

Needle Valves

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

Needle Valves
Metering Valves



Contents

Screwed Bonnet Needle Valves

NB Series



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NT Series



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Union Bonnet Needle Valves

NU Series and NUH 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

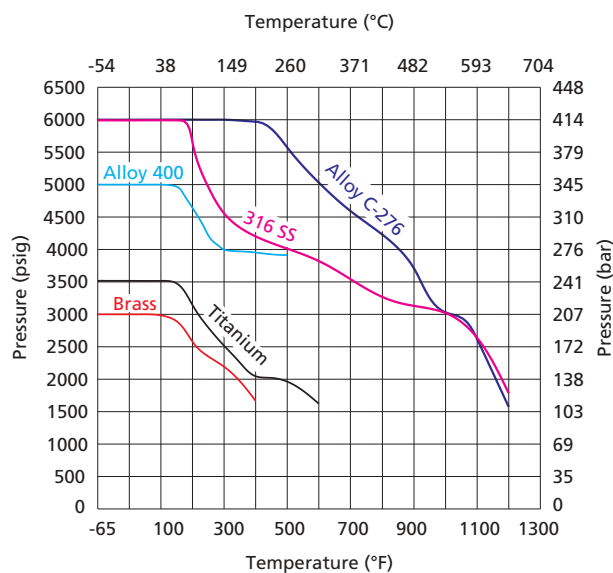


Features

- ⦿ 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 seals 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

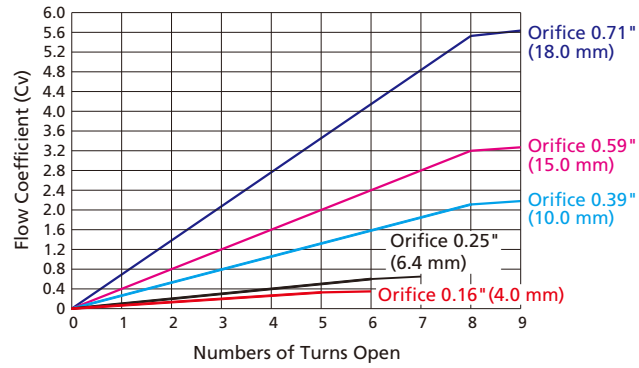
NB Series



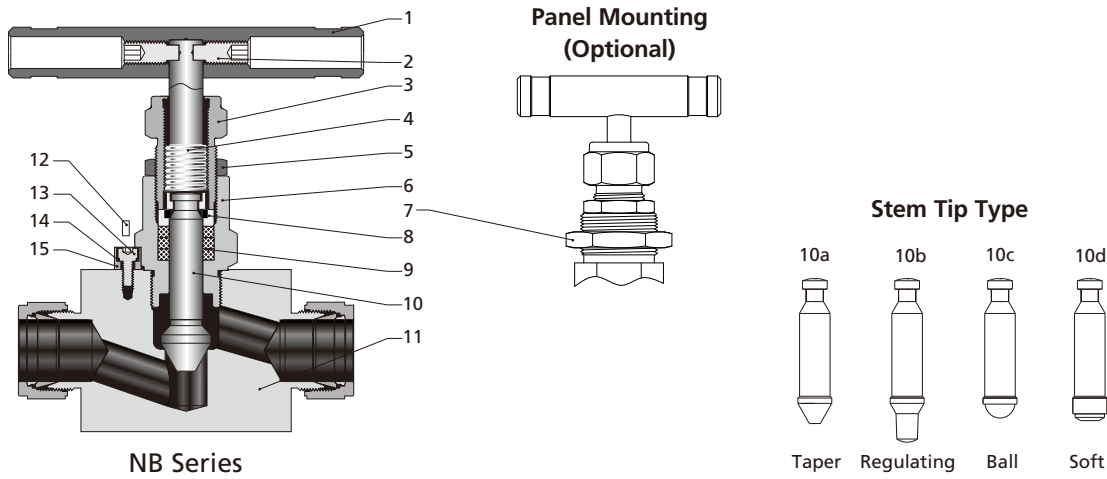
1. Graphs are based on graphite packing.
2. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

Regulating Stem Tip



Standard Materials of Construction



Needle Valves
Metering Valves

Item	Component	Valve Body Material ^a				
		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	

B-88 Needle Valves

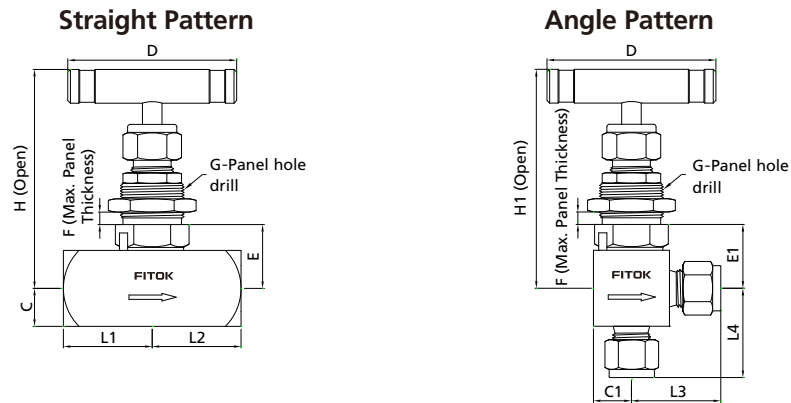
Item	Component	Valve Body Material ^a				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
		Material Grade/ASTM Specification				
7 ^b	Panel Nut (Optional)	Stainless steel				Brass C36000/B16
8	Gland	316 SS/A479				
9	Packing	PTFE or PEEK or graphite				
10a 10b 10c	Lower Stem	Hardened 316 SS/A479	Alloy 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 ^c	Lock Pin	Stainless steel				
13	Screw	Stainless steel				
14	Spring Washer	Stainless steel				
15	Bush	Stainless steel				
	Lubricant	Molybdenum disulfide-based				

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

b. The panel nut is only compatible with valves configured for panel mounting. Applicable valve part numbers have the suffix "Y", for example: NBSS-FNS4-7-Y.

c. 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.

Dimensions



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

Dimensions of NB Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)																					
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1									
NBSS-FNS4-7	1/4 Female NPT	1/4 Female NPT	0.16 (4.0)	0.35	1.06 (26.9)	1.06 (26.9)	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)									
NBSS-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)																		
NBSS-NS4-FNS4-7	1/4 Male NPT	1/4 Female NPT			1.03 (26.2)	1.06 (26.9)	1.06 (26.9)	1.03 (26.2)																		
NBSS-FL4-7	1/4" FITOK	1/4" FITOK																								
NBSS-ML6-7	6 mm FITOK	6 mm FITOK			1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)																		
NBSS-ML8-7	8 mm FITOK	8 mm FITOK																								
NBSS-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.50 (63.5)	0.89 (22.5)	0.89 (22.5)	0.38 (9.7)	0.96 (24.4)	3.50 (88.9)	3.50 (88.9)									
NBSS-FNS6-8	3/8 Female NPT	3/8 Female NPT			1.26 (32.0)	1.26 (32.0)	1.35 (34.2)	1.35 (34.2)																		
NBSS-FNS8-8	1/2 Female NPT	1/2 Female NPT			1.50 (38.1)	1.26 (32.0)	1.35 (34.2)	1.31 (33.4)																		
NBSS-NS8-FNS8-8	1/2 Male NPT	1/2 Female NPT			1.41 (35.8)	1.41 (35.8)	1.32 (33.6)	1.32 (33.6)																		
NBSS-FL6-8	3/8" FITOK	3/8" FITOK			1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)																		
NBSS-FL8-8	1/2" FITOK	1/2" FITOK			1.42 (36.1)	1.42 (36.1)	1.33 (33.8)	1.33 (33.8)																		
NBSS-ML10-8	10 mm FITOK	10 mm FITOK			1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)																		
NBSS-ML12-8	12 mm FITOK	12 mm FITOK																								
NBSS-MTS12-8-G	12mm Tube Socket Weld	12mm Tube Socket Weld			1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	1.13 (28.6)																		
NBSS-MTS14-8-G	14 mm Tube Socket Weld	14 mm Tube Socket Weld																								
NBSS-MTB14-8-G	14x2.5 mm Tube Butt Weld	14x2.5 mm Tube Butt Weld			1.50 (38.1)	1.50 (38.1)	1.50 (38.1)	1.50 (38.1)																		
NBSS-MTB16-8-G	16x2.8 mm Tube Butt Weld	16x2.8 mm Tube Butt Weld			1.50 (38.1)	1.50 (38.1)	1.50 (38.1)	1.50 (38.1)																		
NBSS-UMB14-8	14x2.5 mm Rotatable Tube Butt Weld	14x2.5 mm Rotatable Tube Butt Weld			2.92 (74.1)	2.92 (74.1)												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)
NBSS-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)																				
NBSS-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)	0.77 (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)									
NBSS-FNS12-9	3/4 Female NPT	3/4 Female NPT																								
NBSS-FRT12-9	3/4 Female BSPT	3/4 Female BSPT			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)																		
NBSS-FL12-9	3/4" FITOK	3/4" FITOK			1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)																		
NBSS-ML16-9	16 mm FITOK	16 mm FITOK																								
NBSS-MTS14-9-G	14 mm Tube Socket Weld	14 mm Tube Socket Weld			1.75 (44.5)	1.75 (44.5)																				
NBSS-FNS12-6	3/4 Female NPT	3/4 Female NPT	0.59 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	1.70 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.00 (127)	4.72 (120)									
NBSS-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)										

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.

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	7	0.16" (4.0 mm)		Same as Body		PTFE		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	P	PEEK	Y	Yes	A	Angle	F2	FC-02
	S4	304 SS	FRT	Female BSPT	6	3/8" or 6 mm	9		0.39" (10 mm)	D5	Duplex 2205	G	Graphite							
	4L	304L SS	RT	Male BSPT	8	1/2" or 8 mm	6		0.59" (15 mm)	TI	Titanium									
	S1	321 SS	FMS	Female Metric Thread (for RG-M)	10	10 mm	0		0.71" (18 mm)	A20	Alloy 20							No		
	91	F91	MS	Male Metric Thread (for RG-M)	12	3/4" or 12 mm				M	Alloy 400									
	92	F92	FRP	Female BSPP (for RP)	14	14 mm or 14x2.5 mm or M14x1.5				INC	Alloy 600									
	D5	Duplex 2205	BP	Male BSPP (for RG)	16	1" or 16 mm or 16x2.8 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:

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

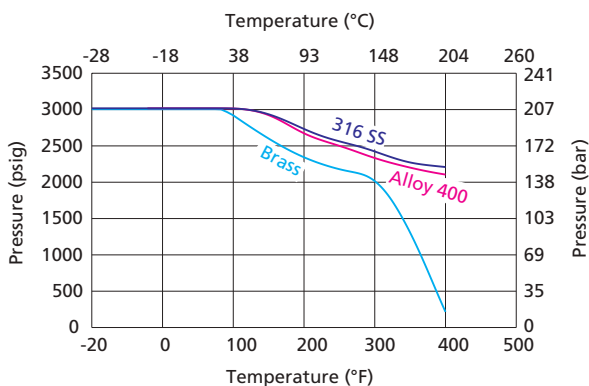
- ⊙ One-piece forged body
- ⊙ Straight and angle pattern
- ⊙ Compact design
- ⊙ Non-rotating stem
- ⊙ Specially designed handle to stop contamination from entering into the valve
- ⊙ Every valve leak tested with nitrogen or compressed air at the maximum allowable working pressure
- ⊙ Working pressure 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)



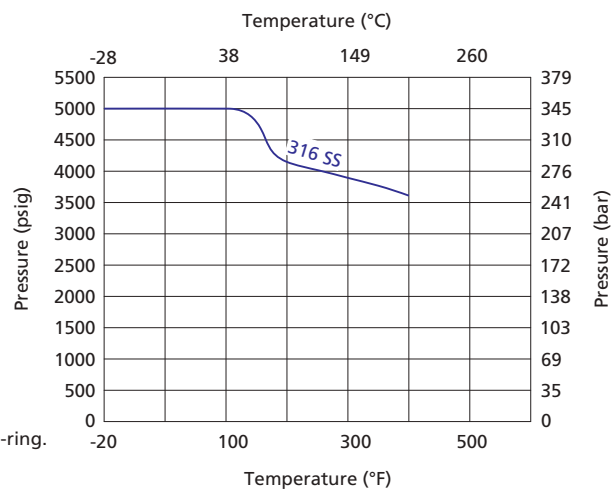
Needle Valves
Metering Valves

Pressure vs. Temperature

ND Series

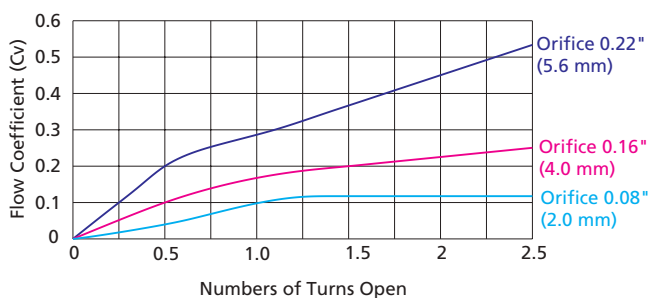


NDH Series

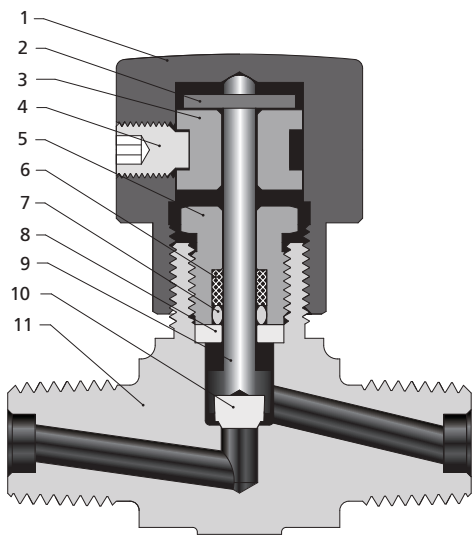


1. The graphs are based on PEEK stem tip and Fluorocarbon rubber (FKM) O-ring.
2. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)



Standard Materials of Construction

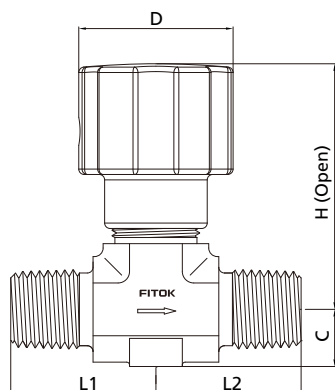


Item	Component	Valve Body Material				
		316 SS	304 SS	321 SS	Brass	Alloy 400
		Material Grade/ASTM Specification				
1	Handle	Anodized aluminum				
2	Stop Pin	Stainless steel				
3	Spool	Aluminum				
4	Set Screw	Stainless steel				
5	Packing Bolt	304 SS/A479			Brass C36000/B16	Alloy 400/B164
6	Backup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

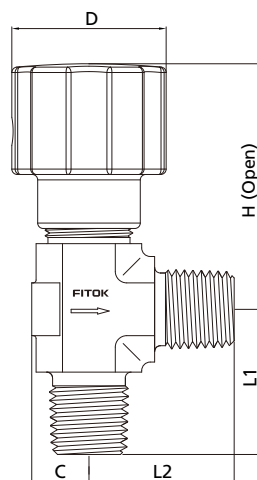
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern

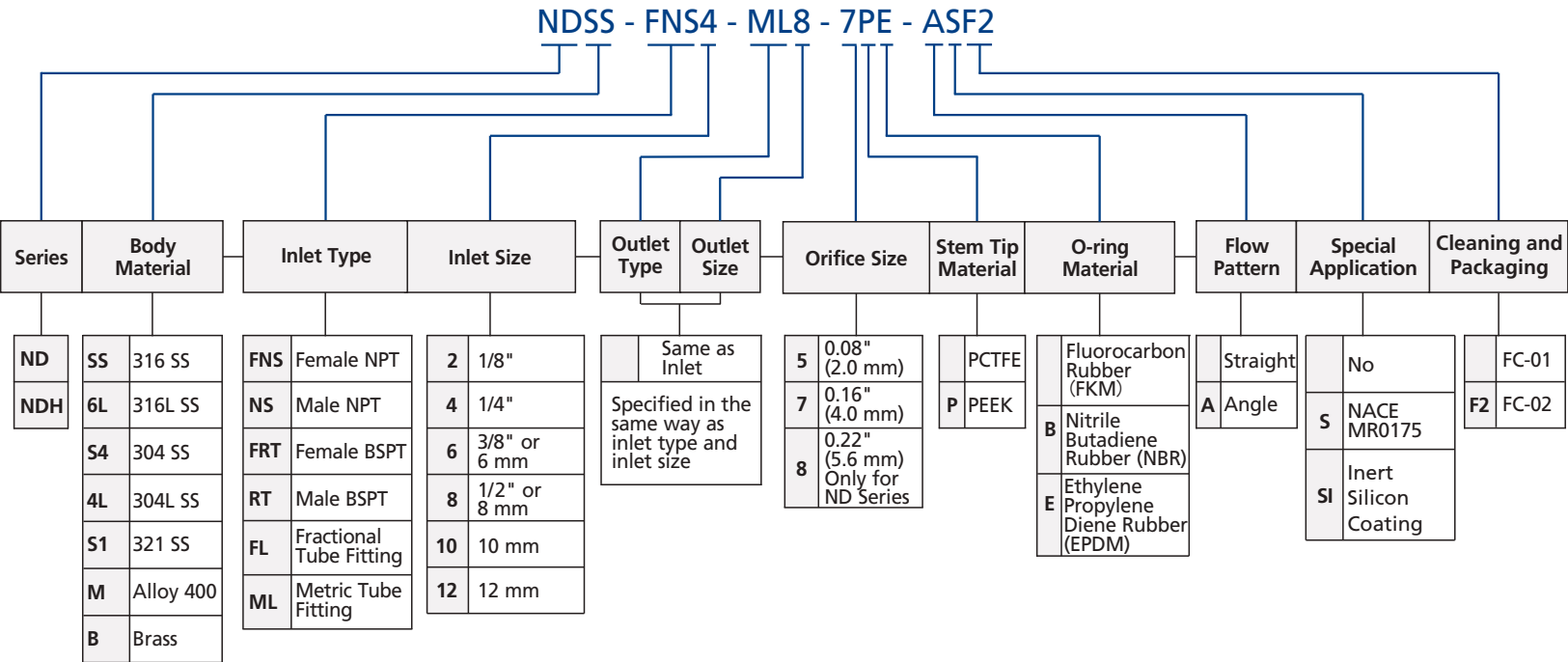


Dimensions of ND and NDH Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
NDSS-FL2-5	1/8" FITOK	1/8" FITOK	0.08 (2.0)	0.12	1.10 (27.9)	1.10 (27.9)	0.32 (8.1)	1.06 (26.9)	1.86 (47.2)
NDSS-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)
NDSS-NS4-FNS4-7	1/4 Male NPT	1/4 Female NPT			1.06 (27.0)		0.49 (12.5)		
NDSS-NS4-ML6-7	1/4 Male NPT	6 mm FITOK			1.00 (25.4)	1.13 (28.7)	0.39 (10.0)		
NDSS-NS4-FL4-7	1/4 Male NPT	1/4" FITOK			0.98 (25.0)				
NDSS-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)				
NDSS-ML6-7	6 mm FITOK	6 mm FITOK							
NDSS-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)
NDSS-NS4-8	1/4 Male NPT	1/4 Male NPT							
NDSS-NS4-FNS4-8	1/4 Male NPT	1/4 Female NPT			1.12 (28.6)	1.12 (28.6)			
NDSS-NS6-8	3/8 Male NPT	3/8 Male NPT							
NDSS-FL6-8	3/8" FITOK	3/8" FITOK			1.29 (32.8)	1.29 (32.8)			
NDSS-FL8-8	1/2" FITOK	1/2" FITOK			1.40 (35.6)	1.40 (35.6)			
NDHSS-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)
NDHSS-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)	1.13 (28.7)			

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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 are for reference only and are subject to change. For dimensions not shown above, please contact FITOK Group or our authorized distributors.

Ordering Number Description



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

1. 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.
 - Inert Silicon coating: Wetted metal components Inert Silicon coated.

Forged Body Needle Valves

NF Series: Working pressure up to 6000 psig

NFH Series: Working pressure up to 10000 psig

Features

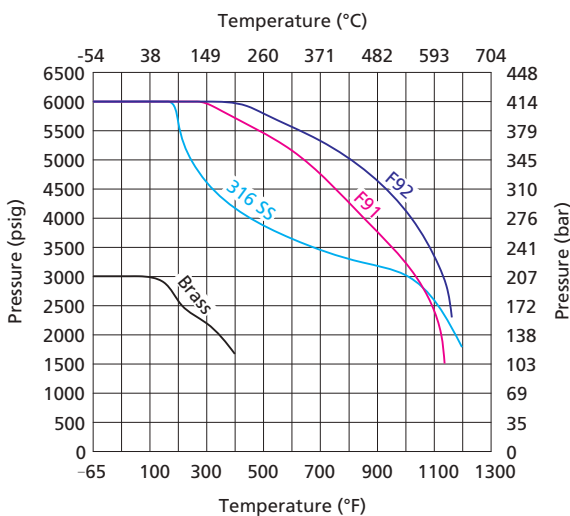
- ⊙ One-piece forged body
- ⊙ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⊙ Upper stem thread lubricant isolated from system media
- ⊙ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion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



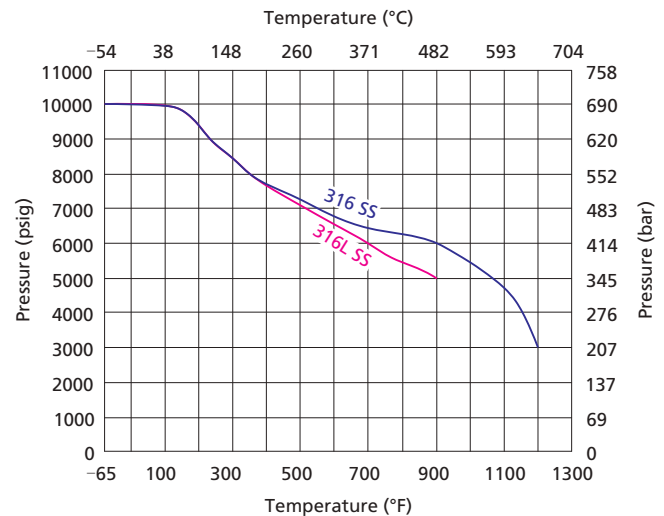
Needle Valves
Metering Valves

Pressure vs. Temperature

NF Series



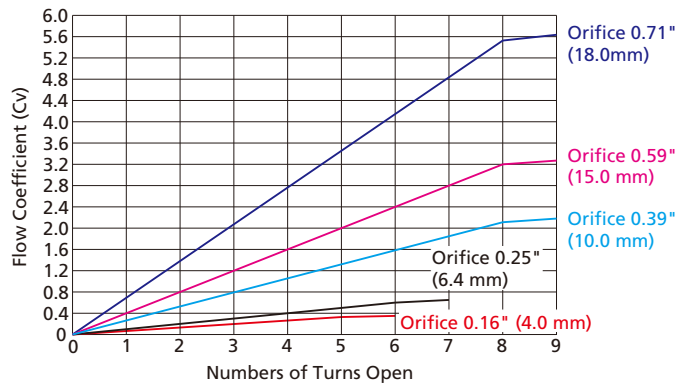
NFH Series



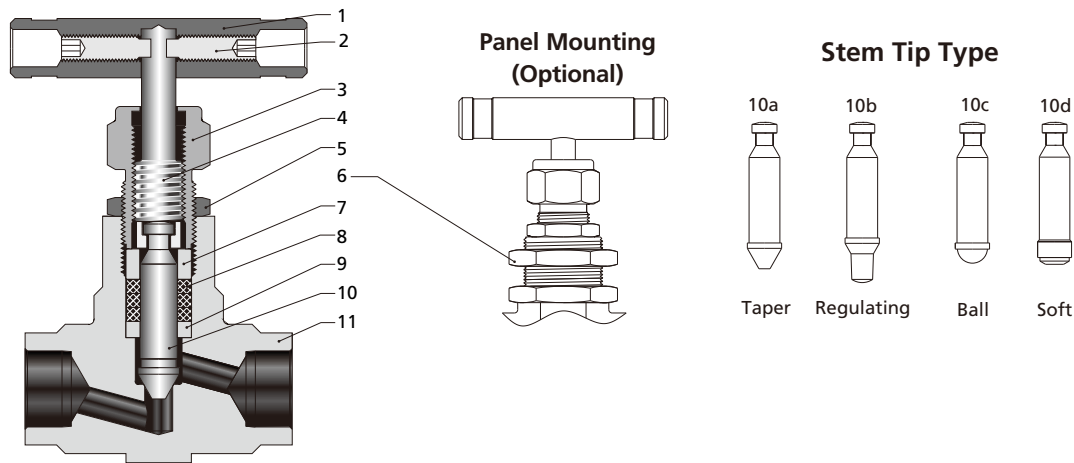
1. Graphs are based on graphite packing.
2. Soft tips are for NF Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

Regulating Stem Tip



Standard Materials of Construction

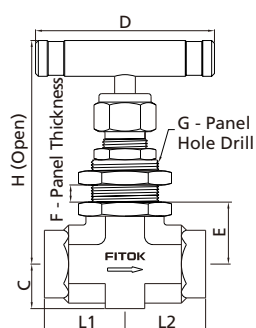


Item	Component	Valve Body Material ^a		
		316 SS	F91	Brass
		Material Grade/ASTM Specification		
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Zinc-plated carbon steel		
3	Packing Bolt	304 SS/A479	F91/A182	Brass C36000/B16
4	Upper Stem	316 SS/A479		
5	Lock Nut	Stainless steel	1020/A108	Brass C36000/B16
6 ^b	Panel Nut (Optional)	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		

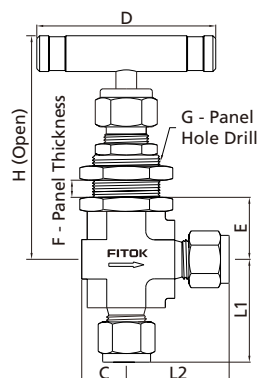
Note: a. Contact FITOK Group or our authorized distributors for other materials.
b. The panel nut is only compatible with valves configured for panel mounting. Applicable valve part numbers have the suffix "Y", for example: NF55-FL4-7-Y.

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

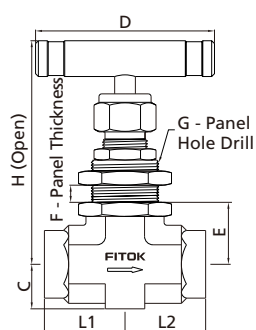
Fittings															
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)										
	Inlet	Outlet			L1	L2	H	D	C	E	F	G			
NF□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	2.85 (72.5)	2.17 (55)	0.49 (12.5)	0.71 (18.0)	0.25 (6.4)	0.77 (19.6)			
NF□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.03 (26.2)	1.03 (26.2)									
NF□□-FL4-7	1/4" FITOK	1/4" FITOK			1.22 (30.9)	1.22 (30.9)									
NF□□-ML6-7	6 mm FITOK	6 mm FITOK			1.25 (31.75)	1.25 (31.75)									
NF□□-ML8-7	8 mm FITOK	8 mm FITOK			1.03 (26.2)	1.03 (26.2)									
NF□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.13 (28.6)	1.13 (28.6)									
NF□□-NS6-7	3/8 Male NPT	3/8 Male NPT													
NF□□-FO4-7	1/4" Male FO	1/4" Male FO													
NF□□-FR4-7	1/4" Male FR	1/4" Male FR													
NF□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.13 (28.6)	1.13 (28.6)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)			
NF□□-FNS6-8	3/8 Female NPT	3/8 Female NPT			1.42 (36.1)	1.42 (36.1)									
NF□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.44 (36.5)	1.44 (36.5)									
NF□□-FL6-8	3/8" FITOK	3/8" FITOK			1.53 (38.9)	1.53 (38.9)									
NF□□-ML10-8	10 mm FITOK	10 mm FITOK			1.56 (39.7)	1.56 (39.7)									
NF□□-ML12-8	12 mm FITOK	12 mm FITOK			1.26 (32.0)	1.26 (32.0)									
NF□□-ML14-8	14 mm FITOK	14 mm FITOK			1.50 (38.1)	1.50 (38.1)									
NF□□-FNS8-8	1/2 Female NPT	1/2 Female NPT			1.53 (38.9)	1.53 (38.9)									
NF□□-NS8-8	1/2 Male NPT	1/2 Male NPT													
NF□□-FL8-8	1/2" FITOK	1/2" FITOK													
NF□□-TS6-8-G	3/8" Tube Socket Weld	3/8" Tube Socket Weld													
NF□□-TS8-8-G	1/2" Tube Socket Weld	1/2" Tube Socket Weld													
NF□□-MTS12-8-G	12 mm Tube Socket Weld	12 mm Tube Socket Weld			1.13 (28.6)	1.13 (28.6)			0.62 (15.8)						
NF□□-MTS14-8-G	14 mm Tube Socket Weld	14 mm Tube Socket Weld													
NF□□-MTS16-8-G	16 mm Tube Socket Weld	16 mm Tube Socket Weld													
NF□□-MTB14-8-G	14x2.5 mm Tube Butt Weld	14x2.5 mm Tube Butt Weld			1.50 (38.1)	1.50 (38.1)									
NF□□-MTB16-8-G	16x2.8 mm Tube Butt Weld	16x2.8 mm Tube Butt Weld													
NF□□-UMB14-8	14x2.5 mm Rotatable Tube Butt Weld	14x2.5 mm Rotatable Tube Butt Weld			2.92 (74.1)	2.92 (74.1)									
NF□□-UMB16-8	16x2.8 mm Rotatable Tube Butt Weld	16x2.8 mm Rotatable Tube Butt Weld													
NF□□-FO8-8	1/2" Male FO	1/2" Male FO			1.13 (28.6)	1.13 (28.6)									
NF□□-FR8-8	1/2" Male FR	1/2" Male FR			1.56 (39.7)	1.56 (39.7)									
NF□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric			1.50 (38.1)	1.50 (38.1)									

Dimensions of NF Series

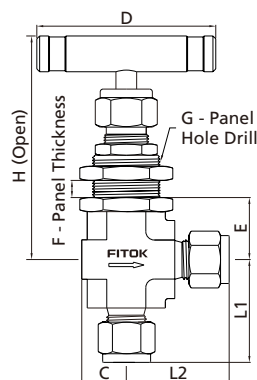
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)														
	Inlet	Outlet			L1	L2	H	D	C	E	F	G							
NF□□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric	0.25 (6.4)	0.85	1.50 (38.1)	1.50 (38.1)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (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)	0.80 (20.4)	1.10 (28.3)	0.38 (9.7)	1.08 (27.5)							
NF□□-NS12-9	3/4 Male NPT	3/4 Male NPT			1.97 (50.0)	1.97 (50.0)			0.76 (19.4)										
NF□□-FL12-9	3/4" FITOK	3/4" FITOK																	
NF□□-ML14-9	14 mm FITOK	14 mm FITOK			1.56 (39.7)	1.56 (39.7)			0.80 (20.4)										
NF□□-ML16-9	16 mm FITOK	16 mm FITOK																	
NF□□-ML18-9	18 mm FITOK	18 mm FITOK			0.76 (19.4)														
NF□□-ML20-9	20 mm FITOK	20 mm FITOK																	
NF□□-MTS14-9-G	14 mm Tube Socket Weld	14 mm Tube Socket Weld			0.35 (9.0)	1.8			2.98 (75.7)				2.98 (75.7)	5.00 (127)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)
NF□□-MTS16-9-G	16 mm Tube Socket Weld	16 mm Tube Socket Weld																	
NF□□-MTS18-9-G	18 mm Tube Socket Weld	18 mm Tube Socket Weld																	
NF□□-TS12-9-G	3/4" Tube Socket Weld	3/4" Tube Socket Weld																	
NF□□-PS8-9-G	1/2 Pipe Socket Weld	1/2 Pipe Socket Weld																	
NF□□-MTB16-9-G	16x2.25 mm Tube Butt Weld	16x2.25 mm Tube Butt Weld																	
NF□□-UMB14-9	14x2.5 mm Rotatable Tube Butt Weld	14x2.5 mm Rotatable Tube Butt Weld	0.39 (10.0)	2.18	1.56 (39.7)	1.56 (39.7)	5.00 (127)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)							
NF□□-UMB16-9	16x2.8 mm Rotatable Tube Butt Weld	16x2.8 mm Rotatable Tube Butt Weld																	
NF□□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric																	
NF□□-FNS12-6	3/4 Female NPT	3/4 Female NPT																	
NF□□-TS16-6-G	1" Tube Socket Weld	1" Tube Socket Weld																	
NF□□-MTS25-6-G	25 mm Tube Socket Weld	25 mm Tube Socket Weld																	
NF□□-MTS28-6-G	28 mm Tube Socket Weld	28 mm Tube Socket Weld	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□□-PS12-6-G	3/4 Pipe Socket Weld	3/4 Pipe Socket Weld																	
NF□□-PB12-6-G	3/4xSCH80 Pipe Butt Weld	3/4xSCH80 Pipe Butt Weld																	
NF□□-FL12-6	3/4" FITOK	3/4" FITOK																	
NF□□-ML20-6	20 mm FITOK	20 mm FITOK																	
NF□□-TS16-0-G	1" Tube Socket Weld	1" Tube Socket Weld																	
NF□□-MTS25-0-G	25 mm Tube Socket Weld	25 mm Tube Socket Weld	0.71 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	5.33 (135.4)	5.00 (127)	1.08 (27.5)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)							
NF□□-MTS28-0-G	28 mm Tube Socket Weld	28 mm Tube Socket Weld																	
NF□□-PS12-0-G	3/4 Pipe Socket Weld	3/4 Pipe Socket Weld																	
NF□□-PB16-0-G	1xSCH80 Pipe Butt Weld	1xSCH80 Pipe Butt Weld																	

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: NFH5S-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□□-FL4-7	1/4" FITOK	1/4" FITOK	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	1/8 Female NPT			1.00 (25.4)	1.00 (25.4)						
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" Tube Socket Weld	1/4" Tube Socket Weld			1.06 (26.2)	1.06 (26.2)						
NFH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	3.38 (85.8)	2.50 (63.5)	0.76 (19.4)	0.87 (22.0)	0.38 (9.7)	0.96 (24.4)
NFH□□-FNS6-8	3/8 Female NPT	3/8 Female NPT										
NFH□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.50 (38.1)	1.50 (38.1)						
NFH□□-TS8-9-G	1/2" Tube Socket Weld	1/2" Tube Socket Weld	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	16 mm Tube Socket Weld							0.80 (20.4)			
NFH□□-MTB25-9-G	25×5.5 mm Tube Butt Weld	25×5.5 mm Tube Butt Weld										
NFH□□-FNS8-9	1/2 Female NPT	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	
NF	SS	316 SS	FNS	Female NPT	2	1/8"	Same as Inlet	7	0.16" (4.0 mm)	Only NF series	Same as Body	Taper	No	Yes	Straight		No		
NFH	6L	316L SS	NS	Male NPT	4	1/4"		8	0.25" (6.4 mm)		W	Stellite							R
	S4	304 SS	FRT	Female BSPT	6	3/8" or 6 mm	9	0.39" (10 mm)	D5		Duplex 2205	B							Ball
	4L	304L SS	RT	Male BSPT	8	1/2" or 8 mm	6	0.59" (15 mm)	TI		Titanium	T							Soft Tip-PTFE
	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						
	91	F91	MS	Male Metric Thread (for RG-M)	12	3/4" or 3/4" xSCH80 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			I	Black Aluminum Bar			
	92	F92	FRP	Female BSPP (for RP)	14	14 mm or 14x2.5 mm or M14x1.5				INC	Alloy 600				GR	Red Aluminum Bar	S	NACE MR0175	
	D5	Duplex 2205	BP	Male BSPP (for RG)	16	1" or 1" xSCH80 or 16 mm or 16x2.25 mm or 16x2.8 mm				HC	Alloy C-276				J	Green Aluminum Bar	SI	Inert Silicon Coating	
	TI	Titanium	TS	Fractional Tube Socket Weld	18	18 mm									M	Blue Aluminum Bar			
	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 or 25x5.5 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															
			UPB	Rotatable Pipe Butt Weld															
			FO	Male FO Fitting															
			FR	Male FR Fitting															

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

- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm
- FO means FITOK O-ring face seal fittings.
- FR means FITOK metal gasket face seal fittings.
- Cleaning and Packaging:
FC-01: Standard cleaning and packaging for general industrial procedures.
FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
- Special Application:
Plural special application designators available in one ordering number, example: NFSS-NS4-7-SSI.
Inert Silicon coating: Wetted metal components Inert Silicon coated.

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.
 - Inert Silicon coating: Wetted metal components Inert Silicon coated.

Integral Bonnet Needle Valves

NG Series: Working pressure up to 3000 psig

NGH Series: Working pressure up to 5000 psig

Features

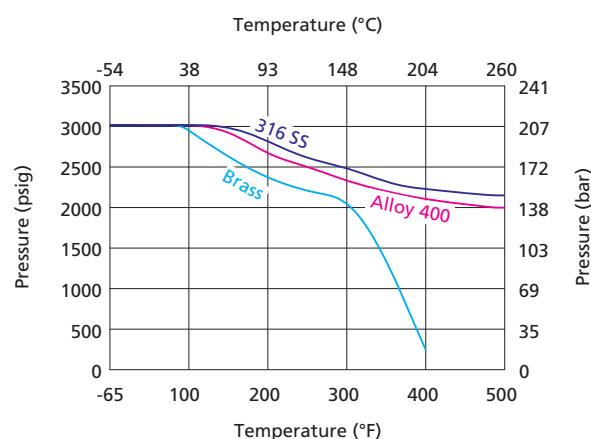
- ⊙ One-piece forged body
- ⊙ Easy external adjustments by packing nut
- ⊙ Live-loaded packing system
- ⊙ Handles of different colors available
- ⊙ Compact design
- ⊙ Panel mounting available
- ⊙ Every valve leak tested with nitrogen or compressed air at the maximum allowable working pressure
- ⊙ Working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



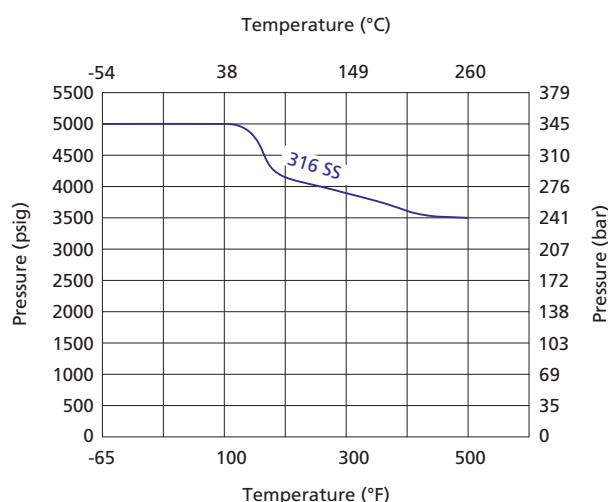
Needle Valves
Metering Valves

Pressure vs. Temperature

NG Series



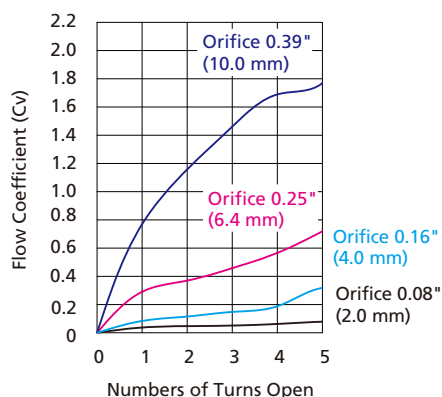
NGH Series



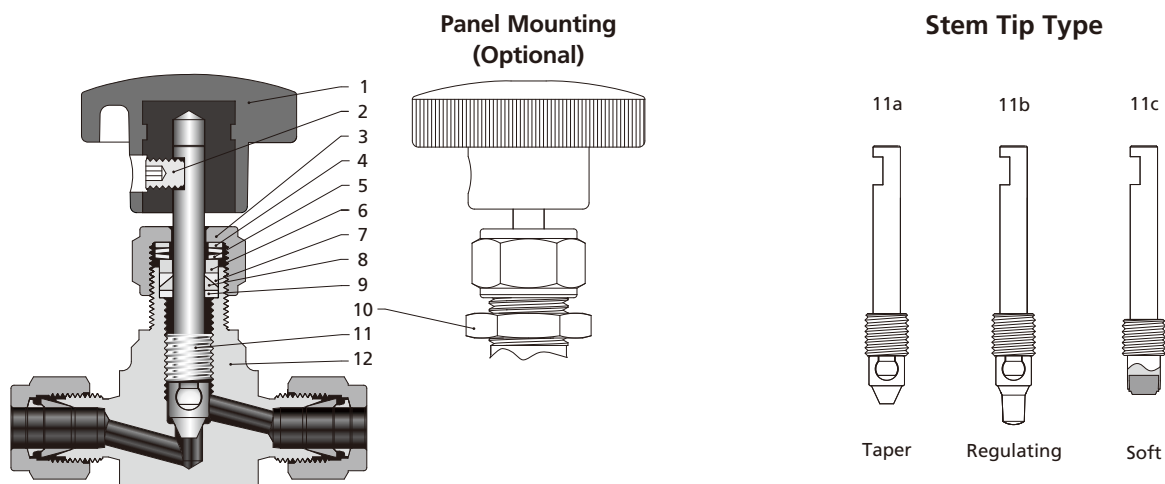
1. Graphs are based on PEEK packing.
2. Temperature rating is limited to 200°F (93°C) max with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

Regulating Stem Tip



Standard Materials of Construction



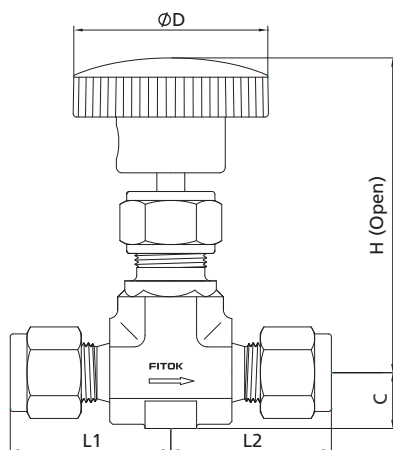
Item	Component	Valve Body Material ^a		
		316 SS	Brass	Alloy 400
		Material Grade/ASTM Specification		
1	Handle	Black knob (aluminum or nylon with copper insert), aluminum alloy or stainless steel bar handle		
2	Set Screw	Zinc-plated carbon steel		
3	Packing Bolt	304 SS/A479	Brass C36000/B16	304 SS/A479
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 ^b	Panel Nut (Optional)	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: a. Contact FITOK Group or our authorized distributors for other materials.

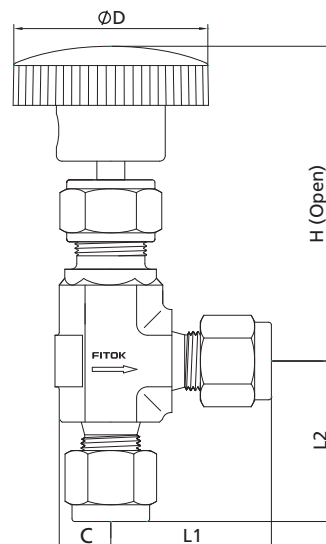
b. The panel nut is only compatible with valves configured for panel mounting. Applicable valve part numbers have the suffix "Y", for example: NGSS-FL4-7-Y.

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			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	6×1.8 mm Rotatable Tube Butt Weld	6×1.8 mm Rotatable Tube Butt Weld									
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)	1.88 (47.8)	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)	0.62 (15.8)		2.90 (73.7)
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)			
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

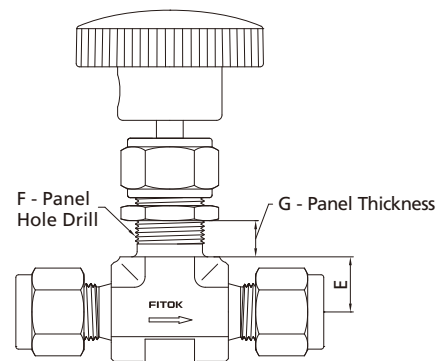
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	H		
NG□□-FNS8-9-L	1/2 Female NPT	1/2 Female NPT	0.39 (10.0)	1.80	1.50 (38.1)	1.50 (38.1)	0.76 (19.4)	3.50 (88.9)	3.37 (85.7)		
NG□□-FNS12-9-L	3/4 Female NPT	3/4 Female NPT			1.56 (39.7)	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.

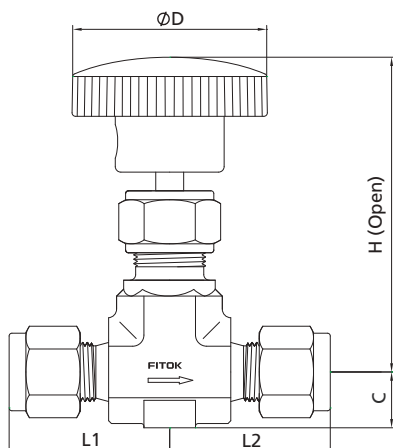
Panel Mount Dimensions of NG Series

Orifice in.(mm)	Dimensions, in.(mm)		
	E	F	G
0.08 (2.0)	0.44 (11.2)	0.47 (11.9)	0.13 (3.2)
0.16 (4.0)	0.44 (11.2)	0.53 (13.5)	0.16 (4.0)
0.25 (6.4)	0.50 (12.7)	0.78 (19.8)	0.18 (4.5)
0.39 (10.0)	0.75 (19.1)	1.03 (26.2)	0.25 (6.4)

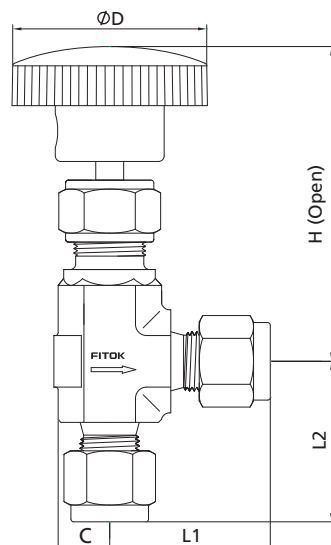
1. NG Series Needle Valves are standard without panel mounting.
2. To order needle valves with panel mounting as illustrated, add -Y to the ordering number. Example: NGSS-NS2-5-Y



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			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	6×1.8 mm Rotatable Tube Butt Weld	6×1.8 mm Rotatable Tube Butt Weld								
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)	1.88 (47.8)	2.85 (72.4)	
NGH□□-UMB14-8	14×2.5 mm Rotatable Tube Butt Weld	14×2.5 mm Rotatable Tube Butt Weld								

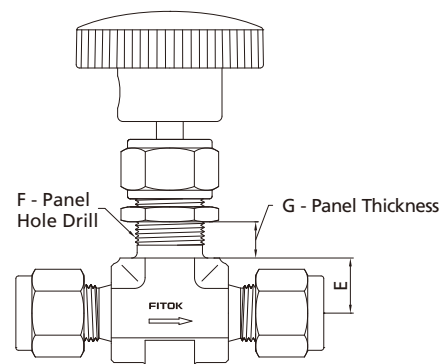
Dimensions of NGH Series

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	G
0.08 (2.0)	0.44 (11.2)	0.47 (11.9)	0.13 (3.2)
0.16 (4.0)	0.44 (11.2)	0.53 (13.5)	0.16 (4.0)
0.25 (6.4)	0.50 (12.7)	0.78 (19.8)	0.18 (4.5)
0.39 (10.0)	0.75 (19.1)	1.03 (26.2)	0.25 (6.4)



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: NGH55-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	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		A Angle	S NACE MR0175	F2 FC-02
	S4 304 SS	FRT Female BSPT	6 3/8" or 6 mm or 6x1.8 mm		8 0.25" (6.4 mm)	K Soft Tip-PCTFE				I Red Aluminum Bar			
	4L 304L SS	RT Male BSPT	8 1/2" or 8 mm		9 0.39" (10 mm)	P Soft Tip-PEEK				GR Green Aluminum Bar			
	S1 321 SS		10 10 mm or 10x2.2 mm							J Blue Aluminum Bar			
	A20 Alloy 20	FMS Female Metric Thread (for RG-M)	12 3/4" or 12 mm							L Black Aluminum Bar			
	M Alloy 400	MS Male Metric Thread (for RG-M)	14 14 mm or 14x2.5 mm or M14x1.5							M Stainless Steel Bar			
	INC Alloy 600	FRP Female BSPP (for RP)	16 1" or 16 mm										
	HC Alloy C-276	BP Male BSPP (for RG)	18 18 mm										
	B Brass	FL Fractional Tube Fitting	20 20 mm or M20 x 1.5										
	CS Carbon Steel	ML Metric Tube Fitting	22 22 mm or M22 x 1.5										
	904L 904L SS	UMB Rotatable Metric Tube Butt Weld											
		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.

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

Rising Plug Valves

NR Series

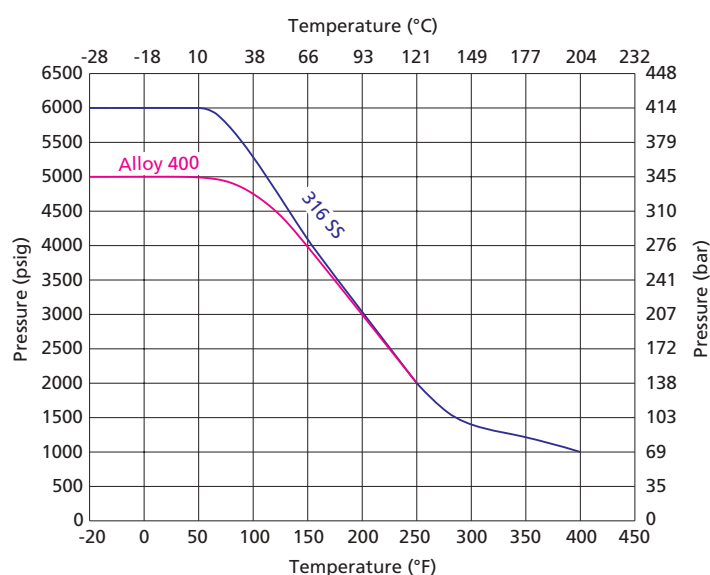
NRG (with gauge port) Series

Features

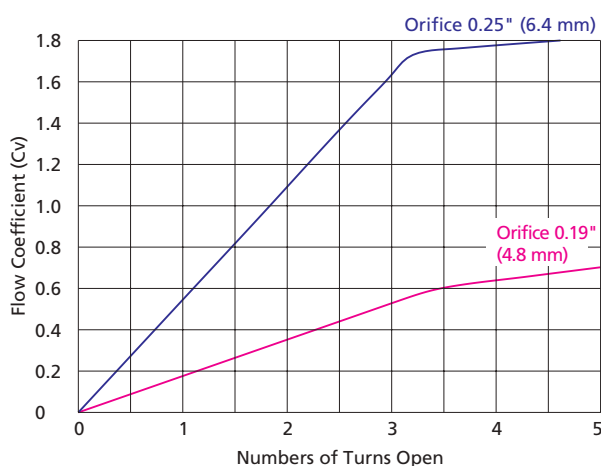
- ⦿ Cold drawn square bar as body material
- ⦿ Nonrotating stem for longer seat life
- ⦿ Roddable, straight through flow path for maximum flow with minimum pressure drop
- ⦿ Stem thread lubricant isolated from system media
- ⦿ Replaceable seat and stem tip design
- ⦿ Stem thread protected from outside contamination by PTFE ring in the gland
- ⦿ Panel mounting available
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with nitrogen or compressed air at the maximum allowable working pressure
- ⦿ Working pressure up to:
 - Stainless steel: 6000 psig (414 bar)
 - Alloy 400: 5000 psig (345 bar)
- ⦿ Working temperature with seat:
 - Acetal: -20°F to 250°F (-28°C to 121°C)
 - PEEK: -20°F to 450°F (-28°C to 232°C)
- ⦿ Working temperature with O-ring:
 - Fluorocarbon Rubber (FKM): -20°F to 400°F (-28°C to 204°C)
 - Nitrile Butadiene Rubber (NBR): -20°F to 212°F (-28°C to 100°C)
 - Ethylene Propylene Diene Rubber (EPDM): -20°F to 300°F (-28°C to 148°C)



Pressure vs. Temperature

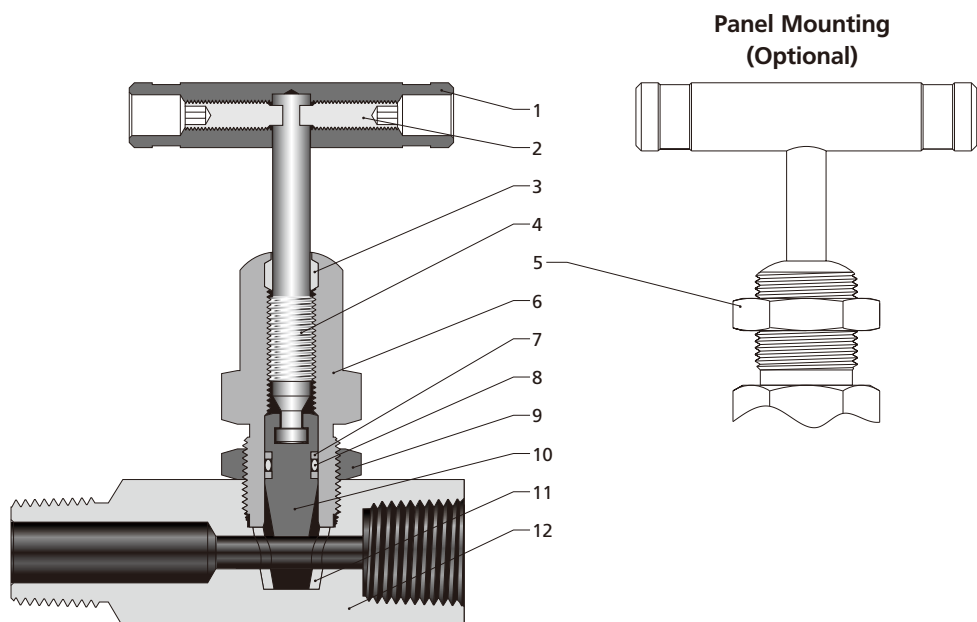


Flow Data at 100°F (38°C)



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

Standard Materials of Construction

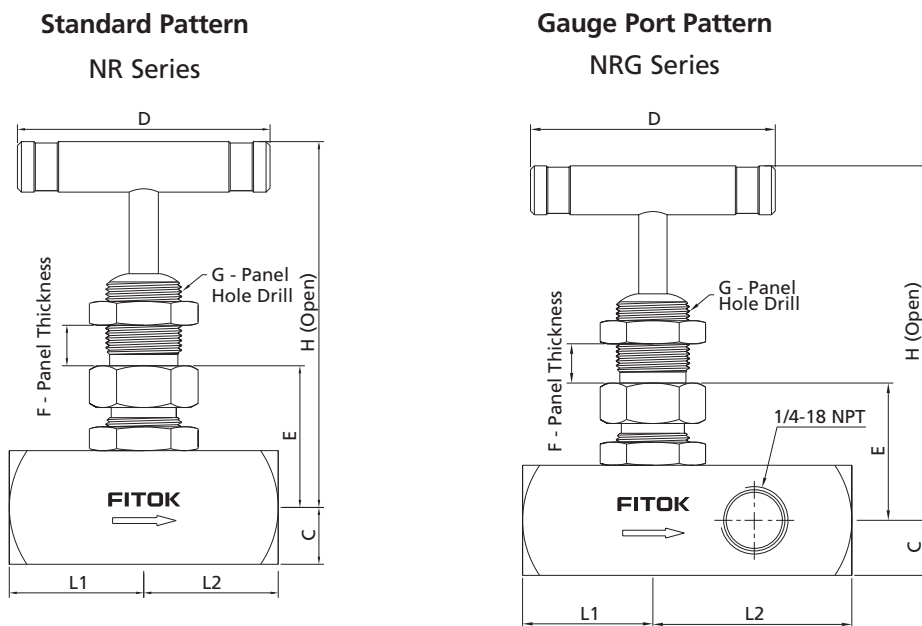


Item	Component	Valve Body Material ^a			
		316 SS	304 SS	321 SS	Alloy 400
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminum or stainless steel or black knob			
2	Set Screw	Zinc-plated carbon steel			
3	Wiper Ring	PTFE/D1710			
4	Upper Stem	316 SS/A479			Alloy 400/B164
5	Panel Nut ^b (Optional)	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: a. Contact FITOK Group or our authorized distributors for other materials.

b. The panel nut is only compatible with valves configured for panel mounting. Applicable valve part numbers have the suffix "Y", for example: NRSS-FNS4-7-Y.

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	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			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														

- Sizes and types listed are standard. Other sizes and types are available upon request.
- 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	Special Application	Cleaning and Packaging
NR	SS 316 SS	FNS Female NPT	2 1/8"	Same as Inlet	Specified in the same way as inlet type and inlet size	Acetal	7 0.19" (4.8 mm)	Fluorocarbon Rubber (FKM)	No	Black Aluminum Bar	No	FC-01
NRG	6L 316L SS	NS Male NPT	4 1/4"			P PEEK	8 0.25" (6.4 mm)	B Nitrile Butadiene Rubber (NBR)	Y Yes	I Red Aluminum Bar	S NACE MR0175	F2 FC-02
	S4 304 SS	FRT Female BSPT	6 3/8" or 6 mm					E Ethylene Propylene Diene Rubber (EPDM)		GR Green Aluminum Bar		
	4L 304L SS	RT Male BSPT	8 1/2" or 8 mm							J Blue Aluminum Bar		
	S1 321 SS	FMS Female Metric Thread (for RG-M)	10 10 mm							M Stainless Steel Bar		
	D5 Duplex 2205	MS Male Metric Thread (for RG-M)	12 3/4" or 12 mm									
	TI Titanium	FRP Female BSPP (for RP)										
	A20 Alloy 20	BP Male BSPP (for RG)										
	M Alloy 400											
	INC Alloy 600											
	HC Alloy C-276											
	B Brass											
	CS Carbon Steel											
	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.

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)

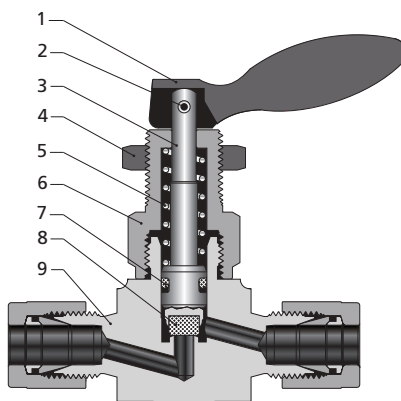


Technical Data

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

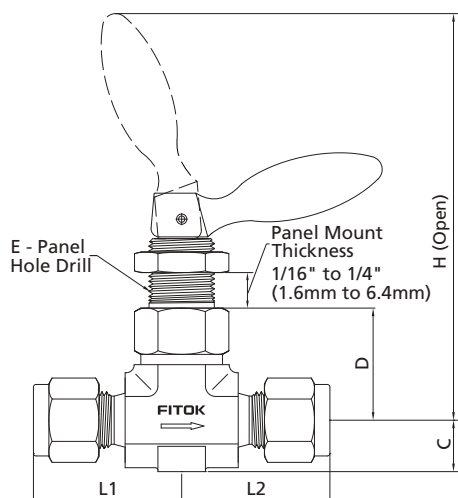


Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Brass
		Material Grade/ASTM Specification			
1	Handle	Stainless steel			
2	Pin	Stainless steel			
3	Stem	316 SS/A479	304 SS/A479		316 SS/A479
4	Panel Nut	Stainless steel			Brass C36000/B16
5	Spring	S17700/A313			
6	Bonnet	304 SS/A479			Brass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

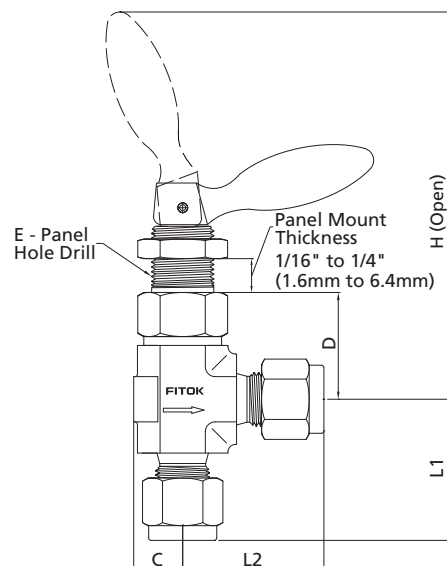
Note: Contact FITOK Group or our authorized distributors for other materials.

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								
NT□□-ML6-7	6 mm FITOK	6 mm FITOK			1.13 (28.7)					
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 or compressed air at the maximum allowable working pressure
- Opens and closes quickly and reliably
- Rotatable actuator port allows easy installation

Actuation Modes

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

Normally Closed and Double Acting

Normally Open



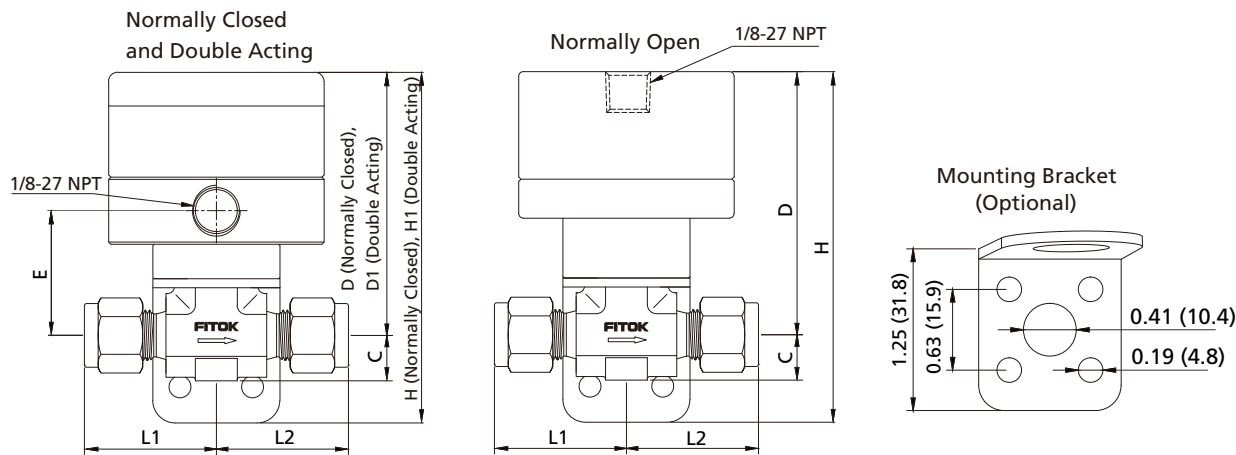
Technical Data

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

Component	Material
	Material Grade/ASTM Specification
Housing	Anodized aluminum
Spring	S17700/A313
Mounting Bracket (Optional)	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

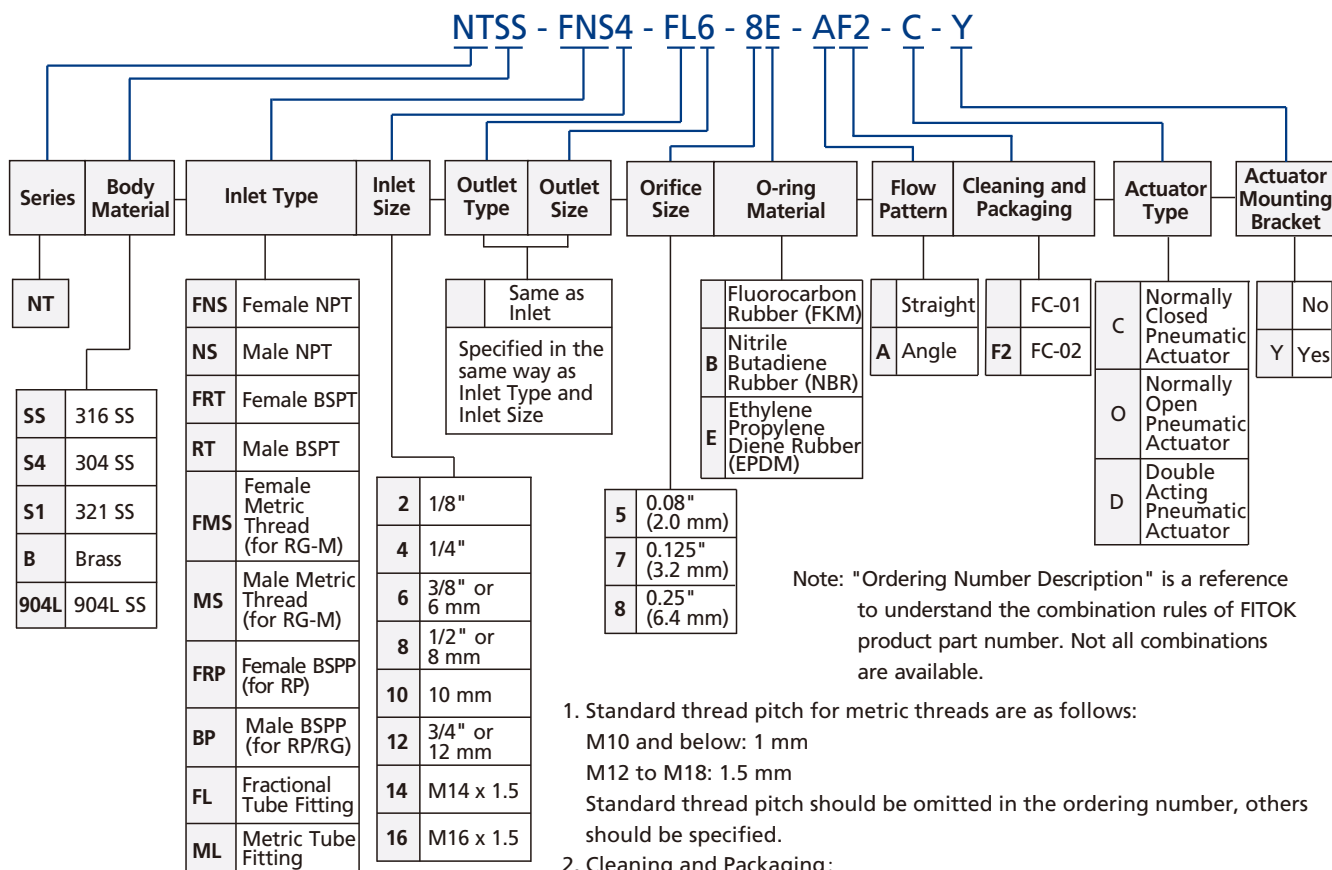


Note: The mounting bracket is only compatible with pneumatic needle valves configured with a mounting bracket. Applicable valve part numbers have the suffix "Y", for example: NTSS-FL4-7-C-Y.

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)						
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)	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-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



Union Bonnet Needle Valves

NU Series: Working pressure up to 6000 psig

NUH Series: Working pressure up to 10000 psig

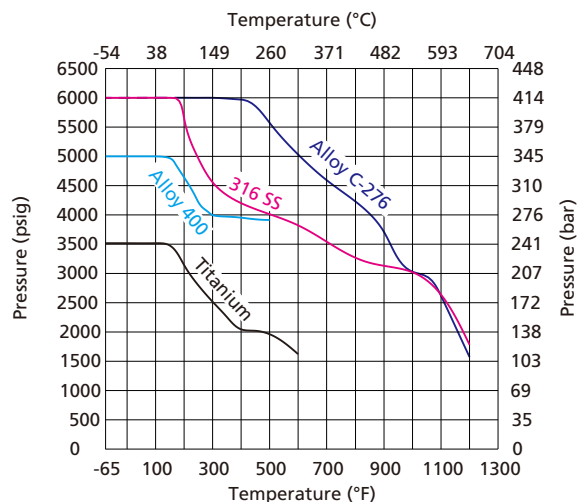
Features

- ⊙ One-piece forged body
- ⊙ Two-piece stem design: Upperstem 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 seals 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)

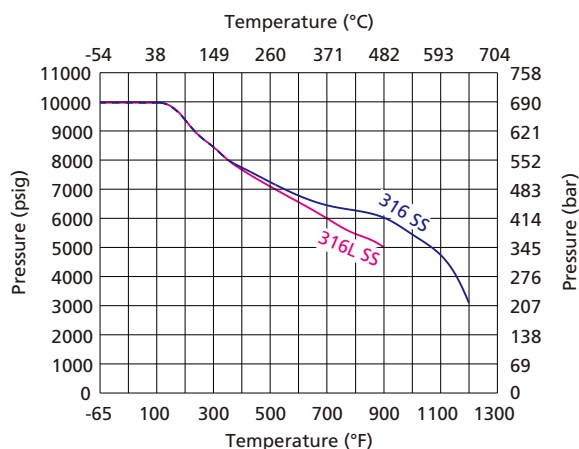


Pressure vs. Temperature

NU Series



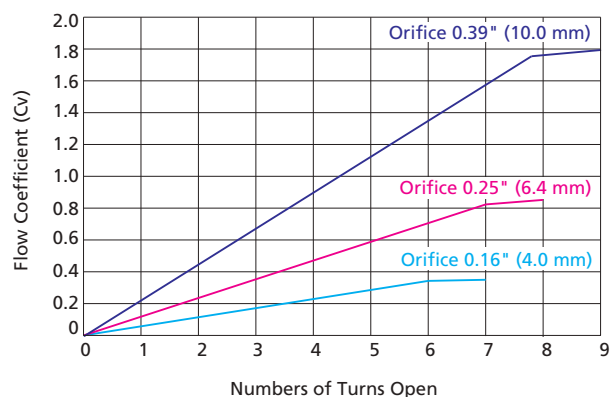
NUH Series



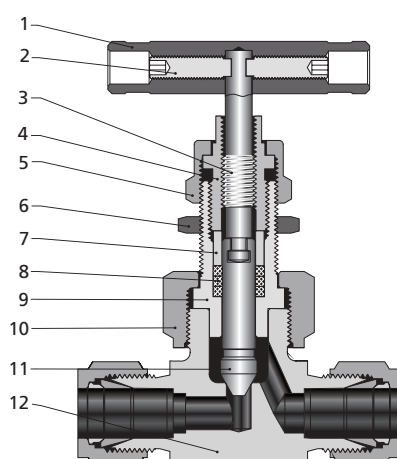
1. Graphs are based on graphite packing.
2. Soft tips are for NU Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (37°C)

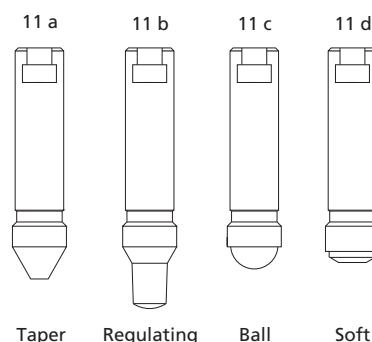
Regulating Stem



Standard Materials of Construction



Stem Type

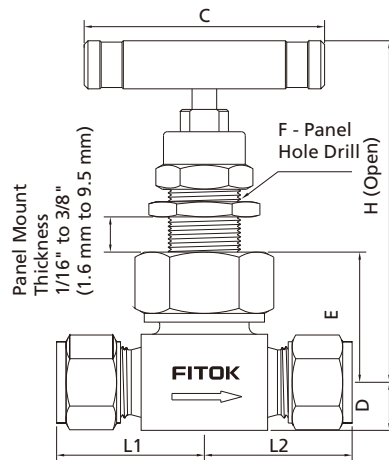


Item	Component	Valve Body Material			
		316 SS	Alloy 400	Titanium	Alloy C-276
		Material Grade/ASTM Specification			
1	Handle	Anodized aluminium or stainless steel or black knob			
2	Set Screw	Zinc-plated carbon steel			
3	Upper Stem	316 SS/A479			
4	Packing Bolt	304 SS/A479			
5	Lock Nut	316 SS/A479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

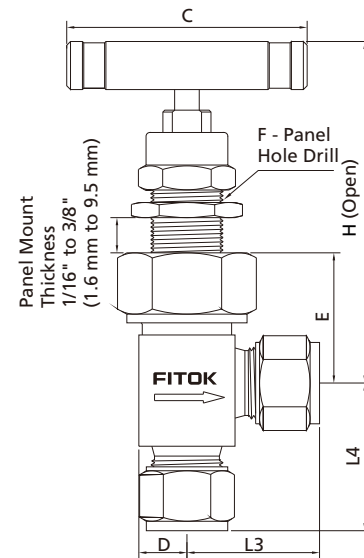
Note: Contact FITOK Group or our authorized distributors for other materials.

Dimensions

Straight Pattern



Angle Pattern



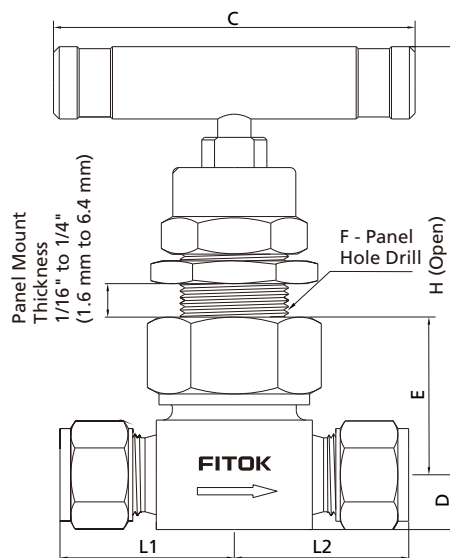
Dimensions of NU Series

Basic Ordering Number	Connection Type and Size		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 (15.0)	3.06 (77.7)							
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																		
NU□□-NS4-FL4-7	1/4 Male NPT	1/4" FITOK			1.00 (25.4)	1.22 (30.9)														
NU□□-FNS4-FL4-7	1/4 Female NPT	1/4" FITOK			1.03 (26.2)	1.22 (30.9)	1.14 (29.0)													
NU□□-FL4-7	1/4" FITOK	1/4" FITOK			1.22 (30.9)	1.22 (30.9)	1.15 (29.2)	1.22 (30.9)												
NU□□-ML6-7	6 mm FITOK	6 mm FITOK																		
NU□□-ML8-7	8 mm FITOK	8 mm FITOK			1.00 (25.4)	1.00 (25.4)	0.85 (21.6)	1.00 (25.4)												
NU□□-TS4-7-G	1/4" Tube Socket Weld	1/4" Tube Socket Weld			1.03 (26.2)	1.03 (26.2)	1.10 (28.0)	1.10 (28.0)												
NU□□-FO4-7	1/4" Male FO	1/4" Male FO																		
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)	0.86	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	3/8 Female NPT					1.06 (26.9)													
NU□□-NS6-8	3/8 Male NPT	3/8 Male NPT																		
NU□□-FL6-8	3/8" FITOK	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	1/2" 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)	3.78 (96.0)						
NU□□-ML14-8	14 mm FITOK	14 mm FITOK																	
NU□□-ML16-8	16 mm FITOK	16 mm FITOK																	
NU□□-TS6-8-G	3/8" Tube Socket Weld	3/8" Tube Socket Weld																	
NU□□-TS8-8-G	1/2" Tube Socket Weld	1/2" Tube Socket Weld																	
NU□□-PS4-8-G	1/4 Pipe Socket Weld	1/4 Pipe Socket Weld																	
NU□□-MTS12-8-G	12 mm Tube Socket Weld	12 mm Tube Socket Weld			1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)											
NU□□-MTS14-8-G	14 mm Tube Socket Weld	14 mm Tube Socket Weld																	
NU□□-MTS16-8-G	16 mm Tube Socket Weld	16 mm Tube Socket Weld																	
NU□□-MTB14-8-G	14x2.5 mm Tube Butt Weld	14x2.5 mm Tube Butt Weld																	
NU□□-MTB16-8-G	16x2.8 mm Tube Butt Weld	16x2.8 mm Tube Butt Weld																	
NU□□-UMB14-8	14x2.5 mm Rotatable Tube Butt Weld	14x2.5 mm Rotatable Tube Butt Weld																	
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)						0.50 (12.7)	1.34 (34.0)	3.78 (96.0)			
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)	—	—						0.87 (22.2)	2.07 (52.6)	5.00 (127)			
NU□□-FNS12-9	3/4 Female NPT	3/4 Female NPT																	
NU□□-NS12-9	3/4 Male NPT	3/4 Male NPT																	
NU□□-FL8-9	1/2" FITOK	1/2" FITOK																	
NU□□-FL12-9	3/4" FITOK	3/4" FITOK																	
NU□□-ML14-9	14 mm FITOK	14 mm FITOK																	
NU□□-ML16-9	16 mm FITOK	16 mm FITOK			1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (52.8)											
NU□□-ML18-9	18 mm FITOK	18 mm FITOK																	
NU□□-ML20-9	20 mm FITOK	20 mm FITOK																	
NU□□-MTS14-9-G	14 mm Tube Socket Weld	14 mm Tube Socket Weld																	
NU□□-MTS16-9-G	16 mm Tube Socket Weld	16 mm Tube Socket Weld																	
NU□□-TS8-9-G	1/2" Tube Socket Weld	1/2" Tube Socket Weld																	
NU□□-TS12-9-G	3/4" Tube Socket Weld	3/4" Tube Socket Weld			1.56 (39.7)	1.56 (39.7)	1.31 (33.3)	1.69 (42.9)											
NU□□-MTB16-9-G	16x2.25 mm Tube Butt Weld	16x2.25 mm Tube Butt Weld																	
NU□□-UMB14-9	14x2.5 mm Rotatable Tube Butt Weld	14x2.5 mm Rotatable Tube Butt Weld																	
NU□□-FR8-9	1/2" Male FR	1/2" Male FR	2.98 (75.7)	2.98 (75.7)	—	—													
NU□□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric	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 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		Orifice in.(mm)	Cv	Dimensions, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
NUH□□-FL4-7	1/4" FITOK	1/4" FITOK	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	1/8 Female NPT			1.13 (28.6)	1.13 (28.6)					
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" Tube Socket Weld	1/4" Tube Socket Weld	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□□-FNS4-8	1/4 Female NPT	1/4 Female NPT									
NUH□□-NS8-8	1/2 Male NPT	1/2 Male NPT									
NUH□□-TS8-8-G	1/2" Tube Socket Weld	1/2" Tube Socket Weld									
NUH□□-MTS12-8-G	12 mm Tube Socket Weld	12 mm Tube Socket Weld									
NUH□□-MTS16-9-G	16 mm Tube Socket Weld	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	22×5 mm Tube Butt Weld									
NUH□□-FNS8-9	1/2 Female NPT	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	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Stem Tip Material	Stem Tip Type	Packing Material	Handle	Flow Pattern	Special Application	Cleaning and Packaging
NU	SS 316 SS	FNS Female NPT	2 1/8"	Same as Inlet	7 0.16" (4.0 mm)	Same as Body	Taper	PTFE		Straight			FC-01
NUH	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		A Angle			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					
	4L 304L SS	RT Male BSPT	8 1/2" or 8 mm			TI Titanium	T Soft Tip-PTFE (only for NU Series Needle Valves)					No	
	S1 321 SS	FMS Female Metric Thread (for RG-M)	10 10 mm			A20 Alloy 20	K Soft Tip-PCTFE (only for NU Series Needle Valves)					S NACE MR0175	
	91 F91	MS Male Metric Thread (for RG-M)	12 3/4" or 12 mm			M Alloy 400	P Soft Tip-PEEK (only for NU Series Needle Valves)					SI Inert Silicon Coating	
	92 F92	FRP Female BSPP (for RP)	14 14 mm or 14x2.5 mm or M14x1.5			INC Alloy 600							
	D5 Duplex 2205	BP Male BSPP (for RP and RG)	16 1" or 16 mm or 16x2.25 mm or 16x2.8 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 22x5 mm or M22x1.5										
	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											
	904L 904L SS	ML Metric Tube Fitting											
		UFB Rotatable Fractional Tube Butt Weld											
		UMB Rotatable Metric Tube Butt Weld											
		FO Male FO Fitting											
		FR Male FR Fitting											

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

- Standard thread pitch for metric threads are as follows:
M10 and below: 1 mm
M12 to M24: 1.5 mm
M27 and above: 2 mm
Standard thread pitch should be omitted in the ordering number, others should be specified.
- FO means FITOK O-ring face seal fittings.
- FR means FITOK metal gasket face seal fittings.
- Cleaning and Packaging:
FC-01: Standard cleaning and packaging for general industrial procedures.
FC-02: Special cleaning and packaging for wetted system components to ensure compliance with product cleanliness requirement of ASTM G93 Level C.
- Special Application:
Plural special application designators available in one ordering number, example: NUSS-NS4-7-SSI.
Inert Silicon coating: Wetted metal components Inert Silicon coated.

