

# 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

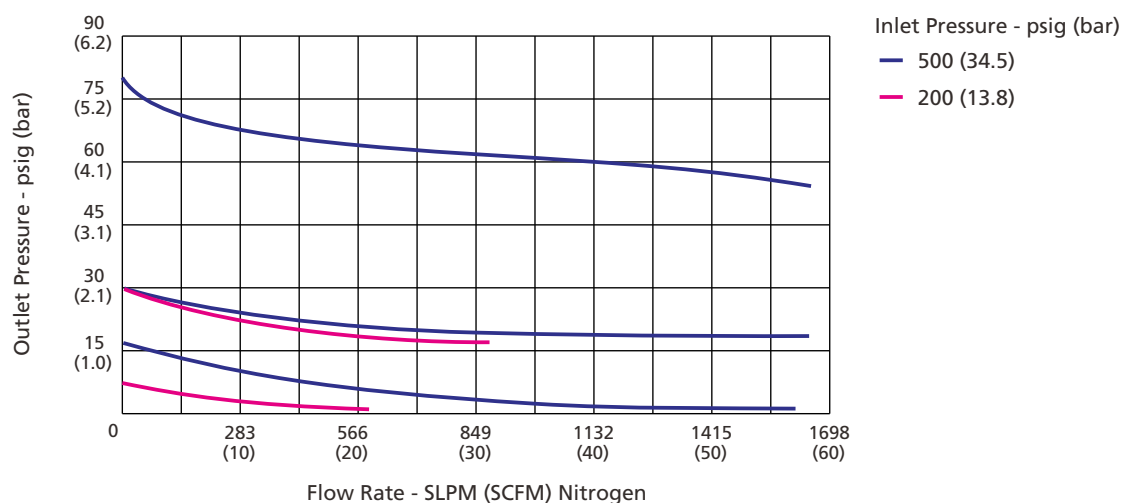
- Large diameter diaphragm offers enhanced pressure sensitivity.
- Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance.
- Reinforced diaphragm design extends diaphragm service life.
- The bonnet includes a captured vent port, allowing media to be vented to a designated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

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

## Flow Data

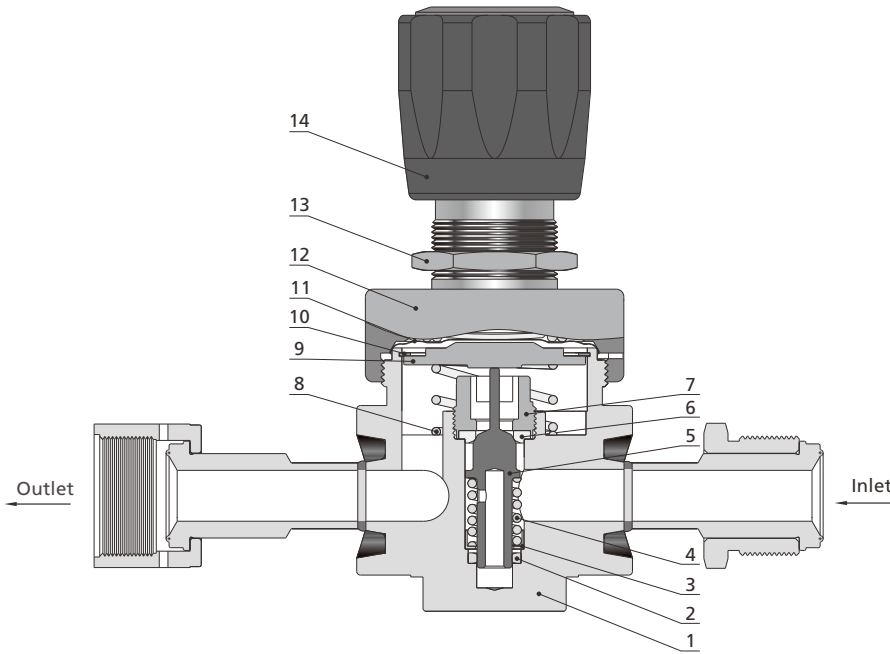


## Process Specification

Process Specification	Special Cleaning and Packaging Process (FC-02)		Ultra High Purity Process (FC-03)
Item			
Material	316L SS	Brass (Nickle-Plated)	316L SS
Wetted Surface Roughness	Face Seal Connection or Butt Weld Connection: Ra 20 $\mu\text{in.}$ (0.5 $\mu\text{m}$ ) Threaded Connection or Tube Fitting Connection: Ra 32 $\mu\text{in.}$ (0.8 $\mu\text{m}$ )	Threaded Connection or Tube Fitting Connection: Ra 32 $\mu\text{in.}$ (0.8 $\mu\text{m}$ )	Face Seal Connection or Butt Weld Connection: Ra 10 $\mu\text{in.}$ (0.25 $\mu\text{m}$ )
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

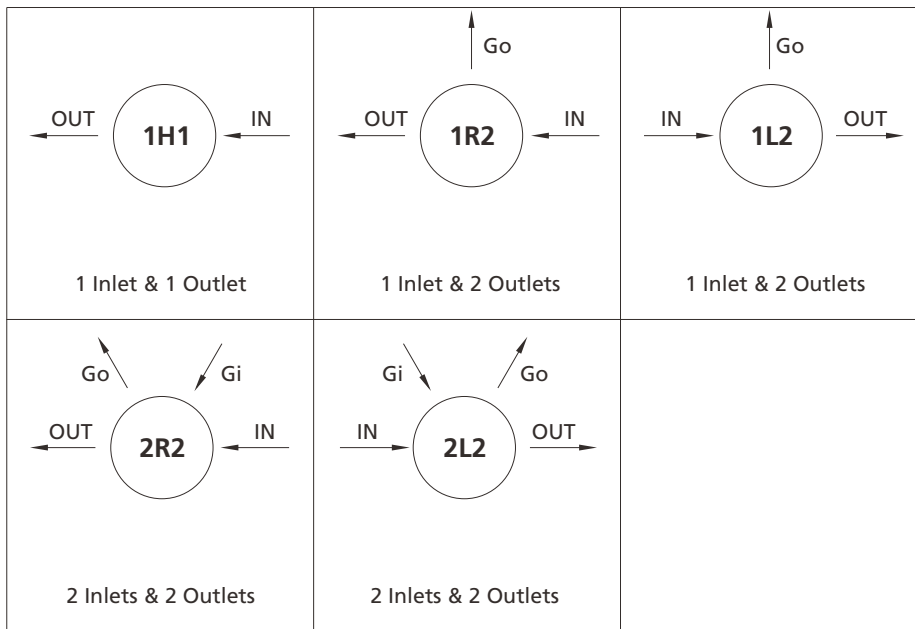
Note: For products with higher surface finish, please contact FITOK.

## 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

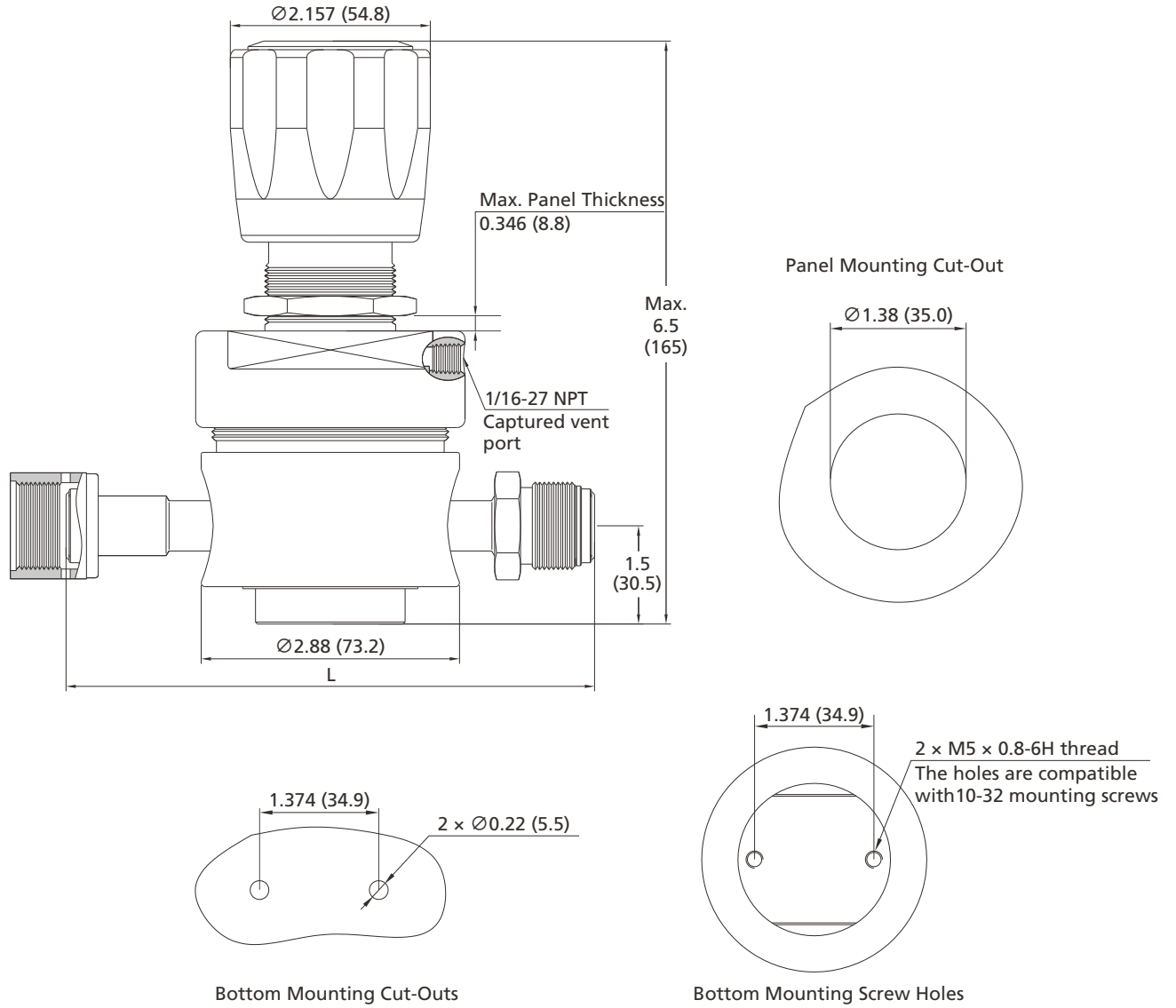
IN	OUT	Gi	Go
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port

#### 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.

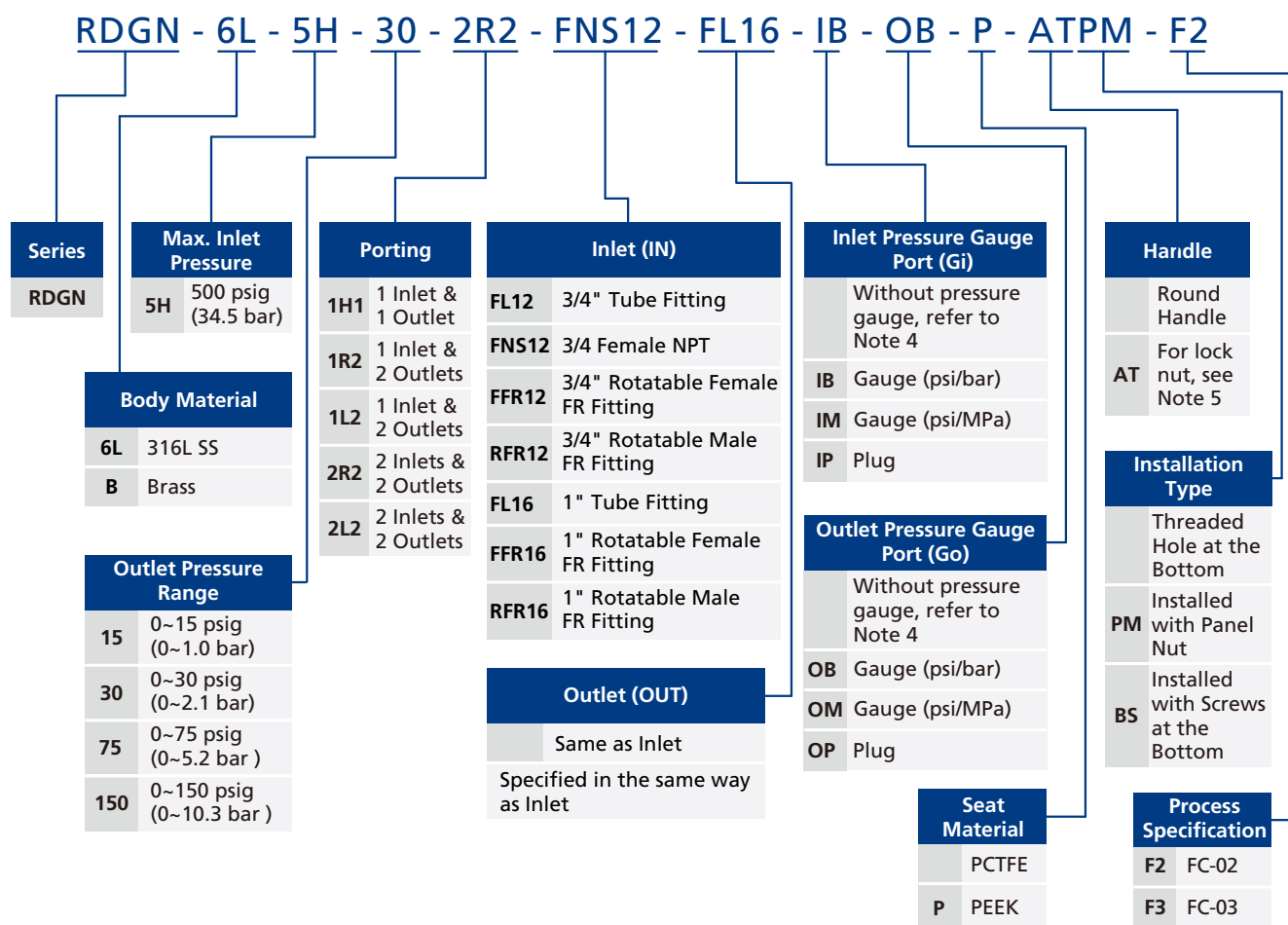
## Dimensions

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



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



### 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 Fitting.
- 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.
- For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page A-12.