

Diaphragm Valves



Fittings

Valves

Regulators

Filters

Tubing

Integrated
SystemsOther
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Information

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Atomic Layer Deposition Diaphragm Valves

ALD Series

Introduction

FITOK ALD Series Atomic Layer Deposition Diaphragm Valves are ideal for the atomic layer deposition processes. They deliver ultra-high precision, cleanliness, consistency, and long cycle life, ensuring accurate gas dosing for technological processes.



Features

- ⦿ Ultra long cycle life
- ⦿ No dead space in the flow path
- ⦿ High Cv consistency and stability
- ⦿ Quick response capable of valve opening or closing time of less than 5 ms
- ⦿ Standard, thermal and thermal immersion models optional
- ⦿ For the valve fitted with a solenoid valve, the solenoid valve is circularly rotatable along the actuator for easy position adjustment

Technical Data

Port Size	1/4" to 3/8", 6 mm to 8 mm, 1.125" or 1.5" surface-mount	3/8" to 1/2", 10 mm to 12 mm, or 1.5" surface-mount
Flow Coefficient (Cv) ^①	Standard and thermal model: 0.27	Standard and thermal model: 0.62
	Thermal immersion model: 0.3 ^②	Thermal immersion model: 0.62 ^③
Orifice Size	0.16" (4.1 mm)	0.23" (5.9 mm)
Working Pressure	Standard and thermal models: Vacuum to 145 psig (10 bar)	
	Thermal immersion model: Vacuum to 70 psig (4.8 bar)	
Actuator Operating Pressure	60 ~ 90 psig (4.2 ~ 6.2 bar)	
Working Temperature	Body	Standard model: 32 ~ 248 °F (0 ~ 120 °C)
		Thermal model: 32 ~ 392 °F (0 ~ 200 °C)
		Thermal immersion model: 70 ~ 428 °F (20 ~ 220 °C)
	Actuator	Standard and thermal models: 32 ~ 248 °F (0 ~ 120 °C)
		Thermal immersion model: 70 ~ 428 °F (20 ~ 220 °C)
	Solenoid Valve	-0.4 ~ 122 °F (-18 ~ 50 °C)
Leak Rate (Helium)	Sensor	-13 ~ 158 °F (-25 ~ 70 °C)
	Internal	≤1×10 ⁻⁹ std·cm ³ /s
	External	≤1×10 ⁻⁹ std·cm ³ /s

① Cv is adjustable and may vary with temperature. The value shown is the default at room temperature before shipment and can be adjusted upon customer request. For more details, please contact FITOK.

② Cv =0.21 at 428 °F (220 °C)

③ Cv =0.4 at 428 °F (220 °C)

Flow Data

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

Orifice Size in. (mm)	Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
0.16 (4.1)	10 (0.68)	86	3.2
	50 (3.4)	230	7.2
	100 (6.8)	410	10.2
0.23 (5.9)	10 (0.68)	199	7.4
	50 (3.4)	530	16.6
	100 (6.8)	945	23.6

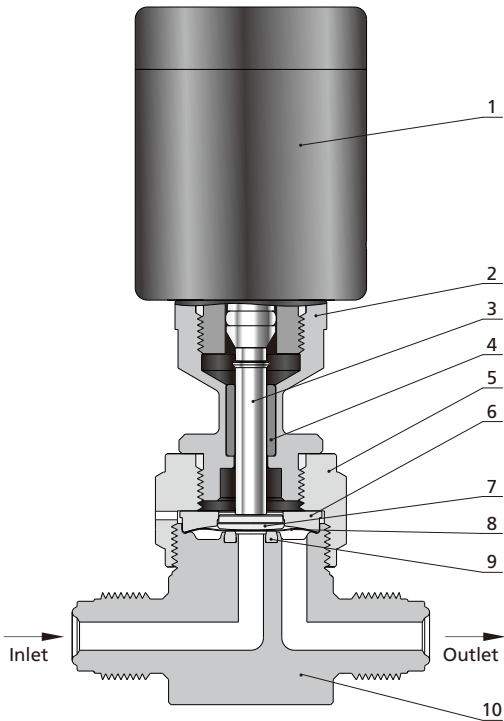
Process Specification

Process Specification	
Item	Ultra High Purity Process (FC-03)
Material	316L SS, 316L SS VAR, 316L SS VIM-VAR
Wetted Surface Roughness	Ra 5 µin. (0.13 µm)
Polishing Process	Electropolished
Cleaning	Ultra high purity cleaning in continuously monitored ultrasonic cleaning system with deionized water
Assembly Environment	ISO 4 (FS 209E 10 equivalent) cleanroom
Packaging	Double bagged in cleanroom

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

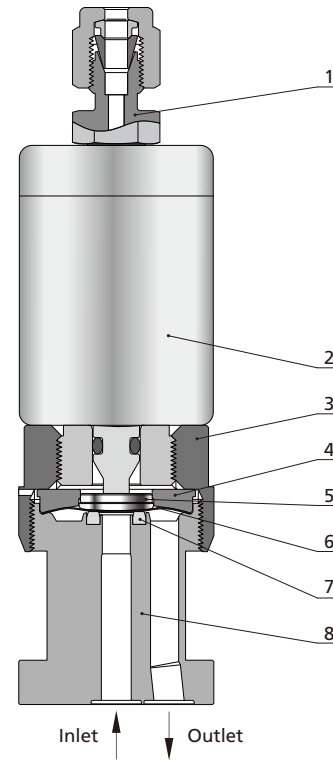
Major Materials of Construction

Item	Component	Material/Specification
1	Actuator	Aluminum
2	Thermal Isolation Coupling Housing (Thermal Model Only)	316 SS/ASTM A479
3	Thermal Isolation Coupling Stem (Thermal Model Only)	S17400/ASTM A564
4	Guide (Thermal Model Only)	PTFE/ASTM D1710
5	Bonnet Nut	316 SS/ASTM A479
6	Bonnet	S17400/ASTM A564
7	Button	316 SS/ASTM A479
8	Diaphragm	Cobalt Alloy/AMS 5876
9	Seat	PFA/ASTM D3307
10	Body	316L SS or 316L SS VAR



Item	Component	Material/Specification
1	Fitting	316 SS/ASTM A479
2	Actuator ^①	316 SS/ASTM A479
3	Bonnet Nut	316 SS/ASTM A479
4	Bonnet	S17400/ASTM A564
5	Button	316 SS/ASTM A479
6	Diaphragm	Cobalt Alloy/AMS 5876
7	Seat	PFA/ASTM D3307
8	Body	316L SS or 316L SS VAR

① 1/8" tube fittings by default.

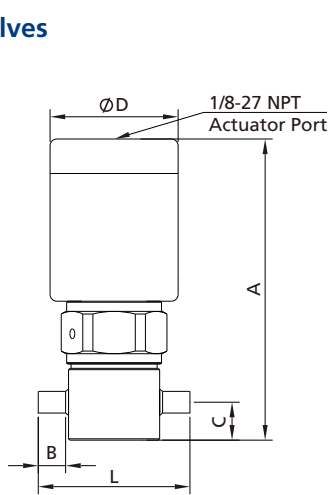


Normally Closed Thermal Immersion Actuator

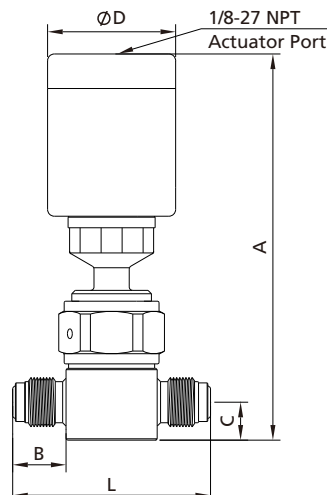
Dimensions and Ordering Information

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

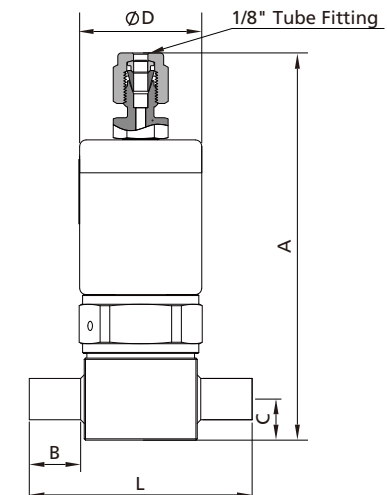
2-Port Valves



Standard Model

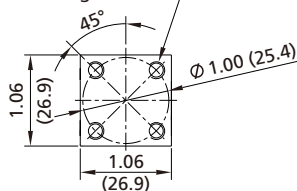


Thermal Model



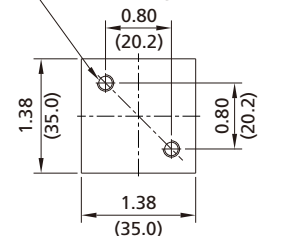
Thermal Immersion Model

4 × M5 × 0.8-6H thread
The holes are compatible
with 10-32 mounting screws



Orifice 0.16 in. (4.1 mm) Bottom

2 × M5 × 0.8-6H thread
The holes are compatible
with 10-32 mounting screws

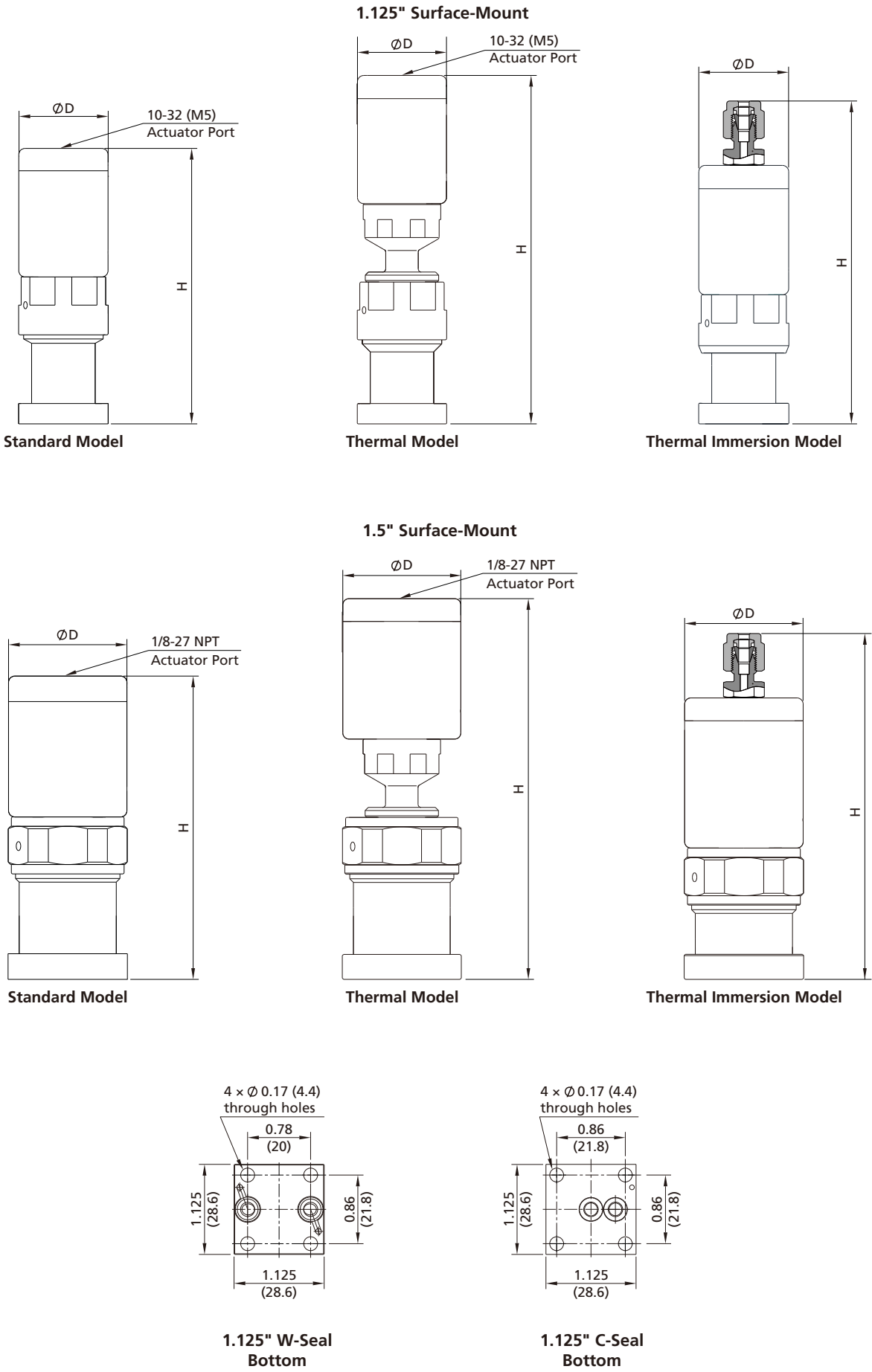


Orifice 0.23 in. (5.9 mm) Bottom

V-07 Diaphragm Valves

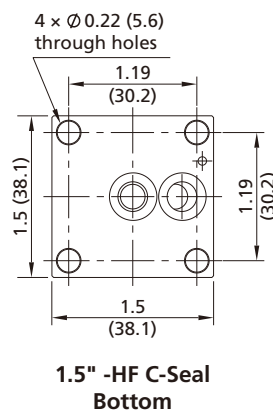
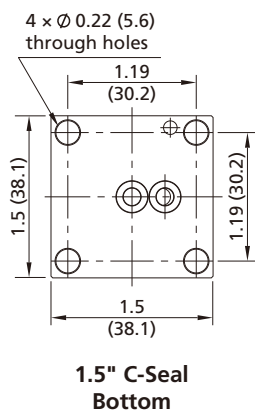
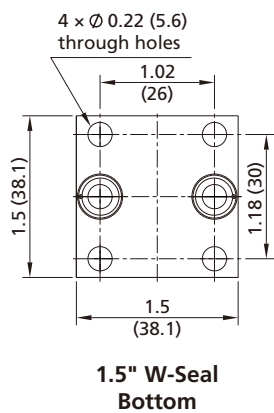
Fittings, Valves, Regulators, Tubing, and Other Products								
Orifice Size in. (mm)	Valve Type	Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)				
				A	B	C	D	L
0.16 (4.1)	Standard	ALD□□-TB4-4-	1/4" Tube Butt Weld	3.50 (88.9)	0.30 (7.6)	0.44 (11.2)	1.49 (37.8)	1.74 (44.2)
		ALD□□-TB6-4-	3/8" Tube Butt Weld		0.26 (6.6)			
		ALD□□-FFR4-4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)			2.78 (70.6)
		ALD□□-RFR4-4-	1/4" Rotatable Male FR Fitting					
		ALD□□-FR4-4-	1/4" Integral Male FR Fitting		0.62 (15.7)			2.30 (58.4)
	Thermal	ALD□□-TB4-4-HT-	1/4" Tube Butt Weld	4.50 (114.0)	0.30 (7.6)	0.44 (11.2)	1.49 (37.8)	1.74 (44.2)
		ALD□□-TB6-4-HT-	3/8" Tube Butt Weld		0.26 (6.6)			
		ALD□□-FFR4-4-HT-	1/4" Rotatable Female FR Fitting		0.86 (21.8)			2.78 (70.6)
		ALD□□-RFR4-4-HT-	1/4" Rotatable Male FR Fitting					
		ALD□□-FR4-4-HT-	1/4" Integral Male FR Fitting		0.62 (15.7)			2.30 (58.4)
	Thermal Immersion	ALD□□-TB4-4-HJ-	1/4" Tube Butt Weld	4.02 (102.1)	0.30 (7.6)	0.44 (11.2)	1.12 (28.5)	1.74 (44.2)
		ALD□□-TB6-4-HJ-	3/8" Tube Butt Weld		0.26 (6.6)			
		ALD□□-FFR4-4-HJ-	1/4" Rotatable Female FR Fitting		0.86 (21.8)			2.78 (70.6)
		ALD□□-RFR4-4-HJ-	1/4" Rotatable Male FR Fitting					
		ALD□□-FR4-4-HJ-	1/4" Integral Male FR Fitting		0.62 (15.7)			2.30 (58.4)
0.23 (5.9)	Standard	ALD□□-TB6-6-	3/8" Tube Butt Weld	3.55 (93)	0.67 (17.0)	0.50 (12.7)	1.49 (37.8)	2.72 (69.0)
		ALD□□-TB8-6-	1/2" Tube Butt Weld					
		ALD□□-FFR8-6-	1/2" Rotatable Female FR Fitting		0.94 (24.0)			3.27 (83.0)
		ALD□□-RFR8-6-	1/2" Rotatable Male FR Fitting					
		ALD□□-FR8-6-	1/2" Integral Male FR Fitting		0.81 (20.6)			3.00 (76.2)
		ALD□□-FHFR4-6-	1/4" Rotatable Female FR Fitting		0.71 (18.1)			2.78 (70.6)
		ALD□□-RHFR4-6-	1/4" Rotatable Male FR Fitting		0.94 (23.8)			3.23 (82)
	Thermal	ALD□□-FHFR4-6-HT-	1/4" Rotatable Female FR Fitting	4.54 (118.1)	0.71 (18.1)	0.50 (12.7)	1.49 (37.8)	2.78 (70.6)
		ALD□□-RHFR4-6-HT-	1/4" Rotatable Male FR Fitting		0.94 (23.8)			3.23 (82)
		ALD□□-TB6-6-HT-	3/8" Tube Butt Weld		0.67 (17.0)			2.72 (69.0)
		ALD□□-TB8-6-HT-	1/2" Tube Butt Weld					
		ALD□□-FFR8-6-HT-	1/2" Rotatable Female FR Fitting		0.94 (24.0)			3.27 (83.0)
		ALD□□-RFR8-6-HT-	1/2" Rotatable Male FR Fitting					4.06 (103.0)
		ALD□□-FR8-6-HT-	1/2" Integral Male FR Fitting		0.81 (20.6)			3.00 (76.2)
	Thermal Immersion	ALD□□-FHFR4-6-HJ-	1/4" Rotatable Female FR Fitting	4.45 (113.1)	0.71 (18.1)	0.50 (12.7)	1.49 (37.8)	2.78 (70.6)
		ALD□□-RHFR4-6-HJ-	1/4" Rotatable Male FR Fitting		0.94 (23.8)			3.23 (82)
		ALD□□-TB6-6-HJ-	3/8" Tube Butt Weld		0.67 (17.0)			2.72 (69.0)
		ALD□□-TB8-6-HJ-	1/2" Tube Butt Weld					
		ALD□□-FFR8-6-HJ-	1/2" Rotatable Female FR Fitting		0.94 (24.0)			3.27 (83.0)
		ALD□□-RFR8-6-HJ-	1/2" Rotatable Male FR Fitting					4.06 (103)
		ALD□□-FR8-6-HJ-	1/2" Integral Male FR Fitting		0.81 (20.6)			3.00 (76.2)
	Integrated Systems							
	Other Products							
Technical Information								

Modular Surface-Mount Valves



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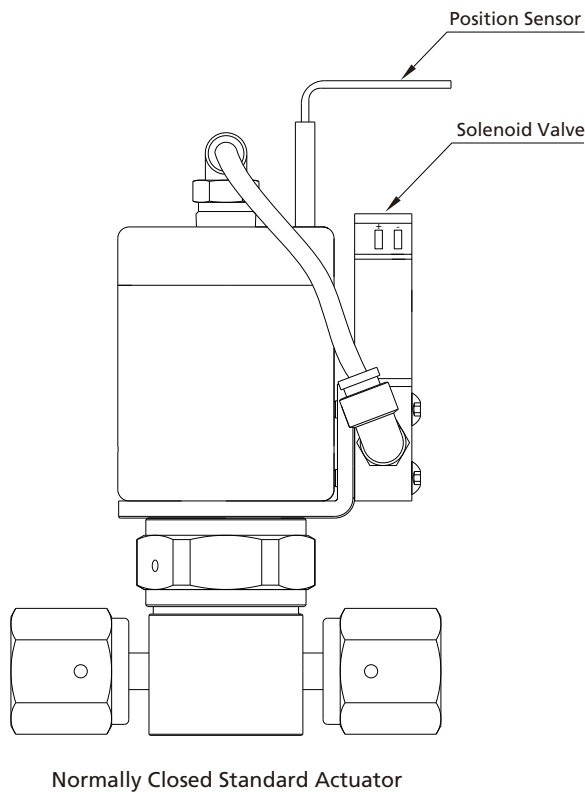
Fittings
Valves
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Integrated Systems
Other Products
Technical Information



Orifice Size in. (mm)	Valve Type	Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)	
				H	ØD
0.16 (4.1)	Standard	ALD□□-WS11-4-	1.125" W-Seal	3.40 (86.4)	1.12 (28.5)
		ALD□□-CS11-4-	1.125" C-Seal		
		ALD□□-CS15-4-	1.5" C-Seal	2.9 (73.6)	
	Thermal	ALD□□-WS11-4-HT-	1.125" W-Seal	4.39 (111.5)	
		ALD□□-CS11-4-HT-	1.125" C-Seal		
		ALD□□-CS15-4-HT-	1.5" C-Seal	3.89 (98.7)	
	Thermal Immersion	ALD□□-WS11-4-HJ-	1.125" W-Seal	4.02 (102)	
		ALD□□-CS11-4-HJ-	1.125" C-Seal		
		ALD□□-CS15-4-HJ-	1.5" C-Seal	3.69 (93.7)	
0.23 (5.9)	Standard	ALD□□-WS15-6-	1.5" W-Seal	3.81 (96.9)	1.49 (37.8)
		ALD□□-CS15-6-	1.5" C-Seal		
		ALD□□-CS15-HF-6-	1.5" C-Seal (High Flow)		
	Thermal	ALD□□-WS15-6-HT-	1.5" W-Seal	4.80 (122.0)	
		ALD□□-CS15-6-HT-	1.5" C-Seal		
		ALD□□-CS15-HF-6-HT-	1.5" C-Seal (High Flow)		
	Thermal Immersion	ALD□□-WS15-6-HJ-	1.5" W-Seal	3.81 (117)	
		ALD□□-CS15-6-HJ-	1.5" C-Seal		
		ALD□□-CS15-HF-6-HJ-	1.5" C-Seal (High Flow)	3.54 (110)	

Options and Accessories

Position sensors and solenoid valves are optional. Valve bodies can be equipped with heater cartridge and thermocouple holes.



Position Sensors

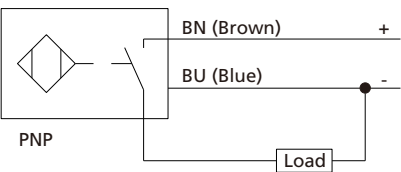
Transmit a signal to an electrical device indicating the open and closed position of pneumatically actuated valves

Technical Information

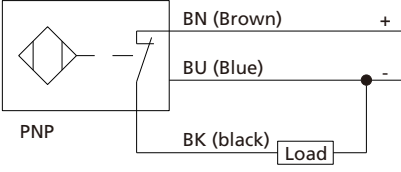
Output	3-wire V (dc), PNP
Output Function	Normally open or normally closed
Voltage	10 ~ 30 V (dc)
Operating Temperature	-13 ~ 158 °F (-25 ~ 70 °C)
Standard Sensor	Grey cable with a diameter of 3.3 mm and a length of 2 m

Wiring Diagram

Normally Open Position Sensor



Normally Closed Position Sensor



- Note:
1. For normally closed pneumatic actuator 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 pneumatic actuator 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.

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Explosion-proof Position Sensors

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

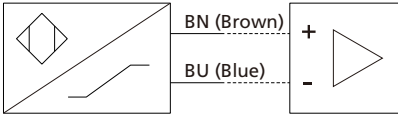
Equipment Group II under ATEX Certification. The output complies with DIN EN 6094 7-5-6 (NAMUR) and the sensor should be used with an isolation amplifier.

Technical Information

Output	2 Wires DC
Voltage	8.2 V (dc)
Working Temperatre	-13 ~ 158 °F (-25 ~ 70 °C)
Explosion-Proof Sensor	Blue cable with a diameter of 3.0 mm and a length of 2 m

Wiring Diagram

Normally Open Position Sensor



Solenoid Valve Assemblies

With fast-acting and high-flow features, the solenoid valve reduces overall response time. The solenoid valve assembly includes tubing, fittings, and a rotatable mounting bracket, offering flexibility for adjusting the solenoid valve position.

Technical Information

Solenoid Valve	Voltage/Power	24 V (dc)/4.0 W
	Electrical Connection	Black cable with a diameter of 1.6 mm and a length of 0.45 m
	Temperature Range	-0.4 ~ 122 °F (-18 ~ 50 °C)
	Port	M5 × 0.8-6H thread, compatible with 10-32 screws
Fitting	Material	316 SS
Tubing		Polyurethane
Bracket		304 SS
O-Ring		Fluorocarbon FKM

Pneumatic Fittings

The pneumatic fitting connects the gas source (via tubing or hose) to a pneumatic actuator, ensuring a reliable gas supply for efficient operation.

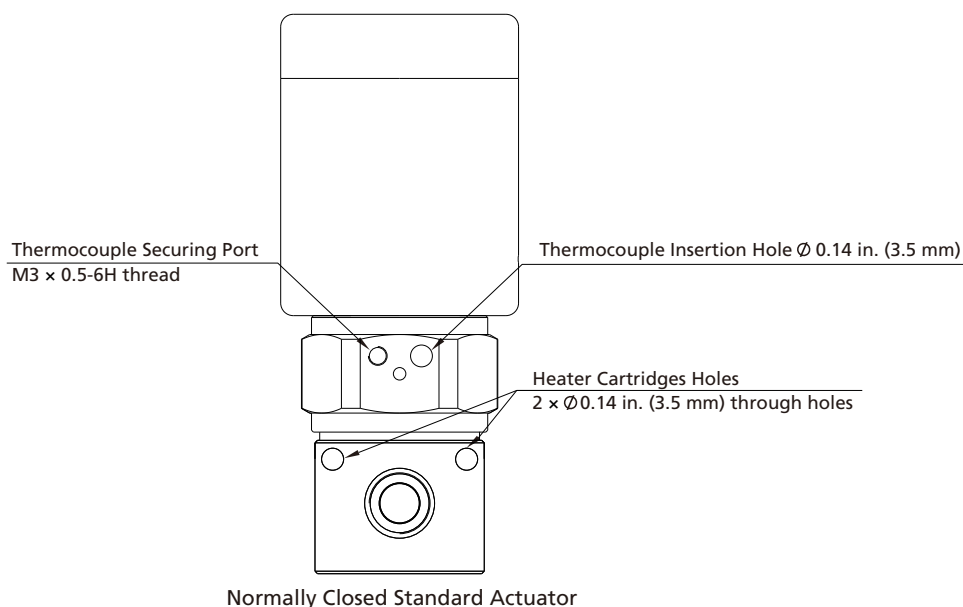
Technical Information

Code	EM4	UM4
Description	90° union elbow for 4 mm tube	Straight fitting for 4 mm tube
Major Materials	316 SS, FKM	
Max. Working Pressure	1 MPa	
Working Temperature	23 ~ 302 °F (-5 ~ 150 °C)	

Note: For additional pneumatic fitting options, please contact FITOK.

Heater Cartridge and Thermocouple Insertion Hole

Heater cartridges holes: 2-port and 3-port modular surface-mounted valves have 1 Hole, while other 2-port valves feature 2 Holes.
Thermocouple Insertion Hole: 2-port and 3-port valves have 1 Thermocouple Insertion Hole and 1 Thermocouple Securing Port.



Ordering Number Description

ALD6LV - CS11 - 4 - HT - 3P - CF3MOVBCEM4 - CE

Body Material	
6L	316L SS
6LV	316L SS VAR
6LW	316L SS VIM-VAR

Port Size	
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	12 mm
11	1.125"
15	1.5"
15-HF	1.5" High Flow

Orifice Size	
4	0.16" (4.1 mm)
6	0.23" (5.9 mm)

Valve Type	
	Standard
HT	Thermal
HJ	Thermal Immersion

Ports	
	2-Port
3P	3-Port
Note: 3P applies only to valves with W/C sealed ports.	

Actuator Type	
C	Normally Closed
O	Normally Open

Process Specification	
F3	FC-03

Position Sensor	
	None
MO	Normally Open Position Sensor
MC	Normally Closed Position Sensor

Accessory	
	None
V	Solenoid Valve Assembly

Heater Cartridge Holes and Thermocouple Holes	
	None
BC	Heater Cartridge Holes and Thermocouple Holes

Pneumatic Fittings	
	1/8" tube fittings (Only for Thermal Immersion Valves)
EM4	90° union elbow for 4 mm tube
UM4	Straight fitting for 4 mm tube

Product Certification	
	None
CE	CE Certification
AX	ATEX Certification

Port Type	
TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
FR	Integral Male FR Fitting
FFR	Rotatable Female FR Fitting
RFR	Rotatable Male FR Fitting
FHFR	High Flow Rotatable Female FR Fitting
RHFR	High Flow Rotatable Male FR Fitting
WS	W-Seal
CS	C-Seal

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

Notes:

1. "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.
2. 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.

Low Pressure Manual Diaphragm Valves

DQ Series

Introduction

DQ Series Low Pressure Manual Diaphragm Valves are suitable for high purity and ultra high purity applications. These valves offer enhanced reliability, a wide temperature range, and excellent medium compatibility, making them applicable to a vast majority of working conditions.

Features

- Low internal volume, fully swept flow path
- Contained seat to provide excellent resistance to swelling and contamination
- Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- Different handle types available



Technical Data

Port Size		1/4" to 3/8" or 6 mm to 8 mm
Flow Coefficient (Cv)		0.27
Orifice Size		0.16 in. (4.1 mm)
Working Pressure		Vacuum to 250 psig (17.2 bar)
Temperature		PCTFE: -10 ~ 176 °F (-23 ~ 80 °C) PFA: -10 ~ 302 °F (-23 ~ 150 °C)
Leak Rate (Helium)	Internal	≤1×10 ⁻⁹ std·cm ³ /s
	External	≤1×10 ⁻⁹ std·cm ³ /s

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)	86	3.2
50 (3.4)	230	7.2
100 (6.8)	410	10.2

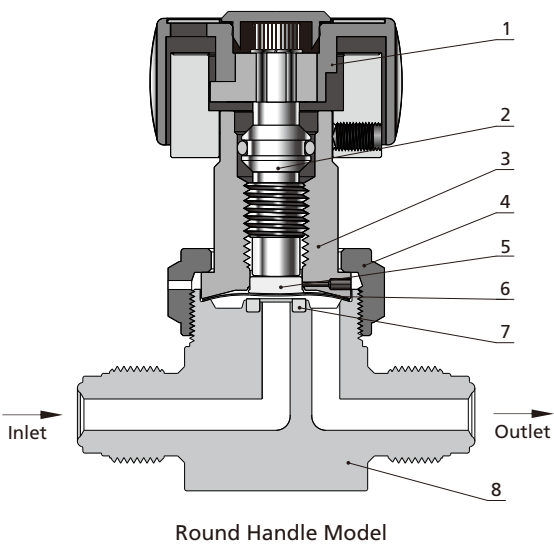
Process Specification

Item	Process Specification	Standard Cleaning and Packaging Process (FC-01) Special Cleaning and Packaging Process (FC-02)		Ultra High Purity Process (FC-03)
Material		316L SS		316L SS, 316L SS VAR
Wetted Surface Roughness		Ra 10 μin. (0.25 μm)	Ra 5 μin. (0.13 μm) ^①	Ra 5 μin. (0.13 μm)
Polishing Process		Machine finished	Electropolished	Electropolished

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

① Wetted surface roughness of valves with FR Series metal gasket face seal connections and tube butt weld connections.

Major Materials of Construction



Item	Component		Material/Specification
1	Handle	Round	ABS
		Integral Lockout (LOTO)	Aluminum
2	Stem		316 SS/ASTM A479
3	Bonnet		S17400/ASTM A564
4	Bonnet Nut		316 SS/ASTM A479
5	Button		316 SS/ASTM A479
6	Diaphragm (2)		Cobalt Alloy/AMS 5876
7	Seat		PCTFE/ASTM D1430 or PFA/ASTM D3307
8	Body		316L SS or 316L SS VAR

Handles

Manual-Round Handle

- Quick, quarter-turn actuation
- Handle with window to visually indicate open and closed states



Manual-Integral Lockout (LOTO) Handle

- Quick, quarter-turn actuation
- Lockable in the closed position for safety



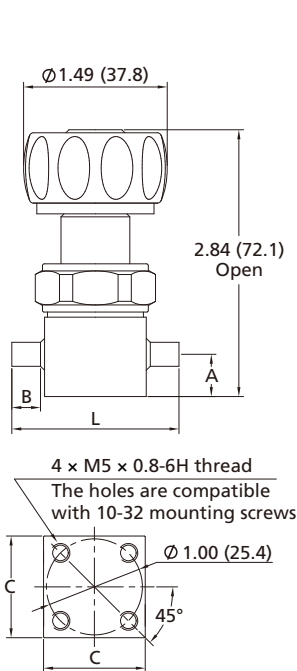
Dimensions and Ordering Information

Straight Type

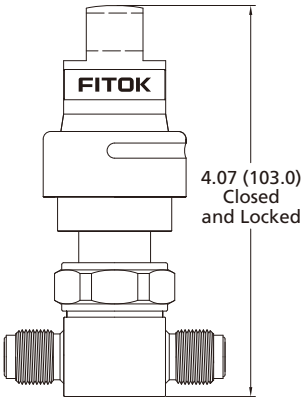
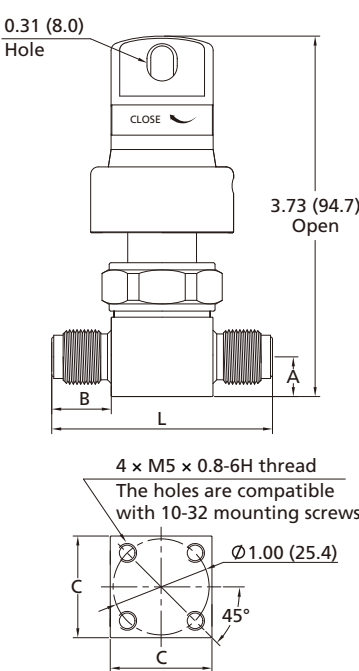
Dimensions

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

Round Handle



Integral Lockout (LOTO) Handle



Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)			
		A	B	C	L
DQ□□-TB4-	1/4" x 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	1.74 (44.2)
DQ□□-TB6-	3/8" x 0.035" Tube Butt Weld		0.26 (6.6)		
DQ□□-FFR4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		2.78 (70.6)
DQ□□-RFR4-	1/4" Rotatable Male FR Fitting		0.62 (15.7)		
DQ□□-FR4-	1/4" Integral Male FR Fitting				2.30 (58.4)

Ordering Number Description

DQ6L - TB4 - FR4 - RAF2

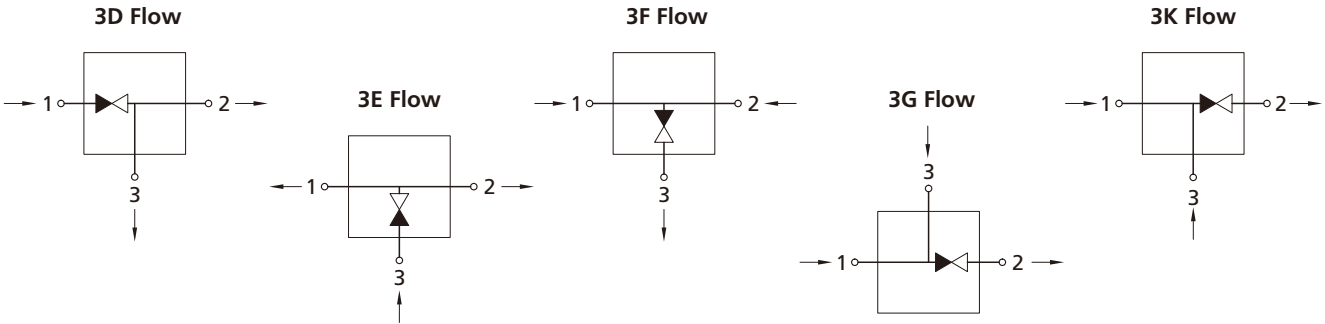
Body Material		Inlet Type		Inlet Size		Outlet Type	Outlet Size	Handle Type		Process Specification	
6L	316L SS	TB	Fractional Tube Butt Weld	4	1/4" or 1/4"× 0.035"	Same as Inlet Specified in the same way as Inlet		R	Manual-Round Handle		FC-01
6LV	316L SS VAR	MTB	Metric Tube Butt Weld	6	6 mm or 3/8"× 0.035"			U	Manual-Integral Lockout (LOTO) Handle	F2	FC-02
		FR	Integral Male FR Fitting	8	8 mm					F3	FC-03
		FFR	Rotatable Female FR Fitting								
		RFR	Rotatable Male FR Fitting								
		FL	Fractional Tube Fitting								
		ML	Metric Tube Fitting								
								Seat			
									PCTFE		
								A	PFA		

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 or our authorized distributors.

Branch Type

Flow Paths

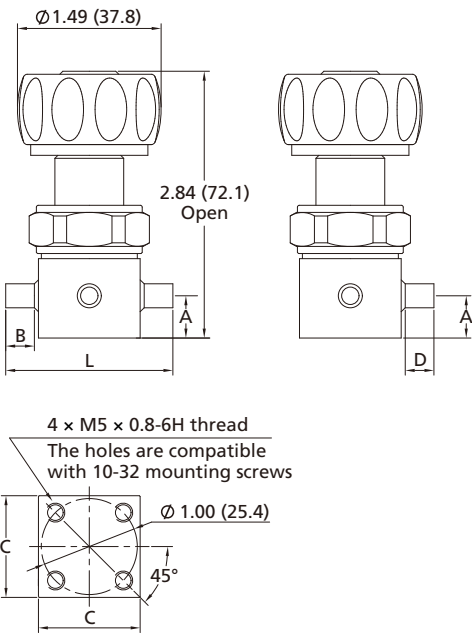
⦿ Flow paths as viewed from the top



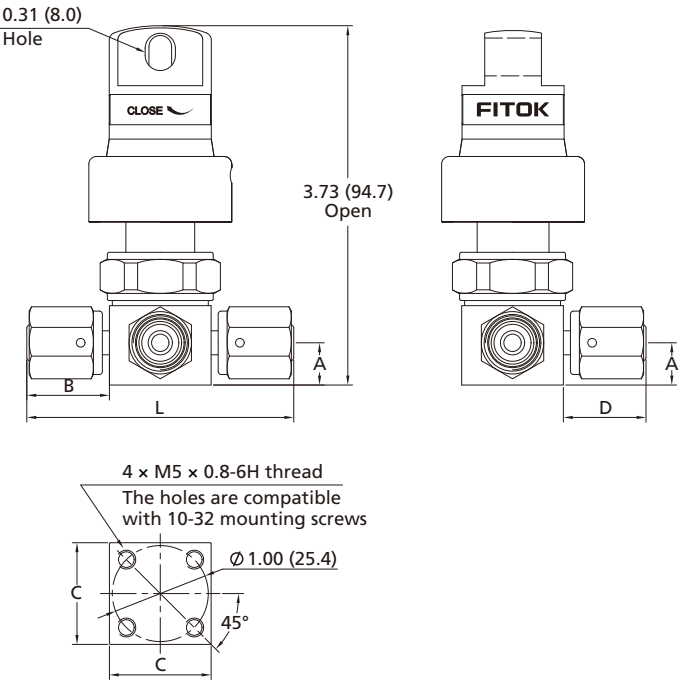
Dimensions

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

Round Handle



Integral Lockout (LOTO) Handle

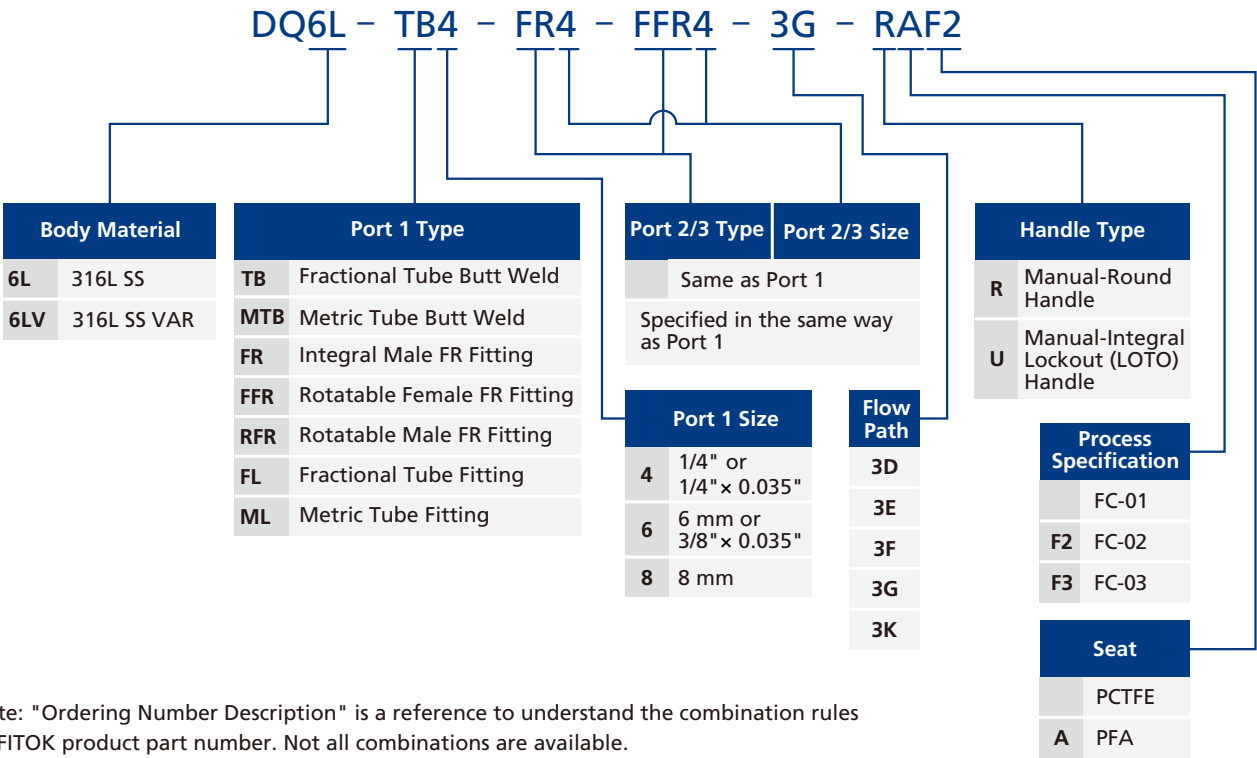


Fittings
Valves
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Tubing
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Other Products
Technical Information

Fittings
Valves
Regulators
Filters
Tubing
Integrated Systems
Other Products
Technical Information

Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)					
		A	B	C	D	L	
DQ□□-TB4-	1/4"× 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	0.30 (7.6)	1.74 (44.2)	
DQ□□-TB6-	3/8"× 0.035" Tube Butt Weld		0.26 (6.6)		0.26 (6.6)		
DQ□□-FFR4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		0.86 (21.8)	0.86 (21.8)	2.78 (70.6)
DQ□□-RFR4-	1/4" Rotatable Male FR Fitting					0.62 (15.7)	0.62 (15.7)
DQ□□-FR4-	1/4" Integral Male FR Fitting						

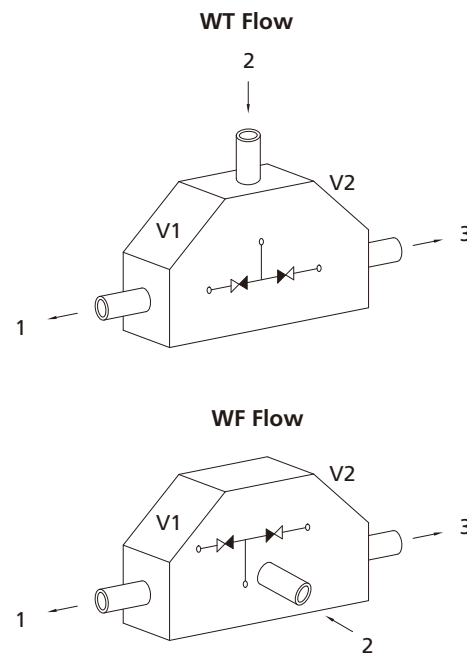
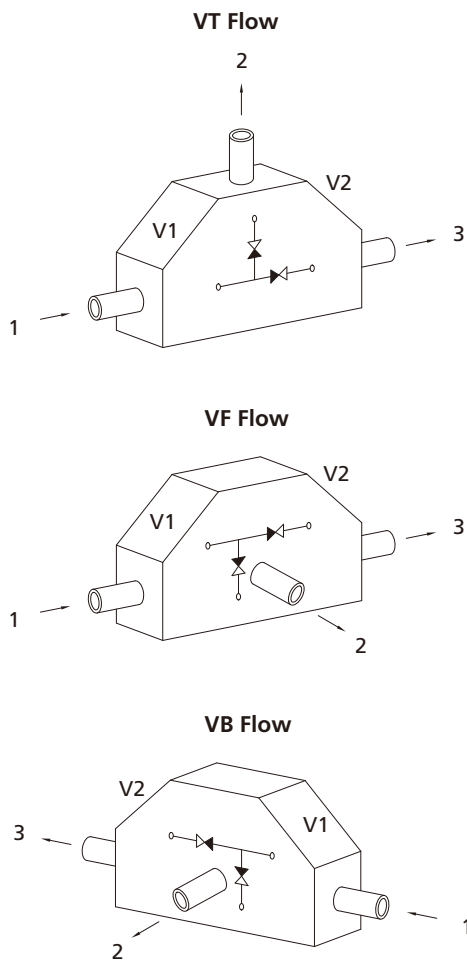
Ordering Number Description



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

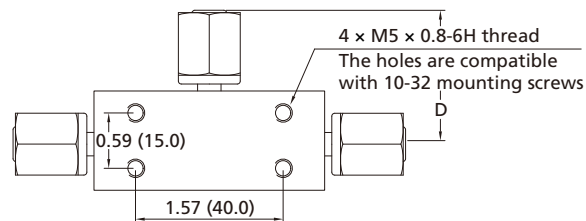
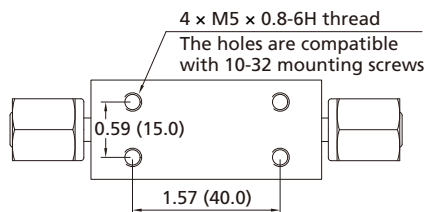
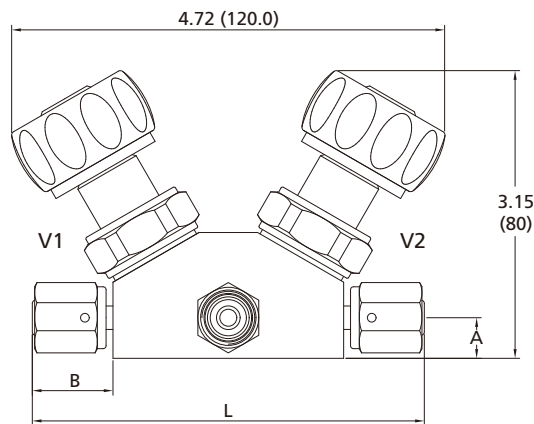
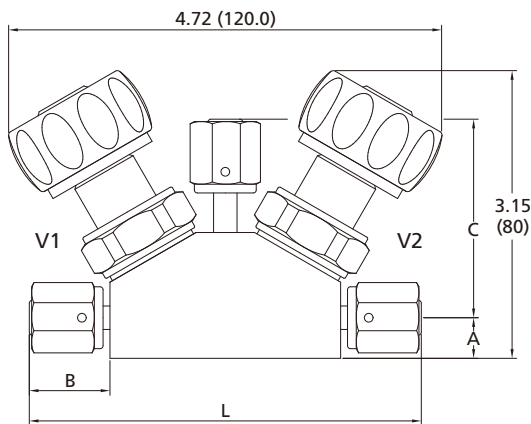
2-Valve 3-Way Block Type

Flow Paths



Dimensions

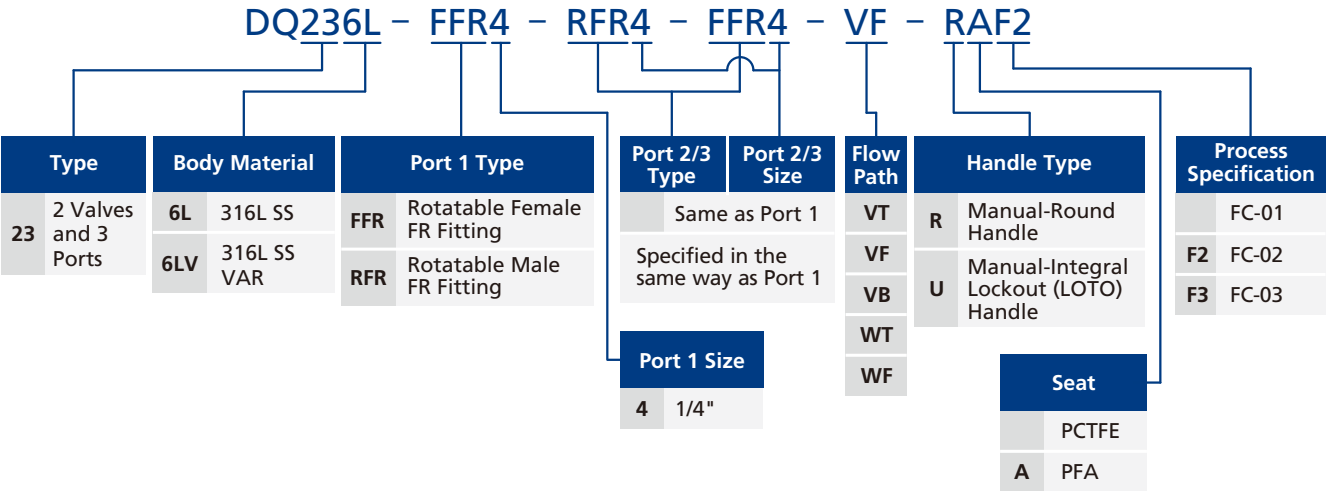
Dimensions, in inches (millimeters), are for reference only.



Fittings
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Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)				
		A	B	C	D	L
DQ23□□-FFR4-	1/4" Rotatable Female FR Fitting	0.44 (11.2)	0.86 (21.8)	2.12 (53.8)	—	4.24 (107.6)
DQ23□□-FFR4-	1/4" Rotatable Female FR Fitting			—	1.37 (34.8)	
DQ23□□-RFR4-	1/4" Rotatable Male FR Fitting			2.12 (53.8)	—	
DQ23□□-RFR4-	1/4" Rotatable Male FR Fitting			—	1.37 (34.8)	

Ordering Number Description

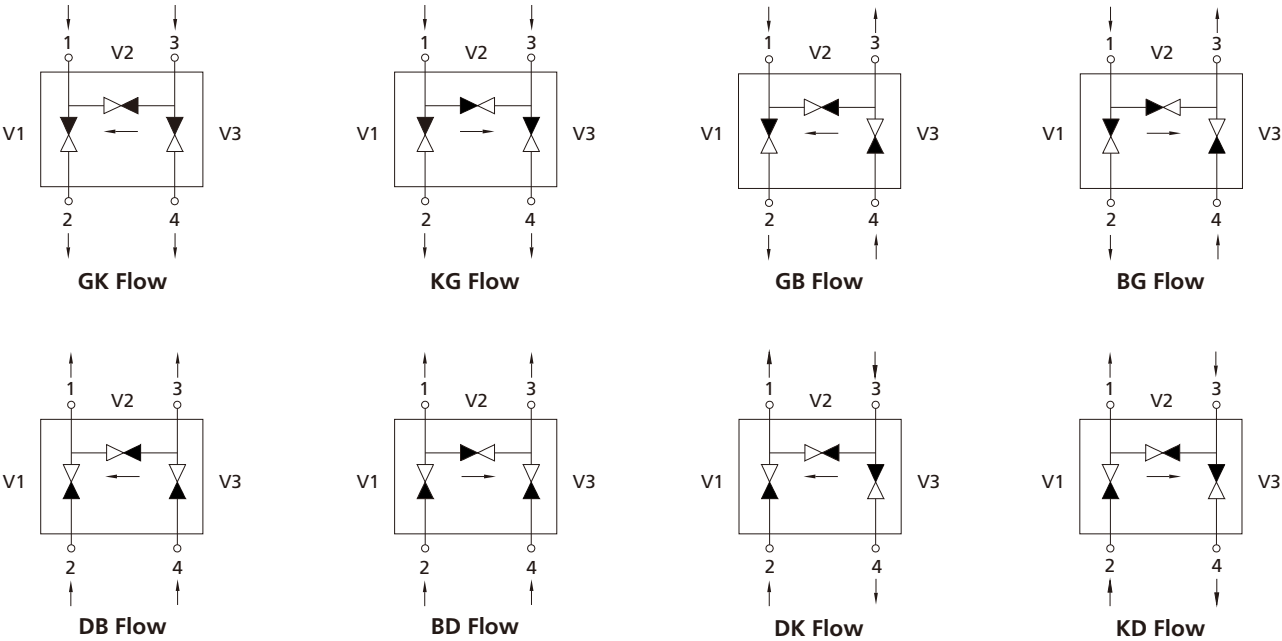


Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.
Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.

3-Valve 4-Way Block Type

Flow Paths

⦿ Flow paths as viewed from the top



Dimensions

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



Fittings
Valves
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Other Products
Technical Information

V-21 Diaphragm Valves

Fittings

Valves

Regulators

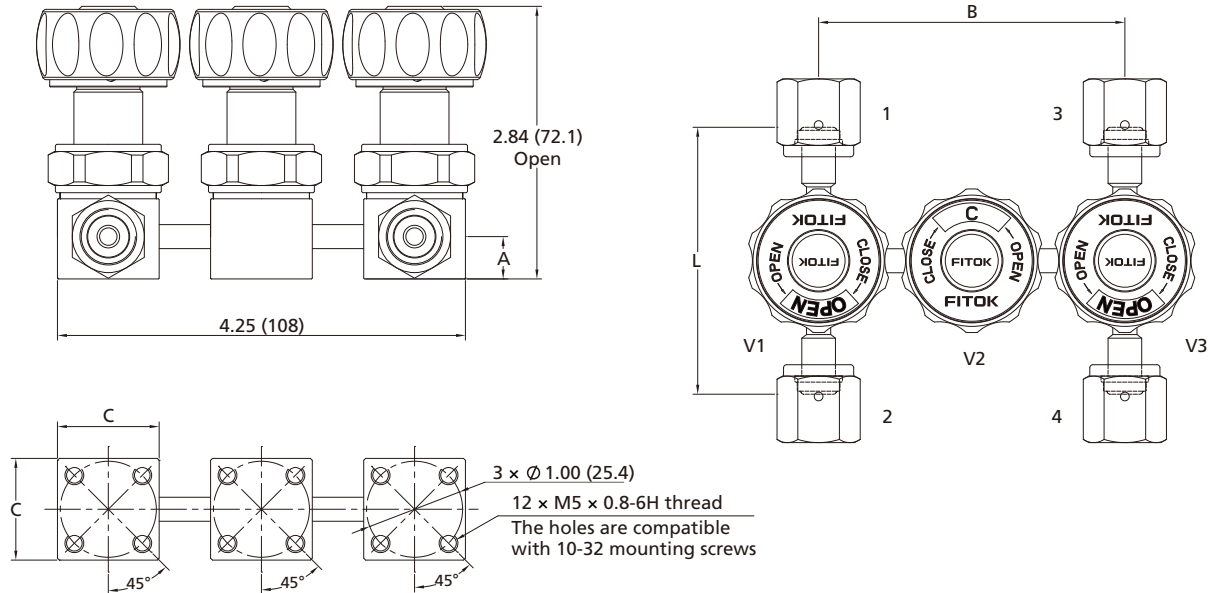
Filters

Tubing

Integrated Systems

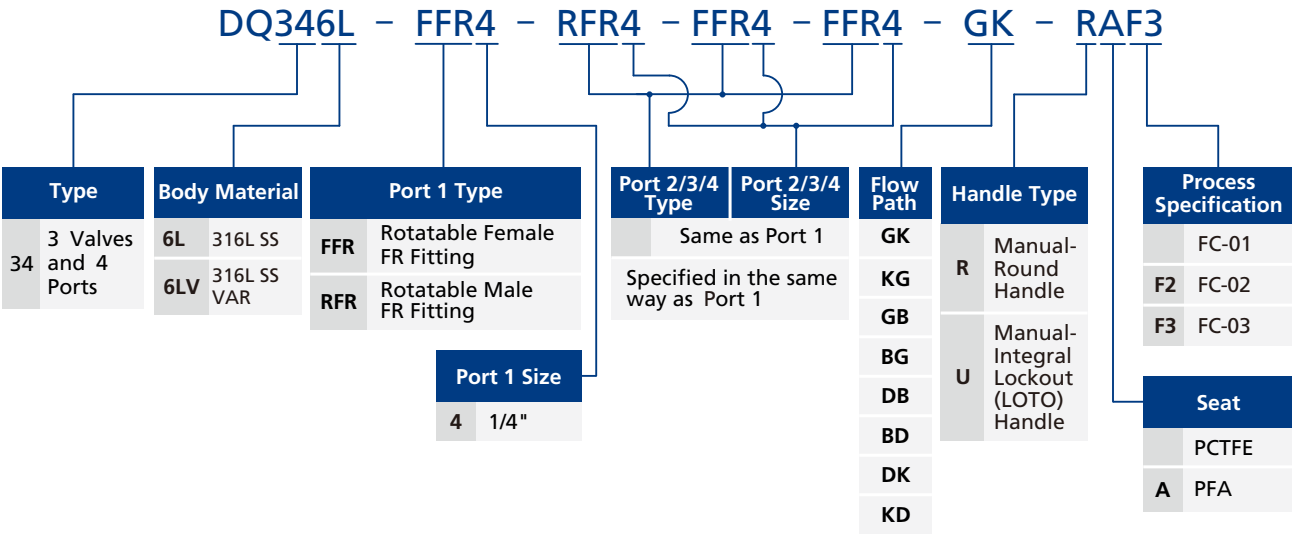
Other Products

Technical Information



Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)			
		A	B	C	L
DQ34□□-FFR4-	1/4" Rotatable Female FR Fitting	0.44 (11.2)	3.19 (81.0)	1.06 (26.9)	2.78 (70.6)
DQ34□□-RFR4-	1/4" Rotatable Male FR Fitting				

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. Should you have any questions, please contact FITOK Group or our authorized distributors.

Replaceable-Seat Diaphragm Valves

DQX Series

Introduction

Replaceable-Seat Diaphragm Valves are suitable for applications requiring frequent valve maintenance and seat replacement, such as precursor containers and canisters. Their easy operation, long cycle life, and excellent sealing performance help to reduce costs for customers.

Features

- ⦿ Easily replaceable valve seat, without need for special tools. Service kits are available
- ⦿ Valve seat assembly with perfectly symmetrical structure to eliminate need to distinguish the orientation of seats
- ⦿ Black handle for easy identification of replaceable-seat valves.

Technical Data

Port Size			1/4" to 3/8" or 6 mm to 8 mm
Flow Coefficient (Cv)			0.3
Orifice Size			0.16 in. (4.1 mm)
Working Pressure			Vacuum to 250 psig (17.2 bar)
Working Temperature			PCTFE: -10 ~ 176 °F (-23 ~ 80 °C) PFA: -10 ~ 302 °F (-23 ~ 150 °C)
Leak Rate (Helium)	Internal	$\leq 1 \times 10^{-9}$ std·cm ³ /s	
	External	$\leq 1 \times 10^{-9}$ std·cm ³ /s	

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)
Material		316L SS	316L SS, 316L SS VAR
Wetted Surface Roughness		Ra 5 μin. (0.13 μm)	
Polishing Process		Electropolishing	

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



open



close

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)	96	3.6
50 (3.4)	250	7.9
100 (6.8)	450	11.0

Fittings

Valves

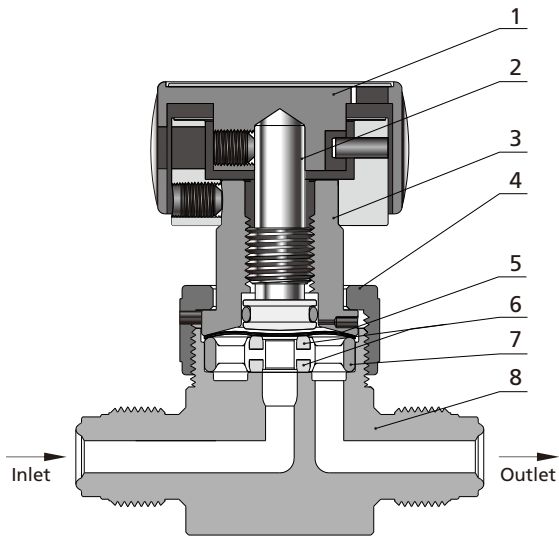
Regulators

Filters

Tubing

Integrated
SystemsOther
ProductsTechnical
Information

Major Materials of Construction

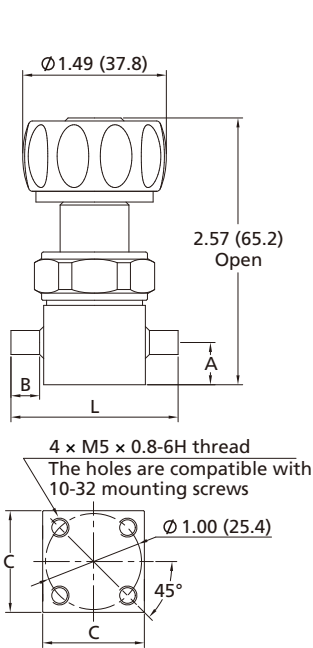


Item			Material/Specification
1	Handle	Round Handle	Aluminum
		Integral Lockout (LOTO) Handle	Aluminum
2	Stem		316 SS/ASTM A479
3	Bonnet		S17400/ASTM A564
4	Bonnet Nut		316 SS/ASTM A479
5	Diaphragm (2)		Cobalt Alloy/AMS 5876
6	Seat		PCTFE/ASTM D1430 or PFA/ASTM D3307
7	Seat Retainer		316L SS or 316L SS VAR
8	Body		316L SS or 316L SS VAR

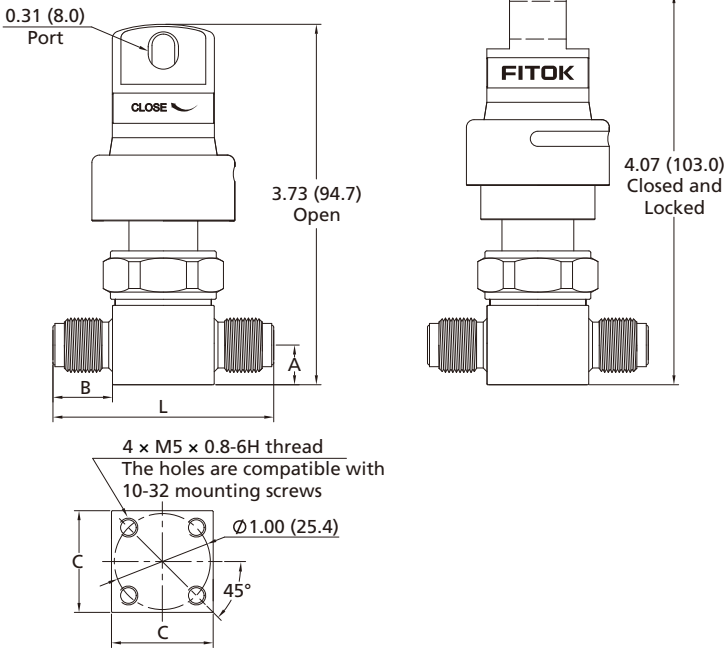
Dimensions and Ordering Information

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

Round Handle



Integral Lockout (LOTO) Handle



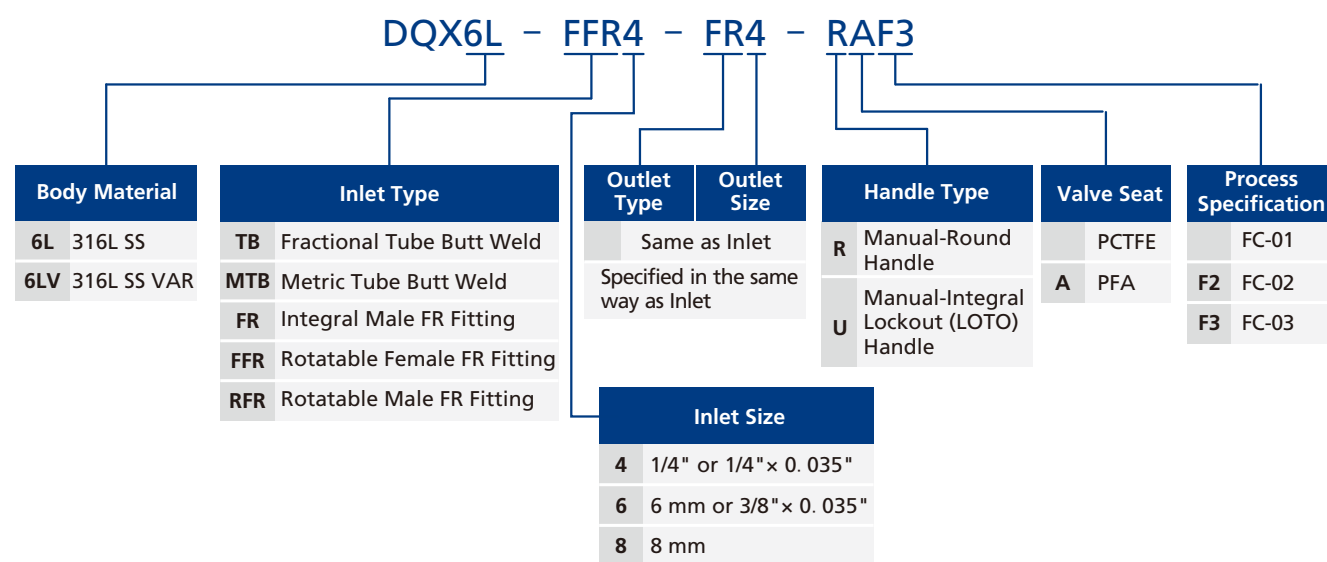
Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)			
		A	B	C	L
DQX□□-TB4-	1/4" × 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	1.74 (44.2)
DQX□□-TB6-	3/8" × 0.035" Tube Butt Weld		0.26 (6.6)		
DQX□□-FFR4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		2.78 (70.6)
DQX□□-RFR4-	1/4" Rotatable Male FR Fitting				
DQX□□-FR4-	1/4" Integral Male FR Fitting		0.62 (15.7)		2.30 (58.4)

Service Kit Ordering Information

Basic Ordering Information	Description	Remarks
☐ ☐ DQX-KIT	Includes 1 piece of seat assembly (seat material: PCTFE), 2 pieces of cobalt alloy diaphragms, and maintenance instructions	Applies to replaceable-seat diaphragm valves
☐ ☐ DQX-A-KIT	Includes 1 piece of seat assembly (seat material: PFA), 2 pieces of cobalt alloy diaphragms, and maintenance instructions	



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. Should you have any questions, please contact FITOK Group or our authorized distributors.

Low Pressure Pneumatic Diaphragm Valves

DP Series

Introduction

DP Series Low Pressure Pneumatic Diaphragm Valves are suitable for high purity and ultra high purity applications. These valves offer enhanced reliability, a wide temperature range, and excellent medium compatibility, making them applicable to a vast majority of working conditions.

Features

- Minimal particle generation and minimal dead space
- Fully contained seat to provide excellent resistance to swelling and contamination
- Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- Long cycle life with high speed actuation
- No internally wetted threads or springs which minimizes particle generation and particle entrapment for high purity.
- Functional under vacuum conditions
- Normally closed or normally open position sensors are optional for pneumatically actuated valves



Technical Data

Port Size	1/4" to 3/8" or 6 mm to 8 mm	
Flow Coefficient (Cv)	0.27, 0.5	
Orifice Size	0.16 in. (4.1 mm), 0.20 in. (5.1 mm)	
Working Pressure	Vacuum to 250 psig (17.2 bar)	
Pneumatic Actuator Operating Pressure	60 to 90 psig (4.2 to 6.2 bar)	
Temperature	PCTFE: -10 ~ 176 °F (-23 ~ 80 °C) PFA: -10 ~ 302 °F (-23 ~ 150 °C)	
Leak Rate (Helium)	Internal	≤1×10 ⁻⁹ std·cm ³ /s
	External	≤1×10 ⁻⁹ std·cm ³ /s

Flow Data

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

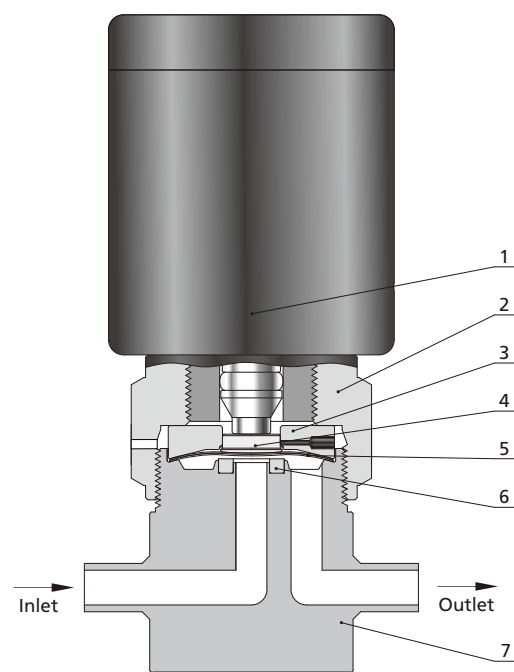
Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
10 (0.68)	86	3.2
50 (3.4)	230	7.2
100 (6.8)	410	10.2

Process Specification

Process Specification Item	Standard Cleaning and Packaging Process (FC-01) Special Cleaning and Packaging Process (FC-02)		Ultra High Purity Process (FC-03)
Material	316L SS		316L SS, 316L SS VAR
Wetted Surface Roughness	Ra 10 μin. (0.25 μm)	Ra 5 μin. (0.13 μm) ^①	Ra 5 μin. (0.13 μm)
Polishing Process	Machine finished	Electropolished	Electropolished

Notes: Refer to page P-01 for a detailed description of Process Specification.
① Wetted surface roughness of valves with FR Series metal gasket face seal connections and tube butt weld connections.

Major Materials of Construction

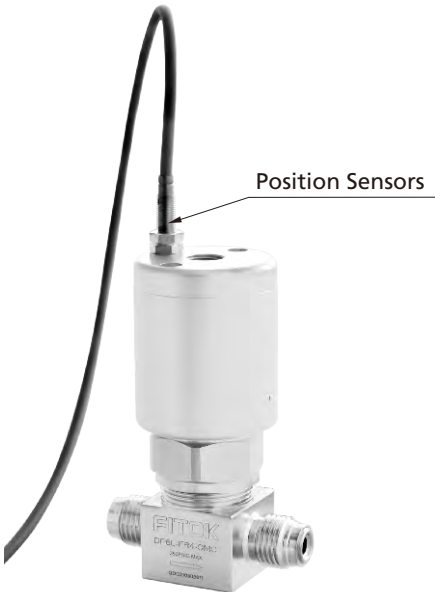


Normally Closed Pneumatic Model

Item	Component	Material/Specification
1	Actuator	Aluminum
2	Bonnet Nut	316 SS/ASTM A479
3	Bonnet	S17400/ASTM A564
4	Button	316 SS/ASTM A479
5	Diaphragm (2)	Cobalt Alloy/AMS 5876
6	Seat	PCTFE/ASTM D1430 or PFA/ASTM D3307
7	Body	316L SS or 316L SS VAR

Pneumatic Actuators

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



Position Sensors

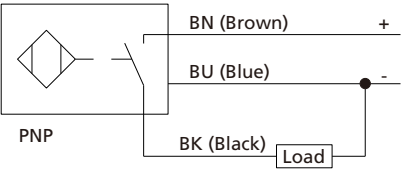
Transmit a signal to an electrical device indicating the open and closed position of pneumatically actuated valves

Technical Information

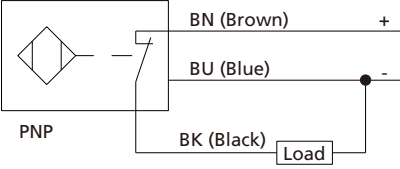
Output	3-wire V (dc), PNP
Output Function	Normally open or normally closed
Voltage	10 ~ 30 V (dc)
Working Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

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 open. Conversely, when fitted with normally closed sensors, the sensors transmit signals with indicators illuminated when the valves are closed.

Explosion-proof Position Sensors

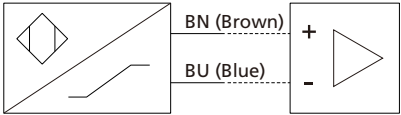
Transmit a signal to an electrical device, indicating the open and closed positions of pneumatically actuated valves.

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

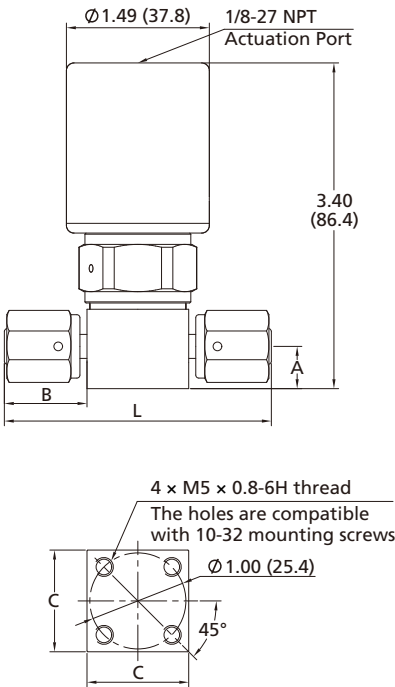


Dimensions and Ordering Information

Straight Type

Dimensions

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



Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)			
		A	B	C	L
DP□□-TB4-	1/4" × 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	1.74 (44.2)
DP□□-TB6-	3/8" × 0.035" Tube Butt Weld		0.26 (6.6)		
DP□□-FFR4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		2.78 (70.6)
DP□□-RFR4-	1/4" Rotatable Male FR Fitting				
DP□□-FR4-	1/4" Integral Male FR Fitting		0.62 (15.7)		2.30 (58.4)

Ordering Number Description

DP6L - TB4 - FR4 - - CAF2MOV - CE

Body Material	
6L	316L SS
6LV	316L SS VAR

Inlet Size	
4	1/4" or 1/4" x 0.035"
6	6 mm or 3/8" x 0.035"
8	8 mm

Inlet Type	
TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
FR	Integral Male FR Fitting
FFR	Rotatable Female FR Fitting
RFR	Rotatable Male FR Fitting
FL	Fractional Tube Fitting
ML	Metric Tube Fitting

Outlet Type	Outlet Size
	Same as Inlet
Specified in the same way as Inlet	

CV
0.27
CV5 0.5

Actuator Type	
C	Normally Closed Pneumatic
O	Normally Open Pneumatic

Seat
PCTFE
A PFA

Process Specification	
	FC-01
F2	FC-02
F3	FC-03

Position Sensor	
	None
MO	Normally Open Position Sensor
MC	Normally Closed Position Sensor

Accessory	
	None
V	Solenoid Valve Assembly

Product Certification ①	
	None
CE	CE Certification
AX	ATEX Certification

① The solenoid valve assembly is not available with CE or ATEX certifications. When selecting a solenoid valve assembly as an option, the part number must not include "CE" or "AX".

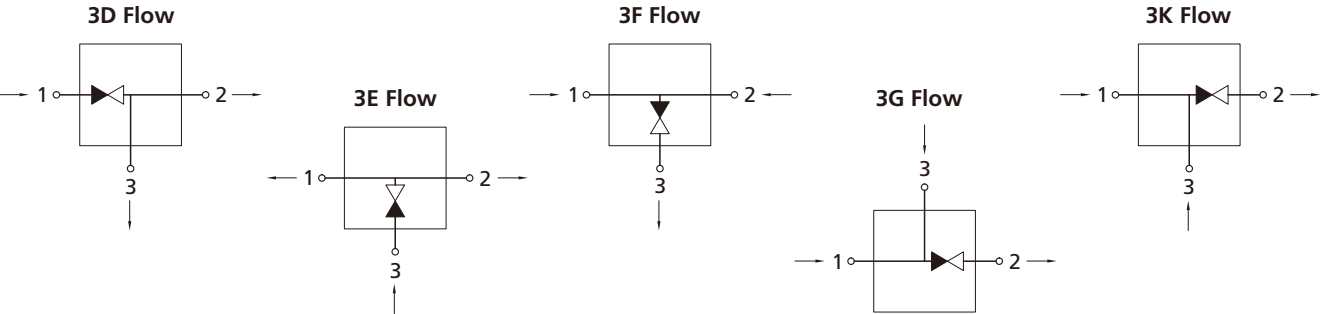
Notes:

- 1. "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.
- 2. 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.

Branch Type

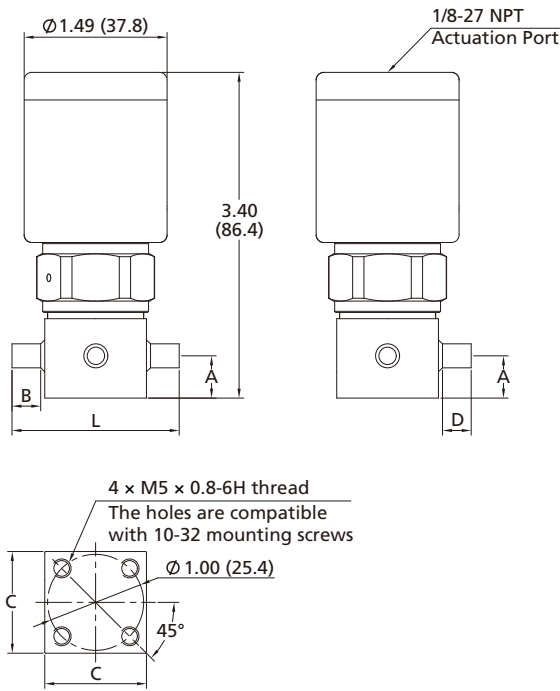
Flow Paths

☉ Flow paths as viewed from the top



Dimensions

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



Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)						
		A	B	C	D	L		
DP□□-TB4-	1/4"× 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	0.30 (7.6)	1.74 (44.2)		
DP□□-TB6-	3/8"× 0.035" Tube Butt Weld		0.26 (6.6)		0.26 (6.6)			
DP□□-FFR4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		1.06 (26.9)	0.86 (21.8)	2.78 (70.6)	
DP□□-RFR4-	1/4" Rotatable Male FR Fitting					0.62 (15.7)	0.62 (15.7)	2.30 (58.4)
DP□□-FR4-	1/4" Integral Male FR Fitting							

Ordering Number Description

DP6L – TB4 – FR4 – FFR4 – – 3G – CAF2MO – CE

Body Material		Port 1 Type		Port 2/3 Type	Port 2/3 Size	CV	Actuator Type	Process Specification
6L	316L SS	TB	Fractional Tube Butt Weld		Same as Port 1	0.27	C	Normally Closed Pneumatic
6LV	316L SS VAR	MTB	Metric Tube Butt Weld		Specified in the same way as Port 1	CV5 0.5	O	Normally Open Pneumatic
		FR	Integral Male FR Fitting					F2 FC-02
		FFR	Rotatable Female FR Fitting					F3 FC-03
		RFR	Rotatable Male FR Fitting					
		FL	Fractional Tube Fitting					
		ML	Metric Tube Fitting					

Port 1 Size	
4	1/4" or 1/4" x 0.035"
6	6 mm or 3/8" x 0.035"
8	8 mm

Flow Path
3D
3E
3F
3G
3K

Seat	
PCTFE	
A	PFA

Position Sensor	
	None
MO	Normally Open Position Sensor
MC	Normally Closed Position Sensor

Product Certification	
	None
CE	CE Certification
AX	ATEX Certification

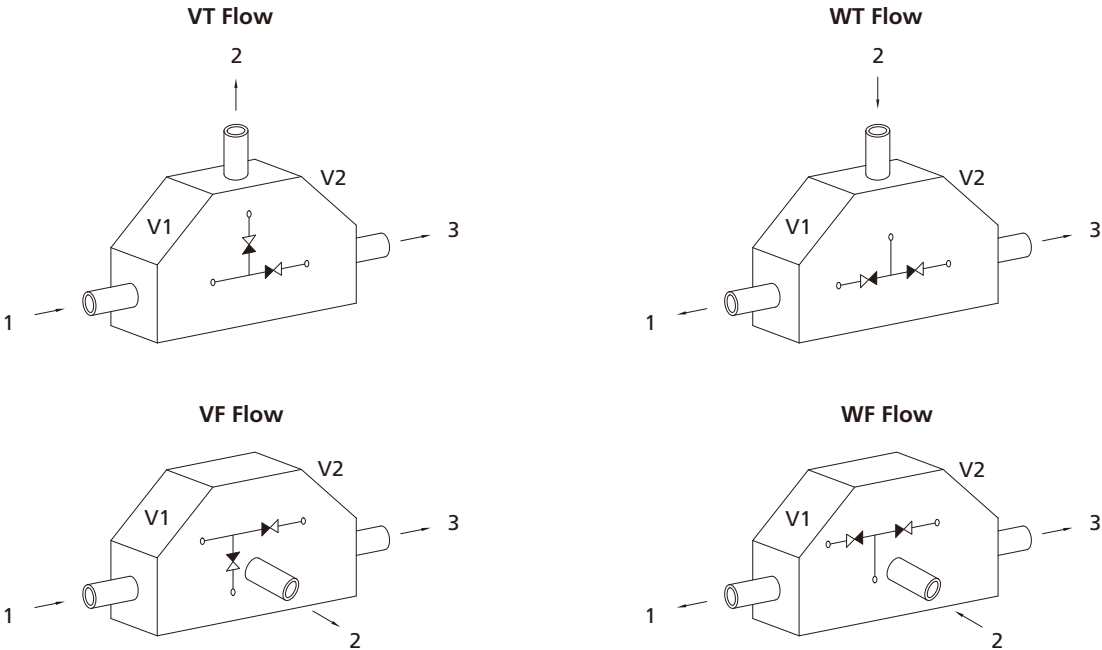
Notes:

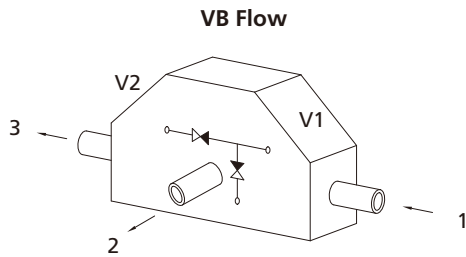
1. "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.

2. 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.

2-Valve 3-Way Block Type

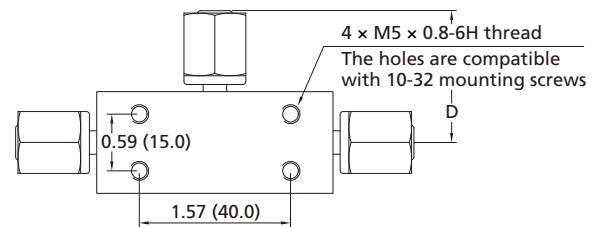
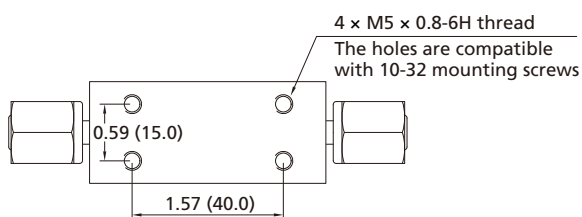
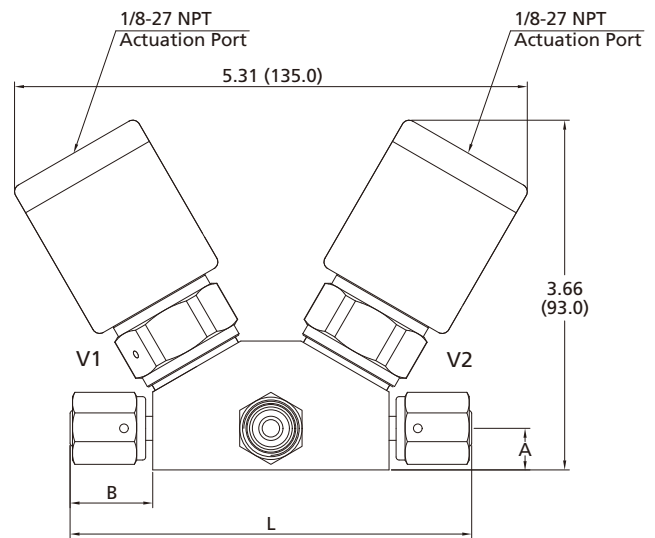
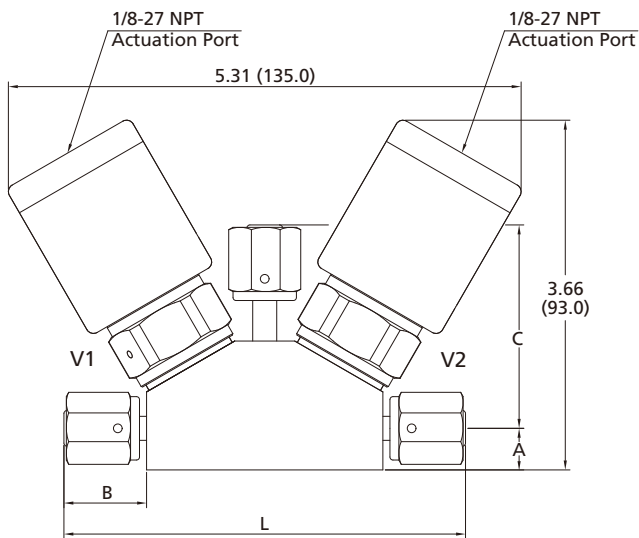
Flow Paths





Dimensions

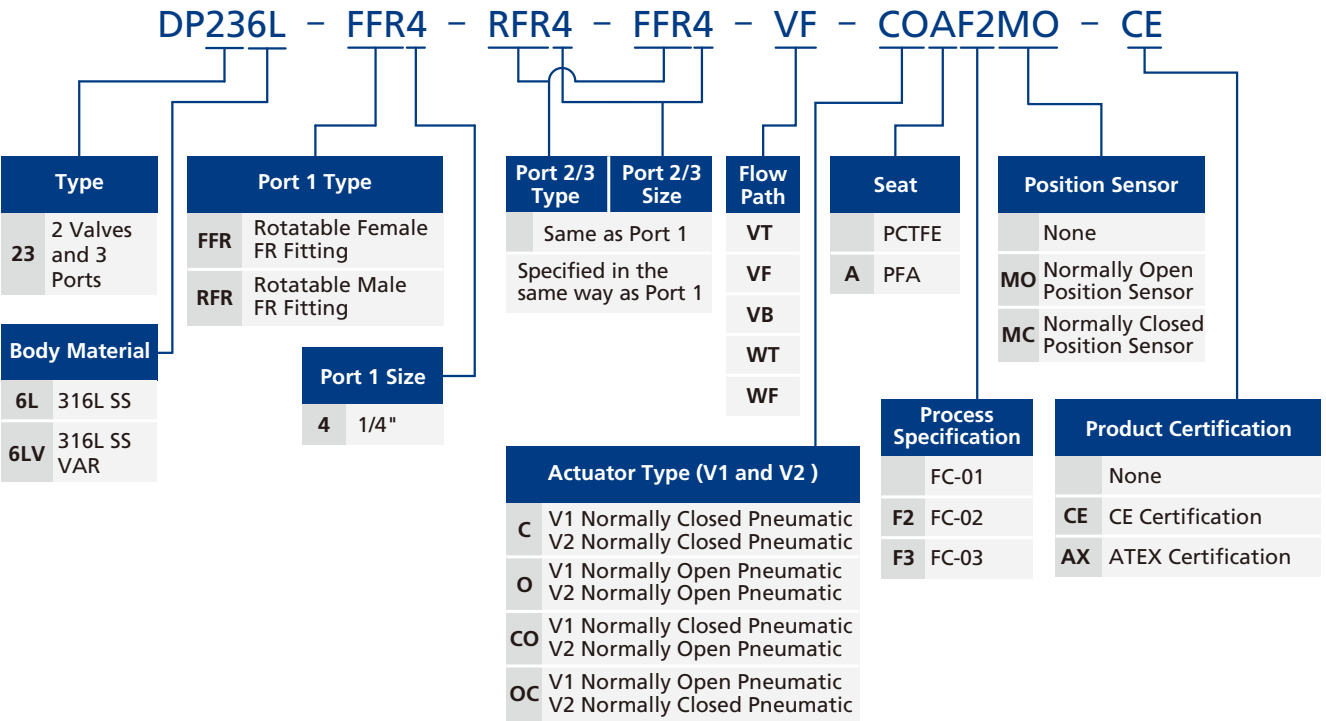
Dimensions, in inches (millimeters), are for reference only.



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Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)				
		A	B	C	D	L
DP23□□-FFR4-	1/4" Rotatable Female FR Fitting	0.44 (11.2)	0.86 (21.8)	2.12 (53.8)	—	4.24 (107.6)
DP23□□-FFR4-	1/4" Rotatable Female FR Fitting			—	1.37 (34.8)	
DP23□□-RFR4-	1/4" Rotatable Male FR Fitting			2.12 (53.8)	—	
DP23□□-RFR4-	1/4" Rotatable Male FR Fitting			—	1.37 (34.8)	

Ordering Number Description

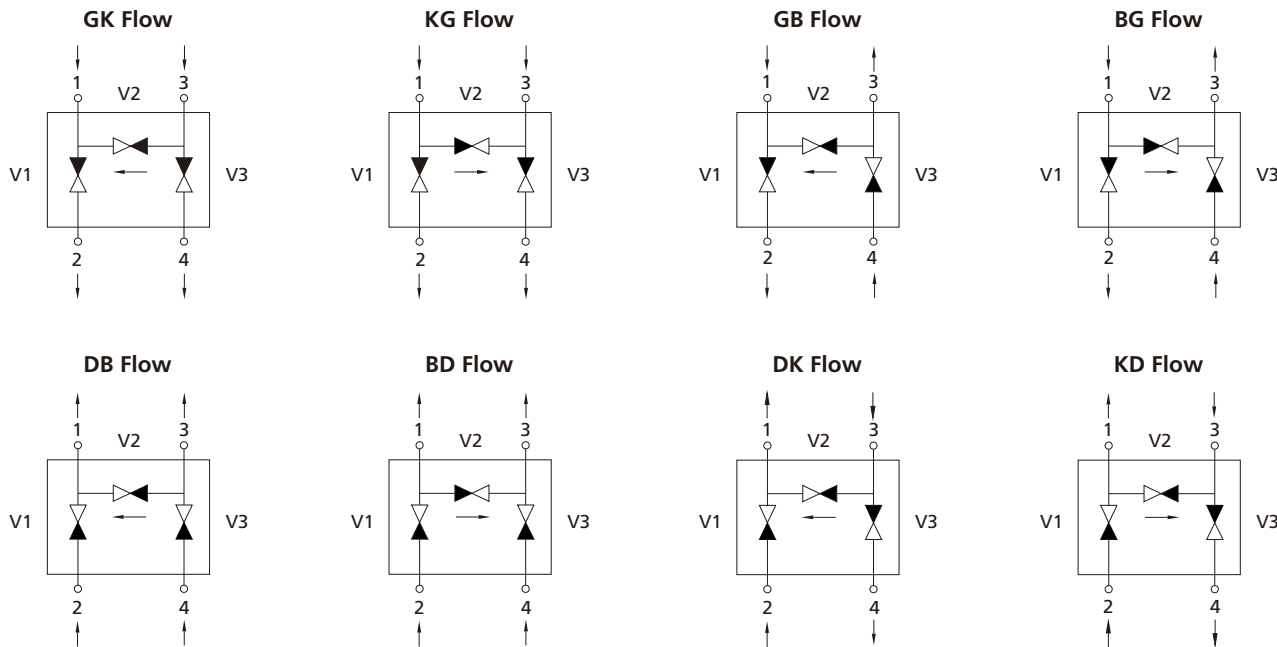


- Notes:
- "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.
 - For the -CE or AX options, the valve conforms to ATEX 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.

3-Valve 4-Way Block Type

Flow Paths

☉ Flow paths as viewed from the top



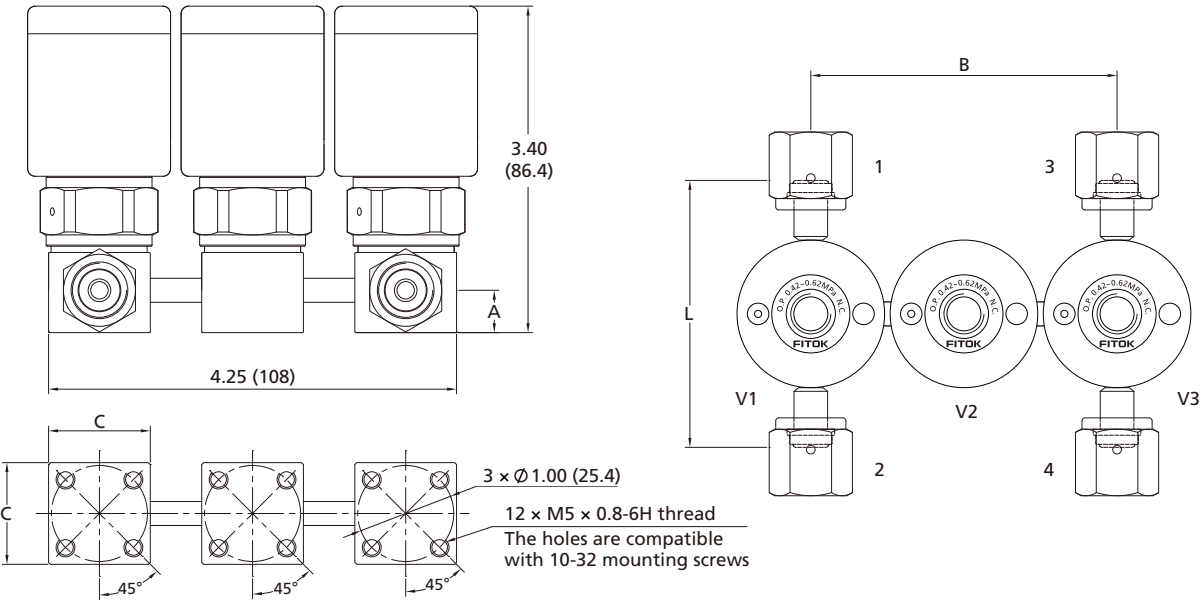
Dimensions

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



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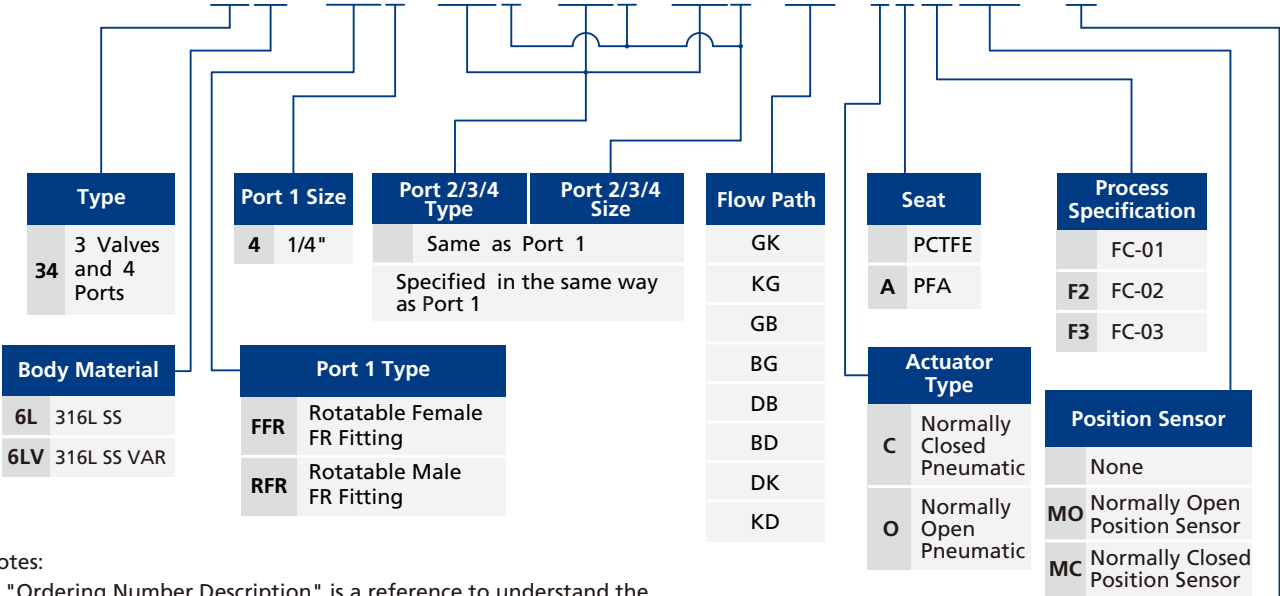
V-35 Diaphragm Valves



Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)			
		A	B	C	L
DP34□□-FFR4-	1/4" Rotatable Female FR Fitting	0.44 (11.2)	3.19 (81.0)	1.06 (26.9)	2.78 (70.6)
DP34□□-RFR4-	1/4" Rotatable Male FR Fitting				

Ordering Number Description

DP346L - FFR4 - RFR4 - FFR4 - FFR4 - GK - CAF3MO - CE



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.

Product Certification	
	None
CE	CE Certification
AX	ATEX Certification

3-Valve 5-Way Block Type

Introduction

3-valve, 5-way purge blocks are designed for gas supply systems handling high purity, corrosive, toxic gases, or multi-component gas mixtures. The unit integrates multiple functions—including gas supply, purging, and exhaust—into a single assembly. A port is available for connection to a pressure sensor to monitor abnormal pressure conditions within the pipeline.

Technical Data

Port Size		1/4"
Flow Coefficient (Cv)		0.27
Orifice Size		0.16 in. (4.1 mm)
Working Pressure		Vacuum to 300 psig (20.7 bar)
Pneumatic Actuator Operating Pressure		60 ~ 90 psig (4.2 ~ 6.2 bar)
Temperature		PCTFE: -40 ~ 160 °F (-40 ~ 71 °C) PFA: -10 ~ 302 °F (-23 ~ 150 °C)
Leak Rate (Helium)	Internal	$\leq 1 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 1 \times 10^{-9}$ std·cm ³ /s

Flow Data

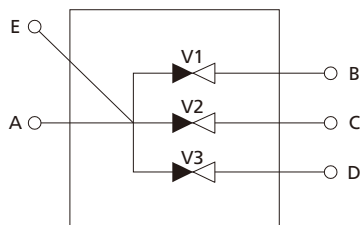
Air @ 70 °F (21 °C)

Water @ 60 °F (16 °C)

Orifice in. (mm)	Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
0.16 (4.1)	10 (0.68)	93	3.5
	50 (3.4)	246	7.8
	100 (6.8)	437	11.0

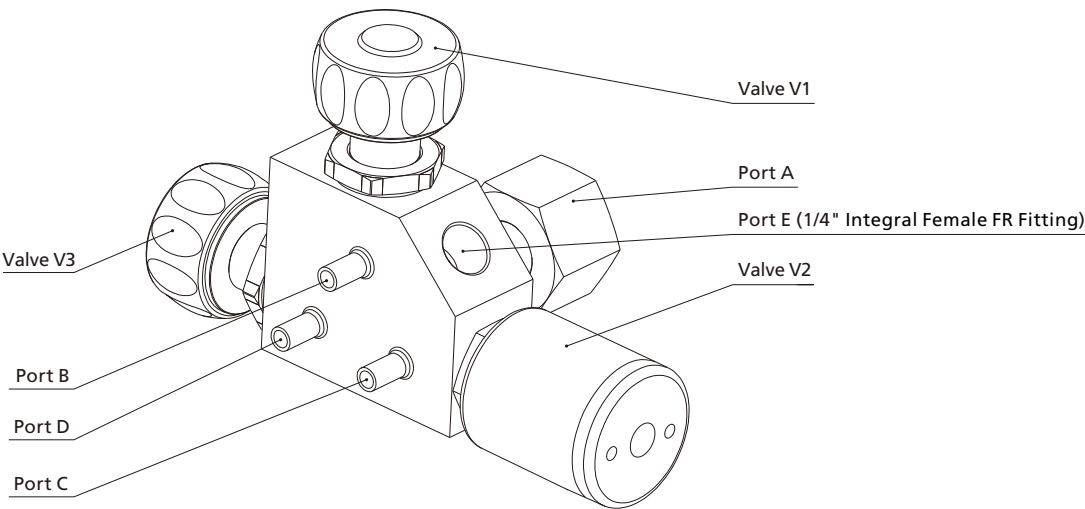
Flow Paths

☉ Flow paths as viewed from the top



Note: C and D serve as purge ports, while A and B serve as the main flow paths.

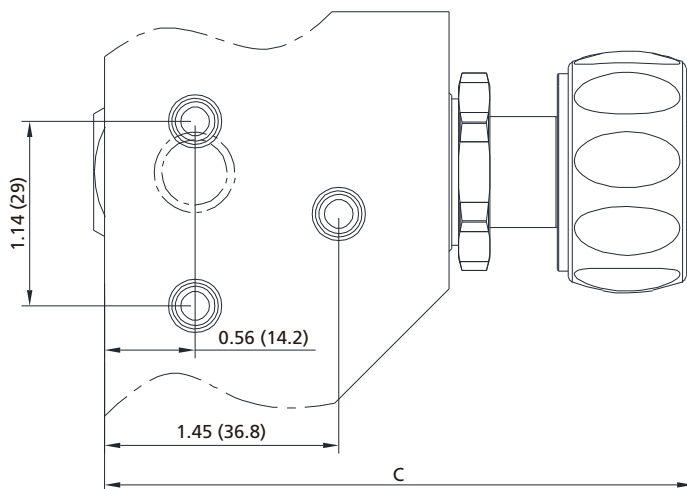
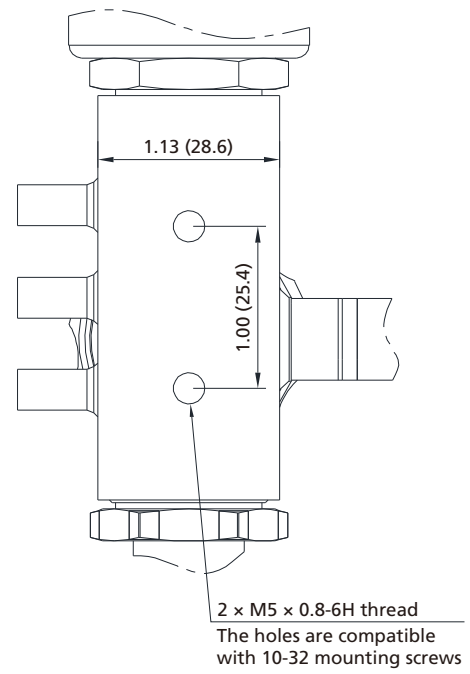
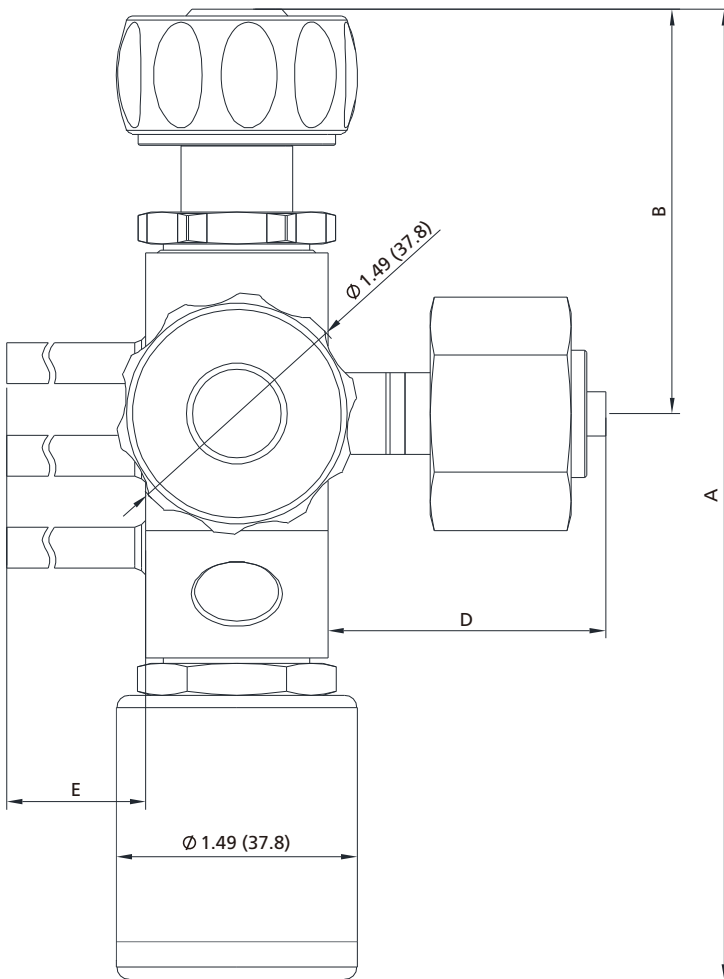
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Dimensions and Ordering Information

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





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V-39 Diaphragm Valves

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Technical Information

Basic Ordering Number	Actuator Type and Size	Dimensions in. (mm)		
		A	B	C
DP□□-P35-□□□-□□□-□□□-C-C-C	V1, V2 and V3: pneumatic actuators	6.48 (164.7)	2.98 (75.8)	4.12 (104.6)
DP□□-P35-□□□-□□□-□□□-C-R-C	V1, V3: pneumatic actuators; V2: manual	6.00 (152.4)		
DP□□-P35-□□□-□□□-□□□-R-C-R	V1, V3: manual actuators; V2: pneumatic	6.00 (152.4)	2.50 (63.5)	3.64 (92.4)
DP□□-P35-□□□-□□□-□□□-R-R-C	V1, V2: manual actuators; V3: pneumatic		2.98 (75.8)	

Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)	
		D	E
DP__P35-TB8-__-3TB4-__-__-__	Inlet: 1/2"×0.049" Tube Butt Weld Outlet: 3×1/4"×0.035" Tube Butt Weld	1.57 (40)	1.57 (40)
DP__P35-FFR4-__-3FFR4-__-__-__	Inlet: 1/4" Rotatable Female FR Fitting Outlet: 3×1/4" Rotatable Female FR Fitting	1.70 (43.2)	1.36 (34.5)
DP__P35-DIN1-__-3TB4-__-__-__	Inlet: DIN1 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld	2.65 (67.2)	1.57 (40)
DP__P35-DIN5-__-3TB4-__-__-__	Inlet: DIN5 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld	2.19 (55.7)	
DP__P35-FFR8-__-3FFR4-__-__-__	Inlet: DIN8 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld		
DP__P35-DIN9-__-3TB4-__-__-__	Inlet: DIN9 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld	2.60 (66)	
DP__P35-DIN11-__-3TB4-__-__-__	Inlet: DIN11 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld	2.22 (56.3)	
DP__P35-DIN14-__-3TB4-__-__-__	Inlet: DIN14 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld	1.69 (42.8)	
DP__P35-C632-__-3TB4-__-__-__	Inlet: CGA632 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld	2.96 (75.2)	
DP__P35-C634-__-3TB4-__-__-__	Inlet: CGA634 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld		
DP__P35-C640-__-3TB4-__-__-__	Inlet: CGA640 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld		
DP__P35-C724-__-3TB4-__-__-__	Inlet: CGA724 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld		
DP__P35-C728-__-3TB4-__-__-__	Inlet: CGA728 Cylinder Connection Outlet: 3×1/4"×0.035" Tube Butt Weld		

Ordering Number Description

DP6L - P35 - FFR4 - 3FFR4 - CMC - CMC - CMC - AF3 - CE									
Body Material		Port A Type		Port B/C/D Type		Actuator Type		Position Sensor	
6L	316L SS	TB4	1/4"×0.035" Tube Butt Weld	3FFR4	3×1/4" Rotatable Female FR Fitting	C	Normally Closed Pneumatic	None	PCTFE
6LV	316L SS VAR	TB8	1/2"×0.049" Tube Butt Weld	3TB4	3×1/4"×0.035" Tube Butt Weld	O	Normally Open Pneumatic	MO	Normally Open Position Sensor
Type		FFR4		FFR8		R		MC	
P	Purge Block	1/4" Rotatable Female FR Fitting		1/2" Rotatable Female FR Fitting		Manual-Round Handle		Normally Closed Position Sensor	
Type		C_		DIN_					
35	3 Valve 5 Way	CGA Cylinder Connection		DIN Cylinder Connection					
								Process Specification	
								FC-01	
								F2 FC-02	
								F3 FC-03	
								Product Certification	
								None	
								CE CE Certification	
								AX ATEX Certification	

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.

Replaceable-Seat Pneumatic Diaphragm Valves

DPX Series

Introduction

Replaceable-Seat Pneumatic Diaphragm Valves are suitable for applications requiring frequent valve maintenance and replacement, such as precursor containers and canisters. Their easy operation, long cycle life, and excellent sealing performance help to reduce costs for customers.

Features

- ⦿ Easily replaceable valve seat without the need for special tools. Service kits are available
- ⦿ Valve seat assembly with perfectly symmetrical structure to eliminate need to distinguish the orientation of seats
- ⦿ Black actuator cylinder plate for easy identification of replaceable-seat valves



Technical Data

Port Size	1/4" to 3/8" or 6 mm to 8 mm	
Flow Coefficient (Cv)	0.3	
Orifice Size	0.16 in. (4.1 mm)	
Working Pressure	Vacuum to 250 psig (17.2 bar)	
Pneumatic Actuator Working Pressure	60 ~ 90 psig (4.2 ~ 6.2 bar)	
Working Temperature	PCTFE: -10 ~ 176 °F (-23 ~ 80 °C) PFA: -10 ~ 302 °F (-23 ~ 150 °C)	
Leak Rate (Helium)	Internal	$\leq 1 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 1 \times 10^{-9}$ std·cm ³ /s

Flow Data

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

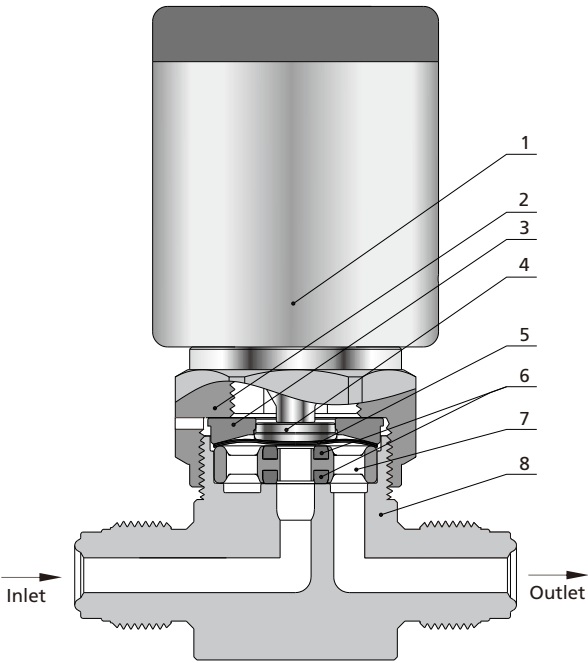
Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
10 (0.68)	96	3.6
50 (3.4)	250	7.9
100 (6.8)	450	11.0

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)
Material		316L SS	316L SS, 316L SS VAR
Wetted Surface Roughness		Ra 5 μin. (0.13 μm)	
Polishing Process		Electropolished	

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

Major Materials of Construction

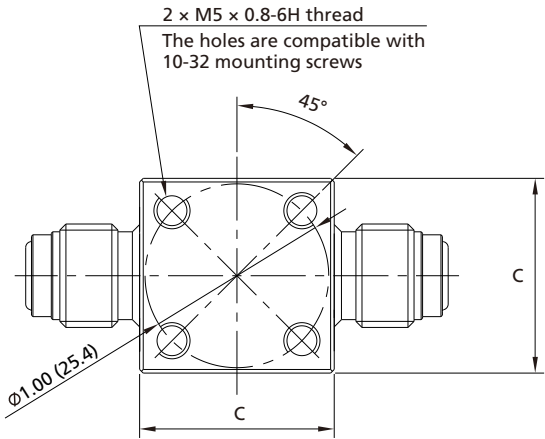
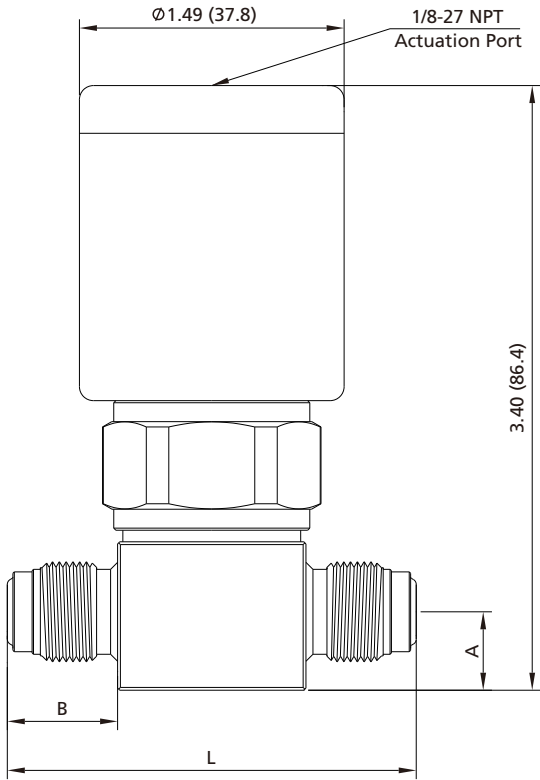


Normally Closed Pneumatic Model
(Replaceable-Seat Type)

Item	Component	Material/Specification
1	Actuator	Aluminum
2	Bonnet Nut	316 SS/ASTM A479
3	Bonnet	S17400/ASTM A564
4	Button	316 SS/ASTM A479
5	Diaphragm (2)	Cobalt Alloy/AMS 5876
6	Seat	PCTFE/ASTM D1430 or PFA/ASTM D3307
7	Seat Retainer	316L SS or 316L SS VAR
8	Body	316L SS or 316L SS VAR

Dimensions and Ordering Information

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



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Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)			
		A	B	C	L
DPX□□-TB4-	1/4"× 0.035"Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	1.74 (44.2)
DPX□□-TB6-	3/8"× 0.035"Tube Butt Weld		0.26 (6.6)		
DPX□□-FFR4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		2.78 (70.6)
DPX□□-RFR4-	1/4" Rotatable Male FR Fitting				
DPX□□-FR4-	1/4" Integral Male FR Fitting				

Service Kit Ordering Information

Basic Ordering Information	Description	Remarks
□□DPX-KIT	Includes 1 piece of seat assembly (seat material: PCTFE), 2 pieces of cobalt alloy diaphragms, and maintenance instructions	Applies to replaceable-seat diaphragm valves
□□DPX-A-KIT	Includes 1 piece of seat assembly (seat material: PFA), 2 pieces of cobalt alloy diaphragms, and maintenance instructions	



Ordering Number Description

DPX6L - FFR4 - FR4 - CAF3

Body Material		Inlet Type		Inlet Size	Outlet Type	Outlet Size	Actuator Type	Valve Seat	Process Specification	
6L	316L SS	TB	Fractional Tube Butt Weld	4	Same as Inlet	Specified in the same way as Inlet	C	PCTFE	FC-01	
6LV	316L SS VAR	MTB	Metric Tube Butt Weld	6				A	F2	FC-02
		FR	Integral Male FR Fitting	8			O		F3	FC-03
		FFR	Rotatable Female FR Fitting							
		RFR	Rotatable Male 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.

Two-Step Pneumatic Diaphragm Valves

DPT Series

Introduction

DPT series two-step pneumatic diaphragm valves, designed for high purity and ultra high purity applications, provide a “soft start” for equipment by rapidly switching between low and high flow modes. This prevents pressure surges in the cavity and avoids scattering of particles that could contaminate the process equipment cavity as a result of the rapid flow of media into the process equipment cavity.

Features

- ⦿ Fast switching between low and high flow rates
- ⦿ Minimal particle generation and minimal dead space
- ⦿ Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- ⦿ No internally wetted threads or springs which minimizes particle generation and particle entrapment for high purity
- ⦿ Valve Cv values in low-flow mode can be preset at the factory according to customer specifications or adjusted by customers themselves

Technical Data

Port Size		1/4"
Flow Coefficient (Cv)		High-Flow (HF) Port: 0.27 Low-Flow (LF) Port: 0.02 ~ 0.12 ^①
Orifice Size		0.16 in. (4.1 mm)
Working Pressure		Vacuum to 145 psig (10 bar)
Pneumatic Actuator Working Pressure		60 ~ 90 psig (4.2 ~ 6.2 bar)
Working Temperature		PFA: 14 ~ 302 °F (-10 ~ 150 °C) PCTFE: 14 ~ 176 °F (-10 ~ 80 °C)
Leak Rate (Helium)	Internal	$\leq 1 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 1 \times 10^{-9}$ std·cm ³ /s

① Note: Valve Cv values in low-flow mode can be preset at the factory according to customer specifications or adjusted by customers themselves. For detailed operating instructions, please refer to page V-46.

Flow Data

Air @ 70 °F (21 °C)

Water @ 60 °F (16 °C)

Orifice in. (mm)	Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
0.16 (4.1)	10 (0.68)	86	3.2
	50 (3.4)	230	7.2
	100 (6.8)	410	10.2



Fittings

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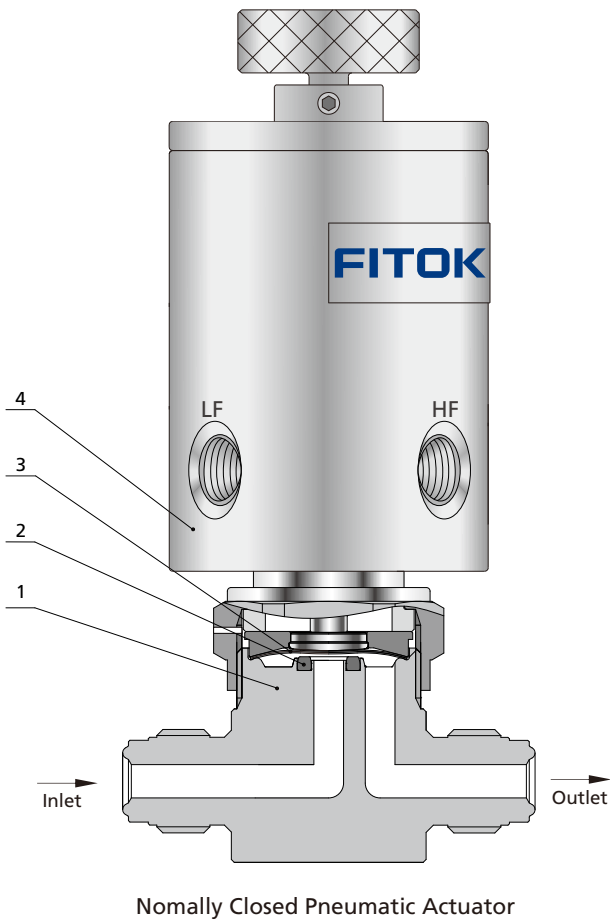
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Process Specification

Item	Process Specification	Ultra High Purity Process (FC-03)
Material		316L SS or 316L SS VAR
Wetted Surface Roughness		Ra 5 µin. (0.13 µm)
Polishing Process		Electropolished
Cleaning		Ultra high purity cleaning in continuously monitored ultrasonic cleaning system with deionized water
Assembly Environment		ISO 4 (FS 209E 10 equivalent) cleanroom
Packaging		Double bagged, packaged in the cleanroom

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

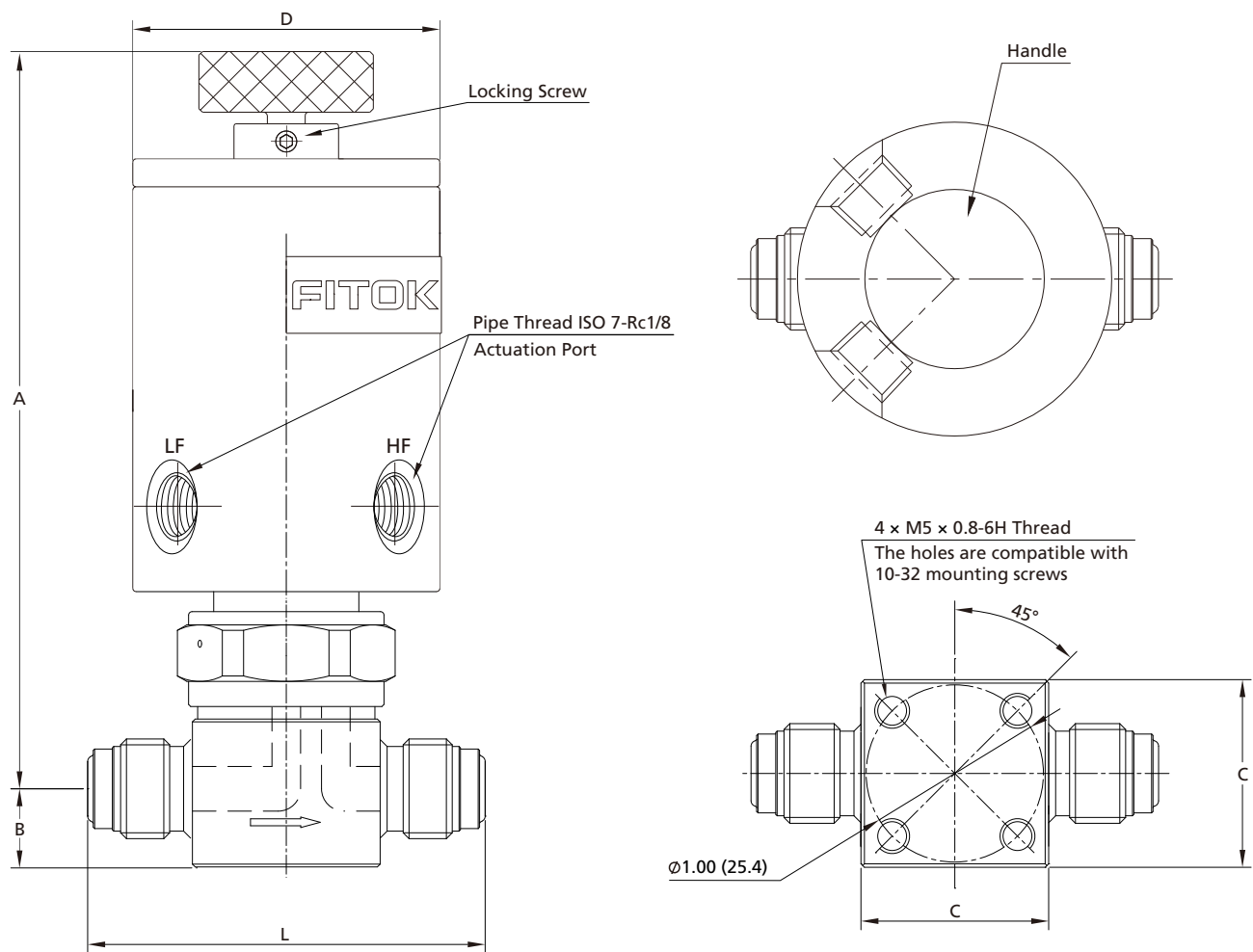
Major Materials of Construction



Item	Component	Material/Specification
1	Body	316L SS or 316L SS VAR
2	Seat	PCTFE/ASTM D1430 or PFA/ASTM D3307
3	Diaphragm (2)	Cobalt Alloy/AMS 5876
4	Actuator	Aluminium

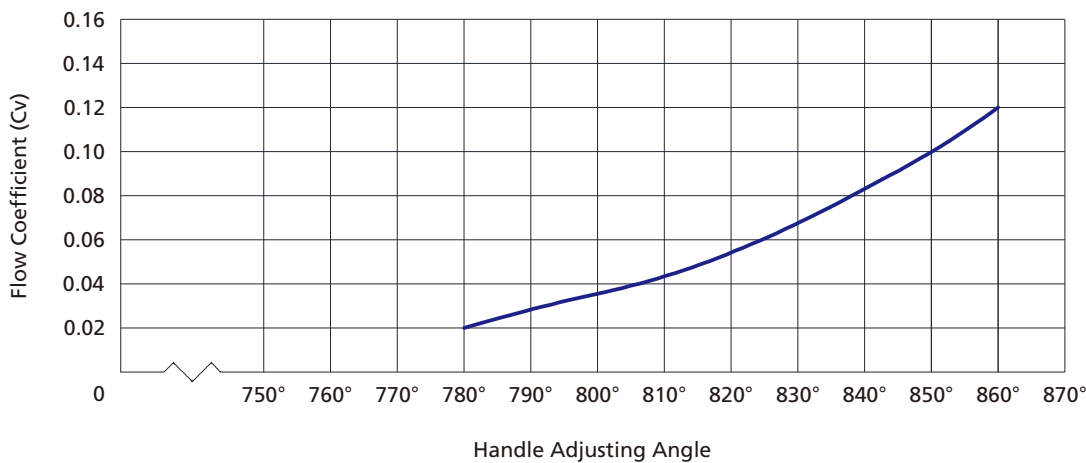
Dimensions and Ordering Information

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



Flow Adjustment Instructions for Low-Flow Mode:

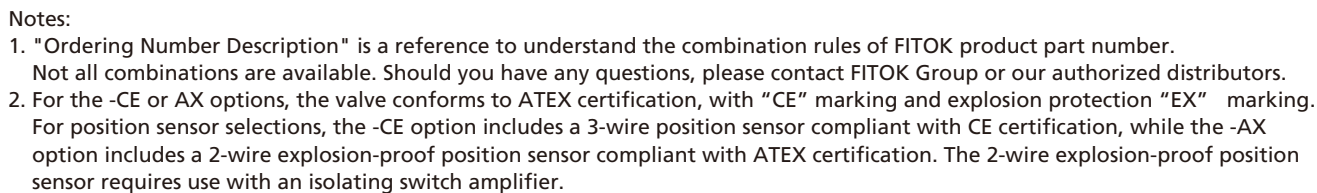
Loosen the locking screws and turn the handle clockwise to the end. Then, rotate the handle counterclockwise until the desired Cv value is reached (see below relationship between Cv and handle adjusting angle). Once the desired Cv is achieved, tighten the locking screws.



Note: The rotation angle for turning the handle counterclockwise by one complete turn is 360°. Consequently, two complete turns equal 720°, and this pattern continues accordingly for additional turns.

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Ordering Number Description



High Pressure Springless Diaphragm Valves

DH Series

Introduction

DH Series High Pressure Springless Diaphragm Valves are suitable for high purity and ultra high purity applications. Featuring an internally springless flow path, these valves ensure high cleanliness and offer multiple flow path options, providing exceptional versatility.



Features

- Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- Manual and pneumatic actuators available
- Pneumatic actuators available in both standard and compact designs, configurable with optional NC/NO position sensors

Technical Data

Port Size	1/4" to 3/8" or 6 mm to 8 mm	
Flow Coefficient (Cv)	0.20	
Orifice Size	0.16 in. (4.1 mm)	
Working Pressure	Vacuum to 3000 psig (207 bar)	
Pneumatic Actuator Operating Pressure	Standard: 75 to 105 psig (5.2 to 7.2 bar)	
	Compact: 60 to 90 psig (4.2 to 6.2 bar)	
Temperature	PCTFE: -10 ~ 150 °F (-23 ~ 65 °C) Polyimide: 50 ~ 302 °F (10 ~ 150 °C)	
Leak Rate (Helium)	Internal	$\leq 1 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 1 \times 10^{-9}$ std·cm ³ /s

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)	64	2.4
50 (3.4)	170	5.4
100 (6.8)	300	7.6

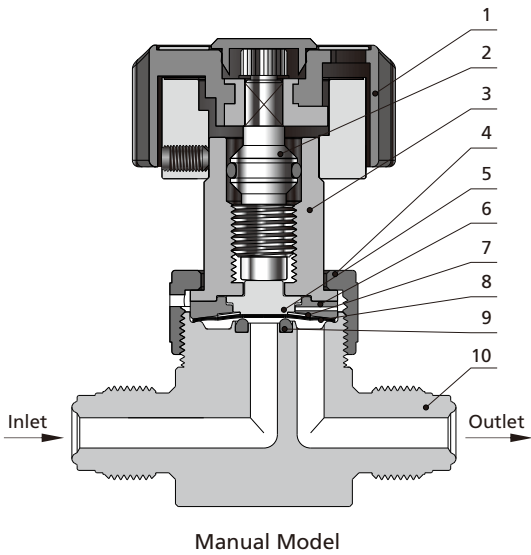
Process Specification

Item	Process Specification		Ultra High Purity Process (FC-03)
	Standard Cleaning and Packaging Process (FC-01)	Special Cleaning and Packaging Process (FC-02)	
Material	316L SS		316L SS, 316L SS VAR
Wetted Surface Roughness	Ra 10 μin. (0.25 μm)	Ra 5 μin. (0.13 μm) ^①	Ra 5 μin. (0.13 μm)
Polishing Process	Machine finished	Electropolished	Electropolished

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

① Wetted surface roughness of valves with FR Series metal gasket face seal connections and tube butt weld connections.

Major Materials of Construction



Item	Component	Material/Specification
1	Handle	ABS
2	Stem	316 SS/ASTM A479
3	Bonnet Retainer	S17400/ASTM A564
4	Bonnet Nut	316 SS/ASTM A479
5	Button	316 SS/ASTM A479
6	Bonnet	S17400/ASTM A564
7	Seal	S17700
8	Diaphragm (3)	Cobalt Alloy /AMS 5876
9	Seat	PCTFE/ASTM D1430 or Polyimide
10	Body	316L SS or 316L SS VAR

Handles and Actuators

Manual - Round Handle

- Quick, quarter-turn actuation
- 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



Compact 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

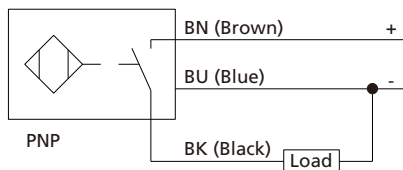
Transmit a signal to an electrical device indicating the open and closed position of pneumatically actuated valves

Technical Information

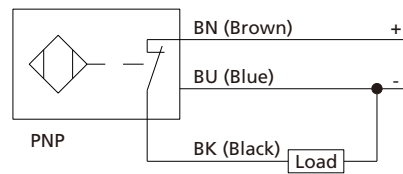
Output	3-wire V (dc), PNP
Output Function	Normally open or normally closed
Voltage	10 ~ 30 V (dc)
Working Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

Wiring Diagram

Normally open position sensors



Normally closed position sensors



Notes:

Pneumatic, Normally Open (NO):

1. Standard Model:

With NO sensor: signal output, indicator ON when valve closes

With NC sensor: signal output, indicator ON when valve opens

2. Compact Model

With NO sensor: signal output, indicator ON when valve opens

With NC sensor: signal output, indicator ON when valve closes

Pneumatic, Normally Closed (NC):

With NO sensor: signal output, indicator ON when valve opens

With NC sensor: signal output, indicator ON when valve closes

Explosion-proof Position Sensors

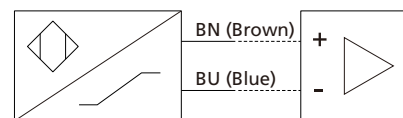
Transmit a signal to an electrical device, indicating the open and closed positions of pneumatically actuated valves.

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 Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

Wiring Diagram



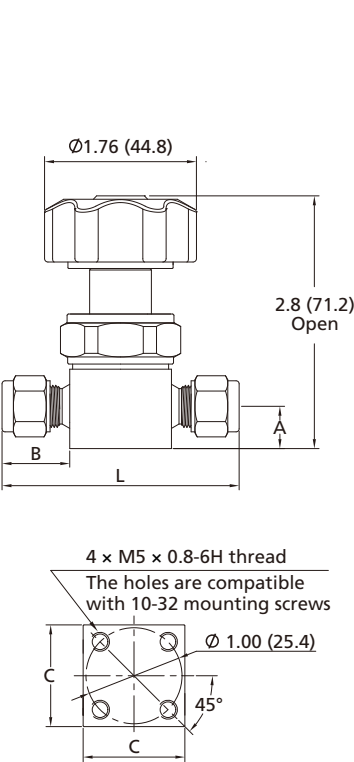
Dimensions and Ordering Information

Straight Type

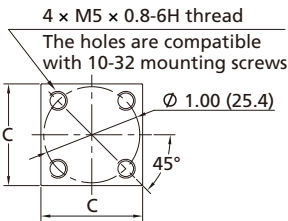
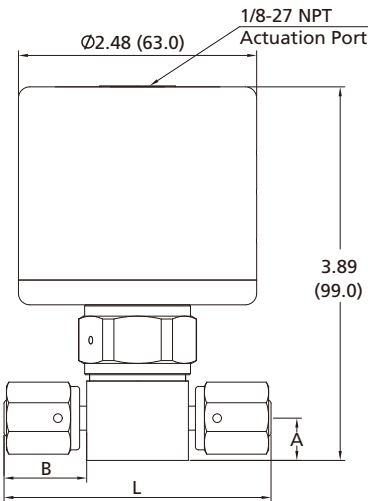
Dimensions

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

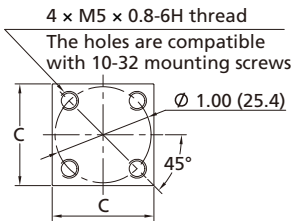
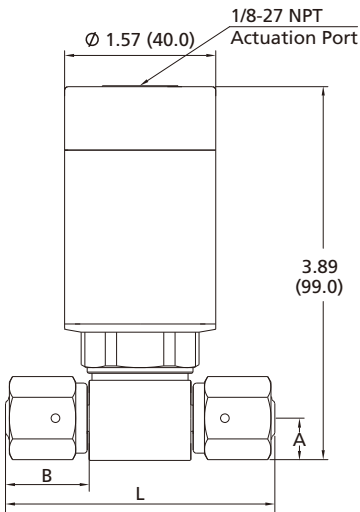
Manual - Round Handle



Pneumatic

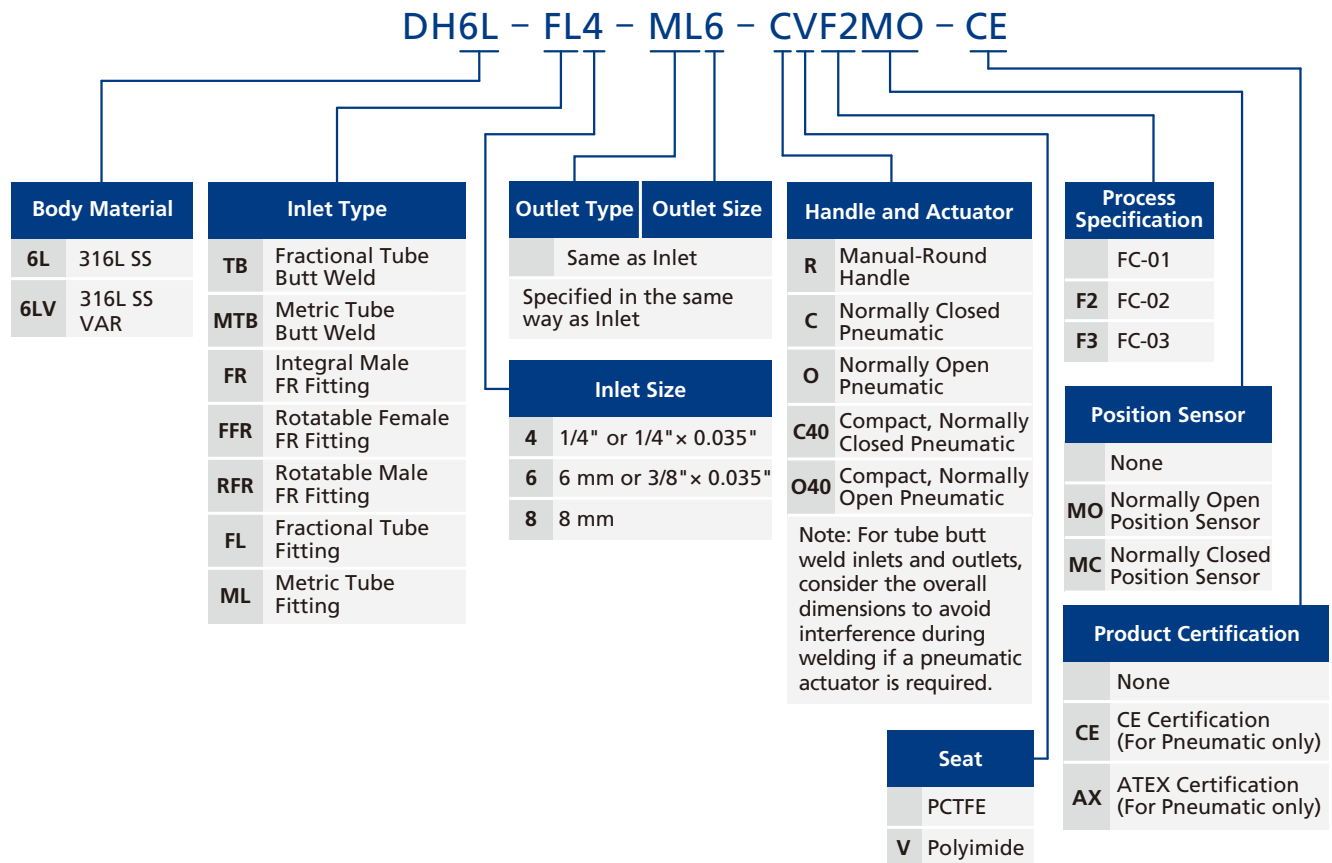


Compact Pneumatic



Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)			
		A	B	C	L
DH□□-TB4-	1/4" × 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	1.74 (44.2)
DH□□-TB6-	3/8" × 0.035" Tube Butt Weld		0.26 (6.6)		
DH□□-FFR4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		2.78 (70.6)
DH□□-RFR4-	1/4" Rotatable Male FR Fitting		0.62 (15.7)		2.30 (58.4)
DH□□-FR4-	1/4" Integral Male FR Fitting		0.70 (17.9)		2.47 (62.7)
DH□□-ML6-	6 mm FITOK Tube Fitting				

Ordering Number Description



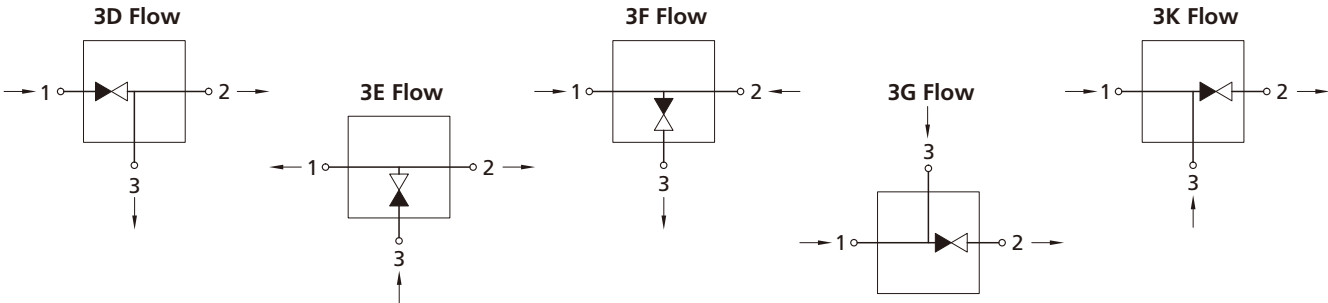
Notes:

- "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.

Branch Type

Flow Paths

⦿ Flow paths as viewed from the top

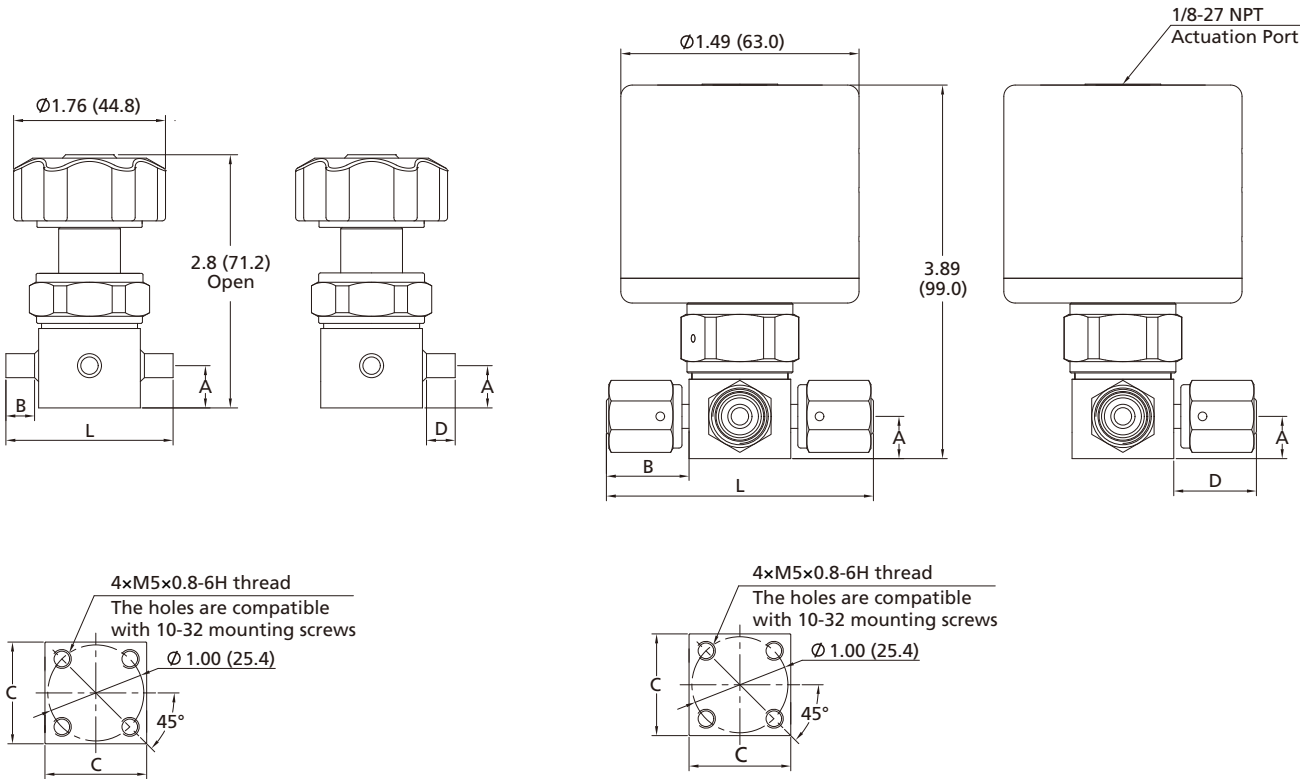


Dimensions

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

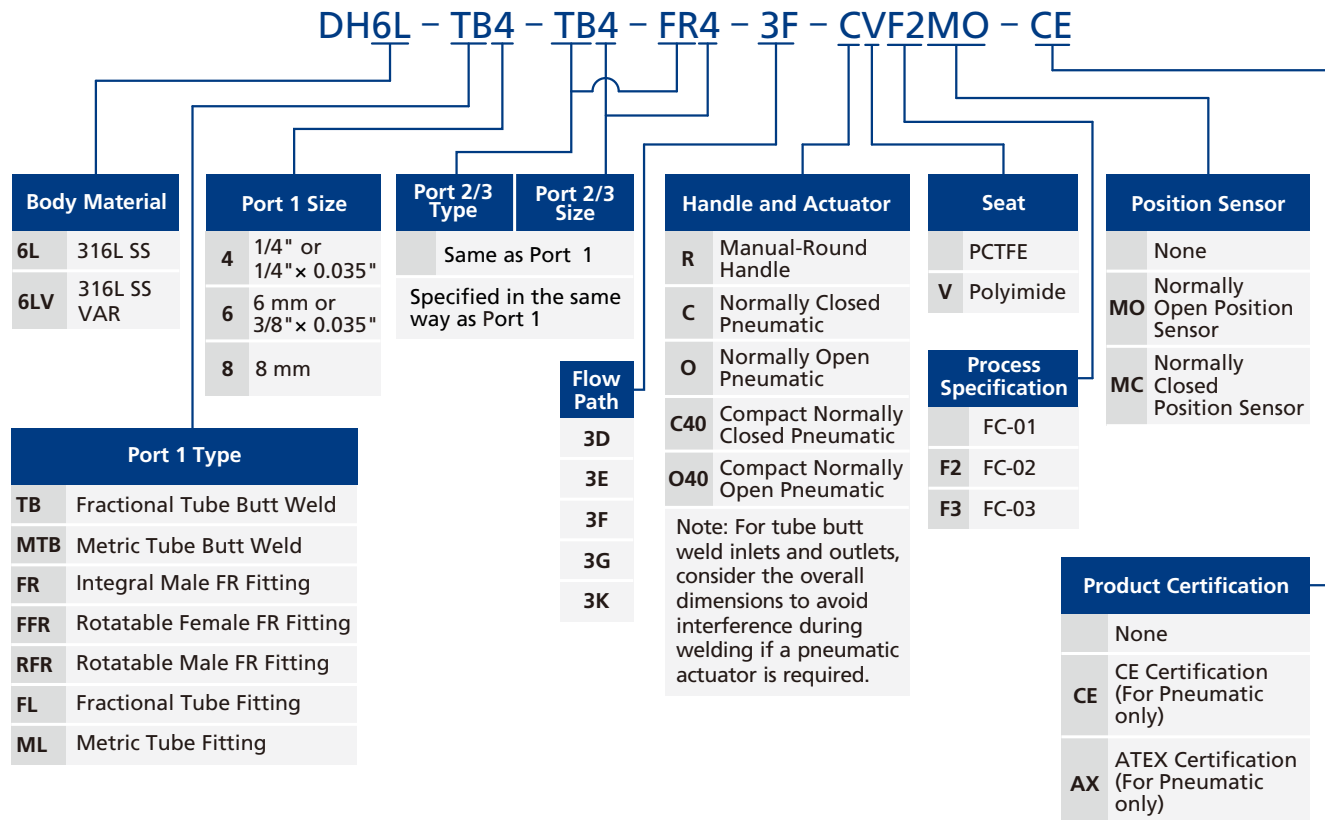
Manual - Round Handle

Pneumatic



Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)				
		A	B	C	D	L
DH□□-TB4-	1/4" x 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	0.30 (7.6)	1.74 (44.2)
DH□□-TB6-	3/8" x 0.035" Tube Butt Weld		0.26 (6.6)		0.26 (6.6)	
DH□□-FFR4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		0.86 (21.8)	2.78 (70.6)
DH□□-RFR4-	1/4" Rotatable Male FR Fitting		0.86 (21.8)		0.86 (21.8)	
DH□□-FR4-	1/4" Integral Male FR Fitting		0.62 (15.7)		0.62 (15.7)	
DH□□-FL4-	1/4" FITOK Tube Fitting		0.70 (17.9)		0.70 (17.9)	

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.

High Pressure Spring Diaphragm Valves

DM Series

Introduction

DM Series High Pressure Spring Diaphragm Valves are suitable for high purity and ultra high purity applications. These valves offer a small seat sealing surface, a wide working temperature range, and an easily replaceable seat, with an maximum pressure rating of 3500 psig.



Features

- Repetitive shutoff with fully contained soft-seat stem tip
- Position indicator ring for lever handle indicates open and closed states
- Reduced seat volume
- Functional under vacuum conditions
- Different manual and pneumatic actuators available
- Normally closed or normally open position sensors are optional for pneumatically actuated valves

Technical Data

Port Size		1/4" to 3/8" or 6 mm to 8 mm
Flow Coefficient (Cv)	Lever Handle	0.14
	Round Handle	0.30
	Pneumatic Actuator	0.20
Orifice Size		0.16 in. (4.1 mm)
Working Pressure		Vacuum to 3500 psig (241 bar)
Max. Differential Back Pressure ^①		1500 psig (103 bar)
Pneumatic Actuator Operating Pressure		60 to 90 psig (4.2 to 6.2 bar)
Temperature		PCTFE: -100 ~ 250 °F (-73 ~ 121 °C) Polyimide: -100 ~ 320 °F (-73 ~ 160 °C)
Leak Rate (Helium)	Internal	≤4×10 ⁻⁹ std·cm ³ /s
	External	≤4×10 ⁻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 1500 psig (103 bar), the valve will not open.
A17-7 SS spring can be used to increase the max. differential back pressure to 2500 psig (172 bar)
To order, please contact FITOK Group or our authorized distributors.

Flow Data

Air @ 70 °F (21 °C)

Water @ 60 °F (16 °C)

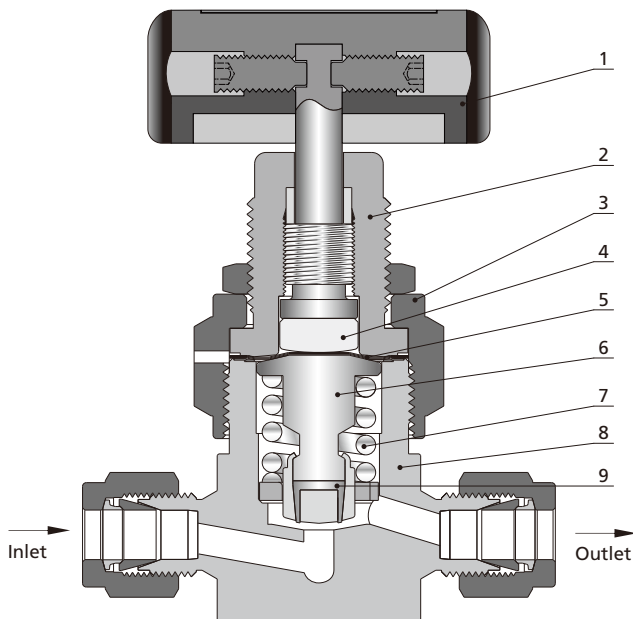
Pressure Drop to Atmosphere psig (bar)	Lever Handle		Round Handle		Pneumatic Actuator	
	Air (l/min)	Water (l/min)	Air (l/min)	Water (l/min)	Air (l/min)	Water (l/min)
10 (0.68)	49	1.6	100	3.5	64	2.4
50 (3.4)	130	3.9	270	8.0	170	5.4
100 (6.8)	240	5.4	490	11.4	300	7.6

Process Specification

Item	Standard Cleaning and Packaging Process (FC-01) Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
Material	316L SS	316L SS, 316L SS VAR
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



Round Handle Model

Item	Component	Material/Specification
1	Handle	Aluminum
2	Bonnet	316 SS/ASTM A479
3	Bonnet Nut	316 SS/ASTM A479
4	Button	316 SS/ASTM A479
5	Diaphragm (3)	Cobalt Alloy/AMS 5876
6	Stem	316L SS or 316L SS VAR
7	Spring	316 SS/ASTM A313
8	Body	316L SS or 316L SS VAR
9	Seat	PCTFE/ASTM D1430 or Polyimide

Handles and Actuators

Manual - Lever Handle

- ⦿ Quick, quarter-turn actuation
- ⦿ Position indicator ring to visually indicate open and closed states



Manual - Round Handle

- ⦿ One and a half turns to operate from fully open to closed



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

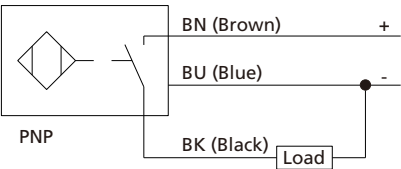
Transmit a signal to an electrical device indicating the open and closed position of pneumatically actuated valves

Technical Information

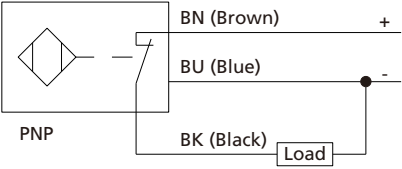
Output	3-wire V (dc), PNP
Output Function	Normally open or normally closed
Voltage	10 ~ 30 V (dc)
Working Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

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

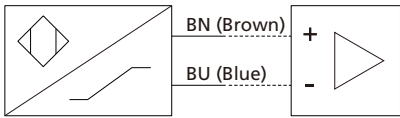
Transmit a signal to an electrical device, indicating the open and closed positions of pneumatically actuated valves.

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

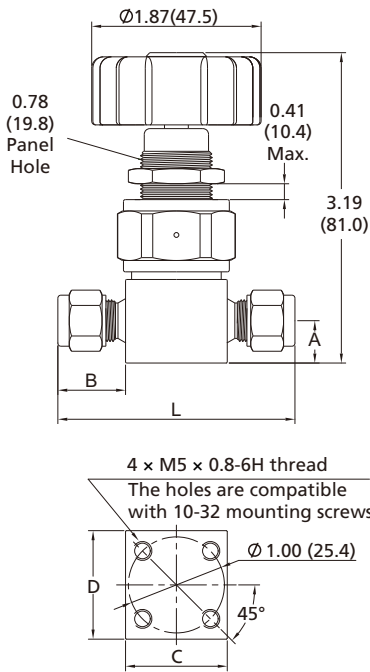
Dimensions and Ordering Information

Straight Type

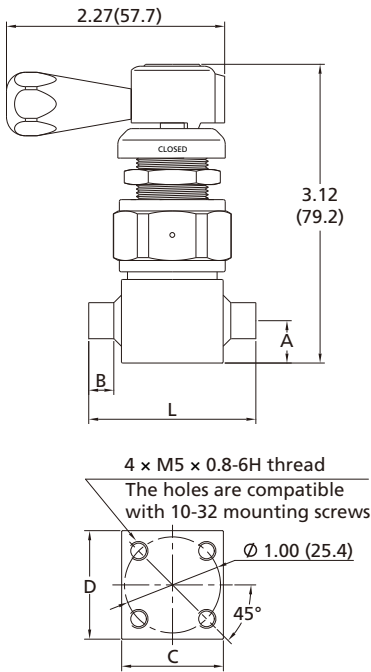
Dimensions

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

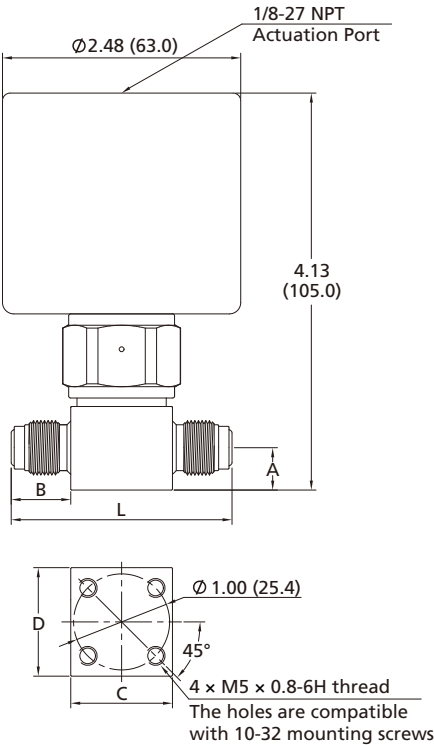
Manual - Round Handle



Manual - Lever Handle



Pneumatic

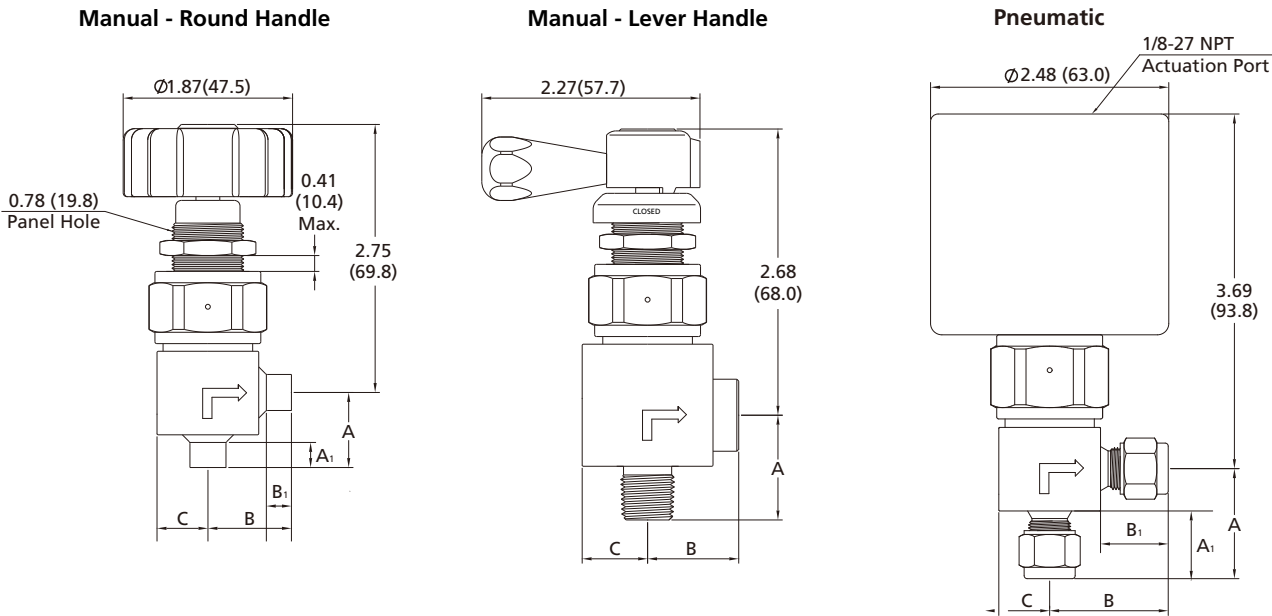


Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)				
		A	B	C	D	L
DM□□-FL4-	1/4" FITOK Tube Fitting	0.44 (11.2)	0.69 (17.6)	1.06 (26.9)	1.13 (28.7)	2.47 (62.1)
DM□□-FL6-	3/8" FITOK Tube Fitting		0.76 (19.3)			2.58 (65.5)
DM□□-ML6-	6 mm FITOK Tube Fitting		0.70 (17.9)			2.47 (62.8)
DM□□-ML8-	8 mm FITOK Tube Fitting		0.74 (18.7)			2.53 (64.3)
DM□□-TB4-	1/4" x 0.035" Tube Butt Weld		0.30 (7.6)			1.74 (44.2)
DM□□-TB6-	3/8" x 0.049" Tube Butt Weld		0.26 (6.6)			1.74 (44.2)
DM□□-NS4-	1/4 Male NPT		—			2.46 (62.5)
DM□□-FNS4-	1/4 Female NPT		—			2.46 (62.5)
DM□□-FR4-	1/4" Integral Male FR Fitting		0.62 (15.7)			2.30 (58.4)
DM□□-FFR4-	1/4" Rotatable Female FR Fitting		0.85 (21.6)			2.76 (70.1)
DM□□-FO4-	1/4" Male FO Fitting		0.47 (11.9)			2.00 (50.8)

Angle Type

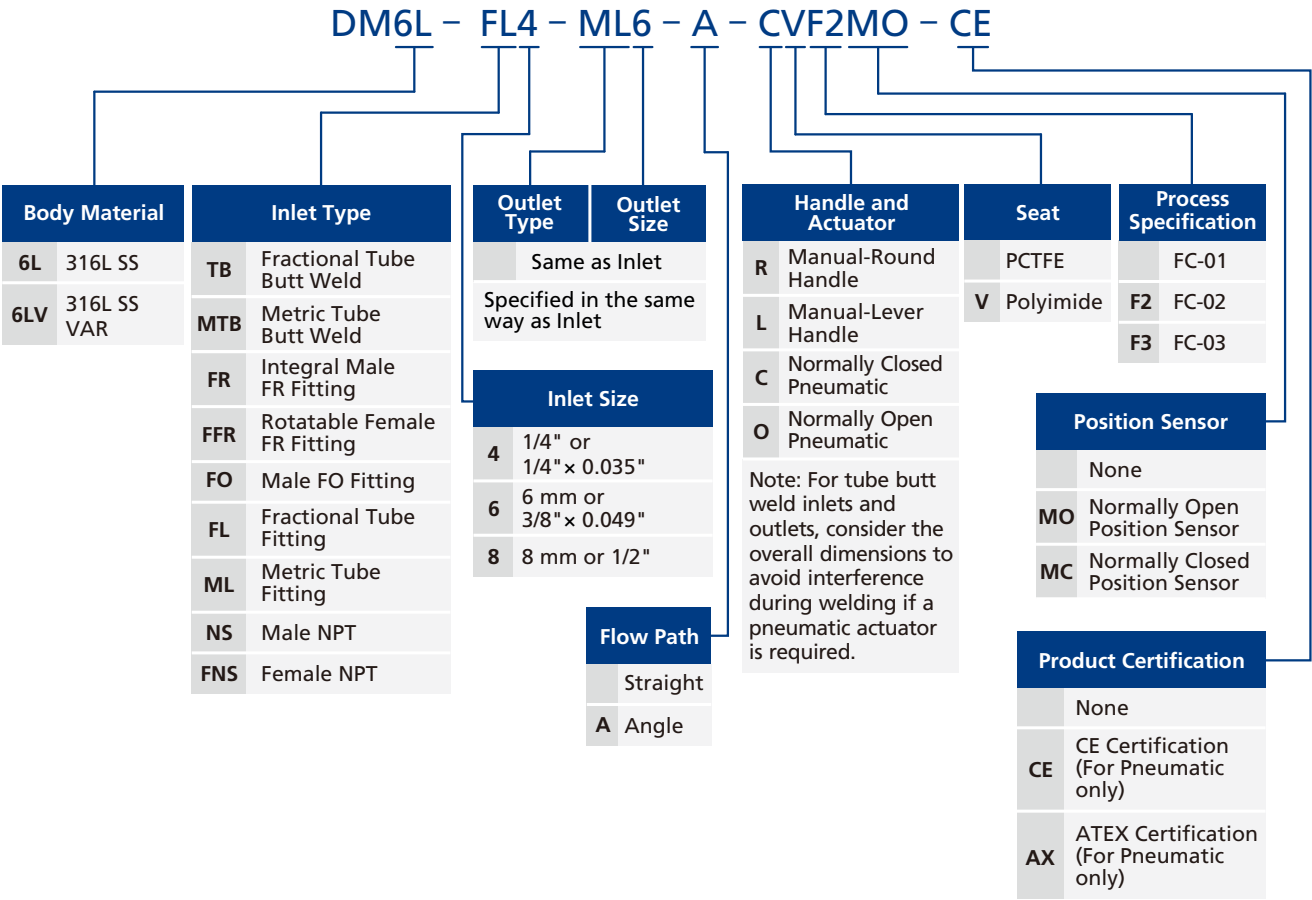
Dimensions

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



Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)				
		A	A ₁	B	B ₁	C
DM□□-FL4-	1/4" FITOK Tube Fitting	1.14 (29.1)	0.69 (17.6)	1.23 (31.3)	0.69 (17.6)	0.53 (13.4)
DM□□-ML6-	6 mm FITOK Tube Fitting		0.70 (17.9)		0.70 (17.9)	
DM□□-TB6-	3/8" × 0.049" Tube Butt Weld	0.78 (19.8)	0.26 (6.6)	0.87 (22.0)	0.26 (6.6)	
DM□□-NS4-FNS4	Inlet 1/4 Male NPT	1.09 (27.7)	-	0.95 (24.1)	-	0.68 (17.3)
	Outlet 1/4 Female NPT					

Ordering Number Description

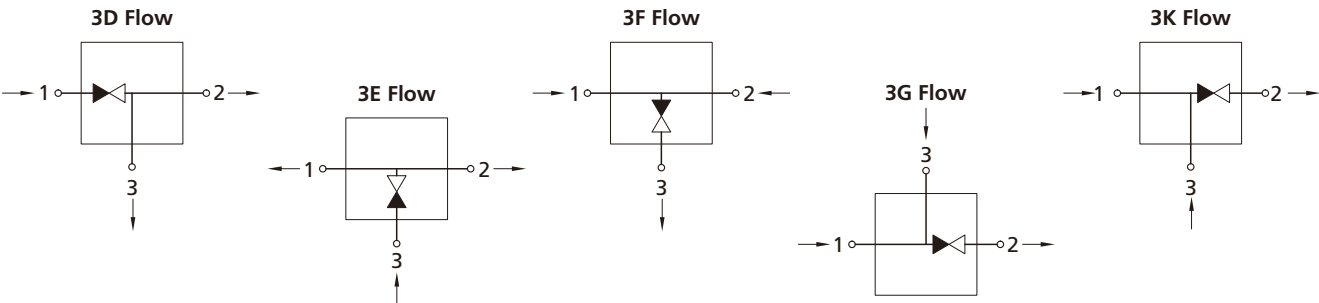


- Notes:
- "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available. Should you have any questions, please contact FITOK Group or our authorized distributors.
 - For the –CE or AX options, the valve conforms to ATEX 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.

Branch Type

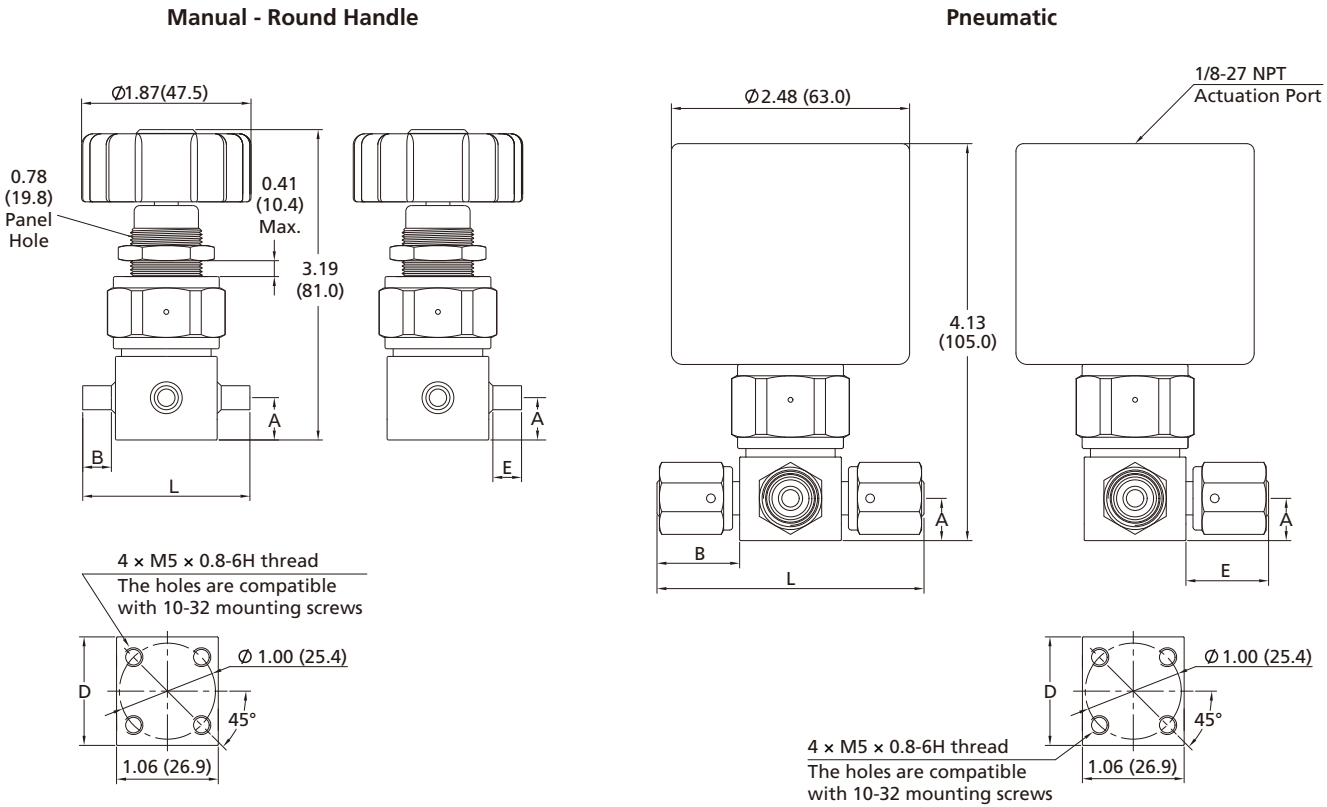
Flow Paths

☉ Flow paths as viewed from the top



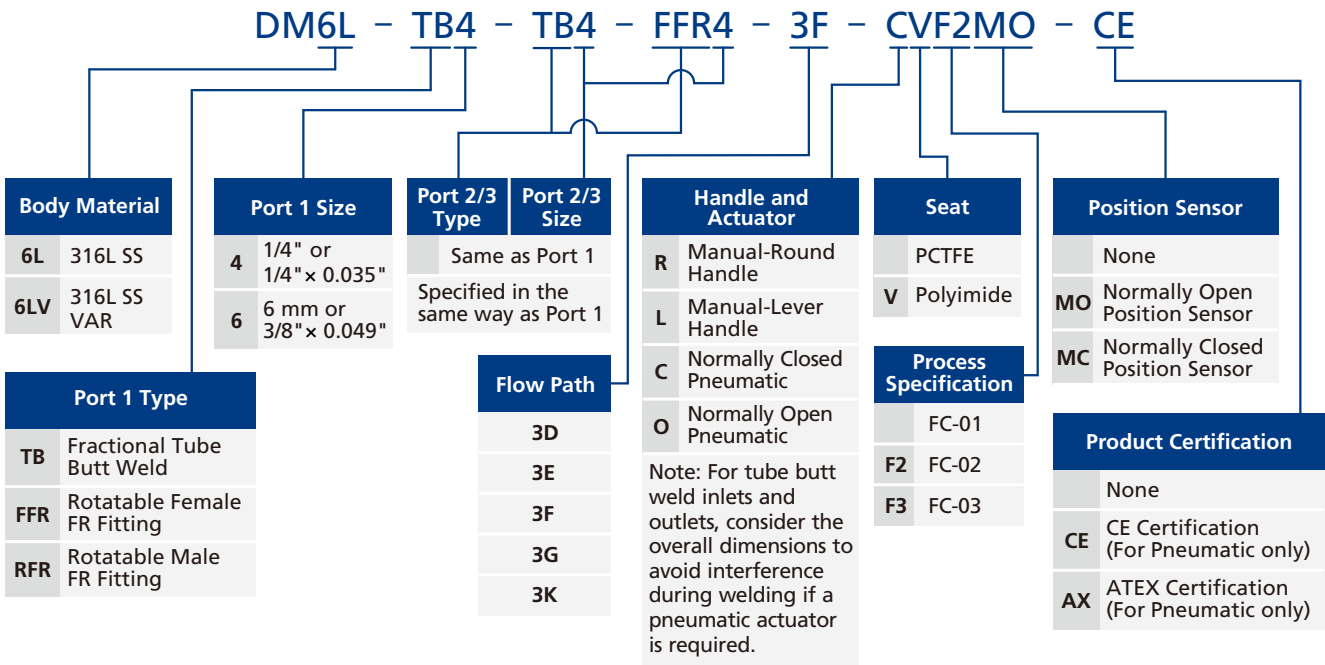
Dimensions

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



Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)				
		A	B	D	E	L
DM□□-TB4-	1/4"× 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.13 (28.7)	0.30 (7.6)	1.74 (44.2)
DM□□-TB6-	3/8"× 0.049" Tube Butt Weld		0.85 (21.6)		0.85 (21.6)	2.76 (70.1)
DM□□-FFR4-	1/4" Rotatable Female FR Fitting					
DM□□-RFR4-	1/4" Rotatable Male FR Fitting					

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.

High Pressure Compact Diaphragm Valves

DS Series

Introduction

DS Series High Pressure Compact Diaphragm Valves are designed for high purity and ultra-high purity applications. Featuring a springless internal flow path, these valves deliver exceptional cleanliness. The pneumatic models feature a compact design, making them ideal for space-constrained installations, while the manual models provide excellent pressure resistance to meet the demands of various high-pressure operating conditions.

Features

- Reduced inner volume
- Minimized number of wetted components
- Manual and pneumatic actuators available
- Aluminum piston for faster operation



Technical Data

Port Size		1/4" to 3/8" or 6 mm to 8 mm
Flow Coefficient (Cv)		0.17
Orifice Size		0.12 in. (3.0 mm)
Working Pressure	Manual	Vacuum to 4500 psig (310 bar)
	Pneumatic	Vacuum to 3000 psig (207 bar)
Pneumatic Actuator Operating Pressure		60 to 90 psig (4.2 to 6.2 bar)
Working Temperature		PCTFE: -10 ~ 150 °F (-23 ~ 65 °C) Polyimide: -10 ~ 250 °F (-23 ~ 121 °C)
Leak Rate (Helium)	Internal	$\leq 1 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 1 \times 10^{-9}$ std·cm ³ /s

Flow Data

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

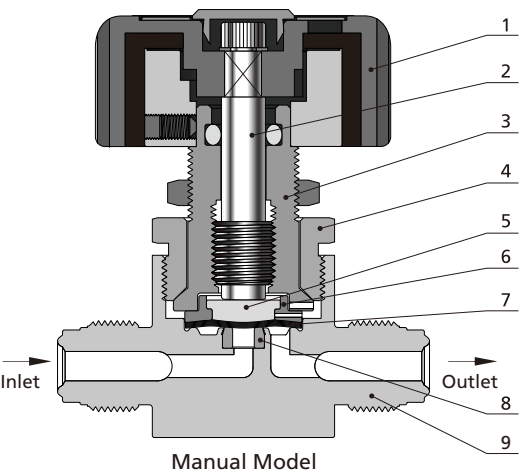
Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
10 (0.68)	55	1.9
50 (3.4)	150	4.5
100 (6.8)	260	6.4

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)
Material		316L SS	316L SS, 316L SS VAR
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	Stem	316 SS/ASTM A479
3	Bonnet Retainer	S17400/ASTM A564
4	Bonnet Nut	316 SS/ASTM A479
5	Button	316 SS/ASTM A479
6	Bonnet	S17400/ASTM A564
7	Diaphragm	Cobalt Alloy/AMS 5876
8	Seat	PCTFE/ASTM D1430 or Polyimide
9	Body	316L SS or 316L SS VAR

Handles and Actuators

Manual - Round Handle

- Quick, quarter-turn actuation
- 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



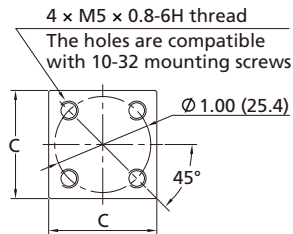
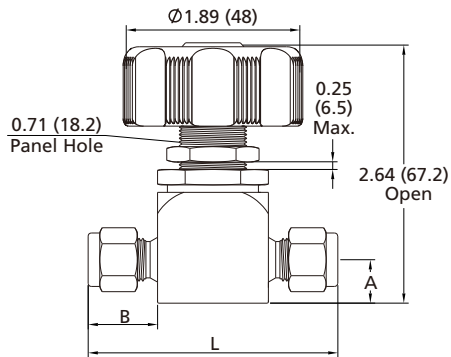
Dimensions and Ordering Information

Straight Type

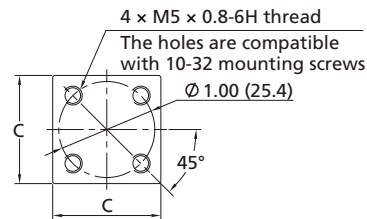
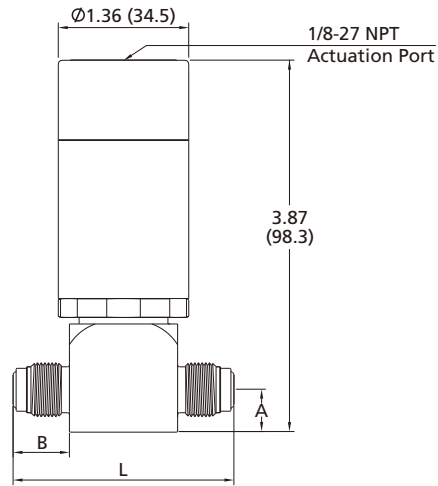
Dimensions

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
DS□□-TB4-	1/4" × 0.035" Tube Butt Weld	0.44 (11.2)	0.34 (8.6)	1.12 (28.6)	1.81 (45.9)
DS□□-FFR4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		2.85 (72.3)
DS□□-FR4-	1/4" Integral Male FR Fitting		0.58 (14.9)		2.30 (58.4)
DS□□-FL4-	1/4" FITOK Tube Fitting		0.70 (17.9)		2.54 (64.4)
DS□□-NS4-	1/4 Male NPT		0.56 (14.2)		2.24 (57.0)
DS□□-FNS4-	1/4 Female NPT		—		2.36 (60.0)

Ordering Number Description

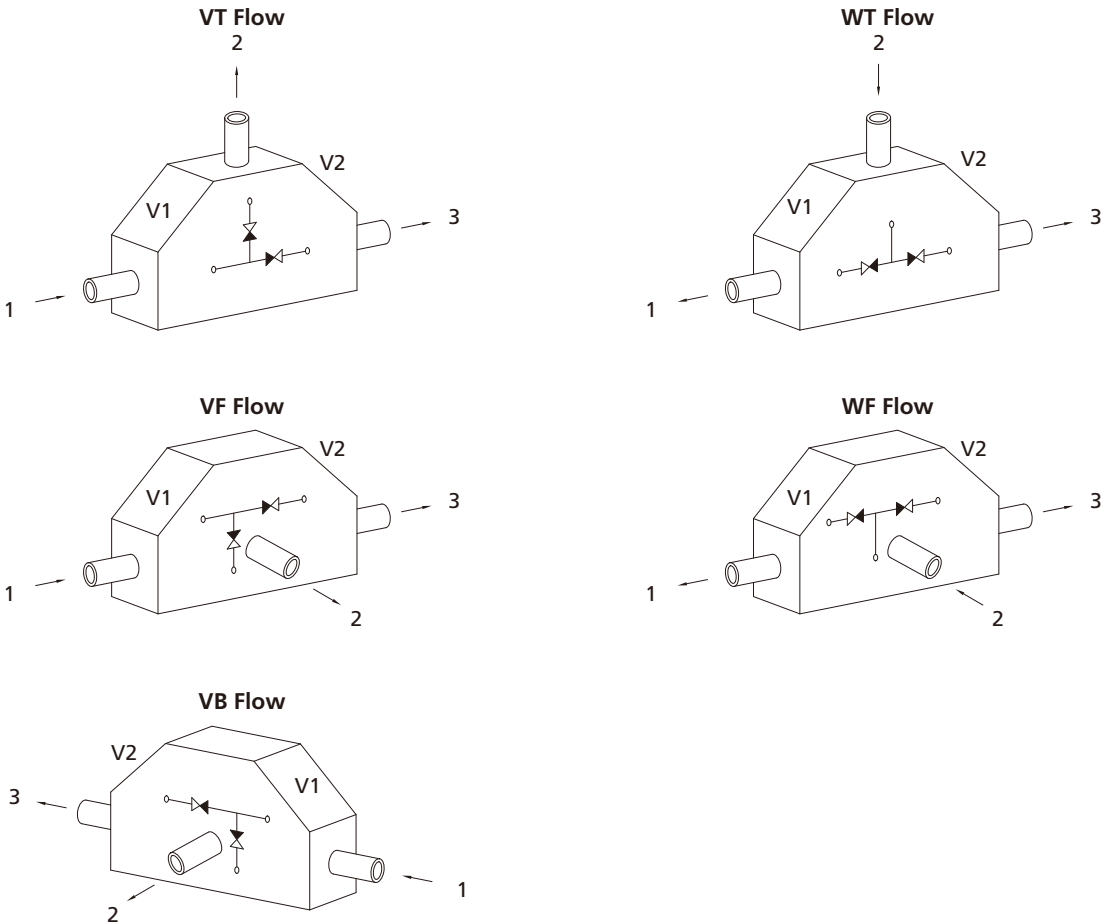
DS6L - NS4 - FNS4 - CVF2 - CE

Body Material		Inlet Type		Outlet Type	Outlet Size	Handle and Actuator		Process Specification	
6L	316L SS	TB	Fractional Tube Butt Weld	Same as Inlet		R	Manual-Round Handle		FC-01
6LV	316L SS VAR	MTB	Metric Tube Butt Weld	Specified in the same way as Inlet		C	Normally Closed Pneumatic	F2	FC-02
		FR	Integral Male FR Fitting			O	Normally Open Pneumatic	F3	FC-03
		FFR	Rotatable Female FR Fitting						
		FL	Fractional Tube Fitting						
		ML	Metric Tube Fitting						
		NS	Male NPT						
		FNS	Female NPT						
				Inlet Size		Seat		Product Certification	
				4	1/4" or 1/4" x 0.035"	PCTFE		None	
				6	6 mm	V		CE	
				8	8 mm			CE Certification (For Pneumatic only)	

- 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 -CE selections, products have "CE" lettering.

2-Valve 3-Way Block Type

Flow Paths



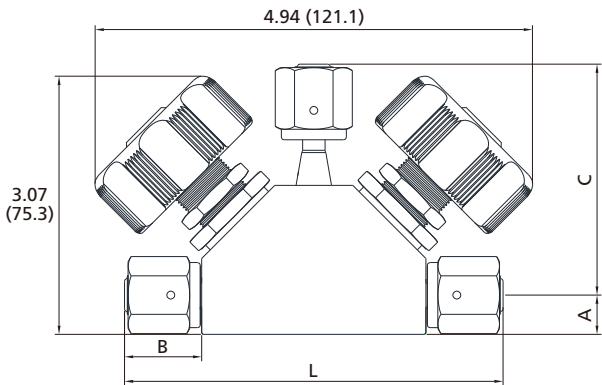
Dimensions

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

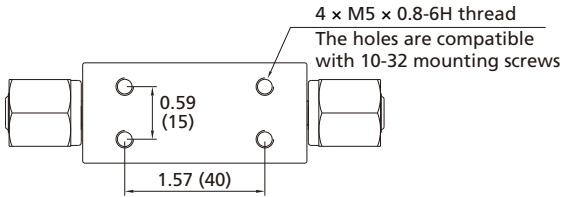
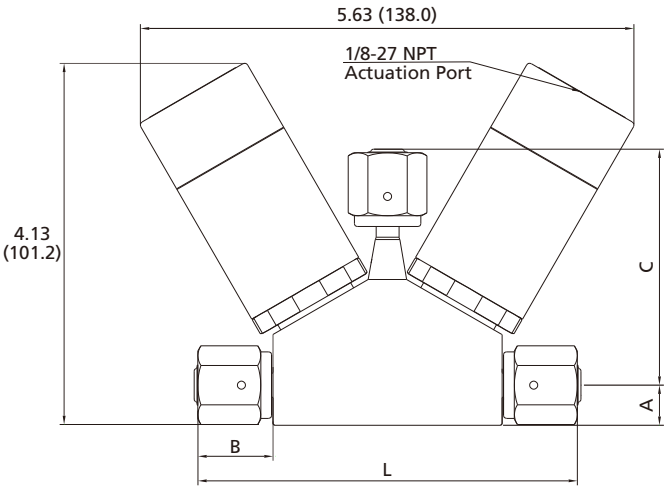


VT/WT Flow

Manual - Round Handle



Pneumatic

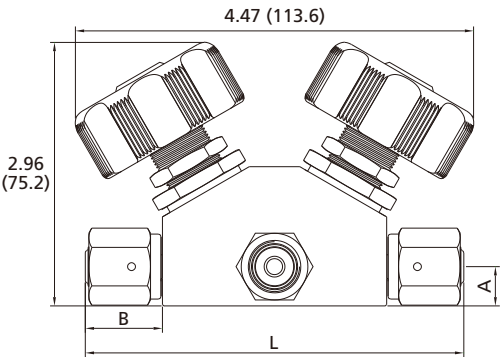


Fittings
Valves
Regulators
Filters
Tubing
Integrated Systems
Other Products
Technical Information

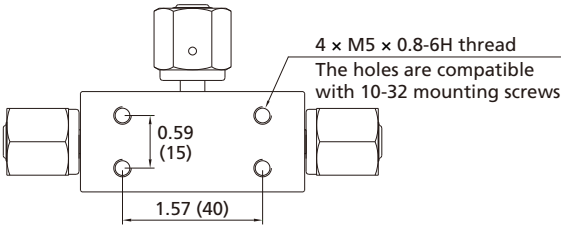
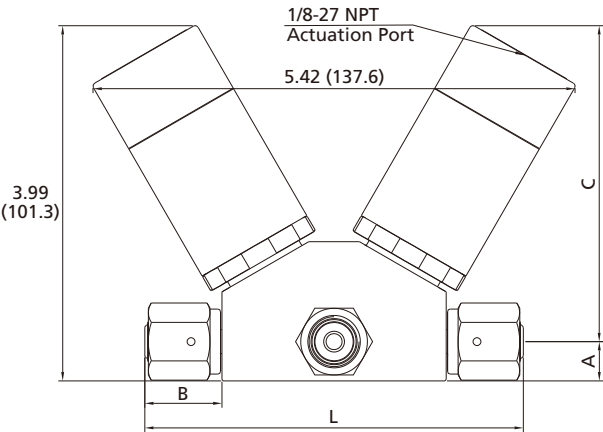
V-69 Diaphragm Valves

VF/VB Flow

Manual - Round Handle

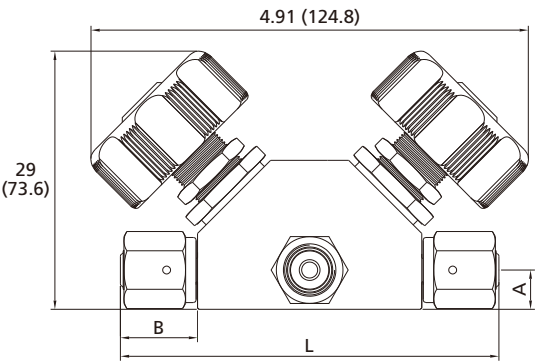


Pneumatic

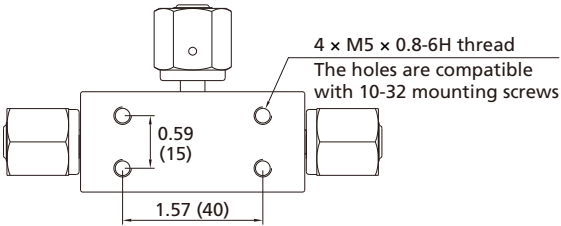
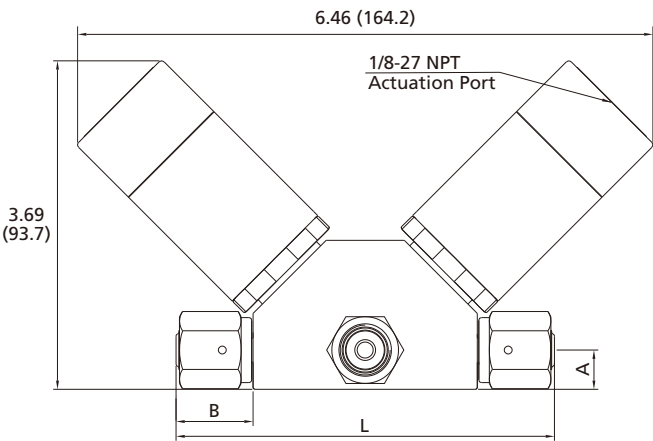


WF Flow

Manual - Round Handle

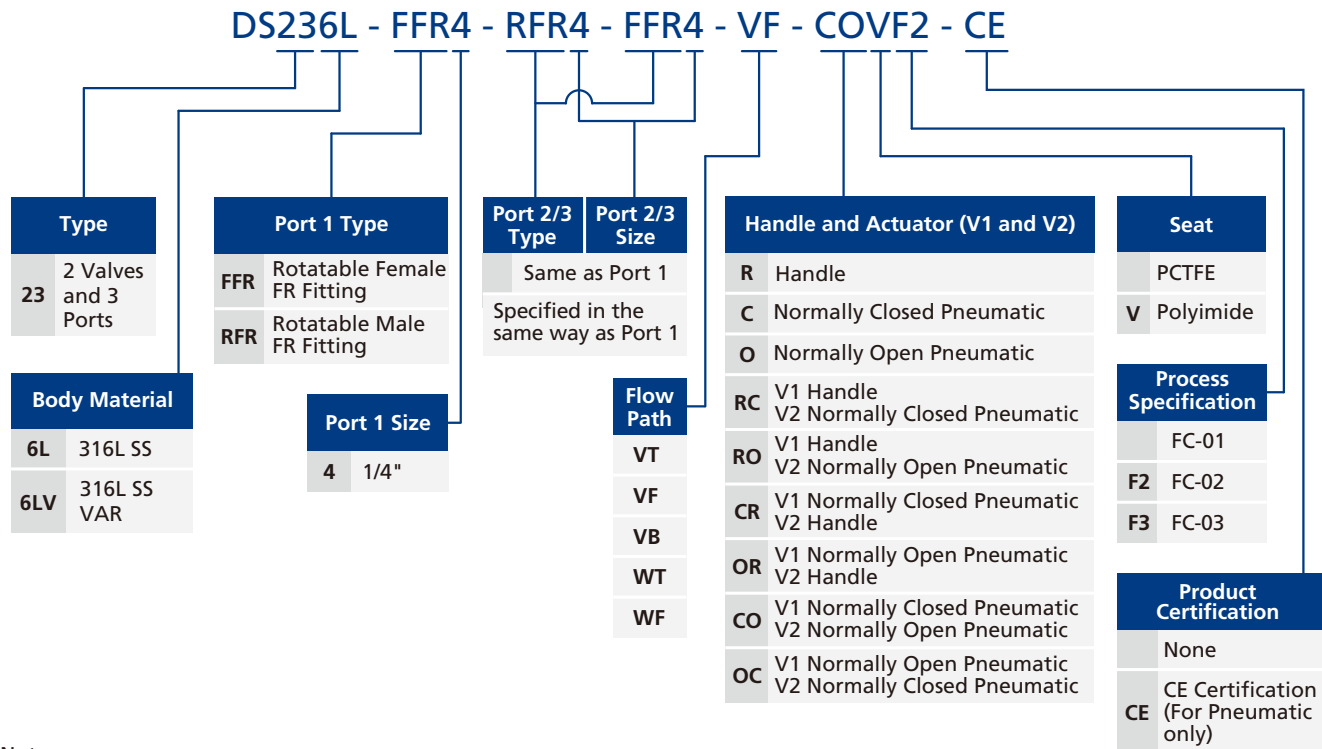


Pneumatic



Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)				
		A	B	C	D	L
DS23□□-FFR4-	1/4" Rotatable Female FR Fitting	0.44 (11.2)	0.86 (21.8)	2.59 (65.7)	—	4.24 (107.6)
DS23□□-FFR4-	1/4" Rotatable Female FR Fitting			—	1.54 (39.1)	

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.
- For -CE selections, products have "CE" lettering.

3-Valve 5-Way Block Type

Introduction

3-valve, 5-way purge blocks are designed for gas supply systems handling high purity, corrosive, toxic gases, or multi-component gas mixtures. The unit integrates multiple functions—including gas supply, purging, and exhaust—into a single assembly. A port is available for connection to a pressure sensor to monitor abnormal pressure conditions within the pipeline.

Technical Data

Port Size			1/4"
Flow Coefficient (Cv)			0.17
Orifice Size			0.12 in. (3.0 mm)
Working Pressure			Vacuum to 3000 psig (207 bar)
Pneumatic Actuator Operating Pressure			60 ~ 90 psig (4.2 ~ 6.2 bar)
Temperature			PCTFE: -40 ~ 160 °F (-40 ~ 71 °C) PFA: -10 ~ 250 °F (-23 ~ 121 °C)
Leak Rate (Helium)	Internal	≤1×10 ⁻⁹ std·cm ³ /s	
	External	≤1×10 ⁻⁹ std·cm ³ /s	

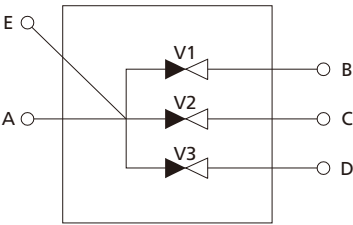
Flow Data

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

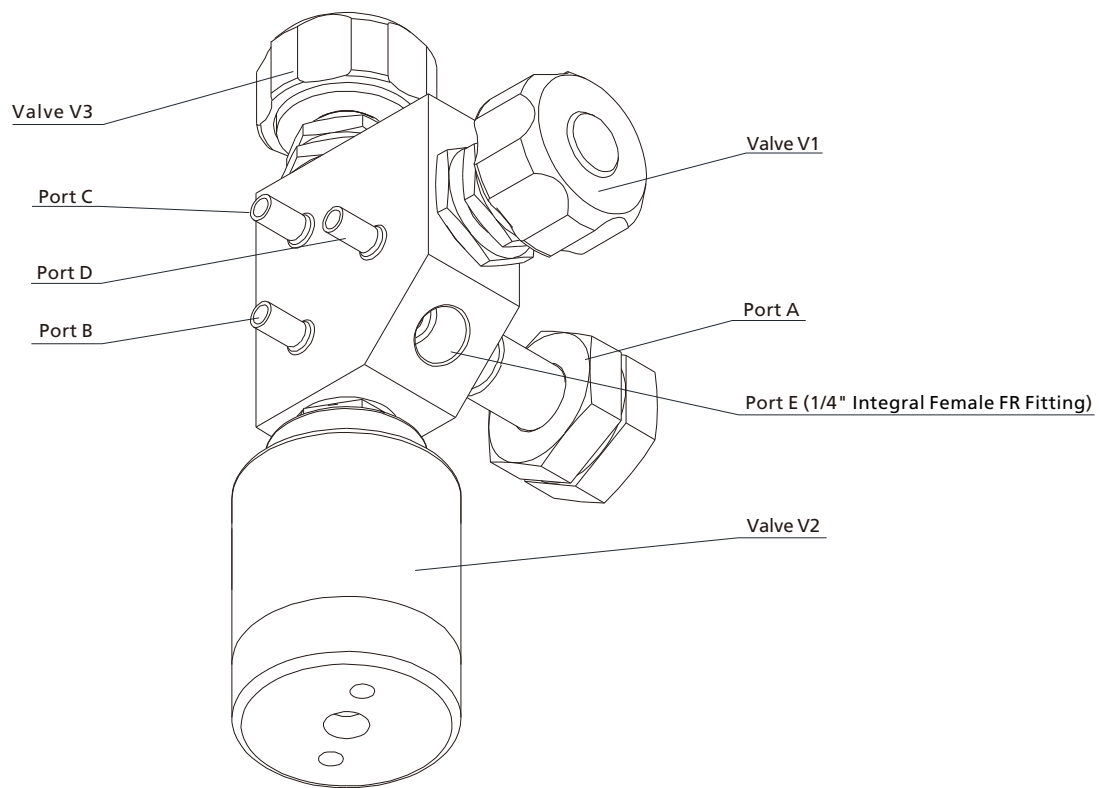
Orifice in. (mm)	Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
0.12 (3.0)	10 (0.68)	64	2.4
	50 (3.4)	170	5.4
	100 (6.8)	300	7.6

Flow Paths

☉ Flow paths as viewed from the top



Note: C and D serve as purge ports, while A and B serve as the main flow paths.



Dimensions and Ordering Information

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



Fittings

Valves

Regulators

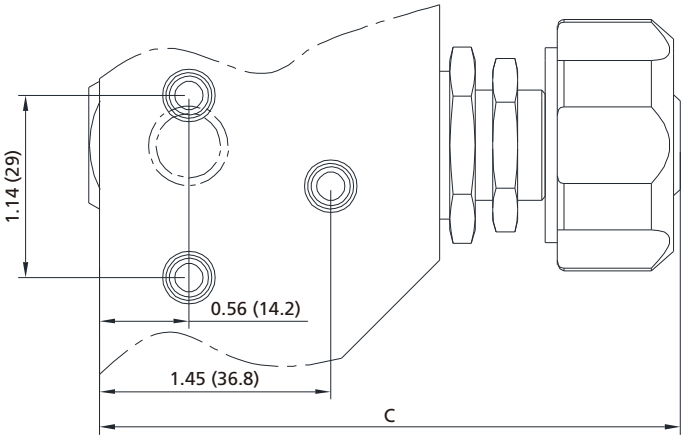
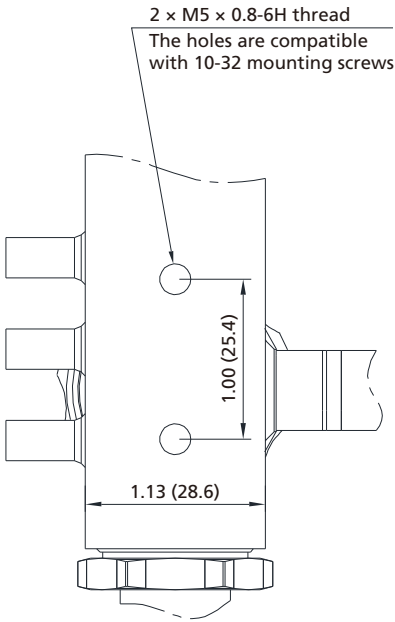
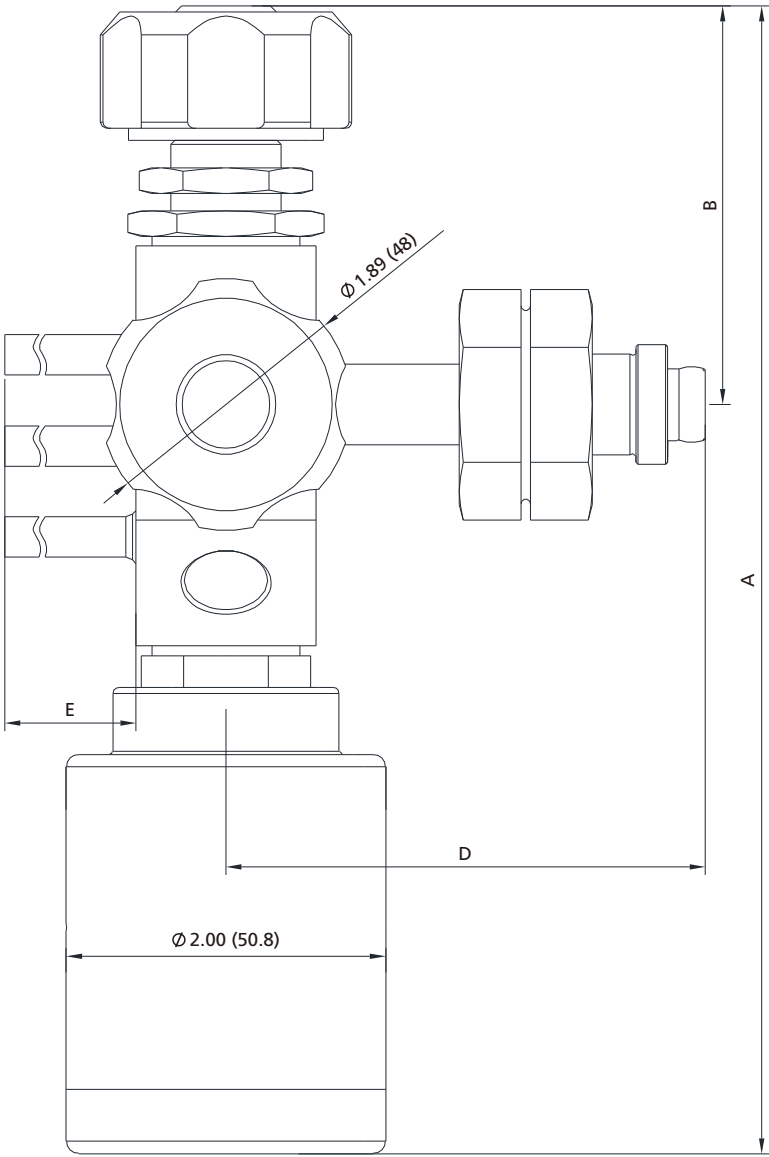
Filters

Tubing

Integrated
SystemsOther
ProductsTechnical
Information

V-73 Diaphragm Valves

Fittings	Valves	Regulators	Filters	Tubing	Integrated Systems	Other Products	Technical Information
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Basic Ordering Number	Actuator Type and Size	Dimensions, in. (mm)		
		A	B	C
DS□□-P35-□□□-□□□-□□□-□-□-□	V1, V2 and V3: pneumatic actuators	8.86 (225.1)	4.17 (106)	5.31 (134.9)
DS□□-P35-□□□-□□□-□□□-□-□-□	V1, V3: pneumatic actuators; V2: manual	7.19 (182.5)		
DS□□-P35-□□□-□□□-□□□-□-□-□	V1, V3: manual actuators; V2: pneumatic	7.19 (182.5)	2.50 (63.5)	3.64 (92.4)
DS□□-P35-□□□-□□□-□□□-□-□-□	V1, V2: manual actuators; V3: pneumatic		4.17 (106)	

Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)	
		D	E
DS__P35-TB8-__-3TB4-__-__-__	Inlet: 1/2"x0.049" Tube Butt Weld Outlet: 3x1/4"x0.035" Tube Butt Weld	1.57 (40)	1.57 (40)
DS__P35-FFR4-__-3FFR4-__-__-__	Inlet: 1/4" Rotatable Female FR Fitting Outlet: 3x1/4" Rotatable Female FR Fitting	1.70 (43.2)	1.36 (34.5)
DS__P35-DIN1-__-3TB4-__-__-__	Inlet: DIN1 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld	2.65 (67.2)	1.57 (40)
DS__P35-DIN5-__-3TB4-__-__-__	Inlet: DIN5 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld	2.19 (55.7)	
DS__P35-DIN8-__-3TB4-__-__-__	Inlet: DIN8 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld		
DS__P35-DIN9-__-3TB4-__-__-__	Inlet: DIN9 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld	2.60 (66)	
DS__P35-DIN11-__-3TB4-__-__-__	Inlet: DIN11 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld	2.22 (56.3)	
DS__P35-DIN14-__-3TB4-__-__-__	Inlet: DIN14 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld	1.69 (42.8)	
DS__P35-C632-__-3TB4-__-__-__	Inlet: CGA632 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld	2.96 (75.2)	
DS__P35-C634-__-3TB4-__-__-__	Inlet: CGA634 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld		
DS__P35-C640-__-3TB4-__-__-__	Inlet: CGA640 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld		
DS__P35-C724-__-3TB4-__-__-__	Inlet: CGA724 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld		
DS__P35-C728-__-3TB4-__-__-__	Inlet: CGA728 Cylinder Connection Outlet: 3x1/4"x0.035" Tube Butt Weld		

Fittings

Valves

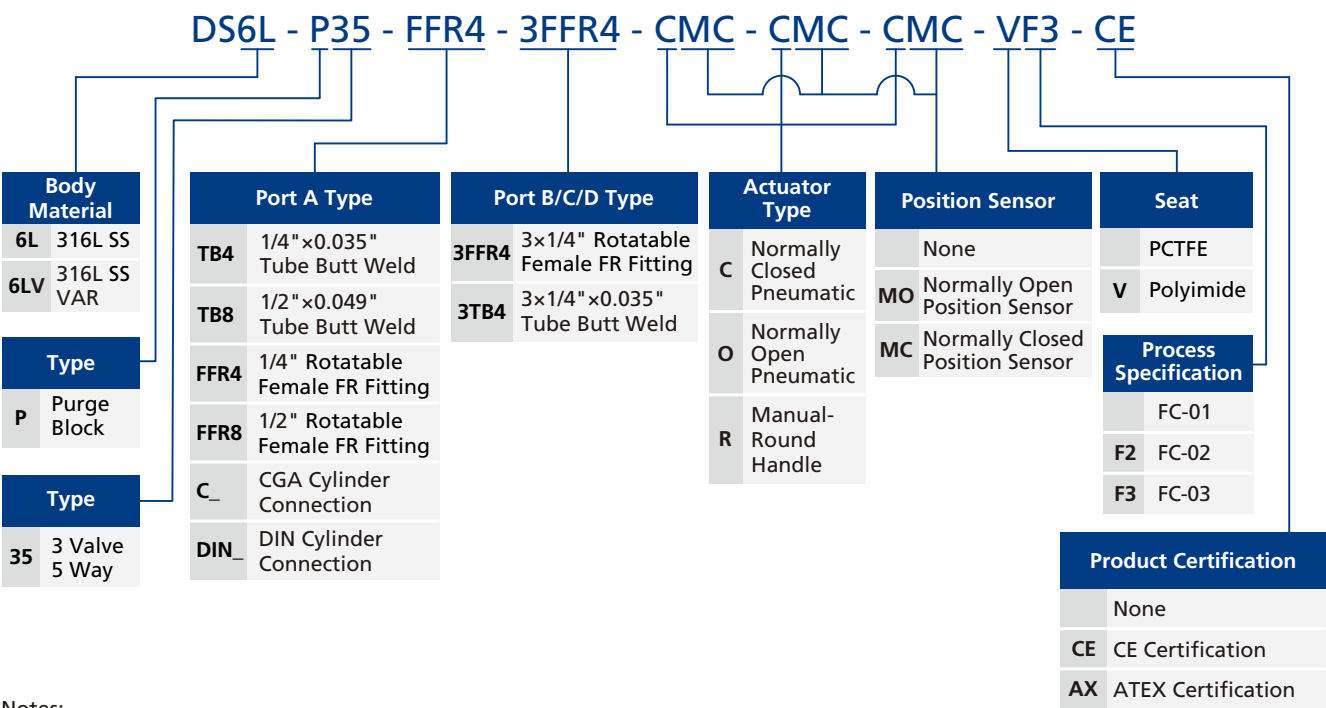
Regulators

Filters

Tubing

Integrated
SystemsOther
ProductsTechnical
Information

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.

Low Pressure/Medium Flow Diaphragm Valves

DR Series

Introduction

DR Series Low Pressure/Medium Flow Diaphragm Valves are suitable for high purity and ultra high purity applications. Featuring an internally springless flow path, these valves offer high cleanliness.

Features

- For medium flow applications
- Minimal particle generation and minimal dead space
- Fully contained seat to provide excellent resistance to swelling and contamination
- Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- Manual and pneumatic actuators available
- Normally closed or normally open position sensors are optional for pneumatically actuated valves
- Optional manual locking mechanism, lockable in both open and closed positions

Technical Data

Port Size	3/8" to 1/2" or 10 mm to 12 mm	
Flow Coefficient (Cv)	0.70	
Orifice Size	0.31 in. (7.9 mm)	
Working Pressure	Vacuum to 145 psig (10 bar)	
Pneumatic Actuator Operating Pressure	60 to 90 psig (4.2 to 6.2 bar)	
Working Temperature	PCTFE: -10 ~ 176 °F (-23 ~ 80 °C) PFA: -10 ~ 302 °F (-23 ~ 150 °C)	
Leak Rate (Helium)	Internal	$\leq 1 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 1 \times 10^{-9}$ std·cm ³ /s

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)	240	8.4
50 (3.4)	630	18.6
100 (6.8)	1120	26.6

Process Specification

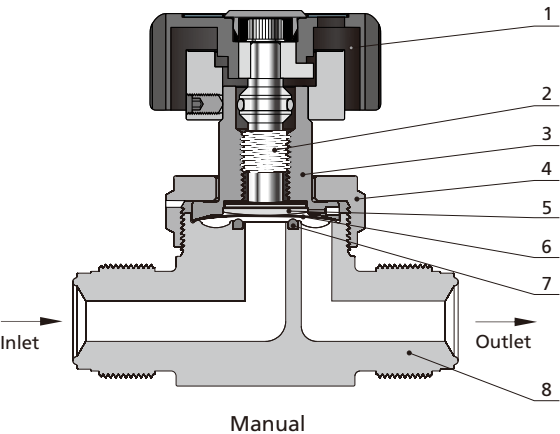
Item	Process Specification	
	Standard Cleaning and Packaging Process (FC-01) Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
Material	316L SS	
Wetted Surface Roughness	Ra 10 μin. (0.25 μm)	Ra 5 μin. (0.13 μm) ^①
Polishing Process	Machine finished	Electropolished

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

① Wetted surface roughness of valves with FR Series metal gasket face seal connections and tube butt weld connections.



Major Materials of Construction



Item	Component	Material/Specification
1	Handle	ABS
2	Stem	316 SS/ASTM A479
3	Bonnet	S17400/ASTM A564
4	Bonnet Nut	316 SS/ASTM A479
5	Button	316 SS/ASTM A479
6	Diaphragm (2)	Cobalt Alloy/AMS 5876
7	Seat	PCTFE/ASTM D1430 or PFA/ASTM D3307
8	Body	316L SS or 316L SS VAR

Handles and Actuators

Manual - Round Handle

- Quick, quarter-turn actuation
- Handle with windows to visually indicate open and closed states



Manual - Two - Position Lockout (LOTO) Handle

- Lockable in both the fully open and fully closed positions
- The pull-to-rotate design for enhanced operational safety, rotate 1/4 turn to open or close the valve
- The handle is equipped with a visual window for direct observation of its opening and closing status



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

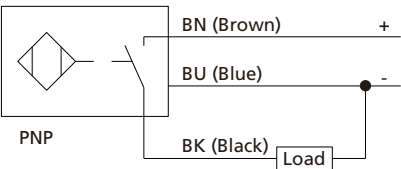
Transmit a signal to an electrical device indicating the open and closed position of pneumatically actuated valves

Technical Information

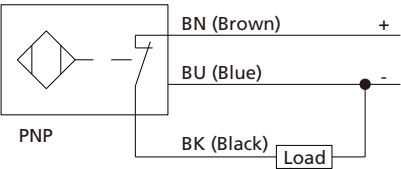
Output	3-wire V (dc), PNP
Output Function	Normally open or normally closed
Voltage	10 ~ 30 V (dc)
Working Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

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

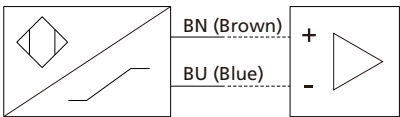
Transmit a signal to an electrical device, indicating the open and closed positions of pneumatically actuated valves.

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 Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

Wiring Diagram



Fittings

Valves

Regulators

Filters

Tubing

Integrated Systems

Other Products

Technical Information

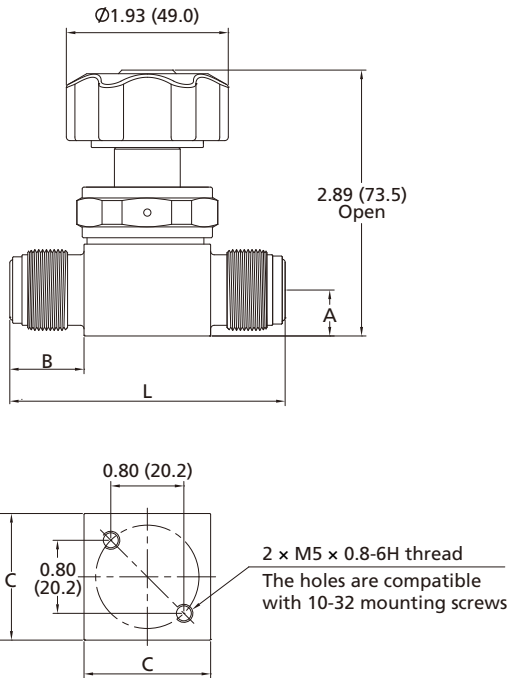
Dimensions and Ordering Information

Straight Type

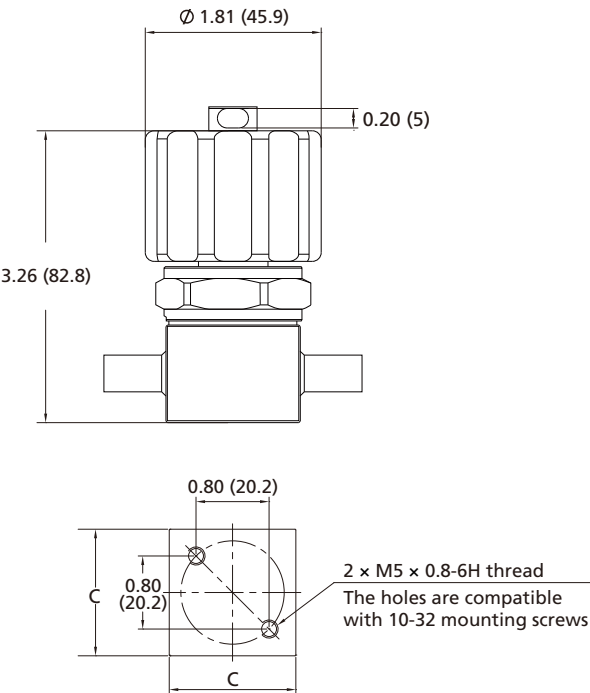
Dimensions

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

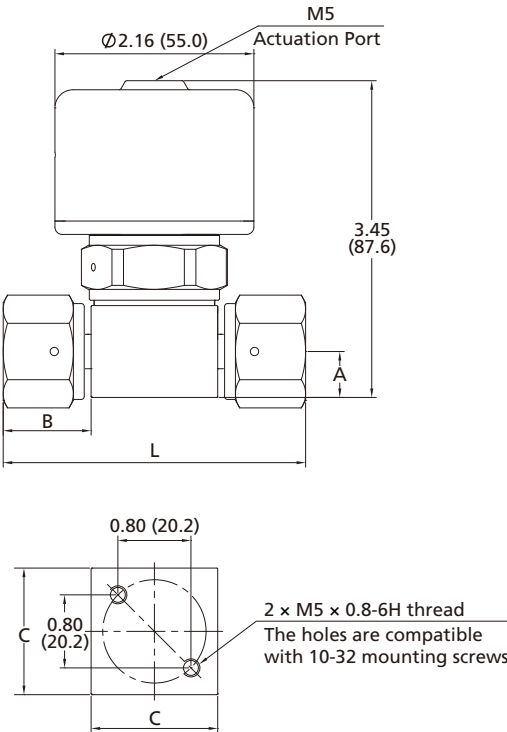
Manual - Round Handle



Manual - Two - position Lockout (LOTO) Handle

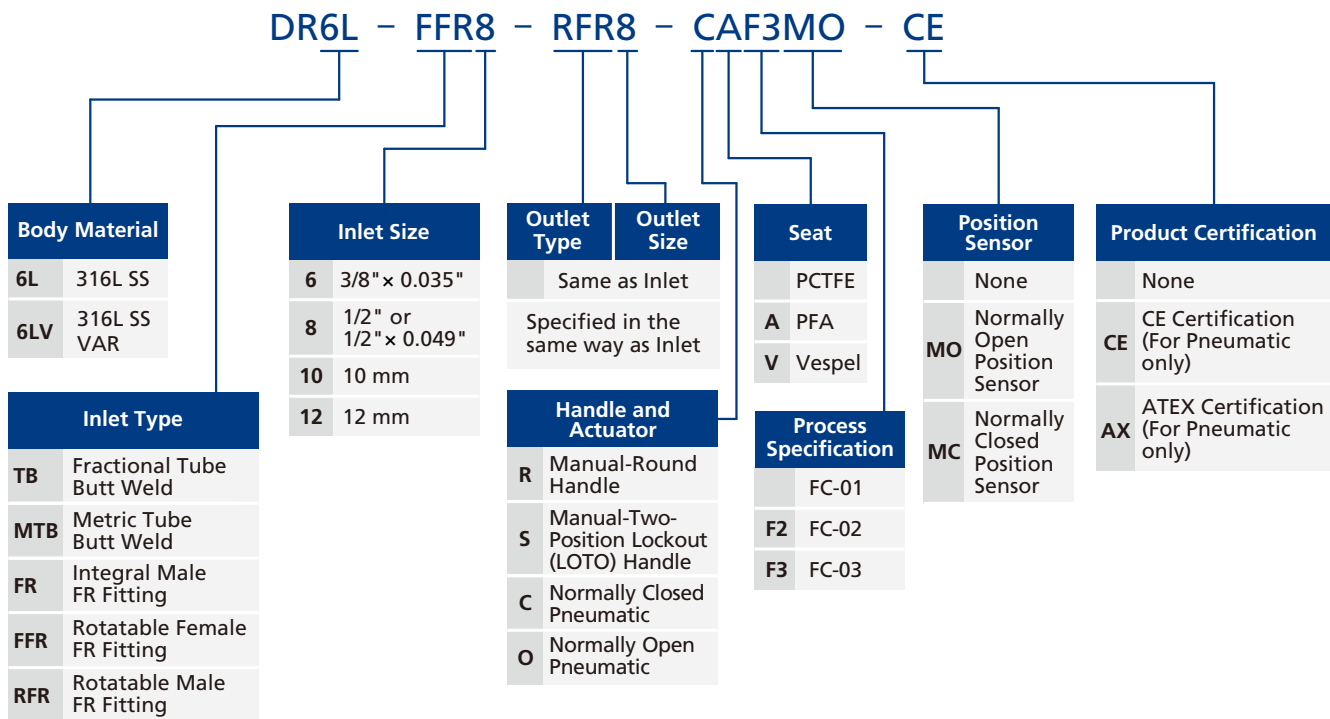


Pneumatic



Ordering Number	Connection Type and Size	Dimensions, in. (mm)			
		A	B	C	L
DR□□-FFR8-CF3	1/2" Rotatable Female FR Fitting	0.50 (12.7)	0.94 (24.0)	1.38 (35.0)	3.27 (83.0)
DR□□-FR8-CF3	1/2" Integral Male FR Fitting		0.81 (20.6)		3.00 (76.2)

Ordering Number Description



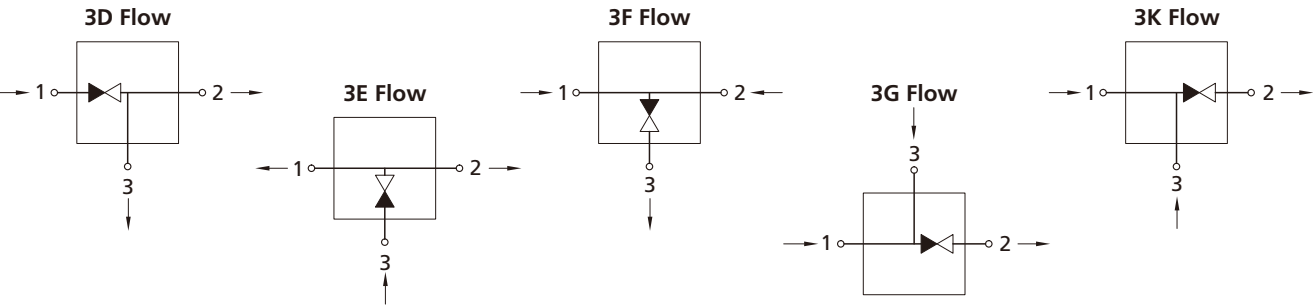
Notes:

- "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.

Branch Type

Flow Paths

☉ Flow paths as viewed from the top

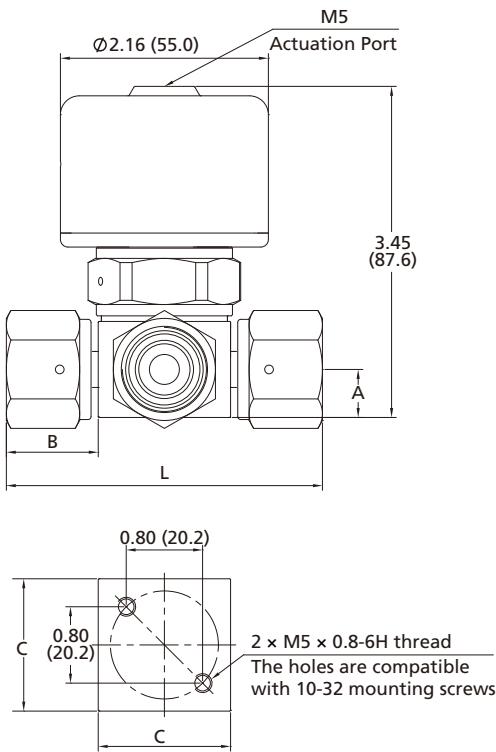
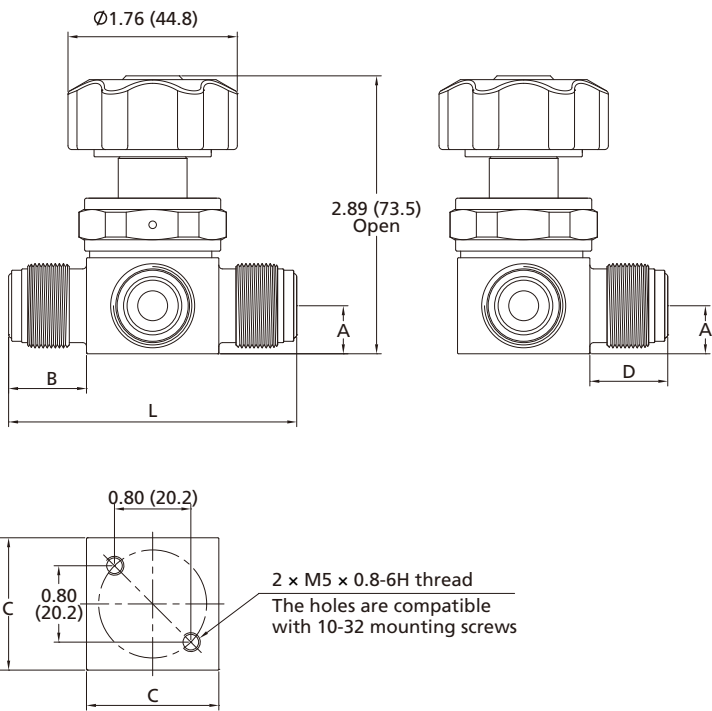


Dimensions

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

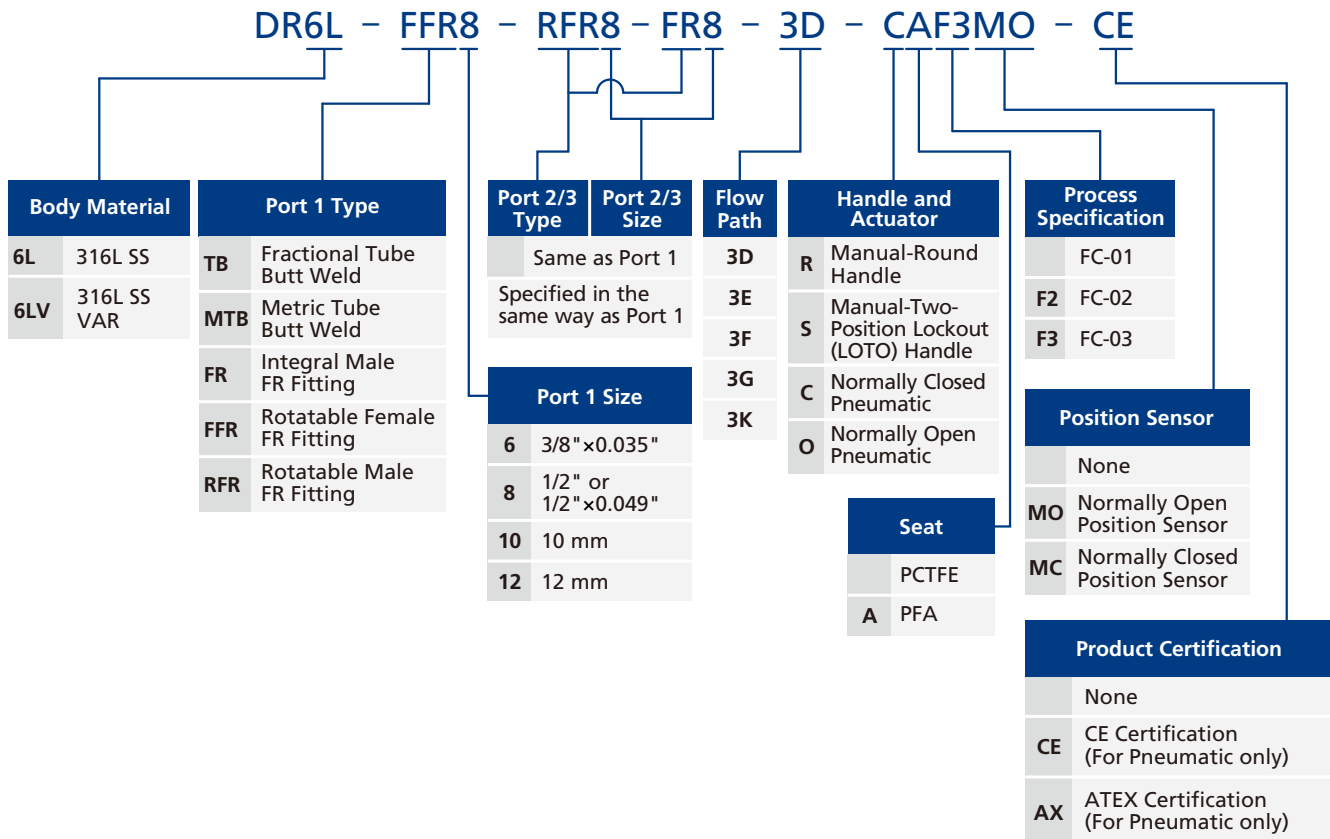
Manual - Round Handle

Pneumatic



Connection Type and Size	Dimensions, in. (mm)				
	A	B	C	D	L
3/8"× 0.035" Tube Butt Weld	0.50 (12.7)	0.67 (17.0)	1.38 (35.0)	0.67 (17.0)	2.72 (69.0)
1/2"× 0.049" Tube Butt Weld					
1/2" Rotatable Female FR Fitting		0.94 (24.0)		0.94 (24.0)	3.27 (83.0)
1/2" Rotatable Male FR Fitting		1.34 (34.0)		1.34 (34.0)	4.05 (103.0)
1/2" Integral Male FR Fitting		0.81 (20.6)		0.81 (20.6)	3.00 (76.2)

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.

Low Pressure/High Flow Diaphragm Valves

DV Series

Introduction

DV Series Low Pressure/High Flow Diaphragm Valves are suitable for high purity and ultra high purity applications. These valves feature a springless design, compact design, high flow capacity, and a variety of pipeline options.

Features

- Ideal for high flow applications
- Metal-to-metal seal
- Tied-diaphragm design to provide positive stem retraction
- No springs or threads in wetted areas to ensure clean operation
- Manual and pneumatic actuators available
- Position sensors available assembled on normally closed valves
- Optional manual locking mechanism, lockable in both open and closed positions



Technical Data

Port Size		1/2" to 1" or 12 mm to 18 mm
Flow Coefficient (Cv)	Manual	2.8
	Pneumatic	2.4
Orifice Size		0.5 in. (12.7 mm)
Working Pressure	Manual	Vacuum to 300 psig (20.7 bar)
	Pneumatic	Vacuum to 145 psig (10 bar)
Pneumatic Actuator Operating Pressure	N.C.	60 to 90 psig (4.2 to 6.2 bar)
	N.O.	80 to 102 psig (5.5 to 7.0 bar)
Working Temperature		PCTFE: -10 ~ 150 °F (-23 ~ 65 °C) Polyimide: -10 ~ 250 °F (-23 ~ 121 °C)
Leak Rate (Helium)	Internal	≤ 1×10 ⁻⁹ std·cm ³ /s
	External	≤ 1×10 ⁻⁹ std·cm ³ /s

Flow Data

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

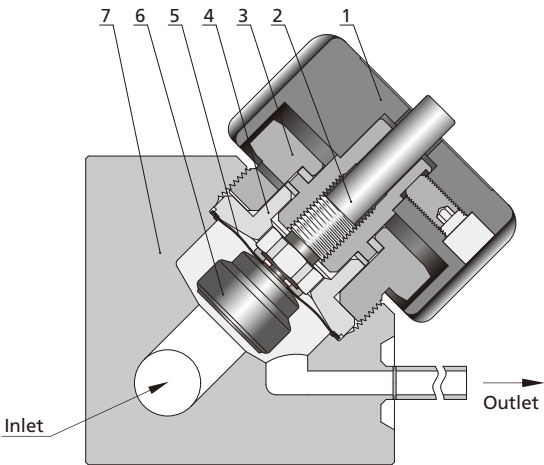
Pressure Drop to Atmosphere psig (bar)	Manual		Pneumatic	
	Air (l/min)	Water (l/min)	Air (l/min)	Water (l/min)
10 (0.68)	870	34	780	29
50 (3.4)	2300	75	2050	64
100 (6.8)	4100	100	3650	91

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)
Material		316L SS, F316L SS	316L SS, F316L SS, 316L SS VAR
Wetted Surface Roughness		Ra 10 μin. (0.25 μm)	Ra 5 μin. (0.13 μm)
Polishing Process		Machine finished	Electropolished

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

Major Materials of Construction



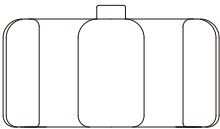
Manual Actuation - Branch Type

Item	Component	Material/Specification
1	Handle	Aluminum
2	Upper Stem	S17400/ASTM A564
3	Bonnet Nut	316 SS/ASTM A479
4	Bonnet	S17400/ASTM A564
5	Diaphragm (3)	Cobalt Alloy/AMS 5876
6	Stem Subassembly	316L SS or 316L SS VAR and PCTFE/ASTM D1430 or Polyimide
7	Body	316L SS or 316L SS VAR or F316L SS

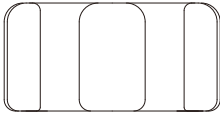
Handles and Actuators

Manual - Round Handle

- Upper stem position to indicate open and closed states



OPEN



CLOSED

Notes: The upper stem protruding from the handle indicates open state.
The upper stem paralleling to or sinking into the handle indicates closed state.

Manual - Two - Position Lockout (LOTO) Handle

- Lockable in both the fully open and fully closed positions
- The pull-to-rotate design for enhanced operational safety, rotate 3/4 turn to open or close the valve
- The handle is equipped with a visual window for direct observation of its opening and closing status



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

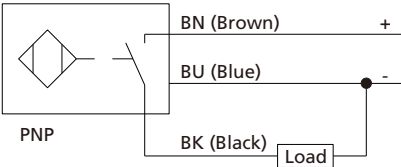
Note: Position sensors are applicable only to normally closed pneumatically actuated valves.

Technical Information

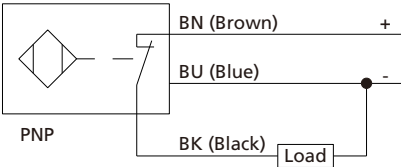
Output	3-wire V (dc), PNP
Output Function	Normally open or normally closed
Voltage	10 ~ 30 V (dc)
Working Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

Wiring Diagram

Normally open position sensors



Normally closed position sensors



Notes: 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.

Explosion-proof Position Sensors

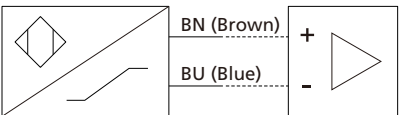
Transmit a signal to an electrical device, indicating the open and closed positions of pneumatically actuated valves.

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 Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

Wiring Diagram



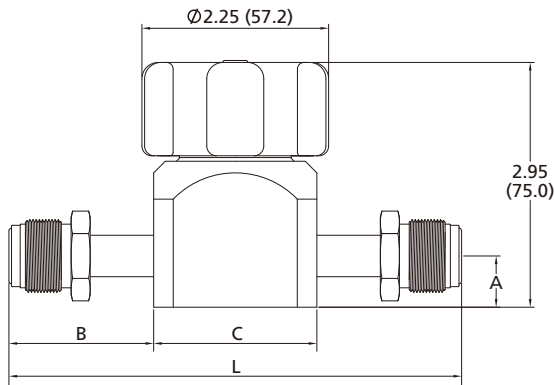
Dimensions and Ordering Information

Straight Type

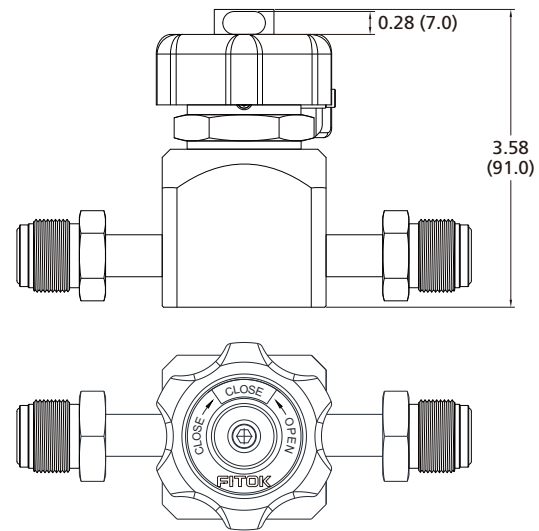
Dimensions

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

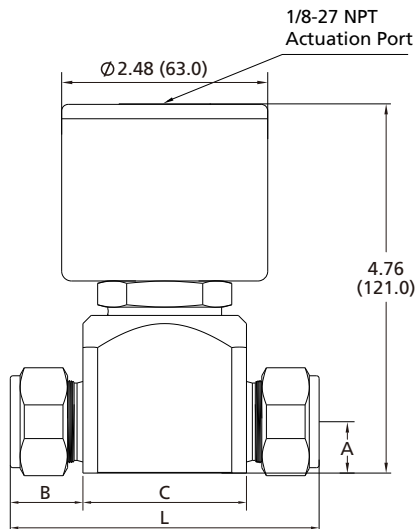
Manual - Round Handle



Manual - Two - Position Lockout (LOTO) Handle



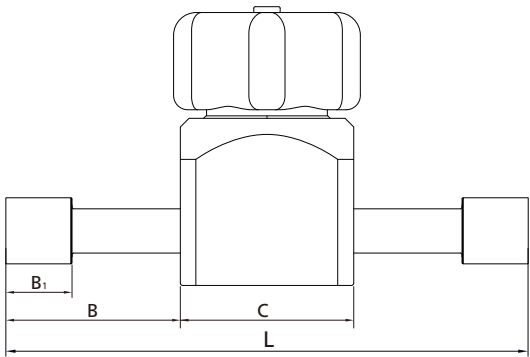
Pneumatic



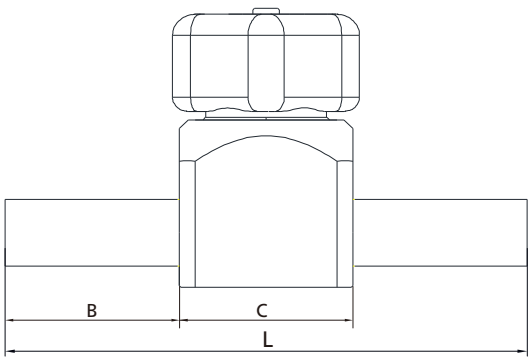
Note: The height in both the fully open and fully closed positions is approximately 91 mm. A round lock with a diameter of 3~7 mm is recommended. All other connection sizes are same as those of the standard DV Series.

Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)				
		A	B	B ₁	C	L
DV□□-TB8-	1/2" × 0.049" Tube Butt Weld	0.62 (15.7)	1.97 (50)	—	1.97 (50)	5.91 (150.0)
DV□□-TB12-	3/4" × 0.049" Tube Butt Weld (Reducing Port)			0.75 (19)		
DV□□-TB12U-	3/4" × 0.049" Tube Butt Weld (Non-Reducing Port)		1.75 (44.5)	—		5.47 (138.9)
DV□□-FR8-	1/2" Integral Male FR Fitting			—		
DV□□-FFR8-	1/2" Rotatable Female FR Fitting			—		
DV□□-FL8-	1/2" FITOK Tube Fitting			—		
DV□□-FL12-	3/4" FITOK Tube Fitting		0.87 (22.2)	—		3.72 (94.4)

Outline Diagram of TB12 Reducing Port
(Example: DV6L-TB12-R)



Outline Diagram of TB12U Non-Reducing Port
(Example: DV6L-TB12U-R)



Ordering Number Description

DV6L - FR8 - TB12U - CVF2MO - CE

Body Material		Inlet Size		Outlet Type	Outlet Size	Seat		Position Sensor		
6L	316L SS	8	1/2" or 1/2" x 0.049"		Same as Inlet		PCTFE		None	
6LV	316L SS VAR	12	12 mm or 3/4" or 3/4" x 0.049"		Specified in the same way as Inlet		V	Polyimide	MO	Normally Open Position Sensor
		18	18 mm			MC			Normally Closed Position Sensor	
				Port Type ①		Process Specification		Note: MO and MC sensors are only applicable to normally closed pneumatically actuated valves.		
						FC-01				
				U		F2				FC-02
						F3				FC-03
				Handle and Actuator				Product Certification		
				R		Manual-Round Handle				None
				S		Manual-Two-Position Lockout (LOTO) Handle				
				C		Normally Closed Pneumatic		CE		CE Certification (For Pneumatic only)
				O		Normally Open Pneumatic		AX		ATEX Certification (For Pneumatic only)

① "Connection Type" applies only to weld end connections (e.g., TB, MTB). Among these, only the TB8 connection is non-reducing by default and therefore does not require the "U" suffix. Other weld connections provide both reducing and non-reducing options: TB12 indicates a reducing weld connection, while TB12U indicates a non-reducing weld connection.

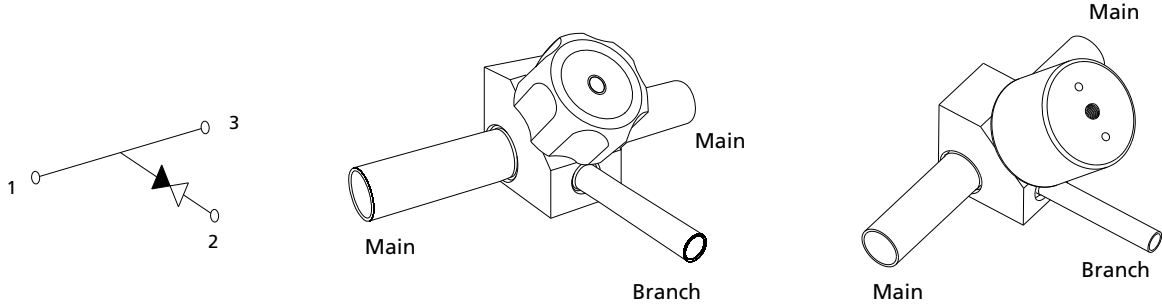
Notes:

- "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.

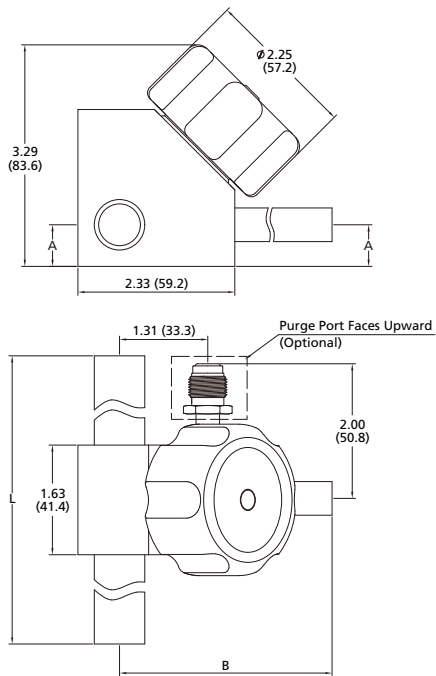
ST Flow

Dimensions

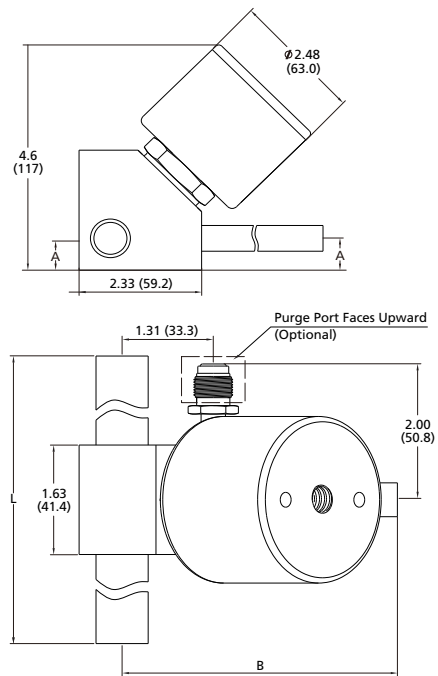
Dimensions, in inches (millimeters), are for reference only.



Manual-Round Handle



Pneumatic

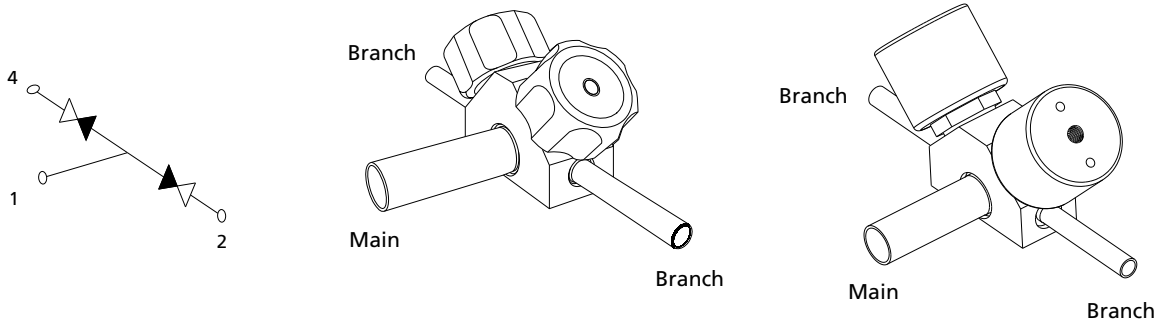


Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)		
	Main	Branch	A	B	L
DV□□-TB8-TB4-ST-	1/2" × 0.049" Tube Butt Weld	1/4" × 0.035" Tube Butt Weld	0.62 (15.7)	4.69 (119.0)	7.58 (193.0)
DV□□-TB8-TB8-ST-	1/2" × 0.049" Tube Butt Weld	1/2" × 0.049" Tube Butt Weld			
DV□□-TB8-RFR4-ST-	1/2" × 0.049" Tube Butt Weld	1/4" Rotatable Male FR Fitting			
DV□□-TB8-RFR8-ST-	1/2" × 0.049" Tube Butt Weld	1/2" Rotatable Male FR Fitting			
DV□□-TB12-TB8-ST-	3/4" × 0.049" Tube Butt Weld	1/2" × 0.049" Tube Butt Weld			
DV□□-TB12-RFR8-ST-	3/4" × 0.049" Tube Butt Weld	1/2" Rotatable Male FR Fitting			
DV□□-TB16-TB8-ST-	1" × 0.065" Tube Butt Weld	1/2" × 0.049" Tube Butt Weld			
DV□□-TB16-RFR8-ST-	1" × 0.065" Tube Butt Weld	1/2" Rotatable Male FR Fitting			

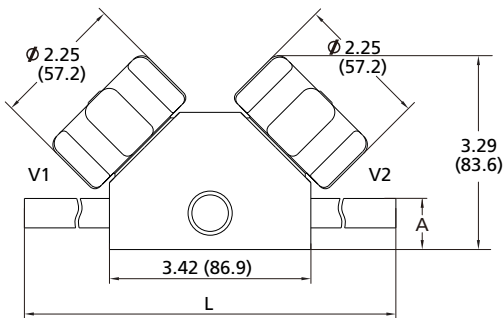
DT Flow

Dimensions

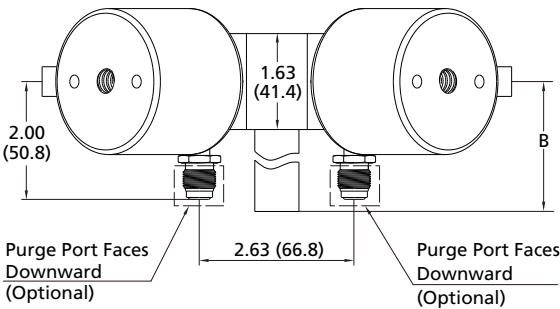
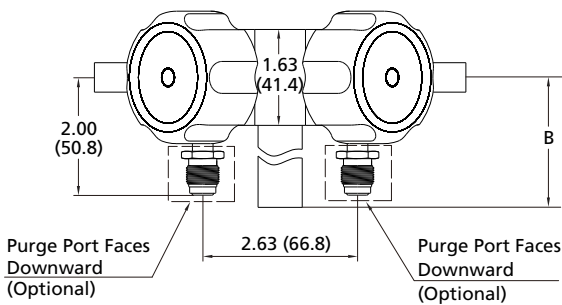
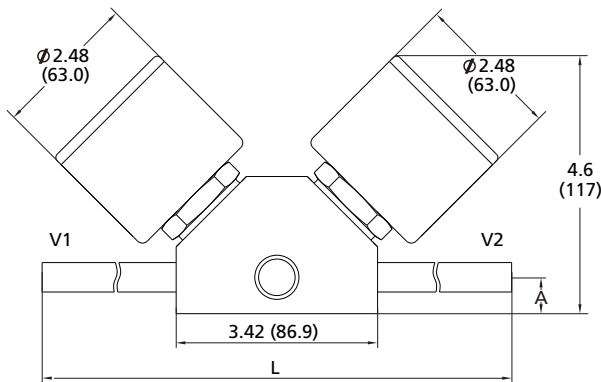
Dimensions, in inches (millimeters), are for reference only.



Manual-Round Handle



Pneumatic

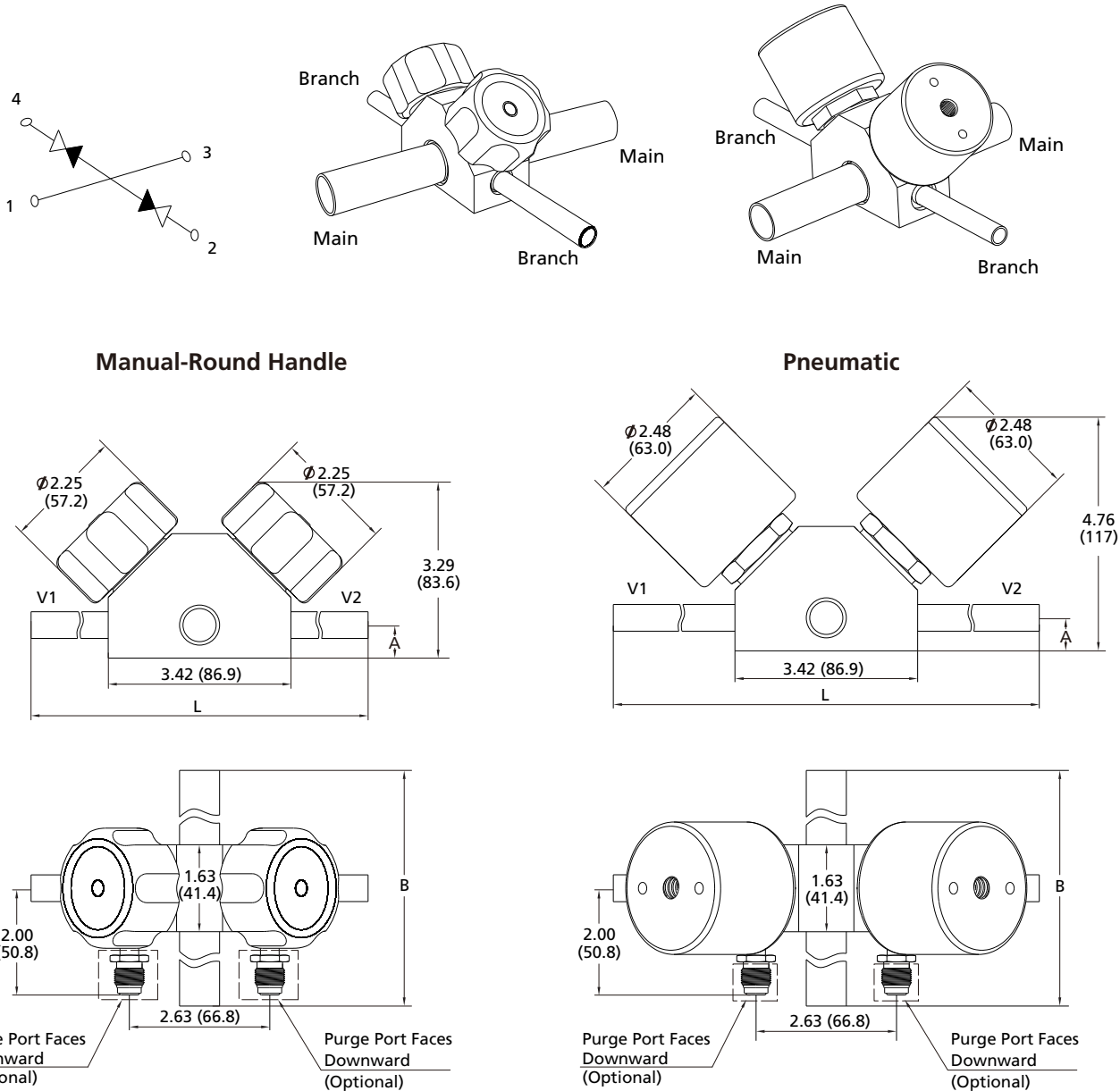


Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)		
	Main	Branch	A	B	L
DV□□-TB12-TB8-DT-	3/4" × 0.049" Tube Butt Weld	1/2" × 0.049" Tube Butt Weld	0.62 (15.7)	3.79 (96.3)	9.38 (238.0)
DV□□-TB12-RFR8-DT-	3/4" × 0.049" Tube Butt Weld	1/2" Rotatable Male FR Fitting			
DV□□-TB16-TB8-DT-	1" × 0.065" Tube Butt Weld	1/2" × 0.049" Tube Butt Weld			
DV□□-TB16-RFR8-DT-	1" × 0.065" Tube Butt Weld	1/2" Rotatable Male FR Fitting			

DC Flow

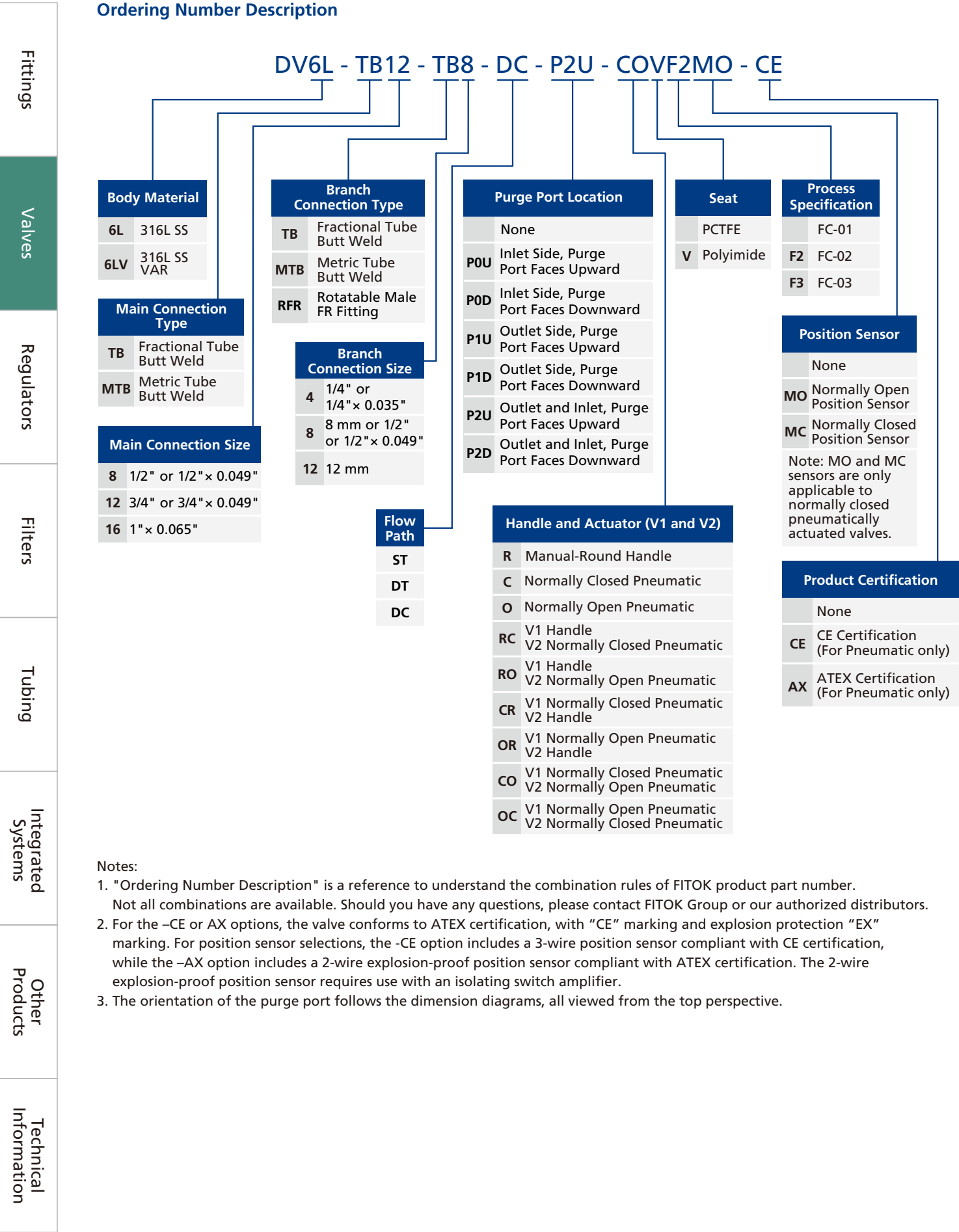
Dimensions

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



Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)		
	Main	Branch	A	B	L
DV□□-TB8-TB8-DC-	1/2" × 0.049" Tube Butt Weld	1/2" × 0.049" Tube Butt Weld	0.62 (15.7)	7.58 (193.0)	9.38 (238.0)
DV□□-TB8-RFR8-DC-	1/2" × 0.049" Tube Butt Weld	1/2" Rotatable Male FR Fitting			
DV□□-TB12-TB8-DC-	3/4" × 0.049" Tube Butt Weld	1/2" × 0.049" Tube Butt Weld			
DV□□-TB12-RFR8-DC-	3/4" × 0.049" Tube Butt Weld	1/2" Rotatable Male FR Fitting			
DV□□-TB16-TB8-DC-	1" × 0.065" Tube Butt Weld	1/2" × 0.049" Tube Butt Weld			
DV□□-TB16-RFR8-DC-	1" × 0.065" Tube Butt Weld	1/2" Rotatable Male FR Fitting			

Ordering Number Description



Low Pressure/Ultra High Flow Diaphragm Valves

DL Series

Introduction

DL Series Low Pressure/Ultra High Flow Diaphragm Valves are suitable for high purity and ultra high purity applications. Featuring a springless design, these valves are available with a cast body or a stainless steel bar stock body, and offer optional purge ports.



Features

- Ideal for ultra high flow applications
- No internally wetted threads or springs which minimizes particle generation and particle entrapment for high purity.
- PCTFE stem tip insert for leak-tight shutoff

Technical Data

Port Size		3/4" to 1" or 23 mm to 25 mm
Flow Coefficient (Cv)	Manual	13
	Pneumatic	6.5
Orifice Size		1.125 in. (28.6 mm)
Working Pressure		Vacuum to 300 psig (20.7 bar)
Pneumatic Actuator Operating Pressure		80 to 95 psig (5.5 to 6.5 bar)
Working Temperature		PCTFE: -10 ~ 150 °F (-23 ~ 65 °C) Polyimide: -10 ~ 250 °F (-23 ~ 121 °C)
Leak Rate (Helium)	Internal	$\leq 1 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 1 \times 10^{-9}$ std·cm ³ /s

Flow Data

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

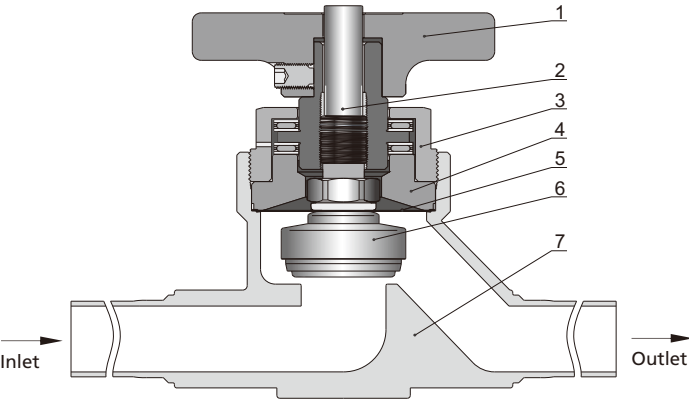
Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
10(0.68)	3900	150
50(3.4)	11000	340
100(6.8)	19500	490

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)
Material	316L SS, CF3M	
Wetted Surface Roughness	Ra 20 μin. (0.5 μm)	Ra 5 μin. (0.13 μm) (Bar Stock) Ra 10 μin. (0.25 μm) (Casting)
Polishing Process	Machine finished	Electropolished

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

Major Materials of Construction

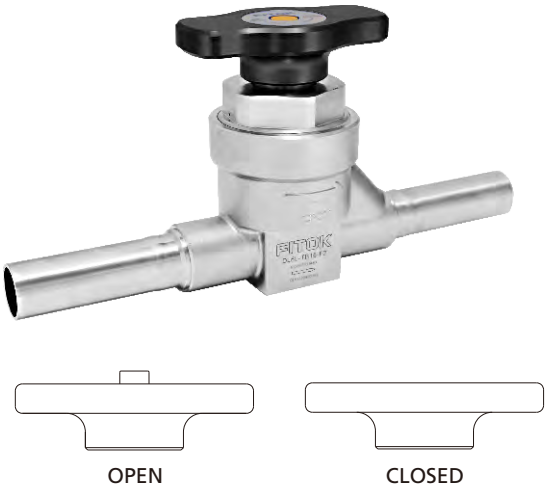


Item	Component	Material/Specification
1	Handle	Aluminum
2	Upper Stem	316 SS/ASTM A479
3	Bonnet Nut	316 SS/ASTM A479
4	Bonnet	316 SS/ASTM A479
5	Diaphragm (3)	Cobalt Alloy/AMS 5876
6	Stem Subassembly	316L SS and PCTFE/ASTM D1430 or Polyimide
7	Body	316L SS or CF3M

Handles and Actuators

Handle

- Five and a half turns to operate from fully open to closed
- Upper stem position to indicate open and closed states



Notes:
The upper stem protruding from the handle indicates open state.
The upper stem paralleling to or sinking into the handle indicates closed state.

Pneumatic

- Normally closed, "N.C." marked on the side of the actuator
- Actuator port 1/8-27 NPT



Position Sensors

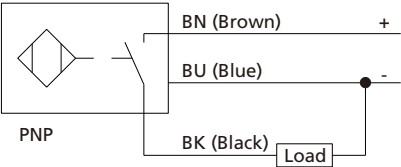
Transmit a signal to an electrical device indicating the open and closed position of pneumatically actuated valves

Technical Information

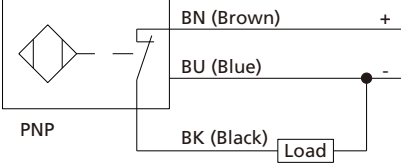
Output	3-wire V (dc), PNP
Output Function	Normally open or normally closed
Voltage	10 ~ 30 V (dc)
Working Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

Wiring Diagram

Normally open position sensors



Normally closed position sensors



Notes: 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.

Explosion-proof Position Sensors

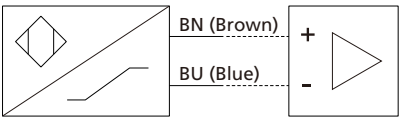
Transmit a signal to an electrical device, indicating the open and closed positions of pneumatically actuated valves.

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)

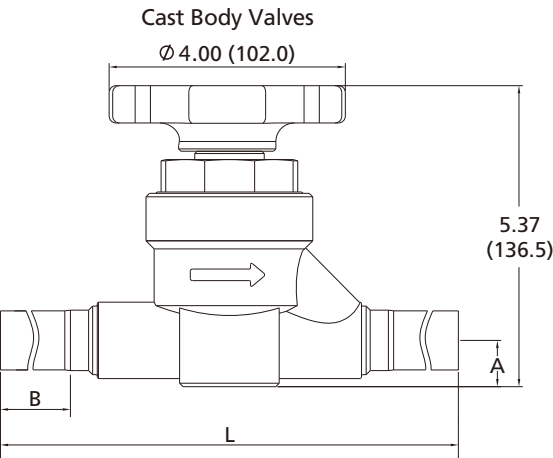
Wiring Diagram



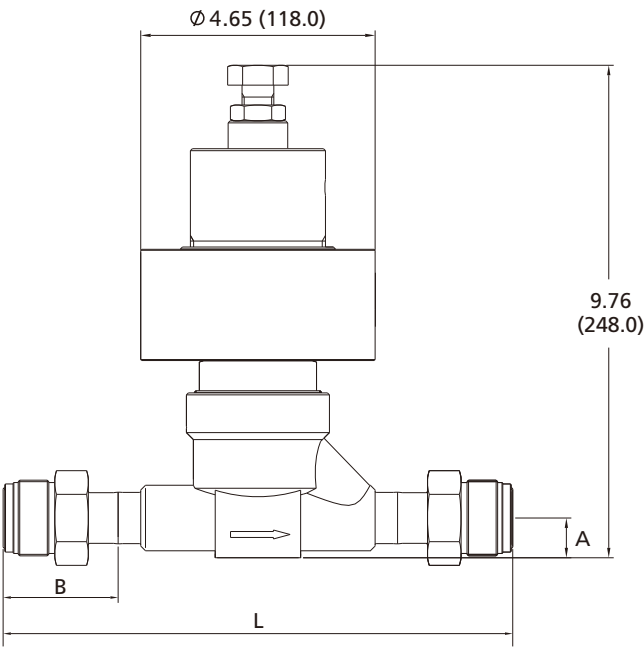
Dimensions

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

Manual - Round Handle



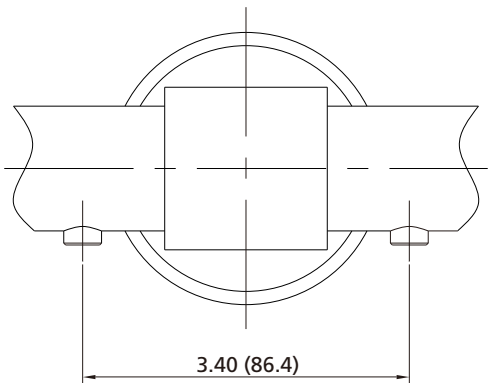
Pneumatic



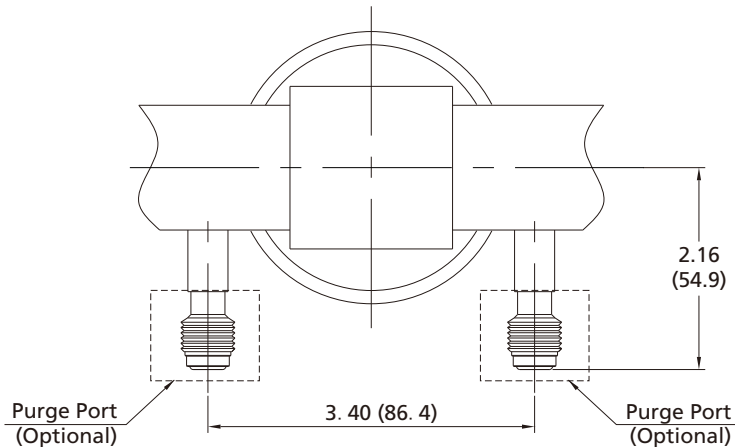
V-95 Diaphragm Valves

Fittings
Valves
Regulators
Filters
Tubing
Integrated Systems
Other Products
Technical Information

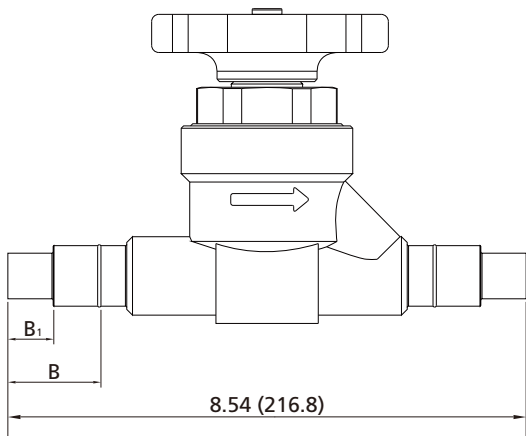
No Purge Ports



1/4" Integral Male FR Fitting

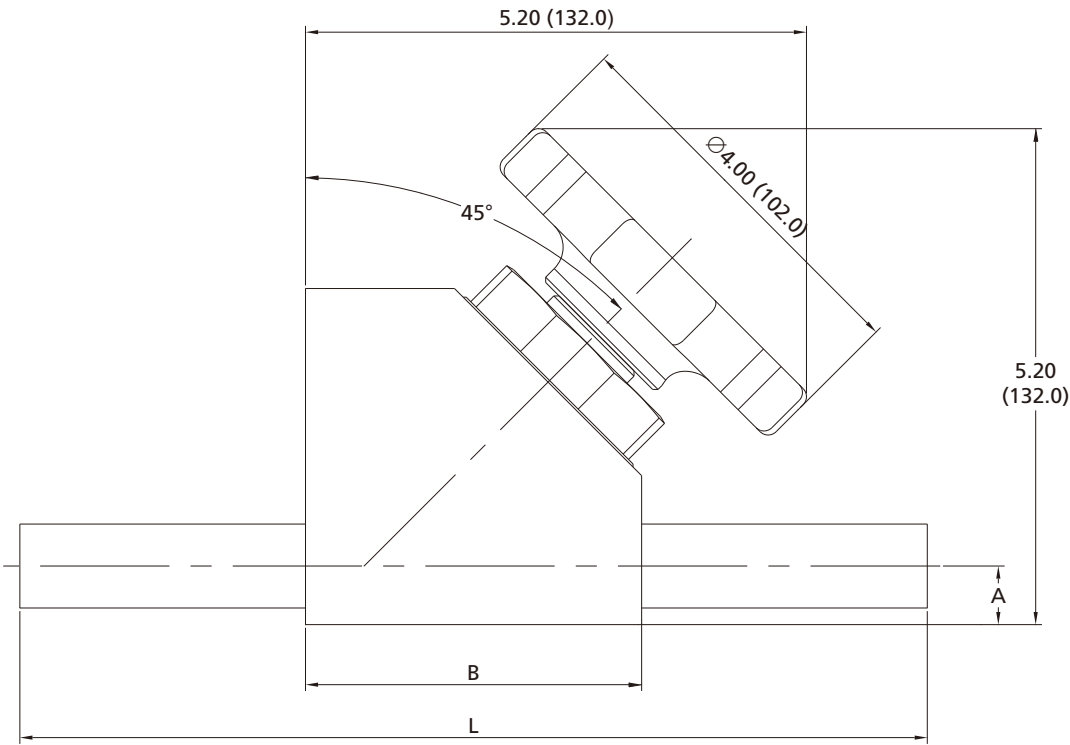


Outline Diagram of TB12 Reducing Port

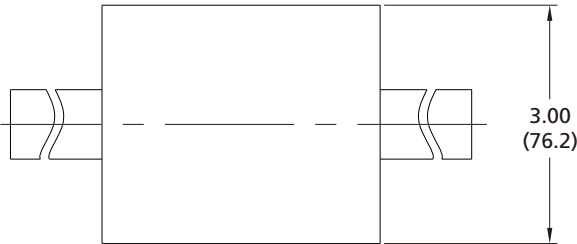


Basic Ordering Number	End Connections		Dimensions, in. (mm)			
	Type	Size	A	B	B ₁	L
DL6L-FL12-	FITOK Tube Fitting	3/4"	0.79 (20.0)	1.62 (41.2)	—	8.27 (210.0)
DL6L-FL16-		1"		1.98 (50.4)		9.45 (240)
DL6L-ML25-		25 mm		1.55 (39.3)		8.63 (219.0)
DL6L-TB12-	Fractional Tube Butt Weld	3/4" × 0.049" (Reducing Port)		1.53 (38.8)	0.75 (19.1)	8.54 (216.8)
DL6L-TB16-		1" × 0.065"		2.71 (68.9)	—	10.90 (277.0)
DL6L-MTB23-	Metric Tube Butt Weld	23 × 1.5 mm				
DL6L-MTB25-		25 × 1.5 mm				10.04 (255.0)
DL6L-FR16-	Integral Male FR Fitting	1"		2.28 (57.9)		

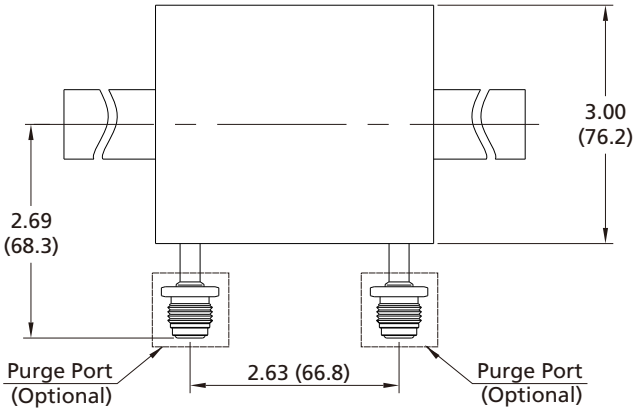
Bar Stock Valves



No purge ports



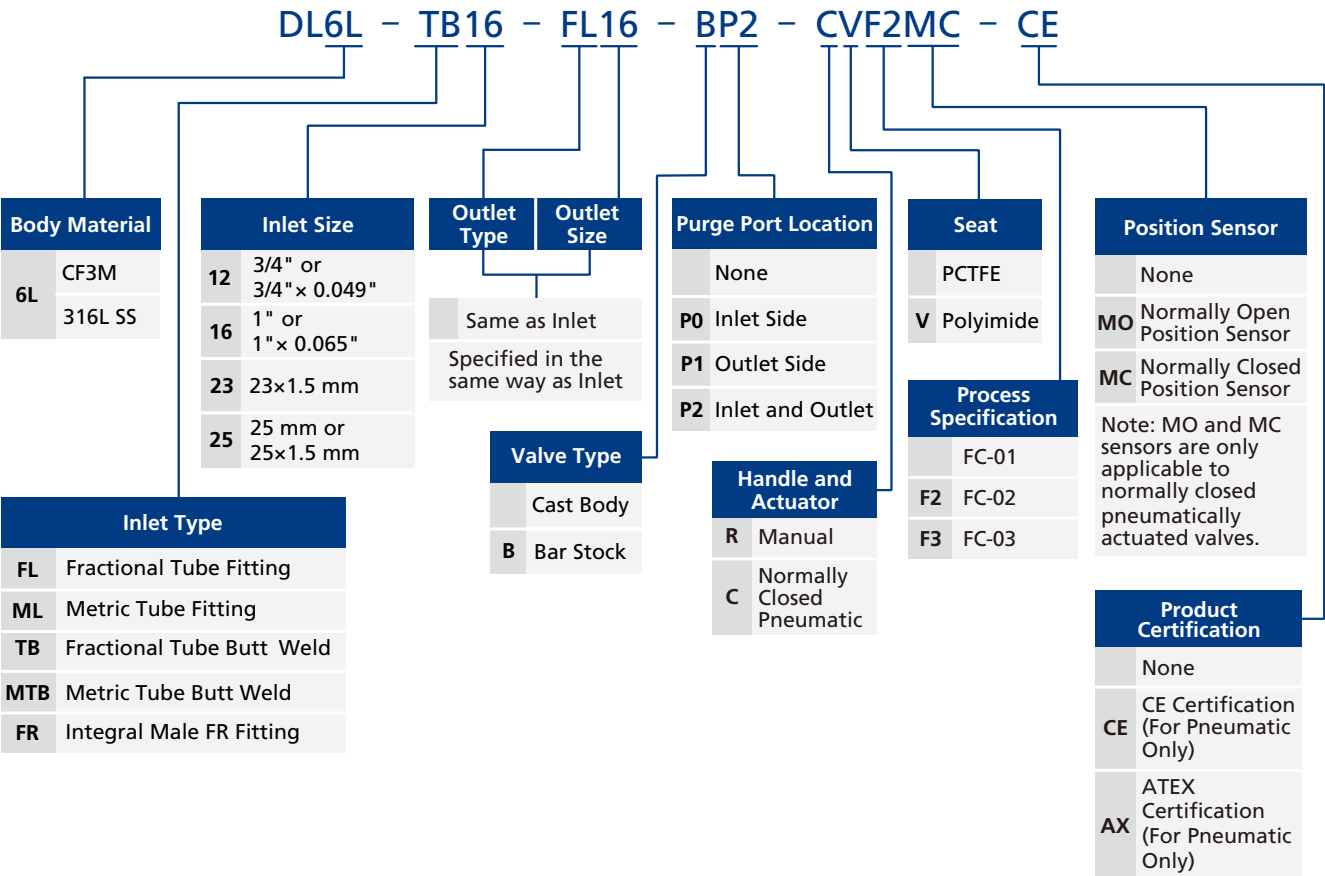
1/4" Rotatable Male FR Fitting



Basic Ordering Number	End Connections		Dimensions, in. (mm)		
	Type	Size	A	B	L
DL6L-TB12-B-	Fractional Tube Butt Weld	3/4" x 0.049"	0.61 (15.5)	3.50 (88.9)	9.46 (240.0)
DL6L-TB16-B-		1" x 0.065"			

Fittings
Valves
Regulators
Filters
Tubing
Integrated Systems
Other Products
Technical Information

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.

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)
Working Pressure	Handle	Vacuum to 3500 psig (241 bar)
	Pneumatic	Vacuum to 3000 psig (207 bar)
Max. Differential Back Pressure ^①		150 psig (10.3 bar)
Pneumatic Actuator Operating Pressure		75 to 105 psig (5.2 to 7.2 bar)
Working 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.

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)
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.

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



Fittings

Valves

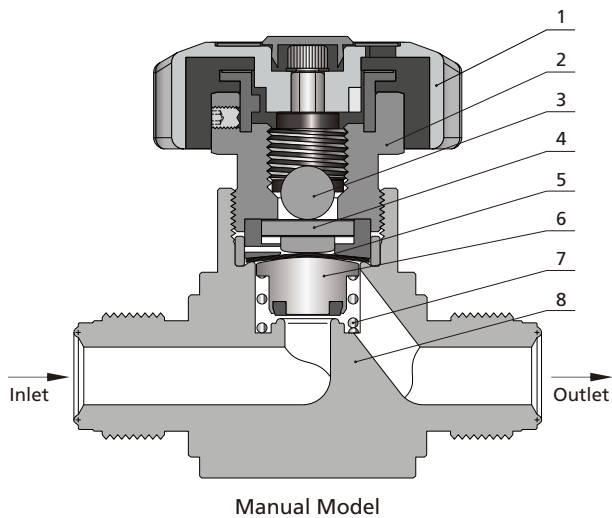
Regulators

Filters

Tubing

Integrated
SystemsOther
ProductsTechnical
Information

Major Materials of Construction



Item	Component	Material/Specification
1	Handle	Aluminum
2	Bonnet Nut	S17400/ASTM A564
3	Ball	400C/A276
4	Button	316 SS/ASTM A479
5	Diaphragm (5)	Cobalt Alloy/AMS 5876
6	Seat Subassembly	316L SS and PCTFE/ASTM D1430 or Polyimide
7	Spring	316 SS/ASTM A313
8	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

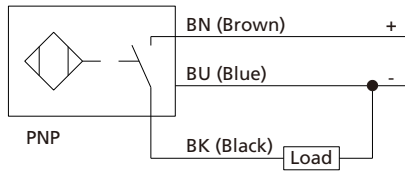
Transmit a signal to an electrical device indicating the open and closed position of pneumatically actuated valves

Technical Information

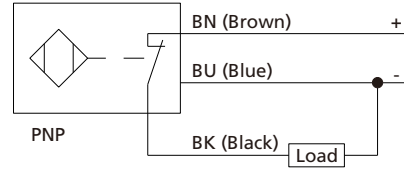
Output	3-wire V (dc), PNP
Output Function	Normally open or normally closed
Voltage	10 ~ 30 V (dc)
Working Temperature	-13 ~ 158 °F (-25 ~ 70 °C)

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

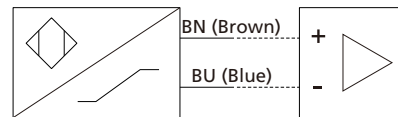
Transmit a signal to an electrical device, indicating the open and closed positions of pneumatically actuated valves.

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)

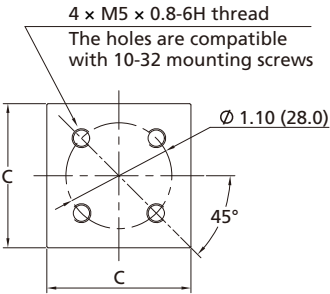
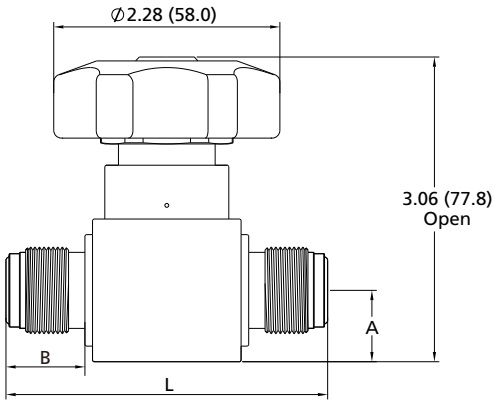
Wiring Diagram



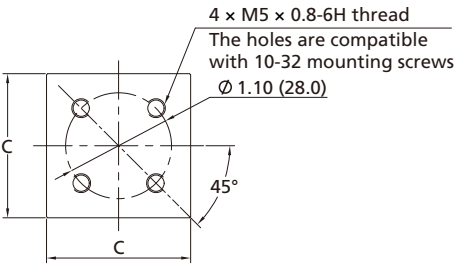
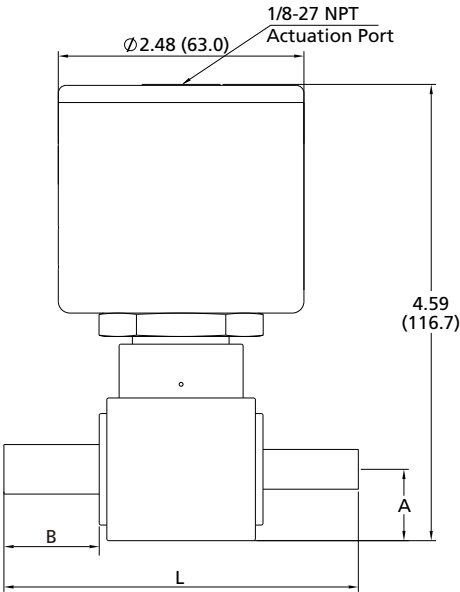
Dimensions

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

Manual - Round Handle

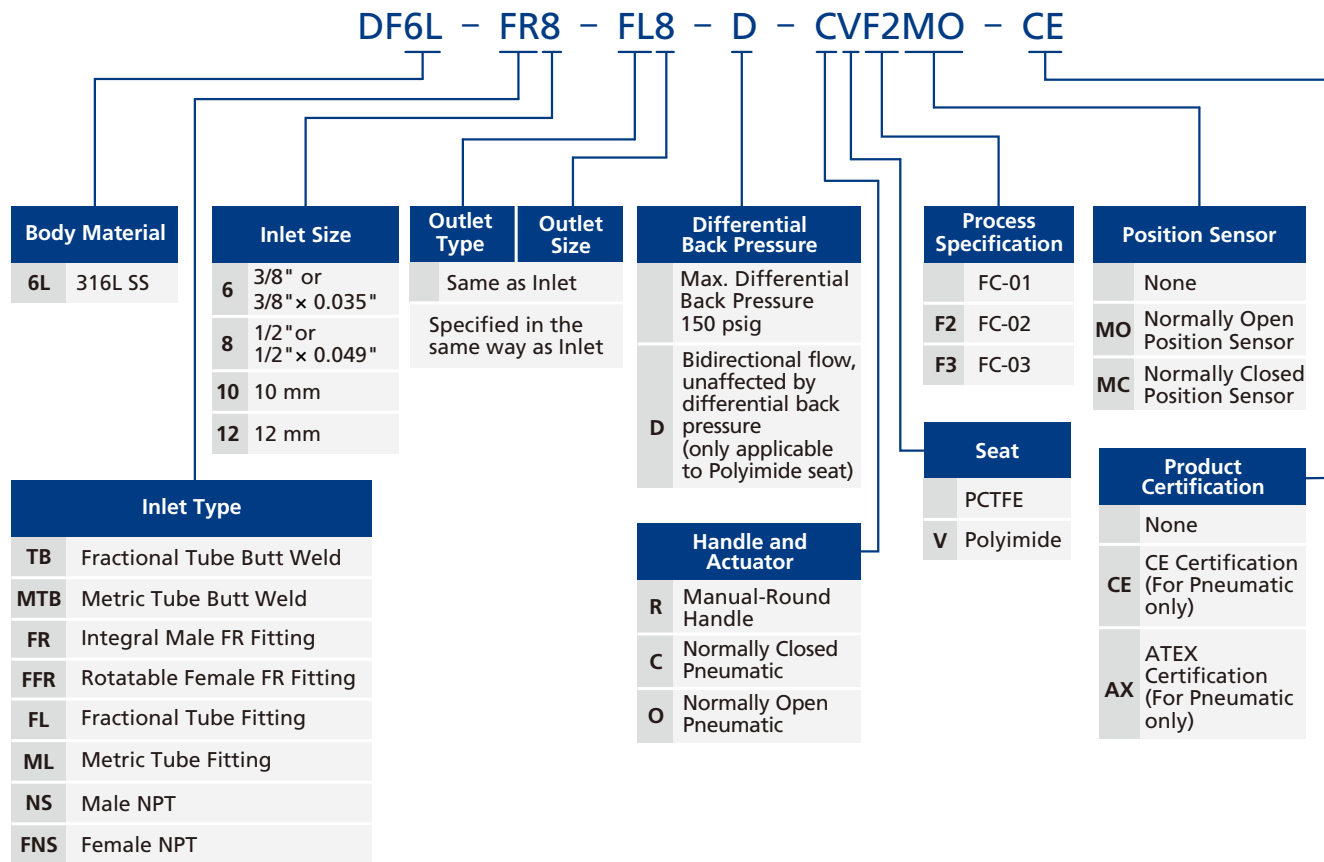


Pneumatic



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		0.80 (20.3)		3.25 (82.5)
DF6L-FR8-	1/2" Integral Male FR Fitting		1.12 (28.4)		3.89 (98.8)
DF6L-FFR8-	1/2" Rotatable Female FR Fitting		0.76 (19.3)		3.27 (83.0)
DF6L-FL6-	3/8" FITOK Tube Fitting		0.86 (21.9)		3.47 (88.2)
DF6L-FL8-	1/2" FITOK Tube Fitting		0.91 (23.0)		3.30 (84.0)
DF6L-FNS8-	1/2 Female NPT				

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.

Economic Diaphragm Valves

DE Series

Introduction

DE series economic diaphragm valves are typical products for ultra high purity gas fluid systems. while maintaining the same basic performance by using the same materials, cleaning and packaging processes as the other series of FITOK diaphragm valves. FITOK's advance manufacturing processes and stringent quality control ensure the products meet the application needs of ultra high purity gas fluid systems for the semiconductor industry.



Features

- Minimal particle generation and minimal dead space
- Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- No springs or threads in wetted areas improves cleanliness

Technical Data

Port Size	1/4"	
Flow Coefficient (Cv)	0.27	
Orifice Size	0.16 in. (4.1 mm)	
Working Pressure	Vacuum to 150 psig (10.3 bar)	
Pneumatic Actuator Operating Pressure	60 ~ 90 psig (4.2 ~ 6.2 bar)	
Working Temperature	-10 ~ 176 °F (-23 ~ 80 °C)	
Leak Rate (Helium)	Internal	≤1×10 ⁻⁹ std·cm ³ /s
	External	≤1×10 ⁻⁹ std·cm ³ /s

Flow Data

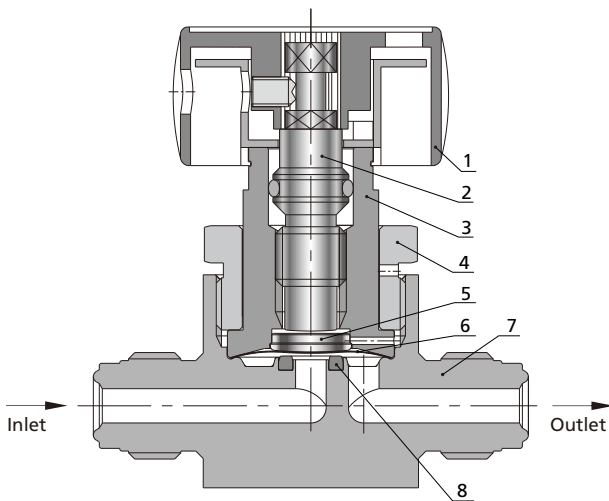
Air @ 70 °F (21 °C)
Water @ 60 °F (16 °C)

Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
10 (0.68)	86	3.2
50 (3.4)	230	7.2
100 (6.8)	410	10.2

Process Specification

Process Specification		Ultra High Purity Process (FC-03)
Item		
Material		316L SS
Wetted Surface Roughness		Ra 5 μin. (0.13 μm)
Polishing Process		Electropolished
Cleaning		Ultra high purity cleaning in continuously monitored ultrasonic cleaning system with deionized water
Assembly Environment		ISO Class 4 (FS 209E Class 10 equivalent) cleanroom
Packaging		Double bagged in cleanroom

Major Materials of Construction



Item	Component	Material / Specification
1	Handle	Aluminum
2	Stem	316 SS/ASTM A479
3	Bonnet	S17400/ASTM A564
4	Bonnet Nut	316 SS/ASTM A479
5	Button	316 SS/ASTM A479
6	Diaphragm	Cobalt Alloy/AMS 5876
7	Body	316L SS
8	Seat	PCTFE/ASTM D1430

Handles and Actuators

Manual - Round Handle

- Quick, half-turn actuation
- Handle with window to visually indicate open and closed states



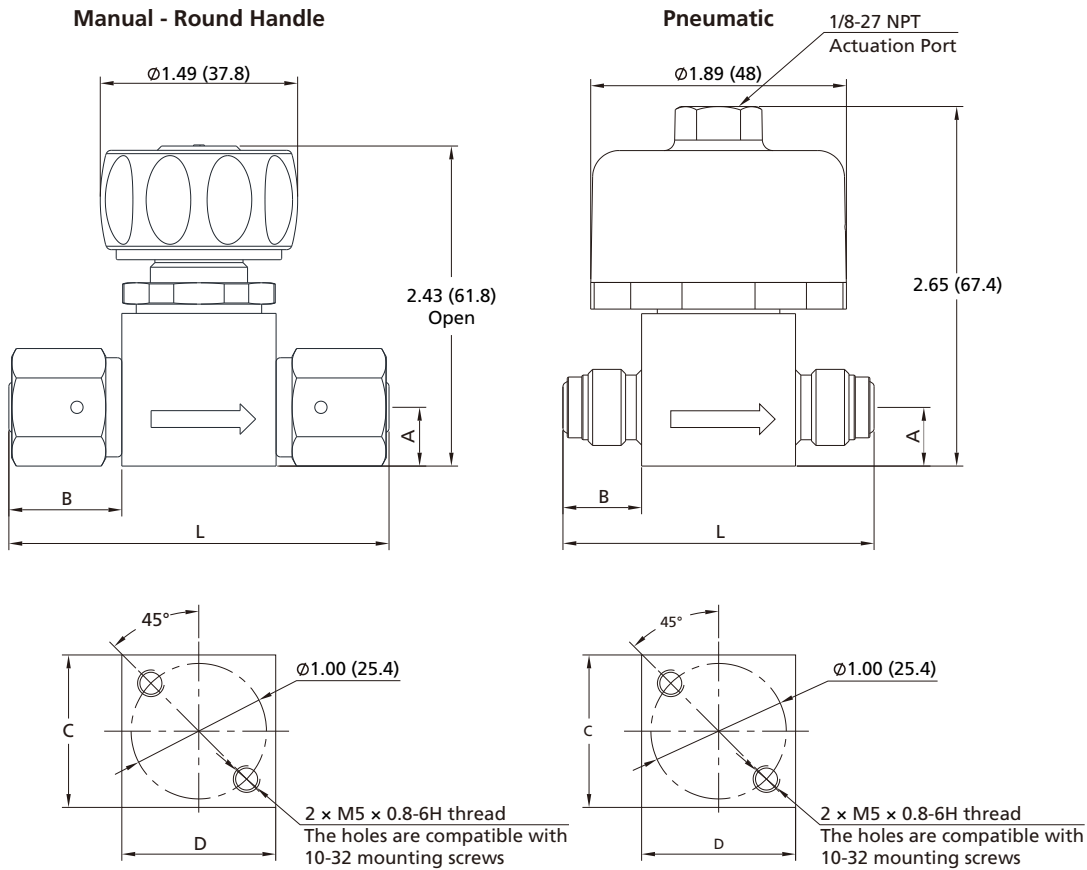
Normally Closed Pneumatic

- Normally Closed, "N.C." marked on the top of the actuator



Dimensions and Ordering Information

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



Ordering Number	Connection Type and Size	Dimensions, in. (mm)				
		A	B	C	D	L
DE6L-FFR4-RF3	1/4" Rotatable Female FR Fitting	0.43 (11)	0.82 (20.9)	1.13 (28.6)	1.14 (28.9)	2.78 (70.6)
DE6L-FFR4-CF3			0.58 (14.7)			2.30 (58.4)
DE6L-FR4-RF3	1/4" Integral Male FR Fitting	0.43 (11)	0.82 (20.9)	1.13 (28.6)	1.14 (28.9)	2.78 (70.6)
DE6L-FR4-CF3			0.58 (14.7)			2.30 (58.4)

Ordering Number Description

DE6L - FFR4 - CF3 - CE					
Body Material	Port Type	Port Size	Handle and Actuator	Process Specification	Product Certification
6L 316L SS	FR Integral Male FR Fitting	4 1/4"	R Manual - Round Handle	F3 FC-03	None
	FFR Rotatable Female FR Fitting		C Normally Closed Pneumatic		CE CE Certification
					AX ATEX Certification

- 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 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.

High Temperature Diaphragm Valves

DK Series

Introduction

DK series diaphragm valves are designed and manufactured to Ultra-High Purity (UHP) standards, ensuring the complete absence of non-metallic materials, such as resins, in gas wetted areas. These valves represent the pinnacle of metal diaphragm valve technology and can operate at temperatures up to 250°C. This makes them ideal for applications such as Metal-Organic Chemical Vapor Deposition (MOCVD) systems and corrosive media delivery systems.

Features

- Thermal immersion design for use in high temperature up to 482 °F (250 °C)
- Metal seat to provide excellent resistance to swelling and contamination
- Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- All-Metal wetted parts with broad chemical compatibility
- Minimal particle generation and minimal dead space, easy to purge

Technical Data

Port Size	1/4" to 3/8" or 6 mm to 8 mm	
Flow Coefficient (Cv)	0.27	
Orifice Size	0.16 in. (4.1 mm)	
Working Pressure	Vacuum to 145 psig (10 bar)	
Pneumatic Actuator Operating Pressure	72 ~ 101 psig (5 ~ 7 bar)	
Working Temperature	Body	14 ~ 482 °F (-10 ~ 250 °C)
	Actuator	14 ~ 482 °F (-10 ~ 250 °C)
Leak Rate (helium)	Internal	$\leq 3 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 3 \times 10^{-9}$ std·cm ³ /s

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)	86	3.2
50 (3.4)	230	7.2
100 (6.8)	410	10.2

Process Specification

Process Specification	Standard Cleaning and Packaging Process (FC-01) Special Cleaning and Packaging Process (FC-02)		Ultra High Purity Process (FC-03)
Item			
Material	316L SS		316L SS, 316L SS VAR
Wetted Surface Roughness	Ra 10 μin. (0.25 μm)	Ra 5 μin. (0.13 μm) ^①	Ra 5 μin. (0.13 μm)
Polishing Process	Machine finished	Electropolished	Electropolished

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

① Wetted surface roughness of valves with FR Series metal gasket face seal connections and tube butt weld connections.



Fittings

Valves

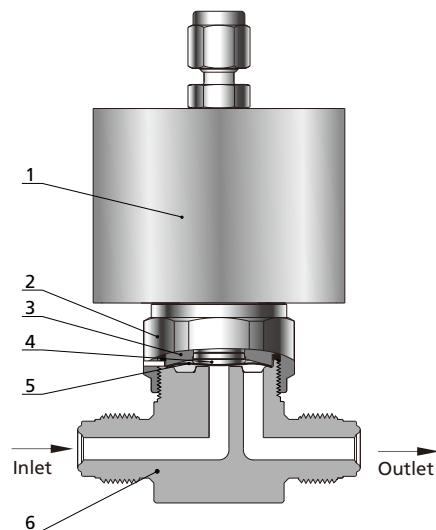
Regulators

Filters

Tubing

Integrated
SystemsOther
ProductsTechnical
Information

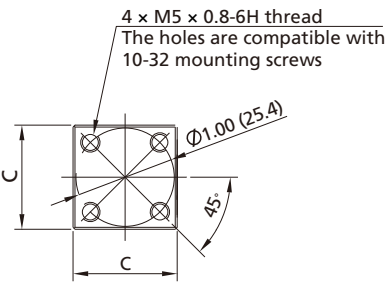
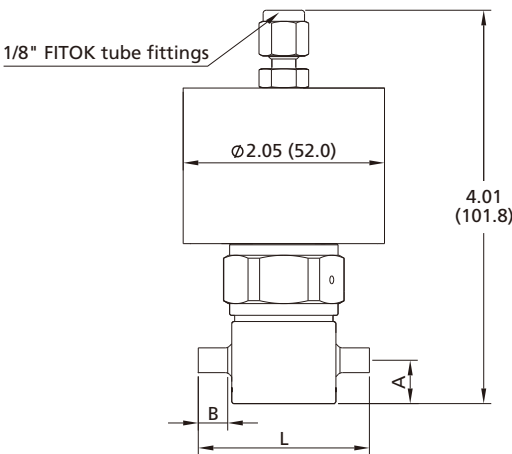
Major Materials of Construction



Item	Component	Material/Specification
1	Actuator	316 SS/ASTM A479
2	Bonnet Nut	316 SS/ASTM A479
3	Bonnet	S17400/ASTM A564
4	Button	316 SS/ASTM A479
5	Diaphragm (2)	Cobalt Alloy/AMS 5876
6	Body	316L SS or 316L SS VAR

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	L
DK□□-TB4-4-	1/4" × 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	1.74 (44.2)
DK□□-TB6-4-	3/8" × 0.035" Tube Butt Weld		0.26 (6.6)		
DK□□-FFR4-4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		2.78 (70.6)
DK□□-RFR4-4-	1/4" Rotatable Male FR Fitting				
DK□□-FR4-4-	1/4" Integral Male FR Fitting		0.62 (15.7)		2.30 (58.4)

DK6L - TB4 - FR4 - 4 - CF3 - CE

Notes:

- FITOK**

Surface Mount Diaphragm Valves

DIM Series

Introduction

DIM Series Diaphragm Valves feature SEMI-compliant surface-mounting. Utilizing either W-seal or C-seal metal seals between the valve and the substrate, these valves are suitable for installation in integrated gas systems (IGS).



Features

- ⦿ Cobalt alloy diaphragm improves strength and corrosion resistance
- ⦿ W-seal and C-seal optional
- ⦿ No packing diaphragm seal ensures high purity
- ⦿ No dead space for easy purging
- ⦿ Pneumatic actuator optional

Technical Data

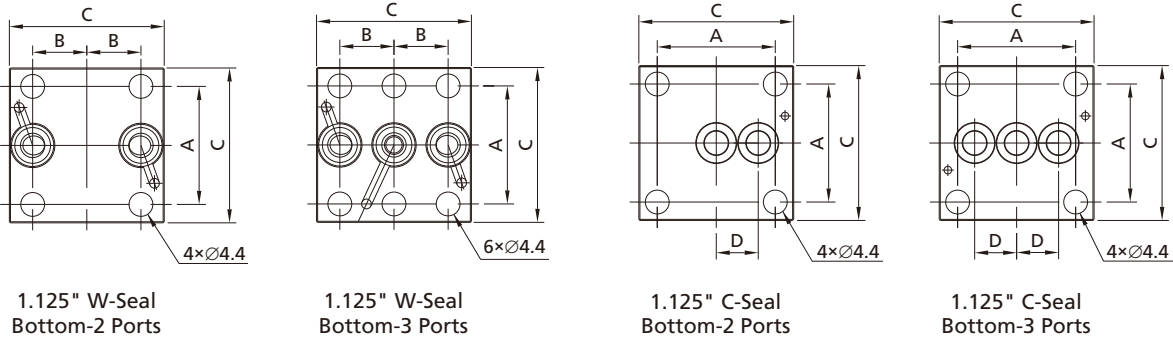
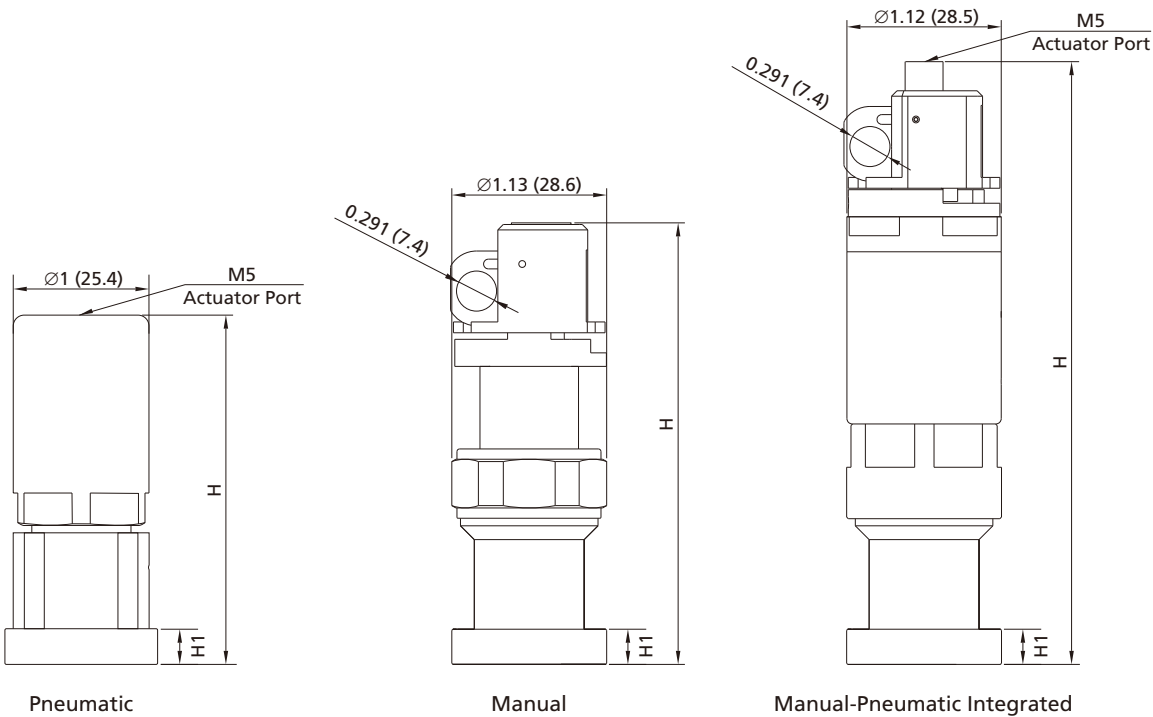
Working Pressure	Manual	Vacuum to 145 psig (10 bar)
	Pneumatic	
Working Temperature		PCTFE: 14~176°F (-10~80°C) PFA: 14~302°F (-10~150°C)
Flow Coefficient (Cv)		0.3
Pneumatic Actuator Working Pressure		60~90 psig (4.2~6.2 bar)
Leakage Rate (Helium)	Internal	$\leq 1 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 1 \times 10^{-9}$ std·cm ³ /s

Process Specification

Item	Process Specification
	Ultra High Purity Process (FC-03)
Material	316L SS, 316L SS VAR
Wetted Surface Roughness	Ra 5 μin. (0.13 μm)
Polishing Process	Electropolished

Dimensions and Ordering Information

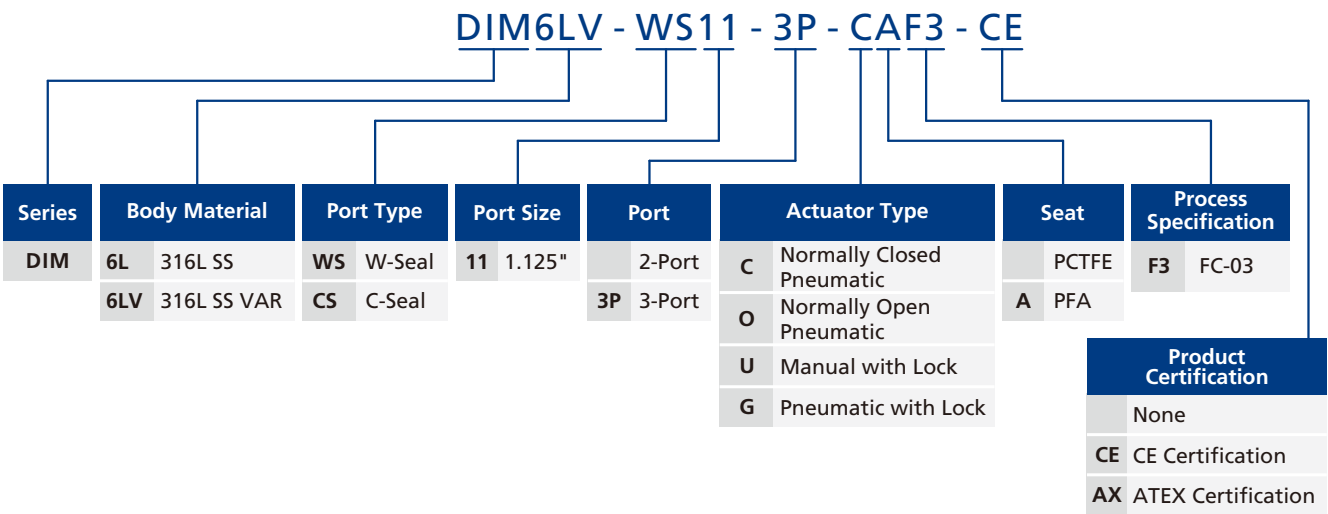
Dimensions, in inches (millimeters), are for reference only.



V-111 Diaphragm Valves

Fittings	Basic Ordering Number	Port Type and Size	Dimensions, in. (mm)					
			A	B	C	D	H	H1
Valves	DIM□□-WS11-CF3	1.125" W-Seal	0.86 (21.8)	0.39 (10.0)	1.13 (28.6)	—	2.89 (73.4)	0.26 (6.5)
	DIM□□-WS11-OF3						2.89 (73.4)	
	DIM□□-WS11-UF3						3.21 (81.6)	
	DIM□□-WS11-GF3						4.38 (111.3)	
	DIM□□-WS11-3P-CF3						2.89 (73.4)	
	DIM□□-WS11-3P-OF3						2.89 (73.4)	
	DIM□□-WS11-3P-UF3						3.21 (81.6)	
	DIM□□-WS11-3P-GF3						4.38 (111.3)	
Regulators	DIM□□-CS11-CF3	1.125" C-Seal	0.86 (21.8)	—	1.13 (28.6)	0.31 (7.75)	2.57 (65.4)	0.26 (6.5)
	DIM□□-CS11-OF3						2.57 (65.4)	
	DIM□□-CS11-UF3						3.21 (81.6)	
	DIM□□-CS11-GF3						4.38 (111.3)	
	DIM□□-CS11-3P-CF3						2.57 (65.4)	
	DIM□□-CS11-3P-OF3						2.57 (65.4)	
	DIM□□-CS11-3P-UF3						3.21 (81.6)	
	DIM□□-CS11-3P-GF3						4.38 (111.3)	
Filters								
Tubing								
Integrated Systems								
Other Products								
Technical Information								

Ordering Number Description



Notes:

- 1. "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 or our authorized distributors.
- 2. Mounting screws and gasket are not included, please contact FITOK Group or our authorized distributors if you have any requests.
- 3. 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.