Needle Valves

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

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Notes:

◎ Packing adjustment may be required during the service life of the valve

◎ For better quality maintenance, FITOK instrumentation needle valves should be kept in half open position in warehouse

Screwed Bonnet Needle Valves

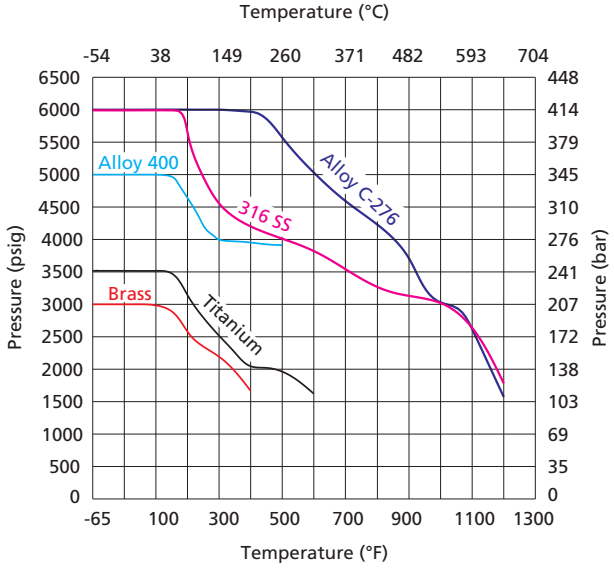
NB Series: Working pressure up to 6000 psig

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(-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

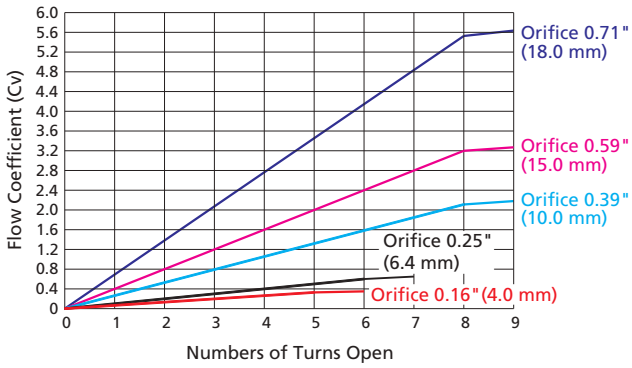
NB Series



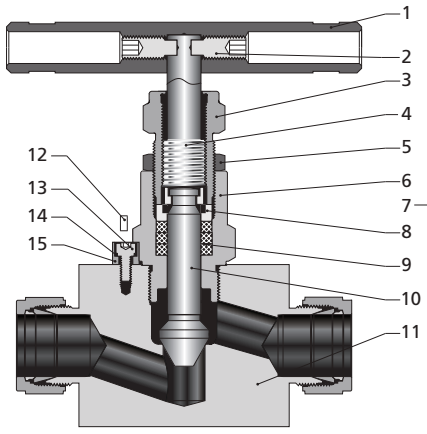
1. Graphs are based on graphite packing.
2. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

Regulating Stem Tip

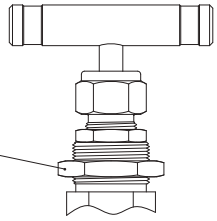


Standard Materials of Construction

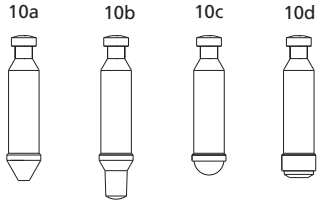


NB Series

Panel Mounting



Stem Tip Type



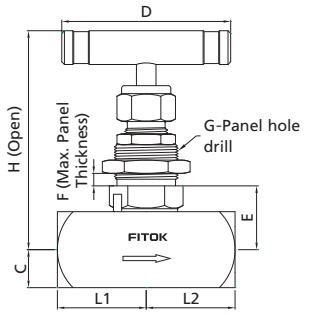
Item	Component	Valve Body Material				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
		Material Grade/ASTM Specification				
1	Handle	Anodized aluminum or stainless steel or black knob				
2	Set Screw	Zinc-plated carbon steel				
3	Packing Bolt	304 SS/A479				Brass C36000/B16
4	Upper Stem	316 SS/A479				
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 SS/A479
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				

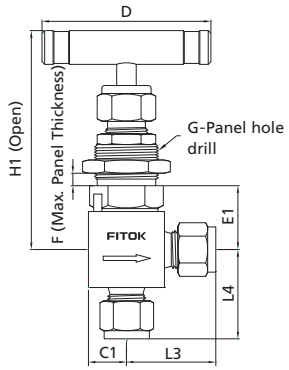
1. Item 12 is applied in valves with orifice of 4.0 and 6.0mm. For valves with orifice of 10.0, 15.0 and 18.0mm, item 13, 14 and 15 are used instead of item 12.
2. Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



◎ 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	Connection Pressure at 100°F (38°C) psig (bar)	Orifice in.(mm)	Cv	Dimensions, in.(mm)												
	Inlet/Outlet	316 SS			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
NB□□-FNS2-7	1/8 Female NPT	6000 (414)	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)	0.82 (20.9)	0.25 (6.4)	0.77 (19.6)	2.86 (72.7)	2.86 (72.7)
NB□□-FNS4-7	1/4 Female NPT				1.06 (26.9)	1.06 (26.9)											
NB□□-NS4-7	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				1.19 (30.2)	1.19 (30.2)											
NB□□-FL4-7	1/4" FITOK				1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)									
NB□□-ML6-7	6 mm FITOK																
NB□□-ML8-7	8 mm FITOK																
NB□□-FNS4-8	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																
NB□□-NS6-8	3/8 Male NPT							1.12 (28.6)									
NB□□-FL6-8	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				1.52 (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	Connection Pressure at 100°F (38°C) psig (bar)	Orifice in.(mm)	Cv	Dimensions, in.(mm)												
	Inlet/Outlet	316 SS			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
NB□□-ML10-8	10 mm FITOK	6000 (414)	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				1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)									
NB□□-ML14-8	14 mm FITOK				1.56 (39.7)	1.56 (39.7)											
NB□□-TS6-8-G	3/8" Tube Socket Weld				1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	1.13 (28.6)									
NB□□-TS8-8-G	1/2" Tube Socket Weld																
NB□□-MTS12-8-G	12 mm Tube Socket Weld																
NB□□-MTS14-8-G	14 mm Tube Socket Weld																
NB□□-MTS16-8-G	16 mm Tube Socket Weld																
NB□□-MTB14-8-G	14×2.5 mm Tube Butt Weld				1.50 (38.1)	1.50 (38.1)	1.50 (38.1)	1.50 (38.1)									
NB□□-MTB16-8-G	16×2.8 mm Tube Butt Weld																
NB□□-UMB14-8	14×2.5 mm Rotatable Tube Butt Weld				2.92 (74.1)	2.92 (74.1)	___	___									
NB□□-UMB16-8	16×2.8 mm Rotatable Tube Butt Weld																
NB□□-MS20-8	M20 x 1.5 Male Metric				1.50 (38.1)	1.50 (38.1)											
NB□□-MS22-8	M22 x 1.5 Male Metric																
NB□□-FNS8-9	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)	0.77 (19.5)	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																
NB□□-NS12-9	3/4 Male NPT						1.50 (38.1)										
NB□□-FL12-9	3/4" FITOK	5800 (400)			1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)									
NB□□-ML14-9	14 mm FITOK	6000 (414)															
NB□□-ML16-9	16 mm FITOK	5800 (400)															
NB□□-ML18-9	18 mm FITOK	5370 (370)															
NB□□-MTS14-9-G	14 mm Tube Socket Weld	6000 (414)			1.75 (44.5)	1.75 (44.5)	___	___									
NB□□-MTS16-9-G	16 mm Tube Socket Weld																
NB□□-TS12-9-G	3/4" Tube Socket Weld																
NB□□-UMB14-9	14×2.5 mm Rotatable Tube Butt Weld				2.98 (75.7)	2.98 (75.7)											
NB□□-MS27-9	M27 x 2 Male Metric				1.56 (39.7)	1.56 (39.7)											
NB□□-FNS12-6	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" Tube Socket Weld						1.75 (44.5)	1.75 (44.5)									
NB□□-MTS25-6-G	25 mm Tube Socket Weld																
NB□□-MTS28-6-G	28 mm Tube Socket Weld	5000 (345)															
NB□□-PS12-6-G	3/4 Pipe Socket Weld	5770 (398)															
NB□□-FNS16-0	1 Female NPT	4350 (300)	0.71 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	___	___	1.24 (31.5)	___	5.00 (127)	___	___	___	___	5.25 (133.3)	___
NB□□-MTS25-0-G	25 mm Tube Socket Weld	6000 (414)															
NB□□-TS16-0-G	1" Tube Socket Weld																
NB□□-MTS28-0-G	28 mm Tube Socket Weld																
NB□□-PS12-0-G	3/4 Pipe Socket Weld																
NB□□-PS16-0-G	1 Pipe Socket Weld	3700 (255)															

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. 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.

FITOK

Ordering Number Description

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

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Stem Tip Material	Stem Tip Type	Packing Material	Panel Mounting	Handle	Flow Pattern	Special Application	Cleaning and Packaging
NB	SS 316 SS	FNS Female NPT	2 1/8"	Same as Inlet	Same as Inlet	7 0.16" (4.0 mm)	Same as Body	Taper	PTFE	No	Black Aluminum Bar	Straight	No	FC-01
	6L 316L SS	NS Male NPT	4 1/4"	Specified in the same way as Inlet Type and Inlet Size		8 0.25" (6.4 mm)	W Stellite	R Regulating	P PEEK	Y Yes	I Red Aluminum Bar	A Angle	S NACE MR0175	F2 FC-02
	S4 304 SS	FRT Female BSPT	6 3/8" or 6 mm			9 0.39" (10 mm)	D5 Duplex 2205	B Ball	G Graphite		GR Green Aluminum Bar			
	4L 304L SS	RT Male BSPT	8 1/2" or 8 mm			6 0.59" (15 mm)	TI Titanium	T Soft Tip-PTFE			J Blue Aluminum Bar			
	S1 321 SS	FMS Female Metric Thread (for RG-M)	10 10 mm			0 0.71" (18 mm)	A20 Alloy 20	K Soft Tip-PCTFE			M Stainless Steel Bar			
	91 F91	MS Male Metric Thread (for RG-M)	12 3/4" or 12 mm				M Alloy 400	Soft stem tip only for NB Series Needle Valves with the orifice 0.16"/4.0mm, 0.25"/6.4mm and 0.39"/10mm			B Black Knob (only for NB Series Needle Valves with the orifice 0.16"/4.0mm and 0.25"/6.4mm)			
	92 F92	FRP Female BSPP (for RP)	14 14 mm or 14×2.5 mm or M14×1.5				INC Alloy 600							
	D5 Duplex 2205	BP Male BSPP (for RG)	16 1" or 16 mm or 16×2.8 mm				HC Alloy C-276							
	TI Titanium	TS Fractional Tube Socket Weld	18 18 mm											
	A20 Alloy 20	MTS Metric Tube Socket Weld	20 20 mm or M20 x 1.5											
	M Alloy 400	TB Fractional Tube Butt Weld	22 22 mm or M22 x 1.5											
	INC Alloy 600	MTB Metric Tube Butt Weld	24 M24 x 1.5											
	HC Alloy C-276	PS Pipe Socket Weld	25 25 mm											
	B Brass	PB Pipe Butt Weld	27 M27 x 2											
	CS Carbon Steel	FL Fractional Tube Fitting	28 28 mm											
	904L 904L SS	ML Metric Tube Fitting												
		UFB Rotatable Fractional Tube Butt Weld												
		UMB Rotatable Metric Tube Butt Weld												

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

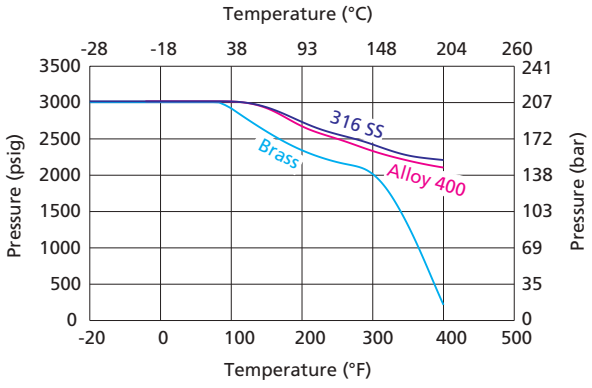
Features

◎ 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 400°F (-28°C to 204°C)

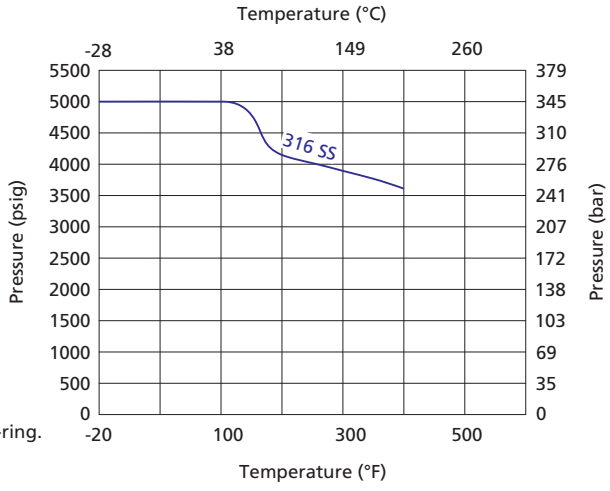
◎ Working temperature with O-ring:
Fluorocarbon Rubber (FKM) : -20°F to 400°F (-28°C to 204°C)
Nitrile Butadiene Rubber (NBR) : -20°F to 212°F (-28°C to 100°C)
Ethylene Propylene Diene Rubber (EPDM): -20°F to 300°F (-28°C to 148°C)

Pressure vs. Temperature

ND Series

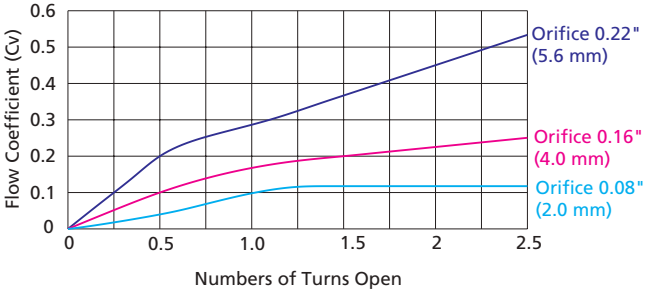


NDH Series

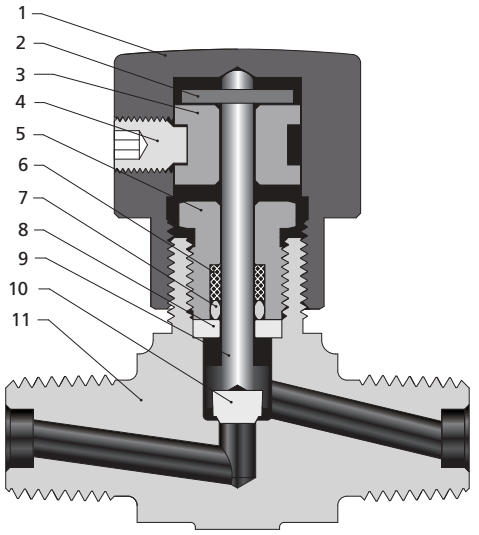


1. The graphs are based on PEEK stem tip and Fluorocarbon rubber (FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)



Standard Materials of Construction

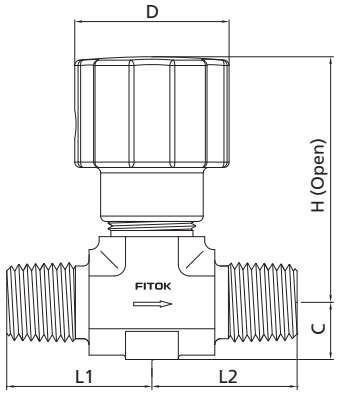


Item	Component	Valve Body Material				
		316 SS	304 SS	321 SS	Brass	Alloy 400
		Material Grade/ASTM Specification				
1	Handle	Anodized aluminum				
2	Stop Pin	Stainless steel				
3	Spool	Aluminum				
4	Set Screw	Stainless steel				
5	Packing Bolt	304 SS/A479			Brass C36000/B16	Alloy 400/B164
6	Backup 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				

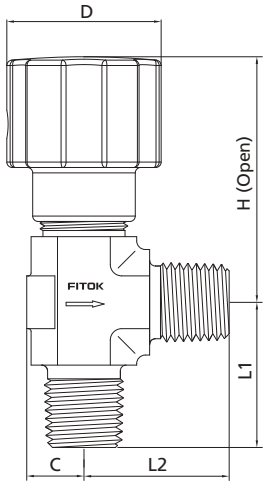
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



ND and NDH 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" FITOK				1.10 (27.9)			
ND□□-FL2-5	1/8" FITOK	1/8" FITOK			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)	1.13 (28.7)	1.86 (47.2)
ND□□-NS4-FL4-7	1/4 Male NPT	1/4 FITOK				1.13 (28.7)			
ND□□-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)				
ND□□-ML6-7	6 mm FITOK	6 mm FITOK							
ND□□-ML8-7	8 mm FITOK	8 mm FITOK			1.18 (30.0)	1.18 (30.0)			
ND□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.22 (5.6)	0.53	1.06 (26.9)	1.06 (26.9)	0.49 (12.5)	1.22 (31.0)	2.02 (51.3)
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			1.10 (27.9)	1.10 (27.9)			
NDH□□-ML3-5	3 mm FITOK	3 mm FITOK							
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)	1.13 (28.7)	1.98 (50.2)
NDH□□-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)	1.13 (28.7)			
NDH□□-ML6-7	6 mm FITOK	6 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 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

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Stem Tip Material	O-ring Material	Flow Pattern	Special Application	Cleaning and Packaging
ND	SS 316 SS	FNS Female NPT	2 1/8"	Same as Inlet		5 0.08" (2.0 mm)	PCTFE	Fluorocarbon Rubber (FKM)	Straight	No	FC-01
NDH	6L 316L SS	NS Male NPT	4 1/4"	Specified in the same way as inlet type and inlet size		7 0.16" (4.0 mm)	P PEEK	B Nitrile Butadiene Rubber (NBR)	A Angle	S NACE MR0175	F2 FC-02
	S4 304 SS	FRT Female BSPT	6 3/8" or 6 mm			8 0.22" (5.6 mm) Only for ND Series		E Ethylene Propylene Diene Rubber (EPDM)		SI SilcoNert® 2000 (Sulfinert®) Coating	
	4L 304L SS	RT Male BSPT	8 1/2" or 8 mm								
	S1 321 SS	FL Fractional Tube Fitting	10 10 mm								
	M Alloy 400	ML Metric Tube Fitting	12 12 mm								
	B Brass										

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.
2. Special Application:
   Plural special application designators available in one ordering number, example: NDSS-NS4-7-SSI.
   SilcoNert® 2000 (Sulfinert®) coating: Wetted metal components SilcoNert® 2000 (Sulfinert®) coated.

Forged Body Needle Valves

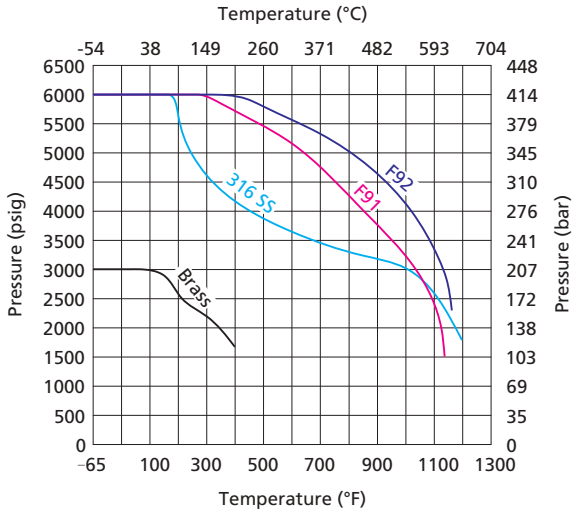
NF Series: Working pressure up to 6000 psig
NFH Series: Working pressure up to 10000 psig

Features

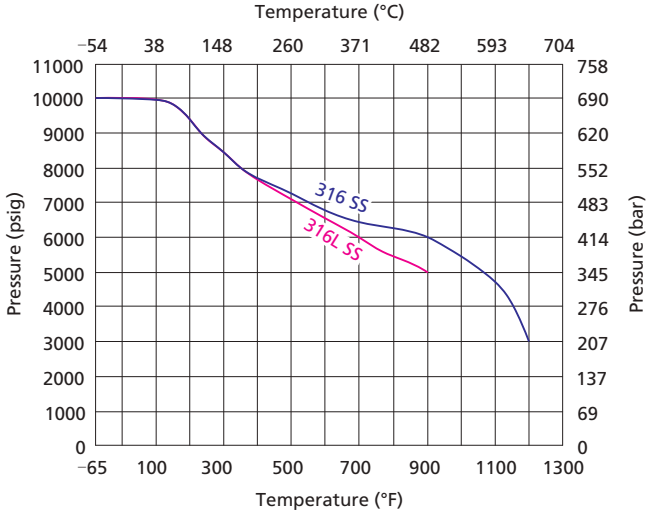
- ◎ One-piece forged body
- ◎ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ◎ Upper stem thread lubricant isolated from system media
- ◎ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion 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)
  NFH 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

NF Series



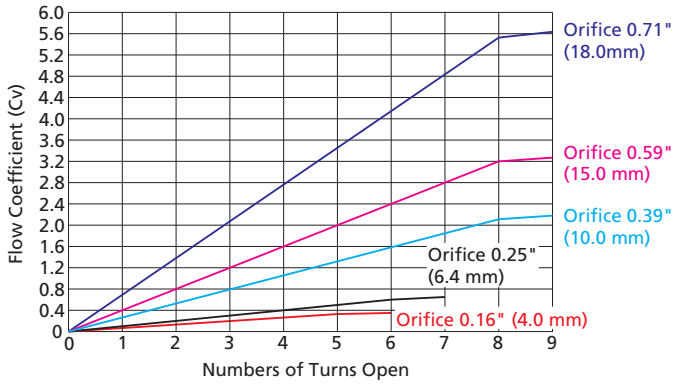
NFH Series



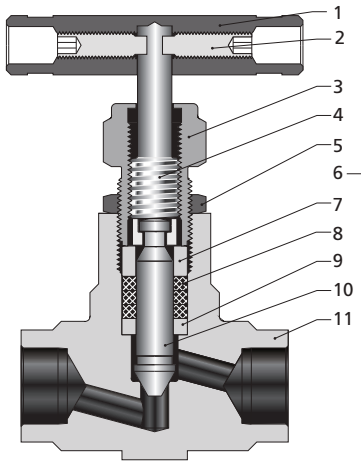
1. Graphs are based on graphite packing.
2. Soft tips are for NF Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

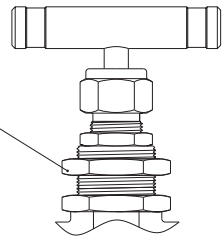
Regulating Stem Tip



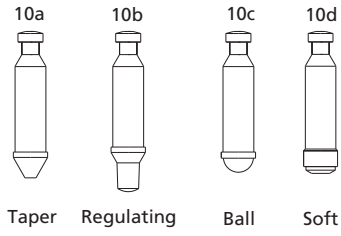
Standard Materials of Construction



Panel Mounting



Stem Tip Type

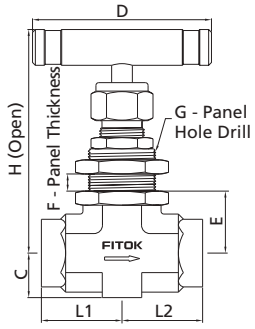


Item	Component	Valve Body Material		
		316 SS	F91	Brass
		Material Grade/ASTM Specification		
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Zinc-plated carbon steel		
3	Packing Bolt	304 SS/A479	F91/A182	Brass C36000/B16
4	Upper Stem	316 SS/A479		
5	Lock Nut	Stainless steel	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		
	Stem Tip	PTFE or PCTFE		
11	Body	316 SS/A182	F91/A182	Brass C37700/B283
	Seat	Same as body		
	Lubricant	Molybdenum disulfide-based		

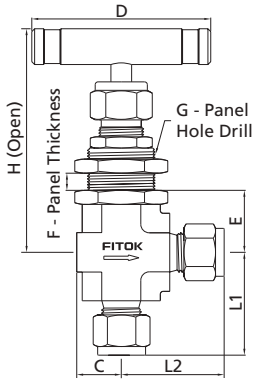
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



◎ 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

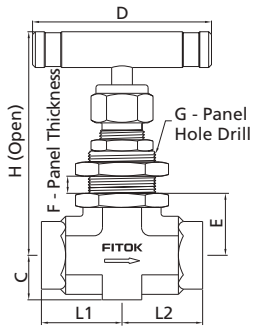
Basic Ordering Number	Connection Type and Size	Connection Pressure at 100°F (38°C) psig (bar)	Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet/Outlet	316 SS			L1	L2	H	D	C	E	F	G
NF□□-FNS2-7	1/8 Female NPT	6000 (414)	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	2.85 (72.5)	2.17 (55)	0.49 (12.5)	0.71 (18.0)	0.25 (6.4)	0.77 (19.6)
NF□□-FNS4-7	1/4 Female NPT				1.03 (26.2)	1.03 (26.2)						
NF□□-FL4-7	1/4" FITOK				1.22 (30.9)	1.22 (30.9)						
NF□□-ML6-7	6 mm FITOK											
NF□□-ML8-7	8 mm FITOK				1.25 (31.75)	1.25 (31.75)						
NF□□-NS4-7	1/4 Male NPT				1.03 (26.2)	1.03 (26.2)						
NF□□-NS6-7	3/8 Male NPT											
NF□□-FO4-7	1/4" Male FO				1.13 (28.6)	1.13 (28.6)						
NF□□-FR4-7	1/4" Male FR											
NF□□-FNS4-8	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											
NF□□-NS6-8	3/8 Male NPT				1.42 (36.1)	1.42 (36.1)						
NF□□-FL6-8	3/8" FITOK				1.44 (36.5)	1.44 (36.5)						
NF□□-ML10-8	10 mm FITOK											
NF□□-ML12-8	12 mm FITOK				1.53 (38.9)	1.53 (38.9)						
NF□□-ML14-8	14 mm FITOK				1.56 (39.7)	1.56 (39.7)						
NF□□-FNS8-8	1/2 Female NPT				1.26 (32.0)	1.26 (32.0)			0.76 (19.4)			
NF□□-NS8-8	1/2 Male NPT				1.50 (38.1)	1.50 (38.1)						
NF□□-FL8-8	1/2" FITOK				1.53 (38.9)	1.53 (38.9)						
NF□□-TS6-8-G	3/8" Tube Socket Weld											
NF□□-TS8-8-G	1/2" Tube Socket Weld											
NF□□-MTS12-8-G	12 mm Tube Socket Weld				1.13 (28.6)	1.13 (28.6)						
NF□□-MTS14-8-G	14 mm Tube Socket Weld											
NF□□-MTS16-8-G	16 mm Tube Socket Weld								0.62 (15.8)			
NF□□-MTB14-8-G	14×2.5 mm Tube Butt Weld				1.50 (38.1)	1.50 (38.1)						
NF□□-MTB16-8-G	16×2.8 mm Tube Butt Weld											
NF□□-UMB14-8	14×2.5 mm Rotatable Tube Butt Weld				2.92 (74.1)	2.92 (74.1)						
NF□□-UMB16-8	16×2.8 mm Rotatable Tube Butt Weld											
NF□□-FO8-8	1/2" Male FO				1.13 (28.6)	1.13 (28.6)						
NF□□-FR8-8	1/2" Male FR				1.56 (39.7)	1.56 (39.7)						
NF□□-MS20-8	M20 x 1.5 Male Metric				1.50 (38.1)	1.50 (38.1)						

Dimensions of NF Series

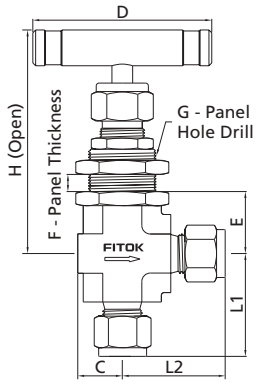
Basic Ordering Number	Connection Type and Size	Connection Pressure at 100°F (38°C) psig (bar)	Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet/Outlet	316 SS			L1	L2	H	D	C	E	F	G
NF□□-MS22-8	M22 x 1.5 Male Metric	6000 (414)	0.25 (6.4)	0.85	1.50 (38.1)	1.50 (38.1)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
NF□□-FNS8-9	1/2 Female NPT		0.39 (10.0)	2.18	1.56 (39.7)	1.56 (39.7)	3.86 (98.0)	3.50 (88.9)	0.80 (20.4)	1.10 (28.3)	0.38 (9.7)	1.08 (27.5)
NF□□-NS12-9	3/4 Male NPT											
NF□□-FL12-9	3/4" FITOK	5800 (400)			1.97 (50.0)	1.97 (50.0)			0.76 (19.4)			
NF□□-ML14-9	14 mm FITOK	6000 (414)										
NF□□-ML16-9	16 mm FITOK	5800 (400)										
NF□□-ML18-9	18 mm FITOK	5370 (370)										
NF□□-ML20-9	20 mm FITOK	5510 (380)										
NF□□-MTS14-9-G	14 mm Tube Socket Weld	6000 (414)			1.56 (39.7)	1.56 (39.7)			0.80 (20.4)			
NF□□-MTS16-9-G	16 mm Tube Socket Weld											
NF□□-MTS18-9-G	18 mm Tube Socket Weld											
NF□□-TS12-9-G	3/4" Tube Socket Weld											
NF□□-PS8-9-G	1/2 Pipe Socket Weld											
NF□□-MTB16-9-G	16×2.25 mm Tube Butt Weld											
NF□□-UMB14-9	14×2.5 mm Rotatable Tube Butt Weld		0.35 (9.0)	1.8	2.98 (75.7)	2.98 (75.7)			0.76 (19.4)			
NF□□-UMB16-9	16×2.8 mm Rotatable Tube Butt Weld											
NF□□-MS27-9	M27 x 2 Male Metric		0.39 (10.0)	2.18	1.56 (39.7)	1.56 (39.7)						
NF□□-FNS12-6	3/4 Female NPT		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)
NF□□-TS16-6-G	1" Tube Socket Weld											
NF□□-MTS25-6-G	25 mm Tube Socket Weld											
NF□□-MTS28-6-G	28 mm Tube Socket Weld	5500 (379)										
NF□□-PS12-6-G	3/4 Pipe Socket Weld	6000 (414)										
NF□□-PB12-6-G	3/4×SCH80 Pipe Butt Weld											
NF□□-FL12-6	3/4" FITOK	5800 (400)			2.35 (59.7)	2.35 (59.7)						
NF□□-ML20-6	20 mm FITOK	5510 (380)										
NF□□-TS16-0-G	1" Tube Socket Weld	6000 (414)	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□□-MTS25-0-G	25 mm Tube Socket Weld											
NF□□-MTS28-0-G	28 mm Tube Socket Weld	5500 (379)										
NF□□-PS12-0-G	3/4 Pipe Socket Weld	6000 (414)										
NF□□-PB16-0-G	1×SCH80 Pipe Butt Weld	5720 (394)										

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.
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	Connection Pressure at 100°F (38°C) psig (bar)	Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet/Outlet	316 SS			L1	L2	H	D	C	E	F	G
NFH□□-FL4-7	1/4" FITOK	10000 (690)	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)
NFH□□-FNS2-7	1/8 Female NPT				1.00 (25.4)	1.00 (25.4)						
NFH□□-FNS4-7	1/4 Female NPT				1.06 (26.2)	1.06 (26.2)						
NFH□□-NS4-7	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" Tube Socket Weld				1.06 (26.2)	1.06 (26.2)						
NFH□□-FNS4-8	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	9000 (620)										
NFH□□-NS6-8	3/8 Male NPT				1.50 (38. 1)	1.50 (38.1)						
NFH□□-TS8-9-G	1/2" Tube Socket Weld	10000 (690)	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)
NFH□□-MTS16-9-G	16 mm Tube Socket Weld								0.80 (20.4)			
NFH□□-MTB25-9-G	25×5.5 mm Tube Butt Weld											
NFH□□-FNS8-9	1/2 Female NPT						4.16 (105.7)		0.88 (22.2)			

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 Tubing catalog.
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

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

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Stem Tip Material	Stem Tip Type	Packing Material	Panel Mounting	Handle	Flow Pattern	Special Application	Cleaning and Packaging

Series

NF	
NFH	

Body Material

SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
S1	321 SS
91	F91
92	F92
D5	Duplex 2205
TI	Titanium
A20	Alloy 20
M	Alloy 400
INC	Alloy 600
HC	Alloy C -276
B	Brass
CS	Carbon Steel
904L	904L SS

Inlet Type

FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RG-M)
MS	Male Metric Thread (for RG-M)
FRP	Female BSPP (for RP)
BP	Male BSPP (for RG)
TS	Fractional Tube Socket Weld
MTS	Metric Tube Socket Weld
TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
PS	Pipe Socket Weld
PB	Pipe Butt Weld
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
UFB	Rotatable Fractional Tube Butt Weld
UMB	Rotatable Metric Tube Butt Weld
UPB	Rotatable Pipe Butt Weld
FO	Male FO Fitting
FR	Male FR Fitting

Inlet Size

2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 3/4"×SCH80 or 12 mm
14	14 mm or 14×2.5 mm or M14×1.5
16	1" or 1"×SCH80 or 16 mm or 16×2.25 mm or 16×2.8 mm
18	18 mm
20	20 mm or M20 x 1.5
22	22 mm or M22 x 1.5
24	M24 x 1.5
25	25 mm or 25×5.5 mm
27	M27 x 2
28	28 mm

Outlet Type

	Same as Inlet

Specified in the same way as inlet type and inlet size

Outlet Size

	Same as Inlet

Specified in the same way as inlet type and inlet size

Orifice Size

7	0.16" (4.0 mm)
8	0.25" (6.4 mm)
9	0.39" (10 mm)
6	0.59" (15 mm)
0	0.71" (18 mm)

Only NF series

Stem Tip Material

	Same as Body
W	Stellite
D5	Duplex 2205
TI	Titanium
A20	Alloy 20
M	Alloy 400
INC	Alloy 600
HC	Alloy C-276

Stem Tip Type

	Taper
R	Regulating
B	Ball
T	Soft Tip-PTFE
K	Soft Tip-PCTFE

Soft stem tip only for NF Series Needle Valves with the orifice 0.16"/4.0mm, 0.25"/6.4mm and 0.39"/10mm

Packing Material

	PTFE
P	PEEK
G	Graphite

Panel Mounting

	No
Y	Yes

Handle

	Black Aluminum Bar
I	Red Aluminum Bar
GR	Green Aluminum Bar
J	Blue Aluminum Bar
M	Stainless Steel Bar
B	Black Knob (only for NF Series Needle Valves with the orifice 0.16"/4.0mm and 0.25"/6.4mm)

Flow Pattern

	Straight
A	Angle

Special Application

	No
S	NACE MR0175
SI	SilcoNert® 2000 (Sulfinert®) Coating

Cleaning and Packaging

	FC-01
F2	FC-02

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. FO means FITOK O-ring face seal fittings.
3. FR means FITOK metal gasket face seal fittings.
4. 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.
5. Special Application:
   Plural special application designators available in one ordering number, example: NFSS-NS4-7-SSI.
   SilcoNert® 2000 (Sulfinert®) coating: Wetted metal components SilcoNert® 2000 (Sulfinert®) coated.

Integral Bonnet Needle Valves

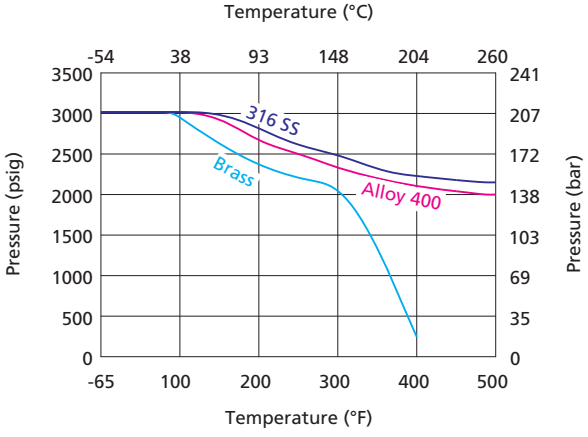
NG Series: Working pressure up to 3000 psig
NGH Series: Working pressure up to 5000 psig

Features

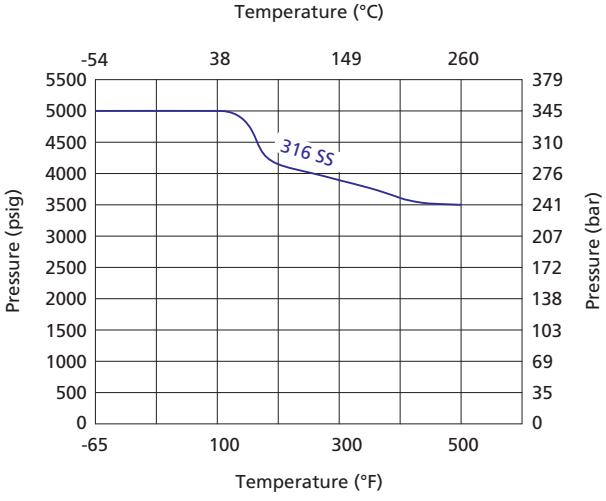
- ◎ One-piece forged body
- ◎ Easy external adjustments by packing nut
- ◎ Live-loaded packing system
- ◎ Handles of different colors available
- ◎ Compact design
- ◎ Panel mounting available
- ◎ Every valve leak tested with nitrogen or compressed air at the maximum allowable working pressure
- ◎ Working 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



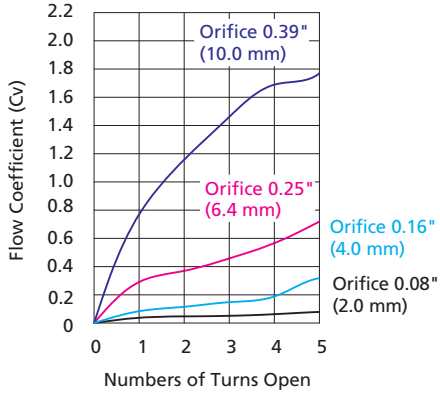
NGH Series



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.

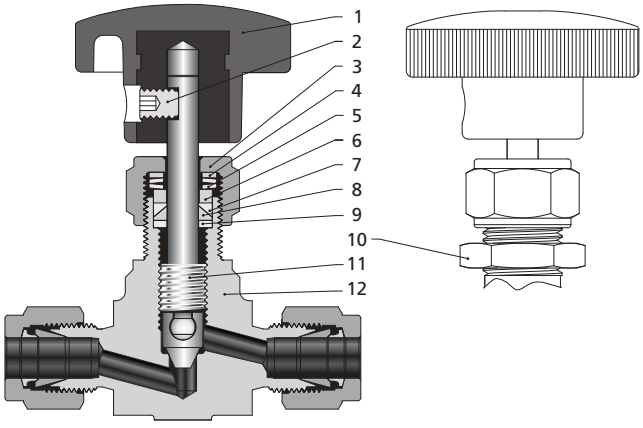
Flow Data at 100°F (38°C)

Regulating Stem Tip

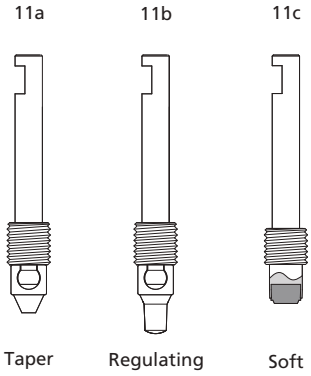


Standard Materials of Construction

Panel Mounting



Stem Tip Type

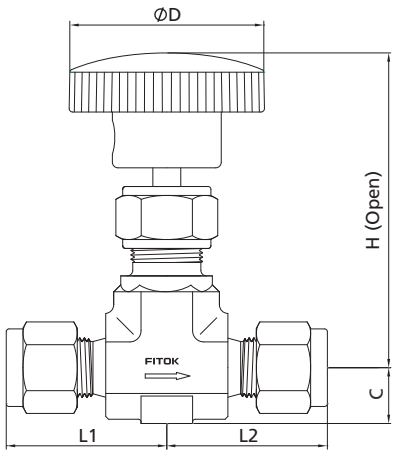


Item	Component	Valve Body Material		
		316 SS	Brass	Alloy 400
		Material Grade/ASTM Specification		
1	Handle	Black knob (aluminum or nylon with copper insert), aluminum alloy or stainless steel bar handle		
2	Set Screw	Zinc-plated carbon steel		
3	Packing Bolt	304 SS/A479	Brass C36000/B16	304 SS/A479
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/A479		Alloy 400/B164
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		

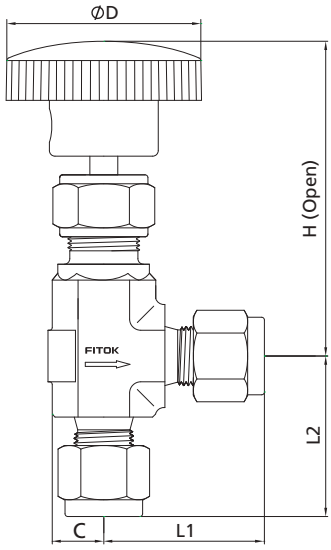
Note: Contact FITOK Group or our authorized distributors for other materials.

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)	0.32 (8.2)	1.00 (25.4)	2.30 (58.4)
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 (10.0)	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							
NG□□-ML8-7	8 mm FITOK	8 mm FITOK			1.17 (29.7)	1.17 (29.7)			
NG□□-UMB6-7	6×1.8 mm Rotatable Tube Butt Weld	6×1.8 mm Rotatable Tube Butt Weld			2.24 (57.0)	2.24 (57.0)			
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)	0.49 (12.5)	1.88 (47.8)	2.85 (72.4)
NG□□-FNS6-8	3/8 Female NPT	3/8 Female NPT					0.62 (15.8)		2.90 (73.7)
NG□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.12 (28.4)	1.12 (28.4)	0.49 (12.5)		2.85 (72.4)
NG□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		2.90 (73.7)
NG□□-FL6-8	3/8" FITOK	3/8" FITOK			1.29 (32.8)	1.29 (32.8)	0.49 (12.5)		2.85 (72.4)
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)			
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)		2.90 (73.7)
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	10×2.2 mm Rotatable Tube Butt Weld	10×2.2 mm Rotatable Tube Butt Weld			2.60 (66.0)	2.60 (66.0)	0.49 (12.5)		2.85 (72.4)
NG□□-UMB14-8	14×2.5 mm Rotatable Tube Butt Weld	14×2.5 mm Rotatable Tube Butt Weld							

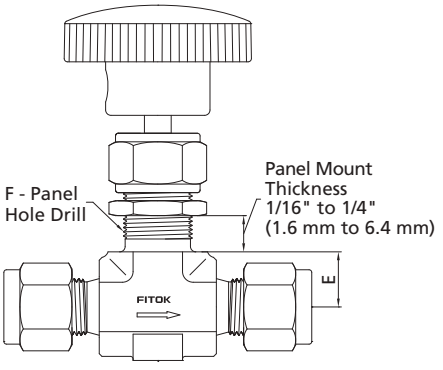
Dimensions of NG Series

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	1.50 (38.1)	1.50 (38.1)	0.76 (19.4)	3.50 (88.9)	3.37 (85.7)
NG□□-FNS12-9-L	3/4 Female NPT	3/4 Female NPT			1.56 (39.7)	1.56 (39.7)	0.80 (20.4)		
NG□□-NS12-9-L	3/4 Male NPT	3/4 Male NPT			1.56 (39.7)	1.56 (39.7)	0.76 (19.4)		
NG□□-FL8-9-L	1/2" FITOK	1/2" FITOK			1.90 (48.3)	1.90 (48.3)	0.76 (19.4)		
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. 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.

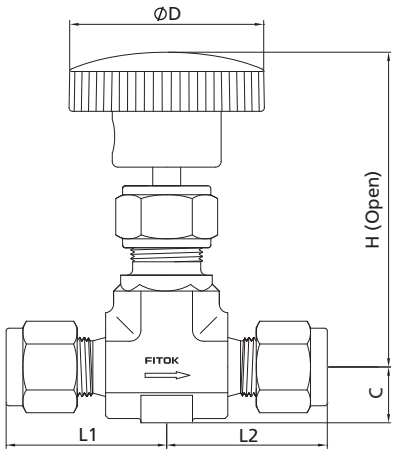
Panel Mount Dimensions of NG Series

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)

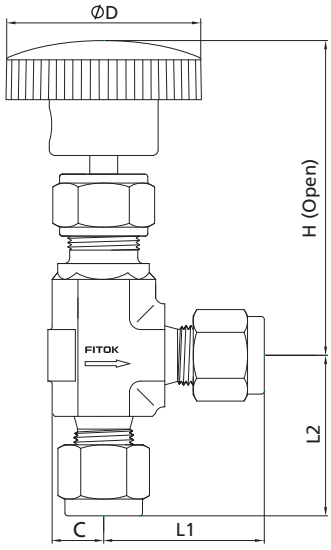


1. NG Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -**Y** to the ordering number. Example: NGSS-NS2-5-**Y**

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)	0.32 (8.2)	1.00 (25.4)	2.30 (58.4)
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							
NGH□□-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 (10.0)	1.38 (35.0)	2.46 (62.5)
NGH□□-NS4-7	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)			
NGH□□-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)	1.13 (28.7)			
NGH□□-ML6-7	6 mm FITOK	6 mm FITOK							
NGH□□-ML8-7	8 mm FITOK	8 mm FITOK			1.17 (29.7)	1.17 (29.7)			
NGH□□-UMB6-7	6×1.8 mm Rotatable Tube Butt Weld	6×1.8 mm Rotatable Tube Butt Weld			2.24 (57.0)	2.24 (57.0)			
NGH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.49 (12.5)	1.88 (47.8)	2.85 (72.4)
NGH□□-FNS6-8	3/8 Female NPT	3/8 Female NPT					0.62 (15.8)		2.90 (73.7)
NGH□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.12 (28.4)	1.12 (28.4)	0.49 (12.5)		2.85 (72.4)
NGH□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		2.90 (73.7)
NGH□□-FL6-8	3/8" FITOK	3/8" FITOK			1.29 (32.8)	1.29 (32.8)	0.49 (12.5)		2.85 (72.4)
NGH□□-FL8-8	1/2" FITOK	1/2" FITOK			1.40 (35.6)	1.40 (35.6)			
NGH□□-ML10-8	10 mm FITOK	10 mm FITOK			1.30 (33.0)	1.30 (33.0)			
NGH□□-ML12-8	12 mm FITOK	12 mm FITOK			1.40 (35.6)	1.40 (35.6)			
NGH□□-ML14-8	14 mm FITOK	14 mm FITOK			1.56 (39.7)	1.56 (39.7)	0.62 (15.8)		2.90 (73.7)
NGH□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)			
NGH□□-UMB10-8	10×2.2 mm Rotatable Tube Butt Weld	10×2.2 mm Rotatable Tube Butt Weld			2.60 (66.0)	2.60 (66.0)	0.49 (12.5)		2.85 (72.4)
NGH□□-UMB14-8	14×2.5 mm Rotatable Tube Butt Weld	14×2.5 mm Rotatable Tube Butt Weld							

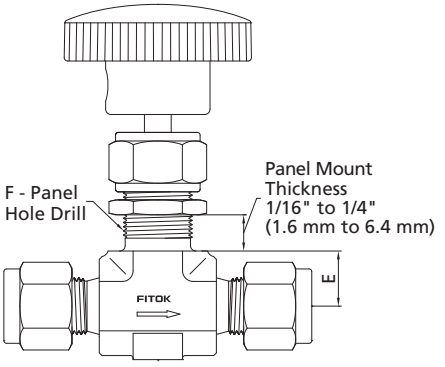
Dimensions of NGH Series

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	1.50 (38.1)	1.50 (38.1)	0.76 (19.4)	3.50 (88.9)	3.37 (85.7)
NGH□□-NS12-9-L	3/4 Male NPT	3/4 Male NPT			1.56 (39.7)	1.56 (39.7)	0.76 (19.4)		
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. 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.

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

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Stem Tip Type	Packing Material	Panel Mounting	Handles	Flow Pattern	Special Application	Cleaning and Packaging
NG	SS 316 SS	FNS Female NPT	2 1/8"	Same as Inlet	Same as Inlet	5 0.08" (2.0 mm)	Taper	PTFE	No	Black Knob Not applicable to Orifice 0.39" (10mm)	Straight	No	FC-01
NGH	6L 316L SS	NS Male NPT	4 1/4"	Specified in the same way as inlet type and inlet size		7 0.16" (4.0 mm)	R Regulating	P PEEK	Y Yes	I Red Aluminum Bar	A Angle	S NACE MR0175	F2 FC-02
	S4 304 SS	FRT Female BSPT	6 3/8" or 6 mm or 6×1.8 mm			8 0.25" (6.4 mm)	K Soft Tip-PCTFE			GR Green Aluminum Bar			
	4L 304L SS	RT Male BSPT	8 1/2" or 8 mm			9 0.39" (10 mm)	P Soft Tip-PEEK			J Blue Aluminum Bar			
	S1 321 SS	FMS Female Metric Thread (for RG-M)	10 10 mm or 10×2.2 mm							L Black Aluminum Bar			
	A20 Alloy 20	MS Male Metric Thread (for RG-M)	12 3/4" or 12 mm							M Stainless Steel Bar			
	M Alloy 400	FRP Female BSPP (for RP)	14 14 mm or 14×2.5 mm or M14×1.5										
	INC Alloy 600	BP Male BSPP (for RG)	16 1" or 16 mm										
	HC Alloy C-276	FL Fractional Tube Fitting	18 18 mm										
	B Brass	ML Metric Tube Fitting	20 20 mm or M20 x 1.5										
	CS Carbon Steel	UMB Rotatable Metric Tube Butt Weld	22 22 mm or M22 x 1.5										
	904L 904L SS	UPB Rotatable Pipe Butt Weld											

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
   Standard thread pitch should be omitted in the ordering number, others should be specified.
2. 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.
3. 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.

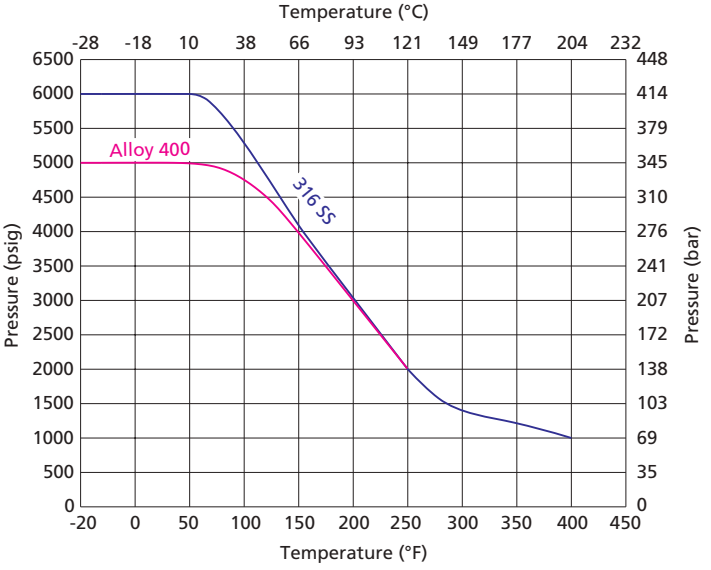
Rising Plug Valves

NR Series
NRG (with gauge port) Series

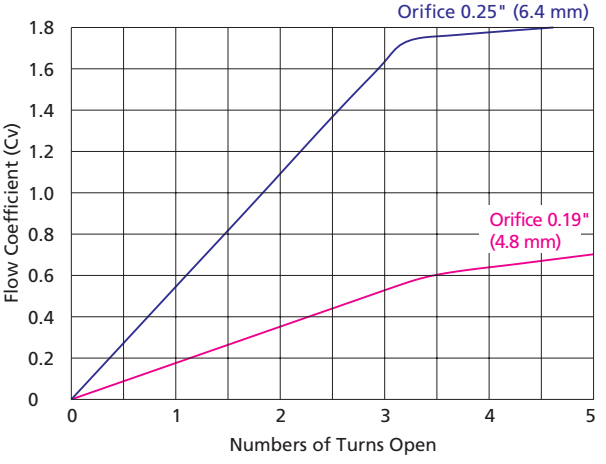
Features

- 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

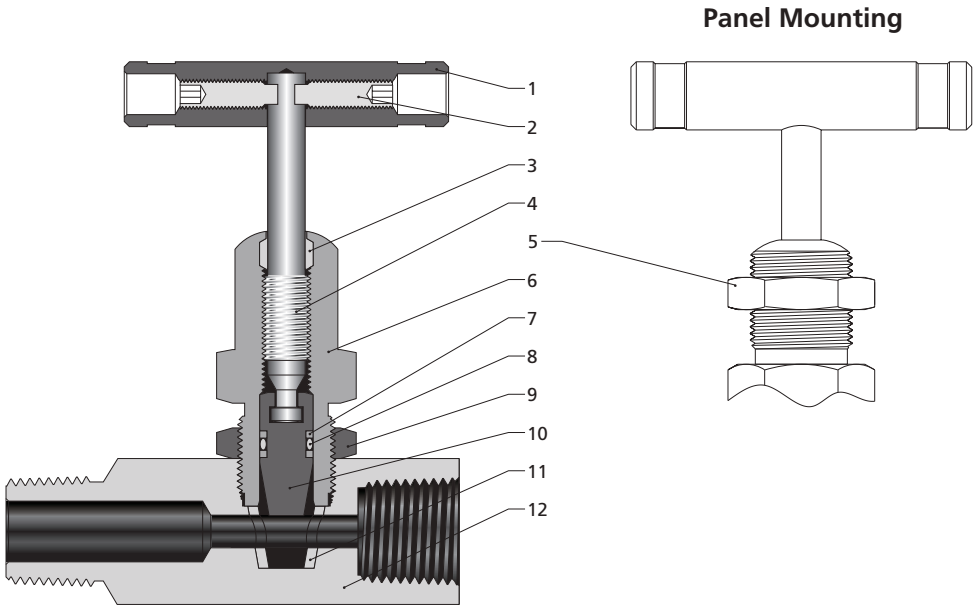


Flow Data at 100°F (38°C)



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



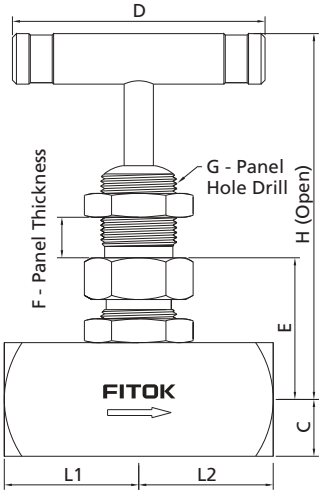
Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Alloy 400
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminum or stainless steel or black knob			
2	Set Screw	Zinc-plated carbon steel			
3	Wiper Ring	PTFE/D1710			
4	Upper Stem	316 SS/A479			Alloy 400/B164
5	Panel Nut	Stainless 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/A479	304 SS/A479	321 SS/A479	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

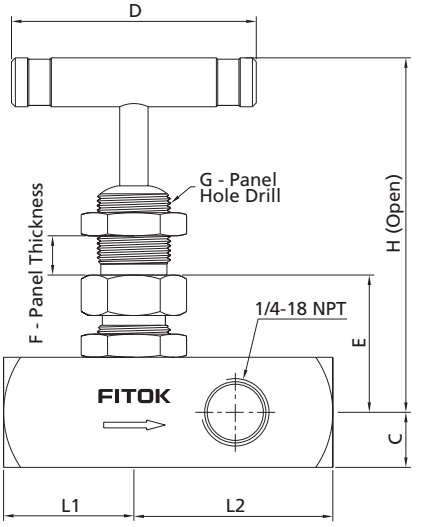
Standard Pattern

NR Series



Gauge Port Pattern

NRG Series



◎ 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**

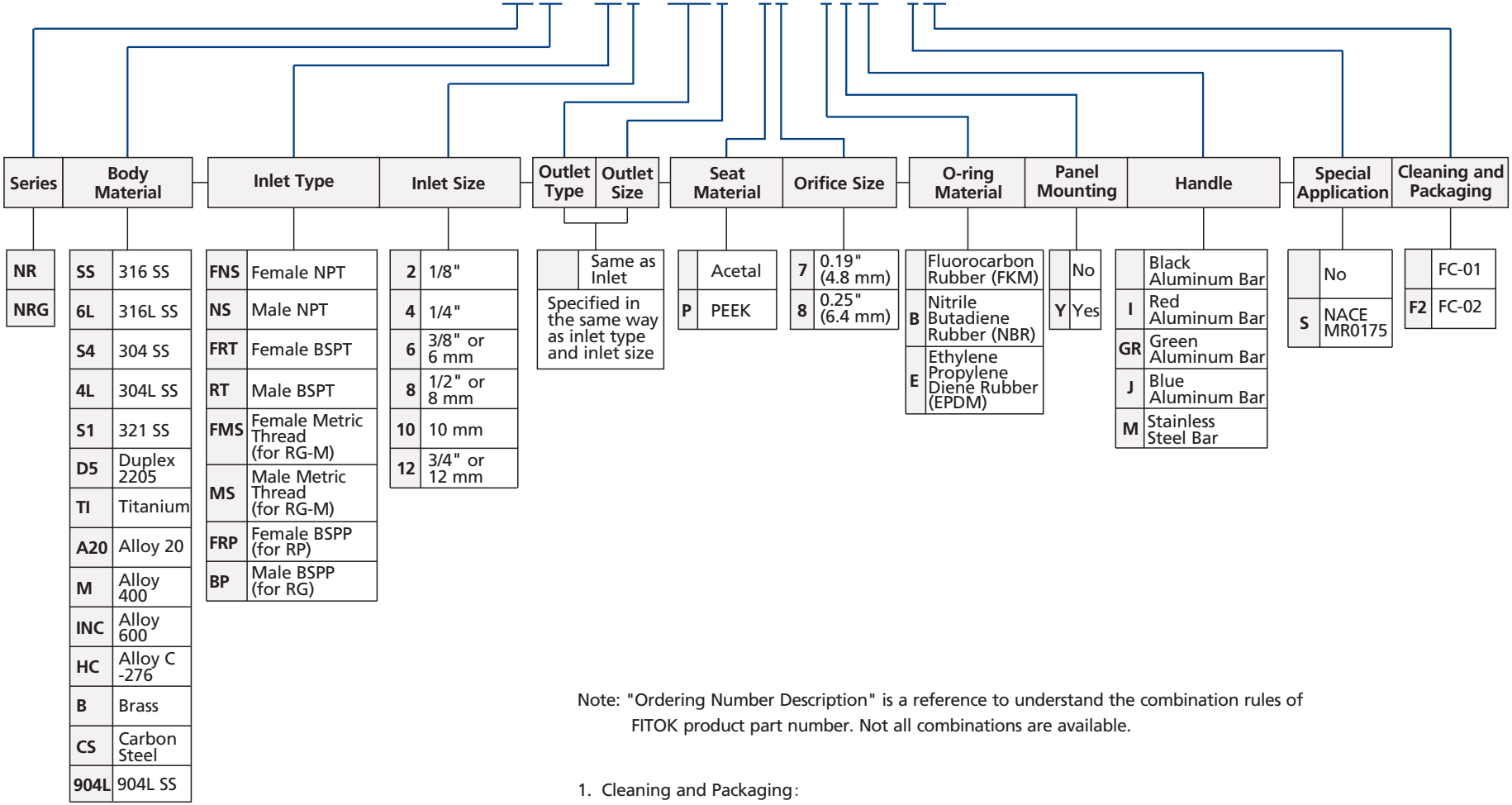
Dimensions of NR and NRG Series

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)							
NRG□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.12 (28.4)	1.75 (44.4)						
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)	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										
NRG□□-FNS8-8	1/2 Female NPT	1/2 Female NPT			3.33 (84.6)	2.25 (57.2)						
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



Series
NR
NRG

Body Material	
SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
S1	321 SS
D5	Duplex 2205
TI	Titanium
A20	Alloy 20
M	Alloy 400
INC	Alloy 600
HC	Alloy C -276
B	Brass
CS	Carbon Steel
904L	904L SS

Inlet Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RG-M)
MS	Male Metric Thread (for RG-M)
FRP	Female BSPP (for RP)
BP	Male BSPP (for RG)

Inlet Size	
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm

Outlet Type / Outlet Size	
	Same as Inlet
Specified in the same way as inlet type and inlet size	

Seat Material	
	Acetal
P	PEEK

Orifice Size	
7	0.19" (4.8 mm)
8	0.25" (6.4 mm)

O-ring Material	
	Fluorocarbon Rubber (FKM)
B	Nitrile Butadiene Rubber (NBR)
E	Ethylene Propylene Diene Rubber (EPDM)

Panel Mounting	
	No
Y	Yes

Handle	
	Black Aluminum Bar
I	Red Aluminum Bar
GR	Green Aluminum Bar
J	Blue Aluminum Bar
M	Stainless Steel Bar

Special Application	
	No
S	NACE MR0175

Cleaning and Packaging	
	FC-01
F2	FC-02

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

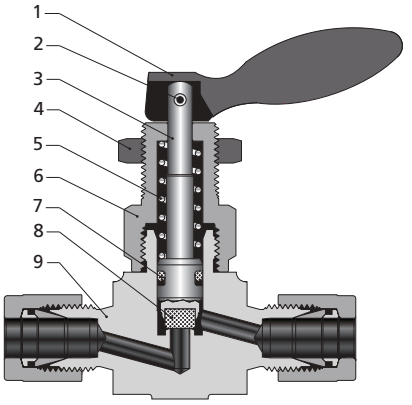
- One piece forged body
- Straight and angle patterns
- Compact design
- Quick opening or closing
- Nonrotating stem
- Panel mounting available
- Every valve leak tested with nitrogen or compressed air at the maximum allowable working pressure
- Working pressure up to: 300 psig (20.7 bar)

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

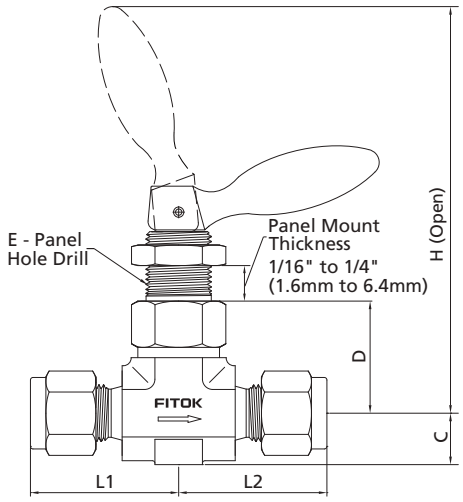


Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Brass
		Material Grade/ASTM Specification			
1	Handle	Stainless steel			
2	Pin	Stainless steel			
3	Stem	316 SS/A479	304 SS/A479		316 SS/A479
4	Panel Nut	Stainless steel			Brass C36000/B16
5	Spring	S17700/A313			
6	Bonnet	304 SS/A479			Brass 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			

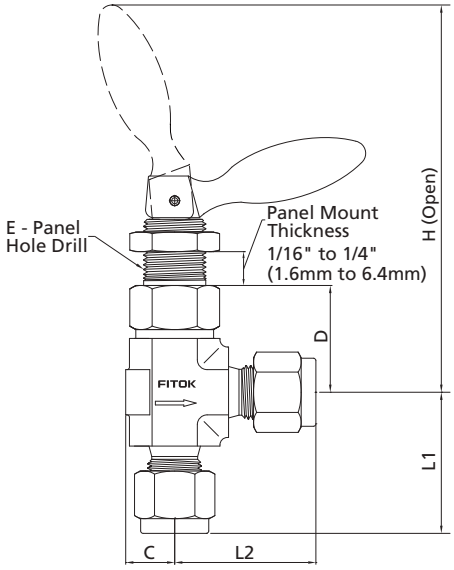
Note: Contact FITOK Group or our authorized distributors for other materials.

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	1.06 (26.9)	1.06 (26.9)	0.53 (13.5)	1.06 (26.9)	0.66 (16.8)	3.59 (91.2)
NT□□-FNS6-8	3/8 Female NPT	3/8 Female NPT								
NT□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.12 (28.4)	1.12 (28.4)				
NT□□-FL6-8	3/8" FITOK	3/8" FITOK			1.29 (32.8)	1.29 (32.8)				
NT□□-FL8-8	1/2" FITOK	1/2" FITOK			1.40 (35.6)	1.40 (35.6)				
NT□□-ML10-8	10 mm FITOK	10 mm FITOK			1.36 (34.5)	1.36 (34.5)				
NT□□-ML12-8	12 mm FITOK	12 mm FITOK			1.46 (37.1)	1.46 (37.1)				

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

Normally Closed and Double Acting

Normally Open

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

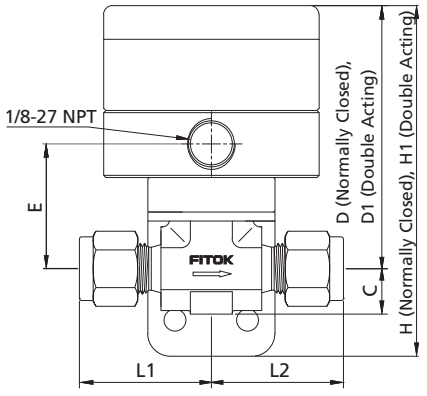
Actuator Type	Working Pressure at 100°F (38°C) psig (bar)	Actuator Pressure Rating psig (bar)
Normally closed	300 (20.7)	87 (6)
Normally open	450 (31.0)	
Double acting		

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

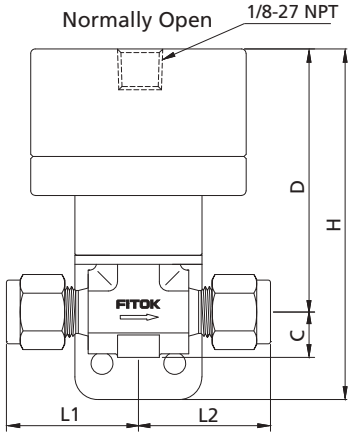
Please refer to NT Series "Standard Materials of Construction" for other materials.

Dimensions

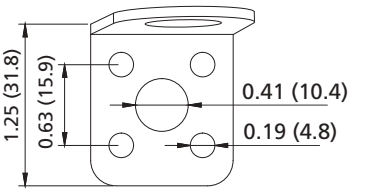
Normally Closed and Double Acting



Normally Open



Mounting Bracket



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-C-Y	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.11	0.86 (21.8)	0.86 (21.8)	0.39 (10.0)	2.28 (58)	2.46 (62.5)	3.04 (77.3)	3.22 (81.8)	1.08 (27.5)
NT□□-NS2-FL2-5-C-Y	1/8 Male NPT	1/8" FITOK			0.86 (21.8)	1.03 (26.2)						
NT□□-FL2-5-C-Y	1/8" FITOK	1/8" FITOK			1.03 (26.2)	1.03 (26.2)						
NT□□-ML3-5-C-Y	3 mm FITOK	3 mm FITOK										
NT□□-FNS2-7-C-Y	1/8 Female NPT	1/8 Female NPT	0.125 (3.2)	0.20	0.81 (20.6)	0.81 (20.6)						
NT□□-NS2-7-C-Y	1/8 Male NPT	1/8 Male NPT			0.86 (21.8)	0.86 (21.8)						
NT□□-NS4-7-C-Y	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)						
NT□□-NS4-FL4-7-C-Y	1/4 Male NPT	1/4" FITOK			0.98 (25.0)	1.13 (28.7)						
NT□□-FL4-7-C-Y	1/4" FITOK	1/4" FITOK			1.13 (28.7)							
NT□□-ML6-7-C-Y	6 mm FITOK	6 mm FITOK										
NT□□-ML8-7-C-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

NTSS - FNS4 - FL6 - 8E - AF2 - C - Y

Series: NT

Body Material

SS	316 SS
S4	304 SS
S1	321 SS
B	Brass
904L	904L SS

Inlet Type

FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RG-M)
MS	Male Metric Thread (for RG-M)
FRP	Female BSPP (for RP)
BP	Male BSPP (for RP/RG)
FL	Fractional Tube Fitting
ML	Metric Tube Fitting

Inlet Size

2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	M14 x 1.5
16	M16 x 1.5

Outlet Type / Outlet Size

	Same as Inlet

Specified in the same way as Inlet Type and Inlet Size

Orifice Size

5	0.08" (2.0 mm)
7	0.125" (3.2 mm)
8	0.25" (6.4 mm)

O-ring Material

	Fluorocarbon Rubber (FKM)
B	Nitrile Butadiene Rubber (NBR)
E	Ethylene Propylene Diene Rubber (EPDM)

Flow Pattern

	Straight
A	Angle

Cleaning and Packaging

	FC-01
F2	FC-02

Actuator Type

C	Normally Closed
O	Normally Open
D	Double Acting

Actuator Mounting Bracket

	No
Y	Yes

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

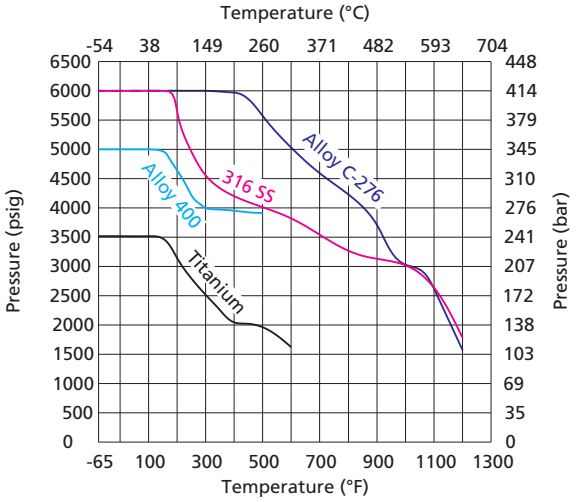
NU Series: Working pressure up to 6000 psig
NUH Series: Working pressure up to 10000 psig

Features

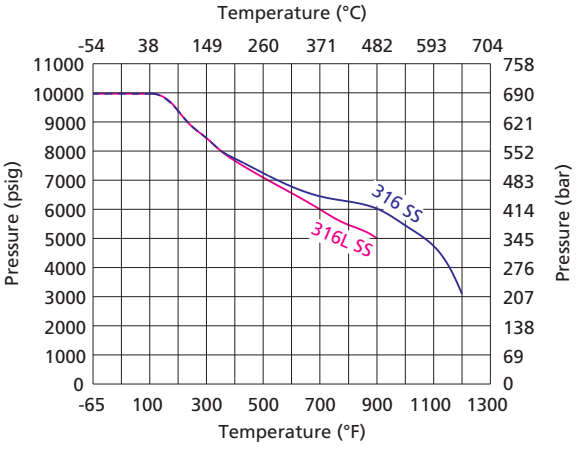
- One-piece forged body
- Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- Accidental valve disassembly disabled by union bonnet construction
- Upper stem thread lubricant isolated from system media
- Linear instead of rotary movement 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



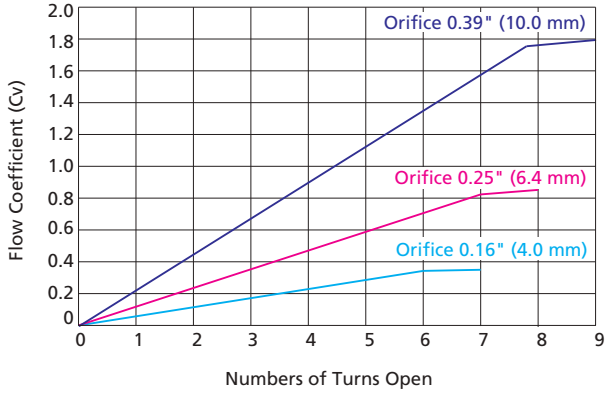
NUH Series



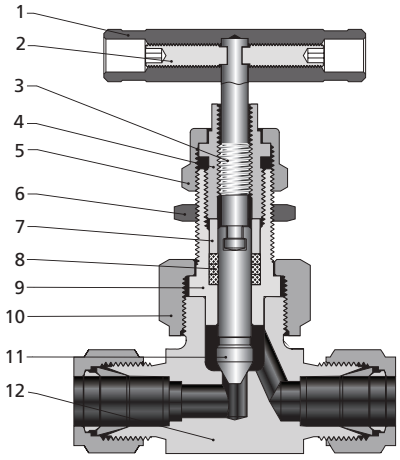
1. Graphs are based on graphite packing.
2. Soft tips are for NU Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (37°C)

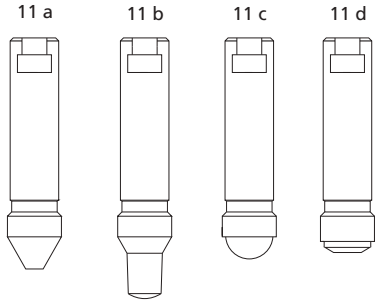
Regulating Stem



Standard Materials of Construction



Stem Type

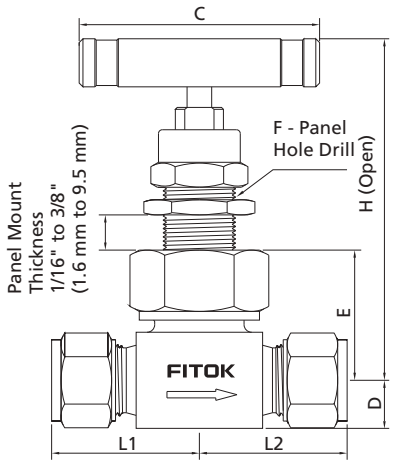


Item	Component	Valve Body Material			
		316 SS	Alloy 400	Titanium	Alloy C-276
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminium or stainless steel or black knob			
2	Set Screw	Zinc-plated carbon steel			
3	Upper Stem	316 SS/A479			
4	Packing Bolt	304 SS/A479			
5	Lock Nut	316 SS/A479			
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			

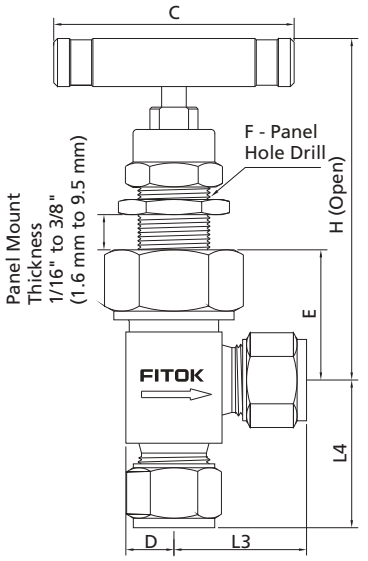
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



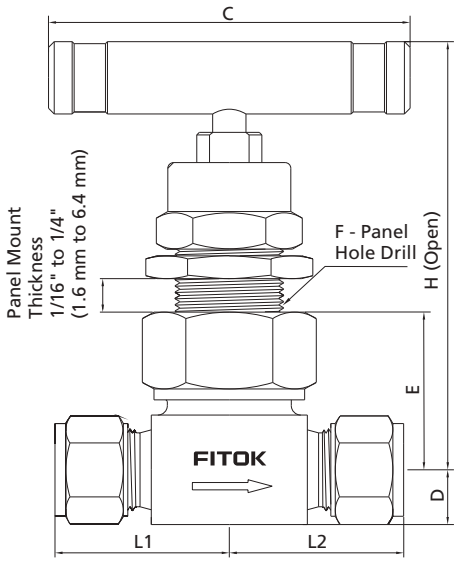
Dimensions of NU Series

Basic Ordering Number	Connection Type and Size	Connection Pressure at 100°F (38°C) psig (bar)	Orifice in.(mm)	Cv	Dimensions, in.(mm)								
	Inlet/Outlet	316 SS			L1	L2	L3	L4	C	D	E	F	H
NU□□-FNS2-7	1/8 Female NPT	6000 (414)	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 (15.0)	3.06 (77.7)
NU□□-FNS4-7	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				1.00 (25.4)	1.00 (25.4)	1.00 (25.4)						
NU□□-NS6-7	3/8 Male NPT												
NU□□-FRP4-7	1/4 Female BSPP				1.03 (26.2)	1.03 (26.2)	0.89 (22.6)						
NU□□-NS4-FL4-7	1/4 Male NPT/ 1/4" FITOK				1.00 (25.4)	1.22 (30.9)	1.14 (29.0)						
NU□□-FNS4-FL4-7	1/4 Female NPT/ 1/4" FITOK				1.03 (26.2)	1.22 (30.9)							
NU□□-FL4-7	1/4" FITOK				1.22 (30.9)	1.22 (30.9)		1.22 (30.9)					
NU□□-ML6-7	6 mm FITOK						1.15 (29.2)						
NU□□-ML8-7	8 mm FITOK												
NU□□-TS4-7-G	1/4" Tube Socket Weld				1.00 (25.4)	1.00 (25.4)	0.85 (21.6)	1.00 (25.4)					
NU□□-FO4-7	1/4" Male FO				1.03 (26.2)	1.03 (26.2)	1.10 (28.0)	1.10 (28.0)					
NU□□-FR4-7	1/4" Male FR												
NU□□-FNS4-8	1/4 Female NPT		0.25 (6.4)	0.86	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)	3.78 (96.0)
NU□□-FNS6-8	3/8 Female NPT						1.06 (26.9)						
NU□□-NS6-8	3/8 Male NPT												
NU□□-FL6-8	3/8" FITOK				1.41 (35.9)	1.41 (35.9)	1.28 (32.5)	1.47 (37.3)					
NU□□-FL8-8	1/2" FITOK				1.52 (38.6)	1.52 (38.6)	1.40 (35.6)	1.58 (40.1)					
NU□□-ML10-8	10 mm FITOK				1.42 (36.1)	1.42 (36.1)	1.30 (33.0)	1.48 (37.6)					

Dimensions of NU Series

Basic Ordering Number	Connection Type and Size	Connection Pressure at 100°F (38°C) psig (bar)	Orifice in.(mm)	Cv	Dimensions, in.(mm)								
	Inlet/Outlet	316 SS			L1	L2	L3	L4	C	D	E	F	H
NU□□-ML12-8	12 mm FITOK	6000 (414)	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)
NU□□-ML14-8	14 mm FITOK												
NU□□-ML16-8	16 mm FITOK	5800 (400)											
NU□□-TS6-8-G	3/8" Tube Socket Weld	6000 (414)			1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)					
NU□□-TS8-8-G	1/2" Tube Socket Weld												
NU□□-PS4-8-G	1/4 Pipe Socket Weld												
NU□□-MTS12-8-G	12 mm Tube Socket Weld												
NU□□-MTS14-8-G	14 mm Tube Socket Weld												
NU□□-MTS16-8-G	16 mm Tube Socket Weld												
NU□□-MTB14-8-G	14×2.5 mm Tube Butt Weld												
NU□□-MTB16-8-G	16×2.8 mm Tube Butt Weld												
NU□□-UMB14-8	14×2.5 mm Rotatable Tube Butt Weld				2.92 (74.1)	2.92 (74.1)	2.55 (64.7)	2.92 (74.1)					
NU□□-FO8-8	1/2" Male FO				1.13 (28.6)	1.13 (28.6)	___	___					
NU□□-FR8-8	1/2" Male FR				1.56 (39.6)	1.56 (39.6)				0.63 (16.0)	1.46 (37.1)		3.90 (99.0)
NU□□-MS20-8	M20 x 1.5 Male Metric				1.50 (38.1)	1.50 (38.1)	1.13 (28.6)	1.50 (38.1)		0.50 (12.7)	1.34 (34.0)		3.78 (96.0)
NU□□-MS22-8	M22 x 1.5 Male Metric												
NU□□-NS8-9	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)
NU□□-FNS8-9	1/2 Female NPT												
NU□□-FNS12-9	3/4 Female NPT				1.63 (41.3)	1.63 (41.3)	___	___		0.87 (22.2)	2.07 (52.6)		5.00 (127)
NU□□-NS12-9	3/4 Male NPT									0.63 (16.0)	1.82 (46.2)		4.76 (121)
NU□□-FL8-9	1/2" FITOK				1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (52.8)					
NU□□-FL12-9	3/4" FITOK	5800 (400)											
NU□□-ML14-9	14 mm FITOK	6000 (414)											
NU□□-ML16-9	16 mm FITOK	5800 (400)											
NU□□-ML18-9	18 mm FITOK	5370 (370)											
NU□□-ML20-9	20 mm FITOK	5510 (380)											
NU□□-MTS14-9-G	14 mm Tube Socket Weld	6000 (414)			1.56 (39.7)	1.56 (39.7)	1.31 (33.3)	1.69 (42.9)					
NU□□-MTS16-9-G	16 mm Tube Socket Weld												
NU□□-TS8-9-G	1/2" Tube Socket Weld												
NU□□-TS12-9-G	3/4" Tube Socket Weld												
NU□□-MTB16-9-G	16×2.25 mm Tube Butt Weld												
NU□□-UMB14-9	14×2.5 mm Rotatable Tube Butt Weld				2.98 (75.7)	2.98 (75.7)	___	___					
NU□□-FR8-9	1/2" Male FR				1.56 (39.7)	1.56 (39.7)							
NU□□-MS27-9	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 FO means O-ring face seal fittings."FR"means metal gasket face seal fittings.
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.



Dimensions of NUH Series

Basic Ordering Number	Connection Type and Size	Connection Pressure at 100°F (38°C) psig (bar)	Orifice in.(mm)	Cv	Dimensions, in.(mm)						
	Inlet/Outlet	316 SS			L1	L2	C	D	E	F	H
NUH□□-FL4-7	1/4" FITOK	10000 (690)	0.16 (4.0)	0.35	1.41 (35.8)	1.41 (35.8)	2.50 (63.5)	0.50 (12.7)	1.35 (34.3)	0.78 (19.8)	3.74 (95.0)
NUH□□-FNS2-7	1/8 Female NPT				1.13 (28.6)	1.13 (28.6)					
NUH□□-FNS4-7	1/4 Female NPT										
NUH□□-NS4-FNS4-7	1/4 Male NPT/ 1/4 Female NPT										
NUH□□-NS4-7	1/4 Male NPT										
NUH□□-TS4-7-G	1/4" Tube Socket Weld										
NUH□□-FNS4-8	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)	1.77 (45.0)	1.03 (26.2)	4.90 (124.5)
NUH□□-NS8-8	1/2 Male NPT										
NUH□□-TS8-8-G	1/2" Tube Socket Weld										
NUH□□-MTS12-8-G	12 mm Tube Socket Weld										
NUH□□-MTS16-9-G	16 mm Tube Socket Weld		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)
NUH□□-MTB22-9-G	22×5 mm Tube Butt Weld										
NUH□□-FNS8-9	1/2 Female NPT				1.56 (39.7)	1.56 (39.7)					

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 tubing applied. For specific working pressure of the valves, please refer to the allowable working pressures in FITOK Tubing catalog.
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

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

Series
NU
NUH

Body Material	
SS	316 SS
6L	316L SS
S4	304 SS
4L	304L SS
S1	321 SS
91	F91
92	F92
D5	Duplex 2205
TI	Titanium
A20	Alloy 20
M	Alloy 400
INC	Alloy 600
HC	Alloy C -276
B	Brass
CS	Carbon Steel
904L	904L SS

Inlet Type	
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RG-M)
MS	Male Metric Thread (for RG-M)
FRP	Female BSPP (for RP)
BP	Male BSPP (for RP and RG)
TS	Fractional Tube Socket Weld
MTS	Metric Tube Socket Weld
TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
PS	Pipe Socket Weld
PB	Pipe Butt Weld
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
UFB	Rotatable Fractional Tube Butt Weld
UMB	Rotatable Metric Tube Butt Weld
FO	Male FO Fitting
FR	Male FR Fitting

Inlet Size	
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	14 mm or 14×2.5 mm or M14×1.5
16	1" or 16 mm or 16×2.25 mm or 16×2.8 mm
18	18 mm
20	20 mm or M20 x 1.5
22	22 mm or 22×5 mm or M22×1.5
24	M24 x 1.5
25	25 mm
27	M27 x 2

Outlet Type / Outlet Size	
	Same as Inlet
Specified in the same way as inlet type and inlet size	

Orifice Size	
7	0.16" (4.0 mm)
8	0.25" (6.4 mm)
9	0.39" (10 mm)

Stem Tip Material	
	Same as Body
W	Stellite
D5	Duplex 2205
TI	Titanium
A20	Alloy 20
M	Alloy 400
INC	Alloy 600
HC	Alloy C-276

Stem Tip Type	
	Taper
R	Regulating
B	Ball
T	Soft Tip-PTFE (only for NU Series Needle Valves)
K	Soft Tip-PCTFE (only for NU Series Needle Valves)
P	Soft Tip-PEEK (only for NU Series Needle Valves)

Packing Material	
	PTFE
P	PEEK
G	Graphite

Handle	
	Black Aluminum Bar
I	Red Aluminum Bar
GR	Green Aluminum Bar
J	Blue Aluminum Bar
M	Stainless Steel Bar
B	Black Knob (only for NU Series Needle Valves with the orifice 0.16"/4.0mm and 0.25"/6.4mm)

Flow Pattern	
	Straight
A	Angle

Special Application	
	No
S	NACE MR0175
SI	SilcoNert® 2000 (Sulfinert®) Coating

Cleaning and Packaging	
	FC-01
F2	FC-02

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
   Standard thread pitch should be omitted in the ordering number, others should be specified.
2. FO means FITOK O-ring face seal fittings.
3. FR means FITOK metal gasket face seal fittings.
4. 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.
5. Special Application:
   Plural special application designators available in one ordering number, example: NUSS-NS4-7-SSI.
   SilcoNert® 2000 (Sulfinert®) coating: Wetted metal components SilcoNert® 2000 (Sulfinert®) coated.

Outside Screw and Yoke (OS&Y) Needle Valves

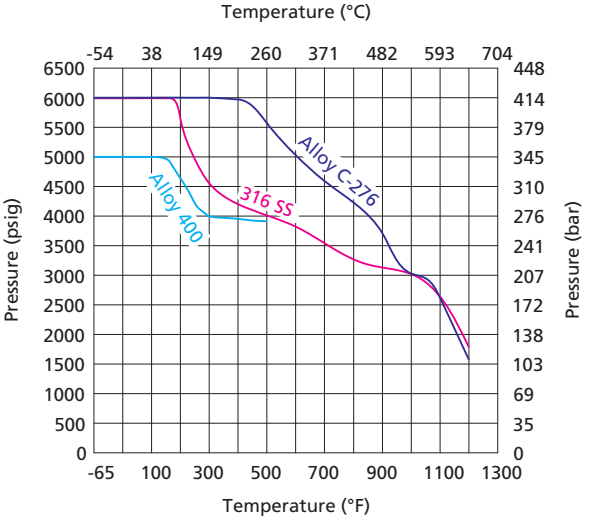
NY Series: Working pressure up to 6000 psig

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(-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)

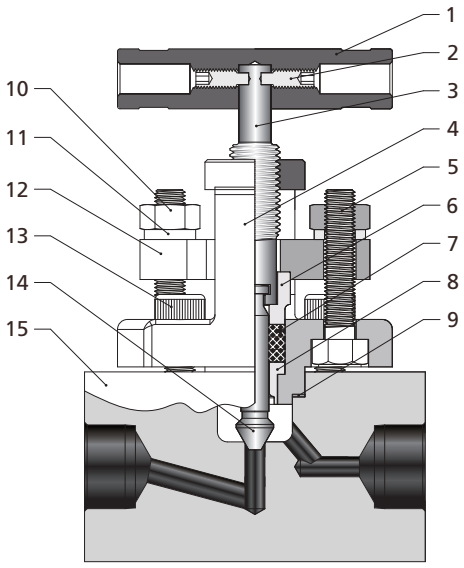
Pressure vs. Temperature

NY Series



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

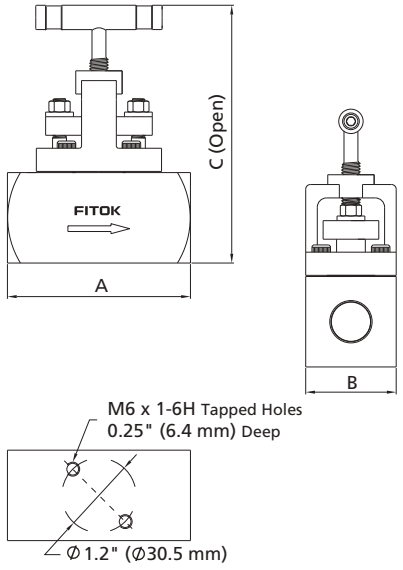


Item	Component	Valve Body Material
		316 SS
		Material Grade/ASTM Specification
1	Handle	Anodized aluminum or stainless steel
2	Set Screw	Zinc-plated carbon steel
3	Upper Stem	316 SS/A479
4	Yoke	316 SS/A182
5	Bolts	Stainless steel
6	Packing Washer	316 SS/A479
7	Packing	PTFE or PEEK or graphite
8	Packing 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 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					
NY□□-FNS6	3/8 Female NPT	3/8 Female NPT			2.72 (69.2)		
NY□□-NS6	3/8 Male NPT	3/8 Male NPT			2.93 (75.0)		
NY□□-FNS8	1/2 Female NPT	1/2 Female NPT			3.00 (76.2)		
NY□□-NS8	1/2 Male NPT	1/2 Male NPT			3.27 (82.0)		
NY□□-NS8-FNS8	1/2 Male NPT	1/2 Female NPT					
NY□□-PS8-G	1/2 Pipe Socket Weld	1/2 Pipe Socket Weld			3.00 (76.2)		
NY□□-PB8-G	1/2×SCH80 Pipe Butt Weld	1/2×SCH80 Pipe Butt Weld			3.54 (89.8)		
NY□□-FL4	1/4" FITOK	1/4" FITOK			3.44 (87.4)		
NY□□-FL6	3/8" FITOK	3/8" FITOK			3.50 (88.9)		
NY□□-FL8	1/2" FITOK	1/2" FITOK			3.78 (96.0)		
NY□□-ML6	6 mm FITOK	6 mm FITOK			3.44 (87.4)		
NY□□-ML8	8 mm FITOK	8 mm FITOK					
NY□□-ML12	12 mm FITOK	12 mm FITOK			3.78 (96.0)		



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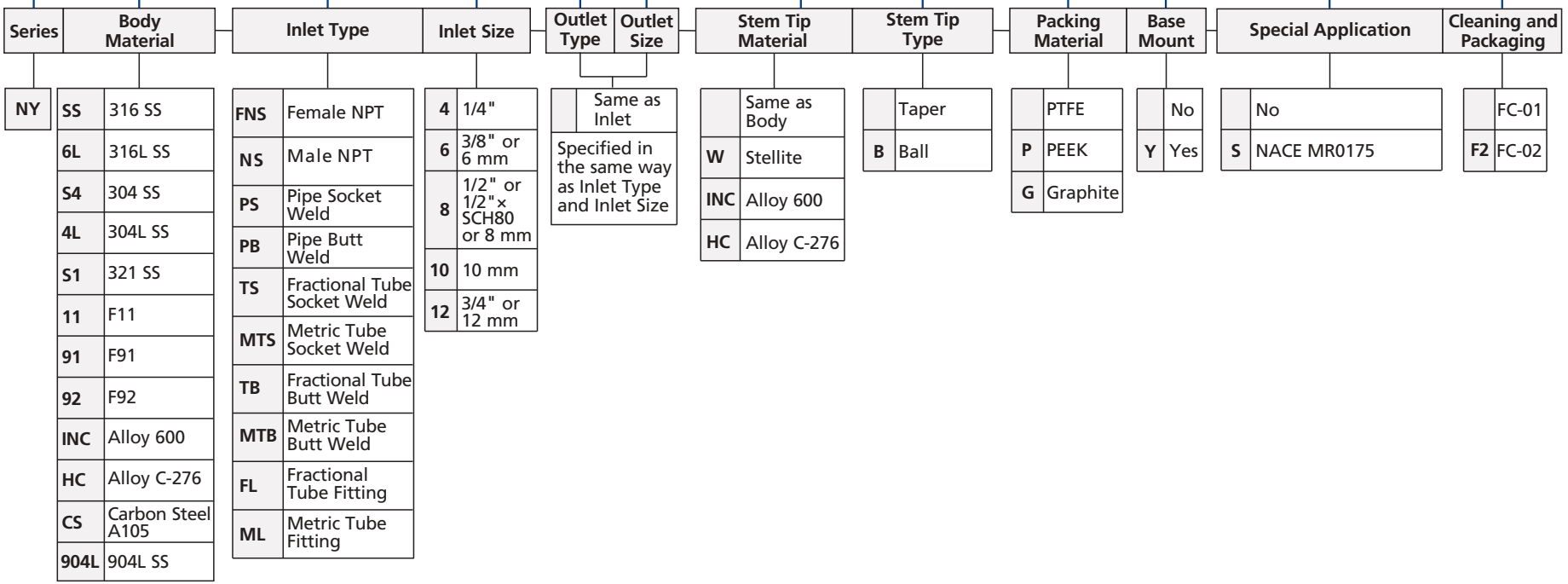
2. Sizes and types listed are standard. Other sizes and types are available upon request. For details, please contact FITOK Group or our authorized distributors.
3. Dimensions are shown with FITOK tube fitting nuts finger-tight. All dimensions not shown above, please contact FITOK Group or our authorized 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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FK-IC-GV-02-EN- 250121