Partek

PTFE Pressure Regulator

Catalog 4183
April 2008

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Overview

Partek produces products that are made from only the finest Fuoropolymers available. These Fluoropolymers are resistant to numerous chemicals and solvents. This information provides only a brief technical overview . For more comprehensive technical and chemical compatibility information, please ask for Technical Bulletin 0002-T1/USA.

Fluorinated Polymers

Chemical Properties

- Flexibility at low temperatures
- Non-solubility
- Long term weatherability
- Non-adhesiveness
- Nonflammability

Electrical Properties

- Resistivity to corrosive agents
- Low dissipation factor
- High arc resistance
- High surface resistance
- High volume resistivity

Mechanical Properties

- Low dielectric constant
- Low coefficient of friction
- Stability at high temperatures

PTFE is a fluorocarbon resin that is isostatically compression molded into various shapes and configurations. It is chemically resistant to all chemicals and solvents with the exception of some molten alkali metals, molten sodium hydroxide, elemental fluorine and certain fluorinating agents. At Partek we use PTFE for machining the bodies and components of various valves and manifolds. It offers chemical resistance and stability at high temperatures.

Modified PTFE material is used primarily for diaphragms and bellows in our products. This material has the same processing and chemically resistant characteristics as the standard product but offers superior cycle life and integrity in diaphragm products.

PFA is a copolymer of tetrafluoroethylene and perfluoroalkyl vinyl ether. The resultant polymer contains the carbon-fluorine backbone chain typical of PTFE, but unlike PTFE, does not require special fabricating techniques. PFA pellets have good melt flow characteristics that allow for processing via extrusion, compression, blow, transfer and injection molding methods. It has outstanding chemical and solvent resistant characteristics over a temperature range even greater than PTFE. PFA is offered in various grades of purity and cleanliness making it the mate-

C_V and K_V Formulas

$$Q = C_V \sqrt{\frac{\Delta P}{SG}}$$

Q = Flow (GPM)
ΔP = Pressure Drop (PSIG)
SG = Specific Gravity

$$Q = K_V \sqrt{\frac{\Delta P}{Y}}$$

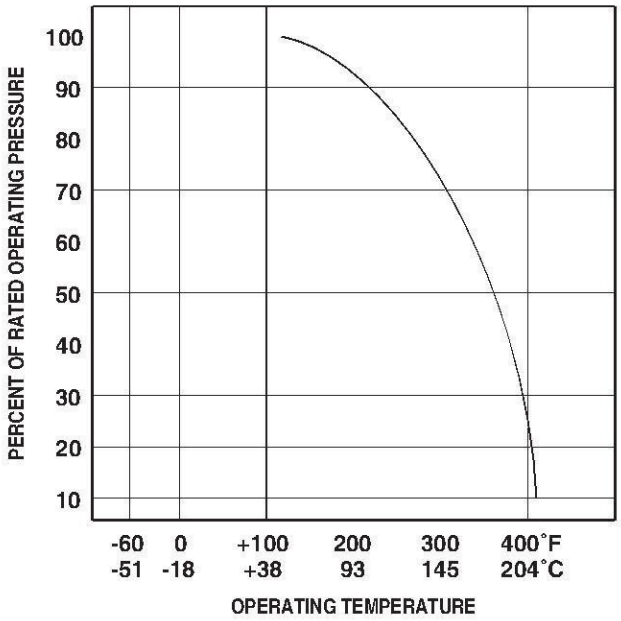
Q = Flow (LPM)
ΔP = Pressure Drop (BAR)
Y = Specific Gravity (kg/cm^3)

$$1\ K_V = 14.26\ C_V$$

"C_V" flow factor is the number of gallons of fluid that pass through a given orifice area in one minute, at a pressure drop of 1 PSIG.

"K_V" flow factor is the number of liters of fluid that pass through a given orifice area in one minute, at a pressure drop of 1 bar.

PERCENT OF RATED PRESSURE VS. TEMPERATURE



For operation at temperatures above ambient conditions, please refer to the chart above for reduced pressure

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PR-1 Pressure Regulator

Product Overview

The 1/4" Pressure Regulators are designed for use in high purity semiconductor applications, and are also ideally suited for ultra-pure water and aggressive chemicals. The design utilizes a machined PFA body with precision machined seat.

Features	Benefits
One piece precision machined diaphragms manufactured from the latest technology modified PTFE.	**High cycle life.**
	Lower replacement costs.
Provides over five times the flexural life as compared to conventional PTFE.	**Less downtime.**
Non-relieving design- requires a 10 psi differential across the valve.	**Stabilizes system pressure. Ideal for use in DI water systems.**
	Low hysteresis.
Tongue and groove diaphragm.	**Seal provides protection for springs and adjusting screw.**

Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE
Non Wetted Surfaces - ABS, Brass, SS, PVDF, SS Spring, Chrome Vanadium Die Spring, HDPE.

Pressure Ranges:

Max Primary Pressure - 120 PSIG (8.3 bar)
Secondary Pressure Options - 0 to 30 PSIG and 0 to 60 PSIG

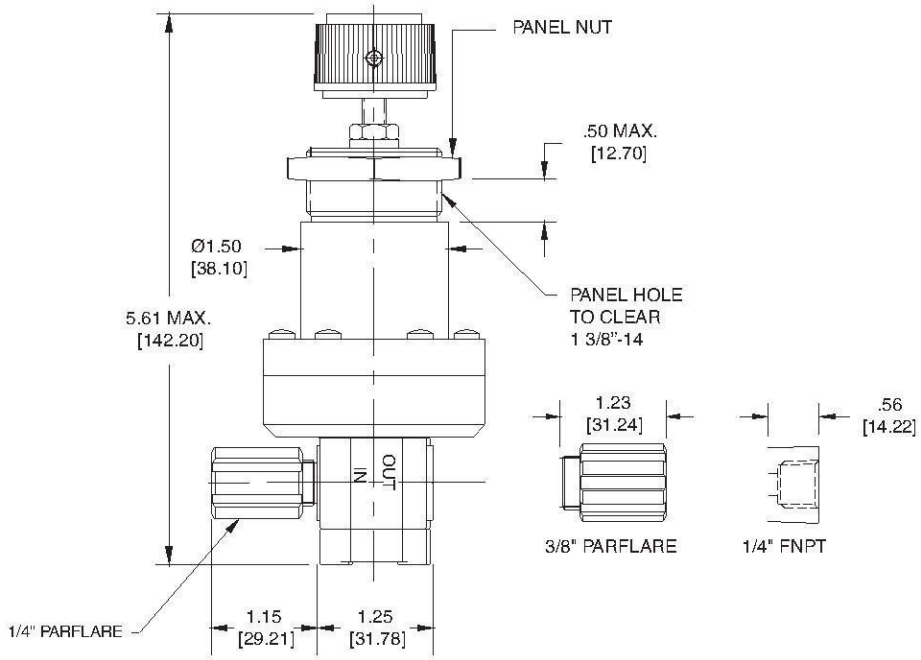
Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges:

0°F - 150°F (-17°C - 66° C) Ambient
0°F - 266°F (-17°C - 130° C) Fluid

Parker Hannifin Corporation
Partek Operation
Tucson, AZ

BRACKETED DIMENSIONS ARE IN mm.



Model Number	*Trim Material*	*Port Configuration*	*Secondary Pressure-X*
PR-1-2214-X	HDPE	1/4" FNPT	1 = 0 to 30 PSIG 2 = 0 to 60 PSIG
PR-1-2264-X		1/4" Parflare	
PR-1-2266-X		3/8" Parflare	

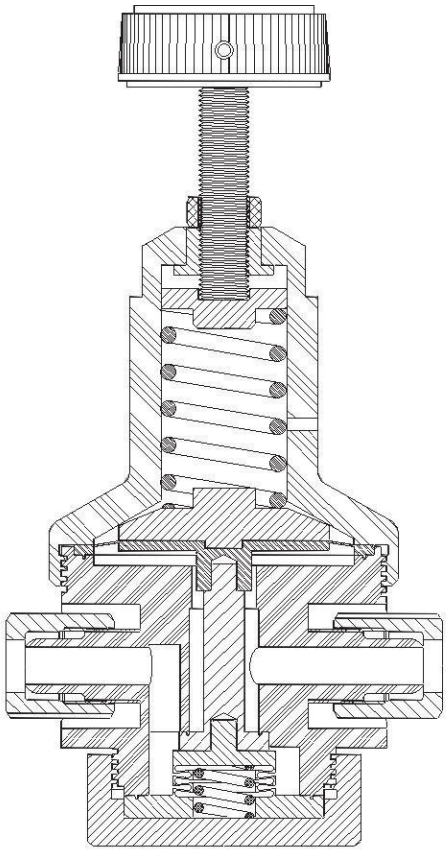
Parker Hannifin Corporation
Partek Operation
Tucson, AZ

PR-3 Pressure Regulator

Product Overview

The 1/2" and 1" PTFE Pressure Regulators are designed for use in high purity semiconductor applications, and are also ideally suited for ultra-pure water and aggressive chemicals. The design utilizes a machined PTFE body with precision machined seat and diaphragm sealing area. The large diaphragm allows for quicker reaction time to changes upstream, preventing the effects of pressure surges to be transferred downstream.

Features	Benefits
One piece precision machined diaphragms manufactured from the latest technology modified PTFE.	**High cycle life.**
	Lower replacement costs.
Provides over five times the flexural life as compared to conventional PTFE.	**Less downtime.**
Non-relieving design requires a 10 psi differential across the valve.	**Stabilizes system pressure. Ideal for use in DI water systems.**
	Low hysteresis.
Tongue and groove diaphragm.	**Seal provides protection of springs and adjusting screw.**



Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE
Non Wetted Surfaces - ABS, Brass, SS, PVDF, SS Spring, Chrome Vanadium Die Spring, HDPE.

Pressure Ranges:

Max Primary Pressure - 120 PSIG (8.3 bar)
Secondary Pressure Options - 0 to 30 PSIG and 0 to 60 PSIG

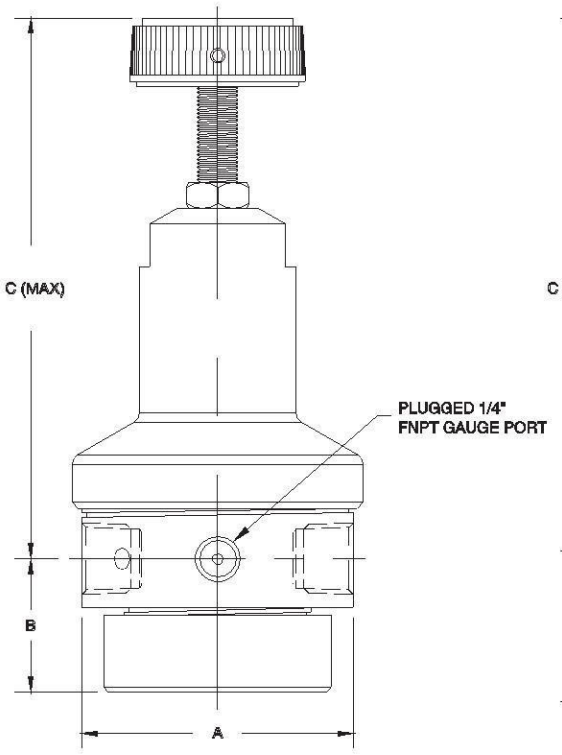
Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges:

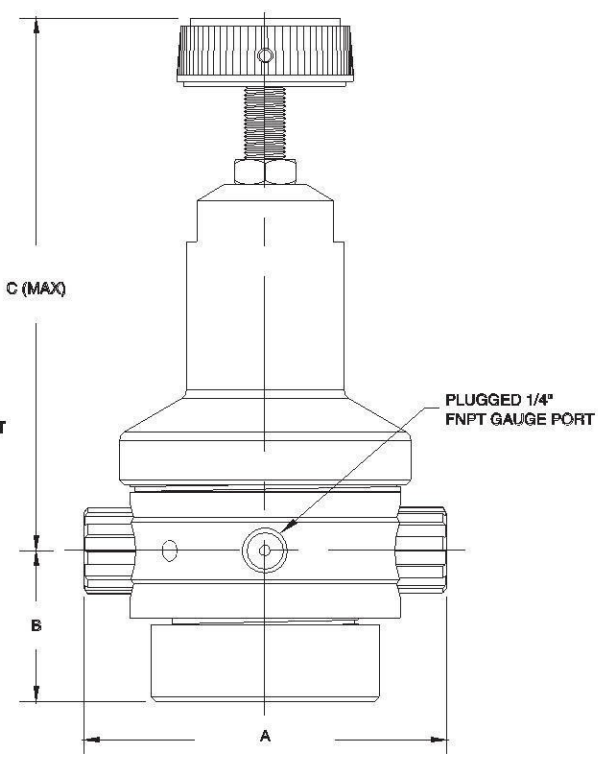
0°F - 150°F (-17°C - 66° C) Ambient
0°F - 266°F (-17°C - 130° C) Fluid

Parker Hannifin Corporation
Partek Operation
Tucson, AZ

BRACKETED DIMENSIONS ARE IN mm.



STYLE 1



STYLE 2

Model Number	*Style*	*Trim Material*	*Port Configuration*	*Secondary Pressure-X*	*A*	*B*	*C*
PR-3-1118-X	1	Anodized Aluminum	1/2" FNPT	1 = 0-30 PSIG 2 = 0-60 PSIG	Ø 3.25 [82.55]	1.60 [40.64]	6.52 [165.61]
PR-3-1168-X	2	Anodized Aluminum	1/2" Parflare		Ø 4.35 [110.49]	1.81 [45.97]	6.63 [168.40]
PR-3-11116-X	1	Anodized Aluminum	1" FNPT		Ø 4.50 [114.30]	2.45 [62.23]	7.92 [201.17]
PR-3-3118-X	1	PVDF	1/2" FNPT		Ø 3.25 [82.55]	1.60 [40.64]	6.52 [165.61]
PR-3-3168-X	2	PVDF	1/2" Parflare		Ø 4.35 [110.49]	1.81 [45.97]	6.63 [168.40]

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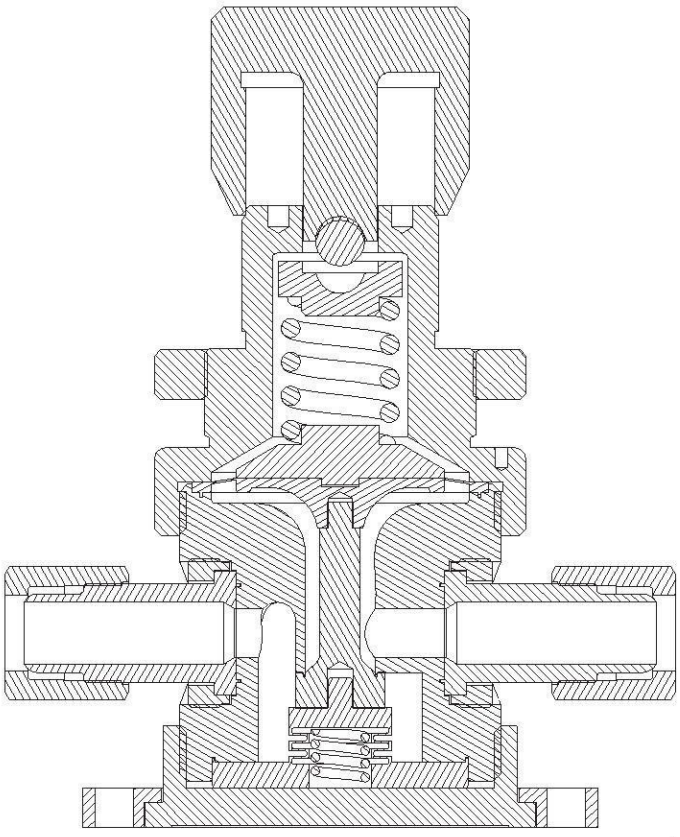
PR-08 1/2" Pressure Regulator

Product Overview

The PR-08 pressure regulator features improved performance with no exposed metals. It is designed for use in high purity fluid handling applications, including ultra-pure water, aggressive chemicals and slurry applications. The design utilizes a machined PTFE body with precision machined seat and diaphragm sealing area. The large diaphragm allows for greater sensitivity to changes upstream, preventing the effects of pressure surges being transferred downstream.

Features	Benefits
One piece precision machined diaphragm manufactured from modified PTFE (provides over five times the flexural life as compared to conventional PTFE)	High cycle life, lower replacement cost, excellent cleanliness and less downtime
Non-relieving design requires 5 psi differential across the valve	Stabilizes system pressure, better droop characteristics and low hysteresis
Tongue and groove diaphragm seal	Ensures product reliability and contains media from atmosphere
Positionable mounting ring	For ease of installation and time savings
Flow direction arrow	Ensures proper installation



Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE, PTFE
Non Wetted Surfaces - Polypro, PTFE, PFA, PVDF, SS Ball, PTFE coated SS Spring, SS Spring

Pressure Range:

Max Primary (Upstream) Pressure - 120 PSIG (8.3 bar)
Max Secondary (Downstream) - 60 PSIG (4.1 bar)

Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure vs. Temperature chart on page 3.

Temperature Range:

0°F - 150°F (-17°C - 66° C) Ambient
0°F - 266°F (-17°C - 130° C) Fluid

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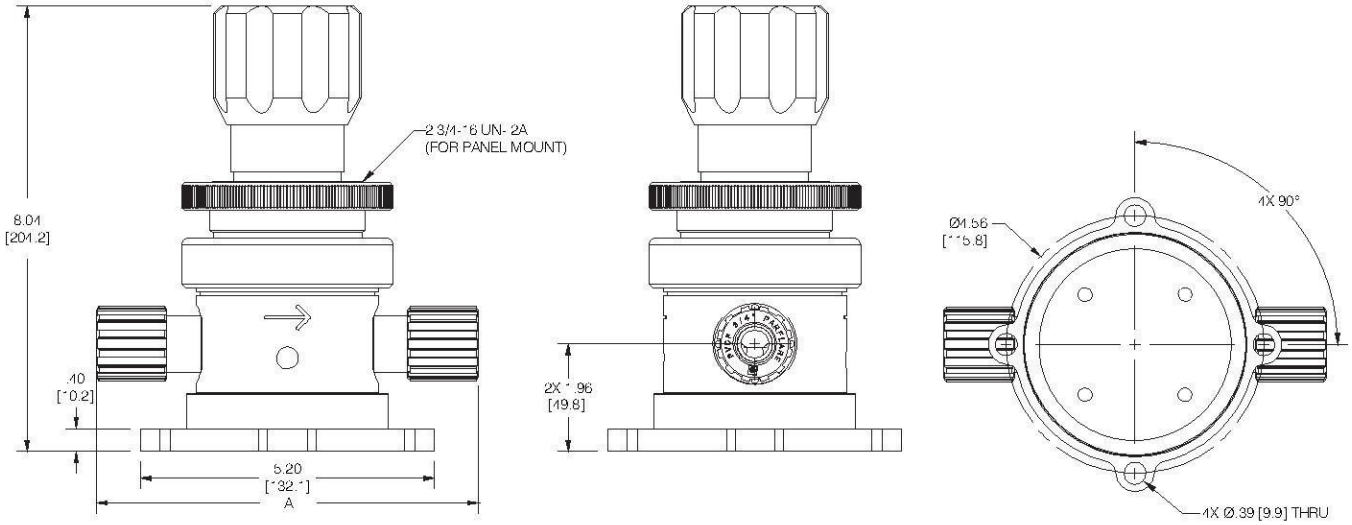
Tucson, AZ

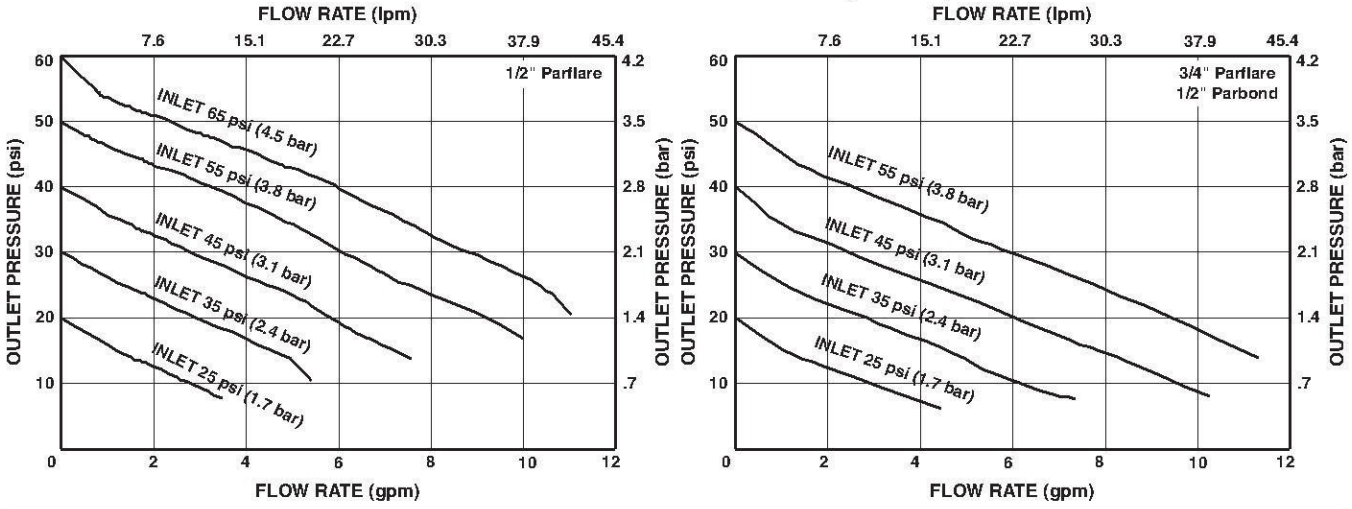
BRACKETED DIMENSIONS ARE IN mm.



Part Number	Body Material	Housing Material	Secondary Pressure	Port Connection	Panel Nut	A inch [mm]
PR-08-52608	PTFE	POLYPRO	0-60 PSIG	1/2" Parflare	No	6.29 [159.77]
PR-08-52612				3/4" Parflare		6.77 [171.96]
PR-08-52708				1/2" Parbond		6.19 [157.23]
PR-08-52712				3/4" Parbond		6.19 [157.23]
PR-08-52608-P	PTFE	POLYPRO	0-60 PSIG	1/2" Parflare	Yes	6.29 [159.77]
PR-08-52612-P				3/4" Parflare		6.77 [171.96]
PR-08-52708-P				1/2" Parbond		6.19 [157.23]
PR-08-52712-P				3/4" Parbond		6.19 [157.23]

Additional end connections available upon request.

OUTLET PRESSURE VS. FLOW RATE (DROOP)



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DPR-08 Pressure Regulator

Product Overview

The DPR-08 dome loaded pressure regulator features improved performance with no exposed metals. It is designed for use in high purity fluid handling applications, including ultra-pure water, aggressive chemicals and slurry applications. The design utilizes a machined PTFE body with precision machined seat and diaphragm sealing area. The large diaphragm allows for greater sensitivity to changes upstream, preventing the effects of pressure surges being transferred downstream.

Features and Benefits

Features	Benefits
One piece precision machined diaphragm manufactured from modified PTFE (provides over five times the flexural life as compared to conventional PTFE)	High cycle life, lower replacement cost, excellent cleanliness and less downtime
Non-relieving design requires 5 psi differential across the valve	Stabilizes system pressure, better droop characteristics and low hysteresis
Tongue and groove diaphragm seal	Ensures product reliability and contains media from atmosphere
Positionable mounting ring	For ease of installation and time savings
Flow direction arrow	Ensures proper installation

Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE, PTFE
Non Wetted Surfaces - Polypro, PTFE, PFA, PVDF, SS Spring

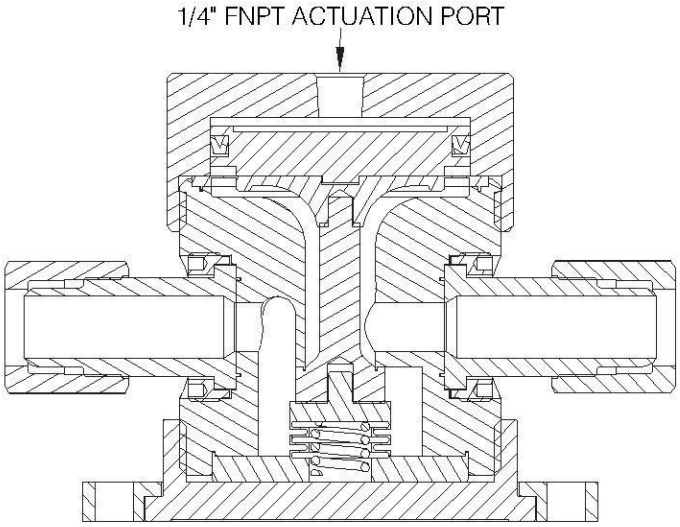
Pressure Range:

Max Primary (Upstream) Pressure - 120 PSIG (8.3 bar)
Max Secondary (Downstream) - 60 PSIG (4.1 bar)

Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure vs. Temperature chart on page 3 of Catalog 4183.

Temperature Range:

0°F - 150°F (-17°C - 66° C) Ambient
0°F - 266°F (-17°C - 130° C) Fluid



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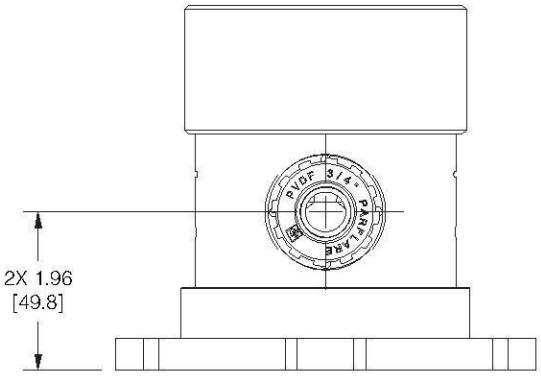

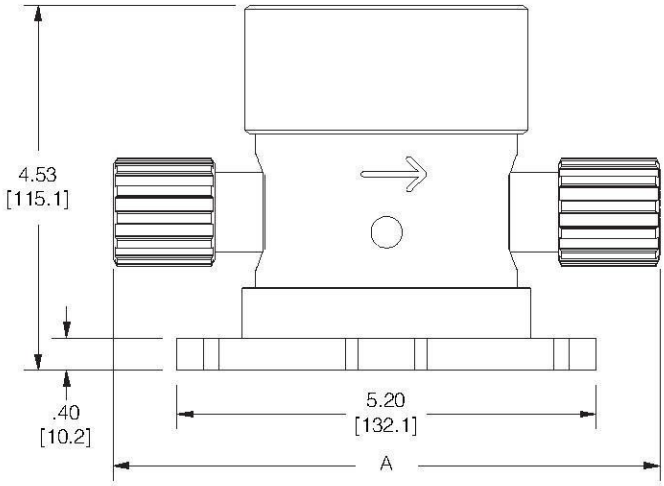

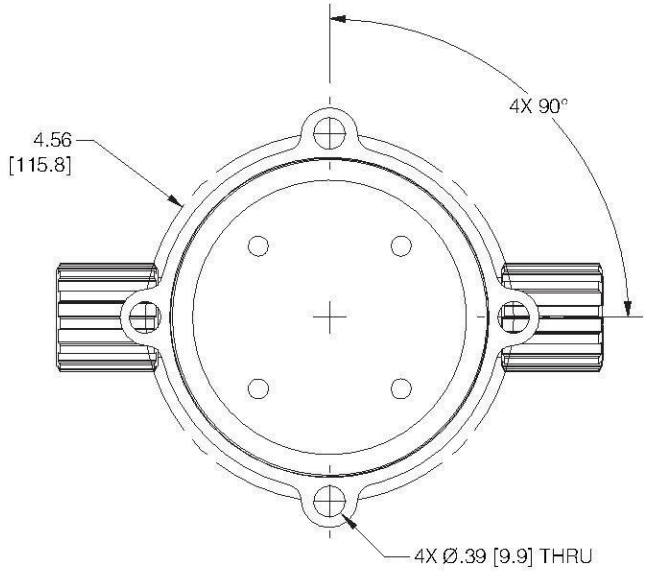

Part Number	*Body Material*	*Housing Material*	*Secondary Pressure*	*Port Connection*	*Panel Nut*	*A inch [mm]*
DPR-08-52608	PTFE	POLYPRO	0-60 PSIG	1/2" Parflare	No	6.29 [159.77]
DPR-08-52612				3/4" Parflare		6.77 [171.96]
DPR-08-52708				1/2" Parbond		6.19 [157.23]
DPR-08-52712				3/4" Parbond		6.19 [157.23]

Additional end connections available upon request.

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Tucson, AZ

BR-1 Back Pressure Regulator

Product Overview

The 1/4" PTFE Back Pressure Regulators are designed for use in high purity semiconductor applications, and are also ideally suited for ultra-pure water and aggressive chemicals. The design utilizes a PFA body with precision machined seats.

Features	Benefits
One piece precision machined diaphragm manufactured from the latest technology modified PTFE.	**High cycle life.**
Provides over five times the flexural life as compared to conventional PTFE.	**Lower replacement costs.**
Non-relieving design requires a 10 psi differential across the valve.	**Less downtime.**
Tongue and groove diaphragm.	**Stabilizes system pressure. Ideal for use in DI water systems.**
	Low hysteresis.
	Seal provides protection for springs and adjusting screw.

Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE
Non Wetted Surfaces - ABS, Brass, SS, PVDF, SS Spring, Chrome Vanadium Die Spring, HDPE.

Pressure Ranges:

Max Primary Pressure - 120 PSIG (8.3 bar)
Secondary Pressure Options - 0 to 30 PSIG and 0 to 60 PSIG

Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges:

0°F - 150°F (-17°C - 66° C) Ambient
0°F - 266°F (-17°C - 130° C) Fluid

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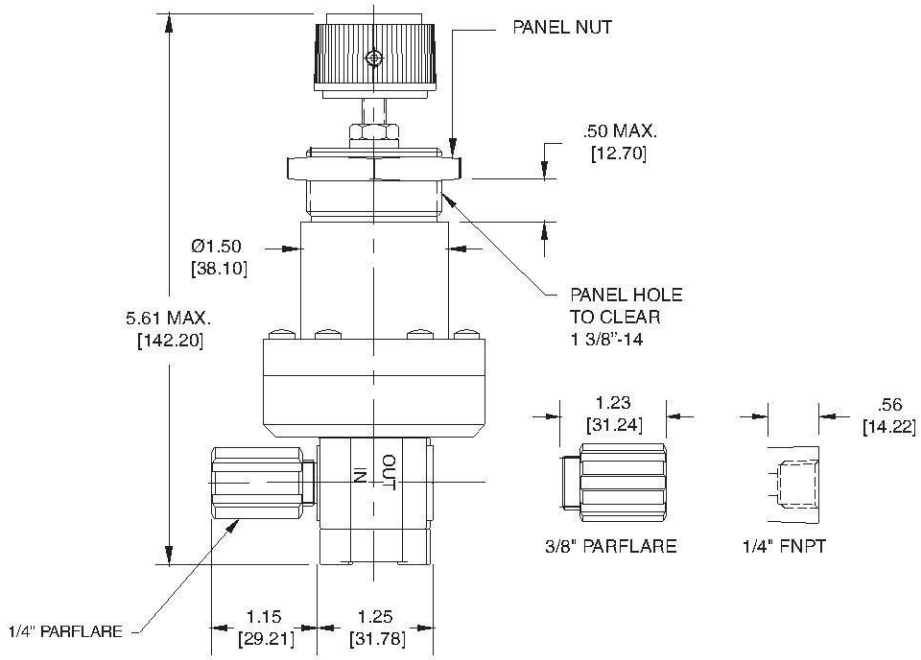
Partek Operation
Tucson, AZ

BRACKETED DIMENSIONS ARE IN mm.



Model Number	*Trim Material*	*Port Configuration*	*Secondary Pressure-X*
BR-1-2214-X	HDPE	1/4" FNPT	1 = 0 to 30 PSIG 2 = 0 to 60 PSIG
BR-1-2264-X		1/4" Parflare	
BR-1-2266-X		3/8" Parflare	

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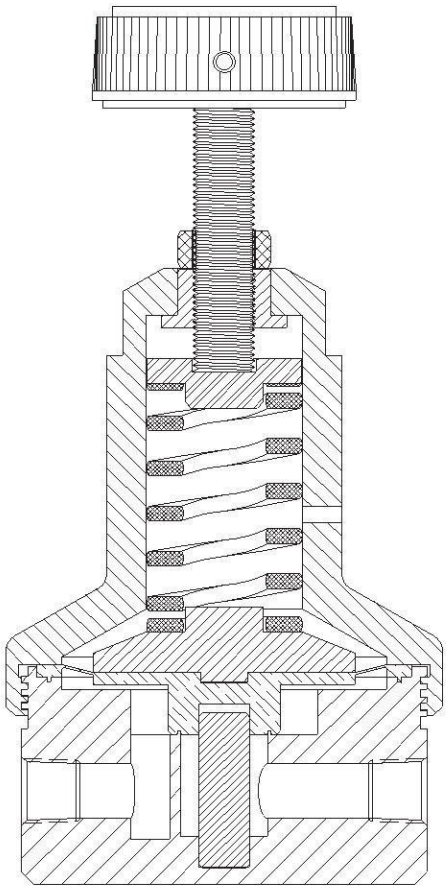
Partek Operation
Tucson, AZ

BR-3 Back Pressure Regulator

Product Overview

The 1/2" and 1" PTFE Back Pressure Regulators are designed for use in high purity semiconductor applications, and are also ideally suited for use in ultra-pure water and aggressive chemicals. The design utilizes a machined PTFE body with precision machined seat and diaphragm sealing area. The larger diaphragm allows for quicker reaction time to changes upstream, preventing pressure surges from affecting and changing upstream processes.

Features	Benefits
One piece precision machined diaphragm manufactured from the latest technology modified PTFE.	**High cycle life.**
	Lower replacement costs.
Provides over five times the flexural life as compared to conventional PTFE.	**Less downtime.**
	Stabilizes system. Ideal for DI water systems.
Non-relieving design requires a 10 psi differential across the valve.	**Low Hysteresis.**
Tongue and groove diaphragm.	**Seal provides protection of springs and adjusting screw.**



Specifications

Materials of Construction:

Wetted Surfaces - PTFE, Modified PTFE
Non Wetted Surfaces - Anodized Aluminum, ABS, Brass, SS, PVDF, SS Spring, Chrome Vanadium Die Spring, HDPE.

Pressure Ranges:

Max Primary Pressure - 120 PSIG (8.3 bar)
Secondary Pressure Options - 0 to 30 PSIG and 0 to 60 PSIG

Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges:

0°F - 150°F (-17°C - 66° C) Ambient
0°F - 266°F (-17°C - 130° C) Fluid

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Partek Operation
Tucson, AZ

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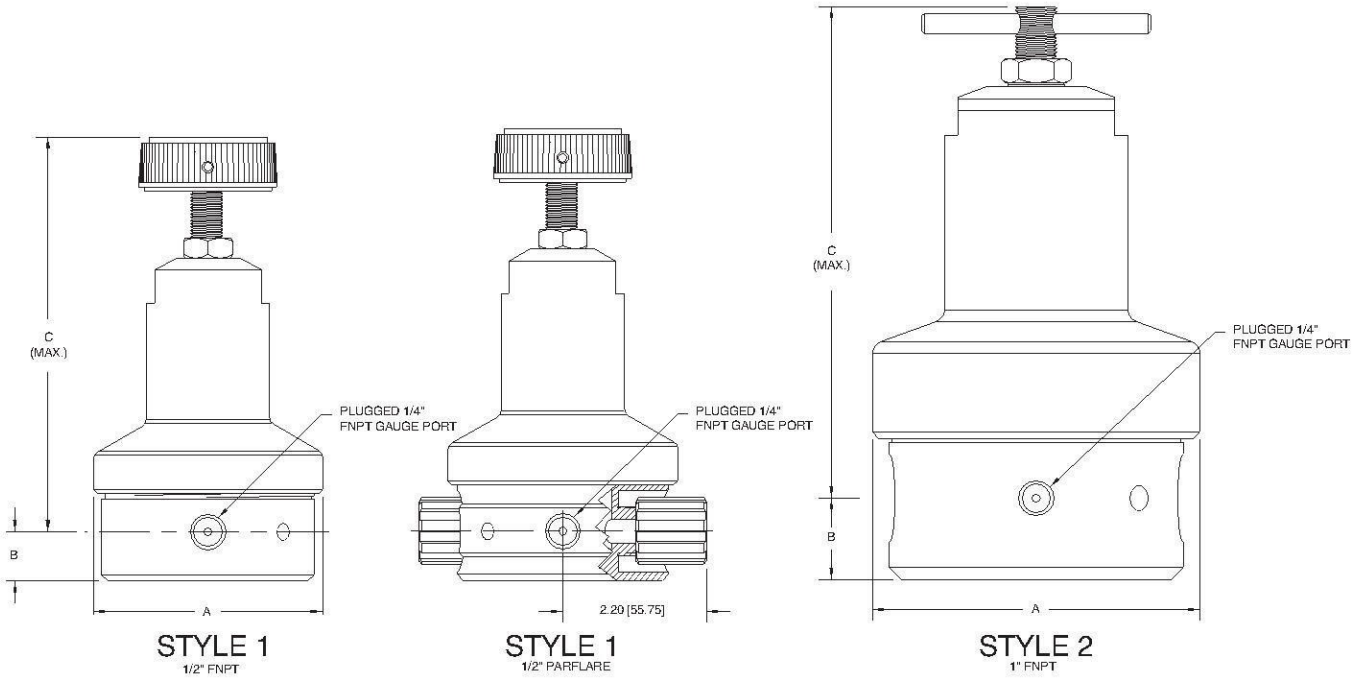


Model Number	*Style*	*Trim Material*	*Port Configuration*	*Secondary Pressure-X*	*A*	*B*	*C*
BR-3-1118-X	1	Anodized Aluminum	1/2" FNPT	1 = 0-30 PSIG 2 = 0-60 PSIG	Ø 3.50 [88.90]	.75 [19.05]	6.52 [165.61]
BR-3-1168-X	1	Anodized Aluminum	1/2" Parflare		Ø 3.50 [88.90]	.75 [19.05]	6.65 [168.91]
BR-3-11116-X	2	Anodized Aluminum	1" FNPT		Ø 5.00 [127.00]	1.25 [31.75]	8.15 [207.01]
BR-3-3118-X	1	PVDF	1/2" FNPT		Ø 3.50 [88.90]	.75 [19.05]	6.52 [165.61]
BR-3-3168-X	1	PVDF	1/2" Parflare		Ø 3.50 [88.90]	.75 [19.05]	6.65 [168.91]

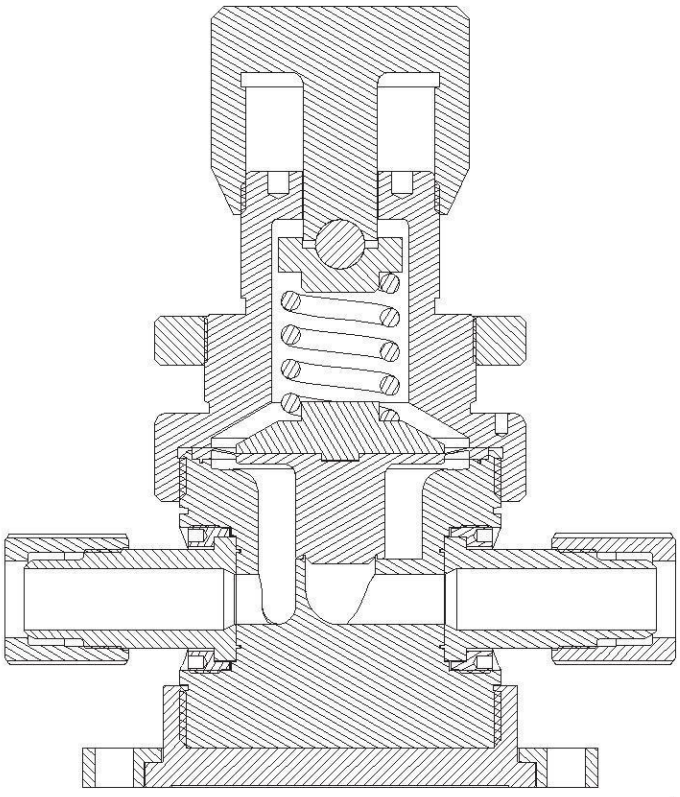
Parker Hannifin Corporation
Partek Operation
Tucson, AZ

BR-08 1/2" Back Pressure Regulator

Product Overview

The BR-08 back pressure regulator features improved performance with no exposed metals. It is designed for use in high purity fluid handling applications, including ultra-pure water, aggressive chemicals and slurry applications. The design utilizes a machined PTFE body with precision machined seat and diaphragm sealing area. The large diaphragm allows for greater sensitivity to changes downstream, preventing the effects of pressure surges being transferred upstream.

Features	Benefits
One piece precision machined diaphragm manufactured from modified PTFE (provides over five times the flexural life as compared to conventional PTFE)	High cycle life, lower replacement cost, excellent cleanliness and less downtime
Non-relieving design requires 5 psi differential across the valve	Stabilizes system pressure, better droop characteristics and low hysteresis
Tongue and groove diaphragm seal	Ensures product reliability and contains media from atmosphere
Positionable mounting ring	For ease of installation and time savings
Flow direction arrow	Ensures proper installation



Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE, PTFE
Non Wetted Surfaces - Polypro, PTFE, PFA, PVDF, SS Ball, PTFE coated SS Spring, SS Spring

Pressure Range:

Max Primary (Upstream) Pressure - 120 PSIG (8.3 bar)
Max Secondary (Downstream) - 60 PSIG (4.1 bar)

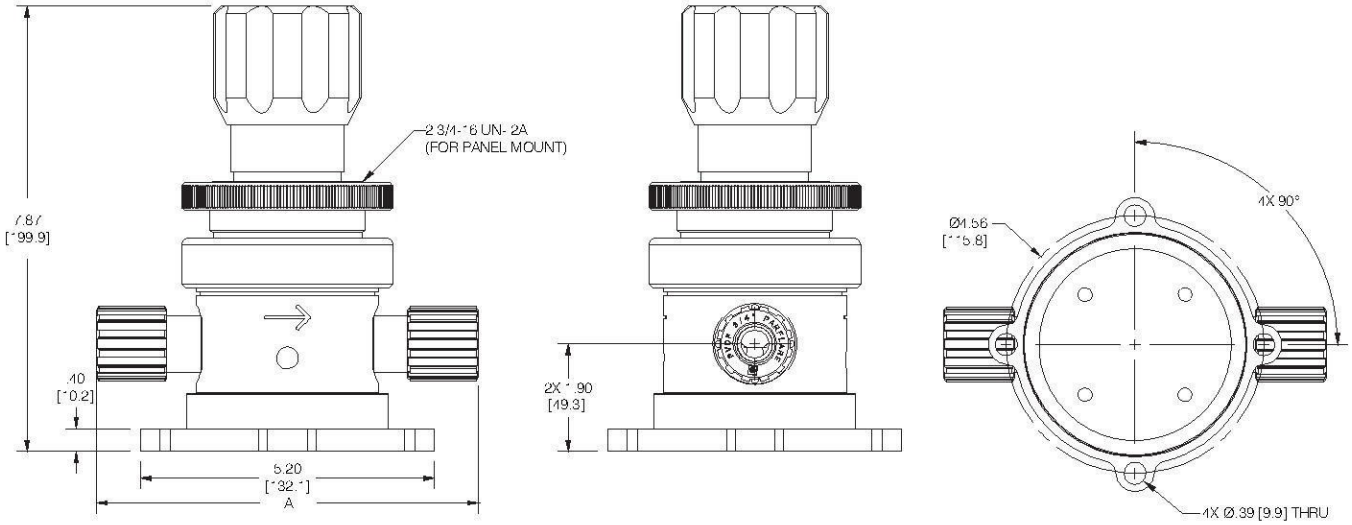
Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure vs. Temperature chart on page 3.

Temperature Range:

0°F - 150°F (-17°C - 66° C) Ambient
0°F - 266°F (-17°C - 130° C) Fluid

Parker Hannifin Corporation
Partek Operation
Tucson, AZ

BRACKETED DIMENSIONS ARE IN mm.



Part Number	Body Material	Housing Material	Secondary Pressure	Port Connection	Panel Nut	A inch [mm]
BR-08-52608	PTFE	POLYPRO	0-60 PSIG	1/2" Parflare	No	6.29 [159.77]
BR-08-52612				3/4" Parflare		6.77 [171.96]
BR-08-52708				1/2" Parbond		6.19 [157.23]
BR-08-52712				3/4" Parbond		6.19 [157.23]
BR-08-52608-P	PTFE	POLYPRO	0-60 PSIG	1/2" Parflare	Yes	6.29 [159.77]
BR-08-52612-P				3/4" Parflare		6.77 [171.96]
BR-08-52708-P				1/2" Parbond		6.19 [157.23]
BR-08-52712-P				3/4" Parbond		6.19 [157.23]

Additional end connections available upon request.

Parker Hannifin Corporation
Partek Operation
Tucson, AZ

DBR-08 Dome Loaded Back Pressure Regulator

Product Overview

The DBR-08 dome loaded back pressure regulator features improved performance with no exposed metals. It is designed for use in high purity fluid handling applications, including ultra-pure water, aggressive chemicals and slurry applications. The design utilizes a machined PTFE body with precision machined seat and diaphragm sealing area. The large diaphragm allows for greater sensitivity to changes downstream, preventing the effects of pressure surges being transferred upstream.

Features

Features	Benefits
One piece precision machined diaphragm manufactured from modified PTFE (provides over five times the flexural life as compared to conventional PTFE)	High cycle life, lower replacement cost, excellent cleanliness and less downtime
Non-relieving design requires 5 psi differential across the valve	Stabilizes system pressure, better droop characteristics and low hysteresis
Tongue and groove diaphragm seal	Ensures product reliability and contains media from atmosphere
Positionable mounting ring	For ease of installation and time savings
Flow direction arrow	Ensures proper installation

Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE, PTFE
Non Wetted Surfaces - Polypro, PTFE, PFA, PVDF

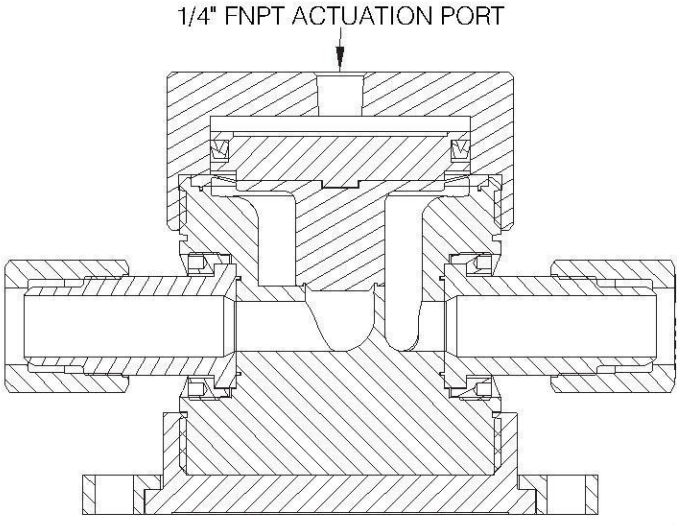
Pressure Range:

Max Primary (Upstream) Pressure - 120 PSIG (8.3 bar)
Max Secondary (Downstream) - 60 PSIG (4.1 bar)

Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure vs. Temperature chart on page 3 of Catalog 4183.

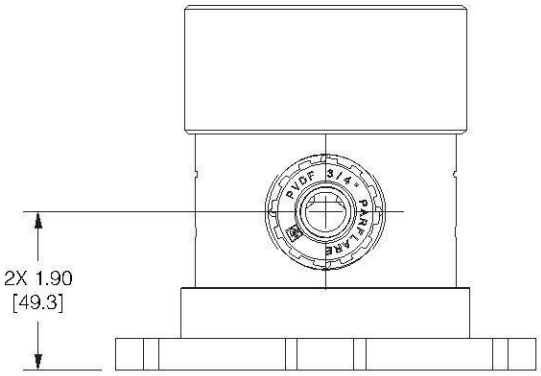
Temperature Range:

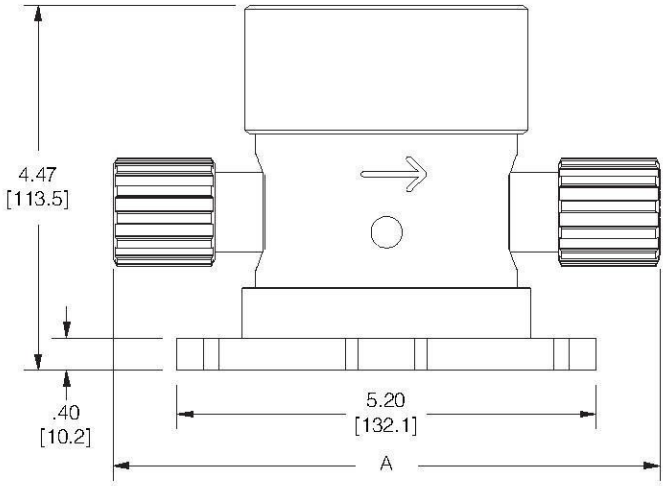
0°F - 150°F (-17°C - 66° C) Ambient
0°F - 266°F (-17°C - 130° C) Fluid

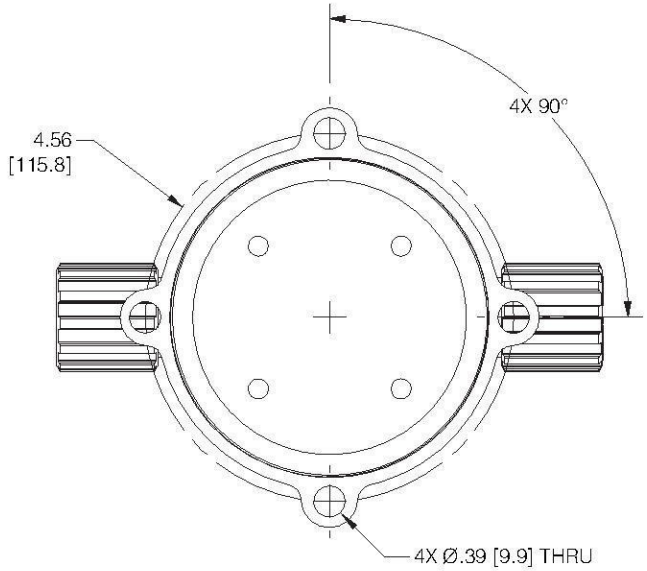


Parker Hannifin Corporation
Partek Operation
Tucson, AZ

BRACKETED DIMENSIONS ARE IN mm.







Part Number	*Body Material*	*Housing Material*	*Secondary Pressure*	*Port Connection*	*Panel Nut*	*A inch [mm]*
DBR-08-52608	PTFE	POLYPRO	0-60 PSIG	1/2" Parflare	No	6.29 [159.77]
DBR-08-52612				3/4" Parflare		6.77 [171.96]
DBR-08-52708				1/2" Parbond		6.19 [157.23]
DBR-08-52712				3/4" Parbond		6.19 [157.23]

Additional end connections available upon request.

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