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 lowviscosity liquid media that feature low to medium flow.

Features

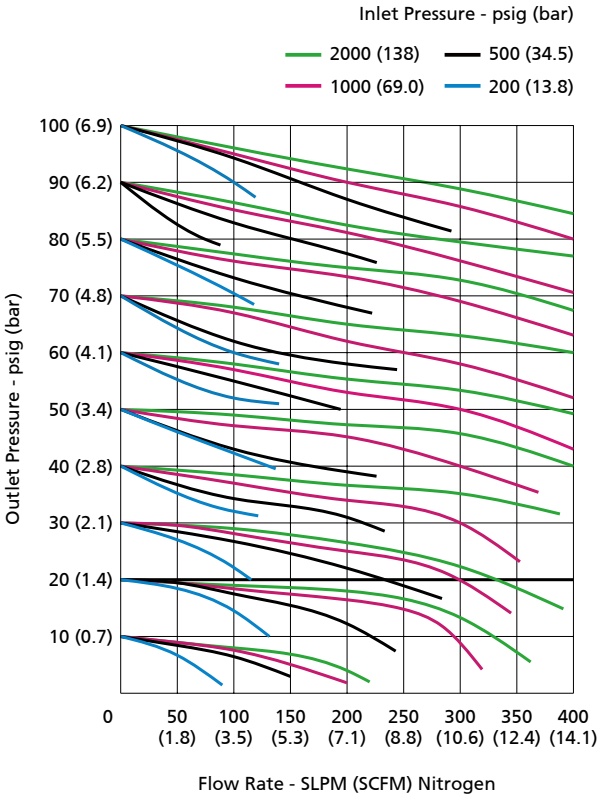
- Compact design and lightweight
- Lift poppet is made of Alloy C-276, offering excellent corrosion resistance
- Metal-to-metal seal between valve body and diaphragm provides ensured sealing performance
- Reinforced diaphragm improves sealing performance and extends service life
- The bonnet includes a captured vent port, allowing media to be vented to a designated location in the event of accidental diaphragm rupture

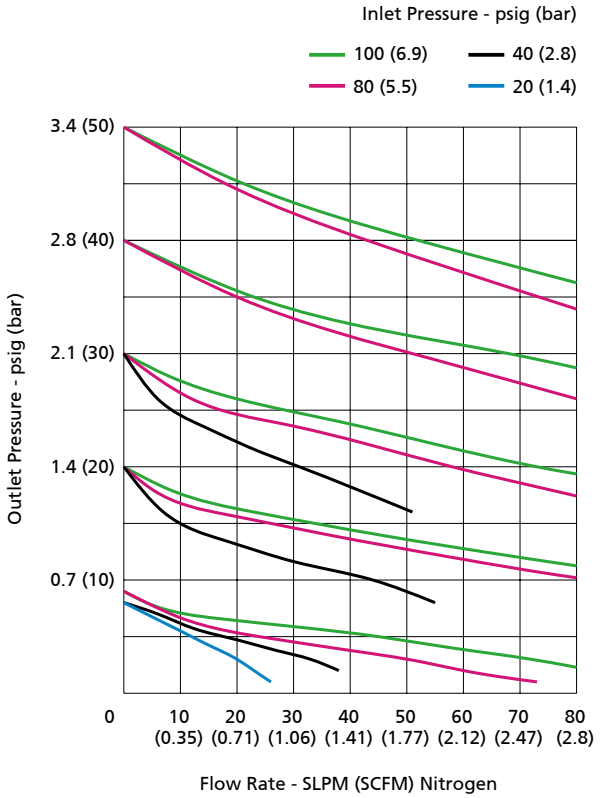
Technical Data

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 Temperature①			PCTFE：-40 ~ 165 °F (-40 ~ 74 °C)
			Polyimide：-40 ~ 500 °F (-40 ~ 260 °C)
			PEEK：-40 ~ 400 °F (-40 ~ 204 °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

① For the working temperature of products equipped with a pressure gauge, a relief valve, or both, please refer to the catalog for Pressure Gauges or Relief Valves.

Flow Data





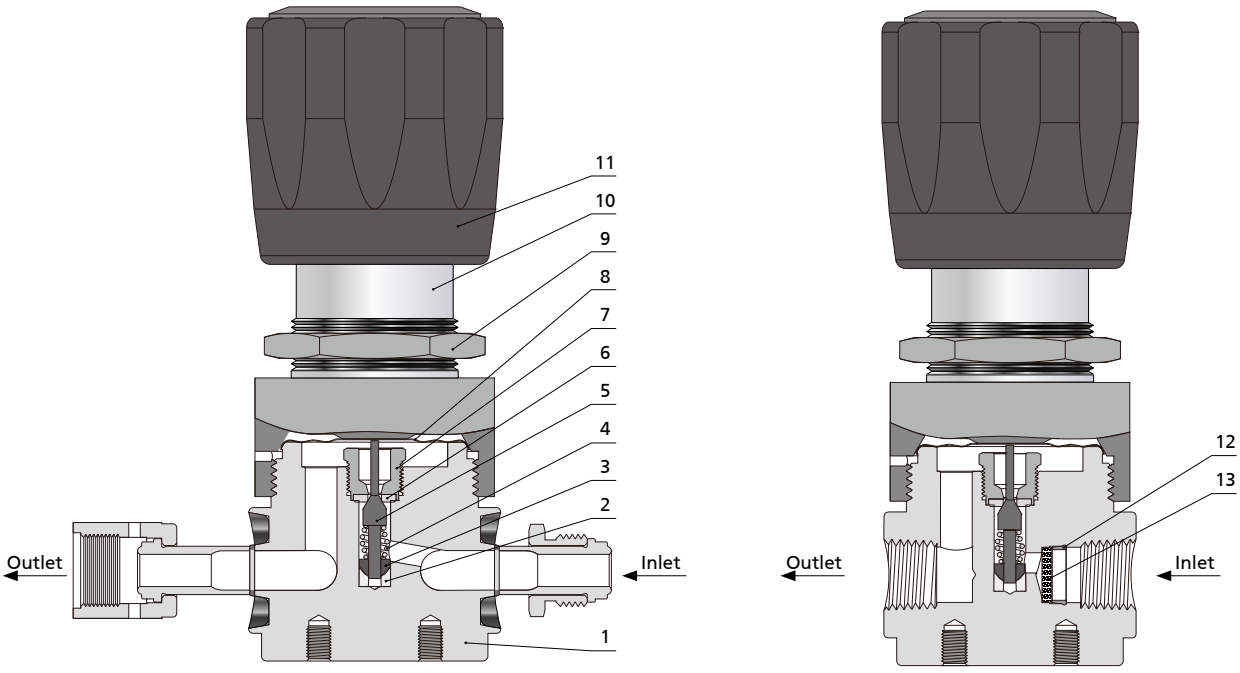
Process Specification

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

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Major Materials of Construction

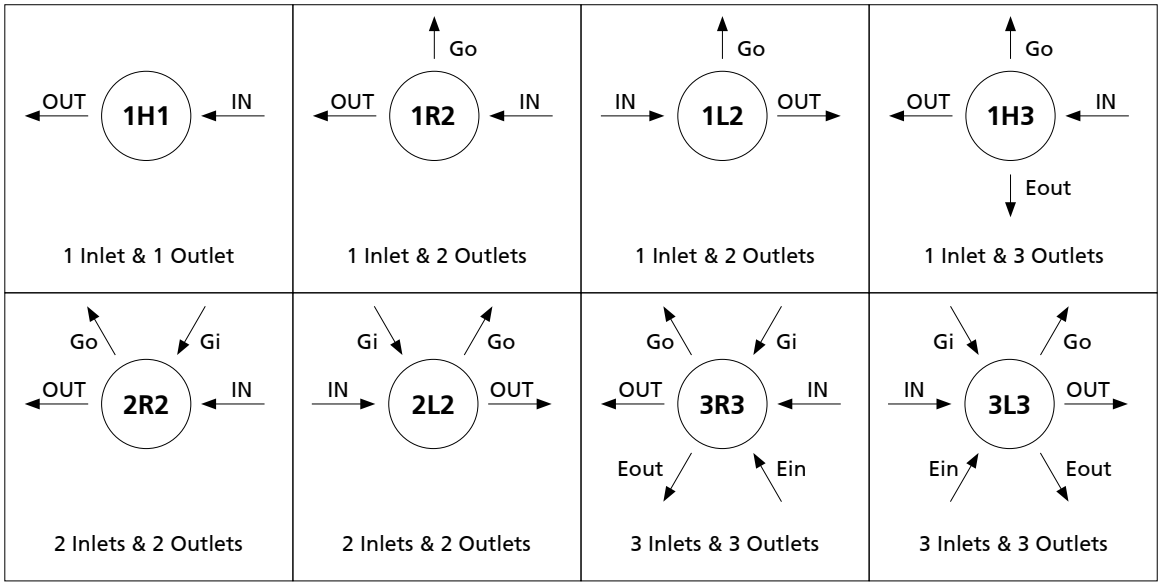


Item	Component	Material/Specification			
		6L	6LV	B	HC
1	Body	316L SS	316L SS VAR	Brass (Nickel-Plated)	Alloy C-276
2	Friction Sleeve	316L SS	316L SS VAR	316L SS	Alloy C-276
3	Poppet Damper	PTFE/ASTM D1710 or Polyimide (use only with Polyimide seat)			
4	Poppet Spring	Alloy X-750			
5	Lift Poppet	Alloy C-276/ASTM B574			
6	Seat	PCTFE/ASTM D1430 or Polyimide or PEEK			
7	Seat Retainer	316L SS	316L SS VAR	316L SS	Alloy C-276
8	Diaphragm	316L SS/ASTM A240	Alloy 22	316L SS/ASTM A240	Alloy 22
9	Panel Nut	304 SS/ASTM A479			
10	Bonnet	304 SS/ASTM A479	304 SS/ASTM A479	Brass (Nickel-Plated)	304 SS/ASTM A479
11	Handle	ABS or Aluminum Alloy (use only with Polyimide or PEEK seat)			
12	Retaining Ring①	PTFE/ASTM D1710	PTFE/ASTM D1710	PTFE/ASTM D1710	-
13	Filter①	316L SS	316L SS	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.

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Porting Configurations



Porting Configuration Symbol

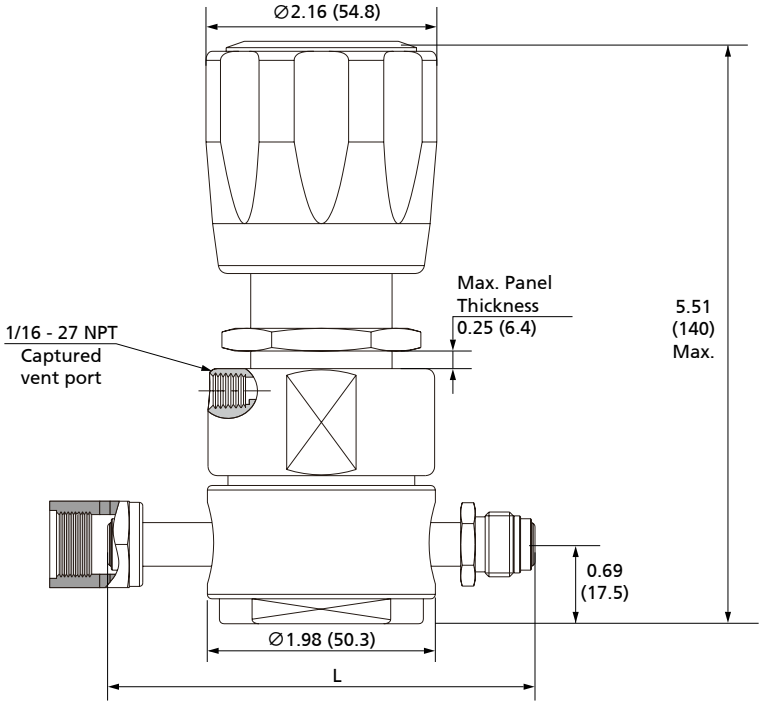
IN	OUT	Gi	Go	Ein	Eout
Inlet	Outlet	Inlet Pressure Gauge Port	Outlet Pressure Gauge Port	Auxiliary Inlet	Auxiliary Outlet

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.

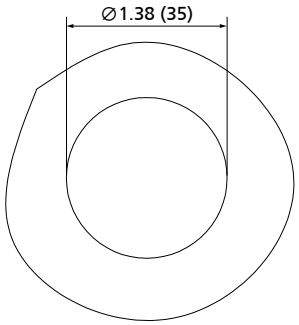
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Dimensions

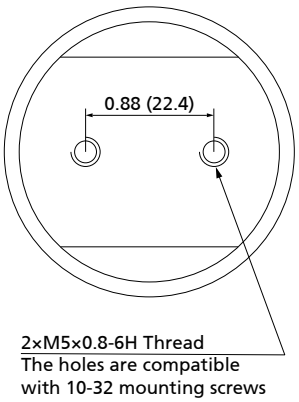
Dimensions, in inches (millimeters), are for reference only.



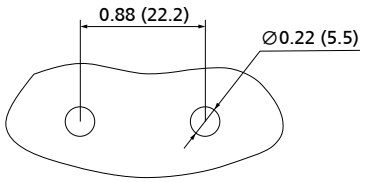
Panel Mounting Cut-Out



Bottom View



Bottom Mounting Cut-Outs



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

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Ordering Number Description

RDGC - 6L - 35H - 1H - 3R3 - C580 - FNS4 - IBAP - OBRP - V - ATPM - F2

Body Material	
6L	316L SS
6LV	316L SS VAR
B	Brass (Nickel-Plated)
HC	Alloy C-276

Max. Inlet Pressure	
5H	500 psig (34.5 bar)
15H	1500 psig (103 bar)
35H	3500 psig (241 bar)
45H	4500 psig (310 bar)

Outlet Pressure Range	
25	0~25 psig (0~1.7 bar)
50	0~50 psig (0~3.4 bar)
1H	0~100 psig (0~6.9 bar)
150	0~150 psig (0~10.3 bar)
250	0~250 psig (0~17.2 bar)
5H	0~500 psig (0~34.5 bar)

Porting	
1H1	1 Inlet & 1 Outlet
1R2	1 Inlet & 2 Outlets
1L2	1 Inlet & 2 Outlets
1H3	1 Inlet & 3 Outlets
2R2	2 Inlets & 2 Outlets
2L2	2 Inlets & 2 Outlets
3R3	3 Inlets & 3 Outlets
3L3	3 Inlets & 3 Outlets

Inlet (IN)	
C_	CGA Cylinder Connection (For Inlet Only)
DIN_	DIN Cylinder Connection (For Inlet Only)
FFR4	1/4" Rotatable Female FR Fitting
RFR4	1/4" Rotatable Male FR Fitting
FNS4	1/4 Female NPT
TB4	1/4"×0.035" Tube Butt Weld
FL4	1/4" Tube Fitting
TB6	3/8"×0.035" Tube Butt Weld (Not applicable for 4500 psig inlet pressure)
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

Inlet Pressure Gauge Port (Gi)	
	Without pressure gauge, refer to Note 6
IB	Gauge (psi/bar)
IM	Gauge (psi/MPa)
IP	Plug

Outlet (OUT)
Same as Inlet
Specified in the same way as Inlet

Auxiliary Inlet (Ein)	
	Without plug, refer to Note 6
AP	Plug

Outlet Pressure Gauge Port (Go)	
	Without pressure gauge, refer to Note 6
OB	Gauge (psi/bar)
OM	Gauge (psi/MPa)
OP	Plug

Auxiliary Outlet (Eout)	
	Without plug, refer to Note 6
RP	Plug
R	With relief valve, refer to Note 7

Seat Material	
	PCTFE
V	Polyimide
P	PEEK

Handle	
	Round Handle
AT	For lock nut, see Note 8

Installation Type	
	Threaded Hole at the Bottom
PM	Installed with Panel Nut
BS	Installed with Screws at the Bottom

Process Specification	
F2	FC-02
F3	FC-03

Notes:

1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.
2. For metal gasket face seal fitting connection or tube butt weld connection, the connection and body are orbital-welded integral structure by default.
3. For NPT connection and tube fitting connection, the body connection is 1/4 Female NPT by default. Other options are adapted from Male NPT.
4. 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.
5. Refer to Cylinder Connections catalog for connection details.
6. 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 Fitting, without auxiliary connection (Ein, Eout) options.
7. For the outlet relief valve, selecting outlet pressure designator 5H is equipped with an RV Series relief valve; all other designators are equipped with an RUV Series relief valve. The set pressure is factory-set to 1.05-1.1 times the maximum outlet pressure at shipment. FITOK can preset a specified set pressure upon request. Please specify the desired set pressure when placing your order.
8. 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.
9. When selecting accessories such as pressure gauges or relief valves, ensure that the media working temperature does not exceed the allowable temperature range of the accessories.
10. For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page A-12 of FITOK Full Technical Catalog For Specialty Gas Application.

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