

High Pressure/High Flow Diaphragm Valves

DF Series

Features

DF Series High Pressure/High Flow Diaphragm Valves are suitable for high purity and ultra high purity applications. Featuring an easily replaceable seat, these valves are ideal for high pressure and high flow applications.

Features

- ⦿ Ideal for high flow applications
- ⦿ Metal-to-metal seal
- ⦿ Spring type design
- ⦿ Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- ⦿ Normally closed or normally open position sensors optional for pneumatically actuated valves



Technical Data

Port Size			3/8" to 1/2" or 8 mm to 12 mm
Flow Coefficient (Cv)			0.80
Orifice Size			0.31 in. (8.0 mm)
Max. Working Pressure	Handle	3500 psig (241 bar)	
	Pneumatic	3000 psig (207 bar)	
Max. Differential Back Pressure ^①			150 psig (10.3 bar)
Pneumatic Actuator Operating Pressure			60 to 90 psig (4.2 to 6.2 bar)
Temperature			PCTFE: -10 ~ 150 °F (-23 ~ 65 °C) Polyimide: -10 ~ 250 °F (-23 ~ 121 °C)
Leak Rate (Helium)	Internal	$\leq 4 \times 10^{-9}$ std-cm ³ /s	
	External	$\leq 4 \times 10^{-9}$ std-cm ³ /s	

① Differential back pressure is equal to the outlet pressure minus the inlet pressure. When the differential back pressure is greater than 150 psig (10.3 bar), the valve will not open. As the force of the differential back pressure acting on the valve stem is downward when closing and is greater than the spring force, the valve stem cannot be lifted.

Flow Data

Air @ 70 °F (21 °C)
Water @ 60 °F (16 °C)

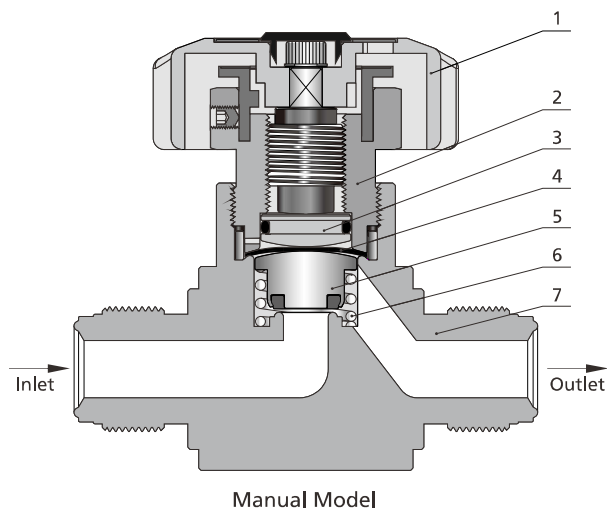
Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
10 (0.68)	274	9.5
50 (3.4)	733	21.5
100 (6.8)	1300	30.3

Process Specification

Item	Process Specification	Standard Cleaning and Packaging Process (FC-01) Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
		316L SS	
Material		316L SS	
Wetted Surface Roughness		Ra 20 μin. (0.5 μm)	Ra 10 μin. (0.25 μm)
Polishing Process		Machine finished	Electropolished

Note: Refer to page P-01 for a detailed description of Process Specification.

Major Materials of Construction



Item	Component	Material/Specification
1	Handle	Aluminum
2	Bonnet Nut	S17400/ASTM A564
3	Button	316 SS/ASTM A479
4	Diaphragm (5)	Cobalt Alloy (3) /AMS 5876 + C17200 (2) /ASTM B194
5	Stem Subassembly	316L SS and PCTFE/ASTM D1430 or Polyimide
6	Spring	316 SS/ASTM A313
7	Body	316L SS

Handles and Actuators

Manual - Round Handle

- One-half turn to operate from fully open to closed
- Handle with window to visually indicate open and closed states



Pneumatic

- Normally open, "N.O." marked on the top of the actuator
- Normally closed, "N.C." marked on the top of the actuator



Position Sensors

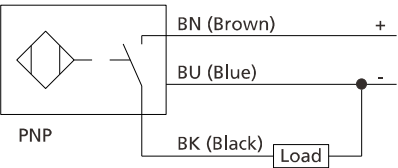
Transmit a signal to an electrical device indicating the open and closed position of pneumatically actuated valves

Technical Information

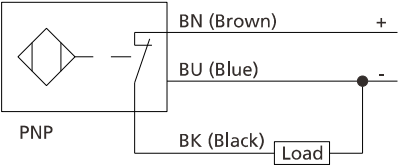
Output	3-wire V (dc), PNP
Output Function	Normally open or normally closed
Voltage	10 ~ 30 V (dc)
Working Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

Wiring Diagram

Normally open position sensors



Normally closed position sensors



- Notes:
- 1. For normally closed pneumatically actuated valves, when fitted with normally open sensors, the sensors transmit signals with indicators illuminated when the valves are open. Conversely, when fitted with normally closed sensors, the sensors transmit signals with indicators illuminated when the valves are closed.
 - 2. For normally open pneumatically actuated valves, when fitted with normally open sensors, the sensors transmit signals with indicators illuminated when the valves are closed. Conversely, when fitted with normally closed sensors, the sensors transmit signals with indicators illuminated when the valves are open.

Explosion-proof Position Sensors

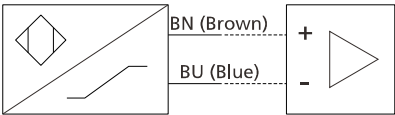
Transmit a signal to an electrical device, indicating the open and closed positions of pneumatically actuated valves.

Equipment Group II under ATEX Certification. The output complies with DIN EN 6094 7-5-6 (NAMUR) and the sensor should be used with an isolation amplifier.

Technical Information

Output	2 Wires DC
Voltage	8.2 V (dc)
Working Temperatre	-13 ~ 158 °F (-25 ~ 70 °C)

Wiring Diagram



Fittings

Valves

Regulators

Filters

Tubing

Integrated Systems

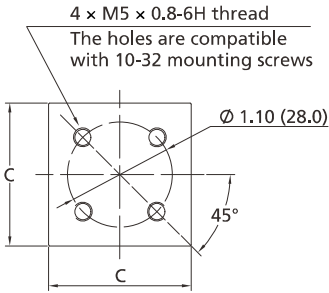
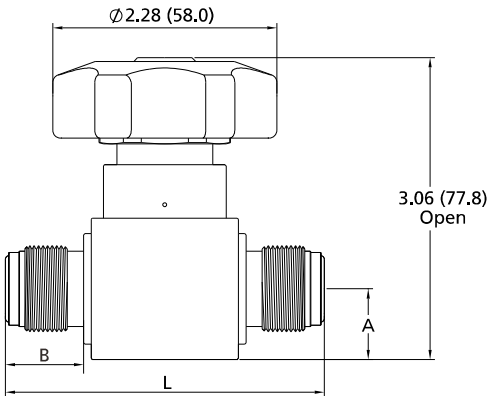
Other Products

Technical Information

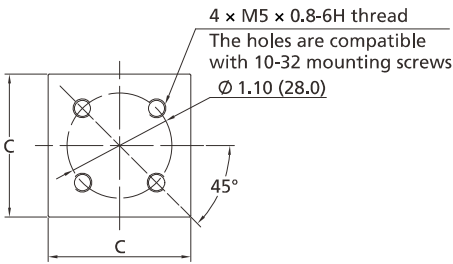
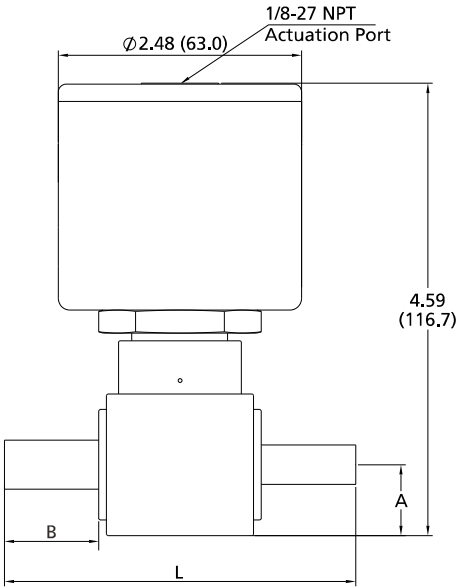
Dimensions

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

Manual - Round Handle

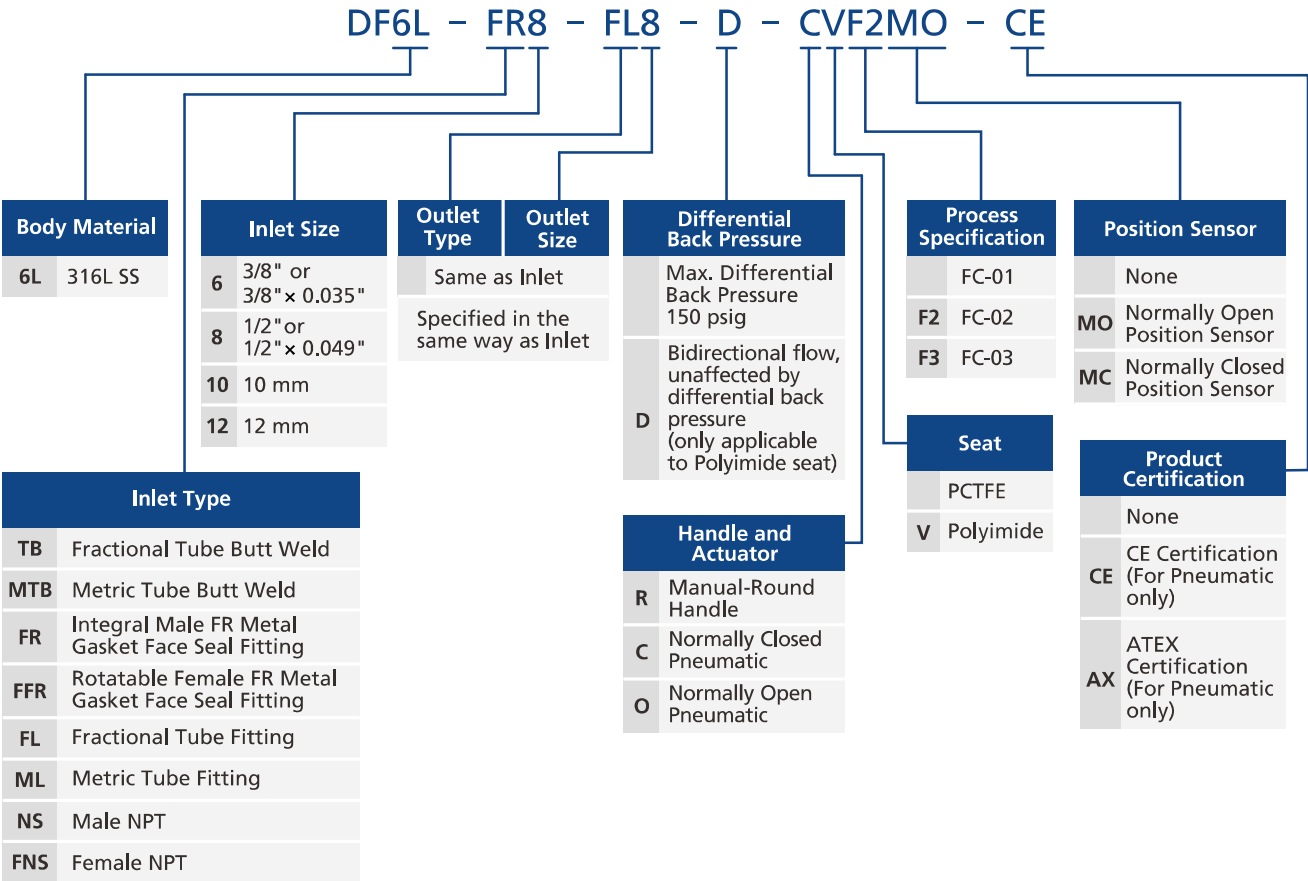


Pneumatic



Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)			
		A	B	C	L
DF6L-TB6-	3/8" x 0.035" Tube Butt Weld	0.71 (18.0)	0.96 (24.5)	1.50 (38.1)	3.58 (90.9)
DF6L-TB8-	1/2" x 0.049" Tube Butt Weld				
DF6L-FR8-	1/2" Integral Male FR Metal Gasket Face Seal Fitting		0.80 (20.3)		3.25 (82.5)
DF6L-FFR8-	1/2" Rotatable Female FR Metal Gasket Face Seal Fitting		1.12 (28.4)		3.89 (98.8)
DF6L-FL6-	3/8" FITOK Tube Fitting		0.76 (19.3)		3.27 (83.0)
DF6L-FL8-	1/2" FITOK Tube Fitting		0.86 (21.9)		3.47 (88.2)
DF6L-FNS8-	1/2 Female NPT		0.91 (23.0)		3.30 (84.0)

Ordering Number Description



Notes:

- "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.
- For the -CE or AX options, the valve conforms to ATEX certification, with "CE" marking and explosion protection "EX" marking. For position sensor selections, the -CE option includes a 3-wire position sensor compliant with CE certification, while the -AX option includes a 2-wire explosion-proof position sensor compliant with ATEX certification. The 2-wire explosion-proof position sensor requires use with an isolating switch amplifier.
- To order unaffected by differential back pressure options, add "-D" to the part number. Pneumatic actuated valve with "-D" in the part number has an air source pressure 75~105 psig (5.2~7.5 bar) and an actuator outside diameter of 66.2 mm.