



An Installer's Pocket Guide For FITOK Tube Fittings

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Ordering Information

Select a basic ordering number.
Example: -CM-FL4-NS4
Add a material designator.
Example: SS-CM-FL4-NS4

Materials

Material	Bar Stock	Forging	Designator
316 stainless steel	ASTM A276, ASME SA479, EN 1.4401	ASTM A182, ASME SA182, EN 1.4401	SS
316L stainless steel	ASTM A479, ASME SA479, EN 1.4404	ASTM A182, ASME SA182, EN 1.4404	6L
304 stainless steel	ASTM A479, ASME SA479, EN 1.4301	ASTM A182, ASME SA182, EN 1.4301	S4
321 stainless steel	ASTM A479, ASME SA479, EN 1.4541	ASTM A182, ASME SA182, EN 1.4541	S1
316Ti stainless steel	ASTM A479, ASME SA479, EN 1.4571	ASTM A182, ASME SA182, EN 1.4571	6T
6Mo (S31254)	ASTM A479	ASTM A182	S12
904L stainless steel	ASTM A479	ASTM A182	904L
Titanium (grade 4)	ASTM B348	ASTM B381	TI
Duplex 2205	ASTM A479	ASTM A182	D5
Duplex 2507	ASTM A479	ASTM A182	D7
Alloy 20	ASTM A479	ASTM B462	A20
Alloy 400	ASTM B164, ASME SB164	ASTM B564, ASME SB564	M
Alloy 600	ASTM B166, ASME SB166	ASTM B564, ASME SB564	INC
Alloy 625	ASTM B446	ASTM B564, ASME SB564	A65
Alloy 718	ASTM B637	ASTM B637	A78
Alloy 825	ASTM B425	ASTM B564	A85
Alloy C-276	ASTM B574	ASTM B564	HC
Carbon steel	ASTM A108	ASTM A105	CS
Brass	ASTM B16/B453	ASTM B283	B
Nylon	ASTM D4066	/	PA
PTFE	ASTM D1710	ASTM D3294	T

Cautions:

- Do not loosen or tighten fittings when the system is pressurized.
- Make sure that the tubing rests firmly on the shoulder of the port.
- Always leave enough straight length of the tubing for the fittings.
- Always use an insert for extremely soft plastic tubing.
- The allowable working pressure of the tube fitting is rated to the maximum working pressure of the corresponding tubing, which can be found in FITOK tubing data sheet. For those which can not be found in FITOK tubing data sheet, please contact the authorized representatives or FITOK Group for related information.
- Keep the tubing end and surface clean and smooth.
- Always use proper thread sealants on tapered pipe threads. Make sure that its working temperature does not exceed that of the sealants.
- When assembling the tube fitting, hold the body with a wrench and turn the nut instead of holding the nut.
- When assembling the valve with tube fitting end, hold the valve body with a wrench and turn the nut.
- When assembling the fitting to a valve with thread, hold the valve body with a wrench and turn the body of the fitting.

Instructions

Tube Fitting

Installation

For Tube Fittings up to 1 in.(25 mm)

1. Insert the tubing into the tube fitting. Make sure the tubing rests firmly on the shoulder of the fitting body. Finger tight the nut. (Fig. 1)



Fig. 1

For High-Pressure Applications and High Safety-Factor Systems:

Further tighten the nut with a wrench until the tubing could not be turned by hand or moved axially in the fitting before Step 2 and Step 3.

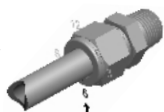


Fig. 2

2. Mark the nut at 6 o'clock position. (Fig. 2)

3. For tube fittings below or equal to 3/16" (4mm) O.D., tighten the nut 3/4 turn to 3 o'clock position with a wrench, while holding the fitting body steady. For tube fittings above 3/16" (4mm) O.D., tighten the nut 1-1/4 turns to 9 o'clock position. (Fig.3)

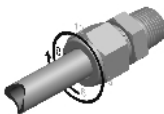


Fig. 3

For Tube Fittings Over 1 in.(25 mm)

1. Preset the ferrules onto the tubing using the FITOK Hydraulic Presetting Tool (HPT) by reference to the HPT Instructions.
2. Apply the lubricant packaged with the fitting lightly to the body threads and the rear surface of the back ferrule.
3. Install the presettled assembly (tubing, nut, front and back ferrules) into the fitting body finger-tight. Finally, tighten the nut 1/2 turn further with a wrench, while holding the fitting body steady.

Gaugeability

For initial installation, the FITOK Gap Inspection Gauge helps to judge whether the fitting has been sufficiently tightened by trying to enter the FITOK Gap Inspection Gauge into the gap between the nut and body. (Fig. 4)

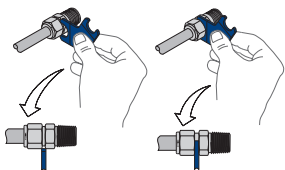


Fig. 4

- ⊙ If the gauge could not enter the gap, the fitting is sufficiently tightened.
- ⊙ If the gauge enters the gap, additional tightening is required.

Reassembly

The FITOK tube fittings can be disassembled and reassembled for multiple times. Prior to disassembly, make sure to mark a straight line along the tubing, the nut and the fitting body to ensure the reassembled fittings are properly tightened. (Fig. 5)

1. Insert tubing with the presettled ferrules into the fitting body until the front ferrule seats.
2. While holding the fitting body steady, rotate the nut with a wrench back to the original position as indicated by the marks on the tubing and the fitting body. At this point, there shall be a significant increase in resistance. (Fig. 6)
3. Tighten the nut slightly further with a wrench so as to complete the reassembly.

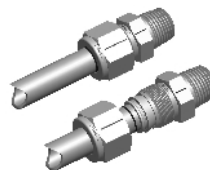


Fig. 5



Fig. 6

▲ *The FITOK Gap Inspection Gauge is not applicable to reassembled fittings.*

Plugs and Port Connectors

Installation

1. While holding the fitting body steady, tighten the plug and the machined ferrule end of port connector one-quarter turn from the finger-tight position. Fig. 7 & Fig. 8

For 1/16, 1/8, and 3/16 in.; 2, 3, and 4 mm tube fittings, tighten the plug and the machined ferrule end of port connector one-eighth turn.

For over 1 in. and over 25 mm tube fittings, tighten the plug and the machined ferrule end of port connector one-quarter turn.

2. For the tube adapter end of port connector, assemble as per Tube Fitting Installation on page 3. Fig. 9



Fig. 7

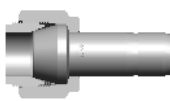


Fig. 8

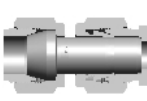


Fig. 9

Reassembly

1. Make subsequent connections by slightly tightening with a wrench after the nut is rotated snug tight by hand.
2. For the tube adapter end of port connector, reassemble as stated in the tube fitting reassembly instructions on page 4.

Presetting Tool

1. Install the nut and ferrules onto the presetting tool.
2. Insert tubing into the presetting tool, make sure the tubing rests firmly on the shoulder of the presetting tool, then rotate the nut finger-tight.
3. Assemble the fitting as per Tube Fitting Installation on page 3. Fig. 10
4. Loosen the nut and insert the tubing with preset ferrules into the fitting body. Fig. 11
5. Reassemble as stated in the reassembly instructions. Fig. 12

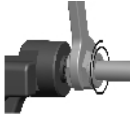


Fig. 10



Fig. 11



Fig. 12

Over 1 in. (25 mm) sizes require use of a Hydraulic Presetting Tool to preset the ferrules onto the tubing.

Pipe Fittings and Weld Fittings

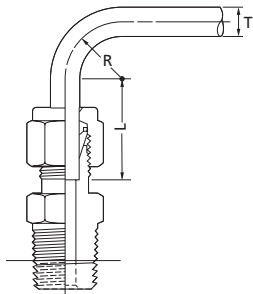
Please refer to the 6 Series Pipe Fittings catalog, FK-IC-GF-02, and 6 Series Weld Fittings catalog, FK-IC-GF-03, for the installation of thread ends and weld ends.

Tubing Installation

Tubing properly selected and handled, combined with properly installed FITOK tube fittings, will give you a leaktight system and provide reliable service in a wide variety of applications. For maximum assurance of reliable performance, use:

- ⦿ Properly selected and handled high-quality tubing—such as provided by FITOK.
- ⦿ FITOK tube fittings assembled in accordance with catalog instructions.
- ⦿ An appropriate tube support system to limit the movement of tubing and fluid system components.

When installing fittings near tube bends, there must be a sufficient straight length of tubing to allow the tubing to be bottomed in the FITOK fitting (see tables).



T Tube O.D.
L Required straight tube length (see tables)
R Radius of tubing bend

Fractional, in.	
T Tube O.D.	L
1/16	1/2
1/8	23/32
3/16	3/4
1/4	13/16
5/16	7/8
3/8	15/16
1/2	1 3/16
5/8	1 1/4
3/4	1 1/4
7/8	1 5/16
1	1 1/2
1 1/4	2
1 1/2	2 13/32
2	3 1/4

Metric, mm	
T Tube O.D.	L
3	19
6	21
8	23
10	25
12	31
14	32
15	32
16	32
18	32
20	34
22	34
25	40
28	46
30	50
32	54
38	63
50	80

Tubing Selection

Proper selection, handling, and installation of tubing, when combined with proper selection of FITOK tube fittings, are essential for reliable tubing systems. The following variables should be considered when ordering tubing for use with FITOK tube fittings:

- ⦿ Surface finish
- ⦿ Material
- ⦿ Wall thickness

Surface Finish

Surface finish is very important for proper sealing. Tubing with any kind of depression, scratch, raised portion, or other surface defect will be difficult to seal, particularly in gas service.

Material

Metal tubing material should be softer than fitting material. For example, stainless steel tubing should not be used with brass fittings. When tubing and fittings are made of the same material, tubing must be fully annealed.

Wall Thickness

The accompanying tables show working pressure ratings of tubing in a wide range of wall thicknesses. Except as noted, allowable pressure ratings are calculated from S values as specified by ASME B31.3, Process Piping. FITOK tube fittings have been repeatedly tested in both the minimum and maximum wall thicknesses shown. FITOK tube fittings are not recommended for tube wall thicknesses outside the ranges shown in the accompanying tables for each size.

Tubing Handling

It is important to properly handle the tubing in order to reduce the scratches and protect the surface finish.

- ⦿ Tubing should never be dragged out of a tubing rack or across a rough surface.
- ⦿ Tube cutters or hacksaws should be sharp. Do not take deep cuts with each turn of the cutter or stroke of the saw.
- ⦿ Removing burrs on the tube end which will be helpful for the tubing to go through the ferrules without damaging the ferrule sealing edge.

Gas Service

Gases (air, hydrogen, helium, nitrogen, etc.) have very small molecules that can escape through even the most minute leak path. Some surface defects on the tubing can provide such a leak path. As tube outside diameter (O.D.) increases, so does the likelihood of a scratch or other surface defect interfering with proper sealing. The most successful connection for gas service will occur if all installation instructions are carefully followed and the heavier wall thicknesses of tubing on the accompanying tables are selected. A heavy-wall tube resists ferrule action more than a thin-wall tube, allowing the ferrules to coin out minor surface imperfections and grip the tube more firmly. Within the applicable suggested allowable working pressure table, select a tube wall thickness whose working pressure is outside of the shaded areas.

Suggested Allowable Pressure Tables

Figures and tables are for reference only. No implication is made that these values can be used for design work. Applicable codes and practices in industry should be considered.

- ⦿ All pressures are calculated from formulas in ASME B31.3, Process Piping. See factors for calculating working pressures in accordance with ASME B31.1, Power Piping.
- ⦿ Calculations are based on maximum O.D. and minimum wall thickness, except as noted in individual tables.
Example: 1/2 in. O.D.x0.049 in. wall thickness stainless steel tubing according to ASTM A269:
O.D. Tolerance ± 0.005 in. / Wall Thickness Tolerance $\pm 10\%$
 Calculations are based on 0.505 in.O.D.x0.0441 in. wall thickness tubing.
- ⦿ No allowance is made for corrosion or erosion.

Suggested Allowable Working Pressure for Stainless Steel Tubing

Allowable working pressures are calculated from an S value of 20 000 psig (137.8 MPa) for ASTM A269 tubing at -20 to 100°F (-28 to 37°C), as listed in ASME B31.3 and ASME B31.1.

For Welded Tubing

For welded and drawn tubing, a derating factor must be applied for weld integrity:

- ⊙ For double-welded tubing, multiply working pressure by 0.85.
- ⊙ For single-welded tubing, multiply working pressure by 0.80.

Suggested Ordering Information

High-quality, fully annealed (Type 304, 304/304L, 316, 316/316L, 317, 317/317L) (seamless or welded and drawn) stainless steel hydraulic tubing, ASTM A269 or A213, or equivalent. Hardness not to exceed 90 HRB or 200 HV. Tubing to be free of scratches, suitable for bending and flaring. O.D. tolerances not to exceed ± 0.003 in. for 1/16 in. O.D. tubing.

Note: Certain austenitic stainless tubing has an allowable ovality tolerance double the O.D. tolerance and may not fit into FITOK precision tube fittings. Dual-certified grades such as 304/304L, 316/316L, and 317/317L meet the minimum chemistry and the mechanical properties of both alloy grades.

Table 1 — Fractional Stainless Steel Seamless Tubing

Tube O.D. (in.)	Nominal Wall Thickness, in.										Working Pressure, psig									
	0.010	0.012	0.014	0.016	0.020	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.156	0.188				
1/16	5600	6800	8100	9400	12000															
1/8						8500	10900													
3/16						5400	7000	10200												
1/4						4000	5100	7500	10200											
5/16							4000	5800	8000											
3/8							3300	4800	6500	7500										
1/2							2600	3700	5100	6700										
5/8								2900	4000	5200	6000									
3/4								2400	3300	4200	4900	5800								
7/8								2000	2800	3600	4200	4800								
1									2400	3100	3600	4200	4700							
1 1/4										2400	2800	3300	3600	4100	4900					
1 1/2											2300	2700	3000	3400	4000	4900				
2												2000	2200	2500	2900	3600				

Note: For gas service, select a tube thickness outside of the shaded area.

Table 2 — Metric Stainless Steel Seamless Tubing

Tube O.D. (mm)	Nominal Wall Thickness, mm														
	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0	3.5	4.0	4.5	4.5	
	Working Pressure, bar														
3	670														
6	310	420	540	710											
8		310	390	520											
10		240	300	400	510	580									
12		200	250	330	410	470									
14		160	200	270	340	380	430	490							
15		150	190	250	310	360	400	450							
16			170	230	290	330	370	400							
18			150	200	260	290	320	370							
20			140	180	230	260	290	330	380						
22			140	160	200	230	260	300	340						
25					180	200	230	260	290	320					
28						180	200	230	260	280	330				
30						170	180	210	240	260	310				
32						160	170	200	220	240	290	330			
38							140	160	190	200	240	270	310		
50										150	180	210	240	270	

Note: For gas service, select a tube thickness outside of the shaded area.

Suggested Allowable Working Pressure for Carbon Steel Tubing

Table 3 — Fractional Carbon Steel Tubing

Allowable working pressures are calculated from an S value of 15 700 psi (108.2 MPa) for ASTM A179 tubing at -20°F to 100°F (-28°C to 37°C), as listed in ASME B31.3. For working pressure in accordance with ASME B31.1, multiply by 0.85.

Suggested Ordering Information

High-quality, soft annealed seamless carbon steel hydraulic tubing, ASTM A179 or equivalent. Hardness not to exceed 72 HRB or 130 HV. Tubing to be free of scratches, suitable for bending and flaring.

Tube O.D. (in.)	Tube Wall Thickness, in.												
	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.148	0.165	0.180	0.220
	Working Pressure, psig												
1/8	8000	10200											
3/16	5100	6600	9600										
1/4	3700	4800	7000	9600									
5/16		3700	5500	7500									
3/8		3100	4500	6200									
1/2		2300	3200	4500	5900								
5/8		1800	2600	3500	4600	5300							
3/4			2100	2900	3700	4300	5100						
7/8			1800	2400	3200	3700	4300						
1			1500	2100	2700	3200	3700	4100					
1 1/4				1600	2100	2500	2900	3200	3600	4000	4600	5000	
1 1/2					1800	2000	2400	2600	2900	3300	3700	4100	5100

Note: For gas service, select a tube thickness outside of the shaded area.

Table 4 — Metric Carbon Steel Tubing

Allowable working pressures are based on equations from ASME B31.3 for DIN 2391 tubing, using a stress value of 113 MPa (16 300 psi) and tensile strength of 340 MPa (49 300 psi).

Suggested Ordering Information

High-quality, soft annealed carbon steel tubing, DIN 2391 or equivalent. Hardness not to exceed 72 HRB or 130 HV. Tubing to be free of scratches, suitable for bending and flaring.

Tube O.D. (mm)	Tube Wall Thickness, mm															
	Working Pressure, bar															
	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0	3.5	4.0	4.5			
3	630	790														
6	290	370	460	590												
8		270	330	430												
10		210	260	330												
12		170	210	270	330	380	420									
14		150	180	230	280	320	350									
15		140	170	210	260	290	330									
16		130	150	200	240	270	300	350								
18			140	170	210	240	270	310								
20			120	160	190	210	240	270	310							
22			110	140	170	190	210	240	280							
25			100	120	150	170	180	210	240	260						
28						150	160	190	210	230	270					
30						140	150	170	200	210	250					
32						130	140	160	180	200	230	270				
38							120	130	150	160	190	230	260			

Note: For gas service, select a tube thickness outside of the shaded area.

Suggested Allowable Working Pressure for Copper Tubing

Allowable working pressures are calculated from an S value of 6000 psi (41.3 MPa) for ASTM B75 (B75M) and ASTM B88 (B88M) tubing at -20°F to 100°F (-28°C to 37°C), as listed in ASME B31.3 and ASME B31.1.

Suggested Ordering Information

High-quality, soft annealed seamless copper tubing, ASTM B75 (B75M) or equivalent. Also soft annealed (Temper O) copper water tube, type K or type L to ASTM B88 (type A or type B to ASTM B88M).

Table 5 — Fractional Copper Tubing

Tube O.D. (in.)	Tube Wall Thickness, in.											
	Working Pressure, psig											
	0.028	0.030	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134		
1/8	2700	3000	3600									
3/16	1800	1900	2300	3400								
1/4	1300	1400	1600	2500	3500							
5/16			1300	1900	2700							
3/8			1000	1600	2200							
1/2			800	1100	1600	2100						
5/8				900	1200	1600	1900					
3/4				700	1000	1300	1500	1800				
7/8				600	800	1100	1300	1500				
1				500	700	900	1100	1300	1500			
1 1/8					600	800	1000	1100	1300	1400		

Note: For gas service, select a tube thickness outside of the shaded area.

Table 6 — Metric Copper Tubing

Tube O.D. (mm)	Tube Wall Thickness, mm										
	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0	Working Pressure, bar
	110	140	170	220							
6											
8		100	120	160							
10		80	100	130							
12		60	80	100	130	140					
14		50	60	90	110	120	130				
15			60	80	100	110	120				
16				70	90	100	110	120			
18				60	80	90	100	110			
20				60	70	80	90	100	110		
22				50	60	70	80	90	100		
25				40	50	60	70	80	90	100	
28					40	50	60	70	80	90	

Note: For gas service, select a tube thickness outside of the shaded area.

Basic Ordering Number
Fractional Stainless Steel Seamless Tubing

Tube O.D. (in.)	Wall Thickness (in.)	Basic Ordering Number		Weight lb/ft
		316/316L	304/304L	
1/4	0.035	SS-TMP-4-035-	S4-TMP-4-035-	0.082
	0.049	SS-TMP-4-049-	S4-TMP-4-049-	0.107
3/8	0.049	SS-TMP-6-049-	S4-TMP-6-049-	0.173
	0.065	SS-TMP-6-065-	S4-TMP-6-065-	0.219
1/2	0.049	SS-TMP-8-049-	S4-TMP-8-049-	0.240
	0.065	SS-TMP-8-065-	S4-TMP-8-065-	0.307
3/4	0.065	SS-TMP-12-065-	S4-TMP-12-065-	0.484
1	0.083	SS-TMP-16-083-	S4-TMP-16-083-	0.827
1 1/2	0.134	SS-TMP-24-134-	S4-TMP-24-134-	1.989

Metric Stainless Steel Seamless Tubing

Tube O.D. (mm)	Wall Thickness (mm)	Basic Ordering Number		Weight Kg/m
		316/316L	304/304L	
6	1.0	SS-TMP-6M-1.0-	S4-TMP-6M-1.0-	0.125
8	1.0	SS-TMP-8M-1.0-	S4-TMP-8M-1.0-	0.175
10	1.0	SS-TMP-10M-1.0-	S4-TMP-10M-1.0-	0.226
	1.5	SS-TMP-10M-1.5-	S4-TMP-10M-1.5-	0.320
12	1.5	SS-TMP-12M-1.5-	S4-TMP-12M-1.5-	0.395
	2.0	SS-TMP-12M-2.0-	S4-TMP-12M-2.0-	0.501
14	1.5	SS-TMP-14M-1.5-	S4-TMP-14M-1.5-	0.470
	2.0	SS-TMP-14M-2.0-	S4-TMP-14M-2.0-	0.602
16	1.5	SS-TMP-16M-1.5-	S4-TMP-16M-1.5-	0.545
	2.0	SS-TMP-16M-2.0-	S4-TMP-16M-2.0-	0.702
18	1.5	SS-TMP-18M-1.5-	S4-TMP-18M-1.5-	0.620
	2.0	SS-TMP-18M-2.0-	S4-TMP-18M-2.0-	0.802
20	2.0	SS-TMP-20M-2.0-	S4-TMP-20M-2.0-	0.903
25	2.5	SS-TMP-25M-2.5-	S4-TMP-25M-2.5-	1.410
28	2.5	SS-TMP-28M-2.5-	S4-TMP-28M-2.5-	1.769
30	3.0	SS-TMP-30M-3.0-	S4-TMP-30M-3.0-	2.031
32	3.5	SS-TMP-32M-3.5-	S4-TMP-32M-3.5-	2.501
38	4.0	SS-TMP-38M-4.0-	S4-TMP-38M-4.0-	3.410

Weight unit conversion: 1 lb/ft=1.488 Kg/m 1 Kg/m=0.672 lb/ft

Male Connectors



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/16	1/16	-CM-FL1-NS1
1/16	1/8	-CM-FL1-NS2
1/16	1/4	-CM-FL1-NS4
1/8	1/16	-CM-FL2-NS1
1/8	1/8	-CM-FL2-NS2
1/8	1/4	-CM-FL2-NS4
1/8	3/8	-CM-FL2-NS6
1/8	1/2	-CM-FL2-NS8
3/16	1/16	-CM-FL3-NS1
3/16	1/8	-CM-FL3-NS2
3/16	1/4	-CM-FL3-NS4
1/4	1/16	-CM-FL4-NS1
1/4	1/8	-CM-FL4-NS2
1/4	1/4	-CM-FL4-NS4
1/4	3/8	-CM-FL4-NS6
1/4	1/2	-CM-FL4-NS8
1/4	3/4	-CM-FL4-NS12
5/16	1/8	-CM-FL5-NS2
5/16	1/4	-CM-FL5-NS4
5/16	3/8	-CM-FL5-NS6
5/16	1/2	-CM-FL5-NS8
3/8	1/8	-CM-FL6-NS2
3/8	1/4	-CM-FL6-NS4
3/8	3/8	-CM-FL6-NS6
3/8	1/2	-CM-FL6-NS8

Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
3/8	3/4	-CM-FL6-NS12
3/8	1	-CM-FL6-NS16
1/2	1/8	-CM-FL8-NS2
1/2	1/4	-CM-FL8-NS4
1/2	3/8	-CM-FL8-NS6
1/2	1/2	-CM-FL8-NS8
1/2	3/4	-CM-FL8-NS12
1/2	1	-CM-FL8-NS16
5/8	1/4	-CM-FL10-NS4
5/8	3/8	-CM-FL10-NS6
5/8	1/2	-CM-FL10-NS8
5/8	3/4	-CM-FL10-NS12
3/4	3/8	-CM-FL12-NS6
3/4	1/2	-CM-FL12-NS8
3/4	3/4	-CM-FL12-NS12
3/4	1	-CM-FL12-NS16
7/8	1/2	-CM-FL14-NS8
7/8	3/4	-CM-FL14-NS12
7/8	1	-CM-FL14-NS16
1	1/2	-CM-FL16-NS8
1	3/4	-CM-FL16-NS12
1	1	-CM-FL16-NS16
1 1/8	1	-CM-FL18-NS16
1 1/4	1	-CM-FL20-NS16
1 1/4	1 1/4	-CM-FL20-NS20
1 1/2	1 1/2	-CM-FL24-NS24

Male Connectors



Fractional Tube		ISO Tapered Thread (RT)
Tube O.D. (in.)	ISO Tapered Thread Size	Basic Ordering Number
1/8	1/8	-CM-FL2-RT2
1/8	1/4	-CM-FL2-RT4
1/4	1/8	-CM-FL4-RT2
1/4	1/4	-CM-FL4-RT4
1/4	3/8	-CM-FL4-RT6
1/4	1/2	-CM-FL4-RT8
5/16	1/8	-CM-FL5-RT2
5/16	1/4	-CM-FL5-RT4
3/8	1/8	-CM-FL6-RT2
3/8	1/4	-CM-FL6-RT4
3/8	3/8	-CM-FL6-RT6
3/8	1/2	-CM-FL6-RT8
3/8	3/4	-CM-FL6-RT12
1/2	1/4	-CM-FL8-RT4
1/2	3/8	-CM-FL8-RT6
1/2	1/2	-CM-FL8-RT8
1/2	3/4	-CM-FL8-RT12
5/8	1/2	-CM-FL10-RT8
3/4	3/4	-CM-FL12-RT12
3/4	1	-CM-FL12-RT16
1	3/4	-CM-FL16-RT12
1	1	-CM-FL16-RT16

Male Connectors



Fractional Tube		ISO Parallel Thread (RS)
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number
1/8	1/8	-CM-FL2-RS2
1/8	1/4	-CM-FL2-RS4
1/8	3/8	-CM-FL2-RS6
1/4	1/8	-CM-FL4-RS2
1/4	1/4	-CM-FL4-RS4
1/4	3/8	-CM-FL4-RS6
1/4	1/2	-CM-FL4-RS8
3/8	1/8	-CM-FL6-RS2
3/8	1/4	-CM-FL6-RS4
3/8	3/8	-CM-FL6-RS6
3/8	1/2	-CM-FL6-RS8
1/2	1/4	-CM-FL8-RS4
1/2	3/8	-CM-FL8-RS6
1/2	1/2	-CM-FL8-RS8
3/4	1/2	-CM-FL12-RS8
3/4	3/4	-CM-FL12-RS12
1	1/2	-CM-FL16-RS8
1	3/4	-CM-FL16-RS12
1	1	-CM-FL16-RS16

Male Connectors



Fractional Tube		ISO Parallel Thread (RP)
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number
1/8	1/8	-CM-FL2-RP2
1/8	1/4	-CM-FL2-RP4
1/4	1/8	-CM-FL4-RP2
1/4	1/4	-CM-FL4-RP4
1/2	3/8	-CM-FL8-RP6
1/2	1/2	-CM-FL8-RP8
3/4	1/2	-CM-FL12-RP8
3/4	3/4	-CM-FL12-RP12
1	1	-CM-FL16-RP16

Male Connectors



Fractional Tube		ISO Parallel Thread (BP)
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number
1/4	3/8	-CM-FL4-BP6
3/8	3/8	-CM-FL6-BP6

Male Connectors



Adapt to straight thread boss of SAE J1926-1, ISO 11926-1 and MS 16142.

Fractional Tube		SAE/MS Straight Thread
Tube O.D. (in.)	SAE/MS Thread Size	Basic Ordering Number
1/16	5/16-24	-CM-FL1-ST5
1/8	5/16-24	-CM-FL2-ST5
1/8	7/16-20	-CM-FL2-ST7
1/8	9/16-18	-CM-FL2-ST9
3/16	3/8-24	-CM-FL3-ST6
1/4	5/16-24	-CM-FL4-ST5
1/4	7/16-20	-CM-FL4-ST7
1/4	9/16-18	-CM-FL4-ST9
1/4	3/4-16	-CM-FL4-ST12
1/4	7/8-14	-CM-FL4-ST14
5/16	1/2-20	-CM-FL5-ST8
3/8	7/16-20	-CM-FL6-ST7
3/8	9/16-18	-CM-FL6-ST9
3/8	3/4-16	-CM-FL6-ST12
3/8	7/8-14	-CM-FL6-ST14
1/2	9/16-18	-CM-FL8-ST9
1/2	3/4-16	-CM-FL8-ST12
1/2	7/8-14	-CM-FL8-ST14
1/2	1 1/16-12	-CM-FL8-ST17
5/8	3/4-16	-CM-FL10-ST12
5/8	7/8-14	-CM-FL10-ST14
3/4	3/4-16	-CM-FL12-ST12
3/4	1 1/16-12	-CM-FL12-ST17
3/4	1 5/16-12	-CM-FL12-ST21
7/8	1 3/16-12	-CM-FL14-ST19
1	1 1/16-12	-CM-FL16-ST17
1	1 5/16-12	-CM-FL16-ST21
1 1/4	1 5/8-12	-CM-FL20-ST26
1 1/2	1 7/8-12	-CM-FL24-ST30

Male Connectors



Fractional Tube		37° Flare (AN)
Tube O.D. (in.)	AN Tube Flare Size	Basic Ordering Number
1/16	1/8	-CM-FL1-AN2
1/8	1/8	-CM-FL2-AN2
1/8	1/4	-CM-FL2-AN4
3/16	3/16	-CM-FL3-AN3
1/4	1/4	-CM-FL4-AN4
5/16	5/16	-CM-FL5-AN5
3/8	1/4	-CM-FL6-AN4
3/8	3/8	-CM-FL6-AN6
1/2	1/2	-CM-FL8-AN8
5/8	5/8	-CM-FL10-AN10
3/4	3/4	-CM-FL12-AN12
1	1	-CM-FL16-AN16

Male Connectors



Fractional Tube		O-Seal with SAE/MS Straight Thread
Tube O.D. (in.)	SAE/MS Thread Size	Basic Ordering Number
1/16	5/16-24	-CM-FL1-OST5
1/8	5/16-24	-CM-FL2-OST5
3/16	3/8-24	-CM-FL3-OST6
1/4	7/16-20	-CM-FL4-OST7
5/16	1/2-20	-CM-FL5-OST8
3/8	9/16-18	-CM-FL6-OST9
1/2	3/4-16	-CM-FL8-OST12
3/4	1 1/16-12	-CM-FL12-OST17
1	1 5/16-12	-CM-FL16-OST21

Male Connectors



Fractional Tube		O-Seal with NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/8	1/8	-CM-FL2-ONS2
1/4	1/8	-CM-FL4-ONS2
1/4	1/4	-CM-FL4-ONS4
3/8	1/4	-CM-FL6-ONS4
3/8	3/8	-CM-FL6-ONS6
3/8	1/2	-CM-FL6-ONS8
1/2	1/2	-CM-FL8-ONS8

Male Connectors



Fractional Tube		Metric Thread (MRS)	
Tube O.D. (in.)	Metric Thread Size	Basic Ordering Number	
1/8	M14 x 1.5	-CM-FL2-MRS14	
1/8	M16 x 1.5	-CM-FL2-MRS16	
1/8	M18 x 1.5	-CM-FL2-MRS18	
1/8	M20 x 1.5	-CM-FL2-MRS20	
1/4	M14 x 1.5	-CM-FL4-MRS14	
1/4	M16 x 1.5	-CM-FL4-MRS16	
1/4	M18 x 1.5	-CM-FL4-MRS18	
1/4	M20 x 1.5	-CM-FL4-MRS20	
3/8	M14 x 1.5	-CM-FL6-MRS14	
3/8	M16 x 1.5	-CM-FL6-MRS16	
3/8	M18 x 1.5	-CM-FL6-MRS18	
3/8	M20 x 1.5	-CM-FL6-MRS20	
1/2	M16 x 1.5	-CM-FL8-MRS16	
1/2	M18 x 1.5	-CM-FL8-MRS18	
1/2	M20 x 1.5	-CM-FL8-MRS20	
1/2	M22 x 1.5	-CM-FL8-MRS22	

Male Connectors



Adapt to straight thread boss of ISO 6149-1.

Fractional Tube		Metric Thread (MST)	
Tube O.D. (in.)	Metric Thread Size	Basic Ordering Number	
1/4	M14X1.5	-CM-FL4-MST14	
3/8	M14X1.5	-CM-FL6-MST14	
3/8	M20X1.5	-CM-FL6-MST20	
1/2	M14X1.5	-CM-FL8-MST14	
1/2	M20X1.5	-CM-FL8-MST20	

Male Connectors



Fractional Tube		Metric Thread (MS)	
Tube O.D. (in.)	Metric Thread Size	Basic Ordering Number	
1/16	M5 x 0.8	-CM-FL1-MS5	
1/8	M14 x 1.5	-CM-FL2-MS14	
1/8	M16 x 1.5	-CM-FL2-MS16	
1/8	M18 x 1.5	-CM-FL2-MS18	
1/8	M20 x 1.5	-CM-FL2-MS20	
1/4	M14 x 1.5	-CM-FL4-MS14	
1/4	M16 x 1.5	-CM-FL4-MS16	
1/4	M18 x 1.5	-CM-FL4-MS18	
1/4	M20 x 1.5	-CM-FL4-MS20	
3/8	M10 x 1.0	-CM-FL6-MS10	
3/8	M14 x 1.5	-CM-FL6-MS14	
3/8	M16 x 1.5	-CM-FL6-MS16	
3/8	M18 x 1.5	-CM-FL6-MS18	
3/8	M20 x 1.5	-CM-FL6-MS20	
1/2	M16 x 1.5	-CM-FL8-MS16	
1/2	M18 x 1.5	-CM-FL8-MS18	
1/2	M20 x 1.5	-CM-FL8-MS20	
1/2	M22 x 1.5	-CM-FL8-MS22	

Male Connectors



Metric Tube		NPT Thread	
Tube O.D. (mm)	NPT Size	Basic Ordering Number	
2	1/8	-CM-ML2-NS2	
3	1/8	-CM-ML3-NS2	
3	1/4	-CM-ML3-NS4	
4	1/8	-CM-ML4-NS2	
4	1/4	-CM-ML4-NS4	
6	1/8	-CM-ML6-NS2	
6	1/4	-CM-ML6-NS4	
6	3/8	-CM-ML6-NS6	
6	1/2	-CM-ML6-NS8	
8	1/8	-CM-ML8-NS2	
8	1/4	-CM-ML8-NS4	
8	3/8	-CM-ML8-NS6	
8	1/2	-CM-ML8-NS8	
10	1/8	-CM-ML10-NS2	
10	1/4	-CM-ML10-NS4	
10	3/8	-CM-ML10-NS6	
10	1/2	-CM-ML10-NS8	
10	3/4	-CM-ML10-NS12	
10	1	-CM-ML10-NS16	
12	1/8	-CM-ML12-NS2	
12	1/4	-CM-ML12-NS4	
12	3/8	-CM-ML12-NS6	
12	1/2	-CM-ML12-NS8	
12	3/4	-CM-ML12-NS12	

Male Connectors



Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
14	1/8	-CM-ML14-NS2
14	1/4	-CM-ML14-NS4
14	3/8	-CM-ML14-NS6
14	1/2	-CM-ML14-NS8
14	3/4	-CM-ML14-NS12
15	1/2	-CM-ML15-NS8
15	3/4	-CM-ML15-NS12
15	1	-CM-ML15-NS16
16	1/4	-CM-ML16-NS4
16	3/8	-CM-ML16-NS6
16	1/2	-CM-ML16-NS8
16	3/4	-CM-ML16-NS12
18	3/8	-CM-ML18-NS6
18	1/2	-CM-ML18-NS8
18	3/4	-CM-ML18-NS12
20	1/2	-CM-ML20-NS8
20	3/4	-CM-ML20-NS12
20	1	-CM-ML20-NS16
22	1/2	-CM-ML22-NS8
22	3/4	-CM-ML22-NS12
22	1	-CM-ML22-NS16
25	1/2	-CM-ML25-NS8
25	3/4	-CM-ML25-NS12
25	1	-CM-ML25-NS16
28	1	-CM-ML28-NS16
28	1 1/4	-CM-ML28-NS20
30	1 1/4	-CM-ML30-NS20
32	1 1/4	-CM-ML32-NS20
38	1 1/2	-CM-ML38-NS24

Metric Tube		ISO Tapered Thread (RT)
Tube O.D. (mm)	ISO Tapered Thread Size	Basic Ordering Number
2	1/8	-CM-ML2-RT2
3	1/8	-CM-ML3-RT2
3	1/4	-CM-ML3-RT4
4	1/8	-CM-ML4-RT2
4	1/4	-CM-ML4-RT4
6	1/8	-CM-ML6-RT2
6	1/4	-CM-ML6-RT4
6	3/8	-CM-ML6-RT6
6	1/2	-CM-ML6-RT8
8	1/8	-CM-ML8-RT2
8	1/4	-CM-ML8-RT4
8	3/8	-CM-ML8-RT6
8	1/2	-CM-ML8-RT8
10	1/8	-CM-ML10-RT2
10	1/4	-CM-ML10-RT4
10	3/8	-CM-ML10-RT6
10	1/2	-CM-ML10-RT8
10	3/4	-CM-ML10-RT12
12	1/8	-CM-ML12-RT2
12	1/4	-CM-ML12-RT4
12	3/8	-CM-ML12-RT6
12	1/2	-CM-ML12-RT8
12	3/4	-CM-ML12-RT12

Male Connectors



Metric Tube		ISO Tapered Thread (RT)	
Tube O.D. (mm)	ISO Tapered Thread Size	Basic Ordering Number	
14	1/8	-CM-ML14-RT2	
14	1/4	-CM-ML14-RT4	
14	3/8	-CM-ML14-RT6	
14	1/2	-CM-ML14-RT8	
14	3/4	-CM-ML14-RT12	
15	1/2	-CM-ML15-RT8	
16	1/4	-CM-ML16-RT4	
16	3/8	-CM-ML16-RT6	
16	1/2	-CM-ML16-RT8	
16	3/4	-CM-ML16-RT12	
18	1/2	-CM-ML18-RT8	
18	3/4	-CM-ML18-RT12	
20	1/2	-CM-ML20-RT8	
20	3/4	-CM-ML20-RT12	
22	3/4	-CM-ML22-RT12	
22	1	-CM-ML22-RT16	
25	1/2	-CM-ML25-RT8	
25	3/4	-CM-ML25-RT12	
25	1	-CM-ML25-RT16	
28	1	-CM-ML28-RT16	
28	1 1/4	-CM-ML28-RT20	
30	1 1/4	-CM-ML30-RT20	
32	1 1/4	-CM-ML32-RT20	
38	1 1/2	-CM-ML38-RT24	

Metric Tube		ISO Parallel Thread (RS)	
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number	
2	1/8	-CM-ML2-RS2	
3	1/8	-CM-ML3-RS2	
3	1/4	-CM-ML3-RS4	
4	1/8	-CM-ML4-RS2	
4	1/4	-CM-ML4-RS4	
6	1/8	-CM-ML6-RS2	
6	1/4	-CM-ML6-RS4	
6	3/8	-CM-ML6-RS6	
6	1/2	-CM-ML6-RS8	
8	1/8	-CM-ML8-RS2	
8	1/4	-CM-ML8-RS4	
8	3/8	-CM-ML8-RS6	
8	1/2	-CM-ML8-RS8	
8	3/4	-CM-ML8-RS12	
10	1/4	-CM-ML10-RS4	
10	3/8	-CM-ML10-RS6	
10	1/2	-CM-ML10-RS8	
12	1/4	-CM-ML12-RS4	
12	3/8	-CM-ML12-RS6	
12	1/2	-CM-ML12-RS8	
12	3/4	-CM-ML12-RS12	
14	1/4	-CM-ML14-RS4	
14	3/8	-CM-ML14-RS6	
14	1/2	-CM-ML14-RS8	
14	3/4	-CM-ML14-RS12	

Male Connectors



Metric Tube		ISO Parallel Thread (RS)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
15	3/8	-CM-ML15-RS6
15	1/2	-CM-ML15-RS8
15	3/4	-CM-ML15-RS12
16	3/8	-CM-ML16-RS6
16	1/2	-CM-ML16-RS8
16	3/4	-CM-ML16-RS12
18	1/2	-CM-ML18-RS8
18	3/4	-CM-ML18-RS12
20	1/2	-CM-ML20-RS8
20	3/4	-CM-ML20-RS12
22	3/4	-CM-ML22-RS12
22	1	-CM-ML22-RS16
25	3/4	-CM-ML25-RS12
25	1	-CM-ML25-RS16
28	1	-CM-ML28-RS16
28	1 1/4	-CM-ML28-RS20
30	1 1/4	-CM-ML30-RS20
32	1 1/4	-CM-ML32-RS20
38	1 1/2	-CM-ML38-RS24

Metric Tube		ISO Parallel Thread (RP)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
3	1/8	-CM-ML3-RP2
3	1/4	-CM-ML3-RP4
4	1/8	-CM-ML4-RP2
6	1/8	-CM-ML6-RP2
6	1/4	-CM-ML6-RP4
6	3/8	-CM-ML6-RP6
6	1/2	-CM-ML6-RP8
8	1/8	-CM-ML8-RP2
8	1/4	-CM-ML8-RP4
8	3/8	-CM-ML8-RP6
8	1/2	-CM-ML8-RP8
10	1/4	-CM-ML10-RP4
10	3/8	-CM-ML10-RP6
10	1/2	-CM-ML10-RP8
12	1/4	-CM-ML12-RP4
12	3/8	-CM-ML12-RP6
12	1/2	-CM-ML12-RP8
12	3/4	-CM-ML12-RP12
15	1/2	-CM-ML15-RP8
16	3/8	-CM-ML16-RP6
16	1/2	-CM-ML16-RP8
18	1/2	-CM-ML18-RP8
18	3/4	-CM-ML18-RP12
20	1/2	-CM-ML20-RP8
20	3/4	-CM-ML20-RP12

Metric Tube		ISO Parallel Thread (RP)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
22	3/4	-CM-ML22-RP12
22	1	-CM-ML22-RP16
25	3/4	-CM-ML25-RP12
25	1	-CM-ML25-RP16
28	1	-CM-ML28-RP16
28	1 1/4	-CM-ML28-RP20
30	1 1/4	-CM-ML30-RP20
32	1 1/4	-CM-ML32-RP20
38	1 1/2	-CM-ML38-RP24

Male Connectors



Metric Tube		ISO Parallel Thread (BP)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
6	1/4	-CM-ML6-BP4
6	3/8	-CM-ML6-BP6
8	1/8	-CM-ML8-BP2
8	1/4	-CM-ML8-BP4
8	3/8	-CM-ML8-BP6
8	1/2	-CM-ML8-BP8
10	1/4	-CM-ML10-BP4
10	1/2	-CM-ML10-BP8
12	3/8	-CM-ML12-BP6
12	1/2	-CM-ML12-BP8
14	1/4	-CM-ML14-BP4
16	3/8	-CM-ML16-BP6
16	1/2	-CM-ML16-BP8
18	1/2	-CM-ML18-BP8

Male Connectors



Adapt to straight thread boss of SAE J1926-1, ISO 11926-1 and MS 16142.

Metric Tube		SAE/MS Straight Thread
Tube O.D. (mm)	SAE/MS Thread Size	Basic Ordering Number
6	9/16-18	-CM-ML6-ST9
10	9/16-18	-CM-ML10-ST9
10	3/4-16	-CM-ML10-ST12
12	7/16-20	-CM-ML12-ST7
12	9/16-18	-CM-ML12-ST9

Male Connectors



Metric Tube		Metric Thread (MRS)
Tube O.D. (mm)	Metric Thread Size	Basic Ordering Number
6	M8 x 1	-CM-ML6-MRS8
6	M10 x 1	-CM-ML6-MRS10
6	M12 x 1.5	-CM-ML6-MRS12
6	M14 x 1.5	-CM-ML6-MRS14
8	M8 x 1	-CM-ML8-MRS8
8	M10 x 1	-CM-ML8-MRS10
8	M12 x 1.5	-CM-ML8-MRS12
8	M14 x 1.5	-CM-ML8-MRS14

Metric Tube		Metric Thread (MRS)
Tube O.D. (mm)	Metric Thread Size	Basic Ordering Number
12	M16 x 1.5	-CM-ML12-MRS16
12	M20 x 1.5	-CM-ML12-MRS20
12	M22 x 1.5	-CM-ML12-MRS22
14	M14 x 1.5	-CM-ML14-MRS14
14	M20 x 1.5	-CM-ML14-MRS20
16	M20 x 1.5	-CM-ML16-MRS20
18	M20 x 1.5	-CM-ML18-MRS20
20	M20 x 1.5	-CM-ML20-MRS20
22	M24 x 1.5	-CM-ML22-MRS24
25	M27 x 2	-CM-ML25-MRS27

Male Connectors



Adapt to straight thread boss of ISO 6149-1.

Metric Tube		Metric Thread (MST)
Tube O.D. (mm)	Metric Thread Size	Basic Ordering Number
6	M14 x 1.5	-CM-ML6-MST14
10	M14 x 1.5	-CM-ML10-MST14
10	M20 x 1.5	-CM-ML10-MST20
12	M14 x 1.5	-CM-ML12-MST14
12	M20 x 1.5	-CM-ML12-MST20

Male Connectors



Metric Tube		Metric Thread (MS)
Tube O.D. (mm)	Metric Thread Size	Basic Ordering Number
6	M6 x 1	-CM-ML6-MS6
6	M8 x 1	-CM-ML6-MS8
6	M10 x 1	-CM-ML6-MS10
6	M12 x 1.5	-CM-ML6-MS12
6	M14 x 1.5	-CM-ML6-MS14
6	M16 x 1.5	-CM-ML6-MS16
6	M18 x 1.5	-CM-ML6-MS18
6	M20 x 1.5	-CM-ML6-MS20
8	M8 x 1	-CM-ML8-MS8
8	M10 x 1	-CM-ML8-MS10
8	M12 x 1.5	-CM-ML8-MS12
8	M14 x 1.5	-CM-ML8-MS14
8	M20 x 1.5	-CM-ML8-MS20
10	M12 x 1.5	-CM-ML10-MS12
10	M14 x 1.5	-CM-ML10-MS14
10	M20 x 1.5	-CM-ML10-MS20
12	M12 x 1.5	-CM-ML12-MS12
12	M16 x 1.5	-CM-ML12-MS16
12	M18 x 1.5	-CM-ML12-MS18
12	M20 x 1.5	-CM-ML12-MS20
14	M14 x 1.5	-CM-ML14-MS14
14	M16 x 1.5	-CM-ML14-MS16
14	M20 x 1.5	-CM-ML14-MS20
16	M20 x 1.5	-CM-ML16-MS20
18	M20 x 1.5	-CM-ML18-MS20
18	M22 x 1.5	-CM-ML18-MS22
20	M20 x 1.5	-CM-ML20-MS20
22	M24 x 1.5	-CM-ML22-MS24
25	M27 x 2	-CM-ML25-MS27

Bulkhead Male
Connectors



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/16	1/16	-BCM-FL1-NS1
1/16	1/8	-BCM-FL1-NS2
1/8	1/8	-BCM-FL2-NS2
3/16	1/8	-BCM-FL3-NS2
1/4	1/8	-BCM-FL4-NS2
1/4	1/4	-BCM-FL4-NS4
1/4	3/8	-BCM-FL4-NS6
1/4	1/2	-BCM-FL4-NS8
5/16	1/8	-BCM-FL5-NS2
5/16	1/4	-BCM-FL5-NS4
3/8	1/8	-BCM-FL6-NS2
3/8	1/4	-BCM-FL6-NS4
3/8	3/8	-BCM-FL6-NS6
3/8	1/2	-BCM-FL6-NS8
1/2	1/8	-BCM-FL8-NS2
1/2	1/4	-BCM-FL8-NS4
1/2	3/8	-BCM-FL8-NS6
1/2	1/2	-BCM-FL8-NS8
5/8	3/8	-BCM-FL10-NS6
5/8	1/2	-BCM-FL10-NS8
3/4	1/2	-BCM-FL12-NS8
3/4	3/4	-BCM-FL12-NS12
7/8	3/4	-BCM-FL14-NS12
1	3/4	-BCM-FL16-NS12
1	1	-BCM-FL16-NS16

Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
6	1/8	-BCM-ML6-NS2
6	1/4	-BCM-ML6-NS4
8	1/8	-BCM-ML8-NS2
8	1/4	-BCM-ML8-NS4
10	1/4	-BCM-ML10-NS4
10	3/8	-BCM-ML10-NS6
10	1/2	-BCM-ML10-NS8
12	1/4	-BCM-ML12-NS4
12	3/8	-BCM-ML12-NS6
12	1/2	-BCM-ML12-NS8

Bulkhead Male
Connectors



Fractional Tube		37° Flare (AN)
Tube O.D. (in.)	AN Tube Flare Size	Basic Ordering Number
1/8	1/8	-BCM-FL2-AN2
1/8	1/4	-BCM-FL2-AN4
3/16	3/16	-BCM-FL3-AN3
1/4	1/4	-BCM-FL4-NS4
5/16	5/16	-BCM-FL5-AN5
3/8	1/4	-BCM-FL6-AN4
3/8	3/8	-BCM-FL6-AN6
1/2	1/2	-BCM-FL8-AN8
5/8	5/8	-BCM-FL10-AN10
3/4	3/4	-BCM-FL12-AN12
1	1	-BCM-FL16-AN16

Thermocouple
Connectors



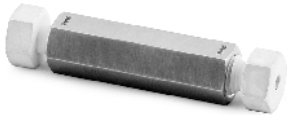
Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/16	1/16	-TCM-FL1-NS1
1/16	1/8	-TCM-FL1-NS2
1/16	1/4	-TCM-FL1-NS4
1/8	1/16	-TCM-FL2-NS1
1/8	1/8	-TCM-FL2-NS2
1/8	1/4	-TCM-FL2-NS4
3/16	1/8	-TCM-FL3-NS2
3/16	1/4	-TCM-FL3-NS4
1/4	1/8	-TCM-FL4-NS2
1/4	1/4	-TCM-FL4-NS4
1/4	3/8	-TCM-FL4-NS6
1/4	1/2	-TCM-FL4-NS8
5/16	1/4	-TCM-FL5-NS4
3/8	1/4	-TCM-FL6-NS4
3/8	3/8	-TCM-FL6-NS6
3/8	1/2	-TCM-FL6-NS8
3/8	3/4	-TCM-FL6-NS12
1/2	1/2	-TCM-FL8-NS8
1/2	3/4	-TCM-FL8-NS12
5/8	3/4	-TCM-FL10-NS12
3/4	3/4	-TCM-FL12-NS12
1	1	-TCM-FL16-NS16

Thermocouple
Connectors



Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
2	1/8	-TCM-ML2-NS2
3	1/8	-TCM-ML3-NS2
3	1/4	-TCM-ML3-NS4
4	1/8	-TCM-ML4-NS2
4	1/4	-TCM-ML4-NS4
6	1/8	-TCM-ML6-NS2
6	1/4	-TCM-ML6-NS4
6	3/8	-TCM-ML6-NS6
6	1/2	-TCM-ML6-NS8
8	1/4	-TCM-ML8-NS4
8	3/8	-TCM-ML8-NS6
8	1/2	-TCM-ML8-NS8
10	3/8	-TCM-ML10-NS6
10	1/2	-TCM-ML10-NS8
10	3/4	-TCM-ML10-NS12
10	1	-TCM-ML10-NS16
12	3/8	-TCM-ML12-NS6
12	1/2	-TCM-ML12-NS8
12	3/4	-TCM-ML12-NS12
14	1/2	-TCM-ML14-NS8
14	3/4	-TCM-ML14-NS12
15	1/2	-TCM-ML15-NS8
15	3/4	-TCM-ML15-NS12
15	1	-TCM-ML15-NS16
16	3/4	-TCM-ML16-NS12
18	3/4	-TCM-ML18-NS12
20	1	-TCM-ML20-NS16
22	1	-TCM-ML22-NS16
25	1	-TCM-ML25-NS16

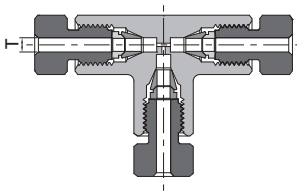
Chromatograph
Fittings



Fractional Tube	
Tube O.D (in.)	Basic Ordering Number

1/16 -U-NFL1

Chromatograph
Fittings



Fractional Tube	
Tube O.D (in.)	Basic Ordering Number

1/16 -TTT-NFL1

Female Connectors



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number

1/16 1/16 -CF-FL1-NS1

1/16 1/8 -CF-FL1-NS2

1/8 1/8 -CF-FL2-NS2

1/8 1/4 -CF-FL2-NS4

3/16 1/8 -CF-FL3-NS2

1/4 1/8 -CF-FL4-NS2

1/4 1/4 -CF-FL4-NS4

1/4 3/8 -CF-FL4-NS6

1/4 1/2 -CF-FL4-NS8

5/16 1/8 -CF-FL5-NS2

5/16 1/4 -CF-FL5-NS4

3/8 1/8 -CF-FL6-NS2

3/8 1/4 -CF-FL6-NS4

3/8 3/8 -CF-FL6-NS6

3/8 1/2 -CF-FL6-NS8

3/8 3/4 -CF-FL6-NS12

1/2 1/4 -CF-FL8-NS4

1/2 3/8 -CF-FL8-NS6

1/2 1/2 -CF-FL8-NS8

1/2 3/4 -CF-FL8-NS12

5/8 3/8 -CF-FL10-NS6

5/8 1/2 -CF-FL10-NS8

3/4 1/2 -CF-FL12-NS8

3/4 3/4 -CF-FL12-NS12

7/8 3/4 -CF-FL14-NS12

1 3/4 -CF-FL16-NS12

1 1 -CF-FL16-NS16

1 1/4 1 1/4 -CF-FL20-NS20

1 1/2 1 1/2 -CF-FL24-NS24

Fractional Tube		ISO Tapered Thread (RT)	
Tube O.D. (in.)	ISO Tapered Thread Size	Basic Ordering Number	
1/4	1/8	-CF-FL4-RT2	
1/4	1/4	-CF-FL4-RT4	
1/4	3/8	-CF-FL4-RT6	
1/4	1/2	-CF-FL4-RT8	
3/8	1/4	-CF-FL6-RT4	
3/8	3/8	-CF-FL6-RT6	
3/8	1/2	-CF-FL6-RT8	
1/2	1/4	-CF-FL8-RT4	
1/2	3/8	-CF-FL8-RT6	
1/2	1/2	-CF-FL8-RT8	

Female Connectors



Fractional Tube		ISO Parallel Thread (RG)	
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number	
1/8	1/4	-CF-FL2-RG4	
1/8	3/8	-CF-FL2-RG6	
1/4	1/4	-CF-FL4-RG4	
1/4	3/8	-CF-FL4-RG6	
1/4	1/2	-CF-FL4-RG8	
5/16	1/4	-CF-FL5-RG4	
5/16	3/8	-CF-FL5-RG6	
5/16	1/2	-CF-FL5-RG8	
3/8	1/4	-CF-FL6-RG4	
3/8	3/8	-CF-FL6-RG6	
3/8	1/2	-CF-FL6-RG8	
1/2	1/4	-CF-FL8-RG4	
1/2	3/8	-CF-FL8-RG6	
1/2	1/2	-CF-FL8-RG8	

Female Connectors



Adapt to Japanese gauge stud (JIS B7505)

Fractional Tube		ISO Parallel Thread (RJ)	
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number	
1/4	1/4	-CF-FL4-RJ4	
1/4	3/8	-CF-FL4-RJ6	
1/4	1/2	-CF-FL4-RJ8	
5/16	1/4	-CF-FL5-RJ4	
5/16	1/2	-CF-FL5-RJ8	
3/8	1/4	-CF-FL6-RJ4	
3/8	3/8	-CF-FL6-RJ6	
3/8	1/2	-CF-FL6-RJ8	
1/2	1/4	-CF-FL8-RJ4	
1/2	3/8	-CF-FL8-RJ6	
1/2	1/2	-CF-FL8-RJ8	

Female Connectors



Fractional Tube		Metric Thread
Tube O.D. (in.)	Metric Thread Size	Basic Ordering Number
1/8	M14 x 1.5	-CF-FL2-MS14
1/8	M16 x 1.5	-CF-FL2-MS16
1/8	M18 x 1.5	-CF-FL2-MS18
1/8	M20 x 1.5	-CF-FL2-MS20
1/4	M16 x 1.5	-CF-FL4-MS16
1/4	M18 x 1.5	-CF-FL4-MS18
1/4	M20 x 1.5	-CF-FL4-MS20
3/8	M14 x 1.5	-CF-FL6-MS14
3/8	M16 x 1.5	-CF-FL6-MS16
3/8	M18 x 1.5	-CF-FL6-MS18
3/8	M20 x 1.5	-CF-FL6-MS20
1/2	M16 x 1.5	-CF-FL8-MS16
1/2	M18 x 1.5	-CF-FL8-MS18
1/2	M20 x 1.5	-CF-FL8-MS20
1/2	M22 x 1.5	-CF-FL8-MS22

Female Connectors



Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
3	1/8	-CF-ML3-NS2
3	1/4	-CF-ML3-NS4
4	1/8	-CF-ML4-NS2
6	1/8	-CF-ML6-NS2
6	1/4	-CF-ML6-NS4
6	3/8	-CF-ML6-NS6
6	1/2	-CF-ML6-NS8
8	1/8	-CF-ML8-NS2
8	1/4	-CF-ML8-NS4
8	3/8	-CF-ML8-NS6
8	1/2	-CF-ML8-NS8
10	1/8	-CF-ML10-NS2
10	1/4	-CF-ML10-NS4
10	3/8	-CF-ML10-NS6
10	1/2	-CF-ML10-NS8
12	1/4	-CF-ML12-NS4
12	3/8	-CF-ML12-NS6
12	1/2	-CF-ML12-NS8
12	3/4	-CF-ML12-NS12
14	3/4	-CF-ML14-NS12
15	1/2	-CF-ML15-NS8
16	3/8	-CF-ML16-NS6
16	1/2	-CF-ML16-NS8
20	1/2	-CF-ML20-NS8
20	3/4	-CF-ML20-NS12
22	3/4	-CF-ML22-NS12
22	1	-CF-ML22-NS16
25	3/4	-CF-ML25-NS12
25	1	-CF-ML25-NS16

Female Connectors



Metric Tube		ISO Tapered Thread (RT)
Tube O.D. (mm)	ISO Tapered Thread Size	Basic Ordering Number
3	1/8	-CF-ML3-RT2
6	1/8	-CF-ML6-RT2
6	1/4	-CF-ML6-RT4
6	3/8	-CF-ML6-RT6
6	1/2	-CF-ML6-RT8
8	1/8	-CF-ML8-RT2
8	1/4	-CF-ML8-RT4
8	3/8	-CF-ML8-RT6
8	1/2	-CF-ML8-RT8
10	1/8	-CF-ML10-RT2
10	1/4	-CF-ML10-RT4
10	3/8	-CF-ML10-RT6
10	1/2	-CF-ML10-RT8
12	1/8	-CF-ML12-RT2
12	1/4	-CF-ML12-RT4
12	3/8	-CF-ML12-RT6
12	1/2	-CF-ML12-RT8
12	3/4	-CF-ML12-RT12
15	1/2	-CF-ML15-RT8
16	1/2	-CF-ML16-RT8
16	3/4	-CF-ML16-RT12
20	1/2	-CF-ML20-RT8
20	3/4	-CF-ML20-RT12
22	3/4	-CF-ML22-RT12
22	1	-CF-ML22-RT16
25	3/4	-CF-ML25-RT12
25	1	-CF-ML25-RT16

Female Connectors



Metric Tube		ISO Parallel Thread (RP)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
6	1/8	-CF-ML6-RP2
6	1/4	-CF-ML6-RP4
22	3/4	-CF-ML22-RP12
25	1	-CF-ML25-RP16

Female Connectors



Metric Tube		ISO Parallel Thread (RG)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
3	1/4	-CF-ML3-RG4
6	1/4	-CF-ML6-RG4
6	3/8	-CF-ML6-RG6
6	1/2	-CF-ML6-RG8
8	1/4	-CF-ML8-RG4
8	3/8	-CF-ML8-RG6
8	1/2	-CF-ML8-RG8
10	1/4	-CF-ML10-RG4
10	3/8	-CF-ML10-RG6
10	1/2	-CF-ML10-RG8
12	1/4	-CF-ML12-RG4
12	3/8	-CF-ML12-RG6
12	1/2	-CF-ML12-RG8
20	1/2	-CF-ML20-RG8
22	1/2	-CF-ML22-RG8

Female Connectors



Adapt to Japanese Gauge
stud (JIS B7505)

Metric Tube		ISO Parallel Thread (RJ)	
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number	
6	1/4	-CF-ML6-RJ4	
6	3/8	-CF-ML6-RJ6	
6	1/2	-CF-ML6-RJ8	
8	1/4	-CF-ML8-RJ4	
8	3/8	-CF-ML8-RJ6	
8	1/2	-CF-ML8-RJ8	
10	1/4	-CF-ML10-RJ4	
10	3/8	-CF-ML10-RJ6	
10	1/2	-CF-ML10-RJ8	
12	1/4	-CF-ML12-RJ4	
12	3/8	-CF-ML12-RJ6	
12	1/2	-CF-ML12-RJ8	

Female Connectors



Metric Tube		Metric Thread	
Tube O.D. (mm)	Metric Thread Size	Basic Ordering Number	
6	M10 x 1	-CF-ML6-MS10	
6	M14 x 1.5	-CF-ML6-MS14	
6	M20 x 1.5	-CF-ML6-MS20	
8	M8 x 1	-CF-ML8-MS8	
8	M10 x 1	-CF-ML8-MS10	
8	M14 x 1.5	-CF-ML8-MS14	
8	M20 x 1.5	-CF-ML8-MS20	
10	M16 x 1.5	-CF-ML10-MS16	
12	M20 x 1.5	-CF-ML12-MS20	
14	M10 x 1	-CF-ML14-MS10	
14	M20 x 1.5	-CF-ML14-MS20	
14	M22 x 1.5	-CF-ML14-MS22	
16	M20 x 1.5	-CF-ML16-MS20	
20	M20 x 1.5	-CF-ML20-MS20	
25	M27 x 2	-CF-ML25-MS27	

Bulkhead Female Connectors



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/16	1/16	-BCF-FL1-NS1
1/16	1/8	-BCF-FL1-NS2
1/8	1/8	-BCF-FL2-NS2
1/8	1/4	-BCF-FL2-NS4
3/16	1/8	-BCF-FL3-NS2
1/4	1/8	-BCF-FL4-NS2
1/4	1/4	-BCF-FL4-NS4
1/4	3/8	-BCF-FL4-NS6
1/4	1/2	-BCF-FL4-NS8
5/16	1/8	-BCF-FL5-NS2
5/16	1/4	-BCF-FL5-NS4
3/8	1/8	-BCF-FL6-NS2
3/8	1/4	-BCF-FL6-NS4
3/8	3/8	-BCF-FL6-NS6
3/8	1/2	-BCF-FL6-NS8
3/8	3/4	-BCF-FL6-NS12
1/2	1/4	-BCF-FL8-NS4
1/2	3/8	-BCF-FL8-NS6
1/2	1/2	-BCF-FL8-NS8
1/2	3/4	-BCF-FL8-NS12
5/8	3/8	-BCF-FL10-NS6
5/8	1/2	-BCF-FL10-NS8
3/4	1/2	-BCF-FL12-NS8
3/4	3/4	-BCF-FL12-NS12
7/8	3/4	-BCF-FL14-NS12
1	3/4	-BCF-FL16-NS12
1	1	-BCF-FL16-NS16

Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
6	1/8	-BCF-ML6-NS2
6	1/4	-BCF-ML6-NS4
8	1/8	-BCF-ML8-NS2
10	1/4	-BCF-ML10-NS4
12	3/8	-BCF-ML12-NS6
12	1/2	-BCF-ML12-NS8

Unions



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-U-FL1
1/8	-U-FL2
3/16	-U-FL3
1/4	-U-FL4
5/16	-U-FL5
3/8	-U-FL6
1/2	-U-FL8
5/8	-U-FL10
3/4	-U-FL12
7/8	-U-FL14
1	-U-FL16
1 1/8	-U-FL18
1 1/4	-U-FL20
1 1/2	-U-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-U-ML2
3	-U-ML3
4	-U-ML4
6	-U-ML6
8	-U-ML8
10	-U-ML10
12	-U-ML12
14	-U-ML14
15	-U-ML15
16	-U-ML16
18	-U-ML18
20	-U-ML20
22	-U-ML22
25	-U-ML25
28	-U-ML28
30	-U-ML30
32	-U-ML32
38	-U-ML38

Conversion Unions



Fractional Tube Metric Tube			Metric Tube Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (mm)	Basic Ordering Number	T-Tube O.D. (mm)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/8	3	-U-FL2-ML3	4	1/8	-U-ML4-FL2
1/4	4	-U-FL4-ML4	6	1/8	-U-ML6-FL2
1/4	6	-U-FL4-ML6	8	1/4	-U-ML8-FL4
3/8	6	-U-FL6-ML6	10	1/8	-U-ML10-FL2
3/8	8	-U-FL6-ML8	10	1/4	-U-ML10-FL4
1/2	6	-U-FL8-ML6	10	5/16	-U-ML10-FL5
1/2	10	-U-FL8-ML10	10	3/8	-U-ML10-FL6
1/2	12	-U-FL8-ML12	12	5/16	-U-ML12-FL5
3/4	12	-U-FL12-ML12	12	3/8	-U-ML12-FL6
3/4	16	-U-FL12-ML16	15	1/2	-U-ML15-FL8
3/4	18	-U-FL12-ML18	16	5/8	-U-ML16-FL10
1	25	-U-FL16-ML25	20	1/2	-U-ML20-FL8

Reducing Unions



Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/8	1/16	-U-FL2-FL1
3/16	1/16	-U-FL3-FL1
3/16	1/8	-U-FL3-FL2
1/4	1/16	-U-FL4-FL1
1/4	1/8	-U-FL4-FL2
1/4	3/16	-U-FL4-FL3
5/16	1/8	-U-FL5-FL2
5/16	1/4	-U-FL5-FL4
3/8	1/16	-U-FL6-FL1
3/8	1/8	-U-FL6-FL2
3/8	1/4	-U-FL6-FL4
3/8	5/16	-U-FL6-FL5
1/2	1/8	-U-FL8-FL2
1/2	1/4	-U-FL8-FL4
1/2	3/8	-U-FL8-FL6
5/8	3/8	-U-FL10-FL6
5/8	1/2	-U-FL10-FL8
3/4	1/4	-U-FL12-FL4
3/4	3/8	-U-FL12-FL6
3/4	1/2	-U-FL12-FL8
3/4	5/8	-U-FL12-FL10
1	1/2	-U-FL16-FL8
1	3/4	-U-FL16-FL12

Reducing Unions



Metric Tube		
T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number
3	2	-U-ML3-ML2
6	2	-U-ML6-ML2
6	3	-U-ML6-ML3
6	4	-U-ML6-ML4
8	6	-U-ML8-ML6
10	6	-U-ML10-ML6
10	8	-U-ML10-ML8
12	6	-U-ML12-ML6
12	8	-U-ML12-ML8
12	10	-U-ML12-ML10
16	10	-U-ML16-ML10
16	12	-U-ML16-ML12
18	12	-U-ML18-ML12
25	18	-U-ML25-ML18
25	20	-U-ML25-ML20
30	18	-U-ML30-ML18
30	20	-U-ML30-ML20
30	25	-U-ML30-ML25
32	18	-U-ML32-ML18
32	20	-U-ML32-ML20
32	25	-U-ML32-ML25
38	20	-U-ML38-ML20
38	25	-U-ML38-ML25
38	30	-U-ML38-ML30

Column End Fittings



Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/8	1/16	-U-TFL2SN7-FL1
1/4	1/16	-U-TFL4SN7-FL1
3/8	1/16	-U-TFL6SN7-FL1

SN7 Stainless steel sinter nominal pore size of 7 μ m, can provide other nominal pore size, stainless steel sinters are loosely installed to facilitate removal and replacement.

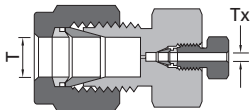
Column End Fittings



Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/8	1/16	-U-TFL2SN7-TFL1
1/4	1/16	-U-TFL4SN7-TFL1
3/8	1/16	-U-TFL6SN7-TFL1
1/2	1/16	-U-TFL8SN7-TFL1

SN7 Stainless steel sinter nominal pore size of 7 μ m, can provide other nominal pore size, stainless steel sinters are loosely installed to facilitate removal and replacement.

Column End Fittings



Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/4	1/16	-U-FL4-NFL1
3/8	1/16	-U-FL6-NFL1

Bulkhead Unions



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-BU-FL1
1/8	-BU-FL2
3/16	-BU-FL3
1/4	-BU-FL4
5/16	-BU-FL5
3/8	-BU-FL6
1/2	-BU-FL8
5/8	-BU-FL10
3/4	-BU-FL12
7/8	-BU-FL14
1	-BU-FL16
1 1/4	-BU-FL20
1 1/2	-BU-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
3	-BU-ML3
4	-BU-ML4
6	-BU-ML6
8	-BU-ML8
10	-BU-ML10
12	-BU-ML12
14	-BU-ML14
15	-BU-ML15
16	-BU-ML16
18	-BU-ML18
20	-BU-ML20
25	-BU-ML25
30	-BU-ML30
32	-BU-ML32
38	-BU-ML38

Bulkhead Reducing Unions



Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/4	1/8	-BU-FL4-FL2
3/8	1/4	-BU-FL6-FL4
1/2	1/4	-BU-FL8-FL4

Metric Tube		
T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number
6	3	-BU-ML6-ML3
8	6	-BU-ML8-ML6
12	8	-BU-ML12-ML8

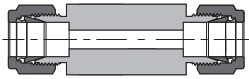
Bulkhead Conversion Unions



Fractional Tube		Metric Tube
T-Tube O.D. (in.)	Tx-Tube O.D. (mm)	Basic Ordering Number
1/4	6	-BU-FL4-ML6

Metric Tube		Fractional Tube
T-Tube O.D. (mm)	Tx-Tube O.D. (in.)	Basic Ordering Number
6	1/8	-BU-ML6-FL2
6	1/4	-BU-ML6-FL4

Weld Bulkhead
Unions



Fractional Tube	
Tx-Tube O.D. (in.)	Basic Ordering Number
1/8	-BU-FL2-OD12
3/16	-BU-FL3-OD12
1/4	-BU-FL4-OD14
5/16	-BU-FL5-OD16
3/8	-BU-FL6-OD19
1/2	-BU-FL8-OD23
5/8	-BU-FL10-OD28
3/4	-BU-FL12-OD32
7/8	-BU-FL14-OD32
1	-BU-FL16-OD35
1 1/4	-BU-FL20-OD50
1 1/2	-BU-FL24-OD55
2	-BU-FL32-OD80

Metric Tube	
Tx-Tube O.D. (mm)	Basic Ordering Number
3	-BU-ML3-OD12
4	-BU-ML4-OD12
6	-BU-ML6-OD12
8	-BU-ML8-OD16
10	-BU-ML10-OD19
12	-BU-ML12-OD23
15	-BU-ML15-OD25
16	-BU-ML16-OD28
18	-BU-ML18-OD28
20	-BU-ML20-OD32
22	-BU-ML22-OD32
25	-BU-ML25-OD38
28	-BU-ML28-OD45
32	-BU-ML32-OD50
38	-BU-ML38-OD60

For specified length, add "-***"
(metric length) as a suffix to
the basic ordering number.
Example: SS-BU-ML12-OD23-100

Bulkhead Locknuts



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-BN-FL1
1/8	-BN-FL2
3/16	-BN-FL3
1/4	-BN-FL4
5/16	-BN-FL5
3/8	-BN-FL6
1/2	-BN-FL8
5/8	-BN-FL10
3/4	-BN-FL12
7/8	-BN-FL14
1	-BN-FL16
1 1/4	-BN-FL20
1 1/2	-BN-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
3	-BN-ML3
4	-BN-ML4
6	-BN-ML6
8	-BN-ML8
10	-BN-ML10
12	-BN-ML12
14	-BN-ML14
18	-BN-ML18
20	-BN-ML20
22	-BN-ML22
25	-BN-ML25
28	-BN-ML28
30	-BN-ML30
32	-BN-ML32
38	-BN-ML38

Male Elbows



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/16	1/16	-LM-FL1-NS1
1/16	1/8	-LM-FL1-NS2
1/8	1/16	-LM-FL2-NS1
1/8	1/8	-LM-FL2-NS2
1/8	1/4	-LM-FL2-NS4
3/16	1/8	-LM-FL3-NS2
3/16	1/4	-LM-FL3-NS4
1/4	1/16	-LM-FL4-NS1
1/4	1/8	-LM-FL4-NS2
1/4	1/4	-LM-FL4-NS4
1/4	3/8	-LM-FL4-NS6
1/4	1/2	-LM-FL4-NS8
5/16	1/8	-LM-FL5-NS2
5/16	1/4	-LM-FL5-NS4
5/16	3/8	-LM-FL5-NS6
3/8	1/8	-LM-FL6-NS2
3/8	1/4	-LM-FL6-NS4
3/8	3/8	-LM-FL6-NS6
3/8	1/2	-LM-FL6-NS8
3/8	3/4	-LM-FL6-NS12
1/2	1/4	-LM-FL8-NS4
1/2	3/8	-LM-FL8-NS6
1/2	1/2	-LM-FL8-NS8
1/2	3/4	-LM-FL8-NS12

Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
5/8	3/8	-LM-FL10-NS6
5/8	1/2	-LM-FL10-NS8
5/8	3/4	-LM-FL10-NS12
3/4	1/2	-LM-FL12-NS8
3/4	3/4	-LM-FL12-NS12
7/8	3/4	-LM-FL14-NS12
1	3/4	-LM-FL16-NS12
1	1	-LM-FL16-NS16
1 1/4	1 1/4	-LM-FL20-NS20
1 1/2	1 1/2	-LM-FL24-NS24

Fractional Tube		ISO Tapered Thread (RT)
Tube O.D. (in.)	ISO Tapered Thread Size	Basic Ordering Number
1/8	1/8	-LM-FL2-RT2
1/8	1/4	-LM-FL2-RT4
1/4	1/8	-LM-FL4-RT2
1/4	1/4	-LM-FL4-RT4
1/4	3/8	-LM-FL4-RT6
1/4	1/2	-LM-FL4-RT8
5/16	1/4	-LM-FL5-RT4
3/8	1/8	-LM-FL6-RT2
3/8	1/4	-LM-FL6-RT4
3/8	3/8	-LM-FL6-RT6
1/2	3/8	-LM-FL8-RT6
1/2	1/2	-LM-FL8-RT8
3/4	1/2	-LM-FL12-RT8
1	1	-LM-FL16-RT16

Male Elbows



Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
3	1/8	-LM-ML3-NS2
3	1/4	-LM-ML3-NS4
4	1/8	-LM-ML4-NS2
4	1/4	-LM-ML4-NS4
6	1/8	-LM-ML6-NS2
6	1/4	-LM-ML6-NS4
6	3/8	-LM-ML6-NS6
6	1/2	-LM-ML6-NS8
8	1/8	-LM-ML8-NS2
8	1/4	-LM-ML8-NS4
8	3/8	-LM-ML8-NS6
8	1/2	-LM-ML8-NS8
10	1/8	-LM-ML10-NS2
10	1/4	-LM-ML10-NS4
10	3/8	-LM-ML10-NS6
10	1/2	-LM-ML10-NS8
12	1/8	-LM-ML12-NS2
12	1/4	-LM-ML12-NS4
12	3/8	-LM-ML12-NS6
12	1/2	-LM-ML12-NS8
12	3/4	-LM-ML12-NS12
15	1/2	-LM-ML15-NS8
16	1/4	-LM-ML16-NS4
16	3/8	-LM-ML16-NS6
16	1/2	-LM-ML16-NS8

Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
16	3/4	-LM-ML16-NS12
18	1/2	-LM-ML18-NS8
18	3/4	-LM-ML18-NS12
20	1/2	-LM-ML20-NS8
20	3/4	-LM-ML20-NS12
22	3/4	-LM-ML22-NS12
22	1	-LM-ML22-NS16
25	3/4	-LM-ML25-NS12
25	1	-LM-ML25-NS16
30	1 1/4	-LM-ML30-NS20
32	1 1/4	-LM-ML32-NS20
38	1 1/2	-LM-ML38-NS24

Male Elbows



Metric Tube		ISO Tapered Thread (RT)
Tube O.D. (mm)	ISO Tapered Thread Size	Basic Ordering Number
3	1/8	-LM-ML3-RT2
3	1/4	-LM-ML3-RT4
4	1/8	-LM-ML4-RT2
4	1/4	-LM-ML4-RT4
6	1/8	-LM-ML6-RT2
6	1/4	-LM-ML6-RT4

Metric Tube		ISO Tapered Thread (RT)	
Tube O.D. (mm)	ISO Tapered Thread Size	Basic Ordering Number	
6	3/8	-LM-ML6-RT6	
6	1/2	-LM-ML6-RT8	
8	1/8	-LM-ML8-RT2	
8	1/4	-LM-ML8-RT4	
8	3/8	-LM-ML8-RT6	
8	1/2	-LM-ML8-RT8	
10	1/8	-LM-ML10-RT2	
10	1/4	-LM-ML10-RT4	
10	3/8	-LM-ML10-RT6	
10	1/2	-LM-ML10-RT8	
12	1/8	-LM-ML12-RT2	
12	1/4	-LM-ML12-RT4	
12	3/8	-LM-ML12-RT6	
12	1/2	-LM-ML12-RT8	
12	3/4	-LM-ML12-RT12	
14	1/2	-LM-ML14-RT8	
15	1/2	-LM-ML15-RT8	
16	1/4	-LM-ML16-RT4	
16	3/8	-LM-ML16-RT6	
16	1/2	-LM-ML16-RT8	
16	3/4	-LM-ML16-RT12	
18	1/2	-LM-ML18-RT8	
18	3/4	-LM-ML18-RT12	
20	1/2	-LM-ML20-RT8	
20	3/4	-LM-ML20-RT12	
22	3/4	-LM-ML22-RT12	
22	1	-LM-ML22-RT16	
25	3/4	-LM-ML25-RT12	
25	1	-LM-ML25-RT16	
28	1	-LM-ML28-RT16	

45° Male Elbows



Fractional Tube		NPT Thread	
Tube O.D. (in.)	NPT Size	Basic Ordering Number	
1/16	1/16	-VM-FL1-NS1	
1/8	1/8	-VM-FL2-NS2	
3/16	1/8	-VM-FL3-NS2	
1/4	1/8	-VM-FL4-NS2	
1/4	1/4	-VM-FL4-NS4	
5/16	1/8	-VM-FL5-NS2	
3/8	1/8	-VM-FL6-NS2	
3/8	1/4	-VM-FL6-NS4	
3/8	3/8	-VM-FL6-NS6	
1/2	3/8	-VM-FL8-NS6	
5/8	1/2	-VM-FL10-NS8	
3/4	3/4	-VM-FL12-NS12	
7/8	3/4	-VM-FL14-NS12	
1	1	-VM-FL16-NS16	

Metric Tube		NPT Thread	
Tube O.D. (mm)	NPT Size	Basic Ordering Number	
6	1/8	-VM-ML6-NS2	
6	1/4	-VM-ML6-NS4	
8	1/8	-VM-ML8-NS2	
10	1/4	-VM-ML10-NS4	
12	3/8	-VM-ML12-NS6	
12	1/2	-VM-ML12-NS8	
16	1/2	-VM-ML16-NS8	

Adjustable Male Elbows

SAE/MS Straight Thread



Adapt to straight thread boss of SAE J1926-1, ISO 11926-1 and MS 16142.

Fractional Tube		SAE/MS Straight Thread
Tube O.D. (in.)	SAE/MS Thread Size	Basic Ordering Number
1/4	7/16-20	-LP-FL4-ST7
1/4	9/16-18	-LP-FL4-ST9
5/16	1/2-20	-LP-FL5-ST8
3/8	7/16-20	-LP-FL6-ST7
3/8	9/16-18	-LP-FL6-ST9
3/8	3/4-16	-LP-FL6-ST12
1/2	9/16-18	-LP-FL8-ST9
1/2	3/4-16	-LP-FL8-ST12
5/8	7/8-14	-LP-FL10-ST14
3/4	1 1/16-12	-LP-FL12-ST17
7/8	1 3/16-12	-LP-FL14-ST19
1	1 5/16-12	-LP-FL16-ST21
1 1/4	1 5/8-12	-LP-FL20-ST26
1 1/2	1 7/8-12	-LP-FL24-ST30

Adjustable Male Elbows

ISO Parallel Thread



Fractional Tube	ISO Parallel Thread (PP)	
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number
1/4	1/8	-LP-FL4-PP2
1/4	1/4	-LP-FL4-PP4
3/8	1/4	-LP-FL6-PP4
3/8	3/8	-LP-FL6-PP6
1/2	1/4	-LP-FL8-PP4
1/2	3/8	-LP-FL8-PP6
1/2	1/2	-LP-FL8-PP8
5/8	1/2	-LP-FL10-PP8
3/4	1/2	-LP-FL12-PP8
3/4	3/4	-LP-FL12-PP12
1	3/4	-LP-FL16-PP12
1	1	-LP-FL16-PP16

Metric Tube	ISO Parallel Thread (PP)	
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
6	1/8	-LP-ML6-PP2
6	1/4	-LP-ML6-PP4
8	1/8	-LP-ML8-PP2
8	1/4	-LP-ML8-PP4
10	1/4	-LP-ML10-PP4
10	3/8	-LP-ML10-PP6
12	1/4	-LP-ML12-PP4
12	3/8	-LP-ML12-PP6
12	1/2	-LP-ML12-PP8
12	3/4	-LP-ML12-PP12

45° Adjustable
Male Elbows

SAE/MS Straight Thread



Adapt to straight thread boss of
SAE J1926-1, ISO 11926-1 and MS
16142.

Fractional Tube		SAE/MS Straight Thread
Tube O.D. (in.)	SAE/MS Thread Size	Basic Ordering Number
1/4	7/16-20	-VP-FL4-ST7
3/8	9/16-18	-VP-FL6-ST9
1/2	3/4-16	-VP-FL8-ST12
3/4	1 1/16-12	-VP-FL12-ST17
1	1 5/16-12	-VP-FL16-ST21

Female Elbows



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/16	1/16	-LF-FL1-NS1
1/16	1/8	-LF-FL1-NS2
1/8	1/8	-LF-FL2-NS2
1/8	1/4	-LF-FL2-NS4
3/16	1/8	-LF-FL3-NS2
1/4	1/8	-LF-FL4-NS2
1/4	1/4	-LF-FL4-NS4
1/4	3/8	-LF-FL4-NS6
1/4	1/2	-LF-FL4-NS8
5/16	1/8	-LF-FL5-NS2
5/16	1/4	-LF-FL5-NS4
3/8	1/8	-LF-FL6-NS2
3/8	1/4	-LF-FL6-NS4
3/8	3/8	-LF-FL6-NS6
3/8	1/2	-LF-FL6-NS8
1/2	1/4	-LF-FL8-NS4
1/2	3/8	-LF-FL8-NS6
1/2	1/2	-LF-FL8-NS8
5/8	3/8	-LF-FL10-NS6
5/8	1/2	-LF-FL10-NS8
3/4	1/2	-LF-FL12-NS8
3/4	3/4	-LF-FL12-NS12
7/8	3/4	-LF-FL14-NS12
1	3/4	-LF-FL16-NS12
1	1	-LF-FL16-NS16

Female Elbows



Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
6	1/8	-LF-ML6-NS2
6	1/4	-LF-ML6-NS4
8	1/8	-LF-ML8-NS2
8	1/4	-LF-ML8-NS4
10	1/4	-LF-ML10-NS4
10	3/8	-LF-ML10-NS6
10	1/2	-LF-ML10-NS8
12	1/4	-LF-ML12-NS4
12	3/8	-LF-ML12-NS6
12	1/2	-LF-ML12-NS8
16	3/8	-LF-ML16-NS6
16	1/2	-LF-ML16-NS8

Union Elbows



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-LU-FL1
1/8	-LU-FL2
3/16	-LU-FL3
1/4	-LU-FL4
5/16	-LU-FL5
3/8	-LU-FL6
1/2	-LU-FL8
5/8	-LU-FL10
3/4	-LU-FL12
7/8	-LU-FL14
1	-LU-FL16
1 1/8	-LU-FL18
1 1/8	-LU-FL20
1 1/2	-LU-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
3	-LU-ML3
4	-LU-ML4
6	-LU-ML6
8	-LU-ML8
10	-LU-ML10
12	-LU-ML12
14	-LU-ML14
15	-LU-ML15
16	-LU-ML16
18	-LU-ML18
20	-LU-ML20
22	-LU-ML22
25	-LU-ML25
28	-LU-ML28
30	-LU-ML30
32	-LU-ML32
38	-LU-ML38

Union Reducing Elbows



Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
3/16	1/8	-LU-FL3-FL2
1/4	1/8	-LU-FL4-FL2
5/16	1/8	-LU-FL5-FL2
5/16	1/4	-LU-FL5-FL4
3/8	1/8	-LU-FL6-FL2
3/8	1/4	-LU-FL6-FL4
3/8	5/16	-LU-FL6-FL5
1/2	1/4	-LU-FL8-FL4
1/2	5/16	-LU-FL8-FL5
1/2	3/8	-LU-FL8-FL6
5/8	3/8	-LU-FL10-FL6
5/8	1/2	-LU-FL10-FL8
3/4	1/4	-LU-FL12-FL4
3/4	3/8	-LU-FL12-FL6
3/4	1/2	-LU-FL12-FL8
7/8	1/4	-LU-FL14-FL4
1	1/2	-LU-FL16-FL8
1	3/4	-LU-FL16-FL12

Metric Tube		
T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number
8	6	-LU-ML8-ML6
10	8	-LU-ML10-ML8
12	8	-LU-ML12-ML8
14	8	-LU-ML14-ML8
14	10	-LU-ML14-ML10

Male Branch Tees



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/8	1/8	-TTM-FL2-NS2
1/8	1/4	-TTM-FL2-NS4
3/16	1/8	-TTM-FL3-NS2
1/4	1/8	-TTM-FL4-NS2
1/4	1/4	-TTM-FL4-NS4
5/16	1/8	-TTM-FL5-NS2
5/16	1/4	-TTM-FL5-NS4
3/8	1/4	-TTM-FL6-NS4
3/8	3/8	-TTM-FL6-NS6
1/2	3/8	-TTM-FL8-NS6
1/2	1/2	-TTM-FL8-NS8
5/8	1/2	-TTM-FL10-NS8
3/4	3/4	-TTM-FL12-NS12
7/8	3/4	-TTM-FL14-NS12
1	3/4	-TTM-FL16-NS12
1	1	-TTM-FL16-NS16

Male Branch Tees



Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
6	1/8	-TTM-ML6-NS2
6	1/4	-TTM-ML6-NS4
8	1/8	-TTM-ML8-NS2
8	1/4	-TTM-ML8-NS4
10	1/4	-TTM-ML10-NS4
10	3/8	-TTM-ML10-NS6
12	1/4	-TTM-ML12-NS4
12	3/8	-TTM-ML12-NS6
12	1/2	-TTM-ML12-NS8
16	1/2	-TTM-ML16-NS8

Male Run Tees



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/8	1/8	-TMT-FL2-NS2
1/8	1/4	-TMT-FL2-NS4
3/16	1/8	-TMT-FL3-NS2
1/4	1/8	-TMT-FL4-NS2
1/4	1/4	-TMT-FL4-NS4
5/16	1/8	-TMT-FL5-NS2
5/16	1/4	-TMT-FL5-NS4
3/8	1/4	-TMT-FL6-NS4
3/8	3/8	-TMT-FL6-NS6
1/2	3/8	-TMT-FL8-NS6
1/2	1/2	-TMT-FL8-NS8
5/8	1/2	-TMT-FL10-NS8
3/4	3/4	-TMT-FL12-NS12
7/8	3/4	-TMT-FL14-NS12
1	3/4	-TMT-FL16-NS12
1	1	-TMT-FL16-NS16

Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
6	1/8	-TMT-ML6-NS2
6	1/4	-TMT-ML6-NS4
8	1/8	-TMT-ML8-NS2
8	1/4	-TMT-ML8-NS4
10	1/4	-TMT-ML10-NS4
10	1/2	-TMT-ML10-NS8
12	1/4	-TMT-ML12-NS4
12	3/8	-TMT-ML12-NS6
12	1/2	-TMT-ML12-NS8
16	1/2	-TMT-ML16-NS8

Adjustable Male Branch Tees

SAE/MS Straight Thread

Adapt to straight thread boss of SAE J1926-1, ISO 11926-1 and MS 16142.



Fractional Tube	SAE/MS Straight Thread	
Tube O.D. (in.)	SAE/MS Thread Size	Basic Ordering Number
1/4	7/16-20	-TTP-FL4-ST7
3/8	9/16-18	-TTP-FL6-ST9
1/2	3/4-16	-TTP-FL8-ST12
3/4	1 1/16-12	-TTP-FL12-ST17
1	1 5/16-12	-TTP-FL16-ST21
1 1/4	1 5/8-12	-TTP-FL20-ST26
1 1/2	1 7/8-12	-TTP-FL24-ST30

Adjustable Male Branch Tees

ISO Parallel Thread



Fractional Tube	ISO Parallel Thread (PP)	
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number
1/4	1/8	-TTP-FL4-PP2
1/4	1/4	-TTP-FL4-PP4
3/8	1/4	-TTP-FL6-PP4
1/2	3/8	-TTP-FL8-PP6
1/2	1/2	-TTP-FL8-PP8
5/8	1/2	-TTP-FL10-PP8
3/4	1/2	-TTP-FL12-PP8
3/4	3/4	-TTP-FL12-PP12
1	1	-TTP-FL16-PP16

Metric Tube	ISO Parallel Thread (PP)	
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
6	1/8	-TTP-ML6-PP2
6	1/4	-TTP-ML6-PP4
8	1/8	-TTP-ML8-PP2
8	1/4	-TTP-ML8-PP4
10	1/4	-TTP-ML10-PP4
12	3/8	-TTP-ML12-PP6
12	1/2	-TTP-ML12-PP8

Adjustable Male
Run Tees

SAE/MS Straight Thread



Adapt to straight thread boss of SAE J1926-1, ISO 11926-1 and MS 16142.

Fractional Tube		SAE/MS Straight Thread
Tube O.D. (in.)	SAE/MS Thread Size	Basic Ordering Number
1/4	7/16-20	-TPT-FL4-ST7
3/8	9/16-18	-TPT-FL6-ST9
1/2	3/4-16	-TPT-FL8-ST12
3/4	1 1/16-12	-TPT-FL12-ST17
1	1 5/16-12	-TPT-FL16-ST21
1 1/4	1 5/8-12	-TPT-FL20-ST26
1 1/2	1 7/8-12	-TPT-FL24-ST30

Adjustable Male
Run Tees

ISO Parallel Thread



Fractional Tube		ISO Parallel Thread (PP)
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number
1/4	1/8	-TPT-FL4-PP2
1/4	1/4	-TPT-FL4-PP4
3/8	1/4	-TPT-FL6-PP4
1/2	3/8	-TPT-FL8-PP6
1/2	1/2	-TPT-FL8-PP8
5/8	1/2	-TPT-FL10-PP8
3/4	1/2	-TPT-FL12-PP8
3/4	3/4	-TPT-FL12-PP12
1	1	-TPT-FL16-PP16

Metric Tube		ISO Parallel Thread (PP)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
6	1/8	-TPT-ML6-PP2
6	1/4	-TPT-ML6-PP4
8	1/8	-TPT-ML8-PP2
8	1/4	-TPT-ML8-PP4
10	1/4	-TPT-ML10-PP4
12	3/8	-TPT-ML12-PP6
12	1/2	-TPT-ML12-PP8

Female Branch
Tees



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/8	1/8	-TTF-FL2-NS2
3/16	1/8	-TTF-FL3-NS2
1/4	1/8	-TTF-FL4-NS2
1/4	1/4	-TTF-FL4-NS4
5/16	1/8	-TTF-FL5-NS2
3/8	1/4	-TTF-FL6-NS4
3/8	3/8	-TTF-FL6-NS6
3/8	1/2	-TTF-FL6-NS8
1/2	1/4	-TTF-FL8-NS4
1/2	3/8	-TTF-FL8-NS6
1/2	1/2	-TTF-FL8-NS8
5/8	1/2	-TTF-FL10-NS8
3/4	3/4	-TTF-FL12-NS12
7/8	3/4	-TTF-FL14-NS12
1	3/4	-TTF-FL16-NS12
1	1	-TTF-FL16-NS16

Female Branch
Tees



Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
6	1/8	-TTF-ML6-NS2
6	1/4	-TTF-ML6-NS4
8	1/8	-TTF-ML8-NS2
8	1/4	-TTF-ML8-NS4
10	1/4	-TTF-ML10-NS4
12	1/8	-TTF-ML12-NS2
12	1/4	-TTF-ML12-NS4
12	3/8	-TTF-ML12-NS6
12	1/2	-TTF-ML12-NS8
16	1/2	-TTF-ML16-NS8

Female Run Tees



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/8	1/8	-TFT-FL2-NS2
3/16	1/8	-TFT-FL3-NS2
1/4	1/8	-TFT-FL4-NS2
1/4	1/4	-TFT-FL4-NS4
5/16	1/8	-TFT-FL5-NS2
3/8	1/4	-TFT-FL6-NS4
1/2	1/4	-TFT-FL8-NS4
1/2	3/8	-TFT-FL8-NS6
1/2	1/2	-TFT-FL8-NS8
5/8	1/2	-TFT-FL10-NS8
3/4	3/4	-TFT-FL12-NS12
7/8	1/2	-TFT-FL14-NS8
7/8	3/4	-TFT-FL14-NS12
1	3/4	-TFT-FL16-NS12
1	1	-TFT-FL16-NS16

Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
6	1/8	-TFT-ML6-NS2
6	1/4	-TFT-ML6-NS4
8	1/8	-TFT-ML8-NS2
8	1/4	-TFT-ML8-NS4
10	1/4	-TFT-ML10-NS4
12	1/4	-TFT-ML12-NS4
12	3/8	-TFT-ML12-NS6
12	1/2	-TFT-ML12-NS8
16	1/2	-TFT-ML16-NS8

Union Tees



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-TTT-FL1
1/8	-TTT-FL2
3/16	-TTT-FL3
1/4	-TTT-FL4
5/16	-TTT-FL5
3/8	-TTT-FL6
1/2	-TTT-FL8
5/8	-TTT-FL10
3/4	-TTT-FL12
7/8	-TTT-FL14
1	-TTT-FL16
1 1/8	-TTT-FL18
1 1/4	-TTT-FL20
1 1/2	-TTT-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-TTT-ML2
3	-TTT-ML3
4	-TTT-ML4
6	-TTT-ML6
8	-TTT-ML8
10	-TTT-ML10
12	-TTT-ML12
14	-TTT-ML14
15	-TTT-ML15
16	-TTT-ML16
18	-TTT-ML18
20	-TTT-ML20
22	-TTT-ML22
25	-TTT-ML25
28	-TTT-ML28
30	-TTT-ML30
32	-TTT-ML32
38	-TTT-ML38

Reducing Union
Tees



Fractional Tube			
T1-Tube O.D. (in.)	T2-Tube O.D. (in.)	T3-Tube O.D. (in.)	Basic Ordering Number
1/4	1/4	1/8	-TTT-FL4-FL4-FL2
3/8	1/4	1/4	-TTT-FL6-FL4-FL4
3/8	1/4	3/8	-TTT-FL6-FL4-FL6
3/8	3/8	1/4	-TTT-FL6-FL6-FL4
1/2	1/4	1/4	-TTT-FL8-FL4-FL4
1/2	1/4	1/2	-TTT-FL8-FL4-FL8
1/2	3/8	3/8	-TTT-FL8-FL6-FL6
1/2	3/8	1/2	-TTT-FL8-FL6-FL8
1/2	1/2	1/4	-TTT-FL8-FL8-FL4
1/2	1/2	3/8	-TTT-FL8-FL8-FL6
5/8	3/8	3/8	-TTT-FL10-FL6-FL6
5/8	3/8	1/2	-TTT-FL10-FL6-FL8
5/8	1/2	3/8	-TTT-FL10-FL8-FL6
5/8	1/2	1/2	-TTT-FL10-FL8-FL8
5/8	5/8	3/8	-TTT-FL10-FL10-FL6
5/8	5/8	1/2	-TTT-FL10-FL10-FL8
3/4	3/8	3/8	-TTT-FL12-FL6-FL6
3/4	1/2	3/8	-TTT-FL12-FL8-FL6
3/4	1/2	1/2	-TTT-FL12-FL8-FL8
3/4	5/8	3/8	-TTT-FL12-FL10-FL6
3/4	5/8	1/2	-TTT-FL12-FL10-FL8
3/4	5/8	5/8	-TTT-FL12-FL10-FL10
3/4	3/4	1/4	-TTT-FL12-FL12-FL4
3/4	3/4	3/8	-TTT-FL12-FL12-FL6
3/4	3/4	1/2	-TTT-FL12-FL12-FL8
3/4	3/4	5/8	-TTT-FL12-FL12-FL10

Fractional Tube			
T1-Tube O.D. (in.)	T2-Tube O.D. (in.)	T3-Tube O.D. (in.)	Basic Ordering Number
7/8	1/2	3/4	-TTT-FL14-FL8-FL12
7/8	5/8	3/8	-TTT-FL14-FL10-FL6
7/8	3/4	3/8	-TTT-FL14-FL12-FL6
7/8	3/4	1/2	-TTT-FL14-FL12-FL8
7/8	3/4	3/4	-TTT-FL14-FL12-FL12
7/8	7/8	1/4	-TTT-FL14-FL14-FL4
7/8	7/8	3/8	-TTT-FL14-FL14-FL6
1	3/8	3/8	-TTT-FL16-FL6-FL6
1	1/2	1/4	-TTT-FL16-FL8-FL4
1	1/2	3/8	-TTT-FL16-FL8-FL6
1	1/2	1/2	-TTT-FL16-FL8-FL8
1	1/2	1	-TTT-FL16-FL8-FL16
1	5/8	3/8	-TTT-FL16-FL10-FL6
1	3/4	3/8	-TTT-FL16-FL12-FL6
1	3/4	1/2	-TTT-FL16-FL12-FL8
1	3/4	5/8	-TTT-FL16-FL12-FL10
1	3/4	1	-TTT-FL16-FL12-FL16
1	7/8	1/4	-TTT-FL16-FL14-FL4
1	7/8	3/8	-TTT-FL16-FL14-FL6
1	7/8	1/2	-TTT-FL16-FL14-FL8
1	7/8	3/4	-TTT-FL16-FL14-FL12
1	7/8	7/8	-TTT-FL16-FL14-FL14
1	1	1/4	-TTT-FL16-FL16-FL4
1	1	3/8	-TTT-FL16-FL16-FL6
1	1	1/2	-TTT-FL16-FL16-FL8
1	1	5/8	-TTT-FL16-FL16-FL10
1	1	3/4	-TTT-FL16-FL16-FL12
1	1	7/8	-TTT-FL16-FL16-FL14
1 1/4	1 1/4	1	-TTT-FL20-FL20-FL16
1 1/2	1 1/2	1	-TTT-FL24-FL24-FL16

Reducing Union Tees



Metric Tube

T1-Tube O.D. (mm)	T2-Tube O.D. (mm)	T3-Tube O.D. (mm)	Basic Ordering Number
3	3	6	-TTT-ML3-ML3-ML6
6	6	3	-TTT-ML6-ML6-ML3
6	6	8	-TTT-ML6-ML6-ML8
8	8	6	-TTT-ML8-ML8-ML6
8	8	12	-TTT-ML8-ML8-ML12
10	10	6	-TTT-ML10-ML10-ML6
10	10	8	-TTT-ML10-ML10-ML8
12	12	6	-TTT-ML12-ML12-ML6
12	12	8	-TTT-ML12-ML12-ML8
12	12	14	-TTT-ML12-ML12-ML14
12	12	18	-TTT-ML12-ML12-ML18
14	14	8	-TTT-ML14-ML14-ML8
14	14	10	-TTT-ML14-ML14-ML10
15	15	12	-TTT-ML15-ML15-ML12
16	8	16	-TTT-ML16-ML8-ML16
16	16	12	-TTT-ML16-ML16-ML12
18	18	8	-TTT-ML18-ML18-ML8
18	18	10	-TTT-ML18-ML18-ML10
18	18	12	-TTT-ML18-ML18-ML12
18	18	14	-TTT-ML18-ML18-ML14
20	20	14	-TTT-ML20-ML20-ML14
22	22	12	-TTT-ML22-ML22-ML12
25	25	12	-TTT-ML25-ML25-ML12

Union Crosses



Fractional Tube

Tube O.D. (in.)	Basic Ordering Number
1/8	-C-FL2
3/16	-C-FL3
1/4	-C-FL4
5/16	-C-FL5
3/8	-C-FL6
1/2	-C-FL8
5/8	-C-FL10
3/4	-C-FL12
7/8	-C-FL14
1	-C-FL16

Metric Tube

Tube O.D. (mm)	Basic Ordering Number
3	-C-ML3
4	-C-ML4
6	-C-ML6
8	-C-ML8
10	-C-ML10
12	-C-ML12
16	-C-ML16
18	-C-ML18
20	-C-ML20
22	-C-ML22
25	-C-ML25

Caps



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-TC-FL1
1/8	-TC-FL2
3/16	-TC-FL3
1/4	-TC-FL4
5/16	-TC-FL5
3/8	-TC-FL6
1/2	-TC-FL8
5/8	-TC-FL10
3/4	-TC-FL12
7/8	-TC-FL14
1	-TC-FL16
1 1/8	-TC-FL18
1 1/4	-TC-FL20
1 1/2	-TC-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-TC-ML2
3	-TC-ML3
4	-TC-ML4
6	-TC-ML6
8	-TC-ML8
10	-TC-ML10
12	-TC-ML12
14	-TC-ML14
15	-TC-ML15
16	-TC-ML16
18	-TC-ML18
20	-TC-ML20
22	-TC-ML22
25	-TC-ML25
28	-TC-ML28
30	-TC-ML30
32	-TC-ML32
38	-TC-ML38

Plugs



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-TP-FL1
1/8	-TP-FL2
3/16	-TP-FL3
1/4	-TP-FL4
5/16	-TP-FL5
3/8	-TP-FL6
1/2	-TP-FL8
5/8	-TP-FL10
3/4	-TP-FL12
7/8	-TP-FL14
1	-TP-FL16
1 1/4	-TP-FL20
1 1/2	-TP-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-TP-ML2
3	-TP-ML3
4	-TP-ML4
6	-TP-ML6
8	-TP-ML8
10	-TP-ML10
12	-TP-ML12
14	-TP-ML14
15	-TP-ML15
16	-TP-ML16
18	-TP-ML18
20	-TP-ML20
22	-TP-ML22
25	-TP-ML25
28	-TP-ML28
30	-TP-ML30
32	-TP-ML32
38	-TP-ML38

Vent Protectors



40 mesh stainless steel
wire screen assembly

NPT Thread	
NPT Size	Ordering Number
1/8	SS-VPF-NS2
1/4	SS-VPF-NS4
3/8	SS-VPF-NS6
1/2	SS-VPF-NS8
3/4	SS-VPF-NS12
1	SS-VPF-NS16

To order brass, replace SS in the ordering number with B
Example: **B**-VPF-NS2

Lapped Flange
Connectors



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/4	-LFC-FL4A
1/4	-LFC-FL4B
3/8	-LFC-FL6A
3/8	-LFC-FL6B
1/2	-LFC-FL8A
1/2	-LFC-FL8B

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
10	-LFC-ML10A
10	-LFC-ML10B

- Standard material is 316 or Monel.
- The flange ends are used with NPS 1/2 lap joint pipe flanges.
- The flange ends are dimensioned to meet "ANSI B16.5 Class 2500" flange specifications.
- The Flange Seal A means surface finish Ra 3.2-6.3 µm.
The flange Seal B means Ra 6.3-12.5 µm.

Male Nuts



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-MN-FL1
1/8	-MN-FL2
1/4	-MN-FL4
1/2	-MN-FL8

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
3	-MN-ML3
6	-MN-ML6
10	-MN-ML10
12	-MN-ML12

Nuts



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-N-FL1
1/8	-N-FL2
3/16	-N-FL3
1/4	-N-FL4
5/16	-N-FL5
3/8	-N-FL6
1/2	-N-FL8
5/8	-N-FL10
3/4	-N-FL12
7/8	-N-FL14
1	-N-FL16
1 1/8	-N-FL18
1 1/4	-N-FL20
1 1/2	-N-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-N-ML2
3	-N-ML3
4	-N-ML4
6	-N-ML6
8	-N-ML8
10	-N-ML10
12	-N-ML12
14	-N-ML14
15	-N-ML15
16	-N-ML16
18	-N-ML18
20	-N-ML20
22	-N-ML22
25	-N-ML25
28	-N-ML28
30	-N-ML30
32	-N-ML32
38	-N-ML38

Knurled Nuts



To order a knurled nut add K to the nut ordering number.
Exemple: B-KN-FL4

Front Ferrules



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-FF-FL1
1/8	-FF-FL2
3/16	-FF-FL3
1/4	-FF-FL4
5/16	-FF-FL5
3/8	-FF-FL6
1/2	-FF-FL8
5/8	-FF-FL10
3/4	-FF-FL12
7/8	-FF-FL14
1	-FF-FL16
1 1/8	-FF-FL18*
1 1/4	-FF-FL20*
1 1/2	-FF-FL24*

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-FF-ML2
3	-FF-ML3
4	-FF-ML4
6	-FF-ML6
8	-FF-ML8
10	-FF-ML10
12	-FF-ML12
14	-FF-ML14
15	-FF-ML15
16	-FF-ML16
18	-FF-ML18
20	-FF-ML20
22	-FF-ML22
25	-FF-ML25
28	-FF-ML28*
30	-FF-ML30*
32	-FF-ML32*
38	-FF-ML38*

* Stainless steel front ferrules over 1 in. or 25 mm are electro-silvered.

Rear Ferrules



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-RF-FL1
1/8	-RF-FL2
3/16	-RF-FL3
1/4	-RF-FL4
5/16	-RF-FL5
3/8	-RF-FL6
1/2	-RF-FL8
5/8	-RF-FL10
3/4	-RF-FL12
7/8	-RF-FL14
1	-RF-FL16
1 1/8	-RF-FL18*
1 1/4	-RF-FL20*
1 1/2	-RF-FL24*

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-RF-ML2
3	-RF-ML3
4	-RF-ML4
6	-RF-ML6
8	-RF-ML8
10	-RF-ML10
12	-RF-ML12
14	-RF-ML14
15	-RF-ML15
16	-RF-ML16
18	-RF-ML18
20	-RF-ML20
22	-RF-ML22
25	-RF-ML25
28	-RF-ML28*
30	-RF-ML30*
32	-RF-ML32*
38	-RF-ML38*

Nuts+Ferrules



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-NFR-FL1
1/8	-NFR-FL2
3/16	-NFR-FL3
1/4	-NFR-FL4
5/16	-NFR-FL5
3/8	-NFR-FL6
1/2	-NFR-FL8
5/8	-NFR-FL10
3/4	-NFR-FL12
7/8	-NFR-FL14
1	-NFR-FL16
1 1/8	-NFR-FL18
1 1/4	-NFR-FL20
1 1/2	-NFR-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-NFR-ML2
3	-NFR-ML3
4	-NFR-ML4
6	-NFR-ML6
8	-NFR-ML8
10	-NFR-ML10
12	-NFR-ML12
14	-NFR-ML14
15	-NFR-ML15
16	-NFR-ML16
18	-NFR-ML18
20	-NFR-ML20
22	-NFR-ML22
25	-NFR-ML25
28	-NFR-ML28
30	-NFR-ML30
32	-NFR-ML32
38	-NFR-ML38

Nut-Ferrule Sets



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-NFS-FL1
1/8	-NFS-FL2
3/16	-NFS-FL3
1/4	-NFS-FL4
5/16	-NFS-FL5
3/8	-NFS-FL6
1/2	-NFS-FL8
5/8	-NFS-FL10
3/4	-NFS-FL12

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-NFS-ML2
3	-NFS-ML3
4	-NFS-ML4
6	-NFS-ML6
8	-NFS-ML8
10	-NFS-ML10
12	-NFS-ML12
14	-NFS-ML14
15	-NFS-ML15
16	-NFS-ML16
18	-NFS-ML18

Each Nut-Ferrule Set contains 5 nuts, 5 front ferrules and 5 rear ferrules.

Ferrule Sets

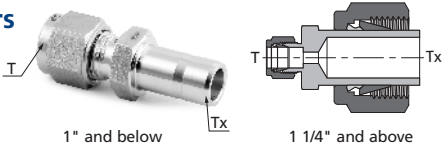


Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-FRS-FL1
1/8	-FRS-FL2
3/16	-FRS-FL3
1/4	-FRS-FL4
5/16	-FRS-FL5
3/8	-FRS-FL6
1/2	-FRS-FL8
5/8	-FRS-FL10
3/4	-FRS-FL12

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
2	-FRS-ML2
3	-FRS-ML3
4	-FRS-ML4
6	-FRS-ML6
8	-FRS-ML8
10	-FRS-ML10
12	-FRS-ML12
14	-FRS-ML14
15	-FRS-ML15
16	-FRS-ML16
18	-FRS-ML18

Each Ferrule Set contains 10 front ferrules and 10 rear ferrules.

Reducers



Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/16	1/8	-R-FL1-FT2
1/16	3/16	-R-FL1-FT3
1/16	1/4	-R-FL1-FT4
1/8	1/16	-R-FL2-FT1
1/8	1/8	-R-FL2-FT2
1/8	3/16	-R-FL2-FT3
1/8	1/4	-R-FL2-FT4
1/8	3/8	-R-FL2-FT6
1/8	1/2	-R-FL2-FT8
3/16	1/8	-R-FL3-FT2
3/16	1/4	-R-FL3-FT4
1/4	1/8	-R-FL4-FT2
1/4	3/16	-R-FL4-FT3
1/4	1/4	-R-FL4-FT4
1/4	5/16	-R-FL4-FT5
1/4	3/8	-R-FL4-FT6
1/4	1/2	-R-FL4-FT8
1/4	5/8	-R-FL4-FT10
1/4	3/4	-R-FL4-FT12
5/16	3/8	-R-FL5-FT6
5/16	1/2	-R-FL5-FT8
3/8	1/4	-R-FL6-FT4
3/8	3/8	-R-FL6-FT6
3/8	1/2	-R-FL6-FT8
3/8	5/8	-R-FL6-FT10
3/8	3/4	-R-FL6-FT12
1/2	1/4	-R-FL8-FT4
1/2	3/8	-R-FL8-FT6

Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/2	1/2	-R-FL8-FT8
1/2	5/8	-R-FL8-FT10
1/2	3/4	-R-FL8-FT12
1/2	1	-R-FL8-FT16
5/8	3/4	-R-FL10-FT12
5/8	7/8	-R-FL10-FT14
5/8	1	-R-FL10-FT16
3/4	3/4	-R-FL12-FT12
3/4	1	-R-FL12-FT16
1	1 1/4	-R-FL16-FT20
1	1 1/2	-R-FL16-FT24
1	2	-R-FL16-FT32
1 1/4	1 1/2	-R-FL20-FT24

Reducers



Metric Tube		
T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number
2	3	-R-ML2-MT3
3	4	-R-ML3-MT4
3	6	-R-ML3-MT6
3	10	-R-ML3-MT10
4	6	-R-ML4-MT6
6	3	-R-ML6-MT3
6	8	-R-ML6-MT8
6	10	-R-ML6-MT10

Metric Tube		
T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number
6	12	-R-ML6-MT12
6	18	-R-ML6-MT18
8	6	-R-ML8-MT6
8	10	-R-ML8-MT10
8	12	-R-ML8-MT12
10	6	-R-ML10-MT6
10	8	-R-ML10-MT8
10	12	-R-ML10-MT12
10	15	-R-ML10-MT15
10	18	-R-ML10-MT18
12	6	-R-ML12-MT6
12	8	-R-ML12-MT8
12	10	-R-ML12-MT10
12	16	-R-ML12-MT16
12	18	-R-ML12-MT18
12	20	-R-ML12-MT20
12	22	-R-ML12-MT22
12	25	-R-ML12-MT25
16	12	-R-ML16-MT12
18	12	-R-ML18-MT12
18	16	-R-ML18-MT16
18	20	-R-ML18-MT20
18	22	-R-ML18-MT22
18	25	-R-ML18-MT25
20	16	-R-ML20-MT16
20	18	-R-ML20-MT18
20	22	-R-ML20-MT22
20	25	-R-ML20-MT25
22	18	-R-ML22-MT18
22	20	-R-ML22-MT20
22	25	-R-ML22-MT25
25	18	-R-ML25-MT18
25	20	-R-ML25-MT20

Reducers



Metric Tube		Fractional Tube
T-Tube O.D. (mm)	Tx-Tube O.D. (in.)	Basic Ordering Number
2	1/8	-R-ML2-FT2
3	1/8	-R-ML3-FT2
3	1/4	-R-ML3-FT4
4	1/4	-R-ML4-FT4
6	1/8	-R-ML6-FT2
6	1/4	-R-ML6-FT4
6	5/16	-R-ML6-FT5
6	3/8	-R-ML6-FT6
6	1/2	-R-ML6-FT8
8	1/4	-R-ML8-FT4
8	3/8	-R-ML8-FT6
8	1/2	-R-ML8-FT8
10	3/8	-R-ML10-FT6
10	1/2	-R-ML10-FT8
12	1/2	-R-ML12-FT8
12	3/4	-R-ML12-FT12
18	3/4	-R-ML18-FT12
18	1	-R-ML18-FT16
25	1	-R-ML25-FT16

Fractional Tube		Metric Tube
T-Tube O.D. (in.)	Tx-Tube O.D. (mm)	Basic Ordering Number
1/8	6	-R-FL2-MT6

Bulkhead
Reducers



Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/8	1/8	-BR-FL2-FT2
1/4	1/4	-BR-FL4-FT4
3/8	3/8	-BR-FL6-FT6
1/2	1/2	-BR-FL8-FT8
5/8	5/8	-BR-FL10-FT10
3/4	3/4	-BR-FL12-FT12
1	1	-BR-FL16-FT16

Reducer Elbows



Metric Tube		
T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number
6	6	-LR-ML6-MT6
12	12	-LR-ML12-MT12

Insert for Soft Plastic Tubings



Fractional Tube		
T-Tube O.D. (in.)	Tx-Tube I.D. (in.)	Basic Ordering Number
3/16	1/8	-IN-3-2
1/4	1/8	-IN-4-2
1/4	0.17	-IN-4-017
1/4	3/16	-IN-4-3
5/16	1/8	-IN-5-2
5/16	3/16	-IN-5-3
5/16	1/4	-IN-5-4
3/8	3/16	-IN-6-3
3/8	1/4	-IN-6-4
1/2	1/4	-IN-8-4
1/2	3/8	-IN-8-6
5/8	3/8	-IN-10-6
5/8	1/2	-IN-10-8
3/4	1/2	-IN-12-8
3/4	5/8	-IN-12-10
1	3/4	-IN-16-12

Metric Tube		
T-Tube O.D. (mm)	Tx-Tube I.D. (mm)	Basic Ordering Number
6	4	-IN-6M-4M
8	6	-IN-8M-6M
10	8	-IN-10M-8M
12	8	-IN-12M-8M
12	10	-IN-12M-10M

Port Connectors



1" /25 mm and below

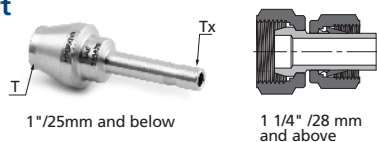


1 1/4" /28 mm and above

Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/16	-P-FL1
1/8	-P-FL2
1/4	-P-FL4
5/16	-P-FL5
3/8	-P-FL6
1/2	-P-FL8
5/8	-P-FL10
3/4	-P-FL12
1	-P-FL16
1 1/4	-P-FL20
1 1/2	-P-FL24

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
3	-P-ML3
6	-P-ML6
8	-P-ML8
10	-P-ML10
12	-P-ML12
15	-P-ML15
16	-P-ML16
18	-P-ML18
20	-P-ML20
25	-P-ML25
28	-P-ML28
30	-P-ML30
32	-P-ML32
38	-P-ML38

Reducing Port Connectors



Fractional Tube

T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number
1/8	1/16	-P-FL2-FL1
1/4	1/16	-P-FL4-FL1
1/4	1/8	-P-FL4-FL2
3/8	1/8	-P-FL6-FL2
3/8	1/4	-P-FL6-FL4
1/2	1/4	-P-FL8-FL4
1/2	3/8	-P-FL8-FL6
3/4	1/2	-P-FL12-FL8
1	1/2	-P-FL16-FL8
1	3/4	-P-FL16-FL12

Metric Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number
6	3	-P-ML6-ML3
8	6	-P-ML8-ML6
10	6	-P-ML10-ML6
10	8	-P-ML10-ML8
12	6	-P-ML12-ML6
12	8	-P-ML12-ML8
12	10	-P-ML12-ML10
16	12	-P-ML16-ML12
28	25	-P-ML28-ML25
32	25	-P-ML32-ML25
38	25	-P-ML38-ML25

Sanitary Flange Fittings



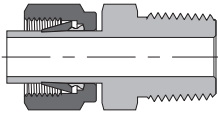
Fractional Tube

Tube O.D. (in.)	Flange Size (in.)	Basic Ordering Number
1/4	1/2	-SFF-FL4-SC8
1/4	3/4	-SFF-FL4-SC12
1/4	1	-SFF-FL4-SC16
1/4	1 1/2	-SFF-FL4-SC24
3/8	1/2	-SFF-FL6-SC8
3/8	3/4	-SFF-FL6-SC12
3/8	1	-SFF-FL6-SC16
3/8	1 1/2	-SFF-FL6-SC24
1/2	1/2	-SFF-FL8-SC8
1/2	3/4	-SFF-FL8-SC12
1/2	1	-SFF-FL8-SC16
1/2	1 1/2	-SFF-FL8-SC24
1	1	-SFF-FL16-SC16
1	2	-SFF-FL16-SC32

Male Adapters



1" and below



1 1/4" and above

Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/16	1/8	-AM-FT1-NS2
1/8	1/8	-AM-FT2-NS2
1/8	1/4	-AM-FT2-NS4
3/16	1/8	-AM-FT3-NS2
3/16	1/4	-AM-FT3-NS4
1/4	1/8	-AM-FT4-NS2
1/4	1/4	-AM-FT4-NS4
1/4	3/8	-AM-FT4-NS6
1/4	1/2	-AM-FT4-NS8
5/16	1/8	-AM-FT5-NS2
5/16	1/4	-AM-FT5-NS4
5/16	3/8	-AM-FT5-NS6
5/16	1/2	-AM-FT5-NS8
3/8	1/8	-AM-FT6-NS2
3/8	1/4	-AM-FT6-NS4
3/8	3/8	-AM-FT6-NS6
3/8	1/2	-AM-FT6-NS8
1/2	1/4	-AM-FT8-NS4
1/2	3/8	-AM-FT8-NS6
1/2	1/2	-AM-FT8-NS8
5/8	1/2	-AM-FT10-NS8

Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
3/4	1/2	-AM-FT12-NS8
3/4	3/4	-AM-FT12-NS12
3/4	1	-AM-FT12-NS16
1	3/4	-AM-FT16-NS12
1	1	-AM-FT16-NS16
1 1/4	1 1/4	-AM-FT20-NS20
1 1/2	1 1/2	-AM-FT24-NS24

Fractional Tube		ISO Tapered Thread (RT)
Tube O.D. (in.)	ISO Tapered Thread Size	Basic Ordering Number
1/8	1/8	-AM-FT2-RT2
1/8	1/4	-AM-FT2-RT4
1/4	1/8	-AM-FT4-RT2
1/4	1/4	-AM-FT4-RT4
1/4	3/8	-AM-FT4-RT6
1/4	1/2	-AM-FT4-RT8
5/16	1/8	-AM-FT5-RT2
5/16	1/4	-AM-FT5-RT4
3/8	1/4	-AM-FT6-RT4
3/8	3/8	-AM-FT6-RT6
3/8	1/2	-AM-FT6-RT8
1/2	1/4	-AM-FT8-RT4
1/2	3/8	-AM-FT8-RT6
1/2	1/2	-AM-FT8-RT8
5/8	3/8	-AM-FT10-RT6
5/8	1/2	-AM-FT10-RT8
3/4	3/4	-AM-FT12-RT12
1	1	-AM-FT16-RT16

Male Adapters



Fractional Tube		ISO Parallel Thread (RS)	
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number	
1/8	1/8	-AM-FT2-RS2	
1/8	1/4	-AM-FT2-RS4	
1/4	1/8	-AM-FT4-RS2	
1/4	1/4	-AM-FT4-RS4	
3/8	1/8	-AM-FT6-RS2	
3/8	1/4	-AM-FT6-RS4	
3/8	3/8	-AM-FT6-RS6	
3/8	1/2	-AM-FT6-RS8	
1/2	1/4	-AM-FT8-RS4	
1/2	3/8	-AM-FT8-RS6	
1/2	1/2	-AM-FT8-RS8	
5/8	1/2	-AM-FT10-RS8	
3/4	3/4	-AM-FT12-RS12	
1	1	-AM-FT16-RS16	

Male Adapters

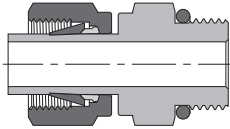


Fractional Tube		ISO Parallel Thread (RP)	
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number	
1/8	1/8	-AM-FT2-RP2	
1/8	1/4	-AM-FT2-RP4	
1/4	1/8	-AM-FT4-RP2	
1/4	1/4	-AM-FT4-RP4	
3/8	1/8	-AM-FT6-RP2	
3/8	1/4	-AM-FT6-RP4	
3/8	3/8	-AM-FT6-RP6	
3/8	1/2	-AM-FT6-RP8	
1/2	1/4	-AM-FT8-RP4	
1/2	3/8	-AM-FT8-RP6	
1/2	1/2	-AM-FT8-RP8	
5/8	1/2	-AM-FT10-RP8	
3/4	3/4	-AM-FT12-RP12	
1	1	-AM-FT16-RP16	

Male Adapters



1" and below



1 1/4" and above

Fractional Tube		SAE/MS Straight Thread	
Tube O.D. (in.)	SAE/MS Thread Size	Basic Ordering Number	
1/8	5/16-24	-AM-FT2-ST5	
1/4	7/16-20	-AM-FT4-ST7	
3/8	7/16-20	-AM-FT6-ST7	
3/8	9/16-18	-AM-FT6-ST9	
3/8	3/4-16	-AM-FT6-ST12	
1/2	9/16-18	-AM-FT8-ST9	
1/2	3/4-16	-AM-FT8-ST12	
5/8	7/8-14	-AM-FT10-ST14	
3/4	1 1/16-12	-AM-FT12-ST17	
1	1 5/16-12	-AM-FT16-ST21	
1 1/4	1 5/8-12	-AM-FT20-ST26	
1 1/2	1 7/8-12	-AM-FT24-ST30	

Adapt to straight thread boss of SAE J1926-1, ISO 11926-1 and MS 16142.

Male Adapters



Fractional Tube		37°Flare (AN)	
Tube O.D. (in.)	AN Tube Flare Size	Basic Ordering Number	
1/4	1/4	-AM-FT4-AN4	
3/8	1/4	-AM-FT6-AN4	
3/8	3/8	-AM-FT6-AN6	
1/2	1/2	-AM-FT8-AN8	
3/4	3/4	-AM-FT12-AN12	
1	1	-AM-FT16-AN16	

Male Adapters

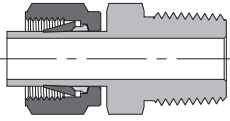


Fractional Tube		O-Seal with SAE/MS Straight Thread	
Tube O.D. (in.)	SAE/MS Thread Size	Basic Ordering Number	
1/8	5/16-24	-AM-FT2-OST5	
3/16	3/8-24	-AM-FT3-OST6	
1/4	7/16-20	-AM-FT4-OST7	
5/16	1/2-20	-AM-FT5-OST8	
3/8	9/16-18	-AM-FT6-OST9	
1/2	3/4-16	-AM-FT8-OST12	

Male Adapters



25 mm and below



28 mm and above

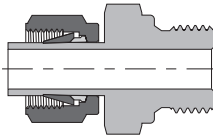
Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
3	1/8	-AM-MT3-NS2
4	1/8	-AM-MT4-NS2
6	1/8	-AM-MT6-NS2
6	1/4	-AM-MT6-NS4
6	3/8	-AM-MT6-NS6
6	1/2	-AM-MT6-NS8
8	1/4	-AM-MT8-NS4
8	3/8	-AM-MT8-NS6
10	1/4	-AM-MT10-NS4
10	3/8	-AM-MT10-NS6
10	1/2	-AM-MT10-NS8
12	1/4	-AM-MT12-NS4
12	3/8	-AM-MT12-NS6
12	1/2	-AM-MT12-NS8
16	1/2	-AM-MT16-NS8
16	3/4	-AM-MT16-NS12
18	1/2	-AM-MT18-NS8
18	3/4	-AM-MT18-NS12
20	1/2	-AM-MT20-NS8
20	3/4	-AM-MT20-NS12
25	1	-AM-MT25-NS16
28	1	-AM-MT28-NS16
28	1 1/4	-AM-MT28-NS20
30	1	-AM-MT30-NS16
30	1 1/4	-AM-MT30-NS20
32	1 1/4	-AM-MT32-NS20
38	1 1/2	-AM-MT38-NS24

Metric Tube		ISO Tapered Thread (RT)
Tube O.D. (mm)	ISO Tapered Thread Size	Basic Ordering Number
3	1/8	-AM-MT3-RT2
4	1/8	-AM-MT4-RT2
6	1/8	-AM-MT6-RT2
6	1/4	-AM-MT6-RT4
8	1/4	-AM-MT8-RT4
8	3/8	-AM-MT8-RT6
10	1/4	-AM-MT10-RT4
10	3/8	-AM-MT10-RT6
10	1/2	-AM-MT10-RT8
12	1/4	-AM-MT12-RT4
12	3/8	-AM-MT12-RT6
12	1/2	-AM-MT12-RT8
16	1/2	-AM-MT16-RT8
18	3/4	-AM-MT18-RT12
20	3/4	-AM-MT20-RT12
25	1	-AM-MT25-RT16
28	1	-AM-MT28-RT16
28	1 1/4	-AM-MT28-RT20
30	1 1/4	-AM-MT30-RT20
32	1 1/4	-AM-MT32-RT20
38	1 1/2	-AM-MT38-RT24

Male Adapters



25 mm and below



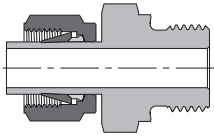
28 mm and above

Metric Tube		ISO Parallel Thread (RS)	
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number	
3	1/8	-AM-MT3-RS2	
4	1/8	-AM-MT4-RS2	
6	1/8	-AM-MT6-RS2	
6	1/4	-AM-MT6-RS4	
8	1/4	-AM-MT8-RS4	
10	1/4	-AM-MT10-RS4	
10	3/8	-AM-MT10-RS6	
10	1/2	-AM-MT10-RS8	
12	1/4	-AM-MT12-RS4	
12	3/8	-AM-MT12-RS6	
12	1/2	-AM-MT12-RS8	
16	1/2	-AM-MT16-RS8	
18	3/4	-AM-MT18-RS12	
20	3/4	-AM-MT20-RS12	
25	1	-AM-MT25-RS16	
28	1	-AM-MT28-RS16	
28	1 1/4	-AM-MT28-RS20	
30	1 1/4	-AM-MT30-RS20	
32	1 1/4	-AM-MT32-RS20	
38	1 1/2	-AM-MT38-RS24	

Male Adapters



25 mm and below



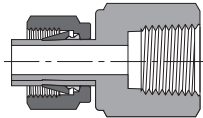
28 mm and above

Metric Tube		ISO Parallel Thread (RP)	
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number	
3	1/8	-AM-MT3-RP2	
4	1/8	-AM-MT4-RP2	
6	1/8	-AM-MT6-RP2	
6	1/4	-AM-MT6-RP4	
8	1/4	-AM-MT8-RP4	
10	1/4	-AM-MT10-RP4	
10	3/8	-AM-MT10-RP6	
10	1/2	-AM-MT10-RP8	
12	1/4	-AM-MT12-RP4	
12	3/8	-AM-MT12-RP6	
12	1/2	-AM-MT12-RP8	
16	1/2	-AM-MT16-RP8	
18	3/4	-AM-MT18-RP12	
20	3/4	-AM-MT20-RP12	
25	1	-AM-MT25-RP16	
28	1	-AM-MT28-RP16	
28	1 1/4	-AM-MT28-RP20	
30	1 1/4	-AM-MT30-RP20	
32	1 1/4	-AM-MT32-RP20	
38	1 1/2	-AM-MT38-RP24	

Female Adapters



1" and below



1 1/4" and above

Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
1/16	1/8	-AF-FT1-NS2
1/8	1/8	-AF-FT2-NS2
1/8	1/4	-AF-FT2-NS4
3/16	1/8	-AF-FT3-NS2
3/16	1/4	-AF-FT3-NS4
1/4	1/8	-AF-FT4-NS2
1/4	1/4	-AF-FT4-NS4
1/4	3/8	-AF-FT4-NS6
1/4	1/2	-AF-FT4-NS8
5/16	1/8	-AF-FT5-NS2
5/16	1/4	-AF-FT5-NS4
5/16	3/8	-AF-FT5-NS6
3/8	1/8	-AF-FT6-NS2
3/8	1/4	-AF-FT6-NS4
3/8	3/8	-AF-FT6-NS6
3/8	1/2	-AF-FT6-NS8
1/2	1/4	-AF-FT8-NS4
1/2	3/8	-AF-FT8-NS6
1/2	1/2	-AF-FT8-NS8
5/8	3/8	-AF-FT10-NS6
5/8	1/2	-AF-FT10-NS8

Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
3/4	1/2	-AF-FT12-NS8
3/4	3/4	-AF-FT12-NS12
3/4	1	-AF-FT12-NS16
7/8	3/4	-AF-FT14-NS12
1	3/4	-AF-FT16-NS12
1	1	-AF-FT16-NS16
1 1/4	1 1/4	-AF-FT20-NS20
1 1/2	1 1/2	-AF-FT24-NS24

Fractional Tube	ISO Tapered Thread (RT)	
Tube O.D. (in.)	ISO Tapered Thread Size	Basic Ordering Number
1/4	1/8	-AF-FT4-RT2
1/4	1/4	-AF-FT4-RT4
3/8	1/4	-AF-FT6-RT4
3/8	3/8	-AF-FT6-RT6
1/2	1/4	-AF-FT8-RT4
1/2	3/8	-AF-FT8-RT6
1/2	1/2	-AF-FT8-RT8

Female Adapters



Fractional Tube		ISO Parallel Thread (RP)	
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number	
1/8	1/8	-AF-FT2-RP2	
1/4	1/8	-AF-FT4-RP2	
1/4	1/4	-AF-FT4-RP4	
3/8	1/4	-AF-FT6-RP4	
3/8	3/8	-AF-FT6-RP6	
1/2	3/8	-AF-FT8-RP6	
1/2	1/2	-AF-FT8-RP8	

Female Adapters



Fractional Tube		ISO Parallel Thread (RG)	
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number	
1/4	1/4	-AF-FT4-RG4	
3/8	3/8	-AF-FT6-RG6	
1/2	1/2	-AF-FT8-RG8	

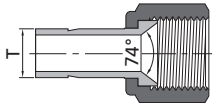
Female Adapters



Adapt to Japanese gauge stud.

Fractional Tube		ISO Parallel Thread (RJ)	
Tube O.D. (in.)	ISO Parallel Thread Size	Basic Ordering Number	
1/4	1/4	-AF-FT4-RJ4	
3/8	3/8	-AF-FT6-RJ6	
1/2	1/2	-AF-FT8-RJ8	

Female Adapters



Fractional Tube		AN Thread	
Tube O.D. (in.)	AN Tube Flare Size(in.)	Basic Ordering Number	
1/8	1/8	-AF-FT2-AN2	
1/8	1/4	-AF-FT2-AN4	
1/4	1/4	-AF-FT4-AN4	
3/8	3/8	-AF-FT6-AN6	
1/2	1/2	-AF-FT8-AN8	
3/4	3/4	-AF-FT12-AN12	

Female Adapters



Metric Tube		NPT Thread
Tube O.D. (mm)	NPT Size	Basic Ordering Number
3	1/8	-AF-MT3-NS2
4	1/8	-AF-MT4-NS2
6	1/8	-AF-MT6-NS2
6	1/4	-AF-MT6-NS4
8	1/8	-AF-MT8-NS2
8	1/4	-AF-MT8-NS4
8	3/8	-AF-MT8-NS6
10	1/4	-AF-MT10-NS4
10	3/8	-AF-MT10-NS6
10	1/2	-AF-MT10-NS8
12	1/4	-AF-MT12-NS4
12	3/8	-AF-MT12-NS6
12	1/2	-AF-MT12-NS8
16	1/2	-AF-MT16-NS8
18	3/4	-AF-MT18-NS12
20	1/2	-AF-MT20-NS8
20	3/4	-AF-MT20-NS12
25	1	-AF-MT25-NS16

Metric Tube		ISO Tapered Thread (RT)
Tube O.D. (mm)	ISO Tapered Thread Size	Basic Ordering Number
3	1/8	-AF-MT3-RT2
4	1/8	-AF-MT4-RT2
6	1/8	-AF-MT6-RT2
8	1/4	-AF-MT8-RT4
10	1/4	-AF-MT10-RT4
10	3/8	-AF-MT10-RT6
10	1/2	-AF-MT10-RT8
12	1/4	-AF-MT12-RT4
12	3/8	-AF-MT12-RT6
12	1/2	-AF-MT12-RT8
16	1/2	-AF-MT16-RT8
18	3/4	-AF-MT18-RT12
20	3/4	-AF-MT20-RT12
25	1	-AF-MT25-RT16

Female Adapters



Metric Tube		ISO Parallel Thread (RP)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
6	1/8	-AF-MT6-RP2
6	1/4	-AF-MT6-RP4
12	1/2	-AF-MT12-RP8

Female Adapters



Metric Tube		ISO Parallel Thread (RG)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
3	1/8	-AF-MT3-RG2
3	1/4	-AF-MT3-RG4
4	1/8	-AF-MT4-RG2
6	1/8	-AF-MT6-RG2
6	1/4	-AF-MT6-RG4
6	3/8	-AF-MT6-RG6
6	1/2	-AF-MT6-RG8
8	1/4	-AF-MT8-RG4
8	3/8	-AF-MT8-RG6
8	1/2	-AF-MT8-RG8
10	1/4	-AF-MT10-RG4
10	3/8	-AF-MT10-RG6
10	1/2	-AF-MT10-RG8
12	1/4	-AF-MT12-RG4
12	3/8	-AF-MT12-RG6
12	1/2	-AF-MT12-RG8
16	1/2	-AF-MT16-RG8
18	1/2	-AF-MT18-RG8

Female Adapters



Adapt to Japanese gauge stud.

Metric Tube		ISO Parallel Thread (RJ)
Tube O.D. (mm)	ISO Parallel Thread Size	Basic Ordering Number
6	1/4	-AF-MT6-RJ4
6	3/8	-AF-MT6-RJ6
6	1/2	-AF-MT6-RJ8
8	1/4	-AF-MT8-RJ4
8	3/8	-AF-MT8-RJ6
8	1/2	-AF-MT8-RJ8
10	1/4	-AF-MT10-RJ4
10	3/8	-AF-MT10-RJ6
10	1/2	-AF-MT10-RJ8
12	1/4	-AF-MT12-RJ4
12	3/8	-AF-MT12-RJ6
12	1/2	-AF-MT12-RJ8

Weld Adapters



Fractional Tube		Pipe Weld
Tube O.D. (in.)	Pipe Weld Size	Basic Ordering Number
1/4	1/4	-AW-FT4-PB4
3/8	1/2	-AW-FT6-PB8
1/2	1/2	-AW-FT8-PB8
1/2	3/4	-AW-FT8-PB12
3/4	3/4	-AW-FT12-PB12

Flange Adapters

- Integrally forged body.
- ASME flanges comply with ASME B16.5.
- DIN flanges comply with DIN 2501/2526.
- GB flanges comply with GB/T 9123.1.
- EN flanges comply with EN 1092-1.
- JIS flanges comply with JIS B 2220.



ASME Flanges			
Tube O.D. (in.)	ASME Flange NPS	Class	Basic Ordering Number Raised Face Flange
1/4	1/2	150	-FA-FL4-F8-150
3/8	1/2	300	-FA-FL6-F8-300
1/2	1/2	150	-FA-FL8-F8-150
1/2	1	150	-FA-FL8-F16-150
1/2	2	150	-FA-FL8-F32-150
3/4	1	150	-FA-FL12-F16-150
1	1	150	-FA-FL16-F16-150

DIN/GB Flanges, Pressure Class PN 40

Tube O.D. (mm)	DIN Flange Size DN	Basic Ordering Number Raised Face Flange
6	25	-FA-ML6-F25-40B1
12	15	-FA-ML12-F15-40B1
12	25	-FA-ML12-F25-40B1
12	50	-FA-ML12-F50-40B1
18	15	-FA-ML18-F15-40B1
18	25	-FA-ML18-F25-40B1
25	25	-FA-ML25-F25-40B1

EN Flanges, Pressure Class PN 40

Tube O.D. (mm)	EN Flange Size DN	Basic Ordering Number Raised Face Flange
6	25	-FA-ML6-F25E-40B1
12	15	-FA-ML12-F15E-40B1
12	25	-FA-ML12-F25E-40B1
12	50	-FA-ML12-F50E-40B1
18	15	-FA-ML18-F15E-40B1
18	25	-FA-ML18-F25E-40B1
25	25	-FA-ML25-F25E-40B1

JIS Flanges, Pressure Class 10K

Tube O.D.	JIS Flange Size DN	Basic Ordering Number Raised Face Flange
1/4"	15	-FA-FL4-F15-10KRF
3/8"	15	-FA-FL6-F15-10KRF
1/2"	15	-FA-FL8-F15-10KRF
3/4"	15	-FA-FL12-F15-10KRF
1"	25	-FA-FL16-F25-10KRF
12 mm	15	-FA-ML12-F15-10KRF
18 mm	15	-FA-ML18-F15-10KRF
25 mm	25	-FA-ML25-F25-10KRF

Weld Connectors



Fractional Tube		Tube Socket Weld
Tube O.D. (in.)	Tube Socket Weld (in.)	Basic Ordering Number
1/8	1/8	-CW-FL2-TS2
3/16	3/16	-CW-FL3-TS3
1/4	1/4	-CW-FL4-TS4
3/8	3/8	-CW-FL6-TS6
1/2	1/2	-CW-FL8-TS8
5/8	5/8	-CW-FL10-TS10
3/4	3/4	-CW-FL12-TS12
1	1	-CW-FL16-TS16

Weld Connectors



Fractional Tube		Pipe Butt Weld
Tube O.D. (in.)	Pipe Weld Size	Basic Ordering Number
1/8	1/8	-CW-FL2-PB2
3/16	1/8	-CW-FL3-PB2
1/4	1/8	-CW-FL4-PB2
1/4	1/4	-CW-FL4-PB4
5/16	1/8	-CW-FL5-PB2
5/16	1/4	-CW-FL5-PB4

Fractional Tube		Pipe Butt Weld
Tube O.D. (in.)	Pipe Weld Size	Basic Ordering Number
3/8	1/4	-CW-FL6-PB4
3/8	3/8	-CW-FL6-PB6
3/8	1/2	-CW-FL6-PB8
3/8	3/4	-CW-FL6-PB12
1/2	3/8	-CW-FL8-PB6
1/2	1/2	-CW-FL8-PB8
1/2	3/4	-CW-FL8-PB12
5/8	1/2	-CW-FL10-PB8
3/4	1/2	-CW-FL12-PB8
3/4	3/4	-CW-FL12-PB12
1	1	-CW-FL16-PB16
1 1/4	1 1/4	-CW-FL20-PB20
1 1/2	1 1/2	-CW-FL24-PB24

Metric Tube		Pipe Butt Weld
Tube O.D. (mm)	Pipe Weld Size	Basic Ordering Number
3	1/8	-CW-ML3-PB2
4	1/8	-CW-ML4-PB2
6	1/8	-CW-ML6-PB2
6	1/4	-CW-ML6-PB4
8	1/8	-CW-ML8-PB2
8	1/4	-CW-ML8-PB4
8	1/2	-CW-ML8-PB8
10	1/4	-CW-ML10-PB4
10	3/8	-CW-ML10-PB6
10	1/2	-CW-ML10-PB8
12	1/4	-CW-ML12-PB4
12	3/8	-CW-ML12-PB6
12	1/2	-CW-ML12-PB8

Metric Tube		Pipe Butt Weld
Tube O.D. (mm)	Pipe Weld Size	Basic Ordering Number
14	3/8	-CW-ML14-PB6
15	1/2	-CW-ML15-PB8
16	1/2	-CW-ML16-PB8
18	1/2	-CW-ML18-PB8
30	1 1/4	-CW-ML30-PB20
32	1 1/4	-CW-ML32-PB20
38	1 1/2	-CW-ML38-PB24

Weld Elbows



Fractional Tube		Tube Socket Weld
Tube O.D. (in.)	Tube Socket Weld (in.)	Basic Ordering Number
1/8	1/8	-LW-FL2-TS2
3/16	3/16	-LW-FL3-TS3
1/4	1/4	-LW-FL4-TS4
3/8	3/8	-LW-FL6-TS6
1/2	1/2	-LW-FL8-TS8
5/8	5/8	-LW-FL10-TS10
3/4	3/4	-LW-FL12-TS12
1	1	-LW-FL16-TS16

Weld Elbows



Fractional Tube		Pipe Butt Weld
Tube O.D. (in.)	Pipe Weld Size	Basic Ordering Number
1/8	1/8	-LW-FL2-PB2
3/16	1/8	-LW-FL3-PB2
1/4	1/8	-LW-FL4-PB2
1/4	1/4	-LW-FL4-PB4
3/8	1/4	-LW-FL6-PB4
1/2	3/8	-LW-FL8-PB6
1/2	1/2	-LW-FL8-PB8
5/8	1/2	-LW-FL10-PB8
3/4	3/4	-LW-FL12-PB12
1	3/4	-LW-FL16-PB12
1	1	-LW-FL16-PB16

Calibration Fittings



Tube O.D. (in.)	SAE/MS Thread Size	Basic Ordering Number
1/4	1/4-28	-FC-FL4-1428
1/4	5/16-24	-FC-FL4-51624

- ⦿ The calibration fittings can be connected directly with the bleed port of the transmitter so that the calibration process can be simplified.
- ⦿ Two types are available to fit the bleed ports of the transmitters.

Dielectric Fittings

Materials	
Component	Material
Insulators	Polyamide-imide
O-ring	70 durometer FKM
Backup Ring	Virgin PTFE

Technical Data

- Electrical Resistance of Insulators: 10×10⁶Ω @10 V D.C at 70°F (21°C)
- Maximum working pressure: 5000 psig (344 bar) at 70°F (21°C)
- Temperature range: -4°F (-20°C) to 200°F (93°C)

Dielectric Fittings



Fractional Tube	
Tube O.D. (in.)	Basic Ordering Number
1/4	-DF-FL4
3/8	-DF-FL6
1/2	-DF-FL8

Metric Tube	
Tube O.D. (mm)	Basic Ordering Number
12	-DF-ML12

Dielectric Fittings



Fractional Tube		NPT Thread
Tube O.D. (in.)	NPT Size	Basic Ordering Number
3/8	1/4	-DF-FL6-NS4

RS, RSD Gaskets



ISO Parallel Thread Size	Basic Ordering Number
1/8	-RS-2
1/4	-RS-4
3/8	-RS-6
1/2	-RS-8
3/4	-RS-12
1	-RS-16

ISO Parallel Thread Size	Basic Ordering Number
1/8	-RSD-2
1/4	-RSD-4
3/8	-RSD-6
1/2	-RSD-8
3/4	-RSD-12
1	-RSD-16

Metric Thread Size	Basic Ordering Number
M8 x 1	-RS-M8
M10 x 1	-RS-M10
M12 x 1.5	-RS-M12
M14 x 1.5	-RS-M14
M16 x 1.5	-RS-M16
M18 x 1.5	-RS-M18
M20 x 1.5	-RS-M20
M22 x 1.5	-RS-M22
M24 x 1.5	-RS-M24
M27 x 2	-RS-M27
M30 x 2	-RS-M30
M33 x 2	-RS-M33
M36 x 2	-RS-M36
M39 x 2	-RS-M39
M42 x 2	-RS-M42
M45 x 2	-RS-M45
M48 x 2	-RS-M48

The RS gasket provides a seal with male ISO parallel threads. The gasket consists of a fluorocarbon FKM or Buna inner ring bonded to a carbon steel or stainless steel outer ring.

RP Gaskets



ISO Parallel Thread Size	Basic Ordering Number
1/8	-RP-2
1/4	-RP-4
3/8	-RP-6
1/2	-RP-8
3/4	-RP-12
1	-RP-16

Metric Thread Size	Basic Ordering Number
M8 x 1	-RP-M8
M10 x 1	-RP-M10
M12 x 1.5	-RP-M12
M14 x 1.5	-RP-M14
M16 x 1.5	-RP-M16
M18 x 1.5	-RP-M18
M20 x 1.5	-RP-M20
M22 x 1.5	-RP-M22
M24 x 1.5	-RP-M24
M27 x 2	-RP-M27
M30 x 2	-RP-M30
M33 x 2	-RP-M33
M36 x 2	-RP-M36
M39 x 2	-RP-M39
M42 x 2	-RP-M42
M45 x 2	-RP-M45
M48 x 2	-RP-M48

The RP gasket provides a seal with male ISO parallel threads.
The RP gasket may be used with a RS fitting.

RG Gaskets



The RG gasket provides a seal on pressure gauges equipped with male ISO parallel threads.

ISO Parallel Thread Size	Basic Ordering Number
1/4	-RG-4
3/8	-RG-6
1/2	-RG-8

Metric Thread Size	Basic Ordering Number
M10 x 1	-RG-M10
M12 x 1.5	-RG-M12
M14 x 1.5	-RG-M14
M16 x 1.5	-RG-M16
M18 x 1.5	-RG-M18
M20 x 1.5	-RG-M20
M22 x 1.5	-RG-M22
M24 x 1.5	-RG-M24
M27 x 2	-RG-M27
M30 x 2	-RG-M30
M33 x 2	-RG-M33
M36 x 2	-RG-M36
M39 x 2	-RG-M39
M42 x 2	-RG-M42
M45 x 2	-RG-M45
M48 x 2	-RG-M48

RJ Gaskets



The RJ gasket provides a seal on Japanese pressure gauges equipped with male ISO parallel threads.

ISO Parallel Thread Size	Basic Ordering Number
1/4	-RJ-4
3/8	-RJ-6
1/2	-RJ-8

O-Rings



O-Rings for Fittings with SAE/MS Straight Threads

SAE/MS Thread Size	Ordering Number
5/16-24	VI9-902
3/8-24	VI9-903
7/16-20	VI9-904
1/2-20	VI9-905
9/16-18	VI9-906
3/4-16	VI9-908
7/8-14	VI9-910
1 1/16-12	VI9-912
1 3/16-12	VI9-914
1 5/16-12	VI9-916
1 5/8-12	VI9-920
1 7/8-12	VI9-924

O-Rings for Fittings with O-Seal Straight Threads

SAE/MS Thread Size	Ordering Number
5/16-24	BN7-011
3/8-24	BN7-012
7/16-20	BN7-013
1/2-20	BN7-112
9/16-18	BN7-113
3/4-16	BN7-116
1 1/16-12	BN7-121
1 5/16-12	BN7-125

O-Rings for Adjustable Fittings with ISO Parallel Threads

ISO Parallel Thread Size	Ordering Number
1/8	VI9-502
1/4	VI9-111
3/8	VI9-113
1/2	VI9-508
3/4	VI9-119
1	VI9-217

O-Rings for Fittings with O-Seal Pipe Threads

NPT/ISO Thread Size	Ordering Number
1/8	BN7-013
1/4	BN7-113
3/8	BN7-116
1/2	BN7-118

O-Rings for Fittings with Metric Threads

Metric Thread Size	Ordering Number
M14 x 1.5	BN9-M14
M20 x 1.5	BN9-M20

SS - CM - ML12 - NS 8 - □ - □ - □ - □

Material	Fitting Type	P1 Type	P1 Size	P2 Type	P2 Size	P3 and P4	Special Application	Cleaning and Packaging
SS	CM Male Connector	ML Metric Ferrule	1 1/16" or 2 1/8" or 3 1/8" or 4 1/4" or 5 5/16" or 6 3/8" or 8 1/2" or 10 5/8" or 12 1/2" or 14 7/8" or 15 15 mm or 16 16 mm or 18 18 mm	Except the same as the P1, the other type follows: NS NPT Thread ONS O-ring with NPT Thread RT ISO Tapered Thread RS ISO Parallel Thread (For RS) RP ISO Parallel Thread (For RP) RG ISO Parallel Thread (Gauge) RJ ISO Parallel Thread (Japanese Gauge) PP Positionable, ISO Parallel Thread ST SAE/MS Straight Thread OST O-ring with SAE/MS Straight Thread	Except the same as the P1, the other size follows: 5 M5 x 0.8 or 5/16-24 6 M6 x 1 or 3/8-24 7 M8 x 1 or 1/2-20 8 M8 x 1 or 9/16-18 10 M10 x 1 12 M12 x 1.5 or 3/4-16 14 M14 x 1.5 or 7/8-14 16 M16 x 1.5 17 1 1/16-12	Specify in the same way as the P2	None EC79 Certification EC79 2000 Sulfonert® Coating SI	FC-01 F2 FC-02
S4	BCM Bulkhead Male Connector	FL Fractional Ferrule						
S1	TCM Thermocouple Connector							
904L	CF Female Connector							
904L	BCF Bulkhead Female Connector							
Ti	U Union							
D5	BU Bulkhead Union							
D7	LM Male Elbow							
A20	VM 45° Male Elbow							
M	VP 45° Adjustable Male Elbow							
INC	LP Positionable Male Elbow							
AL5	LF Female Elbow							
AL5	LU Union Elbow							
AL5	TMT Male Run Tee							

Part Number Description

Material	Fitting Type	P1 Type	P1 Size	P2 Type	P2 Size	P3 and P4	Special Application	Cleaning and Packaging
HC	TTM Male Branch Tee	MT Metric Tube	20 1 1/4" or 20 20 mm	AN 37° Flare	18 M18 x 1.5	Specify in the same way as the P2	None	FC-01
CS	TPT Positionable Male Run Tee	FT Fractional Tube	22 22 mm	MS Male Metric Thread	19 1 3/16-12		EC79 Certification	F2 FC-02
B	TPT Positionable Male Branch Tee		24 1 1/2" or 24 24 mm	TS Fractional Tube Socket Weld	20 M20 x 1.5			
PA	TTF Female Run Tee		25 25 mm	PB Pipe Butt Weld	21 1 5/16-12		SI	EC79 Certification 2000 Sulfonert® Coating
T	TTF Female Branch Tee		28 28 mm		22 M22 x 1.5			
	TTT Union Tee		30 30 mm		24 M24 x 1.5			
	C Union Cross		32 2" or 32 32 mm		26 1 5/8-12			
	TC Cap		38 38 mm		27 M27 x 2			
	TP Plug		50 50 mm		30 1 7/8-12			
	R Reducer							
P	Port Connector							
AM	Male Adapter							
AF	Female Adapter							
CW	Weld Connector							
LW	Weld Elbow							
DF	Dielectric Fitting							



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

P1, P2, P3 and P4 shall be described in the following orders:
 ● Ferrule - Tube - NPT Thread - ISO Tapered Thread - ISO Parallel Thread - SAE/MS Straight Thread - 37° Flare - Pipe Butt Weld - Fractional Tube Socket Weld - Others
 ● Describe in descending order as per size if the end connection types are the same
 ● Describe the end of P1 if all end connections are the same
 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
 In Application:
 Wetted metal components SilcoNert® 2000 (Sulfonert®) coated.

Tools and Accessories

Hand Tube Benders

HTB Series

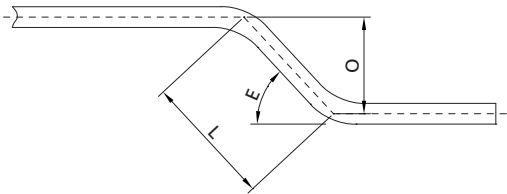
- For bending stainless steel and copper tubing from 1/4" to 1/2" and 6 mm to 16 mm outside diameter
- Roll dies reduce bending force and tube ovality, as compared to conventional slide block design
- 1° to 180° bending range



Ordering Information

Ordering Number	Tube O.D.	Bend Radius
HTB-4S	1/4"	0.56"
HTB-4	1/4"	0.75"
HTB-5	5/16"	0.94"
HTB-6	3/8"	
HTB-8	1/2"	1.5"
HTB-6M	6 mm	15 mm
HTB-8M	8 mm	24 mm
HTB-10M	10 mm	
HTB-12M	12 mm	38 mm
HTB-14M-L	14 mm	56 mm
HTB-16M-L	16 mm	

Offset Bending Formula



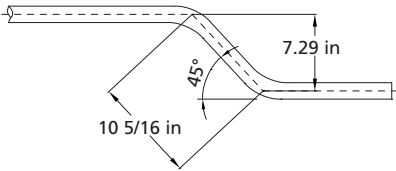
In order to change the center line of the fluid, typically to avoid an obstruction, we choose an offset bend. To determine the length of offset bend, select the offset angle (E) first. Then, multiply the offset dimension (O) by the offset bend allowance (A).

$L=O \times A$

Offset Angle (E)	Offset Bend Allowance (A)
22 1/2°	2.263
30°	2.000
45°	1.414
60°	1.154

Example:
Offset angle (E) 45°
Offset dimension (O) 7.29 in.

$7.29 \times 1.414 = 10.31 \text{ in., or approximately } 10 \frac{5}{16} \text{ in.}$

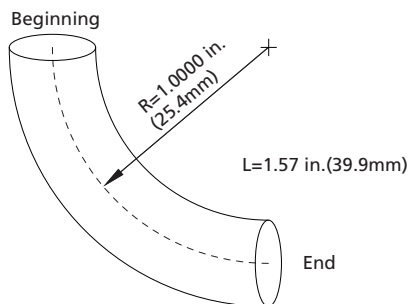


Adjustment (Gain) Calculations

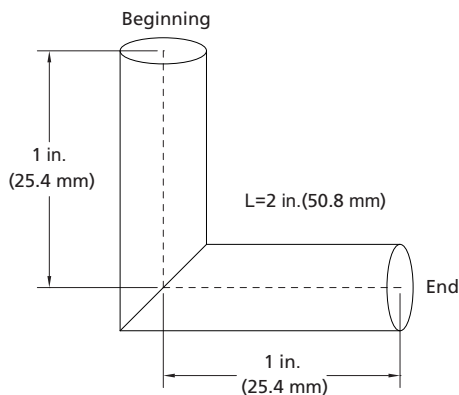
Adjustment (gain) is another available method to get the desired bend.

Adjustment is the difference between the length of tubing used in the radiused bend and that in sharp bend, when measured from the beginning to the end of the bend.

Radiused Bend

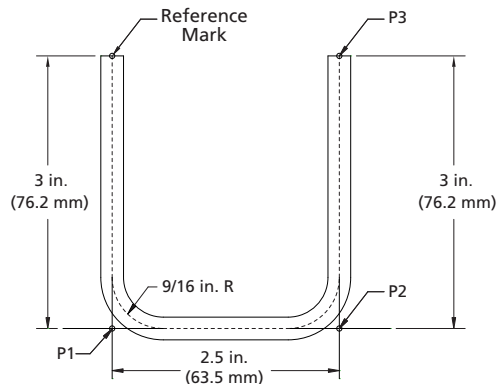


Sharp Bend



Example of the Method

1/4 in. tubing using a 1/4 in. bender with a 9/16 in. bend radius.



In order to get the desired bend, mark the tubing as follows:
 $P1 = 3 \text{ in.}$

To confirm the location of the bend mark, add the new section length to the previous bend mark position, then minus the adjustment (gain) of the previous bend.

$$P2 = P1 + 2.5 \text{ in.} - 5/16 \text{ in. (adjustment)} = 5 \frac{3}{16} \text{ in.}$$

$$P3 = P2 + 3 \text{ in.} - 5/16 \text{ in. (adjustment)} = 7 \frac{7}{8} \text{ in.}$$

7 7/8 in. is the total length of the tube.

$$90^\circ \text{ adjustment} = 5/16 \text{ in.}$$

Bend the tube as described in FITOK Hand Tube Bender Manual

Fractional Adjustment Calculations

Bend Angle	Tube O.D., in.				
	1/4	1/4	5/16	3/8	1/2
	Bend Radius, in				
	9/16	3/4	15/16	15/16	1 1/2
30°	0	0	0	0	1/16
45°	1/16	1/16	1/16	1/16	1/16
50°	1/16	1/16	1/16	1/16	1/8
55°	1/16	1/16	1/8	1/8	1/8
60°	1/8	1/16	1/8	1/8	3/16
65°	1/8	1/8	3/16	3/16	1/4
70°	1/8	1/8	3/16	3/16	5/16
75°	3/16	3/16	1/4	1/4	3/8
80°	3/16	3/16	5/16	5/16	7/16
85°	1/4	1/4	3/8	3/8	9/16
90°	5/16	5/16	7/16	7/16	11/16

Metric Adjustment Calculations

Bend Angle	Tube O.D., mm			
	6	8	10	12
	Bend Radius, mm			
	15	24	24	38
30°	1	1	1	1
45°	1	2	2	3
50°	2	2	2	3
55°	2	3	3	4
60°	3	3	4	5
65°	3	4	4	7
70°	4	5	5	8
75°	5	6	7	10
80°	6	8	8	12
85°	7	10	10	15
90°	8	12	12	18

Tube Cutters

FTC Series

- For cutting stainless steel, soft copper, and aluminum tubing from 3/16" to 1" and 6 to 25 mm outside diameter
- Flare-out and work hardening of tube end is reduced



Ordering Information

Ordering Number	Tube O.D.	Wheel Ordering Number
FTC-03	1/8" to 1" and 3 mm to 25 mm	FTC-03-RR
FTC-04	1/4" to 1 3/8" and 6 mm to 35 mm	FTCW-45
FTC-05	1/4" to 2 5/8" and 6 mm to 65 mm	

Tube Deburring Tools

TDT Series

- ⦿ For deburring stainless steel, carbon steel, copper and aluminum tube ends
- ⦿ Steel blades for long life



Ordering Information

Ordering Number	Deburring Position	Size	Tube Material
TDT-01	I.D.	less than 6 mm	Stainless Steel, Carbon Steel, Copper, Aluminum
TDT-03	O.D.	6 mm to 38 mm and 1/4" to 1 1/2"	Copper, Aluminum
	I.D.		
TDT-05	O.D.	6 mm to 36 mm and 1/4" to 1 1/4"	Stainless Steel, Carbon Steel
	I.D.		

Hydraulic Presetting Tools

HPT Series

- ⦿ To preset ferrules onto tubing
- ⦿ For installing 1/2" to 2" and 12 mm to 50 mm carbon steel, stainless steel, and alloy steel tube fittings
- ⦿ Manually operated hydraulic pump, without requirement for power or compressed air
- ⦿ Made of high grade alloy steel for more durable and firmer usage
- ⦿ Flexible hose connection between the pump and jig to assure easy and comfortable operation
- ⦿ Reduce assembly and installation time and operator error
- ⦿ Fit neatly in a rugged plastic carrying case
- ⦿ Figure dimensions (L x W x H): 12.6 in. x 9.8 in. x 5.9 in. (the height of handle excluded)



Ordering Information

HPT-03 Series

Ordering Number	Tube O.D.
HPT-03M	12 mm, 14 mm, 15 mm, 16 mm, 18 mm, 20 mm, 22 mm, 25 mm
HPT-03F	1/2", 5/8", 3/4", 7/8", 1"
HPT-03-U	Choose your needs from Die Heads for HPT-03 Series
HPT-03	Include HPT-03M and HPT-03F

Die Heads for HPT-03 Series

Ordering Number	Tube O.D.
HPT-ML12	12 mm
HPT-ML14	14 mm
HPT-ML15	15 mm
HPT-ML16	16 mm
HPT-ML18	18 mm
HPT-ML20	20 mm
HPT-ML22	22 mm
HPT-ML25	25 mm
HPT-FL8	1/2"
HPT-FL10	5/8"
HPT-FL12	3/4"
HPT-FL14	7/8"
HPT-FL16	1"

HPT-05 Series

Ordering Number	Tube O.D. (Dimensions)
HPT-05M	28 mm, 30 mm, 32 mm, 38 mm, 50 mm
HPT-05F	1-1/4", 1-1/2", 2"
HPT-05-U	Choose your needs from Die Heads for HPT-05 Series
HPT-05	Include HPT-05M and HPT-05F

Die Heads for HPT-05 Series

Ordering Number	Tube O.D.
HPT-ML28	28 mm
HPT-ML30	30 mm
HPT-ML32	32 mm
HPT-ML38	38 mm
HPT-ML50	50 mm
HPT-ML20	20 mm
HPT-FL20	1-1/4"
HPT-FL24	1-1/2"
HPT-FL32	2"

Manual Presetting Tools

MPT Series

For tube fitting installations in close quarters, the presetting tool can make installation easier and more reliable when paired with the table vice.

- For installing 1/4" to 1" and 6 mm to 25 mm carbon steel, stainless steel and alloy steel tube fittings
- High grade alloy used for clamp to make the presetting tool reliable and durable
- Easy mounting to table vice
- Wider and safer work condition



Ordering Information

Ordering Number	Tube O.D.
MPT-6M	6 mm
MPT-8M	8 mm
MPT-10M	10 mm
MPT-12M	12 mm
MPT-14M	14 mm
MPT-15M	15 mm
MPT-16M	16 mm
MPT-18M	18 mm
MPT-20M	20 mm
MPT-22M	22 mm
MPT-25M	25 mm

Ordering Number	Tube O.D.
MPT-4	1/4 "
MPT-6	3/8 "
MPT-8	1/2 "
MPT-10	5/8 "
MPT-12	3/4 "
MPT-14	7/8 "
MPT-16	1 "

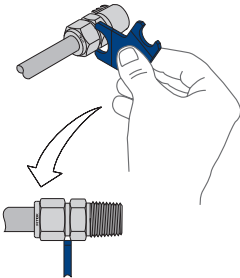
FITOK gap inspection gauge can not be used to check the fittings preset by MPT series presetting tools.

Gap Inspection Gauges

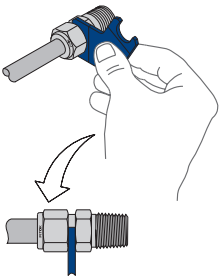
GIG Series

On initial installation, the FITOK gap inspection gauge assures the installer or inspector that a fitting has been sufficiently tightened.

- For all metal fittings, sizes from 1/16" to 1" and 2 mm to 25 mm
- Simple and consistent operation



If the gauge can not enter the gap, the fitting is sufficiently tightened.



If the gauge can enter the gap, additional tightening is required.

- The system must be decompressed before changing the tightness of the fittings.
- Do not use gauge to inspect the reinstalled fittings.
- Do not use gauge to inspect the fittings installed by hydraulic presetting tool.

Ordering Information



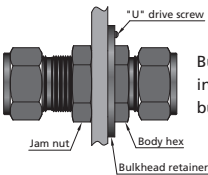
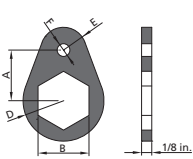
Individual Size



Multiple Sizes

Fitting Size		Ordering Number
in.	mm	
1/16	—	GIG-1
1/8	2, 3	GIG-2
3/16	4	GIG-3
1/4	6	GIG-4
5/16	8	GIG-5
3/8	—	GIG-6
—	10	GIG-10M
1/2	12	GIG-8
5/8	14, 15, 16	GIG-10
3/4	18	GIG-12
7/8	20, 22	GIG-14
1	25	GIG-16
1/4, 3/8, 1/2	6, 12	GIG-468
1/4, 1/2	6, 8, 10, 12	GIG-48

Bulkhead Retainers



Bulkhead fitting installation utilizing bulkhead retainer

Ordering Information

Fitting Size			Ordering Number	Dimensions, in.							Drill Hole Dia	"U" Drive Screw Size	Drill Number
in.	mm	A		B	D	E	F						
1/16	—	SS-BR-1	3/8	5/16	5/16	5/32	5/32	0.120	6-3/8	31			
1/8	—	SS-BR-2	1/2	1/2	13/32	7/32							
3/16	3,4	SS-BR-3	9/16	9/16	15/32	1/4							
1/4	6	SS-BR-4	5/8	5/8	1/2	9/32							
5/16	—	SS-BR-5	11/16	11/16	9/16	5/16							
—	8	SS-BR-M8	11/16	18 mm	9/16	5/16	7/32	0.161	10-1/2	20			
3/8	—	SS-BR-6	3/4	3/4	5/8	11/32							
—	10	SS-BR-M10	15/16	22 mm	3/4	13/32							
1/2	12	SS-BR-8	15/16	15/16	3/4	13/32							
5/8	14,15,16	SS-BR-10	1	1-1/16	13/16	13/32							
3/4	18	SS-BR-12	1-1/16	1-3/16	29/32	15/32	9/16						
7/8	—	SS-BR-14	1-1/8	1-5/16	1-1/32	17/32							
1	25	SS-BR-16	1-9/32	1-5/8	1-5/32	9/16							

General Instrumentation

Fittings



Valves and Filters



Manifolds



Hoses and Quick-connects



Vessels and Sample Cylinders



Tubing and Tools



Medium & High Pressure

Fittings



Valves



Filters and Quick Couplings



Sour Service Products



Subsea Valves



Tubing and Tools



High Purity & Ultra High Purity Products

Fittings



Valves



Regulators



Integrated Gas Systems

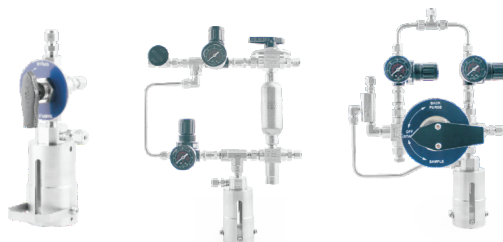


Changeover Systems & Pressure Control Panels



Sampling Systems

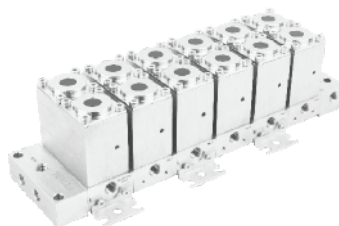
Bottle Configuration Sampling Systems



Cylinder Configuration Sampling Systems



Stream Switching Systems



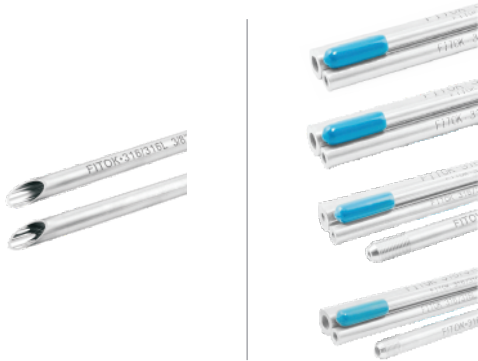
Tubing

Instrumentation Tubing



High Purity Tubing

Medium and High Pressure Tubing



Jacketed Tubing and Insulated Tubing

Heat Trace Tubing

