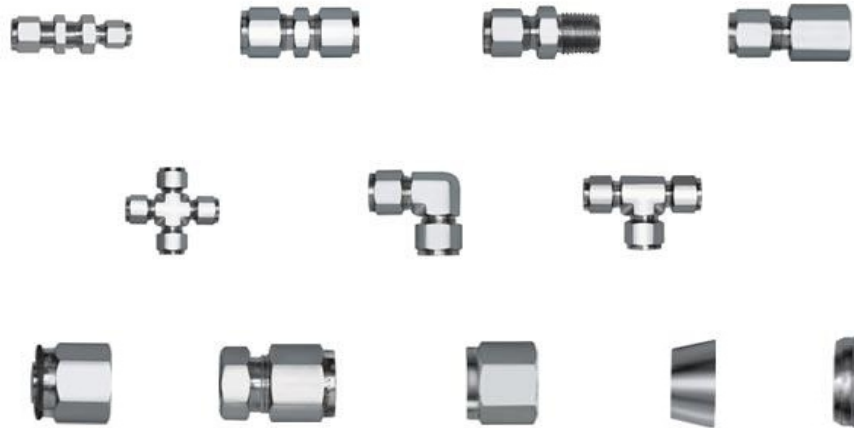




smartech.uk

Instrumentation Fittings



GENERAL INFORMATION :

SMARTECH Tube fittings have been carefully designed and manufactured with continuous research and development backing to very stringent tolerances under rigid Quality Control procedures approved to ISO 9001-2000 quality management systems to provide zero leak, Torque free seal in instrumentation and process tubing.

SMARTECH Tube fittings ensure maximum safety and reliability due to Tests carried out such As High pressure, impulse, vibration, vacuum, temperature, and pulls out and burst pressure.

MATERIAL

SMARTECH Tube fittings are available as standard stainless steel 316. The raw materials used confirm to chemical requirements listed in specification below,

BAR STOCK	FORGING
ASME - SA -479,	ASME-SA-182 316
TYPE 316 - SS	BS970 316-S31
BS970 316 - S31	DIN 4401
DIN 4401	
ASTMA276, TYPE 316	

HEAT TRACEABILITY

Stainless steel 316 Tube fittings are heat code traceable back to the original mill heat from which it was made.

PRESSURE RATING

SMARTECH Tube fitting are rated for working pressure higher than the tubing recommended in tubing data table as shown below. However, tubing should not be used above its maximum allowed working pressure.

TUBING SELECTIONS

Stainless steel 304 and 316 fully annealed seamless tubing according to standard ASTM A213 or ASTM A269 or equivalent, are suitable for use with SMARTECH tube fittings.

The tubing should be compatible with the process fluid, pressure and temperature.

For good performance of SMARTECH tube fittings, the tubing should be reasonably round, free from nicks, scratches, the surface finish should be good and tube ends are squarely cut and must be free from burrs.

Table 1 : TUBING DATA TABLES FOR FRACTIONAL SIZE

Tubing O.D.	ALLOWABLE WORKING PRESSURE (PSI)							
	WALL THICKNESS IN INCH							
	.028	.035	.049	.065	.083	.095	.109	.120
1/8	8600	10900						
3/16	5500	7000	10300					
1/4	4000	5100	7500	10300				
5/16		4100	5900	8100				
3/8		3300	4800	6600				
1/2		2600	3700	5100	6700			
5/8			3000	4000	5200	6100		
3/4			2400	3300	4300	5000	5800	
7/8			2100	2800	3600	4200	4900	
1				2400	3200	3700	4200	4700

Table 2: TUBING DATA TABLES FOR METRIC SIZE.

ALLOWABLE WORKING PRESSURE IN BAR													
Tubing O.D.	WALL THICKNESS IN MILLIMETER												
	0.5	0.6	0.7	0.8	1.0	1.2	1.5	1.6	1.8	2.0	2.2	2.5	3.0
3	497	607	718	828	1032								
6			331	386	497	607	774	912					
8			208	280	359	440	558	607					
10				221	280	342	440	473					
12				182	231	280	359	386	440	497			
14					195	237	302	324	369	416	463	535	654
16					169	205	361	280	319	358	398	460	564
18					150	181	230	246	280	314	349	403	496
22					121	147	185	199	225	252	280	322	394
25					108	128	162	173	196	220	244	280	342

Note: Working pressure (psig) for seamless tubing. Multiply pressure rating by 0.80 for single welded tubing. Multiply pressure rating by 0.85 for double welded tubing.

TABLE 3 : FACTORS USED TO DETERMINE ALLOWABLE PRESSURE AT HIGHER TEMPERATURES.

°F	°C	A.I.S.I. 316
200	93	1
400	204	0.96
600	316	0.85
800	427	0.79
1000	538	0.76
1200	649	0.37

For Example : The allowable pressure for type SS316, Size 1/4"OD x 0.035 wall at 600 ° F(316 ° C) would be equivalent to 5100 psi x 0.85 = 4335 psi.

GAS SERVICE

Extra care must be taken while selecting tubing for gas application, In order to achieve a gas-tight seal, ferrules in instruments fittings must seal any minor surface imperfections.

The thick walled tubing helps the ferrules to overcome minor surface imperfections.

SMARTECH recommends the following minimum wall thickness of tubing for gas application.

TABLE 4 : GAS APPLICATION TUBING

Tube OD (Inches)	Nominal Minimum Wall Thickness (Inches)	Tube OD (Metric)	Nominal Minimum Wall Thickness (Metric)
1/8"	0.028"	3 mm	0.8 mm
3/16"	0.028"	6 mm	0.8 mm
1/4"	0.028"	8 mm	1.0 mm
5/16"	0.035"	10 mm	1.0 mm
3/8"	0.035"	12 mm	1.0 mm
1/2"	0.049"	14 mm	1.2 mm
5/8"	0.065"	16 mm	1.5 mm
3/4"	0.065"	18 mm	1.5 mm
7/8"	0.083"	20 mm	1.8 mm
1"	0.083"	22 mm	2.0 mm
		25 mm	2.2 mm

PIPE END NPT AND ISO PRESSURE RATINGS

Fitting that has both tube and pipe thread ends can have different pressure ratings. The pipe end pressure ratings chart given below for SS316 shows the pressure ratings for male and female pipe thread ends.

Working pressure is calculated on ANSI code for pressure piping B31.3 basis.

TABLE 5:

NPT/BSPT PIPE SIZE	WORKING PRESSURE IN PSIG			
	MALE THREAD		FEMALE THREAD	
	Straight Fittings	Shape Fitting	Straight Fittings	Shape Fitting
1/8"	9100	9100	6400	5500
1/4"	7500	7500	6600	5600
3/8"	7200	7200	5300	5000
1/2"	6600	5800	5200	4500
3/4"	6400	6400	4300	3500
1"	4600	4600	4500	3900

SAE/MS Pressure Ratings for SS316

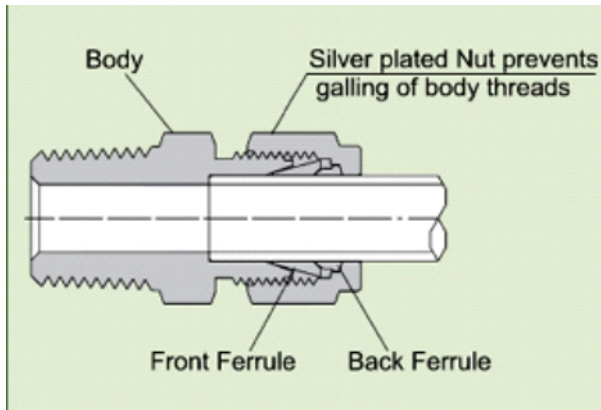
TABLE 6: Pressure ratings are from SAE J1926/3

SAE/MS THREAD SIZE	Non Positionable	Positionable
	PSIG	PSIG
5/16-24	4568	4568
7/16-20	4568	4568
1/2-20	4568	4568
9/16-18	4568	3626
3/4-16	4568	3626
7/8-14	3626	2900
1 ¹ / ₁₆ -12	3626	2900
1 ³ / ₁₆ -12	2900	2320
1 ⁵ / ₁₆ -12	2900	2320

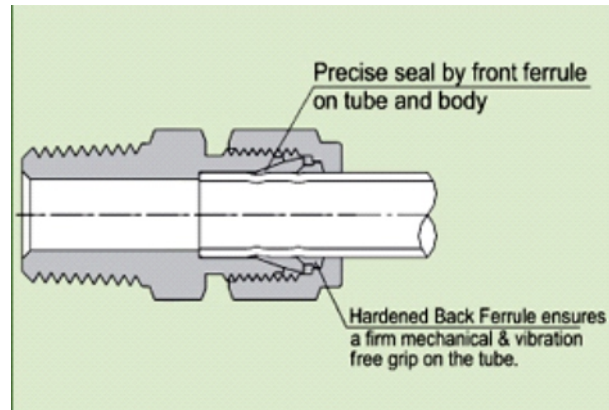
CONSTRUCTION OF SMARTECHTube Fittings

SMARTECHTube Fittings consist of four precision components such as Nut, Back Ferrule, Front Ferrule and Body.

Fractional SMARTECHTube Fittings

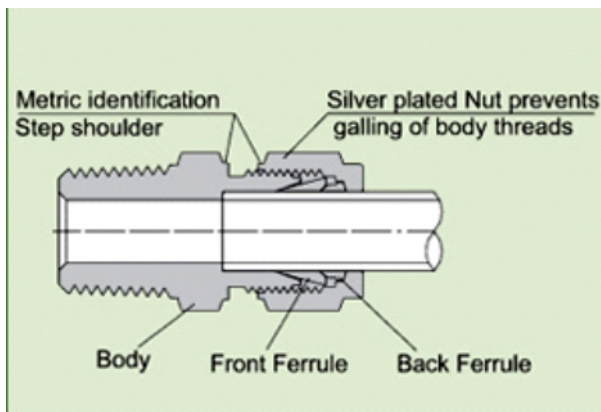


Finger tight SMARTECH Fractional Tube Fittings.

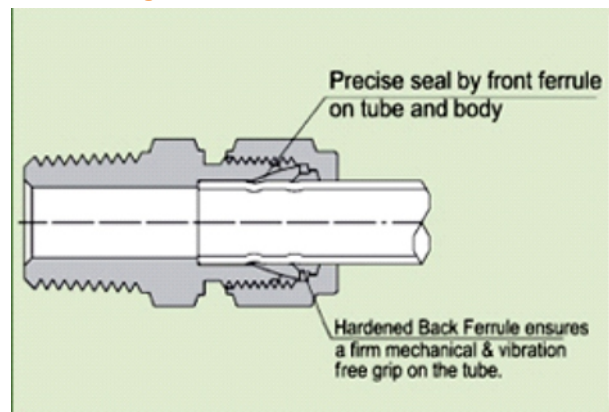


Assembled SMARTECH™ Fractional Tube Fittings after tightening the Nut 1 ¼ turn from the finger tight position.

Metric SMARTECHTube Fittings



Finger tight SMARTECH Metric Tube Fittings.





















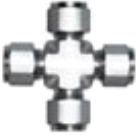




















Assembled SMARTECH Metric Tube Fittings after tightening the Nut 1 ¼ turn from the finger tight position.

Gaugeability:

SMARTECHTube Fittings are manufactured to very stringent tolerances to meet the Gaugeability to check the gap between Nut and Body Hex, this allows easy inspection for sufficient tightening of the Nut before a system is pressurized, which ensures maximum safety and reliability.



<p>MALE CONNECTOR Fractional & Metric Tube to NPT thread & ISO tapered pipe thread Page - 11, 12, 13</p> 	<p>MALE CONNECTOR Fractional & Metric Tube to ISO Parallel Threads - RP Page - 15</p> 	<p>MALE CONNECTOR Fractional & Metric Tube to ISO Parallel Threads - RS Page - 14</p> 	<p>O SEAL MALE CONNECTOR Fractional & Metric Tube to ISO Parallel Thread & Straight Thread - UNF Page - 16</p> 
<p>BULK HEAD MALE CONNECTOR Fractional & Metric Tube & NPT Thread Page - 17</p> 	<p>MALE ELBOW Fractional & Metric Tube to ISO Parallel Thread SAE / MS Straight Thread Page - 18</p> 	<p>MALE BRANCH TEE Fractional & Metric Tube to NPT Thread Page - 19</p> 	<p>MALE RUN TEE Fractional & Metric Tube to NPT Thread Page - 20</p> 
<p>FEMALE CONNECTOR Fractional & Metric Tube to NPT Thread & ISO Tapered Pipe Thread Page - 21</p> 	<p>BULK HEAD FEMALE CONNECTOR Fractional & Metric Tube & NPT Thread Page - 17</p> 	<p>FEMALE ELBOW Fractional & Metric Tube to NPT Thread Page - 22</p> 	<p>FEMALE BRANCH TEE Fractional & Metric Tube to NPT Thread Page - 23</p> 
<p>FEMALE RUN TEE Fractional & Metric Tube to NPT Thread Page - 23</p> 	<p>UNION Fractional & Metric Tube Page - 24</p> 	<p>REDUCING UNION Fractional & Metric Tube Page - 25</p> 	<p>BULKHEAD UNION Fractional & Metric Tube Page - 26</p> 
<p>BULKHEAD REDUCING UNION Fractional Tube Page - 22</p> 	<p>UNION ELBOW Fractional & Metric Tube Page - 27</p> 	<p>UNION TEE Fractional & Metric Tube Page - 28</p> 	<p>REDUCING UNION TEE Fractional Tube Page - 26</p> 
<p>UNION CROSS Fractional & Metric Tube Page - 24</p> 	<p>POSITIONABLE MALE ELBOW Fractional & Metric Tube to ISO Parallel Thread SAE / MS Straight Thread Page - 29</p> 	<p>POSITIONABLE MALE BRANCH TEE Fractional & Metric Tube to ISO Parallel Thread SAE / MS Straight Thread Page - 28</p> 	<p>BULKHEAD REDUCER Fractional Tube Page - 27</p> 

<p>POSITIONABLE MALE RUN TEE Fractional & Metric Tube to ISO Parallel Thread SAE / MS Straight Thread Page - 30</p> 	<p>BUTT WELD PIPE CONNECTOR Fractional & Metric Tube to Pipe Page - 31</p> 	<p>SOCKET WELD TUBE ELBOW Fractional Tube to Tube Page - 32</p> 	<p>BUTT WELD PIPE ELBOW Fractional Tube to Pipe Page - 31</p> 
<p>REDUCER Fractional & Metric Tube Page - 33</p> 	<p>TUBE END CLOSURE Fractional & Metric Tube Page - 32</p> 	<p>FITTING END CLOSURE Fractional & Metric Tube Page - 34</p> 	<p>COUPLING CAP Fractional & Metric Tube Page - 34</p> 
<p>FRONT FERRULE Fractional & Metric Tube Page - 35</p> 	<p>BACK FERRULE Fractional & Metric Tube Page - 35</p> 	<p>MANIFOLD VALVE Page - 40, 41</p> 	<p>NEEDLE VALVE Page - 39</p> 
<p>BALL VALVE Page - 38</p> 	<p>NON RETURN VALVE Page - 42</p> 	<p>QUICK RELEASE COUPLING Page - 42</p> 	

ORDERING CODES

INCH SIZE TUBING

Tube O.D. in multiples of 1/16"
 Pipe thread size in multiples of 1/16"
 Reduced tube O.D. in multiples of 1/16"

Code for Double Ferrule Fittings D
 (No Symbol for conversion fittings)

Fitting Type Designator

Pipe thread specification

NPT Threads to ANSI B 1.20.1 - 1983	N
ISO Parallel Threads to ISO : 228/1	R
ISO Taper Threads to ISO : 7/1	RT
UNF threads to ANSI B 1.1 - 1964	U

Material Designator

304 or 304LStainless Steel	S/SL
316 or 316LStainless Steel	SS/SSL

METRIC SIZE TUBING

Code for Double Ferrule Fittings
 (No Symbol for conversion fittings)

Fitting Type Designator

Tube O.D. in mm

Pipe thread size in multiples of 1/16"

Pipe thread specification

NPT Threads to ANSI B 1.20.1 - 1983	N
ISO Parallel Threads to ISO : 228/1	R
ISO Taper Threads to ISO : 7/1	RT
UNF threads to ANSI B 1.1 - 1964	U

Material Designator

304 or 304LStainless Steel	S/SL
316 or 316LStainless Steel	SS/SSL

FITTING TYPE

ITEM	TYPE
Front Ferrule	ff
Back Ferrule	bf
Coupling Cap	n
Tube End Closer	TEC
Fitting End Closer	FEC
Union	U
Reducing Union	RU
Bulkhead Union	BU
Bulkhead Reducing Union	BRU
Union Elbow	UE
Union Tee	UT
Reducing Union Tee	RUT
Union Cross	UC
Bulkhead Reducer	BR
Male Connector	MC
Female Elbow	FE
Bulkhead Male Connector	BMC
O - Seal Male Connector	OSMC
Male Elbow	ME
Positionable Male Elbow	PME
Male Run Tee	MRT
Male Branch Tee	MBT
Female Run Tee	FRT
Female Branch Tee	FBT
Positionable Male Run Tee	PMRT
Positionable Male Branch Tee	PMBT
Reducer	R
Socket Weld Tube Elbow	SWTE
Butt Weld Pipe Connector	BWPC
Butt Weld Pipe Elbow	BWPE
Female Connector	FC
Bulkhead Female Connector	BFC

NOTE:

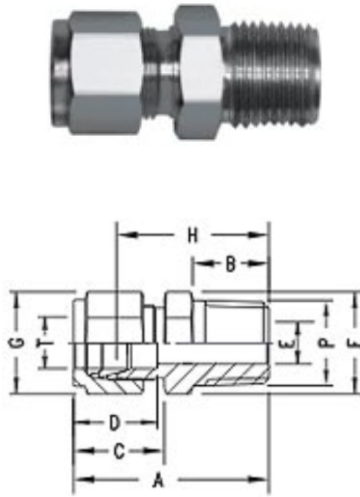
- The bodies of fittings for metric tubes are provided with collar on the tube end side. This is only for identification purpose to
- Differentiate from inch tube fittings. Dimensions 'C' (In some cases 'Cx') are measured the collar in the case of metric tube fittings.



MALE CONNECTOR

(Tapered Thread)

INCH OD Tubes X Male NPT Threads



T Tube OD	P NPT Male	A	B	C	D	E min.	F A/F	G A/F	H	SMARTECH PART NO.
1/16	1/16	23.9	9.6	11.0	8.6	1.3	8	8	20.0	FMC-15-001-N
1/16	1/8	26.2	9.6	11.0	8.6	1.3	14	8	22.4	FMC-15-002-N
1/8	1/8	30.5	9.6	15.3	12.7	2.4	11	11	23.9	FMC-15-003-N
1/8	1/4	35.6	14.3	15.3	12.7	2.4	14	11	29.0	FMC-15-004-N
1/4	1/8	32.8	9.6	17.8	15.3	4.8	14	14	25.4	FMC-15-005-N
1/4	1/4	37.8	14.3	17.8	15.3	4.8	14	14	30.5	FMC-15-006-N
1/4	3/8	38.4	14.3	17.8	15.3	4.8	19	14	31.0	FMC-15-007-N
1/4	1/2	44.7	19.1	17.8	15.3	4.8	22	14	37.4	FMC-15-008-N
5/16	1/4	38.6	14.3	18.5	16.3	6.3	14	16	31.2	FMC-15-009-N
3/8	1/8	35.3	9.6	19.3	16.8	4.8	16	17	27.9	FMC-15-010-N
3/8	1/4	39.8	14.3	19.3	16.8	7.1	16	17	32.5	FMC-15-011-N
3/8	3/8	39.8	14.3	19.3	16.8	7.1	19	17	32.5	FMC-15-012-N
3/8	1/2	41.2	19.1	19.3	16.8	7.1	22	17	38.9	FMC-15-013-N
1/2	1/4	43.4	14.3	21.8	22.9	7.1	22	22	33.3	FMC-15-014-N
1/2	3/8	43.4	14.3	21.8	22.9	9.6	22	22	33.3	FMC-15-015-N
1/2	1/2	49.0	19.1	21.8	22.9	10.4	22	22	38.9	FMC-15-016-N
1/2	3/4	50.5	19.1	21.8	22.9	10.4	27	22	40.4	FMC-15-017-N
1/2	1	57.1	23.8	21.8	22.9	10.4	35	22	47.0	FMC-15-018-N
5/8	3/8	44.2	14.3	21.8	24.4	9.6	24	25	34.0	FMC-15-019-N
5/8	1/2	49.0	19.1	21.8	24.4	10.4	24	25	38.9	FMC-15-020-N
3/4	1/2	50.5	19.1	21.8	24.4	10.4	27	28.5	40.4	FMC-15-021-N
3/4	3/4	50.5	19.1	21.8	24.4	15.8	27	28.5	40.4	FMC-15-022-N
3/4	1	57.1	23.8	21.8	24.4	15.8	35	28.5	47.0	FMC-15-023-N
7/8	3/4	50.5	19.1	21.8	26.0	15.8	30	32	40.4	FMC-15-024-N
1	1/2	57.4	19.1	26.4	31.2	10.4	35	38	45.2	FMC-15-025-N
1	3/4	57.4	19.1	26.4	31.2	15.8	35	38	45.2	FMC-15-026-N
1	1	62.2	23.8	26.4	31.2	22.3	35	38	50.0	FMC-15-027-N

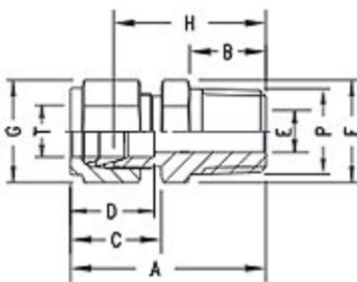
INCH OD Tubes x Male ISO* Tapered Pipe Threads

T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	G A/F	H	SMARTECH PART NO.
1/8	1/8	30.5	9.6	15.3	12.7	2.4	11	11	23.9	FMC-15-063-RT
1/8	1/4	35.6	14.3	15.3	12.7	2.4	14	11	29.0	FMC-15-064-RT
1/4	1/8	32.8	9.6	17.8	15.3	4.8	14	14	25.4	FMC-15-065-RT
1/4	1/4	37.8	14.3	17.8	15.3	4.8	14	14	30.1	FMC-15-066-RT
1/4	3/8	38.4	14.3	17.8	15.3	4.8	19	14	31.0	FMC-15-067-RT
1/4	1/2	44.7	19.1	17.8	15.3	4.8	22	14	37.4	FMC-15-068-RT
3/8	1/8	35.3	9.6	19.3	16.8	4.8	16	17	27.9	FMC-15-069-RT
3/8	1/4	39.8	14.3	19.3	16.8	7.1	16	17	32.5	FMC-15-070-RT
3/8	3/8	39.8	14.3	19.3	16.8	7.1	19	17	32.5	FMC-15-071-RT
3/8	1/2	41.2	19.1	19.3	16.8	7.1	22	17	38.9	FMC-15-072-RT
1/2	1/4	43.4	14.3	21.8	22.9	7.1	22	22	33.3	FMC-15-073-RT
1/2	3/8	43.4	14.3	21.8	22.9	9.6	22	22	33.3	FMC-15-074-RT
1/2	1/2	49.0	19.1	21.8	22.9	10.4	22	22	38.9	FMC-15-075-RT
3/4	3/4	50.5	19.1	21.8	24.4	15.8	27	28.5	40.4	FMC-15-076-RT
1	1	62.2	23.8	26.4	31.2	22.3	35	38	50.0	FMC 15 077-RT



MALE CONNECTOR

METRIC OD Tubes x Male NPT Threads

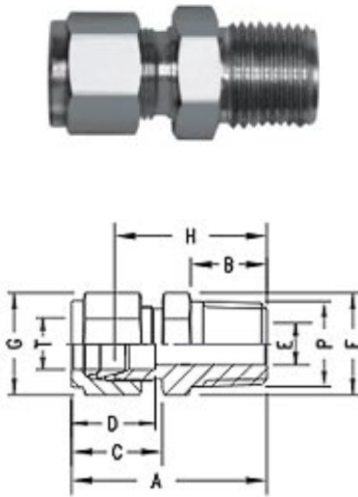


T Tube OD	P NPT Male	A	B	C	D	E min.	F A/F	G A/F	H	SMARTECH PART NO
3	1/8	30.5	9.6	15.3	12.9	2.4	11	11	23.9	FMC-15-028-N
3	1/4	35.6	14.3	15.3	12.9	2.4	14	11	29.0	FMC-15-029-N
6	1/8	32.8	9.6	17.7	15.3	4.8	14	14	25.4	FMC-15-030-N
6	1/4	37.9	14.3	17.7	15.3	4.8	14	14	30.5	FMC-15-031-N
6	3/8	38.4	14.3	17.7	15.3	4.8	19	14	31.0	FMC-15-032-N
6	1/2	44.7	19.1	17.7	15.3	4.8	22	14	37.3	FMC-15-033-N
8	1/8	34.2	9.6	18.6	16.2	4.8	14	16	26.7	FMC-15-034-N
8	1/4	38.7	14.3	18.6	16.2	6.3	14	16	31.2	FMC-15-035-N
8	3/8	39.3	14.3	18.6	16.2	6.3	19	16	31.8	FMC-15-036-N
8	1/2	45.6	19.1	18.6	16.2	6.3	22	16	38.1	FMC-15-037-N
10	1/8	36.3	9.6	19.5	17.2	4.8	17	19	28.7	FMC-15-038-N
10	1/4	40.9	14.3	19.5	17.2	7.9	19	19	33.3	FMC-15-039-N
10	3/8	40.9	14.3	19.5	17.2	7.9	19	19	33.3	FMC-15-040-N
-10	1/2	46.5	19.1	19.5	17.2	7.9	22	19	38.9	FMC-15-041-N
12	1/4	43.4	14.3	22.0	22.8	7.1	22	22	33.3	FMC-15-042-N
12	3/8	43.4	14.3	22.0	22.8	9.5	22	22	33.3	FMC-15-043-N
12	1/2	49.0	19.1	22.0	22.8	9.5	22	22	38.9	FMC-15-044-N
12	3/4	50.5	19.1	22.0	22.8	9.5	27	22	40.4	FMC-15-045-N
12	1	57.1	23.8	22.0	22.8	9.5	35	22	47.0	FMC-15-046-N
14	1/4	44.1	14.3	22.0	24.4	7.1	24	25	34.0	FMC-15-047-N
14	3/8	44.1	14.3	22.0	24.4	9.5	24	25	34.0	FMC-15-048-N
14	1/2	49.0	19.1	22.0	24.4	11.1	24	25	38.9	FMC-15-049-N
15	1/2	49.0	19.1	22.0	24.4	11.9	24	25	38.9	FMC-15-050-N
16	3/8	44.1	14.3	22.0	24.4	9.5	24	25	34.0	FMC-15-051-N
16	1/2	49.0	14.3	22.0	24.4	11.9	24	25	38.9	FMC-15-052-N
16	3/4	50.5	19.1	22.0	24.4	12.7	27	25	40.4	FMC-15-053-N
18	1/2	50.5	19.1	22.0	24.4	11.9	27	30	40.4	FMC-15-054-N
18	3/4	50.5	19.1	22.0	24.4	15.1	27	30	40.4	FMC-15-055-N
20	1/2	52.3	19.1	22.0	26.0	11.9	30	32	42.2	FMC-15-056-N
20	3/4	52.3	19.1	22.0	26.0	15.9	30	32	42.2	FMC-15-057-N
22	3/4	52.3	19.1	22.0	26.0	15.9	30	32	42.2	FMC-15-058-N
22	1	57.1	23.8	22.0	26.0	18.3	35	32	47.0	FMC-15-059-N
25	1/2	57.5	19.1	26.5	31.3	11.9	35	38	45.2	FMC-15-060-N
25	3/4	57.5	19.1	26.5	31.3	15.8	35	38	45.2	FMC-15-061-N



MALE CONNECTOR

METRIC OD Tubes x Male ISO* Tapered Pipe Threads

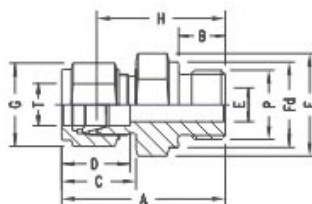


T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	G A/F	H	SMARTECH PART NO.
3	1/8	30.5	9.6	15.3	12.9	2.4	11	11	23.9	FMC-15-078-RT
3	1/4	35.6	14.3	15.3	12.9	2.4	14	11	29.0	FMC-15-079-RT
6	1/8	32.8	9.6	17.7	15.3	4.8	14	14	25.4	FMC-15-080-RT
6	1/4	37.9	14.3	17.7	15.3	4.8	14	14	30.5	FMC-15-081-RT
6	3/8	38.4	14.3	17.7	15.3	4.8	19	14	31.0	FMC-15-082-RT
6	1/2	44.7	19.1	17.7	15.3	4.8	22	14	37.3	FMC-15-083-RT
8	1/8	34.2	9.6	18.6	16.2	4.8	14	16	26.7	FMC-15-084-RT
8	1/4	38.7	14.3	18.6	16.2	6.3	14	16	31.2	FMC-15-085-RT
8	3/8	39.3	14.3	18.6	16.2	6.3	19	16	31.8	FMC-15-086-RT
8	1/2	45.6	19.1	18.6	16.2	6.3	22	16	38.1	FMC-15-087-RT
10	1/8	36.3	9.6	19.5	17.2	4.8	17	19	28.7	FMC-15-088-RT
10	1/4	40.9	14.3	19.5	17.2	7.9	19	19	33.3	FMC-15-089-RT
10	3/8	40.9	14.3	19.5	17.2	7.9	19	19	33.3	FMC-15-090-RT
10	1/2	46.5	19.1	19.5	17.2	7.9	22	19	38.9	FMC-15-091-RT
12	1/4	43.4	14.3	22.0	22.8	7.1	22	22	33.3	FMC-15-092-RT
12	3/8	43.4	14.3	22.0	22.8	9.5	22	22	33.3	FMC-15-093-RT
12	1/2	49.0	19.1	22.0	22.8	9.5	22	22	38.9	FMC-15-094-RT
12	3/4	50.5	19.1	22.0	22.8	9.5	27	22	40.4	FMC-15-095-RT
12	1	57.1	23.8	22.0	22.8	9.5	35	22	47.0	FMC-15-096-RT
14	1/4	44.1	14.3	22.0	24.4	7.1	24	25	34.0	FMC-15-097-RT
14	3/8	44.1	14.3	22.0	24.4	9.5	24	25	34.0	FMC-15-098-RT
14	1/2	49.0	19.1	22.0	24.4	11.1	24	25	38.9	FMC-15-099-RT
15	1/2	49.0	19.1	22.0	24.4	11.9	24	25	38.9	FMC-15-100-RT
16	3/8	44.1	14.3	22.0	24.4	9.5	24	25	34.0	FMC-15-101-RT
16	1/2	49.0	14.3	22.0	24.4	11.9	24	25	38.9	FMC-15-102-RT
16	3/4	50.5	19.1	22.0	24.4	12.7	27	25	40.4	FMC-15-103-RT
18	1/2	50.5	19.1	22.0	24.4	11.9	27	30	40.4	FMC-15-104-RT
18	3/4	50.5	19.1	22.0	24.4	15.1	27	30	40.4	FMC-15-105-RT
20	1/2	52.3	19.1	22.0	26.0	11.9	30	32	42.2	FMC-15-106-RT
20	3/4	52.3	19.1	22.0	26.0	15.9	30	32	42.2	FMC-15-107-RT
22	3/4	52.3	19.1	22.0	26.0	15.9	30	32	42.2	FMC-15-108-RT
22	1	57.1	23.8	22.0	26.0	18.3	35	32	47.0	FMC-15-109-RT
25	1/2	57.5	19.1	26.5	31.3	11.9	35	38	45.2	FMC-15-110-RT
25	3/4	57.5	19.1	26.5	31.3	15.8	35	38	45.2	FMC-15-111-RT



MALE CONNECTOR

INCH OD Tubes x Male ISO* Parallel Threads - RS



T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	SMARTECH PART NO.
1/8	1/8	30.0	7.1	15.3	12.7	2.4	14	13.7	11	23.4	FMC-15-151-RS
1/8	1/4	35.3	11.2	15.3	12.7	2.4	19	18.0	11	28.7	FMC-15-151-RS
1/4	1/8	32.3	7.1	17.8	15.3	4.8	14	13.7	14	24.9	FMC-15-152-RS
1/4	1/4	37.6	11.2	17.8	15.3	4.8	19	18.0	14	30.2	FMC-15-153-RS
1/4	3/8	38.9	11.2	17.8	15.3	4.8	22	21.8	14	31.5	FMC-15-154-RS
1/4	1/2	44.7	14.2	17.8	15.3	4.8	27	26.0	14	37.4	FMC-15-155-RS
3/8	1/4	39.2	11.2	19.3	16.8	5.8	19	18.0	17	31.8	FMC-15-156-RS
3/8	3/8	40.4	11.2	19.3	16.8	7.1	22	21.8	17	33.0	FMC-15-157-RS
3/8	1/2	46.3	14.2	19.3	16.8	7.1	27	26.0	17	38.9	FMC-15-158-RS
1/2	1/4	42.7	11.2	21.8	22.9	5.8	22	18.0	22	32.5	FMC-15-159-RS
1/2	3/8	43.2	11.2	21.8	22.9	7.9	22	21.8	22	33.0	FMC-15-160-RS
1/2	1/2	49.0	14.2	21.8	22.9	10.4	27	26.0	22	38.9	FMC-15-161-RS
1/2	3/4	52.8	15.7	21.8	22.9	10.4	35	32.0	22	42.7	FMC-15-162-RS
3/4	1/2	49.0	14.2	21.8	24.4	11.9	27	26.0	28.5	38.9	FMC-15-163-RS
3/4	3/4	52.8	15.7	21.8	24.4	15.8	35	32.0	28.5	42.7	FMC-15-164-RS
3/4	1	55.4	18.3	21.8	24.4	15.8	41	39.0	28.5	45.6	FMC-15-165-RS
1	1/2	55.9	14.2	26.4	31.2	11.9	35	26.0	38	43.7	FMC-15-166-RS
1	3/4	57.5	15.7	26.4	31.2	15.8	35	32.0	38	45.2	FMC-15-167-RS
1	1	60.0	18.3	26.4	31.2	19.8	41	39.0	38	47.8	FMC-15-168-RS

METRIC OD Tubes x Male ISO* Parallel Threads - RS

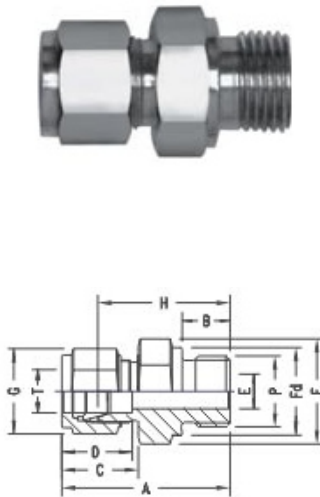
T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	SMARTECH PART NO.
3	1/8	30.0	7.1	15.3	12.9	2.4	14	13.8	11	23.4	FMC-15-169-RS
3	1/4	35.3	11.2	15.3	12.9	2.4	19	18.0	11	28.7	FMC-15-170-RS
6	1/8	32.3	7.1	17.7	15.3	4.8	14	13.8	14	24.9	FMC-15-171-RS
6	1/4	37.6	11.2	17.7	15.3	4.8	19	18.0	14	30.2	FMC-15-172-RS
6	3/8	38.9	11.2	17.7	15.3	4.8	22	21.8	14	31.5	FMC-15-173-RS
6	1/2	44.7	14.2	17.7	15.3	4.8	27	26.0	14	37.3	FMC-15-174-RS
8	1/8	33.2	7.1	18.6	16.2	4.0	14	13.8	16	25.7	FMC-15-175-RS
8	1/4	38.5	11.2	18.6	16.2	6.4	19	18.0	16	31.0	FMC-15-176-RS
8	3/8	39.8	11.2	18.6	16.2	6.4	22	21.8	16	32.3	FMC-15-177-RS
8	1/2	45.6	14.2	18.6	16.2	6.4	27	26.0	16	38.1	FMC-15-178-RS
10	1/4	39.4	11.2	19.5	17.2	5.9	19	18.0	19	31.8	FMC-15-179-RS
10	3/8	40.6	11.2	19.5	17.2	7.6	22	21.8	19	33.0	FMC-15-180-RS
10	1/2	46.5	14.2	19.5	17.2	7.9	27	26.0	19	38.9	FMC-15-181-RS
12	1/4	42.6	11.2	22.0	22.8	5.9	22	18.0	22	32.5	FMC-15-182-RS
12	3/8	43.1	11.2	22.0	22.8	7.9	22	21.8	22	33.0	FMC-15-183-RS
12	1/2	49.0	14.2	22.0	22.8	9.5	27	26.0	22	38.9	FMC-15-184-RS
12	3/4	52.8	15.7	22.0	22.8	9.5	35	32.0	22	42.7	FMC-15-185-RS
16	3/8	43.9	11.2	22.0	24.4	7.9	24	21.8	25	33.8	FMC-15-186-RS
16	1/2	49.0	14.2	22.0	24.4	11.9	27	26.0	25	38.9	FMC-15-187-RS
20	1/2	50.5	14.2	22.0	26.0	11.9	30	26.0	28.5	40.4	FMC-15-188-RS
20	3/4	52.3	15.7	22.0	26.0	15.9	35	32.0	28.5	42.7	FMC-15-189-RS
22	3/4	52.3	15.7	22.0	26.0	15.9	35	32.0	32	42.7	FMC-15-190-RS
22	1	55.3	18.3	22.0	26.0	18.3	41	39.0	32	45.2	FMC-15-191-RS
25	3/4	57.5	15.7	26.5	31.3	15.9	35	32.0	38	45.2	FMC-15-192-RS
25	1	60.1	18.3	26.5	31.3	19.8	41	39.0	38	47.8	FMC-15-193-RS

Sealing Gasket having bonded elastomer seal are used with RS Parallel thread



MALE CONNECTOR

INCH OD Tubes x Male ISO* Parallel Threads - RP



T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	SMARTECH PART NO.
1/8	1/8	30.0	7.1	15.3	12.7	2.4	14	13.7	11	23.4	FMC-15-113-RP
1/8	1/4	35.3	11.2	15.3	12.7	2.4	19	18.0	11	28.7	FMC-15-114-RP
1/4	1/8	32.3	7.1	17.8	15.3	4.8	14	13.7	14	24.9	FMC-15-115-RP
1/4	1/4	37.6	11.2	17.8	15.3	4.8	19	18.0	14	30.2	FMC-15-116-RP
1/4	3/8	38.9	11.2	17.8	15.3	4.8	22	21.8	14	31.5	FMC-15-117-RP
1/4	1/2	44.7	14.2	17.8	15.3	4.8	27	26.0	14	37.4	FMC-15-118-RP
3/8	1/4	39.2	11.2	19.3	16.8	5.8	19	18.0	17	31.8	FMC-15-119-RP
3/8	3/8	40.4	11.2	19.3	16.8	7.1	22	21.8	17	33.0	FMC-15-120-RP
3/8	1/2	46.3	14.2	19.3	16.8	7.1	27	26.0	17	38.9	FMC-15-121-RP
1/2	1/4	42.7	11.2	21.8	22.9	5.8	22	18.0	22	32.5	FMC-15-122-RP
1/2	3/8	43.2	11.2	21.8	22.9	7.9	22	21.8	22	33.0	FMC-15-123-RP
1/2	1/2	49.0	14.2	21.8	22.9	10.4	27	26.0	22	38.9	FMC-15-124-RP

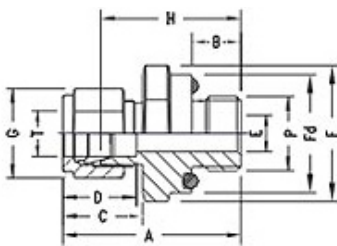
METRIC OD Tubes x Male ISO* Parallel Threads - RP

T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd A/F	G	H	SMARTECH Part No.
3	1/8	30.0	7.1	15.3	12.9	2.4	14	13.8	11	23.4	FMC-15-125-RP
3	1/4	35.3	11.2	15.3	12.9	2.4	19	18.0	11	28.7	FMC-15-126-RP
6	1/8	32.3	7.1	17.7	15.3	4.8	14	13.8	14	24.9	FMC-15-127-RP
6	1/4	37.6	11.2	17.7	15.3	4.8	19	18.0	14	30.2	FMC-15-128-RP
6	3/8	38.9	11.2	17.7	15.3	4.8	22	21.8	14	31.5	FMC-15-129-RP
6	1/2	44.7	14.2	17.7	15.3	4.8	27	26.0	14	37.3	FMC-15-130-RP
8	1/8	33.2	7.1	18.6	16.2	4.0	14	13.8	16	25.7	FMC-15-131-RP
8	1/4	38.5	11.2	18.6	16.2	6.4	19	18.0	16	31.0	FMC-15-132-RP
8	3/8	39.8	11.2	18.6	16.2	6.4	22	21.8	16	32.3	FMC-15-133-RP
8	1/2	45.6	14.2	18.6	16.2	6.4	27	26.0	16	38.1	FMC-15-134-RP
10	1/4	39.4	11.2	19.5	17.2	5.9	19	18.0	19	31.8	FMC-15-135-RP
10	3/8	40.6	11.2	19.5	17.2	7.6	22	21.8	19	33.0	FMC-15-136-RP
10	1/2	46.5	14.2	19.5	17.2	7.9	27	26.0	19	38.9	FMC-15-137-RP
12	1/4	42.6	11.2	22.0	22.8	5.9	22	18.0	22	32.5	FMC-15-138-RP
12	3/8	43.1	11.2	22.0	22.8	7.9	22	21.8	22	33.0	FMC-15-139-RP
12	1/2	49.0	14.2	22.0	22.8	9.5	27	26.0	22	38.9	FMC-15-140-RP
12	3/4	52.8	15.7	22.0	22.8	9.5	35	32.0	22	42.7	FMC-15-141-RP
16	3/8	43.9	11.2	22.0	24.4	7.9	24	21.8	25	33.8	FMC-15-142-RP
16	1/2	49.0	14.2	22.0	24.4	11.9	27	26.0	25	38.9	FMC-15-143-RP
20	1/2	50.5	14.2	22.0	26.0	11.9	30	26.0	28.5	40.4	FMC-15-144-RP
20	3/4	52.3	15.7	22.0	26.0	15.9	35	32.0	28.5	42.7	FMC-15-145-RP
22	3/4	52.3	15.7	22.0	26.0	15.9	35	32.0	32	42.7	FMC-15-146-RP
22	1	55.3	18.3	22.0	26.0	18.3	41	39.0	32	45.2	FMC-15-147-RP
25	3/4	57.5	15.7	26.5	31.3	15.9	35	32.0	38	45.2	FMC-15-148-RP
25	1	60.1	18.3	26.5	31.3	19.8	41	39.0	38	47.8	FMC-15-149-RP

Sealing Flat gasket are used with RP Parallel thread



O SEAL MALE CONNECTOR



INCH OD Tubes X Male ISO* Parallel Threads

T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	O Ring Part No.	SMARTECH PART NO.
1/8	1/8	32.8	7.1	15.3	12.7	2.4	19	18.8	11	26.2	2 OPN	OSMC-595-R
1/4	1/8	35.0	7.1	17.8	15.3	4.8	19	18.8	14	27.7	2 OPN	OSMC-596-R
1/4	1/4	40.0	11.2	17.8	15.3	7.1	24	23.6	14	32.6	4OPN	OSMC-597-R
3/8	1/4	41.5	11.2	19.3	16.8	7.1	24	23.6	17	34.1	4 OPN	OSMC-599-R
3/8	3/8	42.2	11.2	19.3	16.8	7.1	30	29.8	17	34.8	6 OPN	OSMC-600-R
3/8	1/2	47.7	14.2	19.3	16.8	9.6	32	31.8	17	40.3	8 OPN	OSMC-601-R
1/2	3/8	44.5	10.4	21.8	22.9	10.4	30	29.8	22	34.4	6 OPN	OSMC-602-R
1/2	1/2	50.4	14.2	21.8	22.9	11.9	32	31.8	22	40.3	8 OPN	OSMC-603-R
5/8	1/2	50.4	14.2	21.8	24.4	11.9	32	31.8	22	40.3	8 OPN	OSMC-604-R
3/4	1/2	50.4	14.2	21.8	24.4	15.8	32	31.8	28.5	40.3	8 OPN	OSMC-605-R
3/4	3/4	53.5	15.7	21.8	24.4	15.8	38	37.8	28.5	43.4	12 OPN	OSMC-606-R
1	3/4	58.2	15.7	26.4	31.2	22.3	38	37.8	38	46.0	12OPN	OSMC-607-R
1	1	62.2	18.3	26.4	31.2	27.6	45	44.0	38	50.0	16 OPN	OSMC-608-R

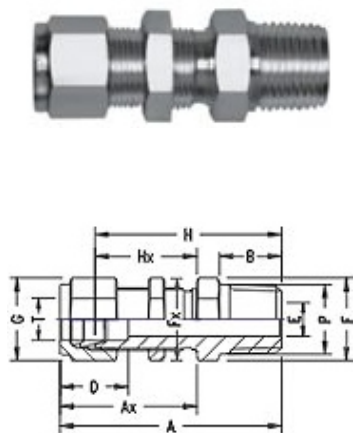
METRIC OD Tubes X Male ISO* Parallel Threads

T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	O Ring Part No.	SMARTECH PART NO.
3	1/8	32.8	7.1	15.3	12.9	2.4	19	18.8	11	26.2	2 OPN	OSMC-609-R
3	1/4	37.6	11.2	15.3	12.9	2.4	24	23.8	11	31.0	4 OPN	OSMC-610-R
6	1/4	40.1	11.2	17.7	15.3	4.8	24	23.8	14	32.7	4 OPN	OSMC-611-R
6	3/8	40.8	11.2	17.7	15.3	4.8	30	29.8	14	33.4	6 OPN	OSMC-612-R
8	1/4	40.9	11.2	18.6	16.2	6.3	24	23.8	16	33.4	4 OPN	OSMC-613-R
10	1/4	41.0	11.2	19.5	17.2	7.1	24	23.8	17	33.4	4 OPN	OSMC-614-R
10	3/8	42.6	11.2	19.5	17.2	7.1	30	29.8	17	35.0	6 OPN	OSMC-615-R
10	1/2	48.0	14.2	19.5	17.2	7.9	32	31.8	17	40.4	8 OPN	OSMC-616-R
12	1/4	44.3	11.2	22.0	22.8	7.1	24	21.8	22	34.2	4 OPN	OSMC-617-R
12	3/8	45.1	11.2	22.0	22.8	7.9	30	29.8	22	34.0	6 OPN	OSMC-618-R
12	1/2	50.5	14.3	22.0	22.8	9.5	32	31.8	22	40.4	8 OPN	OSMC-619-R
16	1/2	50.5	14.3	22.0	24.4	11.9	32	31.8	25	40.4	8 OPN	OSMC-620-R
20	3/4	55.1	15.7	22.0	26.0	15.8	38	37.0	32	45.0	12 OPN	OSMC-621-R
25	3/4	58.1	15.7	26.5	31.3	15.8	38	38	38	45.8	12 OPN	OSMC-622-R
25	1	62.3	18.3	26.5	31.3	19.8	45	44.0	38	50.0	16 OPN	OSMC-623-R



BULKHEAD MALE CONNECTOR

INCH OD Tubes X Male NPT Threads



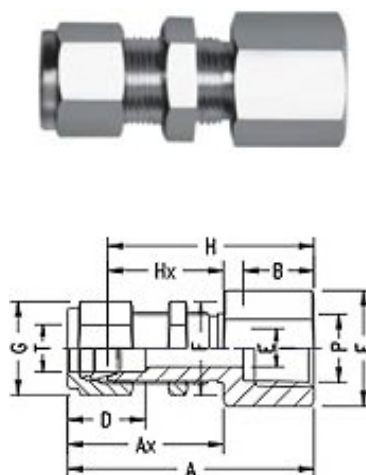
T Tube OD	P NPT Male	A	Ax	B	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thickness	SMARTECH PART NO.
1/8	1/8	46.4	31.2	9.6	12.7	2.4	14	11	39.8	24.6	8.3	12.7	FBMC-194-N
1/4	1/8	49.5	33.5	9.6	15.3	4.8	16	14	42.2	26.2	11.5	10.2	FBMC-195-N
1/4	1/4	54.1	33.5	14.3	15.3	4.8	16	14	46.7	26.2	11.5	10.2	FBMC-196-N
3/8	1/4	57.4	36.8	14.3	16.8	7.1	19	17	50.0	29.5	14.7	11.2	FBMC-197-N
3/8	3/8	57.4	36.8	14.3	16.8	7.1	19	17	50.0	29.5	14.7	11.2	FBMC-198-N
3/8	1/2	63.7	36.8	19.1	16.8	7.1	22	17	56.5	29.5	14.7	11.2	FBMC-199-N
1/2	3/8	63.3	41.9	14.3	22.9	9.6	24	22	53.0	31.8	19.5	12.7	FBMC-200-N
1/2	1/2	68.8	41.9	19.1	22.9	10.4	24	22	58.8	31.8	19.5	12.7	FBMC-201-N
3/4	3/4	76.2	47.5	19.1	24.4	15.8	30	28.5	66.9	37.4	25.8	16.8	FBMC-202-N
1	1	93.2	57.4	23.9	31.2	22.3	41	38	81.0	45.2	33.7	19.0	FBMC-203-N

METRIC OD Tubes X Male NPT Threads

T Tube OD	P NPT Male	A	Ax	B	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thickness	SMARTECH PART NO.
3	1/8	46.4	31.2	9.6	12.9	2.4	11	11	39.8	24.6	8.3	12.7	FBMC-203-N
6	1/8	49.5	33.5	9.6	15.3	4.8	16	14	42.2	26.2	11.5	10.2	FBMC-204-N
10	1/4	57.4	36.8	14.3	17.2	7.1	19	17	50.0	29.5	14.7	11.2	FBMC-205-N
10	3/8	57.4	36.8	14.3	17.2	7.1	19	17	50.0	29.5	14.7	11.2	FBMC-206-N
12	3/8	63.3	41.9	14.3	22.0	9.6	24	22	53.0	31.8	19.5	12.7	FBMC-207-N
12	1/2	68.8	41.9	19.1	22.0	10.4	24	22	58.8	31.8	19.5	12.7	FBMC-208-N

BULK HEAD FEMALE CONNECTOR

INCH OD Tubes x Female NPT Threads

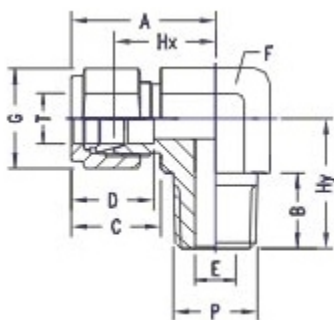


T Tube OD	P NPT Male	A	Ax	B	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thickness	SMARTECH PART NO.
1/8	1/8	44.7	31.2	10.4	12.7	2.4	14	11	38.1	24.6	8.3	12.7	BFC-365-N
1/4	1/4	47.0	33.5	10.4	15.3	4.8	16	14	39.7	26.2	11.5	10.2	BFC-366-N
1/8	1/4	51.5	33.5	15.0	15.3	4.8	19	14	44.2	26.2	11.5	10.2	BFC-367-N
3/8	1/4	54.8	36.8	15.0	16.8	7.1	19	17	47.5	29.5	14.7	11.2	BFC-368-N
1/2	3/8	61.7	41.9	15.0	22.9	10.4	22	22	51.6	31.0	19.5	12.7	BFC-369-N
1/2	1/2	66.7	41.9	19.8	22.9	10.4	27	22	56.6	31.0	19.5	12.7	BFC-370-N
5/8	1/2	67.6	42.7	19.8	22.9	12.7	27	25	57.4	32.5	22.6	12.7	BFC-371-N
3/4	1/2	72.4	47.5	19.8	24.4	16.0	35	28.5	62.3	37.4	25.8	16.8	BFC-372-N
3/4	3/4	74.7	47.5	20.6	24.4	16.0	35	28.5	64.3	37.4	25.8	16.8	BFC-373-N
1	3/4	84.3	57.4	20.6	31.2	16.0	35	38	72.1	45.2	33.7	19.0	BFC-374-N
1	1	93.2	57.4	25.4	31.2	22.2	35	38	81.0	45.2	33.7	19.0	BFC-375-N



MALE ELBOW

INCH OD Tubes x Male NPT Threads



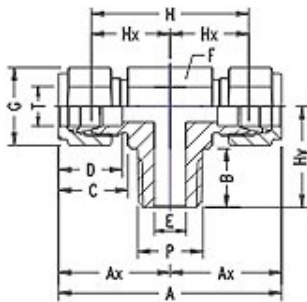
T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	SMARTECH PART NO.
1/8	1/8	23.6	9.6	15.3	12.7	2.4	11	11	17.0	17.8	FME-209-N
1/8	1/4	24.6	14.3	15.3	12.7	2.4	14	11	18.0	23.4	FME-210-N
1/4	1/8	26.9	9.6	17.8	5.3	4.8	14	14	19.6	18.8	FME-211-N
1/4	1/4	26.9	14.3	17.8	15.3	4.8	14	14	19.6	23.4	FME-212-N
1/4	3/8	29.7	14.3	17.8	15.3	4.8	19	14	22.4	26.2	FME-213-N
1/4	1/2	31.8	19.1	17.8	15.3	4.8	22	14	24.4	33.0	FME-214-N
3/8	1/8	30.5	9.6	19.3	16.8	4.8	14	17	23.1	20.9	FME-215-N
3/8	1/4	30.5	14.3	19.3	16.8	7.1	17	17	23.1	25.4	FME-216-N
3/8	3/8	31.2	14.3	19.3	16.8	7.1	19	17	23.9	26.2	FME-217-N
3/8	1/2	33.3	19.1	19.3	16.8	7.1	22	17	25.9	33.0	FME-218-N
1/2	1/4	36.0	14.3	21.8	22.9	4.8	22	22	25.9	28.2	FME-219-N
1/2	3/8	36.0	14.3	21.8	22.9	9.6	22	22	25.9	28.2	FME-220-N
1/2	1/2	36.0	19.1	21.8	22.9	10.4	22	22	25.9	33.0	FME-221-N
1/2	3/4	39.9	19.1	21.8	22.9	10.4	27	22	29.7	36.8	FME-222-N
3/4	1/2	39.9	19.1	21.8	24.4	11.9	27	28.5	29.7	36.8	FME-223-N
3/4	3/4	39.9	19.1	21.8	24.4	15.8	27	28.5	29.7	36.8	FME-224-N
1	3/4	49.0	19.1	26.4	31.2	15.8	35	38	36.8	41.6	FME-225-N
1	1	49.0	23.8	26.4	31.2	22.3	35	38	36.8	46.5	FME-226-N

METRIC OD Tubes x Male ISO* Tapered Pipe Threads

T TUBE OD	P NPT Female	A	B	C	D	E min	F A/F	G A/F	Hz	Hy	SMARTECH PARTNO.
3	1/8	23.6	9.6	15.3	12.9	2.4	11	11	17.0	17.8	FME-227-RT
3	1/4	24.6	14.3	15.3	12.9	2.4	14	11	18.0	23.4	FME-228-RT
6	1/8	27.0	9.6	17.7	15.3	4.8	14	14	19.6	18.8	FME-229-RT
6	1/4	27.0	14.3	17.7	15.3	4.8	14	14	19.6	23.4	FME-230-RT
6	3/8	29.8	14.3	17.7	15.3	4.8	19	14	22.4	26.2	FME-231-RT
6	1/2	31.8	19.1	17.7	15.3	4.8	22	14	24.4	33.0	FME-232-RT
8	1/4	28.8	14.3	18.6	16.2	6.3	14	16	21.3	24.4	FME-233-RT
8	3/8	30.6	14.3	18.6	16.2	6.3	19	16	23.1	26.2	FME-234-RT
8	1/2	32.6	19.1	18.6	16.2	6.3	22	16	25.1	33.0	FME-235-RT
10	1/4	31.5	14.3	19.5	17.2	7.1	17	19	23.9	26.2	FME-236-RT
10	3/8	31.5	14.3	19.5	17.2	7.9	19	19	23.9	26.2	FME-237-RT
10	1/2	33	19.1	19.5	17.2	7.9	22	19	25.9	33.0	FME-238-RT
12	1/4	36.0	19.1	22.0	22.8	7.1	22	22	25.9	26.2	FME-239-RT
12	3/8	36.0	19.1	22.0	22.8	9.5	22	22	25.9	38.2	FME-240-RT
12	1/2	36.0	19.1	22.0	22.8	9.5	22	22	25.9	33.0	FME-241-RT
15	1/2	38.0	19.1	22.0	24.4	11.9	24	25	27.9	35.1	FME-242-RT
16	1/2	38.0	19.1	22.0	24.4	11.9	24	25	27.9	35.1	FME-243-RT
16	3/4	39.8	19.1	22.0	24.4	27.7	27	25	29.7	36.8	FME-244-RT
22	3/4	44.6	19.1	22.0	26.0	15.9	35	32	34.5	41.7	FME-245-RT
22	1	44.6	23.9	22.0	26.0	18.3	35	32	34.5	46.5	FME-246-RT
25	3/4	49.1	19.1	26.5	31.3	59.9	35	38	36.8	41.7	FME-247-RT
25	1	41.1	23.9	26.5	31.3	21.8	35	38	36.8	46.5	FME-248-RT



MALE BRANCH TEE



INCH OD Tubes X Male NPT Threads

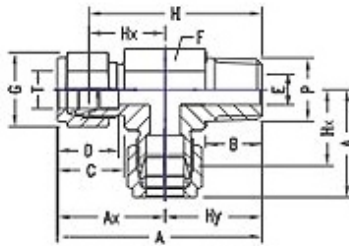
T Tube OD	P NPT Male	A	Ax	B	C	D	E min	F	G A/F	H A/F	Hx	Hy	SMARTECH PART NO.
1/8	1/8	41.4	23.6	9.6	15.3	12.7	2.4	11	11	34.8	17.0	17.8	FMBT-249-N
1/8	1/4	48.0	24.6	14.3	15.3	12.7	2.4	14	11	41.4	18.0	23.4	FMBT-250-N
1/4	1/8	45.7	26.9	9.6	17.8	15.3	4.8	14	14	38.4	19.6	18.8	FMBT-251-N
1/4	1/4	50.3	26.9	14.3	17.8	15.3	4.8	14	14	43	19.6	23.4	FMBT-252-N
1/4	3/8	55.9	29.7	14.3	17.8	15.3	4.8	19	14	48.8	22.4	26.2	FMBT-253-N
1/4	1/2	64.8	31.8	19.1	17.8	15.3	4.8	22	14	57.4	24.4	33.0	FMBT-254-N
3/8	1/4	55.9	30.5	14.3	19.3	16.8	7.1	17	17	48.5	23.1	25.4	FMBT-255-N
3/8	3/8	57.4	31.2	14.3	19.3	16.8	7.1	19	17	50.1	23.9	26.2	FMBT-256-N
3/8	1/2	66.0	33.0	19.1	19.3	16.8	7.1	22	17	58.9	25.9	33.0	FMBT-257-N
1/2	1/4	64.2	36.0	14.3	21.8	22.9	4.8	22	22	54.1	25.9	28.2	FMBT-258-N
1/2	3/8	64.2	36.0	14.3	21.8	22.9	9.6	22	22	54.1	25.9	28.2	FMBT-259-N
1/2	1/2	69.0	36.0	19.1	21.8	22.9	10.4	22	22	58.9	25.9	33.0	FMBT-260-N
5/8	1/2	73.1	38.1	19.1	21.8	24.4	11.9	22	25	62.9	27.9	35.0	FMBT-261-N
3/4	1/2	76.7	39.9	19.1	21.8	24.4	11.9	27	29	66.5	29.7	36.8	FMBT-262-N
3/4	3/4	76.7	39.9	19.1	21.8	24.4	15.8	27	29	66.5	29.7	36.8	FMBT-263-N
-N1	3/4	90.6	49.0	19.1	26.4	31.2	15.8	35	38	78.4	36.8	41.6	FMBT-264-N
1	1	95.5	49.0	23.8	26.4	31.2	22.3	35	38	83.3	36.8	46.5	FMBT-265-N
1.1/4	1.1/4	114.1	66.5	23.8	38.8	41.1	27.6	46	50	92.1	44.5	47.6	FMBT-266-N
1.1/2	1.1/2	138.4	78.0	26.2	45.2	50.0	34.0	55	57	111.2	50.8	60.4	FMBT-267-N

METRIC OD Tubes X Male NPT Threads

T Tube OD	P NPT Male	A	Ax	B	C	D	E min	F	G A/F	H A/F	Hx	Hy	SMARTECH PART NO.
3	1/8	41.4	23.6	9.6	15.3	12.9	2.4	11	11	34.8	17.0	17.8	FMBT-268-N
3	1/4	48.0	24.6	14.3	15.3	12.9	2.4	14	11	41.4	18.0	23.4	FMBT-269-N
6	1/8	45.8	27.0	9.6	17.7	15.3	4.8	14	14	38.9	19.6	18.8	FMBT-270-N
6	1/4	50.4	27.0	14.3	17.7	15.3	4.8	14	14	43.0	19.6	23.4	FMBT-271-N
6	3/8	56.0	29.8	14.3	17.7	15.3	4.8	19	14	48.6	22.4	26.2	FMBT-272-N
8	1/4	53.2	28.8	14.3	18.6	16.2	6.3	14	16	45.7	21.3	24.4	FMBT-273-N
8	3/8	56.8	30.6	14.3	18.6	16.2	6.3	19	16	49.3	23.1	26.2	FMBT-274-N
8	1/2	65.6	32.6	19.1	18.6	16.2	6.3	22	16	58.1	25.1	33.0	FMBT-275-N
10	1/4	57.7	31.5	14.3	19.5	17.2	7.1	17	19	50.1	23.9	26.2	FMBT-276-N
10	3/8	57.7	31.5	14.3	19.5	17.2	7.9	19	19	50.1	23.9	26.2	FMBT-277-N
10	1/2	66.5	33.5	19.1	19.5	17.2	7.9	22	19	58.9	25.9	33.0	FMBT-278-N
12	1/4	62.2	36.0	14.3	22.0	22.8	7.1	22	22	52.1	25.9	26.2	FMBT-279-N
12	3/8	62.2	36.0	14.3	22.0	22.8	9.5	22	22	52.1	25.9	28.2	FMBT-280-N
12	1/2	69.0	36.0	19.1	22.0	22.8	9.5	22	22	58.9	25.9	33.0	FMBT-281-N
16	1/2	73.1	38.0	19.1	22.0	24	11.9	24	25	64.0	27.9	35.1	FMBT-282-N
25	3/4	90.8	49.1	19.1	26.5	31.3	15.8	35	38	78.5	36.8	41.7	FMBT-283-N
25	1	95.6	49.1	23.8	26.5	31.3	21.8	35	38	83.3	36.8	46.5	FMBT-284-N
30	1.1/4	120.0	66.9	23.8	39.2	39.6	26.2	45	50	101.4	48.3	53.1	FMBT-285-N
32	1.1/4	125.4	72.3	23.8	41.6	42.0	27.6	45	50	102.4	49.3	53.1	FMBT-286-N
38	1.1/2	144.4	84.0	26.2	47.9	50.0	33.7	55	57	116.8	56.4	60.4	FMBT-287-N

MALE RUN TEE

INCH OD Tubes x Male NPT Threads



T Tube OD	P NPT Male	A	Ax	B	C	D	E min	F	G	H	Hx	Hy	SMARTECH PART NO.
1/8	1/8	41.4	23.6	9.6	15.3	12.7	2.4	11	11	34.8	17.0	17.8	FMRT-288-N
1/8	1/4	48.0	24.6	14.3	15.3	12.7	2.4	14	11	41.4	18.0	23.4	FMRT-289-N
1/4	1/8	45.7	26.9	9.6	17.8	15.3	4.8	14	14	38.4	19.6	18.8	FMRT-290-N
1/4	1/4	50.3	26.9	14.3	17.8	15.3	4.8	14	14	43	19.6	23.4	FMRT-291-N
1/4	3/8	55.9	29.7	14.3	17.8	15.3	4.8	19	14	48.8	22.4	26.2	FMRT-292-N
1/4	1/2	64.8	31.8	19.1	17.8	15.3	4.8	22	14	57.4	24.4	33.0	FMRT-293-N
3/8	1/4	55.9	30.5	14.3	19.3	16.8	7.1	17	17	48.5	23.1	25.4	FMRT-294-N
3/8	3/8	57.4	31.2	14.3	19.3	16.8	7.1	19	17	50.1	23.9	26.2	FMRT-295-N
3/8	1/2	66.0	33.0	19.1	19.3	16.8	7.1	22	17	58.9	25.9	33.0	FMRT-296-N
1/2	1/4	64.2	36.0	14.3	21.8	22.9	4.8	22	22	54.1	25.9	28.2	FMRT-297-N
1/2	3/8	64.2	36.0	14.3	21.8	22.9	9.6	22	22	54.1	25.9	28.2	FMRT-298-N
1/2	1/2	69.0	36.0	19.1	21.8	22.9	10.4	22	22	58.9	25.9	33.0	FMRT-299-N
5/8	1/2	73.1	38.1	19.1	21.8	24.4	11.9	22	25	62.9	27.9	35.0	FMRT-300-N
3/4	1/2	76.7	39.9	19.1	21.8	24.4	11.9	27	29	66.5	29.7	36.8	FMRT-301-N
3/4	3/4	76.7	39.9	19.1	21.8	24.4	15.8	27	29	66.5	29.7	36.8	FMRT-302-N

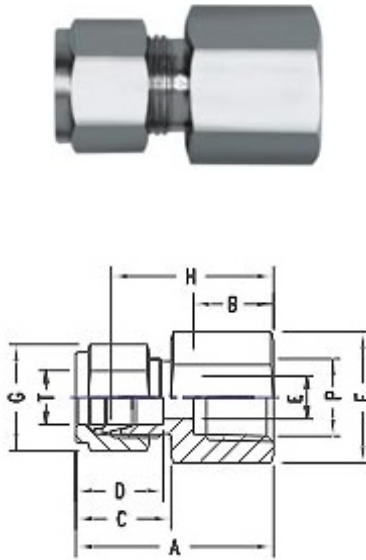
METRIC OD Tubes x Male NPT Threads

T Tube OD	P NPT Male	A	Ax	B	C	D	E min.	F	G A/F	H A/F	Hx	Hy	SMARTECH PART NO.
3	1/8	41.4	23.6	9.6	15.3	12.9	2.4	11	11	34.8	17.0	17.8	FMRT-303-N
3	1/4	48.0	24.6	14.3	15.3	12.9	2.4	14	11	41.4	18.0	23.4	FMRT-304-N
6	1/8	45.8	27.0	9.6	17.7	15.3	4.8	14	14	38.9	19.6	18.8	FMRT-305-N
6	1/4	50.4	27.0	14.3	17.7	15.3	4.8	14	14	43.0	19.6	23.4	FMRT-306-N
6	3/8	56.0	29.8	14.3	17.7	15.3	4.8	19	14	48.6	22.4	26.2	FMRT-307-N
8	1/4	53.2	28.8	14.3	18.6	16.2	6.3	14	16	45.7	21.3	24.4	FMRT-308-N
8	3/8	56.8	30.6	14.3	18.6	16.2	6.3	19	16	49.3	23.1	26.2	FMRT-309-N
8	1/2	65.6	32.6	19.1	18.6	16.2	6.3	22	16	58.1	25.1	33.0	FMRT-310-N
10	1/4	57.7	31.5	14.3	19.5	17.2	7.1	17	19	50.1	23.9	26.2	FMRT-311-N
10	3/8	57.7	31.5	14.3	19.5	17.2	7.9	19	19	50.1	23.9	26.2	FMRT-312-N
10	1/2	66.5	33.5	19.1	19.5	17.2	7.9	22	19	58.9	25.9	33.0	FMRT-313-N
12	1/4	62.2	36.0	14.3	22.0	22.8	7.1	22	22	52.1	25.9	26.2	FMRT-314-N
12	3/8	62.2	36.0	14.3	22.0	22.8	9.5	22	22	52.1	25.9	28.2	FMRT-315-N
12	1/2	69.0	36.0	19.1	22.0	22.8	9.5	22	22	58.9	25.9	33.0	FMRT-316-N
16	1/2	73.1	38.0	19.1	22.0	24	11.9	24	25	64.0	27.9	35.1	FMRT-317-N



FEMALE CONNECTOR

INCH OD Tubes X Female NPT Threads



T Tube OD	P ISO Female	A	B	C	D	E min	F A/F	G A/F	H	SMARTECH PART NO.
1/16	1/16	23.6	9.9	11.0	8.6	1.3	11	8	19.8	FFC-318-N
1/8	1/8	28.7	10.4	15.3	12.7	2.4	14	11	22.1	FFC-319-N
1/8	1/4	33.6	15.0	15.3	12.7	2.4	19	11	26.9	FFC-320-N
1/4	1/8	31.2	9.9	17.8	15.3	4.8	14	14	23.9	FFC-321-N
1/4	1/4	35.8	15.0	17.8	15.3	4.8	19	14	28.5	FFC-322-N
1/4	3/8	37.6	15.0	17.8	15.3	4.8	22	14	30.2	FFC-323-N
1/4	1/2	42.4	19.8	17.8	15.3	4.8	27	14	35.0	FFC-324-N
5/16	1/8	32.0	10.4	18.5	16.3	6.3	14	16	24.6	FFC-325-N
5/16	1/4	36.8	15.0	18.5	16.3	6.3	19	16	29.5	FFC-326-N
3/8	1/4	32.8	10.4	19.3	16.8	7.1	16	17	25.4	FFC-327-N
3/8	3/8	37.6	15.0	19.3	16.8	7.1	19	17	30.2	FFC-328-N
3/8	1/2	39.1	15.0	19.3	16.8	7.1	22	17	31.8	FFC-329-N
3/8	1/2	43.9	19.8	19.3	16.8	7.1	27	17	36.6	FFC-330-N
1/2	1/4	40.4	15.0	21.8	22.9	10.4	22	22	30.2	FFC-331-N
1/2	3/8	41.9	15.0	21.8	22.9	10.4	22	22	30.2	FFC-332-N
1/2	1/2	46.7	19.8	21.8	22.9	10.4	27	22	36.6	FFC-333-N
1/2	3/4	48.3	20.6	21.8	22.9	10.4	32	22	38.1	FFC-334-N
5/8	3/8	41.9	15.0	21.8	24.4	12.7	24	25	31.8	FFC-335-N
5/8	1/2	46.7	19.8	21.8	24.4	12.7	27	25	36.6	FFC-336-N
3/4	1/2	46.7	19.8	21.8	24.4	15.8	27	28.5	36.6	FFC-337-N
3/4	3/4	48.3	20.6	21.8	24.4	15.8	35	28.5	38.1	FFC-338-N
1	3/4	53.4	20.6	26.4	31.2	22.3	35	38	41.2	FFC-339-N
1	1	62.3	25.4	26.4	31.2	22.3	41	38	50.0	FFC-340-N

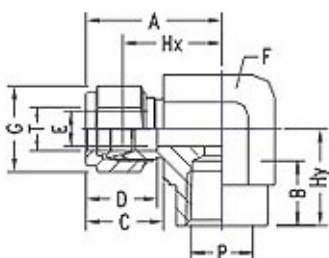
METRIC OD Tubes x Female NPT Threads

T Tube OD	P ISO Female	A	B	C	D	E min	F A/F	G A/F	H	SMARTECH PART NO.
3	1/8	28.7	10.4	15.3	12.9	2.4	14	11	22.1	FFC-341-N
3	1/4	33.5	15.0	15.3	12.9	2.4	19	11	26.9	FFC-342-N
6	1/8	31.3	10.4	17.7	15.3	4.8	14	14	23.9	FFC-343-N
6	1/4	35.8	15.0	17.7	15.3	4.8	19	14	28.4	FFC-344-N
6	3/8	37.6	15.0	17.7	15.3	4.8	22	14	30.2	FFC-345-N
6	1/2	42.5	19.8	17.7	15.3	4.8	27	14	35.1	FFC-346-N
8	1/8	32.1	10.4	18.6	16.2	6.3	14	16	24.6	FFC-347-N
8	1/4	37.0	15.0	18.6	16.2	6.3	19	16	29.5	FFC-348-N
8	3/8	38.5	15.0	18.6	16.2	6.3	22	16	31.0	FFC-349-N
8	1/2	43.3	19.8	18.6	16.2	6.3	27	16	35.8	FFC-350-N
10	1/4	37.8	15.0	19.5	17.2	7.9	19	19	30.2	FFC-351-N
10	3/8	39.4	15.0	19.5	17.2	7.9	22	19	31.8	FFC-352-N
10	1/2	44.2	19.8	19.5	17.2	7.9	27	19	36.6	FFC-353-N
12	1/4	40.3	15.0	22.0	22.8	9.5	22	22	30.2	FFC-354-N
12	3/8	41.9	15.0	22.0	22.8	9.5	22	22	31.8	FFC-355-N
12	1/2	46.7	19.8	22.0	22.8	9.5	27	22	36.6	FFC-356-N
15	1/2	46.7	19.8	22.0	24.4	11.9	27	25	36.6	FFC-357-N
16	1/2	46.9	19.8	22.0	24.4	12.7	27	25	36.8	FFC-358-N
20	1/2	47.9	19.8	22.0	26.0	15.9	30	32	37.8	FFC-359-N
20	3/4	49.7	20.6	22.0	26.0	15.9	35	32	39.6	FFC-360-N
22	3/4	49.7	20.6	22.0	26.0	18.3	35	32	39.6	FFC-361-N
22	1	57.9	25.4	22.0	26.0	18.3	41	32	47.8	FFC-362-N
25	3/4	53.4	20.6	26.5	31.3	21.8	35	38	41.1	FFC-363-N
25	1	62.3	25.4	26.5	31.3	21.8	41	38	50.0	FFC-364-N



FEMALE ELBOW

INCH OD Tubes x Female NPT Threads

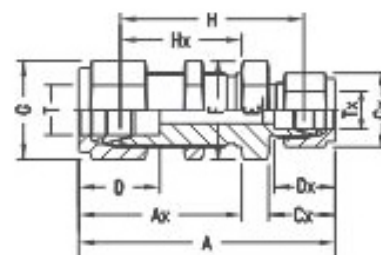


T Tube OD	P NPT Female	A	B	C	D	E min.	F A/F	G A/F	H	Hy	SMARTECH PART NO.
1/8	1/8	24.6	10.4	15.3	12.7	2.4	14	11	18.0	19.0	FFE-381-N
1/8	1/4	27.4	15.0	15.3	12.7	2.4	19	11	20.8	22.4	FFE-382-N
1/4	1/8	26.9	10.4	17.8	15.3	4.8	14	14	19.6	19.0	FFE-383-N
1/4	1/4	29.7	15.0	17.8	15.3	4.8	19	14	22.4	22.4	FFE-384-N
1/4	3/8	31.8	15.0	17.8	15.3	4.8	22	14	24.4	22.4	FFE-385-N
1/4	1/2	34.6	19.8	17.8	15.3	4.8	27	14	27.2	28.5	FFE-386-N
5/16	1/8	28.7	10.4	17.8	15.3	6.3	19	14	21.4	19.1	FFE-387-N
5/16	1/4	30.5	15.0	18.5	16.3	6.3	22	16	23.2	22.4	FFE-388-N
3/8	1/8	30.5	10.4	19.3	16.8	7.1	17	17	23.2	19.1	FFE-389-N
3/8	1/4	31.2	15.0	19.3	16.8	7.1	19	17	23.9	22.4	FFE-390-N
3/8	3/8	33.3	15.0	19.3	16.8	7.1	22	17	25.9	22.4	FFE-391-N
3/8	1/2	36.0	19.8	19.3	16.8	7.1	27	17	28.7	28.5	FFE-392-N
1/2	1/4	36.0	15.0	21.8	22.9	7.1	22	22	25.9	22.4	FFE-393-N
1/2	3/8	36.0	15.0	21.8	22.9	10.4	22	22	25.9	22.4	FFE-394-N
1/2	1/2	38.9	19.8	21.8	22.9	10.4	27	22	28.7	28.5	FFE-395-N
5/8	3/8	38.1	15.0	21.8	22.9	12.7	24	22	28.0	22.4	FFE-396-N
5/8	1/2	39.9	19.8	21.8	24.4	12.7	27	25	29.7	28.5	FFE-397-N
3/4	1/2	39.9	19.8	21.8	24.4	15.8	27	28.5	29.7	28.5	FFE-398-N
3/4	3/4	44.7	20.6	21.8	24.4	15.8	35	28.5	34.6	31.8	FFE-399-N
7/8	3/4	44.7	20.6	21.8	25.9	18.2	35	32	34.6	31.8	FFE-400-N
1	3/4	49.0	20.6	26.4	31.2	22.3	35	38	36.8	31.8	FFE-401-N
1	1	53.6	25.4	26.4	31.2	22.3	41	38	41.4	38.1	FFE-402-N

METRIC OD Tubes x Female NPT Threads

T Tube OD	P NPT Female	A	B	C	D	E min.	F A/F	G A/F	H _z	Hy	SMARTECH PART NO.
3	1/8	24.6	10.4	15.3	12.9	2.4	14	11	18.0	19.0	FFE-403-N
3	1/4	27.4	15.0	15.3	12.9	2.4	19	11	20.8	22.4	FFE-404-N
6	1/8	27.0	10.4	17.7	15.3	4.8	14	14	19.6	19.0	FFE-405-N
6	1/4	29.8	15.0	17.7	15.3	4.8	19	14	22.4	22.4	FFE-406-N
6	1/2	34.6	19.8	17.7	15.3	4.8	27	14	7.2	28.5	FFE-408-N
8	1/4	30.6	15.0	18.6	16.2	6.3	19	16	23.1	22.4	FFE-409-N
8	3/8	32.6	15.0	18.6	16.2	6.3	22	16	25.1	22.4	FFE-410-N
10	1/4	33.5	15.0	19.5	17.2	7.9	19	19	25.9	22.4	FFE-411-N
10	3/8	33.5	15.0	19.5	17.2	7.9	22	19	25.9	22.4	FFE-412-N
12	1/4	36.0	15.0	22.0	22.8	9.5	22	22	25.9	22.4	FFE-413-N
12	3/8	36.0	15.0	22.0	22.8	9.5	22	22	25.9	22.4	FFE-414-N
12	1/2	38.8	19.8	22.0	22.8	9.5	27	22	28.7	28.5	FFE-415-N
16	1/2	39.5	19.8	22.0	24.4	12.7	27	25	29.7	28.5	FFE-416-N

BULKHEAD REDUCING UNION



INCH OD Tubes

T Tube OD	T Tube OD	A	A _x	C _x	D	D _x	E min.	F A/F	G A/F	G _x A/F	H	H _x	Panel Hole Drill Size	Max Panel Thickness	SMARTEC PART NO.
1/4	1/8	55.2	33.5	15.3	15.3	12.7	2.4	16	14	11	41.2	26.2	11.5	10.2	RBU-525
3/8	1/4	60.7	36.6	17.8	16.8	15.3	4.8	22	17	14	46.0	29.5	14.6	11.2	RBU-526
1/2	1/4	66.8	41.9	17.8	22.4	15.3	4.8	24	22	14	49.2	31.8	19.5	12.7	RBU-527
1/2	3/8	66.8	41.9	17.8	22.4	16.8	7.1	24	22	17	49.2	31.8	19.5	12.7	RBU-528



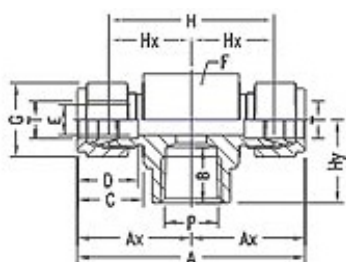
FEMALE BRANCH TEE



INCH OD Tubes x Female NPT Threads

T Tube OD	P NPT Female	A	Ax	B	C	D	E min.	F A/F	G A/F	H	Hx	Hy	SMARTECH PART NO.
1/8	1/8	49.2	24.6	10.4	15.3	12.7	2.4	14	11	36.0	18.0	19.0	FFBT-417-N
1/4	1/8	53.8	26.9	10.4	17.8	15.3	4.8	14	14	39.2	19.6	19.0	FFBT-418-N
1/4	1/4	59.4	27.9	15.0	17.8	15.3	4.8	19	14	44.8	22.4	22.4	FFBT-419-N
3/8	1/4	62.4	31.2	15.0	19.3	16.8	7.1	16	16	47.8	23.9	22.4	FFBT-420-N
3/8	3/8	66.6	33.3	15.0	19.3	16.8	7.1	19	16	51.8	25.9	22.4	FFBT-421-N
1/2	3/8	72.0	36.0	15.0	21.8	22.9	10.4	19	19	51.8	25.9	22.4	FFBT-422-N
1/2	1/2	77.8	38.9	19.8	21.8	22.9	10.4	22	22	57.4	28.7	28.5	FFBT-423-N
3/4	3/4	89.4	44.7	20.6	21.8	24.4	15.8	35	22	69.2	34.6	31.8	FFBT-424-N
1	3/4	98.0	49.0	20.6	26.4	31.2	22.3	35	25	73.6	36.8	31.8	FFBT-425-N
1	1	107.2	53.6	25.4	26.4	31.2	22.3	41	38	82.8	41.4	38.1	FFBT-426-N

METRIC OD Tubes x Female NPT Threads



T Tube OD	P NPT Female	A	Ax	B	C	D	E min.	F A/F	G A/F	H	Hx	Hy	SMARTECH PART NO.
3	1/8	49.2	24.6	10.4	15.3	12.9	2.4	14	11	36.0	18.0	19.0	FFBT-427-N
6	1/8	54.0	27.0	10.4	17.7	15.3	4.8	14	14	39.2	19.6	19.0	FFBT-428-N
6	1/4	59.6	29.8	15.0	17.7	15.3	4.8	19	14	44.8	22.4	22.4	FFBT-429-N
8	1/8	59.8	29.9	10.4	18.6	16.2	6.3	16	16	44.8	22.4	19.0	FFBT-430-N
8	1/4	61.2	30.6	15.0	18.6	16.2	6.3	19	16	46.2	23.1	22.4	FFBT-431-N
10	1/4	67.0	33.5	15.0	19.5	17.2	7.9	19	19	51.8	25.9	22.4	FFBT-432-N
12	3/8	72.0	36.0	15.0	22.0	22.8	9.5	22	22	51.8	25.9	22.4	FFBT-433-N
12	1/2	77.6	38.8	19.8	22.0	22.8	9.5	27	22	57.4	28.7	28.5	FFBT-434-N
16	1/2	79.0	39.5	19.8	22.0	24.4	12.7	27	25	59.4	29.7	28.5	FFBT-435-N

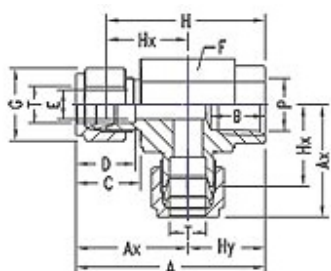
FEMALE RUN TEE



INCH OD Tubes x Female NPT Threads

T Tube OD	P NPT Female	A	Ax	B	C	D	E	F A/F	G A/F	H	Hx	Hy	SMARTECH PART NO.
1/8	1/8	43.6	24.6	10.4	15.3	12.7	2.4	14	11	37.0	18.0	19.0	FRT-436-N
1/4	1/8	45.9	26.9	10.4	17.8	15.3	4.8	14	14	38.6	19.6	19.0	FRT-437-N
1/4	1/4	52.1	29.7	15.0	17.8	15.3	4.8	19	14	44.8	22.4	22.4	FRT-438-N
3/8	1/4	53.6	31.2	15.0	19.3	16.8	7.1	19	17	46.3	23.9	22.4	FRT-439-N
3/8	3/8	55.7	33.3	15.0	19.3	16.8	7.1	22	17	48.3	25.9	22.4	FRT-440-N
1/2	3/8	58.4	36.0	15.0	21.8	22.9	10.4	22	22	48.3	25.9	22.4	FRT-441-N
1/2	1/2	67.4	38.9	19.8	21.8	22.9	10.4	27	22	57.2	28.7	28.5	FRT-442-N
3/4	3/4	76.5	44.7	20.6	21.8	24.4	15.8	35	29	66.4	34.6	31.8	FRT-443-N
1	3/4	80.8	49.0	20.6	26.4	31	22.3	35	38	68.6	36.8	31.8	FRT-444-N
1	1	91.7	53.6	25.4	26.4	31	22.3	41	38	79.5	41.4	38.1	FRT-445-N

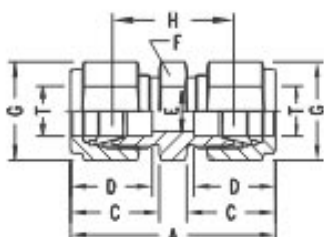
METRIC OD Tubes x Female NPT Threads



T Tube OD	P NPT Female	A	Ax	B	C	D	E min.	F A/F	G A/F	H	Hx	Hy	SMARTECH PART NO.
3	1/8	43.6	24.6	10.4	15.3	12.9	2.4	14	11	37.0	18.0	19.0	FRT-446-N
6	1/8	46.0	27.0	10.4	17.7	15.3	4.8	14	14	38.6	19.6	19.0	FRT-447-N
6	1/4	52.2	29.8	15.0	17.7	15.3	4.8	19	14	44.8	22.4	22.4	FRT-448-N
8	1/8	48.9	29.9	10.4	18.6	16.2	6.3	16	16	41.4	22.4	19.0	FRT-449-N
8	1/4	53.0	30.6	15.0	18.6	16.2	6.3	19	16	45.5	23.1	22.4	FRT-450-N
10	1/4	55.9	33.5	15.0	19.5	17.2	7.9	19	19	48.3	25.9	22.4	FRT-451-N
12	3/8	58.4	36.0	15.0	22.0	22.8	9.5	22	22	48.3	25.9	22.4	FRT-452-N
12	1/2	67.3	38.8	19.8	22.0	22.8	9.5	27	22	57.2	28.7	28.5	FRT-453-N
16	1/2	68.0	39.5	19.8	22.0	24	12.7	27	25	58.2	29.7	28.5	FRT-454-N



UNION



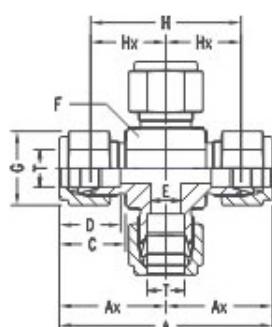
INCH OD Tubes

T Tube OD	A	C	D	E min.	F A/F	G A/F	H	SMARTECH PART NO.
1/16	25.1	11.0	8.6	1.3	8	8	17.5	FU-455
1/8	35.6	15.3	12.7	2.4	11	11	22.4	FU-456
1/4	40.9	17.8	15.3	4.8	14	14	26.2	FU-457
5/16	42.9	18.5	16.3	6.3	14	16	28.2	FU-458
3/8	45.0	19.3	16.8	7.1	16	17	30.2	FU-459
1/2	51.3	21.8	22.9	10.4	22	22	31.0	FU-460
5/8	52.0	21.8	24.4	12.7	24	25	31.8	FU-461
3/4	53.6	21.8	24.4	15.8	27	28.5	33.3	FU-462
7/8	55.2	21.8	25.9	18.2	30	32	34.8	FU-463
1	64.8	26.4	31.2	22.3	35	38	40.4	FU-464

METRIC OD Tubes

T Tube OD	A	C	D	E min.	F A/F	G A/F	H	SMARTECH PART NO.
3	35.3	15.3	12.9	2.4	11	11	22.1	FU-465
6	41.0	17.7	15.3	4.8	14	14	26.2	FU-466
8	43.2	18.6	16.2	6.3	16	16	28.2	FU-467
10	46.2	19.5	17.2	7.9	17	19	31.0	FU-468
12	51.2	22.0	22.8	9.5	22	22	31.0	FU-469
14	52.0	22.0	24.4	11.1	24	25	31.0	FU-470
15	52.0	22.0	24.4	11.9	24	25	31.8	FU-471
16	52.0	22.0	24.4	12.7	24	25	31.8	FU-472
18	53.5	22.0	24.4	15.1	27	30	33.3	FU-473
20	55.0	22.0	26.0	15.9	30	32	34.8	FU-474
22	55.0	22.0	26.0	18.3	30	32	34.8	FU-475
25	65.0	26.5	31.3	21.8	35	38	40.4	FU-476

UNION CROSS



INCH OD Tubes

T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	FITXCEL PART NO.
1/8	44.8	22.4	15.3	12.7	2.4	11	11	31.6	15.8	FUC-581
1/4	53.8	26.9	17.8	15.3	4.8	14	14	39.2	19.6	FUC-582
3/8	61.0	30.5	19.3	16.8	7.1	17	17	46.4	23.2	FUC-583
1/2	72.0	36.0	21.8	22.9	10.4	22	22	51.8	25.9	FUC-584
3/4	79.8	39.9	21.8	24.4	15.8	27	28.5	59.4	29.7	FUC-585
1	98.0	49.0	26.4	31.2	22.3	35	38	73.6	36.8	FUC-586

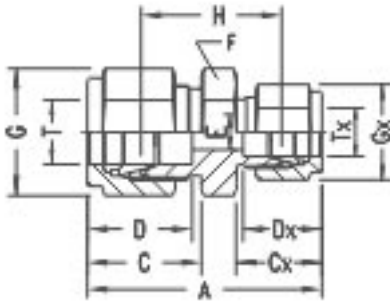
METRIC OD Tubes

T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	SMARTECH PART NO.
3	44.6	22.3	15.3	12.9	2.4	11	11	31.4	15.7	FUC-587
6	54.0	27.0	17.7	15.3	4.8	14	14	39.2	19.6	FUC-588
8	57.6	28.8	18.6	16.2	6.3	16	16	42.6	21.3	FUC-589
10	63.0	31.5	19.5	17.2	7.9	17	19	47.8	23.9	FUC-590
12	72.0	36.0	22.0	22.8	9.5	22	22	51.8	25.9	FUC-591
16	76.0	38.0	22.0	24.4	12.7	24	25	55.8	27.9	FUC-592
22	89.2	44.6	22.0	26.0	18.3	32	32	69.0	34.5	FUC-593
25	98.2	49.1	26.5	31.3	21.8	35	38	73.6	36.8	FUC-594



REDUCING UNION

INCH OD Tubes



T Tube OD	Tx Tube OD	A	C	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	SMARTECH PART NO.
1/4	1/8	38.6	17.8	15.3	15.3	12.7	2.4	14	14	11	24.6	FRU-477
5/16	1/8	39.6	18.6	15.3	16.3	12.7	2.4	14	16	11	25.7	FRU-478
5/16	1/4	42.2	18.6	17.8	16.3	15.3	4.8	14	16	14	27.5	FRU-479
3/8	1/8	40.9	19.3	15.3	16.8	12.7	2.4	16	17	11	26.9	FRU-480
3/8	1/4	43.2	19.3	17.8	16.8	15.3	4.8	16	17	14	28.5	FRU-481
1/2	1/8	45.2	21.8	15.3	22.9	12.7	2.4	22	22	11	28.5	FRU-482
1/2	1/4	47.0	21.8	17.8	22.9	15.3	4.8	22	22	14	29.5	FRU-483
1/2	3/8	48.5	21.8	19.3	22.9	16.8	7.1	22	22	17	31.0	FRU-484
5/8	3/8	49.3	21.8	19.3	24.4	16.8	7.1	24	25	17	31.8	FRU-485
5/8	1/2	52.0	21.8	21.8	24.4	22.9	10.4	24	25	22	31.8	FRU-486
3/4	1/4	49.3	21.8	17.8	24.4	15.3	4.8	27	28.5	14	31.8	FRU-487
3/4	3/8	50.8	21.8	19.3	24.4	16.8	7.1	27	28.5	17	33.3	FRU-488
3/4	1/2	53.6	21.8	21.8	24.4	22.9	10.4	27	28.5	22	33.3	FRU-489
1	1/2	60.5	26.5	21.8	31.2	22.9	10.4	35	38	22	38.1	FRU-490
1	3/4	60.5	26.5	21.8	31.2	24.4	15.8	35	38	28.5	38.1	FRU-491

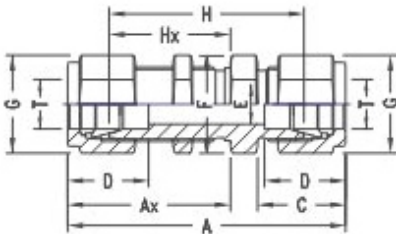
METRIC OD Tubes

T Tube OD	Tx Tube OD	A	C	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	SMARTECH PART NO.
6	3	38.6	17.7	15.3	15.3	12.9	2.4	14	14	11	24.6	FRU-492
8	6	42.3	18.6	17.7	16.2	15.3	4.8	14	16	14	27.4	FRU-493
10	6	44.5	19.5	17.7	17.2	15.3	4.8	17	19	14	29.5	FRU-494
10	8	45.1	19.5	18.6	17.2	16.2	6.3	17	19	16	30.0	FRU-495
12	6	47.0	22.0	17.7	22.8	15.3	4.8	22	22	14	29.5	FRU-496
12	8	47.8	22.0	18.6	22.8	16.2	6.4	22	22	16	30.2	FRU-497
12	10	48.7	22.0	19.5	22.8	17.2	7.9	22	22	19	31.0	FRU-498
16	10	49.5	22.0	19.5	24.4	17.2	7.9	24	25	19	31.8	FRU-499
16	12	52.0	22.0	22.0	24.4	22.8	9.5	24	25	22	31.8	FRU-500
22	18	55.0	22.0	22.0	26.0	24.4	15.1	30	32	30	34.8	FRU-501
22	20	55.0	22.0	22.0	26.0	26.6	15.9	30	32	32	34.8	FRU-502
25	12	65.0	26.5	22.0	31.3	22.8	9.5	35	38	22	40.4	FRU-503
25	20	65.0	26.5	22.0	31.3	26.0	15.9	35	38	32	40.4	FRU-504



BULKHEAD UNION

INCH OD Tubes

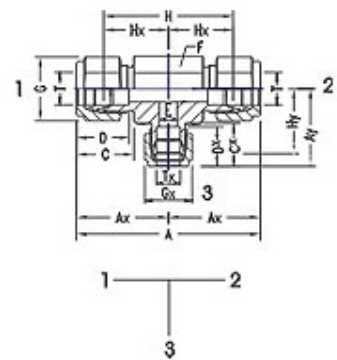


T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max Panel Thickness	SMARTECH PART NO.
1/16	31.5	17.3	11.0	8.6	1.3	11	8	23.8	13.5	5.2	3.0	FBU-505
1/8	51.3	31.2	15.3	12.7	2.4	11	11	38.1	24.6	8.3	12.7	FBU-506
1/4	57.6	33.6	17.8	15.3	4.8	16	14	43.0	26.2	11.5	10.1	FBU-507
5/16	60.7	35.8	18.5	16.3	6.3	17	16	46.0	28.5	13.0	11.1	FBU-508
3/8	62.2	36.8	19.3	7.1	7.1	22	17	47.5	29.5	14.6	11.1	FBU-509
1/2	71.1	41.9	21.8	22.9	10.4	24	22	50.8	31.8	19.5	12.7	FBU-510
5/8	72.6	42.7	21.8	24.4	12.7	27	25	52.3	32.5	22.6	12.7	FBU-511
3/4	79.0	47.5	21.8	24.4	16.0	30	28.5	58.6	37.4	25.8	16.8	FBU-512
1	95.6	57.4	26.4	31.2	22.3	35	38	71.3	45.2	33.7	19.0	FBU-513

METRIC OD Tubes

T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max Panel Thickness	SMARTECH PART NO.
3	51.3	31.2	15.3	12.9	2.4	14	11	38.1	24.6	8.3	12.7	FBU-514
6	57.7	33.6	17.7	15.3	4.8	16	14	42.9	26.2	11.5	10.2	FBU-515
8	61.0	36.1	18.6	16.2	6.3	17	16	46.0	28.6	13.1	11.2	FBU-516
10	63.7	37.0	19.5	17.2	7.9	22	19	48.5	29.4	16.3	11.2	FBU-517
12	71.0	41.9	22.0	22.8	9.5	24	22	50.8	31.8	19.5	12.7	FBU-518
14	72.5	42.6	22.0	24.4	11.1	27	25	52.3	32.5	22.5	12.7	FBU-519
15	72.5	42.6	22.0	24.4	11.9	27	25	52.3	32.5	22.8	12.7	FBU-520
16	72.5	42.6	22.0	24.4	12.7	27	25	52.3	32.5	22.8	12.7	FBU-521
18	78.9	47.4	22.0	24.4	15.1	30	30	58.7	37.3	26.0	16.8	FBU-522
20	84.5	53.0	22.0	26.0	15.8	35	32	64.3	42.9	29.0	19.0	FBU-523
25	95.6	57.4	26.4	31.2	22.3	35	38	71.3	45.2	33.7	19.0	FBU-524

REDUCING UNION TEE



INCH OD Tubes

Tube OD	Tx Tube OD	A	Ax	Ay	C	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	Hx	Hy	SMARTECH PART NO.
3/8	1/4	61.0	30.5	29.0	19.3	17.8	16.8	15.3	4.8	16	17	14	46.2	23.1	21.6	FRUT-573
1/2	1/4	72.2	36.0	31.8	21.8	17.8	22.9	15.3	4.8	22	22	14	51.8	25.9	24.4	FRUT-574
1/2	3/8	72.2	36.0	33.3	21.8	19.3	22.9	16.8	7.1	22	22	17	51.8	25.9	25.9	FRUT-575
3/4	3/8	79.8	39.9	37.0	21.8	19.3	24.4	16.8	7.1	27	28.5	17	59.4	29.7	29.7	FRUT-576
3/4	1/2	79.8	39.9	39.9	21.8	21.3	24.4	22.9	10.4	27	28.5	22	59.4	29.7	29.7	FRUT-577
1	3/8	98.0	49.0	41.9	26.4	19.3	31.2	16.8	7.1	35	38	17	73.6	36.8	34.5	FRUT-578
1	1/2	98.0	49.0	44.7	26.4	22.9	31.2	21.8	10.4	35	38	22	73.6	36.8	34.5	FRUT-579
1	3/4	98.0	49.0	44.7	26.4	24.4	31.2	24.4	15.8	35	38	28.5	73.6	36.8	34.5	FRUT-580

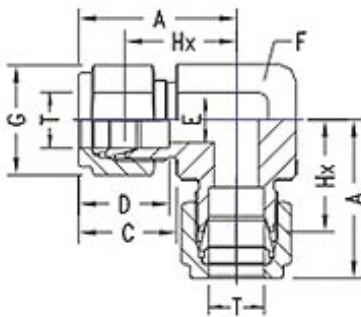


UNION ELBOW

INCH OD Tubes



T Tube OD	A	C	D	E min.	F A/F	G	Hx	SMARTECH PART NO.
1/16	17.8	11.0	8.6	1.3	11	8	14.0	FUE-529
1/8	22.4	15.3	12.7	2.4	11	11	15.8	FUE-530
1/4	26.9	17.8	15.3	4.8	14	14	19.6	FUE-531
5/16	28.7	18.5	16.3	6.3	16	16	21.3	FUE-532
3/8	30.5	19.3	16.8	7.1	17	17	23.2	FUE-533
1/2	36.0	21.8	22.9	10.4	22	22	25.9	FUE-534
5/8	38.1	21.8	24.4	12.7	24	25	27.9	FUE-535
3/4	39.9	21.8	24.4	15.8	27	28.5	29.7	FUE-536
7/8	44.7	21.8	25.9	18.2	35	32	34.6	FUE-537
1	49.0	26.4	31.2	22.3	35	38	36.8	FUE-538



METRIC OD Tubes

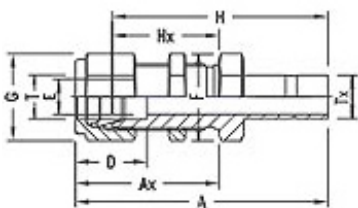
T Tube OD	A	C	D	E min.	F A/F	G	Hx	SMARTECH PART NO.
3	22.3	15.3	12.9	2.4	11	11	15.7	FUE-539
6	27.0	17.7	15.3	4.8	14	14	19.6	FUE-540
8	28.8	18.6	16.2	6.3	16	16	21.3	FUE-541
10	31.5	19.5	17.2	7.9	17	19	23.9	FUE-542
12	36.0	22.0	22.8	9.5	22	22	25.9	FUE-543
14	38.0	22.0	24.4	11.1	24	25	27.9	FUE-544
15	38.0	22.0	24.4	11.9	24	25	27.9	FUE-545
16	38.0	22.0	24.4	12.7	24	25	27.9	FUE-546
18	39.8	22.0	24.4	15.1	27	30	29.7	FUE-547
20	44.6	22.0	26.0	15.9	32	32	34.5	FUE-548
22	44.6	22.0	26.0	18.3	32	32	34.5	FUE-549
25	49.1	26.5	31.3	21.8	35	38	36.8	FUE-550

BULKHEAD REDUCER

INCH OD Tubes



T Tube OD	Tx Tube OD	A	Ax	D	E min.	F A/F	G A/F	H D	Hx	Panel Hole Drill Size	Max. Panel Thickness	SMARTECH PART NO.
1/8	1/8	49.5	31.3	12.7	2.0	11	11	43.0	24.6	8.3	12.7	BR-767
1/4	1/4	55.9	33.5	15.3	4.8	16	14	48.5	26.2	11.5	10.2	BR-768
3/8	3/8	60.8	36.8	16.8	7.1	19	17	53.8	29.5	14.7	11.2	BR-769
1/2	1/2	72.9	41.9	22.9	9.9	24	22	62.7	31.8	19.5	12.7	BR-770
5/8	5/8	75.2	42.7	23.6	12.7	27	25	65.0	32.5	22.6	12.7	BR-771
1	1	100.4	57.4	31.2	20.3	35	38	88.1	45.2	33.7	19.1	BR-772



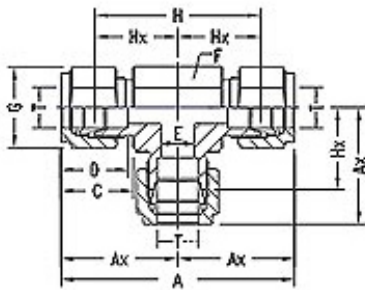


UNION TEE



INCH OD Tubes

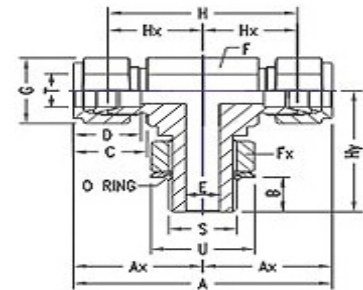
T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	SMARTECH PART NO.
1/16	35.6	17.8	11.0	8.6	1.3	11	8	28.0	14.0	FUT-551
1/8	44.8	22.4	15.3	12.7	2.4	11	11	31.6	15.8	FUT-552
1/4	53.8	26.9	17.8	15.3	4.8	14	14	39.2	19.6	FUT-553
5/16	57.4	28.7	18.5	16.3	6.3	16	16	42.6	21.3	FUT-554
3/8	61.0	30.5	19.3	16.8	7.1	17	17	46.4	23.2	FUT-555
1/2	72.0	36.0	21.8	22.9	10.4	22	22	51.8	25.9	FUT-556
5/8	76.2	38.1	21.8	24.4	12.7	24	25	55.8	27.9	FUT-557
3/4	79.8	39.9	21.8	24.4	15.8	27	28.5	59.4	29.7	FUT-558
7/8	89.4	44.7	21.8	25.9	18.2	35	32	69.2	34.6	FUT-559
1	98.0	49.0	26.4	31.2	22.3	35	38	73.6	36.8	FUT-560



METRIC OD Tubes

T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	SMARTECH PART NO.
3	44.6	22.3	15.3	12.9	2.4	11	11	31.4	15.7	FUT-561
6	54.0	27.0	17.7	15.3	4.8	14	14	39.2	19.6	FUT-562
8	57.6	28.8	18.6	16.2	6.3	16	16	42.6	21.3	FUT-563
10	63.0	31.5	19.5	17.2	7.9	17	19	47.8	23.9	FUT-564
12	72.0	36.0	22.0	22.8	9.5	22	22	51.8	25.9	FUT-565
14	76.0	38.0	22.0	24.4	11.1	24	25	55.8	27.9	FUT-566
15	76.0	38.0	22.0	24.4	11.9	24	25	55.8	27.9	FUT-567
16	76.0	38.0	22.0	24.4	12.7	24	25	55.8	27.9	FUT-568
18	79.6	39.8	22.0	24.4	15.1	27	30	59.4	29.7	FUT-569
20	89.2	44.6	22.0	26.0	15.9	32	32	69.0	34.5	FUT-570
22	89.2	44.6	22.0	26.0	18.3	32	32	69.0	34.5	FUT-571
25	98.2	49.1	26.5	31.3	21.8	35	38	73.6	36.8	FUT-572

POSITIONABLE MALE BRANCH TEE



INCH OD Tubes x SAE/MS *Straight threads

T Tube OD	S SAE/MS Male	A	Ax	B	C	D	E min.	F A/F	Fx A/F	G A/F	H	Hx	Hy	U	O Ring Part No.	SMARTECH PART NO.
1/4	7/16-20	57.0	28.5	9.9	17.8	15.3	4.8	14	14	14	42.0	21.0	28.5	16.5	4 OPU	PMBT-654-R
3/8	9/16-18	64.3	32.0	11.2	19.3	16.8	7.1	16	17	17	49.2	24.6	32.3	20.0	6 OPU	PMBT-655-R
1/2	3/4-16	75.4	37.6	12.7	21.8	22.9	10.4	22	22	22	54.8	27.4	37.8	25.6	8 OPU	PMBT-656-R
3/4	11/16-12	90.2	41.4	16.8	21.8	24.4	15.8	27	32	28.5	62.4	31.2	48.8	36.6	12 OPU	PMBT-657-R
1	15/16-12	104.1	50.5	16.8	26.4	31.2	22.3	35	35	38	76.8	38.4	53.6	44.0	16 OPU	PMBT-658-R

METRIC OD Tubes x SAE/MS *Straight threads

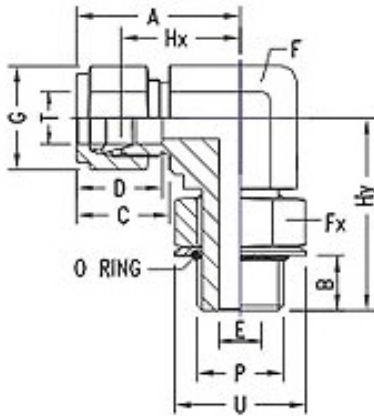
T Tube OD	S SAE/MS Male	A	Ax	B	C	D	E min.	F A/F	Fx A/F	G A/F	H	Hx	Hy	U	O Ring Part No.	SMARTECH PART NO.
6	7/16-20	57.0	28.5	9.9	17.7	15.3	4.8	14	14	14	42.0	21.0	28.5	16.5	4 OPU	PMBT-659-R
10	9/16-18	64.3	32.0	11.2	19.5	17.2	7.1	16	17	17	49.2	24.6	32.3	20.0	6 OPU	PMBT-660-R
12	3/4-16	75.4	37.6	12.7	22.0	22.8	10.4	22	22	22	54.8	27.4	37.8	25.6	8 OPU	PMBT-661-R

POSITIONABLE MALE ELBOW



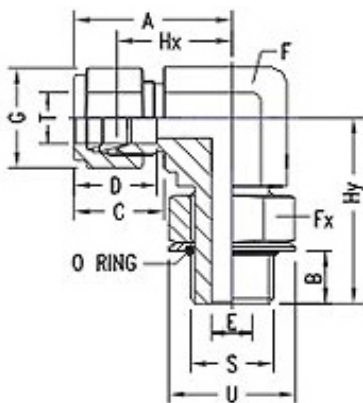
INCH OD Tubes x Male ISO* parallel Threads

T Tube OD	P ISO Male	Ax	B	C	D	E min.	F	Fx A/F	G A/F	Hx A/F	Hy	U	O Ring Part No.	SMARTECH PART NO.	
1/4	1/8	27.0	8.2	17.8	15.3	4.0	14	14	14	19.6	26.4	17.3	2 Opn	FPME-624-R	
1/4	1/4	29.0	9.2	17.8	15.3	4.8	16	19	14	21.6	32.3	22.9	4 Opn	FPME-625-R	
3/8	1/4	30.5	9.2	19.3	16.8	5.8	16	19	17	23.2	32.3	22.9	4 Opn	FPME-626-R	
3/8	3/8	33.0	9.2	19.3	16.8	7.1	22	22	17	25.9	37.0	26.4	6 Opn	FPME-627-R	
1/2	1/4	36.0	9.2	21.8	22.9	5.8	22	19	22	25.9	35.0	22.9	4 Opn	FPME-628-R	
1/2	3/8	36.0	9.4	21.8	22.9	7.8	22	22	22	25.9	37.0	26.4	6 Opn	FPME-629-R	
1/2	1/2	38.1	13.0	21.8	24.4	10.4	24	27	22	27.9	43.4	32.0	8 Opn	FPME-630-R	
5/8	1/2	38.1	13.0	21.8	24.4	10.4	24	27	25	27.9	43.4	32.0	8 Opn	FPME-631-R	
3/4	3/4	1/2	39.9	13.0	21.8	24.4	10.4	27	27	28.5	29.7	45.2	32.0	8 Opn	FPME-632-R
		3/4	39.9	13.0	21.8	24.4	15.8	27	35	28.5	29.7	48.8	41.2	12Opn	FPME-633-R
1	3/4	49.0	13.0	26.4	31.2	15.8	35	35	38	36.8	53.3	41.2	12Opn	FPME-634-R	
1	1	49.0	14.0	26.4	31.2	19.8	35	41	38	36.8	53.6	48.5	16Opn	FPME-635-R	



METRIC OD Tubes x Male ISO* Parallel Threads

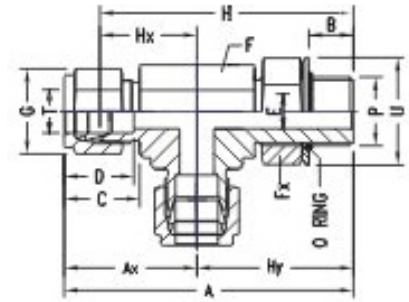
T Tube OD	P ISO Male	Ax	B	C	D	E min.	F	Fx A/F	G A/F	Hx A/F	Hy	U	O Ring Part No.	SMARTECH PART NO.
6	1/8	27.0	8.1	17.7	15.3	4.0	14	14	14	19.6	26.4	17.3	2 Opn	FPME-636-R
6	1/4	29.0	9.1	17.7	15.3	4.8	16	19	14	21.6	32.3	22.9	4 Opn	FPME-637-R
8	1/8	28.8	8.1	18.6	16.2	4.0	14	14	16	21.3	27.4	17.3	2 Opn	FPME-638-R
8	1/4	29.9	9.1	18.6	16.2	5.9	16	19	16	22.4	32.2	22.9	4 Opn	FPME-639-R
10	1/4	33.5	9.1	19.5	17.2	5.9	19	19	19	25.9	35.0	22.9	4 Opn	FPME-640-R
10	3/8	33.5	9.4	19.5	17.2	7.9	19	22	19	25.9	37.1	26.4	6 Opn	FPME-641-R
12	3/8	36.0	9.4	22.0	22.8	7.9	22	22	22	25.9	37.1	26.4	6 Opn	FPME-642-R
12	1/2	38.0	13.0	22.0	22.8	9.5	24	27	22	27.9	43.4	32.0	8 Opn	FPME-643-R
12	3/4	39.8	13.0	22.0	22.8	9.5	27	35	22	29.7	48.8	41.1	Opn	FPME-644-R



INCH OD Tube x SAE/MS Straight Thread

T Tube OD	P ISO Male	Ax	B	C	D	E	F	Fx	G A/F	Hx	Hy	U	O Ring Part No.	SMARTECH PART NO.
1/4	7/16-20	28.5	9.9	17.8	15.3	4.8	14	14	14	21.0	28.5	16.5	4 OPU	FPME-645-U
1/4	9/16-18	30.5	11.2	17.8	15.3	4.8	16	17	14	23.1	32.3	20.0	6 OPU	FPME-646-U
3/8	9/16-18	32.0	11.2	19.3	16.8	7.1	16	17	17	24.6	32.3	20.0	6 OPU	FPME-647-U
3/8	3/4-6	34.8	12.7	19.3	16.8	7.1	22	22	17	27.4	37.8	25.6	8 OPU	FPME-648-U
1/2	3/4-16	37.6	12.7	21.8	22.9	10.4	22	22	22	27.4	37.8	25.6	8 OPU	FPME-649-U
5/8	7/16-14	39.6	14.3	21.8	24.4	12.7	24	25	25	29.5	43.4	29.5	10OPU	FPME-650-U
3/4	11/16-12	41.4	16.8	21.8	24.4	15.8	27	32	28.5	31.2	48.8	36.6	12OPU	FPME-651-U
7/8	11/16-12	43.2	16.8	21.8	25.9	18.3	30	32	32	33	50.5	40.4	14OPU	FPME-652-U
1	15/16-12	50.5	16.8	26.4	31.2	22.3	35	35	38	38.4	53.6	44.0	16OPU	FPME-653-U

POSITIONABLE MALE RUN TEE

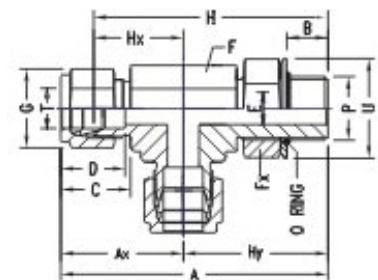


INCH OD Tubes x Male ISO* Parallel Threads

T Tube OD	S SAE/MS Male	A	Ax	B	C	D	E min.	F A/F	Fx A/F	G A/F	H	Hx	Hy	U	O Ring Part No.	SMARTECH PART NO.
1/4	1/8	53.4	27.0	8.2	17.8	15.3	4.0	14	14	14	46.0	19.6	26.4	17.3	2 OPN	PMRT-662-R
1/4	1/4	61.3	29.0	9.2	17.8	15.3	4.8	16	19	14	53.9	21.6	32.3	22.9	4 OPN	PMRT-663-R
3/8	1/4	62.8	30.5	9.2	19.3	16.8	5.8	16	19	17	55.5	23.2	32.3	22.9	4 OPN	PMRT-664-R
1/2	3/8	73.0	36.0	9.4	21.8	22.9	7.8	22	22	22	62.9	25.9	37.0	26.4	6 OPN	PMRT-665-R
1/2	1/2	81.5	38.1	13.0	21.8	24.4	10.4	24	27	22	71.3	27.9	43.4	32.0	8 OPN	PMRT-666-R
5/8	1/2	81.5	38.1	13.0	21.8	24.4	10.4	24	27	25	71.3	27.9	43.4	32.0	8 OPN	PMRT-667-R
3/4	1/2	85.1	39.9	13.0	21.8	24.4	10.4	27	27	28.5	74.9	29.7	45.2	32.0	8 OPN	PMRT-668-R
3/4	3/4	88.7	39.9	13.0	21.8	24.4	15.8	27	35	28.5	78.5	29.7	48.8	41.2	12 OPN	PMRT-669-R
1	1	102.6	49.0	14.0	26.4	31.2	19.8	35	41	38	90.4	36.8	53.6	48.5	16 OPN	PMRT-670-R

METRIC OD Tubes x Male ISO* Parallel Threads

T Tube OD	S SAE/MS Male	A	Ax	B	C	D	E min.	F A/F	Fx A/F	G A/F	H	Hx	Hy	U	O Ring Part No.	SMARTECH PART NO.
6	1/8	53.4	27.0	8.1	17.7	15.3	4.0	14	14	14	46.0	19.6	26.4	17.3	2 OPN	PMRT-671-R
6	1/4	61.3	29.0	9.1	17.7	15.3	4.8	16	19	14	53.9	21.6	32.3	22.9	4 OPN	PMRT-672-R
8	1/8	56.2	28.8	8.1	18.6	16.2	4.0	14	14	16	48.7	21.3	27.4	17.3	2 OPN	PMRT-673-R
8	1/4	62.1	29.9	9.1	18.6	16.2	5.9	16	19	16	54.6	22.4	32.2	22.9	4 OPN	PMRT-674-R
10	1/4	68.5	33.5	9.1	19.5	17.2	5.9	19	19	19	61.9	25.9	35.0	22.9	4 OPN	PMRT-675-R
12	3/8	73.1	36.0	9.4	22.0	22.8	7.9	22	22	22	63.0	25.9	37.1	26.4	6 OPN	PMRT-676-R
12	1/2	81.4	38.0	13.0	22.0	23	9.5	24	27	22	71.3	27.9	43.4	32.0	8 OPN	PMRT-677-R

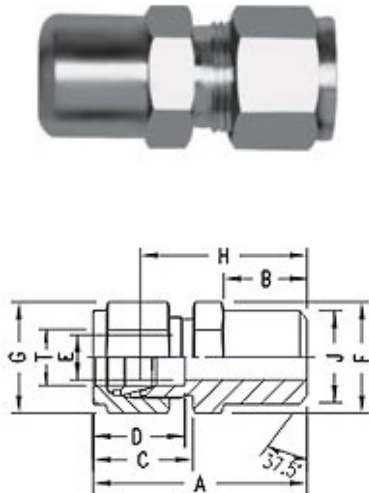


INCH OD Tubes x SAE/MS *Straight Threads

T Tube OD	S SAE/MS Male	A	Ax	B	C	D	E min.	F A/F	Fx A/F	G A/F	H	Hx	Hy	U	O Ring Part No.	SMARTECH PART NO.
1/4	7/16-20	57.0	28.5	9.9	17.8	15.3	4.8	14	14	14	49.5	21.0	28.5	16.5	4 OPU	PMRT-678-R
3/8	9/16-18	64.3	32.0	11.2	19.3	16.8	7.1	16	17	17	56.9	24.6	32.3	20.0	6 OPU	PMRT-679-R
1/2	3/4-16	75.4	37.6	12.7	21.8	22.9	10.4	22	22	22	65.2	27.4	37.8	25.6	8 OPU	PMRT-680-R
3/4	11/16-12	90.2	41.4	16.8	21.8	24.4	15.8	27	32	28.5	80.0	31.2	48.8	36.6	12 OPU	PMRT-681-R
1	15/16-12	104.1	50.5	16.8	26.4	31.2	22.3	35	35	38	92.0	38.4	53.6	44.0	16 OPU	PMRT-682-R



BUTT WELD PIPE CONNECTOR



INCH OD Tubes to Pipe*

T Tube OD	Pipe Weld Male	A	B	C	D	E min.	F A/F	G A/F	H	J	SMARTECH PART NO.
1/8	1/8	30.5	9.6	15.3	12.7	2.4	11	11	23.9	10.3	BWPC-683
1/4	1/8	32.8	9.6	17.8	15.3	4.8	14	14	25.4	10.3	BWPC-684
1/4	1/4	37.8	14.3	17.8	15.3	4.8	14	14	30.5	13.7	BWPC-685
5/16	1/8	34.0	9.6	18.5	16.3	5.1	14	16	26.7	10.3	BWPC-686
5/16	1/4	38.6	14.3	18.5	16.3	6.3	16	16	31.2	13.7	BWPC-687
3/8	1/4	39.9	14.3	19.3	16.8	7.1	16	17	32.5	13.7	BWPC-688
3/8	3/8	39.9	14.3	19.3	16.8	7.1	17	17	32.5	17.2	BWPC-689
3/8	1/2	46.3	19.1	19.3	16.8	7.1	22	17	38.9	21.3	BWPC-690
1/2	3/8	43.4	14.3	21.8	22.9	10.4	22	22	33.3	17.2	BWPC-691
1/2	1/2	49.0	19.1	21.8	22.9	10.4	22	22	38.9	21.3	BWPC-692
1/2	3/4	50.5	19.1	21.8	22.9	10.4	27	22	40.4	26.7	BWPC-693
5/8	1/2	49.0	19.1	21.8	24.4	12.7	24	25	38.9	21.3	BWPC-694
3/4	3/4	50.5	19.1	21.8	24.4	15.8	27	29	40.4	26.7	BWPC-695
1	1	62.2	23.8	26.4	31.2	22.3	35	38	50.0	33.4	BWPC-696

METRIC OD Tube to Pipe*

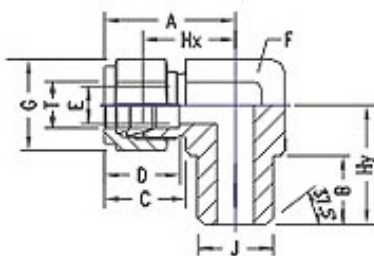
T Tube OD	Pipe Weld Male	A	B	C	D	E min.	F A/F	G A/F	H	J	SMARTECH PART NO.
3	1/8	30.5	9.6	15.3	12.9	2.4	11	11	23.9	10.3	BWPC-697
6	1/8	32.8	9.6	17.8	15.3	4.8	14	14	25.4	10.3	BWPC-698
6	1/4	37.9	14.3	17.8	15.3	4.8	14	14	30.5	13.7	BWPC-699
8	1/8	34.2	9.6	18.5	16.3	5.1	16	16	26.7	10.3	BWPC-700
8	1/4	38.7	14.3	18.5	16.3	6.3	16	16	31.2	13.7	BWPC-701
8	1/2	45.6	19.1	18.5	16.3	6.3	22	16	38.1	21.3	
10	1/4	40.9	14.3	19.5	17.2	7.1	19	19	33.3	13.7	BWPC-702
10	3/8	40.9	14.3	19.5	17.2	7.9	19	19	33.3	17.2	BWPC-703
10	1/2	46.5	19.1	19.5	17.2	7.9	22	19	38.9	21.3	BWPC-704
12	1/4	43.4	14.3	22.0	22.9	7.1	22	22	33.3	13.7	BWPC-705
12	3/8	43.4	14.3	22.0	22.9	9.5	22	22	33.3	17.2	BWPC-706
12	1/2	49.0	19.1	22.0	22.9	9.5	22	22	38.9	21.3	BWPC-707
16	1/2	49.0	19.1	22.0	24.4	12.7	24	25	38.9	21.3	BWPC-708

BUTT WELD PIPE ELBOW



INCH OD Tubes to Pipe*

T Tube OD	Pipe Weld Male	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	J	SMARTECH PART NO.
1/4	1/8	27.0	9.6	17.8	15.3	4.8	14	14	19.6	18.8	10.3	FBWPE-714
1/4	1/4	27.0	14.3	17.8	15.3	4.8	14	14	19.6	23.4	13.7	FBWPE-715
3/8	1/4	30.5	14.3	19.3	16.8	7.1	16	17	23.1	25.9	13.7	FBWPE-716
1/2	1/2	36.0	19.1	21.8	22.9	10.4	22	22	25.9	33.0	21.3	FBWPE-717
3/4	3/4	39.9	19.1	21.8	24.4	15.8	27	29	29.7	36.8	26.7	FBWPE-718

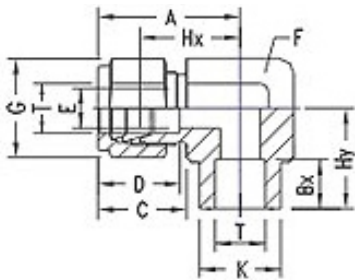


SOCKET WELD TUBE ELBOW

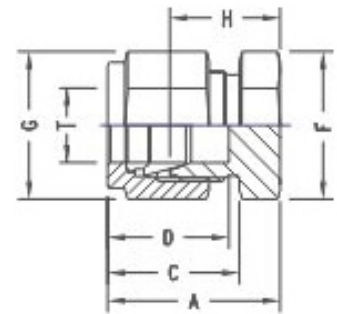


INCH OD Tubes

T Tube OD	A	Bx	C	D	E min.	F A/F	G A/F	Hx	Hy	K	SMARTECH PART NO.
1/4	27.0	7.9	17.8	15.3	4.8	14	14	19.6	19.6	12.7	SWTE-709
3/8	30.5	9.6	19.3	16.8	7.1	16	17	23.1	23.1	15.8	SWTE-710
1/2	36.0	12.7	21.8	22.9	10.4	22	22	25.9	25.9	20.6	SWTE-711
3/4	39.9	14.3	21.8	24.4	15.8	27	28.5	29.7	29.7	27.0	SWTE-712
1	49.0	19.1	26.4	31.2	22.3	35	38	36.8	36.8	35.0	SWTE-713



TUBE END CLOSURE



INCH OD Tubes

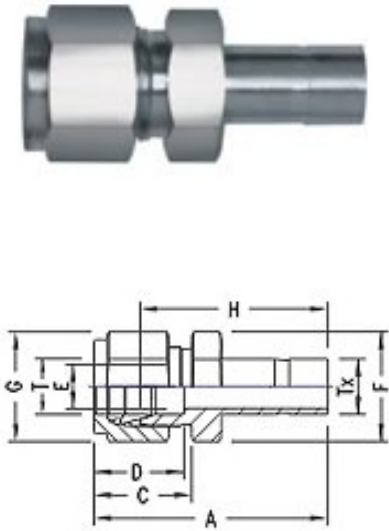
METRIC OD Tubes

T Tube OD	A	C	D	F A/F	G A/F	H	SMARTECH PART NO.	T Tube OD	A	C	D	F A/F	G A/F	H	SMARTECH PART NO.
1/16	13.0	11.0	8.6	11	8	11.2	TEC-773	3	20.1	15.3	12.9	11	11	13.5	TEC-783
1/8	20.0	15.3	12.7	11	11	13.5	TEC-774	6	23.1	17.7	15.3	14	14	15.7	TEC-784
1/4	23.4	17.8	15.3	14	14	16.0	TEC-775	8	24.5	18.6	16.2	16	16	17.0	TEC-785
5/16	24.4	18.5	16.3	16	16	17.0	TEC-776	10	26.6	19.5	17.2	17	19	19.0	TEC-786
3/8	25.7	19.3	16.8	17	17	18.3	TEC-777	12	29.1	22.0	22.8	22	22	19.0	TEC-787
1/2	29.2	21.8	22.9	22	22	19.0	TEC-778	14	29.9	22.0	24.4	24	25	19.8	TEC-788
5/8	30.0	21.8	24.4	24	25	19.8	TEC-779	15	29.9	22.0	24.4	24	25	19.8	TEC-789
3/4	31.5	21.8	24.4	27	28.5	21.4	TEC-780	16	29.9	22.0	24.4	24	25	19.8	TEC-790
7/8	34	21.8	25.9	35	32	23.9	TEC-781	18	31.4	22.0	24.4	27	30	21.3	TEC-791
1	38.4	26.4	31.2	35	38	26.2	TEC-782	20	34.0	22.0	26.0	32	32	23.9	TEC-792
								22	34.0	22.0	26.0	32	32	23.9	TEC-793
								25	38.5	26.5	31.3	35	38	26.2	TEC-794



REDUCER

INCH OD Tubes to INCH OD Ports



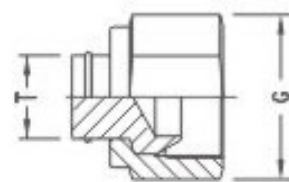
T Tube OD	Tx Tube OD	A	C	D	E min.	F A/F	G A/F	H	SMARTECH PART NO.
1/8	1/8	33.5	15.3	12.7	2.0	11	11	26.9	R-719
1/8	1/4	36.0	15.3	12.7	4.8	11	11	29.5	R-720
1/4	1/8	36.8	17.8	15.3	2.0	14	14	29.5	R-721
1/4	1/4	39.1	17.8	15.3	4.8	14	14	31.8	R-722
1/4	3/8	40.6	17.8	15.3	4.8	14	14	33.3	R-723
1/4	1/2	46.3	17.8	15.3	4.8	14	14	38.9	R-724
5/16	3/8	41.9	18.6	16.3	6.3	14	16	34.6	R-725
5/16	1/2	46.5	18.6	16.3	6.3	14	16	40.2	R-726
3/8	1/4	41.4	19.3	16.8	7.1	16	17	34.0	R-727
3/8	3/8	43.2	19.3	16.8	7.1	16	17	35.8	R-728
3/8	1/2	48.5	19.3	16.8	7.1	16	17	41.2	R-729
1/2	1/4	45.0	21.8	22.9	4.8	22	22	34.8	R-730
1/2	3/8	46.7	21.8	22.9	7.1	22	22	36.6	R-731
1/2	1/2	52.3	21.8	22.9	9.9	22	22	42.2	R-732
1/2	3/4	53.8	21.8	22.9	10.4	22	22	43.7	R-733
1/2	1	60.2	21.8	22.9	10.4	22	22	50.0	R-734
5/8	3/4	54.6	21.8	24.4	12.7	24	25	44.5	R-735
5/8	7/8	56.2	21.8	24.4	12.7	24	25	46.0	R-736
3/4	1/2	54.6	21.8	24.4	9.9	27	28.5	44.5	R-737
3/4	1	62.5	21.8	24.4	15.8	27	28.5	52.3	R-738

METRIC OD Tubes to METRIC OD Ports

T Tube OD	Tx Tube OD	A	C	D	E min.	F A/F	G A/F	H	SMARTECH PART NO.
3	6	36.1	15.3	12.9	2.4	11	11	29.5	R-739
3	10	38.4	15.3	12.9	2.4	14	11	31.8	R-740
6	3	36.9	17.8	15.3	1.8	14	14	29.5	R-741
6	8	39.9	17.8	15.3	4.8	14	14	32.5	R-742
6	10	40.7	17.8	15.3	4.8	14	14	33.3	R-743
6	12	46.3	17.8	15.3	4.8	14	14	38.9	R-744
8	6	40.3	18.6	16.2	4.6	14	16	32.8	R-745
8	10	42.0	18.6	16.2	6.4	14	16	34.5	R-746
8	12	47.6	18.6	16.2	6.4	14	16	40.1	R-747
10	6	42.4	19.5	17.2	4.6	17	17	34.8	R-748
10	8	43.4	19.5	17.2	6.2	17	17	35.8	R-749
10	12	49.8	19.5	17.2	7.9	17	17	42.2	R-750
12	6	44.9	22.0	22.8	4.6	22	22	34.8	R-751
12	8	45.9	22.0	22.8	6.2	22	22	35.8	R-752
12	10	46.7	22.0	22.8	7.7	22	22	36.6	R-753
12	16	53.8	22.0	22.8	9.5	22	22	43.7	R-754
12	20	56.1	22.0	22.8	9.5	22	22	46.0	R-755
12	22	56.1	22.0	22.8	9.5	24	22	46.0	R-756
12	25	62.4	22.0	22.8	9.5	27	22	53.3	R-757
16	12	53.0	22.0	24.4	9.1	24	25	42.9	R-758
18	12	54.6	22.0	24.4	9.1	27	30	44.5	R-759
18	16	56.1	22.0	24.4	12.7	27	30	46.0	R-760
20	16	57.9	22.0	26.0	12.7	30	32	47.8	R-761
20	25	64.2	22.0	26.0	15.8	30	32	54.1	R-762
22	20	59.4	22.0	26.0	15.1	30	32	49.3	R-763
22	25	64.2	22.0	26.0	18.3	30	32	54.1	R-764
25	18	63.1	26.5	31.3	13.9	35	38	50.8	R-765
25	20	64.6	26.5	31.3	15.1	35	38	52.3	R-766



FITTING END CLOSURE

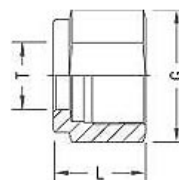


INCH OD Tubes

METRIC OD Tubes

T Tube OD	G A/F	SMARTECH PART NO.	T Tube OD	G A/F	SMARTECH PART NO.
1/8	11	FEC-795	3	11	FEC-804
1/4	14	FEC-796	6	14	FEC-805
5/16	16	FEC-797	8	16	FEC-806
3/8	17	FEC-798	10	19	FEC-807
1/2	22	FEC-799	12	22	FEC-808
5/8	25	FEC-800	14	25	FEC-809
3/4	28.5	FEC-801	15	25	FEC-810
7/8	32	FEC-802	16	25	FEC-811
1	38	FEC-803	18	30	FEC-812
			20	32	FEC-813
			22	32	FEC-814
			25	38	FEC-815

COUPLING CAP

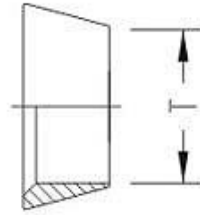


INCH OD Tubes

METRIC OD Tubes

T Tube OD	L	G A/F	SMARTECH PART NO.	T Tube OD	L	G	SMARTECH PART NO.
1/16	8.0	8	CCN-816	3	12.0	11	CCN-826
1/8	12.0	11	CCN-817	6	12.7	14	CCN-827
1/4	12.7	14	CCN-818	8	13.5	16	CCN-828
5/16	14.0	16	CCN-819	10	15.1	19	CCN-829
3/8	14.5	17	CCN-820	12	17.5	22	CCN-830
1/2	17.5	22	CCN-821	14	17.5	25	CCN-831
5/8	17.5	25	CCN-822	15	17.5	25	CCN-832
3/4	17.5	28.5	CCN-823	16	17.5	25	CCN-833
7/8	17.5	32	CCN-824	18	17.5	30	CCN-834
1	20.6	38	CCN-825	20	17.5	32	CCN-835
				22	17.5	32	CCN-836
				25	20.6	38	CCN-837

FRONT FERRULE

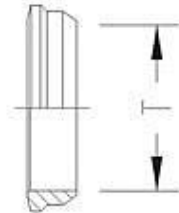


INCH OD Tubes

METRIC OD Tubes

T Tube OD	SMARTECHPART NO.	T Tube OD	SMARTECHPART NO.
1/16	FF-860	3	FF-870
1/8	FF-861	6	FF-871
1/4	FF-862	8	FF-872
5/16	FF-863	10	FF-873
3/8	FF-864	12	FF-874
1/2	FF-865	14	FF-875
5/8	FF-866	15	FF-876
3/4	FF-867	16	FF-877
7/8	FF-868	18	FF-878
1	FF-869	20	FF-879
		22	FF-880
		25	FF-881

BACK FERRULE



INCH OD Tubes

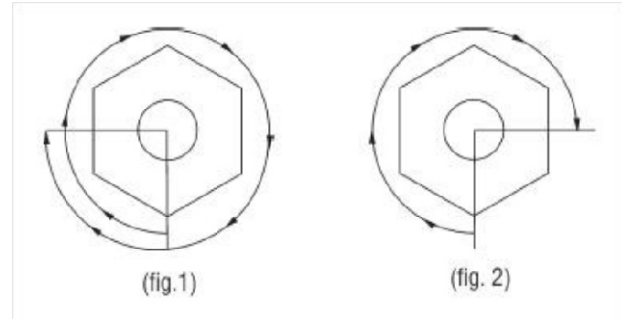
METRIC OD Tubes

T Tube OD	SMARTECHPART NO.	T Tube OD	SMARTECHPART NO.
1/16	BF-838	3	BF-848
1/8	BF-839	6	BF-849
1/4	BF-840	8	BF-850
5/16	BF-841	10	BF-851
3/8	BF-842	12	BF-851
1/2	BF-843	14	BF-853
5/8	BF-844	15	BF-854
3/4	BF-845	16	BF-855
7/8	BF-846	18	BF-856
1	BF-847	20	BF-857
		22	BF-858
		25	BF-859

INSTALLATION INSTRUCTIONS

SMARTECH Tube Fittings

1. Ensure that, the end of the tube is cut square and free from burrs without causing undue chamfering of the tube end.
2. Loosen the fitting Nut.
3. Insert the tubing into the fitting assembly resting it firmly on the internal shoulder of the fittings.
4. Finger tighten the nut.
5. A) Tighten the nut with a wrench 1 ¼ turns from the finger tight position. For the tube fittings size 6mm / 1/4" and above. (see fig 1)
- B) Tighten the nut with a wrench 3/4" turn from the finger tight position for the tube fittings size 4mm / 3/16" and below. (see fig 2)



SMARTECH Recommendation

For high pressure application

Due to variation in the tubing diameter SMARTECH recommends the following instructions for safety and excellent performance of high pressure applications.

1. After insertion of tubing to the fittings assembly, tighten the nut approximately 1/8 turn with a wrench from finger type position or until the tubing does not rotate freely by hand.
2. Further tighten the nut with a wrench 1 ¼ turns to have a firm and safe grip.

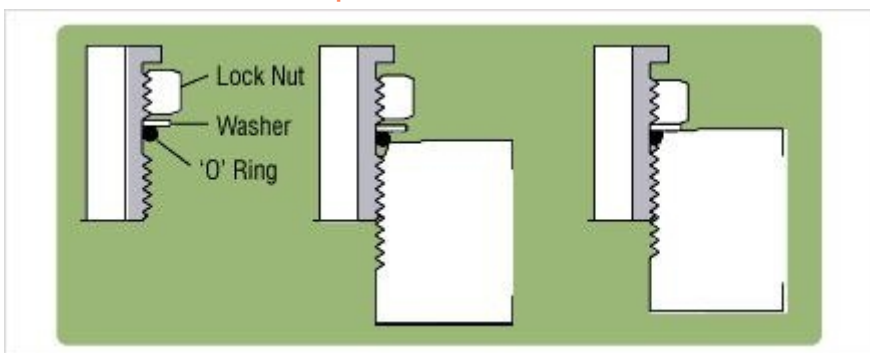
Reassembly Instruction

SMARTECH Tube fittings may be assembled and disassembled repeatedly. The following instructions should be carried out to reassemble the fittings.

1. Firmly insert the tubing end with the previously set ferrules into the fitting body and tighten the nut to a hand- condition.
2. With a wrench, tighten the nut until a sharp condition rise in torque is felt, then simply snug with wrench.

SAE / MS Straight Thread And ISO Parallel Thread Positionable

Elbows and Tees Installation procedure



1. Lubricate the 'O' -ring with lubricant compatible with the system fluid and 'O' - ring material.
2. Turn the fittings into the straight thread port until the metal back-up washer contacts the face of the port.
3. Position the fittings by backing it out, (not more than one turn).
4. Hold the fittings in position and tighten the lock nut until the washer contacts the face of the port.

Note :

- » SAE/MS positionable elbows and tees are compatible with SAE J1926 ports.
- » ISO parallel thread positionable elbows and tees are compatible with female ports having BS 2779 threads.

Face Seal 'O' Ring Fittings

Installation Procedure

The 'O'- ring requires a smooth, flat seating surface, this surface must be perpendicular to the axis of the threads.

1. Turn the 'O'- ring seal fitting in the port until finger tight.
2. The squeezing effect on the 'O'- ring can be felt during the last 1/4 turn.

SAE Specifications

SMARTECHSAE Straight thread 'O'-ring fittings are designed and manufactured to meet SAE standard as follows

1. Male or External fittings End (Dimension: SAE J514)
2. Straight thread SAE J475 (Equivalent to ANSI B1.1 or ISO R725)
3. Female or Internal Straight thread (Port : SAE J1926)

SMARTECHTube fittings with SAE Ends Straight thread SAE Straight Thread 'O'-Ring seal fittings are designed and manufactured to SAE standards defined below for use in many different application including hydraulics and natural gas vehicles. SAE Straight thread fittings are supplied with viton 'O'-rings.

Fittings Available Includes

Connectors, Positionable SAE Elbows and Tees and SAE reducers.

Thread and 'O'ring Sizes

Nominal Tube OD.	Thread size	'O'-ring Size no.
1/8	5/16-24	902
1/4	7/16-20	904
3/8	9/16-18	906
1/2	3/4-16	908
5/8	7/8-14	910
3/4	1 ^{1/16} -12	912
1	1 ^{5/16} -12	916

Port Connector Installation Procedure

1. Remove nut and ferrules from the first of two SMARTECHports to be connected.
2. Slip nut only on port connector over machined ferrule.
3. Insert connector into first port and snug up nut by hand. Tighten the nut with wrench 1/4 turn only. For 1/8, 3/16, 3mm and 4mm tube fittings, tighten the nut 1/8 turn from finger tight position, subsequently connections are made snugging the nut by hand.
4. Insert other end of port connector into SMARTECHport 2, and tighten the nut 1/4. For 1/8, 3/16, 3mm and 4mm tube fittings tighten the nut 3/4 turn from finger tight position.

Plug Installation Procedure

- » For 6mm, 1/4 and above size Tube Fittings, tighten the plug with wrench 1/4 turn from finger tight position.
- » For 1/8, 3/16, 3mm and 4mm tube fittings, tighten the plug with wrench 1/8 turn only.
- » Make subsequent connection by tightening slightly with wrench after snugging the nut by hand.