

Metering Valve

MV1-MV4 Series



Metering Valve

MV1 Series



- ❖ Maximum working pressure up to 2000 psig (137 bar)
- ❖ Working temperature from -10°F to 400°F (-23°C to 204°C)
- ❖ One-piece forged body
- ❖ Orifice size is 0.032" (0.81 mm)
- ❖ Straight, angle, cross and double patterns

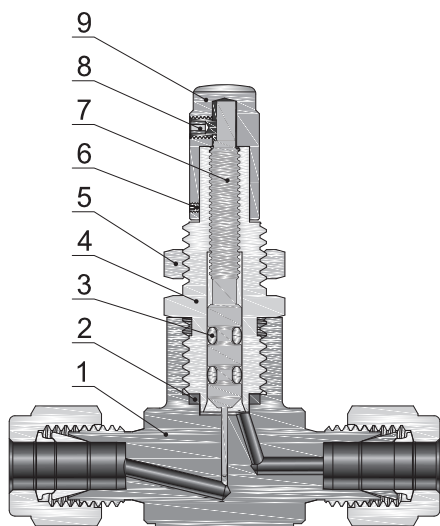
Features

- ❖ Maximum working pressure up to 2000 psig (137 bar)
- ❖ Working temperature from -10°F to 400°F (-23°C to 204°C)
- ❖ Orifice size: 0.032" (0.81 mm)
- ❖ Stem taper: 1°
- ❖ Shutoff service: not available
- ❖ Panel mountable
- ❖ Straight, angle, cross and double pattern
- ❖ Knurled, Adjustable-Torque, Vernier handle
- ❖ Variety of end connections

Temperature Ranges for Different seal Materials

Seal Material	Temperature Range°F (°C)
Buna N	-10 to 300 (-23 to 148)
Ethylene Propylene	-10 to 300 (-23 to 148)
Fluorocarbon FKM	-10 to 400 (-23 to 204)
Kalrez	0 to 300 (-17 to 148)
Neoprene	-10 to 250 (-23 to 121)

Standard Materials of Construction

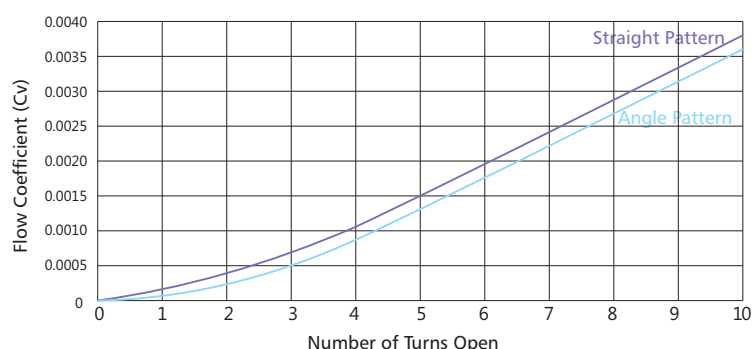


Component		Material Grade/ASTM Specification	
		316 S.S.	Brass
1	Body	316 S.S./A182	Silver-mist chrome-plated C37700/B283
2	Body seal	Fluorocarbon FKM	Buna N
3	O-ring	Fluorocarbon FKM	Buna N
4	Bonnet	316 S.S./A479	Silver-mist chrome-plated C34500/B453
5	Panel nut	316 S.S./A479	Silver-mist chrome-plated C36000/B16
6	Lock Screw	Black oxide alloy steel/ANSI 18.3	
7	Handle Screw	Black oxide alloy steel/ANSI 18.3	
8	Stem	Hard chrome-plated S17400 S.S./A564	
9	Handle	300 S.S./A276	Silver-mist chrome-plated C36000/B16

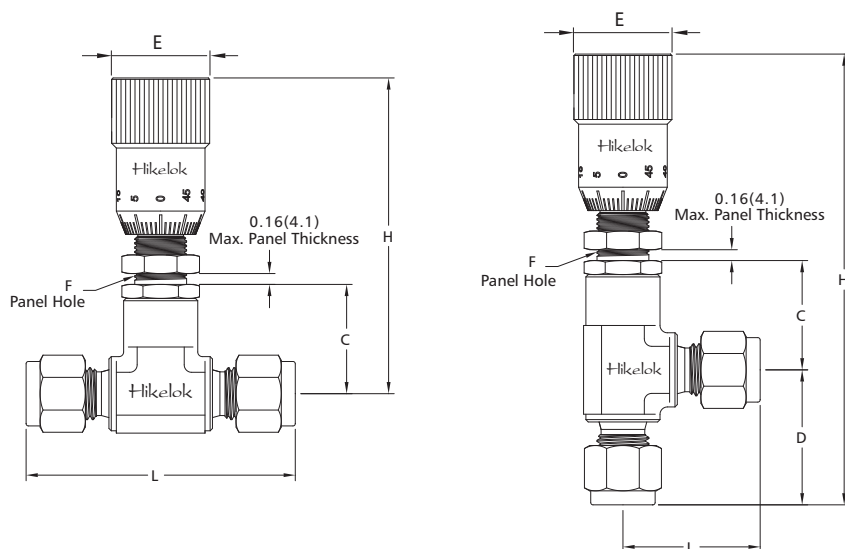
Flow Data at 70°F (20°C)

Pressure Drop to Atmosphere psig (bar)	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)
50 (3.45)	0.10 (2.8)	0.02 (0.07)
100 (6.90)	0.20 (5.6)	0.04 (0.15)

Flow Coefficient at Turns Open

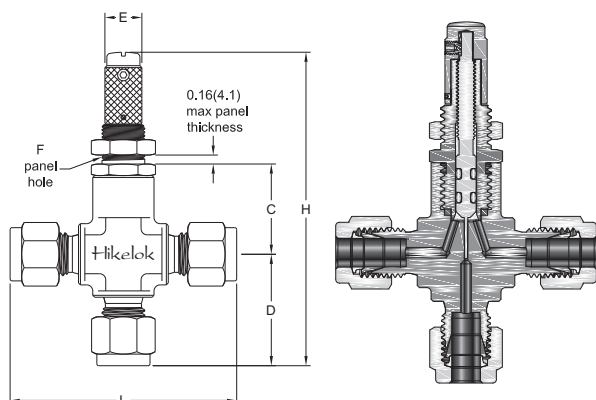


Dimensions

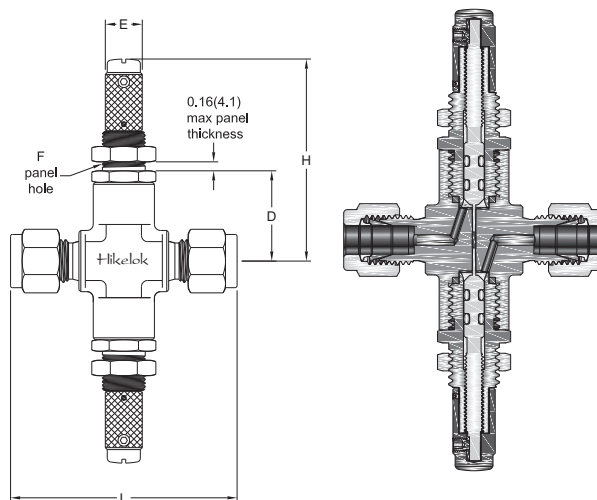


Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)					
		H	L	C	D	E	F
Straight Pattern							
MV1-F1-	1/16" Hikelok	2.34 (59.4)	1.56 (39.6)	0.92 (23.4)	—	0.83 (21.0)	0.45 (11.4)
MV1-F2-	1/8" Hikelok		1.90 (48.3)				
MV1-F4-	1/4" Hikelok		2.04 (51.8)				
MV1-M3-	3 mm Hikelok		1.90 (48.3)				
MV1-M6-	6 mm Hikelok		2.04 (51.8)				
Angle Pattern							
MV1-F1-	1/16" Hikelok	3.22 (81.8)	0.81 (20.6)	0.92 (23.4)	0.88 (22.4)	0.83 (21.0)	0.45 (11.4)
MV1-F2-	1/8" Hikelok	3.32 (84.3)	0.98 (24.9)		0.98 (24.9)		
MV1-F4-	1/4" Hikelok	3.36 (85.3)	1.02 (25.9)		1.02 (25.9)		
MV1-M3-	3 mm Hikelok	3.32 (84.3)	0.98 (24.9)		0.99 (25.1)		
MV1-FNPT2-	1/8 Female NPT	3.07 (78.0)			0.98 (24.9)		

Cross Pattern



Double Pattern



1. Fluid flows between side ports around stem in any stem position.
2. 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	Cv	Dimension, in. (mm)					
			H	L	C	D	E	F
Cross Pattern								
MV1-F2-	1/8" Hikelok	0.004	3.32 (84.3)	1.96 (49.8)	0.98 (24.9)	0.92 (23.4)	0.38 (9.6)	0.45 (11.4)
MV1-M3-	3 mm Hikelok				0.99 (25.1)			
Double Pattern								
MV1-F2-	1/8" Hikelok	0.001	2.34 (59.4)	1.90 (48.3)	—	0.92 (23.4)	0.38 (9.6)	0.45 (11.4)
MV1-M3-	3 mm Hikelok							

Optional Handles

Slotted Handle

- ❖ Flow setting adjustment is available with a screwdriver
- ❖ Ideal for installation where access to handle



Vernier Handle

- ❖ Repeatable flow setting
- ❖ Adjustment accurate to 1/25 turn (1/1000 of an inch)



How to Order

MV1 — NPT4 — M6 — EV — A — 316								
Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	O-Ring Material	Handle Type	Flow Pattern	Material
MV1	FNPT Female NPT	1 1/16 in.	Same as inlet type and inlet size		Fluorocarbon FKM	Knurled, round	Straight	316 316 S.S.
	NPT Male NPT	2 1/8 in.					A Angle	316L 316L
	FBT Female BSPT	3 3 mm	If outlet and inlet are the same, eliminate the outlet designator		B Buna N	A Adjustable-Torque	D Double	304 304
	MBT Male BSPT	4 1/4 in.			E Ethylene propylene	V Vernier	C Cross	304L 304L
	FMS Female ISO 261	6 3/8 in. or 6 mm			N Neoprene			BR Brass
	MS Male ISO 261	8 1/2 in. or 8 mm			Z Kalrez			
	FBP Female BSPP	10 10 mm						
	MBP Male BSPP	12 3/4 in. or 12 mm						
	F Fractional Tube Fitting							
	M Metric Tube Fitting							
	GFS Male GFS Fitting							

Metering Valve

MV2 Series



- ❖ Maximum working pressure up to 1000 psig (68.9 bar)
- ❖ Working temperature from -10°F to 400°F (-23°C to 204°C)
- ❖ One-piece forged body
- ❖ Orifice size is 0.056" (1.42 mm)
- ❖ Straight, angle, cross and double patterns

Features

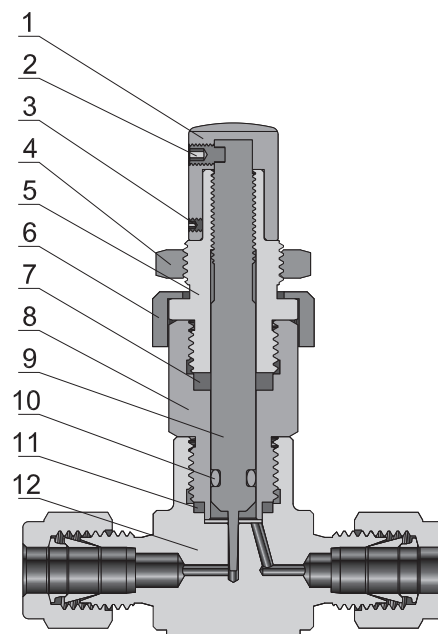
- ❖ Maximum working pressure: 1000 psig (68.9 bar)
- ❖ Working temperature: -10°F to 400°F (-23°C to 204°C)
- ❖ Orifice sizes: 0.056" (1.42 mm)
- ❖ Stem taper: 3°
- ❖ Shutoff service: not available
- ❖ Panel mountable
- ❖ Flow pattern: straight, angle, cross and double patterns
- ❖ Handle type: vernier and slotted
- ❖ Variety of end connections

Temperature Ranges for Different seal Materials

Seal Material	Temperature Range°F (°C)
Buna N	-10 to 300 (-23 to 148)
Ethylene Propylene	-10 to 300 (-23 to 148)
Fluorocarbon FKM	-10 to 400 (-23 to 204)
Kalrez	-0 to 300 (-17 to 148)
Neoprene	-10 to 250 (-23 to 121)

Standard Materials of Construction

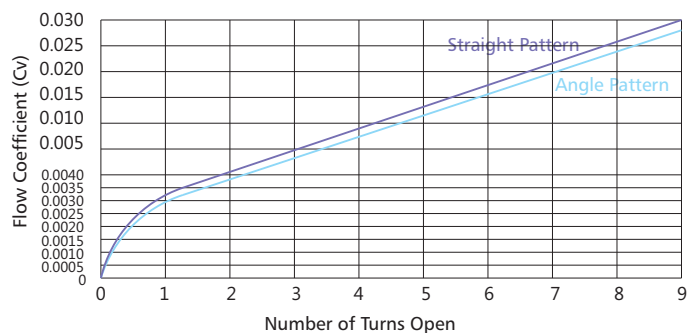
Component		Material Grade/ASTM Specification	
		316 S.S.	Brass
1	Handle	300 SS/A276	Silver-mist chrome-plated C36000/B16
2	Handle Screw	Black oxide alloy steel/ANSI 18.3	
3	Lock Screw	Black oxide alloy steel/ANSI 18.3	
4	Panel Nut	316 S.S./B783	Silver-mist chrome-plated C36000/B16
5	Bonnet	316 S.S./A479	Silver-mist chrome-plated C34500/B453
6	Bonnet Sleeve	Sintered 316 S.S.	
7	Stem Guide Ring	Glass-filled PTFE	
8	Body Extension	316 S.S./A479	Silver-mist chrome-plated C34500/B453
9	Stem	Hard chrome-plated 316 SS/A479	
10	O-ring	Fluorocarbon FKM	Buna N
11	Body Seal	Fluorocarbon FKM	Buna N
12	Body	316 S.S./A182	Silver-mist chrome-plated C37700/B283



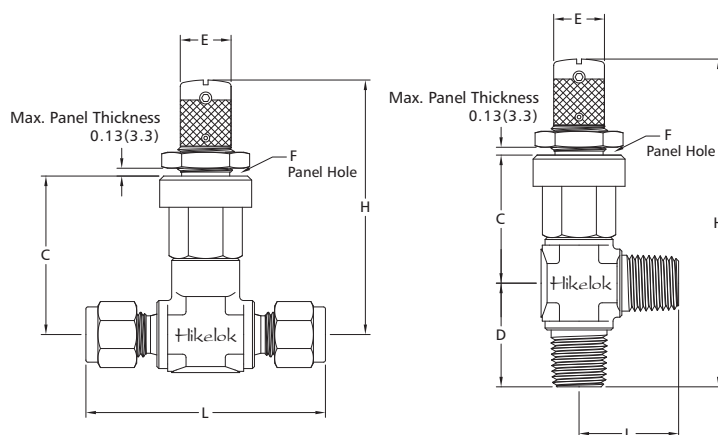
Flow Data at 70°F(20°C)

Pressure Drop to Atmosphere psig (bar)	Air Flow std ft/min ³ (std L/min)	Water Flow U.S. gal/min (L/min)
10 (0.69)	0.33 (9.3)	0.09 (0.34)
50 (3.45)	0.90 (25.4)	0.21 (0.79)
100 (6.90)	1.50 (42.4)	0.30 (1.10)

Flow Coefficient at Turns Open



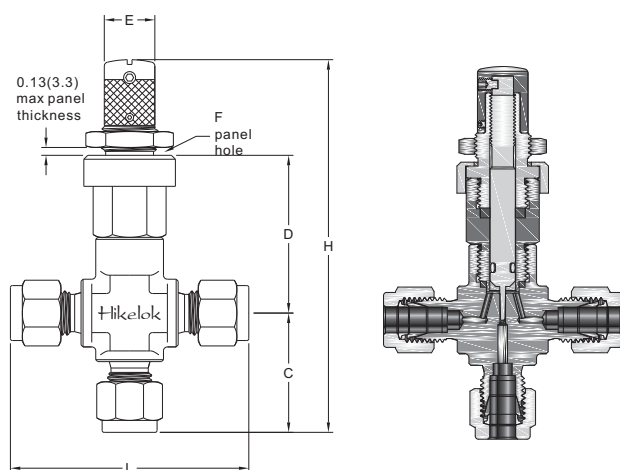
Dimensions



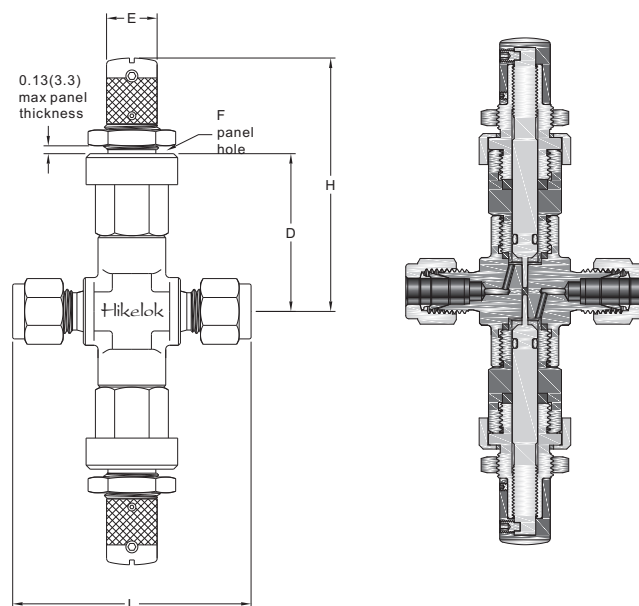
Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)					
		H	L	C	D	E	F
Straight Pattern							
MV2-F2-	1/8" Hikelok	2.78 (70.6)	2.02 (51.3)	1.56 (39.6)	—	0.50 (12.7)	0.58 (14.7)
MV2-F4-	1/4" Hikelok		2.20 (55.9)				
MV2-M3-	3 mm Hikelok		2.02 (51.3)				
MV2-M6-	6 mm Hikelok		2.20 (55.9)				
MV2-NPT2-	1/8 Male NPT		1.50 (38.1)				
MV2-NPT4-	1/4 Male NPT		1.96 (49.8)				
MV2-FNPT2-	1/8 Female NPT		1.94 (49.3)				
Angle Pattern							
MV2-F2-	1/8" Hikelok	3.30 (83.8)	1.01 (25.7)	1.07 (27.2)	1.01 (25.7)	0.50 (12.7)	0.58 (14.7)
MV2-F4-	1/4" Hikelok	3.39 (86.1)	1.10 (27.9)		1.10 (27.9)		
MV2-M3-	3 mm Hikelok	3.30 (83.8)	1.01 (25.7)		1.01 (25.7)		
MV2-M6-	6 mm Hikelok	3.39 (86.1)	1.10 (27.9)		1.10 (27.9)		
MV2-NPT2-	1/8 Male NPT	3.04 (77.2)	0.75 (19.1)		0.75 (19.1)		
MV2-NPT4-	1/4 Male NPT	3.27 (83.1)	0.98 (24.9)		1.02 (25.9)		
MV2-FNPT2-	1/8 Female NPT	3.04 (77.2)	1.01 (25.7)		0.75 (19.1)		

Optional Patterns

Cross Pattern



Double Pattern



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

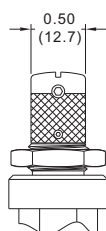
Inlet valve handle can be set and locked at desired maximum flow, outlet valve handle can be used for fine flow control up to the preset maximum of the inlet valve.

Basic Ordering Number	Connection Type and Size	Cv	Dimension, in. (mm)					
			H	L	C	D	E	F
Cross Pattern								
MV2-F4-	1/4" Hikelok	0.03	3.39 (86.1)	2.20 (55.9)	1.10 (27.9)	1.07 (27.2)	0.50 (12.7)	0.58 (14.7)
MV2-M6-	6 mm Hikelok							
Double Pattern								
MV2-F4-	1/4" Hikelok	0.026	2.78 (70.6)	2.20 55.9)	—	1.56 (39.6)	0.50 (12.7)	0.58 (14.7)
MV2-M6-	6 mm Hikelok							

Optional Handles

Slotted Handle

- ❖ Flow setting adjustment is available with a screwdriver
- ❖ Ideal for installation where access to handle



Vernier Handle

- ❖ Repeatable flow setting
- ❖ Adjustment accurate to 1/25 turn (1/1000 of an inch)



How to Order

MV2 — **NPT4** — **M6** — **EV** — **A** — **316**

Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	O-Ring Material	Handle Type	Flow Pattern	Material
MV2	FNPT Female NPT	1 1/16 in.	Same as inlet type and inlet size		Fluorocarbon FKM	Knurled,round	Straight	316 316 S.S.
	NPT Male NPT	2 1/8 in.						
	FBT Female BSPT	3 3 mm	If outlet and inlet are the same, eliminate the outlet designator		B Buna N	V Vernier	A Angle	316L 316L
	MBT Male BSPT	4 1/4 in.			E Ethylene propylene		D Double	304 304
	FMS Female ISO 261	6 3/8 in. or 6 mm			N Neoprene		C Cross	304L 304L
	MS Male ISO 261	8 1/2 in. or 8 mm			Z Kalrez			BR Brass
	FBP Female BSPP	10 10 mm						
	MBP Male BSPP							
	F Fractional Tube Fitting							
	M Metric Tube Fitting							
	GFS Male GFS Fitting							

Metering Valve

MV3 Series



- ❖ Maximum working pressure up to 1000 psig (68.9 bar)
- ❖ Working temperature from -10°F to 400°F (-23°C to 204°C)
- ❖ One-piece forged body
- ❖ Orifice size is 0.128" (3.25 mm)
- ❖ Straight and angle patterns

Features

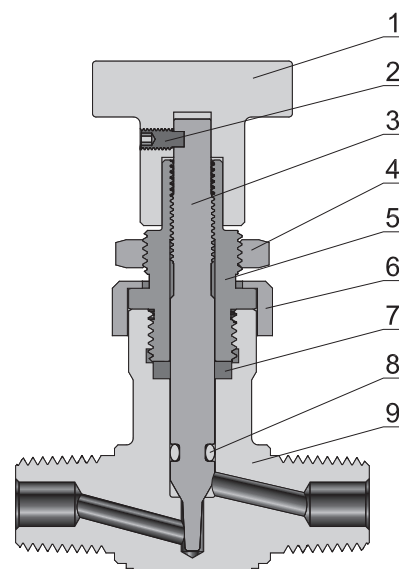
- ❖ Maximum working pressure up to 1000 psig (68.9 bar)
- ❖ Working temperature from -10°F to 400°F (-23°C to 204°C)
- ❖ Orifice size: 0.128" (3.25 mm)
- ❖ Stem taper: 6°
- ❖ Shutoff service: yes
- ❖ Panel mountable
- ❖ Straight and angle pattern
- ❖ Handle type: vernier and knurled
- ❖ Variety of end connections

Temperature Ranges for Different seal Materials

Seal Material	Temperature Range°F (°C)
Buna N	-10 to 300 (-23 to 148)
Ethylene Propylene	-10 to 300 (-23 to 148)
Fluorocarbon FKM	-10 to 400 (-23 to 204)
Kalrez	0 to 300 (-17 to 148)
Neoprene	-10 to 250 (-23 to 121)

Standard Materials of Construction

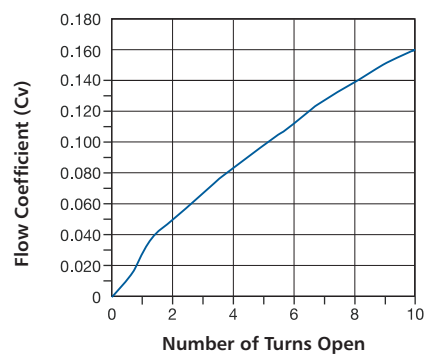
Component		Material Grade/ASTM Specification	
		316 S.S.	Brass
1	Handle	Anodized aluminum	
2	Handle Screw	Black oxide alloy steel/ANSI 18.3	
3	Stem	Hard chrome-plated 316 S.S./A479	
4	Panel nut	316 S.S./B783	Silver-mist chrome-plated C36000/B16
5	Bonnet	316 S.S./A479	Silver-mist chrome-plated C34500/B453
6	Bonnet Sleeve	Sintered 316 S.S.	
7	Stem Guide Ring	Glass-filled PTFE	
8	O-ring	Fluorocarbon FKM	Buna N
9	Body	316 S.S./A182	Silver-mist chrome-plated C37700/B283



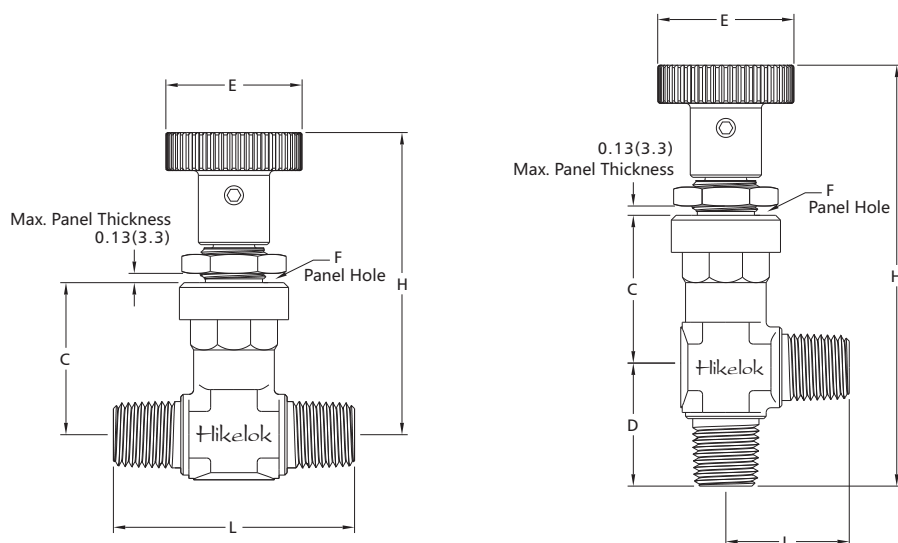
Flow Data at 70°F (20°C)

Pressure Drop to Atmosphere psig (bar)	Air Flow std ft ³ /min (std L/min)	Water Flow U.S. gal/min (L/min)
10 (0.69)	1.6 (45.3)	0.47 (1.7)
50 (3.45)	4.5 (127)	1.0 (3.7)
100 (6.90)	7.9 (223)	1.5 (5.6)

Flow Coefficient at Turns Open



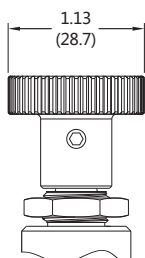
Dimensions



Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)					
		H	L	C	D	E	F
Straight Pattern							
MV3-F4-	1/4" Hikelok	2.82 (71.6)	2.34 (59.4)	1.26 (32.0)	—	1.13 (28.7)	0.58 (14.7)
MV3-F6-	3/8" Hikelok		2.46 (62.5)				
MV3-M6-	6 mm Hikelok		2.34 (59.4)				
MV3-NPT4-	1/4 Male NPT		2.00 (50.8)				
Angle Pattern							
MV3-F4-	1/4" Hikelok	3.77 (95.8)	1.17 (29.7)	1.04 (26.4)	1.17 (29.7)	1.13 (28.7)	0.58 (14.7)
MV3-M6-	6 mm Hikelok						

Optional Handles

Knurled Handle



Vernier Handle

- ❖ Repeatable flow setting
- ❖ Adjustment accurate to 1/25 turn (1/1000 of an inch)



How to Order

MV3 — **NPT4** — **M6** — **EV** — **A1** — **316**

Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	O-Ring Material	Handle Type	Flow Pattern	Material
MV3	FNPT Female NPT	1 1/16 in.	Same as inlet type and inlet size		Fluorocarbon FKM	Knurled	Straight	316 316 S.S.
	NPT Male NPT	2 1/8 in.			B Buna N	V Vernier	A1 Angle	316L 316L
	FBT Female BSPT	3 3 mm	If outlet and inlet are the same, eliminate the outlet designator		E Ethylene Propylene			304 304
	MBT Male BSPT	4 1/4 in.			N Neoprene			304L 304L
	FMS Female ISO 261	6 3/8 in. or 6 mm			Z Kalrez			BR Brass
	MS Male ISO 261	8 1/2 in. or 8 mm						
	FBP Female BSPP	10 10 mm						
	MBP Male BSPP	12 3/4 in. or 12 mm						
	F Fractional Tube Fitting							
	M Metric Tube Fitting							
	GFS Male GFS Fitting							

Metering Valve

MV4 Series



- ❖ Maximum working pressure up to 5000 psig (344 bar)
- ❖ Working temperature from -65°F to 850°F (-54°C to 454°C)
- ❖ Orifice size is 0.062" (1.6 mm)
- ❖ Straight and angle patterns

Features

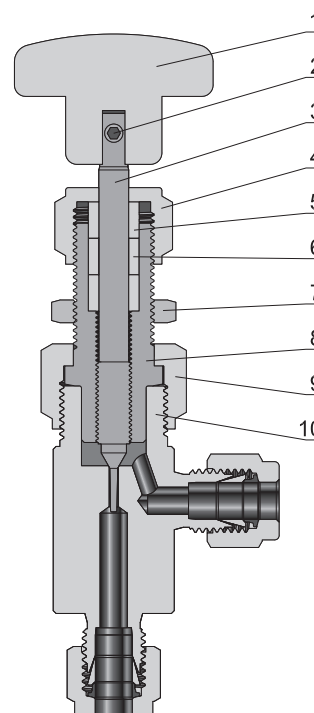
- ❖ Maximum working pressure: 5000 psig (344 bar)
- ❖ Working temperature: -65°F to 850°F (-54°C to 454°C)
- ❖ Orifice size: 0.062" (1.6 mm)
- ❖ Flow coefficient(Cv) : 0.04
- ❖ Stem taper: 2°
- ❖ Shutoff service: available
- ❖ Variety of end connections
- ❖ Panel mountable
- ❖ Flow pattern: straight and angle
- ❖ Handle type: round

Pressure vs. Temperature

Body Material	316 S.S.
Temperature, °F (°C)	Working Pressure, psig(bar)
-65 (-53) to 100 (37)	5000 (344)
200 (93)	4295 (295)
300 (148)	3875 (266)
400 (204)	3560 (245)
500 (260)	3310 (228)
600 (315)	3130 (215)
650 (343)	3080 (212)
700 (371)	3000 (206)
750 (398)	2930 (201)
800 (426)	2980 (198)
850 (454)	2815 (193)

Standard Materials of Construction

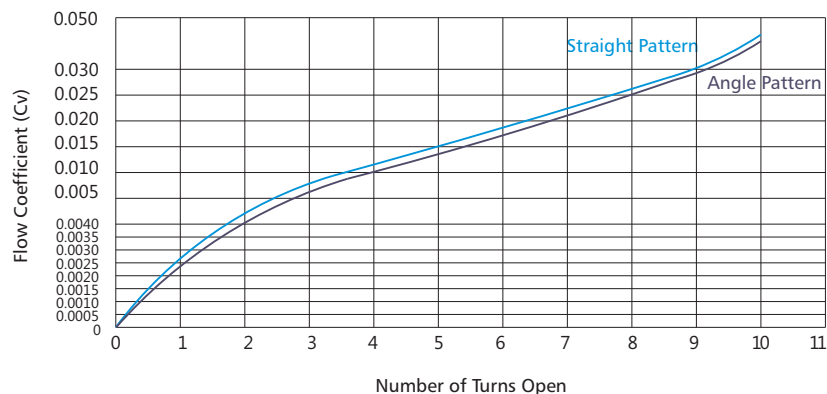
Component		Material Grade/ASTM Specification
		316 S.S.
1	Handle	Anodized aluminum
2	Handle Screw	Black oxide alloy steel/ANSI 18.3
3	Stem	440C S.S./A276
4	Packing nut	316 S.S./A276
5	Gland	316 S.S./A276
6	Packing	PTFE/D1710
7	Panel Nut	316 S.S./B783
8	Bonnet	316 S.S./A479
9	Union nut	316 S.S./A276
10	Body	316 S.S./A479



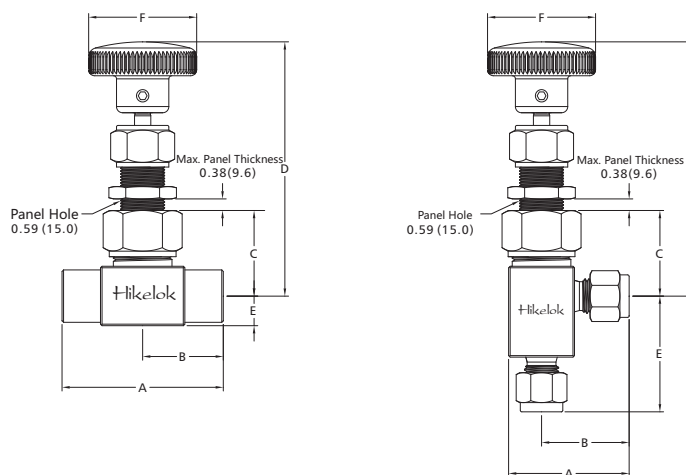
Flow Data at 70°F(20°C)

Pressure Drop to Atmosphere psig (bar)	Air Flow std ft/min ³ (std L/min)	Water Flow U.S. gal/min (L/min)
10 (0.69)	0.45 (12.7)	0.12 (0.45)
50 (3.45)	1.2 (33.9)	0.28 (1.0)
100 (6.90)	2.1 (59.4)	0.40 (1.5)

Flow Coefficient at Turns Open



Dimensions



Basic Ordering Number	Connection Type and Size	Dimension, in. (mm)					
		A	B	C	D	E	F
Straight Pattern							
MV4-F4-	1/4" Hikelok	2.40 (61.0)	1.20 (30.5)	1.09 (27.7)	3.60 (91.4)	0.38 (9.6)	1.38 (35.1)
MV4-M6-	6 mm Hikelok						
MV4-FNPT2-	1/8 Female NPT						
MV4-FNPT4-	1/4 Female NPT						
Angle Pattern							
MV4-F4-	1/4" Hikelok	1.54 (39.1)	1.16 (29.5)	1.09 (27.7)	3.60 (91.4)	1.48 (37.6)	1.38 (35.1)
MV4-M6-	6 mm Hikelok						
MV4-FNPT2-	1/8 Female NPT						
MV4-FNPT4-	1/4 Female NPT						

How to Order

MV4— NPT4 — M6 — G — A — 316

Series	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Packing Material	Flow Pattern	Material
MV4	FNPT Female NPT	1 1/16 in.	Same as inlet type and inlet size		PTEE	Straight	316 316 S.S.
	NPT Male NPT	2 1/8 in.			G Graphite	A Angle	316L 316L
	FBT Female BSPT	3 3 mm	If outlet and inlet are the same, eliminate the outlet designator				304 304
		4 1/4 in.					304L 304L
	MBT Male BSPT	6 3/8 in. or 6 mm					BR Brass
	FMS Female ISO 261	8 1/2 in. or 8 mm					
	MS Male ISO 261	10 10 mm					
	FBP Female BSPP	12 3/4 in. or 12 mm					
	MBP Male BSPP						
	F Fractional Tube Fitting						
	M Metric Tube Fitting						
	GFS Male GFS Fitting						