

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

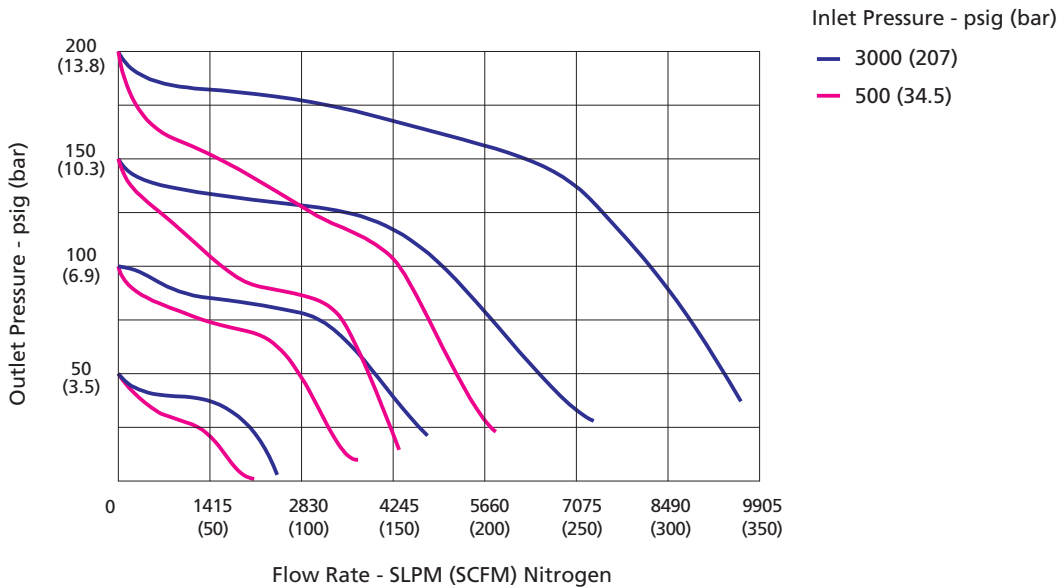
- Large diameter diaphragm offers enhanced pressure sensitivity
- Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance
- Reinforced diaphragm design extends diaphragm service life
- The bonnet includes a captured vent port, allowing media to be vented to a designated 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		PTFE, 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	$\leq 2 \times 10^{-10}$ std cm ³ /s (Helium)
		Outboard	$\leq 1 \times 10^{-9}$ std cm ³ /s (Helium)
	Internal		Max. Inlet Pressure 500 psig: $\leq 4 \times 10^{-8}$ std cm ³ /s (Helium)
			Max. Inlet Pressure 3000 psig: Bubble tight

Flow Data

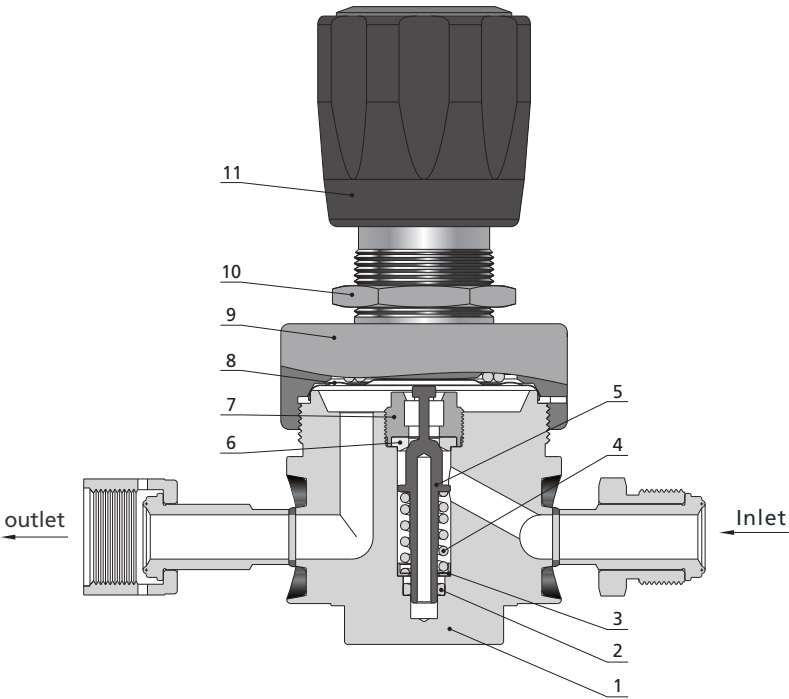


Process Specification

Item	Process Specification	Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
Material		316L SS, 316L SS VAR, Brass	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)	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

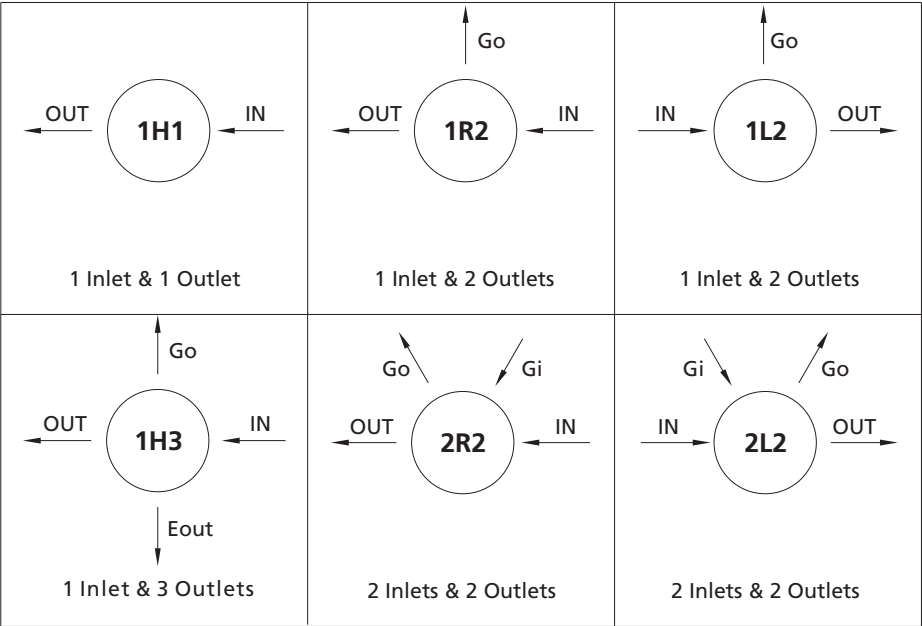
Note: For products with higher surface finish, please contact FITOK.

Major Materials of Construction



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

Porting Configurations



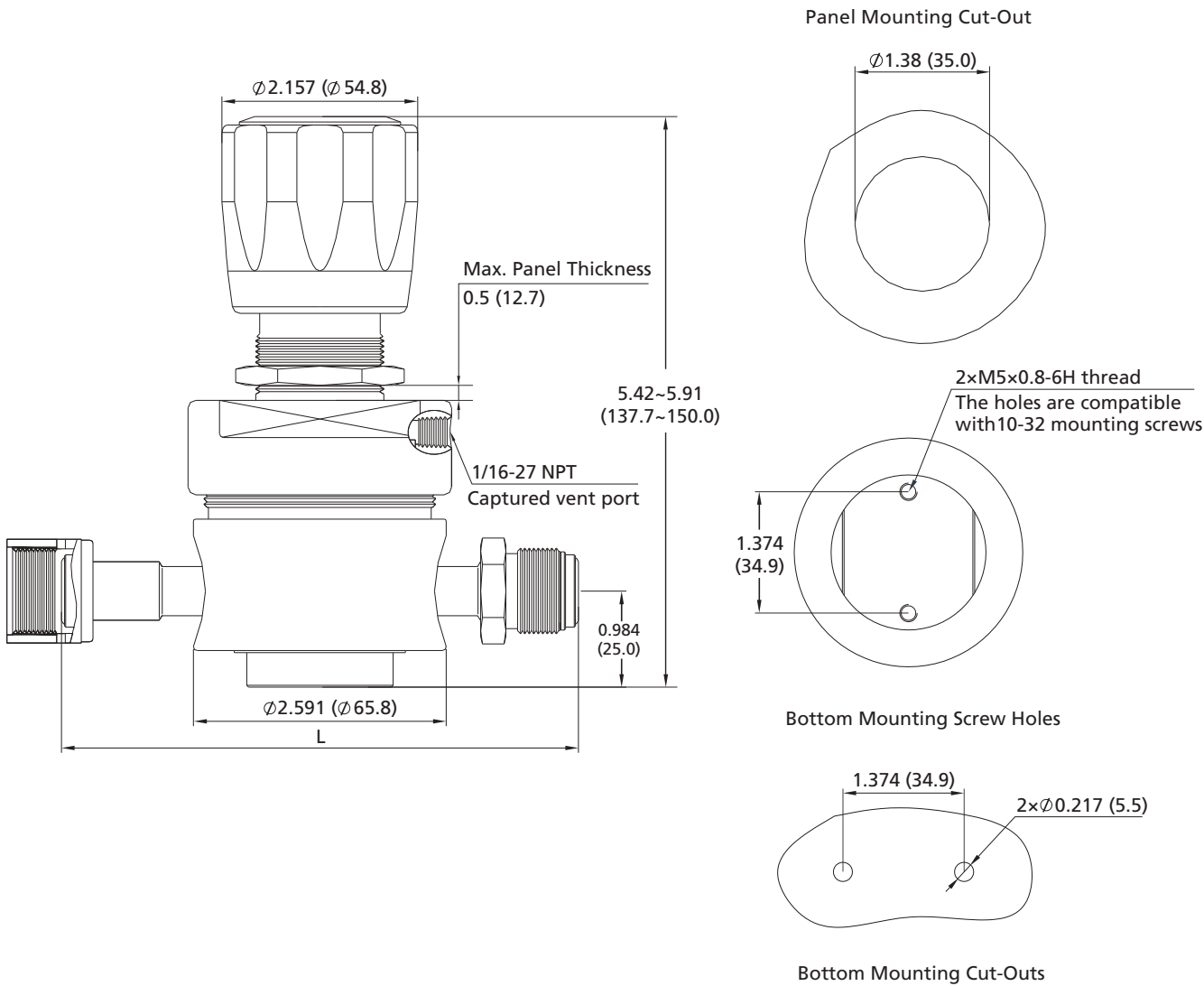
Porting Configuration Symbol

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.



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"×0.035"Tube Butt Weld	4.34 (110.2)
FFR8	1/2" Rotatable Female FR Metal Gasket Face Seal Fitting	5.28 (134.0)
RFR8	1/2" Rotatable Male FR Metal Gasket Face Seal 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 Metal Gasket Face Seal Fitting	5.99 (152.2)
RFR12	3/4" Rotatable Male FR Metal Gasket Face Seal Fitting	

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

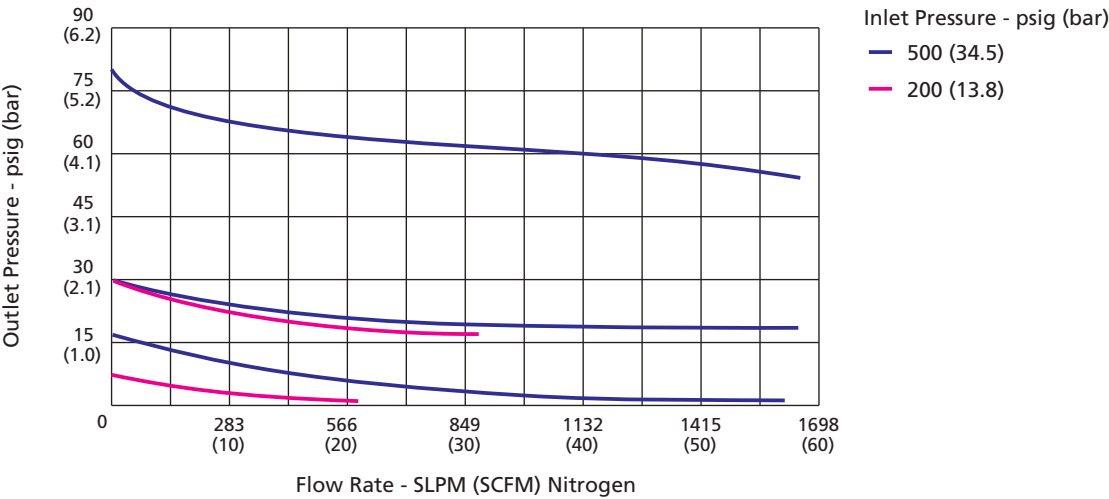
- ⦿ Large diameter diaphragm offers enhanced pressure sensitivity
- ⦿ Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance
- ⦿ Reinforced diaphragm design extends diaphragm service life
- ⦿ The bonnet includes a captured vent port, allowing media to be vented to a 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		-40 ~ 165 °F (-40 ~ 74 °C)	
SPE (Supply Pressure Effect)		4.5 psig per 100 psig source pressure change	
Leak Rate	External	Inboard	$\leq 2 \times 10^{-10}$ std cm ³ /s (Helium)
		Outboard	$\leq 1 \times 10^{-9}$ std cm ³ /s (Helium)
	Internal		No visible air bubble

Flow Data

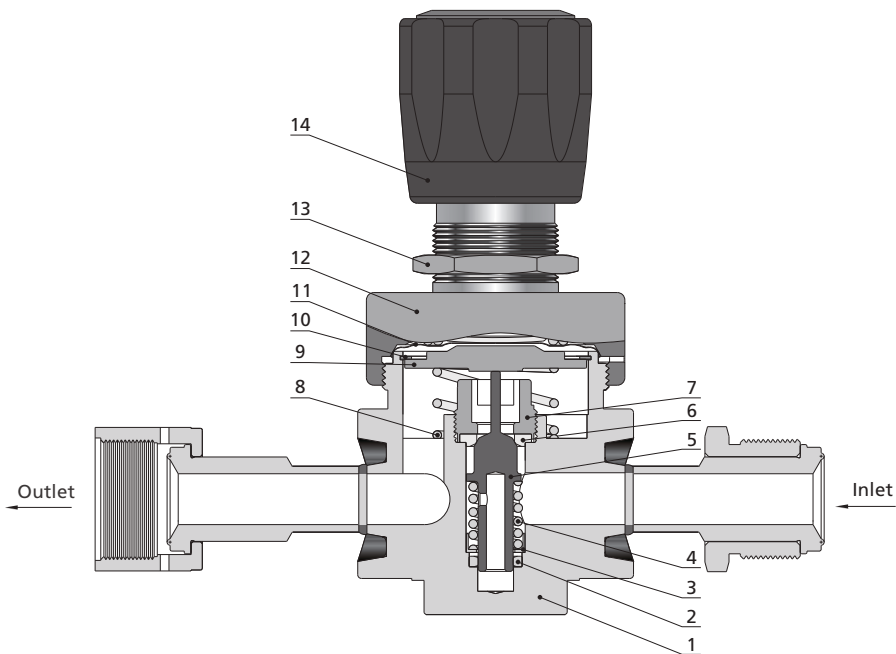


Process Specification

Item	Process Specification	
	Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
Material	316L SS, Brass	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)	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

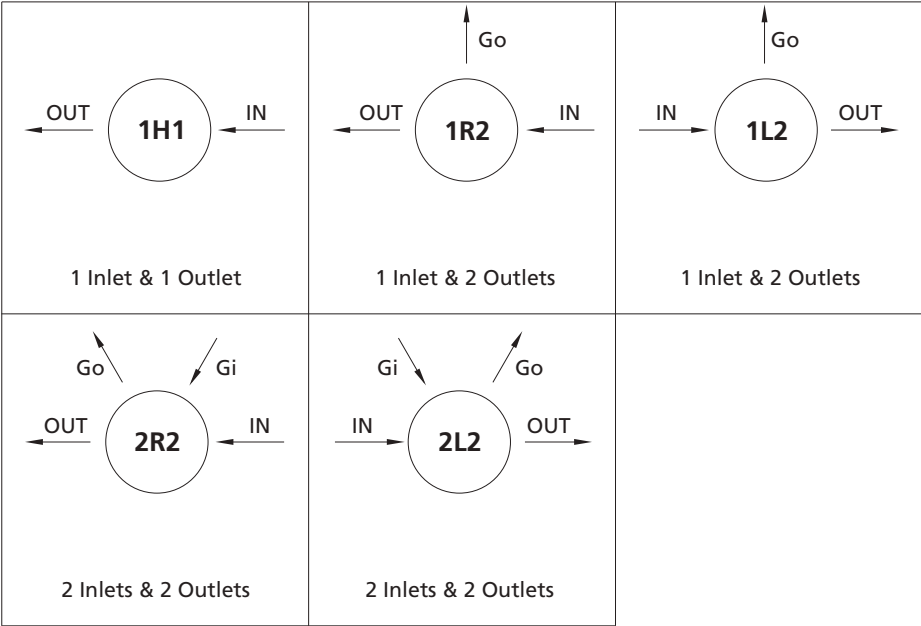
Note: For products with higher surface finish, please contact FITOK.

Major Materials of Construction



Item	Component	Material/Specification
1	Body	316L SS or 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 or Brass
13	Panel Nut	304 SS/ASTM A479
14	Handle	ABS

Porting Configurations



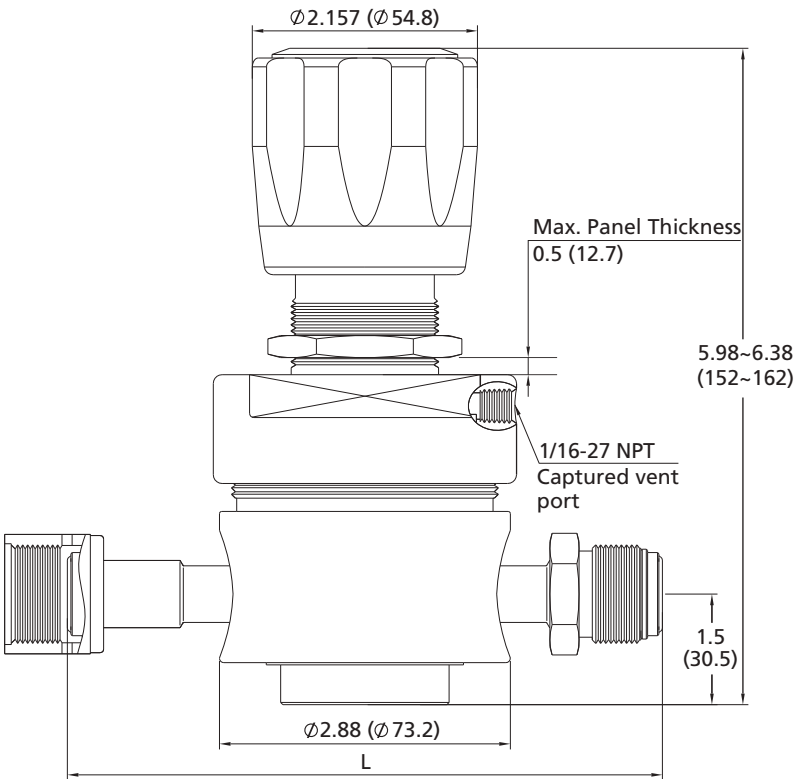
Porting Configuration Symbol

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

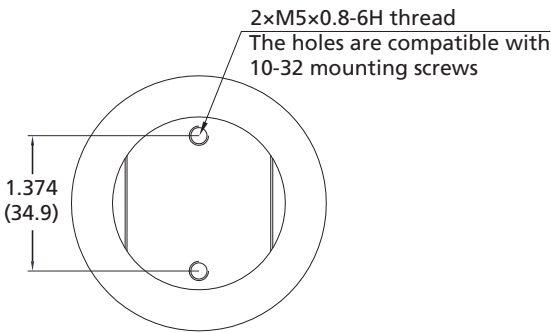
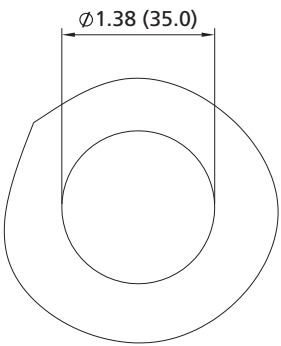
- Notes:
- 1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
 - 2. Porting configuration is viewed from the top.

Dimensions

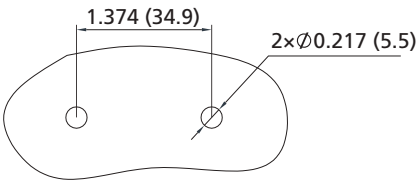
Dimensions, in inches (millimeters), are for reference only.



Panel Mounting Cut-Out



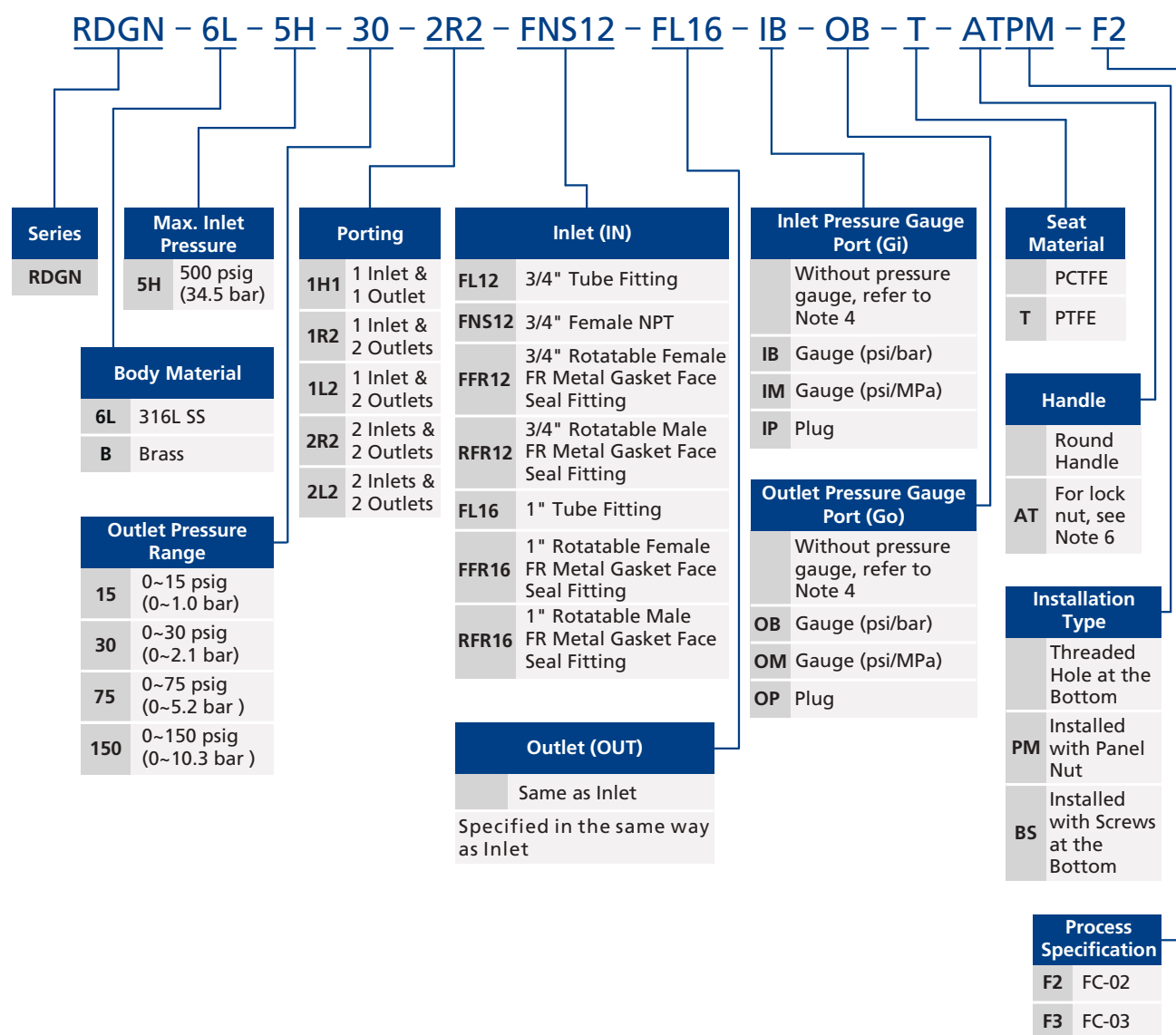
Bottom Mounting Screw Holes



Bottom Mounting Cut-Outs

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 Metal Gasket Face Seal Fitting	6.81 (173)
RFR12	3/4" Rotatable Male FR Metal Gasket Face Seal Fitting	
FL16	1" Tube Fitting	6.42 (163)
FFR16	1" Rotatable Female FR Metal Gasket Face Seal Fitting	7.21 (183)
RFR16	1" Rotatable Male FR Metal Gasket Face Seal Fitting	

Ordering Number Description



Notes:

- "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
- For Metal Gasket Face Seal Fitting ports, the port and body are orbital-welded integral structure by default.
- For NPT or Fractional Tube Fitting ports, the body port is 3/4" Female NPT by default. Other options are adapted from Male NPT.
- 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 Metal Gasket Face Seal Fitting.
- For the outlet relief valve, the set pressure is factory-set to 1.05-1.1 times the maximum outlet pressure by default.
- 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.

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

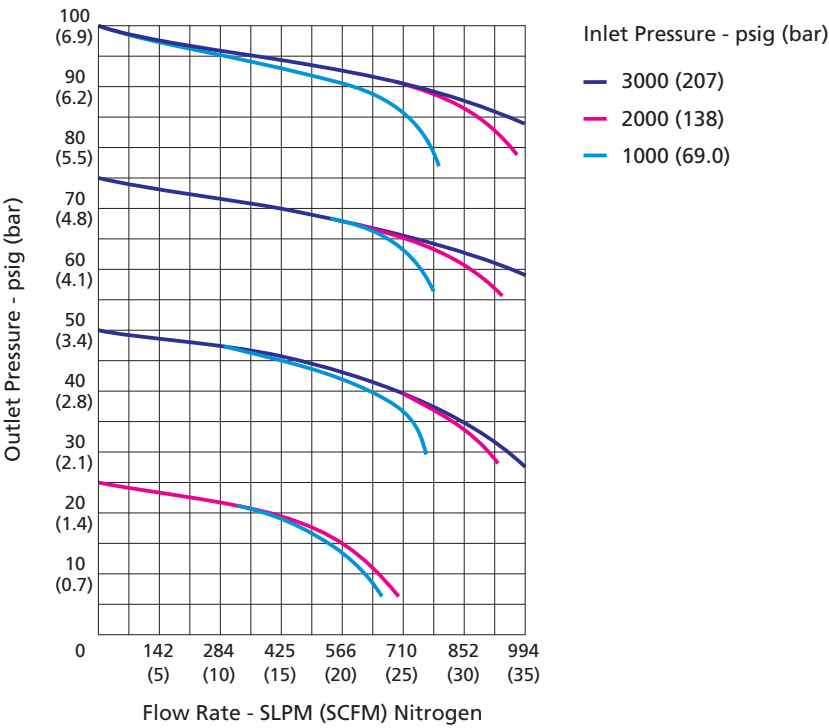
- ⦿ Lift poppet and diaphragm are made of Alloy C-276, offering excellent corrosion resistance
- ⦿ Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance
- ⦿ Reinforced diaphragm design extends diaphragm service life
- ⦿ The bonnet includes a captured vent port, allowing 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		-40 ~ 165 °F (-40 ~ 74 °C)	
SPE (Supply Pressure Effect)		0.5 psig per 100 psig source pressure change	
Leak Rate (Helium)	External	Inboard	≤2×10 ⁻¹⁰ std cm ³ /s
		Outboard	≤1×10 ⁻⁹ std cm ³ /s
	Internal		≤4×10 ⁻⁸ std cm ³ /s

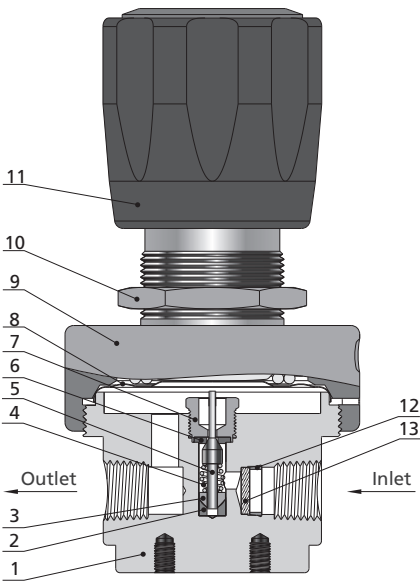


Flow Data



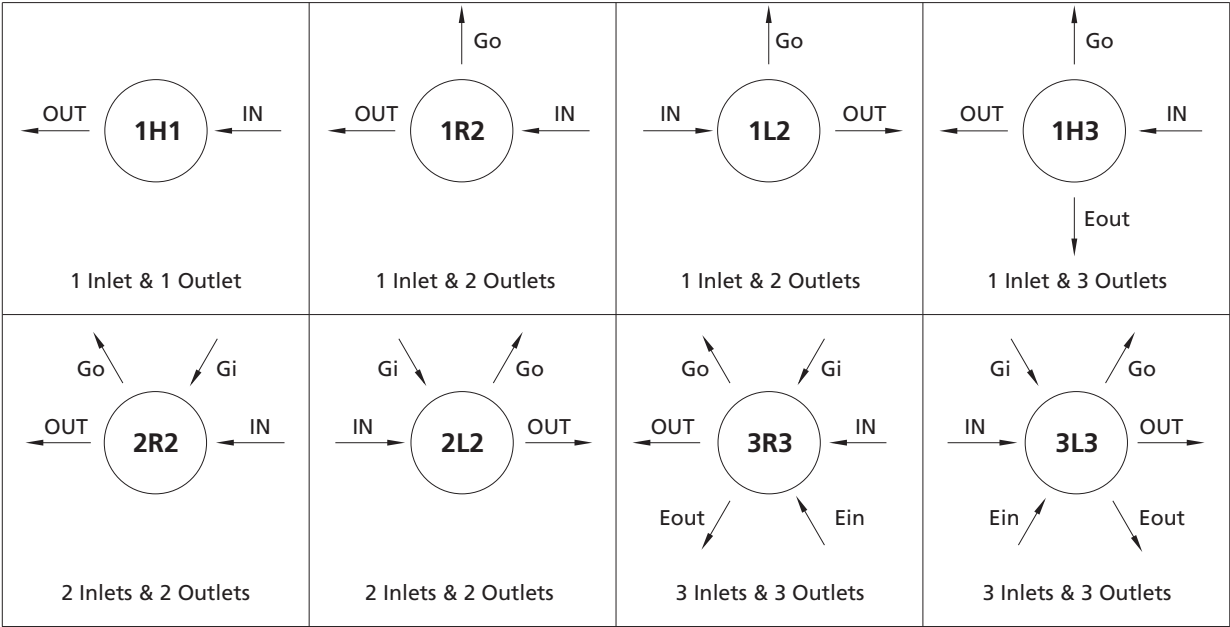
Process Specification	
Item	Special Cleaning and Packaging Process (FC-02)
Material	316L SS, 316L SS VAR, Brass
Wetted Surface Roughness	Ra 32 μin. (0.8 μm)
Polishing Process	Machine finished
Assembly Environment	In specially cleaned areas
Packaging	Double bagged

Major Materials of Construction



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

Porting Configurations



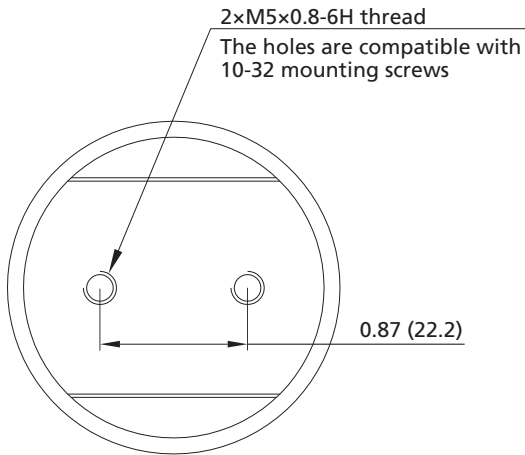
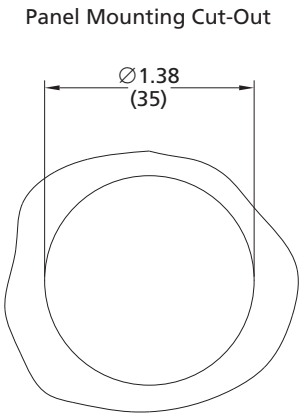
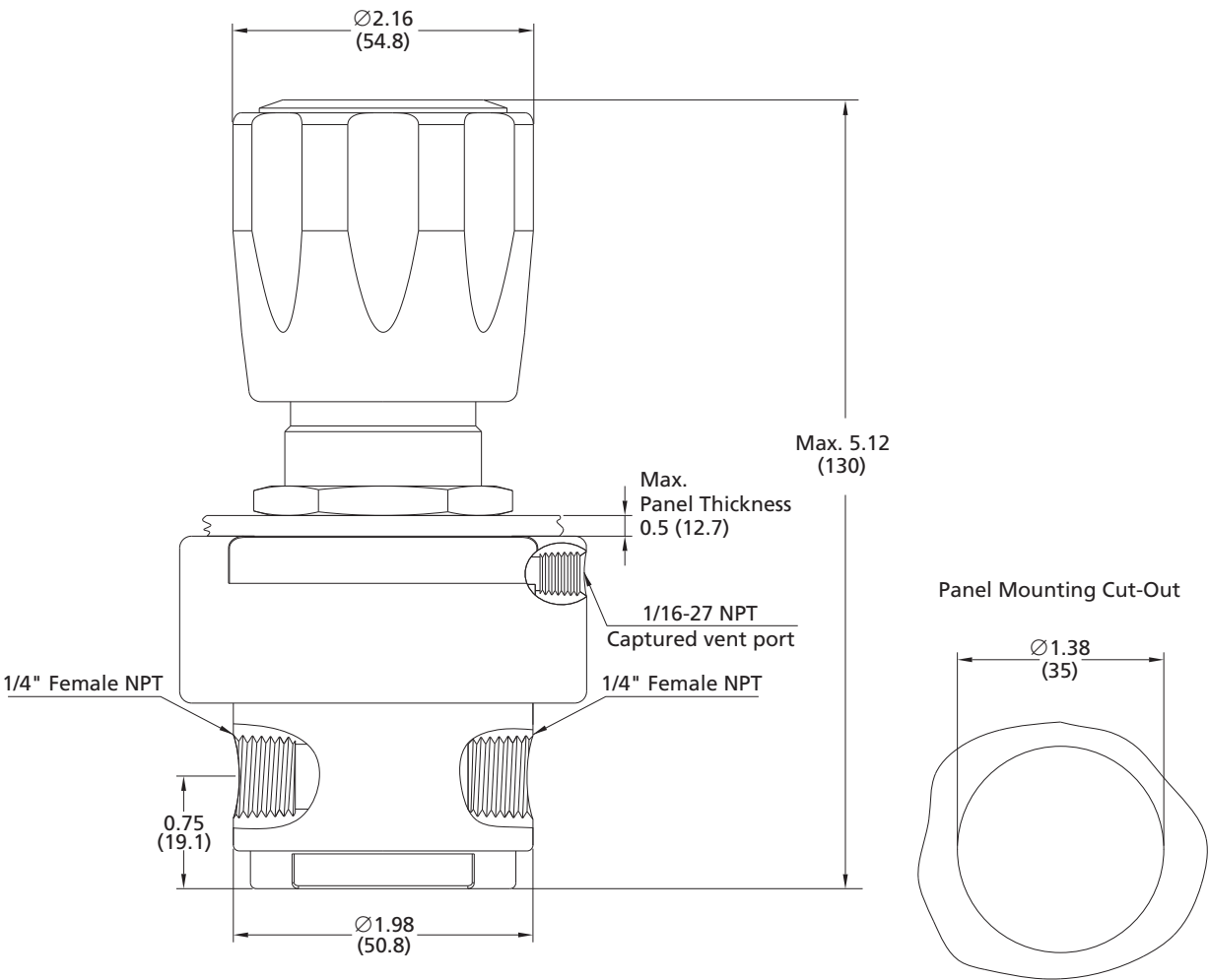
Porting Configuration Symbol

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

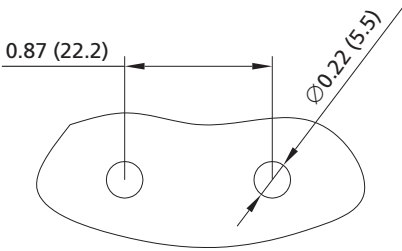
- Notes:
- 1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
 - 2. Porting configuration is viewed from the top.

Dimensions

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

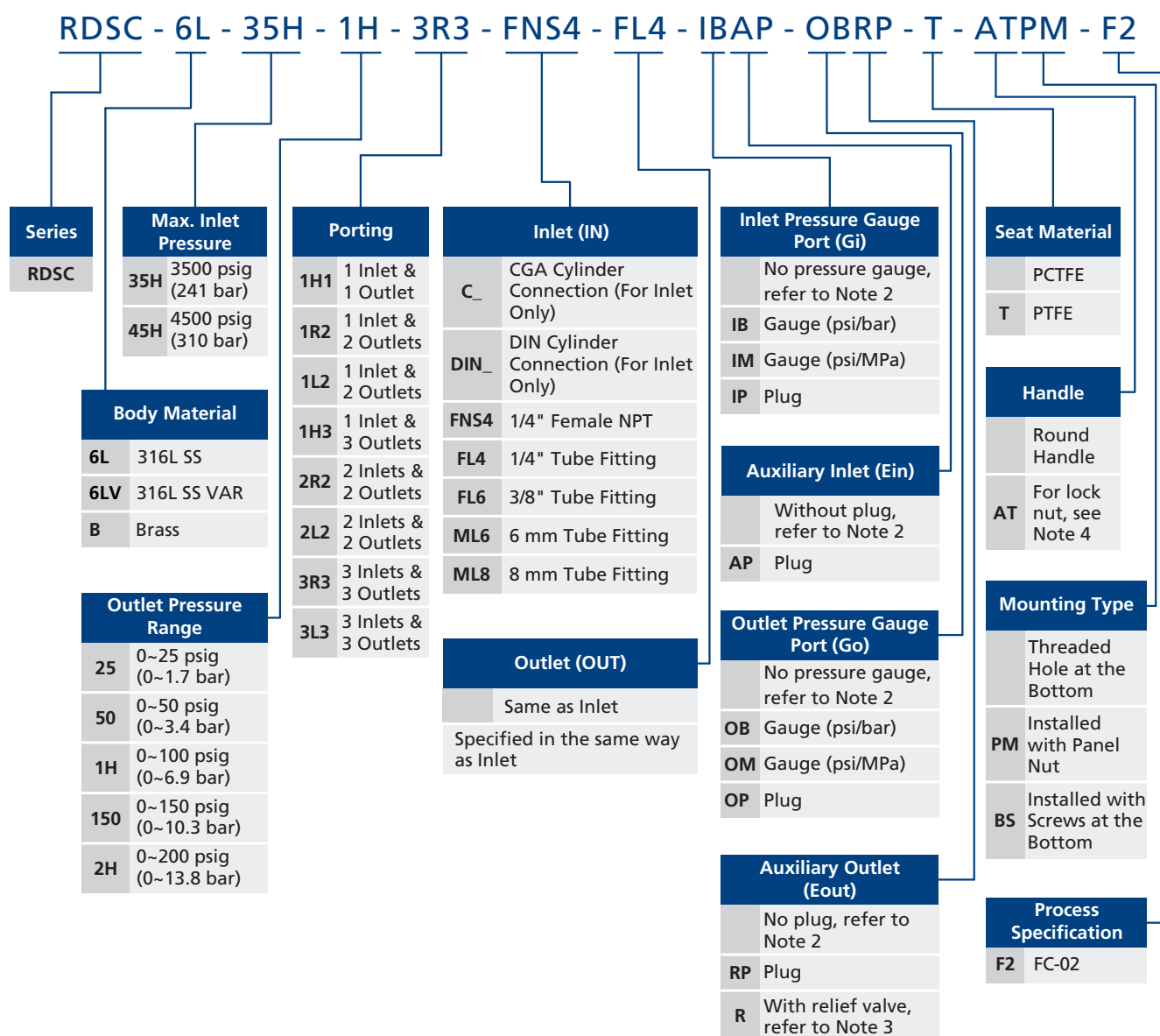


Bottom Mounting Screw Holes



Bottom Mounting Cut-Outs

Ordering Number Description



Notes:

- "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
- The body connection is 1/4" Female NPT by default. Other options are adapted from Male NPT.
- For the outlet relief valve, the set pressure is factory-set to 1.05-1.1 times the maximum outlet pressure by default.
- 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.