

# 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.



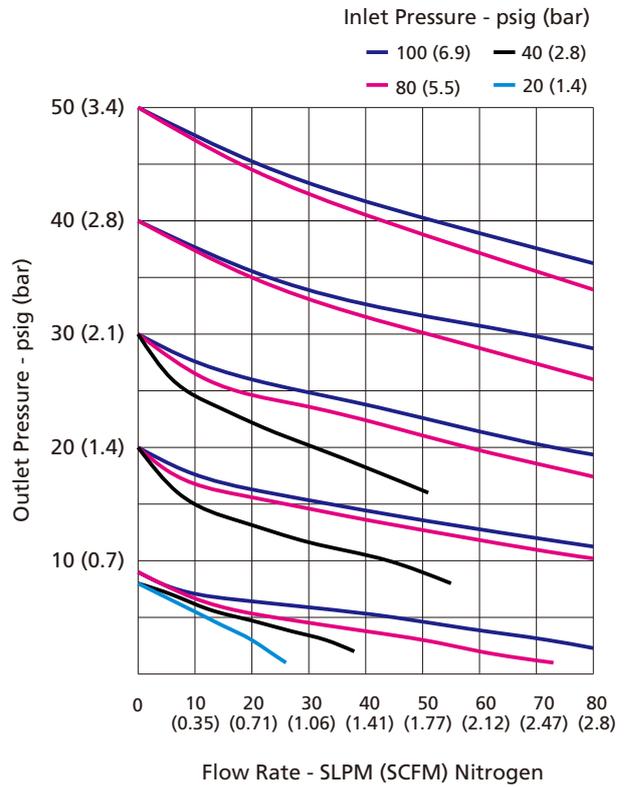
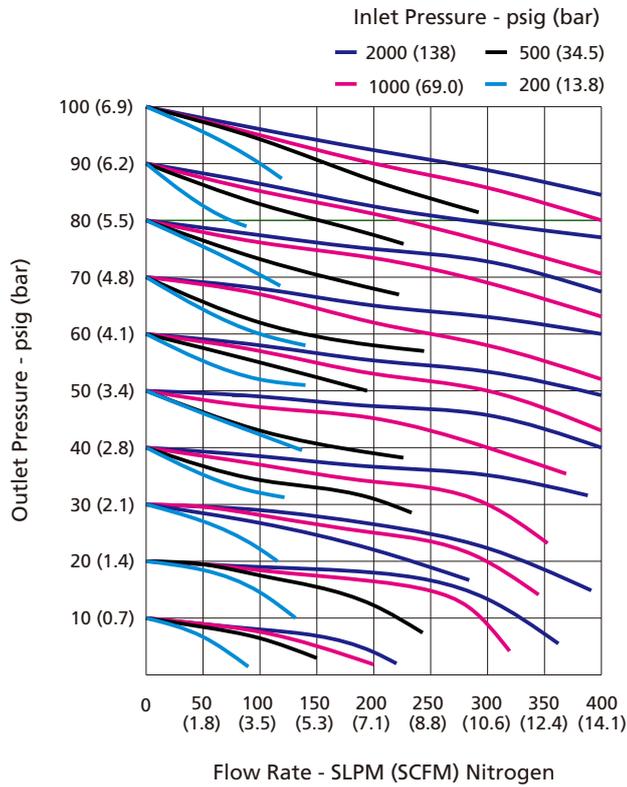
### Features

- ⦿ 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

<b>Port Size</b>	1/4", 3/8", 6 mm or 8 mm		
<b>Max. Working Pressure</b>	4500 psig (310 bar)		
<b>Outlet Pressure Range</b>	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)		
<b>Flow Coefficient (Cv)</b>	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)		
<b>Working Temperature</b>	PCTFE: -40 ~ 165 °F (-40 ~ 74 °C) Polyimide: 14 ~ 194 °F (-10 ~ 90 °C)		
<b>SPE (Supply Pressure Effect)</b>	1.5 psig per 100 psig source pressure change		
<b>Leak Rate (Helium)</b>	<b>External</b>	<b>Inboard</b>	$\leq 2 \times 10^{-10}$ std cm <sup>3</sup> /s
		<b>Outboard</b>	$\leq 2 \times 10^{-9}$ std cm <sup>3</sup> /s
	<b>Internal</b>	$\leq 4 \times 10^{-8}$ std cm <sup>3</sup> /s	

## Flow Data



## Process Specification

Process Specification	Special Cleaning and Packaging (FC-02)	Ultra High Purity (FC-03)
<b>Item</b>		
<b>Material</b>	316L SS, 316L SS VAR, Brass (Nickle-Plated), Alloy C-276	316L SS, 316L SS VAR
<b>Wetted Surface Roughness</b>	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)
<b>Polishing Process</b>	Machine Finished	Electropolished
<b>Assembly Environment</b>	In specially cleaned areas	ISO Class 4 (FS 209E Class 10 equivalent) cleanroom
<b>Packaging</b>	Double bagged	Double bagged in cleanroom

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

Fittings

Valves

Regulators

Filters

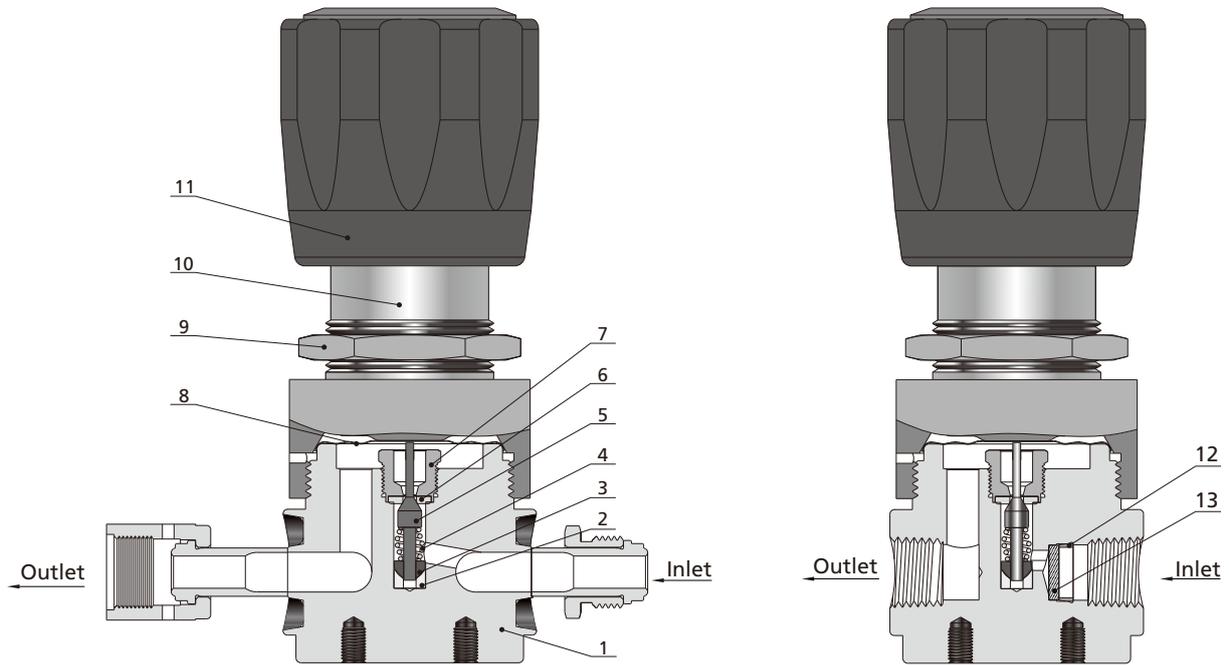
Tubing

Integrated Systems

Other Products

Technical Information

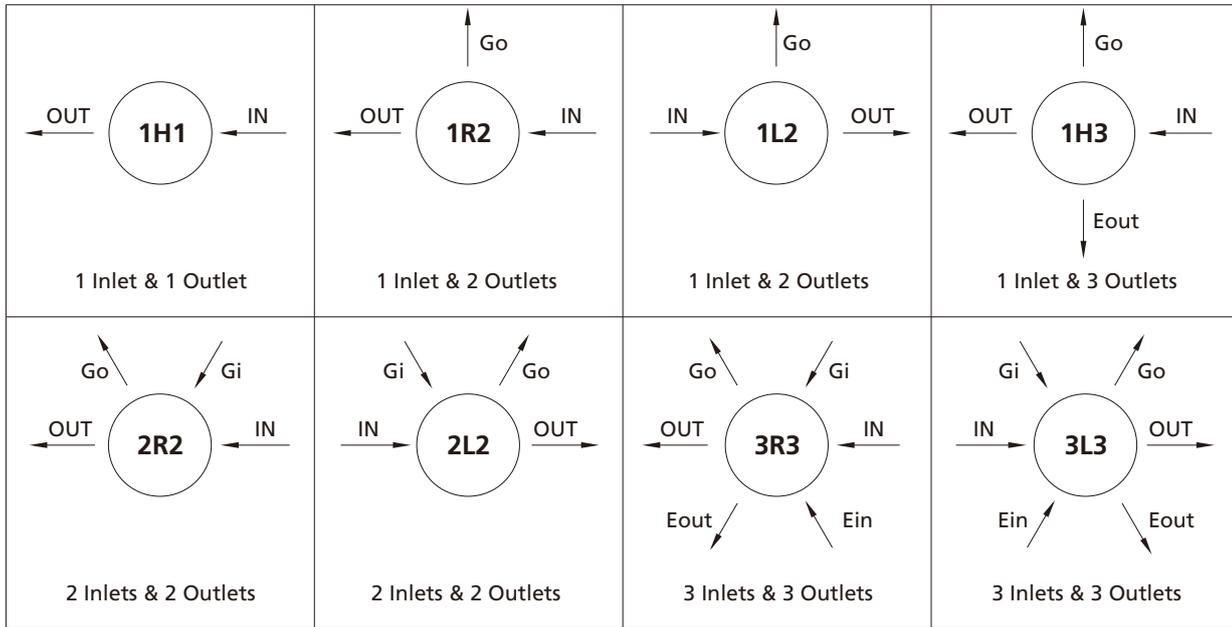
## Major Materials of Construction



Item	Component	Material/Specification
1	Body	316L SS, 316L SS VAR, Brass (Nickle-Plated) or Alloy C-276
2	Friction Sleeve	316L SS, 316L SS VAR or Alloy C-276
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 Polyimide
7	Seat Retainer	316L SS, 316L SS VAR or Alloy C-276
8	Diaphragm	316L SS/ASTM A240
9	Panel Nut	304 SS/ASTM A479
10	Bonnet	304 SS/ASTM A479 or Brass (Nickle-Plated)
11	Handle	ABS
12	Retaining Ring <sup>①</sup>	PTFE
13	Filter <sup>①</sup>	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.

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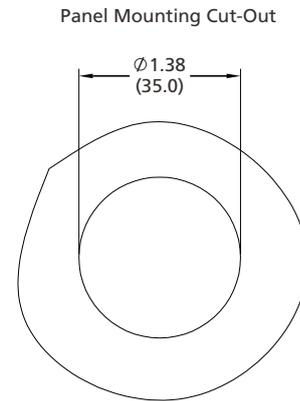
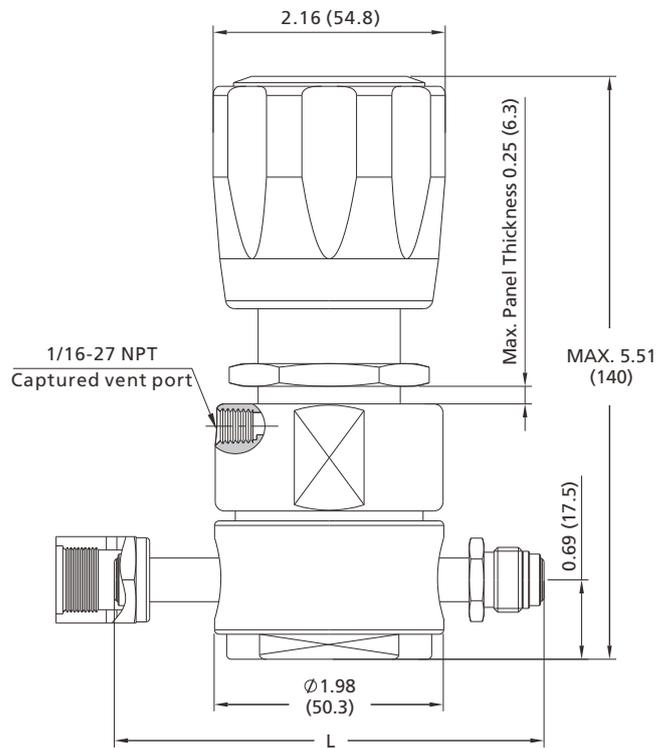
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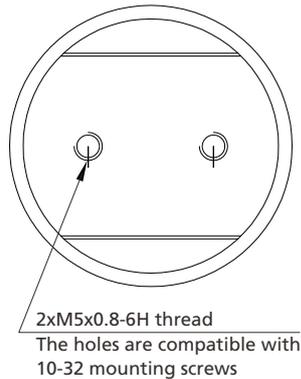
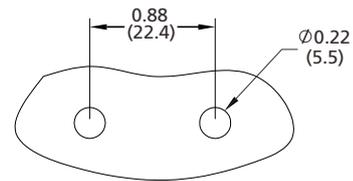
Technical Information

## Dimensions and Ordering Information

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



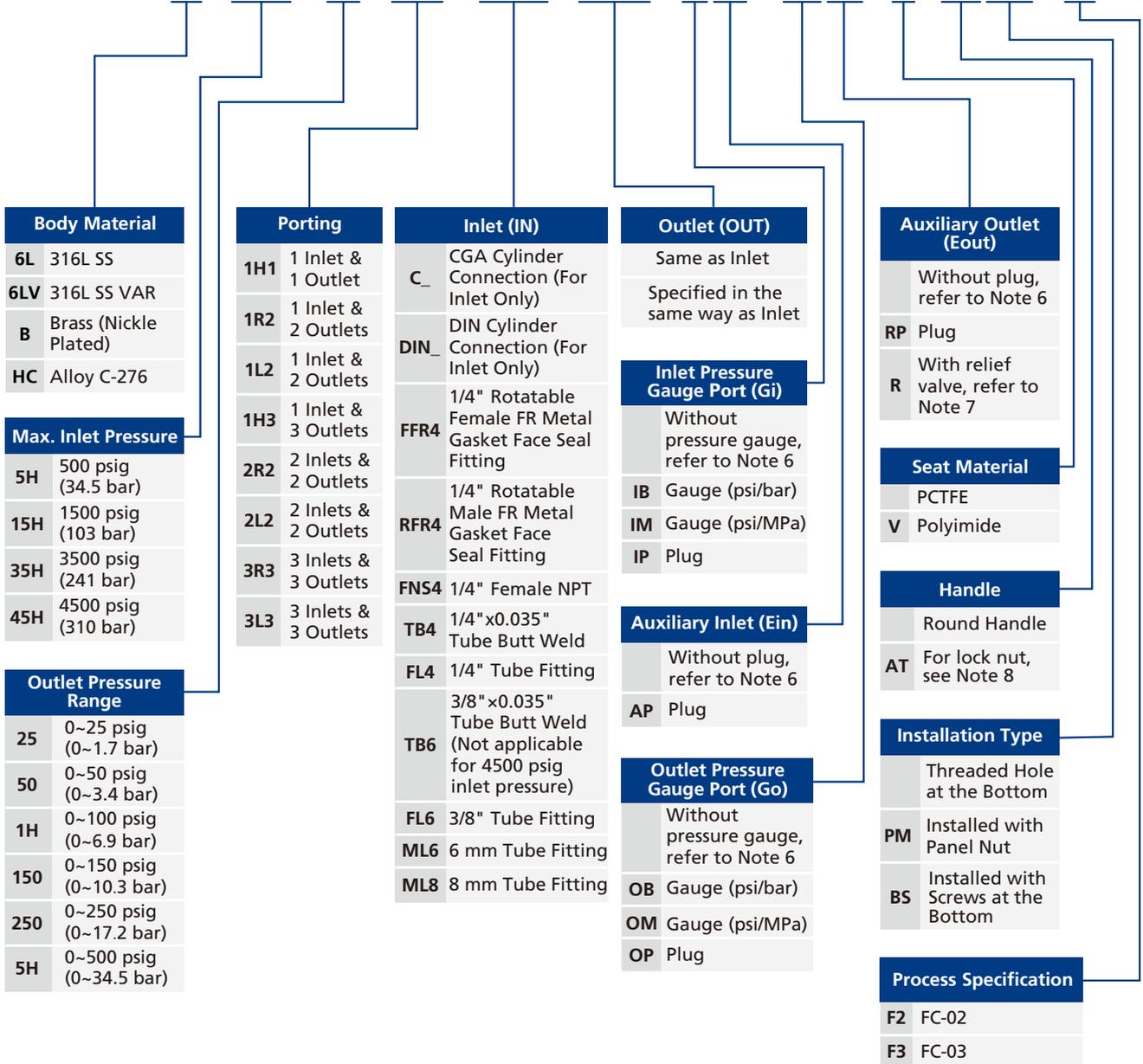
Bottom Mounting Cut-Outs



Connection Designator	Connection Type and Size	Dimension, in.(mm)
		L
FFR4	1/4" Rotatable Female FR Metal Gasket Face Seal Fitting	3.7 (94.0)
RFR4	1/4" Rotatable Male FR Metal Gasket Face Seal Fitting	3.7 (94.0)
FNS4	1/4" Female NPT	1.98 (50.3)
TB4	1/4" x 0.035" Tube Butt Weld	2.96 (75.2)
FL4	1/4" Tube Fitting	3.95 (100.3)
TB6	3/8" x 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



**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 connection or tube butt weld connection, the connection and body are orbital-welded integral structure by default.
- For NPT connection and tube fitting connection, the body connection is 1/4" Female NPT by default. Other options are adapted from Male NPT.
- 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.
- Refer to Cylinder Connections catalog for connection details.
- 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 Metal Gasket Face Seal Fitting, without auxiliary connection (Ein, Eout) options.
- 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.
- 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.

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