

# XINVAL

## Needle Valves

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## Forged Body Needle Valves

**NV1 Series:** Working pressure up to 6000 psig

**NV1H Series:** Working pressure up to 10000 psig

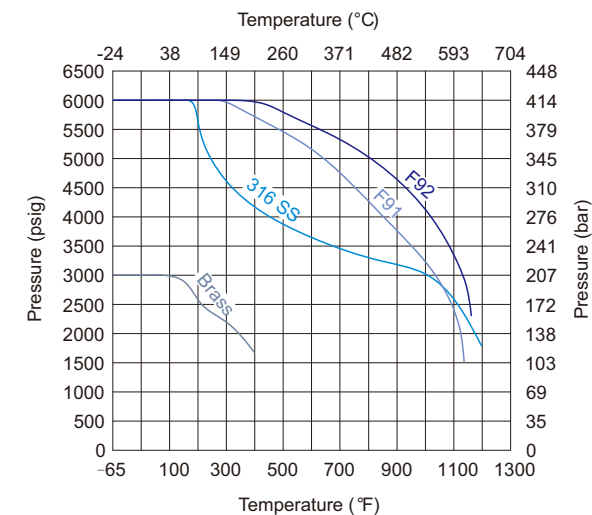
### Features

- One-piece forged body
- Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- Upper stem thread lubricant isolated from system media
- Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- Panel mounting available
- Steady and durable fastening of the handle by double lock-pins
- Handles of different colors available
- Every valve leak tested with Nitrogen or compressed air (NV1 Series) at the maximum allowable working pressure or with water (NV1H Series) at 1.1 times the maximum allowable working pressure
- Working pressure up to :
  - NV1 Series Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
  - Titanium: 3500 psig (241 bar)
  - Brass: 3000 psig (207 bar)
  - NV1H Series Stainless steel: 10000 psig (690 bar)
- Working temperature:
  - PTFE: -65°F to 450°F (-24°C to 232°C)
  - PEEK: -65°F to 500°F (-24°C to 260°C)
  - Graphite: -65°F to 1200°F (-24°C to 649°C)

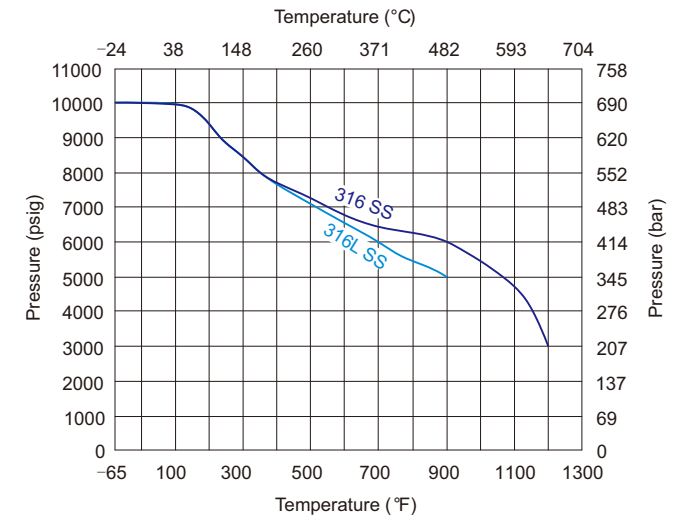


### Pressure vs. Temperature

NV1 Series



NV1H Series



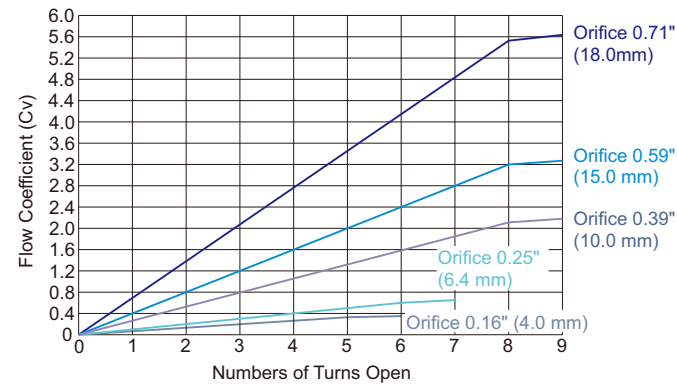
1. Graphs are based on graphite packing.

2. Soft tips are for NV1 Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).

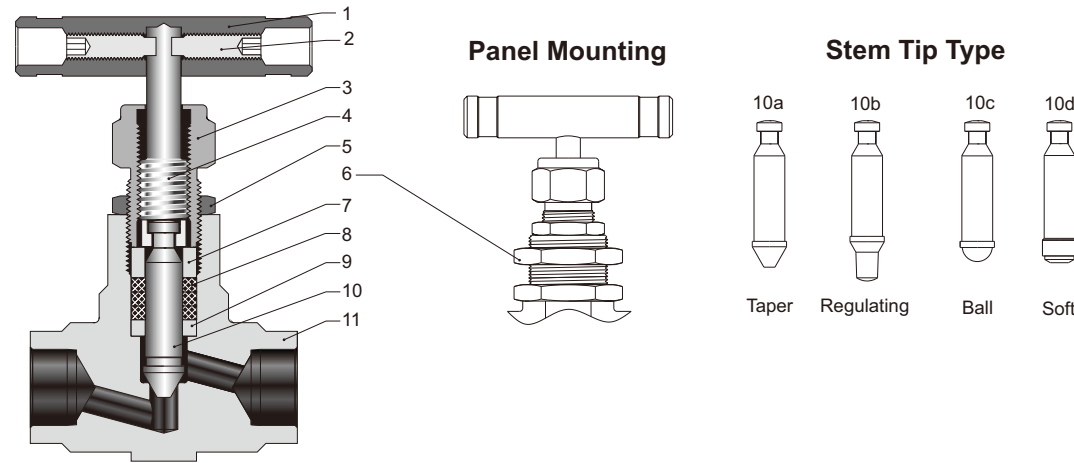
3. Contact XINVAL Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100 F (38°C)

Regulating Stem Tip



## Standard Materials of Construction

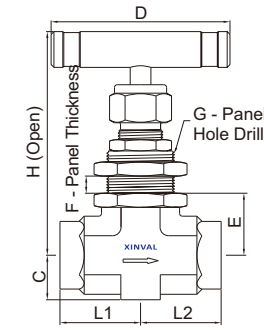


Item	Component	Valve Body Material		
		316 SS	F91	Brass
		Material Grade/ASTM Specification		
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Galvanized carbon steel		
3	Packing Bolt	304 SS/A479	F91/A182	Brass C36000/B16
4	Upper Stem	316 SS/A479		
5	Lock Nut	Stainless steel	1020/A108	Brass C36000/B16
6	Panel Nut	Stainless steel	1020/A108	Brass C36000/B16
7	Gland	316 SS/A479		Brass C36000/B16
8	Packing	PTFE or PEEK or graphite		
9	Packing Washer	316 SS/A479		Brass C36000/B16
10a 10b 10c	Lower Stem	Hardened 316 SS/A479		
10d		Stem	316 SS/A479	
10d		Stem Tip	PTFE or PCTFE	
11	Body	316 SS/A182	F91/A182	Brass C37700/B283
	Seat	Same as Body		
	Lubricant	Molybdenum disulfide-based		

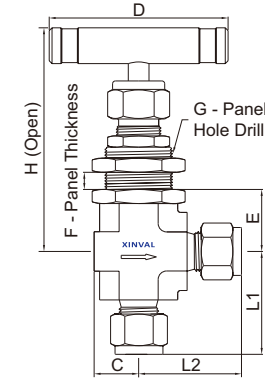
Note: Contact XINVAL Group or our authorized distributors for other materials.

## Dimensions

### Straight Pattern



### Angle Pattern



⦿ NV1 Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: 316-NV12A-FN2-4-Y

## Dimensions of NV1 Series

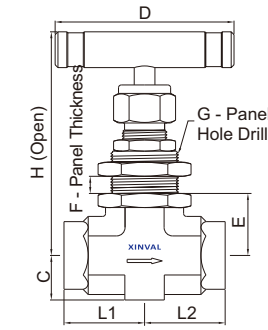
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)												
	Inlet	Outlet			L1	L2	H	D	C	E	F	G					
316-NV12A-FN2-4	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	2.85 (72.5)	2.17 (55)	0.49 (12.5)	0.71 (18.0)	0.25 (6.4)	0.77 (19.6)					
316-NV12A-FN4-4	1/4 Female NPT	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)											
316-NV12A-F4-4	1/4" Tube Fitting	1/4" Tube Fitting			1.22 (30.9)	1.22 (30.9)											
316-NV12A-F6M-4	6 mm Tube Fitting	6 mm Tube Fitting			1.25 (31.75)	1.25 (31.75)											
316-NV12A-F8M-4	8 mm Tube Fitting	8 mm Tube Fitting			1.03 (26.2)	1.03 (26.2)											
316-NV12A-N4-4	1/4 Male NPT	1/4 Male NPT			1.13 (28.6)	1.13 (28.6)											
316-NV12A-N6-4	3/8 Male NPT	3/8 Male NPT			1.13 (28.6)	1.13 (28.6)											
316-NV12A-OR4-4	1/4" Male OR	1/4" Male OR			1.13 (28.6)	1.13 (28.6)											
316-NV12A-MR4-4	1/4" Male MR	1/4" Male MR			1.13 (28.6)	1.13 (28.6)											
316-NV12A-FN4-6	1/4 Female NPT	1/4 Female NPT			1.42 (36.1)	1.42 (36.1)							0.62 (15.8)	0.76 (19.4)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
316-NV12A-FN6-6	3/8 Female NPT	3/8 Female NPT			1.44 (36.5)	1.44 (36.5)											
316-NV12A-N6-6	3/8 Male NPT	3/8 Male NPT			1.53 (38.9)	1.53 (38.9)											
316-NV12A-F6-6	3/8" Tube Fitting	3/8" Tube Fitting	1.56 (39.7)	1.56 (39.7)													
316-NV12A-F10M-6	10 mm Tube Fitting	10 mm Tube Fitting	1.26 (32.0)	1.26 (32.0)													
316-NV12A-F12M-6	12 mm Tube Fitting	12 mm Tube Fitting	1.50 (38.1)	1.50 (38.1)													
316-NV12A-F14M-6	14 mm Tube Fitting	14 mm Tube Fitting	1.53 (38.9)	1.53 (38.9)													
316-NV12A-FN8-6	1/2 Female NPT	1/2 Female NPT	1.13 (28.6)	1.13 (28.6)													
316-NV12A-N8-6	1/2 Male NPT	1/2 Male NPT	1.50 (38.1)	1.50 (38.1)													
316-NV12A-F8-6	1/2" Tube Fitting	1/2" Tube Fitting	1.50 (38.1)	1.50 (38.1)													
316-NV12A-TS6-6	3/8" TS	3/8" TS	2.92 (74.1)	2.92 (74.1)													
316-NV12A-TS8-6	1/2" TS	1/2" TS	1.13 (28.6)	1.13 (28.6)													
316-NV12A-TS12M-6	12 mm MTS	12 mm MTS	1.50 (38.1)	1.50 (38.1)													
316-NV12A-TS14M-6	14 mm MTS	14 mm MTS	1.50 (38.1)	1.50 (38.1)													
316-NV12A-TS16M-6	16 mm MTS	16 mm MTS	1.50 (38.1)	1.50 (38.1)													
316-NV12A-TB14M-6	14 mm MTB	14 mm MTB	2.92 (74.1)	2.92 (74.1)													
316-NV12A-TB16M-6	16 mm MTB	16 mm MTB	1.13 (28.6)	1.13 (28.6)													
316-NV12A-UMB14-6	14 mm UMB	14 mm UMB	1.56 (39.7)	1.56 (39.7)													
316-NV12A-UMB16-6	16 mm UMB	16 mm UMB	1.50 (38.1)	1.50 (38.1)													
316-NV12A-OR8-6	1/2" Male OR	1/2" Male OR	1.56 (39.7)	1.56 (39.7)													
316-NV12A-MR8-6	1/2" Male MR	1/2" Male MR	1.50 (38.1)	1.50 (38.1)													
316-NV12A-MS20-6	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric															

Dimensions of NV1 Series

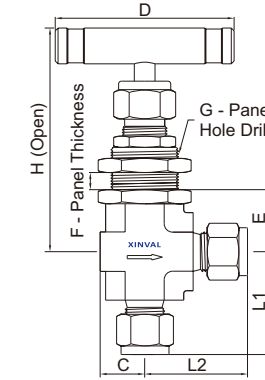
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
316-NV12A-MS22-6	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric	0.25 (6.4)	0.85	1.50 (38.1)	1.50 (38.1)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96
316-NV12A-FN8-10	1/2 Female NPT	1/2 Female NPT			1.56 (39.7)	1.56 (39.7)			0.80 (20.4)			
316-NV12A-N12-10	3/4 Male NPT	3/4 Male NPT										
316-NV12A-F12-10	3/4" Tube Fitting	3/4" Tube Fitting										
316-NV12A-F14M-10	14 mm Tube Fitting	14 mm Tube Fitting										
316-NV12A-F16M-10	16 mm Tube Fitting	16 mm Tube Fitting										
316-NV12A-F18M-10	18 mm Tube Fitting	18 mm Tube Fitting										
316-NV12A-F20M-10	20 mm Tube Fitting	20 mm Tube Fitting										
316-NV12A-TS14M-10	14 mm MTS	14 mm MTS	0.39 (10.0)	2.18					0.76 (19.4)			
316-NV12A-TS16M-10	16 mm MTS	16 mm MTS					3.86 (98.0)	3.50 (88.9)		1.10 (28.3)	0.38 (9.7)	1.08 (27.5)
316-NV12A-TS18M-10	18 mm MTS	18 mm MTS										
316-NV12A-TS12-10	3/4" TS	3/4" TS			1.56 (39.7)	1.56 (39.7)						
316-NV12A-PS8-10	1/2 PS	1/2 PS							0.80 (20.4)			
316-NV12A-TB16M-10	16 mm MTB	16 mm MTB										
316-NV12A-UMB14-10	14 mm UMB	14 mm UMB							0.76 (19.4)			
316-NV12A-UMB16-10	16 mm UMB	16 mm UMB			2.98 (75.7)	2.98 (75.7)						
316-NV12A-MS27-10	M27 x 2 Male Metric	M27 x 2 Male Metric			1.56 (39.7)	1.56 (39.7)						
316-NV12A-FN12-15	3/4 Female NPT	3/4 Female NPT										
316-NV12A-TS16-15	1" TS	1" TS										
316-NV12A-TS25M-15	25 mm MTS	25 mm MTS	0.59 (15.0)	3.27	1.97 (50.0)	1.97 (50.0)	5.00 (127)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)
316-NV12A-TS28M-15	28 mm MTS	28 mm MTS										
316-NV12A-PS12-15	3/4 PS	3/4 PS										
316-NV12A-PB12-15	3/4 PB	3/4 PB										
316-NV12A-F12-15	3/4" Tube Fitting	3/4" Tube Fitting										
316-NV12A-F20M-15	20 mm Tube Fitting	20 mm Tube Fitting			2.35 (59.7)	2.35 (59.7)						
316-NV12A-TS16-18	1" TS	1" TS										
316-NV12A-TS25M-18	25 mm MTS	25 mm MTS	0.71 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	5.33 (135.4)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)
316-NV12A-TS28M-18	28 mm MTS	28 mm MTS										
316-NV12A-PS12-18	3/4 PS	3/4 PS										
316-NV12A-PB16-18	1 PB	1 PB										

1. Connection type of "OR" means O-ring face seal fittings. "MR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "TS\*M" means metric tube socket weld. "TB\*M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact XINVAL Group or our authorized distributors.
3. Dimensions are shown with XINVAL tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.

Straight Pattern



Angle Pattern



● NV1H Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: 316-NV1H2A-FN2-4-Y

Dimensions of NV1H Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
316-NV1H2A-F4-4	1/4" Tube Fitting	1/4" Tube Fitting	0.16 (4.0)	0.35	1.41 (35.8)	1.41 (35.8)	2.85 (72.5)	2.17 (55)	0.62 (15.8)	0.76 (19.4)	0.25 (6.4)	0.77 (19.6)
316-NV1H2A-FN2-4	1/8 Female NPT	1/8 Female NPT			1.00 (25.4)	1.00 (25.4)						
316-NV1H2A-FN4-4	1/4 Female NPT	1/4 Female NPT			1.06 (26.2)	1.06 (26.2)						
316-NV1H2A-N4-4	1/4 Male NPT	1/4 Male NPT			1.22 (30.9)	1.22 (30.9)						
316-NV1H2A-FN4-N4-4	1/4 Female NPT	1/4 Male NPT			1.06 (26.2)	1.22 (30.9)						
316-NV1H2A-TS4-4	1/4" TS	1/4" TS			1.06 (26.2)	1.06 (26.2)						
316-NV1H2A-FN4-6	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	3.38 (85.8)	2.50 (63.5)	0.76 (19.4)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
316-NV1H2A-FN6-6	3/8 Female NPT	3/8 Female NPT			1.50 (38.1)	1.50 (38.1)						
316-NV1H2A-N6-6	3/8 Male NPT	3/8 Male NPT										
316-NV1H2A-TS8-10	1/2" TS	1/2" TS	0.39 (10.0)	2.18			3.86 (98.0)	3.50 (88.9)	0.80 (20.4)	1.10 (28.3)	0.38 (9.7)	1.08 (27.5)
316-NV1H2A-TS16M-10	16 mm MTS	16 mm MTS			1.56 (39.7)	1.56 (39.7)						
316-NV1H2A-TB25M-10	25 mm MTB	25 mm MTB										
316-NV1H2A-FN8-10	1/2 Female NPT	1/2 Female NPT			4.16 (105.7)							

1. Connection type of "OR" means O-ring face seal fittings. "MR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "TS\*M" means metric tube socket weld. "TB\*M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact XINVAL Group or our authorized distributors.
3. Dimensions are shown with XINVAL tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.

# Screwed Bonnet Needle Valves

## NV2 Series:

Working pressure up to 6000 psig

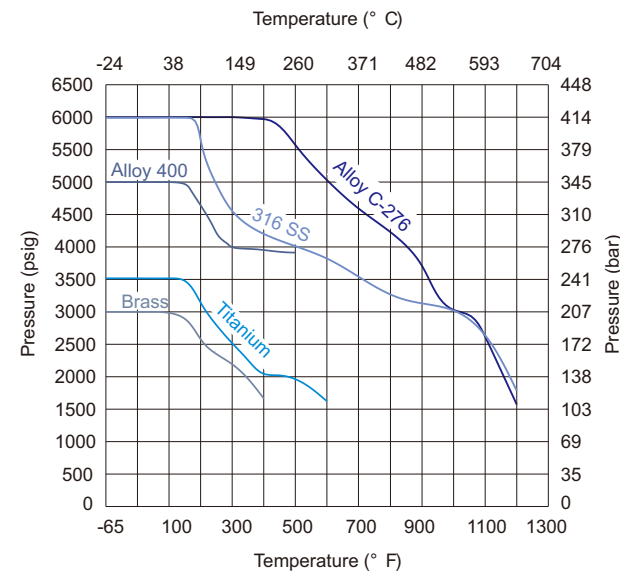


### Features

- ⦿ Cold drawn bar as body
- ⦿ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Safety back seating seal in fully open position
- ⦿ Panel mounting available
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- ⦿ Working pressure up to :
  - Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
  - Titanium: 3500 psig (241 bar)
  - Brass: 3000 psig (207 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-24°C to 232°C)
  - PEEK: -65°F to 500°F (-24°C to 260°C)
  - Graphite: -65°F to 1200°F (-24°C to 649°C)

### Pressure vs. Temperature

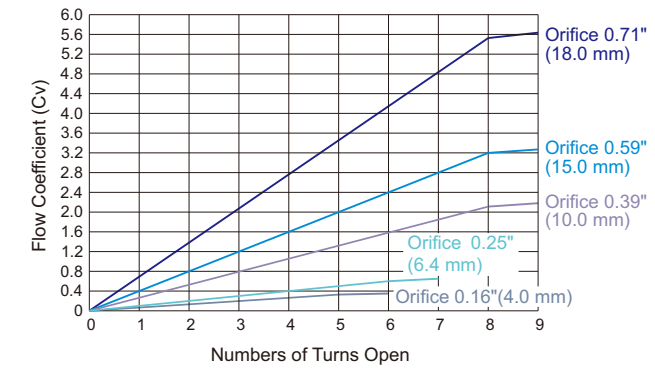
NV2 Series



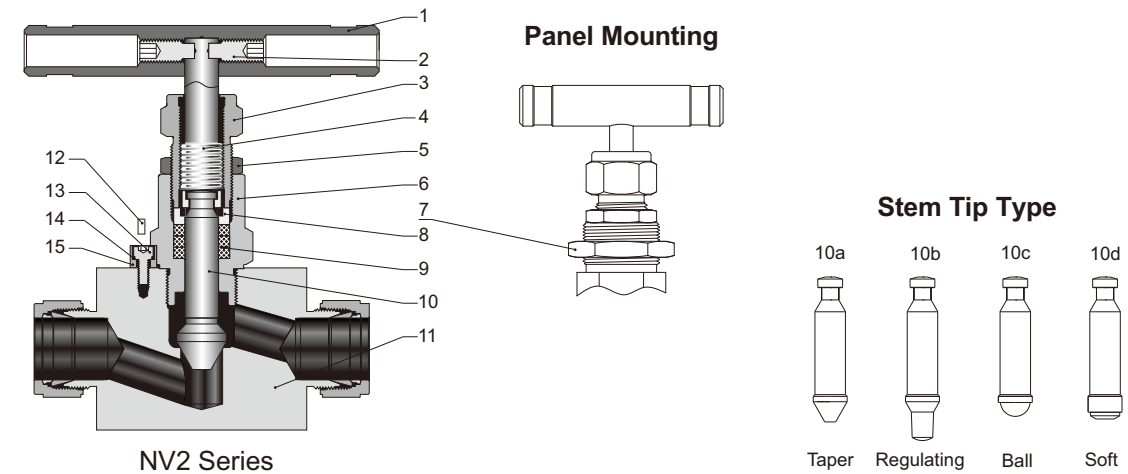
1. Graphs are based on graphite packing.  
 2. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).  
 3. Contact XINVAL Group or our authorized distributors for curve graph of other materials.

### Flow Data at 100 °F (38 °C)

Regulating Stem Tip



### Standard Materials of Construction

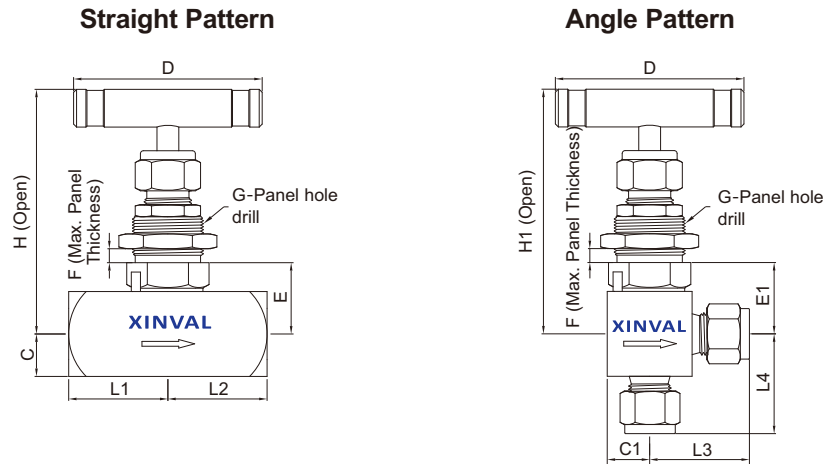


Item	Component	Valve Body Material				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
		<b>Material Grade/ASTM Specification</b>				
1	Handle	Anodized aluminum or stainless steel or black knob				
2	Set Screw	Galvanized carbon steel				
3	Packing Bolt	304 SS/A479				Brass C36000/B16
4	Upper Stem	316 SS/A479				
5	Lock Nut	Stainless steel				Brass C36000/B16
6	Bonnet	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	

Item	Component	Valve Body Material					
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass	
Material Grade/ASTM Specification							
7	Panel Nut	Stainless steel				Brass C36000/B16	
8	Gland	316 SS/A479					
9	Packing	PTFE or PEEK or graphite					
10a 10b 10c	Lower Stem	Hardened 316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	Hardened 316 SSA479	
10d	Stem	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	316 SS/A479	
	Stem Tip	PTFE or PCTFE					
11	Body	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	Brass C36000/B16	
	Seat	Same as Body					
12	Lock Pin	Stainless steel					
13	Screw	Stainless steel					
14	Spring Washer	Stainless steel					
15	Bush	Stainless steel					
	Lubricant	Molybdenum disulfide-based					

- Item 12 is applied in valves with orifice of 4.0 and 6.0mm. For valves with orifice of 10.0, 15.0 and 18.0mm, item 13, 14 and 15 are used instead of item 12.
- Contact XINVAL Group or our authorized distributors for other materials.

### Dimensions



© NV2 Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: 316-NV22ASS-FN2-4-Y

### Dimensions of NV2 Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)															
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1			
316-NV22A-FN2-4	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	1.00 (25.4)	0.56 (14.3)												
316-NV22A-FN4-4	1/4 Female NPT	1/4 Female NPT			1.06 (26.9)	1.06 (26.9)	1.06 (26.9)													
316-NV22A-FN4-4	1/4 Male NPT	1/4 Male NPT			1.03 (26.2)	1.03 (26.2)	1.06 (26.9)	1.06 (26.9)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	0.84 (21.4)	0.84 (21.4)	0.25 (6.4)	0.77 (19.6)	2.86 (72.7)	2.86 (72.7)			
316-NV22A-FN6-4	3/8 Male NPT	3/8 Male NPT			1.19 (30.2)	1.19 (30.2)														
316-NV22A-F4-4	1/4" Tube Fitting	1/4" Tube Fitting																		
316-NV22A-F6M-4	6 mm Tube Fitting	6 mm Tube Fitting			1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)												
316-NV22A-F8M-4	8 mm Tube Fitting	8 mm Tube Fitting																		
316-NV22A-FN4-6	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)												
316-NV22A-FN6-6	3/8 Female NPT	3/8 Female NPT							0.56 (14.3)	0.56 (14.3)	2.50 (63.5)	0.89 (22.5)	0.89 (22.5)	0.38 (9.7)	0.96 (24.4)	3.50 (88.9)	3.50 (88.9)			
316-NV22A-F6-6	3/8" FITOK	3/8" FITOK			1.41 (35.8)	1.41 (35.8)	1.32 (33.6)	1.32 (33.6)												
					1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)												
316-NV22A-F8-6	1/2" Tube Fitting	1/2" Tube Fitting																		

### Dimensions of NV2 Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)																	
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1					
316-NV22A-F10M-6	10 mm Tube Fitting	10 mm Tube Fitting	0.25 (6.4)	0.85	1.42 (36.1)	1.42 (36.1)	1.33 (33.8)	1.33 (33.8)														
316-NV22A-F12M-6	12 mm Tube Fitting	12 mm Tube Fitting			1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)														
316-NV22A-F14M-6	14 mm Tube Fitting	14 mm Tube Fitting			1.56 (39.7)	1.56 (39.7)																
316-NV22A-TS6-6	3/8" TS	3/8" TS																				
316-NV22A-TS8-6	1/2" TS	1/2" TS																				
316-NV22A-TS12M-6	12 mm MTS	12 mm MTS			1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	0.56 (14.3)	0.56 (14.3)	2.50 (63.5)	0.89 (22.5)	0.89 (22.5)	0.38 (9.7)	0.96 (24.4)	3.50 (88.9)	3.50 (88.9)					
316-NV22A-TS14M-6	14 mm MTS	14 mm MTS																				
316-NV22A-TS16M-6	16 mm MTS	16 mm MTS																				
316-NV22A-TB14M-6	14 mm MTB	14 mm MTB			1.50 (38.1)	1.50 (38.1)	1.50 (38.1)	1.50 (38.1)														
316-NV22A-TB16M-6	16 mm MTB	16 mm MTB																				
316-NV22A-UMB14-6	14 mm UMB	14 mm UMB			2.92 (74.1)	2.92 (74.1)																
316-NV22A-UMB16-6	16 mm UMB	16 mm UMB																				
316-NV22A-MS20-6	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)																
316-NV22A-MS22-6	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric																				
316-NV22A-FN8-10	1/2 Female NPT	1/2 Female NPT			0.39 (10.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.63 (41.3)	1.50 (38.1)												
316-NV22A-FN12-10	3/4 Female NPT	3/4 Female NPT									1.50 (38.1)											
316-NV22A-FN12-10	3/4 Male NPT	3/4 Male NPT																				
316-NV22A-F12-10	3/4" Tube Fitting	3/4" Tube Fitting																				
316-NV22A-F14M-10	14 mm Tube Fitting	14 mm Tube Fitting					1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.88 (22.2)	0.75 (19.05)	3.50 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.11 (104.5)	4.11 (104.5)			
316-NV22A-F16M-10	16 mm Tube Fitting	16 mm Tube Fitting																				
316-NV22A-F18M-10	18 mm Tube Fitting	18 mm Tube Fitting																				
316-NV22A-TS14M-10	14 mm MTS	14 mm MTS																				
316-NV22A-TS16M-10	16 mm MTS	16 mm MTS																				
316-NV22A-TS12-10	3/4" TS	3/4" TS																				
316-NV22A-UMB14-10	14 mm UMB	14 mm UMB	2.98 (75.7)	2.98 (75.7)																		
316-NV22A-MS27-10	M27 x 2 Male Metric	M27 x 2 Male Metric	1.56 (39.7)	1.56 (39.7)																		
316-NV22A-FN12-15	3/4 Female NPT	3/4 Female NPT	0.59 (15.0)	3.27					1.75 (44.5)	1.14 (29.0)												
316-NV22A-TS16-15	1" TS	1" TS																				
316-NV22A-TS25M-15	25 mm MTS	25 mm MTS			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	1.70 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.00 (127)	4.72 (120)					
316-NV22A-TS28M-15	28 mm MTS	28 mm MTS																				
316-NV22A-PS12-15	3/4 PS	3/4 PS																				
316-NV22A-FN16-18	1 Female NPT	1 Female NPT																				
316-NV22A-TS25M-18	25 mm MTS	25 mm MTS																				
316-NV22A-TS16-18	1" TS	1" TS																				
316-NV22A-TS28M-18	28 mm MTS	28 mm MTS			1.97 (50.0)	1.97 (50.0)			1.24 (31.5)		5.00 (127)											
316-NV22A-PS12-18	3/4 PS	3/4 PS																				
316-NV22A-PS16-18	1 PS	1 PS																				

- Connection type of "OR" means O-ring face seal fittings. "MR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "TS/M" means metric tube socket weld. "TB/M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
- Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact XINVAL Group or our authorized distributors.
- Dimensions are shown with XINVAL tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.

# Integral Bonnet Needle Valves

**NV3 Series: Working pressure up to 3000 psig**

**NV3H Series: Working pressure up to 5000 psig**

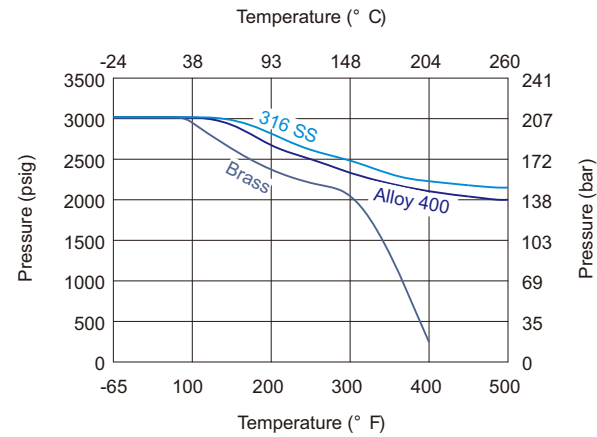
## Features

- One-piece forged body
- Easy external adjustments by packing nut
- Live-loaded packing system
- Handles of different colors available
- Compact design
- Panel mounting available
- Every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- Working pressure up to :
  - NV3 Series—Stainless steel, Brass, Alloy 400: 3000 psig (207 bar)
  - NV3H Series—Stainless steel: 5000 psig (345 bar)
- Working temperature:
  - PTFE: -65°F to 450°F (-24°C to 232°C)
  - PEEK: -65°F to 500°F (-24°C to 260°C)

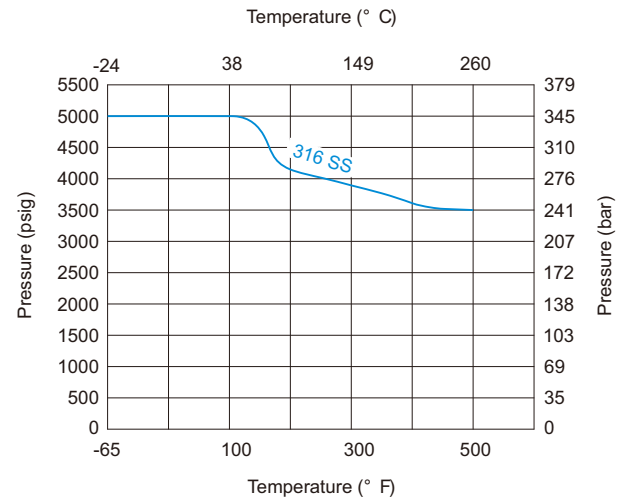


## Pressure vs. Temperature

NV3 Series



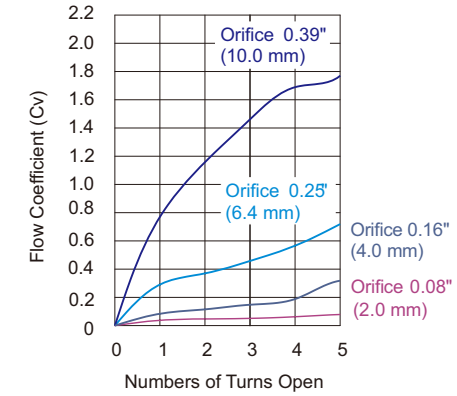
NV3H Series



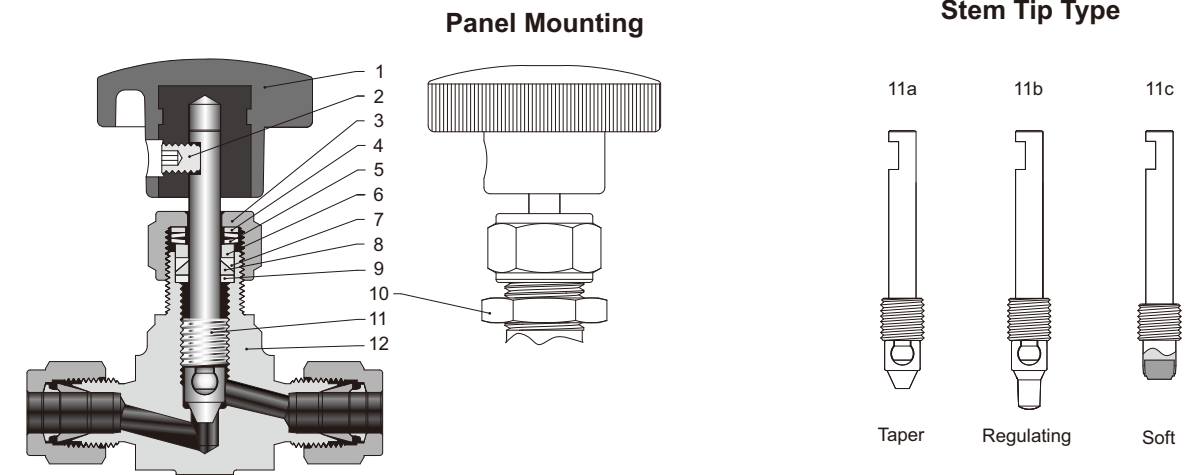
- Graphs are based on PEEK packing.
- Temperature rating is limited to 200°F (93°C) max with PCTFE stem tip (soft tip).
- Contact XINVAL Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100 °F (38 °C)

Regulating Stem Tip

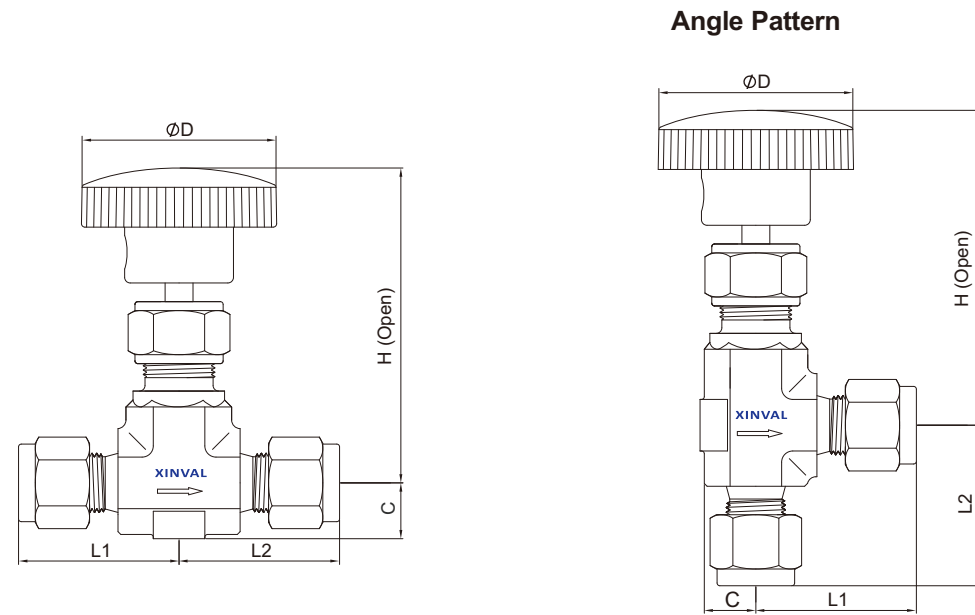


## Standard Materials of Construction



Item	Component	Valve Body Material		
		316 SS	Brass	Alloy 400
Material Grade/ASTM Specification				
1	Handle	Black knob (aluminum or nylon with copper insert), aluminum alloy or stainless steel bar handle		
2	Set Screw	Galvanized carbon steel		
3	Packing Bolt	304 SS/A479	Brass C36000/B16	304 SS/A479
4	Washer	316 SS/A479		
5	Packing Spring	S17700/A693		
6	Washer	316 SS/A479		
7	Upper Packing	PTFE/PEEK		
8	Lower Packing			
9	Packing Washer	316 SS/A479	Alloy 400/B164	
10	Panel Nut	Stainless steel	Brass C36000/B16	Stainless steel
11a	Stem	316 SS/A479		Alloy 400/B164
11b	Stem Tip	Hardened 316 SS/A 479		
11c	Stem	316 SS/A479		Alloy 400/B164
	Stem Tip	PCTFE or PEEK		
12	Body	316 SS/A182	Brass C37700/B283	Alloy 400/B564
Lubricant		Molybdenum disulfide-based		

Note: Contact XINVAL Group or our authorized distributors for other materials.



Dimensions of NV3 Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)					
	Inlet	Outlet			L1	L2	C	D	H	
316-NV32A-N2-2	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.75 (19.05)	0.75 (19.05)	0.32 (8.2)	1.00 (25.4)	2.30 (58.4)	
316-NV32A-FN2-2	1/8 Female NPT	1/8 Female NPT			0.81 (20.6)	0.81 (20.6)				
316-NV32A-F2-2	1/8" Tube Fitting	1/8" Tube Fitting			0.98 (25.0)	0.98 (25.0)				
316-NV32A-F3M-2	3 mm Tube Fitting	3 mm Tube Fitting								
316-NV32A-FN2-4	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	0.81 (20.6)	0.81 (20.6)	0.39 (10.0)	1.38 (35.0)	2.46 (62.5)	
316-NV32A-N4-4	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)				
316-NV32A-F4-4	1/4" Tube Fitting	1/4" Tube Fitting			1.13 (28.7)	1.13 (28.7)				
316-NV32A-F6M-4	6 mm Tube Fitting	6 mm Tube Fitting			1.17 (29.7)	1.17 (29.7)				
316-NV32A-F8M-4	8 mm Tube Fitting	8 mm Tube Fitting			2.24 (57.0)	2.24 (57.0)				
316-NV32A-UMB-4	6 mm UMB	6 mm UMB								
316-NV32A-FN4-6	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.49 (12.5)	1.88 (47.8)	2.85 (72.4)	
316-NV32A-FN6-6	3/8 Female NPT	3/8 Female NPT			0.62 (15.8)	2.90 (73.7)				
316-NV32A-N6-6	3/8 Male NPT	3/8 Male NPT			1.12 (28.4)	1.12 (28.4)	0.49 (12.5)		2.85 (72.4)	
316-NV32A-N8-6	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		2.90 (73.7)	
316-NV32A-F6-6	3/8" Tube Fitting	3/8" Tube Fitting			1.29 (32.8)	1.29 (32.8)				
316-NV32A-F8-6	1/2" Tube Fitting	1/2" Tube Fitting			1.40 (35.6)	1.40 (35.6)	0.49 (12.5)		1.88 (47.8)	2.85 (72.4)
316-NV32A-F10M-6	10 mm Tube Fitting	10 mm Tube Fitting			1.30 (33.0)	1.30 (33.0)				
316-NV32A-F12M-6	12 mm Tube Fitting	12 mm Tube Fitting			1.40 (35.6)	1.40 (35.6)				
316-NV32A-F14M-6	14 mm XINVA	14 mm XINVA			1.56 (39.7)	1.56 (39.7)	0.62 (15.8)			2.90 (73.7)
316-NV32A-MS20-6	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)				
316-NV32A-UMB10-6	10 mm UMB	10 mm UMB								2.85 (72.4)
316-NV32A-UMB14-6	14 mm UMB	14 mm UMB			2.60 (66.0)	2.60 (66.0)	0.49 (12.5)			

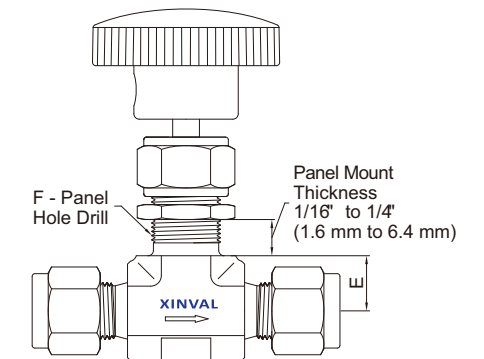
Dimensions of NV3 Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
316-NV32A-FN8-10-L	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.50 (38.1)	1.50 (38.1)	0.76 (19.4)	3.50 (88.9)	3.37 (85.7)
316-NV32A-FN12-10-L	3/4 Female NPT	3/4 Female NPT			1.56 (39.7)	1.56 (39.7)	0.80 (20.4)		
316-NV32A-N12-10-L	3/4 Male NPT	3/4 Male NPT			1.56 (39.7)	1.56 (39.7)	0.76 (19.4)		
316-NV32A-F8-10-L	1/2" Tube Fitting	1/2" Tube Fitting							
316-NV32A-F12-10-L	3/4" Tube Fitting	3/4" Tube Fitting			1.90 (48.3)	1.90 (48.3)	0.76 (19.4)		
316-NV32A-F14M-10-L	14 mm Tube Fitting	14 mm Tube Fitting							

1. Connection type of "OR" means O-ring face seal fittings. "MR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "TS\*M" means metric tube socket weld. "TB\*M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact XINVAL Group or our authorized distributors.
3. Dimensions are shown with XINVAL tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.

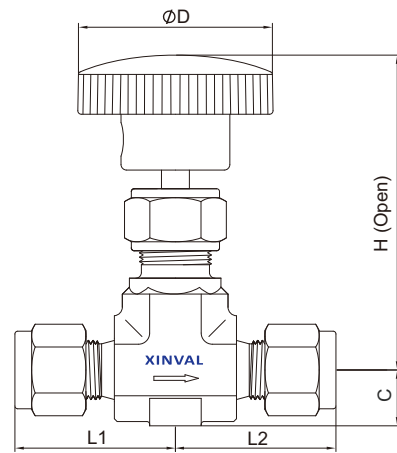
Panel Mount Dimensions of NV3 Series

Orifice in.(mm)	Dimensions, in.(mm)	
	E	F
0.08 (2.0)	0.44 (11.2)	0.47 (11.9)
0.16 (4.0)	0.44 (11.2)	0.53 (13.5)
0.25 (6.4)	0.50 (12.7)	0.78 (19.8)
0.39 (10.0)	0.75 (19.1)	1.03 (26.2)

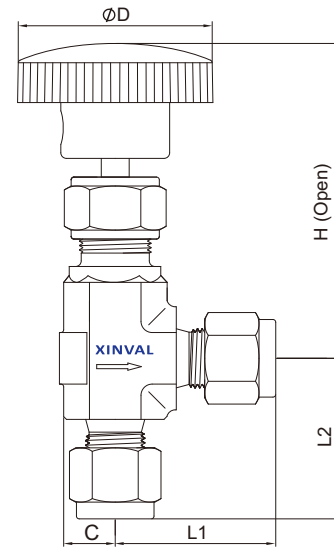


1. NV3 Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: 316-NV32A-N2-2-Y

**Straight Pattern**



**Angle Pattern**



**Dimensions of NV3H Series**

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	H			
316-NV3H2A-N2-2	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.75 (19.0)	0.75 (19.0)	0.32 (8.2)	1.00 (25.4)	2.30 (58.4)			
316-NV3H2A-FN2-2	1/8 Female NPT	1/8 Female NPT			0.81 (20.6)	0.81 (20.6)						
316-NV3H2A-F2-2	1/8" Tube Fitting	1/8 Tube Fitting			0.98 (25.0)	0.98 (25.0)						
316-NV3H2A-F3M-2	3 mm Tube Fitting	3 mm Tube Fitting										
316-NV3H2A-FN2-4	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	0.81 (20.6)	0.81 (20.6)	0.39 (10.0)	1.38 (35.0)	2.46 (62.5)			
316-NV3H2A-N4-4	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)						
316-NV3H2A-F4-4	1/4" Tube Fitting	1/4" Tube Fitting			1.13 (28.7)	1.13 (28.7)						
316-NV3H2A-F6M-4	6 mm Tube Fitting	6 mm Tube Fitting			1.17 (29.7)	1.17 (29.7)						
316-NV3H2A-F8M-4	8 mm Tube Fitting	8 mm Tube Fitting			2.24 (57.0)	2.24 (57.0)						
316-NV3H2A-UMB6-4	6 mm UMB	6 mm UMB										
316-NV3H2A-FN4-6	1/4 Female NPT	1/4 Female NPT			1.06 (26.9)	1.06 (26.9)				0.49 (12.5)	1.88 (47.8)	2.85 (72.4)
316-NV3H2A-FN6-6	3/8" Female NPT	3/8 Female NPT								0.62 (15.8)		
316-NV3H2A-N6-6	3/8 Male NPT	3/8 Male NPT			1.12 (28.4)	1.12 (28.4)				0.49 (12.5)		
316-NV3H2A-N8-6	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)				0.62 (15.8)		
316-NV3H2A-F6-6	3/8" Tube Fitting	3/8" Tube Fitting	1.29 (32.8)	1.29 (32.8)								
316-NV3H2A-F8-6	1/2" Tube Fitting	1/2" Tube Fitting	1.40 (35.6)	1.40 (35.6)	0.49 (12.5)							
316-NV3H2A-F10M-6	10 mm Tube Fitting	10 mm Tube Fitting	1.30 (33.0)	1.30 (33.0)								
316-NV3H2A-F12M-6	12 mm Tube Fitting	12 mm Tube Fitting	1.40 (35.6)	1.40 (35.6)								
316-NV3H2A-F14M-6	14 mm Tube Fitting	14 mm Tube Fitting	1.56 (39.7)	1.56 (39.7)	0.62 (15.8)							
316-NV3H2A-MS20-6	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric	1.50 (38.1)	1.50 (38.1)								
316-NV3H2A-UMB10-6	10 mm UMB	10 mm UMB										
316-NV3H2A-UMB14-6	14 mm UMB	14 mm UMB	2.60 (66.0)	2.60 (66.0)	0.49 (12.5)							

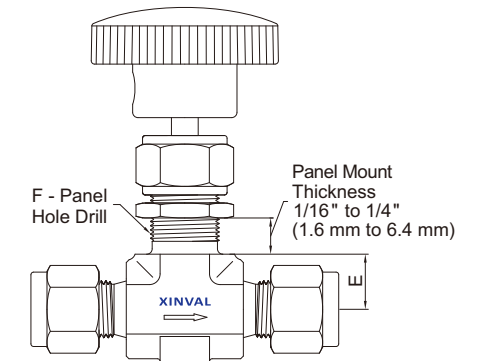
**Dimensions of NV3H Series**

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
316-NV3H2A-FN8-10-L	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.50 (38.1)	1.50 (38.1)	0.76 (19.4)	3.50 (88.9)	3.37 (85.7)
316-NV3H2A-N12-10-L	3/4 Male NPT	3/4 Male NPT			1.56 (39.7)	1.56 (39.7)	0.76 (19.4)		
316-NV3H2A-F8-10-L	1/2" Tube Fitting	1/2" Tube Fitting							
316-NV3H2A-F12-10-L	3/4" Tube Fitting	3/4" Tube Fitting			1.90 (48.3)	1.90 (48.3)	0.76 (19.4)		
316-NV3H2A-F14M-10-L	14 mm Tube Fitting	14 mm Tube Fitting							

1. Connection type of "OR" means O-ring face seal fittings. "MR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "TS\*M" means metric tube socket weld. "TB\*M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact XINVAL Group or our authorized distributors.
3. Dimensions are shown with XINVAL tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.

**Panel Mount Dimensions of NV3H Series**

Orifice in.(mm)	Dimensions, in.(mm)	
	E	F
0.08 (2.0)	0.44 (11.2)	0.47 (11.9)
0.16 (4.0)	0.44 (11.2)	0.53 (13.5)
0.25 (6.4)	0.50 (12.7)	0.78 (19.8)
0.39 (10.0)	0.75 (19.1)	1.03 (26.2)



1. NV3H Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: 316-NV3H2A-N2-2-Y



# Nonrotating-stem Needle Valves

**NV4 Series: Working pressure up to 3000 psig**

**NV4H Series: Working pressure up to 5000 psig**

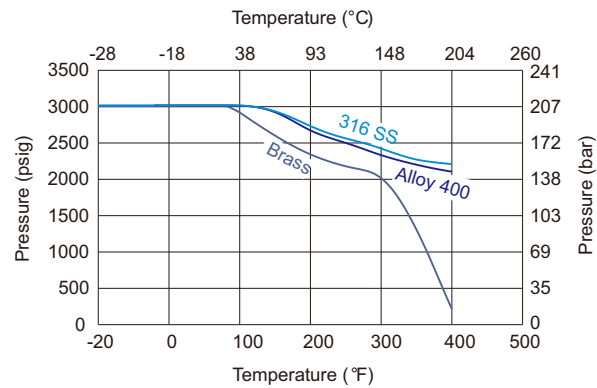
## Features

- One-piece forged body
- Straight and angle pattern
- Compact design
- Non-rotating stem
- Specially designed handle to stop contamination from entering into the valve
- Every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- Working pressure up to:
  - NV4 Series—Stainless steel: 3000 psig (207 bar)
  - Brass: 3000 psig (207 bar)
  - NV4H Series—Stainless steel: 5000 psig(345 bar)
- Working temperature with stem tip:
  - PCTFE stem tip: -20°F to 200°F (-28°C to 93°C)
  - PEEK stem tip: -20°F to 400°F (-28°C to 204°C)
- Working temperature with O-ring:
  - Fluorocarbon Rubber (FKM) : -20°F to 400°F (-28°C to 204°C)
  - Nitrile Butadiene Rubber (NBR) : -20°F to 212°F (-28°C to 100°C)
  - Ethylene Propylene Diene Rubber (EPDM): -20°F to 300°F (-28°C to 148°C)

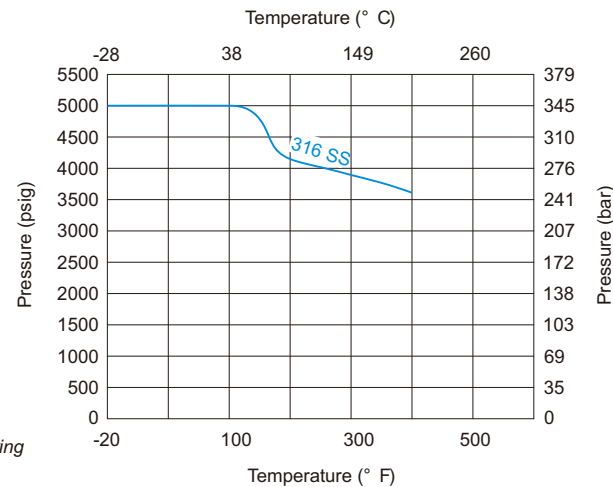


## Pressure vs. Temperature

NV4 Series

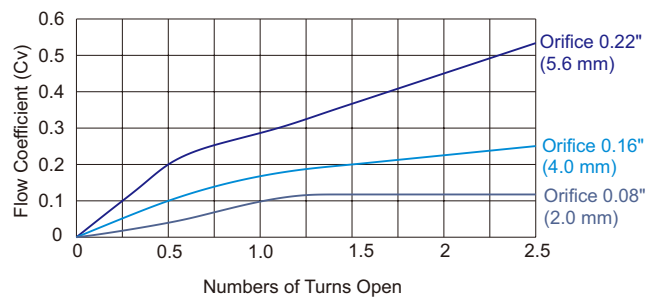


NV4H Series

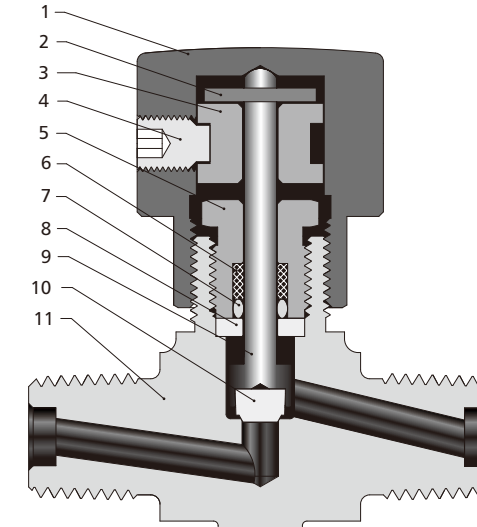


1. The graphs are based on PEEK stem tip and Fluorocarbon rubber (FKM) O-ring  
 2. Contact XINVAL Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100 °F (38°C )



## Standard Materials of Construction



NV4 and NV4H Series

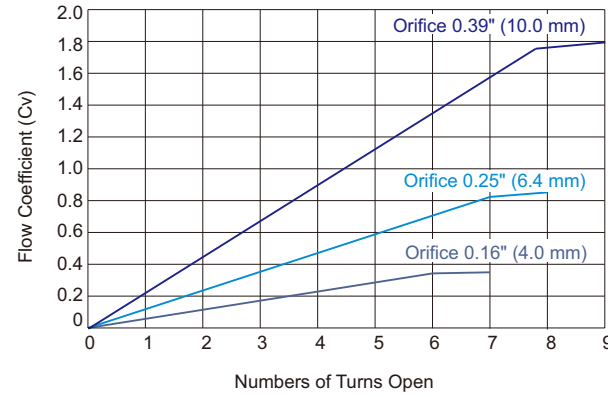
Item	Component	Valve Body Material				
		316 SS	304 SS	321 SS	Brass	Alloy 400
Material Grade/ASTM Specification						
1	Handle	Anodized aluminum				
2	Stop Pin	Stainless steel				
3	Spool	Aluminum				
4	Set Screw	Stainless steel				
5	Packing Bolt	304 SS/A479			Brass C36000/B16	Alloy 400/B164
6	Backup Ring	PTFE/D1710				
7	O-ring	Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR) or Ethylene Propylene Diene Rubber (EPDM)				
8	Washer	316 SS/A479				Alloy 400/B164
9	Stem	316 SS/A479				Alloy 400/B164
10	Stem Tip	PCTFE or PEEK				
11	Body	316 SS/A182	304 SS/A182	321 SS/A182	Brass C37700/B283	Alloy 400/B564
	Lubricant	Molybdenum disulfide-based				

Note: Contact XINVAL Group or our authorized distributors for other materials.

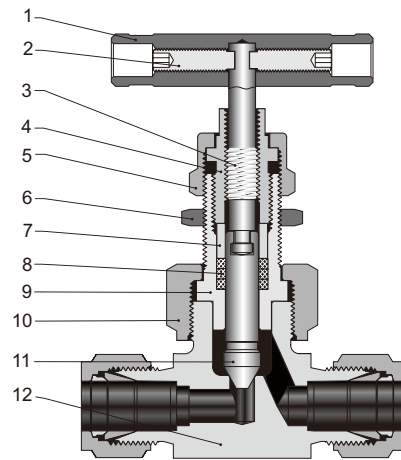


## Flow Data at 100 °F (37 °C)

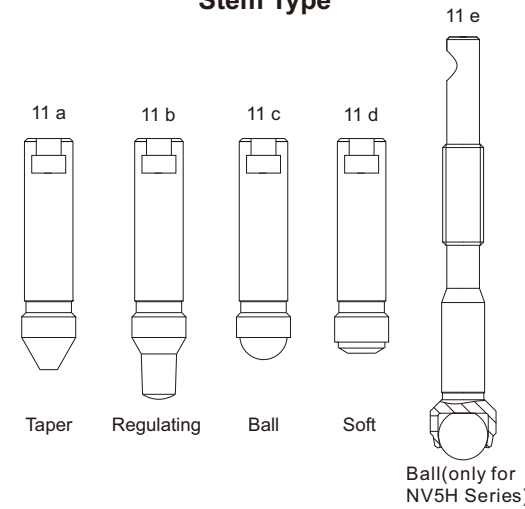
Regulating Stem



## Standard Materials of Construction



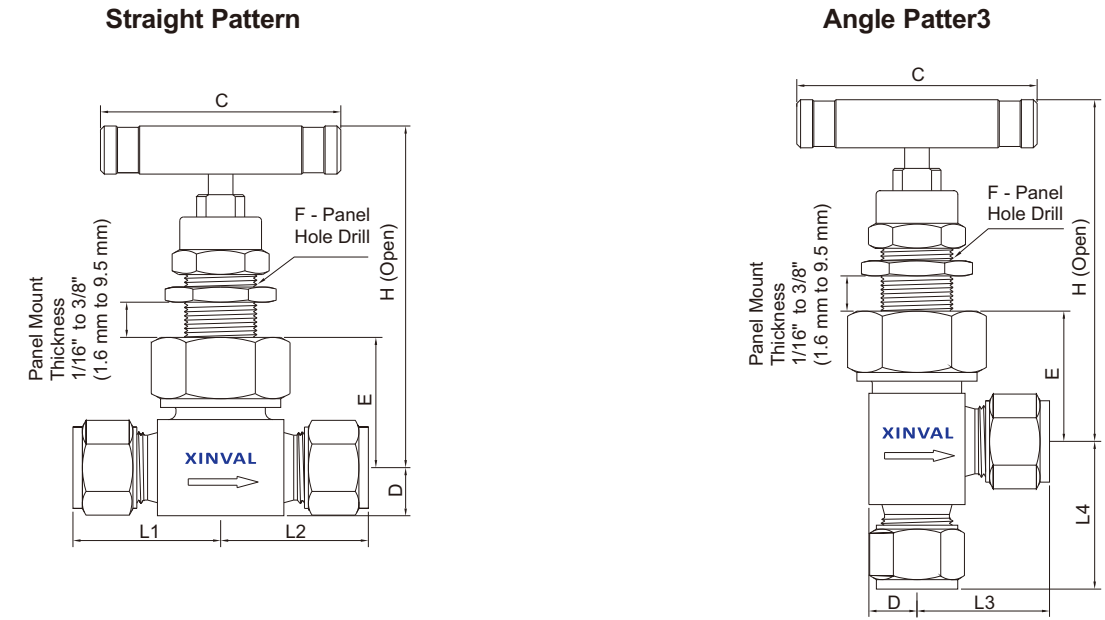
### Stem Type



Item	Component	Valve Body Material			
		316 SS	Alloy 400	Titanium	Alloy C-276
		<b>Material Grade/ASTM Specification</b>			
1	Handle	Anodized aluminium or stainless steel or black knob			
2	Set Screw	Galvanized carbon steel			
3	Upper Stem	316 SS/A479			
4	Packing Bolt	304 SS/A479			
5	Lock Nut	316 SS/A479			
6	Panel Nut	Stainless steel			
7	Gland	316 SS/A479			
8	Packing	PTFE or PEEK or graphite			
9	Bonnet	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574
10	Union Nut	316 SS/A479			
11a 11b 11c	Lower Stem	Hardened 316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574
11d	Stem	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574
	Stem Tip	PTFE or PCTFE or PEEK			
11e	Stem	316 SS/A479	Not Applicable		Alloy C-276/B574
	Stem Tip	Stellite			
12	Body	316 SS/A182	Alloy 400/B164, B127, B564	Titanium Gr 4/B348 or titanium Gr 4/B381	Alloy C-276/B564
	Seat	Same as Body			
Lubricant		Molybdenum disulfide-based			

Note: Contact XINVAL Group or our authorized distributors for other materials.

## Dimensions



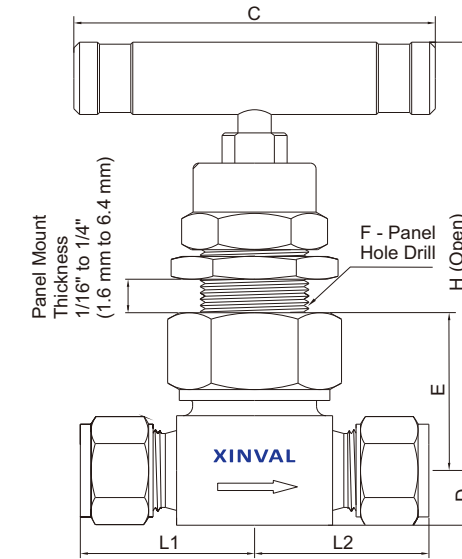
### Dimensions of NV5 Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)											
	Inlet	Outlet			L1	L2	L3	L4	C	D	E	F	H			
316-NV52A-FN2-4	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)										
316-NV52A-FN4-4	1/4 Female NPT	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)	0.89 (22.6)									
316-NV52A-N4-FN4-4	1/4 Male NPT	1/4 Female NPT			1.00 (25.4)	1.03 (26.2)										
316-NV52A-N4-4	1/4 Male NPT	1/4 Male NPT			1.00 (25.4)	1.00 (25.4)	1.00 (25.4)	1.00 (25.4)								
316-NV52A-N6-4	3/8 Male NPT	3/8 Male NPT														
316-NV52A-FRP4-4	1/4 Female BSPP	1/4 Female BSPP			1.03 (26.2)	1.03 (26.2)	0.89 (22.6)			1.75 (44.5)	0.39 (9.9)	1.09 (27.7)	0.59 (15.0)	3.06 (77.7)		
316-NV52A-N4-F4-4	1/4 Male NPT	1/4" Tube Fitting			1.00 (25.4)	1.22 (30.9)										
316-NV52A-FN4-F4-4	1/4 Female NPT	1/4" Tube Fitting			1.03 (26.2)	1.22 (30.9)	1.14 (29.0)									
316-NV52A-F4-4	1/4" Tube Fitting	1/4" Tube Fitting														
316-NV52A-F6M-4	6 mm Tube Fitting	6 mm Tube Fitting			1.22 (30.9)	1.22 (30.9)	1.15 (29.2)	1.22 (30.9)								
316-NV52A-F8M-4	8 mm Tube Fitting	8 mm Tube Fitting														
316-NV52A-TS4-4	1/4" TS	1/4" TS			1.00 (25.4)	1.00 (25.4)	0.85 (21.6)	1.00 (25.4)								
316-NV52A-OR4-4	1/4" Male OR	1/4" Male OR			1.03 (26.2)	1.03 (26.2)	1.10 (28.0)	1.10 (28.0)								
316-NV52A-MR4-4	1/4" Male MR	1/4" Male MR														
316-NV52A-FN4-6	1/4 Female NPT	1/4 Female NPT			0.25 (6.4)	0.8	1.13 (28.6)	1.13 (28.6)	1.00 (25.4)							
316-NV52A-FN6-6	3/8 Female NPT	3/8 Female NPT					1.13 (28.6)	1.13 (28.6)	1.13 (28.6)							
316-NV52A-N6-6	3/8 Male NPT	3/8 Male NPT	1.41 (35.9)	1.41 (35.9)			1.06 (26.9)	1.13 (28.6)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	0.78 (19.8)	3.78 (96.0)			
316-NV52A-F6-6	3/8" Tube Fitting	3/8" Tube Fitting	1.52 (38.6)	1.52 (38.6)			1.28 (32.5)	1.47 (37.3)								
316-NV52A-F8-6	1/2" Tube Fitting	1/2" Tube Fitting	1.52 (38.6)	1.52 (38.6)			1.40 (35.6)	1.58 (40.1)								
316-NV52A-F10M-6	10 mm Tube Fitting	10 mm Tube Fitting	1.42 (36.1)	1.42 (36.1)			1.30 (33.0)	1.48 (37.6)								

Dimensions of NV5 Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)									
	Inlet	Outlet			L1	L2	L3	L4	C	D	E	F	H	
316-NV52A-F12M-6	12 mm Tube Fitting	12 mm Tube Fitting	0.25 (6.4)	0.86	1.52 (38.6)	1.52 (38.6)	1.40 (35.6)	1.58 (40.1)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	0.78 (19.8)	3.78 (96.0)	
316-NV52A-F14M-6	14 mm Tube Fitting	14 mm Tube Fitting												
316-NV52A-F16M-6	16 mm Tube Fitting	16 mm Tube Fitting												
316-NV52A-TS6-6	3/8" TS	3/8" TS												
316-NV52A-TS8-6	1/2" TS	1/2" TS												
316-NV52A-PS4-6	1/4 PS	1/4 PS												
316-NV52A-TS12M-6	12 mm MTS	12 mm MTS												
316-NV52A-TS14M-6	14 mm MTS	14 mm MTS												
316-NV52A-TS16M-6	16 mm MTS	16 mm MTS												
316-NV52A-TB14M-6	14 mm MTB	14 mm MTB												
316-NV52A-TB16M-6	16 mm MTB	16 mm MTB												
316-NV52A-UMB14-6	14 mm UMB	14 mm UMB												
316-NV52A-OR8-6	1/2" Male OR	1/2" Male OR												
316-NV52A-MR8-6	1/2" Male MR	1/2" Male MR			0.63 (16.0)	1.46 (37.1)	3.90 (99.0)							
316-NV52A-MS20-6	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric	0.50 (12.7)	1.34 (34.0)	3.78 (96.0)									
316-NV52A-MS22-6	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric	2.92 (74.1)	2.92 (74.1)	2.55 (64.7)	2.92 (74.1)								
316-NV52A-OR8-6	1/2" Male OR	1/2" Male OR	1.13 (28.6)	1.13 (28.6)										
316-NV52A-MR8-6	1/2" Male MR	1/2" Male MR	1.56 (39.6)	1.56 (39.6)										
316-NV52A-MS20-6	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric	1.50 (38.1)	1.50 (38.1)	1.13 (28.6)	1.50 (38.1)								
316-NV52A-MS22-6	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric	1.56 (39.6)	1.56 (39.6)	1.56 (39.6)	1.56 (39.6)								
316-NV52A-N8-10	1/2 Male NPT	1/2 Male NPT	0.39 (10.0)	1.8	1.56 (39.6)	1.56 (39.6)	1.56 (39.6)	1.56 (39.6)	3.50 (88.9)	0.63 (16.0)	1.82 (46.2)	1.03 (26.2)	4.76 (121)	
316-NV52A-FN8-10	1/2 Female NPT	1/2 Female NPT												
316-NV52A-FN12-10	3/4 Female NPT	3/4 Female NPT												
316-NV52A-FN12-10	3/4 Female NPT	3/4 Female NPT												
316-NV52A-N12-10	3/4 Male NPT	3/4 Male NPT												
316-NV52A-F8-10	1/2" Tube Fitting	1/2" Tube Fitting												
316-NV52A-F12-10	3/4" Tube Fitting	3/4" Tube Fitting												
316-NV52A-F14M-10	14 mm Tube Fitting	14 mm Tube Fitting												
316-NV52A-F16M-10	16 mm Tube Fitting	16 mm Tube Fitting												
316-NV52A-F18M-10	18 mm Tube Fitting	18 mm Tube Fitting												
316-NV52A-F20M-10	20 mm Tube Fitting	20 mm Tube Fitting												
316-NV52A-TS14M-10	14 mm MTS	14 mm MTS												
316-NV52A-TS16M-10	16 mm MTS	16 mm MTS												
316-NV52A-TS8-10	1/2" TS	1/2" TS												
316-NV52A-TS12-10	3/4" TS	3/4" TS												
316-NV52A-TB16M-10	16 mm MTB	16 mm MTB												
316-NV52A-UMB14-10	14 mm UMB	14 mm UMB												
316-NV52A-MR8-10	1/2" Male MR	1/2" Male MR	1.56 (39.7)	1.56 (39.7)										
316-NV52A-MS27-10	M27 x 2 Male Metric	M27 x 2 Male Metric	2.98 (75.7)	2.98 (75.7)										

- 1.Connection type of "OR"means O-ring face seal fittings."MR"means metal gasket face seal fittings."TS" means fractional tube socket weld. "TS\*M" means metric tube socket weld. "TB\*M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB"means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact XINVAL Group or our authorized distributors.
3. Dimensions are shown with XINVAL tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.



Dimensions of NV5H Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
316-NV5H2A-F4-4	1/4" Tube Fitting	1/4" Tube Fitting	0.16 (4.0)	0.35	1.41 (35.8)	1.41 (35.8)	2.50 (63.5)	0.50 (12.7)	1.34 (34.1)	0.78 (19.8)	3.42 (86.9)
316-NV5H2A-FN2-4	1/8 Female NPT	1/8 Female NPT									
316-NV5H2A-FN4-4	1/4 Female NPT	1/4 Female NPT									
316-NV5H2A-N4-FN4-4	1/4 Male NPT	1/4 Female NPT									
316-NV5H2A-N4-4	1/4 Male NPT	1/4 Male NPT									
316-NV5H2A-TS4-4	1/4" TS	1/4" TS									
316-NV5H2A-FN4-6	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.86	1.56 (39.7)	1.56 (39.7)	3.50 (88.9)	0.63 (16.0)	1.81 (46.0)	1.03 (26.2)	4.09 (104)
316-NV5H2A-N8-6	1/2 Male NPT	1/2 Male NPT									
316-NV5H2A-TS8-6	1/2" TS	1/2" TS									
316-NV5H2A-TS12M-6	12 mm TS1	12 mm MTS	0.39 (10.0)	1.8	1.75 (44.5)	1.75 (44.5)	3.50 (88.9)	0.91 (23.0)	2.29 (58.2)	1.14 (28.9)	5.28 (134.1)
316-NV5H2A-TS16M-9	16 mm MTS	16 mm MTS									
316-NV5H2A-TB22M-10	22 mm MTB	22 mm MTB									
316-NV5H2A-FN8-10	1/2 Female NPT	1/2 Female NPT	1.56 (39.7)	1.56 (39.7)							

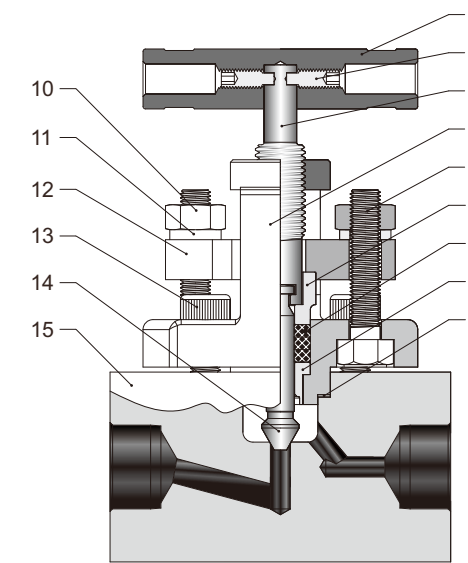
- 1.Connection type of "OR"means O-ring face seal fittings."MR"means metal gasket face seal fittings."TS" means fractional tube socket weld. "TS\*M" means metric tube socket weld. "TB\*M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB"means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact XINVAL Group or our authorized distributors.
3. Dimensions are shown with XINVAL tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.

# Outside Screw and Yoke (OS&Y) Needle Valves

## NV6 Series: Working pressure up to 6000 psig

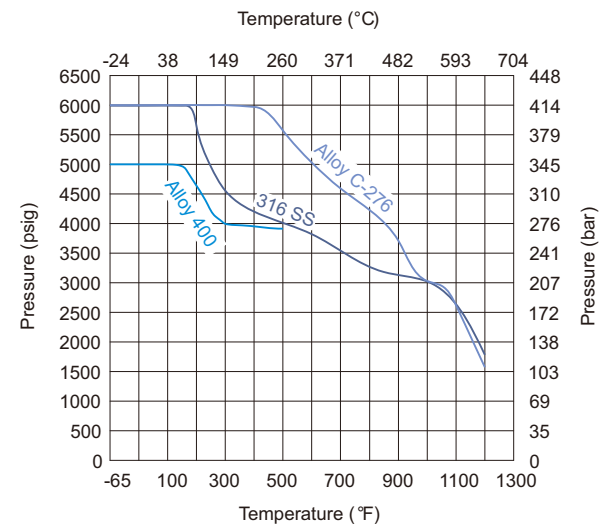
### Features

- ⦿ Cold drawn bar as body
- ⦿ Standard seat diameter 0.16" (4mm). Cv: 0.35 standard
- ⦿ Hardened stem threads prevent galling
- ⦿ Stem threads completely isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Externally adjustable gland, independent of spindle thread
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Bottom mounting available
- ⦿ Every valve leak tested with Nitrogen or compressed air at maximum allowable working pressure
- ⦿ Working pressure up to :
  - Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-24°C to 232°C)
  - PEEK: -65°F to 500°F (-24°C to 260°C)
  - Graphite: -65°F to 1200°F (-24°C to 649°C)



### Pressure vs. Temperature

NV6 Series



1. Graphs are based on graphite packing.  
 2. Contact XINVAL Group or our authorized distributors for curve graph of other materials.

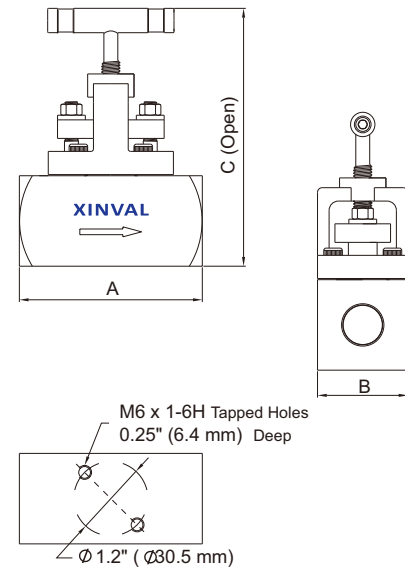
### Standard Materials of Construction

Item	Component	Valve Body Material
		316 SS
		Material Grade/ASTM Specification
1	Handle	Anodized aluminum or stainless steel
2	Set Screw	Galvanized carbon steel
3	Upper Stem	316 SS/A479
4	Yoke	316 SS/A182
5	Bolts	Stainless steel
6	Packing Washer	316 SS/A479
7	Packing	PTFE or PEEK or graphite
8	Packing Washer	316 SS/A479
9	Joint Seal	316 SS/A479
10	Nuts	Stainless steel
11	Gaskets	Stainless steel
12	Gland bridge	316 SS/A182
13	Bolts	Stainless steel
14	Lower Stem	Hardened 316 SS/A479
15	Body	316 SS/A479
	Lubricant	Molybdenum disulfide-based

Note: Contact XINVAL Group or our authorized distributors for other materials.

## Dimensions of NV6 Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension s, in.(mm)		
	Inlet	Outlet			A	B	C
316-NV62A-FN4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	2.69 (68.2)	1.50 (38.1)	4.04 (102.7)
316-NV62A-N4	1/4 Male NPT	1/4 Male NPT			2.95 (75.0)		
316-NV62A-N4-FN4	1/4 Male NPT	1/4 Female NPT			2.72 (69.2)		
316-NV62A-FN6	3/8 Female NPT	3/8 Female NPT			2.93 (75.0)		
316-NV62A-N6	3/8 Male NPT	3/8 Male NPT			3.00 (76.2)		
316-NV62A-FN8	1/2 Female NPT	1/2 Female NPT			3.27 (82.0)		
316-NV62A-N8	1/2 Male NPT	1/2 Male NPT			3.00 (76.2)		
316-NV62A-N8-FN8	1/2 Male NPT	1/2 Female NPT			3.54 (89.8)		
316-NV62A-PS8	1/2 PS	1/2 PS			3.44 (87.4)		
316-NV62A-PB8	1/2 PB	1/2 PB			3.50 (88.9)		
316-NV62A-F4	1/4" Tube Fitting	1/4" Tube Fitting			3.78 (96.0)		
316-NV62A-F6	3/8" Tube Fitting	3/8" Tube Fitting			3.44 (87.4)		
316-NV62A-F8	1/2" Tube Fitting	1/2" Tube Fitting			3.78 (96.0)		
316-NV62A-F6M	6 mm Tube Fitting	6 mm Tube Fitting			3.44 (87.4)		
316-NV62A-F8M	8 mm Tube Fitting	8 mm Tube Fitting			3.78 (96.0)		
316-NV62A-F12M	12 mm Tube Fitting	12 mm Tube Fitting					



1. Connection type of "OR" means O-ring face seal fittings. "MR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "TS\*M" means metric tube socket weld. "TB\*M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact XINVAL Group or our authorized distributors.
3. Dimensions are shown with XINVAL tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.

# Toggle Valves

## NV7 Series

### Features

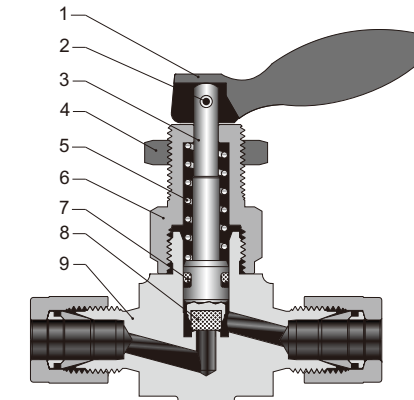
- One piece forged body
- Straight and angle patterns
- Compact design
- Quick opening or closing
- Nonrotating stem
- Panel mounting available
- Every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- Working pressure up to: 300 psig (20.7 bar)



### Technical Data

Orifice in. (mm)	Working Pressure at 100°F (38°C) psig (bar)	O-ring Material	Temperature Rating
0.08 (2.0)	300 (20.7)	Fluorocarbon Rubber (FKM)	-20°F to 400°F (-28°C to 204°C)
0.125 (3.2)		Nitrile Butadiene Rubber (NBR)	-20°F to 212°F (-28°C to 100°C)
0.25 (6.4)	200 (13.8)	Ethylene Propylene Diene Rubber (EPDM)	-20°F to 300°F (-28°C to 148°C)

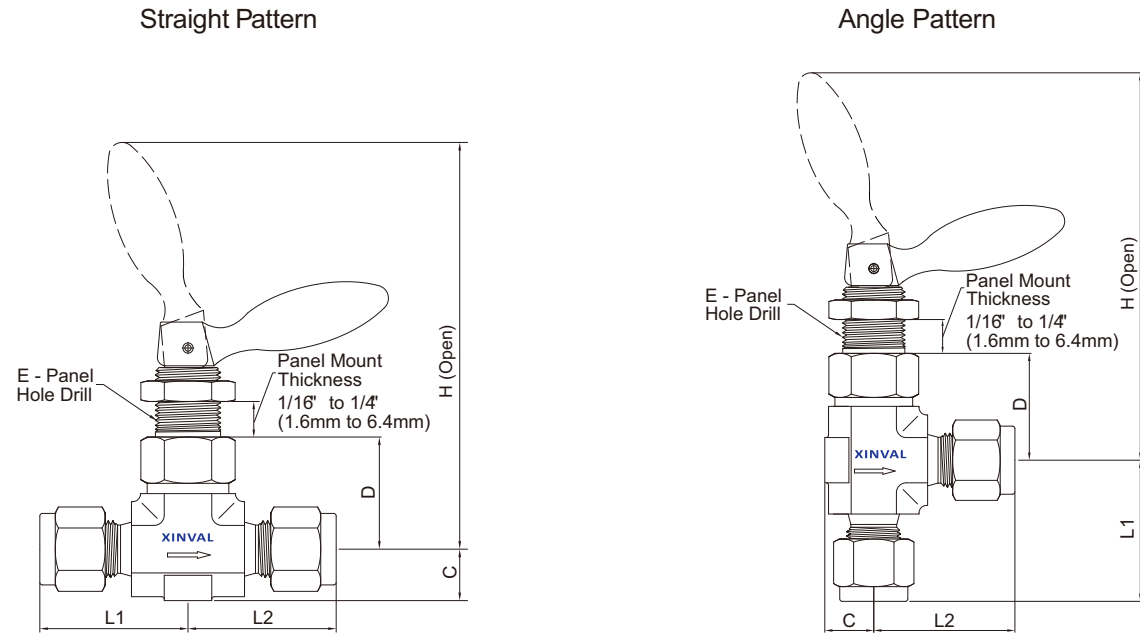
### Standard Materials of Construction



Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Brass
		Material Grade/ASTM Specification			
1	Handle	Stainless steel			
2	Pin	Stainless steel			
3	Stem	316 SS/A479	304 SS/A479	316 SS/A479	
4	Panel Nut	Stainless steel			Brass C36000/B16
5	Spring	S17700/A313			
6	Bonnet	304 SS/A479			Brass C36000/B16
7	O-ring	Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR) or Ethylene Propylene Diene Rubber (EPDM)			
8	Stem Tip	PTFE/D1710			
9	Body	316 SS/A182	304 SS/A182	321 SS/A182	Brass C37700/B283
	Lubricant	Molybdenum disulfide-based			

Note: Contact Tube Fitting Group or our authorized distributors for other materials.

## Dimensions



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)					
	Inlet	Outlet			L1	L2	C	D	E	H
316-NV72A-N2-2	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.11	0.75 (19.05)	0.75 (19.05)	0.32 (8.2)	0.85 (21.7)	0.53 (13.5)	2.83 (71.9)
316-NV72A-N2-F2-2	1/8 Male NPT	1/8" Tube Fitting			0.75 (19.05)	0.98 (25.0)				
316-NV72A-F2-2	1/8" Tube Fitting	1/8" Tube Fitting			0.98 (25.0)	0.98 (25.0)				
316-NV72A-F3M-2	3 mm Tube Fitting	3 mm Tube Fitting	0.125 (3.2)	0.20	0.98 (25.0)	0.98 (25.0)	0.39 (10.0)	0.85 (21.7)	0.53 (13.5)	2.83 (71.9)
316-NV72A-FN2-3	1/8 Female NPT	1/8 Female NPT			0.81 (20.6)	0.81 (20.6)				
316-NV72A-N2-3	1/8 Male NPT	1/8 Male NPT			0.86 (21.8)	0.86 (21.8)				
316-NV72A-N4-3	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)				
316-NV72A-N4-F4-3	1/4 Male NPT	1/4" Tube Fitting			0.98 (25.0)	1.13 (28.7)				
316-NV72A-F4-3	1/4" Tube Fitting	1/4" Tube Fitting			1.13 (28.7)	1.13 (28.7)				
316-NV72A-F6M-3	6 mm Tube Fitting	6 mm Tube Fitting	0.25 (6.4)	0.70	1.40 (35.6)	1.40 (35.6)	0.53 (13.5)	1.06 (26.9)	0.66 (16.8)	3.59 (91.2)
316-NV72A-F8M-3	8 mm Tube Fitting	8 mm Tube Fitting			1.36 (34.5)	1.36 (34.5)				
316-NV72A-FN4-6	1/4 Female NPT	1/4 Female NPT			1.29 (32.8)	1.29 (32.8)				
316-NV72A-FN6-6	3/8 Female NPT	3/8 Female NPT			1.40 (35.6)	1.40 (35.6)				
316-NV72A-N6-6	3/8 Male NPT	3/8 Male NPT			1.36 (34.5)	1.36 (34.5)				
316-NV72A-F6-6	3/8" Tube Fitting	3/8" Tube Fitting			1.46 (37.1)	1.46 (37.1)				
316-NV72A-F8-6	1/2" Tube Fitting	1/2" Tube Fitting								
316-NV72A-F10M-6	10 mm Tube Fitting	10 mm Tube Fitting								
316-NV72A-F12M-6	12 mm Tube Fitting	12 mm Tube Fitting								

1. Connection type of "OR" means O-ring face seal fittings. "MR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "TS\*M" means metric tube socket weld. "TB\*M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.  
 2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact XINVAL Group or our authorized distributors.  
 3. Dimensions are shown with XINVAL tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact XINVAL Group or our authorized distributors.

## Pneumatic Actuators

### Features

- Valve and actuator are fully assembled and every valve leak tested with Nitrogen or compressed air at the maximum allowable working pressure
- Opens and closes quickly and reliably
- Rotatable actuator port allows easy installation

### Actuation Modes

- Normally closed—air opens, spring closes
- Normally open—air closes, spring opens
- Double acting—air opens and closes

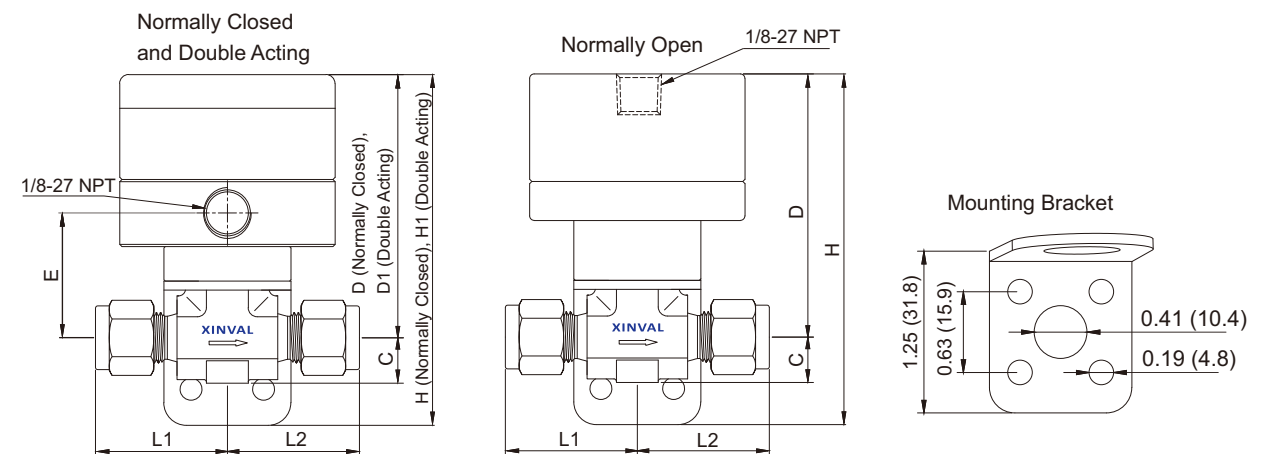
### Technical Data

Actuator Type	Working Pressure at 100°F (38°C) psig (bar)	Actuator Pressure Rating psig (bar)
Normally closed	300 (20.7)	87 (6)
Normally open	450 (31.0)	
Double acting		

Component	Material
	Material Grade/ASTM Specification
Housing	Anodized aluminum
Spring	S17700/A313
Mounting Bracket	304SS/A240
Stem Tip	Normally open, normally closed PTFE/D1710, double acting PCTFE/D1430

Please refer to NV7 Series "Standard Materials of Construction" for other materials.

### Dimensions



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	D1	H	H1	E
316-NV72A-N2-2-LC-Y	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.11	0.86 (21.8)	0.86 (21.8)						
316-NV72A-N2-F2-2-LC-Y	1/8 Male NPT	1/8" Tube Fitting			0.86 (21.8)	1.03 (26.2)						
316-NV72A-F2-2-LC-Y	1/8" Tube Fitting	1/8" Tube Fitting			1.03 (26.2)	1.03 (26.2)						
316-NV72A-F3M-2-LC-Y	3 mm Tube Fitting	3 mm Tube Fitting	0.125 (3.2)	0.20	0.81 (20.6)	0.81 (20.6)	0.39 (10.0)	2.28 (58)	2.46 (62.5)	3.04 (77.3)	3.22 (81.8)	1.08 (27.5)
316-NV72A-FN2-3-LC-Y	1/8 Female NPT	1/8 Female NPT			0.86 (21.8)	0.86 (21.8)						
316-NV72A-N2-3-LC-Y	1/8 Male NPT	1/8 Male NPT			0.98 (25.0)	0.98 (25.0)						
316-NV72A-N4-3-LC-Y	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)						
316-NV72A-N4-F4-3-LC-Y	1/4 Male NPT	1/4 Tube Fitting			1.13 (28.7)	1.13 (28.7)						
316-NV72A-F4-3-LC-Y	1/4" Tube Fitting	1/4" Tube Fitting										
316-NV72A-F6M-3-LC-Y	6 mm Tube Fitting	6 mm Tube Fitting										
316-NV72A-F8M-3-LC-Y	8 mm Tube Fitting	8 mm Tube Fitting										

1. Connection type of "OR" means O-ring face seal fittings. "MR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "TS\*M" means metric tube socket weld. "TB\*M" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
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