



Partek PFA/PTFE Valves

Catalog 4182/USA

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



ENGINEERING YOUR SUCCESS.

Buy: www.ValinOnline.com | Phone 844-385-3099 | Email: CustomerService@valin.com

Table of Contents

Technical Information	3
Manual Valves	
MV-1 PTFE Stop Cock Valve.....	4
MV-6 PTFE Ball Valve.....	6
MV-8 PTFE Sampling Valve.....	8
MV-10 1/4" PFA 2 Way Valve	10
MV-10 1/4" PFA 3 Way Valve	12
MV-11 1/2" PFA 2 Way Valve	14
MV-11 1/2" PFA 3 Way Valve	16
MV-11 1/2" PFA 2 Way Adjustable Valve.....	18
MV-12 1" PFA 2 Way Valve	20
MV-13 PFA Needle Valve.....	22
MV-14 PFA Stop Cock Valve.....	24
MV-16 3/4" PFA 2 Way Valve	26
MV-16 3/4" PFA 3 Way Valve	28
MV-16 3/4" PFA Sampling Valve	30
MV-20 1/4" - 1" PTFE Distribution Valve.....	32
Pneumatic Valves	
PV-1 Miniature Pneumatic PTFE Valve.....	34
PV-10 1/4" Pneumatic PFA 2 Way Valve.....	36
PV-10 1/4" Pneumatic PFA 3 Way Valve.....	38
PV-11 1/2" Pneumatic PFA 2 Way Valve.....	40
PV-11 1/2" Pneumatic PFA 3 Way Valve.....	42
PV-11 1/2" Pneumatic PFA 2 Way Adj. Bypass Valve	44
PV-12 1" Pneumatic PFA 2 Way Valve.....	46
PV-16 3/4" Pneumatic PFA 2 Way Valve.....	48
PV-16 3/4" Pneumatic PFA 3 Way Valve.....	50
PV-16 3/4" Pneumatic PFA Sampling Valve.....	52
PV-20 1/4" - 1" PTFE Distribution Valves	54
Other Valves	
CV-1 1/4" - 1" PTFE Check Valve	56
RV 1/4" Relief Valve.....	58
SV-2 1/4" Solenoid Valve.....	60
Offer of Sale	62



Overview

Partek produces products that are made from only the finest Fluoropolymers available. These Fluoropolymers are resistant to numerous chemicals and solvents. This information provides only a brief technical overview. For more comprehensive technical and chemical compatibility information, please ask for Technical Bulletin 0002-T1/USA.

Fluorinated Polymers

Chemical Properties

- Resistivity to corrosive agents
- Non-solubility
- Long term weatherability
- Non-adhesiveness
- Nonflammability

Electrical Properties

- Low dielectric constant
- Low dissipation factor
- High arc resistance
- High surface resistance
- High volume resistivity

Mechanical Properties

- Flexibility at low temperatures
- Low coefficient of friction
- Stability at high temperatures

PTFE is a fluorocarbon resin that is isostatically compression molded into various shapes and configurations. It is chemically resistant to all chemicals and solvents with the exception of some molten alkali metals, molten sodium hydroxide, elemental fluorine and certain fluorinating agents. At Partek we use PTFE for machining the bodies and components of various valves and manifolds. It offers chemical resistance and stability at high temperatures.

Modified PTFE material is used primarily for diaphragms and bellows in our products. This material has the same processing and chemically resistant characteristics as the standard product but offers superior cycle life and integrity in diaphragm products.

PFA is a copolymer of tetrafluoroethylene and perfluoroalkyl vinyl ether. The resultant polymer contains the carbon-fluorine backbone chain typical of PTFE, but unlike PTFE, does not require special fabricating techniques. PFA pellets have good melt flow characteristics that allow for processing via extrusion, compression, blow, transfer and injection molding methods. It has outstanding chemical and solvent resistant characteristics over a temperature range even greater than PTFE. PFA is offered in various grades of purity and cleanliness making it the material of choice for the semiconductor market.

C_v and K_v Formulas

$$Q = C_v \sqrt{\frac{\Delta P}{SG}}$$

Q = Flow (GPM)
 ΔP = Pressure Drop (PSIG)
 SG = Specific Gravity

$$Q = K_v \sqrt{\frac{\Delta P}{Y}}$$

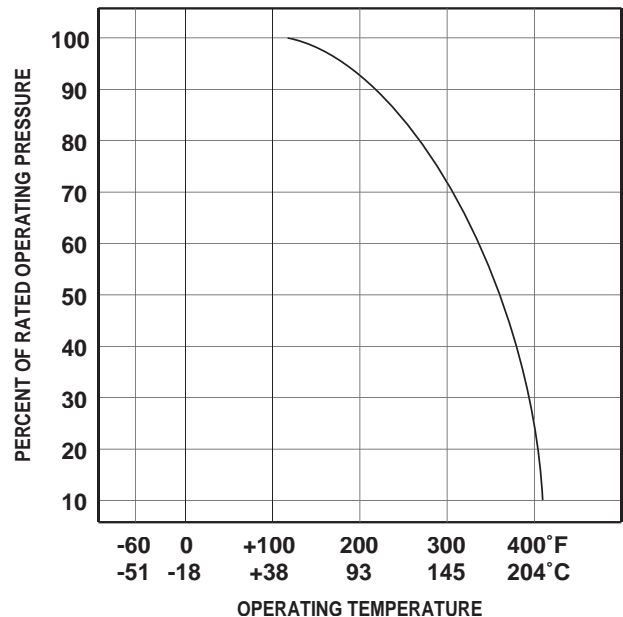
Q = Flow (LPM)
 ΔP = Pressure Drop (BAR)
 Y = Specific Gravity (kg/cm³)

$$1 K_v = 14.26 C_v$$

“C_v” flow factor is the number of gallons of fluid that pass through a given orifice area in one minute, at a pressure drop of 1 PSIG.

“K_v” flow factor is the number of liters of fluid that pass through a given orifice area in one minute, at a pressure drop of 1 bar.

PERCENT OF RATED PRESSURE VS. TEMPERATURE

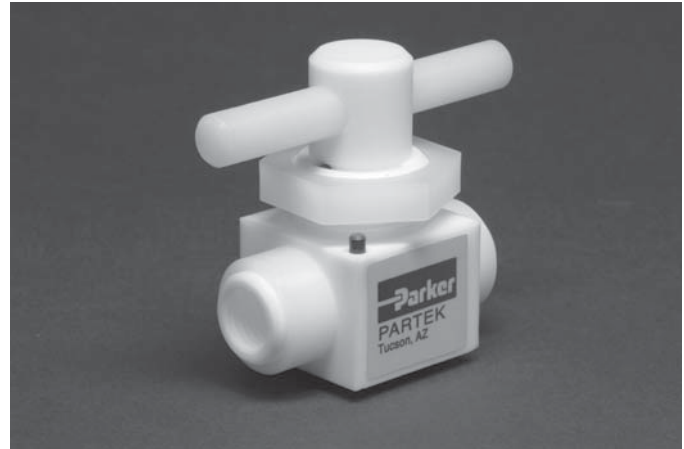


For operation at temperatures above ambient conditions, please refer to the chart above for reduced pressure ratings.

MV-1 Manual Stop Cock Valve

Product Overview

The MV-1 PTFE Stop Cock Valve is designed for use in high purity semiconductor fluid applications, and is also ideally suited for ultra-pure water and aggressive chemicals. A precision-machined PTFE body with a straight through flowpath is combined with a PTFE full flow orifice stem for maximum flow, minimum pressure drop and 1/4" turn operation. The MV-1 is offered for inline and panel mounted applications.



Features

Full flow orifice.

The precision machined stem and body provide tight shut off and 1/4 turn operation.

Parofluor O-Ring stem seals.

Benefits

Maximum flow at the desired size.

Minimum pressure drop. High cycle life.

Positive body to stem seal.

Specifications

Materials of Construction

Wetted: PTFE, Parker Parofluor™

Non-wetted: HDPE, PFA, PVC, PVDF, Titanate

Pressure Ranges

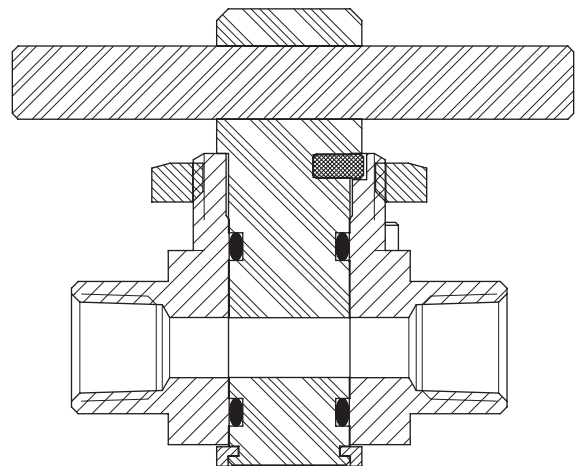
0 to 60 PSIG (4.1 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

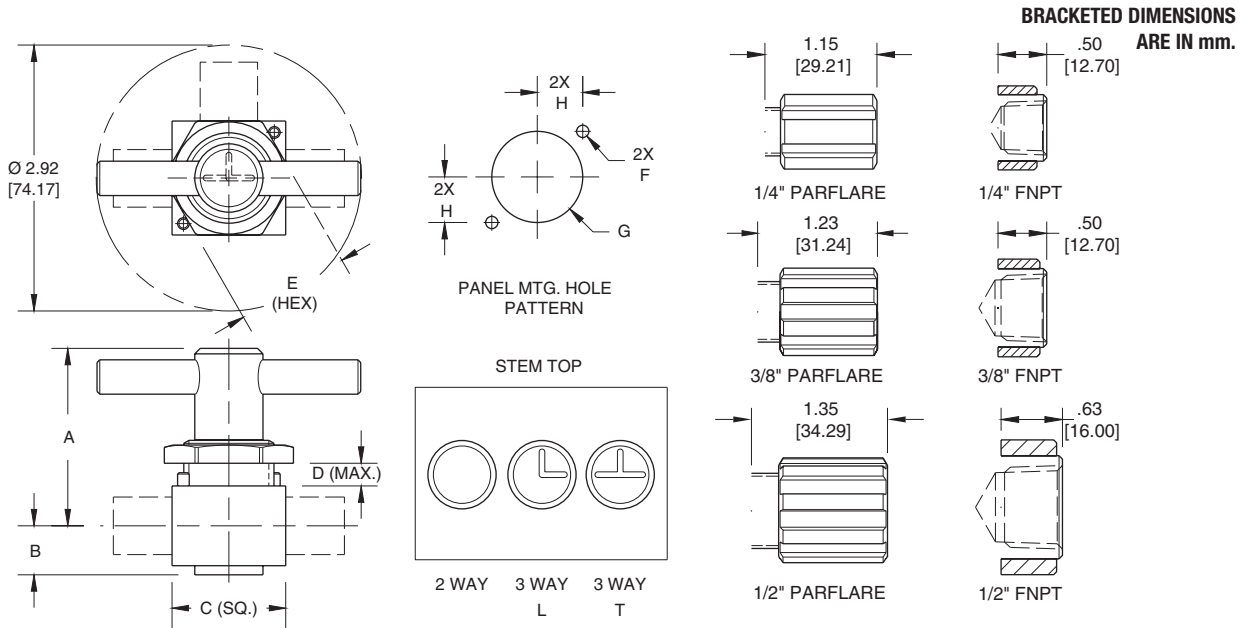
Temperature Ranges

Ambient: -60° - 212° F (-51° - 100° C)

Fluid: -60° - 400° F (-51° - 204° C)

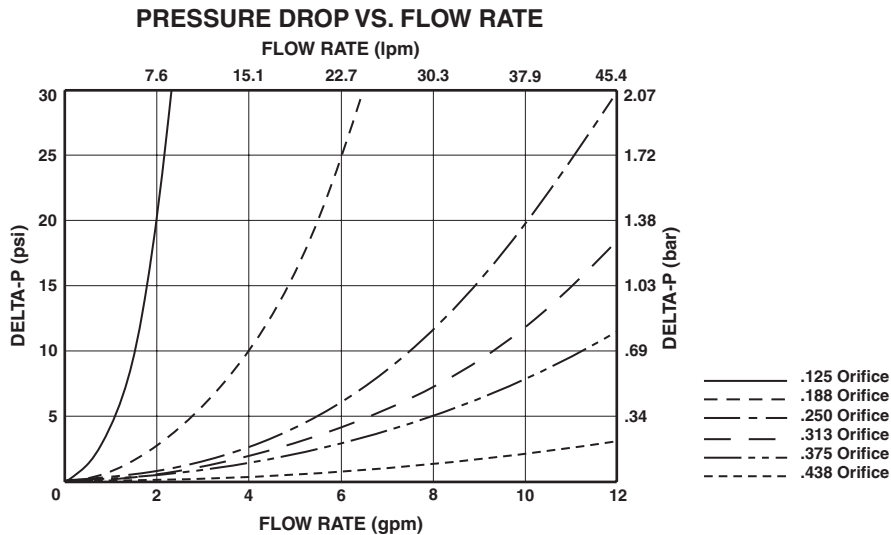


MV-1 Manual Stop Cock Valve



Model Number	Cv	Kv	Orifice	Flow Config.	Port Config.	Dimensions in [mm]									
						A	B	C	D	E	F	G	H		
MV-1-1414	1.95	27.8	.250	2 WAY	1/4" FNPT	1.78 [45.21]	.61 [15.49]	1.25 [31.75]	.25 [6.35]	1.31 [33.27]	Ø .14 [3.56]	Ø 1.00 [25.40]	.50 [12.70]		
MV-1-1424	1.95	27.8	.250	3 WAY L	1/4" FNPT	1.78 [45.21]	.61 [15.49]	1.25 [31.75]	.25 [6.35]	1.31 [33.27]	Ø .14 [3.56]	Ø 1.00 [25.40]	.50 [12.70]		
MV-1-1434	1.95	27.8	.250	3 WAY T	1/4" FNPT	1.78 [45.21]	.61 [15.49]	1.25 [31.75]	.25 [6.35]	1.31 [33.27]	Ø .14 [3.56]	Ø 1.00 [25.40]	.50 [12.70]		
MV-1-6214	.36	5.1	.125	2 WAY	1/4" Parflare	1.78 [45.21]	.61 [15.49]	1.25 [31.75]	.25 [6.35]	1.31 [33.27]	Ø .14 [3.56]	Ø 1.00 [25.40]	.50 [12.70]		
MV-1-6224	.36	5.1	.125	3 WAY L	1/4" Parflare	1.78 [45.21]	.61 [15.49]	1.25 [31.75]	.25 [6.35]	1.31 [33.27]	Ø .14 [3.56]	Ø 1.00 [25.40]	.50 [12.70]		
MV-1-6234	.36	5.1	.125	3 WAY T	1/4" Parflare	1.78 [45.21]	.61 [15.49]	1.25 [31.75]	.25 [6.35]	1.31 [33.27]	Ø .14 [3.56]	Ø 1.00 [25.40]	.50 [12.70]		
MV-1-1616	3.00	42.8	.375	2 WAY	3/8" FNPT	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-1626	3.00	42.8	.375	3 WAY L	3/8" FNPT	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-1636	3.00	42.8	.375	3 WAY T	3/8" FNPT	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-6416	1.95	27.8	.250	2 WAY	3/8" Parflare	1.78 [45.21]	.61 [15.49]	1.25 [31.75]	.25 [6.35]	1.31 [33.27]	Ø .14 [3.56]	Ø 1.00 [25.40]	.50 [12.70]		
MV-1-6426	1.95	27.8	.250	3 WAY L	3/8" Parflare	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-6436	1.95	27.8	.250	3 WAY T	3/8" Parflare	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-1818	6.55	93.4	.438	2 WAY	1/2" FNPT	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-1828	6.55	93.4	.438	3 WAY L	1/2" FNPT	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-1838	6.55	93.4	.438	3 WAY T	1/2" FNPT	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-6618	3.00	42.8	.375	2 WAY	1/2" Parflare	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-6628	2.50	35.7	.313	3 WAY L	1/2" Parflare	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		
MV-1-6638	2.50	35.7	.313	3 WAY T	1/2" Parflare	2.24 [56.90]	.74 [18.80]	1.50 [38.10]	.50 [12.70]	1.75 [44.45]	Ø .20 [5.08]	Ø 1.44 [36.58]	.60 [15.24]		

Parflare model numbers are supplied with PVDF nuts. For PFA nuts add -T to model number.



MV-6 Manual Ball Valve

Product Overview

The MV-6 PTFE Ball Valves are designed for use in high purity semiconductor applications, and are also ideally suited for use in ultra-pure water and aggressive chemicals. All sizes have wetted parts made entirely of PTFE. All valves are designed full port for minimal flow restrictions and are operated 1/4 turn with minimal torque.



Features

Floating ball design without o-rings ensures bubble tight sealing at high pressure.

Full port design; 1/4 turn operation with low torque tee handle.

Panel mounting is an option on all sizes.

Benefits

Bidirectional flow to 120 psi liquid or gas; High cycle life.

Ideal for quick shut-off in contamination-free applications.

Ideal for process instrumentation applications.

Specifications

Materials of Construction

Wetted: PTFE
Non-wetted: HDPE, PVDF and PVC

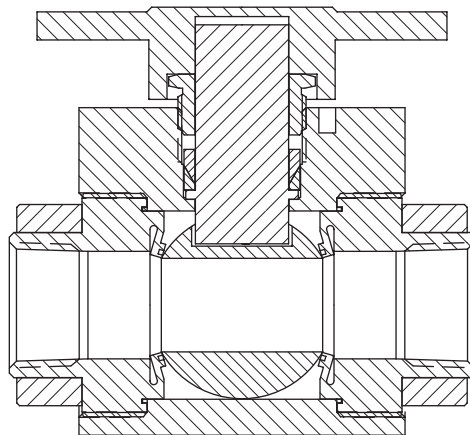
Pressure Ranges

25" HG vacuum (846 mbar) to 120 PSIG (8.3 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

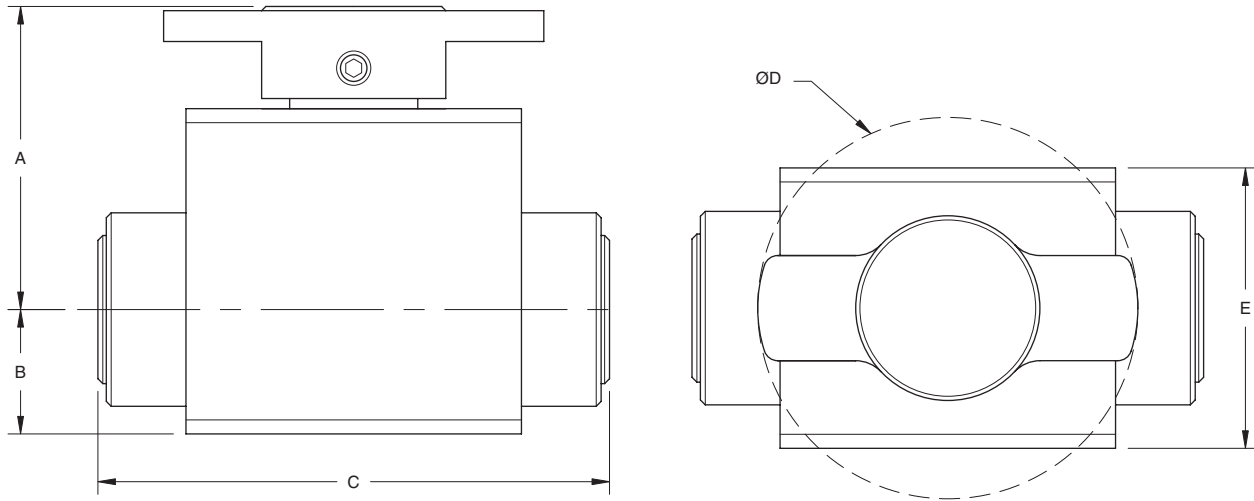
Temperature Ranges

Ambient: -60° - 176° F (-51° - 80° C)
Fluid: -60° - 400° F (-51° - 204° C)

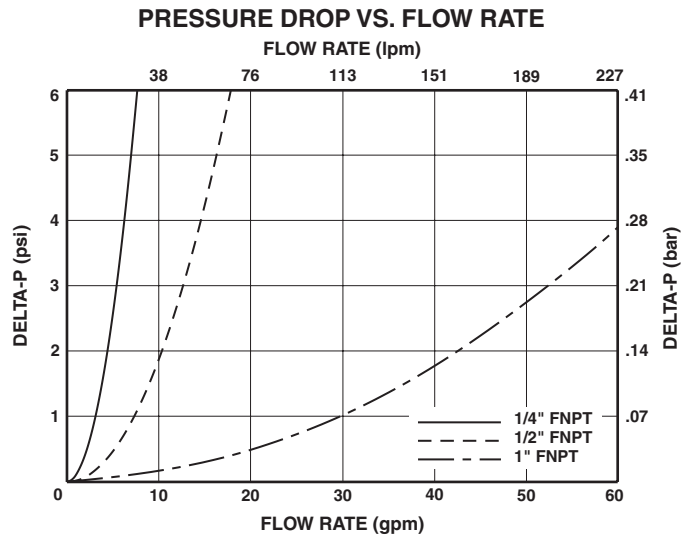


MV-6 Manual Ball Valve

BRACKETED DIMENSIONS
ARE IN mm.



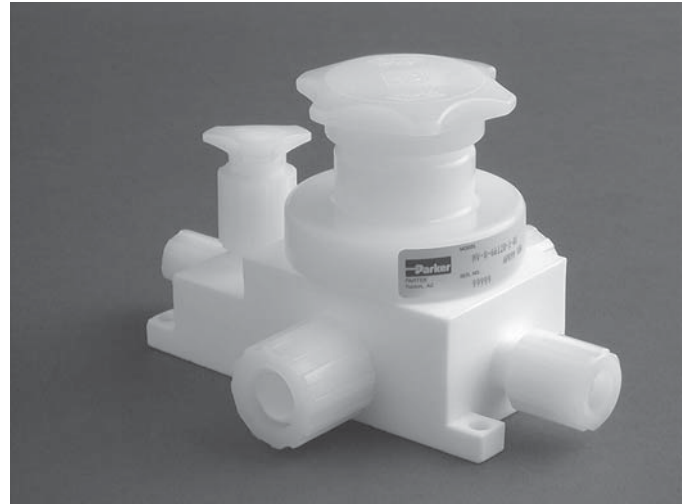
Model Number	Cv	Kv	Flow Config.	Port Config.	Dimensions in [mm]				
					A	B	C	D	E
MV-6-1414-0	1.88	26.81	ON/OFF	1/4" FNPT	1.73 [43.94]	.66 [16.76]	2.91 [73.91]	Ø 1.98 [50.29]	1.31 [33.27]
MV-6-1818-0	6.59	93.97		1/2" FNPT	2.24 [56.89]	.89 [22.60]	3.72 [94.49]	Ø 2.72 [69.08]	2.00 [50.80]
MV-6-116116-0	28.06	400.14		1" FNPT	3.18 [80.77]	1.39 [35.30]	5.00 [127.00]	Ø 4.40 [111.76]	2.53 [64.26]



MV-8 Manual Sampling Valve

Product Overview

The MV-8 PTFE Sampling Valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water or aggressive chemicals. The design utilizes a machined PTFE body with precision machined seat and diaphragm sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. The valve incorporates a full flow through port with a low dead volume down leg. The purge port option makes this the valve of choice for valve manifold boxes and distribution systems.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE, provides over five times the flexural life as compared to conventional PTFE.

Full flow through port.

Purge port option.

Benefits

Higher cycle life resulting in less downtime and lower replacement costs.

Reduced pressure drop.

Allows system maintenance downstream of valve without disrupting main flow.

Specifications

Materials of Construction

Wetted: PTFE, Modified PTFE
Non-wetted: PVDF

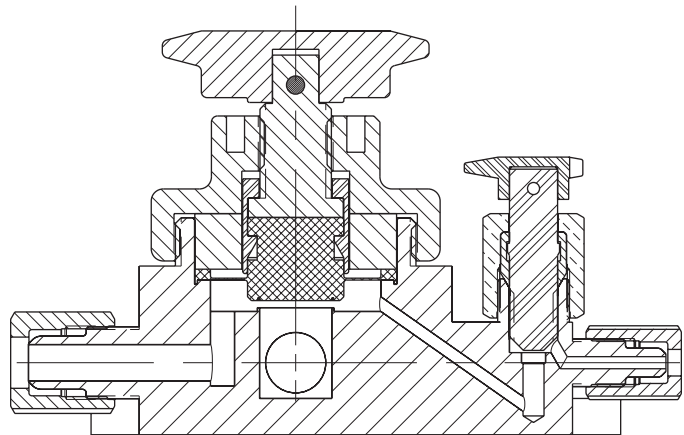
Pressure Ranges

27" HG vacuum (913 mbar) to 120 PSIG (8.3 bar)

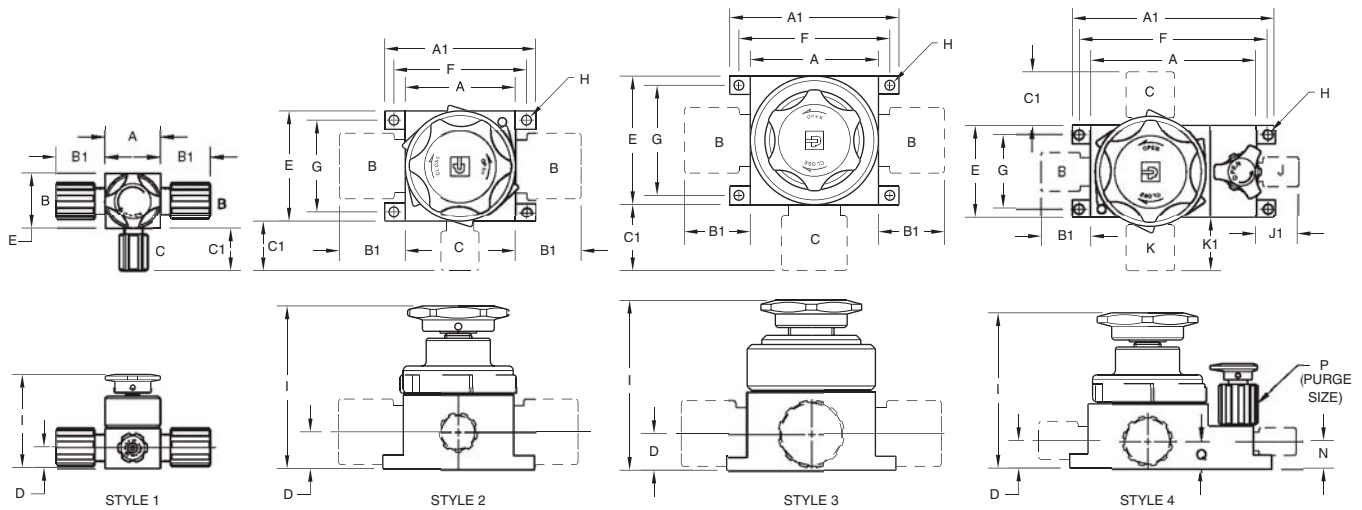
Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

Ambient: 0° - 212° F (17° - 100° C)
Fluid: 0° - 400° F (17° - 204° C)



MV-8 Manual Sampling Valve



DIMENSIONS (in)

STYLE	A	A1	B	B1	C	C1	D	E	F	G	H	I	J	J1	K	K1	N	P	Q	
MV-8-6684-1	1	1.50	-	1/2"	1.35	1/4"	1.15	.56	1.50	-	-	-	2.57							
MV-8-661212-1	2	3.50	4.62	3/4"	1.46	3/4"	1.46	1.00	3.50	4.12	3.00	Ø .266	4.51							
MV-8-66128-1	2	3.00	4.12	3/4"	1.46	1/2"	1.35	1.00	3.00	3.62	2.50	Ø .266	4.51							
MV-8-66164-1	2	3.00	4.12	1"	1.80	1/4"	1.15	1.00	3.00	3.62	2.50	Ø .266	4.51							
MV-8-661616-1	3	3.50	4.12	1"	1.80	1"	1.80	1.00	3.50	4.12	3.00	Ø .266	4.63							
MV-8-66128-1-01	4	4.50	5.50	1/2"	1.35	3/4"	1.46	.75	2.50	5.13	2.00	Ø .266	4.50	1/4"	1.15	3/4"	1.46	.75	1/4"	.75
MV-8-66128-1-05	4	4.63	5.75	1/2"	1.35	3/4"	1.46	.75	2.50	5.37	2.00	Ø .266	4.50	1/2"	1.35	3/4"	1.46	.88	1/2"	.92
MV-8-661212-1-01	4	4.50	5.50	3/4"	1.46	3/4"	1.46	.75	2.50	5.13	2.00	Ø .266	4.50	1/4"	1.15	3/4"	1.46	.75	1/4"	.75
MV-8-66168-1-01	4	4.63	5.75	1/2"	1.35	1"	1.80	.75	3.00	5.37	2.00	Ø .266	4.60	1/2"	1.35	1"	1.80	.88	1/2"	.92
MV-8-661612-1-01	4	4.50	5.50	3/4"	1.46	1"	1.80	.93	3.00	5.13	2.04	Ø .266	4.60	1/4"	1.15	1"	1.80	.75	1/4"	.93
MV-8-661616-1-01	4	4.50	5.50	1"	1.80	1"	1.80	.93	3.00	5.13	2.54	Ø .266	4.60	1/4"	1.15	1"	1.80	.75	1/4"	.93

DIMENSIONS (mm)

STYLE	A	A1	B	B1	C	C1	D	E	F	G	H	I	J	J1	K	K1	N	P	Q	
MV-8-6684-1	1	38.1	-	1/2"	34.3	1/4"	29.2	14.2	38.1	-	-	-	65.3							
MV-8-661212-1	2	88.9	117.3	3/4"	37.1	3/4"	37.1	25.4	88.9	104.6	76.2	Ø 6.76	114.6							
MV-8-66128-1	2	76.2	104.6	3/4"	37.1	1/2"	34.3	25.4	76.2	91.9	63.5	Ø 6.76	114.6							
MV-8-66164-1	2	76.2	104.6	1"	45.7	1/4"	29.2	25.4	76.2	91.9	63.5	Ø 6.76	114.6							
MV-8-661616-1	3	88.9	104.6	1"	45.7	1"	45.7	25.4	88.9	104.6	76.2	Ø 6.76	117.6							
MV-8-66128-1-01	4	114.3	139.7	1/2"	34.3	3/4"	37.1	19.1	63.5	130.3	50.8	Ø 6.76	114.3	1/4"	29.2	3/4"	37.1	19.1	1/4"	19.1
MV-8-66128-1-05	4	117.6	146.0	1/2"	34.3	3/4"	37.1	19.1	63.5	136.4	50.8	Ø 6.76	114.3	1/2"	34.3	3/4"	37.1	22.4	1/2"	23.4
MV-8-661212-1-01	4	114.3	139.7	3/4"	37.1	3/4"	37.1	19.1	63.5	130.3	50.8	Ø 6.76	114.3	1/4"	29.2	3/4"	37.1	19.1	1/4"	19.1
MV-8-66168-1-01	4	117.6	146.0	1/2"	34.3	1"	45.7	19.1	76.2	136.4	50.8	Ø 6.76	116.8	1/2"	34.3	1"	45.7	22.4	1/2"	19.1
MV-8-661612-1-01	4	114.3	139.7	3/4"	37.1	1"	45.7	23.6	76.2	130.3	51.8	Ø 6.76	116.8	1/4"	29.2	1"	45.7	19.1	1/4"	23.6
MV-8-661616-1-01	4	114.3	139.7	1"	45.7	1"	45.7	23.6	76.2	130.3	64.5	Ø 6.76	116.8	1/4"	29.2	1"	45.7	19.1	1/4"	23.6

Model Number	Through Port			Sampling Port			Purge Port			Through Port	Sampling Port	Purge Port
	Cv	Kv	Orifice	Cv	Kv	Orifice	Cv	Kv	Orifice			
MV-8-6684-1	3.2	45.7	.375	.2	2.8	.125	N/A	N/A	N/A	1/2" Parflare	1/4" Parflare	N/A
MV-8-661212-1	13.0	185.6	.625	4.6	65.7	.625	N/A	N/A	N/A	3/4" Parflare	3/4" Parflare	N/A
MV-8-66128-1	13.0	185.6	.625	2.3	32.8	.375	N/A	N/A	N/A	3/4" Parflare	1/2" Parflare	N/A
MV-8-66164-1	37.3	532.6	.875	.2	2.8	.125	N/A	N/A	N/A	1" Parflare	1/4" Parflare	N/A
MV-8-661616-1	37.3	532.6	.875	7.2	102.8	.875	N/A	N/A	N/A	1" Parflare	1" Parflare	N/A
MV-8-66128-1-01	13.0	185.6	.625	2.3	32.8	.375	.2	2.8	.125	3/4" Parflare	1/2" Parflare	1/4" Parflare
MV-8-66128-1-05	13.0	185.6	.625	2.3	32.8	.375	1.1	15.7	.375	3/4" Parflare	1/2" Parflare	1/2" Parflare
MV-8-661212-1-01	13.0	185.6	.625	4.6	65.7	.625	.2	2.8	.125	3/4" Parflare	3/4" Parflare	1/4" Parflare
MV-8-66168-1-01	37.3	532.6	.875	2.3	32.8	.375	1.1	15.7	.375	1" Parflare	1/2" Parflare	1/2" Parflare
MV-8-661612-1-01	37.3	532.6	.875	4.6	65.7	.625	.2	2.8	.125	1" Parflare	3/4" Parflare	1/4" Parflare
MV-8-661616-1-01	37.3	532.6	.875	7.2	102.8	.875	.2	2.8	.125	1" Parflare	1" Parflare	1/4" Parflare

Parflare model numbers are supplied with PVDF nuts. For PFA nuts add -T to model number.



MV-10 1/4" Manual 2 Way Valve

Product Overview

The MV-10 PFA 2 Way Diaphragm Valve is designed for use in high purity semiconductor applications. It is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. A full 1/4" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragms manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel spring.

Quarter turn operation with removable handle for tamper resistance.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Eliminates need for separate lockout device.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, 18-8 SS, Viton seals, PTFE coated SS springs

Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

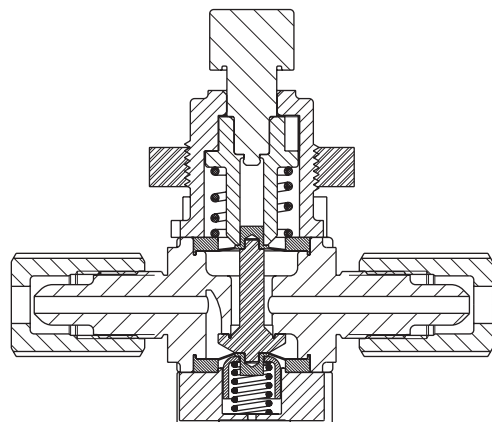
Backward: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

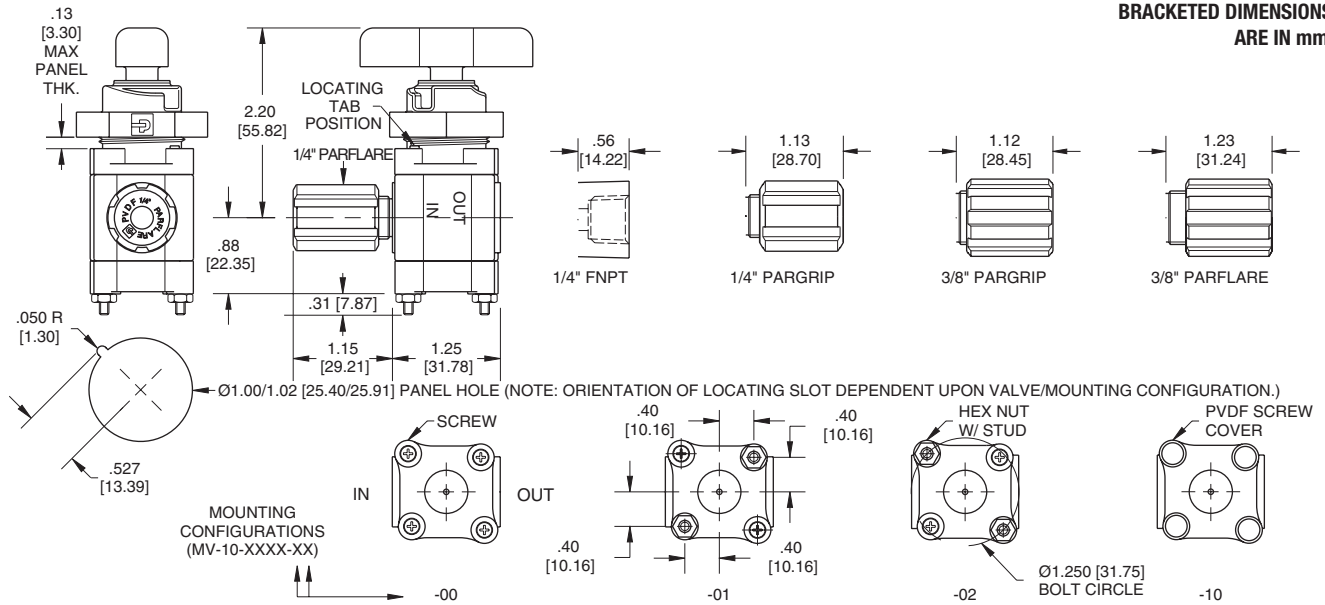
Ambient: 0° - 150° F (17° - 66° C)

Fluid: 0° - 266° F (17° - 130° C)



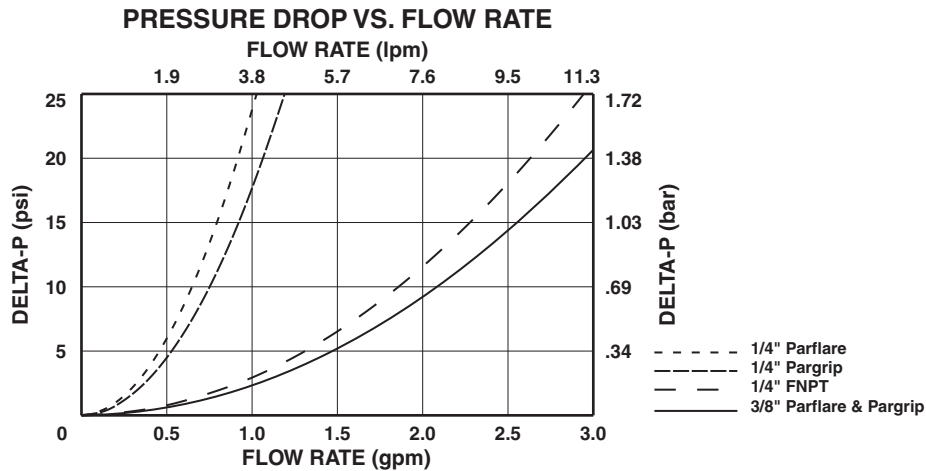
MV-10 1/4" Manual 2 Way Valve

BRACKETED DIMENSIONS
ARE IN mm.

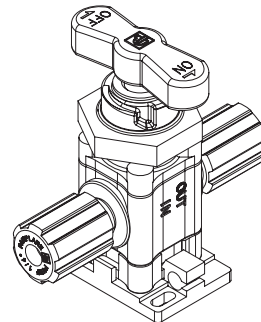
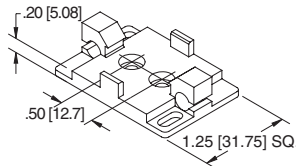
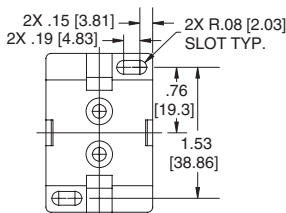


Model Number	Cv	Kv	Flow Configuration	Port Configuration	Mounting Configuration-XX (Depicted Above)
MV-10-1044-XX	.60	8.6	ON/OFF	1/4" FNPT	00 = Screw 01 = Screw/Stud .80 Square 02 = Screw/Stud Ø1.25 Bolt Circle 10 = PVDF Screw Covers
MV-10-2034-XX	.24	3.4		1/4" Pargrip	
MV-10-2046-XX	.62	8.8		3/8" Pargrip	
MV-10-6024-XX	.20	2.8		1/4" Parflare	
MV-10-6046-XX	.62	8.8		3/8" Parflare	

Pargrip models are supplied with PFA nuts. Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.



Accessories	Description
SB-10	PVDF Snap-in Mounting Base. For use with MV-10-XXXX-00 and MV-10-XXXX-10 models only. (Sold separately)



MV-10 1/4" Manual 3 Way Valve

Product Overview

The MV-10 PFA 3 Way Diaphragm Valve is designed for use in high purity semiconductor applications. It is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. A full 1/4" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragms manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel spring.

Quarter turn operation with removable handle for tamper resistance.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Eliminates need for separate lockout device.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, 18-8 SS, Viton seals, PTFE coated SS springs

Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

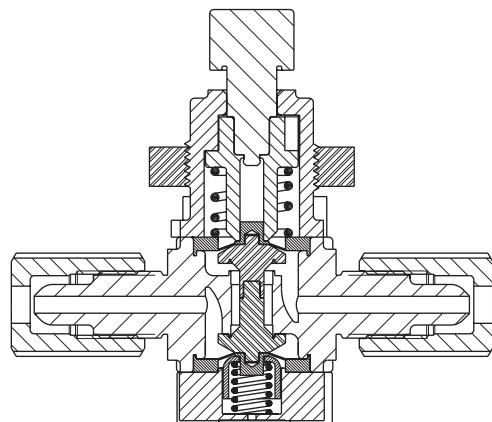
Backward: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

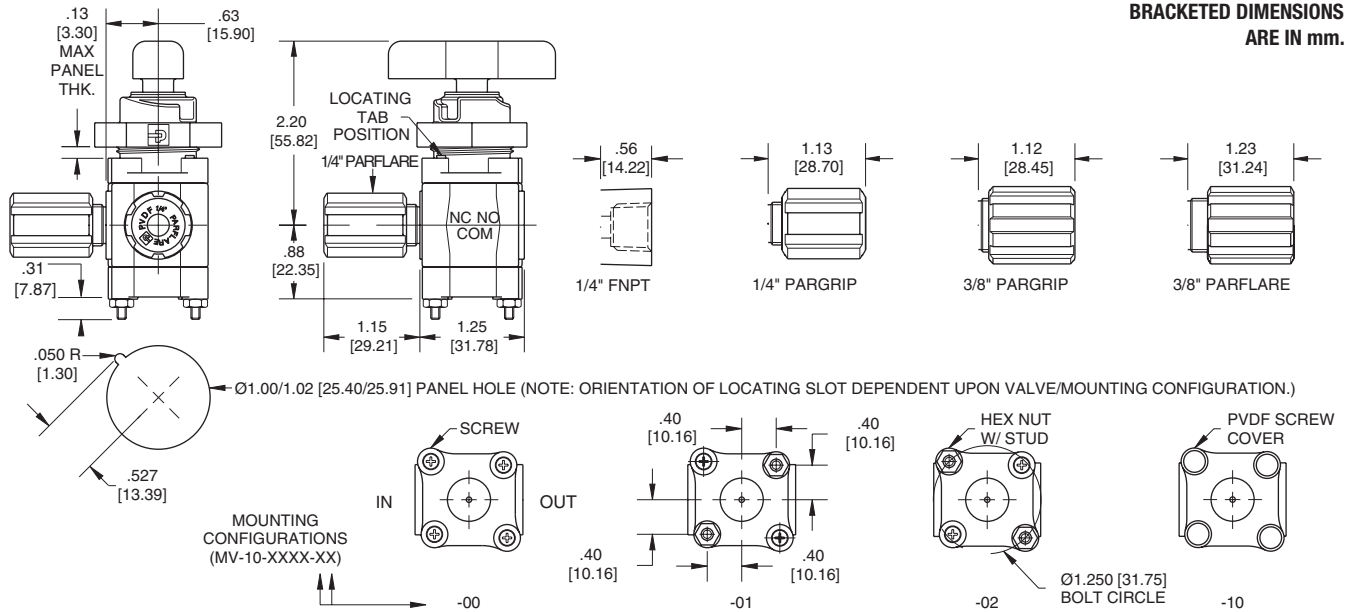
Ambient: 0° - 150° F (17° - 66° C)

Fluid: 0° - 266° F (17° - 130° C)



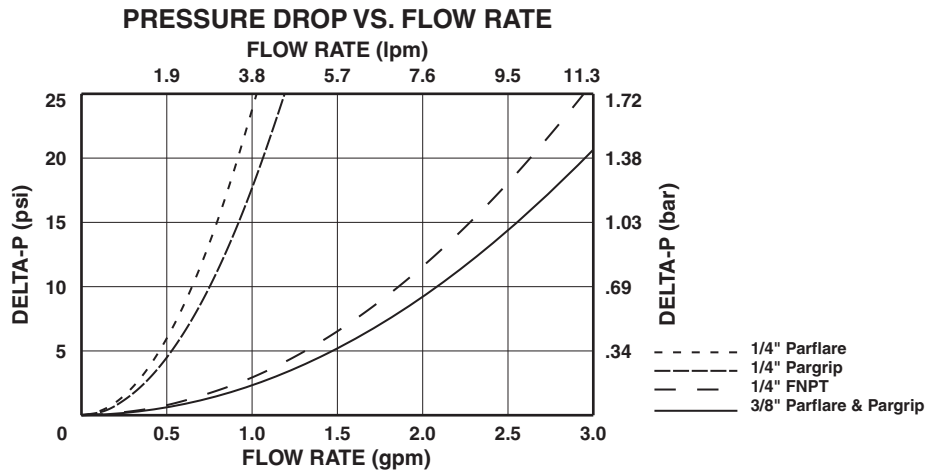
MV-10 1/4" Manual 3 Way Valve

BRACKETED DIMENSIONS ARE IN mm.

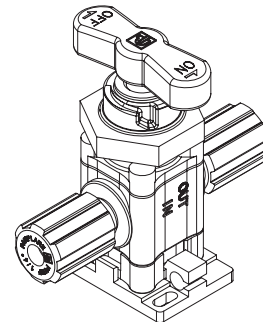
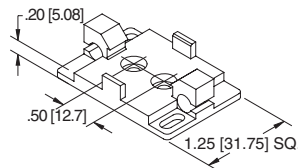
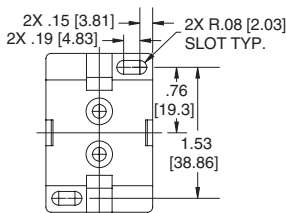


Model Number	Cv	Kv	Flow Configuration	Port Configuration	Mounting Configuration-XX (Depicted Above)
MV-10-1344-XX	.60	8.6	3 WAY	1/4" FNPT	00 = Screw 01 = Screw/Stud .80 Square 02 = Screw/Stud Ø1.25 Bolt Circle 10 = PVDF Screw Covers
MV-10-2334-XX	.24	3.4		1/4" Pargrip	
MV-10-2346-XX	.62	8.8		3/8" Pargrip	
MV-10-6324-XX	.20	2.8		1/4" Parflare	
MV-10-6346-XX	.62	8.8		3/8" Parflare	

Pargrip models are supplied with PFA nuts. Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.



Accessories	Description
SB-10	PVDF Snap-in Mounting Base. For use with MV-10-XXXX-00 and MV-10-XXXX-10 models only. (Sold separately)



MV-11 1/2" Manual 2 Way Valve

Product Overview

The MV-11 PFA 2 Way Diaphragm Valve is designed for use in high purity semiconductor applications. It is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. A full 1/2" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel spring.

Submersible option isolates all valve components from the external environment.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Valve remains functional while operating in wet or gaseous corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, Viton seals, PTFE coated SS springs

Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 100 PSIG (7 bar)

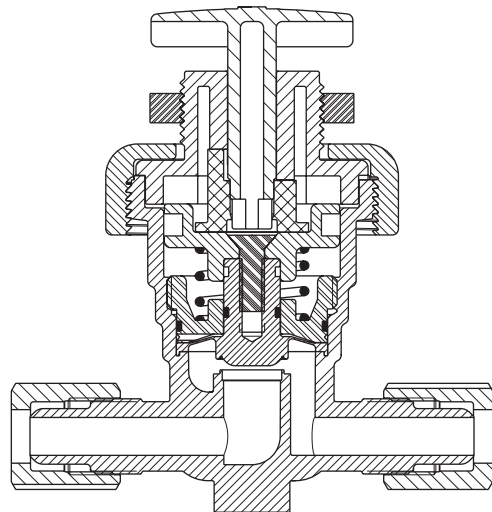
Backward: 27" HG vacuum (913 mbar) to 100 PSIG (7 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

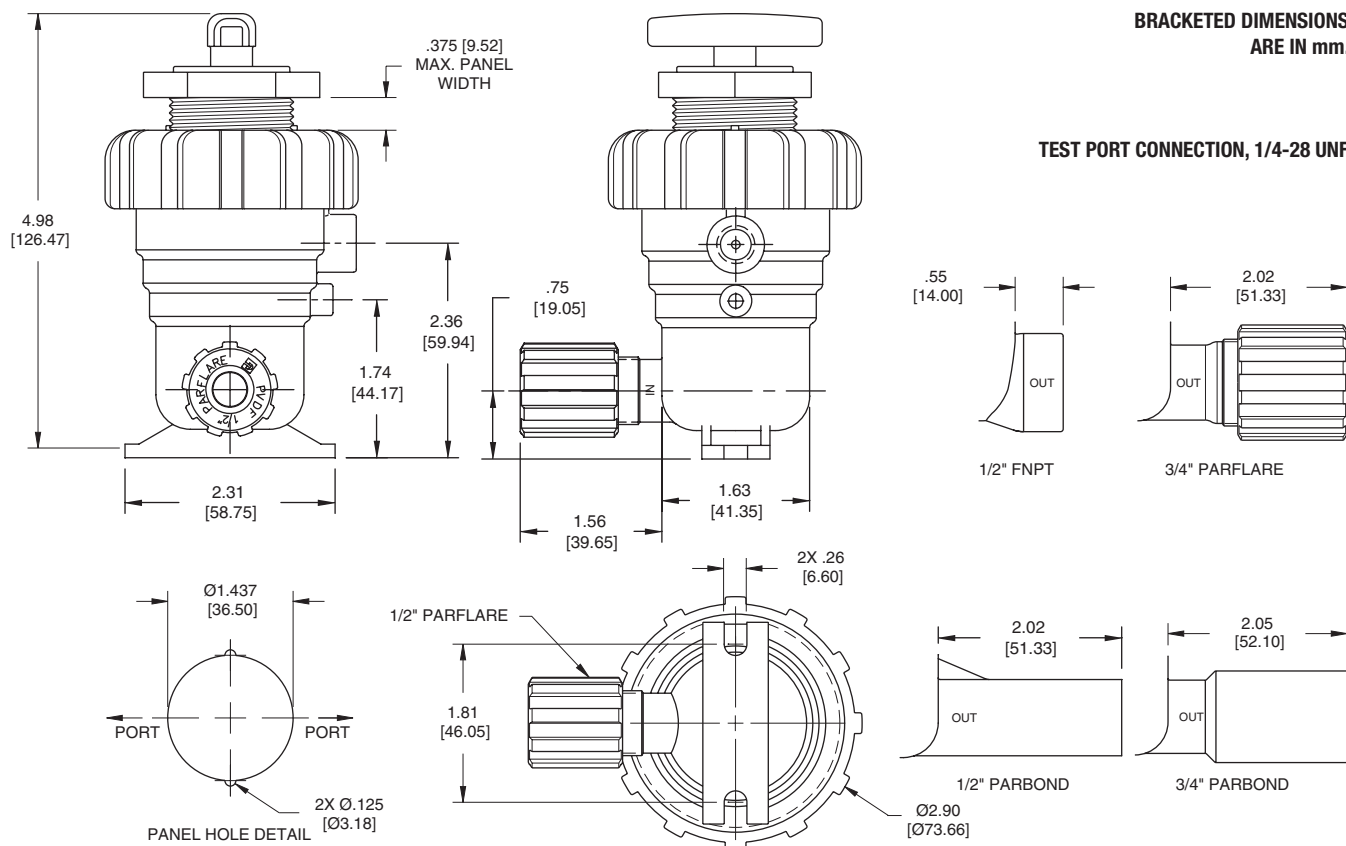
Ambient: 0° - 150° F (17° - 66° C)

Fluid: 0° - 266° F (17° - 130° C)



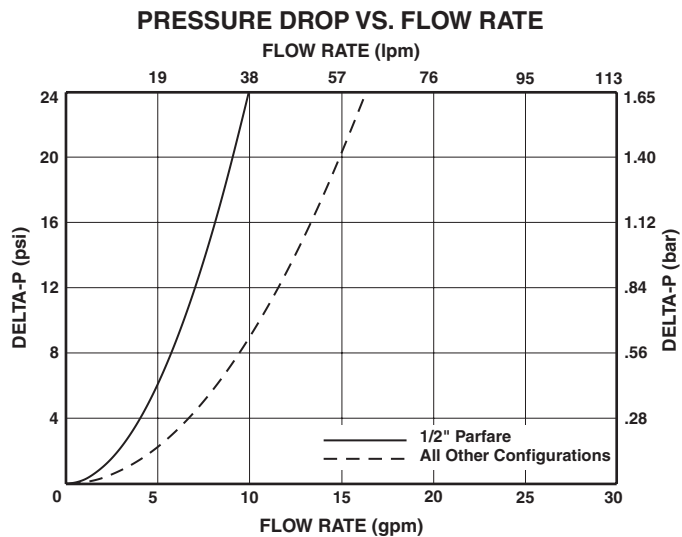
MV-11 1/2" Manual 2 Way Valve

BRACKETED DIMENSIONS
ARE IN mm.



Model Number	Cv	Kv	Flow Configuration	Port Configuration
MV-11-001	2.3	32.8	ON/OFF	1/2" Parflare
MV-11-002	3.7	52.8		3/4" Parflare
MV-11-003	3.7	52.8		1/2" Parbond
MV-11-004	3.7	52.8		3/4" Parbond
MV-11-005	3.7	52.8		1/2" FNPT

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.



MV-11 1/2" Manual 3 Way Valve

Product Overview

The MV-11 PFA 3 Way Diaphragm Valve is designed for use in high purity semiconductor applications. It is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined sealing areas. One piece machined modified PTFE diaphragms are also utilized for excellent flexibility and life. A full 1/2" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel spring.

Submergible option isolates all valve components from the external environment.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Valve remains functional while operating in wet or gaseous corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, Viton seals, PTFE coated SS springs

Pressure Ranges

COM to NO: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

COM to NC: 27" HG vacuum (913 mbar) to 25 PSIG (1.7 bar) minimum

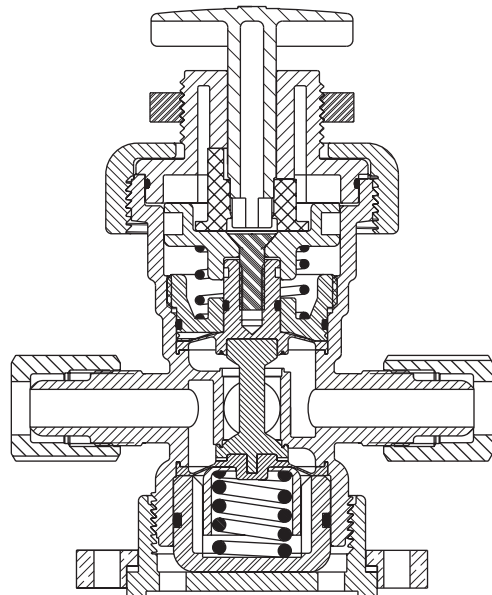
NC to COM: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar) with 50 PSIG (3.4 bar) maximum back pressure

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

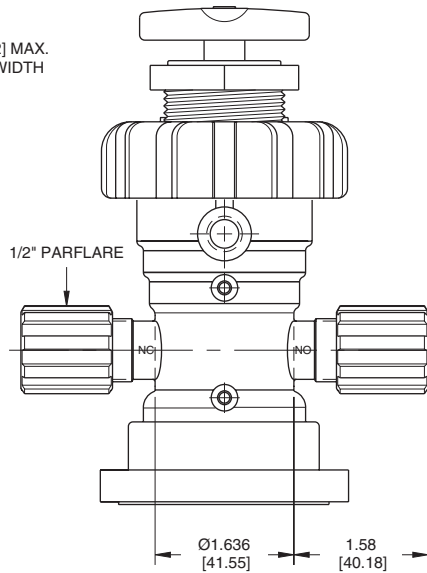
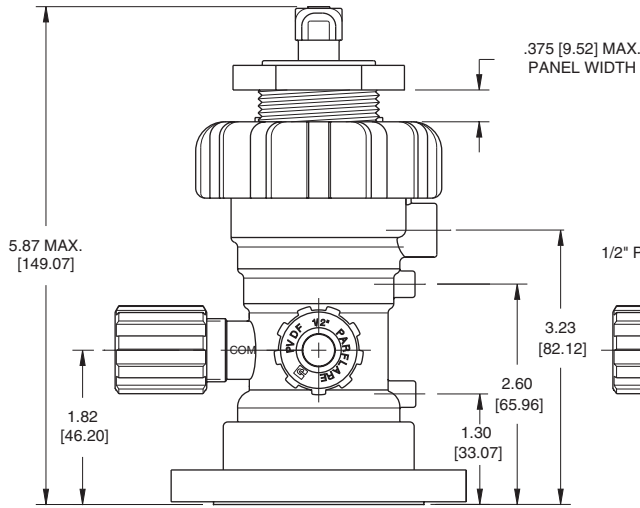
Temperature Ranges

Ambient: 0° - 150° F (17° - 66° C)

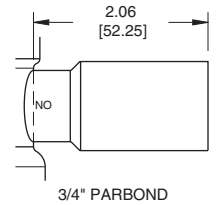
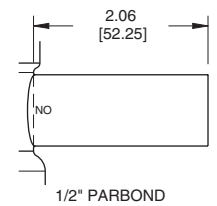
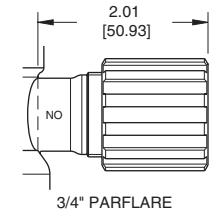
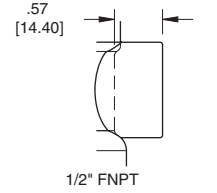
Fluid: 0° - 266° F (17° - 130° C)



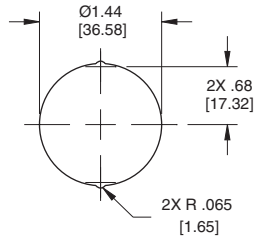
MV-11 1/2" Manual 3 Way Valve



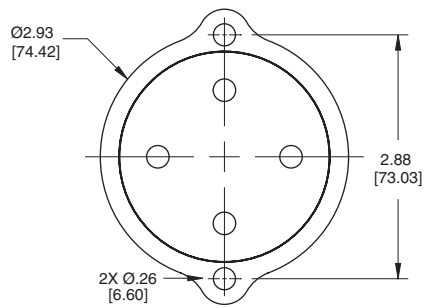
BRACKETED DIMENSIONS ARE IN mm.



TEST PORT CONNECTIONS, 1/4-28 UNF



PANEL HOLE DETAIL

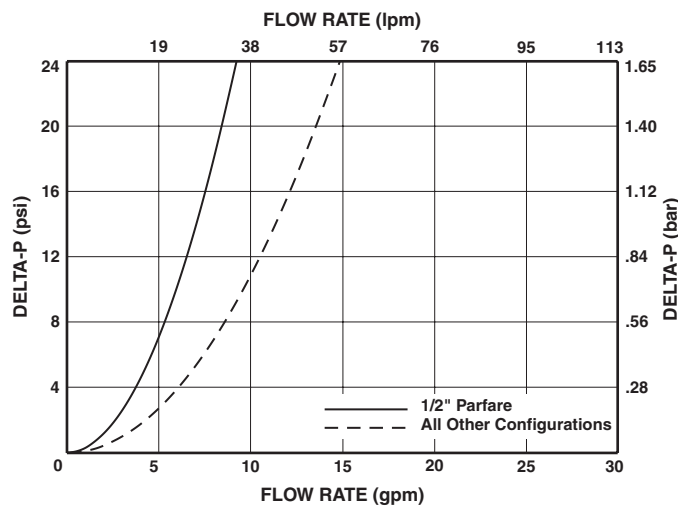


MOUNTING DETAIL

Model Number	Cv	Kv	Flow Configuration	Port Configuration
MV-11-021	1.9	27.1	3 WAY	1/2" Parflare
MV-11-022	2.8	40.0		3/4" Parflare
MV-11-023	2.8	40.0		1/2" Parbond
MV-11-024	2.8	40.0		3/4" Parbond
MV-11-025	2.8	40.0		1/2" FNPT

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.

PRESSURE DROP VS. FLOW RATE



MV-11 1/2" Manual 2 Way Adjustable Valve

Product Overview

The MV-11 PFA Adjustable Diaphragm Valve is designed for use in high purity semiconductor applications. It is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. Multi-turn capability allows precise flow adjustment. A full 1/2" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove diaphragm to body seal assures leak free operation.

PVDF coated stainless steel spring.

Multi-turn operation.

Removable handle.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Precise flow adjustment.

Eliminates need for separate lockout device.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, Viton seals, PTFE coated SS springs

Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 100 PSIG (7 bar)

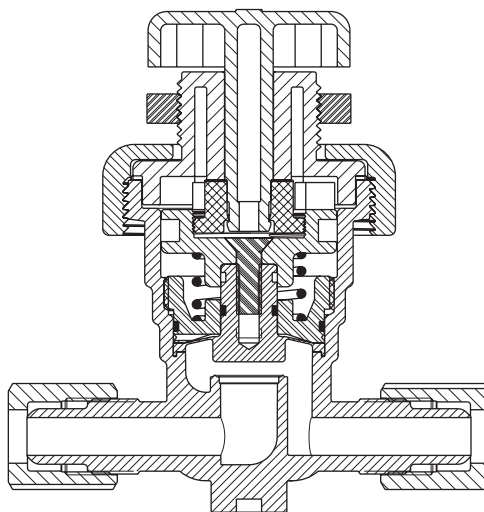
Backward: 27" HG vacuum (913 mbar) to 100 PSIG (7 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

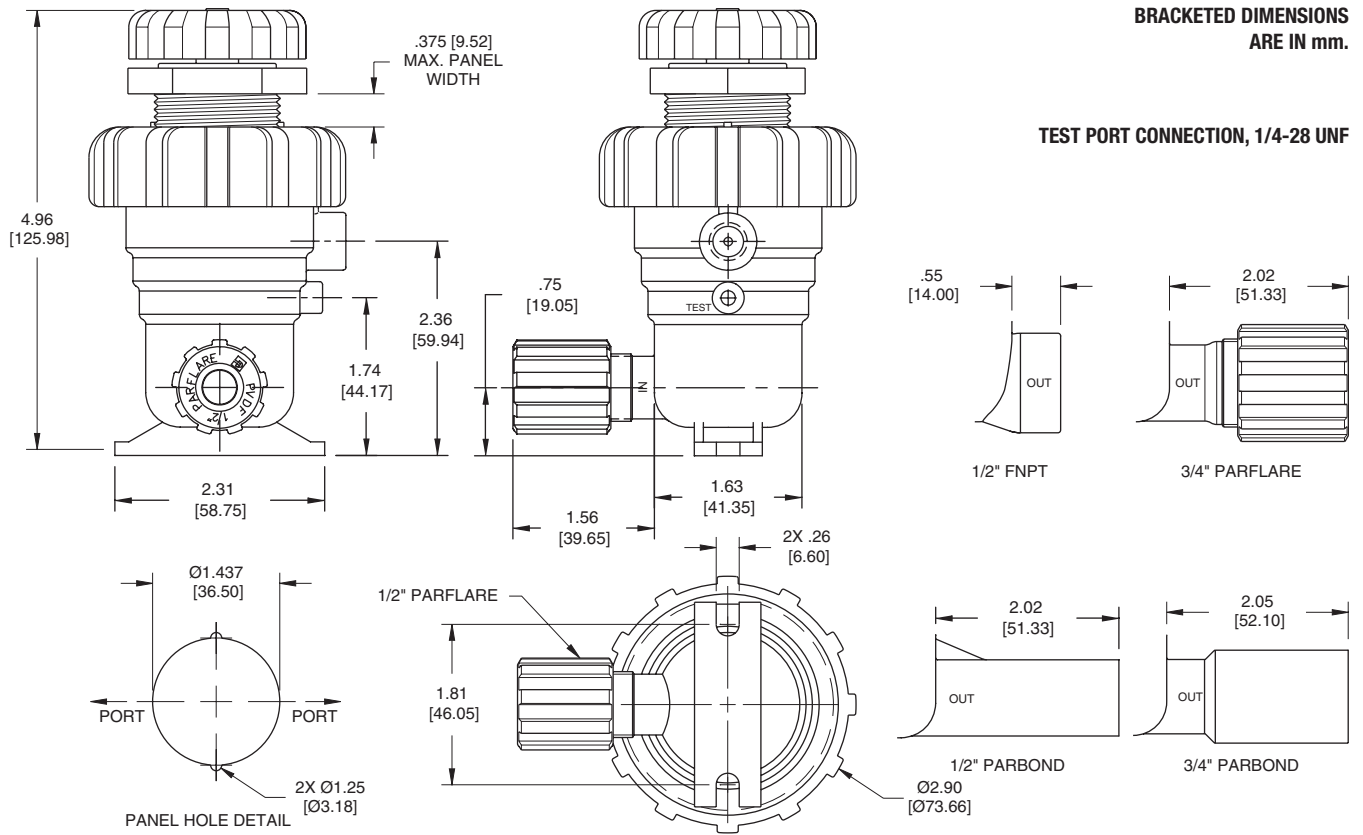
Temperature Ranges

Ambient: 0° - 150° F (17° - 66° C)

Fluid: 0° - 266° F (17° - 130° C)

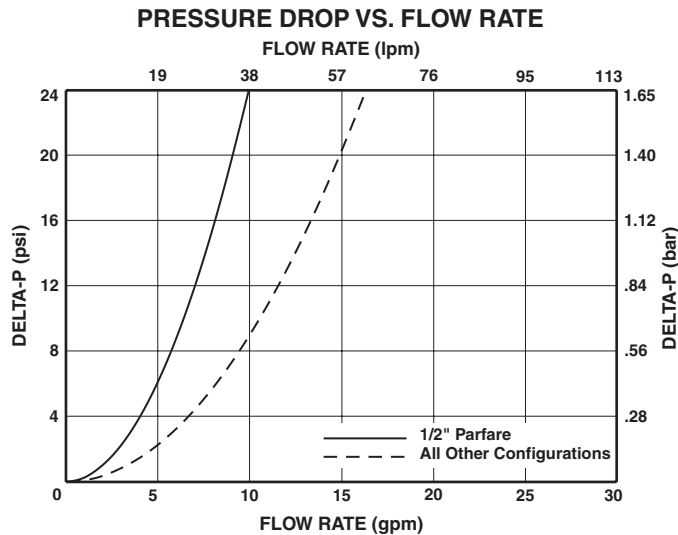


MV-11 1/2" Manual 2 Way Adjustable Valve



Model Number	Cv	Kv	Flow Configuration	Port Configuration
MV-11-201	2.3	32.8	ADJ.	1/2" Parflare
MV-11-202	3.7	52.8		3/4" Parflare
MV-11-203	3.7	52.8		1/2" Parbond
MV-11-204	3.7	52.8		3/4" Parbond
MV-11-205	3.7	52.8		1/2" FNPT

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.



MV-12 1" Manual 2 Way Valve

Product Overview

The MV-12 PFA Diaphragm Valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined seat and diaphragm sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. The valve requires three full turns from the fully closed to fully open position. A full 1" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE.

Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel spring.

Submersible option isolates all valve components from the external environment.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Valve remains functional while operating in wet or gaseous corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, Viton seals, PTFE coated SS springs

Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 100 PSIG (7 bar)

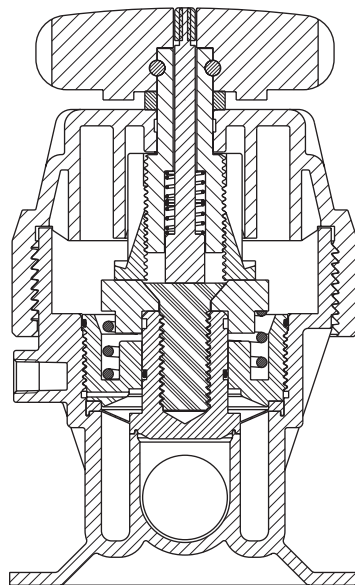
Backward: 27" HG vacuum (913 mbar) to 100 PSIG (7 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

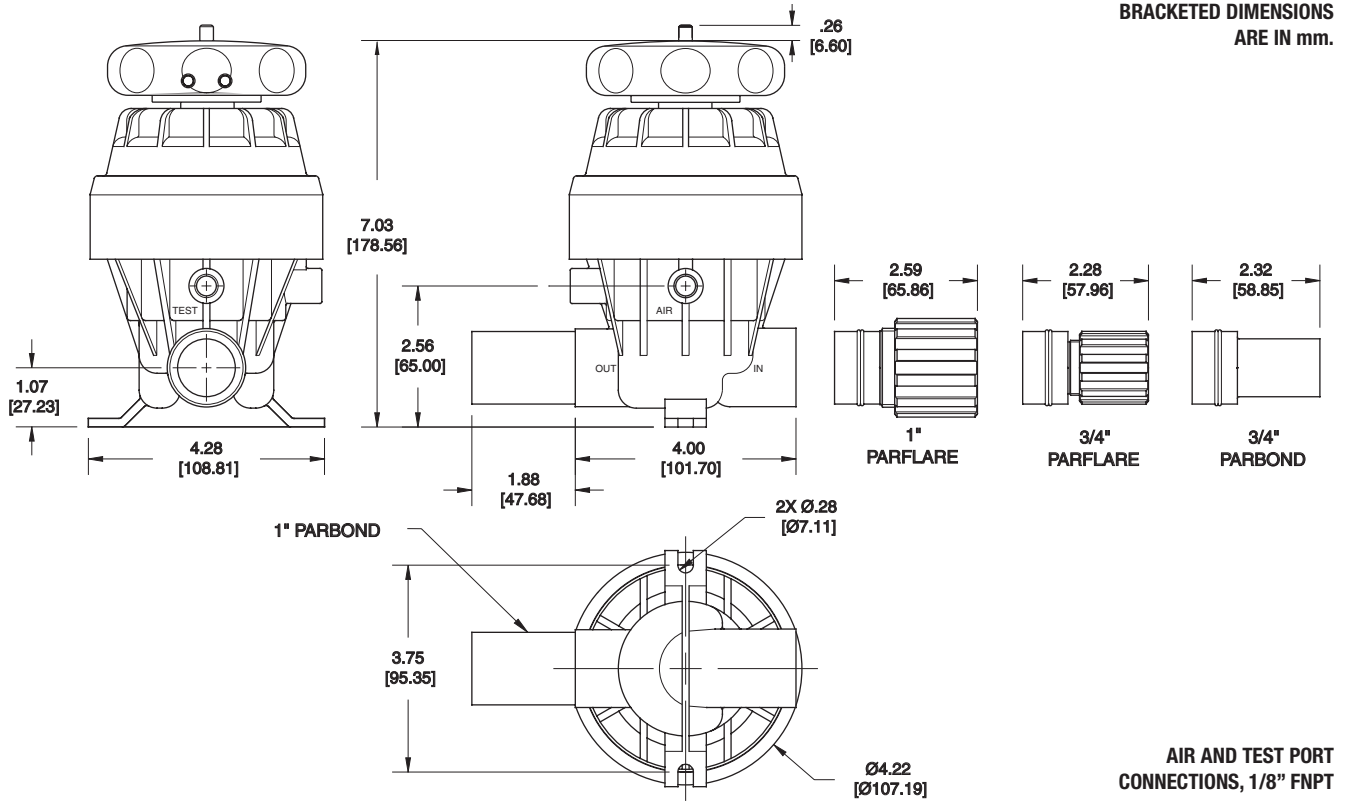
Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



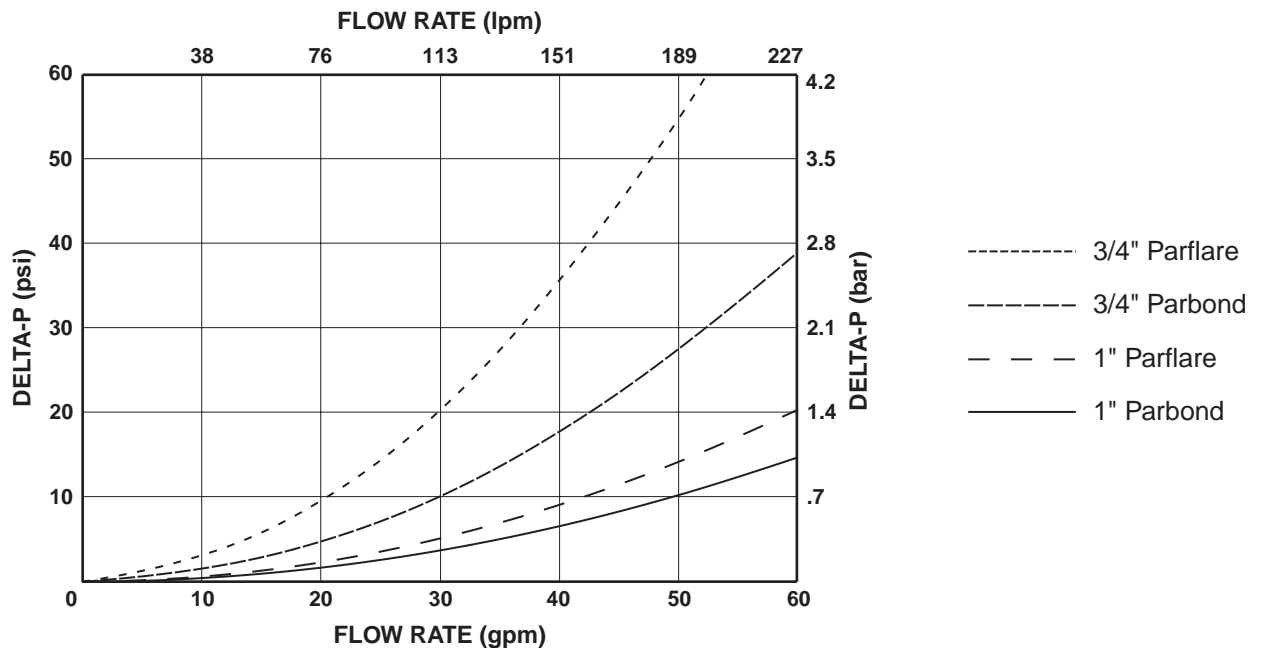
MV-12 1" Manual 2 Way Valve



Part Number	Cv	Kv	Flow Configuration	Port Configuration
MV-12-001	15.7	224.2	ON/OFF	1" Parbond
MV-12-002	13.3	189.9		1" Parflare
MV-12-003	9.6	142.8		3/4" Parbond
MV-12-004	6.8	142.8		3/4" Parflare

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.

PRESSURE DROP VS. FLOW RATE



MV-13 Manual Needle Valve

Product Overview

The MV-13 PFA Needle Valve is designed for high purity or aggressive chemical and gas applications. The design utilizes a molded high purity PFA body and stem as the only wetted components. The stem sealing area is precision machined for smooth, consistent flow. A PTFE ferrule assures a leak tight seal between stem and body. A PFA stem stop prevents removal of stem from body during operation. The MV-13 is available in straight through and angle configurations, several orifice sizes, and numerous end connections.



Features

One piece PFA stem/handle and bodies.

PFA stem stop.

Angle and straight through configurations, with numerous end configurations including Parflare available.

Benefits

High strength and corrosion resistance.

Safer operation.

Reduces connections, mounting space, and overall cost.

Specifications

Materials of Construction

Wetted: PFA, PTFE
Non-wetted: PFA, ETFE, PVDF

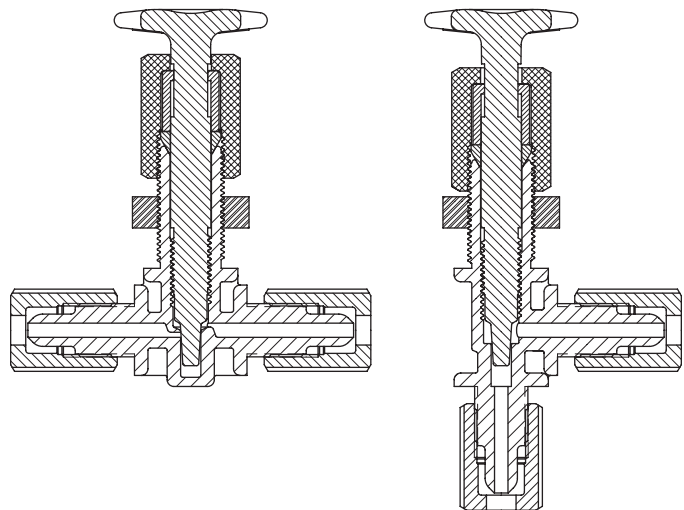
Pressure Ranges

27" HG vacuum (913 mbar) to 100 PSIG (7 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

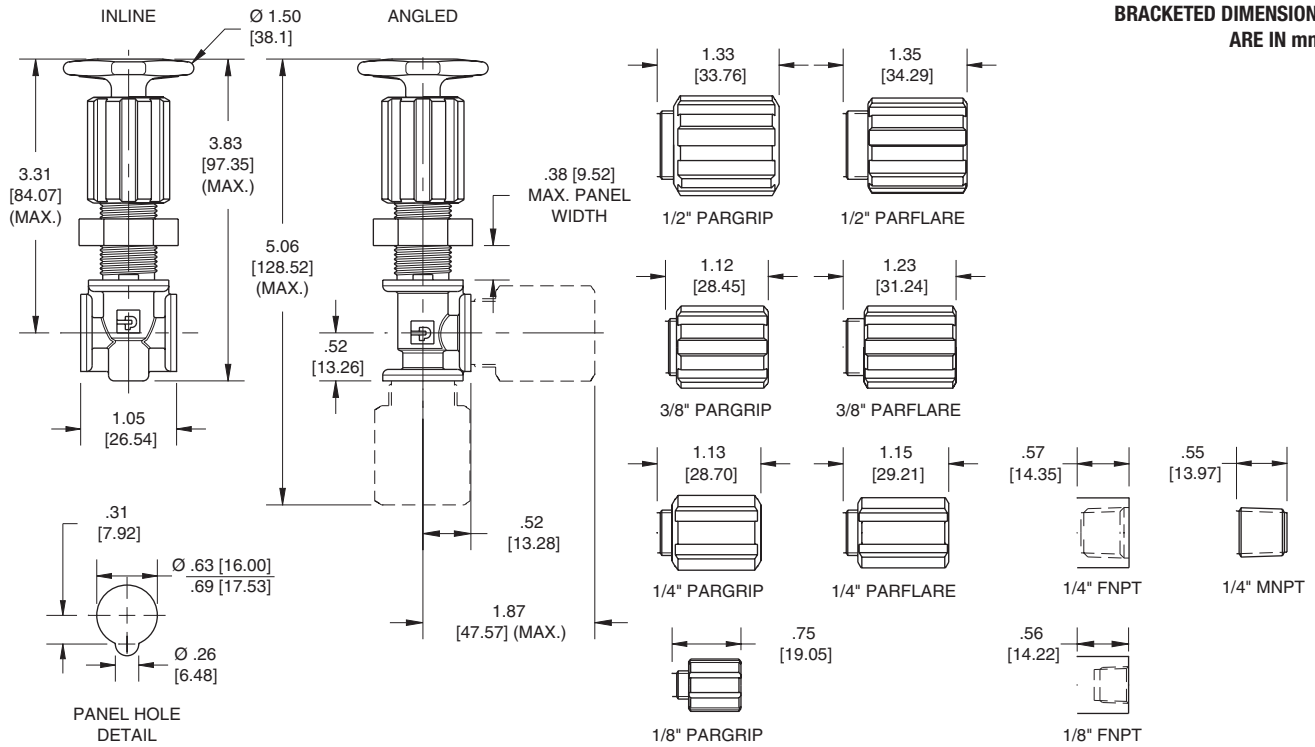
Temperature Ranges

Ambient: 0° - 212° F (17° - 100° C)
Fluid: 0° - 266° F (17° - 130° C)



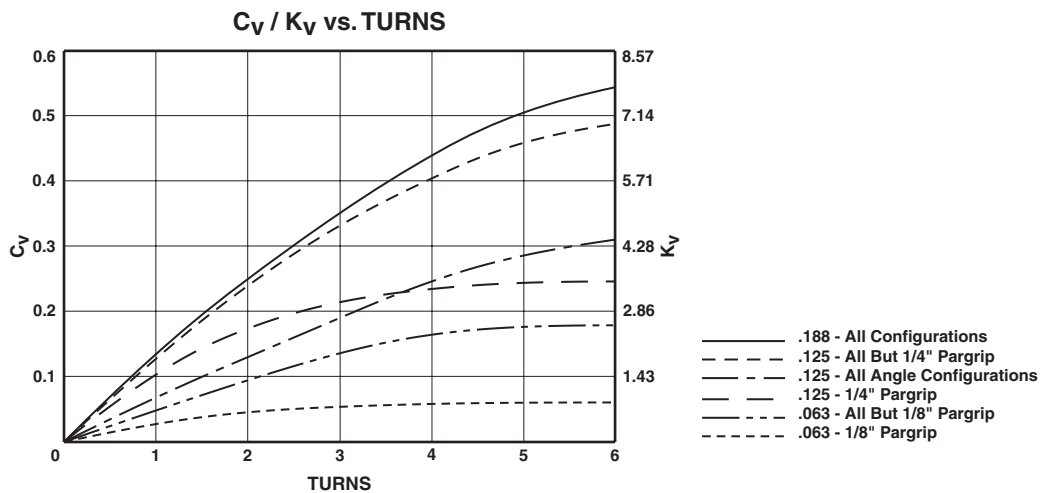
MV-13 Manual Needle Valve

BRACKETED DIMENSIONS
ARE IN mm.



Model Number	Orifice Size	Inlet / Outlet Port Configuration	Flow Configuration
MV-13-100	.063	1/8" Pargrip X 1/8" Pargrip	Straight
MV-13-104	.063	1/4" Parflare X 1/4" Parflare	
MV-13-105	.063	1/4" MNPT X 1/4" Parflare	
MV-13-120	.125	1/4" Pargrip X 1/4" Pargrip	
MV-13-124	.125	3/8" Parflare X 3/8" Parflare	
MV-13-125	.125	1/2" Parflare X 1/2" Parflare	
MV-13-126	.125	1/8" FNPT X 1/8" FNPT	
MV-13-163	.188	3/8" Pargrip X 3/8" Pargrip	
MV-13-166	.188	1/2" Pargrip X 1/2" Pargrip	
MV-13-170	.188	1/4" FNPT X 1/4" FNPT	
MV-13-222	.125	1/4" Parflare X 1/4" Parflare	Angle
MV-13-223	.125	1/4" FNPT X 1/4" FNPT	
MV-13-225	.125	3/8" Parflare X 3/8" Parflare	

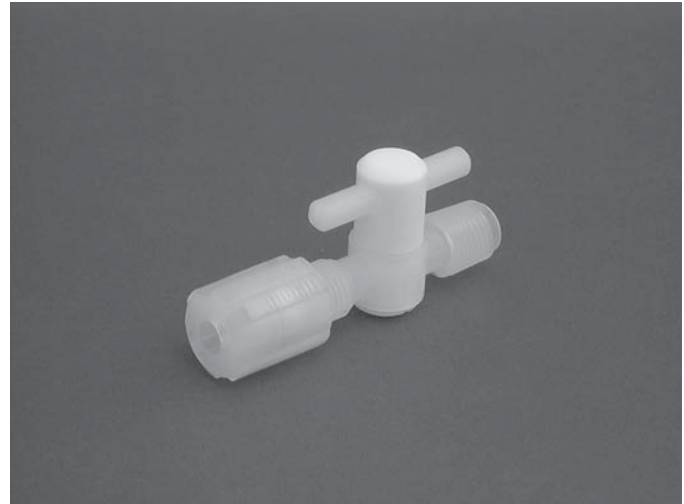
Parflare and Pargrip model numbers are supplied with PFA nuts.



MV-14 Manual 2 Way Stop Cock Valve

Product Overview

The MV-14 PFA 2 Way Stop Cock Valve is designed for use in high purity semiconductor applications. The design utilizes a molded high purity PFA body, and a machined PTFE stem. The press-fit stem assures a leak tight seal between it and the body during operation. Valve operates with a quick 90° turn operation and has a full 1/8" orifice.



Features

One piece precision machined stem and molded high purity PFA body.

All components made of chemical resistant materials.

Numerous end configurations, including Parflare available.

Benefits

Maintains system purity.

Suitable for use in corrosive environments.

Allows direct installation, minimizing additional connections, reducing cost.

Specifications

Materials of Construction

Wetted: PFA, PTFE
Non-wetted: PFA, PVDF

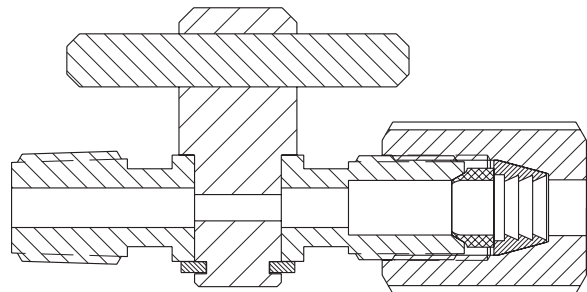
Pressure Ranges

0 to 60 PSIG (4.1 bar)

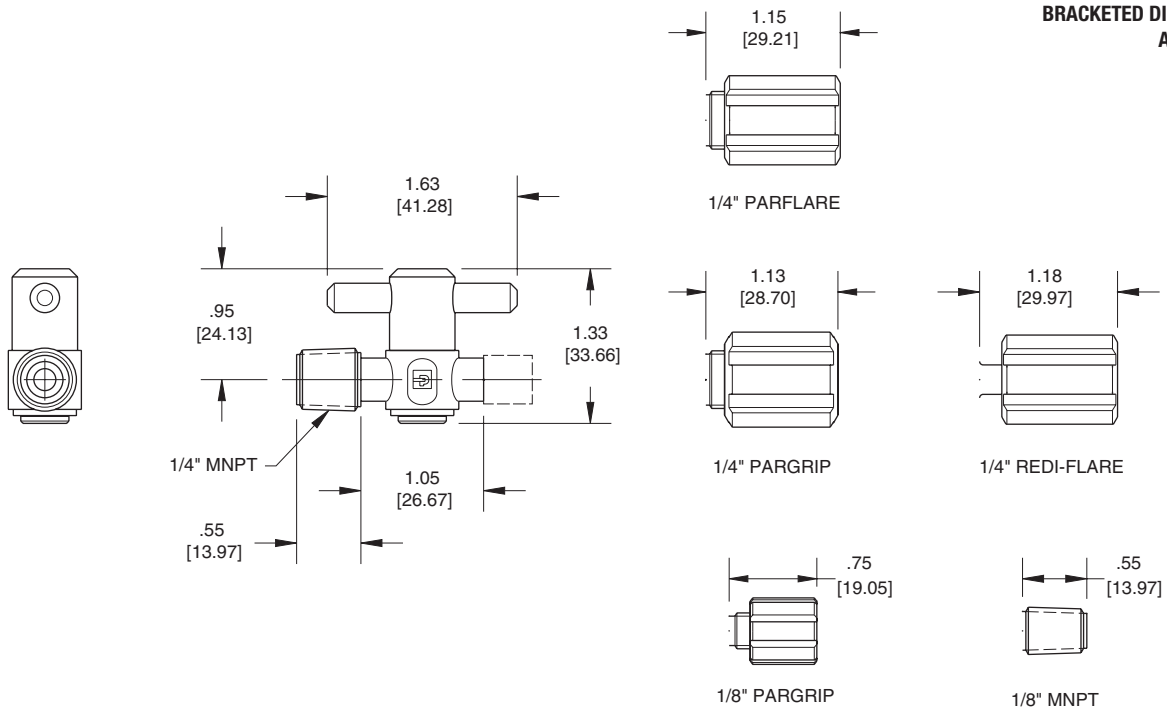
Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

Ambient: 0° - 150° F (17° - 66° C)
Fluid: 0° - 266° F (17° - 130° C)

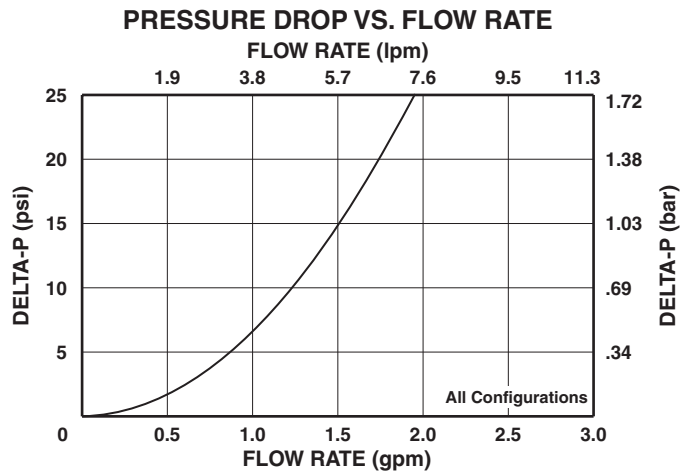


MV-14 Manual 2 Way Stop Cock Valve



Model Number	Cv	Kv	Flow Configuration	Inlet Port	Outlet Port
MV-14-003	.27	3.85	ON/OFF	1/4" Pargrip	1/4" Pargrip
MV-14-004	.27	3.85		1/4" Pargrip	1/8" MNPT
MV-14-005	.27	3.85		1/4" Pargrip	1/4" MNPT
MV-14-006	.27	3.85		1/4" MNPT	1/4" MNPT
MV-14-007	.27	3.85		1/4" Parflare	1/4" Parflare
MV-14-015	.27	3.85		1/4" Parflare	1/4" MNPT
MV-14-016	.27	3.85		1/4" Parflare	1/4" Redi-flare
MV-14-018	.27	3.85		1/8" Pargrip	1/8" Pargrip

Pargrip models are supplied with PFA nuts. Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.



MV-16 3/4" Manual PFA 2 Way Valve

Product Overview

The MV-16 PFA diaphragm valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined seat and diaphragm sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. The MV-16's multi-turn capability allows precise flow adjustment. A full 3/4" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

Halar coated stainless steel spring.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PVDF, Viton, PTFE coated SS spring

Pressure Ranges

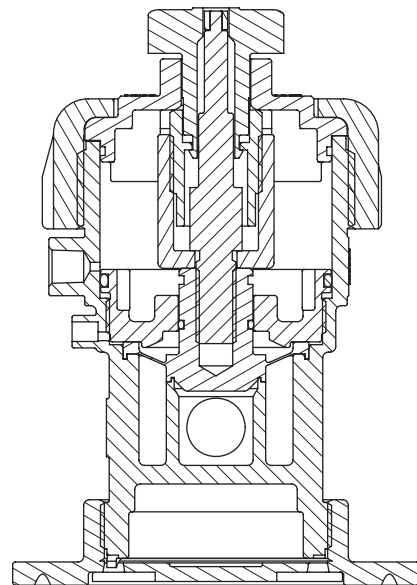
0 - 120 PSIG (8.3 bar) See Cracking Pressure Chart on next page.

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

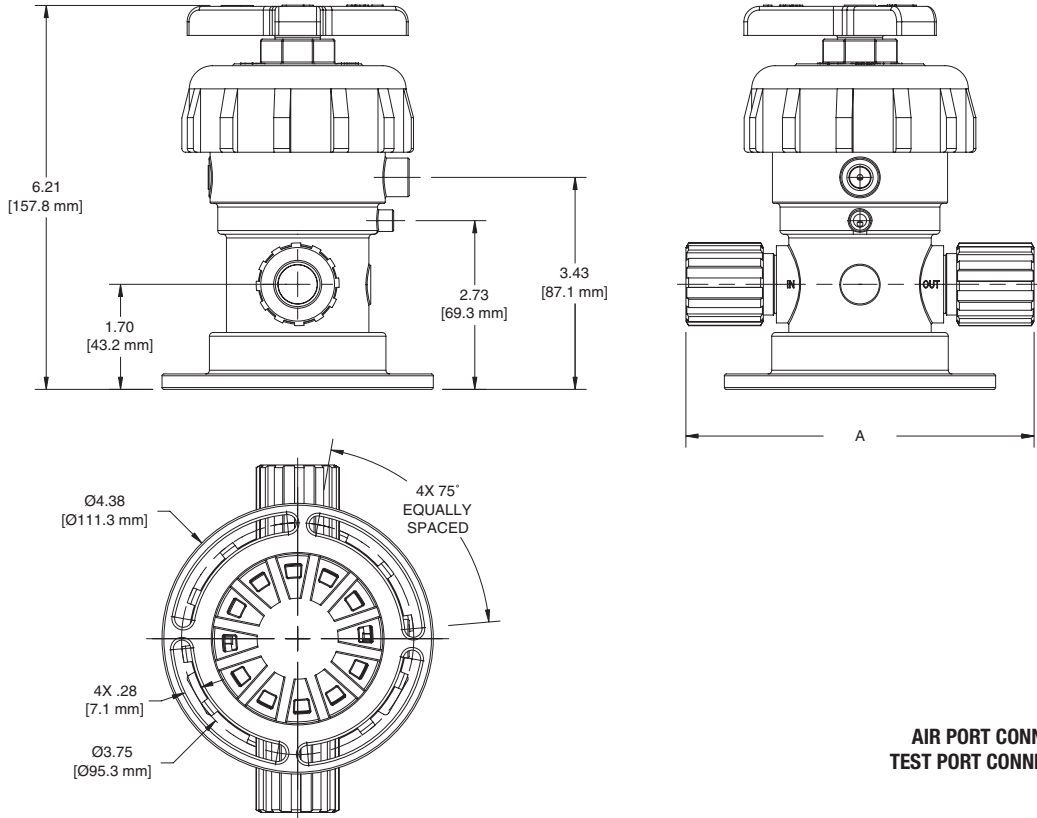
Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



MV-16 3/4" Manual PFA 2 Way Valve

BRACKETED DIMENSIONS
ARE IN mm.

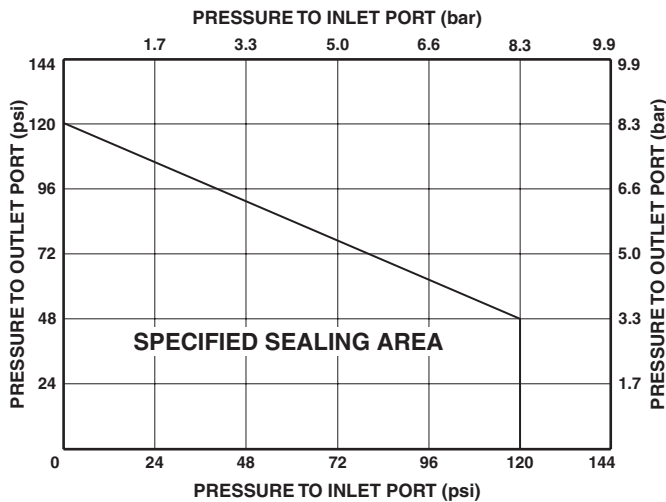


AIR PORT CONNECTION, 1/8" FNPT
TEST PORT CONNECTION, 1/4-28 UNF

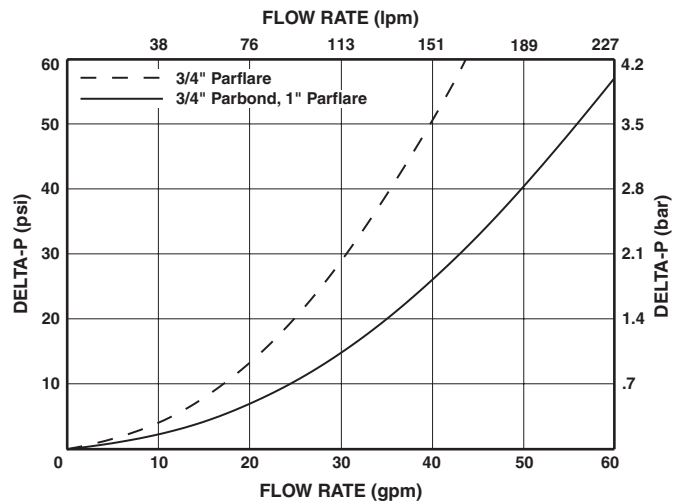
Model Number	Cv	Kv	Flow Configuration	Port Configuration	Dimension in [mm] A
MV-16-0612	5.8	82.7	ON/OFF	3/4" Parflare	5.54 [140.72]
MV-16-0612-01	5.8	82.7		3/4" Parflare Long	6.48 [164.59]
MV-16-0616	7.9	112.6		1" Parflare*	9.12 [231.65]
MV-16-0712	7.9	112.6		3/4" Parbond	5.90 [149.86]

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.
*Ends are fused on.

CRACKING PRESSURE



PRESSURE DROP VS. FLOW RATE



MV-16 3/4" Manual PFA 3 Way Valve

Product Overview

The MV-16 PFA diaphragm valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined seat and diaphragm sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. The MV-16's multi-turn capability allows precise flow adjustment. A full 3/4" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

Halar coated stainless steel spring.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PVDF, Viton, PTFE coated SS spring

Pressure Ranges

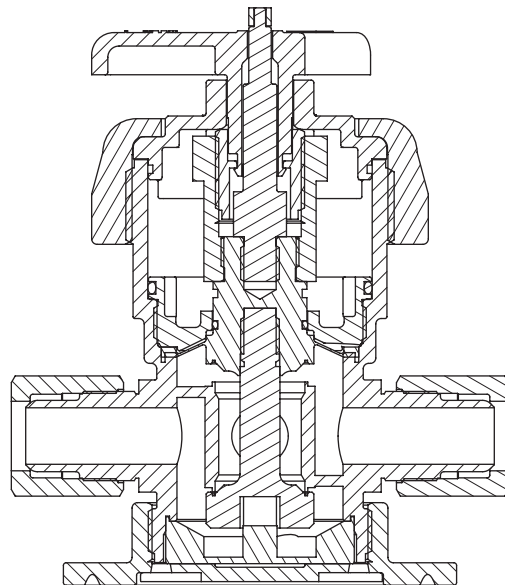
0 - 120 PSIG (8.3 bar) See Cracking Pressure Chart on next page.

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

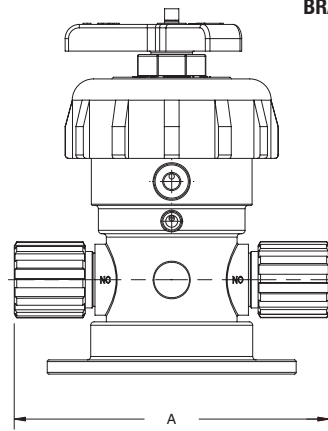
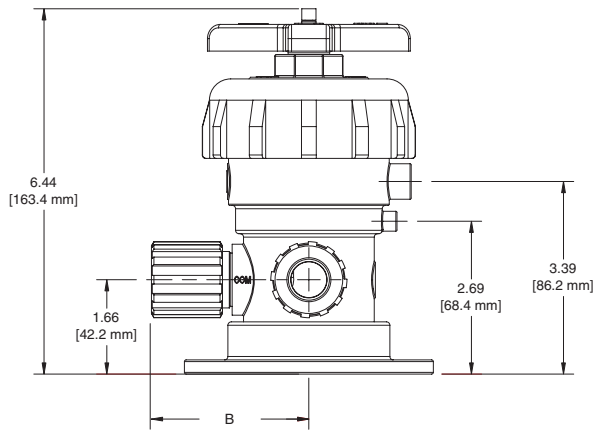
Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

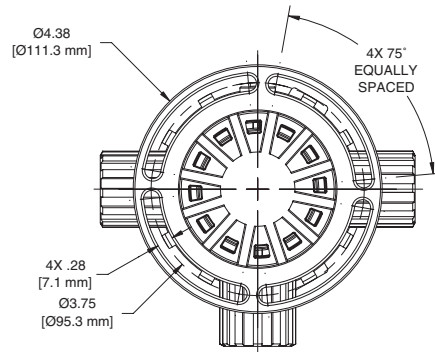
Fluid: 0° - 266° F (-17° - 130° C)



MV-16 3/4" Manual PFA 3 Way Valve



BRACKETED DIMENSIONS
ARE IN mm.



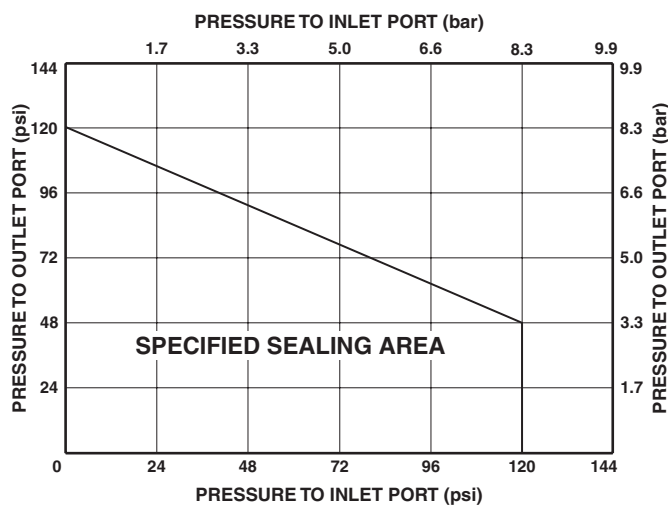
AIR PORT CONNECTION, 1/8" FNPT
TEST PORT CONNECTION, 1/4-28 UNF

Model Number	Cv	Kv	Flow Configuration	Port Configuration	Dimensions in [mm]	
					A	B
MV-16-3612	5.4	77.0	3 WAY COM NC NO	3/4" Parflare	5.54 [140.72]	2.81 [71.37]
MV-16-3612-01	5.4	77.0		3/4" Parflare Long	6.48 [164.59]	2.81 [71.37]
MV-16-3616	7.3	104.1		1" Parflare*	9.12 [231.65]	4.56 [115.82]
MV-16-3712	7.3	104.1		3/4" Parbond	5.90 [149.86]	2.95 [74.93]
MV-16-4612	5.4	77.0	3 WAY Reversed Ports NO COM NC	3/4" Parflare	5.54 [140.72]	2.81 [71.37]
MV-16-4612-01	5.4	77.0		3/4" Parflare Long	6.48 [164.59]	2.81 [71.37]
MV-16-4616	7.3	104.1		1" Parflare*	9.12 [231.65]	4.56 [115.82]
MV-16-4712	7.3	104.1		3/4" Parbond	5.90 [149.86]	2.95 [74.93]

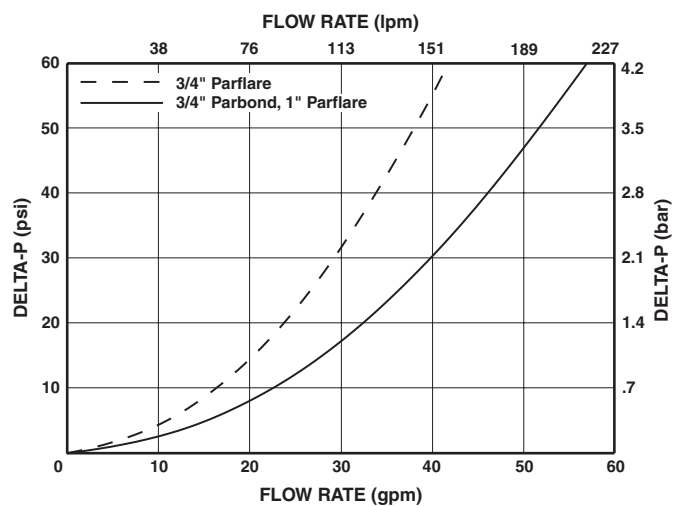
Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.

*Ends are fused on.

CRACKING PRESSURE



PRESSURE DROP VS. FLOW RATE



MV-16 3/4" Manual PFA Sampling Valve

Product Overview

The MV-16 PFA sampling valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined seat and diaphragm sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. The MV-16's multi-turn capability allows precise flow adjustment. The valve incorporates a full flow through port with a low dead volume down leg.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE.

Halar coated stainless steel spring.

Full flow through port.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Reduced pressure drop.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PVDF, Viton, PTFE coated SS spring

Pressure Ranges

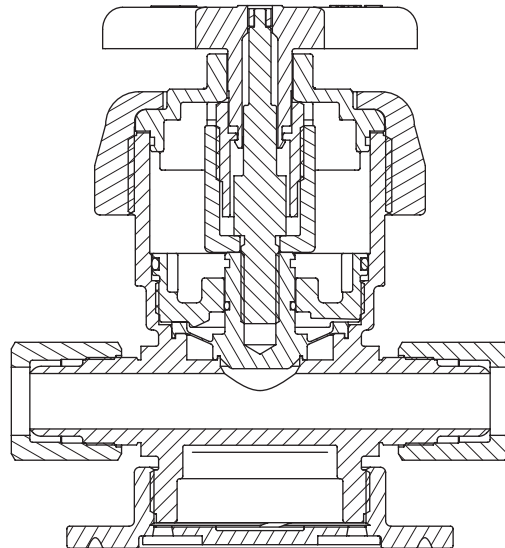
0 - 120 PSIG (8.3 bar) See Cracking Pressure Chart on next page.

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

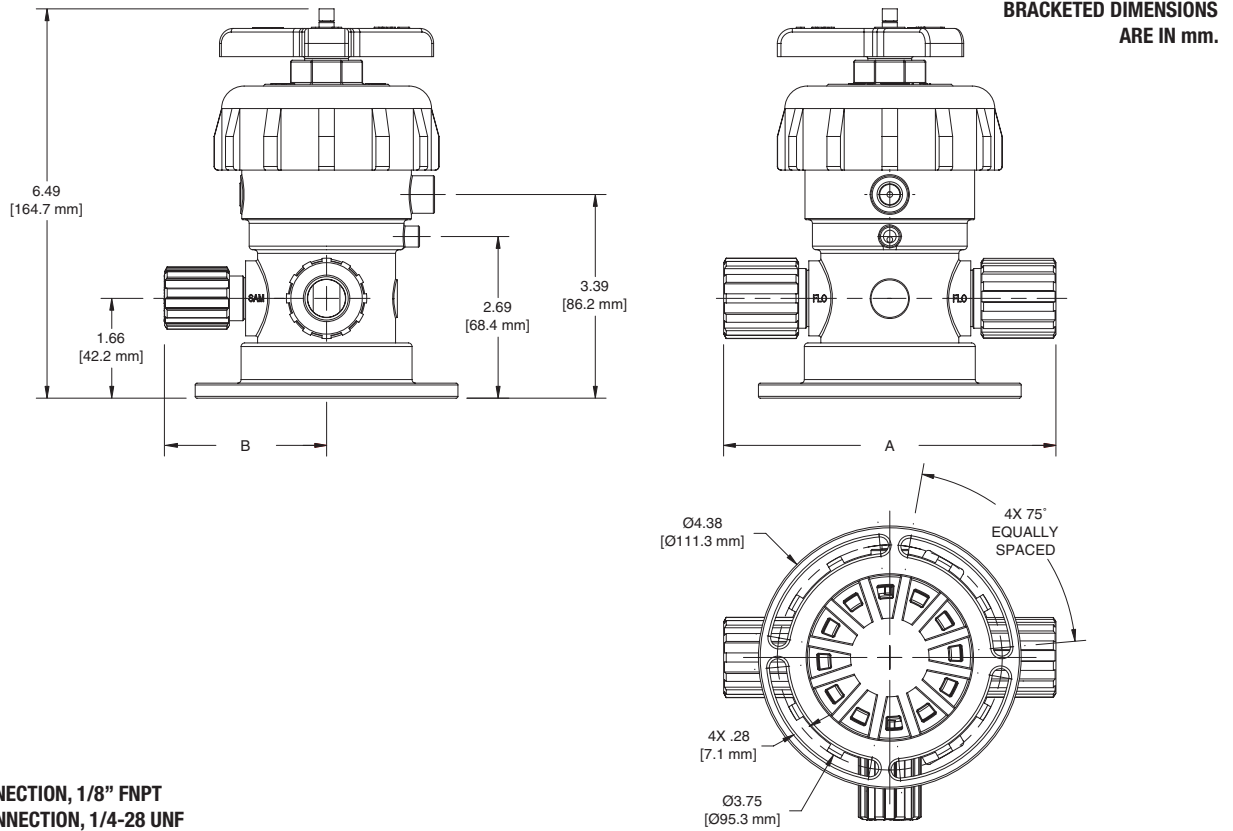
Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



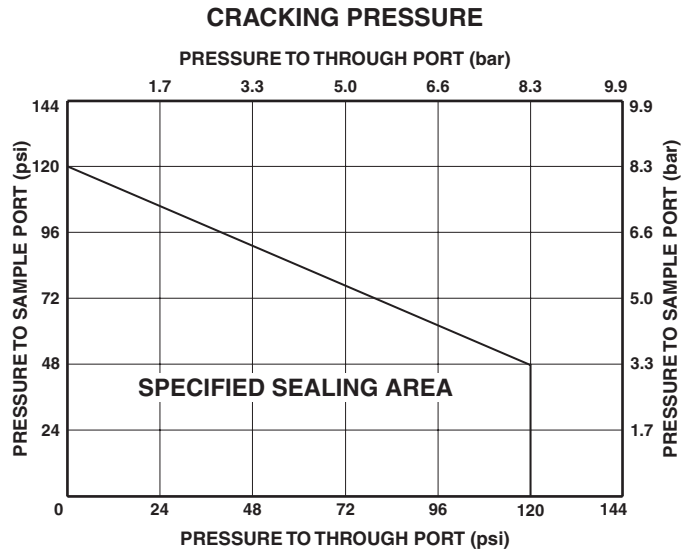
MV-16 3/4" Manual PFA Sampling Valve



AIR PORT CONNECTION, 1/8" FNPT
TEST PORT CONNECTION, 1/4-28 UNF

Model Number	Through Port		Sample Port		Through Port	Sample Port	Dimensions in [mm]	
	Cv	Kv	Cv	Kv			A	B
MV-16-5612-608	13.0	185.4	2.3	32.8	3/4" Parflare	1/2" Parflare	5.54 [140.72]	2.71 [68.83]
MV-16-5612-612	13.0	185.4	4.6	65.6	3/4" Parflare	3/4" Parflare	5.54 [140.72]	2.81 [71.37]
MV-16-5612-712	13.0	185.4	6.9	98.7	3/4" Parflare	3/4" Parbond	5.54 [140.72]	2.95 [74.93]
MV-16-5712-608	25.2	359.92	2.3	32.8	3/4" Parbond	1/2" Parflare	5.90 [149.86]	2.71 [68.83]
MV-16-5712-612	25.2	359.92	4.6	65.6	3/4" Parbond	3/4" Parflare	5.90 [149.86]	2.81 [71.37]
MV-16-5712-712	25.2	359.92	6.9	98.7	3/4" Parbond	3/4" Parbond	5.90 [149.86]	2.95 [74.93]

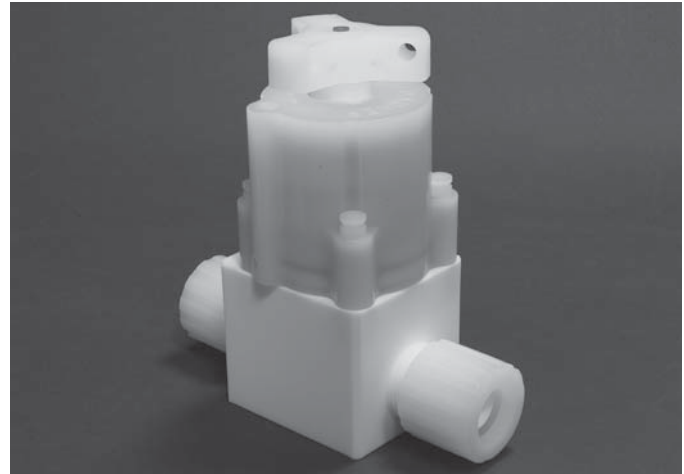
Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.



MV-20 1/4" - 1" Manual PTFE Slurry Valve

Product Overview

The MV-20 slurry valve is designed for use slurry applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a machined PTFE body with precision machined seat and diaphragm sealing areas. The valve is offered in 3 orifice sizes (1/4", 1/2" and 1") and port sizes ranging from 1/4" to 1 1/4".



Features

Fully swept open bowl diaphragm seat area.

Self draining design.

High load point seat seal.

Angled and rounded internal flow path.

One piece precision machined diaphragm manufactured from modified PTFE.

Evenly distributed seat sealing forces.

Maximized diaphragm thickness.

Benefits

Minimizes fluid shear and smooth flow transition.

Minimizes area for entrapment and stagnation of media.

Improves sealing mechanism for aggressive chemicals, deionized water and abrasive slurry media.

Minimizes particle contribution of valve.

Provides faster purging and cleaning of valve.

Less pressure drop allows for lower pressure requirements upstream.

Improves fluid flow dynamics.

Improves cycle life, less shear than standard PTFE material, lower replacement costs, less downtime.

Minimized diaphragm and valve seat strain.

Stabilizes valve back pressure capability.

Minimizes potential for permeation while maximizing cycle life.

Specifications

Materials of Construction

Wetted: PTFE, Modified PTFE

Non-wetted: PVDF, Viton, PTFE coated SS spring

Pressure Ranges

1/4" Orifice: 27" HG vacuum (913 mbar) - 80 PSIG (5.5 bar)

1/2" Orifice: 27" HG vacuum (913 mbar) - 100 PSIG (7 bar)

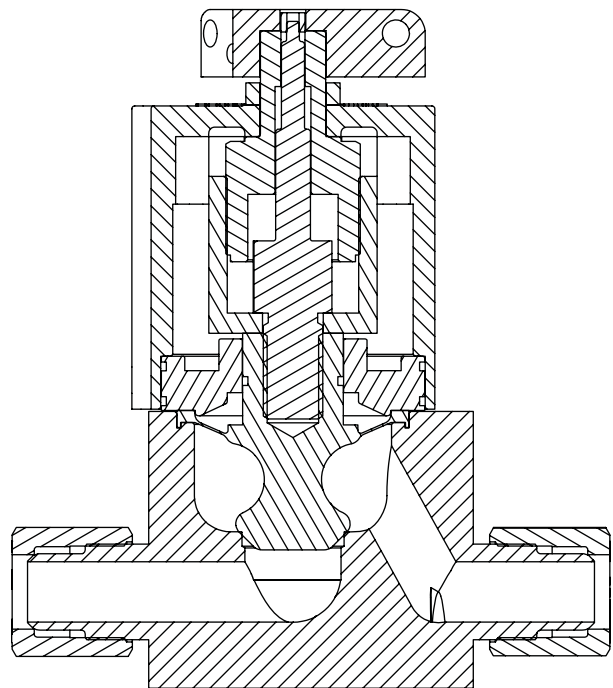
1" Orifice: 27" HG vacuum (913 mbar) - 100 PSIG (7 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

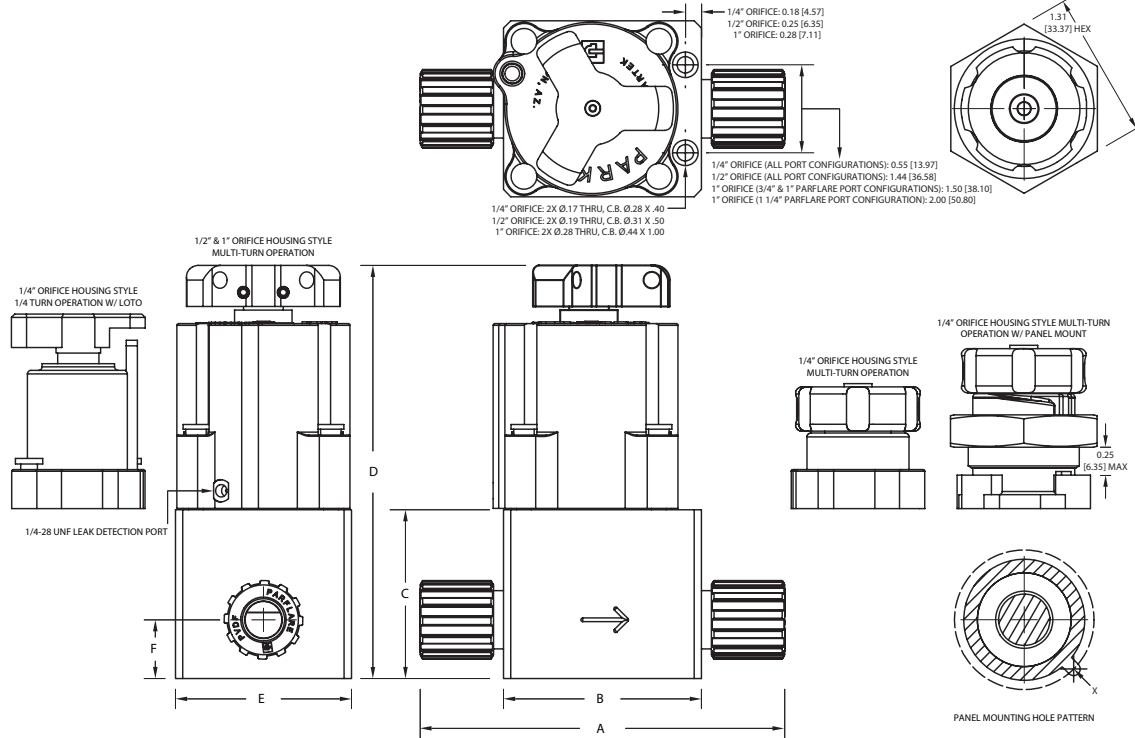
Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



MV-20 1/4" - 1" Manual PTFE Slurry Valve

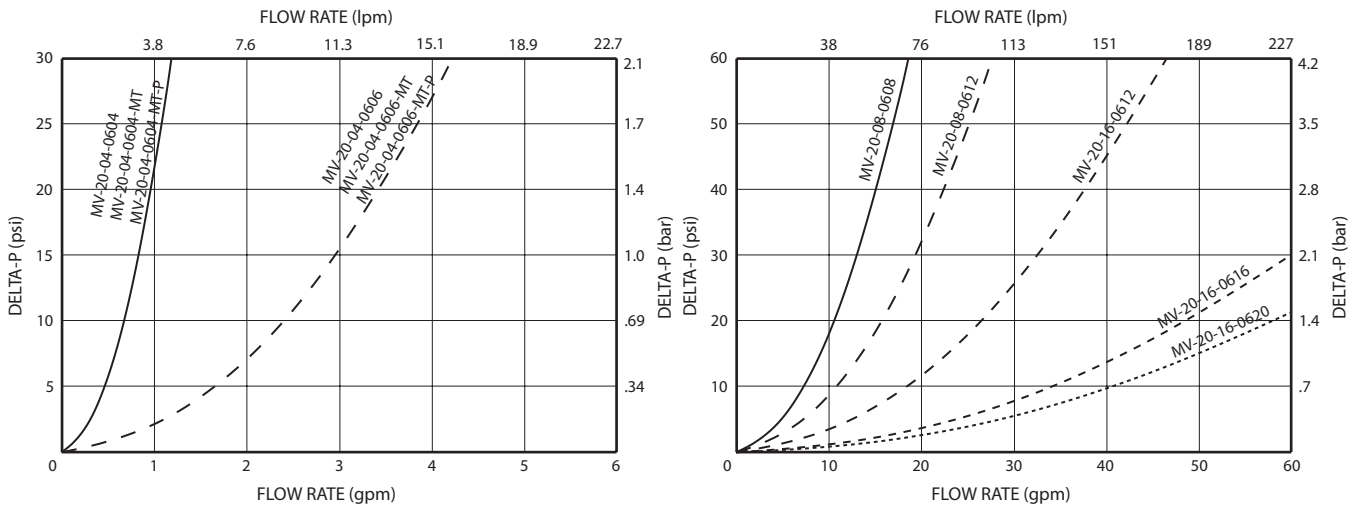
**BRACKETED DIMENSIONS
ARE IN mm.**



Part Number	Cv	Kv	Body Size	Valve Type	Port Configuration	A		B		C		D		E		F	
						inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
MV-20-04-0604	.20	2.8	1/4"	1/4 TURN LOTO	1/4" Parflare	3.80	96.52	1.50	38.10	1.15	29.21	2.91	73.91	1.25	31.75	0.50	12.70
MV-20-04-0606	.76	10.8	1/4"		3/8" Parflare	3.96	100.58	1.50	38.10	1.15	29.21	2.91	73.91	1.25	31.75	0.50	12.70
MV-20-04-0604-MT	.20	2.8	1/4"	MULTI-TURN	1/4" Parflare	3.80	96.52	1.50	38.10	1.15	29.21	2.27	57.66	1.25	31.75	0.50	12.70
MV-20-04-0606-MT	.76	10.8	1/4"		3/8" Parflare	3.96	100.58	1.50	38.10	1.15	29.21	2.27	57.66	1.25	31.75	0.50	12.70
MV-20-08-0608	2.4	34.2	1/2"		1/2" Parflare	5.20	132.08	2.50	63.50	1.80	45.72	5.04	128.02	2.00	50.80	0.78	19.81
MV-20-08-0612	3.9	55.8	1/2"		3/4" Parflare	5.35	135.89	2.50	63.50	2.00	50.80	5.24	133.10	2.00	50.80	0.83	20.96
MV-20-16-0612	6.4	91.5	1"		3/4" Parflare	6.22	157.99	3.38	85.85	2.88	73.15	7.05	179.07	3.00	76.20	1.00	25.40
MV-20-16-0616	10.9	155.4	1"		1" Parflare	6.98	177.29	3.38	85.85	2.88	73.15	7.05	179.07	3.00	76.20	1.00	25.40
MV-20-16-0620	13.5	192.9	1"		1 1/4" Parflare	8.07	204.98	3.75	95.25	3.25	82.55	7.43	188.72	3.00	76.20	1.25	31.75
MV-20-04-0604-MT-P*	.20	2.8	1/4"		MULTI-TURN	1/4" Parflare	3.55	90.17	1.25	31.75	1.15	29.21	2.63	66.80	1.25	31.75	0.50
MV-20-04-0606-MT-P*	.76	10.8	1/4"	PANEL MOUNT	3/8" Parflare	3.96	100.58	1.50	38.10	1.15	29.21	2.63	66.80	1.25	31.75	0.50	12.70

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number. Contact factory for Pillar end connections.
*Does not include mounting holes for this model only.

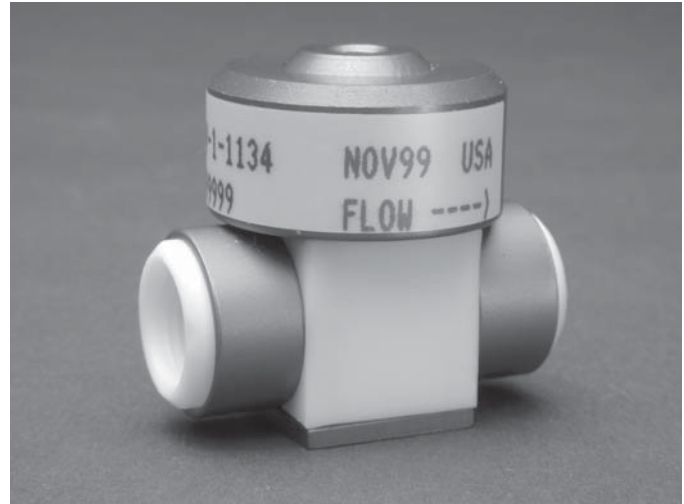
PRESSURE DROP VS. FLOW RATE



PV-1 Miniature Pneumatic Valve

Product Overview

The PV-1 PTFE Miniature Diaphragm Valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical systems. The design utilizes a machined modified PTFE body, seat and diaphragm ensuring excellent flexibility and long life. The valve is available in 2 and 3 way configurations. It is ideal for low flow and small dose injection applications.



Features

Precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seal for positive diaphragm to body seal.

Compact design actuator works on as little as 20 psi.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Isolates media from actuator.

Ease of installation and maintenance.

Specifications

Materials of Construction

Wetted: PTFE, Modified PTFE
Non-wetted: Anodized Aluminum, SS, Nitrile

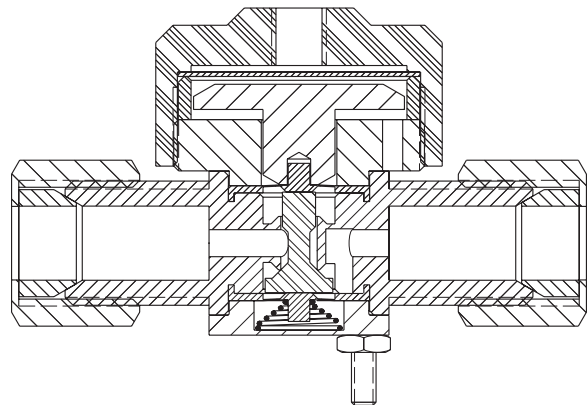
Pressure Ranges

Forward: 25" HG vacuum (846 mbar) to 20 PSIG (1.4 bar)
Back: 25" HG vacuum (846 mbar) to 20 PSIG (1.4 bar)
Actuator: 20 PSIG (1.4 bar) to 120 PSIG (8.3 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

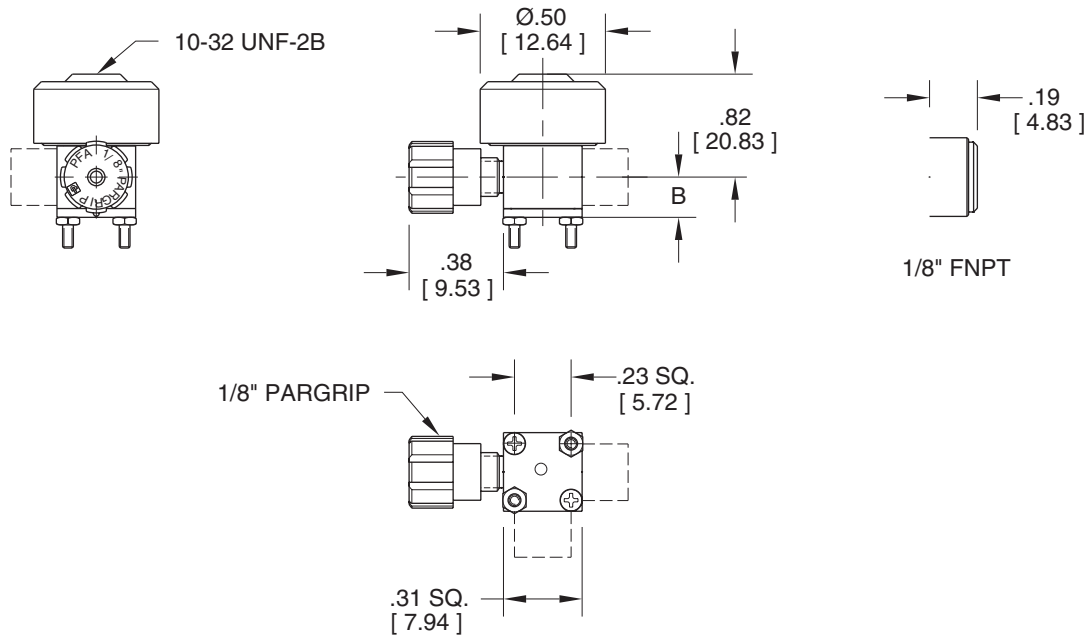
Temperature Ranges

Ambient: -60° - 212° F (-51° - 100° C)
Fluid: -60° - 400° F (-51° - 204° C)

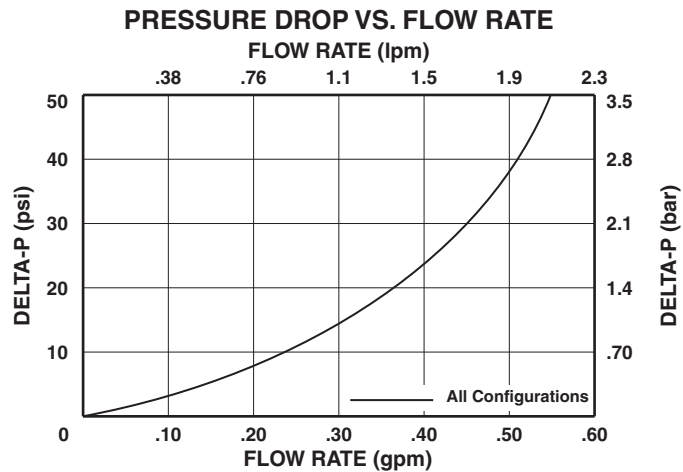


PV-1 Miniature Pneumatic Valve

BRACKETED DIMENSIONS
ARE IN mm.



Model Number	Cv	Kv	Flow Configuration	Orifice Size	Port Configuration	Dimension B
PV-1-1134	.08	1.1	NC	.094	1/8" FNPT	.38 [9.65]
PV-1-1334-03	.08	1.1	3 WAY	.094	1/8" FNPT	.38 [9.65]
PV-1-2134	.08	1.1	NC	.094	1/8" Pargrip	.32 [8.13]
PV-1-2334-03	.08	1.1	3 WAY	.094	1/8" Pargrip	.32 [8.13]



PV-10 1/4" Pneumatic 2 Way Valve

Product Overview

The PV-10 PFA Diaphragm Valve is designed for use in high purity semiconductor applications. It is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. A full 1/4" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragms manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE.

Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel spring.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, 18-8 SS, Viton seals, PTFE coated SS springs

Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

Back: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

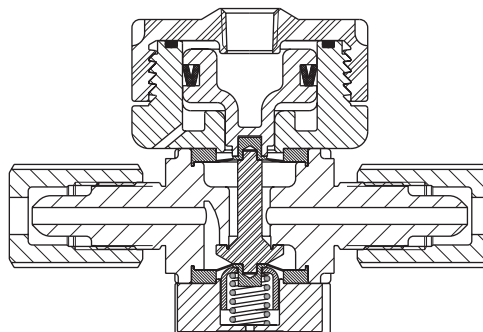
Actuator: 20 PSIG (1.4 bar) to 120 PSIG (8.3 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

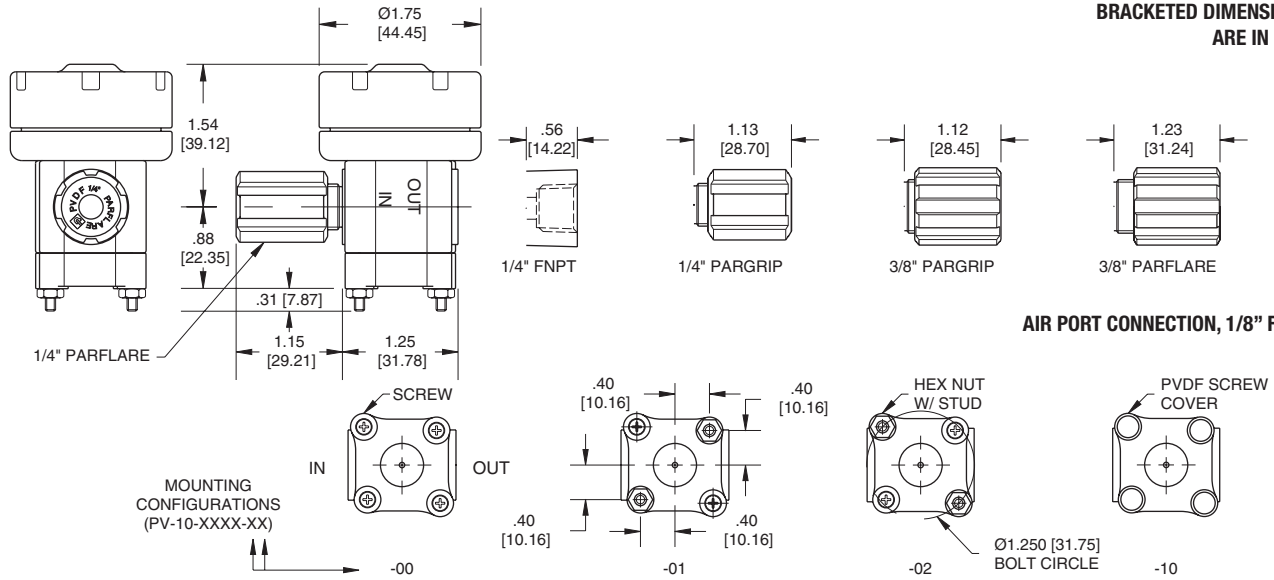
Fluid: 0° - 266° F (-17° - 130° C)



Normally Closed shown

PV-10 1/4" Pneumatic 2 Way Valve

**BRACKETED DIMENSIONS
ARE IN mm.**

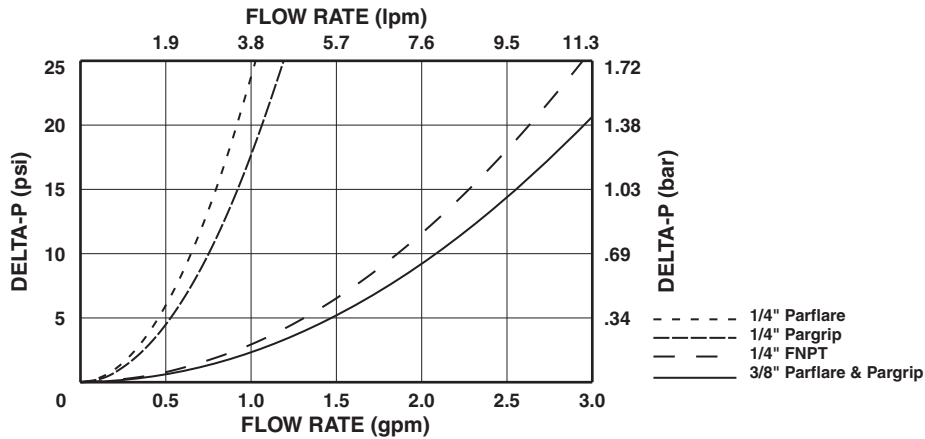


AIR PORT CONNECTION, 1/8" FNPT

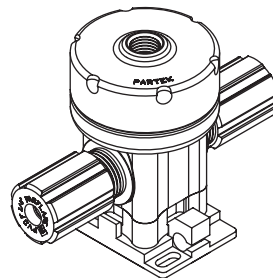
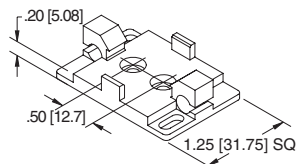
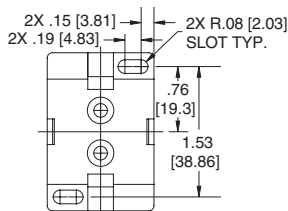
Model Number	Cv	Kv	Flow Configuration	Port Configuration	Mounting Configuration-XX (Depicted Above)
PV-10-1144-XX	.60	8.6	NC	1/4" FNPT	00 = Screw 01 = Screw/Stud .80 Square 02 = Screw/Stud Ø1.25 Bolt Circle 10 = PVDF Screw Covers
PV-10-1244-XX	.60	8.6	NO	1/4" FNPT	
PV-10-2134-XX	.24	3.4	NC	1/4" Pargrip	
PV-10-2234-XX	.24	3.4	NO	1/4" Pargrip	
PV-10-2146-XX	.62	8.8	NC	3/8" Pargrip	
PV-10-2246-XX	.62	8.8	NO	3/8" Pargrip	
PV-10-6124-XX	.20	2.8	NC	1/4" Parflare	
PV-10-6224-XX	.20	2.8	NO	1/4" Parflare	
PV-10-6146-XX	.62	8.8	NC	3/8" Parflare	
PV-10-6246-XX	.62	8.8	NO	3/8" Parflare	

Pargrip models are supplied with PFA nuts. Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.

PRESSURE DROP VS. FLOW RATE



Accessories	Description
SB-10	PVDF Snap-in Mounting Base. For use with PV-10-XXXX-00 and PV-10-XXXX-10 models only. (Sold separately)



PV-10 1/4" Pneumatic 3 Way Valve

Product Overview

The PV-10 PFA 3 Way Diaphragm Valve is designed for use in high purity semiconductor applications. It is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined areas. One piece machined modified PTFE diaphragms are also utilized for excellent flexibility and life. A full 1/4" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragms manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel springs.

Benefits

High cycle life.
Lower replacement costs.
Less downtime.

Reduces effects of corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE
Non-wetted: PFA, PVDF, 18-8 SS, Viton seals, PTFE coated SS springs

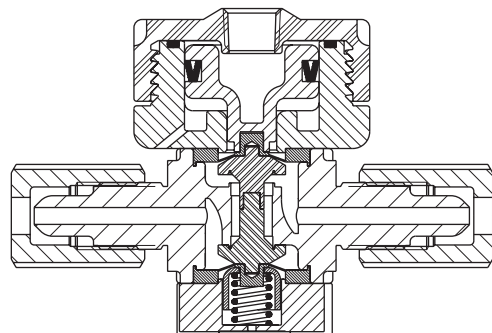
Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)
Back: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)
Actuator: 20 PSIG (1.4 bar) to 120 PSIG (8.3 bar)

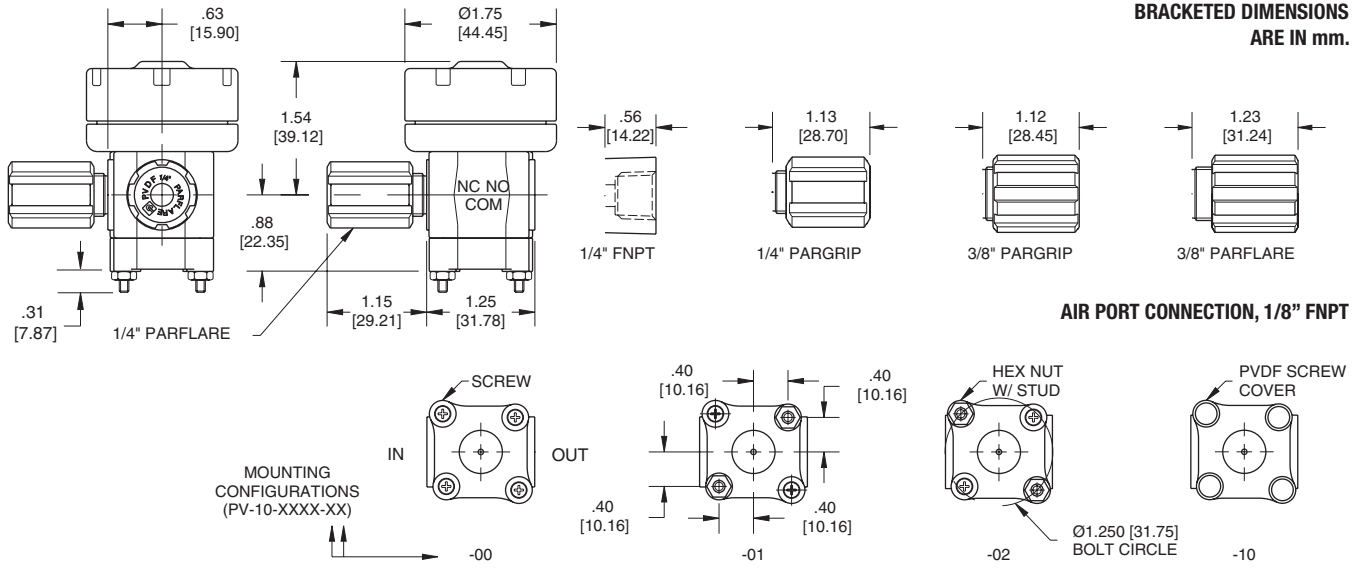
Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)
Fluid: 0° - 266° F (-17° - 130° C)

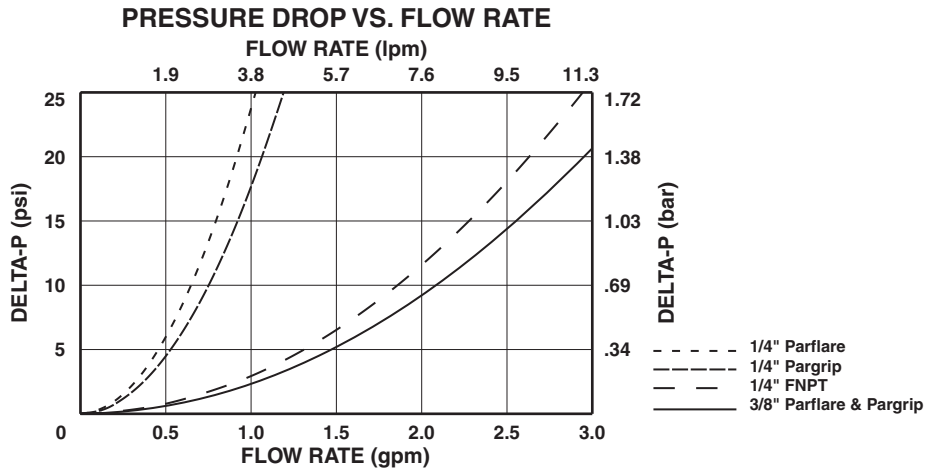


PV-10 1/4" Pneumatic 3 Way Valve

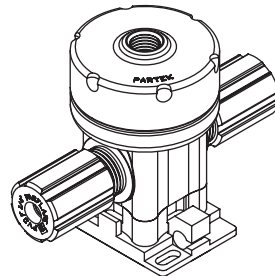
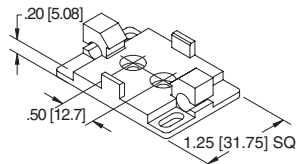
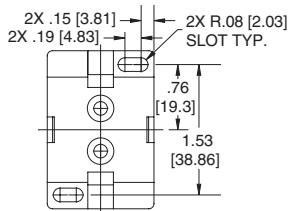


Model Number	Cv	Kv	Flow Configuration	Port Configuration	Mounting Configuration-XX (Depicted Above)
PV-10-1344-XX	.60	8.6	3 WAY	1/4" FNPT	00 = Screw 01 = Screw/Stud .80 Square 02 = Screw/Stud Ø1.25 Bolt Circle 10 = PVDF Screw Covers
PV-10-2334-XX	.24	3.4		1/4" Pargrip	
PV-10-2346-XX	.62	8.8		3/8" Pargrip	
PV-10-6324-XX	.20	2.8		1/4" Parflare	
PV-10-6346-XX	.62	8.8		3/8" Parflare	

Pargrip models are supplied with PFA nuts. Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.



Accessories	Description
SB-10	PVDF Snap-in Mounting Base. For use with PV-10-XXXX-00 and PV-10-XXXX-10 models only. (Sold separately)



PV-11 1/2" Pneumatic 2 Way Valve

Product Overview

The PV-11 PFA Diaphragm Valve is designed for use in high purity semiconductor applications. It is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. A full 1/2" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE.

Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel spring.

Submersible option isolates all valve components from the external environment.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Valve remains functional while operating in wet or gaseous corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, Viton seals, PTFE coated SS springs

Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 100 PSIG (7 bar)

Back: 80 PSIG (5.5 bar) with 80 PSIG (5.5 bar) inlet pressure

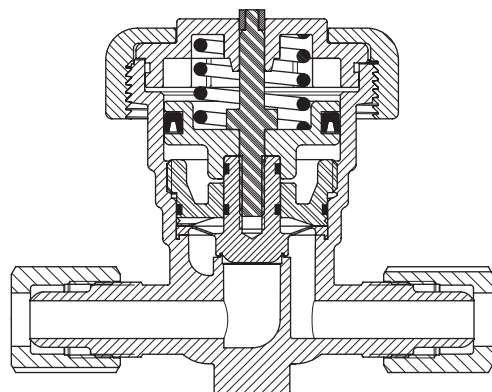
Actuator: 60 PSIG (4.2 bar) to 100 PSIG (7 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

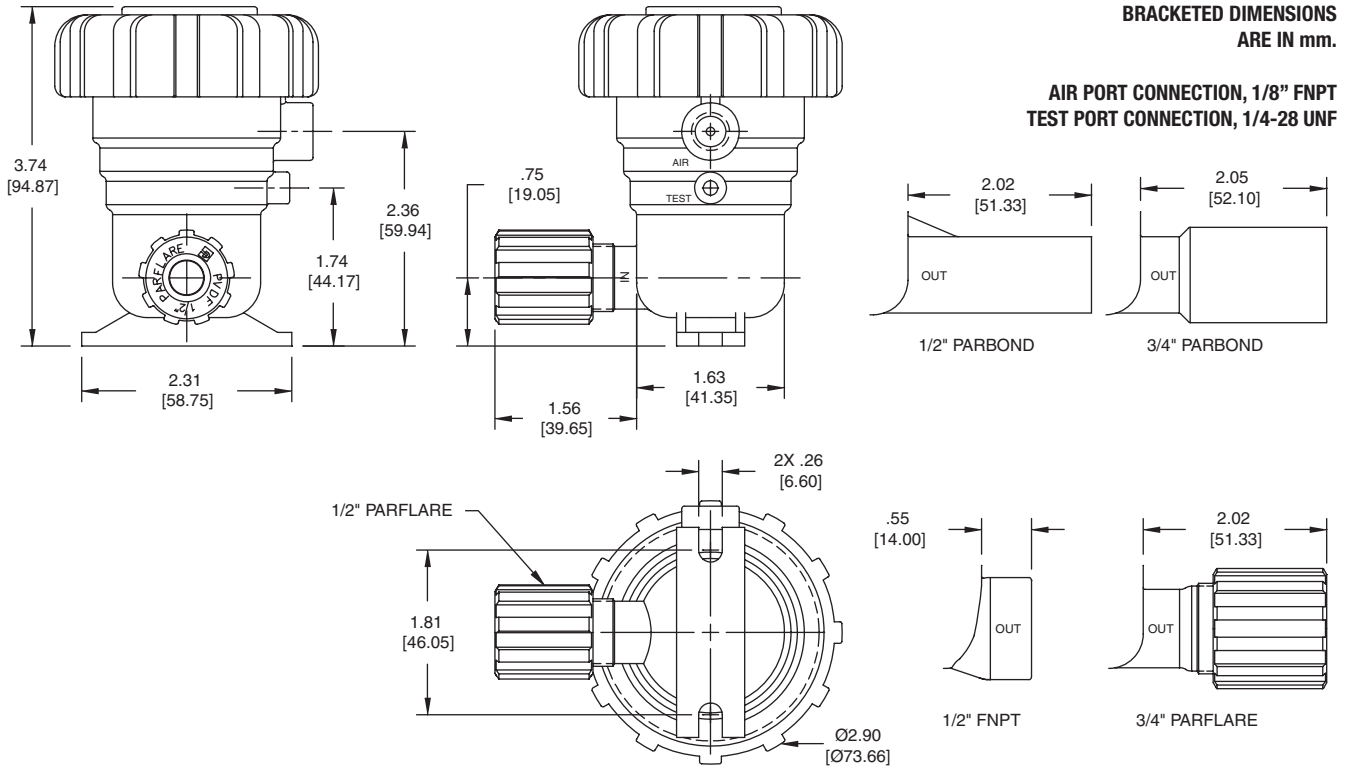
Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



Normally Closed Shown

PV-11 1/2" Pneumatic 2 Way Valve

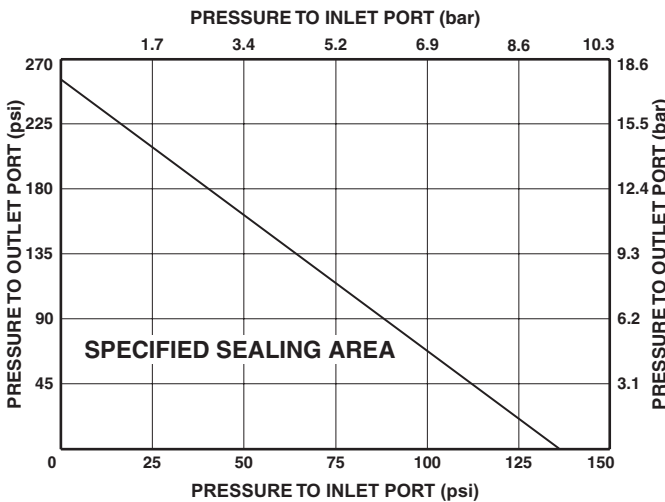


Model Number	Cv	Kv	Flow Config.	Port Config.
PV-11-001	2.3	32.8	N C	1/2" Parflare
PV-11-002	3.7	52.8		3/4" Parflare
PV-11-003	3.7	52.8		1/2" Parbond
PV-11-004	3.7	52.8		3/4" Parbond
PV-11-005	3.7	52.8		1/2" FNPT

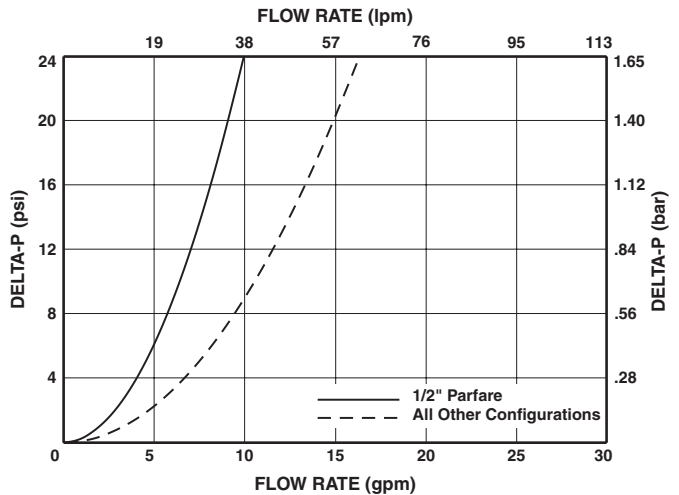
Model Number	Cv	Kv	Flow Config.	Port Config.
PV-11-011	2.3	32.8	N O	1/2" Parflare
PV-11-012	3.7	52.8		3/4" Parflare
PV-11-013	3.7	52.8		1/2" Parbond
PV-11-014	3.7	52.8		3/4" Parbond
PV-11-015	3.7	52.8		1/2" FNPT

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.

CRACKING PRESSURE



PRESSURE DROP VS. FLOW RATE



PV-11 1/2" Pneumatic 3 Way Valve

Product Overview

The PV-11 PFA 3 Way Diaphragm Valve is designed for use in high purity semiconductor applications. It is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined areas. One piece machined modified PTFE diaphragms are also utilized for excellent flexibility and life. A full 1/2" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragms manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel springs.

Submersible option isolates all valve components from the external environment.

Multi-position mounting base.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Valve remains functional while operating in wet or gaseous corrosive environments.

Allows for more mounting flexibility and connector fitting reduction.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, Viton seals, PTFE coated SS springs

Pressure Ranges

COM to NO: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

NO to COM: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

COM to NC: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar) with 20 PSIG (1.4 bar) maximum back pressure

NC to COM: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar) with 50 PSIG (3.4 bar) maximum back pressure

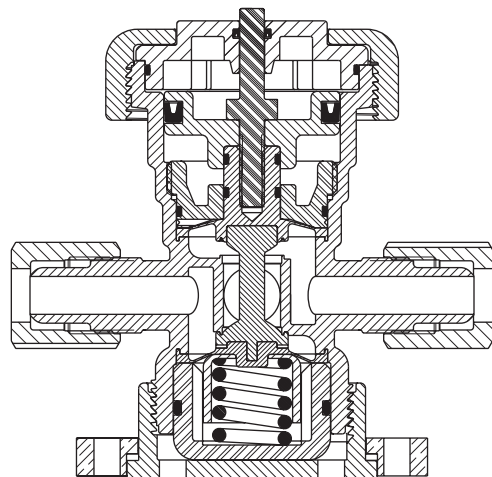
Actuator: 60 PSIG (4.2 bar) to 100 PSIG (7 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

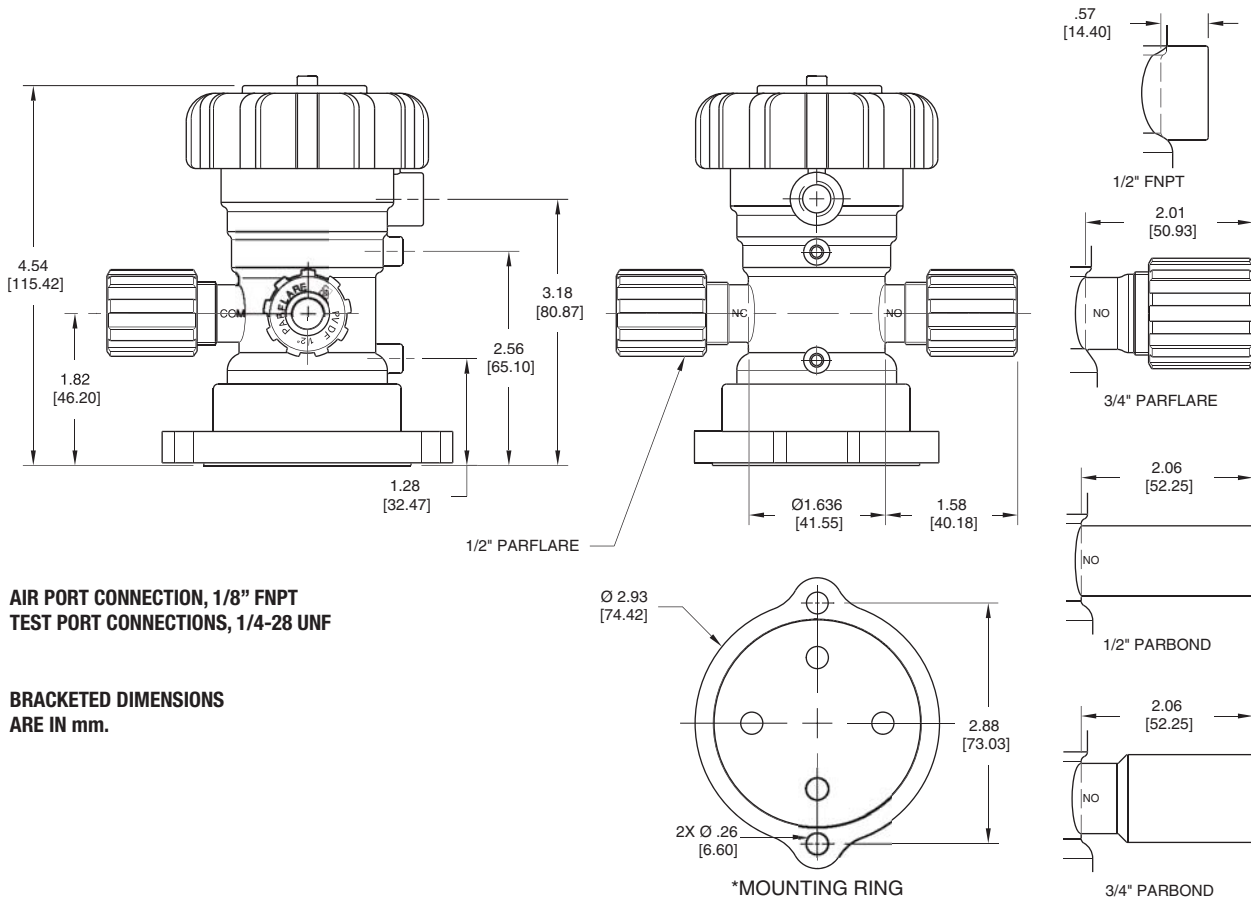
Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



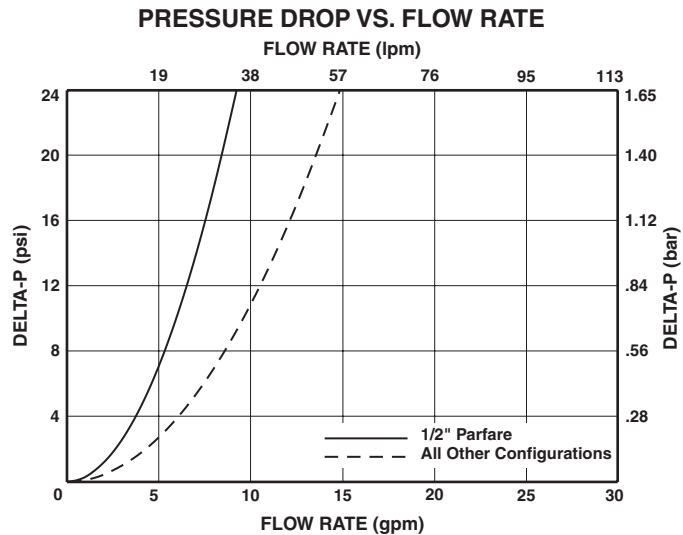
PV-11 1/2" Pneumatic 3 Way Valve



Model Number	Cv	Kv	Flow Configuration	Port Configuration
PV-11-021	1.9	27.1	3 WAY	1/2" Parflare
PV-11-022	2.8	40.0		3/4" Parflare
PV-11-023	2.8	40.0		1/2" Parbond
PV-11-024	2.8	40.0		3/4" Parbond
PV-11-025	2.8	40.0		1/2" FNPT

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.

*To order part without mounting ring add -01 to model number.



PV-11 1/2" Pneumatic Adjustable Bypass Valve

Product Overview

The PV-11 Adjustable Bypass Valve is designed for use in ultra-pure water applications. The design utilizes a molded high purity PFA body with precision machined seats. A machined modified PTFE diaphragm is also utilized for excellent flexibility and life. The integral bypass valve prevents the stagnation and deadheading of media in an ultra-pure water system.



Features

Precision machined diaphragm manufactured from the latest technology modified PTFE.

Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel spring.

Bypass integral to valve body to prevent stagnation of ultra-pure water.

Modified flow configurations with numerous end connections including Parflare available.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environment.

Prevents contamination of media.

Reduces connections, mounting space, and overall cost.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, Viton seals, PTFE coated SS springs

Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

with 20 PSIG (1.4 bar) maximum back pressure

Backward: 27" HG vacuum (913 mbar) to 80 PSIG (5.5 bar)

with 50 PSIG (3.4 bar) maximum back pressure

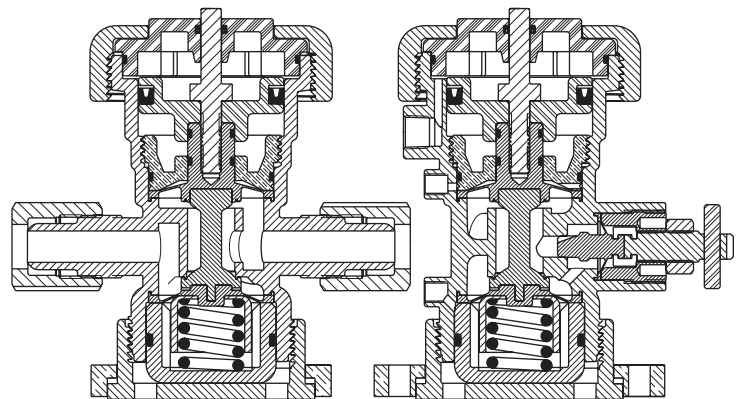
Actuator: 60 PSIG (4.2 bar) to 100 PSIG (7 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

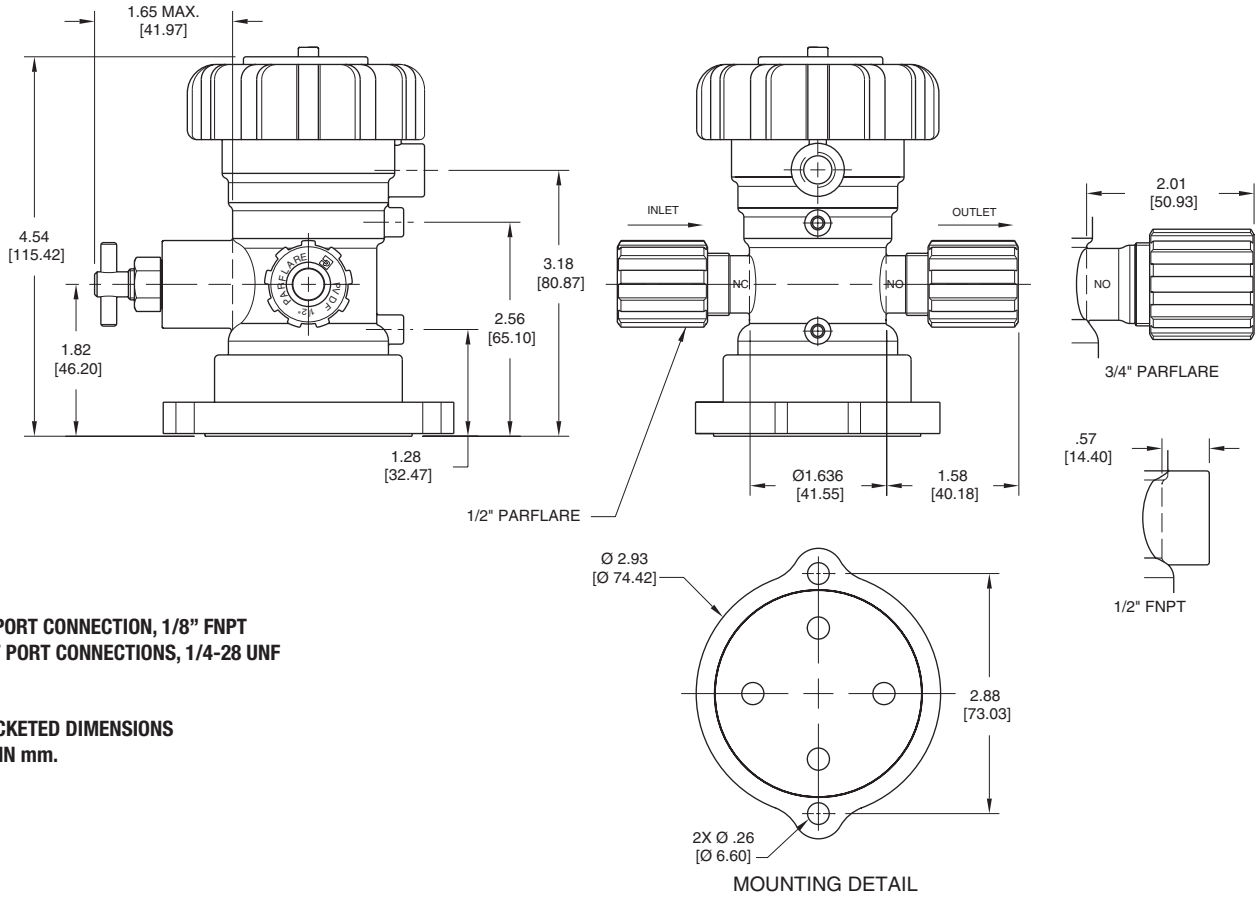
Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



PV-11 1/2" Pneumatic Adjustable Bypass Valve



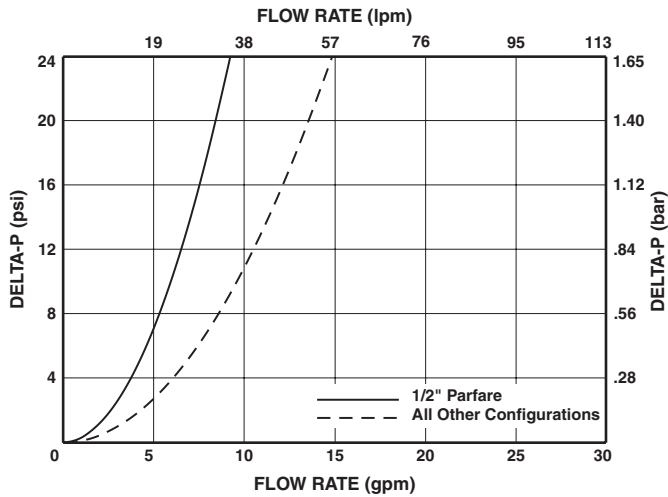
AIR PORT CONNECTION, 1/8" FNPT
TEST PORT CONNECTIONS, 1/4-28 UNF

BRACKETED DIMENSIONS
ARE IN mm.

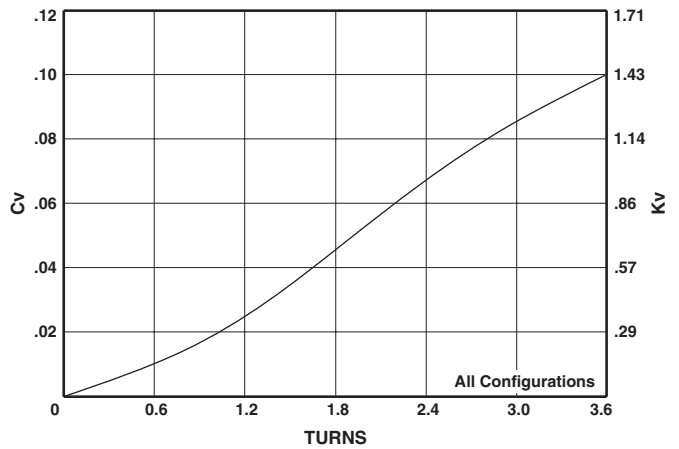
Model Number	Cv	Kv	Flow Configuration	Port Configuration
PV-11-301	1.9	27.1	NC	1/2" Parflare
PV-11-302	2.8	40.0		3/4" Parflare
PV-11-305	2.8	40.0		1/2" FNPT

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.

PRESSURE DROP VS. FLOW RATE



Cv / Kv vs. TURNS FOR BYPASS PORT



PV-12 1" Pneumatic 2 Way Valve

Product Overview

The PV-12 Diaphragm Valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined seat and diaphragm sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. A full 1" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

PVDF coated stainless steel spring.

Submersible option isolates all valve components from the external environment.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Valve remains functional while operating in wet or gaseous corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PFA, PVDF, Viton seals, PTFE coated SS springs

Pressure Ranges

Forward: 27" HG vacuum (913 mbar) to 100 PSIG (7 bar)

Backward: 80 PSIG (5.5 bar) with 100 PSIG (3.4 bar) inlet pressure
100 PSIG (7 bar) with 60 PSIG (4.2 bar) inlet pressure

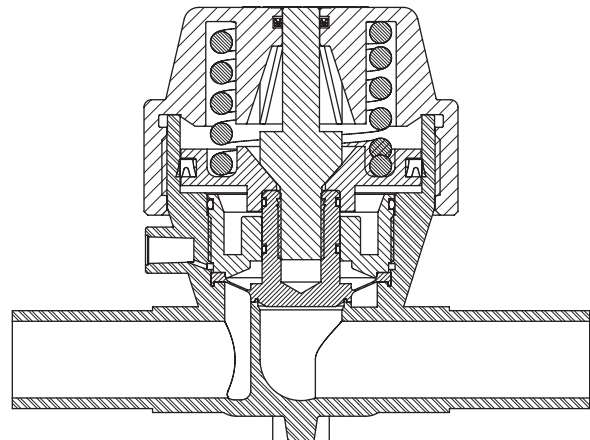
Actuator: 60 PSIG (4.2 bar) to 100 PSIG (7 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

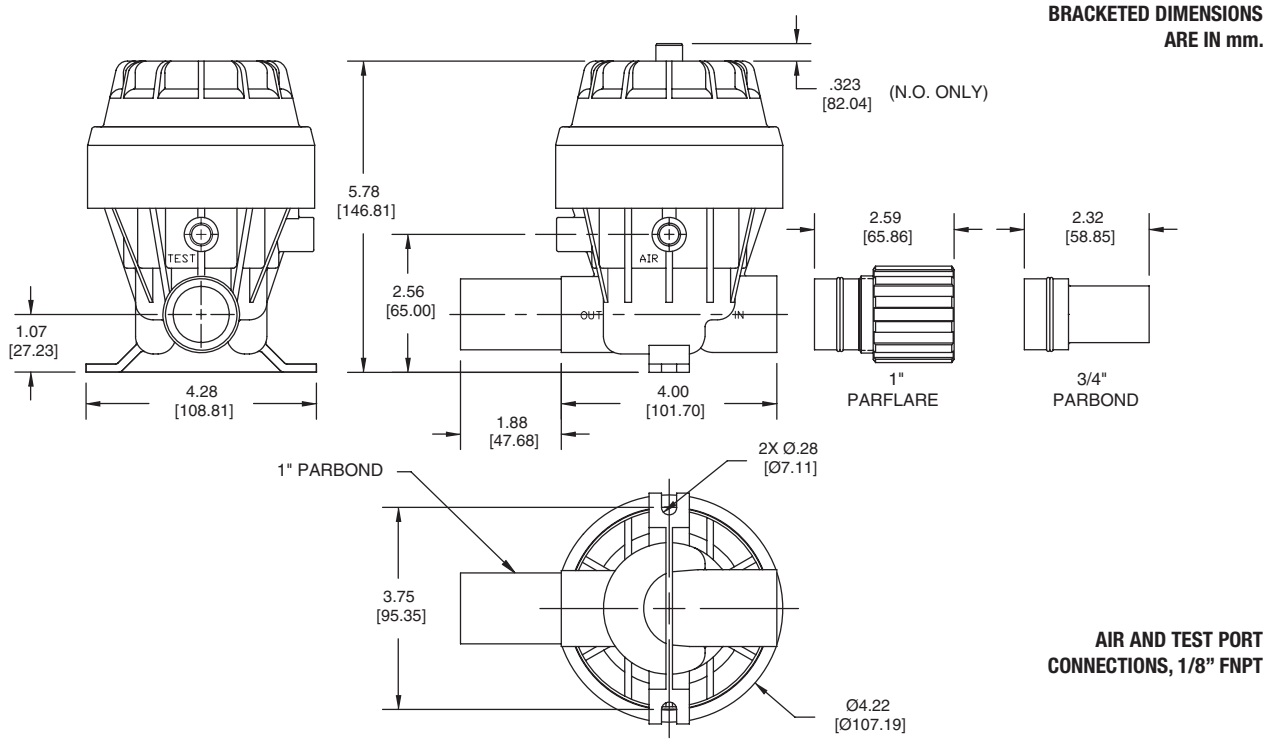
Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



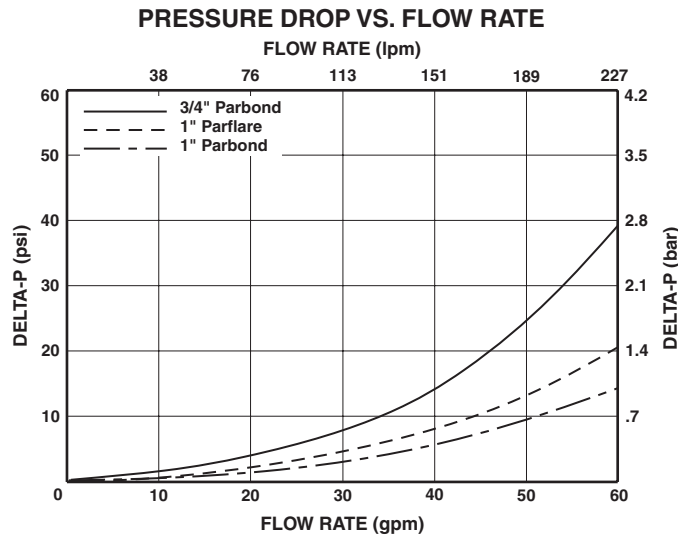
Normally Closed shown

PV-12 1" Pneumatic 2 Way Valve



Model Number	Cv	Kv	Flow Config.	Port Config.	Model Number	Cv	Kv	Flow Config.	Port Config.
PV-12-001	15.7	224.2	N C	1" Parbond	PV-12-005	15.7	224.2	N O	1" Parbond
PV-12-002	13.3	189.9		1" Parflare	PV-12-006	13.3	189.9		1" Parflare
PV-12-003	9.6	142.8		3/4" Parbond	PV-12-007	9.6	142.8		3/4" Parbond

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.



PV-16 3/4" Pneumatic PFA 2 Way Valve

Product Overview

The PV-16 PFA diaphragm valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined seat and diaphragm sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. A full 3/4" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

Halar coated stainless steel spring.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PVDF, Viton, PTFE coated SS spring

Pressure Ranges

0 - 120 PSIG (8.3 bar) See Cracking Pressure Chart on next page.

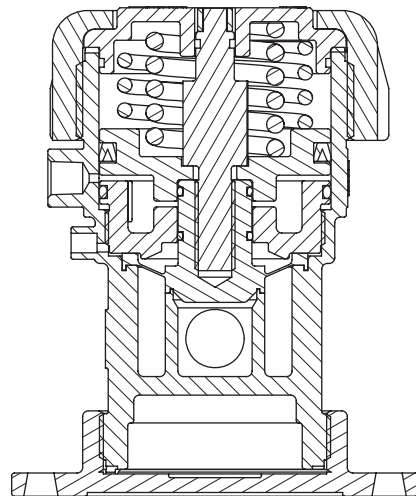
Actuation: 60 PSIG (4.1 bar) - 120 PSIG (8.3 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

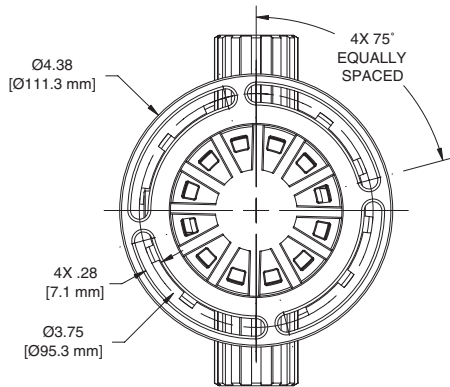
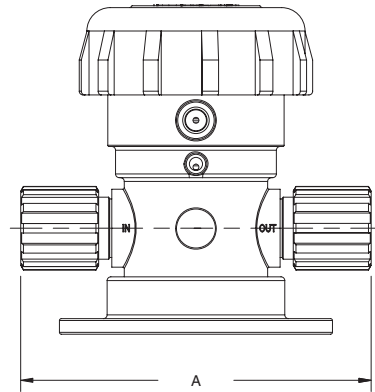
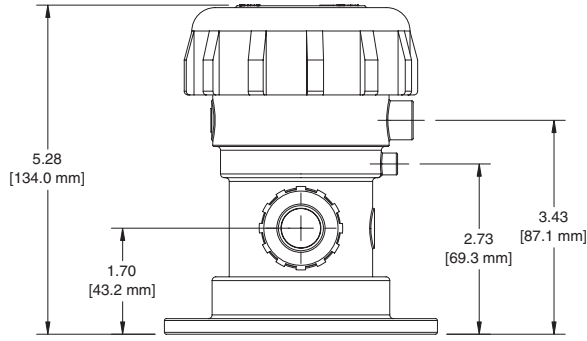
Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



PV-16 3/4" Pneumatic PFA 2 Way Valve

BRACKETED DIMENSIONS
ARE IN mm.

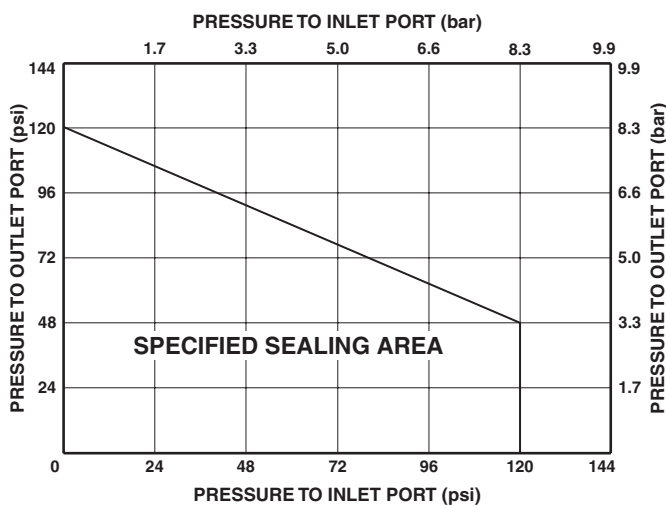


AIR PORT CONNECTION, 1/8" FNPT
TEST PORT CONNECTION, 1/4-28 UNF

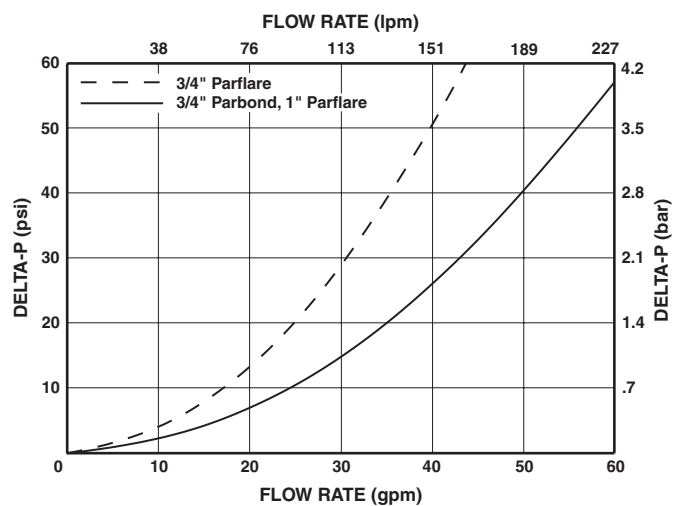
Model Number	Cv	Kv	Flow Configuration-X	Port Configuration	Dimension in [mm] A
PV-16-X612	5.8	82.7	1 = NC 2 = NO	3/4" Parflare	5.54 [140.72]
PV-16-X612-01	5.8	82.7		3/4" Parflare Long	6.48 [164.59]
PV-16-X616	7.9	112.6		1" Parflare*	9.12 [231.65]
PV-16-X712	7.9	112.6		3/4" Parbond	5.90 [149.86]

Parflare model numbers are supplied with PVDF nuts. Also available with PFA (-T) nuts.
*Ends are fused on.

CRACKING PRESSURE



PRESSURE DROP VS. FLOW RATE



PV-16 3/4" Pneumatic PFA 3 Way Valve

Product Overview

The PV-16 PFA diaphragm valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined seat and diaphragm sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. A full 3/4" orifice provides maximum flow capability in a compact package.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE. Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

Halar coated stainless steel spring.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PVDF, Viton, PTFE coated SS spring

Pressure Ranges

0 - 120 PSIG (8.3 bar) See Cracking Pressure Chart on next page.

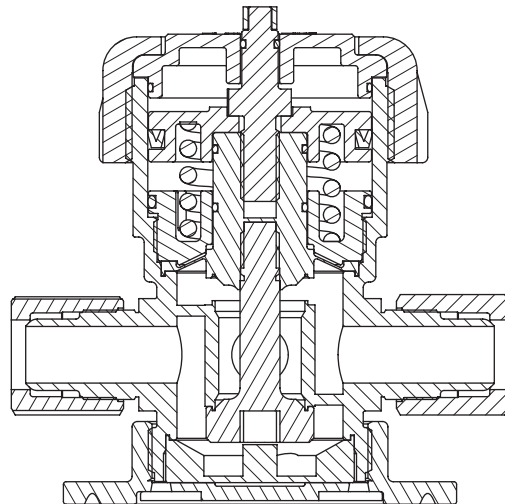
Actuation: 60 PSIG (4.1 bar) - 120 PSIG (8.3 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

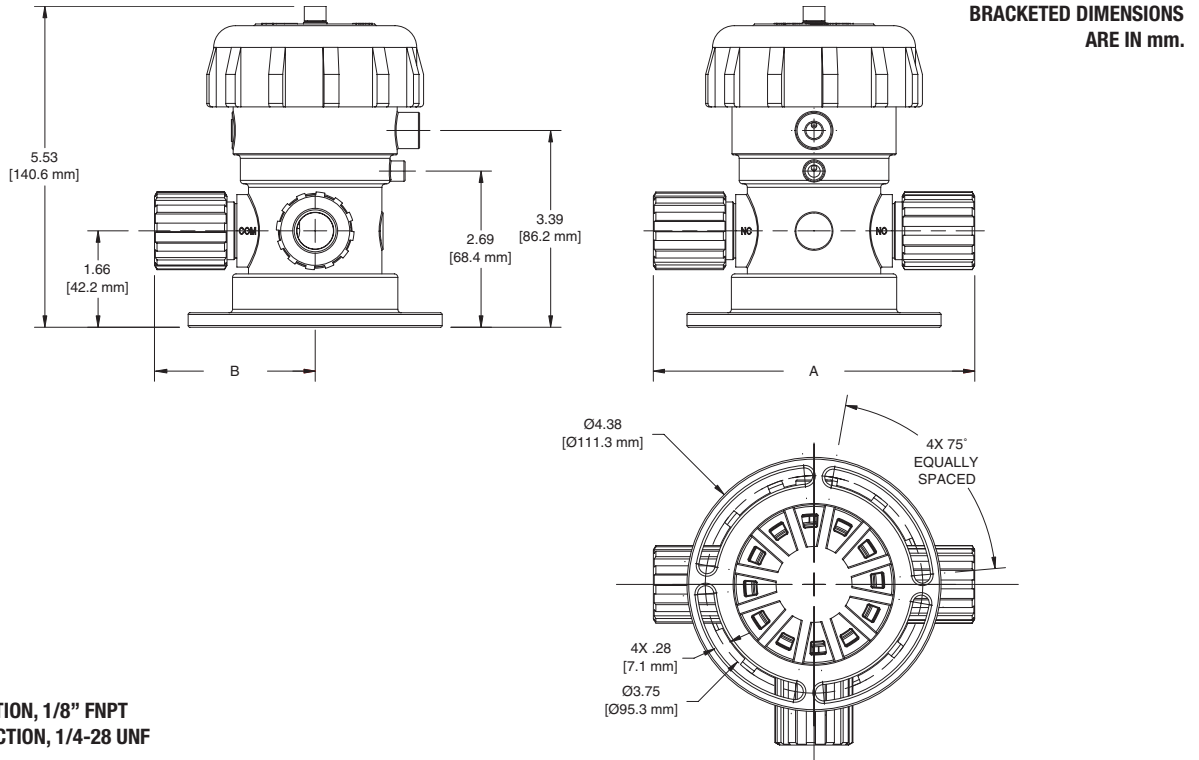
Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



PV-16 3/4" Pneumatic PFA 3 Way Valve



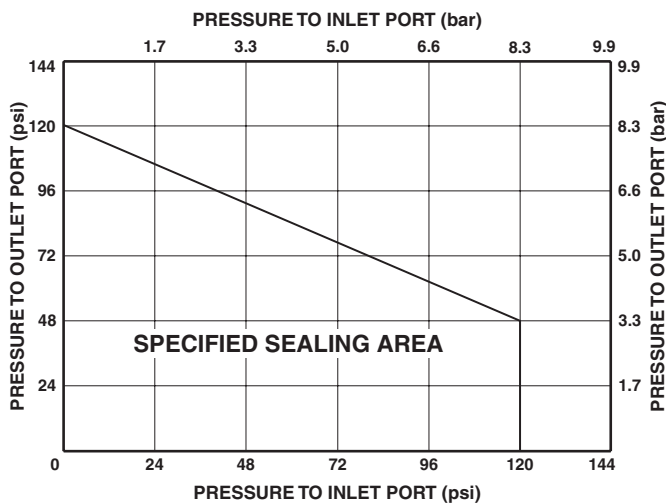
**AIR PORT CONNECTION, 1/8" FNPT
TEST PORT CONNECTION, 1/4-28 UNF**

Model Number	Cv	Kv	Flow Configuration	Port Configuration	Dimensions	
					A	B
PV-16-3612	5.4	77.0	3 WAY COM NC NO	3/4" Parflare	5.54" [140.72 mm]	2.81" [71.37 mm]
PV-16-3612-01	5.4	77.0		3/4" Parflare Long	6.48" [164.59 mm]	2.81" [71.37 mm]
PV-16-3616	7.3	104.1		1" Parflare*	9.12" [231.65 mm]	4.56" [115.82 mm]
PV-16-3712	7.3	104.1		3/4" Parbond	5.90" [149.86 mm]	2.95" [74.93 mm]
PV-16-4612	5.4	77.0	3 WAY Reversed Ports NO COM NC	3/4" Parflare	5.54" [140.72 mm]	2.81" [71.37 mm]
PV-16-4612-01	5.4	77.0		3/4" Parflare Long	6.48" [164.59 mm]	2.81" [71.37 mm]
PV-16-4616	7.3	104.1		1" Parflare*	9.12" [231.65 mm]	4.56" [115.82 mm]
PV-16-4712	7.3	104.1		3/4" Parbond	5.90" [149.86 mm]	2.95" [74.93 mm]

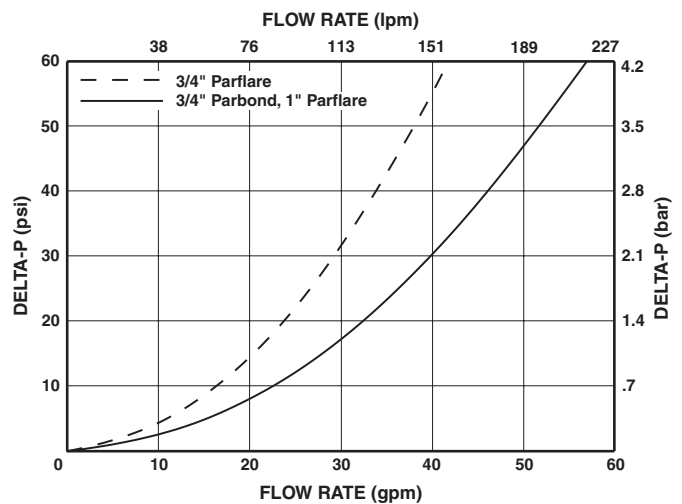
Parflare model numbers are supplied with PVDF nuts. Also available with PFA (-T) nuts.

*Ends are fused on.

CRACKING PRESSURE



PRESSURE DROP VS. FLOW RATE



PV-16 3/4" Pneumatic PFA Sampling Valve

Product Overview

The PV-16 PFA sampling valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a molded high purity PFA body with precision machined seat and diaphragm sealing areas. A one piece machined modified PTFE diaphragm is also utilized for excellent flexibility and life. The valve incorporates a full flow through port with a low dead volume down leg.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE. Provides over five times the flexural life as compared to conventional PTFE.

Halar coated stainless steel spring.

Full flow through port.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Reduces effects of corrosive environments.

Reduced pressure drop.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: PVDF, Viton, PTFE coated SS spring

Pressure Ranges

0 - 120 PSIG (8.3 bar) See Cracking Pressure Chart on next page.

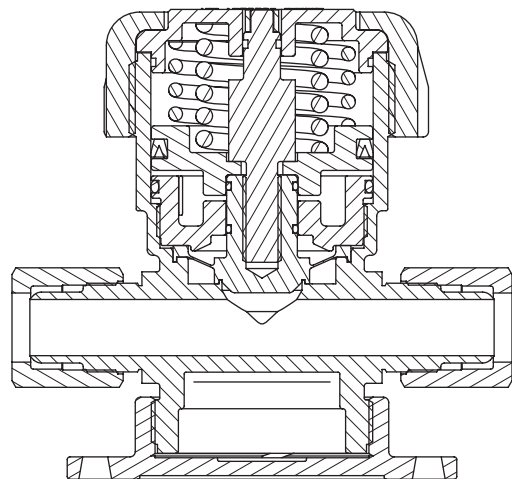
Actuation: 60 PSIG (4.1 bar) - 120 PSIG (8.3 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

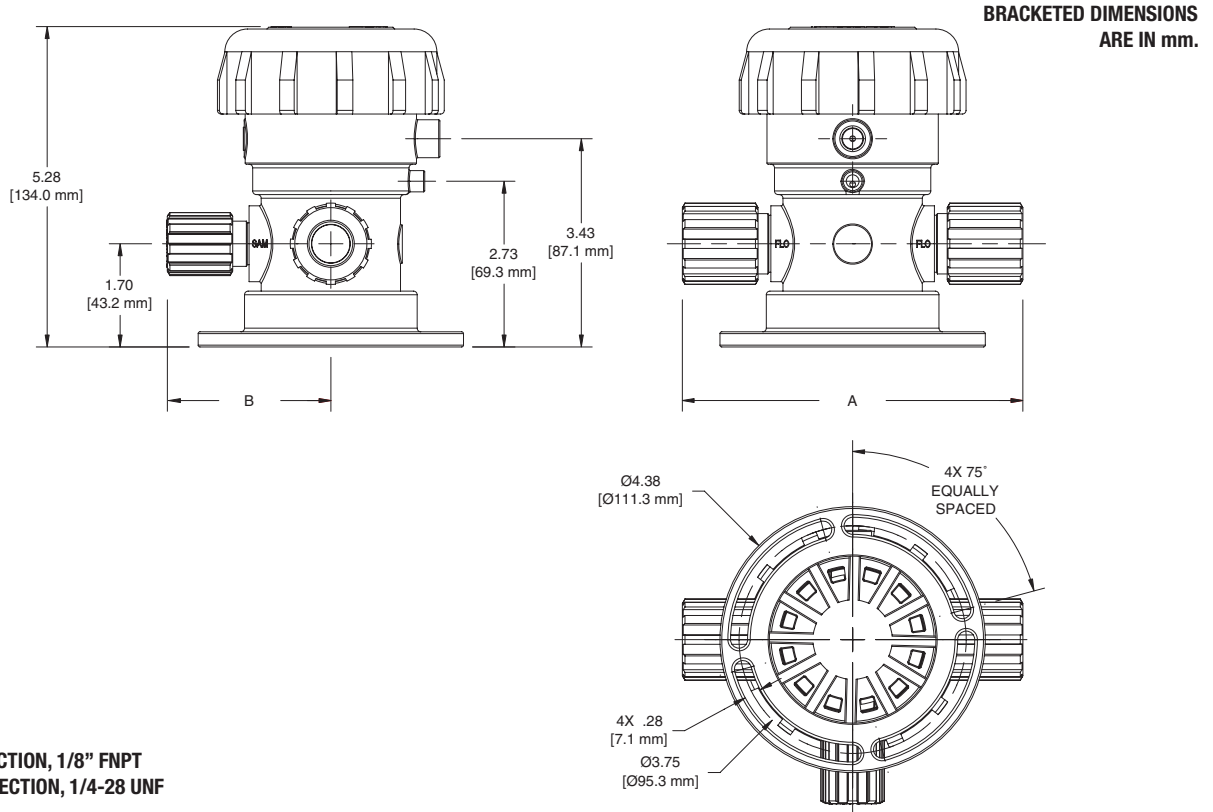
Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



PV-16 3/4" Pneumatic PFA Sampling Valve

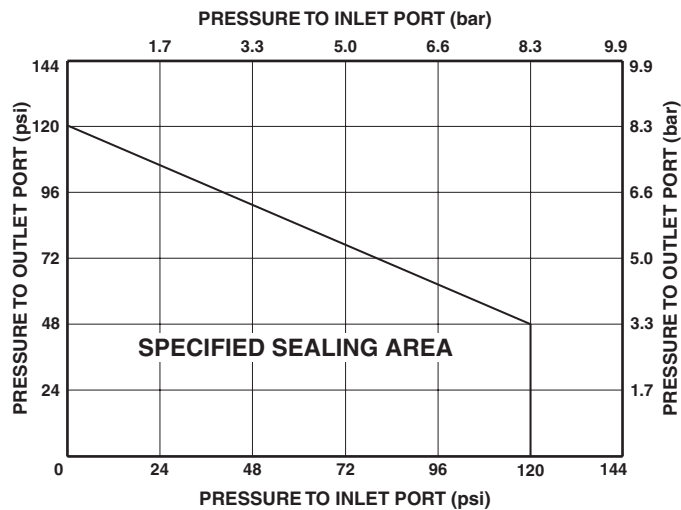


**AIR PORT CONNECTION, 1/8" FNPT
TEST PORT CONNECTION, 1/4-28 UNF**

Model Number	Through Port		Sample Port		Through Port	Sample Port	Dimensions	
	Cv	Kv	Cv	Kv			A	B
PV-16-5612-608	13.0	185.4	2.3	32.8	3/4" Parflare	1/2" Parflare	5.54" [140.72 mm]	2.71" [68.83 mm]
PV-16-5612-612	13.0	185.4	4.6	65.6	3/4" Parflare	3/4" Parflare	5.54" [140.72 mm]	2.81" [71.37 mm]
PV-16-5612-712	13.0	185.4	6.9	98.7	3/4" Parflare	3/4" Parbond	5.54" [140.72 mm]	2.95" [74.93 mm]
PV-16-5712-608	25.2	359.92	2.3	32.8	3/4" Parbond	1/2" Parflare	5.90" [149.86 mm]	2.71" [68.83 mm]
PV-16-5712-612	25.2	359.92	4.6	65.6	3/4" Parbond	3/4" Parflare	5.90" [149.86 mm]	2.81" [71.37 mm]
PV-16-5712-712	25.2	359.92	6.9	98.7	3/4" Parbond	3/4" Parbond	5.90" [149.86 mm]	2.95" [74.93 mm]

Parflare model numbers are supplied with PVDF nuts. Also available with PFA (-T) nuts.

CRACKING PRESSURE



PV-20 1/4" - 1" Pneumatic PTFE Distribution Valve

Product Overview

The PV-20 distribution valve is designed for use in slurry applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes a machined PTFE body with precision machined seat and diaphragm sealing areas. The valve is offered in 3 orifice sizes (1/4", 1/2" and 1") and port sizes ranging from 1/4" to 1 1/4".



Features

Fully swept open bowl diaphragm seat area.

Self draining design.

High load point seat seal.

Angled and rounded internal flow path.

One piece precision machined diaphragm manufactured from modified PTFE.

Evenly distributed seat sealing forces.

Maximized diaphragm thickness.

Benefits

Minimizes fluid shear and smooth flow transition.

Minimizes area for entrapment and stagnation of media.

Improves sealing mechanism for aggressive chemicals, deionized water and abrasive slurry media.

Minimizes particle contribution of valve.

Provides faster purging and cleaning of valve.

Less pressure drop allows for lower pressure requirements upstream.

Improves fluid flow dynamics.

Improves cycle life, less shear than standard PTFE material, lower replacement costs, less downtime.

Minimized diaphragm and valve seat strain.

Stabilizes valve back pressure capability.

Minimizes potential for permeation while maximizing cycle life.

Specifications

Materials of Construction

Wetted: PTFE, Modified PTFE

Non-wetted: PVDF, Viton, PTFE coated SS spring

Pressure Ranges

1/4" Orifice: 27" HG vacuum (913 mbar) - 80 PSIG (5.5 bar)

1/2" Orifice: 27" HG vacuum (913 mbar) - 100 PSIG (7 bar)

1" Orifice: 27" HG vacuum (913 mbar) - 100 PSIG (7 bar)

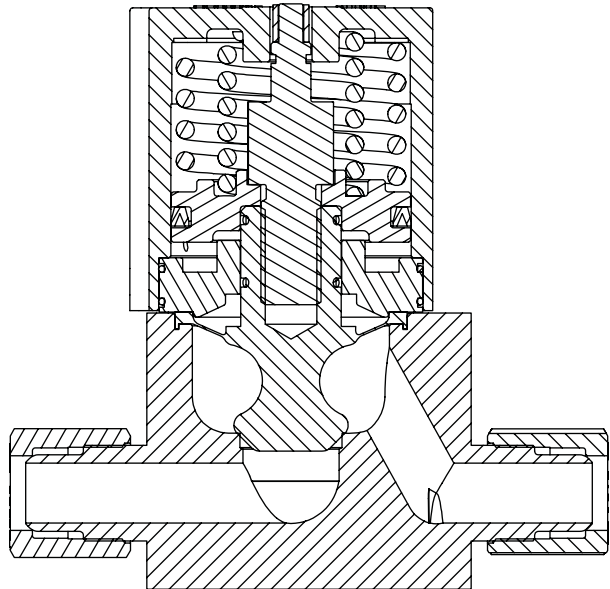
Actuation: 60 PSIG (4.1 bar) - 80 PSIG (5.5 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

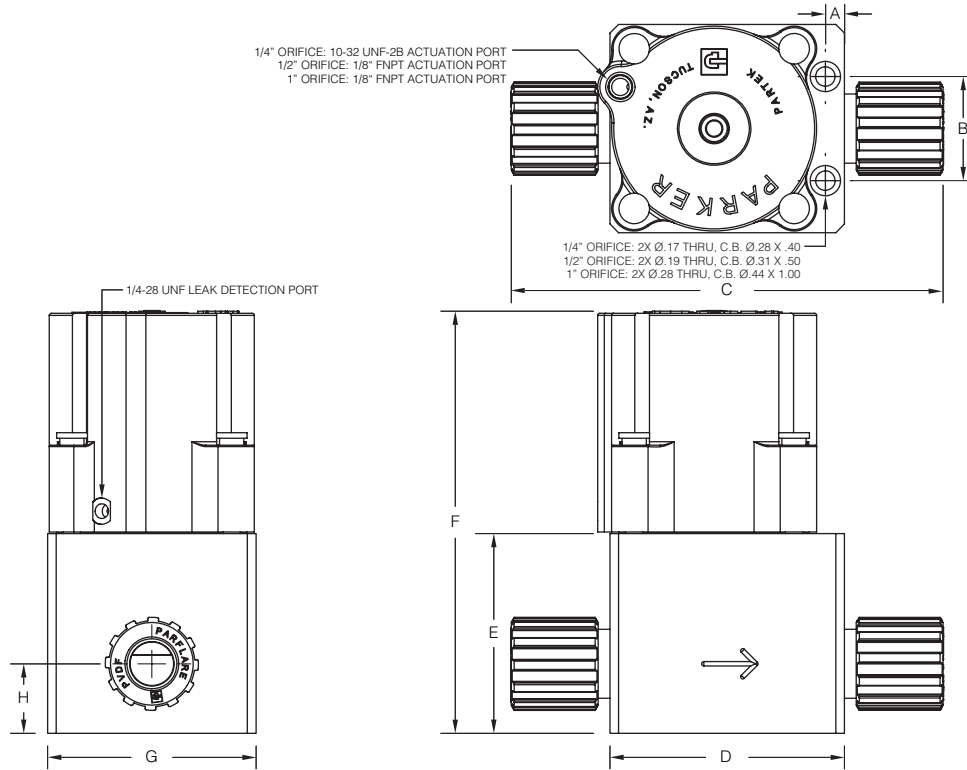
Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)



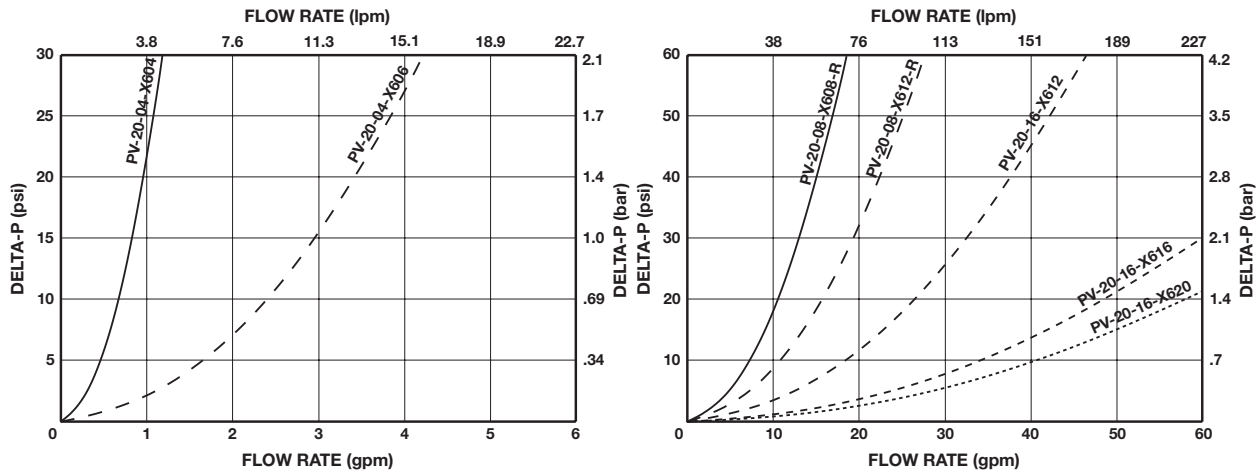
PV-20 1/4" - 1" Pneumatic PTFE Distribution Valve



Part Number	Cv	Kv	Body Size	Valve Type	Port Configuration	A		B		C		D		E		F		G		H	
						inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
PV-20-04-1604	.20	2.8	1/4"	NC	1/4" Parflare	.18	4.57	.55	13.97	3.80	96.52	1.50	38.10	1.15	29.21	2.28	57.91	1.25	31.75	.50	12.70
PV-20-04-1606	.76	10.8	1/4"		3/8" Parflare	.18	4.57	.55	13.97	3.96	100.58	1.50	38.10	1.15	29.21	2.28	57.91	1.25	31.75	.50	12.70
PV-20-08-1608-R	2.4	34.2	1/2"		1/2" Parflare	.25	6.35	1.44	36.58	5.20	132.08	2.50	63.50	1.80	45.72	4.14	105.16	2.00	50.80	.78	19.81
PV-20-08-1612-R	3.9	55.8	1/2"		3/4" Parflare	.25	6.35	1.44	36.58	5.35	135.89	2.50	63.50	2.00	50.80	4.34	110.24	2.00	50.80	.83	20.96
PV-20-16-1612	6.4	91.5	1"		3/4" Parflare	.28	7.11	1.50	38.10	6.22	157.99	3.38	85.85	2.88	73.15	6.08	154.43	3.00	76.20	1.00	25.40
PV-20-16-1616	10.9	155.4	1"		1" Parflare	.28	7.11	1.50	38.10	6.98	177.29	3.38	85.85	2.88	73.15	6.08	154.43	3.00	76.20	1.00	25.40
PV-20-16-1620	13.5	192.9	1"	1 1/4" Parflare	.28	7.11	2.00	50.80	8.07	204.98	3.75	95.25	3.25	82.55	6.45	163.83	3.00	76.20	1.25	31.75	
PV-20-04-2604	.20	2.8	1/4"	NO	1/4" Parflare	.18	4.57	.55	13.97	3.80	96.52	1.50	38.10	1.15	29.21	2.28	57.91	1.25	31.75	.50	12.70
PV-20-04-2606	.76	10.8	1/4"		3/8" Parflare	.18	4.57	.55	13.97	3.96	100.58	1.50	38.10	1.15	29.21	2.28	57.91	1.25	31.75	.50	12.70
PV-20-08-2608-R	2.4	34.2	1/2"		1/2" Parflare	.25	6.35	1.44	36.58	5.20	132.08	2.50	63.50	1.80	45.72	4.14	105.16	2.00	50.80	.78	19.81
PV-20-08-2612-R	3.9	55.8	1/2"		3/4" Parflare	.25	6.35	1.44	36.58	5.35	135.89	2.50	63.50	2.00	50.80	4.34	110.24	2.00	50.80	.83	20.96
PV-20-16-2612	6.4	91.5	1"		3/4" Parflare	.28	7.11	1.50	38.10	6.22	157.99	3.38	85.85	2.88	73.15	6.08	154.43	3.00	76.20	1.00	25.40
PV-20-16-2616	10.9	155.4	1"		1" Parflare	.28	7.11	1.50	38.10	6.98	177.29	3.38	85.85	2.88	73.15	6.08	154.43	3.00	76.20	1.00	25.40
PV-20-16-2620	13.5	192.9	1"	1 1/4" Parflare	.28	7.11	2.00	50.80	8.07	204.98	3.75	95.25	3.25	82.55	6.45	163.83	3.00	76.20	1.25	31.75	

Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number. Contact factory for Pillar end connections.

PRESSURE DROP VS. FLOW RATE



CV-1 Check Valve

Product Overview

The CV-1 PTFE Check Valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemical or gas applications. The design utilizes machined PTFE components to provide superior chemical resistance and purity without requiring o-rings for sealing. The machined PTFE spring allows for low cracking pressure operation and minimal back pressure for resealing.



Features

Polished sealing surfaces.

Tongue and groove external seal.

Machined PTFE spring.

Numerous end configurations available including Parflare. Available with different configurations on either end.

Benefits

Long life and superior sealing characteristics.

Eliminates o-rings and compatibility problems.

Low cracking pressure.

Reduces connections, mounting space, and overall cost.

Specifications

Materials of Construction

Wetted: PTFE

Non-wetted: PFA, PVDF, ETFE

Cracking Pressure

0.25 PSIG (.017 bar) - 0.75 PSIG (.052 bar)

Back Check Sealing Pressure

5.0 PSIG (.35 bar)

Pressure Range

27" Hg vacuum (913 mbar) - 120 PSIG (8.3 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

Style 1: 32° - 212° F (0° - 100° C) Ambient

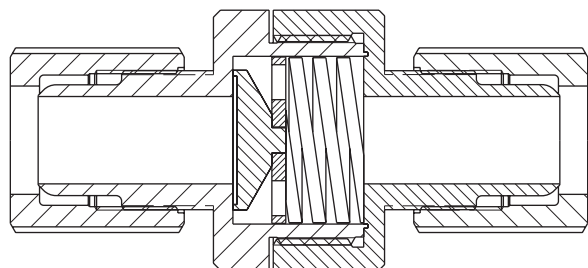
32° - 266° F (0° - 130° C) Fluid

Style 2 & 3: 50° - 212° F (10° - 100° C) Ambient

50° - 266° F (10° - 130° C) Fluid

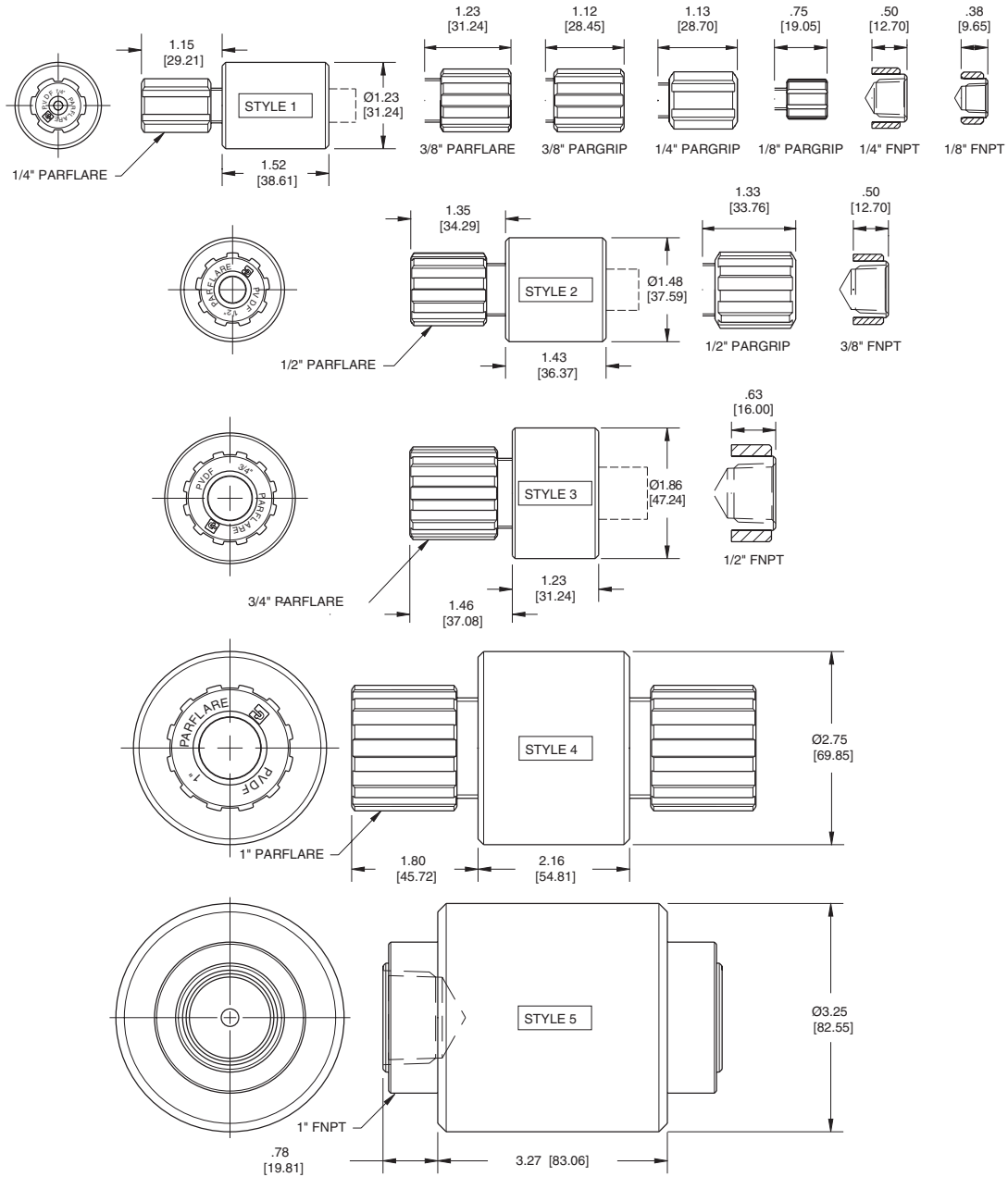
Style 4 & 5: 60° - 212° F (15° - 100° C) Ambient

60° - 266° F (15° - 130° C) Fluid



CV-1 Check Valve

BRACKETED DIMENSIONS ARE IN mm.



Model Number	Cv	Kv	Style	Port Configuration
CV-1-1122	0.61	8.78	1	1/8" FNPT
CV-1-1144	1.51	21.74	1	1/4" FNPT
CV-1-1166	2.43	35.00	2	3/8" FNPT
CV-1-1188	4.22	60.77	3	1/2" FNPT
CV-1-111616	14.00	201.6	5	1" FNPT
CV-1-2222	0.02	0.29	1	1/8" Pargrip
CV-1-2244	0.34	4.90	1	1/4" Pargrip
CV-1-2266	.98	14.11	1	3/8" Pargrip
CV-1-2288	2.17	31.25	2	1/2" Pargrip
CV-1-6644	.26	3.74	1	1/4" Parflare
CV-1-6666	1.11	15.84	1	3/8" Parflare
CV-1-6688	2.03	29.23	2	1/2" Parflare
CV-1-661212	4.13	59.47	3	3/4" Parflare
CV-1-661616	11.85	170.6	4	1" Parflare

Pargrip models are supplied with PFA nuts. Parflare models are supplied with PVDF nuts. For PFA nuts add -T to model number.



RV Relief Valve

Product Overview

The RV Relief Valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemicals. The design utilizes a molded PFA body with precision-machined PTFE seats and diaphragm poppet. When a field set relief pressure is reached, the valve opens and permits flow. The valve resets when 25% of original setpoint is reached.



Features

One piece precision machined diaphragm poppet manufactured from the latest technology modified PTFE.

Provides over five times the flexural life as compared to conventional PTFE.

Tongue and groove seat and diaphragm poppet for positive through flow shut off and diaphragm to body seal.

Field adjustable relief pressure.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Isolates media from adjusting screw.

Prevent over pressurization in critical applications.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE
Non-wetted: PVDF, SS, Brass, ABS, HDPE

Pressure Ranges

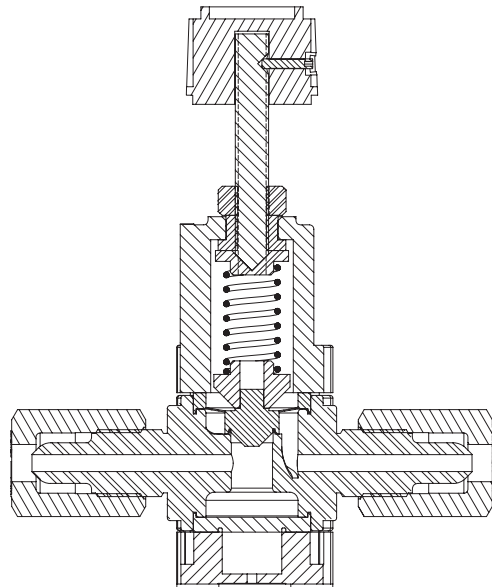
15 PSIG (1.03 bar) - 120 PSIG (8.3 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

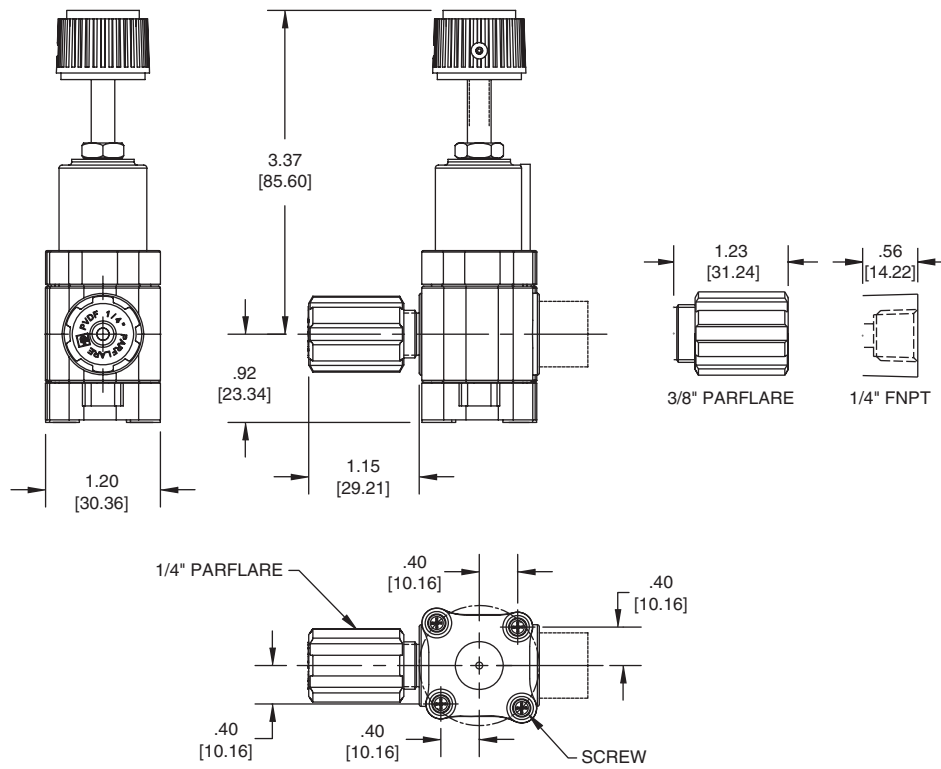
Ambient: 0° - 150° F (-17° - 66° C)
Fluid: 0° - 266° F (-17° - 130° C)

Note: The RV Series Relief Valves *should only* be used to protect Article 3, Paragraph 3 category equipment as defined in Pressure Equipment Directive 97/23/EC Dated 29, May 1997.



RV Relief Valve

BRACKETED DIMENSIONS
ARE IN mm.



Model Number	Cv	Kv	Flow Configuration	Port Configuration	Relieving Pressure Range-XX
RV-144-XX	.78	11.3	ON/OFF	1/4" FNPT	01 - 15 to 60 PSIG 02 - 60 to 120 PSIG
RV-624-XX	.24	3.5		1/4" Parflare	
RV-646-XX	.70	10.2		3/8" Parflare	

Parflare model numbers are supplied with PVDF nuts. Also available with PFA (-T) nuts.

SV-2 1/4" Solenoid Valve

Product Overview

The SV-2 Solenoid Valve is designed for use in high purity semiconductor applications, and is also ideally suited for ultra-pure water and aggressive chemicals. The design utilizes a molded high purity PFA body with precision machined areas. A one-piece machined modified PTFE diaphragm is also utilized for excellent flexibility and long life. The valve is offered in 2 and 3 way configurations, in 3 orifice sizes, and in 2 standard voltages.



Features

One piece precision machined diaphragm manufactured from the latest technology modified PTFE.

Provides over five times the flexural life as compared to conventional PTFE.

Tongue and groove seat and diaphragm for positive through flow shut off and diaphragm to body seal.

Benefits

High cycle life.

Lower replacement costs.

Less downtime.

Isolates media from solenoid.

Specifications

Materials of Construction

Wetted: PFA, Modified PTFE

Non-wetted: Coated Aluminum, Plated Steel, SS, PFA, PVDF, Titanate

Pressure Ranges

Forward: 0 - 80 PSIG (5.5 bar)

Pressure ranges for operation at ambient temperatures. For use at higher temperatures consult Pressure/Temperature chart on page 3.

Temperature Ranges

Ambient: 0° - 150° F (-17° - 66° C)

Fluid: 0° - 266° F (-17° - 130° C)

Solenoid Ratings

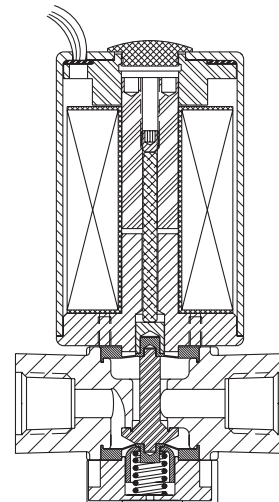
24 VDC, 115 VAC (Double Wire)

All models rated at 12.88 watts for 24 VDC and 14 watts for 115 VAC at ambient temperature.

Coil Duty Cycle: 100%, however, 100% continuous duty may affect performance of valve, therefore 50% continuous duty is recommended.

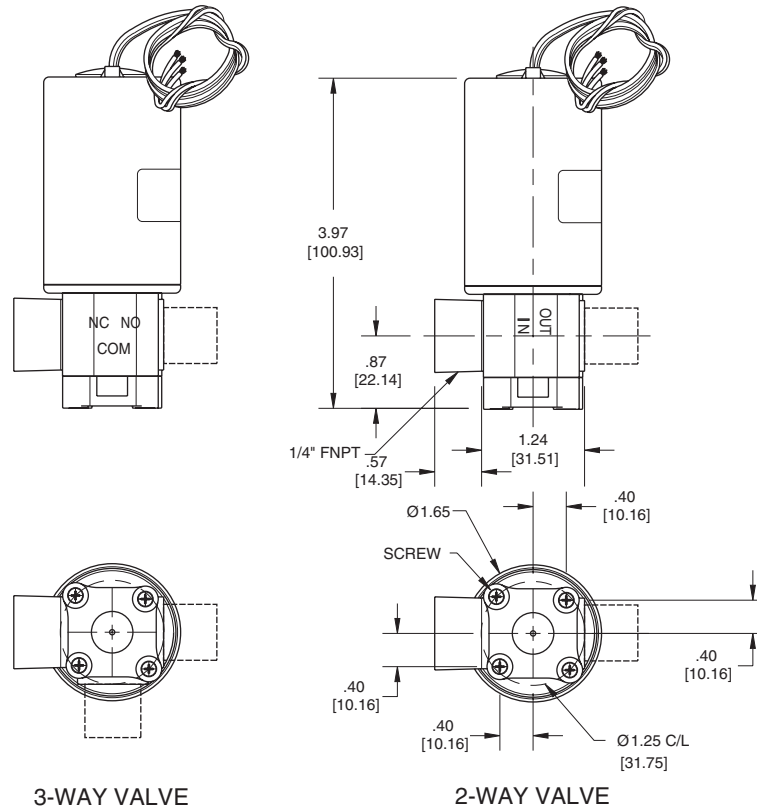
Orientation

All models must be mounted vertically as indicated by the label on the product.

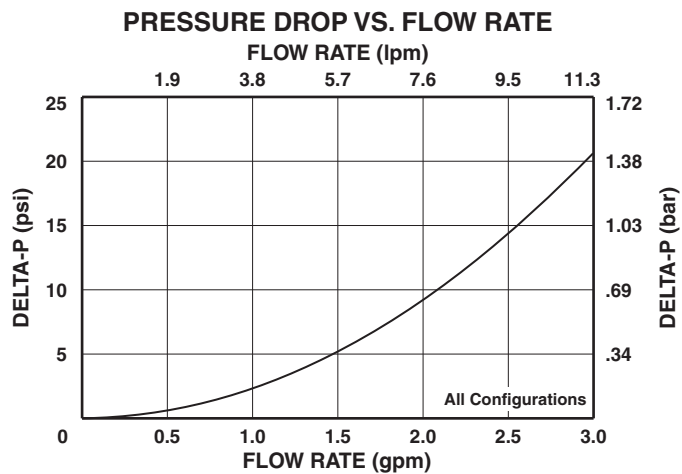


SV-2 1/4" Solenoid Valve

BRACKETED DIMENSIONS
ARE IN mm.



Model Number	Cv	Kv	Flow Configuration	Orifice Size	Port Configuration	Solenoid Voltage-X
SV-2-1144-X	.60	8.6	NC	.250	1/4" FNPT	2 = 24 VDC 7 = 115 VAC
SV-2-1244-X	.60	8.6	NO	.250	1/4" FNPT	
SV-2-1344-X	.60	8.6	3 WAY	.250	1/4" FNPT	



Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such items, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. **Terms and Conditions of Sale:** All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. **Payment:** Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. **Delivery:** Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. **Warranty:** Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.

5. **Limitation Of Remedy:** SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. **Changes, Reschedules and Cancellations:** Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. **Special Tooling:** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. **Buyer's Property:** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. **Taxes:** Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. **Indemnity For Infringement of Intellectual Property Rights:** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. **Force Majeure:** Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. **Entire Agreement/Governing Law:** The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

9/91-P





Parker Hannifin Corporation
 6035 Parkland Blvd.
 Cleveland, Ohio 44124-4141
 Telephone: (216) 896-3000
 Fax: (216) 896-4000
 www.parker.com

Parker Hannifin Corporation

About Parker Hannifin Corporation

Parker Hannifin is a leading global motion-control company dedicated to delivering premier customer service. A Fortune 500 corporation listed on the New York Stock Exchange (PH), our components and systems comprise over 1,400 product lines that control motion in some 1,000 industrial and aerospace markets. Parker is the only manufacturer to offer its customers a choice of hydraulic, pneumatic, and electromechanical motion-control solutions. Our Company has the largest distribution network in its field, with over 7,500 distributors serving nearly 400,000 customers worldwide.

Parker's Charter

To be a leading worldwide manufacturer of components and systems for the builders and users of durable goods. More specifically, we will design, market and manufacture products controlling motion, flow and pressure. We will achieve profitable growth through premier customer service.

Product Information

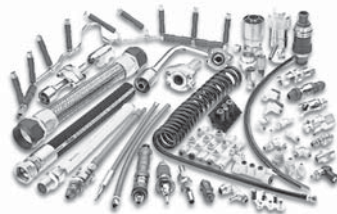
North American customers seeking product information, the location of a nearby distributor, or repair services will receive prompt attention by calling the Parker Product Information Center at our toll-free number: 1-800-C-PARKER (1-800-272-7537). In Europe, call 00800-C-PARKER-H (00800-2727-5374).

The Aerospace Group is a leader in the development, design, manufacture and servicing of control systems and components for aerospace and related high-technology markets, while achieving growth through premier customer service.



The Climate & Industrial Controls Group designs, manufactures and markets system-control and fluid-handling components and systems to refrigeration, air-conditioning and industrial customers worldwide.

The Fluid Connectors Group designs, manufactures and markets rigid and flexible connectors, and associated products used in pneumatic and fluid systems.



The Seal Group designs, manufactures and distributes industrial and commercial sealing devices and related products by providing superior quality and total customer satisfaction.

The Hydraulics Group designs, produces and markets a full spectrum of hydraulic components and systems to builders and users of industrial and mobile machinery and equipment.



The Filtration Group designs, manufactures and markets quality filtration and clarification products, providing customers with the best value, quality, technical support, and global availability.

The Automation Group is a leading supplier of pneumatic and electromechanical components and systems to automation customers worldwide.



The Instrumentation Group is a global leader in the design, manufacture and distribution of high-quality critical flow components for worldwide process instrumentation, ultra-high-purity, medical and analytical applications.

© 2008 Parker Hannifin Corporation



Parker Hannifin Corporation
Veriflo Division
Partek Operation
7075 East Southpoint Road
Tucson, AZ 85706
phone 520 574 2600
fax 520 574 2700
www.parker.com

Buy: www.ValinOnline.com | Phone 844-385-3099 | Email: CustomerService@valin.com