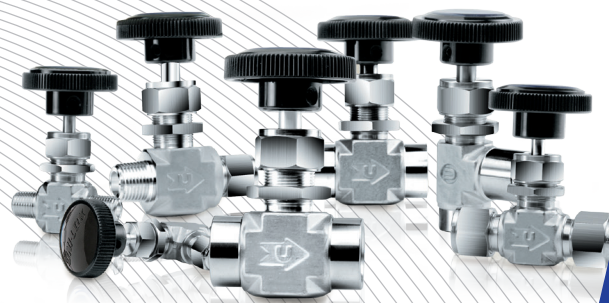




# INTEGRAL BONNET FORGED NEEDLE VALVES

**VN5 Series**

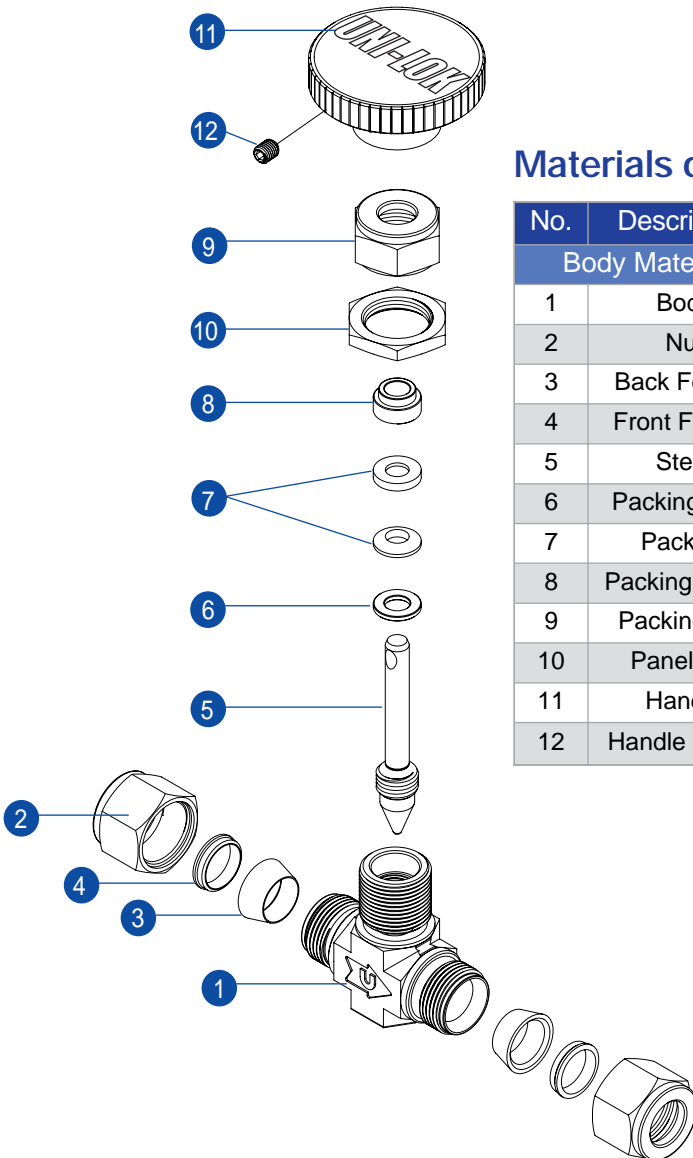
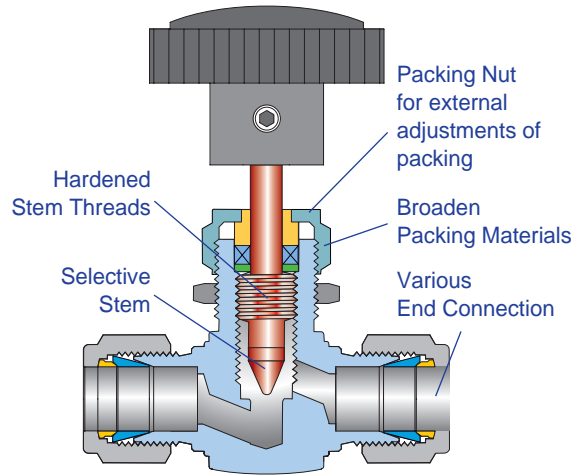
[www.unilok.com](http://www.unilok.com)



**UNILOK** 

## Features

- Pressure rating up to 5000psig (340bar) @38°C (100°F)
- Temperature rating from -53°C(-65°F) to 232°C (450°F) with standard PTFE packing, up to 315°C(600°F) with PEEK packing
- Compact forged body with straight and angle pattern for design of miniaturized fluid systems
- Hardened stem threads and forged body for long cycle life
- Integral bonnet design to eliminate unintentional stem back-out
- Panel mounting without packing disruption
- Wide choices of port sizes and end connections



## Materials of Construction

No.	Description	Materials		
		Body Material	316SS	Brass
1	Body	316SS	Brass	Alloy 400
2	Nut	316SS	Brass	Alloy 400
3	Back Ferrule	316SS	Brass	Alloy 400
4	Front Ferrule	316SS	Brass	Alloy 400
5	Stem	316SS		Alloy R-405/B164
6	Packing Ring	316SS	Brass	Alloy R-405/B164
7	Packing	PTFE		
8	Packing Gland	316SS	Brass	Alloy R-405/B164
9	Packing Nut	316SS	Brass	Alloy R-405/B164
10	Panel Nut	316SS	Brass	316SS
11	Handle	Nylon with brass insert		
12	Handle Screw	304SS		

## Application

Regulation and shut-off of fluids and gases for wide range of general purpose

Sampling systems, laboratories, corrosive and high pressure service, valves - pressure gauge and cylinder, panel board instrumentation

## Sour Environment Services

Uni-Lok valves are comply with NACE MR-0175/ISO 115156 for sour oilfield application or NACE MR-0103 for petroleum refining operations.

To order, add-N to the end of part number.

## Cleaning

Uni-Lok valves are free from machine oils, loose particles and grease throughout the close cleaning process.

## How To Order

Uni-Lok VN5 series needle valves are ordered by part number as shown as below.

## Testing

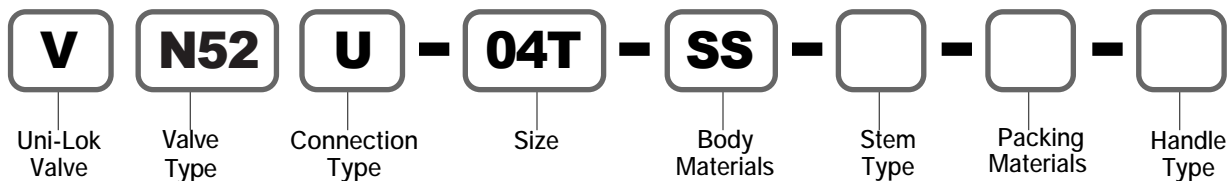
Every valve is 100% factory tested with air and nitrogen at 1000psig(69bar) for leakage at the seat and packing. Each test is performed to a maximum allowable leak rate of 0.1scc/min.

## Important Notification

Proper installation, materials compatibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety.

The packing adjustment may be required during the valve's service life.

**Example :** The following part number, **VN52U-04T-SS** is designated for VN5 series needle valve with both 1/4" Uni-Lok tube fitting, 316SS, round handle.



Valve Type	
N5	Straight Pattern
N5A	Angle Pattern

Connection Type	
U	Uni-Lok Tube Fitting
F	Female NPT or ISO7/1(PT)
M	Male NPT or ISO7/1(PT)
WS-*T	Socket Weld -Tube
WS-*P	Socket Weld - Pipe

Body Materials	
SS	316SS
BS	Brass
MO	Alloy 400

Other alloys are available upon request.

Connection Type							
Fractional(Inch) Tube O.D. Designation							
Tube O.D.	inch	1/8	1/4	3/8	1/2	3/4	1
	mm	3.17	6.35	9.52	12.70	19.05	25.40
Designator		02T	04T	06T	08T	12T	16T

Metric Tube O.D. Designation						
Tube O.D.	mm	6	8	10	12	16
	Designator		M06T	M08T	M10T	M12T

Pipe Size Designation (NPT or ISO7/1-PT)				
Pipe Size	1/8	1/4	3/8	1/2
Designator	02N/R	04N/R	06N/R	08N/R

Weld Size Designation			
Tube Size	1/4	3/8	1/2
Designator	04T	06T	08T
Pipe Size	1/4	3/8	1/2
Designator	04P	06P	08P

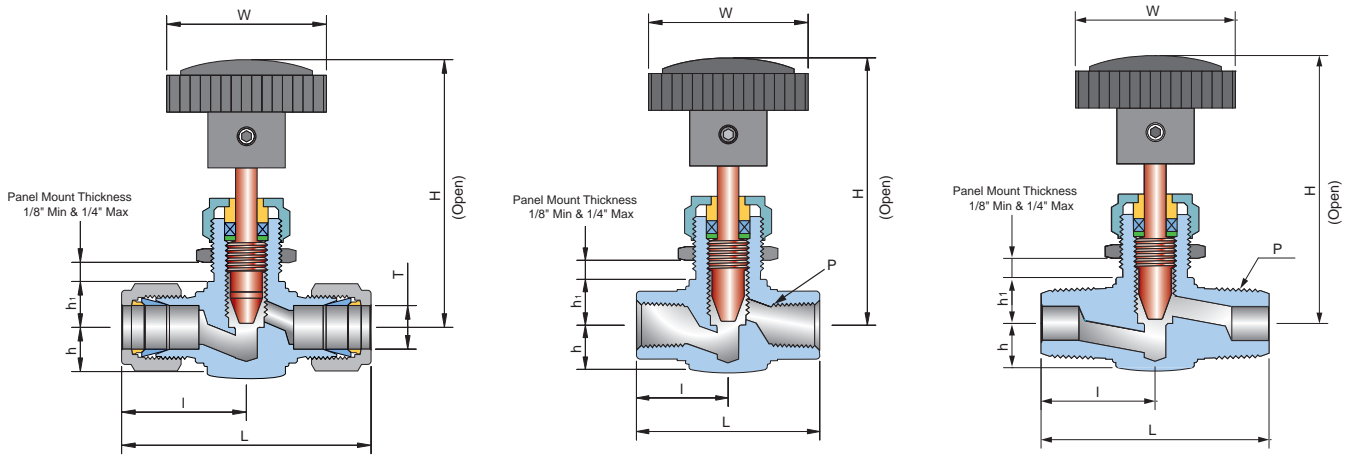
Stem Type	
None	Veel Stem
R	Regulating Stem
S	Soft-seat Stem

Packing Materials	
None	PTFE
PK	PEEK

Handle Type	
None	Nylon Round Handle
B	Bar Handle

# VN5 series

(Straight Pattern, Both Uni-Lok Tube Fittings or Both Female or Male Threads)



## Ordering Information & Dimensions

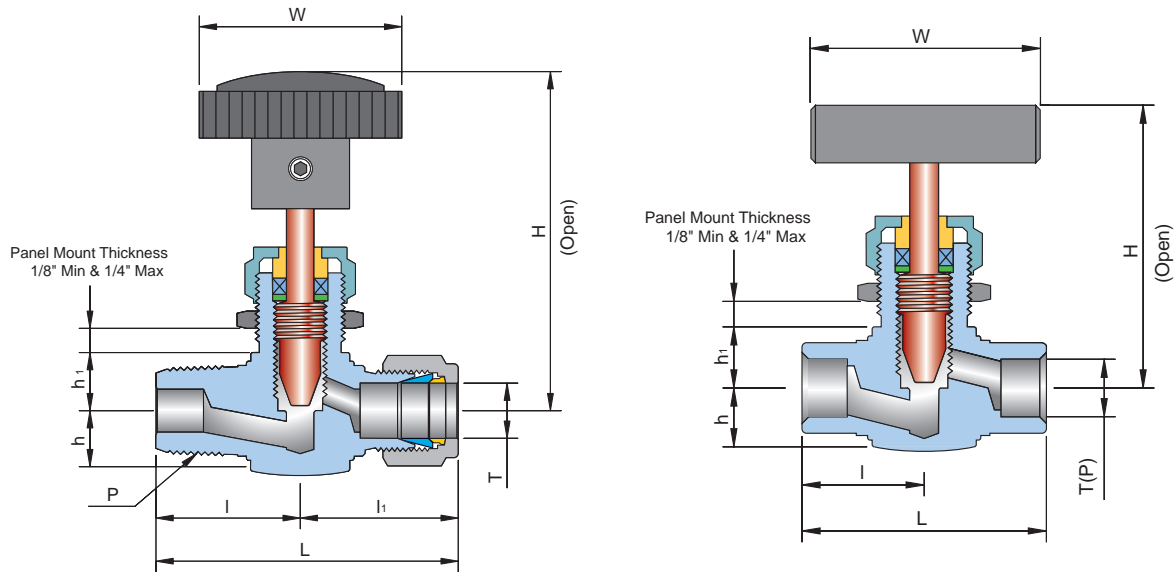
Part Number	End Connection		Orifice	CV	Dimensions (mm)						Panel Hole Drill Size
	Inlet	Outlet			L	I	h	h <sub>1</sub>	Round Handle H(open)	W	
VN51	U-02T-	1/8" Uni-Lok	2.0	0.09	49.3	24.9	11.2	7.9	57.9	25.4	11.9
	U-M03T-	3mm Uni-Lok			49.3	24.9					12.2
	F-02N-	1/8" Female NPT			47.8	23.9					11.9
	M-02N-	1/8" Male NPT			38.1	19.1					11.9
VN52	U-04T-	1/4" Uni-Lok	4.4	0.37	56.3	28.2	9.5	9.5	65.9	34.7	13.5
	U-M06T-	6mm Uni-Lok			56.8	28.4					
	U-M08T-	8mm Uni-Lok			59.0	29.5					
	F-02N-	1/8" Female NPT			42.0	21.0					
	M-02N-	1/8" Male NPT			41.2	20.6					
	M-04N-	1/4" Male NPT			50.0	25.5					
VN53	U-06T-	3/8" Uni-Lok	6.3	0.73	67.8	33.9	12.5	13.5	80.6	46.7	20.0
	U-08T-	1/2" Uni-Lok			73.2	36.6					
	U-M10T-	10mm Uni-Lok			67.4	33.7					
	U-M12T-	12mm Uni-Lok			73.4	36.7					
	F-04N-	1/4" Female NPT			54.0	27.0					
	M-06N-	3/8" Male NPT			53.0	26.5					
	MF-04N-	1/4" Male NPT   1/4" Female NPT			55.6	26.5					
VN54	U-08T-	1/2" Uni-Lok	7.2	1.80	83.2	41.6	17.0	17.0	97.0	55.5	23.0
	U-12T-	3/4" Uni-Lok			83.2	41.6					
	F-06N-	3/8" Female NPT			65.0	30.0					
	F-08N-	1/2" Female NPT			65.0	32.5					
	M-08N-	1/2" Male NPT			66.0	33.0					
	MF-08N-	1/2" Male NPT   1/2" Female NPT			66.0	33.0					
VN55	U-16T-	1" Uni-Lok	12.7	3.20	99.2	49.6	20.0	20.0	86.7*	85*	29.0
	F-12N-	3/4" Female NPT			75.0	37.5			87.2*		
	F-16N-	1" Female NPT			89.0	44.5					

\* Dimensions for bar handle. Round handle for these sizes are not available.  
 ISO/7/1 Tapered Threads (PT) are available for all fractional sizes of VN5 series valves.  
 Add "R" as a suffix instead of "N".

Dimensions are for reference only and are subject to change without prior notice.

# VN5 series

## (Straight Pattern, Male/Uni-Lok Tube Fitting or Both Tube or Pipe Socket Welds)



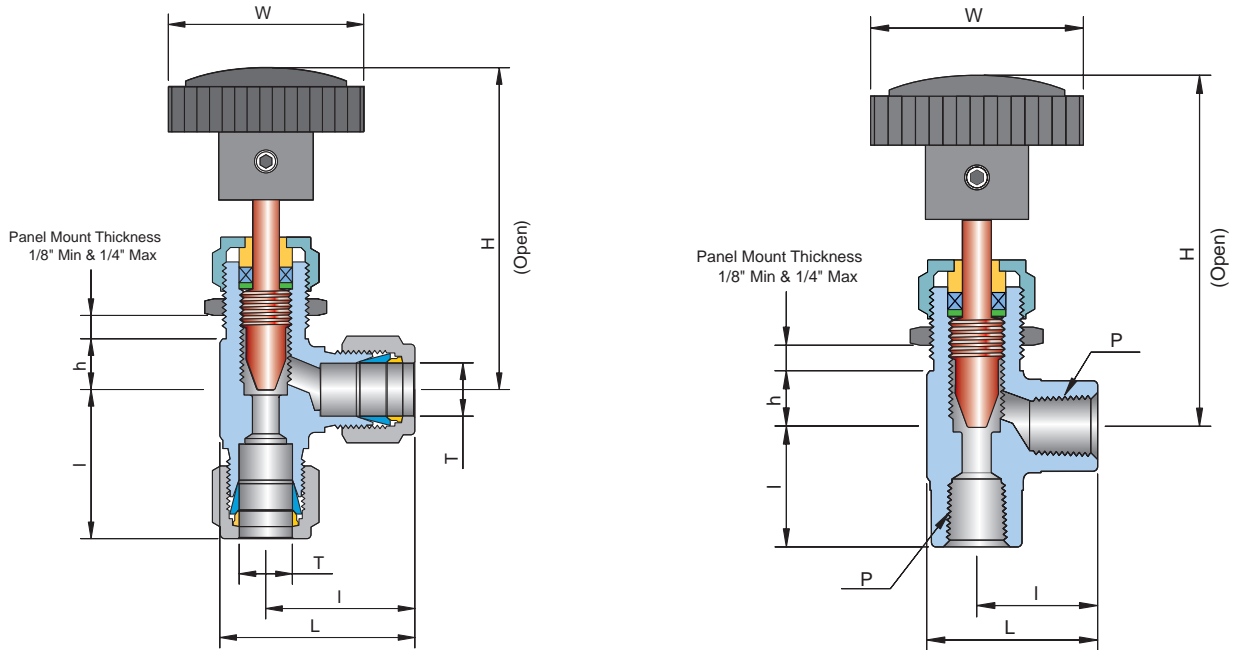
### Ordering Information & Dimensions

Part Number	End Connection		Orifice	CV	Dimensions (mm)						Panel Hole Drill Size	
	Inlet	Outlet			L	l	h	h <sub>1</sub>	Round Handle			
									H(open)	W		
VN52	MU-04N02T-	1/4" Male NPT	1/8" Uni-Lok	2.0	0.09	51.3	25.0	9.5	9.5	54.3	32.0	13.5
	MU-04N04T-	1/4" Male NPT	1/4" Uni-Lok	4.4	0.37	53.3	25.0					
	WS-04T	1/4" Tube				42.0	21.0					
VN53	MU-04N06T-	1/4" Male NPT	3/8" Uni-Lok	6.3	0.73	60.4	26.5	12.5	13.5	67.5	50.6	20.0
	MU-06N06T-	3/8" Male NPT	3/8" Uni-Lok			60.4	26.5					
	MU-06N08T-	3/8" Male NPT	1/2" Uni-Lok			63.1	26.5					
	WS-06T	3/8" Tube				54.0	27.0					
	WS-08T	1/2" Tube				54.0	27.0					
	WS-04P	1/4" Pipe				54.0	27.0					
VN54	WS-06P	3/8" Pipe		7.2	1.80	60.0	30.0	17.0	17.0	83.8	62.5	23.0
	WS-08P	1/2" Pipe				65.0	32.5					

Male ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VN5 series valves.  
Add "R" as a suffix instead of "N".

Dimensions are for reference only and are subject to change without prior notice.

## VN5A series (Angle Pattern, Both Uni-Lok Tube Fittings or Both Female Threads)



### Ordering Information & Dimensions

Part Number	End Connection		Orifice	CV	Dimensions (mm)					Panel Hole Drill Size
	Inlet	Outlet			L	I	h	Round Handle		
								H(open)	W	
VN52A	U-04T-	1/4" Uni-Lok	4.4	0.37	38.9	30.2	10.1	61.1	34.7	13.5
	U-M06T-	6mm Uni-Lok			39.1	30.5				
	U-M08T-	8mm Uni-Lok			39.3	30.7				
	F-02N-	1/8" Female NPT			29.6	21.0				
VN53A	U-06T-	3/8" Uni-Lok	6.3	0.73	44.2	33.1	12.2	78.4	46.7	20.0
	U-08T-	1/2" Uni-Lok			46.9	35.8				
	U-M10T-	10mm Uni-Lok			44.8	33.7				
	U-M12T-	12mm Uni-Lok			46.9	35.8				
	F-04N-	1/4" Female NPT			37.0	26.0				
VN54A	F-06N-	3/8" Female NPT	7.2	1.80	53.5	39.7	15.9	92.2	55.5	23.0
	F-08N-	1/2" Female NPT								

Female ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VN5 series valves.  
Add "R" as a suffix instead of "N".

Dimensions are for reference only and are subject to change without prior notice.

## Pressure - Temperature Ratings by Packing Materials

Body Material	Stem	PTFE packing				PEEK packing			
		Temperature Rating		Pressure Rating		Temperature Rating		Pressure Rating	
		°C	°F	psig	bar	°C	°F	psig	bar
316SS	metal to metal (vee & regulating)	-54~232	-65~450	5000	345	-54~315	-65~600	3130	215
	soft-seat (Kel-F)	-54~93	-65~200			-54~93	-65~200		
Brass	metal to metal (vee & regulating)	-54~204	-65~400	3000	207	-54~204	-65~400	3000	207
	soft-seat (Kel-F)	-54~93	-65~200			-54~93	-65~200		
Alloy 400	metal to metal (vee & regulating)	-54~232	-65~450	3000	207	-54~260	-65~500	2370	162
	soft-seat (Kel-F)	-54~93	-65~200			-54~93	-65~200		

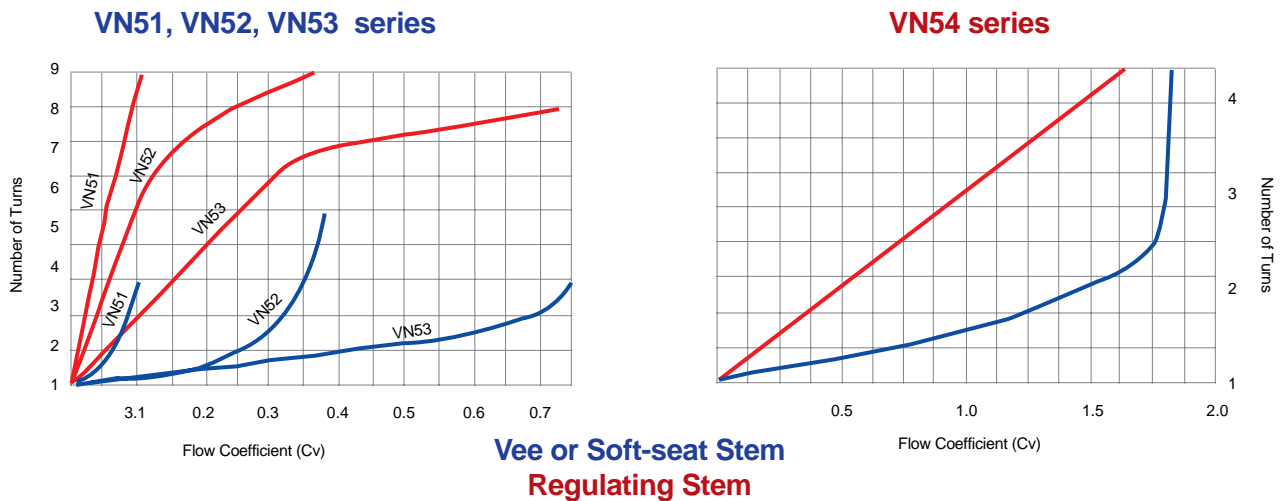
Packing adjustment to be required for extreme temperature variations

For the service with aromatic heat transfer fluids or concentrated sulfuric and nitric acids, PEEK is not recommended.

## Working Pressure at Temperature

Temperature			Working Pressure						
°C		°F	psig	bar	psig	bar	psig	bar	
-54 to	38	-65 to	100	5000	345	3000	207	3000	207
	93		200	4290	296	2600	180	2640	183
	148		300	3870	267	2210	153	2470	171
	176		350	3710	256	1470	102	2430	168
	204		400	3560	246	740	52	2390	165
	232		450	3430	237	-	-	2380	165
Materials			316SS		Brass		Alloy 400		

## Number of Handle Turns - Flow Coefficient (Cv)



## Stem Types

Metal to metal vee stem is standard for pressure tightness even at elevated temperature. Regulating stem and soft-seat stem with KEL-F are available as optional.

The excessive force when closing valve may damage both seat and stem tip, particularly soft-seat stem.



**Vee Stem**

Pressure tightness at elevated temperature



**Regulating Stem**

Flow rate control



**Soft-seat Stem**

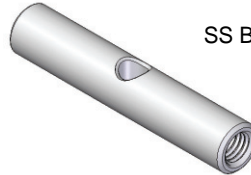
Repetitive shut-off for gas

## Handle Types

Black nylon round handle is standard.

For the valves with brass body and soft-seat stem, standard round handle is recommended.

Optional stainless steel bar handle is available.



SS Bar Handle

**UNILOK** (주) 유니락



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