spade		5: 10-32 Female
		16: 0-25 psig / 0.030" orifice / 0.5 Watt						6: 1/16" (1.5 mm) Barbs*
		18: 0-10 psig / 0.050" orifice / 0.5 Watt						7: 5/64" (2 mm) Barbs
		19: 0-70 psig / 0.050" orifice / 2 Watts						8: 1/8" (3 mm) Barbs
								*1/16" Barbs not available for 0.050" orifice valves

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/s11) to configure your Series 26 Miniature Pneumatic Solenoid Valve. For more detailed information, visit us on the Web, or call and refer to Performance Spec. #790-002075-001 and Drawing #890-003018-001.



Miniature Solenoid Valves

V² Valve Miniature Pneumatic Solenoid Valve 15 mm Pneumatic Solenoid Valve



Applications

- Oxygen Conservers
- Flow control/shut-off valve
- Portable Medical Devices

Product Specifications

Mechanical

Valve Type:

2/3 Port, Direct-acting poppet style

- Normally Closed (NC)
- Normally Open (NO)
- Distributor (Dist)

Media:

Air, Oxygen, Helium, Nitrogen, Carbon Dioxide/Monoxide, & other non-reactive gases.

Operating Environment:

32 to 158°F (0 to 70°C)

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

Dimensions:

- Length: 1.73 in (43.9 mm)
- Width: 0.63 in (15.9 mm)
- Height: 0.67 in (17.0 mm)

Weight:

1.2 oz (34.3 g)

Internal Volume:

0.0009 in³ (0.016 cm³)

Filtration:

40 micron (recommended)

The V² miniature pneumatic solenoid valve is a proven product with a reputation for reliable and consistent performance. Designed for medical device and system manufacturers, the V² miniature pneumatic solenoid valve is made from lightweight PBT plastic and provides flexible mounting and termination options. The V² miniature pneumatic solenoid valve also offers pneumatic and electrical design flexibility. It is available in manifold mount or 1/8" (3 mm) barbed tube configurations and is also available with either wire lead, quick connect spade or 4 pin printed circuit board electrical termination.

Features

- Lightweight PBT plastic body to reduce system weight
- Manifold mount or molded barbed fittings for added system design flexibility
- Printed circuit board mount, quick connect spade or wire lead coil termination to ease integration
- Proven performance tested to 25 million life cycles
- RoHS compliant 🛛 🔬

Electrical

Power Options:

0.5, 1.0, or 2.0 Watts Voltage Options: 5, 12 or 24 VDC Further power reduction may be

achieved through the use of spike and hold or PWM electrical control.

Wetted Materials

Body:
PBT
Stem Base:
36000 HO2 Brass
All Others:
FKM
430 FR Series Stainless Steel
302 Series Stainless Steel

Performance Characteristics

Leak Rate (Air):

<0.2 sccm
 Response:
 <30 ms cycling
 Pressure:
 0 to 100 psig (6.89 bar)
 Vacuum:
 0-27 in Hg (686 mm Hg)
 Orifice Sizes:
 0.030" (0.76 mm)
 0.050" (1.27 mm)
 Reliability:
 Life cycle rating of 25 million

(worst case tested, no performance degradation)





All models reflect typical flow output capability based on rated pressure

Model No.	Orifice Size	Nominal Cv	Maximum Supply Pressure	Power Consumption
10	0.030 in (0.76 mm)	0.017	100 psig (6.89 bar)	2 Watts
13	0.030 in (0.76 mm)	0.017	50 psig (3.45 bar)	1 Watt
14	0.050 in (1.27 mm)	0.034	30 psig (2.07 bar)	2 Watts
16	0.030 in (0.76 mm)	0.017	25 psig (1.72 bar)	0.5 Watt
17	0.050 in (1.27 mm)	0.032	15 psig (1.03 bar)	1 Watt
20	0.050 in (1.27 mm)	0.030	6 psig (0.41 bar)	0.5 Watt

Pressure and Flow Capabilities



Miniature Solenoid Valves

V² Valve Miniature Pneumatic Solenoid Valve

Mechanical Integration Dimensions

V² Basic Dimensions, Barbed Configuration

Barbed



V² Basic Dimensions, Manifold Mount Configuration

Manifold Mount





V² Valve Miniature Pneumatic Solenoid Valve Electrical Interface





*PCB Pin Layout (Coil Type 4 PC Pin)





Miniature Solenoid Valves

V² Valve Miniature Pneumatic Solenoid Valve

ANSI Symbols

 LEGEND:

 SUPPLY:
 Pneumatic Source or Supply Pressure

 EXHAUST:
 Exhaust to Atmospheric Pressure

 REOMT:
 Customer Requirement or Application

 ATM:
 Atmospheric Pressure

PORT LOCATIONS MANIFOLD BODY OPTION BARB BODY OPTION (3) (3) (2) (2) (1) (1) TYPE 1 2-WAY NORMALLY CLOSED PRESSURE VACUUM ANSI SYMBOL M Ē, (2) SUPPLY (2) REQMT (1) SUPPLY (1) REQMT "DE-ENERGIZED" "ENERGIZED" "DE-ENERGIZED" "ENERGIZED" TYPE 3 3-WAY NORMALLY CLOSED PRESSURE VACUUM (3) EXHAUST (3) SUPPLY ANSI SYMBOL ∟3 (2) REQMT (2) REQMT 2 (1) SUPPLY (1) ATM "DE-ENERGIZED" "ENERGIZED" "DE-ENERGIZED" "ENERGIZED" TYPE 3 3-WAY DISTRIBUTOR PRESSURE VACUUM (3) REQMT (3) SUPPLY ANSI SYMBOL (2) SUPPLY (2) REQMT (1) SUPPLY (1) REQMT "DE-ENERGIZED" "ENERGIZED" "DE-ENERGIZED' "ENERGIZED" TYPE 4 3-WAY NORMALLY OPEN PRESSURE VACUUM (3) SUPPLY (3) ATM ANSI SYMBOL M (2) REQMT (2) REQMT 4 (1) SUPPLY (1) EXHAUST "DE-ENERGIZED" "ENERGIZED" "DE-ENERGIZED" "ENERGIZED"

Pneumatic Schematics by Valve Types

---Park

Miniature Solenoid Valves

V² Valve Miniature Pneumatic Solenoid Valve

Accessories

O-Ring (Manifold Seal) Dimensions 190-007024-002

(2 required for each valve) I.D. = Ø.114 ±.005 [Ø2.90 ±0.13]

I.D. = Ø.114 ±.005 [Ø2.90 ±0.13] W = .070 ±.003 [1.78 ±0.08] O.D. = Ø.254 [Ø6.45] REFERENCE



Body Standoff 890-000027-001 (2 required for each valve)



Screw 4-40 x 5/8" Pan Head

191-000115-010 (2 required for each valve)



Ordering Information

Sample Part ID	V2	14	3	PV	12	Р	8	8	
Description	Series	Model Number: Pressure / Orifice / Power	Туре	Material XX: Body / Poppet Seal	Voltage	Coil Type	Body Styles	Topseat Barbs	
Options	V2	10: 0-100 psi / 0.030" orifice / 2 Watts	1: 2-Way NC	PV: Plastic / FKM	5: 5 VDC	F: Wire Leads, 18", No Termination	0: Manifold Mount	0: None (2-Way NC Only)	
		13: 0-50 psi / 0.030" orifice / 1 Watt	 3-Way NC or Distributor 		12: 12 VDC	P: PC Mount, 4 PC Pins	8: 1/8" (3 mm) Barbs	8: 1/8" (3 mm) Barbs	
		14: 0-30 psi / 0.050" orifice / 2 Watts	4: 3-Way NO		24: 24 VDC	S: PC Mount, 2 Solder Tabs			
		16: 0-25 psi / 0.030" orifice / 0.5 Watt				Q: Quick Connect Spade			
		17: 0-15 psi / 0.050" orifice / 1 Watt							
		20: 0-6 psi / 0.050" orifice / 0.5 Watt							
Accessories									
191-000115-010: Screw 4-40 x 5/8' Pan Head, Phillips 890-000027-001: Body Standoff Used to create a flush mount between coil and valve body								ORDER	
190-007024-002: O-r	ing, FKM		Used as seal betwee	en manifold and valve body					

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/v2) to configure your V² Miniature Pneumatic Solenoid Valve. For more detailed information, visit us on the Web, or call and refer to Performance Spec. #790-002156-001 and Drawing #890-003080-001.



Miniature Solenoid Valves

SRS Miniature Pneumatic Solenoid Valve 10 mm Manifold Mount Solenoid Valve



Applications

- Medical & Analytical Gas Control
- Blood Pressure Monitoring
- Sensor Zeroing
- Patient Monitors
- Portable Medical Devices

Product Specifications Mechanical

Valve Type:

- 3 Port, Direct-acting poppet style
- Normally Closed
- Normally Open
- Distributor

Media:

Non-Reactive gases

Operating Environment:

32 to 131°F (0 to 55°C)

Storage Temperature:

-40 to 158°F (-40 to 70°C)

Dimensions:

- Length: 1.5 in (38.1 mm)
- Width: 0.39 in (10.0 mm)
- Height: 0.61 in (15.5 mm)

Porting:

Manifold mount; Gasket supplied

Weight:

0.23 oz (6.5 g)

Internal Volume:

0.0016 in³ (0.027 cm³)

Filtration:

40 micron (recommended)

The SRS miniature solenoid valve is a compact and lightweight 10 mm manifold mount solenoid valve designed for portable instruments and medical devices requiring minimal power consumption and quiet operation. Utilizing an integrated manifold seal design in combination with a variety of electrical termination options, the SRS miniature solenoid valve simplifies pneumatic and electronic integration. With flow rates of up to 18 slpm and inlet pressures of up to 85 psig, the SRS miniature solenoid valve is an ideal solution for demanding portable instruments and medical devices.

Features

- Lightweight and compact to reduce system size and weight
- Integrated manifold seal and PC mount capability to simplify integration
- Hermetically-sealed coil protects the valve from accidental exposure to liquids
- Constucted of PBT and non-corrosive metal for use with non-reactive gases
- RoHS compliant 🔬

Electrical

Power Options: 0.5 or 1.0 Watt

Voltage Options: (±10%)

5, 12 or 24 VDC Further power reduction may be achieved through the use of spike and hold or PWM electrical control.

Wetted Materials

Bobbin/Body: Glass Reinforced PBT (Polybutylene terephthalate) Pole & Plunger: 430 FR Stainless Steel Seal: FKM Other: 300 Series Stainless Steel

Performance Characteristics

Leak Rate: <0.016 sccm of air Response: <30 ms cycling Pressure: 0 to 85 psid (5.86 bar) Vacuum: 0-27 in Hg (686 mm Hg) Burst Pressure:

Duist Flessule.

200 psig (13.7 bar) Orifice Sizes / Equivalent Cv: 0.045" (1.14 mm) / 0.027 0.030" (0.76 mm) / 0.017 0.020" (0.51 mm) / 0.0075

(See Life-cycle information in Performance Parameters section.)







Models 10 and 11 – 0.020" (0.51 mm) Orifice

Typical Flow Curve





Models 13 and 14 - 0.030" (0.76 mm) Orifice







www.mfcp.com

SRS Miniature Pneumatic Solenoid Valve

Performance Parameters

Model No.	Orifice Size	Maximum Supply Pressure	Maximum Supply Vacuum	Power Consumption	Life Requirements (millions of cycles)
10	0.020 in (0.51 mm)	35 psi (2.41 bar)	27 in Hg (686 mm Hg)	0.5 Watt	175
11	0.020 in (0.51 mm)	85 psi (5.86 bar)	27 in Hg (686 mm Hg)	1 Watt	50
13	0.030 in (0.76 mm)	20 psi (1.37 bar)	27 in Hg (686 mm Hg)	0.5 Watt	200
14	0.030 in (0.76 mm)	50 psi (3.44 bar)	27 in Hg (686 mm Hg)	1 Watt	25
16	0.045 in (1.14 mm)	10 psi (0.68 bar)	20 in Hg (508 mm Hg)	0.5 Watt	100
17	0.045 in (1.14 mm)	20 psi (1.37 bar)	27 in Hg (686 mm Hg)	1 Watt	25

Pneumatic Interface



Mechanical Integration Dimensions



SRS Basic Valve Dimensions

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SRS Miniature Pneumatic Solenoid Valve

Electrical Interface





SRS Miniature Pneumatic Solenoid Valve

ANSI Symbols

Pneumatic Schematics by Valve Types TYPE 1 3-WAY NORMALLY CLOSED PRESSURE VACUUM ANSI SYMBOL -3 - 2 (3) SUPPLY (3) EXHAUST (2) REQMT (2) REQMT (1) SUPPLY (1) ATM "DE-ENERGIZED" "ENERGIZED" "DE-ENERGIZED" "ENERGIZED" TYPE 2 3-WAY NORMALLY OPEN PRESSURE VACUUM ANSI SYMBOL 7 (3) SUPPLY (3) ATM ► (2) REQMT (2) REQMT (1) SUPPLY (1) EXHAUST "DE-ENERGIZED" "ENERGIZED" "DE-ENERGIZED" "ENERGIZED" TYPE 3 3-WAY DISTRIBUTOR PRESSURE VACUUM ANSI SYMBOL (3) SUPPLY (3) REQMT (2) SUPPLY (2) REQMT (1) SUPPLY (1) REQMT "DE-ENERGIZED" "ENERGIZED" "DE-ENERGIZED" "ENERGIZED"

Installation and Use

SRS Manifold Mount Diagram





www.mfcp.com

LEGEND: SUPPLY: Pneumatic Source or Supply Pressure EXHAUST: Exhaust to Atmospheric Pressure

REQMT: Customer Requirement or Application

Atmospheric Pressure

ATM:

SRS Miniature Pneumatic Solenoid Valve Accessories

Seal, Valve Manifold, SRS

195-000139-001





(2 required for each valve)



Test Manifold, Single Station, SRS

990-001362-001



Ordering Information

Sample Part ID	SRS	10	2	Р	٧	12	М	
Description	Series	Model Number: Pressure / Orifice	Туре	Material	Seal Material	Voltage	Electrical Connection	
Options	SRS	10: 0-35 psi / 0.020" 11: 0-85 psi / 0.020" 13: 0-20 psi / 0.030" 14: 0-50 psi / 0.030" 16: 0-10 psi / 0.045" 17: 0-20 psi / 0.045"	1: 3-Way NC 2: 3-Way NO 3: 3-Way NC or Distributor	P: Engineering Plastic	V: FKM	5: 5 VDC 12: 12 VDC 24: 24 VDC	F: 0.025" Square Pins, Front M: 0.025" Square Pins, Manifold Interface L: Insulated Wire Leads, 18", Front R: Insulated Wire Leads, 18", Manifold Interface	
Accessories								

DETAIL "B

191-000100-009: Screw 0-80 x 9/16*, Pan Head, Phillips (2 required for each valve) 990-001362-001: Test Manifold, Single Station, SRS

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/srs) to configure your SRS Miniature Pneumatic Solenoid Valve. For more detailed information, visit us on the Web, or call and refer to Performance Spec. #790-002090-001 and Drawing #890-003061-001.

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



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10 mm Normally Open Exhaust Valve



The PND Series miniature pneumatic solenoid valve is an economical 2-way normally open exhaust valve designed for rapid pressure relief. The PND Series miniature pneumatic solenoid valve is the perfect solution for safety oriented applications that require pressure relief to atmosphere upon power loss.

Features

- Compact, economical design to reduce size and cost of integration
- Normally Open configuration to ensure rapid deflation upon power loss
- Low power design reduces heat generation and power consumption
- Proven performance tested to 250,000 life cycles
- RoHS compliant 🔬

Applications

- Non-Invasive Blood Pressure-Devices
- Normally Open Fail-Safe Exhaust

Product Specifications

Mechanical

Valve Type:

2 Port, Direct-acting poppet style
- Normally Open (NO)
Media:
Air, Nitrogen, Argon, Carbon Dioxide,
& other non-reacting gasses
Operating Environment:
32 to 131°F (0 to 55°C)
Storage Temperature:
-13 to 158°F (-25 to 70°C)
Dimensions:
PND-05D:
- Length: 1.01 in (25.7 mm)
- Width: 0.39 (10.0 mm)
- Height: 0.47 in (12.0 mm)
Porting:
Single Barb for 0.078" (2.0 mm)
I.D. Tubing
Weight (Typical):
PND-05A: 0.60 oz (17.0 g)
PND-05D: 0.40 oz (11.4 g)
Internal Volume:
PND-05A: 0.0035 in ³ (0.056 cm ³)
PND-05D: 0.0025 in ³ (0.041 cm ³)
Filtration:
40 micron (recommended)

Electrical

Power: PND-05A: 0.36 Watt PND-05D: 0.50 Watt

Voltage: 3, 6 or 12 VDC Further power reduction can be achieved with the use of PWM control.

Wetted Materials

Bobbin: PBT (Polybutylene terephthalate) Plunger/Barb: SUM24L Steel Seal: Silicone Frame: SPCC Steel (Treatment: MFZn-c) Other: 304 Stainless Steel

Performance Characteristics

Leak Rate:
< 0.016 sccm of air
Response:
< 100 ms cycling
Pressure:
0 to 6 psig (0.4 bar)
Orifice Sizes/Equivalent Cv:
PND-05A:
0.050" (1.27 mm) / 0.035
PND-05D:
0.030" (0.75 mm) / 0.017
Reliability:
Life cycle rating of 250,000 cycles
(worst case tested, no
performance degradation)











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Pressure and Flow Capabilities/Power

Model No.	Orifice Size	Nominal Cv	Maximum Supply Pressure	Power Consumption
PND-05A	0.050 in (1.27 mm)	0.035	6 psig (0.4 bar)	0.36 Watt
PND-05D	0.030 in (0.76 mm)	0.017	6 psig (0.4 bar)	0.50 Watt

Pneumatic Interface

PND Series 05A

S

PDN Series 05D



Mechanical Integration Dimensions



Basic Dimensions, PND-05A





Mounting Guidelines (PND-05A Only)



Ordering Information

Sample Part ID	PND	-	05D	-	12
Description	Series	-	Model: Orifice / Power	-	Voltage
Options	PND		05A: 0.050" / 0.36 Watt		03: 3 VDC
			05D: 0.030" / 0.50 Watt		06: 6 VDC
					12:12 VDC



- 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/pndvalve) to configure your PND Miniature Pneumatic Solenoid Valve. For more detailed information, visit us on the Web, or call and refer to Performance Spec. #790-002198-001 and Drawing #s: PND-05A-DWG and PND-05D-DWG.



Miniature Solenoid Valves

Pulse Valves

Ultra Low Leak Extreme Performance Valve



Pulse Valves solenoid valves offer outstanding potential for precision control of Laser Spectroscopy Gas Analysis. Combining high speed, ultra low leak rate, high flow, and high temperature capability in a small size; this rugged valve operates with extreme repeatability and is constructed of non-corroding, passivated stainless steel. Pulse Valves coils are rated for continuous duty and are potted to exclude the environment.

Features

- Smallest footprint in its class
- High speed response times of less than 2 ms
- 100% tested to leak-tight 1 x 10⁻⁷ cc/sec/atm Helium
- 100% duty cycle in environmental temperatures of up to 221°F (105°C)
- Pressures up to 1250 PSI (86.2 bar)
- Available with a variety of orifices, seals, and voltages to match your application
- RoHS compliant



Product Specifications

Gas pulse generation for Laser

Physical Properties

Applications

Spectroscopy

Valve Type:
Inert Non Isolation
Valve Configuration:
2-Way Normally Closed
Media:
Gases
Operating Environment:
40 to 221°F (4 to 105°C)
Dimensions:
See Dimensions Page
Weight:
2.8 oz (79.4 g)
Porting:
A-LOK [®] , Flange
Internal Volume:
(Contract footows for dataila)

Electrical

Voltage (VDC):	20	28			
Power (Watts):	12.1	11.2			
Current (mA):	606	400			
Resistance (Ohm):	33	70			
(Ω±5% @ 70°F, 21°C)					
Connection					
12" Lead Wires Standard					

Wetted Materials

Poppet Materials*: Vespel^{®**} PTFE O-Ring:

FFKM (Kalrez^{®**})

**NOTE: Vespel and Kalrez are trademarks of Dupont.

* See accessories table under ordering information for additional poppet materials.

Performance Characteristics

Operating Pressures /

Orifice Diameters:

1x10⁻⁵ Torr -1250 psi (86.2 bar)/

0.004" (.10 mm)

0.020" (.51 mm)

0.031" (.79 mm)

1x10⁻⁵ Torr -750 psi (51.7 bar)/ 0.039" (99 mm)

Proof Pressure:

1.5X rated pressure

Response Time:

<2 ms cycling Down to 160µs with the Parker IOTA ONE Valve Driver. (See Accessories)

Leak Rate:

1 x 10⁻⁷ cc/sec/atm Helium

Recommended Filtration: 40 µm max

Orifice Shape:

Cone, No Cone (Cone improves exit stream uniformity)



Pulse Valves Ultra Low Leak Extreme Performance Valve

Mechanical Integration Dimensions



1/4" [6.35 mm] A-LOK® CROSS-SECTION





Miniature Solenoid Valves

Pulse Valves Ultra Low Leak Extreme Performance Valve

Hit and Hold Specifications (12-Watt coils):

Hit and Hold is a method for driving valves that can be used to reduce power consumption and heat generation while maintaining valve performance specifications. The valve is "hit" with the full rated voltage for some time period to open it (T1 in the graph) and then "held" open with substantially reduced voltage until the desired pulse length is reached (T2 in the graph). The following table shows the possible holding voltages and power consumption for most of our standard 12-watt valve solenoids.

Rated	3-w	ay	2-way		
Voltage (volts)	Hold Voltage	Hold Power	Hold Voltage	Hold Power	
28	14 volts	2.8 watts	6 volts	0.51 watts	
24	12 volts	3 watts	5 volts	0.52 watts	
20	10 volts	3 watts	5 volts	0.76 watts	
12	6 volts	3 watts	5 volts	2.1 watts	

Note: Values for 7-watt coils may be different



Hold Voltage Graph



Miniature Solenoid Valves

Ultra Low Leak Extreme Performance Valve

Pulse Valves

Chemical Compatibility Chart

Chemical	FFKM	PTFE	Stainless Steel	Vespel
DI Water	1	1	1	2
Methanol	1	1	1	1
Isopropanol	1	1	1	1
Ethanol	1	1	1	1
Acetonitrile	1	1	1	1
Tetrahydrofuran	1	1	1	2
Toluene	1	1	1	1
Organic Acids - Dilute	1	1	1	1
Non Organic Acids - Dilute	1	1	1	1
Bases - Dilute	1	1	1	1
Saline	1	1	1	1
Bleach 12%	1	1	2	4
Sodium Hydroxide 20%	1	1	1	4

	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				



Pulse Valves Ultra Low Leak Extreme Performance Valve

Accessories

IOTA ONE 060-0001-900

(Microfluidic Valve Driver)



Ordering Information

Orifice Size	Pressure	Valve Type	Seal Material	Voltage	Inlet Porting	Outlet Porting	Part Number
0.004" (.10 mm)	Vac-1250 psi (86.2 bar)	2-Way NC	PTFE, FFKM	28V	- 1/4" A-Lok [®]	Flange, No Cone -	009-1668-900
			Vespel, FFKM	20V			009-1670-900

Orifice Size	Pressure	Valve Type	Seal Material	Voltage	Inlet Porting	Outlet Porting	Part Number
0.020" (.51 mm)	Vac-1250 psi (86.2 bar)	2-Way NC	PTFE, FFKM	28V	1/4" A-Lok [®]	Flange, No Cone	009-0582-900
						Flange, Exit Cone	009-0442-900
			Vespel, FFKM	20V	1/4" A-Lok [®]	Flange, No Cone	009-1421-900
						Flange, Exit Cone	009-0347-900

Orifice Size	Pressure	Valve Type	Seal Material	Voltage	Inlet Porting	Outlet Porting	Part Number
0.031" (.79 mm)	Vac-1250 psi (86.2 bar)	/ac-1250 psi (86.2 bar) 2-Way NC -	PTFE, FFKM	28V	1/4" A-Lok [®]	Flange, No Cone	009-0381-900
						Flange, Exit Cone	009-0181-900
			Vespel, FFKM	espel, FFKM 20V	1/4" A-Lok [®]	Flange, No Cone	009-1671-900
						Flange, Exit Cone	009-0279-900

Orifice Size	Pressure	Valve Type	Seal Material	Voltage	Inlet Porting	Outlet Porting	Part Number
0.020" (00.mm))/aa 750 aai (51 7 bar)		PTFE, FFKM	28V	1/4" A-Lok [®]	Flange No Cana	009-1669-900
0.039" (.99 mm)	Vac-750 psi (51.7 bar)	2-way NC	Vespel, FFKM	20V		Flange, No Cone	009-1643-900

Pulse Valve Rebuild Kits

Pulse Valve Rebuild Kits	Part Number	Pulse Valve Poppet Kits	Part Number
With Teflon Poppets	009-PTFE-KIT	PTFE Poppets Qty. 50pcs	003-0023-050-KIT
With Vespel [®] Poppets	009-VSPL-KIT	Kel-F [®] Poppets Qty. 50pcs	009-0185-020-KIT
With Kel-F [®] Poppets	009-KELF-KIT	Vespel [®] Poppets Qty. 10pcs	009-0595-020-KIT
With PEEK Poppets	009-PEEK-KIT	PEEK Poppets Qty. 50pcs	009-0424-030-KIT
Kit Contents	Quantity Per Kit	Pulse Valve Coils	Part Number
Poppet	10	12 VDC	009-0280-050-2
Buffer Spring	5	20 VDC	009-0279-050-2
Load Spring	5	28 VDC	009-0181-050-2
Internal Viton [®] O - Ring	5	Pulse Valve Bodies (Flange with conical discharge)	Part Number
External Viton® O - Ring	5	0.020"(0.5 mm) Orifice	009-0309-010-003
Teflon Coated Armature	1	0.031"(0.8 mm) Orifice	009-0181-010-003
Shims (Various Thicknesses)	40		

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/pulse) to configure your Pulse Valve Ultra Low Leak Extreme Performance Valve. For more detailed information, visit us on the Web, or call 603-595-1500.

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



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Pulse Valves Ultra Low Leak Extreme Performance Valve Series 9 Accessory Kits

		SERI	ES 9 Accessory Kits			
		Teflon Pulse	Valve Kit - Contents	Qty		
	Teflon Poppet			10		
	Buffer Spring			5		
	Load Spring			5		
	Internal Viton Oring			5		
	External Viton Oring			5		
	Teflon Coated Armature			1		
	Shims (Various Thicknesse	s)		40		
Part Number	009-PTFE-KIT			1		
		/esnel Pulse	Valve Kit - Contents	Otv		
	Vespel Poppet			5		
	Buffer Spring			5		
	Load Spring			5		
	Internal Viton Oring			5		
	External Viton Oring			5		
	Teflon Coated Armature			1		
	Shims (Various Thicknesse	s)		40		
Part Number	009-VSPL-KIT	/		1		
			Volue Kit Contents	0.54		
	Kel f Poppet	Rei-i Puise	valve Kit - Contents	U (1)		
	Ruffer Spring			5		
	Load Spring			5		
	Internal Viton Oring			5		
	External Viton Oring	External Viton Oring				
	Teflon Coated Armature			1		
	Shims (Various Thicknesse	s)		40		
Part Number		3)		1		
		PEEK Pulse	Valve Kit - Contents	Qty		
	PEEK Poppet			10		
	Buffer Spring			5		
	Load Spring			5		
	Internal Viton Oring			5		
	External Viton Oring			5		
	Chines () (prious Thisknesse	-		1		
Deut Numehen		s)		40		
Part Number	009-PEEK-KII			1		
		SERIES	9 POPPET KITS	Otv		
Part Number	003-0023-050-KIT	021120	PTFE Poppets	50		
Part Number	009-0185-020-KIT		Kel-F Poppets	50		
Part Number	009-0595-020-KIT		Vespel Poppets	10		
Part Number	009-0424-030-KIT		PEEK Poppets	50		
		SERIES 9	ORINGS (Kalrez)	Qty		
Part Number	009-0070-100-001		Internal Kalrez Oring	1		
Part Number	001-0045-020-001		External Kalrez Oring	1		
	SER	RIES 9 COIL	(1/4" A-LOK FITTING)***	Qty		
Part Number	009-0280-050-2		12 VDC	1		
Part Number	009-0181-050-2		28 VDC	1		
Part Number	009-0279-050-2		20 VDC	1		

	SERIES 9 BODIES (Flange with conical discharge)		
Part Number	009-0309-010-003	.020" (0.5 mm)	1
Part Number	009-0181-010-003	.031" (0.8 mm)	1
Part Number	091-0351-010-003	.004" (0.1 mm)	1

Please contact customer service for order placement, leadtime and price ***Series 9 coils shown do not ship with electrical connectors



Pulse Valves Ultra Low Leak Extreme Performance Valve

FAQs

1. Can the IOTA One trigger both 20 and 28V pulse valves?

Yes, the IOTA One can trigger 12, 20, 24, and 28V pulse valves. However, you will need to change the jumper settings in the unit, reference manual that ships with the unit. Please note current standard coil. are 20 and 28V.

2. I used to purchase a pulse valve which is not listed in the chart above, is this pulse valve still available?

Currently, only the pulse valve configurations listed in the chart above are available for purchase.

3. I used to purchase spare parts for my pulse valve, are they still available?

Yes, spare parts are still available for pulse valves. Please note that only the kits and part numbers abov are available for purchase. Poppets, armatures, springs, etc... are no longer available for individual purchase and will need to be purchased as part of a kit.

4. Can the IOTA One trigger multiple valves at once?

Currently, the IOTA One is designed to trigger only one valve at a time.

5. What is the fastest pulse duration, opening response time and closing response time?

Typically, the fastest achievable pulse duration is 300 microseconds, opening response time is 180-200 microseconds, and closing response time is 50-250 microseconds.

6. Which Poppet material should I choose and why?

Poppet material should first be chosen based on compatibility with the gas you are flowing through the valve. If multiple materials are compatible then for general and low temperature and pressure applications PTFE and Kel-F should be used, for higher temperature and pressure applications Vespel are PEEK should be used.

7. Is there a performance advantage between the different voltage valves?

The performance difference between voltages is negligible. However, please note that the 20V coil is capable of handling 125C temperatures.

8. What is the maximum cycle frequency for the valve?

The maximum cycle frequency for the valve is 250Hz.



Value Added Application-Specific Solutions



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FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY PROPERTY DAMAGE.

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