

Regulators

FHR-1 Series High Performance High Purity Regulators

Features

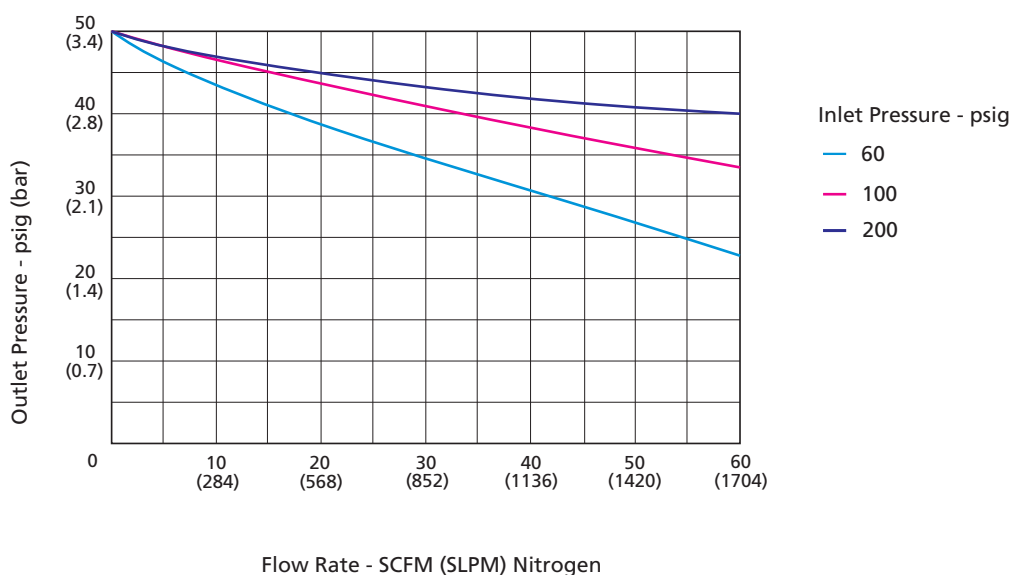
- ⦿ 316L stainless steel body for corrosive gases and toxic gases
- ⦿ Standard Hastelloy poppet and diaphragm
- ⦿ Tied diaphragm for added safety
- ⦿ Metal to metal diaphragm to body seal
- ⦿ No springs or threads are exposed to the wetted area
- ⦿ Internal surfaces are finished with Ra 10 μm . (0.25 μm) or Ra 5 μm . (0.13 μm) to ensure minimal particle generation
- ⦿ Every step of assembly, welding, testing, final cleaning and packaging is conducted in Class 100 cleanroom
- ⦿ Ultra High Purity applications



Technical Data

Port Size	1/4" , 3/8" or 1/2"	
Max. Working Pressure	3500 psig	
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	$\leq 5 \times 10^{-8}$ mbar l/s
	External	$\leq 1 \times 10^{-9}$ mbar l/s
Weight (regulator only)	≈ 1.5 lbs (0.7 kg)	

Flow Data

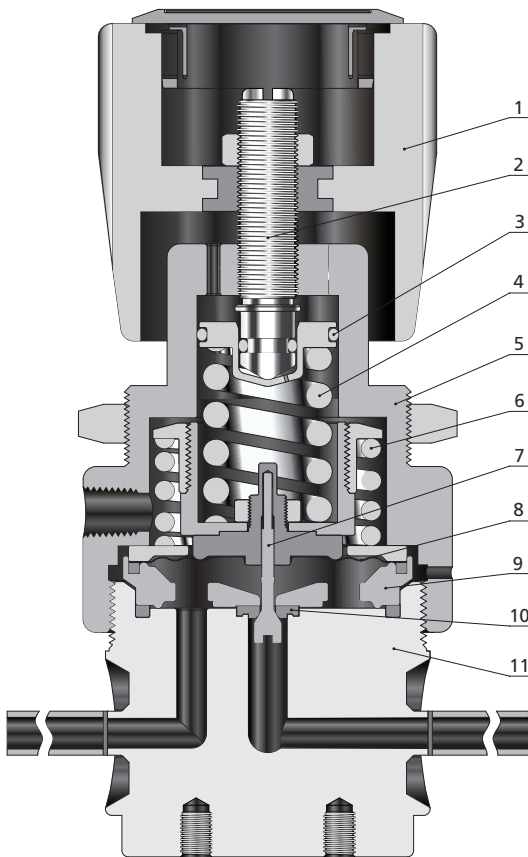


Product Technology Grade

Product Grade Technology	General Purpose	Special Cleaning and Packaging (F2)	Ultra High Purity (F3)
Material/Specification	316L SS/ASTM A479		316L VAR /SEMI F20
Wetted Surface Roughness	Ra 10 µin. (0.25 µm) ^①		Ra 5 µin. (0.13 µm)
Polishing Process	Machine finished ^①		Electropolished
Process Specification	FC-01 Standard Cleaning and Packaging	FC-02 Special Cleaning and Packaging	FC-03 Ultra High Purity Process Specification
Cleaning	Thrice degreasing ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultra high purity cleaning in continuously monitored ultrasonic cleaning system with deionized water
Assembly Environment	At atmosphere	In specially cleaned areas	In ISO Class 5/Federal Class 100 cleanroom
Packaging	Individually bagged	Double bagged	Double bagged and vacuum sealed in cleanroom

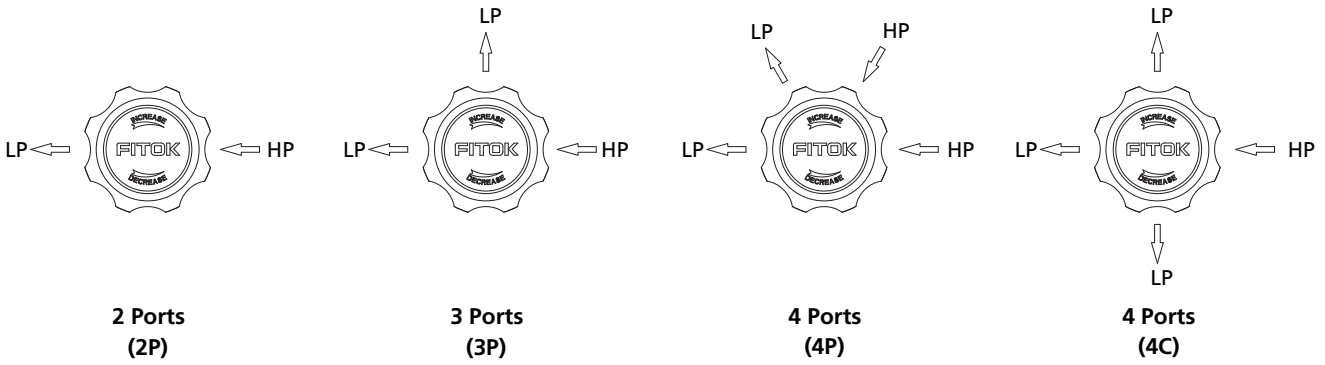
① For FR connections and tube butt connections, the standard polishing process is electropolishing and the internal surface roughness is finished to an average of Ra 5 µin. (0.13 µm).

Major Materials of Construction



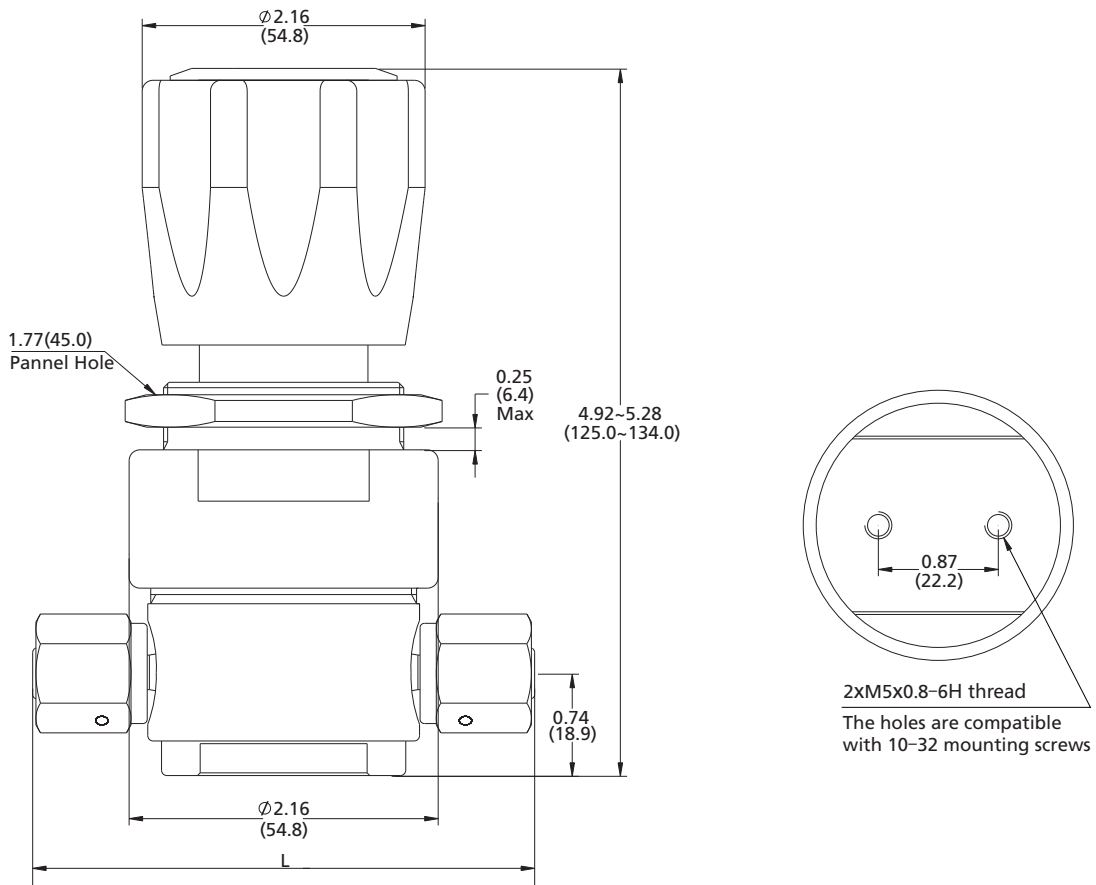
Item	Component	Material/Specification
1	Handle	Aluminum
2	Stem	C36000/ASTM B16
3	O-ring	Viton
4	Range Spring	S17700/ASTM A313
5	Bonnet	304 SS/ASTM A479
6	Back Move Spring	302 SS/ASTM A313
7	Lift Poppet	N06022/ASTM B574
8	Diaphragm	Hastelloy
9	Support	316L SS/ASTM A479
10	Seat	PCTFE/ASTM D1430 or Vespel
11	Body	316L SS/ASTM A479 or 316L VAR /SEMI F20 or 316L VIM-VAR /SEMI F20

Porting Configurations



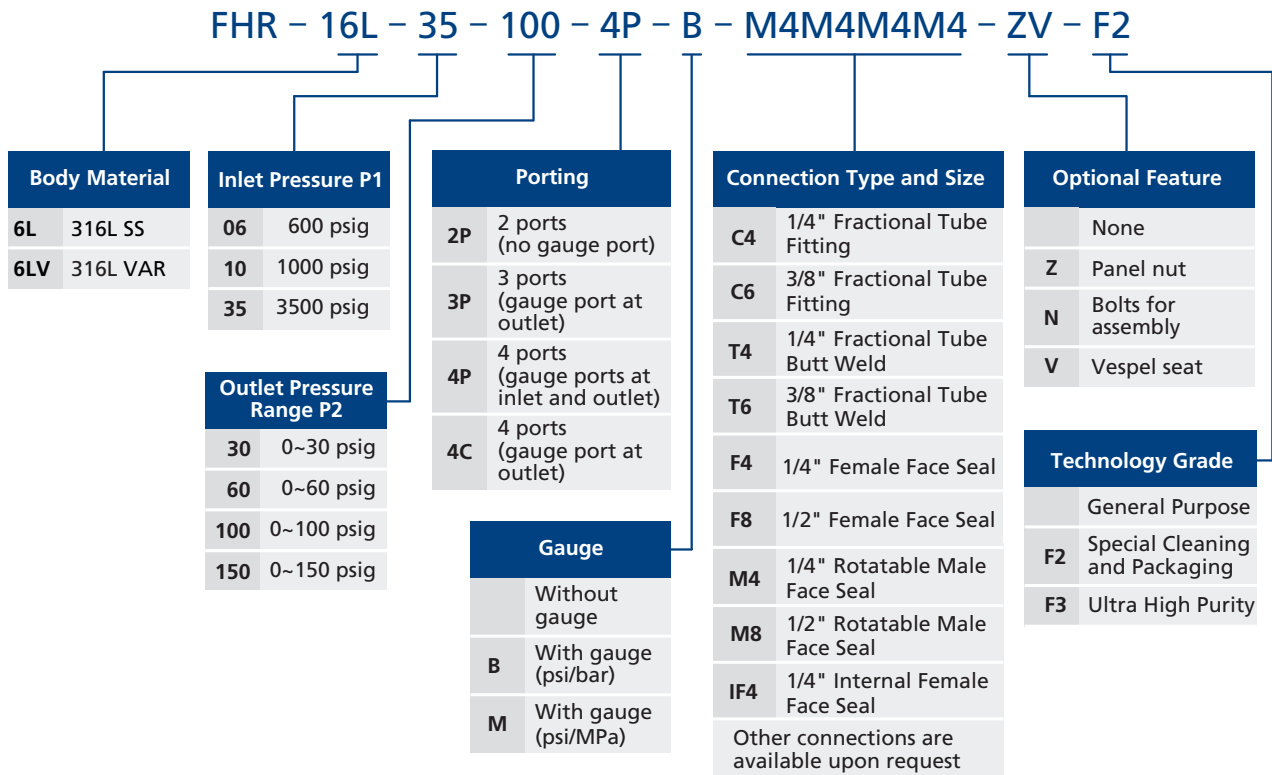
Dimensions

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



Connection Code	Connection Type and Size	L
C4	1/4" Fractional Tube Fitting	4.97" (126.2)
C6	3/8" Fractional Tube Fitting	5.99" (152.1)
T4	1/4" Fractional Tube Butt Weld	3.70 (94.0)
T6	3/8" Fractional Tube Butt Weld	
F4	1/4" Female Face Seal	
F8	1/2" Female Face Seal	4.75" (120.6)
M4	1/4" Rotatable Male Face Seal	3.70 (94.0)
M8	1/2" Rotatable Male Face Seal	4.75" (120.6)
IF4	1/4" Internal Female Face Seal	1.09" (27.7)

Ordering Number Description



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