



# **LET-LOK<sup>®</sup>**

## **TUBE FITTINGS**



1/16" Through 1 1/2"-inch  
2 mm Through 25 mm-Metric

## LET-LOK<sup>®</sup> DESCRIPTION

The HAM-LET<sup>®</sup> GROUP has produced high quality tube and pipe fittings in various materials for high pressure applications since its establishment in 1950.

For almost five decades, through tremendous efforts in research and development, HAM-LET<sup>®</sup> has gained an excellent reputation as a leading manufacturer of high pressure instrumentation products.

The LET-LOK<sup>®</sup> 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 industries.

LET-LOK<sup>®</sup> tube fittings have been carefully manufactured and tested to withstand the demands of high performance tube fittings, such as high pressure, impulse, vibration, vacuum and temperature.

These tube fittings are manufactured to exacting tolerances using the most modern and advanced computerized automation. One of the main conditions required to producing these precision machined fittings is the maintenance of stringent quality control in conjunction with skilled craftsmen.

## LET-LOK<sup>®</sup> HOW DOES IT WORK ?

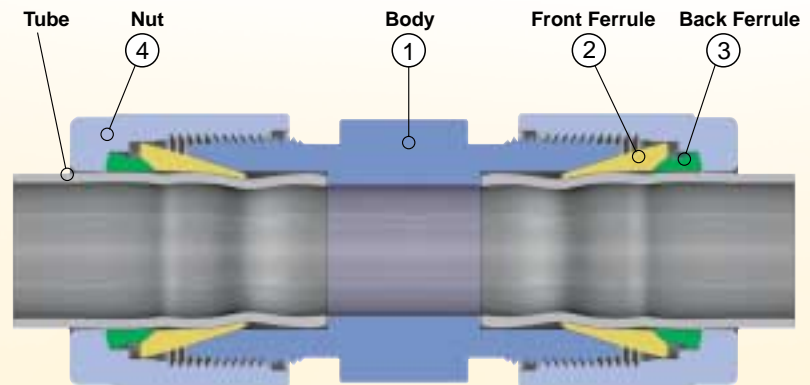
The LET-LOK<sup>®</sup> tube fitting is a mechanism used for both sealing and gripping tubing. The mechanical advantage and geometry of fitting produces a leak-tight assembly.

To assemble, simply insert the tube into the complete assembly until the tube bottoms-out against the shoulder of the fitting body.

The two ferrules are driven forward between the nut 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<sup>1</sup>/<sub>4</sub> turn on 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.



LET-LOK<sup>®</sup> tube fittings are composed of four parts:  
**1. body 2. front ferrule 3. back ferrule 4. nut.**

## LET-LOK® INSTALLATION INSTRUCTIONS

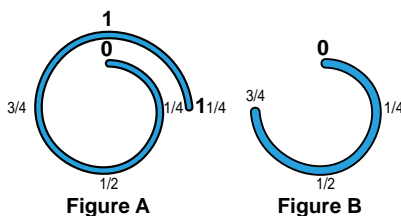
LET-LOK® fittings are supplied assembled, finger tight. Disassembly before use can allow the entry of dirt or other particles.



Insert the tubing into the LET-LOK® 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. (see Fig. A & B) 1 1/4 turns of the nut are required for 1/4" (6 mm) and higher. 3/4 turn of the nut is required for 3/16" (4 mm) and lower.



### 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).

### REASSEMBLY INSTRUCTIONS

LET-LOK® 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.

### 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 PRECAUTIONS 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.

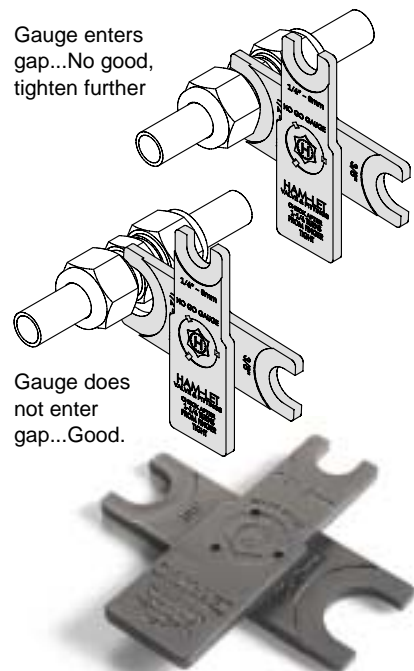
### COPPER TUBING

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:**

1. 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.
2. 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.



To order, use part No. 3900098

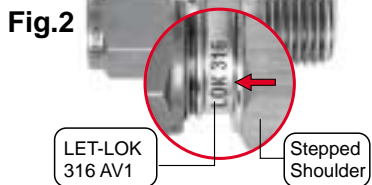
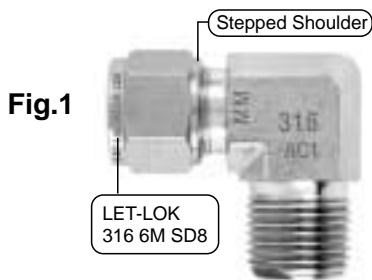
Available only in:

1/4 inch (6mm), 3/8 inch,  
1/2 inch (12mm) - make up 1.1/4

## LET-LOK® PHYSICAL DIFFERENCES AND MARKING

### LET-LOK® METRIC FITTINGS:

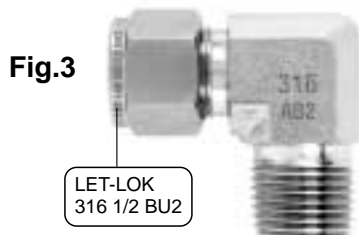
Tee & Elbow (see Fig. 1),  
 Body marked: MM  
 Straight Connectors (see Fig. 2)  
 Body: Stepped shoulder,  
 Marked: LET-LOK 316 AV1<sup>(2)</sup>  
 Nut: (see Figs.1 & 2) Stepped shoulder  
 Shoulder marked LET-LOK 316 6M<sup>(1)</sup> SD8<sup>(2)</sup>



### LET-LOK® INCH FITTINGS:

Tee & Elbow (See Fig. 3)  
 Straight Fittings, (see Fig. 4)  
 Body: Shoulder marked:  
 LET-LOK 316 AV2<sup>(2)</sup>  
 Nut (See Fig. 3 & 4): Shoulder marked  
 LET-LOK 316 1/2<sup>(1)</sup> BU2<sup>(2)</sup>

<sup>(1)</sup> Tube O.D. <sup>(2)</sup> Material Batch



## LET-LOK® 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<sup>1</sup>/<sub>4</sub> 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<sup>1</sup>/<sub>4</sub> rotation.

## TUBING DATA FOR LET-LOK® 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 LET-LOK® 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:

$$\left. \begin{array}{l} 1/16" - 1/8 \\ 2\text{mm} - 3\text{mm} \end{array} \right\} \pm 0.003"$$

$$\left. \begin{array}{l} 3/16" - 1-1/4" \\ 4\text{mm} - 25\text{mm} \end{array} \right\} \pm 0.005"$$

$$1-1/2" \left. \right\} \pm 0.01"$$

Ovality of twice OD tolerance is not suitable for LET-LOK 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.

## LET-LOK® TUBING DATA

**Table 1: STAINLESS STEEL TUBING WALL THICKNESS OF TUBE IN INCH**

Annealed 304 or 316 stainless steel tubing complying with ASTM A213, A269 or equivalent specifications. Based on ultimate tensile strength of 75,000 psi (5167 bar). For metal temp. from -20°F - 100°F (-29°C - 37°C).

Suggested ordering information: Fully annealed high quality (Type 304 or 316) stainless steel hydraulic tubing ASTM A269 or A213 or equivalent, seamless or welded and drawn with a hardness of Rb80 or less. Tubing should be without scratches and suitable for flaring and bending.

Tubing O.D.		0.010	.012	.014	.016	.020	.028	.035	.049	.065	.083	.095	0.109	0.120	0.134	0.156	0.188
mm	Inch																
	1/16	5600	6860	8150	9480	12.080											
2	1/8						8550	10950									
3	3/16						5500	7100	10300								
6	1/4						4100	5200	7600	10300							
8	5/16							4100	5900	8100							
10	3/8							3350	4850	6550							
12	1/2							2650	3750	5150	6750						
16	5/8								2950	4050	5250	6050					
20	3/4								2450	3350	4250	4950	5850				
22	7/8								2050	2850	3650	4250	4850				
25	1"									2400	3100	3600	4200	4700			
	1-1/4"										2400	2800	3300	3600	4100	4900	
	1-1/2"											2300	2700	3000	3400	4000	4900

Working pressure (psig) for seamless tubing.  
 Multiply pressure rating by .80 for single welded tubing.  
 Multiply pressure rating by .85 for double welded tubing.

**Table 2: COPPER TUBING WALL THICKNESS OF TUBE IN INCH**

Annealed copper seamless tubing complying with ASTM B68 and ASTM B75 specifice in temper designation 060. Based on ultimate tensile strength 30,000 psi (2067 bar). For metal temperatures from -20°F to 100° F (-29°C to 37°C). Suggested ordering information: High quality soft annealed seamless copper tubing ASTM B75 or equivalent.

Tubing O.D.		.028	.035	.049	.065	.083	.095	0.109	0.12
mm	Inch								
2	1/8	2700	3600						
3	3/16	1800	2300	3400					
6	1/4	1300	1600	2500	3500				
8	5/16		1300	1900	2700				
10	3/8		1000	1600	2200				
12	1/2		800	1100	1600	2100			
16	5/8			900	1200	1600	1900		
20	3/4			700	1000	1300	1500	1800	
22	7/8			600	800	1100	1300	1500	
25	1			500	700	900	1100	1300	1500

**Table 3: Factors used to determine allowable pressure at higher temperatures**

To determine allowable pressure at higher temperatures, multiply allowable working pressure from Tables 1 & 2 by factor shown in Table 3.

For example: The allowable pressure for Type 316 stainless steel, size 1/2" OD x .049" wall at 800°F(427°C) would be equivalent to 3750 psi x 0.79 = 2962.5 psi.

	°F	°C	A.I.S.I. 316	Copper
	200	93	1	0.80
	400	204	0.96	0.50
	600	316	0.85	-
	800	427	0.79	-
	1000	538	0.76	-
	1200	649	0.37	-

**Table 4: Gas Application Tubing INCH**

Gases are characterized by small molecules which can escape through the smallest leak path. For gas applications, It is therefore recommended for gas applications to select tubing with greater wall thickness. Table 4 shows the recommended wall thicknesses for greater safety and efficiency.

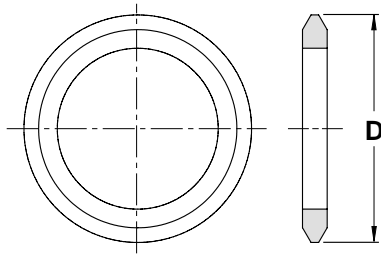
Tubing O.D.	Min. Nominal Wall Thickness
1/8"	0.028"
3/16"	0.028"
1/4"	0.028"
5/16"	0.035"
3/8"	0.035"
1/2"	0.049"
5/8"	0.065"
3/4"	0.065"
7/8"	0.083"
1"	0.083"

**METRIC**

Tubing O.D.	Min. Nominal Wall Thickness
3 mm	0.8 mm
6 mm	0.8 mm
8 mm	1.0 mm
10 mm	1.0 mm
12 mm	1.0 mm
14 mm	1.2 mm
16 mm	1.5 mm
18 mm	1.5 mm
20 mm	1.8 mm
22 mm	2.0 mm
25 mm	2.2 mm

**Warning! For Your Safety** The system designer and user have the sole responsibility to select products suitable for their special application requirements to ensure the proper installation, operation and maintenance of the product. Application details, material compatibility and product ratings should all be considered in the individual selection. Improper selection or use of products can cause property damage or personal injury.

## LET-LOK® STOP COLLAR



LET-LOK		D	
Inch	Inch	mm	
1/4	0.69	17.5	
3/8	0.84	20.6	
1/2	1.10	27.0	
3/4	1.31	33.3	
1	1.68	42.7	



- Assembly Instructions - Stop Collar**
1. Remove nut and ferrules from fitting.
  2. Insert stop collar.
  3. Assemble nut and ferrules - until finger tight.
  4. Make up the fitting until stop collar no longer rotates (feel with finger). At this stage it is guaranteed that the fitting is made up correctly.

### HOW TO ORDER: Assembled Stop Collar (with fitting)

768L	SS = Stainless Steel B = Brass	1/4	X	1/4	SC	S = Stainless Steel C = Carbon Plated
Fitting type (male LET-LOK connector)	Fitting material	Tube O.D. The O.D. size is always the first to be described		1/4 NPT	Stop Collar	Stop Collar material

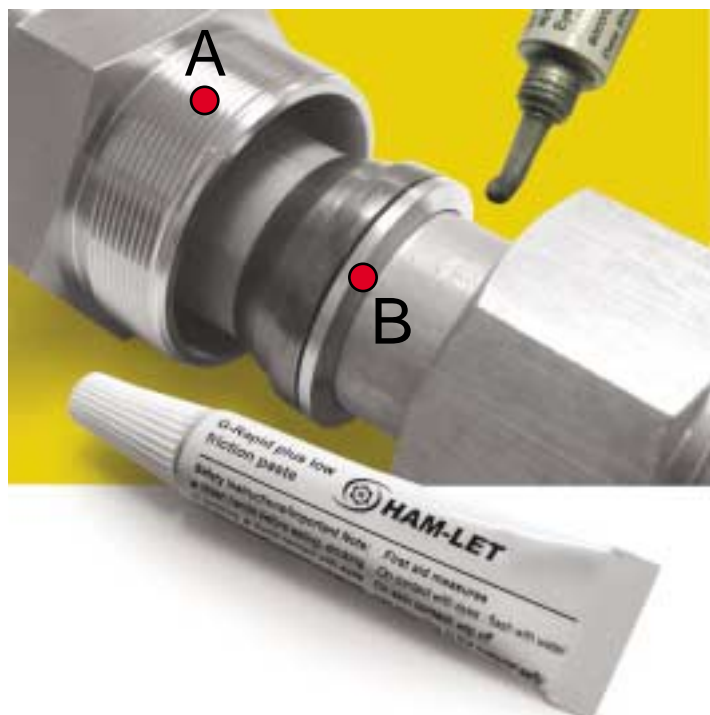
### HOW TO ORDER: Stop collar Only:

1/4	SC	S = Stainless Steel C = Carbon Plated
Tube O.D. The O.D. size is always the first to be described	1/4 NPT	Stop Collar material

## INSTALLATION INSTRUCTION FOR LET-LOK® FITTINGS 1 1/4" - 1 1/2"

1. Close the nut and ferrules on the tube with hydraulic tool.
2. Open and release from the tool.
3. Apply the G-Rapid paste on areas **A** and **B**.
4. Tighten the nut on body 1/2 a turn with a wrench

To order, use part No. 3900098



## HOW TO ORDER

EXAMPLE

768L

 Fitting type  
 (male LET-LOK  
 connector)

 SS = Stainless Steel  
 B = Brass

1/4

X

1/4

 Tube O.D.  
 The O.D. size is always the first  
 to be described

LET-LOK® fitting part numbers are constructed from symbols that identify the type of material and size of the fitting. The part number describes a completely assembled fitting from 1/16" O.D. to 1" O.D.

 760 LB 08  
 BACK FERRULE

 760 LF 08  
 FRONT FERRULE

 760 LI 08  
 TUBE INSERT

 761 L 09  
 NUT

 762 L 09  
 UNION

 763 L 10  
 REDUCING UNION

 764 L 12  
 UNION TEE

 764 LR 13  
 REDUCING UNION TEE

 765 L 14  
 UNION ELBOW

 766 L 15  
 FEMALE CONNECTOR

 766 LR 16  
 FEMALE CONNECTOR

 766 LG 16  
 FEMALE CONNECTOR

 767 LT 17  
 REDUCER

 767 LM 20  
 REDUCING PORT  
 CONNECTOR

 767 LP 20  
 PORT CONNECTOR

 768 L 21  
 MALE CONNECTOR

 768 LG 23  
 MALE CONNECTOR

 768 LR 24  
 MALE CONNECTOR

 768 LOK 25  
 MALE CONNECTOR

 768 LOB 26  
 MALE CONNECTOR


**768 LOP 26**

MALE CONNECTOR

**768 LO 26**

MALE CONNECTOR

**768 LN 27**MALE PIPE WELD  
CONNECTOR**768 LW 28**

TUBE SOCKET WELD UNION

**769 L 28**

MALE ELBOW

**769 LR 30**

MALE ELBOW

**769 LN 30**

MALE PIPE WELD ELBOW

**769 LW 31**

SOCKET WELD ELBOW

**770 L 31**

FEMALE ELBOW

**771 L 32**

MALE RUN TEE

**771 LF 32**

FEMALE RUN TEE

**772 L 33**

MALE BRANCH TEE

**772 LF 34**

FEMALE BRANCH TEE

**774 L 35**

BULKHEAD UNION

**774 LF 35**BULKHEAD FEMALE  
CONNECTOR**774 LT 36**

BULKHEAD REDUCER

**774 LM 36**BULKHEAD MALE  
CONNECTOR**7102 L 37**

UNION CROSS

**7108 L 37**

CAP

**7121 L 38**

PLUG

**739 LF 39**FEMALE ADAPTER  
TUBE TO PIPE**739 LM 40**MALE ADAPTER  
TUBE TO PIPE**761 LFL 41**

LET LOK TO AN ADAPTER

**762 LFL 41**

LET-LOK TO AN UNION

**774 LFL 41**LET-LOK TO  
AN BULKHEAD  
UNION**961 L 42**

MALE NUT

**962 L 42**

UNION

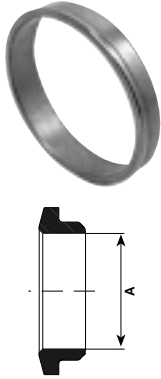
**963 L 42**

REDUCING UNION

**964 L 42**

UNION TEE

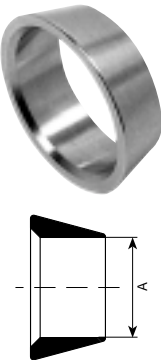
**POSITIONABLE 43**

**BACK FERRULE**

**760 LB Back Ferrule (Metric)**

A Tube O.D.
2
3
4
6
8
10
12
14
15
16
18
20
22
25

**Back Ferrule (Inch)**

A Tube O.D.	
in	mm
1/16	1.58
1/8	3.17
3/16	4.76
1/4	6.35
5/16	7.93
3/8	9.52
1/2	12.70
5/8	15.87
3/4	19.05
7/8	22.22
1	25.40


**FRONT FERRULE**

**760 LF Front Ferrule (Metric)**

A Tube O.D.
2
3
4
6
8
10
12
14
15
16
18
20
22
25

**Front Ferrule (Inch)**

A Tube O.D.	
in	mm
1/16	1.58
1/8	3.17
3/16	4.76
1/4	6.35
5/16	7.93
3/8	9.52
1/2	12.70
5/8	15.87
3/4	19.05
7/8	22.22
1	25.40

**FERRULE SETS**

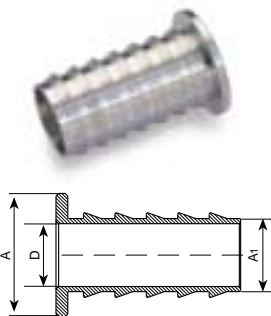
**All Let-Lok Ferrules are available as sets.**

Ferrule sets simplify stocking and assembly.

Ferrule sets prevent damage of single Ferrules during shipping. The back and front Ferrules are arranged as pairs in the set ready

for easy assembly

**To Order:**  
**Please add FS to the product description.**

**TUBE INSERT**

**760 LI Tube Insert (Metric)**

A Tube O.D. mm	A Tube I.D. mm	D mm
6	4	2.8
8	6	4.4
10	8	6.4
12	8	6.4
12	10	8.3

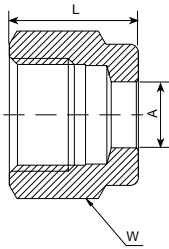
**Tube Insert (Inch)**

A		A1		D	
in	mm	in	mm	in	mm
3/16	4.76	1/8	3.17	.09	2.28
1/4	6.35	1/8	3.17	.09	2.28
1/4	6.35	.17	4.32	.11	2.79
1/4	6.35	3/16	4.76	.14	3.55
5/16	7.93	1/8	3.17	.09	2.28
5/16	7.93	3/16	4.76	.12	3.05
5/16	7.93	1/4	6.35	.19	9.52
3/8	9.52	3/16	4.76	.12	3.05
3/8	9.52	1/4	6.35	.19	9.52
1/2	12.70	1/4	6.35	.19	9.52
1/2	12.70	3/8	9.52	.31	7.87
5/8	15.87	3/8	9.52	.31	7.87
5/8	15.87	1/2	12.70	.44	11.17
3/4	19.05	1/2	12.70	.44	11.17
3/4	19.05	5/8	15.87	.56	14.22
1	25.40	3/4	19.05	.69	17.52

"D" - Dimension is minimum opening.

Dimensions are for reference only, and are subject to change without notice.

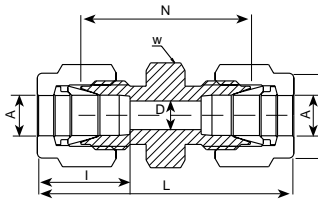
**NUT**



761 L Nut (Metric)		
A Tube O.D. mm	W Width Across Hex. mm	L mm
2	12	11.9
3	12	11.9
4	12	11.9
6	14	12.7
8	16	13.5
10	19	15.1
12	22	17.4
14	25	17.4
15	25	17.4
16	25	17.4
18	30	17.4
20	32	17.4
22	32	17.4
25	38	20.6

Nut (Inch)					
A Tube O.D.		W Width Across Hex		L	
in	mm	in	mm	in	mm
1/16	1.58	5/16	7.93	.31	7.87
1/8	3.17	7/16	11.11	.47	11.93
3/16	4.76	1/2	12.70	.47	11.93
1/4	6.35	9/16	14.28	.50	12.70
5/16	7.93	5/8	15.87	.53	13.46
3/8	9.52	11/16	17.46	.56	14.22
1/2	12.70	7/8	22.22	.69	17.52
5/8	15.87	1	25.40	.69	17.52
3/4	19.05	1-1/8	28.57	.69	17.52
7/8	22.22	1-1/4	31.75	.69	17.52
1	25.40	1-1/2	38.10	.81	20.57

**UNION**

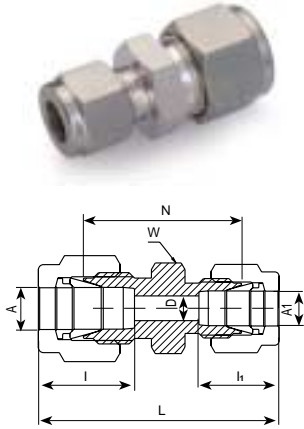


762 L Union (Metric) Tube to Tube						
A Tube O.D. mm	D mm	W Width Across Hex. mm	N mm	L mm	I mm	
2	1.7	12	22.1	35.2	12.9	
3	2.4	12	22.1	35.3	12.9	
4	2.4	12	23.4	36.5	13.7	
6	4.8	14	26.2	41.0	15.3	
8	6.4	15	28.2	43.2	16.2	
10	7.9	18	31.0	45.9	17.2	
12	9.5	22	31.0	51.2	22.8	
14	11.1	24	31.8	52.0	22.8	
15	11.9	24	31.8	52.0	24.4	
16	12.7	24	31.8	52.0	24.4	
18	15.1	27	33.3	53.5	24.4	
20	15.9	30	34.8	55.0	26.0	
22	18.3	30	34.8	55.0	26.0	
25	21.8	35	40.4	65.0	31.3	

762 L Union (Inch) Tube to Tube											
A Tube O.D.		D		W Width Across Hex.		N		L		I	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16	1.58	.05	1.27	5/16	7.93	.69	17.52	.99	25.14	.34	8.6
1/8	3.17	.09	2.28	7/16	11.11	.88	22.35	1.40	35.56	.50	12.7
3/16	4.76	.12	3.04	7/16	11.11	.95	24.13	1.47	37.33	.54	13.7
1/4	6.35	.19	4.82	1/2	12.70	1.03	26.16	1.61	40.89	.60	15.2
5/16	7.93	.25	6.35	9/16	14.28	1.11	28.2	1.69	42.9	.64	16.3
3/8	9.52	.28	7.11	5/8	15.87	1.19	30.22	1.77	44.95	.66	16.8
1/2	12.70	.41	10.41	13/16	20.63	1.22	30.98	2.02	51.30	.90	22.9
5/8	15.87	.50	12.70	15/16	23.81	1.25	31.75	2.05	52.07	.96	24.4
3/4	19.05	.62	15.74	1-1/16	26.98	1.31	33.27	2.11	53.59	.96	24.4
7/8	22.22	.72	18.28	1-3/16	30.16	1.38	35.05	2.17	55.11	1.02	26.0
1	25.40	.88	22.35	1-3/8	34.92	1.59	40.38	2.55	64.77	1.23	31.3
*1-1/4	31.75	1.09	27.7	1-3/4	44.45	1.89	48.0	3.63	92.2	1.62	41.15
*1-1/2	38.1	1.34	34.0	2-1/8	28.57	2.11	53.6	4.25	107.95	1.97	50.04

\*Including low friction paste, See page 5  
 "D" - Dimension is minimum opening.  
 Dimensions are for reference only, and are subject to change without notice.

NUT



**763 L Reducing Union Tube (Metric) to Tube (Metric)**

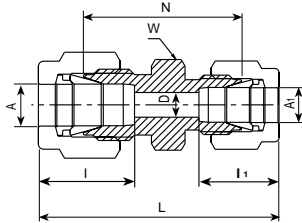
A Tube O.D. mm	A <sub>1</sub> Tube O.D. mm	D mm	W Width Across Hex. mm	N mm	L mm	I mm	I <sub>1</sub> mm
3	2	1.7	12	22.1	35.3	12.9	12.9
6	2	1.7	14	24.6	38.6	15.3	12.9
6	3	2.4	14	24.6	38.6	15.3	12.9
6	4	2.4	14	25.4	39.4	15.3	13.7
8	6	4.8	15	27.4	42.3	16.2	15.3
10	6	4.8	18	29.5	44.5	17.2	15.3
10	8	6.4	18	30.0	45.1	17.2	16.2
12	6	4.8	22	29.5	47.0	22.8	15.3
12	8	6.4	22	30.2	47.8	22.8	16.2
12	10	7.9	22	31.0	48.7	22.8	17.2
16	10	7.9	24	31.8	49.5	24.4	17.2
16	12	9.5	24	31.8	52.0	24.4	22.8
18	12	9.5	27	33.3	53.5	24.4	22.8
25	18	15.1	35	38.6	61.0	31.3	24.4
25	20	15.9	35	39.9	62.3	31.3	26.0

**763 L Reducing Union Tube (Metric) to Tube (Inch)**

A Tube O.D. mm	A <sub>1</sub> Tube O.D. inch	D mm	W Width Across Hex. mm	N mm	L mm	I mm	I <sub>1</sub> mm
2	1/4	1.7	14	24.0	38.6	12.9	15.2
3	1/8	2.4	12	22.1	35.2	12.9	12.7
4	1/8	2.4	12	23.4	36.5	13.7	12.7
4	1/4	2.4	14	25.4	39.4	13.7	15.2
6	1/8	2.4	14	24.6	38.5	15.3	12.7
6	1/4	4.8	14	26.2	41.0	15.3	15.2
6	5/16	4.8	14	27.4	42.3	15.3	16.2
8	1/8	2.4	15	25.9	39.9	16.2	12.7
8	1/4	4.8	15	27.4	42.3	16.2	15.2
8	3/8	6.4	16	29.5	43.5	16.2	16.8
10	1/8	2.4	18	27.7	41.8	17.2	12.7
10	1/4	4.8	18	29.5	44.5	17.2	15.2
10	5/16	6.4	18	30.0	45.1	17.2	16.2
10	3/8	7.1	18	31.0	45.9	17.2	16.8
12	5/16	6.4	22	30.2	47.8	22.8	16.2
12	3/8	7.1	22	31.0	48.4	22.8	16.8
12	1/2	9.5	22	31.0	51.2	22.8	22.9
15	1/2	10.3	24	31.8	52.0	24.4	22.9
16	5/8	12.7	24	31.8	52.0	24.4	24.4
18	3/4	15.1	27	33.3	53.5	24.4	24.4

"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

**REDUCING UNION**

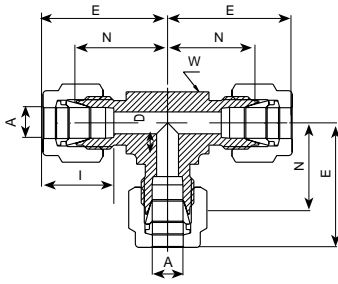


**763 L Reducing Union Tube (Inch) to Tube (Inch)**

A Tube O.D.		A <sub>1</sub> Tube O.D.		D		W Width Across Hex.		N		L		I		I <sub>1</sub>	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/8	3.17	1/16	1.58	.05	1.27	7/16	11.11	.81	20.57	1.22	30.98	.50	12.7	.34	8.6
3/16	4.76	1/16	1.58	.05	1.27	7/16	11.11	.86	21.84	1.27	32.26	.54	13.7	.34	8.6
3/16	4.76	1/8	3.17	.09	2.28	7/16	11.11	.92	23.36	1.44	36.57	.54	13.7	.50	12.7
1/4	6.35	1/16	1.58	.05	1.27	1/2	12.70	.91	23.11	1.35	34.29	.60	15.2	.34	8.6
1/4	6.35	1/8	3.17	.09	2.28	1/2	12.70	.97	24.63	1.52	38.60	.60	15.2	.50	12.7
1/4	6.35	3/16	4.76	.12	3.04	1/2	12.70	1.00	25.40	1.55	37.37	.60	15.2	.54	13.7
5/16	7.93	1/8	3.17	.09	2.28	9/16	14.28	1.02	25.91	1.57	39.88	.64	16.3	.50	12.7
5/16	7.93	1/4	6.35	.19	4.82	9/16	14.28	1.08	27.43	1.66	42.16	.64	16.3	.60	15.2
3/8	9.52	1/16	1.58	.05	1.27	5/8	15.87	1.00	25.40	1.44	36.58	.66	16.8	.34	8.6
3/8	9.52	1/8	3.17	.09	2.28	5/8	15.87	1.06	26.92	1.61	40.89	.66	16.8	.50	12.7
3/8	9.52	1/4	6.35	.19	4.82	5/8	15.87	1.12	28.44	1.70	43.18	.66	16.8	.60	15.2
3/8	9.52	5/16	7.93	.25	6.35	5/8	15.87	1.16	29.46	1.74	44.19	.66	16.8	.64	16.3
1/2	12.70	1/8	3.17	.09	2.28	13/16	20.63	1.12	28.44	1.78	45.21	.90	22.9	.50	12.7
1/2	12.70	1/4	6.35	.19	4.82	13/16	20.63	1.16	29.46	1.85	46.99	.90	22.9	.60	15.2
1/2	12.70	3/8	9.52	.28	7.11	13/16	20.63	1.22	30.98	1.91	48.51	.90	22.9	.66	16.8
5/8	15.87	3/8	9.52	.28	7.11	15/16	23.81	1.25	31.75	1.94	49.27	.96	24.4	.66	16.8
5/8	15.87	1/2	12.70	.41	10.41	15/16	23.81	1.25	31.75	2.05	52.07	.96	24.4	.90	22.9
3/4	19.05	1/4	6.35	.19	4.82	1-1/16	26.98	1.25	31.75	1.94	49.28	.96	24.4	.60	15.2
3/4	19.05	3/8	9.52	.28	7.11	1-1/16	26.98	1.31	33.27	2.00	50.80	.96	24.4	.66	16.8
3/4	19.05	1/2	12.70	.41	10.41	1-1/16	26.98	1.31	33.27	2.11	53.59	.96	24.4	.90	22.9
3/4	19.05	5/8	15.87	.50	12.70	1-1/16	26.98	1.31	33.27	2.11	53.59	.96	24.4	.96	24.4
1	25.4	1/2	12.70	.41	10.41	1-3/8	34.92	1.61	38.10	2.38	60.45	1.23	31.2	.90	22.9
1	25.4	3/4	19.05	.62	15.75	1-3/8	34.92	1.59	38.10	2.38	60.45	1.23	31.2	.96	24.4

"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

**UNION TEE**



**764 L Union Tee - All Tube (Metric)**

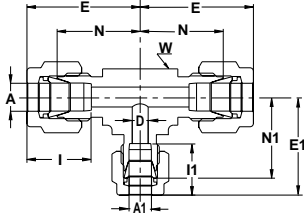
A Tube O.D. mm	D mm	W Width Across Hex. mm      in		N mm	E mm	I mm
2	1.7	9.5	3/8	15.7	22.3	12.9
3	2.4	9.5	3/8	15.7	22.3	12.9
4	2.4	12.7	1/2	18.8	25.4	13.7
6	4.8	12.7	1/2	19.6	27.0	15.3
8	6.4	16.0	5/8	22.4	29.9	16.2
10	7.9	20.5	11/16	23.9	31.5	17.2
12	9.5	20.5	13/16	25.9	36.0	22.8
14	11.1	24.0	15/16	28.7	38.8	24.4
15	11.9	25.0	15/16	28.7	38.8	24.4
16	12.7	25.0	15/16	28.7	38.8	24.4
18	15.1	27.0	1-1/8	29.7	39.8	24.4
20	15.9	30.0	1-3/8	34.5	44.6	26.0
22	18.3	30.0	1-3/8	34.5	44.6	26.0
25	21.8	35.0	1-3/8	36.8	49.1	31.3

**764 L Union Tee - All Tube (Inch)**

A Tube O.D.		D		W Width Across Hex.		N	E		I		
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16	1.58	.05	1.27	3/8	9.52	.56	14.22	.70	17.8	.34	8.6
1/8	3.17	.09	2.28	1/2	12.7	.62	15.74	.88	22.35	.50	12.7
3/16	4.76	.12	3.04	1/2	12.70	.70	17.8	.96	24.4	.54	13.7
1/4	6.35	.19	4.82	1/2	12.70	.77	19.55	1.06	26.9	.60	15.2
5/16	7.93	.25	6.35	5/8	15.87	.88	22.35	1.17	29.71	.64	16.3
3/8	9.52	.28	7.11	5/8	15.87	.91	23.11	1.20	30.48	.66	16.8
1/2	12.70	.41	10.41	13/16	20.63	1.02	25.9	1.42	30.1	.90	22.9
5/8	15.87	.50	12.70	15/16	23.81	1.13	28.7	1.53	38.9	.96	24.4
3/4	19.05	.62	15.74	1-1/8	28.6	1.17	29.7	1.57	39.9	.96	24.4
1	25.40	.88	22.35	1-3/8	34.9	1.45	36.8	1.93	49.0	1.23	31.2
*1-1/4	31.75	1.09	27.7	1-11/16	42.9	1.75	44.5	2.62	66.5	1.62	41.1
*1-1/2	38.1	1.34	34.0	2	50.8	2.00	50.8	3.07	78.0	1.97	50.0

\*Including low friction paste, See page 5  
 "D" - Dimension is minimum opening.  
 Dimensions are for reference only, and are subject to change without notice.

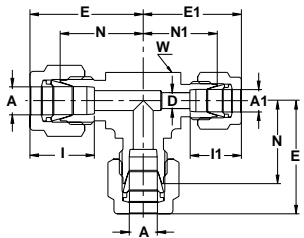
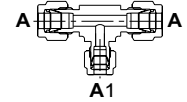
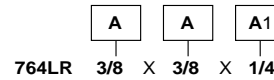
REDUCING UNION TEE



764 LR Reducing Tee

A TUBE O.D.	A1 TUBE O.D.	E	E1	I	I1	D MIN OPENING	W WRENCH FLAT	N	N1
inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm
3/8 9.52	1/4 6.35	1.20 30.5	1.14 29.0	0.66 16.8	0.60 15.2	0.19 4.8	5/8 15.9	0.91 23.1	0.85 21.6
1/2 12.70	1/4 6.35	1.42 36.1	1.25 31.8	0.90 22.9	0.60 15.2	0.19 4.8	13/16 20.6	1.02 25.9	0.96 24.4
1/2 12.70	3/8 9.52	1.42 36.1	1.31 33.3	0.90 22.9	0.66 16.8	0.28 7.1	13/16 20.6	1.02 25.9	1.02 25.9
5/8 15.88	3/8 9.52	1.53 38.9	1.42 36.1	0.96 24.4	0.66 16.8	0.28 7.1	15/16 23.8	1.13 28.7	1.13 28.7
3/4 19.05	3/8 9.52	1.57 39.9	1.46 37.1	0.96 24.4	0.66 16.8	0.28 7.1	1-1/8 28.6	1.17 29.7	1.17 29.7
3/4 19.05	1/2 12.70	1.57 39.9	1.57 39.9	0.96 24.4	0.90 22.9	0.41 10.4	1-1/8 28.6	1.17 29.7	1.17 29.7
1 25.4	3/8 9.52	1.93 49.0	1.65 41.9	1.23 31.2	0.66 16.8	0.28 7.1	1-3/8 34.9	1.45 36.8	1.36 34.5
1 25.4	1/2 12.70	1.93 49.0	1.76 44.7	1.23 31.2	0.90 22.9	0.41 10.4	1-3/8 34.9	1.45 36.8	1.36 34.5
1 25.4	3/4 19.05	1.93 49.0	1.76 44.7	1.23 31.2	0.96 24.4	0.62 15.8	1-3/8 34.9	1.45 36.8	1.36 34.5

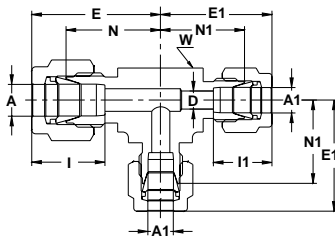
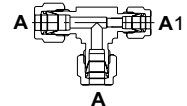
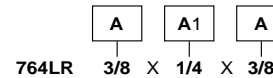
HOW TO ORDER



764 LR

A TUBE O.D.	A1 TUBE O.D.	E	E1	I	I1	D MIN OPENING	W WRENCH FLAT	N	N1
inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm
3/8 9.52	1/4 6.35	1.20 30.5	1.14 29.0	0.66 16.8	0.60 15.2	0.19 4.8	5/8 15.9	0.91 23.1	0.85 21.6

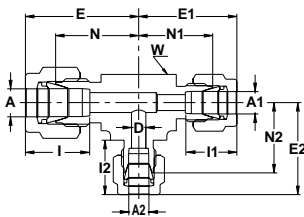
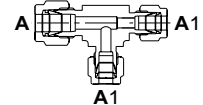
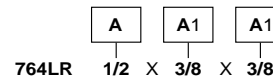
HOW TO ORDER



764 LR

A TUBE O.D.	A1 TUBE O.D.	E	E1	I	I1	D MIN OPENING	W WRENCH FLAT	N	N1
inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm
1/2 12.70	3/8 9.52	1.42 36.1	1.31 33.3	0.90 22.9	0.66 16.8	0.28 7.1	13/16 20.6	1.02 25.9	1.02 25.9
5/8 15.88	3/8 9.52	1.53 38.9	1.42 36.1	0.96 24.4	0.66 16.8	0.28 7.1	15/16 23.8	1.13 28.7	1.13 28.7
3/4 19.05	3/8 9.52	1.57 39.9	1.46 37.1	0.96 24.4	0.66 16.8	0.28 7.1	1-1/8 28.6	1.17 29.7	1.17 29.7

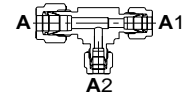
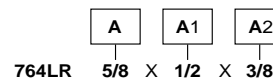
HOW TO ORDER



764 LR

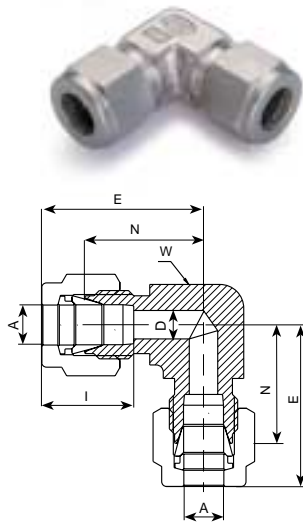
A TUBE O.D.	A1 TUBE O.D.	A2 TUBE O.D.	E	E1	E2	I	I1	I2	D MIN OPENING	W WRENCH FLAT	N	N1&N2
inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm	inch mm
5/8 15.88	1/2 12.70	3/8 9.52	1.53 38.9	1.53 38.9	1.42 36.1	0.96 24.4	0.90 22.9	0.66 16.8	0.28 7.1	15/16 23.8	1.13 28.7	1.13 28.7
3/4 19.05	1/2 12.70	3/8 9.52	1.57 39.9	1.57 39.9	1.46 37.1	0.96 24.4	0.90 22.9	0.66 16.8	0.28 7.1	1-1/8 28.6	1.17 29.7	1.17 29.7
1 25.4	3/4 19.05	3/8 9.52	1.93 49.0	1.76 44.7	1.65 41.9	1.23 31.2	0.96 24.4	0.66 16.8	0.28 7.1	1-3/8 34.9	1.45 36.8	1.36 34.5

HOW TO ORDER



"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

**UNION ELBOW**



**765 L Union Elbow - Tube (Metric) to Tube (Metric)**

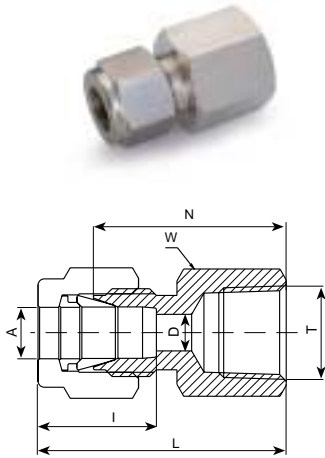
A Tube O.D.		D		W Width Across Hex.		N		E		I	
mm	mm	mm	mm	in	mm	mm	mm	mm	mm	mm	mm
3	2.4	9.5	3/8	15.7	22.3	12.9					
4	2.4	11.1	7/16	18.8	25.4	13.7					
6	4.8	12.5	1/2	19.6	27.0	15.3					
8	6.4	16.0	5/8	21.3	28.8	16.2					
10	7.9	17.5	11/16	23.9	31.5	17.2					
12	9.5	20.6	13/16	25.9	36.0	22.8					
14	11.1	24.0	15/16	27.9	38.1	24.4					
15	11.9	24.0	15/16	27.9	38.8	24.4					
16	12.7	24.0	15/16	27.9	38.0	24.4					
18	15.1	28.6	1-1/8	29.7	39.8	24.4					
20	15.9	35	1-3/8	34.5	44.6	26.0					
22	18.3	35	1-3/8	34.5	44.6	26.0					
25	21.8	35.0	1-3/8	36.8	49.1	31.3					

**765 L Union Elbow - Tube (Inch) to Tube (Inch)**

A Tube O.D.		D		W Width Across Hex.		N		E		I	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/8	3.17	.09	2.28	3/8	9.52	.62	15.74	.88	22.35	.50	12.7
3/16	4.76	.12	3.04	1/2	12.70	.75	19.05	1.01	25.65	.54	13.7
1/4	6.35	.19	4.82	1/2	12.70	.77	19.56	1.06	26.92	.60	15.2
5/16	7.93	.25	6.35	5/8	15.87	.84	21.33	1.13	28.7	.64	16.3
3/8	9.52	.28	7.11	5/8	15.87	.91	23.11	1.20	30.48	.66	16.8
1/2	12.70	.41	10.41	13/16	20.63	1.02	25.90	1.42	36.06	.90	22.9
5/8	15.87	.50	12.70	15/16	23.81	1.10	27.94	1.50	38.1	.96	24.4
3/4	19.05	.62	15.74	1-1/8	28.6	1.17	29.71	1.57	39.89	.96	24.4
7/8	22.22	.72	18.28	1-3/16	30.2	1.36	34.5	1.76	44.7	1.02	25.9
1	25.40	.88	22.35	1-3/8	34.92	1.45	36.83	1.93	49	1.23	31.3
*1-1/4	31.75	1.09	27.7	1-11/16	42.9	1.75	44.5	2.62	66.5	1.62	41.1
*1-1/2	38.10	1.34	34.0	2	50.8	2.00	50.8	3.07	78.0	1.97	50.0

\*Including low friction paste, See page 5  
 "D" - Dimension is minimum opening.  
 Dimensions are for reference only, and are subject to change without notice.

**FEMALE CONNECTOR**



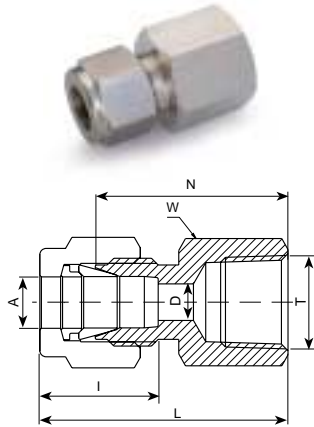
**766 L Female Connector - Tube (Metric) to Female NPT Thread**

A Tube O.D. mm	T (NPT) in	D mm	W Width Across Hex. mm	N mm	L mm	I mm
3	1/8	2.4	14	22.1	28.7	12.7
3	1/4	2.4	19	26.9	33.5	12.7
4	1/8	2.4	14	23.1	29.7	13.7
6	1/8	4.8	14	23.9	31.3	15.3
6	1/4	4.8	19	28.4	35.8	15.3
6	3/8	4.8	22	30.2	37.6	15.3
6	1/2	4.8	27	35.1	42.5	15.3
8	1/8	6.4	15	24.6	32.1	16.2
8	1/4	6.4	19	29.5	37.0	16.2
8	3/8	6.4	22	31.0	38.5	16.2
8	1/2	6.4	27	35.8	43.3	16.2
10	1/4	7.9	19	30.2	37.8	17.2
10	3/8	7.9	22	31.8	39.4	17.2
10	1/2	7.9	27	36.6	44.2	17.2
12	1/4	9.5	22	30.2	40.3	22.8
12	3/8	9.5	22	31.8	41.9	22.8
12	1/2	9.5	27	36.6	46.7	22.8
15	1/2	11.9	27	36.6	46.7	24.4
16	1/2	12.7	27	36.8	46.9	24.4
20	1/2	15.9	30	37.8	47.9	26.0
20	3/4	15.9	35	39.6	49.7	26.0
22	3/4	18.3	35	39.6	49.7	26.0
22	1	18.3	41	47.8	57.9	26.0
25	3/4	21.8	35	41.1	53.4	31.3
25	1	21.8	41	50.0	62.3	31.3

**766 L Female Connector - Tube (Inch) to Female NPT Thread**

A Tube O.D. in	T (NPT) in	D in	W Width Across Hex. in	N in	L in	I in						
1/8	3.17	1/8	.09	2.28	9/16	14.28	.88	22.35	1.14	28.95	.50	12.7
1/8	3.17	1/4	.09	2.28	3/4	19.05	1.06	26.92	1.32	33.52	.50	12.7
3/16	4.76	1/8	.12	3.04	9/16	14.28	.91	23.11	1.17	29.71	.54	13.7
1/4	6.35	1/8	.19	4.82	9/16	14.28	.94	23.87	1.23	31.24	.60	15.2
1/4	6.35	1/4	.19	4.82	3/4	19.05	1.12	28.44	1.41	35.81	.60	15.2
1/4	6.35	3/8	.19	4.82	7/8	22.22	1.19	30.22	1.48	37.59	.60	15.2
1/4	6.35	1/2	.19	4.82	1-1/16	26.98	1.38	35.0	1.67	42.42	.60	15.2
5/16	7.93	1/8	.25	6.35	9/16	14.28	.97	24.63	1.26	32.00	.64	16.3
5/16	7.93	1/4	.25	6.35	3/4	19.05	1.16	29.46	1.45	36.83	.64	16.3
3/8	9.52	1/8	.28	7.11	5/8	15.87	1.00	25.40	1.29	32.76	.66	16.8
3/8	9.52	1/4	.28	7.11	3/4	19.05	1.19	30.22	1.48	37.59	.66	16.8
3/8	9.52	3/8	.28	7.11	7/8	22.22	1.25	31.75	1.54	39.11	.66	16.8
3/8	9.52	1/2	.28	7.11	1-1/16	26.98	1.44	36.57	1.73	43.94	.66	16.8
1/2	12.70	1/4	.41	10.41	13/1	20.63	1.19	30.2	1.59	40.38	.90	22.9
1/2	12.70	3/8	.41	10.41	67/8	22.22	1.25	31.75	1.65	41.91	.90	22.9
1/2	12.70	1/2	.41	10.41	1-1/16	26.98	1.44	36.57	1.84	46.73	.90	22.9
1/2	12.70	3/4	.41	10.41	1-5/16	33.33	1.50	38.10	1.90	48.26	.90	22.9
5/8	15.87	3/8	.50	12.70	15/16	23.81	1.25	31.75	1.65	41.91	.90	24.4
5/8	15.87	1/2	.50	12.70	1-1/16	26.98	1.44	36.57	1.84	46.73	.86	24.4
3/4	19.05	1/2	.62	15.74	1-1/16	26.98	1.44	36.57	1.84	46.73	.86	24.4
3/4	19.05	3/4	.62	15.74	1-5/16	33.33	1.50	38.10	1.90	48.26	.86	24.4
7/8	22.22	3/4	.72	18.28	1-5/16	33.33	1.56	39.62	1.96	49.78	1.02	25.9
1	25.40	3/4	.88	22.35	1-3/8	34.92	1.62	41.14	2.10	53.34	1.23	31.2
1	25.40	1	.88	22.35	1-5/8	41.27	1.97	50.03	2.45	62.23	1.23	31.2

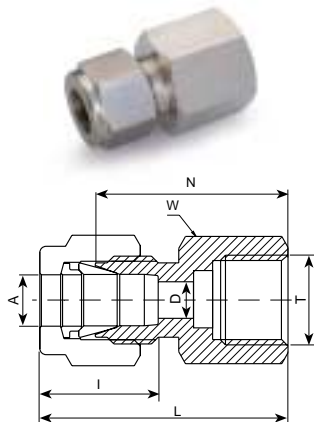
"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

**FEMALE CONNECTOR**

**Reference Specifications:  
Normen:**

DIN - 2999  
 BS - 21  
 JIS - BO203  
 ISO - 7/1-BSP-T

**766 LR Female Connector - Tube (Metric) to Female ISO Tapered Thread**

A Tube O.D.	T (ISO)	D	W Width Across Hex.	N	L	I
mm	inch	mm	mm	mm	mm	mm
3	R-1/8	2.4	14	22.1	28.7	12.9
6	R-1/8	4.8	14	23.9	31.3	15.3
6	R-1/4	4.8	19	28.4	35.8	15.3
6	R-3/8	4.8	22	30.2	37.6	15.3
6	R-1/2	4.8	27	35.1	42.5	15.3
8	R-1/8	6.4	15	24.6	32.1	16.2
8	R-1/4	6.4	19	29.5	37.0	16.2
8	R-3/8	6.4	22	31.0	38.5	16.2
8	R-1/2	6.4	27	35.8	43.3	16.2
10	R-1/8	7.9	18	25.4	33.0	17.2
10	R-1/4	7.9	19	30.2	37.8	17.2
10	R-3/8	7.9	22	31.8	39.4	17.2
10	R-1/2	7.9	27	36.6	44.2	17.2
12	R-1/8	8.3	22	25.4	35.5	22.8
12	R-1/4	9.5	22	30.2	40.3	22.8
12	R-3/8	9.5	22	31.8	41.9	22.8
12	R-1/2	9.5	27	36.6	46.7	22.8
12	R-3/4	9.5	35	38.9	49.0	22.8
15	R-3/8	11.9	24	31.8	41.9	24.4
15	R-1/2	11.9	27	36.6	46.4	24.4
20	R-1/2	15.9	30	37.8	47.9	26.0
20	R-3/4	15.9	35	39.6	49.7	26.0
22	R-3/4	18.3	35	39.6	49.7	26.0
22	R-1	18.3	41	47.8	57.9	26.0
25	R-3/4	21.8	35	41.1	53.4	31.3
25	R-1	21.8	41	50.0	62.3	31.3

**FEMALE CONNECTOR**

**766 LG Female Connector - Tube (Metric) to Female ISO Parallel Thread**

A Tube O.D.	T (ISO)	D	W Width Across Hex	N	L	I
mm	inch	mm	mm	mm	mm	mm
3	G-1/4	2.4	19	28.7	35.3	12.9
6	G-1/4	4.8	19	30.2	37.6	15.3
6	G-3/8	4.8	24	30.2	37.6	15.3
6	G-1/2	4.8	27	36.1	43.5	15.3
8	G-1/4	5.5	19	31.0	38.5	16.2
8	G-3/8	6.5	24	28.7	36.2	16.2
8	G-1/2	7.0	27	33.5	41	16.2
10	G-1/4	5.5	19	31.8	39.4	17.2
10	G-3/8	6.5	24	31.2	38.8	17.2
10	G-1/2	7.0	27	34.5	42.1	17.2
12	G-1/4	5.5	22	31.8	41.9	22.8
12	G-3/8	6.5	24	34.3	44.4	22.8
12	G-1/2	7.0	27	38.1	48.2	22.8
20	G-1/2	7.0	30	44.2	54.3	26.0
22	G-1/2	7.0	30	44.2	54.3	26.0

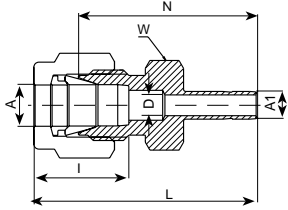
**Reference Specifications:**
**Normen:**

DIN - ISO 228/1  
 BS - 2779  
 JIS - BO202  
 ISO - 228/1-BSP-P

"D" - Dimension is minimum opening.

Dimensions are for reference only, and are subject to change without notice.

**REDUCER**

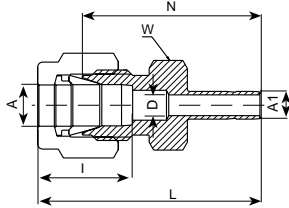


**767 LT Reducer - Tube (Metric) to Stub (Metric)**

A Tube O.D. mm	Tube O.D. mm	D mm	W Width Across Hex. mm	N mm	L mm	I mm
2	3	1.7	12	26.9	33.5	12.9
3	4	2.4	12	28.4	35.0	12.9
3	6	2.4	12	29.5	36.1	12.9
3	10	2.4	14	31.8	38.4	12.9
4	6	2.4	12	30.5	37.1	13.7
6	3	1.8	14	29.5	36.9	15.3
6	8	4.8	14	32.5	39.9	13.7
6	10	4.8	14	33.3	40.7	15.3
6	12	4.8	14	38.9	46.3	15.3
6	18	4.8	22	42.2	49.6	15.3
8	6	4.6	15	32.8	40.3	15.3
8	10	6.4	15	34.5	42.0	15.3
8	12	6.4	15	40.1	47.6	16.2
10	6	4.6	18	34.8	42.4	16.2
10	8	6.4	18	35.8	43.4	17.2
10	12	7.9	18	42.2	49.8	17.2
10	15	7.9	18	43.7	51.3	17.2
10	18	7.9	22	43.7	51.3	17.2
12	6	4.6	22	34.8	44.9	17.2
12	10	7.7	22	36.6	46.7	22.8
12	16	9.5	22	43.7	53.8	22.8
12	18	9.5	22	43.7	53.8	22.8
12	20	9.5	22	46.0	56.1	22.8
12	22	9.5	24	46.0	56.1	22.8
12	25	9.5	27	52.3	62.4	22.8
16	12	9.1	24	42.9	53.0	22.8
18	12	9.1	27	44.5	54.6	24.4
18	16	12.7	27	46.0	56.1	24.4
18	20	15.1	27	47.5	57.6	24.4
18	22	15.1	27	47.5	57.6	24.4
18	25	15.1	27	52.3	62.4	24.4
20	16	12.7	30	47.8	57.9	26.0
20	18	13.9	30	47.8	57.9	26.0
20	22	15.8	30	49.3	59.4	26.0
20	25	15.8	30	54.1	64.2	26.0
22	18	13.9	30	47.8	57.9	26.0
22	20	15.1	30	49.3	59.4	26.0
22	25	18.3	30	54.1	64.2	26.0
25	18	13.9	35	50.8	63.1	31.3
25	20	15.1	35	52.3	64.6	31.3

"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

**REDUCER**



**767 LT Reducer - Tube (Metric) to Stub (Inch)**

A Tube O.D. mm	A <sub>1</sub> Tube O.D. in	D mm	W Width Across Hex. mm	N mm	L mm	I mm
2	1/8	1.7	12	26.9	18.2	12.9
3	1/8	2.0	12	26.9	33.5	12.9
3	1/4	2.4	12	29.5	36.1	12.9
4	1/4	2.4	12	30.5	37.1	13.7
6	1/8	4.8	14	29.5	36.9	15.3
6	5/16	4.8	14	32.5	39.9	15.3
6	3/8	4.8	14	33.3	40.7	15.3
6	1/2	4.8	14	38.9	46.3	15.3
8	3/8	6.4	15	34.5	42.0	16.2
8	1/2	6.4	15	40.1	47.6	16.2
10	3/8	7.1	18	36.6	44.2	17.2
10	1/2	7.9	18	42.2	49.8	17.2
12	1/2	9.5	22	42.2	52.3	22.8
12	3/4	9.5	22	43.7	53.8	22.8
18	3/4	15.1	27	46.0	56.1	24.4
18	1	15.1	27	52.3	62.4	24.4
25	1	20.2	35	57.2	69.4	31.3

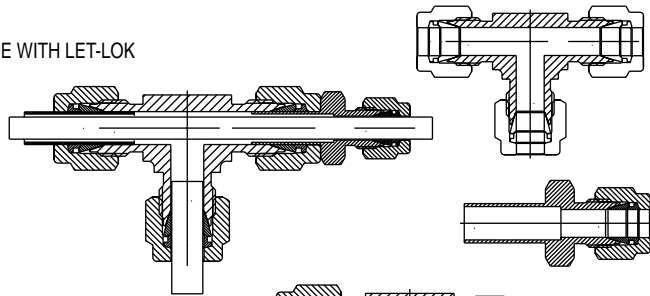
**HEAT EXCHANGER TEE**

**How to order:**

**Option 1:**

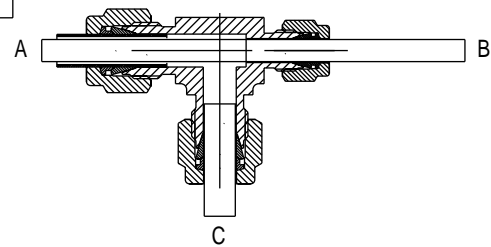
HEAT EXCHANGER TEE MADE WITH LET-LOK TUBE FITTINGS:

- A. TEE UNION - 764 L
- B. REDUCER - 767 LT



**Option 2:**

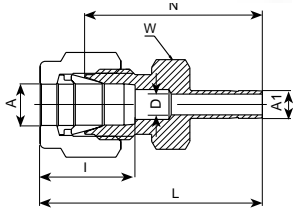
HEAT EXCHANGER TEE - ONE PIECE



764	HE	1 2	X	8
TYPE OF FITTINGS (TEE UNION)	SERIES DESIGNATOR	JACKET-TUBING O.D. "A" "C"	PROCESS TUBING O.D. "B"	

"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

REDUCER

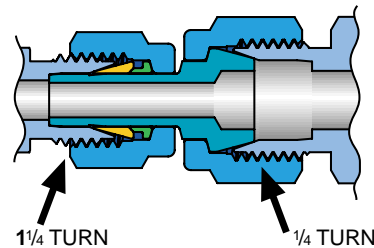


767 LT Reducer - Tube (Inch) to Stub (Inch)

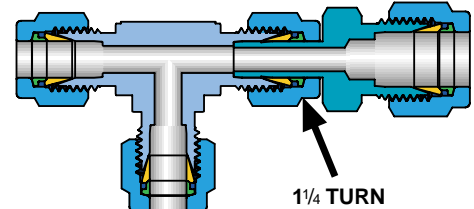
A Tube O.D.		A1 Tube O.D.		D		W Width Across Hex.		N		L		I	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16	1.58	1/8	3.17	.05	1.27	5/16	7.93	1.00	25.40	1.15	29.21	.34	8.6
1/16	1.58	1/4	6.35	.05	1.27	5/16	7.93	1.09	27.68	1.24	31.50	.34	8.6
1/8	3.17	1/16	1.58	.03	0.76	7/16	11.11	0.88	22.35	1.14	28.96	.50	12.7
1/8	3.17	3/16	4.76	.09	2.28	7/16	11.11	1.09	27.68	1.35	34.29	.50	12.7
1/8	3.17	1/4	6.35	.09	2.28	7/16	11.11	1.16	29.46	1.42	36.06	.50	12.7
1/8	3.17	3/8	9.52	.09	2.28	7/16	11.11	1.22	30.98	1.48	37.59	.50	12.7
1/8	3.17	1/2	12.70	.09	2.28	9/16	14.28	1.48	37.59	1.74	44.20	.50	12.7
3/16	4.76	1/8	3.17	.08	2.03	7/16	11.11	1.11	28.19	1.37	34.80	.54	13.7
3/16	4.76	1/4	6.35	.12	3.04	7/16	11.11	1.20	30.48	1.46	37.08	.60	13.7
1/4	6.35	1/8	3.17	.08	2.03	1/2	12.70	1.16	29.46	1.45	36.83	.60	15.2
1/4	6.35	3/16	4.76	.12	3.04	1/2	12.70	1.19	30.22	1.48	37.59	.60	15.2
1/4	6.35	1/4	6.35	.19	4.82	1/2	12.70	1.25	31.75	1.54	39.11	.60	15.2
1/4	6.35	5/16	7.93	.19	4.82	1/2	12.70	1.28	32.51	1.57	39.87	.60	15.2
1/4	6.35	3/8	9.52	.19	4.82	1/2	12.70	1.31	33.27	1.60	40.64	.60	15.2
1/4	6.35	1/2	12.70	.19	4.82	9/16	14.28	1.53	38.86	1.82	46.22	.60	15.2
1/4	6.35	5/8	7.93	.19	4.82	11/16	17.46	1.60	40.64	1.89	48.00	.60	15.2
1/4	6.35	3/4	19.05	.19	4.82	13/16	20.63	1.59	40.39	1.88	47.75	.60	15.2
5/16	7.93	3/8	9.52	.25	6.35	9/16	14.28	1.36	34.54	1.65	41.91	.64	16.3
5/16	7.93	1/2	12.70	.25	6.35	9/16	14.28	1.58	40.13	1.87	47.49	.64	16.3
3/8	9.52	1/4	6.35	.19	4.22	5/8	15.87	1.34	34.03	1.63	41.40	.66	16.8
3/8	9.52	3/8	9.52	.28	7.11	5/8	15.87	1.41	35.81	1.70	43.18	.66	16.8
3/8	9.52	1/2	12.70	.28	7.11	5/8	15.87	1.62	41.14	1.91	48.51	.66	16.8
3/8	9.52	5/8	15.87	.28	7.11	11/16	17.46	1.69	42.92	1.98	50.29	.66	16.8
3/8	9.52	3/4	19.05	.28	7.11	13/16	20.63	1.69	42.92	1.98	50.29	.66	16.8
1/2	12.70	1/4	6.35	.19	4.82	13/16	20.63	1.37	34.80	1.77	44.96	.90	22.9
1/2	12.70	3/8	9.52	.28	7.11	13/16	20.63	1.44	36.58	1.84	46.74	.90	22.9
1/2	12.70	1/2	12.70	.39	9.91	13/16	20.63	1.66	42.16	2.06	52.32	.90	22.9
1/2	12.70	5/8	15.87	.41	10.41	13/16	20.63	1.72	43.68	2.12	53.84	.90	22.9
1/2	12.70	3/4	19.05	.41	10.41	13/16	20.63	1.72	43.68	2.12	53.84	.90	22.9
1/2	12.70	1	25.40	.41	10.41	1-1/16	26.98	1.97	50.03	2.37	60.19	.90	22.9
5/8	15.87	3/4	19.05	.50	12.70	15/16	23.81	1.75	44.45	2.15	54.61	.96	24.4
5/8	15.87	7/8	22.22	.50	12.70	15/16	23.81	1.81	45.97	2.21	56.13	.96	24.4
5/8	15.87	1	25.40	.50	12.70	1-1/16	26.98	2.00	50.80	2.40	60.96	.96	24.4
3/4	19.05	1/2	12.70	.39	9.91	1-1/16	26.98	1.75	44.45	2.15	54.61	.96	24.4
3/4	19.05	1	25.40	.62	15.75	1-1/16	26.98	2.06	52.32	2.46	62.48	.96	24.4
1	25.40	*1-1/4	31.75	.88	22.35	1-3/8	34.93	2.69	68.33	3.17	80.52	1.23	31.2
1	25.40	*1-1/2	38.10	.88	22.35	1-5/8	41.28	3.03	76.96	3.51	89.15	1.23	31.2
1-1/4	31.75	*1-1/2	38.1	1.09	27.7	1-3/4	44.90	3.23	82.00	4.10	104.1	1.62	41.10

ASSEMBLY INSTRUCTIONS

Reducing port connector 767LM

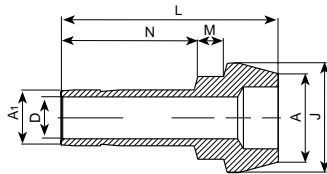


Reducer tube to stub 767 LT



\* Supplied assembled on tube stub end (A1) Nut+Front & Back Ferrule. Tighten the Nut on body 1/2 a turn with wrench. low friction paste, See page 5.  
 "D" - Dimension is minimum opening.  
 Dimensions are for reference only, and are subject to change without notice.

**REDUCING PORT CONNECTOR**



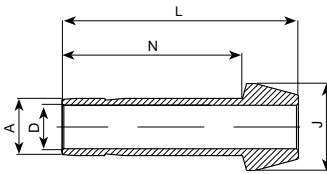
**767 LM Reducing Port Connector - Connects Two LET-LOK® Ports**

A Tube O.D.		A <sub>1</sub> Tube O.D.		D		N		L		J		M	
mm		mm		mm		mm		mm		mm		mm	
6	3	2.2	13.5	22.6	9.0	3.2							
8	6	4.6	15.7	24.7	11.0	3.1							
10	6	4.6	15.7	25.0	13.1	3.4							
10	8	6.4	16.8	25.8	13.1	3.1							
12	6	4.6	15.7	29.1	15.0	3.6							
12	8	6.4	16.8	29.8	15.0	3.4							
12	10	7.7	17.5	30.4	15.0	3.1							
16	12	9.1	23.1	36.2	19.0	3.4							

**767 LM Reducing Port Connector - Connects Two LET-LOK® Ports**

A Tube O.D.		A <sub>1</sub> Tube O.D.		D		N		L		J		M	
in mm		in mm		in mm		in mm		in mm		in mm		in mm	
1/8	3.17	1/16	1.58	.03	0.76	.34	8.64	.68	17.27	.24	6.10	.08	2.03
1/4	6.35	1/16	1.58	.03	0.76	.34	8.64	.71	18.03	.37	9.40	.14	3.55
1/4	6.35	1/8	3.17	.09	2.28	.53	13.46	.89	22.60	.37	9.40	.13	3.30
3/8	9.52	1/8	3.17	.09	2.28	.53	13.46	.91	23.11	.50	12.70	.15	3.81
3/8	9.52	1/4	6.35	.19	4.82	.62	15.75	.98	24.90	.50	12.70	.13	3.30
1/2	12.70	1/4	6.35	.19	4.82	.62	15.75	1.15	29.21	.62	15.75	.15	3.81
1/2	12.70	3/8	9.52	.28	7.11	.69	17.52	1.20	30.48	.62	15.75	.13	3.30
3/4	19.05	1/2	12.70	.39	9.90	.91	23.11	1.44	36.58	.87	22.10	.15	3.81

**PORT CONNECTOR**



**767 LP Port Connector - Connects Two LET-LOK® Ports**

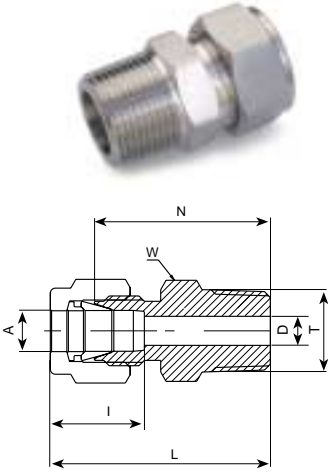
A Tube O.D.		D		N		L		J	
mm		mm		mm		mm		mm	
3	2.1	15.7	22.2	6.0					
6	4.4	18.7	24.6	9.0					
8	6.2	20.0	25.9	11.0					
10	8.2	20.2	26.1	13.1					
12	9.1	26.0	35.8	15.0					
16	12.7	27.6	37.4	19.0					
18	13.9	27.6	37.4	21.1					

**767 LP Port Connector - Connects Two LET-LOK® Ports**

A Tube O.D.		D		N		L		J	
in mm		in mm		in mm		in mm		in mm	
1/16	1.58	.03	0.76	.42	10.66	.54	13.72	.13	3.30
1/8	3.17	.09	2.28	.62	15.75	.88	22.35	.24	6.10
1/4	6.35	.19	4.82	.74	18.80	.97	24.64	.37	9.40
5/16	7.93	.25	6.35	.79	20.06	1.02	25.90	.43	10.92
3/8	9.52	.30	7.62	.80	20.32	1.03	26.16	.50	12.70
1/2	12.70	.39	9.90	1.02	25.90	1.41	35.81	.62	15.75
3/4	19.05	.59	14.58	1.09	27.68	1.47	37.34	.87	22.10
1	25.40	.80	20.32	1.36	34.54	1.90	48.26	1.12	28.45

"D" - Dimension is minimum opening.  
 Assembly instructions - see page 19  
 Dimensions are for reference only, and are subject to change without notice.

**MALE CONNECTOR**



**768 L Male Connector - Tube (Metric) Male NPT Thread**

A Tube O.D. mm	T (NPT) inch	D mm	W Width Across Hex. mm	N mm	L mm	I mm
3	1/8	2.4	12	23.9	30.5	12.9
3	1/4	2.4	14	29.0	35.6	12.9
4	1/8	2.4	12	24.6	31.2	13.7
4	1/4	2.4	14	29.7	36.3	13.7
6	1/8	4.8	14	25.4	32.8	15.3
6	1/4	4.8	14	30.5	37.9	15.3
6	3/8	4.8	18	31.0	38.4	15.3
6	1/2	4.8	22	37.3	44.7	15.3
8	1/8	4.8	15	26.7	34.2	16.2
8	1/4	6.4	15	31.2	38.7	16.2
8	3/8	6.4	18	31.8	39.3	16.2
8	1/2	6.4	22	31.8	45.6	16.2
10	1/8	4.8	18	28.7	36.3	17.2
10	1/4	7.9	18	33.3	40.9	17.2
10	3/8	7.9	18	33.3	40.9	17.2
10	1/2	7.9	22	38.1	46.5	17.2
10	3/4	7.9	27	40.4	48.0	19.5
12	1/8	4.8	22	28.7	38.8	22.8
12	1/4	7.1	22	33.3	43.4	22.8
12	3/8	9.5	22	33.3	43.4	22.8
12	1/2	9.5	22	30.9	49.0	22.8
12	3/4	9.5	27	40.4	50.5	22.8
14	1/4	7.1	24	34.0	44.1	22.8
14	3/8	9.5	24	34.0	44.1	22.8
14	1/2	11.1	24	38.9	49.0	22.8
15	1/2	11.9	24	38.9	49.0	24.4
16	3/8	9.5	24	34.0	44.1	24.4
16	1/2	11.9	24	38.9	49.0	24.4
16	3/4	12.7	27	40.4	50.5	24.4
18	1/2	11.9	27	40.4	50.5	24.4
18	3/4	15.1	27	40.4	50.5	24.4
20	1/2	11.9	30	42.2	52.3	26.0
20	3/4	15.9	30	42.2	52.3	26.0
22	3/4	15.9	30	42.2	52.3	26.0
22	1	18.3	35	47.0	57.1	26.0
25	1/2	11.9	35	45.2	57.5	31.3
25	3/4	15.9	35	45.2	57.5	31.3
25	1	21.8	35	50.0	62.3	31.3

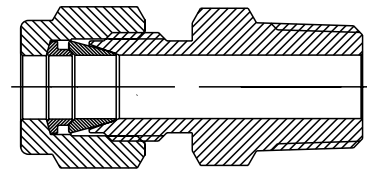
**THERMOCOUPLE - CONNECTORS**

**Thermoelement**

**To order:**

Use catalog number of the selected fitting and add suffix TC.

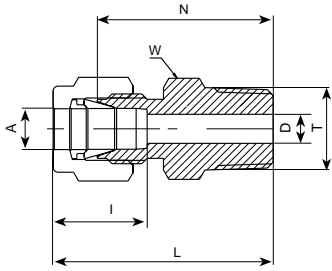
Example: 768 L ss 1/4 x 1/4 TC



"D" - Dimension is minimum opening.

Dimensions are for reference only, and are subject to change without notice.

**MALE CONNECTOR**



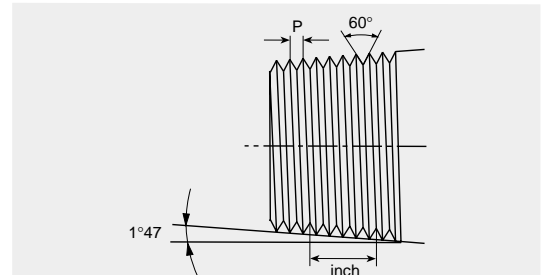
**768 L Male Connector - Tube (Inch) Male NPT Thread**

A Tube O.D.		T (NPT)	D		W Width Across Hex.		N		L		I	
in	mm	in	in	mm	in	mm	in	mm	in	mm	in	mm
1/16	1.58	1/16	.05	1.27	5/16	7.93	.78	19.81	.93	23.62	.34	8.6
1/16	1.58	1/8	.05	1.27	7/16	11.11	.88	22.35	1.03	26.1	.34	8.6
1/8	3.17	1/16	.09	2.28	7/16	11.11	.91	23.11	1.17	29.71	.50	12.7
1/8	3.17	1/8	.09	2.28	7/16	11.11	.94	23.8	1.17	29.71	.50	12.7
1/8	3.17	1/4	.09	2.28	9/16	14.28	1.14	28.95	1.40	35.56	.50	12.7
3/16	4.76	1/8	.12	3.04	7/16	11.11	.97	24.53	1.23	31.24	.54	13.7
3/16	4.76	1/4	.12	3.04	9/16	14.28	1.17	29.72	1.43	36.32	.54	13.7
1/4	6.35	1/16	.12	3.04	1/2	12.70	1.00	25.40	1.29	32.76	.60	15.2
1/4	6.35	1/8	.19	4.82	1/2	12.70	1.00	25.40	1.29	32.76	.60	15.2
1/4	6.35	1/4	.19	4.82	9/16	14.28	1.20	30.50	1.49	37.85	.60	15.2
1/4	6.35	3/8	.19	4.82	11/16	17.46	1.22	30.78	1.51	38.35	.60	15.2
1/4	6.35	1/2	.19	4.82	7/8	22.22	1.47	37.34	1.76	44.70	.60	15.2
5/16	7.93	1/8	.19	4.82	9/16	14.28	1.05	26.67	1.34	34.03	.64	16.2
5/16	7.93	1/4	.25	6.35	9/16	14.28	1.23	31.24	1.52	38.60	.64	16.2
3/8	9.52	1/8	.19	4.82	5/8	15.87	1.10	27.90	1.38	35.05	.66	16.8
3/8	9.52	1/4	.28	7.11	5/8	15.87	1.28	32.51	1.57	39.87	.66	16.8
3/8	9.52	3/8	.28	7.11	11/16	17.46	1.28	32.51	1.57	39.87	.66	16.8
3/8	9.52	1/2	.28	7.11	7/8	22.22	1.52	38.90	1.82	46.23	.66	16.8
3/8	9.52	3/4	.28	7.11	1-1/16	26.98	1.59	40.38	1.88	47.75	.66	16.8
1/2x1/8	12.70	1/8	.19	4.82	13/16	20.63	1.13	28.70	1.53	38.86	.90	22.9
1/2	12.70	1/4	.28	7.11	13/16	20.63	1.31	33.27	1.71	43.43	.90	22.9
1/2	12.70	3/8	.38	9.65	13/16	20.63	1.31	33.27	1.71	43.43	.90	22.9
1/2	12.70	1/2	.41	10.41	7/8	22.22	1.53	38.90	1.93	49.02	.90	22.9
1/2	12.70	3/4	.41	10.41	1-1/16	26.98	1.59	40.38	1.99	50.54	.96	22.9
1/2x1	12.70	1	.41	10.41	1 3/8	34.92	1.85	47.00	2.25	57.15	.96	22.9
5/8	15.87	3/8	.38	9.65	15/16	23.81	1.34	34.03	1.74	44.19	.96	24.4
5/8	15.87	1/2	.47	11.90	15/16	23.81	1.53	38.86	1.93	49.02	.96	24.4
5/8	15.87	3/4	.50	12.70	1-1/16	26.98	1.59	40.38	1.99	50.54	.96	24.4
3/4	19.05	1/2	.50	12.70	1-1/16	26.98	1.59	40.38	1.99	50.54	.96	24.4
3/4	19.05	3/4	.62	15.74	1-1/16	26.98	1.59	40.38	1.99	50.54	.96	24.4
3/4	19.05	1	.62	15.74	13/8	34.92	1.85	47.00	2.25	57.15	.96	24.4
7/8	22.22	3/4	.72	18.28	1-3/16	30.16	1.59	40.38	1.99	50.54	1.02	25.9
1	25.40	3/4	.72	18.28	1-3/8	34.92	1.78	45.21	2.26	57.40	1.23	31.2
1	25.40	1	.88	22.35	1-3/8	34.92	1.97	50.03	2.45	62.23	1.23	31.2

**Reference Specifications: Normen:**

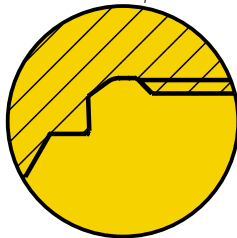
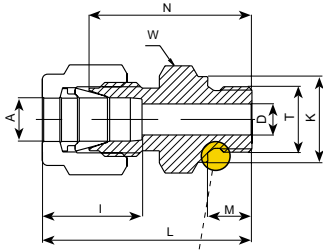
- 60° Thread angle
- Pitch measured in inches
- Truncation of root and crest are flat
- Taper angle 1° 47'

American Standard Pipe Thread (NPT).  
NPT (National Pipe Tapered) is made to specifications outlined in ASNI B1.20.1



"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

**MALE CONNECTOR**



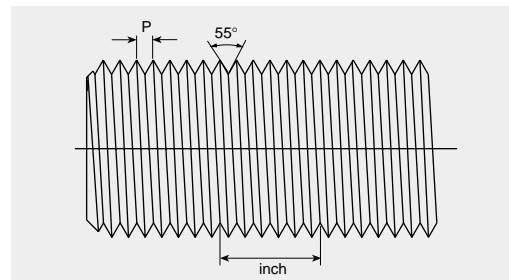
**768 LG Male Connector ISO Parallel Thread**

A Tube O.D. mm	T (ISO) in	D mm	K mm	W Width Across Hex. mm	N mm	M mm	L mm	I mm
2	G-1/8	1.7	13.8	14.0	23.4	7.1	30.0	12.9
3	G-1/8	2.4	13.8	14.0	23.4	7.1	30.0	12.9
3	G-1/4	2.4	18.0	19.0	28.7	11.2	35.3	12.9
4	G-1/8	2.4	13.8	14.0	24.1	7.1	30.7	13.7
6	G-1/8	4.0	13.8	14.0	24.9	7.1	24.9	15.3
6	G-1/4	4.8	18.0	19.0	30.2	11.2	37.6	15.3
6	G-3/8	4.8	21.8	22.0	31.5	11.2	38.9	15.3
6	G-1/2	4.8	26.0	27.0	37.3	14.2	44.7	15.3
8	G-1/8	4.0	13.8	15.0	25.7	7.1	33.2	16.2
8	G-1/4	6.4	13.8	19.0	31.0	11.2	38.5	16.2
8	G-3/8	6.4	21.8	22.0	32.3	11.2	39.8	16.2
8	G-1/2	6.4	26.0	27.0	38.1	14.2	45.6	16.2
10	G-1/4	5.9	18.0	19.0	31.8	11.2	39.4	17.2
10	G-3/8	7.9	21.8	22.0	33.0	11.2	40.6	17.2
10	G-1/2	7.9	26.0	27.0	38.9	14.2	46.5	17.2
12	G-1/4	5.9	18.0	22.0	32.5	11.2	42.6	22.8
12	G-3/8	7.9	21.8	22.0	33.0	11.2	43.1	22.8
12	G-1/2	9.5	26.0	27.0	38.9	14.2	49.0	22.8
12	G-3/4	9.5	32.0	35.0	42.7	15.7	52.8	22.8
16	G-3/8	7.9	21.8	24.0	33.8	11.2	43.9	24.4
16	G-1/2	11.9	26.0	27.0	38.9	14.2	49.0	24.4
18	G-1/2	11.9	26.0	27.0	38.9	14.2	49.0	24.4
18	G-3/4	15.1	32.0	35.0	42.7	15.7	52.8	24.4
20	G-1/2	11.9	26.0	30.0	40.4	14.2	50.5	26.0
20	G-3/4	15.9	32.0	35.0	42.7	15.7	52.8	26.0
22	G-3/4	15.9	32.0	35.0	42.7	15.7	52.8	26.0
22	G-1	18.3	39.0	41.0	45.2	18.3	55.3	26.0
25	G-3/4	15.9	32.0	35.0	45.2	15.7	57.5	31.3
25	G-1	19.8	39.0	41.0	47.8	18.3	60.1	31.3

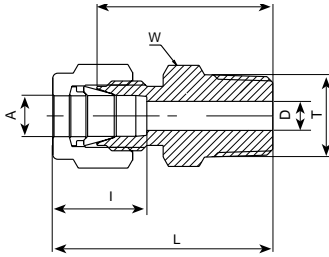
**Reference Specifications:**

- DIN - ISO 228/1
- BS - 2779
- JIS - BO202
- ISO - 228/1-BSP-P

- 55° Thread angle
- Pitch measured in inches
- Truncation of root and crest are round
- Diameter measured in inches



"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

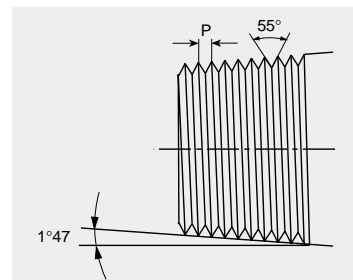
**MALE CONNECTOR****768 LR Male Connector ISO Tapered Thread**

A Tube O.D. mm	T (ISO) in	D mm	W Width Across Hex. mm	N mm	L mm	I mm
2	R-1/8	1.7	12	23.9	30.5	12.9
3	R-1/8	2.4	12	23.9	30.5	12.9
3	R-1/4	2.4	14	29.0	35.6	12.9
4	R-1/8	2.4	12	24.6	31.2	13.7
4	R-1/4	2.4	14	29.7	36.3	15.3
6	R-1/8	4.8	14	25.4	32.8	15.3
6	R-1/4	4.8	14	30.5	37.9	15.3
6	R-3/8	4.8	18	31.0	38.4	15.3
6	R-1/2	4.8	22	37.3	44.7	15.3
8	R-1/8	4.8	15	26.7	34.2	16.2
8	R-1/4	6.4	15	31.2	38.7	16.2
8	R-3/8	6.4	18	31.8	39.2	16.2
8	R-1/2	6.4	22	38.1	45.5	16.2
10	R-1/8	4.8	18	28.7	36.3	17.2
10	R-1/4	7.9	18	33.3	40.9	17.2
10	R-3/8	7.9	18	33.3	40.9	17.2
10	R-1/2	7.9	22	38.9	46.5	17.2
12	R-1/4	7.1	22	33.3	43.4	22.8
12	R-3/8	9.5	22	33.3	43.4	22.8
12	R-1/2	9.5	22	38.9	49.0	22.8
12	R-3/4	9.5	27	40.4	50.5	22.8
15	R-1/2	11.9	24	38.9	49.0	24.4
16	R-1/4	7.1	24	34.0	44.1	24.4
16	R-3/8	9.5	24	34.0	44.1	24.4
16	R-1/2	11.9	24	38.9	49.0	24.4
16	R-3/4	12.7	27	40.4	50.5	24.4
18	R-1/2	11.9	27	40.4	50.5	24.4
18	R-3/4	15.1	27	40.4	50.5	24.4
20	R-1/2	11.9	30	42.2	52.3	26.0
20	R-3/4	15.9	30	42.2	52.3	26.0
22	R-3/4	15.9	30	42.2	52.3	26.0
22	R-1	18.3	35	47.0	57.1	26.0
25	R-3/4	15.9	35	45.2	57.5	31.3
25	R-1	21.8	35	50.0	62.3	31.3

**Reference Specifications: Normen:**

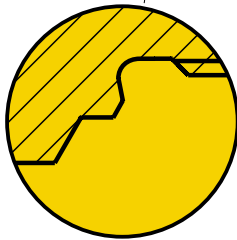
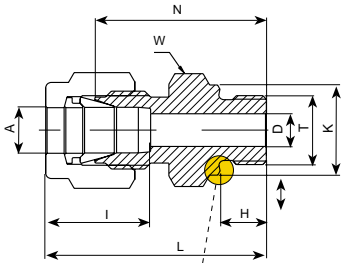
DIN - ISO 2999  
 BS - 21  
 JIS - BO203  
 ISO - 7/1-BSP-T

- 55° Thread angle
- Pitch measured in millimeters
- Truncation of root and crest are round
- Taper angle 1°47'



"D" - Dimension is minimum opening.

Dimensions are for reference only, and are subject to change without notice.

**MALE CONNECTOR**

**768 LOK Male Connector ISO Parallel Thread**

A Tube O.D.	T (P-ISO)	D	K	W Width Across Hex.	H	N	L	I
mm	in	mm	mm	mm	mm	mm	mm	mm
3	G1/8A	2.4	13.8	14	7.1	23.4	30.0	12.9
3	G1/4A	2.4	18.0	19	11.2	28.7	35.3	12.9
4	G1/8A	2.4	13.8	14	7.1	24.1	30.7	13.7
6	G1/8A	4.0	13.8	14	7.1	24.9	32.3	15.3
6	G1/4A	4.8	18.0	19	11.2	30.2	37.6	15.3
6	G3/8A	4.8	21.8	22	11.2	31.5	38.9	15.3
6	G1/2A	4.8	26.0	27	14.2	37.3	44.7	15.3
8	G1/8A	4.0	13.8	15	7.1	25.7	33.2	16.2
8	G1/4A	6.4	18.0	19	11.2	31.0	38.5	16.2
8	G3/8A	6.4	21.8	22	11.2	32.3	39.8	16.2
8	G1/2A	6.4	26.0	27	14.2	38.1	45.6	16.2
10	G1/4A	5.9	18.0	19	11.2	31.8	39.4	17.2
10	G3/8A	7.9	21.8	22	11.2	33.0	40.6	17.2
10	G1/2A	7.9	26.0	27	14.2	38.9	46.5	19.5
12	G1/4A	5.9	18.0	22	11.2	32.5	42.6	17.2
12	G3/8A	7.9	21.8	22	11.2	33.0	43.1	22.8
12	G1/2A	9.5	26.0	27	14.2	38.9	49.0	22.8
12	G3/4A	9.5	32.0	35	15.7	42.7	52.8	22.8
15	G1/2A	11.9	26.0	27	14.2	38.9	49.0	22.8
16	G3/8A	7.9	21.8	24	11.2	33.8	43.9	22.4
16	G1/2A	11.9	26.0	27	14.2	38.9	49.0	22.4
18	G1/2A	11.9	26.0	27	14.2	38.9	49.0	22.4
18	G3/4A	15.1	32.0	35	15.7	42.7	52.8	22.4
20	G1/2A	11.9	26.0	30	14.2	40.4	50.5	26.0
20	G3/4A	15.9	32.0	35	15.7	42.7	52.8	26.0
22	G3/4A	15.9	32.0	35	15.7	42.7	52.8	26.0
22	G1A	18.3	39.0	40	18.3	45.2	55.3	26.0
25	G3/4A	15.9	32.0	35	15.7	45.2	57.5	31.3
25	G1A	19.8	39.0	40	18.3	47.8	60.1	31.3

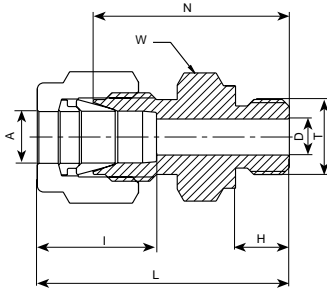
**Reference Specifications:  
Normen:**

DIN - ISO 228/1  
 BS - 2779  
 JIS - BO202  
 ISO - 228/1-BSP-P

"D" - Dimension is minimum opening.

Dimensions are for reference only, and are subject to change without notice.

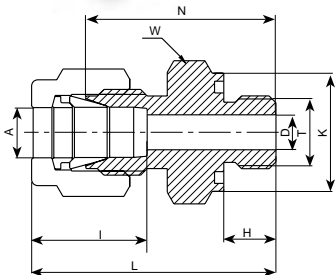
**MALE CONNECTOR**



**768 LOB Male Connector SAE/MS Straight Thread Boss\***

A Tube O.D.	T Straight Thread UN		D		W Width Across Hex		N		H		L		I		O-Ring**
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
1/8	3.17	5/16-24	.09	2.28	7/16	11.11	0.92	23.37	.30	7.62	1.18	29.97	0.50	12.7	-902
1/4	6.35	7/16-20	.19	4.82	9/16	14.28	1.05	26.67	.36	9.14	1.34	34.03	0.60	15.2	-904
1/4	6.35	9/16-18	.19	4.82	11/16	17.46	1.11	28.19	.39	9.90	1.40	35.56	0.60	15.2	-906
1/4	6.35	3/4 -16	.19	4.82	7/8	22.22	1.18	29.97	.44	11.17	1.47	37.33	0.60	15.2	-908
1/4	6.35	7/8-14	.19	4.82	1	25.4	1.31	33.27	.50	12.70	1.60	40.64	0.60	15.2	-910
5/16	7.93	1/2-20	.25	6.4	5/8	15.87	1.08	27.43	.36	9.14	1.37	34.80	0.64	16.2	-905
3/8	9.52	7/16-20	.20	5.08	5/8	15.87	1.11	28.19	.36	9.14	1.40	35.56	0.66	16.8	-904
3/8	9.52	9/16-18	.28	7.11	11/16	17.46	1.17	29.71	.39	9.90	1.46	37.02	0.66	16.8	-906
3/8	9.52	3/4 -16	.28	7.11	7/8	22.22	1.25	31.75	.44	11.17	1.54	39.11	0.66	16.8	-908
3/8	9.52	7/8-14	.28	7.11	1	25.40	1.37	34.80	.50	12.70	1.66	42.16	0.66	16.8	-910
1/2	12.70	9/16-18	.28	7.11	13/16	20.63	1.14	28.95	.39	9.90	1.54	39.11	0.90	22.9	-906
1/2	12.70	3/4 -16	.41	10.41	7/8	22.22	1.25	31.75	.44	11.17	1.65	41.91	0.90	22.9	-908
1/2	12.70	7/8-14	.41	10.41	1	25.40	1.37	34.80	.50	12.70	1.77	44.96	0.90	22.9	-910
1/2	12.70	1-1/16-12	.41	10.41	1-1/4	31.75	1.53	38.86	.59	14.98	1.93	49.02	0.90	22.9	-912
5/8	15.87	3/4 -16	.42	10.66	15/16	23.81	1.25	31.75	.44	11.17	1.65	41.91	0.96	22.4	-908
5/8	15/87	7/8 -14	.50	12.70	1	25.40	1.38	35.05	.50	12.70	1.78	45.21	0.96	22.4	-910
3/4	19.05	3/4 -16	.42	10.66	1-1/16	26.98	1.41	35.81	.44	11.17	1.81	46.0	0.96	22.4	-908
3/4	19.05	1-1/16 -12	.62	15.74	1-1/4	31.75	1.53	38.86	.59	14.98	1.93	49.02	0.96	22.4	-912
7/8	22.22	1-3/16 -12	.72	18.29	1-3/8	34.92	1.53	38.86	.59	14.98	1.93	49.02	1.02	25.9	-914
1	25.40	1-1/16 -12	.66	16.76	1-3/8	34.92	1.63	41.40	.59	14.98	2.11	53.59	1.23	31.2	-912
1	25.40	1-5/16 -12	.88	22.35	1-1/2	38.10	1.66	42.16	.59	14.98	2.14	54.35	1.23	31.2	-916

**MALE CONNECTOR**



**768 LOP O-Seal Male Connector NPT Tapered Thread**

A Tube O.D.	T (NPT) Short	D		K		W Width Across Hex.		N		H		L		I		O-Ring***	
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		
1/8	3.17	1/8	.09	2.28	.74	18.79	3/4	19.05	1.03	26.16	.28	7.11	1.29	32.76	.50	12.70	-111
1/4	6.35	1/8	.19	4.82	.74	18.79	3/4	19.05	1.10	27.94	.28	7.11	1.39	35.30	.60	15.24	-111
1/4	6.35	1/4	.19	4.82	.93	23.62	15/16	23.81	1.23	31.24	.38	9.65	1.52	38.60	.60	15.24	-113
3/8	9.52	1/4	.28	7.11	.93	23.62	15/16	23.81	1.28	32.51	.38	9.65	1.57	39.88	.66	16.76	-113
3/8	9.52	3/8	.28	7.11	1.12	28.45	1-1/8	28.57	1.34	34.04	.41	10.41	1.63	41.40	.66	16.76	-116
3/8	9.52	1/2	.28	7.11	1.30	33.02	1-5/16	33.33	1.56	39.62	.53	13.46	1.85	46.99	.66	16.76	-212
1/2	12.70	1/2	.41	10.41	1.30	33.02	1-5/16	33.33	1.56	39.62	.53	13.46	1.96	49.78	.90	22.86	-212

**768 LO O-Seal Male UNF Thread**

A Tube O.D.	T Straight Thread UNF	D		K		W Width Across Hex.		N		H		L		I		O-Ring***	
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		
1/16	1.58	5/16-24	.05	1.27	.55	14.0	9/16	14.28	.90	22.86	.34	8.63	1.05	26.67	.34	8.63	-011
1/8	3.17	5/16-24	.09	2.28	.55	14.0	9/16	14.28	1.02	25.90	.34	8.63	1.28	32.51	.50	12.70	-011
3/16	4.76	3/8-24	.12	3.04	.62	15.75	5/8	15.87	1.10	27.94	.38	9.65	1.36	34.54	.54	13.72	-012
1/4	6.35	7/16-20	.19	4.22	.74	18.80	3/4	19.05	1.23	31.24	.41	10.41	1.52	38.60	.60	15.24	-111
5/16	7.93	1/2 -20	.25	6.35	.86	21.84	7/8	22.22	1.32	33.52	.44	11.17	1.61	40.89	.64	16.25	-112
3/8	9.52	9/16-18	.28	7.11	.93	23.62	15/16	23.81	1.38	35.05	.47	11.93	1.67	40.89	.66	16.76	-113
1/2	12.70	3/4 -16	.41	10.41	1.12	28.45	1-1/8	28.57	1.41	35.81	.47	11.93	1.81	45.77	.90	22.86	-116
3/4	19.05	1-1/16-12	.62	15.74	1.49	37.85	1-1/2	38.10	1.65	41.91	.56	14.22	2.05	52.07	.96	24.38	-215
1	25.40	1-5/16-12	.88	22.35	1.74	44.20	1-3/4	44.45	1.81	45.97	.56	14.22	2.29	58.17	1.23	31.24	-219

\* Per SAE J1926 and MS 16142. See page 45 for mounting dimensions.

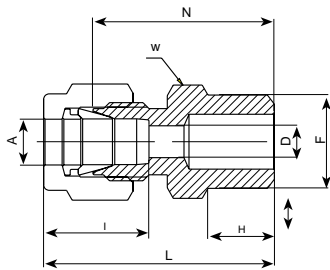
\*\* O-rings used are Viton 90 Durometer. Other O-ring materials are available on request. For more technical information see page 45.

\*\*\* O-rings used are BUNA 70 Durometer.

"D" - Dimension is minimum opening.

Dimensions are for reference only, and are subject to change without notice.

MALE PIPE WELD CONNECTOR



768 LN Male Pipe Weld Connector - Tube (Metric)

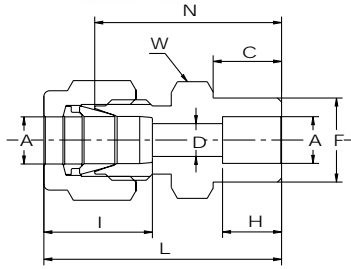
A Tube O.D. mm	F Pipe Size mm	D mm	W Width Across Hex. mm		N mm	H mm	L mm	I mm
3	10.3	2.4	12	23.1	9.7	30.5	12.9	
4	10.3	2.4	12	24.1	9.7	31.2	13.7	
6	10.3	4.8	14	25.4	9.7	32.8	15.3	
6	13.7	4.8	14	30.2	14.2	37.9	15.3	
8	10.3	5.1	15	26.7	9.7	34.2	16.2	
8	13.7	6.4	15	31.2	14.2	38.7	16.2	
8	21.3	6.4	22	37.3	19.0	45.6	16.2	
10	13.7	7.1	18	33.3	14.2	40.9	17.2	
10	17.1	7.9	18	32.5	14.2	40.9	17.2	
10	21.3	7.9	22	38.1	19.0	46.5	17.2	
12	13.7	7.1	22	33.3	14.2	43.4	22.8	
12	17.1	9.5	22	33.3	14.2	43.4	22.8	
12	21.3	9.5	22	38.1	19.0	49.0	22.8	
15	21.3	11.9	24	38.9	19.0	49.0	24.4	
16	21.3	12.7	24	38.9	19.0	49.0	24.4	
18	21.3	13.5	27	40.4	19.0	50.5	24.4	

768 LN Male Pipe Weld Connector - Tube (Inch)

A Tube O.D.		F Pipe Size		D		W Width Across Hex.		N		H		L		I	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/8	3.17	1/8	10.30	.09	2.28	7/16	11.11	.94	23.88	.38	9.65	1.20	30.48	.50	12.70
3/16	4.76	1/8	10.30	.12	3.04	7/16	11.11	.96	24.38	.38	9.65	1.22	30.98	.54	13.72
1/4	6.35	1/8	10.30	.19	4.82	1/2	12.70	1.01	25.65	.38	9.65	1.30	33.02	.60	15.24
1/4	6.35	1/4	13.70	.19	4.82	9/16	14.28	1.19	30.22	.56	14.22	1.48	37.59	.60	15.24
5/16	7.93	1/8	10.30	.20	5.08	9/16	14.28	1.05	26.67	.38	9.65	1.34	34.04	.64	16.25
5/16	7.93	1/4	13.70	.25	6.35	9/16	14.28	1.23	31.24	.56	14.22	1.52	38.61	.64	16.25
3/8	9.52	1/4	13.70	.28	7.11	5/8	15.87	1.28	32.51	.56	14.22	1.57	39.87	.66	16.76
3/8	9.52	3/8	17.10	.28	7.11	11/16	17.46	1.28	32.51	.56	14.22	1.57	39.87	.66	16.76
3/8	9.52	1/2	21.34	.28	7.11	7/8	22.22	1.53	38.86	.75	19.05	1.82	46.22	.66	16.76
1/2	12.70	3/8	17.10	.41	10.41	13/16	20.63	1.31	33.27	.56	14.22	1.71	44.43	.90	22.86
1/2	12.70	1/2	21.34	.41	10.41	7/8	22.22	1.53	38.86	.75	19.05	1.93	49.0	.90	22.86
1/2	12.70	3/4	26.67	.41	10.41	1-1/16	26.98	1.60	40.64	.75	19.05	2.00	50.80	.90	22.86
5/8	15.87	1/2	21.34	.50	12.70	15/16	23.81	1.53	38.86	.75	19.05	1.93	49.02	.96	24.38
3/4	19.05	3/4	26.67	.62	15.74	1-1/16	26.98	1.60	40.64	.75	19.05	2.00	50.80	.96	24.38
1	25.40	1	33.40	.88	22.35	1-3/8	34.92	1.97	50.03	.94	23.87	2.45	62.23	1.23	31.24

"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

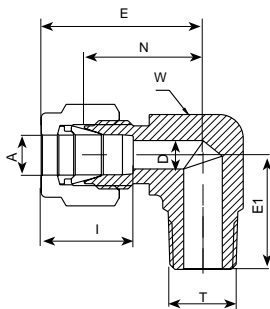
**TUBE SOCKET WELD UNION**



**768 LW Tube socket weld union**

A Tube O.D.	C		D MIN. OPENING		W HEX FLAT		F		H		I		L		N		
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
1/8	3.17	0.34	8.64	0.09	2.28	7/16	11.11	0.31	7.87	0.25	6.35	0.50	12.70	1.14	28.96	0.88	22.35
1/4	6.35	0.41	10.41	0.19	4.80	1/2	12.70	0.44	11.18	0.31	7.87	0.60	15.20	1.32	33.53	1.03	26.16
3/8	9.52	0.47	11.94	0.28	7.10	5/8	15.88	0.62	15.75	0.38	9.65	0.66	16.80	1.48	37.60	1.19	30.23
1/2	12.70	0.47	11.94	0.41	10.40	13/16	20.64	0.75	19.05	0.50	12.7	0.90	22.90	1.62	41.15	1.22	31.00
3/4	19.05	0.47	11.94	0.62	15.80	1-1/16	27.00	1.05	26.67	0.56	14.22	0.96	24.40	1.71	43.43	1.31	33.28
1	25.40	0.56	14.22	0.88	22.35	1-3/8	34.93	1.31	33.27	0.75	19.05	1.23	31.20	2.07	52.58	1.59	40.40

**MALE ELBOW**

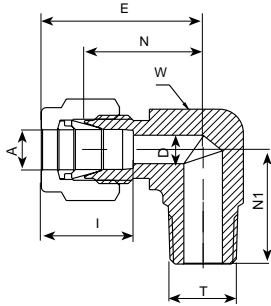


**769 L Male Elbow - Tube (Metric) Male NPT Thread**

A Tube O.D.	T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I
mm	in	mm	mm	in	mm	mm	mm	mm
3	1/8	2.4	11.1	7/16	17.0	23.6	17.8	12.9
3	1/4	2.4	15.9	5/8	18.0	24.6	23.4	12.9
4	1/8	2.4	11.1	7/16	18.8	25.4	18.8	13.7
4	1/4	2.4	15.9	5/8	18.8	25.4	23.4	13.7
6	1/8	4.8	12.7	1/2	19.6	27.0	18.8	15.3
6	1/4	4.8	12.7	1/2	19.6	27.0	23.4	15.3
6	3/8	4.8	18.5	13/16	20.6	29.8	26.2	15.3
6	1/2	4.8	23.8	15/16	24.4	31.8	33.0	15.3
8	1/8	4.8	15.9	5/8	21.3	28.8	19.8	16.2
8	1/4	6.4	16.0	5/8	21.3	28.8	24.4	16.2
8	1/2	6.4	23.8	15/16	25.1	32.6	33.0	16.2
10	1/8	4.8	17.5	11/16	23.9	31.5	21.6	17.2
10	1/4	7.1	17.5	11/16	23.9	31.5	26.2	17.2
10	3/8	7.9	17.5	13/16	20.6	31.5	26.2	17.2
10	1/2	7.9	23.8	15/16	25.9	33.5	33.0	17.2
12	1/4	7.1	20.5	13/16	25.9	36.0	28.2	22.8
12	3/8	9.5	20.5	13/16	25.9	36.0	28.2	22.8
12	1/2	9.5	24.0	15/16	25.9	36.0	33.0	22.8
12	3/4	9.5	28.6	1-1/8	29.7	39.8	36.8	22.8
15	1/2	11.9	24.0	15/16	27.9	38.0	35.1	24.4
16	3/8	9.5	24.0	15/16	27.9	38.0	30.2	24.4
16	1/2	11.9	23.8	15/16	27.9	38.0	35.1	24.4
16	3/4	12.7	28.6	1-1/8	29.7	39.8	36.8	24.4
18	1/2	11.9	28.6	1-1/8	29.7	39.8	36.8	24.4
18	3/4	15.1	28.6	1-1/8	29.7	39.8	36.8	24.4
20	1/2	11.9	30.2	1-3/16	34.5	44.6	41.7	26.0
20	3/4	15.9	30.2	1-3/16	34.5	44.6	41.7	26.0
22	3/4	15.9	30.2	1-3/16	34.5	44.6	41.7	26.0
22	1	18.3	35.0	1-3/8	34.5	44.6	46.5	26.0
25	3/4	15.9	35.0	1-3/8	36.8	49.1	41.7	31.3
25	1	21.8	35.0	1-3/8	36.8	49.1	46.5	31.3

"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

MALE ELBOW

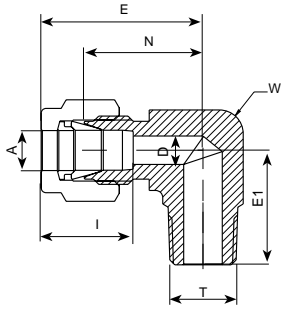


769 L Male Elbow - Tube (Metric) Male NPT Thread

A Tube O.D.		T (NPT)		D		W Width Across Hex.		N		E		N <sub>1</sub>		I	
in	mm	in	in	mm	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16	1.58	1/16	.05	1.27	3/8	9.52	.06	15.24	.75	19.05	.70	17.78	.34	8.6	
1/16	1.58	1/8	.05	1.27	7/16	11.11	.06	15.24	.75	19.05	.70	17.78	.34	8.6	
1/8	3.17	1/16	.09	2.28	3/8	9.52	.67	17.02	.93	23.62	.70	17.78	.50	12.7	
1/8	3.17	1/8	.09	2.28	7/16	11.11	.67	17.02	.93	23.62	.70	17.28	.50	12.7	
1/8	3.17	1/4	.09	2.28	5/8	15.9	.71	18.03	.97	24.64	.92	23.37	.50	12.7	
3/16	4.76	1/4	.12	3.04	5/8	15.9	.74	18.80	1.00	25.40	.92	23.37	.54	13.7	
3/16	4.76	1/8	.12	3.04	1/2	12.7	.74	18.8	1.00	25.4	.74	18.8	.54	13.7	
1/4	6.35	1/8	.19	4.82	1/2	12.70	.77	19.56	1.06	26.92	.74	18.8	.60	15.2	
1/4	6.35	1/4	.19	4.82	1/2	12.70	.77	19.56	1.06	26.92	.92	23.37	.60	15.2	
1/4	6.35	3/8	.19	4.82	13/16	20.6	.88	22.35	1.17	29.71	1.03	26.16	.60	15.2	
1/4	6.35	1/2	.19	4.82	15/16	23.8	.96	24.38	1.25	31.75	1.30	33.02	.60	15.2	
5/16	7.93	1/8	.19	4.82	5/8	15.87	.84	21.34	1.13	28.7	.78	45.21	.64	16.2	
5/16	7.93	1/4	.25	6.35	5/8	15.87	.84	21.34	1.13	28.7	.96	49.78	.64	16.2	
5/16	7.93	3/8	.25	6.35	13/16	20.6	.91	23.11	1.20	30.48	1.03	26.16	.64	16.2	
3/8	9.52	1/8	.19	4.82	5/8	15.87	.91	23.11	1.20	30.48	.82	20.83	.66	14.8	
3/8	9.52	1/4	.28	7.11	5/8	15.87	.91	23.11	1.20	30.48	1.00	25.40	.66	14.8	
3/8	9.52	3/8	.28	7.11	13/16	20.6	.94	23.87	1.23	31.24	1.03	26.16	.66	14.8	
3/8	9.52	1/2	.28	7.11	15/16	23.8	1.02	25.9	1.31	33.28	1.30	33.02	.66	14.8	
3/8	9.52	3/4	.28	7.11	1 1/8	28.6	1.17	29.71	1.46	37.08	1.45	36.83	.66	14.8	
1/2	12.70	1/4	.28	7.11	13/16	20.63	1.02	25.9	1.42	36.07	1.11	28.19	.90	22.9	
1/2	12.70	3/8	.38	9.65	13/16	20.63	1.02	25.9	1.42	36.07	1.11	28.19	.90	22.9	
1/2	12.70	1/2	.41	10.41	15/16	23.8	1.02	25.9	1.42	36.07	1.30	33.02	.90	22.9	
1/2	12.70	3/4	.41	10.41	1 1/8	28.6	1.17	29.71	1.57	39.88	1.45	36.83	.90	22.9	
5/8	15.87	3/8	.38	9.61	15/16	23.81	1.10	27.94	1.50	38.1	1.19	30.23	.96	24.4	
5/8	15.87	1/2	.47	11.94	15/16	23.81	1.10	27.94	1.50	38.1	1.38	35.05	.96	24.4	
5/8	15.87	3/4	.50	12.70	1 1/8	28.6	1.17	29.71	1.57	39.88	1.45	36.83	.96	24.4	
3/4	19.05	1/2	.47	11.94	1 1/8	28.6	1.17	29.71	1.57	39.88	1.45	36.83	.96	24.4	
3/4	19.05	3/4	.62	15.74	1 1/8	28.6	1.17	29.71	1.57	39.88	1.45	36.83	.96	24.4	
7/8	22.22	3/4	.62	15.74	1 3/16	30.2	1.36	34.54	1.76	44.7	1.64	41.66	1.02	25.9	
1	25.40	3/4	.62	15.74	1 3/8	34.9	1.45	36.83	1.93	49.02	1.64	41.66	1.23	31.2	
1	25.40	1	.88	22.35	1 3/8	34.9	1.45	36.83	1.93	49.02	1.83	46.48	1.23	31.2	
1 1/4	31.75	1 1/4	1.09	27.7	1 11/16	42.9	1.75	44.5	2.62	66.5	1.88	47.8	1.62	41.1	
1 1/2	38.1	1 1/2	1.34	34.0	2	50.8	2.00	50.8	3.07	78.0	2.38	60.5	1.97	50.0	

"D" - Dimension is minimum opening.  
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**MALE ELBOW**



Reference Specifications:  
Normen:

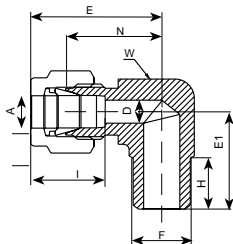
- DIN - 2999
- BS - 21
- JIS - BO203
- ISO - 7/1-BSP-T

**769 LR Male Elbow - Tube (Metric) ISO Tapered Thread**

A Tube O.D.	T (ISO)	D		W Width Across Hex.		N		E		E <sub>1</sub>	I
		mm	in	mm	in	mm	mm	mm	mm		
3	R-1/8	2.4	11.1	7/16	17.0	23.6	17.8	12.9			
3	R-1/4	2.4	15.9	5/8	18.0	24.6	23.4	12.9			
4	R-1/8	2.4	11.1	7/16	18.8	25.4	18.8	13.7			
4	R-1/4	2.4	15.9	5/8	18.8	25.4	23.4	13.7			
6	R-1/8	4.8	12.7	1/2	19.6	27.0	18.8	15.3			
6	R-1/4	4.8	12.7	1/2	19.6	27.0	23.4	15.3			
6	R-3/8	4.8	20.6	13/16	22.4	29.8	26.2	15.3			
6	R-1/2	4.8	23.5	15/16	24.4	31.8	33.0	15.3			
8	R-1/8	4.8	15.9	5/8	21.3	28.8	19.8	16.2			
8	R-1/4	6.4	15.9	5/8	21.3	28.8	24.4	16.2			
8	R-3/8	6.4	20.6	13/16	23.1	31.3	26.2	16.2			
8	R-1/2	6.4	23.8	15/16	25.1	32.6	33.0	16.2			
10	R-1/4	7.1	17.4	11/16	23.9	31.5	26.2	17.2			
10	R-3/8	7.9	20.6	13/16	23.9	31.5	26.2	17.2			
10	R-1/2	7.9	23.5	15/16	25.9	33.5	33.0	17.2			
12	R-1/8	4.8	20.5	13/16	25.9	36.0	23.6	22.8			
12	R-1/4	7.1	20.5	13/16	25.9	36.0	28.2	22.8			
12	R-3/8	9.5	20.5	13/16	25.9	36.0	28.2	22.8			
12	R-1/2	9.5	24.0	15/16	25.9	36.0	33.0	22.8			
12	R-3/4	9.5	28.6	1 1/8	29.7	39.8	36.8	22.8			
16	R-3/8	9.5	24.0	15/16	27.9	38.0	30.2	24.4			
16	R-1/2	11.9	24.0	15/16	27.9	38.0	35.1	24.4			
18	R-1/2	11.9	28.6	1 1/8	29.7	39.8	36.8	24.4			
18	R-3/4	15.1	28.6	1 1/8	29.7	39.8	36.8	24.4			
20	R-1/2	11.9	30.2	1 3/16	34.5	44.6	41.7	26.0			
20	R-3/4	15.9	30.2	1 3/16	34.5	44.6	41.7	26.0			
22	R-3/4	15.9	30.2	1 3/16	34.5	44.6	41.7	26.0			
22	R-1	18.3	35.0	1 3/8	34.5	44.6	46.5	26.0			
25	R-3/4	15.9	35.0	1 3/8	36.8	49.1	41.7	31.3			
25	R-1	21.8	35.0	1 3/8	36.8	49.1	46.5	31.3			

**769 LN Male Pipe Weld Elbow**

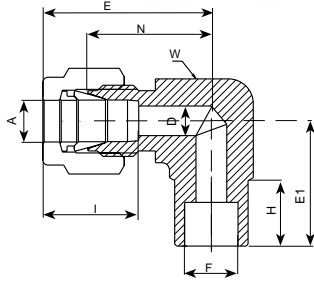
**MALE PIPE WELD ELBOW**



A Tube O.D.	F Pipe Size	D		W Width Across Hex.		N		H		E		E <sub>1</sub>	I				
		in	mm	in	mm	in	mm	in	mm	in	mm						
1/4	6.35	1/8	10.80	.19	4.82	1/2	12.70	.77	19.56	.38	7.65	1.06	26.92	.74	18.8	7.60	15.24
1/4	6.35	1/4	13.70	.19	4.82	1/2	12.70	.77	19.56	.56	14.22	1.06	26.92	.92	23.37	7.60	15.24
3/8	9.52	1/4	13.70	.28	7.11	5/8	15.87	.91	23.11	.56	14.22	1.20	30.48	1.00	25.40	7.66	16.76
1/2	12.70	1/2	21.34	.41	10.41	13/16	20.64	1.02	25.91	.75	19.05	1.42	36.06	1.30	33.02	8.90	22.86
3/4	19.05	3/4	26.67	.62	15.75	1-1/8	28.6	1.17	29.72	.75	19.05	1.57	39.88	1.45	36.83	8.90	24.38

"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

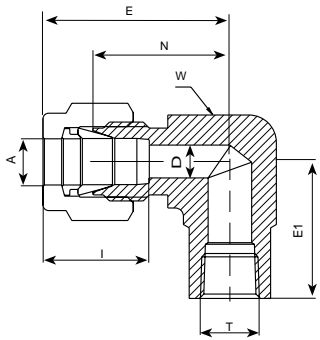
**SOCKET WELD ELBOW**



**769 LW Socket Weld Elbow**

A Tube O.D.		D		W Width Across Hex.		F		N		H		E		E <sub>1</sub>		I	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/4	6.35	.19	4.82	1/2	12.70	1/4	6.35	.78	19.81	.31	7.87	1.07	27.17	.78	19.81	0.6	15.2
3/8	9.52	.28	7.11	5/8	15.87	3/8	9.50	.91	23.11	.38	9.65	1.20	30.98	.91	23.11	0.66	16.76
1/2	12.70	.41	10.41	13/16	20.64	1/2	12.70	1.02	25.91	.50	12.70	1.41	35.81	1.02	25.91	0.90	22.9

**FEMALE ELBOW**



**770 L Female Elbow - Tube (Metric) to Female NPT Thread**

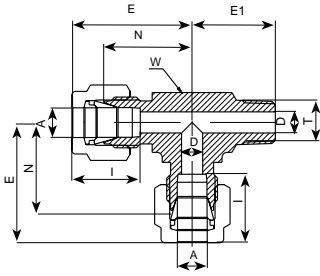
A Tube O.D. mm	T (NPT) in	D	W Width Across Hex.		N	E	E <sub>1</sub>	I
mm	in	mm	mm	in	mm	mm	mm	mm
6	1/8	4.8	16.0	5/8	19.6	27.0	19.1	17.7
6	1/4	4.8	20.6	13/16	22.4	29.8	22.4	17.7
12	1/2	9.5	30.0	1 1/8	28.6	38.8	28.5	22.8
10	1/4	7.9	20.6	13/16	25.9	33.5	22.4	22.8
12	1/4	9.5	20.6	13/16	25.9	36.0	22.4	22.8

**770 L Female Elbow - Tube (Inch) to Female NPT Thread**

A Tube O.D.	T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I
in	in	in	in	in	in	in	in	in
1/8	3/16	.09	5/8	1/2	.71	1.02	.75	.50
1/8	1/4	.09	13/16	5/8	.82	1.08	.88	.50
3/16	1/8	.12	5/8	1/2	.74	1.02	.75	.54
1/4	3/8	.19	5/8	3/4	.77	1.06	.75	.60
1/4	1/2	.19	13/16	3/4	.88	1.17	.88	.60
1/4	3/4	.19	15/16	7/8	.96	1.25	.88	.66
1/4	1/2	.19	1-1/8	1	1.07	1.36	1.12	.60
5/16	1/8	.25	5/8	1/2	.84	1.13	.75	.60
5/16	1/4	.25	13/16	5/8	.91	1.20	.88	.64
3/8	3/8	.28	5/8	3/4	.75	1.08	.75	.64
3/8	1/2	.28	13/16	3/4	.88	1.23	.88	.66
3/8	3/4	.28	15/16	7/8	.88	1.31	.88	.66
3/8	1/2	.28	1-1/8	1	1.12	1.42	1.12	.66
1/2	1/4	.41	13/16	3/4	.88	1.42	.88	.90
1/2	3/8	.41	15/16	7/8	.88	1.42	.88	.90
1/2	1/2	.41	1-1/8	1	1.12	1.53	1.12	.90
5/8	3/8	.50	15/16	7/8	.88	1.50	.88	.96
5/8	1/2	.50	1-1/8	1	1.12	1.57	1.12	.96
3/4	1/2	.62	1-1/8	1	1.12	1.57	1.12	.96
3/4	3/4	.62	1-3/8	1 1/8	1.25	1.76	1.25	.96
7/8	3/4	.72	1-3/8	1 1/8	1.25	1.76	1.25	1.02
1	3/4	.88	1-3/8	1 1/8	1.25	1.93	1.25	1.23
1	1	.88	1-11/16	1 3/8	1.50	2.11	1.50	1.23

"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

**MALE RUN TEE**



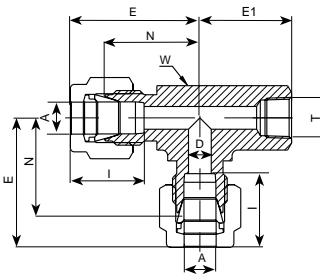
**771 L Male Run Tee - Tube (Metric) to Male NPT Thread**

A Tube O.D.	T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I
mm	in	mm	mm	in	mm	mm	mm	mm
6	1/8	4.8	12.7	1/2	19.6	27.0	18.0	15.3
6	1/4	4.8	16.0	5/8	19.6	27.0	23.4	15.3
8	1/8	4.8	16.0	5/8	22.4	29.9	20.8	15.3
8	1/4	6.4	16.0	5/8	22.4	29.9	25.4	16.2
10	1/4	7.1	17.5	11/16	25.9	33.5	28.2	16.2
12	1/4	7.1	20.6	13/16	25.9	36.0	28.2	22.8
12	3/8	9.5	20.6	13/16	25.9	36.0	28.2	22.8
12	1/2	9.5	24.0	15/16	25.9	36.0	33.0	22.8
16	1/2	11.9	24.0	15/16	27.9	38.0	35.0	24.4

**771 L Male Run Tee - Tube (Inch) to Male NPT Thread**

A Tube O.D.	T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I	
in mm	in	in mm	in mm	in mm	in mm	in mm	in mm	in mm	
1/8 3.17	1/8 .09	2.28	7/16 11.11	.67	17.02	.93	23.62	.70 17.78	.50 12.7
1/8 3.17	1/4 .09	2.28	5/8 15.9	.71	18.03	.97	24.64	.92 23.37	.50 12.7
3/16 4.76	1/8 .12	3.05	7/16 11.11	.70	17.78	.96	24.38	.70 17.78	.54 13.7
1/4 6.35	1/8 .19	4.82	1/2 12.70	.77	19.56	1.06	26.92	.74 18.8	.60 15.2
1/4 6.35	1/4 .19	4.82	5/8 15.9	.77	19.56	1.06	26.92	.92 23.37	.60 15.2
5/16 7.93	1/8 .19	4.82	5/8 15.87	.88	22.35	1.17	29.71	.82 20.83	.64 16.25
3/8 9.52	1/4 .28	7.11	5/8 15.87	.91	23.11	1.20	30.48	1.00 25.40	.66 16.76
3/8 9.52	3/8 .28	7.11	13/16 20.63	1.02	25.91	1.31	33.27	1.11 28.19	.66 16.76
1/2 12.70	3/8 .41	10.41	13/16 20.63	1.02	25.9	1.42	36.07	1.11 28.19	.90 22.86
1/2 12.70	1/2 .41	10.41	15/16 23.8	1.02	25.9	1.42	36.07	1.30 33.02	.90 22.86
5/8 15.87	1/2 .47	11.94	15/16 23.81	1.10	27.94	1.50	38.1	1.38 35.05	.96 24.38
3/4 19.05	3/4 .62	15.75	1-1/8 28.6	1.17	29.72	1.57	39.88	1.45 36.83	.96 24.38

**FEMALE RUN TEE**



**771 LF Female Run Tee - Tube (Inch) to Female NPT Thread**

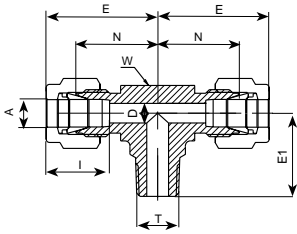
A Tube O.D.	T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I	
in mm	in	in mm	in mm	in mm	in mm	in mm	in mm	in mm	
1/8 3.17	1/8 .09	2.28	5/8 15.87	.71	18.03	.97	24.44	.75 19.05	0.5 12.7
1/4 6.35	1/8 .19	4.82	5/8 15.87	.77	19.56	1.06	26.92	.75 19.05	0.6 15.2
1/4 6.35	1/4 .19	4.82	13/16 20.63	.88	22.35	1.17	29.71	.88 22.35	0.6 15.2
3/8 9.52	1/4 .28	7.11	13/16 20.63	.94	23.87	1.23	31.24	.88 22.35	0.66 16.8
1/2 12.70	3/8 .41	10.41	15/16 23.81	1.02	25.9	1.42	36.07	.88 22.35	0.9 22.9
1/2 12.70	1/2 .41	10.41	1-1/8 28.6	1.17	29.72	1.57	39.88	1.12 28.45	0.9 22.9
3/4 19.05	3/4 .62	15.75	1-3/8 34.92	1.36	34.54	1.76	44.70	1.25 31.75	0.9 22.4

**771 LF Female Run Tee - Tube (Metric) to Female NPT Thread**

A Tube O.D.	T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I		
mm	in	in mm	in mm	in mm	in mm	in mm	in mm	in mm		
6	1/8	.19	4.8	5/8 15.87	.77	19.6	1.06	27.0	.74 19.00	.60 15.3
6	1/4	.19	4.8	13/16 20.63	.88	22.4	1.17	29.8	.87 22.30	.60 15.3
12	1/4	.37	9.5	13/16 20.6	1.01	25.9	1.41	36.0	.88 22.40	.89 22.8
12	1/2	.37	9.5	1-1/8 28.6	1.16	29.7	1.11	28.4	1.12 28.50	.89 22.8

"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

MALE BRANCH TEE



772 L Male Branch Tee - Tube (Metric) to Male NPT Thread

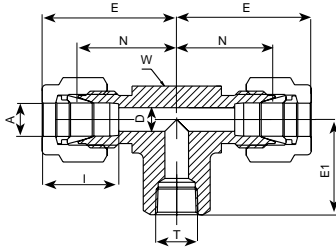
A Tube O.D.	T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I
			mm	in				
6	1/8	4.8	12.7	1/2	19.6	27.0	18.8	15.3
6	1/4	4.8	16.0	5/8	19.6	27.0	23.4	15.3
8	1/8	4.8	15.9	5/8	22.4	29.9	20.8	16.2
8	1/4	6.4	15.9	5/8	22.4	29.9	25.4	16.2
10	1/4	7.1	17.5	11/16	25.9	33.5	28.2	17.2
12	1/4	7.1	20.5	13/16	25.9	36.0	28.2	17.2
12	3/8	9.5	20.5	13/16	25.9	36.0	28.2	22.8
12	1/2	9.5	24.0	15/16	25.9	36.0	33.0	22.8
16	1/2	11.9	24.0	15/16	28.7	38.8	35.8	24.4

772 L Male Branch Tee - Tube (Inch) to Male NPT Thread

A Tube O.D.		T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I					
in	mm			in	mm					in	mm	in	mm	
1/8	3.17	1/8	.09	2.28	7/16	11.11	.67	17.02	.93	23.62	.70	17.78	0.5	12.7
1/8	3.17	1/4	.09	2.28	5/8	15.87	.71	18.03	.97	24.64	.92	23.37	0.5	12.7
3/16	4.76	1/8	.12	3.04	7/16	11.1	.70	17.78	.96	24.38	.70	17.78	.54	13.7
1/4	6.35	1/8	.19	4.82	1/2	12.70	.77	19.56	1.06	26.9	.74	18.8	.60	15.2
1/4	6.35	1/4	.19	4.82	5/8	15.87	.77	19.56	1.06	26.9	.92	23.87	.60	15.2
5/16	7.93	1/8	.19	4.82	5/8	15.87	.88	22.35	1.17	29.71	.82	20.83	.64	16.2
3/8	9.52	1/4	.28	7.11	5/8	15.87	.91	23.11	1.20	30.48	1.00	25.40	.66	16.76
3/8	9.52	3/8	.28	7.11	13/16	20.63	1.02	25.91	1.31	33.27	1.11	28.19	.66	16.76
1/2	12.70	3/8	.38	9.65	13/16	20.63	1.02	25.91	1.42	36.07	1.11	28.19	.90	22.9
1/2	12.70	1/2	.41	10.41	15/16	23.8	1.02	25.96	1.42	36.07	1.30	33.02	.90	22.9
5/8	15.87	1/2	0.47	11.94	15/16	23.81	1.13	28.7	1.53	38.86	1.41	35.8	.96	24.4
3/4	19.05	3/4	.62	15.75	1-1/8	28.6	1.17	29.72	1.57	39.88	1.45	36.83	.96	24.4

"D" - Dimension is minimum opening.  
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**FEMALE BRANCH TEE**



**772 LF Female Branch Tee - Tube (Metric) to Female NPT Thread**

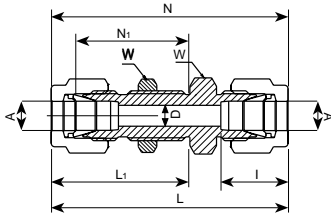
A Tube O.D.	T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I
			mm	in				
6	1/8	4.8	15.9	5/8	19.6	27.0	19.0	15.3
6	1/4	4.8	20.6	13/16	22.4	29.8	22.4	15.3
10	1/4	7.9	20.6	13/16	25.9	33.5	22.4	17.2
10	3/8	7.9	23.8	15/16	25.9	33.5	22.4	15.3
12	1/4	9.5	20.6	13/16	25.9	36.0	22.4	22.8
12	1/2	9.5	28.6	1-1/8	28.7	38.8	28.5	22.8
16	1/2	12.7	28.6	1-1/8	28.7	38.8	28.4	24.4

**772 LF Female Branch Tee - Tube (Inch) to Female NPT Thread**

A Tube O.D.	T (NPT)	D	W Width Across Hex.		N	E	E <sub>1</sub>	I						
			in	mm										
1/8	3.17	1/8	.09	2.28	5/8	15.87	.71	18.3	.97	24.64	.75	19.05	0.5	31.2
1/4	6.35	1/8	.19	4.82	5/8	15.9	.77	19.56	1.06	26.96	.75	19.05	0.6	12.7
1/4	6.35	1/4	.19	4.82	13/16	20.63	.88	22.35	1.17	29.71	.88	22.35	0.6	15.2
3/8	9.52	1/4	.28	7.11	13/16	20.63	.94	23.87	1.23	31.24	.88	22.35	.66	15.2
1/2	12.70	3/8	.41	10.41	15/16	23.81	1.02	25.9	1.42	36.07	.88	22.35	.90	16.8
1/2	12.70	1/4	.41	10.41	13/16	20.63	1.02	25.91	1.42	36.06	.88	22.35	0.90	22.9
1/2	12.70	1/2	.41	10.41	1-1/8	28.6	1.13	28.70	1.53	38.86	1.12	28.45	0.90	22.9
5/8	15.87	1/2	.50	12.70	1-1/8	28.6	1.13	28.7	1.53	38.86	1.12	28.44	0.96	22.9
3/4	19.05	3/4	.62	15.74	1-3/8	34.9	1.36	34.54	1.76	44.7	1.25	31.75	0.96	24.4
1	25.4	3/4	.88	22.35	1-3/8	34.92	1.45	36.83	1.93	49.02	1.25	31.75	1.23	24.4
1	25.4	1	.88	22.35	1-11/16	42.86	1.63	41.4	2.11	53.6	1.50	38.10	1.23	31.2

"D" - Dimension is minimum opening.  
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**BULKHEAD UNION**



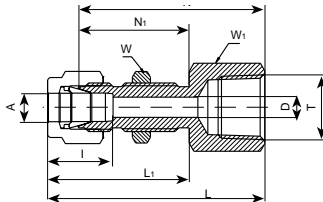
**774 L Bulkhead Union - Tube (Inch) to Tube (Inch)**

A Tube O.D.		D		W Width Across Hex.		N	N <sub>1</sub>	L		L <sub>1</sub>		I	Panel Hole Drill Size		Max Panel Thickness				
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		
1/16	1.58	.05	1.27	5/16	7.93	0.94	23.88	0.53	13.46	1.24	31.5	0.68	17.3	.34	8.6	13/64	5.16	.12	3.05
1/8	3.17	.09	2.28	1/2	12.70	1.50	38.10	0.97	24.63	2.02	51.30	1.23	31.24	.50	12.7	21/64	8.33	.50	12.70
3/16	4.76	.12	3.04	9/16	14.28	1.59	40.38	1.00	25.40	2.11	53.59	1.26	32.00	.54	13.7	25/64	9.92	.50	12.70
1/4	6.35	.19	4.82	5/8	15.87	1.69	42.92	1.03	26.16	2.27	57.65	1.32	33.52	.60	15.2	29/64	11.50	.40	10.16
5/16	7.93	.25	6.35	11/16	17.46	1.81	45.97	1.12	28.44	2.39	60.70	1.41	35.81	.64	16.2	33/64	13.09	.43	10.92
3/8	9.52	.28	7.11	3/4	19.05	1.87	47.5	1.16	29.46	2.45	62.2	1.45	36.83	.66	16.8	37/64	14.68	.44	11.17
1/2	12.70	.41	10.41	15/16	23.81	2.00	50.20	1.25	31.75	2.80	71.12	1.65	41.91	.90	22.9	49/64	19.44	.50	12.70
5/8	15.87	.50	12.7	1-1/16	26.98	2.06	52.32	1.28	32.51	2.86	72.64	1.68	42.67	.96	24.4	57/64	22.62	.50	12.70
3/4	19.05	.50	12.70	1-3/16	30.16	2.31	58.67	1.47	37.33	3.11	78.99	1.87	47.49	.96	24.4	1-1/64	25.79	.66	16.76
1	25.40	.88	22.35	1-5/8	41.27	2.81	71.37	1.78	45.21	3.77	95.76	2.26	57.40	1.23	31.2	1-21/64	33.73	.75	19.05

**774 L Bulkhead Union - Tube (Metric) to Tube (Metric)**

A Tube O.D.		D	W Width Across Hex.		N	N <sub>1</sub>	L	L <sub>1</sub>	I	Panel Hole Drill Size	Max Panel Thickness
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
3	2.4	14.0	38.1	24.6	51.3	31.2	12.9	8.30	12.7		
4	2.4	14.0	40.4	25.4	53.6	32.0	13.7	9.90	12.7		
6	4.8	16.0	42.9	26.2	57.7	33.6	15.3	11.50	10.2		
8	6.4	18.0	46.0	28.6	61.0	36.1	16.2	13.10	11.2		
10	7.9	22.0	48.5	29.4	63.7	37.0	17.2	16.25	11.2		
12	9.5	24.0	50.8	31.8	71.0	41.9	22.8	19.50	12.7		
15	11.9	27.0	52.3	32.5	72.5	42.6	24.4	22.80	12.7		
16	12.7	27.0	52.3	32.5	72.5	42.6	24.4	22.80	12.7		
18	15.1	30.0	58.7	37.3	78.9	47.4	24.4	26.00	16.8		
20	15.9	35.0	64.3	42.9	84.5	53.0	26.0	29.00	23.9		
25	21.8	40.0	71.4	45.2	96.0	57.5	31.2	33.70	19.0		

**BULKHEAD FEMALE CONNECTOR**

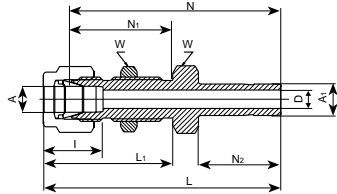


**774 LF Bulkhead Female Connector - Tube (Inch) to Female NPT Thread**

A Tube O.D.		t (NPT)	D		W Width Across Hex.		W <sub>1</sub> Width Across Hex.		N	N <sub>1</sub>	L		L <sub>1</sub>		I	Panel Hole Drill Size		Max Panel Thickness				
in	mm	in	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		
1/8	3.17	1/8	.09	2.28	9/16	14.28	1/2	12.70	1.50	38.10	.97	24.63	1.76	44.70	1.23	31.24	0.5	12.7	21/64	8.33	.50	12.70
1/4	6.35	1/8	.19	4.82	5/8	15.87	5/8	15.87	1.56	39.62	1.03	26.16	1.85	46.99	1.32	33.52	.60	15.2	29/64	11.50	.40	10.16
1/4	6.35	1/4	.19	4.82	3/4	19.05	5/8	15.87	1.75	44.45	1.03	26.16	2.04	51.81	1.32	33.52	.60	15.2	29/64	11.50	.40	10.16
3/8	9.52	1/4	.28	7.11	3/4	19.05	3/4	19.05	1.88	47.75	1.16	29.46	2.17	55.11	1.45	36.83	.66	16.8	37/64	14.68	.44	11.17
1/2	12.70	3/8	.41	10.41	15/16	23.81	15/16	23.81	2.03	51.56	1.25	31.75	2.43	61.72	1.65	41.91	.90	22.9	49/64	19.44	.50	12.70
1/2	12.70	1/2	.41	10.41	1-1/16	26.98	15/16	23.81	2.22	56.38	1.25	31.75	2.62	66.54	1.65	41.91	.90	22.9	49/64	19.44	.50	12.70

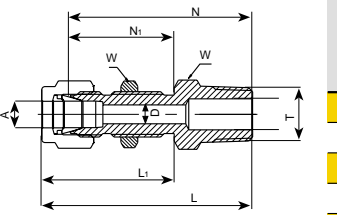
"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

**BULKHEAD REDUCER**



774 LT Bulkhead Reducer - Tube (Inch) to Tube (Inch)																		
A		A <sub>1</sub>	D			W		N		N <sub>1</sub>		N <sub>2</sub>		L		L <sub>1</sub>		I
Tube O.D.			Width			Across Hex.												
in	mm	in	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/8	3.17	1/8	.08	2.03	1/2	12.70	1.69	42.92	.97	24.63	.53	13.46	1.95	49.53	1.23	31.24	0.5	12.7
1/4	6.35	1/4	.19	4.82	5/8	15.87	1.90	48.26	1.03	26.16	.62	15.74	2.19	55.62	1.32	33.52	0.6	15.2
3/8	9.52	3/8	.28	7.11	3/4	19.05	2.13	54.10	1.16	29.46	.69	17.52	2.42	61.46	1.45	36.83	0.66	16.8
1/2	12.70	1/2	.39	9.90	15/16	23.81	2.47	62.73	1.25	31.75	.91	23.11	2.87	72.89	1.65	41.91	0.9	22.9

**BULKHEAD MALE CONNECTOR**

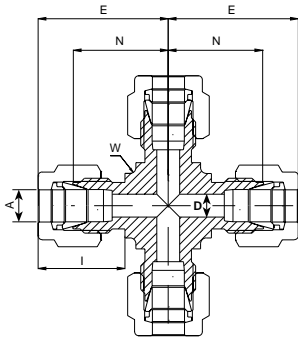


774 LM Bulkhead Male Connector - Tube (Metric) to Male NPT Thread										
A	T	D	W		N	N <sub>1</sub>	L	L <sub>1</sub>	Pane Hole Drill Size	Max Pane Thickness
Tube O.D.	(NPT)		Width Across Hex.							
mm	inch	mm	mm	mm	mm	mm	mm	mm	mm	mm
6	1/8	4.8	16.0	42.2	26.2	49.6	33.6	11.5	10.2	
6	1/4	4.8	16.0	46.0	26.2	53.4	33.6	11.5	10.2	
12	1/2	9.5	24.0	57.8	31.8	68.1	41.9	19.5	12.7	

774 LM Bulkhead Male Connector - Tube (Inch) to Male NPT Thread																		
A		T	D			W		N		N <sub>1</sub>		L		L <sub>1</sub>		Panel Hole Drill Size	Max Panel Thickness	
Tube O.D.		(NPT)	Width Across Hex.															
in	mm	in	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/8	3.17	1/8	.09	2.28	1/2	12.70	1.57	39.87	.97	24.63	1.83	46.48	1.23	31.24	21/64	8.33	12.70	.50
1/4	6.35	1/8	.19	4.82	5/8	15.87	1.66	42.16	1.03	26.16	1.95	49.53	1.32	33.52	29/64	11.50	10.16	.40
1/4	6.35	1/4	.19	4.82	5/8	15.87	1.81	45.97	1.03	26.16	2.10	53.34	1.32	33.52	29/64	11.50	10.16	.40
3/8	9.52	1/4	.28	7.11	3/4	19.05	1.97	50.03	1.16	29.46	2.26	57.40	1.45	36.83	37/64	14.68	11.17	.44
1/2	12.70	3/8	.37	9.40	15/16	23.81	2.09	53.09	1.25	31.75	2.49	63.25	1.65	41.91	49/64	19.44	12.70	.50
1/2	12.70	1/2	.41	10.41	15/16	23.81	2.31	58.8	1.25	31.75	2.71	68.83	1.65	41.91	49/64	19.44	12.70	.50

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UNION CROSS



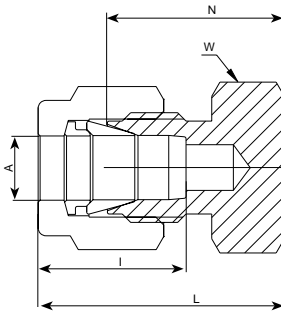
7102 L Union Cross - All Tubes (Metric)

A Tube O.D. mm	D mm	W Width Across Hex. mm	N mm	E mm	I mm
3	2.4	9.5	15.7	22.3	12.9
6	4.8	12.7	19.6	27.0	15.3
8	6.4	15.9	22.4	29.9	16.2
10	7.9	20.6	25.9	33.5	17.2
12	9.5	20.6	25.9	36.0	22.8
16	12.7	23.8	26.9	37.0	24.4
18	15.1	27.0	28.2	38.3	24.4
20	15.9	34.9	34.5	44.6	26.0

7102 L Union Cross - All Tubes (Inch)

A Tube O.D. in	D in	W Width Across Hex. in	N in	E in	I in						
1/8	3.17	.09	2.28	3/8	9.52	.62	15.74	.88	22.35	.50	12.7
1/4	6.35	.19	4.82	1/2	12.70	.77	19.56	1.07	27.18	.60	15.2
5/16	7.93	.25	6.35	5/8	15.87	.88	22.35	1.17	29.71	.64	16.2
3/8	9.52	.28	7.11	5/8	15.87	.91	23.11	1.20	30.48	.66	16.8
1/2	12.70	.41	10.41	13/16	20.63	1.02	25.9	1.42	36.07	.90	22.9
3/4	19.05	.62	15.74	1-1/16	26.98	1.17	29.72	1.57	39.88	.96	24.4
1	25.40	.88	22.35	1-3/8	34.9	1.45	36.8	1.93	49.02	1.23	31.2

CAP



7108 L Cap - Capping End of Tube (Metric)

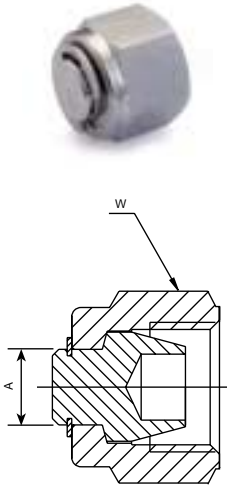
A Tube O.D. mm	W Width Across Hex. mm	N mm	L mm	I mm
2	12	13.5	20.1	12.9
3	12	13.5	20.1	12.9
4	12	14.7	21.3	13.7
6	14	15.7	23.1	15.3
8	15	17.0	24.6	16.2
10	18	15.0	26.6	17.2
12	22	19.0	29.1	22.8
15	24	19.8	29.9	24.4
16	24	19.8	29.9	24.4
18	27	21.3	31.4	24.4
20	30	23.9	34.0	26.0
22	30	23.9	34.0	26.0
25	35	26.2	38.5	31.3

7108 L Cap - Capping End of Tube (Inch)

A Tube O.D. in	W Width Across Hex. in	N in	L in	I in					
1/16	1.58	5/16	7.93	.44	11.17	.59	14.98	.34	8.6
1/8	3.17	7/16	11.11	.53	13.46	.79	20.06	.50	12.7
3/16	4.76	7/16	11.11	.58	14.73	.84	21.84	.54	13.7
1/4	6.35	1/2	12.70	.62	15.74	.91	23.11	.60	15.2
5/16	7.93	9/16	14.28	.67	17.01	.96	24.38	.64	16.2
3/8	9.52	5/8	15.87	.72	18.28	1.01	26.65	.66	16.2
1/2	12.70	13/16	20.63	.75	19.05	1.15	29.21	.90	16.8
5/8	15.87	15/16	23.81	.78	19.81	1.18	29.97	.96	22.9
3/4	19.05	1-1/16	26.98	.84	21.33	1.24	31.49	.96	24.4
7/8	22.22	1-3/16	30.16	.94	23.88	1.34	34.04	1.02	25.9
1	25.40	1-3/8	34.92	1.03	26.16	1.51	38.35	1.23	31.2

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and are subject to change without notice.

**PLUG**



**7121 L Plug - Plugging Unused Port of Fitting (Metric)**

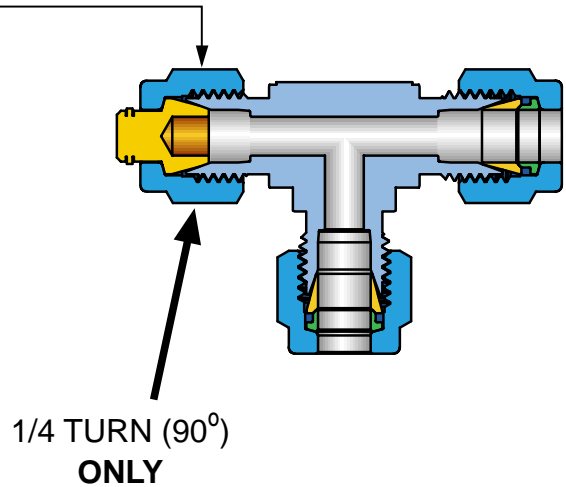
A	W	
	Width Across Hex.	
mm	mm	in
3	12	—
4	12	—
6	14	9/16
8	16	5/8
10	19	3/4
12	22	7/8
15	25	1
16	25	1
18	30	1-3/16
20	32	1-1/4
22	32	1-1/4
25	38	—

**7121 L Plug - Plugging Unused Port of Fitting (Inch)**

A	W		
	Width Across Hex.		
in	mm	in	mm
1/16	1.58	5/16	7.93
1/8	3.17	7/16	11.11
3/16	4.76	1/2	12.70
1/4	6.35	9/16	14.28
5/16	7.93	5/8	15.87
3/8	9.52	11/16	17.46
1/2	12.70	7/8	22.22
5/8	15.87	1	25.40
3/4	19.05	1-1/8	28.57
1	25.40	1-1/2	38.10

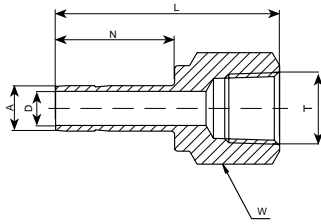
**PLUG ASSEMBLY INSTRUCTIONS**

7121L XX XX



"D" - Dimension is minimum opening.  
Dimensions are for reference only, and are subject to change without notice.

FEMALE ADAPTER  
TUBE TO PIPE



739 LF Female Adapter - Tube (Metric) Female Pipe

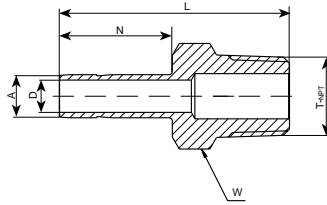
A Tube O.D. mm	T (NPT) inch	D		W Width Across Hex.		N		L	
		mm	mm	mm	in	mm	mm	mm	mm
3	1/8	1.8	14.0	9/16	13.5	31.3			
3	1/4	1.8	19.0	3/4	13.5	34.1			
4	1/8	2.4	14.0	9/16	14.2	32.0			
4	1/4	2.4	19.0	3/4	14.2	34.8			
6	1/8	4.6	14.0	9/16	15.7	32.5			
6	1/4	4.6	19.0	3/4	15.7	37.1			
6	3/8	4.6	22.0	7/8	15.7	39.6			
6	1/2	4.6	27.0	1-1/16	15.7	37.1			
8	1/8	6.4	14.0	9/16	16.5	34.3			
8	1/4	6.4	19.0	3/4	16.5	37.6			
10	1/8	7.1	14.0	9/16	17.3	35.3			
10	1/4	7.7	19.0	3/4	17.3	38.1			
10	3/8	7.7	22.0	7/8	17.3	40.1			
10	1/2	7.7	27.0	1-1/16	17.3	46.5			
12	1/4	9.1	19.0	3/4	22.8	43.7			
12	3/8	9.5	22.0	7/8	22.8	46.7			
12	1/2	9.1	27.0	1-1/16	22.8	52.3			
16	3/8	12.7	22.0	7/8	24.4	48.3			
16	1/2	12.7	27.0	1-1/16	24.4	53.9			
16	3/4	12.7	32.0	1 1/4	24.4	55.4			
20	1/2	15.1	27.0	1-1/16	24.4	53.9			
20	3/4	15.1	32.0	1-1/4	24.4	55.4			
20	1	15.1	41.0	1-5/8	24.4	62.5			
22	3/4	17.0	32.0	1-1/4	26.2	57.2			
25	3/4	23.7	32.0	1-1/4	30.7	61.7			
25	1	23.7	41.0	1-5/8	30.7	68.8			

739 LF Female Adapter - Tube (Inch) Female Pipe

A Tube O.D. in	mm	T (NPT) in	D		W Width Across Hex.		N		L	
			in	mm	in	mm	in	mm	in	mm
1/8	3.17	1/8	.09	2.3	9/16	14.28	.53	13.46	1.24	31.5
1/8	3.17	1/4	.09	2.3	3/4	19.05	.53	13.46	1.39	35.3
3/16	4.76	1/8	.12	3.04	9/16	14.28	.56	14.22	1.26	32.00
3/16	4.76	1/4	.12	3.04	3/4	19.05	.56	14.22	1.41	35.8
1/4	6.35	1/8	.198	4.83	9/16	14.28	.62	15.74	1.30	33.02
1/4	6.35	1/4	.198	4.83	3/4	19.05	.62	15.74	1.46	37.08
1/4	6.35	3/8	.19	4.83	7/8	22.22	.62	15.74	1.55	39.37
1/4	6.35	1/2	.19	4.83	1-1/16	26.98	.62	15.74	1.79	45.46
5/16	7.93	1/8	.25	6.35	9/16	14.28	.65	16.51	1.35	34.29
5/16	7.93	1/4	.25	6.35	3/4	19.05	.65	16.51	1.48	37.6
3/8	9.52	1/8	.28	7.11	9/16	14.28	.68	17.27	1.35	34.3
3/8	9.52	1/4	.28	7.11	3/4	19.05	.68	17.27	1.50	38.10
3/8	9.52	3/8	.28	7.11	7/8	22.22	.68	17.27	1.59	40.4
3/8	9.52	1/2	.28	7.11	1-1/16	26.98	.68	17.27	1.84	46.73
1/2	12.70	1/4	.39	9.90	3/4	19.05	.90	22.86	1.71	43.43
1/2	12.70	3/8	.39	9.90	7/8	22.22	.90	22.86	1.79	45.47
1/2	12.70	1/2	.39	9.90	1-1/16	26.98	.90	22.86	2.04	51.82
5/8	15.87	3/8	.50	12.70	7/8	22.22	.96	24.38	1.90	48.26
5/8	15.87	1/2	.50	12.70	1-1/16	26.98	.96	24.38	2.09	53.08
5/8	15.87	3/4	.50	12.70	1-1/4	31.75	.96	24.38	2.18	55.37
3/4	19.05	1/2	.59	14.98	1-1/16	26.98	.96	24.38	2.08	52.8
3/4	19.05	3/4	.59	14.98	1-5/16	31.75	.96	24.38	2.16	54.86
3/4	19.05	1	.59	14.98	1-5/8	41.27	.96	24.38	2.30	58.42
7/8	22.22	3/4	.68	17.27	1-1/4	31.75	1.03	26.16	2.25	57.15
1	25.40	3/4	.80	20.32	1-1/4	31.75	1.21	30.73	2.39	60.7
1	25.40	1	.80	20.32	1-5/8	41.27	1.21	30.73	2.53	64.26

"D" - Dimension is minimum opening.  
Dimensions are for reference only,  
and are subject to change without notice.

**MALE ADAPTER  
TUBE TO PIPE**



**739 LM Male Adapter - Tube (Metric) Male Pipe**

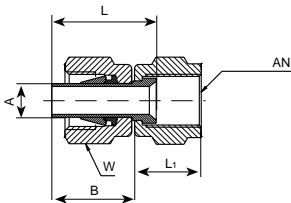
A Tube O.D. mm	T (NPT) in	D mm	W Width Across Hex. mm	N mm	L mm
3	1/8	1.8	11.0	13.5	28.5
3	1/4	1.8	14.0	13.5	33.3
4	1/8	2.4	11.0	14.2	29.2
4	1/4	2.4	14.0	14.2	34.0
6	1/8	4.6	11.0	15.7	32.8
6	1/4	4.6	14.0	15.7	38.1
6	3/8	4.6	17.0	15.7	36.3
6	1/2	4.6	22.0	15.7	41.9
8	1/8	6.4	11.0	16.5	31.8
8	1/4	6.4	14.0	16.5	39.1
10	1/8	7.1	11.0	17.3	33.3
10	1/4	7.1	14.0	17.3	39.9
10	3/8	7.7	17.0	17.3	40.6
10	1/2	7.7	22.0	17.3	46.2
12	1/4	7.1	14.0	22.9	46.5
12	3/8	9.5	17.0	22.9	44.5
12	1/2	9.1	22.0	22.9	52.0
16	3/8	12.7	17.0	24.4	46.0
16	1/2	12.7	22.0	24.4	50.1
16	3/4	12.7	27.0	24.4	51.6
20	1/2	15.1	22.0	24.4	50.8
20	3/4	15.1	27.0	24.4	51.6
20	1	15.1	35.0	24.4	57.9
22	3/4	17.0	27.0	26.2	53.1
25	3/4	19.6	27.0	30.8	57.9
25	1	19.6	35.0	30.8	65.1

**739 LM Male Adapter - Tube (Inch) Male Pipe**

A Tube O.D. in	A Tube O.D. mm	T (NPT) in	D in	D mm	W Width Across Hex. in	W Width Across Hex. mm	N in	N mm	L in	L mm
1/8	3.17	1/8	.09	2.28	7/16	11.11	.53	13.46	1.16	29.46
1/8	3.17	1/4	.09	2.28	9/16	14.28	.53	13.46	1.37	34.8
3/16	4.76	1/8	.12	3.04	7/16	11.11	.56	14.22	1.19	30.22
3/16	4.76	1/4	.12	3.04	9/16	14.28	.56	14.22	1.40	35.56
1/4	6.35	1/8	.19	4.83	7/16	11.11	.62	15.74	1.25	31.75
1/4	6.35	1/4	.19	4.83	9/16	14.28	.62	15.74	1.46	37.08
1/4	6.35	3/8	.19	4.83	11/16	17.46	.62	15.74	1.49	37.85
1/4	6.35	1/2	.19	4.83	7/8	22.22	.62	15.74	1.71	43.43
5/16	7.93	1/8	.25	6.35	7/16	11.11	.65	16.51	1.29	32.76
5/16	7.93	1/4	.25	6.35	9/16	14.28	.65	16.51	1.50	38.1
3/8	9.52	1/8	.28	7.11	7/16	11.11	.68	17.27	1.32	33.53
3/8	9.52	1/4	.28	7.11	9/16	14.28	.68	17.27	1.53	38.86
3/8	9.52	3/8	.28	7.11	11/16	17.46	.68	17.27	1.56	39.62
3/8	9.52	1/2	.28	7.11	7/8	22.22	.68	17.27	1.78	45.21
1/2	12.70	1/4	.39	9.90	9/16	14.28	.90	22.86	1.75	44.45
1/2	12.70	3/8	.39	9.90	11/16	17.46	.90	22.86	1.78	45.21
1/2	12.70	1/2	.39	9.90	7/8	22.22	.90	22.86	20.0	50.8
5/8	15.87	3/8	.50	12.70	11/16	17.46	.96	24.38	1.81	50.8
5/8	15.87	1/2	.50	12.70	7/8	22.22	.96	24.38	2.06	52.34
5/8	15/87	3/4	.50	12.70	1-1/16	26.98	.96	24.38	2.03	52.34
3/4	19.05	1/2	.59	14.98	7/8	22.22	.96	24.38	2.06	52.34
3/4	19.05	3/4	.59	14.98	1-1/16	26.98	.96	24.38	2.06	52.34
3/4	19.05	1	.59	14.98	1-3/8	34.92	.96	24.38	2.28	52.34
7/8	22.22	3/4	.68	17.27	1-1/16	26.98	1.03	26.16	2.09	52.34
1	25.40	3/4	.80	20.32	1-1/16	26.98	1.21	30.73	2.31	58.67
1	25.40	1	.80	20.32	1-3/8	34.92	1.21	30.73	2.60	66.04

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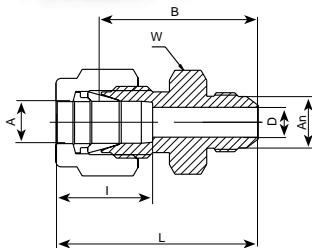
LET-LOK TO AN ADAPTER



761 LFL LET-LOK® to AN Adapter

A Tube O.D.		AN Tube Flare Size		W Width Across Hex.		L		L <sub>1</sub>		B	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/8	3.17	1/8	3.17	3/8	9.52	.73	18.54	.54	13.71	.53	13.46
1/8	3.17	1/4	6.35	9/16	14.28	.75	19.05	.62	15.74	.53	13.46
1/4	6.35	1/4	6.35	9/16	14.28	.84	21.33	.62	15.74	.62	15.75
3/8	9.52	3/8	9.52	11/16	17.46	.98	24.89	.72	21.59	.69	17.53
1/2	12.70	1/2	12.70	7/8	22.22	1.25	31.75	.85	21.59	.91	23.1

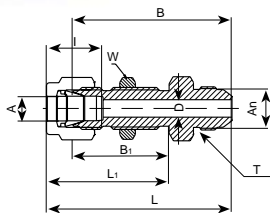
LET-LOK TO AN UNION



762 LFL LET-LOK® to AN Union - Tube (Inch) to Tube (Inch)

A Tube O.D.		AN Tube Flare Size		D		W Width Across Hex.		B		L		I		T Straigh Threa
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
1/16	1.58	1/8	3.17	.05	1.27	7/16	11.11	0.92	23.36	1.07	27.18	.43	10.92	5/16-24
1/8	3.17	1/8	3.17	.06	1.52	7/16	11.11	1.01	25.65	1.27	32.26	.60	15.24	5/16-24
1/8	3.17	1/4	6.35	.09	2.28	1/2	12.70	1.12	28.44	1.38	35.05	.60	15.24	7/16-20
1/4	6.35	1/4	6.35	.17	4.31	1/2	12.70	1.19	30.22	1.48	37.59	.70	17.78	1/16-20
3/8	9.52	1/4	6.35	.17	4.31	5/8	15.87	1.27	32.25	1.56	39.62	.76	19.30	7/16-20
3/8	9.52	3/8	9.52	.28	7.11	5/8	15.87	1.27	32.25	1.56	39.62	.76	19.30	9/16-18
1/2	12.70	1/2	12.70	.39	9.90	13/16	20.63	1.41	35.8	1.80	45.72	.86	21.84	3/4-16
3/4	19.05	3/4	19.05	.61	15.49	1-1/8	28.57	1.70	43.18	2.10	53.34	.86	21.84	1-1/16-12
1	25.40	1	25.40	.84	21.34	1-3/8	34.92	1.94	49.28	2.42	61.47	1.04	26.42	1-5/16-12

LET-LOK to AN Bulkhead Union

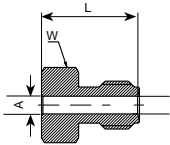


774 LFL LET-LOK® to AN Bulkhead Union - Tube (Inch) to Tube (Inch)

A Tube O.D.		AN Tube Flare Size		D		W Width Across Hex.		B		B <sub>1</sub>		L		L <sub>1</sub>		T Straight Thread	Panel Hole Drill Size	Max. Panel Thickness	I			
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm			
1/4	6.35	1/4	6.35	.19	4.82	5/8	15.87	1.83	46.48	1.03	26.16	2.12	53.84	1.32	33.52	7/16-20	29/64	11.50	11.50	10.16	0.6	15.2
3/8	9.52	3/8	9.52	.28	7.11	3/4	19.05	1.96	49.78	1.16	29.46	2.25	57.15	1.45	36.83	9/16-18	37/64	14.68	14.68	11.17	0.66	16.8
1/2	12.70	1/2	12.70	.39	9.90	15/16	23.81	2.19	55.63	1.25	31.75	2.59	65.79	1.65	41.91	3/4-16	49/64	19.45	19.45	12.70	0.90	22.9
3/4	19.05	3/4	19.05	.61	15.49	1-3/16	30.16	2.71	68.83	1.47	37.34	3.11	78.99	1.87	47.5	1-1/16-12	1-1/64	25.80	25.80	16.76	0.96	24.4
1	25.40	1	25.40	.84	21.33	1-5/8	41.27	3.16	80.26	1.78	45.21	3.64	92.46	2.26	57.4	1-5/16-12	1-21/64	33.73	33.73	19.05	1.23	31.2

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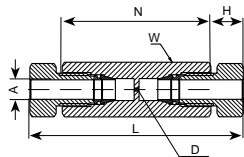
**MALE NUT**



**961 L Male Nut (Inch)**

A		W		L	
Tube O.D.		Width Across Hex			
in	mm	in	mm	in	mm
1/16	1.58	1/4	6.35	3/8	9.52

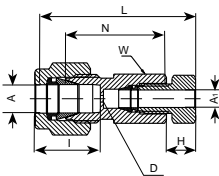
**UNION**



**962 L Union (Inch)**

A		D		W		N		H		L		Dead Space
Tube O.D.				Width Across								
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
1/16	1.58	0.013	0.33	1/4	6.35	0.84	21.34	0.2	5.08	1.25	31.75	6.6 x 10 <sup>-5</sup> cc

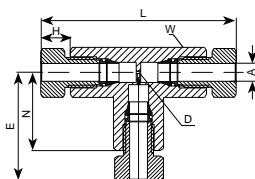
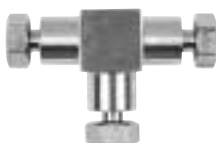
**REDUCING UNION**



**963 L Reducing Union (Inch)**

A		A <sub>1</sub>		D		W		N		L		H		I		Dead Space
Tube O.D.		Tube O.D.				Width Across Hex.										
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
1/4	6.35	1/16	1.58	.013	0.33	1/2	12.70	.75	19.05	1.24	31.50	.20	5.08	0.6	15.2	6.8 x 10 <sup>-5</sup> cc
3/8	9.52	1/16	1.58	.013	0.33	5/8	15.87	.81	20.57	1.30	33.02	.20	5.08	0.66	16.8	6.8 x 10 <sup>-5</sup> cc

**UNION TEE**



**964 L Union Tee (Inch)**

A		D		W		N		H		E		L		Dead Space
Tube O.D.				Width Across Hex.										
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
1/16	1.58	.013	0.33	5/16	7.93	0.45	11.43	0.20	5.08	0.65	16.51	1.30	33.02	2.8 x 10 <sup>-4</sup> cc

"D" - Dimension is minimum opening.  
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**POSITIONABLE**  
Per SAE J1926 and MS 16142



DOUBLE FERRULE FITTINGS

**769 LOB Male Elbow Tube to SAE/MS Straight Thread Boss (Positionable)\***

A	T	D	W	Wa	N	E	E1	L	M	I	O-RING**
Tube O.D.	SAE / MS		Width	Width							DASH No.
in mm	in	in mm	in mm	in mm	in	in	in mm	in mm	in mm	in mm	
1/4 6.35	7/16-20	0.19 4.8	1/2 12.7	9/16 14.3	0.83 21.1	1.12 28.5	1.12 28.5	0.39 9.9	0.65 16.5	0.60 15.2	904

**769 LOB 45° Male Elbow Tube to SAE/MS Straight Thread Boss (Positionable)\***

A	T	D	W	Wa	N	E	E1	L	M	I	O-RING**
Tube O.D.	SAE / MS		Width	Width							DASH No.
in mm	in	in mm	in mm	in mm	in	in	in mm	in mm	in mm	in mm	
3/8 9.53	9/16-18	0.28 7.1	13/16 20.6	11/16 17.5	0.81 20.6	1.10 28.0	1.06 27.0	0.39 10.0	0.79 20.1	0.66 16.8	906

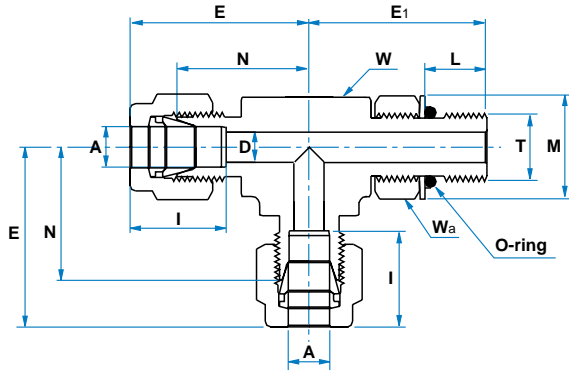
\* Per B.S. 2779

\*\* O-rings used are Viton 90 Durometer. Other O-rings materials are available on request. For more technical information see page 045.

Dimensions are for reference only, and are subject to change without notice.

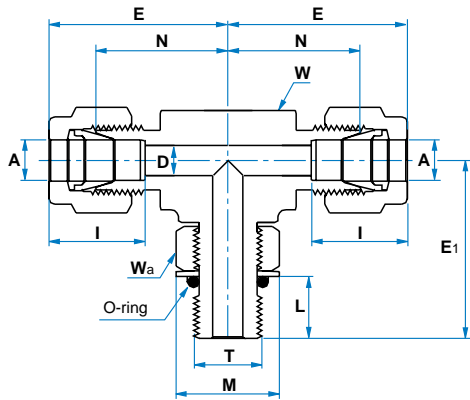
**771 LOB Male Run Tee Tube to SAE/MS Straight Thread Boss (Positionable)\***

Tube O.D.	SAE / MS	D	W	Wa	N	E	E1	L	M	I	O-RING**										
in mm	in	in mm	Width Across hex in mm	Width Across hex in mm	in mm	in mm	in mm	in mm	in mm	in mm	DASH No.										
1/4	6.35	7/16-20	0.19	4.8	1/2	12.7	9/16	14.3	0.83	21.1	1.12	28.5	1.12	28.5	0.39	9.9	0.65	16.5	0.60	15.2	904



**772 LOB Male Branch Tee Tube to SAE/MS Straight Thread Boss (Positionable)\***

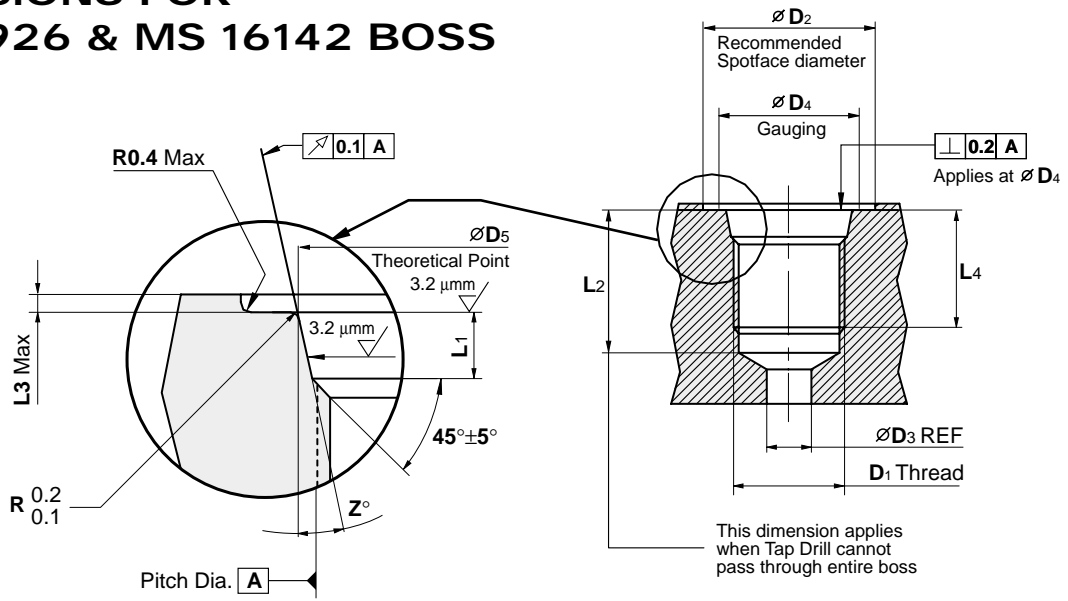
Tube O.D.	SAE / MS	D	W	Wa	N	E	E1	L	M	I	O-RING**										
in mm	in	in mm	Width Across hex in mm	Width Across hex in mm	in mm	in mm	in mm	in mm	in mm	in mm	DASH No.										
1/4	6.35	7/16-20	0.19	4.8	1/2	12.7	9/16	14.3	0.83	21.1	1.12	28.5	1.12	28.5	0.39	9.9	0.65	16.5	0.60	15.2	904



\* Per B.S. 2779

\*\* O-rings used are Viton 90 Durometer. Other O-rings materials are available on request. For more technical information see page 045. Dimensions are for reference only, and are subject to change without notice.

## DIMENSIONS FOR SAE J1926 & MS 16142 BOSS

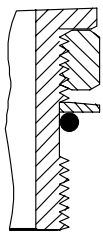


### MOUNTING DIMENSIONS FOR O-SEAL CONNECTORS (SAE/MS)

Tube O.D.		DI	D2	D3	D4	D5	L1	L2	L3	L4	Z°
Inch	mm	Thread Size Inch	Min Diameter $\pm 0.05$	Min Diameter mm	Min mm	$\pm 0.05$ mm	$\pm 0.02$ mm	Min mm	Max mm	Min Full Thread mm	$\pm 1^{\circ}$ mm
1/8	3.18	5/16 - 24 UNF - 2B	17	1.6	11	9.15	2.1	12	1.6	10	12
3/16	4.76	3/8 - 24 UNF - 2B	19	3.5	13	10.75	2.1	12	1.6	10	12
1/4	6.35	7/16 - 20 UNF - 2B	21	4.5	15	12.45	2.6	14	1.6	11.5	12
5/16	7.94	1/2 - 20 UNF - 2B	23	6	16	14.05	2.6	14	1.6	11.5	12
3/8	9.52	9/16 - 18 UNF - 2B	25	7.5	18	15.70	2.7	15.5	1.6	12.7	12
1/2	12.70	3/4 - 16 UNF - 2B	30	10	22	20.65	2.7	17.5	2.4	14.3	15
5/8	15.88	7/8 - 14 UNF - 2B	34	12.5	26	24	2.7	20	2.4	16.7	15
3/4	19.05	1-1/16 - 12 UNF - 2B	41	16	32	29.2	3.5	23	2.4	19	15
7/8	22.22	1-3/16 - 12 UN - 2B	45	18	35	32.4	3.5	23	2.4	19	15
1	25.40	1-5/16 - 12 UN - 2B	49	21	38	35.55	3.5	23	3.2	19	15

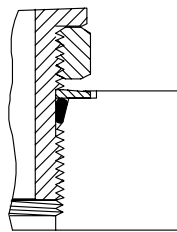
### INSTALLATION INSTRUCTIONS:

Figure 1  
Locking backed off



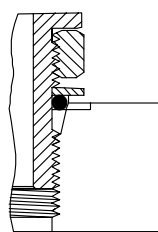
Lubricate O-ring by inserting it in the groove adjacent to the face of the metal back-up washer which is assembled at the extreme end of the groove as shown in figure 1.

Figure 2  
Fitting install hand tight



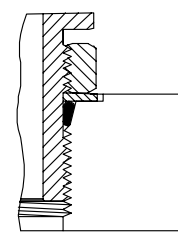
Install the fitting into the S.A.E. straight thread boss, figure 2, until the metal back-up washer contacts the face of the boss as shown in figure 2.

Figure 3  
Fittings backed - off for alignment (1 turn maximum)



Position the fitting by turning the counter clockwise up to maximum of one turn (see figure 3).

Figure 4  
Fitting locknut tight to appropriate torque

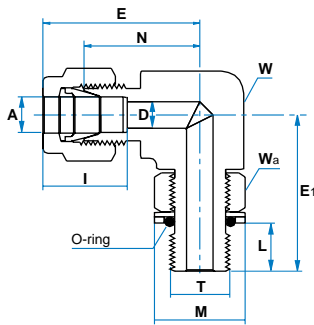


Holding the pad of the the fitting with a spanner, tighten the locknut and washer against the face as shown in figure 4.

**POSITIONABLE** ISO  
Parallel Thread



DOUBLE FERRULE FITTINGS



**769 LG Male Elbow Tube (Inch) to ISO Parallel Thread (Positionable)\***

A	T	D	W	Wa	N	E	E1	L	M	I	O-RING** I.D.	Washer										
Tube O.D.	(ISO)		Width	Width							DASH No.	mm										
in	mm	in	mm	mm	in	mm	in	mm	in	mm	in	mm										
1/4	6.35	1/8-28 BSPP	0.16	4.0	1/2	12.7	9/16	14.3	0.77	19.6	1.06	26.9	1.04	26.4	0.32	8.1	0.68	17.3	0.60	15.3	8.0	17.3x1.1

**769 LG Male Elbow Tube (Metric) to ISO Parallel Thread (Positionable)\***

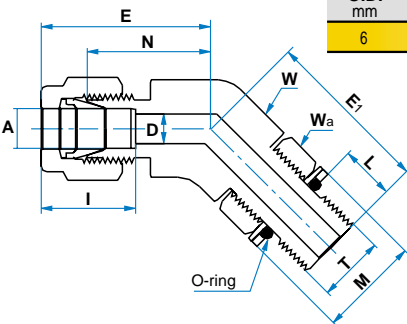
A	T	D	W	Wa	N	E	E1	L	M	I	O-RING** I.D.	Washer		
Tube O.D.	(ISO)		Width	Width							DASH No.	mm		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		
6	1/8-28 BSPP	4.0	1/2	12.7	9/16	14.3	19.6	26.9	26.4	8.1	17.3	15.3	8.0	17.3x1.1

**769 LG 45° Male Elbow Tube (Inch) to ISO Parallel Thread (Positionable)\***

A	T	D	W	Wa	N	E	E1	L	M	I	O-RING** I.D.	Washer										
Tube O.D.	(ISO)		Width	Width							DASH No.	mm										
in	mm	in	mm	mm	in	mm	in	mm	in	mm	in	mm										
1/4	6.35	1/8-28 BSPP	0.16	4.0	9/16	14.3	9/16	14.3	0.69	17.5	0.98	24.9	0.94	24.0	0.32	8.1	0.68	17.3	0.60	15.3	8.0	17.3x1.1

**769 LG 45° Male Elbow Tube (Metric) to ISO Parallel Thread (Positionable)\***

A	T	D	W	Wa	N	E	E1	L	M	I	O-RING** I.D.	Washer		
Tube O.D.	(ISO)		Width	Width							DASH No.	mm		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		
6	1/8-28 BSPP	4.0	9/16	14.3	9/16	14.3	17.5	24.9	24.0	8.1	17.3	15.3	8.0	17.3x1.1



\* Per B.S. 2779

\*\* O-rings used are Viton 90 Durometer. Other O-ring materials are available on request. For more technical information see page 48.

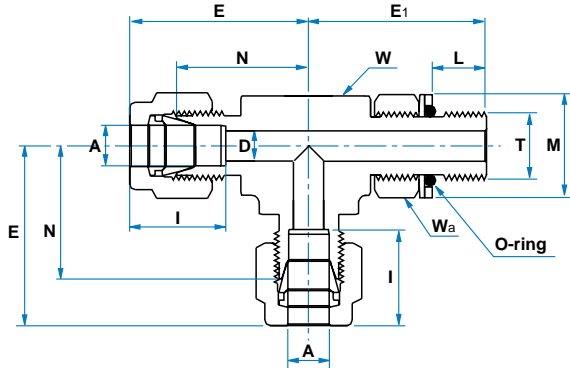
Dimensions are for reference only, and are subject to change without notice.

771 LG Male Run Tee Tube (Inch) to ISO Parallel Thread (Positionable)\*

A	T	D	W	Wa	N	E	E1	L	M	I	O-RING** I.D.	Washer										
Tube O.D.	(ISO)		Width	Width							DASH No.	mm										
in	mm	in	mm	mm	in	mm	in	mm	in	mm	in	mm										
1/4	6.35	1/8-28 BSPP	0.16	4.0	1/2	15.9	9/16	14.3	0.77	19.6	1.06	27	1.04	26.4	0.32	8.1	0.58	17.3	0.50	15.3	8.0	17.3x1.1

771 LG Male Run Tee Tube (Metric) to ISO Parallel Thread (Positionable)\*

A	T	D	W	Wa	N	E	E1	L	M	I	O-RING** I.D.	Washer		
Tube O.D.	(ISO)		Width	Width							DASH No.	mm		
mm	in	mm	in	mm	in	mm	mm	mm	mm	mm	mm	mm		
6	1/8-28 BSPP	4.0	1/2	12.7	9/16	14.3	19.5	27.0	26.4	8.1	17.3	15.3	8.0	17.3x1.1

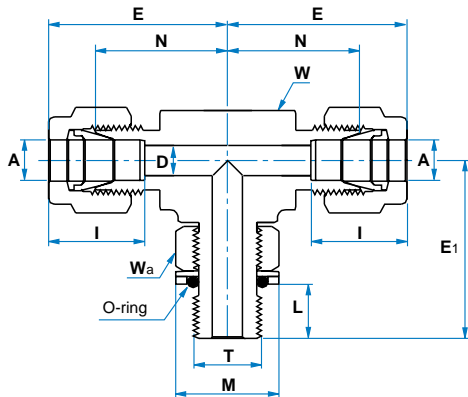


772 LG Male Branch Tee Tube (Inch) to ISO Parallel Thread (Positionable)\*

A	T	D	W	Wa	N	E	E1	L	M	I	O-RING** I.D.	Washer										
Tube O.D.	(ISO)		Width	Width							DASH No.	mm										
in	mm	in	mm	mm	in	mm	in	mm	in	mm	in	mm										
1/4	6.35	1/8-28 BSPP	0.15	4.0	1/2	12.7	9/16	14.3	0.77	19.6	1.06	26.9	1.04	26.4	0.32	8.1	0.68	17.3	0.60	15.3	8.0	17.3x1.1

772 LG Male Branch Tee Tube (Metric) to ISO Parallel Thread (Positionable)\*

A	T	D	W	Wa	N	E	E1	L	M	I	O-RING** I.D.	Washer		
Tube O.D.	(ISO)		Width	Width							DASH No.	mm		
mm	in	mm	in	mm	in	mm	mm	mm	mm	mm	mm	mm		
6	1/8-28 BSPP	4.0	1/2	12.7	9/16	14.3	19.6	24.0	26.4	8.1	17.3	15.3	8.0	17.3x1.1

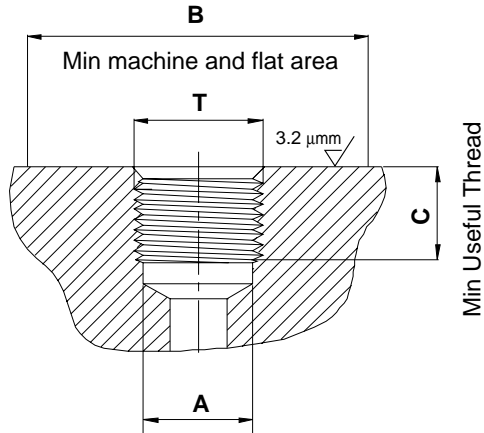


\* Per B.S. 2779

\*\* O-rings used are Viton 90 Durometer. Other O-ring materials are available on request. For more technical information see page 48.

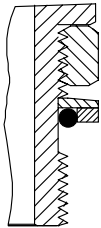
Dimensions are for reference only, and are subject to change without notice.

## ISO PARALLEL THREAD PER B.S. 2779



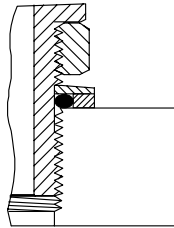
### INSTALLATION INSTRUCTIONS

Figure 1  
Locking backed off



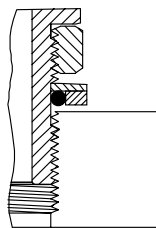
Lubricate O-ring by installing it in the groove adjacent to the face of the metal back-up washer which is assembled at the extreme end of the groove as shown in figure 1.

Figure 2  
Fitting install hand tight



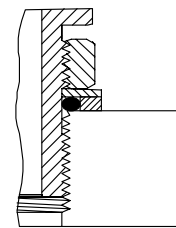
Install the fitting into the straight thread boss, figure 2, until the metal back-up washer contacts the face of the boss as shown in figure 2.

Figure 3  
Fittings backed - off for alignment (1 turn maximum)



Position the fitting by turning counter clockwise up to maximum of one turn. see figure 3.

Figure 4  
Fitting locknut tight to appropriate torque



Holding the pad of the the fitting with a wrench, tighten the locknut and washer against the face as shown in figure 4.

### MOUNTING DIMENSIONS CONNECTORS

T Female	A Thread Minor Diameter				B Min Machine and Flat Area		C Min Useful Thread	
	Max		Min.		Inch	mm	Inch	mm
	Inch	mm	Inch	mm				
1/8 - 28	0.35	8.89	0.34	8.64	0.53	13.50	0.28	7.00