

# Regulators

## High Performance High Purity Regulators

### FHR-1 Series

#### Features

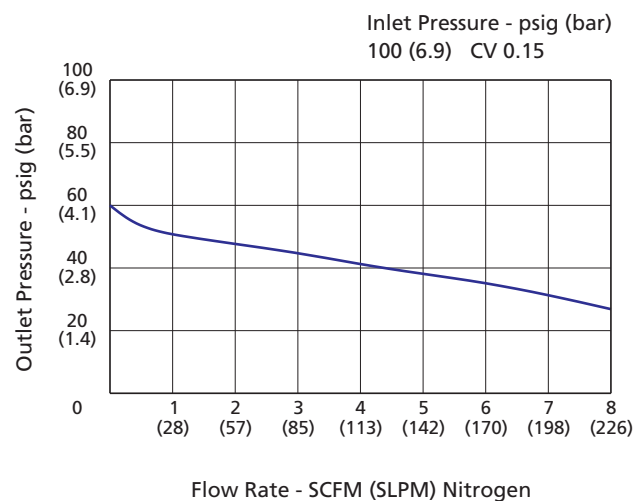
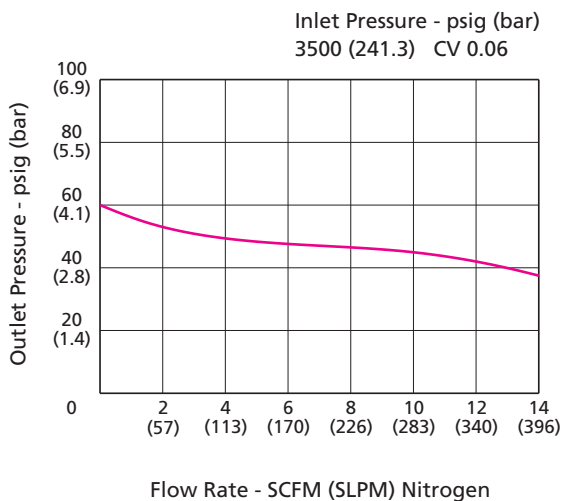
- ⦿ 316L stainless steel body for corrosive gases and toxic gases
- ⦿ Standard Hastelloy poppet and diaphragm
- ⦿ Tied diaphragm for added safety
- ⦿ No springs or threads are exposed to the wetted area
- ⦿ Internal surface roughness is finished to an average of Ra 10  $\mu\text{in.}$  (0.25  $\mu\text{m}$ ) or Ra 5  $\mu\text{in.}$  (0.13  $\mu\text{m}$ ) to ensure minimal particle generation
- ⦿ With special cleaning and packaging, applicable to oxygen-enriched environments
- ⦿ Ultra high purity service available



#### Technical Data

Port Size	1/4", 3/8" or 1/2"	
Max. Working Pressure	3500 psig (241 bar)	
Outlet Pressure Range	0 ~ 30, 0 ~ 60, 0 ~ 100, 0 ~ 150 psig	
Flow Coefficient (Cv)	3500 psig Inlet: 0.06 600, 1000 psig Inlet: 0.15	
Temperature	PCTFE: -40 ~ 149 °F (-40 ~ 65 °C) Vespel: -15 ~ 302 °F (-26 ~ 150 °C)	
Leak Rate (Helium)	Internal	$\leq 5 \times 10^{-8}$ std cm <sup>3</sup> /s
	External	$\leq 1 \times 10^{-9}$ std cm <sup>3</sup> /s
Weight (Regulator Only)	$\approx 1.5$ lbs (0.7 kg)	

#### Flow Data



Fittings

Valves

Pressure Gauges

Integrated Systems and Others

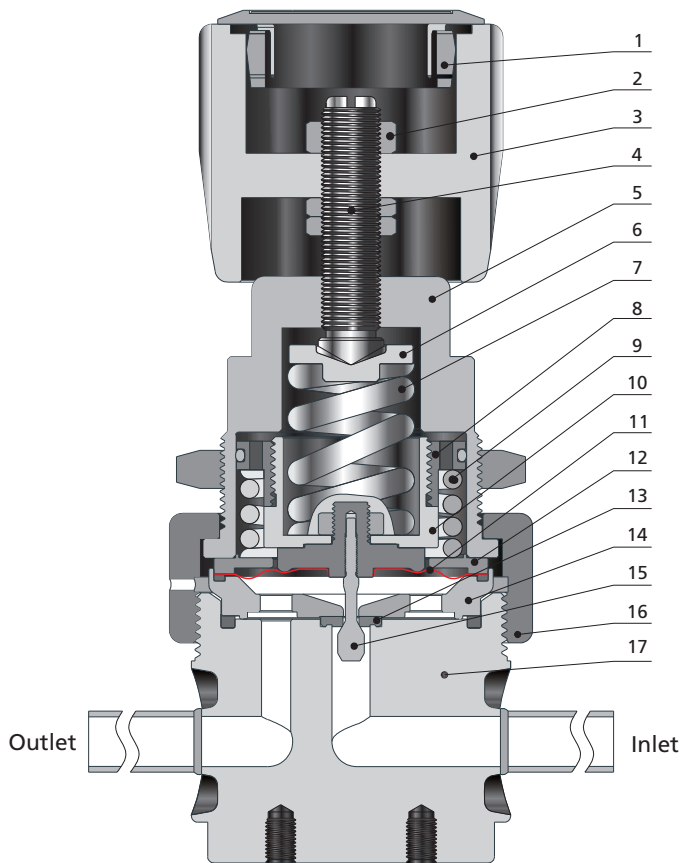
Process Specification

## Process Specification

Process Specification	Special Cleaning and Packaging (FC-02)	Ultra High Purity (FC-03)
Technology		
Material/Specification	316L SS/SEMI F20 316L VAR/SEMI F20 316L VIM-VAR/SEMI F20	
Wetted Surface Roughness	Ra 10 µin. (0.25 µm) <sup>①</sup>	Ra 5 µin. (0.13 µm)
Polishing Process	Machine finished <sup>①</sup>	Electropolished

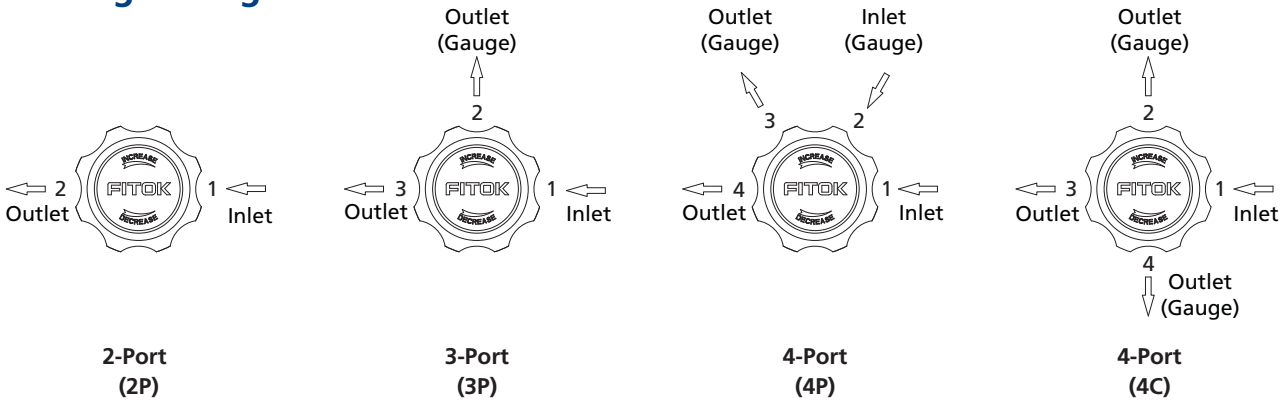
① For valves with FR connections and tube butt connections, the standard polishing process is electropolishing and the internal surface roughness is finished to an average of Ra 5 µin. (0.13 µm).

## Major Materials of Construction



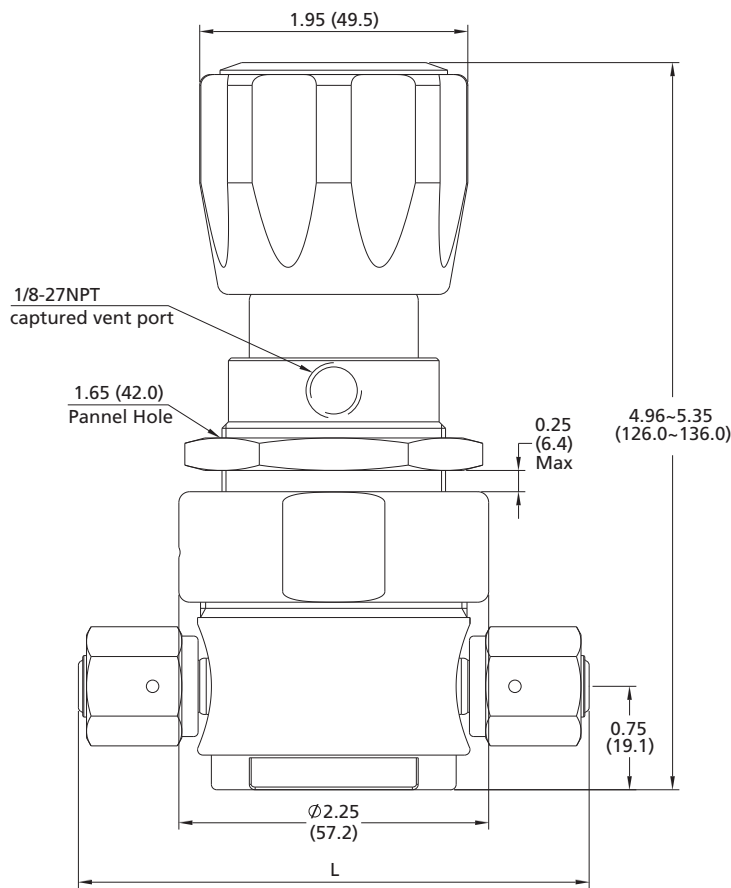
Item	Component	Material/Specification
1	Hole Plug	ABS
2	Stem Nut	Brass
3	Konb Handle	Aluminium
4	Stem	Brass
5	Bonnet	304 SS/ASTM A479
6	Spring Button	304 SS/ASTM A479
7	Range Spring	Alloy
8	Adjustment Nut	Aluminium
9	Return Spring	302 SS/ASTM A313
10	Spring Shield	Aluminium
11	Diaphragm	Hastelloy
12	Gland	630/ASTM A564
13	Seat	PCTFE/ASTM D1430 or Vespel
14	Support	316L SS/SEMI F20 or 316L VAR/SEMI F20 or 316L VIM-VAR /SEMI F20
15	Lift Poppet	Alloy C-22/ASTM B574
16	Bonnet Nut	304 SS/ASTM A479
17	Body	316L SS/SEMI F20 or 316L VAR /SEMI F20 or 316L VIM-VAR /SEMI F20

## Porting Configurations

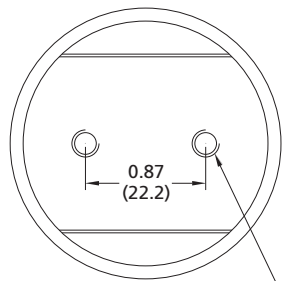


## Dimensions

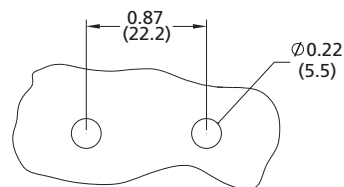
Dimensions, in inches (millimeters), are for reference only.



Bottom Panel Cut-Outs



2xM5x0.8-6H thread  
The holes are compatible with 10-32 mounting screws



Note: Vent port (1/8-27NPT) points to 12 o'clock direction from top view.

Fittings

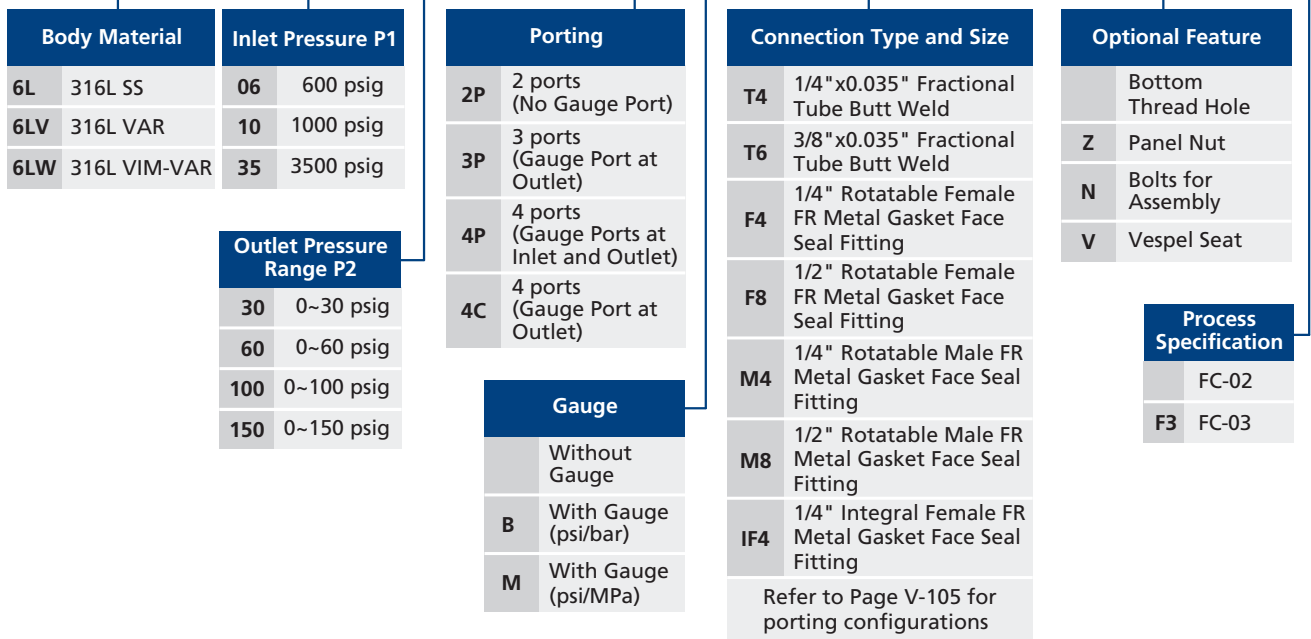
Connection Designator	Connection Type and Size	Dimension, in. (mm)
		L
T4	1/4"x0.035" Fractional Tube Butt Weld	3.70 (94.0)
T6	3/8"x0.035" Fractional Tube Butt Weld	
F4	1/4" Rotatable Female FR Metal Gasket Face Seal Fitting	
F8	1/2" Rotatable Female FR Metal Gasket Face Seal Fitting	4.75 (120.6)
M4	1/4" Rotatable Male FR Metal Gasket Face Seal Fitting	3.70 (94.0)
M8	1/2" Rotatable Male FR Metal Gasket Face Seal Fitting	4.75 (120.6)
IF4	1/4" Integral Female FR Metal Gasket Face Seal Fitting	1.06 (26.8)

Valves

### Ordering Number Description

**FHR - 16L - 35 - 100 - 4P - B - M4M4M4M4 - ZV - F3**

Pressure Gauges



Integrated Systems and Others

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

Process Specification