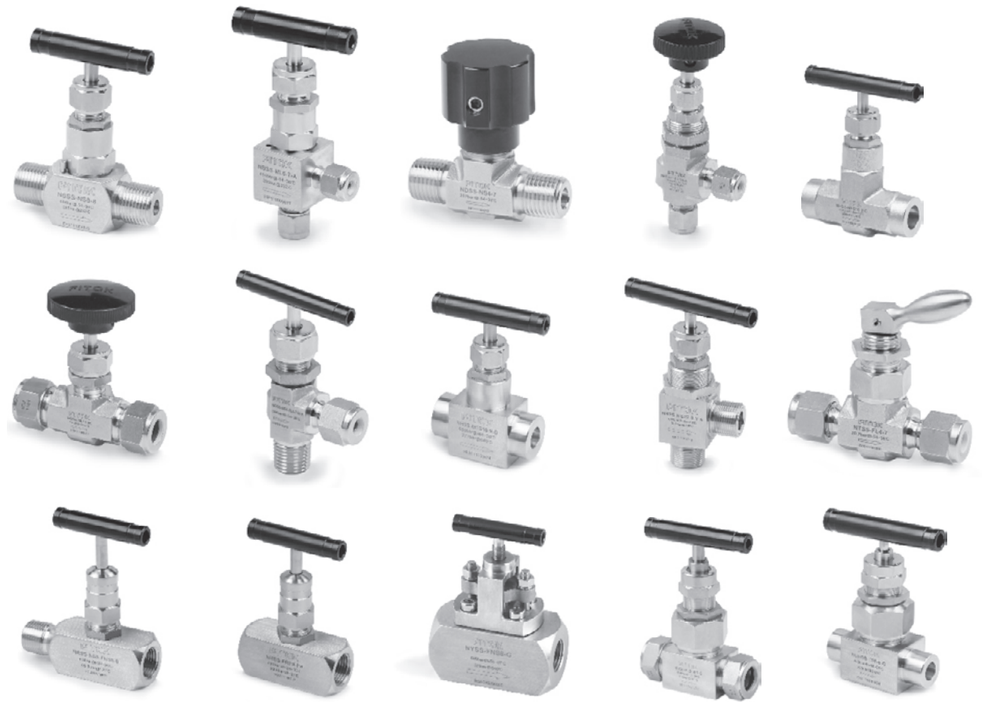
Needle Valves

NB, ND, NF, NG, NH, NR, NT, NU and NY Series



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FI08040813

FITOK
Valves and Fittings

Contents

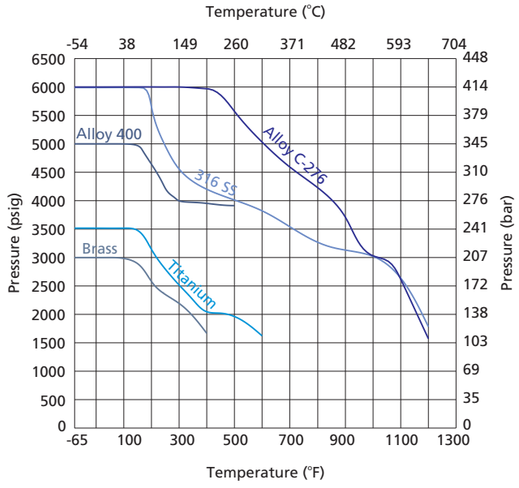
Bar Stock Needle Valves

NB Series

Features

- ◎ Maximum working pressure:
  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)
- ◎ Two-stem design: thread hardened upper stem and smooth surface hardened lower stem
- ◎ Upper stem thread lubricant isolated from system media
- ◎ Linearly instead of helical movement of the nonrotating lower stem, avoiding galling damage to the seat and tip, as well as reducing the total friction area between the packing and thelower stem
- ◎ Safety back seating seal in fully open position
- ◎ Panel mounting available
- ◎ Steady and durable fastening of the handle by double lock-pins
- ◎ Handle of different colors available for option
- ◎ Leak-tight performance testing for every valve with nitrogen at the maximum working pressure

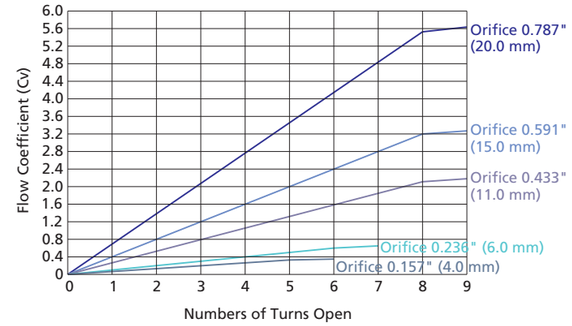
Pressure vs. Temperature



1. Graphs are based on graphite stem packing.
2. 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact the authorized representative or FITOK Group for curve graph of other materials.

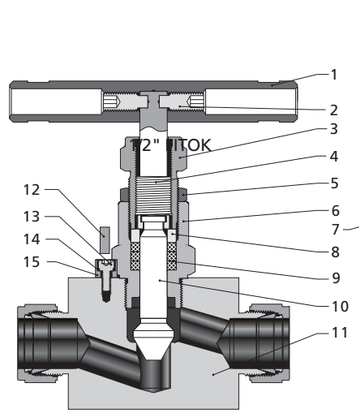
Flow Data at 100°F (38°C)

Regulating Stem

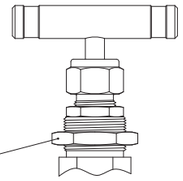


FITOK
Valves and Fittings

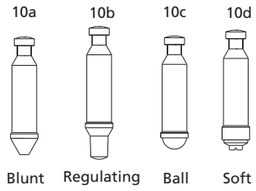
Standard Materials of Construction



Panel Mounting



Stem Type



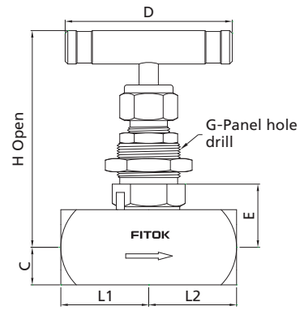
Item	Component	Valve Body Material				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
1	Handle	Anodized aluminum or stainless steel or black knob				
2	Set Screw	Nickel cadmium-plated steel				
3	Packing Bolt	321 SS/A276				Brass 360/B16
4	Upper Stem	316 SS/A276				
5	Lock Nut	316 SS/B783				Brass 360/B16
6	Bonnet	316 SS/A479	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574	Brass 360/B16
7	Panel Nut	316 SS/B783				Brass 360/B16
8	Gland	316 SS/A276				
9	Packing	PTFE or PEEK or graphite				
10a 10b 10c 10d	Lower Stem	Chrome-plated 316 SS/A276	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574	Chrome-plated 316 SS/A276
		Optional				
11	Body	316 SS/A479 316 SS/A182	Alloy 400/B164, B127,B564	Titanium Gr 4/B348 or titanium Gr 4/B381	Alloy C-276/B564	Brass 360/B16
	Seat	Weld stellite optional				
12	Lock Pin	304 SS/A276				
13	Screw	304 SS/A276				
14	Spring Washer	304 SS/A276				
15	Bush	304 SS/A276				
Lubricant		Molybdenum disulfide-based				

1. Item 12 is applied in valves with orifice size 4.0 & 6.0. For valves with orifice size 11.0, 15.0 & 20.0, item 13, 14 & 15 are used instead of item 12.

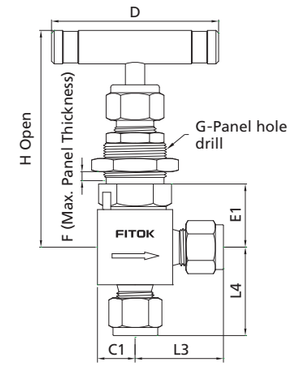
2. Contact the authorized representative or FITOK Group for valves of other materials.

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, 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	0.157 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	1.00 (25.4)	0.563 (14.3)	0.5 (12.7)	0.5 (12.7)	2.17 (55)	0.84 (21.4)	0.9 (23.0)	0.25 (6.4)	0.77 (19.6)	2.85 (72.4)	2.91 (74.0)
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)					0.84 (21.4)				2.85 (72.4)
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															
NB□□-FO4-7	1/4" Male FO	1/4" Male FO			1.03 (26.2)	1.03 (26.2)	——	——									
NB□□-FR4-7	1/4" Male FR	1/4" Male FR															
NB□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.236 (6.0)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)	0.563 (14.3)	0.563 (14.3)	2.5 (63.5)	1.0 (25.4)	1.06 (27.0)	0.38 (9.7)	0.96 (24.4)	3.5 (88.9)	3.56 (90.5)
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)					1.0 (25.4)				3.5 (88.9)
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)									
NB□□-ML10-8	10 mm FITOK	10 mm FITOK			1.42 (36.1)	1.42 (36.1)	1.33 (33.8)	1.33 (33.8)									
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	3/8" TS	3/8" TS			1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	1.13 (28.6)									
NB□□-TS8-8	1/2" TS	1/2" TS															
NB□□-MTS12-8	12 mm MTS	12 mm MTS															
NB□□-MTS14-8	14 mm MTS	14 mm MTS															
NB□□-MTS16-8	16 mm MTS	16 mm MTS															
NB□□-MTB14-8	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	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□□-FO8-8	1/2" Male FO	1/2" Male FO			1.13 (28.6)	1.13 (28.6)											
NB□□-FR8-8	1/2" Male FR	1/2" Male FR			1.56 (39.7)	1.56 (39.7)											
NB□□-MS20-8	M20 x 1.5 Male ISO	M20 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)											
NB□□-MS22-8	M22 x 1.5 Male ISO	M22 x 1.5 Male ISO															

Basic Ordering Number	Connection Type and Size – Inlet	Connection Type and Size – Outlet	Orifice in.(mm)	Cv	L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
NB□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.433 (11.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.63 (41.3)	1.50 (38.1)	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-FNS12-9	3/4 Female NPT	3/4 Female NPT	0.433 (11.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.63 (41.3)	1.50 (38.1)	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-NS12-9	3/4 Male NPT	3/4 Male NPT	0.433 (11.0)	2.18	1.75 (44.5)	1.75 (44.5)	1.50 (38.1)	1.50 (38.1)	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-FL12-9	3/4" FITOK	3/4" FITOK	0.433 (11.0)	2.18	1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-ML14-9	14 mm FITOK	14 mm FITOK	0.433 (11.0)	2.18	1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-ML16-9	16 mm FITOK	16 mm FITOK	0.433 (11.0)	2.18	1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-ML18-9	18 mm FITOK	18 mm FITOK	0.433 (11.0)	2.18	1.97 (50.0)	1.97 (50.0)	1.61 (41.0)	1.61 (41.0)	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-MTS14-9	14 mm MTS	14 mm MTS	0.433 (11.0)	2.18	1.75 (44.5)	1.75 (44.5)	—	—	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-MTS16-9	16 mm MTS	16 mm MTS	0.433 (11.0)	2.18	1.75 (44.5)	1.75 (44.5)	—	—	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-TS12-9	3/4" TS	3/4" TS	0.433 (11.0)	2.18	1.75 (44.5)	1.75 (44.5)	—	—	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-MTB14-9	14 mm MTB	14 mm MTB	0.433 (11.0)	2.18	1.75 (44.5)	1.75 (44.5)	—	—	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-MTB16-9	16 mm MTB	16 mm MTB	0.433 (11.0)	2.18	1.75 (44.5)	1.75 (44.5)	—	—	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-UMB14-9	14 mm UMB	14 mm UMB	0.433 (11.0)	2.18	2.98 (75.7)	2.98 (75.7)	—	—	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-FO12-9	3/4" Male FO	3/4" Male FO	0.433 (11.0)	2.18	1.56 (39.7)	1.56 (39.7)	—	—	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-FR8-9	1/2" Male FR	1/2" Male FR	0.433 (11.0)	2.18	1.56 (39.7)	1.56 (39.7)	—	—	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-MS27-9	M27 x 2 Male ISO	M27 x 2 Male ISO	0.433 (11.0)	2.18	1.56 (39.7)	1.56 (39.7)	—	—	0.875 (22.2)	0.75 (19.05)	3.5 (88.9)	1.38 (34.9)	1.25 (31.75)	0.38 (9.7)	1.08 (27.5)	4.12 (104.8)	4.0 (101.6)
NB□□-FNS12-6	3/4 Female NPT	3/4 Female NPT	0.591 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	1.14 (29.0)	0.875 (22.2)	5.0 (127)	1.7 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.0 (127)	4.72 (120)
NB□□-TS16-6	1" TS	1" TS	0.591 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	0.875 (22.2)	5.0 (127)	1.7 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.0 (127)	4.72 (120)
NB□□-MTS25-6	25 mm MTS	25 mm MTS	0.591 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	0.875 (22.2)	5.0 (127)	1.7 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.0 (127)	4.72 (120)
NB□□-MTS28-6	28 mm MTS	28 mm MTS	0.591 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	0.875 (22.2)	5.0 (127)	1.7 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.0 (127)	4.72 (120)
NB□□-PS12-6	3/4 PS	3/4 PS	0.591 (15.0)	3.27	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	0.875 (22.2)	5.0 (127)	1.7 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.0 (127)	4.72 (120)
NB□□-ML20-6	20 mm FITOK	20 mm FITOK	0.591 (15.0)	3.27	2.35 (59.7)	2.35 (59.7)	2.35 (59.7)	2.0 (51.0)	1.14 (29.0)	0.875 (22.2)	5.0 (127)	1.7 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.0 (127)	4.72 (120)
NB□□-ML22-6	22 mm FITOK	22 mm FITOK	0.591 (15.0)	3.27	2.35 (59.7)	2.35 (59.7)	2.35 (59.7)	2.0 (51.0)	1.14 (29.0)	0.875 (22.2)	5.0 (127)	1.7 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)	5.0 (127)	4.72 (120)
NB□□-FNS16-0	1 Female NPT	1 Female NPT	0.708 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	—	—	1.25 (31.75)	—	5.5 (140)	—	—	—	—	5.2 (132)	—
NB□□-MTS25-0	25 mm MTS	25 mm MTS	0.708 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	—	—	1.25 (31.75)	—	5.5 (140)	—	—	—	—	5.2 (132)	—
NB□□-TS16-0	1" TS	1" TS	0.708 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	—	—	1.25 (31.75)	—	5.5 (140)	—	—	—	—	5.2 (132)	—
NB□□-MTS28-0	28 mm MTS	28 mm MTS	0.708 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	—	—	1.25 (31.75)	—	5.5 (140)	—	—	—	—	5.2 (132)	—
NB□□-PS12-0	3/4 PS	3/4 PS	0.708 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	—	—	1.25 (31.75)	—	5.5 (140)	—	—	—	—	5.2 (132)	—
NB□□-PS16-0	1 PS	1 PS	0.708 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)	—	—	1.25 (31.75)	—	5.5 (140)	—	—	—	—	5.2 (132)	—

1. FITOK means FITOK double ferrule tube fittings, FO means O-ring seal fittings, FR means metal gasket seal fittings, TS means fractional tube socket weld, MTS means metric tube socket weld, MTB means metric tube butt weld, UMB means nut + gasket + metric bulge nipple, ISO means metric thread, *PS means pipe socket weld.*
2. For Butt or Socket end connections, please prior to choose graphite as packing material, avoiding damage non graphite packing material due to the high temperature when welding.
3. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
4. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

Ordering Information

NBSS — FL8 — ML12 — 18WB — GYM — ASF2

Series

Code	
NB	

Body Material

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

Inlet Type

Code	Type
FNS	Female NPT
NS	Male NPT
FRT	Female BSPT
RT	Male BSPT
FMS	Female Metric Thread (for RP)
MS	Male Metric Thread (for RG)
FRP	Female BSPP (for RP)
BP	Male BSPP (for RG)
TS	Fractional Tube Socket Weld
MTS	Metric Tube Socket Weld
TB	Fractional Tube Butt Weld
MTB	Metric Tube Butt Weld
PS	Pipe Socket Weld
PB	Pipe Butt Weld
FL	Fractional Tube Fitting
ML	Metric Tube Fitting
UFB	Nut + Gasket +Fractional Bulge Nipple
UMB	Nut + Gasket + Metric Bulge Nipple
FO	FO Fitting
FR	FR Fitting

Inlet Size

Code	Size
2	1/8"
4	1/4"
6	3/8" or 6 mm
8	1/2" or 8 mm
10	10 mm
12	3/4" or 12 mm
14	14 mm or M14 x 1.5
16	1" or 16 mm
18	18 mm
20	1 1/4" or 20 mm or M20 x 1.5
22	22 mm or M22 x 1.5
24	M24 x 1.5
25	25 mm
27	M27 x 2
28	28 mm

Outlet Type / Outlet Size

Code	
	Same as Inlet
Specify in the same way as inlet Type and inlet Size	

Seat Material

Code	Material
	Same as Body
1	Stellite
X	Customer Specified

Orifice Size

Code	Size
7	0.157" (4.0 mm)
8	0.236" (6.0 mm)
9	0.433" (11 mm)
6	0.591" (15 mm)
0	0.708" (18 mm)

Tip Material

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

Stem Type

Code	Type
	Blunt
R	Regulating
B	Ball
T	Soft Tip-PTFE
K	Soft Tip-PCTFE

Packing Material

Code	Material
	PTFE
P	PEEK
G	Graphite

Panel Mounting

Code	
	No
Y	Yes

Handle

Code	Handle
	Black Aluminum Bar
C	Red Aluminum Bar
F	Green Aluminum Bar
J	Blue Aluminum Bar
M	321 Stainless Steel Bar
O	Black Knob

Flow Pattern

Code	Pattern
	Straight
A	Angle

Special Application

Code	Application
	NO
S	NACE MR0175
	Classification for Nuclear Facility Application
N2	Class 2
N3	Class 3

Cleaning and Packaging

Code	
	FC-01
F2	FC-02

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 ignored in the ordering number, others should be specified.
2. FO means FITOK O-seal fittings.
3. FR means FITOK metal ring 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 as stated in ASTM G93 Level C.

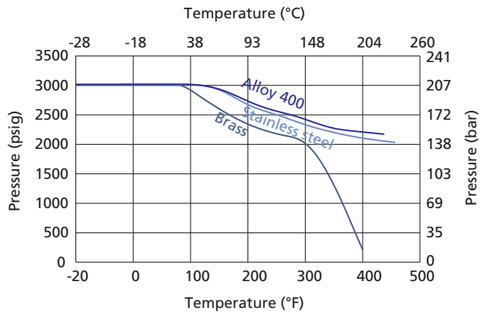
Nonrotating-stem Needle Valves

ND Series

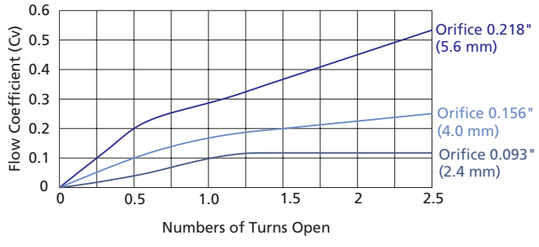
Features

- Maximum working pressure: 3000 psig (207 bar)
- Working temperature:
  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)
- Straight and angle pattern
- Compact design
- Nonrotating stem
- Special designed handle to stop contamination entering into the valve
- Leak-tight performance testing for every valve with nitrogen at the maximum working pressure

Pressure vs. Temperature

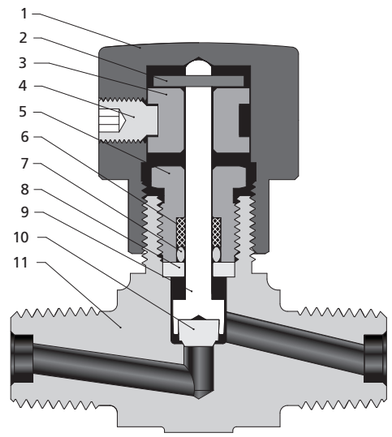


Flow Data at 100°F (38°C)



1. Temperature and pressure shown in the graphs are based on PEEK stem tip
2. Contact the authorized representative or FITOK Group for curve graph of other materials.

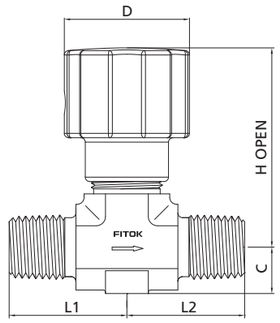
Standard Materials of Construction



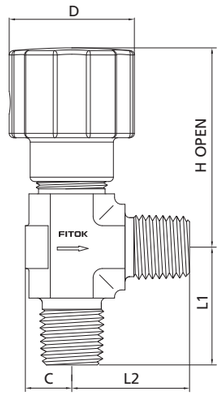
Item	Component	Valve Body Material				
		316 SS	304 SS	321 SS	Brass	Alloy 400
1	Handle	Anodized aluminum				
2	Stop Pin	Stainless steel				
3	Spool	Aluminum				
4	Set Screw	Nickel cadmium-plated steel				
5	Packing Bolt	316 SS/A276	304 SS/A276	321 SS/A276	Brass 360/B16	Alloy R-405/B164
6	Backup Ring	PTFE/D1710				
7	O-ring	Fluorocarbon FKM				
8	Washer	316 SS/A276				Alloy R-405/B164
9	Stem	316 SS/A276				Alloy R-405/B164
10	Stem Tip	PCTFE or PEEK				
11	Body	316 SS/A182	316 SS/A182	316 SS/A182	Brass 377/B283	Alloy 400/B564
Lubricant		Molybdenum disulfide-based				

Dimensions

Straight Pattern



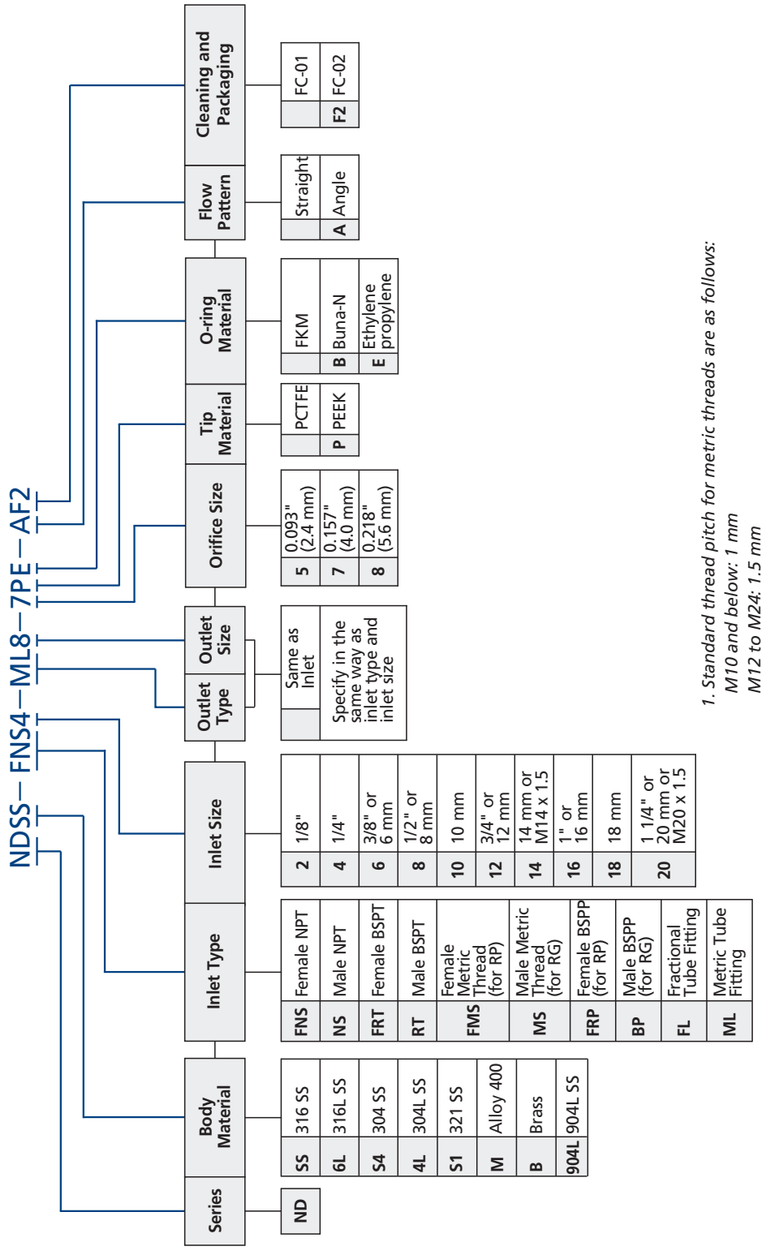
Angle Pattern



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)				
	Inlet	Outlet			L1	L2	C	D	H
ND□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.093 (2.4)	0.12	0.75 (19.0)	0.75 (19.0)	0.31 (7.9)	1.06 (26.9)	1.86 (47.2)
ND□□-NS2-FL2-5	1/8" Male NPT	1/8" FITOK			0.75 (19.0)	1.1 (27.9)			
ND□□-FL2-5	1/8" FITOK	1/8" FITOK			1.1 (27.9)	1.1 (27.9)			
ND□□-ML3-5	3 mm FITOK	3 mm FITOK							
ND□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.27	0.81 (20.6)	0.81 (20.6)	0.39 (9.9)	1.06 (26.9)	1.86 (47.2)
ND□□-NS2-7	1/8 Male NPT	1/8 Male NPT			0.86 (21.8)	0.86 (21.8)			
ND□□-NS4-7	1/4 Male NPT	1/4 Male NPT			25.0 (0.98)	25.0 (0.98)			
ND□□-NS4-FL4-7	1/4" Male NPT	1/4" FITOK			25.0 (0.98)				
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							
ND□□-ML8-7	8 mm FITOK	8 mm FITOK							
ND□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.218 (5.6)	0.53	1.06 (26.9)	1.06 (26.9)	0.5 (12.7)	1.12 (28.4)	2.02 (51.3)
ND□□-FNS6-8	3/8 Female NPT	3/8 Female NPT							
ND□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.12 (28.6)	1.12 (28.6)			
ND□□-FL6-8	3/8" FITOK	3/8" FITOK			1.29 (32.8)	1.29 (32.8)			
ND□□-FL8-8	1/2" FITOK	1/2" FITOK			1.4 (35.6)	1.4 (35.6)			
ND□□-ML10-8	10 mm FITOK	10 mm FITOK			1.3 (33.0)	1.3 (33.0)			
ND□□-ML12-8	12 mm FITOK	12 mm FITOK			1.4 (35.6)	1.4 (35.6)			
ND□□-MS20-8	M20 x 1.5 Male ISO	M20 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)			
ND□□-MS22-8	M22 x 1.5 Male ISO	M22 x 1.5 Male ISO							

1. FITOK means FITOK double ferrule tube fittings, ISO means metric thread.
2. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
3. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

Ordering Information



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 ignored 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 as stated in ASTM G93 Level C.

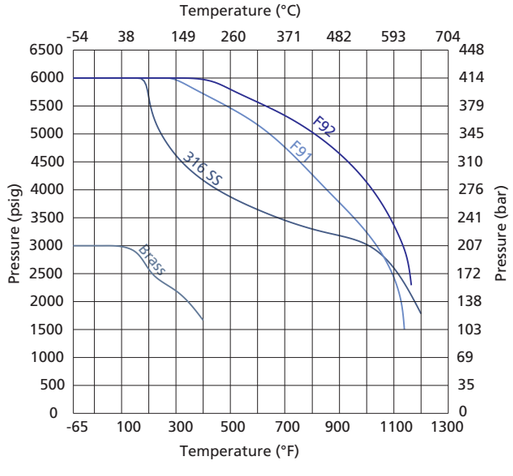
Forged Needle Valves

NF Series

Features

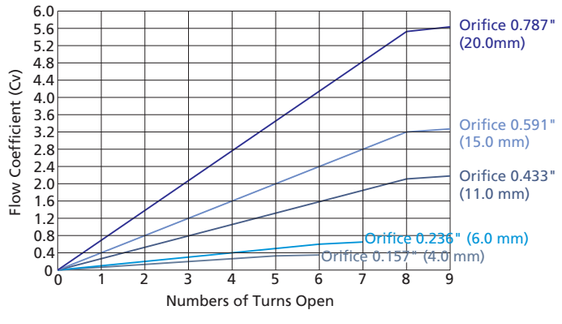
- Maximum working pressure:
  Stainless steel: 6000 psig (414 bar)
  F91: 6000 psig (414 bar)
  F92: 6000 psig (414 bar)
  Brass: 3000 psig (207 bar)
- Working temperature:
  PTFE: -65°F to 450°F (-54°C to 232°C)
  PEEK: -65°F to 500°F (-54°C to 260°C)
  Graphite: -65°F to 1200°F (-54°C to 649°C)
- One-piece body construction
- Two-stem design: thread hardened upper stem and smooth surface hardened lower stem
- Upper stem thread lubricant isolated from system media
- Linearly instead of helical movement of the nonrotating lower stem, avoiding galling damage to the seat and tip, as well as reducing the total friction area between the packing and the lower stem
- Panel mounting available as an option
- Steady and durable fastening of the handle by double lock-pins
- Handle of different colors are available for option
- Leak-tight performance testing for every valve with nitrogen at the maximum working pressure

Pressure vs. Temperature



Flow Data at 100°F (38°C)

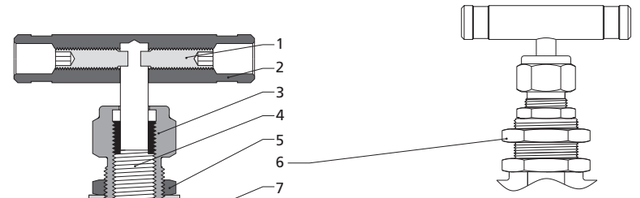
Regulating Stem



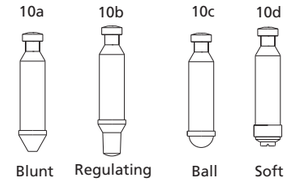
1. Graphs are based on graphite stem packing.
2. 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact the authorized representative or FITOK Group for curve graph of other materials.

Standard Materials of Construction

Panel Mounting



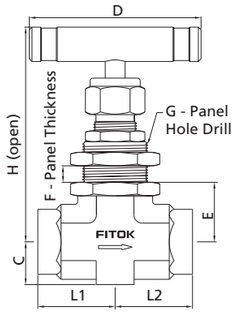
Stem Type



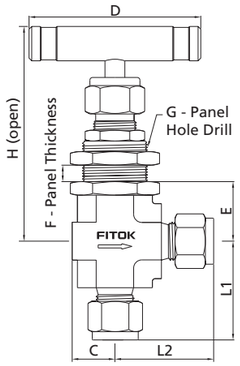
Item	Component	Valve Body Material			
		316 SS	F91	F92	Brass
1	Handle	Anodized aluminum or stainless steel or black knob			
2	Set Screw	Nickel cadmium-plated steel			
3	Packing Bolt	321 SS/A276			
4	Upper Stem	316 SS/A276	F91/A182	F92/A182	Brass 360/B16
5	Lock Nut	316 SS/B783			
6	Panel Nut	316 SS/B783			
7	Gland	316 SS/A276	F91/A182	F92/A182	Brass 360/B16
8	Packing	PTFE or PEEK or graphite			
9	Packing Washer	316 SS/A276	F91/A182	F92/A182	Brass 360/B16
10a 10b 10c 10d	Lower Stem	Chrome-plated 316 SS/A276	Chrome-plated F91/A182	Chrome-plated F92/A182	Chrome-plated 316 SS/A276
		Optional			
11	Body	316 SS/A182	F91/A182	F92/A182	Brass 377/B283
	Seat	Weld stellite seat optional			
Lubricant		Molybdenum disulfide-based			

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
NF□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.157 (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										
NF□□-ML8-7	8 mm FITOK	8 mm FITOK			1.25 (31.75)	1.25 (31.75)						
NF□□-NS6-7	3/8 Male NPT	3/8 Male NPT			1.19 (30.2)	1.19 (30.2)						
NF□□-FO4-7	1/4" Male FO	1/4" Male FO			1.03 (26.2)	1.03 (26.2)						
NF□□-FR4-7	1/4" Male FR	1/4" Male FR										
NF□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.236 (6.0)	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										
NF□□-NS6-8	3/8 Male NPT	3/8 Male NPT										
NF□□-FL6-8	3/8" FITOK	3/8" FITOK			1.44 (36.5)	1.44 (36.5)						
NF□□-ML10-8	10 mm FITOK	10 mm FITOK										
NF□□-ML12-8	12 mm FITOK	12 mm FITOK			1.53 (38.9)	1.53 (38.9)						
NF□□-ML14-8	14 mm FITOK	14 mm FITOK			1.56 (39.7)	1.56 (39.7)						
NF□□-FNS8-8	1/2 Female NPT	1/2 Female NPT			1.26 (32.0)	1.26 (32.0)						
NF□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)						
NF□□-FL8-8	1/2" FITOK	1/2" FITOK			1.53 (38.9)	1.53 (38.9)						
NF□□-TS6-8	3/8" TS	3/8" TS			1.13 (28.6)	1.13 (28.6)						
NF□□-TS8-8	1/2" TS	1/2" TS										
NF□□-MTS12-8	12 mm MTS	12 mm MTS										
NF□□-MTS14-8	14 mm MTS	14 mm MTS										
NF□□-MTS16-8	16 mm MTS	16 mm MTS										
NF□□-MTB14-8	14 mm MTB	14 mm MTB			1.50 (38.1)	1.50 (38.1)						
NF□□-MTB16-8	16 mm MTB	16 mm MTB										
NF□□-UMB14-8	14 mm UMB	14 mm UMB			2.92 (74.1)	2.92 (74.1)						
NF□□-UMB16-8	16 mm UMB	16 mm UMB										
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 ISO	M20 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)						
NF□□-MS22-8	M22 x 1.5 Male ISO	M22 x 1.5 Male ISO										

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)							
	Inlet	Outlet			L1	L2	H	D	C	E	F	G
NF□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.394 (10.0)	2.18	1.56 (39.7)	1.56 (39.7)	3.86 (98.0)	3.5 (88.9)	0.8 (20.2)	1.1 (28.3)	0.38 (9.7)	1.08 (27.5)
NF□□-FNS12-9	3/4 Female NPT	3/4 Female NPT										
NF□□-NS8-9	1/2 Male NPT	1/2 Male NPT										
NF□□-NS12-9	3/4 Male NPT	3/4 Male NPT										
NF□□-FL12-9	3/4" FITOK	3/4" FITOK			1.97 (50.0)	1.97 (50.0)						
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□□-ML25-9	25 mm FITOK	25 mm FITOK										
NF□□-MTS14-9	14 mm MTS	14 mm MTS			1.56 (39.7)	1.56 (39.7)						
NF□□-MTS16-9	16 mm MTS	16 mm MTS										
NF□□-MTS18-9	18 mm MTS	18 mm MTS										
NF□□-TS12-9	3/4" TS	3/4" TS										
NF□□-PS8-9	1/2 PS	1/2 PS										
NF□□-MTB14-9	14 mm MTB	14 mm MTB										
NF□□-MTB16-9	16 mm MTB	16 mm MTB										
NF□□-UMB14-9	14 mm UMB	14 mm UMB			2.98 (75.7)	2.98 (75.7)						
NF□□-UMB16-9	16 mm UMB	16 mm UMB										
NF□□-FO12-9	3/4" Male FO	3/4" Male FO										
NF□□-FR8-9	1/2" Male FR	1/2" Male FR			1.56 (39.7)	1.56 (39.7)						
NF□□-MS27-9	M27 x 2 Male ISO	M27 x 2 Male ISO										
NF□□-FNS12-6	3/4 Female NPT	3/4 Female NPT	0.591 (15.0)	3.27	1.97 (50.0)	1.97 (50.0)	6.5 (165)	5.0 (127)	1.3 (33.0)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)
NF□□-TS16-6	1" TS	1" TS										
NF□□-MTS25-6	25 mm MTS	25 mm MTS										
NF□□-MTS28-6	28 mm MTS	28 mm MTS										
NF□□-PS12-6	3/4 PS	3/4 PS										
NF□□-PB12-6	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□□-FNS16-0	1 Female NPT	1 Female NPT	0.670 (17.0)	5.65	1.97 (50.0)	1.97 (50.0)	6.5 (165)	5.5 (165)	1.3 (33.0)	1.61 (41.0)	0.38 (9.7)	1.45 (36.8)
NF□□-TS16-0	1" TS	1" TS										
NF□□-MTS25-0	25 mm MTS	25 mm MTS										
NF□□-MTS28-0	28 mm MTS	28 mm MTS										
NF□□-PS12-0	3/4 PS	3/4 PS										
NF□□-PB16-0	1 PB	1 PB										

1. *FITOK means FITOK double ferrule tube fittings, FO means O-ring seal fittings, FR means metal gasket seal fittings, TS means fractional tube socket weld, MTS means metric tube socket weld, MTB means metric tube butt weld, UMB means nut + gasket + metric bulge nipple, PS means pipe socket weld, ISO means* metric thread, *PB means pipe butt weld.*
2. *For Butt or Socket end connections, please prior to choose graphite as packing material, avoiding damage non graphite packing material due to the high temperature when welding.*
3. *Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.*
4. *Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.*

Ordering Information

NFS4 – TS16 – MTS25 – 16WR – GYM – ASF2

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Seat Material	Orifice Size	Tip Material	Stem 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	Same as Inlet	Same as Body	7 0.157" (4.0 mm)	W Same as Body	R Regulating	P PEEK	Y Yes	C Red Aluminum Bar	A Angle	S NACE MR0175	F2 FC-02
	6L 316L SS	NS Male NPT	4 1/4"		Specify in the same way as inlet type and inlet size	1 Stellite	8 0.236" (6.0 mm)	D5 Duplex 2205	B Ball	G Graphite		F Green Aluminum Bar		N2 Class 2	
	S4 304 SS	FRT Female BSPT	6 3/8" or 6 mm			X Customer Specified	9 0.394" (10 mm)	TI Titanium	T Soft Tip-PTFE			J Blue Aluminum Bar		N3 Class 3	
	4L 304L SS	RT Male BSPT	8 1/2" or 8 mm				6 0.591" (15 mm)	A20 Alloy 20	K Soft Tip-PCTFE			M 321 Stainless Steel Bar			
	S1 321 SS	FMS Female Metric Thread (for RP)	10 10 mm				0 0.670" (17 mm)	M Alloy 400				O Black Knob			
	91 F91	MS Male Metric Thread (for RG)	12 3/4" or 12 mm					INC Alloy 600							
	92 F92	FRP Female BSPP (for RP)	14 14 mm or M14 x 1.5					HC Alloy C-276							
	D5 Duplex 2205	BP Male BSPP (for RG)	16 1" or 16 mm												
	TI Titanium	TS Fractional Tube Socket Weld	18 18 mm												
	A20 Alloy 20	MTS Metric Tube Socket Weld	20 1 1/4" or 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 Nut + Gasket + Fractional Bulge Nipple													
		UMB Nut + Gasket + Metric Bulge Nipple													
		FO FO Fitting													
		FR FR Fitting													

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 ignored in the ordering number, others should be specified.
2. *FO means FITOK O-seal fittings should be ordered.*
3. *FR means FITOK metal ring 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 as stated in ASTM G93 Level C.

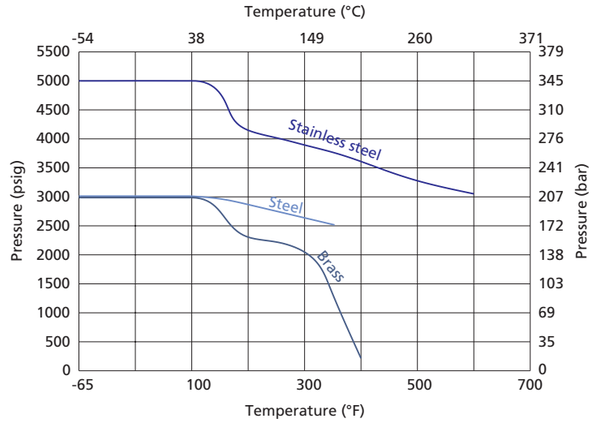
General Purpose Needle Valves

NG Series

Features

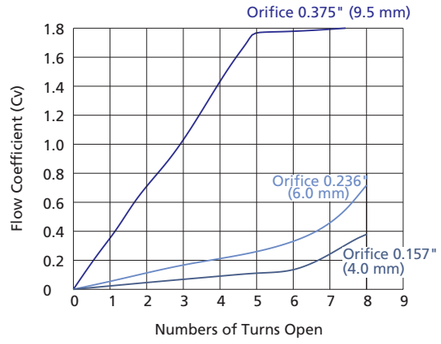
- Maximum working pressure:
  Stainless steel: 5000 psig (345 bar)
  Steel: 3000 psig (207 bar)
  Brass: 3000 psig (207 bar)
- Working temperature:
  PTFE: -65°F to 450°F (-54°C to 232°C)
  PEEK: -65°F to 600°F (-54°C to 315°C)
- Rolled stem threads for longer valve life
- Easy external adjustments by packing nut
- Live-loaded packing system
- Handle of different colors available for option
- Compact design
- Leak-tight performance testing for every valve with nitrogen at the maximum working pressure

Pressure vs. Temperature



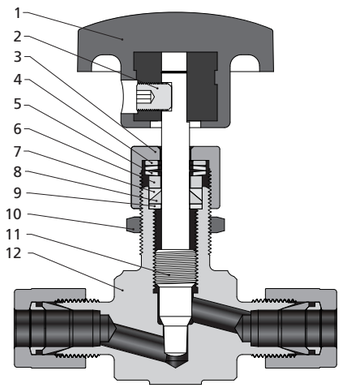
Flow Data at 100°F (38°C)

Regulating Stem

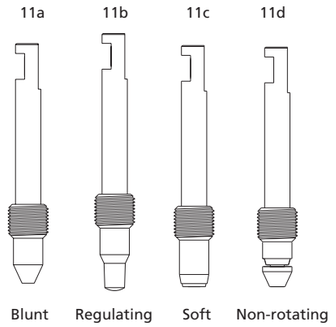


1. *Graphs are based on PEEK stem packing.*
2. *200°F (93°C) max with PCTFE stem tip (soft tip).*
3. *Contact the authorized representative or FITOK Group for curve graph of other materials.*

Standard Materials of Construction



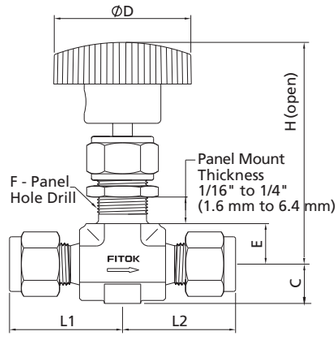
Stem Type



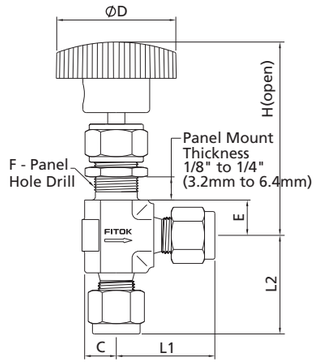
Item	Component	Valve Body Material		
		316 SS	Brass	Steel
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Nickel cadmium-plated steel		
3	Packing Nut	316 SS/A276	Brass 360/B16	12L14/A108
4	Gland	304 SS/A276		
5	Packing Spring	S17700/A693		
6	Packing Gland	304 SS/A276		
7	Upper Packing	PTFE or PEEK		
8	Lower Packing			
9	Lower Gland	316 SS/A276		
10	Panle Nut	316 SS/B783		
11a 11b 11c 11d	Stem	Chrome-plated 316 SS/A276		
12	Body	316 SS/A182	Brass 377/B283	Chrome-plated 11L17/A108
Lubricant		Molybdenum disulfide-based and silicone-based		

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
NG□□-NS2-5	1/8 Male NPT	1/8 Male NPT	0.08 (2.0)	0.09	0.75 (19)	0.75 (19)	0.31 (7.9)	1.0 (25.4)	0.44 (11.2)	0.47 (11.9)	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	0.157 (4.0)	0.35	0.81 (20.6)	0.81 (20.6)	0.39 (9.9)	1.38 (35.0)	0.44 (11.2)	0.53 (13.5)	2.50 (63.5)
NG□□-NS4-7	1/4 Male NPT	1/4 Male NPT			0.98 (25.0)	0.98 (25.0)					
NG□□-FL4-7	1/4" FITOK	1/4" FITOK			1.13 (28.7)	1.13 (28.7)					
NG□□-ML6-7	6 mm FITOK	6 mm FITOK									
NG□□-ML8-7	8 mm FITOK	8 mm FITOK			1.17 (29.7)	1.17 (29.7)					
NG□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.70	1.06 (26.9)	1.06 (26.9)	0.5 (12.7)	1.88 (47.8)	0.5 (12.7)	0.78 (19.8)	2.97 (75.4)
NG□□-FNS6-8	3/8" Female NPT	3/8 Female NPT									
NG□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.12 (28.4)	1.12 (28.4)					
NG□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)					
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			1.4 (35.6)	1.4 (35.6)					
NG□□-ML10-8	10 mm FITOK	10 mm FITOK			1.3 (33.0)	1.3 (33.0)					
NG□□-ML12-8	12 mm FITOK	12 mm FITOK			1.4 (35.6)	1.4 (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 ISO	M20 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)					
NG□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.375 (9.5)	1.80	1.50 (38.1)	1.50 (38.1)	0.75 (19.1)	3.00 (76.2)	0.75 (19.1)	1.03 (26.2)	3.91 (99.3)
NG□□-FNS12-9	3/4 Female NPT	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)					
NG□□-NS12-9	3/4 Male NPT	3/4 Male NPT									
NG□□-FL8-9	1/2" FITOK	1/2" FITOK									
NG□□-FL12-9	3/4" FITOK	3/4" FITOK			1.90 (48.3)	1.90 (48.3)					
NG□□-ML14-9	14 mm FITOK	14 mm FITOK									

1. FITOK means FITOK double ferrule tube fittings, ISO means metric thread,
2. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
3. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

Ordering Information

NG S4 — FNS 8 — FL 8 — 9P — PM — ASF2

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Orifice Size	Tip Type	Packing Material	Handles	Flow Pattern	NACE MR0175	Cleaning and Packaging
NG	SS 316 SS	FNS Female NPT	2 1/8"			5 0.08" (2.0 mm)		P PEEK	C Red Aluminum Bar	A Angle	S YES	F2 FC-02
	6L 316L SS	NS Male NPT	4 1/4"			7 0.157" (4.0 mm)	R Regulating	PTFE	Black Knob	Straight	NO	FC-01
	S4 304 SS	FRT Female BSPT	6 3/8" or 6 mm			8 0.25" (6.4 mm)	K Soft Tip-PCTFE		F Green Aluminum Bar			
	4L 304L SS	RT Male BSPT	8 1/2" or 8 mm			9 0.375" (9.5 mm)	P Soft Tip-PEEK		J Blue Aluminum Bar			
	S1 321 SS	FMS Female Metric Thread (for RP)	10 10 mm				N Non-rotating Stem Tip		L Black Aluminum Bar			
	A20 Alloy 20	MS Male Metric Thread (for RG)	12 3/4" or 12 mm						M 321 Stainless Steel Bar			
	M Alloy 400	FRP Female BSPP (for RP)	14 14 mm or M14 x 1.5									
	INC Alloy 600	BP Male BSPP (for RG)	16 1" or 16 mm									
	HC Alloy C-276	FL Fractional Tube Fitting	18 18 mm									
	B Brass	ML Metric Tube Fitting	20 1 1/4" or 20 mm or M20 x 1.5									
	CS Carbon Steel	UMB Nut + Gasket + Metric Bulge Nipple	22 22 mm or M22 x 1.5									
	904L 904L SS											

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

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 ignored 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 as stated in ASTM G93 Level C.

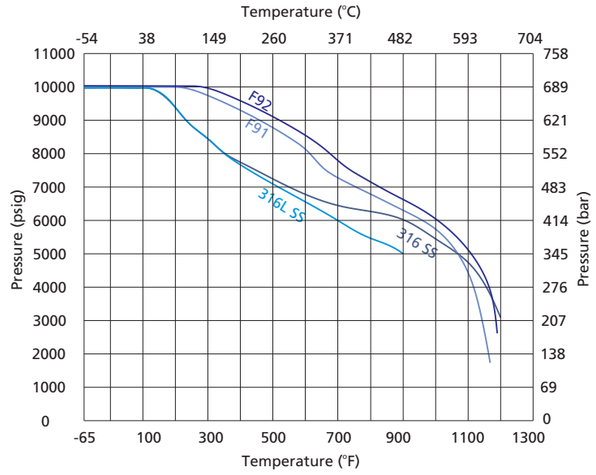
High-pressure Needle Valves

NH Series

Features

- Maximum working pressure: 10000 psig (689 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)
- One-piece body construction
- Two-stem design: thread hardened upper stem and smooth surface hardened lower stem
- Upper stem thread lubricant isolated from system media
- Linearly instead of helical movement of the nonrotating lower stem, avoiding galling damage to the seat and tip, as well as reducing the total friction area between the packing and the lower stem
- Panel mounting available as an option
- Steady and durable fastening of the handle by double lock-pins
- Handle of different colors available for option
- Leak-tight performance testing for every valve with nitrogen at 6000 psig

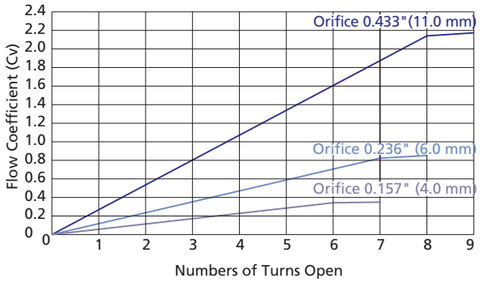
Pressure vs. Temperature



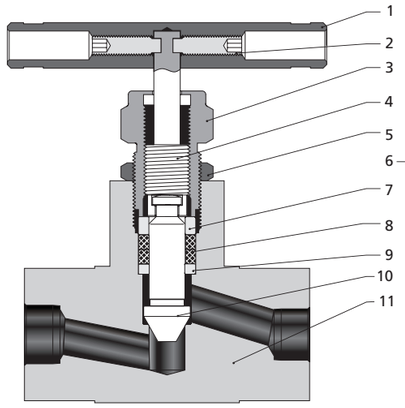
1. *Graphs are based on graphite stem packing.*
2. *200°F (93°C) max with PCTFE stem tip (soft tip).*
3. *Contact the authorized representative or FITOK Group for curve graph of other materials.*

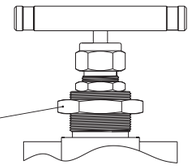
Flow Data at 100°F (37°C)

Regulating Stem



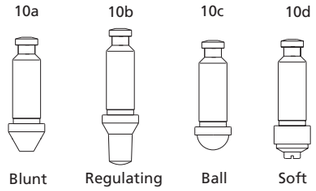
Standard Materials of Construction





Panel Mounting

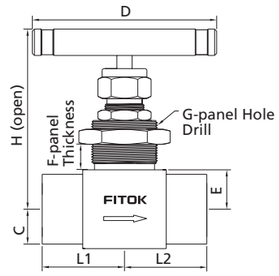
Stem Type



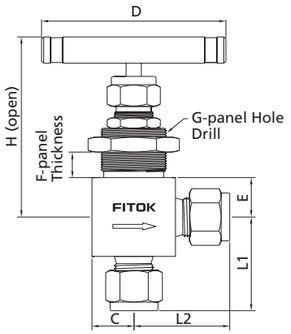
Item	Component	Valve Body Material			
		316L SS	316 SS	F91	F92
1	Handle	Anodized aluminum or stainless steel or black knob			
2	Set Screw	Nickel cadmium-plated steel			
3	Packing Bolt	321 SS/A276			
4	Upper Stem	321 SS/A276			
5	Lock Nut	316 SS/B783			
6	Panel Nut	316 SS/B783			
7	Gland	316 SS/A276	316 SS/A276	F91/A182	F92/A182
8	Packing	PTFE or PEEK or graphite			
9	Packing Washer	316 SS/A276	316 SS/A276	F91/A182	F92/A182
10a 10b 10c 10d	Lower Stem	Chrome-plated 316 SS/A276	Chrome-plated 316 SS/A276	Chrome-plated F91/A182	Chrome-plated F92/A182
		Optional			
11	Body	316L SS/A479 316L SS/A182	316 SS/A479 316 SS/A182	F91/A182	F92/A182
	Seat	Weld stellite seat optional			
Lubricant		Molybdenum disulfide-based			

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	E	F	G	H
NH□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.35	1.13 (28.6)	1.13 (28.6)	0.53 (13.5)	2.17 (55)	0.53 (13.5)	0.25 (6.4)	0.96 (24.4)	2.85 (72.5)
NH□□-FNS4-7	1/4 Female NPT	1/4 Female NPT										
NH□□-FNS4-NS4-7	1/4 Female NPT	1/4 Male NPT										
NH□□-NS4-7	1/4 Male NPT	1/4 Male NPT										
NH□□-FL4-7	1/4" FITOK	1/4" FITOK										
NH□□-ML6-7	6 mm FITOK	6 mm FITOK			1.41 (35.8)	1.41 (35.8)						
NH□□-ML8-7	8 mm FITOK	8 mm FITOK										
NH□□-TS4-7	1/4" TS	1/4" TS			1.13 (28.6)	1.13 (28.6)						
NH□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.236 (6.0)	0.85	1.31 (33.4)	1.31 (33.4)	0.625 (15.88)	2.50 (63.5)	0.625 (15.88)	0.38 (9.7)	1.09 (27.7)	3.5 (88.9)
NH□□-FNS6-8	3/8 Female NPT	3/8 Female NPT										
NH□□-FNS8-8	1/2 Female NPT	1/2 Female NPT										
NH□□-FL6-8	3/8" FITOK	3/8" FITOK			1.41 (35.8)	1.41 (35.8)						
NH□□-FL8-8	1/2" FITOK	1/2" FITOK			1.52 (38.6)	1.52 (38.6)						
NH□□-ML10-8	10 mm FITOK	10 mm FITOK			1.42 (36.1)	1.42 (36.1)						
NH□□-ML12-8	12 mm FITOK	12 mm FITOK			1.52 (38.6)	1.52 (38.6)						
NH□□-ML14-8	14 mm FITOK	14 mm FITOK			1.56 (39.7)	1.56 (39.7)						
NH□□-TS6-8	3/8" TS	3/8" TS										
NH□□-TS8-8	1/2" TS	1/2" TS			1.31 (33.4)	1.31 (33.4)						
NH□□-MTS12-8	12 mm MTS	12 mm MTS										
NH□□-MTS14-8	14 mm MTS	14 mm MTS										
NH□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.433 (11.0)	2.18	1.56 (39.6)	1.56 (39.6)	0.875 (22.2)	3.5 (88.9)	0.875 (22.2)	0.38 (9.7)	1.28 (32.5)	4.17 (106)
NH□□-FNS12-9	3/4 Female NPT	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)						
NH□□-FL12-9	3/4" FITOK	3/4" FITOK										
NH□□-ML14-9	14 mm FITOK	14 mm FITOK			1.97 (50.0)	1.97 (50.0)						
NH□□-ML16-9	16 mm FITOK	16 mm FITOK										
NH□□-ML18-9	18 mm FITOK	18 mm FITOK										
NH□□-MTS14-9	14 mm MTS	14 mm MTS										
NH□□-MTS16-9	16 mm MTS	16 mm MTS			1.56 (39.7)	1.56 (39.7)						
NH□□-MTS16-MTS14-9	16 mm MTS	14 mm MTS										

1. FITOK means FITOK double ferrule tube fittings, TS means fractional tube socket weld, MTS means metric tube socket weld.
2. For Butt or Socket end connections, please prior to choose graphite as packing material, avoiding damage non graphite packing material due to the high temperature when welding.
3. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the nitrogen information.
4. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

Ordering Information

NHSS– FNS6 – FL6 – 18WB – GYM – ASF2

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Seat Material	Orifice Size	Tip Material	Stem Type	Packing Material	Panel Mounting	Handle	Flow Pattern	Special Application	Cleaning and Packaging
NH	SS 316 SS 6L 316L SS S4 304 SS 4L 304L SS S1 321 SS 91 F91 92 F92 INC Alloy 600 HC Alloy C-276 904L 904L SS	FNS Female NPT NS Male NPT FRT Female BSPT RT Male BSPT FMS Female Metric Thread (for RP) MS Male Metric Thread (for RG) FRP Female BSPP (for RP) BP Male BSPP (for RG) TS Fractional Tube Socket Weld MTS Metric Tube Socket Weld TB Fractional Tube Butt Weld MTB Metric Tube Butt Weld PS Pipe Socket Weld PB Pipe Butt Weld FL Fractional Tube Fitting ML Metric Tube Fitting UFB Nut + Gasket + Fractional Bulge Nipple UMB Nut + Gasket + Metric Bulge Nipple	2 1/8" 4 1/4" 6 3/8" or 6 mm 8 1/2" or 8 mm 10 10 mm 12 3/4" or 12 mm 14 14 mm or M14 x 1.5 16 1" or 16 mm 18 18 mm 20 1 1/4" or 20 mm or M20 x 1.5 22 22 mm or M22 x 1.5 24 M24 x 1.5 25 25 mm 27 M27 x 2 28 28 mm	Same as Inlet Specify in the same way as inlet type and inlet size	Same as Body 1 Stellite	7 0.157" (4.0 mm) 8 0.236" (6.0 mm) 9 0.433" (11 mm)	Same as Body W Stellite INC Alloy 600 HC Alloy C-276	PTFE P PEEK G Graphite	Blunt R Regulating B Ball K Soft Tip-PCTFE P Soft Tip-PEEK	No Y Yes	Black Aluminum Bar C Red Aluminum Bar F Green Aluminum Bar J Blue Aluminum Bar M 321 Stainless Steel Bar O Black Knob	Straight A Angle	NO S NACE MR0175 Classification for Nuclear Facility Application N2 Class 2 N3 Class 3	FC-01 F2 FC-02

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 ignored 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 as stated in ASTM G93 Level C.

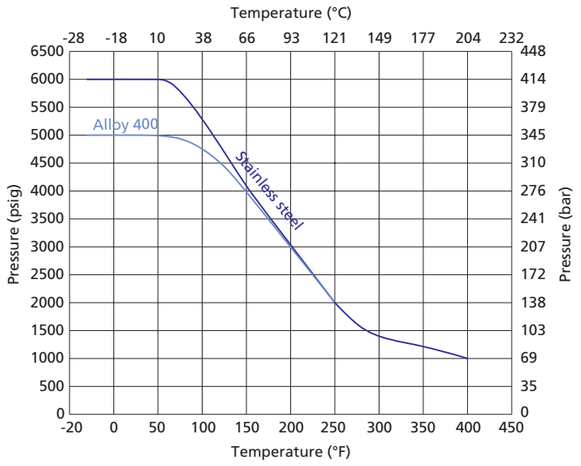
Rising Plug Valves

NR Series and NRG Series

Features

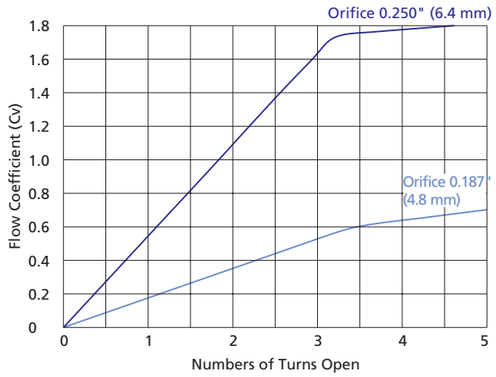
- Maximum working pressure:
  Stainless steel: 6000 psig (414 bar)
  Alloy 400: 5000 psig (345 bar)
- Working temperature:
  Acetal: -20°F to 250°F (-28°C to 121°C)
  PEEK: -20°F to 400°F (-28°C to 204°C)
  PFA: -20°F to 400°F (-28°C to 204°C)
- Nonrotating stem for longer seat life
- Roddable, straight 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 as an option
- Steady and durable fastening of the handle by double lock-pins
- Handle of different colors available for option
- Leak-tight performance testing for every valve with nitrogen at the maximum working pressure

Pressure vs. Temperature



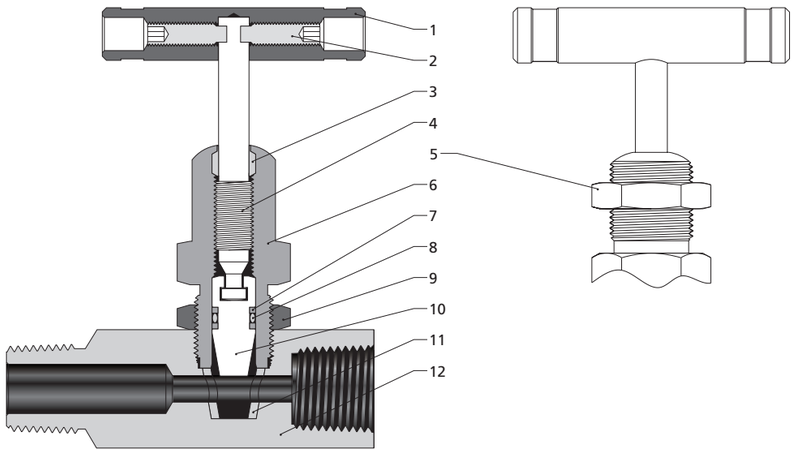
1. *Graphs are based on PEEK seat.*
2. *Contact the authorized representative or FITOK Group for curve graph of other materials.*

Flow Data at 100°F (38°C)



Standard Materials of Construction

Panel Mounting



Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Alloy R-405
1	Handle	Anodized aluminum or stainless steel or black knob			
2	Set Screw	Nickel cadmium-plated steel			
3	Wiper Ring	PTFE/D1710			
4	Upper Stem	316 SS/A276	304 SS/A276	321 SS/A276	Alloy R-405/B164
5	Panel Nut	316 SS/B783			
6	Bonnet	316 SS/A479	304 SS/A479	321 SS/A479	Alloy R-405/B164
7	Backup Ring	PTFE/D1710			
8	O-ring	Fluorocarbon FKM			
9	Lock Nut	316 SS/B783			
10	Stem Tip	316 SS/A276	304 SS/A276	321 SS/A276	Alloy R-405/B164
11	Seat	Acetal or PEEK or PFA			
12	Body	316 SS/A479	304 SS/A479	321 SS/A479	Alloy R-405/B164
Lubricant		Molybdenum disulfide-based and fluorocarbon-based			

Sour Gas Application

NR series valves are available for sour gas application. Materials for wetted components are in accordance with NACE specification MR0175 for sulfide stress cracking-resistant materials.

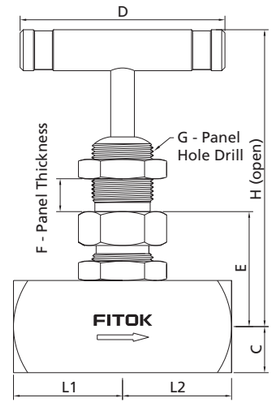
Materials

Body, bonnet: annealed 316 SS
O-ring: ethylene propylene
Stem tip: alloy R-405/ASTM B164
All other components are the same as standard product.

Dimensions

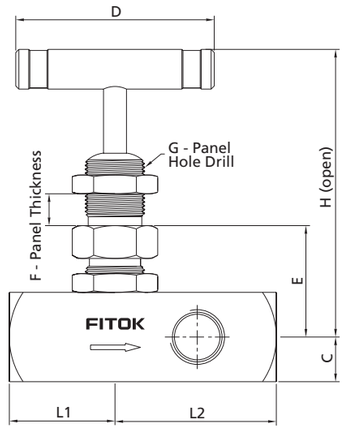
Standard Pattern

NR Series



Gauge Port Pattern

NRG Series



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)							
	Inlet	Outlet			L1	L2	C	D	E	F	G	H
NR□□-FNS4-7	1/4 Female NPT	1/4 Female NPT	0.187 (4.8)	0.63	1.12 (28.4)	1.12 (28.4)	0.44 (11.1)	2.17 (55)	1.08 (27.5)	0.25 (6.4)	0.65 (16.1)	3.77 (95.8)
NR□□-NS4-FNS4-7	1/4 Male NPT	1/4 Female NPT			1.78 (45.2)							
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)	0.50 (12.7)					
NRG□□-NS8-FNS4-7	1/2 Male NPT	1/4 Female NPT										
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)	2.5 (63.5)	1.4 (35.5)	0.38 (9.7)	0.77 (19.6)	3.83 (97.3)
NR□□-NS8-FNS8-8	1/2 Male NPT	1/2 Female NPT			2.16 (54.9)							
NR□□-NS12-FNS8-8	3/4 Male NPT	1/2 Female NPT										
NRG□□-FNS8-8	1/2 Female NPT	1/2 Female NPT			3.33 (84.6)	2.25 (57.2)						
NRG□□-NS12-FNS8-8	3/4 Male NPT	1/2 Female NPT										

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

Ordering Information

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 316 SS	FNS Female NPT	2 1/8"	Same as Inlet	Acetal	7 0.187" (4.8 mm)	FKM	No	Black Aluminum Bar	No	FC-01
	NRG	6L 316L SS	NS Male NPT	4 1/4"	Specify in the same way as inlet type and inlet size	P PEEK	8 0.250" (6.4 mm)	B Buna N	Y Yes	C Red Aluminum Bar	S Yes	F2 FC-02
		S4 304 SS	FRT Female BSPT	6 3/8" or 6 mm		A PFA		E Ethylene propylene		F 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 RP)	10 10 mm						M 321 Stainless Steel Bar		
		D5 Duplex 2205	MS Male Metric Thread (for RG)	12 3/4" or 12 mm						O Black Knob		
		TI Titanium	FRP Female BSPP (for RP)	14 14 mm or M14 x 1.5								
		A20 Alloy 20	BP Male BSPP (for RG)	16 1" or 16 mm								
		M Alloy 400		18 18 mm								
		INC Alloy 600		20 1 1/4" or 20 mm or M20 x 1.5								
		HC Alloy C -276		22 22 mm or M22 x 1.5								
		B Brass		24 M24 x 1.5								
		CS Carbon Steel										
		904L 904L SS										

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 ignored 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 as stated in ASTM G93 Level C.

Toggle Valves

NT Series

Features

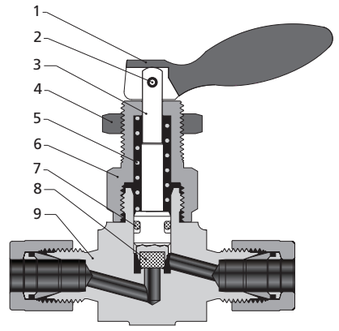
- Maximum working pressure: 300 psig (20.7 bar)
- Straight and angle pattern
- Compact design
- Quick opening or closing
- Nonrotating stem tip
- Leak-tight performance testing for every valve with nitrogen at the maximum working pressure

Technical Data

Orifice	Working Pressure at 100°F (37°C)
2.0 mm	300 psig
3.2 mm	
6.4 mm	200 psig

O-ring Material	Temperature Rating
FKM(Standard)	-20°F to 200°F (-28°C to 93°C)
Buna N	-20°F to 250°F (-28°C to 121°C)
Buna C	-65°F to 250°F (-53°C to 121°C)
Ethylene Propylene	-20°F to 250°F (-28°C to 121°C)

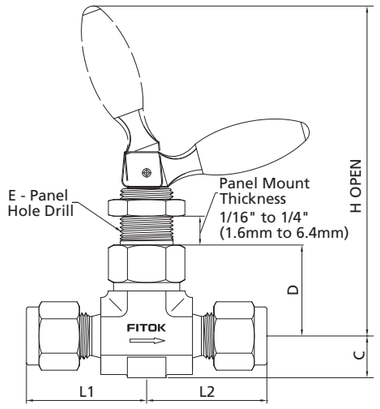
Standard Materials of Construction



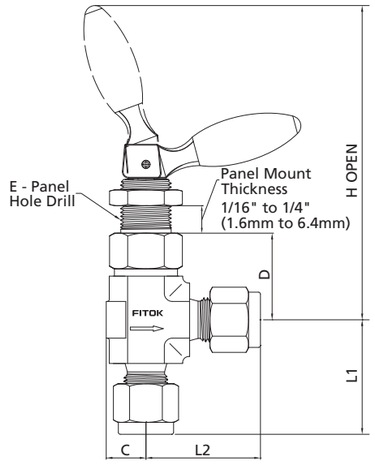
Item	Component	Valve Body Material			
		316 SS	304 SS	321 SS	Brass
1	Handle	Stainless steel			
2	Pin	Stainless steel			
3	Stem	316 SS/A276	304 SS/A276		
4	Panel Nut	316 SS/B783			Brass 360/B16
5	Spring	PTFE-plated S17700/A313			
6	Bonnet	316 SS/A276	304 SS/A276	321 SS/A276	Brass 360/B16
7	O-ring	Fluorocarbon FKM			
8	Stem Tip	PTFE/D1710			
9	Body	316 SS/A182	304 SS/A182	321 SS/A182	Brass 377/B283
Lubricant		Molybdenum disulfide-based and silicone-based			

Dimensions

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, 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 (19.0)	0.75 (19.0)	0.31 (7.9)	0.92 (23.4)	0.53 (13.5)	2.87 (72.9)
NT□□-NS2-FL2-5	1/8 Male NPT	1/8" FITOK			0.75 (19.0)	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 (9.9)	0.92 (23.4)	0.53 (13.5)	2.87 (72.9)
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			25.0 (0.98)	25.0 (0.98)				
NT□□-NS4-FL4-7	1/4 Male NPT	1/4" FITOK			25.0 (0.98)	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)	0.5 (12.7)	1.06 (26.9)	0.66 (16.8)	3.56 (90.4)
NT□□-FNS6-8	3/8 Female NPT	3/8 Female NPT								
NT□□-NS6-8	3/8 Male NPT	3/8 Male NPT			1.12 (28.4)	1.12 (28.4)				
NT□□-FL6-8	3/8" FITOK	3/8" FITOK			1.29 (32.8)	1.29 (32.8)				
NT□□-FL8-8	1/2" FITOK	1/2" FITOK			1.4 (35.6)	1.4 (35.6)				
NT□□-ML10-8	10 mm FITOK	10 mm FITOK			1.36 (34.5)	1.36 (34.5)				
NT□□-ML12-8	12 mm FITOK	12 mm FITOK			1.46 (37.1)	1.46 (37.1)				
NT□□-MS20-8	M20 x 1.5 Male ISO	M20 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)				
NT□□-MS22-8	M22 x 1.5 Male ISO	M22 x 1.5 Male ISO								

1. FITOK means FITOK double ferrule tube fittings, ISO means metric thread,
2. Sizes and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
3. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

Ordering Information

NTSS — FNS4 — FL6 — 8E — AF2

Series	Body Material		Inlet Type		Inlet Size		Outlet Type	Outlet Size	Orifice Size		O-ring Material		Flow Pattern		Cleaning and Packaging	
NT	SS	316 SS	FNS	Female NPT	2	1/8"		Same as Inlet	5	0.08" (2.0 mm)		FKM		Straight		FC-01
	S4	304 SS	NS	Male NPT	4	1/4"	Specify in the same way as Inlet Type and Inlet Size		7	0.125" (3.2 mm)	B	Buna N	A	Angle	F2	FC-02
	S1	321 SS	FRT	Female BSPT	6	3/8" or 6 mm			8	0.25" (6.4 mm)	C	Buna C				
	B	Brass	RT	Male BSPT	8	1/2" or 8 mm					E	Ethylene propylene				
	904L	904L SS	FMS	Female Metric Thread (for RP)	10	10 mm										
			MS	Male Metric Thread (for RG)	12	3/4" or 12 mm										
			FRP	Female BSPP (for RP)	14	14 mm or M14 x 1.5										
			BP	Male BSPP (for RG)	16	1" or 16 mm										
			FL	Fractional Tube Fitting												
			ML	Metric Tube Fitting												

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 ignored 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 as stated in ASTM G93 Level C.

Union Bonnet Needle Valves

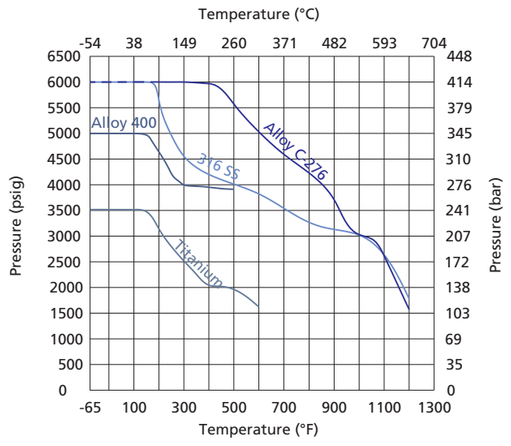
NU Series and NUH Series

Features

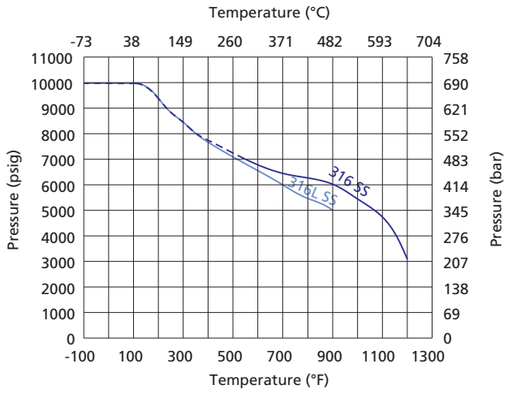
- Maximum working pressure:
  NU series
  Stainless steel: 6000 psig (414 bar)
  Alloy C-276: 6000 psig (414 bar)
  Alloy 400: 5000 psig (345 bar)
  Titanium: 3500 psig (241 bar)
  NUH series: 10000 psig (689 bar)
- Working temperature:
  PTFE: -65°F to 450°F (-54°C to 232°C)
  PEEK: -65°F to 500°F (-54°C to 260°C)
  Graphite: -65°F to 1200°F (-54°C to 649°C)
- Two-stem design: thread hardened upper stem and smooth surface hardened lower stem.
- Accidental valve disassembly disabled by union bonnet construction
- Upper stem thread lubricant isolated from system media
- Linearly instead of helical movement of the nonrotating lower stem, avoiding galling damage to the seat and tip, as well as reducing the total friction area between the packing and the lower stem
- Safety back seating seal in fully open position
- Panel mounting available as an option
- Steady and durable fastening of the handle by double lock-pins
- Handle of different colors available for option
- Leak-tight performance testing for every valve with nitrogen at the maximum working pressure, but not higher than 6000 psig

Pressure vs. Temperature

NU Series



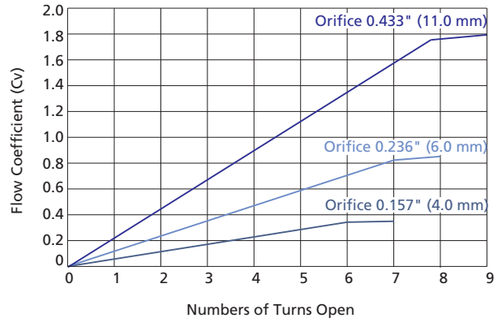
NUH Series



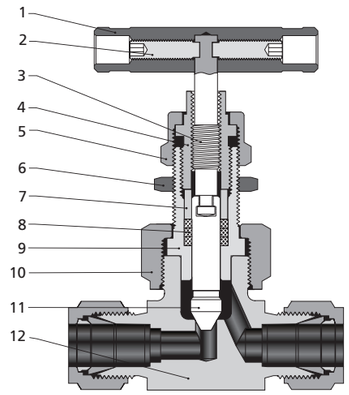
1. Graphs are based on graphite stem packing.
2. 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact the authorized representative or FITOK Group for curve graph of other materials.

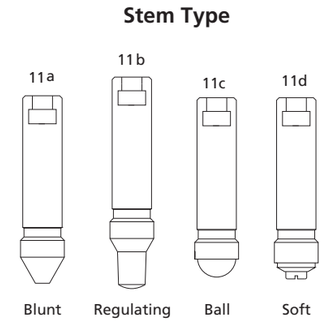
Flow Data at 100°F (37°C)

Regulating Stem



Standard Materials of Construction

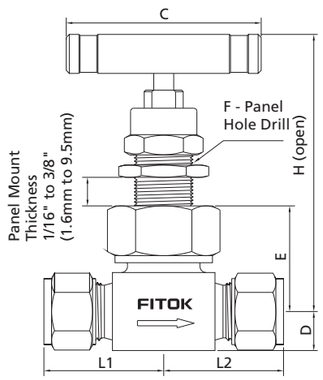




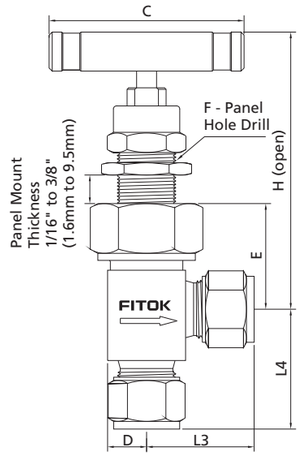
Item	Component	Valve Body Material			
		316 SS	Alloy 400	Titanium	Alloy C-276
1	Handle	Anodized aluminium or stainless stee or black knob			
2	Set Screw	Nickel cadmium-plated steel			
3	Upper Stem	316 SS/A276			
4	Packing Bolt	321 SS/A276			
5	Lock Nut	316 SS/A276			
6	Panel Nut	316 SS/B783			
7	Gland	316 SS/A276	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574
8	Packing	PTFE or PEEK or graphite			
9	Bonnet	316 SS/A479	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574
10	Union Nut	316 SS/A276			
11a 11b 11c 11d	Lower Stem	Chrome-plated 316 SS/A276	Alloy R-405/B164	Titanium Gr 4/B348	Alloy C-276/B574
		Optional			
12	Body	316 SS/A182	Alloy 400/B164, B127, B564	Titanium Gr 4/B348 or titanium Gr 4/B381	Alloy C-276/B564
	Seat	Weld stellite optional			
Lubricant		Molybdenum disulfide-based			

Dimensions of NU Series

Straight Pattern



Angle Pattern



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)								
	Inlet	Outlet			L1	L2	L3	L4	C	D	E	F	H
NU□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.157 (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)	19/32 (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											
NU□□-FRP4-7	1/4 Female BSPP	1/4 Female BSPP			1.03 (26.2)	1.03 (26.2)	0.89 (22.6)						
NU□□-NS4-FL4-7	1/4 Male NPT	1/4" FITOK			1.00 (25.4)	1.22 (30.9)							
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			1.22 (30.9)	1.22 (30.9)	1.16 (29.5)	1.48 (37.6)					
NU□□-ML6-7	6 mm FITOK	6 mm FITOK											
NU□□-ML8-7	8 mm FITOK	8 mm FITOK											
NU□□-TS4-7	1/4" TS	1/4" TS			0.91 (23.1)	0.91 (23.1)	0.88 (22.4)	1.19 (30.2)					
NU□□-FO4-7	1/4" Male FO	1/4" Male FO			1.03 (26.2)	1.03 (26.2)							
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)	1.0 (25.4)	1.13 (28.6)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	25/32 (19.8)	3.70 (94)
NU□□-FNS6-8	3/8 Female NPT	3/8 Female NPT											
NU□□-NS6-8	3/8 Male NPT	3/8 Male NPT					1.06 (26.9)						
NU□□-NS8-8	1/2 Male NPT	1/2 Male NPT			1.50 (38.1)	1.50 (38.1)	1.25 (31.8)	1.50 (38.1)					
NU□□-FL6-8	3/8" FITOK	3/8" FITOK			1.41 (35.9)	1.41 (35.9)	1.29 (32.8)	1.66 (42.2)					
NU□□-FL8-8	1/2" FITOK	1/2" FITOK			1.52 (38.6)	1.52 (38.6)	1.40 (35.6)	1.65 (41.9)					
NU□□-ML10-8	10 mm FITOK	10 mm FITOK			1.42 (36.1)	1.42 (36.1)	1.30 (33.0)	1.55 (39.4)					

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, 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)	0.8	1.52 (38.6)	1.52 (38.6)	1.40 (35.6)	1.65 (41.9)	2.50 (63.5)	0.50 (12.7)	1.34 (34.0)	25/32 (19.8)	3.70 (94)
NU□□-ML14-8	14 mm FITOK	14 mm FITOK											
NU□□-ML16-8	16 mm FITOK	16 mm FITOK											
NU□□-TS6-8	3/8" TS	3/8" TS			1.13 (28.6)	1.13 (28.6)	1.00 (25.4)	1.13 (28.6)					
NU□□-TS8-8	1/2" TS	1/2" TS											
NU□□-PS4-8	1/4 PS	1/4 PS											
NU□□-MTS12-8	12 mm MTS	12 mm MTS											
NU□□-MTS14-8	14 mm MTS	14 mm MTS											
NU□□-MTS16-8	16 mm MTS	16 mm MTS											
NU□□-MTB14-8	14 mm MTB	14 mm MTB			1.50 (38.1)	1.50 (38.1)	1.25 (31.8)	1.50 (38.1)					
NU□□-MTB16-8	16 mm MTB	16 mm MTB											
NU□□-UMB14-8	14 mm UMB	14 mm UMB			2.92 (74.1)	2.92 (74.1)	2.55 (64.7)	2.92 (74.1)					
NU□□-FO8-8	1/2" Male FO	1/2" Male FO			1.13 (28.6)	1.13 (28.6)	——	——					
NU□□-FR8-8	1/2" Male FR	1/2" Male FR			1.56 (39.6)	1.56 (39.6)							
NU□□-MS20-8	M20 x 1.5 Male ISO	M20 x 1.5 Male ISO											
NU□□-MS22-8	M22 x 1.5 Male ISO	M22 x 1.5 Male ISO			1.50 (38.1)	1.50 (38.1)	1.13 (28.6)	1.50 (38.1)					
NU□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	0.394 (10.0)	1.8	1.56 (39.6)	1.56 (39.6)	1.31 (33.3)	1.56 (39.6)	3.50 (88.9)	0.78 (19.8)	1.91 (48.5)	1 1/32 (26.2)	4.85 (123)
NU□□-FNS12-9	3/4 Female NPT	3/4 Female NPT			1.63 (41.3)	1.63 (41.3)	——	——					
NU□□-FNS16-9	1 Female NPT	1 Female NPT			1.81 (46.0)	1.81 (46.0)							
NU□□-NS12-9	3/4 Male NPT	3/4 Male NPT			1.63 (41.3)	1.63 (41.3)							
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			1.97 (50.0)	1.97 (50.0)	1.68 (42.7)	2.08 (52.8)					
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	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	16 mm MTS	16 mm MTS											
NU□□-TS8-9	1/2" TS	1/2" TS											
NU□□-TS12-9	3/4" TS	3/4" TS											
NU□□-MTB14-9	14 mm MTB	14 mm MTB											
NU□□-MTB16-9	16 mm MTB	16 mm MTB											
NU□□-UMB14-9	14 mm UMB	14 mm UMB			2.98 (75.7)	2.98 (75.7)	——	——					
NU□□-FO12-9	3/4" Male FO	3/4" Male FO											
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 ISO	M27 x 2 Male ISO											

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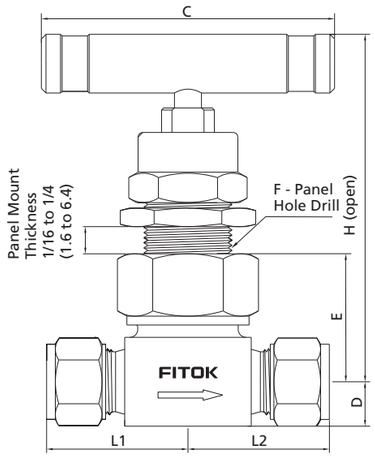
2. For Butt or Socket end connections, please prior to choose graphite as packing material, avoiding damage non graphite packing material due to the high temperature when welding.

3. Sizes and types listed are standard. Other sizes and types are available upon request.

4. Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.

Dimensions of NUH Series



Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)						
	Inlet	Outlet			L1	L2	C	D	E	F	H
NUH□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.157 (4.0)	0.35	1.125 (28.58)	1.125 (28.58)	2.5 (63.5)	0.5 (12.7)	1.34 (34.1)	25/32 (19.8)	3.31 (84.1)
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□□-NS6-7	3/8 Male NPT	3/8 Male NPT									
NUH□□-NS4-FL4-7	1/4 Male NPT	1/4" FITOK			1.125 (28.58)	1.41 (35.7)					
NUH□□-FNS4-FL4-7	1/4 Female NPT	1/4" FITOK									
NUH□□-FL4-7	1/4" FITOK	1/4" FITOK			1.41 (35.7)	1.41 (35.7)					
NUH□□-ML6-7	6 mm FITOK	6 mm FITOK									
NUH□□-ML8-7	8 mm FITOK	8 mm FITOK									
NUH□□-TS4-7	1/4" TS	1/4" TS			1.125 (28.58)	1.125 (28.58)					
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)	1.81 (46.0)	1 1/32 (26.2)	4.13 (105)
NUH□□-NS8-8	1/2 Male NPT	1/2 Male NPT									
NUH□□-FNS8-8	1/2 Female NPT	1/2 Female NPT			1.63 (41.4)	1.63 (41.4)		0.78 (19.8)	1.94 (49.3)		4.13 (105)
NUH□□-NS8-FNS8-8	1/2 Male NPT	1/2 Female NPT									
NUH□□-FL8-8	1/2" FITOK	1/2" FITOK			1.97 (50.0)	1.97 (50.0)					
NUH□□-ML12-8	12 mm FITOK	12 mm FITOK						0.63 (16.0)	1.81 (46.0)		4.25 (108)
NUH□□-TS8-8	1/2" TS	1/2" TS			1.56 (39.7)	1.56 (39.7)					
NUH□□-MTS12-8	12 mm MTS	12 mm MTS									

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2. *For Butt or Socket end connections, please prior to choose graphite as packing material, avoiding damage non graphite packing material due to the high temperature when welding.*
3. *Sizes and types listed are standard. Other sizes and types are available upon request.*
4. *Dimensions are shown with FITOK nuts finger-tightened. All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or FITOK Group.*

Ordering Information

NUSS — FNS6 — FL6 — 18WB — GM — ASF2

Series	Body Material	Inlet Type	Inlet Size	Outlet Type	Outlet Size	Seat Material	Stem Type	Lower Stem Material	Orifice Size	Packing Material	Handle	Flow Pattern	Special Application	Cleaning and Packaging
NU	SS 316 SS	FNS Female NPT	2 1/8"	Same as Inlet	Same as Inlet	Same as Body	Blunt	Same as Body	7 0.157" (4.0 mm)	PTFE	Black Aluminum Bar	Straight	NO	FC-01
NUH	6L 316L SS	NS Male NPT	4 1/4"	Specify in the same way as inlet type and inlet size	1 Stellite	R Regulating	W Stellite	8 0.25" (6.4 mm)	P PEEK	C Red Aluminum Bar	A Angle	S NACE MR0175	F2 FC-02
	S4 304 SS	FRT Female BSPT	6 3/8" or 6 mm		X Customer Specified	B Ball	D5 Duplex 2205	9 0.394" (10 mm)	G Graphite	F Green Aluminum Bar		Classification for Nuclear Facility Application	
	4L 304L SS	RT Male BSPT	8 1/2" or 8 mm			T Soft Tip-PTFE	TI Titanium			J Blue Aluminum Bar		N2 Class 2	
	S1 321 SS	FMS Female Metric Thread (for RP)	10 10 mm			K Soft Tip-PCTFE	A20 Alloy 20			M 321 Stainless Steel Bar		N3 Class 3	
	91 F91	MS Male Metric Thread (for RG)	12 3/4" or 12 mm			P Soft Tip-PEEK	M Alloy 400			O Black Knob			
	92 F92	FRP Female BSPP (for RP)	14 14 mm or M14 x 1.5				INC Alloy 600						
	D5 Duplex 2205	BP Male BSPP (for RG)	16 1" or 16 mm				HC Alloy C-276						
	TI Titanium	TS Fractional Tube Socket Weld	18 18 mm										
	A20 Alloy 20	MTS Metric Tube Socket Weld	20 1 1/4" or 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 Nut + Gasket + Fractional Bulge Nipple											
		UMB Nut + Gasket + Metric Bulge Nipple											
		FO FO Fitting											
		FR FR Fitting											

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 ignored in the ordering number, others should be specified.
2. *FO means FITOK O-seal fittings.*
3. *FR means FITOK metal ring 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 as stated in ASTM G93 Level C.

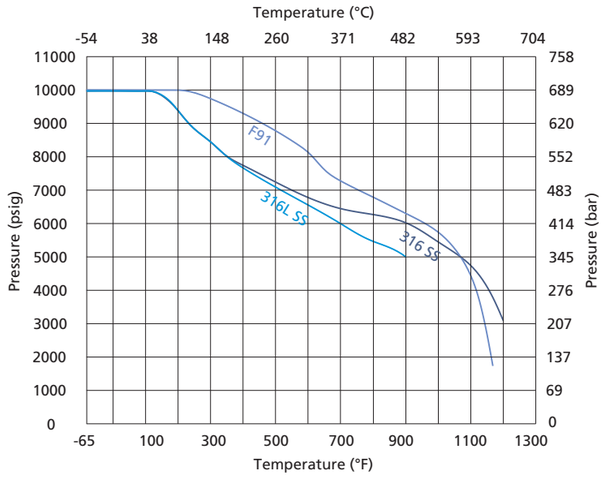
Outside Screw and Yoke Globe Pattern Needle Valves

NY Series

Features

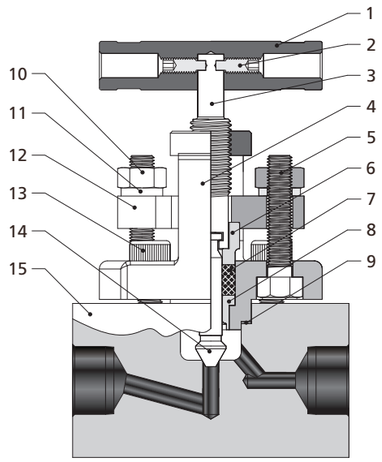
- Maximum working pressure: 10000 psig (689 bar)
- Working temperature:
  PTFE: -65°F to 450°F (-54°C to 232°C)
  PEEK: -65°F to 500°F (-54°C to 260°C)
  Graphite: -65°F to 1200°F (-54°C to 649°C)
- Standard seat diameter 4mm (0.16"). Cv: 0.35 standard
- Hardened stem threads prevent galling
- Stem threads completely isolated from system media
- The nonrotating stem provides repetitive shutoff
- Back seat construction provides secondary stem sealing and prevents stem blowout
- Externally adjustable gland, independent of spindle thread
- Self centering non rotating spindle tip for bubble tight shut off
- Steady and durable fastening of the handle by double lock-pins
- Base mount option
- Leak-tight performance testing for every valve with nitrogen at 6000 psig

Pressure vs. Temperature



1. Graphs are based on graphite stem packing.
2. 200°F (93°C) max with PCTFE stem tip (soft tip).
3. Contact the authorized representative or FITOK Group for curve graph of other materials.

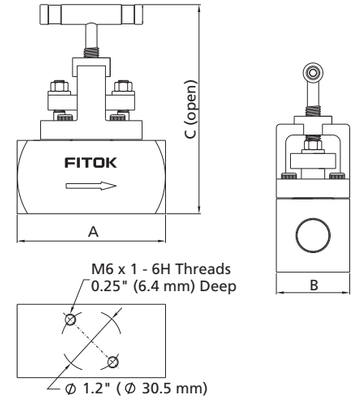
Standard Materials of Construction



Item	Component	Valve Body Material	
		316 SS	F91
1	Handle	Anodized aluminum or stainless steel	
2	Set Screw	Stainless steel	
3	Upper Stem	316 SS/A276	F91/A182
4	Yoke	316 SS/A182	F91/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	Chrome-plated 316 SS/A276	
15	Body	316 SS/A479	F91/A182
	Lubricant	Molybdenum disulfide-based	

Dimensions

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimension, in.(mm)		
	Inlet	Outlet			A	B	C
NY□□-FNS4	1/4 Female NPT	1/4 Female NPT	0.157 (4.0)	0.35	2.685 (68.2)	1.50 (38.1)	3.894 (98.9)
NY□□-NS4	1/4 Male NPT	1/4 Male NPT			2.953 (75.0)		
NY□□-NS4-FNS4	1/4 Male NPT	1/4 Female NPT					
NY□□-FNS6	3/8 Female NPT	3/8 Female NPT			2.724 (69.2)		
NY□□-NS6	3/8 Male NPT	3/8 Male NPT			2.953 (75.0)		
NY□□-FNS8	1/2 Female NPT	1/2 Female NPT			3.00 (76.2)		
NY□□-NS8	1/2 Male NPT	1/2 Male NPT			3.268 (82.0)		
NY□□-NS8-FNS8	1/2 Male NPT	1/2 Female NPT					
NY□□-PS8	1/2 PS	1/2 PS			3.00 (76.2)		
NY□□-PB8	1/2 PB	1/2 PB			3.535 (89.8)		
NY□□-FL4	1/4" FITOK	1/4" FITOK			3.441 (87.4)		
NY□□-FL6	3/8" FITOK	3/8" FITOK			3.50 (88.9)		
NY□□-FL8	1/2" FITOK	1/2" FITOK			3.78 (96.0)		
NY□□-ML6	6 mm FITOK	6 mm FITOK			3.441 (87.4)		
NY□□-ML8	8 mm FITOK	8 mm FITOK					
NY□□-ML12	12 mm FITOK	12 mm FITOK			3.78 (96.0)		



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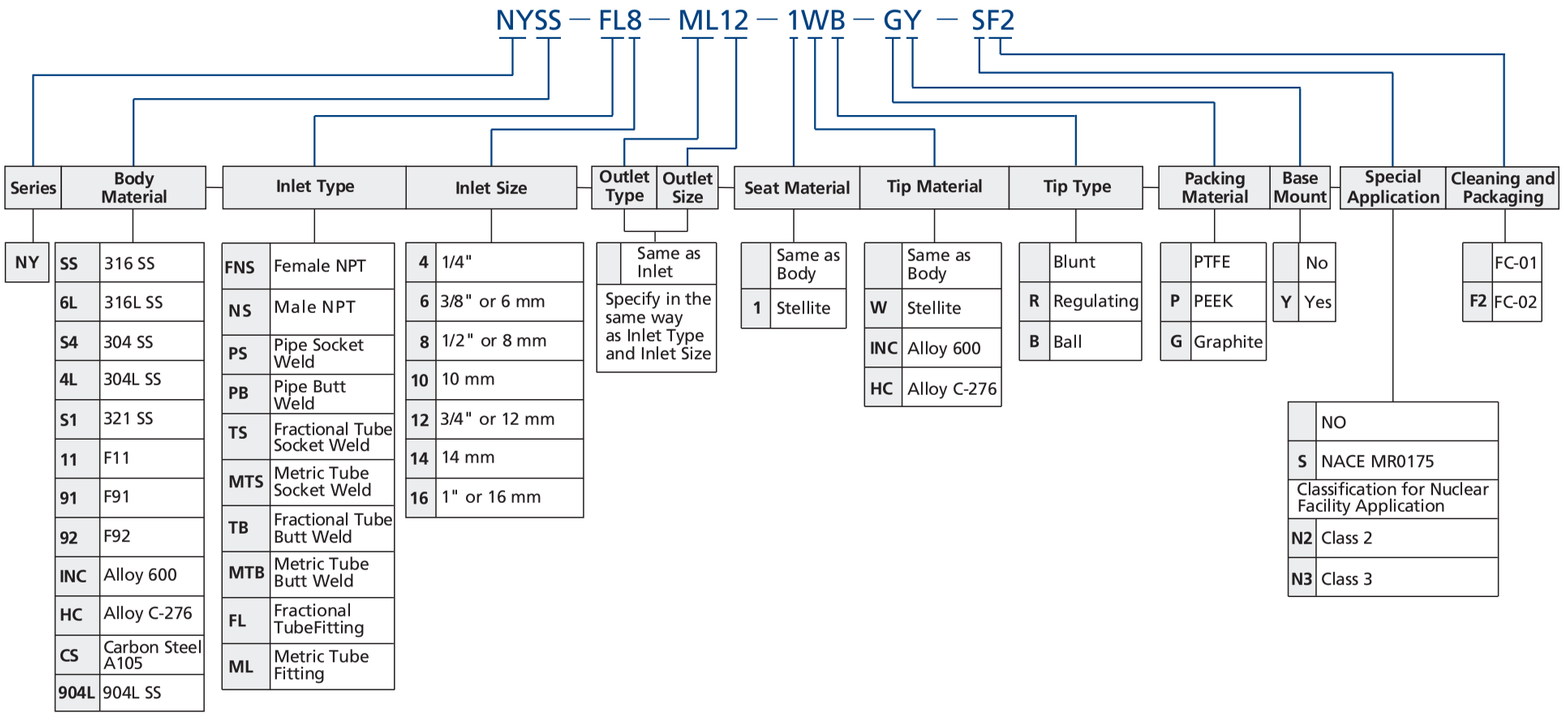

Cleaning and Packaging:
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