

INSTRUMENT

Integral Bonnet Needle Valves VN5



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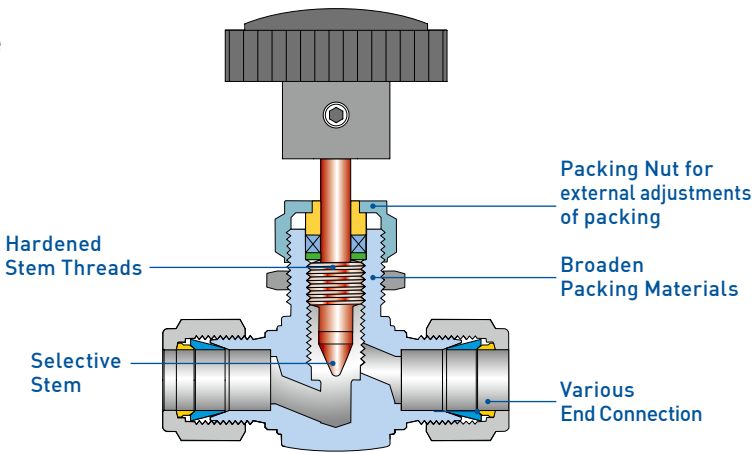
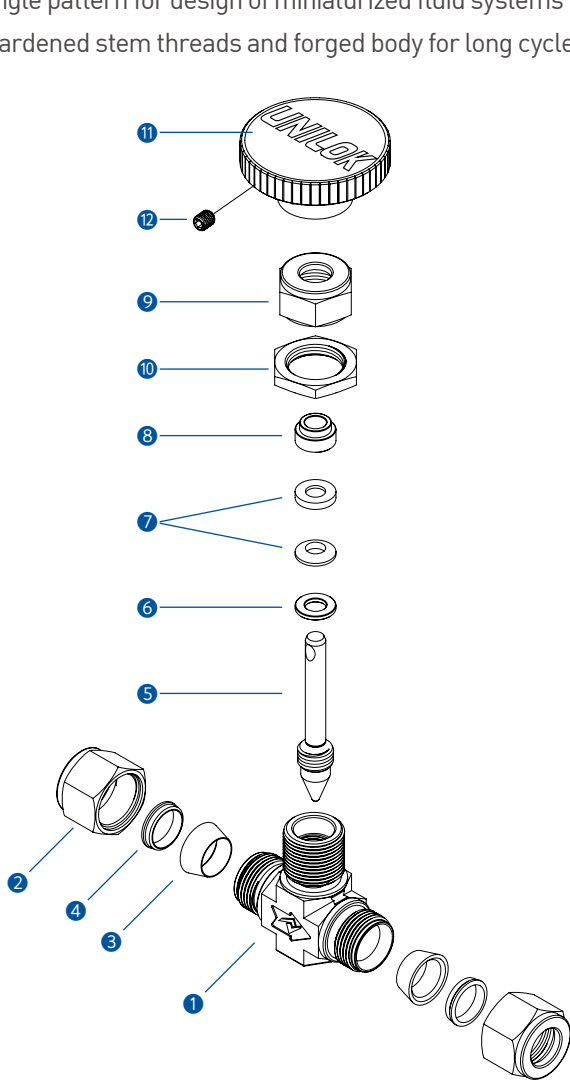
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Features

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	Alloy 400
1	Body	316SS	Brass	Alloy 400
2	Nut	316SS	Brass	Alloy 400
3	Front Ferrule	316SS	Brass	Alloy 400
4	Back Ferrule	316SS	Brass	Alloy 400
5	Stem	316SS	Brass	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

UNILOK valves are comply with NACE MR-0175/ISO 15156 for sour oilfield application or NACE MR-0103 for petroleum refining operations.
To order, add-N to the end of part number.

Cleaning

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

How To Order

UNILOK VN5 series needle valves are ordered by part number as shown 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" UNILOK tube fitting, 316SS, round handle.

V

UNILOK Valve

N52

Valve Type

U

Connection Type

-

04T

Connection Size

-

SS

Body Materials

-

Stem Type

-

Packing Materials

-

Handle Type

Valve Type	
N5	Straight Pattern
N5A	Angle Pattern

Connection Type	
U	UNILOK Tube Fitting
F	Female NPT or ISO7/1(PT)
M	Male NPT or ISO7/1(PT)
WS-	Socket Weld -Tube
WS-	Socket Weld - Pipe

Connection Size							
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	M16T

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

Body Materials	
SS	316SS
BS	Brass
MO	Alloy 400

Other alloys are available upon request.

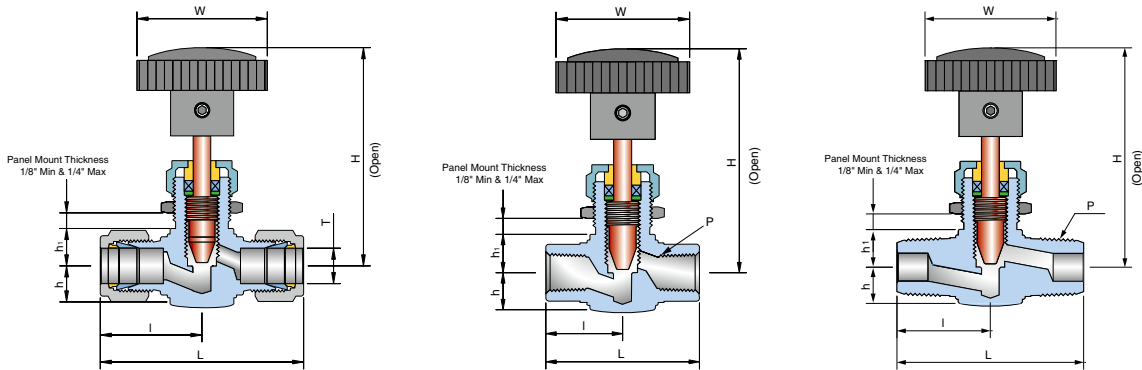
Stem Type	
None	Vee Stem
R	Regulating Stem
S	Soft-seat Stem

Packing Materials	
None	PTFE
PK	PEEK

Handle Type	
None	Nylon Round Handle
B	Bar Handle

VN5 series

(Straight Pattern, Both UNILOK Tube Fittings or Both Female or Male Threads)



Ordering Information & Dimensions

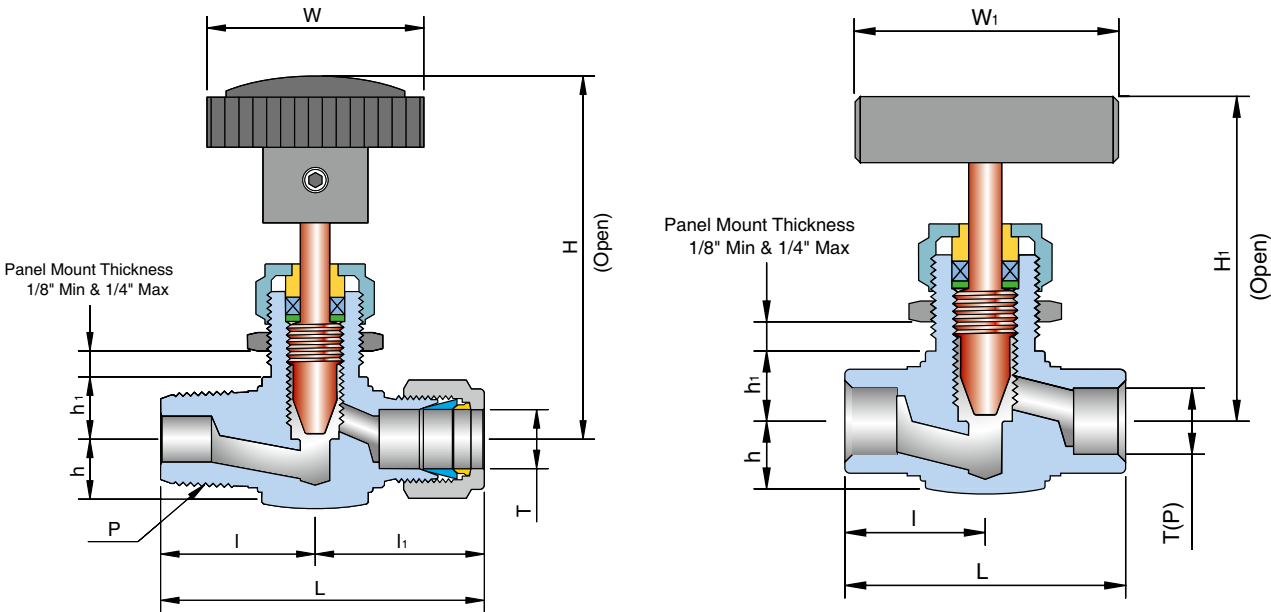
Part No.		End Connections "T"		Orifice	CV	Dimensions (mm)						Panel Hole Drill Size
		Inlet	Outlet			L	I	h	h1	Round Handle		
										H(open)	W	
VN51	U-02T-	1/8" UNILOK		2.0	0.09	49.3	24.9	11.2	7.9	57.9	25.4	11.9
	U-M03T-	3mm UNILOK				49.3	24.9					12.2
	F-02N-	1/8" Female NPT				47.8	23.9					11.9
	M-02N-	1/8" Male NPT				38.1	19.1					
VN52	U-04T-	1/4" UNILOK		4.3	0.37	56.3	28.2	9.5	9.2	65.9	34.7	13.5
	U-M06T-	6mm UNILOK				56.8	28.4					
	U-M08T-	8mm UNILOK				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					
VN53	U-06T-	3/8" UNILOK		6.3	0.73	67.8	33.9	12.5	13.5	80.6	46.7	20.0
	U-08T-	1/2" UNILOK				73.2	36.6					
	U-M10T-	10mm UNILOK				67.4	33.7					
	U-M12T-	12mm UNILOK				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			53.5	26.5					
VN54	U-08T-	1/2" UNILOK		7.2	1.80	83.2	41.6	17.0	17.0	97.0	55.5	23.0
	U-12T-	3/4" UNILOK				83.2	41.6					
	F-06N-	3/8" Female NPT				60	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" UNILOK		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.
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.

VN5 series

(Straight Pattern, Male/UNILOK Tube Fitting or Both Tube or Pipe Socket Welds)



Ordering Information & Dimensions

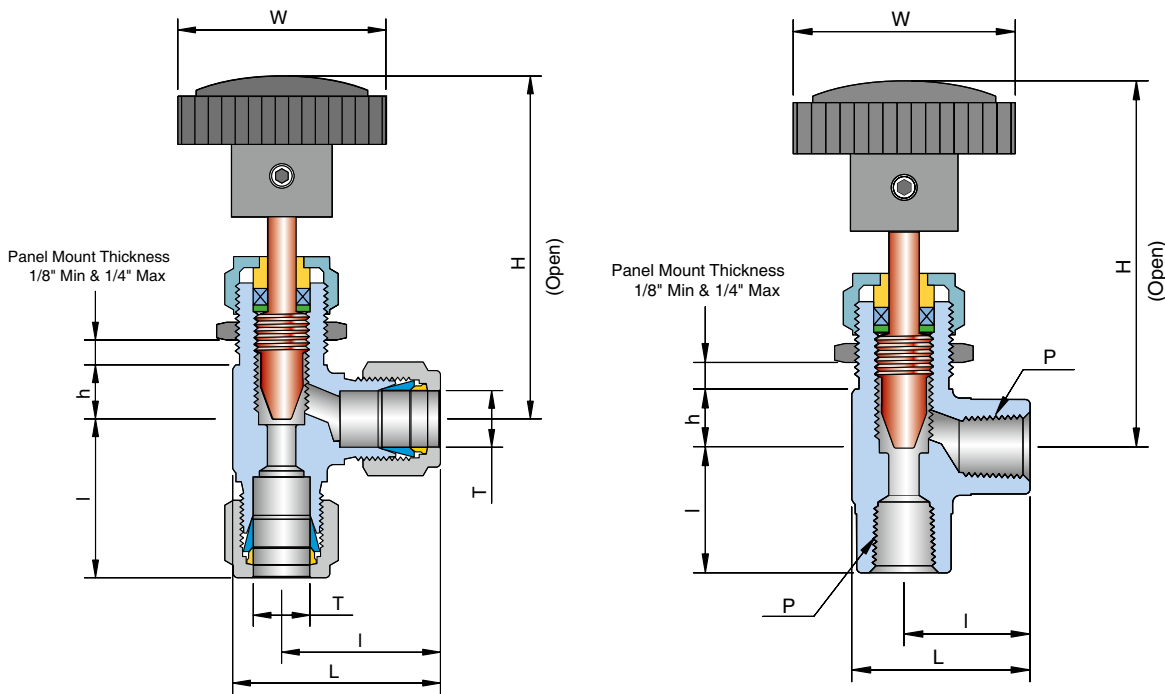
Part No.		End Connections		Orifice	CV	Dimensions (mm)						Panel Hole Drill Size
		Inlet	Outlet			L	I	h	h ₁	Bar Handle		
										H ₁ (open)	W ₁	
VN52	MU-04N02T-	1/4" Male NPT	1/8" UNILOK	2.0	0.09	51.3	25.0	9.5	9.2	54.3	45.0	13.5
	MU-04N04T-	1/4" Male NPT	1/4" UNILOK	4.3	0.37	53.3	25.0					
	WS-04T	1/4" Tube				42.0	21.0					
VN53	MU-04N06T-	1/4" Male NPT	3/8" UNILOK	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" UNILOK			60.4	26.5					
	MU-06N08T-	3/8" Male NPT	1/2" UNILOK			63.1	26.5					
	WS-06P	3/8" Tube				54.0	27.0					
	WS-08P	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 UNILOK Tube Fittings or Both Female Threads)



Ordering Information & Dimensions

Part No.		End "T" Connections		Orifice	CV	Dimensions (mm)					Panel Hole Drill Size
		Inlet	Outlet			L	I	h	Round Handle		
									H(open)	W	
VN52A	U-04T-	1/4" UNILOK		4.3	0.37	38.9	30.2	10.1	64.6	34.7	13.5
	U-M06T-	6mm UNILOK				39.1	30.5		61.1		
	U-M08T-	8mm UNILOK				39.3	30.7		61.1		
	F-02N-	1/8" Female NPT				29.6	21.0	9.8	63.9		
VN53A	U-06T-	3/8" UNILOK		6.3	0.73	44.2	33.1	12.2	78.4	46.7	20.0
	U-08T-	1/2" UNILOK				46.9	35.8				
	U-M10T-	10mm UNILOK				44.8	33.7				
	U-M12T-	12mm UNILOK				46.9	35.8				
	F-04N-	1/4" Female NPT				37.0	26.0				
VN54A	F-06N-	3/8" Female NPT		9.5	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".

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Pressure - Temperature Ratings by Packing Materials

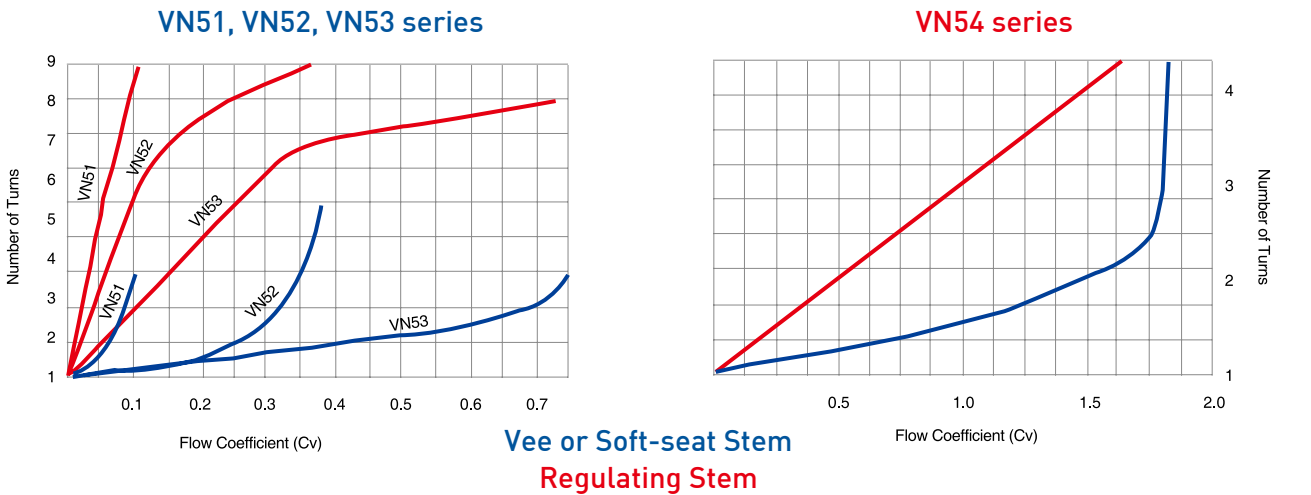
Body Material	Stem	PTFE packing				PEEK packing			
		Temperature Rating		Pressure Rating		Temperature Rating		Pressure Rating	
		°C	°F	psig	bar	°C	°F	psig	bar
316SS	metal to metal (vee & regulating)	-54~232	-65~450	5000	345	-54~315	-65~600	3130	215
	soft-seat (Kel-F)	-54~93	-65~200			-54~93	-65~200		
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	
-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.

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.



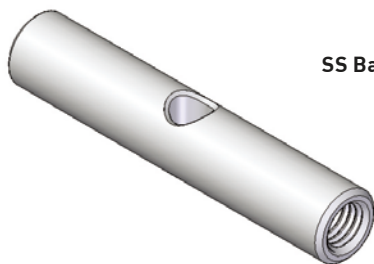
Vee Stem
Pressure tightness at
elevated temperature



Regulating Stem
Flow rate control



Soft-seat Stem
Repetitive
shut-off for gas



SS Bar Handle