

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

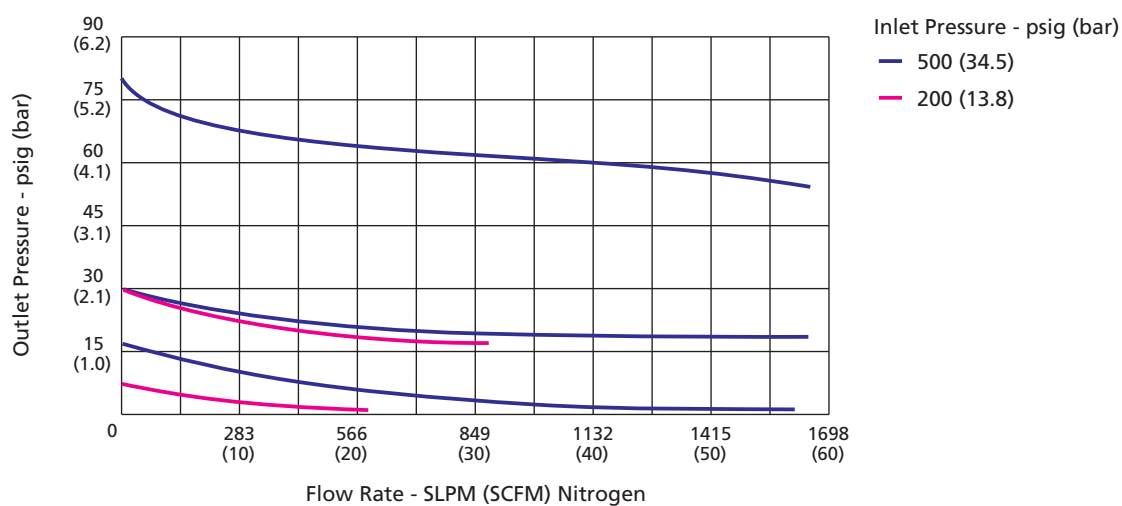
- ⦿ Large diameter diaphragm offers enhanced pressure sensitivity
- ⦿ Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance
- ⦿ Reinforced diaphragm design extends diaphragm service life
- ⦿ The bonnet includes a captured vent port, allowing media to be vented to a 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	≤ 2 × 10 ⁻¹⁰ std cm ³ /s (Helium)	
		Outboard	≤ 1 × 10 ⁻⁹ std cm ³ /s (Helium)	
	Internal		No visible air bubble	

Flow Data

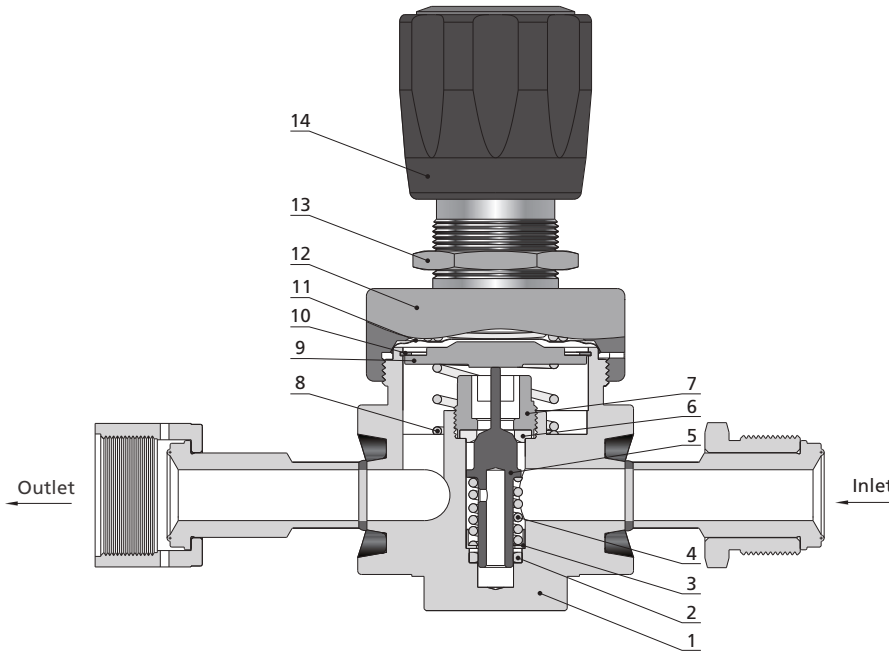


Process Specification

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 $\mu\text{in.}$ (0.5 μm) Threaded Connection or Tube Fitting Connection: Ra 32 $\mu\text{in.}$ (0.8 μm)	Face Seal Connection and Butt Weld Connection: Ra 10 $\mu\text{in.}$ (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

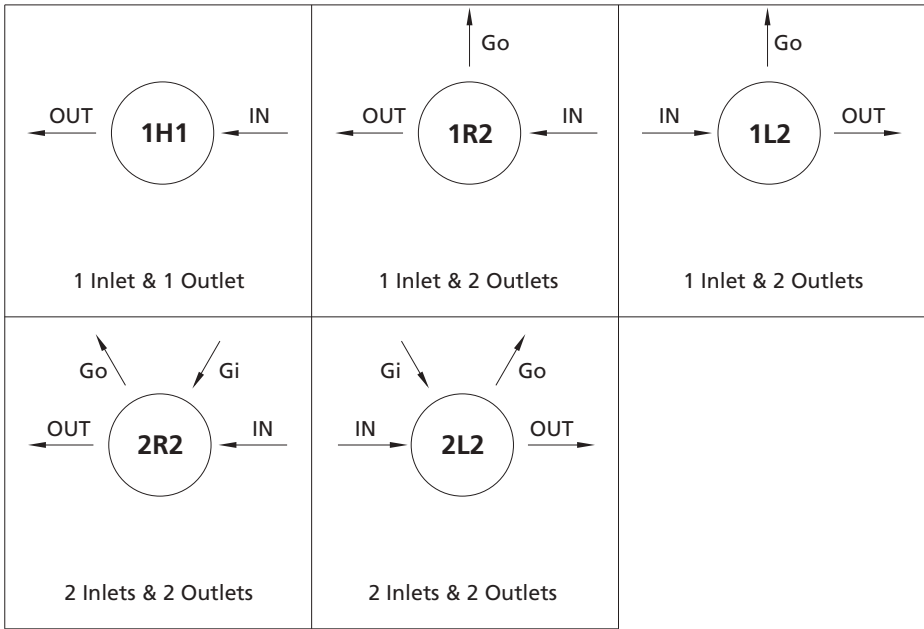
Note: For products with higher surface finish, please contact FITOK.

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

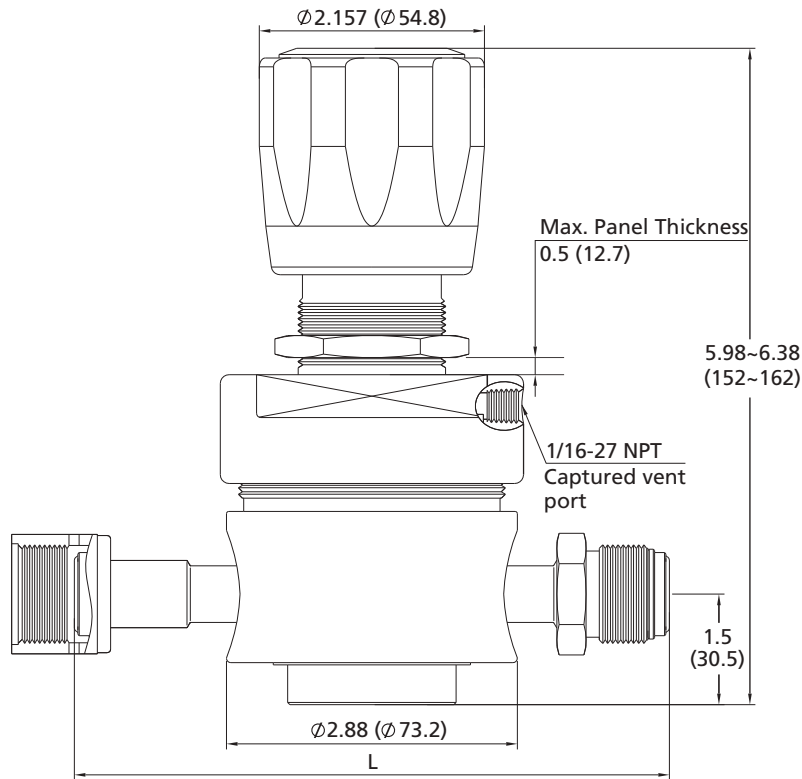
IN	OUT	Gi	Go
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port

Notes:

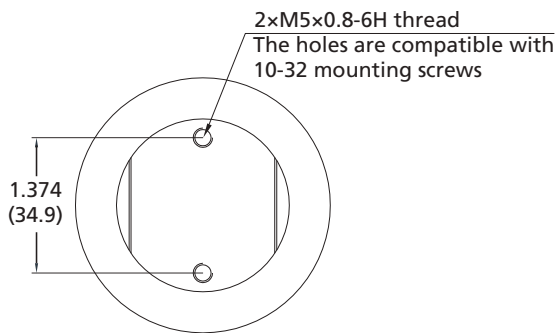
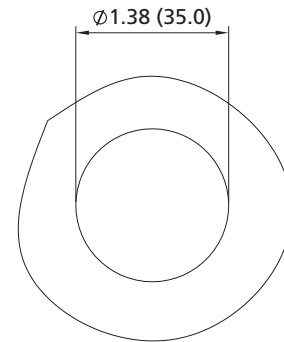
1. IN and OUT are the inlet and outlet ports for connecting the valve to the system. Ports other than IN and OUT should not be used for system connections.
2. Porting configuration is viewed from the top.

Dimensions

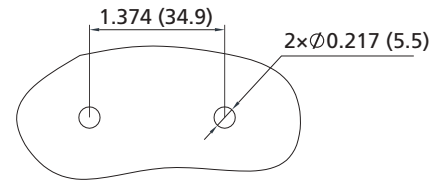
Dimensions, in inches (millimeters), are for reference only.



Panel Mounting Cut-Out



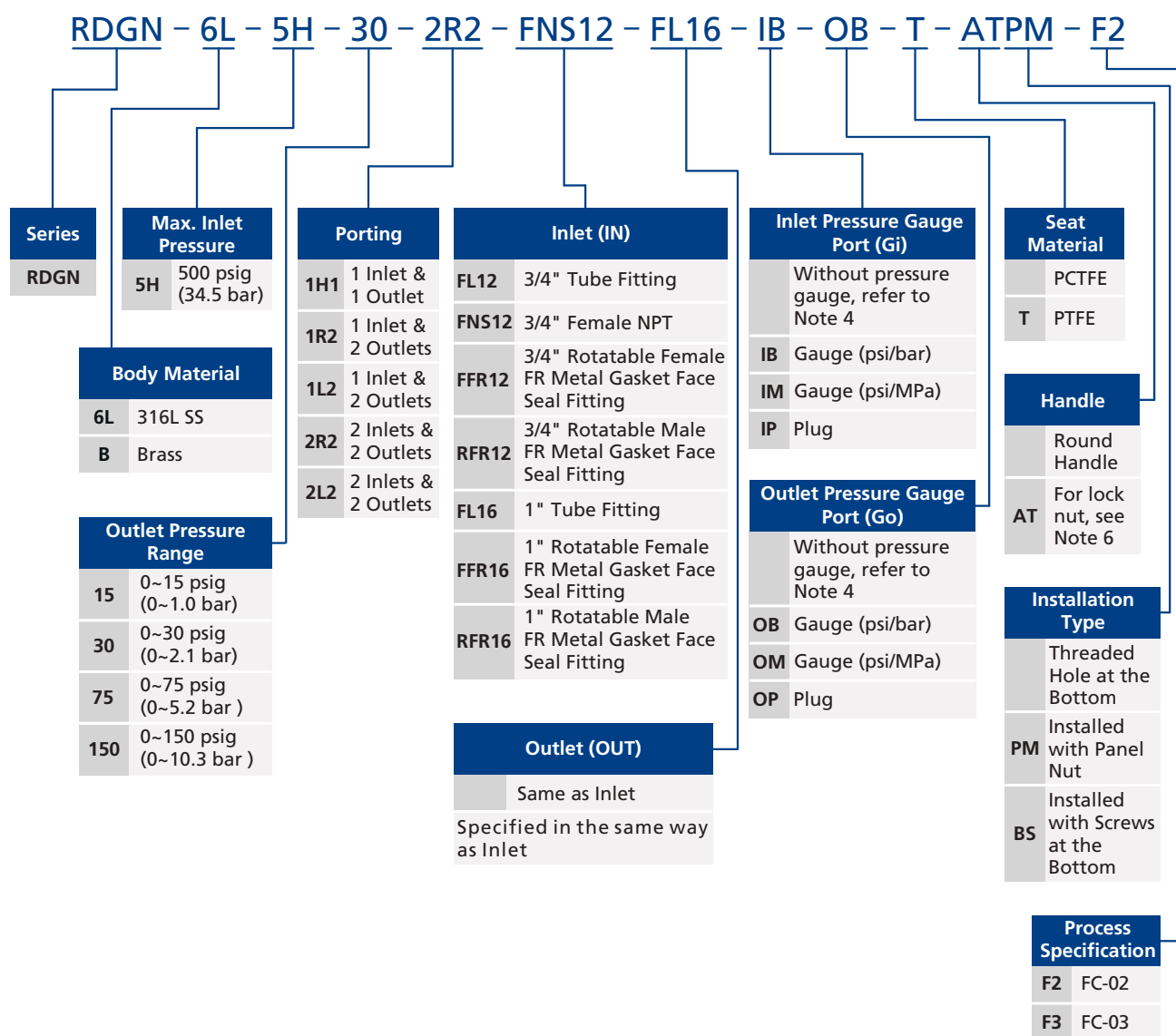
Bottom Mounting Screw Holes



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.