

Forged Body Needle Valves

NF Series: Working pressure up to 6000 psig

NFH Series: Working pressure up to 10000 psig

Features

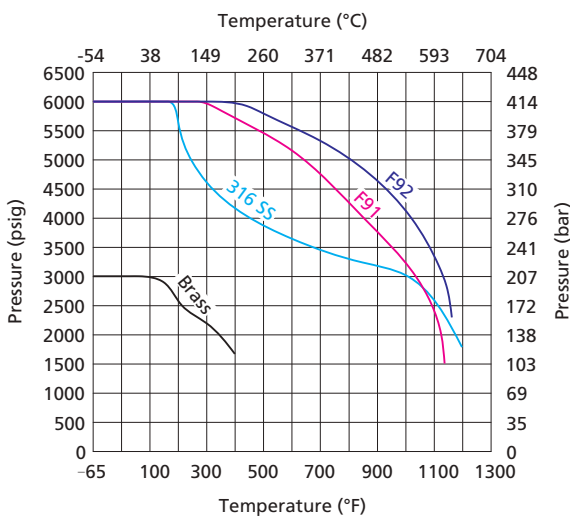
- ⦿ One-piece forged body
- ⦿ Two-piece stem design: Upper stem threads cold rolled and lower stem hardened for high strength and smooth operation
- ⦿ Upper stem thread lubricant isolated from system media
- ⦿ Linear instead of rotary motion of the rising, non-rotating stem minimizes packing abrasion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



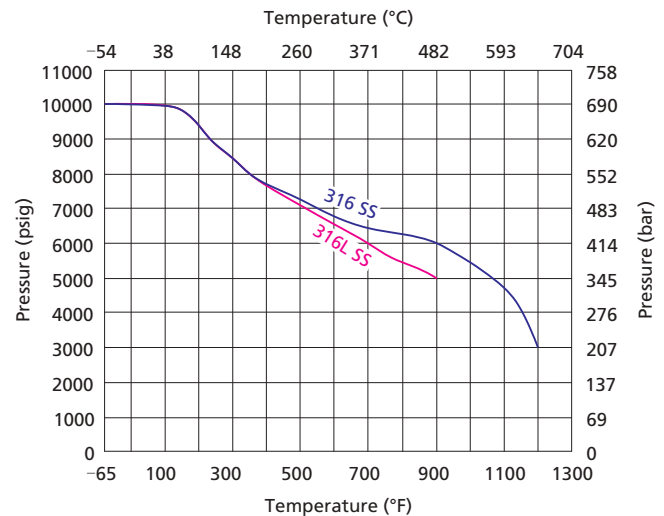
Needle Valves
Metering Valves

Pressure vs. Temperature

NF Series



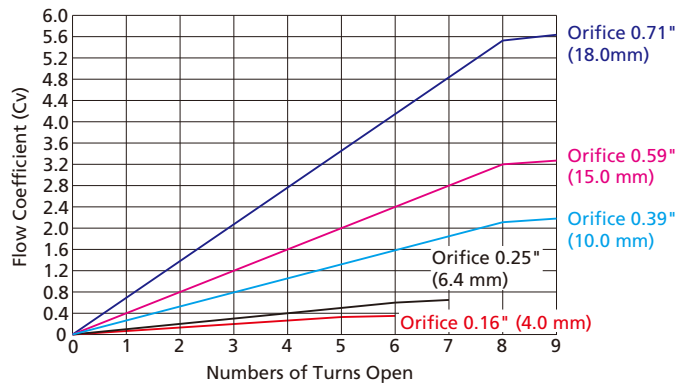
NFH Series



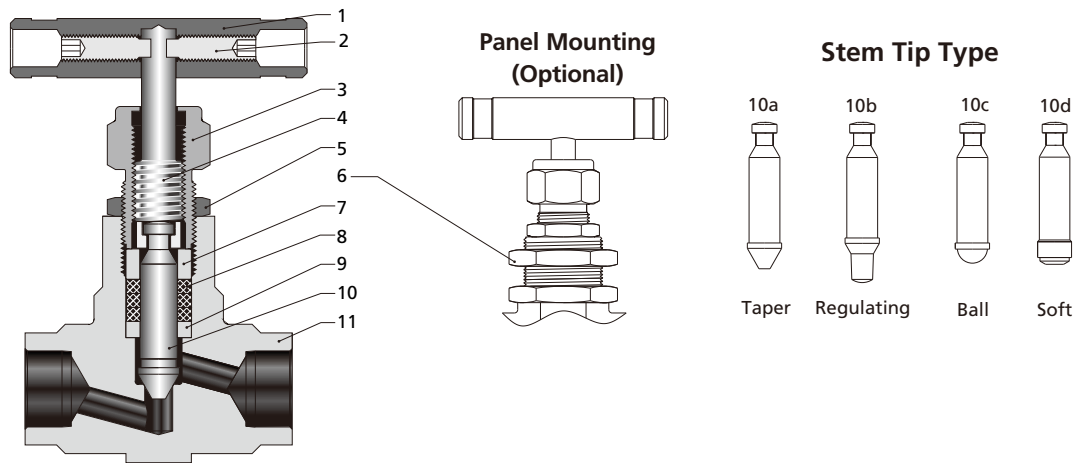
1. Graphs are based on graphite packing.
2. Soft tips are for NF Series only. Temperature rating is limited to 200°F (93°C) max. with PCTFE stem tip (soft tip).
3. Contact FITOK Group or our authorized distributors for curve graph of other materials.

Flow Data at 100°F (38°C)

Regulating Stem Tip



Standard Materials of Construction

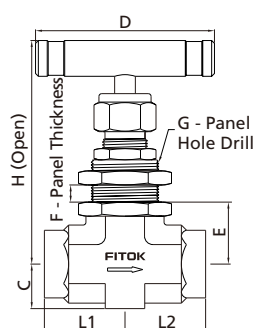


Item	Component	Valve Body Material ^a		
		316 SS	F91	Brass
		Material Grade/ASTM Specification		
1	Handle	Anodized aluminum or stainless steel or black knob		
2	Set Screw	Zinc-plated carbon steel		
3	Packing Bolt	304 SS/A479	F91/A182	Brass C36000/B16
4	Upper Stem	316 SS/A479		
5	Lock Nut	Stainless steel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

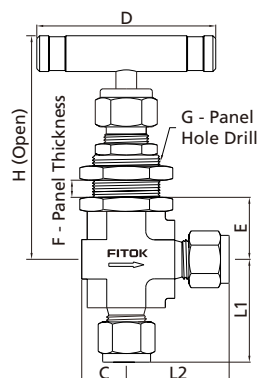
Note: a. Contact FITOK Group or our authorized distributors for other materials.
b. The panel nut is only compatible with valves configured for panel mounting. Applicable valve part numbers have the suffix "Y", for example: NF55-FL4-7-Y.

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

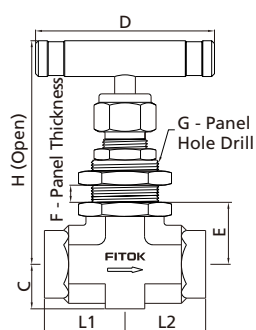
Fittings															
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)										
	Inlet	Outlet			L1	L2	H	D	C	E	F	G			
NF□□-FNS2-7	1/8 Female NPT	1/8 Female NPT	0.16 (4.0)	0.35	1.00 (25.4)	1.00 (25.4)	2.85 (72.5)	2.17 (55)	0.49 (12.5)	0.71 (18.0)	0.25 (6.4)	0.77 (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

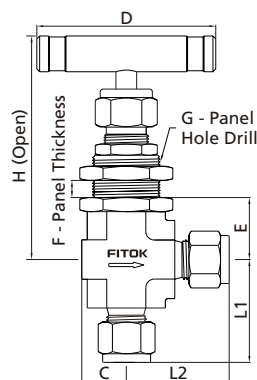
Basic Ordering Number	Connection Type and Size		Orifice in.(mm)	Cv	Dimensions, in.(mm)														
	Inlet	Outlet			L1	L2	H	D	C	E	F	G							
NF□□-MS22-8	M22 x 1.5 Male Metric	M22 x 1.5 Male Metric	0.25 (6.4)	0.85	1.50 (38.1)	1.50 (38.1)	3.38 (85.8)	2.50 (63.5)	0.62 (15.8)	0.87 (22.0)	0.38 (9.7)	0.96 (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)	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□□-UMB16-9	16x2.8 mm Rotatable Tube Butt Weld	16x2.8 mm Rotatable Tube Butt Weld			1.97 (50.0)	1.97 (50.0)			0.76 (19.4)										
NF□□-MS27-9	M27 x 2 Male Metric	M27 x 2 Male Metric											2.35 (59.7)	2.35 (59.7)					
NF□□-FNS12-6	3/4 Female NPT	3/4 Female NPT			0.59 (15.0)	3.27			1.97 (50.0)						1.97 (50.0)	5.00 (127)	5.00 (127)	1.08 (27.5)	1.61 (41.0)
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																	
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	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□□-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																	
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: NFH55-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			1.50 (38.1)	1.50 (38.1)												
NFH□□-NS6-8	3/8 Male NPT	3/8 Male NPT																
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							0.88 (22.2)									
NFH□□-FNS8-9	1/2 Female NPT	1/2 Female NPT			4.16 (105.7)													

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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

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 Specified in the same way as inlet type and inlet size	7 0.16" (4.0 mm) 8 0.25" (6.4 mm) 9 0.39" (10 mm) 6 0.59" (15 mm) 0 0.71" (18 mm)	Only NF series	Same as Body	W Stellite D5 Duplex 2205 TI Titanium A20 Alloy 20 M Alloy 400 INC Alloy 600 HC Alloy C-276	Taper R Regulating B Ball T Soft Tip-PTFE K Soft Tip-PCTFE Soft stem tip only for NF Series Needle Valves with the orifice 0.16"/4.0mm, 0.25"/6.4mm and 0.39"/10mm	PTFE P PEEK G Graphite	No Y Yes	Straight A Angle	Black Aluminum Bar I Red Aluminum Bar GR Green Aluminum Bar J Blue Aluminum Bar M Stainless Steel Bar B Black Knob (only for NF Series Needle Valves with the orifice 0.16"/4.0mm and 0.25"/6.4mm)	No S NACE MR0175 SI Inert Silicon Coating	FC-01 F2 FC-02		
NFH	6L	316L SS	NS	Male NPT	4	1/4"														
	S4	304 SS	FRT	Female BSPT	6	3/8" or 6 mm														
	4L	304L SS	RT	Male BSPT	8	1/2" or 8 mm														
	S1	321 SS	FMS	Female Metric Thread (for RG-M)	10	10 mm														
	91	F91	MS	Male Metric Thread (for RG-M)	12	3/4" or 3/4" x SCH80 or 12 mm														
	92	F92	FRP	Female BSPP (for RP)	14	14 mm or 14x2.5 mm or M14x1.5														
	D5	Duplex 2205	BP	Male BSPP (for RG)	16	1" or 1" x SCH80 or 16 mm or 16x2.25 mm or 16x2.8 mm														
	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 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.
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