VSO® MAX HP Miniature High Flow Proportional Valve

High Flow Proportional Valve

The VSO® MAX HP is a miniature high flow proportional valve that provides maximum flow capabilities greater than 200 slpm @ 45 psi (8.27 bar), while consuming less than two watts of power. The valve delivers a high range of controllable flow while consuming 25% less power than comparable miniature proportional valves. In today's medical device industry, size is an important element. VSO® MAX HP's operating pressure of up to 120 psi (8.27 bar) eliminates the need for an inlet regulator. This translates to a smaller, sleek medical device design and offers potential savings and features three standard control voltage ranges (5, 12 and 24 VDC).

Typical Applications

- Ventilators
- Insufflators
- Anesthesia Delivery & Monitors
- Pressure & Flow Control
- Mass Flow Control

Features

- Delivers a wide range of controllable flow
- Provides repeatable flow performance over its rated life
- Cleaned for Oxygen service use
- Low power consumption generates less heat
- Proven performance tested to 25 million life cycles
- Reach and RoHS compliant

Product Specifications

Physical Properties

Valve Type:	
2-Way Normally Closed	
Media:	
Air, argon, helium, hydrogen, methane, nitrogen, oxygen, & others	
Operating Environment:	
41 to 131°F (5 to 55°C)	
Storage Temperature:	
-40 to 158°F (-40 to 70°C)	
Length:	
2.02 in (51.4 mm)	
Width:	
0.63 in (15.9 mm)	
Height:	
0.69 in (17.4 mm)	
Porting:	
Manifold mount	
Weight:	
2.45 oz (69.5 g)	

Electrical

Power:	
2.0 Watts Maximum @ 20°C	
Voltage:	
See Table 1	
Electrical Termination:	
18 in Wire Leads	

Wetted Materials

Body:	
C36000 Brass	
Stem Base:	
430 FR Stainless Steel C36000 Brass	
All Others:	
FKM; 430 FR Stainless Steel; Stainless Steel	

Performance Characteristics

Leak Rate:	
The leakage shall not exceed the following values: Internal: 5.0 sccm of Air up to 120 psi (8.27 bar) External: 0.5 sccm of Air up to 120 psi (8.27 bar)	
Pressure:	
Operating: 0 - 120 psi (0 - 8.27 bar) Proof: 300 psi (20.7 bar)	
Orifice Sizes:	
0.116" (2.95 mm) effective 0.200" (5.08 mm) actual	
Hysteresis:	
7% of full scale current (Typical) 15% of full scale current (Max)	
Recommended Filtration:	
40 Micron (not supplied)	
Response time:	
10 ms Typical	
Reliability:	
25 Million Cycles	

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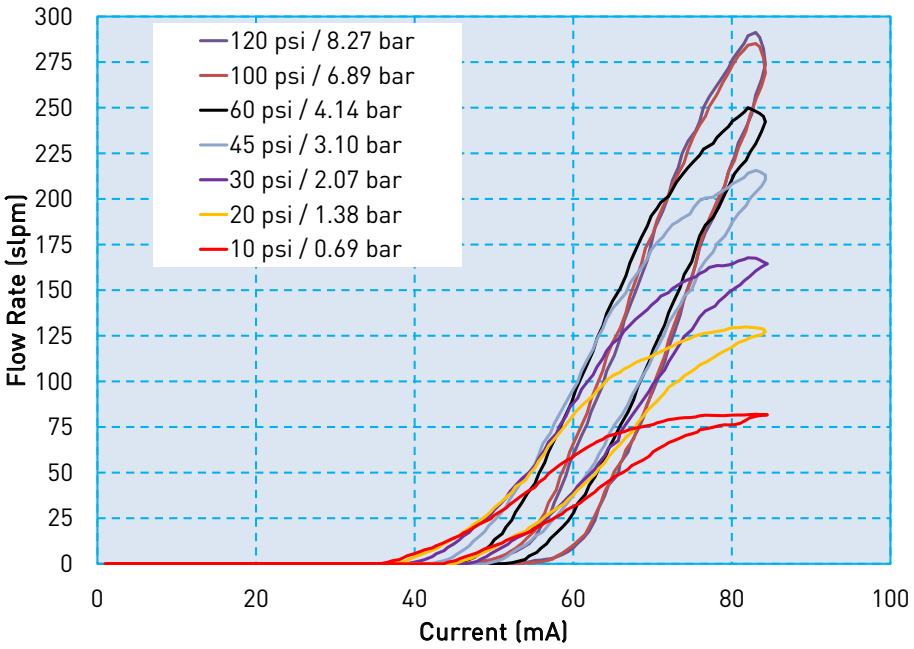
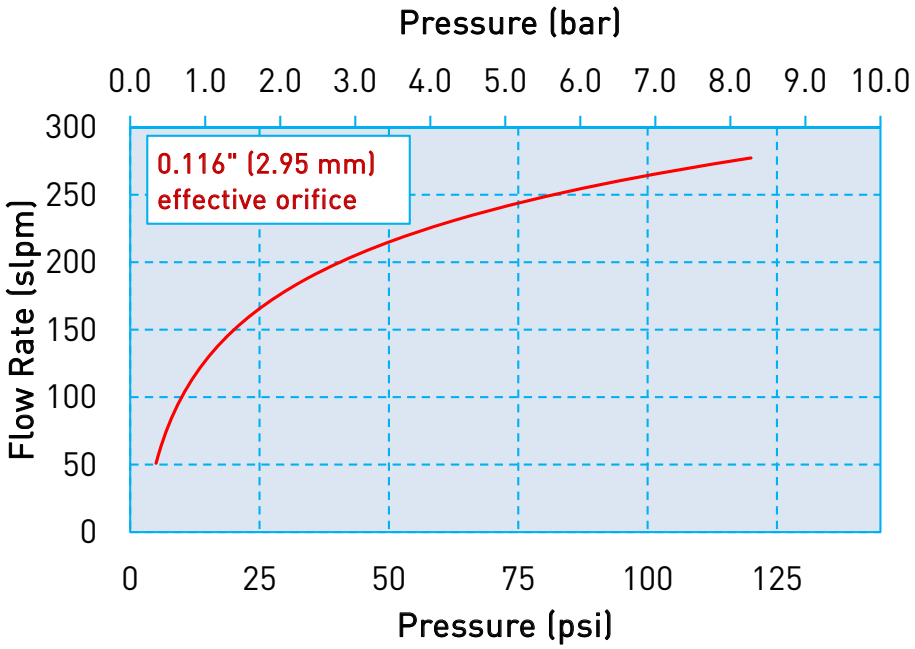
Typical Flow Curves

Typical Air Flow with 12VDC 68 Ohm Coil
(Tested w/air 20° C)



Pressure vs Flow



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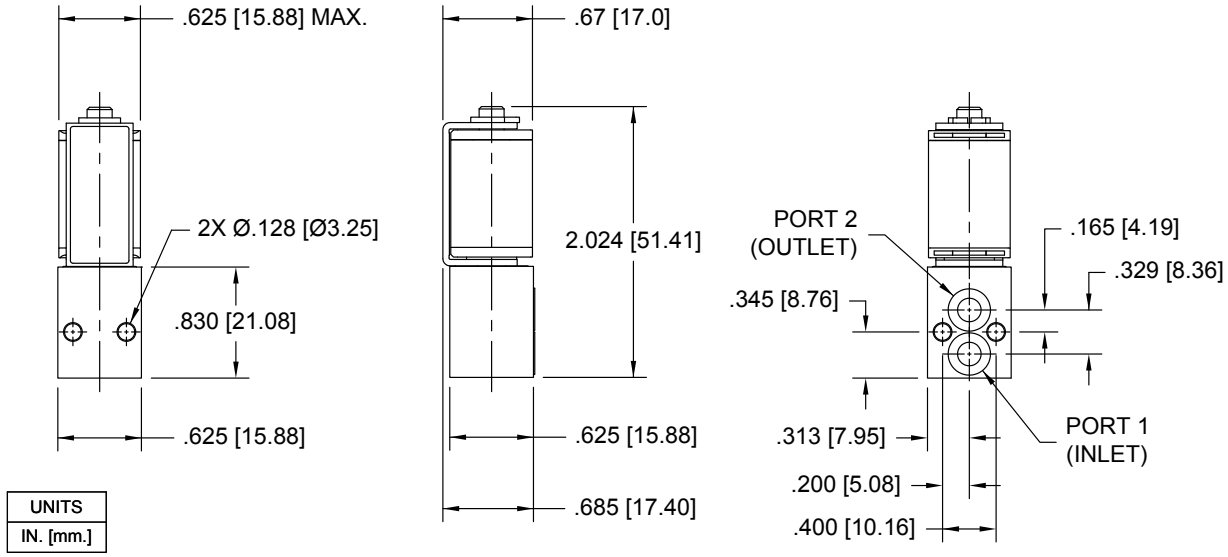
Pneumatic Interface

VSO® MAX HP Manifold Mount

Mechanical Integration

Dimensions

VSO® MAX HP Manifold Body Basic Valve Dimensions



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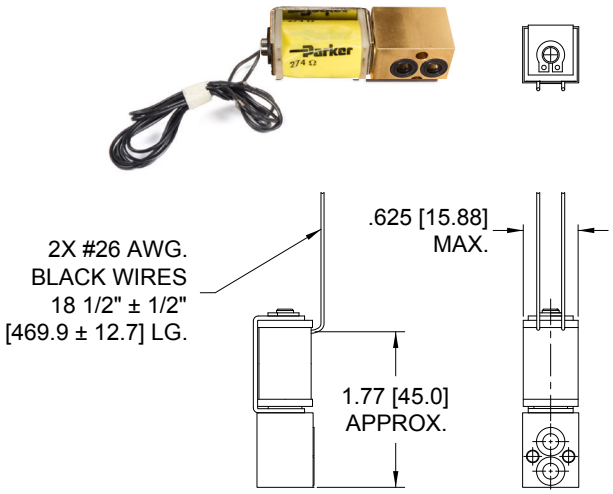
Electrical Interface

VSO® MAX HP Manifold Mount

Coil Type: 18" Wire Lead



Electrical Requirements

Table 1

Maximum Supply Voltage (VDC)	Nominal Coil Resistance (Ohms) @ 20°C	Control Current at Maximum Flow (mA)
5	11.9	423
12	68.4	170
24	273.6	85

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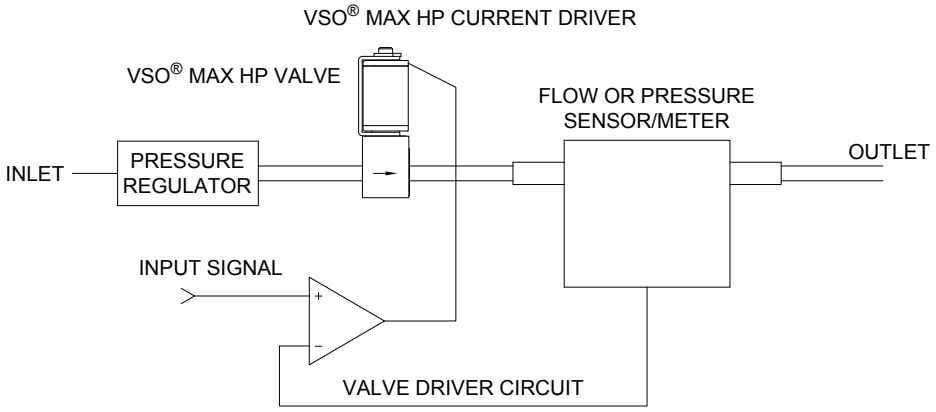
Installation and Use

Typical Valve Set-up

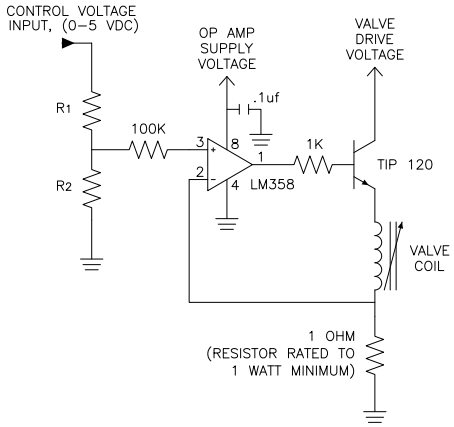


Valve Electrical Control

Basic Control:
The VSO® MAX HP valve can be controlled by either voltage or current; however, it is highly recommended that current control be employed to ensure the most repeatable valve flow performance.

PWM Control:
For PWM control, the signal applied to the valve should have a frequency of 5 kHz or greater. Optimal frequency will be application dependent.

Suggested VSO® MAX HP Current Driver Schematic



This simple current driver circuit draws only 1 mA at the input control (0-5VDC) and provides control for any VSO® MAX HP configuration regardless of valve voltage or resistance.

Table 2 (below) describes the recommended R1 and R2 resistor values based upon the full shut-off current.

Table 2: Selectable Resistor Values for a Low Current (1mA) LM358-Based Current Driver

Maximum Solenoid Voltage (VDC)	Circuit Supply Voltage (VDC)	Nominal Coil Resistance @ 20°C (Ohms)	Maximum Output Current from Circuit (mA)	R1 (Ohms)	R2 (Ohms)
5	7	11.9	425	4990	464
12	14	68.4	172	4990	178
24	26	273.6	85	4990	86.6

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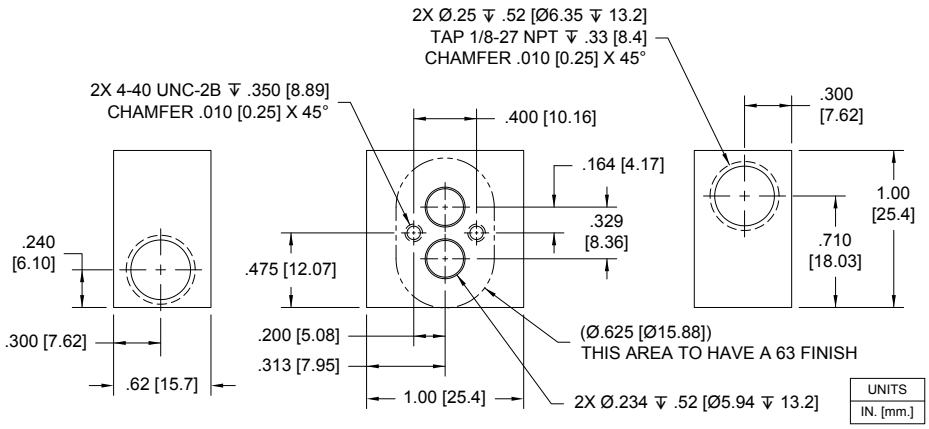
Installation and Use

VSO® MAX HP Manifold Dimensions

890-009034-001



Ordering Information

Sample Part ID	921	2	1	1	05	1	000
Description	**Series**	**Type**	**Pneumatic Interface**	**Body /Elastomer**	**Coil Voltage**	**Electrical Interface**	
Options		2: 120 PSI	1: Manifold Mount	1: Brass / FKM	05: 5 VDC 12: 12 VDC 24: 24 VDC	1: Wire Leads, 18" (45.7 cm)	

Accessories	
191-000214-002: Screw 4-40 x 7/8" Stainless Steel, Socket Head Cap**	**Not supplied with the valve. Used to mount the valve to a manifold.
190-007060-001: Spare Manifold Gasket, Quad Ring FKM*	*Supplied with the valve. Used as a seal between the valve body and manifold. (2 Required)
890-009034-001: Manifold, Single Station, 1/8" NPT	

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

ORDER ON-LINE

Please click on the Order On-line button (or go to www.parker.com/precisionfluidics/vsomaxhp) to configure your VSO® Max HP Non-Thermally Compensated Proportional Valve. For more detailed information, visit us on the Web, or call and refer to Performance Spec. #790-002506-001 and Drawing #890-003423-001.

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