

# Needle Valves

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

Needle Valves  
Metering Valves



# Bar Stock Needle Valves

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

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

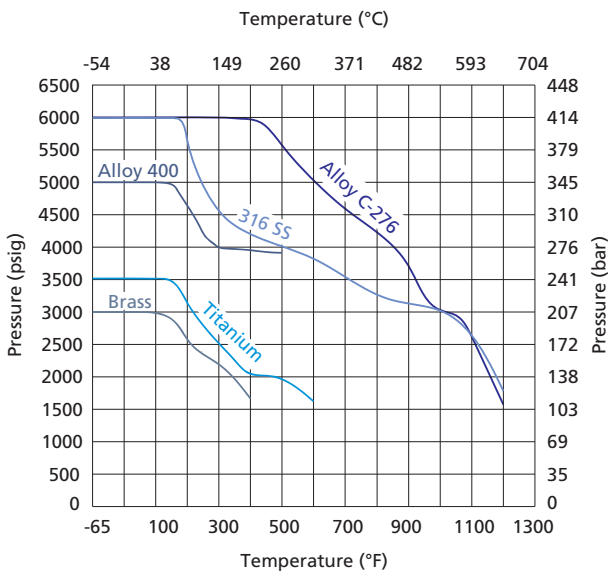


## Features

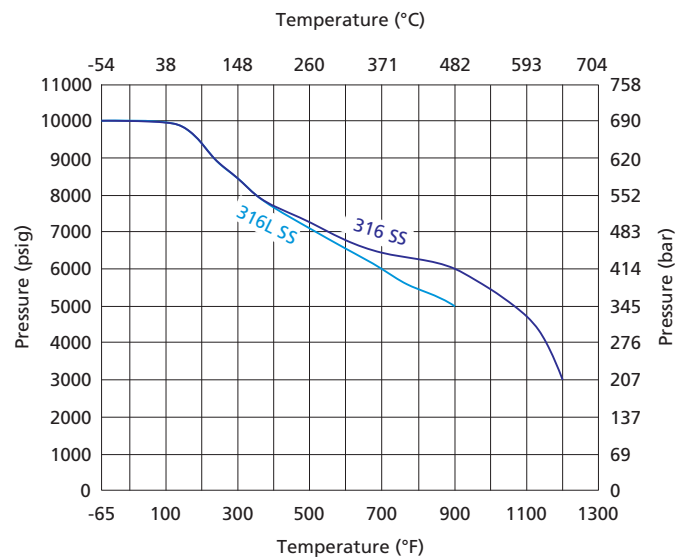
- ⦿ Cold drawn bar as body
- ⦿ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion and reduces the friction between the seat and the tip
- ⦿ Safety back seating seal in fully open position
- ⦿ Panel mounting available
- ⦿ Steady and durable fastening of the handle by double lock-pins
- ⦿ Handles of different colors available
- ⦿ Every valve leak tested with Nitrogen or compressed air (NB Series) at the maximum allowable working pressure or with water (NBH Series) at 1.1 times maximum allowable working pressure
- ⦿ Working pressure up to:
  - NB Series—Stainless steel: 6000 psig (414 bar)
  - Alloy C-276: 6000 psig (414 bar)
  - Alloy 400: 5000 psig (345 bar)
  - Titanium: 3500 psig (241 bar)
  - Brass: 3000 psig (207 bar)
  - NBH Series—Stainless steel: 10000 psig (690 bar)
- ⦿ Working temperature:
  - PTFE: -65°F to 450°F (-54°C to 232°C)
  - PEEK: -65°F to 500°F (-54°C to 260°C)
  - Graphite: -65°F to 1200°F (-54°C to 649°C)

## Pressure vs. Temperature

NB Series



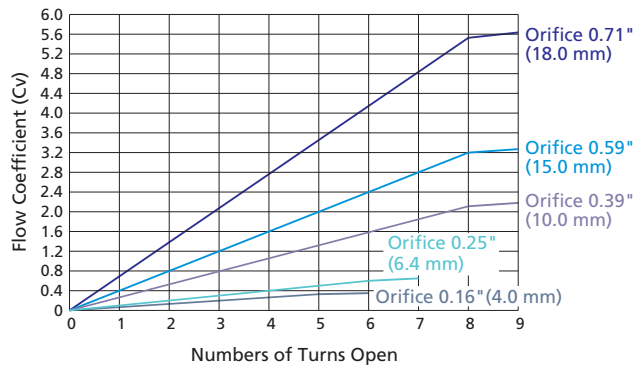
NBH Series



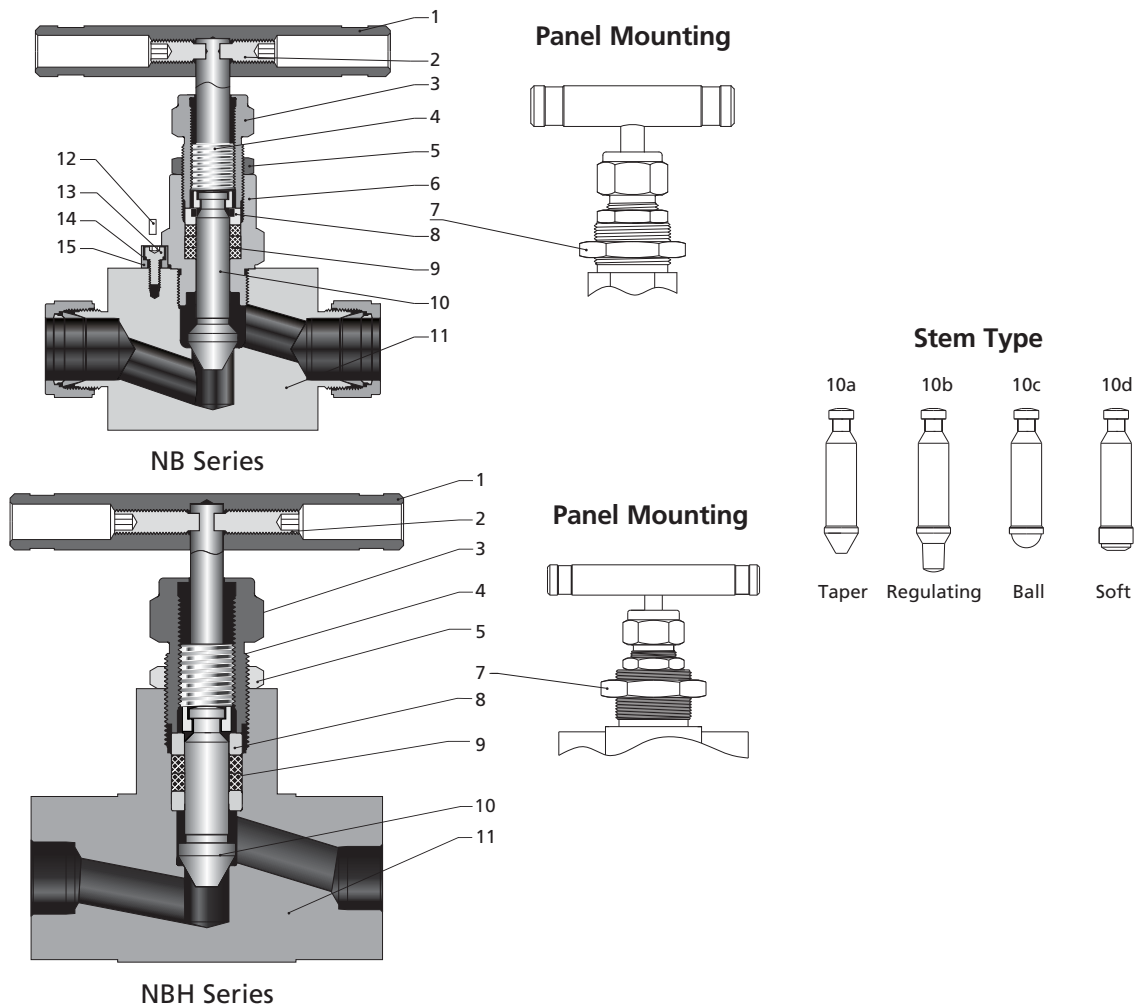
1. Graphs are based on graphite packing.  
 2. Soft tips are for NB Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).  
 3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

## Flow Data at 100°F (38°C)

Regulating Stem



## Standard Materials of Construction



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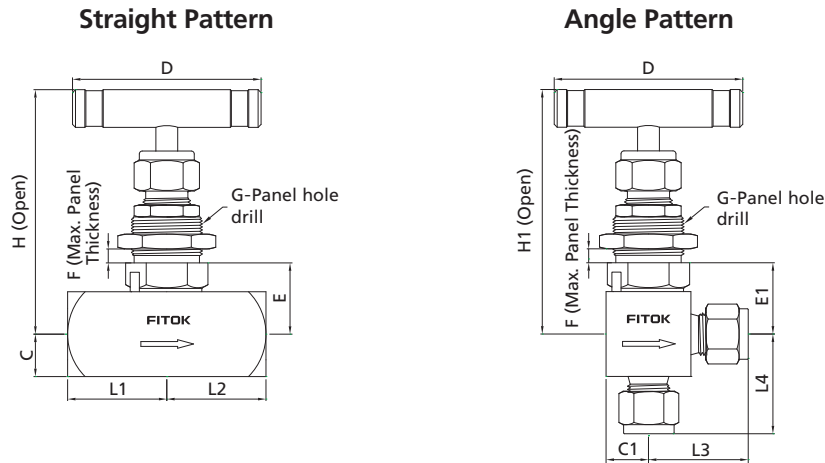
Item	Component	Valve Body Material				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
		Material Grade/ASTM Specification				
1	Handle	Anodized aluminum or stainless steel or black knob				
2	Set Screw	Galvanized carbon steel				
3	Packing Bolt	304 SS/A276			Brass C36000/B16	
4	Upper Stem	316 SS/A276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

## B-64 Needle Valves

Item	Component	Valve Body Material				
		316 SS	Alloy 400	Titanium	Alloy C-276	Brass
		Material Grade/ASTM Specification				
7	Panel Nut	Stainless steel				Brass C36000/B16
8	Gland	316 SS/A276				
9	Packing	PTFE or PEEK or graphite				
10a 10b 10c 10d	Lower Stem	Hardened 316 SS/A276	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	Hardened 316 SS/A276
11	Body	316 SS/A479	Alloy 400/B164	Titanium Gr 4/B348	Alloy C-276/B574	Brass C36000/B16
	Seat	Same as Body				
12	Lock Pin	Stainless steel				
13	Screw	Stainless steel				
14	Spring Washer	Stainless steel				
15	Bush	Stainless steel				
	Lubricant	Molybdenum disulfide-based				

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

## Dimensions



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

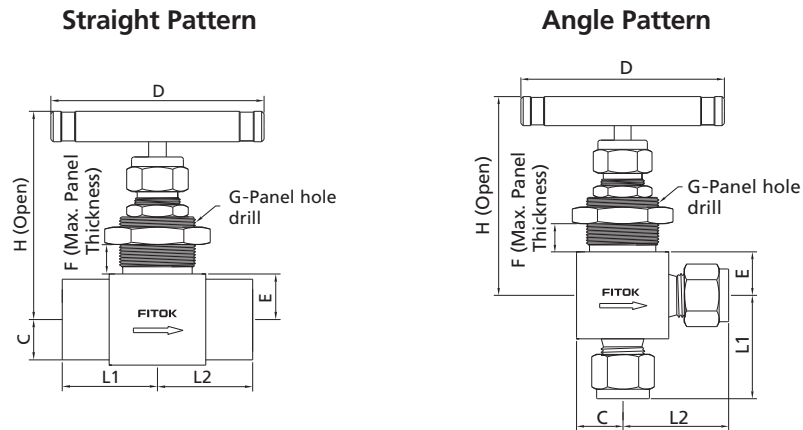
## Dimensions of NB Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)												
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
NB□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	1.00 (25.4)	0.56 (14.3)	0.50 (12.7)	0.50 (12.7)	2.17 (55)	0.84 (21.4)	0.84 (21.4)	0.25 (6.4)	0.77 (19.6)	2.86 (72.7)	2.86 (72.7)
NB□□-FNS4-7	1/4 Female NPT	1/4 Female NPT			1.06 (26.9)	1.06 (26.9)		1.06 (26.9)									
NB□□-NS4-7	1/4 Male NPT	1/4 Male NPT			1.03 (26.2)	1.03 (26.2)	1.06 (26.9)	1.06 (26.9)									
NB□□-NS6-7	3/8 Male NPT	3/8 Male NPT			1.19 (30.2)	1.19 (30.2)											
NB□□-FL4-7	1/4" FITOK	1/4" FITOK															
NB□□-ML6-7	6 mm FITOK	6 mm FITOK			1.20 (30.5)	1.20 (30.5)	1.20 (30.5)	1.20 (30.5)									
NB□□-ML8-7	8 mm FITOK	8 mm FITOK															
NB□□-FNS4-8	1/4 Female NPT	1/4 Female NPT	0.25 (6.4)	0.85	1.12 (28.6)	1.12 (28.6)	1.12 (28.6)	0.63 (15.9)	0.56 (14.3)	0.56 (14.3)	2.50 (63.5)	0.89 (22.5)	0.89 (22.5)	0.38 (9.7)	0.96 (24.4)	3.50 (88.9)	3.50 (88.9)
NB□□-FNS6-8	3/8 Female NPT	3/8 Female NPT						1.12 (28.6)									
NB□□-NS6-8	3/8 Male NPT	3/8 Male NPT															
NB□□-FL6-8	3/8" FITOK	3/8" FITOK			1.41 (35.8)	1.41 (35.8)	1.32 (33.6)	1.32 (33.6)									
NB□□-FL8-8	1/2" FITOK	1/2" FITOK			1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)									

## Dimensions of NB Series

Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)												
	Inlet	Outlet			L1	L2	L3	L4	C	C1	D	E	E1	F	G	H	H1
NB□□-ML10-8	10 mm FITOK	10 mm FITOK	0.25 (6.4)	0.85	1.42 (36.1)	1.42 (36.1)	1.33 (33.8)	1.33 (33.8)	0.56 (14.3)	0.56 (14.3)	2.50 (63.5)	0.89 (22.5)	0.89 (22.5)	0.38 (9.7)	0.96 (24.4)	3.50 (88.9)	3.50 (88.9)
NB□□-ML12-8	12 mm FITOK	12 mm FITOK			1.52 (38.6)	1.52 (38.6)	1.42 (36.1)	1.42 (36.1)									
NB□□-ML14-8	14 mm FITOK	14 mm FITOK			1.56 (39.7)	1.56 (39.7)											
NB□□-TS6-8-G	3/8" TS	3/8" TS			1.13 (28.6)	1.13 (28.6)	1.13 (28.6)	1.13 (28.6)									
NB□□-TS8-8-G	1/2" TS	1/2" TS															
NB□□-MTS12-8-G	12 mm MTS	12 mm MTS			1.50 (38.1)	1.50 (38.1)	1.50 (38.1)	1.50 (38.1)									
NB□□-MTS14-8-G	14 mm MTS	14 mm MTS															
NB□□-MTS16-8-G	16 mm MTS	16 mm MTS			2.92 (74.1)	2.92 (74.1)											
NB□□-MTB14-8-G	14 mm MTB	14 mm MTB															
NB□□-MTB16-8-G	16 mm MTB	16 mm MTB			1.50 (38.1)	1.50 (38.1)											
NB□□-UMB14-8	14 mm UMB	14 mm UMB															
NB□□-UMB16-8	16 mm UMB	16 mm UMB			1.50 (38.1)	1.50 (38.1)											
NB□□-MS20-8	M20 x 1.5 Male Metric	M20 x 1.5 Male Metric															
NB□□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric			0.39 (10.0)	2.18	1.75 (44.5)	1.75 (44.5)									
NB□□-FNS8-9	1/2 Female NPT	1/2 Female NPT	1.75 (44.5)	1.75 (44.5)					1.50 (38.1)								
NB□□-FNS12-9	3/4 Female NPT	3/4 Female NPT															
NB□□-NS12-9	3/4 Male NPT	3/4 Male NPT	1.97 (50.0)	1.97 (50.0)			1.61 (41.0)	1.61 (41.0)									
NB□□-FL12-9	3/4" FITOK	3/4" FITOK															
NB□□-ML14-9	14 mm FITOK	14 mm FITOK	1.75 (44.5)	1.75 (44.5)													
NB□□-ML16-9	16 mm FITOK	16 mm FITOK															
NB□□-ML18-9	18 mm FITOK	18 mm FITOK	2.98 (75.7)	2.98 (75.7)													
NB□□-MTS14-9-G	14 mm MTS	14 mm MTS															
NB□□-MTS16-9-G	16 mm MTS	16 mm MTS	1.56 (39.7)	1.56 (39.7)													
NB□□-TS12-9-G	3/4" TS	3/4" TS															
NB□□-UMB14-9	14 mm UMB	14 mm UMB	1.75 (44.5)	1.75 (44.5)													
NB□□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric															
NB□□-FNS12-6	3/4 Female NPT	3/4 Female NPT	0.59 (15.0)	3.27			1.75 (44.5)	1.75 (44.5)	1.75 (44.5)	1.14 (29.0)	1.14 (29.0)	0.88 (22.2)	5.00 (127)	1.70 (43.2)	1.43 (36.4)	0.38 (9.7)	1.28 (32.5)
NB□□-TS16-6-G	1" TS	1" TS			1.75 (44.5)	1.75 (44.5)			1.75 (44.5)	1.75 (44.5)							
NB□□-MTS25-6-G	25 mm MTS	25 mm MTS															
NB□□-MTS28-6-G	28 mm MTS	28 mm MTS			1.97 (50.0)	1.97 (50.0)											
NB□□-PS12-6-G	3/4 PS	3/4 PS															
NB□□-FNS16-0	1 Female NPT	1 Female NPT	0.71 (18.0)	5.65	1.97 (50.0)	1.97 (50.0)			1.24 (31.5)	5.00 (127)						5.25 (133.3)	
NB□□-MTS25-0-G	25 mm MTS	25 mm MTS															
NB□□-TS16-0-G	1" TS	1" TS															
NB□□-MTS28-0-G	28 mm MTS	28 mm MTS			1.97 (50.0)	1.97 (50.0)											
NB□□-PS12-0-G	3/4 PS	3/4 PS															
NB□□-PS16-0-G	1 PS	1 PS															

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



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

### Dimensions of NBH Series

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

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

# Ordering Number Description

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

Series	Body Material		Inlet Type		Inlet Size		Outlet Type	Outlet Size	Orifice Size		Tip Material	Stem Type	Packing Material	Panel Mounting	Handle	Flow Pattern	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								
NBH	6L	316L SS	NS	Male NPT	4	1/4"		Specify 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 RP)	10	10 mm			0	0.71" (18 mm)	A20	Alloy 20								
	91	F91	MS	Male Metric Thread (for RG)	12	3/4" or 12 mm					M	Alloy 400								
	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 Bulged Nipple																
			UMB	Nut + Gasket + Metric Bulged Nipple																

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

- 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
- 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.