FITOK

Full Technical Catalog
For Specialty Gas Application

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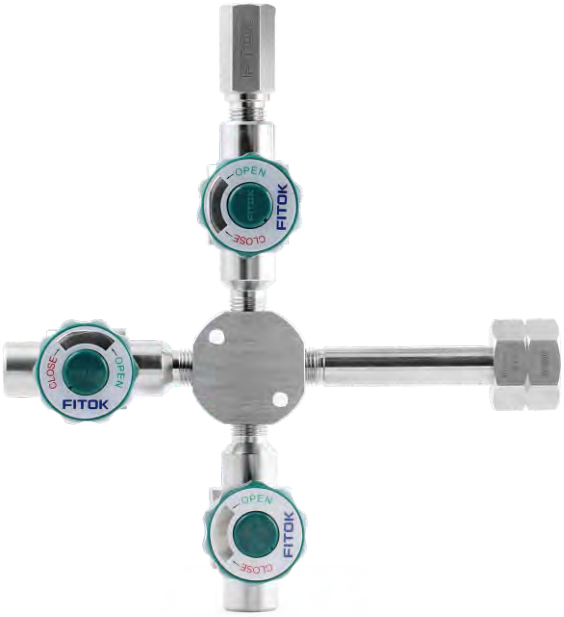
Regulators and Back Pressure Regulators

Point-of-Use Panels

Changeover Systems

Purge Assemblies



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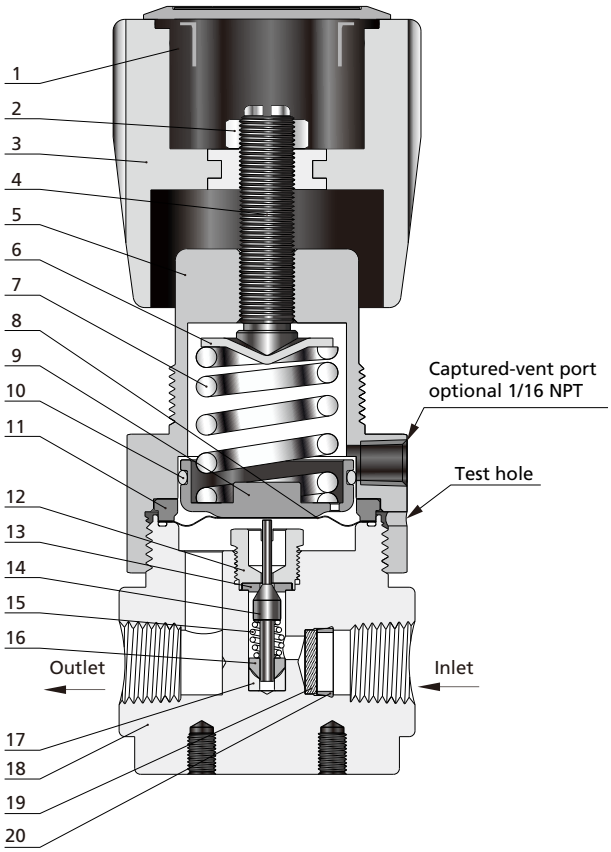
General Introduction

Basic Knowledge of Regulators

A pressure reducing regulator is positioned where the high pressure of a medium needs to be reduced and maintained to a lower and stable level. By turning the adjustment handle, the tension of range spring would be changed so as to control the outlet pressure of the regulator.

Diaphragm Regulators

Major Materials of Construction



Item	Component	Material/Specification
1	Hole Plug	ABS
2	Nut	304 SS/ASTM A479
3	Knob Handle	ABS
4	Range Screw	304 SS/ASTM A479
5	Bonnet	304 SS/ASTM A479 or Brass
6	Spring Button	304 SS/ASTM A240
7	Range Spring	Alloy
8	Diaphragm	Hastelloy
9	Spring Plate	Aluminium alloy
10	O-ring	Buna-N
11	Gland	304 SS/ASTM A479
12	Seat Retainer	316L SS/ASTM A479
13	Seat	PCTFE/ASTM D1430
14	Lift Poppet	N10276/ASTM B574
15	Poppet Spring	Alloy X-750
16	Poppet Damper	PTFE/ASTM D1710
17	Friction Sleeve	316L SS/ASTM A479
18	Body	316L SS/ASTM A479 or 316 SS/ASTM A479 or Brass
19	Filter	316L SS
20	Retaining Ring	PTFE/ASTM D1710

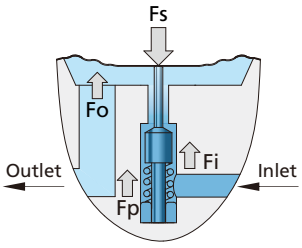
Features

◎ Metal-to-metal diaphragm seal minimizes the potential for leakage.
◎ Metal diaphragm pressure sensing mechanism ensures excellent sensitivity and set point pressure stability. Piston sensing mechanism (shown on the next page) capable of withstanding higher pressures.
◎ The valve stem is designed with fine threads, allowing for precise adjustment of outlet pressure with low torque.
◎ Poppet damper keeps the poppet positioned accurately and reduces vibration.
◎ The regulator seat is easily damaged by contaminants in the system. 40 μm filter is installed at the inlet to protect the regulator. RDGH, RDGN, RPGN and RDVC series are not fitted with filter, if there are particles in the media, a filter should be installed upstream.
◎ RDGC, RDDC, RDSC, RDGH, RDGN, RDVC series diaphragm regulators are fitted with a captured-vent port through which the media can be discharged to a designated location in the event of an accidental rupture of the regulator diaphragm.

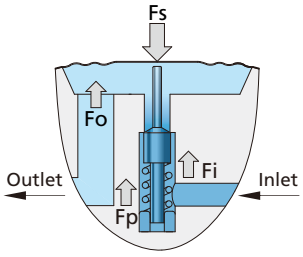
Working Principle

A pressure regulator functions by reducing high pressure media to a lower pressure. It operates by maintaining a dynamic equilibrium of forces, including the downward force on the diaphragm exerted by the range spring -- loading force (Fs), the force from the poppet spring (Fp), the inlet pressure force (Fi), and the outlet pressure force (Fo). These forces establish a balance, expressed as Fs = Fp + Fi + Fo. When one force changes, the other forces must adjust to reestablish balance.

When the outlet pressure (Fo) falls below the set pressure, the excess downward force pushes the poppet away from the seat, allowing more high-pressure gas to enter the chamber, thereby increasing the outlet pressure.
When the outlet pressure (Fo) exceeds the set pressure, the excess upward force lifts the poppet back onto the seat, restricting the flow of high-pressure gas into the chamber and thereby reducing the outlet pressure.



Fs > Fp+Fi+Fo



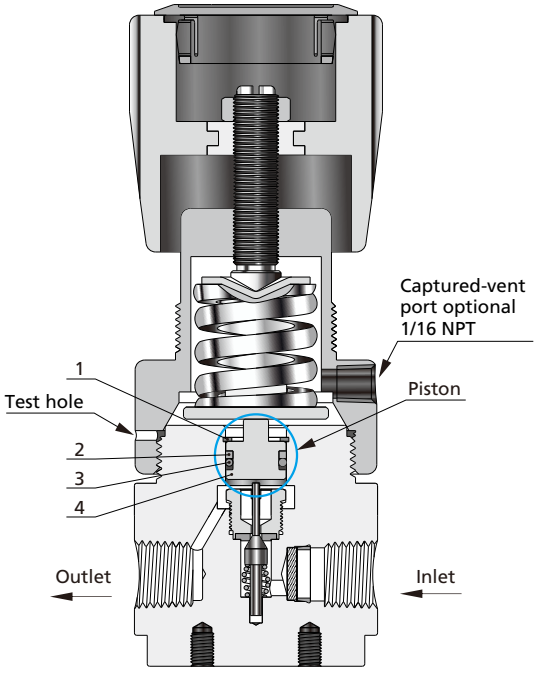
Fs < Fp+Fi+Fo

Piston Regulators

A piston regulator has the same working principle as a diaphragm regulator. The key distinction is that the diaphragm is changed to a piston to satisfy the needs for high pressure applications. Piston sensing mechanisms typically are used to regulate higher pressures than a diaphragm can withstand. They are also more resistant to damage caused by pressure spikes and have a short stroke to maximize cycle life.

Major Materials of Construction

Item	Component	Material/Specification
1	Circlips for Bores	Stainless Steel
2	Retaining Ring	PTFE/ASTM D1710
3	O-ring	FKM or FFKM
4	Piston	316L SS/ASTM A479



Features

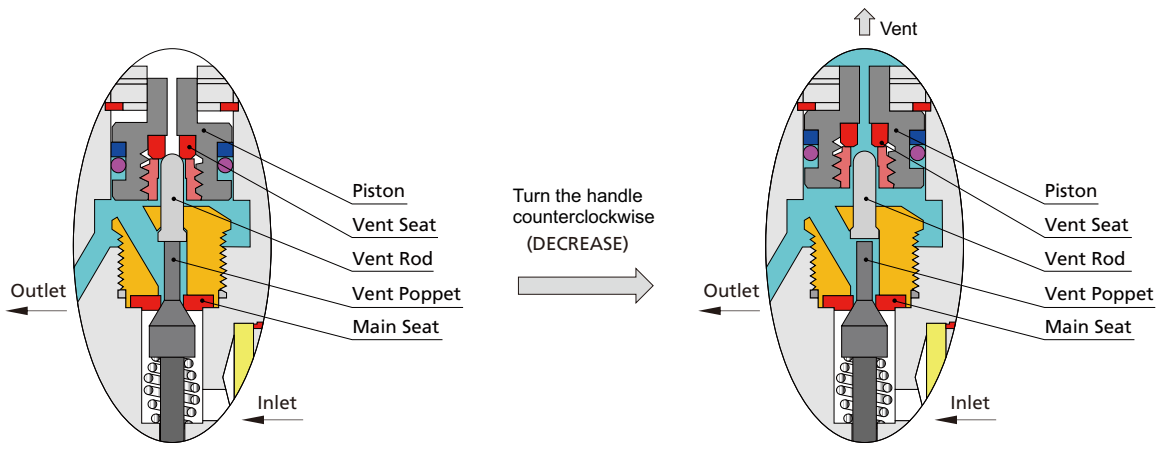
◎ The piston sensing mechanism can withstand higher pressures, so piston regulators have a larger outlet pressure control range.
◎ RPGC series piston regulators are fitted with a captured-vent port, through which the media can be discharged to a designated location in the event of accidental failure of the piston seal of the regulators.
◎ Piston regulators, except for RPCC series, are available with optional self-venting to allow excessive outlet pressure to be discharged.

Self Venting

When turning the handle counterclockwise (to DECREASE pressure), the outlet pressure in a contained system can be fully released through the self-venting mechanism, eliminating the need for an additional purge valve or bleed valve.

Principle: The valve incorporates a structure that is isolated from the atmosphere. During normal operation of the pressure regulator (INCREASE), the piston is pushed upward by the loading force from the range spring, causing the vent seat to contact the vent rod and form a seal. In this sealed state, the outlet pressure is not vented through the vent seat. When the handle is turned counterclockwise (DECREASE), the loading force from the range spring is reduced. At this point, the force exerted on the piston by the outlet pressure exceeds the loading force, causing the piston to move upward. As the piston rises, the vent rod gradually detaches from the vent seat due to its limit structure, allowing the outlet pressure to vent to the atmosphere until it reaches the new set point.

Cautions:
1. Avoid using self-venting regulators with flammable, combustible, toxic, hazardous, or corrosive media, as the self-venting process releases excess outlet pressure directly into the atmosphere. It is also not recommended for use with non-hazardous high-purity media, as self-venting may introduce atmospheric impurities into the system.
2. In certain designs, excess outlet pressure that would be vented through self-venting can be vented to a designated safe area through a captured vent port. For such requirements, please contact FITOK or our authorized distributors.
3. Since the self-venting configuration features an additional seal, considerations should be given to material compatibility, such as the seat material at the seal. Please refer to the FITOK Material Compatibility Guide on page C-05.

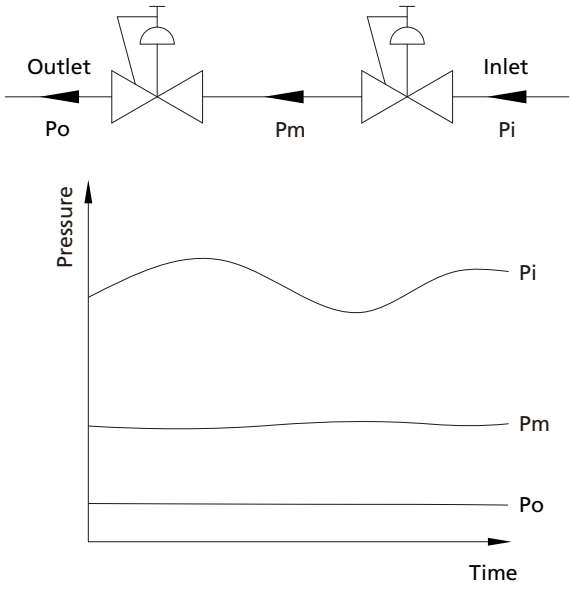


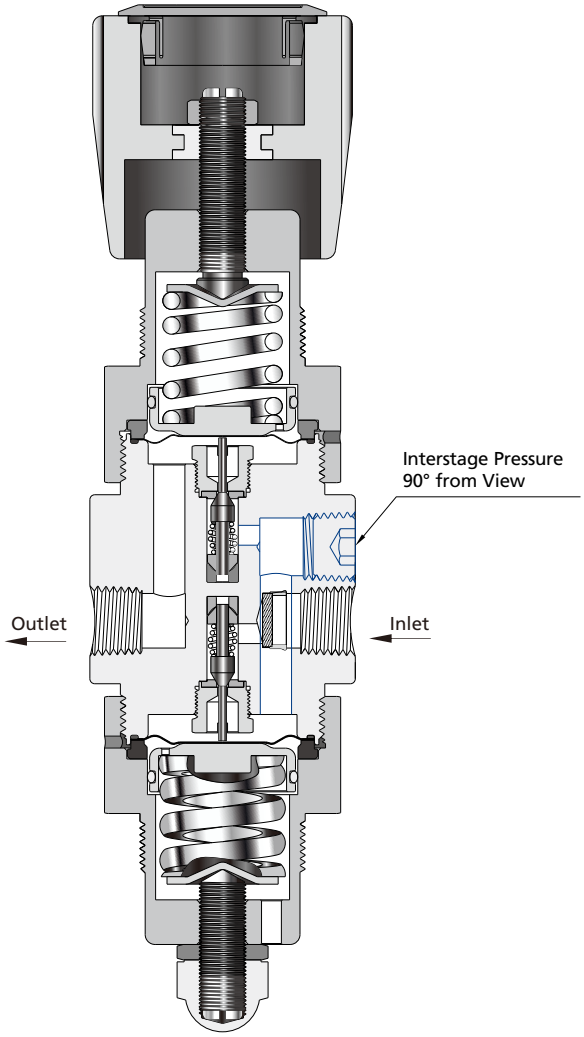
RPGC Series Self-Venting Mechanism Diagram (Media Shown in Cyan)
Note: View the corresponding animated illustration on FITOK's official website.

Dual-Stage Diaphragm Regulators

When the inlet pressure (Pi) decreases, the outlet pressure (Po) shall increase. Even though the increase may not be significant, the dual-stage regulator would be a better option when more stable pressure is required, and the upstream pressure fluctuates violently.

The function of a dual-stage regulator is similar to that of two single-stage regulators in series. The 1st-stage regulator reduces the inlet pressure to an intermediate level for the 2nd-stage regulator to adjust to a constant output, which at the most extent ensures the stability of the outlet pressure.



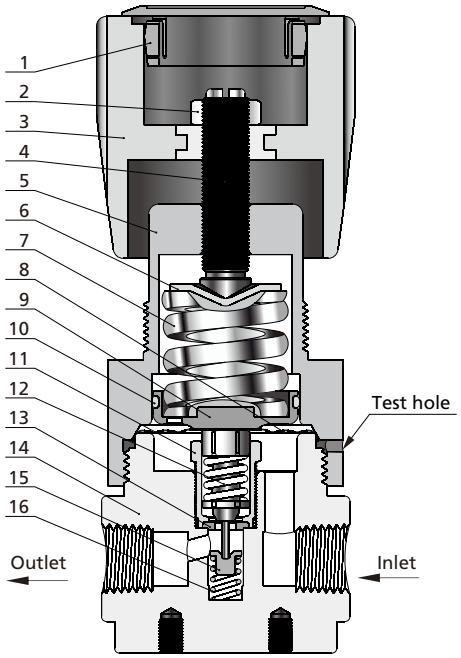


Basic Knowledge of Back Pressure Regulators

Back pressure regulators control inlet pressure by balancing an adjustable spring force against the force of the inlet pressure. The spring force is adjusted by turning the handle/stem, which sets the desired inlet pressure.

Back Pressure Diaphragm Regulators

Major Materials of Construction



Item	Component	Material/Specification
1	Hole Plug	ABS
2	Nut	304 SS/ASTM A479
3	Knob Handle	ABS
4	Range Screw	304 SS/ASTM A479
5	Bonnet	304 SS/ASTM A479 or Brass
6	Spring Button	304 SS/ASTM A240
7	Range Spring	Alloy
8	Diaphragm	316L SS
9	Spring Plate	Aluminium alloy
10	O-ring	NBR
11	Seat Retainer	316L SS/ASTM A479
12	Lift Poppet	316L SS/ASTM A479
13	Seat	PCTFE/ASTM D1430
14	Body	316L SS/ASTM A479 or 316 SS/ASTM A479 or Brass
15	Friction Sleeve	316L SS/ASTM A479
16	Poppet Spring	316L SS/ASTM A313

Features

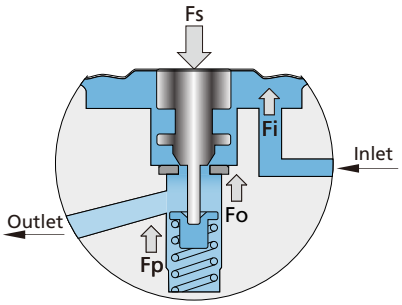
◎ Metal diaphragm pressure sensing mechanism to ensure excellent sensitivity and stable set point pressures.
◎ Stem designed with fine-pitch threads to enable precise spring adjustment with low torque.
◎ Metal-to-metal diaphragm seal minimizes the potential for leakage.

Working Principle

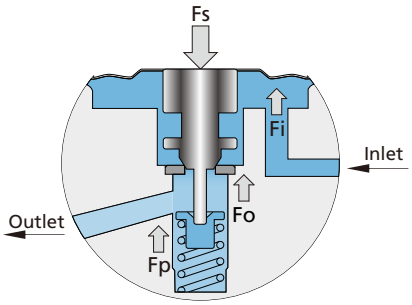
A back pressure regulator operates on a principle similar to that of a pressure regulator. It maintains a dynamic equilibrium of forces, including the downward force on the diaphragm exerted by the range spring--loading force (Fs), the force from the poppet spring (Fp), the inlet pressure force (Fi), and the outlet pressure force (Fo). These forces establish a balance, expressed as Fs = Fp + Fi + Fo. When one force changes, the other forces must adjust to reestablish balance.

When the loading force (Fs) becomes lower than the combined force of the poppet spring(Fp), inlet pressure (Fi), and outlet pressure (Fo), the poppet lifts away from the seat seal, opening the path and thereby reducing the inlet pressure, where the control pressure upstream of the back pressure regulator decreases.

When the loading force (Fs) becomes higher than the combined force of the poppet spring(Fp), inlet pressure (Fi), and outlet pressure (Fo), the poppet presses against the seat seal, closing the path and thereby increasing the inlet pressure, where the control pressure upstream of the back pressure regulator rises.



Fs < Fp+Fi+Fo



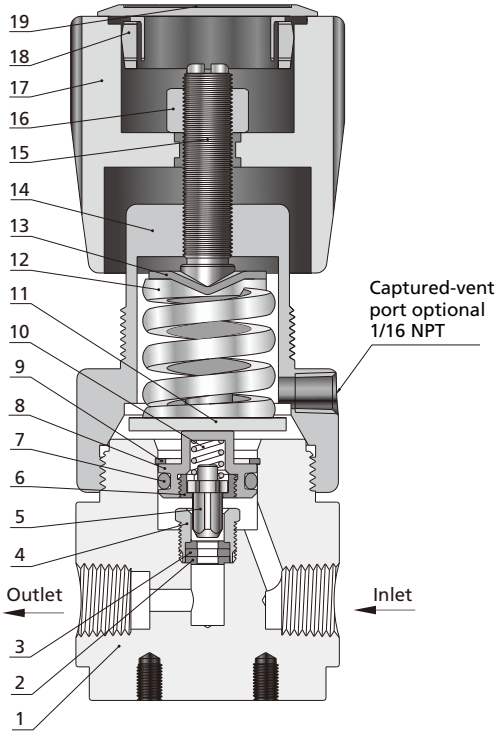
Fs > Fp+Fi+Fo

Back Pressure Piston Regulators

A piston regulator has the same working principle as a diaphragm regulator. The key distinction is that the diaphragm is changed to a piston to satisfy the needs for high pressure applications. Piston sensing mechanisms typically are used to regulate higher pressures than a diaphragm can withstand. They are also more resistant to damage caused by pressure spikes and have a short stroke to maximize cycle life.

Major Materials of Construction

Item	Component	Material/Specification
1	Body	316L SS/ASTM A479 or Brass
2	Seat	PCTFE/ASTM D1430
3	Seat Gasket	316L SS/ASTM A479
4	Seat Retainer	316L SS/ASTM A479
5	Lift Poppet	316L SS/ASTM A479
6	Piston Nut	316L SS/ASTM A479
7	O-ring	NBR or FKM or FFKM
8	Piston	316L SS/ASTM A479
9	Circlips for Bores	304 SS/GB 893.126
10	Poppet Spring	316L SS
11	Spring Plate	304 SS/ASTM A479
12	Range Spring	Alloy
13	Spring Button	304 SS/ASTM A479
14	Bonnet	304 SS/ASTM A479 or Brass
15	Range Screw	316 SS/ASTM A479
16	Nut	304 SS/ASTM A479
17	Knob Handle	ABS
18	Hole Plug	ABS
19	Label	PVC



Features

◎ Piston sensing mechanism can withstand higher pressures, so piston back pressure regulators have a larger inlet pressure adjustment range.
◎ Stem designed with fine-pitch threads enables precise spring adjustment with low torque.
◎ BPGC series piston back pressure regulators are equipped with capture-venting holes. When the piston seal of the back pressure regulator fails accidentally, the media can be released to a designated location through the Captured-vent port.

Products Range

Regulators

Regulators are typically used to reduce the high pressure in pipelines to a desired lower pressure.

Back Pressure Regulators

Back pressure regulators are used to control system back pressure and are typically used in analytical and metering systems.

Pressure Control Panels

The pressure control panels consist of a cylinder pressure regulator (RDGC or RPGC series) and a three-way diaphragm valve with cut-off, pressure reducing and vent functions. They are typically installed in gas storage areas to depressurize high pressure media from cylinders or tanks to a desired lower pressure.

Changeover Systems

The changeover system switches between the two gas sources and selects one of them to supply gas to ensure the continuity of gas consumption.

There are manual changeover system and automatic changeover system.

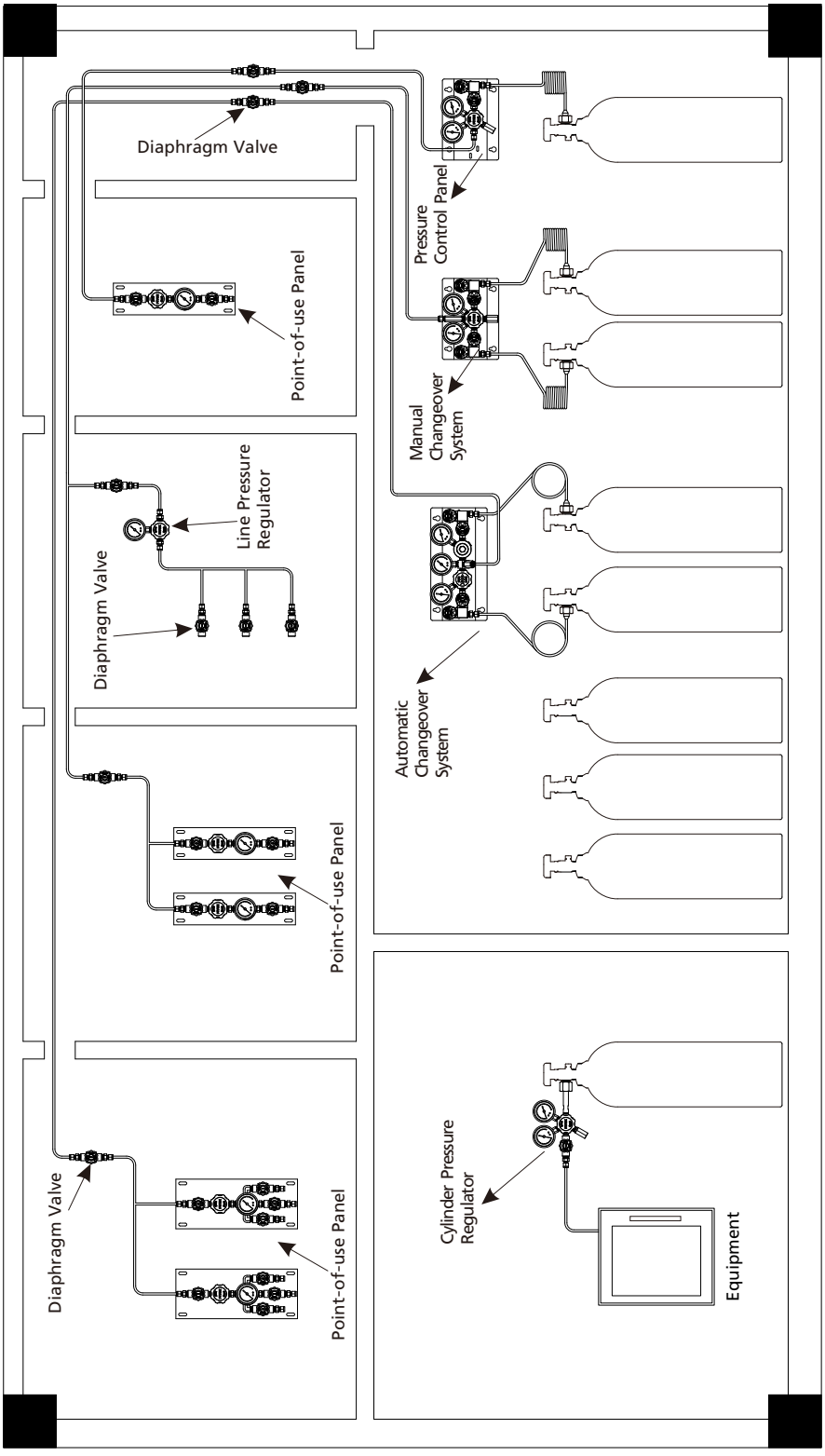
Manual changeover system, when a gas source is exhausted, you need to manually switch to another gas supply.

Automatic changeover system, when a gas source is exhausted, the system automatically switches to another gas supply.

Point-of-Use Panels

The point-of-use panels consist of a line pressure regulator (RDGC series or RDSC series) and a diaphragm valve with cut-off and pressure reducing functions. They are typically installed in a gas point to precisely adjust the system to a desired pressure.

Typical Application



Product Selection Guide

Overview of Basic Data

Select diaphragm regulators when the outlet pressure < 500 psig.
Select piston regulators when the outlet pressure ⩾ 500 psig.
Dual-stage diaphragm regulators are recommended when the inlet pressure fluctuates frequently but no outlet pressure variation is desired.

Type	Series	Sensing Mechanism	Maximum Inlet Pressure (psig)	Outlet Pressure Range (psig)	Captured Vent Port	Flow Rate (Cv)
General Diaphragm Regulators	RDGC	Diaphragm	4500	0~500	Yes	0.2 (Inlet pressure 500, 1500) 0.09 (Inlet pressure 3500, 4500)
General Tied-Diaphragm Regulators	RTGC	Diaphragm	3500	0~150	Yes	0.06 (Inlet pressure 3500) 0.15 (Inlet pressure 600, 1000)
Miniature Diaphragm Regulators	RDCC	Diaphragm	150	0~100	No	0.08
Miniature Tied Diaphragm Regulators	RTCC	Diaphragm	150	0~100	No	0.08
Two-Stage Diaphragm Regulators	RDDC	Diaphragm	4500	0~250	Yes	0.06
Sensitive Diaphragm Regulators	RDSC	Diaphragm	4500	0~200	Yes	0.06
Medium Flow Diaphragm Regulators	RDGH	Diaphragm	3000	0~200	Yes	1.0
High Flow Diaphragm Regulators	RDGN	Diaphragm	500	0~150	Yes	1.8
Steam Heated Regulators	RDVC	Diaphragm	3600	0~500	No	0.06
General Piston Regulators	RPGC	Piston	6000	0~2500	Yes	0.06 0.1 (Vent)
Compact Piston Regulators	RPCC	Piston	6000	0~1800	No	0.06
High Pressure Piston Regulators	RPGX	Piston	10000	10~10000	No	0.06
High Flow Piston Regulators	RPGN	Piston	4500	0~1500	No	2.0
Back Pressure Regulators	BDGC	Diaphragm	250	0~250	No	0.3
	BPGC	Piston	1000	10~1000	Yes	0.3
	BPGX	Piston	10000	5~10000	No	0.25
Pressure Control Panels①	FSR-1	Diaphragm	4500	0~500	No	0.06
	FSR-2	Piston	4500	0~2500	Yes	0.06 0.1 (Vent)
Changeover Systems①	FDR-1	Diaphragm	4500	0~500	No	0.06
	FDR-2	Piston	4500	0~2500	Yes	0.06 0.1 (Vent)
	CEPR	Diaphragm	3000	85~265	No	0.06
	FDR-1L	Diaphragm	4500	85~265	No	0.06
	DPPR	Diaphragm	3000	0~150	No	0.06
	FDR-1T	Diaphragm	4500	0~150	No	0.06
Point-of-Use Panels①	FPR-1	Diaphragm	1500	0~500	No	0.14
	FPR-1S	Diaphragm	1500	0~200	Yes	0.06

Note:
① Sensing mechanism of pressure control panels, changeover systems and point-of-use panels refers to the sensing mechanism of the pressure regulator.

Pressure Gauge Ordering Information

When selecting pressure gauges for use with pressure regulators, back pressure regulators, or control systems, the relationship between the maximum scale value of the inlet/outlet pressure gauge and the working pressure is as follows:

Working Pressure vs. Maximum Gauge Scale			
Working Pressure (psig)	Max. Gauge Scale		
	Scale Unit		
	psig (primary)	MPa (secondary)	bar (secondary)
15	30	0.2	2
25	60	0.4	4
30	60	0.4	4
50	100	0.7	7
60	100	0.7	7
75	100	0.7	7
80	160	1.1	11
100	160	1.1	11
140	200	1.3	13
150	200	1.3	13
200	300	2	20
220	300	2	20
250	400	2.5	25
300	400	2.5	25
500	800	5	50
600	1000	7	70
700	1000	7	70
750	1000	7	70
800	1500	10	100
1000	1500	10	100
1200	2000	13	130
1500	2000	13	130
1800	3000	20	200
2500	4000	25	250
3000	4000	25	250
3500	6000	40	400
3600	6000	40	400
3800	6000	40	400
4000	6000	40	400
4500	6000	40	400
6000	8000	55	550
10000	15000	100	1000

Notes:

1. Pressure gauge scale units are available in either psi/MPa or psi/bar, with psi as the primary unit.
2. For dual-scale pressure gauges, the maximum scale value refers to the primary scale. The secondary scale is for reference only.
   Example: For a gauge with a scale range up to 200 psi, the primary scale's maximum value is 200 psi, while the secondary scale (MPa) may show a corresponding value of 1.3 or 1.4 MPa.
3. Pressure regulators or back pressure regulators are generally equipped with GC series pressure gauges, except in the following cases:
   a. For pressure regulators or back pressure regulators with welded integral FR metal gasket face seal connections, GP series pressure gauges are used by default.
   b. If the inlet pressure or control pressure exceeds 4500 psig, GA series pressure gauges are default.
   c. If pressure regulators or back pressure regulators are required to comply with NACE standards, GA Series pressure gauges are used by default.
   d. If the working temperature exceeds 100°C, GA series pressure gauges are used by default.
4. For pressure gauges used in control systems, refer to the corresponding product catalog.
5. For special requirements regarding pressure gauge series or maximum scale values, please contact FITOK or our authorized distributors.

User's Guide

1. The pressure reducing regulator is a sensitive component. Handle with care and avoid impact or collision.
2. Do not use the pressure reducing regulator as a shutoff valve or a safety valve.
3. Before connecting the pressure reducing regulator to the piping system, ensure that the system is purged to remove Impurities, such as iron chips from tubing cutting or welding slag from welding processes.
4. If the medium contains impurities, a filter must be installed upstream of the regulator inlet. Otherwise, impurities may damage the regulator, causing failure of pressure regulation and continuous downstream pressure rise, which may damage pressure gauges or other equipment. FITOK FT series 15 μm filters are recommended.
5. For liquid service, the inlet filter element may become clogged, causing pressure drop and reduced flow. It is recommended to remove the filter element and install a filter upstream of the regulator inlet instead.
6. During installation, verify the inlet and outlet. The marking "IN" indicates the inlet, and "OUT" indicates the outlet. Do not allow any loose thread seal tape or thread sealant to enter the regulator. Do not connect high pressure exceeding the set outlet pressure to the outlet side, as this may damage the regulator.
7. The regulator may be bottom-mounted or panel-mounted. For panel mounting, some series require removal of the handle. When removing the handle, ensure that the handle and valve stem positions remain consistent with factory settings; otherwise, the outlet pressure range may deviate from the factory settings.
8. Check all connections for leakage using a leak detection solution or a helium leak detector. Turn the handle clockwise to set the outlet pressure to the required value, and verify that all connections are leak-free.
9. After connecting the regulator to the piping system, before operation, confirm that the regulator is in the closed position by turning the handle. Turn the handle counterclockwise to the loosened position (closed position). Note: Do not continue turning the handle counterclockwise after it is fully loosened, as this may cause jamming or detachment of the handle.
10. To adjust pressure, introduce the required inlet pressure, close the shutoff valve downstream of the regulator, and slowly turn the handle clockwise while monitoring the outlet pressure gauge until the desired outlet pressure is reached.
11. To increase outlet pressure, turn the handle clockwise. To decrease outlet pressure, turn the handle counterclockwise while the medium is flowing (i.e., under flow conditions).
12. For a non-self-venting regulator, when closing the regulator, if residual pressure remains at the outlet, do not turn the handle counterclockwise (DECREASE). Otherwise, the residual pressure will act directly on the sensing element (diaphragm or piston), potentially damaging the regulator. The correct procedure is to first release the outlet pressure, then turn the handle counterclockwise to close the regulator.

Regulators

Contents

General Diaphragm Regulators
RDGC Series

Introduction

RDGC Series General Diaphragm Regulators feature a single-stage pressure reduction design with a combination of metal diaphragm and free poppet. This configuration ensures excellent sensitivity and stable outlet pressure, making these valves ideal for a variety of gas and low-viscosity liquid media that feature low to medium flow.

Features

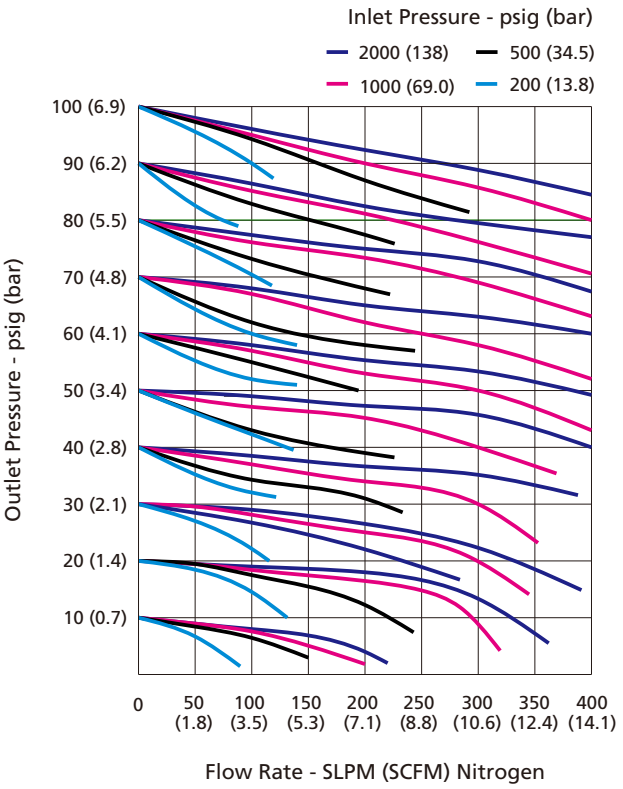
◎ Compact design and lightweight
◎ Lift poppet is made of Alloy C-276, offering excellent corrosion resistance
◎ Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance
◎ Reinforced diaphragm improves sealing performance and extends service life
◎ The bonnet includes a captured vent port, allowing media to be vented to a designated location in the event of accidental diaphragm rupture

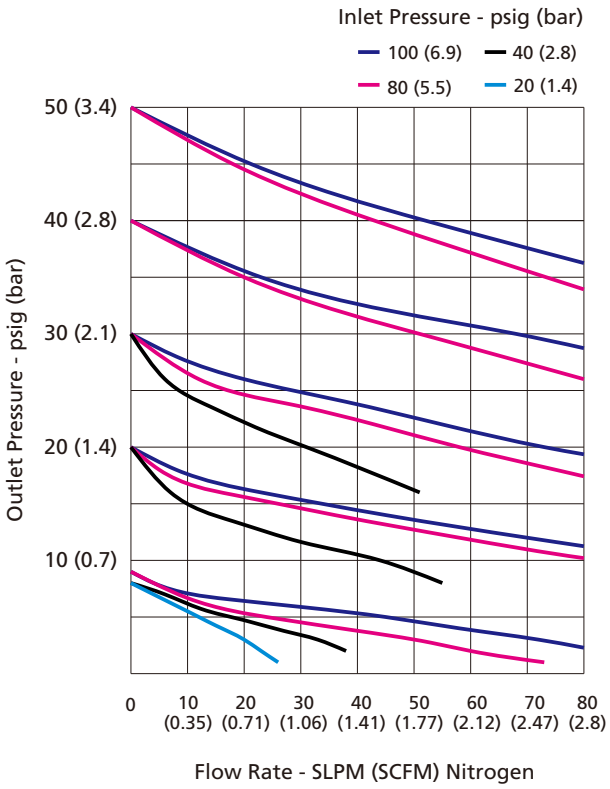
Technical Data

Port Size			1/4", 3/8", 6 mm or 8 mm
Max. Working Pressure			4500 psig (310 bar)
Outlet Pressure Range			0 ~ 25 psig (0 ~ 1.7 bar)
			0 ~ 50 psig (0 ~ 3.4 bar)
			0 ~ 100 psig (0 ~ 6.9 bar)
			0 ~ 150 psig (0 ~ 10.3 bar)
			0 ~ 250 psig (0 ~ 17.2 bar)
			0 ~ 500 psig (0 ~ 34.5 bar)
Flow Coefficient (Cv)			500, 1500 psig Inlet: 0.2 (34.5, 103 bar Inlet: 0.2)
			3500, 4500 psig Inlet: 0.09 (241, 310 bar Inlet: 0.09)
Working Temperature ①			PCTFE：-40 ~ 165 °F (-40 ~ 74 °C)
			Polyimide：-40 ~ 500 °F (-40 ~ 260 °C)
			PEEK：-40 ~ 400 °F (-40 ~ 204 °C)
SPE (Supply Pressure Effect)			1.5 psig per 100 psig source pressure change
Leak Rate (Helium)	**External**	**Inboard**	$\leqslant 2\times10^{-10}$ std·cm³/s
		Outboard	$\leqslant 2\times10^{-9}$ std·cm³/s
	Internal		$\leqslant 4\times10^{-8}$ std·cm³/s

① For the working temperature of products equipped with a pressure gauge, a relief valve, or both, please refer to the **catalog for Pressure Gauges** or **Relief Valves**.

Flow Data



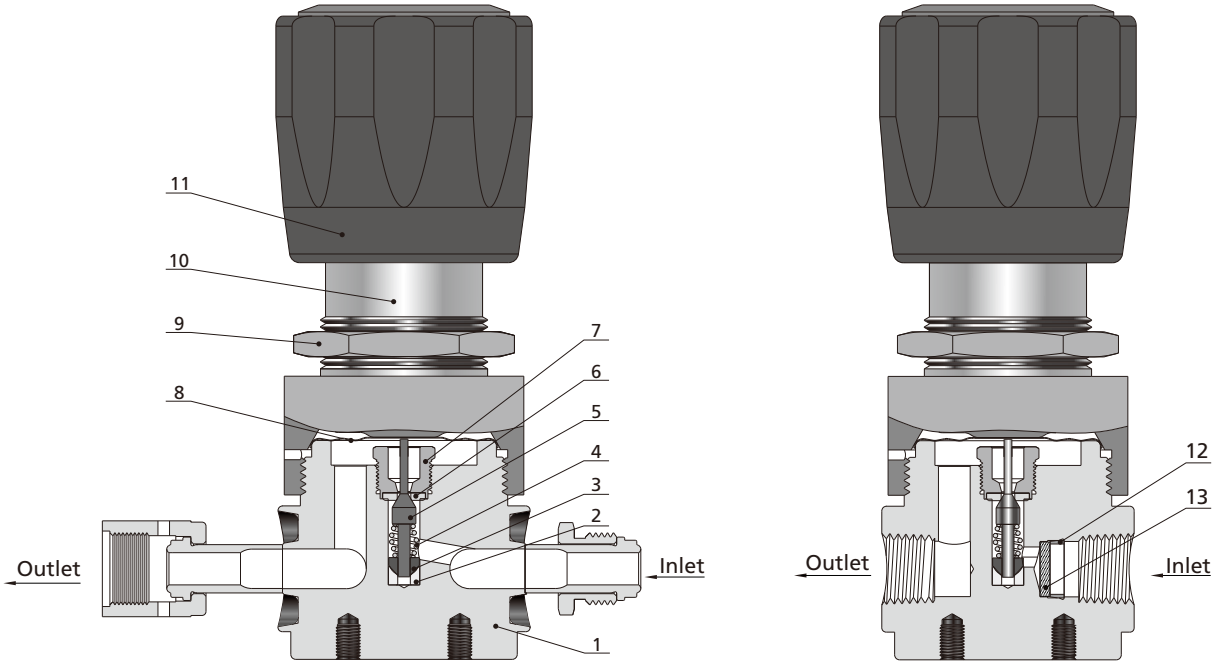


Process Specification

Process Specification / Item	Special Cleaning and Packaging (FC-02)		Ultra High Purity (FC-03)
Material	316L SS, 316L SS VAR, Alloy C-276	Brass (Nickle-Plated)	316L SS, 316L SS VAR
Wetted Surface Roughness	Face Seal Connection or Butt Weld Connection: Ra 20 µin. (0.5 µm) Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)	Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)	Face Seal Connection and Butt Weld Connection: Ra 10 µin. (0.25 µm)
Polishing Process	Machine Finished		Electropolished
Assembly Environment	In specially cleaned areas		ISO Class 4 (FS 209E Class 10 equivalent) cleanroom
Packaging	Double bagged		Double bagged in cleanroom

Note: For products with higher surface finish, please contact FITOK.

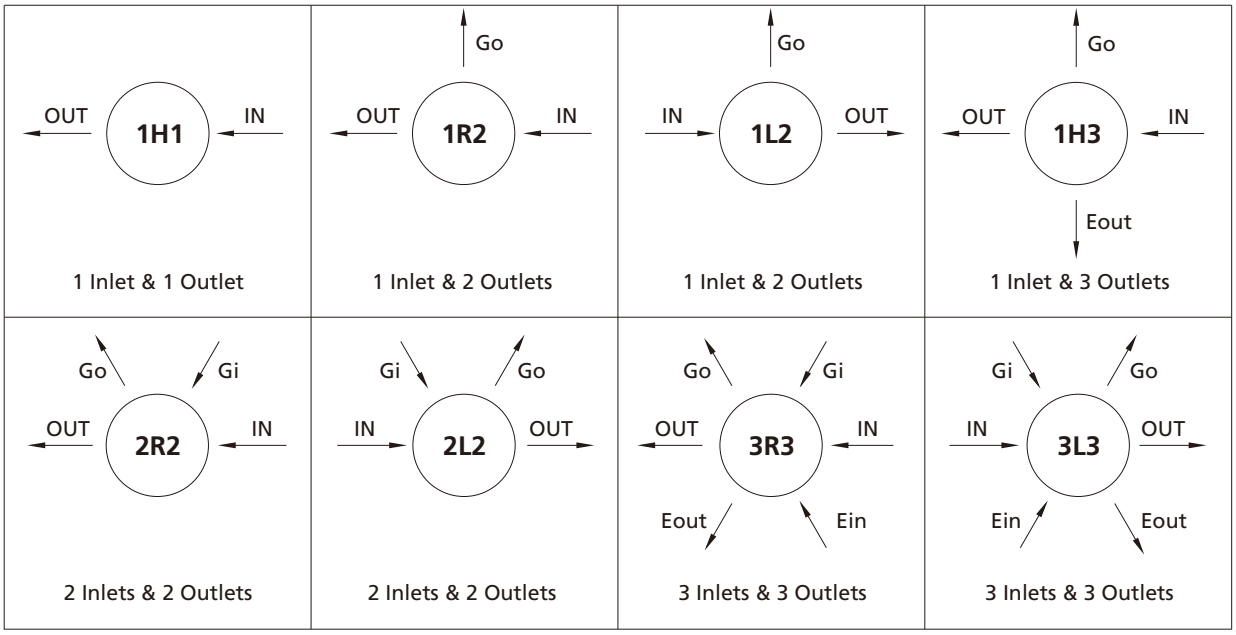
Major Materials of Construction



Item	Component	Material/Specification			
		6L	6LV	B	HC
1	Body	316L SS	316L SS VAR	Brass (Nickle-Plated)	Alloy C-276
2	Friction Sleeve	316L SS	316L SS VAR	316L SS	Alloy C-276
3	Poppet Damper	PTFE/ASTM D1710 or Polyimide (use only with Polyimide seat)			
4	Poppet Spring	Alloy X-750			
5	Lift Poppet	Alloy C-276/ASTM B574			
6	Seat	PCTFE/ASTM D1430 or Polyimide or PEEK			
7	Seat Retainer	316L SS	316L SS VAR	316L SS	Alloy C-276
8	Diaphragm	316L SS/ASTM A240	Alloy 22	316L SS/ASTM A240	Alloy 22
9	Panel Nut	304 SS/ASTM A479			
10	Bonnet	304 SS/ASTM A479	304 SS/ASTM A479	Brass (Nickle-Plated)	304 SS/ASTM A479
11	Handle	ABS or Aluminum Alloy (use only with Polyimide or PEEK seat)			
12	Retaining Ring ①	PTFE/ASTM D1710	PTFE/ASTM D1710	PTFE/ASTM D1710	—
13	Filter ①	316L SS	316L SS	316L SS	—

Note: ① Models featuring HC material, metal gasket face seal fitting connections, or butt weld connections are not equipped with a filter element. All other models include a filter element with a particle removal rating of 40 μm at the inlet.

Porting Configurations



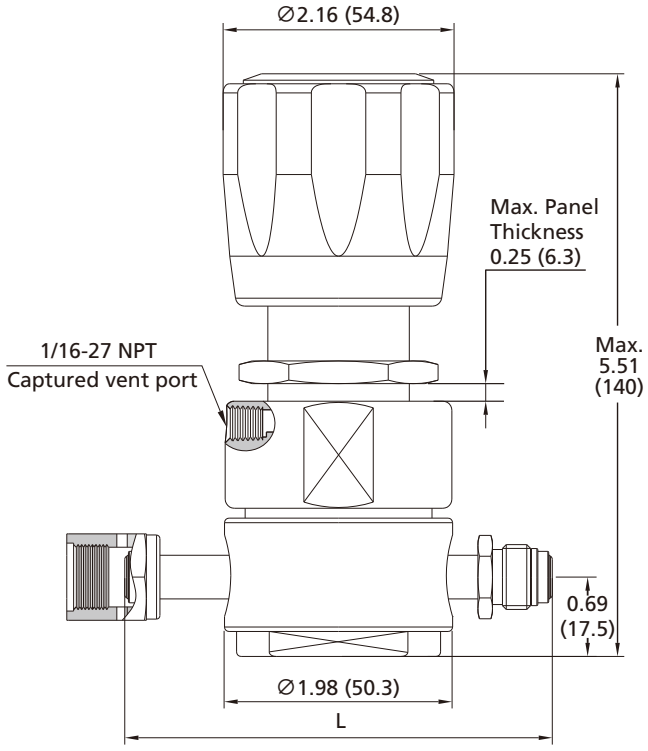
Porting Configuration Symbol

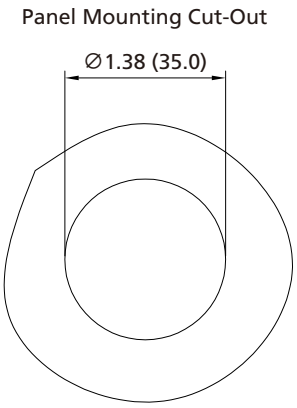
IN	OUT	Gi	Go	Ein	Eout
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port	Auxiliary Inlet	Auxiliary Outlet

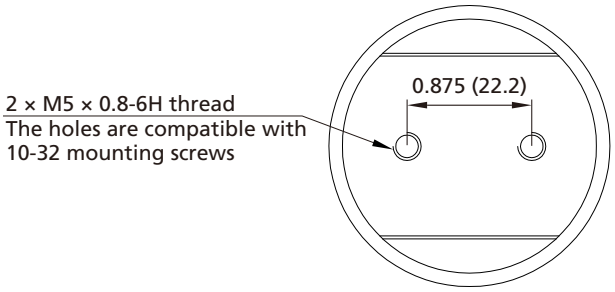
Notes:
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Dimensions and Ordering Information

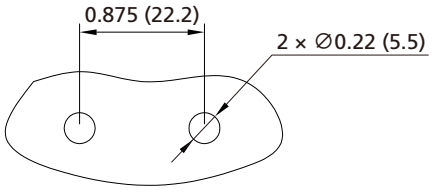
Dimensions, in inches (millimeters), are for reference only.







Bottom Mounting Screw Holes



Bottom Mounting Cut-Outs

Connection Designator	Connection Type and Size	Dimension, in.(mm)
		L
FFR4	1/4" Rotatable Female FR Fitting	3.7 (94.0)
RFR4	1/4" Rotatable Male FR Fitting	3.7 (94.0)
FNS4	1/4 Female NPT	1.98 (50.3)
TB4	1/4"× 0.035" Tube Butt Weld	2.96 (75.2)
FL4	1/4" Tube Fitting	3.95 (100.3)
TB6	3/8"× 0.035" Tube Butt Weld	2.96 (75.2)
FL6	3/8" Tube Fitting	4.19 (106.4)
ML6	6 mm Tube Fitting	3.98 (101.0)
ML8	8 mm Tube Fitting	4.04 (102.5)

Ordering Number Description

RDGC - 6L - 35H - 1H - 3R3 - C580 - FNS4 - IBAP - OBRP - V - ATPM - F2

Body Material	
6L	316L SS
6LV	316L SS VAR
B	Brass (Nickle Plated)
HC	Alloy C-276

Max. Inlet Pressure	
5H	500 psig (34.5 bar)
15H	1500 psig (103 bar)
35H	3500 psig (241 bar)
45H	4500 psig (310 bar)

Outlet Pressure Range	
25	0~25 psig (0~1.7 bar)
50	0~50 psig (0~3.4 bar)
1H	0~100 psig (0~6.9 bar)
150	0~150 psig (0~10.3 bar)
250	0~250 psig (0~17.2 bar)
5H	0~500 psig (0~34.5 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
1H3	1 Inlet & 3 Outlets
2R2	2 Inlets & 2 Outlets
2L2	2 Inlets & 2 Outlets
3R3	3 Inlets & 3 Outlets
3L3	3 Inlets & 3 Outlets

Inlet (IN)	
C_	CGA Cylinder Connection (For Inlet Only)
DIN_	DIN Cylinder Connection (For Inlet Only)
FFR4	1/4" Rotatable Female FR Fitting
RFR4	1/4" Rotatable Male FR Fitting
FNS4	1/4 Female NPT
TB4	1/4"×0.035" Tube Butt Weld
FL4	1/4" Tube Fitting
TB6	3/8"×0.035" Tube Butt Weld (Not applicable for 4500 psig inlet pressure)
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)
Same as Inlet
Specified in the same way as Inlet

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 6
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Auxiliary Inlet (Ein)	
	Without plug, refer to Note 6
AP	Plug

Outlet Pressure Gauge Port (Go)	
	Without pressure gauge, refer to Note 6
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

Seat Material	
	PCTFE
V	Polyimide
P	PEEK

Handle	
	Round Handle
AT	For lock nut, see Note 8

Installation Type	
	Threaded Hole at the Bottom
PM	Installed with Panel Nut
BS	Installed with Screws at the Bottom

Process Specification	
F2	FC-02
F3	FC-03

Auxiliary Outlet (Eout)	
	Without plug, refer to Note 6
RP	Plug
R	With relief valve, refer to Note 7

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. For metal gasket face seal fitting connection or tube butt weld connection, the connection and body are orbital-welded integral structure by default.
3. For NPT connection and tube fitting connection, the body connection is 1/4 Female NPT by default. Other options are adapted from Male NPT.
4. Models involving HC material, metal gasket face seal fitting connection, or butt weld connection are not equipped with filter element. Other part numbers are equipped with filter element with a particle removal rating of 40 μm at inlet.
5. Refer to Cylinder Connections catalog for connection details.
6. When choosing Cylinder Connection, NPT, or Tube Fitting for inlet and outlet, gauge connection (Gi, Go) and auxiliary port (Ein, Eout) are 1/4 Female NPT. When choosing Metal Gasket Face Seal Fitting or Tube Butt Weld for inlet and outlet, gauge connection (Gi, Go) is 1/4" Rotatable Male FR Fitting, without auxiliary connection (Ein, Eout) options.
7. For the outlet relief valve, selecting outlet pressure designator 5H is equipped with an RV Series relief valve; all other designators are equipped with an RUV Series relief valve. The set pressure is factory-set to 1.05–1.1 times the maximum outlet pressure at shipment. FITOK can preset a specified set pressure upon request. Please specify the desired set pressure when placing your order.
8. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.
9. When selecting accessories such as pressure gauges or relief valves, ensure that the media working temperature does not exceed the allowable temperature range of the accessories.
10. For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page A-12.

Two-Stage Diaphragm Regulators
RDDC Series

Introduction

RDDC Series Two-Stage Diaphragm Regulators feature a two-stage pressure reduction design. The combination of a metal diaphragm and a free poppet ensures excellent sensitivity and stable outlet pressure. This configuration makes these regulators ideal for low to medium flow applications that require steady outlet pressure.

Features

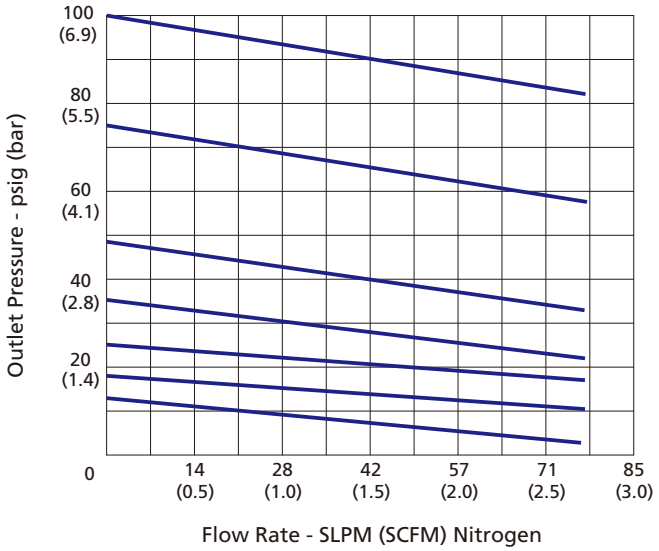
◎ Lift poppet is made of Alloy C-276, offering excellent corrosion resistance
◎ Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance
◎ Two-stage pressure reduction design ensures precise and stable outlet pressure
◎ The bonnet includes a captured vent port, allowing media to be vented to a designated location in the event of accidental diaphragm rupture

Technical Data

Port Size			1/4", 3/8", 6 mm or 8 mm
Max. Working Pressure			4500 psig (310 bar)
Outlet Pressure Range			0 ~ 25 psig (0 ~ 1.7 bar)
			0 ~ 50 psig (0 ~ 3.4 bar)
			0 ~ 100 psig (0 ~ 6.9 bar)
			0 ~ 150 psig (0 ~ 10.3 bar)
			0 ~ 250 psig (0 ~ 17.2 bar)
Flow Coefficient (Cv)			0.06
Working Temperature ①			PCTFE: -40 ~ 165 °F (-40 ~ 74 °C)
			Polyimide: -40 ~ 500 °F (-40 ~ 260 °C)
			PEEK: -40 ~ 400 °F (-40 ~ 204 °C)
SPE (Supply Pressure Effect)			0.01 psig per 100 psig source pressure change
Leak Rate (Helium)	**External**	**Inboard**	$\leqslant 2\times10^{-10}$ std·cm³/s
		Outboard	$\leqslant 2\times10^{-9}$ std·cm³/s
	Internal		$\leqslant 4\times10^{-8}$ std·cm³/s

① For the working temperature of products equipped with a pressure gauge, a relief valve, or both, please refer to the **catalog for Pressure Gauges** or **Relief Valves**.

Flow Data

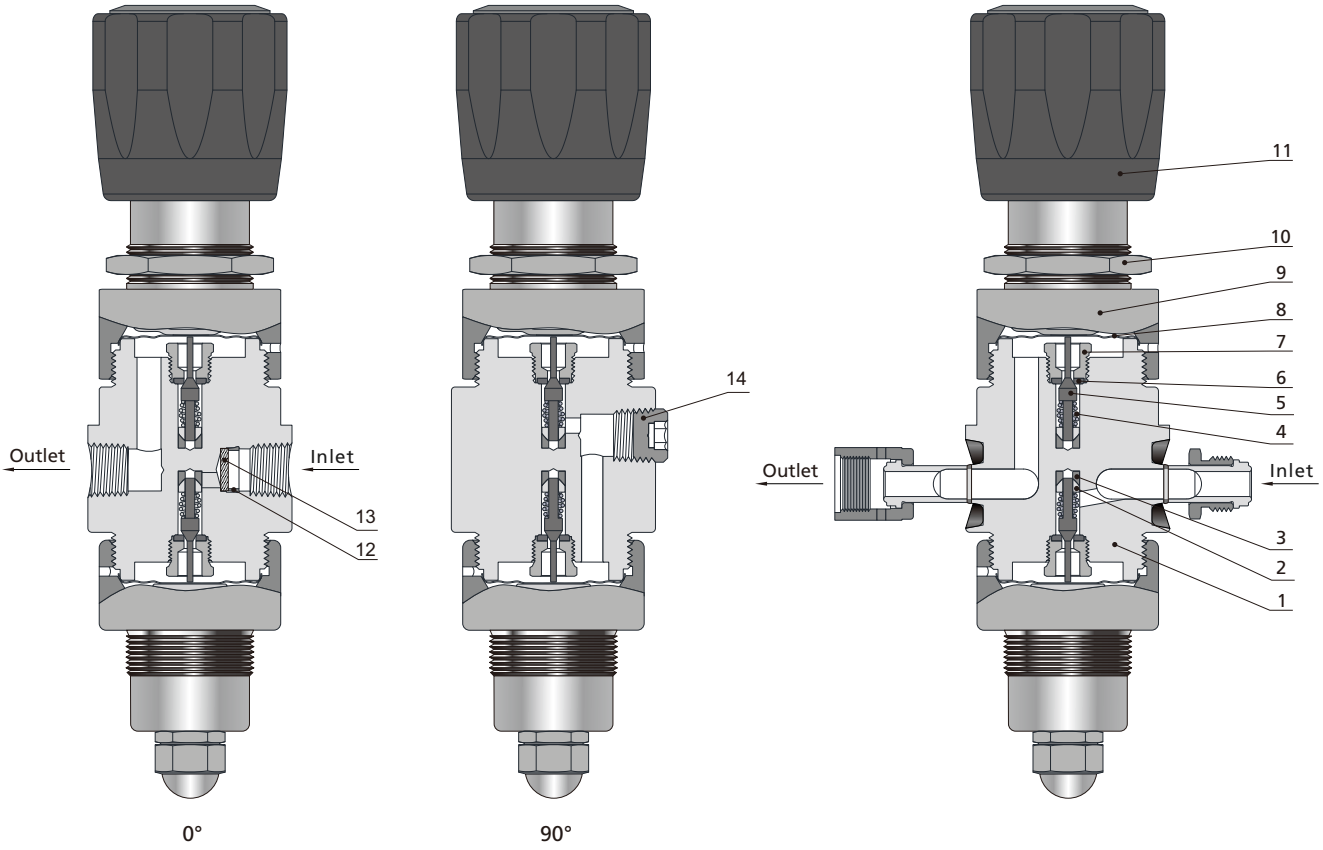


Process Specification

Item \ Process Specification	Special Cleaning and Packaging Process (FC-02)		Ultra High Purity Process (FC-03)
Material	316L SS, 316L SS VAR, Alloy C-276	Brass (Nickle-Plated)	316L SS, 316L SS VAR
Wetted Surface Roughness	Face Seal Connection or Butt Weld Connection: Ra 20 µin. (0.5 µm) Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)	Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)	Face Seal Connection or Butt Weld Connection: Ra 10 µin. (0.25 µm)
Polishing Process	Machine Finished		Electropolished
Assembly Environment	In specially cleaned areas		ISO Class 4 (FS 209E Class 10 equivalent) cleanroom
Packaging	Double bagged		Double bagged in cleanroom

Note: For products with higher surface finish, please contact FITOK.

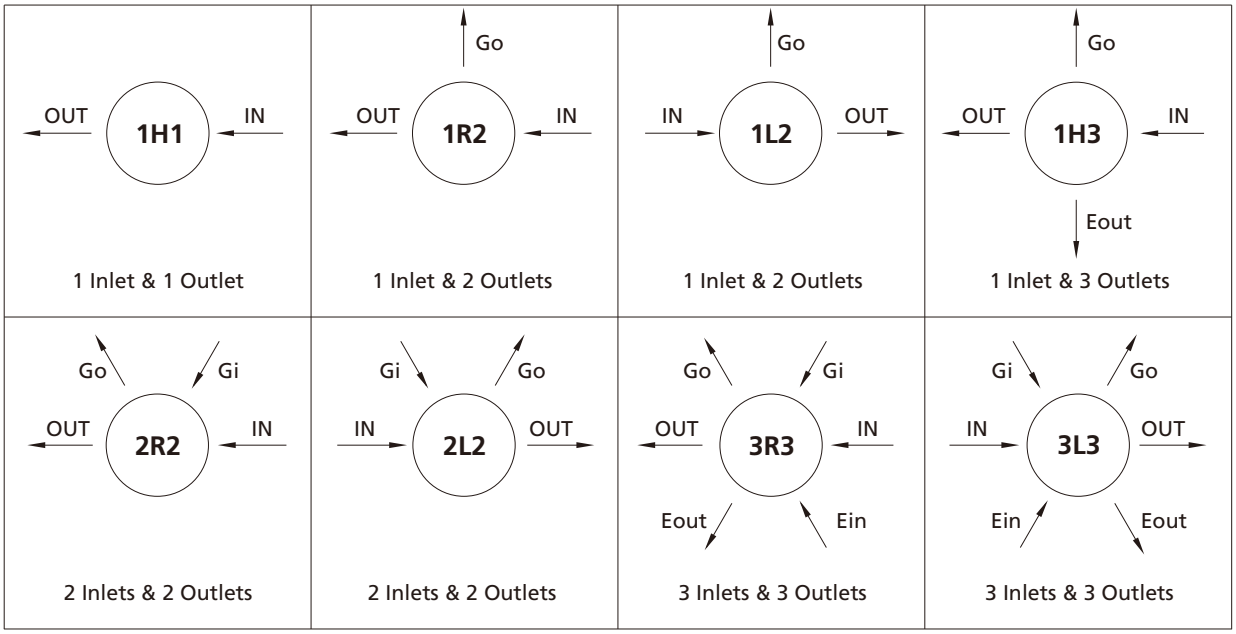
Major Materials of Construction



Item	Component	Material/Specification			
		6L	6LV	B	HC
1	Body	316L SS	316L SS VAR	Brass (Nickle-Plated)	Alloy C-276
2	Poppet Damper	PTFE/ASTM D1710 or Polyimide (use only with Polyimide seat)			
3	Friction Sleeve	316L SS	316L SS VAR	316L SS	Alloy C-276
4	Poppet Spring	Alloy X-750			
5	Lift Poppet	Alloy C-276/ASTM B574			
6	Seat	PCTFE/ASTM D1430 or Polyimide or PEEK			
7	Seat Retainer	316L SS	316L SS VAR	316L SS	Alloy C-276
8	Diaphragm	316L SS/ASTM A240	Alloy 22	316L SS/ASTM A240	Alloy 22
9	Bonnet	304 SS/ASTM A479	304 SS/ASTM A479	Brass (Nickle-Plated)	304 SS/ASTM A479
10	Panel Nut	304 SS/ASTM A479			
11	Handle	ABS or Aluminum Alloy (use only with Polyimide or PEEK seat)			
12	Retaining Ring①	PTFE/ASTM D1710	PTFE/ASTM D1710	PTFE/ASTM D1710	—
13	Filter①	316L SS	316L SS	316L SS	—
14	Interstage Hole Plug②	316L SS	316L SS VAR	316L SS	Alloy C-276

Notes: ① Models featuring HC material, metal gasket face seal fitting connections, or butt weld connections are not equipped with a filter element. All other models include a filter element with a particle removal rating of 40 μm at the inlet.
② Models with metal gasket face seal fitting connections or butt weld connections do not have interstage holes. In other models, interstage holes are present and plugged.

Porting Configurations



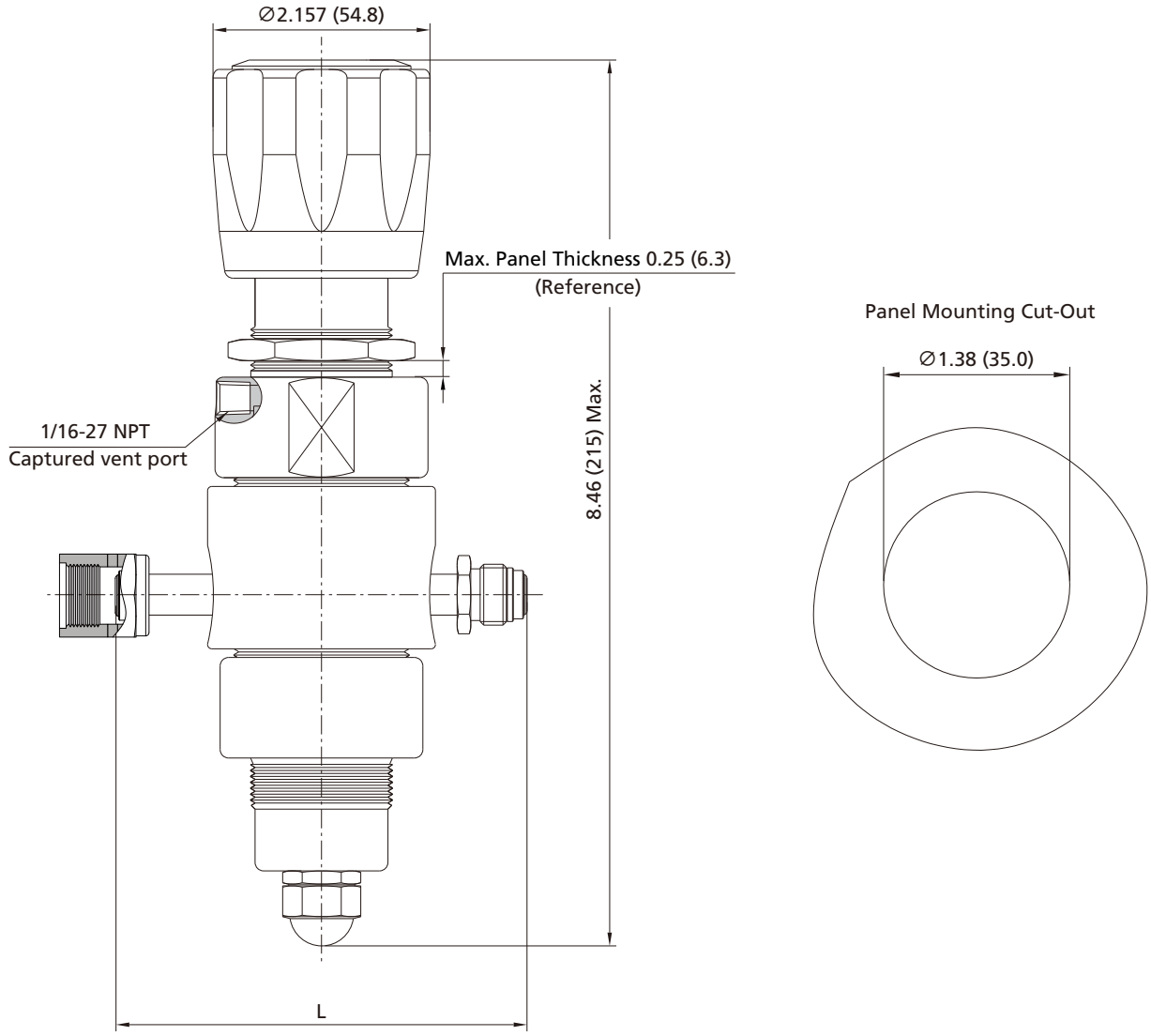
Porting Configuration Symbol

IN	OUT	Gi	Go	Ein	Eout
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port	Auxiliary Inlet	Auxiliary Outlet

Notes:
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Dimensions

Dimensions, in inches (millimeters), are for reference only.



Connection Designator	Connection Type and Size	Dimension, in.(mm)
		L
FFR4	1/4" Rotatable Female FR Fitting	3.7 (94.0)
RFR4	1/4" Rotatable Male FR Fitting	3.7 (94.0)
FNS4	1/4 Female NPT	2.11 (53.5)
TB4	1/4"×0.035" Tube Butt Weld	2.96 (75.2)
TB6	3/8"×0.035" Tube Butt Weld	2.96 (75.2)
FL4	1/4" Tube Fitting	4.07 (103.5)
FL6	3/8" Tube Fitting	4.31 (109.6)
ML6	6 mm Tube Fitting	4.10 (104.2)
ML8	8 mm Tube Fitting	4.16 (105.7)

Ordering Number Description

RDDC – 6L – 35H – 1H – 3R3 – C580 – FNS4 – IBAP – OBRP – V – ATPM – F2

Body Material	
6L	316L SS
6LV	316L SS VAR
B	Brass (Nickle Plated)
HC	Alloy C-276

Max. Inlet Pressure	
35H	3500 psig (241 bar)
45H	4500 psig (310 bar)

Outlet Pressure Range	
25	0~25 psig (0~1.7 bar)
50	0~50 psig (0~3.4 bar)
1H	0~100 psig (0~6.9 bar)
150	0~150 psig (0~10.3 bar)
250	0~250 psig (0~17.2 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
1H3	1 Inlet & 3 Outlets
2R2	2 Inlets & 2 Outlets
2L2	2 Inlets & 2 Outlets
3R3	3 Inlets & 3 Outlets
3L3	3 Inlets & 3 Outlets

Inlet (IN)	
C_	CGA Cylinder Connection (For Inlet Only)
DIN_	DIN Cylinder Connection (For Inlet Only)
FFR4	1/4" Rotatable Female FR Fitting
RFR4	1/4" Rotatable Male FR Fitting
TB4	1/4"×0.035" Tube Butt Weld
TB6	3/8"×0.035" Tube Butt Weld (Not applicable for 4500 psig inlet pressure)
FNS4	1/4" Female NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)	
	Same as Inlet
Specified in the same way as Inlet	

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 6
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Auxiliary Inlet (Ein)	
	Without plug, refer to Note 6
AP	Plug

Outlet Pressure Gauge Port (Go)	
	Without pressure gauge, refer to Note 6
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

Seat Material	
	PCTFE
V	Polyimide
P	PEEK

Auxiliary Outlet (Eout)	
	Without plug, refer to Note 6
RP	Plug
R	With relief valve, refer to Note 7

Handle	
	Round Handle
AT	Lock Nut, refer to Note 8

Installation Type	
	Fixedly Mounted at Pipe Inlet or Outlet
PM	Installed with Panel Nut

Process Specification	
F2	FC-02
F3	FC-03

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. For metal gasket face seal fitting connection or tube butt weld connection, the connection and body are orbital-welded integral structure by default.
3. For NPT connection and Metric/Fractional Tube Fitting connection, the body connection is 1/4 Female NPT by default. Other options are adapted from Male NPT.
4. Models involving HC material, metal gasket face seal fitting connection, or butt weld connection are not equipped with filter element. Other part numbers are equipped with filter element with a particle removal rating of 40 μm at inlet.
5. Refer to Cylinder Connections catalog for connection details.
6. When choosing Cylinder Connection, NPT, or Metric/Fractional Tube Fitting for inlet and outlet, gauge connection (Gi, Go) and auxiliary port (Ein, Eout) are 1/4 Female NPT. When choosing Metal Gasket Face Seal Fitting or Tube Butt Weld for inlet and outlet, gauge connection (Gi, Go) is 1/4" Rotatable Male FR Fitting, without auxiliary connection (Ein, Eout) options.
7. For outlet relief valve, the set pressure is established at 1.05-1.1 times the maximum outlet pressure upon shipping, FITOK can preset the specified set pressure according to customer requirements. Please specify the desired set pressure when placing your order.
8. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer equirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.
9. When selecting accessories such as pressure gauges or relief valves, ensure that the media working temperature does not exceed the allowable temperature range of the accessories.
10. For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page A-12.

Sensitive Diaphragm Regulators

RDSC Series

Introduction

RDSC Series Sensitive Diaphragm Regulators feature a single-stage pressure reduction design and a large-diameter diaphragm to enhance sensitivity to pressure fluctuations, making them ideal for low-flow, high-sensitivity applications.

Features

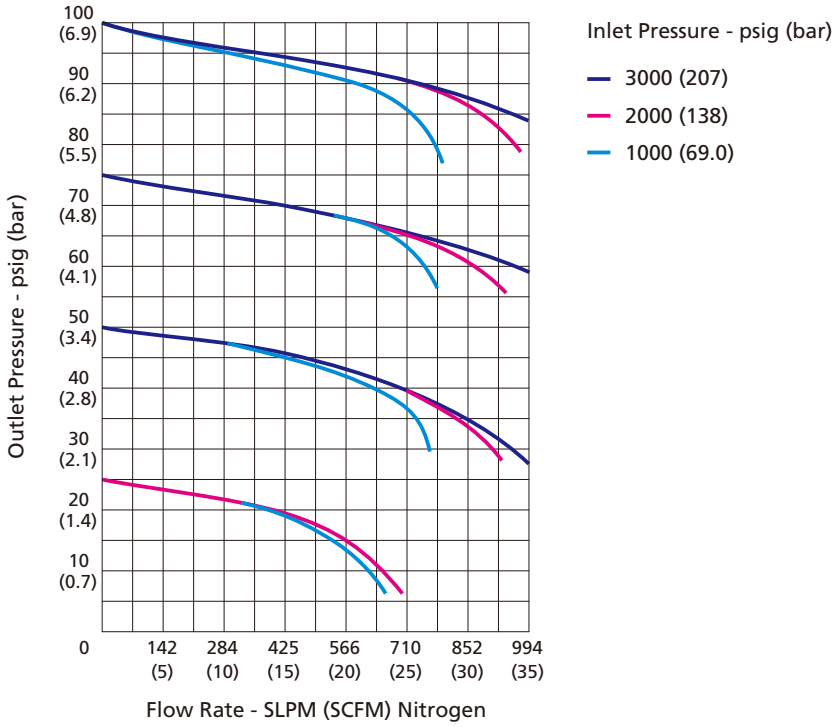
◎ Lift poppet is made of Alloy C-276, offering excellent corrosion resistance.
◎ Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance.
◎ Reinforced diaphragm design extends diaphragm service life.
◎ The bonnet includes a captured vent port, allowing media to be vented to a designated location in the event of an accidental diaphragm rupture.

Technical Data

Port Size			1/4", 3/8", 6 mm or 8 mm
Max. Working Pressure			4500 psig (310 bar)
Outlet Pressure Range			0 ~ 25 psig (0 ~ 1.7 bar)
			0 ~ 50 psig (0 ~ 3.4 bar)
			0 ~ 100 psig (0 ~ 6.9 bar)
			0 ~ 150 psig (0 ~ 10.3 bar)
			0 ~ 200 psig (0 ~ 13.8 bar)
Flow Coefficient (Cv)			0.06
Working Temperature ①			PCTFE: -40 ~ 165 °F (-40 ~ 74 °C)
			Polyimide: -40 ~ 500 °F (-40 ~ 260 °C)
			PEEK: -40 ~ 400 °F (-40 ~ 204 °C)
SPE (Supply Pressure Effect)			0.5 psig per 100 psig source pressure change
Leak Rate (Helium)	**External**	**Inboard**	$\leqslant 2\times10^{-10}$ std·cm³/s
		Outboard	$\leqslant 1\times10^{-9}$ std·cm³/s
	Internal		$\leqslant 4\times10^{-8}$ std·cm³/s

① For the working temperature of products equipped with a pressure gauge, a relief valve, or both, please refer to the **catalog for Pressure Gauges** or **Relief Valves**.

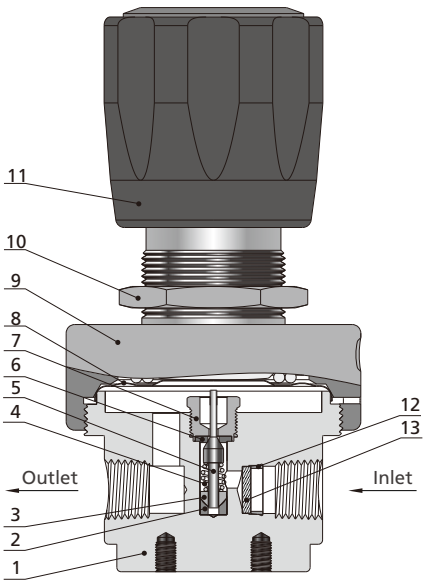
Flow Data



Process Specification

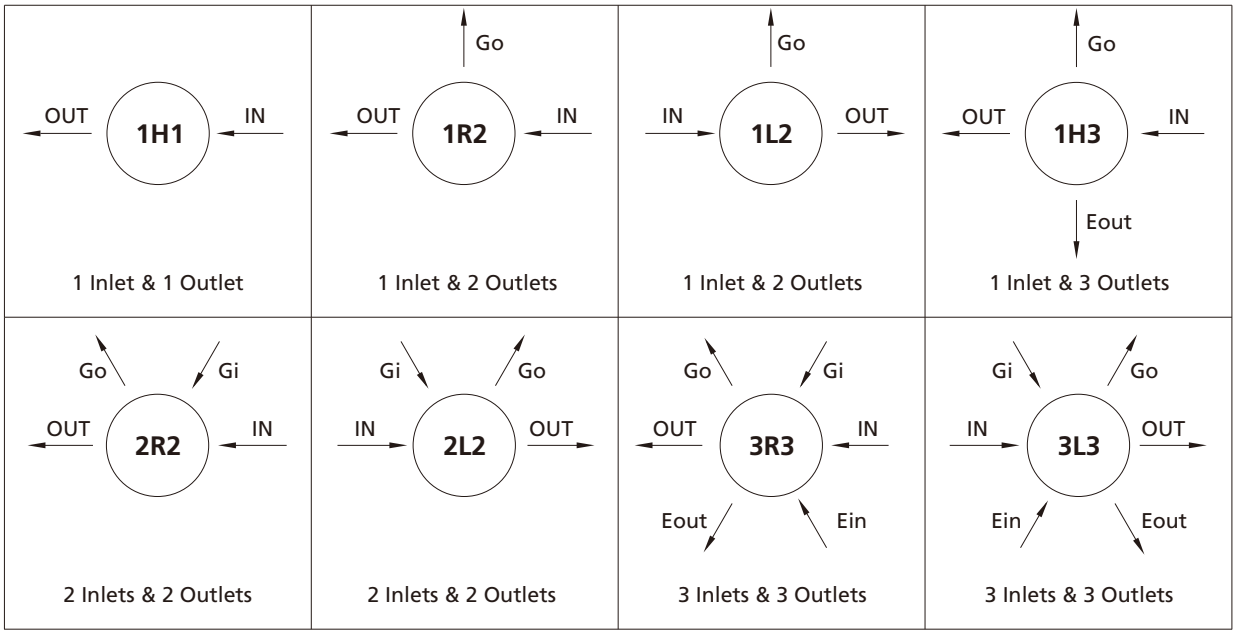
Process Specification / Item	Special Cleaning and Packaging Process (FC-02)
Material	316L SS, 316L SS VAR, Brass
Wetted Surface Roughness	Ra 32 µin. (0.8 µm)
Polishing Process	Machine finished
Assembly Environment	In specially cleaned areas
Packaging	Double bagged

Major Materials of Construction



Item	Component	Material/Specification		
		6L	6LV	B
1	Body	316L SS	316L SS VAR	Brass
2	Friction Sleeve	316L SS	316L SS VAR	316L SS
3	Poppet Damper	PTFE/ASTM D1710 or Polyimide (use only with Polyimide seat)		
4	Poppet Spring	Alloy X-750		
5	Lift Poppet	Alloy C-276/ASTM B574		
6	Seat	PCTFE/ASTM D1430 or Polyimide or PEEK		
7	Seat Retainer	316L SS	316L SS VAR	316L SS
8	Diaphragm	316L SS/ASTM A240	Alloy C2	316L SS/ASTM A240
9	Bonnet	304 SS/ASTM A479	304 SS/ASTM A479	Brass
10	Panel Nut	304 SS/ASTM A479		
11	Handle	ABS or Aluminum Alloy (use only with Polyimide or PEEK seat)		
12	Retaining Ring	PTFE/ASTM D1710		
13	Filter	316L SS		

Porting Configurations



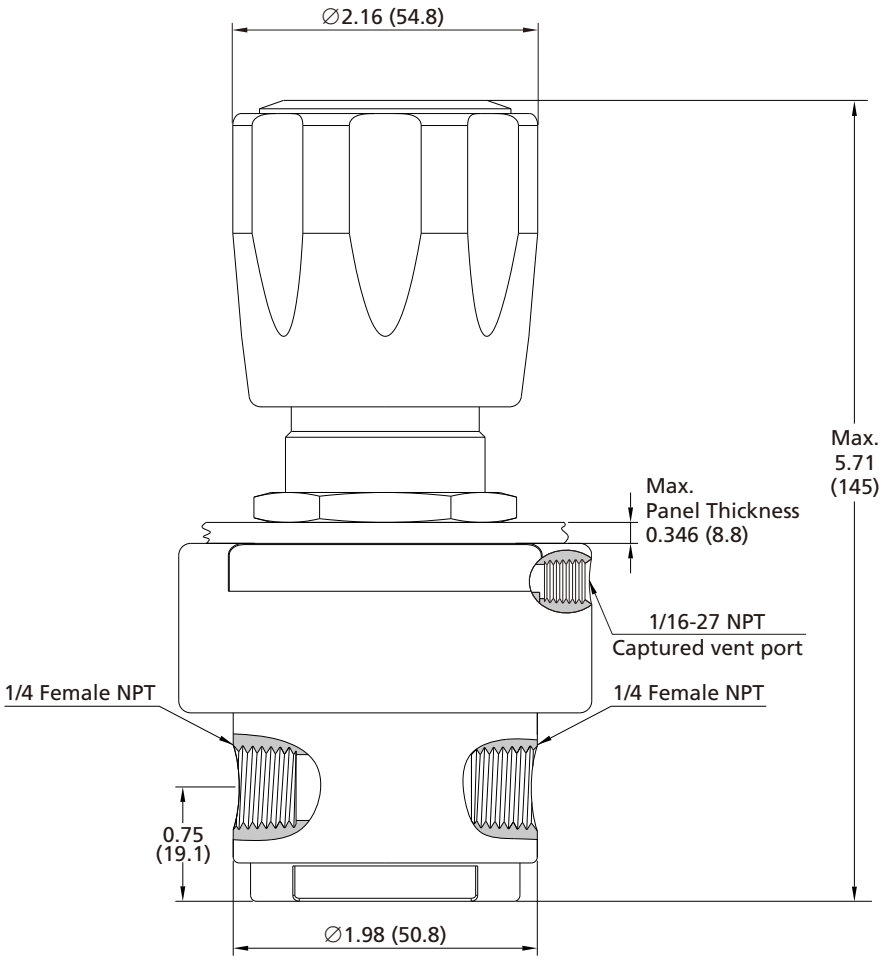
Porting Configuration Symbol

IN	OUT	Gi	Go	Ein	Eout
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port	Auxiliary Inlet	Auxiliary Outlet

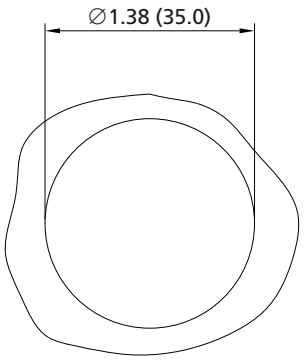
Notes:
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

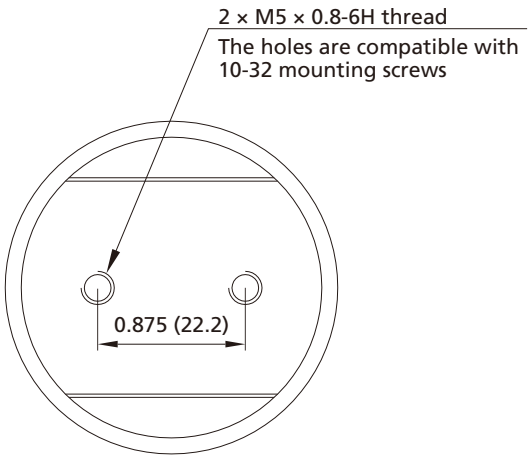
Dimensions

Dimensions, in inches (millimeters), are for reference only.

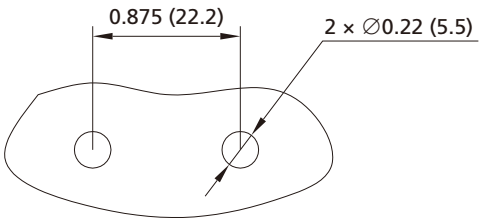


Panel Mounting Cut-Out





Bottom Mounting Screw Holes



Bottom Mounting Cut-Outs

Ordering Number Description

RDSC - 6L - 35H - 1H - 3R3 - FNS4 - FL4 - IBAP - OBRP - P - ATPM - F2

Series
RDSC

Max. Inlet Pressure	
35H	3500 psig (241 bar)
45H	4500 psig (310 bar)

Body Material	
6L	316L SS
6LV	316L SS VAR
B	Brass

Outlet Pressure Range	
25	0~25 psig (0~1.7 bar)
50	0~50 psig (0~3.4 bar)
1H	0~100 psig (0~6.9 bar)
150	0~150 psig (0~10.3 bar)
2H	0~200 psig (0~13.8 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
1H3	1 Inlet & 3 Outlets
2R2	2 Inlets & 2 Outlets
2L2	2 Inlets & 2 Outlets
3R3	3 Inlets & 3 Outlets
3L3	3 Inlets & 3 Outlets

Inlet (IN)	
C_	CGA Cylinder Connection (For Inlet Only)
DIN_	DIN Cylinder Connection (For Inlet Only)
FNS4	1/4 Female NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)
Same as Inlet
Specified in the same way as Inlet

Inlet Pressure Gauge Port (Gi)	
	No pressure gauge, refer to Note 2
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Auxiliary Inlet (Ein)	
	Without plug, refer to Note 2
AP	Plug

Outlet Pressure Gauge Port (Go)	
	No pressure gauge, refer to Note 2
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

Auxiliary Outlet (Eout)	
	No plug, refer to Note 2
RP	Plug
R	With relief valve, refer to Note 3

Seat Material	
	PCTFE
P	PEEK
V	Polyimide

Handle	
	Round Handle
AT	For lock nut, see Note 4

Mounting Type	
	Threaded Hole at the Bottom
PM	Installed with Panel Nut
BS	Installed with Screws at the Bottom

Process Specification	
F2	FC-02

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. The body connection is 1/4 Female NPT by default. Other options are adapted from Male NPT.
3. For the outlet relief valve, the set pressure is factory-set to 1.05-1.1 times the maximum outlet pressure by default, FITOK can preset the specified set pressure according to customer requirements. Please specify the desired set pressure when placing your order.
4. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments.
   FITOK can set the specified outlet pressure based on customer requirements; simply include thisinformation in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.
5. When selecting accessories such as pressure gauges or relief valves, ensure that the media working temperature does not exceed the allowable temperature range of the accessories.
6. For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page A-12.

Medium Flow Diaphragm Regulators

RDGH Series

Introduction

RDGH Series Medium Flow Diaphragm Regulators feature a single-stage pressure reduction design with a combination of metal diaphragm and free poppet. This configuration ensures excellent sensitivity and stable outlet pressure, making these valves ideal for various gas media with medium to high flow.

Features

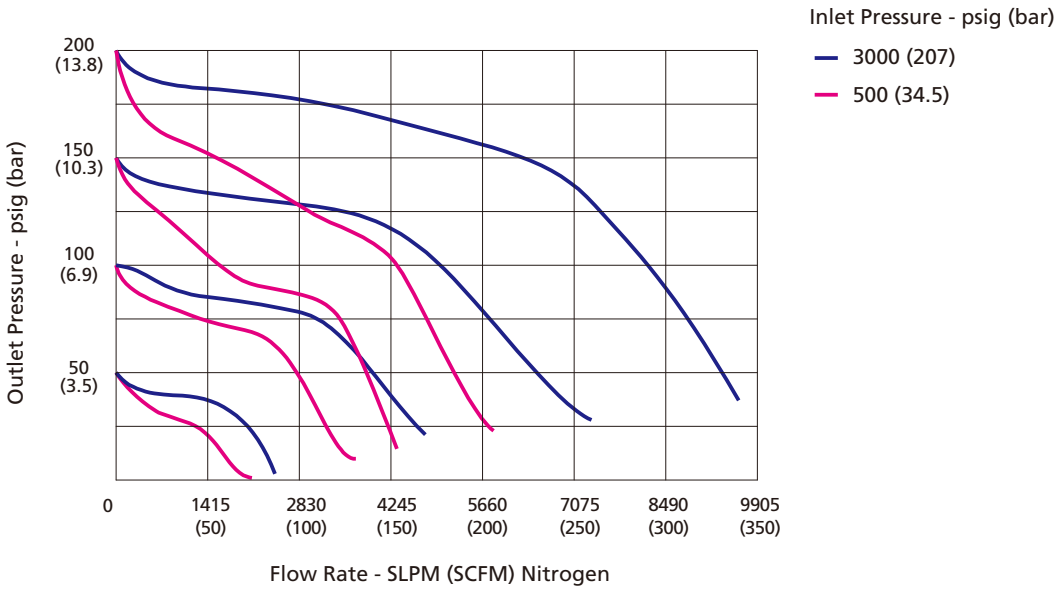
- Large diameter diaphragm offers enhanced pressure sensitivity.
- Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance.
- Reinforced diaphragm design extends diaphragm service life.
- The bonnet includes a captured vent port, allowing media to be vented to a designated location in the event of accidental diaphragm rupture.

Technical Data

Port Size			3/8" to 3/4", 10 mm or 12 mm
Max. Working Pressure			500 psig (34.5 bar)
			3000 psig (207 bar)
Outlet Pressure Range			0 ~ 25 psig (0 ~ 1.7 bar)
			0 ~ 50 psig (0 ~ 3.4 bar)
			0 ~ 100 psig (0 ~ 6.9 bar)
			0 ~ 150 psig (0 ~ 10.3 bar)
			0 ~ 200 psig (0 ~ 13.8 bar)
Flow Coefficient (Cv)			1.0
Working Temperature ①			PCTFE: -40 ~ 165 °F (-40 ~ 74 °C)
			PEEK: -40 ~ 400 °F (-40 ~ 204 °C)
SPE (Supply Pressure Effect)	**Max. Inlet Pressure: 500 psig**		2 psig per 100 psig source pressure change
	Max. Inlet Pressure: 3000 psig		0.5 psig per 100 psig source pressure change
Leak Rate	**External**	**Inboard**	$\leqslant 2\times10^{-10}$ std·cm^3/s (Helium)
		Outboard	$\leqslant 1\times10^{-9}$ std·cm^3/s (Helium)
	Internal		Max. Inlet Pressure 500 psig: $\leqslant 4\times10^{-8}$ std·cm^3/s (Helium)
			Max. Inlet Pressure 3000 psig: Bubble tight

① For the working temperature of products equipped with a pressure gauge, a relief valve, or both, please refer to the **catalog for Pressure Gauges** or **Relief Valves**.

Flow Data

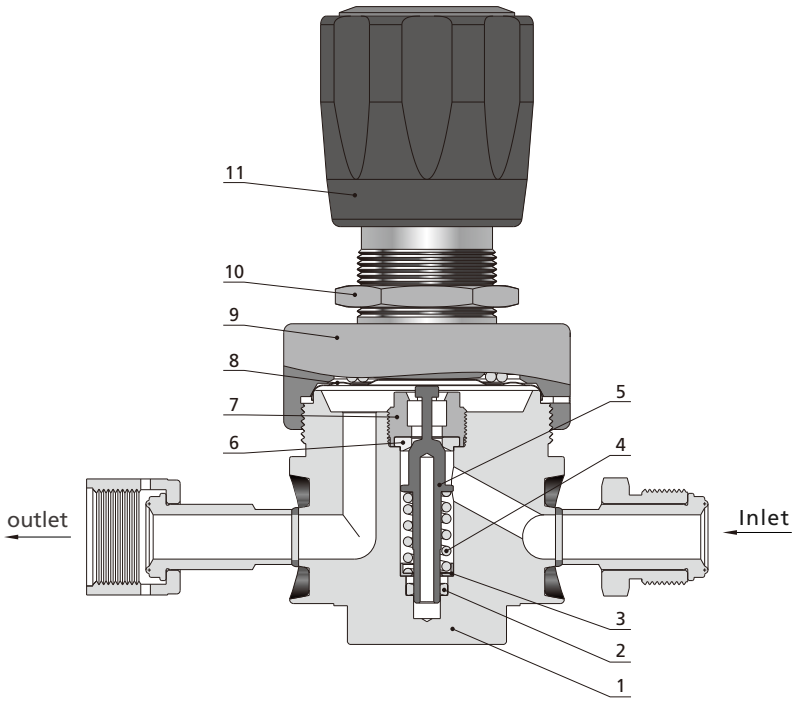


Process Specification

Item \ Process Specification	Special Cleaning and Packaging Process (FC-02)		Ultra High Purity Process (FC-03)
Material	316L SS, 316L SS VAR	Brass (Nickle-Plated)	316L SS, 316L SS VAR
Wetted Surface Roughness	Face Seal Connection or Butt Weld Connection: Ra 20 µin. (0.5 µm) Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)	Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)	Face Seal Connection or Butt Weld Connection: Ra 10 µin. (0.25 µm)
Polishing Process	Machine Finished		Electropolished
Assembly Environment	In specially cleaned areas		ISO 4 (FS 209E 10 equivalent) cleanroom
Packaging	Double bagged		Double bagged in cleanroom

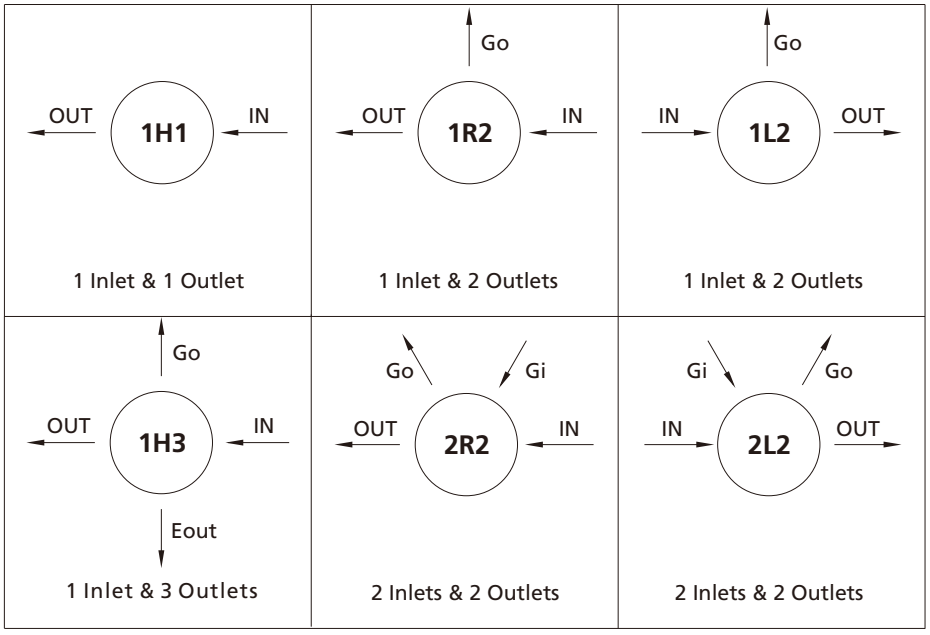
Note: For products with higher surface finish, please contact FITOK.

Major Materials of Construction



Item	Component	Material/Specification		
		6L	6LV	B
1	Body	316L SS	316L SS VAR	Brass
2	Guide Ring or Metal Spring Energized Seal	PTFE/ASTM D1710 or PTFE/ASTM D1710 and 316 SS/ASTM A479		
3	Spring Seat	316L SS	316L SS VAR	316L SS
4	Poppet Spring	316 SS/ASTM A313	Alloy X-750	316 SS/ASTM A313
5	Lift Poppet	316L SS	316L SS VAR	316L SS
6	Seat	PCTFE/ASTM D1430 or PEEK		
7	Seat Retainer	316L SS	316L SS VAR	316L SS
8	Diaphragm	316L SS/ASTM A240	Alloy 22	316L SS/ASTM A240
9	Bonnet	304 SS/ASTM A479	304 SS/ASTM A479	Brass
10	Panel Nut	304 SS/ASTM A479		
11	Handle	ABS or Aluminium alloy (PEEK Seat optional)		

Porting Configurations



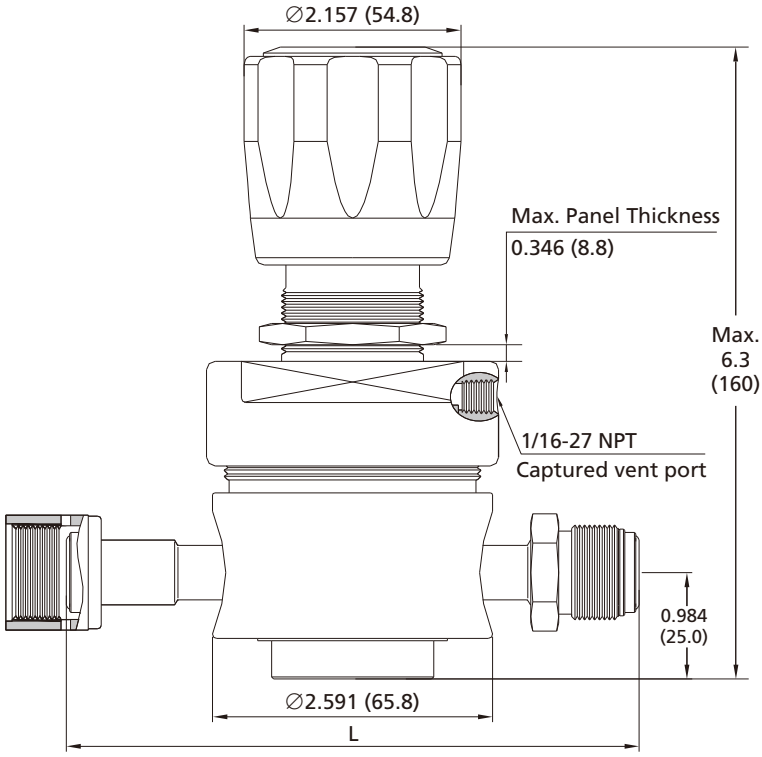
Porting Configuration Symbol

IN	OUT	Gi	Go	Eout
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port	Auxiliary Outlet

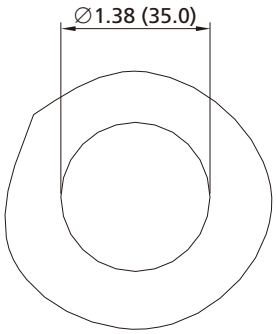
Notes:
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

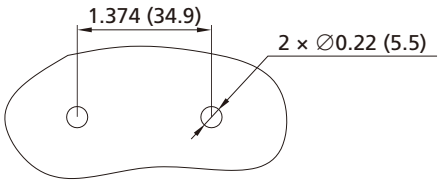
Dimensions

Dimensions, in inches (millimeters), are for reference only.

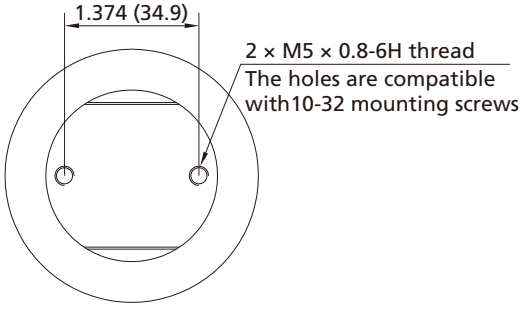


Panel Mounting Cut-Out





Bottom Mounting Cut-Outs



Bottom Mounting Screw Holes

Connection Designator	Connection Type and Size	Dimension, in.(mm)
		L
FL6	3/8" Tube Fitting	5.43 (138.0)
FL8	1/2" Tube Fitting	5.16 (131.0)
FNS8	1/2 Female NPT	2.59 (65.8)
TB8	1/2" × 0.049" Tube Butt Weld	4.34 (110.2)
FFR8	1/2" Rotatable Female FR Fitting	5.28 (134.0)
RFR8	1/2" Rotatable Male FR Fitting	
ML10	10 mm Tube Fitting	5.39 (137.0)
ML12	12 mm Tube Fitting	5.59 (142.0)
FFR12	3/4" Rotatable Female FR Fitting	5.99 (152.2)
RFR12	3/4" Rotatable Male FR Fitting	

Ordering Number Description

RDGH - 6L - 3K - 1H - 2R2 - FNS8 - FL8 - IB - OB - P - ATPM - F2

Series
RDGH

Max. Inlet Pressure	
5H	500 psig (34.5 bar)
3K	3000 psig (207 bar)

Body Material	
6L	316L SS
6LV	316L SS VAR
B	Brass

Outlet Pressure Range	
25	0~25 psig (0~1.7 bar)
50	0~50 psig (0~3.4 bar)
1H	0~100 psig (0~6.9 bar)
150	0~150 psig (0~10.3 bar)
2H	0~200 psig (0~13.8 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
1H3	1 Inlet & 3 Outlets
2R2	2 Inlets & 2 Outlets
2L2	2 Inlets & 2 Outlets

Inlet (IN)	
FL6	3/8" Tube Fitting
FL8	1/2" Tube Fitting
FNS8	1/2 Female NPT
TB8	1/2" × 0.049" Tube Butt Weld
FFR8	1/2" Rotatable Female FR Fitting
RFR8	1/2" Rotatable Male FR Fitting
ML10	10 mm Tube Fitting
ML12	12 mm Tube Fitting
FFR12	3/4" Rotatable Female FR Fitting
RFR12	3/4" Rotatable Male FR Fitting

Outlet (OUT)	
	Same as Inlet
Specified in the same way as Inlet	

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 4
IB	Gauge psi/bar
IM	Gauge psi/MPa
IP	Plug

Outlet Pressure Gauge Port (Go)	
	Without pressure gauge, refer to Note 4
OB	Gauge psi/bar
OM	Gauge psi/MPa
OP	Plug

Auxiliary Outlet (Eout)	
	Without plug, refer to Note 4
RP	Plug
R	With relief valve, refer to Note 5

Seat Material	
	PCTFE
P	PEEK

Handle	
	Round Handle
AT	For lock nut, see Note 6

Installation Type	
	Threaded Hole at the Bottom
PM	Installed with Panel Nut
BS	Installed with Screws at the Bottom

Process Specification	
F2	FC-02
F3	FC-03

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. For Metal Gasket Face Seal Fitting or Tube Butt Weld ports, the port and body are orbital-welded integral structure by default.
3. For NPT or Metric/Fractional Tube Fitting ports, the body port is 1/2 Female NPT by default. Other options are adapted from Male NPT.
4. When choosing NPT or Metric/Fractional Tube Fitting for inlet and outlet, gauge ports (Gi, Go) and auxiliary outlet (Eout) are 1/4 Female NPT. When choosing Metal Gasket Face Seal Fitting or Tube Butt Weld for inlet and outlet, gauge ports (Gi, Go) are 1/4" Rotatable Male FR Fitting, without auxiliary outlet (Eout) options.
5. For the outlet relief valve, the set pressure is factory-set to 1.05-1.1 times the maximum outlet pressure by default, FITOK can preset the specified set pressure according to customer requirements. Please specify the desired set pressure when placing your order.
6. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.
7. When selecting accessories such as pressure gauges or relief valves, ensure that the media working temperature does not exceed the allowable temperature range of the accessories.
8. For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page A-12.

High Flow Diaphragm Regulators
RDGN Series

Introduction

RDGN Series High Flow Diaphragm Regulators feature a single-stage pressure reduction design with a combination of metal diaphragm and free poppet for excellent sensitivity and stable outlet pressure. The reset spring configuration maintains stable and low outlet pressure, even under high flow conditions, making these regulators ideal for various gas media with high flow.

Features

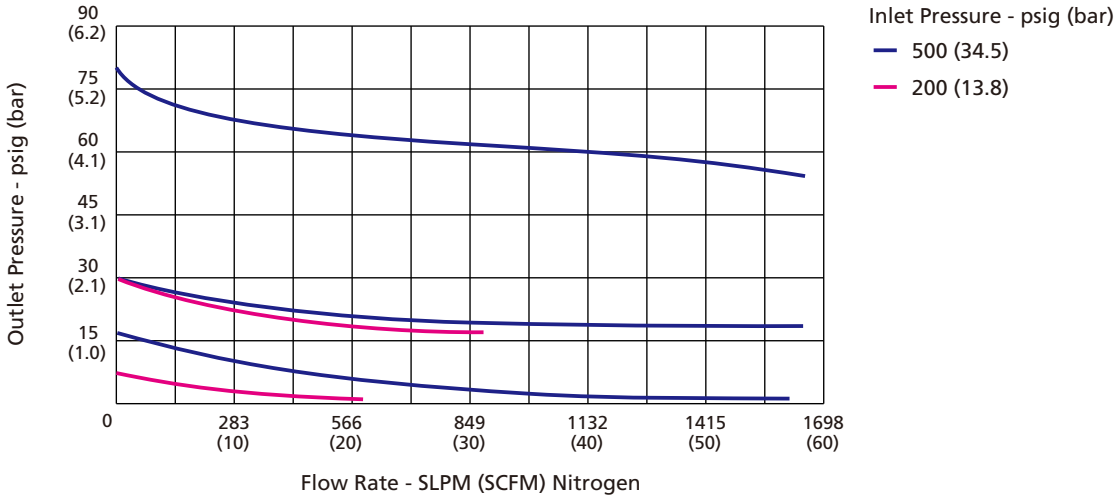
◎ Large diameter diaphragm offers enhanced pressure sensitivity.
◎ Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance.
◎ Reinforced diaphragm design extends diaphragm service life.
◎ The bonnet includes a captured vent port, allowing media to be vented to a designated location in the event of accidental diaphragm rupture.

Technical Data

Port Size			3/4" or 1"
Max. Working Pressure			500 psig (34.5 bar)
Outlet Pressure Range			0 ~ 15 psig (0 ~ 1.0 bar)
			0 ~ 30 psig (0 ~ 2.1 bar)
			0 ~ 75 psig (0 ~ 5.2 bar)
			0 ~150 psig (0 ~ 10.3 bar)
Flow Coefficient (Cv)			1.8
Working Temperature ①			PCTFE: -40 ~ 165 °F (-40 ~ 74 °C)
			PEEK: -40 ~ 400 °F (-40 ~ 204 °C)
SPE (Supply Pressure Effect)			4.5 psig per 100 psig source pressure change
Leak Rate	**External**	**Inboard**	$\leqslant 2\times10^{-10}$ std·cm^3/s (Helium)
		Outboard	$\leqslant 1\times10^{-9}$ std·cm^3/s (Helium)
	Internal		Bubble tight

① For the working temperature of products equipped with a pressure gauge, please refer to the **catalog for Pressure Gauges.**

Flow Data

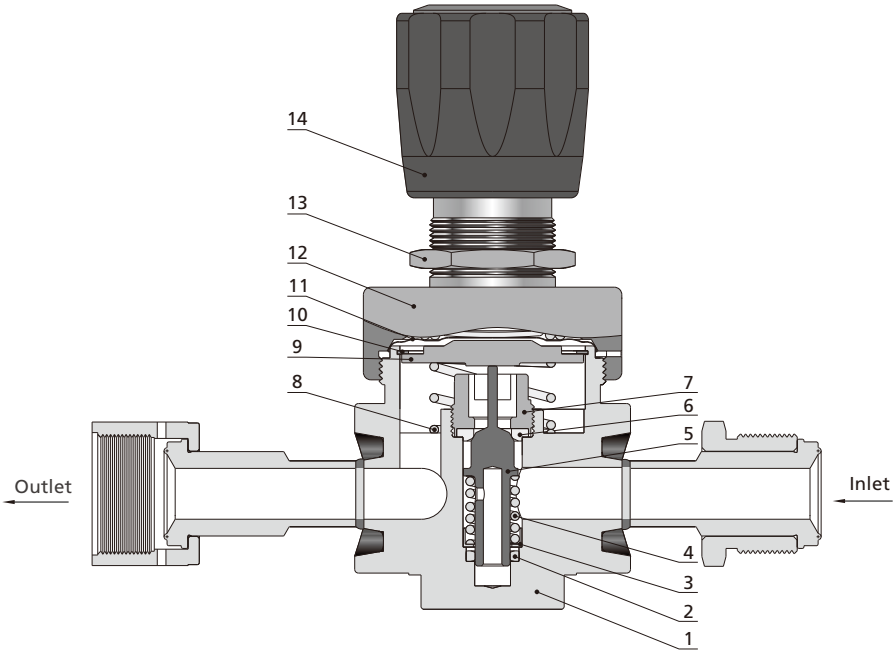


Process Specification

Item \ Process Specification	Special Cleaning and Packaging Process (FC-02)		Ultra High Purity Process (FC-03)
Material	316L SS	Brass (Nickle-Plated)	316L SS
Wetted Surface Roughness	Face Seal Connection or Butt Weld Connection: Ra 20 µin. (0.5 µm) Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)	Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)	Face Seal Connection or Butt Weld Connection: Ra 10 µin. (0.25 µm)
Polishing Process	Machine Finished		Electropolished
Assembly Environment	In specially cleaned areas		ISO 4 (FS 209E 10 equivalent) cleanroom
Packaging	Double bagged		Double bagged in cleanroom

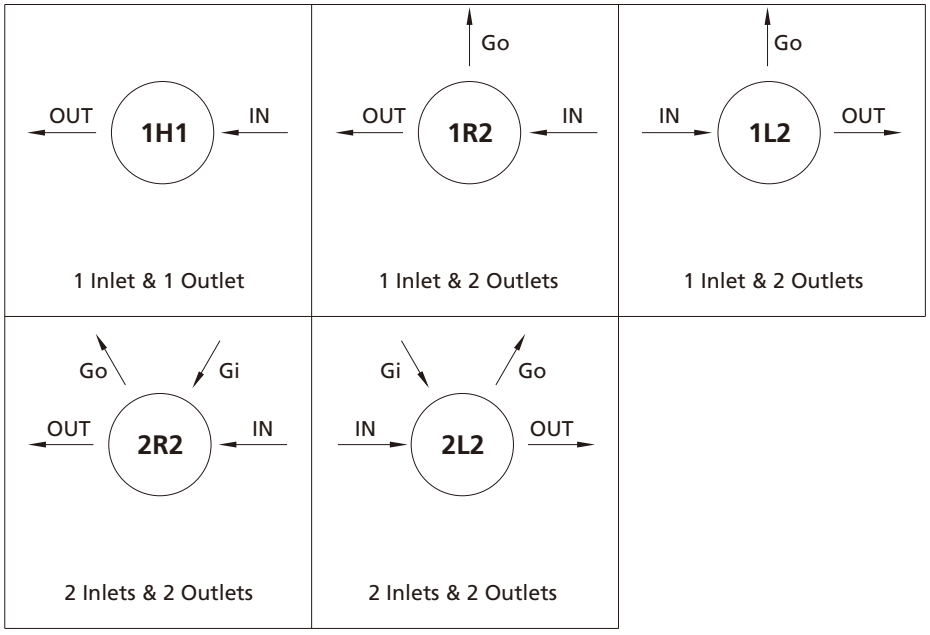
Note: For products with higher surface finish, please contact FITOK.

Major Materials of Construction



Item	Component	Material/Specification	
		6L	B
1	Body	316L SS	Brass
2	Guide Ring	PTFE/ASTM D1710	
3	Spring Seat	316L SS	
4	Poppet Spring	316L SS or Alloy X-750	
5	Lift Poppet	316L SS	
6	Seat	PCTFE/ASTM D1430 or PTFE/ASTM D1710	
7	Seat Retainer	316L SS	
8	Reset Spring	316 SS	
9	Buffer Plate	316L SS	
10	Light-Duty Retainer	316L SS	
11	Diaphragm	316L SS/ASTM A240	
12	Bonnet	304 SS/ASTM A479	Brass
13	Panel Nut	304 SS/ASTM A479	
14	Handle	ABS	

Porting Configurations



Porting Configuration Symbol

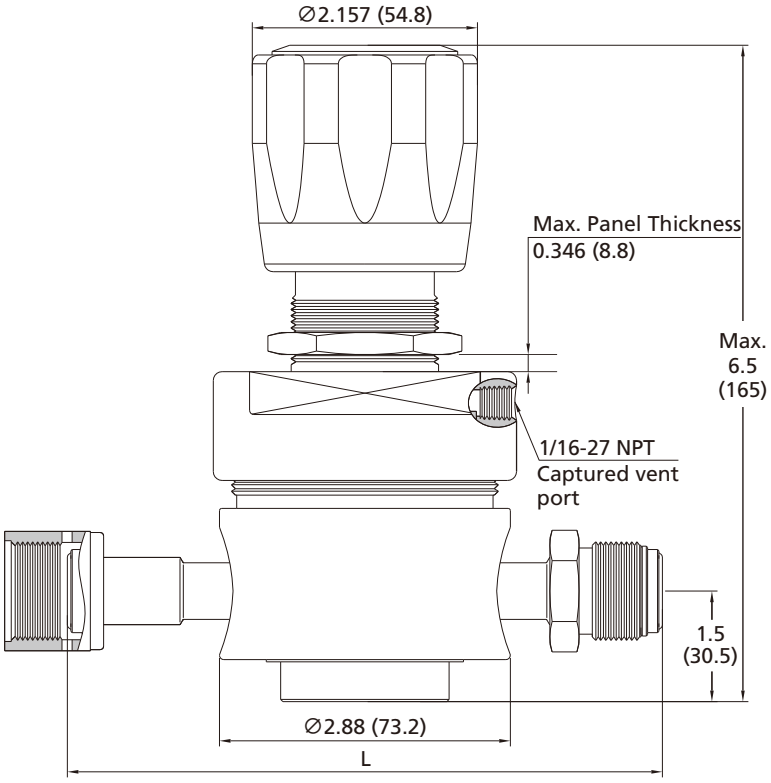
IN	OUT	Gi	Go
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port

Notes:

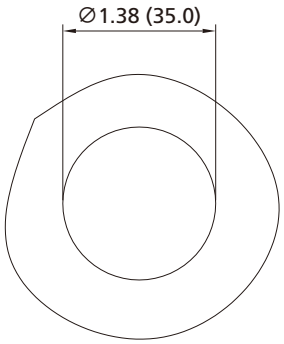
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

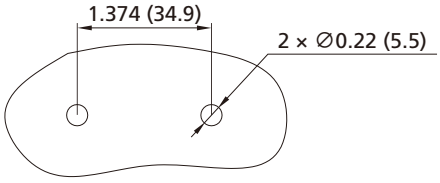
Dimensions

Dimensions, in inches (millimeters), are for reference only.

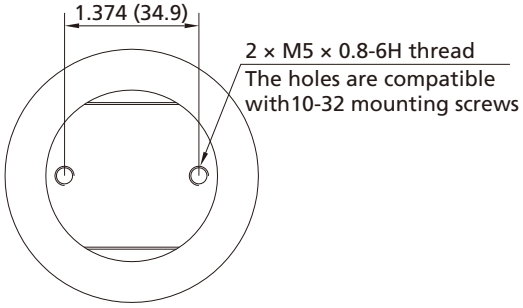


Panel Mounting Cut-Out





Bottom Mounting Cut-Outs



Bottom Mounting Screw Holes

Connection Designator	Connection Type and Size	Dimension, in.(mm)
		L
FL12	3/4" Tube Fitting	5.98 (152)
FNS12	3/4 Female NPT	2.88 (73.2)
FFR12	3/4" Rotatable Female FR Fitting	6.81 (173)
RFR12	3/4" Rotatable Male FR Fitting	
FL16	1" Tube Fitting	6.42 (163)
FFR16	1" Rotatable Female FR Fitting	7.21 (183)
RFR16	1" Rotatable Male FR Fitting	

Ordering Number Description

RDGN - 6L - 5H - 30 - 2R2 - FNS12 - FL16 - IB - OB - P - ATPM - F2

Series
RDGN

Max. Inlet Pressure	
5H	500 psig (34.5 bar)

Body Material	
6L	316L SS
B	Brass

Outlet Pressure Range	
15	0~15 psig (0~1.0 bar)
30	0~30 psig (0~2.1 bar)
75	0~75 psig (0~5.2 bar)
150	0~150 psig (0~10.3 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
2R2	2 Inlets & 2 Outlets
2L2	2 Inlets & 2 Outlets

Inlet (IN)	
FL12	3/4" Tube Fitting
FNS12	3/4 Female NPT
FFR12	3/4" Rotatable Female FR Fitting
RFR12	3/4" Rotatable Male FR Fitting
FL16	1" Tube Fitting
FFR16	1" Rotatable Female FR Fitting
RFR16	1" Rotatable Male FR Fitting

Outlet (OUT)	
	Same as Inlet
Specified in the same way as Inlet	

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 4
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Outlet Pressure Gauge Port (Go)	
	Without pressure gauge, refer to Note 4
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

Seat Material	
	PCTFE
P	PEEK

Handle	
	Round Handle
AT	For lock nut, see Note 5

Installation Type	
	Threaded Hole at the Bottom
PM	Installed with Panel Nut
BS	Installed with Screws at the Bottom

Process Specification	
F2	FC-02
F3	FC-03

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. For Metal Gasket Face Seal Fitting ports, the port and body are orbital-welded integral structure by default.
3. For NPT or Fractional Tube Fitting ports, the body port is 3/4 Female NPT by default. Other options are adapted from Male NPT.
4. When choosing NPT or Fractional Tube Fitting for inlet and outlet, gauge ports (Gi, Go) are 1/4 Female NPT. When choosing Metal Gasket Face Seal Fitting for inlet and outlet, gauge ports (Gi, Go) are 1/4" Rotatable Male FR Fitting.
5. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.
6. For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page A-12.

Steam Heated Regulators
RDVC Series

Introduction

RDVC Series Steam Heated Regulators are designed to heat fluids for analyzer systems, primarily to preheat fluids and prevent gas condensation or liquid evaporation. The unique design allows for easy disassembly, cleaning, and replacement of heat transfer components, reducing maintenance time and costs.

Features

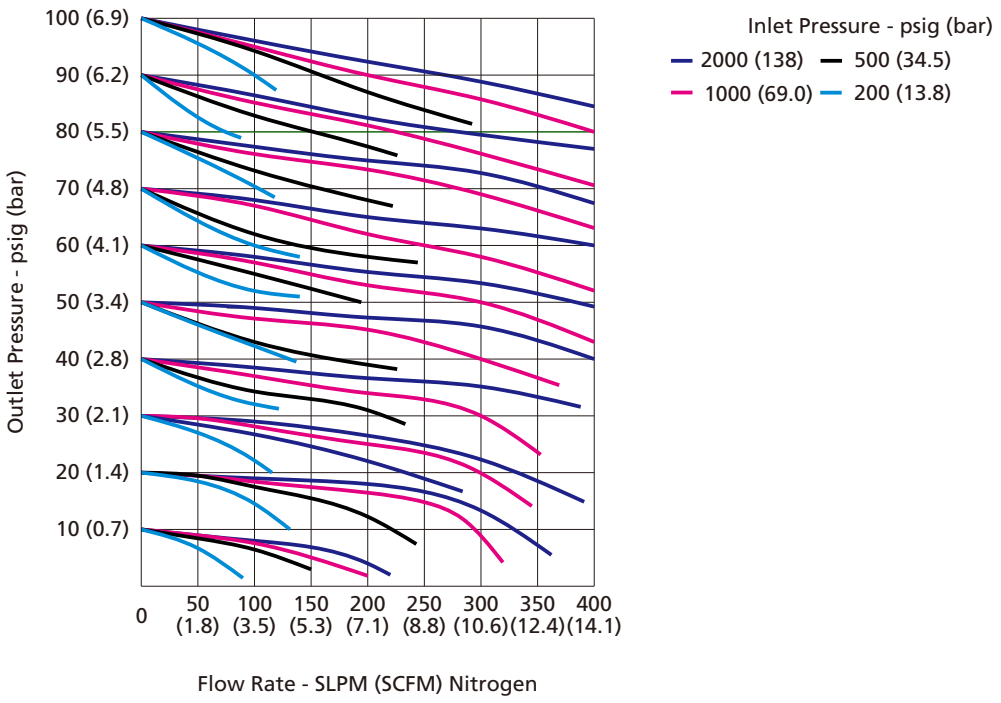
◎ Low internal volume and high flow rate.
◎ Convoluted diaphragm for improved regulation precision and extended service life.
◎ Reinforced diaphragm improves sealing performance and extends service life.
◎ Wetted metal components comply with NACE MR0175.

Technical Data

Port Size	**Media Inlet and Outlet**		1/8" to 3/8", 6 mm or 8 mm
	Steam Supply Port		3/8"
Max. Working Pressure		**Media**	3600 psig (248 bar)
		Steam	600 psig (41.4 bar)
Outlet Pressure Range			0 ~ 25 psig (0 ~ 1.7 bar)
			0 ~ 50 psig (0 ~ 3.4 bar)
			0 ~ 100 psig (0 ~ 6.9 bar)
			0 ~ 250 psig (0 ~ 17.2 bar)
			0 ~ 500 psig (0 ~ 34.4 bar)
Flow Coefficient (Cv)			0.06
Working Temperature①		**Media**	PCTFE: -40 ~ 165 °F (-40 ~ 74 °C)
			Polyimide: -40 ~ 500 °F (-40 ~ 260 °C)
			PEEK: -40 ~ 400 °F (-40 ~ 204 °C)
		Steam	Max. 500 °F (260 °C)
Leak Rate (Helium)		**Internal**	$\leqslant 1\times10^{-7}$ std·cm³/s
		External	$\leqslant 1\times10^{-7}$ std·cm³/s

① For the working temperature of products equipped with a pressure gauge, a relief valve, or both, please refer to the **catalog for Pressure Gauges** or **Relief Valves**.

Flow Data

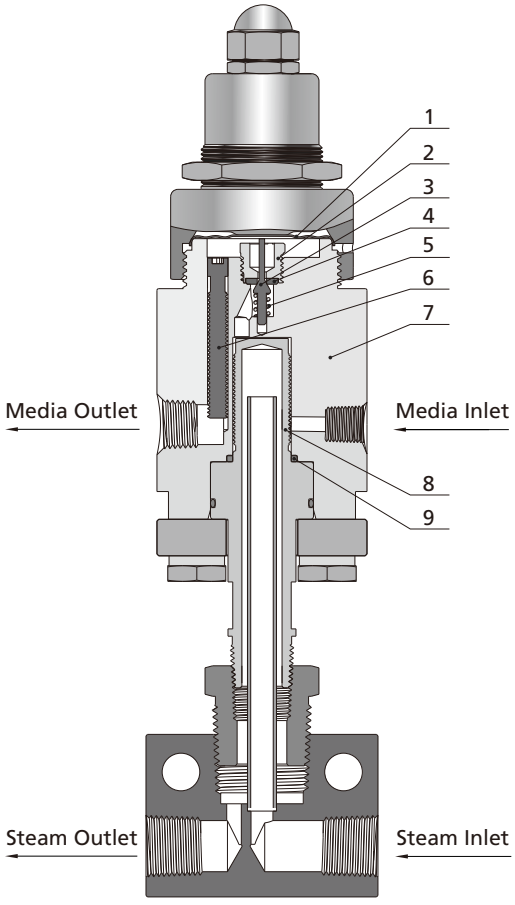


Process Specification

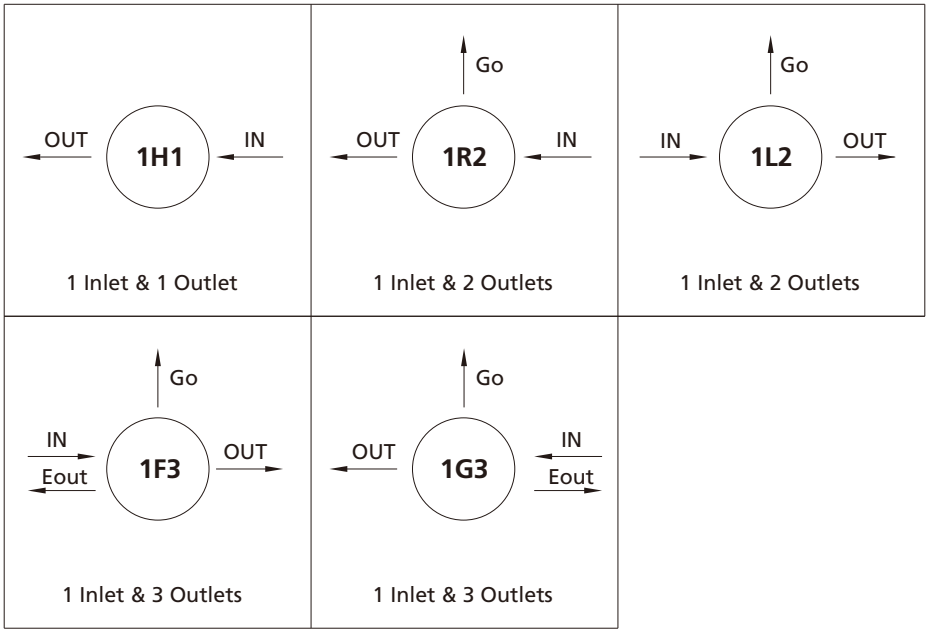
Item \ Process Specification	Special Cleaning and Packaging Process (FC-02)
Material	316L SS, Alloy 400
Wetted Surface Roughness	Ra 32 µin. (0.8 µm)
Polishing Process	Machine Finished
Assembly Environment	In specially cleaned areas
Packaging	Double bagged

Major Materials of Construction

Item	Component	Material/Specification	
		6L	M
1	Diaphragm	Alloy 22/ASTM B575	
2	Seat Retainer	316L SS/ASTM A479	Alloy 400/ASTM B164
3	Lift Poppet	Alloy C-276/ASTM B574	
4	Seat	PCTFE/ASTM D1430 or Polyimide or PEEK	
5	Poppet Spring	Alloy X-750	
6	Shutoff Bolt	316L SS/ASTM A479	Alloy 400/ASTM B164
7	Body	316L SS/ASTM A479	Alloy 400/ASTM B164
8	Stream Heater	316L SS/ASTM A479	Alloy 400/ASTM B164
9	Seal Ring	Polyimide	



Porting Configurations



Porting Configuration Symbol

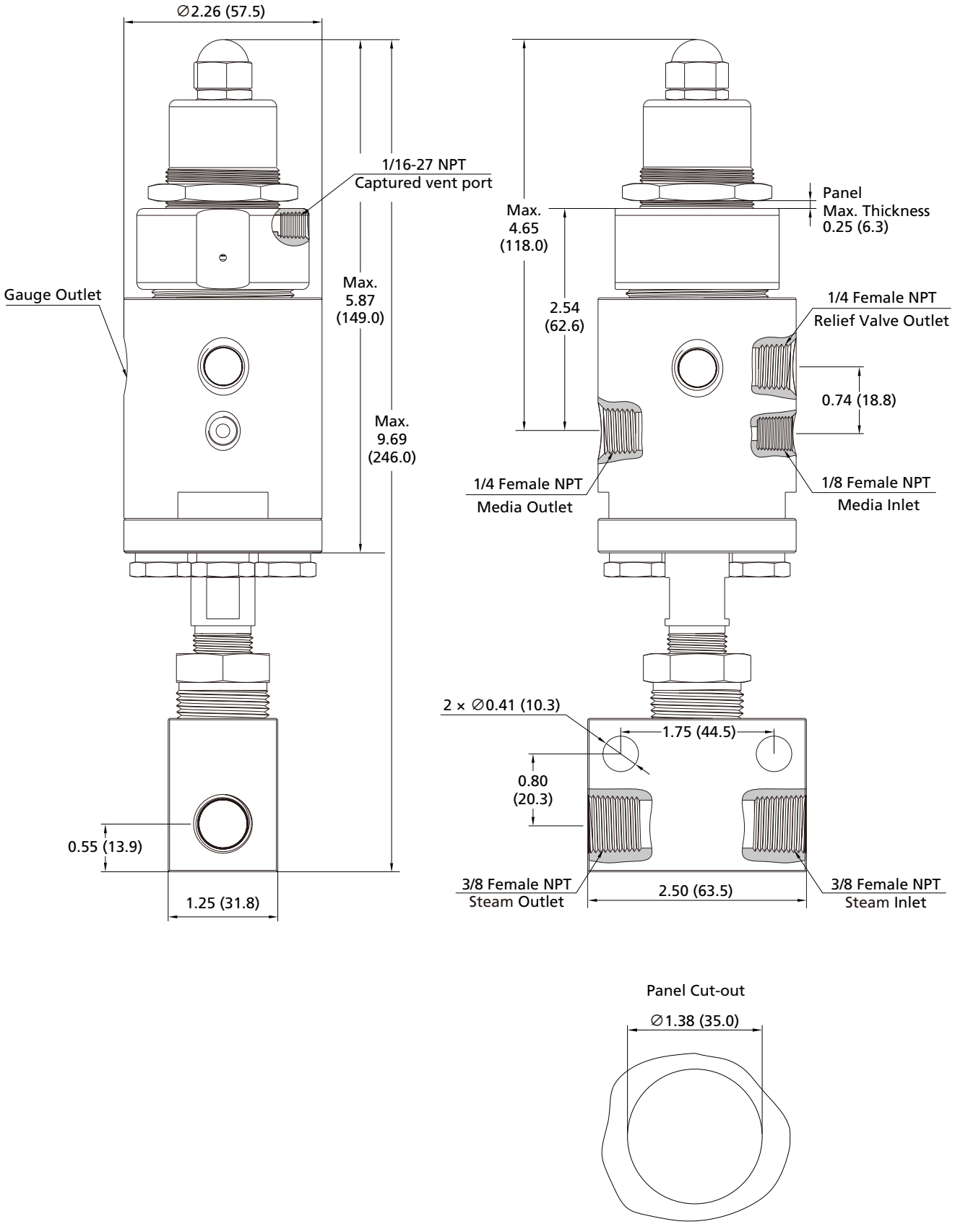
IN	OUT	Go	Eout
Inlet	Outlet	Outlet Pressure Gauge Port	Auxiliary Outlet

Notes:
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Dimensions

Dimensions, in inches (millimeters), are for reference only.

Pressure Regulator with 1 Inlet & 3 Outlets (1F3)



Panel Cut-out

Ordering Number Description

RDVC - 6L - 36H - 1H - 1F3 - FNS2 - FL4 - OBR - P - F2

Body Material	
6L	316L SS
M	Alloy 400

Max. Inlet Pressure	
36H	3600 psig (248 bar)

Outlet Pressure Range	
25	0~25 psig (0~1.7 bar)
50	0~50 psig (0~3.4 bar)
1H	0~100 psig (0~6.9 bar)
250	0~250 psig (0~17.2 bar)
5H	0~500 psig (0~34.4 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
1F3	1 Inlet & 3 Outlets
1G3	1 Inlet & 3 Outlets

Inlet (IN)	
FNS2	1/8 Female NPT
FNS4	1/4 Female NPT
NS4	1/4 Male NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)	
	Same as Inlet
Specified in the same way as Inlet	

Outlet Pressure Gauge Port (Go)	
	No pressure gauge, refer to Note 5
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

Auxiliary Outlet (Eout)	
	No plug, refer to Note 5
RP	Plug
R	With Relief Valve, refer to Note 6

Seat Material	
	Polyimide
P	PEEK
K	PCTFE

Process Specification	
F2	FC-02

Notes:

1. "Ordering Number Description" is a reference to understanding the combination rules of FITOK product part numbers. Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.
2. When selecting pressure gauge and relief valve accessories, the medium working temperature must not exceed the temperature range of the accessories.
3. For "1F3" or "1G3" port configurations, the inlet must be 1/8 female NPT only. The installation space for both the inlet and the auxiliary outlet should be evaluated.
4. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.
5. When choosing NPT or Metric/Fractional Tube Fitting connection for the inlet and outlet, the body inlet port is 1/8 Female NPT by default, the body outlet port is 1/4 Female NPT by default, and the gauge port (Go) and auxiliary outlet (Eout) are also 1/4 Female NPT. Other options are adapted from Male NPT.
6. For the outlet relief valve, the set pressure is factory-set to 1.05-1.1 times the maximum outlet pressure by default, FITOK can preset the specified set pressure according to customer requirements. Please specify the desired set pressure when placing your order.
7. For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page A-12.

General Piston Regulators

RPGC Series

Introduction

RPGC Series General Piston Regulators feature a single-stage pressure reduction design with a piston sensing mechanism that is more resistant to damage caused by pressure spikes and offers a broad outlet pressure range. With eight port configuration options, these regulators accommodate a variety of gas and liquid applications.

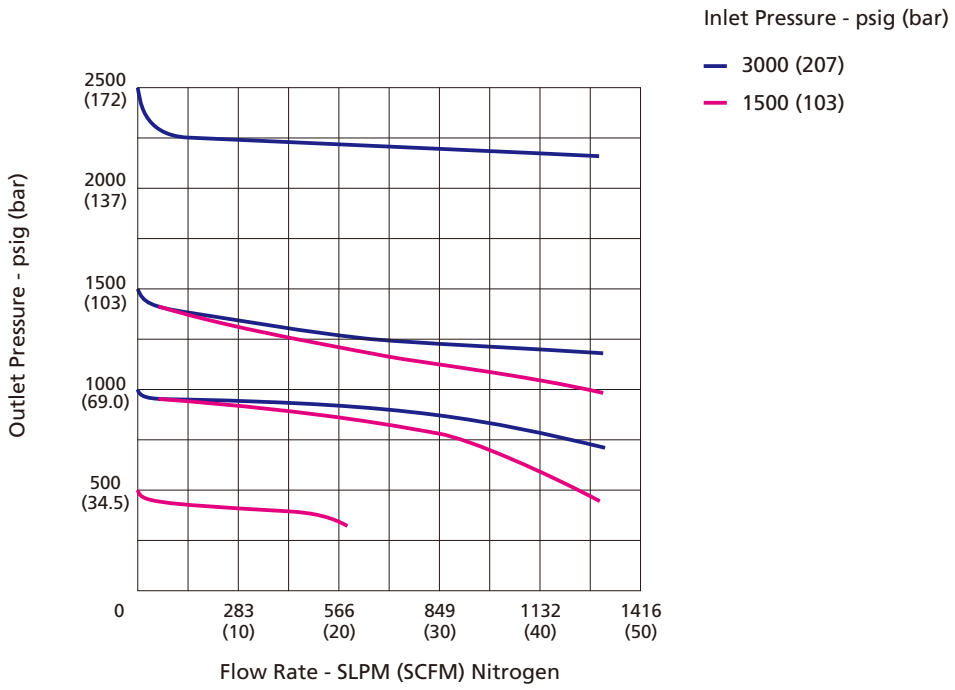
Features

- Built-in 40 µm inlet filter for cleanliness and extended service life.
- Optional self-venting feature.
- The bonnet includes a captured vent port, allowing media to be vented to a designated location in the event of accidental O-ring failure.

Technical Data

Port Size			1/4", 3/8", 6 mm or 8 mm
Max. Working Pressure			6000 psig (414 bar)
Outlet Pressure Range			0 ~ 250 psig (0 ~ 17.2 bar)
			0 ~ 500 psig (0 ~ 34.5 bar)
			0 ~ 750 psig (0 ~ 51.7 bar)
			0 ~ 1000 psig (0 ~ 69.0 bar)
			0 ~ 1500 psig (0 ~ 103 bar)
			0 ~ 2500 psig (0 ~ 172 bar)
Flow Coefficient (Cv)		**Non-self-venting**	0.06
		Self-venting	0.1
Working Temperature		**FKM**	-4 ~ 165 °F (-20 ~ 74 °C)
		FFKM	1.4 ~ 165 °F (-17 ~ 74 °C)
SPE (Supply Pressure Effect)	**Max. Outlet Pressure: 250, 500 psig**		1.3 psig per 100 psig source pressure change
	Max. Outlet Pressure: 750, 1000 psig		1.9 psig per 100 psig source pressure change
	Max. Outlet Pressure: 1500, 2000 psig		4.5 psig per 100 psig source pressure change
Leak Rate		**External**	Bubble tight
		Internal	Bubble tight

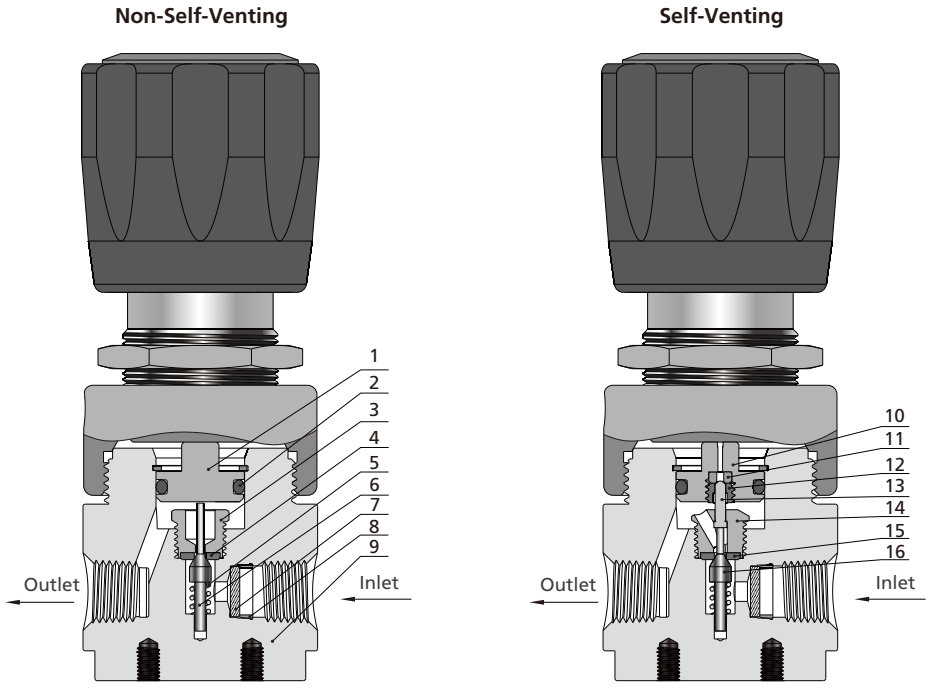
Flow Data



Process Specification

Item / Process Specification	Special Cleaning and Packaging Process (FC-02)
Material	316L SS, Brass (Nickle-Plated)
Wetted Surface Roughness	Ra 32 µin. (0.8 µm)
Polishing Process	Machine Finished
Assembly Environment	In specially cleaned areas
Packaging	Double bagged

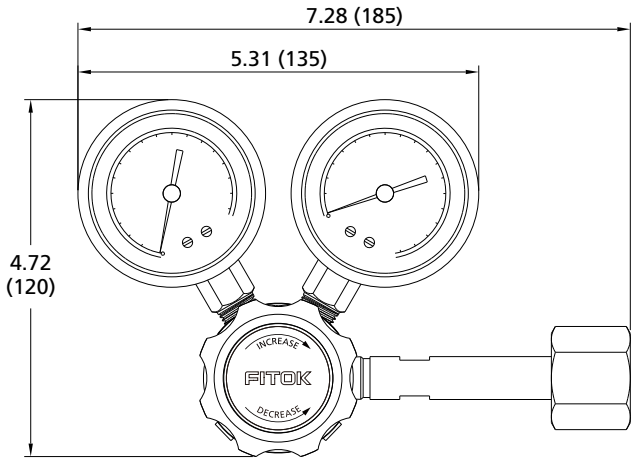
Major Materials of Construction

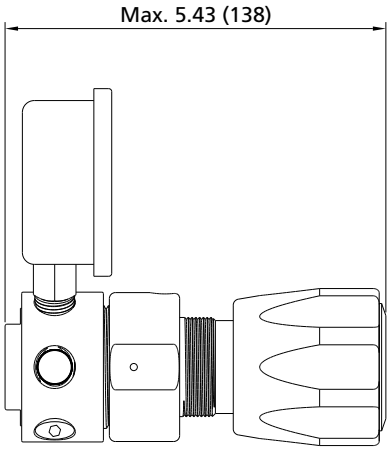


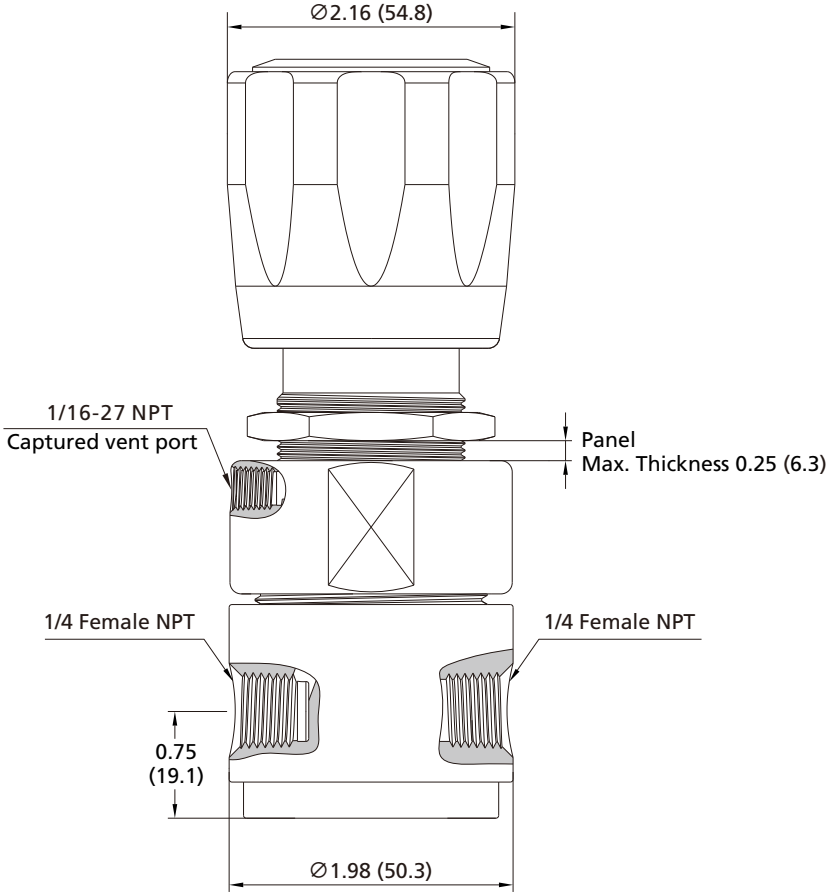
Item	Component	Material/Specification
1	Piston	316L SS/ASTM A276
2	O-Ring	FKM or FFKM
3	Seat Retainer	316L SS/ASTM A479
4	Seat	PCTFE/ASTM D1430
5	Poppet Spring	Alloy
6	Lift Poppet	Alloy C-276/ASTM B574
7	Filter	316L SS
8	Retaining Ring	PTFE/ASTM D1710
9	Body	316L SS/ASTM A479 or Brass (Nickle-Plated)
10	Vent Piston	316L SS/ASTM A479
11	Vent Seat	PEEK
12	Vent Bushing	316L SS/ASTM A479
13	Vent Rod	Alloy C-276/ASTM B574
14	Vent Seat Retainer	316L SS/ASTM A479
15	Seat	PEEK
16	Vent Poppet	Alloy C-276/ASTM B574

Dimensions

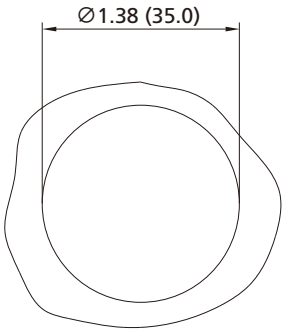
Dimensions, in inches (millimeters), are for reference only.

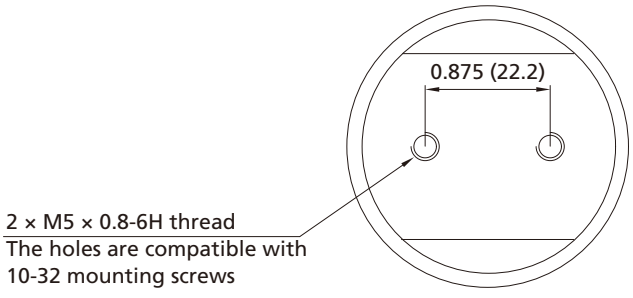




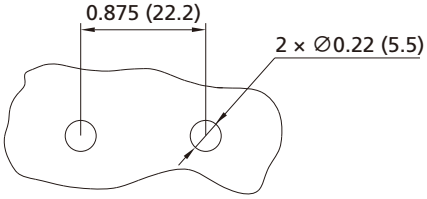


Panel Mounting Cut-Out

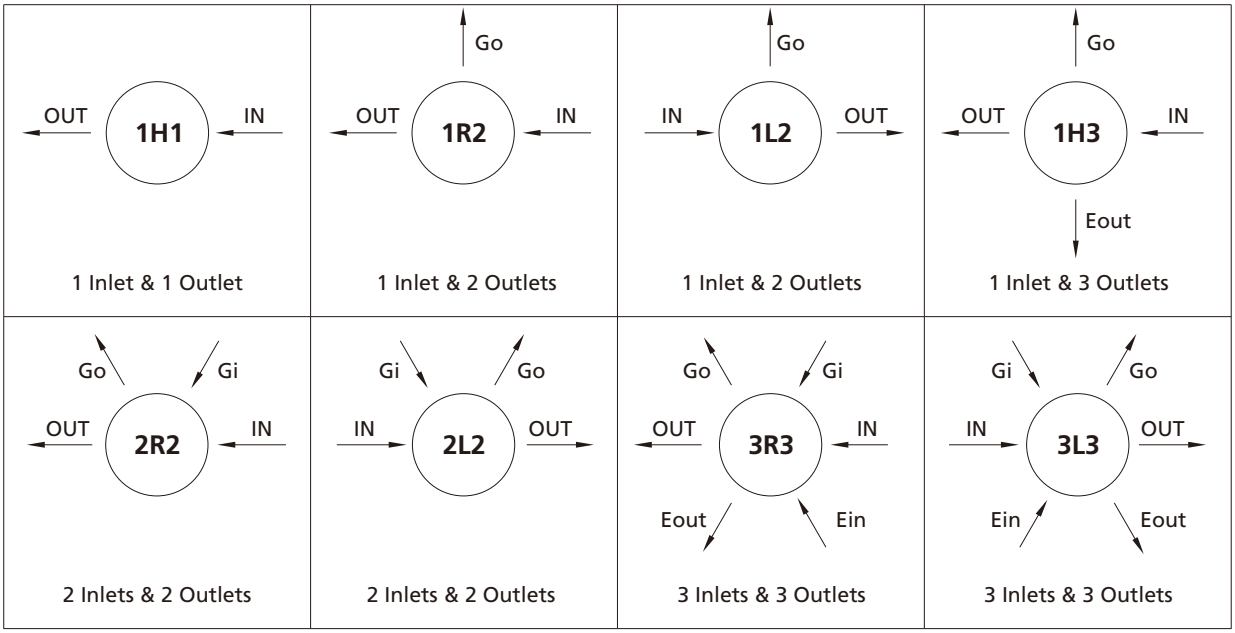




Bottom Mounting Cut-Outs



Porting Configurations



Porting Configuration Symbol

IN	OUT	Gi	Go	Ein	Eout
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port	Auxiliary Inlet	Auxiliary Outlet

Notes：

1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Ordering Number Description

RPGC - 6L - 3K - 5H - 3R3 - C580 - FNS4 - IBAP - OBR - Z - SVATPM - F2

Body Material	
6L	316L SS
B	Brass (Nickle-Plated)

Max. Inlet Pressure	
3K	3000 psig (207 bar)
45H	4500 psig (310 bar)
6K	6000 psig (414 bar)

Outlet Pressure Range	
250	0~250 psig (0~17.2 bar)
5H	0~500 psig (0~34.5 bar)
750	0~750 psig (0~51.7 bar)
1K	0~1000 psig (0~69.0 bar)
15H	0~1500 psig (0~103 bar)
25H	0~2500 psig (0~172 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
1H3	1 Inlet & 3 Outlets
2R2	2 Inlets & 2 Outlets
2L2	2 Inlets & 2 Outlets
3R3	3 Inlets & 3 Outlets
3L3	3 Inlets & 3 Outlets

Inlet (IN)	
C_	CGA Cylinder Connection (For Inlet Only)
DIN_	DIN Cylinder Connection (For Inlet Only)
FNS4	1/4 Female NPT
NS4	1/4 Male NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)	
	Same as Inlet
Specified in the same way as Inlet	

Inlet Pressure Gauge Port (Gi)	
	No pressure gauge, refer to Note 2
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Auxiliary Inlet (Ein)	
	No plug, refer to Note 2
AP	Plug

Outlet Pressure Gauge Port (Go)	
	No pressure gauge, refer to Note 2
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

O-Ring Material	
	FKM
Z	FFKM

Vent Option	
	None
SV	Self-Venting

Handle	
	Round Handle
AT	For lock nut, see Note 5

Auxiliary Outlet (Eout)	
	No plug, refer to Note 2
RP	Plug
R	With relief valve, refer to Note 3

Installation Type	
	Threaded Hole at the Bottom
PM	Installed with Panel Nut
BS	Installed with Screws at the Bottom

Process Specification	
F2	FC-02

Notes:

1. "Ordering Number Description" is a reference to understanding the combination rules of FITOK product part numbers. Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.
2. When selecting Cylinder Connection, NPT, or Fractional/Metric Tube Fitting for the inlet and outlet, the valve body comes with 1/4 Female NPT inlet and outlet ports by default. The gauge ports (Go, Gi), auxiliary inlet (Ein), and auxiliary outlet (Eout) are also 1/4 Female NPT.
3. For the outlet relief valve, the set pressure is factory-set to 1.05-1.1 times the maximum outlet pressure by default, FITOK can preset the specified set pressure according to customer requirements. Please specify the desired set pressure when placing your order.
4. For pressure ratings of cylinder connection ports, refer to the Cylinder Connections Catalog.
5. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.

Compact Piston Regulators

RPCC Series

Introduction

RPCC Series Compact Piston Regulators feature a single-stage pressure reduction design with a piston sensing mechanism that is more resistant to damage caused by pressure spikes and offers a broad outlet pressure range. These regulators are ideal for high-pressure, low-flow applications.

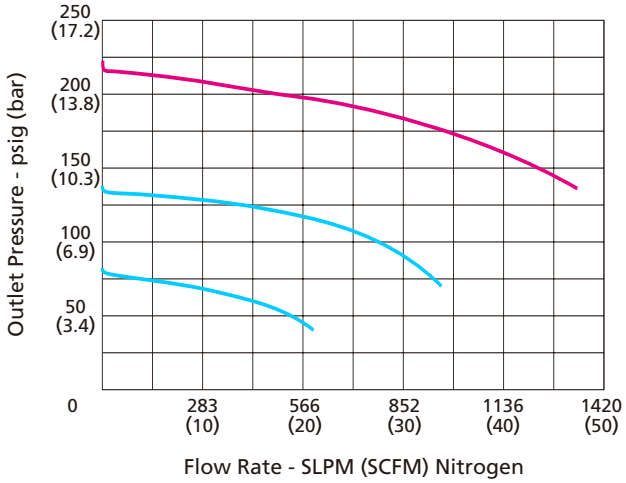
Features

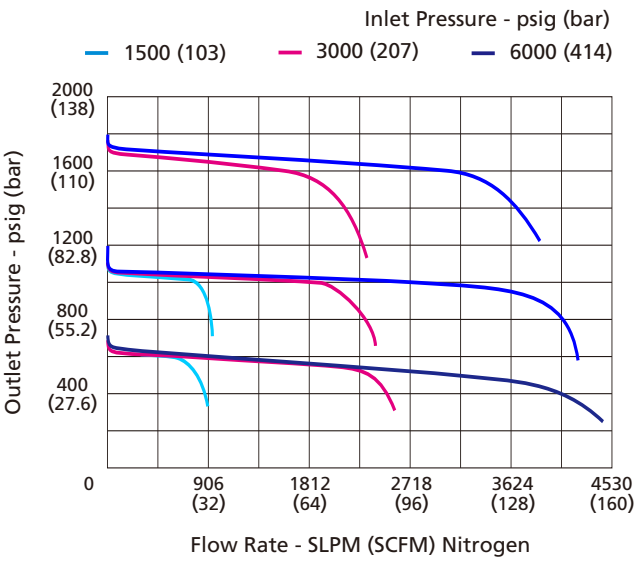
◎ Compact and small size design.
◎ Integrated 40 μm inlet filter for cleanliness and extended service life.
◎ A variety of O-ring material options for broad media compatibility and temperature ranges.

Technical Data

Port Size			1/4", 3/8", 6 mm or 8 mm
Max. Working Pressure			6000 psig (414 bar)
Outlet Pressure Range			0 ~ 80 psig (0 ~ 5.5 bar)
			0 ~ 140 psig (0 ~ 9.7 bar)
			0 ~ 220 psig (0 ~ 15.2 bar)
			0 ~ 700 psig (0 ~ 48.3 bar)
			0 ~ 1200 psig (0 ~ 82.8 bar)
			0 ~ 1800 psig (0 ~ 124 bar)
Flow Coefficient (Cv)			0.06
Working Temperature		**O-Ring**	NBR: -30 ~ 165°F (-34 ~ 74°C)
			FKM: -4 ~ 165°F (-20 ~ 74°C)
			FFKM: 1.4 ~ 400°F (-17 ~ 204°C)
			EPDM: -30 ~ 300°F (-34 ~ 149°C)
		Seat	PCTFE: -30 ~ 165°F (-34 ~ 74°C)
			PEEK: -30 ~ 400°F (-34 ~ 204°C)
SPE (Supply Pressure Effect)	**Outlet Pressure ≤ 220 psig**		0.6 psig per 100 psig source pressure change
	Outlet Pressure > 220 psig		4 psig per 100 psig source pressure change
Leak Rate	**External**		Bubble tight
	Internal		Bubble tight

Flow Data





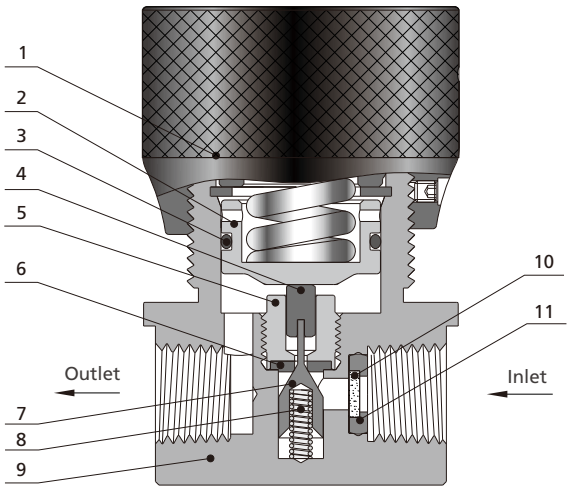
Process Specification

Item \ Process Specification	Special Cleaning and Packaging Process (FC-02)
Material	316L SS, Brass (Nickle-Plated)
Wetted Surface Roughness	Ra 32 µin. (0.8 µm)
Polishing Process	Machine Finished
Assembly Environment	In specially cleaned areas
Packaging	Double bagged

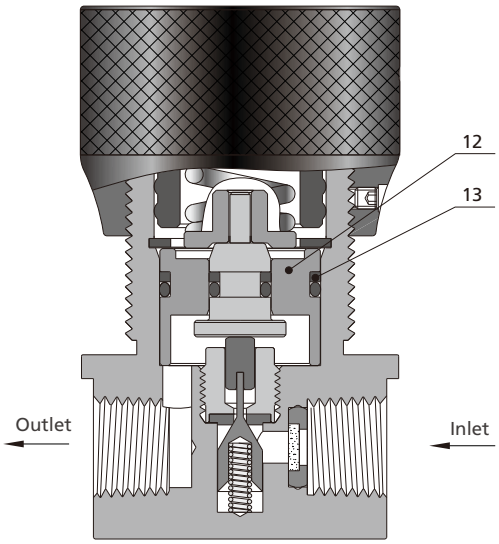
Major Materials of Construction

Large piston configuration: Max. outlet pressure ⩽ 220 psig
Small piston configuration: Max. outlet pressure > 220 psig

Large Piston

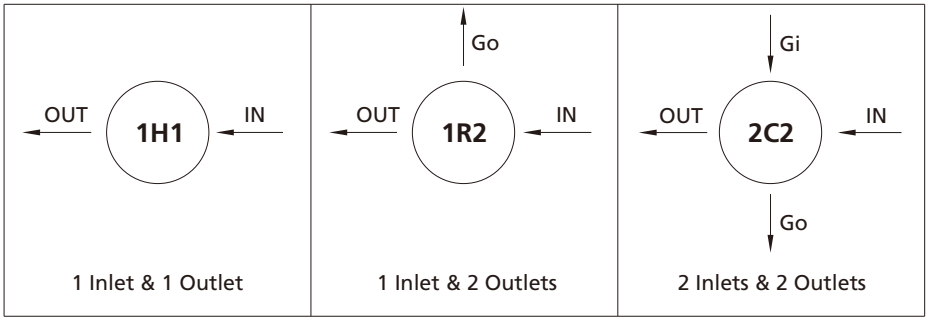


Small Piston



Item	Component	Material/Specification
1	Knob Handle	Aluminium Alloy
2	Piston	316L SS
3	O-Ring	NBR or FKM or FFKM or EPDM
4	Poppet Button	316L SS
5	Seat Retainer	316L SS
6	Seat	PCTFE/ASTM D1430 or PEEK
7	Lift Poppet	316L SS
8	Poppet Spring	316 SS
9	Body	316L SS or Brass (Nickle-Plated)
10	Filter	316L SS
11	Retaining Ring	PTFE/ASTM D1710
12	Piston Ring	316L SS
13	Retaining Ring	PTFE/ASTM D1710 or PEEK

Porting Configurations



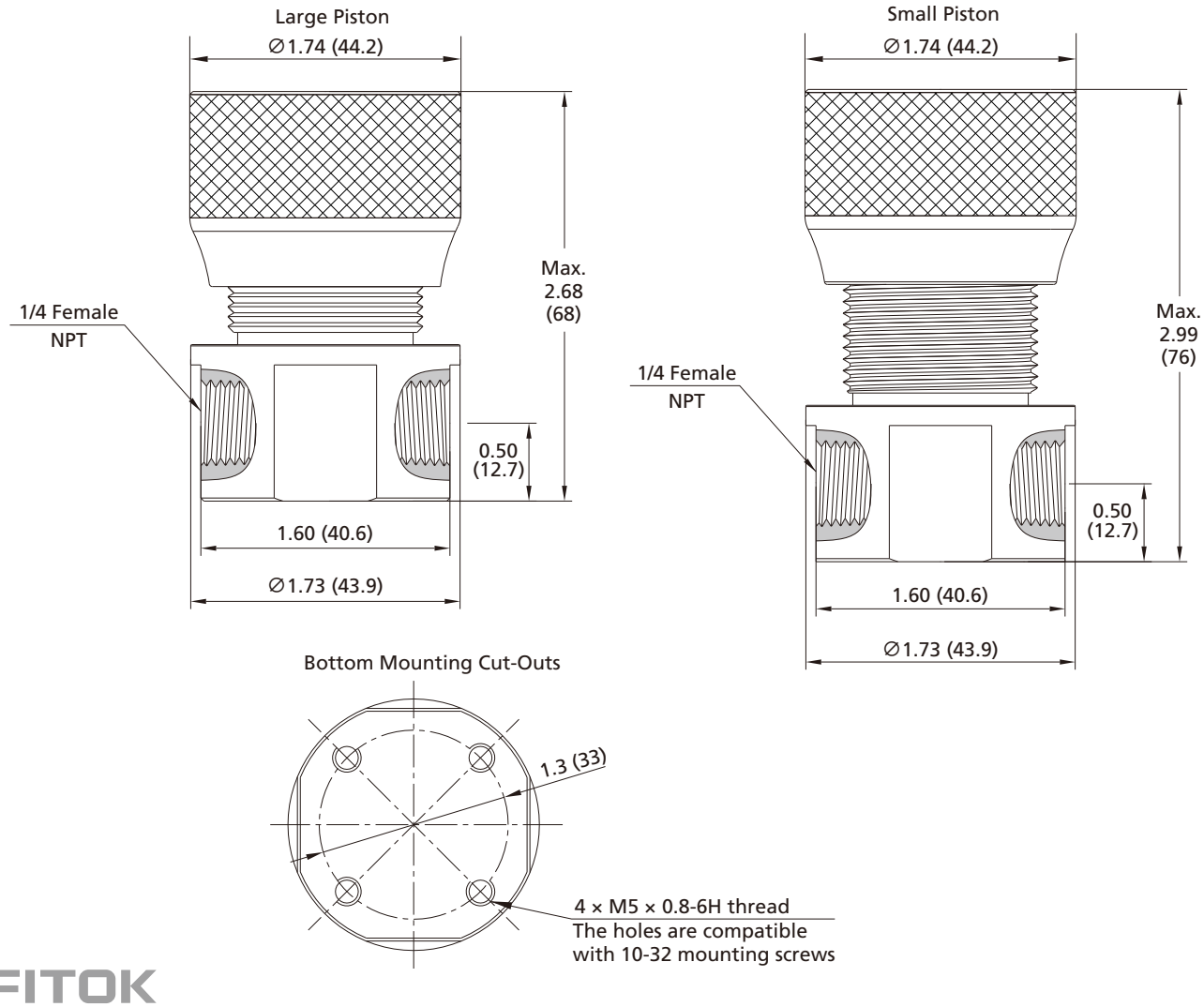
Porting Configuration Symbols

IN	OUT	Gi	Go
Inlet	Outlet	Auxiliary Inlet	Auxiliary Outlet

Notes: 1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Dimensions

Dimensions, in inches (millimeters), are for reference only.



Ordering Number Description

RPCC - 6L - 6K - 7H - 2C2 - FNS4 - FL4 – IB – OB – PV - BS - F2

Series
RPCC

Body Material	
6L	316L SS
B	Brass (Nickle-Plated)

Max. Inlet Pressure	
6K	6000 psig (414 bar)

Outlet Pressure Range	
80	0~80 psig (0~5.5 bar)
140	0~140 psig (0~9.7 bar)
220	0~220 psig (0~15.2 bar)
7H	0~700 psig (0~48.3 bar)
12H	0~1200 psig (0~82.8 bar)
18H	0~1800 psig (0~124 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
2C2	2 Inlets & 2 Outlets

Inlet (IN)	
FNS4	1/4 Female NPT
NS4	1/4 Male NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)	
	Same as Inlet

Specified in the same way as Inlet

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 3
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Outlet Pressure Gauge Port (Go)	
	Without pressure gauge, refer to Note 3
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

Seat	
	PCTFE
P	PEEK

Installation Type	
	Threaded Hole at the Bottom
BS	Installed with Screws at the Bottom

O-Ring Material	
	NBR
V	FKM
Z	FFKM
E	EPDM

Process Specification	
F2	FC-02

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
   Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.
2. For NPT connection and Metric/Fractional Tube Fitting connection, the body connection is 1/4 Female NPT by default.
   Other options are adapted from Male NPT.
3. Auxiliary (Gi, Go) are 1/4 Female NPT by default.

High Pressure Piston Regulators
RPGX Series

Introduction

RPGX Series High Pressure Piston Regulators feature a single-stage pressure reduction design with a piston sensing mechanism that is more resistant to damage caused by pressure spikes. These regulators offer a wide outlet pressure range, with a maximum inlet and outlet pressure of up to 10,000 psig. With eight port configuration options, these regulators are ideal for high pressure, low flow applications.

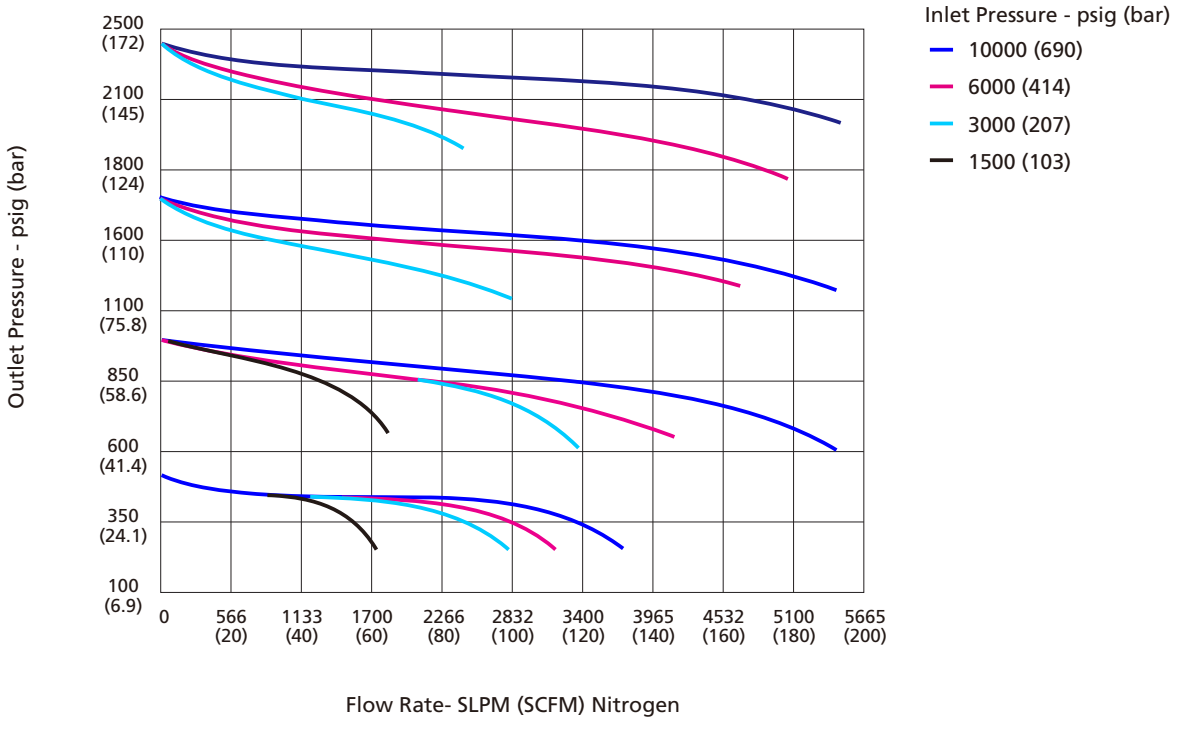
Features

- Built-in 40 μm inlet filter for cleanliness and extended service life.
- Optional self-venting feature.
- Drain port design allows residual liquid media in the downstream pipeline to be vented to a designated location.

Technical Data

Port Size		1/4", 3/8", 6 mm or 8 mm
Max. Working Pressure	**316 SS, 316L SS**	10000 psig (690 bar)
	Brass	6000 psig (414 bar)
Outlet Pressure Range		10 ~ 500 psig (0.69 ~ 34.4 bar)
		15 ~ 800 psig (1.03 ~ 55.2 bar)
		15 ~ 1500 psig (1.03 ~ 103 bar)
		30 ~ 2500 psig (2.1 ~ 172 bar)
		50 ~ 4000 psig (3.4 ~ 276 bar)
		60 ~ 6000 psig (4.1 ~ 414 bar)
		200 ~ 10000 psig (13.8 ~ 690 bar)
Flow Coefficient (Cv)		0.06
Working Temperature	**FKM**	-4 ~ 165 °F (-20 ~ 74 °C)
	NBR	-20 ~ 165 °F (-29 ~ 74 °C)
SPE (Supply Pressure Effect)	**Max. Outlet Pressure: 500, 800 psig**	1.1 psig per 100 psig source pressure change
	Max. Outlet Pressure: 1500, 2500 psig	3 psig per 100 psig source pressure change
	Max. Outlet Pressure: 4000, 6000 psig	9 psig per 100 psig source pressure change
	Max. Outlet Pressure: 10000 psig	13 psig per 100 psig source pressure change
Leak Rate	**External**	Bubble tight
	Internal	Bubble tight

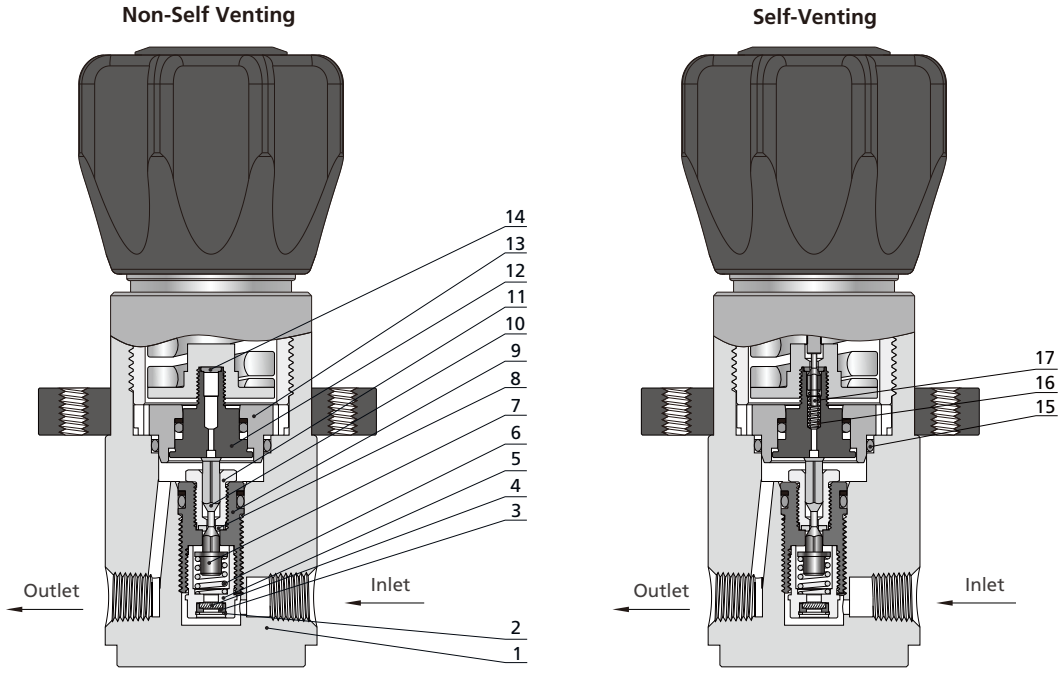
Flow Data



Process Specification

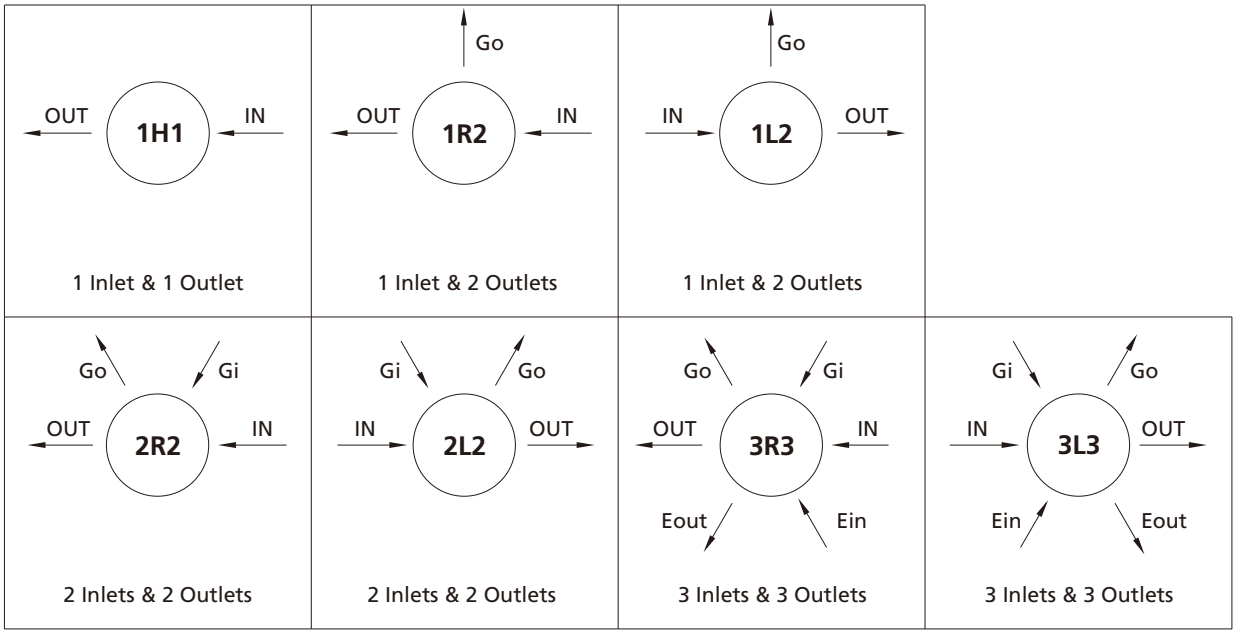
Item \ Process Specification	Standard Cleaning and Packaging Process (FC-01)	Special Cleaning and Packaging Process (FC-02)
Material	316 SS, Brass	
Wetted Surface Roughness	Ra 32 µin. (0.8 µm)	
Polishing Process	Machine Finished	
Assembly Environment	At atmosphere	In specially cleaned areas
Packaging	Single bagged	Double bagged

Major Materials of Construction



Item	Component	Material/Specification		
		SS	6L	B
1	Body	316 SS	316L SS	Brass
2	Circlips for Bores	Stainless Steel		
3	Retaining Ring	PTFE/ASTM D1710		
4	Filter	316L SS		
5	Main Poppet Cap	316 SS/ASTM A479	316L SS/ASTM A479	316 SS/ASTM A479
6	Poppet Spring	316 SS/ASTM A313		
7	Lift Poppet	N10276/B574		
8	Seat	PEEK		
9	Main Poppet	N10276/B574		
10	Poppet Button	N10276/B574		
11	Seat Retainer	316 SS/ASTM A479	316L SS/ASTM A479	316 SS/ASTM A479
12	Piston	316 SS/ASTM A479	316L SS/ASTM A479	316 SS/ASTM A479
13	Piston Ring	316 SS/ASTM A479	316L SS/ASTM A479	316 SS/ASTM A479
14	Auxiliary Seat	PEEK		
15	O-Ring	FKM or NBR		
16	Poppet Spring	316 SS/ASTM A313		
17	Auxiliary Poppet	N10276/B574		

Porting Configurations



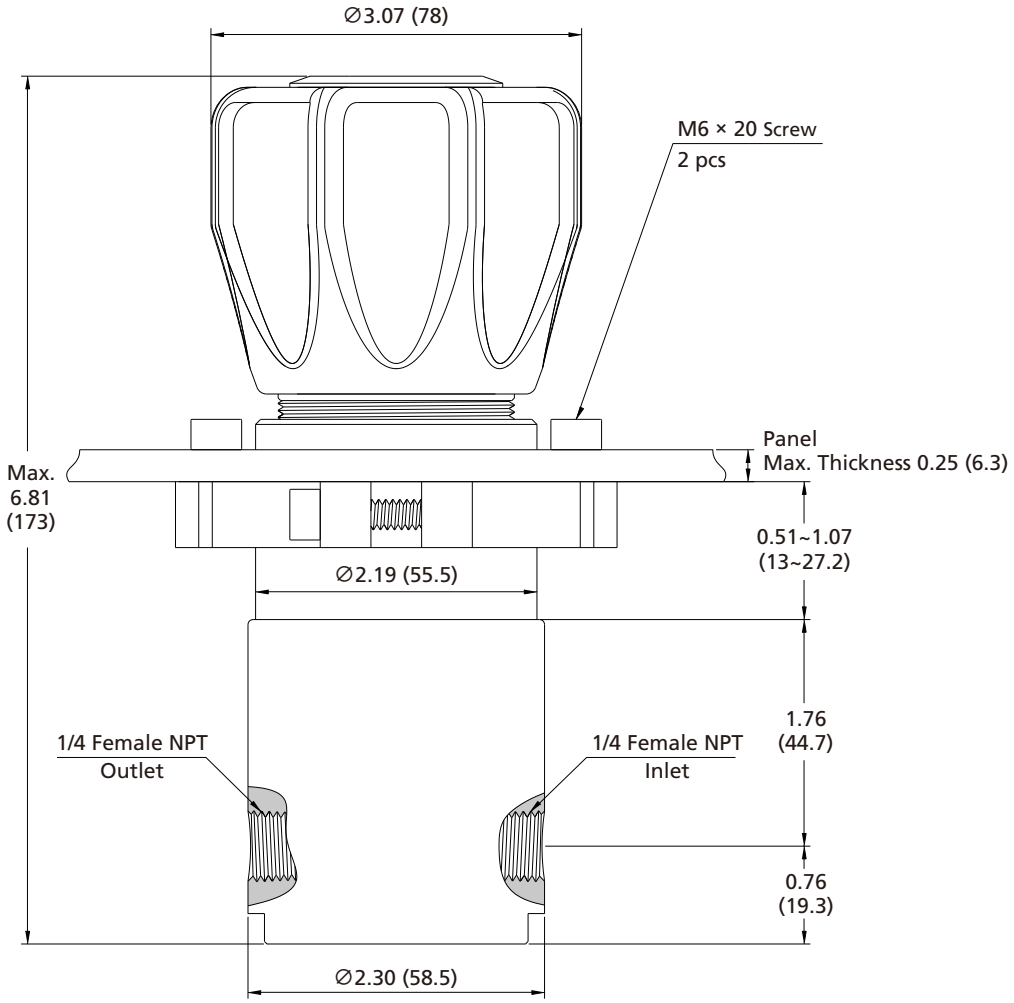
Porting Configuration Symbol

IN	OUT	Gi	Go	Ein	Eout
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port	Auxiliary Inlet	Auxiliary Outlet

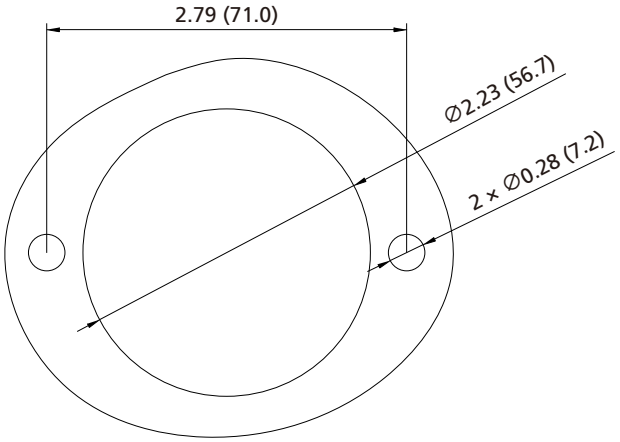
Notes:
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Dimensions

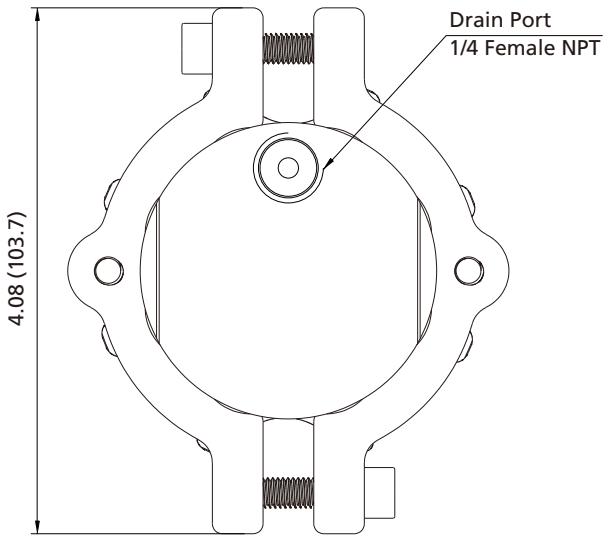
Dimensions, in inches (millimeters), are for reference only.



Panel Mounting Cut-Out



Bottom View



Ordering Number Description

RPGX - SS - 10K - 6K - 3R3 - FNS4 - NS4 - IBAP - OBR - N - SVATPM - F2

Body Material	
SS	316 SS
6L	316L SS
B	Brass

Max. Inlet Pressure	
6K	6000 psig (414 bar)
10K	10000 psig (690 bar)

Outlet Pressure Range	
5H	10~500 psig (0.69~34.4 bar)
8H	15~800 psig (1.03~55.2 bar)
15H	15~1500 psig (1.03~103 bar)
25H	30~2500 psig (2.1~172 bar)
4K	50~4000 psig (3.4~276 bar)
6K	60~6000 psig (4.1~414 bar)
10K	200~10000 psig (13.8~690 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
2R2	2 Inlets & 2 Outlets
2L2	2 Inlets & 2 Outlets
3R3	3 Inlets & 3 Outlets
3L3	3 Inlets & 3 Outlets

Inlet (IN)	
FNS4	1/4 Female NPT
NS4	1/4 Male NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)	
	Same as Inlet
Specified in the same way as Inlet	

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 5
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Auxiliary Inlet (Ein)	
	Without plug, refer to Note 5
AP	Plug

Outlet Pressure Gauge Port (Go)	
	Without pressure gauge, refer to Note 5
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

O-Ring Material	
	FKM
N	NBR

Vent Option	
	None
SV	Self-Venting (Below handle)
BV	Self-Venting (Valve body bottom)

Handle	
	Round Handle
AT	For lock nut, refer to Note 7

Auxiliary Outlet (Eout)	
	Without plug, refer to Note 5
RP	Plug
R	With relief valve, refer to Note 6

Panel Mounting	
	Fixedly Mounted at Pipe Inlet or Outlet
PM	Panel Mounting Clamp

Process Specification	
F1	FC-01
F2	FC-02

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Drain port at the bottom of the regulator can not be blocked.
3. Differentiating media status when selecting the vent option:
   (1) Non-toxic, non-hazardous gases: The SV self-venting option is recommended. In this configuration, the media is vented directly to the atmosphere from below the handle during the self-venting process.
   (2) Toxic or hazardous gases or liquids: The BV self-venting option is recommended. In this configuration, the media is discharged through the drain port at the bottom of the valve body during the self-venting process, allowing tubing to be installed to route the discharged media to a designated location.
4. When choosing NPT or Metric/Fractional Tube Fitting ports, the regulator body comes with 1/4 Female NPT inlet and outlet by default. Other options are adapted from 1/4 Male NPT.
5. When choosing NPT or Metric/Fractional Tube Fitting for inlet and outlet, gauge ports (Gi, Go) and auxiliary ports (Ein, Eout) are 1/4 Female NPT.
6. For the outlet relief valve, the set pressure is factory-set to 1.05-1.1 times the maximum outlet pressure by default, FITOK can preset the specified set pressure according to customer requirements. Please specify the desired set pressure when placing your order.
7. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.

High Flow Piston Regulators
RPGN Series

Introduction

RPGN Series High Flow Piston Regulators feature a single-stage pressure reduction design with a piston sensing mechanism that is more resistant to damage caused by pressure spikes and offers a broad outlet pressure range, making them ideal for high flow applications.

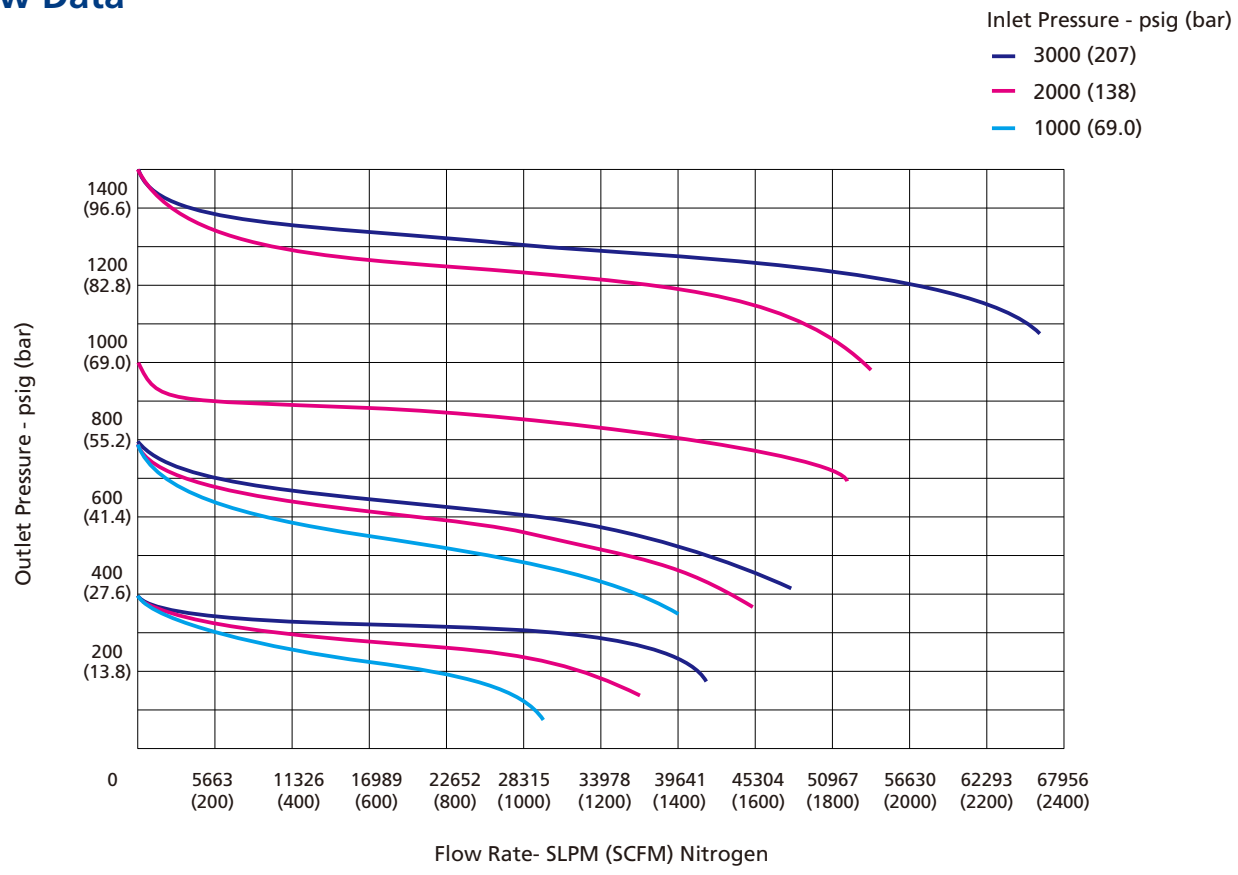
Features

- Large diameter piston improves pressure sensitivity.
- Optional self-venting feature.

Technical Data

Port Size		1/2", 3/4", 16 mm or 18 mm
Max. Working Pressure	**F316 SS, F316L SS**	4500 psig (310 bar)
	Brass	3800 psig (262 bar)
Outlet Pressure Range		0 ~ 300 psig (0 ~ 20.7 bar)
		0 ~ 600 psig (0 ~ 41.4 bar)
		0 ~ 1000 psig (0 ~ 69.0 bar)
		0 ~ 1500 psig (0 ~ 103 bar)
Flow Coefficient (Cv)		2.0
Working Temperature	**FKM**	-4 ~ 220 °F (-20 ~ 104 °C)
	FFKM	1.4 ~ 220 °F (-17 ~ 104 °C)
SPE (Supply Pressure Effect)	**Max. Outlet Pressure: 300, 600 psig**	1.5 psig per 100 psig source pressure change
	Max. Outlet Pressure: 1000, 1500 psig	4 psig per 100 psig source pressure change
Leak Rate	**External**	Bubble tight
	Internal	Bubble tight

Flow Data

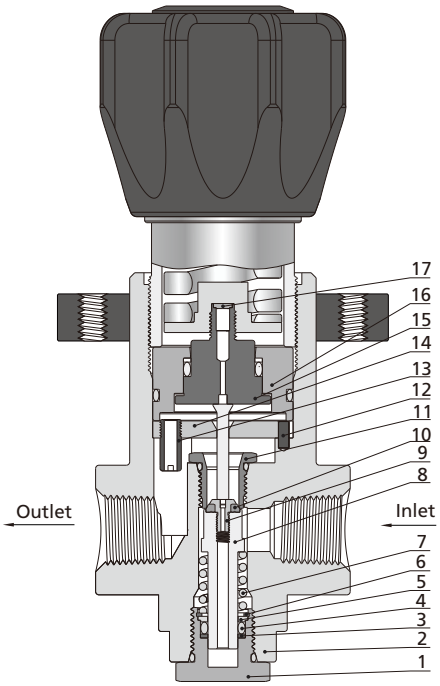


Process Specification

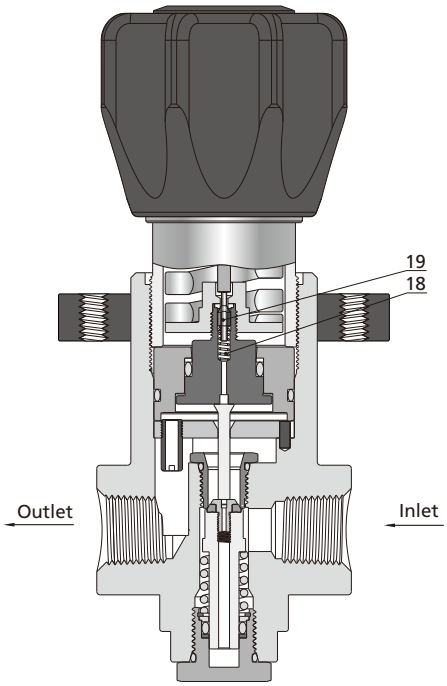
Item \ Process Specification	Special Cleaning and Packaging Process (FC-02)
Material	F316 SS, F316L SS, Brass
Wetted Surface Roughness	Ra 32 µin. (0.8 µm)
Polishing Process	Machine Finished
Assembly Environment	In specially cleaned areas
Packaging	Double bagged

Major Materials of Construction

Non-Self-Venting

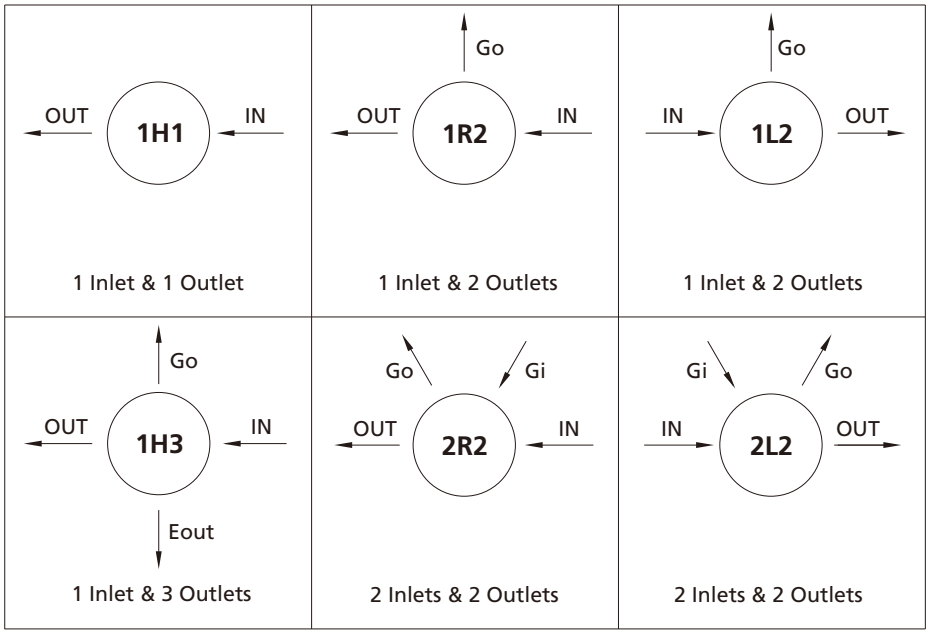


Self-Venting



Item	Component	Material/Specification
1	Plug	316 SS/ASTM A479 or Brass
2	Body	F316 SS/ASTM A182 or F316L SS/ASTM A182 or Brass
3	Circlip	PEEK
4	O-Ring	FKM or FFKM
5	Gland	316 SS/ASTM A479
6	Circlip for Bores	304 SS
7	Poppet Spring	316 SS/ASTM A313
8	Lift Poppet	316 SS/ASTM A479
9	Screw	S17400/ASTM A564
10	Seat	PCTFE/ASTM D1430
11	Seat Retainer	316 SS/ASTM A479
12	Pin	316 SS/ASTM A479
13	Cylinder	316 SS/ASTM A479
14	Guide Block	316 SS/ASTM A479
15	Piston	316 SS/ASTM A479
16	Piston Ring	316 SS/ASTM A479
17	Auxiliary Seat	PCTFE/ASTM D1430
18	Poppet Spring	316L SS/ASTM A313
19	Auxiliary Poppet	S17400/ASTM A564

Porting Configurations



Porting Configuration Symbol

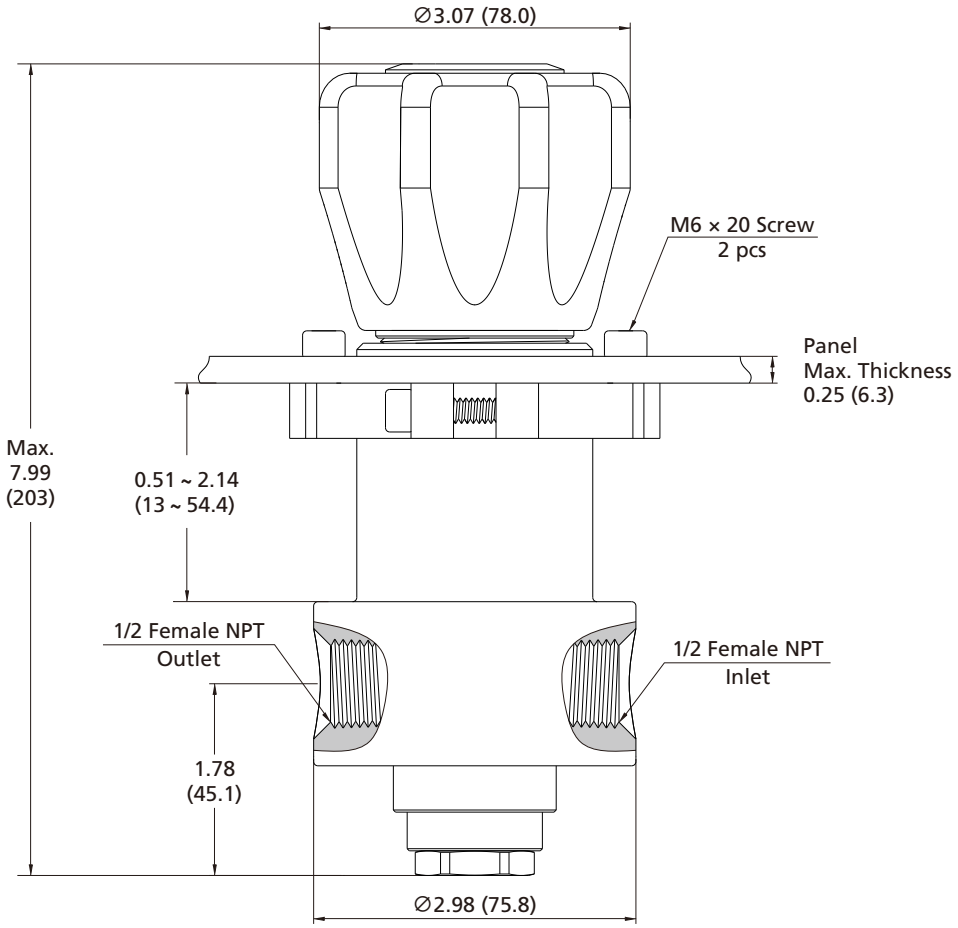
IN	OUT	Gi	Go	Eout
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port	Auxiliary Outlet

Notes:

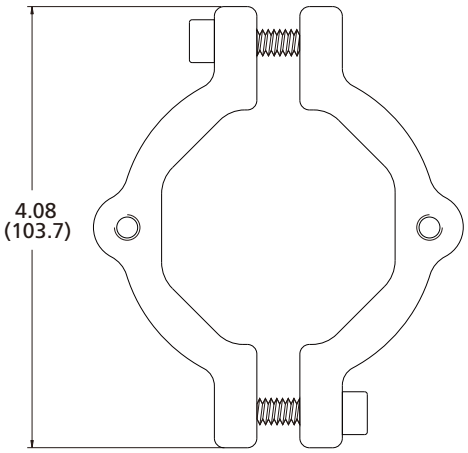
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Dimensions

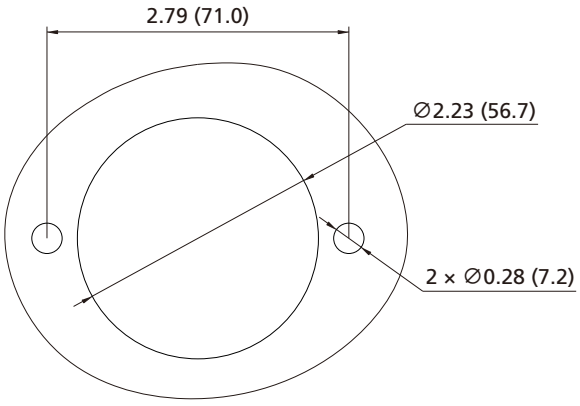
Dimensions, in inches (millimeters), are for reference only.



Clamp View



Panel Mounting Cut-Out



Ordering Number Description

RPGN - 6L - 45H - 1K - 2R2 - FNS8 - FL12 - IB - OB - Z - SVATPM - F2

Body Material

SS	F316 SS
6L	F316L SS
B	Brass

Max. Inlet Pressure

38H	3800 psig (262 bar)
45H	4500 psig (310 bar)

Outlet Pressure Range

3H	0~300 psig (0~20.7 bar)
6H	0~600 psig (0~41.4 bar)
1K	0~1000 psig (0~69.0 bar)
15H	0~1500 psig (0~103 bar)

Porting

1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
1H3	1 Inlet & 3 Outlets
2R2	2 Inlets & 2 Outlets
2L2	2 Inlets & 2 Outlets

Inlet (IN)

FNS8	1/2 Female NPT
FNS12	3/4 Female NPT
FL12	3/4" Tube Fitting
ML16	16 mm Tube Fitting
ML18	18 mm Tube Fitting

Outlet (OUT)

	Same as Inlet

Specified in the same way as Inlet

Inlet Pressure Gauge Port (Gi)

	No pressure gauge, refer to Note 3
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Outlet Pressure Gauge Port (Go)

	No pressure gauge, refer to Note 3
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

O-Ring Material

	FKM
Z	FFKM

Vent Option

	None
SV	Self-Venting

Handle

	Round Handle
AT	For lock nut, see Note 5

Panel Mounting

	Fixedly Mounted at Pipe Inlet or Outlet
PM	Panel Mounting Clamp

Process Specification

F2	FC-02

Notes:

1. "Ordering Number Description" is a reference to understanding the combination rules of FITOK product part numbers. Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.
2. When choosing NPT or Metric/Fractional Tube Fitting ports, the regulator body comes with 1/2 Female NPT inlet and outlet by default. Other options are adapted from 1/2 Male NPT.
3. When choosing NPT or Metric/Fractional Tube Fitting for inlet and outlet, gauge ports (Gi, Go) and auxiliary outlet (Eout) are 1/4 Female NPT.
4. When using the vent function, media will be discharged into the atmosphere from beneath the handle.
5. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.

Back Pressure Regulators

Contents

General Diaphragm Back Pressure Regulators

BDGC Series

Introduction

BDGC Series General Diaphragm Back Pressure Regulators feature a metal diaphragm design, ensuring excellent sensitivity and set point pressure stability. These regulators are ideal for handling various gas and low viscosity liquid media with small to medium flow.

Features

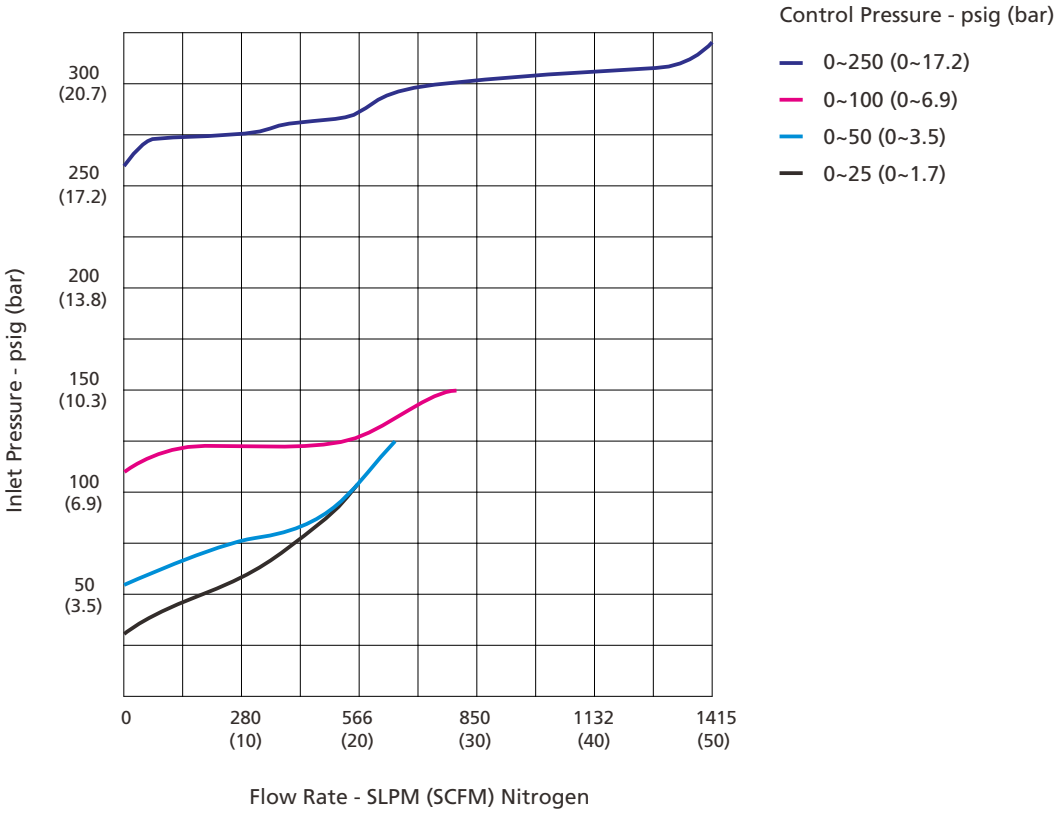
◎ Lightweight, compact design.
◎ Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance.

Technical Data

Port Size		1/4", 3/8", 6 mm or 8 mm
Max. Control Pressure		250 psig (17.2 bar)
Pressure Control Range		0 ~ 25 psig (0 ~ 1.7 bar)
		0 ~ 50 psig (0 ~ 3.4 bar)
		0 ~ 100 psig (0 ~ 6.9 bar)
		0 ~ 250 psig (0 ~ 17.2 bar)
Flow Coefficient (Cv)		0.3
Working Temperature		PCTFE: -40 ~ 165 °F (-40 ~ 74 °C)
		PEEK: -40 ~ 400 °F (-40 ~ 204 °C)
Leak Rate	**External**	$\leqslant 1\times10^{-9}$ std·cm^3/s (helium)
	Internal	Bubble tight

① For the working temperature of products equipped with a pressure gauge, please refer to the **catalog for Pressure Gauges.**

Flow Data

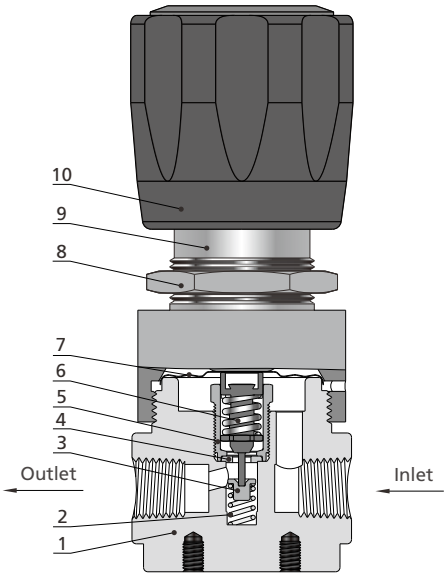


Process Specification

Item \ Process Specification	Special Cleaning and Packaging Process (FC-02)	
Material	316L SS	Brass (Nickle-Plated)
Wetted Surface Roughness	Face Seal Connection or Butt Weld Connection: Ra 20 µin. (0.5 µm) Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)	Threaded Connection or Tube Fitting Connection: Ra 32 µin. (0.8 µm)
Polishing Process	Machine Finished	
Assembly Environment	In specially cleaned areas	
Packaging	Double bagged	

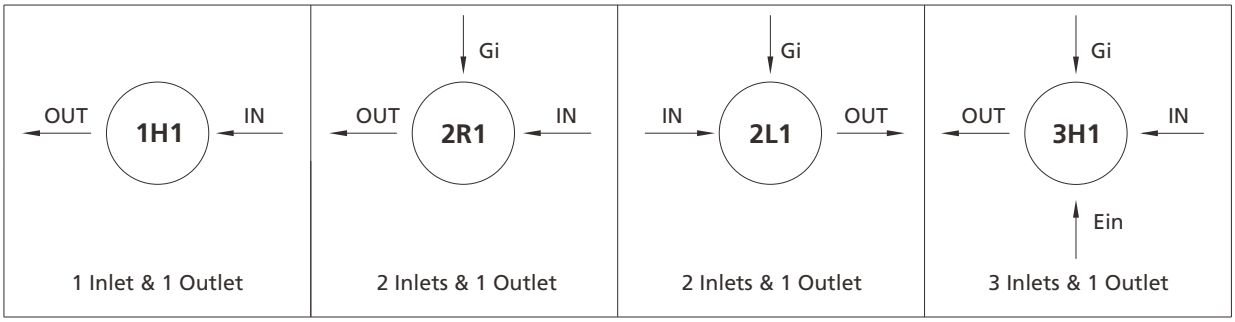
Note: For products with higher surface finish, please contact FITOK.

Major Materials of Construction



Item	Component	Material/Specification	
		6L	B
1	Body	316L SS	Brass (Nickle-Plated)
2	Poppet Spring	316 SS/ASTM A313	
3	Friction Sleeve	316L SS/ASTM A479	
4	Seat	PCTFE/ASTM D1430 or PEEK	
5	Seat Retainer	316L SS/ASTM A479	
6	Lift Poppet Assembly	316L SS and 316 SS	
7	Diaphragm	316L SS/ASTM A240	
8	Panel Nut	304 SS/ASTM A479	
9	Bonnet	304 SS/ASTM A479	Brass (Nickle-Plated)
10	Handle	ABS or Aluminium alloy (PEEK Seat optional)	

Porting Configurations



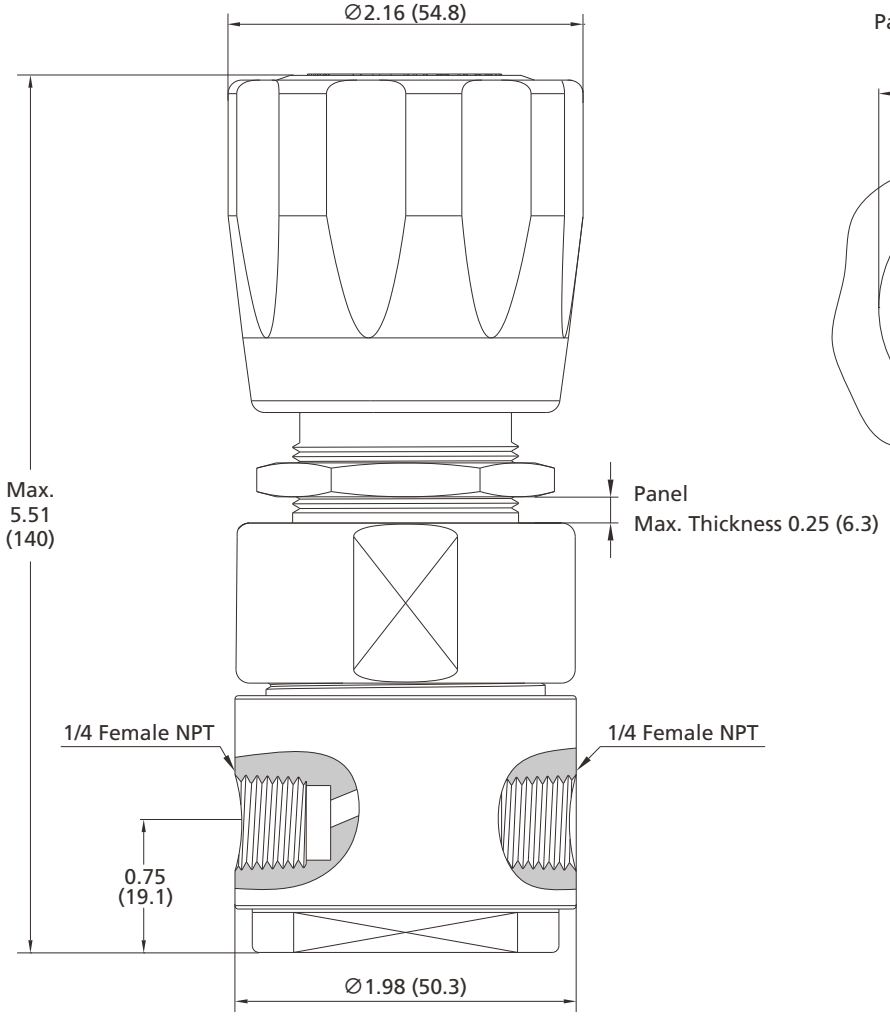
Porting Configuration Symbol

IN	OUT	Gi	Ein
Inlet	Outlet	Inlet Pressure Gauge Port	Auxiliary Inlet

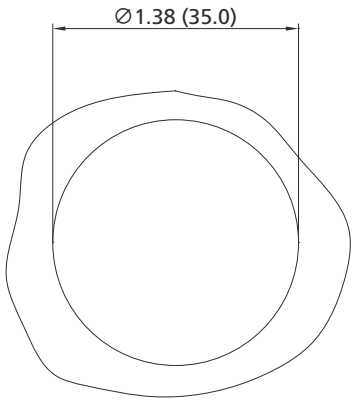
Notes:
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Dimensions

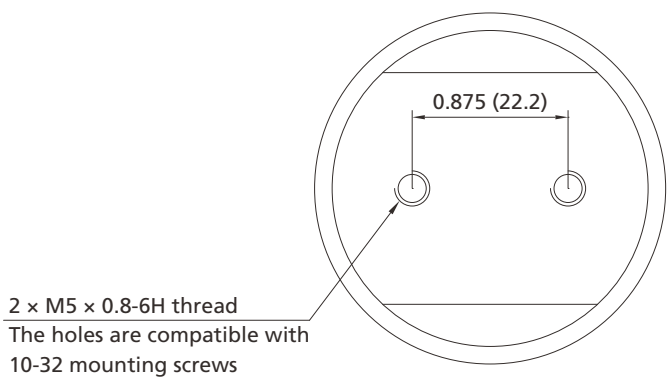
Dimensions, in inches (millimeters), are for reference only.



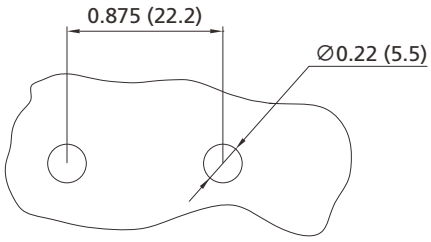
Panel Mounting Cut-Out



Bottom View



Bottom Mounting Cut-Outs



Ordering Number Description

BDGC - 6L - 1H - 2R1 - FL4 - FL6 - IBAP - P - ATPM - F2

Series	
BDGC	

Body Material	
6L	316L SS
B	Brass (Nickle-Plated)

Pressure Control Range	
25	0~25 psig (0~1.7 bar)
50	0~50 psig (0~3.4 bar)
1H	0~100 psig (0~6.9 bar)
250	0~250 psig (0~17.2 bar)

Porting	
1H1	1 Inlet & 1 Outlet
2R1	2 Inlets & 1 Outlet
2L1	2 Inlets & 1 Outlet
3H1	3 Inlets & 1 Outlet

Inlet (IN)	
FFR4	1/4" Rotatable Female FR Fitting
RFR4	1/4" Rotatable Male FR Fitting
TB4	1/4"×0.035" Tube Butt Weld
TB6	3/8"×0.035" Tube Butt Weld
FNS4	1/4 Female NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)	
	Same as Inlet
Specified in the same way as Inlet	

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 4
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Auxiliary Inlet (Ein)	
	Without plug, refer to Note 4
AP	Plug

Seat Material	
	PCTFE
P	PEEK

Handle	
	Round Handle
AT	For lock nut, see Note 5

Installation Type	
	Threaded Hole at the Bottom
PM	Installed with Panel Nut
BS	Installed with Screws at the Bottom

Process Specification	
F2	FC-02

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. For metal gasket face seal fitting connection or tube butt weld connection, the connection and body are orbital-welded integral structure by default.
3. For NPT connection and Metric/Fractional Tube Fitting connection, the body connection is 1/4 Female NPT by default. Other options are adapted from Male NPT.
4. When choosing NPT or Metric/Fractional Tube Fitting for inlet and outlet, gauge connection (Gi) and auxiliary inlet (Ein) are 1/4 Female NPT. When choosing Metal Gasket Face Seal Fitting or Tube Butt Weld for inlet and outlet, gauge connection (Gi) and auxiliary inlet (Ein) are 1/4" Rotatable Male FR Fitting.
5. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.
6. For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page A-12.

General Piston Back Pressure Regulators

BPGC Series

Introduction

BPGC Series General Piston Back Pressure Regulators feature a piston sensing mechanism, offering robust resistance to damage caused by pressure spikes. These regulators are ideal for regulating medium to high pressure settings.

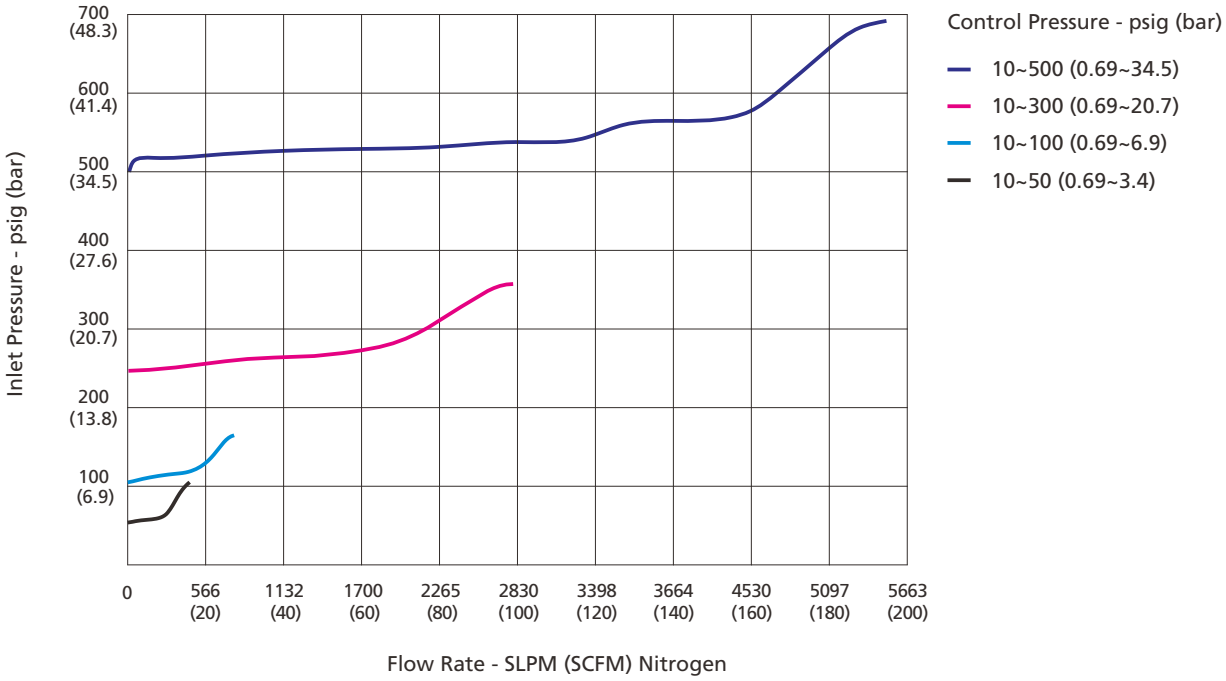
Features

- Piston sensing mechanism offers a wider pressure control range.
- The bonnet includes a captured vent port, allowing media to be vented to a designated location in the event of accidental O-ring failure.

Technical Data

Port Size		1/4", 3/8", 6 mm or 8 mm
Max. Control Pressure		1000 psig (68.9 bar)
Pressure Control Range		10 ~ 300 psig (0.69 ~ 20.7 bar)
		10 ~ 500 psig (0.69 ~ 34.5 bar)
		10 ~ 1000 psig (0.69 ~ 68.9 bar)
Flow Coefficient (Cv)		0.3
Working Temperature	**FKM**	-4 ~ 165 °F (-20 ~ 74 °C)
	FFKM	1.4 ~ 165 °F (-17 ~ 74 °C)
	NBR	-20 ~ 165 °F (-29 ~ 74 °C)
Leak Rate	**External**	Bubble tight
	Internal	Bubble tight

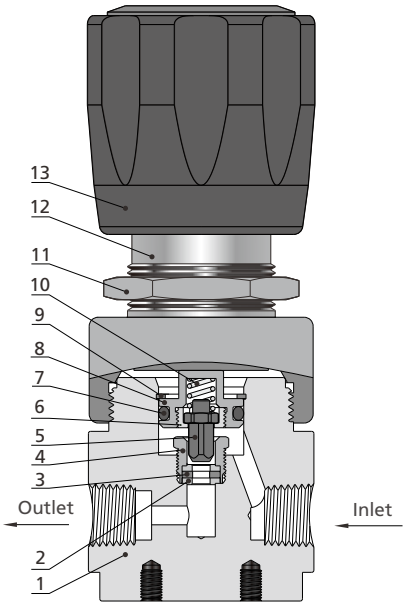
Flow Data



Process Specification

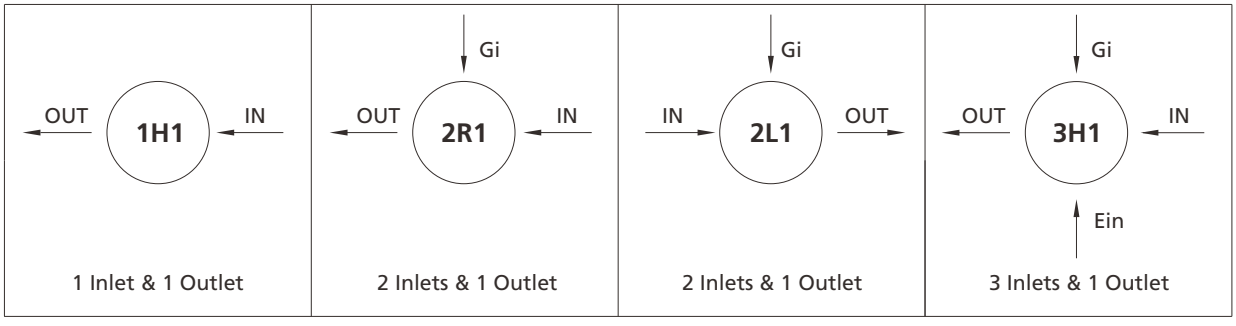
Item \ Process Specification	Special Cleaning and Packaging Process (FC-02)
Material	316L SS, Brass (Nickle-Plated)
Wetted Surface Roughness	Ra 32 µin. (0.8 µm)
Polishing Process	Machine Finished
Assembly Environment	In specially cleaned areas
Packaging	Double bagged

Major Materials of Construction



Item	Component	Material/Specification
1	Body	316L SS or Brass (Nickle-Plated)
2	Seat	PCTFE/ASTM D1430
3	Seat Gasket	316L SS/ASTM A479
4	Seat Retainer	316L SS/ASTM A479
5	Lift Poppet	316L SS/ASTM A479
6	Piston Nut	316L SS/ASTM A479
7	O-Ring	FKM or FFKM or NBR
8	Piston	316L SS/ASTM A479
9	Circlip	304 SS
10	Poppet Spring	316 SS/ASTM A313
11	Panel Nut	304 SS/ASTM A479
12	Bonnet	304 SS/ASTM A479 or Brass (Nickle-Plated)
13	Handle	ABS

Porting Configurations



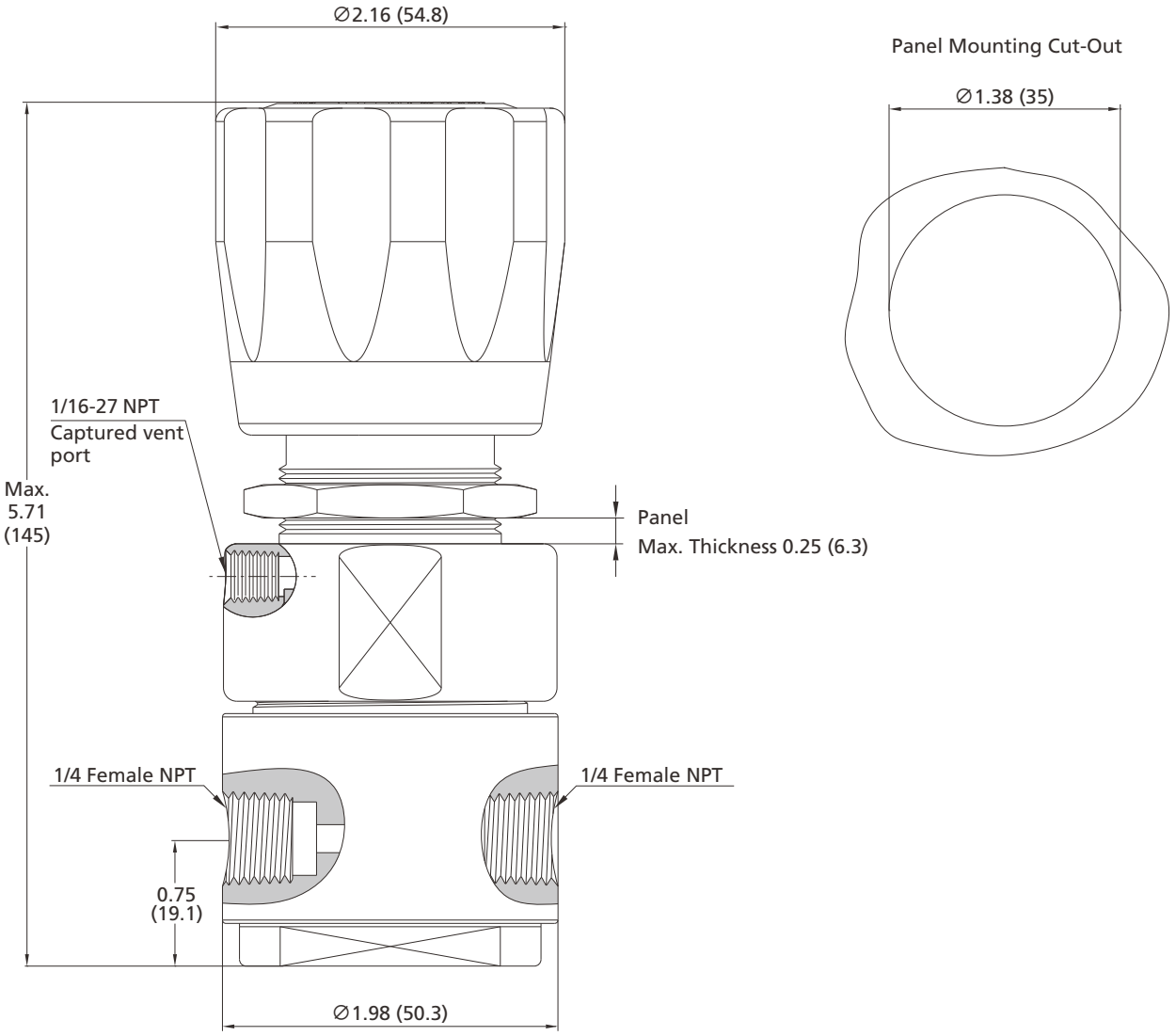
Porting Configuration Symbol

IN	OUT	Gi	Ein
Inlet	Outlet	Inlet Pressure Gauge Port	Auxiliary Inlet

Notes:
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

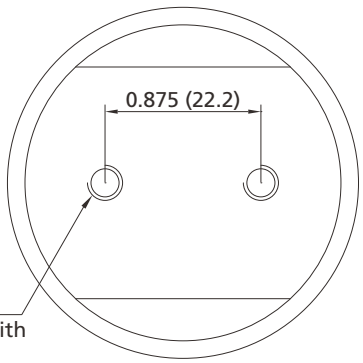
Dimensions

Dimensions, in inches (millimeters), are for reference only.



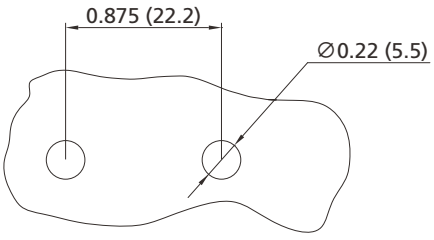
Panel Mounting Cut-Out

Bottom View



2 × M5 × 0.8-6H thread
The holes are compatible with 10-32 mounting screws

Bottom Mounting Cut-Outs



Ordering Number Description

BPGC - 6L - 3H - 3H1 - FL4 - FL6 - IBAP - Z - ATPM - F2

Series
BPGC

Body Material	
6L	316L SS
B	Brass (Nickle-Plated)

Pressure Control Range	
3H	10~300 psig (0.69~20.7 bar)
5H	10~500 psig (0.69~34.5 bar)
1K	10~1000 psig (0.69~68.9 bar)

Porting	
1H1	1 Inlet & 1 Outlet
2R1	2 Inlets & 1 Outlet
2L1	2 Inlets & 1 Outlet
3H1	3 Inlets & 1 Outlet

Inlet (IN)	
FNS4	1/4 Female NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)
Same as Inlet
Specified in the same way as Inlet

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 3
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Auxiliary Inlet (Ein)	
	Without plug, refer to Note 3
AP	Plug

O-Ring Material	
	FKM
Z	FFKM
N	NBR

Handle	
	Round Handle
AT	For lock nut, see Note 4

Installation Type	
	Threaded Hole at the Bottom
PM	Installed with Panel Nut
BS	Installed with Screws at the Bottom

Process Specification	
F2	FC-02

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. For NPT connection and Metric/Fractional Tube Fitting connection, the body connection is 1/4 Female NPT by default. Other options are adapted from Male NPT.
3. Gauge connection (Gi) and auxiliary inlet (Ein) are 1/4 Female NPT.
4. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.

High Pressure Piston Back Pressure Regulators

BPGX Series

Introduction

BPGX Series High Pressure Piston Back Pressure Regulators feature a piston sensing mechanism and a handle using thrust roller bearing. These regulators are ideal for regulating medium to ultra high pressure settings.

Features

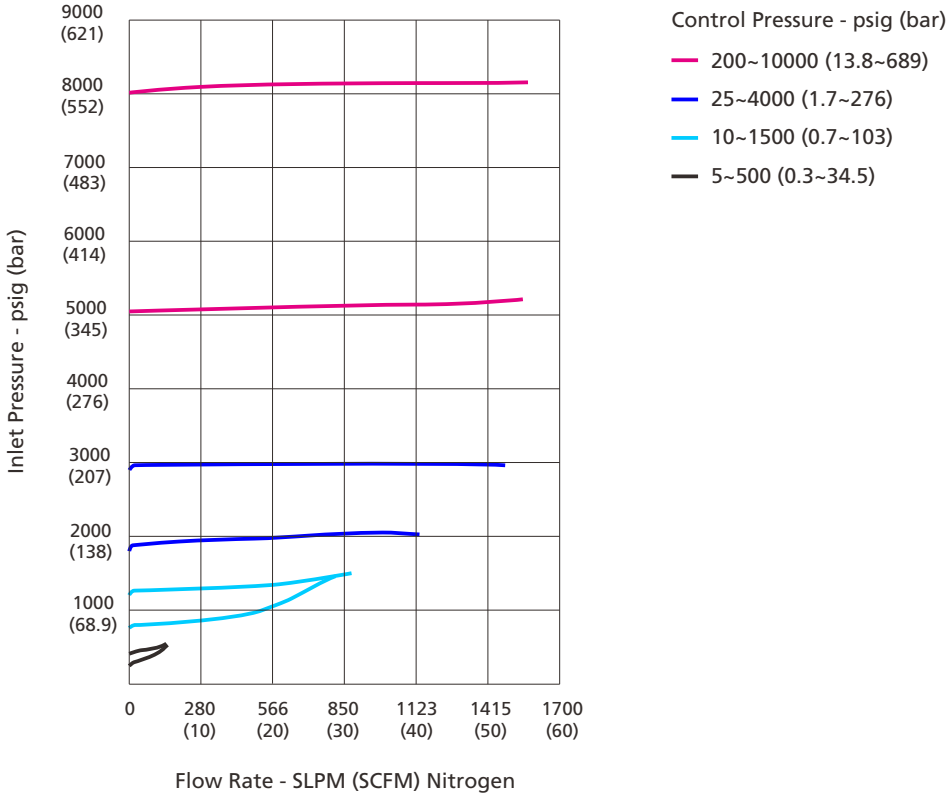
- Piston sensing mechanism offers a wider pressure control range.
- Thrust roller bearing eases operation.
- Panel mounting clamp available.

Technical Data

Port Size		1/4", 3/8", 6 mm or 8 mm
Max. Control Pressure	**316 SS, 316L SS**	10000 psig (689 bar)
	Brass	6000 psig (414 bar)
Pressure Control Range		5 ~ 500 psig (0.35 ~ 34.5 bar)
		5 ~ 800 psig (0.35 ~ 55.2 bar)
		10 ~ 1500 psig (0.69 ~ 103 bar)
		15 ~ 2500 psig (1.0 ~ 172 bar)
		25 ~ 4000 psig (1.7 ~ 276 bar)
		50 ~ 6000 psig (3.5 ~ 414 bar)
		200 ~ 10000 psig (13.8 ~ 689 bar)①
Flow Coefficient (Cv)		0.25
Working Temperature	**FKM**	-4 ~ 165 °F (-20 ~ 74 °C)
	FFKM	1.4 ~ 165 °F (-17 ~ 74 °C)
	NBR	-20 ~ 165 °F (-29 ~ 74 °C)
Leak Rate	**External**	Bubble tight
	Internal	Bubble tight

① Apples to valves made of 316 SS and 316L SS only.

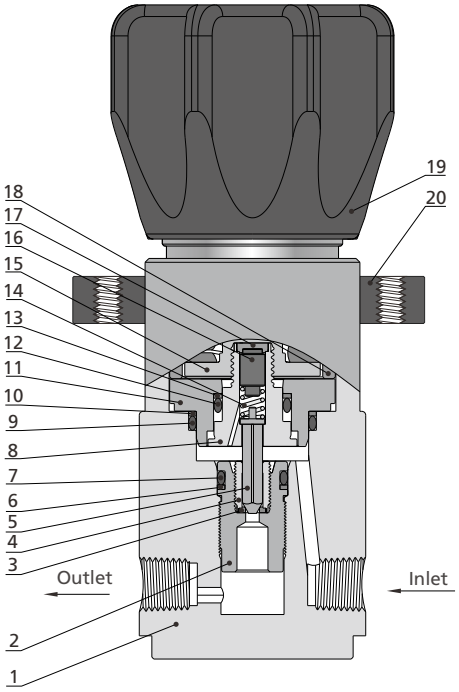
Flow Data



Process Specification

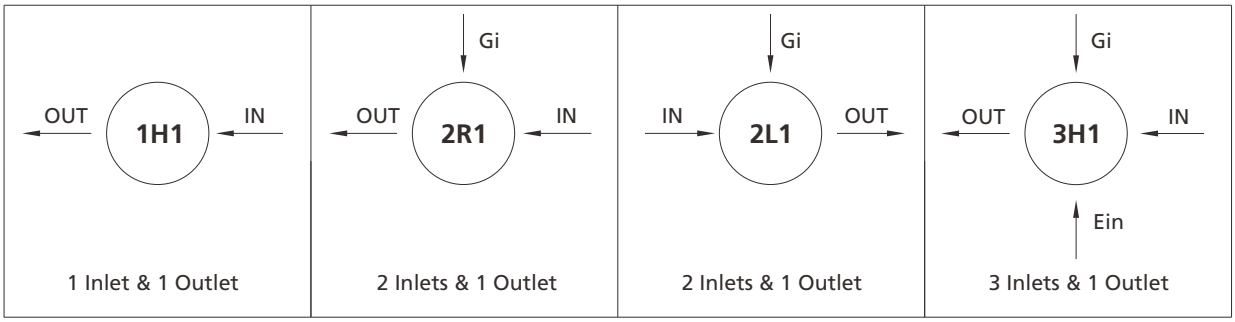
Item \ Process Specification	Standard cleaning and Packaging Process (FC-01)	Special Cleaning and Packaging Process (FC-02)
Material	316 SS, 316L SS, Brass	
Wetted Surface Roughness	Ra 32 µin. (0.8 µm)	
Polishing Process	Machine Finished	
Assembly Environment	At atmosphere	In specially cleaned areas
Packaging	Individually bagged	Double bagged

Major Materials of Construction



Item	Component	Material/Specification
1	Body	316 SS or 316L SS or Brass
2	Poppet	316 SS/ASTM A479
3	Seat	PEEK
4	Seat Retainer	316 SS/ASTM A479
5	Lift Poppet	S17400/A564
6	Circlip	PTFE+25%Carbon Fiber
7	O-Ring	FKM or FFKM or NBR
8	Piston	316 SS/ASTM A479
9	O-Ring	FKM or FFKM or NBR
10	Circlip	PTFE+25%Carbon Fiber
11	Piston Ring	316 SS/ASTM A479
12	O-Ring	FKM or FFKM or NBR
13	Circlip	PTFE+25%Carbon Fiber
14	Poppet Spring	316 SS/ASTM A313
15	Spring Seat	304 SS/ASTM A479
16	Spring Button	316 SS/ASTM A479
17	Seat	PEEK
18	Bonnet	304 SS/ASTM A479 or Brass
19	Handle	Aluminium Alloy
20	Clamp	Aluminium Alloy

Porting Configurations



Porting Configuration Symbol

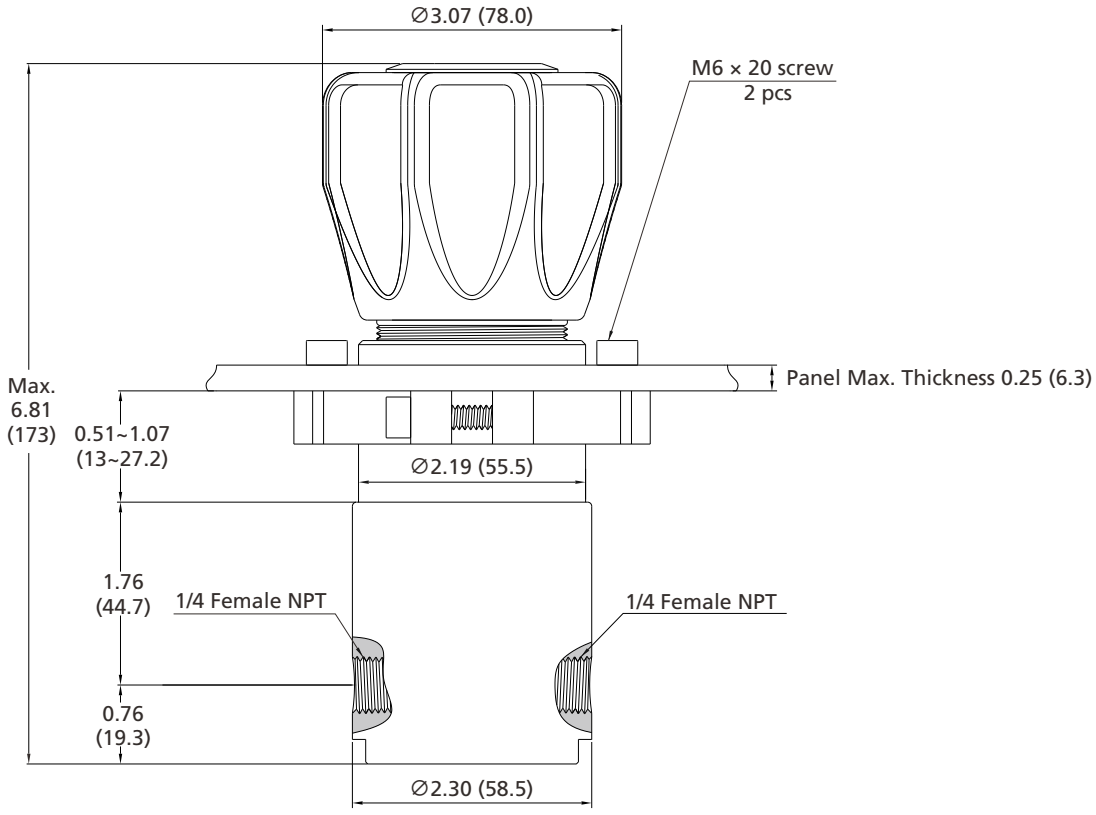
IN	OUT	Gi	Ein
Inlet	Outlet	Inlet Pressure Gauge Port	Auxiliary Inlet

Notes:

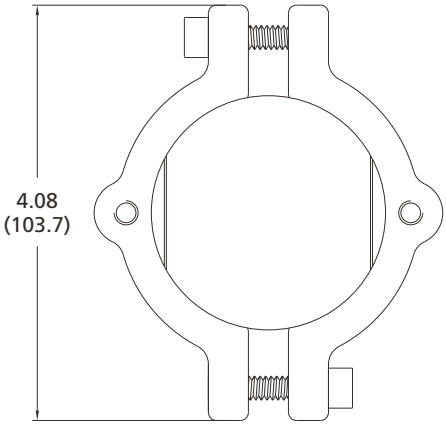
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Dimensions

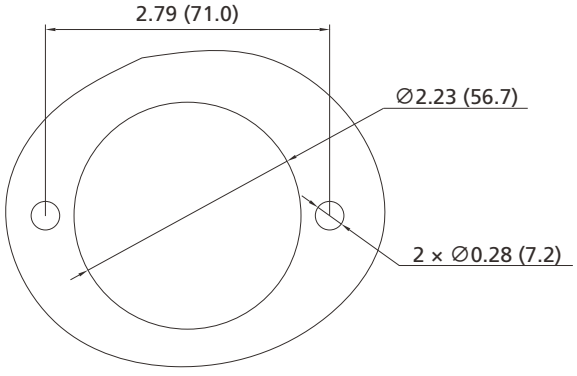
Dimensions, in inches (millimeters), are for reference only.



Bottom View



Panel Mounting Cut-Out



Ordering Number Description

BPGX - 6L - 5H - 3H1 - FL4 - FL6 - IBAP - Z - ATPM - F1

Series
BPGX

Body Material	
SS	316 SS
6L	316L SS
B	Brass (Max. control pressure: 6000 psig)

Pressure Control Range	
5H	5~500 psig (0.35~34.5 bar)
8H	5~800 psig (0.35~55.2 bar)
15H	10~1500 psig (0.69~103 bar)
25H	15~2500 psig (1.0~172 bar)
4K	25~4000 psig (1.7~276 bar)
6K	50~6000 psig (3.5~414 bar)
10K	200~10000 psig (13.8~689 bar)

Porting	
1H1	1 Inlet & 1 Outlet
2R1	2 Inlets & 1 Outlet
2L1	2 Inlets & 1 Outlet
3H1	3 Inlets & 1 Outlet

Inlet (IN)	
FNS4	1/4 Female NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Outlet (OUT)	
	Same as Inlet
	Specified in the same way as Inlet

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 3
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Auxiliary Inlet (Ein)	
	Without plug, refer to Note 3
AP	Plug

O-Ring Material	
	FKM
Z	FFKM
N	NBR

Handle	
	Round Handle
AT	For lock nut, see Note 4

Installation Type	
	Fixedly Mounted at Pipe Inlet or Outlet
PM	Panel Mounting Clamp

Process Specification	
F1	FC-01
F2	FC-02

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. For NPT connection and Metric/Fractional Tube Fitting connection, the body connection is 1/4 Female NPT by default. Other options are adapted from Male NPT.
3. Gauge connection (Gi) and auxiliary inlet (Ein) are 1/4 Female NPT.
4. Lock nut (AT): The metal lock nut construction is designed to prevent accidental pressure adjustments. FITOK can set the specified outlet pressure based on customer requirements; simply include this information in the remarks when placing an order. If the outlet pressure is not specified, customers will need to adjust and fix it themselves.

Pressure Control Panels

Contents

Pressure Control Panels

FSR-1 Series

Model: FSR-16L-45-100-00-B-B-00-R-P

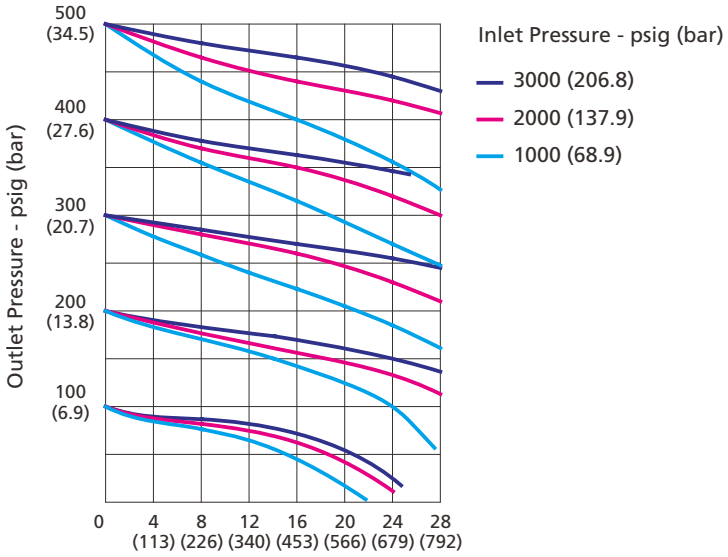
Features

◎ With a RDGC Series Regulator.
◎ With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source.
◎ With special cleaning and packaging, applicable to oxygen-enriched atmospheres.

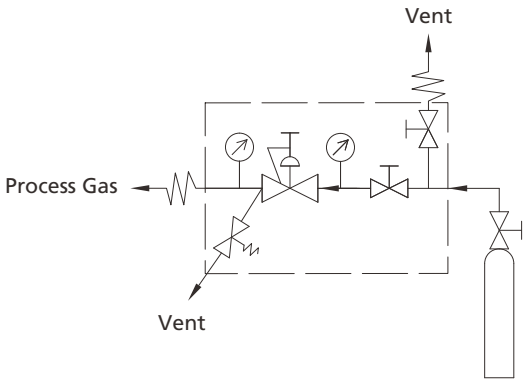
Technical Data

◎ Maximum inlet pressure: 3000 or 4500 psig
◎ Outlet pressure range: 0 ~ 25, 0 ~ 50, 0 ~ 100, 0 ~ 250 or 0 ~ 500 psig
◎ Material of the main components:
Seat: PCTFE (regulator and diaphragm valve)
Diaphragm: Hastelloy (regulator), cobalt alloy (diaphragm valve)
Diaphragm valve body: 316L SS
Filter: 316L SS
◎ Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
◎ Valve leak rates (helium):
Internal: $\leqslant 1\times10^{-7}$ std·cm^3/s
External: $\leqslant 1\times10^{-9}$ std·cm^3/s
◎ Flow coefficient (regulator Cv): 0.06

Typical Flow Chart

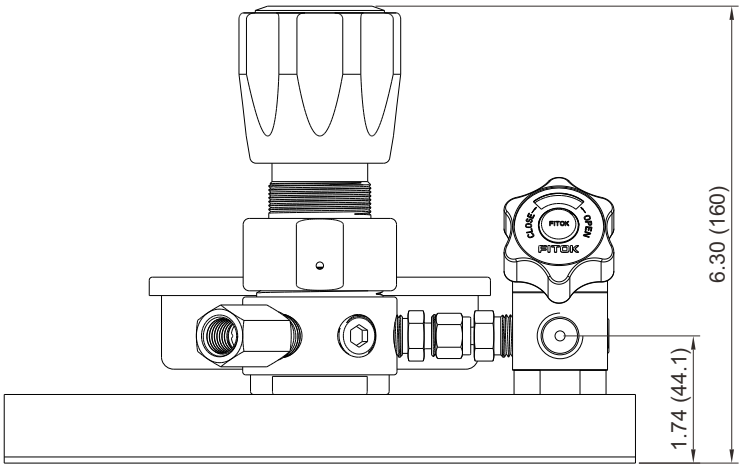


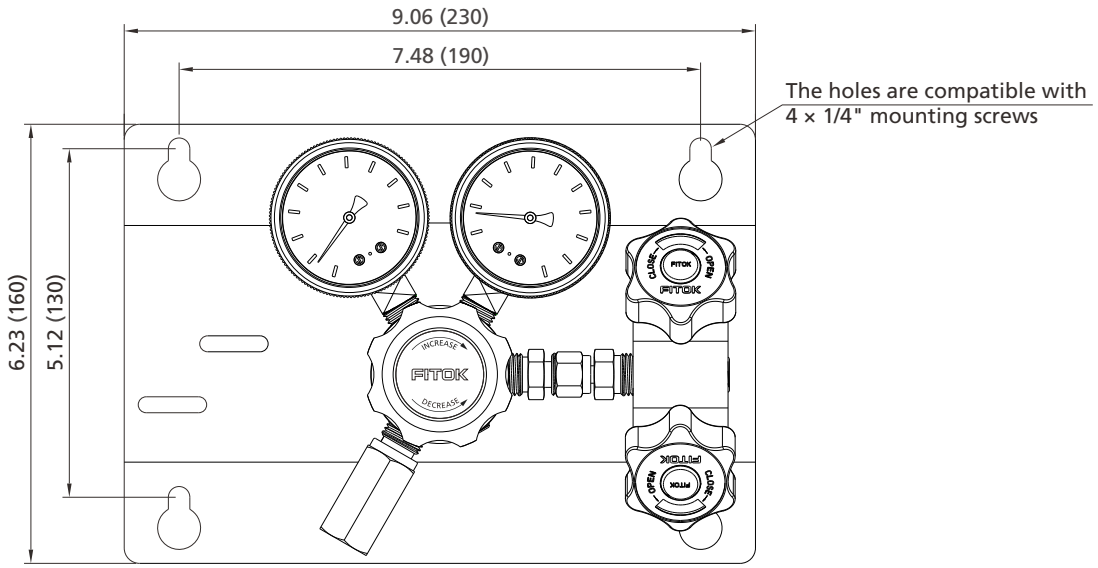
Flow Schematic



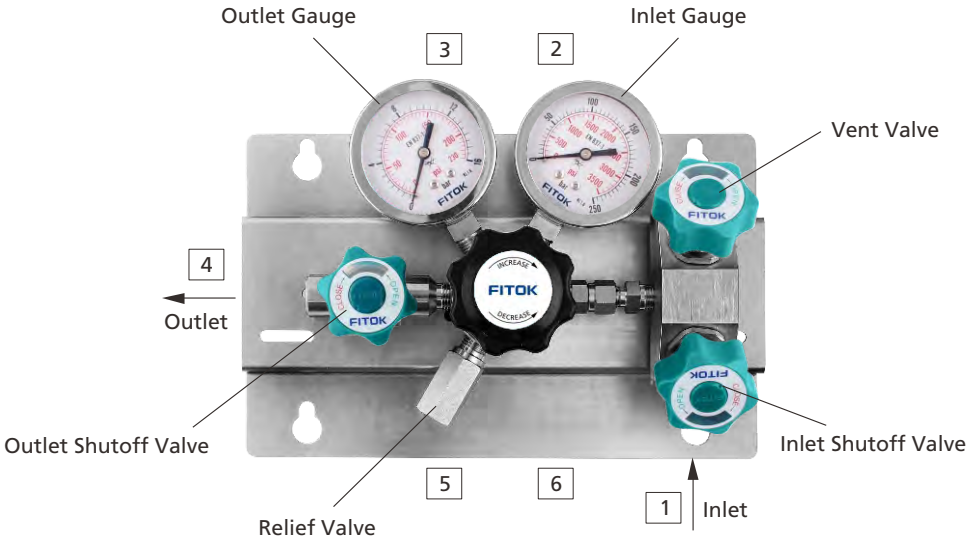
Dimensions

Dimensions, in inches (millimeters), are for reference only.





Components Introduction



Ordering Number Description

FSR – 16L – 30 – 50 – 00 – B – B – 30 – R – P

Body Material (Regulator)	
6L	316L SS
SS	316 SS
HC	Hastelloy C-276
B	Brass (Nickel-plated)

Inlet Pressure P1	
30	3000 psig
45	4500 psig

Outlet Pressure Range P2	
25	0~25 psig
50	0~50 psig
100	0~100 psig
250	0~250 psig
500	0~500 psig

Connection 1	
00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting

Other connections are available upon request

Connection 2	
B	With Gauge (psi/bar)
M	With Gauge (psi/MPa)
P	Plug
00	1/4 Female NPT

Connection 3
Same as Connection 2

Connection 4	
00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting
30	Diaphragm Valve with 1/4 Female NPT
31	Diaphragm Valve with 1/4 Male NPT
32	Diaphragm Valve with 1/4" Tube Fitting
33	Diaphragm Valve with 3/8" Tube Fitting
34	Diaphragm Valve with 6 mm Tube Fitting
35	Diaphragm Valve with 8 mm Tube Fitting

Other connections are available upon request

Connection 5	
R	Relief Valve
P	Plug
00	1/4 Female NPT

Connection 6
Same as Connection 5

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
3. When the part number contains "B" or "M", a GC series pressure gauge is configured by default.

Pressure Control Panels

FSR-2 Series

Features

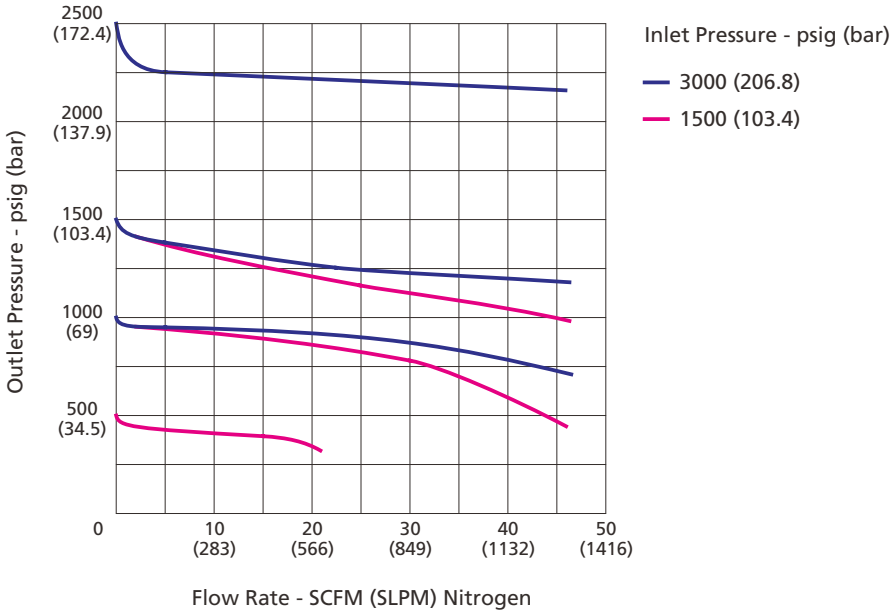
- With a RPGC Series Regulator.
- With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source.
- With special cleaning and packaging, applicable to oxygen-enriched atmospheres.

Model: FSR-2Z6L-45-750-00-B-B-00-P-P

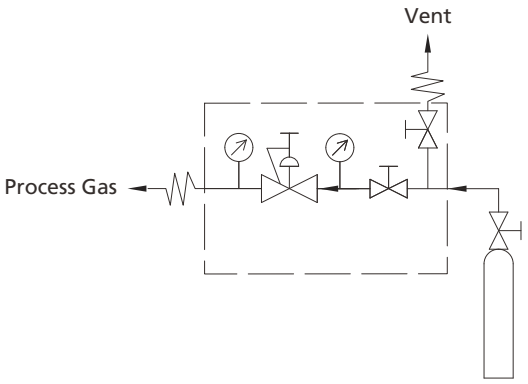
Technical Data

- Maximum inlet pressure: 3000 or 4500 psig
- Outlet pressure range: 0 ~ 750, 0 ~ 1500 or 0 ~ 2500 psig
- Material of the internal components:
  Without venting Model: Main seat PCTFE
  Venting Model: Main seat PEEK, vent seat PCTFE
  Vent seat: PCTFE
  Piston: 316L SS
  O-ring: FKM or FFKM
  Filter: 316L SS
- Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
- Leak rates:
  Internal: Bubble-tight
  External: Bubble-tight
- Flow coefficient (regulator Cv):
  Without vent: 0.06
  With vent: 0.1

Typical Flow Chart

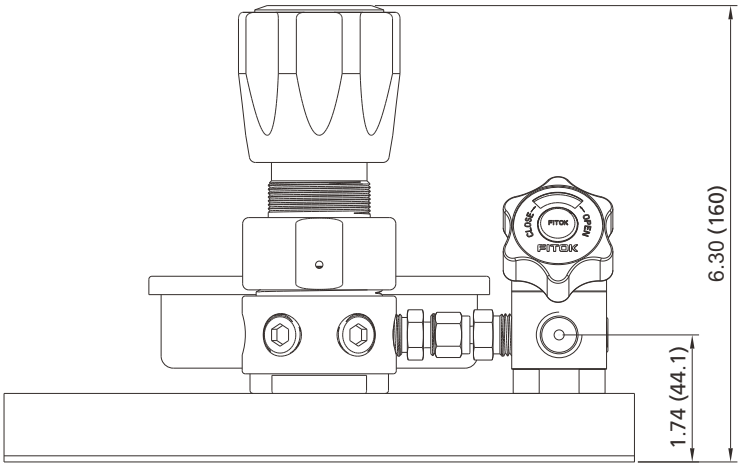


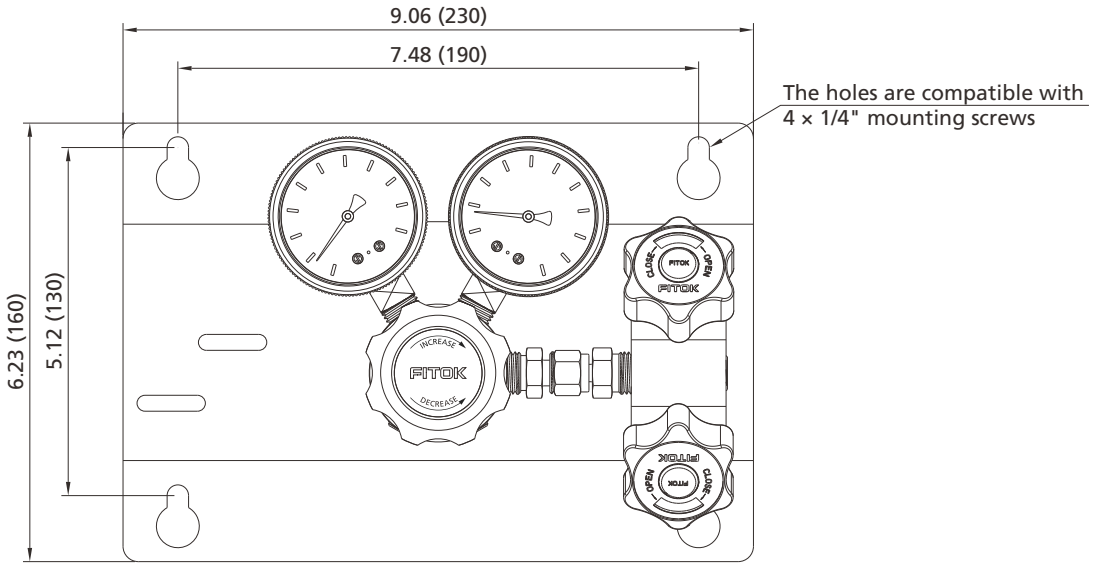
Flow Schematic



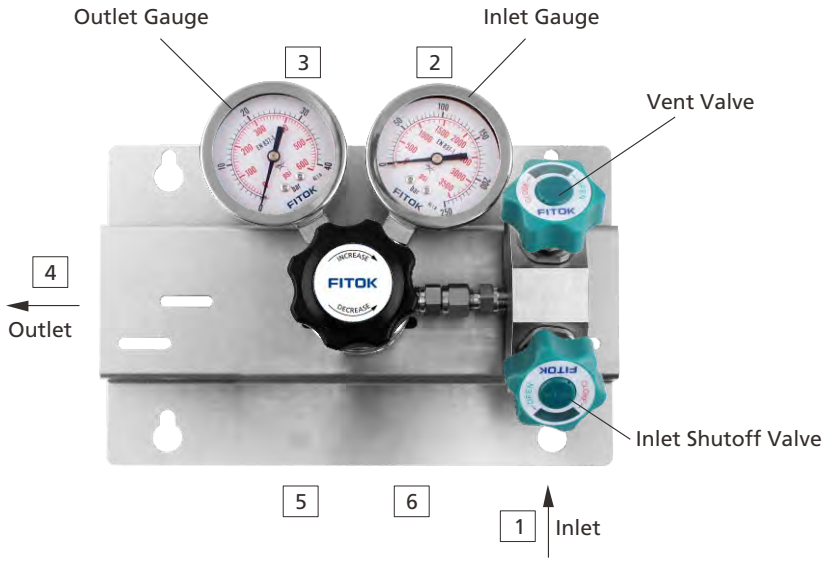
Dimensions

Dimensions, in inches (millimeters), are for reference only.





Components Introduction



Ordering Number Description

FSR – 2V Z 6L – 30 – 1500 – 00 – B – B – 30 – P – P

Vent Option	
	Without
V	With

O-ring Material	
	FKM
Z	FFKM

Body Material (Regulator)	
6L	316L SS
SS	316 SS
B	Brass (Nickel-plated)

Inlet Pressure P1	
30	3000 psig
45	4500 psig

Outlet Pressure Range P2	
750	0~750 psig
1500	0~1500 psig
2500	0~2500 psig

Connection 1	
00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting

Other connections are available upon request

Connection 2	
B	With Gauge (psi/bar)
M	With Gauge (psi/MPa)
P	Plug
00	1/4 Female NPT

Connection 3
Same as Connection 2

Connection 4	
00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting
30	Diaphragm Valve with 1/4 Female NPT
31	Diaphragm Valve with 1/4 Male NPT
32	Diaphragm Valve with 1/4" Tube Fitting
33	Diaphragm Valve with 3/8" Tube Fitting
34	Diaphragm Valve with 6 mm Tube Fitting
35	Diaphragm Valve with 8 mm Tube Fitting

Other connections are available upon request

Connection 5	
R	Relief Valve
P	Plug
00	1/4 Female NPT

Connection 6
Same as Connection 5

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
3. When the part number contains "B" or "M", a GC series pressure gauge is configured by default.

Changeover Systems

Contents

Manual Changeover Systems

FDR-1 Series

Model: FDR-16L-30-500-00-B-B-01-00-R

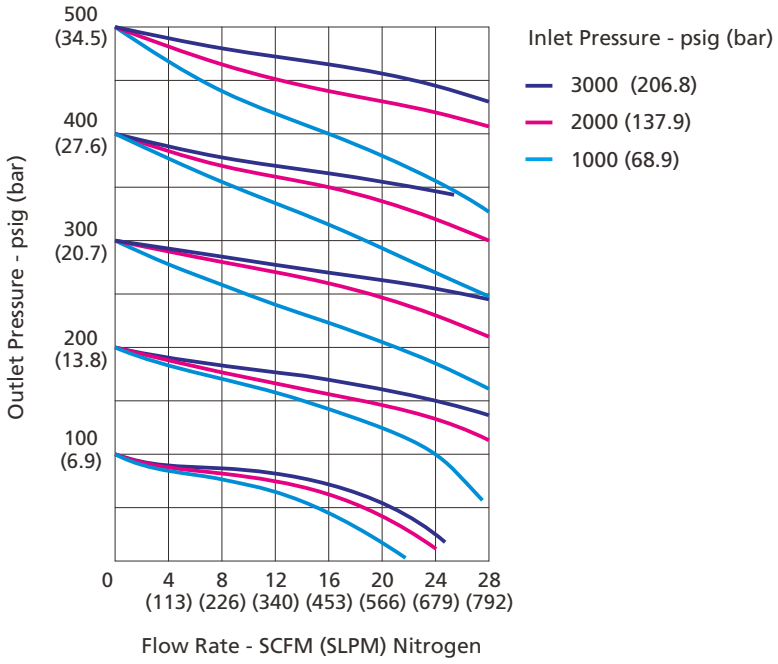
Features

◎ Two gas sources are connected to the system, when the pressure of one gas source is lower than the switching pressure, manually switch to the other gas source to ensure continuous gas supply.
◎ With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source.
◎ With special cleaning and packaging, applicable to oxygen-enriched atmospheres.

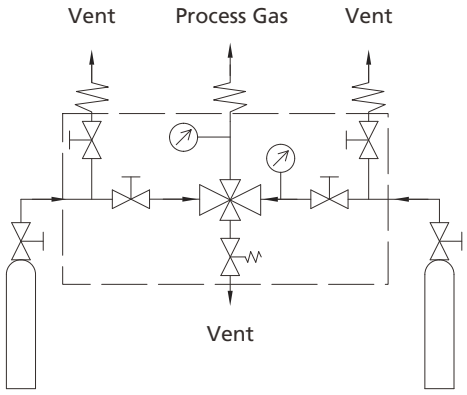
Technical Data

◎ Maximum inlet pressure: 3000 or 4500 psig
◎ Outlet pressure range: 0 ~ 25, 0 ~ 50, 0 ~ 100, 0 ~ 250 or 0 ~ 500 psig
◎ Material of the main components:
Seat: PCTFE (regulator and diaphragm valve)
Diaphragm: Hastelloy (regulator), cobalt alloy (diaphragm valve)
Diaphragm valve body: 316L SS
O-ring: FKM
◎ Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
◎ Valve leak rates (helium):
Internal: $\leqslant 1\times10^{-7}$ std·cm^3/s
External: $\leqslant 1\times10^{-9}$ std·cm^3/s
◎ Flow coefficient (regulator Cv): 0.06

Typical Flow Chart

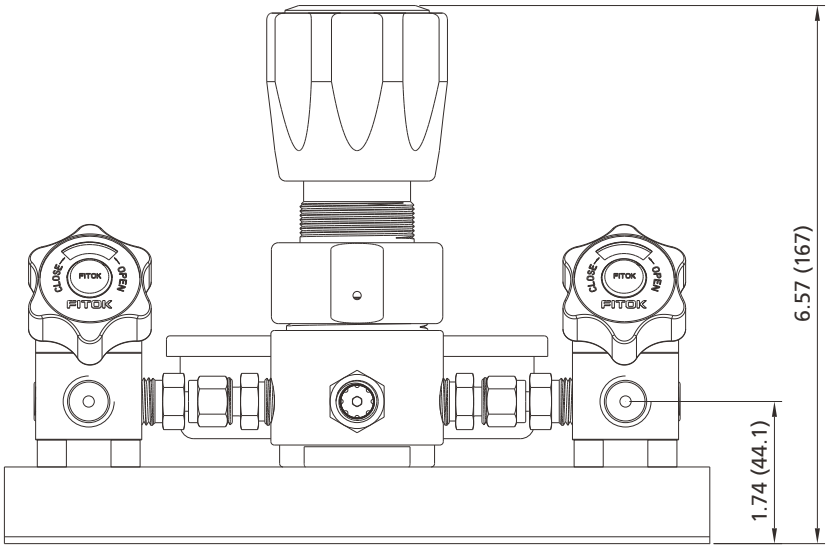


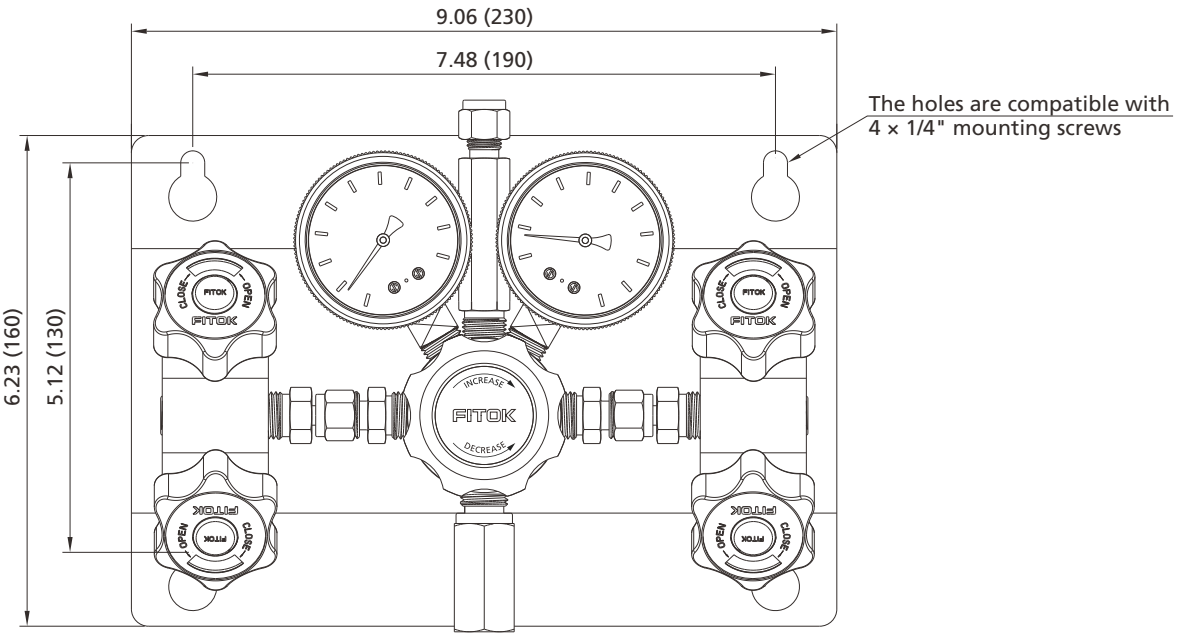
Flow Schematic



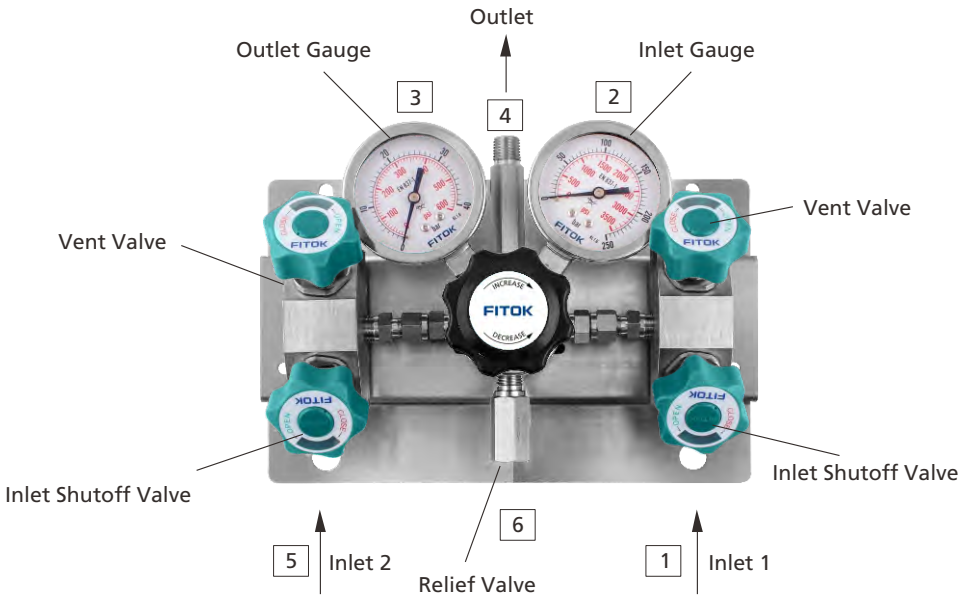
Dimensions

Dimensions, in inches (millimeters), are for reference only.





Components Introduction



Ordering Number Description

FDR – 16L – 30 – 250 – 00 – B – B – 01 – 00 – R

Body Material (Regulator)

6L	316L SS
SS	316 SS
HC	Hastelloy C-276
B	Brass (Nickel-plated)

Inlet Pressure P1

30	3000 psig
45	4500 psig

Outlet Pressure Range P2

25	0~25 psig
50	0~50 psig
100	0~100 psig
250	0~250 psig
500	0~500 psig

Connection 1

00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting

Other connections are available upon request

Connection 2

B	With Gauge (psi/bar)
M	With Gauge (psi/MPa)
P	Plug
00	1/4 Female NPT

Connection 3

Same as Connection 2

Connection 4

00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting

Other connections are available upon request

Connection 5

Same as Connection 1

Connection 6

R	Relief Valve
P	Plug
00	1/4 Female NPT

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
3. When the part number contains "B" or "M", a GC series pressure gauge is configured by default.

Manual Changeover System

FDR-2 Series

Model: FDR-2VSS-45-2500-00-B-B-01-00

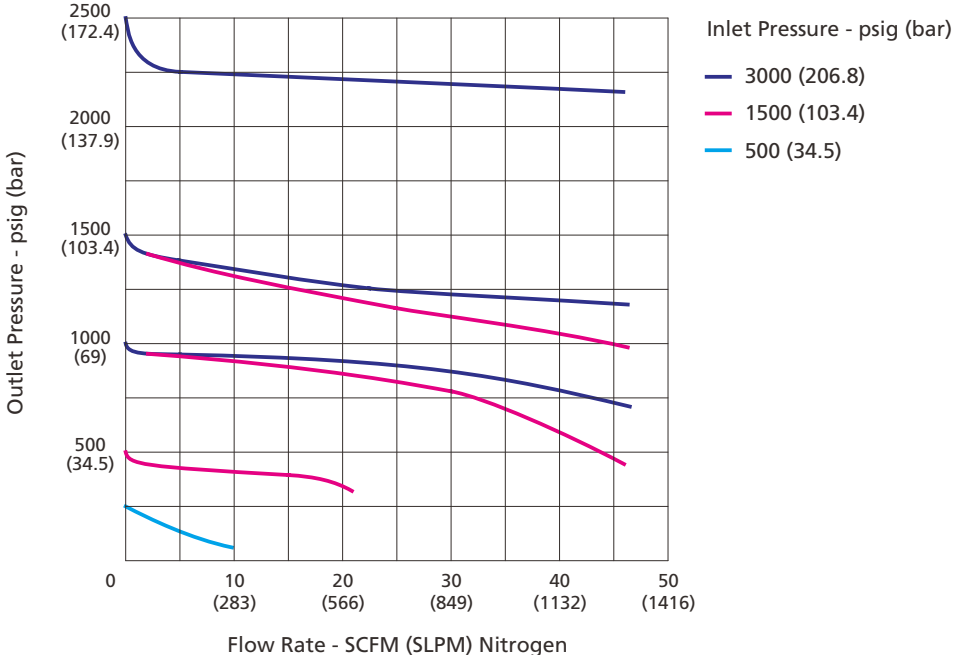
Features

- Two gas sources are connected to the system, when the pressure of one gas source is lower than the switching pressure, manually switch to the other gas source to ensure continuous gas supply
- With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source
- With special cleaning and packaging, applicable to oxygen-enriched atmospheres

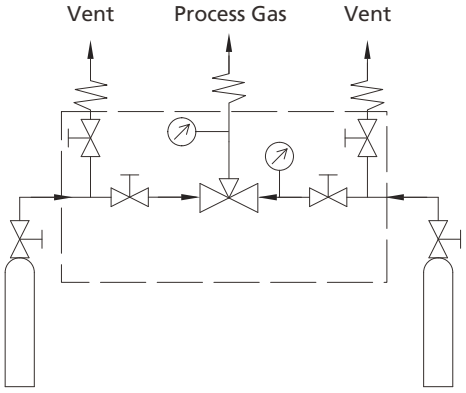
Technical Data

- Maximum inlet pressure: 3000 or 4500 psig
- Outlet pressure range: 0 ~ 750, 0 ~ 1500 or 0 ~ 2500 psig
- Material of the main components:
  Seat: PCTFE (regulator and diaphragm valve)
  Piston: 316L SS
  Diaphragm: cobalt alloy (diaphragm valve)
  Diaphragm valve body: 316L SS
  O-ring: FKM or FFKM
  Filter: 316L SS
- Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
- Leak rates:
  Internal: Bubble-tight
  External: Bubble-tight
- Flow coefficient (regulator Cv):
  Without vent: 0.06
  Vent: 0.1

Typical Flow Chart

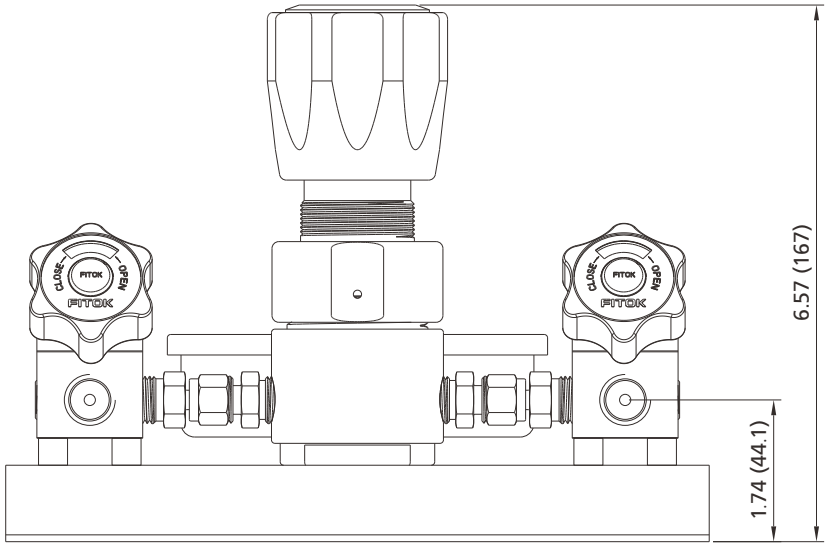


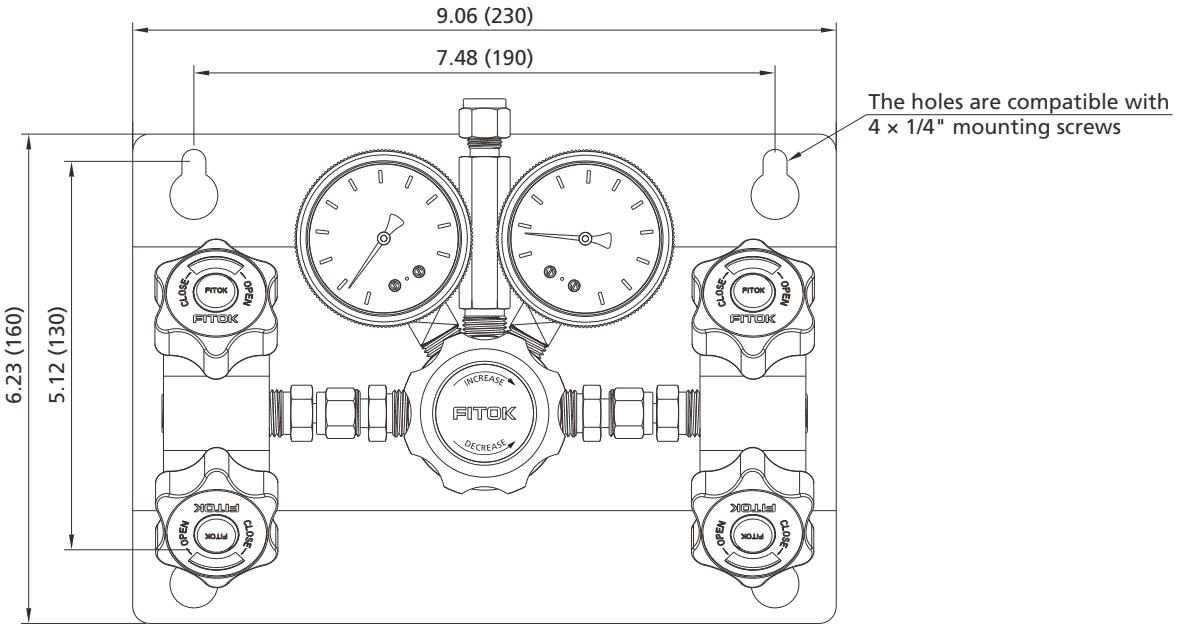
Flow Schematic



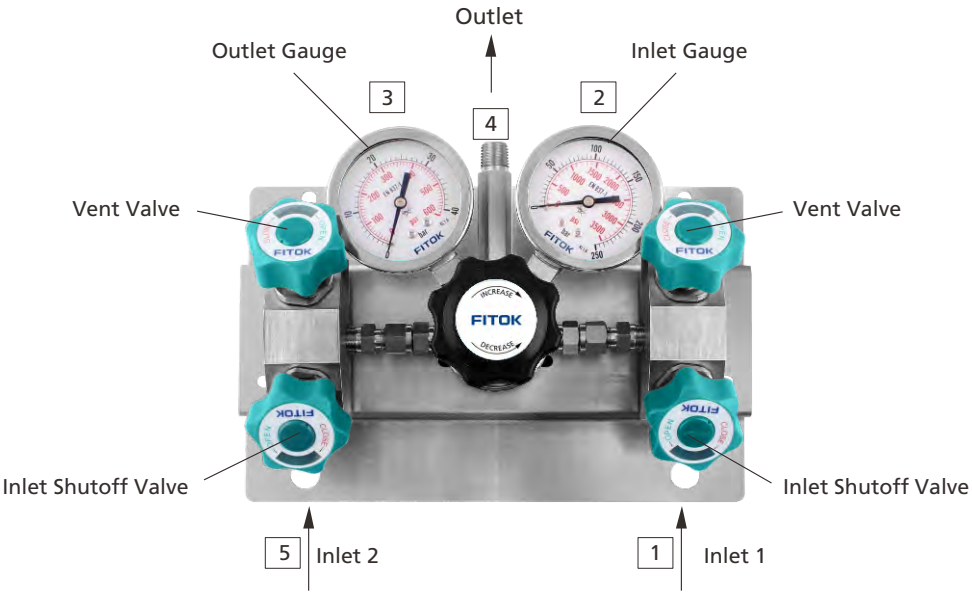
Dimensions

Dimensions, in inches (millimeters), are for reference only.





Components Introduction



Ordering Number Description

FDR – 2V Z 6L – 30 – 750 – 00 – B – B – 01 – 00

Vent Option

	Without
V	With

O-ring Material

	FKM
Z	FFKM

Body Material (Regulator)

6L	316L SS
SS	316 SS
B	Brass (Nickel-plated)

Inlet Pressure P1

30	3000 psig
45	4500 psig

Outlet Pressure Range P2

750	0~750 psig
1500	0~1500 psig
2500	0~2500 psig

Connection 1

00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting

Other connections are available upon request

Connection 2

B	With Gauge (psi/bar)
M	With Gauge (psi/MPa)
P	Plug
00	1/4 Female NPT

Connection 3

Same as Connection 2

Connection 4

00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting

Other connections are available upon request

Connection 5

Same as Connection 1

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
3. When the part number contains "B" or "M", a GC series pressure gauge is configured by default.

Automatic Changeover System
CEPR Series

The CEPR series automatic changeover system, suitable for uninterrupted gas supply, uses dual gas sources of main supply cylinder and backup cylinder. When the pressure of one gas source drops below the set pressure, the changeover system will automatically switch from the depleted source to the backup source, thus achieving a continuous gas supply.

Features

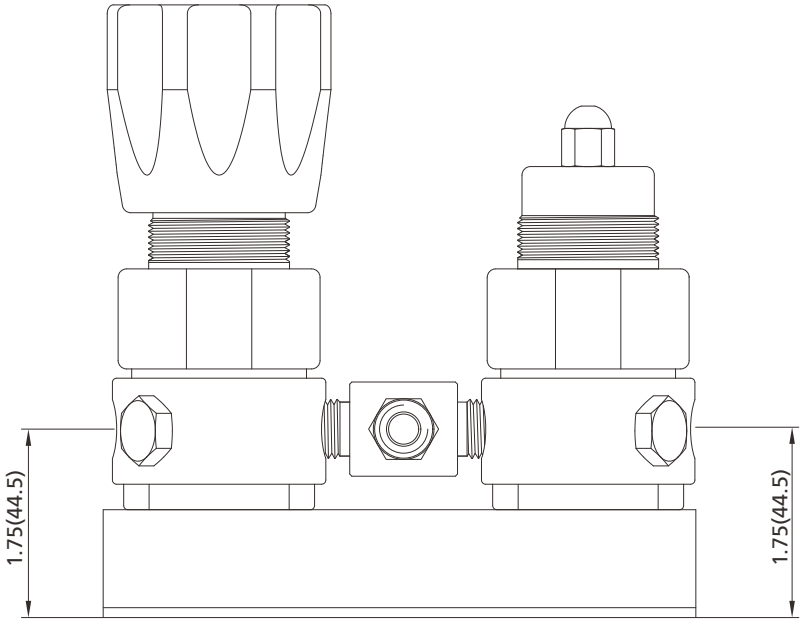
- Two gas sources are connected to regulators of the automatic changeover system, when the pressure of one gas source is lower than the switching pressure, it will automatically switch to the other gas source to supply gas, thus ensuring continuous gas supply.
- Excellent sensitivity and set point pressure stability.

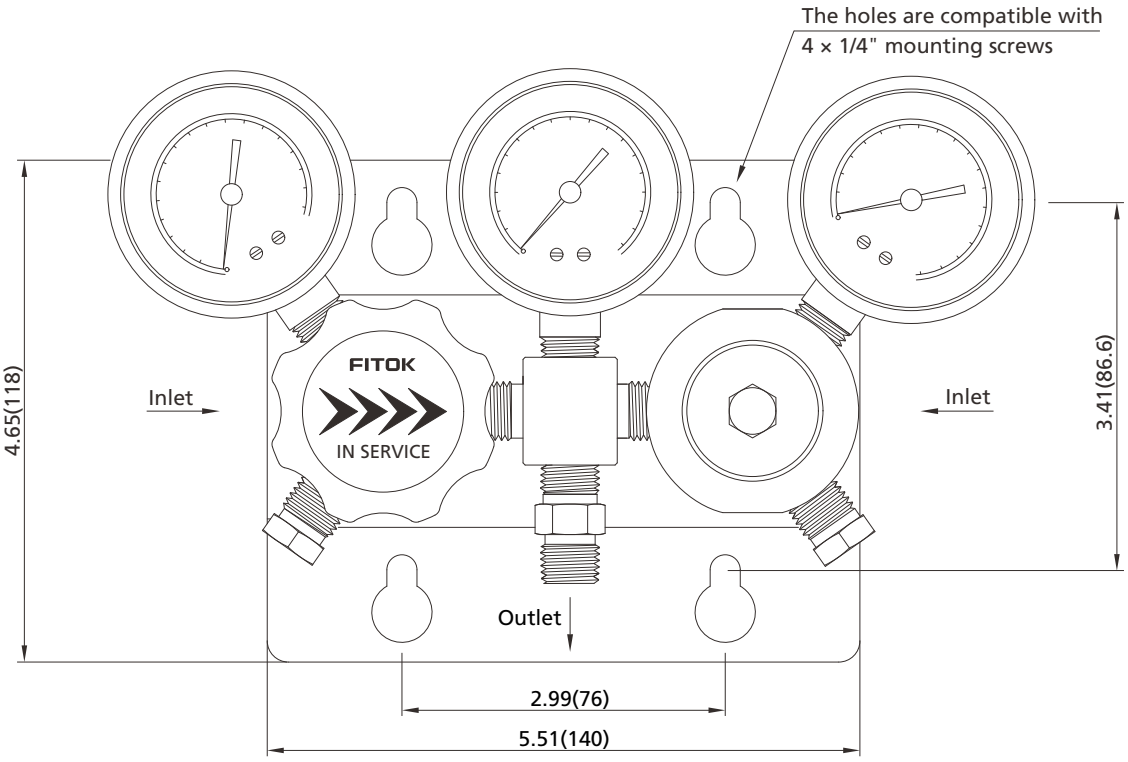
Technical Data

- Maximum inlet pressure: 3000 psig
- Nominal changeover pressure: 100, 150, 200 and 250 psig
- Outlet pressure ranges: 85 ~ 115, 135 ~ 165, 185 ~ 215, 235 ~ 265 psig
- Material of the internal components:
  Seat: PCTFE
  Diaphragm: Hastelloy
  Filter: 316L SS
- Working Temperature: -40 °F ~ 165 °F (-40 °C ~ 74 °C)
- Valve leak rates (helium):
  Internal: Bubble-tight
  External: $\leqslant 2\times10^{-8}$ std·cm^3/s
- Flow coefficient (Cv): 0.06
- Weight: ≈5.07 lbs (2.3 kg)

Dimensions

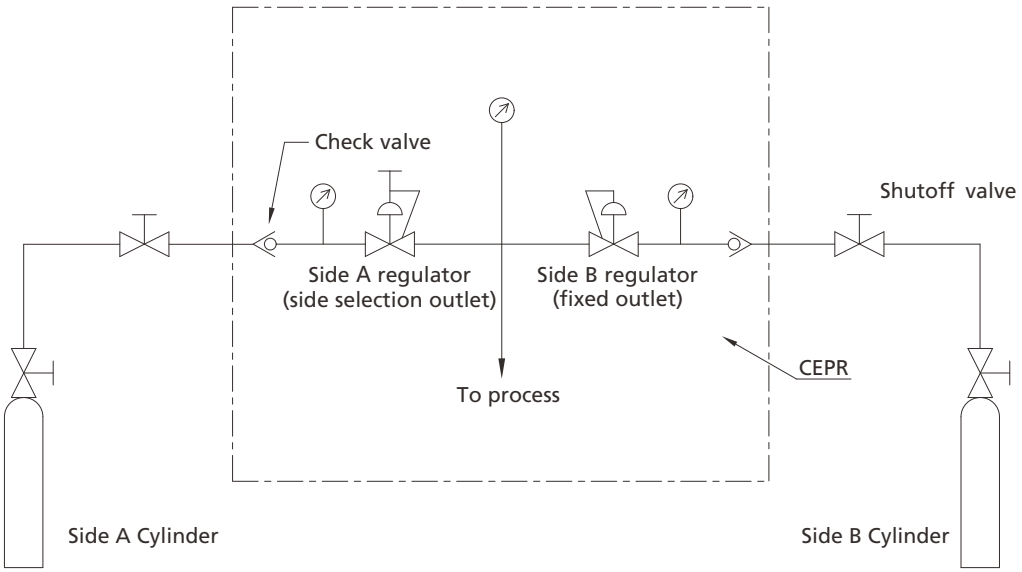
Dimensions, in inches (millimeters), are for reference only.





Operation Overview

The CEPR series changeover system consists of two separate regulators. The two regulators are respectively attached to separate source cylinders. One of the regulators has an adjusting handle which can swivel to enable source side selection.
The other regulator is preset to an appropriate setting for the system outlet range. The source selection handle adjusts the outlet pressure to be either above or below the preset side within 15 ~ 30 psig. When the handle is turned to point to the standby side, the standby side continues to supply gas due to the change in differential pressure to achieve continuous and uninterrupted gas supply. When one supply drops below the changeover pressure, the selector regulator automatically switches the gas feed from the depleted supply to an alternate supply.



Ordering Number Description

COS SS – CEPR – 6 10 P – B – FNS 4 – NS 4 – FA – O – F2

Base Series

COS Series	

Body Material

6L	316L SS
SS	316 SS
B	Brass (nickel-plated)

Embodied Series

CEPR Series	

Inlet Pressure P1

6	3000 psig

Outlet Pressure

Outlet Pressure Range P2	Nominal Changeover Pressures
10	85~115 psig	100 psig
15	135~165 psig	150 psig
20	185~215 psig	200 psig
25	235~265 psig	250 psig

Inlet pressure must exceed changeover pressure for automatic switching to occur

Inlet Pressure Gauge Connection

	1/4 NPT
P	Plug
B	With 50 mm diameter pressure gauge (psi/bar)
M	With 50 mm diameter pressure gauge (psi/MPa)
B63	With 63 mm diameter pressure gauge (psi/bar)
M63	With 63 mm diameter pressure gauge (psi/MPa)
EB	With 50mm dial-mounted single-lower-limit electric contact pressure gauge (psi/bar)
EM	With 50mm dial-mounted single-lower-limit electric contact pressure gauge (psi/MPa)
PSW	With Hirschmann connector pressure switch
PT	With Hirschmann connector 4-20mA pressure transmitter

Inlet Type

FNS	Female NPT
NS	Male NPT
FL	Fractional Tube Fitting
ML	Metric Tube Fitting

Other type available

Inlet Size

2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm

Other size available

Outlet Type

Same as inlet type

Outlet Size

Same as inlet size

Outlet Pressure Gauge Connection

	Same as Inlet
P	Plug
00	1/4 NPT
B	With 50 mm diameter pressure gauge (psi/bar)
M	With 50 mm diameter pressure gauge (psi/MPa)
B63	With 63 mm diameter pressure gauge (psi/bar)
M63	With 63 mm diameter pressure gauge (psi/MPa)

Flame Arrester

	None
FA	Flame Arrester

Check Valve

	None
V	CV Series
O	CO Series
A	COA Series

Check valve default cracking pressure is 3 psig, see check valve catalog for the detail

Product Grade

	Standard Cleaning and Packaging
F2	Special Cleaning and Packaging

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
3. For EB/EM/PSW/PT/FA options, please consult our engineers with specific application details (medium, pressure, flow rate, temperature) for configuration confirmation.
4. When the part number contains "B" or "M", a GC series pressure gauge is configured by default. If the part number contains "B63" or "M63", a GA series pressure gauge is configured by default.

Automatic Changeover Systems
FDR-1L Series

Features

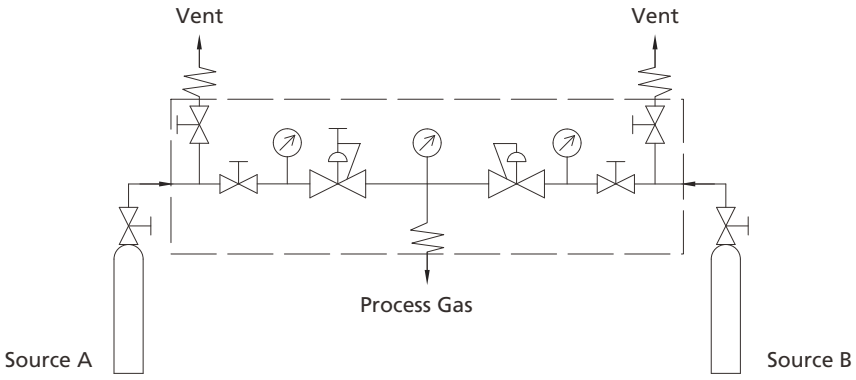
◎ With CEPR series automatic changeover device
◎ With vent valves to relieve residual pressure quickly, easy and safe to remove and replace gas source.
◎ With special cleaning and packaging, applicable to oxygen-enriched atmospheres.

Model: FDR-1L6L-30-10-B-00-00-00

Technical Data

◎ Maximum inlet pressure: 3000 or 4500 psig
◎ Nominal changeover pressure: 100, 150, 200 and 250 psig
◎ Outlet pressure range: 85 ~ 115, 135 ~ 165, 185 ~ 215 or 235 ~ 265 psig
◎ Material of the main components:
Seat: PCTFE (regulator and diaphragm valve)
Diaphragm: Hastelloy (regulator), cobalt alloy (diaphragm valve)
Diaphragm valve body: 316L SS
◎ Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
◎ Valve leak rates (helium):
Internal: $\leqslant 1\times10^{-7}$ std·cm^3/s
External: $\leqslant 1\times10^{-9}$ std·cm^3/s
◎ Flow coefficient (regulator Cv): 0.06
◎ Weight: ≈12.1 lbs (5.5 kg)

Flow Schematic



Operation Overview

The FDR-1L Series Changeover System is mainly comprised of one adjustable outlet pressure regulator together with one fixed outlet pressure regulator.

When the 2 inlets are both open, the one side that the "IN SERVICE" arrow is pointing at by turning the handle would be the 1st source for gas supply.

Fig. 1 When the "In Service" arrow is pointing at side B, side B would be the gas source. At this time, the fixed outlet pressure of side B is higher than the set pressure of side A. Consequently, the diaphragm of side A regulator moves to enable the stem to close the regulator.

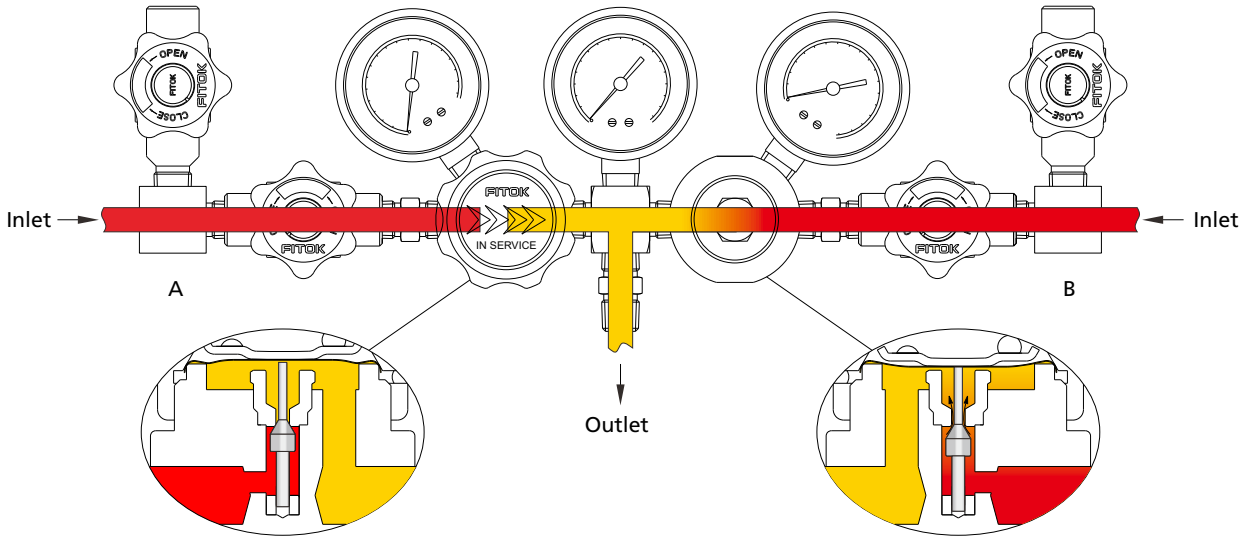


Fig. 1

Fig. 2 If side A is chosen as the gas source, the handle should be turned clockwise until the "IN SERVICE" arrow is pointing at side A. At this time, the set pressure of side A is higher than the fixed outlet pressure of side B. Consequently, the diaphragm of side B regulator moves to enable stem to close the regulator.

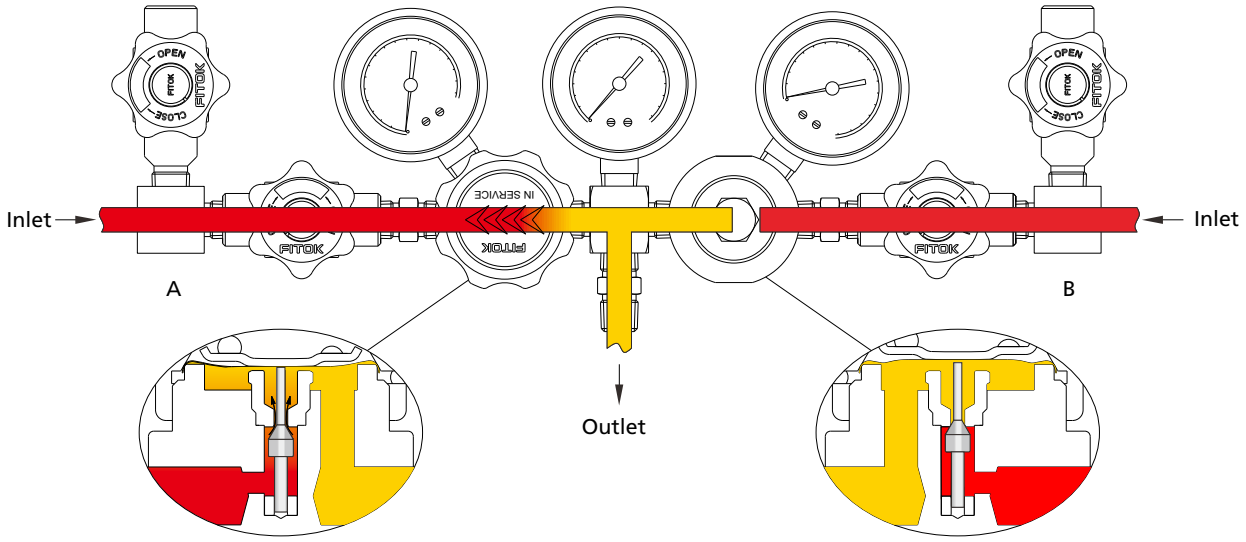


Fig. 2

When gas source of one side is depleted, gas source would automatically change to the other side.

Fig. 1 When "IN SERVICE" arrow is pointing at side B, but gas source of side B is depleted, its outlet pressure shall decrease to be lower than the set pressure of side A. By the force of spring, side A regulator will be opened to begin gas supply as shown in Fig. 3

Gas from side A will flow back into side B. At this time, replace to a new gas source of side B, close the shutoff valve and open the vent valve to exhaust the remaining pressure, then replace to a new gas source. After the replacement, if not rotating the handle, the gas supply will return to the status as of Fig. 1. And if rotating the handle to the status as shown is Fig. 2, the gas supply will be changed to the status as of Fig. 2.

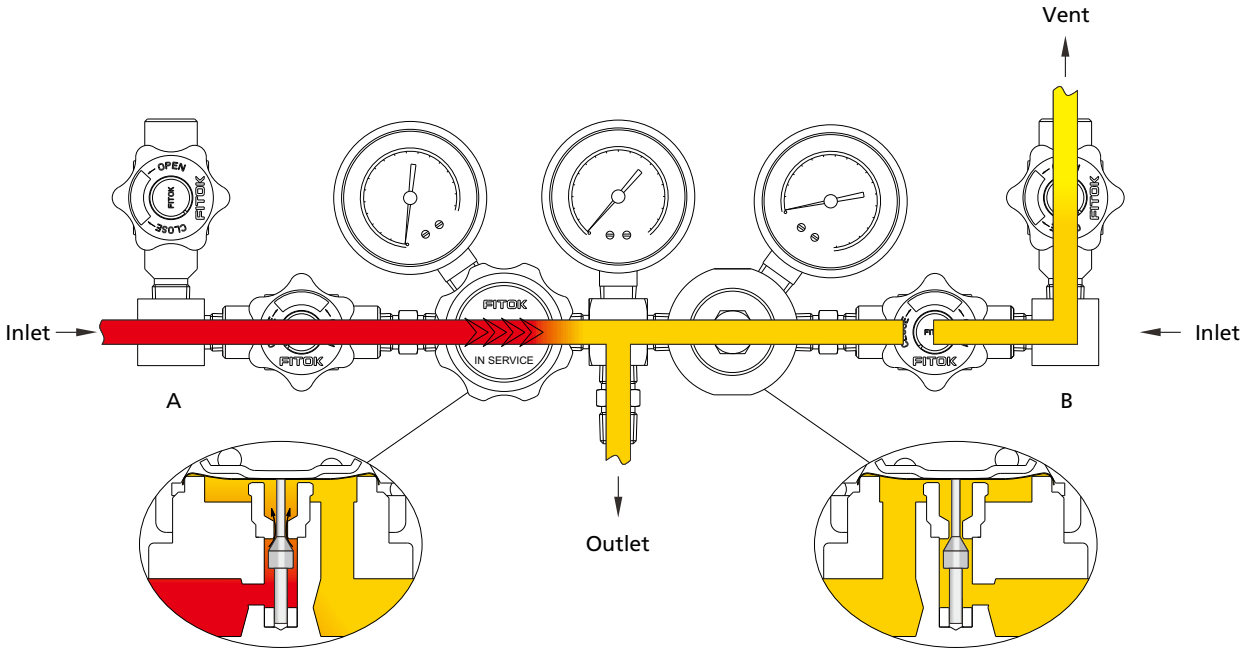
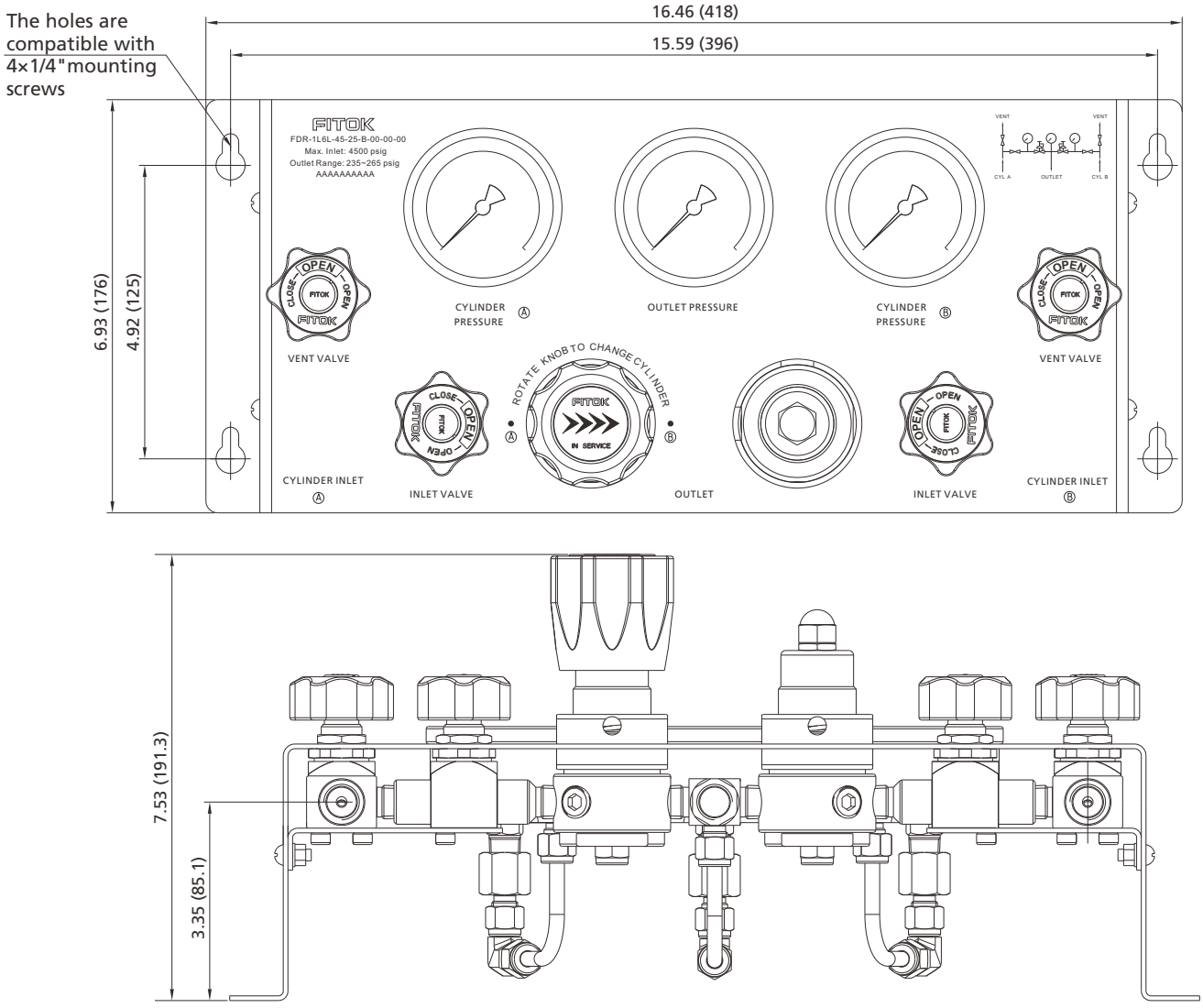


Fig. 3

Dimensions

Dimensions, in inches (millimeters), are for reference only.



Ordering Number Description

FDR – 1L6L – 30 – 20 – B – 10 – 00 – 00

Body Material (Regulator)	
6L	316L SS
SS	316 SS
HC	Hastelloy C-276
B	Brass (Nickel-plated)

Inlet Pressure P1	
30	3000 psig
45	4500 psig

Outlet Pressure		
	Outlet Pressure Range P2	Nominal Changeover Pressures
10	85~115 psig	100 psig
15	135~165 psig	150 psig
20	185~215 psig	200 psig
25	235~265 psig	250 psig

Inlet pressure must exceed changeover pressure for automatic switching to occur

Gauge Scale	
B	With Gauge (psi/bar)
M	With Gauge (psi/MPa)

Inlet A	
00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting

Other connections are available upon request

Inlet B
Same as Inlet A

Outlet
Same as Inlet A

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
3. When the part number contains "B" or "M", a GA series pressure gauge is configured by default.

Automatic Changeover Systems
DPPR Series

The DPPR series automatic changeover system, suitable for uninterrupted gas supply, uses dual gas sources of main supply cylinder and backup cylinder. When the pressure of one gas source drops below the set pressure, the changeover system will automatically switch from the depleted source to the backup source, thus achieving a continuous gas supply.

Features

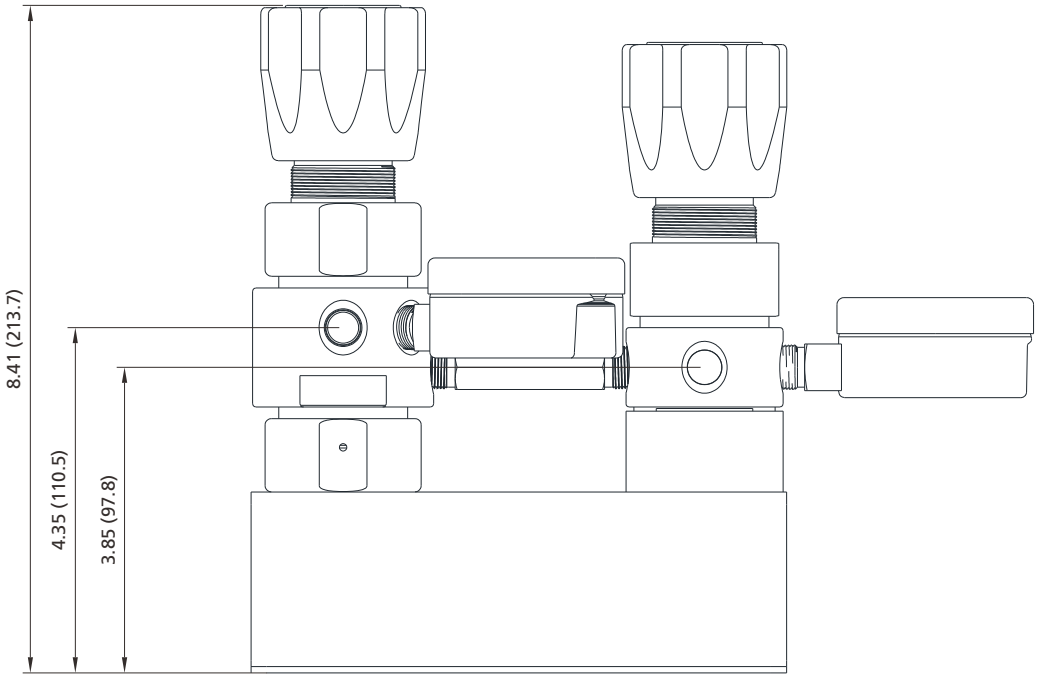
- Two gas sources are connected to regulators of the automatic changeover system, when the pressure of one gas source is lower than the switching pressure, it will automatically switch to the other gas source to supply gas, thus ensuring continuous gas supply.
- Excellent sensitivity and set point pressure stability.

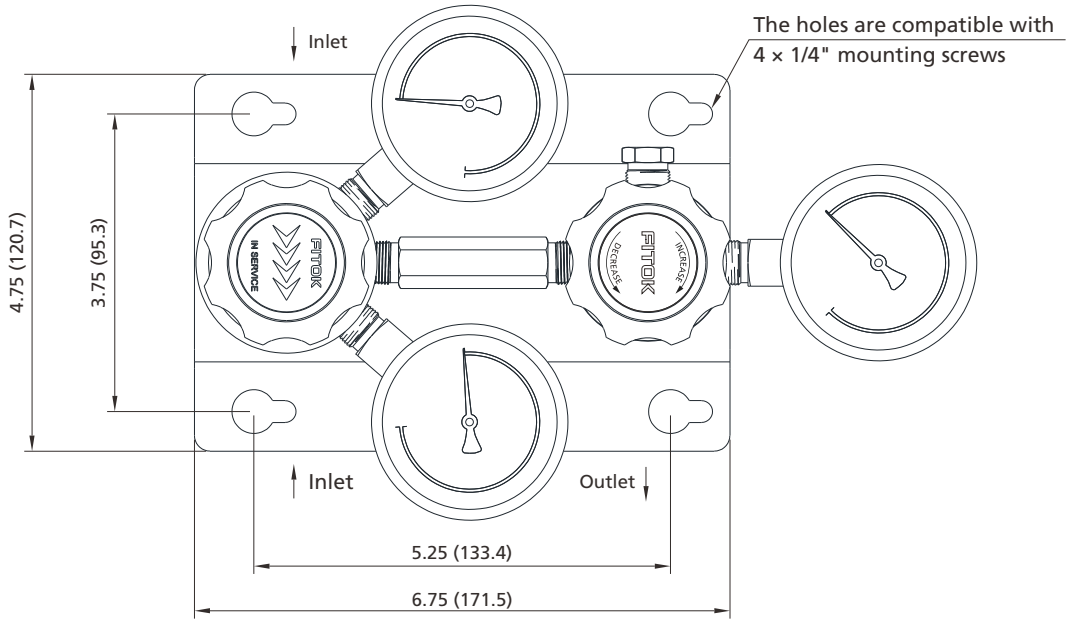
Technical Data

- Maximum inlet pressure: 3000 psig
- Nominal changeover pressures: 250 psig
- Outlet pressure ranges: 0 ~ 25, 0 ~ 50, 0 ~ 100, 0 ~ 150 psig
- Material of the internal components:
  Seat: PCTFE
  Diaphragm: Hastelloy
  Filter: 316L SS
- Temperature: -40 °F ~ 165 °F (-40 °C ~ 74 °C)
- Valve leak rates (helium):
  Internal: Bubble-tight
  External: $\leqslant 2\times10^{-8}$ std·cm^3/s
- Flow coefficient (Cv): 0.06
- Weight: ≈5 lbs (2.3 kg)

Dimensions

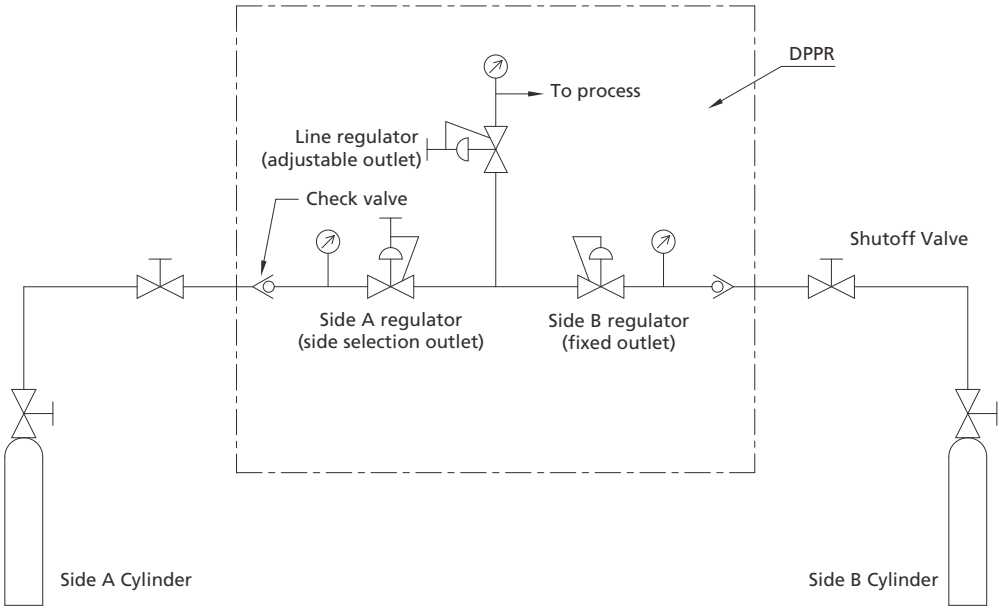
Dimensions, in Inches (millimeters), are for reference only.





Operation Overview

The DPPR series changeover system consists of three pressure regulators, housing two single-stage regulators in a single body and a line regulator. The two single-stage regulators are each attached to separate source cylinders. The adjusting handle can swivel to enable source side selection. The other regulator is preset to an appropriate setting for the system outlet range.
The source selection handle adjusts the outlet pressure to be either above or below the preset side within 15 ~ 30 psig. When the handle is turned to point to the standby side, the standby side continues to supply gas due to the change in differential pressure to achieve continuous and uninterrupted gas supply.
When one supply drops below the changeover pressure, the selector regulator automatically switches the gas feed from the depleted supply to an alternate supply. At this time, the main gas cylinder can be changed for continuous uninterrupted gas supply.



Ordering Number Description

COS SS – DPPR – 6 10 P – B – FNS 4 – NS 4 – FA – O – R – F2

Base Series

	COS Series

Body Material (Regulator)

6L	316L SS
SS	316 SS
B	Brass (nickel-plated)

Embodied Series

	DPPR Series

Inlet Pressure P1

6	3000 psig

Outlet Pressure

Outlet Pressure Range P2		Nominal Changeover Pressures
02	0~25 psig	250 psig
05	0~50 psig	
10	0~100 psig	
15	0~150 psig	

Inlet pressure must exceed changeover pressure for automatic switching to occur

Inlet Pressure Gauge Connection

	1/4 NPT
P	Plug
B	With 50 mm diameter pressure gauge (psi/bar)
M	With 50 mm diameter pressure gauge (psi/MPa)
B63	With 63 mm diameter pressure gauge (psi/bar)
M63	With 63 mm diameter pressure gauge (psi/MPa)
EB	With 50mm dial-mounted single-lower-limit electric contact pressure gauge (psi/bar)
EM	With 50mm dial-mounted single-lower-limit electric contact pressure gauge (psi/MPa)
PSW	With Hirschmann connector pressure switch
PT	With Hirschmann connector 4-20 mA pressure transmitter

Inlet Size

2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 6 mm
	Other size available

Inlet Type

FNS	Female NPT
NS	Male NPT
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
	Other type available

Outlet Pressure Gauge Connection

	Same as Inlet
P	Plug
00	1/4 NPT
B	With 50 mm diameter pressure gauge (psi/bar)
M	With 50 mm diameter pressure gauge (psi/MPa)
B63	With 63 mm diameter pressure gauge (psi/bar)
M63	With 63 mm diameter pressure gauge (psi/MPa)

Outlet Size

	Same as inlet size

Outlet Type

	Same as inlet type

Flame Arrester

	None
FA	Flame Arrester

Inlet Check Valve

	None
V	CV Series
O	CO Series
A	COA Series

Check valve default cracking pressure is 3 psig, see check valve catalog for the detail

Relief Valve

	Plug
R	Relief Valve

Product Grade

	Standard Cleaning and Packaging
F2	Special Cleaning and Packaging

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
3. For EB/EM/PSW/PT/FA options, please consult our engineers with specific application details (medium, pressure, flow rate, temperature) for configuration confirmation.
4. When the part number contains "B" or "M", a GC series pressure gauge is configured by default. If the part number contains "B63" or "M63", a GA series pressure gauge is configured by default.

Automatic Changeover Systems
FDR-1T Series

Features

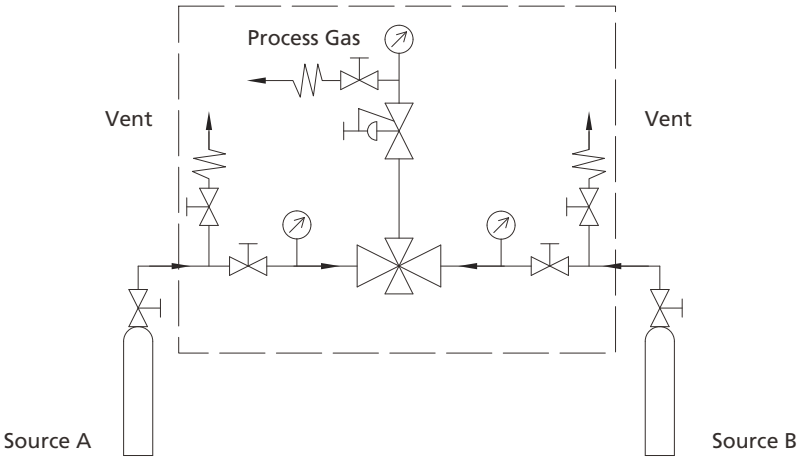
◎ Two gas sources are connected to pressure regulators of the automatic changeover system, when the pressure of one gas source is lower than the switching pressure, it will automatically switch to the other gas source to supply gas to ensure continuous gas supply.
◎ Excellent sensitivity and set point pressure stability.
◎ With special cleaning and packaging, applicable to oxygen-enriched atmospheres.

Model: FDR-1T6L-45-150-B-00-00-00

Technical Data

◎ Maximum inlet pressure: 3000 or 4500 psig
◎ Nominal changeover pressures: 250 psig
◎ Outlet pressure range: 0 ~ 25, 0 ~ 50, 0 ~ 100 or 0 ~ 150 psig
◎ Material of the main components:
Seat: PCTFE (regulator and diaphragm valve)
Diaphragm: Hastelloy (regulator), cobalt alloy (diaphragm valve)
Diaphragm valve body: 316L SS
◎ Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
◎ Valve leak rates (helium):
Internal: $\leqslant 1\times10^{-7}$ std·cm^3/s
External: $\leqslant 1\times10^{-9}$ std·cm^3/s
◎ Flow coefficient (regulator Cv): 0.06
◎ Weight: ≈19.6 lbs (8.9 kg)

Flow Schematic



Operation Overview

The FDR-1T Series Changeover System is mainly comprised of one adjustable outlet pressure regulator and one fixed outlet pressure regulator, together with a line pressure regulator on the outlet port.

When the 2 inlets are both open, the one side that the "IN SERVICE" arrow is pointing at by turning the handle would be the 1st source for gas supply.

Fig. 1 When the "In Service" arrow is pointing at side B, side B would be the gas source. At this time, the fixed outlet pressure of side B is higher than the set pressure of side A. Consequently, the diaphragm of side A regulator moves to enable the stem to close the regulator.

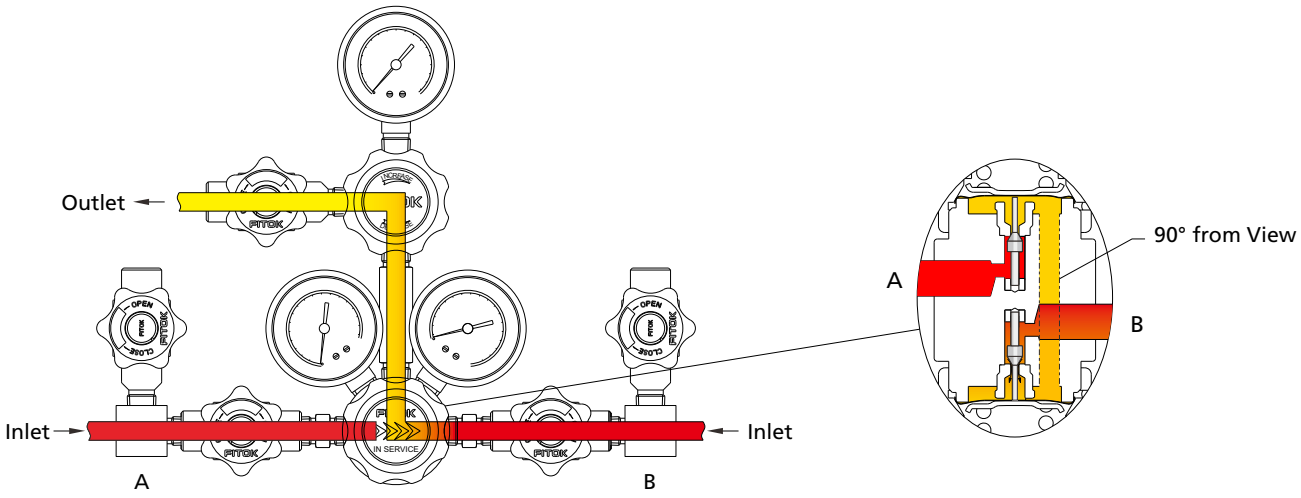


Fig. 1

Fig. 2 If side A is chosen as the gas source, the handle should be turned clockwise until the "IN SERVICE" arrow is pointing at side A. At this time, the set pressure of side A is higher than the fixed outlet pressure of side B. Consequently, the diaphragm of side B regulator moves to enable the stem to close the regulator.

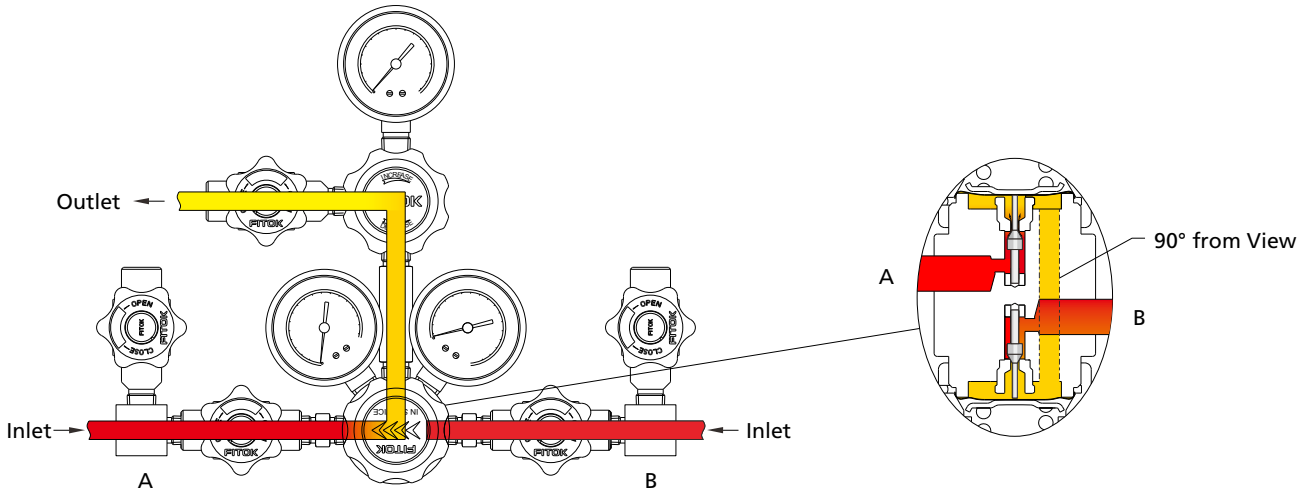


Fig. 2

When gas source of one side is depleted, gas source would automatically change to the other side.

Fig. 3 When "IN SERVICE" arrow is pointing at side B, but gas source of side B is depleted, its outlet pressure shall decrease to be lower than the set pressure of side A. By the force of spring, side A regulator will be opened to begin gas supply.

Gas from side A will flow back into side B. *At this time, replace to a new gas source of side B, close the shutoff valve and open the vent valve to exhaust the remaining pressure, then replace to a new gas source. After the replacement, if not rotating the handle, the gas supply will return to the status as of Fig. 1. And if rotating the handle to the status as shown is Fig. 2, the gas supply will be changed to the status as of Fig. 2.*

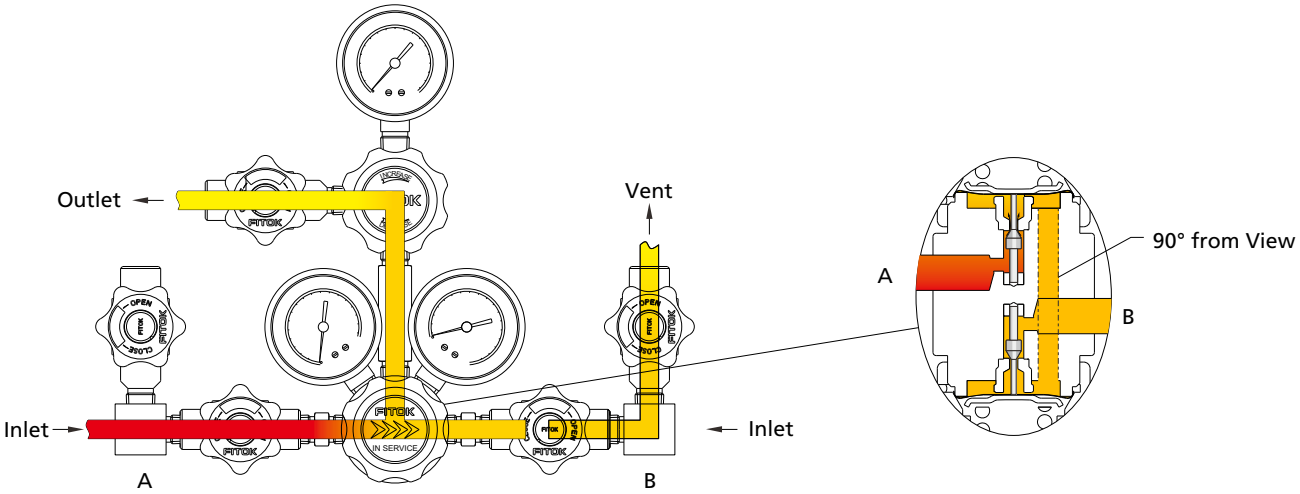
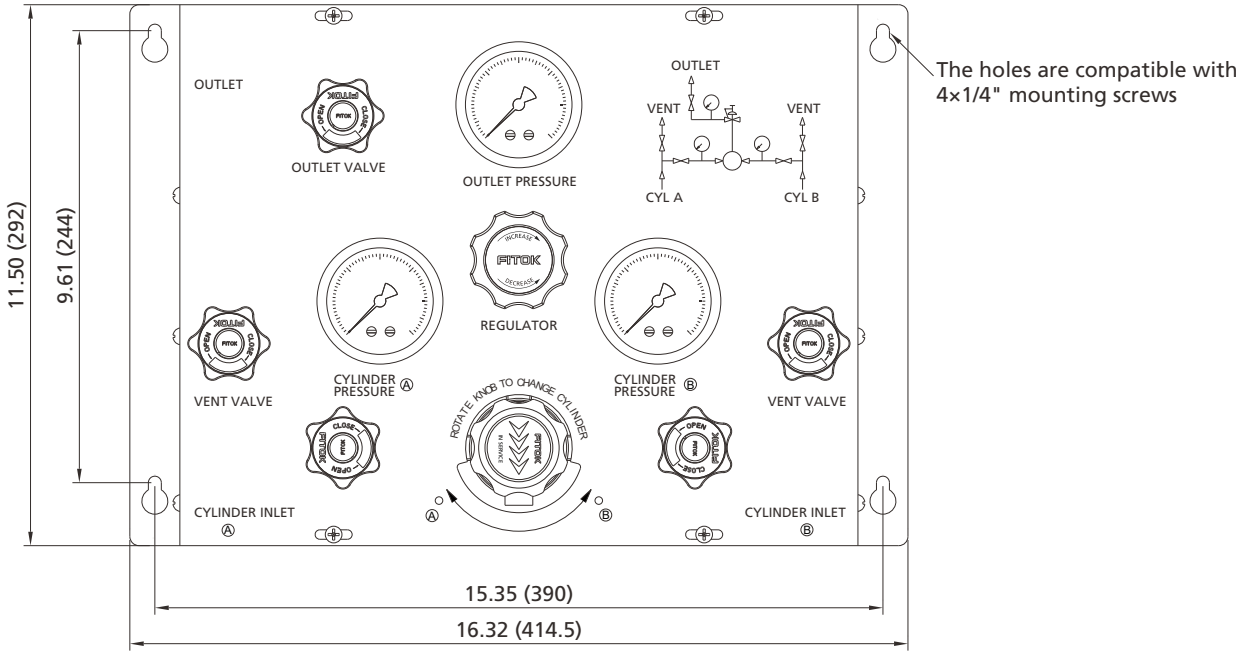
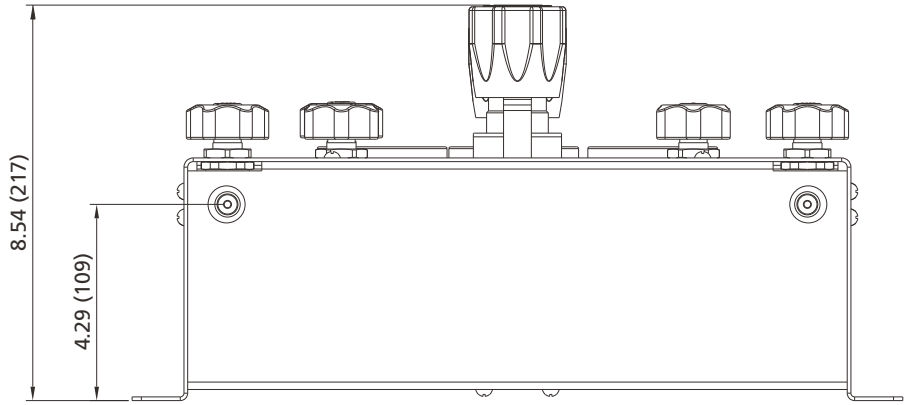


Fig. 3

Dimensions

Dimensions, in inches (millimeters), are for reference only.





Ordering Number Description

FDR – 1T6L – 30 – 25 – B – 10 – 00 – 00

Body Material (Regulator)

6L	316L SS
SS	316 SS
HC	Hastelloy C-276
B	Brass (Nickel-plated)

Inlet Pressure P1

30	3000 psig
45	4500 psig

Outlet Pressure

Outlet Pressure Range P2		Nominal Changeover Pressures
25	0~25 psig	250 psig
50	0~50 psig	
100	0~100 psig	
150	0~150 psig	

Inlet pressure must exceed changeover pressure for automatic switching to occur

Gauge Scale

B	With Gauge (psi/bar)
M	With Gauge (psi/MPa)

Inlet A

00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting

Other connections are available upon request

Inlet B

Same as Inlet A

Outlet

Same as Inlet A

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
3. When the part number contains "B" or "M", a GA series pressure gauge is configured by default.

Point-of-Use Panels

Contents

General Point-of-Use Panels
FPR-1 Series

Features

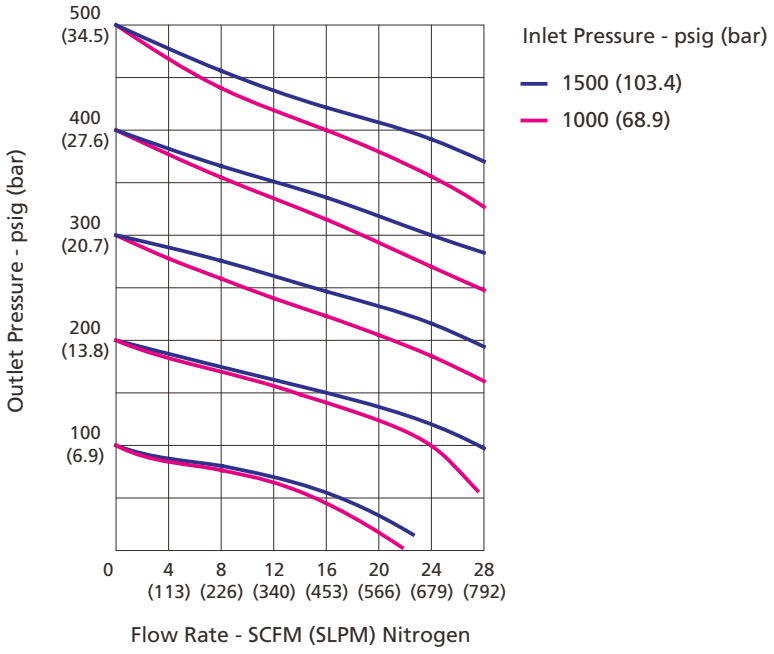
◎ With a RDGC Series Regulator.
◎ With diaphragm valve to cut off the gas supply.
◎ With special cleaning and packaging, applicable to oxygen-enriched atmospheres.

Model: FPR-1U6L-15-50-11-B-11

Technical Data

◎ Maximum inlet pressure: 1500 psig
◎ Outlet pressure range: 0 ~ 25, 0 ~ 50, 0 ~ 100, 0 ~ 250 or 0 ~ 500 psig
◎ Material of the main components:
Seat: PCTFE (regulator and diaphragm valve)
Diaphragm: Hastelloy (regulator), cobalt alloy (diaphragm valve)
Diaphragm valve body: 316L SS
Filter: 316L SS
◎ Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
◎ Valve leak rates (helium):
Internal: $\leqslant 1\times10^{-7}$ std·cm^3/s
External: $\leqslant 1\times10^{-9}$ std·cm^3/s
◎ Flow coefficient (regulator Cv): 0.14

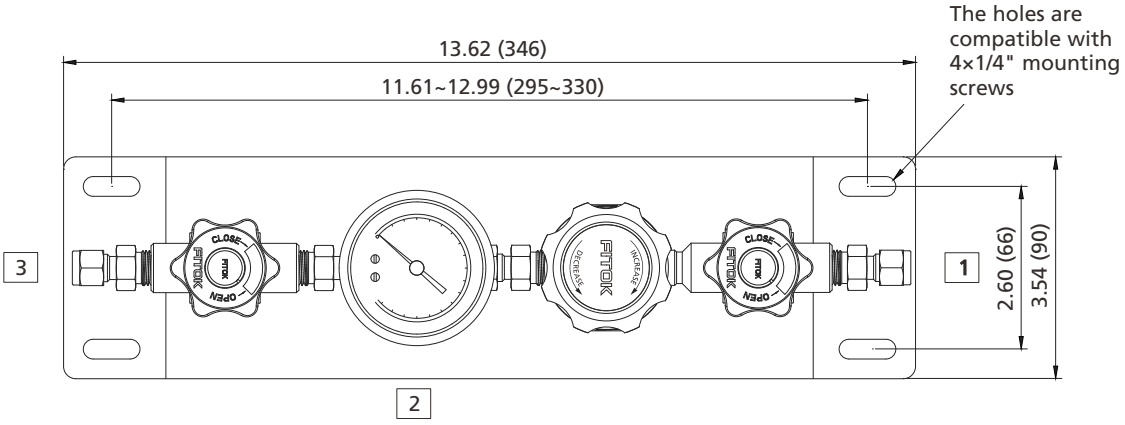
Typical Flow Chart



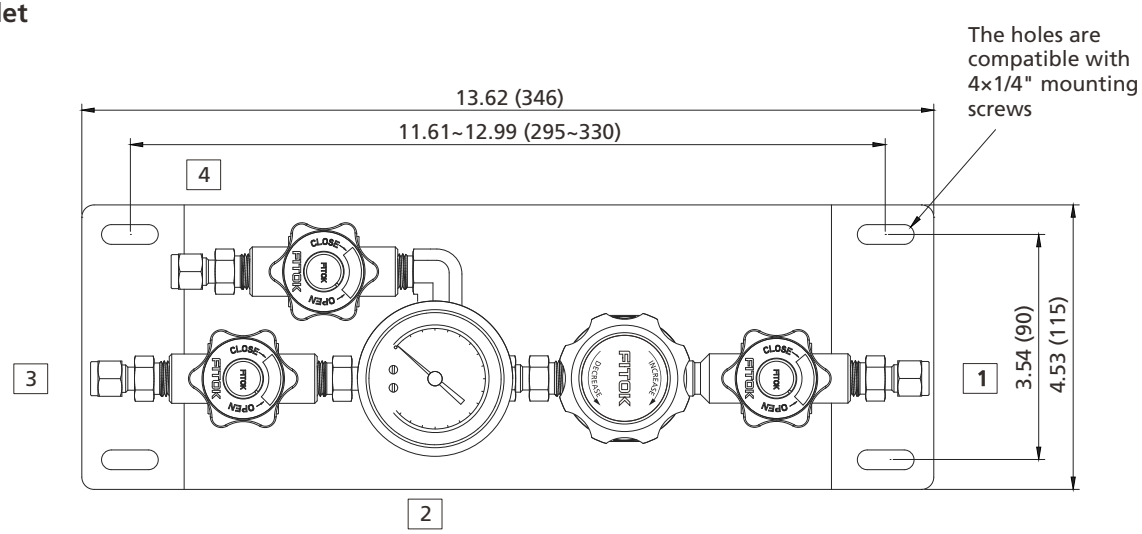
Dimensions

Dimensions, in inches (millimeters), are for reference only.

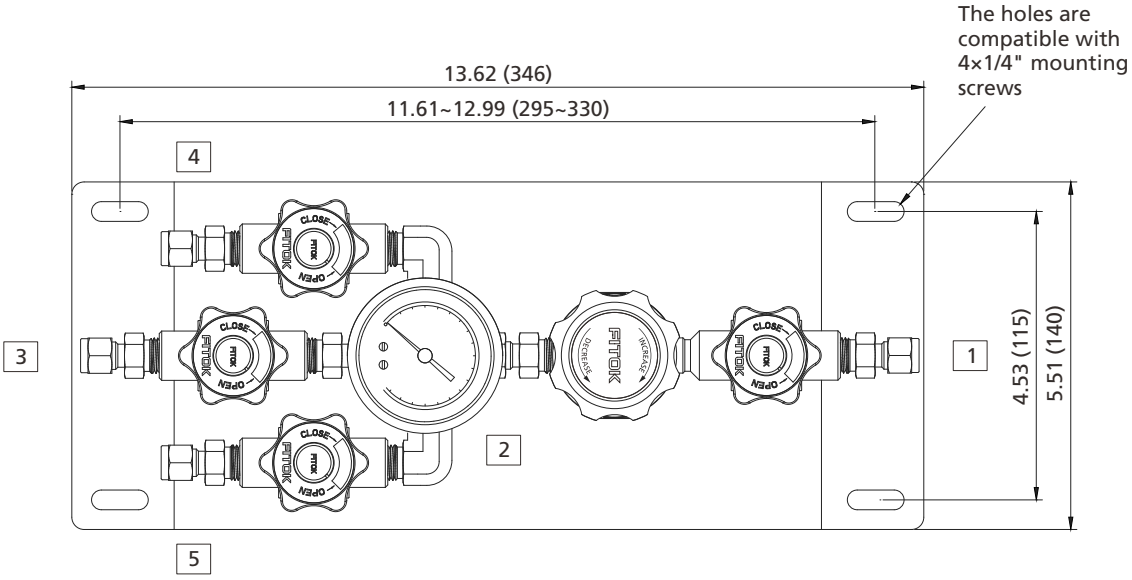
Single-outlet



Dual-outlet



Triple-outlet



Components Introduction

Ordering Number Description

FPR – 1C 6L – 15 – 100 – 10 – M – 10 – 00 – 00

Oulet Option	
U	Single-outlet
T	Dual-outlet
C	Triple-outlet

Body Material (Regulator)	
6L	316L SS
SS	316 SS
HC	Hastelloy C-276
B	Brass (Nickel-plated)

Inlet Pressure P1	
15	1500 psig

Outlet Pressure Range P2	
25	0~25 psig
50	0~50 psig
100	0~100 psig
250	0~250 psig
500	0~500 psig

Connection 1	
00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting
Other connections are available upon request	

Connection 2	
B	With Gauge (psi/bar)
M	With Gauge (psi/MPa)
P	Plug
00	1/4 Female NPT

Connection 3
Same as Connection 1

Connection 4	
	None
Same as Connection 1	

Connection 5	
	None
Same as Connection 1	

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
   Examples of part number:
   a. 2-port type (1 in, 1 out): FPR-1U6L-15-50-11-B-11
   b. 3-port type (1 in, 2 out): FPR-1TSS-15-100-00-B-00-00
3. When the part number contains "B" or "M", a GC series pressure gauge is configured by default.

Sensitive Point-of-Use Panels

FPR-1S Series

Features

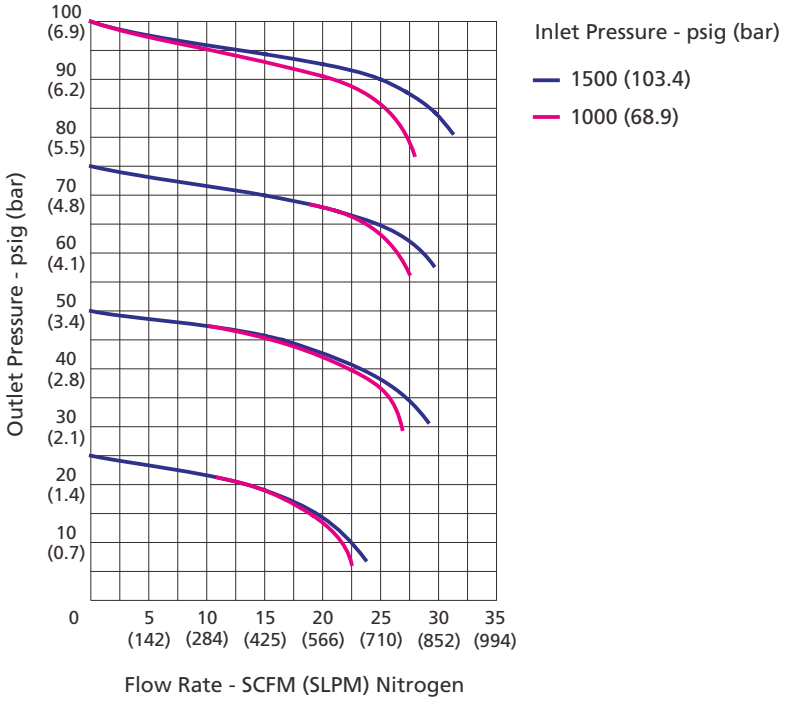
- With a RDSC Series sensitive diaphragm regulator.
- With diaphragm valve to cut off the gas supply.
- With special cleaning and packaging, applicable to oxygen-enriched atmospheres.

Model: FPR-1SUSS-15-50-10-B-10

Technical Data

- Maximum inlet pressure: 1500 psig
- Outlet pressure range: 0 ~ 25, 0 ~ 50, 0 ~ 100, 0 ~ 150 or 0 ~ 200 psig
- Material of the main components:
  Seat: PCTFE (regulator and diaphragm valve)
  Diaphragm: Hastelloy (regulator), cobalt alloy (diaphragm valve)
  Diaphragm valve body: 316L SS
  Filter: 316L SS
- Temperature: -10 °F ~ 150 °F (-23 °C ~ 65 °C)
- Valve leak rates (helium):
  Internal: $\leqslant 1\times10^{-7}$ std·cm^3/s
  External: $\leqslant 1\times10^{-9}$ std·cm^3/s
- Flow coefficient (regulator Cv): 0.06

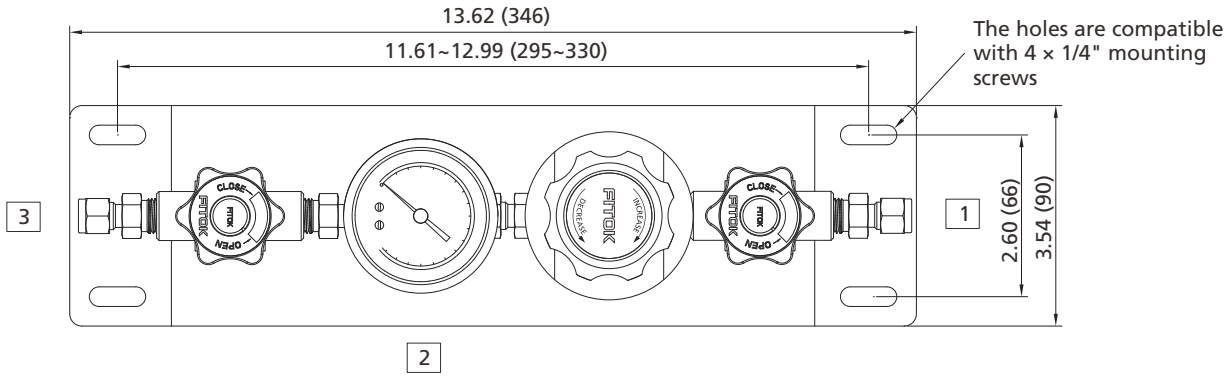
Typical Flow Chart



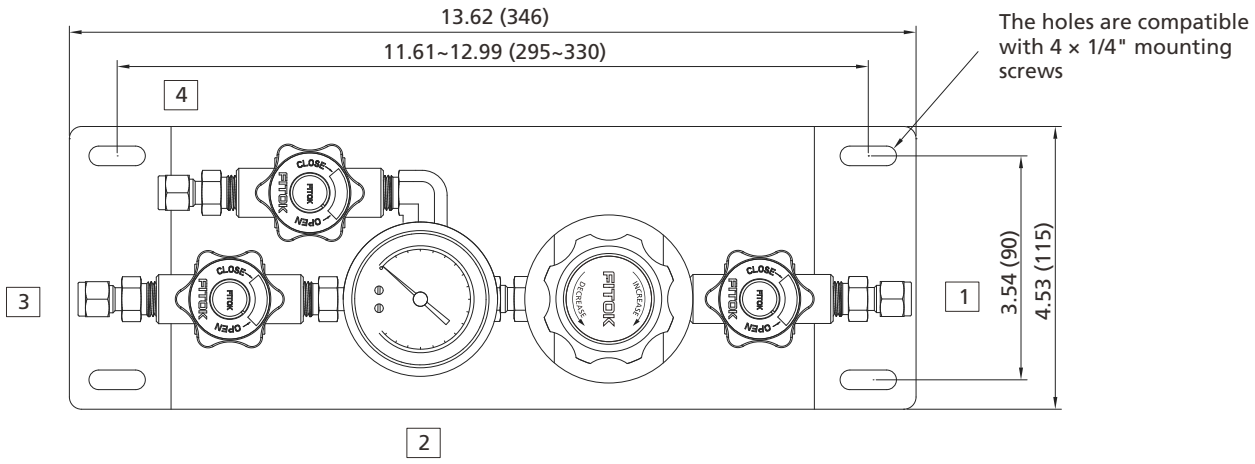
Dimensions

Dimensions, in inches (millimeters), are for reference only.

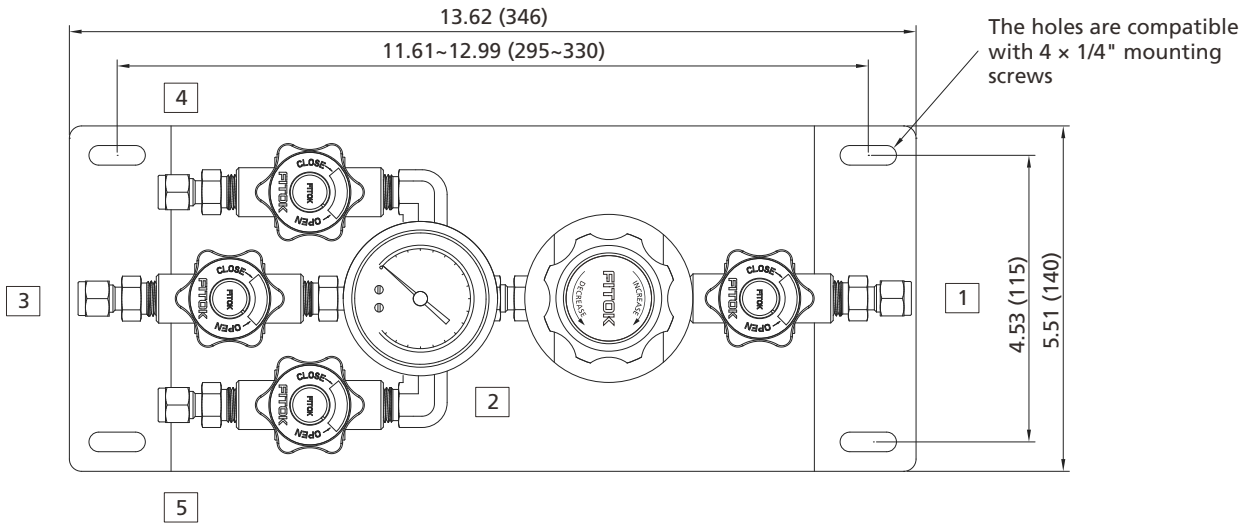
Single-outlet



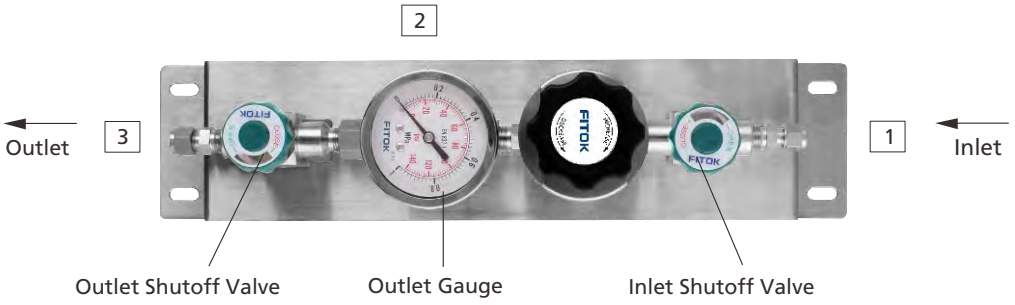
Dual-outlet



Triple-outlet



Components Introduction



Ordering Number Description

FPR – 1SC 6L – 15 – 100 – 10 – M – 10 – 00 – 00

Oulet Option

U	Single-outlet
T	Dual-outlet
C	Triple-outlet

Body Material (Regulator)

6L	316L SS
SS	316 SS
B	Brass

Inlet Pressure P1

15	1500 psig

Outlet Pressure Range P2

25	0~25 psig
50	0~50 psig
100	0~100 psig
150	0~150 psig
200	0~200 psig

Connection 1

00	1/4 Female NPT
01	1/4 Male NPT
10	1/4" Tube Fitting
11	3/8" Tube Fitting
20	6 mm Tube Fitting
21	8 mm Tube Fitting

Other connections are available upon request

Connection 2

B	With Gauge (psi/bar)
M	With Gauge (psi/MPa)
P	Plug
00	1/4 Female NPT

Connection 3

Same as Connection 1

Connection 4

	None

Same as Connection 1

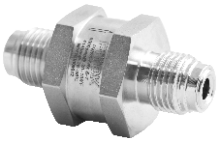
Connection 5

	None

Same as Connection 1

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. Before ordering, please read **User's Guide** on A-13.
   Examples of part number:
   a. 2-port type (1 in, 1 out): FPR-1SU6L-15-25-00-B-20
   b. 3-port type (1 in, 2 out): FPR-1STB-15-200-10-M-10-10
3. When the part number contains "B" or "M", a GC series pressure gauge is configured by default.

B Related Products



Contents

High Pressure Compact Diaphragm Valves
DS Series

Features

- ◎ Reduced inner volume
- ◎ Packless diaphragm seal to ensure high purity
- ◎ Minimized number of components
- ◎ Manual and pneumatic actuators available
- ◎ Aluminum piston to increase operation speed

Technical Data

Port Size		1/4" to 3/8" or 6 mm to 8 mm
Flow Coefficient (Cv)		0.17
Orifice Size		0.12 in. (3.0 mm)
Max. Working Pressure	**Manual**	4500 psig (310 bar)
	Pneumatic	3000 psig (207 bar)
Pneumatic Actuator Operating Pressure		60 to 90 psig (4.2 to 6.2 bar)
Temperature		PCTFE: -10 ~ 150 °F (-23 ~ 65 °C) Polyimide: -10 ~ 250 °F (-23 ~ 121 °C)
Leak Rate (Helium)	**Internal**	$\leqslant 1\times10^{-9}$ std·cm^3/s
	External	$\leqslant 1\times10^{-9}$ std·cm^3/s

Flow Data

Air @ 70 °F (21 °C)
Water @ 60 °F (16 °C)

Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
10 (0.68)	55	1.9
50 (3.4)	150	4.5
100 (6.8)	260	6.4

Ordering Number Description

DS6L – NS4 – FNS4 – RVF2 – CE

Body Material

6L	316L SS
6LV	316L SS VAR

Inlet Type

TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
FR	Integral Male FR Fitting
FFR	Rotatable Female FR Fitting
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
NS	Male NPT
FNS	Female NPT

Outlet Type / Outlet Size

	Same as Inlet
Specified in the same way as Inlet	

Inlet Size

4	1/4" or 1/4"× 0.035"
6	6 mm
8	8 mm

Actuator Type

R	Manual-Round Handle
C	Normally Closed Pneumatic
O	Normally Open Pneumatic

Seat

	PCTFE
V	Polyimide

Process Specification

	FC-01
F2	FC-02
F3	FC-03

Product Certification

	None
CE	CE Certification (For pneumatic only)

Notes:
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. For -CE selections, products have "CE" lettering.

One-Piece Instrumentation Ball Valves
BO Series

Features

◎ Working pressure up to: 3000 psig (207 bar)
◎ Working temperature: -65°F to 300°F (-54°C to 148°C)
◎ End connections:
1/4 to 1/2 thread
1/16" to 3/4" and 3 mm to 18 mm tube fitting
◎ 2-, 3-, 4-, 5-, 6- and 7-way models for on-off, switching and crossover service available
◎ One-piece body and one-piece ball stem
◎ No dead space
◎ Top-loaded design to allow adjustment with the valve in-line
◎ Thermal cycle performance improved and wear compensated by live-loaded design
◎ Any reasonable connections available
◎ Pneumatic and electric actuator available
◎ Handle color options available
◎ Full operating pressure at any port
◎ Leak-tight performance testing with nitrogen or compressed air for every valve at the rated pressure to meet the requirement of no visible leak
◎ The inlet can be any port except for valves with vent ports

Notes:
1. To prevent seat leakage, packing adjustment may be required periodically during the service life of the valve.
2. A higher initial actuation torque may happen to the valves that have not been actuated for a period of time.
3. Before installation, instrumentation ball valves exposed to dynamic temperature conditions may lose their initial packing load. Stem packing adjustment should be required.

Ordering Number Description

BOSS - ML6 - FL4 - ML8 - H05 - DXHQ3L - BLH - FL4 - SF2

Series
BO

Body Material	
SS	316 SS
S4	304 SS
S1	321 SS
6L	316L SS
B	Brass
M	Alloy 400

Connection 1 Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RG-M)
MS	Male Metric Thread (for RG-M)
FRP	Female BSPP (for RP)
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
FO	Male FO Fitting
FR	Male FR Fitting

Connection 1 Size	
1	1/16"
2	1/8"
3	3 mm
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	14 mm
16	16 mm
18	18 mm

Connection 2 to 7 Type / Connection 2 to 7 Size	
	Same as connection 1
Specified in the same way as the connection 1 type and size	

Seat Material	
	PTFE
H	UHMWPE
A	PFA

Orifice Size	
00	0.05" (1.3 mm)
01	0.06" (1.6 mm)
02	0.09" (2.4 mm)
03	0.13" (3.2 mm)
05	0.19" (4.8 mm)
07	0.28" (7.1 mm)
10	0.41" (10.3 mm)

Handle/Actuator	
	Black Nylon Handle
I	Red Nylon Handle
GR	Green Nylon Handle
J	Blue Nylon Handle
U	Black Aluminium Handle
AM	Without Handle
C	90° Normally Closed Pneumatic Actuator
O	90° Normally Open Pneumatic Actuator
D	90° Double Acting Pneumatic Actuator
LX	180° Left End Normally Open Pneumatic Actuator
RX	180° Right End Normally Open Pneumatic Actuator
DX	180° Double Acting Pneumatic Actuator
E	90° Electric Actuator
EX	180° Electric Actuator

For Actuator	
	None
H	Mechanical Limit Switch
N	Inductive Limit Switch
Q	Solenoid Valve
HQ	Mechanical Limit Switch and Solenoid Valve
NQ	Inductive Limit Switch and Solenoid Valve

Flow Pattern	
	Straight
A	Angle
3L	3-way
3HL	
4L	4-way
4C	
4H	
4HL	
4V	
5L	5-way
5H	
5HL	
5LV	
6L	6-way
6C	
7L	7-way

Panel Installation	
	Panel nut
B	Bottom screw

Locking Device	
	None
LH	Locking Device 1
LK	Locking Device 2

Vent Port	
	No vent port
FL2	1/8" tube fitting
FL4	1/4" tube fitting
FL6	3/8" tube fitting
ML3	3 mm tube fitting
ML6	6 mm tube fitting
ML8	8 mm tube fitting

Special Application	
	None
S	NACE MR0175
SI	Inert Silicon Coated
CE	CE Certification

Cleaning and Packaging	
	FC-01
F2	FC-02
FOG	FC-02 without Lubrication

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. For oxygen-enriched atmosphere or hazardous media service, contact FITOK or our authorized distributors.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
3. For more information about pneumatic actuator ball valves, please refer to the catalog **Automatic Control Ball Valves.**
4. Inert Silicon Coating: For wetted metal components.
5. CE certification is available. For more information, please contact FITOK group or our authorized distributors.

Nonrotating-Stem Needle Valves

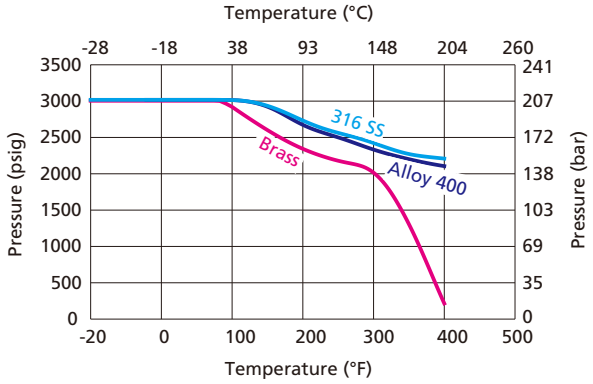
ND Series: Working pressure up to 3000 psig
NDH Series: Working pressure up to 5000 psig

Features

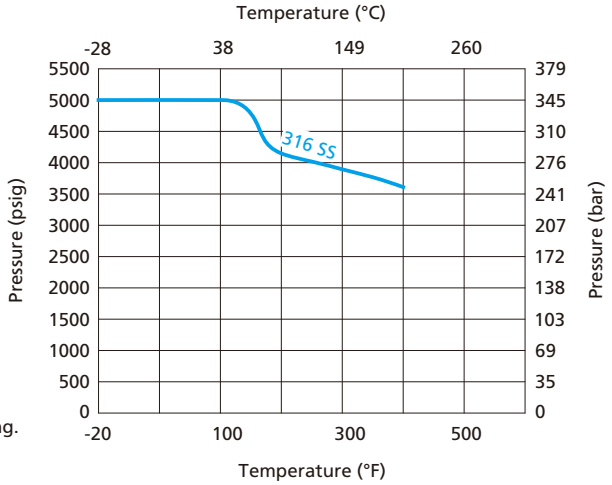
◎ One-piece forged body
◎ Straight and angle pattern
◎ Compact design
◎ Non-rotating stem
◎ Specially designed handle to stop contamination from entering into the valve
◎ Every valve leak tested with nitrogen or compressed air at the maximum allowable working pressure
◎ Working pressure up to:
ND Series—Stainless steel: 3000 psig (207 bar)
Brass: 3000 psig (207 bar)
NDH Series—Stainless steel: 5000 psig(345 bar)
◎ Working temperature with stem tip:
PCTFE stem tip: -20°F to 200°F (-28°C to 93°C)
PEEK stem tip: -20°F to 400°F (-28°C to 204°C)
◎ Working temperature with O-ring:
Fluorocarbon Rubber (FKM) : -20°F to 400°F (-28°C to 204°C)
Nitrile Butadiene Rubber (NBR) : -20°F to 212°F (-28°C to 100°C)
Ethylene Propylene Diene Rubber (EPDM): -20°F to 300°F (-28°C to 148°C)

Pressure vs. Temperature

ND Series

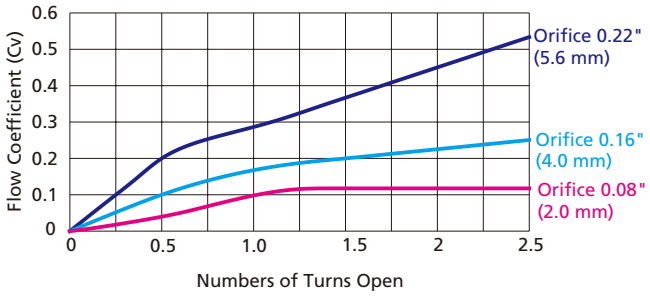


NDH Series



1. The graphs are based on PEEK stem tip and Fluorocarbon rubber (FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100 °F (38 °C)



Ordering Number Description

NDSS - FNS4 - ML8 - 7PE - ASF2

Series
ND
NDH

Body Material	
SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
S1	321 SS
M	Alloy 400
B	Brass

Inlet Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FL	Fractional Tube Fitting
ML	Metric Tube Fitting

Inlet Size	
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	12 mm

Outlet Type / Outlet Size	
	Same as Inlet
Specify in the same way as inlet type and inlet size	

Orifice Size	
5	0.08" (2.0 mm)
7	0.16" (4.0 mm)
8	0.22" (5.6 mm) Only for ND Series

Stem Tip Material	
	PCTFE
P	PEEK

O-ring Material	
	Fluorocarbon Rubber (FKM)
B	Nitrile Butadiene Rubber (NBR)
E	Ethylene Propylene Diene Rubber (EPDM)

Flow Pattern	
	Straight
A	Angle

Special Application	
	None
S	NACE MR0175
SI	Inert Silicon Coated

Cleaning and Packaging	
	FC-01
F2	FC-02

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
2. Special Application:
   Plural special application designators available in one ordering number, example: NDSS-NS4-7-SSI.
   Inert Silicon Coating: For wetted metal components.

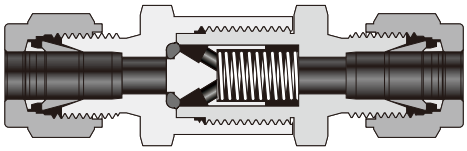
Check Valves
CV, CO and COA Series



Features

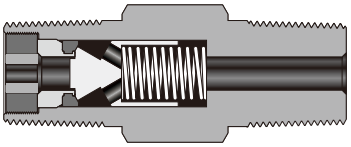
CV Series

- Resilient O-ring seat design for leak free sealing
- Working pressure up to: 3000 psig (207 bar)
- Working temperature: -10°F to 375°F (-23°C to 190°C)
- Cracking pressure: 1/3 to 25 psig (0.02 to 1.7 bar)
- Variety of end connections and materials available
- Non-adjustable cracking pressure, mountable in any directions



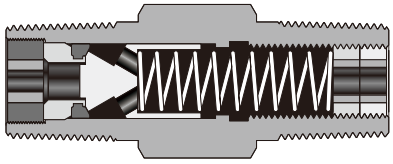
CO Series

- Compact design, one-piece body
- Working pressure up to: 3000 psig (207 bar)
- Working temperature: -10°F to 375°F (-23°C to 190°C)
- Cracking pressure: 1/3 to 25 psig (0.02 to 1.7 bar)
- Variety of end connections and materials available
- Non-adjustable cracking pressure, mountable in any directions



COA Series

- Compact design, one-piece body
- Working pressure up to: 3000 psig (207 bar)
- Working temperature: -10°F to 375°F (-23°C to 190°C)
- Cracking pressure: 3 to 600 psig (0.21 to 41.4 bar)
- Variety of end connections and materials available
- Various springs available
- Adjustable cracking pressure, mountable in any directions



Notes:
1. Check valves are all coated with lubricants like silicone base and molybdenum disulfide base.
2. Please contact FITOK Group or our authorized distributors for other materials.
3. PTFE-coated spring is an option for CV, CO and COA series check valves. For more details, please contact FITOK Group or our authorized distributors.
4. Every valve is tested with nitrogen for leak-tight performance at its maximum working pressure.

Ordering Number Description

CVSS – FL8 – ML10 – B – 2SF2

Series
CV

Body Material	
SS	316 SS
6L	316L SS
B	Brass
M	Alloy 400

Inlet Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RG-M)
MS	Male Metric Thread (for RG-M)
FRP	Female BSPP (for RP)
BP	Male BSPP (for RG)
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
FO	Male FO Fitting
FR	Male FR Fitting
UMB	Rotatable Metric Tube Butt Weld
UFB	Rotatable Fractional Tube Butt Weld

Inlet Size	
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
16	1"

Outlet Type	Outlet Size
	Same as Inlet
Specified in the same way as the inlet type and size	

Seal Material	
	Fluorocarbon FKM
B	Buna N
E	EPDM
N	Neoprene
Z	FFKM

Norminal Cracking Pressure	
	3 psig
1	1/3 psig
2	1 psig
3	10 psig
4	25 psig

Special Application	
	None
S	NACE MR0175

Cleaning and Packaging	
	FC-01
F2	FC-02

1. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   Standard thread pitch should be omitted in the ordering number, others should be specified.
2. For oxygen-enriched atmosphere or hazardous media service, please contact FITOK or our authorized distributors.
3. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
4. The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.
5. PTFE-coated gasket can be chosen to reduce the possibility of O-ring's moving in system caused by the pressure fluctuations, vibration or pulsating. For more details, please contact FITOK Group or our authorized distributors.
6. Check valve is designed with unidirectional flow path, it can't be used as safety relief valve.
7. If the check valve is not opened for a period of time, its initial cracking pressure may be higher than set cracking pressure.

Ordering Number Description

COSS – FNS8 – NS8 – B – 2SF2

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Seal Material	Norminal Cracking Pressure	Special Application	Cleaning and Packaging
CO	SS 316 SS	FNS Female NPT	2 1/8"	Same as Inlet		Fluorocarbon FKM	3 psig	None	FC-01
	6L 316L SS	NS Male NPT	4 1/4"	Specified in the same way as the inlet type and size		B Buna N	1 1/3 psig	S NACE MR0175	F2 FC-02
	B Brass	FRT Female BSPT	6 3/8"			E EPDM	2 1 psig		
	M Alloy 400	RT Male BSPT	8 1/2"			N Neoprene	3 10 psig		
						Z FFKM	4 25 psig		

1. For oxygen-enriched atmosphere or hazardous media service, please contact FITOK Group or our authorized distributors.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
3. The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.
4. Check valve is designed with unidirectional flow path, it can't be used as safety relief valve.
5. If the check valve is not opened for a period of time, its initial cracking pressure may be higher than set cracking pressure.

Ordering Number Description

COASS – FNS8 – FNS4 – B – 5SF2 – T

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Seal Material	Cracking Pressure	Special Application	Cleaning and Packaging	Specified Cracking Pressure
COA	SS 316 SS	FNS Female NPT	4 1/4"	Same as Inlet		Fluorocarbon FKM	3 to 50 psig	None	FC-01	None
	6L 316L SS	NS Male NPT	8 1/2"	Specified in the same way as the inlet type and size		B Buna N	5 50 to 150 psig	S NACE MR0175	F2 FC-02	T Valves are set and tested as per the specified cracking pressure
	B Brass	RT Male BSPT				E EPDM	6 150 to 350 psig			
	M Alloy 400					N Neoprene	7 350 to 600 psig			
						Z FFKM				

1. For oxygen-enriched atmosphere or hazardous media service, please contact FITOK Group or our authorized distributors.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
3. The materials, connection types and sizes listed in the "Ordering Number Description" are standard. For other materials and end connections, please contact FITOK Group or our authorized distributors.
4. Check valve is designed with unidirectional flow path, it can't be used as safety relief valve.
5. If the check valve is not opened for a period of time, its initial cracking pressure may be higher than set cracking pressure.
6. For the specified cracking pressure of check valve, please indicate its value to be set when ordering.

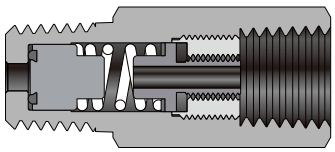
Relief Valves
RUV and RV Series

Introduction

Relief valve opens when system pressure exceeds the set pressure, allowing the medium to flow out to relieve the system pressure, and closes when the system pressure decreases to the resealing pressure.

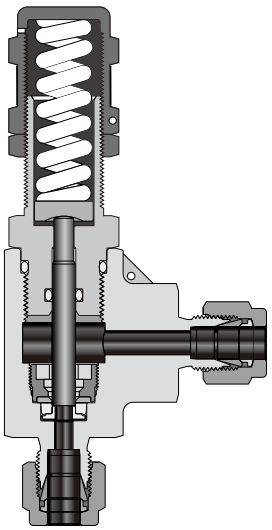
RUV Series

◎ Compact design with one-piece body
◎ Standard seat: FKM
◎ Temperature: -10 °F to 300 °F (-23 °C to 148 °C)
◎ Cracking pressure: 25 to 500 psig (1.7 to 34.5 bar)
◎ Set pressure by nut adjustment and spring replacement



RV Series

◎ Set pressure: 7 color-coded springs available for a wide range of set pressures, 50 to 6000 psig @ 70°F (3.4 to 414 bar @ 20°C)
◎ Maximum outlet pressure:RV series: 1500 psig (103 bar)
◎ Orifice size: RV series: 0.14" (3.6 mm)
◎ Back pressure:
Back pressure is the pressure of the outlet of valves. It increases the set pressure of proportional relief valves.
RV series: Balanced stem design to eliminate the effect of system back pressure
◎ Working temperature: -40 °F to 300 °F (-40 °C to 148 °C)
◎ Variety of end connections
◎ Liquid or gas service
◎ Adjustable bonnet cap and adjustable set pressure
◎ Lead seal lock wire through lock wire holes to lock proportional relief valve so as to secure a set pressure effectively
◎ Variety of seal materials
◎ Label identifies the set pressure range



Temperature Range of Sealing Material

RUV Series

O-ring Material	Temperature Range °F (°C)
FKM	25 to 250 (-4 to 121)
NBR	0 to 212 (-17 to 100)
CR	-10 to 300 (-23 to 148)
EPDM	30 to 250 (-1 to 121)

RV Series

O-ring Material	Temperature Range °F (°C)
FKM	25 to 250 (-4 to 121)
NBR	-40 to 250 (-40 to 121)
CR	-10 to 200 (-23 to 93)
EPDM	-40 to 250 (-40 to 121)
FFKM	25 to 300 (-4 to 148)

Ordering Number Description

RUVSS - FNS4 - NS4 - 6B- 1M - TSF2

Series
RUV
RV

Body Material	
SS	316 SS
6L	316L SS

Inlet Type	
FNS	Female NPT
NS	Male NPT
FL	Fractional Tube Fitting (only for RV Series)
ML	Metric Tube Fitting (only for RV Series)

Inlet Size	
4	1/4"
6	6 mm or 3/8"
8	8 mm or 1/2"

Outlet Type	Outlet Size
	Same as Inlet
Specified in the same way as the inlet type and size	

Orifice Size	
	0.14" (3.6 mm) (only for RUV Series)
6	0.14" (3.6 mm) (only for RV Series)

Seal Material	
	FKM
B	NBR
N	CR
E	EPDM
Z	FFKM

Set Pressure Range and Spring Color		
0	10 to 25 psig	RUV
1	25 to 100 psig	
2	100 to 250 psig	
3	250 to 500 psig	
F	Green 50 to 300 psig	RV
O	Orange 300 to 700 psig	
Y	Yellow 700 to 1500 psig	
P	Purple 1500 to 2500 psig	
W	White 2500 to 3500 psig	
J	Blue 3500 to 4500 psig	
C	Red 4500 to 6000 psig	

Manual Override Handle	
	None
M	Black Aluminum Handle (only for RV Series)
MC	Red Aluminum Handle (only for RV Series)
Valves with set pressure ranges of 50~1500 psig (3.4~103 bar) only.	

Set Pressure	
	Set and test the valves at the minimum of the spring pressure range
L	Set and test the valves at the minimum of the spring pressure range, with lead seal lock wire as accessories. (only for RV Series)
T	Set, test and lock the valves with a specified set pressure. Hang a nameplate with the specified set pressure on it (only for RV Series)

Special Application	
	None
S	NACE MR 0175

Process Specification	
	FC-01
F2	FC-02

Notes:
1. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   Standard thread pitch should be ignored in the ordering number, others should be specified.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleaning requirement of ASTM G93 Level C.
3. For proportional relief valve with a specified set pressure and a nameplate, specify the desired set pressure when ordering. The set pressure value should be within the set pressure range of the selected spring, and the following requirements should be followed:
   10 psig≤set pressure value≤500 psig, take the minimum interval 1 psig.
   500 psig≤set pressure value≤1000 psig, take the minimum interval of 5 psig.
   1000 psig≤set pressure value≤6000 psig, take the minimum interval of 10 psig.
4. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
5. Set pressure can be factory set upon request, please leave a note of desired set pressure when ordering.

Tee-Type Filters
FT Series

Features

- Filtration area type: 4 and 8
- Union bonnet design to prevent lock nut from falling off and offer added safety
- Working pressure up to: 6000 psig (414 bar)
- Working temperature: -20 °F to 900 °F (-28 °C to 482 °C)
- Variety of end connections available

Filters Ordering Number Description

FTB – FL4 – ML10 – S – A15 – SF2

Body Material	
SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
HC	Alloy 276
B	Brass
904L	904L SS

Series
FT

Inlet Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RP gasket)
MS	Male Metric Thread (for RG gasket)
FRP	Female BSPP (for RP gasket)
BP	Male BSPP (for RP gasket)
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
TS	Fractional Tube Socket Weld
TB	Fractional Tube Butt Weld
FR	Male FR Fitting

Outlet Type	
	Same as Inlet

Specified in the same way as the inlet type and size

Outlet Size	
	Specified in the same way as the inlet type and size

Inlet Size	
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm

Element Type	
	Sintered
S	Strainer

Gasket Material	
	Silver-plated 316 SS
A	Aluminum (the only option for brass body)

Element Nominal Pore Size	
05	0.5 µm (Sintered)
2	2 µm
7	7 µm
15	15 µm
40	40 µm
60	60 µm
80	80 µm
100	100 µm (Strainer)
150	150 µm (Strainer)
250	250 µm (Strainer)
450	450 µm (Strainer)
EL	Without filter element

Special Application	
	None
S	NACE MR0175
R110	ECE R110

Process Specification	
	FC-01
F2	FC-02

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for basic industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance requirement as stated in ASTM G93 Level C.
2. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   Standard thread pitch should be ignored in the ordering number, others should be specified.

Elements Ordering Number Description

SSE – SN8 – 60①

Material	
SS	316 SS
HC	Alloy C-276

Part Name	
E	Element

Element Type	
SN	Sintered
ST	Strainer (316 SS Only)

Filtration Area Type
4
8

Element Nominal Pore Size	
05	0.5 μm (sintered)
2	2 μm
7	7 μm
15	15 μm
40	40 μm
60	60 μm
80	80 μm
100	100 μm (Strainer)
150	150 μm (Strainer)
250	250 μm (Strainer)
450	450 μm (Strainer)

① The FT and FB series filters share identical filter element models, while some filter element models for the FI series filters are also same with the FT and FB series. A filter element model represents a single, consistent filter product, meaning one filter element can be used across multiple filter series.

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
Not all combinations are available.

Bypass Filters

FB Series

Features

- ◎ Filtration area type: 4 and 8
- ◎ Union bonnet design to prevent lock nut from falling off and offer added safety
- ◎ Working pressure up to: 6000 psig (414 bar)
- ◎ Working temperature: -20 °F to 900 °F (-28 °C to 482 °C)
- ◎ Variety of end connections available

Filters Ordering Number Description

FBB – FL8 – ML10 – S – A15 – FL4 – SF2

Series
FB

Body Material	
SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
HC	Alloy 276
B	Brass
904L	904L SS

Inlet Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RP gasket)
MS	Male Metric Thread (for RG gasket)
FRP	Female BSPP (for RP gasket)
BP	Male BSPP (for RP gasket)
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
TS	Fractional Tube Socket Weld
TB	Fractional Tube Butt Weld
FR	Male FR Fitting

Outlet Type / Outlet Size	
	Same as Inlet
Specified in the same way as the inlet type and size	

Inlet Size	
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm

Element Type	
	Sintered
S	Strainer

Gasket Material	
	Silver-plated 316 SS
A	Aluminum (the only option for brass body)

Element Nominal Pore Size	
05	0.5 µm (Sintered)
2	2 µm
7	7 µm
15	15 µm
40	40 µm
60	60 µm
80	80 µm
100	100 µm (Strainer)
150	150 µm (Strainer)
250	250 µm (Strainer)
450	450 µm (Strainer)
EL	Without filter element

Bypass Port & Size	
	1/8 Female NPT
FL2	1/8" Fractional Tube Fitting
FL4	1/4" Fractional Tube Fitting
TS4	1/4" Tube Socket Weld
FL6	3/8" Fractional Tube Fitting
FL8	1/2" Fractional Tube Fitting

Special Application	
	None
S	NACE MR0175

Process Specification	
	FC-01
F2	FC-02

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for basic industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance requirement as stated in ASTM G93 Level C.
2. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   Standard thread pitch should be ignored in the ordering number, others should be specified.

Elements Ordering Number Description

SSE – SN8 – 60①

Material	
SS	316 SS
HC	Alloy C-276

Part Name	
E	Element

Element Type	
SN	Sintered
ST	Strainer (316 SS Only)

Filtration Area Type
4
8

Element Nominal Pore Size	
05	0.5 μm (sintered)
2	2 μm
7	7 μm
15	15 μm
40	40 μm
60	60 μm
80	80 μm
100	100 μm (Strainer)
150	150 μm (Strainer)
250	250 μm (Strainer)
450	450 μm (Strainer)

① The FT and FB series filters share identical filter element models, while some filter element models for the FI series filters are also same with the FT and FB series. A filter element model represents a single, consistent filter product, meaning one filter element can be used across multiple filter series.

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
Not all combinations are available.

In-Line Filters

FI Series

Features

- ◎ Filtration area type: 2, 4 and 8
- ◎ Compact and space-saving design
- ◎ Working pressure up to: 3000 psig (207 bar)
- ◎ Working temperature: -20 °F to 900 °F (-28 °C to 482 °C)
- ◎ Variety of end connections available

Filters Ordering Number Description

FIB – FL4 – ML6 – S – A15 – SF2

Series
FI

Body Material	
SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
HC	Alloy 276
B	Brass
904L	904L SS

Inlet Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RP gasket)
MS	Male Metric Thread (for RG gasket)
FRP	Female BSPP (for RP gasket)
BP	Male BSPP (for RP gasket)
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
TS	Fractional Tube Socket Weld
TB	Fractional Tube Butt Weld
FR	Male FR Fitting

Outlet Type / Outlet Size	
	Same as Inlet
Specified in the same way as the inlet type and size	

Inlet Size	
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm

Element Type	
	Sintered
S	Strainer

Gasket Material	
	Silver-plated 316 SS
A	Aluminum (the only option for brass body)

Element Nominal Pore Size	
05	0.5 µm (Sintered)
2	2 µm
7	7 µm
15	15 µm
40	40 µm
60	60 µm
80	80 µm
100	100 µm (Strainer)
150	150 µm (Strainer)
250	250 µm (Strainer)
450	450 µm (Strainer)
EL	Without filter element

Special Application	
	None
S	NACE MR0175

Process Specification	
	FC-01
F2	FC-02

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for basic industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance requirement as stated in ASTM G93 Level C.
2. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   Standard thread pitch should be ignored in the ordering number, others should be specified.

Elements Ordering Number Description

SSE – SN8 – 60①

Material	
SS	316 SS
HC	Alloy C-276

Part Name	
E	Element

Element Type	
SN	Sintered
ST	Strainer (316 SS Only)

Filtration Area Type
2 (only for sintered)
4
8

Element Nominal Pore Size	
05	0.5 μm (sintered)
2	2 μm
7	7 μm
15	15 μm
40	40 μm
60	60 μm
80	80 μm
100	100 μm (Strainer)
150	150 μm (Strainer)
250	250 μm (Strainer)
450	450 μm (Strainer)

① The FT and FB series filters share identical filter element models, while some filter element models for the FI series filters are also same with the FT and FB series. A filter element model represents a single, consistent filter product, meaning one filter element can be used across multiple filter series.

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
Not all combinations are available.

All-Welded In-Line Filters

FW Series

Features

- Full-penetration weld between body and filter element
- Working pressure up to: 6000 psig (414 bar)
- Working temperature: -20 °F to 900 °F (-28 °C to 482 °C)
- Variety of end connections available

Filters Ordering Number Description

FWSS – FL6 – ML10 – S – 15 – SF2

Series	
FW	

Body Material	
SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
904L	904L SS

Inlet Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RP gasket)
MS	Male Metric Thread (for RG gasket)
FRP	Female BSPP (for RP gasket)
BP	Male BSPP (for RP gasket)
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
TB	Fractional Tube Butt Weld
FR	Male FR Fitting

Outlet Type	Outlet Size
	Same as Inlet
Specified in the same way as the inlet type and size	

Inlet Size	
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm

Element Type	
	Sintered
S	Strainer
SF	Combination Strainer

Element Nominal Pore Size	
05	0.5 μm (Sintered)
2	2 μm (Strainer)
7	7 μm (Strainer)
15	15 μm (Strainer)

Special Application	
	None
S	NACE MR0175

Process Specification	
	FC-01
F2	FC-02

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for basic industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance requirement as stated in ASTM G93 Level C.
2. Standard thread pitch for metric threads are as follows:
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   Standard thread pitch should be ignored in the ordering number, others should be specified.

High-Capacity Filters

FH Series

Features

- ◎ Filtration area type: 4H and 8H
- ◎ Bypass port at filter bottom optional for the ease of sampling or purging
- ◎ Elements equipped with retention levers for easy disassembling, cleaning and replacement
- ◎ Standard seal materials: FKM and PTFE
- ◎ Working pressure up to 5000 psig
- ◎ Variety of end connections optional

Filters Ordering Number Description

FH6L – FNS8 – FRP8 – S – E25 – FNS4 – SF2

Series
FH

Body Material	
SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
HC	Alloy 276
904L	904L SS

Inlet Type	
FNS	Female NPT
FRT	Female BSPT
FMS	Female Metric Thread (for RP gasket)
FRP	Female BSPP (for RP gasket)
TS	Fractional Tube Socket Weld (Avoid damaging seals. For TS welding port, welding should be performed with filter body removed.)

Inlet Size	
4	1/4"
6	3/8"
8	1/2"

Outlet Type	Outlet Size
	Same as Inlet
Specified in the same way as the inlet type and size	

Element Type	
S	Strainer

O-Ring Material	
	FKM
B	NBR
E	EPDM
Z	FFKM

Element Nominal Pore Size	
25	25 μm
100	100 μm
150	150 μm
250	250 μm
450	450 μm
EL	Without Filter Element

Bypass Port & Size	
	Without Bypass Port
FNS2	1/8 Female NPT
FNS4	1/4 Female NPT
TS4	1/4" Tube Socket Weld

Special Application	
	None
S	NACE MR0175

Process Specification	
	FC-01
F2	FC-02

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for basic industrial procedures.
   FC-02: Special cleaning and packaging for wetted system components to ensure compliance requirement as stated in ASTM G93 Level C.

Elements Ordering Number Description

SSE – ST8H – 25

Material		Part Name		Element Type		Filtration Area Type	Element Nominal Pore Size	
SS	316 SS	E	Element	ST	Strainer	4H	25	25 μm
						8H	100	100 μm
							150	150 μm
							250	250 μm
							450	450 μm

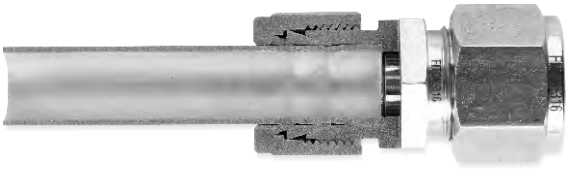
Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

Tube Fittings

6D Series

Features

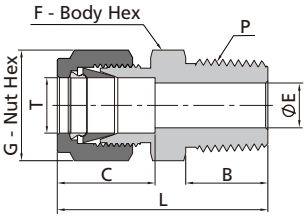
- Sizes range from 1/16" to 2" and 2 mm to 50 mm
- Diverse materials and configurations are available
- Precision machined components ensure perfect deformation of the ferrules and tubing
- Hardened threads with smooth surface finish avoid galling and help to extend the fitting service life
- Female nut threads are silver-plated to reduce the friction against the body threads
- Radius junction design for elbows provides smooth flow path
- Every fitting is marked with size, material and heat number
- Fittings are easy to disconnect and retighten
- 1/8" to 5/8", 3 mm to 16 mm fittings available with EC-79 certification



Ordering Information and Dimensions

Dimensions are for reference only and are subject to change; Dimensions are shown with FITOK nuts finger-tight.

Male Connectors



The E dimension refers to the smallest nominal orifice. It might be larger at tapered thread end, straight thread end.

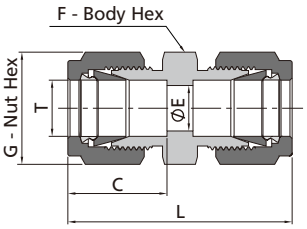
Fractional Tube — NPT Thread

T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, in. (mm)					
			L	B	C	E	G	F
1/4	1/4	-CM-FL4-NS4	1.49(37.8)	0.56(14.2)	0.60(15.2)	0.19(4.8)	0.56(14.3)	0.56(14.3)
3/8	3/8	-CM-FL6-NS6	1.57(39.9)	0.56(14.2)	0.66(16.8)	0.28(7.1)	0.69(17.5)	0.69(17.5)
1/2	1/2	-CM-FL8-NS8	1.93(49.0)	0.75(19.1)	0.90(22.9)	0.41(10.4)	0.87(22.2)	0.87(22.2)

Metric Tube — NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm (in.)					
			L	B	C	E	G	F
6	1/4	-CM-ML6-NS4	37.9(1.49)	14.2(0.56)	15.3(0.60)	4.8(0.19)	14.0(0.55)	14.0(0.55)
8	3/8	-CM-ML8-NS6	39.3(1.55)	14.2(0.56)	16.2(0.64)	6.4(0.25)	16.0(0.63)	18.0(0.71)
10	3/8	-CM-ML10-NS6	40.9(1.61)	14.2(0.56)	17.2(0.68)	7.9(0.31)	19.0(0.75)	18.0(0.71)
12	1/2	-CM-ML12-NS8	49.0(1.93)	19.1(0.75)	22.8(0.90)	9.5(0.37)	22.0(0.87)	22.0(0.87)

Unions



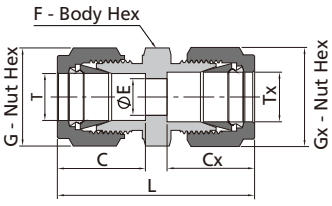
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, in. (mm)				
		L	C	G	F	E
1/4	-U-FL4	1.61(40.9)	0.60(15.2)	0.56(14.3)	0.50(12.7)	0.19(4.8)
3/8	-U-FL6	1.77(45.0)	0.66(16.8)	0.69(17.5)	0.63(15.9)	0.28(7.1)
1/2	-U-FL8	2.02(51.3)	0.90(22.9)	0.87(22.2)	0.81(20.6)	0.41(10.4)

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm (in.)				
		L	C	G	F	E
6	-U-ML6	41.0(1.61)	15.3(0.60)	14.0(0.55)	14.0(0.55)	4.8(0.19)
8	-U-ML8	43.2(1.70)	16.2(0.64)	16.0(0.63)	15.0(0.59)	6.4(0.25)
10	-U-ML10	46.2(1.82)	17.2(0.68)	19.0(0.75)	18.0(0.71)	7.9(0.31)
12	-U-ML12	51.2(2.02)	22.8(0.90)	22.0(0.87)	22.0(0.87)	9.5(0.37)

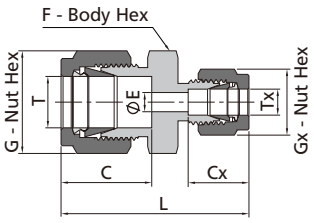
Conversion Unions



Metric Tube — Fractional Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm (in.)						
			L	C	G	F	E	Cx	Gx
6	1/8	-U-ML6-FL2	38.5(1.52)	15.3(0.60)	14.0(0.55)	14.0(0.55)	2.4(0.09)	12.7(0.50)	11.1(0.44)
8	1/4	-U-ML8-FL4	42.3(1.67)	16.2(0.64)	16.0(0.63)	15.0(0.59)	4.8(0.19)	15.2(0.60)	14.3(0.56)
10	1/4	-U-ML10-FL4	44.5(1.75)	17.2(0.68)	19.0(0.75)	18.0(0.71)	4.8(0.19)	15.2(0.60)	14.3(0.56)
10	3/8	-U-ML10-FL6	45.9(1.81)	17.2(0.68)	19.0(0.75)	18.0(0.71)	7.1(0.28)	16.8(0.66)	17.5(0.69)
12	3/8	-U-ML12-FL6	48.4(1.91)	22.8(0.90)	22.0(0.87)	22.0(0.87)	7.1(0.28)	16.8(0.66)	17.5(0.69)
16	5/8	-U-ML16-FL10	52.0(2.05)	24.4(0.96)	25.0(0.98)	24.0(0.94)	12.7(0.50)	24.4(0.96)	25.4(1.00)
20	1/2	-U-ML20-FL8	55.0(2.17)	26.0(1.02)	32.0(1.26)	30.0(1.18)	10.4(0.41)	22.9(0.90)	22.2(0.87)

Reducing Unions



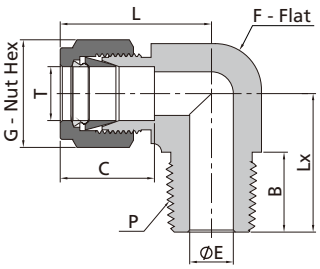
Fractional Tube

T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, in. (mm)						
			L	C	G	F	E	Cx	Gx
3/8	1/4	-U-FL6-FL4	1.70(43.2)	0.66(16.8)	0.69(17.5)	0.63(15.9)	0.19(4.8)	0.60(15.2)	0.56(14.3)
1/2	1/4	-U-FL8-FL4	1.85(47.0)	0.90(22.8)	0.87(22.2)	0.81(20.6)	0.19(4.8)	0.60(15.2)	0.56(14.3)
1/2	3/8	-U-FL8-FL6	1.91(48.5)	0.90(22.8)	0.87(22.2)	0.81(20.6)	0.28(7.1)	0.66(16.8)	0.69(17.5)

Metric Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm (in.)						
			L	C	G	F	E	Cx	Gx
8	6	-U-ML8-ML6	42.3(1.67)	16.3(0.64)	16.0(0.63)	15.0(0.59)	4.8(0.19)	15.3(0.60)	14.0(0.55)
10	8	-U-ML10-ML8	45.1(1.78)	17.2(0.68)	19.0(0.75)	18.0(0.71)	6.4(0.25)	16.3(0.64)	16.0(0.63)
12	10	-U-ML12-ML10	48.7(1.92)	22.8(0.90)	22.0(0.87)	22.0(0.87)	7.9(0.31)	17.2(0.68)	19.0(0.75)

Male Elbows



Fractional Tube — NPT Thread

T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, in. (mm)						
			L	C	G	F	E	B	Lx
1/4	1/4	-LM-FL4-NS4	1.06(26.9)	0.60(15.2)	0.56(14.3)	0.50(12.7)	0.19(4.8)	0.56(14.2)	0.92(23.4)
3/8	3/8	-LM-FL6-NS6	1.23(31.2)	0.66(16.8)	0.69(17.5)	0.69(17.5)	0.28(7.1)	0.56(14.2)	1.03(26.2)
1/2	1/2	-LM-FL8-NS8	1.42(36.1)	0.90(22.9)	0.87(22.2)	0.81(20.6)	0.41(10.4)	0.75(19.1)	1.30(33.0)

Metric Tube — NPT Thread

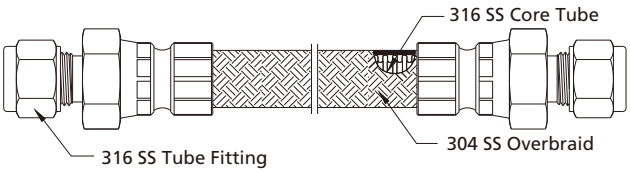
T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm (in.)						
			L	C	G	F	E	B	Lx
6	1/4	-LM-ML6-NS4	27.0(1.06)	15.3(0.60)	14.0(0.55)	12.7(0.50)	4.8(0.19)	14.2(0.56)	23.4(0.92)
8	3/8	-LM-ML8-NS6	30.6(1.20)	16.2(0.64)	16.0(0.63)	17.5(0.69)	6.4(0.25)	14.2(0.56)	26.2(1.03)
10	3/8	-LM-ML10-NS6	31.5(1.24)	17.2(0.68)	19.0(0.75)	17.5(0.69)	7.9(0.31)	14.2(0.56)	26.2(1.03)
12	1/2	-LM-ML12-NS8	36.0(1.42)	22.8(0.90)	22.0(0.87)	20.6(0.81)	9.5(0.37)	19.1(0.75)	33.0(1.30)

Metal Flexible Hoses

MH, MM Series

Features

- Core tube and fitting material: 316, 316L stainless steel
- Overbraid material: 304 stainless steel (316 SS available)
- Vacuum and positive pressure applications
- Working pressure up to: 3100 psig (213 bar)
- Nominal hose size: 1/4" to 2"
- End connections:
  1/4" to 2" pipe thread
  1/4" to 2" and 6 mm to 50 mm tube fitting
- Working temperature: -325 °F to 800 °F (-200 °C to 426 °C)
- Welded fitting-to-hose construction to ensure reliable seal
- Standard and custom length available



Hose Technical Data (MH Series)

Nominal Hose Size	Inside Diameter	Min. Bend Radius		Temperature Range	Working Pressure at 70°F (20°C)	Min. Burst Pressure at 70°F (20°C)
		Static	Dynamic			
in. (mm)	in. (mm)	in. (mm)	in. (mm)	°F (°C)	psig (bar)	psig (bar)
1/4 (6.4)	0.28 (7.1)	2.25 (57.2)	10.0 (254)	-325 to 800 (-200 to 426)	3100 (213)	12400 (854)
3/8 (9.7)	0.42 (10.6)	3.00 (76.2)	12.0 (305)		2000 (137)	8000 (551)
1/2 (12.7)	0.53 (13.5)	4.50 (114)	16.0 (406)		1800 (124)	7200 (496)
3/4 (19.0)	0.80 (20.3)	6.00 (152)	17.0 (432)		1500 (103)	6000 (413)
1 (25.4)	1.03 (26.0)	6.75 (171)	20.0 (508)		1200 (82.6)	4800 (330)
1 1/4 (31.8)	1.30 (33.0)	8.86 (225)	23.0 (584)		950 (65.4)	3800 (261)
1 1/2 (38.1)	1.53 (38.9)	11.0 (280)	26.0 (660)		900 (62.0)	3600 (248)
2 (50.8)	2.05 (52.1)	13.8 (350)	32.0 (813)		500 (34.4)	2000 (137)

Hose Technical Data (MM Series)

Nominal Hose Size	Inside Diameter	Min. Bend Radius				Temperature Range	Working Pressure at 70°F (20°C)	Min. Burst Pressure at 70°F (20°C)
		Helical Convoluted Core		Annular Convoluted Core				
		Static	Dynamic	Static	Dynamic			
in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	°F (°C)	psig (bar)	psig (bar)
1/4 (6.4)	0.25 (6.4)	1.38 (35)	8.66 (220)	0.79 (20)	4.33 (110)	-325 to 800 (-200 to 426)	1600 (110)	6400 (440)
3/8 (9.7)	0.38 (9.5)	2.36 (60)	10.40 (264)	0.98 (25)	5.91 (150)		1470 (101)	6000 (413)
1/2 (12.7)	0.50 (12.7)	2.95 (75)	11.89 (302)	1.18 (30)	4.88 (124)		1110 (76.4)	4500 (310)
3/4 (19.0)	0.75 (19.0)	3.54 (90)	13.58 (345)	1.50 (38)	6.65 (169)		860 (59.2)	3500 (241)
1 (25.4)	1.00 (25.4)	4.13 (105)	15.00 (381)	1.77 (45)	7.68 (195)		680 (46.8)	2680 (184)
1 1/4 (31.8)	1.25 (31.8)	4.72 (120)	16.22 (412)				680 (46.8)	2600 (179)
1 1/2 (38.1)	1.50 (38.1)	5.51 (140)	16.89 (429)				520 (35.8)	2200 (151)
2 (50.8)	2.00 (50.8)	6.30 (160)	18.43 (468)				450 (31.0)	1800 (124)

Ordering Number Description

SS - MH4 - FL6 - NS6 - F36 - R - Z - SK

End Connection Material	
SS	316 SS
904L	904L SS

Hose	
MH	High pressure hose
MM	Medium pressure hose

Nominal Hose Size	
4	1/4"
6	3/8"
8	1/2"
12	3/4"
16	1"
20	1 1/4"
24	1 1/2"
32	2"

End Connection 1 Type	
ML	Metric Tube Fitting
FL	Fractional Tube Fitting
MT	Metric Tube Adapter
FT	Fractional Tube Adapter
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RG-M)
MS	Male Metric Thread (for RG-M)
SAN	Female JIC 37° Flare Swivel
AN	Male JIC 37° Flare
SFFR	Female FR Fitting Swivel
SFR	Male FR Fitting Swivel

End Connection 1 Size	
3	3/16"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	5/8" or 10 mm
12	3/4" or 12 mm
14	M14 × 1.5
16	1" or 16 mm
18	M18 × 1.5
20	M20 × 1.5

End Connection 2 Type and Size	
	Same as End 1
	Specify in the same way as the end connection 1 type and size

Overall Length	
FXX	XX in.
MXX	XX mm

Convolution	
	Helical
R	Annular (for MM series only)

Overbraid	
	304 SS
Z	316 SS

Option①	
SK	Anti-whip Cable
AR2	Helium Leak Testing (1×10^{-9} std·cm³/s)

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
Not all combinations are available.

① To order multiple options, please add designators in alphabetical order and separate them with dashes.

Example: SS-MH4-FT6-M710

SS: End connection material is 316 stainless steel.
MH4: MH series, nominal hose size is 1/4".
FT6: End connection 1 is 3/8" tube adapter.
End connection 2 is 3/8" tube adapter.
M710: Overall length is 710 mm.

Connections are described based on the following rules:
1. Metric Tube Fitting - Fractional Tube Fitting - Metric Tube Adapters - Fractional Tube Adapters - NPT Threads - BSPT Threads - BSPP Threads - SAE/MS Parallel
° Threads - 37 Flare - Others
2. Put the sizes from the biggest down to the smallest if they are of the same type.
3. Put the female before male if they are of the same type and size.

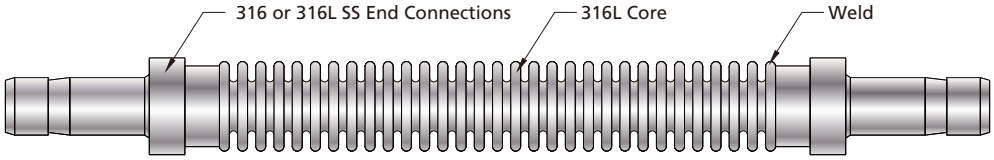
Metal Flexible Hoses
HMF Series

Introduction

HMF Series Metal Flexible Hoses feature an all-metal construction that prevents media permeation, making them ideal for static applications with stringent sealing requirements. These hoses can be manually formed to the desired shape and will retain their form to compensate for pipeline misalignment and vibration under vacuum or low-pressure conditions, thereby improving installation efficiency and overall system reliability.

Features

- Core material: 316L stainless steel
  End connection material: 316 or 316L stainless steel
- Nominal hose sizes: 1/4" to 1/2"
- Working pressure range: Vacuum to 135 psig (9.3 bar)
- All-metal construction suitable for applications with strict media permeation requirements
- Optional additional helium leak test with a leak rate ≤ 1×10^{-9} std·cm^3/s
- Custom lengths available



Technical Parameters

Nominal Hose Size	Inside Diameter	Outside Diameter	Min. Center Line Bend Radius		Temperature Range	Working Pressure at 70 °F (20 °C)
			Annular Convoluted Core			
			Static	Dynamic ①		
in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	°F (°C)	psig (bar)
1/4 (6.4)	0.25 (6.4)	0.38 (9.7)	1.00 (25.4)	–	-325 to 1000 (-200 to 537)	135 (9.3)
3/8 (9.7)	0.39 (10.0)	0.59 (15.0)	1.20 (30.5)			70 (4.8)
1/2 (12.7)	0.48 (12.1)	0.73 (18.6)	1.50 (38.1)			70 (4.8)

① Not suitable for dynamic applications

Testing

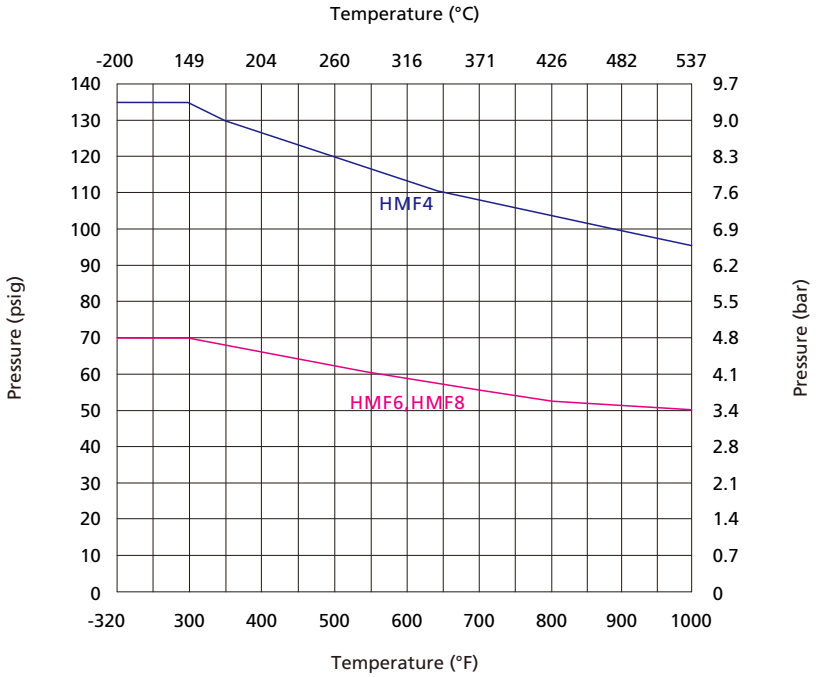
Every FITOK metal flexible hose is factory leak-tested with helium to a maximum leak rate of 1×10^{-7} std·cm³/s.
For additional requirements, please contact FITOK Group or our authorized distributors.

Cleaning and Packaging

FITOK metal flexible hoses are cleaned in accordance with the FITOK Standard Cleaning and Packaging Process (FC-01) by default. Products cleaned per the Special Cleaning and Packaging Process (FC-02) are available upon request. Each metal flexible hose is packed in a PC transparent tube or bagged and boxed/crated. Longer hoses are coiled, then bagged and boxed or crated.

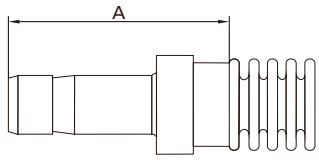
Pressure vs. Temperature

The peak value of pressure fluctuations, vibrations, or pulses in the system must not exceed 50% of the selected flexible hose's rated working pressure.



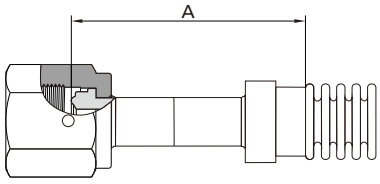
End Connections

Tube Adapters



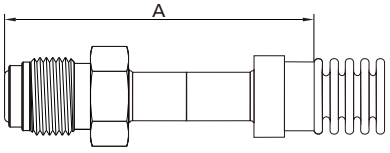
Tube Adapter Size	Nominal Hose Size	End Connection Designator	Dimensions		
			Minimum Inside Diameter	Maximum Outside Dimension	A
in.	in.		in. (mm)		
1/4	1/4	FT4	0.17 (4.3)	0.41 (10.4)	0.96 (24.5)
3/8	3/8	FT6	0.27 (6.8)	0.63 (16.0)	1.03 (26.2)
1/2	1/2	FT8	0.37 (9.4)	0.83 (21.0)	1.30 (33.1)
mm	in.	—	mm (in.)		
6	1/4	MT6	4.1 (0.16)	10.4 (0.41)	24.4 (0.96)
10	3/8	MT10	7.1 (0.28)	16.0 (0.63)	26.2 (1.03)
12	1/2	MT12	8.8 (0.35)	21.0 (0.83)	31.8 (1.25)

Rotatable Female FR Fittings



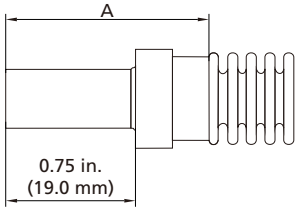
FR Fitting Size	Nominal Hose Size	End Connection Designator	Dimensions		
			Minimum Inside Diameter	Maximum Outside Dimension	A
in.	in.		in. (mm)		
1/4	1/4	SFFR4	0.18 (4.6)	0.87 (22.0)	1.32 (33.5)
1/2	1/2	SFFR8	0.41 (10.4)	1.23 (31.2)	1.38 (35.0)

Rotatable Male FR Fittings



FR Fitting Size	Nominal Hose Size	End Connection Designator	Dimensions		
			Minimum Inside Diameter	Maximum Outside Dimension	A
in.	in.		in. (mm)		
1/4	1/4	SFR4	0.18 (4.6)	0.72 (18.4)	2.04 (51.8)
1/2	1/2	SFR8	0.41 (10.4)	1.08 (27.5)	1.99 (50.5)

Tube Butt Welds



Tube Butt Weld Size	Nominal Hose Size	End Connection Designator	Dimensions		
			Minimum Inside Diameter	Maximum Outside Dimension	A
in.	in.		in. (mm)		
1/4	1/4	OTB4	0.18 (4.6)	0.41 (10.4)	1.09 (27.8)
3/8	3/8	OTB6	0.30 (7.7)	0.63 (16.0)	1.09 (27.8)
1/2	1/2	OTB8	0.40 (10.2)	0.83 (21.0)	1.09 (27.8)

Ordering Number Description

SS – HMF4 – FT4 – SFFR4 – F12 – AR2 – F2

End Connection Material	
SS	316 SS
6L	316L SS

Nominal Hose Size	
4	1/4"
6	3/8"
8	1/2"

End Connection 1 Size	
4	1/4"
6	3/8" or 6 mm
8	1/2"
10	10 mm
12	12 mm

Overall Length	
F10	10 in.
F12	12 in.
F14	14 in.
F18	18 in.
F24	24 in.
F36	36 in.
F48	48 in.
F60	60 in.
F72	72 in.
F96	96 in.
F120	120 in.
FXX	XX in. (inches to one decimal)
MXX	XX mm (XX is a multiple of 10)

Option	
	None
AR2	Helium Leak Testing (1×10^{-9} std·cm^3/s)

Cleaning & Packaging	
	FC-01
F2	FC-02

Series	
HMF	Metal Flexible Hose

End Connection 1 Type	
MT	Metric Tube Adapter
FT	Fractional Tube Adapter
SFFR	Rotatable Female FR Fitting
SFR	Rotatable Male FR Fitting
OTB	Tube Butt Weld Fitting

End Connection 2 Type and Size	
	Same as End 1
	Specified in the same way as the end connection 1 type and size

Example: SS-HMF4-FT4-M500
SS: End connection material is 316 Stainless Steel.
HMF4：**HMF** Series, nominal hose size is 1/4".
FT4: End connection 1 is a 1/4" tube adapter.
End connection 2 is a 1/4" tube adapter.
M500: Overall length is 500 mm

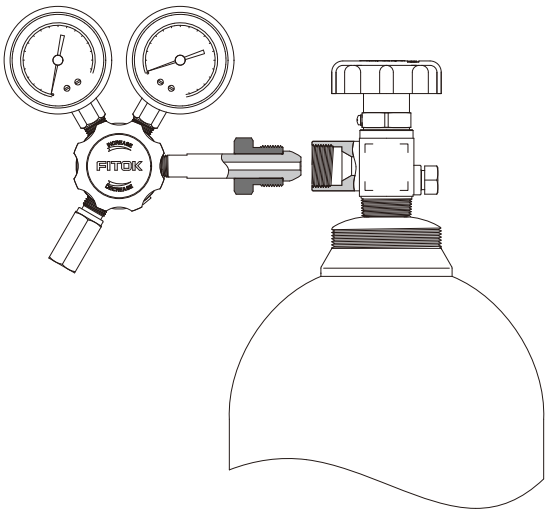
Connections are described based on the following rules:
1. Metric Tube Adapter - Fractional Tube Adapter - FR Fitting - OTB Tube Butt Weld Fitting - Others
2. For connections of the same type, list sizes from largest to smallest.
3. For the same type and size, list female before male.

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
Not all combinations are available.

Cylinder Connections

Features

◎ 100% visual inspection of critical surfaces
◎ Diverse material and configurations available
◎ Silver-plated nut threads to reduce installation torque
◎ Every fitting marked with size, material and heat number
◎ Customized solutions available



Material

Series	Component	Material	Designator
CGA DISS	Nipples	316L SS	6L
	Nuts	304 SS	S4
	Gaskets	Nickel 200	NI
		PCTFE	K
		Aluminum	AL
	Plugs	316L SS	6L
	Adapters	316L SS	6L
	Caps	316L SS	6L
CGA DIN	Nipples	316L SS	6L
	Nuts	304 SS	S4
	Gaskets	PTFE	T
		PCTFE	K
	Plugs, Caps	316L SS	6L
	Adapters	316L SS	6L

Notes:
1. Nickel gasket heat treated; surface hardness＜HB 100
2. 316L SS in compliance with SEMI F20

Ordering information

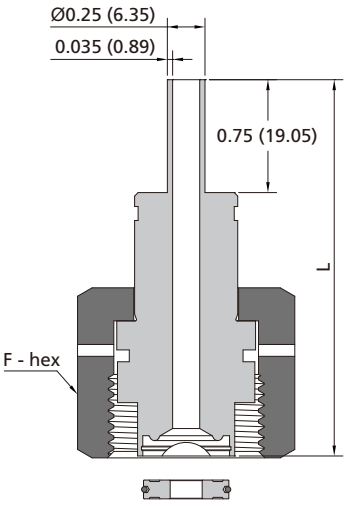
◎ Add material designator as a prefix to the basic ordering number to get the complete ordering number.
Example: 6L-C634-L-FR4
◎ CGA, DIN Series
PTFE is standard material for gasket. If PCTFE is required, please add a suffix of "-k" to the ordering number.
Example: 6L-C350-NS4-K
◎ CGA DISS Series
Nickel is standard material for gasket. If PCTFE is required, please add a suffix of "-k" to the ordering number.
Example: 6L-C632-FR4-K

CGA DISS Series

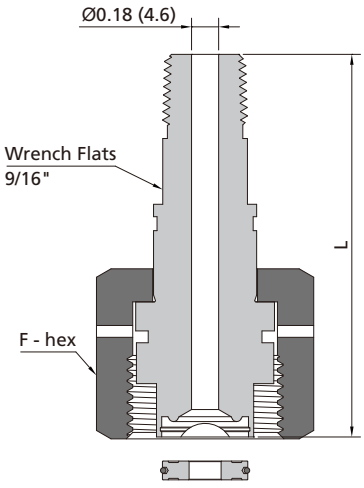
- Designed and verified in compliance with the CGA V-1-2005 standard
- For nipples with TB or FR connections, inner surface electropolished to an average of Ra 9 μin. (0.23 μm), products comply with high purity process specification
- For nipples with NPT connections, inner surface electropolished to an average of Ra 16 μin. (0.4 μm), products comply with special cleaning and packaging, applicable to oxygen-enriched atmospheres
- Maximum allowable leak rate: 1×10^{-9} std·cm^3/s
- CGA DISS series cylinder connections are available with a variety of end connection types, such as 1/4" TB, 3/8" TB, 1/2" TB, 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 1/4" FR, and 1/2" FR. The maximum working pressures for cylinder connections with these end connection types meet the requirements of the CGA V-1-2005 standard
- Maximum working pressures for cylinder connections are calculated at room temperature in accordance with CGA V-1-2005, ASME B31.3, and ASME B31.1 standards
- For other end connection types, please contact FITOK Group or our authorized distributors

Cylinder Connections (Including Nipples, Nuts and Gaskets)

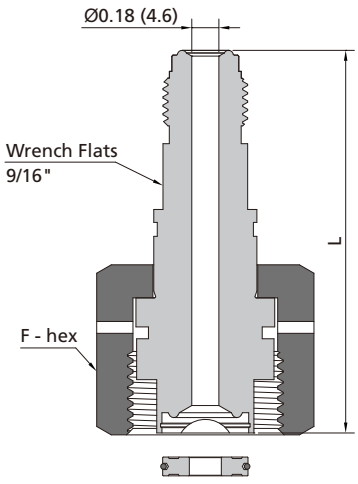
Dimensions are in. (mm).



1/4" Butt Weld (TB)



Male NPT



Male Face Seal (FR)

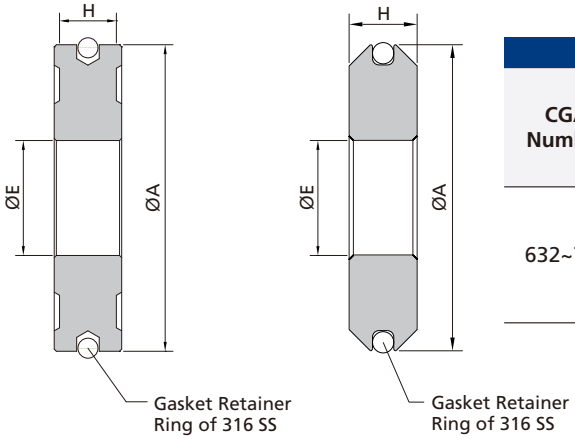
CGA Number	End Connection	Assembly Basic Ordering Number	Nipple Basic Ordering Number	Nut Basic Ordering Number	Gasket Basic Ordering Number	Dimensions, in. (mm)	
						L	F
632	1/4" TB	-C632-TB4	-C632-L-TB4	-C630-N	-C630-GT	2.5 (63.5)	1 1/4 (31.8)
	1/4" FR	-C632-FR4	-C632-L-FR4			3 (76.2)	
	1/4 NPT	-C632-NS4	-C632-L-NS4			3 (76.2)	
634	1/4" TB	-C634-TB4	-C634-L-TB4	-C630-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C634-FR4	-C634-L-FR4			3 (76.2)	
	1/4 NPT	-C634-NS4	-C634-L-NS4			3 (76.2)	
636	1/4" TB	-C636-TB4	-C636-L-TB4	-C630-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C636-FR4	-C636-L-FR4			3 (76.2)	
	1/4 NPT	-C636-NS4	-C636-L-NS4			3 (76.2)	
638	1/4" TB	-C638-TB4	-C638-L-TB4	-C630-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C638-FR4	-C638-L-FR4			3 (76.2)	
	1/4 NPT	-C638-NS4	-C638-L-NS4			3 (76.2)	

CGA Number	End Connection	Assembly Basic Ordering Number	Nipple Basic Ordering Number	Nut Basic Ordering Number	Gasket Basic Ordering Number	Dimensions, in. (mm)	
						L	F
640	1/4" TB	-C640-TB4	-C640-L-TB4	-C630-N	-C630-GT	2.5 (63.5)	1 1/4 (31.8)
	1/4" FR	-C640-FR4	-C640-L-FR4			3 (76.2)	
	1/4 NPT	-C640-NS4	-C640-L-NS4			3 (76.2)	
642	1/4" TB	-C642-TB4	-C642-L-TB4	-C630-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C642-FR4	-C642-L-FR4			3 (76.2)	
	1/4 NPT	-C642-NS4	-C642-L-NS4			3 (76.2)	
712	1/4" TB	-C712-TB4	-C712-L-TB4	-C710-N	-C630-GT	2.5 (63.5)	1 3/8 (34.9)
	1/4" FR	-C712-FR4	-C712-L-FR4			3 (76.2)	
	1/4 NPT	-C712-NS4	-C712-L-NS4			3 (76.2)	
714	1/4" TB	-C714-TB4	-C714-L-TB4	-C710-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C714-FR4	-C714-L-FR4			3 (76.2)	
	1/4 NPT	-C714-NS4	-C714-L-NS4			3 (76.2)	
716	1/4" TB	-C716-TB4	-C716-L-TB4	-C710-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C716-FR4	-C716-L-FR4			3 (76.2)	
	1/4 NPT	-C716-NS4	-C716-L-NS4			3 (76.2)	
718	1/4" TB	-C718-TB4	-C718-L-TB4	-C710-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C718-FR4	-C718-L-FR4			3 (76.2)	
	1/4 NPT	-C718-NS4	-C718-L-NS4			3 (76.2)	
720	1/4" TB	-C720-TB4	-C720-L-TB4	-C720-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C720-FR4	-C720-L-FR4			3 (76.2)	
	1/4 NPT	-C720-NS4	-C720-L-NS4			3 (76.2)	
722	1/4" TB	-C722-TB4	-C722-L-TB4	-C720-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C722-FR4	-C722-L-FR4			3 (76.2)	
	1/4 NPT	-C722-NS4	-C722-L-NS4			3 (76.2)	
724	1/4" TB	-C724-TB4	-C724-L-TB4	-C720-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C724-FR4	-C724-L-FR4			3 (76.2)	
	1/4 NPT	-C724-NS4	-C724-L-NS4			3 (76.2)	
726	1/4" TB	-C726-TB4	-C726-L-TB4	-C720-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C726-FR4	-C726-L-FR4			3 (76.2)	
	1/4 NPT	-C726-NS4	-C726-L-NS4			3 (76.2)	
728	1/4" TB	-C728-TB4	-C728-L-TB4	-C720-N	-C630-GT	2.5 (63.5)	
	1/4" FR	-C728-FR4	-C728-L-FR4			3 (76.2)	
	1/4 NPT	-C728-NS4	-C728-L-NS4			3 (76.2)	

Note:
Nickel is standard material for gasket. If PCTFE is required, please add a suffix of "-k" to the ordering number.
Example: 6L-C638-TB4-K

Gaskets

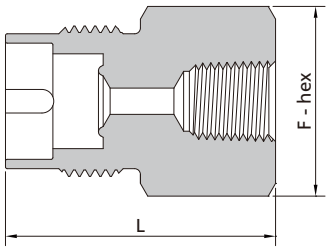
NI-C630-GT / AL-C630-GT **K-C630-GT**



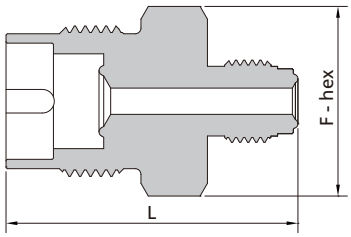
CGA Number	Gasket Ordering Number	Material	Dimensions					
			A		E		H	
			in.	mm	in.	mm	in.	mm
632~728	NI-C630-GT	Nickel 200	0.56	14.3	0.21	5.4	0.105	2.7
	K-C630-GT	PCTFE					0.125	3.2
	AL-C630-GT	Aluminum					0.105	2.7

Outlet Adaptors

Female NPT



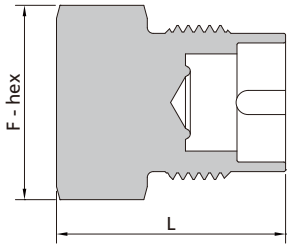
Male Face Seal (FR)



CGA Number	Basic Ordering Number	Dimensions, in. (mm)	
		L	F
632	-C632-A-FNS4	1.85 (47.0)	1 1/8 (28.6)
634	-C634-A-FNS4		
636	-C636-A-FNS4		
638	-C638-A-FNS4		
640	-C640-A-FNS4		
642	-C642-A-FNS4		
712	-C712-A-FNS4		1 1/4 (31.8)
714	-C714-A-FNS4		
716	-C716-A-FNS4		
718	-C718-A-FNS4		
720	-C720-A-FNS4		
722	-C722-A-FNS4		
724	-C724-A-FNS4		
726	-C726-A-FNS4		
728	-C728-A-FNS4		

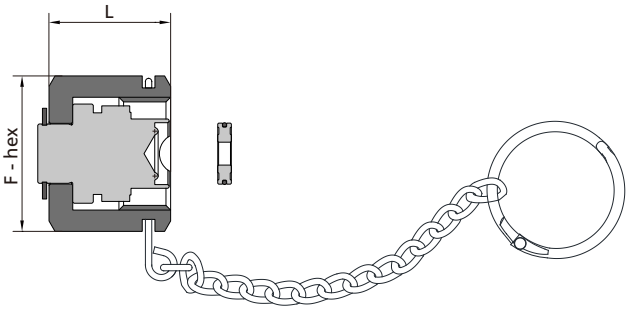
CGA Number	Basic Ordering Number	Dimensions, in. (mm)	
		L	F
632	-C632-A-FR4	2.0 (50.8)	1 1/8 (28.6)
634	-C634-A-FR4		
636	-C636-A-FR4		
638	-C638-A-FR4		
640	-C640-A-FR4		
642	-C642-A-FR4		
712	-C712-A-FR4		1 1/4 (31.8)
714	-C714-A-FR4		
716	-C716-A-FR4		
718	-C718-A-FR4		
720	-C720-A-FR4		
722	-C722-A-FR4		
724	-C724-A-FR4		
726	-C726-A-FR4		
728	-C728-A-FR4		

Blank Plugs



CGA Number	Basic Ordering Number	Dimensions, in. (mm)	
		L	F
632	-C632-BP	1.53 (38.9)	1 1/8 (28.6)
634	-C634-BP		
636	-C636-BP		
638	-C638-BP		
640	-C640-BP		
642	-C642-BP		
712	-C712-BP		1 1/4 (31.8)
714	-C714-BP		
716	-C716-BP		
718	-C718-BP		
720	-C720-BP		
722	-C722-BP		
724	-C724-BP		
726	-C726-BP		
728	-C728-BP		

Valve Outlet Caps (Including Chains, Rings and Gaskets)



CGA Number	Basic Ordering Number	Dimensions, in. (mm)	
		L	F
632	-C632-CP	1.13 (28.7)	1 1/4 (31.8)
634	-C634-CP		
636	-C636-CP		
638	-C638-CP		
640	-C640-CP		
642	-C642-CP		
712	-C712-CP		1 3/8 (34.9)
714	-C714-CP		
716	-C716-CP		
718	-C718-CP		
720	-C720-CP		
722	-C722-CP		
724	-C724-CP		
726	-C726-CP		
728	-C728-CP		

Note:
Nickel is standard material for gasket. If PCTFE is required, please add a suffix of "-k" to the ordering number.
Example: 6L-C632-CP-K

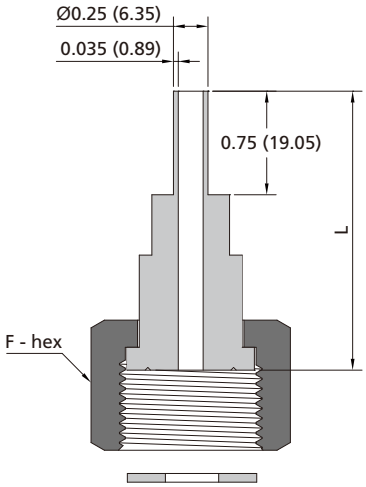
CGA Series

- Designed and verified in compliance with the CGA V-1-2005 standard
- For nipples with TB or FR connections, inner surface electropolished to an average of Ra 9 μin. (0.23 μm); Ra 32 μin. (0.8 μm) for nipples with NPT connections
- With special cleaning and packaging, applicable to oxygen-enriched atmospheres
- Maximum allowable leak rate: 1×10^{-9} std·cm^3/s
- CGA series cylinder connections are available with a variety of end connection types, such as 1/4" TB, 3/8" TB, 1/2" TB, 1/8" NPT, 1/4" NPT, 3/8" NPT, 1/2" NPT, 1/4" FR, and 1/2" FR. The maximum working pressures for cylinder connections with these end connection types meet the requirements of the CGA V-1-2005 standard
- Maximum working pressures for cylinder connections are calculated at room temperature in accordance with CGA V-1-2005, ASME B31.3, and ASME B31.1 standards
- For other end connection types, please contact FITOK Group or our authorized distributors

Cylinder Connections (Including Nipples, Nuts and Gaskets)

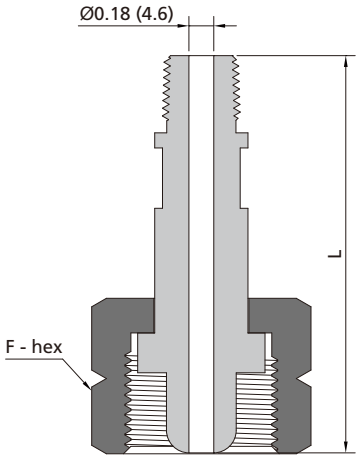
Dimensions are in. (mm).

Fig.1



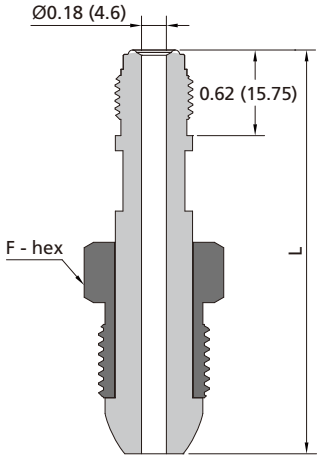
1/4" Butt Weld (TB)

Fig.2



Male NPT

Fig.3



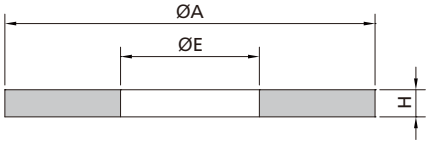
Male Face Seal (FR)

CGA Number	Ref. Fig.	End Connection	Assembly Basic Ordering Number	Nipple Basic Ordering Number	Nut Basic Ordering Number	Gasket Basic Ordering Number	Dimensions, in. (mm)	
							L	F
170	Fig.1	1/4" TB	-C170-TB4	-C170-L-TB4	-C170-N	-C170-GT	1.25 (31.8)	11/16 (17.5)
		1/8 NPT	-C170-NS2	-C170-L-NS2				
180	Fig.1	1/4" TB	-C180-TB4	-C180-L-TB4	-C180-N	-C180-GT	1.25 (31.8)	3/4 (19.1)
		1/8 NPT	-C180-NS2	-C180-L-NS2			1.75 (44.5)	
290	Fig.2	1/4" TB	-C290-TB4	-C290-L-TB4	-C290-N	——	2.63 (66.7)	1 (25.4)
		1/4 NPT	-C290-NS4	-C290-L-NS4			2.25 (57.2)	
296	Fig.3	1/4" TB	-C296-TB4	-C296-L-TB4	-C296-N	——	2.63 (66.7)	7/8 (22.3)
		1/4 NPT	-C296-NS4	-C296-L-NS4			3.5 (88.9)	
		1/4" FR	-C296-FR4	-C296-L-FR4			2.75 (69.9)	
320	Fig.1	1/4" TB	-C320-TB4	-C320-L-TB4	-C320-N	-C320-GT	1.75 (44.5)	1 1/8 (28.6)
		1/4 NPT	-C320-NS4	-C320-L-NS4			2.5 (63.5)	
		1/4" FR	-C320-FR4	-C320-L-FR4			1.75 (44.5)	

CGA Number	Ref. Fig.	End Connection	Assembly Basic Ordering Number	Nipple Basic Ordering Number	Nut Basic Ordering Number	Gasket Basic Ordering Number	Dimensions, in. (mm)	
							L	F
326	Fig.2	1/4" TB	-C326-TB4	-C326-L-TB4	-C326-N	——	2.25 (57.2)	1 1/8 (28.6)
		1/4 NPT	-C326-NS4	-C326-L-NS4			3.0 (76.2)	
		1/4" FR	-C326-FR4	-C326-L-FR4			2.25 (57.2)	
330	Fig.1	1/4" TB	-C330-TB4	-C320-L-TB4	-C330-N	-C320-GT	1.75 (44.5)	
		1/4 NPT	-C330-NS4	-C320-L-NS4			2.5 (63.5)	
		1/4" FR	-C330-FR4	-C320-L-FR4			1.75 (44.5)	
346	Fig.2	1/4" TB	-C346-TB4	-C346-L-TB4	-C346-N	——	2.31 (58.7)	
		1/4 NPT	-C346-NS4	-C346-L-NS4			3.0 (76.2)	
		1/4" FR	-C346-FR4	-C346-L-FR4			2.25 (57.2)	
350	Fig.2	1/4" TB	-C350-TB4	-C350-L-TB4	-C350-N	——	2.31 (58.7)	
		1/4 NPT	-C350-NS4	-C350-L-NS4			3.0 (76.2)	
		1/4" FR	-C350-FR4	-C350-L-FR4			2.25 (57.2)	
510	Fig.3	1/4" TB	-C510-TB4	-C510-L-TB4	-C510-N	——	2.63 (66.7)	
		1/4 NPT	-C510-NS4	-C510-L-NS4			3.5 (88.9)	
		1/4" FR	-C510-FR4	-C510-L-FR4			2.75 (69.9)	
540①	Fig.2	1/4" TB	-C540-TB4	-C540-L-TB4	-C540-N	——	2.25 (57.2)	
		1/4 NPT	-C540-NS4	-C540-L-NS4			3.0 (76.2)	
		1/4" FR	-C540-FR4	-C540-L-FR4			2.25 (57.2)	
580	Fig.3	1/4" TB	-C580-TB4	-C510-L-TB4	-C580-N	——	2.63 (66.7)	
		1/4 NPT	-C580-NS4	-C510-L-NS4			3.5 (88.9)	
		1/4" FR	-C580-FR4	-C510-L-FR4			2.75 (69.9)	
590	Fig.3	1/4" TB	-C590-TB4	-C510-L-TB4	-C590-N	——	2.63 (66.7)	
		1/4 NPT	-C590-NS4	-C510-L-NS4			3.5 (88.9)	
		1/4" FR	-C590-FR4	-C510-L-FR4			2.75 (69.9)	
660	Fig.1	1/4" TB	-C660-TB4	-C660-L-TB4	-C660-N	-C660-GT	2.19 (55.6)	1 1/4 (31.8)
		1/4 NPT	-C660-NS4	-C660-L-NS4			2.5 (63.5)	
		1/4" FR	-C660-FR4	-C660-L-FR4			1.88 (47.6)	
670	Fig.1	1/4" TB	-C670-TB4	-C660-L-TB4	-C670-N	-C660-GT	2.19 (55.6)	
		1/4 NPT	-C670-NS4	-C660-L-NS4			2.5 (63.5)	
		1/4" FR	-C670-FR4	-C660-L-FR4			1.88 (47.6)	
678	Fig.1	1/4" TB	-C678-TB4	-C678-L-TB4	-C678-N	-C678-GT	2.5 (63.5)	
		1/4 NPT	-C678-NS4	-C678-L-NS4			2.5 (63.5)	
		1/4" FR	-C678-FR4	-C678-L-FR4			2.0 (50.8)	
679	Fig.1	1/4" TB	-C679-TB4	-C679-L-TB4	-C679-N	-C679-GT	2.5 (63.5)	
		1/4 NPT	-C679-NS4	-C679-L-NS4			3.0 (76.2)	
		1/4" FR	-C679-FR4	-C679-L-FR4			2.0 (50.8)	

Note: PTFE is standard material for gasket. If PCTFE is required, please add a suffix of "-k" to the ordering number.
Example: 6L-C170-FR4-K
① Cleaned and packaged for Oxygen Service.

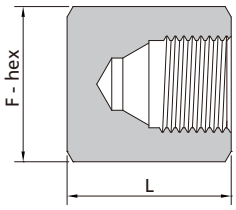
Gaskets



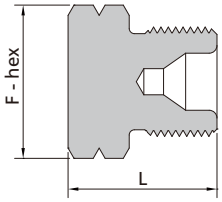
CGA Number	Gasket Basic Ordering Number	Dimensions					
		A		E		H	
		in.	mm	in.	mm	in.	mm
170	-C170-GT	0.43	11.0	0.19	4.8	0.10	2.5
180	-C180-GT	0.44	11.2	0.32	8.1	0.09	2.3
320, 330	-C320-GT	0.72	18.3	0.26	6.6	0.09	2.3
660, 670	-C660-GT	0.94	23.9	0.38	9.7	0.06	1.6
678	-C678-GT	0.61	15.5	0.30	7.6	0.06	1.6
679	-C679-GT	0.53	13.5	0.31	7.9	0.06	1.6

Outlet Adaptors, Blank Caps and Plugs

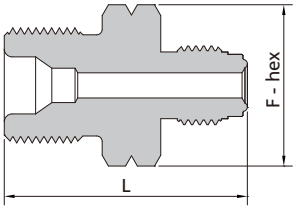
Blank Caps
CGA 580



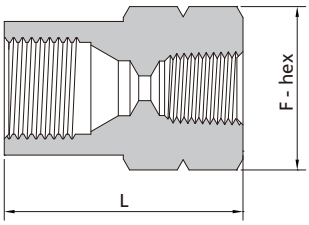
Blank Plugs
CGA 350



Male Face Seal (FR)
CGA 350



Female NPT
CGA 590

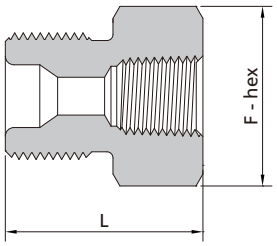


CGA Number	End Connection	Assembly Basic Ordering Number	Dimensions, in. (mm)	
			L	F
180	1/4 Female NPT	-C180-A-FNS4	1.38 (35.0)	3/4 (19.1)
296	Blank Cap	-C296-BC	1.37 (34.8)	1 1/8 (28.6)
	1/4 Female NPT	-C296-A-FNS4	2.0 (50.8)	
	1/4" FR	-C296-A-FR4	2.0 (50.8)	
320	Blank Plug	-C320-BP	1.12 (28.4)	1 (25.4)
	1/4 Female NPT	-C320-A-FNS4	1.12 (28.4)	
	1/4" FR	-C320-A-FR4	1.74 (44.2)	
326	Blank Plug	-C326-BP	1.12 (28.4)	1 (25.4)
	1/4 Female NPT	-C326-A-FNS4	1.31 (33.3)	
	1/4" FR	-C326-A-FR4	1.74 (44.2)	
330	Blank Plug	-C330-BP	1.12 (28.4)	1 (25.4)
	1/4" Female NPT	-C330-A-FNS4	1.31 (33.3)	
	1/4" FR	-C330-A-FR4	1.74 (44.2)	
346	Blank Plug	-C346-BP	1.12 (28.4)	1 (25.4)
	1/4" Female NPT	-C346-A-FNS4	1.31 (33.3)	
	1/4" FR	-C346-A-FR4	1.88 (47.8)	
350	Blank Plug	-C350-BP	1.12 (28.4)	1 (25.4)
	1/4" Female NPT	-C350-A-FNS4	1.31 (33.3)	
	1/4" FR	-C350-A-FR4	1.88 (47.8)	
510	Blank Cap	-C510-BC	1.37 (34.8)	1 1/4 (31.8)
	1/4" Female NPT	-C510-A-FNS4	2.0 (50.8)	
	1/4" FR	-C510-A-FR4	2.0 (50.8)	
540①	Blank Plug	-C540-BP	1.12 (28.4)	1 (25.4)
	1/4" Female NPT	-C540-A-FNS4	1.25 (31.8)	
	1/4" FR	-C540-A-FR4	1.87 (47.5)	
580	Blank Cap	-C580-BC	1.37 (34.8)	1 1/4 (31.8)
	1/4" Female NPT	-C580-A-FNS4	2.0 (50.8)	
	1/4" FR	-C580-A-FR4	2.0 (50.8)	

① *Cleaned and packaged for Oxygen Service.*

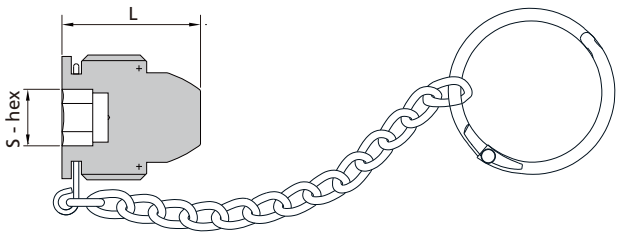
Female NPT

CGA 350

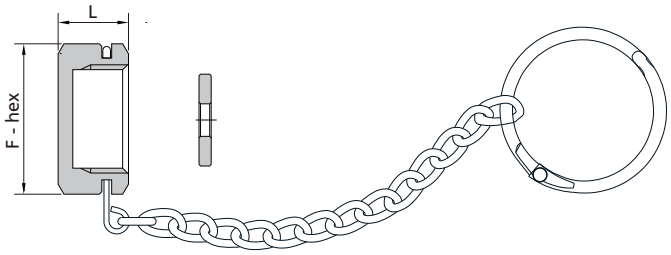


CGA Number	End Connection	Assembly Basic Ordering Number	Dimensions, in. (mm)	
			L	F
590	Blank Cap	-C590-BC	1.37 (34.8)	1 1/4 (31.8)
	1/4 Female NPT	-C590-A-FNS4	2.0 (50.8)	
	1/4" FR	-C590-A-FR4	2.0 (50.8)	
660	Blank Plug	-C660-BP	0.88 (22.4)	1 1/8 (28.6)
	1/4 Female NPT	-C660-A-FNS4	1.25 (31.8)	
	1/4" FR	-C660-A-FR4	1.5 (38.1)	
670	Blank Plug	-C670-BP	0.88 (22.4)	
	1/4 Female NPT	-C670-A-FNS4	1.25 (31.8)	
	1/4" FR	-C670-A-FR4	1.5 (38.1)	
678	Blank Plug	-C678-BP	1.0 (25.4)	
	1/4 Female NPT	-C678-A-FNS4	1.38 (35.1)	
	1/4" FR	-C678-A-FR4	1.5 (38.1)	
679	Blank Plug	-C679-BP	0.88 (22.4)	
	1/4 Female NPT	-C679-A-FNS4	1.25 (31.8)	
	1/4" FR	-C679-A-FR4	1.75 (44.5)	

Cylinder Valve Outlet Plugs

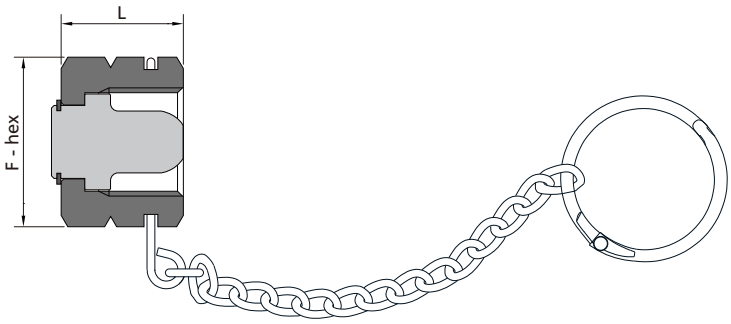


CGA Number	Basic Ordering Number	Dimensions, in. (mm)	
		L	S
510	-C510-PG	1.0 (25.4)	3/8 (9.5)
580	-C580-PG		
590	-C590-PG		



CGA Number	Basic Ordering Number	Dimensions, in. (mm)	
		L	F
320	-C320-CP	0.54 (13.7)	1 (25.4)
326	-C320-CP		
330	-C330-CP		
346	-C320-CP		
660	-C660-CP		1 1/4 (31.8)
670	-C670-CP		
678	-C670-CP		
679	-C670-CP		

Notes:
1. *PTFE is standard material for gasket. If PCTFE is required, please add a suffix of "-k" to the ordering number.*
   Example: S4-C330-CP-K
2. *The caps listed above are only intended to keep valve outlets clean and protect its threads. They shouldn't be used to contain pressure if the valve leaks or is opened by mistake.*



CGA Number	Basic Ordering Number	Dimensions, in. (mm)	
		L	F
350	-C350-CP	0.82 (20.8)	1 1/8 (28.6)

Complete Pigtail Connections
(Including Nipples, Nuts, Gaskets and Blank Plugs or Caps)

Dimensions are in. (mm).

Fig.1

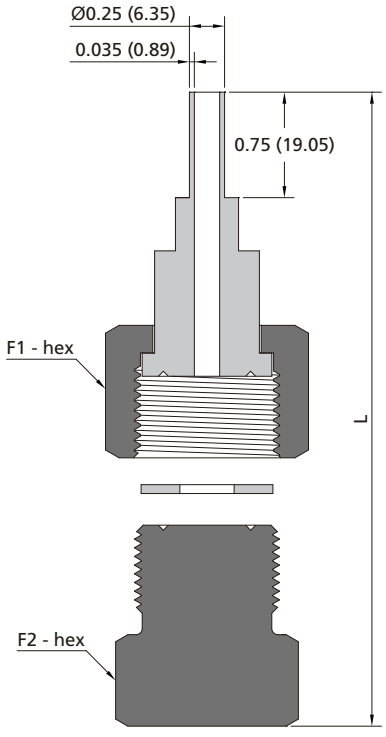
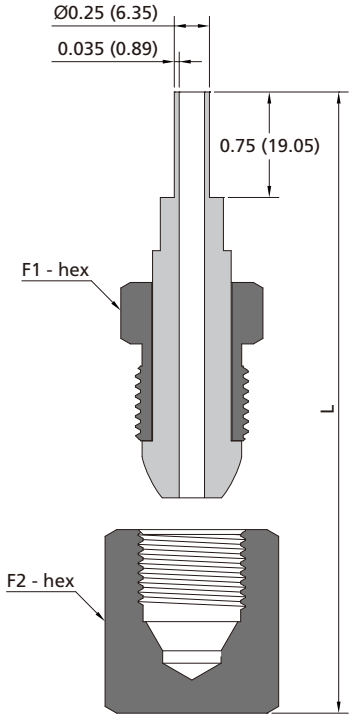


Fig.2



CGA Number	Ref. Fig.	Assembly Basic Ordering Number	Gasket Basic Ordering Number	Dimensions, in. (mm)		
				L	F1	F2
296	Fig.2	-C296-TB4-A	——	3.03 (77.0)	7/8 (22.3)	1 1/8 (28.6)
320	Fig.1	-C320-TB4-A	-C320-GT	2.96 (75.2)	1 1/8 (28.6)	1 (25.4)
326	Fig.1	-C326-TB4-A	——	3.01 (76.5)		
330	Fig.1	-C330-TB4-A	-C320-GT	2.96 (75.2)		
346	Fig.1	-C346-TB4-A	——	2.97 (75.4)		
350	Fig.1	-C350-TB4-A	——	2.96 (75.2)		
510	Fig.2	-C510-TB4-A	——	3.03 (77.0)		1 1/4 (31.8)
540①	Fig.1	-C540-TB4-A	——	2.96 (75.2)		1 (25.4)
580	Fig.2	-C580-TB4-A	——	3.03 (77.0)		1 1/4 (31.8)
590	Fig.2	-C590-TB4-A	——	3.03 (77.0)		
660	Fig.1	-C660-TB4-A	-C660-GT	2.96 (75.2)	1 1/4 (31.8)	1 1/8 (28.6)
670	Fig.1	-C670-TB4-A	-C660-GT	2.96 (75.2)		
678	Fig.1	-C678-TB4-A	-C678-GT	3.08 (78.2)		
679	Fig.1	-C679-TB4-A	-C679-GT	2.96 (75.2)		

Note:
PTFE is standard material for gasket. If PCTFE is required, please add a suffix of "-k" to the ordering number.
Example: 6L-C330-TB4-A-K
① *Cleaned and packaged for Oxygen Service.*

Assembly Torque For CGA Cylinder Connections

CGA NO.	Recommended Torque		CGA NO.	Recommended Torque	
	ft-lb	N·m		ft-lb	N·m
170①	10~15	14~20	510	35~50	47~68
180①	10~15	14~20	540	40~60	54~81
290	30~45	41~61	580	40~60	54~81
296	35~50	47~68	590	40~60	54~81
320①	20~30	27~41	660①	30~45	41~61
326	25~35	34~47	670①	30~45	41~61
330①	20~30	27~41	678①	25~35	34~47
346	35~50	47~68	679①	25~35	34~47
350	35~50	47~68			

CGA DISS NO.	Recommended Torque		Gasket Material
	ft-lb	N·m	
632-728	35~40	47~53.8	Nickel
	12~15	16~20.1	PCTFE

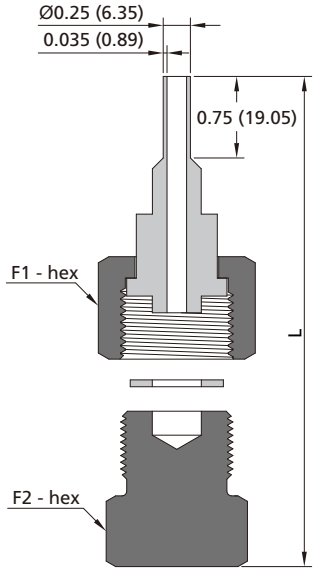
① *Gasket for seal: PTFE or PCTFE.*

DIN Series

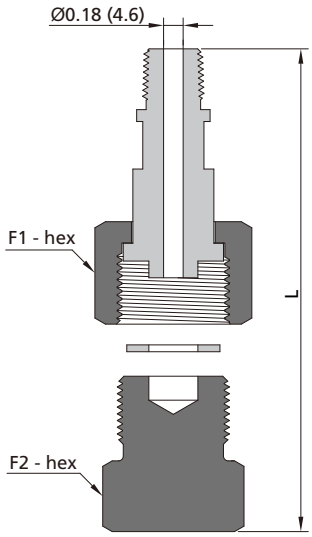
- Designed and verified in compliance with the DIN477-1 standard
- For nipples with TB or FR connections, inner surface electropolished to an average of Ra 9 µin. (0.23 µm); Ra 32 µin. (0.8 µm) for nipples with NPT connections
- With special cleaning and packaging, applicable to oxygen-enriched atmospheres
- Maximum allowable leak rate: 1×10^{-9} std·cm^3/s
- DIN series cylinder connections are available with a variety of end connection types, such as 1/4" TB, 3/8" TB, 1/2" TB, 1/8 NPT, 1/4 NPT, 3/8 NPT, 1/2 NPT, 1/4" FR, and 1/2" FR. Please note that the maximum working pressures for cylinder connections with 3/8" TB and 1/2" TB end connections do not comply with the requirements of the DIN 477-1 standard However, all other end connection types meet the standard's requirements
  Maximum working pressure for cylinder connection with 3/8" TB end connection is 3300 psig
  Maximum working pressure for cylinder connection with 1/2" TB end connection is 3700 psig
- Maximum working pressures for cylinder connections are calculated at room temperature in accordance with DIN477-1, ASME B31.3, and ASME B31.1 standards
- For other end connection types, please contact FITOK Group or our authorized distributors

Complete Pigtail Connections (Including Nipples, Nuts, Gaskets and Blank Plugs)

Dimensions are in. (mm).



1/4" Butt Weld (TB)



Male NPT

DIN Number	Assembly Basic Ordering Number	Gasket Basic Ordering Number	Dimensions, in.(mm)		
			L	F1	F2
1	-DIN1-TB4-A	-DIN1-GT	2.96 (75.2)	1 1/4 (31.8)	1 1/4 (31.8)
	-DIN1-NS4-A		4.25 (108)		
5	-DIN5-TB4-A	-DIN5-GT	3.09 (78.5)		
	-DIN5-NS4-A		4.41 (112)		
6	-DIN6-TB4-A	-DIN1-GT	2.96 (75.2)		
	-DIN6-NS4-A		4.25 (108)		
8	-DIN8-TB4-A	-DIN5-GT	3.09 (78.5)		
	-DIN8-NS4-A		4.41 (112)		
11	-DIN11-TB4-A	-DIN11-GT	2.88 (73.2)	7/8 (22.3)	11/16 (17.5)
	-DIN11-NS4-A		4.14 (105.2)		
14	-DIN14-TB4-A		2.88 (73.2)	1 1/16 (27.0)	7/8 (22.3)
	-DIN14-NS4-A		4.15 (105.5)		

Notes: 1. Above components can be ordered separately.
2. PTFE is standard material for gasket. If PCTFE is required, please add a suffix of "-k" to the ordering number.
Example: 6L-D1N1-TB4-A-K

Gas Connection Assignment Table①

GAS	Formula	CGA DISS	CGA	DIN	JIS
Ammonia	NH_3	720	705	DIN6	22-R
Argon	Ar	718	580	DIN6	22-R or 23-R
Arsenic Pentafluoride	$As F_5$	642	—	—	—
Arsine	$As H_3$	632	350	—	22-L
Boron Trichloride	BCl_3	634	660	DIN8	—
Boron Trifluoride	BF_3	642	330	DIN8	22-L
Carbon Dioxide	CO_2	716	320	DIN6	—
Carbon Monoxide	CO	724	350	DIN5	22-L
Chlorine	Cl_2	728	—	DIN8	26-R
Diborane	B_2H_6	632	350	—	22-L
Dichlorosilane	SiH_2Cl_2	636	678②	DIN5	—
Diethylzinc	$Zn(C_2H_5)_2$	726	510②	—	—
Diethyltelluride	$(C_2H_5)_2Te$	726	—	—	—
Dimethylzinc	$(CH_3)_2Zn$	726	—	—	—
Disilane	Si_2H_6	632	—	—	—
Germane	GeH_4	632	350 or 660	—	—
Halocarbon 11	CCl_3F	716	660	—	—
Halocarbon 115	$ClCF_2CF_3$	716	660	DIN6	—
Halocarbon 12	CCl_2F_2	716	660	DIN6	—
Halocarbon 13	$ClCF_3$	716	660	DIN6	—
Halocarbon 14	CF_4	716	320 or 580	DIN6	—
Halocarbon 23	CHF_3	716	660	DIN6	—
Halocarbon 116	F_3CCF_3	716	660	—	—
Helium	He	718	580	DIN6	22-R or 23-R
Hydrogen	H_2	724	350	DIN1	22-L
Hydrogen Bromide	HBr	634	330	DIN8	26-R
Hydrogen Chloride	HCl	634	330	DIN8	26-R
Hydrogen Fluoride	HF	638	660 or 670	—	26-R
Hydrogen Sulfide	H_2S	722	330	DIN5	—
Krypton	Kr	718	580	DIN6	22-R or 23-R
Neon	Ne	718	580	DIN6	22-R or 23-R
Nitrogen	N_2	718	580	DIN10	22-R or 23-R
Nitrogen Trifluoride	NF_3	640	330 or 670	DIN8	—
Nitrous Oxide	N_2O	712	326	DIN8	—
Oxygen	O_2	714	540	DIN9	22-R or 23-R
Perfluoropropane	$CF_2(CF_3)_2$	716	660	—	—
Phosphine	PH_3	632	350 or 660	DIN1	—
Phosphorus Pentafluoride	PF_5	642	330 or 660	—	—
Silane	SiH_4	632	350	—	—
Silicon Tetrachloride	$SiCl_4$	636	—	—	—
Silicon Tetrafluoride	SiF_4	642	330	—	22-L
Sulphur Hexafluoride	SF_6	716	590	DIN6	26-R
Trichlorosilane	$SiHCl_3$	636	—	—	—
Triethylaluminum	$(C_2H_5)_3Al$	726	510②	—	—
Tungsten Hexafluoride	WF_6	638	670	DIN8	—
Xenon	Xe	718	580	DIN6	22-R

① Consult CGA, DIN, JIS, or ISO organization specifications for information on working pressure.
② Information in this table is for reference only.

C Technical References

Common Terms and Definitions

Inlet Pressure

The pressure of media of gas or liquid on the inlet port of the regulator or valve;
Typical units of measure: psig, bar and MPa.

Outlet Pressure

The pressure of media of gas or liquid on the outlet port of the regulator or valve.

Accuracy

The variation in control pressure which occurs under steady state conditions within the control range of a regulator.

Sensitivity

The ability of a pressure regulator to respond to change in discharge conditions: pressure, flow, temperature, etc.

Flow Coefficient (Cv)

A flow coefficient is numerically equal to the number of U.S. Gallons of water at 60°F/16°C that will flow through a valve or regulator in one minute when the pressure differential between the inlet and outlet is 1 psi. When gas is used instead of liquid, the equation is modified to account for the use of a compressible fluid. For a regulator, Cv is determined when the regulator is wide open and not regulating. When determining flow performance use actual flow curves.

Leakage - External

The loss of fluid from the external surfaces or joints of a regulator or valve. Example: From the body-bonnet-diaphragm joint. Leakage to atmosphere. The leakage rate is measured in std·cm^3/s Helium.

Leakage - Internal

The loss of fluid through a regulator or valve, between pressure zones normally expected to be sealed. Example: Between the inlet pressure and the outlet pressure zones.

Load Element

One of the three basic elements of a pressure reducing regulator. It provides the means by which the operator can set the force that determines the control pressure of a regulator. This element includes the spring and the stem.

Sensing Element

One of the three basic elements of a pressure reducing regulator. It senses the changes of the outlet pressure and acts as a physical connection between the load element and control element.

Control Element

One of the three basic elements of a pressure regulator to reduce the high inlet pressure to a stable lower outlet pressure by adjusting the orifice.

Unbalanced Poppet

A poppet where the effective area of the poppet is influenced by the inlet pressure.

Balanced Poppet

A poppet where the effective area of the poppet is not influenced by the inlet pressure.

Gas Purity Values

Type	Degree	Purity Value	Max. Contamination (ppm)
Pure	2.5	99.5%	5000
	3.0	99.9%	1000
High Purity	3.5	99.95%	500
	4.0	99.99%	100
	4.5	99.995%	50
	5.0	99.999%	10
	5.5	99.9995%	5
	6.0	99.9999%	1.0
Ultra High Purity	7.0	99.99999%	0.1

How to Use the FITOK Flow Charts

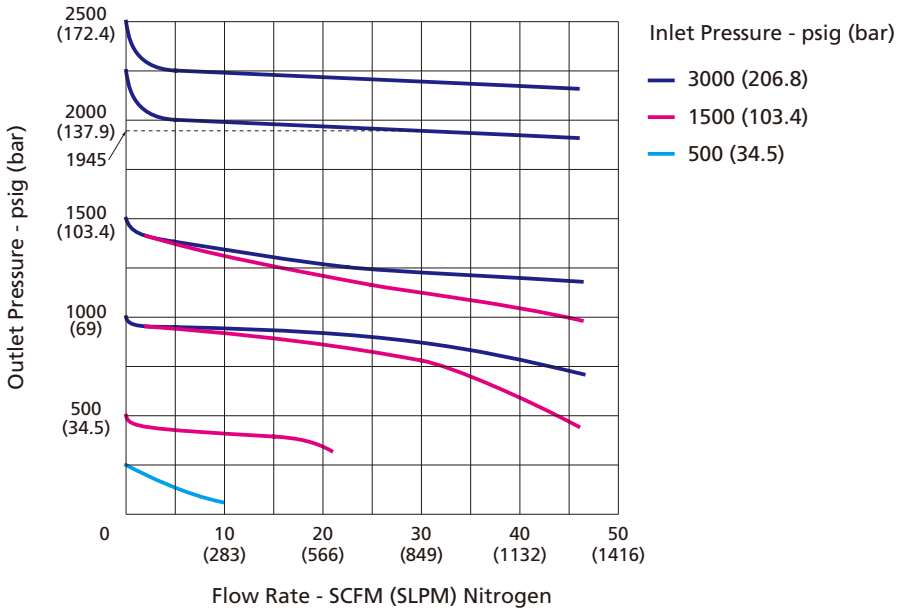
A FITOK Flow Chart is a graphic representation of test results in curves, showing the changes in outlet pressure of a regulator with the varying flow rate basing on different inlet pressures. The regulator is so designed that at the time the outlet pressure reaches the set pressure, the flow rate would be zero. The inlet pressure is indicated on the right end of each curve.

To use the FITOK Flow Charts, the first step is to select the chart that fits the following:
- Regulator model
- Expected flow range
- Inlet pressure range
- Outlet pressure range

Subsequently, select a curve, if available, plotted for the exact inlet pressure and set pressure of the outlet (zero flow). Locate the set pressure on the vertical axis. Follow the curve until it crosses the vertical line corresponding to the desired flow rate. Read horizontally from the cross point to the vertical axis to locate the actual working pressure for this flow rate. If no curve is plotted for the exact pressure, extrapolate a new curve between and referring to the two closest existing curves.

Example:
Using the flow chart to determine the pressure drop (from the set pressure to the outlet pressure at 30 SCFM condition).
Given Conditions: Inlet pressure=3000 psig, Set pressure=2250 psig
Steps: 1. Locate the curve based on inlet pressure (3000 psig) and set outlet pressure (2250 psig)
2. Follow the curve until it crosses the vertical line corresponding to 30 SCFM;
3. Read horizontally from the cross point to the vertical axis. The corresponding pressure read is 1945 psig. Therefore, the pressure drop is 305 psig.

Flow Chart



Notes:
1. The performance of regulator is more accurate in the range where the curve is comparatively flat.
2. All test results on the FITOK Flow Charts are based on utilization of nitrogen as a medium in standard testing conditions. Please contact FITOK for additional information.

Conversion Factors

Pressure

From \ To	psi	bar	atm	KPa	ft. of H_2O	in. of H_2O	mm of Hg	in. of Hg	Kg/cm^2
psi	1	0.068948	0.06805	6.89465	2.3089	27.708	51.175	2.036	0.070307
bar	14.5038	1	0.98692	100	33.4883	401.8596	750.062	29.53	1.0197
atm	14.696	1.01325	1	101.3171	33.932	407.1827	760	29.921	1.0332
KPa	0.14504	0.010	0.00987	1	0.33456	4.01472	7.5006	0.29613	0.0102
ft. of H_2O	0.433107	0.029891	0.02947	2.989	1	12	22.4198	0.882646	0.03048
in. of H_2O	0.03609	0.002499	0.00246	0.0249089	0.08333	1	1.86832	0.073556	0.00254
mm of Hg	0.019337	0.001333	0.00132	0.133322	0.044603	0.535240	1	0.03937	0.00136
in. of Hg	0.49115	0.033864	0.03342	3.376895	1.134	13.6	25.4	1	0.034532
Kg/cm^2	14.22334	0.980665	0.9678	98.03922	32.8084	393.7008	735.5592	28.95903	1

Flow

From \ To	cm^3/min	cm^3/sec	ft^3/hr	ft^3/min	m^3/hr	m^3/min	L/hr	L/min
cm^3/min	1	0.0166667	0.0021189	0.0000353	0.00006	0.000001	0.06	0.001
cm^3/sec	60	1	0.127134	0.0021189	0.0036	0.00006	3.6	0.06
ft^3/hr	471.9474	7.86579	1	0.0166667	0.0283168	0.0004719	28.31685	0.4719474
ft^3/min	28316.85	471.9474	60	1	1.699008	0.0283168	1699.008	28.31686
m^3/hr	16666.67	277.7778	35.31467	0.5885777	1	0.0166667	1000	16.66667
m^3/min	1000000	16666.67	2118.876	35.31467	60	1	60000	1000
L/hr	16.66667	0.2777778	0.0353147	0.0005885	0.001	0.0000167	1	0.0166667
L/min	1000	16.66667	2.118876	0.0353147	0.06	0.001	60	1

Density

From \ To	gms/cm^3	kg/m^3	lbs/ft^3	lbs/in^3	lbs/U.S. gal
gms/cm^3	1	1000	62.428	0.0361273	8.3454
kg/m^3	0.001	1	0.062428	3.61273×10^{-5}	0.0083454
lbs/ft^3	0.0160185	16.018463	1	5.78704×10^{-4}	0.13368
lbs/in^3	27.679905	27679.9	1728	1	231
lbs/U.S. gal	0.1198264	119.8264	7.4805195	0.004329	1

Material Compatibility for Gases

Codes

1 Recommended
2 Use with Limitations
3 Not Applicable
4 Insufficient Data

Material / Media	Metals						Plastics				Elastomers		
	Copper	Brass	Aluminum	SS	Hastelloy C 22	Monel	PCTFE	Teflon PTFE	PEEK	Polyimide	FKM	Buna-N	EPDM
Acetylene	3	2	1	1	1	1	1	1	4	4	1	1	1
Ammonia	3	3	2	1	1	1	1	1	4	3	3	2	1
Argon	1	1	1	1	1	1	1	1	1	1	1	1	1
Argon/Methane	1	1	1	1	1	1	1	1	1	1	1	1	3
Arsine	3	2	3	1	1	1	1	1	4	4	1	4	1
Boron Trichloride	3	3	3	2	1	1	1	1	4	4	4	3	4
Boron Trifluoride	3	3	3	2	1	1	1	1	4	4	4	3	4
N-Butane	1	1	1	1	1	1	1	1	1	1	1	1	4
Carbon Dioxide	1	1	1	1	1	1	1	1	1	1	1	1	1
Carbon Monoxide	1	1	1	1	1	1	1	1	4	4	1	1	1
Chlorine	3	3	3	2	1	1	1	1	4	2	1	3	1
Deuterium	1	1	1	1	1	1	1	1	1	1	1	1	4
Diborane	1	1	1	1	1	1	1	1	1	1	1	3	4
Ethane	1	1	1	1	1	1	1	1	1	1	1	1	3
Ethylene	1	1	1	1	1	1	1	1	1	1	1	1	3
Fluorine	2	3	2	2	2	1	2	1	3	3	3	3	3
Hydrogen	1	1	1	1	1	1	1	1	1	1	1	1	1
Hydrogen Chloride	3	3	3	2	1	1	1	1	4	2	2	3	1
Hydrogen Flouride	3	3	3	3	2	1	1	1	4	4	4	3	1
Hydrogen Sulphide	3	3	3	1	1	4	4	4	4	4	1	4	1
Hydrogen Lodide	3	3	3	4	4	4	4	4	4	4	4	4	4
Helium	1	1	1	1	1	1	1	1	1	1	1	1	1
Hexafluoro Ethane	1	1	1	1	1	1	2	1	4	4	4	4	4

Material / Media	Metals						Plastics				Elastomers		
	Copper	Brass	Aluminum	SS	Hastelloy C 22	Monel	PCTFE	Teflon PTFE	PEEK	Polyimide	FKM	Buna-N	EPDM
Isobutene	1	1	1	1	1	1	1	1	1	1	1	1	3
Isobutane	1	1	1	1	1	1	1	1	1	1	1	1	3
Krypton	1	1	1	1	1	1	1	1	1	1	1	1	4
Methane	1	1	1	1	1	1	1	1	1	1	1	1	3
Methyl Chloride	4	4	3	1	1	4	4	1	4	4	1	3	3
Methyl Mercaptan	3	2	1	1	4	4	1	1	4	4	4	4	4
Neon	1	1	1	1	1	1	1	1	1	1	1	1	1
Nitrogen	1	1	1	1	1	1	1	1	1	1	1	1	1
Nitrous Oxide	1	1	1	1	1	1	2	1	1	1	1	1	4
Nitrogen Dioxide	4	2	2	1	4	2	1	1	4	4	4	4	4
Nitrogen Trifluoride	2	4	4	2	4	1	4	4	4	4	4	4	4
Nitrogen Monoxide	3	3	1	1	1	3	1	1	4	4	4	4	4
Phosphine	2	1	2	1	1	1	1	1	4	4	2	4	1
Propane	1	1	1	1	1	1	1	1	1	1	1	1	3
Propylene	1	1	1	1	1	1	1	1	1	1	1	3	3
Oxygen	1	1	1	1	1	1	1	1	1	1	1	1	1
Sulphur Dioxide	2	2	2	1	1	4	1	1	4	4	3	3	1
Sulphur Hexafluoride	1	1	1	1	1	1	1	1	1	1	1	1	1
Silane	1	1	1	1	1	1	1	1	4	4	1	4	4
Synthetic Air	1	1	1	1	1	1	1	1	1	1	1	1	1
Tetrafluoro Methane	1	1	1	1	1	1	1	1	4	4	1	4	4
Trifluoro Methane R23	1	1	1	1	1	1	1	1	4	4	4	4	4
Xenon	1	1	1	1	1	1	1	1	1	1	1	1	1

Ordering Details for Specialty Gas Application

Company _____

Name _____

Tel _____

E-mail _____

Application Information

Gas _____ Chemical formula _____ Purity _____

Upstream pressure _____ psig, _____ bar, _____ Mpa

Downstream pressure range _____ psig, _____ bar, _____ Mpa

Temperature _____°C _____°F Cv or flow rate _____

Application _____

_____

Pressure Regulator Data

Single-stage ☐ Dual-stage ☐

Material (mostly gas type dependent): Stainless Steel ☐ Brass ☐ Hastelloy ☐

◎ Cylinder pressure regulator ☐

Cylinder connection Yes ☐ No ☐

Purge unit Yes ☐ No ☐

◎ Panel and line pressure regulator ☐

2 ports ☐ 3 ports ☐ 4 ports ☐

◎ Pressure control panel ☐

Purge unit Yes ☐ No ☐

◎ Changeover system ☐

With line regulator Yes ☐ No ☐

◎ Point-of-use panel ☐

Warranty Information

FITOK products are backed by The FITOK Limited Lifetime Warranty. For a copy, contact FITOK Group or our authorized distributors.

info@fitok.com
www.fitok.com