

Two-Stage Diaphragm Regulators

RDDC Series

Introduction

RDDC Series Two-Stage Diaphragm Regulators feature a two-stage pressure reduction design. The combination of a metal diaphragm and a free poppet ensures excellent sensitivity and stable outlet pressure. This configuration makes these regulators ideal for low to medium flow applications that require steady outlet pressure.

Features

- ⦿ 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
- ⦿ Two-stage pressure reduction design ensures precise and stable outlet pressure
- ⦿ The bonnet includes a captured vent port, allowing media to be vented to a designated location in the event of accidental diaphragm rupture

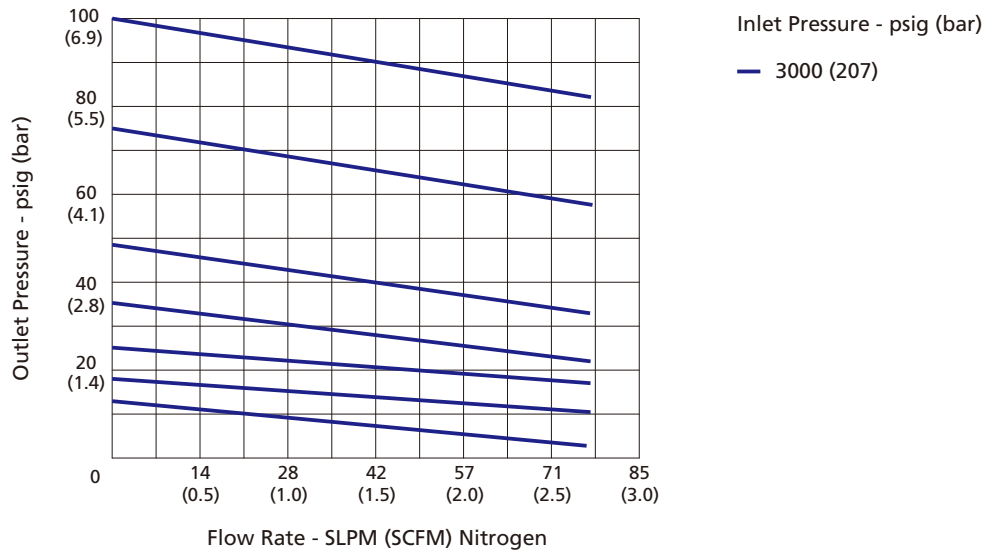
Technical Data

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)	
Flow Coefficient (Cv)		0.06	
Working Temperature ^①		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)		0.01 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

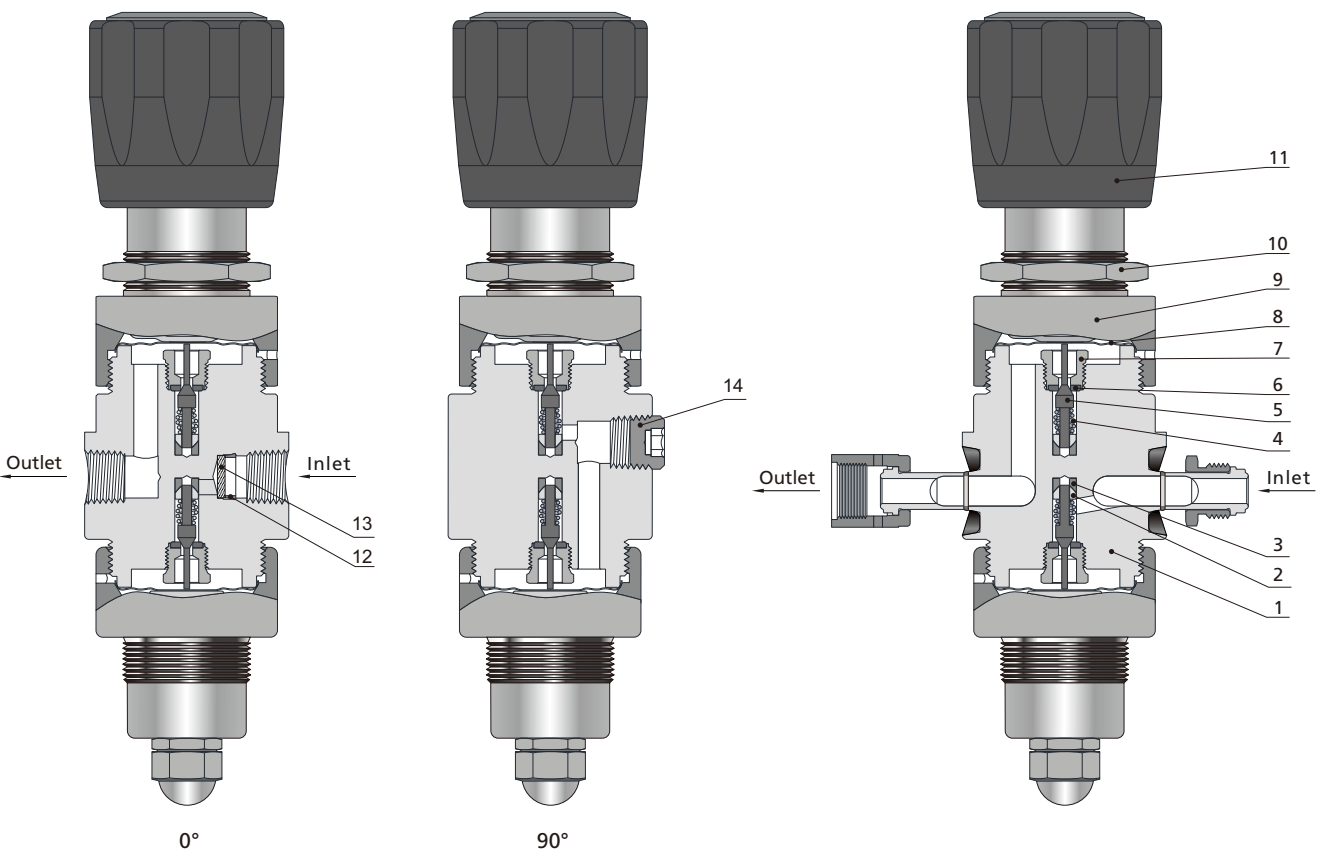


Process Specification

Item	Special Cleaning and Packaging Process (FC-02)		Ultra High Purity Process (FC-03)
	Process Specification		
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 $\mu\text{in.}$ (0.5 μm) Threaded Connection or Tube Fitting Connection: Ra 32 $\mu\text{in.}$ (0.8 μm)	Threaded Connection or Tube Fitting Connection: Ra 32 $\mu\text{in.}$ (0.8 μm)	Face Seal Connection or 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.

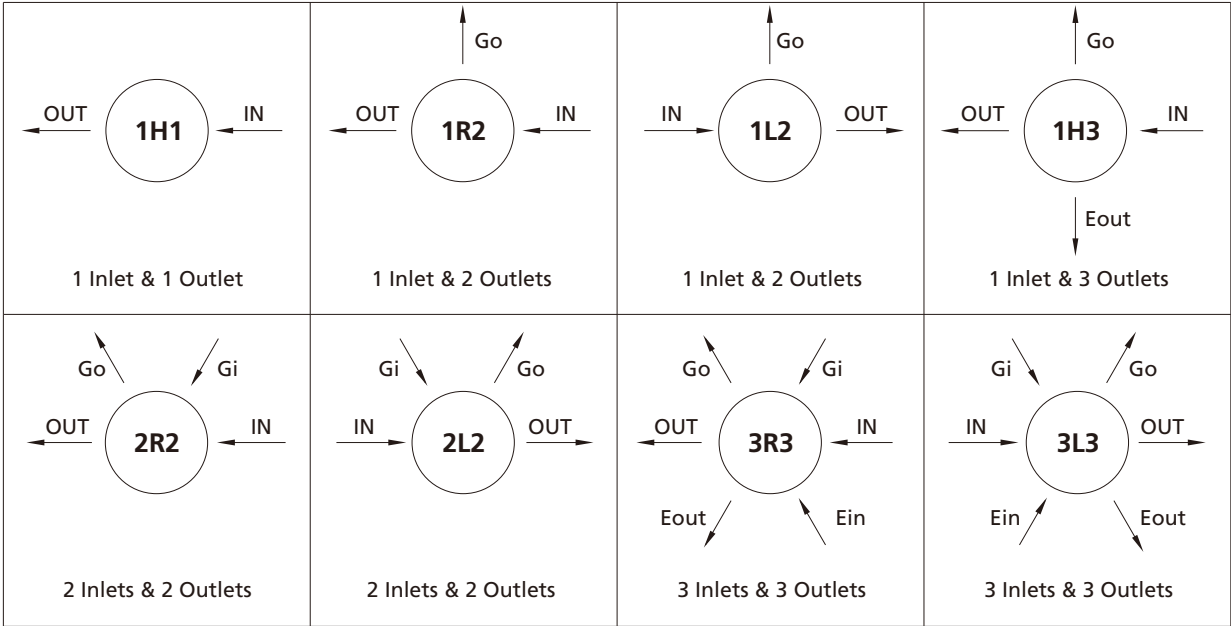
Major Materials of Construction



Item	Component	Material/Specification			
		6L	6LV	B	HC
1	Body	316L SS	316L SS VAR	Brass (Nickle-Plated)	Alloy C-276
2	Poppet Damper	PTFE/ASTM D1710 or Polyimide (use only with Polyimide seat)			
3	Friction Sleeve	316L SS	316L SS VAR	316L SS	Alloy C-276
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 C-22	316L SS/ASTM A240	Alloy C-22
9	Bonnet	304 SS/ASTM A479	304 SS/ASTM A479	Brass (Nickle-Plated)	304 SS/ASTM A479
10	Panel Nut	304 SS/ASTM A479			
11	Handle	ABS or Aluminum Alloy (use only with Polyimide or PEEK seat)			
12	Retaining Ring ^①	PTFE/ASTM D1710	PTFE/ASTM D1710	PTFE/ASTM D1710	—
13	Filter ^①	316L SS	316L SS	316L SS	—
14	Interstage Hole Plug ^②	316L SS	316L SS VAR	316L SS	Alloy C-276

Notes: 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.
② Models with metal gasket face seal fitting connections or butt weld connections do not have interstage holes. In other models, interstage holes are present and plugged.

Porting Configurations



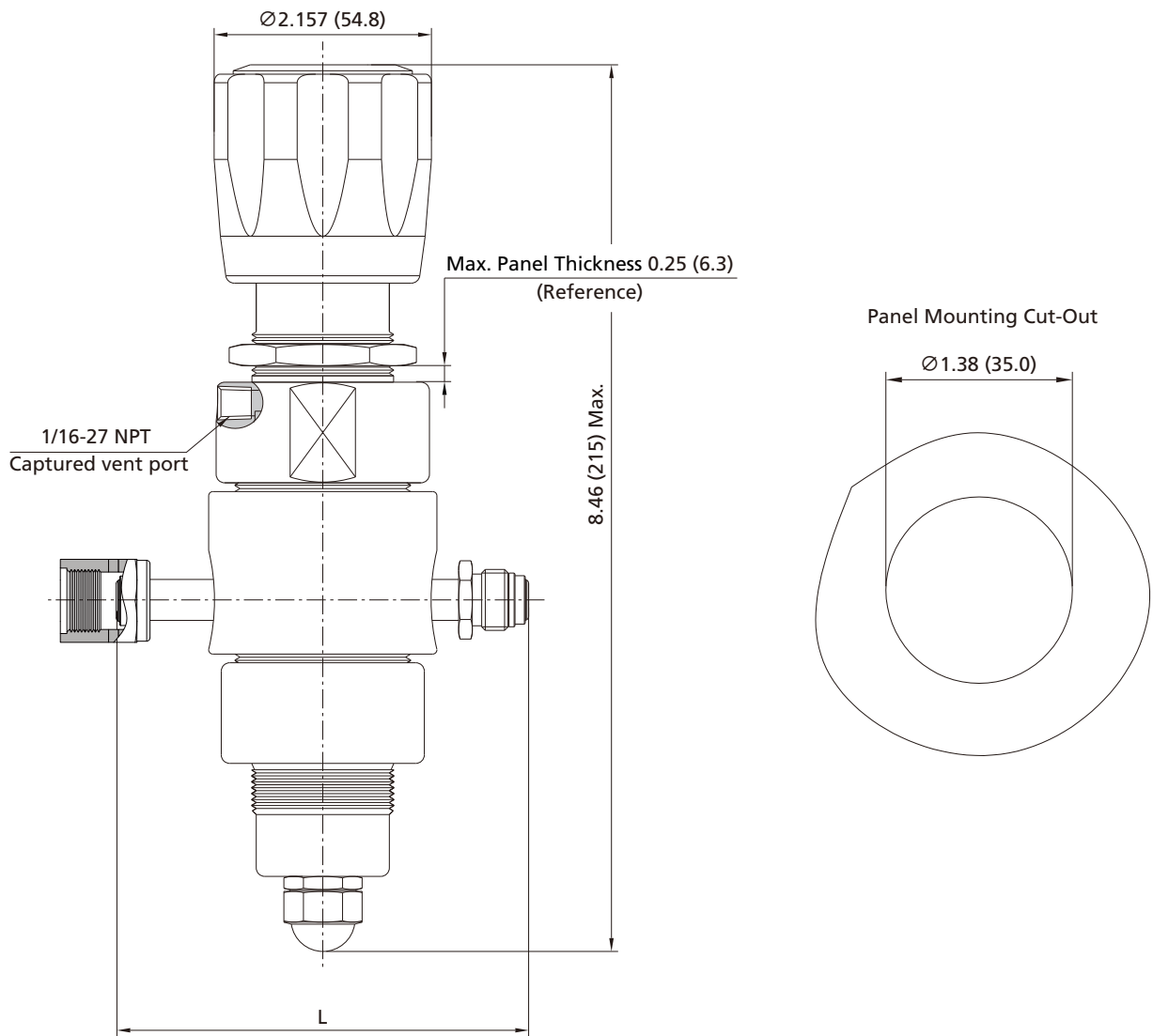
Porting Configuration Symbol

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

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



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	2.11 (53.5)
TB4	1/4"×0.035" Tube Butt Weld	2.96 (75.2)
TB6	3/8"×0.035" Tube Butt Weld	2.96 (75.2)
FL4	1/4" Tube Fitting	4.07 (103.5)
FL6	3/8" Tube Fitting	4.31 (109.6)
ML6	6 mm Tube Fitting	4.10 (104.2)
ML8	8 mm Tube Fitting	4.16 (105.7)

Ordering Number Description

RDDC – 6L – 35H – 1H – 3R3 – C580 – FNS4 – IBAP – OBRP – V – ATPM – F2									
Body Material		Porting			Outlet (OUT)		Seat Material		
6L	316L SS	1H1	1 Inlet & 1 Outlet			Same as Inlet		PCTFE	
6LV	316L SS VAR	1R2	1 Inlet & 2 Outlets			Specified in the same way as Inlet		V	Polyimide
B	Brass (Nickel Plated)	1L2	1 Inlet & 2 Outlets					P	PEEK
HC	Alloy C-276	1H3	1 Inlet & 3 Outlets						
Max. Inlet Pressure		2R2	2 Inlets & 2 Outlets		Inlet Pressure Gauge Port (Gi)		Auxiliary Outlet (Eout)		
35H	3500 psig (241 bar)	2L2	2 Inlets & 2 Outlets			Without pressure gauge, refer to Note 6			Without plug, refer to Note 6
45H	4500 psig (310 bar)	3R3	3 Inlets & 3 Outlets		IB	Gauge (psi/bar)	RP	Plug	
Outlet Pressure Range		3L3	3 Inlets & 3 Outlets		IM	Gauge (psi/MPa)	R	With relief valve, refer to Note 7	
25	0~25 psig (0~1.7 bar)	Inlet (IN)			IP	Plug	Handle		
50	0~50 psig (0~3.4 bar)	C_	CGA Cylinder Connection (For Inlet Only)		Auxiliary Inlet (Ein)			Round Handle	
1H	0~100 psig (0~6.9 bar)	DIN_	DIN Cylinder Connection (For Inlet Only)			Without plug, refer to Note 6	AT	Lock Nut, refer to Note 8	
150	0~150 psig (0~10.3 bar)	FFR4	1/4" Rotatable Female FR Fitting		AP	Plug	Installation Type		
250	0~250 psig (0~17.2 bar)	RFR4	1/4" Rotatable Male FR Fitting		Outlet Pressure Gauge Port (Go)			Fixedly Mounted at Pipe Inlet or Outlet	
		TB4	1/4"x0.035" Tube Butt Weld			Without pressure gauge, refer to Note 6	PM	Installed with Panel Nut	
		TB6	3/8"x0.035" Tube Butt Weld		OB	Gauge (psi/bar)	Process Specification		
		FNS4	1/4" Female NPT		OM	Gauge (psi/MPa)	F2	FC-02	
		FL4	1/4" Tube Fitting		OP	Plug	F3	FC-03	
		FL6	3/8" Tube Fitting						
		ML6	6 mm Tube Fitting						
		ML8	8 mm Tube Fitting						

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 Metric/Fractional 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 Metric/Fractional 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.
- 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.
- 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.
- For the default pressure gauge configurations, please refer to the pressure gauge ordering information on page R-12 of FITOK Full Technical Catalog For Specialty Gas Application.