Flow Switches
FV Series

Introduction

FV Series Flow Switches are safety devices designed for over-flow detection in high-purity and ultra-high-purity gas systems. They can quickly sense increases or decreases in gas flow. When the flow rate reaches or exceeds the preset trip point, the reed sensor generates a signal through the normally closed (NC) or normally open (NO) electrical contacts.

Features

- All-welded construction ensures leak-tight integrity
- No dead space in the flow path
- High-strength permanent magnet for enhanced durability
- Replaceable sensor assembly located outside the flow path for easy maintenance

Technical Data

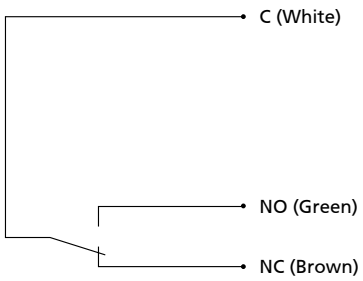
Port Size		1/4"
Source Pressure		Vacuum to 3500 psig (241 bar)
Proof Pressure		5250 psig (362 bar)
Burst Pressure		10500 psig (724 bar)
Working Temperature		-10 ~ 175 °F (-23 ~ 80 °C)
Leak Rate (Helium)	**Inboard**	$\leq 2\times10^{-10}$ std·cm^3/s
	Outboard	$\leq 2\times10^{-10}$ std·cm^3/s
Flow Trip Point		100 slpm (100 psig N_2 In)
Repeatability		±10% of flow trip point or 0.5 slpm (whichever is greater)
Installation Orientation		Inlet at bottom, within 8° of vertical

Note: The flow trip point may vary slightly with temperature. Within the specified working temperature range, the variation is ±2%.

Reed Sensor Data

Type		SPDT, 3-wire, 2-position
Switching Voltage		175 V (AC) Max
Switching Current		0.5A Max
Carry Current		1A Max
Contact Resistance		0.3 Ω max
Wire Specification		26 AWG, 80 °C, 300 V
Wire Jacket		PVC
Wire Length		19.7 in. (50 cm)
Lead Colors	**White**	Common
	Brown	Normally Closed (NC)
	Green	Normally Open (NO)

Wiring Diagram

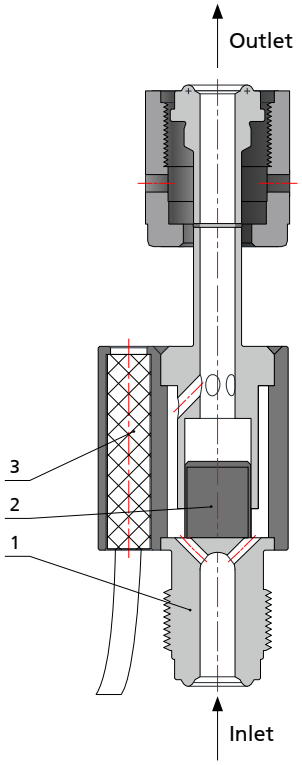


Process Specification

Item \ Process Specification	Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
Material	316L SS, 316L SS VAR	
Wetted Surface Roughness	Ra 15 µin. (0.4 µm)	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 detailed process specifications, refer to the FITOK Full Technical Catalog for Ultra High Purity Products, page P-01.

Major Materials of Construction



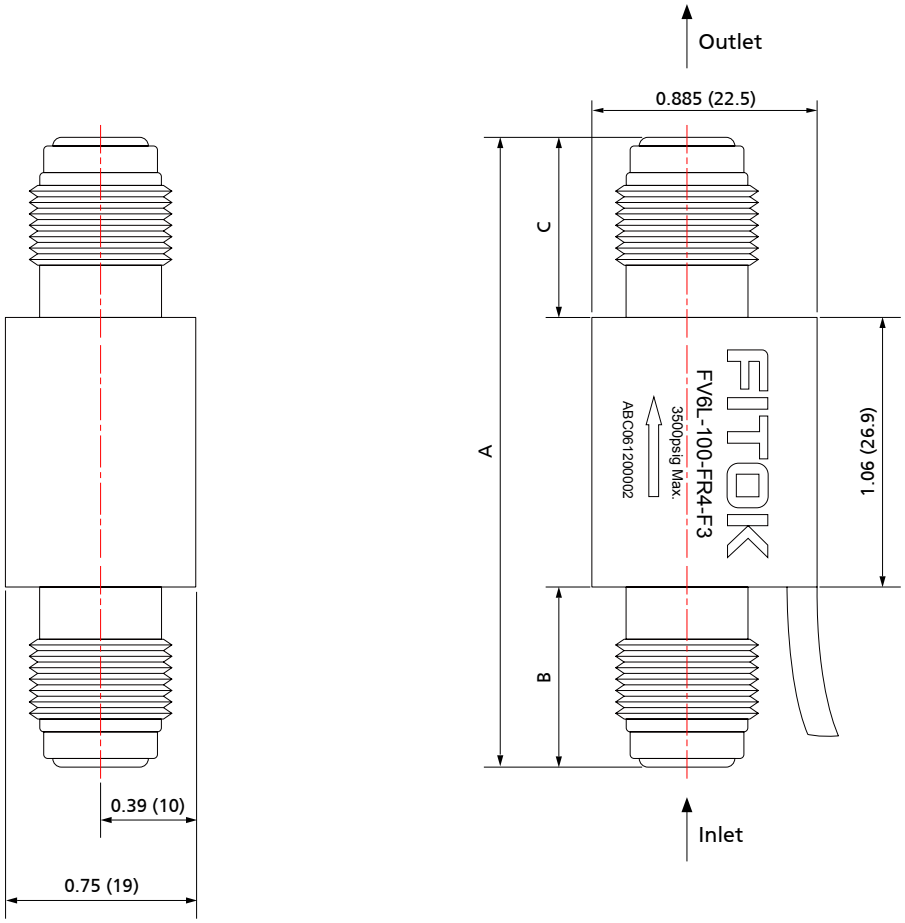
Item	Component	Material/Specification
1	Body	316L SS/SEMI F20
		316L SS VAR/SEMI F20
2	Float	Same as body material
3	Reed Sensor	See above

Cautions:

- ⊙ The actual actuation point varies with pressure. As pressure decreases, the flow trip point also decreases.
- ⊙ It is recommended to select an actual flow trip point based on the minimum system pressure.
- ⊙ The theoretical flow trip point can be calculated based on different inlet pressures and gas media. For calculation details, please contact FITOK.
- ⊙ The flow switch contains a strong magnet. Placing it too close to magnetically sensitive equipment may affect their operation.
- ⊙ Installation orientation is critical. The switch must be installed within 8° of vertical, with the inlet at the bottom.
- ⊙ The flow switch is for gas applications only.
- ⊙ Proper installation and connection are required for correct operation.

Dimensions and Ordering Information

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



Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)		
		A	B	C
FV6L-100-TB4	1/4" Tube Butt Weld Fitting	2.25 (57)	0.59 (15)	0.59 (15)
FV6L-100-FR4	1/4" Integral Male FR Fitting	3.12 (79)	0.71 (18)	1.34 (34.1)
FV6L-100-FFR4	1/4" Rotatable Female FR Fitting	3.99 (101)	1.575 (40)	1.34 (34.1)

Ordering Number Description

FV6L - 100 - FR4 - FFR4 - F3

Series	Body Material	Flow Trip Point	Inlet Type	Inlet Size	Outlet Type & Size	Process Specification
FV	6L 316L SS	100 100=100 slpm	TB Fractional Tube Butt Weld	4 1/4"	Same as Inlet	F2 FC-02
	6LV 316L SS VAR	Note: The flow trip point is specified at an inlet pressure of 100 psig with nitrogen.	FR Integral Male FR Fitting		Specified in the same way as Inlet Type and Inlet Size	F3 FC-03
			FFR Rotatable Female FR Fitting			

Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number, not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.