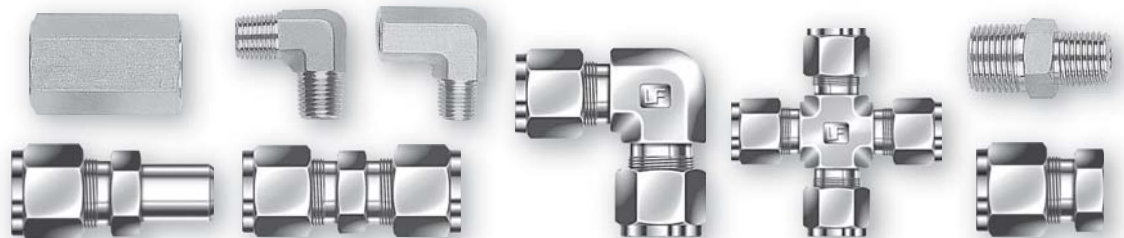


# Tube Fittings

## Tube Fittings



Tube To Union	Tube To Male Pipe	Tube To Female Pipe	Stub Tube Connector	Tube To AN Tube	Tube To SMC-O-Ring Seal	Tube To Weld End	Plug And Cap	Spare Parts	Tube Fittings
11	16	22	27	32	33	36	38	39	40

## LOCK-FIT TUBE FITTINGS DESCRIPTION

The LOCK-FIT has produced high quality tube and pipe fittings in various materials for high pressure applications since its establishment in 1998.

As a result of tremendous efforts in research and development during the last 10 years, LOCK-FIT has gained an excellent reputation as a leading manufacturer of high pressure instrumentation Products.

The LOCK-FIT range of connectors has been developed to fill the rapidly increasing demand for tube fittings suitable for high pressure use in environments such as petrochemical,fluid,power,

nuclear, electronic, as well as other major industrial fields.

LOCK-FIT tube fittings have been carefully manufactured to withstand the persistent demands for high-performance tube fittings. Each one has passed a stringent tolerance test for high pressure,impulse, vibration, vacuum and temperature. These precision-machined fittings are manufactured to exacting standards,employing the most modern state of-the-art computerized automation. All LOCK-FIT fittings are backed by LOCK-FIT commitment to the highest quality-control standards and skilled craftsmanship.

## LOCK-FIT HOW DOES IT WORK

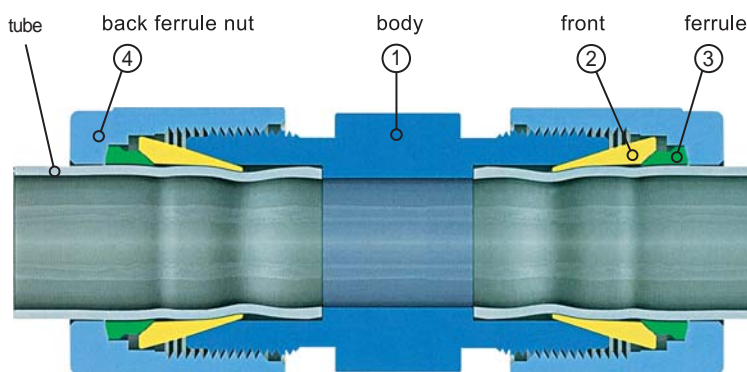
The LOCK-FIT tube fitting is a mechanism used both to seal and to grip tubing. The mechanical advantage and geometry of this kind of fitting produces a leak—tight assembly.

To assemble,simply insert the tube into the complete assembly until the tube bottoms—out against the shoulder of the fitting body(1). The two ferrules are driven forward between the nut (4) and fitting body using the mechanical force created by rotating the nut clockwise. The back ferrule(3)is driven against the tapered rear of the front

ferrule(2)and the front ferrule is driven by force into the tapered mouth of the body.

The rear ferrule is swaged radially inwards on the tube while lifting the front ferrule out to form a full-faced seal on the tapered surface of the body.

The 1-1/4 turn of the nut from the hand tight position assures consistent drive of the sealing members. This ensures an effective seal against high pressure as well as ultra high vacuum conditions.



LOCK-FIT tube fittings are composed of four parts:

1. body
2. front ferrule
3. ferrule
4. back ferrule nut

## LOCK-FIT INSTALLATION INSTRUCTIONS

LOCK-FIT fittings are supplied assembled and finger tight. Disassembly before use can allow the entry of dirt or other particles.

Insert the tubing into the LOCK-FIT fitting.

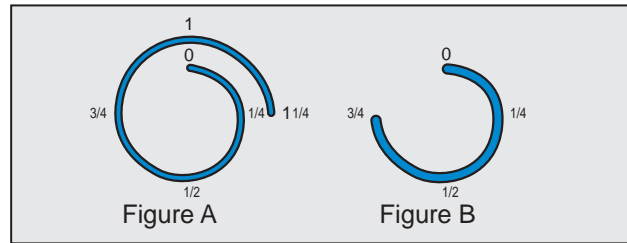
Check that the tube rests firmly on the fitting shoulder and that the nut is finger tight. At this point it is recommended that a scribe mark be drawn on the hex of the nut extending onto the fitting body. This mark will serve as an indicator for the starting point and proper pull-up.

Tighten the nut.

1-1/4 turns of the nut are required for 1/4" (6 mm) and higher (see Fig. A).

3/4 turn of the nut is required for

3/16" (4 mm) and lower (see Fig. B).



## REASSEMBLY INSTRUCTIONS

LOCK-FIT connections may be disconnected and remade repeatedly, without loss of leaktight seal.

1. Before disconnecting, mark the position of the nut in relation to the fitting body.
2. To reassemble, use a wrench to tighten nut to original position.
3. Tighten slightly with wrench until a slight rise in torque is felt.

## TUBE CUTTING

Two different methods can be used to cut tubes:

1. Tube cutter
2. Hacksaw

### TUBE CUTTER

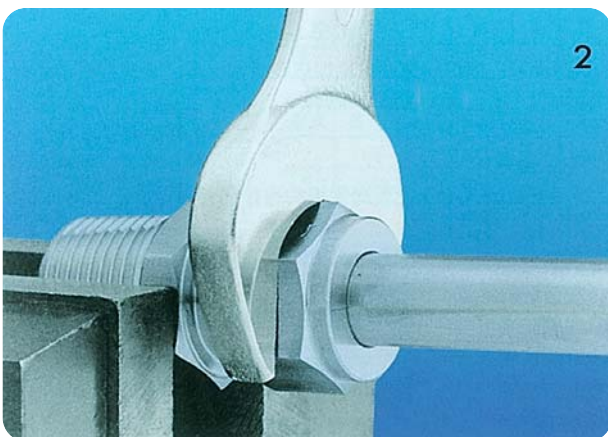
To attain a leak free connection, the tubing must be cut squarely. A good quality tube cutter with the appropriate blade for the tubing material is recommended.

Do not try to reduce the time of cutting by taking deep cuts with each turn of the cutter. This will work harden the tube. The end of the tube must be deburred to avoid damage to the fitting and to ensure that the tube reaches the bottom of the fitting.

### HACKSAW CUTTING

In order to cut the tube with a hacksaw and get square ends, the tube must be cut with guide blocks.

This method of cutting necessitates deburring of the tube ends.

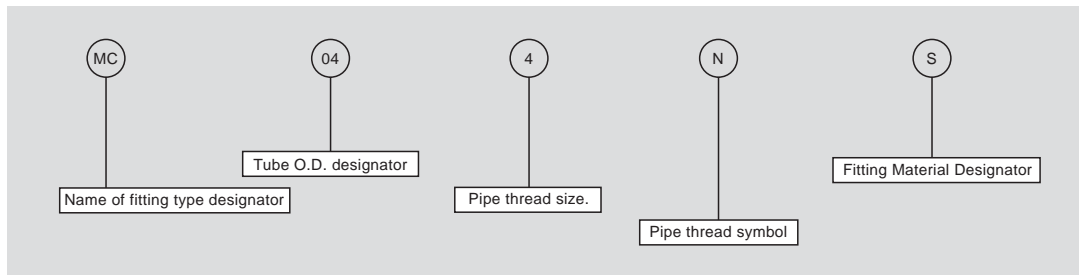


## Order Information:

Example: MC-04-4-N-S

LOCK-FIT Male Connector

Tube 1/2" O.D. x 1/2" Male NPE, 316SS



## Tube O.D. Designator:

Inch O.D.	1/16	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1
Designator	005	01	015	02	025	03	04	05	06	07	08
Metric O.D.	4mm	6mm	8mm	10mm	12mm	14mm	16mm	18mm	20mm	22mm	25mm
Designator	4	6	8	10	12	14	16	18	20	22	25

## Pipe Thread Size Designator:

Nom. Size	1/8"	1/4"	3/8"	1/2"	3/4"	1"
Designator	1	2	3	4	6	8

## Pipe Thread Symbol:

Type	symbol	Specification
Taper	R	ISO 7/1, BS21(BSPT), JIS B 0203(PT), DIN 2999
Thread	N	ANSI B1.20.1(NPT)
Parallel	G	ISO228/1, BS2779(BSPP), JISB0202(PF)
Thread	U	American Standard Unified Screw Threads

## Fitting Material Designator:

Material	316SS	316LSS	304SS	Monel	Brass
Designator	S	L	4	M	B

## Fitting Type Designator:

Designator	Description	Designator	Description
Tube to Tube Union		Tube to SAE O-Ring Seal	
U	Union	MCS	SAE Male Connector
RU	Reducing Union	MES	Positionable SAE Male Elbow
BU	Bulkhead Union	RTS	Positionable SAE Male Run Tee
UE	Union Elbow	BTS	Positionable SAE Male Branch Tee
UT	Union Tee		
UCR	Union Cross		
Tube to Male Pipe		COS	O-Seal Straight Thread Connector
MC	Male Connector	COP	O-Seal Straight Pipe Connector
BMC	Bulkhead Male Connector		
ME	Male Elbow	Tube to AN Tube	
MRT	Male Run Tee	UA	AN Union
MBT	Male Branch Tee	BUA	AN Bulkhead Union
Tube to Male Pipe		Tube to Weld End	
FC	Female Connector	DBW	Male Pipe Weld Connector
GC	Gauge Connector	EBW	Male Pipe Weld Elbow
BFC	Bulkhead Female Connector	DSW	Tube Socket Weld Connector
FE	Female Elbow	ESW	Tube Socket Weld Elbow
FRT	Female Run Tee	Plug and Cap	
FBT	Female Branch Tee	P	Plug
Stub Tube Connector		C	Cap
RB	Reducer	Spare Parts	
RA	Bulkhead Adapter	N	Nut
TAM	Male Adapter/Tube	FF	Front Ferrule
TAF	Male Adapter/Tube	BF	Back Ferrule

**Warning**

Do not hold the tube in a vise in the place where it will be inserted into the fitting (the vise will leave a mark on the tube that may cause leaks, and might cause ovality).

**TUBE HANDLING**

Scratches on the tube might cause leaks. It is, therefore, important to handle the tube carefully to reduce the risk of leaks.

**SOME RECAUTIONS TO BE TAKEN:**

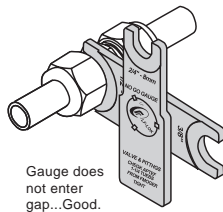
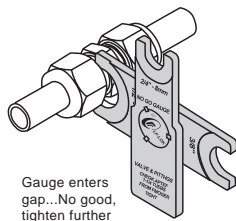
1. Tubes must not be dragged on the floor.
2. Tubes must not be dragged out of a tubing rack, especially in case of large OD tubes.

**COPPER TUBING**

If using copper tubing from a roll, hold the end of the tube and roll the roll outwards allowing the tubing to lie on a flat surface.

**INSPECTION GAUGE**

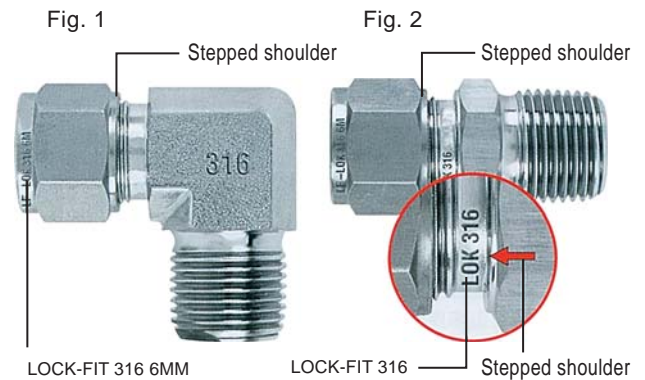
Use: This is a "No-Go" gauge and should be used as follows:  
 Make up the fitting according to the following instructions:  
 1/4 inch (6mm), 3/8 inch, 1/2 inch (12mm) - make up 1-1/4 turns from finger tight. Check gap between nut and body, using the appropriate sized gauge. If the gauge slides easily into the gap, tighten the nut further until gauge can not enter the gap.



**PHYSICAL DIFFERENCES AND MARKING**

**LOCK-FIT METRIC FITTINGS:**

- Tee & Elbow (see Fig. 1)
- Straight Connectors: (see Fig. 2)
- Body: Stepped shoulder
- Marked: LOCK-FIT 316
- Nut: (see Figs.1 & 2) Stepped shoulder marked: LOCK-FIT 316 6MM



- Tee & Elbow: (See Fig. 3)
- Straight Fittings: (see Fig. 4)
- Body: Shoulder marked: LOCK-FIT 316
- Nut: (See Fig. 3 & 4): Shoulder marked LOCK-FIT 316 1/2 T



## HIGH SAFETY

In applications where severe conditions and high pressure exist, we recommend the following installation procedures:

1. Check that the nut is finger tight.
2. Insert the tube (up to the shoulder).
3. Rotate the nut with a wrench until the tube does not rotate freely.
4. Mark position of the nut.
5. Rotate the nut 1-1/4 turns.

This method ensures that even if the tube O.D. is at the minimum tolerance, the ferrules will be in contact with the tube for the full 1-1/4 rotation.

## TUBING DATA FOR LOCK-FIT FITTINGS

In order to assure maximum fitting reliability and performance, great care should be given when selecting the tubing for each application.

### TUBE SELECTION:

Four variables must be considered when ordering tube for use with LOCK-FIT fittings:

1. Material
2. Tube wall thickness
3. Tube surface finish
4. Tube hardness

Tubing should comply with standard ASTM A213 or ASTM A269, be seamless, and fully annealed.

The tube must be free of scratches and suitable for bending and flaring.

### TUBE OD TOLERANCES:

$1/16'' - 1/8''$	} $\pm 0.003''$	$3/16'' - 1/4''$	} $\pm 0.005''$
2mm - 3mm		4mm - 25mm	
		$1 - 1/2''$	} $\pm 0.01''$

Ovality of twice OD tolerance is not suitable for LOCK-FIT fittings.

The tube must be reasonably round.

The ends of the tube must be free of burrs.

Tubing hardness: The hardness of the tube must be lower than the hardness of the fitting material.

The hardness must be not more than Rockwell HRB 80.

**Tube To Union**

**RU** 11

Reducing Union



**U** 12

Union



**UE** 13

Union Elbow



**UT** 13

Union Tee



**RUBT** 14

Union Tee



**RUT** 14

Union Tee



**UCR** 15

Union Cross



**BU** 15

Bulkhead Union



**Tube To Male Pipe**

**MC** 16

Male Connector



**BMC** 17

Thermocouple Connector



**ME** 18

Male Elbow



**MRT** 20

Male Run Tee



**MBT** 21

Male Branch Tee



**Tube To Female Pipe**

**FC** 22

Female Connector



**FCG** 23

Gauge Connector



**BFC** 23

Bulkhead Female



**FE** 24

Female Elbow



**FRT** 25

Female Run Tee



**FBT** 26

Female Branch Tee



**Stub Tube Connector**

**ODTA** 27

Reducer



**BODTA** 29

Bulkhead Adapter



**TAM** 29

Male Adapter



**TAF** 31

Female Adapter



**Tube To AN Tube**

**MCH** 32

AN Union



**BMCH** 32

AN Bulkhead



**Tube To SAE O- Ring Seal**

**MCS** 33

SAE Male Connector



**MES** 33

Positionable  
SAE Male Elbow



**RTS** 34

Positionable  
SAE Male Run Tee



**BTS** 34

Positionable  
SAE Male Branch Tee



**MCOS** 35

O-Seal Straight  
Thread Connector



**MCOP** 35

O-Seal Pipe  
Thread Connector



### Tube to Weld End

#### ODBW 36

Male Pipe Weld Connector



#### EBW 37

Male Pipe Weld Elbow



#### DSW 37

Tube Socket Weld Connector



#### ESW 37

Tube Socket Weld Elbow



### Plug and Cap

#### P 38

Plug



#### C 38

Cap



### Spare Parts

#### N 39

Nut



#### FF 39

Front Ferrule



#### BF 39

Back Ferrule



### Tube Fittings

#### HN 40

HEX NIPPLE



#### RHN 40

REDUCING HEX NIPPLE



#### RA 40

REDUCING ADAPTOR



#### HCG 41

HEX COUPLING



#### RHCG 41

REDUCING HEX COUPLING



#### RB 41

REDUCING BUSHING



#### MET 42

MALE ELBOW



#### E 42

ELBOW



#### SE 42

STREET ELBOW



#### T 43

TEE



#### BT 43

BRANCH TEE



#### ST 44

STREET TEE

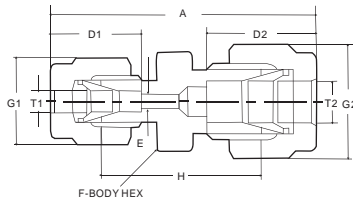
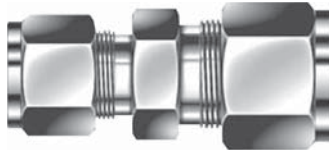


#### MT 44

MALE TEE



RU



REDUCING UNION  
(METRIC)

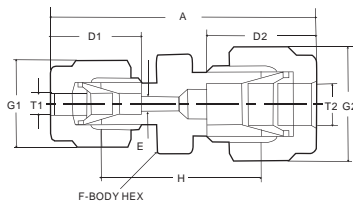
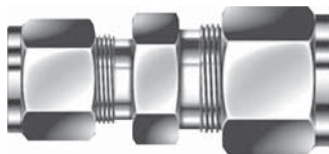
TUBE O.D.		CATALOG										
T1	T2	NUMBER	A	D1	D2	E	G1	G2	F	H	N.W.(G)	
4	3	RU-4-3	38.1	13.7	12.9	2	12	10	12	25.0		
4	6	RU-4-6	39.4	13.7	15.3	3	12	14	14	25.4	29.29	
6	8	RU-6-8	42.3	15.3	16.2	5	14	17	14	27.4	38.8	
6	10	RU-6-10	44.5	15.3	17.2	5	14	19	19	29.5	51.1	
6	12	RU-6-12	47.3	15.3	22.8	5	14	22	22	29.5	68.1	
8	10	RU-8-10	45.1	16.2	17.2	6	17	19	19	30.0	55.8	
8	12	RU-8-12	47.8	16.2	22.8	6	17	22	22	30.2	72.6	
10	12	RU-10-12	48.7	17.2	22.8	8	19	22	22	31.0	79.9	
12	16	RU-12-16	52.0	22.8	24.4	10	22	27	24	31.8	117	
12	18	RU-12-18	53.5	22.8	24.4	10	22	30	27	33.3		
18	25	RU-18-25	61.0	24.4	31.3	15	30	38	35	38.6		
20	25	RU-20-25	62.0	26.0	31.3	16	32	38	35	39.9		

(FRACTIONAL)

TUBE O.D.		CATALOG										
In	T1 mm	T2	NUMBER	A	D1	D2	E	F	G1	G2	H	N.W.(G)
1/8	3.17	3	RU-3-01	35.2	12.8	15.3	2.3	12	11.11	11.11	22.1	
1/8	3.17	4	RU-4-01	36.5	12.8	16.1	2.3	12	11.11	12.70	23.4	26.83
1/4	6.35	4	RU-4-02	39.4	15.3	16.1	2.3	16	14.28	12.70	25.4	28.39
1/8	3.17	6	RU-6-01	38.5	12.8	17.7	2.3	14	11.11	14.28	24.6	29.24
1/4	6.35	6	RU-6-02	41.0	15.8	17.7	4.8	14	14.28	14.28	26.2	31.5
5/16	7.93	6	RU-6-025	42.3	16.2	17.7	4.8	16	15.87	14.28	27.4	
1/4	6.35	8	RU-8-02	42.3	15.3	18.6	4.8	16	14.28	15.87	27.4	39.2
1/8	3.17	10	RU-10-01	41.8	12.8	19.5	2.3	19	11.11	19.05	27.7	
1/4	6.35	10	RU-10-02	44.5	15.3	19.5	4.8	19	14.28	19.05	29.5	51.3
5/16	7.93	10	RU-10-025	45.1	16.2	19.5	6.4	19	15.87	19.05	30.3	
3/8	9.52	10	RU-10-03	45.9	16.9	19.5	7.0	19	17.46	19.05	31.0	55.8
5/16	7.93	12	RU-12-025	47.8	16.2	22.0	6.4	22	15.87	22.22	30.2	
3/8	9.52	12	RU-12-03	48.4	16.9	22.0	7.0	22	17.46	22.22	31.0	72
1/2	12.70	12	RU-12-04	51.2	22.8	22.0	9.5	22	22.22	22.22	31.0	87.5
1/2	12.70	15	RU-15-04	52.0	22.8	22.0	10.0	24	22.22	25.40	31.8	
5/8	15.87	16	RU-16-05	52.0	24.4	22.0	12.0	24	25.40	25.40	31.8	
3/4	19.05	18	RU-18-06	53.5	24.4	22.0	15.0	27	28.57	30.16	33.3	
3/4	19.05	20	RU-20-06	54.9	24.4	22.0	16.0	32	28.57	31.75	34.8	
1	25.40	20	RU-20-08	60.3	31.2	26.4	16.0	35	38.10	31.75	38.0	
1	25.40	22	RU-22-08	60.3	31.2	26.4	16.0	35	38.10	31.75	38.2	

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

RU

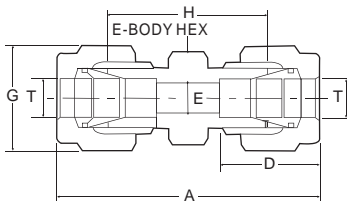
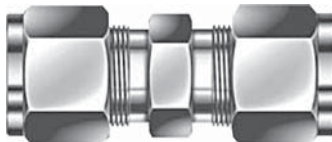


EQUAL UNION  
(METRIC)

TUBE O.D.		CATALOG	A	D2	E	F	G1	G2	H	N.W.(G)
T1	T2	NUMBER								
1/8	3/8	RU-015-01	36.6	12.7	2.3	12	11.11	12.70	23.4	
1/8	1/4	RU-02-01	38.6	12.7	2.3	14	11.11	14.28	24.6	29.64
3/16	1/4	RU-02-015	39.4	13.7	3.0	14	12.70	14.28	25.4	
1/8	5/16	RU-025-01	39.9	12.7	2.3	16	11.11	15.87	25.9	
1/4	5/16	RU-025-02	42.2	15.2	4.8	16	14.28	15.87	27.4	
1/8	3/8	RU-03-01	40.9	12.7	2.3	17	11.11	17.46	26.9	36.84
1/4	3/8	RU-03-02	43.2	15.2	4.8	17	14.28	17.46	28.4	40.5
5/16	3/8	RU-03-025	44.2	16.3	6.4	17	15.87	17.46	29.5	
1/8	1/2	RU-04-01	45.2	12.7	2.3	22	11.11	22.22	28.4	64.34
1/4	1/2	RU-04-02	47.0	15.2	4.8	22	14.28	22.22	29.5	66.8
3/8	1/2	RU-04-03	48.5	16.8	7.0	22	17.46	22.22	31.0	71.8
3/8	5/8	RU-05-03	49.3	16.8	7.0	24	17.46	25.40	31.8	
1/2	5/8	RU-05-04	52.1	22.9	10.0	24	22.22	25.40	31.8	
1/4	3/4	RU-06-02	49.3	15.2	4.8	27	14.28	28.57	31.8	
3/8	3/4	RU-06-03	50.8	16.8	7.0	27	17.46	28.57	33.3	117.2
1/2	3/4	RU-06-04	53.6	22.9	10.0	27	22.22	28.57	33.3	139.2
5/8	3/4	RU-06-05	53.6	24.4	12.0	27	25.40	28.57	33.3	
1/2	1	RU-08-04	63.2	22.9	10.0	35	22.22	38.10	40.9	234.3
3/4	1	RU-08-06	62.7	24.4	16.0	35	28.57	38.10	40.4	250.7

EQUAL UNION  
(METRIC)

U



TUBE O.D.	CATALOG NUMBER	A	D	E	F	G	H	N.W.(G)
2	U-2-0	35.6	12.9	1	10	10	22.4	
3	U-3-0	35.3	12.9	2	10	10	22.1	26.54
4	U-4-0	37.3	13.7	3	12	12	24.1	26.28
6	U-6-0	41.0	15.3	4	12	14	26.2	31.6
8	U-8-0	43.2	16.2	6	14	17	28.2	42.9
10	U-10-0	46.2	17.2	8	19	19	31.0	62.7
12	U-12-0	51.2	22.8	10	22	22	31.0	88.5
14	U-14-0	52.0	24.4	10	24	27	31.8	139.1
15	U-15-0	52.0	24.4	11	24	27	31.8	139.8
16	U-16-0	52.0	24.4	12	24	27	31.8	123.8
18	U-18-0	53.5	24.4	14	27	30	33.3	165.8
20	U-20-0	55.0	26.0	16	30	32	34.8	193.9
22	U-22-0	55.0	26.0	18	30	32	34.8	264.3
25	U-25-0	65.0	31.3	21	35	38	40.4	294.2

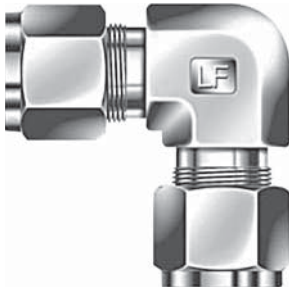
(FRACTIONAL)

1/16	U-005-0	25.1	8.6	1	10	10	17.5	34.76
1/8	U-01-0	35.6	12.7	2	10	10	22.4	26.78
3/16	U-015-0	37.3	13.7	3	12	12	24.1	
1/4	U-02-0	40.9	15.2	4	12	14	26.2	31.2
3/8	U-03-0	45.0	16.8	7	17	17	30.2	43.4
1/2	U-04-0	51.3	22.9	10	22	22	31.0	87
5/8	U-05-0	52.1	24.4	12	24	27	31.8	126.6
3/4	U-06-0	53.6	24.4	15	27	30	33.3	157
1	U-08-0	64.8	31.2	21	35	38	40.4	285.7

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

UNION ELBOW  
(METRIC)

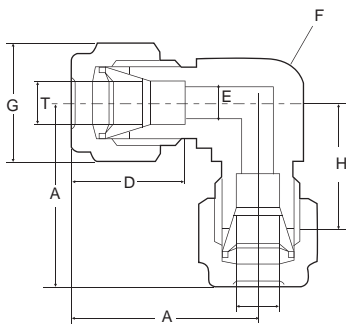
UE



TUBE O.D.	CATALOG NUMBER	A	D	E	F	G	H	N.W.(G)
3	UE-3-0	23.6	12.9	2	12	10	15.7	38.54
4	UE-4-0	25.4	13.7	3	12	12	18.8	33.88
6	UE-6-0	27.0	15.3	5	12	14	19.6	42.3
8	UE-8-0	28.8	16.2	6	14	17	21.3	60.4
10	UE-10-0	31.5	17.2	8	17	19	23.9	93.3
12	UE-12-0	36.0	22.8	10	22	22	25.9	130.4
14	UE-14-0	38.8	24.4	10	24	27	27.9	202.9
15	UE-15-0	38.8	24.4	11	24	27	27.9	192.6
16	UE-16-0	38.8	24.4	12	24	27	27.9	170.5
18	UE-18-0	39.8	24.4	14	27	30	29.7	260.2
20	UE-20-0	44.6	26.0	16	30	32	34.5	271
22	UE-22-0	44.6	26.0	18	30	32	34.5	232.6
25	UE-25-0	49.1	31.3	21	34	38	36.8	442.2

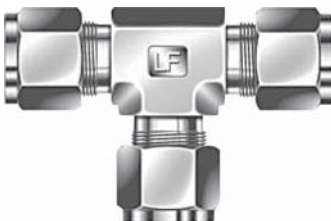
(FRACTIONAL)

1/16	UE-005-0	17.8	8.6	1	12	10	14.0	
1/8	UE-01-0	22.4	12.7	3	12	12	15.8	38.68
3/16	UE-015-0	25.4	13.7	3	12	12	18.8	
1/4	UE-02-0	27.0	15.2	5	12	14	19.6	41.5
5/16	UE-025-0	28.8	16.2	6	14	17	21.3	
3/8	UE-03-0	30.5	16.8	8	17	17	23.1	59.5
1/2	UE-04-0	36.1	22.8	10	22	22	25.9	159.6
5/8	UE-05-0	38.9	24.4	12	24	27	28.7	178.2
3/4	UE-06-0	40.0	24.4	15	27	30	29.7	251.8
7/8	UE-07-0	44.6	26	18	30	32	34.5	
1	UE-08-0	49.0	26.0	21	34	38	36.8	402.2



UNION TEE  
(METRIC)

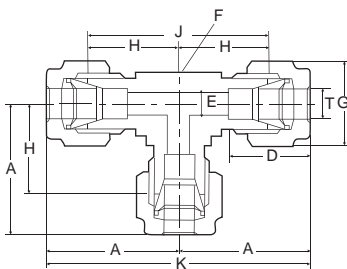
UT



TUBE O.D.	CATALOG NUMBER	A	D	E	F	G	H	J	K	N.W.(G)
3	UT-3-0	23.6	12.9	2	12	10	15.7	31.5	47.2	49.46
4	UT-4-0	25.4	13.7	3	12	12	18.8	37.6	50.8	41.58
6	UT-6-0	27.0	15.3	5	12	14	19.6	39.4	53.9	66.5
8	UT-8-0	29.9	16.2	6	14	17	22.4	44.7	59.7	72
10	UT-10-0	31.5	17.2	8	17	19	23.9	47.8	63.0	110.2
12	UT-12-0	36.0	22.8	10	22	22	25.9	51.8	72.0	147.7
14	UT-14-0	38.8	24.4	10	24	27	28.7	57.4	77.6	230.6
15	UT-15-0	38.8	24.4	11	24	27	28.7	57.4	77.6	
16	UT-16-0	38.8	24.4	12	24	27	28.7	57.4	77.6	198.3
18	UT-18-0	39.8	24.4	14	27	31	29.7	59.4	79.5	341.3
20	UT-20-0	44.6	26.0	16	30	32	34.5	69.1	89.3	
22	UT-22-0	44.6	26.0	18	30	32	34.5	69.1	89.3	533.5
25	UT-25-0	49.1	31.3	21	35	38	36.8	73.7	98.3	585.4

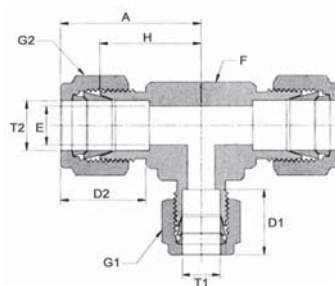
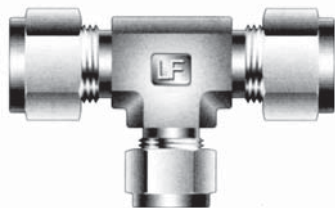
(FRACTIONAL)

1/16	UT-005-0	17.8	8.6	1	12	10	14.0	28.0	35.6	57.16
1/8	UT-01-0	22.4	12.7	2	12	10	15.8	31.4	44.8	41.08
3/16	UT-015-0	25.4	13.7	3	12	12	19.6	39.1	50.8	
1/4	UT-02-0	27.0	15.2	5	12	14	22.4	44.8	54.0	64.8
5/16	UT-025-0	29.9	16.2	6	14	17	22.4	44.7	59.7	
3/8	UT-03-0	30.5	16.8	8	17	19	23.1	46.2	61.0	68
1/2	UT-04-0	36.0	22.8	10	22	22	26.0	52.0	72.0	143.2
5/8	UT-05-0	38.9	24.4	12	24	27	28.7	57.4	77.8	201.1
3/4	UT-06-0	40.0	26.0	15	27	30	29.7	59.4	80.0	326.2
7/8	UT-07-0	44.6	26	18	30	32	34.5	69.1	89.3	
1	UT-08-0	49.0	31.2	21	35	38	36.8	73.6	98.0	584.4



All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

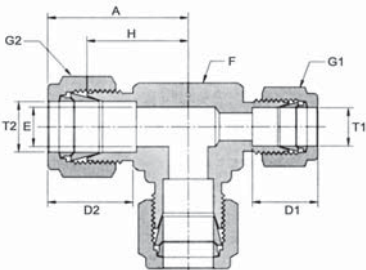
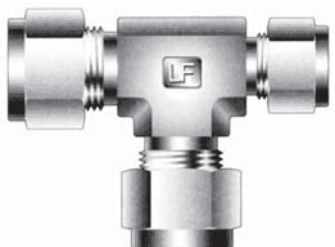
RUBT

UNION TEE  
(METRIC)

TUBE O.D.		CATALOG	A	D1	D2	E	F	G1	G2	H
T1	T2	NUMBER								
1/4	3/8	RUBT-03-02	30.5	15.2	19.3	4.8	15.87	14.28	17.46	21.3
1/4	1/2	RUBT-04-02	36.1	15.2	21.8	4.8	20.63	14.28	20.63	25.9
3/8	1/2	RUBT-04-03	36.1	16.8	21.8	7.0	20.63	17.46	20.63	25.9
3/8	5/8	RUBT-05-03	38.9	16.8	21.8	7.0	25.40	17.46	25.40	28.7
3/8	3/4	RUBT-06-03	39.9	16.8	21.8	7.0	26.98	17.46	28.57	29.7
1/2	3/4	RUBT-06-04	39.9	22.9	21.8	10.0	26.98	22.22	28.57	29.7
3/8	1	RUBT-08-03	49.0	16.8	26.4	7.0	34.92	17.46	38.10	36.8
1/2	1	RUBT-08-04	49.0	22.9	26.4	10.0	34.92	22.22	38.10	36.8
3/4	1	RUBT-08-06	49.0	24.4	26.4	16.0	34.92	28.57	38.10	36.8

UNION TEE  
(METRIC)

RUT

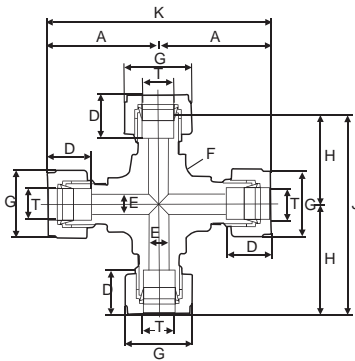


TUBE O.D.		CATALOG	A	D1	D2	E	F	G1	G2	H	N.W.(G)
T1	T2	NUMBER									
1/4	3/8	RUT-03-02	30.5	15.2	19.3	4.8	15.87	14.28	17.46	21.3	65.1
1/4	1/2	RUT-04-02	36.1	15.2	21.8	4.8	20.63	14.28	20.63	25.9	152.2
3/8	1/2	RUT-04-03	36.1	16.8	21.8	7.0	20.63	17.46	20.63	25.9	154.8
3/8	5/8	RUT-05-03	38.9	16.8	21.8	7.0	25.40	17.46	25.40	28.7	
3/8	3/4	RUT-06-03	39.9	16.8	21.8	7.0	26.98	17.46	28.57	29.7	
1/2	3/4	RUT-06-04	39.9	22.9	21.8	10.0	26.98	22.22	28.57	29.7	373.6
3/8	1	RUT-08-03	49.0	16.8	26.4	7.0	34.92	17.46	38.10	36.8	
1/2	1	RUT-08-04	49.0	22.9	26.4	10.0	34.92	22.22	38.10	36.8	
3/4	1	RUT-08-06	49.0	24.4	26.4	16.0	34.92	28.57	38.10	36.8	647.4

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UNION CROSS  
(METRIC)

UCR



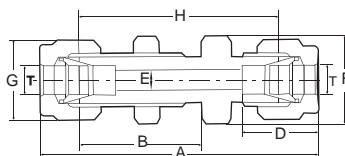
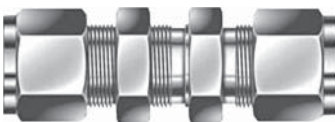
TUBE O.D. (mm)	CATALOG NUMBER	A	D	E	F	G	H	J	K	N.W.(G)
3	UCR-3-0	25.5	14.0	2.4	12	10	18.5	37	51.0	
6	UCR-6-0	30.2	15.2	5	14	14	23	46	60.4	98.6
8	UCR-8-0	30.5	16.5	6	14	17	23	46	61.0	109.9
10	UCR-10-0	31.5	19.5	8	17	19	24	48	63.0	152.6
12	UCR-12-0	37.0	23.6	10	20	22	26	52	74.0	214.5
16	UCR-16-0	38.8	24.4	12	24	27	28.7	57.4	77.6	343.1
18	UCR-18-0	39.8	24.4	14	27	31	29.7	59.4	79.6	
20	UCR-20-0	44.6	26	16	30	32	34.5	69	89.3	
25	UCR-25-0	49.1	31.3	21	35	38	36.8	73.6	98.2	

(FRACTIONAL)

1/8	UCR-01-0	25.5	14.0	2	12	10	18.5	37	51.0	94.26
3/16	UCR-015-0	25.5	14.0	3.5	12	10	18.5	37	51.0	
1/4	UCR-02-0	30.2	15.2	5	14	14	23	46	60.4	100.8
5/16	UCR-025-0	29.9	16.2	6	14	17	22.4	44.7	59.7	
3/8	UCR-03-0	31.5	18.8	8	17	19	24	48	63.0	122.1
1/2	UCR-04-0	37.0	23.6	10	22	22	26	52	74.0	210.3
5/8	UCR-05-0	38.8	24.4	12	24	27	28.7	57.4	77.6	
3/4	UCR-06-0	39.9	26.0	15	27	30	29.7	59.4	79.8	
7/8	UCR-07-0	44.7	26.0	18	30	32	34.5	69.0	89.4	
1	UCR-08-0	49.0	31.2	21	35	38	36.8	73.6	98.2	58.0

BULKHEAD UNION  
(METRIC)

BU



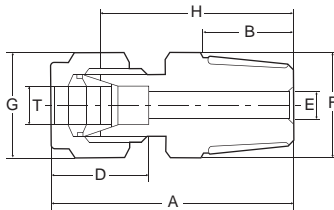
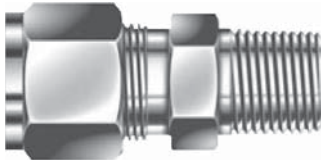
TUBE O.D.	CATALOG NUMBER	A	B	D	E	F	G	H	PANEL HOLE SIZE	MAX PANEL THICK.	N.W.(G)
6	BU-6-0	57.7	26.2	15.3	5	17	14	42.9	11.5	10.2	45.4
8	BU-8-0	61.0	28.6	16.2	6	19	17	46.0	13.1	11.2	60.5
10	BU-10-0	63.7	29.4	17.2	8	19	19	48.5	16.3	11.2	89.7
12	BU-12-0	71.0	31.8	22.8	10	24	22	50.8	19.5	12.7	128.5
14	BU-14-0	72.5	32.5	24.4	10	27	27	52.3	22.5	12.7	201.1
15	BU-15-0	72.5	32.5	24.4	11	27	27	52.3	22.8	12.7	
16	BU-16-0	72.5	32.5	24.4	13	27	27	52.3	22.8	12.7	181.1
18	BU-18-0	78.9	37.3	24.4	14	30	30	58.7	26.0	16.8	
20	BU-20-0	84.5	42.9	26.0	16	35	32	64.3	29.0	23.9	
22	BU-22-0	84.5	42.9	26.0	18	35	32	64.3	29.0	23.9	256.8
25	BU-25-0	99.5	50.0	31.3	21	40	38	75.5	33.2	26.0	

(FRACTIONAL)

1/8	BU-01-0	51.3	24.6	12.7	2.3	14	12	38.1	11.5	10.2	33.98
3/16	BU-015-0	53.6	25.4	13.7	3	14	14	40.4	11.5	10.2	36.5
1/4	BU-02-0	57.7	26.0	15.2	5	17	14	42.9	11.5	10.2	44.8
5/16	BU-025-0	60.7	28.4	16.3	6.4	17	16	46.0	13.1	11.2	
3/8	BU-03-0	62.2	29.0	16.8	7	19	17	46.0	16.3	11.2	69.9
1/2	BU-04-0	71.1	31.0	22.8	10	24	22	50.8	19.5	12.7	127.1
5/8	BU-05-0	72.6	32.5	24.4	12	24	27	52.3	26.0	16.8	183.6
3/4	BU-06-0	79.0	38.0	24.4	15	30	30	58.7	26.0	16.8	216.2
7/8	BU-07-0	84.6	42.9	25.9	18	27	32	64.3	29.0	23.9	
1	BU-08-0	95.8	50.0	31.2	21	40	38	71.4	33.2	26.0	462.2

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MC

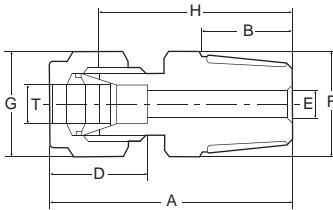
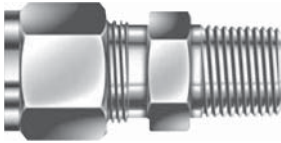

**MALE CONNECTOR  
(METRIC)**

T	PT-NPT CATALOG		A	B	D	E	F	G	H	N.W.(G)
TUBE O.D.	MALE PIPE SIZE	NUMBER								
2	1/8	MC-2-1	30.8	10	12.9	1	10	10	24.2	
3	1/8	MC-3-1	30.8	10	12.9	2	10	10	24.2	14.3
3	1/4	MC-3-2	34.4	13	12.9	2	14	10	27.8	30.22
4	1/8	MC-4-1	31.5	10	13.7	3	10	12	24.9	20.59
4	1/4	MC-4-2	35.1	13	13.7	3	14	12	28.5	29.99
4	3/8	MC-4-3	37.1	14	13.7	3	17	12	30.5	50.71
4	1/2	MC-4-4	41.1	17	13.7	3	22	12	34.5	72.28
6	1/8	MC-6-1	33.1	10	15.3	5	14	14	25.7	23.3
6	1/4	MC-6-2	36.7	13	15.3	5	14	14	29.3	33.1
6	3/8	MC-6-3	38.2	14	15.3	5	17	14	30.8	53.92
6	1/2	MC-6-4	42.7	17	15.3	5	22	14	35.3	75.79
8	1/8	MC-8-1	34.5	10	16.2	5	14	17	27.0	29.9
8	1/4	MC-8-2	37.5	13	16.2	6	14	17	30.0	35.8
8	3/8	MC-8-3	39.1	14	16.2	6	17	17	31.6	57.62
8	1/2	MC-8-4	43.6	17	16.2	6	22	17	36.1	77.89
10	1/8	MC-10-1	36.6	10	17.2	5	19	19	29.0	44.1
10	1/4	MC-10-2	39.7	13	17.2	6	19	19	32.1	49.5
10	3/8	MC-10-3	40.7	14	17.2	8	19	19	33.1	61.22
10	1/2	MC-10-4	44.5	17	17.2	8	22	19	36.9	91.39
10	3/4	MC-10-6	48.0	19	17.2	8	27	19	40.4	120.9
12	1/8	MC-12-1	39.1	10	22.8	5	22	22	29.0	59.9
12	1/4	MC-12-2	42.2	13	22.8	6	22	22	32.1	63.3
12	3/8	MC-12-3	43.2	14	22.8	8	22	22	33.1	76.92
12	1/2	MC-12-4	47.0	17	22.8	10	22	22	36.9	98.39
12	3/4	MC-12-6	50.5	19	22.8	10	27	22	40.4	131.3
12	1	MC-12-8	55.3	22	22.8	10	34	22	45.2	
14	3/8	MC-14-3	43.9	14	24.4	8	24	27	33.8	107.12
14	1/2	MC-14-4	47.0	17	24.4	10	24	27	36.9	117.69
14	3/4	MC-14-6	50.5	19	24.4	10	27	27	40.4	163.9
15	3/8	MC-15-3	47.0	14	24.4	8	24	27	33.8	103.42
15	1/2	MC-15-4	49.0	17	24.4	10	24	27	36.9	
15	3/4	MC-15-6	50.5	19	24.4	10	27	27	40.4	
16	3/8	MC-16-3	43.9	14	24.4	8	24	27	33.8	100.42
16	1/2	MC-16-4	47.0	17	24.4	10	24	27	36.9	110.29
16	3/4	MC-16-6	50.5	19	24.4	12	27	27	40.4	148.6
18	3/8	MC-18-3	45.5	14	24.4	8	27	30	35.4	
18	1/2	MC-18-4	48.5	17	24.4	10	27	30	38.4	136.4
18	3/4	MC-18-6	50.5	19	24.4	15	27	30	40.4	
18	1	MC-18-8	55.3	22	24.4	15	34	30	45.2	
20	1/2	MC-20-4	50.3	17	26.0	10	30	32	40.2	160.99
20	3/4	MC-20-6	52.3	19	26.0	15	30	32	42.2	175.4
22	1/2	MC-22-4	50.3	17	26.0	10	30	32	40.2	
22	3/4	MC-22-6	52.3	19	26.0	16.5	30	32	42.2	161.3
22	1	MC-22-8	55.2	22	26.0	16.5	34	32	45.1	228.3
25	1/2	MC-25-4	55.5	17	31.3	10	34	38	43.2	230.09
25	3/4	MC-25-6	57.5	19	31.3	16.5	34	38	45.2	228.8
25	1	MC-25-8	60.4	22	31.3	20	34	38	48.1	265.3

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**MALE CONNECTOR  
(FRACTIONAL)**

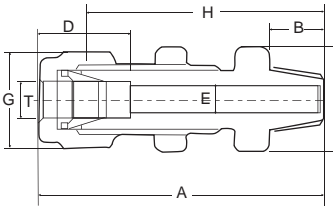
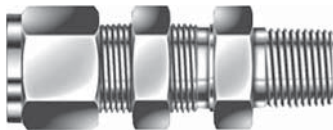
MC



T TUBE O.D.	PT-NPT MALE PIPE SIZE	CATALOG NUMBER	A	B	D	E	F	G	H	N.W.(G)
1/16	1/8	MC-005-1	26.5	10	8.6	1	10	10	22.7	27.12
1/16	1/4	MC-005-2	29.8	13	8.6	1	14	10	26.0	
1/8	1/8	MC-01-1	30.8	10	12.7	3	12	10	24.2	28.58
1/8	1/4	MC-01-2	34.4	13	12.7	3	14	10	27.8	38.44
1/8	3/8	MC-01-3	35.6	14	12.7	3	17	10	29.0	55.64
1/8	1/2	MC-01-4	40.1	17	12.7	3	22	10	33.5	91.14
3/16	1/8	MC-015-1	31.5	10	13.7	3	12	12	24.9	27.74
3/16	1/4	MC-015-2	35.1	13	13.7	3	14	12	28.5	
1/4	1/8	MC-02-1	33.1	10	15.3	5	14	14	27.7	30.74
1/4	1/4	MC-02-2	36.6	13	15.3	5	14	14	29.3	40.4
1/4	3/8	MC-02-3	38.2	14	15.3	5	17	14	30.8	59.1
1/4	1/2	MC-02-4	42.6	17	15.3	5	22	14	35.1	94.9
1/4	3/4	MC-02-6	46.1	19	15.3	5	27	14	38.8	
3/8	1/8	MC-03-1	35.6	10	16.8	5	17	17	28.2	39.04
3/8	1/4	MC-03-2	38.8	13	16.8	6	17	17	31.3	45.6
3/8	3/8	MC-03-3	39.8	14	16.8	8	17	17	32.3	58.5
3/8	1/2	MC-03-4	44.1	17	16.8	8	22	17	36.8	104.6
3/8	3/4	MC-03-6	47.7	19	16.8	8	27	17	40.3	152
1/2	1/8	MC-04-1	39.2	10	22.8	5	22	22	29.0	
1/2	1/4	MC-04-2	42.2	13	22.8	6	22	22	32.1	71.1
1/2	3/8	MC-04-3	43.2	14	22.8	8	22	22	33.1	81.2
1/2	1/4	MC-04-4	46.9	17	22.8	10	22	22	36.8	116.6
1/2	3/4	MC-04-6	50.4	19	22.8	10	27	22	40.3	171
1/2	1	MC-04-8	55.2	22	22.8	10	35	22	45.0	272.8
5/8	3/8	MC-05-3	43.9	14	24.4	8	24	27	33.8	105.7
5/8	1/2	MC-05-4	46.9	17	24.4	10	24	27	36.8	131.8
5/8	3/4	MC-05-6	50.4	19	24.4	12	27	27	40.3	195.2
3/4	1/2	MC-06-4	48.4	17	24.4	10	27	30	38.2	160.5
3/4	3/4	MC-06-6	50.4	19	24.4	15	27	30	40.3	190.4
3/4	1	MC-06-8	55.2	22	24.4	15	35	30	45.0	294.3
1	1/2	MC-08-4	55.4	17	31.3	10	35	38	43.1	253.2
1	3/4	MC-08-6	57.4	19	31.3	16.5	35	38	45.1	285.9
1	1	MC-08-8	60.4	22	31.3	20	35	38	48.1	329.8

**BULKHEAD MALE CONNECTOR  
(METRIC)**

BMC



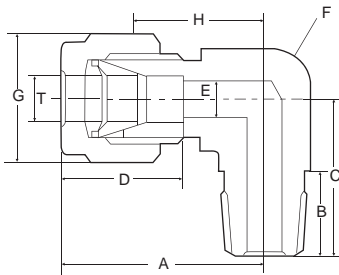
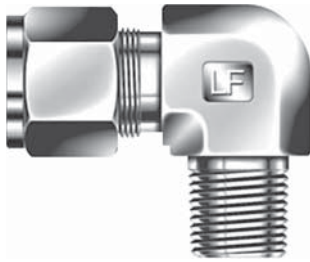
TUBE O.D.	PIPESIZE PT/NPT	CATALOG NUMBER	A	B	D	E	F	G	H	PANEL HOLE SIZE	MAX PANEL THICK.	N.W.(G)
6	1/8	BMC-6-1	50.9	10	15.3	5	17	14	42.4	11.5	10.2	35.2
6	1/4	BMC-6-2	53.6	13	15.3	5	17	14	46.2	11.5	10.2	48.1
6	3/8	BMC-6-3	54.9	14	15.3	5	17	14	40.9	11.5	10.2	52.2
6	1/2	BMC-6-4	57.9	17	15.3	5	22	14	43.9	11.5	10.2	
8	1/8	BMC-8-1	53.4	10	16.2	6	19	17	38.4	13.1	11.2	
8	1/4	BMC-8-2	56.4	13	16.2	6	19	17	41.4	13.1	11.2	54
8	3/8	BMC-8-3	57.4	14	16.2	6	19	17	42.4	13.1	11.2	68.9
8	1/2	BMC-8-4	60.4	17	16.2	6	22	17	45.4	13.1	11.2	85.3
10	1/4	BMC-10-2	56.0	13	17.2	8	19	19	42.0	16.3	11.2	76.9
10	3/8	BMC-10-3	56.0	14	17.2	8	19	19	43.0	16.3	11.2	
10	1/2	BMC-10-4	59.0	17	17.2	8	24	19	47.0	16.3	11.2	
12	1/4	BMC-12-2	62.2	13	22.8	10	24	22	42.4	19.5	12.7	
12	3/8	BMC-12-3	63.2	14	22.8	10	24	22	43.4	19.5	12.7	
12	1/2	BMC-12-4	68.8	17	22.8	10	24	22	58.7	19.5	12.7	13.8

**(FRACTIONAL)**

1/4	1/8	BMC-02-1	50.9	10	15.3	5	17	14	42.4	11.5	10.2	
1/4	1/4	BMC-02-2	49.5	13	15.3	5	17	14	46.7	11.5	10.2	47.2
1/4	3/8	BMC-02-3	54.9	14	15.3	5	17	14	40.9	11.5	10.2	
1/4	1/2	BMC-02-4	57.9	17	15.3	5	22	14	43.9	11.5	10.2	
3/8	1/4	BMC-03-2	57.4	13	16.8	8	19	17	42.0	16.3	11.2	
3/8	3/8	BMC-03-3	57.4	14	16.8	8	19	17	43.0	16.3	11.2	67.6
3/8	1/2	BMC-03-4	63.8	17	16.8	8	22	17	47.0	16.3	11.2	93.4
1/2	1/4	BMC-04-2	62.2	13	22.8	10	24	22	42.7	19.5	12.7	
1/2	3/8	BMC-04-3	63.2	14	22.8	10	24	22	43.7	19.5	12.7	
1/2	1/2	BMC-04-4	68.8	17	22.8	10	24	22	58.8	19.5	12.7	

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. ONLY FOR REFERENCE SUBJECT TO CHANGE.

ME

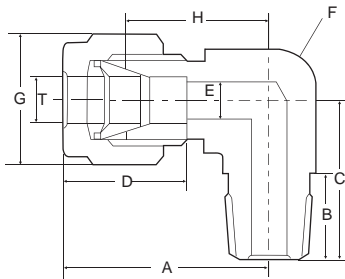
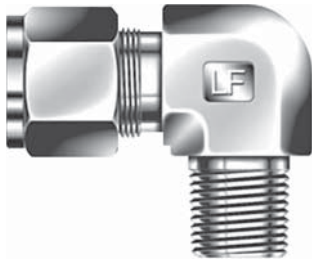

**MALE ELBOW  
(METRIC)**

T TUBE O.D.	PT-NPT MALE PIPE SIZE	CATALOG NUMBER	A	B	C	D	E	F	G	H	N.W.(G)
3	1/8	ME-3-1	25.4	10	19.8	13	2.4	12	12	18.8	
3	1/4	ME-3-2	26.6	13	24.0	13	2.4	14	12	20.0	
4	1/8	ME-4-1	25.4	10	19.1	13.7	3	12	12	18.8	28.89
4	1/4	ME-4-2	26.6	13	22.2	13.7	3	14	12	20.0	46.09
4	3/8	ME-4-3	28.4	14	26.0	13.7	3	17	12	21.8	
4	1/2	ME-4-4	31.3	17	31.0	13.7	3	22	12	24.7	
6	1/8	ME-6-1	27.0	10	19.1	15.3	5	12	14	19.6	32.8
6	1/4	ME-6-2	27.0	13	22.2	15.3	5	14	14	19.6	47.6
6	3/8	ME-6-3	29.8	14	26.0	15.3	5	17	14	22.4	72.2
6	1/2	ME-6-4	31.8	17	31.0	15.3	5	22	14	24.4	137.5
8	1/8	ME-8-1	28.8	10	20.1	16.2	6	14	17	21.3	47.5
8	1/4	ME-8-2	28.8	13	23.2	16.2	6	14	17	21.3	52.2
8	3/8	ME-8-3	30.6	14	26.0	16.2	6	17	17	23.1	76
8	1/2	ME-8-4	32.6	17	31.0	16.2	6	22	17	25.1	130.4
10	1/8	ME-10-1	31.5	10	21.9	17.2	6	17	19	23.9	73.8
10	1/4	ME-10-2	31.5	13	25.0	17.2	8	17	19	23.9	80.4
10	3/8	ME-10-3	31.5	14	26.0	17.2	8	17	19	23.9	82.2
10	1/2	ME-10-4	33.5	17	31.0	17.2	8	22	19	25.9	137.4
12	1/8	ME-12-1	36.0	10	25.7	22.8	10	22	22	25.9	100.9
12	1/4	ME-12-2	36.0	13	27.0	22.8	10	22	22	25.9	109.1
12	3/8	ME-12-3	36.0	14	28.0	22.8	10	22	22	25.9	108.2
12	1/2	ME-12-4	36.0	17	31.0	22.8	10	22	22	25.9	148
12	3/4	ME-12-6	39.8	19	26.8	22.8	10	27	22	29.7	253.8
12	1	ME-12-8	45.3	22	45.2	22.8	10	34	22	35.2	
14	3/8	ME-14-3	38.0	14	29.0	24.4	10	24	27	27.9	162.6
14	1/2	ME-14-4	38.0	17	33.1	24.4	10	24	27	27.9	180.1
14	3/4	ME-14-6	39.8	19	36.8	24.4	10	27	27	29.7	
15	3/8	ME-15-3	38.0	14	29.0	24.4	11	24	27	27.9	
15	1/2	ME-15-4	38.0	17	33.1	24.4	11	24	27	27.9	
15	3/4	ME-15-6	39.8	19	36.8	24.4	11	27	27	29.7	
16	3/8	ME-16-3	38.0	14	29.0	24.4	12	24	27	27.9	153
16	1/2	ME-16-4	38.0	17	33.1	24.4	12	24	27	27.9	165.5
16	3/4	ME-16-6	39.8	19	36.8	24.4	12	27	27	29.7	261.6
18	3/8	ME-18-3	39.8	14	32.5	24.4	14	27	30	29.7	
18	1/2	ME-18-4	39.8	17	34.8	24.4	14	27	30	29.7	
18	3/4	ME-18-6	39.8	19	36.8	24.4	14	27	30	29.7	268.5
20	1/2	ME-20-4	44.6	17	39.7	26.0	16	30	32	34.5	250.3
20	3/4	ME-20-6	44.6	19	41.7	26.0	16	30	32	34.5	
22	1/2	ME-22-4	44.6	17	39.7	26.0	18	30	32	34.5	
22	3/4	ME-22-6	44.6	19	41.7	26.0	18	30	32	34.5	
22	1	ME-22-8	44.6	22	44.5	26.0	18	34	32	34.5	
25	1/2	ME-25-4	49.1	17	39.7	31.3	21	34	38	36.8	
25	3/4	ME-25-6	49.1	19	41.7	31.3	21	34	38	36.8	
25	1	ME-25-8	49.1	22	44.5	31.3	21	34	38	36.8	

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

MALE ELBOW  
(FRACTIONAL)

ME

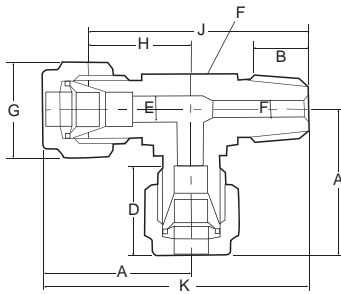
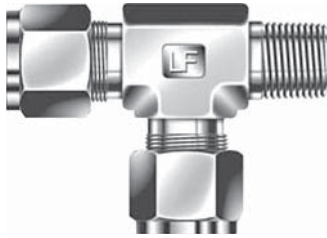


T TUBE O.D.	PT-NPT MALE PIPE SIZE	CATALOG NUMBER	A	B	C	D	E	F	G	H	N.W.(G)
1/16	1/8	ME-005-1	19.1	10	18.1	8.6	1	10	10	15.2	28.78
1/16	1/4	ME-005-2	21.8	13	21.6	8.6	1	14	10	18.0	
1/8	1/8	ME-01-1	23.6	10	18.1	12.7	3	12	10	17.0	31.64
1/8	1/4	ME-01-2	24.6	13	22.2	12.7	3	14	10	18.0	48.14
1/8	3/8	ME-01-3	28.4	14	26.8	12.7	3	17	10	21.8	
1/8	1/2	ME-01-4	31.3	17	32.7	12.7	3	22	10	24.7	
3/16	1/8	ME-015-1	25.4	10	19.1	13.7	3	12	12	18.8	
3/16	1/4	ME-015-2	25.4	13	22.2	13.7	3	14	12	18.6	
1/4	1/8	ME-02-1	27.0	10	19.1	15.3	5	12	14	19.6	32.1
1/4	1/4	ME-02-2	27.0	13	22.2	15.3	5	14	14	19.6	49.4
1/4	3/8	ME-02-3	29.7	14	26.0	15.3	5	17	14	22.4	72.6
1/4	1/2	ME-02-4	31.8	17	31.0	15.3	5	22	14	24.4	128
3/8	1/8	ME-03-1	30.5	10	21.1	16.8	6	17	17	21.3	43.6
3/8	1/4	ME-03-2	30.5	13	24.2	16.8	8	17	17	21.3	51.1
3/8	3/8	ME-03-3	31.2	14	26.0	16.8	8	17	17	23.1	77
3/8	1/2	ME-03-4	33.3	17	31.0	16.8	8	22	17	26.0	134.1
1/2	1/8	ME-04-1	36.1	10	25.7	22.8	10	22	22	26.0	102.3
1/2	1/4	ME-04-2	36.1	13	27.0	22.8	10	22	22	26.0	101.5
1/2	3/8	ME-04-3	36.1	14	29.0	22.8	10	22	22	26.0	109.9
1/2	1/2	ME-04-4	36.1	17	31.0	22.8	10	22	22	26.0	148.4
1/2	3/4	ME-04-6	40.0	19	36.8	22.8	10	27	22	29.7	255.1
1/2	1	ME-04-8	45.3	22	45.2	22.8	10	34	22	35.2	
5/8	3/8	ME-05-3	38.1	14	30.0	24.4	12	23	27	27.9	150.6
5/8	1/2	ME-05-4	38.1	17	33.1	24.4	12	24	27	27.9	165.9
5/8	3/4	ME-05-6	40.0	19	36.8	24.4	12	24	27	29.7	
3/4	1/2	ME-06-4	40.0	17	34.8	24.4	15	27	30	29.7	266.3
3/4	3/4	ME-06-6	40.5	19	36.8	24.4	15	27	30	29.7	230.7
1	3/4	ME-08-3	49.0	19	41.7	31.3	21	34	38	36.8	
1	1	ME-08-8	49.0	22	44.5	31.3	21	34	38	36.8	388.9

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

MALE RUN TEE  
(METRIC)

MRT



T TUBE O.D.	PT-NPT MALE PIPE SIZE	CATALOG NUMBER	A	B	D	E	F	G	H	J	K	N.W.(G)
4	1/8	MRT-4-1	25.4	10	15.3	3	12	12	18.8	37.9	44.5	
4	1/4	MRT-4-2	25.4	13	15.3	3	14	12	18.8	41.0	47.6	
6	1/8	MRT-6-1	27.0	10	15.3	5	12	14	19.6	38.7	46.1	
6	1/4	MRT-6-2	27.0	13	15.3	5	14	14	19.6	41.8	49.2	72.1
6	3/8	MRT-6-3	29.8	14	15.3	5	17	14	22.4	48.4	55.8	
6	1/2	MRT-6-4	31.8	17	15.3	5	22	14	24.4	55.4	62.8	
8	1/8	MRT-8-1	28.8	10	16.2	6	14	17	21.3	41.4	48.9	
8	1/4	MRT-8-2	28.8	13	16.2	6	14	17	21.3	46.3	52.0	76.7
8	3/8	MRT-8-3	28.8	14	16.2	6	17	17	21.3	49.1	54.8	106.6
8	1/2	MRT-8-4	30.6	17	16.2	6	22	17	25.1	56.1	61.6	
10	1/8	MRT-10-1	31.5	10	17.2	8	17	19	23.9	45.8	53.4	
10	1/4	MRT-10-2	31.5	13	17.2	8	17	19	23.9	48.9	56.5	114.4
10	3/8	MRT-10-3	31.5	14	17.2	8	17	19	23.9	49.9	57.5	117.5
10	1/2	MRT-10-4	33.5	17	17.2	8	22	19	25.9	56.9	64.5	
12	1/8	MRT-12-1	36.0	10	22.8	10	22	22	25.9	51.6	61.7	
12	1/4	MRT-12-2	36.0	13	22.8	10	22	22	25.9	52.9	63.0	
12	3/8	MRT-12-3	36.0	14	22.8	10	22	22	25.9	53.9	64.0	156.7
12	1/2	MRT-12-4	36.0	17	22.8	10	22	22	25.9	56.9	67.0	
12	3/4	MRT-12-6	39.8	19	22.8	10	27	22	29.7	66.9	76.6	
12	1	MRT-12-8	45.3	22	22.8	10	34	22	35.2	80.4	90.5	
14	3/8	MRT-14-3	38.0	14	24.4	10	24	27	27.9	56.9	67.0	
14	1/2	MRT-14-4	38.0	17	24.4	10	24	27	27.9	61.0	71.1	
14	3/4	MRT-14-6	39.8	19	24.4	10	27	27	29.7	66.5	76.6	
15	3/8	MRT-15-3	38.0	14	24.4	10	24	27	27.9	56.9	67.0	
15	1/2	MRT-15-4	38.0	17	24.4	10	24	27	27.9	61.0	71.1	
15	3/4	MRT-15-6	39.8	19	24.4	10	27	27	29.7	66.5	76.6	
16	3/8	MRT-16-3	38.0	14	24.4	12	24	27	27.9	56.9	67.0	
16	1/2	MRT-16-4	38.0	17	24.4	12	24	27	27.9	61.0	71.1	
16	3/4	MRT-16-6	39.8	19	24.4	12	27	27	29.7	66.5	76.6	
18	3/8	MRT-18-3	39.8	14	24.4	14	27	30	29.7	62.2	72.3	
18	1/2	MRT-18-4	39.8	17	24.4	14	27	30	29.7	64.5	74.6	
18	3/4	MRT-18-6	39.8	19	24.4	14	27	30	29.7	66.5	76.6	
20	1/2	MRT-20-4	44.6	17	26.0	16	30	32	34.5	74.2	84.3	
20	3/4	MRT-20-6	44.6	19	26.0	16	30	32	34.5	76.2	96.3	
22	1/2	MRT-22-4	44.6	17	26.0	18	30	32	34.5	74.2	84.3	
22	3/4	MRT-22-6	44.6	19	26.0	18	30	32	34.5	76.2	86.3	
25	1/2	MRT-25-4	49.1	17	31.3	21	34	38	36.8	76.5	88.8	
25	3/4	MRT-25-6	49.1	19	31.3	21	34	38	36.8	78.5	90.8	
25	1	MRT-25-8	49.1	22	31.3	21	34	38	36.8	81.3	93.6	

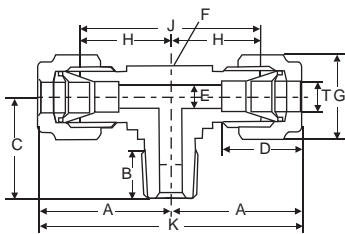
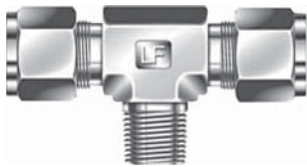
(FRACTIONAL)

1/8	1/8	MRT-01-1	23.6	10	12.7	3	12	12	17.0	35.1	41.7	
1/8	1/4	MRT-01-2	24.6	13	12.7	3	14	12	18.0	40.2	46.8	
1/4	1/8	MRT-02-1	27.0	10	15.2	5	12	14	19.6	38.7	46.1	
1/4	1/4	MRT-02-2	27.0	13	15.2	5	14	14	19.6	41.8	49.2	69.4
1/4	3/8	MRT-02-3	29.8	14	15.2	5	17	14	22.4	48.4	55.8	
1/4	1/2	MRT-02-4	31.8	17	15.2	5	22	14	24.4	55.4	62.8	
3/8	1/8	MRT-03-1	30.5	11	16.8	8	17	17	21.3	42.4	51.6	
3/8	1/4	MRT-03-2	30.5	13	16.8	8	17	17	21.3	45.5	54.7	72.1
3/8	3/8	MRT-03-3	31.2	14	16.8	8	17	17	23.1	49.1	57.2	
3/8	1/2	MRT-03-4	33.3	17	16.8	8	22	17	26.0	57.0	64.3	155.5
1/2	1/8	MRT-04-1	36.0	11	22.8	10	22	22	25.9	51.6	61.7	
1/2	1/4	MRT-04-2	36.0	13	22.8	10	22	22	25.9	52.9	63.0	
1/2	3/8	MRT-04-3	36.0	14	22.8	10	22	22	25.9	53.9	64.0	
1/2	1/2	MRT-04-4	36.0	17	22.8	10	22	22	25.9	56.9	67.0	200.1
1/2	3/4	MRT-04-6	39.8	19	22.8	10	27	22	29.7	66.5	76.6	
1/2	1	MRT-04-8	45.3	22	22.8	10	34	22	35.2	80.4	90.5	
5/8	3/8	MRT-05-3	38.1	14	24.4	12	24	27	27.9	57.9	68.1	
5/8	1/2	MRT-05-4	38.1	17	24.4	12	24	27	27.9	61.0	71.2	
5/8	3/4	MRT-05-6	40.0	19	24.4	12	27	27	29.7	66.5	76.8	
3/4	1/2	MRT-06-4	40.0	17	24.4	15	27	30	29.7	66.5	76.8	
3/4	3/4	MRT-06-6	40.0	19	24.4	15	34	30	29.7	66.5	76.8	304.9
1	3/4	MRT-08-6	49.1	19	31.3	21	34	38	36.8	78.5	90.8	
1	1	MRT-08-8	49.1	22	31.3	21	34	38	36.8	81.3	93.6	

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

MALE BRANCH TEE  
(METRIC)

MBT



T	PT-NPT	CATALOG	A	B	C	D	E	F	G	H	J	K	N.W.(G)
TUBE	MALE	NUMBER											
O.D.	PIPE	SIZE											
4	1/8	MBT-4-1	25.4	10	19.1	13.7	3	12	12	18.8	37.8	50.8	
4	1/4	MBT-4-2	25.4	13	22.2	13.7	3	14	12	18.8	37.6	50.8	
6	1/8	MBT-6-1	27.0	10	19.1	15.3	5	12	14	19.6	39.2	54.0	
6	1/4	MBT-6-2	27.0	13	22.2	15.3	5	14	14	19.6	39.2	54.0	70.6
6	3/8	MBT-6-3	29.8	14	26.0	15.3	5	17	14	22.4	44.8	59.6	
6	1/2	MBT-6-4	31.8	17	31.0	15.3	5	22	14	24.4	48.8	63.6	170
8	1/8	MBT-8-1	28.8	10	20.1	16.2	6	14	17	21.3	42.6	57.6	
8	1/4	MBT-8-2	28.8	13	23.2	16.2	6	14	17	21.3	42.6	57.6	75.2
8	3/8	MBT-8-3	30.6	14	26.0	16.2	6	17	17	21.3	46.2	61.2	104.2
8	1/2	MBT-8-4	32.6	17	31.0	16.2	6	22	17	23.1	50.2	65.2	175.4
10	1/8	MBT-10-1	31.5	10	21.9	17.2	8	17	19	25.1	47.8	63.0	
10	1/4	MBT-10-2	31.5	13	25.0	17.2	8	17	19	23.9	47.8	63.0	115.8
10	3/8	MBT-10-3	31.5	14	26.0	17.2	8	17	19	23.9	47.8	63.0	117.8
10	1/2	MBT-10-4	33.5	17	31.0	17.2	8	22	19	25.9	51.8	67.0	166.5
12	1/8	MBT-12-1	36.0	10	25.7	22.8	10	22	22	25.9	51.8	72.0	
12	1/4	MBT-12-2	36.0	13	27.0	22.8	10	22	22	25.9	51.8	72.0	148.2
12	3/8	MBT-12-3	36.0	14	28.0	22.8	10	22	22	25.9	51.8	72.0	
12	1/2	MBT-12-4	36.0	17	31.0	22.8	10	22	22	25.9	51.8	72.0	205.3
12	3/4	MBT-12-6	39.8	19	36.8	22.8	10	27	22	29.7	59.4	79.6	324.8
12	1	MBT-12-8	45.3	22	45.2	22.8	10	35	22	35.2	70.4	90.6	
14	3/8	MBT-14-3	38.0	14	29.0	24.4	10	24	27	27.9	55.8	76.0	
14	1/2	MBT-14-4	38.0	17	33.1	24.4	10	24	27	27.9	55.8	76.0	
14	3/4	MBT-14-6	39.8	19	36.8	24.4	10	27	27	29.7	59.4	79.6	
15	3/8	MBT-15-3	38.0	14	29.0	24.4	11	24	27	27.9	55.8	76.0	
15	1/2	MBT-15-4	38.0	17	33.1	24.4	11	24	27	27.9	55.8	76.0	
15	3/4	MBT-15-6	39.8	19	36.8	24.4	11	27	27	27.9	59.4	79.6	
16	3/8	MBT-16-3	38.0	14	29.0	24.4	12	24	27	27.9	55.8	76.0	
16	1/2	MBT-16-4	38.0	17	33.1	24.4	12	24	27	27.9	55.8	76.0	
16	3/4	MBT-16-6	39.8	19	36.8	24.4	12	27	27	29.7	59.4	79.6	
18	3/8	MBT-18-3	39.8	14	32.5	24.4	14	27	30	29.7	59.4	79.6	
18	1/2	MBT-18-4	39.8	17	34.8	24.4	14	27	30	29.7	59.4	79.6	
18	3/4	MBT-18-6	39.8	19	36.8	24.4	14	27	30	29.7	59.4	79.6	
20	1/2	MBT-20-4	44.6	17	39.7	26.0	16	30	32	34.5	69.0	89.2	
20	3/4	MBT-20-6	44.6	19	41.7	26.0	16	30	32	34.5	69.0	89.2	
22	1/2	MBT-22-4	44.6	17	39.7	26.0	18	30	32	34.5	69.0	89.2	
22	3/4	MBT-22-6	44.6	19	41.7	26.0	18	30	32	34.5	69.0	89.2	
25	1/2	MBT-25-4	49.1	17	39.7	31.3	21	35	38	36.8	73.6	98.2	
25	3/4	MBT-25-6	49.1	19	41.7	31.3	21	35	38	36.8	73.6	98.2	
25	1	MBT-25-8	49.1	22	41.5	31.3	21	35	38	36.8	73.6	98.2	

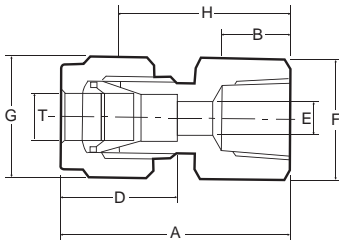
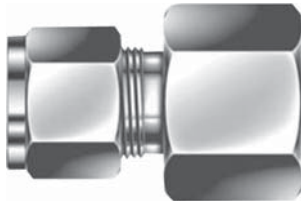
(FRACTIONAL)

1/8	1/8	MBT-01-1	23.6	10	18.1	12.7	3	12	12	17.0	34.0	47.2	62.98
1/8	1/4	MBT-01-2	24.6	13	22.2	12.7	3	14	12	18.0	36.0	49.2	65.98
1/4	1/8	MBT-02-1	27.0	10	19.1	15.2	3	12	14	19.6	39.2	54.0	63.6
1/4	1/4	MBT-02-2	27.0	13	22.2	15.2	5	14	14	19.6	39.2	54.0	69.9
1/4	3/8	MBT-02-3	29.8	14	26.0	15.2	5	17	14	22.4	44.8	59.6	100.8
1/4	1/2	MBT-02-4	31.8	17	31.0	15.2	5	22	14	24.4	48.8	63.6	
3/8	1/8	MBT-03-1	30.5	10	21.1	16.8	8	17	17	21.3	42.6	61.0	
3/8	1/4	MBT-03-2	30.5	13	24.2	16.8	8	17	17	21.3	42.6	61.0	72.2
3/8	3/8	MBT-03-3	31.2	14	26.0	16.8	8	17	17	23.1	46.2	62.4	104.1
3/8	1/2	MBT-03-4	33.3	14	31.0	16.8	8	22	17	26.0	52.0	66.6	
1/2	1/8	MBT-04-1	36.0	10	25.7	22.8	10	22	22	25.9	51.8	72.0	
1/2	1/4	MBT-04-2	36.0	13	27.0	22.8	10	22	22	25.9	51.8	72.0	
1/2	3/8	MBT-04-3	36.0	14	28.0	22.8	10	22	22	25.9	51.8	72.0	
1/2	1/2	MBT-04-4	36.0	17	31.0	22.8	10	22	22	25.9	51.8	72.0	203.4
1/2	3/4	MBT-04-6	39.8	19	36.8	22.8	10	27	22	29.7	59.4	79.6	
1/2	1	MBT-04-8	45.3	22	45.2	22.8	10	35	22	35.2	70.4	90.6	
5/8	3/8	MBT-05-3	38.1	14	30.0	24.4	12	24	27	27.9	55.8	76.2	
5/8	1/2	MBT-05-4	38.1	17	33.1	24.4	12	24	27	27.9	55.8	76.2	
5/8	3/4	MBT-05-6	40.0	19	36.8	24.4	12	27	27	29.7	59.4	80.0	
3/4	3/4	MBT-06-6	40.5	19	36.8	24.4	15	27	30	29.7	59.4	81.0	364.5
1	3/4	MBT-08-6	49.0	19	41.7	31.3	21	35	38	36.8	73.6	98.0	
1	1	MBT-08-8	49.0	22	44.5	31.3	21	35	38	36.8	73.6	98.0	

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

**FEMALE CONNECTOR  
(METRIC)**

FC



T TUBE O.D.	PT-NPT FEMALE PIPE SIZE	CATALOG NUMBER	A	B	D	E	F	G	H	N.W.(G)
4	1/8	FC-4-1	29.7	12	13.7	3	14	12	23.1	
6	1/8	FC-6-1	31.3	12	15.3	5	14	14	23.9	25.7
6	1/4	FC-6-2	35.8	15	15.3	5	17	14	28.4	36
6	3/8	FC-6-3	37.6	15	15.3	5	22	14	30.2	51.1
6	1/2	FC-6-4	42.5	20	15.3	5	27	14	35.1	82.4
8	1/8	FC-8-1	32.1	12	16.2	5	14	17	24.6	31.2
8	1/4	FC-8-2	37.0	15	16.2	6	17	17	29.5	39.8
8	3/8	FC-8-3	38.5	15	16.2	6	22	17	31.0	57.8
8	1/2	FC-8-4	43.3	20	16.2	6	27	17	35.8	86.6
10	1/8	FC-10-1	34.8	12	17.2	5	19	19	27.2	48.2
10	1/4	FC-10-2	37.8	15	17.2	6	19	19	30.2	46.8
10	3/8	FC-10-3	39.4	15	17.2	8	22	19	31.8	67.1
10	1/2	FC-10-4	44.2	20	17.2	8	27	19	36.8	95.4
12	1/8	FC-12-1	37.3	12	22.8	5	22	22	27.2	
12	1/4	FC-12-2	40.3	15	22.8	6	22	22	30.2	68.9
12	3/8	FC-12-3	41.9	15	22.8	8	22	22	31.8	76.5
12	1/2	FC-12-4	46.7	20	22.8	10	27	22	36.6	106.3
12	3/4	FC-12-6	48.3	21	22.8	10	32	22	38.2	127.7
12	1	FC-12-8	51.3	24	22.8	10	40	22	41.2	
14	3/8	FC-14-3	41.9	15	24.4	8	27	27	31.8	
14	1/2	FC-14-4	46.7	20	24.4	10	27	27	36.6	130.6
14	3/4	FC-14-6	48.3	21	24.4	10	32	27	38.2	
15	3/8	FC-15-3	41.9	15	24.4	8	27	27	31.8	
15	1/2	FC-15-4	46.7	20	24.4	10	27	27	36.6	
15	3/4	FC-15-6	48.3	21	24.4	10	32	27	38.2	
16	3/8	FC-16-3	42.1	15	24.4	8	27	27	32.0	
16	1/2	FC-16-4	46.9	20	24.4	10	27	27	36.8	
16	3/4	FC-16-6	48.5	21	24.4	12	32	27	38.4	
18	3/8	FC-18-3	42.1	15	24.4	14	27	30	32.0	
18	1/2	FC-18-4	46.9	20	24.4	14	27	30	36.8	
18	3/4	FC-18-6	48.2	21	24.4	14	32	30	38.4	
20	1/2	FC-20-4	47.9	20	26.0	16	30	32	37.8	
20	3/4	FC-20-6	49.7	21	26.0	16	32	32	39.6	171.6
22	1/2	FC-22-4	47.9	20	26.0	18	30	32	37.8	
22	3/4	FC-22-6	49.7	21	26.0	18	32	32	39.6	
22	1	FC-22-8	57.9	24	26.0	18	40	32	47.8	227.4
25	3/4	FC-25-6	53.4	21	31.3	21	35	38	41.1	
25	1	FC-25-8	62.3	24	31.3	21	40	38	50.0	

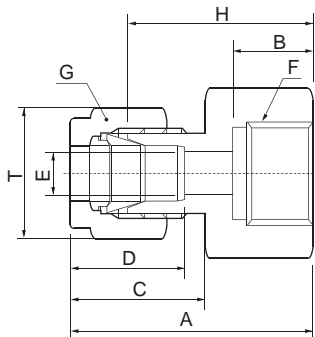
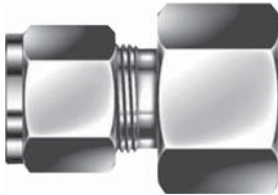
**(FRACTIONAL)**

1/8	1/8	FC-01-1	28.7	12	12.7	2	14	10	22.1	
1/8	1/4	FC-01-2	33.5	15	12.7	2	17	10	27.0	33.64
1/4	1/8	FC-02-1	31.2	12	15.3	5	14	14	24.0	
1/4	1/4	FC-02-2	35.8	15	15.3	5	17	14	28.4	36
1/4	3/8	FC-02-3	37.6	15	15.3	5	22	14	30.2	53.7
1/4	1/2	FC-02-4	42.4	20	15.3	5	27	14	35.1	82.9
3/8	1/8	FC-03-1	32.8	12	16.8	5	17	19	25.4	31.2
3/8	1/4	FC-03-2	37.6	15	16.8	6	17	19	30.2	40.5
3/8	3/8	FC-03-3	39.1	15	16.8	8	22	19	31.8	58.8
3/8	1/2	FC-03-4	43.9	20	16.8	8	27	19	36.6	87.3
3/8	3/4	FC-03-6	47.8	21	16.8	8	32	19	40.4	
1/2	1/8	FC-04-1	37.3	12	22.8	5	22	22	27.2	
1/2	1/4	FC-04-2	40.4	15	22.8	6	22	22	30.2	67.7
1/2	3/8	FC-04-3	42.0	15	22.8	8	22	22	31.8	75
1/2	1/2	FC-04-4	46.7	20	22.8	10	27	22	36.6	104.6
1/2	3/4	FC-04-6	48.3	21	22.8	10	32	22	38.2	125.9
1/2	1	FC-04-8	51.3	24	22.8	10	40	22	41.2	
5/8	3/8	FC-05-3	42.1	15	24.4	8	27	27	32.0	
5/8	1/2	FC-05-4	46.9	20	24.4	11	27	27	36.8	
5/8	3/4	FC-05-6	48.5	21	24.4	12	32	27	38.4	
3/4	1/2	FC-06-4	46.7	20	24.4	15	27	30	36.6	128.4
3/4	3/4	FC-06-6	48.3	21	24.4	15	32	30	38.1	150.3
1	3/4	FC-08-6	53.3	21	31.3	21	35	38	41.1	
1	1	FC-08-8	62.2	24	31.3	21	40	38	50.0	274.1

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

**GAUGE CONNECTOR  
(METRIC) Connects metric tube to ISO parallel thread(gauge)**

**FCG**



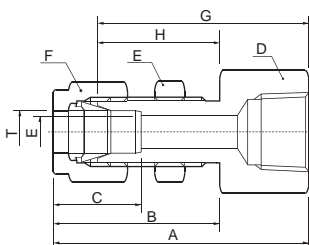
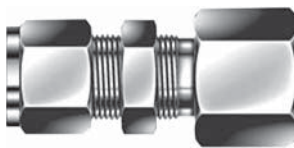
T TUBE O.D.	R(PF) FEMALE PIPE SIZE	CATALOG NUMBER	A	B	C	D	E	F	G	H	T
3	1/4	FCG-3-2G	35.3	13	12.9	3	2.4	19	12	28.7	15.3
6	1/4	FCG-6-2G	37.6	13	15.3	6	4.8	19	14	30.2	17.7
6	3/8	FCG-6-3G	37.6	14	15.3	6	4.8	24	14	30.2	17.7
6	1/2	FCG-6-4G	43.0	19	15.3	6	4.8	27	14	36.3	17.7
8	1/4	FCG-8-2G	38.5	13	16.2	8	5.5	19	16	31.0	18.6
8	3/8	FCG-8-3G	36.2	14	16.2	8	6.5	24	16	28.7	18.6
8	1/2	FCG-8-4G	40.5	19	16.2	8	7.0	27	16	33.0	18.6
10	1/4	FCG-10-2G	39.4	13	17.2	10	5.5	19	19	31.8	19.5
10	3/8	FCG-10-3G	38.8	14	17.2	10	6.5	24	19	31.2	19.5
10	1/2	FCG-10-4G	41.4	19	17.2	10	7.0	27	19	33.8	19.5
12	1/4	FCG-12-2G	41.9	13	22.8	12	5.5	22	22	31.8	22.0
12	3/8	FCG-12-3G	44.4	14	22.8	12	6.5	24	22	34.3	22.0
12	1/2	FCG-12-4G	48.2	19	22.8	12	7.0	27	22	38.1	22.0
20	1/2	FCG-20-4G	54.3	19	26.0	20	7.0	30	32	44.2	22.0
22	1/2	FCG-22-4G	54.3	19	26.0	22	7.0	30	32	44.2	22.0

**(FRACTIONAL) Connects metric tube to ISO parallel thread(gauge)**

1/4	1/8	FCG-02-1G	33.6	12.0	15.3	1/4	4.8	14.3	14.3	26.3	17.8
1/4	1/4	FCG-02-2G	37.6	13.0	15.3	1/4	4.8	19.0	14.3	30.2	17.8
1/4	3/8	FCG-02-3G	37.6	14.2	15.3	1/4	4.8	23.8	14.3	30.2	17.8
1/4	1/2	FCG-02-4G	43.4	18.8	15.3	1/4	4.8	27.0	14.3	30.1	17.8
3/8	1/4	FCG-03-2G	39.1	13.0	19.3	3/8	5.6	19.0	17.5	31.8	39.1
3/8	3/8	FCG-03-3G	38.6	14.2	19.3	3/8	6.6	23.8	17.5	31.2	38.6
3/8	1/2	FCG-03-4G	41.9	18.8	19.3	3/8	7.2	27.0	17.5	34.5	41.9
1/2	1/4	FCG-04-2G	42.0	13.0	21.9	1/2	5.6	22.2	22.2	31.8	42.0
1/2	3/8	FCG-04-3G	44.5	14.2	21.9	1/2	6.6	23.8	22.2	34.2	44.5
1/2	1/2	FCG-04-4G	48.3	18.8	21.9	1/2	7.2	27.0	22.2	38.1	48.3

**BULKHEAD FEMALE CONNECTOR  
(METRIC)**

**BFC**



T TUBE O.D.	PT-NPT FEMALE PIPE SIZE	CATALOG NUMBER	A	B	C	D	E	F	G	H	I	PANEL HOLE DRILL	MAX PANEL THICK	N.W.(G)
6	1/8	BFC-6-1	46.90	35.00	15.3	15.8	4.8	14	39.6	26.2	15.8	11.5	10.2	
6	1/4	BFC-6-2	51.80	33.60	15.3	19.0	4.8	14	44.4	26.2	16.0	11.5	10.2	43.1
8	1/4	BFC-8-2	53.85	35.55	16.2	19.0	6.3	16	46.7	28.6	17.4	13.1	11.2	56
12	1/2	BFC-12-4	66.50	41.90	22.8	27.0	9.5	22	56.4	31.8	24.0	19.5	12.7	

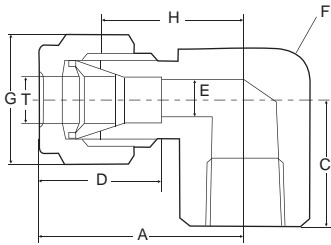
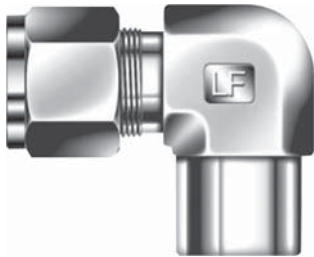
**(FRACTIONAL)**

1/8	1/8	BFC-01-1	44.70	31.24	12.70	14.28	2.28	11.11	12.70	38.10	24.63	8.33	12.70	
1/4	1/8	BFC-02-1	46.99	33.52	15.24	15.87	4.82	14.28	15.87	39.62	26.16	11.50	10.16	
1/4	1/4	BFC-02-2	51.81	33.52	15.24	19.05	4.82	14.28	15.87	44.45	26.16	11.50	10.16	42.9
3/8	1/4	BFC-03-2	55.11	36.83	16.76	19.05	7.11	17.46	19.05	47.75	29.46	14.68	11.17	66.7
3/8	3/8	BFC-03-3	56.77	36.83	16.76	22.22	7.11	17.46	19.05	49.41	29.46	14.68	11.17	73.7
1/2	3/8	BFC-04-3	61.72	41.91	22.86	23.81	10.41	22.22	23.81	51.56	31.75	19.44	12.70	
1/2	1/2	BFC-04-4	66.54	41.91	22.86	26.98	10.41	22.22	23.81	56.38	31.75	19.44	12.70	138
3/4	3/4	BFC-06-6	73.51	47.21	24.38	31.75	15.74	28.57	30.16	63.60	38.30	25.79	16.76	
1	1	BFC-08-8	93.23	57.40	31.24	41.27	22.35	38.10	41.27	81.04	45.21	33.73	19.05	

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**FEMALE ELBOW  
(METRIC)**

FE



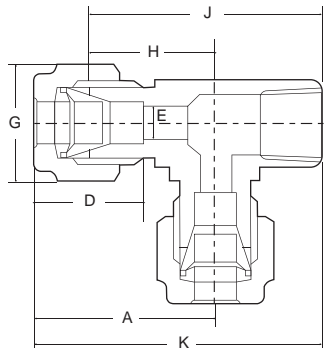
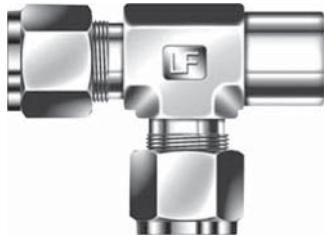
		PT-NPT CATALOG									
T	MALE	NUMBER									
TUBE	PIPE		A	C	D	E	F	G	H	N.W.(G)	
O.D.	SIZE										
6	1/8	FE-6-1	27.0	19.1	15.3	5	14	14	19.6	47.5	
6	1/4	FE-6-2	29.8	22.4	15.3	5	17	14	22.4	61.5	
6	3/8	FE-6-3	34.6	22.4	15.3	5	22	14	27.2		
6	1/2	FE-6-4	37.7	26.4	15.3	5	27	14	30.3		
8	1/8	FE-8-1	29.3	20.0	16.2	6	14	17	21.8	51.2	
8	1/4	FE-8-2	30.6	22.4	16.2	6	17	17	23.1	72.8	
8	3/8	FE-8-3	34.0	27.7	16.2	6	22	17	26.5		
8	1/2	FE-8-4	36.8	31.7	16.2	6	27	17	29.3		
10	1/8	FE-10-1	31.5	19.0	17.2	8	17	19	23.9		
10	1/4	FE-10-2	33.5	22.4	17.2	8	17	19	25.9	80.5	
10	3/8	FE-10-3	37.5	27.7	17.2	8	17	19	29.9		
10	1/2	FE-10-4	40.3	31.7	17.2	8	22	19	32.7	243.1	
12	1/8	FE-12-1	36.0	22.4	22.8	10	22	22	25.9		
12	1/4	FE-12-2	36.0	22.4	22.8	10	22	22	25.9	114.5	
12	3/8	FE-12-3	36.0	22.4	22.8	10	22	22	29.9	144.7	
12	1/2	FE-12-4	38.8	28.4	22.8	10	27	22	28.7	241.2	
12	3/4	FE-12-6	41.8	32.4	22.8	10	32	22	31.7		
14	3/8	FE-14-3	39.8	25.4	24.4	10	27	27	29.7		
14	1/2	FE-14-4	39.8	28.4	24.4	10	27	27	29.7		
14	3/4	FE-14-6	42.8	32.4	24.4	10	32	27	32.7		
15	3/8	FE-15-3	39.8	25.4	24.4	11	27	27	29.7		
15	1/2	FE-15-4	39.8	28.4	24.4	11	27	27	29.7		
15	3/4	FE-15-6	42.8	32.4	24.4	11	32	27	32.7		
16	3/8	FE-16-3	39.8	25.4	24.4	12	27	27	29.7		
16	1/2	FE-16-4	39.5	28.4	24.4	12	27	27	29.7		
16	3/4	FE-16-6	42.8	32.4	24.4	12	32	27	32.7		
18	3/8	FE-18-3	40.5	25.4	24.4	14	27	30	30.4		
18	1/2	FE-18-4	40.5	28.4	24.4	14	27	30	30.4		
18	3/4	FE-18-6	43.5	32.4	24.4	14	32	30	33.4		
20	1/2	FE-20-4	43.5	31.4	26.0	16	32	32	33.4		
20	3/4	FE-20-6	46.5	35.4	26.0	16	32	32	36.4		
22	1/2	FE-22-4	43.5	31.4	26.0	18	32	32	33.4		
22	3/4	FE-22-6	46.5	35.4	26.0	18	32	32	36.4		
25	1/2	FE-25-4	47.5	33.4	31.5	21	34	38	35.2		
25	3/4	FE-25-6	50.5	37.4	31.5	21	34	38	38.2		

**(FRACTIONAL)**

1/4	1/8	FE-02-1	27.0	19.1	15.3	5	14	14	19.6	48.9
1/4	1/4	FE-02-2	29.7	22.4	15.3	5	17	14	22.4	69.7
1/4	3/8	FE-02-3	32.6	22.4	15.3	5	22	14	27.2	123
1/4	1/2	FE-02-4	37.7	28.4	15.3	5	27	14	30.3	
3/8	1/8	FE-03-1	30.5	19.8	16.8	7	17	17	23.1	
3/8	1/4	FE-03-2	31.2	22.4	16.8	7	17	17	24.0	68.2
3/8	3/8	FE-03-3	33.3	22.4	16.8	7	22	17	26.0	
3/8	1/2	FE-03-4	36.1	28.4	16.8	7	27	17	28.7	
1/2	1/8	FE-04-1	36.0	22.4	22.8	10	22	22	25.9	
1/2	1/4	FE-04-2	36.1	22.4	22.8	10	22	22	26.0	105.6
1/2	3/8	FE-04-3	36.1	22.4	22.8	10	22	22	26.0	
1/2	1/2	NFE-04-4	39.0	28.4	22.8	10	27	22	28.7	242.7
1/2	3/4	NFE-04-6	41.8	32.4	22.8	10	32	22	31.7	
5/8	3/4	NFE-05-6	42.8	32.4	24.4	12	32	27	32.7	
3/4	1/2	NFE-06-4	39.9	28.4	24.4	15	27	30	29.7	237.8
3/4	3/4	NFE-06-6	44.7	32.4	24.4	15	32	30	34.5	404.2
1	3/4	NFE-08-6	49.0	32.4	31.3	21	34	38	36.8	

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FRT



FEMALE RUN TEE  
(METRIC)

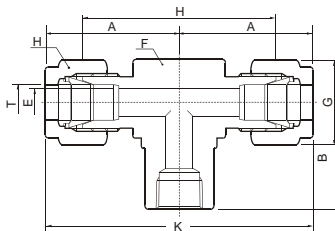
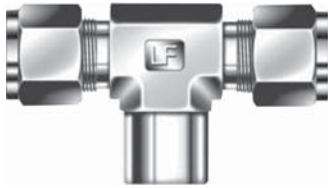
T TUBE O.D.	PT-NPT MALE PIPE SIZE	CATALOG NUMBER	A	D	E	F	G	H	J	K	N.W.(G)
6	1/8	FRT-6-1	27.0	15.3	5	14	14	19.6	38.6	46.0	70.1
6	1/4	FRT-6-2	29.8	15.3	5	17	14	22.4	44.7	52.1	102.2
6	3/8	FRT-6-3	34.6	15.3	5	22	14	27.2	58.7	57.0	
6	1/2	FRT-6-4	37.7	15.3	5	27	14	30.2	41.4	66.1	
8	1/8	FRT-8-1	29.9	16.2	6	14	17	22.4	41.4	48.9	
8	1/4	FRT-8-2	30.6	16.2	6	17	17	23.1	45.5	53.0	104.8
8	3/8	FRT-8-3	34.0	16.2	6	22	17	26.5	54.2	61.7	
8	1/2	FRT-8-4	36.8	16.2	6	27	17	29.3	61.0	68.5	
10	1/8	FRT-10-1	31.5	17.2	8	17	19	23.9	42.9	50.5	
10	1/4	FRT-10-2	33.5	17.2	8	17	19	25.9	48.3	55.9	
10	3/8	FRT-10-3	37.5	17.2	8	2	19	29.9	57.6	65.2	184.8
10	1/2	FRT-10-4	40.3	17.2	8	27	19	32.7	64.4	72.0	
12	1/8	FRT-12-1	36.0	22.8	10	22	22	25.9	48.3	58.4	
12	1/4	FRT-12-2	36.0	22.8	10	22	22	25.9	48.3	58.4	
12	3/8	FRT-12-3	36.0	22.8	10	22	22	25.9	48.3	58.4	
12	1/2	FRT-12-4	38.8	22.8	10	27	22	28.7	57.1	67.2	
12	3/4	FRT-12-6	41.8	22.8	10	32	22	31.7	64.1	74.2	
14	3/8	FRT-14-3	39.8	24.4	10	27	27	29.7	55.1	65.2	
14	1/2	FRT-14-4	39.8	24.4	10	27	27	29.7	58.1	68.2	
14	3/4	FRT-14-6	42.8	24.4	10	32	27	32.7	65.1	75.2	
15	3/8	FRT-15-3	39.8	24.4	11	27	27	29.7	55.1	65.2	
15	1/2	FRT-15-4	39.8	24.4	11	27	27	29.7	58.1	68.2	
15	3/4	FRT-15-6	42.8	24.4	11	32	27	32.7	65.1	75.2	
16	3/8	FRT-16-3	39.8	24.4	12	27	27	29.7	55.1	65.2	
16	1/2	FRT-16-4	39.8	24.4	12	27	27	29.7	58.1	65.2	
16	3/4	FRT-16-6	42.8	24.4	12	32	27	32.7	65.1	75.2	
18	3/8	FRT-18-3	40.5	24.4	14	27	30	30.4	55.8	65.9	
18	1/2	FRT-18-4	40.5	24.4	14	27	30	30.4	58.8	68.9	
18	3/4	FRT-18-6	43.5	24.4	14	32	30	33.4	65.8	75.9	
20	1/2	FRT-20-4	43.5	26.0	16	32	32	33.4	64.8	74.9	
20	3/4	FRT-20-6	46.5	26.0	16	32	32	36.4	71.8	81.9	
22	1/2	FRT-22-4	43.5	26.0	18	32	32	33.4	64.8	74.9	
22	3/4	FRT-22-6	46.5	26.0	18	32	32	36.4	71.8	81.9	
25	1/2	FRT-25-4	47.5	31.3	21	34	38	35.2	68.6	80.9	
25	3/4	FRT-25-6	50.5	31.3	21	34	38	38.2	75.6	87.9	

(FRACTIONAL)

1/4	1/8	FRT-02-1	27.0	15.2	5	14	14	19.6	38.6	46.0	66.2
1/4	1/4	FRT-02-2	29.8	15.2	5	17	14	22.4	44.7	52.1	97.2
1/4	3/8	FRT-02-3	34.6	15.2	5	22	14	27.2	49.6	57.0	
1/4	1/2	FRT-02-4	37.7	15.2	5	27	14	30.2	58.7	66.1	
3/8	1/8	FRT-03-1	30.5	16.8	7	17	17	23.1	42.9	50.3	
3/8	1/4	FRT-03-2	31.2	16.8	7	17	17	24.0	46.4	53.6	103.8
3/8	3/8	FRT-03-3	33.3	16.8	7	22	17	26.0	48.4	55.7	
3/8	1/2	FRT-03-4	36.1	16.8	7	27	17	28.7	57.1	64.2	
1/2	1/8	FRT-04-1	36.0	22.8	10	22	22	25.9	48.3	58.4	
1/2	1/4	FRT-04-2	36.0	22.8	10	22	22	25.9	48.3	57.4	
1/2	3/8	FRT-04-3	36.0	22.8	10	22	22	26.0	48.3	58.4	
1/2	1/2	FRT-04-4	38.8	22.8	10	27	22	28.7	57.1	67.2	346.9
1/2	3/4	FRT-04-6	41.8	22.8	10	32	22	31.7	64.1	74.2	
3/4	1/2	FRT-06-4	39.9	24.4	15	27	30	29.7	51.8	68.3	
3/4	3/4	FRT-06-6	44.7	24.4	15	32	30	34.5	66.2	76.4	
1	3/4	FRT-08-6	50.5	31.3	21	34	38	38.2	75.6	87.9	

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

FBT



FEMALE BRANCH TEE  
(METRIC)

T TUBE O.D.	PT-NPT MALE PIPE SIZE	CATALOG NUMBER	A	B	D	E	F	G	H	K	N.W.(G)
6	1/8	FBT-6-1	27.0	19.1	15.3	5	14	14	39.2	54.0	70.2
6	1/4	FBT-6-2	29.8	22.4	15.3	5	17	14	44.8	59.6	93.8
6	3/8	FBT-6-3	34.6	22.4	15.3	5	22	14	54.4	69.2	
6	1/2	FBT-6-4	37.7	28.4	15.3	5	27	14	60.6	74.6	
8	1/8	FBT-8-1	29.3	20.0	16.2	6	14	17	43.6	58.6	
8	1/4	FBT-8-2	30.6	22.4	16.2	6	17	17	46.2	61.2	99.5
8	3/8	FBT-8-3	34.0	27.7	16.2	6	22	17	53.0	68.0	
8	1/2	FBT-8-4	36.8	31.7	16.2	6	27	17	58.6	73.6	
10	1/8	FBT-10-1	31.5	19.0	17.2	8	17	19	47.8	63.0	116.2
10	1/4	FBT-10-2	33.5	22.4	17.2	8	17	19	51.8	67.0	117.7
10	3/8	FBT-10-3	37.5	27.7	17.2	8	22	19	59.8	75.0	144.3
10	1/2	FBT-10-4	40.3	31.7	17.2	8	27	19	65.4	80.6	
12	1/8	FBT-12-1	36.0	22.4	22.8	10	22	22	51.8	72.0	
12	1/4	FBT-12-2	36.0	22.4	22.8	10	22	22	51.8	72.0	159.9
12	3/8	FBT-12-3	36.0	22.4	22.8	10	22	22	51.8	72.0	
12	1/2	FBT-12-4	38.8	28.4	22.8	10	27	22	57.4	77.6	334.4
12	3/4	FBT-12-6	41.8	32.4	22.8	10	32	22	63.4	83.6	
14	3/8	FBT-14-3	39.8	25.4	24.4	10	27	27	59.4	79.6	
14	1/2	FBT-14-4	39.8	28.4	24.4	10	27	27	59.4	79.6	
14	3/4	FBT-14-6	42.8	32.4	24.4	10	32	27	65.4	85.6	
15	3/8	FBT-15-3	39.8	25.4	24.4	11	27	27	59.4	79.6	
15	1/2	FBT-15-4	39.8	28.4	24.4	11	27	27	59.4	79.6	
15	3/4	FBT-15-6	42.8	32.4	24.4	11	32	27	65.4	85.6	
16	3/8	FBT-16-3	39.8	25.4	24.4	12	27	27	59.4	79.6	
16	1/2	FBT-16-4	39.8	28.4	24.4	12	27	27	59.4	79.6	
16	3/4	FBT-16-6	42.8	32.4	24.4	12	32	27	65.4	85.6	
18	3/8	FBT-18-3	40.5	25.4	24.4	14	27	30	60.8	81.0	
18	1/2	FBT-18-4	40.5	28.4	24.4	14	27	30	60.8	81.0	
18	3/4	FBT-18-6	43.5	32.4	24.4	14	32	30	66.8	87.0	
20	1/2	FBT-20-4	43.5	31.4	26.0	16	32	32	66.8	87.0	
20	3/4	FBT-20-6	46.5	35.4	26.0	16	32	32	72.8	93.0	
22	1/2	FBT-22-4	43.5	31.4	26.0	18	32	32	66.8	87.0	
22	3/4	FBT-22-6	46.5	35.4	26.0	18	32	32	72.8	93.0	
25	1/2	FBT-25-4	47.5	33.4	31.3	21	34	38	71.0	95.0	
25	3/4	FBT-25-6	50.5	37.4	31.3	21	34	38	76.4	101.0	

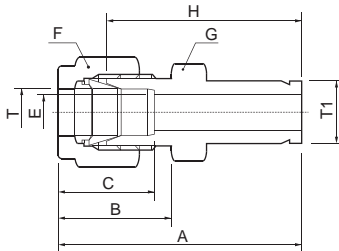
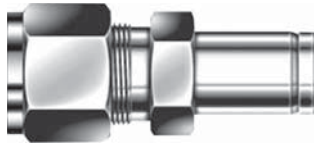
(FRACTIONAL)

1/4	1/8	FBT-02-1	27.0	19.1	15.2	5	14	14	39.2	54.0	70.6
1/4	1/4	FBT-02-2	29.8	22.4	15.2	5	17	14	44.8	59.6	92.5
1/4	3/8	FBT-02-3	34.6	22.4	15.2	5	22	14	54.4	69.2	
1/4	1/2	FBT-02-4	37.7	28.4	15.2	5	27	14	60.6	74.6	
3/8	1/8	FBT-03-1	30.5	19.8	16.8	7	17	17	46.2	61.0	
3/8	1/4	FBT-03-2	31.2	22.4	16.8	7	17	17	48.0	62.4	103
3/8	3/8	FBT-03-3	33.3	22.4	16.8	7	22	17	52.0	66.6	162
3/8	1/2	FBT-03-4	36.1	28.4	16.8	7	27	17	57.4	72.2	294.4
1/2	1/8	FBT-04-1	36.0	22.4	22.8	10	22	22	51.8	72.0	
1/2	1/4	FBT-04-2	36.0	22.4	22.8	10	22	22	51.8	72.0	154.3
1/2	3/8	FBT-04-3	36.0	22.4	22.8	10	22	22	51.8	72.0	
1/2	1/2	FBT-04-4	38.8	28.4	22.8	10	27	22	57.4	77.6	318.4
1/2	3/4	FBT-04-6	41.8	32.4	22.8	10	32	22	63.4	83.6	
3/4	1/2	FBT-06-4	39.9	28.4	24.4	15	27	30	59.4	79.8	
3/4	3/4	FBT-06-6	44.7	31.7	24.4	15	32	30	69.0	89.4	
1	3/4	FBT-08-6	49.0	31.7	31.2	21	34	38	73.6	98.0	

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**REDUCER**  
(METRIC) Connects metric tube to fractional LOCK-FIT port

ODTA



T TUBE O.D.	T1 TUBE	CATALOG NUMBER	A	B	C	E	F	G	H	N.W.(G)
2	3.17	ODTA-2-01	33.5	15.3	12.9	1.7	12	12	26.9	
3	3.17	ODTA-3-01	33.5	15.3	12.9	2.0	12	12	26.9	
3	6.35	ODTA-3-02	36.1	15.3	12.9	2.4	12	12	29.5	18.92
4	3.17	ODTA-4-01	37.1	16.1	13.7	2.4	12	12	30.5	
4	6.35	ODTA-4-02	36.9	17.7	15.3	2.0	14	14	29.5	
6	3.17	ODTA-6-01	39.2	17.7	15.3	4.8	14	14	31.8	21.7
6	6.35	ODTA-6-02	39.9	17.7	15.3	4.8	14	14	32.5	23.3
6	9.52	ODTA-6-03	40.7	17.7	15.3	4.8	14	14	33.3	
6	12.7	ODTA-6-04	46.3	17.7	15.3	4.8	14	14	38.9	37.1
8	9.52	ODTA-8-03	42.0	18.6	16.2	6.4	15	16	34.5	31.1
8	12.7	ODTA-8-04	47.6	18.6	16.2	6.4	15	16	40.1	
10	9.52	ODTA-10-03	44.2	19.5	17.2	7.1	18	19	36.6	
10	12.7	ODTA-10-04	49.8	19.5	17.2	7.9	18	19	42.2	
12	12.7	ODTA-12-04	52.3	22.0	22.8	9.5	22	22	42.2	
12	19.05	ODTA-12-06	53.8	22.0	22.8	9.5	22	22	43.7	
18	19.05	ODTA-18-06	56.1	22.0	24.4	15.1	27	30	46.0	
18	25.4	ODTA-18-08	62.4	22.0	24.4	15.1	27	30	52.3	
25	25.4	ODTA-25-08	69.5	26.5	31.3	20.2	35	38	57.2	

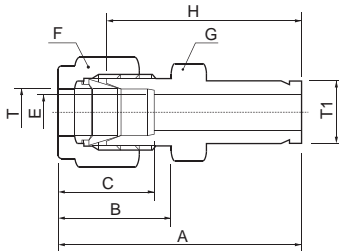
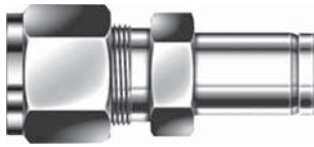
(METRIC) Connects metric tube to fractional LOCK-FIT port

2	3	ODTA-2-3	35.3	15.3	12.9	1.7	12	12	26.9	
3	4	ODTA-3-4	35.0	15.3	12.9	2.4	12	12	28.4	
3	6	ODTA-3-6	36.1	15.3	12.9	2.4	12	12	29.5	18.52
3	10	ODTA-3-10	38.4	15.3	12.9	2.4	12	12	31.8	
4	6	ODTA-4-6	37.1	16.1	13.7	2.4	12	12	30.5	
6	3	ODTA-6-3	36.9	17.7	15.3	1.8	14	14	29.5	
6	8	ODTA-6-8	39.9	17.7	15.3	4.8	14	14	32.5	
6	10	ODTA-6-10	40.7	17.7	15.3	4.8	14	14	33.3	28.4
6	12	ODTA-6-12	46.3	17.7	15.3	4.8	14	14	38.9	
8	6	ODTA-8-6	40.3	18.6	16.2	4.6	15	16	32.8	
8	10	ODTA-8-10	42.0	18.6	16.2	6.4	15	16	34.5	
8	12	ODTA-8-12	47.6	18.6	16.2	6.4	15	16	40.1	
10	6	ODTA-10-6	42.4	19.5	17.2	4.6	18	19	34.8	39.7
10	12	ODTA-10-12	49.8	19.5	17.2	7.9	18	19	42.2	
10	15	ODTA-10-15	51.3	19.5	17.2	7.9	18	19	43.7	
10	18	ODTA-10-18	51.3	19.5	17.2	7.9	19	19	43.7	
12	6	ODTA-12-6	44.9	22.0	22.8	4.6	22	22	34.8	
12	10	ODTA-12-10	46.7	22.0	22.8	7.7	22	22	36.6	
12	16	ODTA-12-16	53.8	22.0	22.8	9.5	22	22	43.7	
12	18	ODTA-12-18	53.8	22.0	22.8	9.5	22	22	43.7	
12	20	ODTA-12-20	56.1	22.0	22.8	9.5	22	22	46.0	
12	22	ODTA-12-22	56.1	22.0	22.8	9.5	24	22	46.0	
12	25	ODTA-12-25	62.4	22.0	22.8	9.5	27	22	52.3	
16	12	ODTA-16-12	53.0	22.0	24.4	9.1	24	25	42.9	
18	12	ODTA-18-12	54.6	22.0	24.4	9.1	27	30	44.5	
18	16	ODTA-18-16	56.1	22.0	24.4	12.7	27	30	46.0	
18	20	ODTA-18-20	57.6	22.0	24.4	15.1	27	30	47.5	
18	22	ODTA-18-22	57.6	22.0	24.4	15.1	27	30	47.5	
18	25	ODTA-18-25	62.4	22.0	24.4	15.1	27	30	52.3	
20	16	ODTA-20-16	57.9	22.0	26.0	12.7	30	32	47.8	
20	18	ODTA-20-18	57.9	22.0	26.0	13.9	30	32	47.8	
20	22	ODTA-20-22	59.4	22.0	26.0	15.8	30	32	49.3	
20	25	ODTA-20-25	64.2	22.0	26.0	15.8	30	32	54.1	
22	18	ODTA-22-18	57.9	22.0	26.0	13.9	30	32	47.8	
22	20	ODTA-22-20	59.4	22.0	26.0	15.1	30	32	49.3	
22	25	ODTA-22-25	64.2	22.0	26.0	18.3	30	32	54.1	
25	18	ODTA-25-18	63.1	26.5	31.3	13.9	35	38	50.8	
25	20	ODTA-25-20	64.6	26.5	31.3	15.1	35	38	52.3	

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

**REDUCER**  
(METRIC) Connects metric tube to fractional LOCK-FIT port

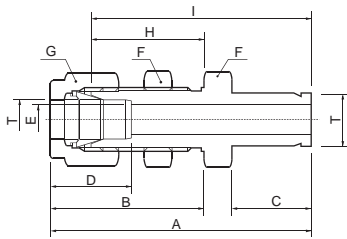
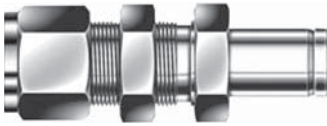
ODTA



T TUBE O.D.	T1 TUBE O.D.	CATALOG NUMBER	A	B	C	E	F	G	H	N.W.(G)
1/16	3.17	ODTA-005-01	29.21	10.92	8.63	1.27	7.93	7.93	25.40	
1/16	6.35	ODTA-005-02	31.49	10.92	8.63	1.27	7.93	7.93	27.68	
1/8	1.58	ODTA-01-015	28.95	15.24	12.70	1.76	11.11	11.11	22.35	
1/8	3.17	ODTA-01-01	33.52	15.24	12.70	2.03	11.11	11.11	26.92	16.24
1/8	4.76	ODTA-01-015	34.29	15.24	12.70	2.28	11.11	11.11	27.68	
1/8	6.35	ODTA-01-02	36.06	15.24	12.70	2.28	11.11	11.11	29.46	19.24
1/8	9.52	ODTA-01-03	37.59	15.24	12.70	2.28	11.11	11.11	30.98	
1/8	12.7	ODTA-01-04	44.19	15.24	12.70	2.28	14.28	11.11	37.59	
3/16	3.17	ODTA-015-01	34.79	16.00	13.71	2.03	11.11	12.70	28.19	
3/16	6.35	ODTA-015-02	37.08	16.00	13.71	3.04	11.11	12.70	30.48	
1/4	3.17	ODTA-02-01	36.83	17.78	15.24	2.03	12.70	14.28	29.46	
1/4	4.76	ODTA-02-015	37.59	17.78	15.24	3.04	12.70	14.28	30.22	
1/4	6.35	ODTA-02-02	39.11	17.78	15.24	4.82	12.70	14.28	31.75	22.9
1/4	7.93	ODTA-02-025	39.87	17.78	15.24	4.82	12.70	14.28	32.51	
1/4	9.52	ODTA-02-03	40.64	17.78	15.24	4.82	12.70	14.28	33.27	27.1
1/4	12.7	ODTA-01-04	46.22	17.78	15.24	4.82	14.28	14.28	38.86	
1/4	15.87	ODTA-02-05	48.00	17.78	15.24	4.82	17.46	14.28	40.64	
1/4	19.05	ODTA-02-06	47.75	17.78	15.24	4.82	20.64	14.28	40.38	
5/16	9.52	ODTA-025-03	41.91	18.54	16.25	6.35	14.28	15.87	34.54	
5/16	12.7	ODTA-025-04	47.49	18.54	16.25	6.35	14.28	15.87	40.13	
3/8	6.35	ODTA-03-02	41.40	19.30	16.76	4.82	15.87	17.46	34.03	
3/8	9.52	ODTA-03-03	43.18	19.30	16.76	7.11	15.87	17.46	35.81	36.3
3/8	12.7	ODTA-03-04	48.51	19.30	16.76	7.11	15.87	17.46	41.14	38.8
3/8	15.87	ODTA-03-05	50.29	19.30	16.76	7.11	17.46	17.46	42.92	
3/8	19.05	ODTA-03-06	50.29	19.30	16.76	7.11	20.64	17.46	42.92	
1/2	6.35	ODTA-04-02	44.95	21.84	22.86	4.82	20.64	22.22	34.79	54.8
1/2	9.52	ODTA-04-03	46.73	21.84	22.86	7.11	20.64	22.22	36.57	
1/2	12.7	ODTA-04-04	52.32	21.84	22.86	9.90	20.64	22.22	42.16	58.2
1/2	15.87	ODTA-04-05	53.84	21.84	22.86	10.41	20.64	22.22	43.68	
1/2	19.05	ODTA-04-06	53.84	21.84	22.86	10.41	20.64	22.22	43.68	98.7
1/2	25.4	ODTA-04-08	60.19	21.84	22.86	10.41	26.98	22.22	50.03	
5/8	19.05	ODTA-05-06	54.61	21.84	24.38	12.70	23.81	25.40	44.45	
5/8	22.22	ODTA-05-07	56.13	21.84	24.38	12.70	23.81	25.40	45.97	
5/8	25.4	ODTA-05-08	60.96	21.84	24.38	12.70	26.98	25.40	50.80	
3/4	12.7	ODTA-06-04	54.61	21.84	24.38	9.90	26.98	28.57	44.45	
3/4	25.4	ODTA-06-08	62.48	21.84	24.38	15.74	26.98	28.57	52.32	
1	9.52	ODTA-08-03	80.51	26.41	31.24	22.35	34.93	38.10	68.32	
1	12.7	ODTA-08-04	89.15	26.41	31.24	22.35	41.28	38.10	76.96	
1	19.05	ODTA-08-06	112.52	26.41	31.24	22.35	53.98	38.10	100.33	

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**BODTA**

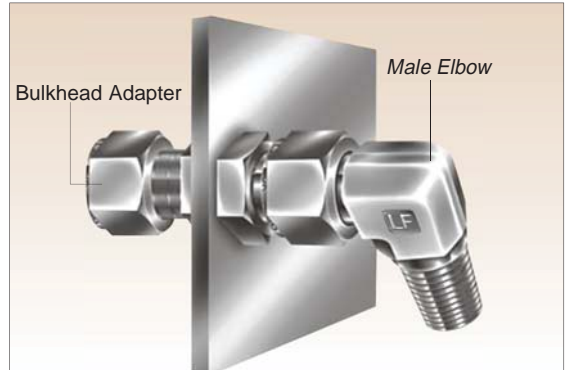


**BULKHEAD ADAPTER**

Connects fractional tube to fractional LOCK-FIT port

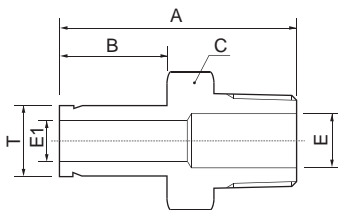
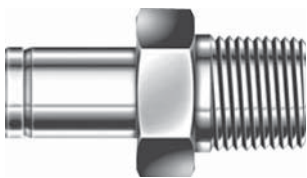
CATALOG TUBE NUMBER	A	B	C	D	E	F	G	H	I	PANEL HOLE DRILL	MAX PANEL THICK
1/8 BODTA-01-01	49.53	31.24	13.45	12.70	2.03	12.70	11.11	24.63	42.92	8.33	12.70
1/4 BODTA-02-02	55.88	33.52	15.74	15.24	4.82	15.87	14.28	26.16	48.51	11.50	10.16
3/8 BODTA-03-03	61.21	36.83	17.50	16.76	7.11	19.05	17.46	29.46	53.84	14.68	11.17
1/2 BODTA-04-04	72.89	41.91	23.11	22.86	10.41	23.81	22.22	31.75	62.73	19.44	12.70
5/8 BODTA-05-05	75.18	42.67	24.70	24.38	12.70	26.98	25.40	32.51	65.02	22.62	12.70
1 BODTA-08-08	100.33	57.40	31.70	31.24	20.32	41.28	38.10	45.21	88.13	33.73	19.05

The bulkhead adapter is useful for panel construction when you need to set a direction.



Set a direction

**TAM**



**MALE ADAPTER**

Connects metric LOCK-FIT port to female ISO tapered thread

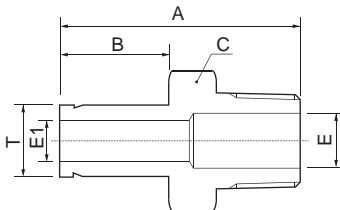
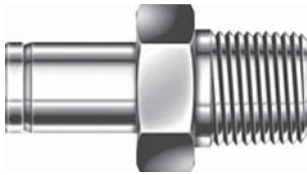
T TUBE	PT-NPT FEMALE PIPE SIZE	CATALOG NUMBER	A	B	C	E	E1	N.W.(G)
3	1/8	TAM-3-1	29.4	13.15	12	4.0	1.8	10.2
6	1/8	TAM-6-1	32.8	15.75	12	4.6	4.6	11.4
6	1/4	TAM-6-2	38.1	15.75	14	4.6	4.6	
8	1/4	TAM-8-2	39.1	16.50	14	6.3	6.3	22.1
10	1/4	TAM-10-2	39.9	17.50	14	7.7	7.7	19.7
10	3/8	TAM-10-3	40.6	17.50	17	7.7	7.7	
10	1/2	TAM-10-4	45.2	17.50	22	11.9	7.7	62.5
12	1/4	TAM-12-2	46.5	23.50	14	7.1	9.1	
12	3/8	TAM-12-3	46.5	23.50	17	9.1	9.1	
12	1/2	TAM-12-4	51.8	23.50	22	11.9	9.1	68.1
18	1/2	TAM-18-4	53.2	24.90	22	11.9	13.9	
18	3/4	TAM-18-6	53.2	24.90	27	15.9	13.9	

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MALE ADAPTER

Connects fractional LOCK-FIT port to female PT(NPT) thread

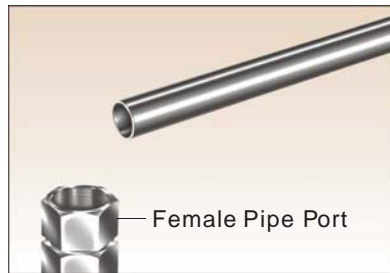
TAM



T TUBE O.D.	PT-NPT FEMALE PIPE SIZE	CATALOG NUMBER	A	B	C	E	E1	N.W.(G)
1/8	1/8	TAM-01-1	29.50	13.45	11.11	4.57	1.77	
1/8	1/4	TAM-01-2	34.80	13.45	14.28	7.11	1.77	
3/16	1/8	TAM-015-1	30.22	14.20	11.11	4.57	3.04	
3/16	1/4	TAM-015-2	35.56	14.20	14.28	7.11	3.04	
1/4	1/8	TAM-02-1	31.80	15.75	11.11	4.57	4.57	
1/4	1/4	TAM-02-2	37.08	15.75	14.28	7.11	4.57	19.7
1/4	3/8	TAM-02-3	37.84	15.75	17.46	10.41	4.57	
1/4	1/2	TAM-02-4	43.43	15.75	22.22	12.70	4.57	
5/16	1/8	TAM-025-1	32.76	16.80	11.11	4.57	6.35	
5/16	1/4	TAM-025-2	38.10	16.80	14.28	7.11	6.35	
3/8	1/8	TAM-03-1	33.50	17.50	11.11	4.57	7.11	
3/8	1/4	TAM-03-2	38.90	17.50	14.28	7.11	7.11	19.1
3/8	3/8	TAM-03-3	39.60	17.50	17.46	10.41	7.11	36.1
3/8	1/2	TAM-03-4	45.20	17.50	22.22	12.70	7.11	
1/2	1/4	TAM-04-2	44.50	23.20	14.28	7.11	9.90	
1/2	3/8	TAM-04-3	45.20	23.20	17.46	10.41	9.90	
1/2	1/2	TAM-04-4	50.50	23.20	22.22	12.70	9.90	70.4
5/8	3/8	TAM-05-3	47.40	24.70	17.46	10.41	12.70	
5/8	1/2	TAM-05-4	52.30	24.70	22.22	12.70	12.70	
5/8	3/4	TAM-05-6	52.30	24.70	26.98	18.28	12.70	
3/4	1/2	TAM-06-4	52.30	24.70	22.22	12.70	14.98	64.3
3/4	3/4	TAM-06-6	52.30	24.70	26.98	18.28	14.98	87.5
3/4	1	TAM-06-8	57.91	24.70	34.92	22.35	14.98	
7/8	3/4	TAM-07-6	54.30	26.70	26.98	18.28	17.27	
1	3/4	TAM-08-6	58.70	31.70	26.98	18.28	20.06	
1	1	TAM-08-8	66.00	31.70	34.92	22.35	20.06	

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LOCK-FIT Adapter eliminates alignment problems



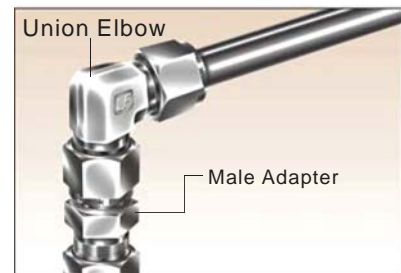
In the direction shown the female port is required to connect with tubing.



The male elbow is positioning in the wrong direction.

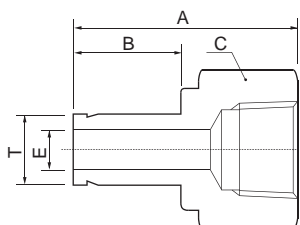
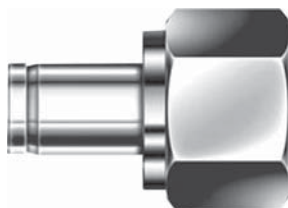


To eliminate the problem, use a male adapter into the female port.



Connect a union elbow to the adapter by tightening the LOCK-FIT port with a wrench while holding the elbow wrench pad in the desired direction

TAF



FEMALE ADAPTER

Connects fractional LOCK-FIT port to male PT(NPT) thread

T TUBE O.D.	PT-NPT FEMALE PIPE SIZE	CATALOG NUMBER	A	B	C	E	N.W.(G)
1/8	1/8	TAF-01-1	31.50	13.45	14.28	1.77	
1/8	1/4	TAF-01-2	35.30	13.45	19.05	1.77	
3/16	1/8	TAF-015-1	32.00	14.20	14.28	3.04	
3/16	1/4	TAF-015-2	35.81	14.20	19.05	3.04	
1/4	1/8	TAF-02-1	33.02	15.75	14.28	4.57	17.5
1/4	1/4	TAF-02-2	37.10	15.75	19.05	4.57	29.4
1/4	3/8	TAF-02-3	39.37	15.75	22.22	4.57	
1/4	1/2	TAF-02-4	45.50	15.75	26.98	4.57	
5/16	1/8	TAF-025-1	34.29	16.80	14.28	6.35	
5/16	1/4	TAF-025-2	37.59	16.80	19.05	6.35	
3/8	1/8	TAF-03-1	34.29	17.50	14.28	7.11	
3/8	1/4	TAF-03-2	38.10	17.50	19.05	7.11	
3/8	3/8	TAF-03-3	40.38	17.50	22.22	7.11	
3/8	1/2	TAF-03-4	46.73	17.50	26.98	7.11	
1/2	1/4	TAF-04-2	43.43	23.20	19.05	9.90	
1/2	3/8	TAF-04-3	45.46	23.20	22.22	9.90	
1/2	1/2	TAF-04-4	51.80	23.20	26.98	9.90	93.3
5/8	3/8	TAF-05-3	48.26	24.70	22.22	12.70	
5/8	1/2	TAF-05-4	53.84	24.70	26.98	12.70	
5/8	3/4	TAF-05-6	55.37	24.70	33.33	12.70	
3/4	1/2	TAF-06-4	52.83	24.70	26.98	14.98	
3/4	3/4	TAF-06-6	54.86	24.70	33.33	14.98	
3/4	1	TAF-06-8	58.42	24.70	41.27	14.98	
7/8	3/4	TAF-07-6	57.15	26.70	33.33	17.27	
1	3/4	TAF-08-6	60.70	31.70	33.33	20.06	
1	1	TAF-08-8	64.26	31.70	41.27	20.06	

Connects metric LOCK-FIT port to male PT(NPT) thread

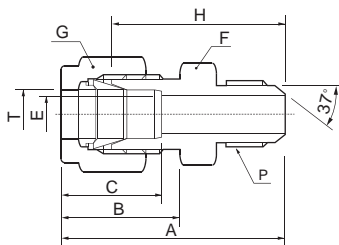
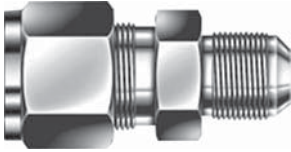
3	1/8	TAF-3-1	31.15	13.15	14	1.8	
6	1/8	TAF-6-1	32.50	15.75	14	4.6	
6	1/4	TAF-6-2	37.10	15.75	19	4.6	
8	1/4	TAF-8-2	37.60	16.50	19	6.3	
10	1/4	TAF-10-2	38.10	17.50	19	7.7	
10	3/8	TAF-10-3	40.10	17.50	22	7.7	
10	1/2	TAF-10-4	46.50	17.50	27	7.7	86.2
12	1/4	TAF-12-2	43.70	23.50	19	9.1	
12	3/8	TAF-12-3	46.00	23.50	22	9.1	
12	1/2	TAF-12-4	52.30	23.50	27	9.1	91.2
18	3/4	TAF-18-6	54.80	24.90	32	13.9	

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

## AN UNION

Connects fractional tube to AN flare tube

## MCH

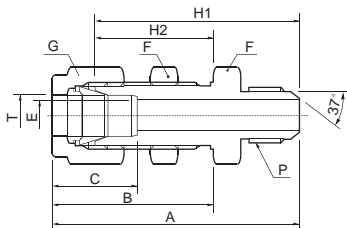
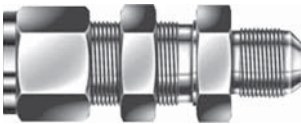


T TUBE O.D.	AN TUBE FLARE SIZE	CATALOG NUMBER	STRAIGHT THREAD P(U)	A	B	C	E	F	G	H
1/16	1/8	MCH-005-1U	5/16-24	27.17	10.92	8.63	1.27	11.11	7.93	23.36
1/8	1/8	MCH-01-1U	5/16-24	31.49	15.24	12.70	1.52	11.11	11.11	24.89
1/8	1/4	MCH-01-2U	7/16-20	35.05	15.24	12.70	2.28	12.70	11.11	28.44
1/4	1/4	MCH-02-2U	7/16-20	37.59	17.78	15.24	4.31	12.70	14.28	30.22
5/16	5/16	MCH-025-2.5U	1/2-20	38.35	18.54	16.25	5.84	14.28	15.87	30.98
3/8	1/4	MCH-03-2U	7/16-20	39.62	19.30	16.76	4.31	15.87	17.46	32.25
3/8	3/8	MCH-03-3U	9/16-18	39.62	19.30	16.76	7.11	15.87	17.46	32.25
1/2	1/2	MCH-04-4U	3/4-16	45.97	21.84	22.86	9.90	20.64	22.22	35.81
3/4	3/4	MCH-06-6U	1-1/16-12	53.34	21.84	24.38	15.49	28.58	28.58	43.18
1	1	MCH-08-8U	1-5/16-12	61.46	26.41	31.24	21.33	34.92	38.10	49.27

## AN BULKHEAD UNION

Connects fractional tube to AN flare tube

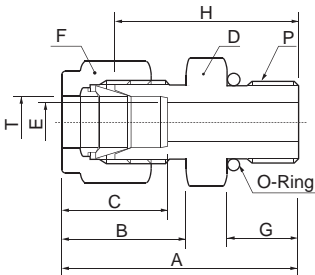
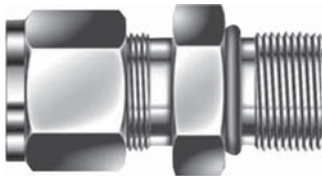
## BMCH



TUBE O.D.	AN TUBE FLARE SIZE	CATALOG NUMBER	STRAIGHT THREAD P(U)	A	B	C	E	F	G	H1	H2	PANEL HOLE DRILL	MAX PANEL THICK
1/8	1/8	BMCH-01-1U	5/16-24	47.45	31.23	13.71	1.77	12.70	11.11	40.85	24.63	8.33	12.70
1/4	1/4	BMCH-02-2U	7/16-20	53.84	33.52	15.24	4.31	15.87	14.28	46.48	26.16	11.50	10.16
3/8	3/8	BMCH-03-3U	9/16-18	57.15	36.83	16.76	7.11	19.05	17.46	49.78	29.46	14.68	11.17
1/2	1/2	BMCH-04-4U	3/4-16	65.78	41.91	22.86	9.90	23.81	22.22	55.62	31.75	19.44	12.70
3/4	3/4	BMCH-06-6U	1-1/16-12	78.99	47.49	24.38	15.49	30.16	28.58	68.83	37.33	25.79	16.76
1	1	BMCH-08-8U	1-5/16-12	92.45	57.40	31.24	21.33	41.27	38.10	80.26	45.21	33.73	19.05

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MCS

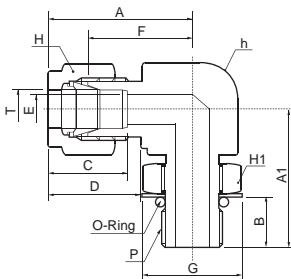
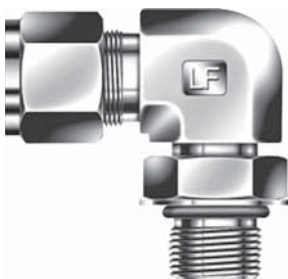


SAE MALE CONNECTOR  
Connects fractional tube to SAE straight thread boss

T TUBE O.D.	STRAIGHT THREAD P(U)	CATALOG NUMBER	A	B	C	D	E	F	G	H	O-Ring Uniform Size Number
1/8	5/16-24	MCS-01-1U	29.97	15.24	12.70	11.11	2.28	11.11	7.62	23.26	-902
1/4	7/16-20	MCS-02-2U	34.03	17.78	15.24	14.28	4.82	14.28	9.14	26.67	-904
1/4	9/16-18	MCS-02-3U	35.56	17.78	15.24	17.46	4.82	14.28	9.90	28.19	-906
1/4	3/4-16	MCS-02-4U	37.59	17.78	15.24	22.22	4.82	14.28	11.17	30.22	-908
1/4	7/8-14	MCS-02-5U	40.64	17.78	15.24	25.40	4.82	14.28	12.70	33.27	-910
5/16	1/2-20	MCS-025-5U	34.79	18.54	16.25	15.87	5.84	15.87	9.14	27.43	-905
3/8	7/16-20	MCS-03-2U	35.56	19.30	16.76	15.87	5.08	17.46	9.14	28.19	-904
3/8	9/16-18	MCS-03-3U	37.08	19.30	16.76	17.46	7.11	17.46	9.90	29.71	-906
3/8	3/4-16	MCS-03-4U	39.11	19.30	16.76	22.22	7.11	17.46	11.17	31.75	-908
3/8	7/8-14	MCS-03-5U	42.16	19.30	16.76	25.40	7.11	17.46	12.70	34.79	-910
1/2	9/16-18	MCS-04-3U	39.11	21.84	22.86	20.64	7.11	22.22	9.90	28.95	-906
1/2	3/4-16	MCS-04-4U	41.91	21.84	22.86	22.22	10.41	22.22	11.17	31.75	-908
1/2	7/8-14	MCS-04-5U	44.95	21.84	22.86	25.40	10.41	22.22	12.70	34.79	-910
1/2	1-1/16-12	MCS-04-6U	49.02	21.84	22.86	31.75	10.41	22.22	14.98	38.86	-912
5/8	3/4-16	MCS-05-4U	41.91	21.84	24.38	23.81	10.66	25.40	11.17	31.75	-908
5/8	7/8-14	MCS-05-5U	45.21	21.84	24.38	25.40	12.70	25.40	12.70	35.05	-910
3/4	3/4-16	MCS-06-4U	45.97	21.84	24.38	26.98	10.66	28.57	11.17	35.81	-908
3/4	1-1/16-12	MCS-06-6U	49.02	21.84	24.38	31.75	15.74	28.57	14.98	38.86	-912
7/8	1-3/16-12	MCS-07-7U	49.02	21.84	25.90	34.92	18.28	31.75	14.98	38.86	-914
1	1-1/16-12	MCS-08-6U	53.34	26.41	31.24	34.92	16.76	38.10	14.98	41.14	-912
1	1-5/16-12	MCS-08-8U	54.35	26.41	31.24	38.10	22.35	38.10	14.98	42.16	-916

SAE MALE ELBOW  
Connects fractional tube to SAE straight thread boss

MES



T TUBE O.D.	STRAIGHT THREAD P(U)	CATALOG NUMBER	A	A1	B	C	D	E	F	G	h	H	H1	O-Ring Uniform Size Number
1/4	7/16-20	MES-02-2U	28.44	28.44	9.90	15.24	17.78	4.82	21.08	16.51	12.70	14.28	14.28	-904
5/16	1/2-20	MES-025-2.5	30.22	29.46	9.90	16.25	18.54	5.84	22.86	18.28	14.28	15.87	15.87	-905
3/8	9/16-18	MES-03-3	32.00	32.25	11.17	16.76	19.30	7.11	24.63	20.06	15.87	17.46	17.46	-906
3/8	3/4-16	MES-03-4	34.79	37.84	12.70	16.76	19.30	7.11	27.43	25.65	20.64	17.46	22.22	-908
1/2	3/4-16	MES-04-4	37.59	37.84	12.70	22.86	21.84	10.41	27.43	25.65	20.64	22.22	22.22	-908
5/8	7/8-14	MES-05-4.5	39.62	43.43	14.22	24.38	21.84	12.70	29.46	29.46	25.40	25.40	25.40	-910
3/4	1-3/16-12	MES-07-7	43.18	50.54	16.76	25.90	21.84	18.28	33.02	40.38	31.75	31.75	34.92	-914
7/8	1-1/16-12	MES-06-6	41.40	48.76	16.76	24.38	21.84	15.74	31.24	36.57	26.98	28.57	31.75	-912
1	1-5/16-12	MES-08-8	50.54	53.59	16.76	31.24	26.41	22.35	38.35	43.94	34.92	38.10	38.10	-916

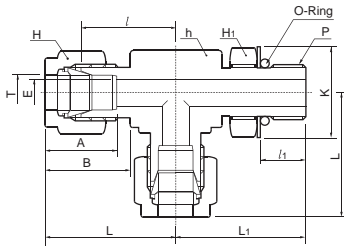
All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

RTS



POSITIONABLE SAE MALE RUN TEE  
Connects fractional tube to SAE straight thread boss

T TUBE O.D.	STRAIGHT THREAD P(U)	CATALOG NUMBER	A	B	E	h	H	H1	I	I <sub>1</sub>	L	L <sub>1</sub>	K	O-Ring Uniform Size Number
1/4	7/16-20	RTS-02-2U	15.24	17.78	4.82	12.70	14.28	14.28	21.08	9.90	28.44	28.44	16.51	-904
3/8	9/16-18	RTS-03-3U	16.76	19.30	7.11	15.87	17.46	17.46	24.63	11.17	32.00	32.25	20.06	-906
1/2	3/4-16	RTS-04-4U	22.86	21.84	10.41	20.64	22.22	22.22	27.43	12.70	37.59	37.84	25.65	-908
3/4	1-1/16-12	RTS-06-6U	24.38	21.84	15.74	26.98	28.58	31.75	31.24	16.76	41.40	48.76	36.57	-912
1	1-5/16-12	RTS-08-8U	31.24	26.41	22.35	34.92	38.10	38.10	38.35	16.76	50.54	50.54	43.94	-916



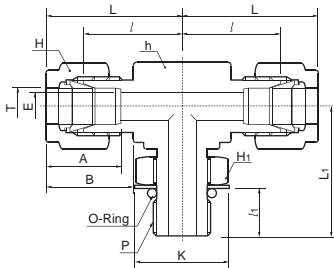
POSITIONABLE SAE MALE BRANCH TEE  
Connects fractional tube to SAE straight thread boss

BTS

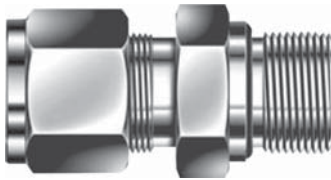


T TUBE O.D.	STRAIGHT THREAD P(U)	CATALOG NUMBER	A	B	E	h	H	H1	I	I <sub>1</sub>	L	L <sub>1</sub>	K	O-Ring Uniform Size Number
1/4	7/16-20	BTS-02-2U	15.24	17.78	4.82	12.70	14.28	14.28	21.08	9.90	28.44	28.44	16.51	-904
3/8	9/16-18	BTS-03-3U	16.76	19.30	7.11	15.87	17.46	17.46	24.63	11.17	32.00	32.25	20.06	-906
1/2	3/4-16	BTS-04-4U	22.86	21.84	10.41	20.64	22.22	22.22	27.43	12.70	37.59	37.84	25.65	-908
3/4	1-1/16-12	BTS-06-6U	24.38	21.84	15.74	26.98	28.58	31.75	31.24	16.76	41.40	48.76	36.57	-912
1	1-5/16-12	BTS-08-8U	31.24	26.41	22.35	34.92	38.10	38.10	38.35	16.76	50.54	53.59	43.94	-916

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.

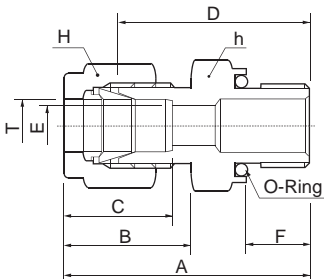


MCOS



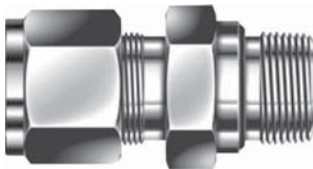
O-SEAL STRAIGHT THREAD CONNECTION  
Connects fractional tube to female straight thread

T TUBE O.D.	STRAIGHT THREAD T(U)	CATALOG NUMBER	A	B	C	D	E	F	G	H	O-Ring Uniform Size Number
1/8	5/16-20	MCOS-01-1U	32.76	15.24	12.70	14.28	2.28	11.11	26.16	8.63	-011
3/16	3/8-24	MCOS-015-1.5U	34.29	16.00	13.71	15.87	3.04	12.70	27.68	9.65	-012
1/4	7/16-20	MCOS-02-2U	38.35	17.78	15.24	19.05	4.82	14.28	30.98	10.41	-111
5/16	1/2-20	MCOS-025-2.5U	40.64	18.54	16.25	22.22	6.35	15.87	33.27	11.17	-112
3/8	9/16-18	MCOS-03-3U	42.41	19.30	16.76	23.81	7.11	17.46	35.05	11.93	-113
1/2	3/4-16	MCOS-04-4U	45.97	21.84	22.86	28.57	10.41	22.22	35.81	11.93	-116
3/4	1-1/16-12	MCOS-06-6U	52.32	21.84	24.38	38.10	15.74	28.58	42.16	14.22	-215
1	1-5/16-12	MCOS-08-8U	58.16	26.41	31.24	44.45	22.35	38.10	45.97	14.22	-219



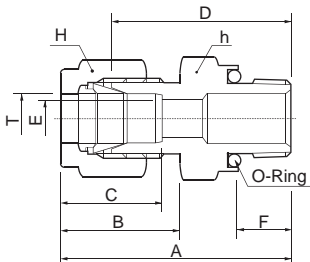
O-SEAL TAPERED THREAD CONNECTION  
Connects fractional tube to female straight thread

MCOP



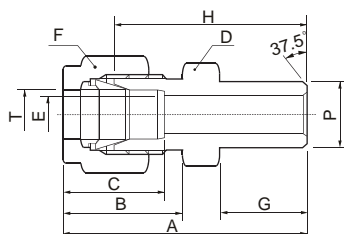
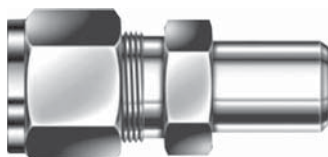
T TUBE O.D.	PT-NPT MALE PIPE SIZE	CATALOG NUMBER	A	B	C	D	E	F	G	H	O-Ring Uniform Size Number
1/8	1/8	MCOP-01-1	32.76	15.24	12.70	19.05	2.28	11.11	26.16	7.11	-111
1/4	1/8	MCOP-02-1	35.05	17.78	15.24	19.05	4.82	14.28	27.68	7.11	-111
1/4	1/4	MCOP-02-2	38.35	17.78	15.24	23.81	4.82	14.28	30.98	9.65	-113
3/8	1/4	MCOP-03-2	39.87	19.30	16.76	23.81	7.11	17.46	32.51	9.65	-113
3/8	3/8	MCOP-03-3	41.40	19.30	16.76	28.58	7.11	17.46	34.03	10.41	-116
3/8	1/2	MCOP-03-4	46.99	19.30	16.76	33.33	7.11	17.46	39.62	13.46	-212
1/2	1/2	MCOP-04-4	49.78	21.84	22.86	33.33	10.41	22.22	39.62	13.46	-212

All dimensions are in millimeters unless otherwise specified, only for reference subject to change.



**MALE PIPE WELD CONNECTOR**  
Connects fractional tube to pipe

ODBW



T TUBE O.D.	MALE PIPE SIZE P		CATALOG NUMBER	A	B	C	D	E	F	G	H	N.W.(G)
	Nom. inch	mm										
1/8	1/8	10.29	ODBW-01-1P	31.24	15.24	12.70	11.11	2.28	11.11	9.65	23.87	13
3/16	1/8	10.29	ODBW-015-1P	31.24	16.00	13.71	11.11	3.04	12.70	9.65	24.63	
1/4	1/8	10.29	ODBW-02-1P	32.76	17.78	15.24	12.70	4.82	14.28	9.65	25.40	
1/4	1/4	13.72	ODBW-02-2P	37.84	17.78	15.24	14.28	4.82	14.28	14.22	30.48	25.2
5/16	1/8	10.29	ODBW-025-1P	34.03	18.54	16.25	14.28	5.08	15.87	9.65	26.67	
5/16	1/4	13.72	ODBW-025-2P	38.60	18.54	16.25	14.28	6.35	15.87	14.22	31.24	
3/8	1/4	13.72	ODBW-03-2P	39.87	19.30	16.76	15.87	7.11	17.46	14.22	32.51	
3/8	3/8	17.15	ODBW-03-3P	39.87	19.30	16.76	17.46	7.11	17.46	14.22	32.51	41
3/8	1/2	21.34	ODBW-03-4P	43.23	19.30	16.76	22.22	7.11	17.46	11.05	38.86	84.6
1/2	3/8	17.15	ODBW-04-3P	43.43	21.84	22.86	20.64	10.41	22.22	14.22	33.27	
1/2	1/2	21.34	ODBW-04-4P	49.02	21.84	22.86	22.22	10.41	22.22	19.05	38.86	
1/2	3/4	26.67	ODBW-04-6P	50.54	21.84	22.86	26.98	10.41	22.22	19.05	40.38	
5/8	1/2	21.34	ODBW-05-4P	49.02	21.84	24.38	23.81	12.70	25.40	19.05	38.86	
3/4	3/4	26.67	ODBW-06-6P	50.54	21.84	24.38	26.98	15.74	28.58	19.05	40.38	
1	1	33.40	ODBW-08-8P	62.23	26.41	31.24	34.92	22.35	38.10	23.87	50.03	

Connects metric tube to pipe

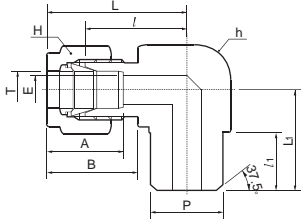
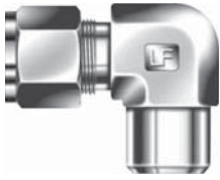
T TUBE O.D.	MALE PIPE SIZE P		CATALOG NUMBER	A	B	C	D	E	F	G	H	N.W.(G)
	Nom. inch	mm										
3	1/8	10.29	ODBW-3-1P	29.7	15.3	12.9	12	2.4	12	9.7	23.1	
4	1/8	10.29	ODBW-4-1P	30.7	16.1	13.7	12	2.4	12	9.7	24.1	
6	1/8	10.29	ODBW-6-1P	32.8	17.7	15.3	14	4.8	14	9.7	25.4	15.3
6	1/4	13.72	ODBW-6-2P	37.6	17.7	15.3	14	4.8	14	14.2	30.2	25.2
8	1/8	10.29	ODBW-8-1P	34.2	18.6	16.2	15	5.1	16	9.7	26.7	
8	1/4	13.72	ODBW-8-2P	38.7	18.6	16.2	15	6.4	16	14.2	31.2	27.6
8	1/2	21.34	ODBW-8-4P	44.8	18.6	16.2	22	6.4	16	19.0	37.3	79.5
10	1/4	13.72	ODBW-10-2P	40.9	19.5	17.2	18	7.1	19	14.2	33.3	
10	3/8	17.15	ODBW-10-3P	40.1	19.5	17.2	18	7.9	19	14.2	32.5	
10	1/2	21.34	ODBW-10-4P	45.7	19.5	17.2	22	7.9	19	19.0	38.1	
12	1/4	13.72	ODBW-12-2P	43.4	22.0	22.8	22	7.1	22	14.2	33.3	
12	3/8	17.15	ODBW-12-3P	43.4	22.0	22.8	22	9.5	22	14.2	33.3	
12	1/2	21.34	ODBW-12-4P	48.2	22.0	22.8	22	9.5	22	19.0	38.1	82.5
14	3/8	17.15	ODBW-14-3P	44.1	22.0	24.4	24	10.3	25	14.2	34.0	
15	1/2	21.34	ODBW-15-4P	49.0	22.0	24.4	24	11.9	25	19.0	38.9	
16	1/2	21.34	ODBW-16-4P	49.0	22.0	24.4	24	12.7	25	19.0	38.9	
18	1/2	21.34	ODBW-18-4P	50.5	22.0	24.4	27	13.5	30	19.0	40.4	84.5

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**LOCK-FIT WELDING INFORMATION**

LOCK-FIT weld ends are constructed to Schedule 80 wall or greater. The first step is to remove the nut and ferrules from the LOCK-FIT fitting to protect them from weld heat and cover the threads with a protective device (i.e. another nut or a plug) DP to protect the LOCK-FIT port threads & sealing surface from weld spatter. Only finger-tighten the protective device so that you can use it many times. The second step is to tack weld at four positions 90 apart to hold the fitting in place to ensure alignment and concentricity of the components, then complete the weld.

**EBW**

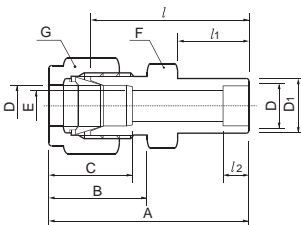
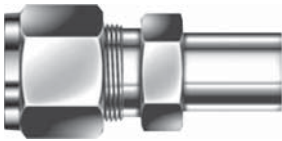


**TUBE SOCKET WELD ELBOW**  
Connects fractional tube to pipe

TUBE O.D.	MALE PIPE SIZE P		CATALOG NUMBER	A	B	E	h	H	l	l <sub>1</sub>	L	L <sub>1</sub>
	Nom. inch	O.D. mm										
1/8	1/8	10.29	EBW-01-1P	15.24	17.78	4.82	12.70	14.28	19.55	9.65	26.92	18.79
1/4	1/4	13.72	EBW-02-2P	15.24	17.78	4.82	12.70	14.28	19.55	14.22	26.92	23.36
3/8	1/4	13.72	EBW-03-2P	16.76	19.30	7.11	15.87	17.46	23.11	14.22	30.48	25.40
1/2	1/2	21.34	EBW-04-4P	22.86	21.84	10.41	20.64	22.22	25.90	19.05	36.06	33.02
3/4	3/4	26.67	EBW-06-6P	24.38	21.84	15.74	26.98	28.58	29.71	19.05	39.87	36.83

**TUBE SOCKET WELD CONNECTOR**  
Connects fractional tube

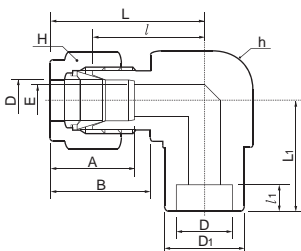
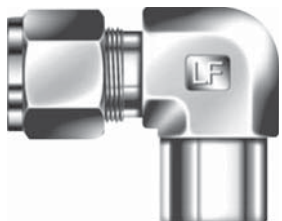
**DSW**



TUBE O.D. D	D1	CATALOG NUMBER	A	B	C	E	F	G	l	l <sub>1</sub>	l <sub>2</sub>	
												inch
1/8	3.17	7.87	DSW-01-1	28.95	15.24	12.70	2.28	11.11	11.11	22.35	8.63	6.35
1/4	6.35	11.17	DSW-02-2	33.52	17.78	15.24	4.82	12.70	14.28	26.16	10.41	7.87
3/8	9.52	15.74	DSW-03-3	37.59	19.30	16.76	7.11	15.87	17.46	30.22	11.93	9.65
1/2	12.70	19.05	DSW-04-4	41.14	21.84	22.86	10.41	20.64	22.22	30.98	11.93	12.70
3/4	19.05	26.67	DSW-06-6	43.43	21.84	24.38	15.74	26.98	28.58	33.27	11.93	14.22
1	25.04	33.27	DSW-08-8	52.57	26.41	31.24	22.35	34.92	38.10	40.38	14.22	19.05

**TUBE SOCKET WELD ELBOW**  
Connects fractional tube

**ESW**



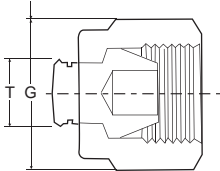
TUBE O.D. D	D1	CATALOG NUMBER	A	B	E	h	H	l	l <sub>1</sub>	L	L <sub>1</sub>	
												inch
1/4	6.35	12.07	ESW-02-2	15.24	17.78	4.82	12.70	14.28	19.55	7.87	26.92	19.55
3/8	9.52	15.74	ESW-03-3	16.76	19.30	7.11	15.87	17.46	23.11	9.65	30.48	23.11
1/2	12.70	20.57	ESW-04-4	22.86	21.84	10.41	20.64	22.22	25.90	12.70	36.06	25.90
3/4	19.05	26.92	ESW-06-6	24.38	21.84	15.74	26.98	28.58	29.71	14.22	39.87	29.71
1	25.40	35.05	ESW-08-8	31.24	26.41	22.35	34.93	38.10	36.83	19.05	49.02	36.83

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P



NUT HEX



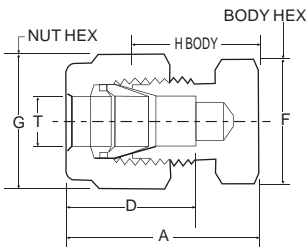
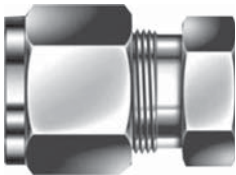
PLUG  
(METRIC)

(FRACTIONAL)

	CATALOG NUMBER	G	N.W.(G)	TUBE O.D.	CATALOG NUMBER	G
3	P-3	10	9	1/16	P-005	10.0
4	P-4	12	8.1	1/8	P-01	10.0
6	P-6	14	12.2	3/16	P-015	12.0
8	P-8	16	16.5	1/4	P-02	14.0
10	P-10	19	23.5	3/8	P-03	17.0
12	P-12	22	36.5	1/2	P-04	22.0
14	P-14	27		3/4	P-06	32.0
15	P-15	27		1	P-08	38.0
16	P-16	27	58.6			
18	P-18	30				
20	P-20	32				
22	P-22	32	71.2			
25	P-25	38	122.8			

CAP  
(METRIC)

C



TUBE O.D.	CATALOG NUMBER	A	D	F	G	H	N.W.(G)
2	C-2	20.1	12.9	12	12	13.5	
3	C-3	20.1	12.9	12	12	13.5	
4	C-4	21.3	13.7	12	12	14.7	16.48
6	C-6	23.1	15.3	14	14	15.7	22.6
8	C-8	24.5	16.2	14	17	17.0	31.4
10	C-10	26.6	17.2	19	19	19.0	38.5
12	C-12	29.1	22.8	22	22	19.0	53
14	C-14	29.9	24.4	24	27	19.8	88.9
15	C-15	29.9	24.4	24	27	19.8	
16	C-16	29.9	24.4	24	27	19.8	81.3
18	C-18	31.4	24.4	27	30	21.3	
20	C-20	34.0	26.0	30	32	23.9	
22	C-22	34.0	26.0	30	32	23.9	
25	C-25	38.5	31.3	35	41	26.2	175.4

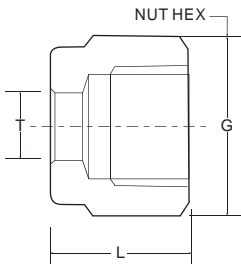
(FRACTIONAL)

1/16	C-005	15.0	8.6	10	10	11.2	
1/8	C-01	20.1	12.7	12	12	13.5	16.24
3/16	C-015	21.3	13.7	12	12	14.7	
1/4	C-02	23.4	15.2	14	14	17.0	22.6
3/8	C-03	25.7	16.3	17	17	18.3	26.6
1/2	C-04	29.2	22.8	22	22	19.1	61.4
3/4	C-06	31.5	24.4	27	30	21.3	101.8
1	C-08	38.4	31.2	35	38	26.2	173

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NUT  
(METRIC)

N



TUBE O.D.	CATALOG NUMBER	G	L	N.W.(G)
2	N-2	10	11.9	1.8
3	N-3	10	11.9	7.9
4	N-4	12	11.9	6.4
6	N-6	14	12.7	8.8
8	N-8	17	13.5	11.9
10	N-10	19	15.1	16.9
12	N-12	22	17.4	22.8
14	N-14	27	17.4	39.9
15	N-15	27	17.4	39.7
16	N-16	27	17.4	37.5
18	N-18	30	17.4	42.7
20	N-20	32	17.4	41.5
22	N-22	32	17.4	36.2
25	N-25	38	20.6	73.8

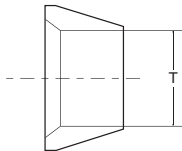
(FRACTIONAL)

1/16	N-005	10	7.9	1.9
1/8	N-01	10	11.9	8
3/16	N-015	12	11.9	6.2
1/4	N-02	14	12.7	8.8
3/8	N-03	17	13.5	11.8
1/2	N-04	22	17.5	22.9
5/8	N-05	27	17.5	38.1
3/4	N-06	30	17.5	42.3
1	N-08	38	20.6	71.4

FRONT FERRULE  
(METRIC)

(FRACTIONAL)

FF

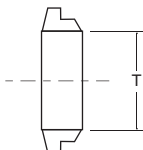


TUBE O.D.	CATALOG FFUMBER	N.W.(G)	TUBE O.D.	CATALOG FFUMBER	N.W.(G)
2	FF-2	0.2	1/16	FF-005	0.18
3	FF-3	0.4	1/8	FF-1	0.4
4	FF-4	0.5	3/16	FF-15	0.6
6	FF-6	0.8	1/4	FF-02	0.7
8	FF-8	1.0	3/8	FF-03	1.2
10	FF-10	1.2	1/2	FF-04	3.4
12	FF-12	3.4	5/8	FF-05	4.1
14	FF-14	3.6	3/4	FF-06	5.1
15	FF-15	3.8	1	FF-08	11.4
16	FF-16	3.9			
18	FF-18	4.6			
20	FF-20	5.3			
22	FF-22	5.9			
25	FF-25	11.4			

BACK FERRULE  
(METRIC)

(FRACTIONAL)

BF

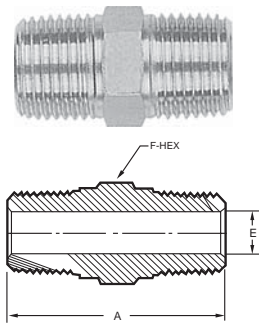


TUBE O.D.	CATALOG NUMBER	N.W.(G)	TUBE O.D.	CATALOG NUMBER	N.W.(G)
2	BF-2		1/16	BF-005	0.1
3	BF-3	0.22	1/8	BF-01	0.24
4	BF-4	0.29	3/16	BF-015	0.3
6	BF-6	0.3	1/4	BF-02	0.3
8	BF-8	0.5	3/8	BF-03	0.5
10	BF-10	0.5	1/2	BF-04	1.0
12	BF-12	0.9	5/8	BF-05	1.6
14	BF-14	1.3	3/4	BF-06	1.6
15	BF-15	1.4	1	BF-08	3.3
16	BF-16	1.6			
18	BF-18	1.7			
20	BF-20	2.2			
22	BF-22	2.1			
25	BF-25	3.5			

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### HEX NIPPLE (METRIC)

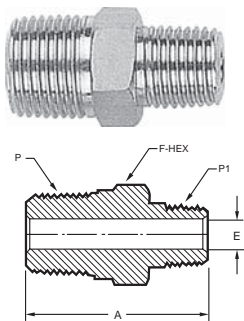
HN



P MALE PT/NPT SIZE	CATALOG NUMBER	A	E MIN OPENING	F HEX FLAT
1/8	HN-01	26	5	12
1/4	HN-02	32	6	14
3/8	HN-03	35	8	17
1/2	HN-04	42	10	22
3/4	HN-06	47	15	27
1	HN-08	56	21	35

### REDUCING HEX NIPPLE

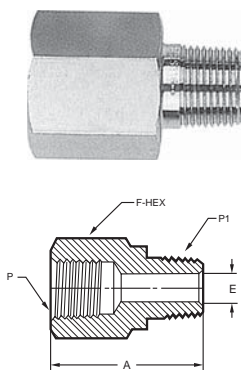
RHN



P MALE PT/NPT SIZE	P1 MALE PT/NPT SIZE	CATALOG NUMBER	A	E MIN OPENING	F HEX FLAT	N.W.(G)
1/4	1/8	RHN-02-01	29	5	14	21.3
3/8	1/8	RHN-03-01	31	5	17	31.2
3/8	1/4	RHN-03-02	32	6	17	39
1/2	1/8	RHN-04-01	35	5	22	58.6
1/2	1/4	RHN-04-02	38	6	22	58.9
1/2	3/8	RHN-04-03	39	8	22	66.9
3/4	1/4	RHN-06-02	41	6	27	
3/4	3/8	RHN-06-03	42	8	27	97.5
3/4	1/2	RHN-06-04	45	10	27	119.1
1	1/2	RHN-08-04	51	10	35	192.5
1	3/4	RHN-08-06	53	15	35	197.2

### REDUCING ADAPTOR

RA

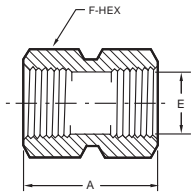
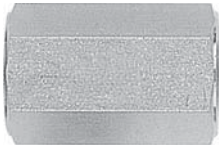


P MALE PT/NPT SIZE	P1 MALE PT/NPT SIZE	CATALOG NUMBER	A	E MIN OPENING	F HEX FLAT	N.W.(G)
1/8	1/8	RA-01-01	27	5	14	19.9
1/4	1/8	RA-02-01	30	5	17	27.4
1/4	1/4	RA-02-02	33	6	17	31.8
3/8	1/8	RA-03-01	30	5	22	39.7
3/8	1/4	RA-03-02	33	6	22	42.7
3/8	3/8	RA-03-03	34	8	22	48.3
1/2	1/8	RA-04-01	35	5	27	74.3
1/2	1/4	RA-04-02	38	6	27	73.7
1/2	3/8	RA-04-03	39	8	27	91
1/2	1/2	RA-04-04	42	10	27	94
3/4	1/4	RA-06-02	40	6	32	119
3/4	3/8	RA-06-03	41	8	32	
3/4	1/2	RA-06-04	44	10	32	
1	1/4	RA-08-02	43	6	40	
1	3/8	RA-08-03	44	8	40	
1	1/2	RA-08-04	47	10	40	
1	3/4	RA-08-06	49	15	40	

ALL DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS FOR REFERENCE ONLY, SUBJECT TO CHANGE.

HEX COUPLING

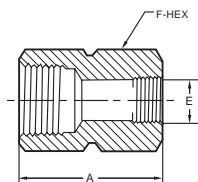
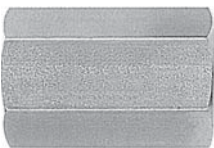
HCG



P FEMALE PT/NPT SIZE	CATALOG NUMBER	A	E MIN OPENING	F HEX FLAT	N.W.(G)
1/8	HCG-01	25	8	14	19.7
1/4	HCG-02	35	11	17	33.5
3/8	HCG-03	35	14	22	56.9
1/2	HCG-04	39	18	27	97.4
3/4	HCG-06	43	23	35	190.1
1	HCG-08	49	29	40	257.6

REDUCING HEX COUPLING

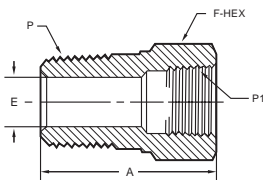
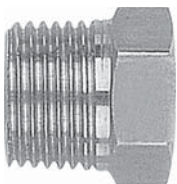
RHCG



FEMALE PT/NPT SIZE	FEMALE PT/NPT SIZE	CATALOG NUMBER	A	E	F	N.W.(G)
1/4	1/8	RHCG-02-01	32	8	17	31.9
3/8	1/8	RHCG-03-01	32	8	22	59.8
3/8	1/8	RHCG-03-02	35	11	22	67.1
1/2	1/8	RHCG-04-01	37	8	27	
1/2	1/4	RHCG-04-02	40	11	27	112.8
1/2	3/8	RHCG-04-03	41	14	27	102.1
3/4	1/4	RHCG-06-02	40	11	32	
3/4	3/8	RHCG-06-03	41	14	32	
3/4	1/2	RHCG-06-04	44	18	32	
1	1/2	RHCG-08-04	47	18	40	
1	3/4	RHCG-08-06	49	23	40	

REDUCING BUSHING

RB

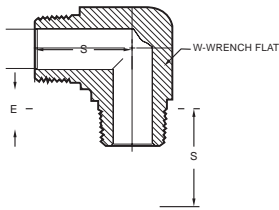


P MALE PT/NPT SIZE	P1 FEMALE PT/NPT SIZE	CATALOG NUMBER	A	E MIN OPENING	F HEX FLAT	N.W.(G)
1/4	1/8	RB-02-01	20	7	14	13.5
3/8	1/8	RB-03-01	25	7	17	
3/8	1/4	RB-03-02	25	11	17	31.1
1/2	1/8	RB-04-01	27	7	22	50.2
1/2	1/4	RB-04-02	27	11	22	45.1
1/2	3/8	RB-04-03	27	14	22	40.9
3/4	1/4	RB-06-02	30	11	27	85.8
3/4	3/8	RB-06-03	30	14	27	74.3
3/4	1/2	RB-06-04	30	19	27	61
1	1/4	RB-08-02	35	11	35	178.5
1	3/8	RB-08-03	35	14	35	
1	1/2	RB-08-04	35	19	35	164.9
1	3/4	RB-08-06	35	22	35	133.5

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## MALE ELBOW

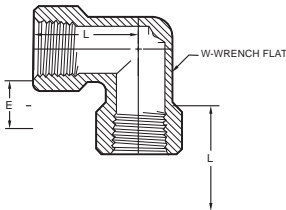
## MET



P MALE PT/NPT SIZE	CATALOG NUMBER	E	S	N.W.(G)
1/8	MET-01	5	19.8	11.8
1/4	MET-02	6	24.0	17
3/8	MET-03	8	26.8	25.5
1/2	MET-04	10	32.7	40
3/4	MET-06	15	37.5	69.5
1	MET-08	21	45.2	113

## ELBOW

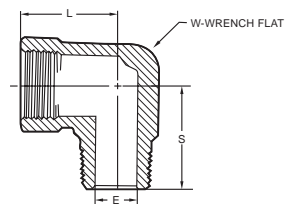
## E



P MALE PT/NPT SIZE	CATALOG NUMBER	E	L	N.W.(G)
1/8	E-01	8	20.0	40.4
1/4	E-02	11	24.8	63
3/8	E-03	14	27.7	130
1/2	E-04	18	35.5	203.1
3/4	E-06	23	42.5	326.2
1	E-08	29	47.2	

## STREET ELBOW

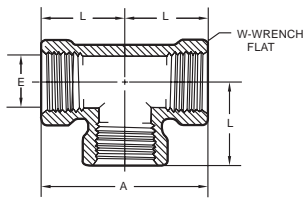
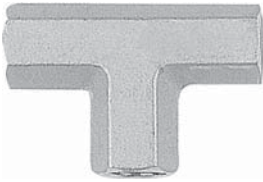
## SE



P MALE/FEMALE PT/NPT SIZE	CATALOG NUMBER	E	L	S	N.W.(G)
1/8	SE-01	5	20.0	21.0	35.6
1/4	SE-02	6	24.8	25.8	61.8
3/8	SE-03	8	27.7	29.7	130.2
1/2	SE-04	10	35.5	35.5	231.7
3/4	SE-06	15	42.5	40.5	
1	SE-08	21	47.2	45.2	

ALL DIMENSIONS ARE IN MILLIMETERS. DIMENSIONS FOR REFERENCE ONLY, SUBJECT TO CHANGE.

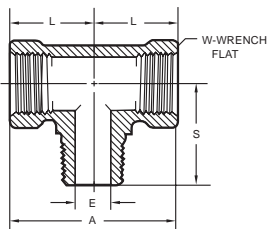
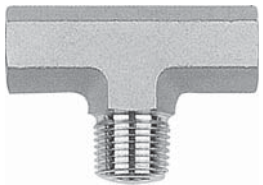
T



TEE

P FEMALE PT/NPT SIZE	CATALOG NUMBER	A	E	L	N.W.(G)
1/8	T-01	40.0	8	20.0	53.1
1/4	T-02	49.6	11	24.8	82.5
3/8	T-03	55.4	14	27.7	158.4
1/2	T-04	71.0	18	35.5	269
3/4	T-06	83.0	23	42.5	
1	T-08	94.4	29	47.2	

BT

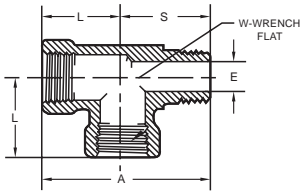
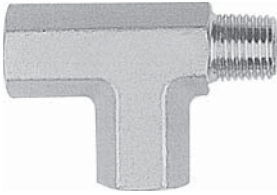


BRANCH TEE

P FEMALE PT/NPT SIZE	CATALOG NUMBER	A	E	L	S
1/8	BT-01	40.0	5	20.0	21.0
1/4	BT-02	49.6	6	24.8	25.8
3/8	BT-03	55.4	8	27.7	29.7
1/2	BT-04	71.0	10	35.5	35.5
3/4	BT-06	85.0	15	42.5	40.5
1	BT-08	94.4	21	47.5	45.2

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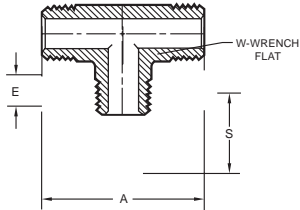
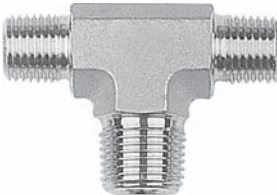
ST



STREET TEE

P MALE/FEMALE PT/NPT SIZE	CATALOG NUMBER	A	E	L	S	N.W.(G)
1/8	ST-01	41.0	5	20.0	21.0	
1/4	ST-02	50.6	6	24.8	25.8	89.8
3/8	ST-03	57.7	8	27.7	29.7	
1/2	ST-04	71.0	10	35.5	35.5	
3/4	ST-06	83.0	15	42.5	40.5	
1	ST-08	92.4	21	47.2	45.2	

MT



MALE TEE

P PT/NPT SIZE	CATALOG NUMBER	A	E	S	N.W.(G)
1/8	MT-01	39.6	5	19.8	27.6
1/4	MT-02	48.0	6	24.0	54.3
3/8	MT-03	53.6	8	26.8	
1/2	MT-04	65.4	10	32.7	175
3/4	MT-06	75.0	15	37.5	
1	MT-08	90.4	21	45.2	

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