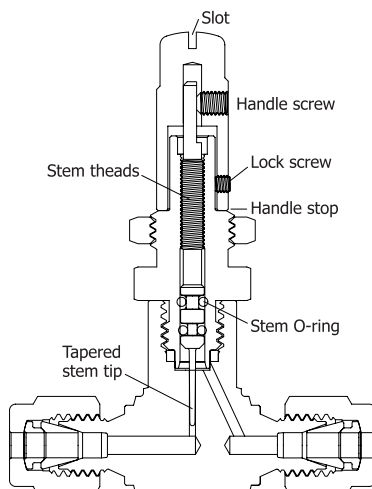


# Metering Valves

VM 1D, 3D, and 6D Series

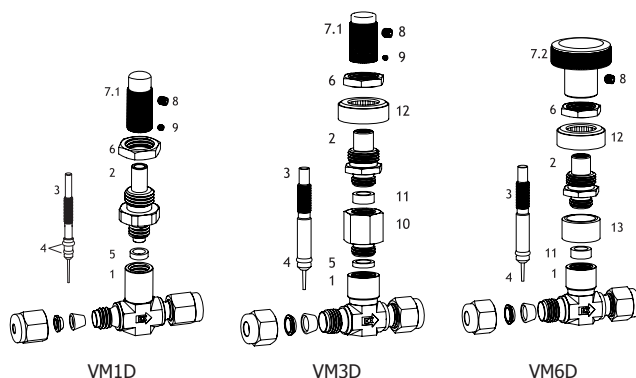
Catalog No. VM-1  
Oct. 2009



## Features

- **Slotted handle**  
allows flow setting adjustment with a screwdriver.
- **Lock screw**  
locks out flow setting.
- **Stem threads**  
are isolated from system fluid.
- **Handle stop**  
mechanically helps prevent damage to stem and orifice.
- **Stem O-ring**  
seals system fluids
- **Tapered stem tip**  
controls gas or liquid flow rates accurately.
- **Body materials**  
are forged stainless steel 316 or brass.

Straight and angle **patterns**.  
Standard **Panel mounting**.



## Factory Test

Every valve is factory tested with nitrogen gas at 68.9bar (1,000psig) for leakage to a maximum allowable leak rate of 0.1SCCM at seat. Hydraulic shell test is optionally performed at 1.5 times the working pressure to a requirement of no detectable leakage with a liquid leak detector.

## Cleaning and Packaging

Every valve is cleaned and packaged in accordance with DK TECH Corporation cleaning standard of DC-01. Optional DC-11 cleaning for oxygen application is available on request.

**Panel mount:** VM1D & 3D series with standard L and optional SL handle allow valve panel mount with no handle removal.

Table 1. Material of Construction

Component	Valve Body Materials Grade/ASTM Specification	
	Stainless Steel	Brass
1 Body	F316/A182	C37700/B283
2 Bonnet	316SS/A479	C34500/B453
3 Stem	S17400/A564 for VM1D, 316SS/A479 for VM3D & VM6D	
4 Stem o-ring	FKM	Buna N
5 Body seal	PTFE	
6 Panel nut	316SS/A479	C36000/B16
7.1 Handle	300SS/A479	C36000/B16
7.2 Round handle	Aluminum 6061	
8 Handle set screw	Alloy steel	
9 Lock screw	Alloy steel	
10 Body extension	316SS/A479	C34500/B453
11 Stem guide ring	Glass-filled PTFE	
12 Bonnet sleeve	Sintered 316SS	
13 Body support ring	316SS/A479	

- Wetted components listed in blue.
- Lubricant: Molybdenum disulfide-based; silicon-based.

Table 2. Temperature Rating

Standard O-ring material	Designator	Temperature Rating °F (°C)
FKM standard for SS316 body	VT	-10 to 400 (-23 to 204)
NBR standard for brass body	BN	-10 to 300 (-23 to 148)
Optional Kalrez®	KZ	0 to 300 (-17 to 148)

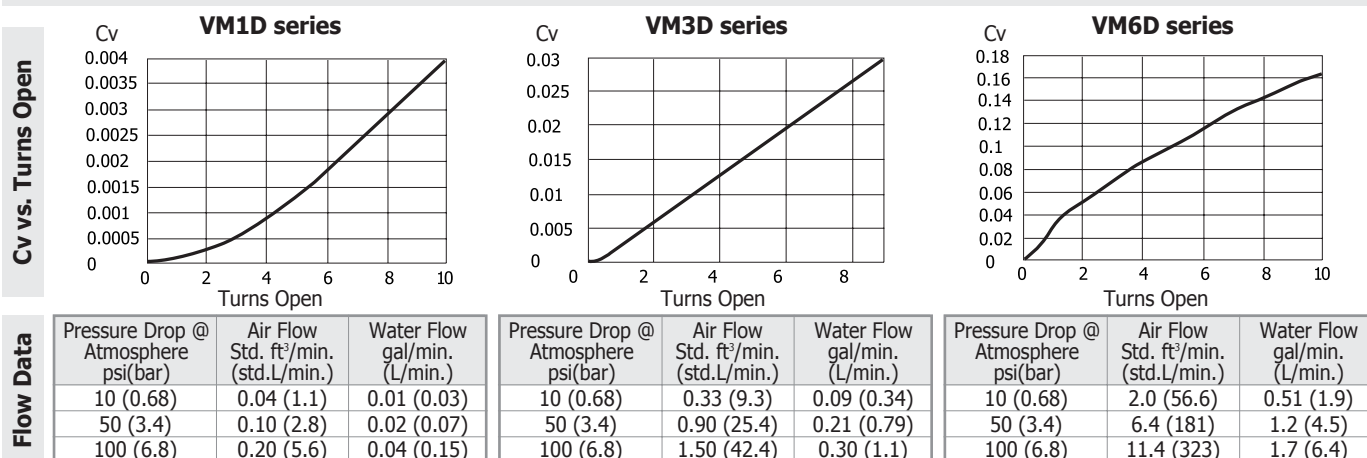
Table 3. Technical Data

Series	VM1D	VM3D	VM6D
Working pressure psig (bar)	2,000 (137)	1,000 (68.9)*	
Orifice in. (mm)	0.032 (0.81)	0.056 (1.42)	0.128 (3.25)
Stem taper	1°	3°	6°
Cv	0.004	0.03	0.16
Turns to Open	8 to 12	8 to 10	10 to 11
Internal volume cu.in (cu.mm)	0.006 (98)	0.028 (460)	0.035 (570)
Flow shut off	No	No	Yes**

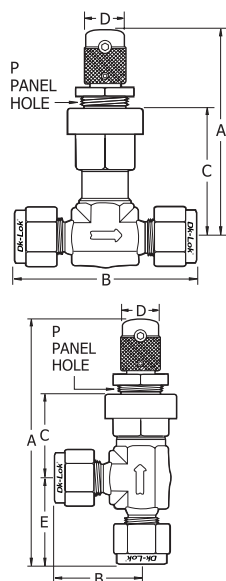
\* While valve is adjusted at pressure, 500 psig (34.4 bar) is max downstream pressure due to mechanical strength limit of the fine-pitch threads and high operation torque.

\*\* VM6D series in use for shutoff in vacuum or gas, or for repetitive shutoff in liquid are not recommendable.

Table 4. Turns Open and Flow Data



## Ordering Information and Dimensions



VM series	P	Max Panel Thickness
1D	0.45 (11.4)	0.16 (4.1)
3D	0.58 (14.7)	0.13 (3.3)
6D		

Basic Ordering Number		Angle pattern	End Connections		Dimensions in. (mm)				
			Inlet	Outlet	A	B	C	D	E
VM1D-	D1T-		1/16 in. DK-LOK	2.34 (59.4)	1.56 (39.6)	0.92 (23.4)	0.38 (9.6)	-	
	D2T-		1/8 in. DK-LOK		1.90 (48.3)				
	D4T-		1/4 in. DK-LOK		2.04 (51.8)				
	D3M-		3mm DK-LOK		1.90 (48.3)				
	D6M-		6mm DK-LOK		2.04 (51.8)				
	D1T-	A-	1/16 in. DK-LOK	3.22 (81.8)	0.81 (20.6)		0.88 (22.4)		
D2T-	A-	1/8 in. DK-LOK	3.32 (84.3)	0.98 (24.9)		0.98 (24.9)			
VM3D-	D2T-		1/8 in. DK-LOK	2.78 (70.6)	2.02 (51.3)	1.56 (39.6)		-	
	D4T-		1/4 in. DK-LOK		2.20 (55.9)				
	D3M-		3mm DK-LOK		2.02 (51.3)				
	D6M-		6mm DK-LOK		2.20 (55.9)				
	D2T-	A-	1/8 in. DK-LOK	3.30 (83.8)	1.01 (25.7)	1.07 (27.2)	0.50 (12.7)	1.01 (25.7)	
	D4T-	A-	1/4 in. DK-LOK	3.39 (86.1)	1.10 (27.9)			1.10 (27.9)	
	M2N-		1/8 in. Male NPT	2.78 (70.6)	1.50 (38.1)	1.56 (39.6)		-	
	M4N-		1/4 in. Male NPT		1.96 (49.8)				
	F2N-			1/8 in. Female NPT	2.78 (70.6)				1.94 (49.3)
F2N-	A-	1/8 in. Female NPT	3.26 (82.8)	0.98 (24.6)					
VM6D-	D4T-		1/4 in. DK-LOK	2.82 (71.6)	2.34 (59.4)	1.26 (32.0)	1.13 (28.7)	-	
	D6T-		3/8 in. DK-LOK		2.46 (62.5)				
	D6M-		6mm DK-LOK		2.34 (59.4)				
	D4T-	A-	1/4 in. DK-LOK	3.77 (95.8)	1.17 (29.7)	1.04 (26.4)		1.17 (29.7)	
	M4N-		1/4 in. Male NPT	2.82 (71.6)	2.00 (50.8)	1.26 (32.0)		-	

Dimensions shown are for reference only and are subject to change. Dimensions with DK-LOK nuts are in finger-tight position.

### Standard and Optional Handles

**Lock screw** handle allows locking the set flow, standard for 1D and 3D series.

**Vernier handle** made out of aluminum helps ensure repeatable flow setting in readings accurate to 1/25° turn.

**Slotted handle** helps flow setting adjustment with a screwdriver.

**Adjustable-torque handle** enhances control for setting flows with two top-mounted adjustment screws.

### How to Order





Select desired valve basic ordering number, optional handle, O-ring and body material designators.

VM1D-D2T

-V

-KZ

-S

Handle Designators					<ul style="list-style-type: none"><li>• <b>Nil:</b> L is standard for 1D and 3D series</li><li>• <b>V:</b> Optional to 1D, 3D, and 6D series</li><li>• <b>SL:</b> Optional to 1D and 3D series</li><li>• <b>A:</b> Optional to 1D series</li><li>• <b>Nil:</b> Round handle (designator -R) standard for 6D series</li></ul> <p><b>Note:</b> Chrome plated brass handle supplied on brass valve.</p>	O-ring Designators	Body material Designators
	L Lock screw handle	V Vernier handle	SL Slotted handle	A Adjustable-Torque handle		<p><b>Nil:</b> VT standard for stainless body. <b>Nil:</b> BN standard for brass body.</p> <ul style="list-style-type: none"><li>• VT: Viton</li><li>• BN: NBR</li><li>• KZ: Kalrez</li></ul>	<ul style="list-style-type: none"><li>• S: SS316</li><li>• B: Brass</li></ul>