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.

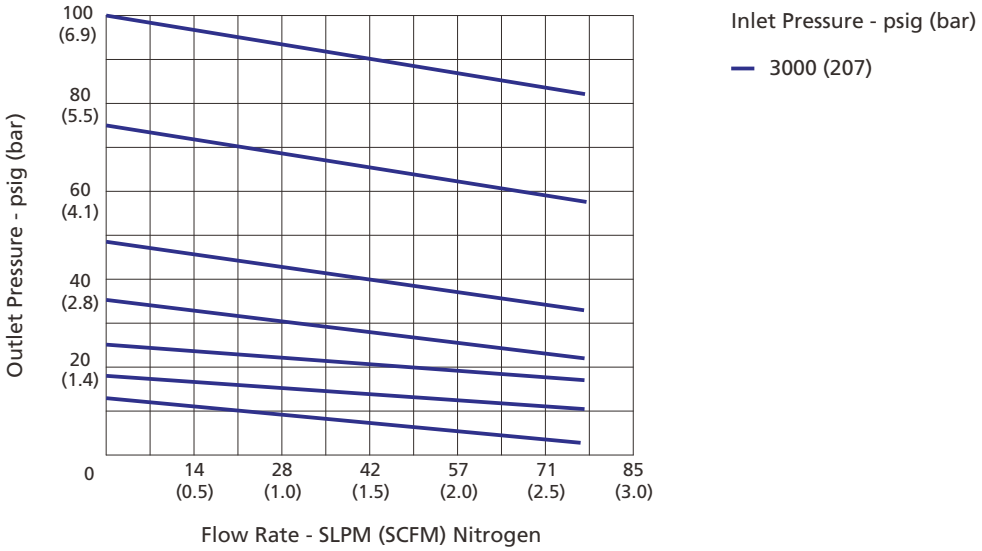
Features

◎ 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			PCTFE：-40 ~ 165°F (-40 ~ 74°C) Polyimide：14 ~ 194°F (-10 ~ 90°C)
SPE (Supply Pressure Effect)			0.01 psig per 100 psig source pressure change
Leak Rate (Helium)	**External**	**Inboard**	$\leqslant 2\times10^{-10}$ std cm^3/s
		Outboard	$\leqslant 2\times10^{-9}$ std cm^3/s
	Internal		$\leqslant 4\times10^{-8}$ std cm^3/s

Flow Data

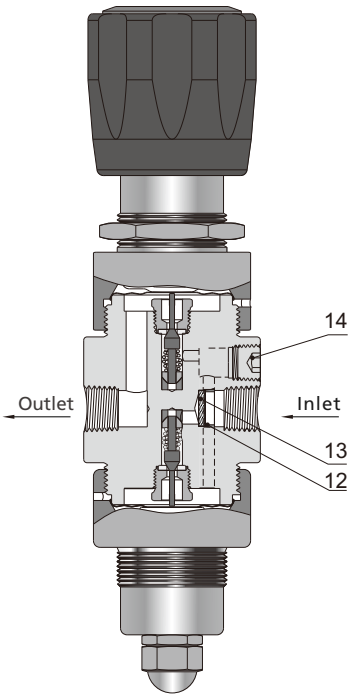


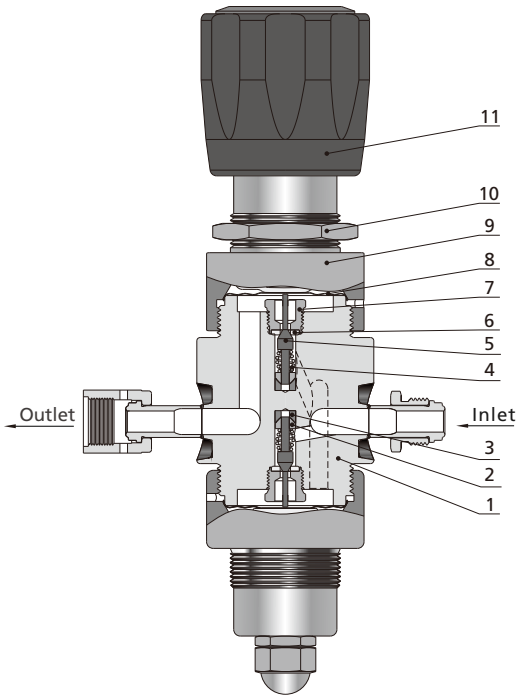
Process Specification

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

Major Materials of Construction

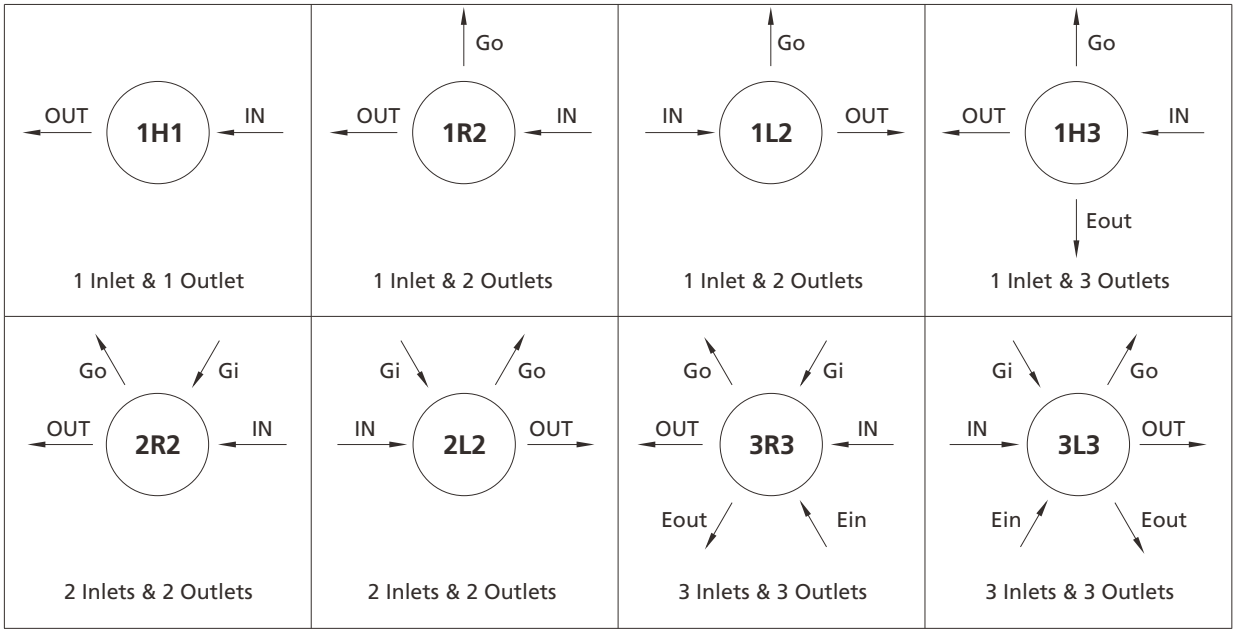




Item	Component	Material/Specification
1	Body	316L SS, 316L SS VAR, Brass (Nickle-Plated) or Alloy C-276
2	Poppet Damper	PTFE/ASTM D1710
3	Friction Sleeve	316L SS, 316L SS VAR or Alloy C-276
4	Poppet Spring	Alloy X-750
5	Lift Poppet	Alloy C-276
6	Seat	PCTFE/ASTM D1430 or Polyimide
7	Seat Retainer	316L SS, 316L SS VAR or Alloy C-276
8	Diaphragm	316L SS/ASTM A240
9	Bonnet	304 SS/ASTM A479 or Brass (Nickle-Plated)
10	Panel Nut	304 SS/ASTM A479
11	Handle	ABS
12	Retaining Ring①	PTFE
13	Filter①	316L SS
14	Interstage Hole Plug②	316L SS or Alloy C-276 (Including PTFE Sealing Tape)

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.
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



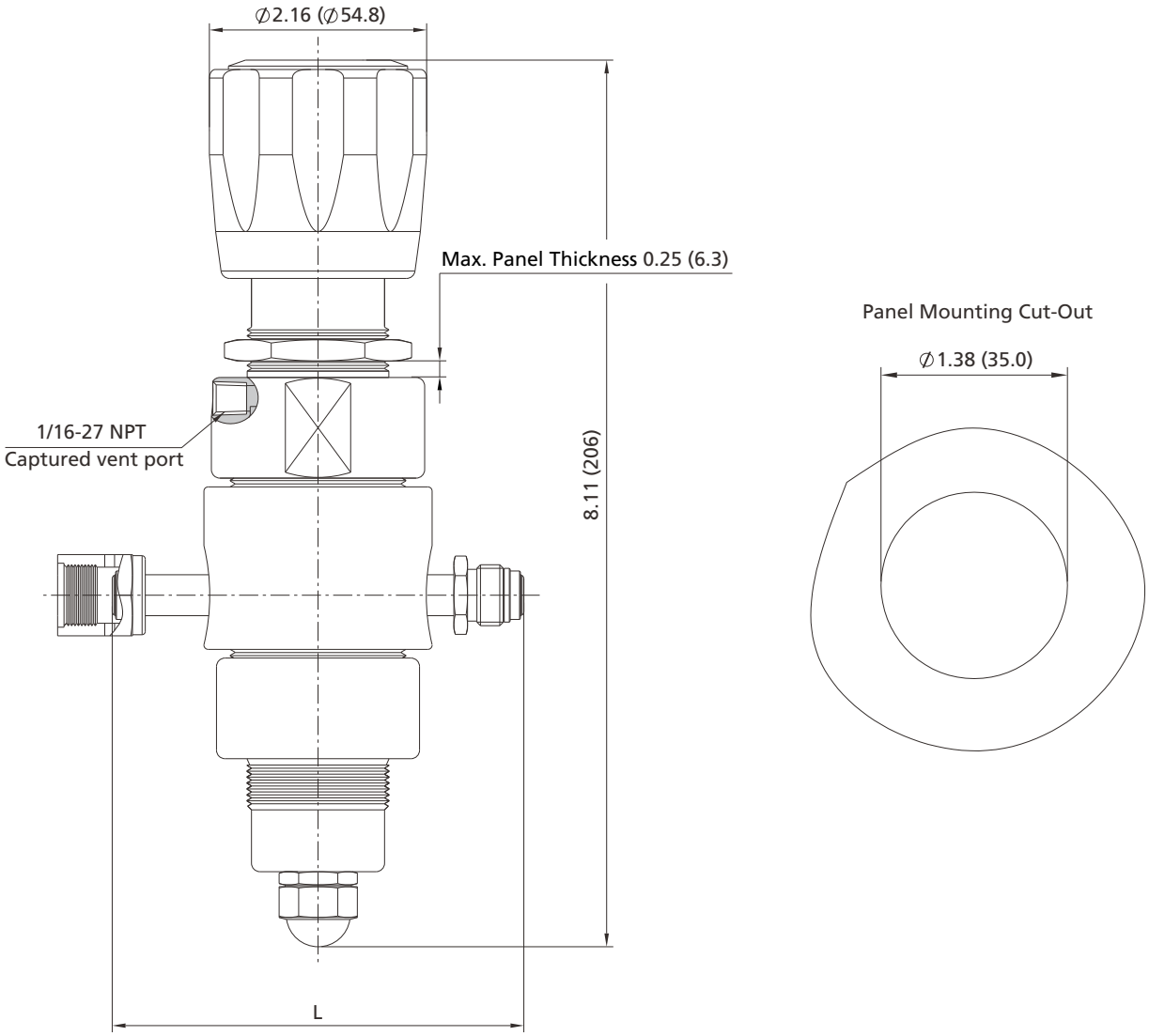
Porting Configuration Symbol

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

Max. Inlet Pressure	
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)

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 Metal Gasket Face Seal Fitting
RFR4	1/4" Rotatable Male FR Metal Gasket Face Seal Fitting
TB4	1/4"×0.035" Tube Butt Weld
TB6	3/8"×0.035" Tube Butt Weld
FNS4	1/4" Female NPT
FL4	1/4" Tube Fitting
FL6	3/8" Tube Fitting
ML6	6 mm Tube Fitting
ML8	8 mm Tube Fitting

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

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

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

Seat Material	
	PCTFE
V	Polyimide

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

Handle	
	Round Handle
AT	Lock Nut, refer to Note 8

Installation Type	
	Fixedly Mounted at Pipe Inlet or Outlet
PM	Installed with Panel Nut

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 Metric/Fractional 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 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 Metal Gasket Face Seal Fitting, without auxiliary connection (Ein, Eout) options.
7. 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.
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 equirements; 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.