

Diaphragm Valves

DQ, DP, DH, DM, DS, DR, DV and DF Series



FITOK
Valves and Fittings

www.fitokgroup.com

Diaphragm Valves

DQ, DP, DH, DM, DS, DR, DV and DF Series



Diaphragm Valves

DQ Series Low Pressure Manual Diaphragm Valves

Features

- ⦿ Low internal volume, fully swept flow path
- ⦿ Contained seat to provide excellent resistance to swelling and contamination
- ⦿ Elgiloy diaphragm to provide high strength and corrosion resistance to ensure long cycle life
- ⦿ Different handle types available
- ⦿ Suitable for ultra high purity applications

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)	
Max. Working Pressure	250 psig (17.2 bar)	
Temperature	PCTFE: -10~150°F (-23~65°C) PFA: -10~302°F (-23~150°C)	
Leak Rate (helium)	Internal	≤ 1x10 ⁻⁹ mbar l/s
	External	≤ 1x10 ⁻⁹ mbar l/s

Flow Data

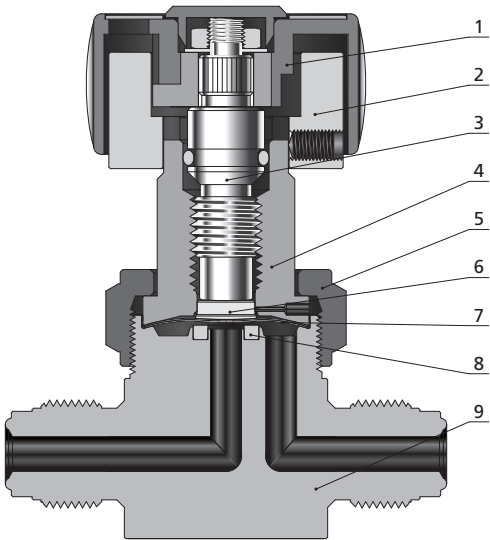
Air @ 70°F (21°C)
Water @ 60°F (16°C)

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

Product Technology Grade

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

Major Material of Construction



Item	Component		Material/Specification
1	Handle	Round	ABS
		Integral Lockout	Aluminum
2	Actuator		Aluminum
3	Stem		316 SS/ASTM A479
4	Bonnet		S17400/ASTM A564
5	Bonnet Nut		316 SS/ASTM A479
6	Button		316 SS/ASTM A479
7	Diaphragm(2)		Elgiloy/AMS 5876
8	Seat		PCTFE/ASTM D1430 or PFA/ASTM D3307
9	Body		316 SS/ASTM A479 or 316L SS/ASTM A479 or 316L VIM-VAR/SEMI F20

Round Handle Actuator

Actuators

Round Handle

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

Integral Lockout Handle

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



OPEN

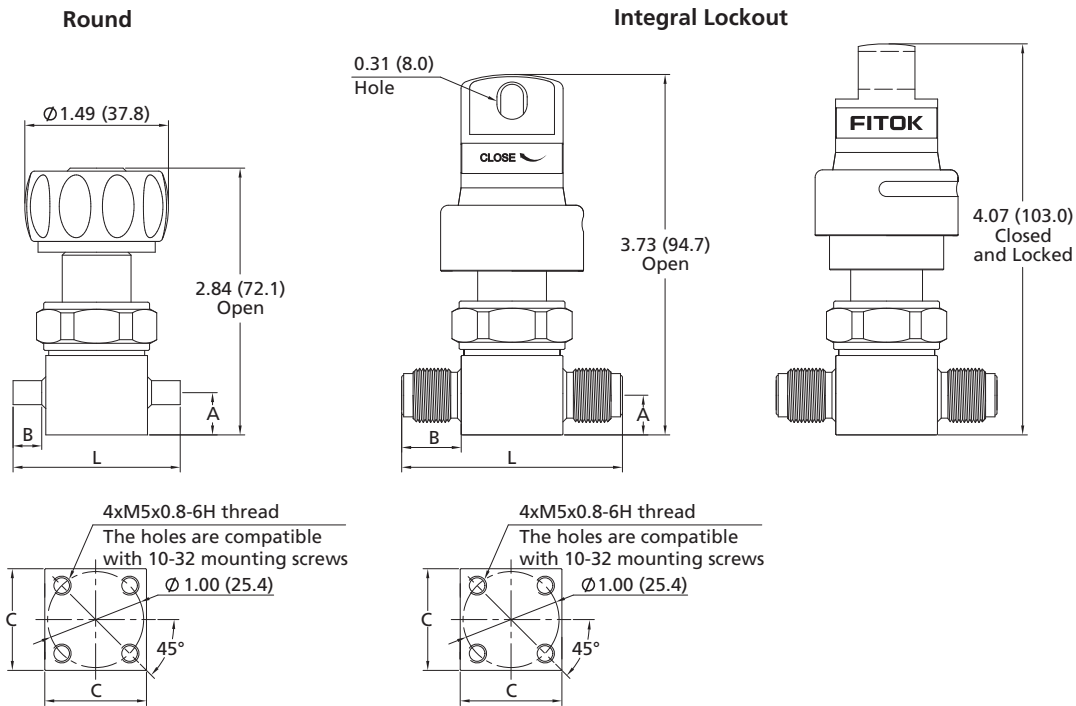
CLOSED



Straight Type

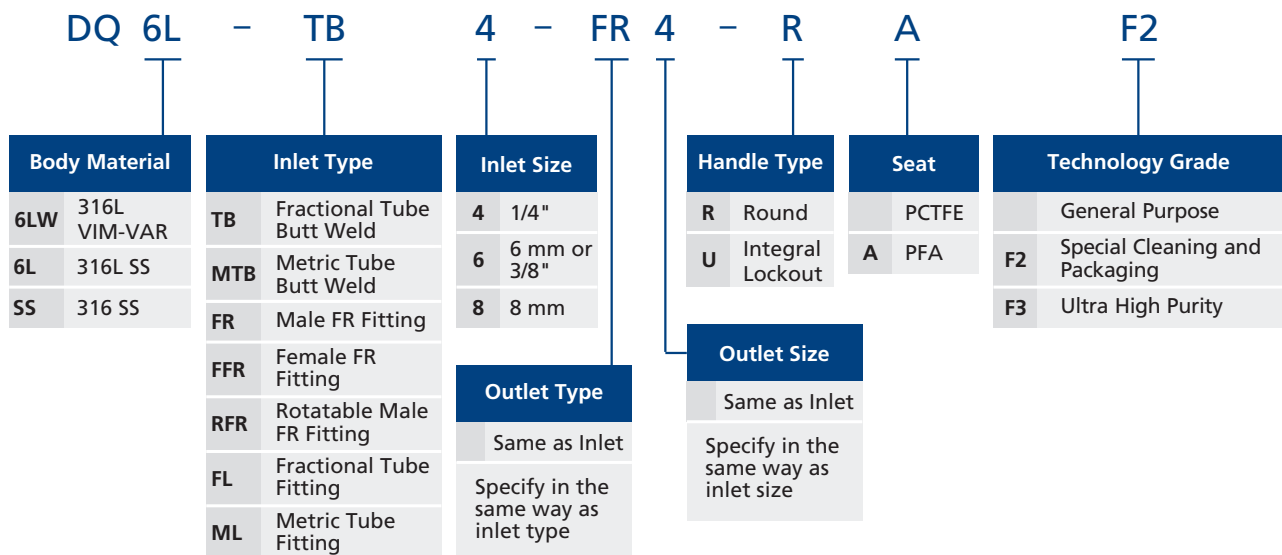
Dimensions

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



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

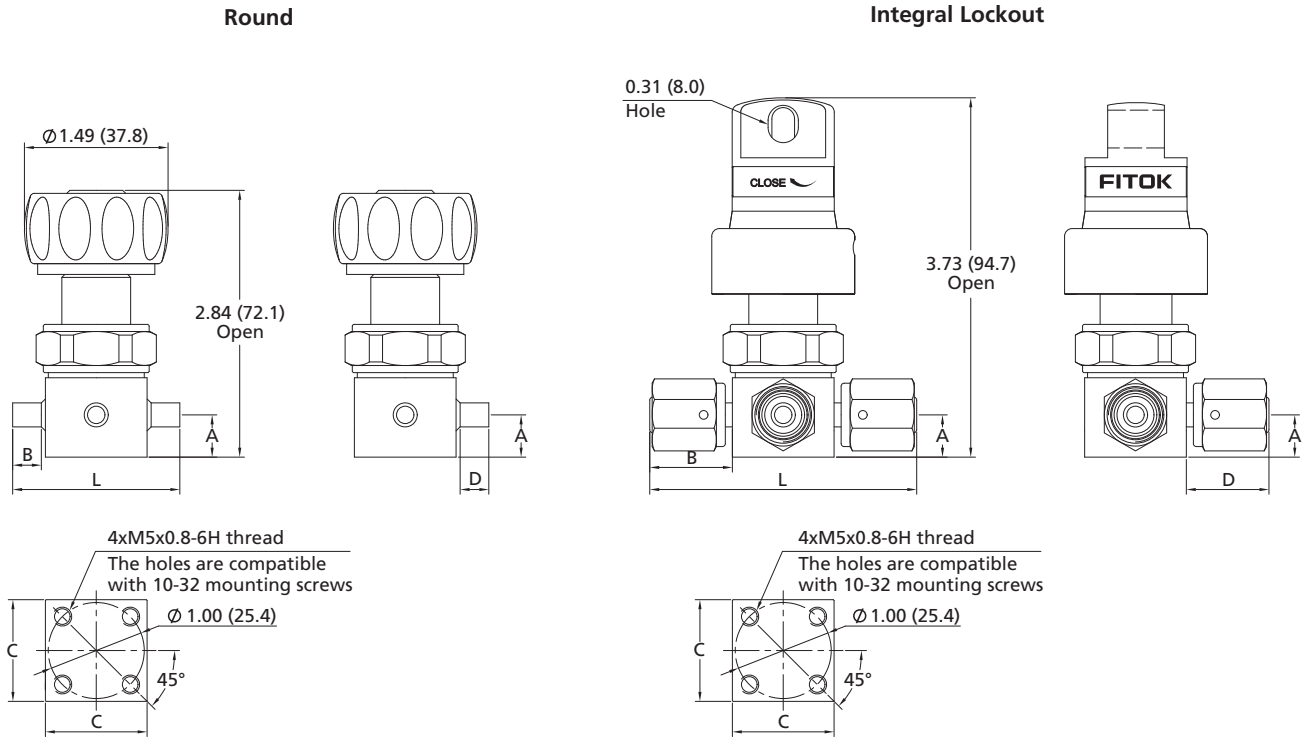
Part Number Description



Branch Type

Dimensions

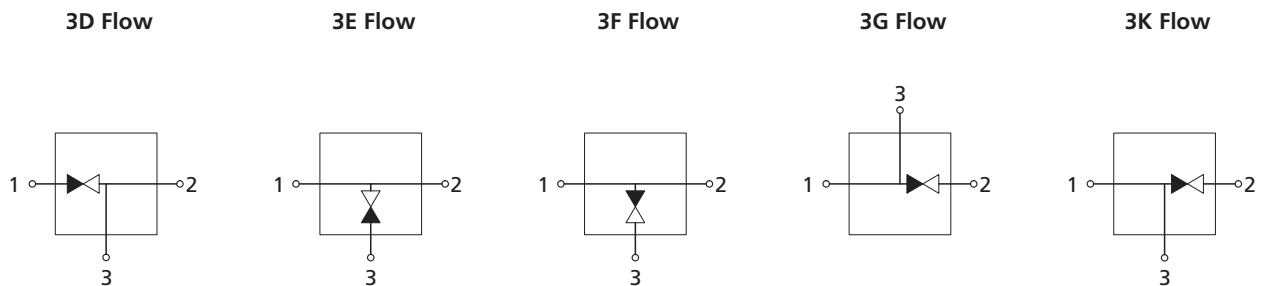
Dimensions, in inches (millimeters), are for reference only.



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

Flow Paths

☉ Flow paths as viewed from the top



Part Number Description

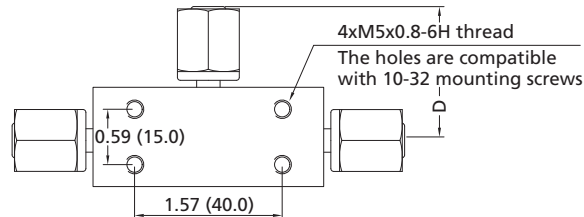
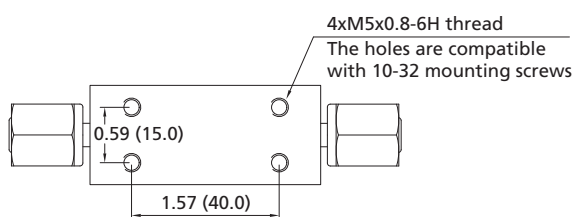
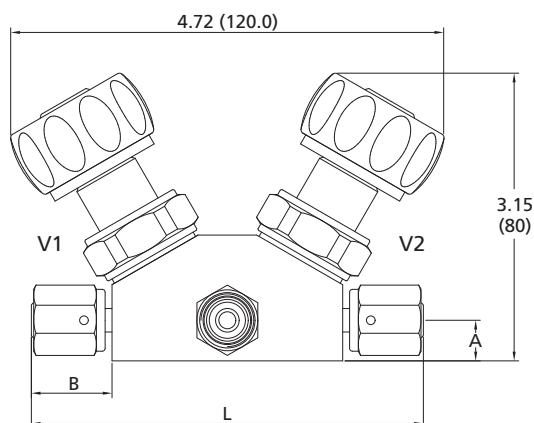
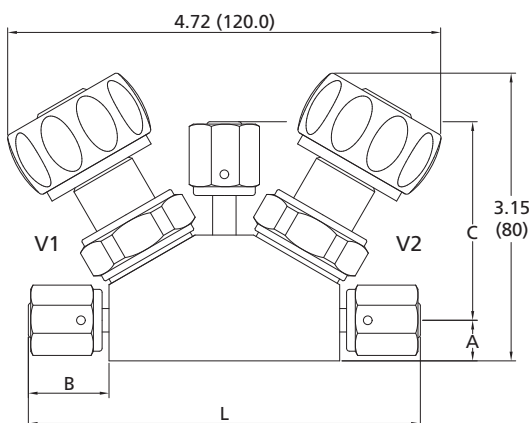
DQ 6L - TB 4 - FR 4 - FFR 4 - 3G - R A F2

Body Material		Port 1 Type		Port 1 Size		Port 2/3 Size		Flow Path		Handle Type		Technology Grade						
6LW	316L VIM-VAR	TB	Fractional Tube Butt Weld	4	1/4"	Same as Port 1	3D	R	Round			General Purpose						
6L	316L SS	MTB	Metric Tube Butt Weld	6	6 mm or 3/8"	Specify in the same way as Port 1 size	3E	U	Integral Lockout			F2 Special Cleaning and Packaging						
SS	316 SS	FR	Male FR Fitting	8	8 mm		3F	<table border="1"> <tr><th colspan="2">Seat</th></tr> <tr><td>PCTFE</td></tr> <tr><td>A PFA</td></tr> </table>		Seat		PCTFE	A PFA			F3 Ultra High Purity		
Seat																		
PCTFE																		
A PFA																		
		FFR	Female FR Fitting			<table border="1"> <tr><th colspan="2">Port 2/3 Type</th></tr> <tr><td>Same as Port 1</td></tr> <tr><td>Specify in the same way as Port 1 type</td></tr> </table>		Port 2/3 Type		Same as Port 1	Specify in the same way as Port 1 type	3G						
Port 2/3 Type																		
Same as Port 1																		
Specify in the same way as Port 1 type																		
		RFR	Rotatable Male FR Fitting					3K										
		FL	Fractional Tube Fitting															
		ML	Metric Tube Fitting															

2-Valve 3-Way Block Type

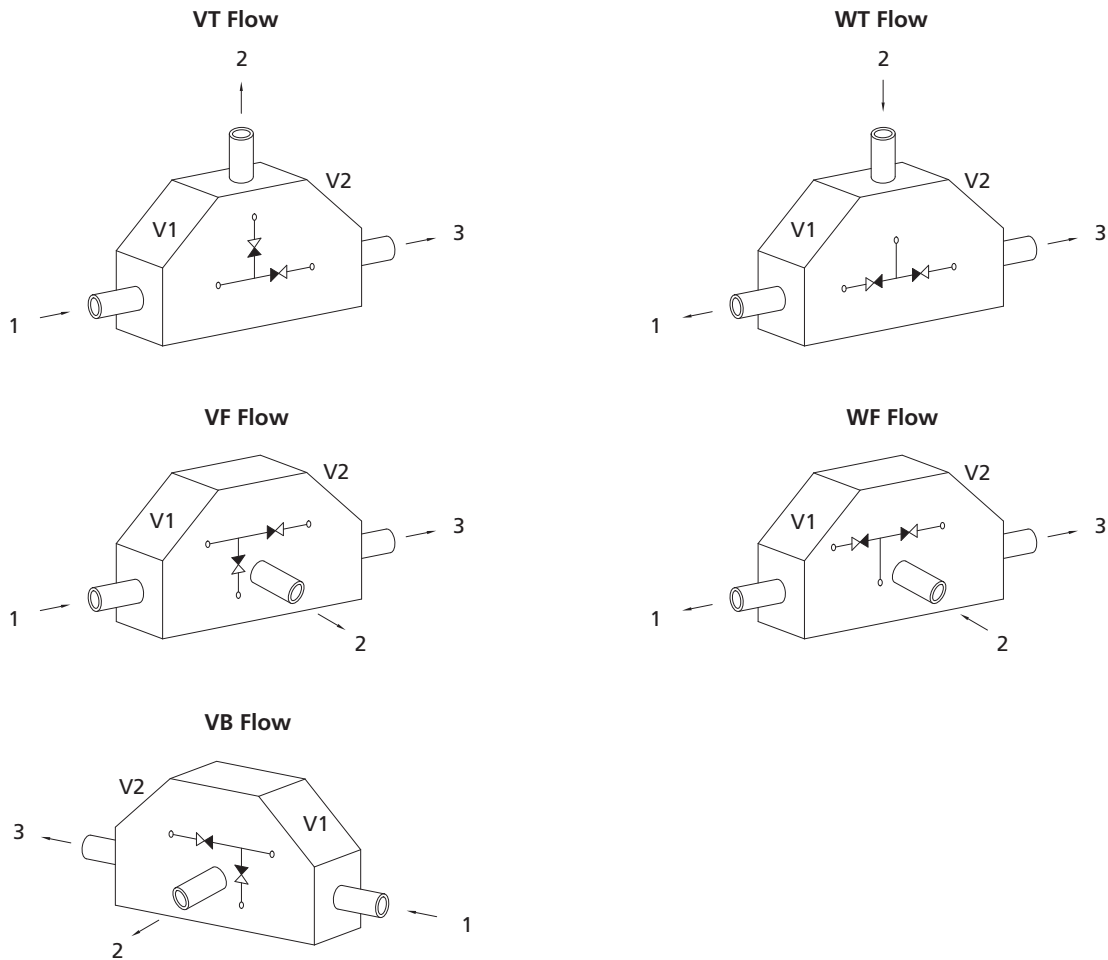
Dimensions

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



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

Flow Paths



Part Number Description

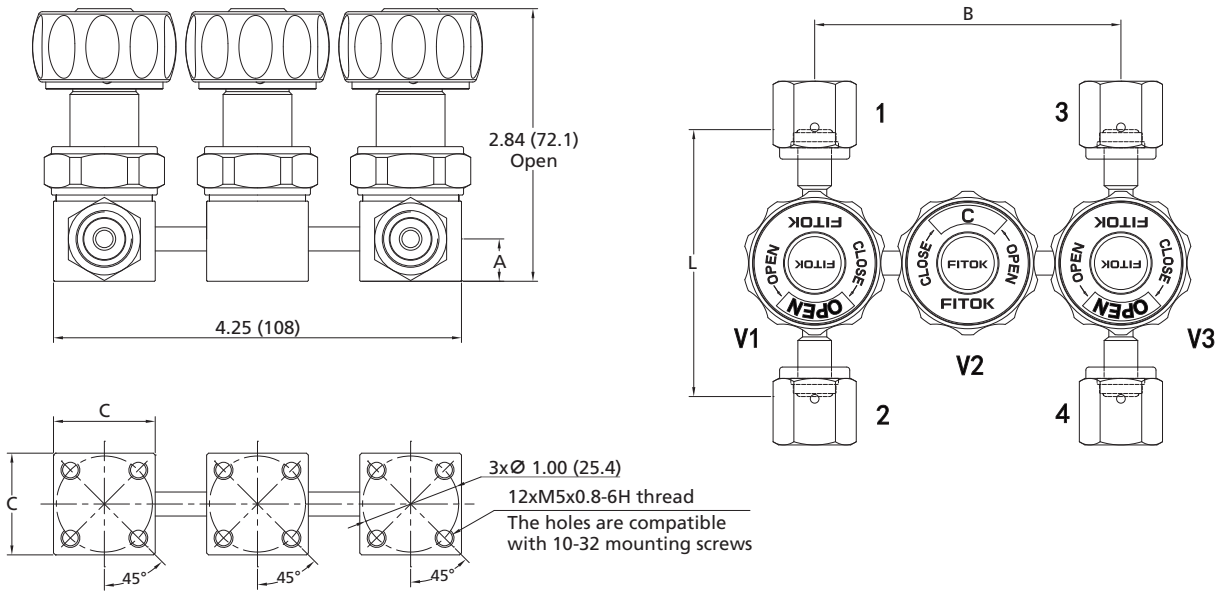
DQ 23 **6L** - **FFR** **4** - **RFR 4** - **FFR 4** - **VF - A** **F2**

Type	Body Material	Port 1 Type	Port 1 Size	Port 2/3 Size	Flow Path	Technology Grade
23 2 Valves and 3 Ports	6LW 316L VIM-VAR 6L 316L SS SS 316 SS	FFR Female FR Fitting RFR Rotatable Male FR Fitting	4 1/4"	Same as Port 1 Specify in the same way as Port 1 size	VT VF VB WT WF	General Purpose F2 Special Cleaning and Packaging F3 Ultra High Purity
			Port 2/3 Type Same as Port 1 Specify in the same way as Port 1 type		Seat PCTFE A PFA	

3-Valve 4-Way Block Type

Dimensions

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

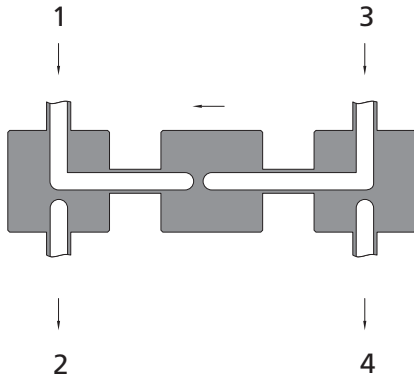


Basic Ordering Number	Connection Type and Size	Dimension in. (mm)			
		A	B	C	L
DQ34□□-FFR4-	1/4" Female FR	0.44 (11.2)	3.19 (81.0)	1.06 (26.9)	2.78 (70.6)
DQ34□□-RFR4-	1/4" Rotatable Male FR	0.44 (11.2)	3.19 (81.0)	1.06 (26.9)	2.78 (70.6)

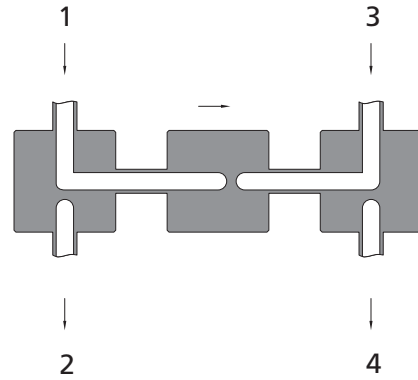
09 Diaphragm Valves

Flow Paths

© Flow paths as viewed from the top



GK Flow



KG Flow

Part Number Description

DQ34	6L	-	FFR	4 - RFR	4 - FFR	4 - FFR	4 - GK - R	A	F3
Type	Body Material		Port 1 Type	Port 2/3/4 Type		Port 2/3/4 Size	Flow Path		Technology Grade
3 Valves and 4 Ports	6LW 316L VIM-VAR 6L 316L SS SS 316 SS		FFR Female FR Fitting RFR Rotatable Male FR Fitting	Same as Port 1	Specify in the same way as Port 1 type	Same as Port 1	GK KG		General Purpose F2 Special Cleaning and Packaging F3 Ultra High Purity
				Port 1 Size			Handle Type	Seat	
				4 1/4 "			R Round U Integral Lockout	PCTFE A PFA	

Diaphragm Valves

DP Series Low Pressure Pneumatic Diaphragm Valves

Features

- ⦿ Minimum particle generation and dead space
- ⦿ Fully contained seat to provide excellent resistance to swelling and contamination
- ⦿ Elgiloy diaphragm to provide high strength and corrosion resistance
- ⦿ Long cycle life with high speed actuation
- ⦿ Internally threadless and springless
- ⦿ Fully functional under vacuum conditions

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)	
Max. Working Pressure	250 psig (17.2 bar)	
Pneumatic Actuator Operating Pressure	60 to 90 psig (4.2 to 6.2 bar)	
Temperature	PCTFE: -10~150°F (-23~65°C) PFA: -10~302°F (-23~150°C)	
Leak Rate (helium)	Internal	$\leq 1 \times 10^{-9}$ mbar l/s
	External	$\leq 1 \times 10^{-9}$ mbar l/s

Flow Data

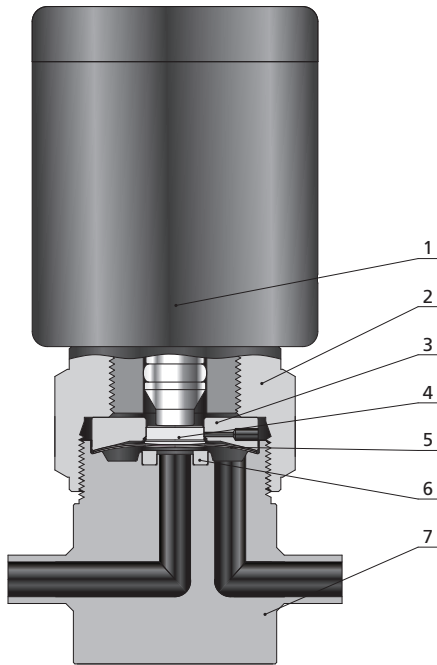
Air @ 70°F (21°C)
Water @ 60°F (16°C)

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

Product Technology Grade

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

Major Material of Construction



Normally Closed Pneumatic Actuator

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)	Elgiloy/AMS 5876
6	Seat	PCTFE/ASTM D1430 or PFA/ASTM D3307
7	Body	316 SS/ASTM A479 or 316L SS/ASTM A479 or 316L VIM-VAR/SEMI F20

Pneumatic Actuators

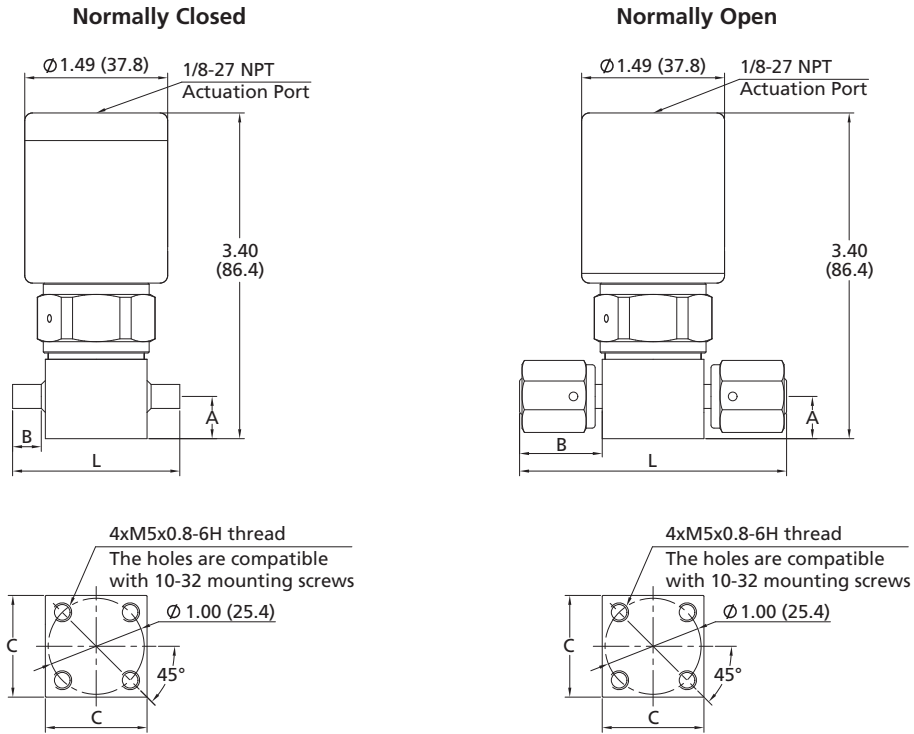
- ⊙ Normally open, "N.O." marked on the top of the cylinder
- ⊙ Normally closed, "N.C." marked on the top of the cylinder



Straight Type

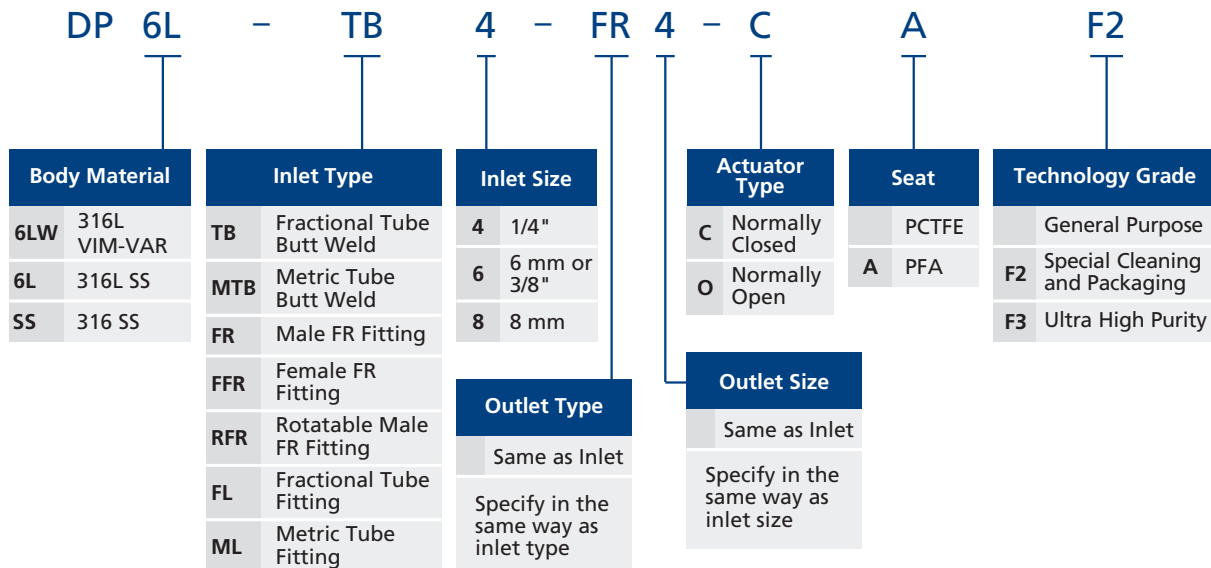
Dimensions

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



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

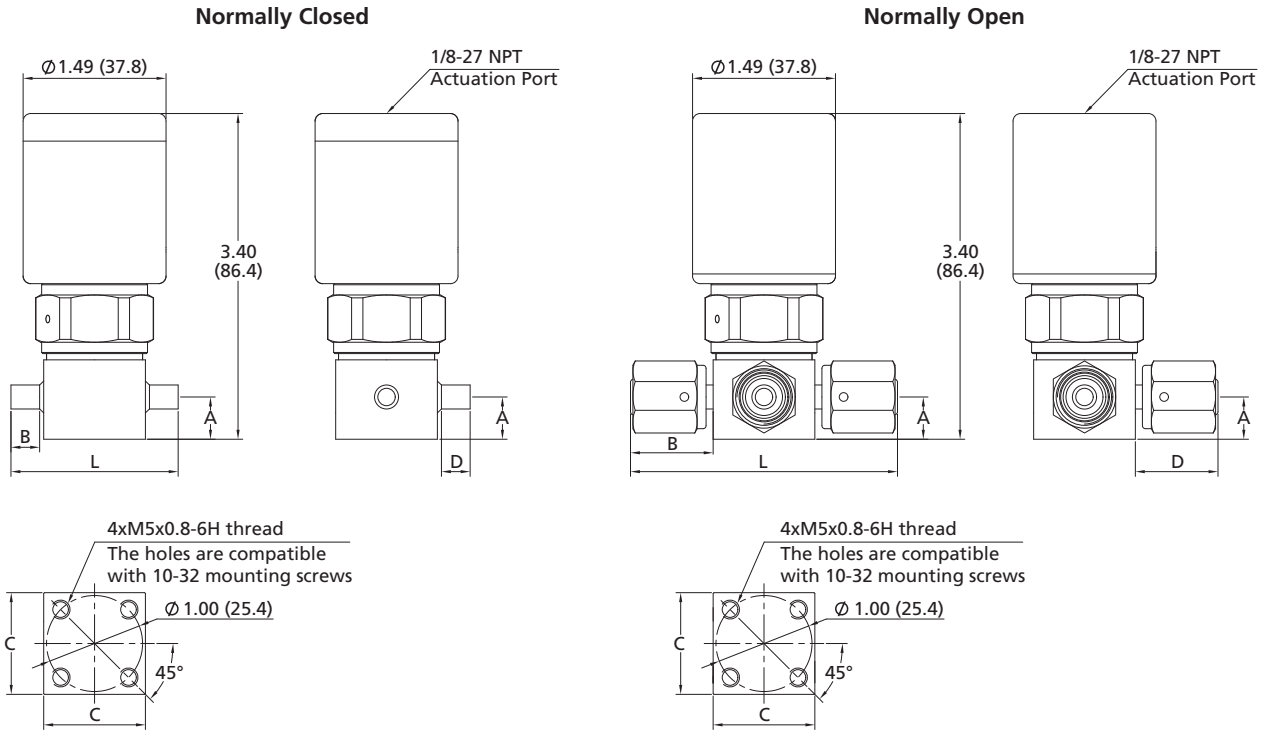
Part Number Description



Branch Type

Dimensions

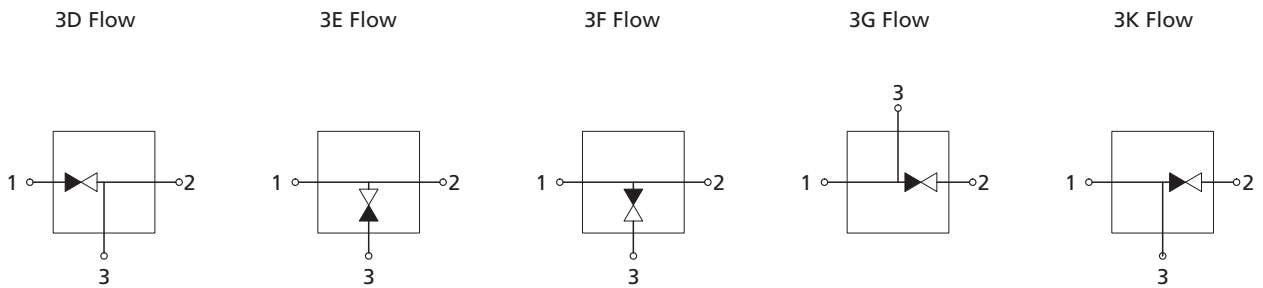
Dimensions, in inches (millimeters), are for reference only.



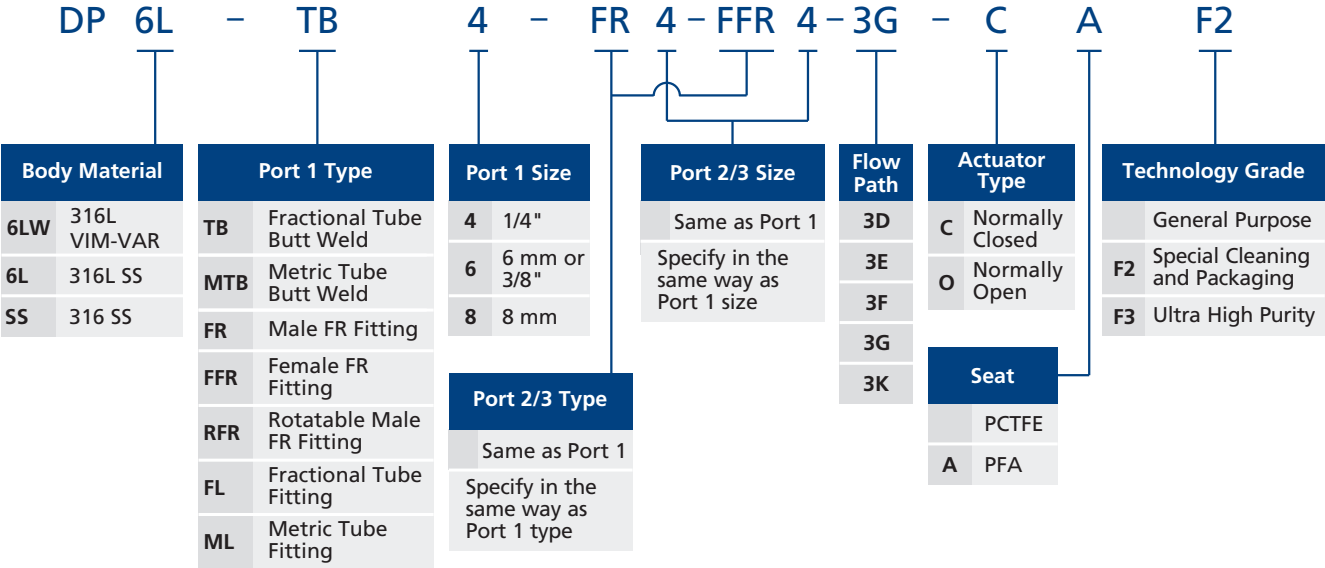
Basic Ordering Number	Connection Type and Size	Dimension in. (mm)				
		A	B	C	D	L
DP□□-TB4-	1/4" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	0.30 (7.6)	1.74 (44.2)
DP□□-TB6-	3/8" Tube Butt Weld	0.44 (11.2)	0.26 (6.6)	1.06 (26.9)	0.26 (6.6)	1.74 (44.2)
DP□□-FFR4-	1/4" Female FR	0.44 (11.2)	0.86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

Flow Paths

☉ Flow paths as viewed from the top



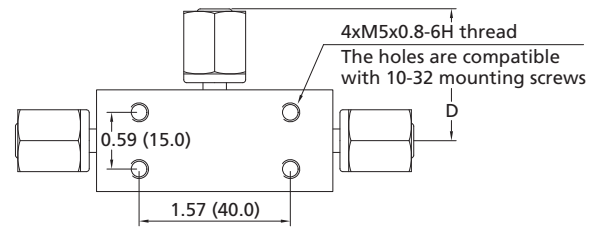
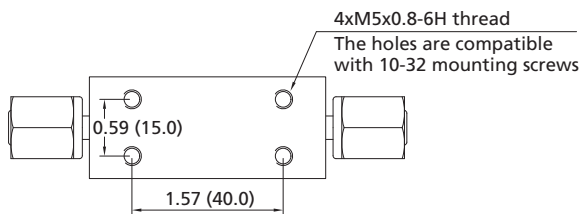
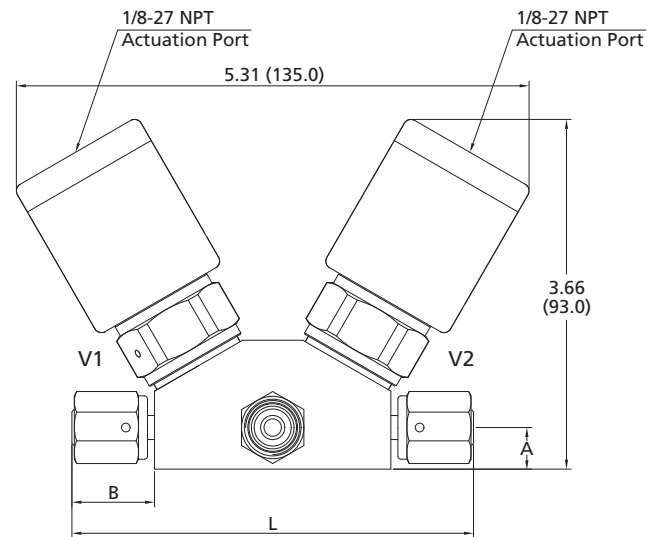
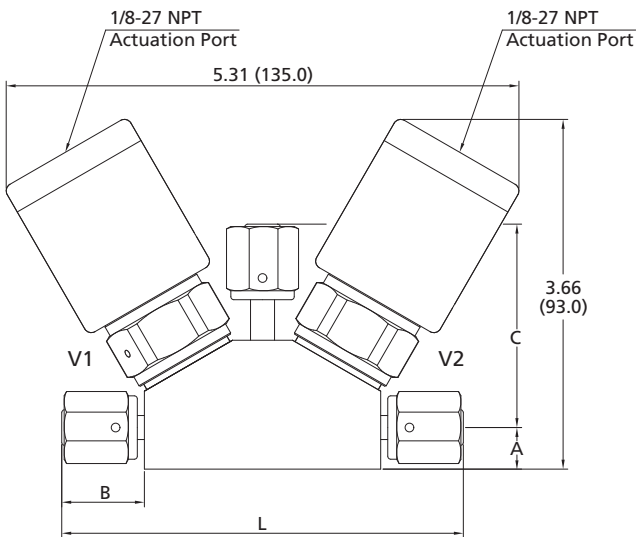
Part Number Description



2-Valve 3-Way Block Type

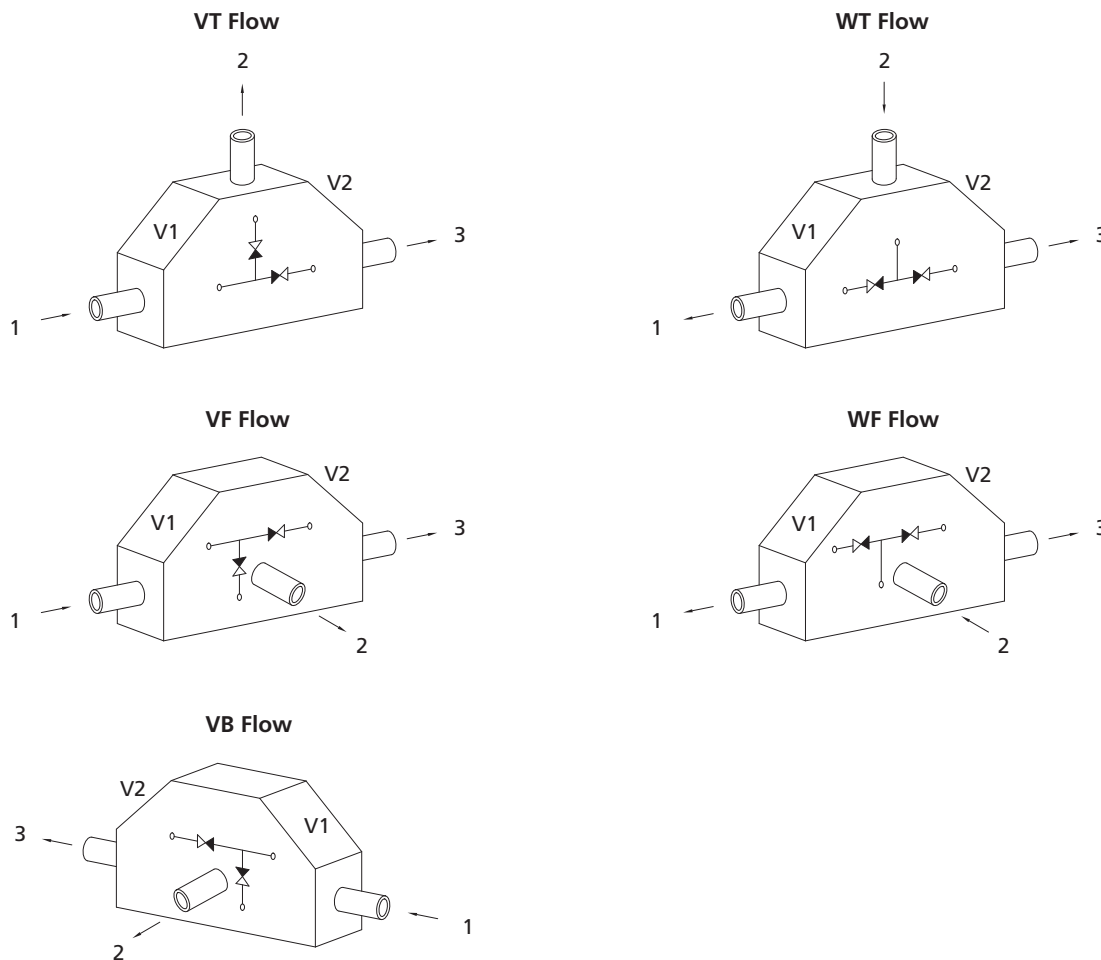
Dimensions

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



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

Flow Paths



Part Number Description

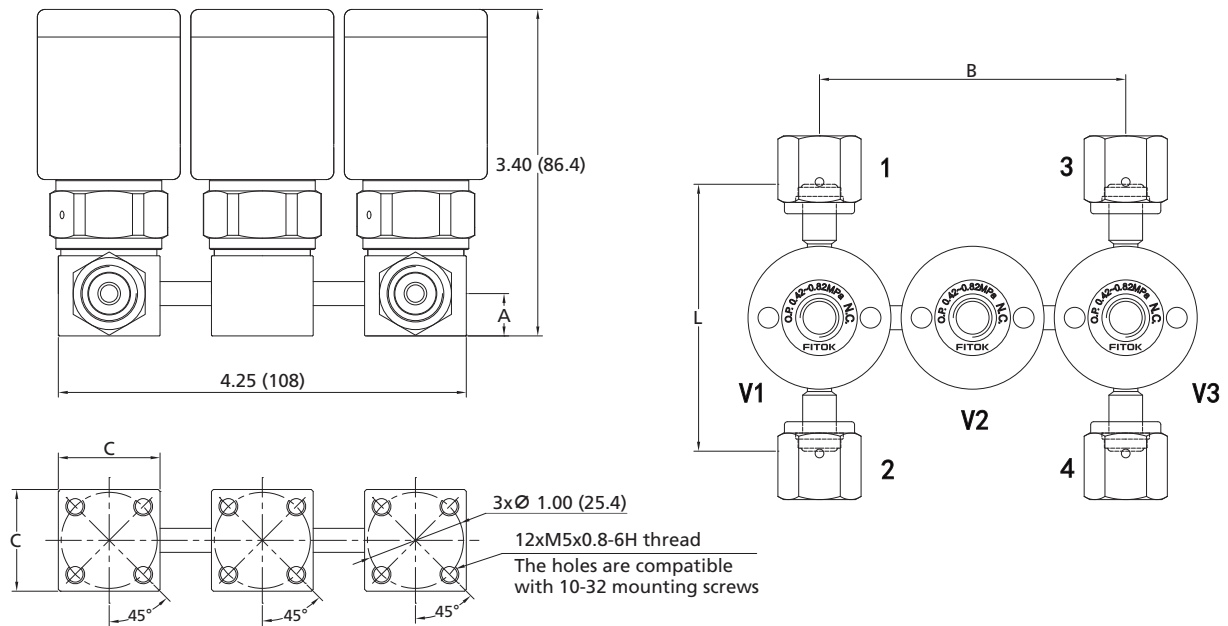
DP 23 6L - FFR 4 - RFR 4 - FFR 4 - VF - CO A F2

Type	Port 1 Type	Port 2/3 Type	Port 2/3 Size	Flow Path	Actuator Type V1 and V2	Technology Grade
23 2 Valves and 3 Ports	FFR Female FR Fitting	Same as Port 1	Same as Port 1	VT	C V1 Closed V2 Closed	General Purpose
	RFR Rotatable Male FR Fitting	Specify in the same way as Port 1 type	Specify in the same way as Port 1 size	VF	O V1 Open V2 Open	F2 Special Cleaning and Packaging
Body Material	Port 1 Size			VB	CO V1 Closed V2 Open	F3 Ultra High Purity
6LW 316L VIM-VAR	4 1/4"			WT	OC V1 Open V2 Closed	Seat
6L 316L SS				WF		PCTFE
SS 316 SS						A PFA

3-Valve 4-Way Block Type

Dimensions

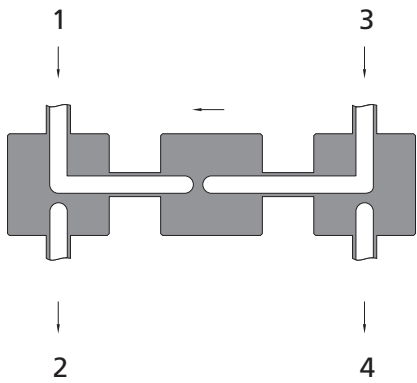
Dimensions, in inches (millimeters), are for reference only.



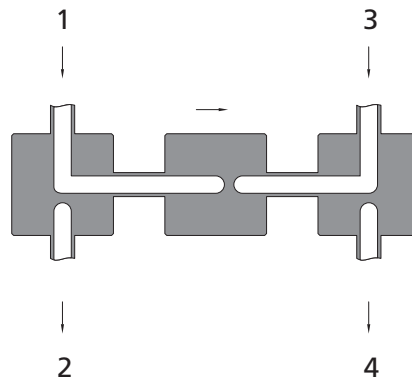
Basic Ordering Number	Connection Type and Size	Dimension in. (mm)			
		A	B	C	L
DP34□□-FFR4-	1/4" Female FR	0.44 (11.2)	3.19 (81.0)	1.06 (26.9)	2.78 (70.6)
DP34□□-RFR4-	1/4" Rotatable Male FR	0.44 (11.2)	3.19 (81.0)	1.06 (26.9)	2.78 (70.6)

Flow Paths

© Flow paths as viewed from the top



GK Flow



KG Flow

Part Number Description

DP34 6L - FFR 4 - RFR 4 - FFR 4 - FFR 4 - GK - C A F3

Type	Body Material	Port 1 Type	Port 2/3/4 Type	Port 2/3/4 Size	Flow Path	Actuator Type	Seat	Technology Grade
3 Valves and 4 Ports	6LW 316L VIM-VAR 6L 316L SS SS 316 SS	FFR Female FR Fittings RFR Rotatable Male FR Fitting	Same as Port 1 Specify in the same way as Port 1 type	Same as Port 1 Specify in the same way as Port 1 size	GK KG	C Normally Closed O Normally Open	PCTFE A PFA	General Purpose F2 Special Cleaning and Packaging F3 Ultra High Purity

Port 1 Size: 4 1/4"

Diaphragm Valves

DH Series High Pressure Springless Diaphragm Valves

Features

- ⦿ Metal diaphragm seal
- ⦿ Elgiloy diaphragm to provide high strength and corrosion resistance
- ⦿ Long cycle life in high pressure application
- ⦿ Manual and pneumatic actuators available

Technical Data

Port Size	1/4" to 3/8" or 6 mm to 8 mm	
Flow Coefficient (Cv)	0.2	
Orifice Size	0.16 in. (4.1 mm)	
Max. Working Pressure	3000 psig (206 bar)	
Pneumatic Actuator Operating Pressure	60 to 90 psig (4.2 to 6.2 bar)	
Temperature	PCTFE: -10~150°F (-23~65°C)	
Leak rate (helium)	Internal	≤ 1x10 ⁻⁹ mbar l/s
	External	≤ 1x10 ⁻⁹ mbar l/s

Flow Data

Air @ 70°F (21°C)

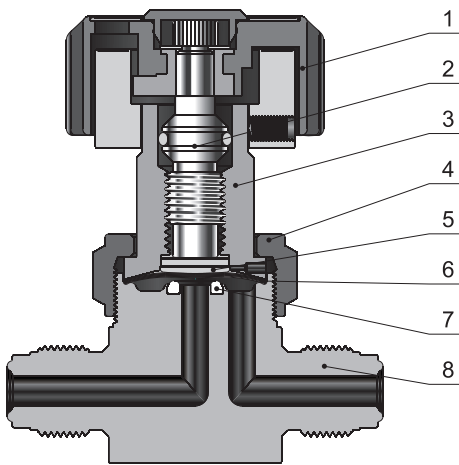
Water @ 60°F (16°C)

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

Product Technology Grade

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

Major Material of Construction



Handle Actuator

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(5)	Elgiloy(3)/AMS 5876 + C17200(2)/ASTM B194
7	Seat	PCTFE/ASTM D1430 or PFA/ASTM D3307
8	Body	316 SS/ASTM A479 or 316L SS/ASTM A479 or 316L VIM-VAR/SEMI F20

Actuators

Handle

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



Pneumatic

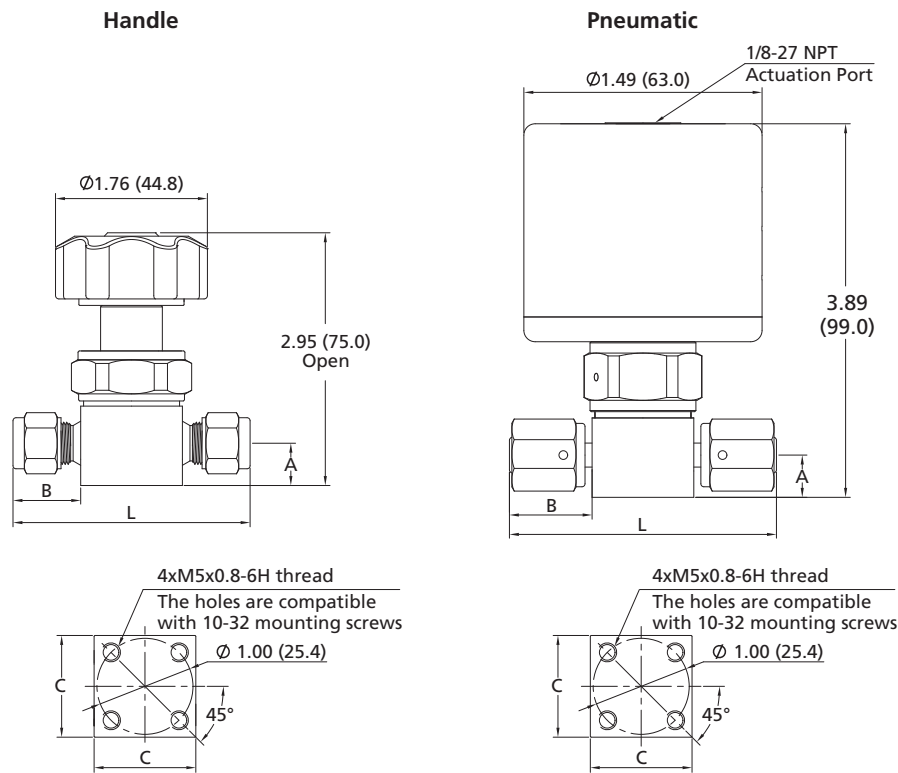
- ⦿ Normally open, "N.O." marked on the top of the cylinder
- ⦿ Normally closed, "N.C." marked on the top of the cylinder



Straight Type

Dimensions

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



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

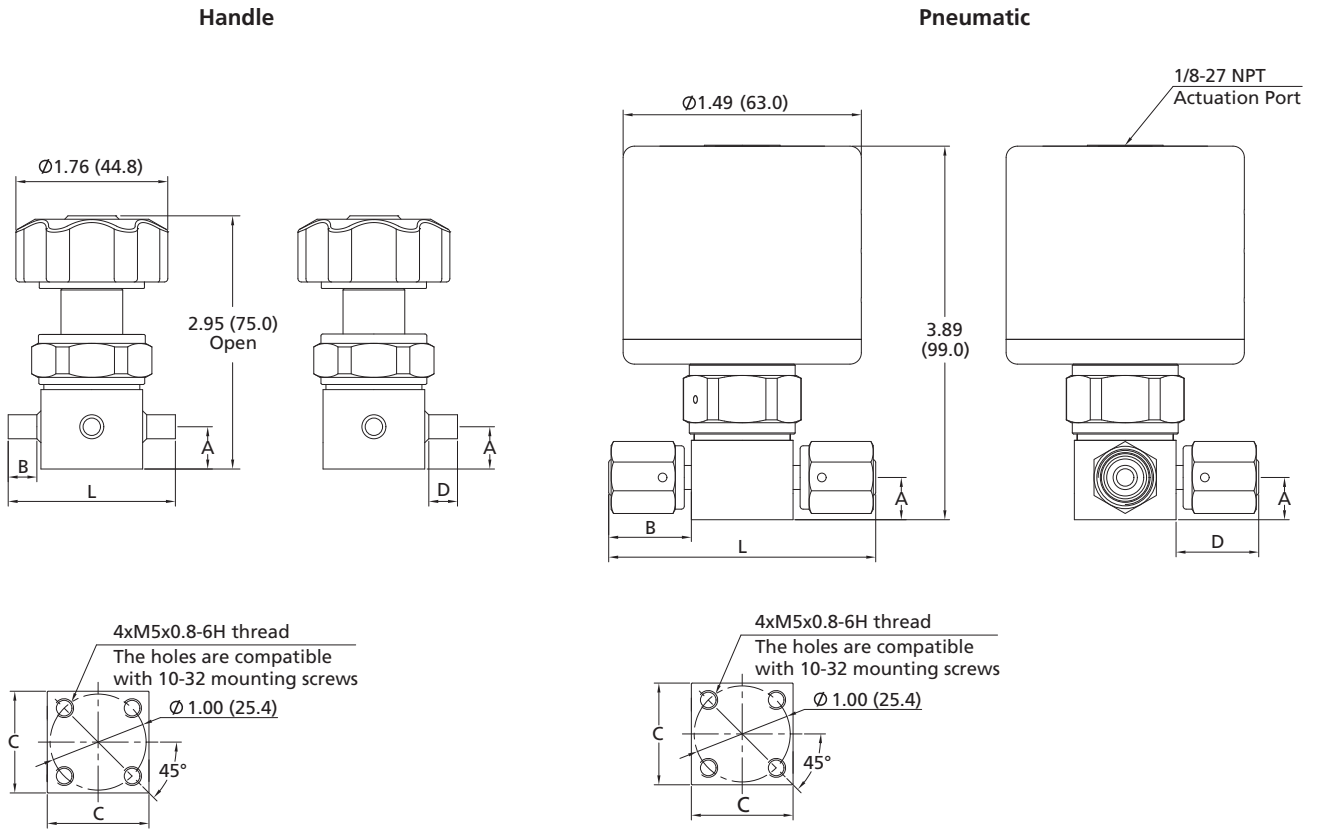
Part Number Description

DH		6L	-	FL	4	-	ML	6	-	C	-	F2
Body Material		Inlet Type		Inlet Size		Outlet Type		Outlet Size		Actuator Type		Technology Grade
6LW	316L VIM-VAR	TB	Fractional Tube Butt Weld	4	1/4"		Same as Inlet		R	Handle		General Purpose
6L	316L SS	MTB	Metric Tube Butt Weld	6	6 mm or 3/8"		Specify in the same way as inlet size		C	Pneumatic Normally Closed	F2	Special Cleaning and Packaging
SS	316 SS	FR	Male FR Fitting	8	8 mm				O	Pneumatic Normally Open	F3	Ultra High Purity
		FFR	Female FR Fitting									
		RFR	Rotatable Male FR Fitting									
		FL	Fractional Tube Fitting									
		ML	Metric Tube Fitting									

Branch Type

Dimensions

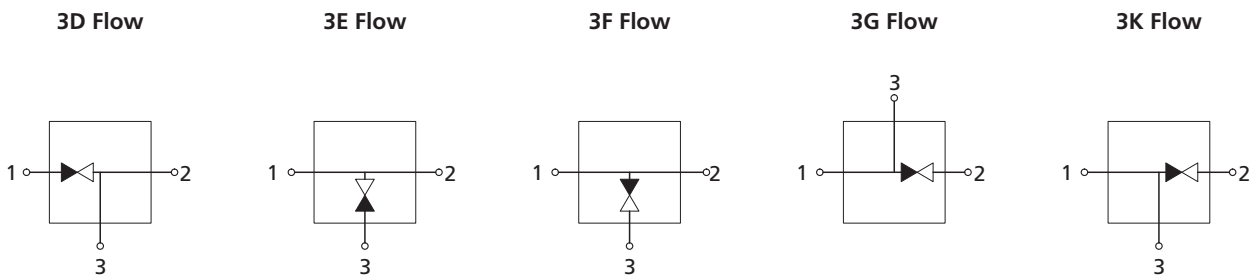
Dimensions, in inches (millimeters), are for reference only.



Basic Ordering Number	Connection Type and Size	Dimension in. (mm)				
		A	B	C	D	L
DH□□-TB4-	1/4" 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" Tube Butt Weld	0.44 (11.2)	0.26 (6.6)	1.06 (26.9)	0.26 (6.6)	1.74 (44.2)
DH□□-FFR4-	1/4" Female FR	0.44 (11.2)	0.86 (21.8)	1.06 (26.9)	0.86 (21.8)	2.78 (70.6)
DH□□-RFR4-	1/4" Rotatable Male FR	0.44 (11.2)	0.86 (21.8)	1.06 (26.9)	0.86 (21.8)	2.78 (70.6)
DH□□-FR4-	1/4" Integral Male FR	0.44 (11.2)	0.62 (15.7)	1.06 (26.9)	0.62 (15.7)	2.30 (58.4)
DH□□-FL4-	1/4" FITOK Tube Fitting	0.44 (11.2)	0.70 (17.9)	1.06 (26.9)	0.70 (17.9)	2.47 (62.7)

Flow Paths

☉ Flow paths as viewed from the top



23 Diaphragm Valves

Part Number Description

DH 6L - TB 4 - TB 4 - FR 4-3F - C F2

Body Material		Port 1 Type		Port 1 Size		Port 2/3 Size		Flow Path	Actuator Type		Technology Grade	
6LW	316L VIM-VAR	TB	Fractional Tube Butt Weld	4	1/4"	Same as Port 1		3D	R	Handle	General Purpose	
6L	316L SS	MTB	Metric Tube Butt Weld	6	6 mm or 3/8"	Specify in the same way as Port 1 size		3E	C	Pneumatic Normally Closed	F2	Special Cleaning and Packaging
SS	316 SS	FR	Male FR Fitting	8	8 mm			3F	O	Pneumatic Normally Open	F3	Ultra High Purity
		FFR	Female FR Fitting					3G	Note: For butt weld connection, pneumatic actuator is not applicable unless no interference when welding.			
		RFR	Rotatable Male FR Fitting			3K						
		FL	Fractional Tube Fitting									
		ML	Metric Tube Fitting									

Port 2/3 Type
Same as Port 1
Specify in the same way as Port 1 type

Diaphragm Valves

DM Series High Pressure Spring Diaphragm Valves

Features

- ⦿ All-metal containment, packless
- ⦿ Repetitive shutoff with fully contained soft-seat stem tip
- ⦿ Position indicator ring for lever handle
- ⦿ Reduced seat volume
- ⦿ Fully functional under vacuum conditions
- ⦿ Different handle types and pneumatic actuators available

Technical Data

Port Size		1/4" to 3/8" or 6 mm to 8 mm
Flow Coefficient (Cv)	Lever Handle	0.14
	Round Handle	0.3
	Pneumatic Actuator	0.2
Orifice Size		0.16 in. (4.1 mm)
Max. Working Pressure		3500 psig (241 bar)
Pneumatic Actuator Operating Pressure		60 to 90 psig (4.2 to 6.2 bar)
Temperature		PCTFE: -10~150°F (-23~65°C) Vespel: -10~250°F (-23~121°C)
Leak Rate (helium)	Internal	$\leq 4 \times 10^{-9}$ mbar l/s
	External	$\leq 4 \times 10^{-9}$ mbar l/s

Flow Data

Air @ 70°F (21°C)

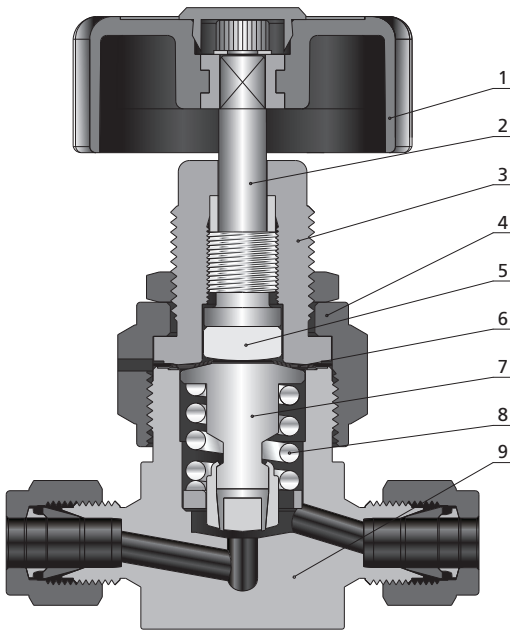
Water @ 60°F (16°C)

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

Product Technology Grade

Product Grade Technology	General Purpose	Special Cleaning and Packaging	Ultra High Purity
Material/Specification	316 SS/ASTM A479 or 316L SS/ASTM A479		316L SS/ASTM A479
Wetted Surface Roughness	Ra 25 µin. (0.64 µm)	Ra 10 µin. (0.25 µm)	
Polishing Process	Machine finished	Electropolished	
Cleaning and Packaging Specification	FC-01 Standard Cleaning and Packaging	FC-02 Special Cleaning and Packaging	FC-03 Ultra High Purity Cleaning and Packaging
Cleaning Process	Thrice degreasing ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultra high purity cleaning in continuously monitored ultrasonic cleaning system with deionized water
Assembly Environment	At atmosphere	In specially cleaned areas	In Class 100 cleanroom
Packaging Process	Individually bagged	Individually bagged	Double bagged and vacuum sealed in cleanroom

Major Material of Construction



Round Handle Actuator

Item	Component	Material/Specification
1	Handle	ABS or Aluminum
2	Actuator	416 SS/ASTM A582
3	Bonnet	316 SS/ASTM A479
4	Bonnet Nut	316 SS/ASTM A479
5	Button	C36000/ASTM B16
6	Diaphragm(3)	Elgiloy/AMS 5876
7	Stem	316L SS/ASTM A479
8	Spring	316 SS/ASTM A313
9	Body	316 SS/ASTM A479 or 316L SS/ASTM A479
10	Seat	PCTFE/ASTM D1430 or Vespel

Actuators

Lever Handle

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



Round Handle

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



Pneumatic

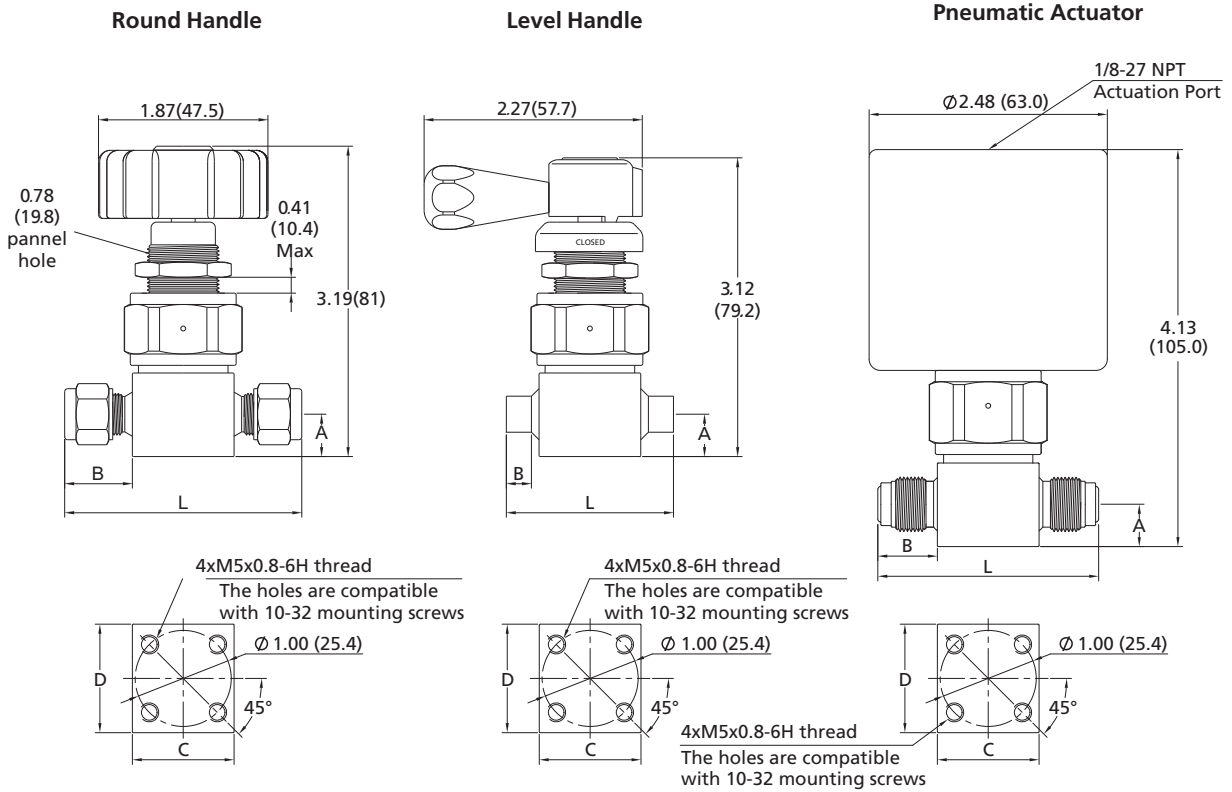
- ⦿ Normally open, "N.O." marked on the top of the cylinder
- ⦿ Normally closed, "N.C." marked on the top of the cylinder



Straight Type

Dimensions

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

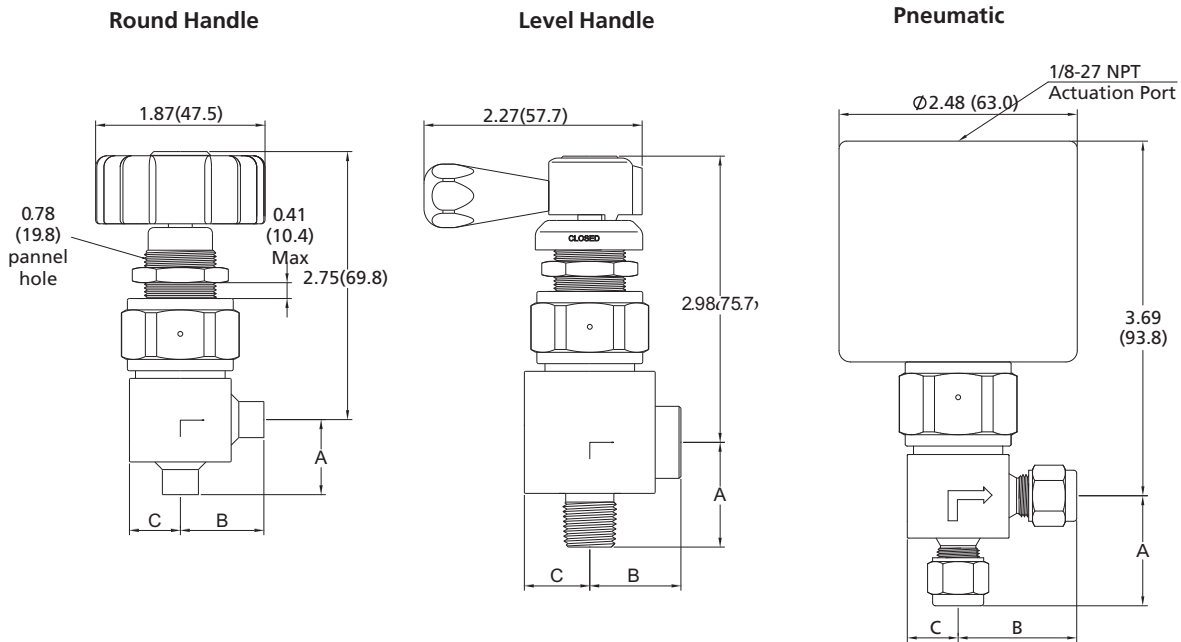


Basic Ordering Number	Connection Type and Size	Dimension in. (mm)				
		A	B	C	D	L
DM□□-FL4-	1/4" FITOK Tube Fitting	0.44 (11.2)	0.70 (17.9)	1.06 (26.9)	1.13 (28.7)	2.46 (62.5)
DM□□-FL6-	3/8" FITOK Tube Fitting	0.44 (11.2)	0.76 (19.3)	1.06 (26.9)	1.13 (28.7)	2.58 (65.5)
DM□□-ML6-	6 mm FITOK Tube Fitting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

Angle Type

Dimensions

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



Basic Ordering Number	Connection Type and Size	Dimension in. (mm)		
		A	B	C
DM□□-FL4-	1/4" FITOK Tube Fitting	1.14 (29.1)	1.23 (31.3)	0.53 (13.4)
DM□□-ML6-	6mm FITOK Tube Fitting	1.14 (29.1)	1.23 (31.3)	0.53 (13.4)
DM□□-TB6-	3/8" Tube Butt Weld	0.78 (19.8)	0.87 (22.0)	0.53 (13.4)
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			

Part Number Description

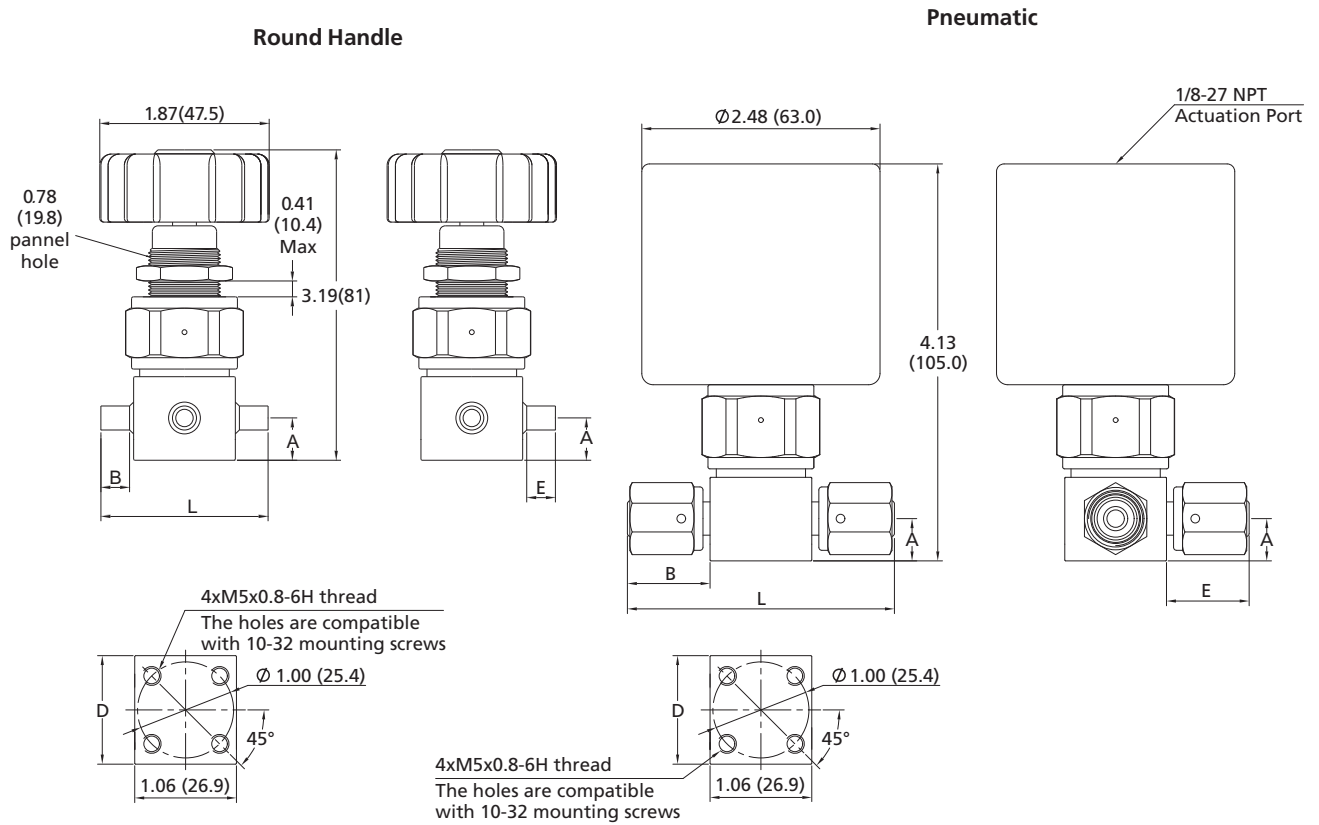
DM SS - FL 4 - ML6 - A C V F2

Body Material	Inlet Type	Inlet Size	Flow Path	Actuator Type	Technology Grade
6L 316L SS	TB Fractional Tube Butt Weld	4 1/4"	Straight	R Round Handle	General Purpose
SS 316 SS	MTB Metric Tube Butt Weld	6 6 mm or 3/8"	A Angle	L Lever Handle	F2 Special Cleaning and Packaging
	FR Male FR Fitting	8 8 mm or 1/2"		C Pneumatic Normally Closed	F3 Ultra High Purity
	FFR Female FR Fitting			O Pneumatic Normally Open	
	FL Fractional Tube Fitting	Outlet Type		Note: For butt weld connection, pneumatic actuator is not applicable unless no interference when welding.	Stem Tip Material
	ML Metric Tube Fitting	Same as Inlet	Specify in the same way as inlet size		PCTFE
	NS Male NPT	Specify in the same way as inlet type			V Vespel
	FNS Female NPT				

Branch Type

Dimensions

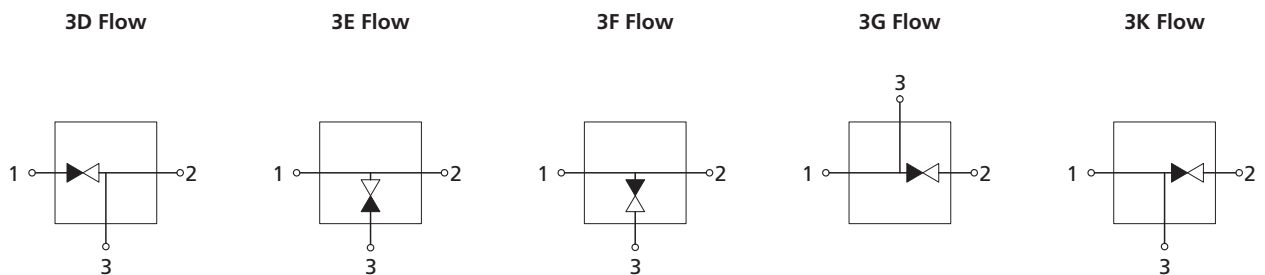
Dimensions, in inches (millimeters), are for reference only.



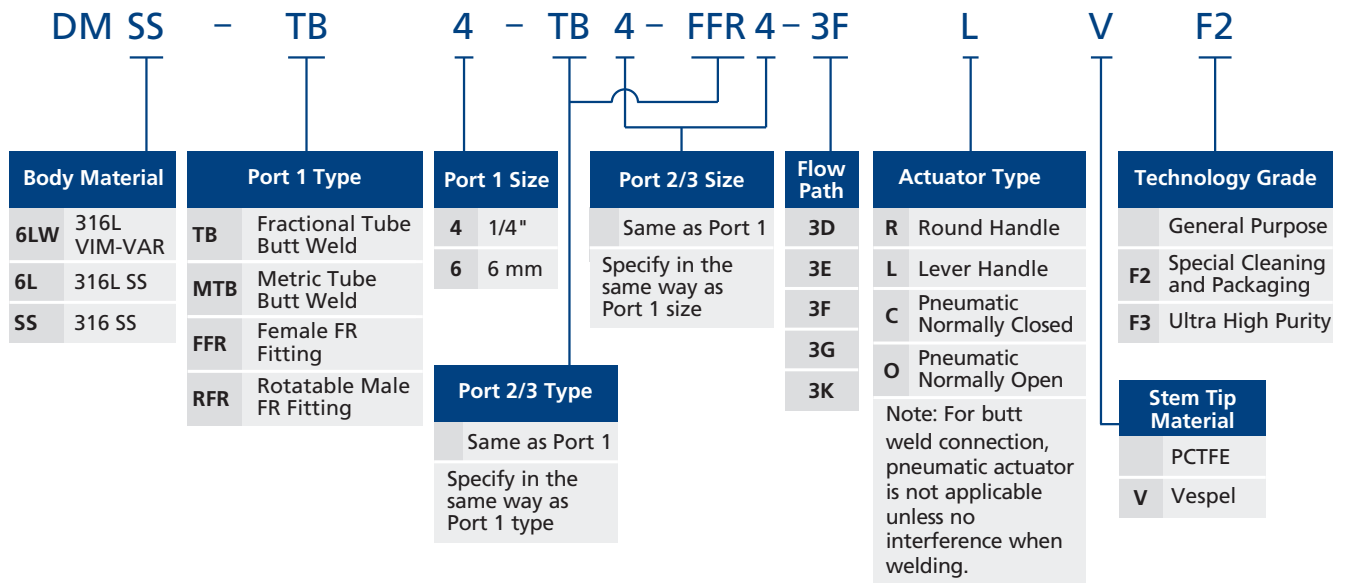
Basic Ordering Number	Connection Type and Size	Dimension in. (mm)				
		A	B	D	E	L
DM□□-TB4-	1/4" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.13 (28.7)	0.30 (7.6)	1.74 (44.2)
DM□□-MTB6-	6mm Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.13 (28.7)	0.30 (7.6)	1.74 (44.2)
DM□□-FFR4-	1/4" Female FR	0.44 (11.2)	0.85 (21.6)	1.13 (28.7)	0.85 (21.6)	2.76 (70.1)
DM□□-RFR4-	1/4" Rotatable Male FR	0.44 (11.2)	1.21 (30.7)	1.13 (28.7)	1.21 (30.7)	3.48 (88.4)

Flow Paths

☉ Flow paths as viewed from the top



Part Number Description



Diaphragm Valves

DS Series High Pressure Compact Diaphragm Valves

Features

- ⦿ Reduced inner volume
- ⦿ Packless diaphragm seal to ensure high purity
- ⦿ Minimized number of components
- ⦿ Manual and pneumatic actuators available
- ⦿ Aluminum piston to increase operation speed

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.(3.0mm)
Max. Working Pressure	Handle	4500 psig (310 bar)	
	Pneumatic	3000 psig (206 bar)	
Pneumatic Actuator Operating Pressure			60 to 90 psig (4.2 to 6.2 bar)
Temperature			PCTFE: -10~150°F (-23~65°C) Vespel: -10~250°F (-23~121°C)
Leak Rate (helium)	Internal	≤1x10 ⁻⁹ mbar l/s	
	External	≤1x10 ⁻⁹ mbar l/s	

Flow Data

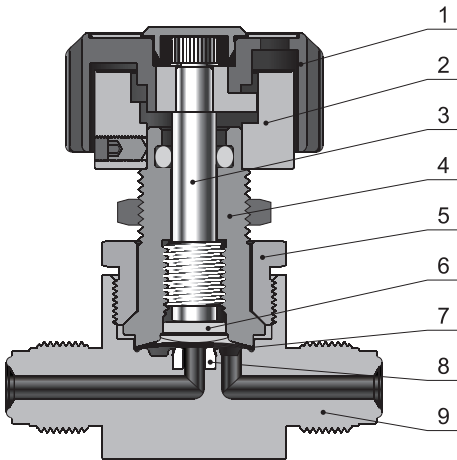
Air @ 70°F (21°C)
Water @ 60°F (16°C)

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

Product Technology Grade

Product Grade	General Purpose	Special Cleaning and Packaging	Ultra High Purity
Material/Specification	316 SS/ASTM A479 316L SS/ASTM A479		316L SS/ASTM A479 316L VIM-VAR /SEMI F20
Wetted Surface Roughness	Ra 25 μin. (0.64 μm)	Ra 10 μin. (0.25 μm)	
Polishing Process	Machine finished	Electropolished	
Cleaning and Packaging Specification	FC-01 Standard Cleaning and Packaging	FC-02 Special Cleaning and Packaging	FC-03 Ultra High Purity Cleaning and Packaging
Cleaning Process	Thrice degreasing ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultra high purity cleaning in continuously monitored ultrasonic cleaning system with deionized water
Assembly Environment	At atmosphere	In specially cleaned areas	In Class 100 cleanroom
Packaging Process	Individually bagged	Individually bagged	Double bagged and vacuum sealed in cleanroom

Major Material of Construction



Handle Actuator

Item	Component	Material/Specification
1	Handle	ABS
2	Actuator	Aluminum
3	Stem	316 SS/ASTM A479
4	Bonnet	S17400/ASTM A564
5	Bonnet Nut	316 SS/ASTM A479
6	Button	316 SS/ASTM A479
7	Diaphragm(5)	Elgiloy(3)/AMS 5876 + C17200(2)/ASTM B194
8	Seat	PCTFE/ASTM D1430 or Vespel
9	Body	316 SS/ASTM A479 or 316L SS/ASTM A479 or 316L VIM-VAR/SEMI F20

Actuators

Handle

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



Pneumatic

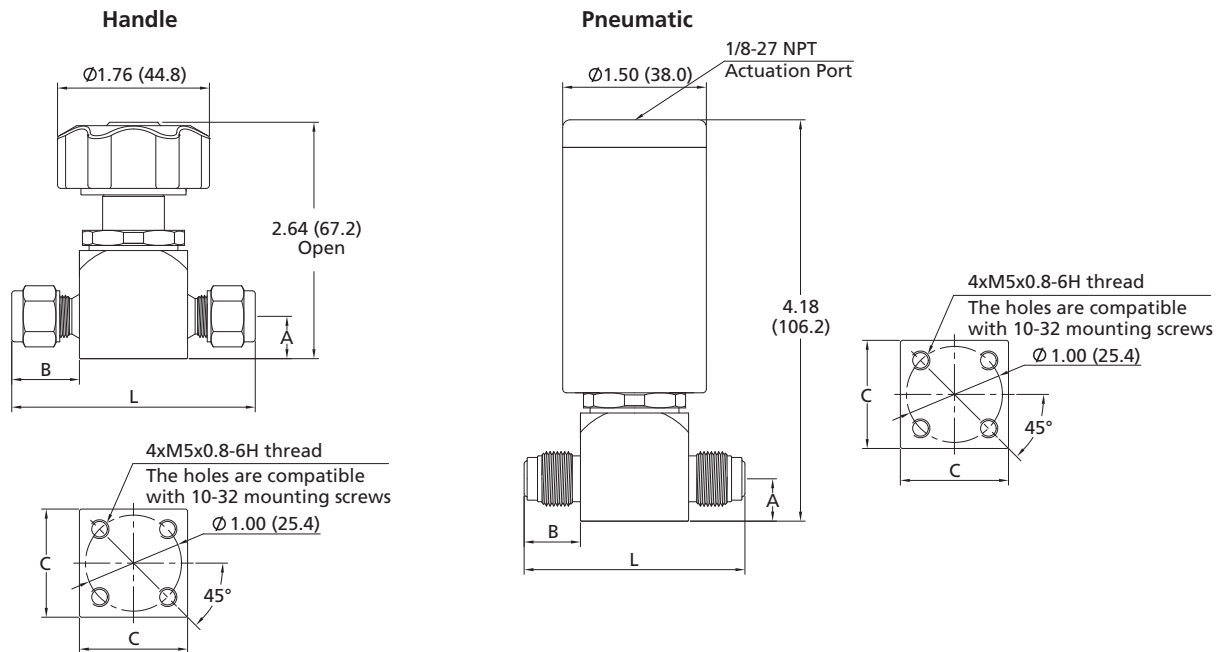
- ⦿ Normally open, "N.O." marked on the top of the cylinder
- ⦿ Normally closed, "N.C." marked on the top of the cylinder



Straight Type

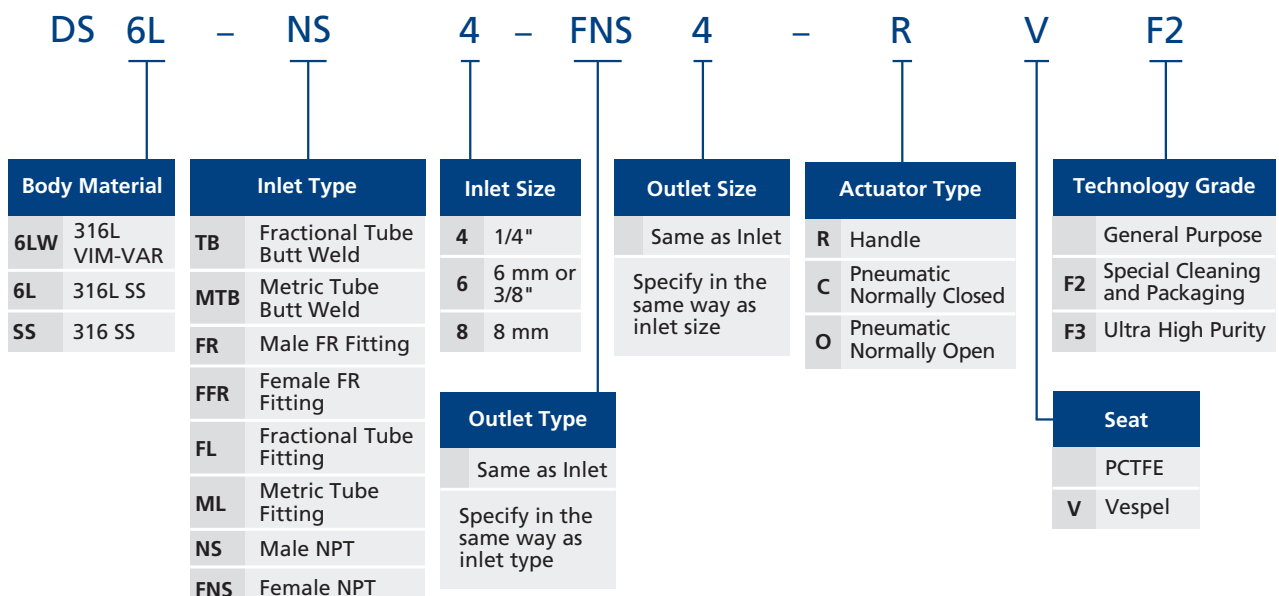
Dimensions

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



Basic Ordering Number	Connection Type and Size	Dimension in. (mm)			
		A	B	C	L
DS□□-TB4-	1/4" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.12 (28.6)	1.81 (45.9)
DS□□-TB6-	3/8" Tube Butt Weld	0.44 (11.2)	0.26 (6.6)	1.12 (28.6)	1.81 (45.9)
DS□□-FFR4-	1/4" Female FR	0.44 (11.2)	0.86 (21.8)	1.12 (28.6)	2.85 (72.3)
DS□□-FR4-	1/4" Integral Male FR	0.44 (11.2)	0.58 (14.9)	1.12 (28.6)	2.30 (58.4)
DS□□-FL4-	1/4" FITOK Tube Fitting	0.44 (11.2)	0.70 (17.9)	1.12 (28.6)	2.54 (64.4)
DS□□-NS4-	1/4" Male NPT	0.44 (11.2)	0.56 (14.2)	1.12 (28.6)	2.24 (57.0)
DS□□-FNS4-	1/4" Female NPT	0.44 (11.2)	—	1.12 (28.6)	2.36 (60.0)

Part Number Description



2-Valve 3-Way Block Type

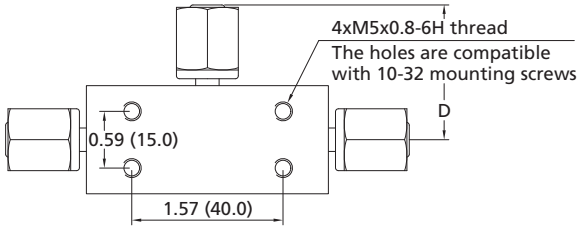
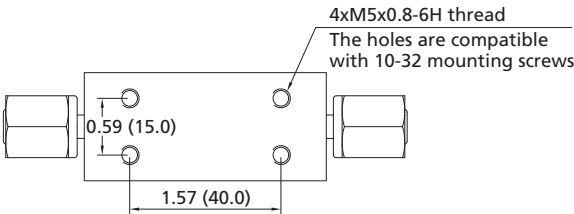
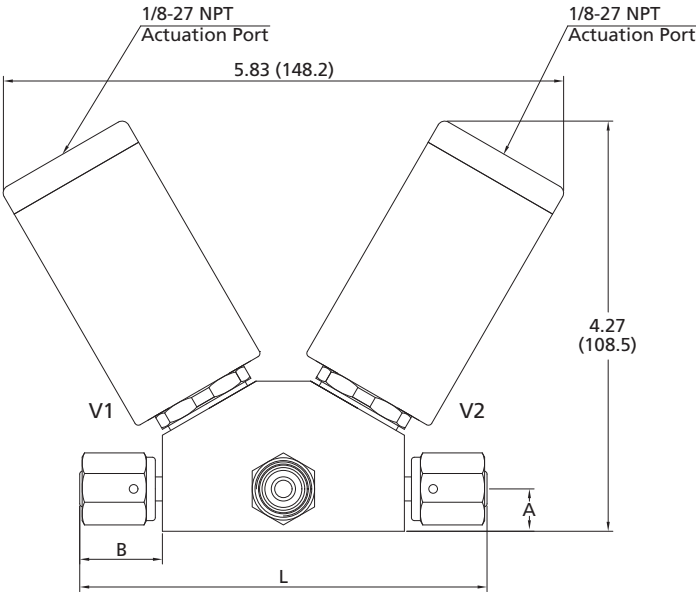
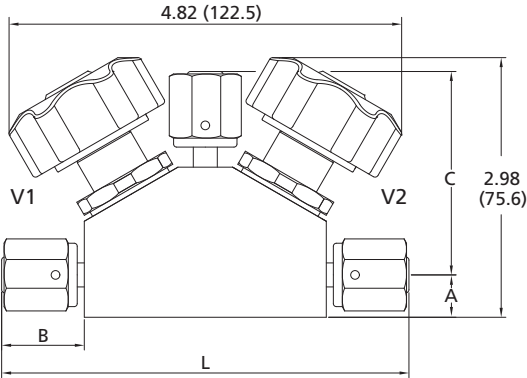
Dimensions

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



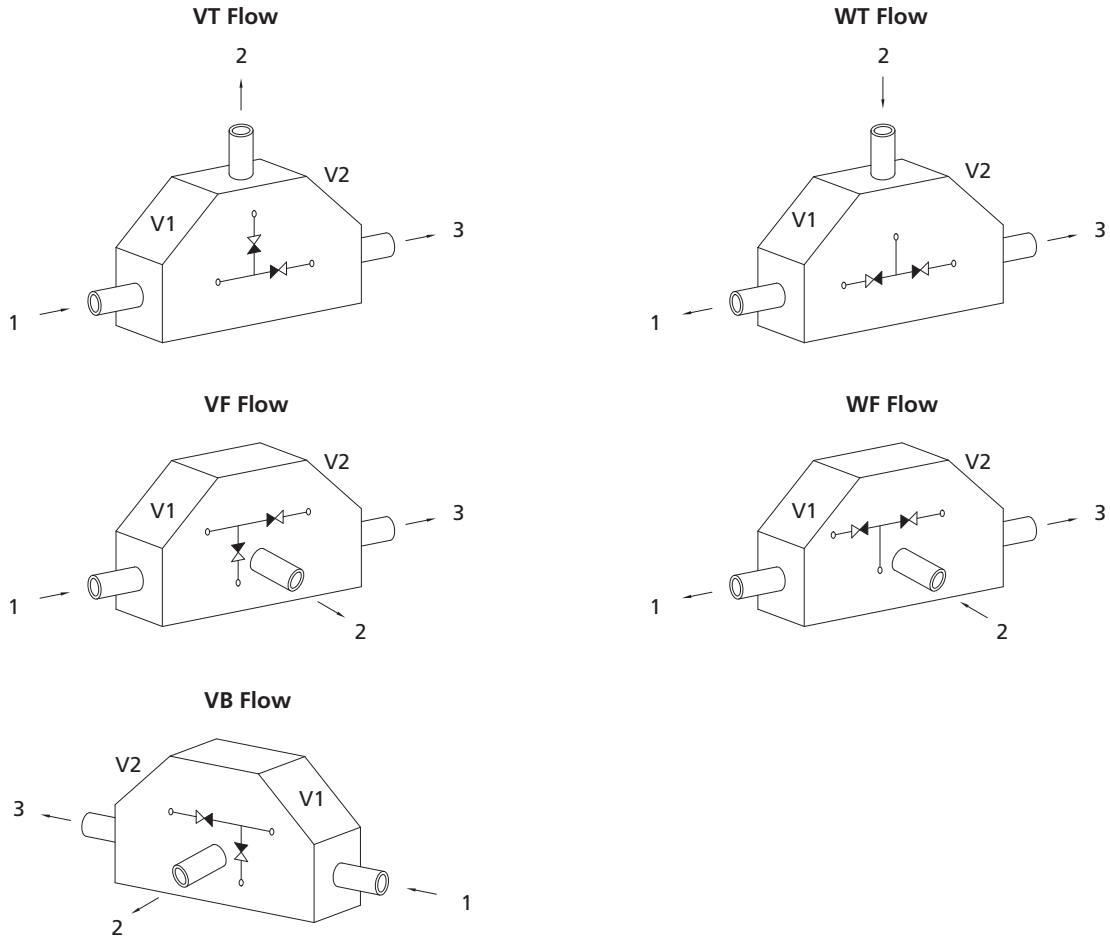
Handle

Pneumatic



Basic Ordering Number	Connection Type and Size	Dimension in. (mm)				
		A	B	C	D	L
DS23□□-FFR4-	1/4" Female FR	0.44 (11.2)	0.86 (21.8)	2.59 (65.7)	—	4.24 (107.6)
DS23□□-FFR4-	1/4" Female FR	0.44 (11.2)	0.86 (21.8)	—	1.54 (39.1)	4.24 (107.6)
DS23□□-FNS4-	1/4" Female NPT	0.44 (11.2)	—	—	0.68 (17.3)	3.07 (78.0)

Flow Paths



Part Number Description

DS	23	6L	-	FFR	4	RFR	4	-	FFR	4	-	VF	-	CO	V	F2
Type	2 Valves and 3 Ports	Body Material		Port 1 Type		Port 2/3 Type			Port 2/3 Size			Flow Path		Actuator Type V1 and V2		Technology Grade
23		6LW 316L VIM-VAR 6L 316L SS SS 316 SS		FFR Female FR Fitting RFR Rotatable Male FR Fitting FNS Female NPT	4 1/4"	Same as Port 1 Specify in the same way as Port 1 type	Same as Port 1 Specify in the same way as Port 1 size				VT VF VB WT WF	R All Handles C Pneumatic all Closed O Pneumatic all Open RC V1 Handle V2 Closed RO V1 Handle V2 Open CR V1 Closed V2 Handle OR V1 Open V2 Handle CO V1 Closed V2 Open OC V1 Open V2 Closed	F2 Special Cleaning and Packaging F3 Ultra High Purity			
															Seat	
															PCTFE V Vespel	

Diaphragm Valves

DR Series Low Pressure/Medium Flow Diaphragm Valves

Features

- ⦿ For medium flow applications
- ⦿ Minimum particle generation and dead space
- ⦿ Fully contained seat to provide excellent resistance to swelling and contamination
- ⦿ Elgiloy diaphragm to provide high strength and corrosion resistance to ensure long cycle life
- ⦿ Manual and pneumatic actuators available

Technical Data

Port Size	3/8" to 1/2" or 10 mm to 12 mm	
Flow Coefficient (Cv)	0.7	
Orifice Size	0.31 in. (7.9 mm)	
Max. Working Pressure	145 psig (10 bar)	
Pneumatic Actuator Operating Pressure	60 to 90 psig (4.2 to 6.2 bar)	
Temperature	PCTFE: -10~150°F (-23~65°C) PFA: -10~302°F (-23~150°C)	
Leak Rate (helium)	Internal	≤1x10 ⁻⁹ mbar l/s
	External	≤1x10 ⁻⁹ mbar l/s

Flow Data

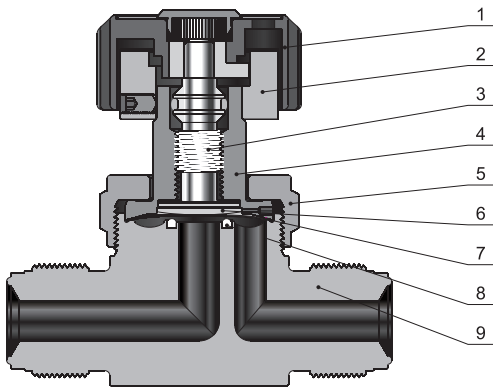
Air @ 70°F (21°C)
Water @ 60°F (16°C)

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

Product Technology Grade

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

Major Material of Construction



Item	Component	Material/Specification
1	Handle	ABS
2	Actuator	Aluminum
3	Stem	316 SS/ASTM A479
4	Bonnet	S17400/ASTM A564
5	Bonnet Nut	316 SS/ASTM A479
6	Button	316 SS/ASTM A479
7	Diaphragm(2)	Elgiloy/AMS 5876
8	Seat	PCTFE/ASTM D1430 or PFA/ASTM D3307
9	Body	316 SS/ASTM A479 or 316L SS/ASTM A479 or 316L VIM-VAR/SEMI F20

Handle Actuator

Actuators

Handle

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



Pneumatic

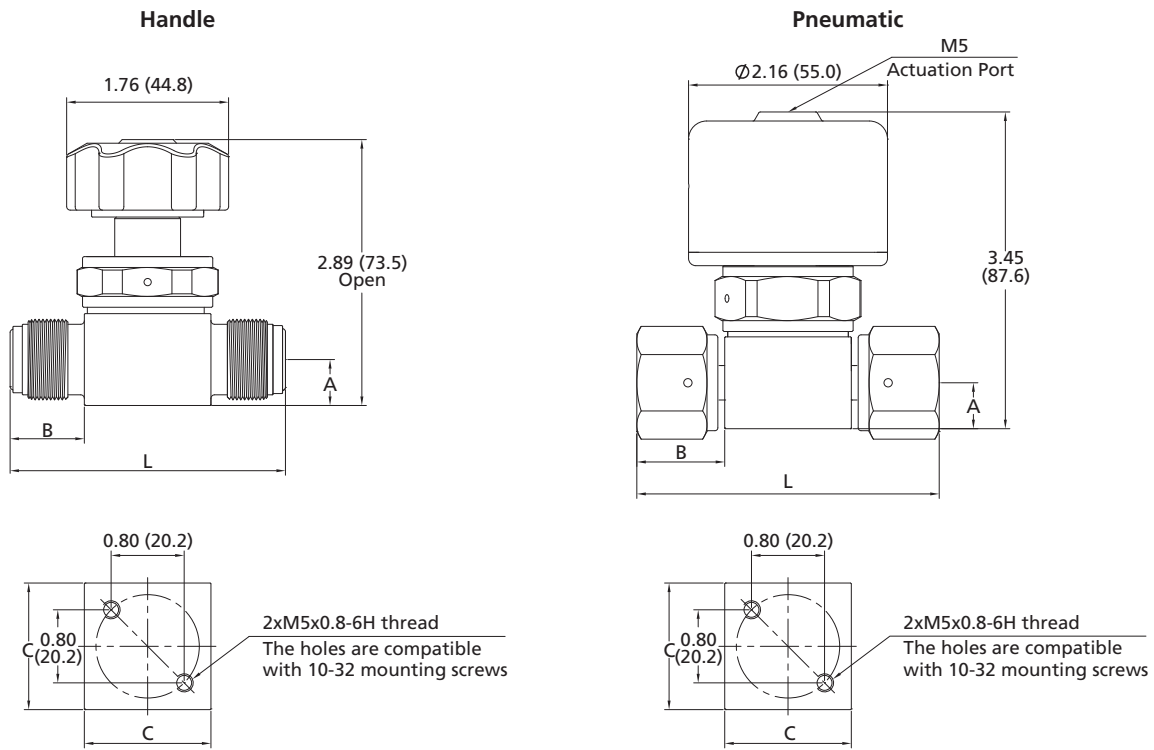
- ⦿ Normally open, "N.O." marked on the top of the cylinder
- ⦿ Normally closed, "N.C." marked on the top of the cylinder



Straight Type

Dimensions

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



Basic Ordering Number	Connection Type and Size	Dimension in. (mm)			
		A	B	C	L
DR□□-TB6-	3/8" Tube Butt Weld	0.50 (12.7)	0.67 (17.0)	1.38 (35.0)	2.72 (69.0)
DR□□-TB8-	1/2" Tube Butt Weld	0.50 (12.7)	0.67 (17.0)	1.38 (35.0)	2.72 (69.0)
DR□□-FFR8-	1/2" Female FR	0.50 (12.7)	0.94 (24.0)	1.38 (35.0)	3.27 (83.0)
DR□□-RFR8-	1/2" Rotatable Male FR	0.50 (12.7)	0.94 (24.0)	1.38 (35.0)	3.27 (83.0)
DR□□-FR8-	1/2" Integral Male FR	0.50 (12.7)	0.81 (20.6)	1.38 (35.0)	3.00 (76.2)

Part Number Description

DR
6L
-
FFR
8
-
RFR
8
-
R
A
F3

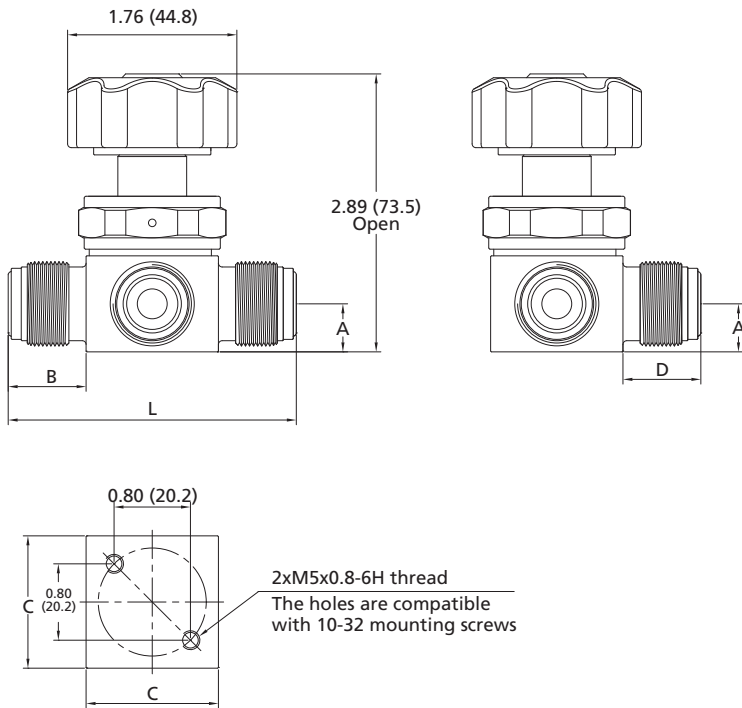
Body Material		Inlet Type		Inlet Size		Actuator Type		Seat		Technology Grade	
6LW	316L VIM-VAR	TB	Fractional Tube Butt Weld	6	3/8"	R	Handle		PCTFE		General Purpose
6L	316L SS	MTB	Metric Tube Butt Weld	8	1/2"	C	Pneumatic Normally Closed	A	PFA	F2	Special Cleaning and Packaging
SS	316 SS	FR	Male FR Fitting	10	10mm	O	Pneumatic Normally Open			F3	Ultra High Purity
		FFR	Female FR Fitting	12	12mm						
		RFR	Rotatable Male FR Fitting	Outlet Type		Outlet Size					
				Same as Inlet		Same as Inlet					
				Specify in the same way as inlet type		Specify in the same way as inlet size					

Branch Type

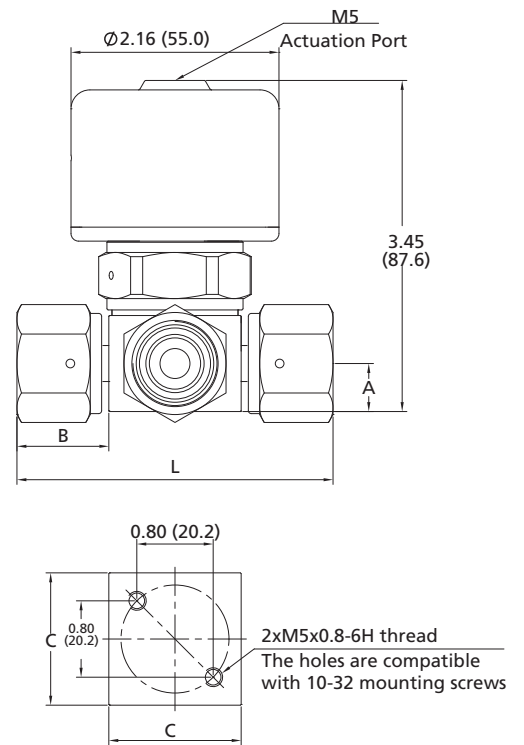
Dimensions

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

Handle



Pneumatic

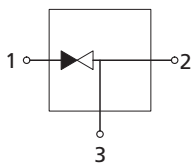


Basic Ordering Number	Connection Type and Size	Dimension in. (mm)				
		A	B	C	D	L
DR□□-TB6-	3/8" Tube Butt Weld	0.50 (12.7)	0.67 (17.0)	1.38 (35.0)	0.67 (17.0)	2.72 (69.0)
DR□□-TB8-	1/2" Tube Butt Weld	0.50 (12.7)	0.67 (17.0)	1.38 (35.0)	0.67 (17.0)	2.72 (69.0)
DR□□-FFR8-	1/2" Female FR	0.50 (12.7)	0.94 (24.0)	1.38 (35.0)	0.94 (24.0)	3.27 (83.0)
DR□□-RFR8-	1/2" Rotatable Male FR	0.50 (12.7)	0.94 (24.0)	1.38 (35.0)	0.94 (24.0)	3.27 (83.0)
DR□□-FR8-	1/2" Integral Male FR	0.50 (12.7)	0.81 (20.6)	1.38 (35.0)	0.81 (20.6)	3.00 (76.2)

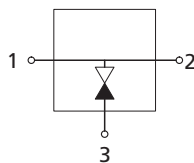
Flow Paths

☉ Flow paths as viewed from the top

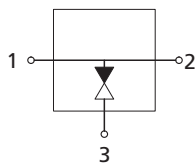
3D Flow



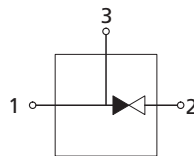
3E Flow



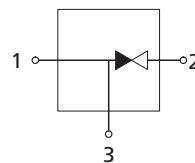
3F Flow



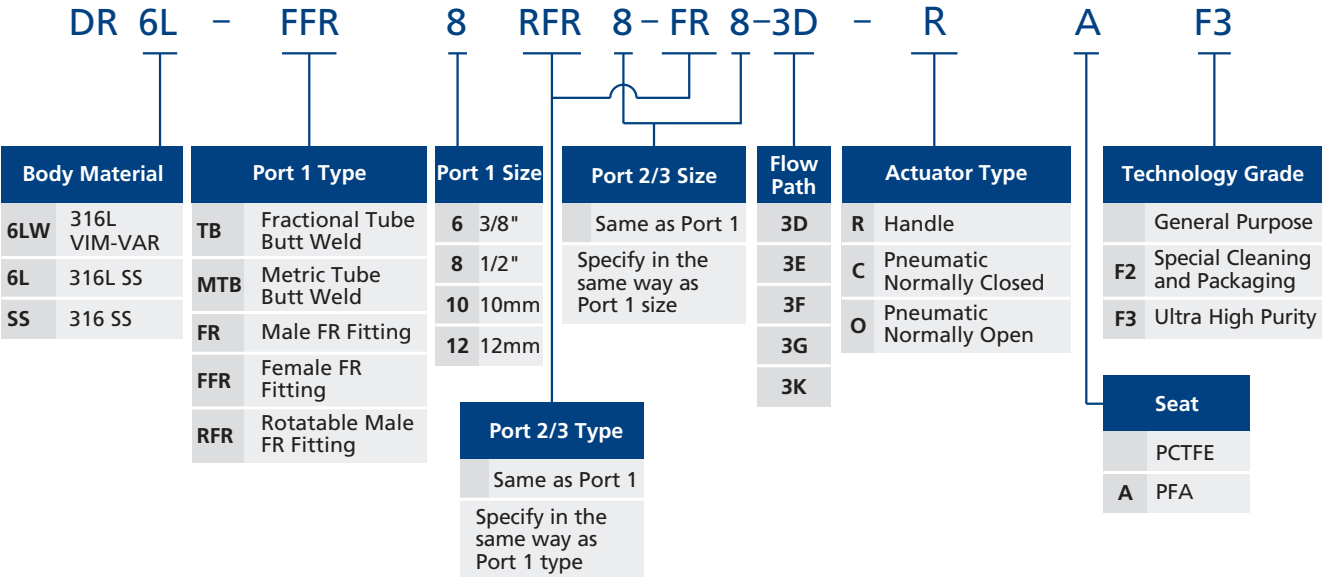
3G Flow



3K Flow



Part Number Description



Diaphragm Valves

DV Series Low Pressure/High Flow Diaphragm Valves

Features

- ⦿ Ideal for high flow applications
- ⦿ Metal-to-metal seal
- ⦿ Tide-diaphragm design to provide positive stem retraction
- ⦿ No spring nor threads in wetted areas to ensure clean operation

Technical Data

Port Size	1/2" to 1" or 12 mm to 18 mm	
Flow Coefficient (Cv)	2.8	
Orifice Size	0.5 in. (12.7 mm)	
Max. Working Pressure	300 psig (20.6 bar)	
Temperature	PCTFE: -10~150°F (-23~65°C) Vespel: -10~250°F (-23~121°C)	
Leak Rate (helium)	Internal	≤1x10 ⁻⁹ mbar l/s
	External	≤1x10 ⁻⁹ mbar l/s

Flow Data

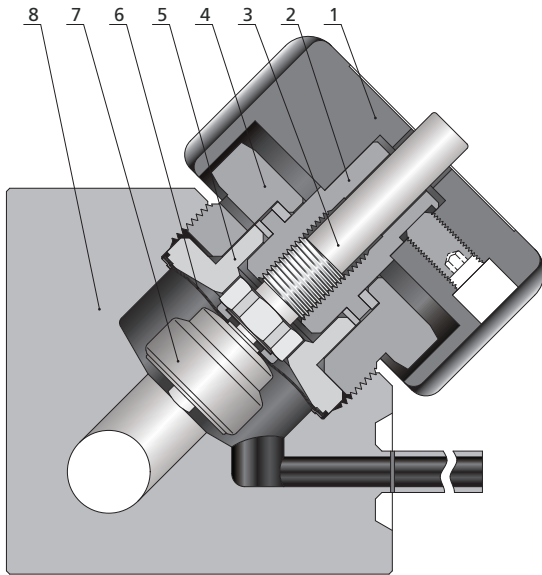
Air @ 70°F (21°C)
Water @ 60°F (16°C)

Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
10 (0.68)	870	34
50 (3.4)	2300	75
100 (6.8)	4100	100

Product Technology Grade

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

Major Material of Construction

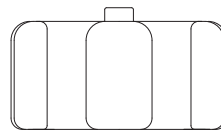


Item	Component	Material/Specification
1	Handle	Aluminum
2	Actuator	316 SS/ASTM A479
3	Upper Stem	316 SS/ASTM A479
4	Bonnet Nut	316 SS/ASTM A479
5	Bonnet	S17400/ASTM A564
6	Diaphragm (2)	Elgiloy/AMS 5876
7	Stem Subassembly	316L SS/ASTM A479 and PCTFE/ASTM D1430 or 316L SS/ASTM A479 and Vespel
8	Body	316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

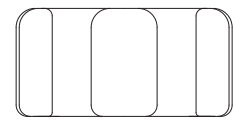
Actuators

Handle

© Upper stem position to indicate open and closed states



OPEN



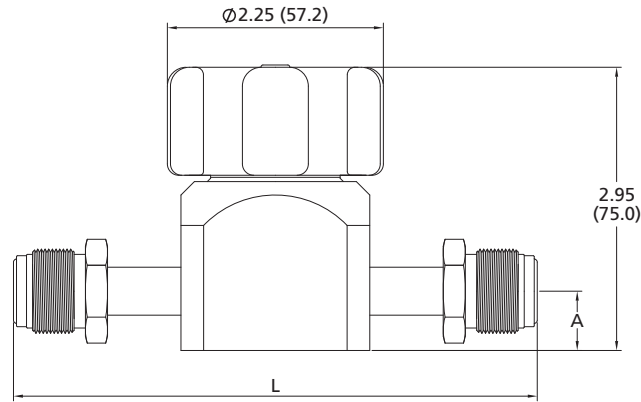
CLOSED

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

Straight Type

Dimensions

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



Basic Ordering Number	Connection Type and Size	Dimension in. (mm)	
		A	L
DV□□-TB8-	1/2" Tube Butt Weld	0.62 (15.7)	5.91 (150.0)
DV□□-TB12-	3/4" Tube Butt Weld	0.62 (15.7)	5.91 (150.0)
DV□□-FR8-	1/2" Male FR	0.62 (15.7)	5.46 (138.7)
DV□□-FFR8-	1/2" Female FR	0.62 (15.7)	5.46 (138.7)
DV□□-FL8-	1/2" FITOK Tube Fitting	0.62 (15.7)	5.69 (144.4)
DV□□-FL12-	3/4" FITOK Tube Fitting	0.62 (15.7)	5.71 (145.0)

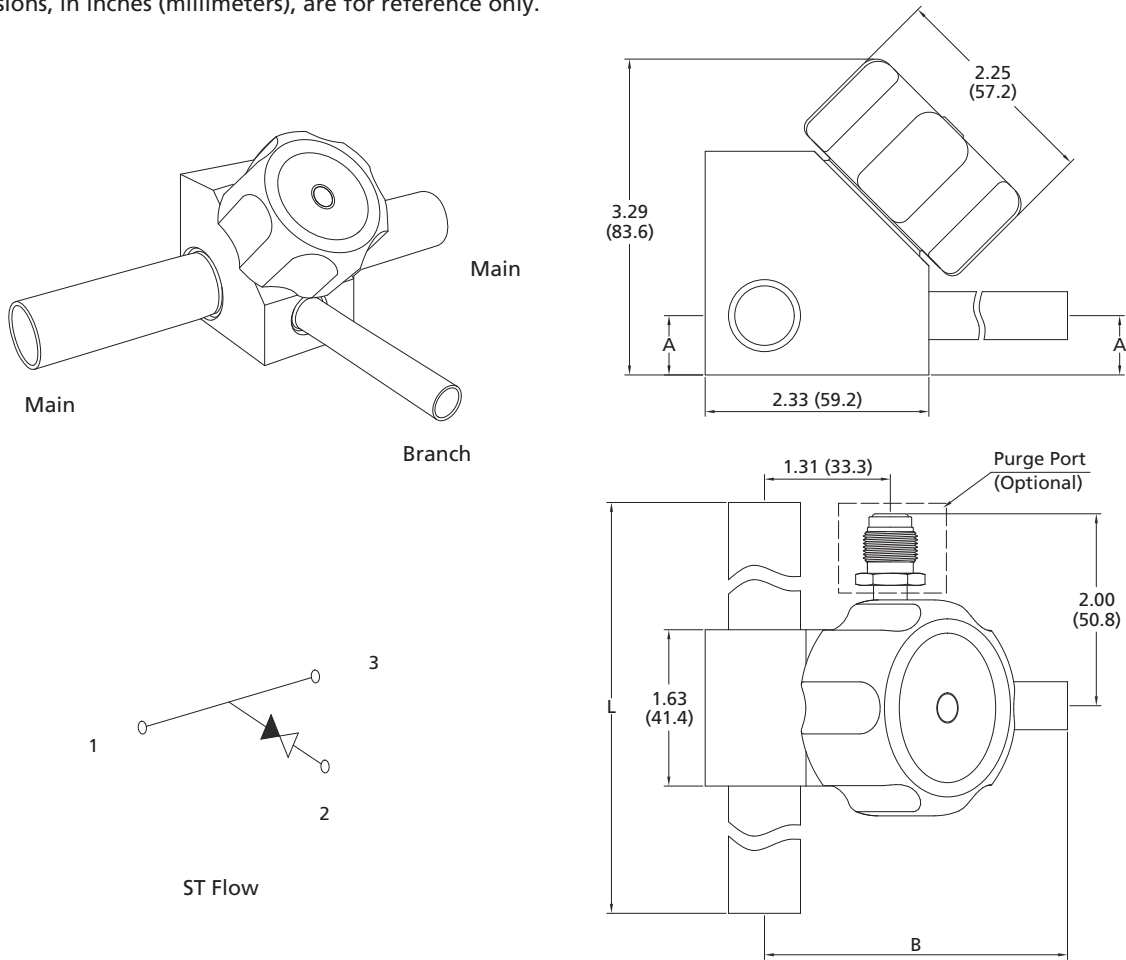
Part Number Description

DV 6L		-	FR		8	-	FL	8	-	V	F2
Body Material		Inlet Type		Inlet Size		Outlet Size		Seat		Technology Grade	
6L	316L SS	TB	Fractional Tube Butt Weld	8	1/2"	Same as Inlet		PCTFE		General Purpose	
SS	316 SS	MTB	Metric Tube Butt Weld	12	12 mm or 3/4"	Specify in the same way as inlet size		V Vespel		F2	Special Cleaning and Packaging
		FR	Male FR Fitting	18	18 mm					F3	Ultra High Purity
		FFR	Female FR Fitting								
		FL	Fractional Tube Fitting								
		ML	Metric Tube Fitting								
				Outlet Type							
				Same as Inlet							
				Specify in the same way as inlet type							

Branch Type

Dimensions

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

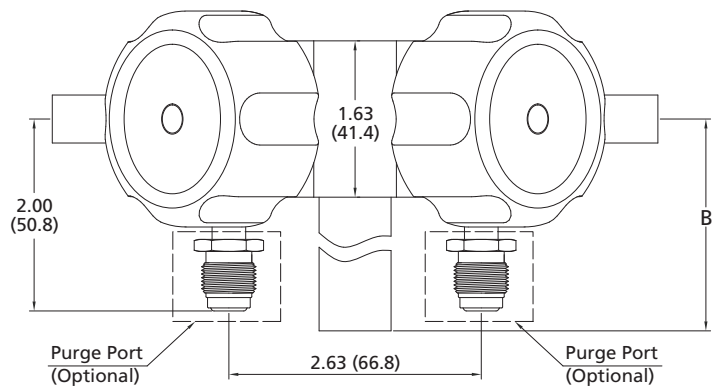
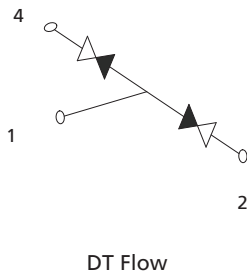
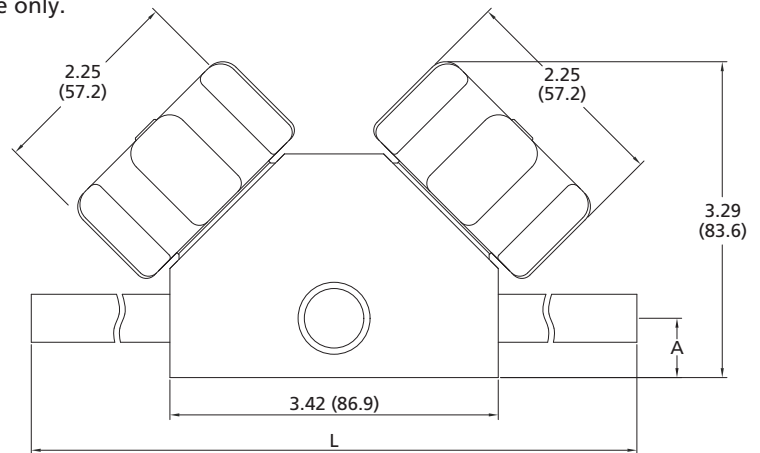
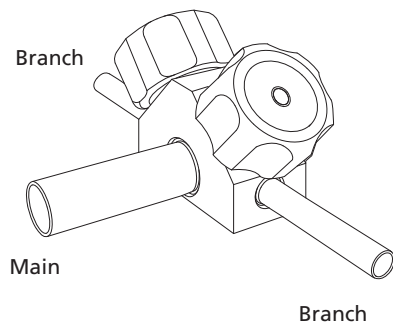


Basic Ordering Number	Connection Type and Size		Dimension in. (mm)		
	Main	Branch	A	B	L
DV□□-TB8-TB4-	1/2" × 0.049"	1/4" × 0.035"	0.62 (15.7)	4.69 (119.0)	7.58 (193.0)
DV□□-TB8-TB8-	1/2" × 0.049"	1/2" × 0.049"	0.62 (15.7)	4.69 (119.0)	7.58 (193.0)
DV□□-TB8-RFR4-	1/2" × 0.049"	1/4" Rotatable Male FR	0.62 (15.7)	2.57 (65.0)	7.58 (193.0)
DV□□-TB8-RFR8-	1/2" × 0.049"	1/2" Rotatable Male FR	0.62 (15.7)	3.43 (87.0)	7.58 (193.0)
DV□□-TB12-TB8-	3/4" × 0.065"	1/2" × 0.049"	0.62 (15.7)	4.69 (119.0)	7.58 (193.0)
DV□□-TB12-RFR8-	3/4" × 0.065"	1/2" Rotatable Male FR	0.62 (15.7)	3.43 (87.0)	7.58 (193.0)
DV□□-TB16-TB8-	1" × 0.065"	1/2" × 0.049"	0.62 (15.7)	4.69 (119.0)	7.58 (193.0)
DV□□-TB16-RFR8-	1" × 0.065"	1/2" Rotatable Male FR	0.62 (15.7)	3.43 (87.0)	7.58 (193.0)

Block Type

Dimensions

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

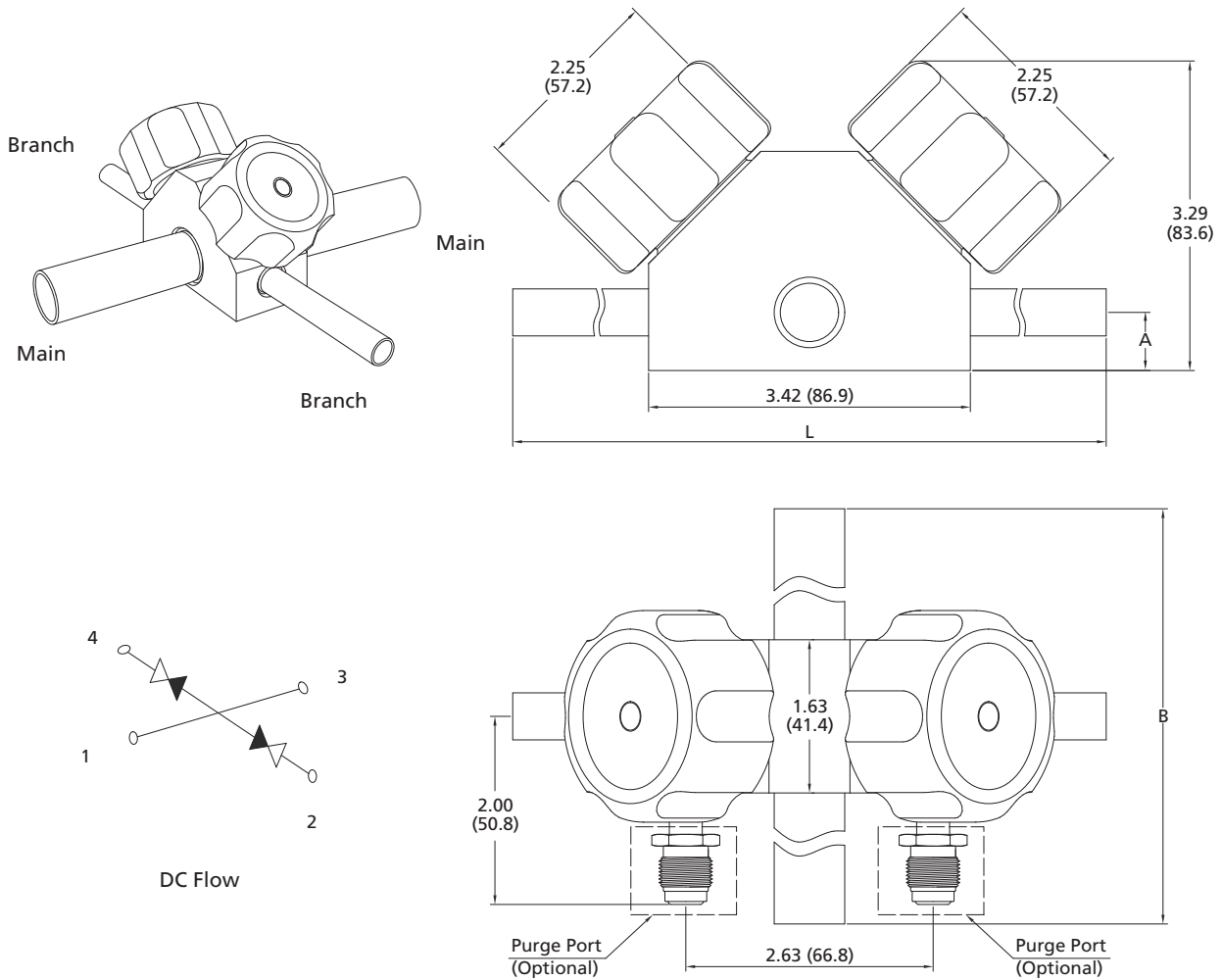


Basic Ordering Number	Connection Type and Size		Dimension in. (mm)		
	Main	Branch	A	B	L
DV□□-TB12-TB8-	3/4" × 0.065"	1/2" × 0.049"	0.62 (15.7)	3.79 (96.3)	9.38 (238.0)
DV□□-TB12-RFR8-	3/4" × 0.065"	1/2" Rotatable Male FR	0.62 (15.7)	3.79 (96.3)	9.38 (238.0)
DV□□-TB16-TB8-	1" × 0.065"	1/2" × 0.049"	0.62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

Block Type

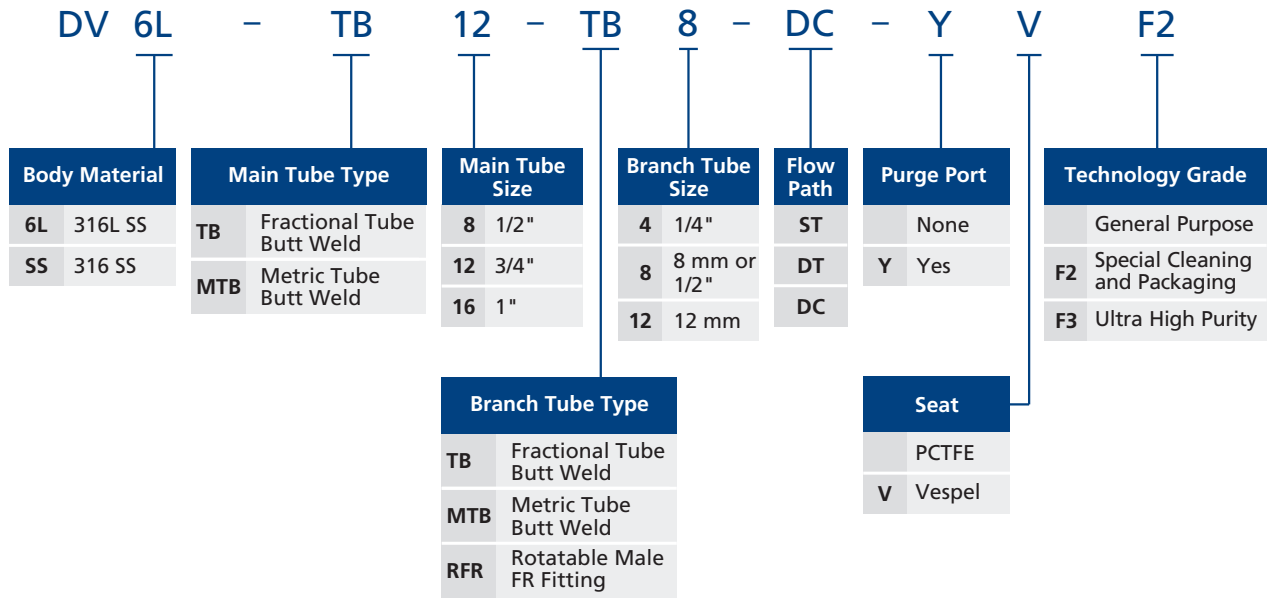
Dimensions

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



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

Part Number Description



Diaphragm Valves

DF Series High Pressure/High Flow Diaphragm Valves

Features

- ⦿ Ideal for high flow applications
- ⦿ Metal-to-metal seal
- ⦿ Spring type design
- ⦿ Elgiloy diaphragm to provide high strength and corrosion resistance to ensure long cycle life

Technical Data

Port Size		3/8" to 1/2" or 8 mm to 12 mm
Flow Coefficient (Cv)		0.8
Orifice Size		0.27 in. (6.8 mm)
Max. Working Pressure	Handle	3500 psig (241 bar)
	Pneumatic	3000 psig (206 bar)
Pneumatic Actuator Operating Pressure		60 to 90 psig (4.2 to 6.2 bar)
Temperature		PCTFE: -10~150°F (-23~65°C) Vespel: -10~250°F (-23~121°C)
Leak Rate (helium)	Internal	≤4x10 ⁻⁹ mbar l/s
	External	≤4x10 ⁻⁹ mbar l/s

Flow Data

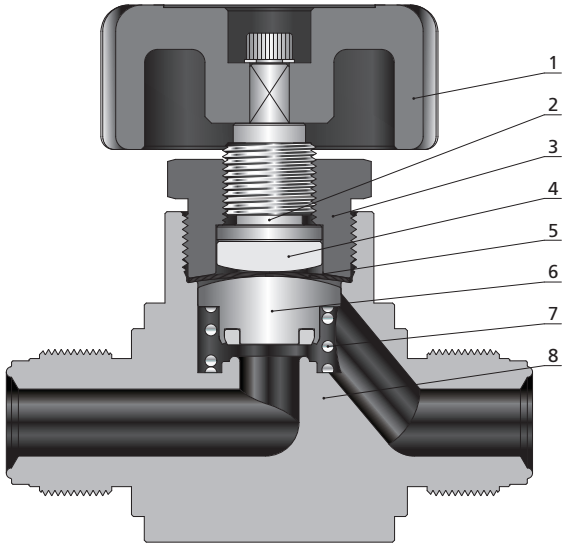
Air @ 70°F (21°C)
Water @ 60°F (16°C)

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

Product Technology Grade

Product Grade	General Purpose	Special Cleaning and Packaging	Ultra High Purity
Technology			
Material	316 SS/ASTM A479 or 316L SS/ASTM A479		316L SS/ASTM A479
Wetted Surface Roughness	Ra 25 μin. (0.64 μm)	Ra 10 μin. (0.25 μm)	
Polishing Process	Machine finished	Electropolished	
Cleaning and Packaging Specification	FC-01 Standard Cleaning and Packaging	FC-02 Special Cleaning and Packaging	FC-03 Ultra High Purity Cleaning and Packaging
Cleaning Process	Thrice degreasing ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultra high purity cleaning in continuously monitored ultrasonic cleaning system with deionized water
Assembly Environment	At atmosphere	In specially cleaned areas	In Class 100 cleanroom
Packaging Process	Individually bagged	Individually bagged	Double bagged and vacuum sealed in cleanroom

Major Material of Construction



Handle Actuator

Item	Component	Material/Specification
1	Handle	Aluminum
2	Actuator	316 SS/ASTM A479
3	Bonnet Nut	S17400/ASTM A564
4	Button	C36000/ASTM B16
5	Diaphragm(5)	Elgiloy(3)/AMS 5876 + C17200(2)/ASTM B194
6	Stem Subassembly	316L SS/ASTM A479 and PCTFE/ASTM D1430 or 316L SS/ASTM A479 and Vespel
7	Spring	316 SS/ASTM A313
8	Body	316 SS/ASTM A479 or 316L SS/ASTM A479

Actuators

Handle

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

Pneumatic

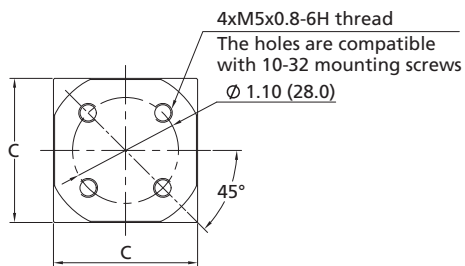
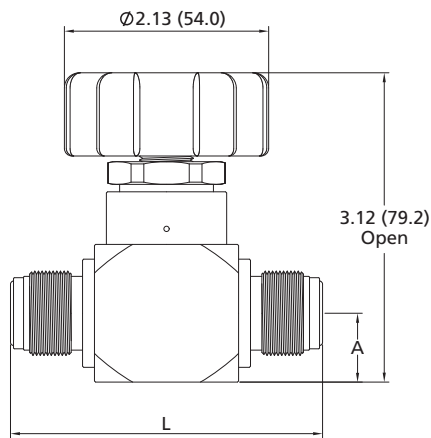
- ⊙ Normally open, "N.O." marked on the top of the cylinder
- ⊙ Normally closed, "N.C." marked on the top of the cylinder



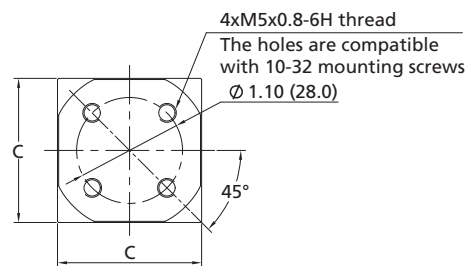
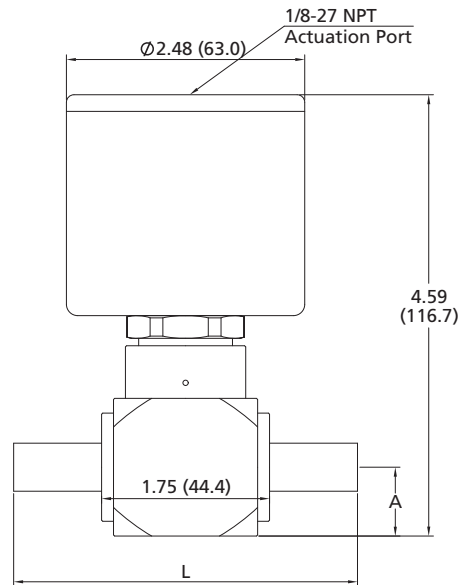
Dimensions

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

Handle

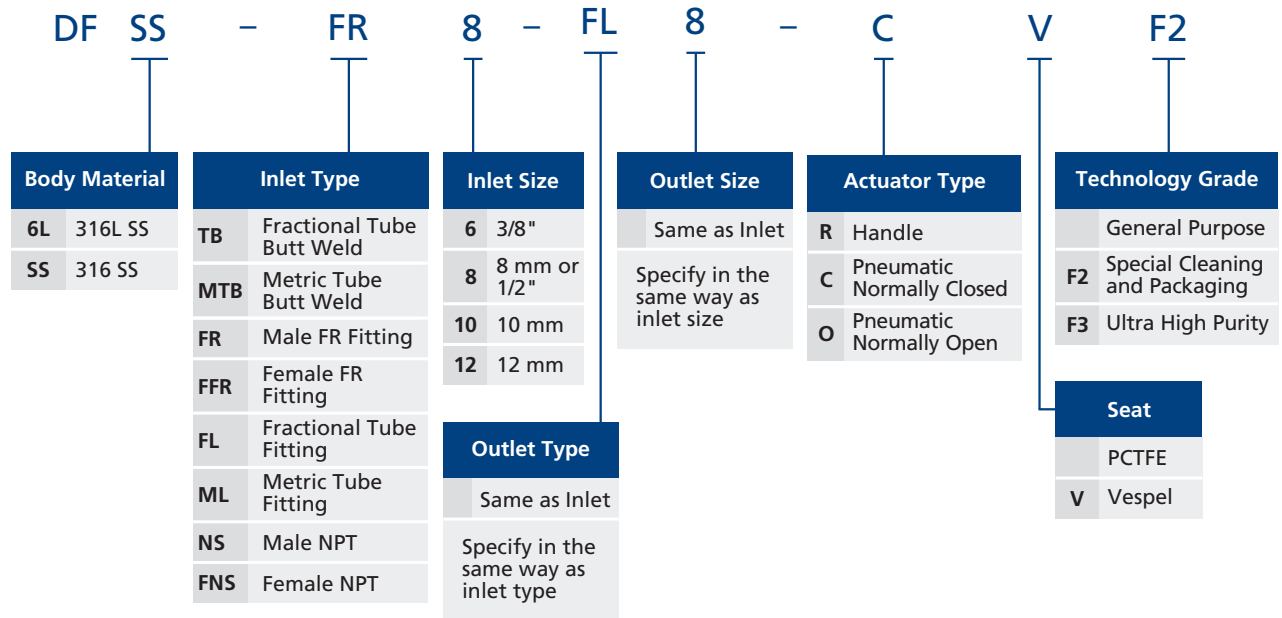


Pneumatic



Basic Ordering Number	Connection Type and Size	Dimension in. (mm)		
		A	C	L
DF□□-TB6-	3/8" Tube Butt Weld	0.71 (18.0)	1.50 (38.1)	3.58 (90.9)
DF□□-TB8-	1/2" Tube Butt Weld	0.71 (18.0)	1.50 (38.1)	3.58 (90.9)
DF□□-FR8-	1/2" Male FR	0.71 (18.0)	1.50 (38.1)	3.25 (82.5)
DF□□-FFR8-	1/2" Female FR	0.71 (18.0)	1.50 (38.1)	3.89 (98.8)
DF□□-FL6-	3/8" FITOK Tube Fitting	0.71 (18.0)	1.50 (38.1)	3.27 (83.0)
DF□□-FL8-	1/2" FITOK Tube Fitting	0.71 (18.0)	1.50 (38.1)	3.47 (88.2)
DF□□-FNS8-	1/2" Female NPT	0.71 (18.0)	1.50 (38.1)	3.30 (84.0)

Part Number Description



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