



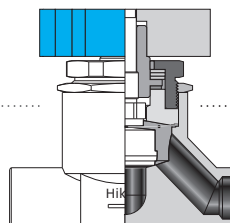
Diaphragm Valves

DV Series

Contents

High-Flow Diaphragm Valves (DV1, DV2 and DV3 Series)

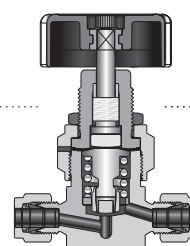
- ❖ Maximum working pressure: 300 psig (20.7 bar)
- ❖ Working temperature: -20°F to 300°F (-28°C to 148°C)
- ❖ Variety of end connections



7-35

High Pressure Diaphragm Valves (DV4 Series)

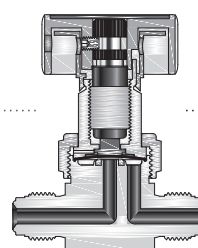
- ❖ Maximum working pressure: 3500 psig (241 bar)
- ❖ Working temperature: -100°F to 250°F (-73°C to 121°C)
- ❖ Variety of end connections



7-40

High Performance Diaphragm Valves (DV5 Series)

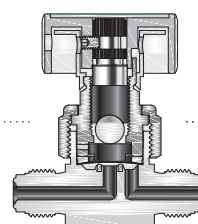
- ❖ Maximum working pressure: 3045 psig (210 bar)
- ❖ Working temperature: -10°F to 150°F (-23°C to 65°C)
- ❖ Variety of end connections



7-44

General-Purpose Diaphragm Valves (DV6 Series)

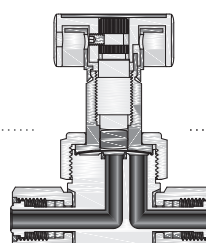
- ❖ Maximum working pressure: 3045 psig (210 bar)
- ❖ Working temperature: -10°F to 150°F (-23°C to 65°C)
- ❖ Variety of end connections



7-56

Diaphragm Valves (DV7 Series)

- ❖ Maximum working pressure: 300 psig (20.6 bar)
- ❖ Working temperature: -10°F to 150°F (-23°C to 65°C)
- ❖ Variety of end connections



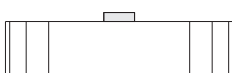
7-61

High-Flow Diaphragm Valves

DV1, DV2 and DV3 Series

Features

- ❖ Maximum working pressure: 300 psig (20.7 bar)
- ❖ Working temperature: -20°F to 300°F (-28°C to 148°C)
- ❖ Variety of end connections
- ❖ Body material: Cast, forged and bar stock stainless steel
- ❖ No spring or thread within wetted area for cleaner operation
- ❖ Wetted surface finish machined to an average of 0.51 µm Ra for cast body, electropolished to 0.25 µm Ra for forged and bar stock body
- ❖ PCTFE stem tip insert for leak-tight shutoff
- ❖ Unique bonnet design for safety
- ❖ Diaphragms welded to the stem for leak-tight performance
- ❖ Optimum combination of strength, flexibility and cycle life by three diaphragms
- ❖ The upper stem as a indicator of the valve position-open or closed



Open-upper stem visible above handle

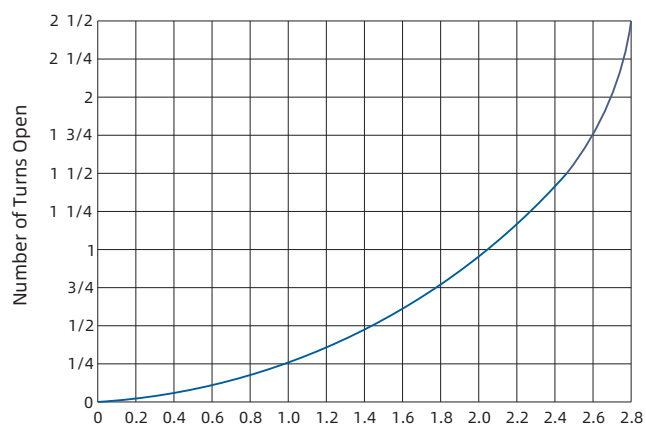


Close-upper stem flush with top of handle

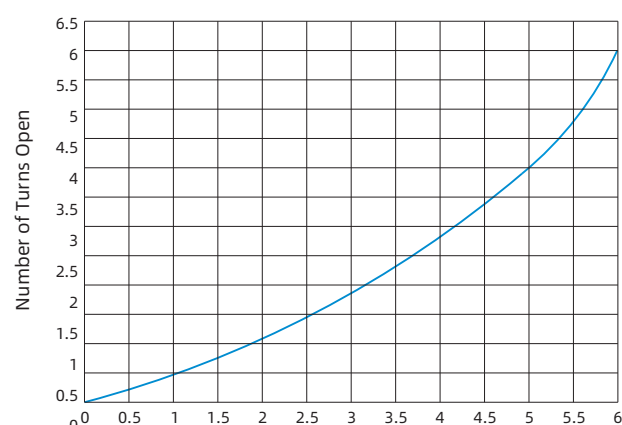
Pressure-Temperature Ratings

Body Material	Cast	Forged and Bar Stock
Temperature, °F(°C)	Working Pressure, psig(bar)	
-20(-28) to 100(37)	300(20.6)	300(20.6)
200(93)	265(18.2)	255(17.5)
300(148)	240(16.5)	230(15.8)

Flow Coefficient vs. Turns Open

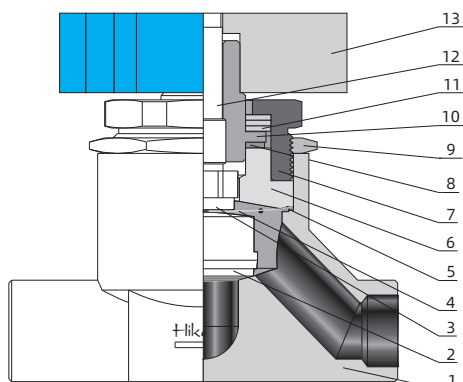


Flow Coefficient (Cv)
1/2" size, 0.5" (12.7 mm) orifice



Flow Coefficient (Cv)
1" size, 1.0" (25.4 mm) orifice

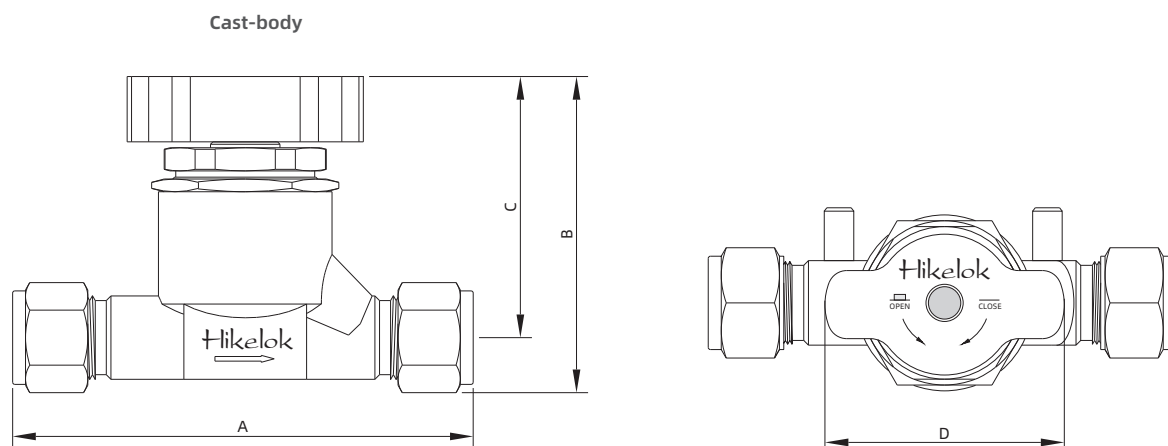
Standard Materials of Construction



Component	Valve Body Material Grade/ASTM Specification		
	DV1 Series	DV2 Series	DV3 Series
1 Body	CF3M / A351	316L S.S. / A182	316L S.S. / A479
2 Tip Subassembly	PCTFE / AMS 3650 insert 316L S.S. / A479		
3 Gasket	PTFE-coated 316L S.S. / A240		
4 Diaphragm	316L S.S. / A240		
5 Clamp Ring	Brass / B16		
6 Bonnet	316 S.S. / A479		
7 Upper Stem	316 S.S. / A479		
8 Spring Washer	Alloy steel		
9 Actuator	416 S.S. / A582		
10 Bearing Subassembly	High-carbon chrome steel		
11 Lock Nut	17-4 PH powered metal		
12 Bonnet Nut	Silver-plated 316 S.S. / A479		
13 Handle	Polyester with 316 S.S. insert		

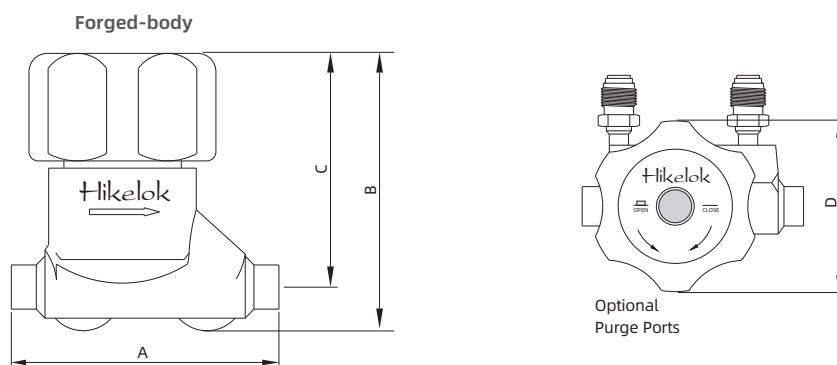
Dimensions

DV1 Series



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)			
				A	B	C	D
DV1-F8-13-	1/2" Hikelok	0.5 (12.7)	2.8	5.30 (135)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-F12-25-	3/4" Hikelok	1.0 (25.4)	12.0	8.28 (210)	5.12 (130.0)	4.35 (110.0)	4.0 (102.0)
DV1-F16-25-	1" Hikelok	1.0 (25.4)	12.0	8.46 (215)	5.12 (130.0)	4.35 (110.0)	4.0 (102.0)
DV1-M12-13-	12 mm Hikelok	0.5 (12.7)	2.8	5.30 (135)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-M25-25-	25 mm Hikelok	1.0 (25.4)	12.0	8.63 (219)	5.12 (130.0)	4.35 (110.0)	4.0 (102.0)
DV1-FNPT8-13-	1/2" Female NPT	0.5 (12.7)	2.8	5.61 (142)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-FNPT16-25-	1" Female NPT	1.0 (25.4)	12.0	8.46 (215)	5.12 (130.0)	4.35 (110.0)	4.0 (102.0)
DV1-MBW12-13-	12 mm MBW	0.5 (12.7)	2.8	5.30 (135)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-MBW25-25-	25 mm MBW	1.0 (25.4)	12.0	8.63 (219)	5.12 (130.0)	4.35 (110.0)	4.0 (102.0)
DV1-FBT8-13-	1/2" Female BSPT	0.5 (12.7)	2.8	5.61 (142)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-FBT16-25-	1" Female BSPT	1.0 (25.4)	12.0	8.46 (215)	5.12 (130.0)	4.35 (110.0)	4.0 (102.0)
DV1-GFS8-13-	1/2" Male GFS	0.5 (12.7)	2.8	4.58 (116)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-FT8-13-	1/2" X 0.049 " Fractional Tube	0.5 (12.7)	2.8	8.82 (224)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-FT12-13-	3/4" X 0.065" Fractional Tube	0.5 (12.7)	2.8	8.79 (223)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-FT16-25-	1" X 0.065" Fractional Tube	1.0 (25.4)	12.0	10.87 (276)	5.12 (130.0)	4.35 (110.0)	4.0 (102.0)
DV1-MT12-13-	12 X 1 mm Metric Tube	0.5 (12.7)	2.8	8.82 (224)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-MT18-13-	18 X 1.5 mm Metric Tube	0.5 (12.7)	2.8	8.79 (223)	2.95 (74.9)	2.41 (61.2)	2.25 (57.2)
DV1-MT22-25-	22 X 1.5 mm Metric Tube	1.0 (25.4)	12.0	10.87 (276)	5.12 (130.0)	4.35 (110.0)	4.0 (102.0)
DV1-MT25-25-	25 X 1.5 mm Metric Tube	1.0 (25.4)	12.0	10.87 (276)	5.12 (130.0)	4.35 (110.0)	4.0 (102.0)

DV2 Series



Basic Ordering Number	Connection Type and Size	Orifice in. (mm)	Cv	Dimension, in. (mm)			
				A	B	C	D
DV2-F8-13-	1/2" Hikelok	0.5(12.7)	2.8	5.30(135)	3.03(77.0)	2.54(64.5)	2.25(57.2)
DV2-M12-13-	12 mm Hikelok			5.30(135)			
DV2-FBW6-13-	3/8" FBW			2.88(73.2)			
DV2-FBW8-13-	1/2" FBW			2.88(73.2)			
DV2-FGFS8-13-	1/2" Female GFS Fitting			4.09(104)			
DV2-RGFS8-13-	1/2" Rotatable Male GFS Fitting			5.43(138)			
DV2-FTE-13-	3/8" X 0.049" Fractional Tube			8.86(225)			
DV2-FTE-13-	1/2" X 0.049" Fractional Tube			8.86(225)			

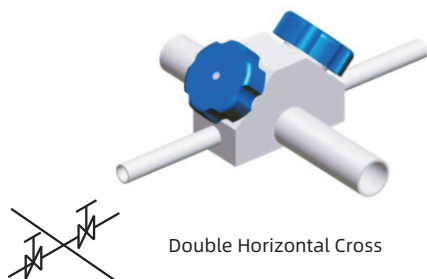
How to Order

DV1 — FGFS8 — FGFS4 — 13 — D — E — 316L

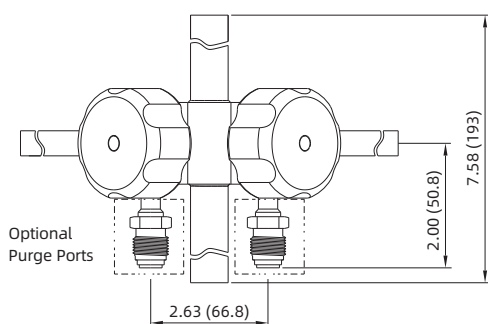
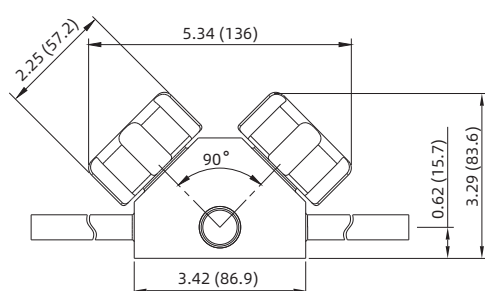
Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Purge Port	Handle Color	Body Material
DV1	FNPT Female NPT	2 1/8 in.	Same as inlet type and inlet size		13 0.5 in. (12.7 mm)	None	Blue	316 316 S.S.
DV2	NPT Male NPT	4 1/4 in.				U Upstream	C Red	316L 316L S.S.
	FBT Female BSPT	6 3/8 in. or 6 mm	If outlet and inlet are the same, eliminate the outlet designator		25 1 in. (25.4 mm)	D Downstream	G Gold	
	FBP Female BSPP	1/2 in. or				UD Upstream and Downstream	E Green	
	MBP Male BSPP (for BG)	8 Φ1/2 x 0.049" or 8 mm					B Black	
	FSW Fractional Tube Socket Weld	10 10 mm					P Purple	
	MSW Metric Tube Socket Weld	3/4 in. or					O Orange	
	FBW Fractional Tube Butt Weld	12 Φ3/4 x 0.065" 12 mm or M12 x 1					I Pink	
	MBW Metric Tube Butt Weld	14 14 mm					R Brown	
	F Fractional Tube Fitting	16 1 in. or 16 mm					S Silver	
	M Metric Tube Fitting	18 18 mm or Φ18 x 1.5					W White	
	FGFS Female FR Fitting	20 1 1/4 in. or 20 mm or M20 x 1.5					Y Yellow	
	GFS Male FR Fitting	22 22 mm						
	RGFS Rotatable Male FR Fitting	25 25 mm						
	FTE 3" Fractional Tube Extension							
	MTE 3" Metric Tube Extension							

DV3D Series

Bar Stock-body

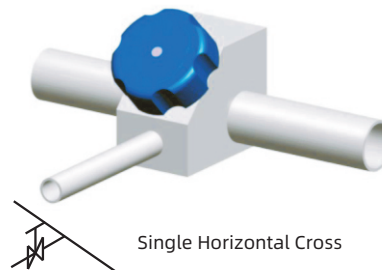


Double Horizontal Cross

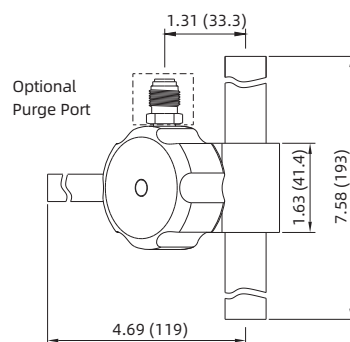
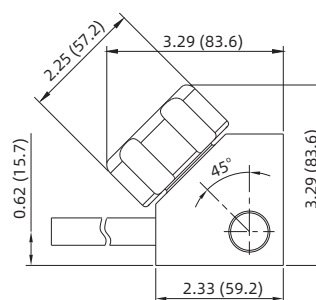


DV3S Series

Bar Stock-body



Single Horizontal Cross



Basic Ordering Number	Tube Size		Orifice in.(mm)	Cv
	Main	Branch		
DV3D-8-8-	1/2" x 0.049"	1/2" x 0.049"	0.5 (12.7)	2.8
DV3D-8-RGFS8-	1/2" x 0.049"	1/2" rotatable male GFS fitting		
DV3D-12-8-	3/4" x 0.065"	1/2" x 0.049"		
DV3D-12-RGFS8-	3/4" x 0.065"	1/2" rotatable male GFS fitting		
DV3D-16-8-	1" x 0.065"	1/2" x 0.049"		
DV3D-16-RGFS8-	1" x 0.065"	1/2" rotatable male GFS fitting		

Basic Ordering Number	Tube Size		Orifice in.(mm)	Cv
	Main	Branch		
DV3S-8-4-	1/2" x 0.049"	1/4" x 0.035"	0.5 (12.7)	2.8
DV3S-8-8-	1/2" x 0.049"	1/2" x 0.049"		
DV3S-8-RGFS4-	1/2" x 0.049"	1/4" rotatable male GFS fitting		
DV3S-8-RGFS8-	1/2" x 0.049"	1/2" rotatable male GFS fitting		
DV3S-12-8-	3/4" x 0.065"	1/2" x 0.049"		
DV3S-12-RGFS8-	3/4" x 0.065"	1/2" rotatable male GFS fitting		
DV3S-16-8-	1" x 0.065"	1/2" x 0.049"		
DV3S-16-RGFS8-	1" x 0.065"	1/2" rotatable male GFS fitting		

High Pressure Diaphragm Valves

DV4 Series

Features

- ❖ Maximum working pressure: 3500 psig (241 bar)
- ❖ Working temperature: -100°F to 250°F (-73°C to 121°C)
- ❖ Repetitive shutoff with fully contained softseat stem tip
- ❖ Position indicator ring for lever handle
- ❖ Manual or pneumatic actuation
- ❖ Aluminum piston accelerated open/close speed
- ❖ Helium leak tested, maximum leak rate of $4^{-9} \times 10$ std cm³/s
- ❖ Different handle types and colors are available
- ❖ Can be used in vacuum applications



Technical Data

Sort	Max. Working Pressure psig (bar)	Working Temperature Range°F(°C)	Flow Coefficient (Cv)	Orifice in. (mm)	Operating
Lever handle	3500 (241)	-100 to 250 (-73 to 121)	0.14	0.156 (4.0)	Approximately one quarter turn to operate from fully open to closed
Round handle			0.30		Approximately one and one-half turns to operate from fully open to closed

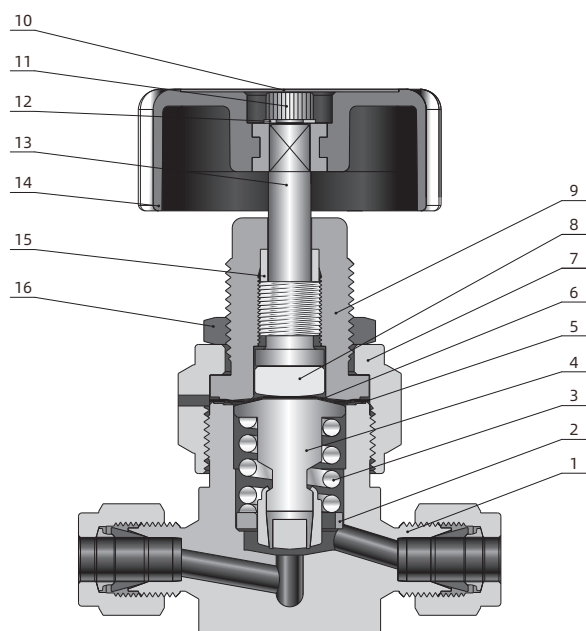
Flow Data

Pressure Drop to Atmosphere ΔP (bar)	Lever handle Cv=0.14		Round handle Cv=0.30	
	Air std L/min	Water L/min	Air std L/min	Water L/min
0.68	49	1.6	100	3.5
3.4	130	3.9	270	8.0
6.8	240	5.4	490	11.4

Pressure-Temperature Ratings

Temperature, °F(°C)	Working Pressure, psig(bar)
-73(-100) to 100(37)	3500(241)
200(93)	2950(203)
250(121)	2800(192)

Standard Materials of Construction



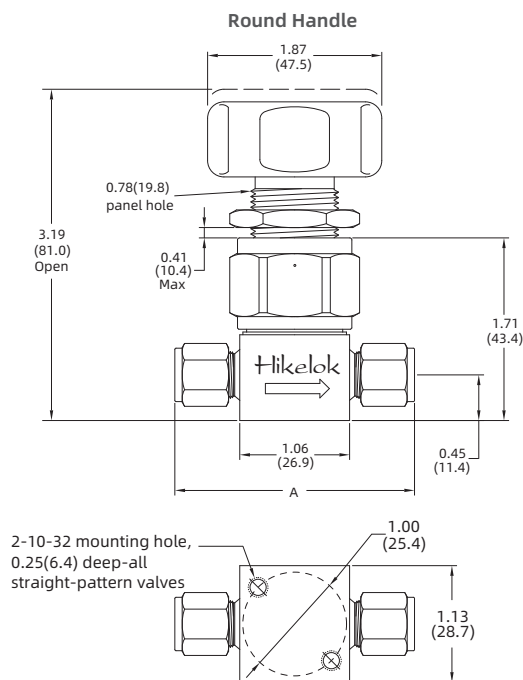
Item	Component	Material Grade/ASTM Specification	
		Manual	
1	Body	316 S.S. / A479 / 316L S.S. / A479	
2	Guide	Electropolished 316 S.S. / A479	
3	Spring	316 S.S. / A313	
4	Stem assembly	Stem plug	316L S.S. / A479
		Stem insert	PCTFE / D1430
		Stem container	316L S.S. / A479
		Stem	316L S.S. / A479
5	Gasket	PTFE-coated 316L S.S. / A240	
6	Diaphragms	Elgiloy / AMS 5876	
7	Bonnet nut	316 S.S. / A479	
8	Actuator Button	C36000 / B16	
9	Bonnet	316 S.S. / A479	
10	Lable	PVC	
11	Set Screw	304 S.S.	
12	Gasket	65Mn	
13	Actuator	416S.S. / A582	
14	Round Handle	ABS	
15	Wipe Ring	PTFE	
16	Panel mount nut	316 S.S. / A479	

Product technology grade

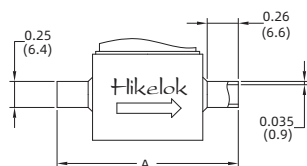
Grade	General purpose	Special Cleaning and Packaging	Ultrahigh-purity
Material	316 S.S. or 316L S.S.		
Wetted Surface Roughness	Ra 25 µin. (0.64 µm)	Ra 10 µin. (0.25 µm)	
Process	Machine finished	Electropolished	
Process Specification	FC-01 Standard Cleaning and Packaging	FC-02 Special Cleaning and Packaging	FC-03 Ultrahigh-Purity Process Specification
Cleaning	Thrice degreasinga ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultrahigh-purity cleaning with a continuously monitored, deionized water, ultrasonic cleaning system
Assembly	At atmosphere	Performed in specially cleaned areas	Performed in ISO Class 4 work areas
Testing	Inboard helium leak tested to maximum leak rate of 4x10 ⁻⁹ std cm ³ /s		
Packing	Individually bagged	Individually bagged	Valves are double bagged and vacuum sealed in cleanroom bags

Dimensions

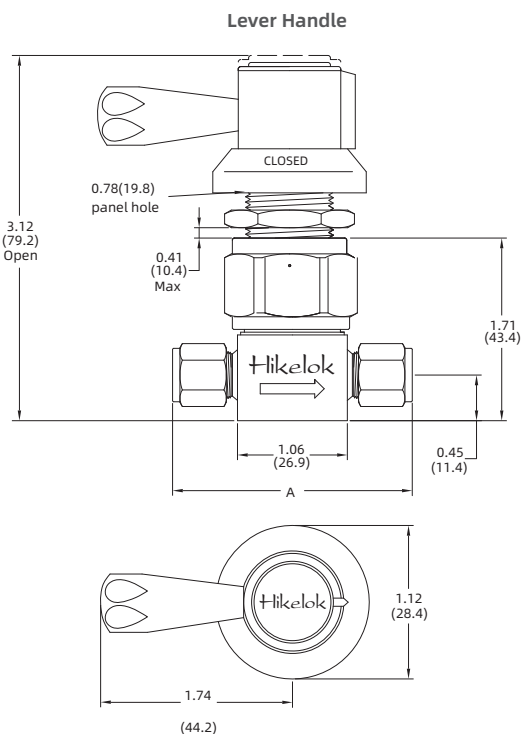
Straight Patterns



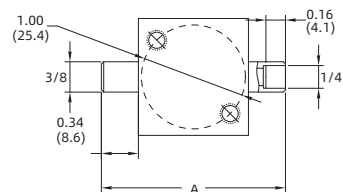
Tube fitting



Tube butt weld



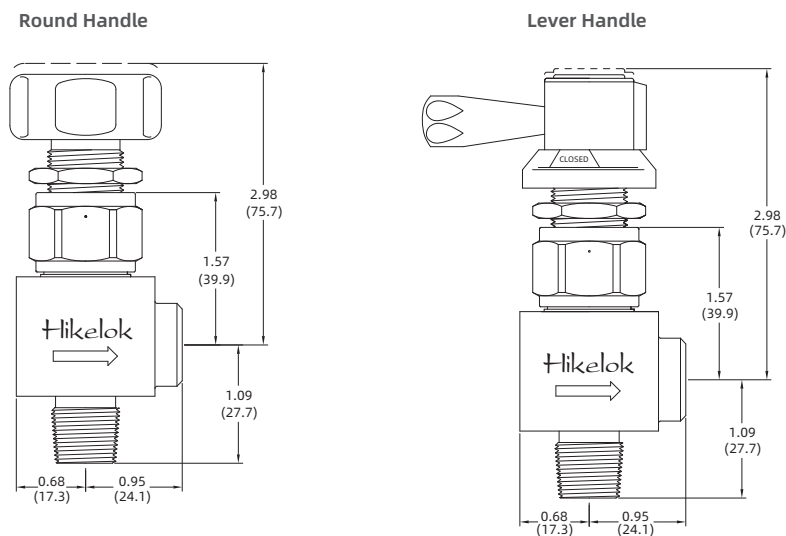
Tube fitting



Tube butt / Tube socket weld

Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)	Orifice in. (mm)
		A	
DV4-F4-	1/4" Hikelok	2.46(62.5)	
DV4-F6-	3/8" Hikelok	2.58(65.5)	
DV4-M6-	6 mm Hikelok	2.46(62.5)	
DV4-M8-	8 mm Hikelok	2.53(64.3)	
DV4-FBW4-	1/4" Tube butt weld	1.74(44.2)	
DV4-FBW6-	3/8" Tube butt weld	1.74(44.2)	
DV4-FBW6FSW4	3/8" Tube butt weld to 1/4" tube socket weld	1.75(44.4)	0.156(4.0)
DV4-FBW8FSW6	1/2" Tube butt weld to 3/8" tube socket weld	1.81(46.0)	
DV4-NPT4-	1/4" Male NPT	2.46(62.5)	
DV4-FNPT4-	1/4" Female NPT	2.46(62.5)	
DV4-GFS4-	1/4" Male GFS	2.30(58.4)	
DV4-FGFS4-	1/4" Female GFS	2.76(70.1)	
DV4-FGFS4-GFS4-	1/4" Female GFS to 1/4" Male GFS	2.54(64.5)	
DV4-GFS4-FGFS4-	1/4" Male GFS to 1/4" Female GFS	2.54(64.5)	

Angle Patterns



Basic Ordering Number	Connection Type and Size	
	Inlet	Outlet
DV4-NPT4-FNPT4-	1/4" Male NPT	1/4" Female NPT

How to Order

DV4		FGFS4		GFS4		T		EA		LH		316L	
Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Stem Tip Material	Handle Color	Flow Pattern	Actuator	Body Material				
DV4	F	Fractional Tube Fitting	2	1/8 in.	Same as inlet type and inlet size	PCTFE	Blue	Straight	Round Handle	316 316 S.S.			
		4	1/4 in.	T		PTFE	C	Red			A	Angle	LH
	M	Metric Tube Fitting	6	6 mm	If outlet and inlet are the same, eliminate the outlet designator	V	Polyimide	G	Gold				
		FBW	Fractional Tube Butt Weld	8			1/2 in.	E	Green				
	MBW	Metric Tube Butt Weld		B			Black						
		GFS	Male GFS Fitting				P	Purple					
	FGFS	Female GFS Fitting		O			Orange						
		NPT	Male NPT				I	Pink					
	FNPT	Female NPT		R			Brown						
				S			Silver						
				W			White						
				Y			Yellow						

High Performance Diaphragm Valves

DV5 Series

Features

- ❖ Maximum working pressure: 3045 psig (210 bar)
- ❖ Working temperature: -10°F to 150°F (-23°C to 65°C)
- ❖ 316L VIM-VAR stainless steel body is available
- ❖ Suitable for ultrahigh-purity applications
- ❖ Elgiloy material for strength and corrosion resistance for long cycle life
- ❖ Fully contained PCTFE seat design provides excellent resistance to swelling and contamination
- ❖ Wetted Surface Electropolished, Roughness Ra finished to an average of Ra5 µin.(0.13 µm)
- ❖ Helium leak tested, maximum leak rate of 1x10⁻⁹ std cm³/s
- ❖ Low-pressure and high-pressure models
- ❖ Manual or pneumatic actuation
- ❖ Aluminum piston accelerated open/close speed
- ❖ Different handle types are available
- ❖ Can be used in vacuum applications



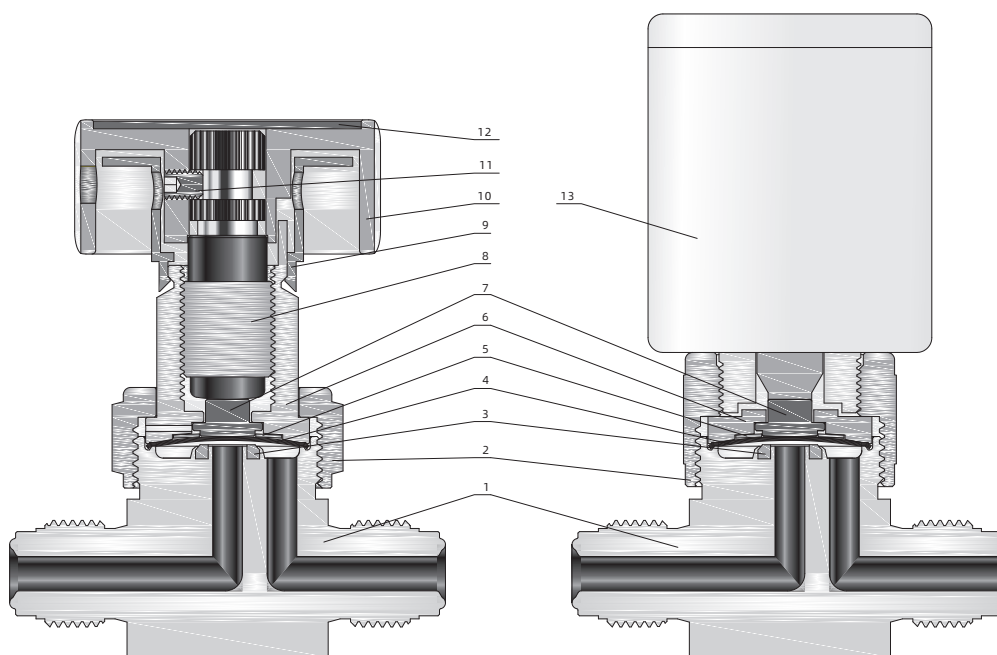
Technical Data

Sort	Max. Working Pressure psig (bar)	Working Temperature Range °F(°C)	Flow Coefficient (Cv)	Orifice in.(mm)	Pneumatic Actuator Operating Pressure psig (bar)
Low-pressure	250(17.2)	-10 to 150 (-23 to 65)	0.27	0.16 (4.1)	60 to 120 (4.2 to 8.2)
High-pressure	3045(210)		0.20		70 to 120 (4.9 to 8.2)

Flow Data

Pressure Drop to Atmosphere bar	Low-Pressure Models Cv=0.27		High-Pressure Models Cv=0.20	
	Air std L/min	Water L/min	Air std L/min	Water L/min
0.68	86	3.2	64	2.4
3.4	230	7.2	170	5.4
6.8	410	10.2	300	7.6

Standard Materials of Construction



Component		Material Grade / ASTM Specification	
		Low-Pressure	High-Pressure
1	Body	316 S.S. / A479 or 316L S.S. / A479 or 316L VIM-VAR S.S. / SEMI F20	
2	Bonnet nut	316 S.S. / A479	
3	Seat	PCTFE / D1430	
4	Diaphragm	Elgiloy / AMS 5876	
5	Washer	—	S17700 / A693
6	Button	316 S.S. / A479	
7	Bonnet		
8	Stem		
9	Indicator ring	PC	
10	Handle	Round handle	Aluminum with anodic oxidation of surface
		Directional handle	
		Integral lockout handle	
		Toggle handle	316 S.S. with epoxy coating
11	Screw	304 S.S.	
12	Label	PVC	
13	Pneumatic Actuator	Aluminum	

Product technology grade

Grade	General purpose	Special Cleaning and Packaging	Ultrahigh-purity
Material	316S.S. or 316L S.S. or 316L VIM-VAR S.S. / SEMI F20		
Wetted Surface Roughness	Ra 10 µin. (0.25 µm)	Ra 5 µin. (0.13 µm)	
Process	Machine finished	Electropolished	
Process Specification	FC-01 Standard Cleaning and Packaging	FC-02 Special Cleaning and Packaging	FC-03 Ultrahigh-Purity Process Specification
Cleaning	Thrice degreasing ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultrahigh-purity cleaning with a continuously monitored, deionized water, ultrasonic cleaning system
Assembly	At atmosphere	Performed in specially cleaned areas	Performed in ISO Class 4 work areas
Testing	Inboard helium leak tested to maximum leak rate of 1×10^{-9} std cm ³ /s		
Packing	Individually bagged	Individually bagged	Valves are double bagged and vacuum sealed in cleanroom bags

Manual Actuators

Round

- ❖ Quick, quarter-turn actuation
- ❖ Handle with window provides visual indication of open and closed positions

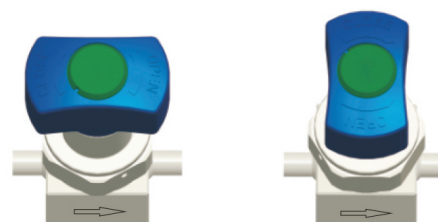


OPEN

CLOSED

Directional

- ❖ Quick, quarter-turn actuation
- ❖ Handle shape provides visual indication of open and closed position



OPEN

CLOSED

Integral Lockout

- ❖ Quick, quarter-turn actuation
- ❖ Lockable in the CLOSED position for safety
- ❖ Handle shape and window indicator provides visual indication of OPEN and CLOSED position

Toggle

- ❖ Spring-loaded toggle design quick actuation
- ❖ Lockable in the CLOSED position for safety
- ❖ Handle position provides visual indication of OPEN and CLOSED positions
- ❖ Narrow handle profile allows close parallel mounting of valves
- ❖ Only for low-pressure models

Pneumatic Actuators

High-Pressure Pneumatic Actuator

- ❖ Normally open, "N.O." marked on the top of the cylinder
- ❖ Normally close, "N.C." marked on the top of the cylinder



Low-Pressure Pneumatic Actuator

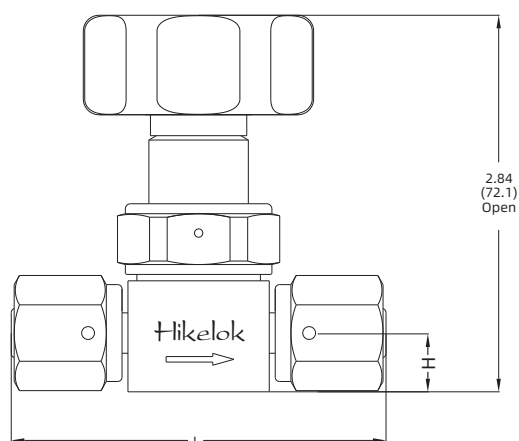
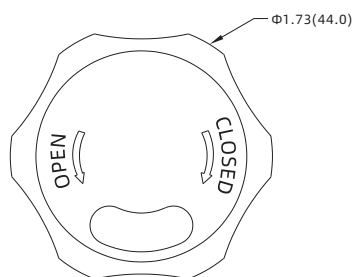
- ❖ Normally open, "N.O." marked on the top of the cylinder
- ❖ Normally close, "N.C." marked on the top of the cylinder



Dimensions

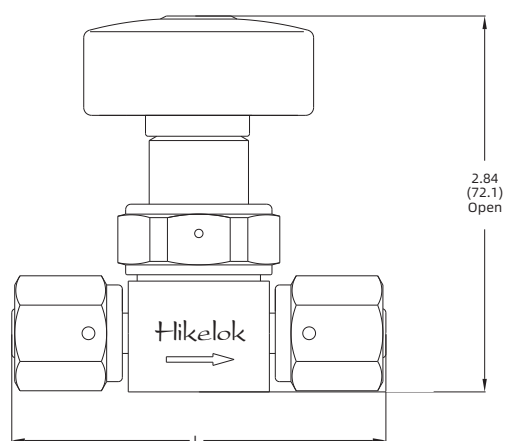
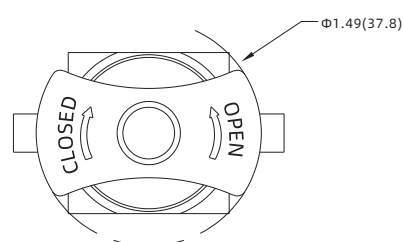
Low-Pressure Valves

Round Handle



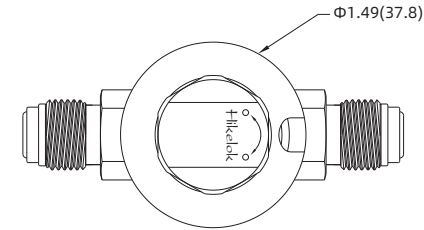
Female GFS Fittings

Directional Handle

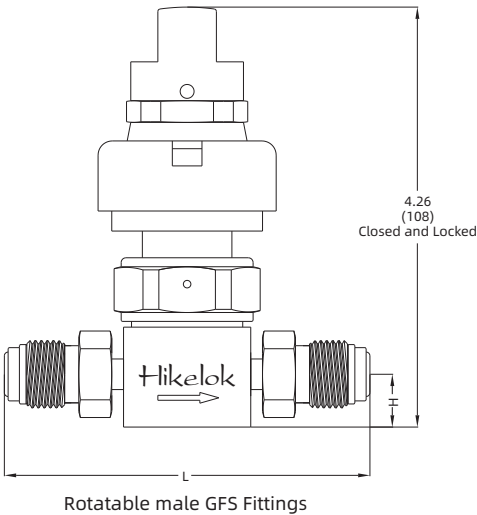
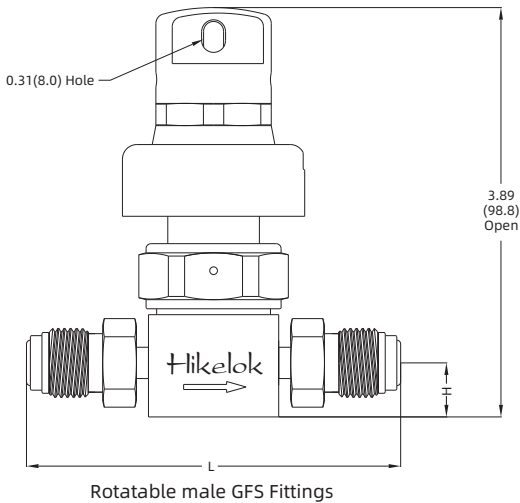
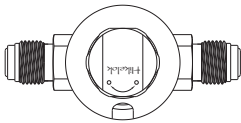


Female GFS Fittings

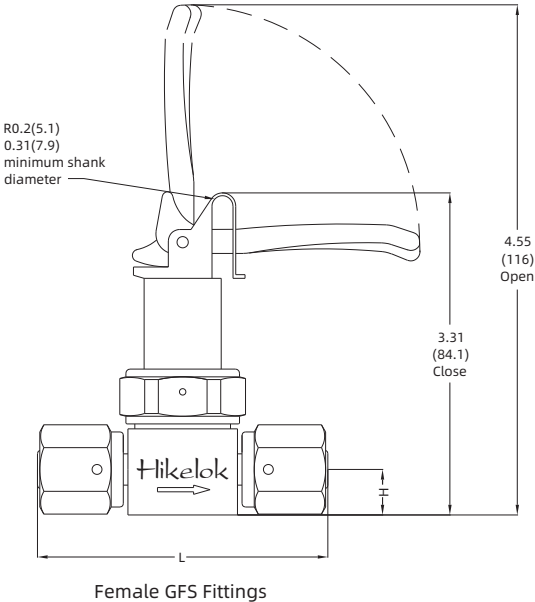
Integral Lockout



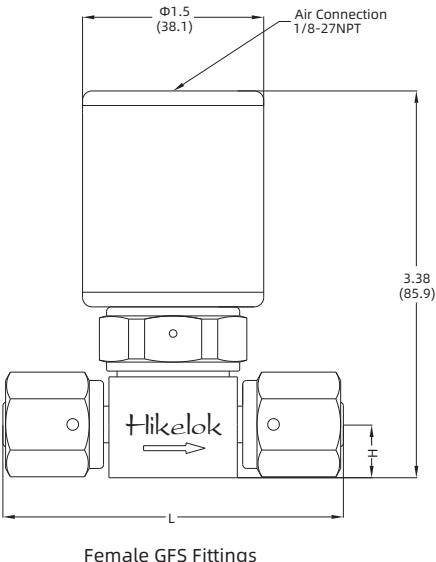
Handle



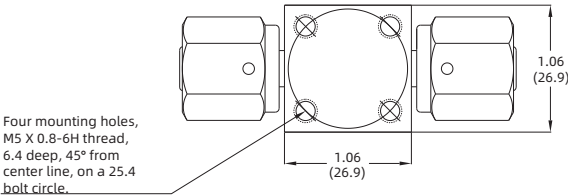
Toggle Handle



Pneumatic Actuator



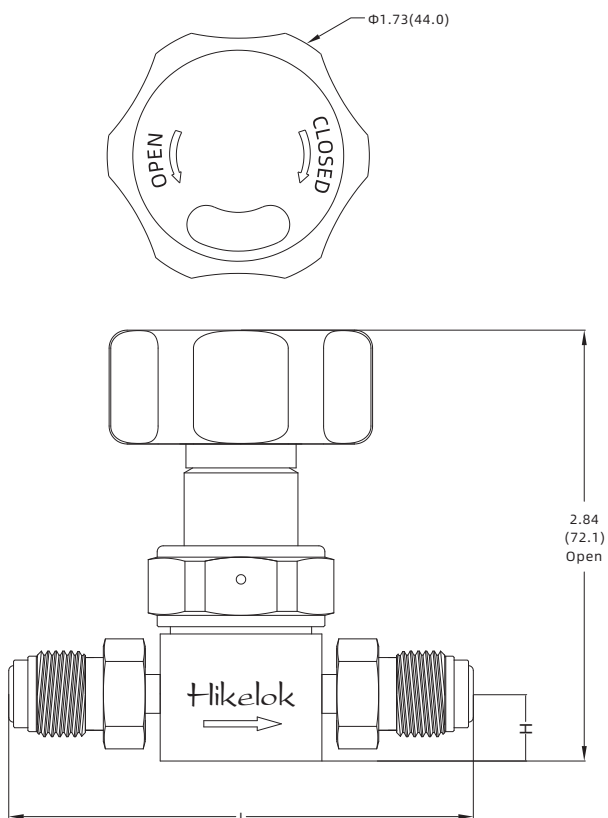
Bottom



Basic Ordering Number	Connection Type and Size	Dimension, in.(mm)	
		L	H
DV5-FBW4-L-	1/4" tube butt weld 0.30"(7.6 mm) tube stub, 0.035"(0.89 mm) wall	1.74(44.2)	0.44(11.2)
DV5-FBW4S-L-	1/4" tube butt weld 0.26"(6.6 mm) tube stub, 0.035"(0.89 mm) wall	1.61(40.9)	0.44(11.2)
DV5-MBW6-L-	6 mm tube butt weld, 1 mm wall	1.74(44.2)	0.44(11.2)
DV5-FGFS4-L-	1/4" female GFS fitting	2.78(70.6)	0.44(11.2)
DV5-RGFS4-L-	1/4" rotatable male GFS fitting		
DV5-GFS4-L-	1/4" integral male GFS fitting	2.30(58.4)	0.44(11.2)
DV5-F4-L-	1/4" Hikelok tube fittings	2.46(62.5)	0.44(11.2)
DV5-M6-L-	6 mm Hikelok tube fittings	2.45(62.2)	0.44(11.2)

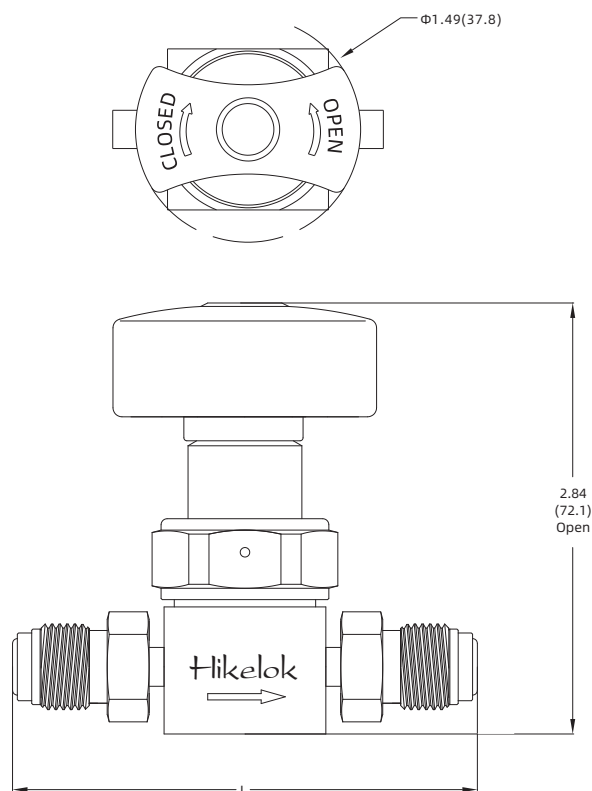
High-Pressure Valves

Round Handle



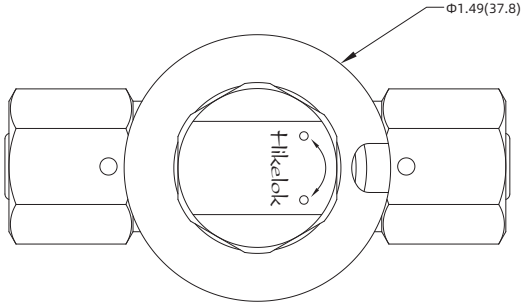
Rotatable male GFS Fittings

Directional Handle

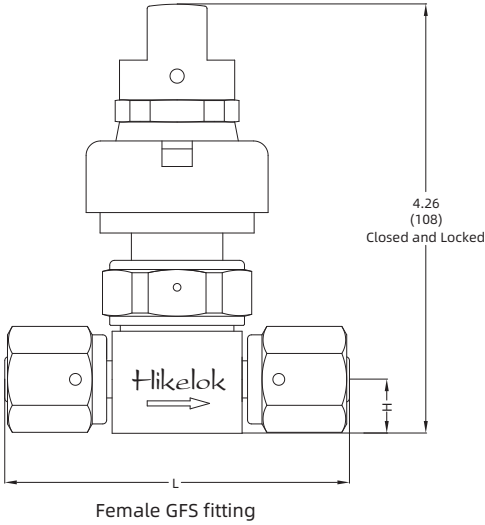
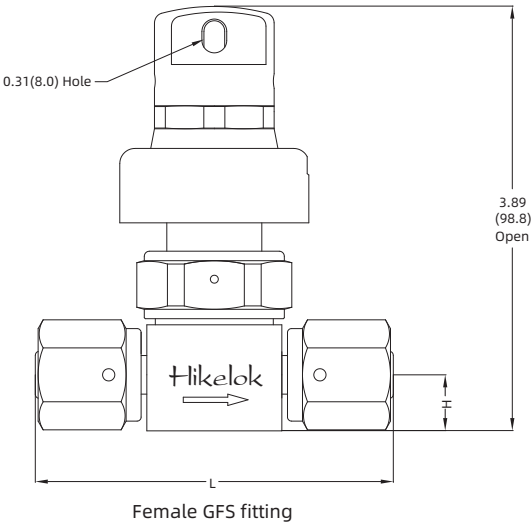
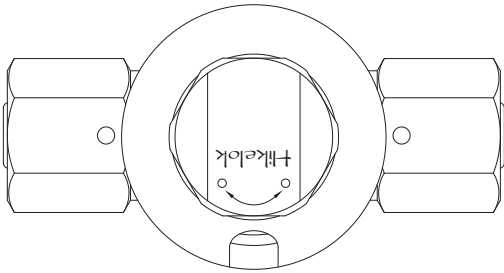


Rotatable male GFS Fittings

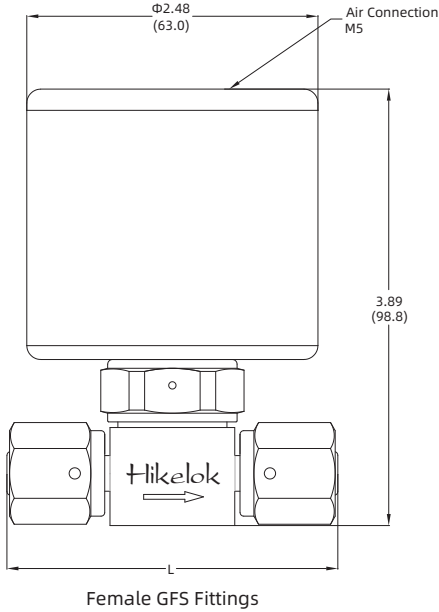
Integral Lockout



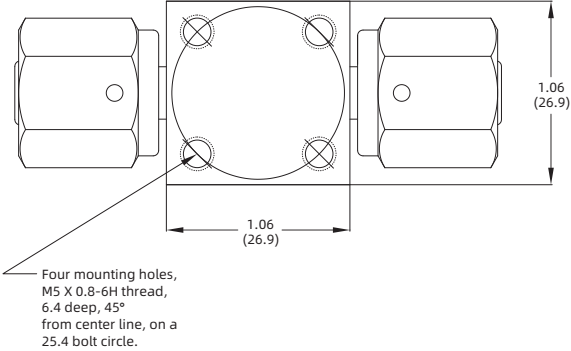
Handle



Pneumatic Actuator



Bottom



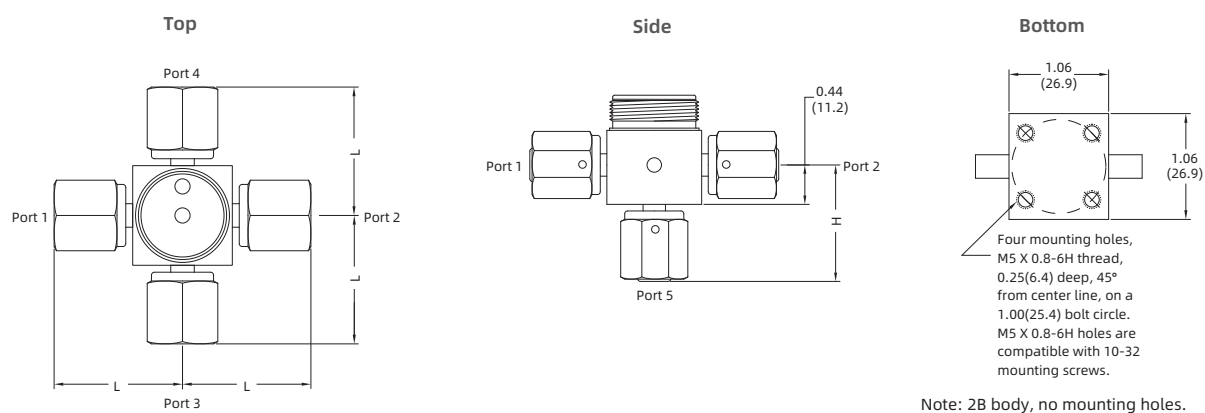
Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)	
		L	H
DV5-FBW4-H-	1/4" tube butt weld 0.30"(7.6 mm) tube stub, 0.035" (0.89 mm) wall	1.74(44.2)	0.44(11.2)
DV5-FBW4S-H-	1/4" tube butt weld 0.26"(6.6 mm) tube stub, 0.035" (0.89 mm) wall	1.61(40.9)	0.44(11.2)
DV5-MBW6-H-	6 mm tube butt weld, 1 mm wall	1.74(44.2)	0.44(11.2)
DV5-FGFS4-H-	1/4" female GFS fitting	2.78(70.6)	0.44 (11.2)
DV5-RGFS4-H-	1/4" rotatable holes are male GFS fitting		
DV5-GFS4-H-	1/4" integral male GFS fitting	2.30(58.4)	0.44(11.2)
DV5-F4-H-	1/4" Hikelok tube fittings	2.46(62.5)	0.44(11.2)
DV5-M6-H-	6 mm Hikelok tube fittings	2.45(62.2)	0.44(11.2)

Multiport and Elbow Valves

- ❖ Select a flow path as viewed from the top of the valve
- ❖ A a next to the port number indicates inlet of the valve
- ❖ A b next to the port number indicates outlet of the valve

Designator	Schematic	Flow Path		Designator	Schematic	Flow Path	
		Closed	Open			Closed	Open
2A				3D			
2B				3E			
2C				3F			
4M				3G			
4N				3K			

End Connections and Dimentions



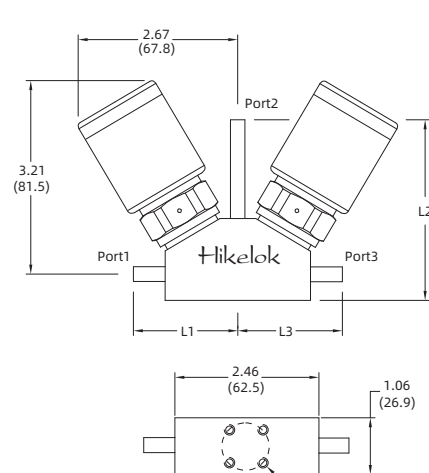
Designator	End Connection		Dimension, in. (mm)	
			L	H
FBW4	1/4" tube butt weld 0.30"(7.6 mm) tube stub, 0.035"(0.89 mm) wall		0.87(22.1)	0.76(19.3)
FBW4S	1/4" tube butt weld 0.26"(6.6 mm) tube stub, 0.035" (0.89 mm) wall		0.81(20.6)	0.70(17.8)
MBW6	6mm tube butt weld , 1 mm wall		0.87(22.1)	0.76(19.3)
FGFS4	1/4" female GFS fitting		1.39(35.3)	1.28(32.5)
RGFS4	1/4" rotatable male GFS fitting		1.39(35.3)	1.28(32.5)

Multivalve Manifolds

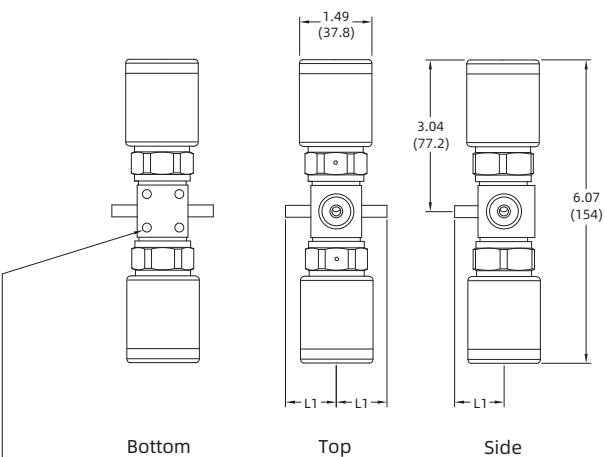
Designator	Schematic	Flow Path
V		
W		
D		

End Connections and Dimentionns

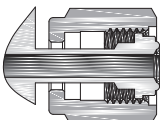
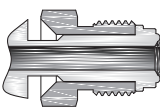
V and W Multivalve Manifolds



D Multivalve Manifold

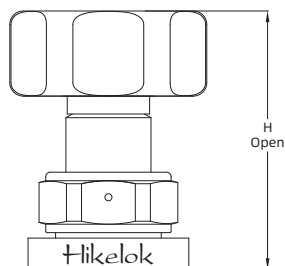


Four bottom mounting holes, M5 X 0.8-6H thread, 0.25 (6.4) deep, located 45° from center line, on a 1.00 (25.4) bolt circle.
M5 X 0.8-6H holes are compatible with 10-32 mounting screws.

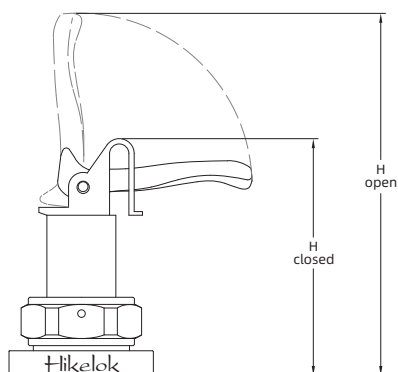
Designator	End Connection		Dimensions, in. (mm)				
			V and W Multivalve Manifolds				D Multivalve Manifold
			L1	L2		L3	L1
				Low-pressure	High-pressure		
FBW4	1/4" tube butt weld 0.30"(7.6 mm) tube stub, 0.035"(0.89 mm) wall		1.81(46.0)	2.79(70.9)	4.04(103)	1.81(46.0)	0.87(22.1)
FGFS4	1/4" female GFS fitting		2.03(51.6)	2.66(67.6)	3.91(99.3)	2.03(51.6)	1.39(35.3)
RGFS4	1/4" rotatable male GFS fitting		2.39(60.7)	3.35(85.1)	4.60(117)	2.39(60.7)	

IGS Modular Surface-Mount Valves

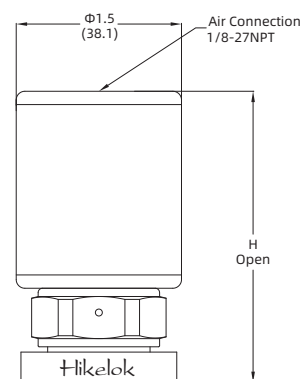
Directional and Round Handles



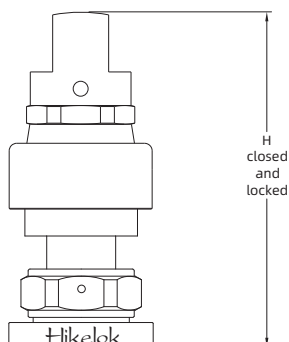
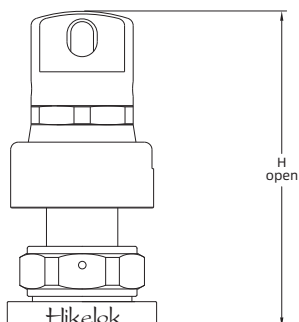
Toggle Handle



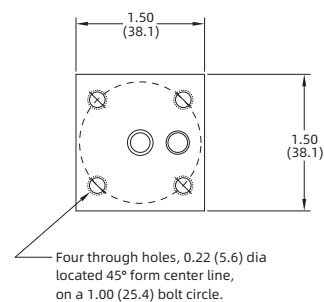
Pneumatic Actuator



Integral Lockout Handle



Bottom



Handle Type	Dimensions, in.(mm)			
	Low-Pressure		High-Pressure	
	H Open	H Closed	H Open	H Closed
Directional and Roud	2.36(59.9)	2.34(59.4)	2.36(59.9)	2.34(59.4)
Integral Lockout	3.25(82.6)	3.59(91.2)	3.41(86.6)	3.78(96.0)
Toggle	2.83(71.9)	4.04(103)		

Notice: Toggle Handle and Pneumatic Actuator are not used for high pressure system.

How to Order

DV5 — **FBW6** — **FBW4** — **H** — **R3A** — **NO** — **316LVV**

Series	Port 1 Type	Port 1 Size	Port 2/3/4/5 Type	Port 2/3/4/5 Size	Pressure Type	Colour	Flow Path	Actuator/Handle	Body Material
DV5	F Fractional Tube Fitting	2 1/8 in.	Same as port 1		H High-Pressure Valves	Blue	Straight	Round Handle	316 316 S.S.
	M Metric Tube Fitting	4 1/4 in.				B Black	2A	DH Directional Handle	316L 316L S.S.
	FBW Fractional Tube Butt Weld	6 6 mm	L Low-Pressure Valves	W White	2B	IH Integral Lockout Handle	316LV 316 VAR S.S.		
	MBW Metric Tube Butt Weld			Y Yellow	2C		316LVV 316L VIM-VARS.S		
	GFS Male GFS Fitting			G Green	3D	TH Toggle Handle			
	FGFS Female GFS Fitting			R Red	3E	NC Pneumatic, Normally closed			
	RGFS Rotatable Male GFS Fitting				3F				
					3G	NO Pneumatic, Normally open			
					3K				
					4M				
					4N				
					M1V				
					M1W				
					M1D				

General-Purpose Diaphragm Valves

DV6 Series

Features

- ❖ Maximum working pressure: 3045 psig (210 bar)
- ❖ Working temperature: -10°F to 150°F (-23°C to 65°C)
- ❖ 316L VIM-VAR stainless steel body is available
- ❖ Suitable for ultrahigh-purity applications
- ❖ Elgiloy material for strength and corrosion resistance for long cycle life
- ❖ Fully contained PCTFE seat design provides excellent resistance to swelling and contamination
- ❖ Ball drive design reduces operating torque
- ❖ Wetted Surface Electropolished, Roughness Ra finished to an average of Ra5 µin (0.13 µm)
- ❖ Helium leak tested, maximum leak rate of 1x10⁻⁹ std cm³/s
- ❖ Low-pressure and high-pressure models
- ❖ Manual or pneumatic actuation
- ❖ Aluminum piston accelerated open / close speed
- ❖ Different handle types are available
- ❖ Can be used in vacuum applications



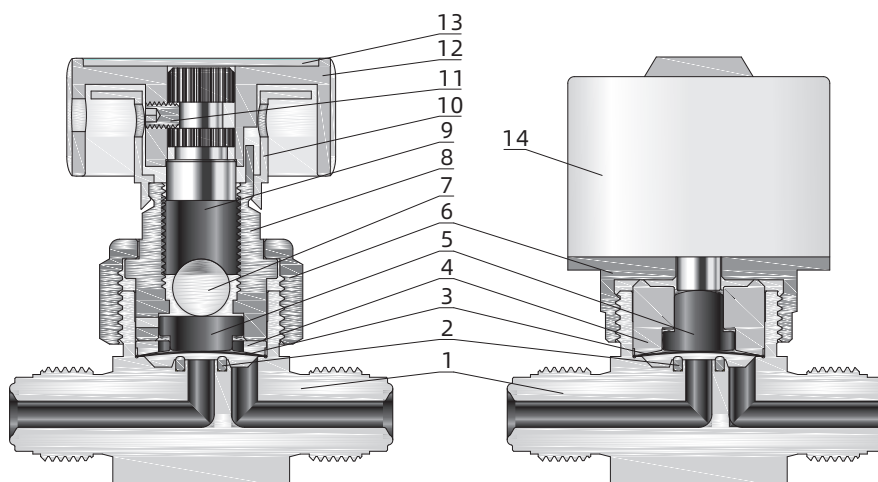
Technical Data

Sort	Max. Working Pressure psig(bar)	Working Temperature Range °F(°C)	Flow Coefficient (Cv)	Orifice in.(mm)	Pneumatic Actuator Operating Pressure psig (bar)
Low-pressure	250(17.2)	-10 to 150 (-23 to 65)	0.27	0.16 (4.1)	58 to 87 (4.0 to 6.0)
High-pressure	3045(210)		0.20		—
Low-pressure	145(10)		0.70	0.27 (7.0)	58 to 87 (4.0 to 6.0)

Flow Data

Pressure Drop to Atmosphere ΔP(bar)	Low-Pressure Models Cv=0.27		High-Pressure Models Cv=0.2		Low-Pressure Models Cv=0.7	
	Air std L/min	Water std L/min	Air std L/min	Water std L/min	Air std L/min	Water std L/min
0.68	86	3.2	64	2.4	224	8.4
3.4	230	7.2	170	5.4	595	18.7
6.8	410	10.2	300	7.6	1056	26.5

Materials of Construction



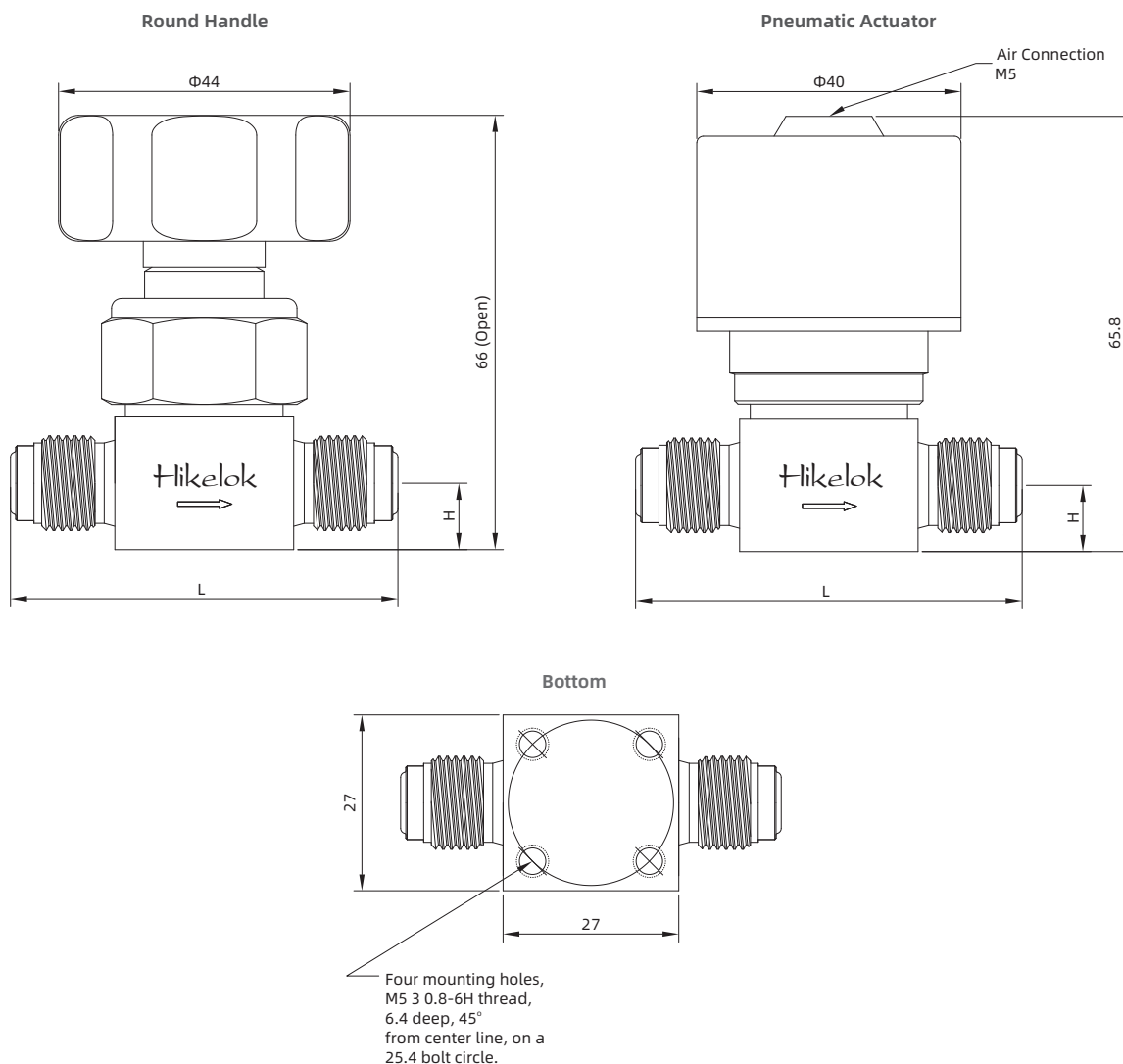
Item	Component	Material Grade / ASTM Specification
1	Body	316 S.S. / A479 or 316L S.S. / A479 or 316L VIM-VAR S.S. / SEMI F20
2	Seat	PCTFE / D1430
3	Diaphragm	Elgiloy / AMS 5876
4	Bonnet	316 S.S. / A479
5	Button	
6	Bonnet nut	
7	Ball	440C / A276
8	Drive	316 S.S. / A479
9	Stem	
10	Indicator ring	PC
11	Screw	304 S.S.
12	Handle	Aluminum
13	Label	PVC
14	Pneumatic Actuator	Aluminum

Product Technology Grade

Grade	General purpose	Special Cleaning and Packaging	Ultrahigh-purity
Material	316 S.S. or 316L S.S. or 316L VIM-VAR S.S. / SEMI F20		
Wetted Surface Roughness	Ra 10 µin. (0.25 µm)	Ra 5 µin. (0.13 µm)	
Process	Machine finished	Electropolished	
Process Specification	FC-01 and Packaging Standard Cleaning	FC-02 Packaging Special Cleaning and	FC-03 Specification Ultrahigh-Purity Process
Cleaning	Thrice degreasinga ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultrahigh-purity cleaning with a continuously monitored, deionized water, ultrasonic cleaning system
Assembly	At atmosphere	Performed in specially cleaned areas	Performed in ISO Class 4 work areas
Testing	Inboard helium leak tested to maximum leak rate of 1x10 ⁻⁹ std cm ³ /s		
Packing	Individually bagged	Individually bagged	Valves are double bagged and vacuum sealed in cleanroom bags

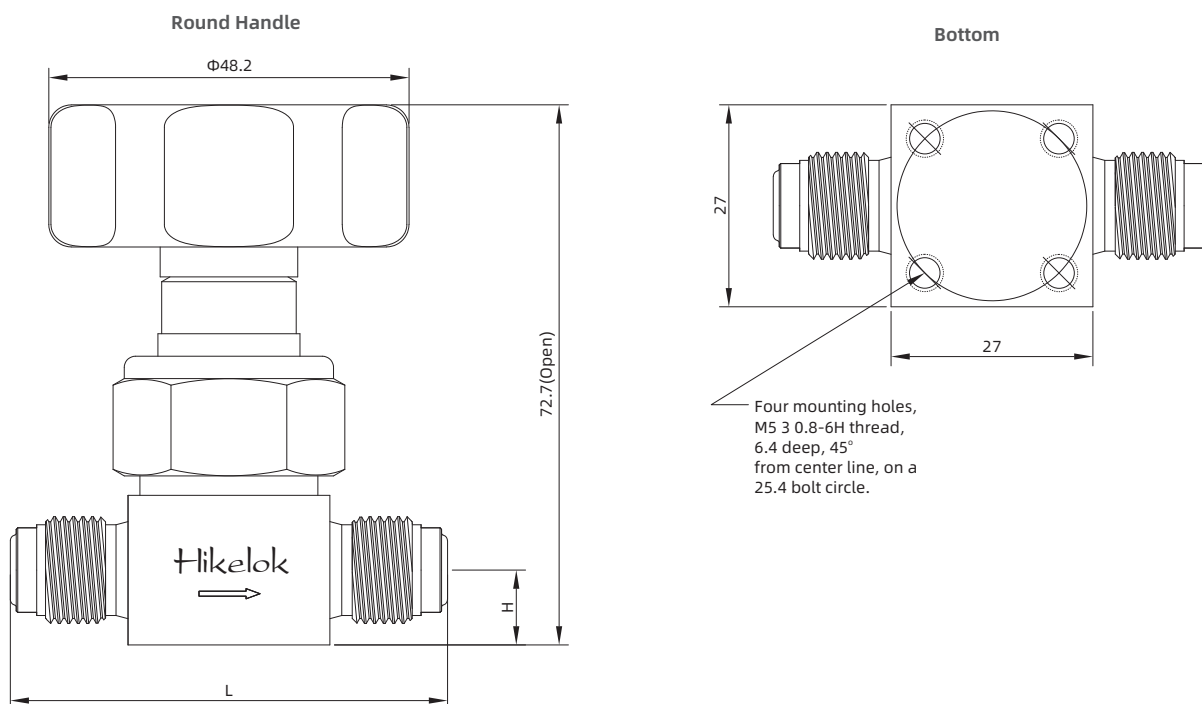
Dimensions

Low-Pressure Valves



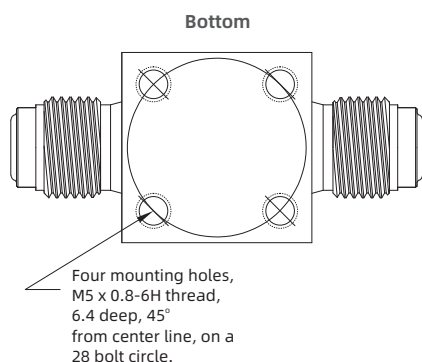
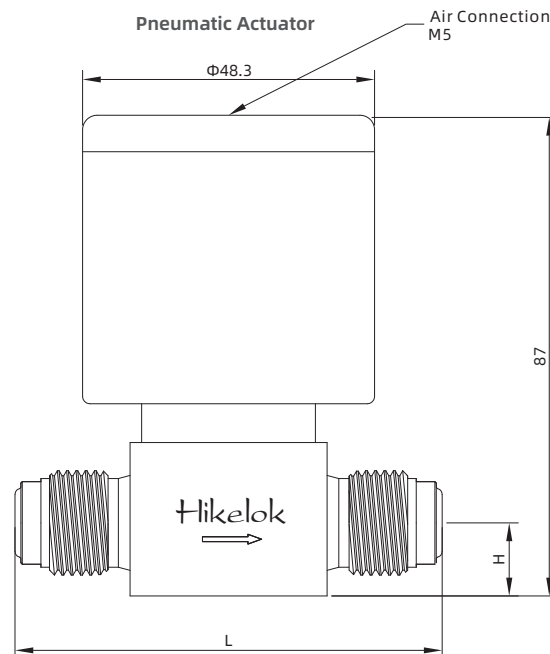
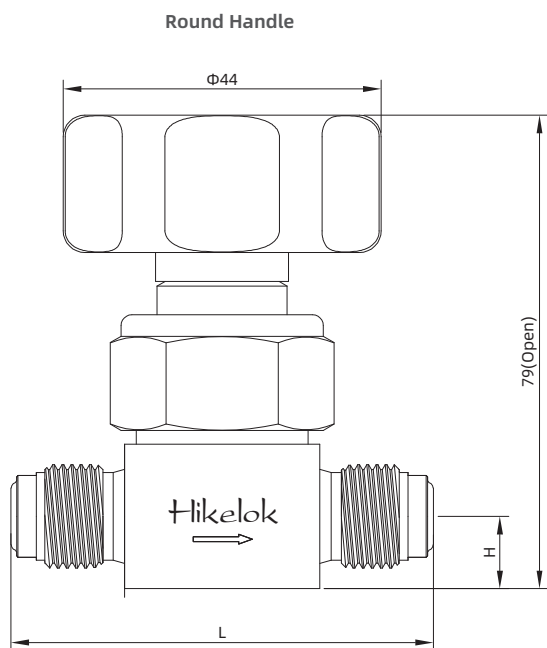
Basic Ordering Number	Connection Type and Size	Dimension, in.(mm)	
		L	H
DV6-FBW4-L	1/4" tube butt weld 0.30"(7.6 mm) tube stub, 0.035"(0.89 mm)wall	1.74(44.2)	0.44(11.2)
DV6-MBW6-L	6 mm tube butt weld, 1 mm wall		
DV6-FGFS4-L	1/4" female GFS fitting	2.78(70.6)	0.44(11.2)
DV6-RGFS4-L	1/4" rotatable male GFS fitting		
DV6-GFS4-L	1/4" integral male GFS fitting	2.30(58.4)	0.44(11.2)
DV6-F4-L	1/4" Hikelok tube fittings	2.46(62.5)	0.44(11.2)
DV6-M6-L	6 mm Hikelok tube fittings	2.45(62.2)	0.44(11.2)

High-Pressure Valves



Basic Ordering Number	Connection Type and Size	Dimension, in.(mm)	
		L	H
DV6-FBW4-H	1/4" tube butt weld 0.30"(7.6 mm) tube stub, 0.035"(0.89 mm)wall	1.74(44.2)	0.44(11.2)
DV6-MBW6-H	6 mm tube butt weld, 1 mm wall		
DV6-FGFS4-H	1/4" female GFS fitting	2.78(70.6)	0.44(11.2)
DV6-RGFS4-H	1/4" rotatable male GFS fitting		
DV6-GFS4-H	1/4" integral male GFS fitting	2.30(58.4)	0.44(11.2)
DV6-F4-H	1/4" Hikelok tube fittings	2.46(62.5)	0.44(11.2)
DV6-M6-H	6 mm Hikelok tube fittings	2.45(62.2)	0.44(11.2)

Low-Pressure Valves



Basic Ordering Number	Connection Type and Size	Dimension, in.(mm)	
		L	H
DV6-GFS8-L	1/2" integral male GFS fitting	3.03(77.0)	0.63(16.0)
DV6-FGFS8-L	1/2" female GFS fitting	4.12(104.6)	0.63(16.0)
DV6-F6-L	3/8" Hikelok tube fittings	3.25(82.5)	0.63(16.0)
DV6-F8-L	1/2" Hikelok tube fittings	3.55(90.2)	0.63(16.0)

How to Order

DV6 – F4 – M6 – L – R2C – NC – 316									
Series	Port 1 Type	Port 1 Size	Port 2/3/4/5 Type	Port 2/3/4/5 Size	Pressure Type	Colour	Flow Path	Actuator/Handle	Body Material
DV6	F Fractional Tube Fitting	2 1/8 in.	Same as port 1		H High-Pressure Valves	Blue	Straight	Round Handle	316 316 S.S.
	M Metric Tube Fitting	4 1/4 in.			L Low-Pressure Valves	B Black	2A	NC Pneumatic, Normally closed	316L 316L S.S.
	FBW Fractional Tube Butt Weld	6 3/8 in. or 6 mm	Specify in the same way as port 1 type and port 1 size			W White	2B	NO Pneumatic, Normally open	316LV 316 VAR S.S.
	MBW Metric Tube Butt Weld	8 1/2 in.				Y Yellow	2C		316LVV 316L VIM-VARS.S
	GFS Male GFS Fitting					G Green	3D		
	FGFS Female GFS Fitting					R Red	3E		
	RGFS Rotatable Male GFS Fitting						3F		
							3G		
							3K		
							4M		
							4N		

Diaphragm Valves

DV7 Series

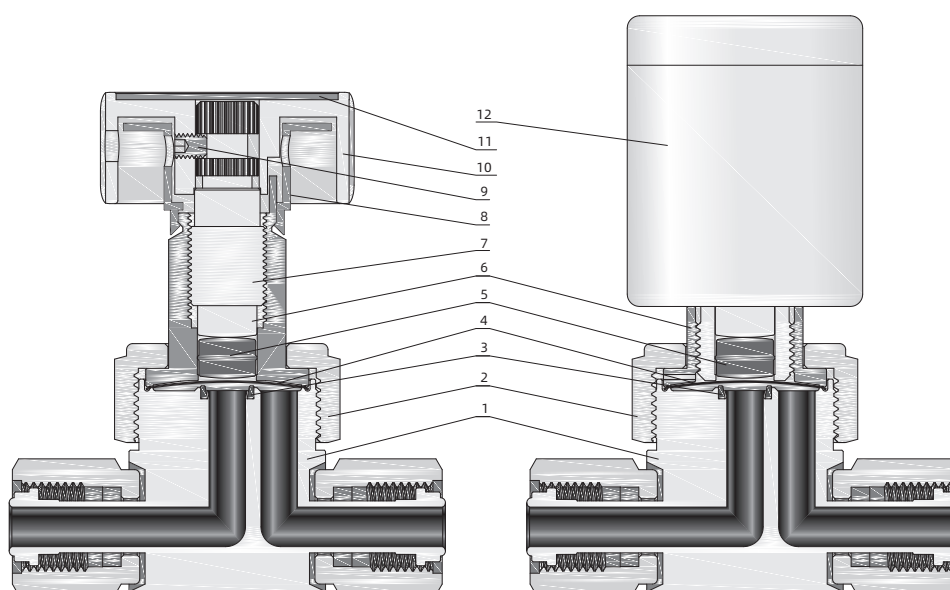
Features

- ❖ Maximum working pressure: 300 psig (20.6 bar)
- ❖ Working temperature: -10°F to 150°F (-23°C to 65°C)
- ❖ Flow coefficient of 0.62 meets high flow requirements
- ❖ 316L VIM-VAR stainless steel body is available
- ❖ Suitable for ultrahigh-purity applications
- ❖ Elgiloy material for strength and corrosion resistance for long cycle life
- ❖ Fully contained PCTFE seat design provides excellent resistance to swelling and contamination
- ❖ Wetted Surface Electropolished, Roughness Ra finished to an average of Ra5 µin (0.13 µm)
- ❖ Helium leak tested, maximum leak rate of 1×10^{-9} std cm³/3
- ❖ Manual or pneumatic actuation
- ❖ Aluminum piston accelerated open / close speed
- ❖ Can be used in vacuum applications

Technical Data

Sort	Max. Working Pressure psig(bar)	Working Temperature Range °F(°C)	Flow Coefficient (Cv)	Orifice in.(mm)	Pneumatic Actuator Operating Pressure psig (bar)
Round handle	300 (20.6)	-10 to 150 (-23 to 65)	0.62	0.23 (5.8)	—
Pneumatic actuator	125 (8.6)				70 to 100 (4.9 to 6.8)

Materials of Construction

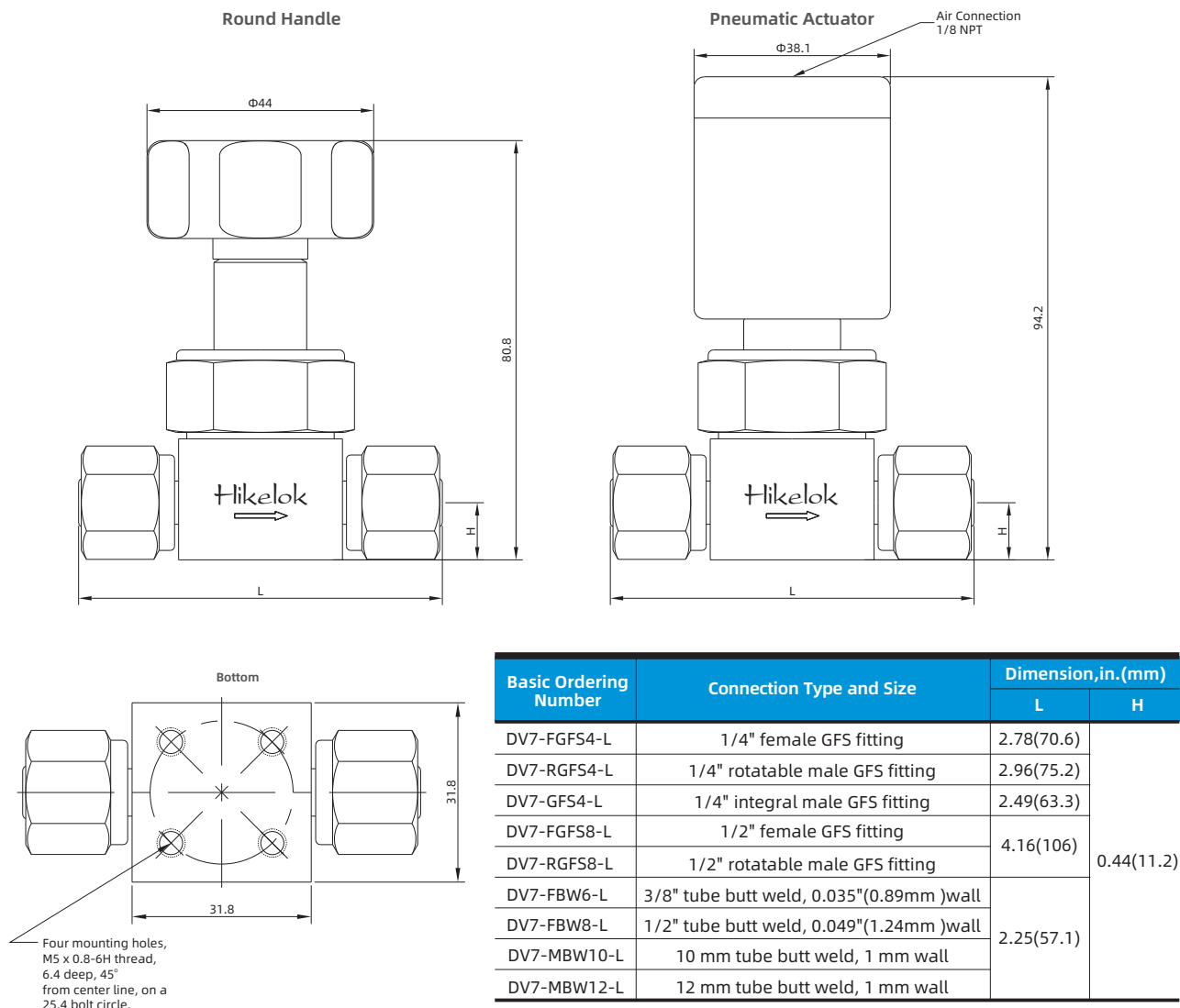


Item	Component	Material Grade/ASTM Specification
1	Body	316 S.S. / A479 or 316L S.S. / A479 or 316L VIM-VAR S.S. / SEMI F20
2	Bonnet nut	316 S.S. / A479
3	Seat	PCTFE / D1430
4	Diaphragm	Elgiloy / AMS 5876
5	Button	316 S.S. / A479
6	Bonnet	316 S.S. / A479
7	Stem	316 S.S. / A479
8	Indicator ring	PC
9	Screw	304 S.S.
10	Handle	Aluminum
11	Lable	PVC
12	Pneumatic Actuator	Aluminum

Product Technology Grade

Grade	General purpose	Special Cleaning and Packaging	Ultrahigh-purity
Material	316 S.S. or 316L S.S. or 316L VIM-VAR S.S./SEMI F20		
Wetted Surface Roughness	Ra 10 μin. (0.25 μm)	Ra 5 μin. (0.13 μm)	
Process	Machine finished	Electropolished	
Process Specification	FC-01 and Packaging Standard Cleaning	FC-02 Packaging Special Cleaning and	FC-03 Specification Ultrahigh-Purity Process
Cleaning	Thrice degreasinga ultrasonic cleaning	Special cleaning with non-ozone-depleting chemicals	Ultrahigh-purity cleaning with a continuously monitored, deionized water, ultrasonic cleaning system
Assembly	At atmosphere	Performed in specially cleaned areas	Performed in ISO Class 4 work areas
Testing	Inboard helium leak tested to maximum leak rate of 1×10^{-9} std cm ³ /s		
Packing	Individually bagged	Individually bagged	Valves are double bagged and vacuum sealed in cleanroom bags

Dimensions



How to Order

DV7 – FGFS4 – GFS4 – L – R2C – NC – 316									
Series	Port 1 Type	Port 1 Size	Port 2/3/4/5 Type	Port 2/3/4/5 Size	Pressure Type	Colour	Flow Path	Actuator/Handle	Body Material
DV7	FBW	Fractional Tube Butt Weld	4	1/4 in.	L Low-Pressure Valves	Blue	Straight	Round Handle	316 316 S.S.
	MBW	Metric Tube Butt Weld	6	3/8 in.		B Black	2A	NC Pneumatic, Normally closed	316L 316L S.S.
			8	1/2 in.		W White	2B	NO Pneumatic, Normally open	316LV 316 VAR S.S.
	GFS	Male GFS Fitting	10	10 mm		Y Yellow	2C		316LVV 316L VIM-VAR S.S.
	FGFS	Female GFS Fitting	12	12 mm		G Green	3D		
						R Red	3E		
							3F		
							3G		
							3K		
							4M		
							4N		
	RGFS	Rotatable Male GFS Fitting							