

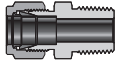
# Tube Fittings

Twin Ferrule Series



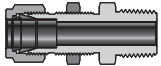
# Contents

## Male Connectors



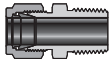
4

## Bulkhead Male Connectors



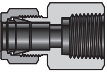
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## Thermocouple Connectors



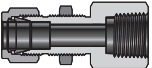
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## Female Connectors



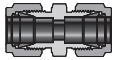
18

## Bulkhead Female Connectors



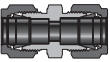
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## Unions



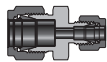
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## Conversion Unions



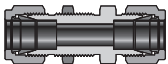
25

## Reducing Unions



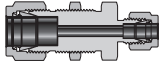
25

## Bulkhead Unions



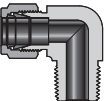
27

## Bulkhead Reducing Unions



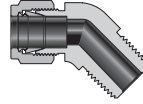
27

## Male Elbows



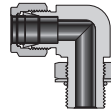
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## 45° Male Elbows



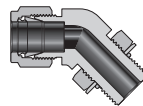
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## Adjustable Male Elbows



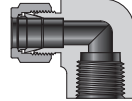
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## 45° Adjustable Male Elbows



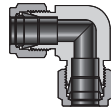
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## Female Elbows



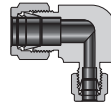
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## Union Elbows



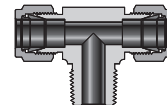
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## Union Reducing Elbows



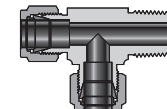
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## Male Branch Tees



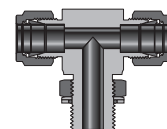
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## Male Run Tees



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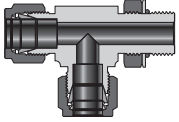
## Adjustable Male Branch Tees



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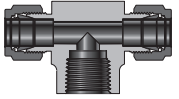
# Contents

## Adjustable Male Run Tees



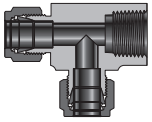
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## Female Branch Tees



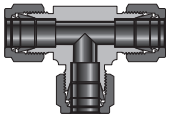
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## Female Run Tees



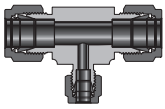
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## Union Tees



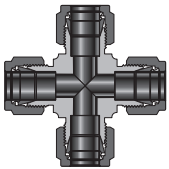
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## Reducing Union Tees



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## Union Crosses



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## Caps



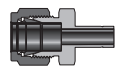
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## Plugs



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## Reducers



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## Port Connectors



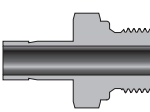
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## Reducing Port Connectors



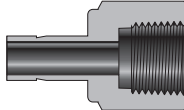
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## Male Adapters



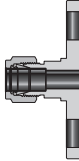
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## Female Adapters



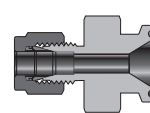
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## Flange Adapters



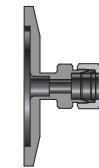
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## Sanitary Flange Fittings



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## KF Vacuum Flange Fittings



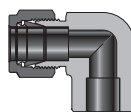
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## Weld Connectors



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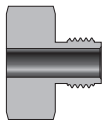
## Weld Elbows



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# Contents

Male Nuts



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Front Ferrules



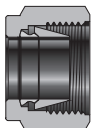
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Rear Ferrules



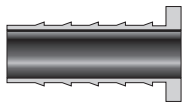
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Nuts+Ferrules



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Insert for Soft Plastic Tubings



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BS Gaskets



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BP Gaskets



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BG Gaskets



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O-rings



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## Features

- ❖ Twin ferrule fittings provide metal-to-metal seal connections, non-elastomeric seals for leak-free connections
- ❖ Hikelok 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
- ❖ Stainless steel tube hardness: the hardness of the tube shall be not greater than 85 HRB
- ❖ Available in sizes from 1/16 to 2in and 2 mm to 50 mm
- ❖ Hikelok fittings materials include 316 stainless steel, steel, brass, aluminum, nickel-copper, Hastelloy C, 6Mo, Incoloy 625 and 825
- ❖ Hikelok 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 ( $1 \times 10^{-4}$  mbar or greater): the leak rate less than  $1 \times 10^{-8}$
- ❖ 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 evidence of leakage
- ❖ Pneumatic pressure vibration test (The frequency of vibration shall be set at 45 Hz and complete  $20 \times 10^6$  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 helium detected

## Materials Standards

Material	Bar Stock	Forgings
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	ASTM B564, ASME SB564
Alloy 825	ASTM B425	ASTM B564, ASME SB564
Alloy C-276	ASTM B574	ASTM B564
Aluminum	ASTM B211	ASTM B247
Brass	ASTM B16, ASTM B453	ASTM B283
Carbon steel	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

## Thread Specifications

Thread Type (End Connection)	Reference Specification
NPT	ASME B1.20.1, SAE AS71051
ISO/BSP(parallel) (Based on DIN 3852) (HIKELOK PPT, BP, and BS fittings)	ISO 228, JIS B0202
ISO/BSP(tapered) (Based on DIN 3852) (Hikelok BT fittings)	ISO 7, BS EN 10226-1, JIS B0203
ISO/BSP(gauge) (Based on EN 837-1 and 837-3) (Hikelok BG)	ISO 228, JIS B0202
Unified (SAE) (Hikelok ST fittings)	ASME B1.1

## NPT Thread 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	760	6700	460	5500	380	3300	230
1/8	10000	690	6500	440	5000	340	3200	220
1/4	8000	550	6600	450	4000	270	3300	220
3/8	7800	540	5300	360	3900	270	2600	180
1/2	7700	530	4900	330	3800	260	2400	160
3/4	7300	500	4600	320	3600	250	2300	160
1	5300	370	4400	300	2600	180	2200	150
1 1/4	6000	410	5000	350	3000	200	2500	170
1 1/2	5000	340	4600	310	2500	170	2300	150
2	3900	270	3900	270	1900	130	1900	130

To determine pressure ratings in accordance with ASME B31.1, Power Piping:  
stainless steel material-multiply by 0.94  
carbon steel material-multiply by 0.85  
Brass material ratings remain the same.

## SAE/MS Thread Pressure Ratings

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

SAE/MS Thread Size	316 S.S. and Carbon Steel					
	Nonpositionable		positionable			
	psig	bar	psig	bar		
5/16-24	4568	315	4568	315		
7/16-20						
1/2-20			3626	250		
9/16-18						
3/4-16	3626	250	2900	200		
7/8-14						
1 1/16-12			2900	200	2320	160
1 3/16-12						
1 5/16-12	2320	160	1813	125		
1 5/8-12						
1 7/8-12						
2 1/2-12	1813	125	1450	100		

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

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

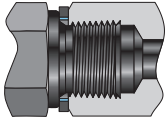
Pressure ratings are at ambient temperature.

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 parallel threads

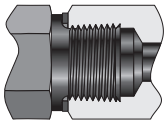
### 1. BS sealing: BS male thread end, BS gasket and BP female thread port

- ❖ BS male thread end complies with DIN 3852-2 type A
- ❖ BP female thread port complies with DIN 3852-2 type X



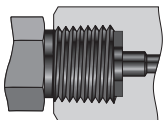
### 2. BP sealing: BP male thread end, BP gasket and BP female thread port

- ❖ BP male thread end complies with DIN 3852-2 type B
- ❖ BP female thread port complies with DIN 3852-2 type X
- ❖ The BP gasket can be used with a BS fitting



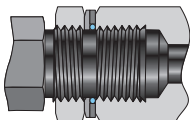
### 3. BG sealing: BG male thread end, BG gasket and BG female thread port

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

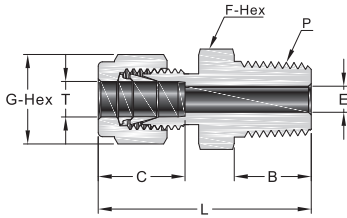


### 4. PPT sealing: PPT male thread end and BP female thread port

- ❖ BP female thread port complies with DIN 3852-2 type X



## Male Connectors



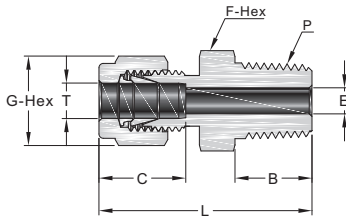
### Fractional Tube

### 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-	47.0	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



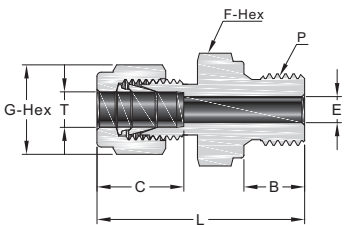
## Male Connectors



### 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

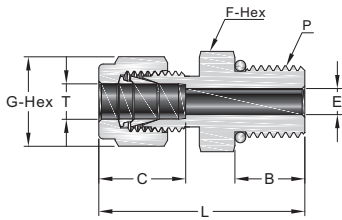
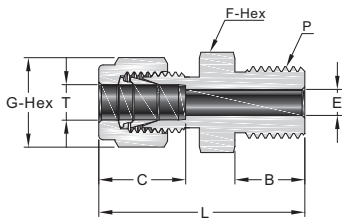
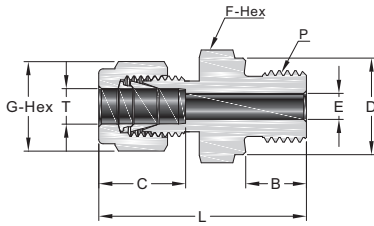


### Fractional Tube

### 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



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

### 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

### Fractional Tube

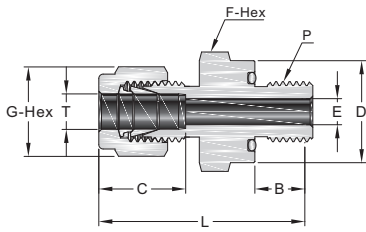
### ISO Parallel Thread (BG)

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

### Fractional Tube

### SAE/MS Straight Thread

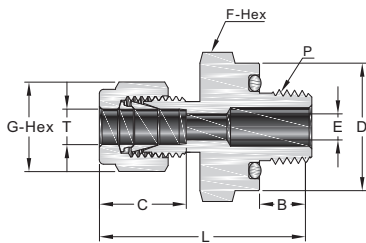
T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/16	5/16-24	F1-MC-OST5-	23.4	7.6	8.6	1.3	7.9	11.1
1/8	5/16-24	F2-MC-OST5-	30.0	7.6	12.7	2.3	11.1	11.1
1/8	7/16-20	F2-MC-OST7-	31.5	9.1	12.7	2.3	11.1	14.3
1/8	9/16-18	F2-MC-OST9-	33.3	9.9	12.7	2.3	11.1	17.5
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



**Fractional Tube**

**O-Seal with SAE/MS Straight Thread**

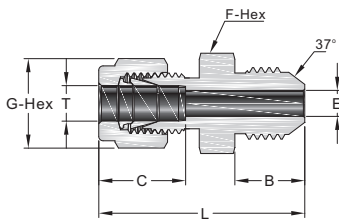
T-Tube O.D. (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm						
			L	B	C	E	G	F	D
1/16	5/16-24	F1-MC-STO5-	26.7	8.6	8.6	1.3	7.9	14.3	14.0
1/8	5/16-24	F2-MC-STO5-	32.8	8.6	12.7	2.3	11.1	14.3	14.0
3/16	3/8-24	F3-MC-STO6-	34.3	9.7	13.7	3.0	12.7	15.9	15.7
1/4	7/16-20	F4-MC-STO7-	38.4	10.4	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-NPTO2-	32.8	7.1	8.6	2.3	11.1	19.1	18.8
1/4	1/8	F4-MC-NPTO2-	35.1	7.1	15.2	4.8	14.3	19.1	18.8
1/4	1/4	F4-MC-NPTO4-	38.4	9.7	15.2	4.8	14.3	23.8	23.6
3/8	1/4	F6-MC-NPTO4-	39.9	9.7	16.8	7.1	17.5	23.8	23.6
3/8	3/8	F6-MC-NPTO6-	41.4	10.4	16.8	7.1	17.5	28.6	28.4
3/8	1/2	F6-MC-NPTO8-	47.0	13.5	16.8	7.1	17.5	33.3	33.0
1/2	1/2	F8-MC-NPTO8-	49.8	13.5	22.9	10.4	22.2	33.3	33.0

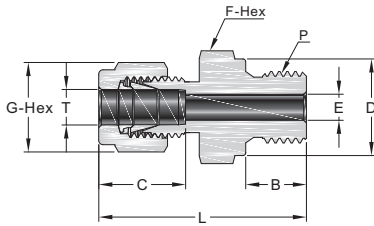


**Fractional Tube**

**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)	

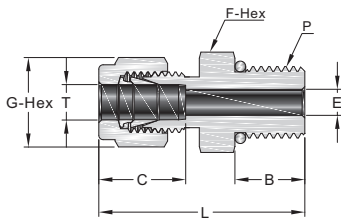
## Male Connectors



### 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

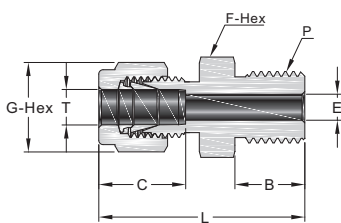


Adapt to straight thread boss of ISO 6149-1.

### 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

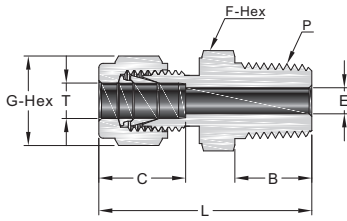


### Fractional Tube

### 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	F4-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

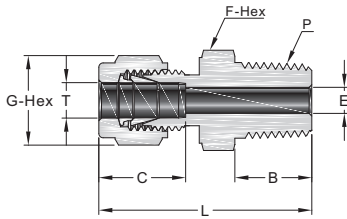


### Metric Tube

### 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

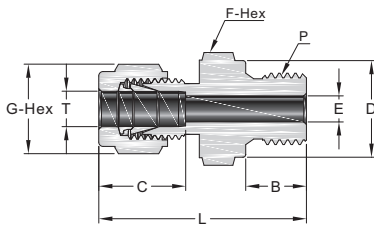


### Metric Tube

### 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

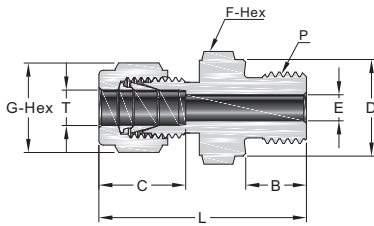


### Metric Tube

### 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

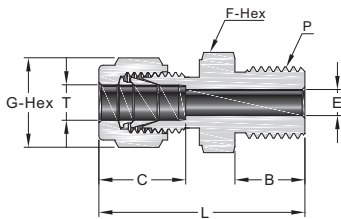
## Male Connectors



### 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



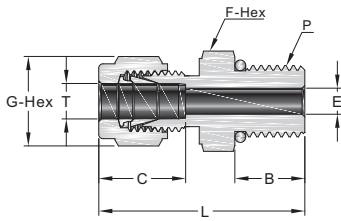
### Metric Tube

### 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.

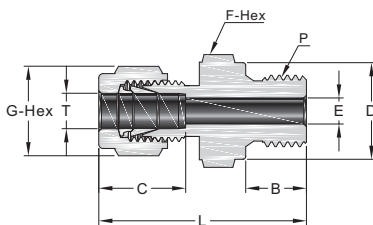
### Metric Tube

### SAE/MS Straight Thread

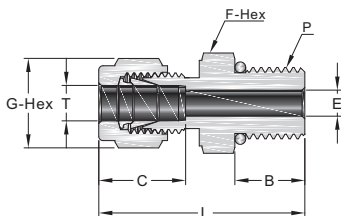
T-Tube O.D. (mm)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
6	9/16-18	M6-MC-OST9-	35.6	9.9	15.3	4.8	14	18
10	9/16-18	M10-MC-OST9-	37.3	9.9	17.2	7.1	19	22
10	3/4-16	M10-MC-OST12-	39.4	11.2	17.2	7.9	19	22
12	7/16-20	M12-MC-OST7-	40.6	9.1	22.8	5.2	22	22
12	9/16-18	M12-MC-OST9-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

### 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	



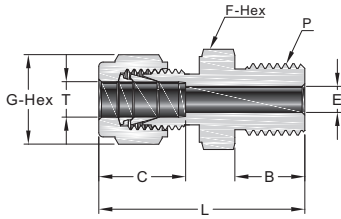
Adapt to straight thread boss of ISO 6149-1.

### 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

Male Connectors

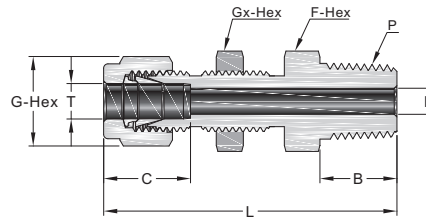


Metric Tube

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	M22-MC-MS27-	57.0	18	31.3	16.1	38	35

## Bulkhead Male Connectors



### Fractional Tube

### NPT Thread

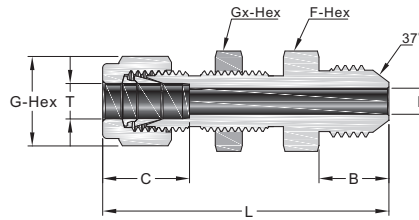
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm							Panel Hole Size (mm)	Max. Panel Thickness (mm)
			L	B	C	E	G	F	Gx		
1/16	1/16	F1-BMC-NPT1-	30.2	9.7	8.6	1.3	7.9	7.9	7.9	5.2	6.4
1/16	1/8	F1-BMC-NPT2-	32.3	9.7	8.6	1.3	7.9	11.1	7.9	5.2	6.4
1/8	1/8	F2-BMC-NPT2-	46.5	9.7	12.7	2.3	11.1	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

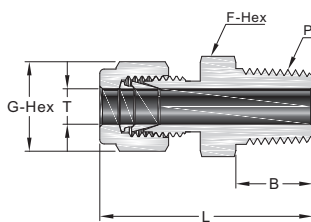


### Fractional Tube

### 37° Flare (AN)

T-Tube O.D. (in.)	AN Tube Flare Size	Basic Ordering Number	Dimension, in. (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-	1.91 (48.5)	0.45 (11.4)	0.50 (12.7)	0.06 (1.5)	0.44 (11.1)	0.50 (12.7)	0.50 (12.7)	0.33 (8.3)	0.50 (12.7)
1/8	1/4	F2-BMC-AN4-	2.04 (51.8)	0.55 (14.0)	0.50 (12.7)	0.09 (2.3)	0.44 (11.1)	0.63 (15.9)	0.50 (12.7)	0.33 (8.3)	0.51 (12.7)
3/16	3/16	F3-BMC-AN3-	1.98 (50.3)	0.48 (12.2)	0.54 (13.7)	0.09 (2.3)	0.50 (12.7)	0.56 (14.3)	0.56 (14.3)	0.39 (9.9)	0.50 (12.7)
1/4	1/4	F4-BMC-AN4-	2.12 (53.8)	0.55 (14.0)	0.60 (15.2)	0.17 (4.3)	0.56 (14.3)	0.63 (15.9)	0.63 (15.9)	0.45 (11.5)	0.40 (10.2)
5/16	5/16	F5-BMC-AN5-	2.21 (56.1)	0.55 (14.0)	0.64 (16.2)	0.23 (5.8)	0.63 (15.9)	0.69 (17.5)	0.69 (17.5)	0.52 (13.1)	0.56 (14.3)
3/8	1/4	F6-BMC-AN4-	2.25 (57.2)	0.55 (14.0)	0.66 (16.8)	0.17 (4.3)	0.69 (17.5)	0.75 (19.1)	0.75 (19.1)	0.58 (14.7)	0.44 (11.2)
3/8	3/8	F6-BMC-AN6-	2.25 (57.2)	0.56 (14.2)	0.66 (16.8)	0.28 (7.1)	0.69 (17.5)	0.75 (19.1)	0.75 (19.1)	0.58 (14.7)	0.44 (11.2)
1/2	1/2	F8-BMC-AN8-	2.59 (65.8)	0.66 (16.8)	0.90 (22.8)	0.39 (9.9)	0.87 (22.2)	0.94 (23.8)	0.94 (23.8)	0.76 (19.4)	0.50 (12.7)
5/8	5/8	F10-BMC-AN10-	2.74 (69.6)	0.76 (19.3)	0.96 (24.4)	0.48 (12.3)	1.00 (25.4)	1.06 (27.0)	1.06 (27.0)	0.89 (22.6)	0.59 (15.1)
3/4	3/4	F12-BMC-AN12-	3.11 (79.0)	0.86 (21.8)	0.96 (24.4)	0.61 (15.5)	1.13 (28.6)	1.19 (30.2)	1.19 (30.2)	1.02 (25.8)	0.66 (16.8)
1	1	F16-BMC-AN16-	3.64 (92.5)	0.91 (23.1)	1.23 (31.2)	0.84 (21.3)	1.50 (38.1)	1.63 (41.3)	1.63 (41.3)	1.33 (33.7)	0.75 (19.1)

## Thermocouple Connectors

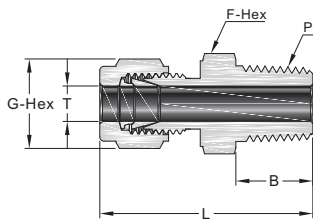


### Fractional Tube

### 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

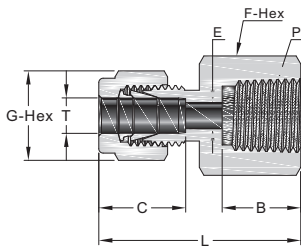


### Metric Tube

### 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

## Female Connectors



### Fractional Tube

### NPT Thread

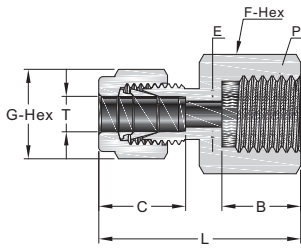
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm					
			L	B	C	E	G	F
1/16	1/16	F1-FC-FNPT1-	23.6	9.9	8.6	1.3	7.9	11.1
1/16	1/8	F1-FC-FNPT2-	24.4	10.4	8.6	1.3	7.9	14.3
1/8	1/8	F2-FC-FNPT2-	28.7	10.4	12.7	2.3	11.1	14.3
1/8	1/4	F2-FC-FNPT4-	33.5	15.0	12.7	2.3	11.1	19.1
3/16	1/8	F3-FC-FNPT2-	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

### 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

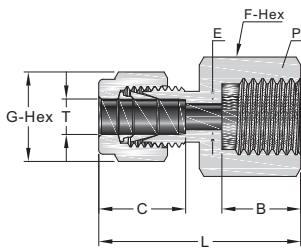
## Female Connectors



### 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

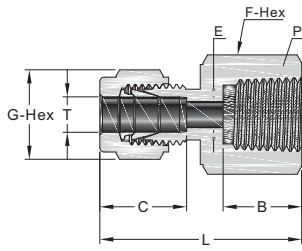


### Fractional Tube

### 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

## Female Connectors



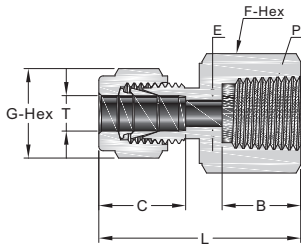
### Metric Tube

### 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	4.8	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	4.8	19	15
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

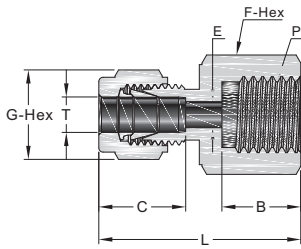


### Metric Tube

### 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



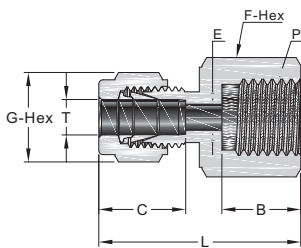
### Metric Tube

### 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

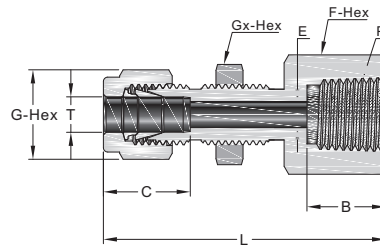
### Metric Tube

### 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

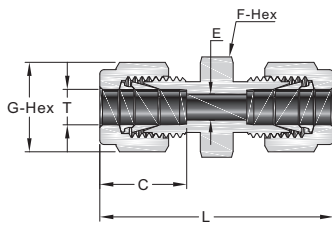
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm							Panel Hole Size (mm)	Max. Panel Thickness (mm)
			L	B	C	E	G	F	Gx		
1/16	1/16	F1-BFC-FNPT1-	26.2	9.9	8.6	1.3	7.9	11.1	7.9	5.2	3.2
1/16	1/8	F1-BFC-FNPT2-	26.9	10.4	8.6	1.3	7.9	14.3	7.9	5.2	3.2
1/8	1/8	F2-BFC-FNPT2-	44.7	10.4	12.7	2.3	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



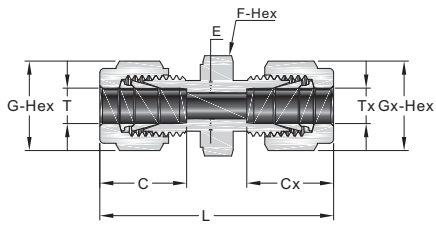
### Fractional Tube

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

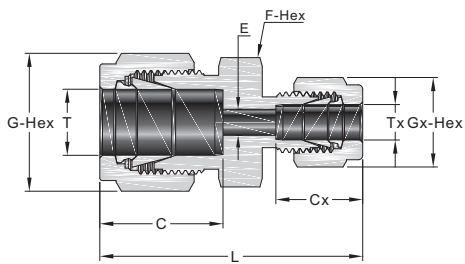


### Metric Tube

### 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

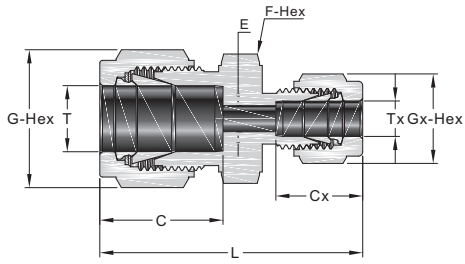
## Reducing Unions



### 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

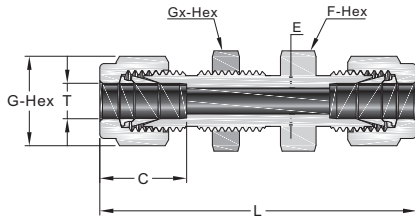
## Reducing Unions



### 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



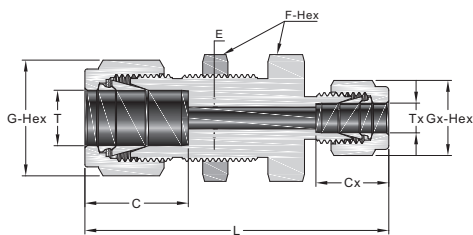
### Fractional Tube

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

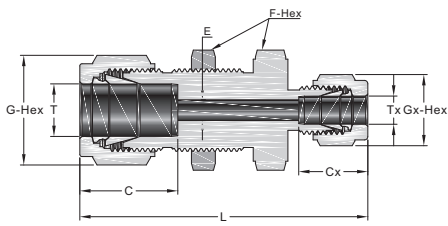
## Bulkhead Reducing Unions



### 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

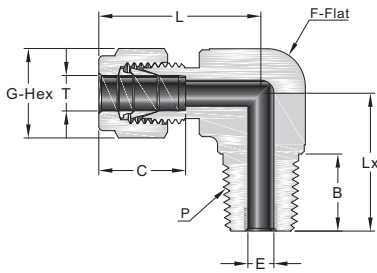


### Metric Tube

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	



## Male Elbows



### Fractional Tube

### NPT Thread

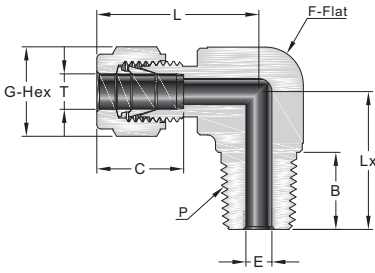
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/16	1/16	F1-ME-NPT1-	19.1	8.6	7.9	11.1	1.3	9.7	17.8
1/16	1/8	F1-ME-NPT2-	19.1	8.6	7.9	11.1	1.3	9.7	17.8
1/8	1/16	F2-ME-NPT1-	23.6	12.7	11.1	11.1	2.4	9.7	17.8
1/8	1/8	F2-ME-NPT2-	23.6	12.7	11.1	11.1	2.4	9.7	17.8
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

### 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

## Male Elbows

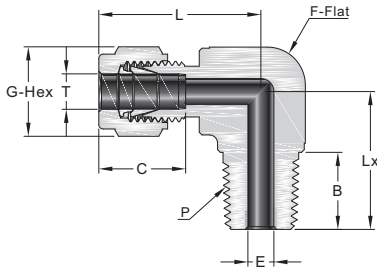


### Metric Tube

### 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

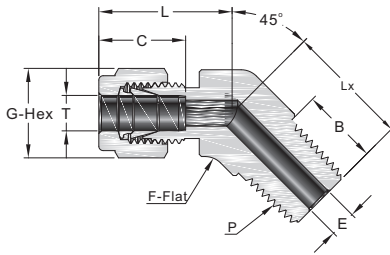


### Metric Tube

### 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

## 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

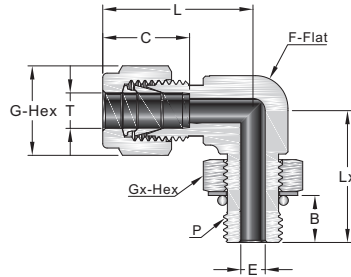
### NPT Thread

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

## Positionable Male Elbows

SAE/MS Straight Thread

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



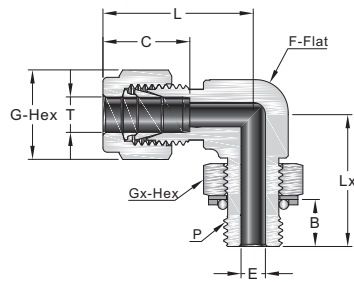
Fractional Tube

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

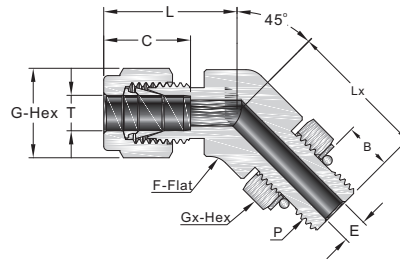
### ISO Parallel Thread (PPT)

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

## 45° Positionable Male Elbows

SAE/MS Straight Thread

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

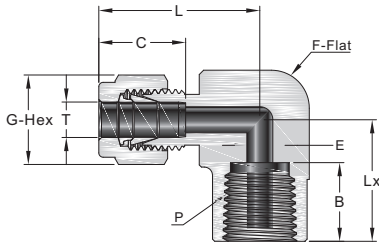


### Fractional Tube

### 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

## 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

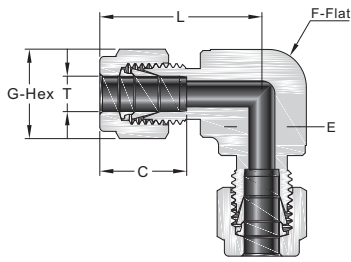
### Metric Tube

### 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



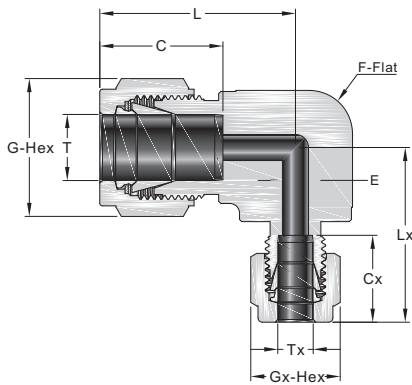
### Fractional Tube

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



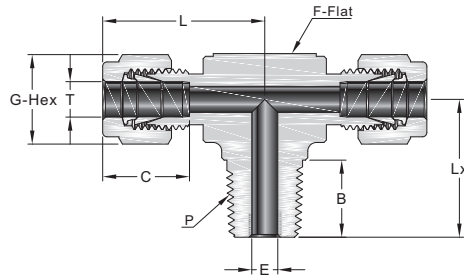
### Fractional Tube

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	

## Male Branch Tees



### Fractional Tube

### NPT Thread

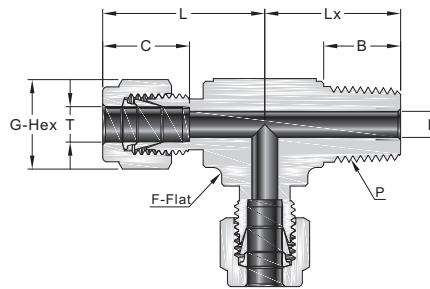
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/8	1/8	F2-MBT-F2-NPT2-	23.6	12.7	11.1	11.1	2.3	9.7	17.8
1/8	1/4	F2-MBT-F2-NPT4-	24.6	12.7	11.1	12.7	2.3	14.2	23.4
3/16	1/8	F3-MBT-F3-NPT2-	24.4	13.7	12.7	11.1	3.0	9.7	17.8
1/4	1/8	F4-MBT-F4-NPT2-	26.9	15.2	14.3	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

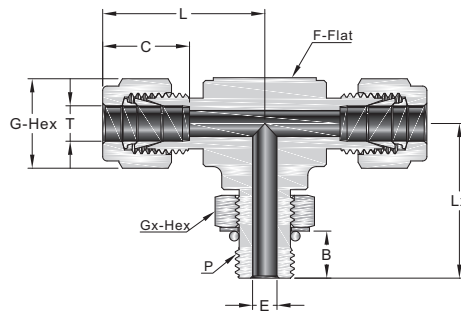
Metric Tube NPT Thread

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

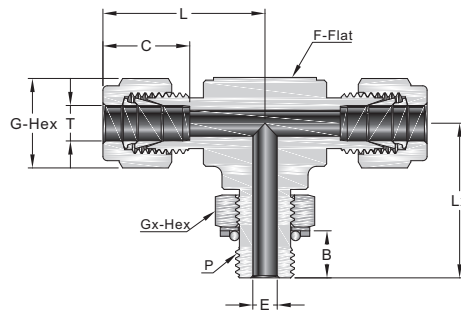
Adapt to straight thread boss of  
SAE J1926-1, ISO 11926-1 and MS 16142.



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	F24-PMBT-F24-PST30-	78.0	16.8	50.0	34.0	57.2	50.8	60.5	54.0

## Positionable Male Branch Tees

ISO Parallel Thread



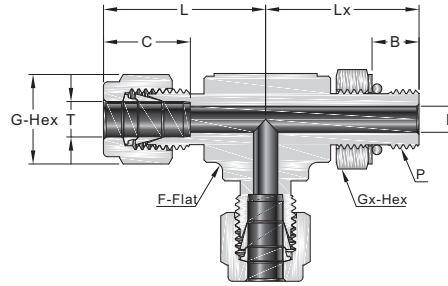
T-Tube O.D. (in.)	P-ISO Parallel Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	E	G	F	Lx	Gx
1/4	1/8	F4-PMBT-F4-PPT2-	26.9	8.1	15.2	4.1	14.3	12.7	26.4	14.3
1/4	1/4	F4-PMBT-F4-PPT4-	29.0	9.1	15.2	4.8	14.3	15.9	32.3	19.1
3/8	1/4	F6-PMBT-F6-PPT4-	30.5	9.1	16.8	5.8	17.5	15.9	32.3	19.1
1/2	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

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.



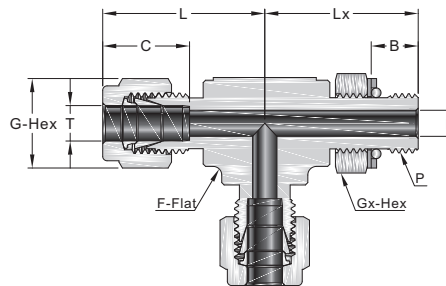
Fractional Tube

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)

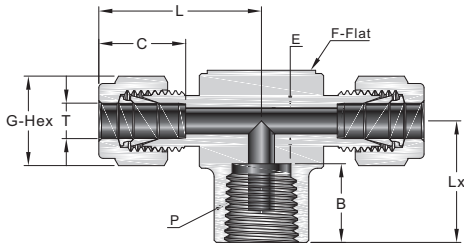
T-Tube O.D. (in.)	P-ISO Parallel Thread Size	Basic Ordering Number	Dimension, mm							
			L	B	C	E	G	F	Lx	Gx
1/4	1/8	F4-PMRT-PPT2-F4-	26.9	8.1	15.2	4.1	14.3	12.7	26.4	14.3
1/4	1/4	F4-PMRT-PPT4-F4-	29.0	9.1	15.2	4.8	14.3	15.9	32.3	19.1
3/8	1/4	F6-PMRT-PPT4-F6-	30.5	9.1	16.8	5.8	17.5	15.9	32.3	19.1
1/2	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

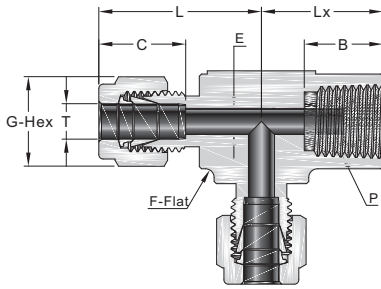
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm						
			L	C	G	F	E	B	Lx
1/8	1/8	F2-FBT-F2-FNPT2-	24.6	12.7	11.1	12.7	2.3	10.4	19.1
3/16	1/8	F3-FBT-F3-FNPT2-	25.7	13.7	12.7	12.7	3.0	10.4	19.1
1/4	1/8	F4-FBT-F4-FNPT2-	26.9	15.2	14.3	12.7	4.8	10.4	19.1
1/4	1/4	F4-FBT-F4-FNPT4-	29.7	15.2	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

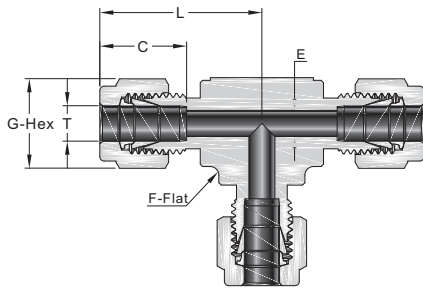
### Metric Tube

### 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



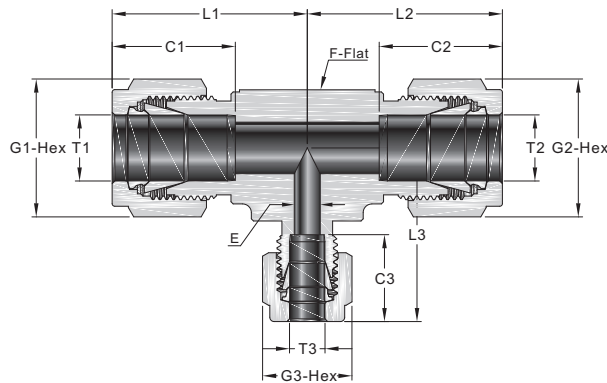
## Fractional Tube

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

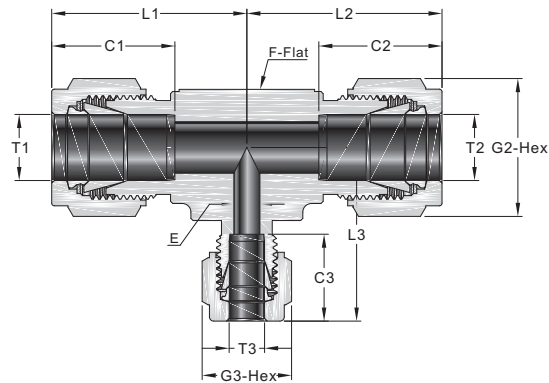
## Reducing Union Tees



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

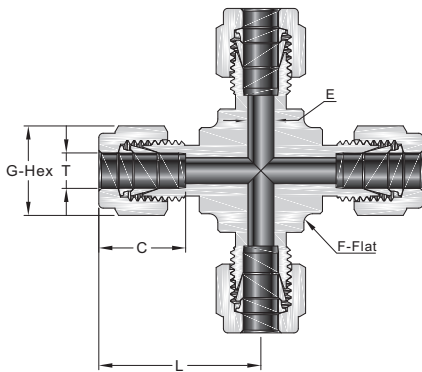
## Reducing Union Tees



### 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



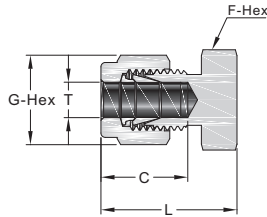
### Fractional Tube

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

## Caps



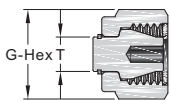
### Fractional Tube

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



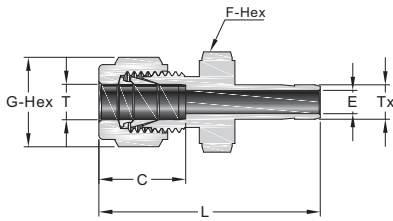
### Fractional Tube

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

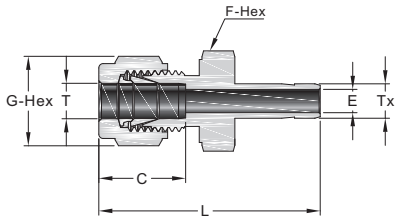
## Reducers



### 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

## Reducers

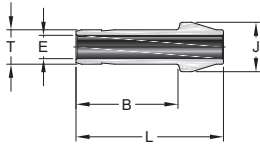


### Metric Tube

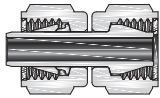
### Fractional Tube

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



1 1/4" /28 mm and above

### Fractional Tube

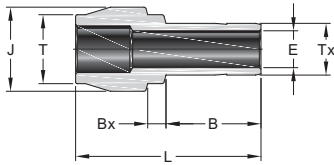
T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm			
		L	B	E	J
1/16	PC-F1-	13.7	10.7	0.8	3.3
1/8	PC-F2-	22.4	15.7	2.0	6.1
1/4	PC-F4-	24.6	18.8	4.3	9.4
5/16	PC-F5-	25.9	20.1	5.6	10.9
3/8	PC-F6-	26.2	20.3	6.9	12.7
1/2	PC-F8-	35.8	25.9	9.4	15.7
5/8	PC-F10-	37.8	28.1	11.9	20.5
3/4	PC-F12-	37.3	27.7	14.7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

### 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-	63.5	48.3	22.5	34.4
30	PC-M30-	67.6	52.2	24.3	37.4
32	PC-M32-	69.7	52.4	26.5	39.4
38	PC-M38-	81.9	61.4	31.6	45.8



## Reducing Port Connectors



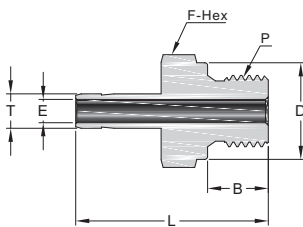
### Fractional Tube

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

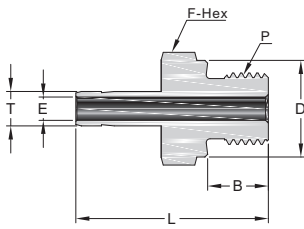
## Male Adapters



### Fractional Tube

### ISO Parallel Thread (BS)

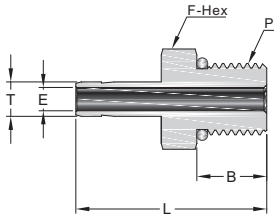
T-Tube O.D. (in.)	P-BS Size	Basic Ordering Number	Dimension, in. (mm)				
			L	B	E	F	D
1/8	1/8	FT2-MA-MBS2-	1.22(31.0)	0.28(7.1)	0.08(2.0)	0.56(14.3)	0.54(13.7)
1/8	1/4	FT2-MA-MBS4-	1.41(35.8)	0.44(11.2)	0.08(2.0)	0.75(19.1)	0.70(17.8)
1/4	1/8	FT4-MA-MBS2-	1.31(33.3)	0.28(7.1)	0.16(4.1)	0.56(14.3)	0.54(13.7)
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)



**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)

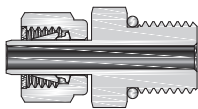


**Fractional Tube**

**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-	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-	3.28(83.3)	0.59(15.0)	1.25(31.8)	2.13(54.0)

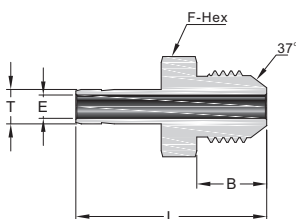
1" and below



1 1/4" and above

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

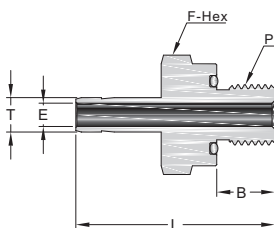
**Male Adapters**



**Fractional Tube**

**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)

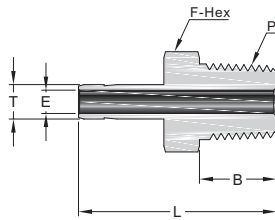


**Fractional Tube**

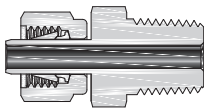
**O-Seal with SAE/MS Straight Thread**

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

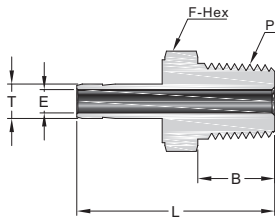
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/16	1/8	FT1-MA-NPT2-	1.00(25.4)	0.38(9.7)	0.03(0.8)	0.44(11.1)
1/8	1/8	FT2-MA-NPT2-	1.16(29.5)	0.38(9.7)	0.08(2.0)	0.44(11.1)
1/8	1/4	FT2-MA-NPT4-	1.37(34.8)	0.56(14.2)	0.08(2.0)	0.56(14.3)
3/16	1/8	FT3-MA-NPT2-	1.19(30.2)	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-	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-	3.72(94.5)	1.03(26.2)	1.25(31.8)	2.13(54.0)

### Fractional Tube

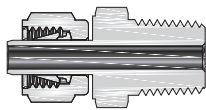
### ISO Tapered Thread (BSPT)

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

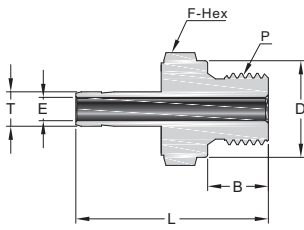
T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
3	1/8	MT3-MA-NPT2-	29.4(1.16)	9.7(0.38)	1.8(0.07)	12.0(0.47)
4	1/8	MT4-MA-NPT2-	29.4(1.16)	9.7(0.38)	2.0(0.08)	12.0(0.47)
6	1/8	MT6-MA-NPT2-	32.8(1.29)	9.7(0.38)	4.1(0.16)	12.0(0.47)
6	1/4	MT6-MA-NPT4-	38.1(1.50)	14.2(0.56)	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-	74.4(2.93)	23.9(0.94)	22.2(0.87)	35.0(1.38)
28	1 1/4	MT28-MA-NPT20-	76.2(3.00)	23.9(0.94)	22.5(0.89)	46.0(1.81)
30	1	MT30-MA-NPT16-	79.2(3.12)	23.9(0.94)	22.2(0.87)	41.0(1.61)
30	1 1/4	MT30-MA-NPT20-	80.0(3.15)	23.9(0.94)	24.3(0.96)	46.0(1.81)
32	1 1/4	MT32-MA-NPT20-	81.0(3.19)	23.9(0.94)	26.5(1.04)	46.0(1.81)
38	1 1/2	MT38-MA-NPT24-	92.2(3.63)	26.2(1.03)	31.6(1.24)	55.0(2.17)

### Metric Tube

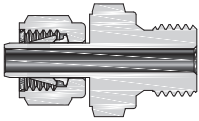
### ISO Tapered Thread (BSPT)

T-Tube O.D. (mm)	P-BSPT Size	Basic Ordering Number	Dimension, in. (mm)			
			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-	74.7(2.94)	23.9(0.94)	22.2(0.87)	35.0(1.38)
28	1 1/4	MT28-MA-MBT20-	76.2(3.00)	23.9(0.94)	22.5(0.89)	46.0(1.81)
30	1 1/4	MT30-MA-MBT20-	80.0(3.15)	23.9(0.94)	24.3(0.96)	46.0(1.81)
32	1 1/4	MT32-MA-MBT20-	81.0(3.19)	23.9(0.94)	26.5(1.04)	46.0(1.81)
38	1 1/2	MT38-MA-MBT24-	92.2(3.63)	26.2(1.03)	31.6(1.24)	55.0(2.17)

## Male Adapters



25 mm and below



28 mm and above

### Metric Tube

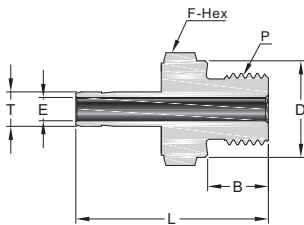
### ISO Parallel Thread (BS)

T-Tube O.D. (mm)	P-BS Size	Basic Ordering Number	Dimension, in. (mm)				
			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-	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-	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-	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-	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-	94.5(3.72)	22.1(0.87)	31.6(1.24)	55.0(2.17)	54.7(2.15)

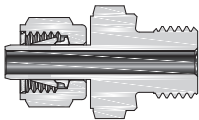
### Metric Tube

### ISO Parallel Thread (BP)

T-Tube O.D. (mm)	P-BP Size	Basic Ordering Number	Dimension, in. (mm)				
			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-	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-	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-	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-	94.5(3.72)	22.1(0.87)	31.6(1.24)	55.0(2.17)	54.7(2.15)

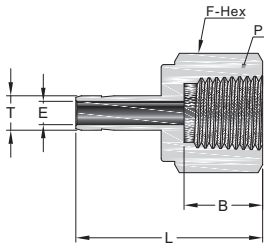


25 mm and below

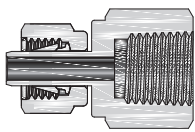


28 mm and above

## Female Adapters



1" and below



1 1/4" and above

### Fractional Tube

### NPT Thread

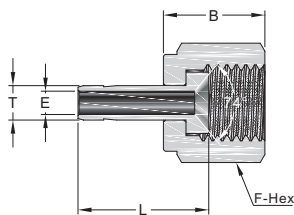
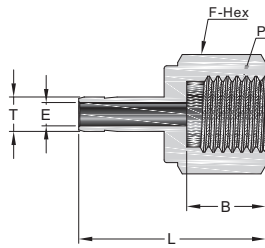
T-Tube O.D. (in.)	P-NPT Size	Basic Ordering Number	Dimension, in. (mm)			
			L	B	E	F
1/16	1/8	FT1-FA-FNPT2-	1.07(27.2)	0.41(10.4)	0.03(0.8)	0.56(14.3)
1/8	1/8	FT2-FA-FNPT2-	1.24(31.5)	0.41(10.4)	0.08(2.0)	0.56(14.3)
1/8	1/4	FT2-FA-FNPT4-	1.39(35.3)	0.59(15.0)	0.08(2.0)	0.75(19.1)
3/16	1/8	FT3-FA-FNPT2-	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-	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-	3.50(88.9)	1.09(27.7)	1.25(31.8)	2.37(60.3)

### Fractional Tube

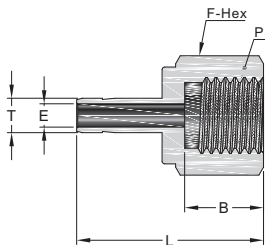
### ISO Tapered Thread (RT)

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



## 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)

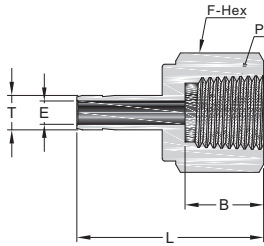
### Fractional Tube AN Thread

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-AN2-	0.88(22.4)	0.55(14.0)	0.09(2.4)	0.37(9.5)
1/8	1/4	FT2-FA-AN4-	0.88(22.4)	0.62(15.8)	0.09(2.4)	0.56(14.3)
1/4	1/4	FT4-FA-AN4-	0.96(24.4)	0.62(15.8)	0.18(4.6)	0.56(14.3)
3/8	3/8	FT6-FA-AN6-	1.11(28.1)	0.73(18.5)	0.28(7.1)	0.69(17.5)
1/2	1/2	FT8-FA-AN8-	1.42(36.1)	0.85(21.6)	0.39(9.9)	0.87(22.2)
3/4	3/4	FT12-FA-AN12-	1.49(37.8)	1.03(26.2)	0.58(14.7)	1.25(31.8)

### Metric Tube ISO Parallel Thread (BG)

T-Tube O.D. (mm)	P-BG Size	Basic Ordering Number	Dimension, in. (mm)			
			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)

## Female Adapters



### Metric Tube

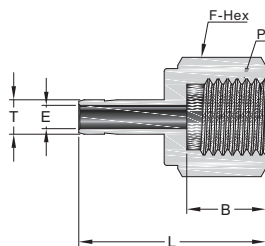
### NPT Thread

T-Tube O.D. (mm)	P-NPT Size	Basic Ordering Number	Dimension, in. (mm)			
			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, in. (mm)			
			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)



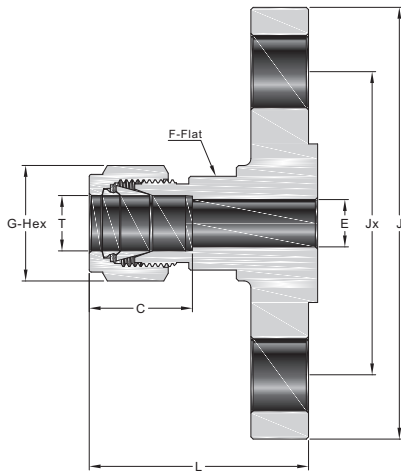
### Metric Tube

### ISO Parallel Thread (BG)

T-Tube O.D. (mm)	P-BG Size	Basic Ordering Number	Dimension, in. (mm)			
			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)



## 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-FL8-150-	40.9	88.9	60.5	4.8	15.2	14.3	20.6
3/8	1/2	300	F6-FLA-FL8-150-	45.5	95.3	66.5	7.1	16.8	17.5	20.6
1/2	1/2	150	F8-FLA-FL8-150-	45.2	88.9	60.5	10.4	22.9	22.2	20.6
1/2	1	150	F8-FLA-FL16-150-	48.3	108.0	79.2	10.4	22.9	22.2	20.6
1/2	2	150	F8-FLA-FL32-150-	53.1	152.4	121	10.4	22.9	22.2	20.6
3/4	1	150	F12-FLA-FL16-150-	50.3	108.0	79.2	15.7	24.4	28.6	31.8
1	1	150	F16-FLA-FL16-150-	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, in. (mm)						
			L	J	Jx	E	C	G	F
6	25	M6-FLA-RF25-40C-	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-RF15-40C-	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-RF25-40C-	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-RF50-40C-	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-RF15-40C-	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-RF25-40C-	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-RF25-40C-	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)

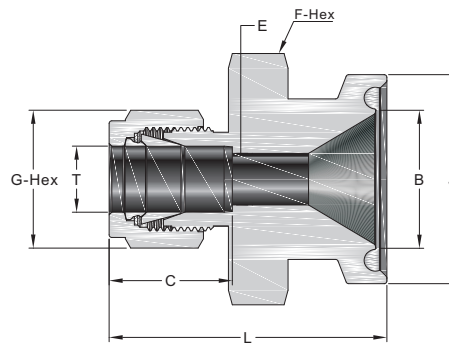
## EN Flanges, Pressure Class PN 40

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-RF25E-40B1-	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-RF15E-40B1-	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-RF25E-40B1-	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-RF50E-40B1-	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-RF15E-40B1-	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-RF25E-40B1-	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-RF25E-40B1-	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. (mm)	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-RF15-10K-	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-RF15-10K-	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-RF15-10K-	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-RF15-10K-	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-RF25-10K-	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-RF15-10K-	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-RF15-10K-	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-RF25-10K-	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)

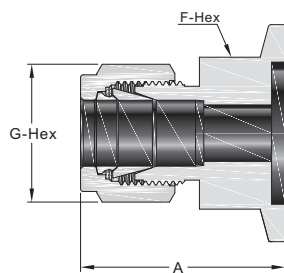
## Sanitary Flange Fittings



### Fractional Tube

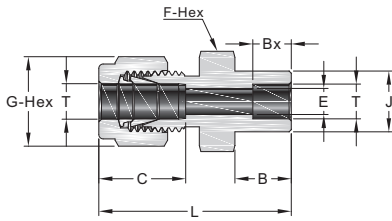
T-Tube O.D. (in.)	Flange Size (in.)	Basic Ordering Number	Dimension, in. (mm)						
			L	B	C	E	F	J	G
1/4	1/2	F4-SFF-SC8-	1.57(39.9)	0.37(9.4)	0.60(15.2)	0.19(4.8)	1.00(25.4)	0.98(24.9)	0.98(24.9)
1/4	3/4	F4-SFF-SC12-	1.57(39.9)	0.62(15.7)	0.60(15.2)	0.19(4.8)	1.00(25.4)	0.98(24.9)	0.98(24.9)
1/4	1	F4-SFF-SC16-	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-SC24-	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-SC8-	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-SC12-	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-SC16-	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-SC24-	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-SC8-	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-SC12-	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-SC16-	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-SC24-	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-SC16-	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-SC32-	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)

## KF Vacuum Flange Fittings



T-Tube O.D. (in.)	Flange Size (in.)	Basic Ordering Number	A in.(mm)	F in.(mm)	G in.(mm)
1/4	KF10	KF10-VFA-F4-	1.47(37.3)	1/2(12.7)	9/16(14.3)
	KF16	KF16-VFA-F4-			
	KF25	KF25-VFA-F4-			
	KF40	KF40-VFA-F4-			
	KF50	KF50-VFA-F4-			
3/8	KF10	KF10-VFA-F6-	1.63(41.4)	5/8(15.9)	11/16(17.5)
	KF16	KF16-VFA-F6-			
	KF25	KF25-VFA-F6-			
	KF40	KF40-VFA-F6-			
	KF50	KF50-VFA-F6-			
1/2	KF25	KF25-VFA-F8-	1.77(45.0)	13/16(20.6)	7/8(22.2)
	KF40	KF40-VFA-F8-			
	KF50	KF50-VFA-F8-			
3/4	KF25	KF25-VFA-F12-	2.14(54.4)	1 1/16(27.0)	1 1/8(28.6)
	KF40	KF40-VFA-F12-			
	KF50	KF50-VFA-F12-			
1	KF25	KF25-VFA-F16-	2.60(66.0)	1 3/8(34.9)	1 1/2(38.1)
	KF40	KF40-VFA-F16-			
	KF50	KF50-VFA-F16-			

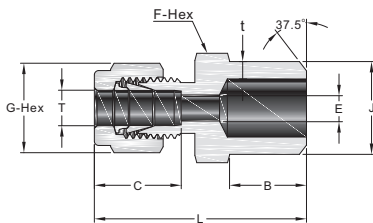
## Weld Connectors



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	7.9
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	11.2
3/8	F6-WC-FSW6-	37.6	16.8	17.5	15.9	11.9	7.1	7.9	15.7
1/2	F8-WC-FSW8-	41.1	22.9	22.2	20.6	11.9	10.4	9.7	19.1
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	26.7
1	F16-WC-FSW16-	52.6	31.2	38.1	34.9	14.2	22.4	15.7	33.3

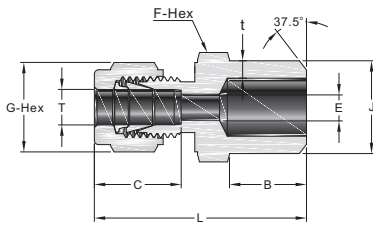


Fractional Tube

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	2.413
3/16	1/8	F3-WC-PBW2-	31.2	13.7	12.7	11.1	3.0	9.7	10.3	2.413
1/4	1/8	F4-WC-PBW2-	32.8	15.2	14.3	12.7	4.8	9.7	10.3	2.413
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	2.413
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	5.1
1 1/2	1 1/2	F24-WC-PBW24-	88.9	50.0	57.2	54.0	34.0	26.2	48.3	5.5

## Weld Connectors

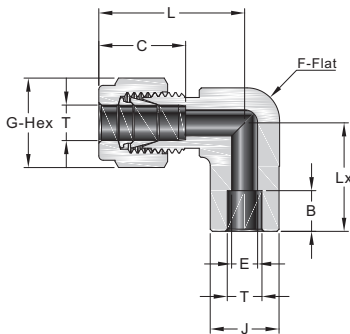


### Metric Tube

### Pipe Butt Weld

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

## Weld Elbows

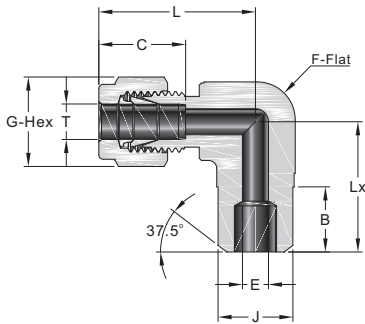


### Fractional Tube

### 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	9.7
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	12.7
3/8	F6-WE-FSW6-	30.5	16.8	17.5	15.9	7.9	7.1	23.1	15.7
1/2	F8-WE-FSW8-	36.1	22.9	22.2	20.6	9.7	10.4	25.9	20.6
5/8	F10-WE-FSW10-	29.5	24.4	25.4	27.0	10.4	12.7	29.5	23.9
3/4	F12-WE-FSW12-	39.9	24.4	28.6	27.0	11.2	15.7	29.7	26.9
1	F16-WE-FSW16-	49.0	31.2	38.1	34.9	15.7	22.4	36.8	35.1

## Weld Elbows

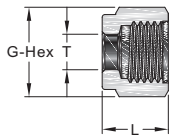


### Fractional Tube

### 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

## Nuts



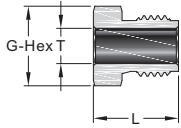
### Fractional Tube

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, in. (mm)	
		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, in. (mm)	
		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



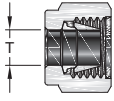
### Fractional Tube

T-Tube O.D. (in.)	Basic Ordering Number
1/16	RF-F1
1/8	RF-F2
3/16	RF-F3
1/4	RF-L4
5/16	RF-F5
3/8	RF-L6
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.

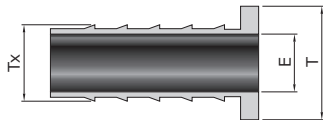
### Fractional Tube

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

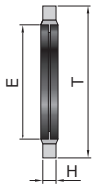
T-Tube O.D. (in.)	Tx-Tube I.D. (in.)	Basic Ordering Number	E in. (mm)
3/16	1/8	ISPF-3-2-	0.09(2.3)
1/4	1/8	ISPF-4-2-	0.09(2.3)
1/4	0.17	ISPF-4-017-	0.11(2.8)
1/4	3/16	ISPF-4-3-	0.14(3.5)
5/16	1/8	ISPF-5-2-	0.09(2.3)
5/16	3/16	ISPF-5-3-	0.12(3.0)
5/16	1/4	ISPF-5-4-	0.19(4.8)
3/8	3/16	ISPF-6-3-	0.12(3.0)
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	Dimension, 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	Dimension, 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(0.63)	12.7(0.42)	
M14 x 1.5	BS-MS14-	22.0(0.71)	14.7(0.50)	
M16 x 1.5	BS-MS16-	24.0(0.87)	16.7(0.66)	
M18 x 1.5	BS-MS18-	26.0(0.94)	18.7(0.74)	
M20 x 1.5	BS-MS20-	28.0(1.02)	20.7(0.81)	
M22 x 1.5	BS-MS22-	30.0(1.10)	22.7(0.89)	2.0(0.08)
M24 x 1.5	BS-MS24-	32.0(1.20)	24.7(1.00)	
M27 x 2	BS-MS27-	36.0(1.30)	27.2(1.10)	
M30 x 2	BS-MS30-	39.0(1.40)	30.7(1.20)	
M33 x 2	BS-MS33-	42.0(1.50)	33.7(1.30)	2.5(0.10)
M36 x 2	BS-MS36-	48.0(1.70)	37.0(1.50)	
M39 x 2	BS-MS39-	51.0(1.90)	40.0(1.60)	
M42 x 2	BS-MS42-	53.0(2.00)	42.7(1.70)	3.0(0.12)
M45 x 2	BS-MS45-	57.0(2.10)	46.0(1.80)	
M48 x 2	BS-MS48-	59.0(2.20)	48.7(1.90)	

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

## Ordering Information

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

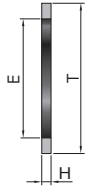
Ring		Designator
Outer	Inner	
Stainless Steel	FKM	316, 304
Carbon Steel	Buna-N	CS

### 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

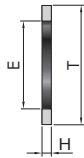


ISO Parallel Thread Size	Basic Ordering Number	Dimension, in. (mm)		
		T	E	H
1/8	BP-2-	0.59(15.0)	0.39(9.9)	0.04(1.0)
1/4	BP-4-	0.75(19.1)	0.52(13.2)	0.06(1.5)
3/8	BP-6-	0.91(23.1)	0.66(16.8)	
1/2	BP-8-	1.06(26.9)	0.83(21.1)	0.08(2.0)
3/4	BP-12-	1.30(33.0)	1.05(26.7)	
1	BP-16-	1.58(40.1)	1.31(33.2)	

Metric Thread Size	Basic Ordering Number	Dimension, 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(0.60)	12.2(0.40)	2.0(0.08)
M14 x 1.5	BP-MS14-	20.2(0.72)	14.2(0.48)	
M16 x 1.5	BP-MS16-	22.2(0.80)	16.2(0.64)	
M18 x 1.5	BP-MS18-	24.2(0.87)	18.2(0.72)	
M20 x 1.5	BP-MS20-	26.2(0.95)	20.2(0.80)	
M22 x 1.5	BP-MS22-	28.2(1.03)	22.2(0.87)	
M24 x 1.5	BP-MS24-	30.2(1.10)	24.2(1.00)	2.5(0.10)
M27 x 2	BP-MS27-	33.3(1.20)	27.2(1.10)	
M30 x 2	BP-MS30-	37.3(1.30)	30.2(1.20)	
M33 x 2	BP-MS33-	40.3(1.50)	33.2(1.30)	
M36 x 2	BP-MS36-	43.3(1.60)	36.2(1.40)	
M39 x 2	BP-MS39-	47.3(1.70)	39.2(1.50)	
M42 x 2	BP-MS42-	50.3(1.90)	42.2(1.70)	
M45 x 2	BP-MS45-	53.3(2.00)	45.2(1.80)	
M48 x 2	BP-MS48-	56.3(2.10)	48.2(1.90)	

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

## BG Gaskets



ISO Parallel Thread Size	Basic Ordering Number	Dimension, in. (mm)		
		T	E	H
1/4	BG-4	0.42(10.7)	0.30(7.6)	0.07(1.8)
3/8	BG-6	0.56(14.2)	0.34(8.6)	0.09(2.3)
1/2	BG-8	0.70(17.8)	0.36(9.1)	0.10(2.5)

ISO Parallel Thread Size	Basic Ordering Number	Dimension, in. (mm)		
		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)	2.0(0.08)
M14 x 1.5	BG-MS14-	11.7(0.38)	6.4(0.21)	
M16 x 1.5	BG-MS16-	13.7(0.46)	8.4(0.25)	
M18 x 1.5	BG-MS18-	15.7(0.54)	10.0(0.39)	
M20 x 1.5	BG-MS20-	17.6(0.62)	11.4(0.45)	
M22 x 1.5	BG-MS22-	19.6(0.69)	13.4(0.53)	
M24 x 1.5	BG-MS24-	21.6(0.77)	14.8(0.58)	2.5(0.10)
M27 x 2	BG-MS27-	24.0(0.90)	13.9(0.50)	
M30 x 2	BG-MS30-	27.0(0.90)	19.5(0.80)	
M33 x 2	BG-MS33-	30.0(1.10)	21.5(0.80)	
M36 x 2	BG-MS36-	33.0(1.20)	23.5(0.90)	
M39 x 2	BG-MS39-	36.0(1.30)	24.5(1.00)	
M42 x 2	BG-MS42-	38.9(1.40)	29.5(1.20)	
M45 x 2	BG-MS45-	41.9(1.50)	30.0(1.20)	
M48 x 2	BG-MS48-	44.9(1.60)	32.5(1.30)	

## Ordering Information

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

Material	Designator
Copper	BR
316L SS	316L
PTFE	T

Vulcanized Fibre and PTFE cannot be used for BG gasket.

Example:

BP-8-BR, BG-4-316, BG-MS14-BR.

## 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	

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

