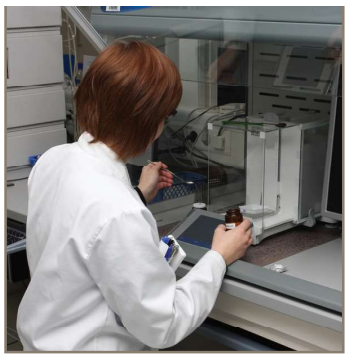

Precision Pressure Regulators

Precision Fluidics

Parker

ENGINEERING YOUR SUCCESS.

This is increased efficiency.

Precision low flow carrier gas control for gas chromatography.

Parker precision regulators, valves and controllers are designed specifically for critical service in analytical instrumentation. All regulator models are direct-acting, non-relieving, and are supplied with a sintered stainless steel cartridge filter on the inlet. We offer several distinct models with a variety of process connections, spring ranges and diaphragm materials to satisfy the most demanding instrument applications.

Parker

ENGINEERING YOUR SUCCESS.

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Model 8310/8311 Precision Pressure Regulator

Forward Pressure Regulators

Parker Precision Fluidics Model 8310/8311 Regulators incorporate a threadless valve seat assembly with a precision glass ball. It is ideal for very low flow carrier gas applications and provides bubble tight shut-off. The 8310/8311 is a direct-acting, non-relieving pressure regulator supplied with a replaceable sintered stainless steel cartridge filter on the inlet. It can be configured with a stainless steel diaphragm to reduce permeability. Each regulator is performance tested and ideally suited for manufacturers of analytical equipment.

Typical Applications

- Environmental Analyzers — Helium or Hydrogen Carrier Gas
- Precision Nitrogen Control for Chemical Analysis
- Laboratory and Process Gas Chromatography applications

Features

- Direct-acting and non-relieving
- Compact design enables panel mounting
- All bar stock construction reduces production variation
- Bubble tight shut-off
- Cleaned for Analytical Service Use
- Pressure gauge port included
- RoHS and REACH compliant

Product Specifications

Physical Properties

Valve Technology:
Quad Ring Poppet

Media:
Air, Nitrogen, Helium, Argon, Hydrogen, Oxygen, Krypton, Neon, Xenon, and other non-corrosive gases

Width: 1.875" (47.63 mm)

Height:
Model 8310 – 3.06" (77.72 mm) without compression fittings
Model 8311 – 3.81" (96.77 mm) with compression fittings

Weight: 0.5 lbs (0.23 kg) (typical)

Porting:
1/8" FNPT, Side Ports (8310 Model) 5/16-24 UNF-2-A, Bottom Ports, Supplied with 1/8" Compression Fittings (8311 Model)

[1] Performance characteristics are based on 60 psig (4.14 barg) helium supply pressure at 50 psig (3.45 barg) outlet pressure.
[2] Available in Music Wire (ASTM A228) only.

Performance Ratings

Ratings:
Max inlet pressure:
250 psig (17.3 barg)
Max working temperature:
160°F (71°C)

Pressure Drop:
Minimum: 10 psid (0.7 barg)
Maximum: 250 psid (17.3 barg)

Wetted Materials

Body:
Aluminum or 303 Stainless Steel

Diaphragm:
Fairprene BN-5029 (Buna-N on Nylon), 300 Series Stainless Steel, or FKM on Nomex®

O-Rings: Buna-N or FKM

Filter Element:
Sintered Stainless Steel (100 micron)

Internal Ball Seat Valve: Glass

Non-Wetted Materials

Bonnet: Aluminum

Range Spring:
Music Wire (ASTM A228) or Nickel Iron Alloy (AMS 5221)

Performance Characteristics[1]

Supply Pressure Effect:
10 psi change < 0.07 psi
(0.69 barg change ≤ 0.005 barg)

Ambient Temperature Effect:
(Temperature coefficient)
Music Wire (ASTM A228) –
(60 psig (4.14 bar) range)
0.008 psig/°F (0.99 mbarg/°C)
Nickel Iron Alloy (AMS 5221) –
(60 psig (4.14 bar) range)
0.004 psig/°F (0.50 mbarg/°C)

Long-Term Drift:
Fairprene diaphragm: 0.2%
Stainless steel diaphragm: 0.8%

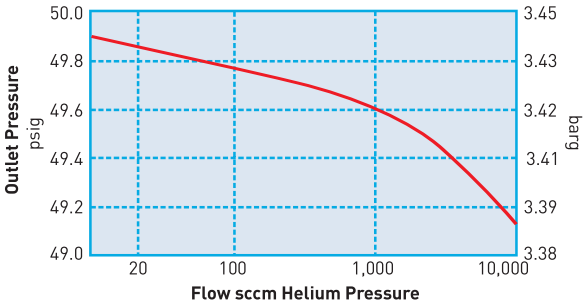
Flow Regulation:
From 2 sccm to 250 sccm Helium, outlet pressure will not decrease more than 0.17 psig (0.01 barg) for unit with elastomer diaphragm, 0.3 psig (0.02 barg) for unit with stainless steel diaphragm

Regulating Range:
0 - 2.5 psig (0 - 0.17 barg)[2]
0 - 5 psig (0 - 0.35 barg)[2]
0 - 10 psig (0 - 0.69 barg)
0 - 15 psig (0 - 1.03 barg)
0 - 30 psig (0 - 2.07 barg)
0 - 60 psig (0 - 4.14 barg)
0 - 100 psig (0 - 6.89 barg)

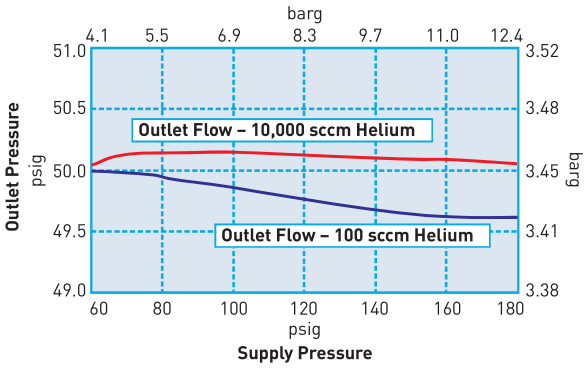
Model 8310/8311 Precision Pressure Regulator

Typical Flow Curves

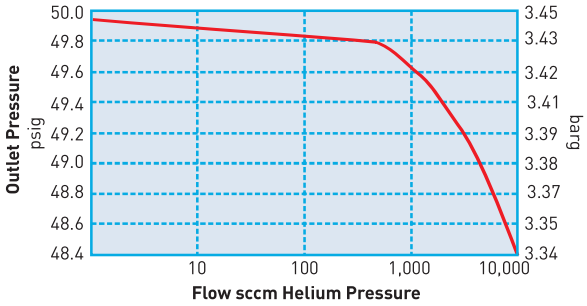
Typical Droop (Flow Sensitivity) Curve (Fairprene Diaphragm Unit)



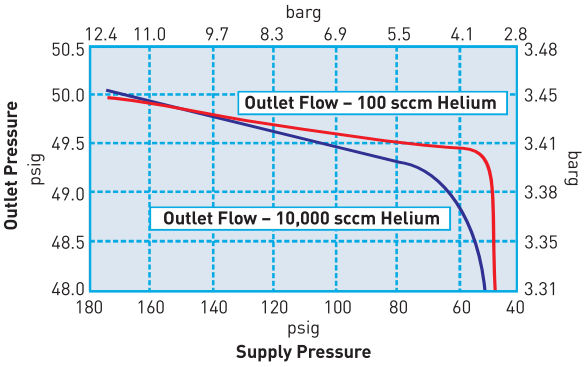
Typical Regulator Output vs. Change in Supply Pressure (Supply Pressure Effect) (Fairprene Diaphragm Unit)



Typical Droop (Flow Sensitivity) Curve (Stainless Steel Diaphragm)



Typical Regulator Output vs. Change in Supply Pressure (Supply Pressure Effect) (Stainless Steel Diaphragm)



Model 8310/8311 Precision Pressure Regulator

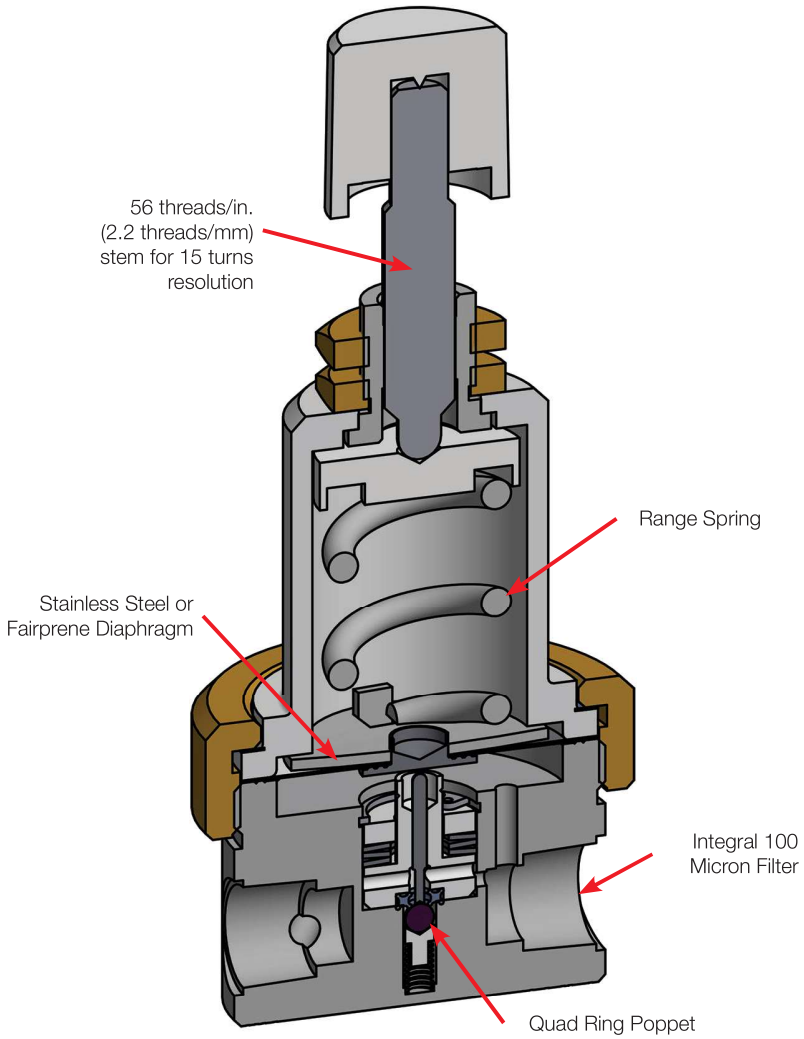
Principle of Operation

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 knob.

The outlet pressure and the inlet pressure hold the quad ring poppet assembly in the closed position against the force of the spring.

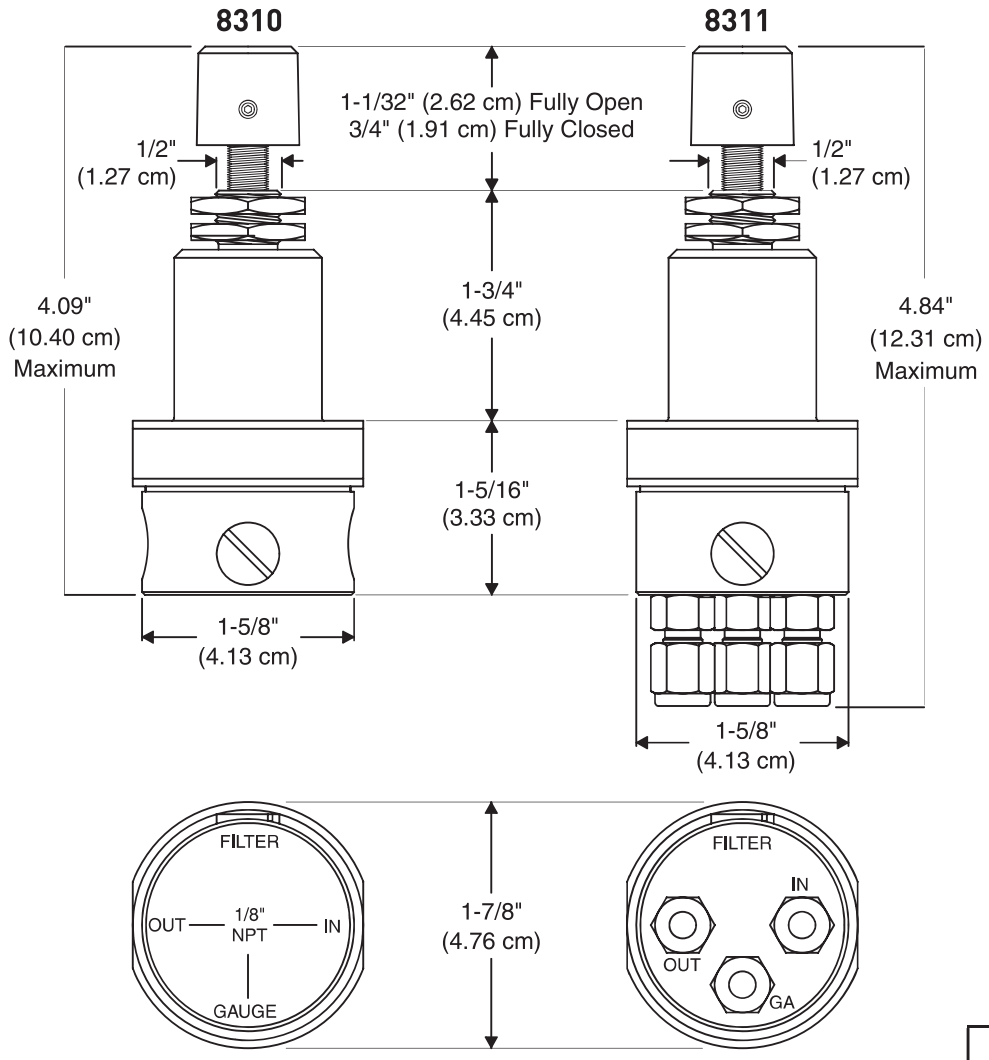


Model 8310/8311 Precision Pressure Regulator

Mechanical Integration

Dimensions

Basic Dimensions

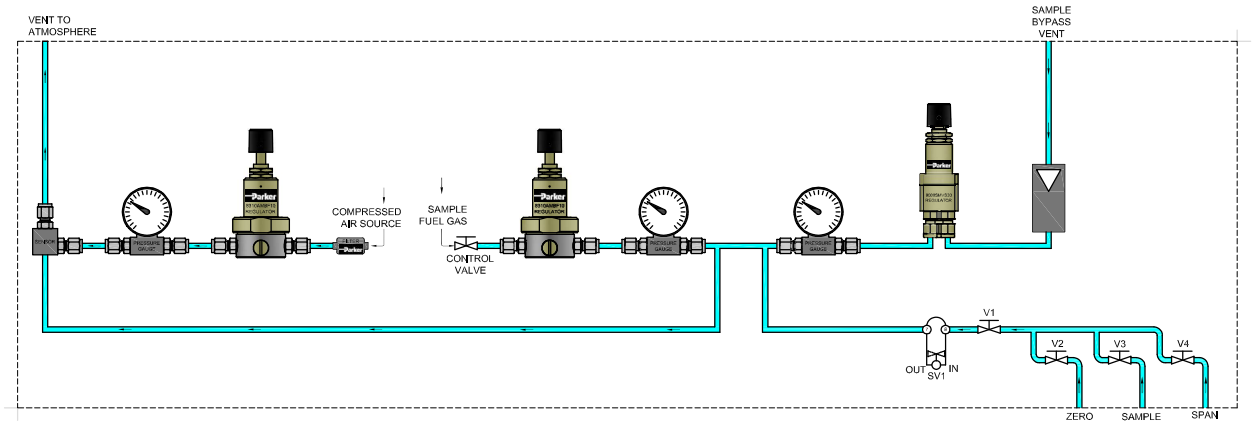


Units
In (cm)

Model 8310/8311 Precision Pressure Regulator

Typical Flow Diagram

VOC Emissions Monitoring Analyzer



Model 8310/8311 Precision Pressure Regulator

Ordering Information

Sample Part #	8310	A	M	B	F	10
Description	**Model**	**Body Material**	**Spring Material**	**O-Ring Material**	**Diaphragm Material**	**Pressure Range**
Options	8310 8311	A: Aluminum* S: Stainless Steel	M: Music Wire (ASTM A228) N: Nickel Iron Alloy (AMS 5221)	B: Buna-N V: FKM	F: Fairprene BN-5029 S: Stainless Steel V: FKM and Nomex	2.5**: 2.5 psig (0.17 barg) 5**: 5 psig (0.34 barg) 10: 10 psig (0.69 barg) 15: 15 psig (1.03 barg) 30: 30 psig (2.07 barg) 60: 60 psig (4.14 barg) 100: 100 psig (6.89 barg)

* Supplied with Brass Fittings

** Available in Music Wire (ASTM A228) only

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/regulators) to configure your Precision Pressure Regulator. For more detailed information, visit us on the web or call Applications Engineering.

Installation Guide

- For NPT connections, a high quality sealant compatible with the customer's process gas must be used.
- May be installed in any orientation.
- Support inlet and outlet piping to reduce strain on regulator body.

Key Things to Remember:

- To minimize your Helium gas costs, consider using 2.5 or 5 psig Pressure Range (0.17 or 0.34 barg) only available from Parker.
- Choice of Diaphragm Materials – Stainless Steel Diaphragms provide extremely low permeability. Coated Fabric Diaphragms, available in Buna or FKM, offer unmatched sensitivity.
- Fine Pitch Adjusting Stem – 56 threads/in. (2.2 threads/mm) stem for 15 turns resolution pitch on all regulator adjusting stems gives precise control over incremental pressure adjustments.
- Bar Stock Construction and Analytical Service Cleaning – Machined from bar stock in your choice of aluminum or stainless steel. All parts are cleaned to procedures developed specifically for analytical service use, minimizing contaminant generation in low-level analyzer applications.
- Extensive Choice of Pressure Range – This ensures maximum resolution at specific pressure and temperature requirements.