V15 Series Needle Valves

Forged body, Pressure Rating up to 5000psig (345bar)

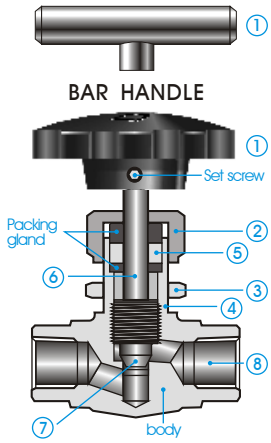
Catalog Number V15-4
November 2005

Integral Bonnet Needle Valves FOR REGULATING and SHUT-OFF

6. Stem
Hard chrome plated stem threads assures extended service life

7. Choice of Fluid Control
-Metal to metal Vee & Regulating stems for elevated temperatures
-Repetitive soft seat for gas leak-tight

8. Variety of end connections
-Reliable DK-LOK® Tube Fitting Ends
-NPT & ISO Male & Female



1. Positive Driven Handle
Choice of Round handle and Bar Handle

2. Packing Nut
Allows external adjustments of packing

3. Panel Nut
Allows panel installation without disrupting the packing

4. Integral Bonnet Design
To eliminate inadvertent stem back-out

5. 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		
	Set Screw	SS304/A276l		
2	Packing Nut	SS316/A276	Brass/B16	Alloy R-405/B164
3	Panel Nut	SS316/A276	Brass/B16	Alloy R-405/B164
	Packing Gland	SS316/A276	Brass/B16	Alloy R-405/B164
5	Packing	Standard PTFE, Optional PEEK		
6,7	Regulating Stem	SS316/A276 Hard Chrome-plated on stem tip and threads		Alloy R-405
6,7	Vee Stem			
6,7	Soft Seat Stem	SS316/A276 Hard Chrome-plated on threads		
7	Stem tip (Soft Seat)	Kel-F		
	Body	SS316/A182	Brass/B124	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 scc/min. The packing is tested for no detectable leakage.

Panel Mounting

Valve disassembly and reassembly for panel mounting.

Panel hole drilland 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)		

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

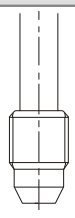
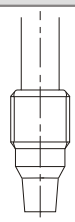
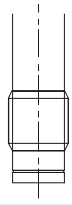
2. Remove the packing nut & panel nut and set aside for later use.
3. Place the valve bonnet in the panel hole.

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.

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

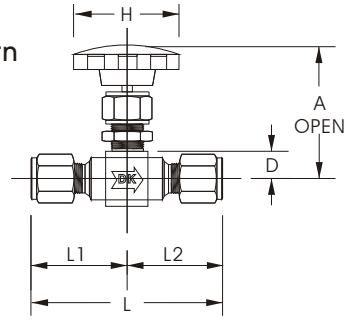
Choice of Stem Tip

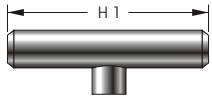
Vee Stem	Regulating Stem	Soft seat
		
Metal to metal Vee stem for pressure tightness at elevated temperature.	Regulating stem for flow rate control	KEL-F soft seat for repetitive shut-off on gas. • Round Handle is recommended for soft seat valve.

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

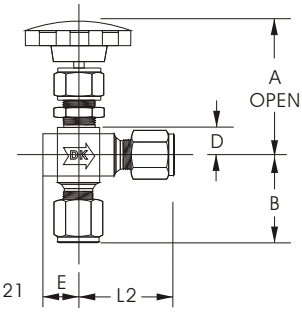
Inline Pattern





BAR HANDLE

Angle Pattern



Unit : mm (inch)

Valve Basic Ordering Number		End Connections Inlet	End Connections Outlet	Orifice	Cv	Dimensions A	B	L	L1	L2	E	D	H	H1
V15 A	F-2N-	1/8" 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" Male NPT							21 (.83)	20(.79)				
	MD-2N2T-	1/8" Male NPT	1/8" Dk-Lok					47(1.85)		26(1.02)				
	D-2T-	1/8" Dk-Lok					26 (1.02)	52 (2.05)	26 (1.02)					
	D-3M-	3mm Dk-Lok												
V15 B	F-2N-	1/8" Female NPT		4.4 (.172)	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" Male NPT												
	M-4N-	1/4" Male NPT					25 (.98)	50(1.97)	25 (.98)	25(.98)				
	MD-4N4T-	1/4" 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" Dk-Lok												
	D-8M-	8mm Dk-Lok					30(1.18)	59.2(2.33)	29.6(1.16)					
V15 C	F-4N-	1/4" 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" Female ISOTapered												
	MF-4N-	1/4" Male NPT	1/4" Female NPT					61.2(2.41)		33.2(1.31)				
	MD-4N6T-	1/4" Male NPT	3/8" Dk-Lok				29 (1.14)	58(2.28)	29(1.14)	29(1.14)				
	M-6N-	3/8" Male NPT						62.2(2.45)		33.2(1.31)				
	MD-6N6T-	3/8" Male NPT	3/8" Dk-Lok					65(2.56)		36(1.42)				
	MD-6N8T-	3/8" Male NPT	1/2" Dk-Lok				33 (1.30)	66 (2.60)	33.2 (1.31)	33.2 (1.31)				
	D-10M-	10mm Dk-Lok												
	D-6T-	3/8" Dk-Lok					36 (1.42)	72 (2.83)	36 (1.42)	36 (1.42)				
	D-12M-	12mm Dk-Lok												
	D-8T-	1/2" Dk-Lok												
V15 D	F-6N-	3/8" 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" Female ISOTapered												
	F-8N-	1/2" Female NPT												
	F-8R-	1/2" Female ISOTapered												
	M-8N-	1/2" Male NPT												
	MF-8N-	1/2" Male NPT	1/2" Female NPT											
	D-8T-	1/2" Dk-Lok					49 (1.93)	97 (3.82)	48.5 (1.91)					
	D-12T-	3/4" Dk-Lok												

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	3000	206
	200°F (93°C)	4293	296	2353	162	2640	181
	300°F (148°C)	3877	267	2059	142	2470	170
	350°F (176°C)	3719	256	1471	101	2430	167
	400°F (204°C)	3562	246	392	27	2390	164
	450°F (232°C)	3437	237	-		2380	163

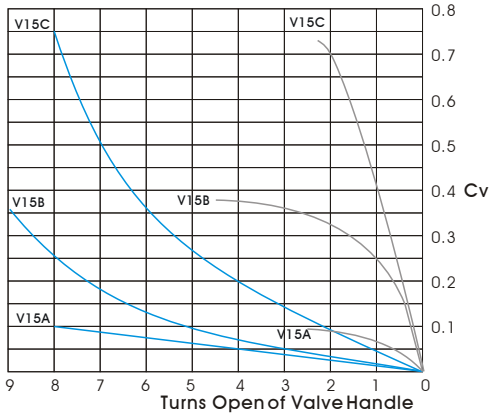
Note : Pressure rating of valve is sometimes limited to the working pressure of pipe ends and the tubing connected.
Refer to DK-LOK Tube Fitting catalog for the details of working pressures in various tubing sizes, materials and wall thickness.

Temperature and Pressure Rating with standard PTFE and Optional PEEK packing

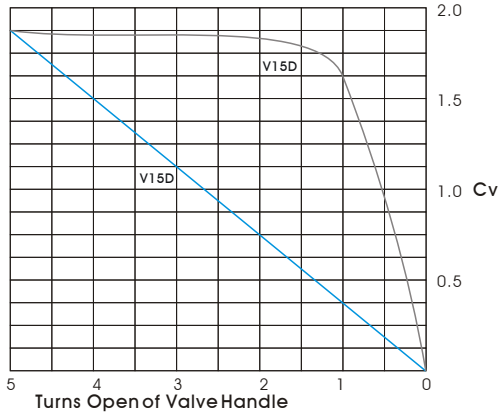
Valve Material	Stem	with PTFE packing		with PEEK packing	
		Temperature Rating	Pressure Rating @100°F (38℃)	Temperature Rating	Pressure Rating @100°F (38℃)
SS316	Metal to metal (Vee & Regulating)	-65°F to 450°F (-54℃ to 232℃)	5000 psig (345 bar)	-65°F to 600°F (-54℃ to 315℃)	3130 psig (215 bar)
	Soft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

Flow Curves

For V15A, 15B & 15C



For V15D



How to order

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

Valve Pattern	Stem Designator	Handle Designator	Body Material Designator
• **Nil**: Inline patterm • **A**: Angle patterm	• **Nil**: Standard Vee stem tip • **R**: Regulating tip • **K**: Kel-F Soft seat	• **RD**: Nylon round handle • **BH**: Bar Handle	• **S** : SS316 • **B** : Brass • **M** : Alloy 400
	Handle for Soft Seat Round Handle is recommended for soft seat valve to prevent the valve from excessive torque.		

Examples : **V15B-F-2N-BH-B** for Inline Pattern, Standard Vee tip with bar Handle and Brass Body

V15B-F-2N-A-PK-K-RD-S for Angle Pattern, Peek packing, Soft tip with Bar Handle and SS316 Body

A : Angle Pattem
PK : Peek stem Packing
S : SS316 body
RD: Nylon round handle
K : Kel-F soft Tip

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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