Precision Pressure Regulators
Model 8320
Precision Fluidics
# Model 8320 Precision Pressure Regulator

## Low Flow Gas Regulator

Conventional regulators exhibit significant deviation from setpoint when pressure and temperature effects are introduced to the carrier gas stream. Parker Precision Fluidics new Model 8320 Regulator controls these effects to within ±0.50 PSIG, significantly reducing system testing and field commissioning cycle time. 8320 is an excellent drop-in replacement choice for obsolete carrier gas regulators.

### Features
- Maintains carrier gas pressure ±0.5 psig of set-point within 80°F ambient temperature
- Modular configuration provides two inlet and outlet ports
- 8320 regulator reduces system testing and minimizes cycle time
- High resolution adjustment stem
- Cleaned for Analytical Service Use
- Stock a single part to cover a broad range of applications for multiple flow patterns
- RoHS and REACH compliant

### Typical Applications
- Process Gas Chromatography — Helium or Hydrogen Carrier Gas
- Environmental Analyzers

## Physical Properties

<table>
<thead>
<tr>
<th>Media:</th>
<th>Helium, Hydrogen and other Non-corrosive clean dry gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width:</td>
<td>3.0&quot; square (76.20 mm)</td>
</tr>
<tr>
<td>Height:</td>
<td>4.5&quot; maximum (114.3 mm)</td>
</tr>
<tr>
<td>Weight:</td>
<td>1.2 lb (0.54 kg) (typical)</td>
</tr>
<tr>
<td>Porting:</td>
<td>(2) 1/8” compression fittings, (2) inlet and outlet plugs (field removable and relocatable)</td>
</tr>
</tbody>
</table>

### Wetted Materials

| Body: | 6061 Al, clear anodized |
| Seat: | Nickel Plated Brass, TFE, FKM |
| Diaphragm: | 300 Series Stainless Steel |
| Flow Plugs: | 300 Series Stainless Steel |
| Fittings: | Brass |
| O-Rings: | FKM |
| Lubricant: | Krytox |
| Filter Element: | Sintered Stainless Steel (100 micron) |

### Non-Wetted Materials

| Range Spring: | Nickel Iron Alloy (AMS 5221) |
| Cover: | Powder Coated Nickel Plated Steel |
| Spring Seat: | Brass |
| Cover Bolts: | Stainless Steel |
| Adjustment Bushing: | Nickel Plated Bearing Bronze |
| Adjustment Stem and Jam Nut: | 300 Series Stainless Steel |

## Performance Characteristics

### Supply Pressure Effect:
25 psi supply increase < 1 psig (0.69 barg change ≤ 0.69 barg)

### Ambient Temperature Effect:
Less than 0.004 psi per degree F

### Flow Regulation:
From 6 sccm to 100 sccm helium, outlet pressure will not change more than 0.2 psig (0.137 barg)

### Regulating Range:
1 - 100 psig (-0 - 6.89 barg)

Note: Please consult factory for non-standard options.
Model 8320  Precision Pressure Regulator

Typical Flow Curves

8320 Setability

8320 Flow Effect Curve  
P1=110 psig P2=90 psig  
Helium

8320 Flow Effect Curve  
P1=60 psig P2=40 psig  
Helium

8320 SPE He

Notes:
P1 = Inlet  
P2 = Outlet  
SPE = Supply Pressure Effect

For more information call +1 603 595 1500 or email ppinfo@parker.com  
Visit www.parker.com/precisionfluidics
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Principle of Operation

As gas enters the regulator body from the inlet [left], the pressure rises which pushes the diaphragm, closing the control inlet valve and preventing any more gas from entering the regulator.

When gas is drawn from the outlet [right] side, the pressure inside the regulator body falls. As a result, the diaphragm is pushed back by the spring and the valve opens, allowing more gas in from the supply until equilibrium is reached between the outlet pressure and the spring.

The outlet pressure is a function of the spring force which may be modified by the adjustment stem.

The outlet pressure and the inlet pressure hold the spring assembly in the closed position against the force of the spring. The 8320 automatic mechanical pressure regulating valve is designed to offer a low temperature coefficient across a wide range of ambient temperatures. The device is designed with a large stainless steel diaphragm area to maintain sensitive control of low flows of light gasses in a chemically clean environment. The addition of a second coaxial range spring offers increased manual setting resolution at low settings while maintaining improved temperature coefficient.
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Mechanical Integration
Dimensions

Basic Dimensions

Note: All Inlet and Outlet threads are 5/16-24 UNF-2B

Alternate 2nd Outlet (Plugged if not used)

Alternate 2nd Inlet (Plugged if not used)

Units

In (cm)

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Ordering Information

<table>
<thead>
<tr>
<th>Sample Part #</th>
<th>Description</th>
<th>Model</th>
<th>Body Material</th>
<th>Spring Material</th>
<th>O-Ring Material</th>
<th>Diaphragm Material</th>
<th>Pressure Range</th>
</tr>
</thead>
</table>

**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.

Please click on the ORDER ON-LINE button [or go to www.parker.com/precisionfluidics/8320] to configure your Precision Pressure Regulator. For more detailed information, visit us on the web or call Applications Engineering.

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**Key Things to Remember:**

- Porting – Inlet and Outlet plug.
- Carrier Gas stream should be clean or free from contaminants.
- Please consult factory for non-standard options.
# Value Added Application-Specific Solutions

## Gassing Control System
- Mixed gassing logic design includes VSO® proportional valves, X-Valve®, pressure switch, pressure sensors, and PCB interface

## Pneumatic Module
- Integrated valve manifold
- Compact design
- Single electrical connection
- Valves configured per specifications

## Vacuum Gas Control Module
- Tested to $1 \times 10^{-7}$ cc/sec/atm Helium
- Assembly tested on mass spectrometer

## 6 Position VSO® Proportional Valve Pneumatic Manifold Assembly
- Quick connect fittings
- Circuit board with mass electrical termination

## Magnum Manifold Assembly
- Integrated circuit board with single connection
- Compact design
- Easily adaptable
- 2 way and 3 way designs

## 8 Position SRS Model Pneumatic Manifold
- Integrated circuit board mounting
- Mass electrical termination

## 10 Position X-Valve® Pneumatic Manifold
- Mixed pneumatic logic design
- Ultra-miniature design with PCB for mass termination

## 10 Position SRS Model Pneumatic Manifold
- Circuit board with transducers
- Pressed in barbed fittings

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Visit [www.parker.com/precisionfluidics](http://www.parker.com/precisionfluidics)
Precision Pressure Regulators

Portfolio Review

Customization
Contact Division Applications at (603) 595 1500 or ppfinfo@parker.com.

Models 8310 & 8311
Flow control from 1 sccm to 3 slpm

Model 8286
Flow control from 1 slpm to 40 slpm

Model 8320
Flow control from 15 sccm @ 110 psig He
Forward Pressure Regulator

Model 4000
Flow control from 0.5 slpm to 10 slpm
Smaller Size

Model 9000
Flow control from 10 sccm to 1 slpm
Back Pressure Regulator