

Precision Pressure Regulators

Precision Fluidics



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.



ENGINEERING **YOUR** SUCCESS.

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Model 8310/8311 Precision Pressure Regulator

Forward Pressure Regulators



Typical Applications

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

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.

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)

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 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 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)

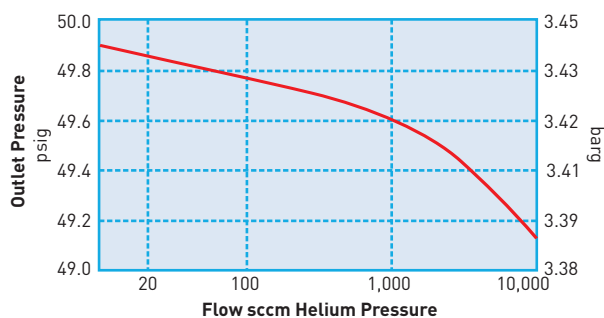
¹ Performance characteristics are based on 60 psig (4.14 barg) helium supply pressure at 50 psig (3.45 barg) outlet pressure.

² Available in Music Wire (ASTM A228) only.

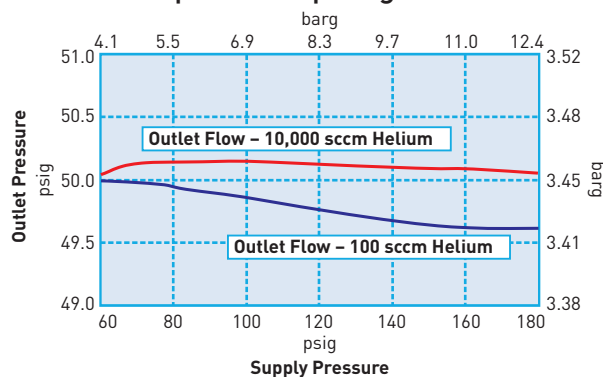
Model 8310/8311 Precision Pressure Regulator

Typical Flow Curves

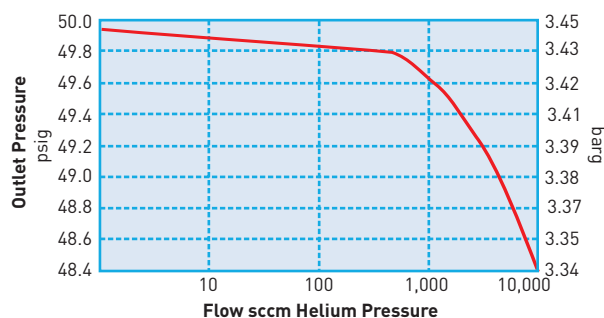
Typical Droop
(Flow Sensitivity) Curve
(Fairprene Diaphragm Unit)



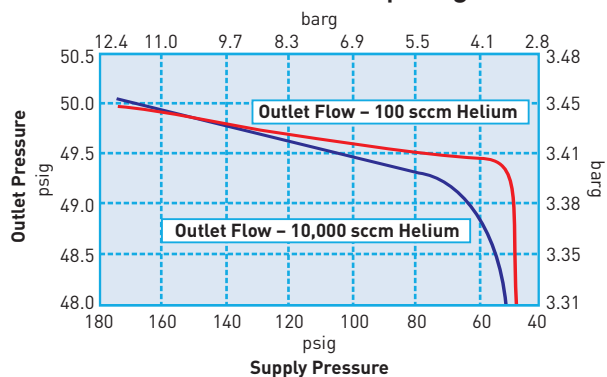
Typical Regulator Output vs.
Change in Supply Pressure
(Supply Pressure Effect)
(Fairprene Diaphragm Unit)



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



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



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Model 8310/8311 Precision Pressure Regulator

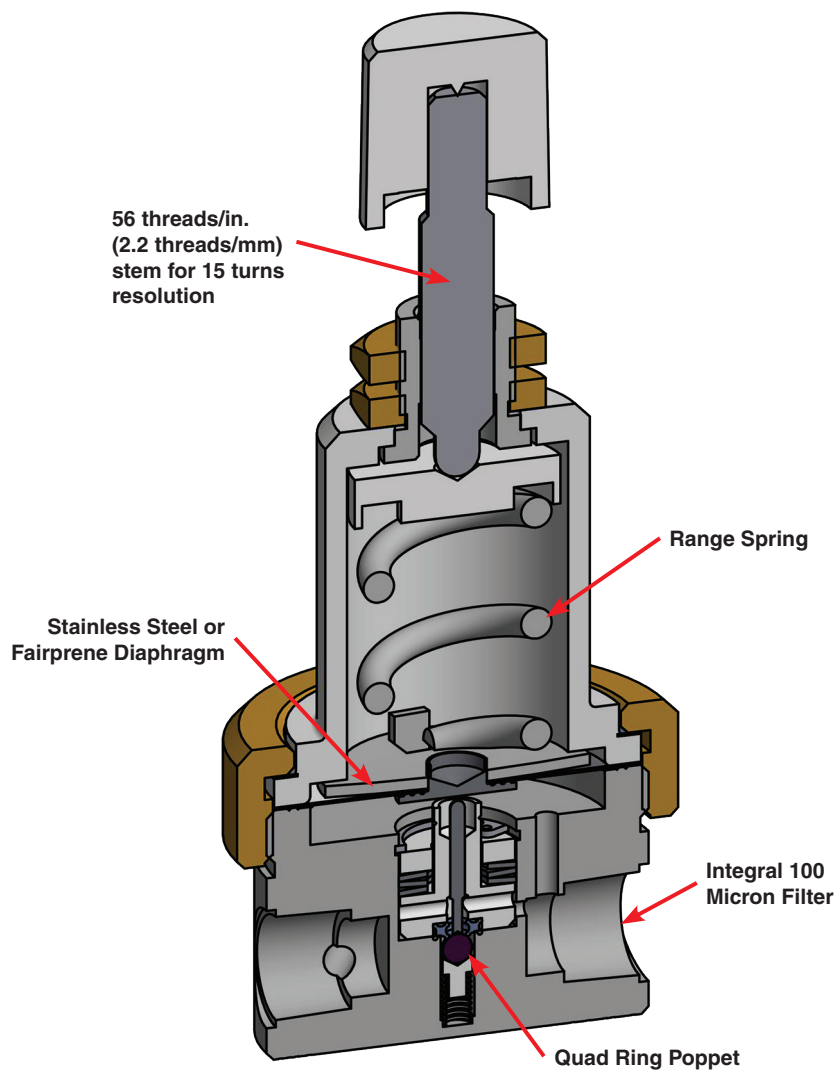
Principle of Operation

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.



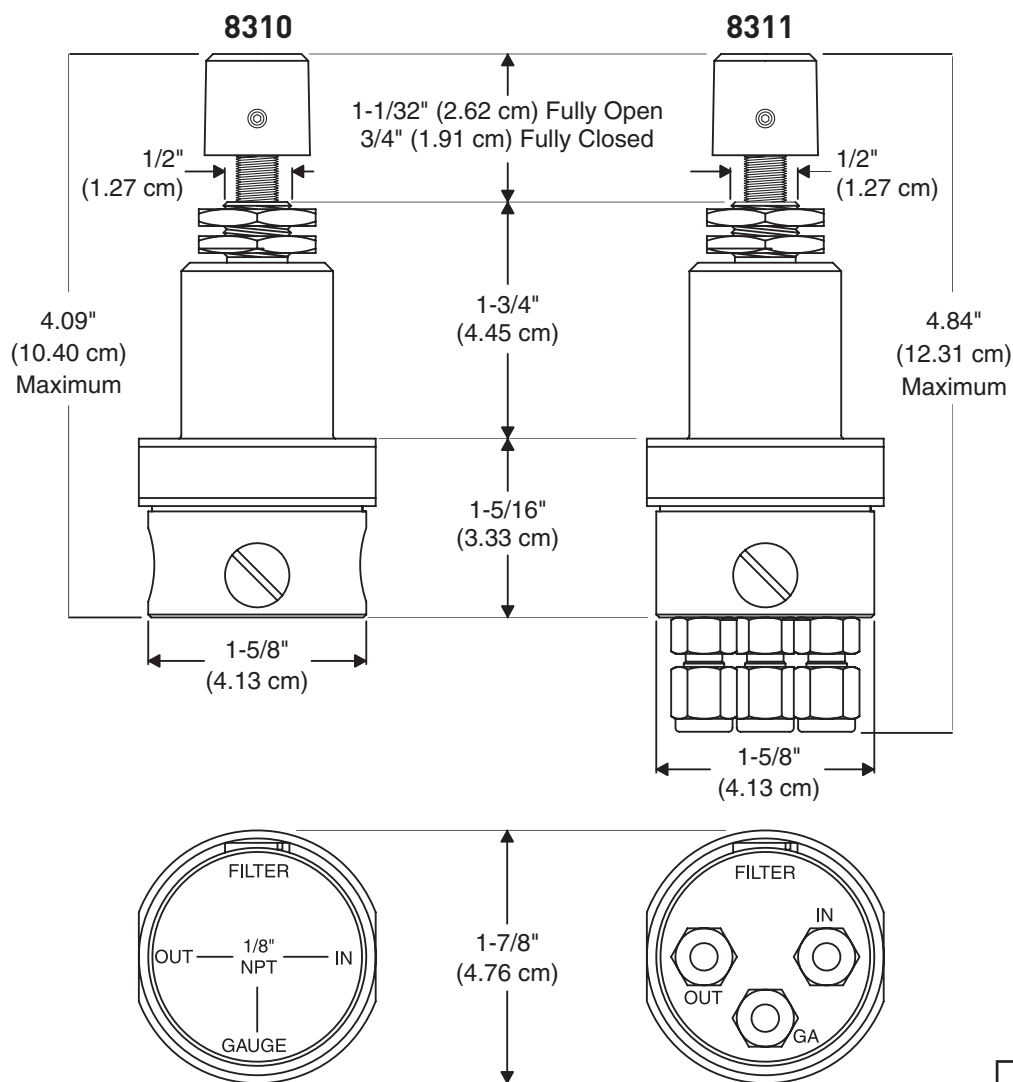
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Model 8310/8311 Precision Pressure Regulator

Mechanical Integration

Dimensions

Basic Dimensions



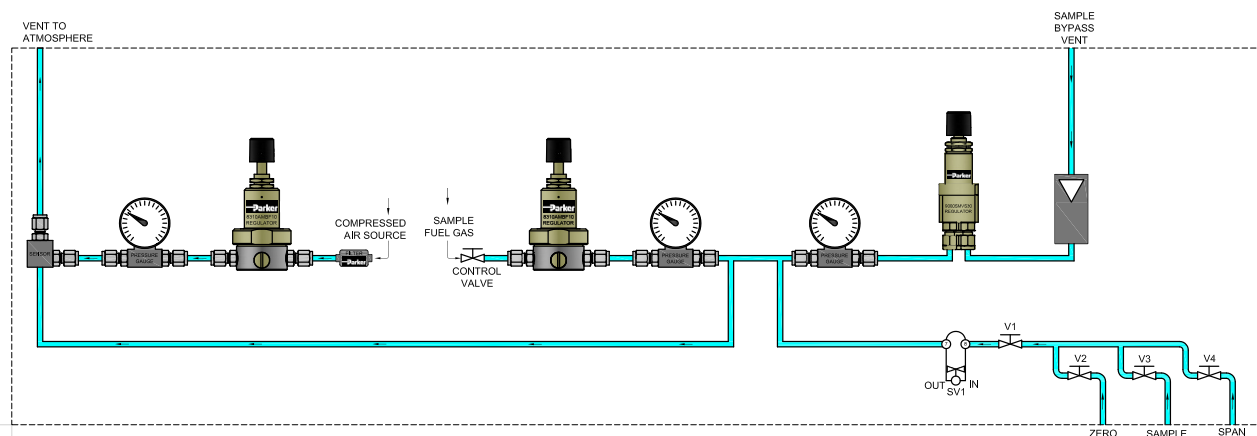
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Model 8310/8311 Precision Pressure Regulator

Typical Flow Diagram

VOC Emissions Monitoring Analyzer



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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.

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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

Product Specifications

Physical Properties

Media:

Helium, Hydrogen and other
Non-corrosive clean dry gas

Width:

3.0" square (76.20 mm)

Height:

4.5" maximum (114.3 mm)

Weight:

1.2 lb (0.54 kg) (typical)

Porting:

(2) 1/8" compression fittings,
(2) inlet and outlet plugs (field
removable and relocatable)

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 Characteristics¹

Supply Pressure Effect:

25 psi supply increase < 1 psig
(0.69 barg change \leq 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.

Performance Ratings

Ratings:

Max inlet pressure:
250 psig (17.3 barg)
Max working temperature:
140°F (60°C)

Pressure Drop:

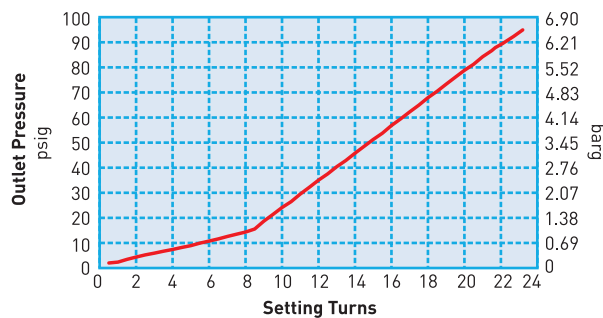
Minimum: 5 psig (0.34 barg)



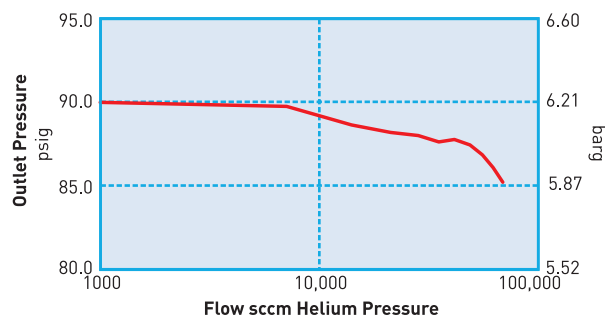
Model 8320 Precision Pressure Regulator

Typical Flow Curves

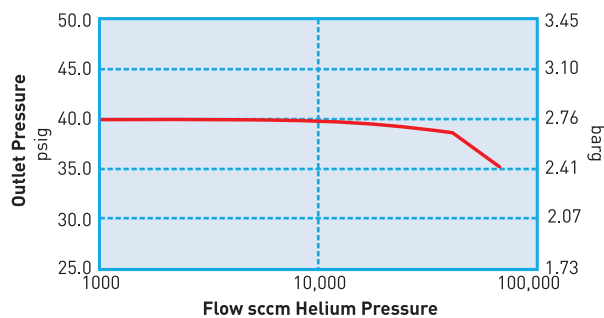
8320 Setability



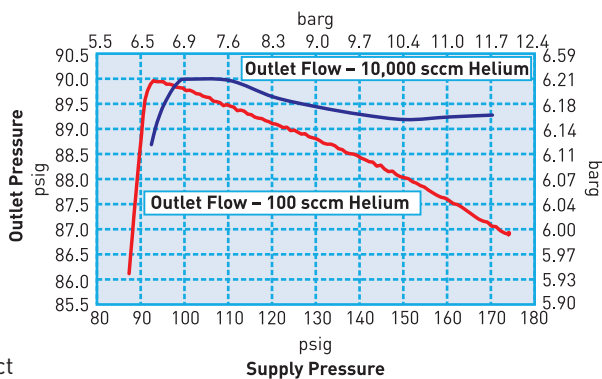
8320 Flow Effect Curve P1=110 psig P2=90 psig Helium



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



8320 SPE He



Notes:

P1 = Inlet

P2 = Outlet

SPE = Supply Pressure Effect

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Model 8320 Precision Pressure Regulator

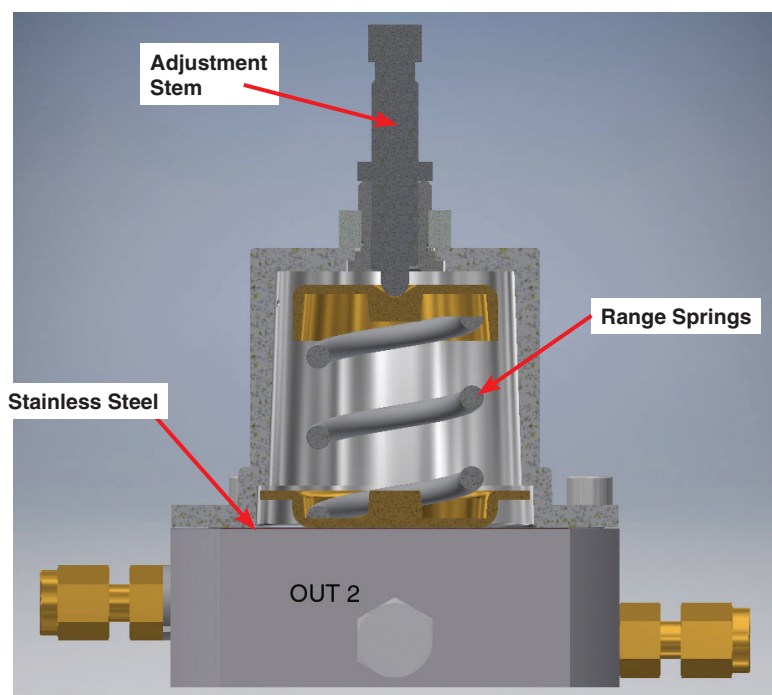
Principle of Operation

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 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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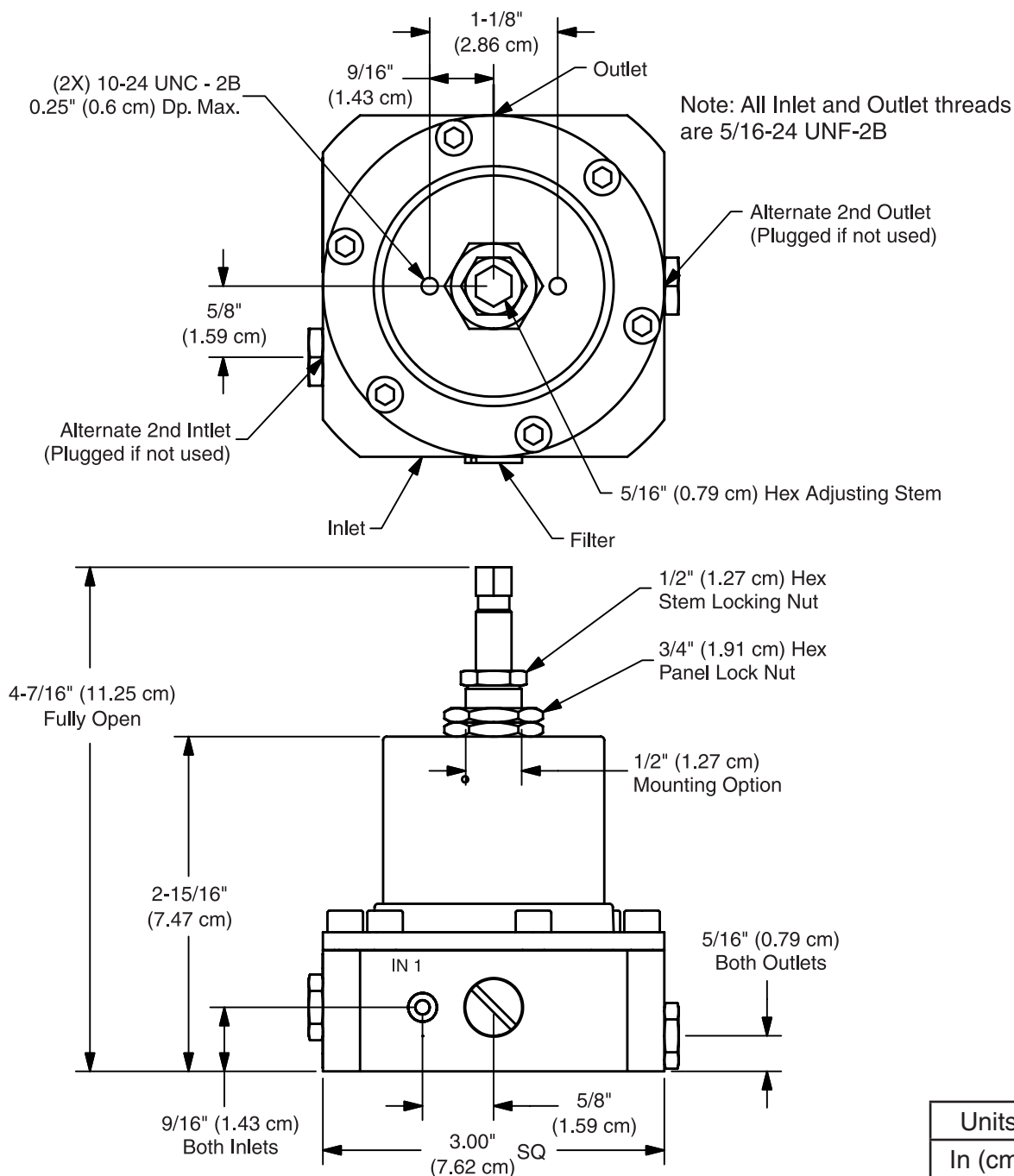


Model 8320 Precision Pressure Regulator

Mechanical Integration

Dimensions

Basic Dimensions



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Model 8320 Precision Pressure Regulator

Ordering Information

Sample Part #	8320	A	N	V	S	100
Description	Model	Body Material	Spring Material	O-Ring Material	Diaphragm Material	Pressure Range
Options	8320	A: Aluminum	N: Nickel Iron Alloy (AMS 5221)	V: FKM	S: Stainless Steel	100: 100 psig (6.89 barg)

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.



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.

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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

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 barg)
Maximum: 250 psig (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 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 barg) range)
0.008 psig/°F (0.99 mbarg/°C)
Nickel Iron Alloy (AMS 5221) –
(60 psig (4.14 barg) 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 (0.069 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)

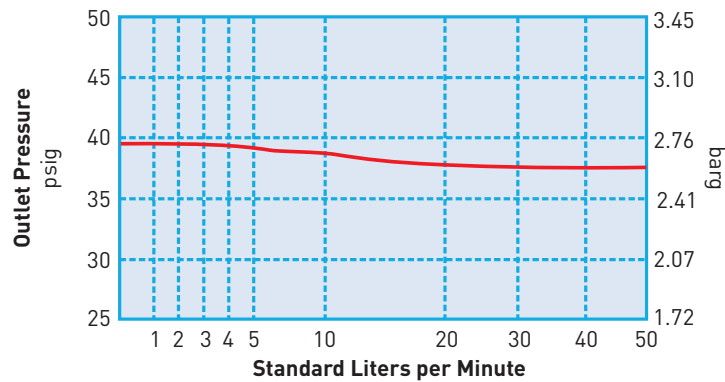
¹ Performance characteristics are based on 60 psig (4.14 barg) helium supply pressure at 50 psig (3.45 barg) outlet pressure.

² Available in Music Wire (ASTM A228) only.

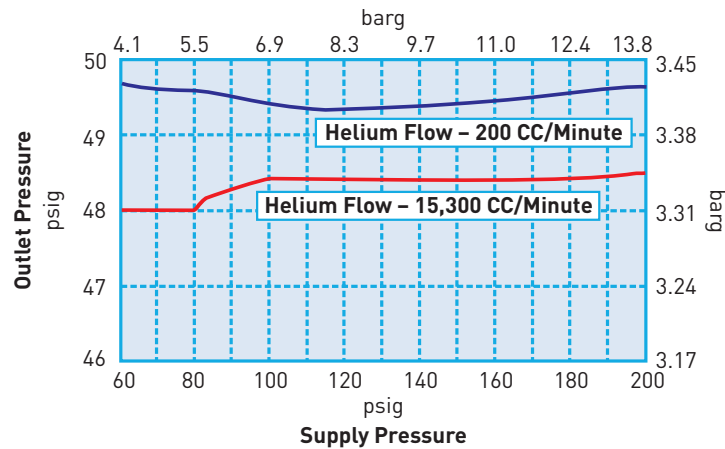
Model 8286 Precision Pressure Regulator

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)



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Model 8286 Precision Pressure Regulator

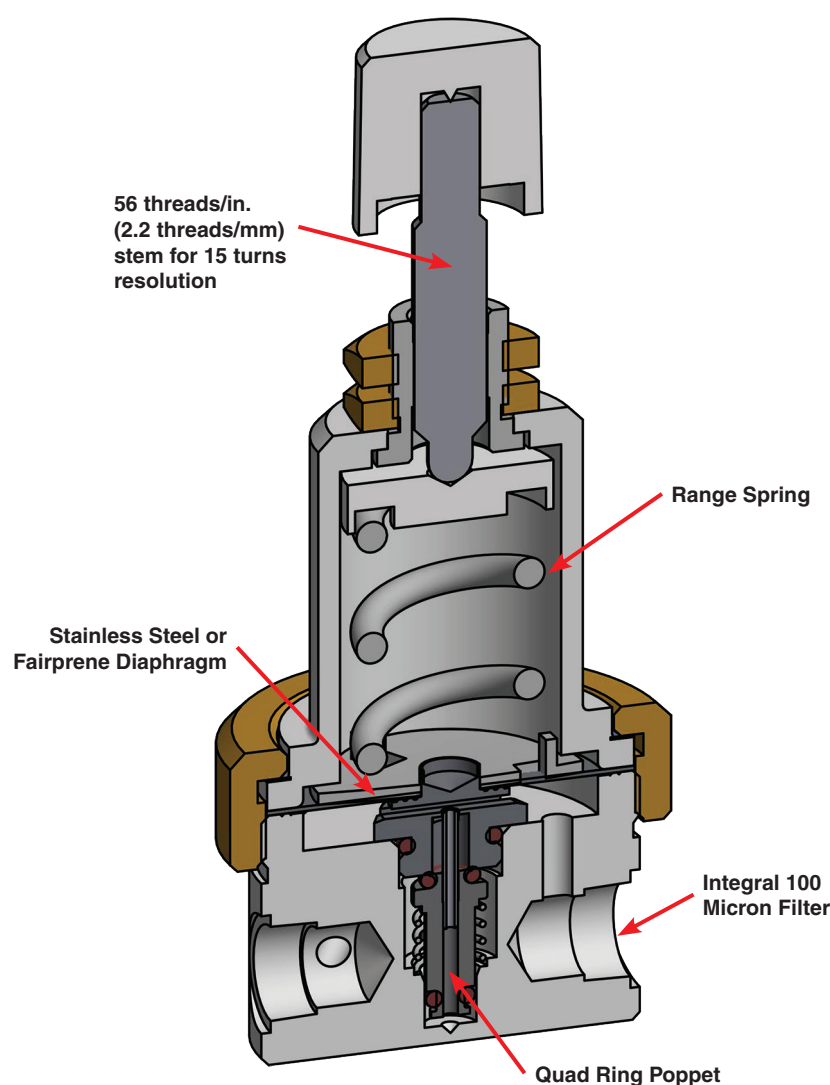
Principle of Operation

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 dual poppet assembly in the closed position against the force of the spring.



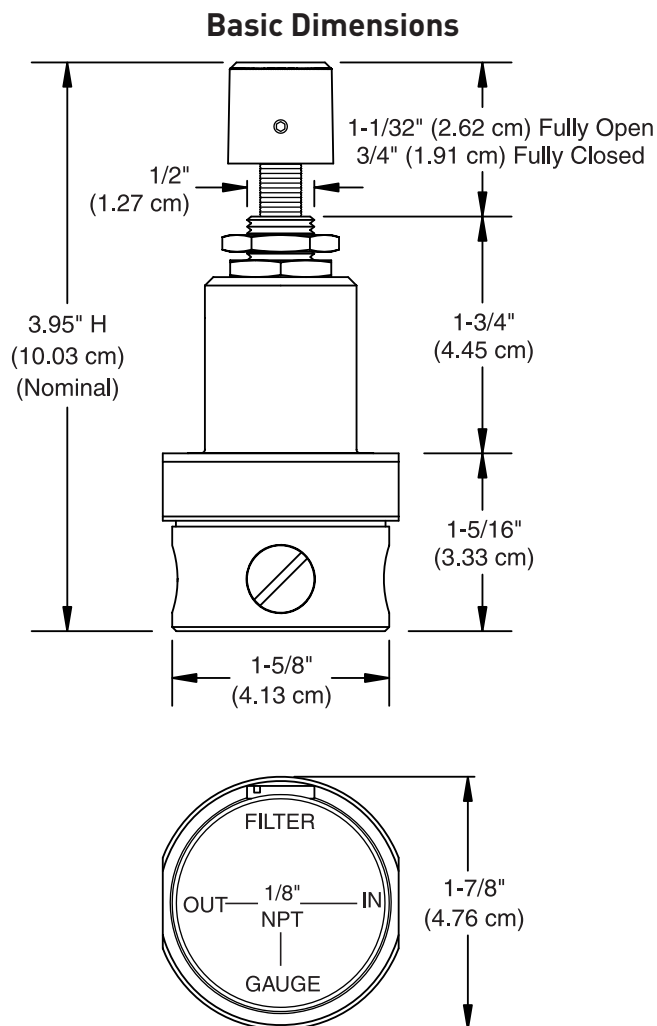
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Model 8286 Precision Pressure Regulator

Mechanical Integration

Dimensions



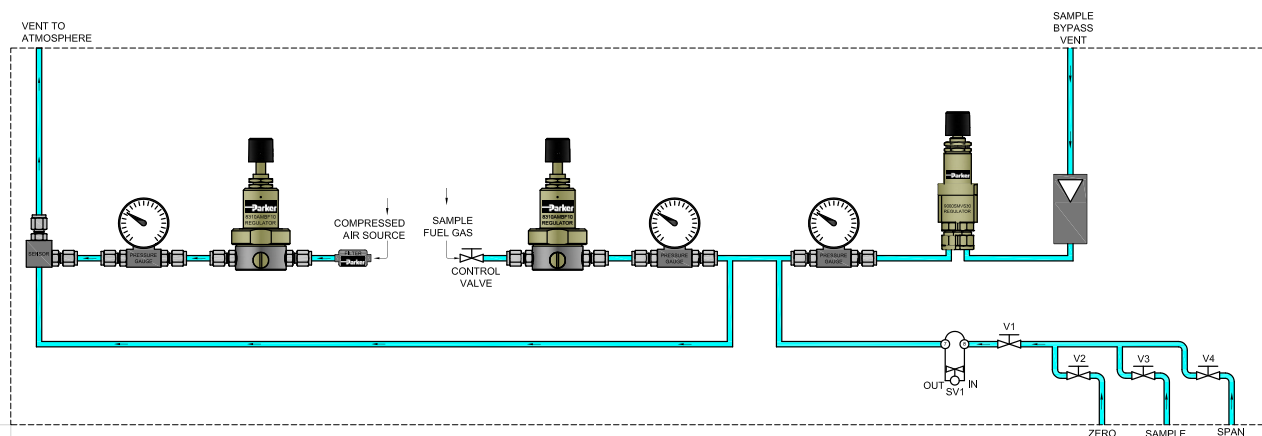
Units
In (cm)

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Model 8286 Precision Pressure Regulator

Typical Flow Diagram

VOC Emissions Monitoring Analyzer



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Visit www.parker.com/precisionfluidics



Model 8286 Precision Pressure Regulator

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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Model 4000

Precision Pressure Regulator

High Performance Pressure Regulator



The Parker Precision Fluidics Model 4000 Regulator is a high performance miniature size pressure regulator. With a compact diameter of only 1-1/8", it fits easily into small instruments, yet its performance surpasses that of many competitive large diaphragm regulators. Model 4000 is a direct-acting, non-relieving performance regulator 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



Typical Applications

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

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: 1.25" (31.75 mm)

Height:

4.47" (113.54 mm)

Weight:

0.31 lbs (0.14kg) (typical)

Porting:

1/8" compression fittings, inlet, outlet and gauge

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 barg)

Maximum: 250 psig (17.3 barg)

Wetted Materials

Body: Aluminum

Diaphragm: 300 Stainless Steel

O-Rings: Buna-N or FKM

Internal Ball Seat Valve: Glass

Non-Wetted Materials

Bonnet: Aluminum

Range Spring:

Music Wire (ASTM A228)

Performance Characteristics*

Flow Capacity: 15 slpm (typical maximum flow with 60 psig (4.14 barg) helium supply pressure and 15 psig (1.03 barg) outlet)

Supply Rejection: 10 psig (0.69 barg) change in supply will not change outlet more than 0.05 psig (0.003 barg)

Ambient Temperature Effect: (Temperature coefficient)
Music Wire (ASTM A228) –
(60 psig (4.14 barg) range)
0.008 psig/°F (0.99 mbarg/°C)

Long-Term Drift: Less than 0.2% in first 15 minutes to a total of 0.6% long term

Flow Regulation: From 2 sccm to 250 sccm helium outlet pressure will not change more than 0.2 psig (0.014 barg) for unit with elastomer diaphragm

Baseline Oscillation:
0.0012 psig (0.083 mbarg)

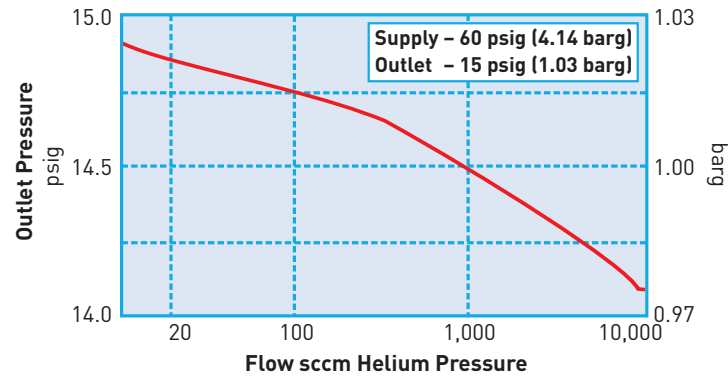
Regulating Range:
0 - 10 psig (0 - 0.69 barg)
0 - 15 psig (0 - 1.03 barg)
0 - 30 psig (0 - 2.07 barg)
0 - 60 psig (0 - 4.14 barg)
0 - 100 psig (0 - 6.89 barg)

* Performance characteristics are based on 60 psig (4.14 barg) helium supply pressure at 50 psig (3.45 barg) outlet pressure.

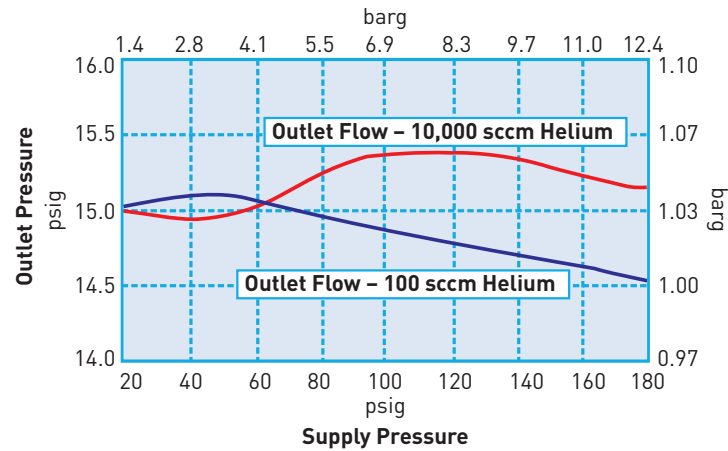
Model 4000 Precision Pressure Regulator

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)



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Model 4000 Precision Pressure Regulator

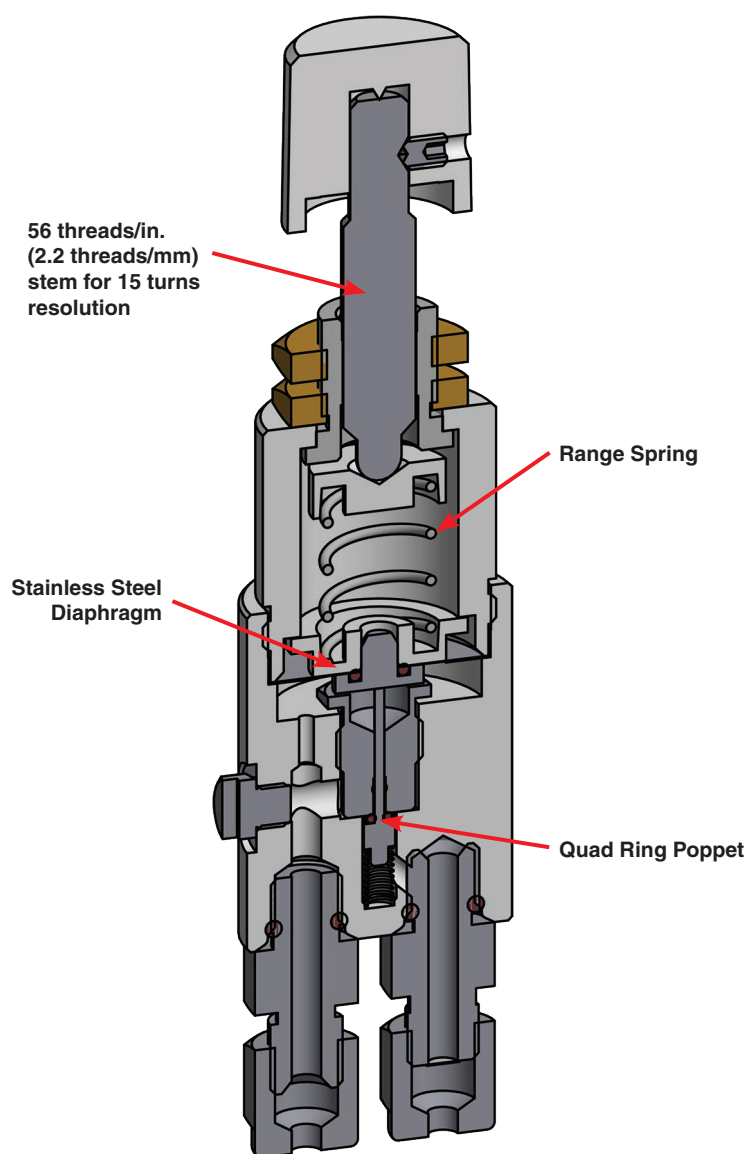
Principle of Operation

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.

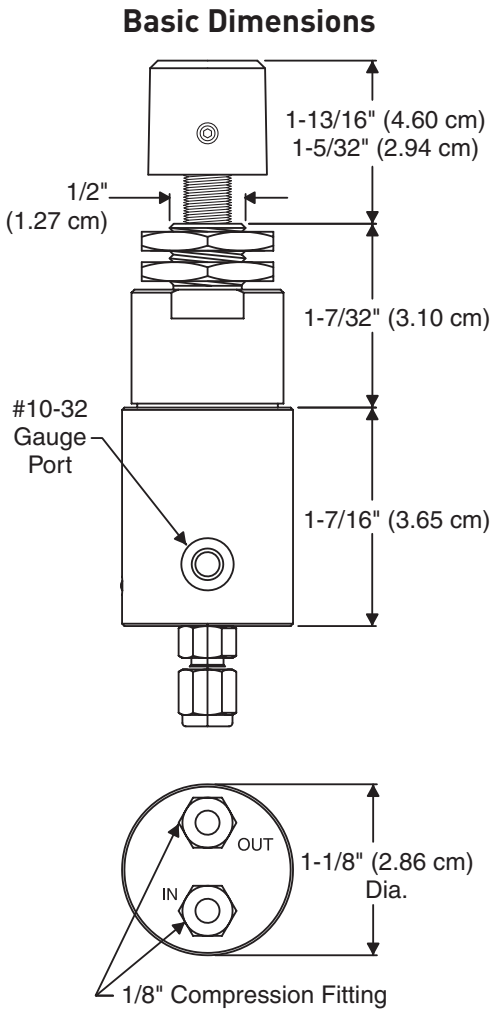


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Model 4000 Precision Pressure Regulator

Mechanical Integration
Dimensions



Units
In (cm)

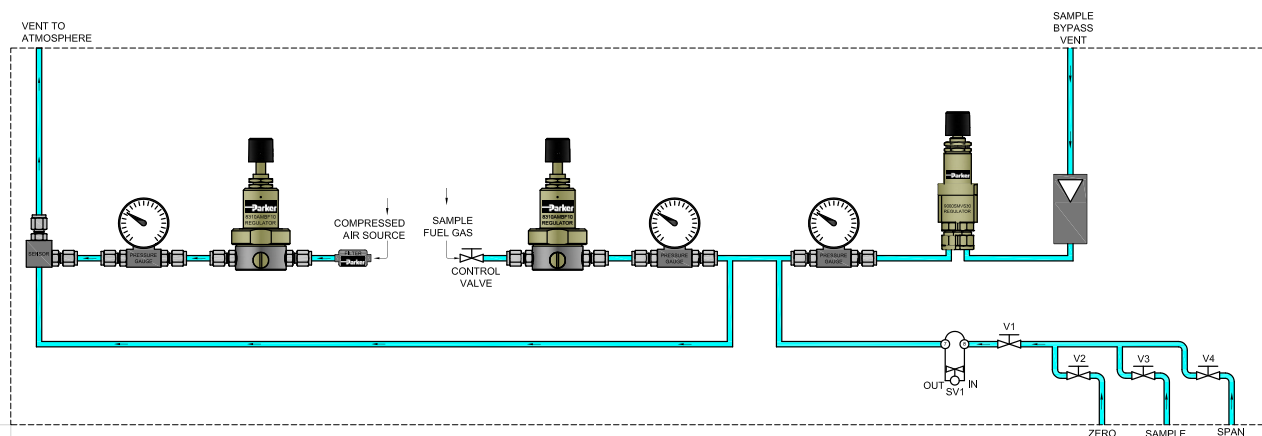
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Model 4000 Precision Pressure Regulator

Typical Flow Diagram

VOC Emissions Monitoring Analyzer



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Model 4000 Precision Pressure Regulator

Ordering Information

Sample Part #	4000	A	M	B	S	30
Description	Model	Body Material	Spring Material	O-Ring Material	Diaphragm Material	Pressure Range
Options	4000	A: Aluminum*	M: Music Wire (ASTM A228)	B: Buna-N V: FKM	S: Stainless Steel	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

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

- May be installed in any orientation.

Key Things to Remember:

- 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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Model 9000

Precision Pressure Regulator

Back Pressure Regulator



The Parker Precision Fluidics Model 9000 Regulator is a compact, spring-loaded, diaphragm operated back pressure regulator. Designed specifically for precision regulation in low-flow gas applications, it controls upstream pressure rather than downstream pressure and is similar to a relief valve in operation. Model 9000 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
- Panel mount applications
- Cleaned for Analytical Service Use
- Pressure gauge port included
- RoHS and REACH compliant



Typical Applications

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

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: 1.25" (31.75 mm)

Height: 4.5" (114.3 mm)

Weight:

0.375 lbs (0.17kg) (typical)

Porting:

1/8" compression fittings, inlet, outlet and gauge

Performance Ratings

Flow Capacity: 0 - 1000 sccm

Ratings:

Max. operating temperature:
160°F (71°C)

Wetted Materials

Body:

Aluminum or 303 Stainless Steel

Diaphragm:

Fairprene BN-5029 (Buna-N on nylon), 300 Stainless Steel, or FKM and 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)

Performance Characteristics*

Ambient Temperature Effect:

(Temperature coefficient)
60 psig (4.14 barg) range
0.008 psig/°F (0.99 mbarg/°C)

Long-Term Drift:

Fairprene diaphragm: 0.2%
Stainless steel diaphragm: 0.8%

Flow Regulation:

From 10 sccm to 1 sccm Helium, outlet pressure will not decrease more than 1 psig (0.069 barg) for unit with elastomer diaphragm

Baseline Oscillation:

0.0012 psig (0.083 mbarg)

Regulating Range:

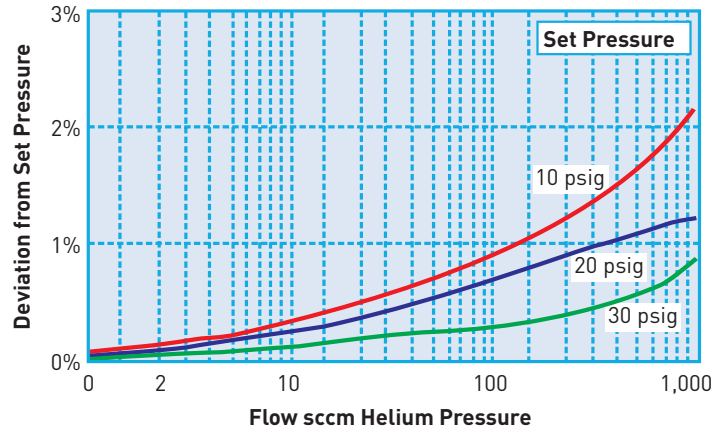
0 - 15 psig (0 - 1.03 barg)
0 - 30 psig (0 - 2.07 barg)
0 - 60 psig (0 - 4.14 barg)
0 - 100 psig (0 - 6.89 barg)

* Performance characteristics are based on 60 psig (4.14 barg) helium supply pressure at 50 psig (3.45 barg) outlet pressure.

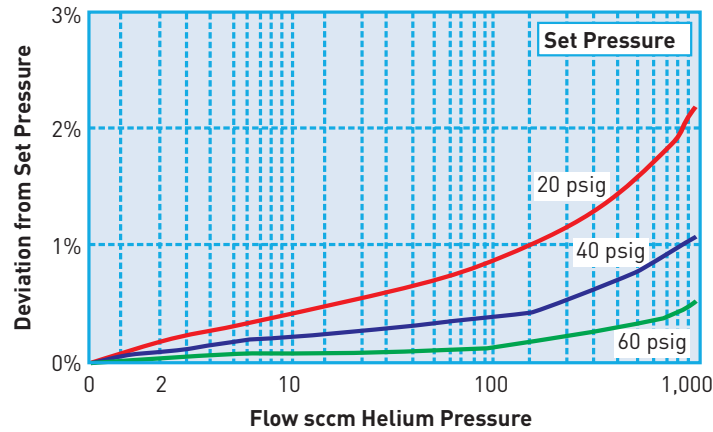
Model 9000 Precision Pressure Regulator

Typical Flow Curves

Typical Droop
(Flow Sensitivity) Curve
30 psig (2.07 barg) Range Spring



Typical Droop
(Flow Sensitivity) Curve
60 psig (4.14 barg) Range Spring

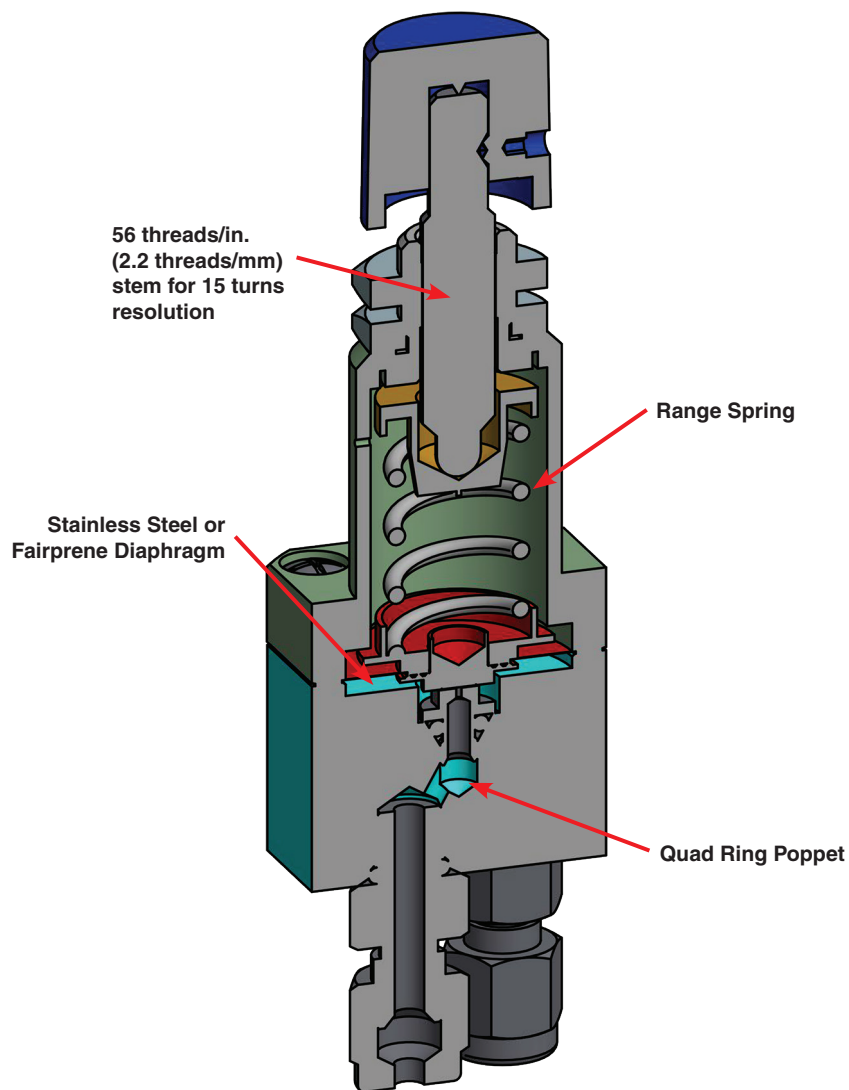


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Visit www.parker.com/precisionfluidics

Model 9000 Precision Pressure Regulator

Principle of Operation

A backpressure regulator is designed to regulate inlet pressure. The force of the regulator spring holds the valve closed. When the inlet pressure of the process fluid overcomes the spring setting the valve begins to open. Using a backpressure regulator to precisely control upstream gas pressure is typically more accurate than a relief valve.



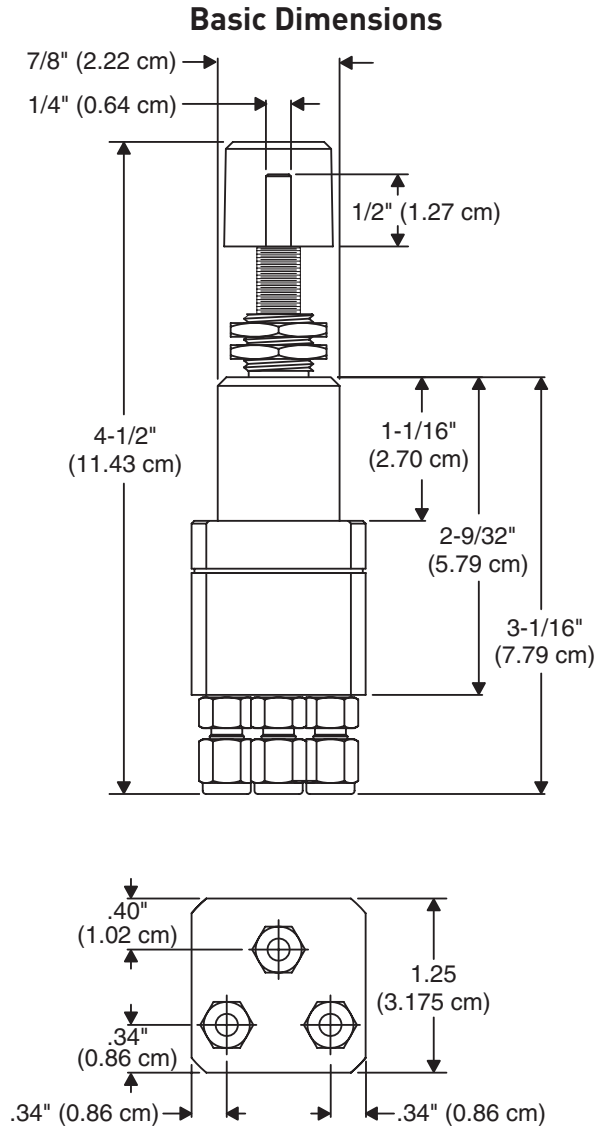
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Model 9000 Precision Pressure Regulator

Mechanical Integration

Dimensions



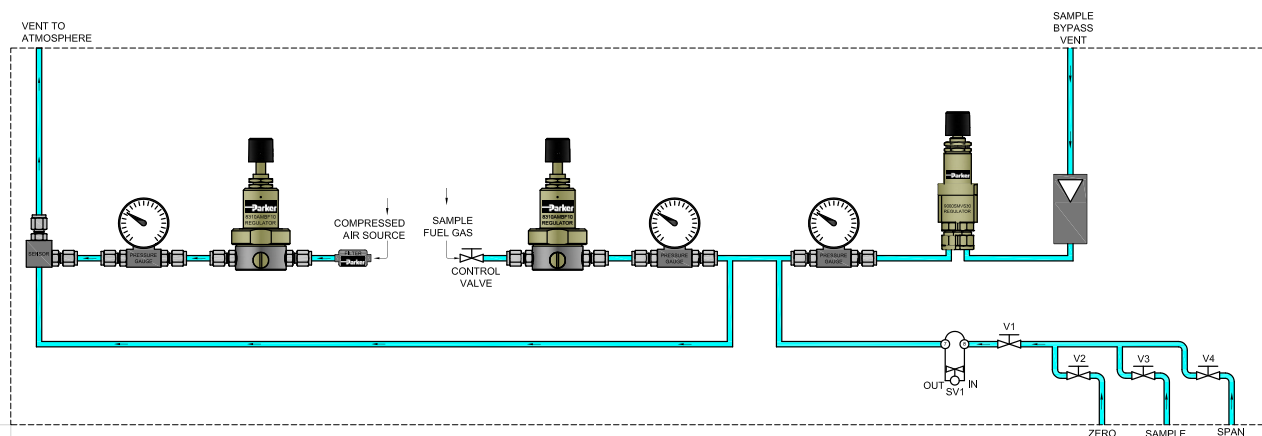
Units
In (cm)

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Model 9000 Precision Pressure Regulator

Typical Flow Diagram

VOC Emissions Monitoring Analyzer



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Visit www.parker.com/precisionfluidics



Model 9000 Precision Pressure Regulator

Ordering Information

Sample Part #	9000	A	M	B	S	30
Description	Model	Body Material	Spring Material	O-Ring Material	Diaphragm Material	Pressure Range
Options	9000	A: Aluminum* S: Stainless Steel	M: Music Wire (ASTM A228)	B: Buna-N V: FKM	F: Fairprene BN-5029 S: Stainless Steel	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

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

- May be installed in any orientation.
- Support inlet and outlet piping to reduce strain on regulator body.

Key Things to Remember:

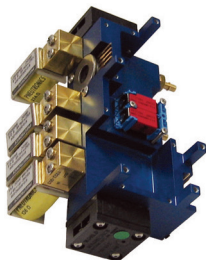
- Choice of Diaphragm Materials – Stainless Steel Diaphragms provide extremely low permeability. Coated Fabric Diaphragms, available in Fairprene BN-5029, offer unmatched sensitivity.
- Fine Pitch Adjusting Stem – 56 threads/in. (2.2 threads/mm) stem for 15 turns resolution pitch on all regulator adjusting 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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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



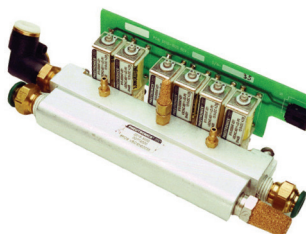
- Integrated valve manifold
- Compact design
- Single electrical connection
- Valves configured per specifications

Vacuum Gas Control Module



- Tested to 1×10^{-7} cc/sec/atm Helium
- Assembly tested on mass spectrometer

6 Position VSO® Proportional Valve Pneumatic Manifold Assembly



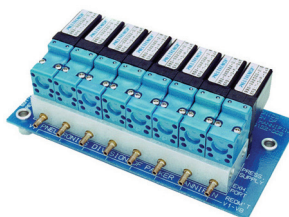
- Quick connect fittings
- Circuit board with mass electrical termination

Magnum Manifold Assembly



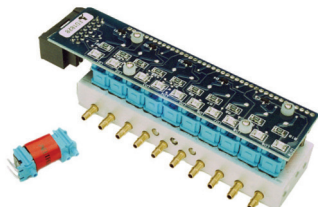
- Integrated circuit board with single connection
- Compact design
- Easily adaptable
- 2 way and 3 way designs

8 Position SRS Model Pneumatic Manifold



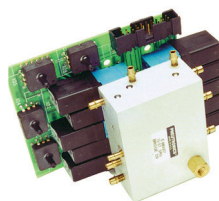
- Integrated circuit board mounting
- Mass electrical termination

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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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

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PERSONAL INJURY, AND PROPERTY DAMAGE.

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Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems, assuring that all performance, safety, and warning requirements of the application are met.

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