

# Needle Valves

NB, NBH, ND, NDH, NF, NFH, NG, NGH, NR, NRG,  
NT, NU, NUH, NY and NYH Series



Needle Valves  
Metering Valves

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# Bar Stock Needle Valves

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

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

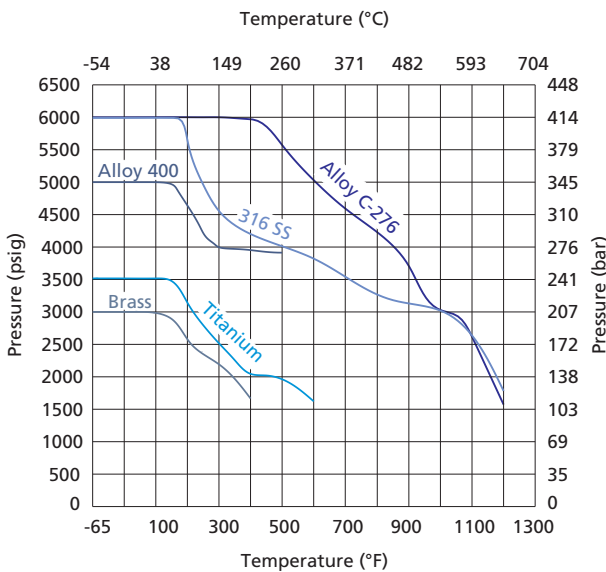


## Features

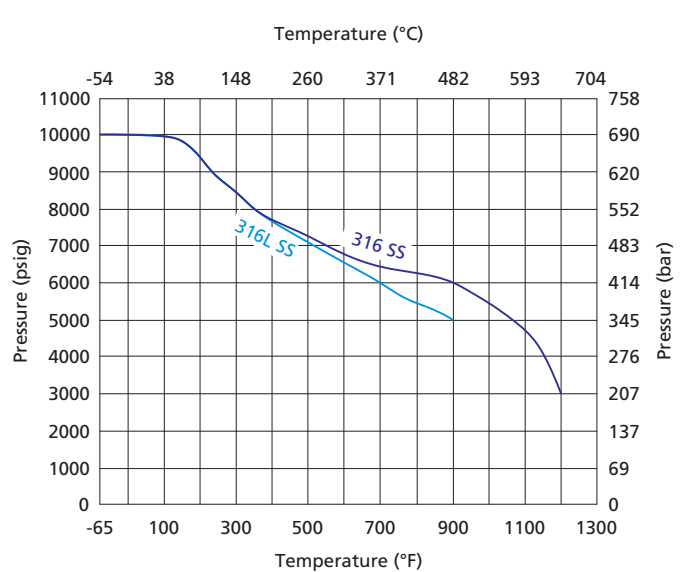
- ⦿ Cold drawn bar as body
- ⦿ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion 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 (NB Series) at the maximum allowable working pressure or with water (NBH Series) at 1.1 times maximum allowable working pressure
- ⦿ Working pressure up to:
  - NB 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)
  - NBH Series—Stainless steel: 10000 psig (690 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)

## Pressure vs. Temperature

NB Series



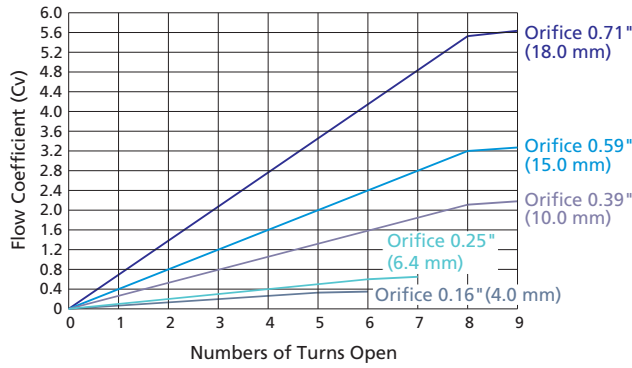
NBH Series



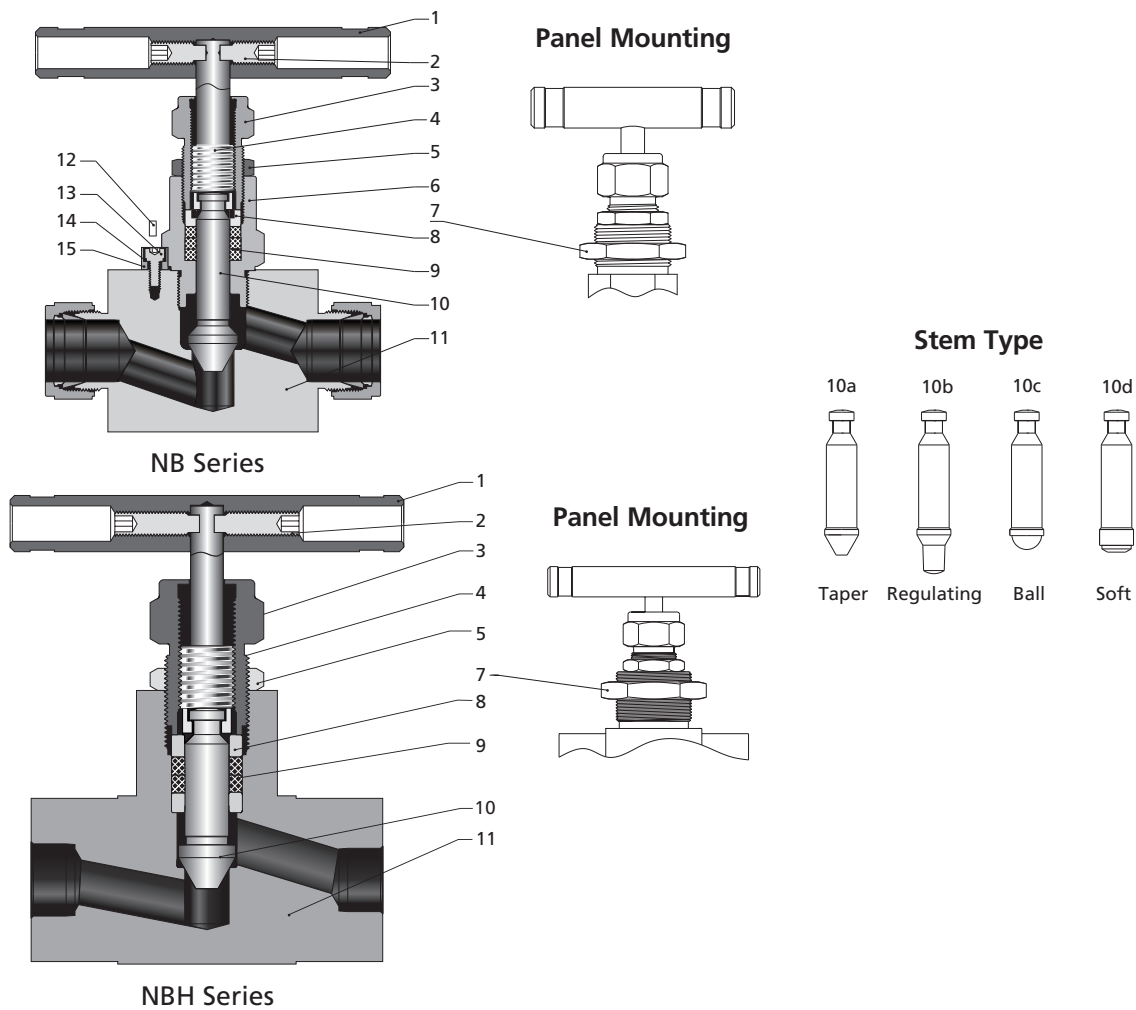
1. Graphs are based on graphite packing.  
 2. Soft tips are for NB Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).  
 3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

# Flow Data at 100°F (38°C)

Regulating Stem



## Standard Materials of Construction

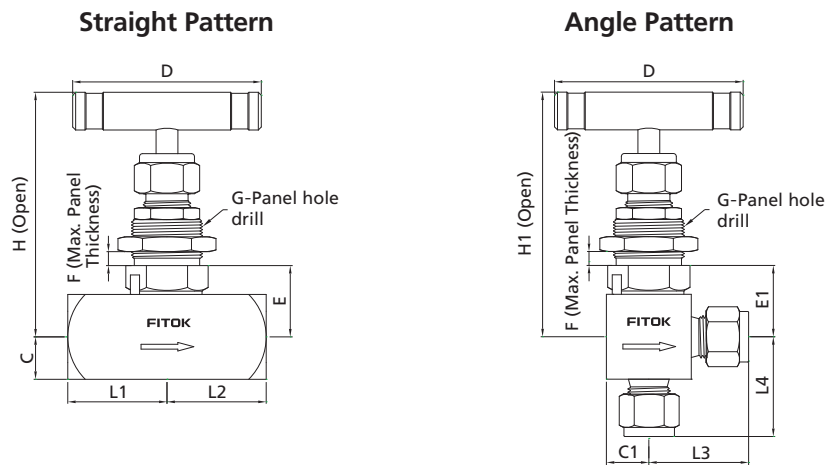


Item	Component	Valve Body Material				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
		<b>Material Grade/ASTM Specification</b>				
1	Handle	Anodized aluminum or stainless steel or black knob				
2	Set Screw	Stainless steel				
3	Packing Bolt	304 SS/A276				Brass C36000/B16
4	Upper Stem	316 SS/A276				
5	Lock Nut	Stainless steel				
6	Bonnet	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	Brass C36000/B16

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/A276				
9	Packing	PTFE or PEEK or graphite				
10a 10b 10c 10d	Lower Stem	Hardened 316 SS/A276	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	Hardened 316 SS/A276
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 FITOK Group or our authorized distributors for other materials.

## Dimensions



© NB Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NBSS-FNS2-7-Y

## Dimensions of NB Series

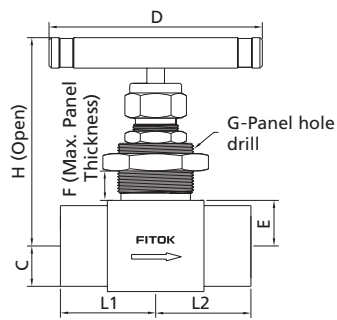
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)																							
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1											
NB□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	1.00 (25.4)	0.56 (14.3)	0.50 (12.7)	0.50 (12.7)	2.17 (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)											
NB□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.06 (26.9)	1.06 (26.9)																						
NB□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.03 (26.2)	1.03 (26.2)	1.06 (26.9)	1.06 (26.9)																				
NB□□-NS6-7	3/8 Male NPT	3/8 Male NPT			1.19 (30.2)	1.19 (30.2)																						
NB□□-FL4-7	1/4" FITOK	1/4" FITOK																										
NB□□-ML6-7	6 mm FITOK	6 mm FITOK					1.20 (30.5)	1.20 (30.5)										1.20 (30.5)	1.20 (30.5)									
NB□□-ML8-7	8 mm FITOK	8 mm FITOK																										
NB□□-FNS4-8	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)	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)											
NB□□-FNS6-8	3/8 Female NPT	3/8 Female NPT																										
NB□□-NS6-8	3/8 Male NPT	3/8 Male NPT																										
NB□□-FL6-8	3/8" FITOK	3/8" FITOK					1.41 (35.8)	1.41 (35.8)										1.32 (33.6)	1.32 (33.6)									
NB□□-FL8-8	1/2" FITOK	1/2" FITOK					1.52 (38.6)	1.52 (38.6)										1.42 (36.1)	1.42 (36.1)									

## Dimensions of NB Series

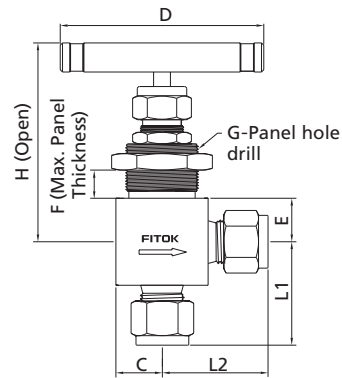
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)																							
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1											
NB□□-ML10-8	10 mm FITOK	10 mm FITOK	0.25 (6.4)	0.85	1.42 (36.1)	1.42 (36.1)	1.33 (33.8)	1.33 (33.8)	0.56 (14.3)	0.56 (14.3)	2.50 (63.5)	0.89 (22.5)	0.89 (22.5)	0.38 (9.7)	0.96 (24.4)	3.50 (88.9)	3.50 (88.9)											
NB□□-ML12-8	12 mm FITOK	12 mm FITOK			1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)																				
NB□□-ML14-8	14 mm FITOK	14 mm FITOK			1.56 (39.7)	1.56 (39.7)																						
NB□□-TS6-8-G	3/8" TS	3/8" TS																										
NB□□-TS8-8-G	1/2" TS	1/2" TS																										
NB□□-MTS12-8-G	12 mm MTS	12 mm MTS			1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	1.13 (28.6)																				
NB□□-MTS14-8-G	14 mm MTS	14 mm MTS																										
NB□□-MTS16-8-G	16 mm MTS	16 mm MTS																										
NB□□-MTB14-8-G	14 mm MTB	14 mm MTB			1.50 (38.1)	1.50 (38.1)	1.50 (38.1)	1.50 (38.1)																				
NB□□-MTB16-8-G	16 mm MTB	16 mm MTB																										
NB□□-UMB14-8	14 mm UMB	14 mm UMB			2.92 (74.1)	2.92 (74.1)																						
NB□□-UMB16-8	16 mm UMB	16 mm UMB																										
NB□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)																						
NB□□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric																										
NB□□-FNS8-9	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)	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)											
NB□□-FNS12-9	3/4 Female NPT	3/4 Female NPT																										
NB□□-NS12-9	3/4 Male NPT	3/4 Male NPT			1.50 (38.1)																							
NB□□-FL12-9	3/4" FITOK	3/4" FITOK																										
NB□□-ML14-9	14 mm FITOK	14 mm FITOK			1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)																				
NB□□-ML16-9	16 mm FITOK	16 mm FITOK																										
NB□□-ML18-9	18 mm FITOK	18 mm FITOK																										
NB□□-MTS14-9-G	14 mm MTS	14 mm MTS			1.75 (44.5)	1.75 (44.5)																						
NB□□-MTS16-9-G	16 mm MTS	16 mm MTS																										
NB□□-TS12-9-G	3/4" TS	3/4" TS																										
NB□□-UMB14-9	14 mm UMB	14 mm UMB			2.98 (75.7)	2.98 (75.7)																						
NB□□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric			1.56 (39.7)	1.56 (39.7)																						
NB□□-FNS12-6	3/4 Female NPT	3/4 Female NPT			0.59 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)										1.75 (44.5)	1.14 (29.0)	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)
NB□□-TS16-6-G	1" TS	1" TS																										
NB□□-MTS25-6-G	25 mm MTS	25 mm MTS	1.75 (44.5)	1.75 (44.5)			1.75 (44.5)	1.75 (44.5)																				
NB□□-MTS28-6-G	28 mm MTS	28 mm MTS																										
NB□□-PS12-6-G	3/4 PS	3/4 PS																										
NB□□-ML22-6	22 mm FITOK	22 mm FITOK	2.35 (59.7)	2.35 (59.7)			2.35 (59.7)	2.00 (51.0)																				
NB□□-FNS16-0	1 Female NPT	1 Female NPT	0.71 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	1.24 (31.5)	5.00 (127)	1.24 (31.5)	5.00 (127)	1.24 (31.5)	5.00 (127)	1.24 (31.5)	5.00 (127)	1.24 (31.5)	5.00 (127)	1.24 (31.5)	5.00 (127)										
NB□□-MTS25-0-G	25 mm MTS	25 mm MTS																										
NB□□-TS16-0-G	1" TS	1" TS																										
NB□□-MTS28-0-G	28 mm MTS	28 mm MTS			1.97 (50.0)	1.97 (50.0)																						
NB□□-PS12-0-G	3/4 PS	3/4 PS																										
NB□□-PS16-0-G	1 PS	1 PS																										

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "TS" means fractional tube socket weld. "MTS" means metric tube socket weld. "MTB" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

**Straight Pattern**



**Angle Pattern**



© NBH Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NBHSS-FNS2-7-Y

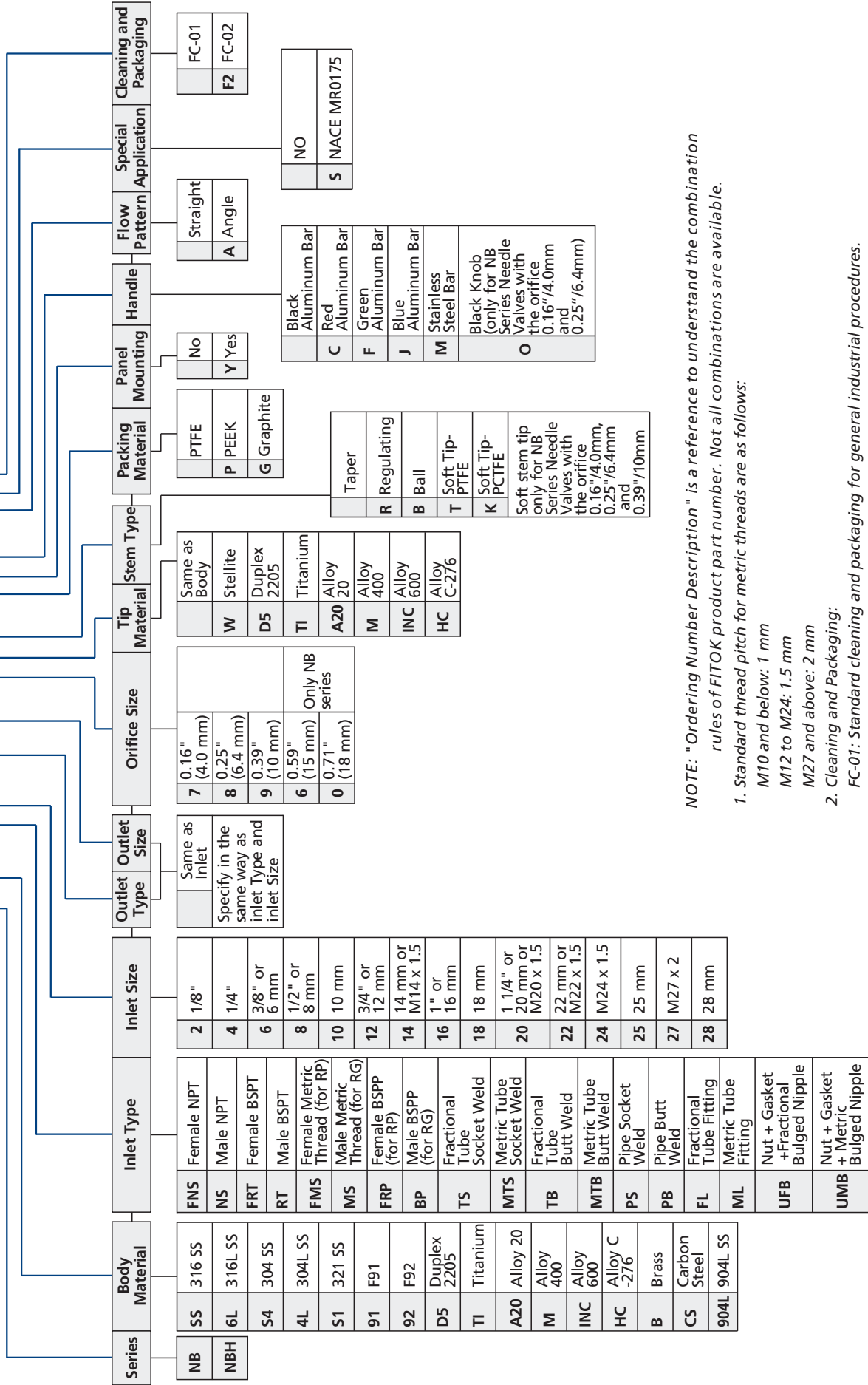
**Dimensions of NBH Series**

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	E	F	G	H
NBH□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.35	1.13 (28.6)	1.13 (28.6)	0.50 (12.7)	2.50 (63.5)	0.50 (12.7)	0.25 (6.4)	0.96 (24.4)	2.87 (73)
NBH□□-FNS4-7	1/4 Female NPT	1/4 Female NPT										
NBH□□-FNS4-NS4-7	1/4 Female NPT	1/4 Male NPT										
NBH□□-NS4-7	1/4 Male NPT	1/4 Male NPT										
NBH□□-TS4-7-G	1/4" TS	1/4" TS			1.13 (28.6)	1.13 (28.6)						
NBH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.236 (6.4)	0.85	1.31 (33.4)	1.31 (33.4)	0.625 (15.88)	3.50 (88.9)	0.625 (15.88)	0.38 (9.7)	1.09 (27.7)	3.56 (90.3)
NBH□□-FNS6-8	3/8 Female NPT	3/8 Female NPT										
NBH□□-NS6-8	3/8 Male NPT	3/8 Male NPT										
NBH□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	2.18	1.56 (39.6)	1.56 (39.6)	0.875 (22.2)	3.50 (88.9)	0.875 (22.2)	0.38 (9.7)	1.45 (36.8)	4.17 (106)

1. Connection type of "TS" means fractional tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NBSS - FL8 - ML12 - 8WB - GYM - ASF2



NOTE: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Standard thread pitch for metric threads are as follows:

- M10 and below: 1 mm
- M12 to M24: 1.5 mm
- M27 and above: 2 mm

2. Cleaning and Packaging:

- FC-01: Standard cleaning and packaging for general industrial procedures.
- FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.



# Nonrotating-stem Needle Valves

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

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

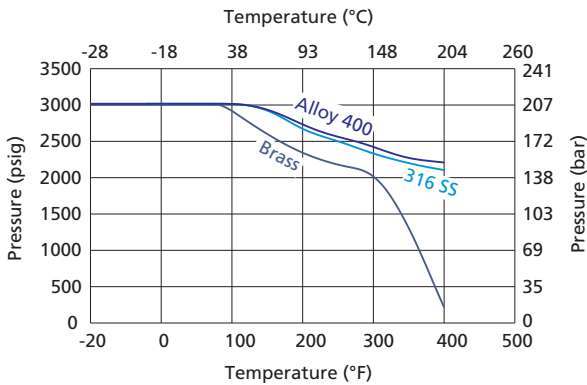
## Features

- ⦿ 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:
  - ND Series—Stainless steel: 3000 psig (207 bar)
  - Brass: 3000 psig (207 bar)
  - NDH 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 450°F (-28°C to 232°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)

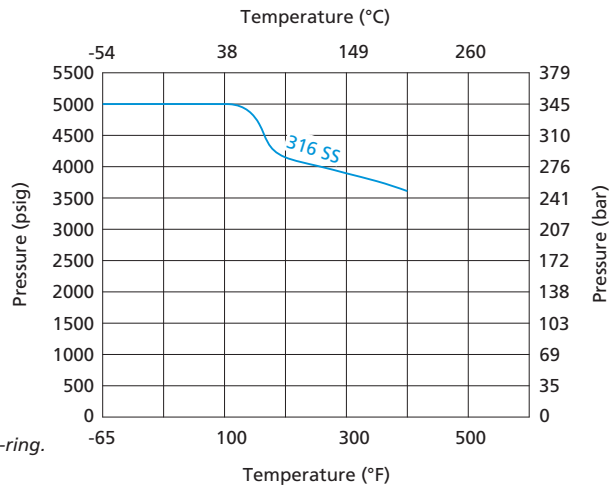


## Pressure vs. Temperature

ND Series

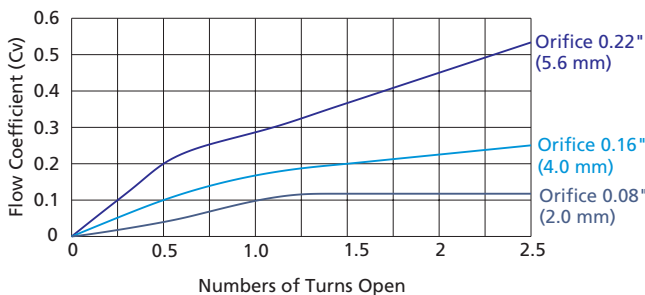


NDH Series

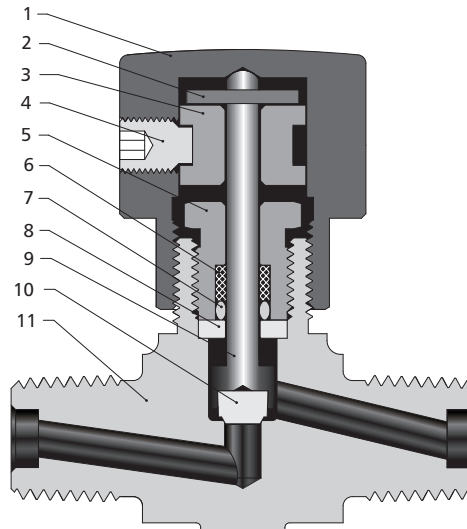


1. The graphs are based on PEEK stem tip and Fluorocarbon rubber (FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (38°C)



## Standard Materials of Construction

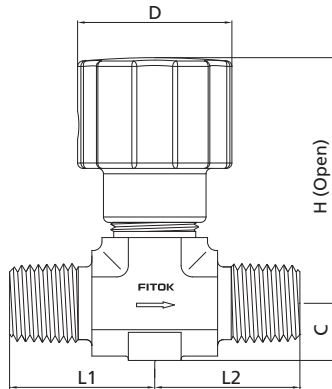


Item	Component	Valve Body Material				
		316 SS	304 SS	321 SS	Brass	Alloy 400
		Material Grade/ASTM Specification				
1	Handle	Anodized aluminum				
2	Stop Pin	Stainless steel				
3	Spool	Aluminum				
4	Set Screw	Stainless steel				
5	Packing Bolt	316 SS/A276	304 SS/A276	321 SS/A276	Brass C36000/B16	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/A276				Alloy 400/B164
9	Stem	316 SS/A276				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				

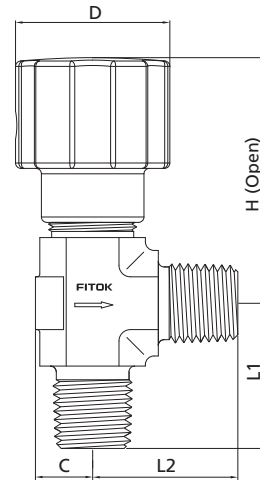
Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions

**Straight Pattern**



**Angle Pattern**



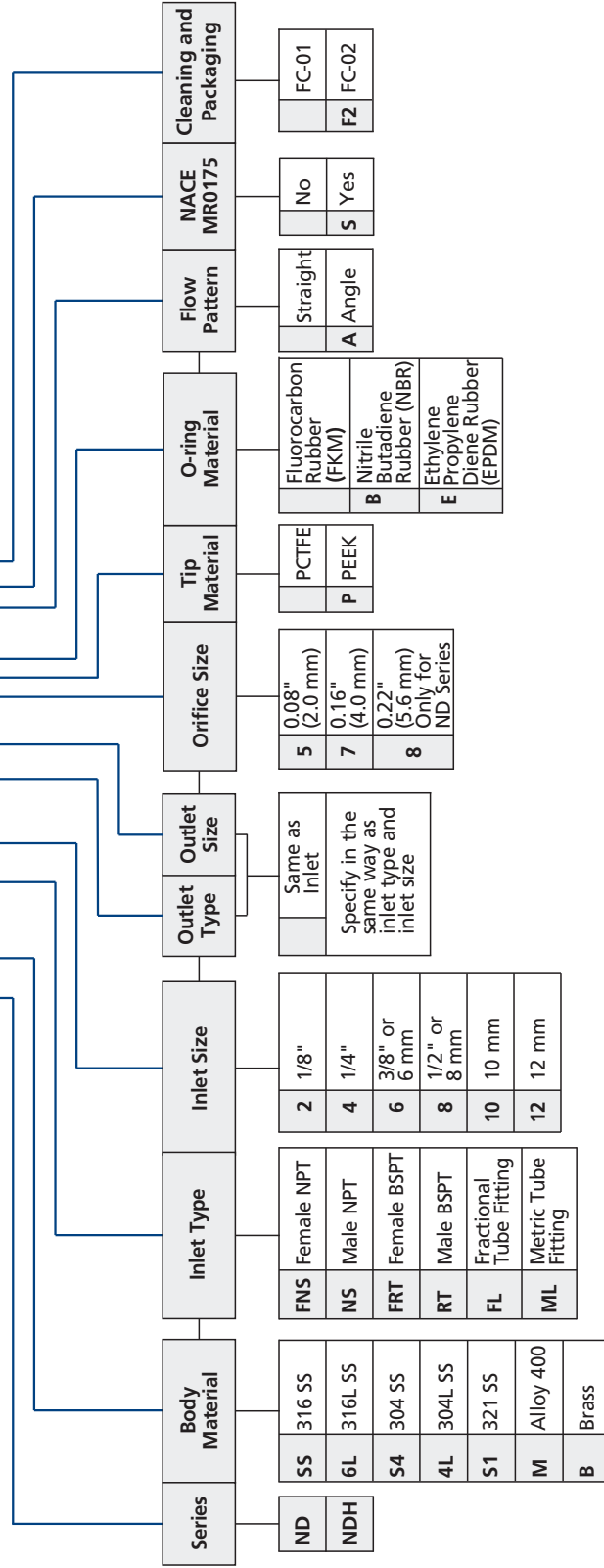
**ND and NHD Series**

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
ND□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.12	0.81 (20.6)	0.81 (20.6)	0.32 (8.1)	1.06 (26.9)	1.86 (47.2)
ND□□-NS2-FL2-5	1/8" Male NPT	1/8" Male NPT							
ND□□-FL2-5	1/8" FITOK	1/8" FITOK			1.10 (27.9)	1.10 (27.9)			
ND□□-ML3-5	3 mm FITOK	3 mm FITOK							
ND□□-NS4-7	1/4 Male NPT	1/4 Male NPT	0.16 (4.0)	0.27	0.98 (25.0)	0.98 (25.0)	0.39 (10.0)	1.06 (26.9)	1.86 (47.2)
ND□□-NS4-FL4-7	1/4" Male NPT	1/4" Male NPT							
ND□□-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)	1.13 (28.7)			
ND□□-ML6-7	6 mm FITOK	6 mm FITOK			1.18 (30.0)	1.18 (30.0)			
ND□□-ML8-7	8 mm FITOK	8 mm FITOK	0.22 (5.6)	0.53	1.06 (26.9)	1.06 (26.9)	0.53 (13.5)	1.12 (28.4)	2.02 (51.3)
ND□□-FNS4-8	1/4 Female NPT	1/4 Female NPT							
ND□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.12 (28.6)	1.12 (28.6)			
ND□□-FL6-8	3/8" FITOK	3/8" FITOK			1.29 (32.8)	1.29 (32.8)			
ND□□-FL8-8	1/2" FITOK	1/2" FITOK			1.40 (35.6)	1.40 (35.6)			
ND□□-ML10-8	10 mm FITOK	10 mm FITOK			1.30 (33.0)	1.30 (33.0)			
ND□□-ML12-8	12 mm FITOK	12 mm FITOK	1.40 (35.6)	1.40 (35.6)					
NDH□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.12	0.81 (20.6)	0.81 (20.6)	0.32 (8.1)	1.06 (26.9)	1.86 (47.2)
NDH□□-FL2-5	1/8" FITOK	1/8" FITOK							
NDH□□-ML3-5	3 mm FITOK	3 mm FITOK			1.10 (27.9)	1.10 (27.9)			
NDH□□-NS4-7	1/4" Male NPT	1/4" Male NPT	0.16 (4.0)	0.27	0.98 (25.0)	0.95 (25.0)	0.39 (10.0)	1.06 (26.9)	1.98 (50.2)
NDH□□-FL4-7	1/4" FITOK	1/4" FITOK							
NDH□□-ML6-7	6 mm FITOK	6 mm FITOK			1.13 (28.7)	1.13 (28.7)			

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of used applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NDSS - FNS4 - ML8 - 7PE - ASF2



NOTE: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

### Cleaning and Packaging:

FC-01: Standard cleaning and packaging for general industrial procedures.

FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# Forged Needle Valves

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

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

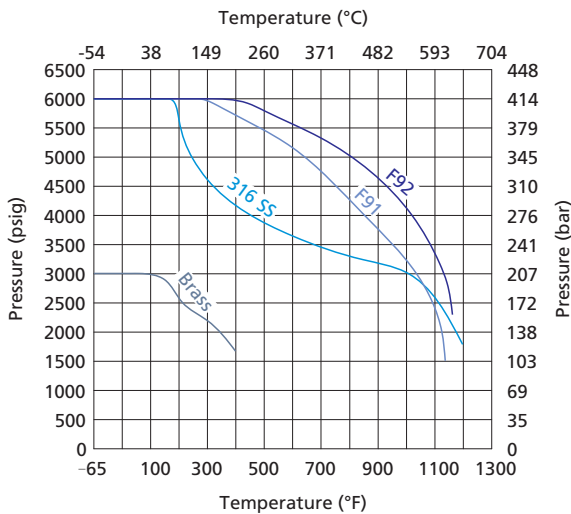
## Features

- ⦿ 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 (NF Series) at the maximum allowable working pressure or with water (NFH Series) at 1.1 times the maximum allowable working pressure
- ⦿ Working pressure up to:
  - NF 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)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)

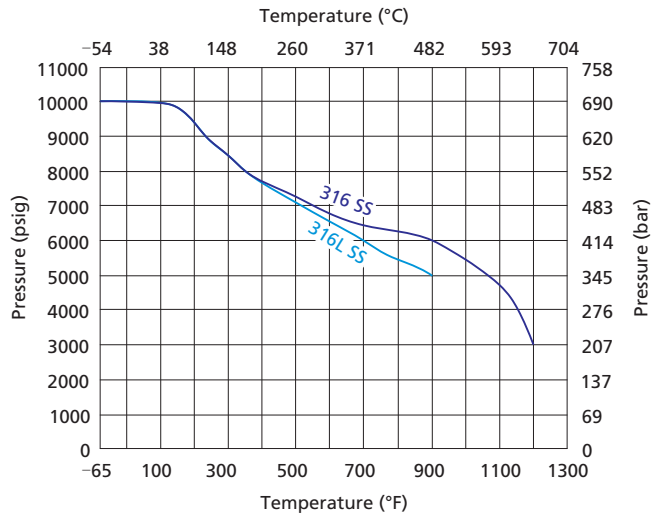


## Pressure vs. Temperature

NF Series



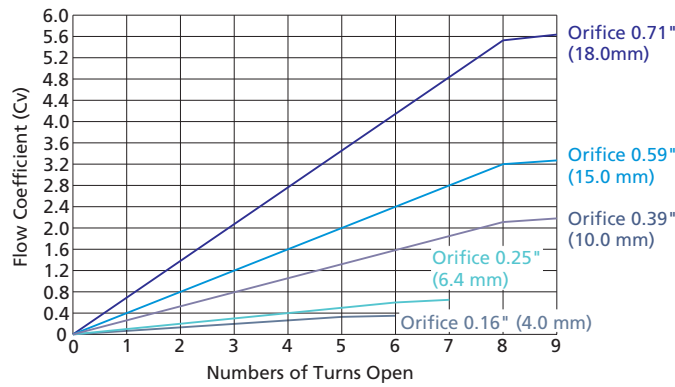
NFH Series



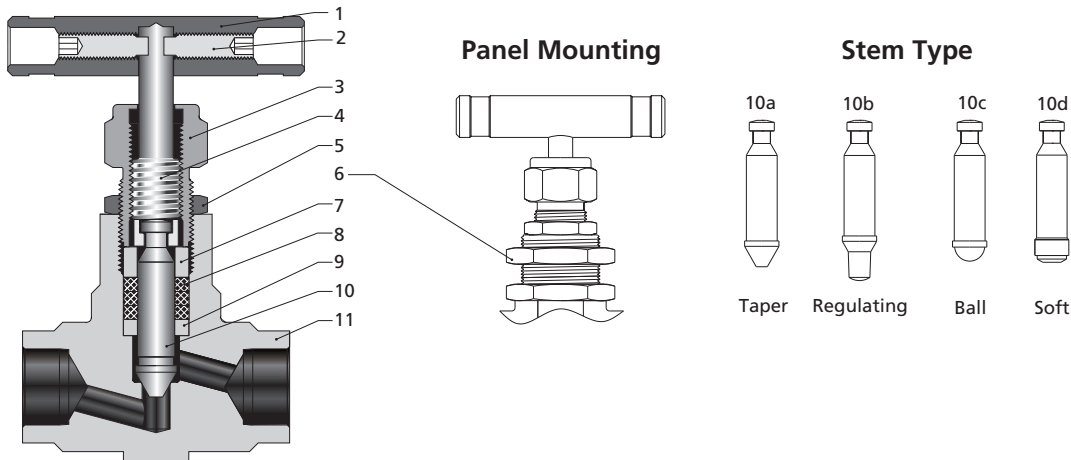
1. Graphs are based on graphite packing.
2. Soft tips are for NF Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (38°C)

Regulating Stem



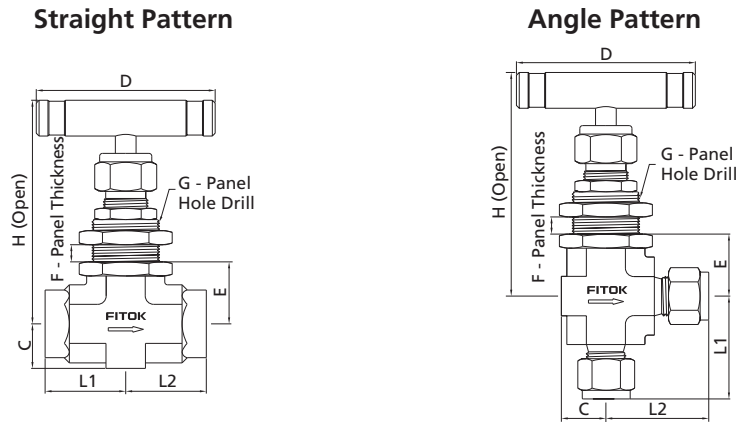
## Standard Materials of Construction



Item	Component	Valve Body Material		
		316 SS	F91	Brass
		<b>Material Grade/ASTM Specification</b>		
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Stainless steel		
3	Packing Bolt	304 SS/A276	F91/A182	Brass C36000/B16
4	Upper Stem	316 SS/A276		
5	Lock Nut	Stainless steel	1020/A108	Brass C36000/B16
6	Panel Nut	Stainless steel	1020/A108	Brass C36000/B16
7	Gland	316 SS/A276		Brass C36000/B16
8	Packing	PTFE or PEEK or graphite		
9	Packing Washer	316 SS/A276		Brass C36000/B16
10a 10b 10c 10d	Lower Stem	Hardened 316 SS/A276		
11	Body	316 SS/A182	F91/A182	Brass C37700/B283
	Seat	Same as Body		
	Lubricant	Molybdenum disulfide-based		

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

## Dimensions



© NF Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NFSS-FNS2-7-Y

### Dimensions of NF 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
NF□□-FNS2-7	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)	0.53 (13.5)	0.71 (18.0)	0.25 (6.4)	0.77 (19.6)
NF□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)						
NF□□-FL4-7	1/4" FITOK	1/4" FITOK			1.22 (30.9)	1.22 (30.9)						
NF□□-ML6-7	6 mm FITOK	6 mm FITOK			1.25 (31.75)	1.25 (31.75)						
NF□□-ML8-7	8 mm FITOK	8 mm FITOK			1.03 (26.2)	1.03 (26.2)						
NF□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.13 (28.6)	1.13 (28.6)						
NF□□-NS6-7	3/8 Male NPT	3/8 Male NPT										
NF□□-FO4-7	1/4" Male FO	1/4" Male FO										
NF□□-FR4-7	1/4" Male FR	1/4" Male FR										
NF□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.13 (28.6)	1.13 (28.6)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
NF□□-FNS6-8	3/8 Female NPT	3/8 Female NPT			1.42 (36.1)	1.42 (36.1)						
NF□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.44 (36.5)	1.44 (36.5)						
NF□□-FL6-8	3/8" FITOK	3/8" FITOK			1.53 (38.9)	1.53 (38.9)						
NF□□-ML10-8	10 mm FITOK	10 mm FITOK			1.56 (39.7)	1.56 (39.7)						
NF□□-ML12-8	12 mm FITOK	12 mm FITOK			1.26 (32.0)	1.26 (32.0)						
NF□□-ML14-8	14 mm FITOK	14 mm FITOK			1.50 (38.1)	1.50 (38.1)						
NF□□-FNS8-8	1/2 Female NPT	1/2 Female NPT			1.53 (38.9)	1.53 (38.9)						
NF□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.13 (28.6)	1.13 (28.6)						
NF□□-FL8-8	1/2" FITOK	1/2" FITOK			1.50 (38.1)	1.50 (38.1)						
NF□□-TS6-8-G	3/8" TS	3/8" TS			1.53 (38.9)	1.53 (38.9)						
NF□□-TS8-8-G	1/2" TS	1/2" TS			1.13 (28.6)	1.13 (28.6)						
NF□□-MTS12-8-G	12 mm MTS	12 mm MTS			1.50 (38.1)	1.50 (38.1)						
NF□□-MTS14-8-G	14 mm MTS	14 mm MTS			2.92 (74.1)	2.92 (74.1)						
NF□□-MTS16-8-G	16 mm MTS	16 mm MTS			1.13 (28.6)	1.13 (28.6)						
NF□□-MTB14-8-G	14 mm MTB	14 mm MTB			1.56 (39.7)	1.56 (39.7)						
NF□□-MTB16-8-G	16 mm MTB	16 mm MTB			1.50 (38.1)	1.50 (38.1)						
NF□□-UMB14-8	14 mm UMB	14 mm UMB			1.50 (38.1)	1.50 (38.1)						
NF□□-UMB16-8	16 mm UMB	16 mm UMB			1.13 (28.6)	1.13 (28.6)						
NF□□-FO8-8	1/2" Male FO	1/2" Male FO			1.56 (39.7)	1.56 (39.7)						
NF□□-FR8-8	1/2" Male FR	1/2" Male FR	1.50 (38.1)	1.50 (38.1)								
NF□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric										

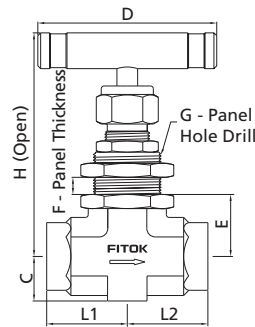
## Dimensions of NF Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)															
	Inlet	Outlet			L1	L2	H	D	C	E	F	G								
NF□□-MS22-8	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 (24.4)								
NF□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	2.18	1.56 (39.7)	1.56 (39.7)	3.86 (98.0)	3.50 (88.9)	0.89 (22.5)	1.10 (28.3)	0.38 (9.7)	1.08 (27.5)								
NF□□-NS8-9	1/2 Male NPT	1/2 Male NPT																		
NF□□-NS12-9	3/4 Male NPT	3/4 Male NPT																		
NF□□-FL12-9	3/4" FITOK	3/4" FITOK																		
NF□□-ML14-9	14 mm FITOK	14 mm FITOK																		
NF□□-ML16-9	16 mm FITOK	16 mm FITOK			1.97 (50.0)	1.97 (50.0)			0.76 (19.4)											
NF□□-ML18-9	18 mm FITOK	18 mm FITOK																		
NF□□-ML20-9	20 mm FITOK	20 mm FITOK																		
NF□□-MTS14-9-G	14 mm MTS	14 mm MTS																		
NF□□-MTS16-9-G	16 mm MTS	16 mm MTS																		
NF□□-MTS18-9-G	18 mm MTS	18 mm MTS			1.56 (39.7)	1.56 (39.7)			0.89 (22.5)											
NF□□-TS12-9-G	3/4" TS	3/4" TS																		
NF□□-PS8-9-G	1/2 PS	1/2 PS																		
NF□□-MTB16-9-G	16 mm MTB	16 mm MTB																		
NF□□-UMB14-9	14 mm UMB	14 mm UMB			2.98 (75.7)	2.98 (75.7)							0.76 (19.4)							
NF□□-UMB16-9	16 mm UMB	16 mm UMB																		
NF□□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric	1.56 (39.7)	1.56 (39.7)	0.59 (15.0)	3.27	5.00 (127)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)								
NF□□-FNS12-6	3/4 Female NPT	3/4 Female NPT																		
NF□□-TS16-6-G	1" TS	1" TS																		
NF□□-MTS25-6-G	25 mm MTS	25 mm MTS	1.97 (50.0)	1.97 (50.0)																
NF□□-MTS28-6-G	28 mm MTS	28 mm MTS																		
NF□□-PS12-6-G	3/4 PS	3/4 PS																		
NF□□-PB12-6-G	3/4 PB	3/4 PB																		
NF□□-FL12-6	3/4" FITOK	3/4" FITOK																		
NF□□-FL16-6	1" FITOK	1" FITOK	2.35 (59.7)	2.35 (59.7)																
NF□□-ML20-6	20 mm FITOK	20 mm FITOK																		
NF□□-ML22-6	22 mm FITOK	22 mm FITOK																		
NF□□-ML25-6	25 mm FITOK	25 mm FITOK																		
NF□□-TS16-0-G	1" TS	1" TS																		
NF□□-MTS25-0-G	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)
NF□□-MTS28-0-G	28 mm MTS	28 mm MTS																		
NF□□-PS12-0-G	3/4 PS	3/4 PS																		
NF□□-PB16-0-G	1 PB	1 PB																		

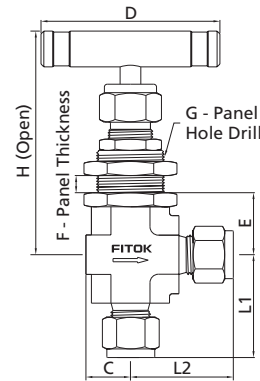
1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "FO" means O-ring face seal fittings. "FR" means metal gasket face seal fittings. "TS" means fractional tube socket weld. "MTS" means metric tube socket weld. "MTB" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld. "PB" means pipe butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.



**Straight Pattern**



**Angle Pattern**



© NFH Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NFHSS-FNS2-7-Y

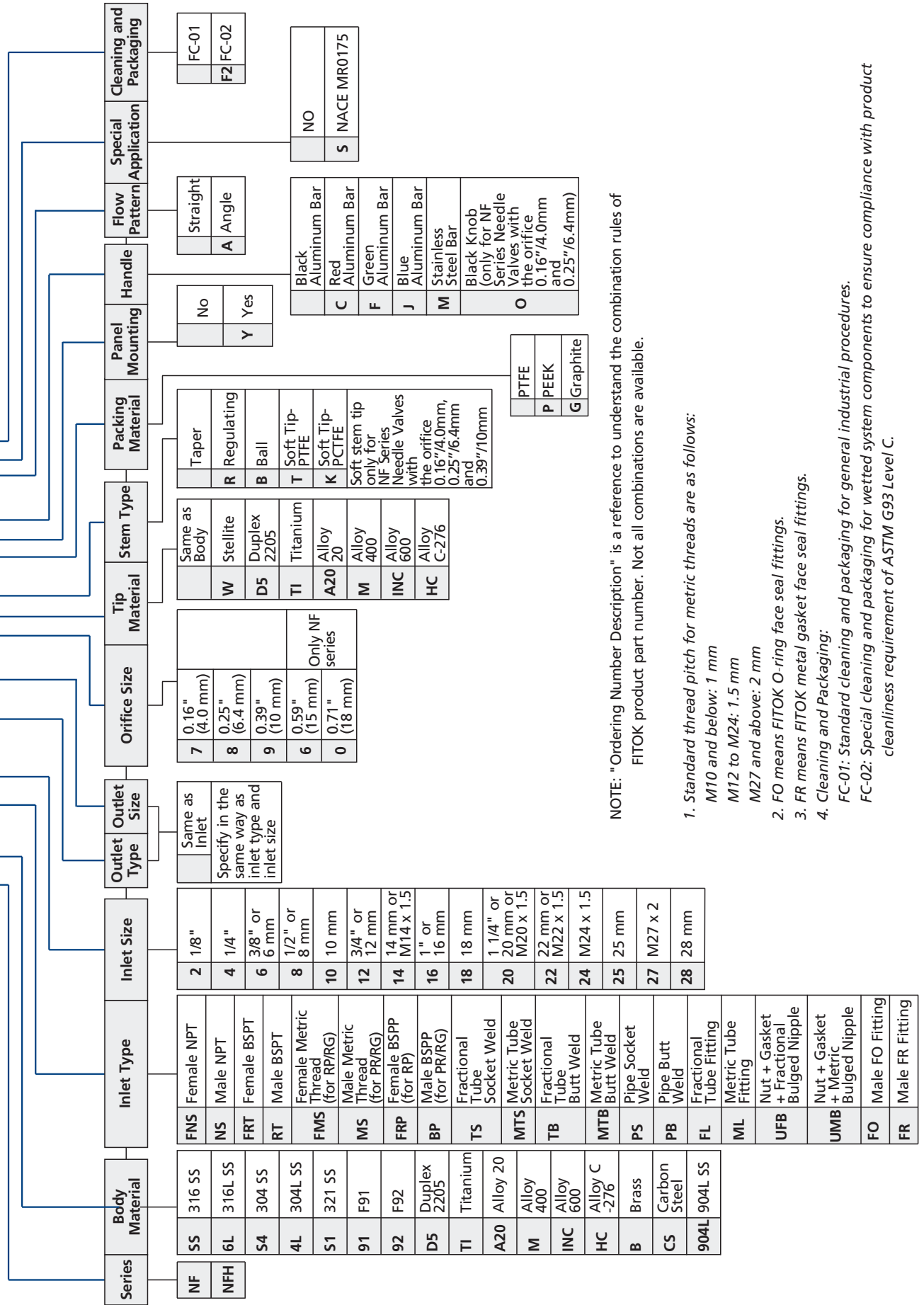
**Dimensions of NFH Series**

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
NFH□□-FNS2-7	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)	0.62 (15.8)	0.76 (19.4)	0.25 (6.4)	0.77 (19.6)
NFH□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.06 (26.2)	1.06 (26.2)						
NFH□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.22 (30.9)	1.22 (30.9)						
NFH□□-FNS4-NS4-7	1/4 Female NPT	1/4 Male NPT			1.06 (26.2)	1.22 (30.9)						
NFH□□-TS4-7-G	1/4" TS	1/4" TS			1.06 (26.2)	1.06 (26.2)						
NFH□□-FNS4-8	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)
NFH□□-FNS6-8	3/8 Female NPT	3/8 Female NPT			1.50 (38.1)	1.50 (38.1)						
NFH□□-NS6-8	3/8 Male NPT	3/8 Female NPT			1.56 (39.7)	1.56 (39.7)						
NFH□□-TS8-9-G	1/2" TS	1/2" TS	0.39 (10.0)	2.18	1.56 (39.7)	1.56 (39.7)	3.86 (98.0)	3.50 (88.9)	0.76 (19.4)	1.10 (28.3)	0.38 (9.7)	1.08 (27.5)

1. Connection type of "TS" means tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NFS4 - TS16 - MTS25 - 6WR - GYM - ASF2



NOTE: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

- Standard thread pitch for metric threads are as follows:  
 M10 and below: 1 mm  
 M12 to M24: 1.5 mm  
 M27 and above: 2 mm
- FO means FITOK O-ring face seal fittings.
- FR means FITOK metal gasket face seal fittings.
- Cleaning and Packaging:  
 FC-01: Standard cleaning and packaging for general industrial procedures.  
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# General Purpose Needle Valves

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

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

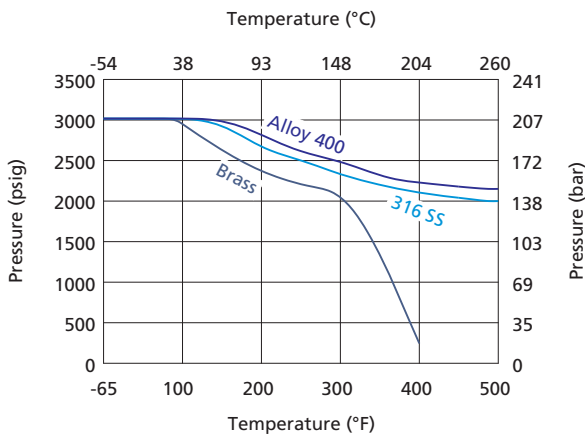
## Features

- ⦿ 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:
  - NG Series—Stainless steel, Brass, Alloy 400: 3000 psig (207 bar)
  - NGH Series—Stainless steel: 5000 psig (345 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)

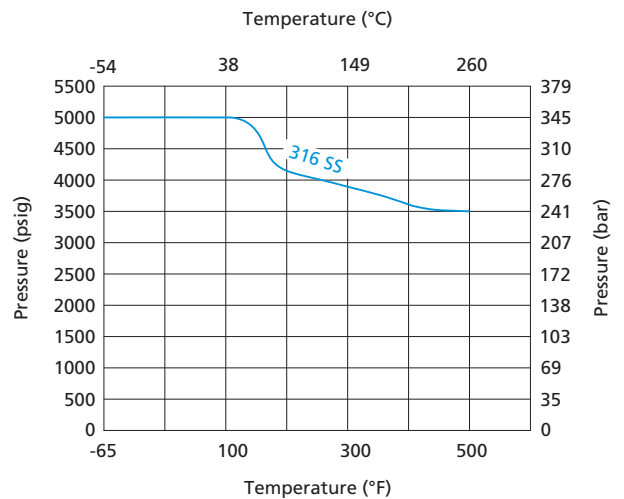


## Pressure vs. Temperature

NG Series



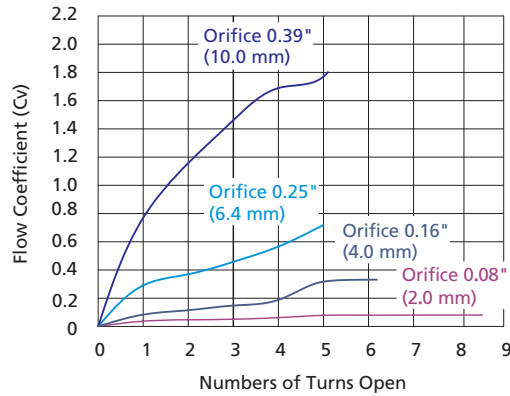
NGH Series



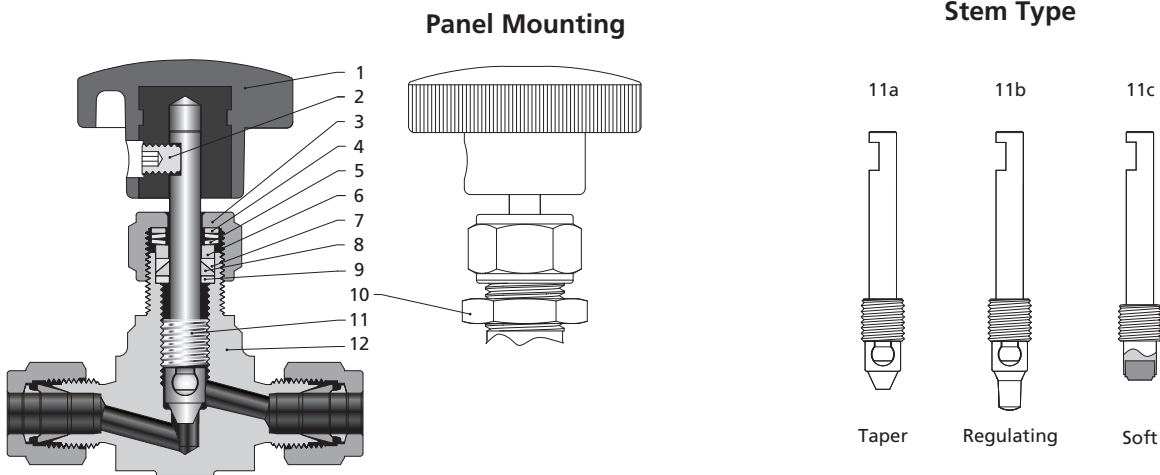
1. Graphs are based on PEEK packing.
2. Temperature rating is limited to 200°F (93°C) max with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (38°C)

Regulating Stem



## Standard Materials of Construction

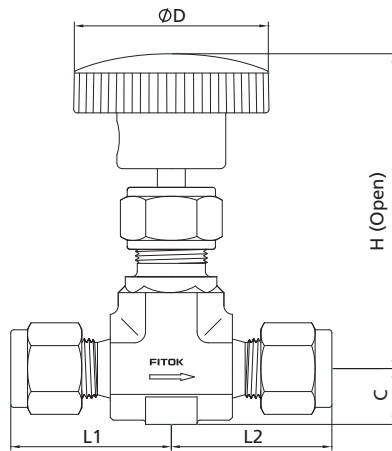


Item	Component	Valve Body Material		
		316 SS	Brass	Alloy
		Material Grade/ASTM Specification		
1	Handle	Black knob (aluminum or nylon with copper insert), aluminum alloy or stainless steel bar handle		
2	Set Screw	Stainless steel		
3	Packing Bolt	304 SS/A276	Brass C36000/B16	Alloy 400/B164
4	Washer	316 SS/A276		
5	Packing Spring	S17700/A693		
6	Washer	316 SS/A276		
7	Upper Packing	PTFE/PEEK		
8	Lower Packing			
9	Packing Washer	316 SS/A276		
10	Panel Nut	Stainless steel		
11a	Taper Stem/Stem Tip	Hardened 316 SS/A276		
11b	Regulating Stem/Stem Tip	Hardened 316 SS/A276		
11c	Soft Stem	316 SS/A276		
	Stem Tip	PCTFE/D1430 or PEEK		
12	Body	316 SS/A182	Brass C37700/B283	Alloy 400/B564
Lubricant		Molybdenum disulfide-based		

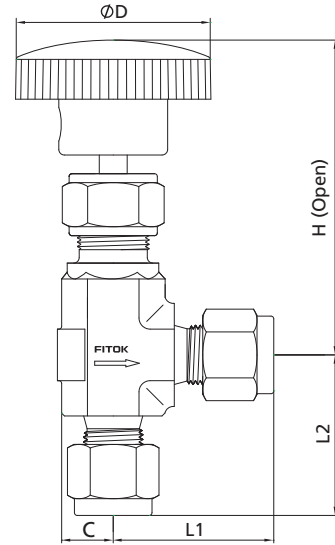
Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions

**Straight Pattern**



**Angle Pattern**



### Dimensions of NG Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
NG□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.75 (19.05)	0.75 (19.05)	0.31 (7.9)	1.00 (25.4)	2.28 (57.9)
NG□□-FNS2-5	1/8 Female NPT	1/8 Female NPT			0.81 (20.6)	0.81 (20.6)			
NG□□-FL2-5	1/8" FITOK	1/8" FITOK			0.98 (25.0)	0.98 (25.0)			
NG□□-ML3-5	3 mm FITOK	3 mm FITOK							
NG□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	0.81 (20.6)	0.81 (20.6)	0.39 (9.9)	1.38 (35.0)	2.46 (62.5)
NG□□-NS4-7	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)			
NG□□-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)	1.13 (28.7)			
NG□□-ML6-7	6 mm FITOK	6 mm FITOK			1.17 (29.7)	1.17 (29.7)			
NG□□-ML8-7	8 mm FITOK	8 mm FITOK			2.24 (57.0)	2.24 (57.0)			
NG□□-UMB6-7	6 mm UMB	6 mm UMB							
NG□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.53 (13.5)	1.88 (47.8)	2.97 (75.4)
NG□□-FNS6-8	3/8 Female NPT	3/8 Female NPT					0.62 (15.8)		
NG□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.12 (28.4)	1.12 (28.4)	0.53 (13.5)		
NG□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		
NG□□-FL6-8	3/8" FITOK	3/8" FITOK			1.29 (32.8)	1.29 (32.8)			
NG□□-FL8-8	1/2" FITOK	1/2" FITOK			1.40 (35.6)	1.40 (35.6)			
NG□□-ML10-8	10 mm FITOK	10 mm FITOK			1.30 (33.0)	1.30 (33.0)	0.53 (13.5)		
NG□□-ML12-8	12 mm FITOK	12 mm FITOK			1.40 (35.6)	1.40 (35.6)			
NG□□-ML14-8	14 mm FITOK	14 mm FITOK			1.56 (39.7)	1.56 (39.7)	0.62 (15.8)		
NG□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)			
NG□□-UMB10-8	10 mm UMB	10 mm UMB							
NG□□-UMB14-8	14 mm UMB	14 mm UMB			2.60 (66.0)	2.60 (66.0)	0.53 (13.5)		

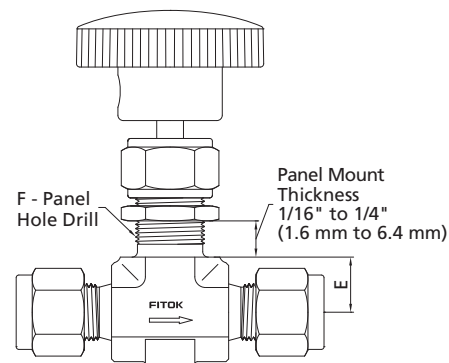
## Dimensions of NG Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
NG□□-FNS8-9-L	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.56 (39.7)	1.56 (39.7)	0.76 (19.4)	3.50 (88.9)	3.37 (85.7)
NG□□-FNS12-9-L	3/4 Female NPT	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)	0.89 (22.5)		
NG□□-NS12-9-L	3/4 Male NPT	3/4 Male NPT			1.90 (48.3)	1.90 (48.3)	0.76 (19.4)		
NG□□-FL8-9-L	1/2" FITOK	1/2" FITOK							
NG□□-FL12-9-L	3/4" FITOK	3/4" FITOK							
NG□□-ML14-9-L	14 mm FITOK	14 mm FITOK							

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of used tubing. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "UMB" means rotatable metric tube butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

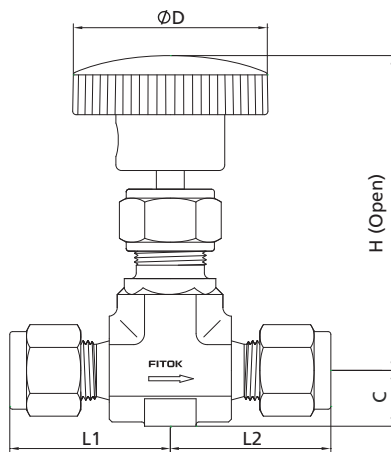
## Panel Mount Dimensions of NG Series

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)

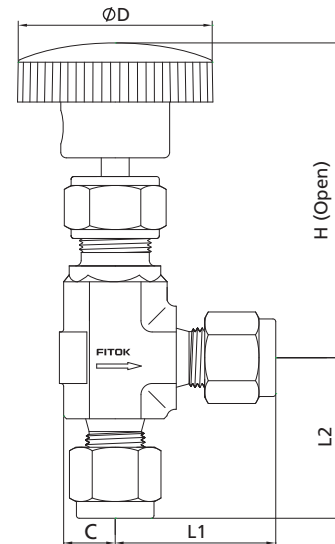


1. NG Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NGSS-NS2-5-Y

**Straight Pattern**



**Angle Pattern**



**Dimensions of NGH Series**

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)					
	Inlet	Outlet			L1	L2	C	D	H	
NGH□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.75 (19.0)	0.75 (19.0)	0.31 (7.9)	1.00 (25.4)	2.28 (57.9)	
NGH□□-FNS2-5	1/8 Female NPT	1/8 Female NPT			0.81 (20.6)	0.81 (20.6)				
NGH□□-FL2-5	1/8" FITOK	1/8" FITOK			0.98 (25.0)	0.98 (25.0)				
NGH□□-ML3-5	3 mm FITOK	3 mm FITOK	0.16 (4.0)	0.35	0.81 (20.6)	0.81 (20.6)	0.39 (9.9)	1.38 (35.0)	2.50 (63.5)	
NGH□□-FNS2-7	1/8 Female NPT	1/8 Female NPT			0.98 (25.0)	0.98 (25.0)				
NGH□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.13 (28.7)	1.13 (28.7)				
NGH□□-FL4-7	1/4" FITOK	1/4" FITOK			1.17 (29.7)	1.17 (29.7)				
NGH□□-ML6-7	6 mm FITOK	6 mm FITOK			2.24 (57.0)	2.24 (57.0)				
NGH□□-ML8-7	8 mm FITOK	8 mm FITOK	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.53 (13.5)	1.88 (47.8)	2.97 (75.4)	
NGH□□-UMB6-7	6 mm UMB	6 mm UMB			1.12 (28.4)	1.12 (28.4)	0.62 (15.8)			
NGH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT			1.12 (28.4)	1.12 (28.4)	0.53 (13.5)			
NGH□□-FNS6-8	3/8" Female NPT	3/8" Female NPT			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)			
NGH□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.29 (32.8)	1.29 (32.8)	0.53 (13.5)			
NGH□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.40 (35.6)	1.40 (35.6)				
NGH□□-FL6-8	3/8" FITOK	3/8" FITOK			1.30 (33.0)	1.30 (33.0)				
NGH□□-FL8-8	1/2" FITOK	1/2" FITOK			1.40 (35.6)	1.40 (35.6)	0.62 (15.8)			
NGH□□-ML10-8	10 mm FITOK	10 mm FITOK			1.56 (39.7)	1.56 (39.7)				
NGH□□-ML12-8	12 mm FITOK	12 mm FITOK			1.50 (38.1)	1.50 (38.1)				
NGH□□-ML14-8	14 mm FITOK	14 mm FITOK			2.60 (66.0)	2.60 (66.0)	2.60 (66.0)			0.53 (13.5)
NGH□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric					2.60 (66.0)			0.53 (13.5)
NGH□□-UMB10-8	10 mm UMB	10 mm UMB					2.60 (66.0)			0.53 (13.5)
NGH□□-UMB14-8	14 mm UMB	14 mm UMB								

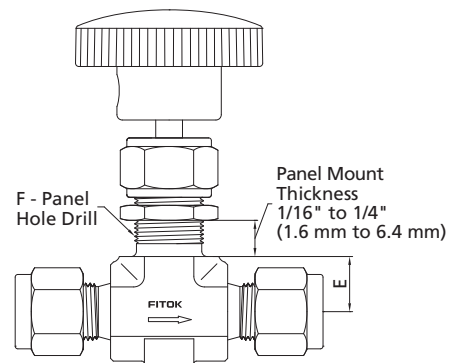
## Dimensions of NGH Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
NGH□□-FNS8-9-L	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.56 (39.7)	1.56 (39.7)	0.76 (19.4)	3.50 (88.9)	3.37 (85.7)
NGH□□-NS12-9-L	3/4 Male NPT	3/4 Male NPT			1.63 (41.3)	1.63 (41.3)	0.89 (22.5)		
NGH□□-FL8-9-L	1/2" FITOK	1/2" FITOK			1.90 (48.3)	1.90 (48.3)	0.76 (19.4)		
NGH□□-FL12-9-L	3/4" FITOK	3/4" FITOK							
NGH□□-ML14-9-L	14 mm FITOK	14 mm FITOK							

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "UMB" means rotatable metric tube butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

## Panel Mount Dimensions of NGH 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)

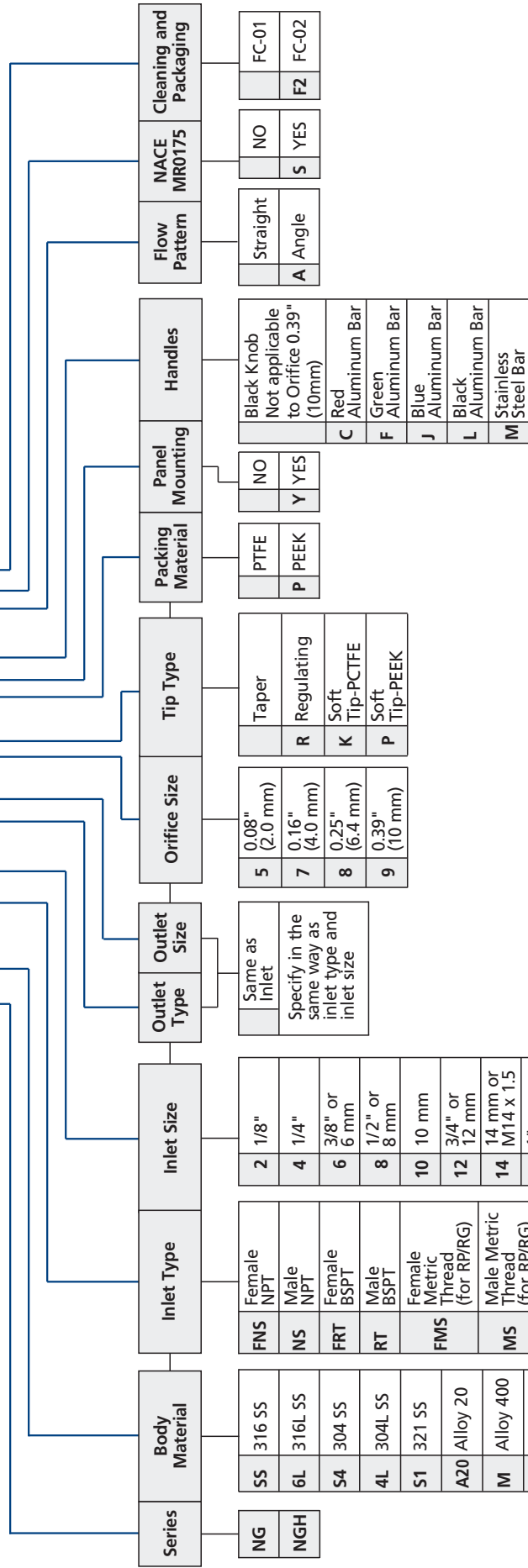


1. NGH Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NGHSS-NS2-5-Y



# Ordering Number Description

NGS4 - FNS8 - FL8 - 9P - PYM - ASF2



NOTE: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

- Standard thread pitch for metric threads are as follows:  
 M10 and below: 1 mm  
 M12 to M24: 1.5 mm  
 M27 and above: 2 mm  
 Standard thread pitch should be omitted in the ordering number, others should be specified.  
 For Orifice 0.39" (10 mm) needle valves, the option of black knob handle is unavailable.  
 If handle designator is void, a black anodized Aluminum bar handle should be equipped.
- Cleaning and Packaging:  
 FC-01: Standard cleaning and packaging for general industrial procedures.  
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# Rising Plug Valves

## NR Series

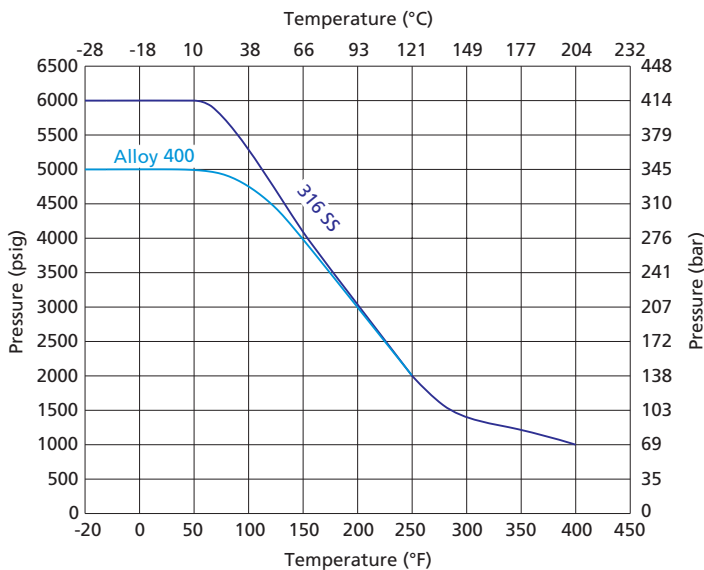
## NRG (with gauge port) Series

### Features

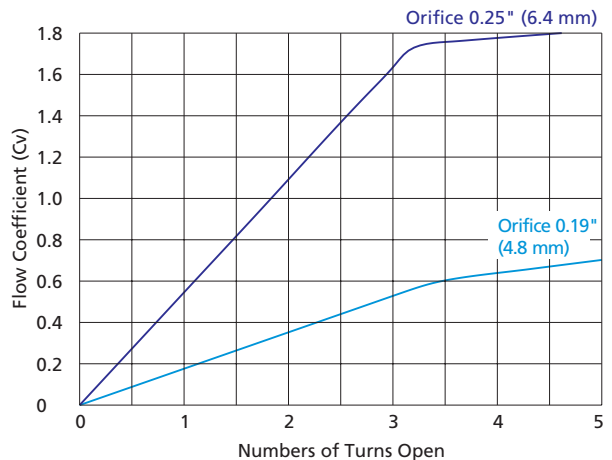
- ⦿ Cold drawn square bar as body material
- ⦿ Nonrotating stem for longer seat life
- ⦿ Roddable, straight through flow path for maximum flow with minimum pressure drop
- ⦿ Stem thread lubricant isolated from system media
- ⦿ Replaceable seat and stem tip design
- ⦿ Stem thread protected from outside contamination by PTFE ring in the gland
- ⦿ Panel mounting available
- ⦿ 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 400: 5000 psig (345 bar)
- ⦿ Working temperature with seat:
  - Acetal: -20°F to 250°F (-28°C to 121°C)
  - PEEK: -20°F to 450°F (-28°C to 232°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

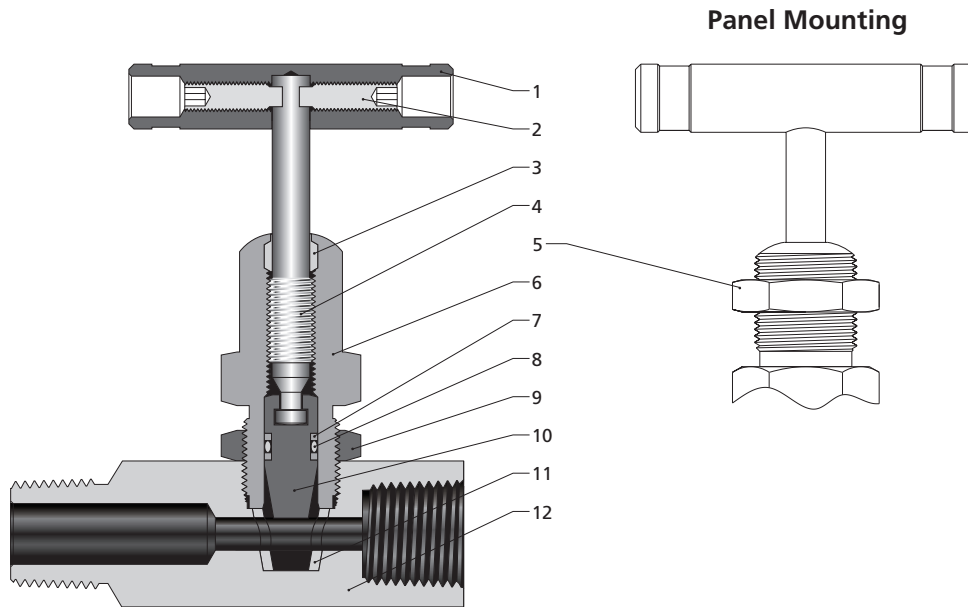


### Flow Data at 100°F (38°C)



1. Graphs are based on PEEK seat and Fluorocarbon(FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

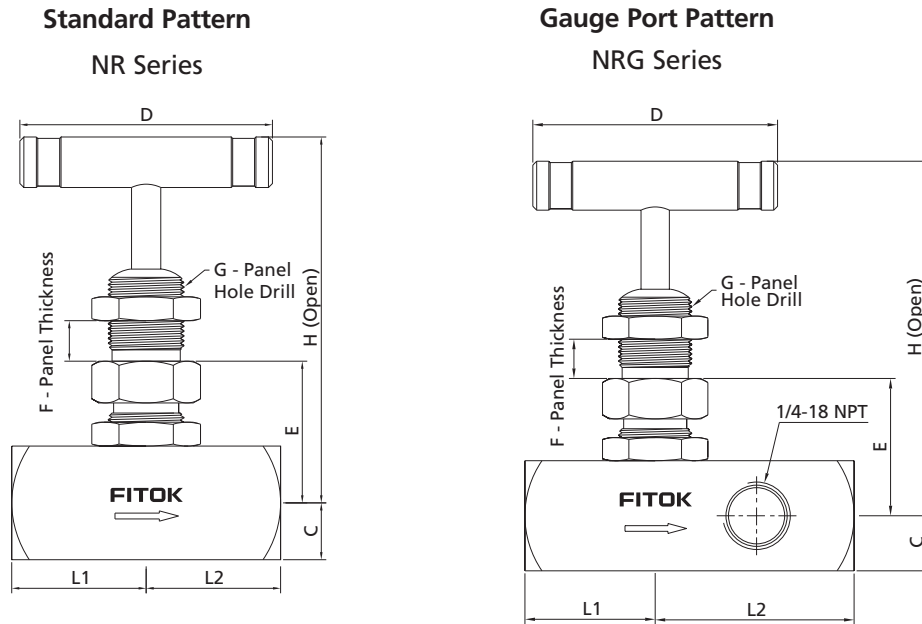
## Standard Materials of Construction



Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Alloy 400
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminum or stainless steel or black knob			
2	Set Screw	Stainless steel			
3	Wiper Ring	PTFE/D1710			
4	Upper Stem	316 SS/A479			Alloy 400/B164
5	Panel Nut	Stainless steel			
6	Bonnet	316 SS/A479	304 SS/A479	321 SS/A479	Alloy 400/B164
7	Backup Ring	PTFE/D1710			
8	O-ring	Fluorocarbon Rubber (FKM), Nitrile Butadiene Rubber (NBR) or Ethylene Propylene Diene Rubber (EPDM)			
9	Lock Nut	Stainless steel			
10	Stem Tip	316 SS/A276	304 SS/A276	321 SS/A276	Alloy 400/B164
11	Seat	Acetal or PEEK			
12	Body	316 SS/A479	304 SS/A479	321 SS/A479	Alloy 400/B164
	Lubricant	Molybdenum disulfide-based			

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

## Dimensions



© NR Series Needle Valves are standard without panel mounting. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NRSS-FNS4-7-Y

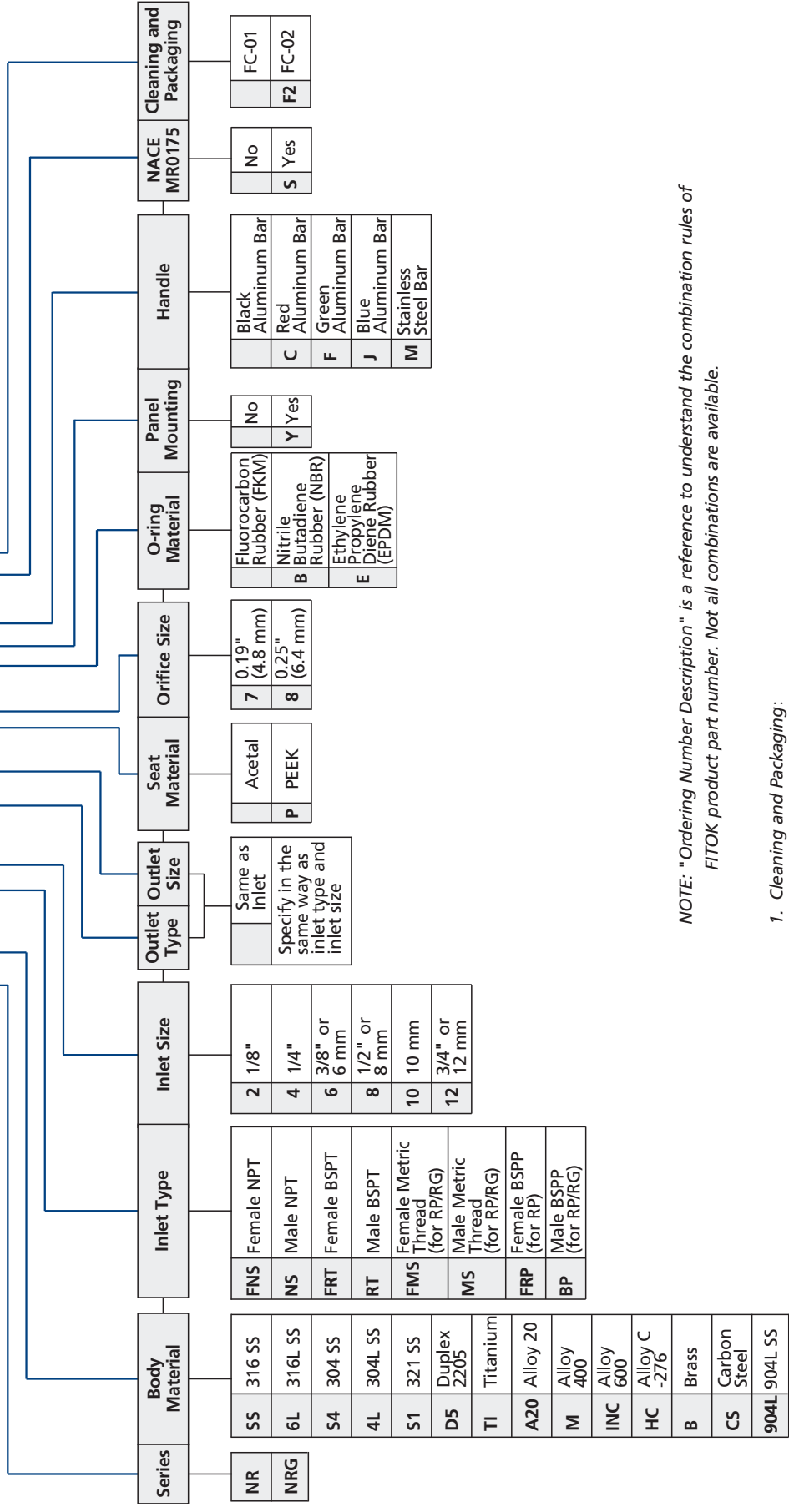
### Dimensions of NR and NRG Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	E	F	G	H
NR □□-FNS4-7	1/4 Female NPT	1/4 Female NPT	0.19 (4.8)	0.63	1.12 (28.4)	1.12 (28.4)	0.44 (11.1)	2.17 (55.0)	1.28 (32.5)	0.38 (9.7)	0.77 (19.6)	3.77 (95.8)
NR □□-NS4-FNS4-7	1/4 Male NPT	1/4 Female NPT			1.78 (45.2)		0.50 (12.7)		1.34 (34.0)			
NR □□-NS8-FNS4-7	1/2 Male NPT	1/4 Female NPT			1.89 (48.0)		0.50 (12.7)					
NRG □□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.12 (28.4)	1.75 (44.4)	1.33 (33.8)					
NRG □□-NS8-FNS4-7	1/2 Male NPT	1/4 Female NPT			3.12 (79.2)							
NR □□-FNS8-8	1/2 Female NPT	1/2 Female NPT	0.25 (6.4)	1.80	1.33 (33.8)	0.56 (14.3)		2.50 (63.5)	1.40 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)
NR □□-NS8-FNS8-8	1/2 Male NPT	1/2 Female NPT	2.16 (54.9)									
NR □□-NS12-FNS8-8	3/4 Male NPT	1/2 Female NPT	3.33 (84.6)		2.25 (57.2)							
NRG □□-FNS8-8	1/2 Female NPT	1/2 Female NPT										
NRG □□-NS12-FNS8-8	3/4 Male NPT	1/2 Female NPT										

1. Sizes and types listed are standard. Other sizes and types are available upon request.
2. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

## NRSS - NS8 - FNS8 - P8 - BYM - SF2



NOTE: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Cleaning and Packaging:
  - FC-01: Standard cleaning and packaging for general industrial procedures.
  - FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# Toggle Valves

## NT 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)

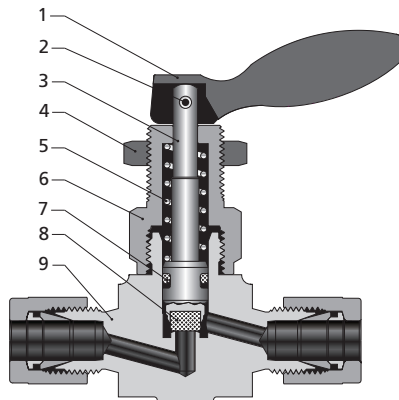


### Technical Data

Orifice in. (mm)	Working Pressure at 100°F (38°C) psig (bar)
0.08 (2.0)	300 (20.7)
0.125 (3.2)	
0.25 (6.4)	200 (13.8)

O-ring Material	Temperature Rating
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)

### Standard Materials of Construction

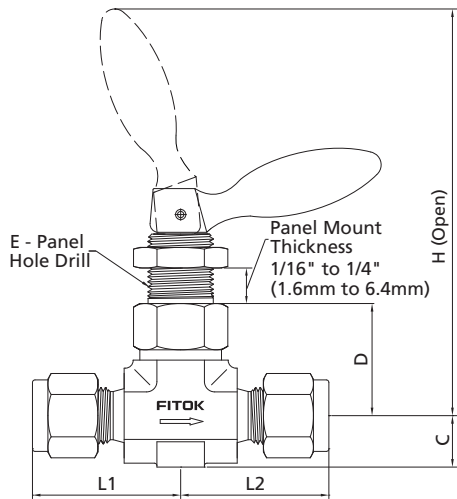


Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Brass
		Material Grade/ASTM Specification			
1	Handle	Stainless steel			
2	Pin	Stainless steel			
3	Stem	316 SS/A276	304 SS/A276		316 SS/A276
4	Panel Nut	Stainless steel			Brass C36000/B16
5	Spring	S17700/A313			
6	Bonnet	304 SS/A276			Brass 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			

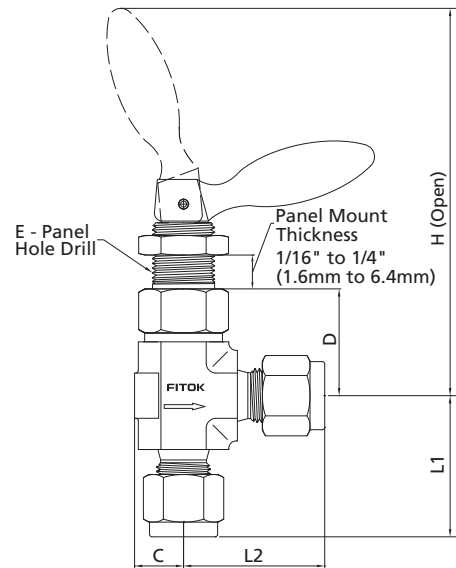
Note: Contact FITOK Group or our authorized distributors for other materials.

## Dimensions

Straight Pattern



Angle Pattern



### Dimensions of NT series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)					
	Inlet	Outlet			L1	L2	C	D	E	H
NT□□-NS2-5	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)
NT□□-NS2-FL2-5	1/8 Male NPT	1/8" FITOK			0.75 (19.05)	0.98 (25.0)				
NT□□-FL2-5	1/8" FITOK	1/8" FITOK			0.98 (25.0)	0.98 (25.0)				
NT□□-ML3-5	3 mm FITOK	3 mm FITOK								
NT□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.125 (3.2)	0.20	0.81 (20.6)	0.81 (20.6)	0.39 (10.0)	0.85 (21.7)	0.53 (13.5)	2.83 (71.9)
NT□□-NS2-7	1/8 Male NPT	1/8 Male NPT			0.86 (21.8)	0.86 (21.8)				
NT□□-NS4-7	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)				
NT□□-NS4-FL4-7	1/4 Male NPT	1/4" FITOK			0.98 (25.0)	1.13 (28.7)				
NT□□-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)					
NT□□-ML6-7	6 mm FITOK	6 mm FITOK								
NT□□-ML8-7	8 mm FITOK	8 mm FITOK								
NT□□-FNS4-8	1/4 Female NPT	1/4 Female NPT			0.25 (6.4)	0.70				
NT□□-FNS6-8	3/8 Female NPT	3/8 Female NPT	1.12 (28.4)	1.12 (28.4)						
NT□□-NS6-8	3/8 Male NPT	3/8 Male NPT	1.29 (32.8)	1.29 (32.8)						
NT□□-FL6-8	3/8" FITOK	3/8" FITOK	1.40 (35.6)	1.40 (35.6)						
NT□□-FL8-8	1/2" FITOK	1/2" FITOK	1.36 (34.5)	1.36 (34.5)						
NT□□-ML10-8	10 mm FITOK	10 mm FITOK	1.46 (37.1)	1.46 (37.1)						
NT□□-ML12-8	12 mm FITOK	12 mm FITOK								

1. Connection type of "FITOK" means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK 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

Normally Closed and  
Double Acting

Normally Open



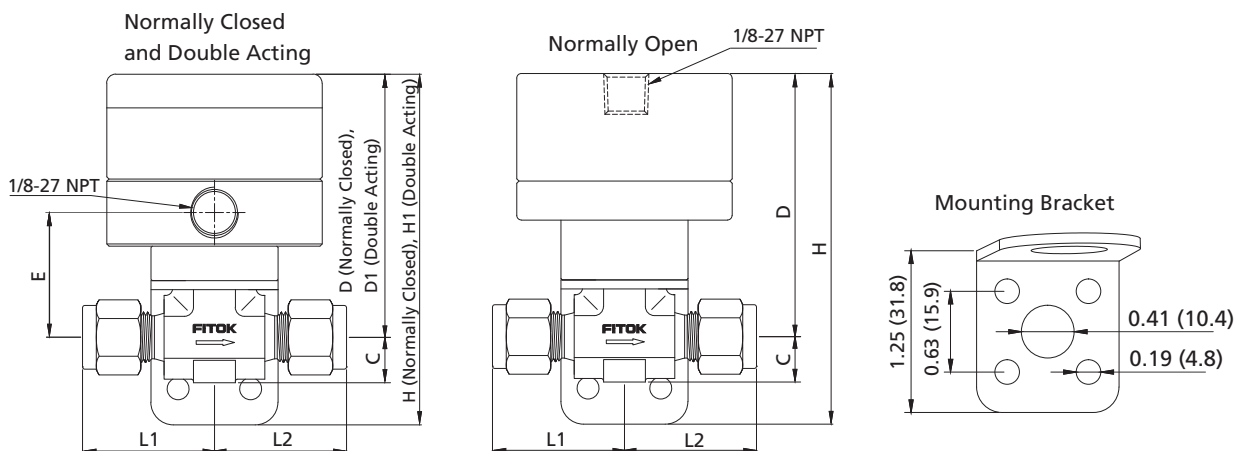
## Technical Data

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 NT Series "Standard Materials of Construction" for other materials.

## Dimensions

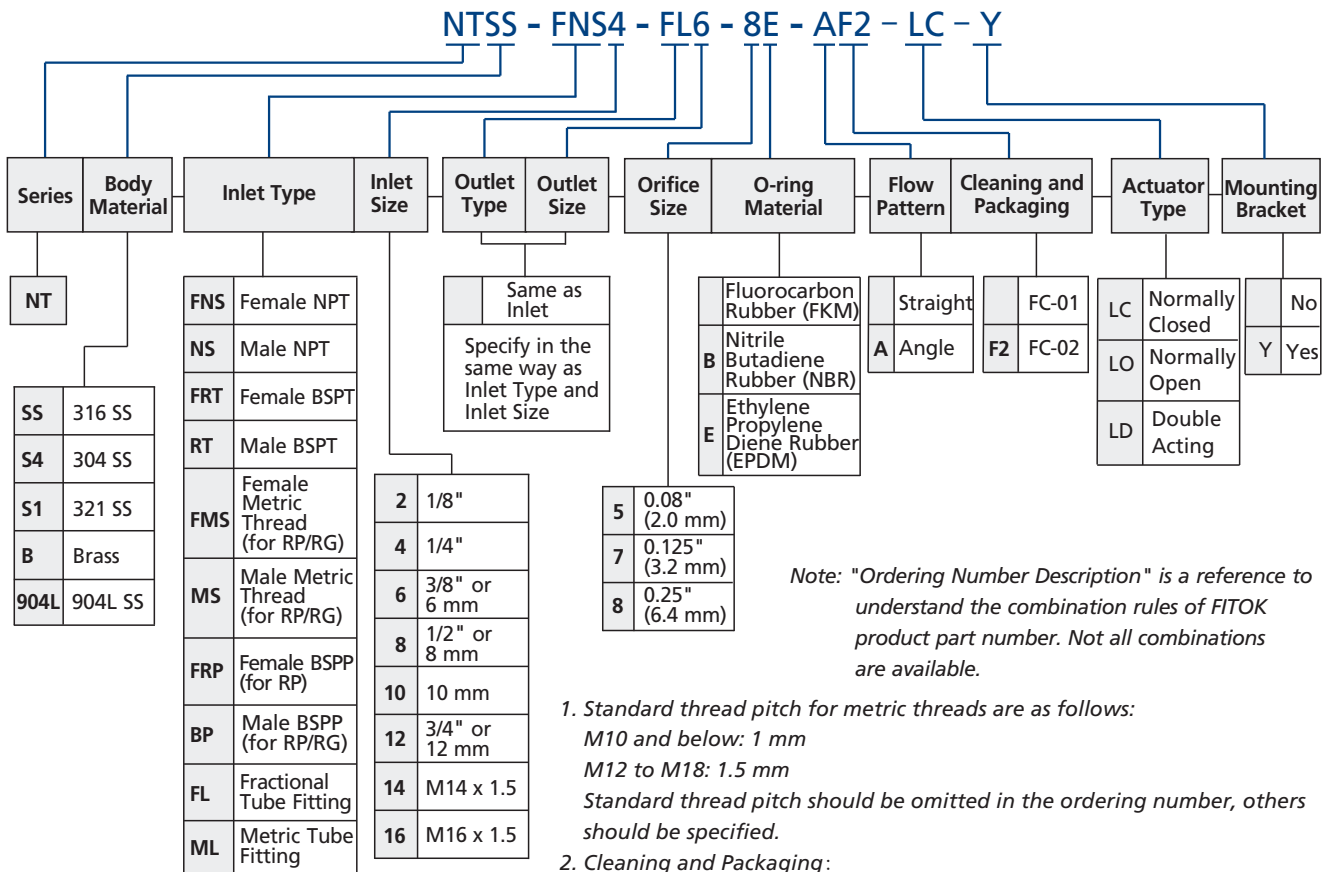




Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	D1	H	H1	E
NT□□-NS2-5-LC-Y	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.11	0.86 (21.8)	0.86 (21.8)						
NT□□-NS2-FL2-5-LC-Y	1/8 Male NPT	1/8" FITOK			0.86 (21.8)	1.03 (26.2)						
NT□□-FL2-5-LC-Y	1/8" FITOK	1/8" FITOK			1.03 (26.2)	1.03 (26.2)						
NT□□-ML3-5-LC-Y	3 mm FITOK	3 mm FITOK	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)
NT□□-FNS2-7-LC-Y	1/8 Female NPT	1/8 Female NPT			0.86 (21.8)	0.86 (21.8)						
NT□□-NS2-7-LC-Y	1/8 Male NPT	1/8 Male NPT			0.98 (25.0)	0.98 (25.0)						
NT□□-NS4-7-LC-Y	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	1.13 (28.7)						
NT□□-NS4-FL4-7-LC-Y	1/4 Male NPT	1/4" FITOK			1.13 (28.7)							
NT□□-FL4-7-LC-Y	1/4" FITOK	1/4" FITOK										
NT□□-ML6-7-LC-Y	6 mm FITOK	6 mm FITOK										
NT□□-ML8-7-LC-Y	8 mm FITOK	8 mm FITOK										

1. Connection type of "FITOK" means FITOK double ferrule tube fittings.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

## Ordering Number Description



Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

1. Standard thread pitch for metric threads are as follows:  
 M10 and below: 1 mm  
 M12 to M18: 1.5 mm  
 Standard thread pitch should be omitted in the ordering number, others should be specified.
2. Cleaning and Packaging:  
 FC-01: Standard cleaning and packaging for general industrial procedures.  
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.

# Union Bonnet Needle Valves

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

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

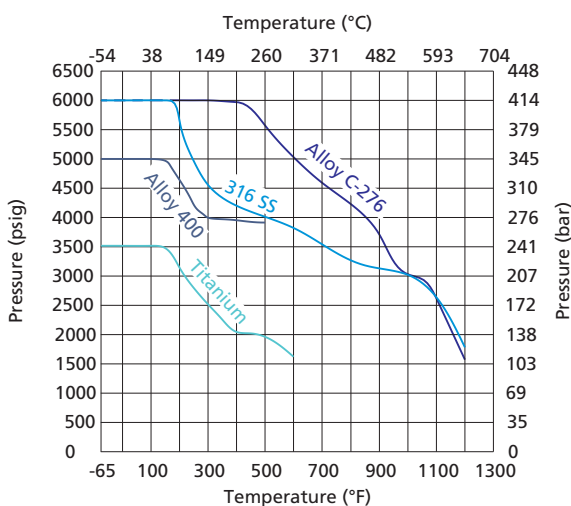
## Features

- ⦿ One-piece forged body
- ⦿ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Accidental valve disassembly disabled by union bonnet construction
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary movement 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 (NU Series) at the maximum allowable working pressure or with water (NUH Series) at 1.1 times the maximum allowable pressure
- ⦿ Working pressure up to:
  - NU 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)
  - NUH Series—Stainless steel: 10000 psig (690 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)

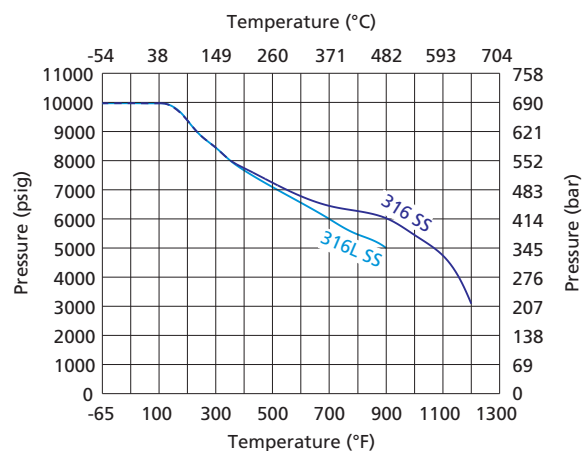


## Pressure vs. Temperature

### NU Series



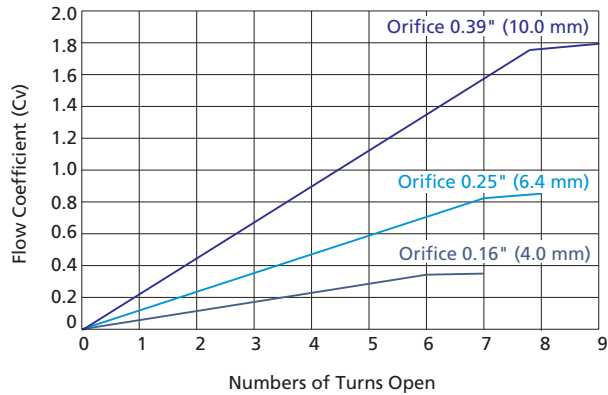
### NUH Series



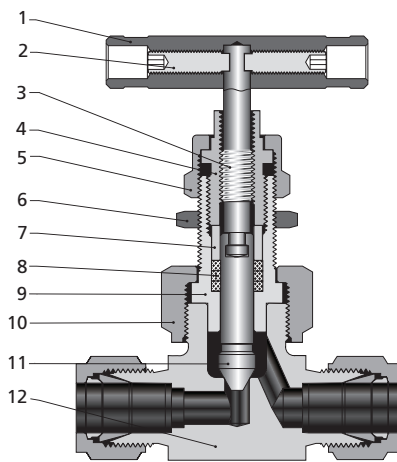
1. Graphs are based on graphite packing.
2. Soft tips are for NU Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (37°C)

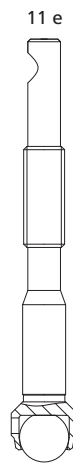
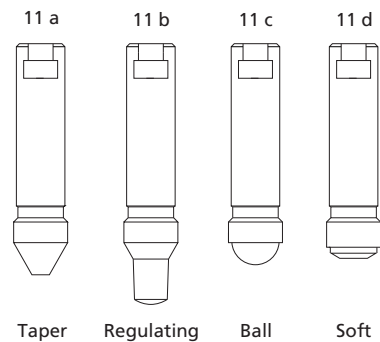
Regulating Stem



## Standard Materials of Construction



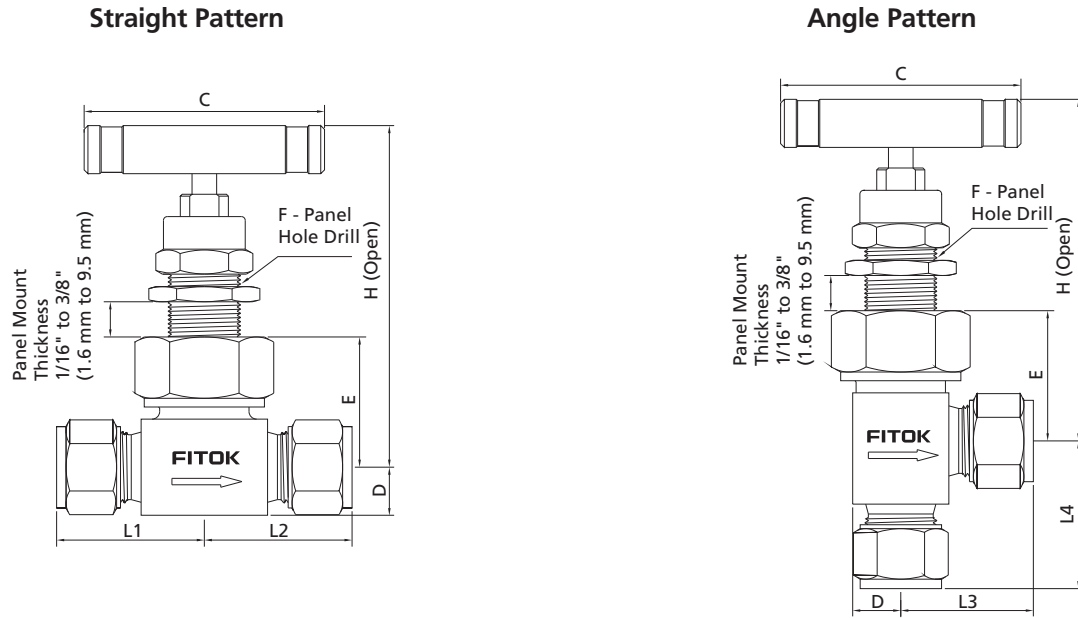
### Stem Type



Item	Component	Valve Body Material			
		316 SS	Alloy 400	Titanium	Alloy C-276
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminium or stainless steel or black knob			
2	Set Screw	Stainless steel			
3	Upper Stem	316 SS/A276			
4	Packing Bolt	304 SS/A276			
5	Lock Nut	316 SS/A276			
6	Panel Nut	Stainless steel			
7	Gland	316 SS/A276			
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/A276			
11a 11b 11c 11d 11e	Lower Stem	Hardened 316 SS/A276	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574
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 FITOK Group or our authorized distributors for other materials.

## Dimensions



## Dimensions of NU Series

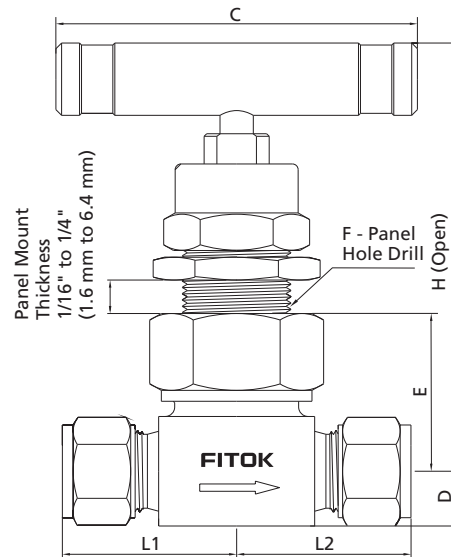
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)															
	Inlet	Outlet			L1	L2	L3	L4	C	D	E	F	H							
NU□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	0.89 (22.6)	1.00 (25.4)	1.75 (44.5)	0.39 (9.9)	1.09 (27.7)	0.59 (15.1)	3.04 (77.2)							
NU□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)														
NU□□-NS4-FNS4-7	1/4 Male NPT	1/4 Female NPT			1.00 (25.4)	1.03 (26.2)														
NU□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.00 (25.4)	1.00 (25.4)	1.00 (25.4)													
NU□□-NS6-7	3/8 Male NPT	3/8 Male NPT			1.03 (26.2)	1.03 (26.2)	0.89 (22.6)													
NU□□-FRP4-7	1/4 Female BSPP	1/4 Female BSPP			1.00 (25.4)	1.22 (30.9)	1.14 (28.8)													
NU□□-NS4-FL4-7	1/4 Male NPT	1/4" FITOK			1.03 (26.2)	1.22 (30.9)														
NU□□-FNS4-FL4-7	1/4 Female NPT	1/4" FITOK			1.22 (30.9)	1.22 (30.9)	1.22 (30.9)													
NU□□-FL4-7	1/4" FITOK	1/4" FITOK			0.91 (23.1)	0.91 (23.1)	0.88 (22.4)													
NU□□-ML6-7	6 mm FITOK	6 mm FITOK			1.03 (26.2)	1.03 (26.2)								1.19 (30.2)						
NU□□-ML8-7	8 mm FITOK	8 mm FITOK			1.03 (26.2)	1.03 (26.2)														
NU□□-TS4-7-G	1/4" TS	1/4" TS			0.25 (6.4)	0.8	1.13 (28.6)							1.13 (28.6)	1.00 (25.4)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	0.78 (19.8)	3.77 (95.7)
NU□□-FNS4-8	1/4 Female NPT	1/4 Female NPT					1.06 (26.9)							1.13 (28.6)						
NU□□-FNS6-8	3/8 Female NPT	3/8 Female NPT					1.41 (35.9)							1.41 (35.9)	1.28 (32.5)					
NU□□-NS6-8	3/8 Male NPT	3/8 Male NPT	1.52 (38.6)	1.52 (38.6)			1.40 (35.6)	1.58 (40.1)												
NU□□-FL6-8	3/8" FITOK	3/8" FITOK	1.42 (36.1)	1.42 (36.1)			1.30 (33.0)	1.48 (37.6)												
NU□□-FL8-8	1/2" FITOK	1/2" FITOK																		
NU□□-ML10-8	10 mm FITOK	10 mm FITOK																		

Dimensions of NU 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		
NU □□-ML12-8	12 mm FITOK	12 mm FITOK	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)	3.70 (94.0)		
NU □□-ML14-8	14 mm FITOK	14 mm FITOK													
NU □□-ML16-8	16 mm FITOK	16 mm FITOK													
NU □□-TS6-8-G	3/8" TS	3/8" TS													
NU □□-TS8-8-G	1/2" TS	1/2" TS													
NU □□-PS4-8-G	1/4 PS	1/4 PS													
NU □□-MTS12-8-G	12 mm MTS	12 mm MTS			1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)		
NU □□-MTS14-8-G	14 mm MTS	14 mm MTS													
NU □□-MTS16-8-G	16 mm MTS	16 mm MTS													
NU □□-MTB14-8-G	14 mm MTB	14 mm MTB													
NU □□-MTB16-8-G	16 mm MTB	16 mm MTB													
NU □□-UMB14-8	14 mm UMB	14 mm UMB													
NU □□-FO8-8	1/2" Male FO	1/2" Male FO			1.56 (39.6)	1.56 (39.6)	1.13 (28.6)	1.50 (38.1)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	0.78 (19.8)	3.70 (94.0)		
NU □□-FR8-8	1/2" Male FR	1/2" Male FR													
NU □□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric													
NU □□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric													
NU □□-NS8-9	1/2 Male NPT	1/2 Male NPT													
NU □□-FNS8-9	1/2 Female NPT	1/2 Female NPT													
NU □□-NS12-9	3/4 Male NPT	3/4 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)
NU □□-FNS12-9	3/4 Female NPT	3/4 Female NPT													
NU □□-NS12-9	3/4 Male NPT	3/4 Male NPT													
NU □□-FL8-9	1/2" FITOK	1/2" FITOK													
NU □□-FL12-9	3/4" FITOK	3/4" FITOK													
NU □□-ML14-9	14 mm FITOK	14 mm FITOK													
NU □□-ML16-9	16 mm FITOK	16 mm FITOK	1.97 (50.0)	1.97 (50.0)			1.68 (42.7)	2.08 (52.8)	3.50 (88.9)	0.63 (16.0)	1.82 (46.2)	1.03 (26.2)	4.76 (121)		
NU □□-ML18-9	18 mm FITOK	18 mm FITOK													
NU □□-ML20-9	20 mm FITOK	20 mm FITOK													
NU □□-MTS14-9-G	14 mm MTS	14 mm MTS													
NU □□-MTS16-9-G	16 mm MTS	16 mm MTS													
NU □□-TS8-9-G	1/2" TS	1/2" TS													
NU □□-TS12-9-G	3/4" TS	3/4" TS	1.56 (39.7)	1.56 (39.7)			1.31 (33.3)	1.69 (42.9)	3.50 (88.9)	0.63 (16.0)	1.82 (46.2)	1.03 (26.2)	4.76 (121)		
NU □□-MTB16-9-G	16 mm MTB	16 mm MTB													
NU □□-UMB14-9	14 mm UMB	14 mm UMB													
NU □□-FR8-9	1/2" Male FR	1/2" Male FR													
NU □□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric													
NU □□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric													

1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "TS" means fractional tube socket weld. "MTS" means metric tube socket weld. "MTB" means metric tube butt weld. "UMB" means rotatable metric tube butt weld. "PS" means pipe socket weld.
4. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
5. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Needle Valves  
Metering Valves



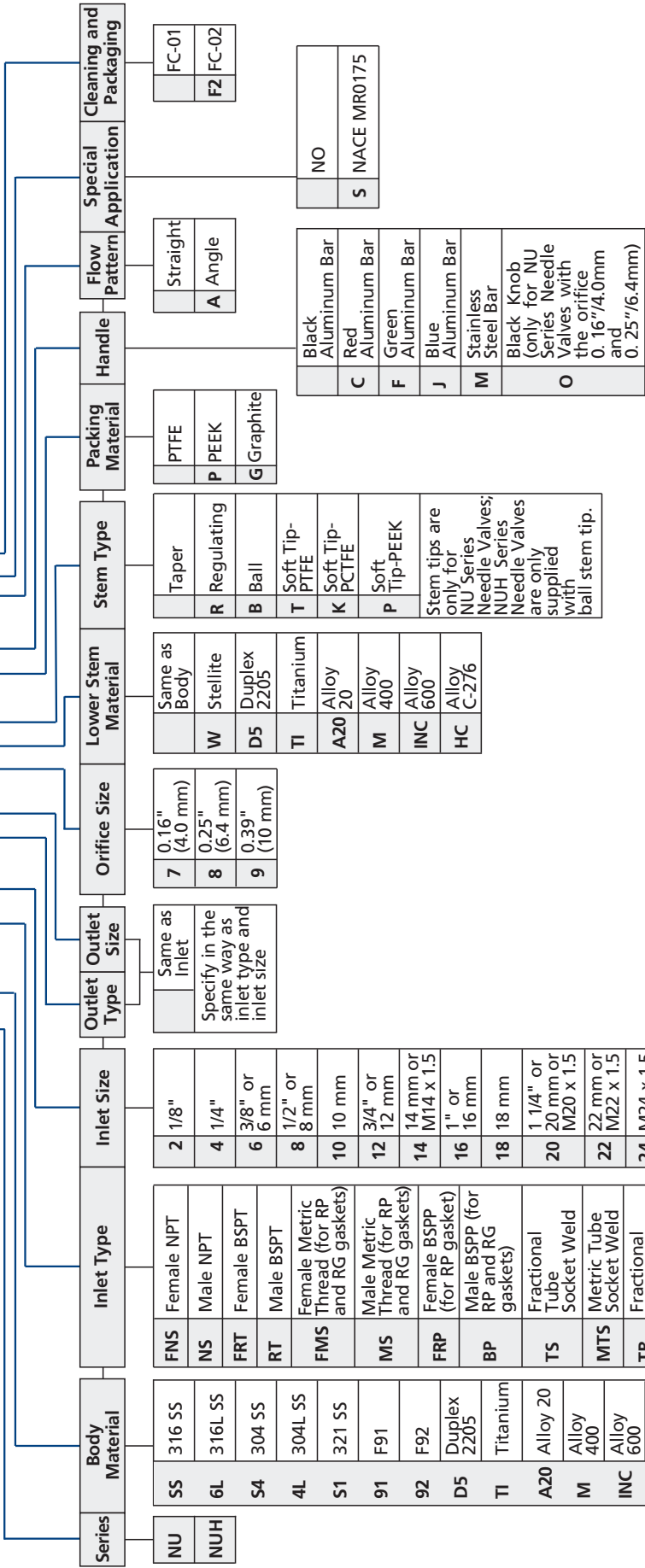
### Dimensions of NUH Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
NUH□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.13 (28.6)	1.13 (28.6)	2.50 (63.5)	0.50 (12.7)	1.34 (34.1)	0.78 (19.8)	3.42 (86.9)
NUH□□-FNS4-7	1/4 Female NPT	1/4 Female NPT									
NUH□□-NS4-FNS4-7	1/4 Male NPT	1/4 Female NPT									
NUH□□-NS4-7	1/4 Male NPT	1/4 Male NPT									
NUH□□-TS4-7-G	1/4" TS	1/4" TS			1.13 (28.6)	1.13 (28.6)					
NUH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.86	1.56 (39.6)	1.56 (39.6)	3.50 (88.9)	0.63 (16.0)	1.77 (45.0)	1.03 (26.2)	4.09 (104)
NUH□□-NS8-8	1/2 Male NPT	1/2 Male NPT									
NUH□□-TS8-8-G	1/2" TS	1/2" TS									
NUH□□-MTS12-8-G	12 mm MTS	12 mm MTS									

1. Connection type of "TS" means tube socket weld. "MTS" means metric tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NUSS - FNS6 - FL6 - 8WB - GM - ASF2



Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Lower Stem Material	Stem Type	Packing Material	Handle	Flow Pattern	Special Application	Cleaning and Packaging
NU	316 SS	Female NPT	2 1/8"	Same as Inlet	7 0.16" (4.0 mm)	Same as Body	Taper	PTFE	Black Aluminum Bar	Straight		FC-01	
NUH	316L SS	Male NPT	4 1/4"	Specify in the same way as inlet type and inlet size	8 0.25" (6.4 mm)	Stellite	R Regulating	P PEEK	Red Aluminum Bar	A Angle		F2 FC-02	
S4	304 SS	Female BSPT	6 3/8" or 6 mm		9 0.39" (10 mm)	Duplex 2205	B Ball	G Graphite	Green Aluminum Bar				
4L	304L SS	Male BSPT	8 1/2" or 8 mm			Titanium	T Soft Tip-PTFE		Blue Aluminum Bar				
S1	321 SS	Female Metric Thread (for RP and RG gaskets)	10 10 mm			Alloy 20	K Soft Tip-PTFE		Stainless Steel Bar				
91	F91	Male Metric Thread (for RP and RG gaskets)	12 3/4" or 12 mm			Alloy 400	P Soft Tip-PEEK		Black Knob Series Needle Valves with the orifice 0.16"/4.0mm and 0.25"/6.4mm				
92	F92	Female BSPP (for RP gasket)	14 14 mm or M14 x 1.5			Alloy 600	Stem tips are only for NU Series Needle Valves; NUH Series Needle Valves are only supplied with ball stem tip.						
D5	Duplex 2205	Male BSPP (for RP and RG gaskets)	16 1" or 16 mm			Alloy C-276							
TI	Titanium	BP	18 18 mm										
A20	Alloy 20	TS	20 1 1/4" or 20 mm or M20 x 1.5										
M	Alloy 400	MTS	22 22 mm or M22 x 1.5										
INC	Alloy 600	TB	24 24 mm or M24 x 1.5										
HC	Alloy C-276	MTB	25 25 mm										
B	Brass	PS	27 M27 x 2										
CS	Carbon Steel	PB	28 28 mm										
904L	904L SS	FL											
		ML											
		UFB											
		UMB											
		FO											
		FR											

NOTE: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

- Standard thread pitch for metric threads are as follows:  
M10 and below: 1 mm  
M12 to M24: 1.5 mm  
M27 and above: 2 mm  
Standard thread pitch should be omitted in the ordering number, others should be specified.
- FO means FITOK O-ring face seal fittings.
- FR means FITOK metal gasket face seal fittings.
- Cleaning and Packaging:  
FC-01: Standard cleaning and packaging for general industrial procedures.  
FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.



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

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

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

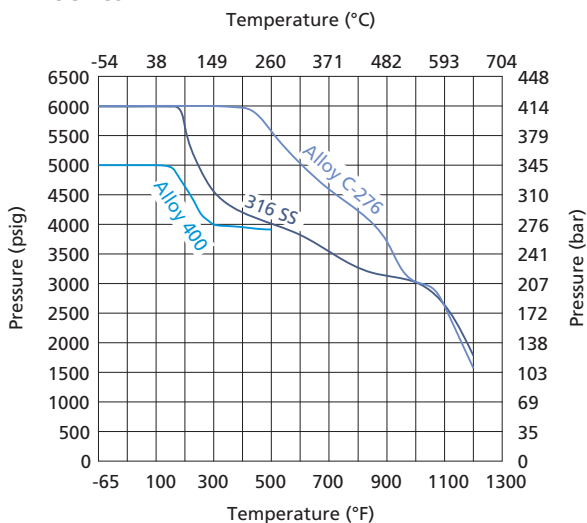
## Features

- ⊙ 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 (NY Series) at maximum allowable working pressure or with water (NYH Series) at 1.1 times maximum allowable working pressure
- ⊙ Working pressure up to:
  - NY Series—Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
  - NYH Series—Stainless steel: 10000 psig (690 bar)
- ⊙ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)

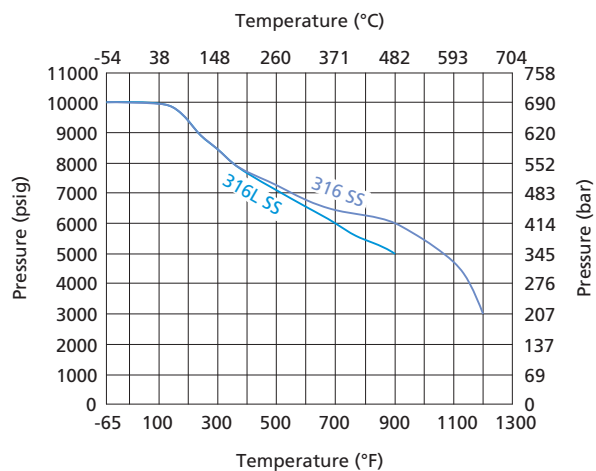


## Pressure vs. Temperature

NY Series



NYH Series

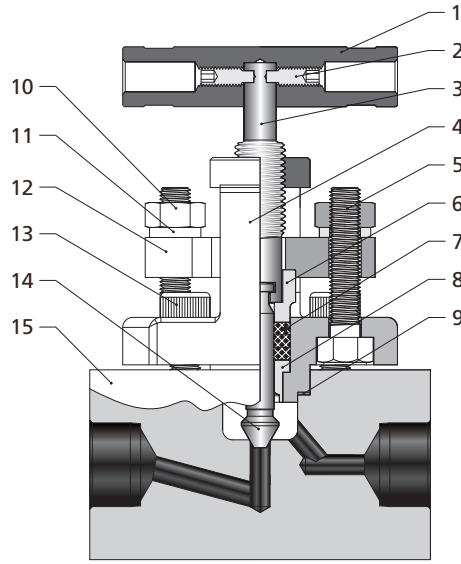


1. Graphs are based on graphite packing.

2. Contact FITOK Group or our authorized distributors for curve graph of other materials.



## Standard Materials of Construction

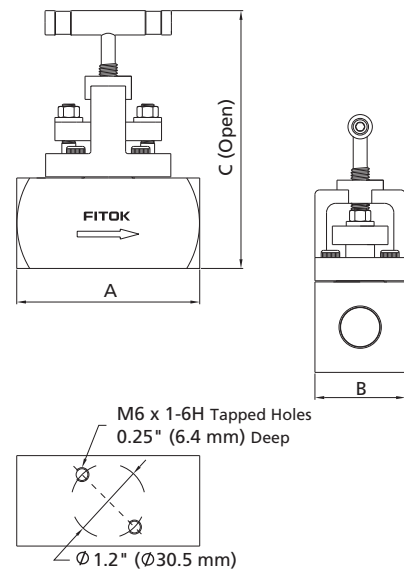


Item	Component	Valve Body Material
		316 SS
		Material Grade/ASTM Specification
1	Handle	Anodized aluminum or stainless steel
2	Set Screw	Stainless steel
3	Upper Stem	316 SS/A276
4	Yoke	316 SS/A182
5	Bolts	Stainless steel
6	Packing Washer	316 SS/A276
7	Packing	PTFE or PEEK or graphite
8	Packing Washer	316 SS/A276
9	Joint Seal	316 SS/A276
10	Nuts	Stainless steel
11	Gaskets	Stainless steel
12	Gland bridge	316 SS/A182
13	Bolts	Stainless steel
14	Lower Stem	Hardened 316 SS/A276
15	Body	316 SS/A479
	Lubricant	Molybdenum disulfide-based

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

## Dimensions of NY Series

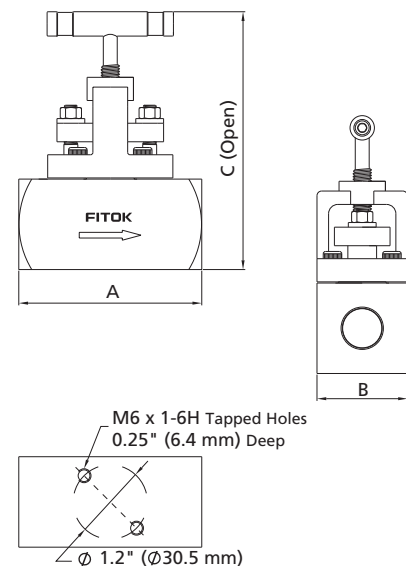
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)		
	Inlet	Outlet			A	B	C
NY□□-FNS4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	2.69 (68.2)	1.50 (38.1)	4.04 (102.7)
NY□□-NS4	1/4 Male NPT	1/4 Male NPT			2.95 (75.0)		
NY□□-NS4-FNS4	1/4 Male NPT	1/4 Female NPT			2.72 (69.2)		
NY□□-FNS6	3/8 Female NPT	3/8 Female NPT			2.93 (75.0)		
NY□□-NS6	3/8 Male NPT	3/8 Male NPT			3.00 (76.2)		
NY□□-FNS8	1/2 Female NPT	1/2 Female NPT			3.27 (82.0)		
NY□□-NS8	1/2 Male NPT	1/2 Male NPT			3.00 (76.2)		
NY□□-NS8-FNS8	1/2 Male NPT	1/2 Female NPT			3.00 (76.2)		
NY□□-PS8-G	1/2 PS	1/2 PS			3.54 (89.8)		
NY□□-PB8-G	1/2 PB	1/2 PB			3.44 (87.4)		
NY□□-FL4	1/4" FITOK	1/4" FITOK			3.50 (88.9)		
NY□□-FL6	3/8" FITOK	3/8" FITOK			3.78 (96.0)		
NY□□-FL8	1/2" FITOK	1/2" FITOK			3.44 (87.4)		
NY□□-ML6	6 mm FITOK	6 mm FITOK			3.78 (96.0)		
NY□□-ML8	8 mm FITOK	8 mm FITOK					
NY□□-ML12	12 mm FITOK	12 mm FITOK					



1. Connection type of "FITOK" means FITOK double ferrule tube fittings. When the connection type of valves is FITOK double ferrule tube fitting, the working pressures of the valves are related to the wall thickness of tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Catalog Tubing.
2. Connection type of "PS" means pipe socket weld. "PB" means pipe butt weld.
3. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
4. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions not shown above, please contact FITOK Group or our authorized distributors.

## Dimensions of NYH Series

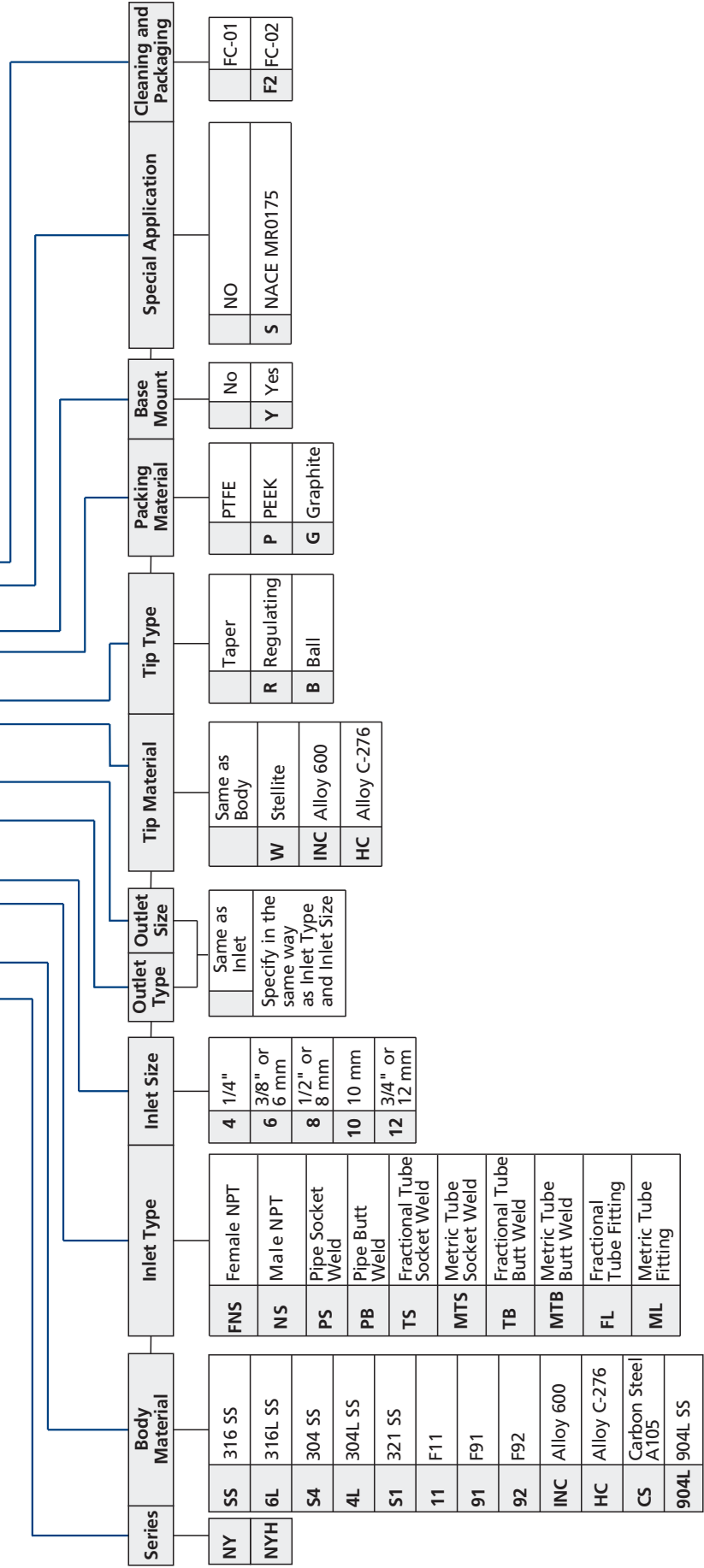
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)		
	Inlet	Outlet			A	B	C
NYH□□-FNS4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	2.69 (68.2)	1.50 (38.1)	4.04 (102.7)
NYH□□-NS4	1/4 Male NPT	1/4 Male NPT			2.95 (75.0)		
NYH□□-FNS4-NS4	1/4 Female NPT	1/4 Male NPT			2.72 (69.2)		
NYH□□-TS4-G	1/4" TS	1/4" TS			2.69 (68.2)		
NYH□□-FNS6	3/8 Female NPT	3/8 Female NPT					
NYH□□-NS6	3/8 Male NPT	3/8 Male NPT			3.00 (76.2)		
NYH□□-FNS8	1/2 Female NPT	1/2 Female NPT					
NYH□□-NS8	1/2 Male NPT	1/2 Male NPT					



1. Connection types of "TS" means tube socket weld.
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

# Ordering Number Description

NYSS - FL8 - ML12 - WB - GY - SF2



NOTE: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.

Cleaning and Packaging:  
 FC-01: Standard cleaning and packaging for general industrial procedures.  
 FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.



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