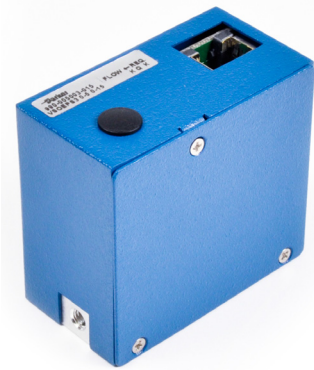


VSO[®]-GC Miniature Electronic Pressure Controllers

Pressure Controllers




Typical Applications

- Volumetric Flow Control
- Carrier Gas Pressure Control
- Air over Liquid Flow Control
- Split Flow Control

The VSO[®]-GC Miniature Electronic Pressure Controller converts a variable electrical control signal into a variable pneumatic output. The internal integration of the VSO[®]-GC has been optimized for low flow applications and applications requiring minimal volume. Used to control critical pressures and flows, the VSO[®]-GC replaces manual regulators, needle valves, flow controllers, and vent orifices, providing integral closed loop proportional control. Using Parker Hannifin's patented VSO[®] proportional valve for precise control, the VSO[®]-GC is an ideal choice for carrier gas flow control, microfluidic flow control and for aspirate/dispense applications.

Features

- Offers silent operation to reduce system noise levels
- Ensures high accuracy and unparalleled resolution for improved results
- Tested for long life to improve system availability
- Offers internal closed loop control to minimize system development time
- OEM application-specific configurations available
- Analog control for added design flexibility
- Optimized for stability at low flows
- RoHS compliant 

Product Specifications

Physical Properties

Valve Technology:
Thermally compensated VSO [®] proportional valves.
Media:
Non-corrosive gases
Operating Environment:
32 to 131°F (0 to 55°C)
Storage Temperature:
-40 to 149°F (-40 to 65°C)
Length:
1.27 in (32.3 mm)
Width:
2.32 in (59.0 mm)
Height:
2.20 in (55.8 mm)
Weight:
5.6 oz (158.8 g)
Porting:
10-32 female ports Metric adaptor available

Electrical

Main Voltage:
24 VDC ± 10%
Input Control Signal:
0-5 VDC standard
Monitor Output Voltage:
0-5 VDC
Maximum Current Requirement:
< 400 mA
Electrical Connection:
RJ-45

Wetted Materials

Manifold:
AL 6061-T6, FKM, 302 Series SS
Valve:
FKM, 300 Series SS Brass 36000HT
Tubing:
Ester Based Polyurethane
Sensor:
Glass, Silicon, Silicone, Polyphenylene Sulfide

Performance Characteristics

Pressure Ranges:
0-2 psig (0-0.14 bar)
0-15 psig (0-1.03 bar)
0-50 psig (0-3.45 bar)
0-100 psig (0-6.89 bar)
<i>(Effective control range is 10%-100% of full scale)</i>
Pressure Accuracy:
± 1.5% Full Scale maximum
Response:
< 15 ms
<i>(Response time to target pressure is output volume dependent)</i>
Linearity:
≤ +1.5% Full Scale

VSO is a registered trademark of Parker Hannifin Corporation.



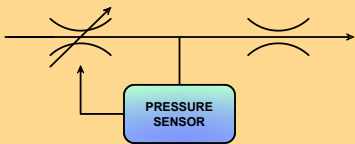
VSO®-GC Miniature Electronic Pressure Controllers

VSO®-GC Flow Capability Sizing Charts

How Flow Effects Pressure Control

The flow curves illustrate the flow capabilities of the three models of pressure controllers.

Pressure control using a constant flow approach requires the system to manage pressure drops across a variable orifice and a fixed orifice (see below).



Choosing the Right Model

In many cases, the fixed orifice is the cumulative restriction of the application system consuming gas. That fixed restriction and the inlet supply pressure level are key factors when selecting the correct model number for the VSO®-GC.

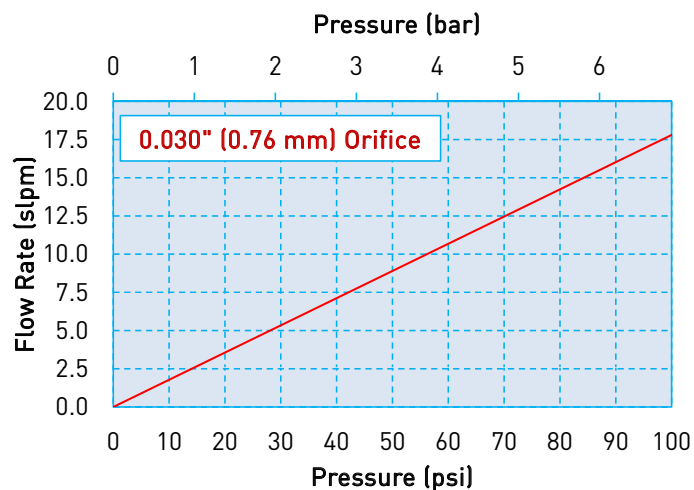
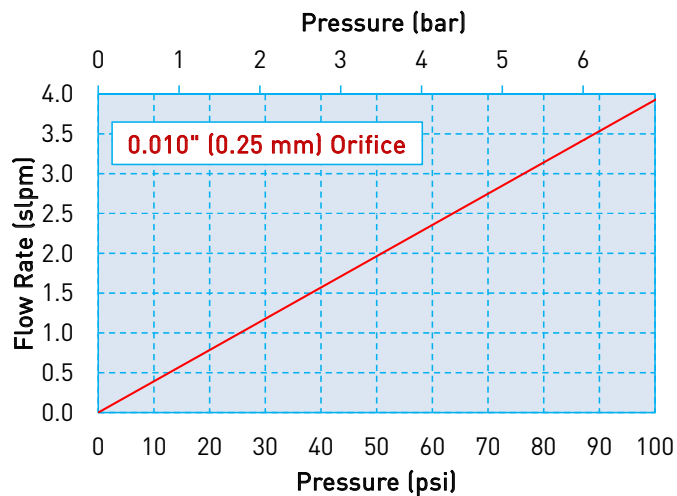
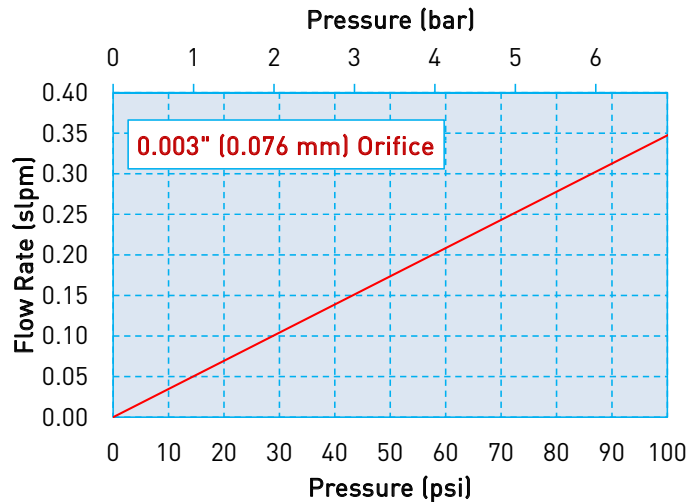
If the orifice is too small, it may fail to generate enough flow to drop the required pressure across the fixed orifice. If the orifice is too large, the Pressure Controller can become unstable. When considering orifice size please remember that the effective control range is 10%-100% of full scale.

EXAMPLE:

Please refer to flow chart labeled 0.010" (0.25mm) orifice. If your application requires 40 PSIG of pressure at 1 SLPM of flow, you would need a 0.010" orifice pressure controller.

This graph shows that a 0.010" orifice will flow up to 1.5 SLPM at 40 PSIG making it the right choice for your application.

Typical Flow vs Pressure @ 25°C

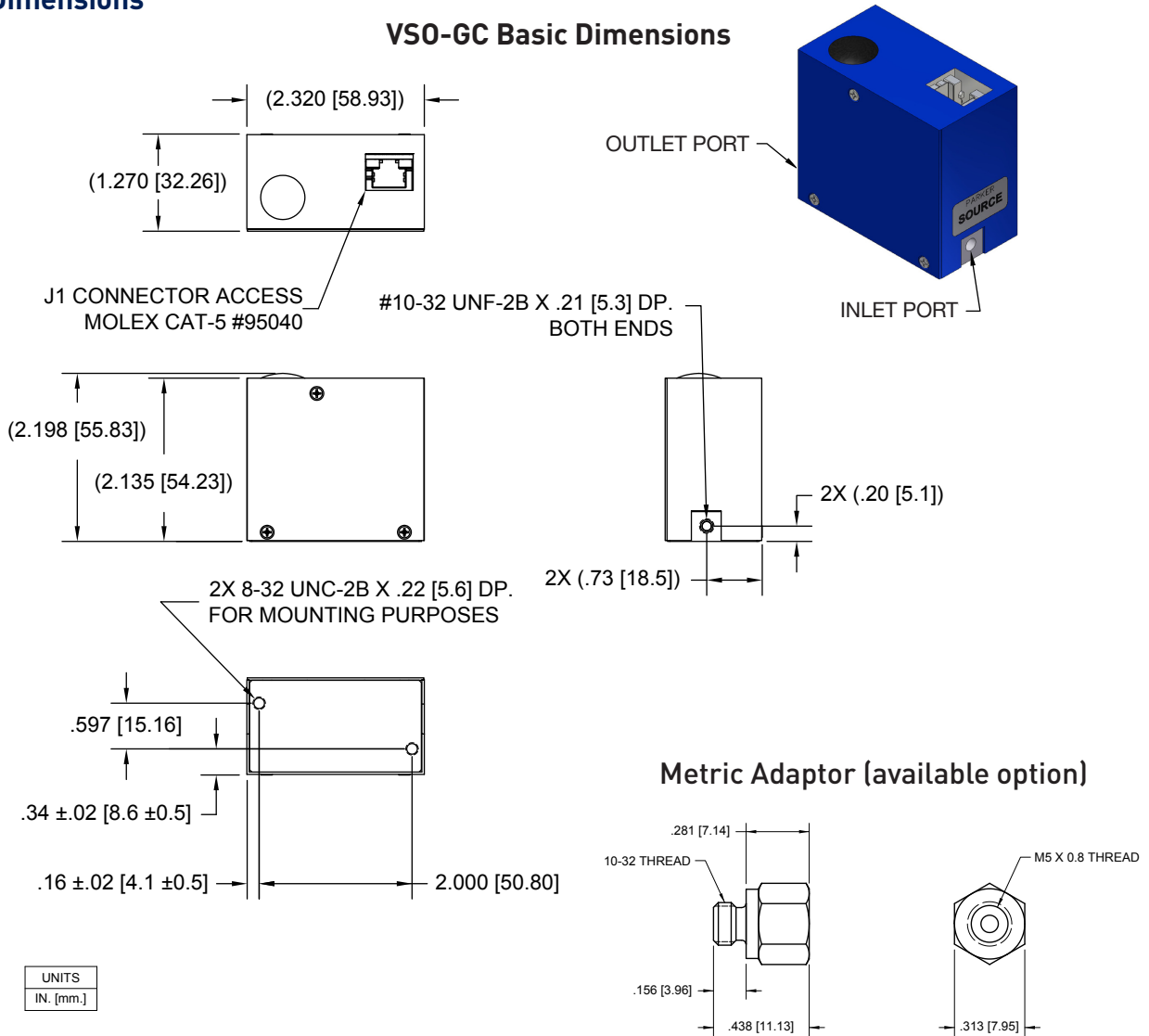


VSO®-GC Miniature Electronic Pressure Controllers

Mechanical Integration

Dimensions

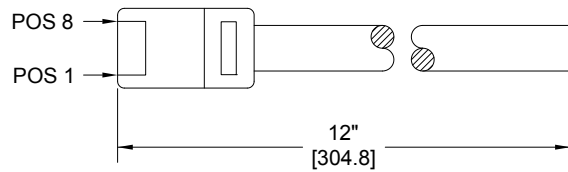
VSO-GC Basic Dimensions



Electrical Interface

CAT 5e Plug-in (RJ-45) Connector (included)	
Signal	RJ-45 Pin No. Color
Main Power, 24 VDC	1 White w/ Orange
Input Control Signal, 0-5 VDC	2 Solid Orange
Monitor Signal Output, 0-5 VDC	3 White w/ Green
System Ground	4 Solid Blue

CAT 5e to flying lead Plug-in Cable (included)



VSO®-GC Miniature Electronic Pressure Controllers

Installation Guide

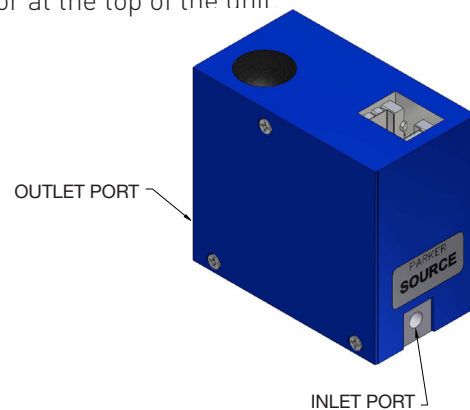
The VSO®-GC is a dynamic pressure controller that uses proportional valve technology to supply an accurate and stable pressure source for a variety of application requirements. Installation of this device requires the completion of a few easy steps.

They are as follows:

- Ensure that the gas is non corrosive, clean and dry.
- Connect the gas supply to the Inlet Port on the VSO®-GC.
- Connect a line requiring the controlled pressure to the Outlet Port on the VSO®-GC.
- Pneumatic ports are 10-32 UNF-2B Female. Metric Adaptor option is available.
- The EPC effective control range is 10%-100% of full scale.
- Electrical connections are made through the connector at the top of the unit

They are as follows:

CAT 5e Plug-in (RJ-45) Connector (included)	
Signal	RJ-45 Pin No. Color
Main Power, 24 VDC	1 White w/ Orange
Input Control Signal, 0-5 VDC	2 Solid Orange
Monitor Signal Output, 0-5 VDC	3 White w/ Green
System Ground	4 Solid Blue



Key Things to Remember:

The pressure controller requires downstream restriction to build pressure.

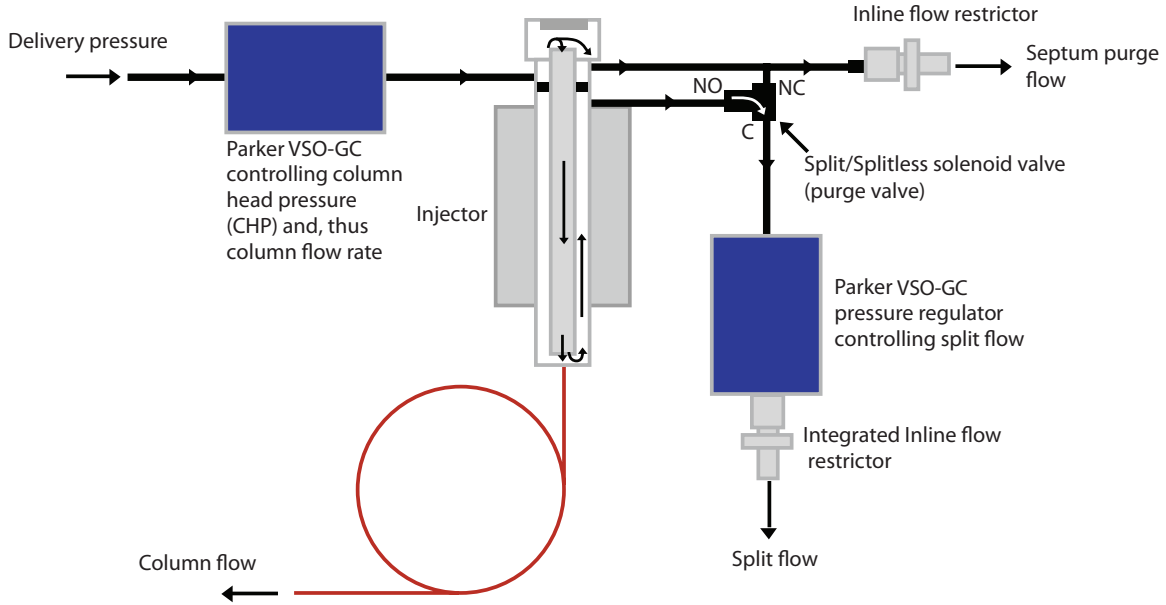
- The VSO®-GC is a non venting controller. A non-venting controller does not incorporate an internal vent orifice and will require a downstream restriction of roughly 20% to 60% of the controller's orifice size.

For example:

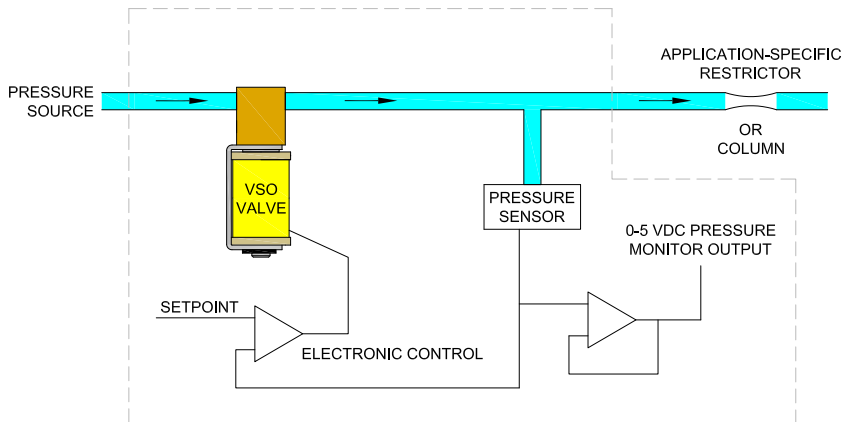
A non-vented controller with an orifice size of 0.010" should have 0.002" to 0.006" effective downstream restriction.

VSO®-GC Miniature Electronic Pressure Controllers Configurations

Typical Gas Chromatograph Schematic



Pressure Controller with No Internal Vent



With No Internal Vent.

An internal vent may not be required when the application consumes a high rate of gas or the gas is coming from a limited source and/or is flammable.

VSO®-GC Miniature Electronic Pressure Controllers

Ordering Information

Part Number	990-005020-002	990-005021-015	990-005021-050	990-005021-100
Series	VSO-GC	VSO-GC	VSO-GC	VSO-GC
Configuration	No Internal Vent	No Internal Vent	No Internal Vent	No Internal Vent
Effective Orifice	0.003" (0.076 mm)	0.010" (0.25 mm)	0.010" (0.25 mm)	0.010" (0.25 mm)
Main Voltage	24 VDC	24 VDC	24 VDC	24 VDC
Control Voltage	0-5 VDC	0-5 VDC	0-5 VDC	0-5 VDC
Pressure Range	0-2 psig	0-15 psig	0-50 psig	0-100 psig

Part Number	990-005023-015	990-005023-050	990-005023-100
Series	VSO-GC	VSO-GC	VSO-GC
Configuration	No Internal Vent	No Internal Vent	No Internal Vent
Effective Orifice	0.030" (0.76 mm)	0.030" (0.76 mm)	0.030" (0.76 mm)
Main Voltage	24 VDC	24 VDC	24 VDC
Control Voltage	0-5 VDC	0-5 VDC	0-5 VDC
Pressure Range	0-15 psig	0-50 psig	0-100 psig

Accessories	
Part Number	190-008246-001
Configuration	10-32 Male to M5 x 0.8 mm Female Adaptor w/O-ring
Wetted Materials	FKM & Brass



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/vsogc) to configure your VSO-GC Miniature Electronic Pressure Controller. For more detailed information, visit us on the Web, or call and refer to Performance Spec. #790-002202-002 and Drawing #890-003146-002.