

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

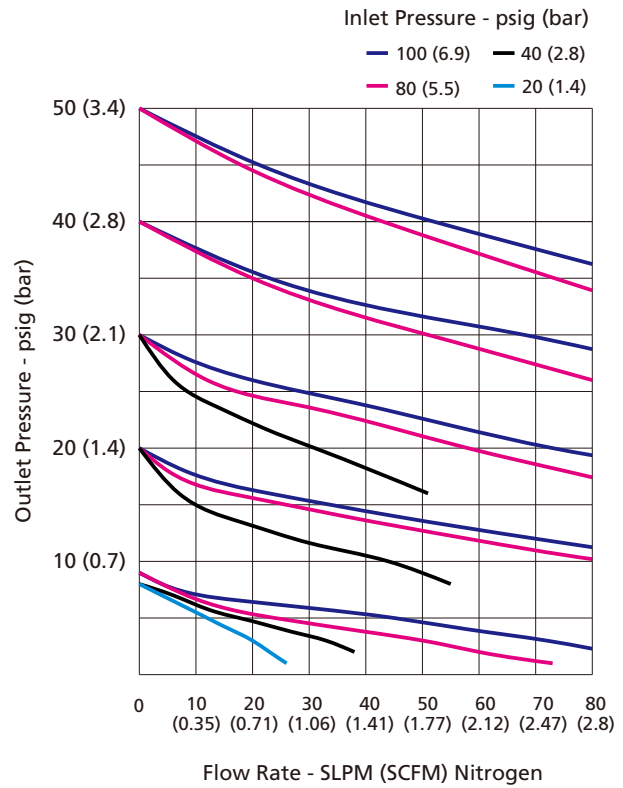
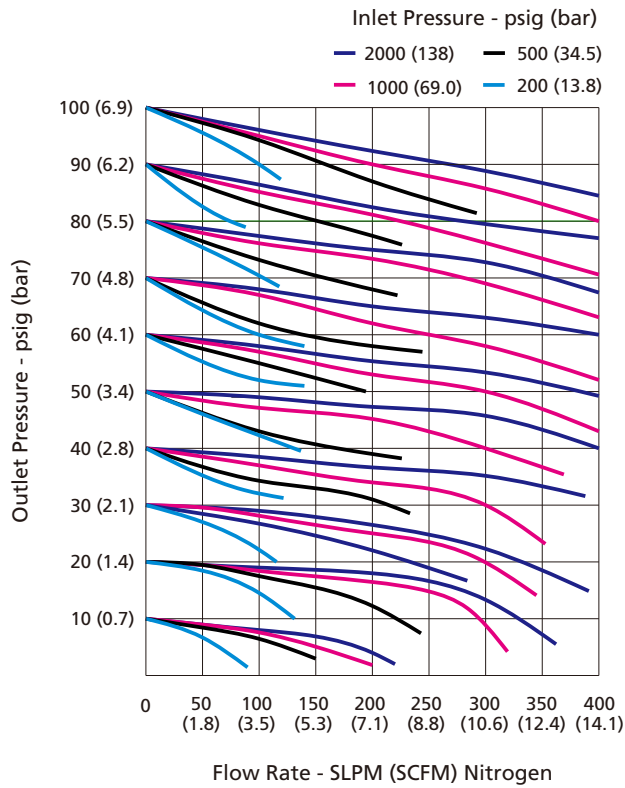
- ⦿ Compact design and lightweight
- ⦿ Lift poppet is made of Alloy C-276, offering excellent corrosion resistance
- ⦿ Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance
- ⦿ Reinforced diaphragm improves sealing performance and extends service life
- ⦿ The bonnet 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		PCTFE: -40 ~ 165 °F (-40 ~ 74 °C) Polyimide: 14 ~ 194 °F (-10 ~ 90 °C)	
SPE (Supply Pressure Effect)		1.5 psig per 100 psig source pressure change	
Leak Rate (Helium)	External	Inboard	≤2×10 ⁻¹⁰ std cm ³ /s
		Outboard	≤2×10 ⁻⁹ std cm ³ /s
	Internal		≤4×10 ⁻⁸ std cm ³ /s

Flow Data

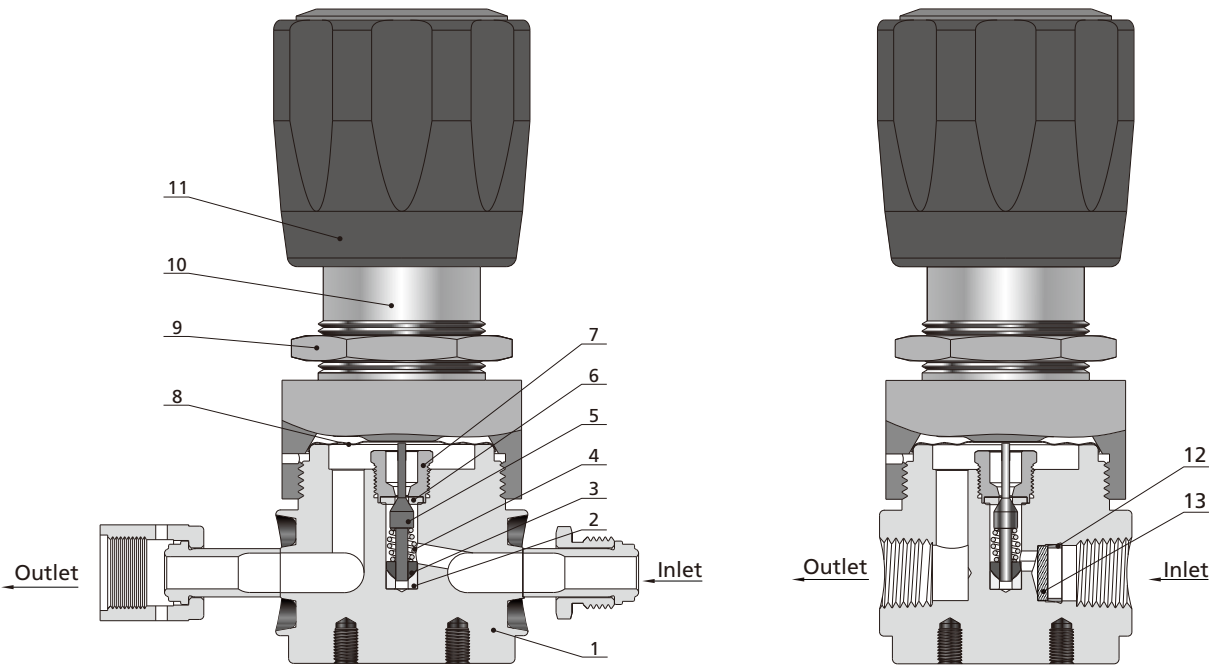


Process Specification

Item	Process Specification	
	Special Cleaning and Packaging (FC-02)	Ultra High Purity (FC-03)
Material	316L SS, 316L SS VAR, Brass (Nickel-Plated), Alloy C-276	316L SS, 316L SS VAR
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.

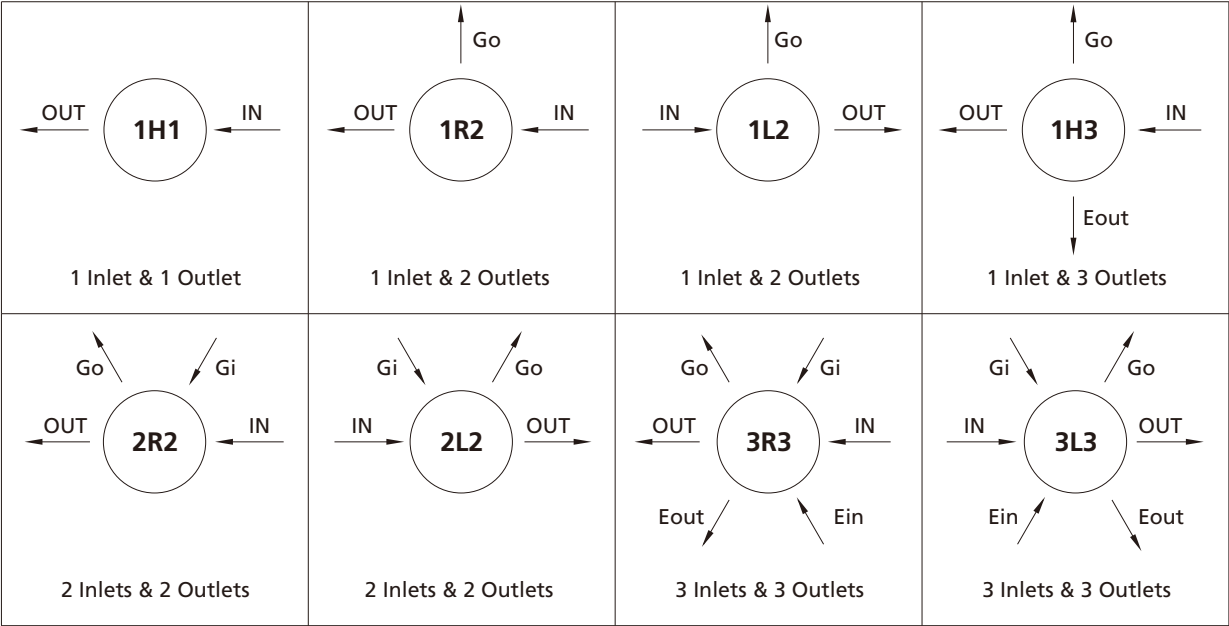
Major Materials of Construction



Item	Component	Material/Specification
1	Body	316L SS, 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 ^①	PTFE
13	Filter ^①	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



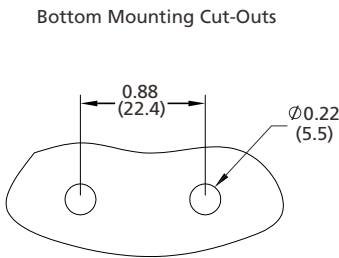
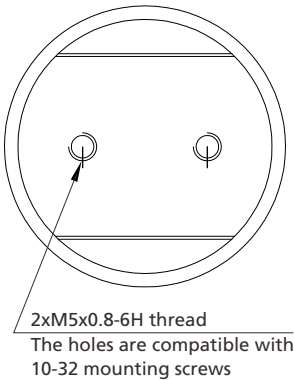
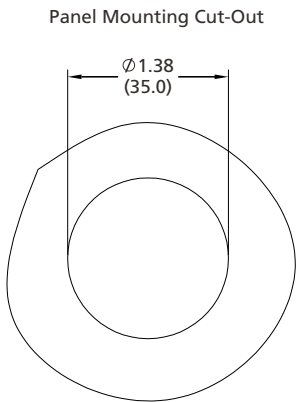
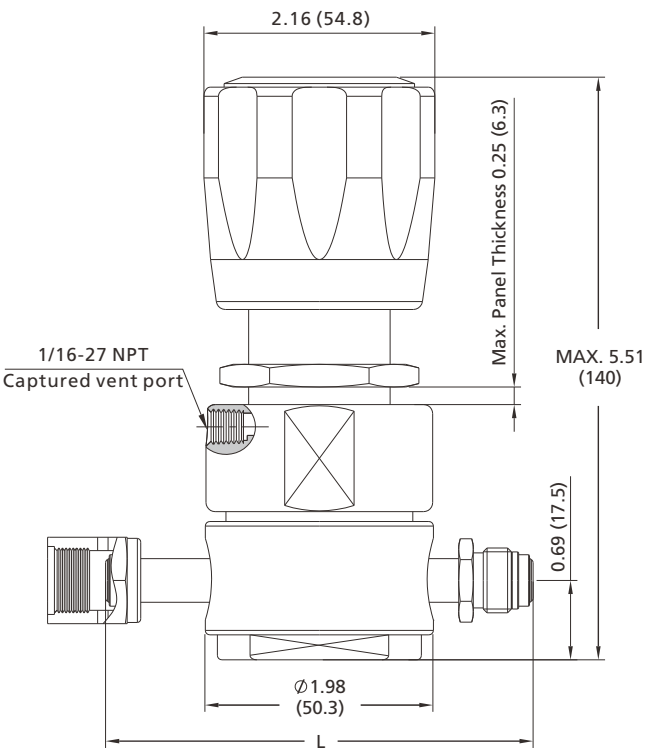
Porting Configuration Symbol

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.



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									
Body Material		Porting		Inlet (IN)		Outlet (OUT)		Auxiliary Outlet (Eout)	
6L	316L SS	1H1	1 Inlet & 1 Outlet	C_	CGA Cylinder Connection (For Inlet Only)	Same as Inlet		Without plug, refer to Note 6	
6LV	316L SS VAR	1R2	1 Inlet & 2 Outlets	DIN_	DIN Cylinder Connection (For Inlet Only)	Specified in the same way as Inlet		RP Plug	
B	Brass (Nickel Plated)	1L2	1 Inlet & 2 Outlets	FFR4	1/4" Rotatable Female FR Metal Gasket Face Seal Fitting	Inlet Pressure Gauge Port (Gi)		R With relief valve, refer to Note 7	
HC	Alloy C-276	1H3	1 Inlet & 3 Outlets		1/4" Rotatable Male FR Metal Gasket Face Seal Fitting	Without pressure gauge, refer to Note 6		Seat Material	
Max. Inlet Pressure		2R2	2 Inlets & 2 Outlets	RFR4	1/4" Rotatable Male FR Metal Gasket Face Seal Fitting	IB Gauge (psi/bar)		PCTFE	
5H	500 psig (34.5 bar)	2L2	2 Inlets & 2 Outlets	FNS4	1/4" Female NPT	IM Gauge (psi/MPa)		V Polyimide	
15H	1500 psig (103 bar)	3R3	3 Inlets & 3 Outlets	TB4	1/4"x0.035" Tube Butt Weld	IP Plug		Handle	
35H	3500 psig (241 bar)	3L3	3 Inlets & 3 Outlets	FL4	1/4" Tube Fitting	Auxiliary Inlet (Ein)		Round Handle	
45H	4500 psig (310 bar)			TB6	3/8"x0.035" Tube Butt Weld (Not applicable for 4500 psig inlet pressure)	Without plug, refer to Note 6		AT For lock nut, see Note 8	
Outlet Pressure Range				FL6	3/8" Tube Fitting	AP Plug		Installation Type	
25	0~25 psig (0~1.7 bar)			ML6	6 mm Tube Fitting	Outlet Pressure Gauge Port (Go)		Threaded Hole at the Bottom	
50	0~50 psig (0~3.4 bar)			ML8	8 mm Tube Fitting	Without pressure gauge, refer to Note 6		PM Installed with Panel Nut	
1H	0~100 psig (0~6.9 bar)					OB Gauge (psi/bar)		BS Installed with Screws at the Bottom	
150	0~150 psig (0~10.3 bar)					OM Gauge (psi/MPa)		Process Specification	
250	0~250 psig (0~17.2 bar)					OP Plug		F2 FC-02	
5H	0~500 psig (0~34.5 bar)							F3 FC-03	

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.