

# Union Bonnet Needle Valves

**SUNV Series**

## Features

- Panel mountable
- Non-rotating stem tips
- Variety of stem tips
- Variety of End Connections
- Straight and Angle flow patterns
- Each and every valve is tested at the factory



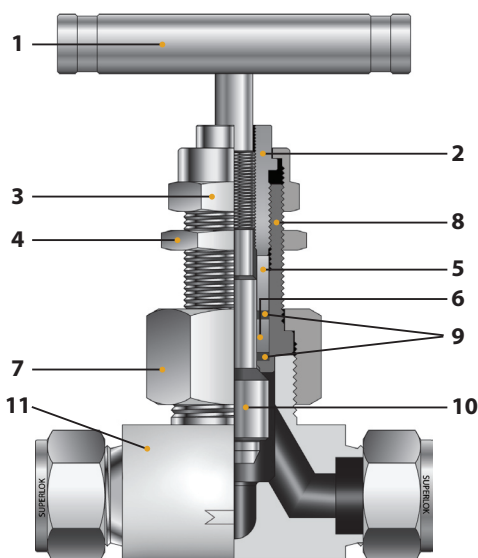
## Specifications

<b>Pressure rating</b>	6000psig (413 bar) @100°F(38°C)
<b>Temperature rating</b>	-65 to 450°F (-54 to 232 °C) with PTFE packing and up to 1200°F(648°C) with Grafoil packing
<b>Body material</b>	316 stainless steel, alloy 400 and Alloy C-276
<b>Orifice</b>	0.156" to 0.437" (4.0mm to 11.1mm)

## Testing

- Each Valve is tested with nitrogen at 1000psig(69bar) to maximum allowable leak rate of 0.1 SCCM.
- Hydrostatic shell test is performed at 1.5 times of the working pressure. (OPTION)

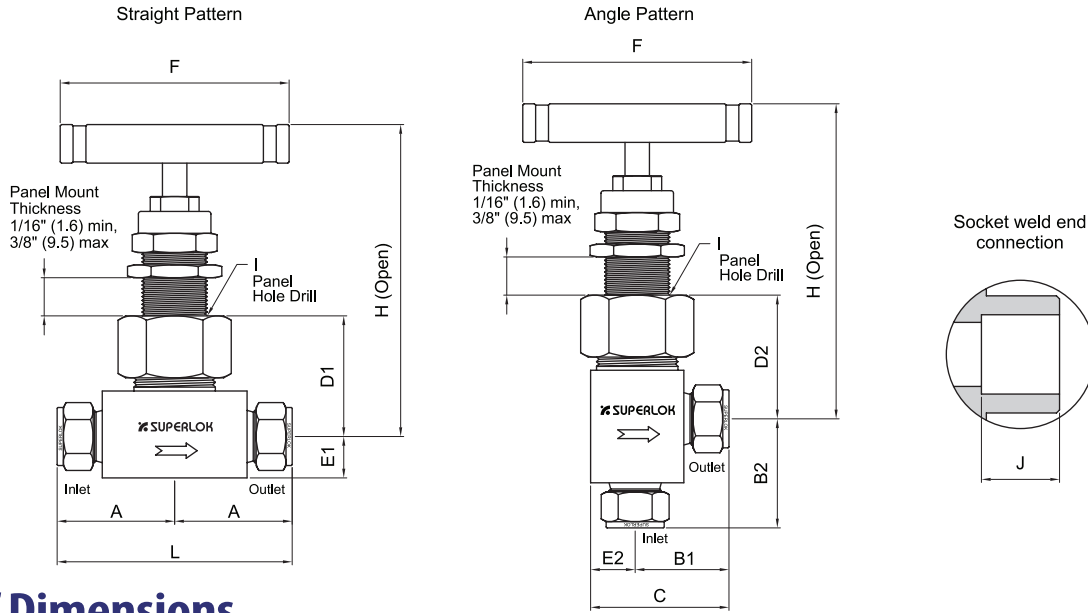
## Materials of Construction



No.	Component	Material Grade / ASTM Specification			
		Stainless Steel	Alloy 400	Alloy C-276	
1	Bar Handle	SS316 / A276			
	Set Screw	Stainless Steel			
2	Packing Bolt	SS316 / A276			
3	Packing Nut	SS316 / A276 or A479			
4	Panel Nut	SS316 / A276			
5	Packing Gland	SS316 / A276	Alloy R-405 / B164	Alloy C-276 / B574	
*6	Packing	PTFE			
7	Union Nut	SS316 / A276			
*8	Bonnet	SS316 / A479	Alloy R-405 / B164	Alloy C-276 / B574	
*9	Packing Supports	Glass-filled PTFE			
*10	STEM	Vee Tip	SS316 / A276	Alloy R-405 / B164	Alloy C-276 / B574
		Ball Tip			
		Soft Tip			
		Regulating			
*11	Body	SS316 / A479	Alloy R-400 / B164	Alloy C-276 / B574	

•Wetted components are marked <sup>\*</sup>and <sup>\*\*</sup>

# SUNV Series



## Table of Dimensions

Order Number		Orifice (mm)	Cv	End Connections		Dimensions (mm)																							
Series	Part No.			Inlet	Outlet	L	A	B1	B2	C	D1	D2	E1	E2	F	I	H Straight	H Angle	J										
SUNV1	F	2N	4.0	0.35	1/8" Female NPT		50.8	25.4	23.0	32.9	27.8	32.6	9.9	9.9	45.0	15.1	77.8	82.6	-										
	F	4N			1/4" Female NPT		52.4	26.2																					
	M	4N			1/4" Male NPT		50.8	25.4	25.4	35.3																			
	MF	4N			1/4" Male NPT	1/4" Female NPT	52.4	26.2	23.0	32.9																			
	S	6M			6mm SUPERLOK		62.0	31.0	29.4	37.3	39.3	27.8	77.8	7.2															
	S	4			1/4" SUPERLOK		46.0	23.0	22.3	30.2	32.2																		
	SW	4T			1/4" Tube Socket Weld							62.0	31.0	29.4	37.3	39.3													
	S	8M			8mm SUPERLOK		57.2	28.6	25.4	28.6	38.1						34.1	12.7	12.7	64.0	19.9	93.7	96.9	-					
F	4N	1/4" Female NPT		57.2	28.6	25.4						28.6	38.1	37.3															
F	6N	3/8" Female NPT		73.0	36.5	33.3						39.7	46.1	34.2	93.7														
S	10M	10mm SUPERLOK														73.0									36.5	33.3	39.7	46.1	34.2
S	6	3/8" SUPERLOK		77.8	38.9	35.7						42.1	48.4	34.2	93.7														
S	12M	12mm SUPERLOK														77.8									38.9	35.7	42.1	48.4	34.2
S	8	1/2" SUPERLOK		57.2	28.6	25.4						28.6	38.1	37.3	96.9	9.6													
SW	4P	1/4" Pipe Socket Weld																							57.2	28.6	25.4	28.6	38.1
SW	6T	3/8" Tube Socket Weld		79.4	39.7	33.3	39.7	50.8	46.0	50.8	15.9	17.5	89.0	26.2	121.5	126.2													
SW	8T	1/2" Tube Socket Weld															79.4	39.7	33.3	39.7	50.8	46.0	50.8	15.9	17.5	89.0	26.2	121.5	126.2
F	8N	1/2" Female NPT		79.4	39.7	33.3	39.7	50.8	46.0	50.8	15.9	17.5	89.0	26.2	121.5	126.2													
F	12N	3/4" Female NPT		82.6	41.3	-	-	-	48.4	-	19.9	-					89.0	26.2	123.9	-									
F	16N	1" Female NPT		92.0	46.0	-	-	-	54.0	-	25.4	-	89.0	26.2	129.4	-													
MF	8N	1/2" Male NPT	1/2" Female NPT	79.4	39.7	33.3	39.7	50.8	46.0	50.8	15.9	17.5					89.0	26.2	121.5	126.2									
MF	12N	3/4" Male NPT	3/4" Female NPT	82.6	41.3	-	-	-	48.4	-	19.9	-	89.0	26.2	123.9	-													
MF	16N	1" Male NPT	1" Female NPT	92.0	46.0	-	-	-	54.0	-	25.4	-					89.0	26.2	129.4	-									
S	12M	12mm SUPERLOK		100.0	50.0	43.7	53.2	61.2	46.0	47.6	15.9	17.5	89.0	26.2	121.5	123.1													
S	8	1/2" SUPERLOK															79.4	39.7	33.3	39.7	50.8	47.6	50.8	17.5	17.5	89.0	26.2	123.1	9.6
S	12	3/4" SUPERLOK																											
S	16	1" SUPERLOK															79.4	39.7	33.3	42.9	50.8	46.0	47.6	15.9	-	89.0	26.2	121.5	123.1
SW	8P	1/2" Pipe Socket Weld		79.4	39.7	33.3	39.7	50.8	46.0	47.6	15.9	-	89.0	26.2	121.5	123.1													
SW	8T	1/2" Tube Socket Weld															79.4	39.7	33.3	42.9	50.8	46.0	47.6	15.9	-	89.0	26.2	121.5	123.1
SW	12T	3/4" Tube Socket Weld		-	-	-	-	-	46.0	-	-	-	89.0	26.2	-	11.1													

\* Dimensions shown with SUPERLOK nuts measure in the finger - tight, where applicable.  
All dimensions are for reference only, subject to change.

# Technical Data

## Temperature and Pressure Rating

Body Material	Stem	Temperature Rating	Pressure Rating @ -65°F ~ 100°F (-54°C ~ 38°C)
SS316	NR-Vee, NR-Ball & Regulating	-65°F ~ 450°F (-54°C ~ 232°C)	6000 psig (413 bar)
	NR-Soft Seat(Kel-F)	-65°F ~ 200°F (-54°C ~ 93°C)	
Alloy 400	NR-Vee, NR-Ball & Regulating	-65°F ~ 450°F (-54°C ~ 232°C)	5000 psig (345 bar)
	NR-Soft Seat(Kel-F)	-65°F ~ 200°F (-54°C ~ 93°C)	
Alloy C-276	NR-Vee, NR-Ball & Regulating	-65°F ~ 450°F (-54°C ~ 232°C)	6000 psig (413 bar)
	NR-Soft Seat(Kel-F)	-65°F ~ 200°F (-54°C ~ 93°C)	

\*NR : Non-Rotating \* The above ratings are for a standard valve with PTFE packing. \* Extreme temperature fluctuations may require packing adjustment.

## Temperature vs Working Pressure

Temperature Rating	Pressure psig(bar) @ Temperature Rating			
	SS316	Alloy 400	Alloy C-276	
-65°F (-54 °C) to	100°F (38 °C)	6000psig (413bar)	5000psig (345bar)	6000psig (413bar)
	200°F (93 °C)	5160psig (355bar)	4400psig (303bar)	6000psig (413bar)
	300°F (148 °C)	4660psig (321bar)	4120psig (283bar)	6000psig (413bar)
	350°F (176 °C)	4470psig (308bar)	4050psig (279bar)	5975psig (411bar)
	400°F (204 °C)	4280psig (294bar)	3980psig (274bar)	5880psig (405bar)
	450°F (232 °C)	4130psig (284bar)	3970psig (273bar)	5710psig (393bar)

## Packing and Body materials vs Temperature and Pressure Rating

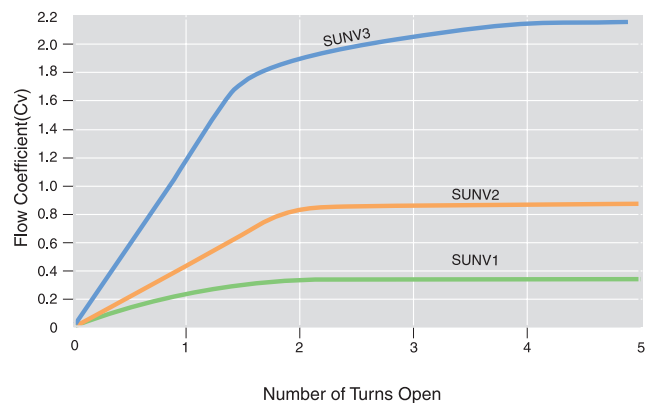
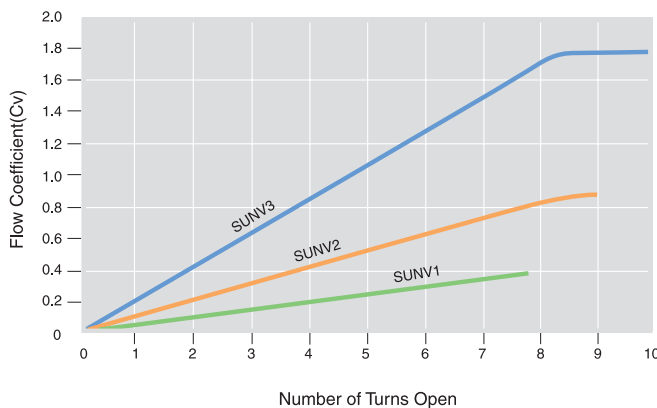
Packing Material	Body Material	Temperature Rating	Pressure Rating @ Max. Temperature
PTFE (Standard)	SS316	-65°F ~ 450°F (-54 °C ~ 232 °C)	4130 psig (284 bar)
	Alloy 400		3970 psig (273 bar)
	Alloy C-276		5710 psig (393 bar)
PEEK	SS316	-65°F ~ 600°F (-54 °C ~ 315 °C)	3760 psig (259 bar)
	Alloy 400	-65°F ~ 500°F (-54 °C ~ 260 °C)	3960 psig (272 bar)
	Alloy C-276	-65°F ~ 600°F (-54 °C ~ 315 °C)	5040 psig (347 bar)
Grafoil	SS316	-65°F ~ 1200°F (-54 °C ~ 648 °C)	1715 psig (118 bar)
	Alloy 400	-65°F ~ 500°F (-54 °C ~ 260 °C)	3960 psig (272 bar)
	Alloy C-276	-65°F ~ 1200°F (-54 °C ~ 648 °C)	1545 psig (106 bar)

\*Alloy 400 not applicable over 500°F (260°C)

\* PEEK is not recommended for service with aromatic heat transfer or concentrated sulfuric and nitric acids. Other limitations may apply.

## Flow Data at 100°F(37°C)

### Flow Coefficient at Turns Open



# Handle

- 316 Stainless steel bar handles are standard.
- Optional anodized black aluminum bar handles are available.

## Ordering Information

**SUNV1 - MS - 4N - 4 - AH - A - GRBT - SS**

**1                      2                      3                      4                      5                      6                      7                      8**

### 1. Valve Series

- SUNV1 : 4.0mm Orifice
- SUNV2 : 6.4mm Orifice
- SUNV3 : 11.0mm Orifice

### 2. Port Type (Inlet x Outlet)

- S : SUPERLOK Tube Fitting
- M : Male Pipe Thread
- F : Female Pipe Thread
- SW : Socket Weld
- MS : Male Pipe Thread x SUPERLOK Tube Fitting
- MF : Male Pipe Thread x Female Pipe Thread

### 3. Port Size

#### ■ Pipe Thread Designation

Size (inch)	1/8	1/4	3/8	1/2	3/4	1
Screwed BSPT	2R	4R	6R	8R	12R	16R
Screwed NPT	2N	4N	6N	8N	12N	16N

#### ■ Tube O.D Designation

Tube O.D (inch)	1/4	3/8	1/2	3/4	1
Designation	4	6	8	12	16
Tube O.D (mm)	6	10	12	20	25
Designation	6M	10M	12M	20M	25M

### 4. Handle

- Nil : 316 Stainless Steel Bar Handle (Standard)
- AH : Anodized Black aluminum bar handle

### 5. Flow Pattern

- Nil : Straight Pattern (Standard)
- A : Angle Pattern

### 6. Packing Material

- Nil : PTFE (Standard)
- PE : PEEK
- GR : Grafoil

### 7. Stem Tip

- Nil : Non-Rotating Vee (Standard)
- RT : Regulating
- BT : Non-Rotating Ball
- ST : Non-Rotating Soft Seat

### 8. Body Material

- SS : 316 Stainless Steel
- M : Alloy 400 (Monel)
- H : Alloy C-276 (Hastelloy)

#### ■ Examples

- ex1) SUNV1 - S - 4 - SS  
 - SUNV1 Series / [Inlet]SUPERLOK x [Outlet]SUPERLOK / Port Size: 1/4" x 1/4" / SS316 Bar Handle / Straight Pattern / PTFE packing / Vee Tip / 316 Stainless Steel Body
- ex2) SUNV2 - SW - 8T - BT - SS  
 - SUNV2 Series / [Inlet]Tube Socket Weld x [Outlet]Tube Socket Weld / Port Size: 1/4" x 1/4" / SS316 Bar Handle / Straight Pattern / PTFE packing / Ball Tip / 316 Stainless Steel Body
- ex3) SUNV3 - MF - 8N - A - GRRT - SS  
 - SUNV3 Series / [Inlet]Male Pipe Thread x [Outlet]Female Pipe Thread / Port Size: 1/2"NPT x 1/2"NPT / SS316 Bar Handle / Angle Pattern / Grafoil packing / Regulating Tip / 316 Stainless Steel Body