



Regulator & Metering Valves

Rev. 01-02
Apr. 2025





Regulators VR6 Series

Rev. 02-01
Mar. 2024



Features

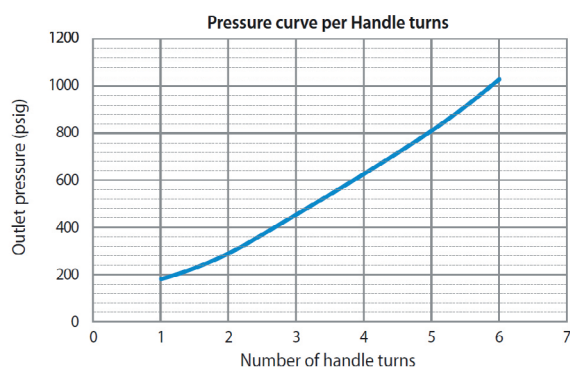


- The High Pressure Regulator valve is featured by controlling the pressure toward downstream from zero to 1,000 psig (68.9 barg) precisely and keeping the downstream pressure constantly after adjusting, though the upstream pressure may be fluctuated unexpectedly.
- The diaphragm made of thin plate of stainless steel is positioned between the body and housing to make sure of stable sealing characteristics and keep the control volume.

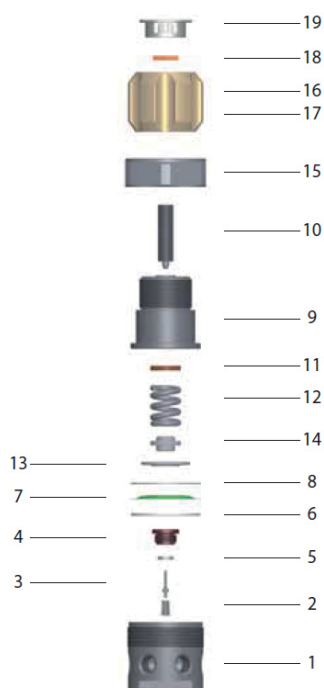
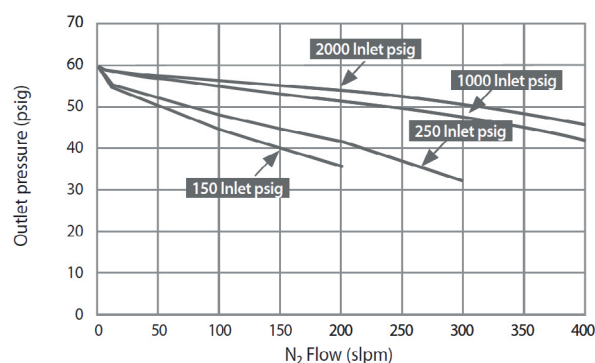
Technical Data

Body Material	Seat Material	Temperature Rating °F (°C)	Pressure Rating @ -40 ~ 160 °F (-40 ~ 70°C)	Control Volume
SS316L/A276	PCTFE	-40 ~ 160 (-40 ~ 70)	0 ~ 6,000 psig (420 barg)	4 cc

Graph 1. Control Pressure per Handle turns



Graph 2. Flow Curves



Material of Construction

Components	VR6 Series (Standard)
1. BODY	SS316L/A276
2. SPRING-RETURN	SS316L
3. VALVE	SS316L
4. SEAT HOUSIG	SS316L
5. SEAT	PCTFE
6. SEAL BODY	EPDM
7. DIAPHRAGM	SS316L
8. WASHER	SS316L
9. HOUSING	SS316L/A276
10. ADJUST SCREW	SS316L
11. CAP SCREW	BRASS
12. SPRING CONTROL	SS316L
13. STOPPER	SS316L
14. PLUNGER	BRASS
15. NUT HOUSING	SS316L
16. HANDLE	ABS
17. HANDLE NUT	SS316L
18. LOCK NUT	SS316L
19. HANDLE CAP	ABS

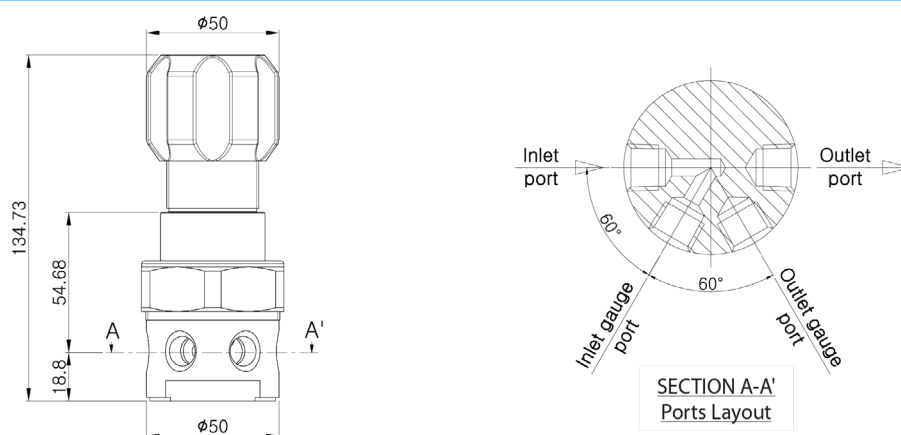
Factory Test

Every valve is factory tested with nitrogen gas @1,000 psig (68.9 barg) for leakage to a maximum allowable leak rate of 0.1 SCCM 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-Lok cleaning standard DC-01. Special cleaning and packaging in accordance with DK-Lok DC-11 ensures compliance with product cleaning of ASTM G93 Level C is available on request for valves with PCTFE and PTFE seats.

Dimensions and Port Layout



Designation for Port Layout

Port Layout	IN → OUT	IN → OUT	IN → OUT	IN → OUT
Designation	Nil	0	3	X4

How to order

Select applicable valve basic ordering number, options and body material designator listed below.

VR6-F-4N

-S

Port Layout	Seat Materials	Self-Vent Options	Body Material
Nil : 4 ports (60° per port) 0 : None of gauge port 3 : 3 port (1 for Gauge) X4 : 4 ports (90° per port)	Nil : Standard PCTFE PK : PEEK	Nil : None	S : 316L Stainless steel

Safe Valve Selection

The selection of a valve for any application or system design must be considered to ensure safe performance. Valve function, valve rating, material compatibility, proper installation, operation and maintenance retain the sole responsibility of the system designer and the user. DK-Lok accepts no liability for any improper selection, installation, operation or maintenance.

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Safe Component Selection

The Selection of component for any applications or system design must be considered to ensure safe performance. Component function, material compatibility, component ratings, proper installation, operation and maintenance remain the sole responsibility of the system designer and the user. DK-Lok accepts no liability for any improper selection, installation, operation or maintenance.



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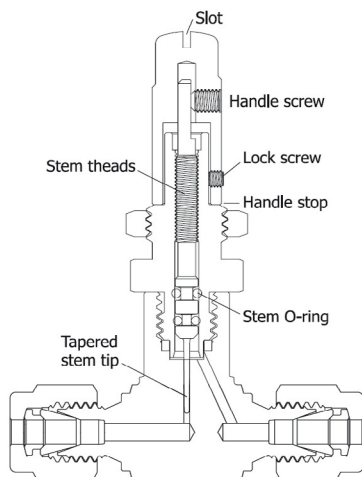
Metering Valves

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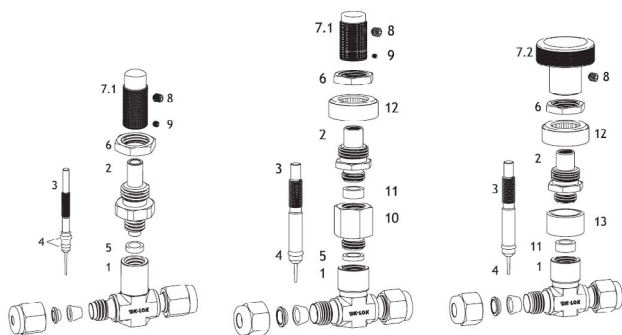


VM 1D, 3D, and 6D Series

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**.



VM1D

VM3D

VM6D

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	SS316/A276	C34500/B453
3. Stem	S17400/A564 for VM1D, A276 for VM3D & VM6D	
4. Stem o-ring	FKM	Buna N
5. Body seal	PTFE	
6. Panel nut	SS316/A276	C36000/B16
7-1. Handle	SS300/A276	C36000/B16
7-2. Round handle	Aluminum 6061	
8. Handle set screw	Alloy steel	
9. Lock screw	Alloy steel	
10. Body extension	SS316/A276	C34500/B453
11. Stem guide ring	Glass-filled PTFE	
12. Bonnet sleeve	Sintered SS316	
13. Body support ring	SS316	

• Wetted components listed in **blue**.

• **Lubricant :** Molybdenum disulfide-based; silicon-based.

Factory Test

Every valve is factory tested with nitrogen gas at 68.9bar (1,000 psig) and required to no detectable leakage. Hydraulic shell test is optionally performed at 1.5 times the working pressure.

Cleaning and Packaging

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

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)

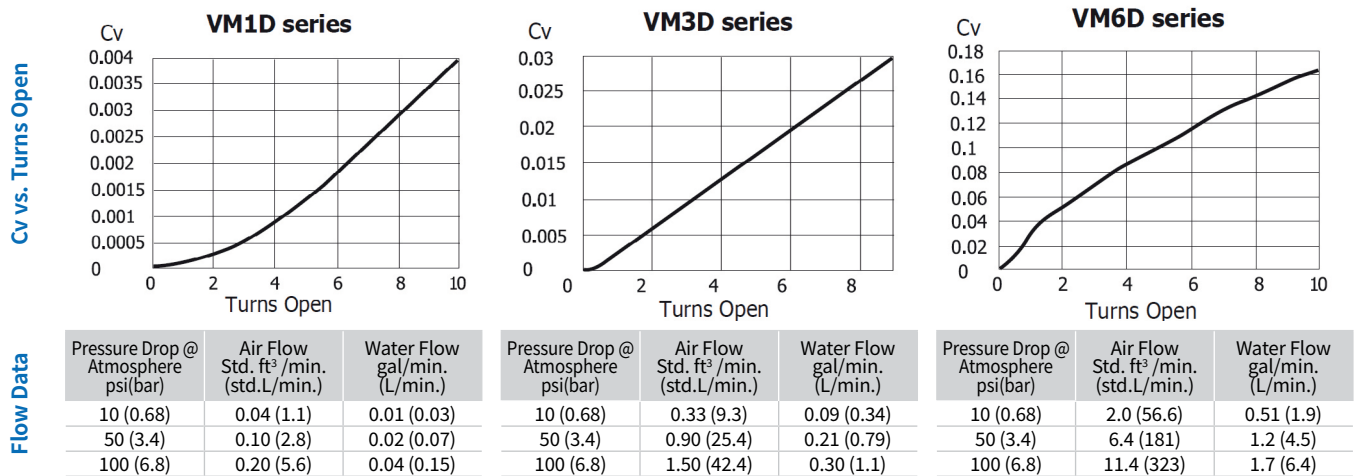
Table 3. Technical Data

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**

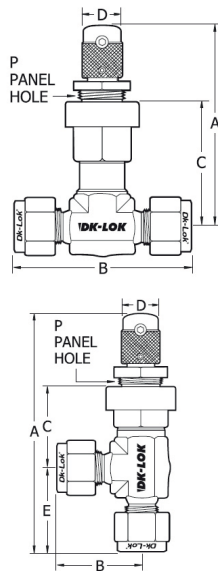
* While valve is adjusted at pressure, 500 psig (34.4 bar) is max downstream pressure due to mechanical strength limit of the finepitch threads and high operation torque.

** 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 Inlet & Outlet	Dimensions in. (mm)					
				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-		3mmDK-Lok		1.90 (48.3)				
	D6M-		6mmDK-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)	0.50 -12.7	-	
	D4T-		1/4 in.DK-Lok		2.20 (55.9)				
	D3M-		3mmDK-Lok		2.02 (51.3)				
	D6M-		6mmDK-Lok		2.20 (55.9)				
	D2T-	A-	1/8 in.DK-Lok	3.30 (83.8)	1.01 (25.7)			1.07 (27.2)	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		1.94 (49.3)				
F2N-	A-	1/8 in.Female NPT	3.26 (82.8)	0.98 (24.9)	1.07 (27.2)	0.97 (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-		6mmDK-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 1/25th 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

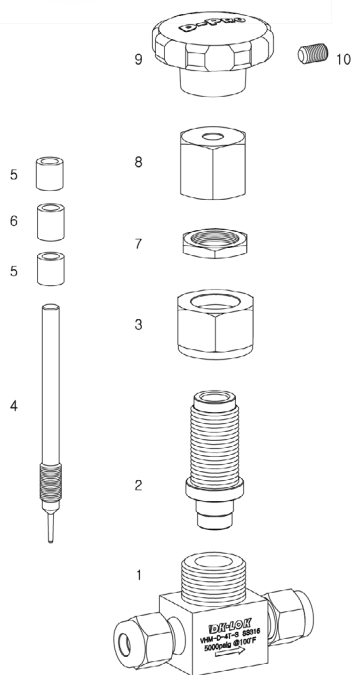
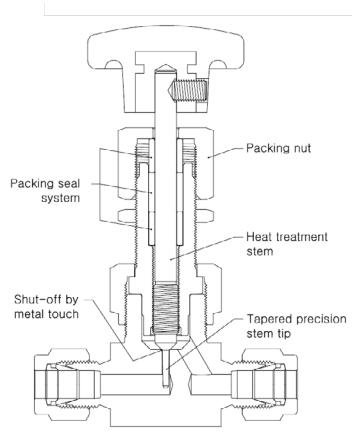
-S

Handle Designators

				<p>Nil : L is standard for 1D and 3D series V : Optional to 1D,3D, and 6D series SL : Optional to 1D and 3D series ATH : Optional to 1D series Nil : Round handle (designator -R) standard for 6D series Note : 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	ATH Adjustable-Torque handle		<p>Nil : VT standard for stainless body. Nil : BN standard for brass body. • VT : Vition • BN : NBR • KZ : Kalrez</p>	<p>S : SS316 B : Brass</p>

VMH Series

Features



• Packing Seal System

prevents protrusion of packing caused by internal pressure

• Metal To Metal Shut Off

leak free performance between the stem and body seat

• Packing Nut

externally adjustable

• Heat Treated Stem

improves endurance life

• Tapered Precision Stem Tip

ensures accurate flow control

Table 4. Material of Construction

Component	Grade/ASTM Specification
1. Body	SS316/A276
2. Bonnet	SS316/A276
3. Union nut	SS316/A276
4. Stem	SS440/A276
5. Gland	SS316/A276
6. Packing	PTFE/D1710
7. Panel nut	SS316/A276
8. Packing nut	SS316/A276
9. Handle	Nylon with brass insert
10. Handle set screw	Alloy steel

Table 5. Pressure vs. Temperature Ratings

ASME Class	2080
Material Group	2.2
Material Name	SS316
Temperature, °F (°C)	Working pressure, psig (bar)
-65~100 (-53~38)	5,000 (344)
200 (93)	4,295 (295)
300 (148)	3,875 (266)
400 (204)	3,560 (245)
450 (232)	3,435 (236)
500 (260)	3,310 (228)
600 (315)	3,130 (215)
650 (343)	3,080 (212)
700 (371)	3,000 (206)
750 (398)	2,930 (201)
800 (426)	2,880 (198)
850 (454)	2,815 (193)

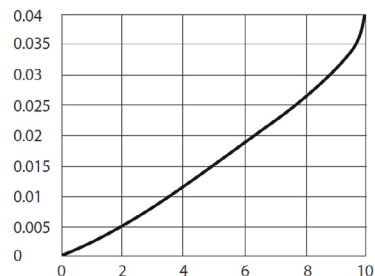
Standard PTFE packing is up to 450°F (232°C), optional Grafoil packing is up to 850°F (454°C)

Factory Test

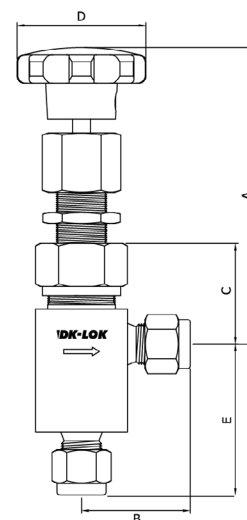
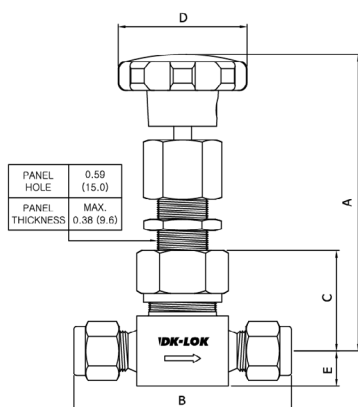
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Cleaning and Packaging

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

Table 6. Turns Open and Flow Data
Cv vs. Turns Open

Flow Data

Pressure Drop @ Atmosphere psi(bar)	Air Flow Std. ft ³ /min. (std.L/min.)	Water Flow Gal/min. (L/min.)
10 (0.68)	0.45 (12.7)	0.12 (0.45)
50 (3.4)	1.2 (33.9)	0.28 (1.0)
100 (6.8)	2.1 (59.4)	0.4 (1.5)

Ordering Information and Dimensions


Basic Ordering Number		Angle pattern	End Connections Inlet & Outlet	Dimensions in. (mm)				
				A	B	C	D	E
VMH-	D4T-		1/4 in. DK-Lok	3.6 (91.4)	2.4 (61.0)	1.09 (27.7)	1.42 (36.0)	0.38 (9.6)
	D6M-		6 mm DK-Lok					
	D4T-	A-	1/4 in. DK-Lok	3.6 (91.4)	1.16 (29.5)	1.09 (27.7)	1.42 (36.0)	1.48 (37.6)
	D6M-	A-	6 mm DK-Lok					
	F2N-		1/8 in. Female NPT	3.6 (91.4)	2.0 (50.8)	1.09 (27.7)	1.42 (36.0)	0.38 (9.6)
	F4N-		1/4 in. Female NPT		2.06 (52.3)			
	F2N-	A-	1/8 in. Female NPT	3.8 (96.5)	2.0 (50.8)	1.09 (27.7)	1.42 (36.0)	1.0 (25.4)
	F4N-	A-	1/4 in. Female NPT		2.06 (52.3)			

Dimensions shown are for reference only and are subject to change.

Dimensions are with DK-Lok nuts in the finger-tight position.

How to Order
VMH-D4T-GF

BL		-S	
Packing designators	Handle colors		Body material designator
Nil : PTFE GF : Grafoil	Handle color	Designator	S : SS316
	Black	Nil	
	Red	RD	
	Blue	BL	

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