



Tube Fittings

Tube Fitting Series

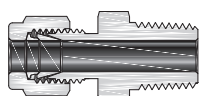
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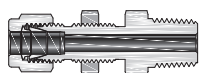
Male Connectors

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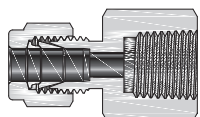
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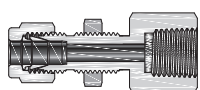
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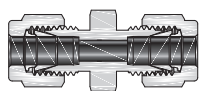
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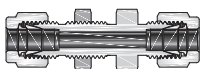
Bulkhead Female Connectors

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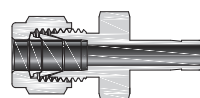
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Bulkhead Unions

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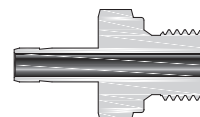
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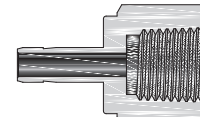
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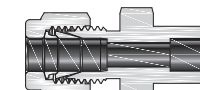
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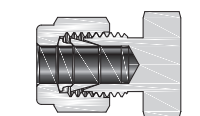
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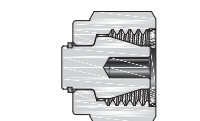
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Caps

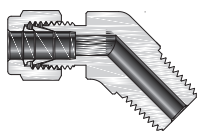
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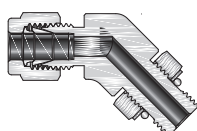
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45° Elbows



45° Male Elbows

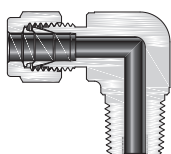
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45° Positionable Male Elbows

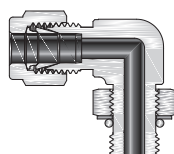
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90° Elbows



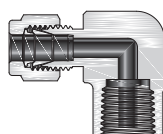
Male Elbows

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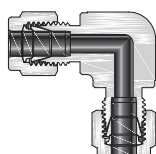
Positionable Male Elbows

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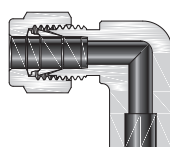
Female Elbows

1-53



Union Elbows

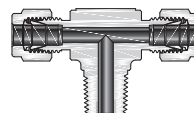
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Weld Elbows

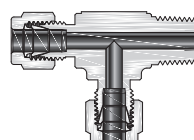
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Tees



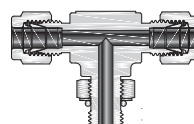
Male Branch Tees

1-57



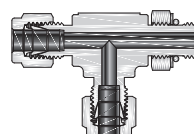
Male Run Tees

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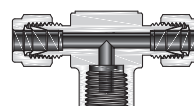
Positionable Male Branch Tees

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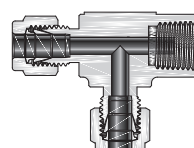
Positionable Male Run Tees

1-60



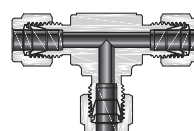
Female Branch Tees

1-61



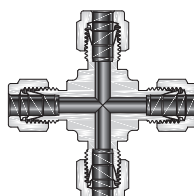
Female Run Tees

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Union Tees

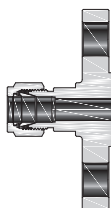
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Union Crosses

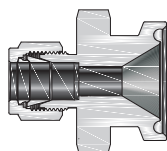
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Flanges



Flange Adapters

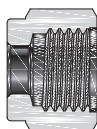
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Sanitary Flange Fittings

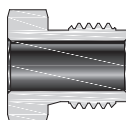
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Replacement Parts



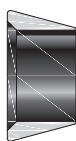
Nuts

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Male Nuts

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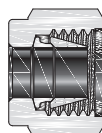
Front Ferrules

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Rear Ferrules

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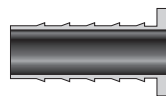
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Ferrule Sets

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BP Gaskets and BG Gaskets

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Bulkhead Retainers

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Features

- ❖ Twin ferrule fittings provide metal-to-metal seal connections, non-elastomeric seals for leak-free connections
- ❖ CIR-LOK twin ferrule fittings are designed to have a maximum allowable working pressure that is higher than that of any tubing
- ❖ Industry standard design for all instrumentation grade tubing
- ❖ Available in sizes from 1/16 to 2 in. and 2 mm to 50 mm
- ❖ CIR-LOK fittings materials include 316 stainless steel, steel, aluminum, nickel-copper, Hastelloy C, 6Mo, Incoloy 625 and 825
- ❖ CIR-LOK special treated back ferrule is to provide secure
- ❖ Silver coated threads to reduce galling
- ❖ Leak-proof joints capable of satisfying high pressure vacuum and vibration applications

Performance

- ❖ Hydraulic proof pressure test (1.5 times the maximum permissible working pressure): no leakage
- ❖ Dismantling and reassembly test (dismantle 10 times): no leakage
- ❖ Minimum hydrostatic pressure test (4 times the maximum permissible ambient pressure rating): no leakage
- ❖ Vacuum test (1×10^{-4} mbar or greater): the leak rate less than 1×10^{-6} mbar·L/s
- ❖ Maximum static gas pressure test (with nitrogen gas to 150% of pressure rating): no visible bubbles
- ❖ Hydraulic impulse and vibration test (the pressure impulses at between 0.5 Hz and 1.7 Hz and the vibration at between 23 Hz and 47 Hz): no leakage
- ❖ Thermal cycle test (ambient to +80 °C and then to -25 °C with a hydrostatic pressure): no leakage
- ❖ Pneumatic pressure vibration test (The frequency of vibration shall be set at 45 Hz and complete 20×10^6 cycles): without failure
- ❖ Fire test (in accordance with BS ISO 19921): no leakage
- ❖ Corrosion resistance test (the duration of exposure at least 168 h): no visible evidence of corrosion
- ❖ Deep water submersion test (equivalent to 3048 m of sea water): no leakage

Materials Standards

Material	Bar Stock ^①	Forgings ^②
316 stainless steel	ASTM A276 ASME SA479, EN 1.4401	ASTM A182 ASME SA182, EN 1.4401
Alloy 20	ASTM B473	ASTM B462
Alloy 400/R-405	ASTM B164, ASME SB164	ASTM B564, ASME SB564
Alloy 600	ASTM B166, ASME SB166	ASTM B564, ASME SB564
Alloy 625	ASTM B446 ^③	ASTM B564, ASME SB564 ^④
Alloy 825	ASTM B425	ASTM B564, ASME SB564
Alloy C-276	ASTM B574	ASTM B564
Aluminum	ASTM B211	ASTM B247
Carbon steel ^⑤	ASTM A108	—
Duplex 2507	ASTM A479	ASTM A182
Titanium(grade 4)	ASTM B348	ASTM B381
PFA	—	ASTM D3307 Type I
PTFE	ASTM D1710	ASTM D3294

① Straight fittings and tube adapters

② Elbows, crosses, and tees

③ All straight fittings and tube adapters and 1/4 and 3/8 in.; 6 and 10 mm elbows, crosses, and tees

④ Elbows, crosses, and tees larger than 3/8 in. and 10 mm

⑤ All carbon steel CIR-LOK tube fittings are supplied with 316 stainless steel back ferrules

Thread Specifications

Thread Type	Specification
NPT	ASME B1.20.1, SAE AS71051
ISO/BSP (tapered) (Based on DIN 3852)	ISO 7-1, BS EN 10226-1, JIS B0203
ISO/BSP (parallel) (Based on DIN 3852)	ISO 228-1, JIS B0202
Unified SAE	ASME B1.1
Metric	ISO 261

Working Temperature Rating

Material	Working Temperature Rating °F(°C)
316 stainless steel	-65 (-53) to 1000 (537)
Brass	-20 (-28) to 400 (204)
Carbon steel	-65 (-53) to 375 (190)
BS gaskets (FKM)	-5 (-15) to 400 (204)
BG BP gaskets (copper)	-325 (-198) to 400 (204)
SAE O-ring (FKM)	-20 (-28) to 400 (204)

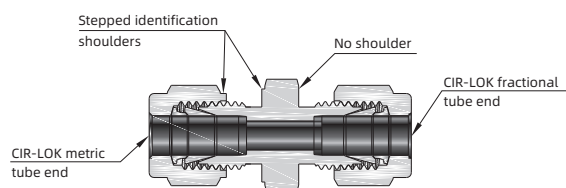
❖ System temperatures may be limited by the thread sealant or, when applicable, the gasket or O-ring material.

Pipe Thread Sealants

❖ A thread sealant or PTFE tape should always be used when assembling tapered threads.

Metric CIR-LOK Tube Fittings

❖ Metric and Fractional tube fittings are similar in appearance. To avoid any confusion and for ready identification, Metric tube fittings have a stepped shoulder on the body hex and hex nut.



CIR-LOK Tube Fitting Pressure Ratings

❖ CIR-LOK tube fitting ends are rated to the working pressure of tubing as listed in CIR-LOK Tubing Data.

NPT/ISO Pipe Pressure Ratings

❖ Ratings are based on ASME Code for Pressure Piping B31.3, Process Piping, at ambient temperature.

NPT/ISO Pipe Size	316 S.S. and Carbon Steel				Brass			
	Male		Female		Male		Female	
	psig	bar	psig	bar	psig	bar	psig	bar
1/16	11000	757	6700	461	5500	378	3300	227
1/8	10000	689	6500	447	5000	344	3200	220
1/4	8000	551	6600	454	4000	275	3300	227
3/8	7800	537	5300	365	3900	268	2600	179
1/2	7700	530	4900	337	3800	261	2400	165
3/4	7300	502	4600	316	3600	248	2300	158
1	5300	365	4400	303	2600	179	2200	151
1 1/4	6000	413	5000	344	3000	206	2500	172
1 1/2	5000	344	4600	316	2500	172	2300	158
2	3900	268	3900	268	1900	130	1900	130

❖ To determine pressure ratings in accordance with ASME B31.1, Power Piping:
carbon steel material—multiply by 0.85.
Stainless steel and brass material ratings remain the same.

❖ To determine MPa, multiply bar by 0.10.

SAE/MS Thread Pressure Ratings

❖ Pressure ratings are based on SAE J1926/3 at ambient temperature.

SAE/MS Thread Size	Designator	316 S.S. and Carbon Steel			
		Nonpositionable		positionable	
		psig	bar	psig	bar
5/16-24	ST5	5076	350	5076	350
7/16-20	ST7			4568	315
1/2-20	ST8				
9/16-18	ST9			4061	280
3/4-16	ST12	4568	315		
7/8-14	ST14	3625	250	3045	210
1 1/16-12	ST17				
1 3/16-12	ST19	3045	210	2538	175
1 5/16-12	ST21				
1 5/8-12	ST26	2538	175	2030	140
1 7/8-12	ST30				
2 1/2-12	ST40	2030	140	1522	105

❖ Some fittings with O-seal, and SAE/MS ends may have lower ratings.

Positionable, ISO/BSP Parallel Thread (PPT) Pressure Ratings

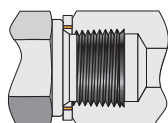
❖ Pressure ratings are at ambient temperature.

ISO/BSP Male Pipe Size in.	316 S.S. and Carbon Steel	
	psig	bar
1/8	4568	315
1/4		
3/8		
1/2	2320	160
3/4		
1		

Types of Sealing for ISO Parallel Threads

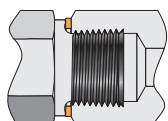
1. BS sealing: BS male thread end, BS gasket and BP female thread port

- ❖ BS male thread end complies with DIN 3852-2 type A
- ❖ BP female thread port complies with EN 837-1/3



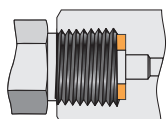
2. BP sealing: BP male thread end, BP gasket and BP female thread port

- ❖ BP male thread end complies with DIN 3852-2 type B
- ❖ BP female thread port complies with EN 837-1/3
- ❖ The BP gasket can be used with a BS fitting



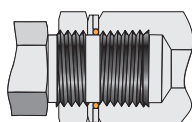
3. BG sealing: BG male thread end, BG gasket and BP female thread port

- ❖ BG female thread port complies with EN 837-1/3



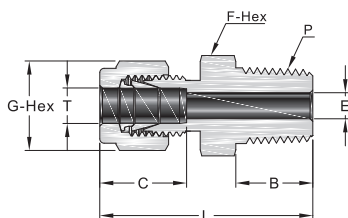
4. PPT sealing: PPT male thread end and BP female thread port

- ❖ BP female thread port complies with EN 837-1/3



Straight Fittings

Male Connectors

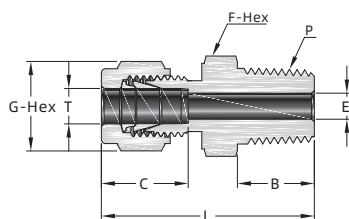


Fractional Tube

NPT Thread

T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/16	1/16	F1-MC-NPT1-	23.9	9.7	8.6	1.3	7.9	7.9
1/16	1/8	F1-MC-NPT2-	26.2	9.7	8.6	1.3	7.9	11.1
1/16	1/4	F1-MC-NPT4-	31.0	14.2	8.6	1.3	7.9	14.3
1/8	1/16	F2-MC-NPT1-	29.7	9.7	12.7	2.3	11.1	11.1
1/8	1/8	F2-MC-NPT2-	30.5	9.7	12.7	2.3	11.1	11.1
1/8	1/4	F2-MC-NPT4-	35.6	14.2	12.7	2.3	11.1	14.3
1/8	3/8	F2-MC-NPT6-	35.8	14.2	12.7	2.3	11.1	17.5
1/8	1/2	F2-MC-NPT8-	42.2	19.1	12.7	2.3	11.1	22.2
3/16	1/16	F3-MC-NPT1-	31.2	9.7	13.7	2.3	12.7	11.1
3/16	1/8	F3-MC-NPT2-	31.2	9.7	13.7	3.0	12.7	11.1
3/16	1/4	F3-MC-NPT4-	36.3	14.2	13.7	3.0	12.7	14.3
1/4	1/16	F4-MC-NPT1-	32.8	9.7	15.2	3.0	14.3	12.7
1/4	1/8	F4-MC-NPT2-	32.8	9.7	15.2	4.8	14.3	12.7
1/4	1/4	F4-MC-NPT4-	37.8	14.2	15.2	4.8	14.3	14.3
1/4	3/8	F4-MC-NPT6-	38.4	14.2	15.2	4.8	14.3	17.5
1/4	1/2	F4-MC-NPT8-	44.7	19.1	15.2	4.8	14.3	22.2
1/4	3/4	F4-MC-NPT12-	46.2	19.1	15.2	4.8	14.3	27.0
5/16	1/8	F5-MC-NPT2-	34.0	9.7	16.3	4.8	15.9	14.3
5/16	1/4	F5-MC-NPT4-	38.6	9.7	16.3	6.4	15.9	14.3
5/16	3/8	F5-MC-NPT6-	39.1	14.2	16.3	6.4	15.9	17.5
5/16	1/2	F5-MC-NPT8-	45.5	19.1	16.3	6.4	15.9	22.2
3/8	1/8	F6-MC-NPT2-	35.3	9.7	16.8	4.8	17.5	15.9
3/8	1/4	F6-MC-NPT4-	39.9	14.2	16.8	7.1	17.5	15.9
3/8	3/8	F6-MC-NPT6-	39.9	14.2	16.8	7.1	17.5	17.5
3/8	1/2	F6-MC-NPT8-	46.2	19.1	16.8	7.1	17.5	22.2
3/8	3/4	F6-MC-NPT12-	47.8	19.1	16.8	7.1	17.5	27.0
3/8	1	F6-MC-NPT16-	54.4	23.9	16.8	7.1	17.5	34.9
1/2	1/8	F8-MC-NPT2-	38.9	9.7	22.9	4.8	22.2	20.6
1/2	1/4	F8-MC-NPT4-	43.4	14.2	22.9	7.1	22.2	20.6
1/2	3/8	F8-MC-NPT6-	43.4	14.2	22.9	9.7	22.2	20.6
1/2	1/2	F8-MC-NPT8-	49.0	19.1	22.9	10.4	22.2	22.2
1/2	3/4	F8-MC-NPT12-	50.5	19.1	22.9	10.4	22.2	27.0
1/2	1	F8-MC-NPT16-	57.2	23.9	22.9	10.4	22.2	34.9
5/8	1/4	F10-MC-NPT4-	44.2	14.2	24.4	7.1	25.4	23.8
5/8	3/8	F10-MC-NPT6-	44.2	14.2	24.4	9.7	25.4	23.8
5/8	1/2	F10-MC-NPT8-	49.0	19.1	24.4	11.9	25.4	23.8
5/8	3/4	F10-MC-NPT12-	50.5	19.1	24.4	12.7	25.4	27.0
3/4	3/8	F12-MC-NPT6-	45.7	14.2	24.4	10.4	28.6	27.0
3/4	1/2	F12-MC-NPT8-	50.5	19.1	24.4	11.9	28.6	27.0
3/4	3/4	F12-MC-NPT12-	50.5	19.1	24.4	15.7	28.6	27.0
3/4	1	F12-MC-NPT16-	57.2	23.9	24.4	15.7	28.6	34.9
7/8	1/2	F14-MC-NPT8-	50.5	19.1	25.9	11.9	31.8	30.2
7/8	3/4	F14-MC-NPT12-	50.5	19.1	25.9	15.7	31.8	30.2
7/8	1	F14-MC-NPT16-	57.2	23.9	25.9	18.3	31.8	34.9
1	1/2	F16-MC-NPT8-	57.4	19.1	31.2	11.9	38.1	34.9
1	3/4	F16-MC-NPT12-	57.4	19.1	31.2	15.7	38.1	34.9
1	1	F16-MC-NPT16-	62.2	23.9	31.2	22.4	38.1	34.9
1 1/8	1	F18-MC-NPT16-	62.2	23.9	31.2	22.4	46.0	41.3
1 1/4	1	F20-MC-NPT16-	77.2	23.9	41.1	22.4	47.6	44.5
1 1/4	1 1/4	F20-MC-NPT20-	77.2	23.9	41.1	27.7	47.6	44.5
1 1/2	1 1/2	F24-MC-NPT24-	88.9	26.2	50.0	34.0	57.2	54.0

Male Connectors

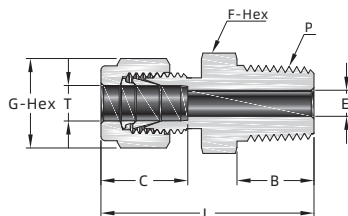


Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
2	1/8	M2-MC-NPT2-	30.5	9.7	12.9	1.7	12	12
3	1/8	M3-MC-NPT2-	30.5	9.7	12.9	2.4	12	12
3	1/4	M3-MC-NPT4-	35.6	14.2	12.9	2.4	12	14
4	1/8	M4-MC-NPT2-	31.2	9.7	13.7	2.4	12	12
4	1/4	M4-MC-NPT4-	36.3	14.2	13.7	2.4	12	14
6	1/8	M6-MC-NPT2-	32.8	9.7	15.3	4.8	14	14
6	1/4	M6-MC-NPT4-	37.9	14.2	15.3	4.8	14	14
6	3/8	M6-MC-NPT6-	38.4	14.2	15.3	4.8	14	18
6	1/2	M6-MC-NPT8-	44.7	19.1	15.3	4.8	14	22
8	1/8	M8-MC-NPT2-	34.2	9.7	16.2	4.8	16	15
8	1/4	M8-MC-NPT4-	38.7	14.2	16.2	6.4	16	15
8	3/8	M8-MC-NPT6-	39.3	14.2	16.2	6.4	16	18
8	1/2	M8-MC-NPT8-	45.6	19.1	16.2	6.4	16	22
10	1/8	M10-MC-NPT2-	36.3	9.7	17.2	4.8	19	18
10	1/4	M10-MC-NPT4-	40.9	14.2	17.2	7.1	19	18
10	3/8	M10-MC-NPT6-	40.9	14.2	17.2	7.9	19	18
10	1/2	M10-MC-NPT8-	46.5	19.1	17.2	7.9	19	22
10	3/4	M10-MC-NPT12-	48.0	19.1	17.2	7.9	19	27
10	1	M10-MC-NPT16-	54.6	23.9	17.2	7.9	19	35
12	1/8	M12-MC-NPT2-	38.8	9.7	22.8	4.8	22	22
12	1/4	M12-MC-NPT4-	43.4	14.2	22.8	7.1	22	22
12	3/8	M12-MC-NPT6-	43.4	14.2	22.8	9.5	22	22
12	1/2	M12-MC-NPT8-	49.0	19.1	22.8	9.5	22	22
12	3/4	M12-MC-NPT12-	50.5	19.1	22.8	9.5	22	27
14	1/8	M14-MC-NPT2-	38.8	9.7	24.4	4.8	25	24
14	1/4	M14-MC-NPT4-	44.1	14.2	24.4	7.1	25	24
14	3/8	M14-MC-NPT6-	44.1	14.2	24.4	9.5	25	24
14	1/2	M14-MC-NPT8-	49.0	19.1	24.4	11.1	25	24
14	3/4	M14-MC-NPT12-	50.5	19.1	24.4	11.1	25	27
15	1/2	M15-MC-NPT8-	49.0	19.1	24.4	11.9	25	24
15	3/4	M15-MC-NPT12-	50.5	19.1	24.4	11.9	25	27
15	1	M15-MC-NPT16-	57.1	23.9	24.4	11.9	25	35
16	1/4	M16-MC-NPT4-	44.1	14.2	24.4	7.1	25	24
16	3/8	M16-MC-NPT6-	44.1	14.2	24.4	9.5	25	24
16	1/2	M16-MC-NPT8-	49.0	19.1	24.4	11.9	25	24
16	3/4	M16-MC-NPT12-	50.5	19.1	24.4	12.7	25	27
18	3/8	M18-MC-NPT6-	45.6	14.2	24.4	9.5	30	27
18	1/2	M18-MC-NPT8-	50.5	19.1	24.4	11.9	30	27
18	3/4	M18-MC-NPT12-	50.5	19.1	24.4	15.1	30	27
20	1/2	M20-MC-NPT8-	52.3	19.1	26.0	11.9	32	30
20	3/4	M20-MC-NPT12-	52.3	19.1	26.0	15.9	32	30
20	1	M20-MC-NPT16-	57.1	23.9	26.0	15.9	32	35
22	1/2	M22-MC-NPT8-	52.3	19.1	26.0	11.9	32	30
22	3/4	M22-MC-NPT12-	52.3	19.1	26.0	15.9	32	30
22	1	M22-MC-NPT16-	57.1	23.9	26.0	18.3	32	35
25	1/2	M25-MC-NPT8-	57.5	19.1	31.3	11.9	38	35
25	3/4	M25-MC-NPT12-	57.5	19.1	31.3	15.9	38	35
25	1	M25-MC-NPT16-	62.3	23.9	31.3	21.8	38	35
28	1	M28-MC-NPT16-	72.4	23.9	36.6	21.8	46	41
28	1 1/4	M28-MC-NPT20-	73.1	23.9	36.6	21.8	46	46
30	1 1/4	M30-MC-NPT20-	77.2	23.9	39.6	26.2	50	46
32	1 1/4	M32-MC-NPT20-	79.6	23.9	42.0	28.6	50	46
38	1 1/2	M38-MC-NPT24-	91.6	26.2	49.4	33.7	60	55

Male Connectors

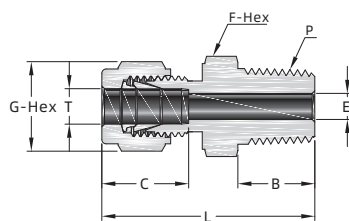


Fractional Tube

ISO Tapered Thread (BSPT)

T-Tube O.D. (in.)	p-BSPT Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/8	1/8	F2-MC-MBT2-	30.5	9.7	12.7	2.3	11.1	11.1
1/8	1/4	F2-MC-MBT4-	35.6	14.2	12.7	2.3	11.1	14.3
1/4	1/8	F4-MC-MBT2-	32.8	9.7	15.2	4.8	14.3	12.7
1/4	1/4	F4-MC-MBT4-	37.8	14.2	15.2	4.8	14.3	14.3
1/4	3/8	F4-MC-MBT6-	38.4	14.2	15.2	4.8	14.3	17.5
1/4	1/2	F4-MC-MBT8-	44.7	19.1	15.2	4.8	14.3	22.2
5/16	1/8	F5-MC-MBT2-	34.0	9.7	16.3	4.8	15.9	14.3
5/16	1/4	F5-MC-MBT4-	38.6	9.7	16.3	6.4	15.9	14.3
3/8	1/8	F6-MC-MBT2-	35.3	9.7	16.8	4.8	17.5	15.9
3/8	1/4	F6-MC-MBT4-	39.9	14.2	16.8	7.1	17.5	15.9
3/8	3/8	F6-MC-MBT6-	39.9	14.2	16.8	7.1	17.5	17.5
3/8	1/2	F6-MC-MBT8-	46.2	19.1	16.8	7.1	17.5	22.2
3/8	3/4	F6-MC-MBT12-	47.8	19.1	16.8	7.1	17.5	27.0
1/2	1/4	F8-MC-MBT4-	43.4	14.2	22.9	7.1	22.2	20.6
1/2	3/8	F8-MC-MBT6-	43.4	14.2	22.9	9.7	22.2	20.6
1/2	1/2	F8-MC-MBT8-	49.0	19.1	22.9	10.4	22.2	22.2
1/2	3/4	F8-MC-MBT12-	50.5	19.1	22.9	10.4	22.2	27.0
5/8	1/2	F10-MC-MBT8-	49.0	19.1	24.4	11.9	25.4	23.8
3/4	3/4	F12-MC-MBT12-	50.5	19.1	24.4	15.7	28.6	27.0
3/4	1	F12-MC-MBT16-	57.2	23.9	24.4	15.7	28.6	34.9
1	3/4	F16-MC-MBT12-	57.4	19.1	31.2	15.7	38.1	34.9
1	1	F16-MC-MBT16-	62.2	23.9	31.2	22.4	38.1	34.9

Male Connectors

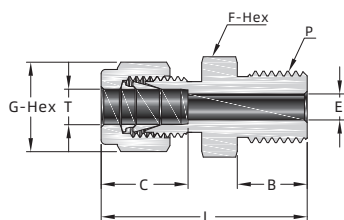


Metric Tube

ISO Tapered Thread (BSPT)

T-Tube O.D. (mm)	P-BSPT Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
2	1/8	M2-MC-MBT2-	30.5	9.7	12.9	1.7	12	12
3	1/8	M3-MC-MBT2-	30.5	9.7	12.9	2.4	12	12
3	1/4	M3-MC-MBT4-	35.6	14.2	12.9	2.4	12	14
4	1/8	M4-MC-MBT2-	31.2	9.7	13.7	2.4	12	12
4	1/4	M4-MC-MBT4-	36.3	14.2	13.7	2.4	12	14
6	1/8	M6-MC-MBT2-	32.8	9.7	15.3	4.8	14	14
6	1/4	M6-MC-MBT4-	37.9	14.2	15.3	4.8	14	14
6	3/8	M6-MC-MBT6-	38.4	14.2	15.3	4.8	14	18
6	1/2	M6-MC-MBT8-	44.7	19.1	15.3	4.8	14	22
8	1/8	M8-MC-MBT2-	34.2	9.7	16.2	4.8	16	15
8	1/4	M8-MC-MBT4-	38.7	14.2	16.2	6.4	16	15
8	3/8	M8-MC-MBT6-	39.2	14.2	16.2	6.4	16	18
8	1/2	M8-MC-MBT8-	45.6	19.1	16.2	6.4	16	22
10	1/8	M10-MC-MBT2-	36.3	9.7	17.2	4.8	19	18
10	1/4	M10-MC-MBT4-	40.9	14.2	17.2	7.1	19	18
10	3/8	M10-MC-MBT6-	40.9	14.2	17.2	7.9	19	18
10	1/2	M10-MC-MBT8-	46.5	19.1	17.2	7.9	19	22
10	3/4	M10-MC-MBT12-	48.0	19.1	17.2	7.9	19	27
12	1/8	M12-MC-MBT2-	38.3	9.7	22.8	4.8	22	22
12	1/4	M12-MC-MBT4-	43.4	14.2	22.8	7.1	22	22
12	3/8	M12-MC-MBT6-	43.4	14.2	22.8	9.5	22	22
12	1/2	M12-MC-MBT8-	49.0	19.1	22.8	9.5	22	22
12	3/4	M12-MC-MBT12-	50.5	19.1	22.8	9.5	22	27
14	1/8	M14-MC-MBT2-	38.8	9.7	24.4	4.8	25	24
14	1/4	M14-MC-MBT4-	44.1	14.2	24.4	7.1	25	24
14	3/8	M14-MC-MBT6-	44.1	14.2	24.4	7.9	25	24
14	1/2	M14-MC-MBT8-	49.0	19.1	24.4	11.1	25	24
14	3/4	M14-MC-MBT12-	50.5	19.1	24.4	11.1	25	27
15	1/2	M15-MC-MBT8-	49.0	19.1	24.4	11.9	25	24
16	1/4	M16-MC-MBT4-	44.1	14.2	24.4	7.1	25	24
16	3/8	M16-MC-MBT6-	44.1	14.2	24.4	9.5	25	24
16	1/2	M16-MC-MBT8-	49.0	19.1	24.4	11.9	25	24
16	3/4	M16-MC-MBT12-	50.5	19.1	24.4	12.7	25	27
18	1/2	M18-MC-MBT8-	50.5	19.1	24.4	11.9	30	27
18	3/4	M18-MC-MBT12-	50.5	19.1	24.4	15.1	30	27
20	1/2	M20-MC-MBT8-	52.3	19.1	26.0	11.9	32	30
20	3/4	M20-MC-MBT12-	52.3	19.1	26.0	15.9	32	30
22	3/4	M22-MC-MBT12-	52.3	19.1	26.0	15.9	32	30
22	1	M22-MC-MBT16-	57.1	23.9	26.0	18.3	32	35
25	1/2	M25-MC-MBT8-	57.5	19.1	31.3	11.9	38	35
25	3/4	M25-MC-MBT12-	57.5	19.1	31.3	15.9	38	35
25	1	M25-MC-MBT16-	62.3	23.9	31.3	21.8	38	35
28	1	M28-MC-MBT16-	72.4	23.9	36.6	21.8	46	41
28	1 1/4	M28-MC-MBT20-	73.1	23.9	36.6	21.8	46	46
30	1 1/4	M30-MC-MBT20-	77.2	23.9	39.6	26.2	50	46
32	1 1/4	M32-MC-MBT20-	79.6	23.9	42.0	28.6	50	46
38	1 1/2	M38-MC-MBT24-	91.6	26.2	49.4	33.7	60	55

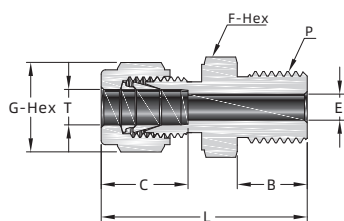
Male Connectors



Fractional Tube

ISO Parallel Thread (BG)

T-Tube O.D. (in.)	P-BG Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/4	3/8	F4-MC-MBP6-	38.4	14.2	15.2	4.8	14.3	17.5
3/8	3/8	F6-MC-MBP6-	39.9	14.2	16.8	7.1	17.5	17.5

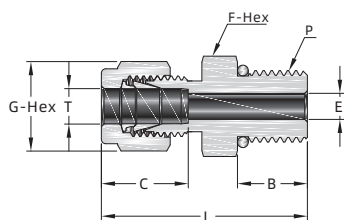


Metric Tube

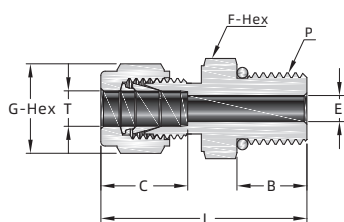
ISO Parallel Thread (BG)

T-Tube O.D. (mm)	P-BG Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
6	1/4	M6-MC-MBP4-	36.9	12.9	15.3	4.8	14	14
6	3/8	M6-MC-MBP6-	39.5	14.2	15.3	4.8	14	18
8	1/8	M8-MC-MBP2-	33.9	9.8	16.2	4.0	16	14
8	1/4	M8-MC-MBP4-	37.0	12.9	16.2	6.4	16	14
8	3/8	M8-MC-MBP6-	39.3	14.2	16.2	6.4	16	18
8	1/2	M8-MC-MBP8-	45.4	18.8	16.2	6.4	16	22
10	1/4	M10-MC-MBP4-	39.5	12.9	17.2	5.9	19	18
10	1/2	M10-MC-MBP8-	46.3	18.8	17.2	7.9	19	22
12	3/8	M12-MC-MBP6-	44.2	14.2	22.8	7.9	22	22
12	1/2	M12-MC-MBP8-	49.0	18.8	22.8	9.5	22	22
14	1/4	M14-MC-MBP4-	42.9	12.9	24.4	5.9	25	24
16	3/8	M16-MC-MBP6-	43.4	14.2	24.4	7.9	25	24
16	1/2	M16-MC-MBP8-	47.9	18.8	24.4	9.5	25	24
18	1/2	M18-MC-MBP8-	49.8	18.8	24.4	9.5	30	27

Male Connectors



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



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

Fractional Tube

SAE/MS Straight Thread

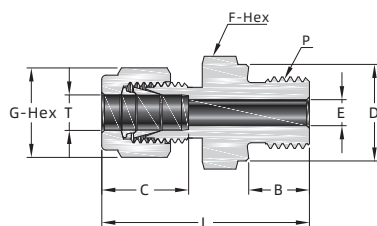
T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/16	5/16-24	F1-MC-OST5-	23.4	7.6	8.6	1.3	7.9	11.1
1/8	5/16-24	F2-MC-OST5-	30.0	7.6	12.7	2.3	11.1	11.1
1/8	7/16-20	F2-MC-OST7-	31.5	9.1	12.7	2.3	11.1	14.3
1/8	9/16-18	F2-MC-OST9-	33.3	9.9	12.7	2.3	11.1	17.5
3/16	3/8-24	F3-MC-OST6-	30.5	7.6	13.7	3.0	12.7	12.7
1/4	5/16-24	F4-MC-OST5-	32.3	7.6	15.2	2.3	14.3	12.7
1/4	7/16-20	F4-MC-OST7-	34.0	9.1	15.2	4.8	14.3	14.3
1/4	9/16-18	F4-MC-OST9-	35.6	9.9	15.2	4.8	14.3	17.5
1/4	3/4-16	F4-MC-OST12-	37.6	11.2	15.2	4.8	14.3	22.2
1/4	7/8-14	F4-MC-OST14-	40.6	12.7	15.2	4.8	15.9	25.4
5/16	1/2-20	F5-MC-OST8-	34.8	9.1	16.3	6.4	17.5	15.9
3/8	7/16-20	F6-MC-OST7-	35.6	9.1	16.8	5.1	17.5	15.9
3/8	9/16-18	F6-MC-OST9-	37.1	9.9	16.8	7.1	17.5	17.5
3/8	3/4-16	F6-MC-OST12-	39.1	11.2	16.8	7.1	17.5	22.2
3/8	7/8-14	F6-MC-OST14-	42.2	12.7	22.9	7.1	17.5	25.4
1/2	9/16-18	F8-MC-OST9-	39.1	9.9	22.9	7.1	22.2	20.6
1/2	3/4-16	F8-MC-OST12-	41.9	11.2	22.9	10.4	22.2	22.2
1/2	7/8-14	F8-MC-OST14-	45.0	12.7	22.9	10.4	22.2	25.4
1/2	1 1/16-12	F8-MC-OST17-	49.0	15.0	22.9	10.4	22.2	31.8
5/8	3/4-16	F10-MC-OST12-	41.9	11.2	24.4	10.7	25.4	23.8
5/8	7/8-14	F10-MC-OST14-	45.2	12.7	24.4	12.7	25.4	25.4
3/4	3/4-16	F12-MC-OST12-	46.0	11.2	24.4	10.7	28.6	27.0
3/4	1 1/16-12	F12-MC-OST17-	49.0	15.0	24.4	15.7	28.6	31.8
3/4	1 5/16-12	F12-MC-OST21-	49.8	15.0	24.4	16.0	28.6	38.1
7/8	1 3/16-12	F14-MC-OST19-	49.0	15.0	25.9	18.3	31.8	34.9
1	1 1/16-12	F16-MC-OST17-	53.3	15.0	31.2	16.8	38.1	34.9
1	1 5/16-12	F16-MC-OST21-	54.4	15.0	31.2	22.4	38.1	38.1
1 1/4	1 5/8-12	F20-MC-OST26-	68.3	15.0	41.1	27.7	47.6	47.6
1 1/2	1 7/8-12	F24-MC-OST30-	77.7	15.0	50.0	34.0	57.2	54.0

Metric Tube

SAE/MS Straight Thread

T-Tube O.D. (mm)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
6	9/16-18	M6-MC-OST9-	35.6	9.9	15.3	4.8	14	18
10	9/16-18	M10-MC-OST9-	37.3	9.9	17.2	7.1	19	22
10	3/4-16	M10-MC-OST12-	39.4	11.2	17.2	7.9	19	22
12	7/16-20	M12-MC-OST7-	40.6	9.1	22.8	5.2	22	22
12	9/16-18	M12-MC-OST9-	39.9	9.9	22.8	7.1	22	22

Male Connectors

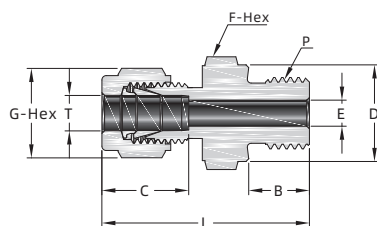


Fractional Tube

ISO Parallel Thread (BP)

T-Tube O.D. (in.)	P-BP Size	Basic Ordering Number	Dimension, mm						
			L	B	C	E	G	F	D
1/8	1/8	F2-MC-PMBP2-	30.0	7.1	12.7	2.3	11.1	14.3	13.7
1/8	1/4	F2-MC-PMBP4-	35.3	11.2	12.7	2.3	11.1	19.1	18.0
1/4	1/8	F4-MC-PMBP2-	32.3	7.1	15.2	4.1	14.3	14.3	13.8
1/4	1/4	F4-MC-PMBP4-	37.6	11.2	15.2	4.8	14.3	19.1	18.0
1/2	3/8	F8-MC-PMBP6-	40.4	11.2	22.9	7.9	22.2	22.2	21.8
1/2	1/2	F8-MC-PMBP8-	49.0	14.2	22.9	10.4	22.2	27.0	25.9
3/4	1/2	F12-MC-PMBP8-	49.0	14.2	24.4	11.9	28.6	27.0	25.9
3/4	3/4	F12-MC-PMBP12-	52.9	15.7	24.4	15.7	28.6	33.3	32
1	1	F16-MC-PMBP16-	59.9	18.3	31.2	19.8	38.1	41.3	39.1

Male Connectors

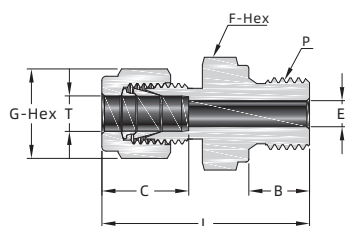


Metric Tube

ISO Parallel Thread (BP)

T-Tube O.D. (mm)	P-BP Size	Basic Ordering Number	Dimension, mm						
			L	B	C	E	G	F	D
3	1/8	M3-MC-PMBP2-	30.0	7.1	12.9	2.4	12	14	13.8
3	1/4	M3-MC-PMBP4-	35.3	11.2	12.9	2.4	12	19	18.0
4	1/8	M4-MC-PMBP2-	30.7	7.1	13.7	2.4	12	14	13.8
6	1/8	M6-MC-PMBP2-	32.3	7.1	15.3	4.0	14	14	13.8
6	1/4	M6-MC-PMBP4-	37.6	11.2	15.3	4.8	14	19	18.0
6	3/8	M6-MC-PMBP6-	38.9	11.2	15.3	4.8	14	22	21.8
6	1/2	M6-MC-PMBP8-	44.7	14.2	15.3	4.8	14	27	26.0
8	1/8	M8-MC-PMBP2-	33.3	7.1	16.2	4.0	16	15	13.8
8	1/4	M8-MC-PMBP4-	38.5	11.2	16.2	5.9	16	19	18.0
8	3/8	M8-MC-PMBP6-	39.8	11.2	16.2	6.4	16	22	21.8
8	1/2	M8-MC-PMBP8-	45.6	14.2	16.2	6.4	16	27	26.0
10	1/4	M10-MC-PMBP4-	39.4	11.2	17.2	5.9	19	19	18.0
10	3/8	M10-MC-PMBP6-	40.6	11.2	17.2	7.9	19	22	21.8
10	1/2	M10-MC-PMBP8-	46.5	14.2	17.2	7.9	19	27	26.0
12	1/4	M12-MC-PMBP4-	42.6	11.2	22.8	5.9	22	22	18.0
12	3/8	M12-MC-PMBP6-	43.1	11.2	22.8	7.9	22	22	21.8
12	1/2	M12-MC-PMBP8-	49.0	14.2	22.8	9.5	22	27	26.0
12	3/4	M12-MC-PMBP12-	52.8	15.7	22.8	9.5	22	35	32.0
15	1/2	M15-MC-PMBP8-	49.0	14.2	24.4	11.9	25	27	26.0
16	3/8	M16-MC-PMBP6-	43.9	11.2	24.4	7.9	25	24	21.8
16	1/2	M16-MC-PMBP8-	49.0	14.2	24.4	11.9	25	27	26.0
18	1/2	M18-MC-PMBP8-	49.0	14.2	24.4	11.9	30	27	26.0
18	3/4	M18-MC-PMBP12-	52.8	15.7	24.4	15.1	30	35	32.0
20	1/2	M20-MC-PMBP8-	50.5	14.2	26.0	11.9	32	30	26.0
20	3/4	M20-MC-PMBP12-	52.8	15.7	26.0	15.9	32	35	32.0
22	3/4	M22-MC-PMBP12-	52.8	15.7	26.0	15.9	32	35	32.0
22	1	M22-MC-PMBP16-	55.3	18.3	26.0	18.3	32	41	39.0
25	3/4	M25-MC-PMBP12-	57.5	15.7	31.3	15.9	38	35	32.0
25	1	M25-MC-PMBP16-	60.1	18.3	31.3	19.8	38	41	39.0
28	1	M28-MC-PMBP16-	70.1	18.3	36.6	19.8	46	41	39.0
28	1 1/4	M28-MC-PMBP20-	73.9	19.8	36.6	21.8	46	50	49.0
30	1 1/4	M30-MC-PMBP20-	76.5	19.8	39.6	26.2	50	50	49.0
32	1 1/4	M32-MC-PMBP20-	78.9	19.8	42.0	28.6	50	50	49.0
38	1 1/2	M38-MC-PMBP24-	89.3	20.6	49.4	31.8	60	55	54.7

Male Connectors

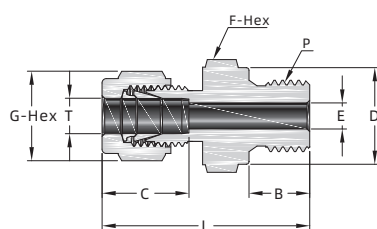


Fractional Tube

ISO Parallel Thread (BS)

T-Tube O.D. (in.)	P-BS Size	Basic Ordering Number	Dimension, mm						
			L	B	C	E	G	F	D
1/8	1/8	F2-MC-MBS2-	30.0	7.1	12.7	2.3	11.1	14.3	13.7
1/8	1/4	F2-MC-MBS4-	35.3	11.2	12.7	2.3	11.1	19.1	18.0
1/8	3/8	F2-MC-MBS6-	36.3	11.2	12.7	2.3	11.1	22.2	21.8
1/4	1/8	F4-MC-MBS2-	32.3	7.1	15.2	4.0	14.3	14.3	13.7
1/4	1/4	F4-MC-MBS4-	37.6	11.2	15.2	4.8	14.3	19.1	18.0
1/4	3/8	F4-MC-MBS6-	38.9	11.2	15.2	4.8	14.3	22.2	21.8
1/4	1/2	F4-MC-MBS8-	44.7	14.2	15.2	4.8	14.3	27.0	25.9
3/8	1/8	F6-MC-MBS2-	37.8	7.1	16.8	4.0	17.5	15.9	13.7
3/8	1/4	F6-MC-MBS4-	39.1	11.2	16.8	5.9	17.5	19.1	18.0
3/8	3/8	F6-MC-MBS6-	40.4	11.2	16.8	7.1	17.5	22.2	21.8
3/8	1/2	F6-MC-MBS8-	46.2	14.2	16.8	7.1	17.5	27.0	25.9
1/2	1/4	F8-MC-MBS4-	42.7	11.2	22.9	5.9	22.2	20.6	18.0
1/2	3/8	F8-MC-MBS6-	43.2	11.2	22.9	7.9	22.2	22.2	21.8
1/2	1/2	F8-MC-MBS8-	49.0	14.2	22.9	10.4	22.2	27.0	25.9
3/4	1/2	F12-MC-MBS8-	49.0	14.2	24.4	11.9	28.6	27.0	25.9
3/4	3/4	F12-MC-MBS12-	52.9	15.7	24.4	15.7	28.6	33.3	32.0
1	1/2	F16-MC-MBS8-	55.5	14.2	31.2	11.9	38.1	34.9	25.9
1	3/4	F16-MC-MBS12-	57.7	15.7	31.2	16.0	38.1	34.9	32.0
1	1	F16-MC-MBS16-	59.9	18.3	31.2	19.8	38.1	41.3	39.1

Male Connectors

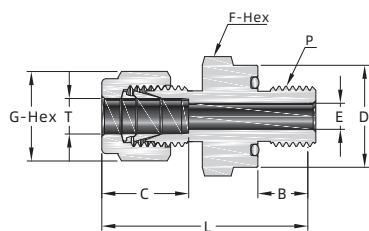


Metric Tube

ISO Parallel Thread (BS)

T-Tube O.D. (mm)	P-BS Size	Basic Ordering Number	Dimension, mm						
			L	B	C	E	G	F	D
2	1/8	M2-MC-MBS2-	30.0	7.1	12.9	1.7	12	14	13.7
3	1/8	M3-MC-MBS2-	30.0	7.1	12.9	2.4	12	14	13.7
3	1/4	M3-MC-MBS4-	35.3	11.2	12.9	2.4	12	19	18.0
4	1/8	M4-MC-MBS2-	30.7	7.1	13.7	2.4	12	14	13.7
4	1/4	M4-MC-MBS4-	36.0	11.2	13.7	2.4	12	19	18.0
6	1/8	M6-MC-MBS2-	32.3	7.1	15.3	4.0	14	14	13.7
6	1/4	M6-MC-MBS4-	37.6	11.2	15.3	4.8	14	19	18.0
6	3/8	M6-MC-MBS6-	38.9	11.2	15.3	4.8	14	22	21.6
6	1/2	M6-MC-MBS8-	44.7	14.2	15.3	4.8	14	27	25.9
8	1/8	M8-MC-MBS2-	33.2	7.1	16.2	4.0	16	15	14.5
8	1/4	M8-MC-MBS4-	38.5	11.2	16.2	6.4	16	19	18.0
8	3/8	M8-MC-MBS6-	39.8	11.2	16.2	6.4	16	22	21.6
8	1/2	M8-MC-MBS8-	45.6	14.2	16.2	6.4	16	27	25.9
8	3/4	M8-MC-MBS12-	49.5	15.7	16.2	6.4	16	35	32.0
10	1/4	M10-MC-MBS4-	39.4	11.2	17.2	5.9	19	19	18.0
10	3/8	M10-MC-MBS6-	40.6	11.2	17.2	7.9	19	22	21.6
10	1/2	M10-MC-MBS8-	46.5	14.2	17.2	7.9	19	27	25.9
12	1/4	M12-MC-MBS4-	42.6	11.2	22.8	5.9	22	22	21.6
12	3/8	M12-MC-MBS6-	43.1	11.2	22.8	7.9	22	22	21.6
12	1/2	M12-MC-MBS8-	49.0	14.2	22.8	9.5	22	27	25.9
12	3/4	M12-MC-MBS12-	52.8	15.7	22.8	9.5	22	35	32.0
14	1/4	M14-MC-MBS4-	42.9	11.2	24.4	7.1	25	24	18.0
14	3/8	M14-MC-MBS6-	43.9	11.2	24.4	7.9	25	24	21.6
14	1/2	M14-MC-MBS8-	49.0	14.2	24.4	11.1	25	27	25.9
14	3/4	M14-MC-MBS12-	52.8	15.7	24.4	11.1	25	35	32.0
15	3/8	M15-MC-MBS6-	43.9	11.2	24.4	7.9	25	24	21.6
15	1/2	M15-MC-MBS8-	49.0	14.2	24.4	11.9	25	27	25.9
15	3/4	M15-MC-MBS12-	52.8	15.7	24.4	11.9	25	35	32.0
16	3/8	M16-MC-MBS6-	43.9	11.2	24.4	7.9	25	24	21.6
16	1/2	M16-MC-MBS8-	49.0	14.2	24.4	11.9	25	27	25.9
16	3/4	M16-MC-MBS12-	52.8	15.7	24.4	12.7	25	35	32.0
18	1/2	M18-MC-MBS8-	49.0	14.2	24.4	11.9	30	27	25.9
18	3/4	M18-MC-MBS12-	52.8	15.7	24.4	15.1	30	35	32.0
20	1/2	M20-MC-MBS8-	50.5	14.2	26.0	11.9	32	30	25.9
20	3/4	M20-MC-MBS12-	52.8	15.7	26.0	15.9	32	35	32.0
22	3/4	M22-MC-MBS12-	52.8	15.7	26.0	15.9	32	35	32.0
22	1	M22-MC-MBS16-	55.3	18.3	26.0	18.3	32	41	39.1
25	3/4	M25-MC-MBS12-	57.5	15.7	31.3	15.9	38	35	32.0
25	1	M25-MC-MBS16-	60.1	18.3	31.3	19.8	38	41	39.1
28	1	M28-MC-MBS16-	70.1	18.3	36.6	19.8	46	41	39.1
28	1 1/4	M28-MC-MBS20-	73.9	19.8	36.6	21.8	46	50	49.0
30	1 1/4	M30-MC-MBS20-	76.5	19.8	39.6	25.0	50	50	49.0
32	1 1/4	M32-MC-MBS20-	78.9	19.8	42.0	25.0	50	50	49.0
38	1 1/2	M38-MC-MBS24-	90.8	22.1	49.4	31.8	60	55	54.7

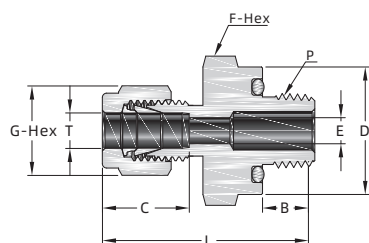
Male Connectors



Fractional Tube

O-Seal with SAE/MS Straight Thread

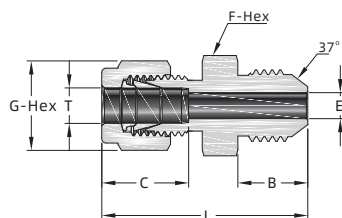
T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm						
			L	B	C	E	G	F	D
1/16	5/16-24	F1-MC-STO5-	26.7	8.6	8.6	1.3	7.9	14.3	14.0
1/8	5/16-24	F2-MC-STO5-	32.8	8.6	12.7	2.3	11.1	14.3	14.0
3/16	3/8-24	F3-MC-STO6-	34.3	9.7	13.7	3.0	12.7	15.9	15.7
1/4	7/16-20	F4-MC-STO7-	38.4	10.4	15.2	4.8	14.3	19.1	18.8
5/16	1/2-20	F5-MC-STO8-	40.6	11.2	16.3	6.4	15.9	22.2	21.8
3/8	9/16-18	F6-MC-STO9-	42.4	11.9	16.8	7.1	17.5	23.8	23.6
1/2	3/4-16	F8-MC-STO12-	46.0	11.9	22.9	10.4	22.2	28.6	28.4
3/4	1 1/16-12	F12-MC-STO17-	52.3	14.2	24.4	15.7	28.6	38.1	37.8
1	1 5/16-12	F16-MC-STO21-	58.2	14.2	31.2	22.4	38.1	44.5	44.2



Fractional Tube

O-Seal with NPT Thread

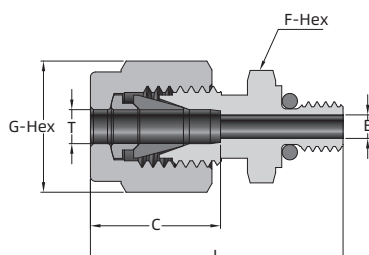
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	B	C	E	G	F	D
1/8	1/8	F2-MC-NPT02-	32.8	7.1	8.6	2.3	11.1	19.1	18.8
1/4	1/8	F4-MC-NPT02-	35.1	7.1	15.2	4.8	14.3	19.1	18.8
1/4	1/4	F4-MC-NPT04-	38.4	9.7	15.2	4.8	14.3	23.8	23.6
3/8	1/4	F6-MC-NPT04-	39.9	9.7	16.8	7.1	17.5	23.8	23.6
3/8	3/8	F6-MC-NPT06-	41.4	10.4	16.8	7.1	17.5	28.6	28.4
3/8	1/2	F6-MC-NPT08-	47.0	13.5	16.8	7.1	17.5	33.3	33.0
1/2	1/2	F8-MC-NPT08-	49.8	13.5	22.9	10.4	22.2	33.3	33.0



Fractional Tube

37° Flare (AN)

T-Tube O.D. (in.)	AN Tube Flare Size	Basic Ordering Number	Dimension, in. (mm)						
			L	B	C	E	G	F	
1/16	1/8	F1-MC-AN2-	1.07(27.2)	0.45(11.4)	0.34(8.6)	0.05(1.3)	0.31(7.9)	0.44(11.1)	
1/8	1/8	F2-MC-AN2-	1.27(32.3)	0.45(11.4)	0.50(12.7)	0.06(1.5)	0.44(11.1)	0.44(11.1)	
1/8	1/4	F2-MC-AN4-	1.38(35.1)	0.55(14.0)	0.50(12.7)	0.09(2.3)	0.44(11.1)	0.50(12.7)	
3/16	3/16	F3-MC-AN3-	1.32(33.5)	0.48(12.2)	0.54(13.7)	0.09(2.3)	0.50(12.7)	0.44(11.1)	
1/4	1/4	F4-MC-AN4-	1.48(37.6)	0.55(14.0)	0.60(15.2)	0.17(4.3)	0.56(14.3)	0.50(12.7)	
5/16	5/16	F5-MC-AN5-	1.51(38.4)	0.55(14.0)	0.64(16.2)	0.23(5.8)	0.63(15.9)	0.56(14.3)	
3/8	1/4	F6-MC-AN4-	1.56(39.6)	0.55(14.0)	0.66(16.8)	0.17(4.3)	0.69(17.5)	0.63(15.9)	
3/8	3/8	F6-MC-AN6-	1.56(39.6)	0.56(14.1)	0.66(16.8)	0.28(7.1)	0.69(17.5)	0.63(15.9)	
1/2	1/2	F8-MC-AN8-	1.81(46.0)	0.66(16.7)	0.90(22.8)	0.39(9.9)	0.87(22.2)	0.81(20.6)	
5/8	5/8	F10-MC-AN10-	1.93(49.0)	0.76(19.3)	0.96(24.5)	0.48(12.3)	1.00(25.4)	0.94(23.8)	
3/4	3/4	F12-MC-AN12-	2.10(53.3)	0.86(21.9)	0.96(24.4)	0.61(15.5)	1.13(28.6)	1.13(28.6)	
1	1	F16-MC-AN16-	2.42(61.5)	0.91(23.1)	1.23(31.2)	0.84(21.3)	1.50(38.1)	1.37(34.9)	

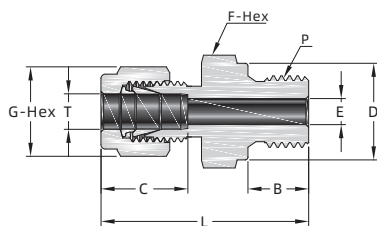


Fractional Tube

10-32 Thread

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				
		L	C	E	G	F
1/8	F2-MC-UNFD10	24.1	12.7	2.3	11.1	9.5
1/4	F4-MC-UNFD10	27.4	15.2	2.3	14.3	12.7

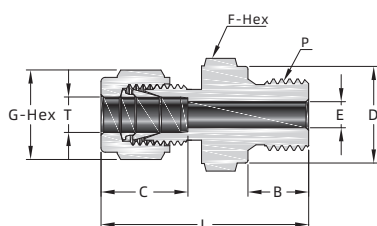
Male Connectors



Fractional Tube

Metric Thread (BSMS)

T-Tube O.D. (in.)	P-Metric Thread Size	Basic Ordering Number	Dimension, mm						
			L	B	C	E	G	F	D
1/8	M14x1.5	F2-MC-BSMS14-	36.7	12	12.7	2.3	11.1	19.1	19
1/8	M16x1.5	F2-MC-BSMS16-	37.5	12	12.7	2.3	11.1	22.2	21
1/8	M18x1.5	F2-MC-BSMS18-	38.5	12	12.7	2.3	11.1	23.8	23
1/8	M20x1.5	F2-MC-BSMS20-	41.1	14	12.7	2.3	11.1	25.4	25
1/4	M14x1.5	F4-MC-BSMS14-	38.0	12	15.2	4.8	14.3	19.1	19
1/4	M16x1.5	F4-MC-BSMS16-	39.9	12	15.2	4.8	14.3	22.2	21
1/4	M18x1.5	F4-MC-BSMS18-	40.8	12	15.2	4.8	14.3	23.8	23
1/4	M20x1.5	F4-MC-BSMS20-	43.6	14	15.2	4.8	14.3	25.4	25
3/8	M14x1.5	F6-MC-BSMS14-	41.3	12	16.8	7.1	17.5	19.1	19
3/8	M16x1.5	F6-MC-BSMS16-	41.3	12	16.8	7.1	17.5	22.2	21
3/8	M18x1.5	F6-MC-BSMS18-	41.8	12	16.8	7.1	17.5	23.8	23
3/8	M20x1.5	F6-MC-BSMS20-	45.1	14	16.8	7.1	17.5	25.4	25
1/2	M16x1.5	F8-MC-BSMS16-	44.0	12	22.9	9.0	22.2	22.2	21
1/2	M18x1.5	F8-MC-BSMS18-	44.0	12	22.9	10.0	22.2	23.8	23
1/2	M20x1.5	F8-MC-BSMS20-	47.9	14	22.9	10.4	22.2	25.4	25
1/2	M22x1.5	F8-MC-BSMS22-	48.5	14	22.9	10.4	22.2	27.0	27

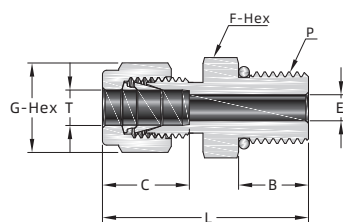


Metric Tube

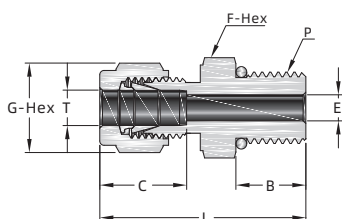
Metric Thread (BSMS)

T-Tube O.D. (mm)	P-Metric Thread Size	Basic Ordering Number	Dimension, mm						
			L	B	C	E	G	F	D
6	M8 x 1	M6-MC-BSMS8-	33.3	8	15.3	3.0	14	14	12
6	M10 x 1	M6-MC-BSMS10-	36.3	8	15.3	4.0	14	14	14
6	M12 x 1.5	M6-MC-BSMS12-	38.2	12	15.3	4.8	14	18	17
6	M14 x 1.5	M6-MC-BSMS14-	39.7	12	15.3	4.8	14	19	19
8	M8 x 1	M8-MC-BSMS8-	34.1	8	16.2	3.0	16	14	12
8	M10 x 1	M8-MC-BSMS10-	34.1	8	16.2	5.0	16	15	14
8	M12 x 1.5	M8-MC-BSMS12-	40.4	12	16.2	6.0	16	18	17
8	M14 x 1.5	M8-MC-BSMS14-	40.4	12	16.2	6.4	16	19	19
10	M12 x 1.5	M10-MC-BSMS12-	40.7	12	17.2	6.0	19	18	17
10	M14 x 1.5	M10-MC-BSMS14-	41.5	12	17.2	7.9	19	19	19
12	M16 x 1.5	M12-MC-BSMS16-	45.5	12	22.8	9	22	22	21
12	M20 x 1.5	M12-MC-BSMS20-	48.0	14	22.8	9.5	22	25	25
12	M22 x 1.5	M12-MC-BSMS22-	49.5	14	22.8	9.5	22	27	27
14	M14 x 1.5	M14-MC-BSMS14-	44.9	12	24.4	8	25	24	19
14	M20 x 1.5	M14-MC-BSMS20-	48.0	14	24.4	11.1	25	25	25
16	M20 x 1.5	M16-MC-BSMS20-	48.0	14	24.4	12	25	25	25
18	M20 x 1.5	M18-MC-BSMS20-	48.5	14	24.4	12	30	27	25
20	M20 x 1.5	M20-MC-BSMS20-	50.0	14	26.0	12	32	30	25
22	M24 x 1.5	M22-MC-BSMS24-	50.5	14	26.0	15	32	30	29
25	M27 x 2	M25-MC-BSMS27-	57.5	16	31.3	16.8	38	35	32

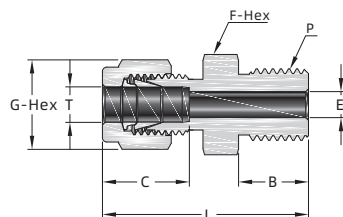
Male Connectors



Adapt to straight thread boss of ISO 6149-1.



Adapt to straight thread boss of ISO 6149-1.



Fractional Tube

Metric Thread (OMS)

T-Tube O.D. (in.)	P-Metric Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/4	M14X1.5	F4-MC-OMS14-	35.2	11	15.2	4.8	14.3	19.1
3/8	M14X1.5	F6-MC-OMS14-	36.7	11	16.8	7.1	17.5	19.1
3/8	M20X1.5	F6-MC-OMS20-	41.2	14	16.8	7.1	17.5	27.0
1/2	M14X1.5	F8-MC-OMS14-	40.2	11	22.9	7.5	22.2	20.6
1/2	M20X1.5	F8-MC-OMS20-	44.0	14	22.9	10.4	22.2	27.0

Metric Tube

Metric Thread (OMS)

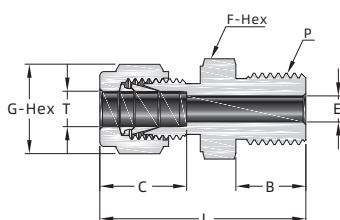
T-Tube O.D. (mm)	P-Metric Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
6	M14 x 1.5	M6-MC-OMS14-	35.2	11	15.3	4.8	14	19
10	M14 x 1.5	M10-MC-OMS14-	36.7	11	17.2	7.5	19	19
10	M20 x 1.5	M10-MC-OMS20-	41.2	14	17.2	7.9	19	27
12	M14 x 1.5	M12-MC-OMS14-	40.2	11	22.8	7.5	22	22
12	M20 x 1.5	M12-MC-OMS20-	44.0	14	22.8	10.4	22	27

Fractional Tube

Metric Thread (MS)

T-Tube O.D. (in.)	P-Metric Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/16	M5x0.8	F1-MC-MS5-	21.8	8	8.6	1.3	7.9	7.9
1/8	M14x1.5	F2-MC-MS14-	34.8	13	12.7	2.3	11.1	15.9
1/8	M16x1.5	F2-MC-MS16-	35.8	14	12.7	2.3	11.1	17.5
1/8	M18x1.5	F2-MC-MS18-	37.2	15	12.7	2.3	11.1	19.1
1/8	M20x1.5	F2-MC-MS20-	38.2	16	12.7	2.3	11.1	22.2
1/4	M14x1.5	F4-MC-MS14-	36.9	13	15.2	4.8	14.3	15.9
1/4	M16x1.5	F4-MC-MS16-	38.1	14	15.2	4.8	14.3	17.5
1/4	M18x1.5	F4-MC-MS18-	39.5	15	15.2	4.8	14.3	19.1
1/4	M20x1.5	F4-MC-MS20-	40.7	16	15.2	4.8	14.3	22.2
3/8	M10x1.0	F6-MC-MS10-	36.4	11	16.8	4.8	17.5	15.9
3/8	M14x1.5	F6-MC-MS14-	39.3	13	16.8	7.1	17.5	15.9
3/8	M16x1.5	F6-MC-MS16-	39.7	14	16.8	7.1	17.5	17.5
3/8	M18x1.5	F6-MC-MS18-	41.5	15	16.8	7.1	17.5	19.1
3/8	M20x1.5	F6-MC-MS20-	42.3	16	16.8	7.1	17.5	22.2
1/2	M16x1.5	F8-MC-MS16-	43.2	14	22.9	8.4	22.2	20.6
1/2	M18x1.5	F8-MC-MS18-	43.7	15	22.9	9.6	22.2	20.6
1/2	M20x1.5	F8-MC-MS20-	44.9	16	22.9	10.4	22.2	22.2
1/2	M22x1.5	F8-MC-MS22-	47.0	17	22.9	10.4	22.2	23.8

Male Connectors

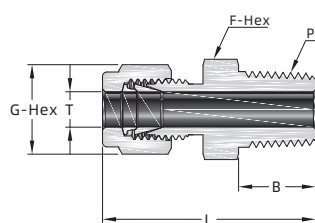


Metric Tube

Metric Thread (MS)

T-Tube O.D. (mm)	P-Metric Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
6	M6 x 1	M6-MC-MS6-	32.4	8	15.3	2.0	14	14
6	M8 x 1	M6-MC-MS8-	32.4	9	15.3	3.0	14	14
6	M10 x 1	M6-MC-MS10-	35.2	11	15.3	4.7	14	14
6	M12 x 1.5	M6-MC-MS12-	36.4	12	15.3	4.8	14	14
6	M14 x 1.5	M6-MC-MS14-	37.4	13	15.3	4.8	14	16
6	M16 x 1.5	M6-MC-MS16-	38.4	14	15.3	4.8	14	18
6	M18 x 1.5	M6-MC-MS18-	40.0	15	15.3	4.8	14	19
6	M20 x 1.5	M6-MC-MS20-	41.7	16	15.3	4.8	14	22
8	M8 x 1	M8-MC-MS8-	34.5	9	16.2	3.0	16	14
8	M10 x 1	M8-MC-MS10-	35.6	11	16.2	4.7	16	14
8	M12 x 1.5	M8-MC-MS12-	36.6	12	16.2	6.0	16	14
8	M14 x 1.5	M8-MC-MS14-	37.7	13	16.2	6.4	16	16
8	M20 x 1.5	M8-MC-MS20-	42.5	16	16.2	6.4	16	22
10	M12 x 1.5	M10-MC-MS12-	38.7	12	17.2	6.0	19	18
10	M14 x 1.5	M10-MC-MS14-	39.7	13	17.2	7.2	19	18
10	M20 x 1.5	M10-MC-MS20-	43.5	16	17.2	7.9	19	22
12	M12 x 1.5	M12-MC-MS12-	41.2	12	22.8	6.0	22	22
12	M16 x 1.5	M12-MC-MS16-	43.2	14	22.8	9.5	22	22
12	M18 x 1.5	M12-MC-MS18-	44.2	15	22.8	9.5	22	22
12	M20 x 1.5	M12-MC-MS20-	45.2	16	22.8	9.5	22	22
14	M14 x 1.5	M14-MC-MS14-	42.5	13	24.4	7.2	25	24
14	M16 x 1.5	M14-MC-MS16-	43.9	14	24.4	8.4	25	24
14	M20 x 1.5	M14-MC-MS20-	45.1	16	24.4	10.8	25	24
16	M20 x 1.5	M16-MC-MS20-	46.1	16	24.4	10.8	25	24
18	M20 x 1.5	M18-MC-MS20-	47.5	16	24.4	10.8	30	27
18	M22 x 1.5	M18-MC-MS22-	48.5	17	24.4	12	30	27
20	M20 x 1.5	M20-MC-MS20-	49.5	16	26.0	10.8	32	30
22	M24 x 1.5	M22-MC-MS24-	50.5	17	26.0	14.4	32	30
25	M27 x 2	M25-MC-MS27-	57.0	18	31.3	16.1	38	35

Thermocouple Connectors

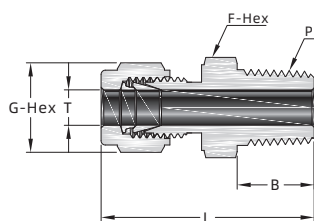


Fractional Tube

NPT Thread

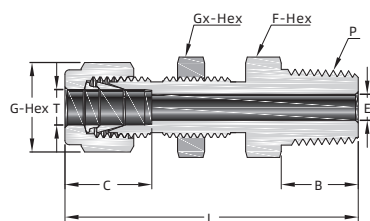
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm			
			L	B	G	F
1/16	1/16	F1-TC-NPT1-	23.9	9.7	7.9	7.9
1/16	1/8	F1-TC-NPT2-	26.2	9.7	7.9	11.1
1/16	1/4	F1-TC-NPT4-	31.0	14.2	7.9	14.3
1/8	1/16	F2-TC-NPT1-	29.7	9.7	11.1	11.1
1/8	1/8	F2-TC-NPT2-	30.5	9.7	11.1	11.1
1/8	1/4	F2-TC-NPT4-	35.6	14.2	11.1	14.3
3/16	1/8	F3-TC-NPT2-	31.2	9.7	12.7	11.1
3/16	1/4	F3-TC-NPT4-	36.3	14.2	12.7	14.3
1/4	1/8	F4-TC-NPT2-	32.8	9.7	14.3	12.7
1/4	1/4	F4-TC-NPT4-	37.8	14.2	14.3	14.3
1/4	3/8	F4-TC-NPT6-	38.4	14.2	14.3	17.5
1/4	1/2	F4-TC-NPT8-	44.7	19.1	14.3	22.2
5/16	1/4	F5-TC-NPT4-	38.6	14.2	15.9	14.3
3/8	1/4	F6-TC-NPT4-	39.9	14.2	17.5	15.9
3/8	3/8	F6-TC-NPT6-	39.9	14.2	17.5	17.5
3/8	1/2	F6-TC-NPT8-	46.2	19.1	17.5	22.2
3/8	3/4	F6-TC-NPT12-	47.8	19.1	17.5	27.0
1/2	1/2	F8-TC-NPT8-	49.0	19.1	22.2	22.2
1/2	3/4	F8-TC-NPT12-	50.5	19.1	22.2	27.0
5/8	3/4	F10-TC-NPT12-	50.5	19.1	25.4	27.0
3/4	3/4	F12-TC-NPT12-	50.5	19.1	28.6	27.0
1	1	F16-TC-NPT16-	62.2	23.9	38.1	34.9

Thermocouple Connectors



Metric Tube			NPT Thread			
T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm			
			L	B	G	F
2	1/8	M2-TC-NPT2-	30.5	9.7	12	12
3	1/8	M3-TC-NPT2-	30.5	9.7	12	12
3	1/4	M3-TC-NPT4-	35.6	14.2	12	14
4	1/8	M4-TC-NPT2-	31.2	9.7	12	12
4	1/4	M4-TC-NPT4-	36.3	14.2	12	14
6	1/8	M6-TC-NPT2-	32.8	9.7	14	14
6	1/4	M6-TC-NPT4-	37.9	14.2	14	14
6	3/8	M6-TC-NPT6-	38.4	14.2	14	18
6	1/2	M6-TC-NPT8-	44.7	19.1	14	22
8	1/4	M8-TC-NPT4-	38.7	14.2	16	15
8	3/8	M8-TC-NPT6-	39.3	14.2	16	18
8	1/2	M8-TC-NPT8-	45.6	19.1	16	22
10	3/8	M10-TC-NPT6-	40.9	14.2	19	18
10	1/2	M10-TC-NPT8-	46.5	19.1	19	22
10	3/4	M10-TC-NPT12-	48.0	19.1	19	27
10	1	M10-TC-NPT16-	54.6	23.9	19	35
12	3/8	M12-TC-NPT6-	43.4	14.2	22	22
12	1/2	M12-TC-NPT8-	49.0	19.1	22	22
12	3/4	M12-TC-NPT12-	50.5	19.1	22	27
14	1/2	M14-TC-NPT8-	49.0	19.1	25	24
14	3/4	M14-TC-NPT12-	50.5	19.1	25	27
15	1/2	M15-TC-NPT8-	49.0	19.1	25	24
15	3/4	M15-TC-NPT12-	50.5	19.1	25	27
15	1	M15-TC-NPT16-	57.1	23.9	25	35
16	3/4	M16-TC-NPT12-	50.5	19.1	25	27
18	3/4	M18-TC-NPT12-	50.5	19.1	30	27
20	1	M20-TC-NPT16-	57.1	23.9	32	35
22	1	M22-TC-NPT16-	57.1	23.9	32	35
25	1	M25-TC-NPT16-	62.3	23.9	38	35

Bulkhead Male Connectors



Fractional Tube

NPT Thread

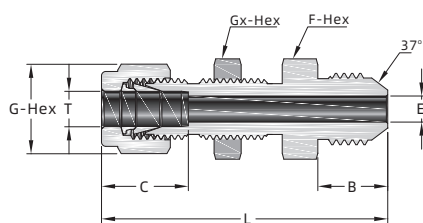
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm							Panel Hole Size (mm)	Max. Panel Thickness (mm)
			L	B	C	E	G	F	Gx		
1/16	1/16	F1-BMC-NPT1-	30.2	9.7	8.6	1.3	7.9	7.9	7.9	5.2	6.4
1/16	1/8	F1-BMC-NPT2-	32.3	9.7	8.6	1.3	7.9	11.1	7.9	5.2	6.4
1/8	1/8	F2-BMC-NPT2-	46.5	9.7	12.7	2.3	11.1	12.7	12.7	8.3	12.7
3/16	1/8	F3-BMC-NPT2-	48.0	9.7	13.7	3.0	12.7	14.3	14.3	9.9	12.7
1/4	1/8	F4-BMC-NPT2-	49.5	9.7	15.2	4.8	14.3	15.9	15.9	11.5	10.2
1/4	1/4	F4-BMC-NPT4-	54.1	14.2	15.2	4.8	14.3	15.9	15.9	11.5	10.2
1/4	3/8	F4-BMC-NPT6-	54.9	14.2	15.2	4.8	14.3	17.5	15.9	11.5	10.2
1/4	1/2	F4-BMC-NPT8-	60.3	19.1	15.2	4.8	14.3	22.2	15.9	11.5	10.2
5/16	1/8	F5-BMC-NPT2-	52.8	9.7	16.3	4.8	15.9	17.5	17.5	13.1	11.2
5/16	1/4	F5-BMC-NPT4-	57.7	14.2	16.3	6.4	15.9	17.5	17.5	13.1	11.2
3/8	1/8	F6-BMC-NPT2-	52.9	9.7	16.8	4.8	17.5	19.1	19.1	14.7	11.2
3/8	1/4	F6-BMC-NPT4-	57.4	14.2	16.8	7.1	17.5	19.1	19.1	14.7	11.2
3/8	3/8	F6-BMC-NPT6-	57.4	14.2	16.8	7.1	17.5	19.1	19.1	14.7	11.2
3/8	1/2	F6-BMC-NPT8-	63.8	19.1	16.8	7.1	17.5	22.2	19.1	14.7	11.2
1/2	1/8	F8-BMC-NPT2-	58.7	9.7	22.9	4.8	22.2	23.8	23.8	19.4	12.7
1/2	1/4	F8-BMC-NPT4-	63.2	14.2	22.9	7.1	22.2	23.8	23.8	19.4	12.7
1/2	3/8	F8-BMC-NPT6-	63.2	14.2	22.9	9.7	22.2	23.8	23.8	19.4	12.7
1/2	1/2	F8-BMC-NPT8-	68.8	19.1	22.9	10.4	22.2	23.8	23.8	19.4	12.7
5/8	3/8	F10-BMC-NPT6-	66.7	14.2	24.4	9.7	25.4	27.0	27.0	22.6	15.1
5/8	1/2	F10-BMC-NPT8-	71.5	19.1	24.4	11.9	25.4	27.0	27.0	22.6	15.1
3/4	1/2	F12-BMC-NPT8-	76.2	19.1	24.4	11.9	28.6	30.2	30.2	25.8	16.8
3/4	3/4	F12-BMC-NPT12-	76.2	19.1	24.4	15.7	28.6	30.2	30.2	25.8	16.8
7/8	3/4	F14-BMC-NPT12-	84.1	19.1	25.9	15.7	31.8	33.3	33.3	29.0	19.1
1	3/4	F16-BMC-NPT12-	88.4	19.1	31.2	15.7	38.1	41.3	41.3	33.7	19.1
1	1	F16-BMC-NPT16-	93.2	23.9	31.2	22.4	38.1	41.3	41.3	33.7	19.1

Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm							Panel Hole Size (mm)	Max. Panel Thickness (mm)
			L	B	C	E	G	F	Gx		
6	1/8	M6-BMC-NPT2-	49.6	9.7	15.3	4.8	14	16	16	11.5	10.2
6	1/4	M6-BMC-NPT4-	53.6	14.2	15.3	4.8	14	16	16	11.5	10.2
8	1/8	M8-BMC-NPT2-	52.3	9.7	16.2	4.8	16	18	18	13.1	11.2
8	1/4	M8-BMC-NPT4-	57.5	14.2	16.2	6.4	16	18	18	13.1	11.2
10	1/4	M10-BMC-NPT4-	58.4	14.2	17.2	7.9	19	22	22	16.3	11.2
10	3/8	M10-BMC-NPT6-	58.4	14.2	17.2	7.9	19	22	22	16.3	11.2
10	1/2	M10-BMC-NPT8-	63.1	19.1	17.2	7.9	19	22	22	16.3	11.2
12	1/4	M12-BMC-NPT4-	63.9	14.2	22.8	7.9	22	24	24	19.5	12.7
12	3/8	M12-BMC-NPT6-	63.9	14.2	22.8	9.5	22	24	24	19.5	12.7
12	1/2	M12-BMC-NPT8-	68.8	19.1	22.8	9.5	22	24	24	19.5	12.7

Bulkhead Male Connectors

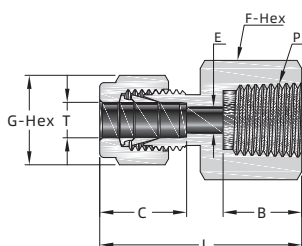


Fractional Tube

37° Flare (AN)

T-Tube O.D. (in.)	AN Tube Flare Size	Basic Ordering Number	Dimension, mm							Panel Hole Size in. (mm)	Max. Panel Thickness in. (mm)
			L	B	C	E	G	F	Gx		
1/8	1/8	F2-BMC-AN2-	48.5	11.4	12.7	1.5	11.1	12.7	12.7	8.3	12.7
1/8	1/4	F2-BMC-AN4-	51.8	14.0	12.7	2.3	11.1	15.9	12.7	8.3	12.7
3/16	3/16	F3-BMC-AN3-	50.3	12.2	13.7	2.3	12.7	14.3	14.3	9.9	12.7
1/4	1/4	F4-BMC-AN4-	53.8	14.0	15.2	4.3	14.3	15.9	15.9	11.5	10.2
5/16	5/16	F5-BMC-AN5-	56.1	14.0	16.2	5.8	15.9	17.5	17.5	13.1	14.3
3/8	1/4	F6-BMC-AN4-	57.2	14.0	16.8	4.3	17.5	19.1	19.1	14.7	11.2
3/8	3/8	F6-BMC-AN6-	57.2	14.2	16.8	7.1	17.5	19.1	19.1	14.7	11.2
1/2	1/2	F8-BMC-AN8-	65.8	16.8	22.8	9.9	22.2	23.8	23.8	19.4	12.7
5/8	5/8	F10-BMC-AN10-	69.6	19.3	24.4	12.3	25.4	27.0	27.0	22.6	15.1
3/4	3/4	F12-BMC-AN12-	79.0	21.8	24.4	15.5	28.6	30.2	30.2	25.8	16.8
1	1	F16-BMC-AN16-	92.5	23.1	31.2	21.3	38.1	41.3	41.3	33.7	19.1

Female Connectors

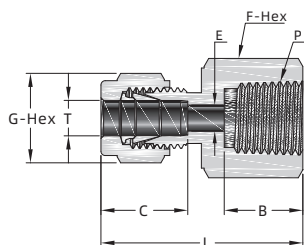


Fractional Tube

NPT Thread

T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/16	1/16	F1-FC-FNPT1-	23.6	9.9	8.6	1.3	7.9	11.1
1/16	1/8	F1-FC-FNPT2-	24.4	10.4	8.6	1.3	7.9	14.3
1/8	1/8	F2-FC-FNPT2-	28.7	10.4	12.7	2.3	11.1	14.3
1/8	1/4	F2-FC-FNPT4-	33.5	15.0	12.7	2.3	11.1	19.1
3/16	1/8	F3-FC-FNPT2-	29.7	10.4	13.7	3.0	12.7	14.3
1/4	1/8	F4-FC-FNPT2-	31.2	10.4	15.2	4.8	14.3	14.3
1/4	1/4	F4-FC-FNPT4-	35.8	15.0	15.2	4.8	14.3	19.1
1/4	3/8	F4-FC-FNPT6-	37.6	15.0	15.2	4.8	14.3	22.2
1/4	1/2	F4-FC-FNPT8-	42.4	19.8	15.2	4.8	14.3	27.0
5/16	1/8	F5-FC-FNPT2-	32.0	10.4	16.3	6.4	15.9	14.3
5/16	1/4	F5-FC-FNPT4-	36.8	15.0	16.3	6.4	15.9	19.1
3/8	1/8	F6-FC-FNPT2-	32.8	10.4	16.8	7.1	17.5	15.9
3/8	1/4	F6-FC-FNPT4-	37.6	15.0	16.8	7.1	17.5	19.1
3/8	3/8	F6-FC-FNPT6-	39.1	15.0	16.8	7.1	17.5	22.2
3/8	1/2	F6-FC-FNPT8-	43.9	19.8	16.8	7.1	17.5	27.0
3/8	3/4	F6-FC-FNPT12-	47.8	20.6	16.8	7.1	17.5	33.3
1/2	1/4	F8-FC-FNPT4-	40.4	15.0	22.9	10.4	22.2	20.6
1/2	3/8	F8-FC-FNPT6-	41.9	15.0	22.9	10.4	22.2	22.2
1/2	1/2	F8-FC-FNPT8-	46.7	19.8	22.9	10.4	22.2	27.0
1/2	3/4	F8-FC-FNPT12-	48.3	20.6	22.9	10.4	22.2	33.3
5/8	3/8	F10-FC-FNPT6-	41.9	15.0	24.4	12.7	25.4	23.8
5/8	1/2	F10-FC-FNPT8-	46.7	19.8	24.4	12.7	25.4	27.0
3/4	1/2	F12-FC-FNPT8-	46.7	19.8	24.4	15.7	28.6	27.0
3/4	3/4	F12-FC-FNPT12-	48.3	20.6	24.4	15.7	28.6	33.3
7/8	3/4	F14-FC-FNPT12-	49.8	20.6	25.9	18.3	31.8	33.3
1	3/4	F16-FC-FNPT12-	53.3	20.6	31.2	22.4	38.1	34.9
1	1	F16-FC-FNPT16-	62.2	25.4	31.2	22.4	38.1	41.3
1 1/4	1 1/4	F20-FC-FNPT20-	74.7	25.4	41.1	27.7	47.6	54.0
1 1/2	1 1/2	F24-FC-FNPT24-	83.3	27.7	50.0	36.3	57.2	60.3

Female Connectors

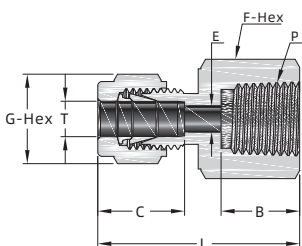
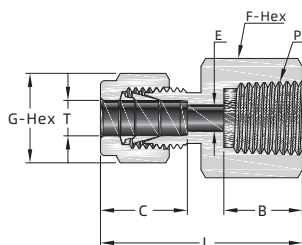


Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
3	1/8	M3-FC-FNPT2-	28.7	10.4	12.9	2.4	12	14
3	1/4	M3-FC-FNPT4-	33.5	15.0	12.9	2.4	12	19
4	1/8	M4-FC-FNPT2-	29.7	10.4	13.7	2.4	12	14
6	1/8	M6-FC-FNPT2-	31.3	10.4	15.3	4.8	14	14
6	1/4	M6-FC-FNPT4-	35.8	15.0	15.3	4.8	14	19
6	3/8	M6-FC-FNPT6-	37.7	15.0	15.3	4.8	14	22
6	1/2	M6-FC-FNPT8-	42.5	19.8	15.3	4.8	14	27
8	1/8	M8-FC-FNPT2-	32.1	10.4	16.2	6.4	16	15
8	1/4	M8-FC-FNPT4-	37.0	15.0	16.2	6.4	16	19
8	3/8	M8-FC-FNPT6-	38.5	15.0	16.2	6.4	16	22
8	1/2	M8-FC-FNPT8-	43.3	19.8	16.2	6.4	16	27
10	1/8	M10-FC-FNPT2-	33.0	10.4	17.2	6.4	19	18
10	1/4	M10-FC-FNPT4-	37.8	15.0	17.2	7.9	19	19
10	3/8	M10-FC-FNPT6-	39.4	15.0	17.2	7.9	19	22
10	1/2	M10-FC-FNPT8-	44.2	19.8	17.2	7.9	19	27
12	1/4	M12-FC-FNPT4-	40.3	15.0	22.8	7.9	22	22
12	3/8	M12-FC-FNPT6-	41.9	15.0	22.8	9.5	22	22
12	1/2	M12-FC-FNPT8-	46.7	19.8	22.8	9.5	22	27
12	3/4	M12-FC-FNPT12-	49.7	20.6	22.8	9.5	22	35
14	3/4	M14-FC-FNPT12-	49.7	20.6	24.4	11.1	25	35
15	1/2	M15-FC-FNPT8-	46.7	19.8	24.4	11.9	25	27
16	3/8	M16-FC-FNPT6-	41.9	15.0	24.4	9.5	25	27
16	1/2	M16-FC-FNPT8-	46.9	19.8	24.4	11.9	25	27
20	1/2	M20-FC-FNPT8-	47.9	19.8	26.0	11.9	32	30
20	3/4	M20-FC-FNPT12-	49.7	20.6	26.0	15.9	32	35
22	3/4	M22-FC-FNPT12-	49.7	20.6	26.0	15.9	32	35
22	1	M22-FC-FNPT16-	57.9	25.4	26.0	18.3	32	41
25	3/4	M25-FC-FNPT12-	53.4	20.6	31.3	15.9	38	35
25	1	M25-FC-FNPT16-	62.3	25.4	31.3	21.8	38	41

Female Connectors



Fractional Tube

ISO Tapered Thread (BSPT)

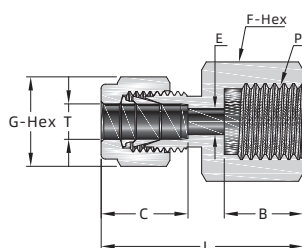
T-Tube O.D. (in.)	P-BSPT Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/4	1/8	F4-FC-FBT2-	31.2	10.4	15.2	4.8	14.3	14.3
1/4	1/4	F4-FC-FBT4-	35.8	15.0	15.2	4.8	14.3	19.1
1/4	3/8	F4-FC-FBT6-	37.6	15.0	15.2	4.8	14.3	22.2
1/4	1/2	F4-FC-FBT8-	42.4	19.8	15.2	4.8	14.3	27.0
3/8	1/4	F6-FC-FBT4-	37.6	15.0	16.8	7.1	17.5	19.1
3/8	3/8	F6-FC-FBT6-	39.1	15.0	16.8	7.1	17.5	22.2
3/8	1/2	F6-FC-FBT8-	43.9	19.8	16.8	7.1	17.5	27.0
1/2	1/4	F8-FC-FBT4-	40.4	15.0	22.9	10.4	22.2	20.6
1/2	3/8	F8-FC-FBT6-	41.9	15.0	22.9	10.4	22.2	22.2
1/2	1/2	F8-FC-FBT8-	46.7	19.8	22.9	10.4	22.2	27.0

Metric Tube

ISO Tapered Thread (BSPT)

T-Tube O.D. (mm)	P-BSPT Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
3	1/8	M3-FC-FBT2-	28.7	10.4	12.9	2.4	12	14
6	1/8	M6-FC-FBT2-	31.3	10.4	15.3	4.8	14	14
6	1/4	M6-FC-FBT4-	35.8	15.0	15.3	4.8	14	19
6	3/8	M6-FC-FBT6-	36.9	15.0	15.3	4.8	14	22
6	1/2	M6-FC-FBT8-	42.5	19.8	15.3	4.8	14	27
8	1/8	M8-FC-FBT2-	32.1	10.4	16.2	6.4	16	15
8	1/4	M8-FC-FBT4-	37.0	15.0	16.2	6.4	16	19
8	3/8	M8-FC-FBT6-	38.5	15.0	16.2	6.4	16	22
8	1/2	M8-FC-FBT8-	43.3	19.8	16.2	6.4	16	27
10	1/8	M10-FC-FBT2-	33.0	10.4	17.2	7.9	19	18
10	1/4	M10-FC-FBT4-	37.8	15.0	17.2	7.9	19	19
10	3/8	M10-FC-FBT6-	39.4	15.0	17.2	7.9	19	22
10	1/2	M10-FC-FBT8-	44.2	19.8	17.2	7.9	19	27
12	1/8	M12-FC-FBT2-	35.5	10.4	22.8	8.3	22	22
12	1/4	M12-FC-FBT4-	40.3	15.0	22.8	9.5	22	22
12	3/8	M12-FC-FBT6-	41.9	15.0	22.8	9.5	22	22
12	1/2	M12-FC-FBT8-	46.7	19.8	22.8	9.5	22	27
12	3/4	M12-FC-FBT12-	49.0	20.6	22.8	9.5	22	35
15	1/2	M15-FC-FBT8-	46.7	19.8	24.4	11.9	25	27
16	1/2	M16-FC-FBT8-	48.4	19.8	24.4	11.9	25	27
16	3/4	M16-FC-FBT12-	49.7	20.6	24.4	12.7	25	35
20	1/2	M20-FC-FBT8-	47.9	19.8	26.0	11.9	32	30
20	3/4	M20-FC-FBT12-	49.7	20.6	26.0	15.9	32	35
22	3/4	M22-FC-FBT12-	49.7	20.6	26.0	15.9	32	35
22	1	M22-FC-FBT16-	57.9	25.4	26.0	18.3	32	41
25	3/4	M25-FC-FBT12-	53.4	20.6	31.3	15.9	38	35
25	1	M25-FC-FBT16-	62.3	25.4	31.3	21.8	38	41

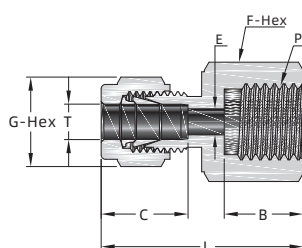
Female Connectors



Fractional Tube

ISO Parallel Thread (BG)

T-Tube O.D. (in.)	P-BG Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/8	1/4	F2-FC-FBP4-	35.3	12.9	12.7	2.3	11.1	19.1
1/8	3/8	F2-FC-FBP6-	38.7	14.2	12.7	2.3	11.1	23.8
1/4	1/4	F4-FC-FBP4-	37.6	12.9	15.2	4.8	14.3	19.1
1/4	3/8	F4-FC-FBP6-	37.6	14.2	15.2	4.8	14.3	23.8
1/4	1/2	F4-FC-FBP8-	43.4	18.8	15.2	4.8	14.3	27.0
5/16	1/4	F5-FC-FBP4-	38.4	12.9	16.3	5.6	15.9	19.1
5/16	3/8	F5-FC-FBP6-	39.2	14.2	16.3	6.4	15.9	23.8
5/16	1/2	F5-FC-FBP8-	40.9	18.8	16.3	7.1	15.9	27.0
3/8	1/4	F6-FC-FBP4-	39.1	12.9	16.8	5.6	17.5	19.1
3/8	3/8	F6-FC-FBP6-	38.6	14.2	16.8	6.4	17.5	23.8
3/8	1/2	F6-FC-FBP8-	41.9	18.8	16.8	7.1	17.5	27.0
1/2	1/4	F8-FC-FBP4-	41.9	12.9	22.9	5.6	22.2	22.2
1/2	3/8	F8-FC-FBP6-	44.5	14.2	22.9	6.4	22.2	23.8
1/2	1/2	F8-FC-FBP8-	48.3	18.8	22.9	7.1	22.2	27.0

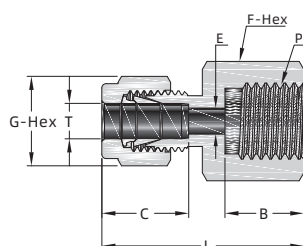


Metric Tube

ISO Parallel Thread (BG)

T-Tube O.D. (mm)	P-BG Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
3	1/4	M3-FC-FBP4-	35.3	12.9	12.9	2.4	12	19
6	1/4	M6-FC-FBP4-	37.6	12.9	15.3	4.8	14	19
6	3/8	M6-FC-FBP6-	37.6	14.2	15.3	4.8	14	24
6	1/2	M6-FC-FBP8-	43.5	18.8	15.3	4.8	14	27
8	1/4	M8-FC-FBP4-	38.5	12.9	16.2	6.4	16	19
8	3/8	M8-FC-FBP6-	36.2	14.2	16.2	6.4	16	24
8	1/2	M8-FC-FBP8-	41.0	18.8	16.2	6.4	16	27
10	1/4	M10-FC-FBP4-	39.4	12.9	17.2	5.9	19	19
10	3/8	M10-FC-FBP6-	38.8	14.2	17.2	7.9	19	24
10	1/2	M10-FC-FBP8-	42.1	18.8	17.2	7.9	19	27
12	1/4	M12-FC-FBP4-	41.9	12.9	22.8	5.9	22	22
12	3/8	M12-FC-FBP6-	44.4	14.2	22.8	7.9	22	24
12	1/2	M12-FC-FBP8-	48.2	18.8	22.8	9.5	22	27
20	1/2	M20-FC-FBP8-	54.3	18.8	26.0	11.9	32	30
22	1/2	M22-FC-FBP8-	54.3	18.8	26.0	11.9	32	30

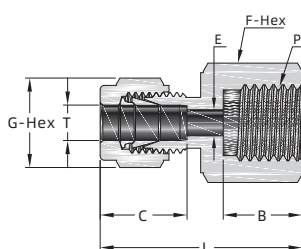
Female Connectors



Fractional Tube

Metric Thread

T-Tube O.D. (in.)	P-Metric Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/8	M14 x 1.5	F2-FC-FMS14-	32.3	13	12.7	2.3	11.1	19.1
1/8	M16 x 1.5	F2-FC-FMS16-	33.3	14	12.7	2.3	11.1	22.2
1/8	M18 x 1.5	F2-FC-FMS18-	34.3	15	12.7	2.3	11.1	25.4
1/8	M20 x 1.5	F2-FC-FMS20-	35.3	16	12.7	2.3	11.1	27.0
1/4	M16 x 1.5	F4-FC-FMS16-	35.8	14	15.2	4.8	14.3	22.2
1/4	M18 x 1.5	F4-FC-FMS18-	36.8	15	15.2	4.8	14.3	25.4
1/4	M20 x 1.5	F4-FC-FMS20-	37.8	16	15.2	4.8	14.3	27.0
3/8	M14 x 1.5	F6-FC-FMS14-	37.1	13	16.8	7.1	17.5	19.1
3/8	M16 x 1.5	F6-FC-FMS16-	37.5	14	16.8	7.1	17.5	22.2
3/8	M18 x 1.5	F6-FC-FMS18-	38.5	15	16.8	7.1	17.5	25.4
3/8	M20 x 1.5	F6-FC-FMS20-	39.5	16	16.8	7.1	17.5	27.0
1/2	M16 x 1.5	F8-FC-FMS16-	41.4	14	22.9	8.4	22.2	22.2
1/2	M18 x 1.5	F8-FC-FMS18-	42.4	15	22.9	9.6	22.2	25.4
1/2	M20 x 1.5	F8-FC-FMS20-	43.4	16	22.9	10.4	22.2	27.0
1/2	M22 x 1.5	F8-FC-FMS22-	44.4	17	22.9	10.4	22.2	27.0

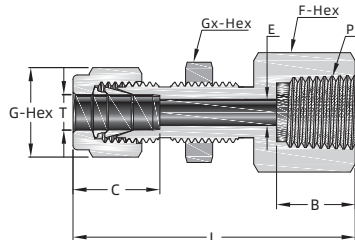


Metric Tube

Metric Thread

T-Tube O.D. (mm)	P-Metric Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
6	M10 x 1	M6-FC-FMS10-	32.7	11	15.3	4.0	14	16
6	M14 x 1.5	M6-FC-FMS14-	34.7	13	15.3	4.8	14	19
6	M20 x 1.5	M6-FC-FMS20-	37.7	16	15.3	4.8	14	27
8	M8 x 1	M8-FC-FMS8-	31.6	9	16.2	3.2	16	14
8	M10 x 1	M8-FC-FMS10-	33.6	11	16.2	4.0	16	16
8	M14 x 1.5	M8-FC-FMS14-	35.6	13	16.2	6.0	16	19
8	M20 x 1.5	M8-FC-FMS20-	38.6	16	16.2	6.4	16	27
10	M16 x 1.5	M10-FC-FMS16-	38.1	14	17.2	7.9	19	22
12	M20 x 1.5	M12-FC-FMS20-	44.9	16	22.8	9.5	22	27
14	M10 x 1	M14-FC-FMS10-	42.5	11	24.4	4.0	25	24
14	M20 x 1.5	M14-FC-FMS20-	44.9	16	24.4	10.8	25	27
14	M22 x 1.5	M14-FC-FMS22-	45.9	17	24.4	11.1	25	27
16	M20 x 1.5	M16-FC-FMS20-	44.9	16	24.4	10.8	26	27
20	M20 x 1.5	M20-FC-FMS20-	46.5	16	26.0	10.8	32	30
25	M27 x 2	M25-FC-FMS27-	54.4	18	31.3	16.1	38	35

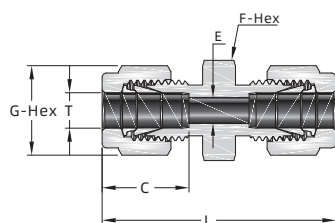
Bulkhead Female Connectors



Fractional Tube										NPT Thread	
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm							Panel Hole Size (mm)	Max. Panel Thickness (mm)
			L	B	C	E	G	F	Gx		
1/16	1/16	F1-BFC-FNPT1-	26.2	9.9	8.6	1.3	7.9	11.1	7.9	5.2	3.2
1/16	1/8	F1-BFC-FNPT2-	26.9	10.4	8.6	1.3	7.9	14.3	7.9	5.2	3.2
1/8	1/8	F2-BFC-FNPT2-	44.7	10.4	12.7	2.3	11.1	14.3	12.7	8.3	12.7
1/8	1/4	F2-BFC-FNPT4-	49.6	15.0	12.7	2.3	11.1	19.1	12.7	8.3	12.7
3/16	1/8	F3-BFC-FNPT2-	45.5	10.4	13.7	3.0	12.7	14.3	14.3	9.9	12.7
1/4	1/8	F4-BFC-FNPT2-	47.0	10.4	15.2	4.8	14.3	15.9	15.9	11.5	10.2
1/4	1/4	F4-BFC-FNPT4-	51.8	15.0	15.2	4.8	14.3	19.1	15.9	11.5	10.2
1/4	3/8	F4-BFC-FNPT6-	53.3	15.0	15.2	4.8	14.3	22.2	15.9	11.5	10.2
1/4	1/2	F4-BFC-FNPT8-	58.2	19.8	15.2	4.8	14.3	27.0	15.9	11.5	10.2
5/16	1/8	F5-BFC-FNPT2-	49.8	10.4	16.3	6.4	15.9	14.3	17.5	13.1	11.2
5/16	1/4	F5-BFC-FNPT4-	60.5	15.0	16.3	6.4	15.9	19.1	17.5	13.1	11.2
3/8	1/8	F6-BFC-FNPT2-	50.3	10.4	16.8	7.1	17.5	15.9	19.1	14.5	11.2
3/8	1/4	F6-BFC-FNPT4-	55.1	15.0	16.8	7.1	17.5	19.1	19.1	14.5	11.2
3/8	3/8	F6-BFC-FNPT6-	56.6	15.0	16.8	7.1	17.5	22.2	19.1	14.5	11.2
3/8	1/2	F6-BFC-FNPT8-	61.5	19.8	16.8	7.1	17.5	27.0	19.1	14.5	11.2
3/8	3/4	F6-BFC-FNPT12-	65.3	20.6	16.8	7.1	17.5	33.3	19.1	14.5	11.2
1/2	1/4	F8-BFC-FNPT4-	60.2	15.0	22.9	10.4	22.2	23.8	23.8	19.4	12.7
1/2	3/8	F8-BFC-FNPT6-	61.7	15.0	22.9	10.4	22.2	23.8	23.8	19.4	12.7
1/2	1/2	F8-BFC-FNPT8-	66.5	19.8	22.9	10.4	22.2	27.0	23.8	19.4	12.7
1/2	3/4	F8-BFC-FNPT12-	68.1	20.6	22.9	10.4	22.2	33.3	23.8	19.4	12.7
5/8	3/8	F10-BFC-FNPT6-	62.5	15.0	24.4	12.7	25.4	23.8	27.0	22.6	15.1
5/8	1/2	F10-BFC-FNPT8-	67.3	19.8	24.4	12.7	25.4	27.0	27.0	22.6	15.1
3/4	1/2	F12-BFC-FNPT8-	72.2	19.8	24.4	15.7	28.6	27.0	30.2	25.8	19.8
3/4	3/4	F12-BFC-FNPT12-	73.7	20.6	24.4	15.7	28.6	33.3	30.2	25.8	19.8
7/8	3/4	F14-BFC-FNPT12-	80.8	20.6	25.9	18.3	31.8	33.3	33.3	29.0	23.8
1	3/4	F16-BFC-FNPT12-	84.7	20.6	31.2	22.4	38.1	41.3	41.3	33.7	23.8
1	1	F16-BFC-FNPT16-	93.5	25.4	31.2	22.4	38.1	41.3	41.3	33.7	23.8

Metric Tube										NPT Thread	
T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm							Panel Hole Size (mm)	Max. Panel Thickness (mm)
			L	B	C	E	G	F	Gx		
6	1/8	M6-BFC-FNPT2-	47.2	10.4	15.3	4.8	14	16	16	11.5	10.2
6	1/4	M6-BFC-FNPT4-	51.8	15.0	15.3	4.8	14	19	16	11.5	10.2
8	1/8	M8-BFC-FNPT2-	49.6	10.4	16.2	4.8	16	18	18	13.1	11.2
10	1/4	M10-BFC-FNPT4-	55.2	15.0	17.2	7.9	19	22	22	16.3	11.2
12	3/8	M12-BFC-FNPT6-	60.9	15.0	22.8	9.5	22	24	24	19.5	12.7
12	1/2	M12-BFC-FNPT8-	66.5	19.8	22.8	9.5	22	27	24	19.5	12.7

Unions



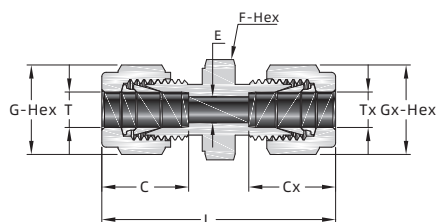
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				
		L	C	G	F	E
1/16	F1-U-F1-	25.1	8.6	7.9	11.1	1.3
1/8	F2-U-F2-	35.6	12.7	11.1	11.1	2.3
3/16	F3-U-F3-	37.3	13.7	12.7	12.7	3.0
1/4	F4-U-F4-	40.9	15.2	14.3	12.7	4.8
5/16	F5-U-F5-	42.9	16.2	15.9	14.3	6.4
3/8	F6-U-F6-	45.0	16.8	17.5	15.9	7.1
1/2	F8-U-F8-	51.3	22.9	22.2	20.6	10.4
5/8	F10-U-F10-	52.1	24.4	25.4	23.9	12.7
3/4	F12-U-F12-	53.6	24.4	28.6	27.0	15.7
7/8	F14-U-F14-	55.1	25.9	31.8	34.9	18.3
1	F16-U-F16-	64.8	31.2	38.1	34.9	22.4
1 1/8	F18-U-F18-	64.8	31.2	44.5	41.3	24.6
1 1/4	F20-U-F20-	92.2	41.1	47.6	44.5	27.7
1 1/2	F24-U-F24-	108	50.0	57.2	54.0	34.0

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm				
		L	C	G	F	E
2	M2-U-M2-	35.6	12.9	12	12	1.7
3	M3-U-M3-	35.3	12.9	12	12	2.4
4	M4-U-M4-	37.3	13.7	12	12	2.4
6	M6-U-M6-	41.0	15.3	14	14	4.8
8	M8-U-M8-	43.2	16.2	16	15	6.4
10	M10-U-M10-	46.2	17.2	19	18	7.9
12	M12-U-M12-	51.2	22.8	22	22	9.5
14	M14-U-M14-	52.0	24.4	25	24	11.1
15	M15-U-M15-	52.0	24.4	25	24	11.9
16	M16-U-M16-	52.0	24.4	25	24	12.7
18	M18-U-M18-	53.5	24.4	30	27	15.1
20	M20-U-M20-	55.0	26.0	32	30	15.9
22	M22-U-M22-	55.0	26.0	32	30	18.3
25	M25-U-M25-	65.0	31.3	38	35	21.8
28	M28-U-M28-	85.0	36.6	46	41	21.8
30	M30-U-M30-	92.7	39.6	50	46	26.2
32	M32-U-M32-	97.3	42.0	50	46	28.6
38	M38-U-M38-	113.6	49.4	60	55	33.7

Conversion Unions

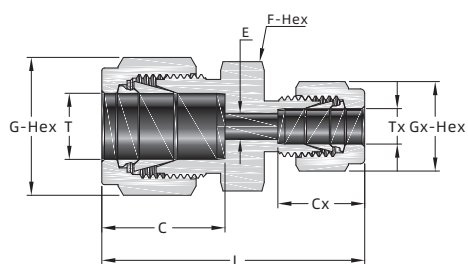


Metric Tube

Fractional Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	Cx	Gx
3	1/8	M3-U-F2-	35.2	12.9	12	12	2.4	12.7	11.1
4	1/8	M4-U-F2-	36.5	13.7	12	12	2.4	12.7	11.1
4	1/4	M4-U-F4-	39.4	13.7	12	14	2.4	15.2	14.3
6	1/8	M6-U-F2-	38.5	15.3	14	14	2.4	12.7	11.1
6	1/4	M6-U-F4-	41.0	15.3	14	14	4.8	15.2	14.3
6	5/16	M6-U-F5-	42.3	15.3	14	14	4.8	16.2	15.9
8	1/4	M8-U-F4-	42.3	16.2	16	15	4.8	15.2	14.3
8	3/8	M8-U-F6-	44.3	16.2	16	16	6.4	16.8	17.5
10	1/8	M10-U-F2-	41.8	17.2	19	18	2.4	12.7	11.1
10	1/4	M10-U-F4-	44.5	17.2	19	18	4.8	15.2	14.3
10	5/16	M10-U-F5-	45.1	17.2	19	18	6.4	16.2	15.9
10	3/8	M10-U-F6-	45.9	17.2	19	18	7.1	16.8	17.5
12	5/16	M12-U-F5-	47.8	22.8	22	22	6.4	16.2	15.9
12	3/8	M12-U-F6-	48.4	22.8	22	22	7.1	16.8	17.5
12	1/2	M12-U-F8-	51.2	22.8	22	22	9.5	22.9	22.2
15	1/2	M15-U-F8-	52.0	24.4	25	24	10.4	22.9	22.2
16	5/8	M16-U-F10-	52.0	24.4	25	24	12.7	24.4	25.4
18	3/4	M18-U-F12-	53.5	24.4	30	27	15.1	24.4	28.6
20	1/2	M20-U-F8-	55.0	26.0	32	30	10.4	22.9	22.2
20	1	M20-U-F16-	62.8	26.0	32	35	15.9	31.2	38.1
25	1	M25-U-F16-	65.0	31.3	38	35	21.8	31.2	38.1

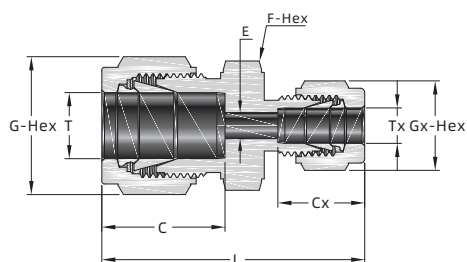
Reducing Unions



Fractional Tube

T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	Cx	Gx
1/8	1/16	F2-U-F1-	31.0	12.7	11.1	11.1	1.3	8.6	7.9
3/16	1/16	F3-U-F1-	32.3	13.7	12.7	11.1	1.3	8.6	7.9
3/16	1/8	F3-U-F2-	36.6	13.7	12.7	11.1	2.3	12.7	11.1
1/4	1/16	F4-U-F1-	34.3	15.2	14.3	12.7	1.3	8.6	7.9
1/4	1/8	F4-U-F2-	38.6	15.2	14.3	12.7	2.3	12.7	11.1
1/4	3/16	F4-U-F3-	39.4	15.2	14.3	12.7	3.0	13.7	12.7
5/16	1/8	F5-U-F2-	39.6	16.2	15.9	14.3	2.3	12.7	11.1
5/16	1/4	F5-U-F4-	42.2	16.2	15.9	14.3	4.8	15.2	14.3
3/8	1/16	F6-U-F1-	36.6	16.8	17.5	15.9	1.3	8.6	7.9
3/8	1/8	F6-U-F2-	40.9	16.8	17.5	15.9	2.3	12.7	11.1
3/8	1/4	F6-U-F4-	43.2	16.8	17.5	15.9	4.8	15.2	14.3
3/8	5/16	F6-U-F5-	44.2	16.8	17.5	15.9	6.4	16.2	15.9
1/2	1/8	F8-U-F2-	45.2	22.8	22.2	20.6	2.3	12.7	11.1
1/2	1/4	F8-U-F4-	47.0	22.8	22.2	20.6	4.8	15.2	14.3
1/2	3/8	F8-U-F6-	48.5	22.8	22.2	20.6	7.1	16.8	17.5
5/8	3/8	F10-U-F6-	49.3	24.4	25.4	23.9	7.1	16.8	17.5
5/8	1/2	F10-U-F8-	52.1	24.4	25.4	23.9	10.4	22.8	22.2
3/4	1/4	F12-U-F4-	49.3	24.4	28.6	27.0	4.8	15.2	14.3
3/4	3/8	F12-U-F6-	50.8	24.4	28.6	27.0	7.1	16.8	17.5
3/4	1/2	F12-U-F8-	53.6	24.4	28.6	27.0	10.4	22.8	22.2
3/4	5/8	F12-U-F10-	53.6	24.4	28.6	27.0	12.7	24.4	25.4
1	1/2	F16-U-F8-	60.5	31.2	38.1	34.9	10.4	22.8	22.2
1	3/4	F16-U-F12-	60.5	31.2	38.1	34.9	15.7	24.4	28.6

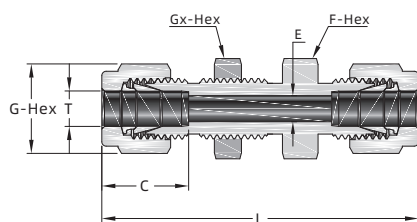
Reducing Unions



Metric Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	Cx	Gx
3	2	M3-U-M2-	35.3	12.9	12	12	1.7	12.9	12
6	2	M6-U-M2-	38.6	15.3	14	14	1.7	12.9	12
6	3	M6-U-M3-	38.6	15.3	14	14	2.4	12.9	12
6	4	M6-U-M4-	39.4	15.3	14	14	2.4	13.7	12
8	6	M8-U-M6-	42.3	16.3	16	15	4.8	15.3	14
10	6	M10-U-M6-	44.5	17.2	19	18	4.8	15.3	14
10	8	M10-U-M8-	45.1	17.2	19	18	6.4	16.3	16
12	6	M12-U-M6-	47.0	22.8	22	22	4.8	15.3	14
12	8	M12-U-M8-	47.8	22.8	22	22	6.4	16.3	16
12	10	M12-U-M10-	48.7	22.8	22	22	7.9	17.2	19
16	10	M16-U-M10-	49.5	24.4	25	24	7.9	17.2	19
16	12	M16-U-M12-	52.0	24.4	25	24	9.5	22.8	22
18	12	M18-U-M12-	53.5	24.4	30	27	9.5	22.8	22
25	18	M25-U-M18-	61.0	31.3	38	35	15.1	24.4	30
25	20	M25-U-M20-	62.3	31.3	38	35	15.9	26.0	32
30	18	M30-U-M18-	75.4	39.6	50	46	15.1	24.4	30
30	20	M30-U-M20-	75.4	39.6	50	46	15.9	26.0	32
30	25	M30-U-M25-	80.1	39.6	50	46	21.8	31.3	38
32	18	M32-U-M18-	77.8	42.0	50	46	15.1	24.4	30
32	20	M32-U-M20-	77.8	42.0	50	46	15.9	26.0	32
32	25	M32-U-M25-	82.3	42.0	50	46	21.8	31.3	38
38	20	M38-U-M20-	87.5	49.4	60	55	15.9	26.0	32
38	25	M38-U-M25-	92.0	49.4	60	55	21.8	31.3	38
38	30	M38-U-M30-	104.6	49.4	60	55	26.2	39.6	50

Bulkhead Unions



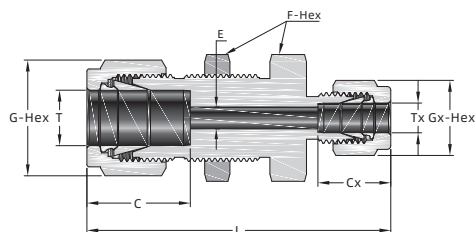
Fractional Tube

Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm						Panel Hole Size (mm)	Max. Panel Thickness (mm)
		L	C	E	G	F	Gx		
1/16	F1-BU-F1-	31.5	8.6	1.3	7.9	7.9	7.9	5.2	3.0
1/8	F2-BU-F2-	51.3	12.7	2.3	11.1	12.7	12.7	8.3	12.7
3/16	F3-BU-F3-	53.6	13.7	3.0	12.7	14.3	14.3	9.9	12.7
1/4	F4-BU-F4-	57.7	15.2	4.8	14.3	15.9	15.9	11.5	10.2
5/16	F5-BU-F5-	60.7	16.3	6.4	15.9	17.5	17.5	13.1	11.2
3/8	F6-BU-F6-	62.2	16.8	7.1	17.5	19.1	19.1	14.7	11.2
1/2	F8-BU-F8-	71.1	22.9	10.4	22.2	23.8	23.8	19.4	12.7
5/8	F10-BU-F10-	72.6	24.4	12.7	25.4	27.0	27.0	22.6	12.7
3/4	F12-BU-F12-	79.0	24.4	15.7	28.6	30.2	30.2	25.8	16.8
7/8	F14-BU-F14-	84.6	25.9	18.3	31.8	34.9	34.9	29.0	19.1
1	F16-BU-F16-	95.8	31.2	22.4	38.1	41.3	41.3	33.7	19.1
1 1/4	F20-BU-F20-	123.2	41.1	27.8	47.6	47.6	47.6	41.7	19.1
1 1/2	F24-BU-F24-	139.2	50.0	34.0	57.2	57.2	57.2	49.6	19.1

Metric Tube

Tx-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm						Panel Hole Size (mm)	Max. Panel Thickness (mm)
		L	C	E	G	F	Gx		
3	M3-BU-M3-	51.3	12.9	2.4	12	14	14	8.3	12.7
4	M4-BU-M4-	53.6	13.7	2.4	12	14	14	9.9	12.7
6	M6-BU-M6-	57.7	15.3	4.8	14	16	16	11.5	10.2
8	M8-BU-M8-	61.0	16.2	6.4	16	18	18	13.1	11.2
10	M10-BU-M10-	63.7	17.2	7.9	19	22	22	16.3	11.2
12	M12-BU-M12-	71.0	22.8	9.5	22	24	24	19.5	12.7
14	M14-BU-M14-	72.5	24.4	11.1	25	27	27	22.5	12.7
15	M15-BU-M15-	72.5	24.4	11.9	25	27	27	22.8	12.7
16	M16-BU-M16-	72.5	24.4	12.7	25	27	27	22.8	12.7
18	M18-BU-M18-	78.9	24.4	15.1	30	30	30	26.0	16.8
20	M20-BU-M20-	84.5	26.0	15.9	32	35	35	29.0	19.0
25	M25-BU-M25-	96.0	31.3	21.8	38	41	41	34.0	19.0
30	M30-BU-M30-	124.0	39.6	26.2	50	50	50	40.5	19.0
32	M32-BU-M32-	128.0	42.0	28.6	50	50	50	42.5	19.0
38	M38-BU-M38-	145.0	49.4	33.7	60	60	60	50.5	19.0

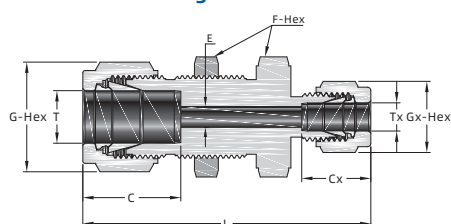
Bulkhead Reducing Unions



Fractional Tube

T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm							Panel Hole Size (mm)	Max. Panel Thickness (mm)
			L	C	E	G	F	Cx	Gx		
1/4	1/8	F4-BU-F2-	55.1	15.2	2.3	14.3	15.9	12.7	11.1	11.5	10.2
3/8	1/4	F6-BU-F4-	60.7	16.8	4.8	17.5	19.1	15.2	14.3	14.7	11.2
1/2	1/4	F8-BU-F4-	66.8	22.9	4.8	22.2	23.8	15.2	14.3	19.4	12.7

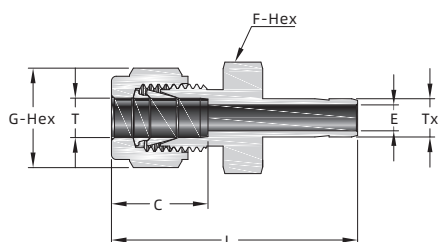
Bulkhead Reducing Unions



Metric Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm							Panel Hole Size (mm)	Max. Panel Thickness (mm)
			L	C	E	G	F	Cx	Gx		
6	3	M6-BU-M3-	55.1	15.3	2.4	14	16	12.9	12	11.5	10.2
8	6	M8-BU-M6-	60.1	16.2	4.8	16	18	15.3	14	13.1	11.2
12	8	M12-BU-M8-	67.6	22.8	6.4	22	24	16.2	16	19.5	12.7

Reducers

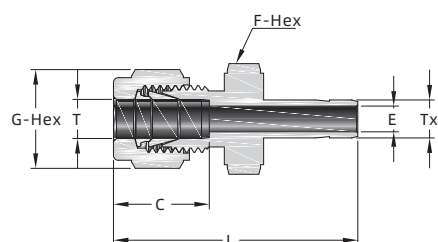


Fractional Tube

T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				
			L	C	G	F	E
1/16	1/8	F1-R-FT2-	29.2	8.6	7.9	7.9	1.3
1/16	3/16	F1-R-FT3-	30.0	8.6	7.9	7.9	1.3
1/16	1/4	F1-R-FT4-	31.5	8.6	7.9	7.9	1.3
1/8	1/16	F2-R-FT1-	29.0	12.7	11.1	11.1	0.8
1/8	1/8	F2-R-FT2-	33.5	12.7	11.1	11.1	2.0
1/8	3/16	F2-R-FT3-	34.3	12.7	11.1	11.1	2.3
1/8	1/4	F2-R-FT4-	36.1	12.7	11.1	11.1	2.3
1/8	3/8	F2-R-FT6-	37.6	12.7	11.1	11.1	2.3
1/8	1/2	F2-R-FT8-	44.2	12.7	11.1	14.3	2.3
3/16	1/8	F3-R-FT2-	34.8	13.7	12.7	11.1	2.0
3/16	1/4	F3-R-FT4-	37.1	13.7	12.7	11.1	3.0
1/4	1/8	F4-R-FT2-	36.8	15.2	14.3	12.7	2.0
1/4	3/16	F4-R-FT3-	37.6	15.2	14.3	12.7	3.0
1/4	1/4	F4-R-FT4-	39.1	15.2	14.3	12.7	4.3
1/4	5/16	F4-R-FT5-	39.9	15.2	14.3	12.7	4.8
1/4	3/8	F4-R-FT6-	40.6	15.2	14.3	12.7	4.8
1/4	1/2	F4-R-FT8-	46.2	15.2	14.3	14.3	4.8
1/4	5/8	F4-R-FT10-	48.0	15.2	14.3	17.5	4.8
1/4	3/4	F4-R-FT12-	47.8	15.2	14.3	20.6	4.8
5/16	3/8	F5-R-FT6-	41.9	16.3	15.9	14.3	6.4
5/16	1/2	F5-R-FT8-	47.5	16.3	15.9	14.3	6.4
3/8	1/4	F6-R-FT4-	41.4	16.8	17.5	15.9	4.3
3/8	3/8	F6-R-FT6-	43.2	16.8	17.5	15.9	6.9
3/8	1/2	F6-R-FT8-	48.5	16.8	17.5	15.9	7.1
3/8	5/8	F6-R-FT10-	50.3	16.8	17.5	17.5	7.1
3/8	3/4	F6-R-FT12-	50.3	16.8	17.5	20.6	7.1
1/2	1/4	F8-R-FT4-	45.0	22.9	22.2	20.6	4.3
1/2	3/8	F8-R-FT6-	46.7	22.9	22.2	20.6	6.9
1/2	1/2	F8-R-FT8-	52.3	22.9	22.2	20.6	9.4
1/2	5/8	F8-R-FT10-	53.8	22.9	22.2	20.6	10.4
1/2	3/4	F8-R-FT12-	53.8	22.9	22.2	20.6	10.4
1/2	1	F8-R-FT16-	60.2	22.9	22.2	27.0	10.4
5/8	3/4	F10-R-FT12-	54.6	24.4	25.4	23.8	12.7
5/8	7/8	F10-R-FT14-	56.1	24.4	25.4	23.8	12.7
5/8	1	F10-R-FT16-	61.0	24.4	25.4	27.0	12.7
3/4	1/2	F12-R-FT8-	54.6	24.4	28.6	27.0	9.4
3/4	3/4	F12-R-FT12-	54.6	24.4	28.6	27.0	14.7
3/4	1	F12-R-FT16-	62.5	24.4	28.6	27.0	15.7

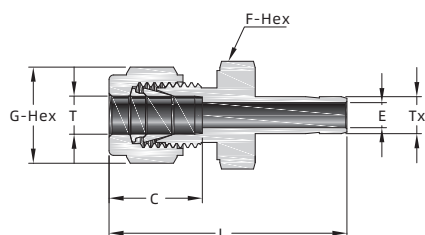
Fractional Tube

T-Tube O.D. (in.)	Tx-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm				
			L	C	G	F	E
1/8	6	F2-R-MT6-	36.1	12.7	11.1	11.1	2.3



Metric Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm				
			L	C	G	F	E
2	3	M2-R-MT3-	33.5	12.9	12	12	1.7
3	4	M3-R-MT4-	35.0	12.9	12	12	2.4
3	6	M3-R-MT6-	36.1	12.9	12	12	2.4
3	10	M3-R-MT10-	38.4	12.9	12	14	2.4
4	6	M4-R-MT6-	37.1	13.7	12	12	2.4
6	3	M6-R-MT3-	36.9	15.3	14	14	1.9
6	8	M6-R-MT8-	39.9	15.3	14	14	4.8
6	10	M6-R-MT10-	40.7	15.3	14	14	4.8
6	12	M6-R-MT12-	46.3	15.3	14	14	4.8
6	18	M6-R-MT18-	49.6	15.3	14	22	4.8
8	6	M8-R-MT6-	40.3	16.2	16	15	4.1
8	10	M8-R-MT10-	42.0	16.2	16	15	6.4
8	12	M8-R-MT12-	47.6	16.2	16	15	6.4
10	6	M10-R-MT6-	42.4	17.2	19	18	4.1
10	8	M10-R-MT8-	43.4	17.2	19	18	5.6
10	12	M10-R-MT12-	49.8	17.2	19	18	7.9
10	15	M10-R-MT15-	51.3	17.2	19	18	7.9
10	18	M10-R-MT18-	51.3	17.2	19	22	7.9
12	6	M12-R-MT6-	44.9	22.8	22	22	4.1
12	8	M12-R-MT8-	45.9	22.8	22	22	5.6
12	10	M12-R-MT10-	46.7	22.8	22	22	7.1
12	16	M12-R-MT16-	53.8	22.8	22	22	9.5
12	18	M12-R-MT18-	53.8	22.8	22	22	9.5
12	20	M12-R-MT20-	56.1	22.8	22	22	9.5
12	22	M12-R-MT22-	56.1	22.8	22	24	9.5
12	25	M12-R-MT25-	62.4	22.8	22	27	9.5
16	12	M16-R-MT12-	53.0	24.4	25	24	8.8
18	12	M18-R-MT12-	54.6	24.4	30	27	8.8
18	16	M18-R-MT16-	56.1	24.4	30	27	12.0
18	20	M18-R-MT20-	57.6	24.4	30	27	15.1
18	22	M18-R-MT22-	57.6	24.4	30	27	15.1
18	25	M18-R-MT25-	62.4	24.4	30	27	15.1
20	16	M20-R-MT16-	57.9	26.0	32	30	12.0
20	18	M20-R-MT18-	57.9	26.0	32	30	13.9
20	22	M20-R-MT22-	59.4	26.0	32	30	15.9
20	25	M20-R-MT25-	64.2	26.0	32	30	15.8
22	18	M22-R-MT18-	57.9	26.0	32	30	13.9
22	20	M22-R-MT20-	59.4	26.0	32	30	15.5
22	25	M22-R-MT25-	64.2	26.0	32	30	18.3
25	18	M25-R-MT18-	63.1	31.3	38	35	13.9
25	20	M25-R-MT20-	64.6	31.3	38	35	15.5

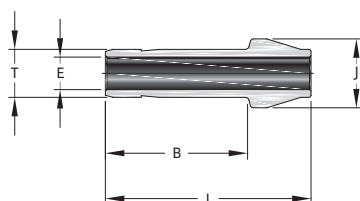


Metric Tube

Fractional Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				
			L	C	G	F	E
2	1/8	M2-R-FT2-	33.5	12.9	12	12	1.7
3	1/8	M3-R-FT2-	33.5	12.9	12	12	2.0
3	1/4	M3-R-FT4-	36.1	12.9	12	12	2.4
4	1/4	M4-R-FT4-	37.1	13.7	12	12	2.4
6	1/8	M6-R-FT2-	36.9	15.3	14	14	2.0
6	1/4	M6-R-FT4-	39.2	15.3	14	14	4.4
6	5/16	M6-R-FT5-	39.9	15.3	14	14	4.8
6	3/8	M6-R-FT6-	40.7	15.3	14	14	4.8
6	1/2	M6-R-FT8-	46.3	15.3	14	14	4.8
8	1/4	M8-R-FT4-	40.3	16.2	16	15	4.4
8	3/8	M8-R-FT6-	42.0	16.2	16	15	6.4
8	1/2	M8-R-FT8-	47.6	16.2	16	15	6.4
10	3/8	M10-R-FT6-	44.2	17.2	19	18	6.8
10	1/2	M10-R-FT8-	49.8	17.2	19	18	7.9
12	1/2	M12-R-FT8-	52.3	22.8	22	22	9.3
12	3/4	M12-R-FT12-	53.8	22.8	22	22	9.5
18	3/4	M18-R-FT12-	56.1	24.4	30	27	14.7
18	1	M18-R-FT16-	62.4	24.4	30	27	15.1
25	1	M25-R-FT16-	69.5	31.3	38	35	20.2

Port Connectors



1"/25 mm and below

Fractional Tube

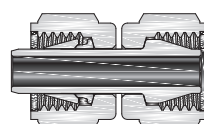
T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm			
		L	B	E	J
1/16	PC-F1-	13.7	10.7	0.8	3.3
1/8	PC-F2-	22.4	15.7	2.0	6.1
1/4	PC-F4-	24.6	18.8	4.3	9.4
5/16	PC-F5-	25.9	20.1	5.6	10.9
3/8	PC-F6-	26.2	20.3	6.9	12.7
1/2	PC-F8-	35.8	25.9	9.4	15.7
5/8	PC-F10-	37.8	28.1	11.9	20.5
3/4	PC-F12-	37.3	27.7	14.7	22.1
1	PC-F16-	48.0	34.5	20.3	28.4
1 1/4	PC-F20- ^①	69.1	50.6	25.9	37.4
1 1/2	PC-F24- ^①	84.1	59.4	31.8	45.8

^① Furnished with nut and preswaged ferrules.

Metric Tube

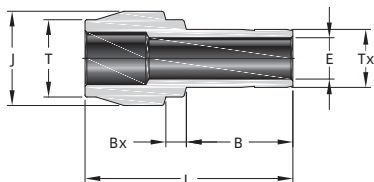
T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm			
		L	B	E	J
3	PC-M3-	22.2	15.7	1.9	6.0
6	PC-M6-	24.6	18.7	4.1	9.0
8	PC-M8-	25.9	20.0	5.6	11.0
10	PC-M10-	26.1	20.2	7.1	13.1
12	PC-M12-	35.8	26.0	8.8	15.0
15	PC-M15-	37.8	27.6	11.2	19.6
16	PC-M16-	37.8	27.6	12.0	20.6
18	PC-M18-	37.8	27.7	13.9	21.0
20	PC-M20-	39.4	29.2	15.5	24.6
25	PC-M25-	49.3	34.5	19.9	31.2
28	PC-M28- ^①	63.5	48.3	22.5	34.4
30	PC-M30- ^①	67.6	52.2	24.3	37.4
32	PC-M32- ^①	69.7	52.4	26.5	39.4
38	PC-M38- ^①	81.9	61.4	31.6	45.8

^① Furnished with nut and preswaged ferrules.



1 1/4"/28 mm and above

Reducing Port Connectors



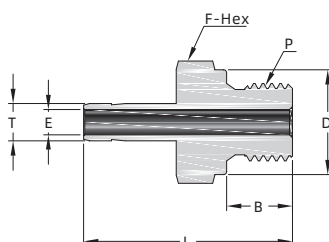
Fractional Tube

T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				
			L	B	E	Bx	J
1/8	1/16	F2-PC-F1-	17.3	8.6	0.8	2.0	6.1
1/4	1/16	F4-PC-F1-	18.0	8.6	0.8	3.6	9.4
1/4	1/8	F4-PC-F2-	22.6	13.5	2.0	3.3	9.4
3/8	1/8	F6-PC-F2-	23.1	13.5	2.0	3.8	12.7
3/8	1/4	F6-PC-F4-	24.9	15.7	4.3	3.3	12.7
1/2	1/4	F8-PC-F4-	29.2	15.7	4.3	3.8	15.7
1/2	3/8	F8-PC-F6-	30.5	17.5	6.9	3.3	15.7
3/4	1/2	F12-PC-F8-	37.8	23.1	9.4	3.8	22.1
1	1/2	F16-PC-F8-	42.9	24.4	9.4	4.8	28.5
1	3/4	F16-PC-F12-	43.7	25.9	14.7	4.1	28.5

Metric Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm				
			L	B	E	Bx	J
6	3	M6-PC-M3-	22.6	13.5	1.9	3.2	9.0
8	6	M8-PC-M6-	24.7	15.7	4.1	3.1	11.0
10	6	M10-PC-M6-	25.0	15.7	4.1	3.4	13.1
10	8	M10-PC-M8-	26.3	17.0	5.6	3.1	13.1
12	6	M12-PC-M6-	29.6	15.7	4.1	3.6	15.0
12	8	M12-PC-M8-	29.8	16.8	5.6	3.4	15.0
12	10	M12-PC-M10-	30.4	17.5	7.1	3.1	15.0
16	12	M16-PC-M12-	36.2	23.1	8.8	3.4	19.0
28	25	M28-PC-M25-	56.5	33.0	19.8	8.2	34.3
32	25	M32-PC-M25-	60.3	33.0	19.8	9.9	39.5
38	25	M38-PC-M25-	65.8	33.0	19.8	12.3	47.1

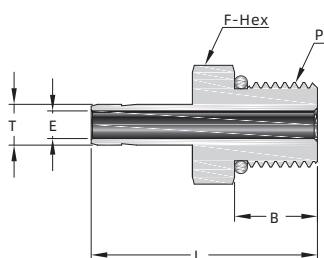
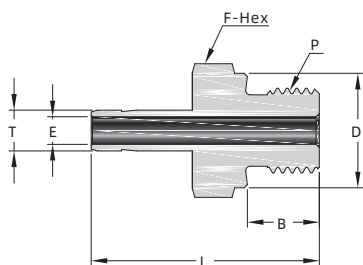
Male Adapters



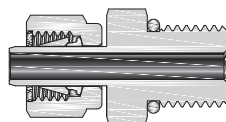
Fractional Tube

ISO Parallel Thread (BS)

T-Tube O.D. (in.)	P-BS Size	Basic Ordering Number	Dimension, in. (mm)				
			L	B	E	F	D
1/8	1/8	FT2-MA-MBS2-	1.22(31.0)	0.28(7.1)	0.08(2.0)	0.56(14.3)	0.54(13.7)
1/8	1/4	FT2-MA-MBS4-	1.41(35.8)	0.44(11.2)	0.08(2.0)	0.75(19.1)	0.70(17.8)
1/4	1/8	FT4-MA-MBS2-	1.31(33.3)	0.28(7.1)	0.16(4.1)	0.56(14.3)	0.54(13.7)
1/4	1/4	FT4-MA-MBS4-	1.50(38.1)	0.44(11.2)	0.17(4.3)	0.75(19.1)	0.70(17.8)
3/8	1/8	FT6-MA-MBS2-	1.34(34.0)	0.28(7.1)	0.05(1.3)	0.56(14.3)	0.54(13.7)
3/8	1/4	FT6-MA-MBS4-	1.57(39.9)	0.44(11.2)	0.23(5.8)	0.75(19.1)	0.70(17.8)
3/8	3/8	FT6-MA-MBS6-	1.60(40.6)	0.44(11.2)	0.27(6.9)	0.87(22.2)	0.85(21.6)
3/8	1/2	FT6-MA-MBS8-	1.69(42.9)	0.56(14.2)	0.28(7.1)	1.06(27.0)	1.02(25.9)
1/2	1/4	FT8-MA-MBS4-	1.79(45.5)	0.44(11.2)	0.23(5.8)	0.75(19.1)	0.70(17.8)
1/2	3/8	FT8-MA-MBS6-	1.82(46.2)	0.44(11.2)	0.31(7.9)	0.87(22.2)	0.85(21.6)
1/2	1/2	FT8-MA-MBS8-	1.94(49.2)	0.56(14.2)	0.37(9.4)	1.06(27.0)	1.02(25.9)
5/8	1/2	FT10-MA-MBS8-	1.97(50.0)	0.56(14.2)	0.47(11.9)	1.06(27.0)	1.02(25.9)
3/4	3/4	FT12-MA-MBS12-	2.16(54.9)	0.63(16.0)	0.58(14.7)	1.31(33.3)	1.26(32.0)
1	1	FT16-MA-MBS16-	2.54(64.5)	0.72(18.3)	0.80(20.3)	1.63(41.3)	1.53(38.9)



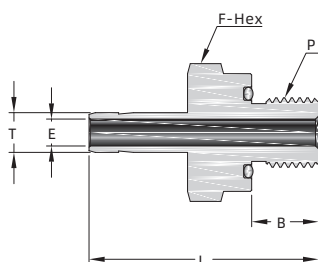
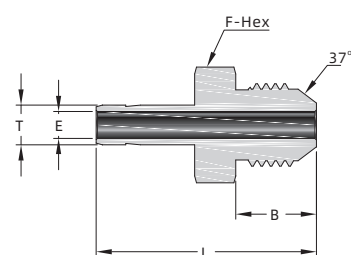
1" and below



1 1/4" and above

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

Male Adapters



Fractional Tube

ISO Parallel Thread (BP)

T-Tube O.D. (in.)	P-BP Size	Basic Ordering Number	Dimension, in. (mm)				
			L	B	E	F	D
1/8	1/8	FT2-MA-PMBP2-	1.09(27.7)	0.28(7.1)	0.05(1.3)	0.56(14.3)	0.54(13.7)
1/8	1/4	FT2-MA-PMBP4-	1.31(33.3)	0.44(11.2)	0.05(1.3)	0.75(19.1)	0.70(17.8)
1/4	1/8	FT4-MA-PMBP2-	1.19(30.2)	0.28(7.1)	0.16(4.1)	0.56(14.3)	0.54(13.7)
1/4	1/4	FT4-MA-PMBP4-	1.50(38.1)	0.44(11.2)	0.18(4.6)	0.75(19.1)	0.70(17.8)
3/8	1/8	FT6-MA-PMBP2-	1.34(34.0)	0.28(7.1)	0.05(1.3)	0.75(19.1)	0.54(13.7)
3/8	1/4	FT6-MA-PMBP4-	1.47(37.3)	0.44(11.2)	0.25(6.4)	0.75(19.1)	0.70(17.8)
3/8	3/8	FT6-MA-PMBP6-	1.50(38.1)	0.44(11.2)	0.28(7.1)	0.87(22.2)	0.85(21.6)
3/8	1/2	FT6-MA-PMBP8-	1.69(42.9)	0.56(14.2)	0.28(7.1)	1.06(27.0)	1.02(25.9)
1/2	1/4	FT8-MA-PMBP4-	1.69(42.9)	0.44(11.2)	0.25(6.4)	0.75(19.1)	0.70(17.8)
1/2	3/8	FT8-MA-PMBP6-	1.72(43.7)	0.44(11.2)	0.31(7.9)	0.87(22.2)	0.85(21.6)
1/2	1/2	FT8-MA-PMBP8-	1.94(49.3)	0.56(14.2)	0.39(9.9)	1.06(27.0)	1.02(25.9)
5/8	1/2	FT10-MA-PMBP8-	1.97(50.0)	0.56(14.2)	0.47(11.9)	1.06(27.0)	1.02(25.9)
3/4	3/4	FT12-MA-PMBP12-	2.09(53.1)	0.63(16.0)	0.58(14.7)	1.32(33.5)	1.26(32.0)
1	1	FT16-MA-PMBP16-	2.49(63.3)	0.72(18.3)	0.80(20.3)	1.63(41.3)	1.53(38.9)

Fractional Tube

SAE/MS Straight Thread

T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/8	5/16-24	FT2-MA-OST5-	1.20(30.5)	0.30(7.6)	0.08(2.0)	0.44(11.1)
1/4	7/16-20	FT4-MA-OST7-	1.39(35.3)	0.36(9.1)	0.17(4.3)	0.56(14.3)
3/8	7/16-20	FT6-MA-OST7-	1.46(37.1)	0.36(9.1)	0.20(5.1)	0.56(14.3)
3/8	9/16-18	FT6-MA-OST9-	1.52(38.6)	0.39(9.9)	0.27(6.9)	0.69(17.5)
3/8	3/4-16	FT6-MA-OST12-	1.60(40.6)	0.44(11.2)	0.27(6.9)	0.87(22.2)
1/2	9/16-18	FT8-MA-OST9-	1.74(44.2)	0.39(9.9)	0.28(7.1)	0.69(17.5)
1/2	3/4-16	FT8-MA-OST12-	1.82(46.2)	0.44(11.2)	0.37(9.4)	0.87(22.2)
5/8	7/8-14	FT10-MA-OST14-	1.94(49.3)	0.50(12.7)	0.47(11.9)	1.00(25.4)
3/4	1 1/16-12	FT12-MA-OST17-	2.10(53.3)	0.59(15.0)	0.58(14.7)	1.25(31.8)
1	1 5/16-12	FT16-MA-OST21-	2.41(61.2)	0.59(15.0)	0.80(20.3)	1.50(38.1)
1 1/4	1 5/8-12	FT20-MA-OST26- ^①	2.81(71.4)	0.59(15.0)	1.02(25.9)	1.87(47.6)
1 1/2	1 7/8-12	FT24-MA-OST30- ^①	3.28(83.3)	0.59(15.0)	1.25(31.8)	2.13(54.0)

① Furnished with nut and preswaged ferrules.

Fractional Tube

37° Flare (AN)

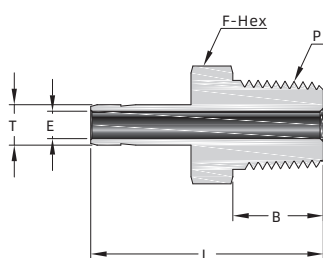
T-Tube O.D. (in.)	AN Tube Flare Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/4	1/4	FT4-MA-AN4-	1.46(37.1)	0.55(14.0)	0.17(4.3)	0.50(12.7)
3/8	1/4	FT6-MA-AN4-	1.53(38.9)	0.55(14.0)	0.17(4.3)	0.50(12.7)
3/8	3/8	FT6-MA-AN6-	1.56(39.6)	0.56(14.2)	0.27(6.9)	0.63(15.9)
1/2	1/2	FT8-MA-AN8-	1.91(48.5)	0.66(16.8)	0.37(9.4)	0.81(20.6)
3/4	3/4	FT12-MA-AN12-	2.21(56.1)	0.86(21.8)	0.58(14.7)	1.13(28.6)
1	1	FT16-MA-AN16-	2.58(65.5)	0.91(23.1)	0.80(20.3)	1.37(34.9)

Fractional Tube

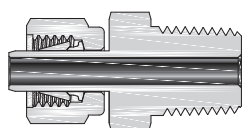
O-Seal with SAE/MS Straight Thread

T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/8	5/16-24	FT2-MA-STO5-	1.28(32.5)	0.34(8.6)	0.08(2.0)	0.56(14.3)
3/16	3/8-24	FT3-MA-STO6-	1.38(35.1)	0.38(9.7)	0.12(3.0)	0.63(15.9)
1/4	7/16-20	FT4-MA-STO7-	1.54(39.1)	0.41(10.4)	0.17(4.3)	0.75(19.1)
5/16	1/2-20	FT5-MA-STO8-	1.64(41.7)	0.44(11.2)	0.22(5.6)	0.87(22.2)
3/8	9/16-18	FT6-MA-STO9-	1.70(43.2)	0.47(11.9)	0.27(6.9)	0.94(23.8)
1/2	3/4-16	FT8-MA-STO12-	1.95(49.5)	0.47(11.9)	0.37(9.4)	1.13(28.6)

Male Adapters



1" and below



1 1/4" and above

Fractional Tube

NPT Thread

T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/16	1/8	FT1-MA-NPT2-	1.00(25.4)	0.38(9.7)	0.03(0.8)	0.44(11.1)
1/8	1/8	FT2-MA-NPT2-	1.16(29.5)	0.38(9.7)	0.08(2.0)	0.44(11.1)
1/8	1/4	FT2-MA-NPT4-	1.37(34.8)	0.56(14.2)	0.08(2.0)	0.56(14.3)
3/16	1/8	FT3-MA-NPT2-	1.19(30.2)	0.38(9.7)	0.12(3.0)	0.44(11.1)
3/16	1/4	FT3-MA-NPT4-	1.40(35.6)	0.56(14.2)	0.12(3.0)	0.56(14.3)
1/4	1/8	FT4-MA-NPT2-	1.25(31.8)	0.38(9.7)	0.17(4.3)	0.44(11.1)
1/4	1/4	FT4-MA-NPT4-	1.46(37.1)	0.56(14.2)	0.17(4.3)	0.56(14.3)
1/4	3/8	FT4-MA-NPT6-	1.49(37.8)	0.56(14.2)	0.17(4.3)	0.69(17.5)
1/4	1/2	FT4-MA-NPT8-	1.71(43.4)	0.75(19.1)	0.17(4.3)	0.87(22.2)
5/16	1/8	FT5-MA-NPT2-	1.29(32.8)	0.38(9.7)	0.19(4.8)	0.44(11.1)
5/16	1/4	FT5-MA-NPT4-	1.50(38.1)	0.56(14.2)	0.22(5.6)	0.56(14.3)
5/16	3/8	FT5-MA-NPT6-	1.53(38.9)	0.56(14.2)	0.22(5.6)	0.69(17.5)
5/16	1/2	FT5-MA-NPT8-	1.74(44.2)	0.75(19.1)	0.22(5.6)	0.87(22.2)
3/8	1/8	FT6-MA-NPT2-	1.32(33.5)	0.38(9.7)	0.19(4.8)	0.44(11.1)
3/8	1/4	FT6-MA-NPT4-	1.53(38.9)	0.56(14.2)	0.27(6.9)	0.56(14.3)
3/8	3/8	FT6-MA-NPT6-	1.56(39.6)	0.56(14.2)	0.27(6.9)	0.69(17.5)
3/8	1/2	FT6-MA-NPT8-	1.78(45.2)	0.75(19.1)	0.27(6.9)	0.87(22.2)
1/2	1/4	FT8-MA-NPT4-	1.75(44.5)	0.56(14.2)	0.28(7.1)	0.56(14.3)
1/2	3/8	FT8-MA-NPT6-	1.78(45.2)	0.56(14.2)	0.37(9.4)	0.69(17.5)
1/2	1/2	FT8-MA-NPT8-	2.00(50.8)	0.75(19.1)	0.37(9.4)	0.87(22.2)
5/8	1/2	FT10-MA-NPT8-	2.06(52.3)	0.75(19.1)	0.47(11.9)	0.87(22.2)
3/4	1/2	FT12-MA-NPT8-	2.06(52.3)	0.75(19.1)	0.47(11.9)	0.87(22.2)
3/4	3/4	FT12-MA-NPT12-	2.06(52.3)	0.75(19.1)	0.58(14.7)	1.06(27.0)
3/4	1	FT12-MA-NPT16-	2.41(61.2)	0.94(23.9)	0.81(20.7)	1.37(34.9)
1	3/4	FT16-MA-NPT12-	2.31(58.7)	0.75(19.1)	0.62(15.7)	1.06(27.0)
1	1	FT16-MA-NPT16-	2.60(66.0)	0.94(23.9)	0.80(20.3)	1.37(34.9)
1 1/4	1 1/4	FT20-MA-NPT20- ^①	3.16(80.3)	0.94(23.9)	1.02(25.9)	1.75(44.5)
1 1/2	1 1/2	FT24-MA-NPT24- ^①	3.72(94.5)	1.03(26.2)	1.25(31.8)	2.13(54.0)

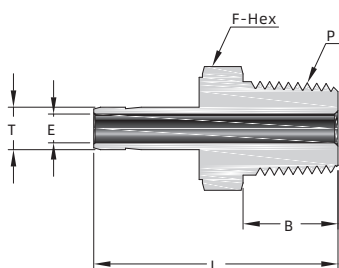
① Furnished with nut and preswaged ferrules.

Fractional Tube

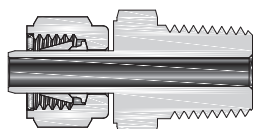
ISO Tapered Thread (BSPT)

T-Tube O.D. (in.)	P-BSPT Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/8	1/8	FT2-MA-MBT2-	1.16(29.5)	0.38(9.7)	0.08(2.0)	0.44(11.1)
1/8	1/4	FT2-MA-MBT4-	1.37(34.8)	0.56(14.2)	0.08(2.0)	0.56(14.3)
1/4	1/8	FT4-MA-MBT2-	1.25(31.8)	0.38(9.7)	0.17(4.3)	0.44(11.1)
1/4	1/4	FT4-MA-MBT4-	1.46(37.1)	0.56(14.2)	0.17(4.3)	0.56(14.3)
1/4	3/8	FT4-MA-MBT6-	1.49(37.8)	0.56(14.2)	0.17(4.3)	0.69(17.5)
1/4	1/2	FT4-MA-MBT8-	1.71(43.4)	0.75(19.1)	0.17(4.3)	0.87(22.2)
5/16	1/8	FT5-MA-MBT2-	1.29(32.8)	0.38(9.7)	0.19(4.8)	0.44(11.1)
5/16	1/4	FT5-MA-MBT4-	1.50(38.1)	0.56(14.2)	0.22(5.6)	0.56(14.3)
3/8	1/4	FT6-MA-MBT4-	1.53(38.9)	0.56(14.2)	0.27(6.9)	0.56(14.3)
3/8	3/8	FT6-MA-MBT6-	1.56(39.6)	0.56(14.2)	0.27(6.9)	0.69(17.5)
3/8	1/2	FT6-MA-MBT8-	1.78(45.2)	0.75(19.1)	0.27(6.9)	0.87(22.2)
1/2	1/4	FT8-MA-MBT4-	1.75(44.5)	0.56(14.2)	0.28(7.1)	0.56(14.3)
1/2	3/8	FT8-MA-MBT6-	1.78(45.2)	0.56(14.2)	0.37(9.4)	0.69(17.5)
1/2	1/2	FT8-MA-MBT8-	2.00(50.8)	0.75(19.1)	0.37(9.4)	0.87(22.2)
5/8	3/8	FT10-MA-MBT6-	1.91(48.5)	0.56(14.2)	0.37(9.5)	0.69(17.5)
5/8	1/2	FT10-MA-MBT8-	2.06(52.3)	0.75(19.1)	0.47(11.9)	0.87(22.2)
3/4	3/4	FT12-MA-MBT12-	2.06(52.3)	0.75(19.1)	0.58(14.7)	1.06(27.0)
1	1	FT16-MA-MBT16-	2.60(66.0)	0.94(23.9)	0.80(20.3)	1.37(34.9)

Male Adapters



25 mm and below



28 mm and above

Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm(in.)			
			L	B	E	F
3	1/8	MT3-MA-NPT2-	29.4(1.16)	9.7(0.38)	1.8(0.07)	12.0(0.47)
4	1/8	MT4-MA-NPT2-	29.4(1.16)	9.7(0.38)	2.0(0.08)	12.0(0.47)
6	1/8	MT6-MA-NPT2-	32.8(1.29)	9.7(0.38)	4.1(0.16)	12.0(0.47)
6	1/4	MT6-MA-NPT4-	38.1(1.50)	14.2(0.56)	4.1(0.16)	14.0(0.55)
6	3/8	MT6-MA-NPT6-	39.2(1.54)	14.2(0.56)	4.1(0.16)	18.0(0.71)
6	1/2	MT6-MA-NPT8-	42.1(1.66)	19.1(0.75)	4.1(0.16)	22.0(0.87)
8	1/4	MT8-MA-NPT4-	39.1(1.54)	14.2(0.56)	5.6(0.22)	14.0(0.55)
8	3/8	MT8-MA-NPT6-	39.9(1.57)	14.2(0.56)	5.6(0.22)	19.0(0.75)
10	1/4	MT10-MA-NPT4-	39.9(1.57)	14.2(0.56)	7.1(0.28)	14.0(0.55)
10	3/8	MT10-MA-NPT6-	40.6(1.60)	14.2(0.56)	7.1(0.28)	18.0(0.71)
10	1/2	MT10-MA-NPT8-	46.2(1.82)	19.1(0.75)	7.1(0.28)	22.0(0.87)
12	1/4	MT12-MA-NPT4-	46.5(1.83)	14.2(0.56)	7.1(0.28)	14.0(0.55)
12	3/8	MT12-MA-NPT6-	46.2(1.82)	14.2(0.56)	8.8(0.35)	18.0(0.71)
12	1/2	MT12-MA-NPT8-	52.1(2.05)	19.1(0.75)	8.8(0.35)	22.0(0.87)
16	1/2	MT16-MA-NPT8-	50.8(2.00)	19.1(0.75)	12.7(0.50)	22.0(0.87)
16	3/4	MT16-MA-NPT12-	51.6(2.03)	19.1(0.75)	12.7(0.50)	27.0(1.06)
18	1/2	MT18-MA-NPT8-	50.8(2.00)	19.1(0.75)	12.7(0.50)	27.0(1.06)
18	3/4	MT18-MA-NPT12-	51.6(2.03)	19.1(0.75)	14.0(0.55)	27.0(1.06)
20	1/2	MT20-MA-NPT8-	51.8(2.04)	19.1(0.75)	11.9(0.47)	22.0(0.87)
20	3/4	MT20-MA-NPT12-	52.4(2.06)	19.1(0.75)	15.1(0.59)	27.0(1.06)
25	1	MT25-MA-NPT16-	65.9(2.59)	23.9(0.94)	19.8(0.78)	35.0(1.38)
28	1	MT28-MA-NPT16- ^①	74.4(2.93)	23.9(0.94)	22.2(0.87)	35.0(1.38)
28	1 1/4	MT28-MA-NPT20- ^①	76.2(3.00)	23.9(0.94)	22.5(0.89)	46.0(1.81)
30	1	MT30-MA-NPT16- ^①	79.2(3.12)	23.9(0.94)	22.2(0.87)	41.0(1.61)
30	1 1/4	MT30-MA-NPT20- ^①	80.0(3.15)	23.9(0.94)	24.3(0.96)	46.0(1.81)
32	1 1/4	MT32-MA-NPT20- ^①	81.0(3.19)	23.9(0.94)	26.5(1.04)	46.0(1.81)
38	1 1/2	MT38-MA-NPT24- ^①	92.2(3.63)	26.2(1.03)	31.6(1.24)	55.0(2.17)

① Furnished with nut and preswaged ferrules.

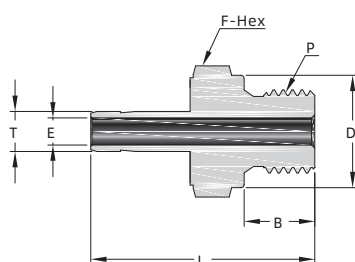
Metric Tube

ISO Tapered Thread (BSPT)

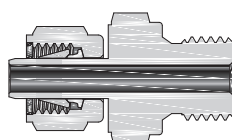
T-Tube O.D. (mm)	P-BSPT Size	Basic Ordering Number	Dimension, mm(in.)			
			L	B	E	F
3	1/8	MT3-MA-MBT2-	29.4(1.16)	9.7(0.38)	1.8(0.07)	12.0(0.47)
4	1/8	MT4-MA-MBT2-	29.4(1.16)	9.7(0.38)	2.0(0.08)	12.0(0.47)
6	1/8	MT6-MA-MBT2-	32.8(1.29)	9.7(0.38)	4.1(0.16)	12.0(0.47)
6	1/4	MT6-MA-MBT4-	38.1(1.50)	14.2(0.56)	4.1(0.16)	14.0(0.55)
8	1/4	MT8-MA-MBT4-	39.1(1.54)	14.2(0.56)	5.6(0.22)	14.0(0.55)
8	3/8	MT8-MA-MBT6-	39.9(1.57)	14.2(0.56)	5.6(0.22)	18.0(0.71)
10	1/4	MT10-MA-MBT4-	39.9(1.57)	14.2(0.56)	7.1(0.28)	14.0(0.55)
10	3/8	MT10-MA-MBT6-	40.6(1.60)	14.2(0.56)	7.1(0.28)	18.0(0.71)
10	1/2	MT10-MA-MBT8-	44.5(1.75)	19.1(0.75)	7.5(0.30)	22.0(0.87)
12	1/4	MT12-MA-MBT4-	46.5(1.83)	14.2(0.56)	7.1(0.28)	16.0(0.63)
12	3/8	MT12-MA-MBT6-	46.2(1.82)	14.2(0.56)	8.8(0.35)	18.0(0.71)
12	1/2	MT12-MA-MBT8-	51.8(2.04)	19.1(0.75)	8.8(0.35)	22.0(0.87)
16	1/2	MT16-MA-MBT8-	50.8(2.00)	19.1(0.75)	12.7(0.50)	22.0(0.87)
18	3/4	MT18-MA-MBT12-	51.6(2.03)	19.1(0.75)	14.0(0.55)	27.0(1.06)
20	3/4	MT20-MA-MBT12-	52.4(2.06)	19.1(0.75)	15.1(0.59)	27.0(1.06)
25	1	MT25-MA-MBT16-	65.9(2.59)	23.9(0.94)	19.8(0.78)	35.0(1.38)
28	1	MT28-MA-MBT16- ^①	74.7(2.94)	23.9(0.94)	22.2(0.87)	35.0(1.38)
28	1 1/4	MT28-MA-MBT20- ^①	76.2(3.00)	23.9(0.94)	22.5(0.89)	46.0(1.81)
30	1 1/4	MT30-MA-MBT20- ^①	80.0(3.15)	23.9(0.94)	24.3(0.96)	46.0(1.81)
32	1 1/4	MT32-MA-MBT20- ^①	81.0(3.19)	23.9(0.94)	26.5(1.04)	46.0(1.81)
38	1 1/2	MT38-MA-MBT24- ^①	92.2(3.63)	26.2(1.03)	31.6(1.24)	55.0(2.17)

① Furnished with nut and preswaged ferrules.

Male Adapters



25 mm and below



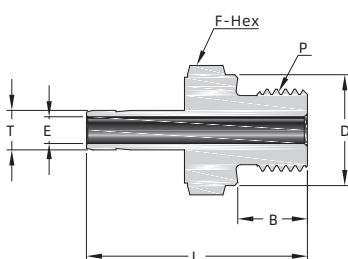
28 mm and above

Metric Tube

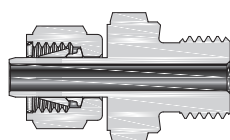
ISO Parallel Thread (BS)

T-Tube O.D. (mm)	P-BS Size	Basic Ordering Number	Dimension, mm(in.)				
			L	B	E	F	D
3	1/8	MT3-MA-MBS2-	31.0(1.22)	7.1(0.28)	1.8(0.07)	14.0(0.55)	13.7(0.54)
4	1/8	MT4-MA-MBS2-	31.8(1.25)	7.1(0.28)	2.0(0.08)	14.0(0.55)	13.7(0.54)
6	1/8	MT6-MA-MBS2-	34.3(1.35)	7.1(0.28)	4.0(0.16)	14.0(0.55)	13.7(0.54)
6	1/4	MT6-MA-MBS4-	39.1(1.54)	11.2(0.44)	4.1(0.16)	19.0(0.75)	17.8(0.70)
8	1/4	MT8-MA-MBS4-	40.1(1.58)	11.2(0.44)	5.6(0.22)	19.0(0.75)	17.8(0.70)
10	1/4	MT10-MA-MBS4-	40.9(1.61)	11.2(0.44)	5.9(0.23)	19.0(0.75)	17.8(0.70)
10	3/8	MT10-MA-MBS6-	41.7(1.64)	11.2(0.44)	7.1(0.28)	22.0(0.87)	21.6(0.85)
10	1/2	MT10-MA-MBS8-	44.7(1.76)	14.2(0.56)	7.1(0.28)	27.0(1.06)	25.9(1.02)
12	1/4	MT12-MA-MBS4-	46.7(1.84)	11.2(0.44)	5.9(0.23)	19.0(0.75)	17.8(0.70)
12	3/8	MT12-MA-MBS6-	47.2(1.86)	11.2(0.44)	7.9(0.31)	22.0(0.87)	21.6(0.85)
12	1/2	MT12-MA-MBS8-	50.5(1.99)	14.2(0.56)	8.8(0.35)	27.0(1.06)	25.9(1.02)
16	1/2	MT16-MA-MBS8-	50.8(2.00)	14.2(0.56)	11.9(0.47)	27.0(1.06)	25.9(1.02)
18	3/4	MT18-MA-MBS12-	55.9(2.20)	16.0(0.63)	13.9(0.55)	35.0(1.38)	32.0(1.26)
20	3/4	MT20-MA-MBS12-	57.0(2.24)	16.0(0.63)	15.1(0.59)	35.0(1.38)	32.0(1.26)
25	1	MT25-MA-MBS16-	65.1(2.56)	18.3(0.72)	19.8(0.78)	41.0(1.61)	38.9(1.53)
28	1	MT28-MA-MBS16- ^①	72.9(2.87)	18.3(0.72)	19.8(0.78)	41.0(1.61)	38.9(1.53)
28	1 1/4	MT28-MA-MBS20- ^①	77.0(3.03)	19.8(0.78)	22.5(0.89)	50.0(1.97)	49.0(1.93)
30	1 1/4	MT30-MA-MBS20- ^①	80.8(3.18)	19.8(0.78)	24.3(0.96)	50.0(1.97)	49.0(1.93)
32	1 1/4	MT32-MA-MBS20- ^①	81.8(3.22)	19.8(0.78)	26.5(1.04)	50.0(1.97)	49.0(1.93)
38	1 1/2	MT38-MA-MBS24- ^①	94.5(3.72)	22.1(0.87)	31.6(1.24)	55.0(2.17)	54.7(2.15)

① Furnished with nut and preswaged ferrules.



25 mm and below



28 mm and above

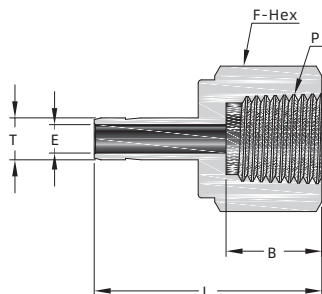
Metric Tube

ISO Parallel Thread (BP)

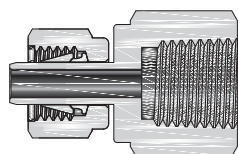
T-Tube O.D. (mm)	P-BP Size	Basic Ordering Number	Dimension, mm(in.)				
			L	B	E	F	D
3	1/8	MT3-MA-PMBP2-	31.0(1.22)	7.1(0.28)	1.8(0.07)	14.0(0.55)	13.7(0.54)
4	1/8	MT4-MA-PMBP2-	31.8(1.25)	7.1(0.28)	2.0(0.08)	14.0(0.55)	13.7(0.54)
6	1/8	MT6-MA-PMBP2-	33.3(1.31)	7.1(0.28)	4.0(0.16)	14.0(0.55)	13.7(0.54)
6	1/4	MT6-MA-PMBP4-	38.1(1.50)	11.2(0.44)	4.0(0.16)	19.0(0.75)	17.8(0.70)
8	1/4	MT8-MA-PMBP4-	38.9(1.53)	11.2(0.44)	6.4(0.25)	19.0(0.75)	17.8(0.70)
10	1/4	MT10-MA-PMBP4-	38.9(1.53)	11.2(0.44)	6.4(0.25)	19.0(0.75)	17.8(0.70)
10	3/8	MT10-MA-PMBP6-	39.7(1.56)	11.2(0.44)	7.5(0.30)	22.0(0.87)	21.6(0.85)
10	1/2	MT10-MA-PMBP8-	42.9(1.69)	14.2(0.56)	7.5(0.30)	27.0(1.06)	25.9(1.02)
12	1/4	MT12-MA-PMBP4-	43.7(1.72)	11.2(0.44)	6.4(0.25)	19.0(0.75)	17.8(0.70)
12	3/8	MT12-MA-PMBP6-	44.5(1.75)	11.2(0.44)	7.9(0.31)	22.0(0.87)	21.6(0.85)
12	1/2	MT12-MA-PMBP8-	49.2(1.94)	14.2(0.56)	9.1(0.36)	27.0(1.06)	25.9(1.02)
16	1/2	MT16-MA-PMBP8-	50.8(2.00)	14.2(0.56)	11.9(0.47)	27.0(1.06)	25.9(1.02)
18	3/4	MT18-MA-PMBP12-	53.2(2.09)	16.0(0.63)	14.0(0.55)	33.0(1.30)	32.0(1.26)
20	3/4	MT20-MA-PMBP12-	54.0(2.13)	16.0(0.63)	15.1(0.59)	33.0(1.30)	32.0(1.26)
25	1	MT25-MA-PMBP16-	65.1(2.56)	18.3(0.72)	19.8(0.78)	41.0(1.61)	38.9(1.53)
28	1	MT28-MA-PMBP16-	72.7(2.86)	18.3(0.72)	19.8(0.78)	41.0(1.61)	38.9(1.53)
28	1 1/4	MT28-MA-PMBP20- ^①	77.3(3.04)	19.8(0.78)	22.5(0.89)	50.0(1.97)	49.0(1.93)
30	1 1/4	MT30-MA-PMBP20- ^①	80.8(3.18)	19.8(0.78)	24.3(0.96)	50.0(1.97)	49.0(1.93)
32	1 1/4	MT32-MA-PMBP20- ^①	82.1(3.23)	19.8(0.78)	26.5(1.04)	50.0(1.97)	49.0(1.93)
38	1 1/2	MT38-MA-PMBP24- ^①	94.5(3.72)	22.1(0.87)	31.6(1.24)	55.0(2.17)	54.7(2.15)

① Furnished with nut and preswaged ferrules.

Female Adapters



1" and below



1 1/4" and above

Fractional Tube

NPT Thread

T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/16	1/8	FT1-FA-FNPT2-	1.07(27.2)	0.41(10.4)	0.03(0.8)	0.56(14.3)
1/8	1/8	FT2-FA-FNPT2-	1.24(31.5)	0.41(10.4)	0.08(2.0)	0.56(14.3)
1/8	1/4	FT2-FA-FNPT4-	1.39(35.3)	0.59(15.0)	0.08(2.0)	0.75(19.1)
3/16	1/8	FT3-FA-FNPT2-	1.25(31.8)	0.41(10.4)	0.11(2.9)	0.56(14.3)
3/16	1/4	FT3-FA-FNPT4-	1.41(35.8)	0.59(15.0)	0.12(3.0)	0.75(19.1)
1/4	1/8	FT4-FA-FNPT2-	1.30(33.0)	0.41(10.4)	0.17(4.3)	0.56(14.3)
1/4	1/4	FT4-FA-FNPT4-	1.46(37.1)	0.59(15.0)	0.17(4.3)	0.75(19.1)
1/4	3/8	FT4-FA-FNPT6-	1.55(39.4)	0.59(15.0)	0.17(4.3)	0.87(22.2)
1/4	1/2	FT4-FA-FNPT8-	1.79(45.5)	0.78(19.8)	0.17(4.3)	1.06(27.0)
5/16	1/8	FT5-FA-FNPT2-	1.34(34.0)	0.41(10.4)	0.22(5.6)	0.56(14.3)
5/16	1/4	FT5-FA-FNPT4-	1.48(37.6)	0.59(15.0)	0.22(5.6)	0.75(19.1)
5/16	3/8	FT5-FA-FNPT6-	1.59(40.4)	0.59(15.0)	0.22(5.6)	0.87(22.2)
3/8	1/8	FT6-FA-FNPT2-	1.35(34.3)	0.41(10.4)	0.27(6.9)	0.56(14.3)
3/8	1/4	FT6-FA-FNPT4-	1.50(38.1)	0.59(15.0)	0.27(6.9)	0.75(19.1)
3/8	3/8	FT6-FA-FNPT6-	1.59(40.4)	0.59(15.0)	0.27(6.9)	0.87(22.2)
3/8	1/2	FT6-FA-FNPT8-	1.84(46.7)	0.78(19.8)	0.27(6.9)	1.06(27.0)
1/2	1/4	FT8-FA-FNPT4-	1.71(43.4)	0.59(15.0)	0.37(9.4)	0.75(19.1)
1/2	3/8	FT8-FA-FNPT6-	1.79(45.5)	0.59(15.0)	0.37(9.4)	0.87(22.2)
1/2	1/2	FT8-FA-FNPT8-	2.04(51.8)	0.78(19.8)	0.37(9.4)	1.06(27.0)
5/8	3/8	FT10-FA-FNPT6-	1.86(47.2)	0.59(15.0)	0.47(11.9)	0.87(22.2)
5/8	1/2	FT10-FA-FNPT8-	2.09(53.1)	0.78(19.8)	0.47(11.9)	1.06(27.0)
3/4	1/2	FT12-FA-FNPT8-	2.08(52.8)	0.78(19.8)	0.58(14.7)	1.06(27.0)
3/4	3/4	FT12-FA-FNPT12-	2.16(54.9)	0.81(20.6)	0.58(14.7)	1.31(33.3)
3/4	1	FT12-FA-FNPT16-	2.30(58.4)	1.00(25.4)	0.58(14.7)	1.63(41.3)
7/8	3/4	FT14-FA-FNPT12-	2.22(56.4)	0.81(20.6)	0.58(14.7)	1.31(33.3)
1	3/4	FT16-FA-FNPT12-	2.39(60.7)	0.81(20.6)	0.80(20.3)	1.31(33.3)
1	1	FT16-FA-FNPT16-	2.53(64.3)	1.00(25.4)	0.80(20.3)	1.63(41.3)
1 1/4	1 1/4	FT20-FA-FNPT20-①	3.06(77.7)	1.00(25.4)	1.02(25.9)	2.13(54.0)
1 1/2	1 1/2	FT24-FA-FNPT24-①	3.50(88.9)	1.09(27.7)	1.25(31.8)	2.37(60.3)

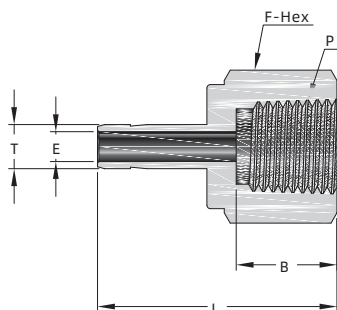
① Furnished with nut and preswaged ferrules.

Fractional Tube

ISO Tapered Thread (RT)

T-Tube O.D. (in.)	P-RT Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/4	1/8	FT4-FA-FBT2-	1.30(33.0)	0.41(10.4)	0.17(4.3)	0.56(14.3)
1/4	1/4	FT4-FA-FBT4-	1.45(36.8)	0.59(15.0)	0.17(4.3)	0.75(19.1)
3/8	1/4	FT6-FA-FBT4-	1.50(38.1)	0.59(15.0)	0.27(6.9)	0.75(19.1)
3/8	3/8	FT6-FA-FBT6-	1.59(40.4)	0.59(15.0)	0.27(6.9)	0.87(22.2)
1/2	1/4	FT8-FA-FBT4-	1.71(43.4)	0.59(15.0)	0.37(9.4)	0.75(19.1)
1/2	3/8	FT8-FA-FBT6-	1.80(45.7)	0.59(15.0)	0.37(9.4)	0.87(22.2)
1/2	1/2	FT8-FA-FBT8-	2.05(52.1)	0.78(19.8)	0.37(9.4)	1.06(27.0)

Female Adapters



Metric Tube

NPT Thread

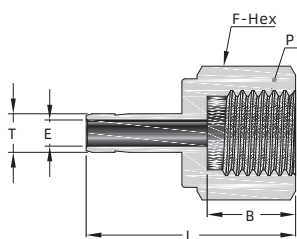
T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm(in.)			
			L	B	E	F
3	1/8	MT3-FA-FNPT2-	28.8(1.13)	10.4(0.41)	1.3(0.05)	14.0(0.55)
4	1/8	MT4-FA-FNPT2-	33.3(1.31)	10.4(0.41)	2.0(0.08)	14.0(0.55)
6	1/8	MT6-FA-FNPT2-	32.5(1.28)	10.4(0.41)	4.1(0.16)	14.0(0.55)
6	1/4	MT6-FA-FNPT4-	37.1(1.46)	15.0(0.59)	4.1(0.16)	19.0(0.75)
8	1/8	MT8-FA-FNPT2-	35.1(1.38)	10.4(0.41)	6.4(0.25)	14.0(0.55)
8	1/4	MT8-FA-FNPT4-	37.6(1.48)	15.0(0.59)	5.6(0.22)	19.0(0.75)
8	3/8	MT8-FA-FNPT6-	36.5(1.44)	15.0(0.59)	6.4(0.25)	22.0(0.87)
10	1/4	MT10-FA-FNPT4-	38.1(1.50)	15.0(0.59)	7.1(0.28)	19.0(0.75)
10	3/8	MT10-FA-FNPT6-	40.1(1.58)	15.0(0.59)	7.1(0.28)	22.0(0.87)
10	1/2	MT10-FA-FNPT8-	46.5(1.83)	19.8(0.78)	7.1(0.28)	27.0(1.06)
12	1/4	MT12-FA-FNPT4-	43.7(1.72)	15.0(0.59)	8.8(0.35)	19.0(0.75)
12	3/8	MT12-FA-FNPT6-	42.9(1.69)	15.0(0.59)	9.1(0.36)	22.0(0.87)
12	1/2	MT12-FA-FNPT8-	52.3(2.06)	19.8(0.78)	8.8(0.35)	27.0(1.06)
16	1/2	MT16-FA-FNPT8-	49.2(1.94)	19.8(0.78)	12.7(0.50)	27.0(1.06)
18	3/4	MT18-FA-FNPT12-	52.4(2.06)	20.6(0.81)	14.0(0.55)	32.0(1.26)
20	1/2	MT20-FA-FNPT8-	50.0(1.97)	19.8(0.78)	15.0(0.59)	27.0(1.06)
20	3/4	MT20-FA-FNPT12-	53.2(2.09)	20.6(0.81)	15.1(0.59)	32.0(1.26)
25	1	MT25-FA-FNPT16-	66.7(2.63)	25.4(1.00)	19.8(0.78)	41.0(1.61)

Metric Tube

ISO Tapered Thread (BSPT)

T-Tube O.D. (mm)	P-BSPT Size	Basic Ordering Number	Dimension, mm(in.)			
			L	B	E	F
3	1/8	MT3-FA-FBT2-	27.8(1.09)	10.4(0.41)	1.8(0.07)	14.0(0.55)
4	1/8	MT4-FA-FBT2-	28.6(1.13)	10.4(0.41)	2.0(0.08)	14.0(0.55)
6	1/8	MT6-FA-FBT2-	33.0(1.30)	10.4(0.41)	4.1(0.16)	14.0(0.55)
8	1/4	MT8-FA-FBT4-	37.6(1.48)	15.0(0.59)	5.6(0.22)	19.0(0.75)
10	1/4	MT10-FA-FBT4-	38.1(1.50)	15.0(0.59)	7.1(0.28)	19.0(0.75)
10	3/8	MT10-FA-FBT6-	36.5(1.44)	15.0(0.59)	7.5(0.30)	22.0(0.87)
10	1/2	MT10-FA-FBT8-	41.3(1.63)	19.8(0.78)	7.5(0.30)	27.0(1.06)
12	1/4	MT12-FA-FBT4-	40.5(1.59)	15.0(0.59)	9.1(0.36)	19.0(0.75)
12	3/8	MT12-FA-FBT6-	43.7(1.72)	15.0(0.59)	9.1(0.36)	22.0(0.87)
12	1/2	MT12-FA-FBT8-	46.8(1.84)	19.8(0.78)	9.1(0.36)	27.0(1.06)
16	1/2	MT16-FA-FBT8-	48.4(1.91)	19.8(0.78)	12.7(0.50)	27.0(1.06)
18	3/4	MT18-FA-FBT12-	52.4(2.06)	20.6(0.81)	14.0(0.55)	32.0(1.26)
20	3/4	MT20-FA-FBT12-	53.2(2.09)	20.6(0.81)	15.1(0.59)	32.0(1.26)
25	1	MT25-FA-FBT16-	66.7(2.63)	25.4(1.00)	19.8(0.78)	41.0(1.61)

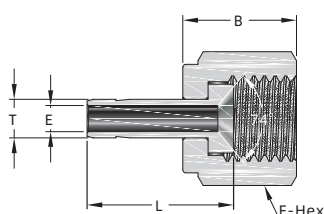
Female Adapters



Fractional Tube

ISO Parallel Thread (BP)

T-Tube O.D. (in.)	P-BP Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/8	1/8	FT2-FA-FBP2-	1.17(29.7)	0.40(10.2)	0.08(2.0)	0.56(14.3)
1/4	1/8	FT4-FA-FBP2-	1.25(31.8)	0.40(10.2)	0.17(4.3)	0.56(14.3)
1/4	1/4	FT4-FA-FBP4-	1.50(38.1)	0.60(15.2)	0.17(4.3)	0.75(19.1)
3/8	1/4	FT6-FA-FBP4-	1.55(39.4)	0.60(15.2)	0.27(6.9)	0.75(19.1)
3/8	3/8	FT6-FA-FBP6-	1.57(39.9)	0.60(15.2)	0.27(6.9)	0.94(23.8)
1/2	3/8	FT8-FA-FBP6-	1.78(45.2)	0.60(15.2)	0.38(9.7)	0.94(23.8)
1/2	1/2	FT8-FA-FBP8-	1.95(49.5)	0.72(18.2)	0.38(9.7)	1.06(27.0)

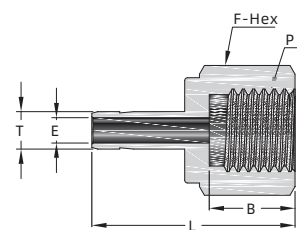


Fractional Tube

AN Thread

T-Tube O.D. (in.)	AN Tube Flare Size(in.)	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/8	1/8	FT2-FA-SAN2-	0.88(22.4)	0.55(14.0)	0.09(2.4)	0.37(9.5)
1/8	1/4	FT2-FA-SAN4-	0.88(22.4)	0.62(15.8)	0.09(2.4)	0.56(14.3)
1/4	1/4	FT4-FA-SAN4-	0.96(24.4)	0.62(15.8)	0.18(4.6)	0.56(14.3)
3/8	3/8	FT6-FA-SAN6-	1.11(28.1)	0.73(18.5)	0.28(7.1)	0.69(17.5)
1/2	1/2	FT8-FA-SAN8-	1.42(36.1)	0.85(21.6)	0.39(9.9)	0.87(22.2)
3/4	3/4	FT12-FA-SAN12-	1.49(37.8)	1.03(26.2)	0.58(14.7)	1.25(31.8)

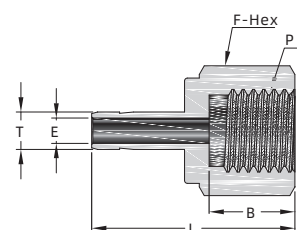
Female Adapters



Metric Tube

ISO Parallel Thread (BG)

T-Tube O.D. (mm)	P-BG Size	Basic Ordering Number	Dimension, mm(in.)			
			L	B	E	F
3	1/8	MT3-FA-FBP2-	28.6(1.13)	6.5(0.26)	1.6(0.06)	14.0(0.55)
3	1/4	MT3-FA-FBP4-	33.5(1.32)	10.2(0.40)	1.9(0.07)	19.0(0.75)
4	1/8	MT4-FA-FBP2-	29.4(1.16)	6.5(0.26)	2.0(0.08)	14.0(0.55)
6	1/8	MT6-FA-FBP2-	31.0(1.22)	6.5(0.26)	4.1(0.16)	14.0(0.55)
6	1/4	MT6-FA-FBP4-	35.3(1.39)	10.2(0.40)	4.1(0.16)	19.0(0.75)
6	3/8	MT6-FA-FBP6-	38.4(1.51)	14.2(0.56)	4.1(0.16)	24.0(0.94)
6	1/2	MT6-FA-FBP8-	42.9(1.69)	18.0(0.71)	4.1(0.16)	27.0(1.06)
8	1/4	MT8-FA-FBP4-	33.0(1.30)	10.2(0.40)	5.5(0.22)	19.0(0.75)
8	3/8	MT8-FA-FBP6-	38.9(1.53)	14.2(0.56)	5.6(0.22)	24.0(0.94)
8	1/2	MT8-FA-FBP8-	43.7(1.72)	18.0(0.71)	5.6(0.22)	27.0(1.06)
10	1/4	MT10-FA-FBP4-	34.5(1.36)	10.2(0.40)	5.5(0.22)	19.0(0.75)
10	3/8	MT10-FA-FBP6-	36.1(1.42)	14.2(0.56)	6.5(0.26)	24.0(0.94)
10	1/2	MT10-FA-FBP8-	41.1(1.62)	18.0(0.71)	7.1(0.28)	27.0(1.06)
12	1/4	MT12-FA-FBP4-	41.1(1.62)	10.2(0.40)	5.5(0.22)	19.0(0.75)
12	3/8	MT12-FA-FBP6-	44.7(1.76)	14.2(0.56)	6.5(0.26)	24.0(0.94)
12	1/2	MT12-FA-FBP8-	48.8(1.92)	18.0(0.71)	7.0(0.28)	27.0(1.06)
16	1/2	MT16-FA-FBP8-	49.0(1.93)	18.0(0.71)	7.0(0.28)	27.0(1.06)
18	1/2	MT18-FA-FBP8-	49.3(1.94)	18.0(0.71)	7.0(0.28)	27.0(1.06)

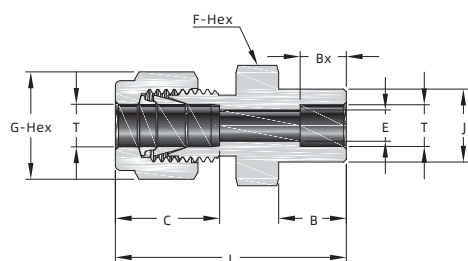


Metric Tube

ISO Parallel Thread (BG)

T-Tube O.D. (mm)	P-BG Size	Basic Ordering Number	Dimension, mm(in.)			
			L	B	E	F
6	1/8	MT6-FA-FBP2-	32.0(1.26)	10.2(0.40)	4.1(0.16)	14.0(0.55)
6	1/4	MT6-FA-FBP4-	37.8(1.49)	15.2(0.60)	4.1(0.16)	19.0(0.75)
12	1/2	MT12-FA-FBP8-	49.8(1.96)	18.8(0.74)	8.8(0.35)	27.0(1.06)

Weld Connectors



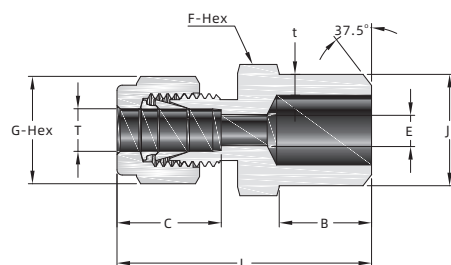
Fractional Tube

Tube Socket Weld

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm							
		L	C	G	F	B	E	Bx	J
1/8	F2-WC-FSW2-	29.0	12.7	11.1	11.1	8.6	2.3	2.5	7.4
3/16	F3-WC-FSW3-	29.7	13.7	12.7	11.1	9.5	3.3	4.8	10.7
1/4	F4-WC-FSW4-	33.5	15.2	14.3	12.7	10.4	4.8	7.1	12.2
3/8	F6-WC-FSW6-	37.6	16.8	17.5	15.9	11.9	7.1	7.9	15.2
1/2	F8-WC-FSW8-	41.1	22.9	22.2	20.6	11.9	10.4	9.7	18.5
5/8	F10-WC-FSW10-	41.9	24.4	25.4	23.8	11.9	12.7	10.4	23.4
3/4	F12-WC-FSW12-	43.4	24.4	28.6	27.0	11.9	15.7	11.1	26.4
1	F16-WC-FSW16-	52.6	31.2	38.1	34.9	14.2	22.4	15.7	34.5

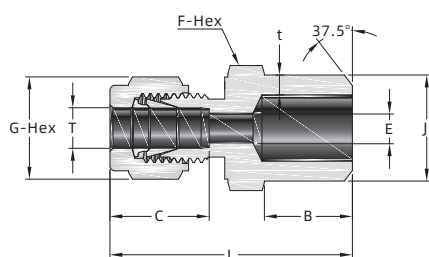
Fractional Tube

Pipe Butt Weld



T-Tube O.D. (in.)	Pipe Weld Size	Basic Ordering Number	Dimension, mm							
			L	C	G	F	E	B	J	t
1/8	1/8	F2-WC-PBW2-	30.5	12.7	11.1	11.1	2.3	9.7	10.3	2.4
3/16	1/8	F3-WC-PBW2-	31.2	13.7	12.7	11.1	3.0	9.7	10.3	2.4
1/4	1/8	F4-WC-PBW2-	32.8	15.2	14.3	12.7	4.8	9.7	10.3	2.4
1/4	1/4	F4-WC-PBW4-	37.8	15.2	14.3	14.3	4.8	14.2	13.7	3.0
5/16	1/8	F5-WC-PBW2-	34.0	16.3	15.9	14.3	5.3	9.7	10.3	2.4
5/16	1/4	F5-WC-PBW4-	38.6	16.3	15.9	14.3	6.4	14.2	13.7	3.0
3/8	1/4	F6-WC-PBW4-	39.9	16.8	17.5	15.9	7.1	14.2	13.7	3.0
3/8	3/8	F6-WC-PBW6-	39.9	16.8	17.5	17.5	7.1	14.2	17.1	3.2
3/8	1/2	F6-WC-PBW8-	46.2	16.8	17.5	22.2	7.1	19.1	21.3	3.7
3/8	3/4	F6-WC-PBW12-	47.8	16.8	17.5	27.0	7.1	19.1	26.7	3.9
1/2	3/8	F8-WC-PBW6-	43.4	22.9	22.2	20.6	10.4	14.2	17.1	3.2
1/2	1/2	F8-WC-PBW8-	49.0	22.9	22.2	22.2	10.4	19.1	21.3	3.7
1/2	3/4	F8-WC-PBW12-	50.5	22.9	22.2	27.0	10.4	19.1	26.7	3.9
5/8	1/2	F10-WC-PBW8-	49.0	24.4	25.4	23.8	12.7	19.1	21.3	3.7
3/4	1/2	F12-WC-PBW8-	50.5	24.4	28.6	27.0	14.0	19.1	21.3	3.7
3/4	3/4	F12-WC-PBW12-	50.5	24.4	28.6	27.0	15.7	19.1	26.7	3.9
1	1	F16-WC-PBW16-	62.2	31.2	38.1	34.9	22.4	23.9	33.4	4.5
1 1/4	1 1/4	F20-WC-PBW20-	77.2	41.1	47.6	44.5	27.7	23.9	42.2	4.9
1 1/2	1 1/2	F24-WC-PBW24-	88.9	50.0	57.2	54.0	34.0	26.2	48.3	5.1

Weld Connectors

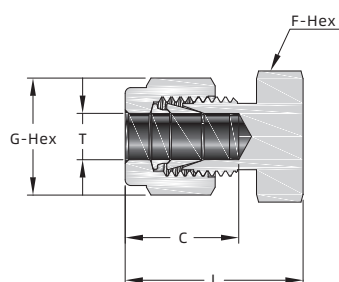


Metric Tube

Pipe Butt Weld

T-Tube O.D. (mm)	Pipe Weld Size	Basic Ordering Number	Dimension, mm							
			L	C	G	F	E	B	J	t
3	1/8	M3-WC-PBW2-	30.5	12.9	12	12	2.4	9.7	10.3	2.4
4	1/8	M4-WC-PBW2-	31.5	13.7	12	12	2.4	9.7	10.3	2.4
6	1/8	M6-WC-PBW2-	32.8	15.3	14	14	4.8	9.7	10.3	2.4
6	1/4	M6-WC-PBW4-	37.9	15.3	14	14	4.8	14.2	13.7	3.0
8	1/8	M8-WC-PBW2-	34.2	16.2	16	15	5.4	9.7	10.3	2.4
8	1/4	M8-WC-PBW4-	38.7	16.2	16	15	6.4	14.2	13.7	3.0
8	1/2	M8-WC-PBW8-	45.6	16.2	16	22	6.4	19.1	21.3	3.7
10	1/4	M10-WC-PBW4-	40.9	17.2	19	18	7.5	14.2	13.7	3.0
10	3/8	M10-WC-PBW6-	40.9	17.2	19	18	7.9	14.2	17.1	3.2
10	1/2	M10-WC-PBW8-	46.5	17.2	19	22	7.9	19.1	21.3	3.7
12	1/4	M12-WC-PBW4-	43.4	22.8	22	22	7.5	14.2	13.7	3.0
12	3/8	M12-WC-PBW6-	43.4	22.8	22	22	9.5	14.2	17.1	3.2
12	1/2	M12-WC-PBW8-	49.0	22.8	22	22	9.5	19.1	21.3	3.7
14	3/8	M14-WC-PBW6-	44.1	24.4	25	24	10.7	14.2	17.1	3.2
15	1/2	M15-WC-PBW8-	49.0	24.4	25	24	11.9	19.1	21.3	3.7
16	1/2	M16-WC-PBW8-	49.0	24.4	25	24	12.7	19.1	21.3	3.7
18	1/2	M18-WC-PBW8-	50.5	24.4	30	27	13.9	19.1	21.3	3.7
30	1 1/4	M30-WC-PBW20-	77.2	39.6	50	46	26.2	23.9	42.2	4.9
32	1 1/4	M32-WC-PBW20-	79.6	42.0	50	46	28.6	23.9	42.2	4.9
38	1 1/2	M38-WC-PBW24-	91.6	49.4	60	55	33.7	26.2	48.3	5.1

Caps



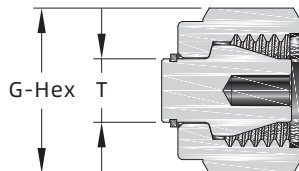
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm			
		L	C	G	F
1/16	CA-F1-	15.0	8.6	7.9	7.9
1/8	CA-F2-	20.1	12.7	11.1	11.1
3/16	CA-F3-	21.3	13.7	12.7	11.1
1/4	CA-F4-	23.4	15.2	14.3	12.7
5/16	CA-F5-	24.4	16.3	15.9	14.3
3/8	CA-F6-	25.7	16.8	17.5	15.9
1/2	CA-F8-	29.2	22.9	22.2	20.6
5/8	CA-F10-	30.0	24.4	25.4	23.8
3/4	CA-F12-	31.5	24.4	28.6	27.0
7/8	CA-F14-	34.0	25.9	31.8	30.2
1	CA-F16-	38.4	31.2	38.1	34.9
1 1/8	CA-F18-	38.4	31.2	46.0	41.3
1 1/4	CA-F20-	53.3	41.1	47.6	44.5
1 1/2	CA-F24-	64.5	50.0	57.2	54.0

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm			
		L	C	G	F
2	CA-M2-	20.1	12.9	12	12
3	CA-M3-	20.1	12.9	12	12
4	CA-M4-	21.3	13.7	12	12
6	CA-M6-	23.1	15.3	14	14
8	CA-M8-	24.5	16.2	16	15
10	CA-M10-	26.6	17.2	19	18
12	CA-M12-	29.1	22.8	22	22
14	CA-M14-	29.9	24.4	25	24
15	CA-M15-	29.9	24.4	25	24
16	CA-M16-	29.9	24.4	25	24
18	CA-M18-	31.4	24.4	30	27
20	CA-M20-	34.0	26.0	32	30
22	CA-M22-	34.0	26.0	32	30
25	CA-M25-	38.5	31.3	38	35
28	CA-M28-	48.5	36.6	46	41
30	CA-M30-	53.4	39.6	50	46
32	CA-M32-	55.8	42.0	50	46
38	CA-M38-	65.4	49.4	60	55

Plugs



Fractional Tube

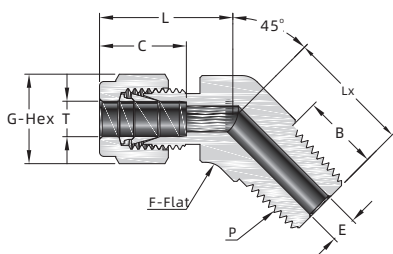
T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm
		G
1/16	PL-F1-	7.9
1/8	PL-F2-	11.1
3/16	PL-F3-	12.7
1/4	PL-F4-	14.3
5/16	PL-F5-	15.9
3/8	PL-F6-	17.5
1/2	PL-F8-	22.2
5/8	PL-F10-	25.4
3/4	PL-F12-	28.6
7/8	PL-F14-	31.8
1	PL-F16-	38.1
1 1/4	PL-F20-	47.6
1 1/2	PL-F24-	57.2

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm
		G
2	PL-M2-	12
3	PL-M3-	12
4	PL-M4-	12
6	PL-M6-	14
8	PL-M8-	16
10	PL-M10-	19
12	PL-M12-	22
14	PL-M14-	25
15	PL-M15-	25
16	PL-M16-	25
18	PL-M18-	30
20	PL-M20-	32
22	PL-M22-	32
25	PL-M25-	38
28	PL-M28-	46
30	PL-M30-	50
32	PL-M32-	50
38	PL-M38-	60

45° Elbows

45° Male Elbows



Fractional Tube

NPT Thread

T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/16	1/16	F1-45ME-NPT1-	15.7	8.6	7.9	9.5	1.3	9.7	14.5
1/8	1/8	F2-45ME-NPT2-	20.8	12.7	11.1	11.1	2.3	9.7	16.8
3/16	1/8	F3-45ME-NPT2-	21.6	13.7	12.7	11.1	3.0	9.7	14.7
1/4	1/8	F4-45ME-NPT2-	24.6	15.2	14.3	12.7	4.8	9.7	16.5
1/4	1/4	F4-45ME-NPT4-	24.6	15.2	14.3	12.7	4.8	14.3	21.1
5/16	1/8	F5-45ME-NPT2-	24.1	16.3	15.9	14.3	4.8	9.7	16.8
3/8	1/8	F6-45ME-NPT2-	27.9	16.8	17.5	15.9	4.8	9.7	18.3
3/8	1/4	F6-45ME-NPT4-	27.9	16.8	17.5	15.9	7.1	14.3	22.9
3/8	3/8	F6-45ME-NPT6-	29.2	16.8	17.5	20.6	7.1	19.1	24.1
1/2	3/8	F8-45ME-NPT6-	32.0	22.9	22.2	20.6	9.7	19.1	24.1
5/8	1/2	F10-45ME-NPT8-	30.7	24.4	25.4	23.8	11.9	19.1	29.7
3/4	3/4	F12-45ME-NPT12-	34.0	24.4	28.6	27.0	15.7	19.1	31.0
7/8	3/4	F14-45ME-NPT12-	40.4	25.9	31.8	31.8	15.7	19.1	32.3
1	1	F16-45ME-NPT16-	40.4	31.2	38.1	34.9	22.4	23.9	37.8

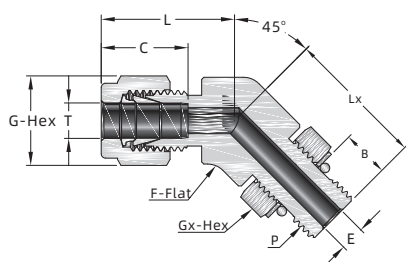
Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
6	1/8	M6-45ME-NPT2-	23.4	15.3	14	12.7	4.8	9.7	16.8
6	1/4	M6-45ME-NPT4-	23.4	15.3	14	12.7	4.8	14.3	21.8
8	1/8	M8-45ME-NPT2-	24.3	16.2	16	15.9	4.8	9.7	16.8
10	1/4	M10-45ME-NPT4-	26.6	17.2	19	17.5	7.9	14.3	24.1
12	3/8	M12-45ME-NPT6-	29.1	22.8	22	20.6	9.5	19.1	24.1
12	1/2	M12-45ME-NPT8-	30.7	22.8	22	20.6	9.5	19.1	29.7
16	1/2	M16-45ME-NPT8-	30.7	24.4	25	23.8	11.9	19.1	29.7

45° Positionable Male Elbows

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



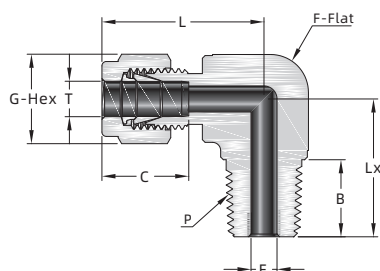
Fractional Tube

SAE/MS Straight Thread

T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	G	E	F	Lx	Gx
1/4	7/16-20	F4-45PME-PST7-	25.7	9.9	15.2	14.3	4.8	12.7	25.7	14.3
3/8	9/16-18	F6-45PME-PST9-	27.9	11.2	16.8	17.5	7.1	15.9	28.2	17.5
1/2	3/4-16	F8-45PME-PST12-	32.0	12.7	22.9	22.2	10.4	20.6	32.3	22.2
3/4	1 1/16-12	F12-45PME-PST17-	39.9	16.8	24.4	28.6	15.7	27.0	47.2	31.8
1	1 5/16-12	F16-45PME-PST21-	47.5	16.8	31.2	38.1	22.4	33.3	50.5	38.1

90° Elbows

Male Elbows

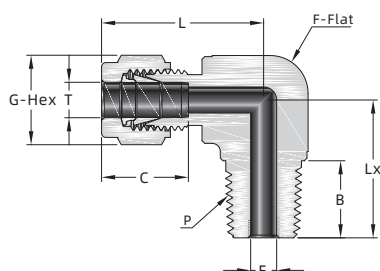


Fractional Tube

NPT Thread

T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/16	1/16	F1-ME-NPT1-	19.1	8.6	7.9	11.1	1.3	9.7	17.8
1/16	1/8	F1-ME-NPT2-	19.1	8.6	7.9	11.1	1.3	9.7	17.8
1/8	1/16	F2-ME-NPT1-	23.6	12.7	11.1	11.1	2.4	9.7	17.8
1/8	1/8	F2-ME-NPT2-	23.6	12.7	11.1	11.1	2.4	9.7	17.8
1/8	1/4	F2-ME-NPT4-	24.6	12.7	11.1	12.7	2.4	14.2	23.4
3/16	1/8	F3-ME-NPT2-	25.4	13.7	12.7	12.7	3.0	9.7	18.8
3/16	1/4	F3-ME-NPT4-	25.4	13.7	12.7	12.7	3.0	14.2	23.4
1/4	1/16	F4-ME-NPT1-	26.9	15.2	14.3	12.7	3.0	9.7	18.8
1/4	1/8	F4-ME-NPT2-	26.9	15.2	14.3	12.7	4.8	9.7	18.8
1/4	1/4	F4-ME-NPT4-	26.9	15.2	14.3	12.7	4.8	14.2	23.4
1/4	3/8	F4-ME-NPT6-	29.7	15.2	14.3	17.5	4.8	14.2	26.2
1/4	1/2	F4-ME-NPT8-	31.8	15.2	14.3	20.6	4.8	19.1	33.0
5/16	1/8	F5-ME-NPT2-	28.7	16.3	15.9	14.3	4.8	9.7	19.8
5/16	1/4	F5-ME-NPT4-	28.7	16.3	15.9	14.3	6.4	14.2	24.4
5/16	3/8	F5-ME-NPT6-	30.5	16.3	15.9	17.5	6.4	14.2	26.2
3/8	1/8	F6-ME-NPT2-	30.5	16.8	17.5	15.9	4.8	9.7	20.8
3/8	1/4	F6-ME-NPT4-	30.5	16.8	17.5	15.9	7.1	14.2	25.4
3/8	3/8	F6-ME-NPT6-	31.2	16.8	17.5	17.5	7.1	14.2	26.2
3/8	1/2	F6-ME-NPT8-	33.3	16.8	17.5	20.6	7.1	19.1	33.0
3/8	3/4	F6-ME-NPT12-	37.1	16.8	17.5	27.0	7.1	19.1	36.8
1/2	1/4	F8-ME-NPT4-	36.1	22.9	22.2	20.6	7.1	14.2	28.2
1/2	3/8	F8-ME-NPT6-	36.1	22.9	22.2	20.6	9.7	14.2	28.2
1/2	1/2	F8-ME-NPT8-	36.1	22.9	22.2	20.6	10.4	19.1	33.0
1/2	3/4	F8-ME-NPT12-	39.9	22.9	22.2	27.0	10.4	19.1	36.8
5/8	3/8	F10-ME-NPT6-	38.1	24.4	25.4	23.8	9.7	14.2	30.2
5/8	1/2	F10-ME-NPT8-	38.1	24.4	25.4	23.8	11.9	19.1	35.1
5/8	3/4	F10-ME-NPT12-	39.9	24.4	25.4	27.0	12.7	19.1	36.8
3/4	1/2	F12-ME-NPT8-	39.9	24.4	28.6	27.0	11.9	19.1	36.8
3/4	3/4	F12-ME-NPT12-	39.9	24.4	28.6	27.0	15.7	19.1	36.8
7/8	3/4	F14-ME-NPT12-	44.7	25.9	31.8	34.9	15.7	19.1	41.7
1	3/4	F16-ME-NPT12-	49.0	31.2	38.1	34.9	15.7	19.1	41.7
1	1	F16-ME-NPT16-	49.0	31.2	38.1	34.9	22.4	23.9	46.5
1 1/4	1 1/4	F20-ME-NPT20-	66.5	41.1	47.6	42.9	27.7	23.9	52.4
1 1/2	1 1/2	F24-ME-NPT24-	78.0	50.0	57.2	50.8	34.0	26.2	60.5

Male Elbows

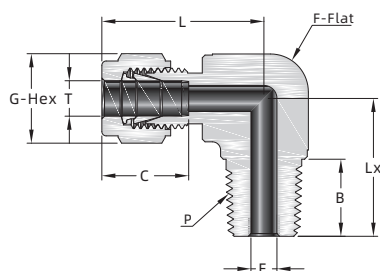


Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
3	1/8	M3-ME-NPT2-	23.6	12.9	12	11.1	2.4	9.7	17.8
3	1/4	M3-ME-NPT4-	24.6	12.9	12	12.7	2.4	14.2	23.4
4	1/8	M4-ME-NPT2-	25.4	13.7	12	12.7	2.4	9.7	18.8
4	1/4	M4-ME-NPT4-	25.4	13.7	12	12.7	2.4	14.2	23.4
6	1/8	M6-ME-NPT2-	27.0	15.3	14	12.7	4.8	9.7	18.8
6	1/4	M6-ME-NPT4-	27.0	15.3	14	12.7	4.8	14.2	23.4
6	3/8	M6-ME-NPT6-	29.8	15.3	14	17.5	4.8	14.2	26.2
6	1/2	M6-ME-NPT8-	31.8	15.3	14	20.6	4.8	19.0	33.0
8	1/8	M8-ME-NPT2-	28.8	16.2	16	14.3	4.8	9.7	19.8
8	1/4	M8-ME-NPT4-	28.8	16.2	16	14.3	6.4	14.2	24.4
8	3/8	M8-ME-NPT6-	30.6	16.2	16	17.5	6.4	14.2	26.2
8	1/2	M8-ME-NPT8-	32.6	16.2	16	20.6	6.4	19.1	33.0
10	1/8	M10-ME-NPT2-	31.5	17.2	19	17.5	4.8	9.7	21.6
10	1/4	M10-ME-NPT4-	31.5	17.2	19	17.5	7.1	14.2	26.2
10	3/8	M10-ME-NPT6-	31.5	17.2	19	17.5	7.9	14.2	26.2
10	1/2	M10-ME-NPT8-	33.5	17.2	19	20.6	7.9	19.1	33.0
12	1/8	M12-ME-NPT2-	36.0	22.8	22	20.6	4.8	9.7	23.6
12	1/4	M12-ME-NPT4-	36.0	22.8	22	20.6	7.1	14.2	28.2
12	3/8	M12-ME-NPT6-	36.0	22.8	22	20.6	9.5	14.2	28.2
12	1/2	M12-ME-NPT8-	36.0	22.8	22	20.6	9.5	19.1	33.0
12	3/4	M12-ME-NPT12-	39.8	22.8	22	27.0	9.5	19.1	36.8
15	1/2	M15-ME-NPT8-	38.0	24.4	25	23.8	11.9	19.1	35.1
16	1/4	M16-ME-NPT4-	38.0	24.4	25	23.8	7.1	14.2	30.2
16	3/8	M16-ME-NPT6-	38.0	24.4	25	23.8	9.5	14.2	30.2
16	1/2	M16-ME-NPT8-	38.0	24.4	25	23.8	11.9	19.1	35.1
16	3/4	M16-ME-NPT12-	39.8	24.4	25	27.0	12.7	19.1	36.8
18	1/2	M18-ME-NPT8-	39.8	24.4	30	27.0	11.9	19.1	36.8
18	3/4	M18-ME-NPT12-	39.8	24.4	30	27.0	15.1	19.1	36.8
20	1/2	M20-ME-NPT8-	44.6	26.0	32	34.9	11.9	19.1	41.7
20	3/4	M20-ME-NPT12-	44.6	26.0	32	34.9	15.9	19.1	41.7
22	3/4	M22-ME-NPT12-	44.6	26.0	32	34.9	15.9	19.1	41.7
22	1	M22-ME-NPT16-	44.6	26.0	32	34.9	18.3	23.9	46.5
25	3/4	M25-ME-NPT12-	49.1	31.3	38	34.9	15.9	19.0	41.7
25	1	M25-ME-NPT16-	49.1	31.3	38	34.9	21.8	23.9	46.5
30	1 1/4	M30-ME-NPT20-	69.9	39.6	50	42.9	26.2	23.9	53.1
32	1 1/4	M32-ME-NPT20-	72.3	42.0	50	42.9	27.8	23.9	53.1
38	1 1/2	M38-ME-NPT24-	84.0	49.4	60	50.8	33.7	26.2	60.4

Male Elbows



Fractional Tube

ISO Tapered Thread (BSPT)

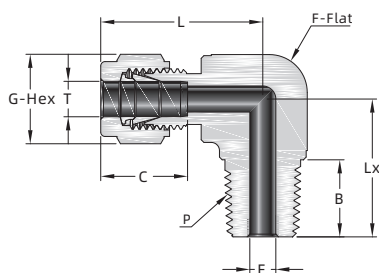
T-Tube O.D. (in.)	p-BSPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/8	1/8	F2-ME-MBT2-	23.6	12.7	11.1	11.1	2.4	9.7	17.8
1/8	1/4	F2-ME-MBT4-	24.6	12.7	11.1	12.7	2.4	14.2	23.4
1/4	1/8	F4-ME-MBT2-	26.9	15.2	14.3	12.7	4.8	9.7	18.8
1/4	1/4	F4-ME-MBT4-	26.9	15.2	14.3	12.7	4.8	14.2	23.4
1/4	3/8	F4-ME-MBT6-	29.7	15.2	14.3	17.5	4.8	14.2	26.2
1/4	1/2	F4-ME-MBT8-	31.8	15.2	14.3	20.6	4.8	19.1	33.0
5/16	1/4	F5-ME-MBT4-	28.7	16.3	15.9	14.3	6.4	14.2	24.4
3/8	1/8	F6-ME-MBT2-	30.5	16.8	17.5	15.9	4.8	9.7	20.8
3/8	1/4	F6-ME-MBT4-	30.5	16.8	17.5	15.9	7.1	14.2	25.4
3/8	3/8	F6-ME-MBT6-	31.2	16.8	17.5	17.5	7.1	14.2	26.2
1/2	3/8	F8-ME-MBT6-	36.1	22.9	22.2	20.6	9.7	14.2	27.9
1/2	1/2	F8-ME-MBT8-	36.1	22.9	22.2	20.6	10.4	19.1	33.0
3/4	1/2	F12-ME-MBT8-	39.9	24.4	28.6	27.0	11.9	19.1	36.8
1	1	F16-ME-MBT16-	49.0	31.2	38.1	34.9	22.4	23.9	46.5

Metric Tube

ISO Tapered Thread (BSPT)

T-Tube O.D. (mm)	p-BSPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
3	1/8	M3-ME-MBT2-	23.6	12.9	12	11.1	2.4	9.7	17.8
3	1/4	M3-ME-MBT4-	24.6	12.9	12	12.7	2.4	14.2	23.4
4	1/8	M4-ME-MBT2-	25.4	13.7	12	12.7	2.4	9.7	18.8
4	1/4	M4-ME-MBT4-	25.4	13.7	12	12.7	2.4	14.2	23.4
6	1/8	M6-ME-MBT2-	27.0	15.3	14	12.7	4.8	9.7	18.8
6	1/4	M6-ME-MBT4-	27.0	15.3	14	12.7	4.8	14.2	23.4
6	3/8	M6-ME-MBT6-	29.8	15.3	14	17.5	4.8	14.2	26.2
6	1/2	M6-ME-MBT8-	31.8	15.3	14	20.6	4.8	19.0	33.0
8	1/8	M8-ME-MBT2-	28.8	16.2	16	14.3	4.8	9.7	19.8
8	1/4	M8-ME-MBT4-	28.8	16.2	16	14.3	6.4	14.2	24.4
8	3/8	M8-ME-MBT6-	30.6	16.2	16	17.5	6.4	14.2	26.2
8	1/2	M8-ME-MBT8-	32.6	16.2	16	20.6	6.4	19.1	33.0
10	1/8	M10-ME-MBT2-	31.5	17.2	19	17.5	4.8	9.7	21.6
10	1/4	M10-ME-MBT4-	31.5	17.2	19	17.5	7.1	14.2	26.2
10	3/8	M10-ME-MBT6-	31.5	17.2	19	17.5	7.9	14.2	26.2
10	1/2	M10-ME-MBT8-	33.5	17.2	19	20.6	7.9	19.1	33.0
12	1/8	M12-ME-MBT2-	36.0	22.8	22	20.6	4.8	9.7	23.6
12	1/4	M12-ME-MBT4-	36.0	22.8	22	20.6	7.1	14.2	28.2
12	3/8	M12-ME-MBT6-	36.0	22.8	22	20.6	9.5	14.2	28.2
12	1/2	M12-ME-MBT8-	36.0	22.8	22	20.6	9.5	19.1	33.0
12	3/4	M12-ME-MBT12-	39.8	22.8	22	27.0	9.5	19.1	36.8
14	1/2	M14-ME-MBT8-	38.1	24.4	25	23.8	11.1	19.1	35.1
15	1/2	M15-ME-MBT8-	38.1	24.4	25	23.8	11.9	19.1	35.1
16	1/4	M16-ME-MBT4-	38.0	24.4	25	23.8	7.1	14.2	30.2
16	3/8	M16-ME-MBT6-	38.0	24.4	25	23.8	9.5	14.2	30.2
16	1/2	M16-ME-MBT8-	38.0	24.4	25	23.8	11.9	19.1	35.1
16	3/4	M16-ME-MBT12-	39.8	24.4	25	27.0	12.7	19.1	36.8
18	1/2	M18-ME-MBT8-	39.8	24.4	30	27.0	11.9	19.1	36.8
18	3/4	M18-ME-MBT12-	39.8	24.4	30	27.0	15.1	19.1	36.8
20	1/2	M20-ME-MBT8-	44.6	26.0	32	34.9	11.9	19.1	41.7
20	3/4	M20-ME-MBT12-	44.6	26.0	32	34.9	15.9	19.1	41.7
22	3/4	M22-ME-MBT12-	44.6	26.0	32	34.9	15.9	19.1	41.7
22	1	M22-ME-MBT16-	44.6	26.0	32	34.9	18.3	23.9	46.5
25	3/4	M25-ME-MBT12-	49.1	31.3	38	34.9	15.9	19.1	41.7
25	1	M25-ME-MBT16-	49.1	31.3	38	34.9	21.8	23.9	46.5
28	1	M28-ME-MBT16-	64.0	36.6	46	42.9	21.8	23.9	53.1

Male Elbows



Fractional Tube

ISO Tapered Thread (BSPT)

T-Tube O.D. (in.)	P-BSPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/8	1/8	F2-ME-MBT2-	23.6	12.7	11.1	11.1	2.4	9.7	17.8
1/8	1/4	F2-ME-MBT4-	24.6	12.7	11.1	12.7	2.4	14.2	23.4
1/4	1/8	F4-ME-MBT2-	26.9	15.2	14.3	12.7	4.8	9.7	18.8
1/4	1/4	F4-ME-MBT4-	26.9	15.2	14.3	12.7	4.8	14.2	23.4
1/4	3/8	F4-ME-MBT6-	29.7	15.2	14.3	17.5	4.8	14.2	26.2
1/4	1/2	F4-ME-MBT8-	31.8	15.2	14.3	20.6	4.8	19.1	33.0
5/16	1/4	F5-ME-MBT4-	28.7	16.3	15.9	14.3	6.4	14.2	24.4
3/8	1/8	F6-ME-MBT2-	30.5	16.8	17.5	15.9	4.8	9.7	20.8
3/8	1/4	F6-ME-MBT4-	30.5	16.8	17.5	15.9	7.1	14.2	25.4
3/8	3/8	F6-ME-MBT6-	31.2	16.8	17.5	17.5	7.1	14.2	26.2
1/2	3/8	F8-ME-MBT6-	36.1	22.9	22.2	20.6	9.7	14.2	27.9
1/2	1/2	F8-ME-MBT8-	36.1	22.9	22.2	20.6	10.4	19.1	33.0
3/4	1/2	F12-ME-MBT8-	39.9	24.4	28.6	27.0	11.9	19.1	36.8
1	1	F16-ME-MBT16-	49.0	31.2	38.1	34.9	22.4	23.9	46.5

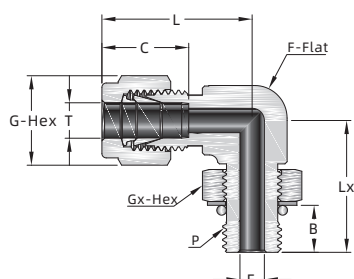
Metric Tube

ISO Tapered Thread (BSPT)

T-Tube O.D. (mm)	P-BSPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
3	1/8	M3-ME-MBT2-	23.6	12.9	12	11.1	2.4	9.7	17.8
3	1/4	M3-ME-MBT4-	24.6	12.9	12	12.7	2.4	14.2	23.4
4	1/8	M4-ME-MBT2-	25.4	13.7	12	12.7	2.4	9.7	18.8
4	1/4	M4-ME-MBT4-	25.4	13.7	12	12.7	2.4	14.2	23.4
6	1/8	M6-ME-MBT2-	27.0	15.3	14	12.7	4.8	9.7	18.8
6	1/4	M6-ME-MBT4-	27.0	15.3	14	12.7	4.8	14.2	23.4
6	3/8	M6-ME-MBT6-	29.8	15.3	14	17.5	4.8	14.2	26.2
6	1/2	M6-ME-MBT8-	31.8	15.3	14	20.6	4.8	19.0	33.0
8	1/8	M8-ME-MBT2-	28.8	16.2	16	14.3	4.8	9.7	19.8
8	1/4	M8-ME-MBT4-	28.8	16.2	16	14.3	6.4	14.2	24.4
8	3/8	M8-ME-MBT6-	30.6	16.2	16	17.5	6.4	14.2	26.2
8	1/2	M8-ME-MBT8-	32.6	16.2	16	20.6	6.4	19.1	33.0
10	1/8	M10-ME-MBT2-	31.5	17.2	19	17.5	4.8	9.7	21.6
10	1/4	M10-ME-MBT4-	31.5	17.2	19	17.5	7.1	14.2	26.2
10	3/8	M10-ME-MBT6-	31.5	17.2	19	17.5	7.9	14.2	26.2
10	1/2	M10-ME-MBT8-	33.5	17.2	19	20.6	7.9	19.1	33.0
12	1/8	M12-ME-MBT2-	36.0	22.8	22	20.6	4.8	9.7	23.6
12	1/4	M12-ME-MBT4-	36.0	22.8	22	20.6	7.1	14.2	28.2
12	3/8	M12-ME-MBT6-	36.0	22.8	22	20.6	9.5	14.2	28.2
12	1/2	M12-ME-MBT8-	36.0	22.8	22	20.6	9.5	19.1	33.0
12	3/4	M12-ME-MBT12-	39.8	22.8	22	27.0	9.5	19.1	36.8
14	1/2	M14-ME-MBT8-	38.1	24.4	25	23.8	11.1	19.1	35.1
15	1/2	M15-ME-MBT8-	38.1	24.4	25	23.8	11.9	19.1	35.1
16	1/4	M16-ME-MBT4-	38.0	24.4	25	23.8	7.1	14.2	30.2
16	3/8	M16-ME-MBT6-	38.0	24.4	25	23.8	9.5	14.2	30.2
16	1/2	M16-ME-MBT8-	38.0	24.4	25	23.8	11.9	19.1	35.1
16	3/4	M16-ME-MBT12-	39.8	24.4	25	27.0	12.7	19.1	36.8
18	1/2	M18-ME-MBT8-	39.8	24.4	30	27.0	11.9	19.1	36.8
18	3/4	M18-ME-MBT12-	39.8	24.4	30	27.0	15.1	19.1	36.8
20	1/2	M20-ME-MBT8-	44.6	26.0	32	34.9	11.9	19.1	41.7
20	3/4	M20-ME-MBT12-	44.6	26.0	32	34.9	15.9	19.1	41.7
22	3/4	M22-ME-MBT12-	44.6	26.0	32	34.9	15.9	19.1	41.7
22	1	M22-ME-MBT16-	44.6	26.0	32	34.9	18.3	23.9	46.5
25	3/4	M25-ME-MBT12-	49.1	31.3	38	34.9	15.9	19.1	41.7
25	1	M25-ME-MBT16-	49.1	31.3	38	34.9	21.8	23.9	46.5
28	1	M28-ME-MBT16-	64.0	36.6	46	42.9	21.8	23.9	53.1

Positionable Male Elbows

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

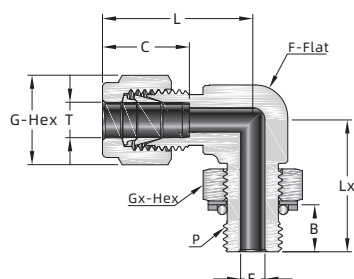


Fractional Tube SAE/MS Straight Thread

T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	G	E	F	Lx	Gx
1/4	7/16-20	F4-PME-PST7-	28.4	9.9	15.2	14.3	4.8	12.7	28.4	14.3
1/4	9/16-18	F4-PME-PST9-	30.5	11.2	15.2	14.3	4.8	15.9	32.3	17.5
5/16	1/2-20	F5-PME-PST8-	30.2	9.9	16.3	15.9	5.8	14.3	29.5	15.9
3/8	7/16-20	F6-PME-PST7-	33.3	9.9	16.8	17.5	5.1	15.9	31.5	14.3
3/8	9/16-18	F6-PME-PST9-	32.0	11.2	16.8	17.5	7.1	15.9	32.3	17.5
3/8	3/4-16	F6-PME-PST12-	34.8	12.7	16.8	17.5	7.1	20.6	37.8	22.2
1/2	9/16-18	F8-PME-PST9-	37.6	11.2	22.9	22.2	7.1	20.6	37.5	17.5
1/2	3/4-16	F8-PME-PST12-	37.6	12.7	22.9	22.2	10.4	20.6	37.8	22.2
5/8	7/8-14	F10-PME-PST14-	39.6	14.2	24.4	25.4	12.7	23.8	43.4	25.4
3/4	1 1/16-12	F12-PME-PST17-	41.4	16.8	24.4	28.6	15.7	27.0	48.8	31.8
7/8	1 3/16-12	F14-PME-PST19-	43.2	16.8	25.9	31.8	18.3	30.2	50.5	34.9
1	1 5/16-12	F16-PME-PST21-	50.5	16.8	31.2	38.1	22.4	34.9	53.6	38.1
1 1/4	1 5/8-12	F20-PME-PST26-	67.8	16.8	41.1	47.6	27.7	42.9	58.2	47.6
1 1/2	1 7/8-12	F24-PME-PST30-	78.0	16.8	50.0	57.2	34.0	50.8	60.5	54.0

Positionable Male Elbows

- ❖ ISO Parallel Thread



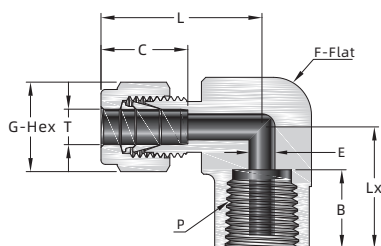
Fractional Tube ISO Parallel Thread (PPT)

T-Tube O.D. (in.)	P-ISO Parallel Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	G	E	F	Lx	Gx
1/4	1/8	F4-PME-PPT2-	26.9	8.1	15.2	14.3	4.1	12.7	26.4	14.3
1/4	1/4	F4-PME-PPT4-	29.0	9.1	15.2	14.3	4.8	15.9	32.3	19.1
3/8	1/4	F6-PME-PPT4-	30.5	9.1	16.8	17.5	5.8	15.9	32.3	19.1
3/8	3/8	F6-PME-PPT6-	33.3	9.4	16.8	17.5	7.1	20.6	37.1	22.2
1/2	1/4	F8-PME-PPT4-	36.1	9.1	22.9	22.2	5.8	20.6	35.1	19.1
1/2	3/8	F8-PME-PPT6-	36.1	9.4	22.9	22.2	7.9	20.6	37.1	22.2
1/2	1/2	F8-PME-PPT8-	38.1	13.0	22.9	22.2	10.4	23.8	43.4	27.0
5/8	1/2	F10-PME-PPT8-	38.1	13.0	24.4	25.4	11.9	23.8	43.4	27.0
3/4	1/2	F12-PME-PPT8-	39.9	13.0	24.4	28.6	11.9	27.0	45.2	27.0
3/4	3/4	F12-PME-PPT12-	39.9	13.0	24.4	28.6	15.7	27.0	48.8	34.9
1	3/4	F16-PME-PPT12-	49.0	13.0	31.2	38.1	15.7	34.9	53.3	34.9
1	1	F16-PME-PPT16-	49.0	14.0	31.2	38.1	19.8	34.9	53.6	41.3

Metric Tube ISO Parallel Thread (PPT)

T-Tube O.D. (mm)	P-ISO Parallel Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	G	E	F	Lx	Gx
6	1/8	M6-PME-PPT2-	27.0	8.1	15.3	14	4.0	12.7	26.4	14.3
6	1/4	M6-PME-PPT4-	29.0	9.1	15.3	14	4.8	15.9	32.3	19.1
8	1/8	M8-PME-PPT2-	28.8	8.1	16.2	16	4.0	14.3	27.4	14.3
8	1/4	M8-PME-PPT4-	29.9	9.1	16.2	16	5.9	15.9	32.2	19.1
10	1/4	M10-PME-PPT4-	33.5	9.1	17.2	19	5.9	20.6	35.0	19.1
10	3/8	M10-PME-PPT6-	33.5	9.4	17.2	19	7.9	20.6	37.1	22.2
12	1/4	M12-PME-PPT4-	36.0	9.1	22.8	22	5.9	20.6	35.0	19.1
12	3/8	M12-PME-PPT6-	36.0	9.4	22.8	22	7.9	20.6	37.1	22.2
12	1/2	M12-PME-PPT8-	38.0	13.0	22.8	22	9.5	23.8	43.4	27.0
12	3/4	M12-PME-PPT12-	39.8	13.0	22.8	22	9.5	27.0	48.8	34.9

Female Elbows



Fractional Tube

NPT Thread

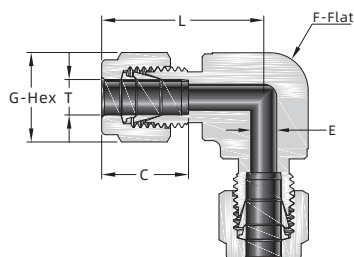
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	B	C	G	E	F	Lx
1/16	1/16	F1-FE-FNPT1-	18.0	9.9	8.6	7.9	1.3	11.1	14.2
1/16	1/8	F1-FE-FNPT2-	20.6	10.4	8.6	7.9	1.3	14.3	19.1
1/8	1/8	F2-FE-FNPT2-	24.6	10.4	12.7	11.1	2.3	14.3	19.1
1/8	1/4	F2-FE-FNPT4-	27.4	15.0	12.7	11.1	2.3	17.5	22.4
3/16	1/8	F3-FE-FNPT2-	25.4	10.4	13.7	12.7	3.0	12.7	19.1
1/4	1/8	F4-FE-FNPT2-	26.9	10.4	15.2	14.3	4.8	14.3	19.1
1/4	1/4	F4-FE-FNPT4-	29.7	15.0	15.2	14.3	4.8	17.5	22.4
1/4	3/8	F4-FE-FNPT6-	31.8	15.0	15.2	14.3	4.8	20.6	22.4
1/4	1/2	F4-FE-FNPT8-	34.5	19.8	15.2	14.3	4.8	25.4	28.4
5/16	1/8	F5-FE-FNPT2-	28.7	10.4	16.3	15.9	6.4	14.3	19.1
5/16	1/4	F5-FE-FNPT4-	30.5	15.0	16.3	15.9	6.4	17.5	22.4
3/8	1/8	F6-FE-FNPT2-	30.5	10.4	16.8	17.5	7.1	15.9	19.1
3/8	1/4	F6-FE-FNPT4-	31.2	15.0	16.8	17.5	7.1	17.5	22.4
3/8	3/8	F6-FE-FNPT6-	33.3	15.0	16.8	17.5	7.1	20.6	22.4
3/8	1/2	F6-FE-FNPT8-	36.1	19.8	16.8	17.5	7.1	25.4	28.4
1/2	1/4	F8-FE-FNPT4-	36.1	15.0	22.9	22.2	10.4	20.6	22.4
1/2	3/8	F8-FE-FNPT6-	36.1	15.0	22.9	22.2	10.4	20.6	22.4
1/2	1/2	F8-FE-FNPT8-	38.9	19.8	22.9	22.2	10.4	25.4	28.4
5/8	3/8	F10-FE-FNPT6-	38.1	15.0	24.4	25.4	12.7	23.8	22.4
5/8	1/2	F10-FE-FNPT8-	39.9	19.8	24.4	25.4	12.7	27.0	28.4
3/4	1/2	F12-FE-FNPT8-	39.9	19.8	24.4	28.6	15.7	27.0	28.4
3/4	3/4	F12-FE-FNPT12-	44.7	20.6	24.4	28.6	15.7	34.9	31.8
7/8	3/4	F14-FE-FNPT12-	44.7	20.6	25.9	31.8	18.3	34.9	31.8
1	3/4	F16-FE-FNPT12-	49.0	20.6	31.2	38.1	22.4	34.9	31.8
1	1	F16-FE-FNPT16-	53.6	25.4	31.2	38.1	22.4	42.9	38.1

Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	B	C	G	E	F	Lx
6	1/8	M6-FE-FNPT2-	27.0	10.4	15.3	14	4.8	12.7	19.0
6	1/4	M6-FE-FNPT4-	29.8	15.0	15.3	14	4.8	17.5	22.4
8	1/8	M8-FE-FNPT2-	28.8	10.4	16.2	16	4.8	14.3	19.1
8	1/4	M8-FE-FNPT4-	30.6	15.0	16.2	16	6.4	17.5	22.4
10	1/4	M10-FE-FNPT4-	33.5	15.0	17.2	19	7.9	20.6	22.4
10	3/8	M10-FE-FNPT6-	33.5	15.0	17.2	19	7.9	20.6	22.4
10	1/2	M10-FE-FNPT8-	36.6	19.8	17.2	19	7.9	25.4	28.5
12	1/4	M12-FE-FNPT4-	36.0	15.0	22.8	22	7.9	20.6	22.4
12	3/8	M12-FE-FNPT6-	36.0	15.0	22.8	22	9.5	20.6	22.4
12	1/2	M12-FE-FNPT8-	38.8	19.8	22.8	22	9.5	25.4	28.4
16	3/8	M16-FE-FNPT6-	39.5	15.0	24.4	25	9.5	27.0	23.6
16	1/2	M16-FE-FNPT8-	39.5	19.8	24.4	25	12.7	27.0	28.5

Union Elbows



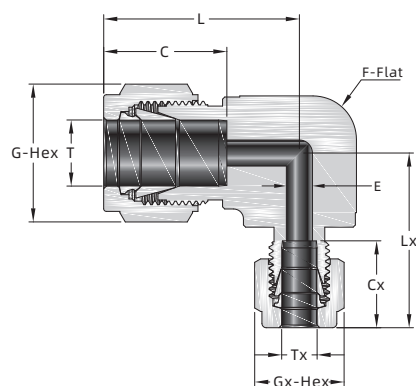
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				
		L	C	G	F	E
1/16	F1-UE-F1-	17.8	8.6	7.9	9.5	1.3
1/8	F2-UE-F2-	22.4	12.7	11.1	9.5	2.3
3/16	F3-UE-F3-	25.4	13.7	12.7	12.7	3.0
1/4	F4-UE-F4-	26.9	15.2	14.3	12.7	4.8
5/16	F5-UE-F5-	28.7	16.3	15.9	14.3	6.4
3/8	F6-UE-F6-	30.5	16.8	17.5	15.9	7.1
1/2	F8-UE-F8-	36.1	22.9	22.2	20.6	10.4
5/8	F10-UE-F10-	38.1	24.4	25.4	23.8	12.7
3/4	F12-UE-F12-	39.9	24.4	28.6	27.0	15.7
7/8	F14-UE-F14-	44.7	25.9	31.8	34.9	18.3
1	F16-UE-F16-	49.0	31.2	38.1	34.9	22.4
1 1/8	F18-UE-F18-	55.1	31.2	41.3	42.9	24.6
1 1/4	F20-UE-F20-	66.5	41.1	47.6	42.9	27.7
1 1/2	F24-UE-F24-	78.0	50.0	57.2	50.8	34.0

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm				
		L	C	G	F	E
3	M3-UE-M3-	22.3	12.9	12	9.5	2.4
4	M4-UE-M4-	25.4	13.7	12	12.7	2.4
6	M6-UE-M6-	27.0	15.3	14	12.7	4.8
8	M8-UE-M8-	28.8	16.2	16	14.3	6.4
10	M10-UE-M10-	31.5	17.2	19	17.5	7.9
12	M12-UE-M12-	36.0	22.8	22	20.6	9.5
14	M14-UE-M14-	38.0	24.4	25	23.8	11.0
15	M15-UE-M15-	38.8	24.4	25	23.8	11.9
16	M16-UE-M16-	38.0	24.4	25	23.8	12.7
18	M18-UE-M18-	39.8	24.4	30	27.0	15.1
20	M20-UE-M20-	44.6	26.0	32	34.9	15.9
22	M22-UE-M22-	44.6	26.0	32	34.9	18.3
25	M25-UE-M25-	49.1	31.3	38	34.9	21.8
28	M28-UE-M28-	64.0	36.6	46	42.9	21.8
30	M30-UE-M30-	69.9	39.6	50	42.9	26.2
32	M32-UE-M32-	72.3	42.0	50	42.9	28.6
38	M38-UE-M38-	84.0	49.4	60	50.8	33.7

Union Reducing Elbows



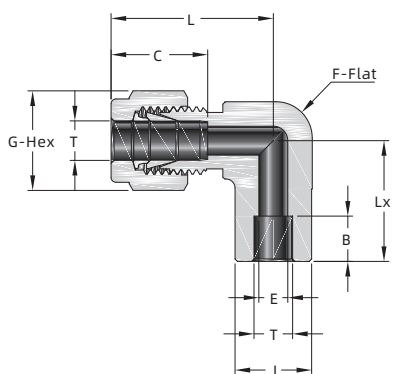
Fractional Tube

T-Tube O.D. (in.)	Tx-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm							
			L	C	G	F	E	Cx	Gx	Lx
3/16	1/8	F3-UE-F2-	25.4	13.7	12.7	12.7	2.3	12.7	11.1	24.7
1/4	1/8	F4-UE-F2-	26.9	15.2	14.3	12.7	2.3	12.7	11.1	25.4
5/16	1/8	F5-UE-F2-	29.7	16.3	15.9	14.3	2.3	12.7	11.1	26.4
5/16	1/4	F5-UE-F4-	29.7	16.3	15.9	14.3	4.8	15.2	14.3	29.0
3/8	1/8	F6-UE-F2-	30.5	16.8	17.5	15.9	2.3	12.7	11.1	26.4
3/8	1/4	F6-UE-F4-	30.5	16.8	17.5	15.9	4.8	15.2	14.3	29.0
3/8	5/16	F6-UE-F5-	30.5	16.8	17.5	15.9	6.4	16.3	15.9	29.7
1/2	1/4	F8-UE-F4-	36.1	22.9	22.2	20.6	4.8	15.2	14.3	32.2
1/2	5/16	F8-UE-F5-	36.1	22.9	22.2	20.6	6.4	16.3	15.9	32.5
1/2	3/8	F8-UE-F6-	36.1	22.9	22.2	20.6	7.1	16.8	17.5	33.6
5/8	3/8	F10-UE-F6-	38.1	24.4	25.4	23.8	7.1	16.8	17.5	35.6
5/8	1/2	F10-UE-F8-	38.1	24.4	25.4	23.8	10.4	22.9	22.2	38.1
3/4	1/4	F12-UE-F4-	39.9	24.4	28.6	27.0	4.8	15.2	14.3	35.9
3/4	3/8	F12-UE-F6-	39.9	24.4	28.6	27.0	7.1	16.8	17.5	37.4
3/4	1/2	F12-UE-F8-	39.9	24.4	28.6	27.0	10.4	22.9	22.2	39.9
7/8	1/4	F14-UE-F4-	44.7	25.9	31.8	34.9	4.8	15.2	14.3	40.7
1	1/2	F16-UE-F8-	49.0	31.2	38.1	34.9	10.4	22.9	22.2	44.4
1	3/4	F16-UE-F12-	49.0	31.2	38.1	34.9	15.7	24.4	28.6	44.4

Metric Tube

T-Tube O.D. (mm)	Tx-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm							
			L	C	G	F	E	Cx	Gx	Lx
8	6	M8-UE-M6-	28.8	16.2	16	14.3	4.8	15.3	14	27.9
10	8	M10-UE-M8-	31.5	17.2	19	17.5	6.4	16.2	16	30.5
12	8	M12-UE-M8-	36.0	22.8	22	20.6	6.4	16.2	16	32.6
14	8	M14-UE-M8-	38.8	24.4	25	23.8	6.4	16.2	16	35.4
14	10	M14-UE-M10-	38.8	24.4	25	23.8	7.9	17.2	19	36.4

Weld Elbows

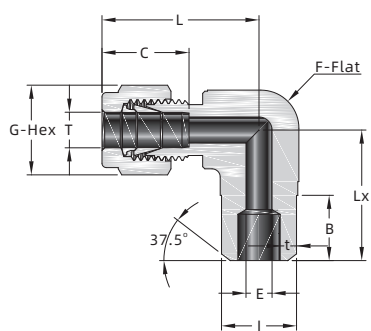


Fractional Tube

Tube Socket Weld

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm							
		L	C	G	F	B	E	Lx	J
1/8	F2-WE-FSW2-	16.8	12.7	11.1	9.5	2.5	2.3	16.0	9.4
3/16	F3-WE-FSW3-	18.3	13.7	12.7	11.1	4.8	3.3	17.5	11.2
1/4	F4-WE-FSW4-	26.9	15.2	14.3	12.7	7.1	4.8	19.6	12.2
3/8	F6-WE-FSW6-	30.5	16.8	17.5	15.9	7.9	7.1	23.1	15.2
1/2	F8-WE-FSW8-	36.1	22.9	22.2	20.6	9.7	10.4	25.9	18.5
5/8	F10-WE-FSW10-	29.5	24.4	25.4	27.0	10.4	12.7	29.5	23.4
3/4	F12-WE-FSW12-	39.9	24.4	28.6	27.0	11.2	15.7	29.7	26.4
1	F16-WE-FSW16-	49.0	31.2	38.1	34.9	15.7	22.4	36.8	34.5

Weld Elbows



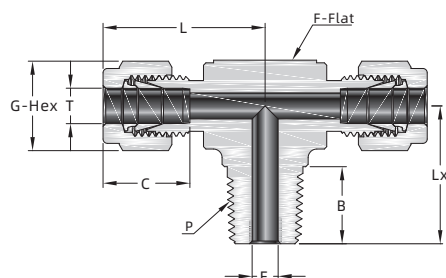
Fractional Tube

Pipe Butt Weld

T-Tube O.D. (in.)	Pipe Weld Size	Basic Ordering Number	Dimension, mm							
			L	C	G	F	B	E	Lx	J
1/8	1/8	F2-WE-PBW2-	23.4	12.7	11.1	11.1	9.7	2.3	18.3	10.3
3/16	1/8	F3-WE-PBW2-	25.7	13.7	12.7	12.7	9.7	3.3	18.8	10.3
1/4	1/8	F4-WE-PBW2-	26.9	15.2	14.3	12.7	9.7	4.8	18.8	10.3
1/4	1/4	F4-WE-PBW4-	26.9	15.2	14.3	12.7	14.2	4.8	23.4	13.7
3/8	1/4	F6-WE-PBW4-	30.5	16.8	17.5	15.9	14.2	7.1	25.4	13.7
1/2	3/8	F8-WE-PBW6-	34.8	22.9	22.2	19.1	14.2	10.4	28.8	17.2
1/2	1/2	F8-WE-PBW8-	36.1	22.9	22.2	20.6	19.1	10.4	33.0	21.3
5/8	1/2	F10-WE-PBW8-	36.3	24.4	25.4	23.8	19.1	12.7	35.1	21.3
3/4	3/4	F12-WE-PBW12-	39.9	24.4	28.6	27.0	19.1	15.7	36.8	26.7
1	3/4	F16-WE-PBW12-	49.3	31.2	38.1	34.9	19.1	22.4	41.9	26.7
1	1	F16-WE-PBW16-	49.3	31.2	38.1	34.9	20.6	22.4	46.7	33.4

Tees

Male Branch Tees



Fractional Tube

NPT Thread

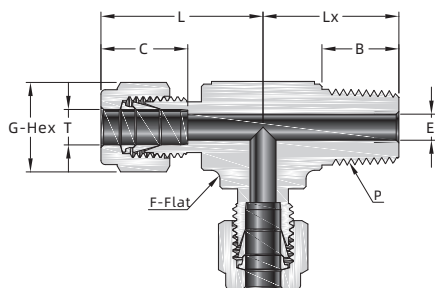
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/8	1/8	F2-MBT-F2-NPT2-	23.6	12.7	11.1	11.1	2.3	9.7	17.8
1/8	1/4	F2-MBT-F2-NPT4-	24.6	12.7	11.1	12.7	2.3	14.2	23.4
3/16	1/8	F3-MBT-F3-NPT2-	24.4	13.7	12.7	11.1	3.0	9.7	17.8
1/4	1/8	F4-MBT-F4-NPT2-	26.9	15.2	14.3	12.7	4.8	9.7	18.8
1/4	1/4	F4-MBT-F4-NPT4-	26.9	15.2	14.3	12.7	4.8	14.2	23.4
5/16	1/8	F5-MBT-F5-NPT2-	29.7	16.3	15.9	15.9	4.8	9.7	20.8
5/16	1/4	F5-MBT-F5-NPT4-	29.7	16.3	15.9	15.9	6.4	14.2	25.7
3/8	1/4	F6-MBT-F6-NPT4-	30.5	16.8	17.5	15.9	7.1	14.2	25.4
3/8	3/8	F6-MBT-F6-NPT6-	33.3	16.8	17.5	20.6	7.1	14.2	28.2
1/2	3/8	F8-MBT-F8-NPT6-	36.1	22.9	22.2	20.6	9.7	14.2	28.2
1/2	1/2	F8-MBT-F8-NPT8-	36.1	22.9	22.2	20.6	10.4	19.1	33.0
5/8	1/2	F10-MBT-F10-NPT8-	38.9	24.4	25.4	25.4	11.9	19.1	35.8
3/4	3/4	F12-MBT-F12-NPT12-	39.9	24.4	28.6	27.0	15.7	19.1	36.8
7/8	3/4	F14-MBT-F14-NPT12-	44.7	25.9	31.8	33.3	15.7	19.1	38.1
1	3/4	F16-MBT-F16-NPT12-	49.3	31.2	38.1	33.3	15.7	19.1	42.2
1	1	F16-MBT-F16-NPT16-	49.3	31.2	38.1	34.9	22.4	23.9	46.7

Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
6	1/8	M6-MBT-M6-NPT2-	27.0	15.3	14	12.7	4.8	9.7	18.8
6	1/4	M6-MBT-M6-NPT4-	27.0	15.3	14	12.7	4.8	14.2	23.4
8	1/8	M8-MBT-M8-NPT2-	29.9	16.2	16	15.9	4.8	9.7	20.8
8	1/4	M8-MBT-M8-NPT4-	29.9	16.2	16	15.9	6.4	14.2	25.4
10	1/4	M10-MBT-M10-NPT4-	33.5	17.2	19	20.6	7.9	14.2	28.2
10	3/8	M10-MBT-M10-NPT6-	33.5	17.2	19	20.6	7.9	14.2	28.2
12	1/4	M12-MBT-M12-NPT4-	36.0	22.8	22	20.6	7.9	14.2	28.2
12	3/8	M12-MBT-M12-NPT6-	36.0	22.8	22	20.6	9.5	14.2	28.2
12	1/2	M12-MBT-M12-NPT8-	36.0	22.8	22	20.6	9.5	19.1	33.0
16	1/2	M16-MBT-M16-NPT8-	38.8	24.4	25	25.4	11.9	19.1	35.8

Male Run Tees



Fractional Tube

NPT Thread

T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/8	1/8	F2-MRT-NPT2-F2-	23.6	12.7	11.1	11.1	2.3	9.7	17.8
1/8	1/4	F2-MRT-NPT4-F2-	24.6	12.7	11.1	12.7	2.3	14.2	23.4
3/16	1/8	F3-MRT-NPT2-F3-	24.4	13.7	12.7	11.1	3.0	9.7	17.8
1/4	1/8	F4-MRT-NPT2-F4-	26.9	15.2	14.3	12.7	4.8	9.7	18.8
1/4	1/4	F4-MRT-NPT4-F4-	26.9	15.2	14.3	12.7	4.8	14.2	23.4
5/16	1/8	F5-MRT-NPT2-F5-	29.7	16.3	15.9	15.9	4.8	9.7	20.8
5/16	1/4	F5-MRT-NPT4-F5-	29.7	16.3	15.9	15.9	6.4	14.2	25.7
3/8	1/4	F6-MRT-NPT4-F6-	30.5	16.8	17.5	15.9	7.1	14.2	25.4
3/8	3/8	F6-MRT-NPT6-F6-	33.3	16.8	17.5	20.6	7.1	14.2	28.2
1/2	3/8	F8-MRT-NPT6-F8-	36.1	22.9	22.2	20.6	9.7	14.2	28.2
1/2	1/2	F8-MRT-NPT8-F8-	36.1	22.9	22.2	20.6	10.4	19.1	33.0
5/8	1/2	F10-MRT-NPT8-F10-	38.1	24.4	25.4	23.8	11.9	19.1	35.8
3/4	3/4	F12-MRT-NPT12-F12-	39.9	24.4	28.6	27.0	15.7	19.1	36.8
7/8	3/4	F14-MRT-NPT12-F14-	44.7	25.9	31.8	33.3	15.7	19.1	38.1
1	3/4	F16-MRT-NPT12-F16-	49.3	31.2	38.1	33.3	15.7	19.1	42.2
1	1	F16-MRT-NPT16-F16-	49.3	31.2	38.1	34.9	22.4	23.9	46.7

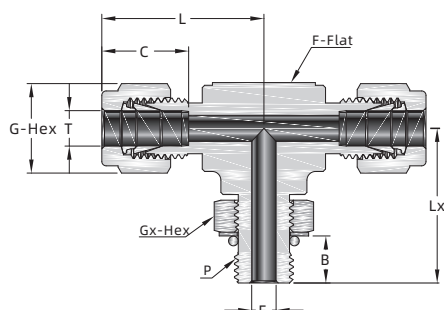
Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
6	1/8	M6-MRT-NPT2-M6-	27.0	15.3	14	12.7	4.8	9.7	18.0
6	1/4	M6-MRT-NPT4-M6-	27.0	15.3	14	12.7	4.8	14.2	23.4
8	1/8	M8-MRT-NPT2-M8-	29.9	16.2	16	15.9	4.8	9.7	20.8
8	1/4	M8-MRT-NPT4-M8-	29.9	16.2	16	15.9	6.4	14.2	25.4
10	1/4	M10-MRT-NPT4-M10-	33.5	17.2	19	20.6	7.9	14.2	28.2
10	1/2	M10-MRT-NPT8-M10-	33.5	17.2	19	20.6	7.9	14.2	28.2
12	1/4	M12-MRT-NPT4-M12-	36.0	22.8	22	20.6	7.9	14.2	28.2
12	3/8	M12-MRT-NPT6-M12-	36.0	22.8	22	20.6	9.5	14.2	28.2
12	1/2	M12-MRT-NPT8-M12-	36.0	22.8	22	20.6	9.5	19.1	33.0
16	1/2	M16-MRT-NPT8-M16-	38.0	24.4	25	23.8	11.9	19.1	35.0

Positionable Male Branch Tees

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

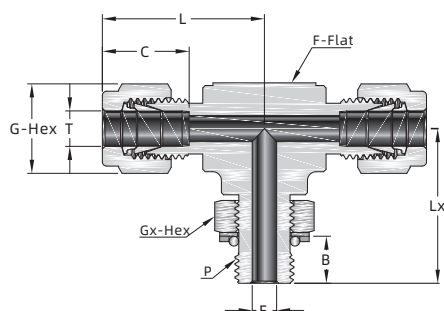


Fractional Tube SAE/MS Straight Thread

T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	E	G	F	Lx	Gx
1/4	7/16-20	F4-PMBT-F4-PST7-	28.5	9.9	15.2	4.8	14.3	12.7	28.5	14.3
3/8	9/16-18	F6-PMBT-F6-PST9-	32.0	11.2	16.8	7.1	17.5	15.9	32.3	17.5
1/2	3/4-16	F8-PMBT-F8-PST12-	37.6	12.7	22.9	10.4	22.2	20.6	37.8	22.2
3/4	1 1/16-12	F12-PMBT-F12-PST17-	41.4	16.8	24.4	15.7	28.6	27.0	48.8	28.6
1	1 5/16-12	F16-PMBT-F16-PST21-	50.5	16.8	31.2	22.4	38.1	34.9	53.6	38.1
1 1/4	1 5/8-12	F20-PMBT-F20-PST26-	67.8	16.8	41.1	27.7	47.6	42.9	58.2	47.6
1 1/4	1 7/8-12	F20-PMBT-F20-PST30-	78.0	16.8	50.0	34.0	57.2	50.8	60.5	54.0

Positionable Male Branch Tees

- ❖ ISO Parallel Thread



Fractional Tube ISO Parallel Thread (PPT)

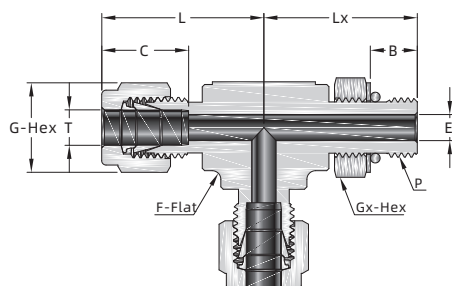
T-Tube O.D. (in.)	P-ISO Parallel Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	E	G	F	Lx	Gx
1/4	1/8	F4-PMBT-F4-PPT2-	26.9	8.1	15.2	4.1	14.3	12.7	26.4	14.3
1/4	1/4	F4-PMBT-F4-PPT4-	29.0	9.1	15.2	4.8	14.3	15.9	32.3	19.1
3/8	1/4	F6-PMBT-F6-PPT4-	30.5	9.1	16.8	5.8	17.5	15.9	32.3	19.1
1/2	3/8	F8-PMBT-F8-PPT6-	36.1	9.4	22.9	7.9	22.2	20.6	37.1	22.2
1/2	1/2	F8-PMBT-F8-PPT8-	38.1	13.0	22.9	10.4	22.2	23.8	43.4	27.0
5/8	1/2	F10-PMBT-F10-PPT8-	38.1	13.0	24.4	11.9	25.4	23.8	43.4	27.0
3/4	1/2	F12-PMBT-F12-PPT8-	39.9	13.0	24.4	11.9	28.6	27.0	45.2	27.0
3/4	3/4	F12-PMBT-F12-PPT12-	39.9	13.0	24.4	15.7	28.6	27.0	48.8	34.9
1	1	F16-PMBT-F16-PPT16-	49.0	14.0	31.2	19.8	38.1	34.9	53.6	41.3

Metric Tube ISO Parallel Thread (PPT)

T-Tube O.D. (mm)	P-ISO Parallel Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	E	G	F	Lx	Gx
6	1/8	M6-PMBT-M6-PPT2-	27.0	8.1	15.3	4.0	14	12.7	26.4	14.3
6	1/4	M6-PMBT-M6-PPT4-	29.0	9.1	15.3	4.8	14	15.9	32.2	19.1
8	1/8	M8-PMBT-M8-PPT2-	28.8	8.1	16.2	4.0	16	14.3	27.5	14.3
8	1/4	M8-PMBT-M8-PPT4-	29.9	9.1	16.2	5.9	16	15.9	32.2	19.1
10	1/4	M10-PMBT-M10-PPT4-	33.5	9.1	17.2	5.9	19	20.6	35.1	19.1
12	3/8	M12-PMBT-M12-PPT6-	36.0	9.4	22.8	7.9	22	20.6	37.1	22.2
12	1/2	M12-PMBT-M12-PPT8-	38.0	13.0	22.8	9.5	22	23.8	43.5	27.0

Positionable Male Run Tees

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



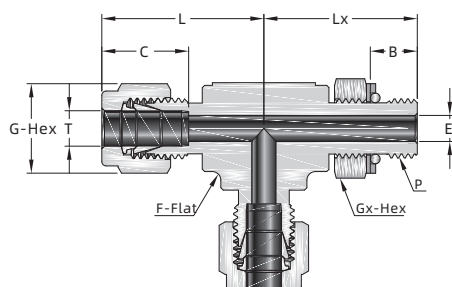
Fractional Tube

SAE/MS Straight Thread

T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	E	G	F	Lx	Gx
1/4	7/16-20	F4-PMRT-PST7-F4-	28.5	9.9	15.2	4.8	14.3	12.7	28.5	14.3
3/8	9/16-18	F6-PMRT-PST9-F6-	32.0	11.2	16.8	7.1	17.5	15.9	32.3	17.5
1/2	3/4-16	F8-PMRT-PST12-F8-	37.6	12.7	22.9	10.4	22.2	20.6	37.8	22.2
3/4	1 1/16-12	F12-PMRT-PST17-F12-	41.4	16.8	24.4	15.7	28.6	27.0	48.8	28.6
1	1 5/16-12	F16-PMRT-PST21-F16-	50.5	16.8	31.2	22.4	38.1	34.9	53.6	38.1
1 1/4	1 5/8-12	F20-PMRT-PST26-F20-	67.8	16.8	41.1	27.7	47.6	42.9	58.2	47.6
1 1/2	1 7/8-12	F24-PMRT-PST30-F24-	78.0	16.8	50.0	34.0	57.2	50.8	60.5	54.0

Positionable Male Run Tees

- ❖ ISO Parallel Thread



Fractional Tube

ISO Parallel Thread (PPT)

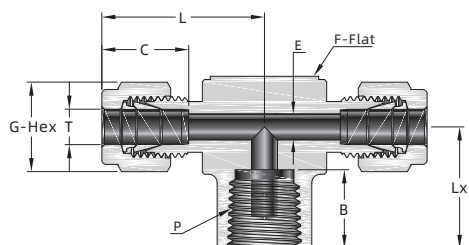
T-Tube O.D. (in.)	P-ISO Parallel Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	E	G	F	Lx	Gx
1/4	1/8	F4-PMRT-PPT2-F4-	26.9	8.1	15.2	4.1	14.3	12.7	26.4	14.3
1/4	1/4	F4-PMRT-PPT4-F4-	29.0	9.1	15.2	4.8	14.3	15.9	32.3	19.1
3/8	1/4	F6-PMRT-PPT4-F6-	30.5	9.1	16.8	5.8	17.5	15.9	32.3	19.1
1/2	3/8	F8-PMRT-PPT6-F8-	36.1	9.4	22.9	7.9	22.2	20.6	37.1	22.2
1/2	1/2	F8-PMRT-PPT8-F8-	38.1	13.0	22.9	10.4	22.2	23.8	43.4	27.0
5/8	1/2	F10-PMRT-PPT8-F10-	38.1	13.0	24.4	11.9	25.4	23.8	43.4	27.0
3/4	1/2	F12-PMRT-PPT8-F12-	39.9	13.0	24.4	11.9	28.6	27.0	45.2	27.0
3/4	3/4	F12-PMRT-PPT12-F12-	39.9	13.0	24.4	15.7	28.6	27.0	48.8	34.9
1	1	F16-PMRT-PPT16-F16-	49.0	14.0	31.2	19.8	38.1	34.9	53.6	41.3

Metric Tube

ISO Parallel Thread (PPT)

T-Tube O.D. (mm)	P-ISO Parallel Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	E	G	F	Lx	Gx
6	1/8	M6-PMRT-PPT2-M6-	27.0	8.1	15.3	4.0	14	12.7	26.4	14.3
6	1/4	M6-PMRT-PPT4-M6-	29.0	9.1	15.3	4.8	14	15.9	32.2	19.1
8	1/8	M8-PMRT-PPT2-M8-	28.8	8.1	16.2	4.0	16	14.3	27.5	14.3
8	1/4	M8-PMRT-PPT4-M8-	29.9	9.1	16.2	5.9	16	15.9	32.2	19.1
10	1/4	M10-PMRT-PPT4-M10-	33.5	9.1	17.2	5.9	19	20.6	35.1	19.1
12	3/8	M12-PMRT-PPT6-M12-	36.0	9.4	22.8	7.9	22	20.6	37.1	22.2
12	1/2	M12-PMRT-PPT8-M12-	38.0	13.0	22.8	9.5	22	23.8	43.5	27.0

Female Branch Tees



Fractional Tube

NPT Thread

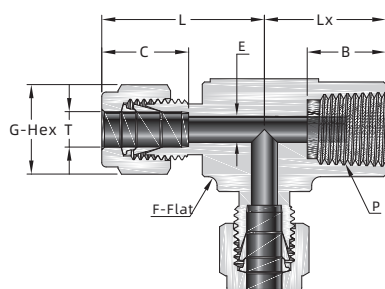
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/8	1/8	F2-FBT-F2-FNPT2-	24.6	12.7	11.1	12.7	2.3	10.4	19.1
3/16	1/8	F3-FBT-F3-FNPT2-	25.7	13.7	12.7	12.7	3.0	10.4	19.1
1/4	1/8	F4-FBT-F4-FNPT2-	26.9	15.2	14.3	12.7	4.8	10.4	19.1
1/4	1/4	F4-FBT-F4-FNPT4-	29.7	15.2	14.3	17.5	4.8	15.0	22.4
5/16	1/8	F5-FBT-F5-FNPT2-	29.7	16.2	15.9	15.9	6.4	10.4	19.1
3/8	1/4	F6-FBT-F6-FNPT4-	31.2	16.8	17.5	17.5	7.1	15.0	22.4
3/8	3/8	F6-FBT-F6-FNPT6-	33.3	16.8	17.5	20.6	7.1	15.0	22.4
3/8	1/2	F6-FBT-F6-FNPT8-	36.1	16.8	17.5	25.4	7.1	19.8	28.4
1/2	1/4	F8-FBT-F8-FNPT4-	36.1	22.9	22.2	20.6	10.4	15.0	22.4
1/2	3/8	F8-FBT-F8-FNPT6-	36.1	22.9	22.2	20.6	10.4	15.0	22.4
1/2	1/2	F8-FBT-F8-FNPT8-	38.9	22.9	22.2	25.4	10.4	19.8	28.4
5/8	1/2	F10-FBT-F10-FNPT8-	38.9	24.4	25.4	25.4	12.7	19.8	28.4
3/4	3/4	F12-FBT-F12-FNPT12-	44.7	24.4	28.6	34.9	15.7	20.6	31.8
7/8	3/4	F14-FBT-F14-FNPT12-	44.7	25.9	31.8	34.9	18.3	20.6	31.8
1	3/4	F16-FBT-F16-FNPT12-	49.0	31.2	38.1	34.9	22.4	20.6	31.8
1	1	F16-FBT-F16-FNPT16-	53.6	31.2	38.1	42.9	22.4	25.4	38.1

Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
6	1/8	M6-FBT-M6-FNPT2-	27.0	15.3	14	12.7	4.8	10.4	19.0
6	1/4	M6-FBT-M6-FNPT4-	29.8	15.3	14	17.5	4.8	15.0	22.4
8	1/8	M8-FBT-M8-FNPT2-	29.9	16.2	16	15.9	6.4	10.4	19.0
8	1/4	M8-FBT-M8-FNPT4-	30.6	16.2	16	17.5	6.4	15.0	22.4
10	1/4	M10-FBT-M10-FNPT4-	33.5	17.2	19	20.6	7.9	15.0	22.4
12	1/8	M12-FBT-M12-FNPT2-	36.0	22.8	22	20.6	6.4	10.4	22.3
12	1/4	M12-FBT-M12-FNPT4-	36.0	22.8	22	20.6	9.5	15.0	22.4
12	3/8	M12-FBT-M12-FNPT6-	36.0	22.8	22	20.6	9.5	15.0	22.4
12	1/2	M12-FBT-M12-FNPT8-	38.8	22.8	22	25.4	9.5	19.8	28.5
16	1/2	M16-FBT-M16-FNPT8-	38.8	24.4	25	25.4	12.7	19.8	28.4

Female Run Tees



Fractional Tube

NPT Thread

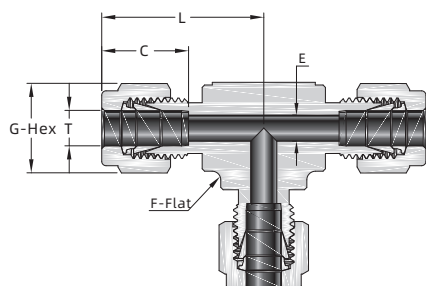
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/8	1/8	F2-FRT-FNPT2-F2-	24.6	12.7	11.1	12.7	2.3	10.4	19.1
3/16	1/8	F3-FRT-FNPT2-F3-	25.7	13.7	12.7	12.7	3.0	10.4	19.1
1/4	1/8	F4-FRT-FNPT2-F4-	26.9	15.2	14.3	12.7	4.8	10.4	19.1
1/4	1/4	F4-FRT-FNPT4-F4-	29.7	15.2	14.3	17.5	4.8	15.0	22.4
5/16	1/8	F5-FRT-FNPT2-F5-	29.7	16.2	15.9	15.9	6.4	10.4	19.1
3/8	1/4	F6-FRT-FNPT4-F6-	31.2	16.8	17.5	17.5	7.1	15.0	22.4
1/2	1/4	F8-FRT-FNPT4-F8-	36.1	22.9	22.2	20.6	10.4	15.0	22.4
1/2	3/8	F8-FRT-FNPT6-F8-	36.1	22.9	22.2	20.6	10.4	15.0	22.4
1/2	1/2	F8-FRT-FNPT8-F8-	39.9	22.9	22.2	27.0	10.4	19.8	28.4
5/8	1/2	F10-FRT-FNPT8-F10-	39.9	24.4	25.4	27.0	12.7	19.8	28.4
3/4	3/4	F12-FRT-FNPT12-F12-	44.7	24.4	28.6	34.9	15.7	20.6	31.8
7/8	1/2	F14-FRT-FNPT8-F14-	44.7	25.9	31.8	34.9	15.7	19.8	28.4
7/8	3/4	F14-FRT-FNPT12-F14-	44.7	25.9	31.8	34.9	18.3	20.6	31.8
1	3/4	F16-FRT-FNPT12-F16-	49.0	31.2	38.1	34.9	22.4	20.6	31.8
1	1	F16-FRT-FNPT16-F16-	53.6	31.2	38.1	42.9	22.4	25.4	38.1

Metric Tube

NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
6	1/8	M6-FRT-FNPT2-M6-	27.0	15.3	14	12.7	4.8	10.4	19.0
6	1/4	M6-FRT-FNPT4-M6-	29.8	15.3	14	17.5	4.8	15.0	22.4
8	1/8	M8-FRT-FNPT2-M8-	29.9	16.2	16	15.9	4.8	10.4	19.0
8	1/4	M8-FRT-FNPT4-M8-	30.6	16.2	16	17.5	6.4	15.0	22.4
10	1/4	M10-FRT-FNPT4-M10-	33.5	17.2	19	20.6	7.9	15.0	22.4
12	1/4	M12-FRT-FNPT4-M12-	36.0	22.8	22	20.6	9.5	15.0	22.4
12	3/8	M12-FRT-FNPT6-M12-	36.0	22.8	22	20.6	9.5	15.0	23.1
12	1/2	M12-FRT-FNPT8-M12-	38.8	22.8	22	25.4	9.5	19.8	28.5
16	1/2	M16-FRT-FNPT8-M16-	39.8	24.4	25	27.0	11.9	19.8	28.4

Union Tees



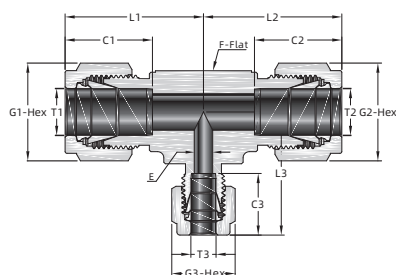
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				
		L	C	G	F	E
1/16	F1-UT-F1-F1-	17.8	8.6	7.9	9.5	1.3
1/8	F2-UT-F2-F2-	22.4	12.7	11.1	9.5	2.3
3/16	F3-UT-F3-F3-	24.4	13.7	12.7	11.1	3.0
1/4	F4-UT-F4-F4-	26.9	15.2	14.3	12.7	4.8
5/16	F5-UT-F5-F5-	29.7	16.2	15.9	15.9	6.4
3/8	F6-UT-F6-F6-	30.5	16.8	17.5	15.9	7.1
1/2	F8-UT-F8-F8-	36.1	22.9	22.2	20.6	10.4
5/8	F10-UT-F10-F10-	38.9	24.4	25.4	25.4	12.7
3/4	F12-UT-F12-F12-	39.9	24.4	28.6	27.0	15.7
7/8	F14-UT-F14-F14-	44.7	25.9	31.8	34.9	18.3
1	F16-UT-F16-F16-	49.0	31.2	38.1	34.9	22.4
1 1/8	F18-UT-F18-F18-	55.1	31.2	46.0	42.9	24.6
1 1/4	F20-UT-F20-F20-	66.5	41.1	47.6	42.9	27.7
1 1/2	F24-UT-F24-F24-	78.0	50.0	57.2	50.8	34.0

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm				
		L	C	G	F	E
2	M2-UT-M2-M2-	22.3	12.9	12	9.5	1.7
3	M3-UT-M3-M3-	22.3	12.9	12	9.5	2.4
4	M4-UT-M4-M4-	25.4	13.7	12	12.7	2.4
6	M6-UT-M6-M6-	27.0	15.3	14	12.7	4.8
8	M8-UT-M8-M8-	29.9	16.2	16	15.9	6.4
10	M10-UT-M10-M10-	31.5	17.2	19	17.5	7.9
12	M12-UT-M12-M12-	36.0	22.8	22	20.6	9.5
14	M14-UT-M14-M14-	38.8	24.4	25	25.4	11.1
15	M15-UT-M15-M15-	38.8	24.4	25	25.4	11.9
16	M16-UT-M16-M16-	38.8	24.4	25	25.4	12.7
18	M18-UT-M18-M18-	38.8	24.4	30	27.0	15.1
20	M20-UT-M20-M20-	44.6	26.0	32	34.9	15.9
22	M22-UT-M22-M22-	44.6	26.0	32	34.9	18.3
25	M25-UT-M25-M25-	49.1	31.3	38	34.9	21.8
28	M28-UT-M28-M28-	64.0	36.6	46	42.9	21.8
30	M30-UT-M30-M30-	69.9	39.6	50	42.9	26.2
32	M32-UT-M32-M32-	72.3	42.0	50	42.9	28.6
38	M38-UT-M38-M38-	84.0	49.4	60	50.8	33.7

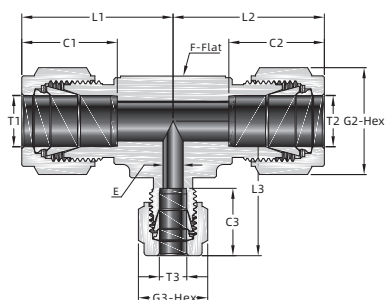
Reducing Union Tees



Fractional Tube

T1-Tube O.D. (in.)	T2-Tube O.D. (in.)	T3-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm										
				L1	L2	L3	C1	C2	C3	G1	G2	G3	F	E
1/4	1/4	1/8	F4-UT-F4-F2-	26.7	26.7	24.4	15.2	15.2	12.7	14.3	14.3	11.1	12.7	2.3
3/8	1/4	1/4	F6-UT-F4-F4-	30.5	29.0	29.0	16.8	15.2	15.2	17.5	14.3	14.3	15.9	4.8
3/8	1/4	3/8	F6-UT-F4-F6-	30.5	29.0	30.5	16.8	15.2	16.8	17.5	14.3	17.5	15.9	4.8
3/8	3/8	1/4	F6-UT-F6-F4-	30.5	30.5	29.0	16.8	16.8	15.2	17.5	17.5	14.3	15.9	4.8
1/2	1/4	1/4	F8-UT-F4-F4-	36.1	31.8	31.8	22.9	15.2	15.2	22.2	14.3	14.3	20.6	4.8
1/2	1/4	1/2	F8-UT-F4-F8-	36.1	31.8	36.1	22.9	15.2	22.9	22.2	14.3	22.2	20.6	4.8
1/2	3/8	3/8	F8-UT-F6-F6-	36.1	33.3	33.3	22.9	16.8	16.8	22.2	17.5	17.5	20.6	7.1
1/2	3/8	1/2	F8-UT-F6-F8-	36.1	33.3	36.1	22.9	16.8	22.9	22.2	17.5	22.2	20.6	7.1
1/2	1/2	1/4	F8-UT-F8-F4-	36.1	36.1	31.8	22.9	22.9	15.2	22.2	22.2	14.3	20.6	4.8
1/2	1/2	3/8	F8-UT-F8-F6-	36.1	36.1	33.3	22.9	22.9	16.8	22.2	22.2	17.5	20.6	7.1
5/8	3/8	3/8	F10-UT-F6-F6-	38.9	36.1	36.1	24.4	16.8	16.8	25.4	17.5	17.5	25.4	7.1
5/8	3/8	1/2	F10-UT-F6-F8-	38.9	36.1	38.9	24.4	16.8	22.9	25.4	17.5	22.2	25.4	7.1
5/8	1/2	3/8	F10-UT-F8-F6-	38.9	38.9	36.1	24.4	22.9	16.8	25.4	22.2	17.5	25.4	7.1
5/8	1/2	1/2	F10-UT-F8-F8-	38.9	38.9	38.9	24.4	22.9	22.9	25.4	22.2	22.2	25.4	10.4
5/8	5/8	3/8	F10-UT-F10-F6-	38.9	38.9	36.1	24.4	24.4	16.8	25.4	25.4	17.5	25.4	7.1
5/8	5/8	1/2	F10-UT-F10-F8-	38.9	38.9	38.9	24.4	24.4	22.9	25.4	25.4	22.2	25.4	10.4
3/4	3/8	3/8	F12-UT-F6-F6-	39.6	36.9	36.9	24.4	16.8	16.8	28.6	17.5	17.5	27.0	7.1
3/4	1/2	3/8	F12-UT-F8-F6-	39.6	39.6	36.9	24.4	22.9	16.8	28.6	22.2	17.5	27.0	7.1
3/4	1/2	1/2	F12-UT-F8-F8-	39.6	39.6	39.6	24.4	22.9	22.9	28.6	22.2	22.2	27.0	10.4
3/4	5/8	3/8	F12-UT-F10-F6-	39.6	39.6	36.9	24.4	24.4	16.8	28.6	25.4	17.5	27.0	7.1
3/4	5/8	1/2	F12-UT-F10-F8-	39.6	39.6	39.6	24.4	24.4	22.9	28.6	25.4	22.2	27.0	10.4
3/4	5/8	5/8	F12-UT-F10-F10-	39.6	39.6	39.6	24.4	24.4	24.4	28.6	25.4	25.4	27.0	12.7
3/4	3/4	1/4	F12-UT-F12-F4-	39.6	39.6	35.1	24.4	24.4	15.2	28.6	28.6	14.3	27.0	4.8
3/4	3/4	3/8	F12-UT-F12-F6-	39.6	39.6	36.9	24.4	24.4	16.8	28.6	28.6	17.5	27.0	7.1
3/4	3/4	1/2	F12-UT-F12-F8-	39.6	39.6	39.6	24.4	24.4	22.9	28.6	28.6	22.2	27.0	10.4
3/4	3/4	5/8	F12-UT-F12-F10-	39.6	39.6	39.6	24.4	24.4	24.4	28.6	28.6	25.4	27.0	12.7
7/8	1/2	3/4	F14-UT-F8-F12-	44.7	44.7	44.7	25.9	22.9	24.4	31.8	22.2	28.6	34.9	10.4
7/8	5/8	3/8	F14-UT-F10-F6-	44.7	44.7	41.9	25.9	24.4	16.8	31.8	25.4	17.5	34.9	7.1
7/8	3/4	3/8	F14-UT-F12-F6-	44.7	44.7	41.9	25.9	24.4	16.8	31.8	28.6	17.5	34.9	7.1
7/8	3/4	1/2	F14-UT-F12-F8-	44.7	44.7	44.7	25.9	24.4	22.9	31.8	28.6	22.2	34.9	10.4
7/8	3/4	3/4	F14-UT-F12-F12-	44.7	44.7	44.7	25.9	24.4	24.4	31.8	28.6	28.6	34.9	15.7
7/8	7/8	1/4	F14-UT-F14-F4-	44.7	44.7	40.4	25.9	25.9	15.2	31.8	31.8	14.3	34.9	4.8
7/8	7/8	3/8	F14-UT-F14-F6-	44.7	44.7	41.9	25.9	25.9	16.8	31.8	31.8	17.5	34.9	7.1
1	3/8	3/8	F16-UT-F6-F6-	49.3	41.9	41.9	31.2	16.8	16.8	38.1	17.5	17.5	34.9	7.1
1	1/2	1/4	F16-UT-F8-F4-	49.3	44.7	40.4	31.2	22.9	15.2	38.1	22.2	14.3	34.9	4.8
1	1/2	3/8	F16-UT-F8-F6-	49.3	44.7	41.9	31.2	22.9	16.8	38.1	22.2	17.5	34.9	7.1
1	1/2	1/2	F16-UT-F8-F8-	49.3	44.7	44.7	31.2	22.9	22.9	38.1	22.2	22.2	34.9	10.4
1	1/2	1	F16-UT-F8-F16-	49.3	44.7	49.3	31.2	22.9	31.2	38.1	22.2	38.1	34.9	10.4
1	5/8	3/8	F16-UT-F10-F6-	49.3	44.7	41.9	31.2	24.4	16.8	38.1	25.4	17.5	34.9	7.1
1	3/4	3/8	F16-UT-F12-F6-	49.3	44.7	41.9	31.2	24.4	16.8	38.1	28.6	17.5	34.9	7.1
1	3/4	1/2	F16-UT-F12-F8-	49.3	44.7	44.7	31.2	24.4	22.9	38.1	28.6	22.2	34.9	10.4
1	3/4	5/8	F16-UT-F12-F10-	49.3	44.7	44.7	31.2	24.4	24.4	38.1	28.6	25.4	34.9	12.7
1	3/4	1	F16-UT-F12-F16-	49.3	44.7	49.3	31.2	24.4	31.2	38.1	28.6	38.1	34.9	15.7
1	7/8	1/4	F16-UT-F14-F4-	49.3	44.7	40.4	31.2	25.9	15.2	38.1	31.8	14.3	34.9	4.8
1	7/8	3/8	F16-UT-F14-F6-	49.3	44.7	41.9	31.2	25.9	16.8	38.1	31.8	17.5	34.9	7.1
1	7/8	1/2	F16-UT-F14-F8-	49.3	44.7	44.7	31.2	25.9	22.9	38.1	31.8	22.2	34.9	10.4
1	7/8	3/4	F16-UT-F14-F12-	49.3	44.7	44.7	31.2	25.9	24.4	38.1	31.8	28.6	34.9	12.7
1	7/8	7/8	F16-UT-F14-F14-	49.3	44.7	44.7	31.2	25.9	25.9	38.1	31.8	31.8	34.9	18.3
1	1	1/4	F16-UT-F16-F4-	49.3	49.3	40.4	31.2	31.2	15.2	38.1	38.1	14.3	34.9	4.8
1	1	3/8	F16-UT-F16-F6-	49.3	49.3	41.9	31.2	31.2	16.8	38.1	38.1	17.5	34.9	7.1
1	1	1/2	F16-UT-F16-F8-	49.3	49.3	44.7	31.2	31.2	22.9	38.1	38.1	22.2	34.9	10.4
1	1	5/8	F16-UT-F16-F10-	49.3	49.3	44.7	31.2	31.2	24.4	38.1	38.1	25.4	34.9	12.7
1	1	3/4	F16-UT-F16-F12-	49.3	49.3	44.7	31.2	31.2	24.4	38.1	38.1	28.6	34.9	15.7
1	1	7/8	F16-UT-F16-F14-	49.3	49.3	44.7	31.2	31.2	25.9	38.1	38.1	31.8	34.9	18.3
1 1/4	1 1/4	1	F20-UT-F20-F16-	67.8	67.8	55.1	41.2	41.2	31.3	47.6	47.6	38.1	42.9	22.4
1 1/2	1 1/2	1	F24-UT-F24-F16-	78.7	78.7	60.0	50.0	50.0	31.3	57.2	57.2	38.1	50.8	22.4

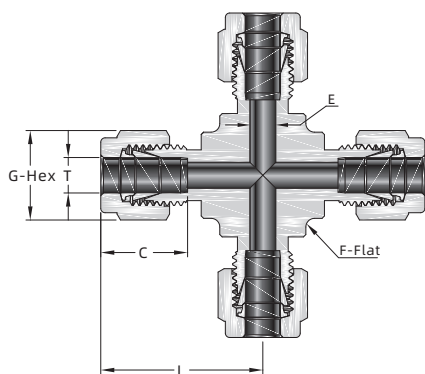
Reducing Union Tees



Metric Tube

T1-Tube O.D. (mm)	T2-Tube O.D. (mm)	T3-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm											
				L1	L2	L3	C1	C2	C3	G1	G2	G3	F	E	
3	3	6	M3-UT-M3-M6-	24.7	24.7	27.0	12.9	12.9	15.3	12	12	14	12.7	2.4	
6	6	3	M6-UT-M6-M3-	27.0	27.0	25.4	15.3	15.3	12.9	14	14	12	12.7	2.4	
6	6	8	M6-UT-M6-M8-	28.0	28.0	28.8	15.3	15.3	16.2	14	14	16	14.3	4.8	
8	8	6	M8-UT-M8-M6-	30.0	30.0	29.0	16.2	16.2	15.3	16	16	14	15.9	4.8	
8	8	12	M8-UT-M8-M12-	35.2	35.2	36.0	16.2	16.2	22.8	16	16	22	20.6	6.4	
10	10	6	M10-UT-M10-M6-	31.5	31.5	29.9	17.2	17.2	15.3	19	19	14	17.5	4.8	
10	10	8	M10-UT-M10-M8-	31.5	31.5	30.7	17.2	17.2	16.2	19	19	16	17.5	6.4	
12	12	6	M12-UT-M12-M6-	36.0	36.0	31.8	22.8	22.8	15.3	22	22	14	20.6	4.8	
12	12	8	M12-UT-M12-M8-	36.0	36.0	35.2	22.8	22.8	16.2	22	22	16	20.6	6.4	
12	12	14	M12-UT-M12-M14-	38.0	38.0	38.0	22.8	22.8	24.4	22	22	25	25.4	9.5	
12	12	18	M12-UT-M12-M18-	39.8	39.8	39.8	22.8	22.8	24.4	22	22	30	27.0	9.5	
14	14	8	M14-UT-M14-M8-	38.0	38.0	37.2	24.4	24.4	16.2	25	25	16	25.4	6.4	
14	14	10	M14-UT-M14-M10-	38.0	38.0	38.0	24.4	24.4	17.2	25	25	19	25.4	7.9	
15	15	12	M15-UT-M15-M12-	38.8	38.8	38.8	24.4	24.4	22.8	25	25	22	25.4	9.5	
16	16	8	M16-UT-M16-M8-	38.8	37.2	38.8	24.4	16.2	24.4	25	16	25	25.4	6.4	
16	16	12	M16-UT-M16-M12-	38.8	38.8	38.9	24.4	24.4	22.8	25	25	22	25.4	9.5	
18	18	8	M18-UT-M18-M8-	39.8	39.8	39.0	24.4	24.4	16.2	30	30	16	27.0	6.4	
18	18	10	M18-UT-M18-M10-	39.8	39.8	39.8	24.4	24.4	17.2	30	30	19	27.0	7.9	
18	18	12	M18-UT-M18-M12-	39.8	39.8	39.8	24.4	24.4	22.8	30	30	22	27.0	9.5	
18	18	14	M18-UT-M18-M14-	39.8	39.8	39.8	24.4	24.4	24.4	30	30	25	27.0	11.1	
20	20	14	M20-UT-M20-M14-	44.6	44.6	44.6	26.0	26.0	24.4	32	32	25	34.9	11.1	
22	22	12	M22-UT-M22-M12-	44.6	44.6	44.6	26.0	26.0	22.8	32	32	22	34.9	9.5	
25	25	12	M25-UT-M25-M12-	49.1	49.1	44.7	31.3	31.3	22.8	38	38	22	34.9	9.5	

Union Crosses



Fractional Tube

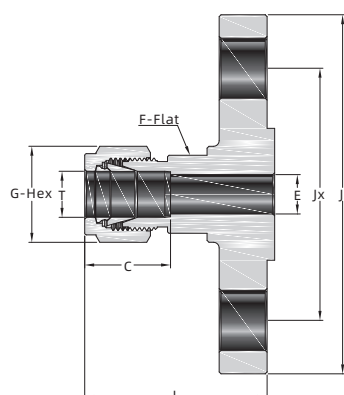
T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				
		L	C	G	F	E
1/8	F2-UC-F2-F2-F2-	22.4	12.7	11.1	9.5	2.3
3/16	F3-UC-F3-F3-F3-	24.4	13.7	12.7	11.1	3.0
1/4	F4-UC-F4-F4-F4-	26.9	15.2	14.3	12.7	4.8
5/16	F5-UC-F5-F5-F5-	29.7	16.2	15.9	15.9	6.4
3/8	F6-UC-F6-F6-F6-	30.5	16.8	17.5	15.9	7.1
1/2	F8-UC-F8-F8-F8-	36.1	22.9	22.2	20.6	10.4
5/8	F10-UC-F10-F10-F10-	36.3	24.4	25.4	27.0	12.7
3/4	F12-UC-F12-F12-F12-	39.9	24.4	28.6	27.0	15.7
7/8	F14-UC-F14-F14-F14-	44.7	25.9	31.8	34.9	18.3
1	F16-UC-F16-F16-F16-	49.0	31.2	38.1	34.9	22.4

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm				
		L	C	G	F	E
3	M3-UC-M3-M3-M3-	22.3	12.9	12	9.5	2.4
4	M4-UC-M4-M4-M4-	25.4	13.7	12	12.7	2.4
6	M6-UC-M6-M6-M6-	27.0	15.3	14	12.7	4.8
8	M8-UC-M8-M8-M8-	29.9	16.2	16	15.9	6.4
10	M10-UC-M10-M10-M10-	33.5	17.2	19	20.6	7.9
12	M12-UC-M12-M12-M12-	36.0	22.8	22	20.6	9.5
16	M16-UC-M16-M16-M16-	37.0	24.4	25	23.8	12.7
18	M18-UC-M18-M18-M18-	38.3	24.4	30	27.0	15.1
20	M20-UC-M20-M20-M20-	44.6	26.0	32	34.9	15.9
22	M22-UC-M22-M22-M22-	44.7	26.0	32	34.9	18.3
25	M25-UC-M25-M25-M25-	49.2	31.3	38	34.9	21.8

Flanges

Flange Adapters



ASME Flanges

T-Tube O.D. (in.)	ASME Flange NPS	Class	Basic Ordering Number Raised Face Flange	Dimension, mm						
				L	J	Jx	E	C	G	F
1/4	1/2	150	F4-FLA-RF8150-	40.9	88.9	60.5	4.8	15.2	14.3	20.6
3/8	1/2	300	F6-FLA-RF8300-	45.5	95.3	66.5	7.1	16.8	17.5	20.6
1/2	1/2	150	F8-FLA-RF8150-	45.2	88.9	60.5	10.4	22.9	22.2	20.6
1/2	1	150	F8-FLA-RF16150-	48.3	108.0	79.2	10.4	22.9	22.2	20.6
1/2	2	150	F8-FLA-RF32150-	53.1	152.4	121	10.4	22.9	22.2	20.6
3/4	1	150	F12-FLA-RF16150-	50.3	108.0	79.2	15.7	24.4	28.6	31.8
1	1	150	F16-FLA-RF16150-	60.5	108.0	79.2	22.4	31.2	38.1	34.9

DIN/GB Flanges, Pressure Class PN 40

T-Tube O.D. (mm)	DIN Flange Size DN	Basic Ordering Number Raised Face Flange	Dimension, mm(in.)						
			L	J	Jx	E	C	G	F
6	25	M6-FLA-RF2540B1-	47.5(1.87)	115.0(4.53)	85.0(3.35)	4.8(0.19)	15.3(0.60)	14.0(0.55)	20.0(0.79)
12	15	M12-FLA-RF1540B1-	48.5(1.91)	95.0(3.74)	65.0(2.56)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
12	25	M12-FLA-RF2540B1-	50.5(1.99)	115.0(4.53)	85.0(3.35)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
12	50	M12-FLA-RF5040B1-	55.3(2.18)	165.0(6.50)	125.0(4.92)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
18	15	M18-FLA-RF1540B1-	51.8(2.04)	95.0(3.74)	65.0(2.56)	15.1(0.59)	24.4(0.96)	30.0(1.18)	32.0(1.26)
18	25	M18-FLA-RF2540B1-	53.8(2.12)	115.0(4.53)	85.0(3.35)	15.1(0.59)	24.4(0.96)	30.0(1.18)	32.0(1.26)
25	25	M25-FLA-RF2540B1-	64.0(2.52)	115.0(4.53)	85.0(3.35)	21.8(0.86)	31.3(1.23)	38.0(1.50)	35.0(1.38)

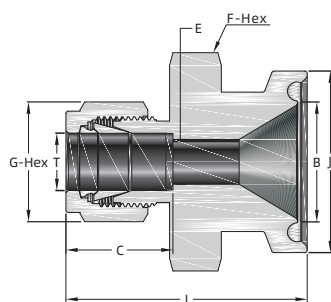
EN Flanges, Pressure Class PN 40

T-Tube O.D. (mm)	EN Flange Size DN	Basic Ordering Number Raised Face Flange	Dimension, mm(in.)						
			L	J	Jx	E	C	G	F
6	25	M6-FLA-RF25E40B1-	47.5(1.87)	115.0(4.53)	85.0(3.35)	4.8(0.19)	15.3(0.60)	14.0(0.55)	20.0(0.79)
12	15	M12-FLA-RF15E40B1-	48.5(1.91)	95.0(3.74)	65.0(2.56)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
12	25	M12-FLA-RF25E40B1-	50.5(1.99)	115.0(4.53)	85.0(3.35)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
12	50	M12-FLA-RF50E40B1-	55.3(2.18)	165.0(6.50)	125.0(4.92)	9.5(0.37)	22.8(0.90)	22.0(0.87)	20.0(0.79)
18	15	M18-FLA-RF15E40B1-	51.8(2.04)	95.0(3.74)	65.0(2.56)	15.1(0.59)	24.4(0.96)	30.0(1.18)	32.0(1.26)
18	25	M18-FLA-RF25E40B1-	53.8(2.12)	115.0(4.53)	85.0(3.35)	15.1(0.59)	24.4(0.96)	30.0(1.18)	32.0(1.26)
25	25	M25-FLA-RF25E40B1-	64.0(2.52)	115.0(4.53)	85.0(3.35)	21.8(0.86)	31.3(1.23)	38.0(1.50)	35.0(1.38)

JIS Flanges, Pressure Class 10K

T-Tube O.D. (in.)	JIS Flange Size DN	Basic Ordering Number Raised Face Flange	Dimension, in. (mm)						
			L	J	Jx	E	C	G	F
1/4	15	F4-FLA-RF1510K-	1.66(42.2)	3.74(95.0)	2.76(70.1)	0.19(4.8)	0.60(15.2)	0.56(14.3)	0.81(20.6)
3/8	15	F6-FLA-RF1510K-	1.72(43.7)	3.74(95.0)	2.76(70.1)	0.28(7.1)	0.66(16.8)	0.69(17.5)	0.81(20.6)
1/2	15	F8-FLA-RF1510K-	1.83(46.5)	3.74(95.0)	2.76(70.1)	0.41(10.4)	0.90(22.9)	0.87(22.2)	0.81(20.6)
3/4	15	F12-FLA-RF1510K-	1.91(48.5)	3.74(95.0)	2.76(70.1)	0.62(15.7)	0.96(24.4)	1.13(28.6)	1.25(31.8)
1	25	F16-FLA-RF2510K-	2.40(61.0)	4.92(125.0)	3.54(89.9)	0.88(22.4)	1.23(31.2)	1.50(38.1)	1.37(34.9)
12mm	15	M12-FLA-RF1510K-	1.83(46.5)	3.74(95.0)	2.76(70.0)	0.37(9.5)	0.90(22.8)	0.87(22.0)	0.79(20.0)
18mm	15	M18-FLA-RF1510K-	1.91(48.5)	3.74(95.0)	2.76(70.0)	0.59(15.1)	0.96(24.4)	1.18(30.0)	1.26(32.0)
25mm	25	M25-FLA-RF2510K-	2.40(61.0)	4.92(125.0)	3.54(90.0)	0.86(21.8)	1.23(31.3)	1.50(38.0)	1.38(35.0)

Sanitary Flange Fittings

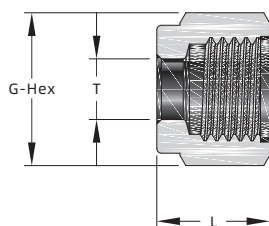


Fractional Tube

T-Tube O.D. (in.)	Flange Size (in.)	Basic Ordering Number	Dimension, in. (mm)						
			L	B	C	E	F	J	G
1/4	1/2	F4-SFF-SF8-	1.57(39.9)	0.37(9.4)	0.60(15.2)	0.19(4.8)	1.00(25.4)	0.98(24.9)	0.98(24.9)
1/4	3/4	F4-SFF-SF12-	1.57(39.9)	0.62(15.7)	0.60(15.2)	0.19(4.8)	1.00(25.4)	0.98(24.9)	0.98(24.9)
1/4	1	F4-SFF-SF16-	1.57(39.9)	0.87(22.1)	0.60(15.2)	0.19(4.8)	1.37(34.9)	1.98(50.3)	1.98(50.3)
1/4	1 1/2	F4-SFF-SF24-	1.57(39.9)	1.37(34.8)	0.60(15.2)	0.19(4.8)	1.37(34.9)	1.98(50.3)	1.98(50.3)
3/8	1/2	F6-SFF-SF8-	1.63(41.4)	0.30(7.6)	0.66(16.8)	0.28(7.1)	1.00(25.4)	0.98(24.9)	0.98(24.9)
3/8	3/4	F6-SFF-SF12-	1.63(41.4)	0.62(15.7)	0.66(16.8)	0.28(7.1)	1.00(25.4)	0.98(24.9)	0.98(24.9)
3/8	1	F6-SFF-SF16-	1.63(41.4)	0.87(22.1)	0.66(16.8)	0.28(7.1)	1.37(34.9)	1.98(50.3)	1.98(50.3)
3/8	1 1/2	F6-SFF-SF24-	1.63(41.4)	1.37(34.8)	0.66(16.8)	0.28(7.1)	1.37(34.9)	1.98(50.3)	1.98(50.3)
1/2	1/2	F8-SFF-SF8-	1.74(44.2)	0.30(7.6)	0.90(22.9)	0.37(9.4)	1.00(25.4)	0.98(24.9)	0.98(24.9)
1/2	3/4	F8-SFF-SF12-	1.74(44.2)	0.62(15.7)	0.90(22.9)	0.41(10.4)	1.00(25.4)	0.98(24.9)	0.98(24.9)
1/2	1	F8-SFF-SF16-	1.74(44.2)	0.87(22.1)	0.90(22.9)	0.41(10.4)	1.37(34.9)	1.98(50.3)	1.98(50.3)
1/2	1 1/2	F8-SFF-SF24-	1.74(44.2)	1.37(34.8)	0.90(22.9)	0.41(10.4)	1.37(34.9)	1.98(50.3)	1.98(50.3)
1	1	F16-SFF-SF16-	1.91(48.5)	0.87(22.1)	1.23(31.2)	0.87(22.1)	1.37(34.9)	1.98(50.3)	1.98(50.3)
1	2	F16-SFF-SF32-	2.49(63.2)	1.37(34.8)	1.23(31.2)	0.88(22.4)	2.75(69.9)	2.52(64.0)	2.52(64.0)

Replacement Parts

Nuts



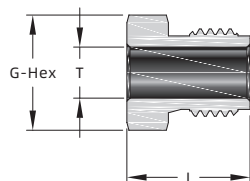
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, in. (mm)	
		L	G
1/16	N-F1-	0.31(7.9)	0.31(7.9)
1/8	N-F2-	0.47(11.9)	0.44(11.1)
3/16	N-F3-	0.47(11.9)	0.50(12.7)
1/4	N-F4-	0.50(12.7)	0.56(14.3)
5/16	N-F5-	0.53(13.5)	0.63(15.9)
3/8	N-F6-	0.56(14.2)	0.69(17.5)
1/2	N-F8-	0.69(17.5)	0.87(22.2)
5/8	N-F10-	0.69(17.5)	1.00(25.4)
3/4	N-F12-	0.69(17.5)	1.13(28.6)
7/8	N-F14-	0.69(17.5)	1.25(31.8)
1	N-F16-	0.81(20.6)	1.50(38.1)
1 1/8	N-F18-	1.21(30.8)	1.81(46.0)
1 1/4	N-F20-	1.25(31.8)	1.87(47.6)
1 1/2	N-F24-	1.50(38.1)	2.25(57.2)

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm(in.)	
		L	G
2	N-M2-	11.9(0.47)	12.0(0.47)
3	N-M3-	11.9(0.47)	12.0(0.47)
4	N-M4-	11.9(0.47)	12.0(0.47)
6	N-M6-	12.7(0.50)	14.0(0.55)
8	N-M8-	13.5(0.53)	16.0(0.63)
10	N-M10-	15.1(0.59)	19.0(0.75)
12	N-M12-	17.4(0.69)	22.0(0.87)
14	N-M14-	17.4(0.69)	25.0(0.98)
15	N-M15-	17.4(0.69)	25.0(0.98)
16	N-M16-	17.4(0.69)	25.0(0.98)
18	N-M18-	17.4(0.69)	30.0(1.18)
20	N-M20-	17.4(0.69)	32.0(1.26)
22	N-M22-	17.4(0.69)	32.0(1.26)
25	N-M25-	20.6(0.81)	38.0(1.50)
28	N-M28-	30.6(1.20)	46.0(1.81)
30	N-M30-	32.7(1.29)	50.0(1.97)
32	N-M32-	34.4(1.35)	50.0(1.97)
38	N-M38-	40.6(1.60)	60.0(2.36)

Male Nuts



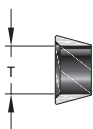
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number	Dimension, in. (mm)	
		L	G
1/16	MN-F1-	0.38(9.7)	0.25(6.4)
1/8	MN-F2-	0.53(13.5)	0.37(9.5)
1/4	MN-F4-	0.62(15.7)	0.50(12.7)
1/2	MN-F8-	0.87(22.1)	0.94(23.8)

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number	Dimension, mm(in.)	
		L	G
3	MN-M3-	13.5(0.53)	10.0(0.39)
6	MN-M6-	15.7(0.62)	14.0(0.55)
10	MN-M10-	22.1(0.87)	22.0(0.87)
12	MN-M12-	22.1(0.87)	24.0(0.94)

Front Ferrules



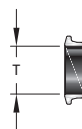
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number
1/16	FF-F1
1/8	FF-F2
3/16	FF-F3
1/4	FF-F4
5/16	FF-F5
3/8	FF-F6
1/2	FF-F8
5/8	FF-F10
3/4	FF-F12
7/8	FF-F14
1	FF-F16
1 1/8	FF-F18
1 1/4	FF-F20
1 1/2	FF-F24

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number
2	FF-M2
3	FF-M3
4	FF-M4
6	FF-M6
8	FF-M8
10	FF-M10
12	FF-M12
14	FF-M14
15	FF-M15
16	FF-M16
18	FF-M18
20	FF-M20
22	FF-M22
25	FF-M25
28	FF-M28
30	FF-M30
32	FF-M32
38	FF-M38

Rear Ferrules



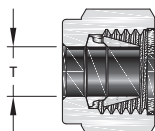
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number
1/16	RF-F1
1/8	RF-F2
3/16	RF-F3
1/4	RF-F4
5/16	RF-F5
3/8	RF-F6
1/2	RF-F8
5/8	RF-F10
3/4	RF-F12
7/8	RF-F14
1	RF-F16
1 1/8	RF-F18
1 1/4	RF-F20
1 1/2	RF-F24

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number
2	RF-M2
3	RF-M3
4	RF-M4
6	RF-M6
8	RF-M8
10	RF-M10
12	RF-M12
14	RF-M14
15	RF-M15
16	RF-M16
18	RF-M18
20	RF-M20
22	RF-M22
25	RF-M25
28	RF-M28
30	RF-M30
32	RF-M32
38	RF-M38

Nuts+ Ferrules



Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number
1/16	NFR-F1
1/8	NFR-F2
3/16	NFR-F3
1/4	NFR-F4
5/16	NFR-F5
3/8	NFR-F6
1/2	NFR-F8
5/8	NFR-F10
3/4	NFR-F12
7/8	NFR-F14
1	NFR-F16
1 1/8	NFR-F18
1 1/4	NFR-F20
1 1/2	NFR-F24

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number
2	NFR-M2
3	NFR-M3
4	NFR-M4
6	NFR-M6
8	NFR-M8
10	NFR-M10
12	NFR-M12
14	NFR-M14
15	NFR-M15
16	NFR-M16
18	NFR-M18
20	NFR-M20
22	NFR-M22
25	NFR-M25
28	NFR-M28
30	NFR-M30
32	NFR-M32
38	NFR-M38

Nut - Ferrule Sets

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



Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number
1/16	NFS-F1-
1/8	NFS-F2-
3/16	NFS-F3-
1/4	NFS-F4-
5/16	NFS-F5-
3/8	NFS-F6-
1/2	NFS-F8-
5/8	NFS-F10-
3/4	NFS-F12-

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number
2	NFS-M2-
3	NFS-M3-
4	NFS-M4-
6	NFS-M6-
8	NFS-M8-
10	NFS-M10-
12	NFS-M12-
14	NFS-M14-
15	NFS-M15-
16	NFS-M16-
18	NFS-M18-

Ferrule Sets

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



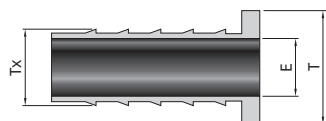
Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number
1/16	FRS-F1-
1/8	FRS-F2-
3/16	FRS-F3-
1/4	FRS-F4-
5/16	FRS-F5-
3/8	FRS-F6-
1/2	FRS-F8-
5/8	FRS-F10-
3/4	FRS-F12-

Metric Tube

T-Tube O.D. (mm)	Basic Ordering Number
2	FRS-M2-
3	FRS-M3-
4	FRS-M4-
6	FRS-M6-
8	FRS-M8-
10	FRS-M10-
12	FRS-M12-
14	FRS-M14-
15	FRS-M15-
16	FRS-M16-
18	FRS-M18-

Insert for Soft Plastic Tubings



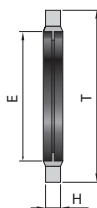
Fractional Tube

T-Tube O.D. (in.)	Tx-Tube I.D. (in.)	Basic Ordering Number	E in. (mm)
3/16	1/8	ISPF-3-2-	0.09(2.3)
1/4	1/8	ISPF-4-2-	0.09(2.3)
1/4	0.17	ISPF-4-017-	0.11(2.8)
1/4	3/16	ISPF-4-3-	0.14(3.5)
5/16	1/8	ISPF-5-2-	0.09(2.3)
5/16	3/16	ISPF-5-3-	0.12(3.0)
5/16	1/4	ISPF-5-4-	0.19(4.8)
3/8	3/16	ISPF-6-3-	0.12(3.0)
3/8	1/4	ISPF-6-4-	0.19(4.8)
1/2	1/4	ISPF-8-4-	0.19(4.8)
1/2	3/8	ISPF-8-6-	0.31(7.9)
5/8	3/8	ISPF-10-6-	0.31(7.9)
5/8	1/2	ISPF-10-8-	0.44(11.1)
3/4	1/2	ISPF-12-8-	0.44(11.1)
3/4	5/8	ISPF-12-10-	0.56(14.2)
1	3/4	ISPF-16-12-	0.69(17.5)

Metric Tube

T-Tube O.D. (mm)	Tx-Tube I.D. (mm)	Basic Ordering Number	E mm (in.)
6	4	ISPM-6-4-	2.8(0.11)
8	6	ISPM-8-6-	4.4(0.17)
10	8	ISPM-10-8-	6.4(0.25)
12	8	ISPM-12-8-	6.4(0.25)
12	10	ISPM-12-10-	8.3(0.33)

BS Gaskets



ISO Parallel Thread Size	Basic Ordering Number	Dimensions, in. (mm)		
		T	E	H
1/8	BS-2-	0.63(16.0)	0.41(10.4)	0.08(2.0)
1/4	BS-4-	0.81(20.6)	0.54(13.7)	
3/8	BS-6-	0.94(23.9)	0.68(17.3)	
1/2	BS-8-	1.13(28.7)	0.85(21.6)	0.10(2.5)
3/4	BS-12-	1.38(35.1)	1.06(26.9)	
1	BS-16-	1.69(42.9)	1.33(33.8)	

Metric Thread Size	Basic Ordering Number	Dimensions, mm (in.)		
		T	E	H
M8 x 1	BS-MS8-	13.0(0.51)	8.7(0.34)	1.5(0.06)
M10 x 1	BS-MS10-	16.0(0.63)	10.7(0.42)	
M12 x 1.5	BS-MS12-	18.0(0.71)	12.7(0.50)	
M14 x 1.5	BS-MS14-	22.0(0.87)	14.7(0.58)	
M16 x 1.5	BS-MS16-	24.0(0.94)	16.7(0.66)	
M18 x 1.5	BS-MS18-	26.0(1.02)	18.7(0.74)	
M20 x 1.5	BS-MS20-	28.0(1.10)	20.7(0.81)	
M22 x 1.5	BS-MS22-	30.0(1.18)	22.7(0.89)	2.0(0.08)
M24 x 1.5	BS-MS24-	32.0(1.26)	24.7(0.97)	
M27 x 2	BS-MS27-	36.0(1.42)	27.2(1.07)	
M30 x 2	BS-MS30-	39.0(1.54)	30.7(1.21)	
M33 x 2	BS-MS33-	42.0(1.65)	33.7(1.33)	2.5(0.10)
M36 x 2	BS-MS36-	48.0(1.89)	37.0(1.46)	
M39 x 2	BS-MS39-	51.0(2.01)	40.0(1.57)	
M42 x 2	BS-MS42-	53.0(2.09)	42.7(1.68)	3.0(0.12)
M45 x 2	BS-MS45-	57.0(2.24)	46.0(1.81)	
M48 x 2	BS-MS48-	59.0(2.32)	48.7(1.92)	

❖ The BS gasket provides a seal with male ISO parallel threads/Metric threads.

Ordering Information

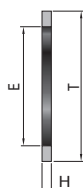
❖ Add the material designator as a postfix to the basic ordering number to complete the ordering number.

Ring		Designator
Outer	Inner	
316 Stainless Steel	FKM	316
Carbon Steel	Buna-N	CS

Example:

- ❖ A BS gasket with a Buna inner ring bonded to carbon steel outer ring provides a seal with 1/8 male ISO parallel thread, the complete ordering number is **BS-2-CS**.
- ❖ BS gasket can be used with BS fitting only.

BP Gaskets



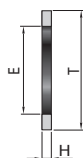
ISO Parallel Thread Size	Basic Ordering Number	Dimensions, in. (mm)		
		T	E	H
1/8	BP-2-	0.59(15.0)	0.39(9.9)	0.06(1.5)
1/4	BP-4-	0.75(19.1)	0.52(13.2)	
3/8	BP-6-	0.91(23.1)	0.66(16.8)	
1/2	BP-8-	1.06(26.9)	0.83(21.1)	0.08(2.0)
3/4	BP-12-	1.30(33.0)	1.05(26.7)	
1	BP-16-	1.69(40.1)	1.31(33.2)	

Metric Thread Size	Basic Ordering Number	Dimensions, mm (in.)		
		T	E	H
M8 x 1	BP-MS8-	13.2(0.52)	8.2(0.32)	1.5(0.06)
M10 x 1	BP-MS10-	15.2(0.60)	10.2(0.40)	
M12 x 1.5	BP-MS12-	18.2(0.72)	12.2(0.48)	
M14 x 1.5	BP-MS14-	20.2(0.80)	14.2(0.56)	2.0(0.08)
M16 x 1.5	BP-MS16-	22.2(0.87)	16.2(0.64)	
M18 x 1.5	BP-MS18-	24.2(0.95)	18.2(0.72)	
M20 x 1.5	BP-MS20-	26.2(1.03)	20.2(0.80)	
M22 x 1.5	BP-MS22-	28.2(1.11)	22.2(0.87)	
M24 x 1.5	BP-MS24-	30.2(1.19)	24.2(0.95)	
M27 x 2	BP-MS27-	33.3(1.31)	27.2(1.07)	2.5(0.10)
M30 x 2	BP-MS30-	37.3(1.47)	30.2(1.19)	
M33 x 2	BP-MS33-	40.3(1.59)	33.2(1.37)	
M36 x 2	BP-MS36-	43.3(1.70)	36.2(1.43)	
M39 x 2	BP-MS39-	47.3(1.86)	39.2(1.54)	
M42 x 2	BP-MS42-	50.3(1.98)	42.2(1.66)	
M45 x 2	BP-MS45-	53.3(2.10)	45.2(1.78)	
M48 x 2	BP-MS48-	56.3(2.22)	48.2(1.90)	

❖ The BP gasket provides a seal with male ISO parallel threads/Metric threads.

❖ The BP gasket may be used with a BP fitting.

BG Gaskets



ISO Parallel Thread Size	Basic Ordering Number	Dimensions, in. (mm)		
		T	E	H
1/4	BG-4-	0.42(10.7)	0.30(7.6)	0.08(2.0)
3/8	BG-6-	0.56(14.2)	0.34(8.6)	0.08(2.0)
1/2	BG-8-	0.70(17.8)	0.36(9.1)	0.10(2.5)

Metric Thread Size	Basic Ordering Number	Dimensions, mm (in.)		
		T	E	H
M10 x 1	BG-MS10-	8.3(0.33)	3.3(0.13)	1.5(0.06)
M12 x 1.5	BG-MS12-	9.7(0.38)	5.4(0.21)	
M14 x 1.5	BG-MS14-	11.7(0.46)	6.4(0.25)	
M16 x 1.5	BG-MS16-	13.7(0.54)	8.4(0.33)	2.0(0.08)
M18 x 1.5	BG-MS18-	15.7(0.62)	10.0(0.39)	
M20 x 1.5	BG-MS20-	18.0(0.71)	8.0(0.31)	
M22 x 1.5	BG-MS22-	19.6(0.77)	13.4(0.53)	
M24 x 1.5	BG-MS24-	21.6(0.85)	14.8(0.58)	
M27 x 2	BG-MS27-	24.0(0.94)	13.9(0.55)	
M30 x 2	BG-MS30-	27.0(1.06)	19.5(0.77)	2.5(0.10)
M33 x 2	BG-MS33-	30.0(1.18)	21.5(1.85)	
M36 x 2	BG-MS36-	33.0(1.30)	23.5(0.93)	
M39 x 2	BG-MS39-	36.0(1.42)	24.5(1.00)	
M42 x 2	BG-MS42-	38.9(1.53)	29.5(1.16)	
M45 x 2	BG-MS45-	41.9(1.65)	30.0(1.18)	
M48 x 2	BG-MS48-	44.9(1.77)	32.5(1.28)	

Ordering Information

❖ Add the material designator as a postfix to the basic ordering number to complete the ordering number.

Material	Designator
Copper	CU
316 Stainless Steel	316
PTFE	PTFE

❖ Example: BP-8-CU, BG-4-316, BG-MS14-CU.

O-rings



O-rings for Fittings with SAE/MS Straight Threads

SAE/MS Thread Size	Ordering Number	Material
5/16-24	FKM9-902	90 Durometer Fluorocarbon FKM
3/8-24	FKM9-903	
7/16-20	FKM9-904	
1/2-20	FKM9-905	
9/16-18	FKM9-906	
3/4-16	FKM9-908	
7/8-14	FKM9-910	
1 1/16-12	FKM9-912	
1 3/16-12	FKM9-914	
1 5/16-12	FKM9-916	
1 5/8-12	FKM9-920	
1 7/8-12	FKM9-924	

O-rings for Fittings with O-Seal Pipe Threads

NPT/ISO Thread Size	Ordering Number	Material
1/8	NBR7-013	70 Durometer NBR
1/4	NBR7-113	
3/8	NBR7-116	
1/2	NBR7-118	

O-rings for Positionable Fittings with ISO Parallel Threads

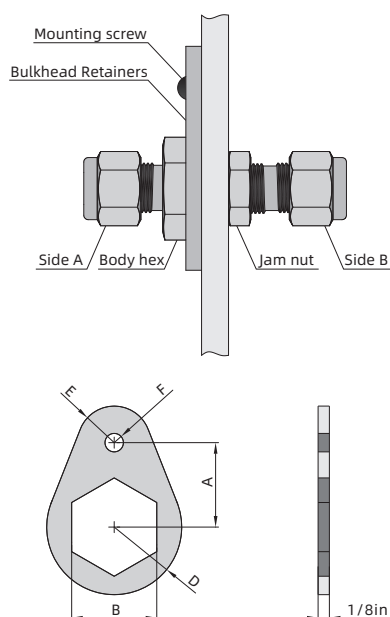
ISO Parallel Thread Size	Ordering Number	Material
1/8	FKM9-502	90 Durometer Fluorocarbon FKM
1/4	FKM9-111	
3/8	FKM9-113	
1/2	FKM9-508	
3/4	FKM9-119	
1	FKM9-217	

O-rings for Fittings with O-Seal Straight Threads

SAE/MS Thread Size	Ordering Number	Material
5/16-24	NBR7-011	70 Durometer NBR
3/8-24	NBR7-012	
7/16-20	NBR7-013	
1/2-20	NBR7-112	
9/16-18	NBR7-113	
3/4-16	NBR7-116	
1 1/16-12	NBR7-121	
1 5/16-12	NBR7-125	

Bulkhead Retainers

- ❖ By using the bulkhead retainer, one person can tighten the jam nut on side A for initial bulkhead fitting installation. Now tubing can be connected to side A and B by one person with one wrench, because the bulkhead retainer acts as a backup wrench.



Fitting Size		Ordering Number	Dimensions, in.				
in.	mm		A	B	D	E	F
1/16	—	BR-01-316	3/8	5/16	5/16	5/32	5/32
1/8	—	BR-02-316	1/2	1/2	13/32	7/32	
3/16	3,4	BR-03-316	9/16	9/16	15/32	1/4	
1/4	6	BR-04-316	5/8	5/8	1/2	9/32	
5/16	—	BR-05-316	11/16	11/16	9/16	5/16	
—	8	BR-M8-316	11/16	18mm	9/16	5/16	7/32
3/8	—	BR-06-316	3/4	3/4	5/8	11/32	
—	10	BR-M10-316	15/16	22mm	3/4	13/32	
1/2	12	BR-08-316	15/16	15/16	3/4	13/32	
5/8	15,16	BR-10-316	1	1 1/16	13/16	13/32	
3/4	18	BR-12-316	1 1/16	1 3/16	29/32	15/32	
7/8	—	BR-14-316	1 1/8	1 5/16	1 1/32	17/32	
1	—	BR-16-316	1 9/32	1 5/8	1 5/32	9/16	

- ❖ Including matching mounting screws.

How to Order

F8 — **MBT** — **F8** — **NPT8** — **316**

Port 1 Type	Port 1 Size	Configuration Designator	Port 2 Type	Port 2 Size	Port 3 and Port 4	Material
M Metric Ferrule	1 1/16 in.	MC Male Connector	Same as the Port 1 or as follows: FNPT Female NPT	Same as the Port 1 or as follows: 5 M5 x 0.8 or 5/16-24	Same as the Port 1	316 316 S.S.
F Fractional Ferrule	2 1/8 in. or 2 mm	BMC Bulkhead Male Connector	NPT Male NPT	6 M6 x 1 or 3/8-24		316L 316L S.S.
MT Metric Tube Adapter	3 3/16 in. or 3 mm	TC Thermocouple Connector	NPTD O-ring with Male NPT	7 7/16-20		304 304 S.S.
FT Fractional Tube Adapter	4 1/4 in. or 4 mm	FC Female Connector	FBT Female BSPT	8 M8 x 1 or 1/2-20		304L 304L S.S.
	5 5/16 in.	BFC Bulkhead Female Connector	MBT Male BSPT	9 9/16-18		A20 Alloy 20
	6 3/8 in. or 6 mm	U Union	MBTO O-ring with Male BSPT	10 M10 x 1		A400 Alloy 400
	8 1/2 in. or 8 mm	BU Bulkhead Union	FBP Female BSPP	12 M12 x 1.5 or 3/4-16		A600 Alloy 600
	10 5/8 in. or 10 mm	ME Male Elbow	PMBP Male BSPP (for BP)	14 M14 x 1.5 or 7/8-14		A625 Alloy 625
	12 3/4 in. or 12 mm	45ME 45° Male Elbow	MBS Male BSPP (for BS)	16 M16 x 1.5		A825 Alloy 825
	14 7/8 in. or 14 mm	45PME Positionable 45° Male Elbow	MBP Male BSPP (for BG)	17 1 1/16-12		A276 Alloy C276
	15 15 mm	PME Positionable Male Elbow	MBPO O-ring with Male BSPP	18 M18 x 1.5		DU7 Duplex 2507
	16 1 in. or 16 mm	FE Female Elbow	FMS Female Metric	19 1 3/16-12		CS Carbon steel
	18 1 1/8 in. or 18 mm	UE Union Elbow	MS Male Metric (for BG)	20 M20 x 1.5		Ti Titanium (grade4)
	20 1 1/4 in. or 20 mm	MRT Male Run Tee	BPMS Male Metric (for BP)	21 1 5/16-12		PTFE PTFE
	22 22 mm	MBT Male Branch Tee	BSMS Male Metric (for BS)	22 M22 x 1.5		
	24 1 1/2 in. or 24 mm	PMRT Positionable Male Run Tee	OMS O-ring with Male Metric	24 M24 x 1.5		
	25 25 mm	PMBT Positionable Male Branch Tee	FST Female SAE	26 1 5/8-12		
	28 28 mm	FRT Female Run Tee	MST Male SAE (for BG)	27 M27 x 2		
	30 30 mm	FBT Female Branch Tee	BPST Male SAE (for BP)	30 1 7/8-12		
	32 2 in. or 32 mm	UT Union Tee	BSST Male SAE (for BS)			
	38 38 mm	UC Union Cross	OST SAE			
	50 50 mm	CA Cap	STO O-Seal with SAE			
		PL Plug	PPT Positionable BSPP Thread			
		R Reducer	PMS Positionable Metric Parallel Thread			
		RE Reducer Elbow	PST Positionable SAE Parallel Thread			
		BR Bulkhead Reducer	AN Male 37° Flare			
		PC Port Connector	AN Female 37° Flare			
		MA Male Adapter	FSW Fractional Tube Socket Weld			
		FA Female Adapter	FBW Fractional Tube Butt Weld			
		WC Weld Connector	MSW Metric Tube Socket Weld			
		WE Weld Elbow	MBW Metric Tube Butt Weld			
		FLA Flange Adapter	PBW Pipe Butt Weld			
		SFF Sanitary Flange Fitting	PSW Pipe Socket Weld			
		N Nut				
		MN Male Nut				
		RF Rear Ferrule				
		FF Front Ferrule				
		FR Ferrules				
		NFR Nut + Ferrules				

