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## Needle/Toggle Valve



## Integral Bonnet Needle Valves FOR REGULATING and SHUT-OFF

### Stem

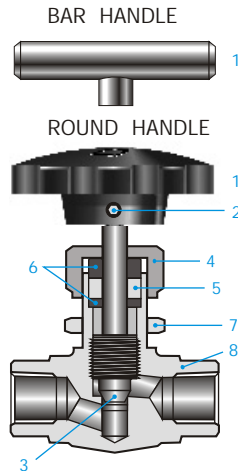
Hard chrome plated stem threads assures extended service life

### Choice of Fluid Control

- Metal to metal Vee & Regulating stems for elevated temperatures
- Repetitive soft seat for gas leak-tight

### Variety of end connections

- Reliable DK-LOK<sup>®</sup> Tube Fitting Ends
- NPT & ISO Male & Female



### Positive Driven Handle

Choice of Round handle and Bar Handle

### Packing Nut

Allows external adjustments of packing

### Panel Nut

Allows panel installation

### Integral Bonnet Design

To eliminate inadvertent stem back-out

### Packing

- Low operating torque.
- Standard PTFE
- Optional PEEK for high Temperature

## Materials of Construction

Components	VALVE BODY MATERIALS Material Grade/ASTM Specification		
	SS316	BRASS	ALLOY 400
1 Round handle	Nylon with brass insert		
1 Bar handle	SS316/A276		
2 Set Screw	SS304/A276		
3 Standard Vee Stem	SS316/A276 Hard Chrome-plated on stem tip and threads		Alloy R-405
	SS316/A276 Hard Chrome-plated on threads		
	Kel-F		
4 Packing Nut	SS316/A276	Brass/B16	Alloy R-405/B164
5 Packing	Standard PTFE, Optional PEEK		
6 Packing Gland	SS316/A276	Brass/B16	Alloy R-405/B164
7 Panel Nut	SS316/A276	Brass/B16	SS316/A276
8 Body	SS316/A182	Brass/B283	Alloy 400/B564

Wetted parts and lubricant are listed in blue.

Lubrication: Molybdenum disulfide with hydrocarbon coating

## Design

- Designed to the requirements of ASME B16.34
- Designed for a wide range of general purpose in gas and liquid applications
- Forged Body with Inline and Angle pattern
- Integral Bonnet design to eliminate inadvertent stem back-out
- Standard metal seal for pressure tightness at elevated temperatures
- Standard PTFE packing, and optional PEEK packing for higher temperature service
- Packing nut allows external packing adjustment to ensure leak-free packing on stem
- Broad choices of end connections include reliable DK-LOK, NPT & ISO Male & Female pipe threads

### Operation

- Pressure rating up to 5000psig (345bar) @100°F (38°C)
- Temperature rating up to 450°F (232°C) with standard PTFE packing; up to 600°F (315°C) with optional PEEK packing
- Panel mounting without packing disruption
- Standard SS316 and Brass material valve construction
- DK-LOK®Gap gauge allows easy inspection for sufficient tube pull-up before a system is pressurized
- Valves for Sour Gas Service meeting the requirements of NACE MR0175 are available

### Factory Test

Every valve is tested with the nitrogen @1000psig (68bar) for leakage at the seat to a maximum allowable leak rate of 0.1 SCCM. The packing is tested for no detectable leakage.

### Panel Mounting

How to mount on panel.



Panel Nut

Panel hole drill and thickness		mm (inch)	
Valve Series	Panel Hole Drill	Panel Thickness	
		Min.	Max.
V15A	13.5 (0.53)	3.17 (0.12)	6.35 (0.25)
V15B	13.5 (0.53)		
V15C	20.0 (0.78)		
V15D	26.2 (1.03)		

2. Remove the packing nut & panel nut and set aside for later use.
3. Place the valve bonnet in the panel hole.

#### Reassembly

4. Tighten the panel nut onto the valve bonnet.  
Keep the panel nut always on the external portion of the panel.
5. Finger tighten the packing nut onto the valve body.
6. Place the handle on the stem. Align the set screw with the groove on the side of the stem. Tighten the set screw.
7. Fully close the valve and retract the stem two or three turns before torque the packing nut to the torque value below.

#### Disassembly

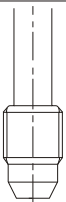
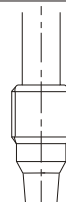
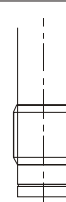
1. Loosen the handle set screw using an allen key and remove the handle

• Handle Set Screw Allen Key

Valve Series	Allen Key	
	Round Handle	Bar Handle
V15A & V15B	Hex. 2.5mm	Hex. 4.0mm
V15C	Hex. 3.0mm	
V15D		Hex. 5.0mm

Valve Series	Torque	
	lbf.ft	kgf.cm
V15A, V15B	5.2	71
V15C	10.6	146
V15D	25.1	347

### Choice of Stem Tip

Vee Stem	Regulating Stem	Soft seat
		
Metal to metal Vee stem for pressure tightness at elevated temperature.	Regulating stem for flow rate control	KEL-F soft seat for repetitive shut-off on gas. • Round Handle is recommended for soft seat valve.

Note: Soft seat packing adjustment may be required during service to compensate the physical compression of soft seat after repeated shut-off.

## Ordering Information and Table of Dimensions



Valve Basic Ordering Number	End Connections		Orifice	Cv	Dimensions													
	Inlet	Outlet			A	B	L	L1	L2	E	D	H	H1					
V15 A	F-2N-	1/8 in. Female NPT	2.0 (.08)	0.09	60 (2.36)	21 (.83)	42 (1.65)	21(.83)		9.5 (.37)	11 (.43)	36 (1.42)	32 (1.26)					
	M-2N-	1/8 in. Male NPT						21 (.83)	20(.79)									
	MD-2N2T-	1/8 in. Male NPT						1/8" Dk-Lok	47(1.85)					26(1.02)				
	D-2T-	1/8 in. Dk-Lok						26 (1.02)	52 (2.05)					26 (1.02)				
	D-3M-	3mm Dk-Lok																
V15 B	F-2N-	1/8 in. Female NPT	4.3 (.17)	0.37	60 (2.36)	21 (.83)	42 (1.65)	21(.83)		9.5 (.37)	11 (.43)	36 (1.42)	45 (1.77)					
	M-2N-	1/8 in. Male NPT						25 (.98)	25(.98)									
	M-4N-	1/4 in. Male NPT						50(1.97)	25 (.98)					25(.98)				
	MD-4N4T-	1/4 in. Male NPT						1/4" Dk-Lok	54(2.13)					28.8 (1.13)				
	D-6M-	6mm Dk-Lok						29 (1.14)	57.6 (2.27)					28.8 (1.13)				
	D-4T-	1/4 in. Dk-Lok						30(1.18)	59.2(2.33)					29.6(1.16)				
	D-8M-	8mm Dk-Lok																
V15 C	F-4N-	1/4 in. Female NPT	6.4 (.25)	0.73	71 (2.80)	28 (1.10)	56 (2.20)	28 (1.10)	28 (1.10)	13 (.51)	13.5 (.53)	50 (1.97)	64 (2.52)					
	F-4R-	1/4 in. Female ISO Tapered												61.2(2.41)	33.2(1.31)			
	MF-4N-	1/4 in. Male NPT												1/4" Female NPT	58(2.28)	29(1.14)		
	MD-4N6T-	1/4 in. Male NPT												3/8" Dk-Lok	29 (1.14)	62.2(2.45)	29(1.14)	33.2(1.31)
	M-6N-	3/8 in. Male NPT												3/8" Dk-Lok	65(2.56)	36(1.42)		
	MD-6N6T-	3/8 in. Male NPT												3/8" Dk-Lok	33 (1.30)	66 (2.60)	33.2 (1.31)	33.2 (1.31)
	MD-6N8T-	3/8 in. Male NPT												1/2" Dk-Lok	36 (1.42)	72 (2.83)	36 (1.42)	36 (1.42)
	D-10M-	10mm Dk-Lok																
	D-6T-	3/8 in. Dk-Lok																
	D-12M-	12mm Dk-Lok																
	D-8T-	1/2 in. Dk-Lok																
V15 D	F-6N-	3/8 in. Female NPT	9.5 (.375)	1.80	99 (3.90)	38 (1.50)	76 (2.99)	38 (1.50)	38 (1.50)	19 (.75)	19 (.75)	66 (2.06)	76 (3.00)					
	F-6R-	3/8 in. Female ISO Tapered																
	F-8N-	1/2 in. Female NPT																
	F-8R-	1/2 in. Female ISO Tapered																
	M-8N-	1/2 in. Male NPT																
	MF-8N-	1/2 in. Male NPT												1/2" Female NPT				
	D-8T-	1/2 in. Dk-Lok																
	D-12T-	3/4 in. Dk-Lok												49 (1.93)	97 (3.82)	48.5 (1.91)		

All dimensions shown are for reference only and are subject to change. Dimensions with DK-LOK nuts are in finger-tight position.  
 Patterns: To order angle pattern, use -A as a suffix to the valve ordering number. Example : V15A-F-2N-A

## Technical Data

### Working pressure

The class rating and rated working pressure are the way that ASME standards simplify the design process. The pressure rating is governed by the allowable stress of different material group, class rating, and service temperature.

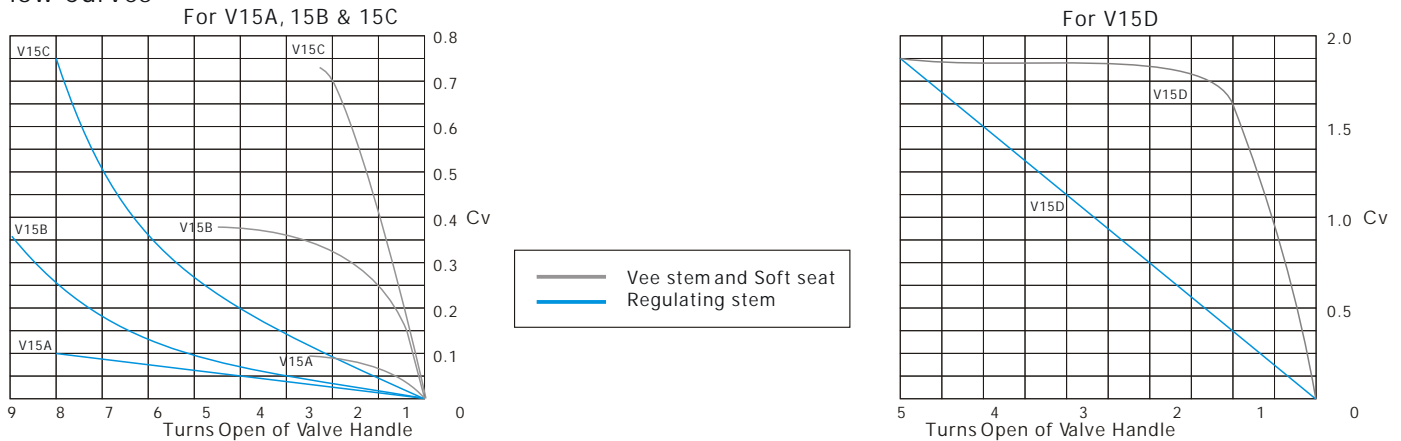
ASME Material Group	TABLE 2-2.2		N/A		TABLE 2-3.4	
Material Name	SS316		Brass		Alloy 400	
ASME CLASS Rating	2080		N/A		1500	
Temperature @ pressure	psig	bar	psig	bar	psig	Bar
-65°F (-54°C) to	100°F (38°C)	5000	345	3000	207	206
	200°F (93°C)	4293	296	2353	162	181
	300°F (148°C)	3877	267	2059	142	170
	350°F (176°C)	3719	256	1471	101	167
	400°F (204°C)	3562	246	392	27	2390
450°F (232°C)	3437	237	-	-	2380	163

Note : Pressure rating of valve is sometimes limited to the working pressure of pipe ends and the tubing connected.  
 Refer to DK-LOK Tube Fitting catalog for the details of working pressures in various tubing sizes, materials and wall thickness.

### Temperature and Pressure Rating with standard PTFE and Optional PEEK packing

Valve Material	Stem	with PTFE packing		with PEEK packing	
		Temperature Rating °F (°C)	Pressure Rating @100°F (38°C)	Temperature Rating °F(°C)	Pressure Rating @100°F (38°C)
SS316	Metal to metal (Vee & Regulating)	-65 to 450 (-54 to 232)	5000 psig (345 bar)	-65 to 600 (-54 to 315)	3130 psig (215 bar)
	Soft Seat (Kel-F)	-65 to 200 (-54 to 93)		-65 to 200 (-54 to 93°C)	
Brass	Metal to metal (Vee & Regulating)	-65 to 400 (-54 to 204)	3000 psig (207 bar)	-65 to 400 (-54 to 204)	3000 psig (207 bar)
	Soft Seat (Kel-F)	-65 to 200 (-54 to 93)		-65 to 200 (-54 to 93)	
Alloy 400	Metal to metal (Vee & Regulating)	-65 to 450 (-54 to 232)	3000 psig (207 bar)	-65 to 500 (-54 to 260)	2370 psig (162 bar)
	Soft Seat (Kel-F)	-65 to 200 (-54 to 93)		-65 to 200 (-54 to 93)	

### Flow Curves



### How to order

Select applicable Valve Pattern, Stem Tip, Handle and Body material from designators listed below.

V15B-F-2N  
V15B-F-2N



Valve Pattern	Stem Packing Designator	Stem Designator	Handle Designator	Body Material Designator
<ul style="list-style-type: none"> <li>• Nil : Inline pattern</li> <li>• A : Angle pattern</li> </ul>	<ul style="list-style-type: none"> <li>• Nil : Standard PTFE</li> <li>• PK : PEEK</li> </ul>	<ul style="list-style-type: none"> <li>• Nil : Standard Vee stem tip</li> <li>• R : Regulating tip</li> <li>• K : Kel-F Soft seat</li> </ul>	<ul style="list-style-type: none"> <li>• Nil : Nylon Round Handle</li> <li>• BH : Bar Handle</li> </ul>	<ul style="list-style-type: none"> <li>• S : SS316</li> <li>• B : Brass</li> <li>• M : Alloy 400</li> </ul>
<p><b>Handle for Soft Seat</b> Round Handle is recommended for soft seat valve to prevent the soft seat from damage.</p>				

We reserve the right to change specifications stated in this catalog for our continuing program of improvement.

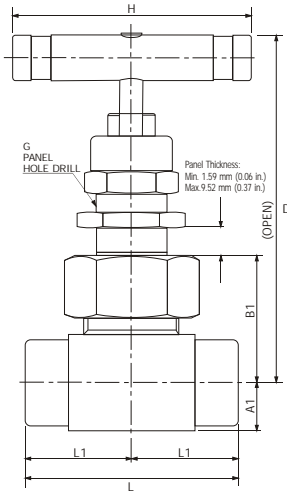
### Safe Valve Selection

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 remain the sole responsibility of the system designer and the user. Dk Tech accepts no liability for any improper selection, installation, operation or maintenance.

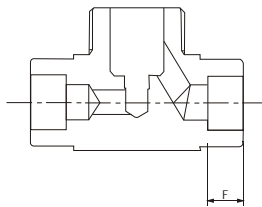
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	<p>Mailing Address 826, Naesam-Ri, Juchon-Myeon, Gimhae-City, Gyeong Nam, Korea 621-841</p>			

Ordering Information and Dimensions

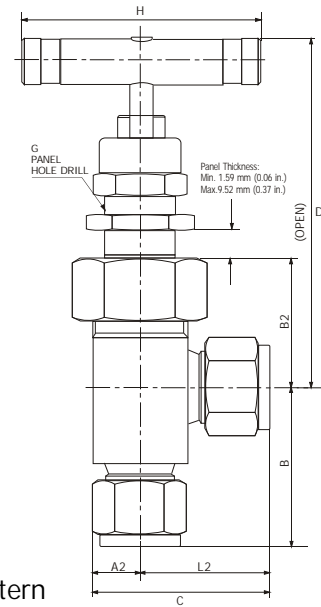
■ In-line pattern



■ Socket weld end



■ Angle pattern



Basic Ordering Number	End Connections		Orifice mm (in.)	Cv	Dimensions mm (inch)													
	Inlet	Outlet			L	L1	L2	B	C	B1	B2	A1	A2	H	G	D	D1	F
V16A-	F-2N-	1/8 Female NPT	4.0 (0.156)	0.35	50.8(2.00)	25.4(1.00)	22.6(0.89)	25.4(1.00)	32.3(1.27)	27.7(1.09)	32.5(1.28)	9.7(0.38)	9.7(0.38)	44.4(1.75)	15.1(19/32)	77.2(3.04)	82.0(3.23)	-
	F-4N-	1/4 Female NPT			52.3(2.06)	26.2(1.03)	22.6(0.89)	25.4(1.00)	32.3(1.27)	27.7(1.09)	32.5(1.28)	9.9(0.39)	9.7(0.38)	44.4(1.75)	15.1(19/32)	77.2(3.04)	82.0(3.23)	-
	M-4N-	1/4 Male NPT			50.8(2.00)	25.4(1.00)	25.4(1.00)	25.4(1.00)	35.1(1.38)	27.7(1.09)	27.7(1.09)	9.7(0.38)	9.7(0.38)	44.4(1.75)	15.1(19/32)	77.2(3.04)	77.2(3.04)	-
	MF-4N-	1/4 Male to Female NPT			51.6(2.03)	26.2(1.03)	22.6(0.89)	25.4(1.00)	32.3(1.27)	27.7(1.09)	32.5(1.28)	9.9(0.39)	9.7(0.38)	44.4(1.75)	15.1(19/32)	77.2(3.04)	82.0(3.23)	-
	D-6M-	6mm Dk-Lok			61.0(2.40)	30.5(1.20)	29.5(1.16)	37.6(1.48)	39.1(1.54)	27.7(1.09)	27.7(1.09)	9.7(0.38)	9.7(0.38)	44.4(1.75)	15.1(19/32)	77.2(3.04)	77.2(3.04)	-
	D-4T-	1/4 Dk-Lok			61.0(2.40)	30.5(1.20)	29.5(1.16)	37.6(1.48)	39.1(1.54)	27.7(1.09)	27.7(1.09)	9.7(0.38)	9.7(0.38)	44.4(1.75)	15.1(19/32)	77.2(3.04)	77.2(3.04)	-
	SW-4T-	1/4 TSW			46.2(1.82)	23.1(0.91)	22.4(0.88)	30.2(1.19)	31.8(1.25)	27.7(1.09)	27.7(1.09)	9.7(0.38)	9.7(0.38)	44.4(1.75)	15.1(19/32)	77.2(3.04)	77.2(3.04)	7.1(0.28)
	D-8M-	8 mm Dk-Lok			61.0(2.40)	30.5(1.20)	-	-	-	27.7(1.09)	-	9.7(0.38)	-	44.4(1.75)	15.1(19/32)	77.2(3.04)	-	-
V16B-	F-4N-	1/4 Female NPT	6.4 (0.25)	0.86	57.2(2.25)	28.4(1.12)	25.4(1.00)	28.4(1.12)	38.1(1.50)	34.0(1.34)	37.3(1.47)	12.7(0.50)	12.7(0.50)	63.5(2.50)	19.8(25/32)	94.0(3.70)	97.0(3.82)	-
	F-6N-	3/8 Female NPT			57.2(2.25)	28.4(1.12)	25.4(1.00)	28.4(1.12)	38.1(1.50)	34.0(1.34)	37.3(1.47)	12.7(0.50)	12.7(0.50)	63.5(2.50)	19.8(25/32)	94.0(3.70)	97.0(3.82)	-
	D-10M-	10mm Dk-Lok			72.4(2.85)	36.1(1.42)	33.0(1.30)	39.4(1.55)	45.7(1.80)	34.0(1.34)	34.3(1.35)	12.7(0.50)	12.7(0.50)	63.5(2.50)	19.8(25/32)	93.7(3.69)	94.2(3.71)	-
	D-6T-	3/8 Dk-Lok			71.9(2.83)	35.8(1.41)	32.8(1.29)	42.2(1.66)	45.5(1.79)	34.0(1.34)	31.0(1.22)	12.7(0.50)	12.7(0.50)	63.5(2.50)	19.8(25/32)	94.0(3.70)	90.7(3.57)	-
	D-12M-	12mm Dk-Lok			77.2(3.04)	38.6(1.52)	35.6(1.40)	41.9(1.65)	48.3(1.90)	34.0(1.34)	34.0(1.34)	12.7(0.50)	12.7(0.50)	63.5(2.50)	19.8(25/32)	94.0(3.70)	94.0(3.70)	-
	D-8T-	1/2 Dk-Lok			77.2(3.04)	38.6(1.52)	35.6(1.40)	41.9(1.65)	48.3(1.90)	34.0(1.34)	34.0(1.34)	12.7(0.50)	12.7(0.50)	63.5(2.50)	19.8(25/32)	94.0(3.70)	94.0(3.70)	-
	SW-4P-	1/4 PSW			57.2(2.25)	28.4(1.12)	25.4(1.00)	28.4(1.12)	38.1(1.50)	34.0(1.34)	37.3(1.47)	12.7(0.50)	12.7(0.50)	63.5(2.50)	19.8(25/32)	94.0(3.70)	97.0(3.82)	9.7(0.38)
	SW-6T-	3/8 TSW			57.2(2.25)	28.4(1.12)	25.4(1.00)	31.8(1.25)	38.1(1.50)	34.0(1.34)	34.0(1.34)	12.7(0.50)	12.7(0.50)	63.5(2.50)	19.8(25/32)	94.0(3.70)	94.0(3.70)	7.9(0.31)
	SW-8T-	1/2 TSW			57.2(2.25)	28.4(1.12)	25.4(1.00)	25.4(1.00)	38.1(1.50)	34.0(1.34)	35.6(1.40)	12.7(0.50)	12.7(0.50)	63.5(2.50)	19.8(25/32)	94.0(3.70)	95.5(3.76)	9.7(0.38)
V16C-	F-8N-	1/2 Female NPT	11.1 (0.437)	2.20	79.2(3.12)	39.6(1.56)	33.3(1.31)	39.6(1.56)	50.8(2.00)	46.2(1.82)	50.8(2.00)	15.7(0.62)	17.5(0.69)	88.9(3.50)	26.2(1-1/32)	121(4.78)	126(4.97)	-
	F-12N-	3/4 Female NPT			82.6(3.25)	41.1(1.62)	-	-	-	48.5(1.91)	-	19.8(0.78)	-	88.9(3.50)	26.2(1-1/32)	124(4.88)	-	-
	F-16N-	1" Female NPT			91.9(3.62)	46.0(1.81)	-	-	-	54.1(2.13)	-	25.4(1.00)	-	88.9(3.50)	26.2(1-1/32)	129(5.10)	-	-
	MF-8N-	1/2 Male to Female NPT			79.2(3.12)	39.6(1.56)	33.3(1.31)	39.6(1.56)	50.8(2.00)	46.2(1.82)	50.8(2.00)	15.7(0.62)	17.5(0.69)	88.9(3.50)	26.2(1-1/32)	121(4.78)	126(4.97)	-
	MF-12N-	3/4 Male to Female NPT			82.6(3.25)	41.1(1.62)	-	-	-	48.5(1.91)	-	19.8(0.78)	-	88.9(3.50)	26.2(1-1/32)	124(4.88)	-	-
	MF-16N-	1" Male to Female NPT			91.9(3.62)	46.0(1.81)	-	-	-	54.1(2.13)	-	25.4(1.00)	-	88.9(3.50)	26.2(1-1/32)	129(5.10)	-	-
	D-12M-	Dk-Lok 12mm			99.6(3.92)	49.8(1.96)	42.7(1.68)	52.8(2.08)	60.2(2.37)	46.2(1.82)	47.8(1.88)	15.7(0.62)	17.5(0.69)	88.9(3.50)	26.2(1-1/32)	121(4.78)	123(4.85)	-
	D-8T-	1/2 Dk-Lok			99.6(3.92)	49.8(1.96)	42.7(1.68)	52.8(2.08)	60.2(2.37)	46.2(1.82)	47.8(1.88)	15.7(0.62)	17.5(0.69)	88.9(3.50)	26.2(1-1/32)	121(4.78)	123(4.85)	-
	D-12T-	3/4 Dk-Lok			99.6(3.92)	49.8(1.96)	42.7(1.68)	52.8(2.08)	60.2(2.37)	46.2(1.82)	47.8(1.88)	15.7(0.62)	17.5(0.69)	88.9(3.50)	26.2(1-1/32)	121(4.78)	123(4.85)	-
	D-16T-	1 Dk-Lok			104(4.09)	51.8(2.04)	-	-	-	47.8(1.88)	-	17.5(0.69)	-	88.9(3.50)	26.2(1-1/32)	121(4.78)	123(4.85)	-
	SW-8P-	1/2 PSW			79.2(3.12)	39.6(1.56)	33.3(1.31)	39.6(1.56)	50.8(2.00)	47.8(1.88)	50.8(2.00)	17.5(0.69)	17.5(0.69)	88.9(3.50)	26.2(1-1/32)	123(4.85)	126(4.97)	9.7(0.38)
	SW-8T-	1/2 TSW			79.2(3.12)	39.6(1.56)	33.3(1.31)	42.9(1.69)	50.8(2.00)	46.2(1.82)	47.8(1.88)	15.7(0.62)	17.5(0.69)	88.9(3.50)	26.2(1-1/32)	121(4.78)	123(4.85)	9.7(0.38)
SW-12T-	3/4 TSW	79.2(3.12)	39.6(1.56)	-	-	-	46.2(1.82)	-	15.7(0.62)	-	88.9(3.50)	26.2(1-1/32)	121(4.78)	-	11.2(0.44)			

All dimensions shown are for reference only and are subject to change. Dimensions with Dk-Lok nuts are in finger-tight position.

- Non-rotating globe pattern stem providing repetitive leak tight shut-off is standard.
- To order Angle Pattern, use A as a suffix to the basic ordering number. Refer to the ordering information.

### Class Ratings

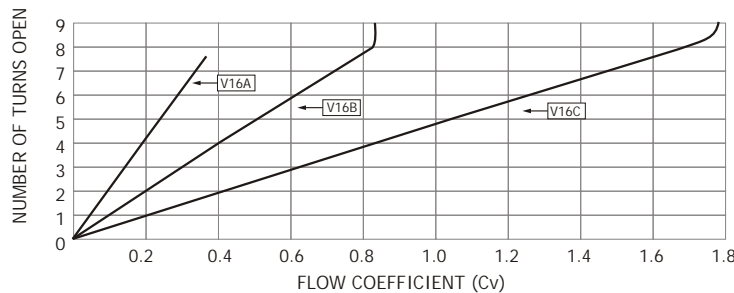
Material groups, Class ratings, and Temperatures are based on ASME codes. The class rating and the pressure rating represent two different design data. Please contact Dk-Lok distributor for further details. Valve minimum wall thickness and additional thickness are determined by ASME codes.

ASME Class	2500		
Material Group	2.2	3.1	3.8
Material Name	S316	Alloy 20	C276
Temperature	Working pressure, psig (bar)		
-65 to 100°F (-53 to 38°C)	6000 (413)	5000 (344)	6000 (413)
200°F (93°C)	5160 (355)	4350 (299)	6000 (413)
300°F (148°C)	4660 (321)	4080 (281)	6070 (418)
400°F (204°C)	4280 (294)	4080 (281)	5880 (405)
500°F (260°C)	3980 (274)	4080 (281)	5540 (381)
600°F (315°C)	3760 (259)	4080 (281)	5040 (347)
650°F (343°C)	3700 (254)	4080 (281)	4950 (347)

#### Valve ratings with Dk-Lok end connections

Valve ratings may be limited to the maximum working pressure of pipe ends and tubing connected. For valve rating with Dk-Lok Tube Fitting end connections, please refer to Dk-Lok catalog providing suggested working pressures for various tubing ODs, materials and wall thicknesses.

### Flow Data @ 38°C (100°F) for valves with regulating stem



#### Non-Rotating Globe Stem Flow Data

Non-rotating globe stem is designed for use in a fully open or fully closed position. Refer to Cv of Globe Stem in the ordering information and dimensions on Page 2.

#### Cv reduction

Valve flow may be reduced by the restriction of pipe and tubing connected.

### Valve Ratings with optional Stem Packing

Valves with Optional packing may affect the valve rating depending on the valve material. Table below provides the rating of valves with optional packing materials. To order valves with factory-assembled optional packing, use the packing material designator from the table below as a suffix. Refer to ordering information on Page 4.

#### Grafoil information

- Grafoil is a high temperature packing material that requires a load on the material to generate a seal. Grafoil packing is not for use with pneumatic actuating valves.
- In air, Grafoil maximum temperature is 523°C (973°F), in steam, Grafoil goes up to the maximum temperature of 648°C (1200°F).

Stem Packing Material	Packing Material Designator	Valve Material	Temperature Rating	Pressure rating @ max. Temperature* psig (bar)
Standard PTFE	-PE	S316	-53 to 232°C (-65 to 449°F)	3980 (274)
		Alloy 20	-53 to 232°C (-65 to 449°F)	4080 (281)
		Alloy C276	-53 to 232°C (-65 to 449°F)	5540 (381)
Optional PEEK	-PK	S316	-53 to 300°C (-65 to 572°F)	3760 (259)
		Alloy 20	-53 to 300°C (-65 to 572°F)	4080 (281)
		Alloy C276	-53 to 300°C (-65 to 572°F)	5040 (347)
Optional Grafoil	-GF	S316	-53 to 648°C (-65 to 1200°F)	1545 (106)
		Alloy 20	-53 to 423°C (-65 to 793°F)	4080 (281)
		Alloy C276	-53 to 648°C (-65 to 1200°F)	1545 (106)

- Pressure at the maximum temperature is based on ASME B16.34

**Sour Gas Valves**

Cracking of low or high strength materials in the presence of hydrogen sulfide and water in combination with a tensile stress is called sulfide stress cracking (SSC). For use valves in sour gas, materials for wetted components are selected to NACE MR0175.

To order, use designator -SG as a suffix to the basic ordering number.



**Optional Handles**

SS316 bar handles are standard. Optional anodized black aluminum bar handles are available.

To order valves with factory-assembled optional handle, use designator AH. Refer to ordering information below

To order handle for field assembly, select desired handle ordering number from the table below. i.e., V16A-AH

Valve Series	Handle Ordering Number for Field Assembly	
	Standard SS316 Bar Handle	Aluminum Bar Handle Black Anodized
V16A	V16A-BH	V16A-AH
V16B	V16B-BH	V16B-AH
V16C	V16C-BH	V16C-AH

**Ordering Information**

Select the desired valve basic ordering number, pattern, options and body material.





V16B-D-6T-						A
V16C-MF-12N-						
	-GF		-R		-AH	
					-SG	
						-S
						-L20
Body Pattern Designator	Packing Material Designator	Stem Designator	Handle Designator	Sour Gas Designator	Valve material Designator	
-Nil: In-line Pattern -A: Angle Pattern	-Nil: PTFE -PK: PEEK -GF: Grafoil*	-Nil: Globe Pattern -AH: Regulating Stem	-Nil: SS316 bar handle -AH: Aluminum Bar Handle Black Anodized	-Nil: no Sour Gas -SG: Sour Gas	-S: SS316 -L20: Alloy 20 -HC: Alloy C276	

\* Grafoil TM UCAR

We reserve the right to change the specifications stated in this catalog for our continuing program of improvement.

**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 remain the sole responsibility of the system designer and the user. Dk Tech accepts no liability for any improper selection, installation, operation or maintenance.

 <p><b>THE POWER OF RELIABILITY</b> DK TECH CORPORATION www.dklok.com</p>	DK TECH Trademarks		<p>DK TECH contact information</p> <p>Tel. (82) 55-338-0114</p> <p>Fax. (82) 55-338-6745</p> <p>E-mail: sales@dklok.com</p>	<p>For International customers</p> <p>Tel. (82) 55-338-0031/2</p> <p>Fax. (82) 55-338-6746</p> <p>E-mail: dklok@dklok.com</p>
	  	<p>Mailing Address</p> <p>826, Naesam-Ri, Juchon-Myeon, Gimhae-City, Gyeong Nam, Korea 621-841</p>		



## Features

Two-piece chevron-style PTFE stem packing design with compensating disc springs

- reduces packing friction wear
- reduces valve operating torque
- reduces load to seal

Packing is supported by lower and upper Glands as well as compensating disc springs

- reduces need for packing adjustment

## Temperature and Pressure Ratings

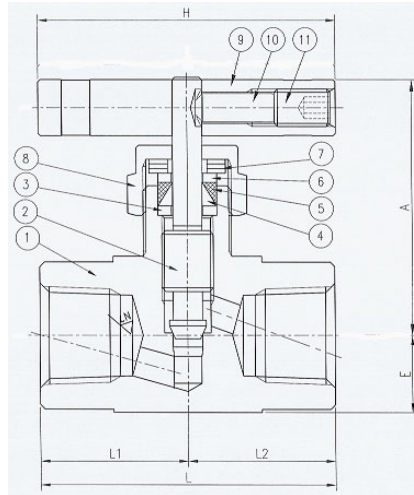
Ratings are based on valves with PFA chevron packing.

Valve Series	Stem	Temperature Rating °C (°F)	Pressure Rating At 38 °C (100°F)
V16A	Vee	-53 to 232 (-65 to 450)	413 bar (6000 psi)
V16B	PCTFE Soft Seat	-53 to 93 (-65 to 200)	

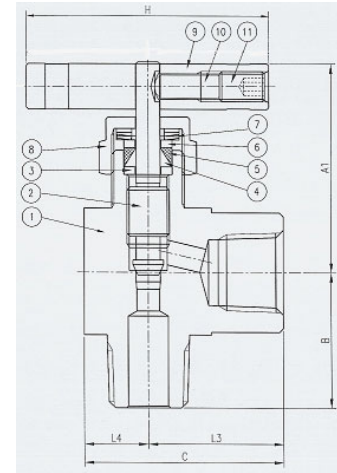
## Material of Construction

No.	Component	Material
1	Body	S316L
2	Stem	S316L
3	Lower Gland	S316L
4	Lower Packing	PTFE
5	Upper Packing	PTFE
6	Upper Gland	S316L
7	Packing Springs	17-7PH
8	Gland Nut	S316L
9	Bar Handle	S316
10	Locking Pin	S316
11	Set Screw	S316

Inline pattern



Angle pattern

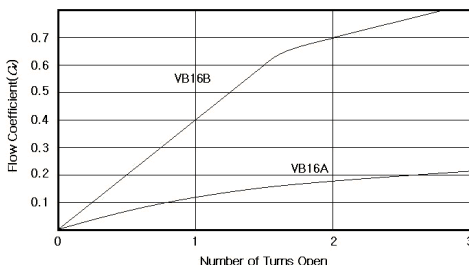


## Ordering Information and Table of Dimensions

Unit: mm (in.)

Valve	End Connection		Dimensions, mm (inch)														
	Ordering Number	Inlet	Outlet	A	A1	E	B	L	L1	L2	C	L3	D	H			
VB16A- Cv 0.21 Orifice: 3.2mm (0.125 in.)	F-4N	1/4" Female NPT		41.7 (1.64)	42.2 (1.66)	11.2 (0.44)	25.4 (1.00)	47.8 (1.88)	23.9 (0.94)		36.6 (1.44)	25.4 (1.00)	10.7 (0.42)	44.4 (1.75)			
	M-4N	1/4" Male NPT						49.3 (1.94)	24.6 (0.97)								
	F-4R	1/4" Female ISO 7/1						47.8 (1.88)	23.9 (0.94)								
	MF-4N	1/4" Male NPT	1/4" Female NPT			26.2 (1.03)		48.5 (1.91)	24.6 (0.97)	23.9 (0.94)	36.6 (1.44)	25.4 (1.00)					
	D-4T	1/4" Dk-Lok			42.2 (1.66)	11.2 (0.44)	29.5 (1.16)	62.5 (2.46)	31.2 (1.23)		39.9 (1.57)	28.7 (1.13)					
	MD-4N4T	1/4" Male NPT	1/4" Dk-Lok			25.4 (1.00)		-	-	-							
VB16B- Cv 0.73 Orifice: 6.4mm (0.250 in.)	F-6N	3/8" Female NPT		58.7 (2.31)	-	-	-	71.4 (2.81)	31.8 (1.25)		-	35.8 (1.41)	16.8 (0.66)	64.0 (2.52)			
	F-8N	1/2" Female NPT			58.7 (2.31)	16.8 (0.66)	35.8 (1.41)				52.3 (2.06)	31.8 (1.25)					
	F-8R	1/2" Female ISO 7/1										35.8 (1.41)					
	MF-6N	3/8" Male NPT	3/8" Female NPT		58.7 (2.31)	16.8 (0.66)	31.0 b (1.22)				64.8 (2.55)	33.0 (1.30)			31.8 (1.25)	52.3 (2.06)	35.6 (1.40)
	MF-8N	1/2" Male NPT	1/2" Female NPT				35.8 (1.41)				63.5 (2.50)	31.8 (1.25)					
	MF-12N8N	3/4" Male NPT	1/2" Female NPT								78.2 (3.08)	39.1 (1.54)					
	D-6T	3/8" Dk-Lok			-	-					83.8 (3.30)	41.9 (1.65)					
	D-8T	1/2" Dk-Lok															

Flow Coefficient at Turns Open



## Flow Data

Cv are measured at the valve. Therefore restrictions in end connections may reduce flow.

## Factory Test

Every valve is tested with the nitrogen @68 bar (1000 psig) for leakage at the seat to a maximum allowance leak rate of 0.1 scc/min. The stem packing is tested for no detectable leakage.

## Dk Tech Corporation

www.dklok.com  
www.dklokusa.com



# V46A series Hex. Body Needle Valves

Pressure rating up to 10 000 psig

Catalog No. V46A-1  
Aug. 2009

## Features

- **Packing bolt** permits packing adjustment externally.
- **Chevron PTFE packing** design provides far improved sealing integrity.
- **Packing** below stem threads is to isolate **threads** from system fluid and lubricant washout.
- **Non-rotating** stem tip at closure for long-life and leak-tight shutoff.
- **Lock plate** ensures the valve fastened to the body.
- **NACE** MR0175/ISO 15156-3 applicable.
- Designed to ASME B16.34 class 2500.

## Pressure-Temperature Ratings

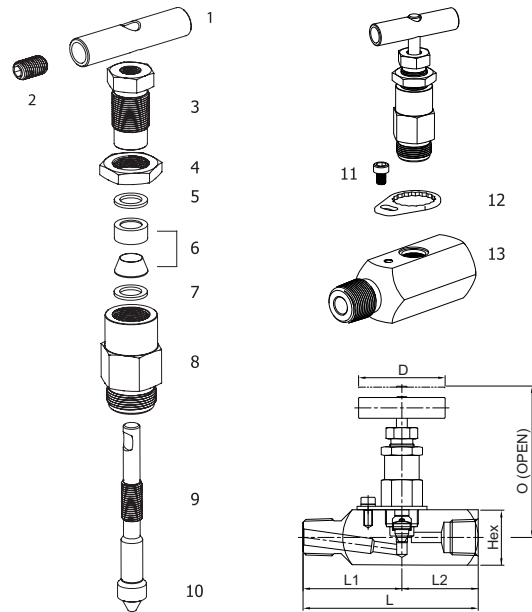
Body Material	Packing material	Temperature Rating	Pressure Rating @ 38 C (100 F)	Pressure Rating @ Max. Temp.
Stainless steel	PTFE	- 54 to 232 °C (-65 to 450 °F)	689 bar (10 000 psig)	285 bar@232 °C 4130 psig@450 °F
	Grafoil	-54 to 648 °C (-65 to 1200 °F)		118 bar@648 °C 1715 psig @ 1200 °F
Carbon steel	PTFE	- 29 to 176 °C (-20 to 350F)	689 bar (10 000 psig)	360 bar @ 176 °C (5230 psig @ 350 °F)
	Grafoil	- 29 to 176 °C (-20 to 350°F)		

## Materials of Construction

Component	Valve Body Materials	
	Stainless Steel	Carbon steel
	<b>Grade/ASTM Specification</b>	
1. Handle	Stainless Steel	Carbon steel
2. Set screw		Carbon steel
3. Packing bolt	SS316/A276 or A479	C.Steel/JIS G4051
4. Lock nut		
5. Upper gland		SS316/A276 or A479
6. Packing	Standard chevron PTFE packing. Optional Grafoil.	
7. Lower gland	SS316/A276 or A479	SS316/A276 or A479
8. Bonnet		C.Steel/JIS G4051
9. Stem		SS316/A276 or A479
10. Non-rotating stem disc	SS630/A564	
11. Lock bolt	Stainless steel	
12. Lock plate		
13. Body	SS316/A276 or A479	C.Steel/ JIS G4051, White zinc galvanized.

Wetted components listed in blue.

Grafoil: TM UCAR



## Ordering Information and Dimensions

Basic Ordering No.	End Connection		Orifice in. (mm)	CV	Dimensions inch (mm)						
	Inlet	Outlet			L	L1	L2	Hex	D	O	
V46A-	F4N-	1/4 Female NPT	0.185 (4.7)	0.83	3.00 (76.2)	1.50 (38.1)	1.50 (38.1)	1.25 (31.75)	2.52 (64.0)	3.48 (88.5)	
	F6N-	3/8 Female NPT									
	F8N-	1/2 Female NPT									
	MF8N-	1/2 Male NPT			1/2 Female NPT	3.50 (88.9)	2.21 (56.1)				1.29 (32.8)
	MF12N8N-	1/2 Male NPT			1/2 Female NPT	2.00 (50.8)	1.50 (38.1)				

Dimensions shown are for reference only and subject to change.

## How to order

- To complete ordering number, add material designator **S** for stainless steel or **C** for carbon steel. Example V46A-F8N-**S**
- To order optional Grafoil packing, insert **GF** to the ordering number. Example V46A-F8N-**GF-S**
- To order NACE applicable valve, insert **SG** to the ordering number. Example V46A-F8N-**GF-SG-S**



## Factory test, cleaning and packaging

- Every valve is factory tested with nitrogen @ 69 bar (1000 psig) for leakage at the seat to a maximum allowable leak rate of 0.1 SCCM.
- Stem packing is tested for no detectable leakage.
- Every valve is cleaned and packaged in accordance with DK Tech Corporation cleaning standard DC-01. Optional DC-11 cleaning for oxygen application is available on request.

## Packing adjustment and Actuation Torque

- Extreme or rapid temperature cycle while valve in service may require packing adjustment.
- Valves that have not been actuated for a period of time may have a higher initial actuation torque.

## 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 Remain the sole responsibility of the system designer and the user. Dk Tech accepts no liability for any improper selection, installation, operation or maintenance.





# VEX110 Needle Valves

Bar Stock Union Bonnet High Pressure Needle Valve  
 Maximum Working Pressure 10 000 psig (689 bar)

Spec. sheet #: VEX110-6

September, 2004

## Features

- Premium multiple four (4) sealing mechanism.
- Unique pressure reacting sealing system eliminates the need of packing adjustment.
- Sealing cup swells up in system pressure for leak-tight operation.
- Backseat stem design prevents stem blowout.
- High precision machining provides low valve operating torque.
- Stem packing below the threads prevents thread lubricant washout and media contamination.

## Temperature and Pressure Ratings

Valve Material	Optional Valve O-ring Designator	Standard Sealing Cup Material	Temp. Rating °C (°F)	Pressure Rating @ 38 °C (100°F)
S316	KZ*	PEEK	- 30 ~ 250 (-22 ~ 482)	689 bar (10 000 psi)
	VT*		-30~204 (-22 ~399)	

\*KZ: Kalrez (Perfluoroelastomer), TM Dupont

\*VT: Viton (Vinylidene fluoride-based fluoroelastomer), TM Dupont

## Material of Construction

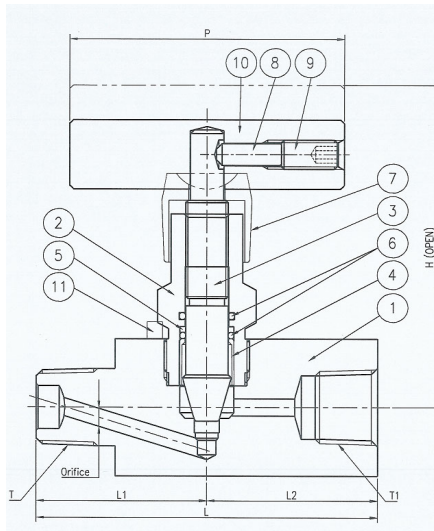
#	Component	Material / ASTM
1	Body	S316/ A479, A276
2	Bonnet	S316/ A479, A276
3	Stem	S316/ A479, A276
4	Sealing Cup	Standard
5	Packing	Polyetheretherketon-PEEK
6	Upper & Lower O-ring seal	Kalrez or Viton
7	Handle guide	Poly Oxy Methylene-Copolymer- POM C
8	Handle pin	S316/ A479, A276
9	Set screw	
10	Bar Handle	
11	Bonnet Locking Pin	

**Lubrication:** Molybdenum disulfide lubricant

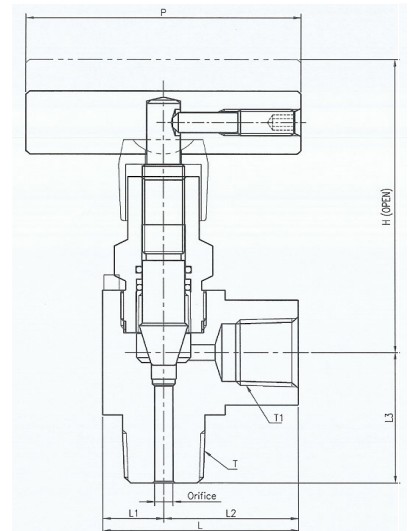
Note: 1. Wetted components are marked in blue.

2. Sealing system is marked in Red.

## In-line pattern



## Angle pattern



## Ordering Information and Table of Dimensions

Basic Ordering Number	End Connections		Orifice mm (in.)	Cv	Dimensions, mm (inch)						
	Inlet	Outlet			L	L1	L2	L3	H	P	
In-line pattern VEX110B-	MF-4N-*-S	1/4" Male NPT	1/4" Female NPT	4.76 (0.19)	0.75	88.9	44.45	44.45	-	90.0	71.5
	MF-6N-*-S	3/8" Male NPT	3/8" Female NPT			(3.5)	(1.75)	(1.75)	-	(3.54)	(2.81)
	MF-8N-*-S	1/2" Male NPT	1/2" Female NPT			-	-	-	-	-	-
Angle pattern VEX110B-	MF-4N-A-*-S	1/4" Male NPT	1/4" Female NPT			50.8	15.87	34.93	36.6	90.0	71.5
	MF-6N-A-*-S	3/8" Male NPT	3/8" Female NPT			(2.0)	(0.62)	(1.38)	(1.44)	(3.54)	(2.81)
	MF-8N-A-*-S	1/2" Male NPT	1/2" Female NPT			-	-	-	-	-	-

### \*Ordering information

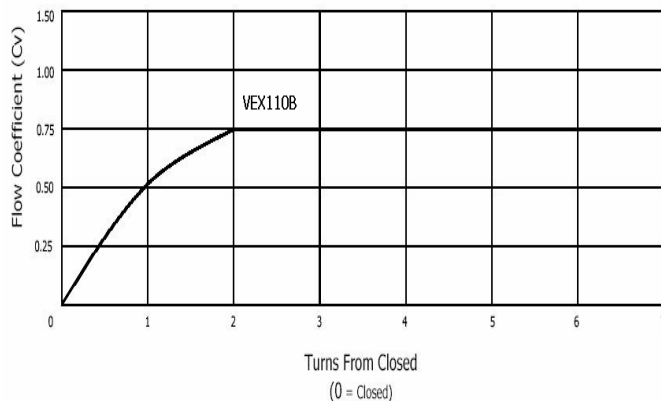
To order valve with Viton o-ring, insert the designator "VT" to the valve ordering number.

Example: VEX110B-MF-4N-VT-S.

To order valve with Kalrez o-ring, insert the designator "KZ" to the valve ordering number.

Example: VEX110B-MF-8N-A-KZ-S

## Flow Coefficient at Turns Open



## Flow Data

Cv is measured at the valve. Restrictions in end connections may reduce the flow.

## Factory Test

Every valve is tested with the nitrogen @ 68 bar (1000psig) at the seat to a maximum allowable leak rate of 0.1 scc/min. The packing is tested for no detectable leakage.



Model Shown: Angle Pattern VEX110B-MF-8N-A-VT-S



**DK Tech Corporation**  
[www.dklok.com](http://www.dklok.com)  
[www.dklokusa.com](http://www.dklokusa.com)

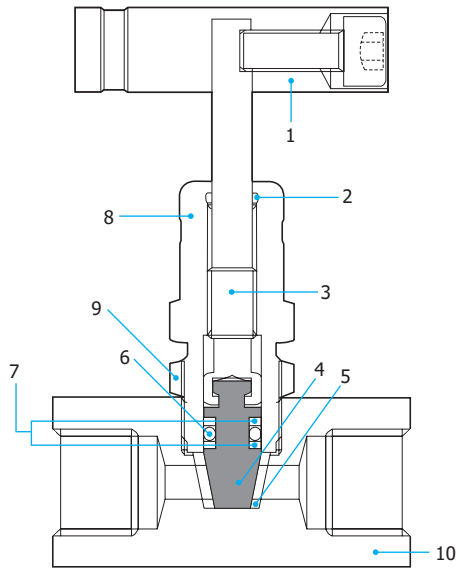


# V96 Series Rising Stem Plug Valves

Pressure Ratings up to 6000 psig (413 bar)

Catalog No. V96-4  
June 2008

## Features



- Bi-directional flow control.
- Straight-through orifice hence roddable for easy cleaning.
- Replaceable seat design: Acetal seat standard, optional PEEK and PFA.
- Non-rotating Stem Tip for positive sealing and maximum soft seat life.
- Internal bonnet O-ring protects threads from external contamination.
- Isolated threads located above sealing rings prevents media contamination and thread lubricant washout.

### Materials of Construction

Component	Grade/ASTM Specification
1. Handle, Set screw	SS316 / A276
2. Bonnet O-ring	FKM O-ring
3. Stem Shank	SS316 / A276, A479
4. Stem Tip	
5. Seat	Acetal/D4181, optional PEEK, PFA
6. Stem tip O-ring	FKM O-ring
7. Backup rings (2)	PTFE/D1710
8. Bonnet	SS316/A276
9. Locking nut	
10. Body	SS316/A276, A479

Wetted components are listed in blue.

#### Lubrication:

Fluorocarbon base on threads, silicone base on soft parts

## Technical Information

### Pressure-Temperature

Ratings are based on standard stem tip of FKM O-ring and PTFE backup rings.

Body Material	SS316		
	Acetal	PEEK	PFA
Seat			
Temperature °F (°C)	Working Pressure, psig (bar)		
-20 to 100 (-28 to 37)	6000 (413)	6000 (413)	750 (51.6)
200 (93)	2650 (182)	3000 (206)	625 (43.0)
250 (121)	1000 (68.9)	1600 (110)	450 (31.0)
300 (148)	-	1300 (89.5)	300 (20.6)
350 (176)	-	1200 (82.6)	200 (13.7)
400 (204)	-	1000 (68.9)	100 (6.8)

Valve with Acetal seat: For water and steam application, standard valve with Acetal seat is not recommended for application of greater than 200 °F (93 °C) temperature.

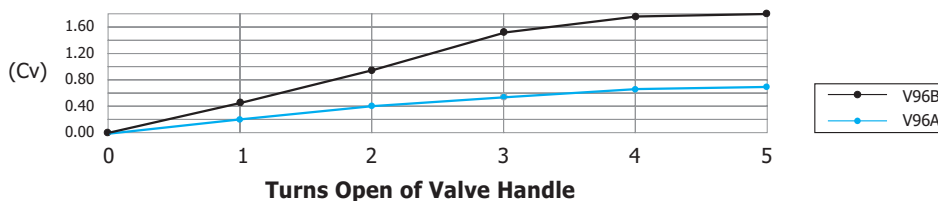
### Temperature Range

#### Optional O-ring materials

O-ring Material	Designator	Temperature Range °F (°C)
Buna C	BC	-65 to 250 (-53 to 121)
Buna N	BN	-20 to 250 (-28 to 121)
EPDM	EP	-20 to 250 (-28 to 121)
Kalrez	KZ	-20 to 400 (-28 to 204)

## Flow Efficiency at 100°F (37 °C)

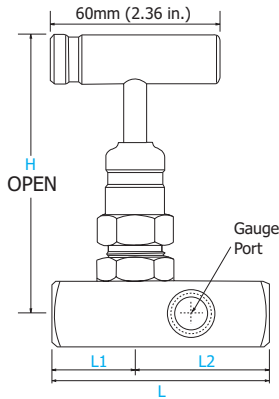
### Flow Curves



## Testing

Every valve is factory tested with the nitrogen gas @ 1000 psig (68 bar) for leakage at the seat to a maximum allowable leak rate of 0.1 SCCM. Stem seals are tested to a requirement of no detectable leakage using a liquid leak detector.

<p>Quality System Approvals</p>	<p>Dk-Lok Tube Fitting Certification Listing</p>	<p>D-Pro Valve Certification Listing</p>	<p>THE POWER OF RELIABILITY DK TECH CORPORATION www.dklok.com</p>
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### Gauge Port Valves

- V96A-G4 series
- V96B-G8 series



## Ordering information and Dimensions

Basic Ordering Number	End Connections		Orifice mm(in.)	Cv	Dimensions, mm(in.)			
	Inlet	Outlet			L	L1	L2	H
V96A-	F-4N	1/4 in. Female NPT		4.8 (0.187)	0.63	56.9 (2.24)	28.4 (1.12)	95.8 (3.77)
	MF-4N	1/4 in. Male NPT	1/4 in. Female NPT			73.4 (2.90)	45.2 (1.78)	
	MF-8N4N	1/2 in. Male NPT	1/4 in. Female NPT			76.5 (3.01)	48.0 (1.89)	
V96A-G4*-	F-4N	1/4 in. Female NPT				72.9 (2.87)	28.4 (1.12)	
	MF-8N4N	1/2 in. Male NPT	1/4 in. Female NPT			124 (4.87)	79.2 (3.12)	
V96B-	F-8N	1/2 in. Female NPT				6.4 (0.25)	1.8	
	MF-8N	1/2 in. Male NPT	1/2 in. Female NPT	88.6(3.49)	54.9 (2.16)			
	MF-12N8N	3/4 in. Male NPT	1/2 in. Female NPT	90.9 (3.58)	33.8 (1.33)			
V96B-G8*-	F-8N	1/2 in. Female NPT		142 (5.58)	84.6 (3.33)			
	MF-8N	1/2 in. Male NPT	1/2 in. Female NPT					
	MF-12N8N	3/4 in. Male NPT	1/2 in. Female NPT					

All dimensions shown are for reference only and are subject to change.

- V96A-G4\* gauge port: 1/4 in. Female NPT, V96B-G8\*: 1/2 in. Female NPT.
- Gauge port valves with pipe insulation extended body of 2.0 in. (50 mm) are listed in [blue](#).



### Panel Mounting option

Panel hole drill size 25/32 in. (19.8 mm), max. panel thickness 1/2 in. (12.7 mm).  
To order, add **-PM** as a suffix to the valve ordering number. Example: V96A-F-4N-**PM**

### Sour Gas Service option

Materials are selected in accordance with NACE standards.  
To order, add **-SG** as a suffix to the ordering number. Example: V96A-F-4N-**SG**

## How to order

Select desired valve basic ordering number, and applicable options from designators listed below.

**Example: V96A-F-4N**    **- PK**    **-EP**    **-PM**    **- SG**    **- S**

Seat Designator	Stem tip O-ring Designator	Panel mounting Designator	Sour Gas Designator	Body Material Designator
<ul style="list-style-type: none"> <li>• Nil: Acetal</li> <li>• PK: PEEK</li> <li>• PA: Teflon PFA</li> </ul>	<ul style="list-style-type: none"> <li>• Nil: FKM O-ring</li> <li>• EP: EPDM</li> <li>• KZ: Kalrez</li> <li>• BC: Buna C</li> <li>• BN: Buna N</li> </ul>	<ul style="list-style-type: none"> <li>• PM: Panel Mounting</li> </ul>	<ul style="list-style-type: none"> <li>• SG: Sour Gas</li> </ul>	<ul style="list-style-type: none"> <li>• S: SS316</li> </ul>

**We reserve the right to change specifications stated in this catalog for our continuing program of improvement.**

## 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 remain the sole responsibility of the system designer and the user. Dk Tech accepts no liability for any improper selection, installation, operation or maintenance.

<p><b>THE POWER OF RELIABILITY</b> DK TECH CORPORATION www.dklok.com</p>	<p>DK TECH Trademarks</p>		<p>DK TECH contact information</p> <p>Tel. (82) 55-338-0114 Fax (82) 55-338-6745 E-mail: sales@dklok.com</p>	<p>For International customers</p> <p>Tel. (82) 55-338-0031/2 Fax (82) 55-338-6746 E-mail: dklok@dklok.com</p>
	<p>Mailing Address</p> <p>826, Naesam-Ri, Juchon-Myeon, Gimhae-City, Gyeong Nam, Korea 621-841</p>			



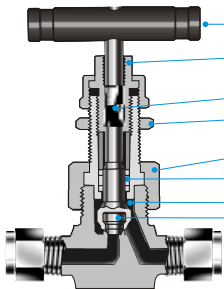
# V16 Series Severe Service Union Bonnet Valves

Pressure Rating up to 6000psig (413 bar)

Catalog No. V16-5  
June 2008

## Features

- Pressure up to 6000 psig (413 bar) @ 100°F (37°C).
- High Temperatures up to 449°F (232°C) with standard PTFE packing; up to 1200°F (648°C) with Grafoil packing.
- Standard S316 stainless steel, optional Alloy 20, and Alloy C276 construction.
- Valve stem back seating against the beveled edge of bonnet ensures safety in severe service, this also prevents maximum leakage through bonnet when a packing fails.
- Standard non-rotating stem tip and stem packing below the threads design.



- **Handle-** Standard SS316 bar handle, optional aluminum bar handle.
- **External Packing Bolt-** allows packing adjustment without the valve disassembly.
- **Roll threaded and hard chrome plated stem-** is for long valve life.
- **Panel Mounting Nut-** is standard and permits valve to panel or actuator.
- **Union Nut-** prevents accidental disassembly of the valve in service..
- **Stem Packing below the threads-** prevents media contamination and thread lubricant washout.
- **Stem Back Seating-** when valve in full open position.
- **Non-Rotating Stem Tip at Closure-** is for maximum metal seat life and positive seal.

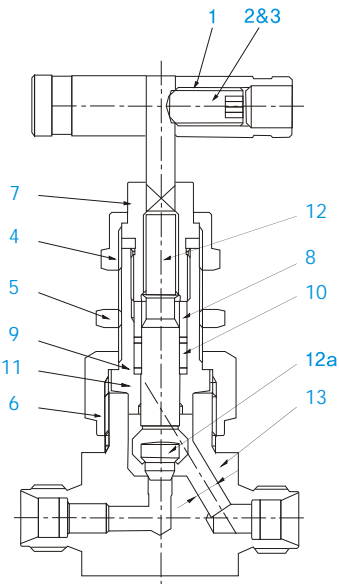
## Materials of Construction

Component	Valve Body Materials		
	SS316	Alloy 20	Alloy C276
	Material Grade/ASTM Specification		
1. Handle	SS316/A276		
2. Handle pin	Molybdenum disulfide coated S316/A276		
3. Set Screw	Nickel cadmium-plated steel		
4. Cap nut	SS316/A276 or A479		
5. Panel nut	SS316/A276		
6. Union nut	SS316/A276		
7. Packing bolt	SS316/A276		
8. Gland	SS316/A276	Alloy 20/B473	C276/B574
9. Packing supports(2)	Glass-filled PTFE.		
10. Packing	PTFE/D1710, optional PEEK & Grafoil		
11. Bonnet	S316/A479	Alloy 20/B473	C276/B574
12. Globe Stem	Hard Chrome-plated SS316/A276	Alloy 20/B473	C276/B574
12a. Globe Stem tip Optional Regulating Stem	TYPE630/A564	Alloy 20/B473	C276/B574
13. Body	SS316/A276 or A479	Alloy 20/B473	C276/B574

wetted parts and lubricants are listed in blue.

Lubrication:

- Nickel anti-seize lubricant for PTFE packed valves.
- Molybdenum disulfide lubricant for PEEK packed valves.
- Fluorinated tungsten disulfide-based lubricant for Grafoil packed valves.



## Technical Data

Ratings are for valves with standard PTFE packing. Refer to valve ratings with optional packing on Page 3.

Valve Material	Stem Designator	Temperature Rating	Pressure Rating @ -63 to 100°F (-53 to 37°C)
Ss316, Alloy C276	Globe: -G Regulating: -R	-65 to 449°F (-53 to 232°C)	6000 psig (413 bar)
Alloy 20		-65 to 449°F (-53 to 232°C)	5000 psig (344 bar)

## Packing Adjustment and Actuation Torque

- Extreme temperature fluctuations while valve in service may require packing adjustment.
- Valves that have not been actuated for a period of time may have a higher initial actuation torque.

## Factory Test

- Every valve is tested with the nitrogen gas @ 1000 psig (68 bar) for leakage at the seat to a maximum allowable leak rate of 0.1 SCCM. The packing is tested for no detectable leakage. Optional hydrostatic shell test with additional cost is performed with pure water at 1.5 times the working pressure.

<p>Quality System Approvals</p>	<p>Dk-Lok Tube Fitting Certification Listing</p>	<p>D-Pro Valve Certification Listing</p>
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# V103 Series Toggle Valves

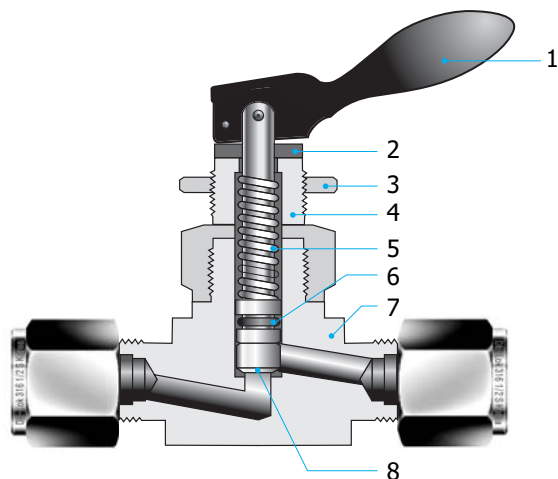
Pressure Rating up to 300 psig (20.6 bar)

Catalog No. V103-3  
May 2008

## Toggle Valves for Quick Shut-Off

### Features

- Quick open and close
- Soft seat for repetitive shut-off
- Study Aluminum handle
- Standard panel mounting



### Materials of Construction

Component	Valve Body Material	
	SS316	Brass
	Grade/ASTM Specification	
1. Handle	Aluminium black anodized	
2. Washer	Nylon	
3. Panel Nut	SS316/A276	Brass 360/B16
4. Packing nut		
5. Spring	Stainless/A313	
6. Stem	SS316/A276	
O-ring	FKM	
7. Body	SS316/A182	C377/B283
8. Stem tip	PTFE/D1710	
Lubricant	Silicon based	

Wetted component listed in blue.

## Operation

- To open the valve, lift the handle.
- Spring forces the valve to close.
- Soft seat provides leak-tight sealing under positive pressure and vacuum conditions.
- O-ring stem seal eliminates packing adjustment.

## Design

- Valves are designed for use in gas sampling, analysis systems and test equipment.
- In-line and angle flow pattern.
- O-ring seal below stem spring protects the spring from contamination.

## Technical Data

### Pressure and Temperature Ratings

Valve Series	Orifice		Pressure Rating @ 100 °F (37 °C) for SS316, Brass body	Temperature Rating
	inch	mm		
V103A	0.080	2.00	300 psig	FKM O-ring -20 to 200 °F (-28 to 93 °C)
V103B	0.125	3.20		
V103C	0.250	6.40	200 psig	

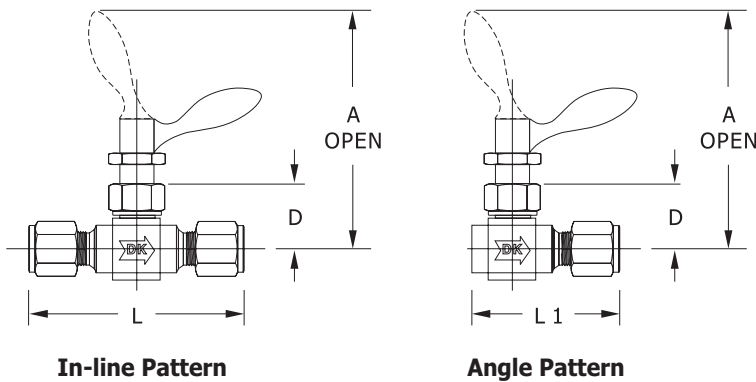
### Optional O-ring

O-ring	Temperature range		Application	Designator
	°F	°C		
Buna-C	-65 to 200	-53 to 93	Low temperature service	BC
Kalrez	-30 to 600	-30 to 316	High temperature service	KZ

## Factory test

Every valve is factory tested at 200psig (13 bar) with nitrogen gas at the seat and seal.





## Ordering Information and Dimensions

Basic Ordering Number	End Connection		Orifice		Cv	Dimensions in.(mm)			
	Inlet	Outlet	in.	mm		L	L1	D	A
V103A-	M-2N	1/8 in. Male NPT	0.080	2.0	0.11	1.5 (38.1)	1.06 (27.0)	.92 (23.4)	2.87 (72.9)
	D-2T	1/8 in. Dk-Lok				1.96 (49.8)	1.29 (32.8)		
	D-3M	3mm Dk-Lok							
	MD-2N2T	1/8 in. Male NPT   1/8 in. Dk-Lok				1.73 (43.9)			
V103B-	F-2N	1/8 in. Female NPT	0.125	3.2	0.20	1.63 (41.4)	1.19 (30.2)	.86 (21.8)	2.81 (71.4)
	M-2N	1/8 in. Male NPT				1.72 (43.7)	1.23 (31.2)		
	M-4N	1/4 in. Male NPT				1.96 (49.8)	1.36 (34.5)		
	D-4T	1/4 in. Dk-Lok				2.26 (57.4)	1.50 (38.1)		
	D-6M	6mm Dk-Lok							
	D-8M	8mm Dk-Lok							
	MF-2N	1/8 in. Male NPT   1/8 in. Female NPT				1.63 (41.4)	1.19 (30.2)		
MD-4N4T	1/4 in. Male NPT   1/4 in. Dk-Lok	2.11 (53.6)	1.50 (38.1)						
V103C-	F-4N	1/4 in. Female NPT	0.250	6.4	0.70	2.12 (53.8)	1.56 (39.6)	1.06 (26.9)	3.56 (90.4)
	M-6N	3/8 in. Male NPT				2.25 (57.2)	1.62 (41.1)		
	D-6T	3/8 in. Dk-Lok				2.58 (65.5)	1.79 (45.5)		
	D-8T	1/2 in. Dk-Lok				2.80 (71.1)	1.90 (48.3)		
	D-10M	10mm Dk-Lok				2.72 (69.1)	1.86 (47.2)		
	D-12M	12mm Dk-Lok				2.92 (74.2)	1.96 (49.8)		

All dimensions shown are for reference only and subject to change. Dimensions with Dk-Lok nuts are in finger-tight position.

## How to Order

Select basic ordering number, applicable valve pattern, O-ring and body material designators listed below.

### V103B-D-4T

-A  
↓

-BC  
↓

-S  
↓





Valve Pattern	O-ring Designator	Body Material
<ul style="list-style-type: none"> <li>Nil: Inline pattern</li> <li>A : Angle pattern</li> </ul>	<ul style="list-style-type: none"> <li>Nil : FKM</li> <li>KZ : Kalrez</li> <li>BC : Buna-C</li> </ul>	<ul style="list-style-type: none"> <li>S : S316</li> <li>B : Brass</li> </ul>

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