

NEEDLE VALVES



**Western Valve
& Fitting**

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Integral Bonnet Needle Valves For Regulating and Shut-off

Stem

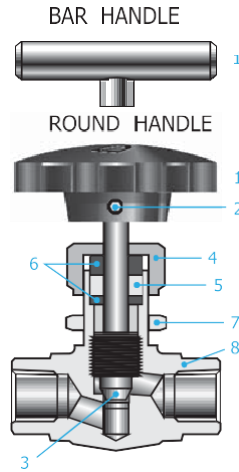
Hard chrome plated stem threads assures extended service life

Choice of Fluid Control

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

Variety of end connections

- 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 Chevron PEEK for high temperature

Materials of Construction

Component s	VALVE BODY MATERIALS Material Grade/ASTM Specification			
	SS316	BRASS	ALLOY 400	
1	Round handle	Nylon with brass insert		
	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	
	Optional Regulating stem	SS316/A276 Hard Chrome-plated on threads		
	Optional Soft Seat Stem	PCTFE		
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/B28 3	Alloy 400/B564

Wetted parts and lubricant are listed in [blue](#).

Lubrication : Molybdenum disulfide with hydrocarbon coating

Design

- 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 compression ends, NPT & ISO Male & Female pipe threads

Operation

- Pressure rating up to 5,000psig (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
- Compression ends 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 @1,000psig (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 the valve on panel.



Panel hole drill and thickness mm (in)			
Valve Series	Panel Hole Drill	Panel Thickness	
		Min.	Max.
NVA	13.5 (0.53)		
NVB	13.5 (0.53)	3.17 (0.125)	6.35 (0.25)
NVC	20.0 (0.79)		
NVD	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 round handle on the stem. Align the set screw with the groove on the side of the stem. Tighten the set screw.

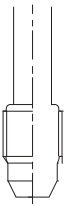
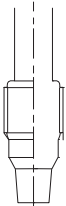

7. Fully close the valve and retract the stem two or three turns before torque the packing nut to the torque below.

- Packing Nut Torque Table

Disassembly

1. Un-tighten the handle set screw using an allen key and remove the handle.

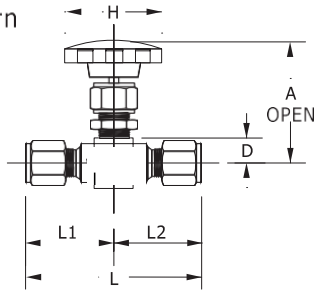
Choice of Stem Tip

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

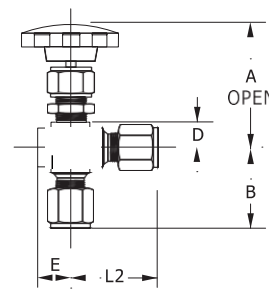
Note : Soft seat packing adjustment may be required during service to compensate the physical compression of soft seat after repeated shut-off.

Ordering Information and Table of Dimensions

Inline Pattern



Angle Pattern



Unit : mm (in.)

Valve Basic Ordering Number	End Connections		Orifice	Cv	Dimensions												
	Inlet	Outlet			A	B	L	L1	L2	E	D	H	H1				
NVA-	F-1/8-	1/8" Female NPT	2.0 (0.08)	0.09	60 (2.36)	21(0.83)	42(1.65)	21(0.83)		9.5 (0.37)	11 (0.43)	36 (1.42)	32 (1.26)				
	M-1/8-	1/8" Male NPT						21(0.83)	20(0.79)								
	MC-1/8 x 1/8	1/8" Male NPT 1/8" Compression							26(1.02)								
	C-1/8-	1/8" Compression						52(2.05)	26(1.02)								
C-3M-	3mm Compression																
NVB-	F-1/8-	1/8" Female NPT	4.3 (0.17)	0.37	60 (2.36)	21(0.83)	42(1.65)	21(0.83)		9.5 (0.37)	11 (0.43)	36 (1.42)	45 (1.77)				
	M-1/8-	1/8" Male NPT						25(0.98)	25(0.98)								
	M-1/4-	1/4" Male NPT							54(2.13)								
	MC-1/4x1/4-	1/4" Male NPT 1/4" Compression						29(1.14)	57.6(2.27)					28.8(1.13)	28.8(1.13)		
	C-6M-	6mm Compression													30(1.18)		
	C-4T-	1/4" Compression						59.2(2.33)	29.6(1.16)								
	C-8M-	8mm Compression															
NVC-	F-1/4-	1/4" Female NPT	6.4 (0.252)	0.73	71 (2.80)	28(1.10)	56(2.20)	28(1.10)	28(1.10)	13 (0.51)	13.5 (0.53)	50 (1.97)	64 (2.52)				
	F-1/4FT-	1/4" Female ISO Tapered							61.2(2.41)					33.2(1.31)			
	MF-1/4-	1/4" Male NPT							1/4" Female NPT					29(1.14)	62.2(2.45)	29(1.14)	29(1.14)
	MC-1/4x3/8-	1/4" Male NPT							3/8" Compression								65(2.56)
	M-3/8-	3/8" Male NPT							33(1.30)					66(2.60)	33.2(1.31)	33.2(1.31)	
	MC-3/8x3/8-	3/8" Male NPT														3/8" Compression	36(1.42)
	MC-3/8x1/2-	3/8" Male NPT							1/2" Compression					36(1.42)	72(2.83)	36(1.42)	36(1.42)
	C-10M-	10mm Compression															
	C-3/8-	3/8" Compression															
	C-12M-	12mm Compression															
	C-1/2-	1/2" Compression															
NVD-	F-3/8-	3/8" Female NPT	9.5 (0.374)	1.80	99 (3.90)	38(1.50)	76(2.99)	38(1.50)	38(1.50)	19 (0.75)	19 (0.75)	66 (2.60)	76 (3.00)				
	F-3/8FT-	3/8" Female ISO Tapered							49(1.93)					97(3.82)	48.5(1.91)		
	F-1/2-	1/2" Female NPT															
	F-1/2FT-	1/2" Female ISO Tapered															
	M-1/2-	1/2" Male NPT															
	MF-1/2-	1/2" Male NPT							1/2" Female NPT								
	C-1/2-	1/2" Compression															
	C-3/4-	3/4" Compression															

All dimensions shown are for reference only and are subject to change. Dimensions with compression nuts are in finger-tight position. Patterns: To order angle pattern, use -A as a suffix to the valve ordering number. Example: NVA-F-1/8-A-S

Table 1. Pressure-Temperature Ratings for valves with standard PTFE packing

Pressure rating of valves with PCTFE soft seat is limited to 200°F (93°C).

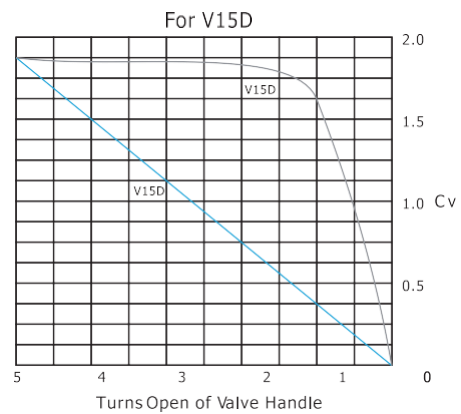
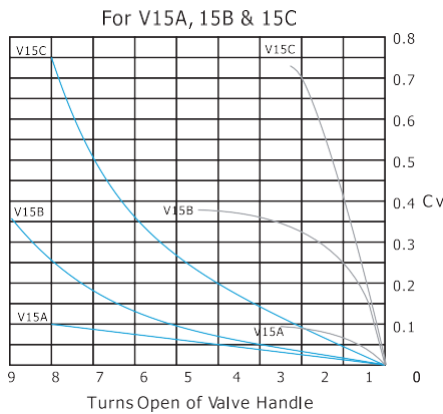
ASME Material Group		TABLE 2-2.2		N/A		TABLE 2-3.4	
Material Name		SS316		Brass		Alloy 400	
ASME Class Rating		2,080		N/A		1,500	
Temperature @ pressure		psig	bar	psig	bar	psig	bar
-65F (-54°C) to	100°F (38°C)	5,000	345	3,000	207	3,000	207
	200°F (93°C)	4,293	296	2,353	162	2,640	182
	300°F (148°C)	3,877	267	2,059	142	2,470	170
	350°F (176°C)	3,719	256	1,471	101	2,430	167
	400°F (204°C)	3,562	246	392	27	2,390	165
	450°F (232°C)	3,437	237	-		2,380	164

Note : Pressure rating of valve may be limited to the working pressure of pipe ends and the tubing connected.

Table 2. Pressure-Temperature Ratings for valves with optional PEEK packing

Valve Material	Packing	Stem	Pressure –Temperature Rating °F (°C)
SS316	PEEK K	Metal to metal (Vee & Regulating)	-65 to 600 (-54 to 315) @ 3,130 psig (215 bar)
Brass			-65 to 400 (-54 to 204) @ 3,000 psig (207 bar)
Alloy 400			-65 to 500 (-54 to 260) @ 2,370 psig (163 bar)

Flow Curves



How to order

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

NVB-F-2N	-A	-PK	-R	-BH	-S -S
	↓	↓	↓	↓	↓
Valve Pattern	Stem Packing Designator	Stem Designator	Handle Designator	Body Material Designator	
Nil : Inline pattern A : Angle pattern	Nil : Standard PTFE PK : PEEK	Nil : Standard Vee stem tip R : Regulating tip K : PCTFE (Kel-F) soft seat	Nil : Nylon Round Handle BH : Bar Handle	S : SS316 B : Brass M : Alloy 400	
Handle for Soft Seat Nylon Round Handle is recommended for soft seat valve. This helps prevent the soft seat from damage.					

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. We accept no liability for any improper selection, installation, operation or maintenance.