

XINVAL

Metering Valves

MV1, MV2, MV3 and MV4 Series



Features

MV1 Series

- Working pressure up to : 2000 psig (138 bar)
- Working temperature: -10°F to 400°F (-23°C to 204°C)
- Orifice size: 0.032" (0.81 mm)
- Max. flow coefficient (Cv): 0.004
- Stem taper: 1°
- Turns to open: 9 to 12
- Shutoff service: not available
- Bottom mounting available
- Variety of end connections
- Panel mountable
- Flow pattern: straight, angle, cross and double
- Handle type: knurled, vernier and slotted
- Variety of materials available for valve body



MV2 and MV3 Series

- Working pressure up to : 1000 psig (69 bar)
- Working temperature: -10°F to 400°F (-23°C to 204°C)
- Max. flow coefficients (Cv):
 - MV2 series: 0.03
 - MV3 series: 0.15
- Orifice sizes:
 - MV2 series: 0.056" (1.42 mm)
 - MV3 series: 0.128" (3.25 mm)
- Stem taper:
 - MV2 series: 3°
 - MV3 series: 6.5°
- Turns to open:
 - MV2 series: 8 to 10
 - MV3 series: 10 to 11
- Shutoff service:
 - MV2 series: not available
 - MV3 series: available
- Variety of end connections
- Panel mountable
- Flow pattern: straight, angle, cross (MV2 Series) and double (MV2 Series)
- Handle type:
 - MV2 series: knurled, vernier and slotted
 - MV3 series: round and vernier
- Variety of materials available for valve body

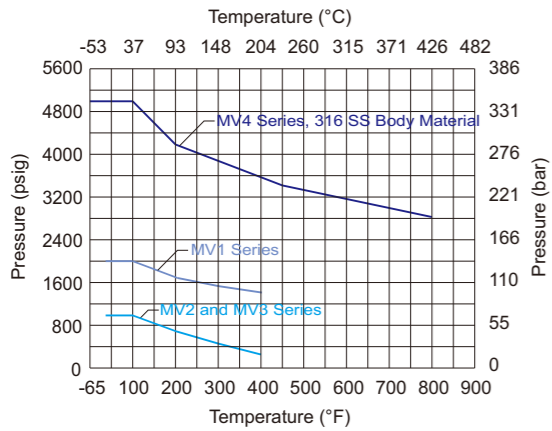


MV4 Series

- ⦿ Working pressure up to : 5000 psig (345 bar)
- ⦿ Working temperature: -65°F to 850 °F (-54°C to 454°C)
- ⦿ Orifice size: 0.062" (1.6 mm)
- ⦿ Max. flow coefficient(Cv): 0.04
- ⦿ Stem taper: 2 °
- ⦿ Turns to open: 9 to 10
- ⦿ Shutoff service: available
- ⦿ Variety of end connections
- ⦿ Panel mountable
- ⦿ Flow pattern: straight and angle
- ⦿ Handle type: round circular and vernier
- ⦿ Variety of materials available for valve body



Pressure vs. Temperature



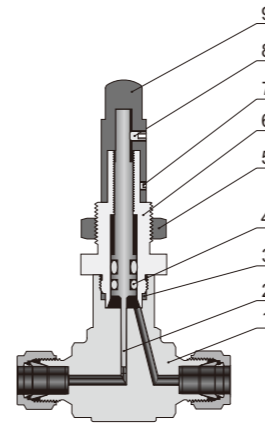
1. Graphs are based on Fluorocarbon and Graphite (for MV4 Series).
 2. Contact XINVAL Group or our authorized distributors for curve graph of other materials.

Temperature Ranges for Different Seal Materials

Seal Material	Temperature Range °F (°C)
O-Ring (for MV1, MV2, MV3 Series)	
Buna N (NBR)	-10 to 212 (-23 to 100)
Ethylene Propylene (EPDM)	-10 to 300 (-23 to 148)
Fluorocarbon (FKM)	-10 to 400 (-23 to 204)
FFKM	-10 to 527 (-23 to 275)
Neoprene (CR)	-10 to 250 (-23 to 121)
Stem Packing (for MV4 Series)	
PTFE	-65 to 450 (-54 to 232)
Graphite	-65 to 850 (-54 to 454)

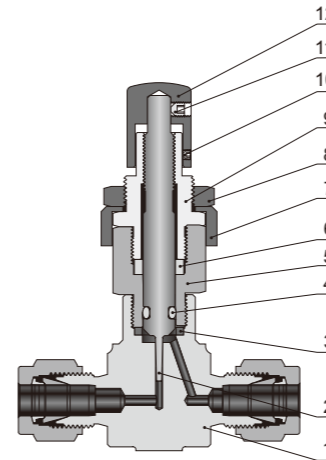
Standard Materials of Construction

MV1 Series



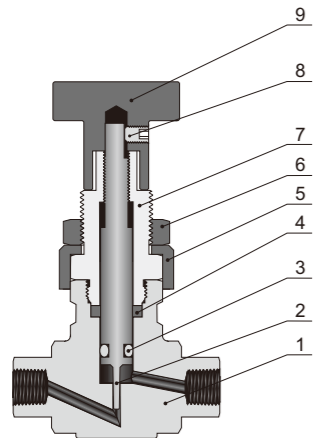
Component	Valve Body Material Grade/ASTM Specification	
	316 SS	Brass
1 Body	316 SS/A182	Silver-mist chrome-plated C37700/B283
2 Stem	316 SS/A479	
3 Body Seal	Fluorocarbon FKM	
4 O-ring	Fluorocarbon FKM	
5 Panel Mount Nut	Stainless steel	Silver-mist chrome-plated C36000/B16
6 Bonnet	316 SS/A479	Silver-mist chrome-plated C36000/B16
7 Lock Screw	Stainless steel	
8 Handle Screw	Stainless steel	
9 Handle	316 SS/A276	Silver-mist chrome-plated C36000/B16

MV2 Series



Component	Valve Body Material Grade/ASTM Specification	
	316 SS	Brass
1 Body	316 SS/A182	Silver-mist chrome-plated C37700/B283
2 Stem	316 SS/A479	
3 Body Seal	Fluorocarbon FKM	
4 O-ring	Fluorocarbon FKM	
5 Body Extension	316 SS/A479	Silver-mist chrome-plated C36000/B16
6 Stem Guide Ring	PTFE/D1710	
7 Bonnet Sleeve	Stainless steel	
8 Panel Mount Nut	316 SS/A276	Silver-mist chrome-plated C36000/B16
9 Bonnet	316 SS/A479	Silver-mist chrome-plated C36000/B16
10 Lock Screw	Stainless steel	
11 Handle Screw	Stainless steel	
12 Handle	316 SS/A276	Silver-mist chrome-plated C36000/B16

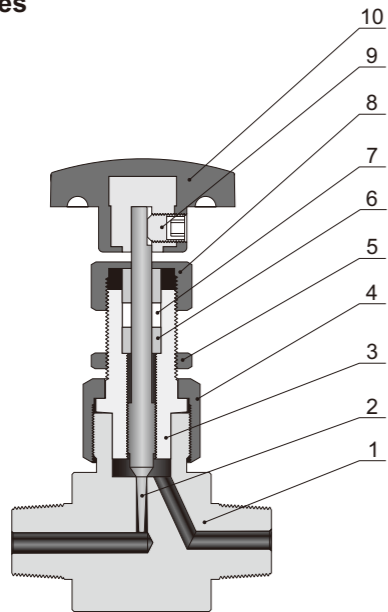
MV3 Series



Component	Valve Body Material Grade/ASTM Specification	
	316 SS	Brass
1 Body	316 SS/A182	Silver-mist chrome-plated C37700/B283
2 Stem	Hardened 316 SS/A479	
3 O-ring	Fluorocarbon FKM	
4 Stem Guide Ring	PTFE/D1710	
5 Bonnet Sleeve	Stainless steel	
6 Panel Mount Nut	316 SS/A276	Silver-mist chrome-plated C36000/B16
7 Bonnet	316 SS/A479	Silver-mist chrome-plated C36000/B16
8 Handle Screw	Stainless steel	
9 Handle	Anodized aluminium	

- 1. Lubricants: Silicone-based
- 2. Contact XINVAL Group or our authorized distributors for other materials.

MV4 Series



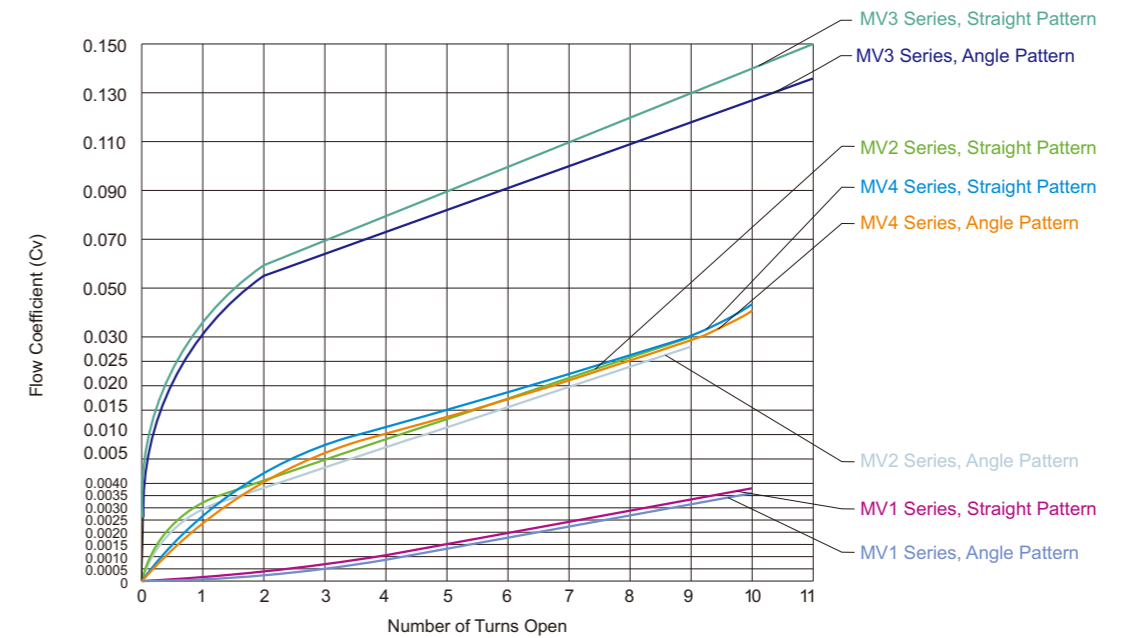
Component	Material Grade/ASTM Specification
1 Body	316 SS/A479
2 Stem	440C SS/A276
3 Bonnet	316 SS/A479
4 Union Nut	316 SS/A276
5 Panel Mount Nut	Stainless steel
6 Packing Gland	316 SS/A276
7 Packing	PTFE/D1710
8 Union Nut	316 SS/A276
9 Handle Screw	Stainless steel
10 Handle	Nylon

Lubricant: Silicone-based

Flow Data in Full Open Position at 70°F (20°C)

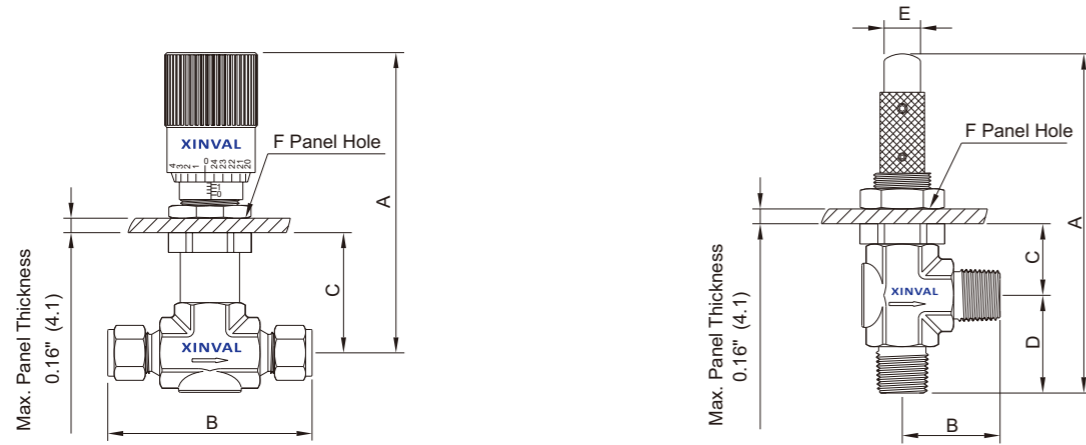
Pressure Drop to Atmosphere psig (bar)	MV1 Series (Cv: 0.004)		MV2 Series (Cv: 0.03)		MV3 Series (Cv: 0.15)		MV4 Series (Cv: 0.04)	
	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)
10 (0.69)	0.04 (1.1)	0.01 (0.03)	0.33 (9.3)	0.09 (0.34)	2.00 (56.6)	0.51 (1.90)	0.45 (12.7)	0.12 (0.45)
50 (3.45)	0.10 (2.8)	0.02 (0.07)	0.90 (25.4)	0.21 (0.79)	6.40 (181)	1.20 (4.50)	1.20 (33.9)	0.28 (1.00)
100 (6.90)	0.20 (5.6)	0.04 (0.15)	1.50 (42.4)	0.30 (1.10)	11.40 (323)	1.70 (6.40)	2.10 (59.4)	0.40 (1.50)

Flow Coefficient at Turns to Open



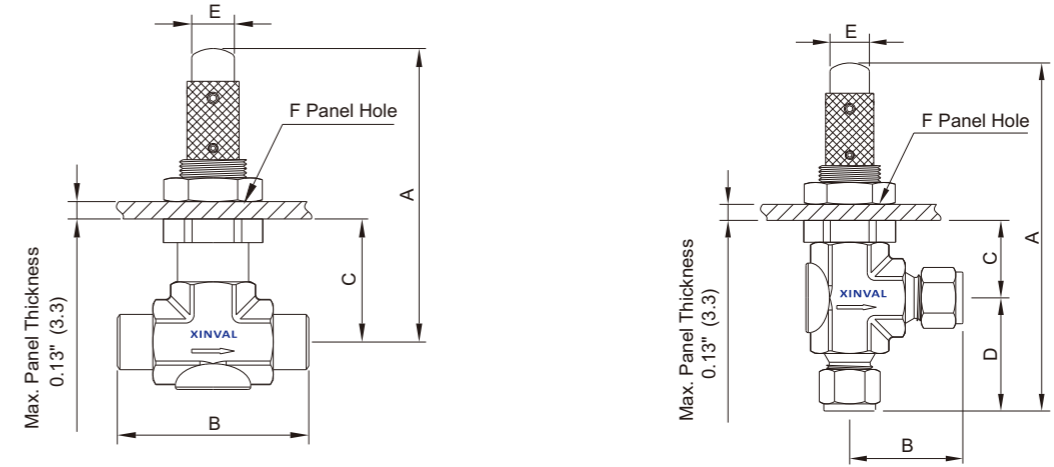
Dimensions

MV1 Series



Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F
Straight Pattern								
316-MV1-F1-	1/16" Tube Fitting	1/16" Tube Fitting	2.34 (59.4)	1.56 (39.6)	0.92 (23.4)	—	0.38 (9.6)	0.45 (11.4)
316-MV1-F2-	1/8" Tube Fitting	1/8" Tube Fitting						
316-MV1-F4-	1/4" Tube Fitting	1/4" Tube Fitting						
316-MV1-F3M-	3 mm Tube Fitting	3 mm Tube Fitting						
316-MV1-F6M-	6 mm Tube Fitting	6 mm Tube Fitting						
316-MV1-MR4-	1/4 Male FR	1/4 Male FR		2.06 (52.3)				
Angle Pattern								
316-MV1-F1-	1/16" Tube Fitting	1/16" Tube Fitting	2.96 (75.2)	0.81 (20.6)	0.92 (23.4)	1.02 (25.9)	0.38 (9.6)	0.45 (11.4)
316-MV1-F2-	1/8" Tube Fitting	1/8" Tube Fitting	3.07 (78.0)	0.98 (24.9)				
316-MV1-F4-	1/4" Tube Fitting	1/4" Tube Fitting	3.11 (79.0)	1.02 (25.9)				
316-MV1-F3M-	3 mm Tube Fitting	3 mm Tube Fitting	3.07 (78.0)	0.98 (24.9)				
316-MV1-FN2-	1/8 Female NPT	1/8 Female NPT		0.98 (24.9)				
				0.88 (22.4)				
				0.98 (24.9)				

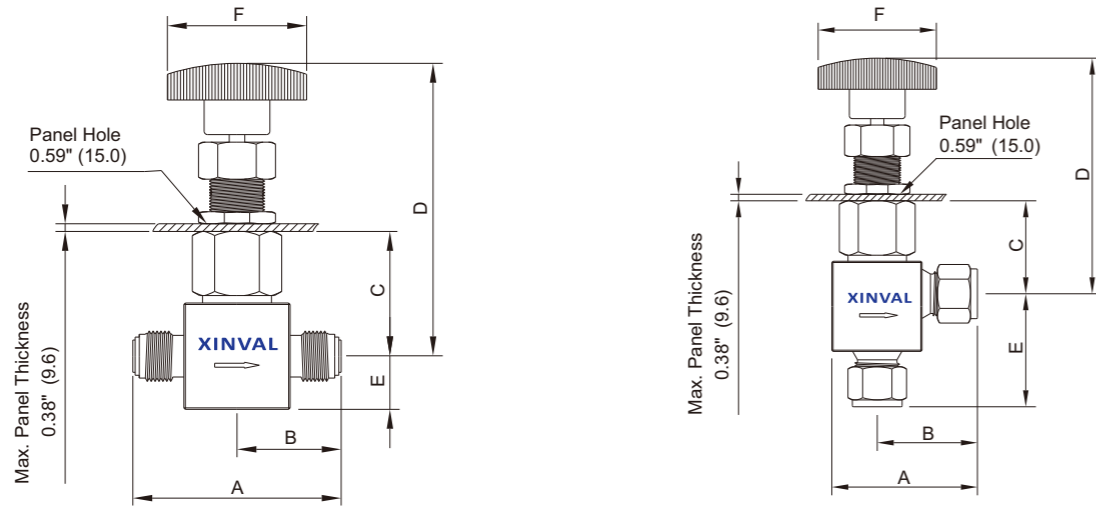
MV2 and MV3 Series



Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F
Straight Pattern								
316-MV2-F2-	1/8" Tube Fitting	1/8" Tube Fitting	2.64 (67.1)	2.02 (51.3)	1.52 (38.5)	—	0.50 (12.7)	0.58 (14.7)
316-MV2-F4-	1/4" Tube Fitting	1/4" Tube Fitting		2.20 (55.9)				
316-MV2-F3M-	3 mm Tube Fitting	3 mm Tube Fitting		2.02 (51.3)				
316-MV2-F6M-	6 mm Tube Fitting	6 mm Tube Fitting		2.20 (55.9)				
316-MV2-N2-	1/8 Male NPT	1/8 Male NPT		1.60 (40.6)				
316-MV2-N4-	1/4 Male NPT	1/4 Male NPT		1.96 (49.8)				
316-MV2-FN2-	1/8 Female NPT	1/8 Female NPT		1.94 (49.3)				
316-MV2-MR4-	1/4 Male MR	1/4 Male MR		2.06 (52.3)				
Angle Pattern								
316-MV2-F2-	1/8" Tube Fitting	1/8" Tube Fitting	3.65 (92.8)	1.01 (25.7)	1.07 (27.2)	1.01 (25.7)	0.50 (12.7)	0.58 (14.7)
316-MV2-F4-	1/4" Tube Fitting	1/4" Tube Fitting	3.74 (95.0)	1.10 (27.9)				
316-MV2-F3M-	3 mm Tube Fitting	3 mm Tube Fitting	3.65 (92.8)	1.01 (25.7)				
316-MV2-F6M-	6 mm Tube Fitting	6 mm Tube Fitting	3.74 (95.0)	1.10 (27.9)				
316-MV2-N2-	1/8 Male NPT	1/8 Male NPT	3.44 (87.4)	0.80 (20.3)				
316-MV2-N4-	1/4 Male NPT	1/4 Male NPT	3.62 (92.0)	0.98 (24.9)				
316-MV2-FN2-	1/8 Female NPT	1/8 Female NPT	3.61 (91.7)	0.97 (24.6)				
316-MV2-MR4-	1/4 Male MR	1/4 Male MR		0.97 (24.6)				

Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F
Straight Pattern								
316-MV3-F4-	1/4" Tube Fitting	1/4" Tube Fitting	2.72 (69.1)	2.34 (59.4)	1.26 (32.0)	—	1.13 (28.7)	0.58 (14.7)
316-MV3-F6-	3/8" Tube Fitting	3/8" Tube Fitting		2.46 (62.5)				
316-MV3-F6M-	6 mm Tube Fitting	6 mm Tube Fitting		2.34 (59.4)				
316-MV3-N4-	1/4 Male NPT	1/4 Male NPT		2.00 (50.8)				
Angle Pattern								
316-MV3-F4-	1/4" Tube Fitting	1/4" Tube Fitting	3.89 (98.8)	1.17 (29.7)	1.26 (32.0)	1.17 (29.7)	1.13 (28.7)	0.58 (14.7)
316-MV3-F6M-	6 mm Tube Fitting	6 mm Tube Fitting						

MV4 Series



Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F
Straight Pattern								
316-MV4-F4-	1/4" Tube Fitting	1/4" Tube Fitting	2.40 (61.0)	1.20 (30.5)	1.09 (27.7)	3.86 (98.0)	0.38 (9.6)	1.38 (35.1)
316-MV4-F6M-	6 mm Tube Fitting	6 mm Tube Fitting						
316-MV4-FN2-	1/8 Female NPT	1/8 Female NPT						
316-MV4-FN4-	1/4 Female NPT	1/4 Female NPT						
Angle Pattern								
316-MV4-F4-	1/4" Tube Fitting	1/4" Tube Fitting	1.54 (39.1)	1.16 (29.5)	1.09 (27.7)	3.86 (98.0)	1.48 (37.6)	1.38 (35.1)
316-MV4-F6M-	6 mm Tube Fitting	6 mm Tube Fitting						
316-MV4-FN2-	1/8 Female NPT	1/8 Female NPT						
316-MV4-FN4-	1/4 Female NPT	1/4 Female NPT						

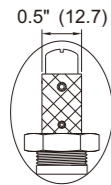
Optional Handles

Slotted Handle

- Flow setting adjustment is available with a screwdriver
- Ideal for installation where handle is difficult to access
- Available for MV1 and MV series

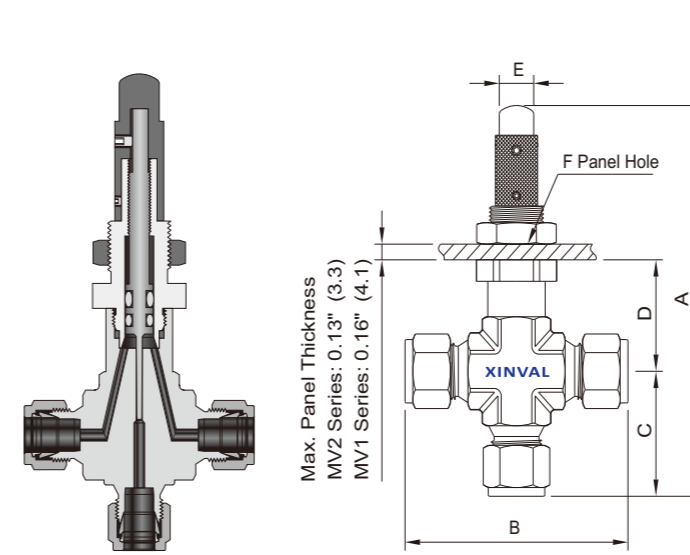
Vernier Handle

- Precise graduated aluminum alloy handle
- Repeatable flow setting
- Adjustment accurate to 1/25 turn (1/1000 of an inch)
- Available for all series

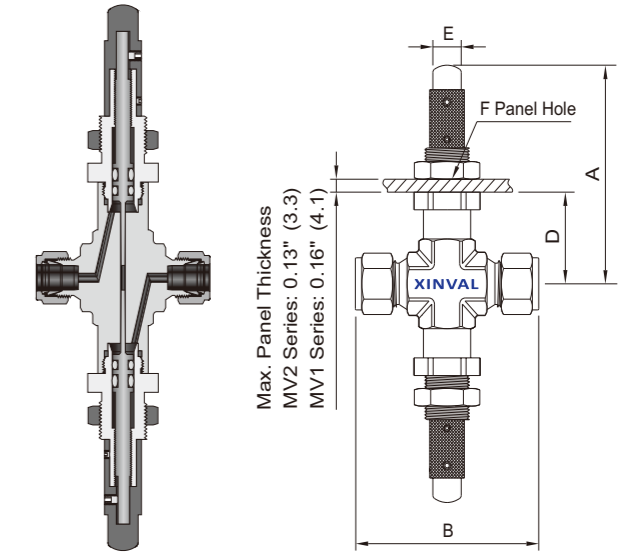


Optional Patterns

Cross Pattern



Double Pattern



- Fluid flows between side ports around stem in any stem position.
- Fluid flows through branch port can be metered in both directions.

Inlet valve handle can be set and locked at desired maximum flow, outlet valve handle can be used for fine flow control up to the preset maximum of the inlet valve.

Basic Ordering Number	Connection Type and Size		Dimensions, in. (mm)					
	Inlet	Outlet	A	B	C	D	E	F
Cross Pattern								
316-MV1-F2-	1/8" Tube Fitting	1/8" Tube Fitting	3.32 (84.3)	1.96 (49.8)	0.98 (24.9)	0.92 (23.4)	0.38 (9.6)	0.45 (11.4)
316-MV1-F3M-	3 mm Tube Fitting	3 mm Tube Fitting						
Double Pattern								
316-MV1-F2-	1/8" Tube Fitting	1/8" Tube Fitting	2.41 (61.2)	1.90 (48.3)	—	0.99 (25.2)	0.38 (9.6)	0.45 (11.4)
316-MV1-F3M-	3 mm Tube Fitting	3 mm Tube Fitting						
Cross Pattern								
316-MV2-F4-	1/4" Tube Fitting	1/4" Tube Fitting	3.74 (95.0)	2.20 (55.9)	1.10 (27.9)	1.52 (38.5)	0.50 (12.7)	0.58 (14.7)
316-MV2-F6M-	6 mm Tube Fitting	6 mm Tube Fitting						
Double Pattern								
316-MV2-F4-	1/4" Tube Fitting	1/4" Tube Fitting	2.62 (67.1)	2.20 (55.9)	—	1.52 (38.5)	0.50 (12.7)	0.58 (14.7)
316-MV2-F6M-	6 mm Tube Fitting	6 mm Tube Fitting						

- MR means metal gasket seal fittings.
- Sizes and types listed are standard. Other sizes and types are available upon request. For special sizes and types, refer to the ordering information.
- Dimensions are shown with XINVAL nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.

Ordering Number Description

