

Precision Pressure Regulators Model 8286

Precision Fluidics



ENGINEERING YOUR SUCCESS.

Model 8286 Precision Pressure Regulator

Balanced Poppet Regulator



Typical Applications

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

The Parker Precision Fluidics Model 8286 Regulator utilizes a pneumatically balanced poppet valve to ensure maximum stability over wide variations in supply pressure. Based on Parker's popular 8310 model, the 8286 offers higher flow capability combined with precision pressure control. It can be equipped with a stainless diaphragm for reduced permeability. The Model 8286 is performance tested under simulated operating conditions and is cleaned for analytical instrument service.

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: 3.06" (77.72 mm)
Weight: 0.5 lb (0.23 kg) (typical)
Porting: 1/8" FNPT side ports, inlet, outlet and gauge

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 psig (0.7 bar) Maximum: 250 psig (17.3 bar)

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 Characteristics¹

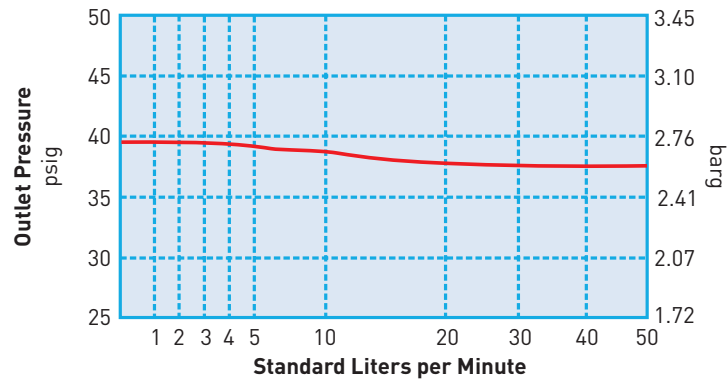
Supply Pressure Effect: 10 psi change < 0.07 psi (0.69 barg change ≤ 0.005 barg)
Ambient Temperature Effect: (Temperature coefficient) Music Wire (ASTM A228) – (60 psig (4.14 bar) range) 0.008 psig/°F (0.99 mbarg/°C) Nickel Iron Alloy (AMS 5221) – (60 psig (4.14 bar) range) 0.004 psig/°F (0.50 mbarg/°C)
Long-Term Drift: Fairprene diaphragm: 0.2% Stainless steel diaphragm: 0.8%
Flow Regulation: From 1 slpm to 20 slpm helium, outlet pressure will not decrease more than 1 psig (.069 barg) for unit with elastomer 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 - 30 psig (0 - 2.07 barg) 0 - 60 psig (0 - 4.14 barg) 0 - 100 psig (0 - 6.89 barg)



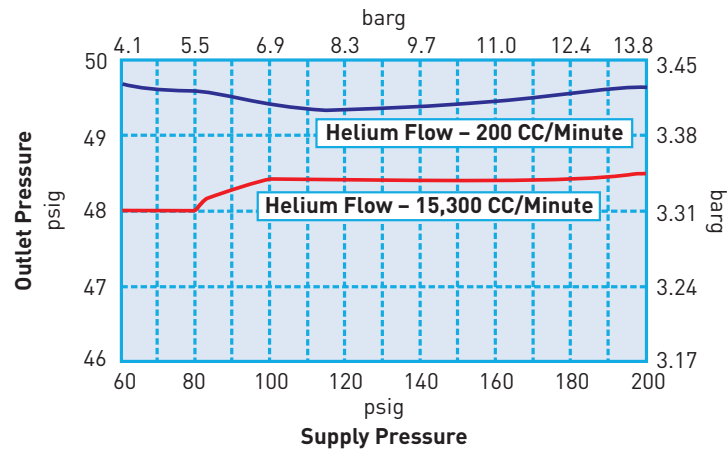
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Typical Flow Curves

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



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



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



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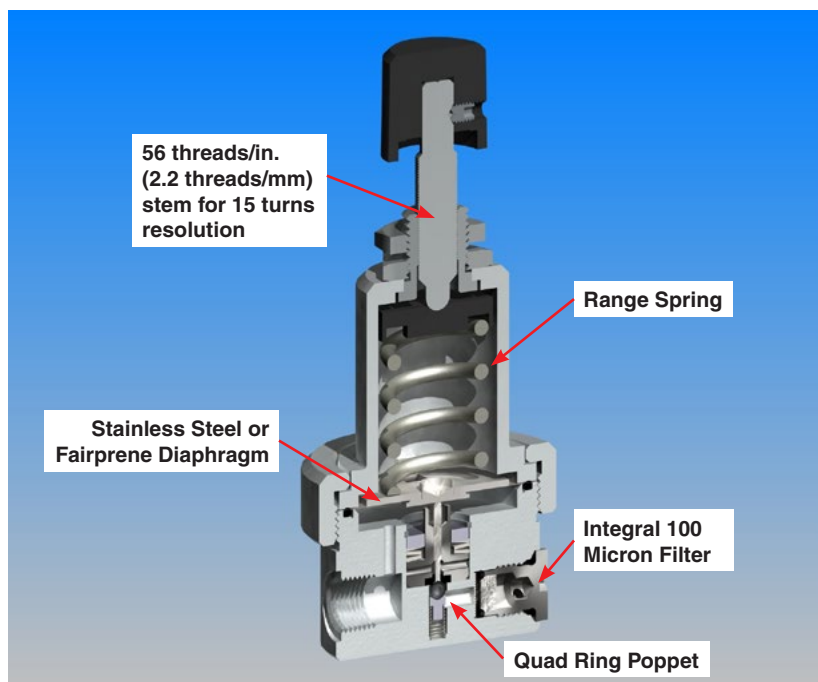
Principle of Operation

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 knob.

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



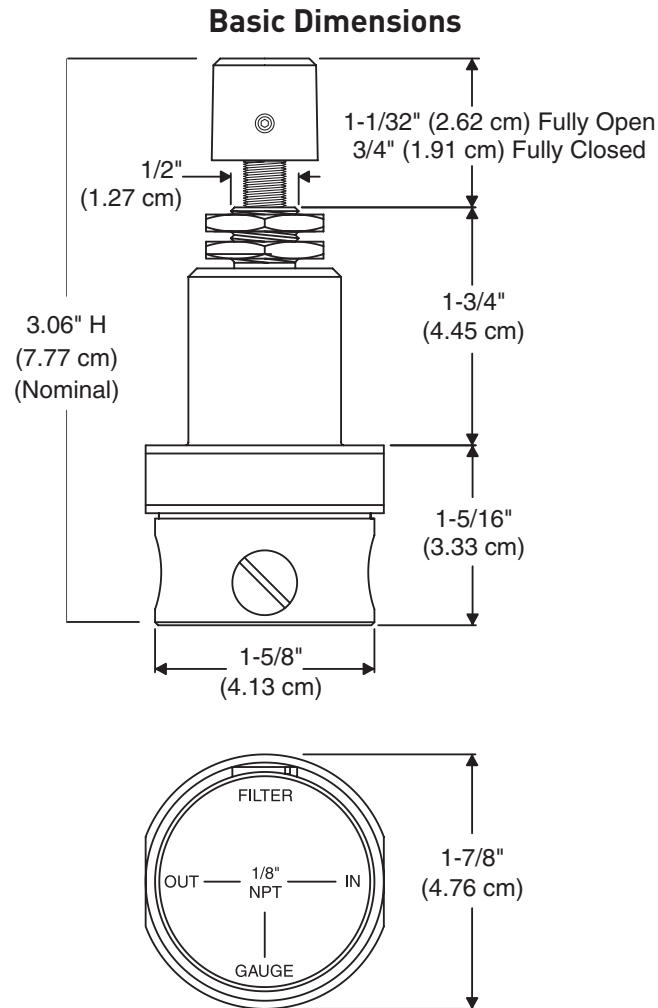
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Mechanical Integration

Dimensions



Units
In (cm)

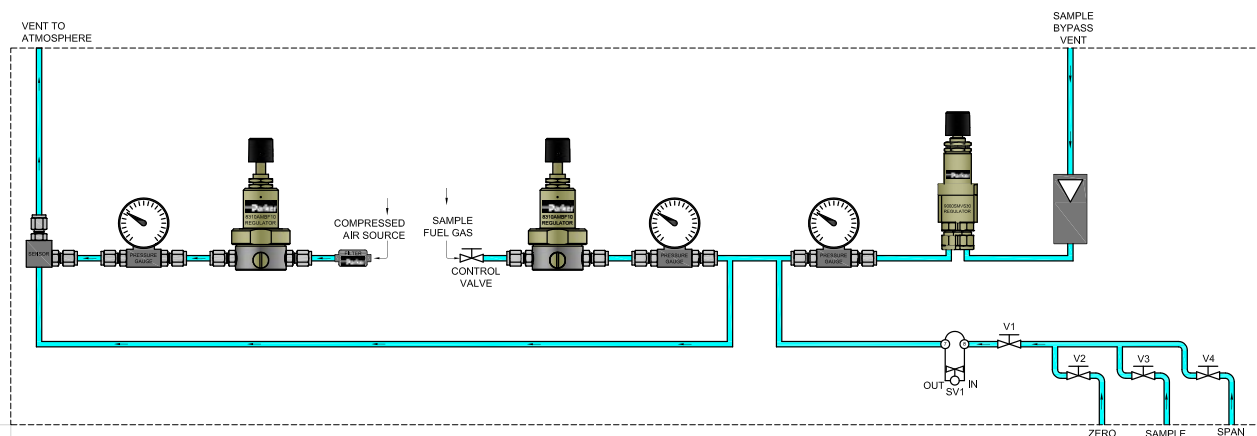
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Typical Flow Diagram

VOC Emissions Monitoring Analyzer



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Ordering Information

Sample Part #	8286	A	M	B	F	10
Description	Model	Body Material	Spring Material	O-Ring Material	Diaphragm Material	Pressure Range
Options	8286	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) 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.

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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 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

