

Needle Valves

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



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Bar Stock Needle Valves

NB Series: Working pressure up to 6000 psig

NBH Series: Working pressure up to 10000 psig

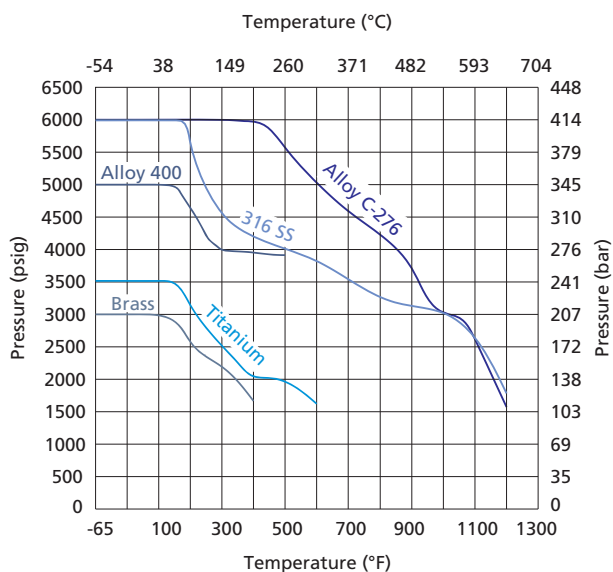


Features

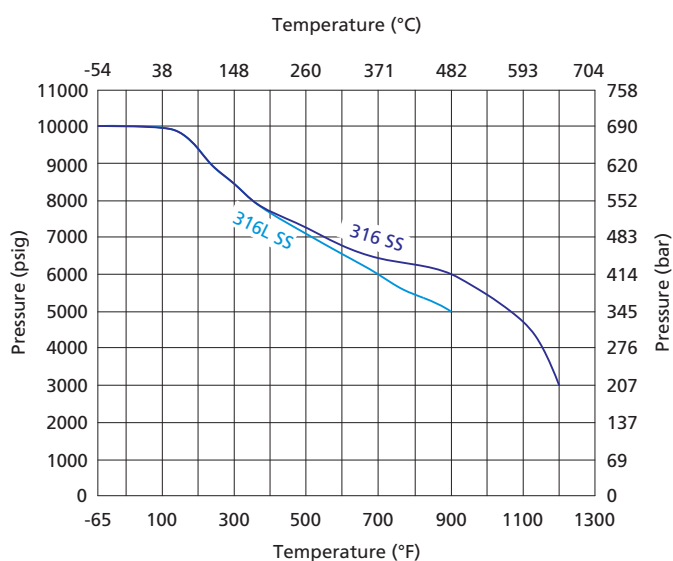
- ⦿ Cold drawn bar as body
- ⦿ Two-stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and 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/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



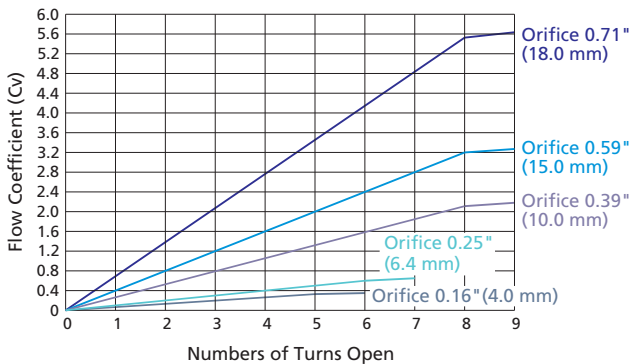
NBH Series



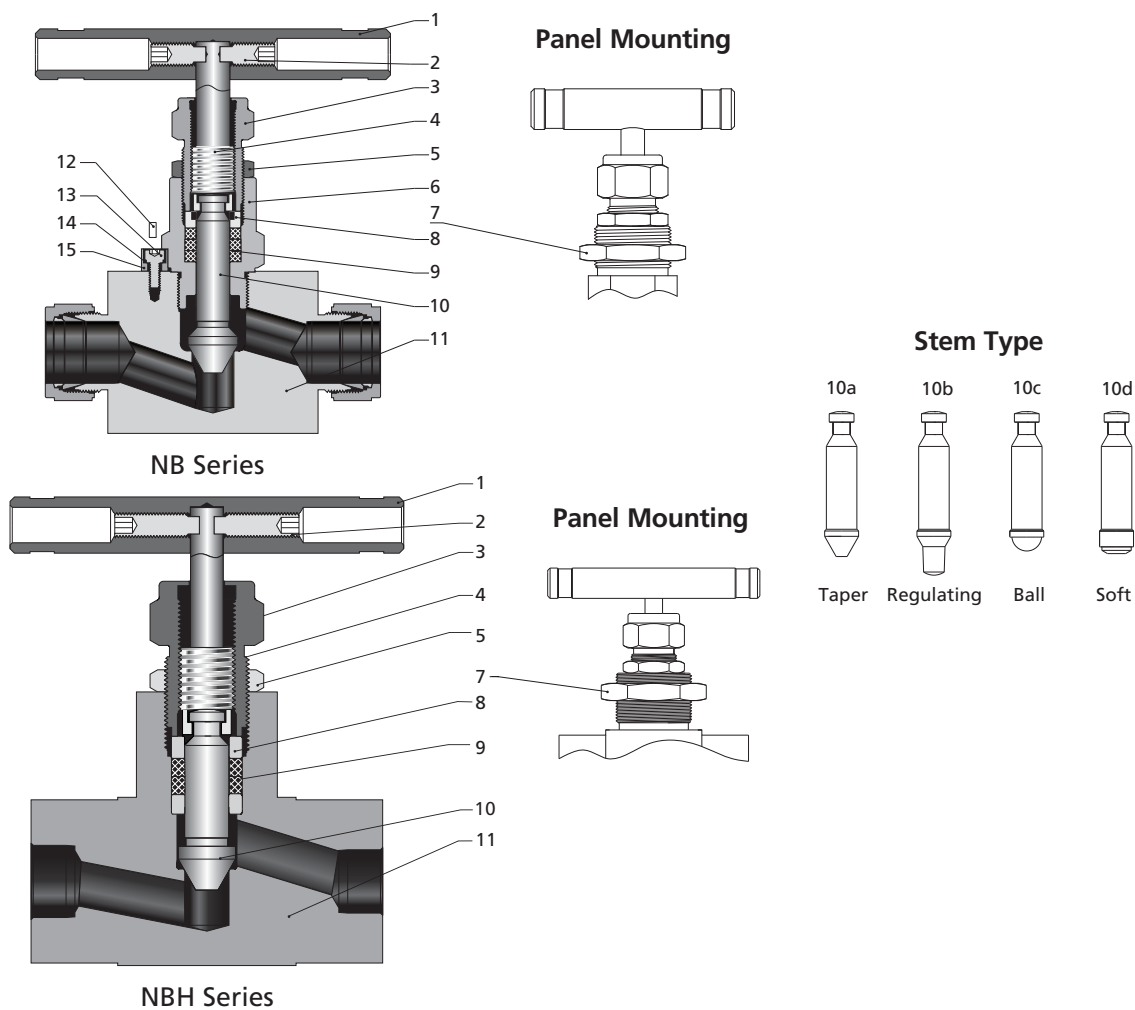
1. Graphs are based on graphite packing.
2. Soft tips are for NB Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

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
		Material Grade/ASTM Specification				
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				Brass C36000/B16
6	Bonnet	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	

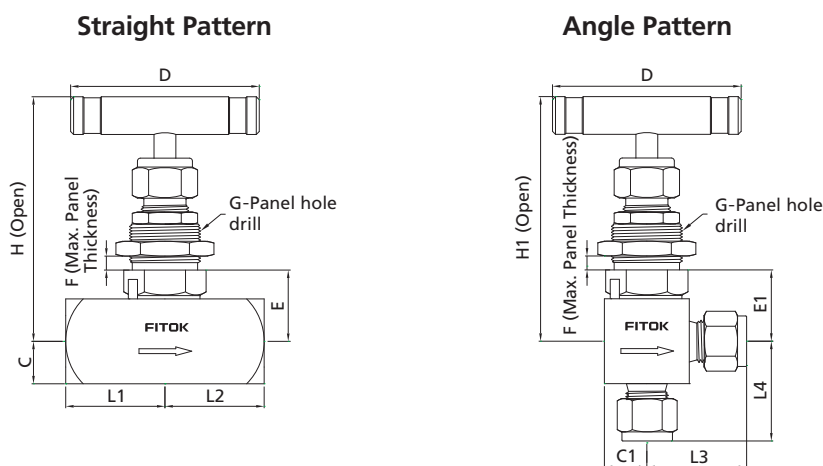
B-64 Needle Valves

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				

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



© 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-Y

Dimensions of NB Series

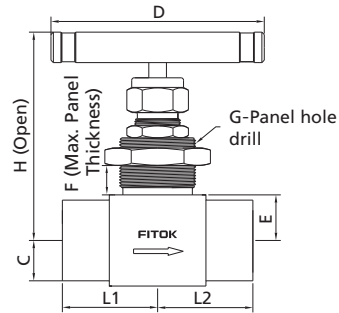
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)												
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
NB□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	1.00 (25.4)	0.56 (14.3)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	0.84 (21.4)	0.84 (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			1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)									
NB□□-ML6-7	6 mm FITOK	6 mm FITOK															
NB□□-ML8-7	8 mm FITOK	8 mm FITOK	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□□-FNS4-8	1/4 Female NPT	1/4 Female NPT						1.12 (28.6)									
NB□□-FNS6-8	3/8 Female NPT	3/8 Female NPT															
NB□□-NS6-8	3/8 Male NPT	3/8 Male NPT						1.12 (28.6)									
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

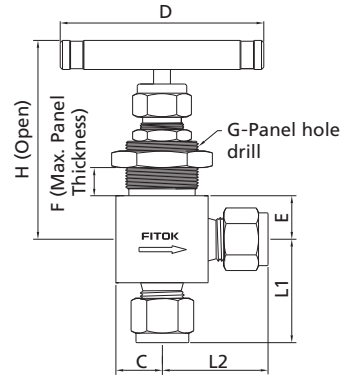
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)																					
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1									
NB□□-ML10-8	10 mm FITOK	10 mm FITOK	0.25 (6.4)	0.85	1.42 (36.1)	1.42 (36.1)	1.33 (33.8)	1.33 (33.8)	0.56 (14.3)	0.56 (14.3)	2.50 (63.5)	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			1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)																		
NB□□-ML14-9	14 mm FITOK	14 mm FITOK																								
NB□□-ML16-9	16 mm FITOK	16 mm FITOK																								
NB□□-ML18-9	18 mm FITOK	18 mm FITOK			1.75 (44.5)	1.75 (44.5)																				
NB□□-MTS14-9-G	14 mm MTS	14 mm MTS																								
NB□□-MTS16-9-G	16 mm MTS	16 mm MTS																								
NB□□-TS12-9-G	3/4" TS	3/4" TS			2.98 (75.7)	2.98 (75.7)																				
NB□□-UMB14-9	14 mm UMB	14 mm UMB																								
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)	1.14 (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					1.75 (44.5)	1.75 (44.5)																		
NB□□-MTS25-6-G	25 mm MTS	25 mm MTS																								
NB□□-MTS28-6-G	28 mm MTS	28 mm MTS			2.35 (59.7)	2.35 (59.7)	2.35 (59.7)	2.00 (51.0)																		
NB□□-PS12-6-G	3/4 PS	3/4 PS																								
NB□□-ML22-6	22 mm FITOK	22 mm FITOK																								
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)					5.25 (133.3)										
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																								
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	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□□-FNS4-8	1/4 Female NPT	1/4 Female NPT										
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

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

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

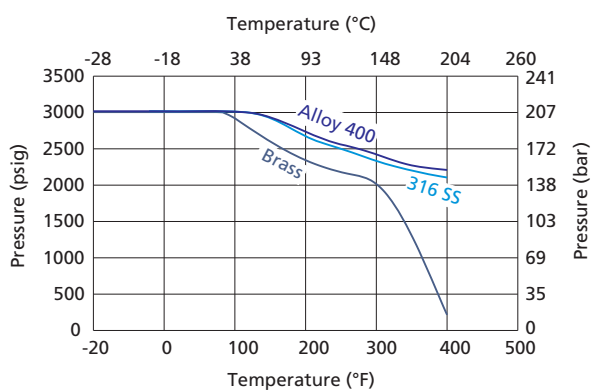
Features

- ⊙ 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/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)

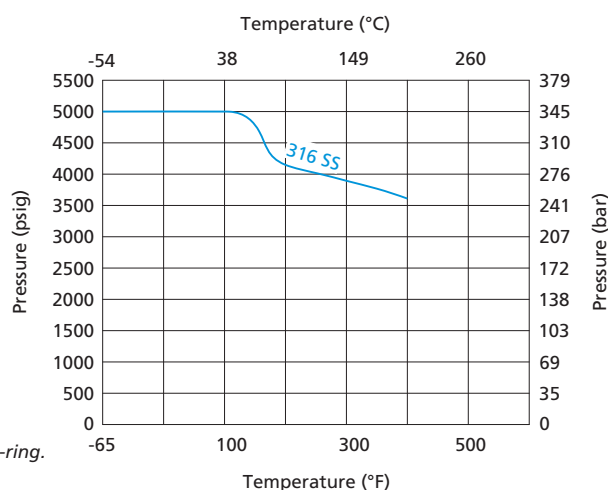


Pressure vs. Temperature

ND Series

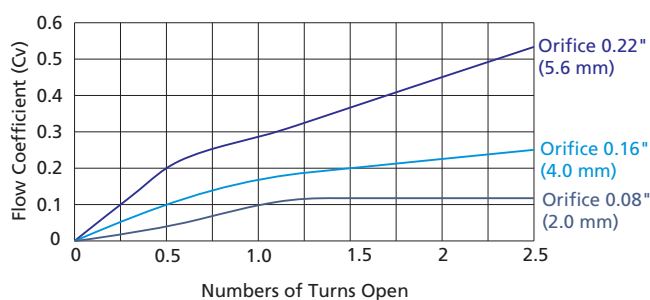


NDH Series

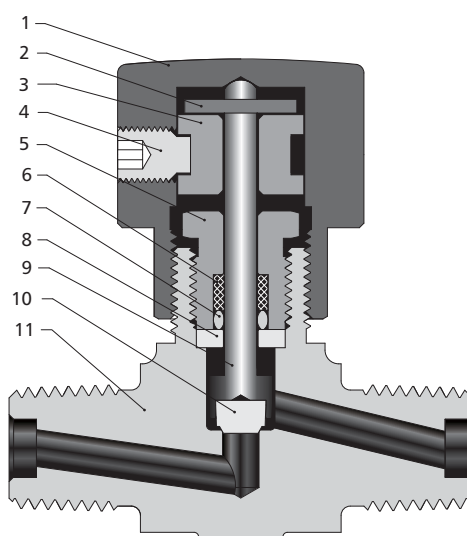


1. The graphs are based on PEEK stem tip and Fluorocarbon rubber (FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)



Standard Materials of Construction

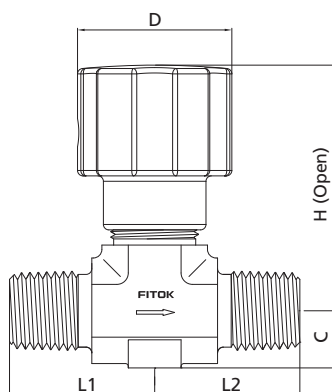


Item	Component	Valve Body Material				
		316 SS	304 SS	321 SS	Brass	Alloy 400
		Material Grade/ASTM Specification				
1	Handle	Anodized aluminum				
2	Stop Pin	Stainless steel				
3	Spool	Aluminum				
4	Set Screw	Stainless steel				
5	Packing Bolt	316 SS/A276	304 SS/A276	321 SS/A276	Brass C36000/B16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

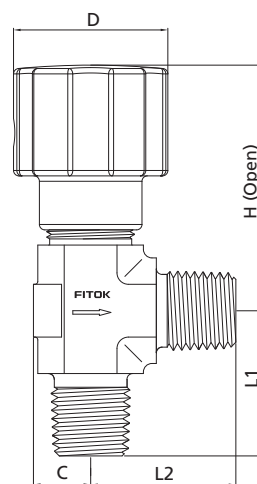
Note: Contact FITOK Group or our authorized distributors for other materials.

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							
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)	0.53 (13.5)	1.12 (28.4)	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)	1.06 (26.9)	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	Tip Material	O-ring Material	Flow Pattern	NACE MR0175	Cleaning and Packaging
ND	NDH	SS	FNS	Female NPT	2	1/8"	Same as Inlet	5	PCTFE	Fluorocarbon Rubber (FKM)	Straight	No	FC-01
		316 SS	NS	Male NPT	4	1/4"		7	P PEEK	Nitrile Butadiene Rubber (NBR)			
S4		304 SS	FRT	Female BSPT	6	3/8" or 6 mm	Specify in the same way as inlet type and inlet size	8	Only for ND Series	Ethylene Propylene Diene Rubber (EPDM)	Angle	S Yes	F2 FC-02
		304L SS	RT	Male BSPT	8	1/2" or 8 mm							
S1		321 SS	FL	Fractional Tube Fitting	10	10 mm							
		Alloy 400	ML	Metric Tube Fitting	12	12 mm							
M													
B		Brass											

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

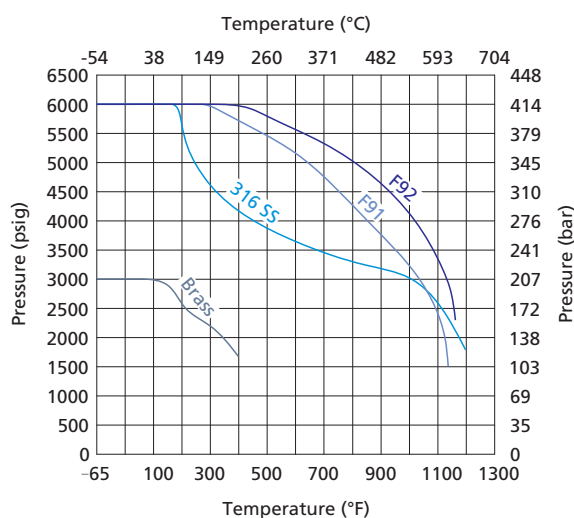
Features

- ⊙ One-piece forged body
- ⊙ Two-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/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)

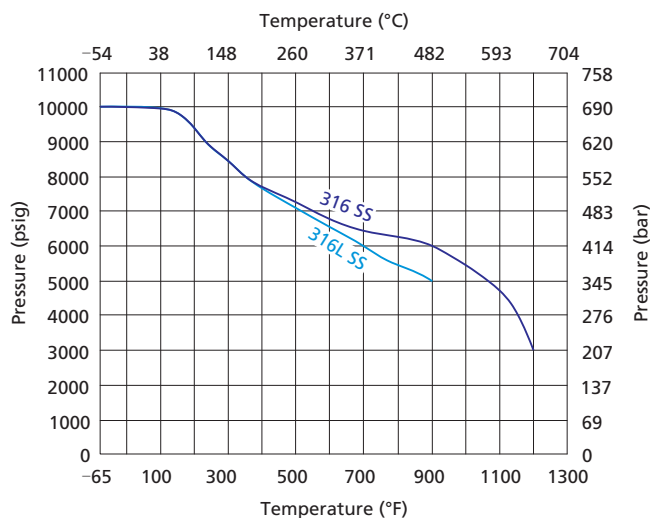


Pressure vs. Temperature

NF Series



NFH Series

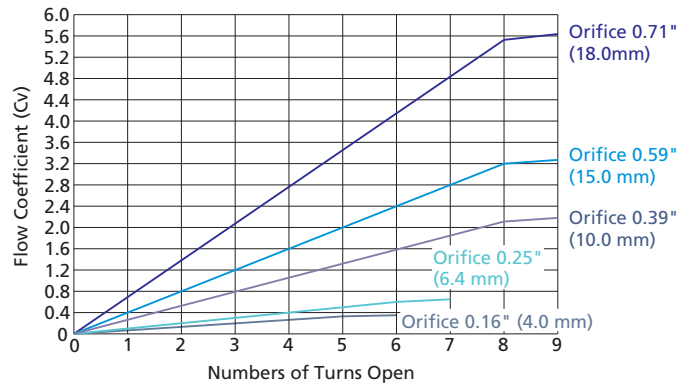


1. Graphs are based on graphite packing.
2. Soft tips are for NF Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

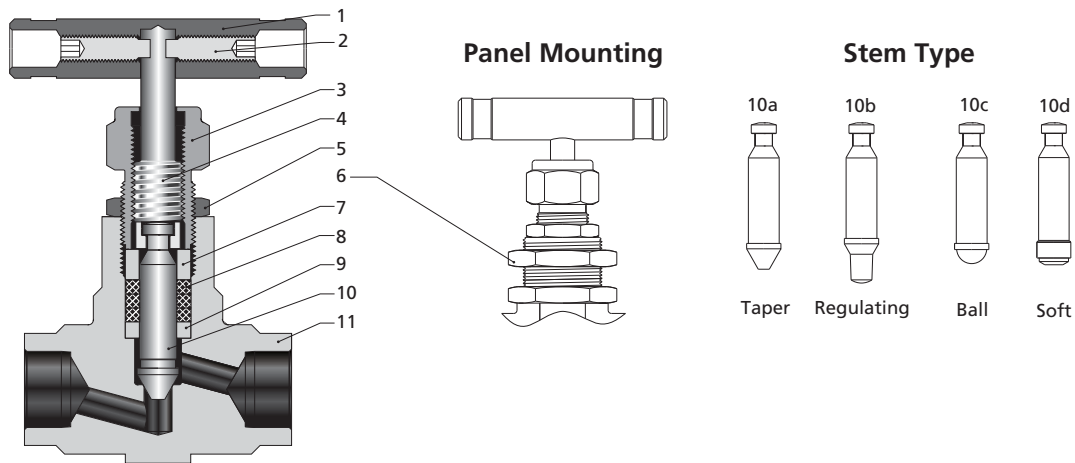
FITOK

Flow Data at 100°F (38°C)

Regulating Stem



Standard Materials of Construction

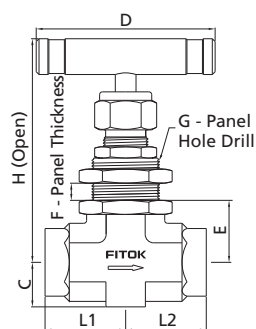


Item	Component	Valve Body Material		
		316 SS	F91	Brass
		Material Grade/ASTM Specification		
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Stainless steel		
3	Packing Bolt	304 SS/A276	F91/A182	Brass C36000/B16
4	Upper Stem	316 SS/A276		
5	Lock Nut	Stainless steel	1020/A108	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		

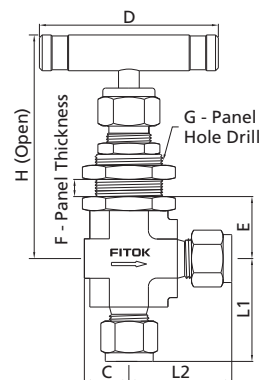
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

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: NF5S-FNS2-7-Y

Dimensions of NF Series

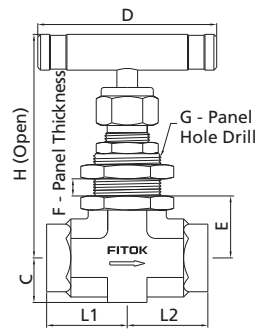
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
NF□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	2.85 (72.5)	2.17 (55)	0.53 (13.5)	0.71 (18.0)	0.25 (6.4)	0.77 (19.6)
NF□□-FNS4-7	1/4 Female 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	0.25 (6.4)	0.85			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□□-FNS4-8	1/4 Female NPT	1/4 Female NPT			1.13 (28.6)	1.13 (28.6)						
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										
NF□□-FL8-8	1/2" FITOK	1/2" FITOK										
NF□□-TS6-8-G	3/8" TS	3/8" TS			1.13 (28.6)	1.13 (28.6)			0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
NF□□-TS8-8-G	1/2" TS	1/2" TS										
NF□□-MTS12-8-G	12 mm MTS	12 mm MTS										
NF□□-MTS14-8-G	14 mm MTS	14 mm MTS										
NF□□-MTS16-8-G	16 mm MTS	16 mm MTS										
NF□□-MTB14-8-G	14 mm MTB	14 mm MTB			1.50 (38.1)	1.50 (38.1)						
NF□□-MTB16-8-G	16 mm MTB	16 mm MTB			2.92 (74.1)	2.92 (74.1)						
NF□□-UMB14-8	14 mm UMB	14 mm UMB			1.13 (28.6)	1.13 (28.6)						
NF□□-UMB16-8	16 mm UMB	16 mm UMB			1.56 (39.7)	1.56 (39.7)						
NF□□-FO8-8	1/2" Male FO	1/2" Male FO			1.50 (38.1)	1.50 (38.1)						
NF□□-FR8-8	1/2" Male FR	1/2" Male FR										
NF□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric										

Dimensions of NF Series

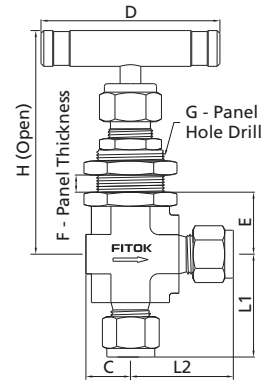
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
NF□□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric	0.25 (6.4)	0.85	1.50 (38.1)	1.50 (38.1)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
NF□□-FNS8-9	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			0.76 (19.4)							
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										
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										
NF□□-TS12-9-G	3/4" TS	3/4" TS										
NF□□-PS8-9-G	1/2 PS	1/2 PS				0.89 (22.5)						
NF□□-MTB16-9-G	16 mm MTB	16 mm MTB				0.76 (19.4)						
NF□□-UMB14-9	14 mm UMB	14 mm UMB										
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)			5.00 (127)			
NF□□-FNS12-6	3/4 Female NPT	3/4 Female NPT	1.97 (50.0)	1.97 (50.0)								
NF□□-TS16-6-G	1" TS	1" TS										
NF□□-MTS25-6-G	25 mm MTS	25 mm MTS										
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			2.35 (59.7)	2.35 (59.7)						
NF□□-FL16-6	1" FITOK	1" FITOK										
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	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 MTS	25 mm MTS										
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			1.12	1.12						
NFH□□-FNS6-8	3/8 Female NPT	3/8 Female NPT	0.25 (6.4)	0.85	(28.6)	(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□□-NS6-8	3/8 Male NPT	3/8 Female NPT			1.50 (38.1)	1.50 (38.1)						
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

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Tip Material	Stem Type	Packing Material	Panel Mounting	Handle	Flow Pattern Application	Cleaning and Packaging					
NF	SS	FNS	2	1/8"	Same as Inlet	7	Same as Body	Same as Body	Taper	No	Straight		FC-01					
NFH	6L	NS	4	1/4"		8								W	Stellite	R	Regulating	
	S4	FRT	6	3/8" or 6 mm		9								D5	Duplex 2205	B		Ball
	4L	RT	8	1/2" or 8 mm		6								TI	Titanium	T		
	S1	FMS	10	10 mm	0	A20	Alloy 20	K	Soft Tip-PTFE									
	91	MS	12	3/4" or 12 mm		M	Alloy 400			Soft stem tip only for NF Series Needle Valves with the orifice 0.16"/4.0mm, 0.25"/6.4mm and 0.39"/10mm								
	92	FRP	14	14 mm or M14 x 1.5		INC	Alloy 600											
	D5	BP	16	1" or 16 mm		HC	Alloy C-276											
	TI	TS	18	18 mm														
	A20	MTS	20	1 1/4" or 20 mm or M20 x 1.5														
	M	TB	22	22 mm or M22 x 1.5														
	INC		24	24 mm or M24 x 1.5														

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.

General Purpose Needle Valves

NG Series: Working pressure up to 3000 psig

NGH Series: Working pressure up to 5000 psig

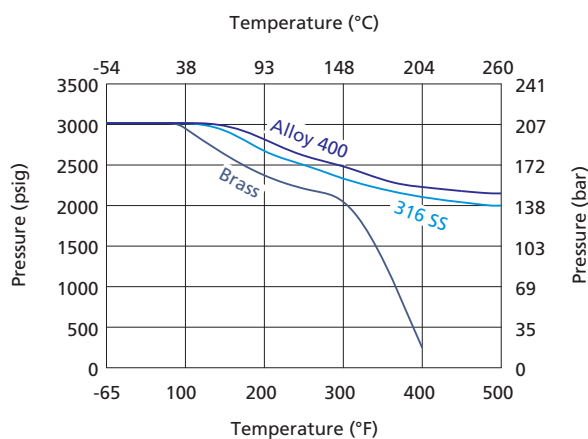
Features

- ⦿ 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/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)

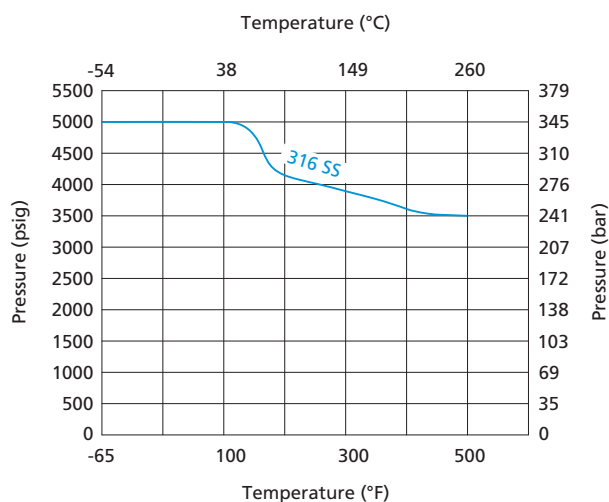


Pressure vs. Temperature

NG Series



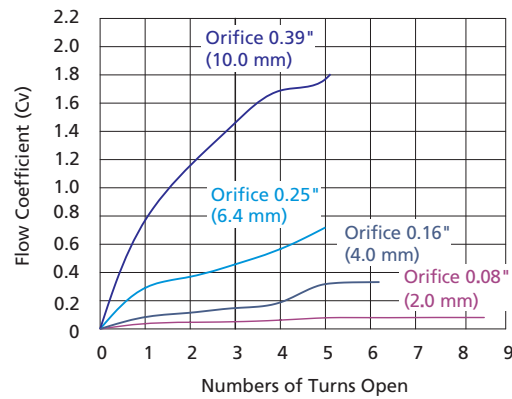
NGH Series



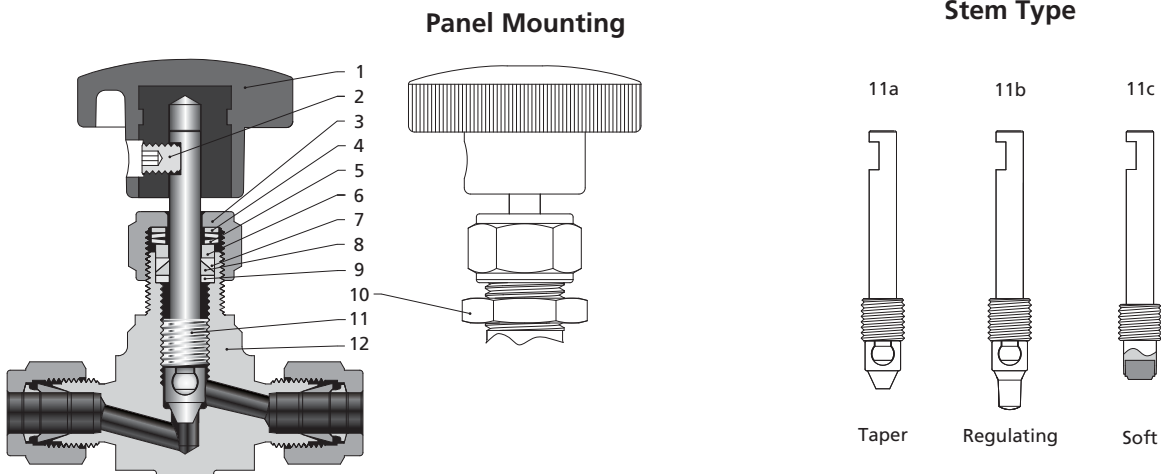
1. Graphs are based on PEEK packing.
2. Temperature rating is limited to 200°F (93°C) max with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

Regulating Stem



Standard Materials of Construction

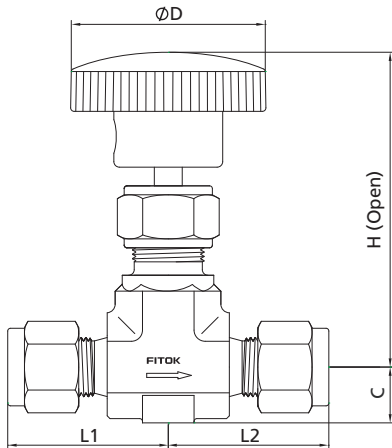


Item	Component	Valve Body Material		
		316 SS	Brass	Alloy
		Material Grade/ASTM Specification		
1	Handle	Black knob (aluminum or nylon with copper insert), aluminum alloy or stainless steel bar handle		
2	Set Screw	Stainless steel		
3	Packing Bolt	304 SS/A276	Brass C36000/B16	Alloy 400/B164
4	Washer	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		

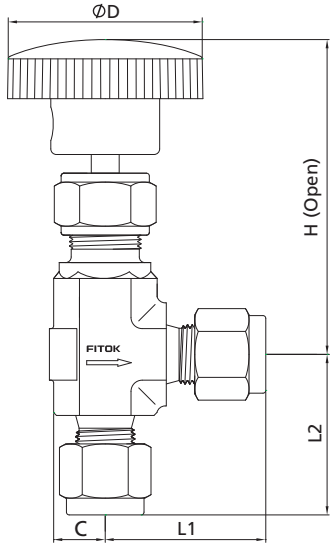
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



Needle Valves
Metering Valves

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)			
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)			
NG□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		
NG□□-UMB10-8	10 mm UMB	10 mm UMB			2.60 (66.0)	2.60 (66.0)	0.53 (13.5)		
NG□□-UMB14-8	14 mm UMB	14 mm UMB							

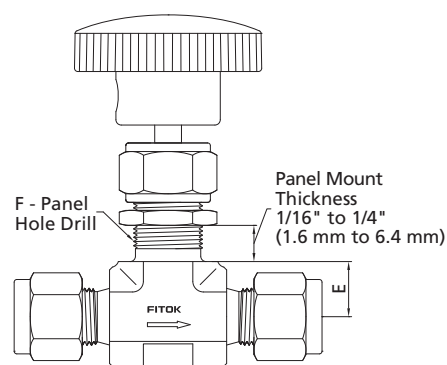
Dimensions of NG Series

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.

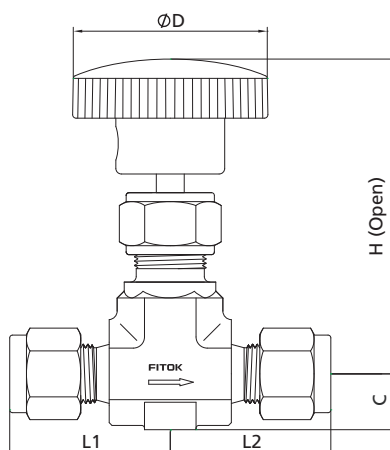
Panel Mount Dimensions of NG Series

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)

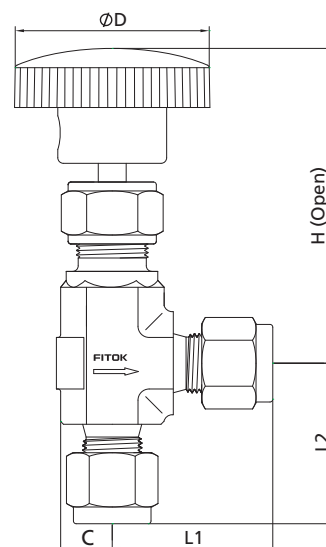


1. NG Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NGSS-NS2-5-Y

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							
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 (9.9)	1.38 (35.0)	2.50 (63.5)
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			1.17 (29.7)	1.17 (29.7)			
NGH□□-ML8-7	8 mm FITOK	8 mm FITOK			2.24 (57.0)	2.24 (57.0)			
NGH□□-UMB6-7	6 mm UMB	6 mm UMB							
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)	0.53 (13.5)	1.88 (47.8)	2.97 (75.4)
NGH□□-FNS6-8	3/8" Female NPT	3/8" Female NPT			1.12 (28.4)	1.12 (28.4)	0.62 (15.8)		
NGH□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		
NGH□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.29 (32.8)	1.29 (32.8)			
NGH□□-FL6-8	3/8" FITOK	3/8" FITOK			1.40 (35.6)	1.40 (35.6)			
NGH□□-FL8-8	1/2" FITOK	1/2" FITOK			1.30 (33.0)	1.30 (33.0)			
NGH□□-ML10-8	10 mm FITOK	10 mm FITOK			1.40 (35.6)	1.40 (35.6)			
NGH□□-ML12-8	12 mm FITOK	12 mm FITOK			1.56 (39.7)	1.56 (39.7)			
NGH□□-ML14-8	14 mm FITOK	14 mm FITOK			1.50 (38.1)	1.50 (38.1)	0.62 (15.8)		
NGH□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			2.60 (66.0)	2.60 (66.0)	0.53 (13.5)		
NGH□□-UMB10-8	10 mm UMB	10 mm UMB							
NGH□□-UMB14-8	14 mm UMB	14 mm UMB							

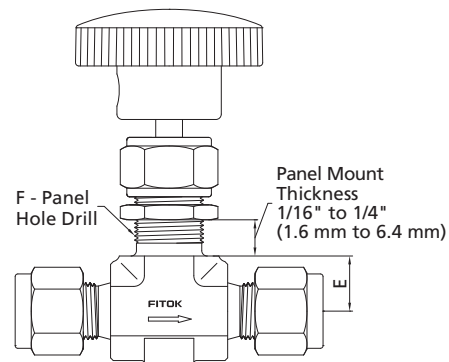
Dimensions of NGH Series

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							
NGH□□-FL12-9-L	3/4" FITOK	3/4" FITOK			1.90 (48.3)	1.90 (48.3)	0.76 (19.4)		
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: NGH5S-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		Tip Type		Packing Material		Panel Mounting		Handles		Flow Pattern		NACE MR0175		Cleaning and Packaging	
NG	NGH	SS 316 SS	FNS	Female NPT	2	1/8"	Same as Inlet	Specify in the same way as inlet type and inlet size	5	0.08" (2.0 mm)	Taper	PTFE	NO	Black Knob Not applicable to Orifice 0.39" (10mm)	Straight	NO	FC-01									
		6L 316L SS	NS	Male NPT	4	1/4"			7	0.16" (4.0 mm)								R	Regulating	P	PEEK	Y	YES	A	Angle	S
S4		304 SS	FRT	Female BSPT	6	3/8" or 6 mm			8	0.25" (6.4 mm)	K	Soft Tip-PCTFE	P	Soft Tip-PEEK												
4L		304L SS	RT	Male BSPT	8	1/2" or 8 mm			9	0.39" (10 mm)	P	Soft Tip-PEEK														
S1		321 SS	FMS	Female Metric Thread (for RP/RG)	10	10 mm																				
A20		Alloy 20	MS	Male Metric Thread (for RP/RG)	12	3/4" or 12 mm																				
M		Alloy 400	MS	Male Metric Thread (for RP/RG)	14	14 mm or M14 x 1.5																				
INC		Alloy 600	FRP	Female BSPP (for RG)	16	1" or 16 mm																				
HC		Alloy C-276	FRP	Female BSPP (for RG)	18	18 mm																				
B		Brass	BP	Male BSPP (for RP/RG)	20	1 1/4" or 20 mm or M20 x 1.5																				
CS		Carbon Steel	FL	Fractional Tube Fitting	22	22 mm or M22 x 1.5																				
904L		904L SS	ML	Metric Tube Fitting																						
			UMB	Nut + Gasket + Metric Bulge Nipple																						

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.

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.
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.
- 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

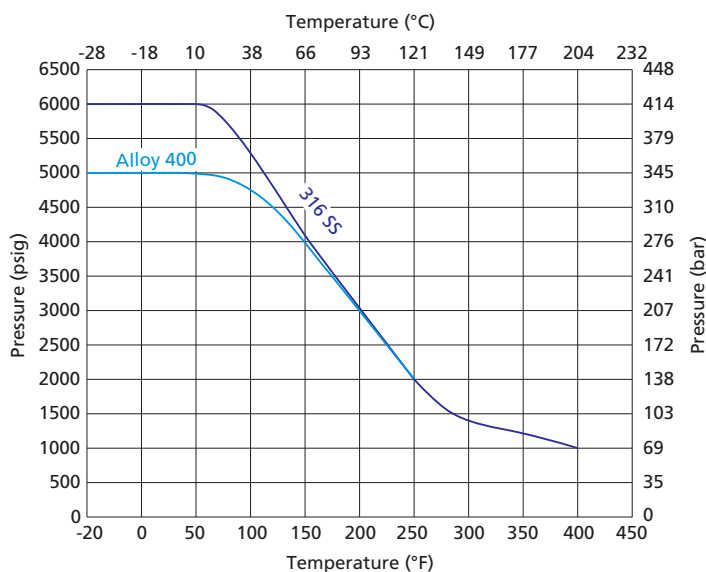
NRG (with gauge port) Series

Features

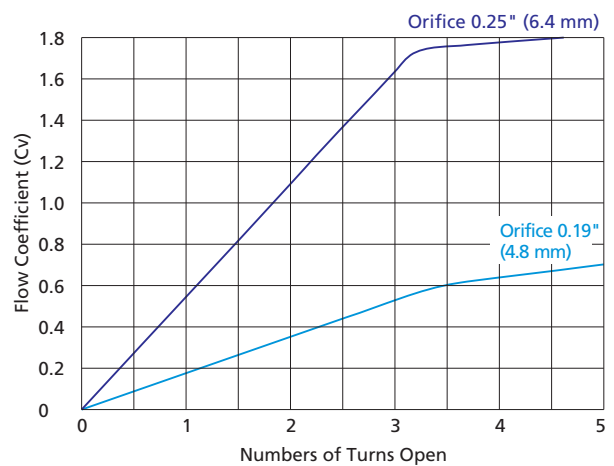
- ⦿ Cold drawn square bar as body material
- ⦿ Nonrotating stem for longer seat life
- ⦿ Roddable, straight through flow path for maximum flow with minimum pressure drop
- ⦿ Stem thread lubricant isolated from system media
- ⦿ Replaceable seat and stem tip design
- ⦿ Stem thread protected from outside contamination by PTFE ring in the gland
- ⦿ Panel mounting available
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with nitrogen/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

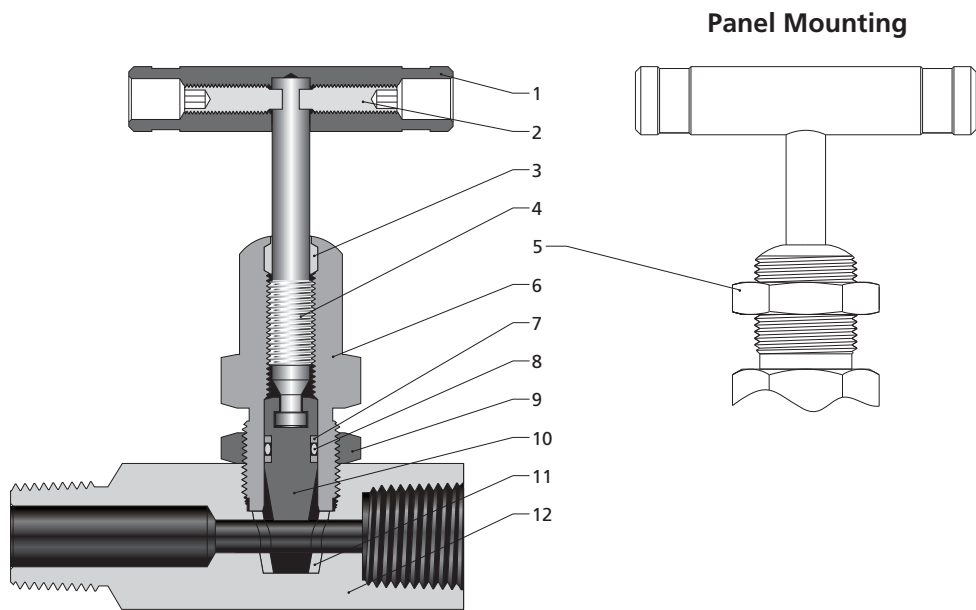


Flow Data at 100°F (38°C)



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.

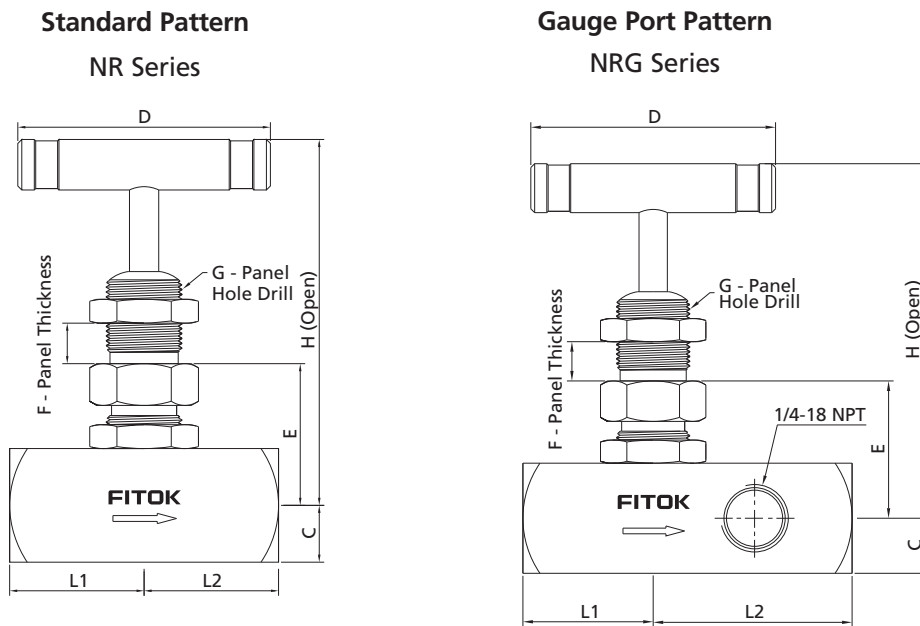
Standard Materials of Construction



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: NR55-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)	0.56 (14.3)		2.50 (63.5)				1.40 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)
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	1.33 (33.8)	1.80												
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	0.25 (6.4)	1.80	3.33 (84.6)	2.25 (57.2)	0.56 (14.3)	2.50 (63.5)	1.40 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)				

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	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Seat Material	Orifice Size	O-ring Material	Panel Mounting	Handle	NACE MR0175	Cleaning and Packaging
NR	SS	FNS	Female NPT	2	1/8"	Acetal	7	Fluorocarbon Rubber (FKM)	No	Black Aluminum Bar	No	FC-01
NRG	6L	NS	Male NPT	4	1/4"	PEEK	8	Nitrile Rubber (NBR)	Yes	Red Aluminum Bar	Yes	FC-02
	S4	FRT	Female BSPT	6	3/8" or 6 mm			Ethylene Propylene Diene Rubber (EPDM)		Green Aluminum Bar		
	4L	RT	Male BSPT	8	1/2" or 8 mm					Blue Aluminum Bar		
	S1	FMS	Female Metric Thread (for RP/RG)	10	10 mm					321 Stainless Steel Bar		
	D5	MS	Male Metric Thread (for RP/RG)	12	3/4" or 12 mm							
	Ti											
	A20	FRP	Female BSPP (for RP)									
	M	BP	Male BSPP (for RP/RG)									
	INC											
	HC											
	B											
	CS											
	904L											

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/air at the maximum allowable working pressure
- Working pressure up to: 300 psig (20.7 bar)

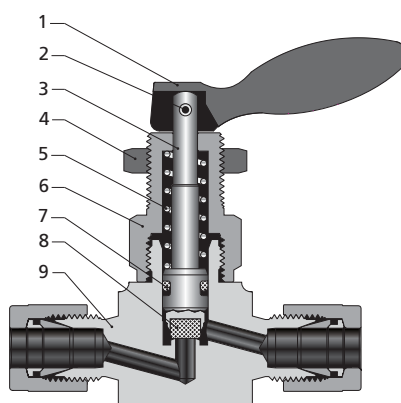


Technical Data

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

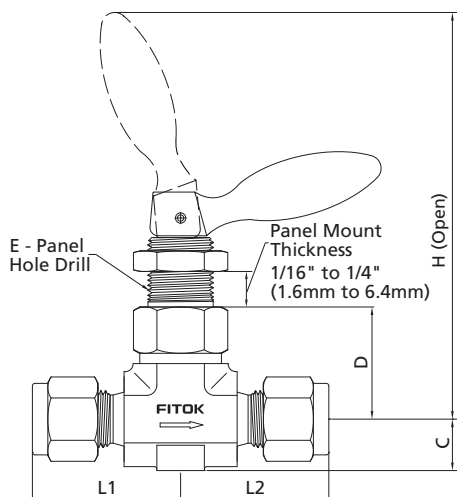


Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Brass
		Material Grade/ASTM Specification			
1	Handle	Stainless steel			
2	Pin	Stainless steel			
3	Stem	316 SS/A276	304 SS/A276		316 SS/A276
4	Panel Nut	Stainless steel			Brass C36000/B16
5	Spring	S17700/A313			
6	Bonnet	304 SS/A276			Brass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

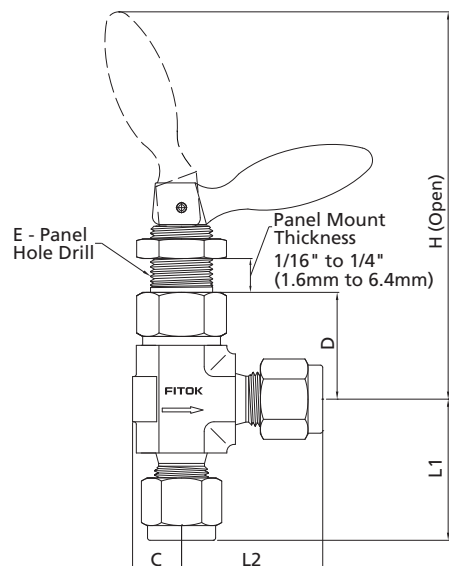
Note: Contact FITOK Group or our authorized distributors for other materials.

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	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			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/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



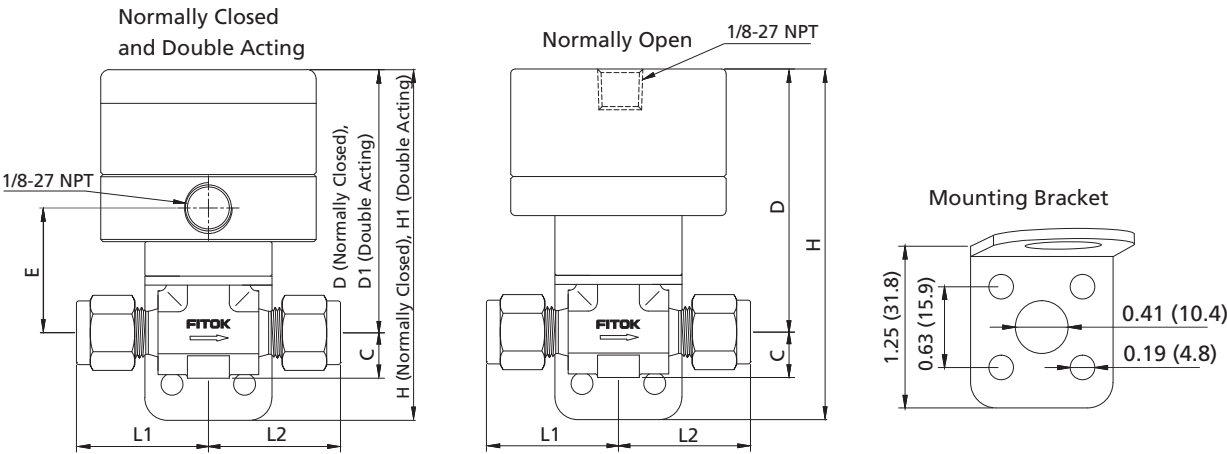
Technical Data

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.

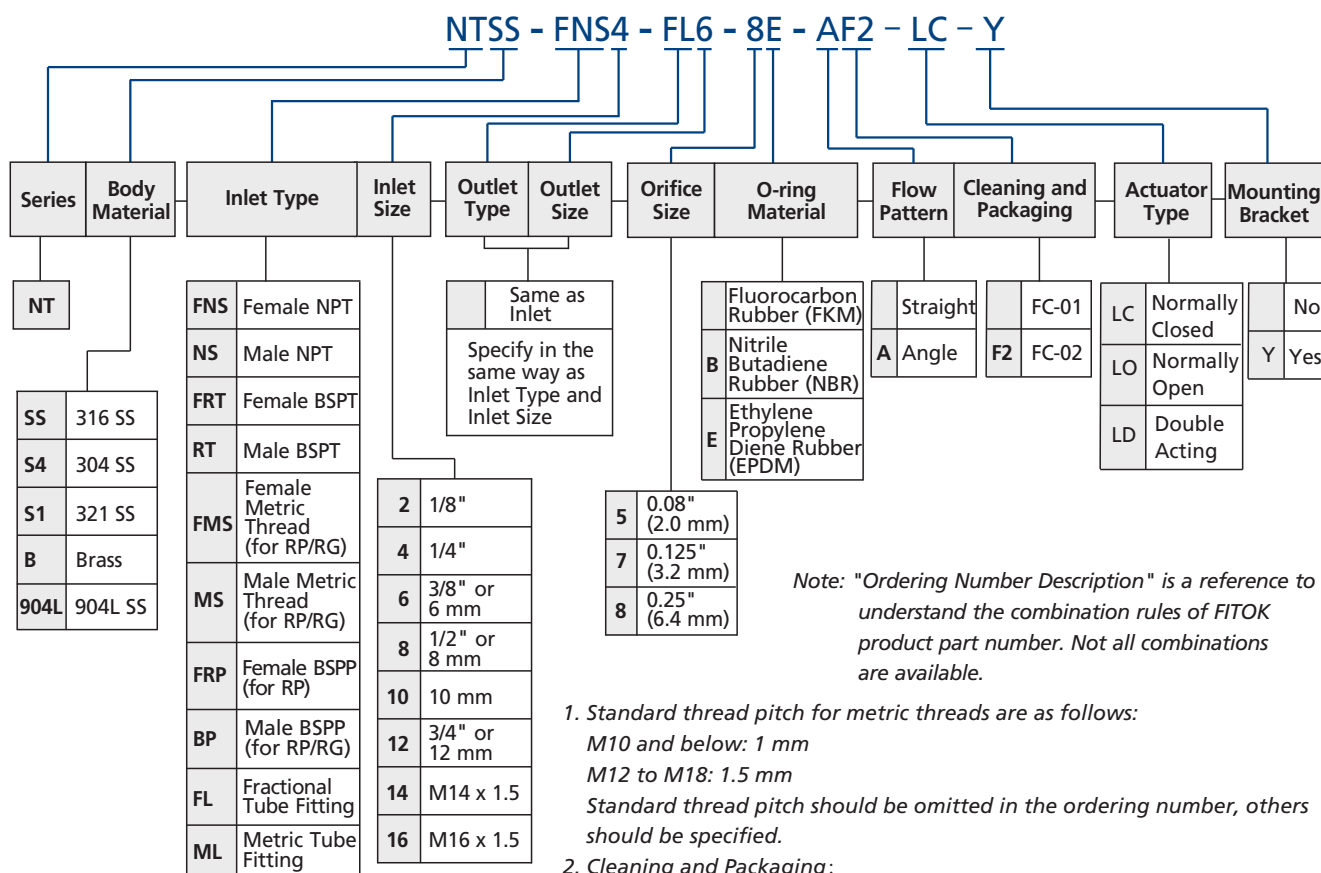
Dimensions



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										
NT□□-FNS2-7-LC-Y	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)	2.28 (58)	2.46 (62.5)	3.04 (77.3)	3.22 (81.8)	1.08 (27.5)
NT□□-NS2-7-LC-Y	1/8 Male NPT	1/8 Male NPT			0.86 (21.8)	0.86 (21.8)						
NT□□-NS4-7-LC-Y	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)						
NT□□-NS4-FL4-7-LC-Y	1/4 Male NPT	1/4" FITOK			0.98 (25.0)	1.13 (28.7)						
NT□□-FL4-7-LC-Y	1/4" FITOK	1/4" FITOK			1.13 (28.7)							
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



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

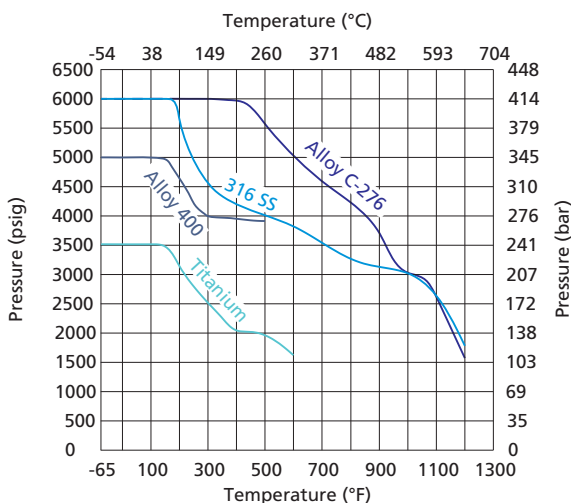
Features

- ⦿ One-piece forged body
- ⦿ Two-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/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)

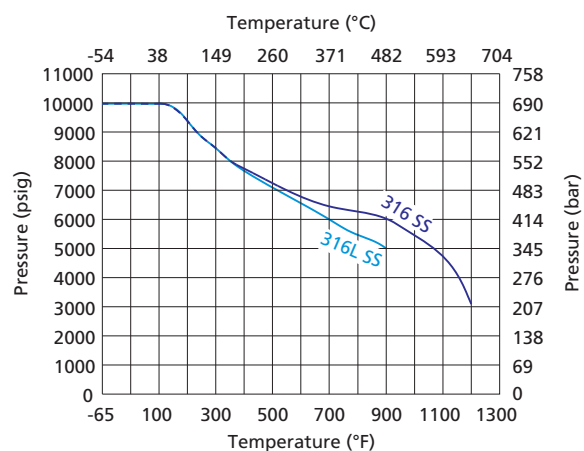


Pressure vs. Temperature

NU Series



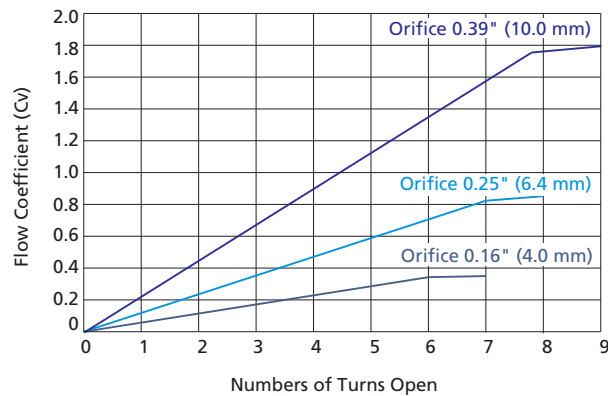
NUH Series



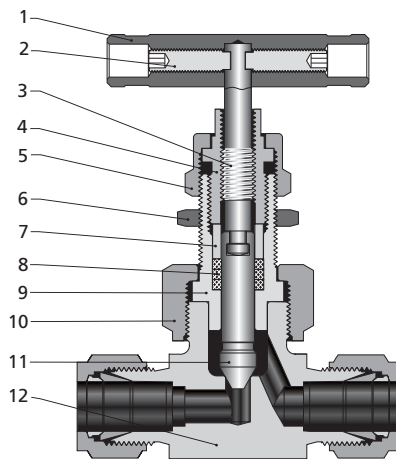
1. Graphs are based on graphite packing.
2. Soft tips are for NU Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (37°C)

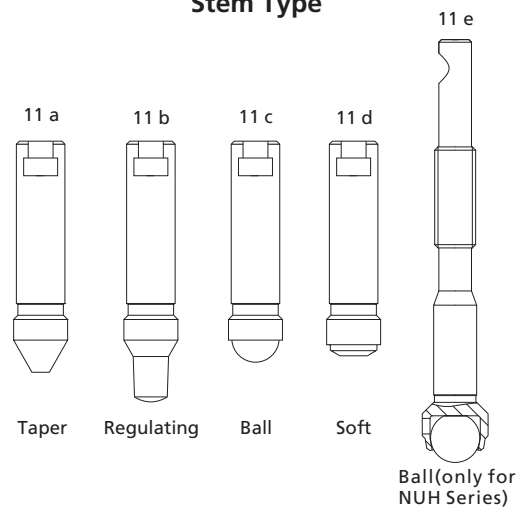
Regulating Stem



Standard Materials of Construction



Stem Type

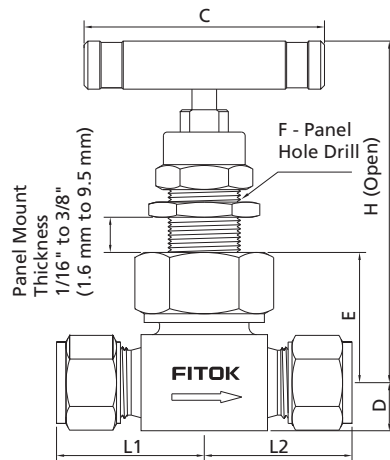


Item	Component	Valve Body Material			
		316 SS	Alloy 400	Titanium	Alloy C-276
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminium or stainless steel or black knob			
2	Set Screw	Stainless steel			
3	Upper Stem	316 SS/A276			
4	Packing Bolt	304 SS/A276			
5	Lock Nut	316 SS/A276			
6	Panel 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			

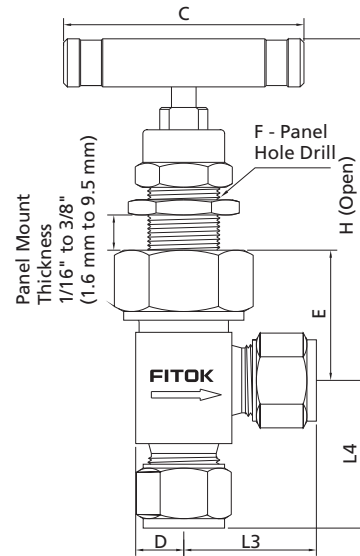
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



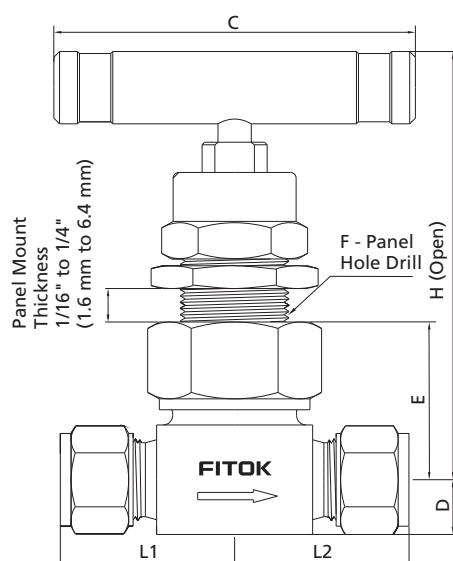
Dimensions of NU Series

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)
NU□□-NS4-FL4-7	1/4 Male NPT	1/4" FITOK													
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	1/4" FITOK					1.14 (28.8)								
NU□□-ML6-7	6 mm FITOK	6 mm FITOK						1.22 (30.9)							
NU□□-ML8-7	8 mm FITOK	8 mm FITOK			0.91 (23.1)	0.91 (23.1)									
NU□□-TS4-7-G	1/4" TS	1/4" TS					0.88 (22.4)								
NU□□-FO4-7	1/4" Male FO	1/4" Male FO	1.03 (26.2)	1.03 (26.2)	1.19 (30.2)										
NU□□-FR4-7	1/4" Male FR	1/4" Male FR													
NU□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.8	1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	0.78 (19.8)	3.77 (95.7)		
NU□□-FNS6-8	3/8 Female NPT	3/8 Female NPT					1.06 (26.9)								
NU□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.41 (35.9)	1.41 (35.9)	1.28 (32.5)	1.47 (37.3)							
NU□□-FL6-8	3/8" FITOK	3/8" FITOK													
NU□□-FL8-8	1/2" FITOK	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	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		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)										
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			2.92 (74.1)	2.92 (74.1)	2.55 (64.7)	2.92 (74.1)										
NU □□-FR8-8	1/2" Male FR	1/2" Male FR			1.13 (28.6)	1.13 (28.6)	—	—										
NU □□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.56 (39.6)	1.56 (39.6)	—	—										
NU □□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)	1.13 (28.6)	1.50 (38.1)										
NU □□-NS8-9	1/2 Male NPT	1/2 Male NPT	0.39 (10.0)	1.8	1.56 (39.6)	1.56 (39.6)	1.56 (39.6)	1.56 (39.6)	3.50 (88.9)	0.63 (16.0)	1.82 (46.2)	1.03 (26.2)	4.76 (121)					
NU □□-FNS8-9	1/2 Female NPT	1/2 Female NPT			1.63 (41.3)	1.63 (41.3)	—	—										
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			1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (52.8)										
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																
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			1.56 (39.7)	1.56 (39.7)	1.31 (33.3)	1.69 (42.9)										
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																
NU □□-MTB16-9-G	16 mm MTB	16 mm MTB			2.98 (75.7)	2.98 (75.7)	—	—										
NU □□-UMB14-9	14 mm UMB	14 mm UMB																
NU □□-FR8-9	1/2" Male FR	1/2" Male FR	1.56 (39.7)	1.56 (39.7)														
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.



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									
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	SS	FNS	2 1/8"	Same as Inlet	7	0.16" (4.0 mm)	Same as Body	Taper	PTFE		Straight		FC-01
NUH	6L	NS	4 1/4"	Specify in the same way as inlet type and inlet size	8	0.25" (6.4 mm)	W	R	P PEEK		A Angle		F2 FC-02
	S4	FRT	6 3/8" or 6 mm		9	0.39" (10 mm)	D5	B	G Graphite				
	4L	RT	8 1/2" or 8 mm				TI	T					
	S1	FMS	10 10 mm				A20	K					
	91	MS	12 3/4" or 12 mm				M	P					
	92	FRP	14 14 mm or M14 x 1.5				INC						
	D5	BP	16 1" or 16 mm				HC						
	TI		18 18 mm										
	A20	TS	20 1 1/4" or 20 mm or M20 x 1.5										
	M	MTS	22 22 mm or M22 x 1.5										
	INC	TB	24 M24 x 1.5										
	HC	MTB	25 25 mm										
	B	PS	27 M27 x 2										
	CS	PB	28 28 mm										
	904L	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.

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.

Black Aluminum Bar		NO
Red Aluminum Bar	C	S NACE MR0175
Green Aluminum Bar	F	
Blue Aluminum Bar	J	
321 Stainless Steel Bar	M	
Black Knob (only for NU Series Needle Valves with the orifice 0.16"/4.0mm and 0.25"/6.4mm)	O	

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

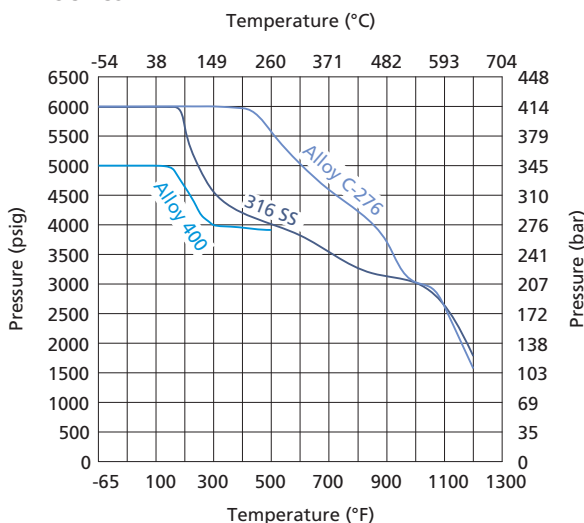
- ⦿ Cold drawn bar as body
- ⦿ Standard seat diameter 0.16" (4mm). Cv: 0.35 standard
- ⦿ Hardened stem threads prevent galling
- ⦿ Stem threads completely isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction 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/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)



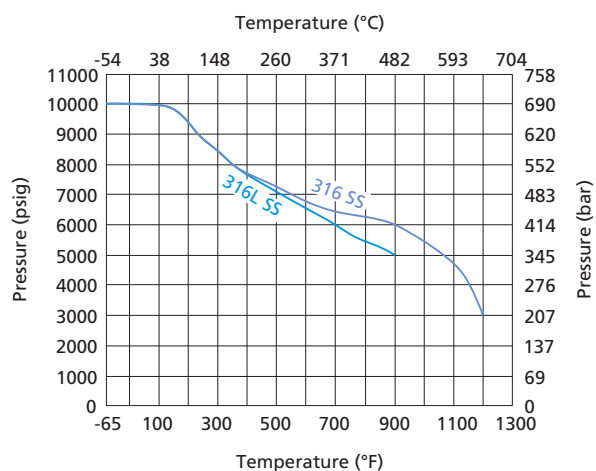
Needle Valves
Metering Valves

Pressure vs. Temperature

NY Series

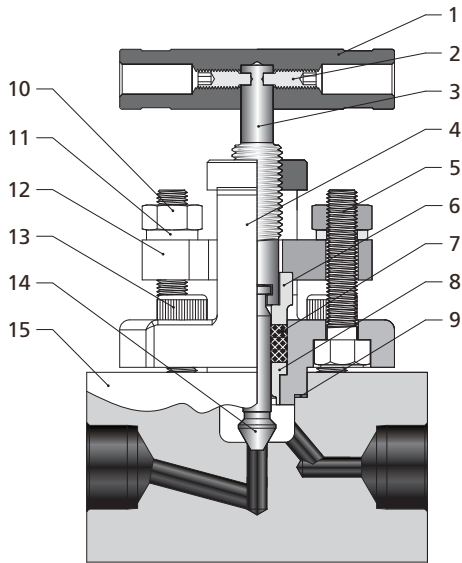


NYH Series



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

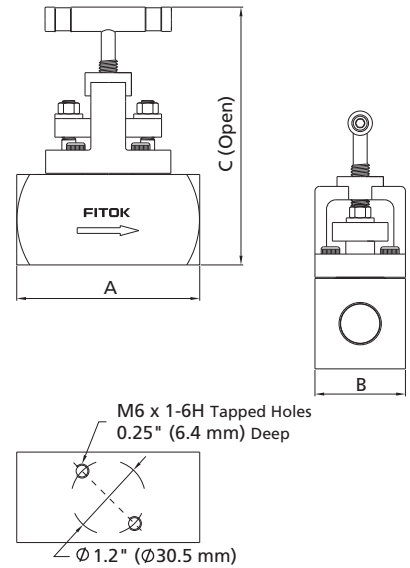


Item	Component	Valve Body Material
		316 SS
		Material Grade/ASTM Specification
1	Handle	Anodized aluminum or stainless steel
2	Set Screw	Stainless steel
3	Upper Stem	316 SS/A276
4	Yoke	316 SS/A182
5	Bolts	Stainless steel
6	Packing Washer	316 SS/A276
7	Packing	PTFE or PEEK or graphite
8	Packing Washer	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

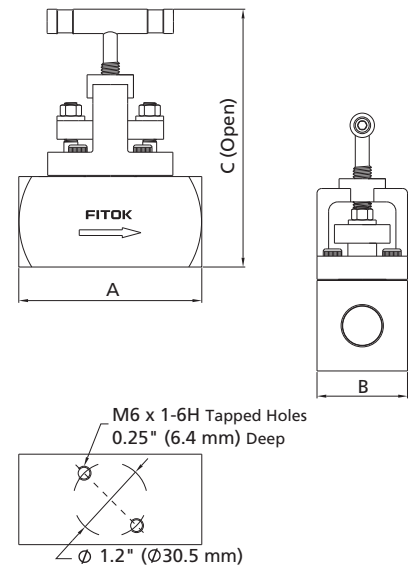
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)		
	Inlet	Outlet			A	B	C
NY□□-FNS4	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	2.69 (68.2)	1.50 (38.1)	4.04 (102.7)
NY□□-NS4	1/4 Male NPT	1/4 Male NPT			2.95 (75.0)		
NY□□-NS4-FNS4	1/4 Male NPT	1/4 Female NPT			2.72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



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			3.00 (76.2)		
NYH□□-NS6	3/8 Male NPT	3/8 Male NPT			3.00 (76.2)		
NYH□□-FNS8	1/2 Female NPT	1/2 Female NPT			3.00 (76.2)		
NYH□□-NS8	1/2 Male NPT	1/2 Male NPT			3.00 (76.2)		



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

Series		Body Material	Inlet Type	Inlet Size	Outlet Type	Tip Material	Tip Type	Packing Material	Base Mount	Special Application	Cleaning and Packaging
NY	SS	316 SS	FNS	4 1/4"	Same as Inlet	Same as Body	Taper	PTFE	No		FC-01
NYH	6L	316L SS	NS	6 3/8" or 6 mm							
	S4	304 SS	PS	8 1/2" or 8 mm	Specify in the same way as Inlet Type and Inlet Size	W	R	P	Y	S	F2
	4L	304L SS	PB	10 10 mm		INC	B	G		NACE MR0175	
	S1	321 SS	TS	12 3/4" or 12 mm		HC					
	11	F11	MTS								
	91	F91									
	92	F92	TB								
	INC	Alloy 600	MTB								
	HC	Alloy C-276	FL								
	CS	Carbon Steel A105	ML								
	904L	904L SS									

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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