Parker
Instrumentation

Partek/Atlantic

Other PFA/PTFE Products

Catalog 4183/USA
April 2003

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⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. 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 and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Overview

Partek/Atlantic 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
- Resistivity to corrosive agents
- Non-solubility
- Long term weatherability
- Non-adhesiveness
- Nonflammability

Electrical Properties
- Low dielectric constant
- Low dissipation factor
- High arc resistance
- High surface resistance
- High volume resistivity

Mechanical Properties
- Flexibility at low temperatures
- 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 material of choice for the semiconductor market.

C_V and K_V Formulas

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

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

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

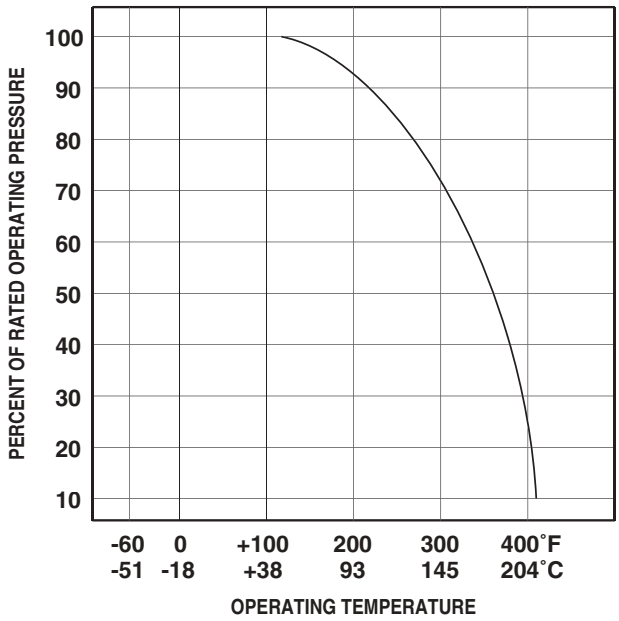
Q = Flow (LPM)
ΔP = Pressure Drop (BAR)
Y = Specific Gravity (kg/cm^3)

$$1\ K_V = 14.26\ C_V$$

"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



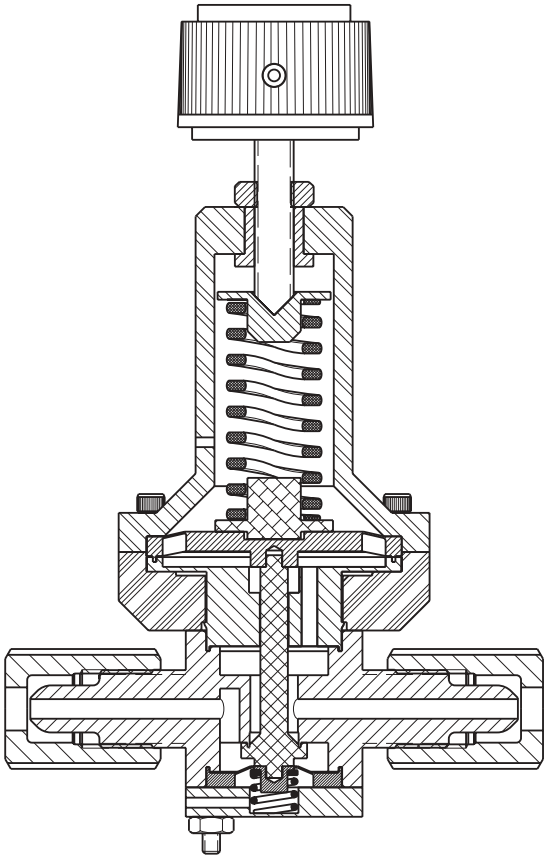
For operation at temperatures above ambient conditions, please refer to the chart above for reduced pressure ratings.

PR-1 Pressure Regulator

Product Overview

The PR-1 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.

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

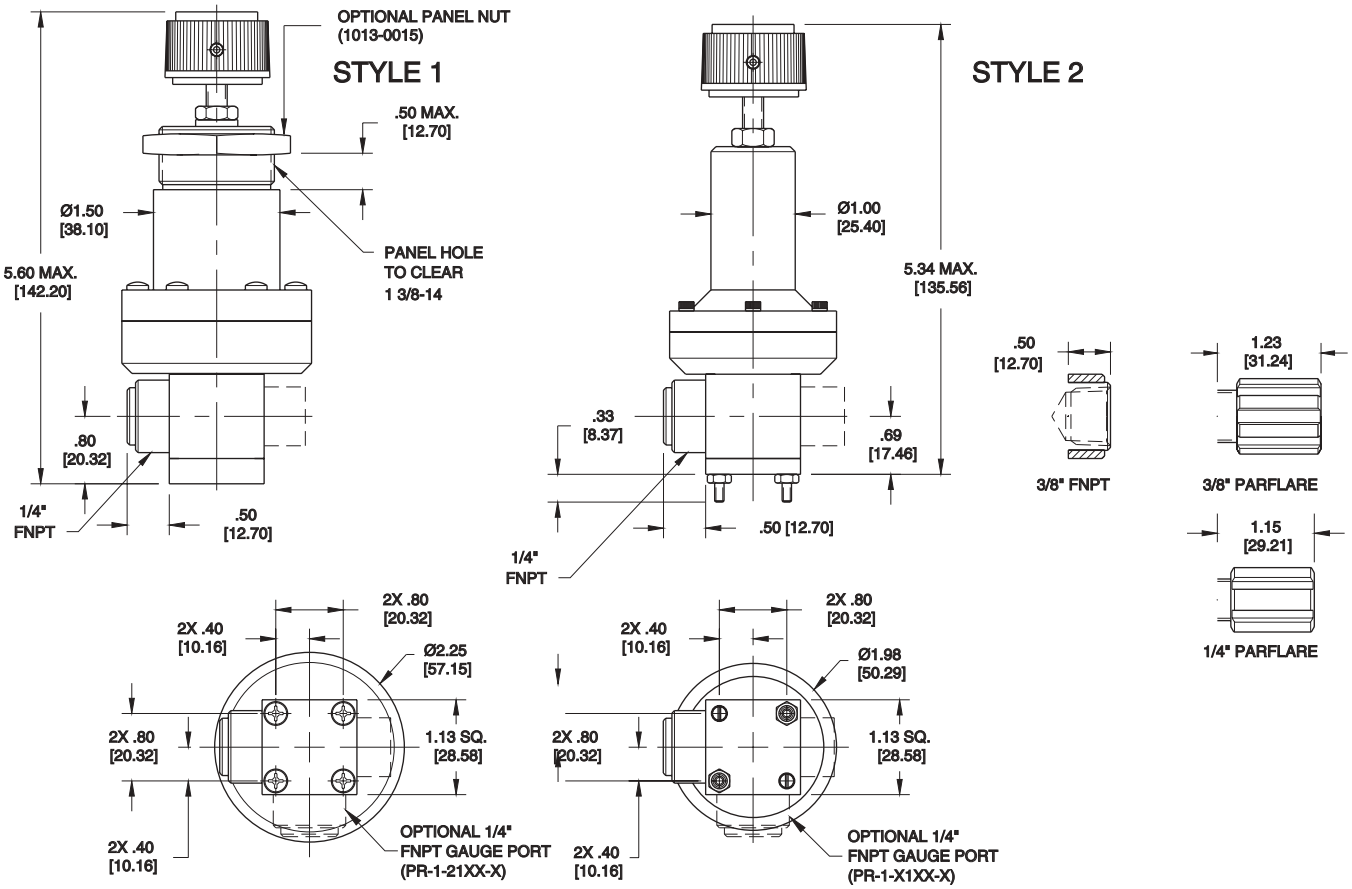
Pressure Ranges:

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



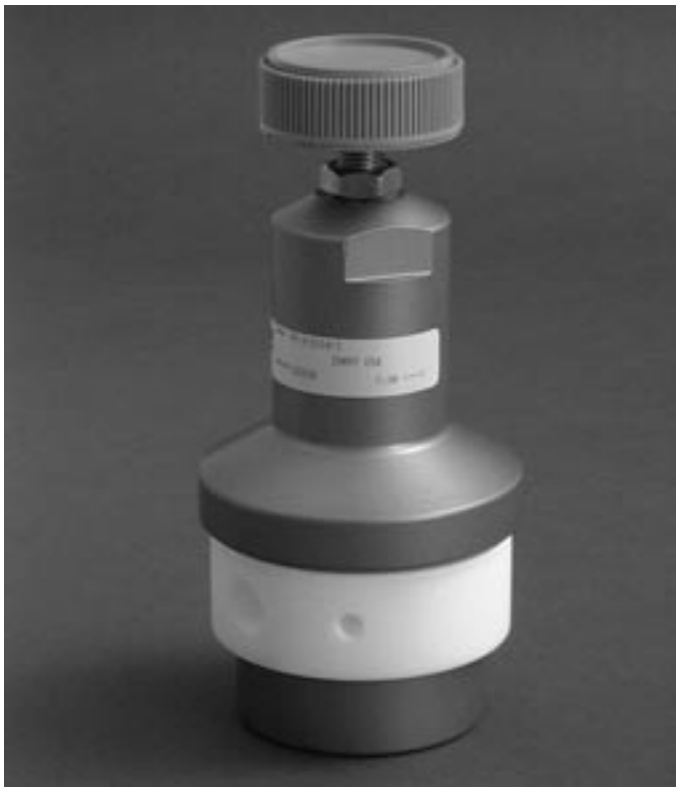
Model Number	*Style*	*Port Configuration*	*Secondary Pressure (PSIG)*	*Trim Material*
PR-1-1114-1	2	1/4" FNPT	0-30 PSIG	Anodized Aluminum
PR-1-1114-2	2	1/4" FNPT	0-60 PSIG	Anodized Aluminum
PR-1-1164-1	2	1/4" Parflare	0-30 PSIG	Anodized Aluminum
PR-1-1214-1	2	1/4" FNPT	0-30 PSIG	Anodized Aluminum
PR-1-1264-1	2	1/4" Parflare	0-30 PSIG	Anodized Aluminum
PR-1-1264-2	2	1/4" Parflare	0-60 PSIG	Anodized Aluminum
PR-1-2114-2	1	1/4" FNPT	0-60 PSIG	HDPE
PR-1-2214-1	1	1/4" FNPT	0-30 PSIG	HDPE
PR-1-2264-2	1	1/4" Parflare	0-60 PSIG	HDPE
PR-1-2266-1	1	3/8" Parflare	0-30 PSIG	HDPE
PR-1-2266-2	1	3/8" Parflare	0-60 PSIG	HDPE
PR-1-4216-2	2	3/8" FNPT	0-60 PSIG	PVDF Coated Aluminum
PR-1-4264-2	2	1/4" Parflare	0-60 PSIG	PVDF Coated Aluminum

To add panel nut (1013-0015) to Style 1 add -P to final suffix of model number (i.e. PR-1-2114-2-P). Parflare models are supplied with PVDF nuts. For PFA nuts add -T to final suffix of model number (i.e. PR-1-1164-1-T). Please consult factory for other available configurations or trim materials.

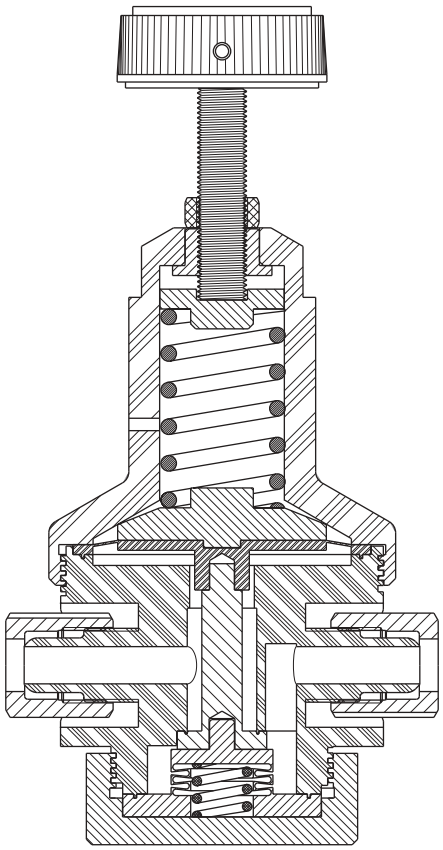
PR-3 Pressure Regulator

Product Overview

The PR-3 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 - PTFE, Modified PTFE
Non Wetted Surfaces - Anodized Aluminum, ABS, Brass, SS, PVDF, SS Spring, Chrome Vanadium Die Spring, HDPE.

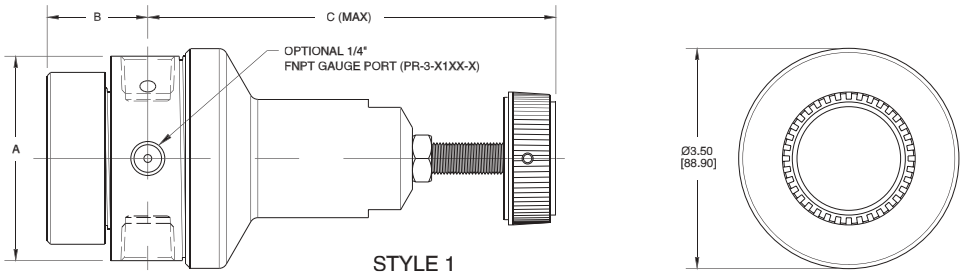
Pressure Ranges:

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

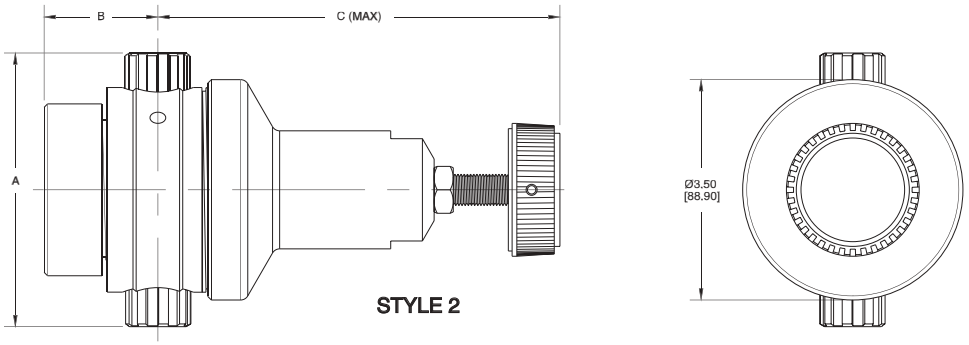
Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges:

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



STYLE 1



STYLE 2

		DIMENSIONS (in.)			DIMENSIONS (mm.)		
	STYLE	A	B	C	A	B	C
PR-3-1118-1	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61
PR-3-1118-2	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61
PR-3-1168-2	2	Ø 4.35	1.81	6.63	Ø 110.49	45.97	168.40
PR-3-1218-1	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61
PR-3-1218-2	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61
PR-3-1268-1	2	Ø 4.35	1.81	6.63	Ø 110.49	45.97	168.40
PR-3-11116-1	1	Ø 4.50	2.45	7.92	Ø 114.30	62.23	201.17
PR-3-11116-2	1	Ø 4.50	2.45	7.92	Ø 114.30	62.23	201.17
PR-3-3118-1	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61
PR-3-3118-2	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61
PR-3-3168-2	2	Ø 4.35	1.81	6.63	Ø 110.49	45.97	168.40
PR-3-3268-2	2	Ø 4.35	1.81	6.63	Ø 110.49	45.97	168.40
PR-3-4118-1	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61
PR-3-4118-2	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61
PR-3-4218-1	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61
PR-3-4218-2	1	Ø 3.25	1.60	6.52	Ø 82.55	40.64	165.61

Model Number	*Style*	*Port Configuration*	*Secondary Pressure (PSIG)*	*Trim Material*
PR-3-1118-1	1	1/2" FNPT	0-30 PSIG	Anodized Aluminum
PR-3-1118-2	1	1/2" FNPT	0-60 PSIG	Anodized Aluminum
PR-3-1168-2	2	1/2" Parflare	0-60 PSIG	Anodized Aluminum
PR-3-1218-1	1	1/2" FNPT	0-30 PSIG	Anodized Aluminum
PR-3-1218-2	1	1/2" FNPT	0-60 PSIG	Anodized Aluminum
PR-3-1268-1	2	1/2 Parflare	0-30 PSIG	Anodized Aluminum
PR-3-11116-1	1	1" FNPT	0-30 PSIG	Anodized Aluminum
PR-3-11116-2	1	1" FNPT	0-60 PSIG	Anodized Aluminum
PR-3-3118-1	1	1/2" FNPT	0-30 PSIG	PVDF
PR-3-3118-2	1	1/2" FNPT	0-60 PSIG	PVDF
PR-3-3168-2	2	1/2" Parflare	0-60 PSIG	PVDF
PR-3-3268-2	2	1/2" Parflare	0-60 PSIG	PVDF
PR-3-4118-1	1	1/2" FNPT	0-30 PSIG	PVDF Coated Aluminum
PR-3-4118-2	1	1/2" FNPT	0-60 PSIG	PVDF Coated Aluminum
PR-3-4218-1	1	1/2" FNPT	0-30 PSIG	PVDF Coated Aluminum
PR-3-4218-2	1	1/2" FNPT	0-60 PSIG	PVDF Coated Aluminum

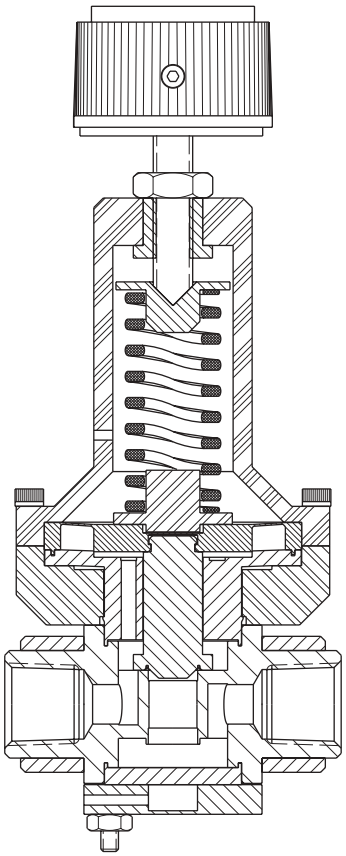
Parflare models are supplied with PVDF nuts. For PFA add -T to final suffix of model number (i.e. PR-3-3268-2-T). Please consult factory for other available configurations or trim materials.

BR-1 Back Pressure Regulator

Product Overview

The BR-1 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 machined PTFE body with precision machined seats.

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

Pressure Ranges:

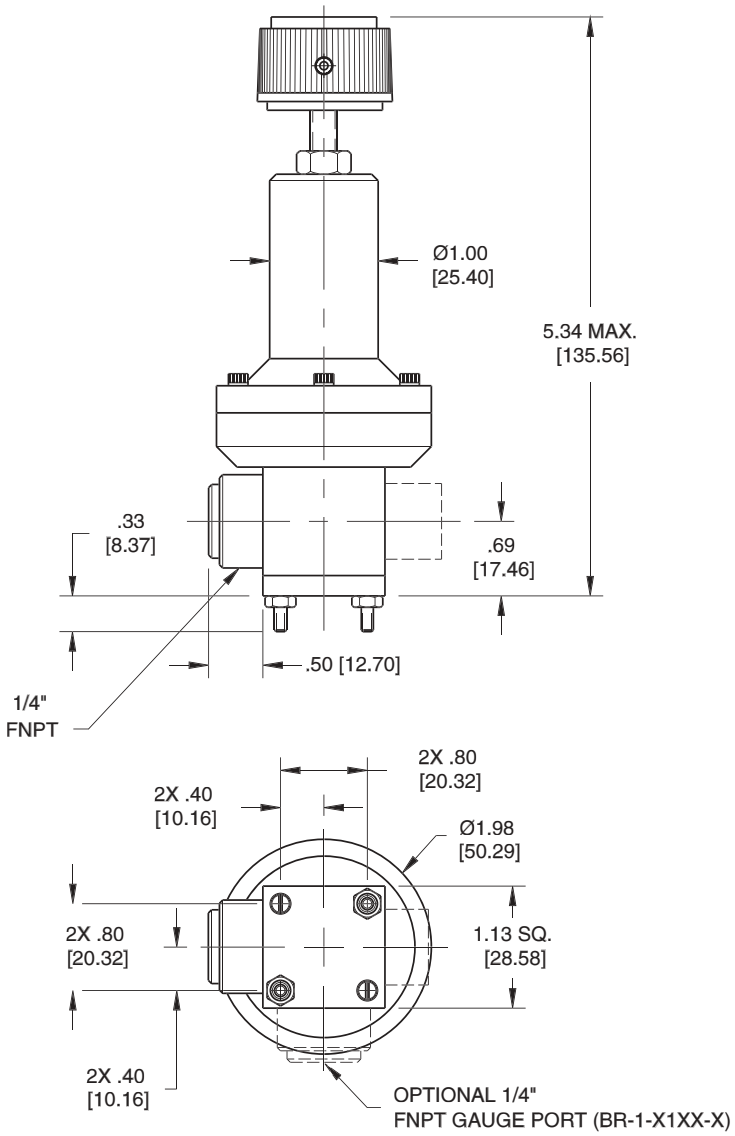
Max Primary Pressure - 120 PSIG (8.3 bar)
Secondary Pressure Options - 0 to 30 PSIG and 0 to 60 PSIG

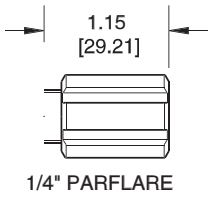
Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges:

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

BRACKETED DIMENSIONS ARE IN mm.





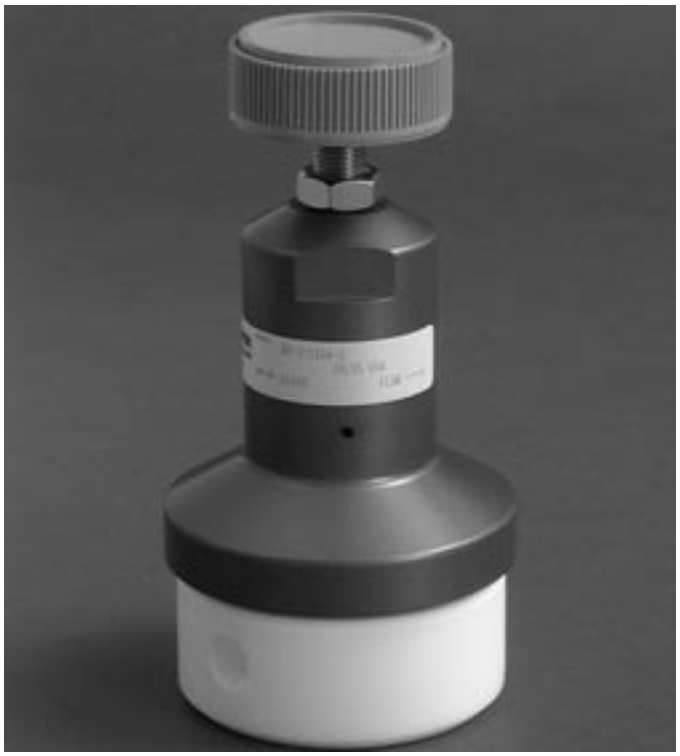
Model Number	*Port Configuration*	*Secondary Pressure (PSIG)*	*Trim Material*
BR-1-1114-1	1/4" FNPT	0-30 PSIG	Anodized Aluminum
BR-1-1114-2	1/4" FNPT	0-60 PSIG	Anodized Aluminum
BR-1-1214-1	1/4" FNPT	0-30 PSIG	Anodized Aluminum
BR-1-1214-2	1/4" FNPT	0-60 PSIG	Anodized Aluminum
BR-1-1164-1	1/4" Parflare	0-30 PSIG	Anodized Aluminum

Parflare models are supplied with PVDF nuts. For PFA add -T to final suffix of model number (i.e. BR-1-1164-1-T). Please consult factory for other available configurations or trim materials.

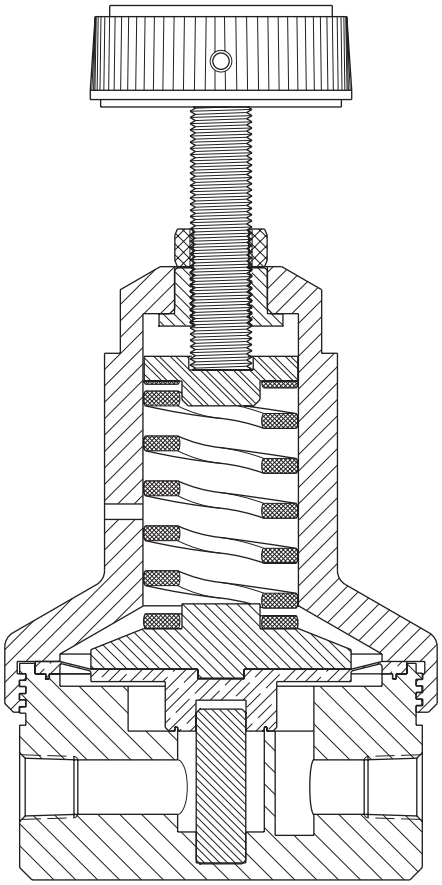
BR-3 Back Pressure Regulator

Product Overview

The BR-3 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.**
Non-relieving design requires a 10 psi differential across the valve.	**Stabilizes system. Ideal for DI water systems.**
	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.

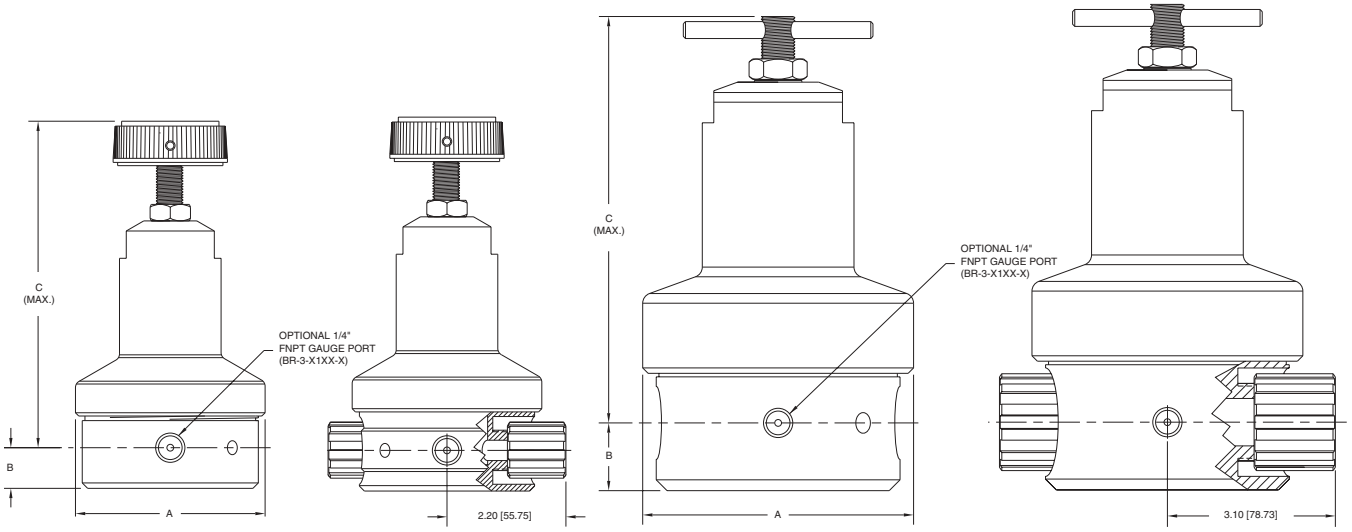
Pressure Ranges:

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



STYLE 1 FNPT | STYLE 1 1/2" PARFLARE | STYLE 2 FNPT | STYLE 2 1" PARFLARE

		DIMENSIONS (in.)			DIMENSIONS (mm.)		
	STYLE	A	B	C	A	B	C
BR-3-1114-1	1	Ø 3.50	.75	6.52	Ø 88.90	19.05	165.61
BR-3-1114-2	1	Ø 3.50	.75	6.52	Ø 88.90	19.05	165.61
BR-3-1118-1	1	Ø 3.50	.75	6.52	Ø 88.90	19.05	165.61
BR-3-1118-2	1	Ø 3.50	.75	6.52	Ø 88.90	19.05	165.61
BR-3-1168-2	1	Ø 3.50	.75	6.65	Ø 88.90	19.05	168.91
BR-3-3114-1	1	Ø 3.50	.75	6.52	Ø 88.90	19.05	165.61
BR-3-3118-1	1	Ø 3.50	.75	6.52	Ø 88.90	19.05	165.61
BR-3-3118-2	1	Ø 3.50	.75	6.52	Ø 88.90	19.05	165.61
BR-3-3268-1	1	Ø 3.50	.75	6.65	Ø 88.90	19.05	168.91
BR-3-4118-1	1	Ø 3.50	.75	6.52	Ø 88.90	19.05	165.61
BR-3-4118-2	1	Ø 3.50	.75	6.52	Ø 88.90	19.05	165.61
BR-3-4268-1	1	Ø 3.50	.75	6.65	Ø 88.90	19.05	168.91
BR-3-41116-1	2	Ø 5.00	1.25	7.94	Ø 127.00	31.75	201.68
BR-3-41116-2	2	Ø 5.00	1.25	7.94	Ø 127.00	31.75	201.68
BR-3-42616-1	2	Ø 5.00	1.25	8.15	Ø 127.00	31.75	207.01

Model Number	*Port Configuration*	*Secondary Pressure (PSIG)*	*Trim Material*
BR-3-1114-1	1/4" FNPT	0-30 PSIG	Anodized Aluminum
BR-3-1114-2	1/4" FNPT	0-60 PSIG	Anodized Aluminum
BR-3-1118-1	1/2" FNPT	0-30 PSIG	Anodized Aluminum
BR-3-1118-2	1/2" FNPT	0-60 PSIG	Anodized Aluminum
BR-3-1168-2	1/2" Parflare	0-60 PSIG	Anodized Aluminum
BR-3-3114-1	1/4" FNPT	0-30 PSIG	PVDF
BR-3-3118-1	1/2" FNPT	0-30 PSIG	PVDF
BR-3-3118-2	1/2" FNPT	0-30 PSIG	PVDF
BR-3-3268-1	1/2" Parflare	0-30 PSIG	PVDF
BR-3-4118-1	1/2" FNPT	0-30 PSIG	PVDF Coated Aluminum
BR-3-4118-2	1/2" FNPT	0-60 PSIG	PVDF Coated Aluminum
BR-3-4268-1	1/2" Parflare	0-30 PSIG	PVDF Coated Aluminum
BR-3-41116-1	1" FNPT	0-30 PSIG	PVDF Coated Aluminum
BR-3-41116-2	1" FNPT	0-60 PSIG	PVDF Coated Aluminum
BR-3-42616-1	1" Parflare	0-30 PSIG	PVDF Coated Aluminum

Parflare models are supplied with PVDF nuts. For PFA add -T to final suffix of model number (i.e. BR-3-42616-1-T). Please consult factory for other available configurations or trim materials.

FM-3 Flowmeter

Product Overview

The FM-3 Flowmeter is designed for all high purity applications where precise measurement and control of fluids is required. The FM-3 Flowmeter utilizes precision machined PTFE bodies and needle valve componets and a molded high purity PFA barrel. Models available for precision metering from 0-5000 cc/min. Rather than typical face-to-face seals, the FM-3 utilizes tongue and groove technology to seal the barrel to the bodies, creating a more postive seal. An integral needle valve is also available. Panel nut mounting is standard regardless of the type of end connection.

Features	Benefits
Tongue and groove barrel to body seals.	**Zero leakage and allows 360 degree port orientation.**
Molded PFA barrel.	**PFA is most chemically compatible and its translucency makes for precise flow measurement.**
Numerous end connections and flow rates.	**Versatility to provide exact model for application.**

Specifications

Materials of Construction:

Wetted Surfaces - PFA and PTFE
External Surfaces - PTFE, PFA, and PVDF

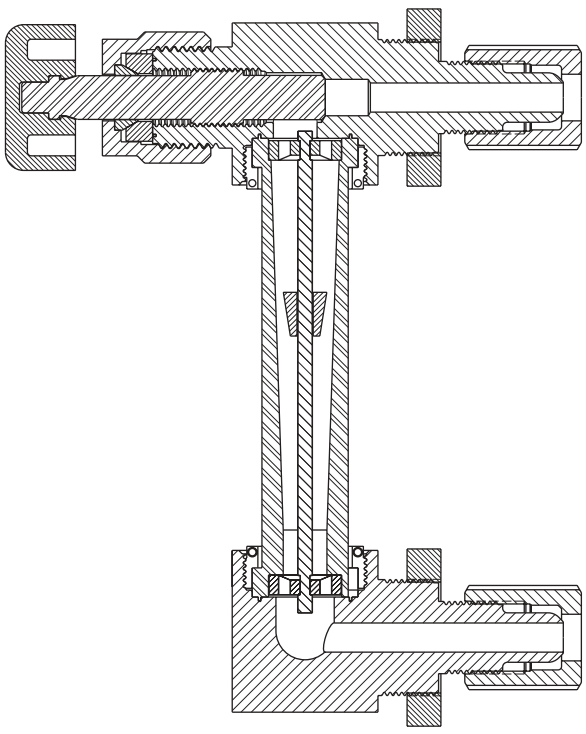
Pressure Ranges:

0 PSIG (0 mbar) to 120 PSIG (8.3 bar)

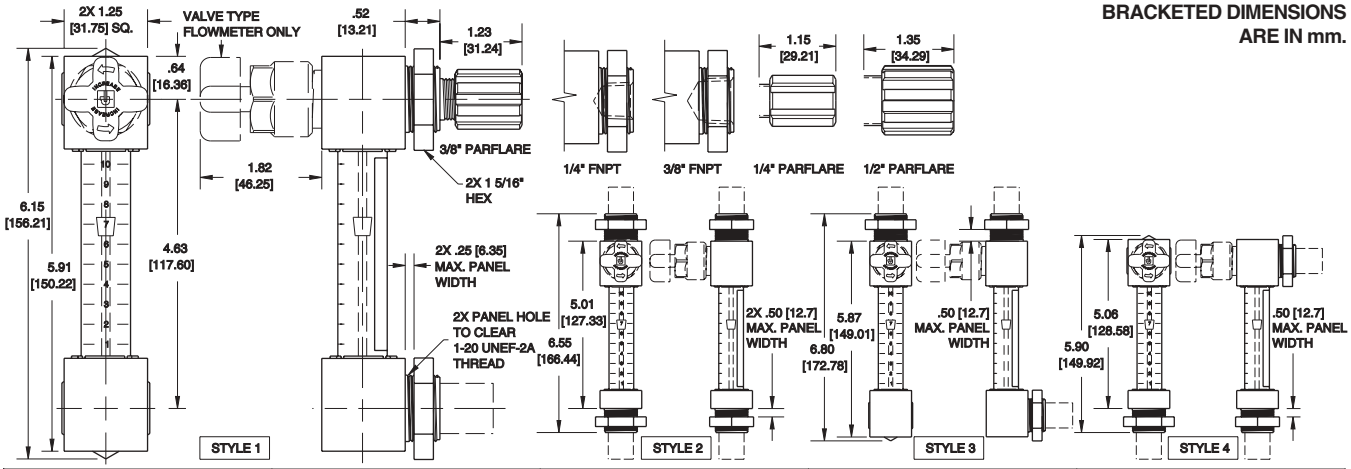
Pressure range above is for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges:

0° - 212° F (-17° - 100° C) Ambient
0° - 266° F (-17° - 130° C) Fluid



BRACKETED DIMENSIONS
ARE IN mm.

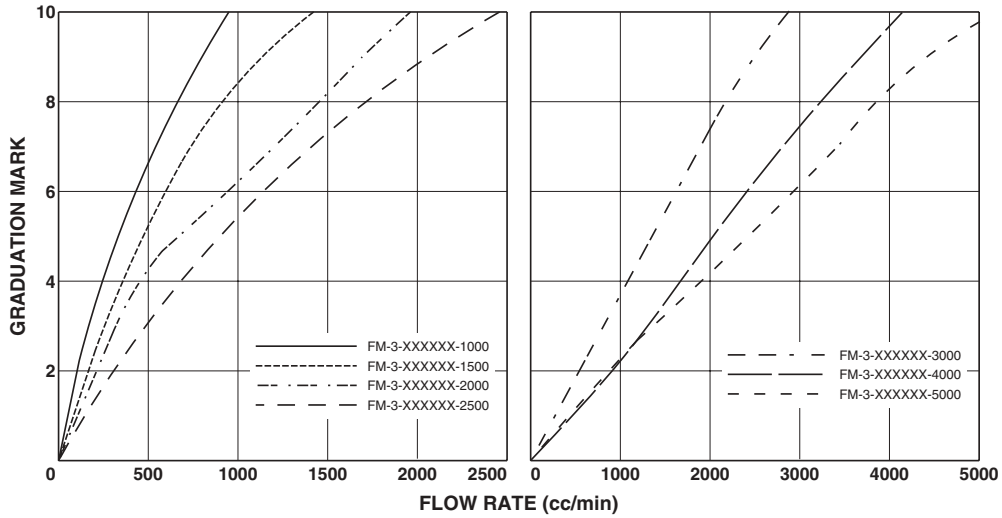


Model Number	*Style*	*Needle Valve*	*Inlet Port*	*Outlet Port*
FM-3-101144-XXXX	1	N	1/4" FNPT	1/4" FNPT
FM-3-101166-XXXX	1	N	3/8" FNPT	3/8" FNPT
FM-3-106644-XXXX	1	N	1/4" Parflare	1/4" Parflare
FM-3-106666-XXXX	1	N	3/8" Parflare	3/8" Parflare
FM-3-106688-XXXX	1	N	1/2" Parflare	1/2" Parflare
FM-3-111144-XXXX	1	Y	1/4" FNPT	1/4" FNPT
FM-3-111166-XXXX	1	Y	3/8" FNPT	3/8" FNPT
FM-3-116644-XXXX	1	Y	1/4" Parflare	1/4" Parflare
FM-3-116666-XXXX	1	Y	3/8" Parflare	3/8" Parflare
FM-3-116688-XXXX	1	Y	1/2" Parflare	1/2" Parflare
FM-3-201144-XXXX	2	N	1/4" FNPT	1/4" FNPT
FM-3-201166-XXXX	2	N	3/8" FNPT	3/8" FNPT
FM-3-206644-XXXX	2	N	1/4" Parflare	1/4" Parflare
FM-3-206666-XXXX	2	N	3/8" Parflare	3/8" Parflare
FM-3-206688-XXXX	2	N	1/2" Parflare	1/2" Parflare
FM-3-211144-XXXX	2	Y	1/4" FNPT	1/4" FNPT
FM-3-211166-XXXX	2	Y	3/8" FNPT	3/8" FNPT
FM-3-216644-XXXX	2	Y	1/4" Parflare	1/4" Parflare
FM-3-216666-XXXX	2	Y	3/8" Parflare	3/8" Parflare
FM-3-216688-XXXX	2	Y	1/2" Parflare	1/2" Parflare

To complete model numbers above please refer to table below. Please consult factory for styles 3 and 4.

SUFFIX	FLOW RANGE
1000	100 - 1,000 cc/min
1500	170 - 1,500 cc/min
2000	250 - 2,000 cc/min
2500	300 - 2,500 cc/min
3000	600 - 3,000 cc/min
4000	1,100 - 4,000 cc/min
5000	1,200 - 5,000 cc/min

FLOW CHARACTERISTICS



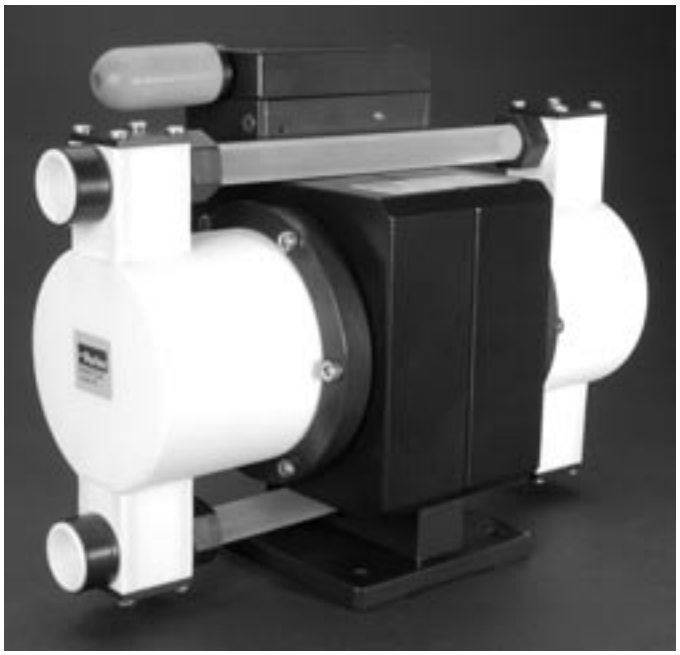
Parker Instrumentation

Parker Hannifin Corporation
Partek/Atlantic
Tucson, AZ

PP Pneumatic Bellows Pump

Product Overview

The Pnematic Bellows Pumps are designed for use in ultra- pure water and aggressive chemical applications. The design utilizes a double bellows design to provide reliable continuous or intermittent duty. The high bellows stroke rate minimizes pulsation and provides smooth more consistent delivery of media.



Features

Precision machined bellows manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE or PFA bellows.

High bellows stroke rate.

PTFE Ball check used to cycle between bellows to provide maximum efficiency.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces pulsation and eliminates need for dampener.

Specifications

Materials of Construction:

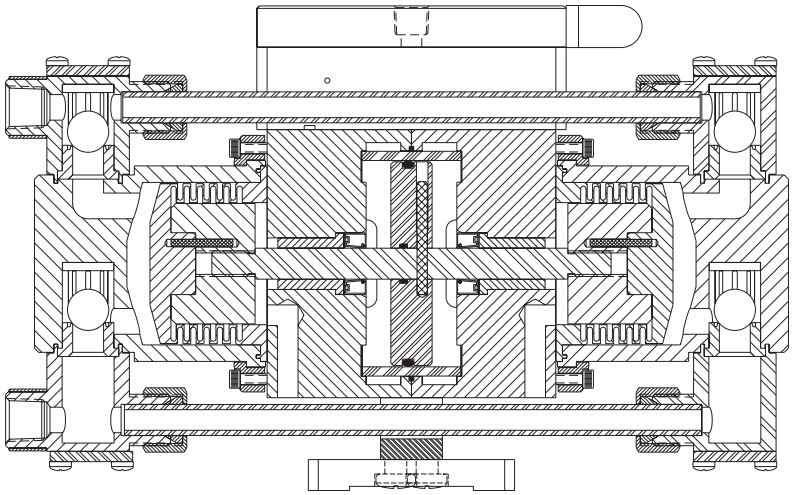
Wetted Surfaces - PTFE, PFA
Non Wetted Surfaces - Fluoroloy “A” Rod, Nitrile, PVDF Coated 6061-T6 Aluminum Trim, Stainless Steel.

Pressure Ranges:

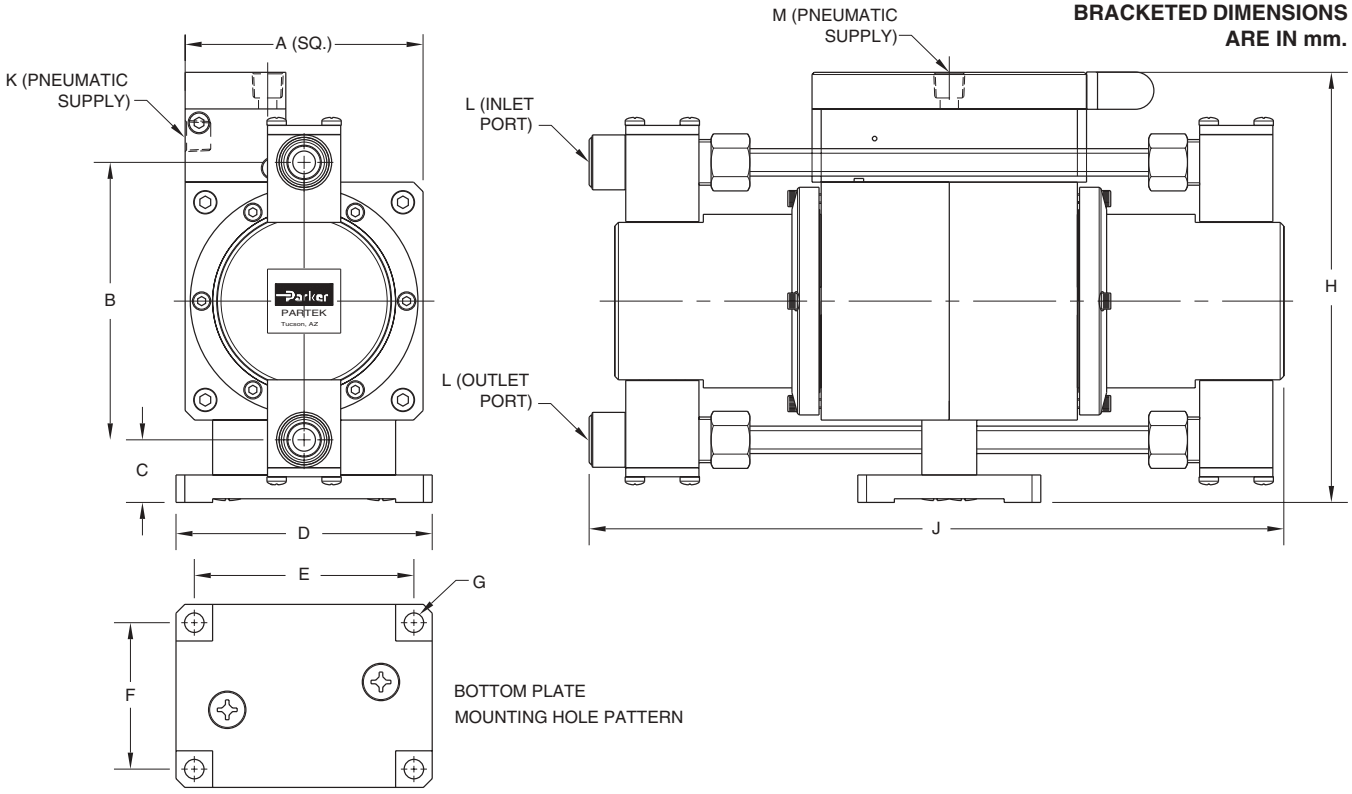
Max Driver Supply Pressure - 60 PSIG (4.1 bar)
Max Operating Pressure - 60 PSIG (4.1 bar)

Temperature Ranges:

-60° - 212° F (-51° - 100° C) Ambient
-60° - 400° F (-51° - 204° C) Fluid



BRACKETED DIMENSIONS ARE IN mm.



DIMENSIONS (in.)

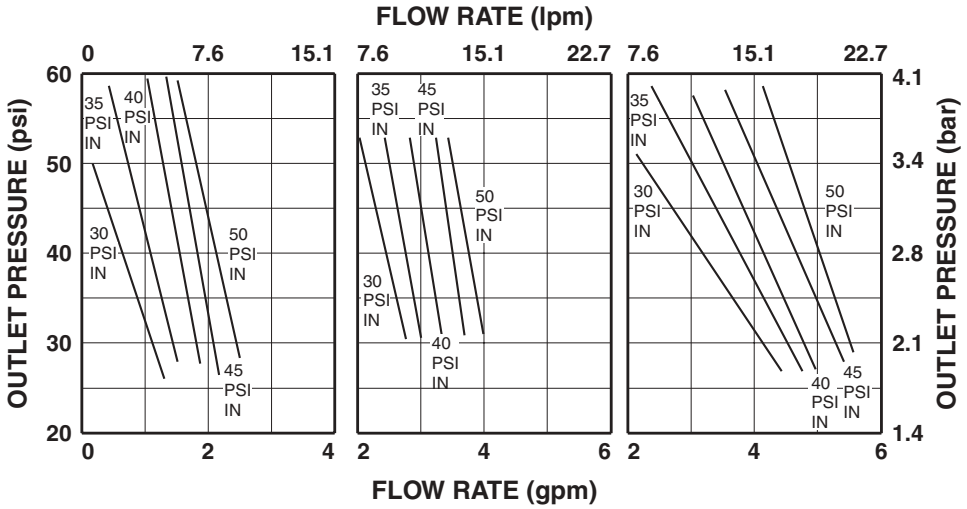
	A	B	C	D	E	F	G	H	J	K	L	M
PP-04	3.25	3.79	0.86	3.50	3.00	2.00	Ø .266	5.88	9.49	N/A	1/4" FNPT	1/8" FNPT
PP-10	4.00	4.55	1.10	4.00	3.50	2.25	Ø .266	6.88	10.34	N/A	3/8" FNPT	1/8" FNPT
PP-20	5.00	5.55	1.10	4.00	3.50	3.00	Ø .266	8.39	11.06	1/4" FNPT	1/2" FNPT	N/A

DIMENSIONS (mm.)

A	B	C	D	E	F	G	H	J	K	L	M
82.55	96.27	21.84	88.90	76.20	50.80	Ø 6.76	149.35	241.05	N/A	1/4" FNPT	1/8" FNPT
101.60	115.57	27.94	101.60	88.90	57.15	Ø 6.76	174.75	262.63	N/A	3/8" FNPT	1/8" FNPT
127.00	140.97	27.94	101.60	88.90	76.20	Ø 6.76	213.10	280.92	1/4" FNPT	1/2" FNPT	N/A

Model Number	*Volume*	*End Connection Size*
PP-04	4 LITER	1/4" FNPT
PP-10	10 LITER	3/8" FNPT
PP-20	20 LITER	1/2" FNPT

4 LTR **10 LTR** **20 LTR**



Parker Instrumentation

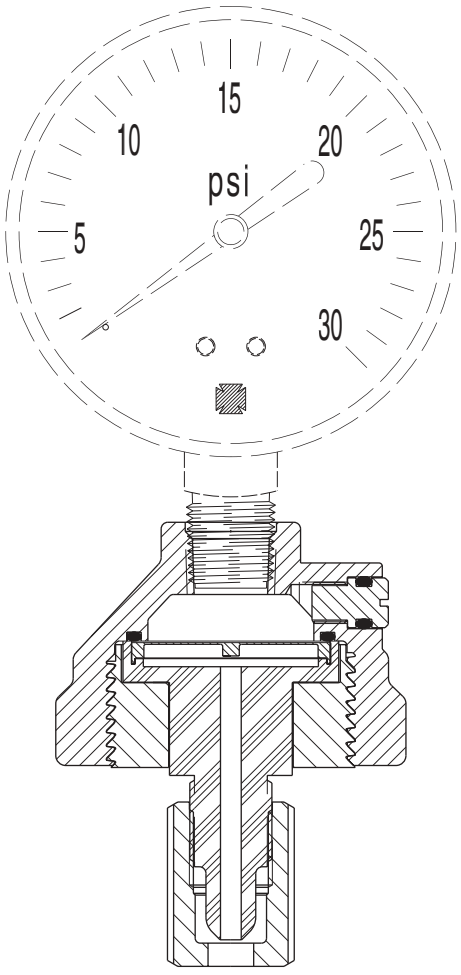
Parker Hannifin Corporation
Partek/Atlantic
Tucson, AZ

GP Gauge Protector

Product Overview

The GP Gauge Protectors are designed for use in high purity semiconductor applications, and are also ideally suited for use in ultra-pure water and aggressive chemicals. They can be fitted with customer specified, customer supplied, or factory supplied gauges. They can be filled with various customer specified liquids. Standard isolation fluid is a 50/50 mix of deionized water and Isopropyl Alcohol.

Features	Benefits
One piece precision machined diaphragm manufactured from the latest technology modified PTFE, provides over five times the flexural life as compared to conventional PTFE.	**Higher cycle life resulting in less downtime and lower replacement costs.**
PTFE and PFA wetted surfaces.	**Eliminates contamination and fluid compatibility issues.**
Tongue and groove diaphragm to body seal.	**Assures barrier between operating fluid and isolation media.**
Suitable for pressure, vacuum, and dual range operation.	**Reduces number of device installations for varying pressure ranges.**



Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE
External Surfaces - PFA, PVDF (all but GP-X1X-XX), HDPE (GP-X1X-XX only), EPR (Fill screw seal)

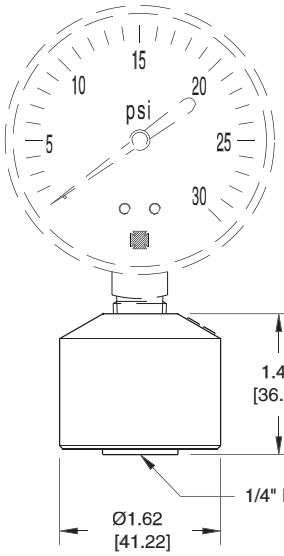
Pressure Range:

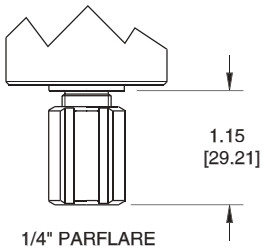
27" Hg vacuum (913 mbar) to 160 PSIG (11 bar)

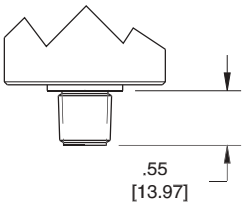
Pressure ranges above are for operation at ambient temperature. For use at higher temperatures consult Pressure/ Temperature chart on page 3.

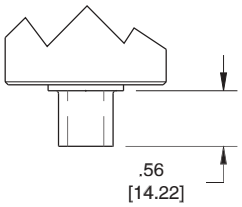
Temperature Ranges:

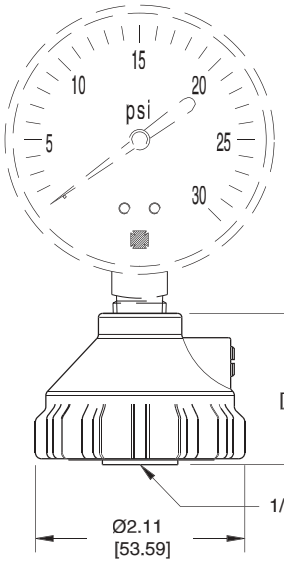
0° - 212° F (-17° -100° C) Ambient
0° - 400° F (-17° - 204° C) Fluid





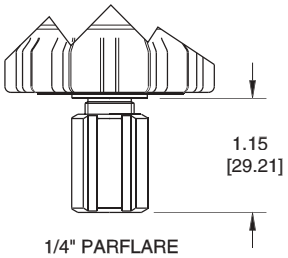


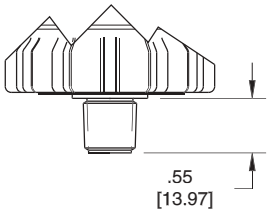


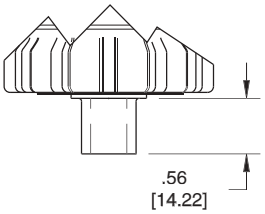


STYLE 2

BRACKETED DIMENSIONS ARE IN mm.







Model Number	*Housing Style*	*Port Configuration*	*Gauge Pressure (PSIG)*
GP-110-00	1	1/4" FNPT	NONE
GP-111-01	1	1/4" FNPT	0-30 PSIG
GP-111-02	1	1/4" FNPT	0-60 PSIG
GP-111-03	1	1/4" FNPT	0-160 PSIG
GP-130-00	2	1/4" FNPT	NONE
GP-131-01	2	1/4" FNPT	0-30 PSIG
GP-131-02	2	1/4" FNPT	0-60 PSIG
GP-131-03	2	1/4" FNPT	0-160 PSIG
GP-510-00	1	1/4" MNPT	NONE
GP-511-01	1	1/4" MNPT	0-30 PSIG
GP-511-02	1	1/4" MNPT	0-60 PSIG
GP-511-03	1	1/4" MNPT	0-160 PSIG
GP-530-00	2	1/4" MNPT	NONE
GP-531-01	2	1/4" MNPT	0-30 PSIG

Model Number	*Housing Style*	*Port Configuration*	*Gauge Pressure (PSIG)*
GP-531-02	2	1/4" MNPT	0-60 PSIG
GP-531-03	2	1/4" MNPT	0-160 PSIG
GP-610-00	1	1/4" Parflare	NONE
GP-611-01	1	1/4" Parflare	0-30 PSIG
GP-611-02	1	1/4" Parflare	0-60 PSIG
GP-611-03	1	1/4" Parflare	0-160 PSIG
GP-630-00	2	1/4" Parflare	NONE
GP-631-01	2	1/4" Parflare	0-30 PSIG
GP-631-02	2	1/4" Parflare	0-60 PSIG
GP-631-03	2	1/4" Parflare	0-160 PSIG
GP-730-00	2	1/4" Parbond	NONE
GP-731-01	2	1/4" Parbond	0-30 PSIG
GP-731-02	2	1/4" Parbond	0-60 PSIG
GP-731-03	2	1/4" Parbond	0-160 PSIG

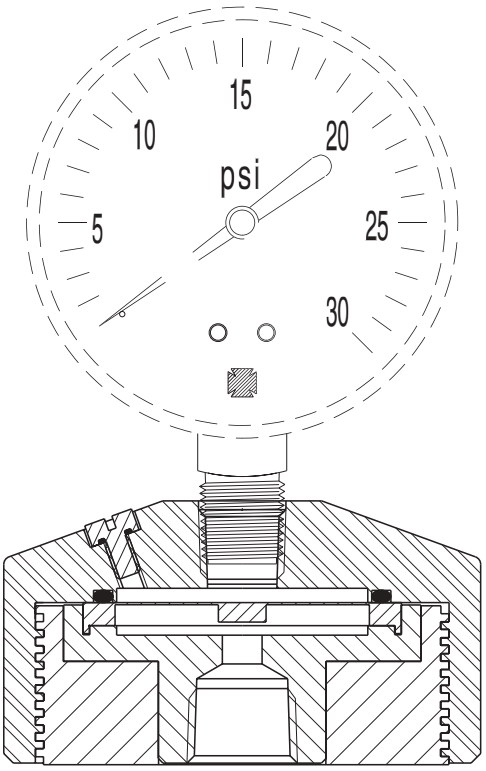
Above Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number. Please consult factory for other available configurations or custom assemblies. All factory supplied gauges are standard brass internal construction with steel case and glass face.

GPL Gauge Protector

Product Overview

The GPL Gauge Protectors are designed for use in high purity Semiconductor applications, and are also ideally suited for use in ultra-pure water and aggressive chemicals. The large diaphragm design offers a higher degree of accuracy as compared to standard units. They can be fitted with customer specified, customer supplied, or factory supplied gauges. They can be filled with various customer specified liquids. Standard isolation fluid is a 50/50 mix of deionized water and Isopropyl Alcohol.

Features	Benefits
One piece precision machined diaphragm manufactured from the latest technology modified PTFE, provides over five times the flexural life as compared to conventional PTFE.	**Higher cycle life resulting in less downtime and lower replacement costs.**
PTFE and PFA wetted surfaces.	**Eliminates contamination and fluid compatibility issues.**
Tongue and groove diaphragm to body seal.	**Assures barrier between operating fluid and isolation media.**
Suitable for pressure, vacuum, and dual range operation.	**Reduces number of device installations for varying pressure ranges.**



Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE
External Surfaces - PFA, PVDF (all but GP-X1X-XX), HDPE (GP-X1X-XX only), EPR (Fill screw seal)

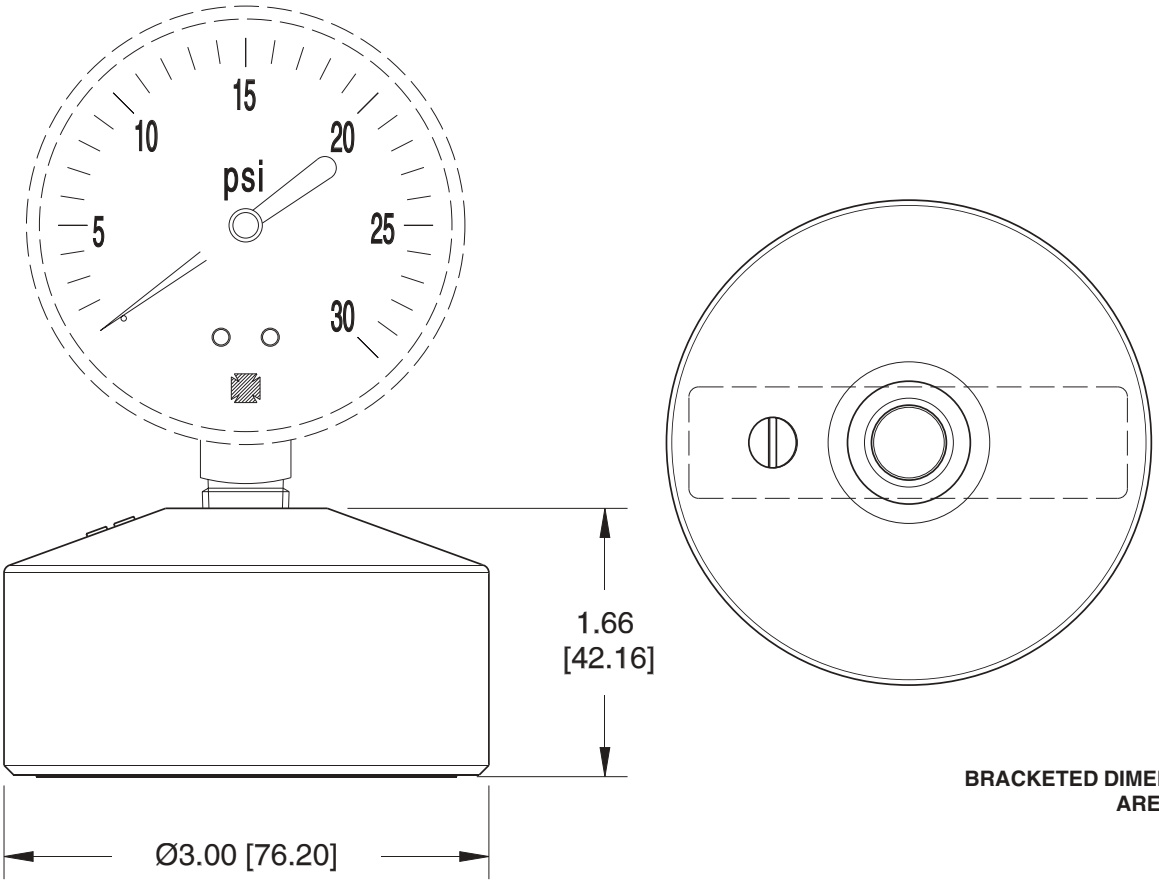
Pressure Range:

27" Hg vacuum (913 mbar) to 160 PSIG (11 bar)

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

Temperature Ranges:

0° - 212° F (-17° -100° C) Ambient
0° - 400° F (-17° - 204° C) Fluid



BRACKETED DIMENSIONS ARE IN mm.

Model Number	*Housing Material*	*Gauge Port Configuration*	*Process Port Configuration*	*Gauge Pressure (PSIG)*
GPL-110-00	HDPE	1/2" FNPT	1/2" FNPT	NONE
GPL-110-00-03	HDPE	3/8" FNPT	1/4" FNPT	NONE
GPL-110-00-05	HDPE	3/8" FNPT	1/2" FNPT	NONE
GPL-110-00-07	HDPE	1/4" FNPT	1/2" FNPT	NONE
GPL-110-00-10	HDPE	1/4" FNPT	1/4" FNPT	NONE
GPL-130-00	PVDF	1/4" FNPT	1/2" FNPT	NONE
GPL-130-00-01	PVDF	1/2" FNPT	1/2" FNPT	NONE
GPL-130-00-10	PVDF	1/4" FNPT	1/4" FNPT	NONE

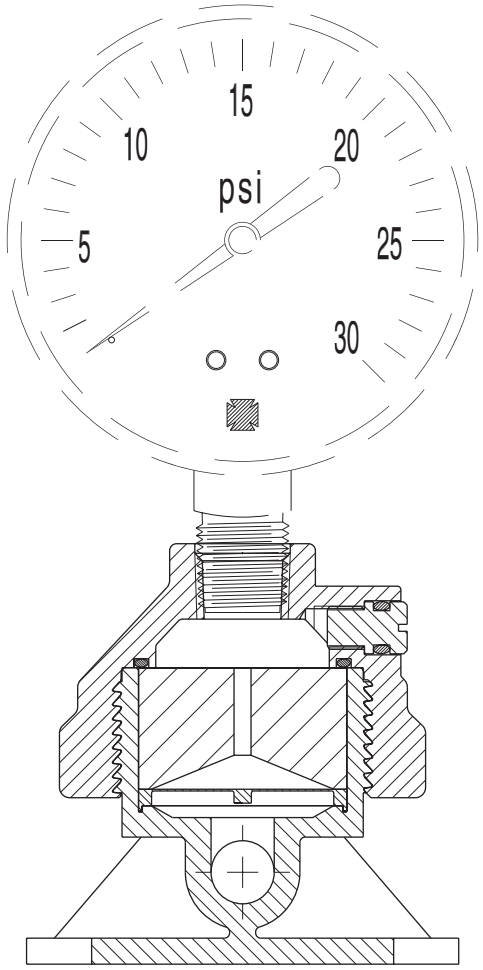
Please consult factory for other available configurations or custom assemblies.

GPIL In-line Gauge Protector

Product Overview

The GPIL In-line Gauge Protectors are designed for use in high purity Semiconductor applications, and are also ideally suited for use in ultra-pure water and aggressive chemicals. The In-line design allows for quick cut-in installation and helps prevent entrapment of fluids. They can be fitted with customer specified, customer supplied, or factory supplied gauges. They can be filled with various customer specified liquids. Standard isolation fluid is a 50/50 mix of deionized water and Isopropyl Alcohol.

Features	Benefits
One piece precision. machined diaphragm manufactured from the. latest technology modified PTFE, provides over five times the flexural life as compared to conventional PTFE.	**Higher cycle life resulting in less downtime and lower replacement costs.**
Modified PTFE and PFA wetted surfaces.	**Eliminates contamination and fluid compatibility issues.**
Tongue and groove diaphragm to body seal.	**Assures barrier between operating fluid and isolation media.**
Suitable for pressure, vacuum, and dual range operation.	**Reduces number of device installations for varying pressure ranges.**
In-line operation.	**Reduces connections and entrapment areas.**



Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE
External Surfaces - PFA, PVDF, EPR (Fill screw seal)

Pressure Range:

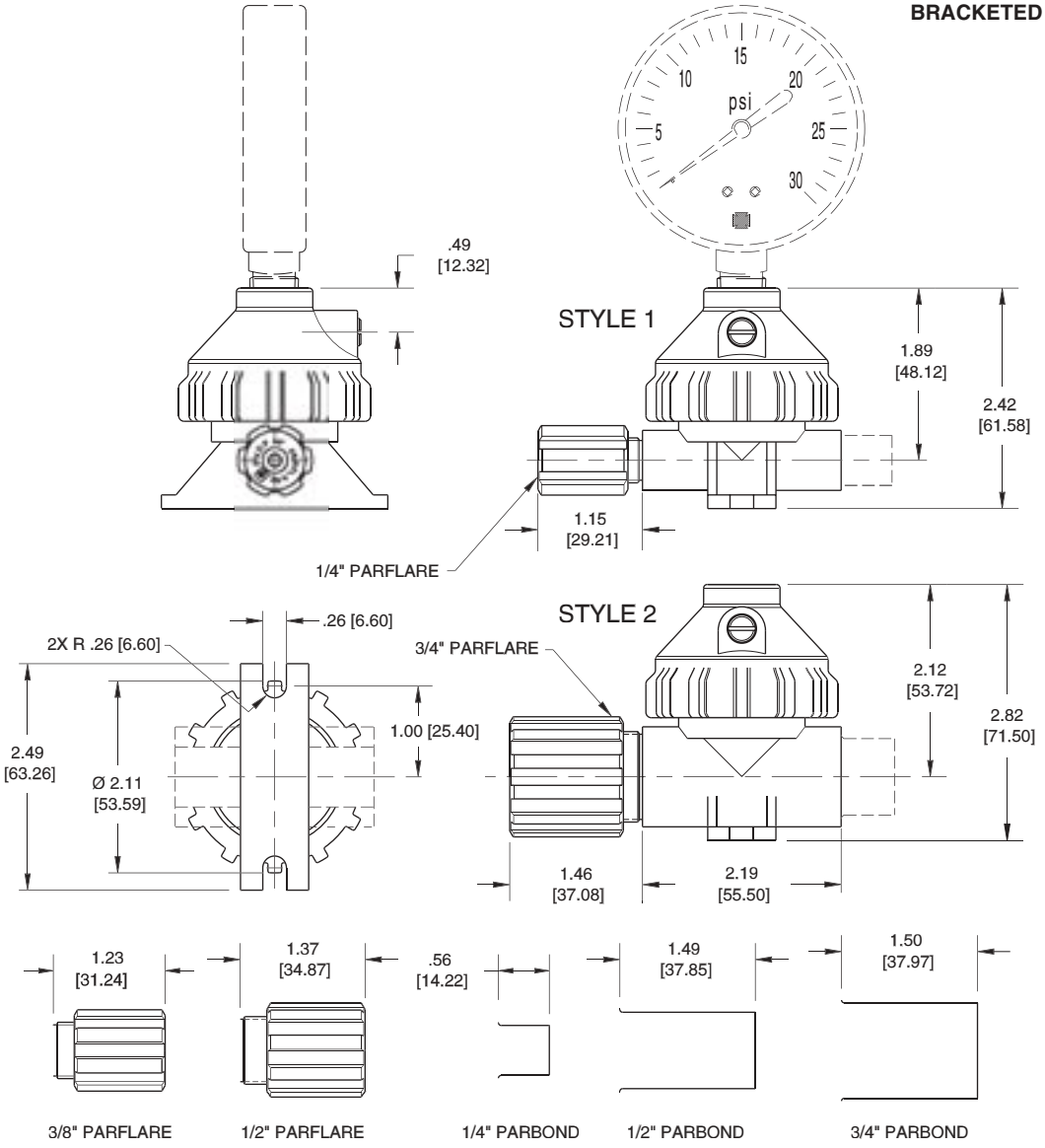
27" Hg vacuum (913 mbar) to 160 PSIG (11 bar)

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

Temperature Ranges:

0° - 212° F (17° -100° C) Ambient
0° - 400° F (17° - 204° C) Fluid

BRACKETED DIMENSIONS ARE IN mm.



Model Number	Housing Style	Port Configuration	Gauge Pressure (PSIG)
GPIL-6644-00	1	1/4" Parflare	NONE
GPIL-6644-01	1	1/4" Parflare	0-30 PSIG
GPIL-6644-02	1	1/4" Parflare	0-60 PSIG
GPIL-6644-03	1	1/4" Parflare	0-160 PSIG
GPIL-6666-00	1	3/8" Parflare	NONE
GPIL-6666-01	1	3/8" Parflare	0-30 PSIG
GPIL-6666-02	1	3/8" Parflare	0-60 PSIG
GPIL-6666-03	1	3/8" Parflare	0-160 PSIG
GPIL-7744-00	1	1/4" Parbond	NONE
GPIL-7744-01	1	1/4" Parbond	0-30 PSIG
GPIL-7744-02	1	1/4" Parbond	0-60 PSIG
GPIL-7744-03	1	1/4" Parbond	0-160 PSIG
GPIL-6688-00	2	1/2" Parflare	NONE
GPIL-6688-01	2	1/2" Parflare	0-30 PSIG

Model Number	Housing Style	Port Configuration	Gauge Pressure (PSIG)
GPIL-6688-02	2	1/2" Parflare	0-60 PSIG
GPIL-6688-03	2	1/2" Parflare	0-160 PSIG
GPIL-661212-00	2	3/4" Parflare	NONE
GPIL-661212-01	2	3/4" Parflare	0-30 PSIG
GPIL-661212-02	2	3/4" Parflare	0-60 PSIG
GPIL-661212-03	2	3/4" Parflare	0-160 PSIG
GPIL-7788-00	2	1/2" Parbond	NONE
GPIL-7788-01	2	1/2" Parbond	0-30 PSIG
GPIL-7788-02	2	1/2" Parbond	0-60 PSIG
GPIL-7788-03	2	1/2" Parbond	0-160 PSIG
GPIL-771212-00	2	3/4" Parbond	NONE
GPIL-771212-01	2	3/4" Parbond	0-30 PSIG
GPIL-771212-02	2	3/4" Parbond	0-60 PSIG
GPIL-771212-03	2	3/4" Parbond	0-160 PSIG

Above Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number. Please consult factory for other available configurations or custom assemblies. All factory supplied gauges are standard brass internal construction with steel case and glass face.

SG-1 DI Water Spray Gun

Product Overview

The SG-1 DI Water Spray Gun is suitable for use in high purity Semiconductor applications. The design utilizes a molded high purity PFA body with precision machined sealing areas. A one piece machined modified PTFE diaphragm/poppet provides excellent flexibility and long life. Wetted surfaces are PFA and modified PTFE thus eliminating the need for elastomer seals. The SG-1 is available with either 1/4" FNPT or 3/8" Parflare connections. Optional coiled hoses, with or without recirculation feature are also available.

Features	Benefits
One piece precision machined diaphragm/ poppet manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Wiper seat for positive through flow shut off and diaphragm to body seal.	**High cycle life.**
	Lower replacement costs.
	Less downtime.
Reversible/removable hanger.	**Allows hanging in either direction.**
Optional recirculation kit.	**Provides low dead volume, purity maintaining circulation.**

Specifications

Materials of Construction:

Wetted Surfaces - PFA, Modified PTFE
External Surfaces - PFA, PVDF, and PET handle retention screw.
Other Materials - Stainless steel spring

Pressure Ranges:

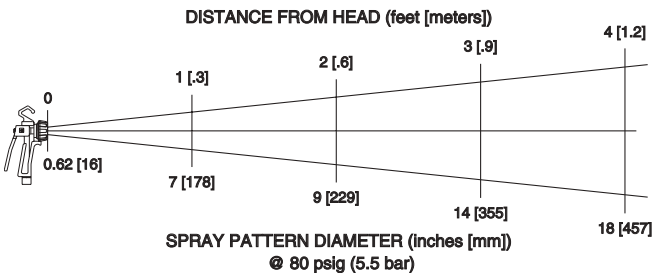
0 PSIG (0 bar) to 80 PSIG (5.5 bar)

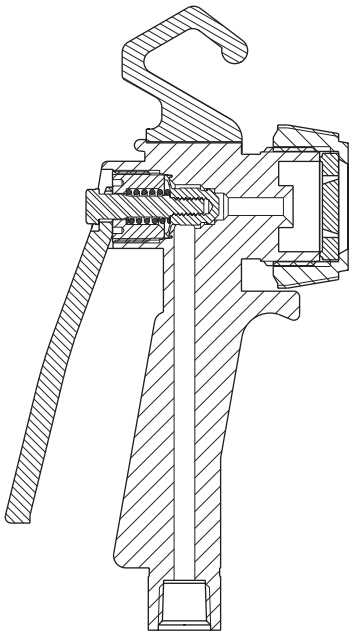
Pressure range above is for operation at ambient temperature. For use at higher temperatures consult Pressure/Temperature chart on page 3.

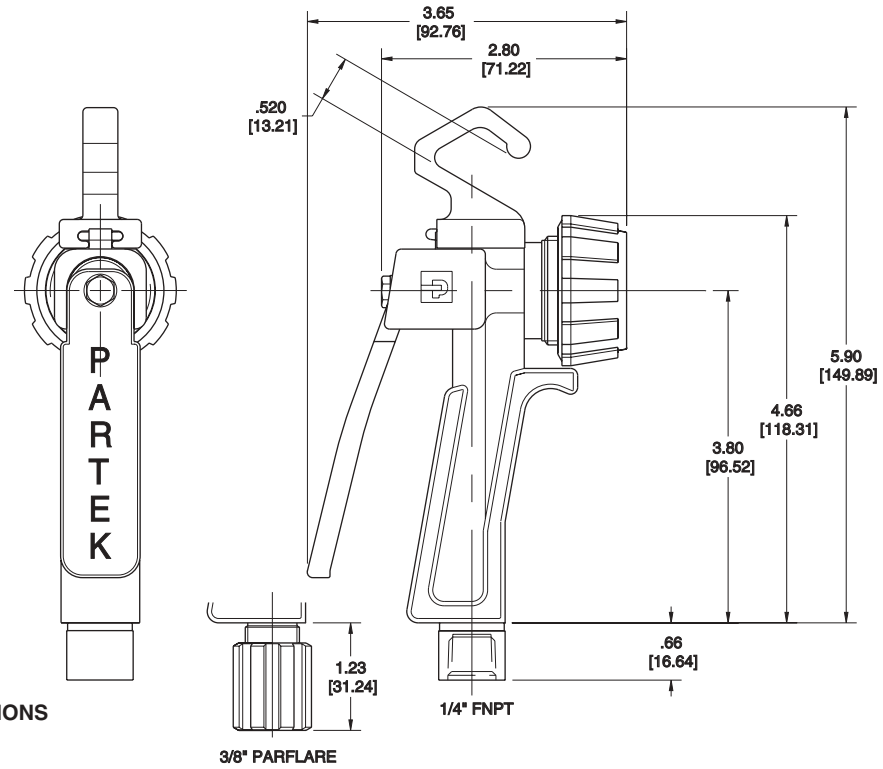
Temperature Ranges:

0° - 150° F (-17° - 66° C) Ambient
0° - 200° F (-17° - 93° C) Fluid

SPRAY PATTERN





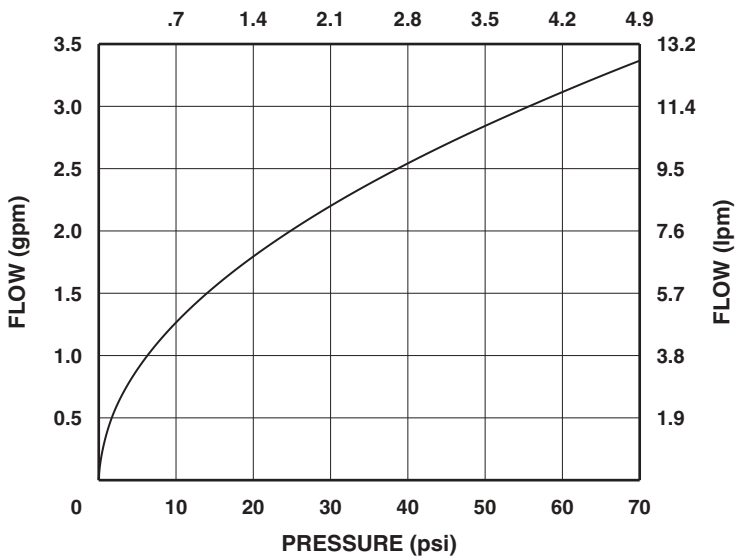


BRACKETED DIMENSIONS ARE IN mm.

Model Number	*End Connection*	*Description*
SG-1-01	1/4" FNPT	Spray Gun only
SG-1-02	3/8" Parflare	Spray Gun only
SG-1-02-01	3/8" Parflare	Spray Gun with complete 1002-0158 Recirculation Assembly
FBMTR-2G64	N/A	Recirculating Tee Connector only
1002-0158	"	Complete Recirculation Kit with FMBTR-2G64 and 8' FEP Coil
1002-0161	"	8' FEP Coil only

Above Parflare model numbers are supplied with PVDF nuts. Please consult factory for other available configurations or custom assemblies.

INLET PRESSURE VS. FLOW

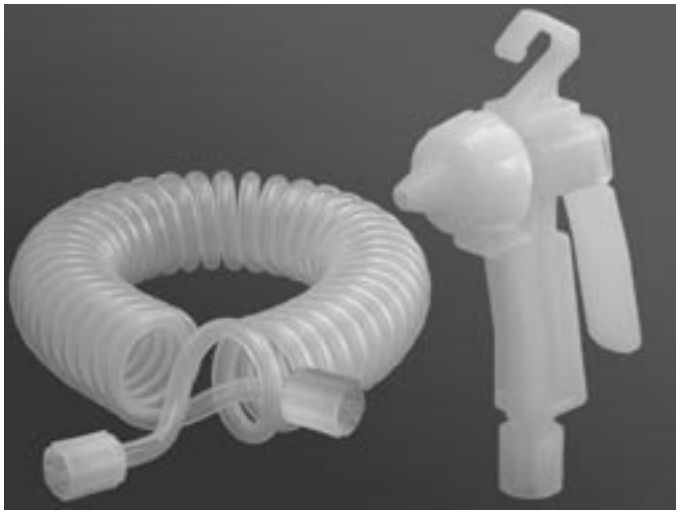


Parker Instrumentation
Parker Hannifin Corporation
Partek/Atlantic
Tucson, AZ

SG-1 Nitrogen Gun

Product Overview

The SG-1 Nitrogen Gun is suitable for use in high purity Semiconductor applications. The design utilizes a molded high purity PFA body with precision machined sealing areas. Interior surfaces are PFA and a one piece machined modified PTFE diaphragm/poppet. This design eliminates the need for elastomer seals, while providing excellent flexibility and long life. The SG-1 is available with 1/4" FNPT or 3/8" Parflare connections. Additional options include a .1, .2, or .5 micron filter and a coiled hose assembly.



Features	Benefits
One piece precision machined diaphragm/ poppet manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Wiper seat for positive through flow shut off and diaphragm to body seal.	**High cycle life.**
	Lower replacement costs.
	Less downtime.
Reversible/removable hanger.	**Allows hanging in either direction.**

Specifications

Materials of Construction:

Interior Surfaces - PFA, Modified PTFE, (optional HDPE filter element)
External Surfaces - PFA, PVDF, and PET handle retention screw.
Other Materials - Stainless steel spring

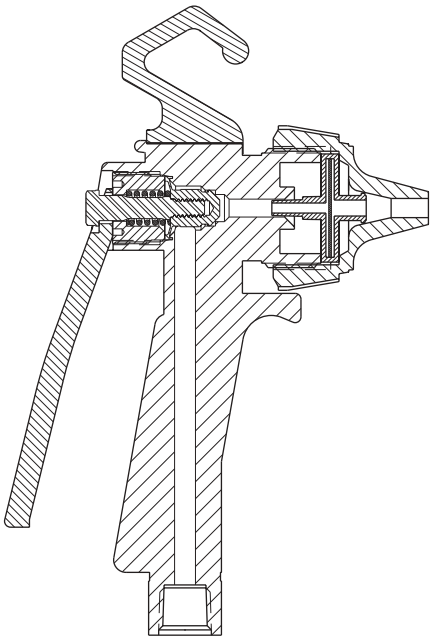
Pressure Ranges:

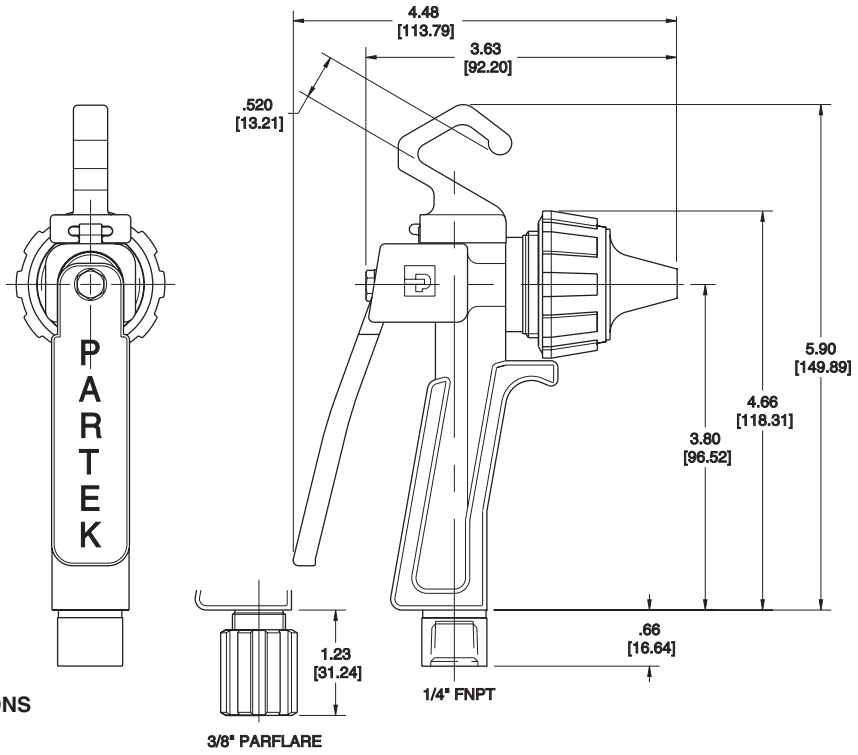
0 PSIG (0 bar) to 80 PSIG (5.5 bar)

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

Temperature Ranges:

0° - 150° F (-17° - 66° C) Ambient
0° - 200° F (-17° - 93° C) Fluid



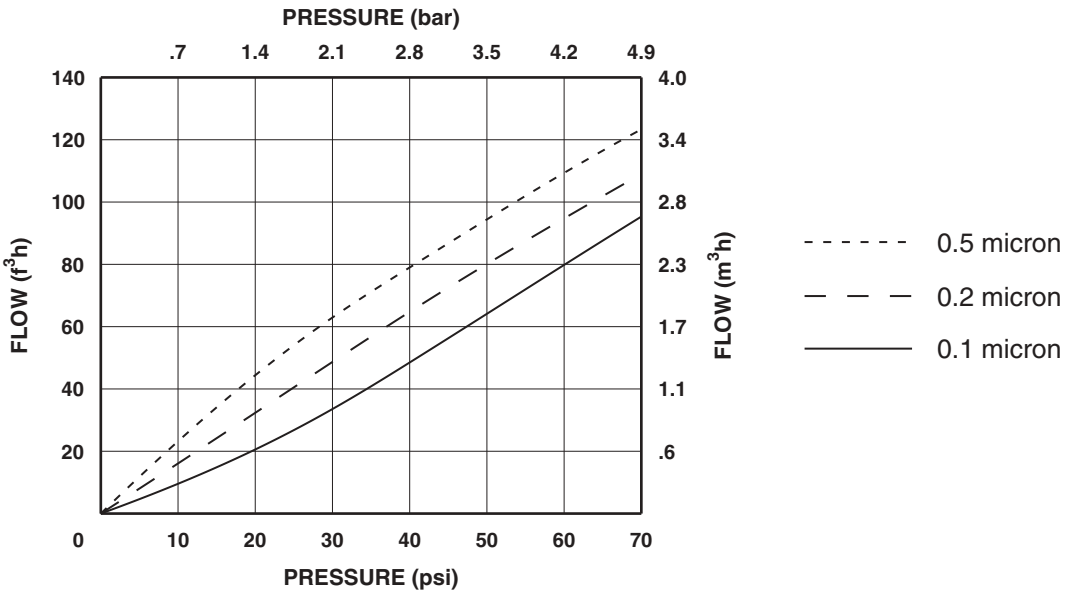


BRACKETED DIMENSIONS ARE IN mm.

Model Number	*End Connection*	*Description*
SG-1-03	1/4" FNPT	Spray Gun only (No Filter)
SG-1-04	3/8" Parflare	Spray Gun only (No Filter)
SG-1-03-X	1/4" FNPT	Spray Gun with Filter (Add -1, -2, or -5 for 0.1, 0.2, or 0.5 Micron Element)
SG-1-04-X	3/8" Parflare	Spray Gun with Filter (Add -1, -2, or -5 for 0.1, 0.2, or 0.5 Micron Element)
1002-0161	N/A	8' FEP Coil only
4999-0114	"	0.5 Micron Replacement Element
4999-0115	"	0.2 Micron Replacement Element
4999-0118	"	0.1 Micron Replacement Element

Above Parflare model numbers are supplied with PVDF nuts. Please consult factory for other available configurations or custom assemblies.

INLET PRESSURE VS. FLOW

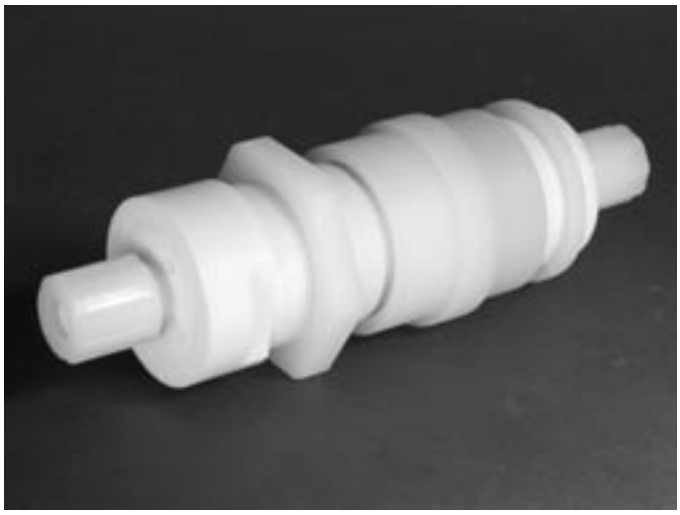


Parker Instrumentation
Parker Hannifin Corporation
Partek/Atlantic
Tucson, AZ

QC-1 Quick Coupler

Product Overview

The QC-1 Quick Coupler is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes only PTFE and Parofluor™ components in the flow path which eliminates virtually all contamination and provides a long life. The advanced no spill feature limits the amount of hazardous material per disconnection which minimizes cleanup. The push to connect design allows for ease of operation. The quick coupler is available in 1/4", 3/8", 1/2", 3/4" and 1" end connections. The quick coupler is an excellent choice for safe, non-spill connection and disconnection fluid handling systems.



Features / Benefits

Features	Benefits
No springs in flow path. PTFE and Parofluor™ wetted surfaces.	**Eliminates contamination and fluid compatibility issues. Contributes to a longer life and reduces maintenance costs.**
Push to connect design.	**Simple to operate.**
No spill design.	**Provides safety. Easy to clean and maintain.**
Standardized body sizes.	**Allows for flexible valve configurations.**

Specifications

Materials of Construction:

Wetted Surfaces - PTFE, Parofluor™
Non Wetted Surfaces - HDPE, Polypropylene, PVDF Coated Stainless Steel Springs.

Pressure Ranges:

0 to 60 PSIG (4.2 bar)

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

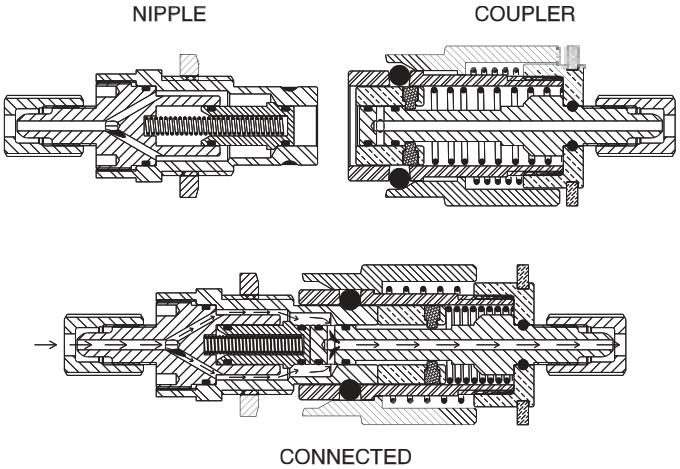
Temperature Ranges:

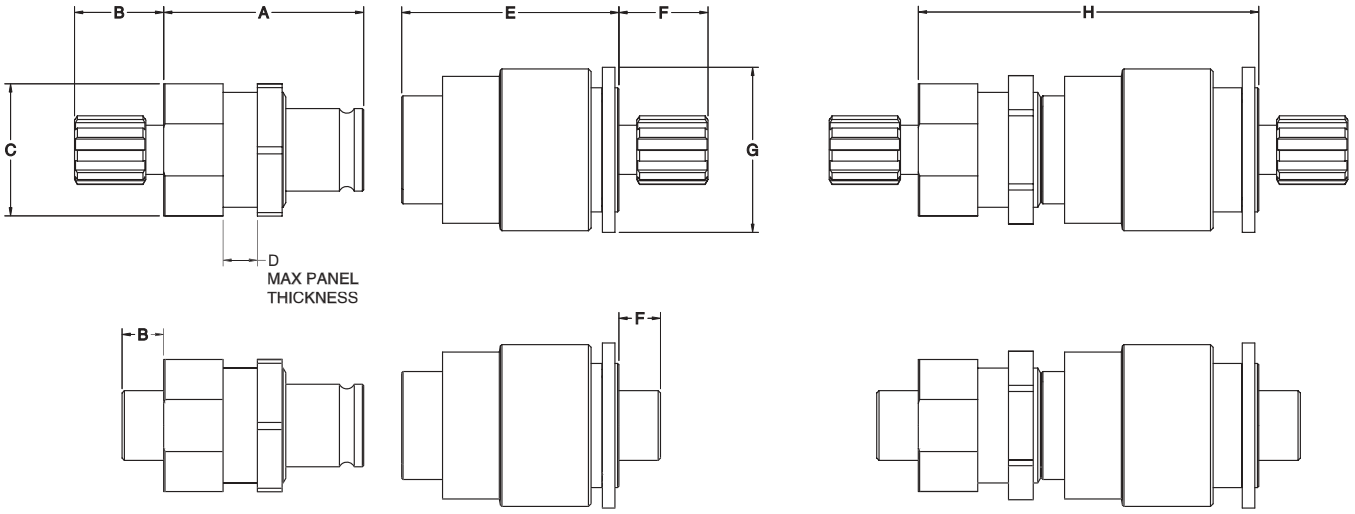
0° - 125° F (-17° - 51° C) Ambient
0° - 200° F (-17° - 93° C) Fluid

Flow Coefficient:

BODY SIZE	Cv	Kv
1/4"	.97	13.8
1/2"	3.54	50.4
1"	14.35	204.6

*Cv values are based on largest orifice for that body size.





NIPPLE COUPLER CONNECTED

DIMENSIONS (in.)

	A	B	C	D	E	F	G	H
QC-1-144X	2.77	.40	Ø 1.40	.63	2.94	.50	Ø 2.00	4.73
QC-1-644X	2.77	1.15	Ø 1.40	.63	2.94	1.15	Ø 2.00	4.73
QC-1-664X	2.77	1.23	Ø 1.40	.63	2.94	1.23	Ø 2.00	4.73
QC-1-188X	3.03	.63	Ø 2.15	.50	3.29	.63	Ø 2.45	5.16
QC-1-688X	3.03	1.35	Ø 2.15	.50	3.29	1.35	Ø 2.45	5.16
QC-1-6128X	3.03	1.46	Ø 2.15	.50	3.29	1.46	Ø 2.45	5.16
QC-1-11216X	4.10	.65	Ø 2.85	.88	4.23	.42	Ø 3.75	6.72
QC-1-61216X	4.10	1.46	Ø 2.85	.88	4.23	1.46	Ø 3.75	6.72
QC-1-11616X	4.10	.78	Ø 2.85	.88	4.23	.70	Ø 3.75	6.72
QC-1-61616X	4.10	1.80	Ø 2.85	.88	4.23	1.80	Ø 3.75	6.72

DIMENSIONS (mm.)

A	B	C	D	E	F	G	H
70.36	10.16	Ø 35.56	16.00	74.68	12.70	Ø 50.80	120.14
70.36	29.21	Ø 35.56	16.00	74.68	29.21	Ø 50.80	120.14
70.36	31.24	Ø 35.56	16.00	74.68	31.24	Ø 50.80	120.14
76.96	16.00	Ø 54.61	12.70	83.57	16.00	Ø 62.23	131.06
76.96	34.29	Ø 54.61	12.70	83.57	34.29	Ø 62.23	131.06
76.96	37.08	Ø 54.61	12.70	83.57	37.08	Ø 62.23	131.06
104.14	16.51	Ø 72.39	22.35	107.44	10.67	Ø 95.25	170.69
104.14	37.08	Ø 72.39	22.35	107.44	37.08	Ø 95.25	170.69
104.14	19.81	Ø 72.39	22.35	107.44	17.78	Ø 95.25	170.69
104.14	45.72	Ø 72.39	22.35	107.44	45.72	Ø 95.25	170.69

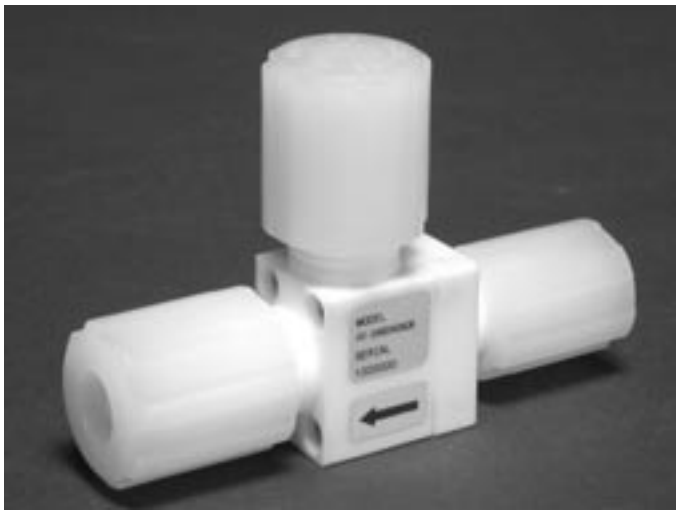
*Panel Hole to Clear - 1 1/4-10 (1/4" Body Size), 1 3/4-8 (1/2" Body Size), 3 3/4-10 (1" Body Size)

Model Number	*End Connection Type*	*End Connection Size*	*Body Size*	*Coupling Type*
QC-1-144N	FNPT	1/4"	1/4"	Nipple
QC-1-144C	FNPT	1/4"	1/4"	Coupler
QC-1-644N	Parflare	1/4"	1/4"	Nipple
QC-1-644C	Parflare	1/4"	1/4"	Coupler
QC-1-664N	Parflare	3/8"	1/4"	Nipple
QC-1-664C	Parflare	3/8"	1/4"	Coupler
QC-1-188N	FNPT	1/2"	1/2"	Nipple
QC-1-188C	FNPT	1/2"	1/2"	Coupler
QC-1-688N	Parflare	1/2"	1/2"	Nipple
QC-1-688C	Parflare	1/2"	1/2"	Coupler
QC-1-6128N	Parflare	3/4"	1/2"	Nipple
QC-1-6128C	Parflare	3/4"	1/2"	Coupler
QC-1-11216N	FNPT	3/4"	1"	Nipple
QC-1-11216C	FNPT	3/4"	1"	Coupler
QC-1-61216N	Parflare	3/4"	1"	Nipple
QC-1-61216C	Parflare	3/4"	1"	Coupler
QC-1-11616N	FNPT	1"	1"	Nipple
QC-1-11616C	FNPT	1"	1"	Coupler
QC-1-61616N	Parflare	1"	1"	Nipple
QC-1-61616C	Parflare	1"	1"	Coupler

VV Venturi/Vacuum Generator

Product Overview

The Venturi/Vacuum Generator is designed for corrosive or high purity gas applications. The design consists of two machined high purity PTFE body halves attached using a tongue and groove sealing mechanism. The concept of a venturi valve is a short tube with a tapered constriction in the middle that causes an increase in the velocity of flow of a fluid and a corresponding decrease in fluid pressure. This is used in measuring flow or for creating a suction. The lack of moving parts eliminates the possibility of media contamination.



Features	Benefits
Integral nozzle on inlet body half.	**Eliminates the need for calibration and realignment.**
PTFE wetted surfaces.	**Eliminates contamination and fluid compatibility issues.**

Specifications

Materials of Construction:

Wetted Surfaces - PTFE
Non Wetted Surfaces - PVDF, 18-8 stainless steel

Pressure Ranges:

0 to 120 PSIG (8.2 bar)

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

Temperature Ranges:

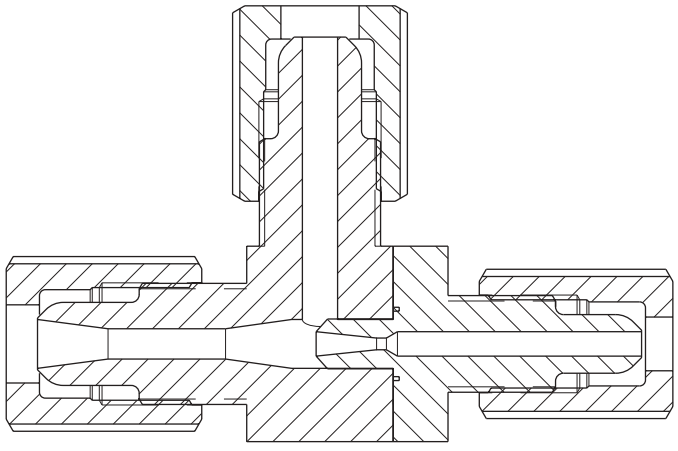
0° - 150° F (-17° - 66° C) Ambient
0° - 266° F (-17° - 130° C) Fluid

Motive Fluid:

Clean Dry Air, N_2 or any other available gas

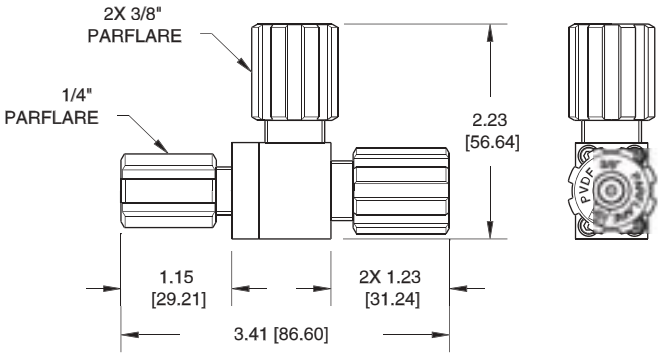
Motive Consumption (Air):

At 40 PSIG: 1.60 SCFM
At 60 PSIG: 1.75 SCFM
At 80 PSIG: 1.80 SCFM

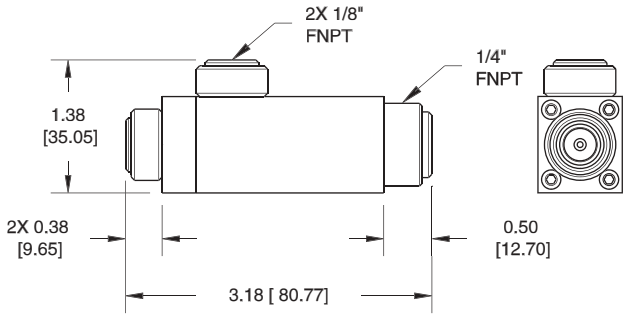


BRACKETED DIMENSIONS ARE IN mm.

VV-046040606



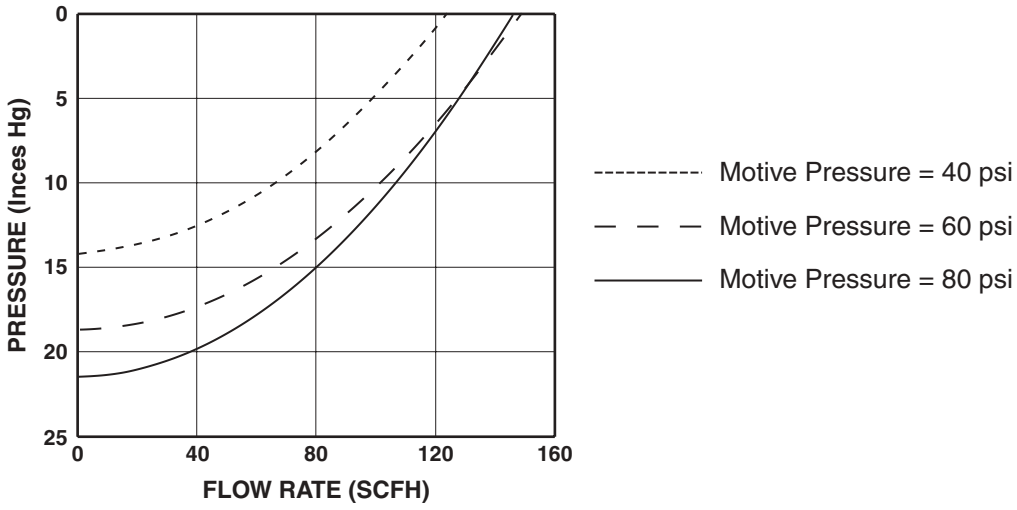
VV-041020204



Model Number	*Orifice*	*Flow Configuration*	*Inlet Port*	*Vacuum Port*	*Outlet Port*
VV-041020204	.060	ON/OFF	1/8" FNPT	1/8" FNPT	1/4" FNPT
VV-046040606	.060	"	1/4" Parflare	3/8" Parflare	3/8" Parflare

Please consult factory for other available configurations or custom assemblies.

SUCTION PRESSURE VS. FLOW RATE

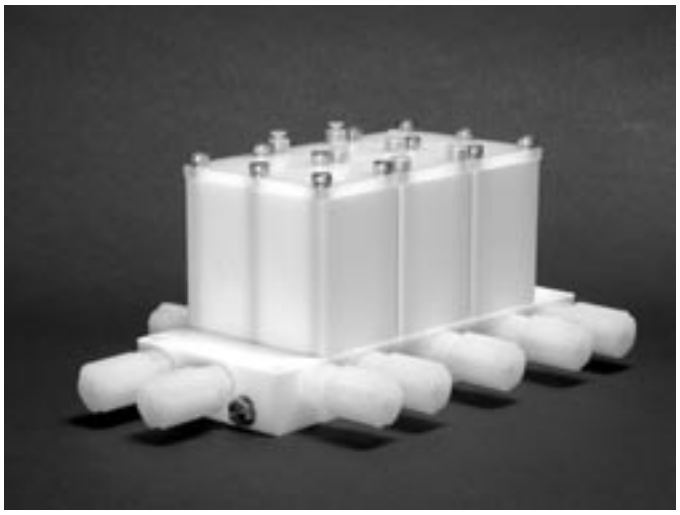


Parker Instrumentation
Parker Hannifin Corporation
Partek/Atlantic
Tucson, AZ

K-Max Stream Switching Valve

Product Overview

The K-Max Stream Switching Valve is designed to be used in analytical systems. The design utilizes state-of-the-art surface mount technology to reduce leak paths, internal volume and dead volume. The design allows for both stream switching and internal loop filtering in one assembly. In addition, the unique nested assembly design allows for the addition of new streams and maintenance on existing streams without breaking any process lines.



Features	Benefits
Surface mount design.	**Allows user to maintenance system without breaking process line.**
Modular valve design.	**Ease of additional streams without disrupting installed units.**
Visual position indication.	**Provides system safety.**
Low actuation pressure.	**Minimizes pneumatic demands on system.**
Captured vent.	**Prevents cross contamination of process and air signal, while giving the user an indication of system integrity problems.**
Dual acting, normally open and normally closed configurations.	**Will work in any system setup without replumbing.**
GC Module.	**Equilibrates the sample loop pressure to atmospheric just prior to sample injection.**

Specifications

Materials of Construction:

Wetted Surfaces - PTFE, Parofluor™ O-Rings
External Surfaces - PVDF, PTFE, 18-8 stainless steel, Viton seals, PVDF coated stainless steel springs.

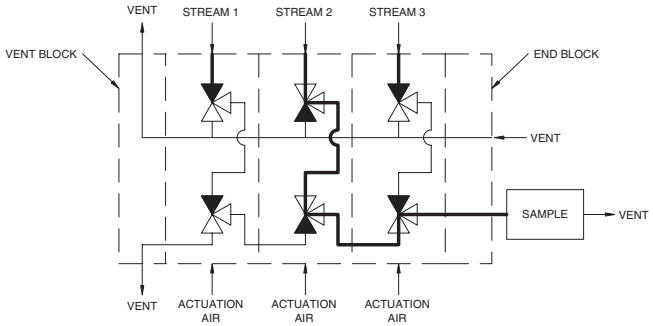
Pressure Ranges:

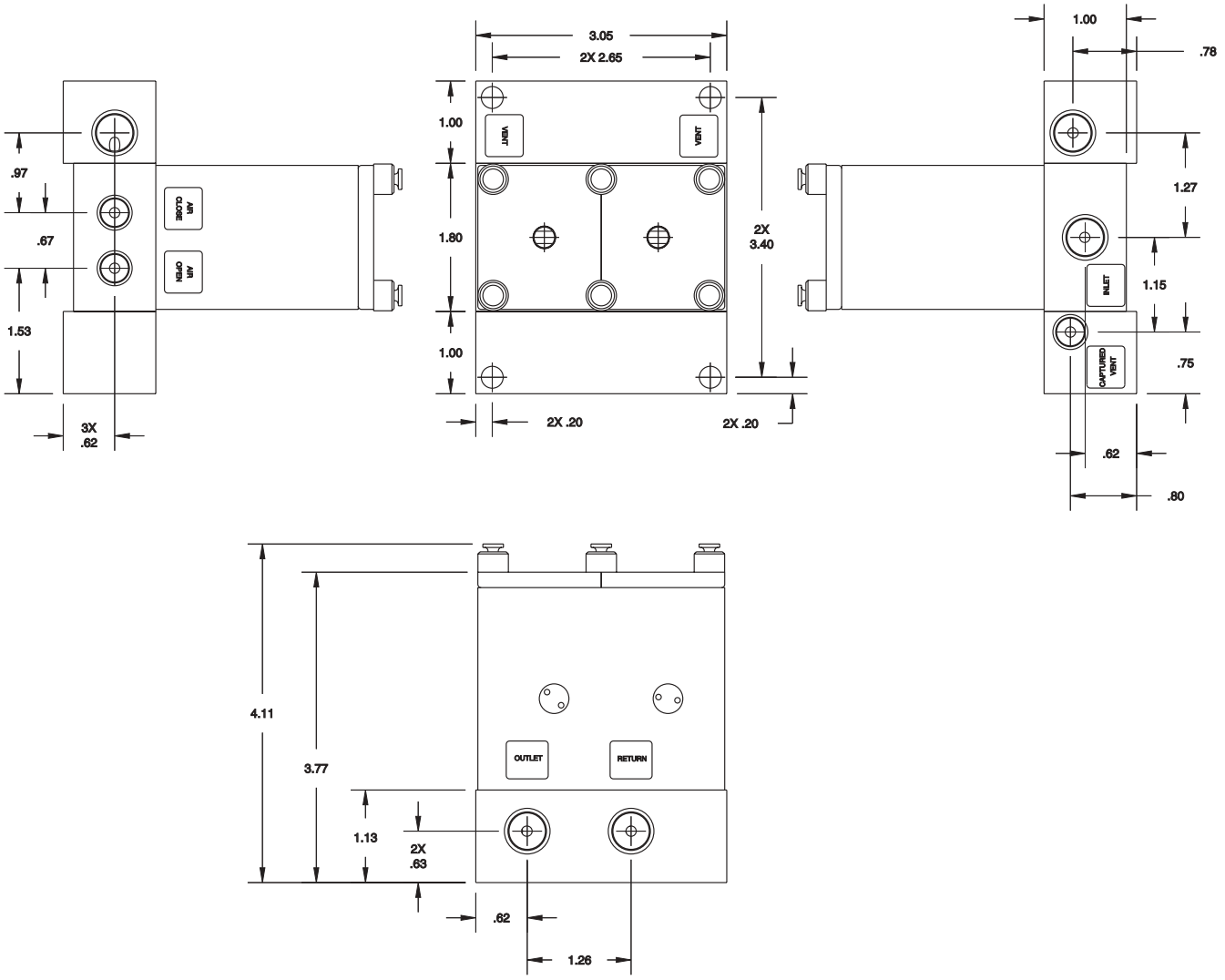
-5 PSIG (-.34 bar) to 50 PSIG (3.4 bar)
Actuator Pressure: 40 PSIG (2.8 bar) to 60 PSIG (4.2 bar)

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

Temperature Ranges:

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





Model Number	*Port Configuration*	*Seal Options**	*Actuation*	*No. of Streams***
KM-111-XXXXXX	1/4" Parflare	Wetted-Parofluor™ / Non Wetted-Viton	Double Acting	1 to 6
KM-112-XXXXXX	1/4" Parflare	Wetted-Parofluor™ / Non Wetted-Viton	Normally Closed	1 to 6
KM-113-XXXXXX	1/4" Parflare	Wetted-Parofluor™ / Non Wetted-Viton	Normally Open	1 to 6
KM-211-XXXXXX	1/4" Pargrip	Wetted-Parofluor™ / Non Wetted-Viton	Double Acting	1 to 6
KM-212-XXXXXX	1/4" Pargrip	Wetted-Parofluor™ / Non Wetted-Viton	Normally Closed	1 to 6
KM-213-XXXXXX	1/4" Pargrip	Wetted-Parofluor™ / Non Wetted-Viton	Normally Open	1 to 6
KM-311-XXXXXX	1/4" FNPT	Wetted-Parofluor™ / Non Wetted-Viton	Double Acting	1 to 6
KM-312-XXXXXX	1/4" FNPT	Wetted-Parofluor™ / Non Wetted-Viton	Normally Closed	1 to 6
KM-313-XXXXXX	1/4" FNPT	Wetted-Parofluor™ / Non Wetted-Viton	Normally Open	1 to 6

Above Pargrip model numbers are supplied with PFA nuts. Parflare models are supplied with PVDF nuts. For PFA nuts, add -T as the final suffix to the model number (i.e. KM-112-111000-T). Please consult factory for other available configurations or custom assemblies.

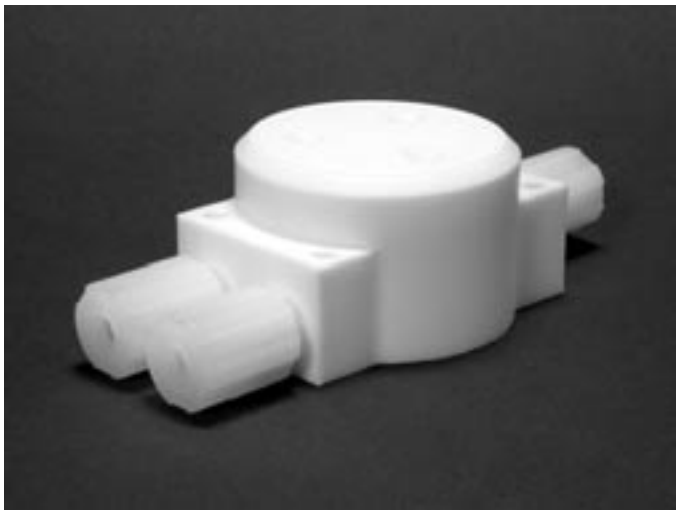
* For all Parofluor o-rings, change second number to “2” (i.e. KM-3**2**1-111000).
** All six digits must be used in part number from left to right. For example, part **KM-111-111200** designates a K-Max Valve with 1/4” Parflare port configurations, Wetted-Parofluor™/Non Wetted-Viton seal option, double acting actuation, and 3 standard streams/1 GC module.

“0” designates no stream at that location
“1” designates standard stream
“2” designates GC module

KMF Filter

Product Overview

The KMF Filter is designed for use in analytical systems. It is ideally suited for aggressive chemical and gas applications. The design utilizes a high purity PTFE body with precision machined features and a PTFE filter element. It is used in conjunction with the Partek K-Max Stream Switching Valve to quickly recirculate media or as a standard in-line filter. The hydrophobic fitler membrande allows gas to pass while eliminating contaminants and moisture from sample.



Features	Benefits
Bypass loop.	**Allows for recirculation without filtration.**
Low profile.	**Reduces space and overall cost.**
PTFE and Parofluor™ wetted surfaces	**Eliminates fluid compatibility issues.**
Hydrophobic coalescent filter membrane.	**Provides purity by removing particulates and moisture.**

Specifications

Materials of Construction:

Wetted Surfaces - PTFE, Parofluor™ O-Rings
External Surfaces - PVDF, PTFE.

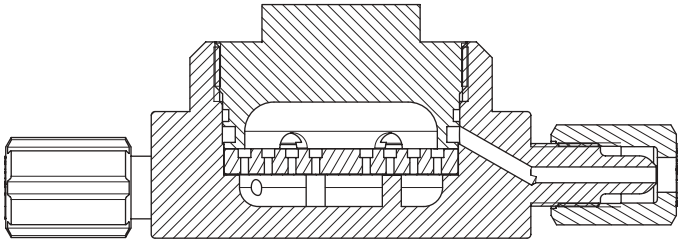
Pressure Ranges:

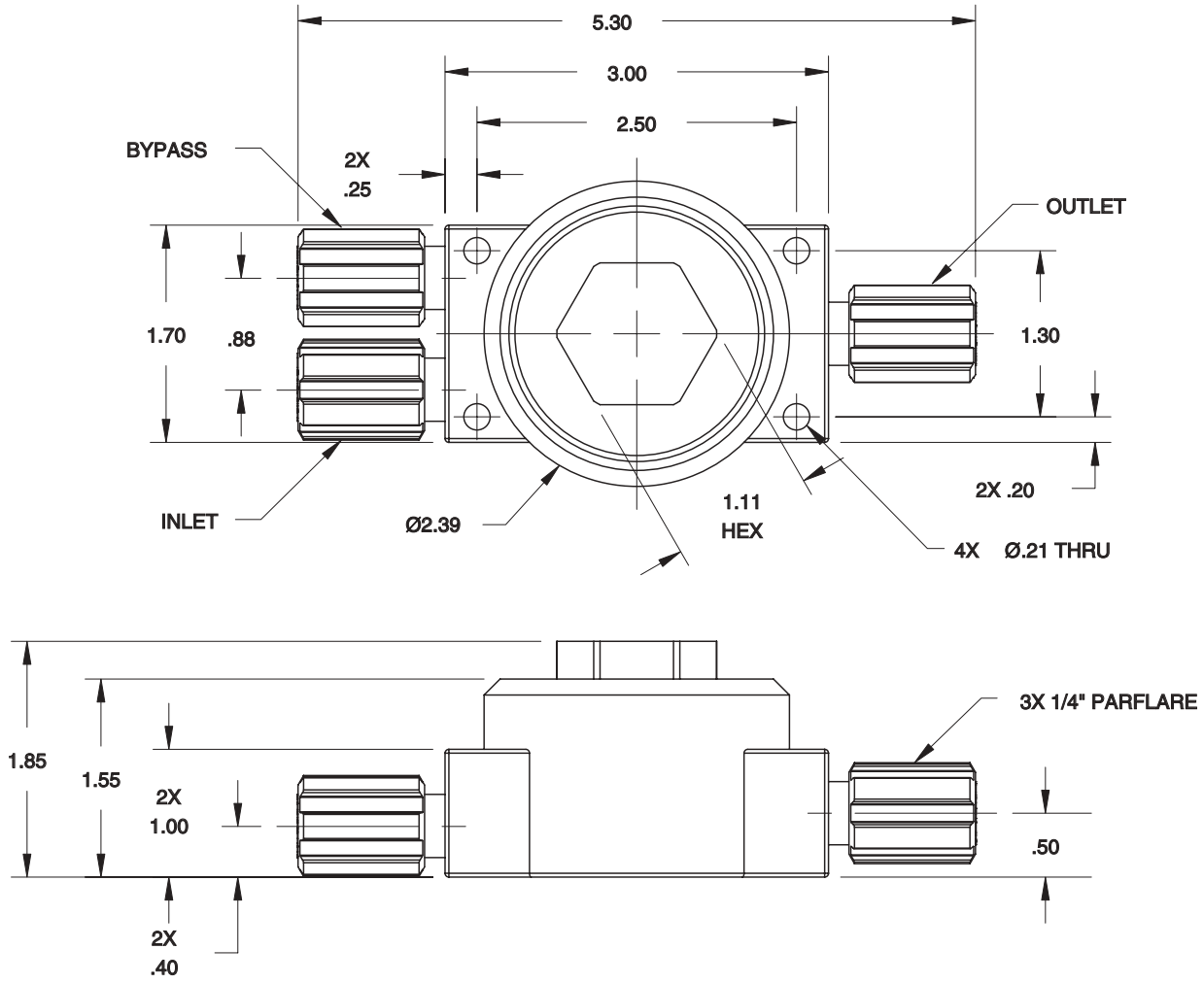
-5 (.34 bar) to 50 PSIG (3.4 bar)

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

Temperature Ranges:

-60° - 150° F (-51° - 66° C) Ambient
-60° - 150° F (-51° - 66° C) Fluid

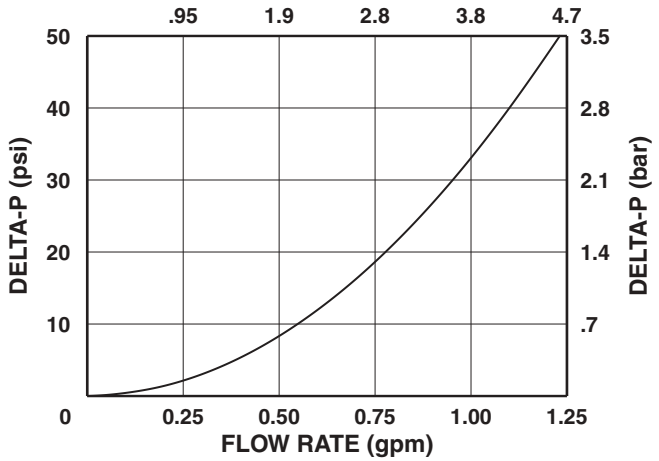




Model Number	*Cv*	*Kv*	*Filter Element*	*End Connection*
KMF-11	.2	4.1	5 Micron	1/4" Parflare
KMF-12	.2	4.1	20 Micron	"
KMF-21	.2	4.1	5 Micron	1/4" Pargrip
KMF-22	.2	4.1	20 Micron	"

For replacement elements, order 5004-0001 for 5 microns and 5004-0009 for 20 microns.

PRESSURE DROP VS. FLOW RATE



Parker Instrumentation
Parker Hannifin Corporation
Partek/Atlantic
Tucson, AZ

Specialty and Custom

Overview

Partek will design custom assemblies for all your applications. Partek has a state of the art facility with dedicated, expert personnel that are focused on your design and creating a solution to your needs. All of the products pass through Partek Engineering and customer approval process before being manufactured, assembled and 100% leak tested at our ISO 9001 UHP Facility. These include, but are not limited to, such products as:

- **Manifolds**
- **Welded Assemblies**
- **Surface Mounts**
- **Valve Assemblies**
- **Special Customer Components**
- **Miscellaneous Assemblies**

We focus on fluorinated polymer flow control products for use in fluid systems where corrosion resistance or high purity is required. Materials we can manufacture your specialty product from include, but are not limited to, PTFE, Modified PTFE, PFA, FEP, PVDF, and ETFE.

Partek has over 20 years of experience in fabricating products used in applications including semiconductor manufacturing; chemical, food, and pharmaceutical processing; and biomedical and analytical instrumentation. Whatever your specialty applications needs are, Partek can provide it.

Design and Assembly Process

Defining Your Needs

Through thorough analysis and review, Partek will provide your custom assembly in a timely manner. Based on the analysis, our expert engineers will create your design to meet your product's specific application. Armed with the latest CAD technology, your design will include drafting, layouts, 2-dimensional and 3-dimensional drawings. Partek is committed to working closely with you to develop your concepts into a solution that will exceed all your specialty needs.

Quotation and Approval

Partek will provide a quotation for your approval. The quotation will be submitted with detailed drawings for your review, and will also contain our price, delivery time, testing, packaging and prototype (if required).

Assembly

Upon receipt of your signed approval and purchase order, we will manufacture and assemble your custom product in a controlled environment. Our experienced lab technicians will assemble your product to your exact specifications within the required lead time.

Solution

The product you needed is ready for shipment. Remember, from your initial concepts to the delivery of your application specific product, Partek ensures only the highest quality materials and workmanship in designing and manufacturing your specialty products.

Manifolds

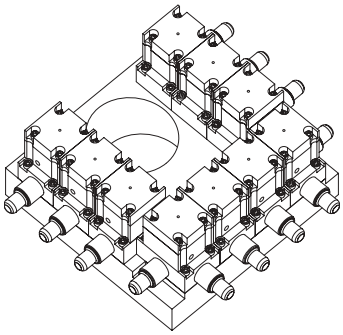
Engineered manifolds combine valves and fittings onto one larger PTFE block. Due to the continuous need to reduce space in chemical cabinet environments, you will benefit from:

- Reduction in size to the absolute minimum.
- Reduction in the quantity of connections.
- Fits directly into a given space for minimum assembly time.

Weld Assemblies

The use of Parbond fittings and PFA pipe provides for the most permanent and leakproof connection available on the market today. Utilizing state of the art fusion welding equipment, Partek/Atlantic can assemble a drop in unit for all permanent applications.

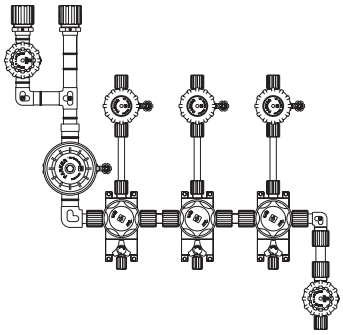
- Significantly reduces assembly time in the field.
- Small assemblies eliminate connections.
- Allows customers to modify and improve system efficiency.



Surface Mounts

Individual bottom ported valves mounted to a substrate is a growing trend. We manufacture modular components of various sizes, Cv rates and orientations along with custom single and multi-station subbases of many diverse flow patterns.

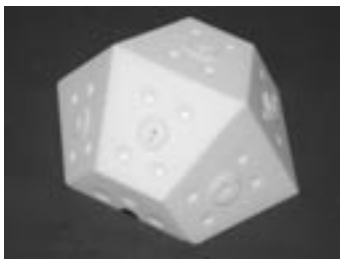
- Assembly adaptability in the field due to modular components and blocking plates.
- Significantly reduces space and number of connections.
- Reduces repair costs with modular components.



Valve Assemblies

Standard and/or nonstandard valves coupled together to develop a custom product for all types of specialty applications. These are constructed, mounted and tested in a complete drop-in configuration to reduce OEM and MRO assembly, repair time, and total fitting connections.

- Provides a solution for unique flow applications.
- Reduces space to a minimum.
- Partek takes a value added approach when engineering these assemblies.



Special Customer Components

Specially designed components not in the scope of Partek/Atlantic's standard product line, but the need falls within our manufacturing, machining and molding capabilities to fulfill the customer's requests. Designated with a CPRT number for internal identification purposes.

- Solves specific and critical customer applications.
- Value added engineering and service.

Miscellaneous Assemblies

Your application is our challenge.

Notes

Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such items, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer, Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.**

NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.

5. Limitation Of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INC.

LUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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Parker Hannifin Corporation

About Parker Hannifin Corporation

Parker Hannifin is a leading global motion-control company dedicated to delivering premier customer service. A Fortune 500 corporation listed on the New York Stock Exchange (PH), our components and systems comprise over 1,400 product lines that control motion in some 1,000 industrial and aerospace markets. Parker is the only manufacturer to offer its customers a choice of hydraulic, pneumatic, and electromechanical motion-control solutions. Our Company has the largest distribution network in its field, with over 7,500 distributors serving nearly 400,000 customers worldwide.

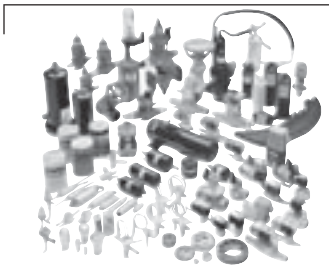
Parker's Charter

To be a leading worldwide manufacturer of components and systems for the builders and users of durable goods. More specifically, we will design, market and manufacture products controlling motion, flow and pressure. We will achieve profitable growth through premier customer service.

Product Information

North American customers seeking product information, the location of a nearby distributor, or repair services will receive prompt attention by calling the Parker Product Information Center at our toll-free number: 1-800-C-PARKER (1-800-272-7537). In Europe, call 00800-C-PARKER-H (00800-2727-5374).

The Aerospace Group is a leader in the development, design, manufacture and servicing of control systems and components for aerospace and related high-technology markets, while achieving growth through premier customer service.



The Climate & Industrial Controls Group designs, manufactures and markets system-control and fluid-handling components and systems to refrigeration, air-conditioning and industrial customers worldwide.

The Fluid Connectors Group designs, manufactures and markets rigid and flexible connectors, and associated products used in pneumatic and fluid systems.

The Seal Group designs, manufactures and distributes industrial and commercial sealing devices and related products by providing superior quality and total customer satisfaction.

The Hydraulics Group designs, produces and markets a full spectrum of hyraulic components and systems to builders and users of industrial and mobile machinery and equipment.

The Filtration Group designs, manufactures and markets quality filtration and clarification products, providing customers with the best value, quality, technical support, and global availability.

The Automation Group is a leading supplier of pneumatic and electromechanical components and systems to automation customers worldwide.

The Instrumentation Group is a global leader in the design, manufacture and distribution of high-quality critical flow components for worldwide process instrumentation, ultra-high-purity, medical and analytical applications.

anything Parker Possible™

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