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
◎ Indicator switch available assembled on normally closed valves, transmitting a signal to an electrical device to indicated either the open or closed position of the valves

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)
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)

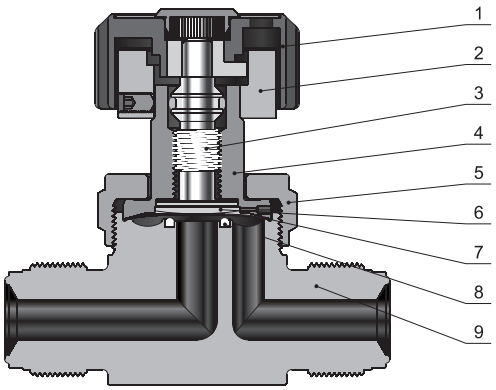
Pressure Drop to Atmosphere psi (bar)	Air (l/min)	Water (l/min)
10 (0.68)	240	8.4
50 (3.4)	630	18.6
100 (6.8)	1120	26.6

Product Technology Grade

Technology \ Product Grade	General Purpose	Special Cleaning and Packaging (F2)	Ultra High Purity (F3)
Material/Specification	316L SS/ASTM A479		316L VAR/SEMI F20 316L VIM-VAR /SEMI F20
Wetted Surface Roughness	Ra 10 µin. (0.25 µm)①		Ra 5 µin. (0.13 µm)
Polishing Process	Machine finished①		Electropolished
Process Specification	FC-01 Standard Cleaning and Packaging	FC-02 Special Cleaning and Packaging	FC-03 Ultra High Purity Process Specification
Cleaning	Thrice degreasing ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultra high purity cleaning in continuously monitored ultrasonic cleaning system with deionized water
Assembly Environment	At atmosphere	In specially cleaned areas	In ISO Class 5/Federal Class 100 cleanroom
Packaging	Individually bagged	Double bagged	Double bagged and vacuum sealed in cleanroom

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

Major Materials of Construction



Round Handle Model

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

Actuators

Manual - Round 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

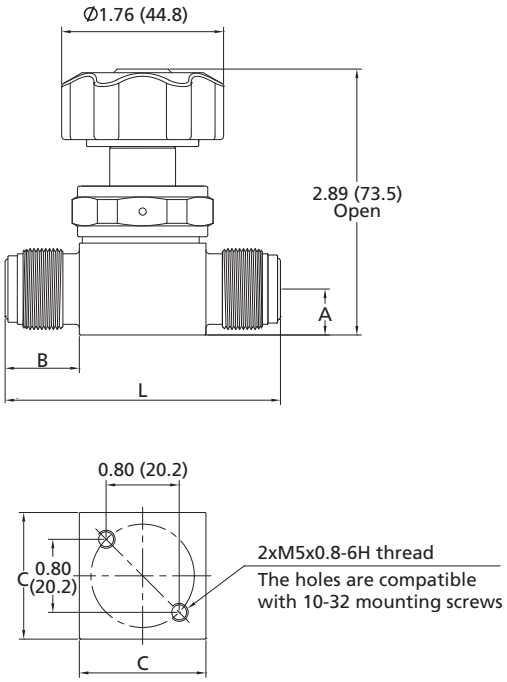
Dimensions and Ordering Information

Straight Type

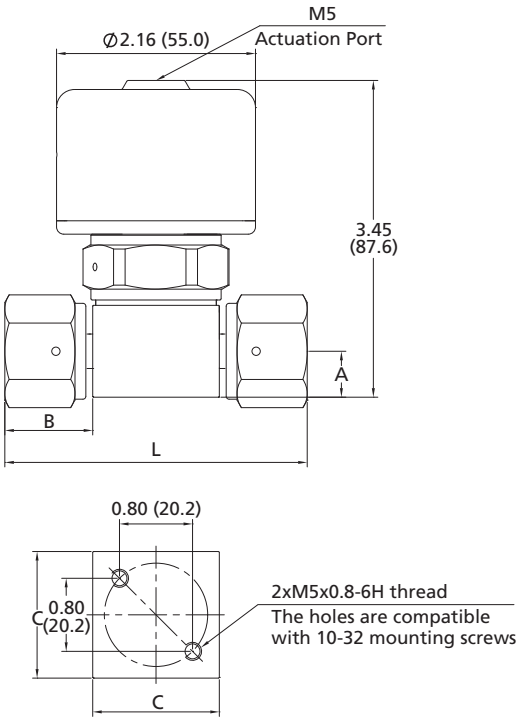
Dimensions

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
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□□-FR8-	1/2" Integral Male FR	0.50 (12.7)	0.81 (20.6)	1.38 (35.0)	3.00 (76.2)

Ordering Number Description

DR6L – FFR8 – RFR8 – RAF3M

Body Material

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

Inlet Type

TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
FR	Integral Male FR Fitting
FFR	Female FR Fitting
RFR	Rotatable Male FR Fitting

Outlet Type / Outlet Size

	Same as Inlet

Specified in the same way as Inlet type and size

Inlet Size

6	3/8"
8	1/2"
10	10 mm
12	12 mm

Actuator Type

R	Handle
C	Pneumatic Normally Closed
O	Pneumatic Normally Open

Seat

	PCTFE
A	PFA

Technology Grade

	General Purpose
F2	Special Cleaning and Packaging
F3	Ultra High Purity

Indicator Switch (only for normally closed valves)

	None
M	Normally Open
M2	Normally Closed

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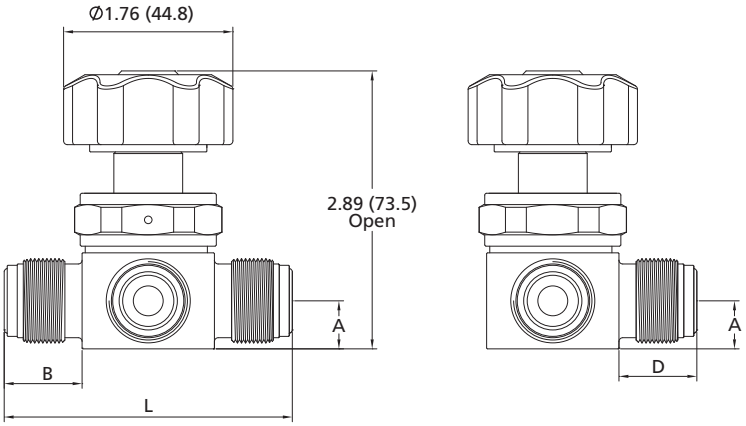
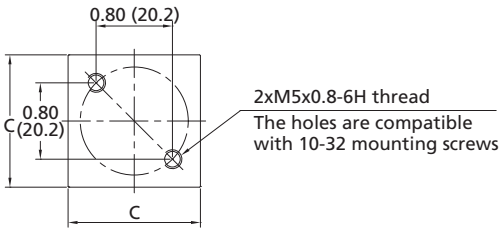
Branch Type

Dimensions

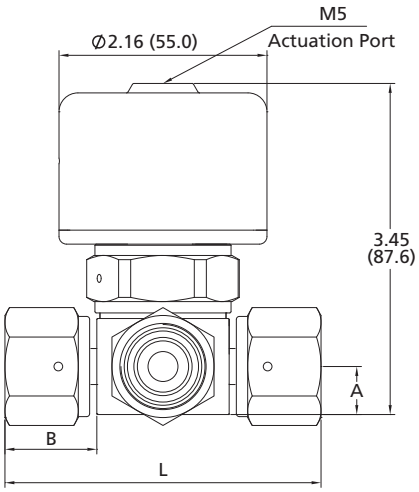
Dimensions, in inches (millimeters), are for reference only.

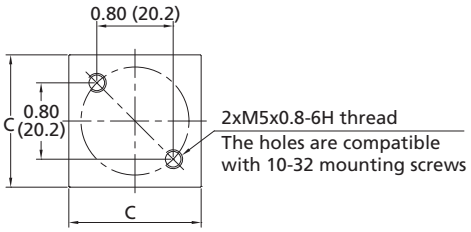
Manual - Round Handle





Pneumatic



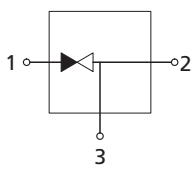


Basic Ordering Number	Connection Type and Size	Dimensions in. (mm)				
		A	B	C	D	L
DR□□-TB6-	3/8" Tube Butt Weld	0.50 (12.7)	0.67 (17.0)	1.38 (35.0)	0.67 (17.0)	2.72 (69.0)
DR□□-TB8-	1/2" Tube Butt Weld	0.50 (12.7)	0.67 (17.0)	1.38 (35.0)	0.67 (17.0)	2.72 (69.0)
DR□□-FFR8-	1/2" Female FR	0.50 (12.7)	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)

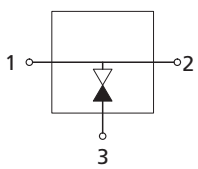
Flow Paths

◎ Flow paths as viewed from the top

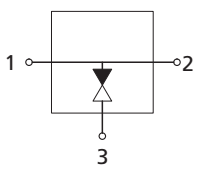
3D Flow



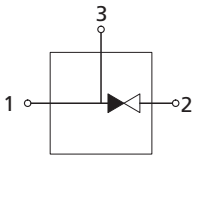
3E Flow



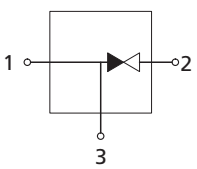
3F Flow



3G Flow



3K Flow



Ordering Number Description

DR6L – FFR8 – RFR8 – FR8 – 3D – RAF3M

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

Port 1 Type	
TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
FR	Integral Male FR Fitting
FFR	Female FR Fitting
RFR	Rotatable Male FR Fitting

Port 1 Size	
6	3/8"
8	1/2"
10	10 mm
12	12 mm

Port 2/3 Type / Port 2/3 Size	
	Same as Port 1
Specified in the same way as Port 1 type and size	

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

Actuator Type	
R	Handle
C	Pneumatic Normally Closed
O	Pneumatic Normally Open

Seat	
	PCTFE
A	PFA

Technology Grade	
	General Purpose
F2	Special Cleaning and Packaging
F3	Ultra High Purity

Indicator Switch (only for normally closed valves)	
	None
M	Normally Open
M2	Normally Closed