Duolok
Tube Fittings



Duolok Instrumentation Tube Fittings

- ☑ Industry leading 2 Ferrule Design Interchangeable with leading competitors
- ☑ Individually bagged and marked with size for safety
- ☑ Available in Stainless Steel, Brass, Alloy 400, Alloy C-276
- ☑ Sizes: 1/16 - 2in, 3 - 25mm

www.mySSP.com

MADE IN USA



At SSP, we are proud to be an American manufacturing success story.

100% of our products are made in America. All of our manufacturing is performed in our 165,000 sq. ft. facility located near Cleveland, Ohio. Our facility is the largest vertically integrated, single-site operation in the industry. In addition to manufacturing and assembly, we have closed die forging, tool & die design, product engineering and testing operations under the same roof with customer service and management.

Made in America is good business. Not only do we make everything in America, we use American suppliers too. Buying American allows us to have better quality control and a more reliable supply chain. We can work more closely within our walls and with our suppliers to improve quality, reduce costs, and shorten lead times, which means faster service and better products for you.

Support where it counts. SSP products and services are supported by more than 4000 people and 350 distributor locations around the globe.
For a distributor near you, contact SSP Customer Service or visit www.mySSP.com/distributors.

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Duolok® Tube Fittings

Duolok® tube fittings use a double-ferrule design to ensure leak-tight performance in analytical and process instrumentation applications where leak-tight performance can have a significant impact on quality, productivity and cost. They are designed and manufactured to interchange and intermix with Swagelok® tube fittings when used in accordance with published installation and service recommendations of SSP.



Overview

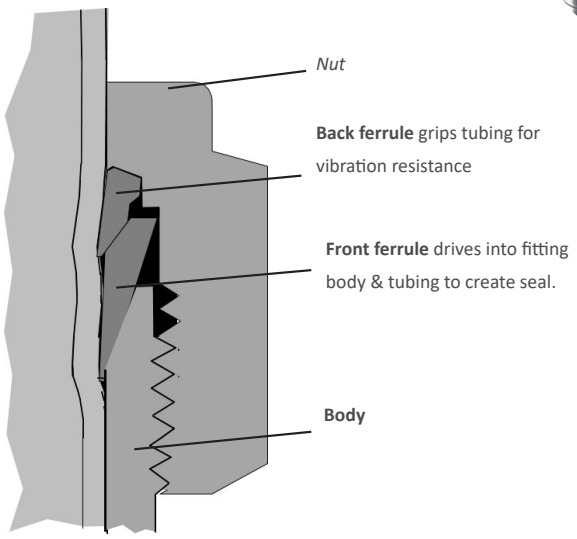
- MAWP: 12,000 psig*
- Temperature Range: -325 to 1200°F
- Materials: 316 SS, Alloy 400, C-276, and Brass. Other materials are available upon request
- Fractional Sizes: 1/16 to 2 in
- Metric Sizes: 3 to 25 mm
- Adapters: NPT, ISO/BSP, SAE/MS, AN, weld, tube stub, port connectors, hose, and ORFS
- Shapes: Straight, elbows, tees, crosses, caps, plugs
- Special fittings: Bulkhead and extended (long), bore through, positionable, calibration and dielectric fittings
- Accessories: Stop collars, bulkhead lock nuts, nut and ferrule sets, tools and accessories

*Duolok tube fittings are rated to the maximum allowable pressure rating of the tubing it connects. *(See page 62)*

Product Design

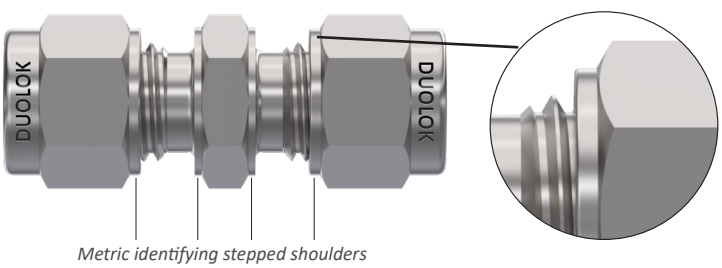
Features

- Leak-tight double-ferrule design
- Spring action of ferrules compensates for changes in temperature and pressure
- Ferrule drives along the axis of the fitting. Nut torque is not transmitted to the tubing during installation for less tube stress
- Expanite® process hardens the back ferrule for exceptional tube grip and low corrosion
- Gap-inspection gage allows quality assurance prior to system testing
- Fast, easy and consistent installation

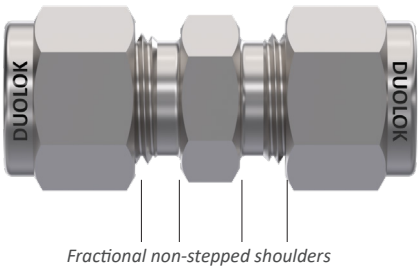


Identifying Metric Duolok Fittings

Duolok metric tube fittings have a stepped shoulder on the body hex and the nut; shaped fittings have a stepped shoulder on the nut.



Metric identifying stepped shoulders



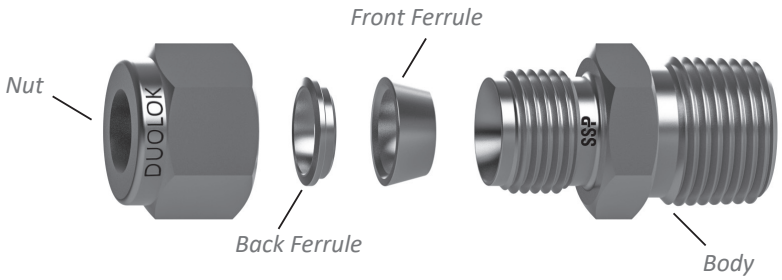
Fractional non-stepped shoulders

Tube Fittings

Design

SSP tube fittings are designed and manufactured to provide a reliable, leak-proof connection in instrumentation and process tubing systems. SSP Duolok tube fittings consist of four precision-machined components:

Figure 01.



The double ferrule design, with the staged sequential swaging action of the ferrules during make-up, compensates for the variations in tubing materials, hardness, and thickness of the tube wall to provide leak-tight connections in an extensive range of applications.

Additionally, in fulfillment of the design criteria, all SSP tube fitting components are manufactured with stringent tolerances and superior surface finishes under rigorous quality control standards to ensure the optimum performance of each component.

Operation

Through the critical interaction of precision-machined fitting components with the process tube, a leak-tight seal is achieved. The simple rotation of the SSP tube fitting nut provides the axial thrust necessary to swage the ferrules to the outside diameter of the tube. To eliminate any potential stress on an existing system, the tube fittings have been designed to minimize the transmission of installation torque from the tube fittings to the tubing.

During the rotational movement of the nut, the internal surface of the nut meets with the rear surface of the back ferrule to axially move the back ferrule forward against the rear angle of the front ferrule. Simultaneously, the front ferrule is driven forward into the angular section of the fitting body where the desired “lift to seal” action of the front ferrule occurs. The back ferrule “locks’’ on the outside diameter of the tube to complete the sealing action and secure the tube within the fitting.

The resulting “engineered gap’’ between the front and back ferrule is designed to help compensate for exposure to system variables such as vibration, pressure pulsation and thermal expansion/contraction.

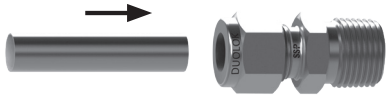
Installation Instructions

Initial Installation

1. SSP tube fittings come individually bagged and completely assembled for immediate use. There is no need for disassembly prior to use. Simply remove the tube fitting from its bag, insert the tube* until it bottoms in the SSP tube fitting body and then hand tighten the Duolok nut. (See Figure 02.)

Tubing ends should be cut as straight as possible with all O.D. and I.D. burrs removed. Use of a tubing cutter or guide blocks with a hacksaw is recommended.

Figure 02.



NOTE: For extreme system applications using high pressures or requiring an extra factor of safety, it may be desirable to use a "common make up starting point" to alleviate the inherent variations in tubing diameters. Installation should begin from a snug position, which is achieved by wrench tightening the Duolok nut until the inserted tubing will not move by hand (approximately 1/8 turn). From this new "snug" starting point, continue with the recommended installation instructions.

2. While holding the fitting body stable with a back-up wrench, scribe the nut for a reference point and wrench tighten the nut 1-1/4 turns for sizes 1/4" to 1" or 6mm to 25mm and 3/4 turn for sizes 1/16" to 3/16" or 3mm to 5mm. (See Figures 03 and 04 below.)

NOTE: For all sizes, tighten plugs (P), machined ferrule end of port connector (PC) and the SSP tube fitting end of the Female AN adapter (ANF) only 1⁄4 of a turn. Tube fittings in sizes over 25mm and 1in. require the use of the SSP Hydraulic Swaging Tool for installation. Contact your local SSP Distributor for more information.

Figure 03.

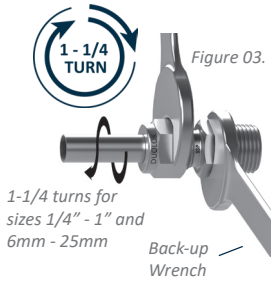
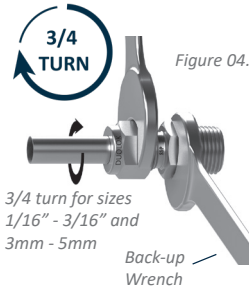


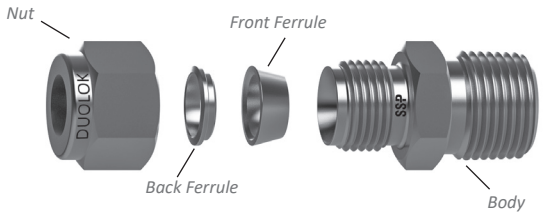
Figure 04.



Component Assembly

Should individual component assembly of an SSP tube fitting ever be required, careful attention must be given to the proper sequence and direction of the SSP tube fitting components. (See Figure 07.)

Figure 07.

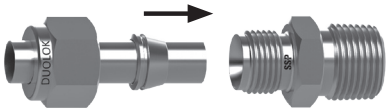


Reassembly Instructions

Prior to disassembly mark the body hex and nut hex with a mark, then remove the nut.

1. To reassemble an SSP tube fitting connection, simply insert the tubing with the previously installed ferrules and nut into the fitting body until the front ferrule seats within the fitting body, and then tighten the nut by hand. (See Figure 05.)

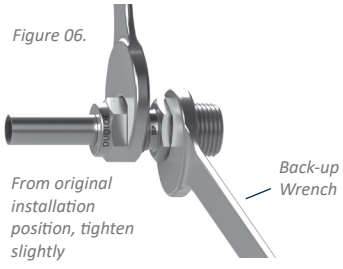
Figure 05.



NOTE: By following proper reassembly procedures, SSP tube fitting connections may be disconnected and reconnected repeatedly.

2. While holding the fitting body stable with a back-up wrench, use a wrench to rotate the SSP nut to the fitting's original installation position (approximately 1⁄4 turn from the hand-tight, snug position) then continue to tighten the SSP nut slightly. (See Figure 06.)

Figure 06.



Pre-setting

The SSP tube fitting pre-setting tool is used to preset the ferrules on the tubing for subsequent installation in a fitting body. The pre-setting tool can be especially helpful when an installation must be made in a tight space or hard-to-work area. The pre-setting tool allows the major portion of the installation work to occur in a more favorable work setting with only the completion of the installation in hard to work areas, and/or in OEM applications when repetitive systems are being built.

Pre-setting Instructions

1. Secure the pre-setting tool in a vise.

2. Remove the nut and ferrules from the fitting, and assemble the SSP nut and ferrules loosely to the pre-setting tool. Insert the tubing through the nut and ferrules until it bottoms in the pre-setting tool, and then follow the standard SSP tube fitting installation instructions from page 6.
(See Figures 08a and 08b.)

Figure 08a.

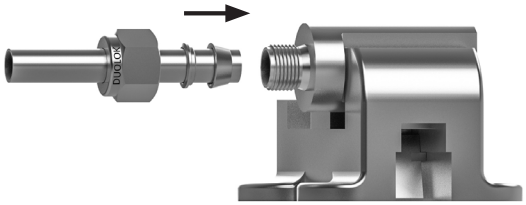
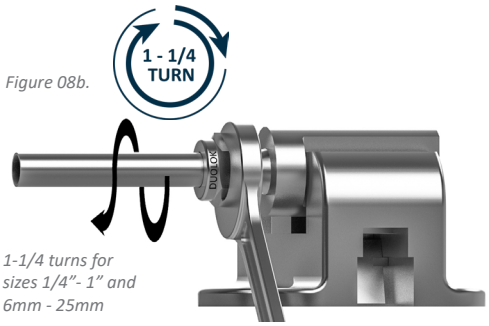


Figure 08b.

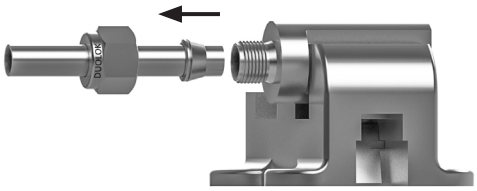


1-1/4 turns for sizes 1/4"- 1" and 6mm - 25mm

3/4 turn for sizes 1/16" - 3/16" and 3mm - 5mm

3. Loosen the nut and remove the tubing with the pre-set SSP tube fitting nut and ferrules from the pre-setting tool.
(See Figure 09.)

Figure 09.



4. Installation of the tubing, with the pre-set SSP tube fitting ferrules and nut into the appropriate fitting body, can now be made by tightening the nut onto the fitting body until it is finger-tight. Hold the fitting body stable with a back-up wrench and tighten the nut another 1/2 turn with a wrench.
(See Figures 10a and 10b)

Figure 10a.

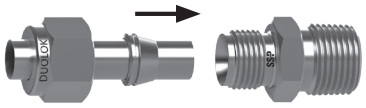
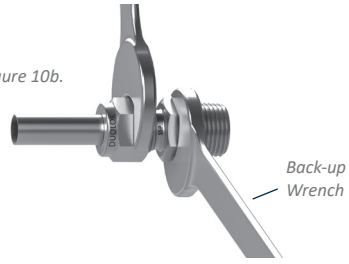


Figure 10b.



5. Return the protective nut to the presetting tool.

NOTE: To extend the life of a pre-setting tool, lubricate the tool with a lubricant compatible with the system's tubing material, environment, and media. Also, at times, an oversized or very soft tubing may tend to stick in the pre-setting tool after makeup. To remove the tubing, gently rock it back and forth. Never turn the tube with pliers or another tool, as such action may damage the sealing surfaces.

Gageability

Each SSP tube fitting component is manufactured with utmost precision to provide the optimum performance interaction of the components during assembly. By maintaining such stringent manufacturing tolerances, SSP tube fittings are considered gageable for sufficient pull-up during initial installation. The SSP tube fitting "Gap Gages" are designed to identify for the installer or inspector, prior to pressurizing a system, that sufficient tightening of the tube fitting has occurred. Gageability provides additional reliability for proper installation and ultimate tube fitting safety and performance.

Gap Gage Instructions

1. Follow proper installation instructions (as supplied with the fittings, or published in the SSP tube fittings catalog).

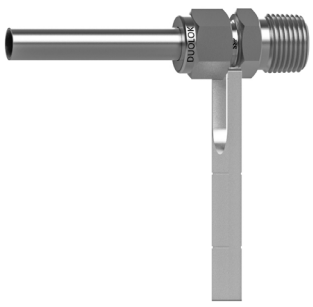
2. After completion of the installation instructions and prior to pressurizing the system, choose the proper size Gap Gage and try to insert it between the fitting's nut and body hex. (See Figures 11a and 11b.)

3. If the Gap Gage will not enter between the fitting's nut and body hex, no additional tightening is required.

4. If the gage fits then additional tightening is required until the gap gage will not enter between the fitting's nut and body hex.

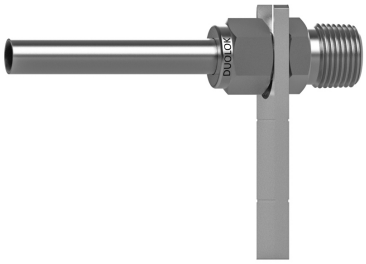
NOTE: Swagelok® Gap Inspection Gages may also be utilized effectively with Duolok tube fittings.

Figure 11a.



No additional tightening required.

Figure 11b.



Additional tightening required.

**** Swagelok is a registered trademark of the Swagelok Company.***

How to Order- Duolok Tube Fittings

1. *Select the Instrumentation Material Designator from Chart A. Example:* ***ISS****D4MC2*
2. *Add the SSP Brand Designator ("D" for Duolok). Example: ISS****D****4MC2*
3. *Add the Tube O.D. from Chart C. Example: ISSD****4****MC2*
4. *Add the Type of Tube Fitting from Chart D. Example: ISSD4****MC****2*
5. *For a reduced size tube O.D. or a differing type of end connection, add a second end connection from chart E. Example: ISSD4MC****2***
6. *Add options if applicable.*



Basic Part Number					Options
A	B	C	D	E	– F
ISS	D	4	MC	2	SILN2

A MATERIAL

IB	*Brass*
ISS	*316 Stainless Steel*
IS	*Carbon Steel*
IM	*Monel*
*IN**	*Nylon*
*IPFA**	*PFA Teflon*
*ITFE**	*PTFE Teflon*

**Ferrules Only*

B SSP BRAND DESIGNATOR

D Duolok

C + E SIZE

1	*1/16"*	*10*	*5/8"*
2	*1/8"*	*12*	*3/4"*
3	*3/16"*	*16*	*1"*
4	*1/4"*	*20*	*1-1/4"*
5	*5/16"*	*24*	*1-1/2"*
6	*3/8"*	*32*	*2"*
8	*1/2"*		

F OPTIONS

-NBR3	*Low Temp Nitrile*
-SILN2	*SilcoNert 2000 Coating*

D TUBE FITTING TYPE

ANA	*AN Adapter*
ANBU	*AN Bulkhead Union*
ANF	*Female AN Adapter*
ANU	*AN Union*
BF	*Back Ferrule*
BFC	*Bulkhead Female Connector*
BMC	*Bulkhead Male Connector*
BN	*Bulkhead Locknut*
BR	*Bulkhead Reducer/Adapter*
BRU	*Bulkhead Reducing Union*
BU	*Bulkhead Union*
CP	*Cap*
CU	*Calibration Union*
DA	*Dielectric Adapter*
DMC	*Dielectric Male Connector*
DU	*Dielectric Union*
FA	*Female Adapter*
FARG	*Female Adapter to ISO Parallel*
FBT	*Female Branch Tee*
FC	*Female Connector*
FCRG	*Female Connector to ISO Parallel*
FCRT	*Female Connector to ISO Tapered*
FE	*Female Elbow*
FF	*Front Ferrule*
FRT	*Female Run Tee*
FS	*Ferrule Set*
HBA	*Hose Barb Adapter*
HBC	*Hose Barb Connector*
HL	*Push-on Hose Barb Connector*
HLTA	*Push-on Hose Barb Adapter*
KN	*Knurled Nut*
M45E	*Male 45° Elbow*
M45EST	*Male 45° Elbow to Straight Thread Boss*
MA	*Male Adapter*
MARS	*Male Adapter to ISO Parallel*
MAST	*Male Adapter to Straight Thread Boss*
MBT	*Male Branch Tee*
MBTST	*Male Branch Tee to Straight Thread Boss*
MC	*Male Connector*
MCBT	*Male Connector Bored Through*
MCRS	*Male Connector to ISO Parallel*
MCRT	*Male Connector to ISO Tapered*
MCST	*Male Connector to Straight Thread Boss*
MD	*Mud Dauber*
ME	*Male Elbow*
MERS	*Male Elbow to ISO Parallel*
MERT	*Male Elbow to ISO Tapered*
MEST	*Male Elbow to Straight Thread Boss*
MPWC	*Male Pipe Weld Connector*
MPWE	*Male Pipe Weld Elbow*
MRT	*Male Run Tee*
MRTST	*Male Run Tee to Straight Thread Boss*
N	*Nut*
NFS	*Nut and Ferrule Set*
OMC	*O-Ring Seal Male Pipe Connector*
OSC	*O-Ring Seal Straight Thread Connector*
P	*Plug*
PC	*Port Connector*
R	*Reducer/Adapter*
RM	*Reducing Male Adapter*
RPC	*Reducing Port Connector*
RU	*Reducing Union*
RUM	*Reducing Union, Metric*
RUT	*Reducing Union Tee*
TFHA	*SAE 100R14 Hose Adapter*
TFHC	*SAE 100R14 Hose Connector*
TI	*Tube Insert*
TIM	*Tube Insert, Metric*
TSWE	*Tube Socket Weld Elbow*
TSWU	*Tube Socket Weld Union*
U	*Union*
UCS	*Union Cross*
UE	*Union Elbow*
UT	*Union Tee*

NOTES:

All Configurations:
Only one size indicator is necessary when all of the connections are the same type and size.

Tees:
Tees are described by first sizing the run (1 to 2) and then the branch (3). Crosses are described by first sizing the run (1 to 2) and then the branch (3 to 4) See Figure 01.

Specials:
SSP manufactures a wide variety of special application tube fittings. Contact your local distributor for details regarding availability of special tube fitting configurations, materials and sizes.

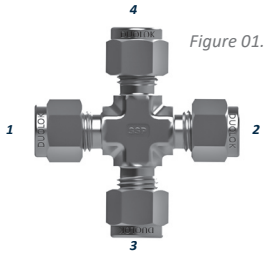
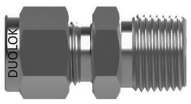
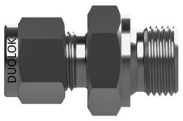
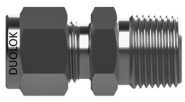
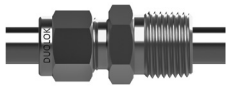
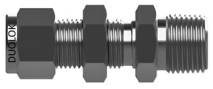


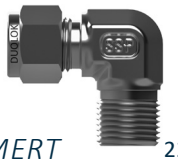
Figure 01.

Selection Guide

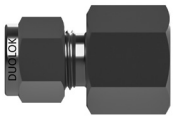
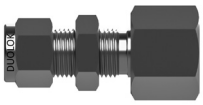
Our selection guide makes it easy to locate any fitting. Simply turn to the page designated in the lower right-hand corner.

Tube to Male Pipe

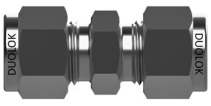
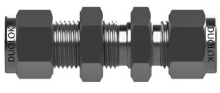
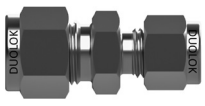
Male Connector	Male Connector to ISO Parallel	Male Connector to ISO Tapered	Male Connector Bored Through	Bulkhead Male Connector
				
MC 13	*MCRS* 15	*MCRT* 17	*MCBT* 19	*BMC* 19

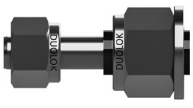
Male Elbow	Male Elbow to ISO Tapered	45° Male Elbow	Male Branch Tee	Male Run Tee
				
ME 20	*MERT* 22	*M45E* 23	*MBT* 23	*MRT* 24

Tube to Female Pipe

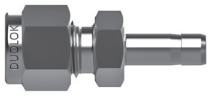
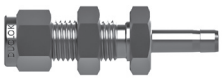
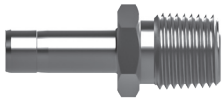
Female Connector	Bulkhead Female Connector	Female Elbow	Female Branch Tee	Female Run Tee
				
FC 25	*BFC* 27	*FE* 27	*FBT* 28	*FRT* 29

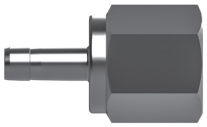
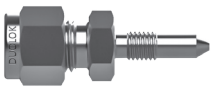
Tube to Tube Union

Union	Bulkhead Union	Reducing Union	Union Elbow	Union Tee
				
U 30	*BU / BRU* 31	*RU* 32	*UE* 33	*UT* 34

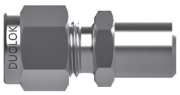
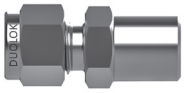
Reducing Union Tee	Union Cross	Dielectric Adapter / Union
		
RUT 35	*UCS* 36	*DA / DU* 37

Tube Stub Connectors / Adapters

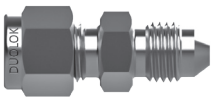
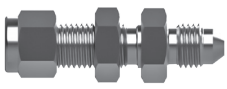
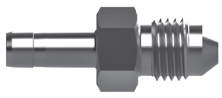
Reducer / Adapter	Bulkhead Reducer / Adapter	Port Connector	Reducing Port Connector	Male Adapter
				
R 38	*BR* 40	*PC* 41	*RPC* 41	*MA* 42

Female Adapter	Calibration Union
	
FA 43	*CU* 44

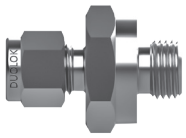
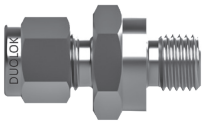
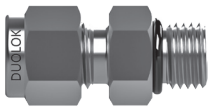
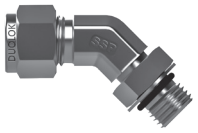
Tube to Welded Systems

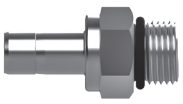
Tube Socket Weld Union	Tube Socket Weld Elbow	Male Pipe Weld Elbow	Male Pipe Weld Connector
			
TSWU 45	*TSWE* 45	*MPWE* 45	*MPWC* 46

Duolok to 37° Flare (AN)

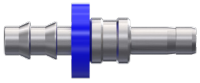
AN Union	AN Bulkhead Union	Female AN Adapter	AN Adapter
			
ANU 47	*ANBU* 47	*ANF* 47	*ANA* 48

Tube to O-Ring Seal & Tube to SAE / MS

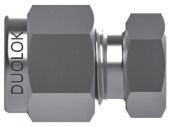
O-Ring Seal Male Connector	O-Ring Seal Straight Connector	Male Elbow to Straight Thread Boss	Male Connector to Straight Thread Boss	45° Male Elbow to Straight Thread Boss
				
OMC 48	*OSC* 49	*MEST* 49	*MCST* 50	*M45EST* 51

Male Branch Tee to Straight Thread Boss	Male Run Tee to Straight Thread Boss	Male Adapter to Straight Thread Boss
		
MBTST 51	*MRTST* 52	*MAST* 52

Hose Connectors / Adapters

Hose Barb Connector	Hose Barb Connector	Push-on Hose Barb Connector	Push-on Hose Barb Adapter	SAE 100R14 Hose Adapter	SAE 100R14 Hose Connector
					
HBA 53	*HBC* 53	*HL* 54	*HLTA* 54	*TFHA* 54	*TFHC* 54

Caps & Plug

Cap	Plug
	
CP 55	*P* 56

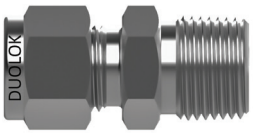
Components

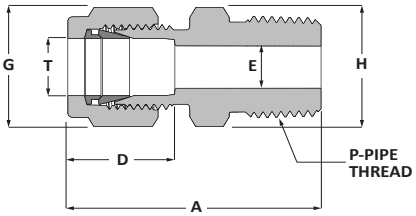
Nut	Back Ferrule	Front Ferrule	Ferrule Set	Nut & Ferrule Set
				
N 57	*BF* 57	*FF* 57	*FS* 58	*NFS* 58

Knurled Nut	Bulkhead Locknut	Tube Insert
		
KN 58	*BN* 59	*TI* 59

Tube to Male Pipe

Male Connector (MC)
Fractional

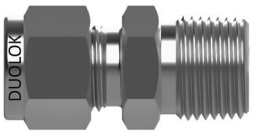


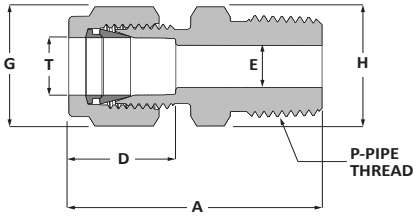


T Tube O.D.	P NPT MALE PIPE SIZE	PART #	A	D	E	G	H FLAT
			Fractional (in.)				
1/16	1/16	D1MC1	0.94	0.34	0.05	5/16	5/16
1/16	1/8	D1MC2	1.03	0.34	0.05	5/16	7/16
1/16	1/4	D1MC4	1.22	0.34	0.05	5/16	9/16
1/8	1/16	D2MC1	1.17	0.50	0.09	7/16	7/16
1/8	1/8	D2MC2	1.20	0.50	0.09	7/16	7/16
1/8	1/4	D2MC4	1.40	0.50	0.09	7/16	9/16
1/8	3/8	D2MC6	1.41	0.50	0.09	7/16	11/16
1/8	1/2	D2MC8	1.66	0.50	0.09	7/16	7/8
3/16	1/8	D3MC2	1.23	0.54	0.12	1/2	7/16
3/16	1/4	D3MC4	1.43	0.54	0.12	1/2	9/16
1/4	1/16	D4MC1	1.29	0.60	0.11	9/16	1/2
1/4	1/8	D4MC2	1.29	0.60	0.17	9/16	1/2
1/4	1/4	D4MC4	1.49	0.60	0.19	9/16	9/16
1/4	3/8	D4MC6	1.51	0.60	0.19	9/16	11/16
1/4	1/2	D4MC8	1.76	0.60	0.19	9/16	7/8
1/4	3/4	D4MC12	1.82	0.60	0.19	9/16	1 1/16
5/16	1/8	D5MC2	1.34	0.64	0.19	5/8	9/16
5/16	1/4	D5MC4	1.52	0.64	0.25	5/8	9/16
5/16	3/8	D5MC6	1.54	0.64	0.25	5/8	11/16
3/8	1/8	D6MC2	1.39	0.66	0.19	11/16	5/8
3/8	1/4	D6MC4	1.57	0.66	0.28	11/16	5/8
3/8	3/8	D6MC6	1.57	0.66	0.28	11/16	11/16
3/8	1/2	D6MC8	1.82	0.66	0.28	11/16	7/8
3/8	3/4	D6MC12	1.88	0.66	0.28	11/16	1 1/16
1/2	1/8	D8MC2	1.53	0.90	0.19	7/8	13/16
1/2	1/4	D8MC4	1.71	0.90	0.28	7/8	13/16
1/2	3/8	D8MC6	1.71	0.90	0.38	7/8	13/16
1/2	1/2	D8MC8	1.93	0.90	0.41	7/8	7/8
1/2	3/4	D8MC12	1.99	0.90	0.41	7/8	1-1/16
1/2	1	D8MC16	2.25	0.90	0.41	7/8	1-3/8
5/8	3/8	D10MC6	1.74	0.96	0.38	1	15/16
5/8	1/2	D10MC8	1.93	0.96	0.47	1	15/16
5/8	3/4	D10MC12	1.99	0.96	0.50	1	1 1/16
3/4	1/2	D12MC8	1.99	0.96	0.47	1 1/8	1 1/16
3/4	3/4	D12MC12	1.99	0.96	0.62	1 1/8	1 1/16
3/4	1	D12MC16	2.25	0.96	0.62	1 1/8	1 3/8
7/8	3/4	D14MC12	1.99	1.02	0.62	1 1/4	1 3/16
7/8	1	D14MC16	2.25	1.02	0.72	1 1/4	1 3/8
1	1/2	D16MC8	2.26	1.23	0.47	1 1/2	1 3/8
1	3/4	D16MC12	2.26	1.23	0.62	1 1/2	1 3/8
1	1	D16MC16	2.45	1.23	0.88	1 1/2	1 3/8
1 1/4	1	D20MC16	3.04	1.62	0.88	1 7/8	1 3/4
1 1/4	1 1/4	D20MC20	3.04	1.62	1.09	1 7/8	1 3/4
1 1/2	1 1/2	D24MC24	3.50	1.97	1.34	2 1/4	2 1/8
2	2	D32MC32	4.47	2.66	1.81	3	2 3/4

Tube to Male Pipe

Male Connector (MC)
Metric*



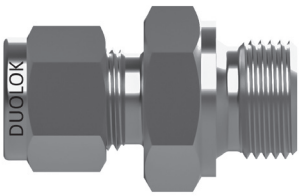


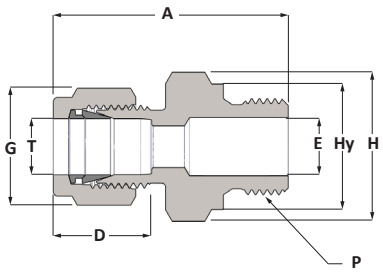
T Tube O.D.	P NPT Male Pipe Size	Part#	A	D	E	G	H
Metric (mm)							
3	1/8	DM3MC2	30.5	12.9	2.4	12.0	12.0
3	1/4	DM3MC4	35.6	12.9	2.4	12.0	14.0
4	1/8	DM4MC2	31.2	13.7	2.4	12.0	12.0
4	1/4	DM4MC4	36.3	13.7	2.4	12.0	14.0
6	1/8	DM6MC2	32.8	15.3	4.8	14.0	14.0
6	1/4	DM6MC4	37.9	15.3	4.8	14.0	14.0
6	3/8	DM6MC6	38.4	15.3	4.8	14.0	18.0
6	1/2	DM6MC8	44.7	15.3	4.8	14.0	22.0
8	1/8	DM8MC2	34.2	16.2	4.8	16.0	15.0
8	1/4	DM8MC4	38.7	16.2	6.4	16.0	15.0
8	3/8	DM8MC6	39.3	16.2	6.4	16.0	18.0
8	1/2	DM8MC8	45.6	16.2	6.4	16.0	22.0
10	1/8	DM10MC2	36.3	17.2	4.8	19.0	18.0
10	1/4	DM10MC4	40.9	17.2	7.1	19.0	18.0
10	3/8	DM10MC6	40.9	17.2	7.9	19.0	18.0
10	1/2	DM10MC8	46.5	17.2	7.9	19.0	22.0
10	3/4	DM10MC12	48.0	17.2	7.9	19.0	27.0
12	1/8	DM12MC2	38.8	22.8	4.8	22.0	22.0
12	1/4	DM12MC4	43.4	22.8	7.1	22.0	22.0
12	3/8	DM12MC6	43.4	22.8	9.5	22.0	22.0
12	1/2	DM12MC8	49.0	22.8	9.5	22.0	22.0
12	3/4	DM12MC12	50.5	22.8	9.5	22.0	27.0
14	1/4	DM14MC4	44.1	24.4	7.1	25.0	24.0
14	3/8	DM14MC6	44.1	24.4	9.5	25.0	24.0
14	1/2	DM14MC8	49.0	24.4	11.1	25.0	24.0
15	1/2	DM15MC8	49.0	24.4	11.9	25.0	24.0
16	3/8	DM16MC6	44.1	24.4	9.5	25.0	24.0
16	1/2	DM16MC8	49.0	24.4	11.9	25.0	24.0
16	3/4	DM16MC12	50.5	24.4	12.7	25.0	27.0
18	1/2	DM18MC8	50.5	24.4	11.9	30.0	27.0
18	3/4	DM18MC12	50.5	24.4	15.1	30.0	27.0
20	1/2	DM20MC8	52.3	26.0	11.9	32.0	30.0
20	3/4	DM20MC12	52.3	26.0	15.9	32.0	30.0
22	3/4	DM22MC12	52.3	26.0	15.9	32.0	30.0
22	1	DM22MC16	57.1	26.0	18.3	32.0	35.0
25	1/2	DM25MC8	57.5	31.3	11.9	38.0	35.0
25	3/4	DM25MC12	57.5	31.3	15.9	38.0	35.0
25	1	DM25MC16	62.3	31.3	21.8	38.0	35.0

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Male Pipe

Male Connector to ISO Parallel (MCRS) Fractional

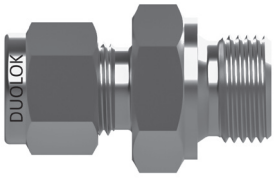


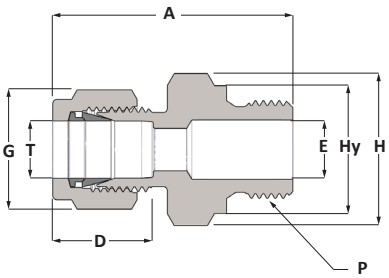


T TUBE O.D.	P ISO Male Pipe	PART #	A	D	E	G	H Hex Flat	Hy
Fractional (in.)								
1/8	1/8	D2MCRS2	1.18	0.50	0.09	7/16	9/16	0.54
1/8	1/4	D2MCRS4	1.39	0.50	0.09	7/16	3/4	0.71
1/8	3/8	D2MCRS6	1.43	0.50	0.09	7/16	7/8	0.86
1/4	1/8	D4MCRS2	1.27	0.60	0.16	9/16	9/16	0.54
1/4	1/4	D4MCRS4	1.48	0.60	0.19	9/16	3/4	0.71
1/4	3/8	D4MCRS6	1.53	0.60	0.19	9/16	7/8	0.86
1/4	1/2	D4MCRS8	1.76	0.60	0.19	9/16	1 1/16	1.02
3/8	1/8	D6MCRS2	1.38	0.66	0.18	11/16	5/8	0.54
3/8	1/4	D6MCRS4	1.54	0.66	0.23	11/16	3/4	0.71
3/8	3/8	D6MCRS6	1.59	0.66	0.28	11/16	7/8	0.86
3/8	1/2	D6MCRS8	1.82	0.66	0.28	11/16	1 1/16	1.02
1/2	1/4	D8MCRS4	1.68	0.90	0.23	7/8	13/16	0.71
1/2	3/8	D8MCRS6	1.70	0.90	0.31	7/8	7/8	0.86
1/2	1/2	D8MCRS8	1.93	0.90	0.41	7/8	1 1/16	1.02
3/4	1/2	D12MCRS8	1.93	0.96	0.47	1 1/8	1-1/16	1.02
3/4	3/4	D12MCRS12	2.08	0.96	0.62	1 1/8	1 5/16	1.26
3/4	1	D12MCRS16	2.18	0.96	0.62	1 1/8	1 5/8	1.53
1	1/2	D16MCRS8	2.20	1.23	0.47	1 1/2	1 3/8	1.02
1	3/4	D16MCRS12	2.26	1.23	0.67	1 1/2	1 3/8	1.26
1	1	D16MCRS16	2.36	1.23	0.78	1 1/2	1 5/8	1.54
1 1/4	1 1/4	D20MCRS20	2.90	1.62	1.09	1 7/8	2	1.84

Tube to Male Pipe

Male Connector to ISO (MCRS) Metric*



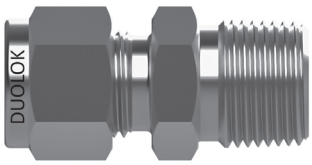


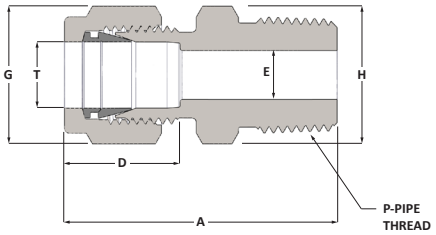
T TUBE O.D.	P ISO Male Pipe	PART #	A	D	E	G	H Hex Flat	Hy
Metric (mm)								
3	1/8	DM3MCRS2	33.3	12.9	2.4	12.0	14.0	13.8
3	1/4	DM3MCRS4	38.1	12.9	2.4	12.0	19.0	18.0
4	1/8	DM4MCRS2	34.0	13.7	2.4	12.0	14.0	13.8
6	1/8	DM6MCRS2	35.6	15.3	4.0	14.0	14.0	13.8
6	1/4	DM6MCRS4	40.4	15.3	4.8	14.0	19.0	18.0
6	3/8	DM6MCRS6	41.1	15.3	4.8	14.0	22.0	21.8
6	1/2	DM6MCRS8	43.2	15.3	4.8	14.0	27.0	26.0
8	1/8	DM8MCRS2	36.6	16.2	4.0	16.0	15.0	13.8
8	1/4	DM8MCRS4	41.4	16.2	6.4	16.0	19.0	18.0
8	3/8	DM8MCRS6	42.2	16.2	6.4	16.0	22.0	21.8
8	1/2	DM8MCRS8	44.2	16.2	6.4	16.0	27.0	26.0
10	1/4	DM10MCRS4	42.2	17.2	5.9	19.0	19.0	18.0
10	3/8	DM10MCRS6	42.9	17.2	7.9	19.0	22.0	21.8
10	1/2	DM10MCRS8	45.0	17.2	7.9	19.0	27.0	26.0
12	1/4	DM12MCRS4	44.5	22.8	5.9	22.0	22.0	18.0
12	3/8	DM12MCRS6	45.5	22.8	7.9	22.0	22.0	21.8
12	1/2	DM12MCRS8	47.5	22.8	9.5	22.0	27.0	26.0
12	3/4	DM12MCRS12	52.1	22.8	9.5	22.0	35.0	32.0
16	3/8	DM16MCRS6	45.5	24.4	7.9	25.0	24.0	21.8
16	1/2	DM16MCRS8	47.5	24.4	11.9	25.0	27.0	26.0
18	1/2	DM18MCRS8	48.8	24.4	11.9	30.0	27.0	26.0
18	3/4	DM18MCRS12	52.1	24.4	15.1	30.0	35.0	32.0
20	1/2	DM20MCRS8	50.5	26.0	11.9	32.0	30.0	26.0
20	3/4	DM20MCRS12	52.6	26.0	15.9	32.0	35.0	32.0
22	3/4	DM22MCRS12	52.6	26.0	15.9	32.0	35.0	32.0
22	1	DM22MCRS16	54.9	26.0	18.3	32.0	41.0	39.0
25	3/4	DM25MCRS12	57.7	31.3	15.9	38.0	35.0	32.0
25	1	DM25MCRS16	59.7	31.3	19.8	38.0	41.0	39.0

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Male Pipe

Male Connector to ISO (MCRT)
Fractional

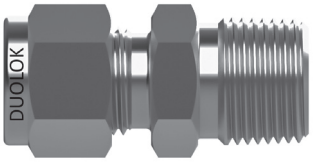


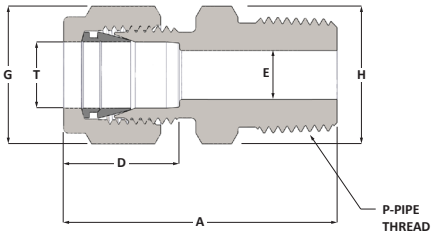


T Tube O.D.	P ISO Male Pipe	Part #	A	D	E	G Hex Flat	H Hex Flat
Fractional (in.)							
1/8	1/8	D2MCRT2	1.20	0.50	0.09	7/16	7/16
1/8	1/4	D2MCRT4	1.40	0.50	0.09	7/16	9/16
1/4	1/8	D4MCRT2	1.29	0.60	0.19	9/16	1/2
1/4	1/4	D4MCRT4	1.49	0.60	0.19	9/16	9/16
1/4	3/8	D4MCRT6	1.51	0.60	0.19	9/16	11/16
1/4	1/2	D4MCRT8	1.76	0.60	0.19	9/16	7/8
5/16	1/8	D5MCRT2	1.34	0.64	0.19	5/8	9/16
5/16	1/4	D5MCRT4	1.52	0.64	0.25	5/8	9/16
3/8	1/8	D6MCRT2	1.39	0.66	0.19	11/16	5/8
3/8	1/4	D6MCRT4	1.57	0.66	0.28	11/16	5/8
3/8	3/8	D6MCRT6	1.57	0.66	0.28	11/16	11/16
3/8	1/2	D6MCRT8	1.82	0.66	0.28	11/16	7/8
1/2	1/4	D8MCRT4	1.71	0.90	0.28	7/8	13/16
1/2	3/8	D8MCRT6	1.71	0.90	0.38	7/8	13/16
1/2	1/2	D8MCRT8	1.93	0.90	0.41	7/8	7/8
1/2	3/4	D8MCRT12	1.99	0.90	0.41	7/8	1 1/16
3/4	3/4	D12MCRT12	1.99	0.96	0.62	1 1/8	1 1/16
1	1	D16MCRT16	2.45	1.23	0.88	1 1/2	1 3/8

Tube to Male Pipe

Male Connector to ISO (MCRT) Metric*



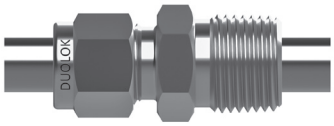


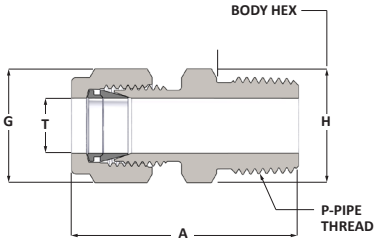
T Tube O.D.	P ISO Male Pipe	Part #	A	D	E	G Hex Flat	H Hex Flat
Metric (mm)							
4	1/8	DM4MCRT2	31.2	13.7	2.4	12.0	12.0
4	1/4	DM4MCRT4	36.3	13.7	2.4	14.0	14.0
6	1/8	DM6MCRT2	32.8	15.3	4.8	14.0	14.0
6	1/4	DM6MCRT4	37.9	15.3	4.8	14.0	14.0
6	3/8	DM6MCRT6	38.4	15.3	4.8	18.0	18.0
6	1/2	DM6MCRT8	44.7	15.3	4.8	22.0	22.0
8	1/8	DM8MCRT2	34.2	16.2	4.8	15.0	15.0
8	1/4	DM8MCRT4	38.7	16.2	6.4	15.0	15.0
8	3/8	DM8MCRT6	39.2	16.2	6.4	18.0	18.0
8	1/2	DM8MCRT8	54.6	16.2	6.4	22.0	22.0
10	1/8	DM10MCRT2	36.3	17.2	4.8	18.0	18.0
10	1/4	DM10MCRT4	40.9	17.2	7.1	18.0	18.0
10	3/8	DM10MCRT6	40.9	17.2	7.9	18.0	18.0
10	1/2	DM10MCRT8	46.5	17.2	7.9	22.0	22.0
12	1/4	DM12MCRT4	43.4	22.8	7.1	22.0	22.0
12	3/8	DM12MCRT6	43.4	22.8	9.5	22.0	22.0
12	1/2	DM12MCRT8	49.0	22.8	9.5	22.0	22.0
12	3/4	DM12MCRT12	50.5	22.8	9.5	27.0	27.0
15	1/2	DM15MCRT8	49.0	24.4	11.9	24.0	24.0
16	1/4	DM16MCRT4	44.1	24.4	7.1	24.0	24.0
16	3/8	DM16MCRT6	44.1	24.4	9.5	24.0	24.0
16	1/2	DM16MCRT8	49.0	24.4	11.9	24.0	24.0
16	3/4	DM16MCRT12	50.5	24.4	12.7	27.0	27.0
18	1/2	DM18MCRT8	50.5	24.4	11.9	27.0	27.0
18	3/4	DM18MCRT12	50.5	24.4	15.1	27.0	27.0
20	1/2	DM20MCRT8	52.3	26.0	11.9	30.0	30.0
20	3/4	DM20MCRT12	52.3	26.0	15.9	30.0	30.0
22	3/4	DM22MCRT12	52.3	26.0	18.3	35.0	35.0
25	1/2	DM25MCRT8	57.5	31.3	15.9	35.0	35.0
25	3/4	DM25MCRT12	62.3	31.3	21.8	35.0	35.0

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Male Pipe

Male Connector Bored Through (MCBT)

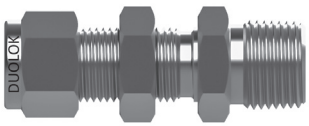


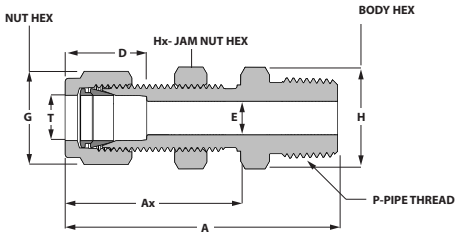


T Tube O.D.	P NPT Male Pipe Size	Part #	A	G	H
Fractional (in.)					
1/16	1/16	D1MCBT1	0.94	5/16	5/16
1/16	1/8	D1MCBT2	1.03	5/16	7/16
1/8	1/16	D2MCBT1	1.17	7/16	7/16
1/8	1/8	D2MCBT2	1.20	7/16	7/16
1/8	1/4	D2MCBT4	1.40	7/16	9/16
3/16	1/8	D3MCBT2	1.23	1/2	7/16
3/16	1/4	D3MCBT4	1.43	1/2	9/16
1/4	1/8	D4MCBT2	1.29	9/16	1/2
1/4	1/4	D4MCBT4	1.49	9/16	9/16
1/4	3/8	D4MCBT6	1.51	9/16	11/16
1/4	1/2	D4MCBT8	1.76	9/16	7/8
5/16	1/4	D5MCBT4	1.52	5/8	9/16
3/8	1/4	D6MCBT4	1.57	11/16	5/8
3/8	3/8	D6MCBT6	1.57	11/16	11/16
3/8	1/2	D6MCBT8	1.82	11/16	7/8
1/2	1/2	D8MCBT8	1.93	7/8	7/8
5/8	3/4	D10MCBT12	1.99	1	11/16
3/4	3/4	D12MCBT12	1.99	1 1/8	11/16
1	1	D16MCBT16	2.45	1 1/2	1 3/8
1 1/4	1 1/4	D20MCBT20	3.04	1 7/8	1 3/4

Tube to Male Pipe

Bulkhead Male Connector (BMC)





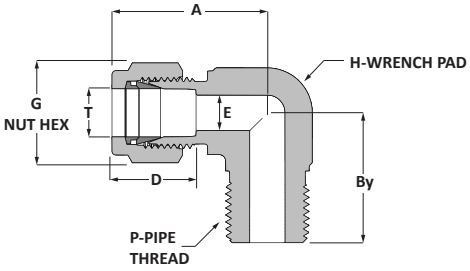
T Tube O.D.	P NPT Male Pipe Size	Part #	A	Ax	D	E	G	H	Hx	Maximum Panel Thickness	Panel Hole Drill Size
Fractional (in.)											
1/8	1/8	D2BMC2	1.83	1.23	0.50	0.09	7/1 6	1/2	1/2	0.50	21/64
1/4	1/8	D4BMC2	1.95	1.32	0.60	0.17	9/1 6	5/8	5/8	0.40	29/64
1/4	1/4	D4BMC4	2.10	1.32	0.60	0.19	9/1 6	5/8	5/8	0.40	29/64
3/8	1/4	D6BMC4	2.26	1.45	0.66	0.28	11/1 6	3/4	3/4	0.44	37/64
1/2	3/8	D8BMC6	2.49	1.65	0.90	0.37	7/8	15/1 6	15/1 6	0.50	49/64
1/2	1/2	D8BMC8	2.71	1.65	0.90	0.41	7/8	15/1 6	15/1 6	0.50	49/64

Tube to Male Pipe

Male Elbow (ME)

Fractional

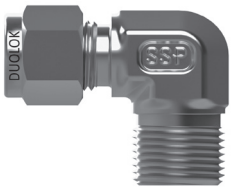


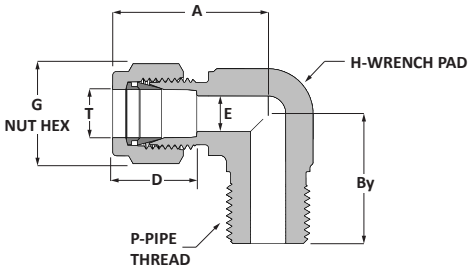


T Tube O.D	P NPT Male Pipe Size	Part #	A	By	D	E	G	H
Fractional (in.)								
1/16	1/16	D1ME1	0.75	0.70	0.34	0.05	5/16	7/16
1/16	1/8	D1ME2	0.75	0.70	0.34	0.05	5/16	1/2
1/8	1/16	D2ME1	0.93	0.70	0.50	0.09	7/16	7/16
1/8	1/8	D2ME2	0.93	0.70	0.50	0.09	7/16	7/16
1/8	1/4	D2ME4	0.97	0.92	0.50	0.09	7/16	1/2
3/16	1/8	D3ME2	1.00	0.74	0.54	0.12	1/2	1/2
3/16	1/4	D3ME4	1.00	0.92	0.54	0.12	1/2	1/2
1/4	1/8	D4ME2	1.06	0.74	0.60	0.17	9/16	1/2
1/4	1/4	D4ME4	1.06	0.92	0.60	0.19	9/16	1/2
1/4	3/8	D4ME6	1.17	1.03	0.60	0.19	9/16	11/16
1/4	1/2	D4ME8	1.25	1.30	0.60	0.19	9/16	7/8
5/16	1/8	D5ME2	1.13	0.78	0.64	0.19	5/8	9/16
5/16	1/4	D5ME4	1.13	0.96	0.64	0.25	5/8	9/16
5/16	3/8	D5ME6	1.20	1.03	0.64	0.25	5/8	11/16
3/8	1/8	D6ME2	1.20	0.82	0.66	0.19	11/16	5/8
3/8	1/4	D6ME4	1.20	1.00	0.66	0.28	11/16	5/8
3/8	3/8	D6ME6	1.23	1.03	0.66	0.28	11/16	11/16
3/8	1/2	D6ME8	1.31	1.30	0.66	0.28	11/16	7/8
3/8	3/4	D6ME12	1.46	1.45	0.66	0.28	11/16	1 1/16
1/2	1/4	D8ME4	1.42	1.11	0.90	0.28	7/8	13/16
1/2	3/8	D8ME6	1.42	1.11	0.90	0.38	7/8	13/16
1/2	1/2	D8ME8	1.42	1.30	0.90	0.41	7/8	7/8
1/2	3/4	D8ME12	1.57	1.45	0.90	0.41	7/8	1 1/16
5/8	3/8	D10ME6	1.50	1.19	0.96	0.38	1	15/16
5/8	1/2	D10ME8	1.50	1.38	0.96	0.47	1	15/16
5/8	3/4	D10ME12	1.57	1.45	0.96	0.50	1	1 1/16
3/4	1/2	D12ME8	1.57	1.45	0.96	0.47	1 1/8	1 1/16
3/4	3/4	D12ME12	1.57	1.45	0.96	0.62	1 1/8	1 1/16
7/8	3/4	D14ME12	1.76	1.64	1.02	0.62	1 1/4	1 3/8
1	3/4	D16ME12	1.93	1.64	1.23	0.62	1 1/2	1 3/8
1	1	D16ME16	1.93	1.83	1.23	0.88	1 1/2	1 3/8
1 1/4	1 1/4	D20ME20	2.62	1.88	1.62	1.09	1 7/8	1 11/16
1 1/2	1 1/2	D24ME24	3.07	2.38	1.97	1.34	2 1/4	2
2	2	D32ME32	4.22	2.78	2.66	1.81	3	2 3/4

Tube to Male Pipe

Male Elbow (ME)
Metric*





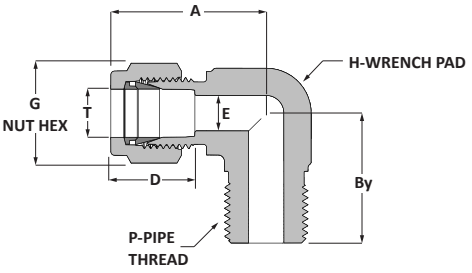
T Tube O.D.	P NPT Male Pipe	Part #	A	By	D	E	H
Metric (mm)							
3	1/8	DM3ME2	23.6	17.8	12.9	2.4	7/16
3	1/4	DM3ME4	24.6	23.4	12.9	2.4	1/2
4	1/8	DM4ME2	25.4	18.8	13.7	2.4	1/2
4	1/4	DM4ME4	25.4	23.4	13.7	2.4	1/2
6	1/8	DM6ME2	27.0	18.8	15.3	4.8	1/2
6	1/4	DM6ME4	27.0	23.4	15.3	4.8	1/2
6	3/8	DM6ME6	29.8	26.2	15.3	4.8	11/16
6	1/2	DM6ME8	31.8	33.0	15.3	4.8	13/16
8	1/8	DM8ME2	28.8	19.8	16.2	4.8	9/16
8	1/4	DM8ME4	28.8	24.4	16.2	6.4	9/16
8	3/8	DM8ME6	30.6	26.2	16.2	6.4	11/16
8	1/2	DM8ME8	32.6	33.0	16.2	6.4	13/16
10	1/8	DM10ME2	31.5	21.6	17.2	4.8	11/16
10	1/4	DM10ME4	31.5	26.2	17.2	7.1	11/16
10	3/8	DM10ME6	31.5	26.2	17.2	7.9	11/16
10	1/2	DM10ME8	33.5	33.0	17.2	7.9	13/16
12	1/4	DM12ME4	36.0	28.2	22.8	7.1	13/16
12	3/8	DM12ME6	36.0	28.2	22.8	9.5	13/16
12	1/2	DM12ME8	36.0	33.0	22.8	9.5	13/16
12	3/4	DM12ME12	39.8	36.8	22.8	9.5	1-1/16
15	1/2	DM15ME8	38.0	35.1	24.4	11.9	15/16
16	3/8	DM16ME6	38.0	30.2	24.4	9.5	15/16
16	1/2	DM16ME8	38.0	35.1	24.4	11.9	15/16
16	3/4	DM16ME12	39.8	36.8	24.4	12.7	1-1/16
18	1/2	DM18ME8	39.8	36.8	24.4	11.9	1 1/16
18	3/4	DM18ME12	39.8	36.8	24.4	15.1	1-1/16
20	1/2	DM20ME8	44.6	41.7	26.0	11.9	1 3/8
20	3/4	DM20ME12	44.6	41.7	26.0	15.9	1-3/8
22	3/4	DM22ME12	44.6	41.7	26.0	15.9	1 3/8
22	1	DM22ME16	44.6	46.5	26.0	18.3	1-3/8
25	3/4	DM25ME12	49.1	41.7	31.3	15.9	1 3/8
25	1	DM25ME16	49.1	46.5	31.3	21.8	1-3/8

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Male Pipe

Male Elbow to ISO Tapered (MERT)



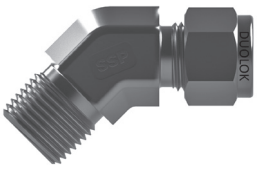


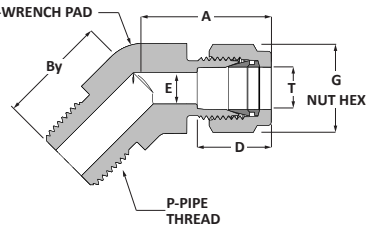
T Tube O.D.	P ISO Male Pipe	Part #	A	BY	D	E	G	H WRENCH PAD
Fractional (in.)								
1/8	1/8	D2MERT2	0.93	0.70	0.50	0.09	7/16	7/16
1/4	1/8	D4MERT2	1.06	0.74	0.60	0.19	9/16	1/2
1/4	1/4	D4MERT4	1.06	0.92	0.60	0.19	9/16	1/2
1/4	3/8	D4MERT6	1.17	1.03	0.60	0.19	9/16	11/16
1/4	1/2	D4MERT8	1.25	1.30	0.60	0.19	9/16	13/16
5/16	1/4	D5MERT4	1.13	0.96	0.64	0.25	5/8	9/16
3/8	1/8	D6MERT2	1.20	0.82	0.66	0.19	11/16	5/8
3/8	1/4	D6MERT4	1.20	1.00	0.66	0.28	11/16	5/8
3/8	3/8	D6MERT6	1.23	1.03	0.66	0.28	11/16	11/16
3/8	1/2	D6MERT8	1.31	1.30	0.66	0.28	11/16	13/16
1/2	1/4	D8MERT4	1.42	1.11	0.90	0.28	7/8	13/16
1/2	3/8	D8MERT6	1.42	1.11	0.90	0.38	7/8	13/16
1/2	1/2	D8MERT8	1.42	1.30	0.90	0.41	7/8	13/16
Metric (mm)								
3	1/8	DM3MERT2	23.6	17.8	12.9	2.4	12.0	7/16
3	1/4	DM3MERT4	24.6	23.4	12.9	2.4	12.0	1/2
4	1/8	DM4MERT2	25.4	18.8	13.7	2.4	12.0	1/2
4	1/4	DM4MERT4	25.4	23.4	13.7	2.4	12.0	1/2
6	1/8	DM6MERT2	27.0	18.8	15.3	4.8	14.0	1/2
6	1/4	DM6MERT4	27.0	23.4	15.3	4.8	14.0	1/2
6	3/8	DM6MERT6	29.8	26.2	15.3	4.8	14.0	11/16
6	1/2	DM6MERT8	31.8	33.0	15.3	4.8	14.0	13/16
8	1/8	DM8MERT2	28.8	19.8	16.2	4.8	16.0	9/16
8	1/4	DM8MERT4	28.8	24.4	16.2	6.4	16.0	9/16
8	3/8	DM8MERT6	30.6	26.2	16.2	6.4	16.0	11/16
8	1/2	DM8MERT8	32.6	33.0	16.2	6.4	16.0	13/16
10	1/4	DM10MERT4	31.5	26.2	17.2	7.1	19.0	11/16
10	3/8	DM10MERT6	31.5	26.2	17.2	7.9	19.0	11/16
10	1/2	DM10MERT8	33.5	33.0	17.2	7.9	19.0	13/16
12	1/8	DM12MERT2	36.0	23.6	22.8	4.8	22.0	13/16
12	1/4	DM12MERT4	36.0	28.2	22.8	7.1	22.0	13/16
12	3/8	DM12MERT6	36.0	28.2	22.8	9.5	22.0	13/16
12	1/2	DM12MERT8	36.0	33.0	22.8	9.5	22.0	13/16
12	3/4	DM12MERT12	39.8	36.8	22.8	9.5	22.0	1-1/16
16	3/8	DM16MERT6	38.0	30.2	24.4	9.5	25.0	15/16
16	1/2	DM16MERT8	38.0	35.1	24.2	11.9	25.0	15/16
18	1/2	DM18MERT8	39.8	36.8	24.4	11.9	30.0	1 1/16
18	3/4	DM18MERT12	39.8	36.8	24.4	15.1	30.0	1 1/16
20	1/2	DM20MERT8	44.6	41.7	26.0	11.9	32.0	1 3/8
20	3/4	DM20MERT12	44.6	41.7	26.0	15.9	32.0	1 3/8
22	3/4	DM22MERT12	44.6	41.7	26.0	15.9	32.0	1 3/8
22	1	DM22MERT16	44.6	46.5	26.0	18.3	32.0	1 3/8
25	3/4	DM25MERT12	49.1	41.7	31.3	15.9	38.0	1 3/8
25	1	DM25MERT16	49.1	46.5	31.3	21.8	38.0	1 3/8

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Male Pipe

45° Male Elbow (M45E)



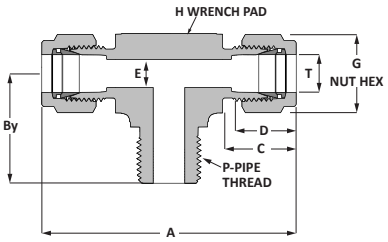


T Tube O.D.	P NPT Male Pipe	Part #	A	By	D	E	G	H
Fractional (in.)								
1/4	1/8	D4M45E2	0.97	0.65	0.60	0.17	9/16	9/16
1/4	1/4	D4M45E4	0.97	0.83	0.60	0.19	9/16	9/16
3/8	1/8	D6M45E2	1.10	0.72	0.66	0.19	11/16	9/16
3/8	1/4	D6M45E4	1.10	0.90	0.66	0.28	11/16	9/16
3/8	3/8	D6M45E6	1.15	0.95	0.66	0.28	11/16	3/4
1/2	3/8	D8M45E6	1.26	0.95	0.90	0.38	7/8	3/4
3/4	3/4	D12M45E12	1.33	1.22	0.96	0.62	1 1/8	1 1/16
1	1	D16M45E16	1.59	1.49	1.23	0.88	1 1/2	1 3/8

Tube to Male Pipe

Male Branch Tee (MBT)





T Tube O.D.	P NPT Male Pipe	Part #	A	BY	C	D	E	G	H
Fractional (in.)									
1/8	1/8	D2MBT2	1.86	0.70	0.60	0.50	0.09	7/16	7/16
1/8	1/4	D2MBT4	1.94	0.92	0.60	0.50	0.09	7/16	9/16
3/16	1/8	D3MBT2	1.92	0.70	0.63	0.54	0.12	1/2	7/16
1/4	1/8	D4MBT2	2.12	0.74	0.70	0.60	0.17	9/16	1/2
1/4	1/4	D4MBT4	2.12	0.92	0.70	0.60	0.17	9/16	9/16
5/16	1/8	D5MBT2	2.34	0.82	0.73	0.64	0.19	5/8	5/8
3/8	1/4	D6MBT4	2.40	1.00	0.76	0.66	0.28	11/16	5/8
3/8	3/8	D6MBT6	2.62	1.11	0.76	0.66	0.28	11/16	13/16
1/2	3/8	D8MBT6	2.84	1.11	0.86	0.90	0.38	7/8	13/16
1/2	1/2	D8MBT8	2.84	1.30	0.86	0.90	0.41	7/8	7/8
5/8	1/2	D10MBT8	3.06	1.41	0.86	0.96	0.47	1	1
3/4	3/4	D12MBT12	3.14	1.45	0.86	0.96	0.62	1 1/8	1 1/16
1	1	D16MBT16	2.90	1.83	1.04	1.23	0.88	1 1/2	1 5/16
Metric (mm)									
6	1/8	DM6MBT2	53.9	18.8	17.7	15.3	4.8	14.0	1/2
6	1/4	DM6MBT4	53.9	23.4	17.7	15.3	4.8	14.0	1/2
8	1/8	DM8MBT2	59.7	20.8	18.6	16.2	4.8	16.0	5/8
8	1/4	DM8MBT4	59.7	25.4	18.6	16.2	6.4	16.0	5/8
10	1/4	DM10MBT4	67.0	26.2	19.5	17.2	7.1	19.0	13/16
12	1/4	DM12MBT4	72.0	28.2	22.0	22.8	7.1	22.0	13/16
12	3/8	DM12MBT6	72.0	28.2	22.0	22.8	9.5	22.0	13/16
12	1/2	DM12MBT8	72.0	33.0	22.0	22.8	9.5	22.0	13/16
16	1/2	DM16MBT8	77.6	35.8	22.0	24.4	11.9	25.0	1

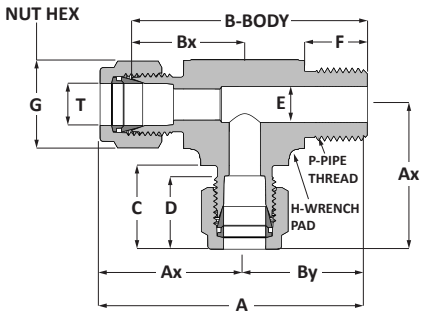
**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

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Tube to Male Pipe

Male Run Tee (MRT)



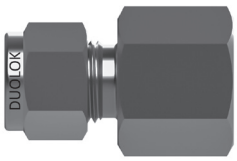


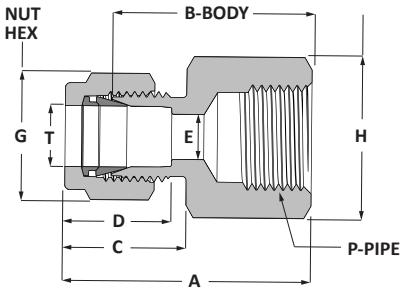
T Tube O.D.	P NPT Male Pipe	Part #	A	Ax	B	Bx	By	C	D	E	F	G	H
Fractional (in.)													
1/8	1/8	D2MRT2	1.63	0.93	1.37	0.67	0.70	0.60	0.50	0.09	0.38	7/16	7/16
1/8	1/4	D2MRT4	1.89	0.97	1.63	0.71	0.92	0.60	0.50	0.09	0.56	7/16	9/16
3/16	1/8	D3MRT2	1.66	0.96	1.40	0.70	0.70	0.63	0.54	0.12	0.38	1/2	7/16
1/4	1/8	D4MRT2	1.80	1.06	1.51	0.77	0.74	0.70	0.60	0.17	0.38	9/16	1/2
1/4	1/4	D4MRT4	1.98	1.06	1.69	0.77	0.92	0.70	0.60	0.19	0.56	9/16	9/16
5/16	1/8	D5MRT2	1.99	1.17	1.70	0.88	0.82	0.73	0.64	0.19	0.38	5/8	5/8
5/16	1/4	D5MRT4	2.17	1.17	1.88	0.88	1.00	0.73	0.64	0.25	0.57	5/8	5/8
3/8	1/4	D6MRT4	2.20	1.20	1.91	0.91	1.00	0.76	0.66	0.28	0.56	11/16	5/8
3/8	3/8	D6MRT6	2.42	1.31	2.13	1.02	1.11	0.76	0.66	0.28	0.56	11/16	13/16
1/2	3/8	D8MRT6	2.53	1.42	2.13	1.02	1.11	0.86	0.90	0.38	0.56	7/8	13/16
1/2	1/2	D8MRT8	2.72	1.42	2.32	1.02	1.30	0.86	0.90	0.41	0.75	7/8	7/8
5/8	1/2	D10MRT8	2.88	1.50	2.48	1.10	1.38	0.86	0.96	0.47	0.75	1	1
3/4	3/4	D12MRT12	3.02	1.57	2.62	1.17	1.45	0.86	0.96	0.62	0.75	1 1/8	1 1/16
Metric (mm)													
6	1/8	DM6MRT2	45.8	27.0	38.4	19.6	18.0	17.7	15.3	4.8	9.7	14	1/2
6	1/4	DM6MRT4	50.3	27.0	42.9	19.6	23.4	17.7	15.3	4.8	14.2	14	1/2
8	1/4	DM8MRT4	55.3	29.9	47.8	22.4	25.4	18.6	16.2	6.4	14.2	16	5/8
12	1/4	DM12MRT4	64.2	36.0	54.1	25.9	28.2	22.0	22.8	7.1	14.2	22	13/16
12	1/2	DM12MRT8	69.0	36.0	58.9	25.9	33.0	22.0	22.8	9.5	19.0	22	13/16
16	1/2	DM16MRT8	73.1	38.0	63.0	27.9	35.0	22.0	24.4	11.9	19.0	25	15/16

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Female Pipe

Female Connector (FC)





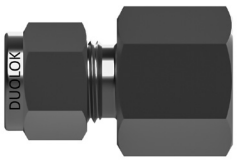
T Tube O.D.	P NPT Female	Part #	A	B	C	D	E	G	H
Fractional (in.)									
1/16	1/16	D1FC1	0.93	0.78	0.43	0.34	0.05	5/16	7/16
1/16	1/8	D1FC2	0.96	0.81	0.43	0.34	0.05	5/16	9/16
1/8	1/8	D2FC2	1.13	0.87	0.60	0.50	0.09	7/16	9/16
1/8	1/4	D2FC4	1.32	1.06	0.60	0.50	0.09	7/16	3/4
3/16	1/8	D3FC2	1.17	0.91	0.63	0.54	0.12	1/2	9/16
1/4	1/8	D4FC2	1.23	0.94	0.70	0.60	0.19	9/16	9/16
1/4	1/4	D4FC4	1.41	1.12	0.70	0.60	0.19	9/16	3/4
1/4	3/8	D4FC6	1.48	1.19	0.70	0.60	0.19	9/16	7/8
1/4	1/2	D4FC8	1.67	1.38	0.70	0.60	0.19	9/16	1 1/16
5/16	1/8	D5FC2	1.26	0.97	0.73	0.64	0.25	5/8	9/16
5/16	1/4	D5FC4	1.45	1.16	0.73	0.64	0.25	5/8	3/4
3/8	1/8	D6FC2	1.29	1.00	0.76	0.66	0.28	11/16	5/8
3/8	1/4	D6FC4	1.48	1.19	0.76	0.66	0.28	11/16	3/4
3/8	3/8	D6FC6	1.54	1.25	0.76	0.66	0.28	11/16	7/8
3/8	1/2	D6FC8	1.73	1.44	0.76	0.66	0.28	11/16	1 1/16
3/8	3/4	D6FC12	1.88	1.59	0.76	0.66	0.28	11/16	1 5/16
1/2	1/4	D8FC4	1.59	1.19	0.86	0.90	0.41	7/8	13/16
1/2	3/8	D8FC6	1.65	1.25	0.86	0.90	0.41	7/8	7/8
1/2	1/2	D8FC8	1.84	1.44	0.86	0.90	0.41	7/8	1 1/16
1/2	3/4	D8FC12	1.90	1.50	0.86	0.90	0.41	7/8	1 5/16
5/8	3/8	D10FC6	1.65	1.25	0.86	0.96	0.50	1	15/16
5/8	1/2	D10FC8	1.84	1.44	0.86	0.96	0.50	1	1 1/16
3/4	1/2	D12FC8	1.84	1.44	0.86	0.96	0.63	1 1/8	1 1/16
3/4	3/4	D12FC12	1.90	1.50	0.86	0.96	0.63	1 1/8	1 5/16
7/8	3/4	D14FC12	1.96	1.56	0.86	1.02	0.72	1 1/4	1 5/16
1	3/4	D16FC12	2.10	1.62	1.04	1.23	0.88	1 1/2	1 3/8
1	1	D16FC16	2.45	1.97	1.04	1.23	0.88	1 1/2	1 5/8
1 1/4	1 1/4	D20FC20	2.94	2.07	1.53	1.62	1.09	1 7/8	2 1/8
1 1/2	1 1/2	D24FC24	3.28	2.21	1.78	1.97	1.34	1 1/4	2 3/8
2	2	D32FC32	4.00	2.53	2.47	2.66	1.81	3	2 7/8
Metric (mm)									
3	1/8	DM3FC2	28.7	22.1	15.3	12.9	2.4	12	14
3	1/4	DM3FC4	33.5	26.9	15.3	12.9	2.4	12	19
4	1/8	DM4FC2	29.7	23.1	16.1	13.7	2.4	12	14
6	1/8	DM6FC2	31.3	23.9	17.7	15.3	4.8	14	14
6	1/4	DM6FC4	35.8	28.4	17.7	15.3	4.8	14	19
6	3/8	DM6FC6	37.6	30.2	17.7	15.3	4.8	14	22
6	1/2	DM6FC8	42.5	35.1	17.7	15.3	4.8	14	27
8	1/8	DM8FC2	32.1	24.6	18.6	16.2	6.4	16	15
8	1/4	DM8FC4	37.0	29.5	18.6	16.2	6.4	16	19
8	3/8	DM8FC6	38.5	31.0	18.6	16.2	6.4	16	22

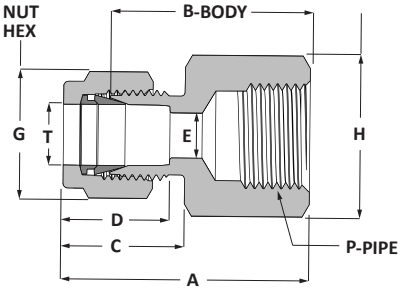
**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Female Pipe

Female Connector (FC)

Continued



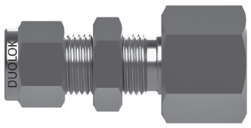


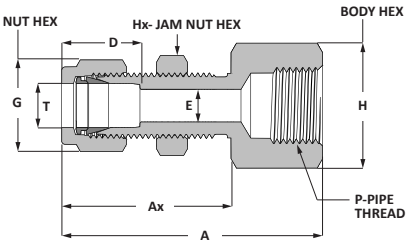
T Tube O.D.	P NPT Female	Part #	A	B	C	D	E	G	H
Metric (mm)									
8	1/2	DM8FC8	43.3	35.8	18.6	16.2	6.4	16	27
10	1/4	DM10FC4	37.8	30.2	19.5	17.2	7.9	19	19
10	3/8	DM10FC6	39.4	31.8	19.5	17.2	7.9	19	22
10	1/2	DM10FC8	44.2	36.6	19.5	17.2	7.9	19	27
12	1/4	DM12FC4	40.3	30.2	22.0	22.8	9.5	22	22
12	3/8	DM12FC6	41.9	31.8	22.0	22.8	9.5	22	22
12	1/2	DM12FC8	46.7	36.6	22.0	22.8	9.5	22	27
15	1/2	DM15FC8	46.7	36.6	22.0	24.4	11.9	25	27
16	1/2	DM16FC8	46.9	36.8	22.0	24.4	12.7	25	27
20	1/2	DM20FC8	47.9	37.8	22.0	26.0	15.9	32	30
20	3/4	DM20FC12	49.7	39.6	22.0	26.0	15.9	32	35
22	3/4	DM22FC12	49.7	39.6	22.0	26.0	18.3	32	35
22	1	DM22FC16	57.9	47.8	22.0	26.0	18.3	32	41
25	3/4	DM25FC12	53.4	41.1	26.5	31.3	21.8	38	35
25	1	DM25FC16	62.3	50.0	26.5	31.3	21.8	38	41

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Female Pipe

Bulkhead Female Connector (BFC)





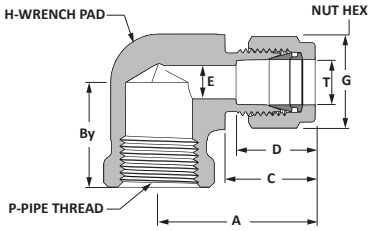
T Tube O.D.	P NPT Female Pipe Size	PART #	A	Ax	D	E	G	H	Hx	Maximum Panel Thickness	Panel Hole Drill Size
Fractional (in.)											
1/8	1/8	D2BFC2	1.76	1.23	0.50	0.09	7/16	9/16	1/2	0.50	21/64
1/4	1/8	D4BFC2	1.85	1.32	0.60	0.19	9/16	5/8	5/8	0.40	29/64
1/4	1/4	D4BFC4	2.04	1.32	0.60	0.19	9/16	3/4	5/8	0.40	29/64
3/8	1/4	D6BFC4	2.17	1.45	0.66	0.28	11/16	3/4	3/4	0.44	37/64
3/8	3/8	D6BFC6	2.24	1.45	0.66	0.28	11/16	15/16	3/4	0.44	37/64
1/2	3/8	D8BFC6	2.43	1.65	0.90	0.41	7/8	15/16	15/16	0.50	49/64
1/2	1/2	D8BFC8	2.62	1.65	0.90	0.41	7/8	1 1/16	15/16	0.50	49/64
3/4	3/4	D12BFC12	2.09	1.87	0.96	0.63	1 1/8	1 5/16	1 3/16	0.60	1 1/16
1	1	D16BFC16	3.67	2.26	1.23	0.88	1 1/2	1 5/8	1 3/8	0.75	1 21/64
Metric (mm / in.)											
6	1/4	DM6BFC4	51.8	41.91	15.3	4.8	14	19	5/8	10.2	11.5
12	1/2	DM12BFC8	66.5	22.8	22.8	9.5	22	29	15/16	12.7	19.5

Tube to Female Pipe

Female Elbow (FE)

Fractional





T Tube O.D.	P NPT Female Pipe	Part #	A	By	C	D	E	G	H
Fractional (in.)									
1/8	1/8	D2FE2	0.97	0.75	0.60	0.50	0.09	7/16	1/2
1/8	1/4	D2FE4	1.08	0.88	0.60	0.50	0.09	7/16	3/4
3/16	1/8	D3FE2	1.00	0.75	0.63	0.54	0.12	1/2	1/2
1/4	1/8	D4FE2	1.06	0.75	0.70	0.60	0.19	9/16	1/2
1/4	1/4	D4FE4	1.17	0.88	0.70	0.60	0.19	9/16	3/4
1/4	3/8	D4FE6	1.25	0.88	0.70	0.60	0.19	9/16	7/8
1/4	1/2	D4FE8	1.36	1.12	0.70	0.60	0.19	9/16	1
5/16	1/8	D5FE2	1.13	0.75	0.73	0.64	0.25	5/8	9/16
5/16	1/4	D5FE4	1.20	0.88	0.73	0.64	0.25	5/8	3/4
3/8	1/8	D6FE2	1.20	0.75	0.76	0.66	0.28	11/16	5/8
3/8	1/4	D6FE4	1.23	0.88	0.76	0.66	0.28	11/16	3/4
3/8	3/8	D6FE6	1.31	0.88	0.76	0.66	0.28	11/16	7/8
3/8	1/2	D6FE8	1.42	1.12	0.76	0.66	0.28	11/16	1
1/2	1/4	D8FE4	1.42	0.88	0.86	0.90	0.41	7/8	13/16
1/2	3/8	D8FE6	1.42	0.88	0.86	0.90	0.41	7/8	7/8
1/2	1/2	D8FE8	1.53	1.12	0.86	0.90	0.41	7/8	1
5/8	3/8	D10FE6	1.50	0.88	0.86	0.96	0.50	1	15/16
5/8	1/2	D10FE8	1.57	1.12	0.86	0.96	0.50	1	1-1/16
3/4	1/2	D12FE8	1.57	1.12	0.86	0.96	0.62	1-1/8	1-1/16
3/4	3/4	D12FE12	1.76	1.25	0.86	0.96	0.62	1-1/8	1-3/8
7/8	3/4	D14FE12	1.76	1.25	0.86	1.02	0.72	1-1/4	1-3/8
1	3/4	D16FE12	1.93	1.25	1.04	1.23	0.88	1-1/2	1-3/8
1	1	D16FE16	2.11	1.50	1.04	1.23	0.88	1-1/2	1-5/8

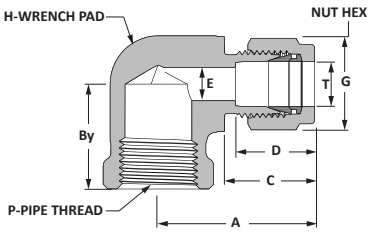
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Tube to Female Pipe

Female Elbow (FE)

*Metric**



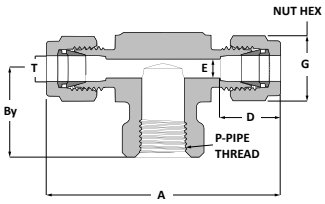


T Tube O.D.	P NPT Female Pipe	Part #	A	By	C	D	E	G	H
Metric (mm)									
6	1/8	DM6FE2	27.0	19.0	17.7	15.3	4.8	14	1/2
6	1/4	DM6FE4	29.8	22.4	17.7	15.3	4.8	14	11/16
6	1/2	DM6FE8	34.6	28.4	17.7	15.3	4.8	14	1
8	1/4	DM8FE4	30.6	22.4	18.6	16.2	6.4	16	11/16
10	1/8	DM10FE2	31.5	19.0	19.5	17.2	7.9	19	11/16
10	1/4	DM10FE4	33.5	22.4	19.5	17.2	7.9	19	13/16
12	1/4	DM12FE4	36.0	22.4	22.0	22.8	9.5	22	13/16
12	1/2	DM12FE8	38.8	28.4	22.0	22.8	9.5	22	1
16	1/2	DM16FE8	39.5	28.4	22.0	24.4	12.7	25	1-1/16

Tube to Female Pipe

Female Branch Tee (FBT)



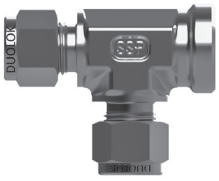


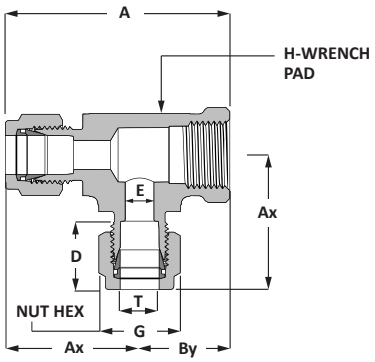
T Tube O.D.	P NPT Female Pipe	Part #	A	By	D	E	G	H
Fractional (in.)								
1/8	1/8	D2FBT2	1.94	0.75	0.50	0.09	7/16	9/16
1/4	1/8	D4FBT2	2.12	0.75	0.60	0.19	9/16	9/16
1/4	1/4	D4FBT4	2.34	0.88	0.60	0.19	9/16	3/4
3/8	1/4	D6FBT4	2.46	0.88	0.66	0.28	1-1/16	3/4
3/8	1/2	D6FBT8	2.84	1.12	0.66	0.28	1-1/16	1
1/2	1/4	D8FBT4	2.84	0.88	0.90	0.41	7/8	1-3/1 6
1/2	3/8	D8FBT6	2.84	0.88	0.90	0.41	7/8	7/8
1/2	1/2	D8FBT8	3.06	1.12	0.90	0.41	7/8	1
5/8	1/2	D10FBT8	3.06	1.12	0.96	0.50	1	1
3/4	3/4	D12FBT12	3.52	1.25	0.96	0.62	1-1/8	1-3/8
1	3/4	D16FBT12	3.86	1.25	1.23	0.88	1-1/2	1-3/8
1	1	D16FBT16	4.22	1.50	1.23	0.88	1-1/2	1-5/8
Metric (mm)								
6	1/4	DM6FBT4	59.5	22.4	15.3	4.8	14	1-1/16
8	1/8	DM8FBT2	59.7	19.0	16.2	6.4	16	5/8
8	1/4	DM8FBT4	61.2	22.4	16.2	6.4	16	1-1/16
10	1/4	DM10FBT4	67.0	22.4	17.2	7.9	19	1-3/16
12	1/4	DM12FBT4	72.0	22.4	22.8	9.5	22	1-3/16
12	3/8	DM12FBT6	72.0	22.4	22.8	9.5	22	1-3/16
12	1/2	DM12FBT8	77.7	28.4	22.8	9.5	22	1
16	1/2	DM16FBT8	77.6	28.4	24.4	12.7	25	1

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Female Pipe

Female Run Tee (FRT)



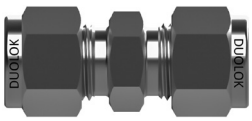


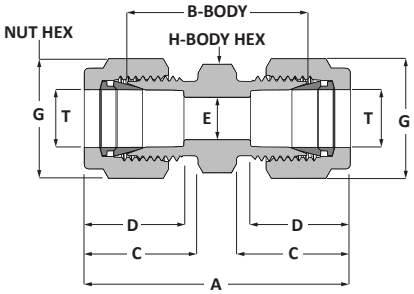
T Tube O.D.	P NPT Female Pipe Size	Part #	A	Ax	By	D	E	G	H
Fractional (in.)									
1/8	1/8	D2FRT2	1.72	0.97	0.75	0.50	0.09	7/16	9/16
1/4	1/8	D4FRT2	1.81	1.06	0.75	0.60	0.19	9/16	9/16
1/4	1/4	D4FRT4	2.05	1.17	0.88	0.60	0.19	9/16	3/4
3/8	1/4	D6FRT4	2.11	1.23	0.88	0.66	0.28	11/16	3/4
1/2	3/8	D8FRT6	2.30	1.42	0.88	0.90	0.41	7/8	7/8
1/2	1/2	D8FRT8	2.69	1.57	1.12	0.90	0.41	7/8	1 1/16
3/4	3/4	D12FRT12	3.01	1.76	1.25	0.96	0.62	1 1/8	1 3/8
Metric (mm)									
6	1/8	DM6FRT2	46.0	27.0	19.0	15.3	4.8	14.0	1/2
6	1/4	DM6FRT4	52.1	29.8	22.4	15.3	4.8	14.0	11/16
8	1/8	DM8FRT2	48.9	29.9	19.0	16.2	6.4	16.0	5/8
8	1/4	DM8FRT4	53.0	30.6	22.4	16.2	6.4	16.0	11/16
10	1/4	DM10FRT4	55.9	33.5	22.4	17.2	7.9	19.0	13/16
12	1/4	DM12FRT4	58.4	36.0	22.4	22.8	9.5	22.0	13/16
12	3/8	DM12FRT6	58.4	36.0	22.4	22.8	10.3	22.0	13/16
16	1/2	DM16FRT8	68.2	39.8	28.4	24.4	12.7	25.0	1-1/16

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Tube Union

Union (U)



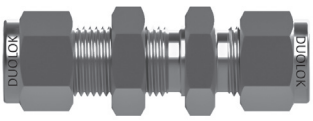


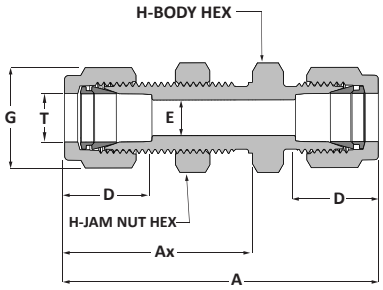
T Tube O.D.	Part #	A	B	C	D	E	G	H
Fractional (in.)								
1/16	D1U	0.99	0.69	0.43	0.34	0.05	5/16	5/16
1/8	D2U	1.40	0.88	0.60	0.50	0.09	7/16	7/16
3/16	D3U	1.47	0.95	0.63	0.54	0.12	1/2	7/16
1/4	D4U	1.61	1.03	0.70	0.60	0.19	9/16	1/2
5/16	D5U	1.69	1.11	0.73	0.64	0.25	5/8	9/16
3/8	D6U	1.77	1.19	0.76	0.66	0.28	11/16	5/8
1/2	D8U	2.02	1.22	0.86	0.90	0.41	7/8	13/16
5/8	D10U	2.05	1.25	0.86	0.96	0.50	1	15/16
3/4	D12U	2.11	1.31	0.86	0.96	0.62	1 1/8	1 1/16
7/8	D14U	2.17	1.37	0.86	1.02	0.72	1 1/4	1 3/16
1	D16U	2.55	1.59	1.04	1.23	0.88	1 1/2	1 3/8
1 1/4	D20U	2.63	1.89	1.53	1.62	1.09	1 7/8	1 3/4
1 1/2	D24U	4.25	2.11	1.78	1.97	1.34	2 1/4	2 1/8
2	D32U	5.88	2.94	2.47	2.66	1.81	3	2 3/4
Metric (mm)								
3	DM3U	35.3	22.1	15.3	12.9	2.4	12	12
4	DM4U	37.3	24.1	16.1	13.7	2.4	12	12
6	DM6U	41.0	26.2	17.7	15.3	4.8	14	14
8	DM8U	43.2	28.2	18.6	16.2	6.4	16	15
10	DM10U	46.2	31.0	19.5	17.2	7.9	19	18
12	DM12U	51.2	31.0	22.0	22.8	9.5	22	22
14	DM14U	52.0	31.8	22.0	24.4	11.1	25	24
15	DM15U	52.0	31.8	22.0	24.4	11.9	25	24
16	DM16U	52.0	31.8	22.0	24.4	12.7	25	24
18	DM18U	53.5	33.3	22.0	24.4	15.1	30	27
20	DM20U	55.0	34.8	22.0	26.0	15.9	32	30
22	DM22U	55.0	34.8	22.0	26.0	18.3	32	30
25	DM25U	65.0	40.4	26.5	31.3	21.8	38	35

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Tube Union

Bulkhead Union (BU)



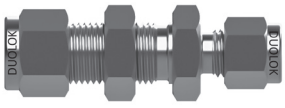


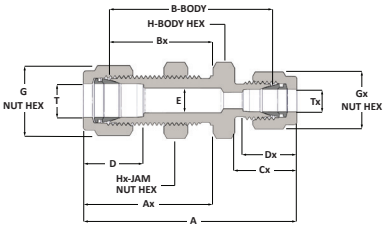
T Tube O.D.	Part #	A	AX	D	E	G	H	Maximum Panel Thickness	Panel Hole Drill Size
Fractional (in.)									
1/16	D1BU	1.24	0.68	0.34	0.05	5/1 6	5/1 6	0.12	13/ 64
1/8	D2BU	2.02	1.23	0.50	0.09	7/1 6	1/2	0.50	21/64
3/16	D3BU	2.11	1.26	0.54	0.12	1/2	9/1 6	0.50	25/64
1/4	D4BU	2.27	1.32	0.60	0.19	9/1 6	5/8	0.40	29/64
5/16	D5BU	2.39	1.41	0.64	0.25	5/8	11/1 6	0.44	33/64
3/8	D6BU	2.45	1.45	0.66	0.28	11/1 6	3/4	0.44	37/64
1/2	D8BU	2.80	1.65	0.90	0.41	7/8	15/1 6	0.50	49/64
5/8	D10BU	2.86	1.68	0.96	0.50	1	1 1/1 6	0.50	57/64
3/4	D12BU	3.11	1.87	0.96	0.63	1 1/8	1 3/1 6	0.66	1 1/64
1	D16BU	3.77	2.26	1.23	0.88	1 1/2	1 5/8	0.75	1 21/64
Metric (mm)									
3	DM3BU	51.3	31.2	12.9	2.4	12	14	8.3	12.7
4	DM4BU	53.6	32.0	13.7	2.4	12	14	9.9	12.7
6	DM6BU	57.7	33.6	15.3	4.8	14	16	11.5	10.2
8	DM8BU	61.0	36.1	16.2	6.4	16	18	13.1	11.2
10	DM10BU	63.7	37.0	17.2	7.9	19	22	16.3	11.2
12	DM12BU	71.0	41.9	22.8	9.5	22	24	19.5	12.7
14	DM14BU	72.5	42.6	24.4	11.1	26	27	22.5	12.7
15	DM15BU	72.5	42.6	24.4	11.9	26	27	22.8	12.7
16	DM16BU	72.5	42.6	24.4	12.7	26	27	22.8	12.7
18	DM18BU	78.9	47.4	24.4	15.1	30	30	26.0	16.8
20	DM20BU	84.5	53.0	26.0	15.9	32	35	29.0	19.0
25	DM25BU	96.0	57.5	31.3	21.8	38	34.0	34.0	19.0

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Tube Union

Bulkhead Reducing Union (BRU)



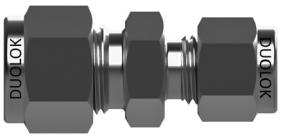


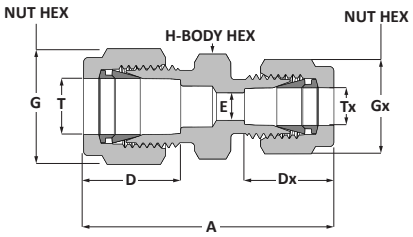
T Tube	Tx Tube	Part #	A	Ax	B	Bx	Cx	D	Dx	E	G	Gx	H	Hx	Max. Panel Thickness	Panel Hole Drill Size
Fractional (in.)																
1/4	1/8	D4BRU2	2.17	1.32	1.62	1.03	0.60	0.60	0.50	0.09	9/16	7/16	5/8	5/8	0.40	29/64
3/8	1/4	D6BRU4	2.39	1.44	1.81	1.16	0.70	0.66	0.60	0.19	11/16	9/16	3/4	3/4	0.44	37/64
1/2	1/4	D8BRU4	2.63	1.65	1.94	1.25	0.70	0.90	0.60	0.19	7/8	9/16	15/16	15/16	0.50	49/64
1/2	3/8	D8BRU6	2.68	1.65	1.99	1.25	0.75	0.90	0.66	0.19	7/8	11/16	15/16	15/16	0.50	49/64

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Tube to Tube Union

Reducing Union (RU)





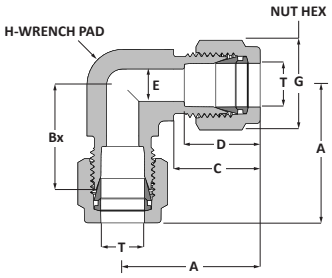
T Tube O.D.	Tx Tube O.D.	Part #	A	D	DX	E	G	GX	H
Fractional (in.)									
1/8	1/16	D2RU1	1.22	0.50	0.34	0.05	7/16	5/16	7/16
3/16	1/16	D3RU1	1.27	0.54	0.34	0.05	1/2	5/16	7/16
3/16	1/8	D3RU2	1.44	0.54	0.50	0.09	1/2	7/16	7/16
1/4	1/16	D4RU1	1.35	0.60	0.34	0.05	9/16	5/16	1/2
1/4	1/8	D4RU2	1.52	0.60	0.50	0.09	9/16	7/16	1/2
1/4	3/16	D4RU3	1.55	0.60	0.54	0.12	9/16	1/2	1/2
5/16	1/8	D5RU2	1.57	0.64	0.50	0.09	5/8	7/16	9/16
5/16	1/4	D5RU4	1.66	0.64	0.60	0.19	5/8	9/16	9/16
3/8	1/16	D6RU1	1.44	0.66	0.34	0.05	11/16	5/16	5/8
3/8	1/8	D6RU2	1.61	0.66	0.50	0.09	11/16	7/16	5/8
3/8	1/4	D6RU4	1.70	0.66	0.60	0.19	11/16	9/16	5/8
3/8	5/16	D6RU5	1.74	0.66	0.64	0.25	11/16	5/8	5/8
1/2	1/8	D8RU2	1.78	0.90	0.50	0.09	7/8	7/16	13/16
1/2	1/4	D8RU4	1.85	0.90	0.60	0.19	7/8	9/16	13/16
1/2	3/8	D8RU6	1.91	0.90	0.66	0.28	7/8	11/16	13/16
5/8	3/8	D10RU6	1.94	0.96	0.66	0.28	1	11/16	15/16
5/8	1/2	D10RU8	2.05	0.96	0.90	0.41	1	7/8	15/16
3/4	1/4	D12RU4	1.94	0.96	0.60	0.19	1 1/8	9/16	1 1/16
3/4	3/8	D12RU6	2.00	0.96	0.66	0.28	1 1/8	11/16	1 1/16
3/4	1/2	D12RU8	2.11	0.96	0.90	0.41	1 1/8	7/8	1 1/16
3/4	5/8	D12RU10	2.11	0.96	0.96	0.50	1 1/8	1	1 1/16
1	1/2	D16RU8	2.49	1.23	0.90	0.41	1 1/2	7/8	1 3/8
1	3/4	D16RU12	2.47	1.23	0.96	0.62	1 1/2	1 1/8	1 3/8
Metric (mm)									
3	2	DM3RUM2	35.2	12.9	12.8	1.7	12	12	12
6	2	DM6RUM2	36.6	12.9	15.3	1.7	14	12	14
6	3	DM6RUM3	38.6	15.3	12.9	2.4	14	12	14
6	4	DM6RUM4	39.4	15.3	13.7	2.4	14	12	14
8	6	DM8RUM6	42.3	16.2	15.3	4.8	16	14	15
10	6	DM10RUM6	44.1	17.2	15.3	4.8	19	14	18
10	8	DM10RUM8	45.1	17.2	16.2	6.4	19	16	18
12	6	DM12RUM6	47.0	22.8	15.3	4.8	22	14	22
12	8	DM12RUM8	47.8	22.8	16.2	6.4	22	16	22
12	10	DM12RUM10	48.7	22.8	17.2	7.9	22	19	22
16	10	DM16RUM10	45.9	24.4	17.2	7.9	25	19	24
16	12	DM16RUM2	52.0	24.4	22.8	9.5	25	22	24
18	12	DM18RUM12	53.5	24.4	22.8	9.5	30	22	27
25	18	DM25RUM18	61.0	31.3	24.4	15.1	38	30	35
25	20	DM25RUM20	62.3	31.3	26.0	15.9	38	32	35

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Tube Union

Union Elbow (UE)

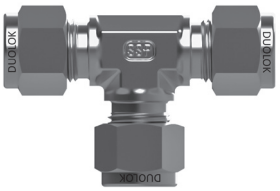


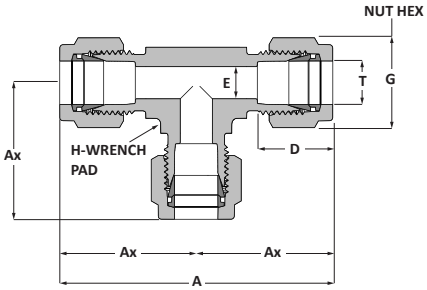


T Tube O.D.	Part #	A	Bx	C	D	E	G	H
Fractional (in.)								
1/16	D1UE	0.70	0.55	0.43	0.34	0.05	5/16	3/8
1/8	D2UE	0.88	0.62	0.60	0.50	0.09	7/16	3/8
3/16	D3UE	1.00	0.74	0.63	0.54	0.12	1/2	1/2
1/4	D4UE	1.06	0.77	0.70	0.60	0.19	9/16	1/2
5/16	D5UE	1.13	0.84	0.73	0.64	0.25	5/8	9/16
3/8	D6UE	1.20	0.91	0.76	0.66	0.28	11/16	5/8
1/2	D8UE	1.42	1.02	0.86	0.90	0.41	7/8	13/16
5/8	D10UE	1.50	1.10	0.86	0.96	0.50	1	15/16
3/4	D12UE	1.57	1.17	0.86	0.96	0.62	1 1/8	1 1/16
7/8	D14UE	1.76	1.36	0.86	1.02	0.72	1 1/4	1 3/8
1	D16UE	1.93	1.45	1.04	1.23	0.88	1 1/2	1 3/8
1 1/4	D20UE	2.62	1.75	1.53	1.62	1.09	1 7/8	1 11/16
1 1/2	D24UE	3.07	2.00	1.78	1.97	1.34	2 1/4	2
2	D32UE	4.22	2.75	2.47	2.66	1.81	3	2 3/4
Metric (mm)								
3	DM3UE	22.3	15.7	15.3	12.9	2.4	12	3/8 in.
4	DM4UE	25.4	18.8	16.1	13.7	2.4	12	1/2 in.
6	DM6UE	27	19.6	17.7	15.3	4.8	14	1/2 in.
8	DM8UE	28.8	21.3	18.8	16.2	6.4	16	9/16 in.
10	DM10UE	31.5	23.9	19.5	17.2	7.9	19	11/16 in.
12	DM12UE	36	25.9	22.0	22.8	9.5	22	13/16 in.
14	DM14UE	38	27.9	22.0	24.4	11.1	25	15/16 in.
15	DM15UE	38	27.9	22.0	24.4	11.9	25	15/16 in.
16	DM16UE	38	27.9	22.0	24.4	12.7	25	15/16 in.
18	DM18UE	39.8	29.7	22.0	24.4	15.1	30	1 1/16 in.
20	DM20UE	44.6	34.5	22.0	26	15.9	32	1 3/8 in.
22	DM22UE	44.6	34.5	22.0	26	18.3	32	1 3/8 in.
25	DM25UE	49.1	36.8	26.5	31.3	21.8	38	1 3/8 in.

Tube to Tube Union

Union Tee (UT)



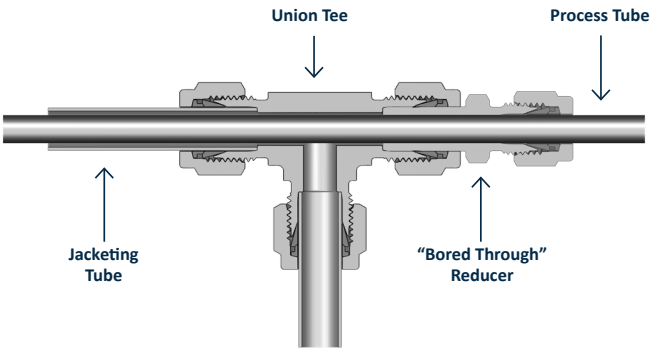


T Tube O.D.	Part #	A	Ax	D	E	G	H
Fractional (in.)							
1/16	D1UT	1.40	0.70	0.34	0.05	5/16	3/8
1/8	D2UT	1.76	0.88	0.50	0.09	7/16	3/8
3/16	D3UT	1.92	0.96	0.54	0.12	1/2	7/16
1/4	D4UT	2.12	1.06	0.60	0.19	9/16	1/2
5/16	D5UT	2.34	1.17	0.64	0.25	5/8	5/8
3/8	D6UT	2.40	1.20	0.66	0.28	11/16	5/8
1/2	D8UT	2.84	1.42	0.90	0.41	7/8	13/16
5/8	D10UT	3.06	1.53	0.96	0.50	1	1
3/4	D12UT	3.14	1.57	0.96	0.62	1 1/8	1 1/16
7/8	D14UT	3.52	1.76	1.02	0.72	1 1/4	1 3/8
1	D16UT	3.86	1.93	1.23	0.88	1 1/2	1 3/8
11/4	D20UT	5.24	2.62	1.62	1.09	1 7/8	1 5/8
11/2	D24UT	6.14	3.07	1.97	1.34	21/4	2
2	D32UT	8.44	4.22	2.66	1.81	3	2 3/4
Metric (mm)							
3	DM3UT	44.7	22.3	12.9	2.4	12	3/8 in.
4	DM4UT	50.8	25.4	13.7	2.4	12	1/2 in.
6	DM6UT	53.9	27.0	15.3	4.8	14	1/2 in.
8	DM8UT	59.7	29.9	16.2	6.4	16	5/8 in.
10	DM10UT	63.0	31.5	17.2	7.9	19	11/16 in.
12	DM12UT	72.0	36.0	22.8	9.5	22	13/16 in.
14	DM14UT	77.6	38.8	24.4	11.1	25	1 in.
15	DM15UT	77.6	38.8	24.4	11.9	25	1 in.
16	DM16UT	77.6	38.8	24.4	12.7	25	1 in.
18	DM18UT	79.6	39.8	24.4	15.1	30	1 1/16 in.
20	DM20UT	89.3	44.6	26.0	15.9	32	1 3/8 in.
22	DM22UT	89.3	44.6	26.0	18.3	32	1 3/8 in.
25	DM25UT	98.3	49.1	31.3	21.8	38	1 3/8 in.

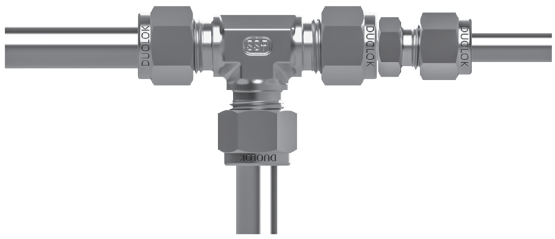
**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Heat Exchanger Tee Fittings

Forged heat exchanger tees can be designed and manufactured by SSP to customers' specific design criteria. Additionally, heat exchanger tees may be assembled by utilizing standard union tees (UT) combined with reducers that have been "bored through" (RBT fittings) to allow the process tube to be inserted into and through the jacketing tube.



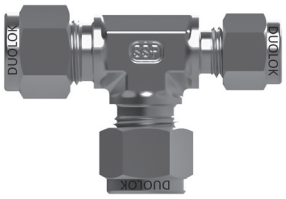
Assembled Heat Exchanger Tee

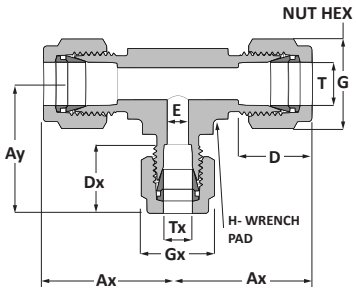


Note: Pressure ratings of "bored through" fittings are reduced. For additional information on a specific fitting's rating, contact your local distributor.

Tube to Tube Union

Reducing Union Tee (RUT)



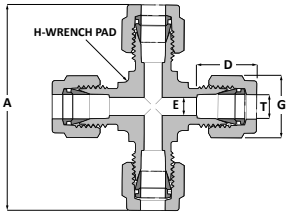


T Tube O.D.	Tx Tube O.D.	Part #	A	Ax	Ay	D	Dx	E	G	Gx	H
Fractional (in.)											
3/8	1/4	D6RUT64	2.40	1.20	1.14	0.66	0.60	0.19	11/16	9/16	5/8
1/2	1/4	D8RUT84	2.84	1.42	1.25	0.90	0.60	0.19	7/8	9/16	13/16
1/2	3/8	D8RUT86	2.84	1.42	1.31	0.90	0.66	0.28	7/8	11/16	13/16
5/8	3/8	D10RUT106	3.06	1.53	1.42	0.96	0.66	0.28	1	11/16	1
3/4	3/8	D12RUT126	3.14	1.57	1.46	0.96	0.66	0.28	1 1/8	11/16	1 1/16
3/4	1/2	D12RUT128	3.14	1.57	1.57	0.96	0.90	0.41	1 1/8	7/8	1 1/16
1	3/8	D16RUT166	3.86	1.93	1.65	1.23	0.66	0.28	1 1/2	1 1/16	1 3/8
1	1/2	D16RUT168	3.86	1.93	1.76	1.23	0.86	0.41	1 1/2	7/8	1 3/8
1	3/4	D16RUT1612	3.86	1.93	1.76	1.23	0.96	0.62	1 1/2	1 1/8	1 3/8

Tube to Tube Union

Union Cross (UCS)



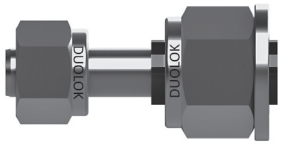


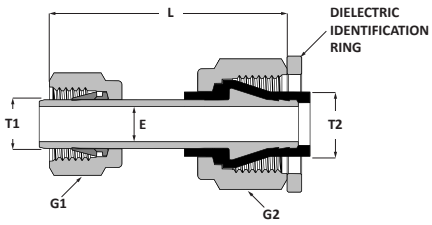
Part #	T Tube O.D.	A	D	E	G	H
Fractional (in.)						
D2UCS	1/8	1.76	0.50	0.09	7/1 6	7/1 6
D4UCS	1/4	2.12	0.60	0.19	9/1 6	7/1 6
D5UCS	5/1 6	2.34	0.64	0.25	5/8	9/1 6
D6UCS	3/8	2.40	0.66	0.28	11/1 6	9/1 6
D8UCS	1/2	2.84	0.90	0.41	7/8	3/4
D12UCS	3/4	3.14	0.96	0.62	1 1/8	1 1/1 6
D16UCS	1	3.86	1.23	0.88	1 1/2	1 5/1 6
Metric (mm)						
DM3UCS	3	44.7	12.9	2.4	12	3/8
DM6UCS	6	53.9	15.3	4.8	14	1/2
DM8UCS	8	59.7	16.2	6.4	16	5/8
DM10UCS	10	67.0	17.2	7.9	19	13/16
DM12UCS	12	72.0	22.8	9.5	22	13/16
DM16UCS	16	74.0	24.4	12.7	25	15/16
DM18UCS	18	76.6	24.4	15.1	30	1-1/16
DM20UCS	20	89.3	26.0	15.9	32	1-3/8
DM25UCS	25	98.3	31.3	21.8	38	1-3/8

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube to Tube Union

Dielectric Adapter / Union (DA/DU)

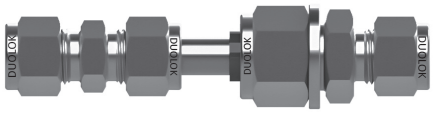


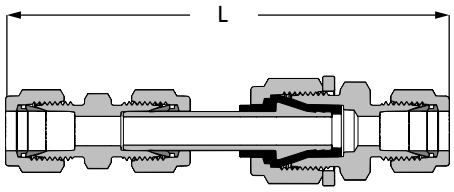


The SSP Instrumentation Dielectric Adapter is supplied with pre-swaged 3/8” nut and ferrules. The dielectric connection has a captive 1/2” nut. Dielectric Stop Collar and assembly instructions are also supplied with the adapter. By using 3/8” and 1/2” tube-ended fittings with the adapter, a wide range of dielectric fitting configurations can be built.

Part #	T1 Tube End	T2 Tube End	L	E	G1 Hex	G2 Hex
	Fractional (in.)					
D8DA6	3/8	1/2	2.08	0.30	11/16	7/8

DU: Dielectric Union





Dielectric fittings are designed to isolate monitoring and control instruments and equipment from electrical current and voltages. Manufactured in 316 stainless steel with thermoplastic insulators, SSP Instrumentation’s dielectric fittings provide high dielectric strength in applications up to 5,000 PSIG. Typical applications for dielectric fittings are on impulse lines in natural gas pipeline monitoring stations. For additional factory assembled configurations, contact your local distributor.

Part #	L (in.)
D4DU	4.08
D6DU	4.20
D8DU	4.79
D6DMC4	3.80

Materials and Technical Data

Body: 316 Stainless Steel

Pressure Rating: 5,000 PSIG

Electrical Resistance: 1.0 x 10E7 Ohm at 70°F (20°C) at 10 VDC @ 50% relative humidity; voltage breakdown resistance of 3,000 VDC.

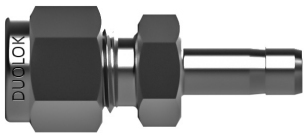
Insulator: Polyamide-imide

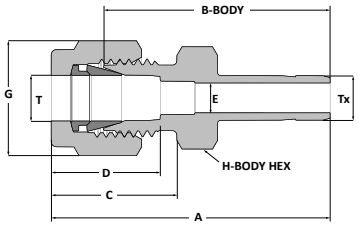
Temperature Rating: From -40ºF to 200ºF

Tube Stub Connectors / Adapters

Reducer / Adapter (R)

Fractional



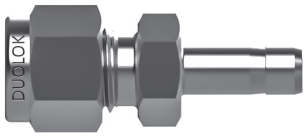


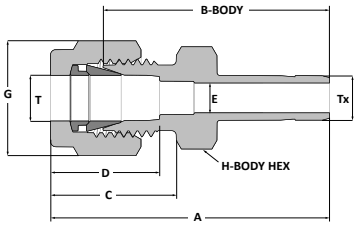
T Tube O.D.	Tx O.D.	Part #	A	B	C	D	E	G	H
Fractional (in.)									
1/16	1/8	D1R2	1.15	1.00	0.43	0.34	0.06	5/16	5/16
1/16	1/4	D1R4	1.24	1.09	0.43	0.34	0.11	5/16	5/16
1/8	1/16	D2R1	1.14	0.88	0.60	0.50	0.02	7/16	7/16
1/8	1/8	D2R2	1.32	1.06	0.60	0.50	0.06	7/16	7/16
1/8	3/16	D2R3	1.35	1.09	0.60	0.50	0.08	7/16	7/16
1/8	1/4	D2R4	1.42	1.16	0.60	0.50	0.11	7/16	7/16
1/8	3/8	D2R6	1.48	1.22	0.60	0.50	0.24	7/16	7/16
1/8	1/2	D2R8	1.74	1.48	0.60	0.50	0.33	7/16	9/16
3/16	1/8	D3R2	1.37	1.11	0.63	0.54	0.06	1/2	7/16
3/16	1/4	D3R4	1.46	1.20	0.63	0.54	0.11	1/2	7/16
1/4	1/8	D4R2	1.45	1.16	0.70	0.60	0.06	9/16	1/2
1/4	3/16	D4R3	1.48	1.19	0.70	0.60	0.08	9/16	1/2
1/4	1/4	D4R4	1.54	1.25	0.70	0.60	0.11	9/16	1/2
1/4	5/16	D4R5	1.57	1.28	0.70	0.60	0.18	9/16	1/2
1/4	3/8	D4R6	1.60	1.31	0.70	0.60	0.24	9/16	1/2
1/4	1/2	D4R8	1.82	1.53	0.70	0.60	0.33	9/16	9/16
1/4	5/8	D4R10	1.89	1.60	0.70	0.60	0.42	9/16	11/16
1/4	3/4	D4R12	1.88	1.59	0.70	0.60	0.51	9/16	13/16
5/16	3/8	D5R6	1.65	1.36	0.73	0.64	0.24	5/8	9/16
5/16	1/2	D5R8	1.87	1.58	0.73	0.64	0.33	5/8	9/16
3/8	1/4	D6R4	1.63	1.34	0.76	0.66	0.15	11/16	5/8
3/8	3/8	D6R6	1.70	1.41	0.76	0.66	0.24	11/16	5/8
3/8	1/2	D6R8	1.91	1.62	0.76	0.66	0.33	11/16	5/8
3/8	5/8	D6R10	1.98	1.69	0.76	0.66	0.42	11/16	11/16
3/8	3/4	D6R12	1.98	1.69	0.76	0.66	0.51	11/16	13/16
1/2	1/4	D8R4	1.77	1.37	0.86	0.90	0.15	7/8	13/16
1/2	3/8	D8R6	1.84	1.44	0.86	0.90	0.24	7/8	13/16
1/2	1/2	D8R8	2.06	1.66	0.86	0.90	0.33	7/8	13/16
1/2	5/8	D8R10	2.12	1.72	0.86	0.90	0.42	7/8	13/16
1/2	3/4	D8R12	2.12	1.72	0.86	0.90	0.51	7/8	13/16
1/2	1	D8R16	2.37	1.97	0.86	0.90	0.75	7/8	11/16
5/8	3/4	D10R12	2.15	1.75	0.86	0.96	0.51	1	15/16
5/8	7/8	D10R14	2.21	1.81	0.86	0.96	0.64	1	15/16
5/8	1	D10R16	2.40	2.00	0.86	0.96	0.75	1	11/16
3/4	1/2	D12R8	2.15	1.75	0.86	0.96	0.34	11/8	11/16
3/4	1	D12R16	2.46	2.06	0.86	0.96	0.75	11/8	11/16
11/4	11/2	D20R24	4.10	3.23	1.53	1.62	1.09	21/4	1 7/8

Tube Stub Connectors / Adapters

Reducer / Adapter (R)

*Metric**



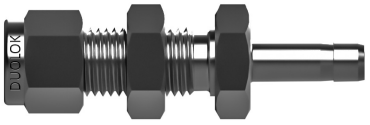


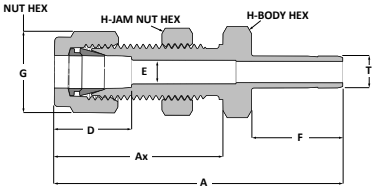
T Tube O.D.	Tx Tube O.D.	Part #	A	B	C	D	E	G	H
Metric (mm)									
3	4	DM3RM4	35.0	28.4	15.3	12.9	2.4	12	12
3	6	DM3RM6	36.1	29.5	15.3	12.9	2.4	12	12
3	10	DM3RM10	38.4	31.8	15.3	12.9	2.4	12	14
4	6	DM4RM6	37.1	30.5	16.1	13.7	2.4	14	12
6	3	DM6RM3	36.9	29.5	17.7	15.3	1.9	14	14
6	8	DM6RM8	39.6	32.5	17.7	15.3	4.8	14	14
6	10	DM6RM10	40.7	33.3	17.7	15.3	4.8	14	14
6	12	DM6RM12	46.3	38.9	17.7	15.3	4.8	14	14
6	18	DM6RM18	49.6	42.2	17.7	15.3	4.8	16	22
8	6	DM8RM6	40.3	32.8	18.6	16.2	4.1	16	15
8	10	DM8RM10	42.0	34.5	18.6	16.2	6.4	16	15
8	12	DM8RM12	47.6	40.1	18.6	16.2	6.4	19	15
10	6	DM10RM6	42.4	34.8	19.5	17.2	4.1	19	18
10	8	DM10RM8	43.4	35.8	19.5	17.2	5.6	19	18
10	12	DM10RM12	49.8	42.2	19.5	17.2	7.9	19	18
10	15	DM10RM15	51.3	43.7	19.5	17.2	7.9	19	18
10	18	DM10RM18	51.3	43.7	19.5	17.2	7.9	22	22
12	6	DM12RM6	44.9	34.8	22.0	22.8	4.1	22	22
12	8	DM12RM8	45.9	35.8	22.0	22.8	5.6	22	22
12	10	DM12RM10	46.7	36.6	22.0	22.8	7.1	22	22
12	16	DM12RM16	53.8	43.7	22.0	22.8	9.5	22	22
12	18	DM12RM18	53.8	43.7	22.0	22.8	9.5	22	22
12	20	DM12RM20	56.1	46.0	22.0	22.8	9.5	22	22
12	22	DM12RM22	56.1	46.0	22.0	22.8	9.5	22	24
12	25	DM12RM25	62.4	52.3	22.0	22.8	9.5	22	27
16	12	DM16RM12	53.0	42.9	22.0	24.4	8.8	25	24
18	12	DM18RM12	54.6	44.5	22.0	24.4	8.8	30	27
18	16	DM18RM16	56.1	46.0	22.0	24.4	12.0	30	27
18	20	DM18RM20	57.6	47.5	22.0	24.4	15.1	30	27
18	22	DM18RM22	57.6	47.5	22.0	24.4	15.1	30	27
18	25	DM18RM25	62.4	52.3	22.0	24.4	15.1	30	27
20	16	DM20RM16	57.9	47.8	22.0	26.0	12.0	32	30
20	18	DM20RM18	57.9	47.8	22.0	26.0	13.9	32	30
20	22	DM20RM22	59.4	49.3	22.0	26.0	15.9	32	30
20	25	DM20RM25	64.2	54.1	22.0	26.0	15.9	32	30
22	18	DM22RM18	57.9	47.8	22.0	26.0	13.9	32	30
22	20	DM22RM20	59.4	49.3	22.0	26.0	15.5	32	30
22	25	DM22RM25	64.2	54.1	22.0	26.0	18.3	32	30
25	18	DM25RM18	63.1	50.8	26.5	31.3	13.9	38	35
25	20	DM25RM20	64.6	52.3	26.5	31.3	15.5	38	35

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube Stub Connectors / Adapters

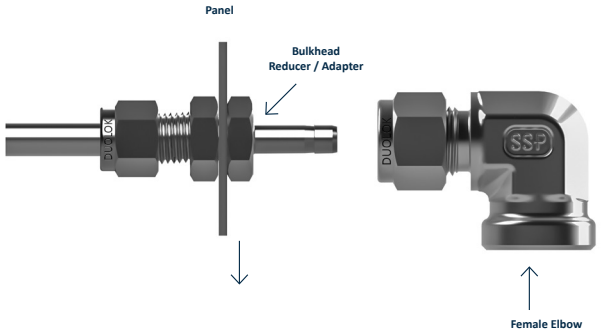
Bulkhead Reducer / Adapter (BR)

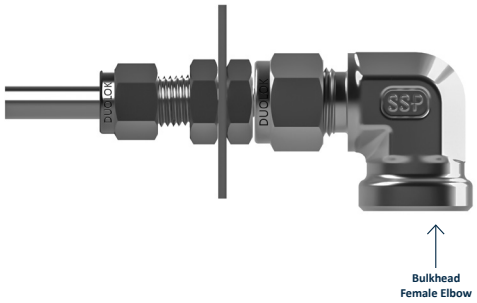




T Tube O.D.	Part #	A	Ax	D	E	F	G	H	Max. Panel Thickness	Panel Hole Drill Size
Fractional (in.)										
1/8	D2BR2	1.95	1.23	0.50	0.06	0.53	7/1 6	1/2	0.50	21/64
1/4	D4BR4	2.20	1.32	0.60	0.11	0.62	9/1 6	5/8	0.40	29/64
3/8	D6BR6	2.41	1.45	0.66	0.24	0.69	11/1 6	3/4	0.44	37/64
1/2	D8BR8	2.87	1.65	0.90	0.33	0.91	7/8	15/1 6	0.50	49/64
5/8	D10BR10	2.96	1.68	0.96	0.47	1.02	1	1 1/16	0.50	57/64
3/4	D12BR12	3.21	1.92	0.96	0.58	1.02	1 1/8	1 3/16	0.66	1 1/64
1	D16BR16	3.96	2.27	1.23	0.80	1.30	1 1/2	1 5/8	0.75	1 21/64

The Bulkhead Reducer/ Adapter tube fitting provides the greatest connection flexibility in panel installations. The Bulkhead Reducer/ Adapter can be used with any proper size Duolok tube fitting configuration to meet the installer's special requirements.

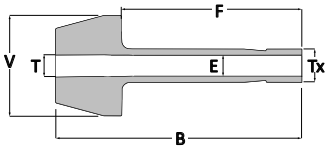




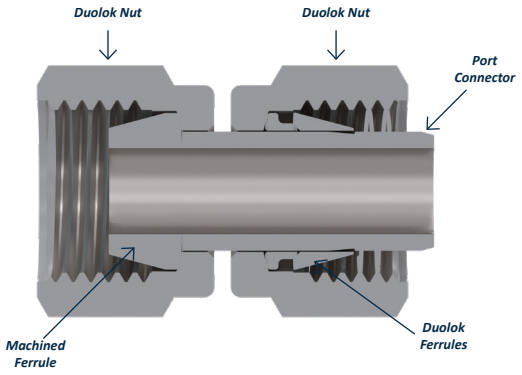
Tube Stub Connectors / Adapters

Port Connector (PC)



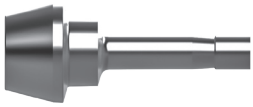


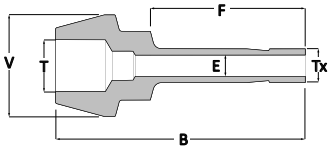
T Tube O.D.	Part #	B	E	F	TX	V
Fractional (in.)						
1/16	D1PC	0.54	0.02	0.42	1/16	0.13
1/8	D2PC	0.88	0.06	0.62	1/8	0.24
1/4	D4PC	0.97	0.11	0.74	1/4	0.37
5/16	D5PC	1.02	0.18	0.79	5/16	0.43
3/8	D6PC	1.03	0.24	0.80	3/8	0.50
1/2	D8PC	1.41	0.33	1.02	1/2	0.62
3/4	D12PC	1.47	0.51	1.09	3/4	0.87
1	D16PC	1.89	0.75	1.36	1	1.12



Tube Stub Connectors / Adapters

Reducing Port Connector (RPC)





T Tube O.D.	Tx Reduced Tube O.D.	Part #	B	E	F	V
Fractional (in.)						
1/8	1/16	D2RPC1	0.68	0.02	0.34	0.24
1/4	1/16	D4RPC1	0.71	0.02	0.34	0.37
1/4	1/8	D4RPC2	0.89	0.06	0.53	0.37
3/8	1/8	D6RPC2	0.91	0.08	0.53	0.50
3/8	1/4	D6RPC4	0.98	0.15	0.62	0.50
1/2	1/4	D8RPC4	1.15	0.15	0.62	0.62
1/2	3/8	D8RPC6	1.20	0.24	0.69	0.62
3/4	1/2	D12RPC8	1.44	0.34	0.91	0.87

Installation Instructions for Port Connectors

(1a) Remove the nut and ferrules from the first Duolok tube fitting that will be close-connected.

(1b) Slide the Duolok nut (no ferrules) over the machined ferrule end of the port connector.

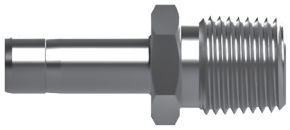
(1c) Insert the machined ferrule end of the port connector into the Duolok tube fitting port and hand tighten the Duolok nut.

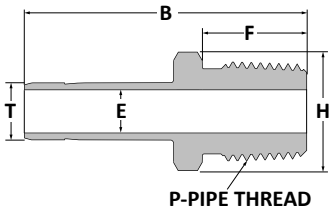
(1d) While holding the tube fitting body steady with a back up wrench, tighten the Duolok nut with a wrench 1/4 turn.

(2) Insert opposite end of the port connector into the second tube fitting port, hand tighten the Duolok nut, and while holding the tube fitting body steady with a back up wrench; tighten the Duolok nut 1-1/4 turns for sizes 1/4” to 2” or 3/4 turn for sizes 1/16” to 3/16”.

Tube Stub Connectors / Adapters

Male Adapter (MA)



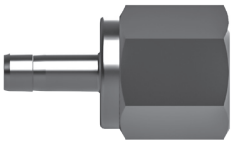


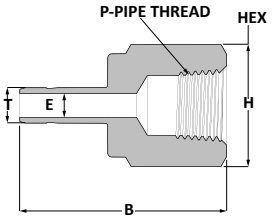
T Tube O.D.	P NPT Male Pipe	PART #	B	E	F	H
Fractional (in.)						
1/8	1/8	D2MA2	1.12	0.04	0.38	7/16
1/8	1/4	D2MA4	1.31	0.05	0.56	9/16
3/16	1/8	D3MA2	1.15	0.08	0.38	7/16
3/16	1/4	D3MA4	1.34	0.10	0.56	9/16
1/4	1/8	D4MA2	1.21	0.12	0.38	7/16
1/4	1/4	D4MA4	1.40	0.13	0.56	9/16
1/4	3/8	D4MA6	1.43	0.14	0.56	11/16
1/4	1/2	D4MA8	1.65	0.14	0.75	7/8
5/16	1/8	D5MA2	1.25	0.18	0.38	7/16
5/16	1/4	D5MA4	1.46	0.18	0.56	9/16
3/8	1/8	D6MA2	1.31	0.19	0.38	7/16
3/8	1/4	D6MA4	1.50	0.24	0.56	9/16
3/8	3/8	D6MA6	1.50	0.24	0.56	11/16
3/8	1/2	D6MA8	1.71	0.24	0.75	7/8
1/2	1/4	D8MA4	1.71	0.28	0.56	9/16
1/2	3/8	D8MA6	1.75	0.33	0.56	11/16
1/2	1/2	D8MA8	1.93	0.33	0.75	7/8
5/8	1/2	D10MA8	2.00	0.42	0.75	7/8
3/4	3/8	D12MA6	1.87	0.33	0.56	7/8
3/4	1/2	D12MA8	2.00	0.47	0.75	7/8
3/4	3/4	D12MA12	2.03	0.51	0.75	11/16
3/4	1	D12MA16	2.33	0.59	0.94	1 3/8
1	3/4	D16MA12	2.28	0.62	0.75	11/16
1	1	D16MA16	2.56	0.75	0.94	1 3/8
1 1/4	1 1/4	D20MA20	3.16	1.02	0.97	1 3/4
1 1/2	1 1/2	D24MA24	3.72	1.25	1.00	2 1/8
2	2	D32MA32	4.70	1.72	1.03	2 3/4
Metric to Fractional (mm)						
6	1/8	DM6MA2	32.8	4.1	9.7	12
6	1/4	DM6MA4	38.1	4.1	14.2	14
8	1/4	DM8MA4	39.1	5.6	14.2	14
8	1/2	DM8MA8	47.6	6.4	14.2	15
10	1/4	DM10MA4	39.9	7.1	14.2	14
10	3/8	DM10MA6	40.6	7.1	14.2	18
10	1/2	DM10MA8	46.2	7.1	19.2	22
12	1/4	DM12MA4	46.5	7.1	14.2	16
12	1/2	DM12MA8	52.1	8.8	19.1	22

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Tube Stub Connectors / Adapters

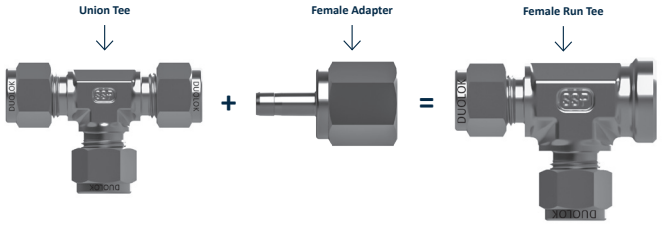
Female Adapter (FA)





T Tube O.D.	P NPT Female Pipe Size	Part #	B	E	H
1/8	1/8	D2FA2	1.23	0.07	9/16
1/8	1/4	D2FA4	1.34	0.07	3/4
3/16	1/4	D3FA4	1.37	0.12	3/4
1/4	1/8	D4FA2	1.32	0.18	9/16
1/4	1/4	D4FA4	1.43	0.18	3/4
1/4	3/8	D4FA6	1.56	0.18	7/8
1/4	1/2	D4FA8	1.46	0.18	1 1/16
5/16	1/4	D5FA4	1.46	0.25	3/4
3/8	1/8	D6FA2	1.39	0.28	9/16
3/8	1/4	D6FA4	1.50	0.28	3/4
3/8	3/8	D6FA6	1.62	0.28	7/8
3/8	1/2	D6FA8	1.84	0.28	1 1/16
1/2	1/4	D8FA4	1.71	0.39	3/4
1/2	3/8	D8FA6	1.84	0.39	7/8
1/2	1/2	D8FA8	2.06	0.39	1 1/16
5/8	1/2	D10FA8	2.12	0.50	1 1/16
3/4	1/2	D12FA8	2.12	0.59	1 1/16
3/4	3/4	D12FA12	2.18	0.59	1 5/16
3/4	1	D12FA16	2.46	0.59	1 5/8
1	3/4	D16FA12	2.43	0.95	1 1/4
1	1	D16FA16	2.71	0.95	1 5/8
1 1/4	1 1/4	D20FA20	3.06	1.02	2 1/8
1 1/2	1 1/2	D24FA24	3.50	1.25	2 3/8
2	2	D32FA32	4.23	.1.72	2 7/8
Metric					
6	1/8	DM6FA2	32.5	4.1	14
6	1/4	DM6FA4	37.1	4.1	19
8	1/4	DM8FA4	37.6	5.6	19
10	1/4	DM10FA4	38.1	7.1	19
10	3/8	DM10FA6	40.1	7.1	22
10	1/2	DM10FA8	46.7	7.1	27
12	1/4	DM12FA4	43.7	8.8	19
12	1/2	DM12FA8	52.3	8.8	27

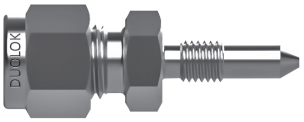
**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

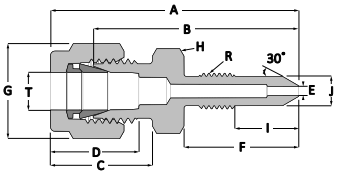


Female Adapter fittings allow any Duolok tube fitting to be converted for connection to a male NPT.

Tube Stub Connectors / Adapters

Calibration Union (CU)

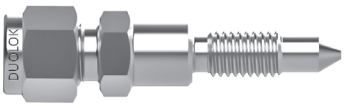


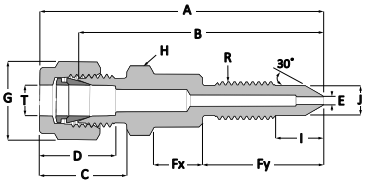


Part #	T Tube O.D.	A	B BODY	C	D	E	F	G Nut Hex	H Body Hex	I	J	R Thread
Fractional (in.)												
D4CU1	1/4	1.63	1.40	0.64	0.54	0.06	0.78	9/16	1/2	0.43	0.20	1/4-28 UNF

Tube Stub Connectors / Adapters

Calibration Union (CU)



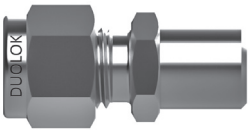


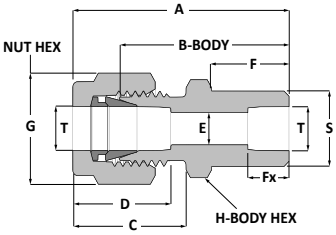
Part #	T Tube O.D.	A	B Body	C	D	E (min. opening)	FX	FY	G Nut Hex	H Body Hex	I	J	R Thread
Fractional (in.)													
D4CU2	1/4	2.26	2.03	0.64	0.54	0.06	0.41	1	9/16	1/2	0.40	0.25	5/16-24 UNF

SSP Instrumentation Calibration Unions streamline the typical DP transmitter calibration process and are available in 1/4" OD tubing by 1/4-28 straight thread, and 1/4" OD tubing by 5/16-24 straight thread. Calibration unions screw directly into plug/bleed port fittings, eliminating the possibility of galling the transmitter's NPT threads. Standard fitting material is 316 stainless steel. For more information, contact your local distributor.

Tube to Welded Systems

Tube Socket Weld Union (TSWU)





T Tube O.D.	Part #	A	B	C	D	E	F	FX	G	H	S
Fractional (in.)											
1/8	D2TSWU2	1.14	0.88	0.60	0.50	0.09	0.34	0.25	7/16	7/16	0.31
1/4	D4TSWU4	1.32	1.03	0.70	0.60	0.19	0.41	0.31	9/16	1/2	0.44
3/8	D6TSWU6	1.48	1.19	0.76	0.66	0.28	0.47	0.38	11/16	5/8	0.62
1/2	D8TSWU8	1.62	1.22	0.86	0.90	0.41	0.47	0.50	7/8	13/16	0.75
3/4	D12TSWU12	1.71	1.31	0.86	0.96	0.62	0.47	0.56	1 1/8	1 1/16	1.05
1	D16TSWU16	2.07	1.59	1.04	1.23	0.88	0.56	0.75	1 1/2	1 3/8	1.31

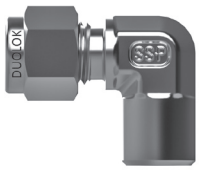
Duolok tube fittings with weld ends allow weld system connection to tubing, with the advantage of a leak-tight seal that can be disassembled in an otherwise permanently welded system. Weld ends conform to ANSI B31.1 and B31.3 piping codes.

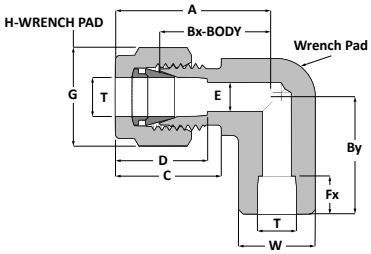
Welding precautions: Prior to welding, remove the nut and ferrules. To protect the fitting body threads and seat, cover with a plug or another nut. Position a suitable heat sink to dissipate the heat. Insert the tube until it bottomed in the socket, then back out approximately 1/16” before welding.

Note: The welding of a bottomed tube may lead to stress-cracking of the weld. To hold the fitting in proper alignment, tack weld the fitting in four places (90° apart) and then complete the weld. After welding, remove the protective plug or nut and replace with the nut and ferrules for tube installation following the instructions from page6.

Tube to Welded Systems

Tube Socket Weld Elbow (TSWE)



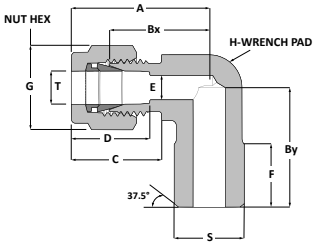


T Tube O.D.	Part #	A	Bx	By	C	D	E	Fx	G	H	W
1/4	D4TSWE4	1.06	0.77	0.77	0.70	0.60	0.19	0.31	9/16	1/2	0.500
3/8	D6TSWE6	1.20	0.91	0.91	0.76	0.66	0.28	0.38	11/16	5/8	0.620
1/2	D8TSWE8	1.42	1.02	1.02	0.86	0.90	0.41	0.50	7/8	7/8	0.810

Tube to Welded Systems

Male Pipe Weld Elbow (MPWE)

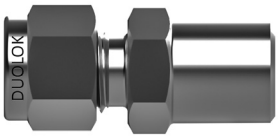


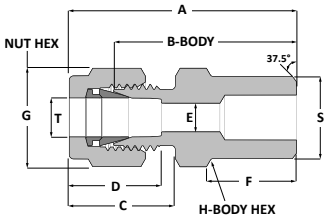


T Tube O.D.	Male Pipe Weld Size	Part #	A	Bx	By	C	D	E	F	G	H	S
1/4	1/8	D4MPWE2	1.06	0.77	0.74	0.70	0.60	0.19	0.38	9/16	1/2	0.405
1/4	1/4	D4MPWE4	1.06	0.77	0.92	0.70	0.60	0.19	0.56	9/16	1/2	0.540
3/8	1/4	D6MPWE4	1.20	0.91	1.00	0.76	0.66	0.28	0.56	11/16	5/8	0.540
1/2	1/2	D8MPWE8	1.42	1.02	1.30	0.86	0.90	0.41	0.75	7/8	7/8	0.840
3/4	3/4	D12MPWE12	1.57	1.17	1.45	0.86	0.96	0.62	0.75	1 1/8	1 1/16	1.050

Tube to Welded Systems

Male Pipe Weld Connector (MPWC)



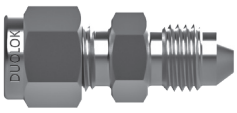


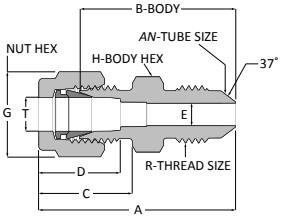
T Tube O.D.	Male Pipe Weld	Part #	A	B	C	D	E	F	G	H	S
Fractional (in.)											
1/8	1/8	D2MPWC2	1.20	0.94	0.60	0.50	0.09	0.38	7/16	7/16	0.405
3/16	1/8	D3MPWC2	1.23	0.97	0.63	0.54	0.12	0.38	1/2	7/16	0.405
1/4	1/8	D4MPWC2	1.29	1.00	0.70	0.60	0.19	0.38	9/16	1/2	0.405
1/4	1/4	D4MPWC4	1.49	1.20	0.70	0.60	0.19	0.56	9/16	9/16	0.540
5/16	1/8	D5MPWC2	1.34	1.05	0.73	0.64	0.20	0.38	5/8	9/16	0.405
5/16	1/4	D5MPWC4	1.52	1.23	0.73	0.64	0.25	0.56	5/8	9/16	0.540
3/8	1/4	D6MPWC4	1.57	1.28	0.76	0.66	0.28	0.56	11/16	5/8	0.540
3/8	3/8	D6MPWC6	1.57	1.28	0.76	0.66	0.28	0.56	11/16	11/16	0.675
3/8	1/2	D6MPWC8	1.82	1.53	0.76	0.66	0.28	0.75	11/16	7/8	0.840
1/2	3/8	D8MPWC6	1.71	1.31	0.86	0.90	0.41	0.56	7/8	13/16	0.675
1/2	1/2	D8MPWC8	1.93	1.53	0.86	0.90	0.41	0.75	7/8	7/8	0.840
1/2	3/4	D8MPWC12	1.99	1.59	0.86	0.90	0.41	0.75	7/8	1 1/16	1.050
5/8	1/2	D10MPWC8	1.93	1.53	0.86	0.96	0.50	0.75	1	15/16	0.840
3/4	3/4	D12MPWC12	1.99	1.59	0.86	0.96	0.62	0.75	1 1/8	1 1/16	1.050
1	1	D16MPWC16	2.45	1.97	1.04	1.23	0.86	0.94	1 1/2	1 3/8	1.315
1 1/4	1 1/4	D20MPWC20	3.04	2.17	1.53	1.62	1.09	0.94	2	1 3/4	1.660
1 1/2	1 1/2	D24MPWC24	3.50	2.43	1.78	1.97	1.34	1.03	21/4	2 1/8	1.900
Metric (mm)											
3	1/8	DM3MPWC2	30.5	23.9	15.3	12.9	2.4	9.7	12	12	10.3
4	1/8	DM4MPWC2	31.2	24.6	16.1	13.7	2.4	9.7	12	12	10.3
6	1/8	DM6MPWC2	32.8	25.4	17.7	15.3	4.8	9.7	14	14	10.3
6	1/4	DM6MPWC4	37.9	30.5	17.7	15.3	4.8	14.2	14	14	13.7
8	1/8	DM8MPWC2	34.2	26.7	18.6	16.2	5.4	9.7	16	15	10.3
8	1/4	DM8MPWC4	38.7	31.2	18.6	16.2	6.4	14.2	16	15	13.7
8	1/2	DM8MPWC8	45.6	38.1	18.6	16.2	6.4	19	16	22	21.3
10	1/4	DM10MPWC4	40.9	33.3	19.5	17.2	7.5	14.2	19	18	13.7
10	3/8	DM10MPWC6	40.9	33.3	19.5	17.2	7.9	14.2	19	18	17.1
10	1/2	DM10MPWC8	46.5	38.9	19.5	17.2	7.9	19	19	22	21.3
12	1/4	DM12MPWC4	43.4	33.3	22	22.8	7.5	14.2	22	22	13.7
12	3/8	DM12MPWC6	43.4	33.3	22	22.8	9.5	14.2	22	22	17.1
12	1/2	DM12MPWC8	49	38.9	22	22.8	9.5	19	22	22	21.3
14	3/8	DM14MPWC6	44.1	34	22	24.4	10.3	14.2	25	24	17.1
15	1/2	DM15MPWC8	49	38.9	22	24.4	11.9	19	25	24	21.3
16	1/2	DM16MPWC8	49	38.9	22	24.4	12.7	19	25	24	21.3
18	1/2	DM18MPWC8	50.5	40.4	22	24.4	13.9	19	30	27	21.3

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Duolok to 37° Flare (AN)

AN Union (ANU)

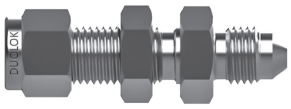


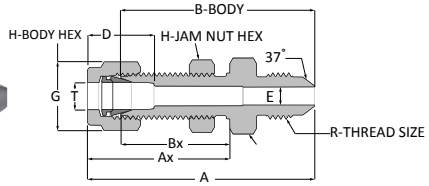


T Tube O.D.	AN Tube Flare Size	Part #	A	B	C	D	E	G	H	R
Fractional (in.)										
1/16	1/8	D1ANU2	1.07	0.92	0.43	0.34	0.05	5/16	7/16	5/16 - 24 UNJF-3
1/8	1/8	D2ANU2	1.27	1.01	0.60	0.50	0.06	7/16	7/16	5/16 - 24 UNJF-3
1/8	1/4	D2ANU4	1.38	1.12	0.60	0.50	0.09	7/16	1/2	7/16 - 20 UNJF-3
1/4	1/4	D4ANU4	1.48	1.19	0.70	0.60	0.17	9/16	1/2	7/16 - 20 UNJF-3
5/16	5/16	D5ANU5	1.51	1.22	0.73	0.64	0.23	5/8	9/16	1/2 - 20 UNJF-3
3/8	1/4	D6ANU4	1.56	1.27	0.76	0.66	0.17	11/16	5/8	7/16 - 20 UNJF-3
3/8	3/8	D6ANU6	1.56	1.27	0.76	0.66	0.28	11/16	5/8	9/16 - 18 UNJF-3
1/2	1/2	D8ANU8	1.81	1.41	0.86	0.90	0.39	7/8	13/16	3/4 - 16 UNJF-3
3/4	3/4	D12ANU12	2.10	1.70	0.86	0.96	0.61	1 1/8	1 1/8	1 1/16 - 12 UNJ-3
1	1	D16ANU16	2.42	1.94	1.04	1.23	0.84	1 1/2	1 3/8	1 5/16 - 12 UNJ-3

Duolok to 37° Flare (AN)

AN Bulkhead Union (ANBU)

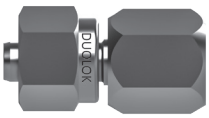


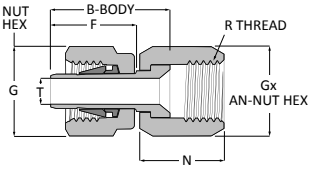


T Tube O.D.	AN Tube Flare Size	Part #	A	AX	B	BX	D	E	G	H	R	Max. Panel Thickness	PANEL HOLE DRILL SIZE
Fractional (in.)													
1/4	1/4	D4ANBU4	2.12	1.32	1.83	1.03	0.60	0.17	9/16	5/8	7/16 - 20 UNJF-3	0.40	29/64
3/8	3/8	D6ANBU6	2.25	1.45	1.96	1.16	0.66	0.28	11/16	3/4	9/16 - 18 UNJF-3	0.44	37/64
1/2	1/2	D8ANBU8	2.59	1.65	2.19	1.25	0.90	0.39	7/8	15/16	3/4 - 16 UNJF-3	0.50	49/64
3/4	3/4	D12ANBU12	3.11	1.87	2.71	1.47	0.96	0.61	1 1/8	1 3/16	1 1/16 - 12 UNJ-3	0.66	1 1/64
1	1	D16ANBU16	3.64	2.26	3.16	1.78	1.23	0.84	1 1/2	1 5/8	1 5/16 - 12 UNJ-3	0.75	1 21/64

Duolok to 37° Flare (AN)

Female AN Adapter (ANF)



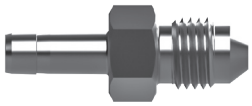


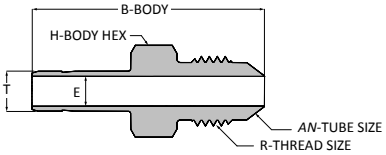
T Tube O.D.	AN Flare Size	Part #	B	F	G HEX FLAT	GX HEX FLAT	N	R AN THREAD SIZE
Fractional (in.)								
1/8	1/8	D2ANF2	0.73	0.53	7/16	3/8	0.54	5/16-24 UNJF-3
1/8	1/4	D2ANF4	0.75	0.53	7/16	9/16	0.62	7/16-20 UNJF-3
1/4	1/4	D4ANF4	0.84	0.62	9/16	9/16	0.62	7/16-20 UNJF-3
3/8	3/8	D6ANF6	0.98	0.69	11/16	11/16	0.72	9/16-18 UNJF-3
1/2	1/2	D8ANF8	1.25	0.91	7/8	7/8	0.85	3/4-16 UNJF-3

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Duolok to 37° Flare (AN)

AN Adapter (ANA)

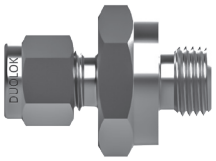


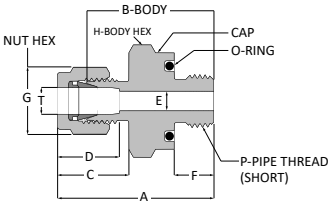


T Tube O.D.	AN Tube Flare Size	Part #	B Body Length	R AN Thread Size	E	H Hex Flat
Fractional (in.)						
1/4	1/4	D4ANA4	1.46	7/16-20 UNJF-3	0.17	1/2
3/8	1/4	D6ANA4	1.53	7/16-20 UNJF-3	0.17	1/2
3/8	3/8	D6ANA6	1.56	9/16-18 UNJF-3	0.26	5/8
1/2	1/2	D8ANA8	1.91	3/4-16 UNJF-3	0.36	13/1 6
3/4	3/4	D12ANA12	2.21	1-1/16-12 UNJ-3	0.59	1 1/8
1	1	D16ANA16	2.58	1-5/16-12 UNJ-3	0.82	1 3/8

Tube to O-Ring Seal

O-Ring Seal Male Connector (OMC)



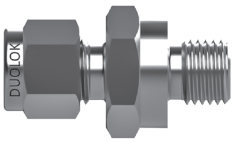


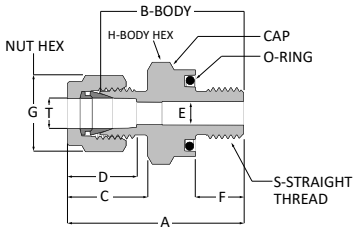
T TUBE O.D.	P NPT* MALE PIPE SIZE	PART #	A	B	C	D	E	F	G	H	HD
Fractional (in.)											
1/8	1/8	D2OMC2	1.29	1.03	0.60	0.50	0.09	0.28	7/16	3/4	0.74
1/4	1/8	D4OMC2	1.38	1.09	0.70	0.60	0.19	0.28	9/16	3/4	0.74
1/4	1/4	D4OMC4	1.51	1.22	0.70	0.60	0.19	0.38	9/16	15/16	0.93
3/8	1/4	D6OMC4	1.57	1.28	0.76	0.66	0.28	0.38	11/16	15/16	0.93
3/8	3/8	D6OMC6	1.63	1.34	0.76	0.66	0.28	0.41	11/16	1 1/8	1.12
3/8	1/2	D6OMC8	1.85	1.56	0.76	0.66	0.28	0.53	11/16	1 5/16	1.30
1/2	1/2	D8OMC8	1.96	1.56	0.86	0.90	0.41	0.53	7/8	1 5/16	1.30

*** Modified Male NPT to Allow O-Ring Seal Connection**
**** 70 Durometer BUNA compound O-Ring is standard. Other O-Ring compounds are available.**

Tube to O-Ring Seal & Tube to SAE / MS

O-Ring Seal Straight Connector (OSC)



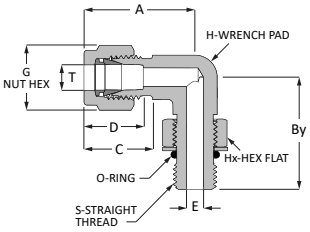


T TUBE O.D.	S THREAD SIZE	PART #	A	B	C	D	E	F	G	H	CAP
Fractional (in.)											
1/16	5/16 - 24	D1OSC2	1.05	0.90	0.43	0.34	0.05	0.34	5/16	9/16	0.55
1/8	5/16 - 24	D2OSC2	1.29	1.03	0.60	0.50	0.09	0.34	7/16	9/16	0.55
3/16	3/8 - 24	D3OSC3	1.35	1.09	0.63	0.54	0.12	0.38	1/2	5/8	0.62
1/4	7/16 - 20	D4OSC4	1.51	1.22	0.70	0.60	0.19	0.41	9/16	3/4	0.74
5/16	1/2 - 20	D5OSC5	1.60	1.31	0.73	0.64	0.25	0.44	5/8	7/8	0.86
3/8	9/16 - 18	D6OSC6	1.67	1.38	0.76	0.66	0.28	0.47	11/16	15/16	0.93
1/2	3/4 - 16	D8OSC8	1.81	1.41	0.86	0.90	0.41	0.47	7/8	1 1/8	1.12
3/4	1 1/16 - 12	D12OSC12	2.06	1.66	0.86	0.96	0.62	0.56	1 1/8	1 1/2	1.49
1	1 5/16 - 12	D16OSC16	2.29	1.81	1.04	1.23	0.88	0.56	1 1/2	1 3/4	1.74

Tube to O-Ring Seal & Tube to SAE / MS

Male Elbow to Straight Thread Boss (MEST)



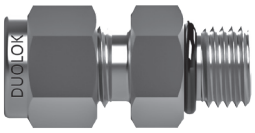


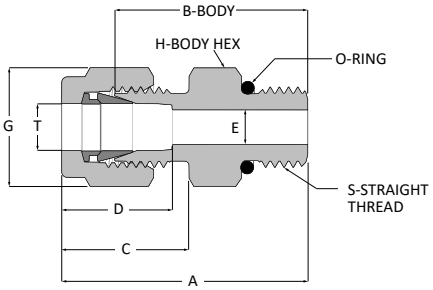
T Tube O.D.	S SAE/MS Thread	Part #	A	By	D	E	H Wrench Pad	Hx Hex Flat	G Hex Flat
1/4	7/16-20	D4MEST4	1.12	1.12	0.60	0.19	1/2	9/16	9/16
1/4	9/16-18	D4MEST6	1.20	1.27	0.60	0.19	5/8	11/16	9/16
5/16	1/2-20	D5MEST5	1.19	1.16	0.64	0.23	9/16	5/8	5/8
3/8	7/16-20	D6MEST4	1.26	1.15	0.66	0.28	9/16	9/16	11/16
3/8	9/16-18	D6MEST6	1.26	1.27	0.66	0.28	9/16	11/16	11/16
3/8	3/4-16	D6MEST8	1.37	1.49	0.66	0.28	3/4	7/8	11/16
1/2	9/16-18	D8MEST6	1.48	1.27	0.90	0.41	3/4	11/16	7/8
1/2	3/4-16	D8MEST8	1.48	1.49	0.90	0.41	13/16	7/8	7/8
5/8	7/8-14	D10MEST10	1.56	1.71	0.96	0.50	15/16	1	1
3/4	1 1/16-12	D12MEST12	1.63	1.92	0.96	0.62	1 1/16	1 1/4	1 1/8
7/8	1 3/16-12	D14MEST14	1.70	1.99	1.02	0.88	1 3/16	1 3/8	1 1/8
1	1 5/16-12	D16MEST16	1.99	2.11	1.23	0.88	1 3/8	1 1/2	1 1/2
1-1/4	1 5/8 - 12	D20MEST20	2.67	2.29	1.62	1.09	1-11/16	1-7/8	1-7/8
1 1/2	1 7/8-12	D24MEST24	3.07	2.38	1.97	1.34	2	2	2 1/4
2	2 1/2-12	D32MEST32	4.22	2.82	2.66	1.81	2 3/4	2 3/4	2 1/2

*** 90 Durometer Viton O-Ring is standard. Other O-Ring compounds are available.**

Tube to O-Ring Seal & Tube to SAE / MS

Male Connector to Straight Thread Boss (MCST)



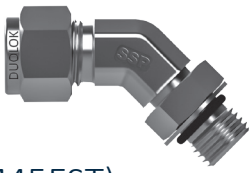


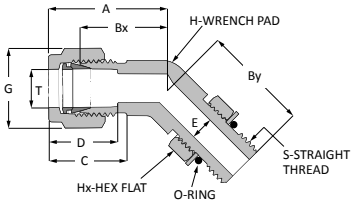
T Tube O.D.	S Thread Size	Part #	A	D	E	G	H	AS568 O-RING UNIFORM SIZE NUMBER*
Fractional (in.)								
1/16	5/16 -24	D1MCST2	1.01	0.34	0.05	5/16	7/16	-902
1/8	5/16 -24	D2MCST2	1.18	0.50	0.09	7/16	7/16	-902
1/8	7/16 -20	D2MCST6	1.31	0.50	0.09	7/16	11/16	-906
1/4	7/16 -20	D4MCST4	1.34	0.60	0.19	9/16	9/16	-904
1/4	9/16 -18	D4MCST6	1.40	0.60	0.19	9/16	11/16	-906
1/4	3/4 -16	D4MCST8	1.48	0.60	0.19	9/16	7/8	-908
1/4	7/8 -14	D4MCST10	1.60	0.60	0.19	9/16	1	-910
5/16	1/2 -20	D5MCST5	1.37	0.64	0.25	5/8	5/8	-905
3/8	7/16 -20	D6MCST4	1.40	0.66	0.20	11/16	5/8	-904
3/8	9/16 -18	D6MCST6	1.46	0.66	0.28	11/16	11/16	-906
3/8	3/4 -16	D6MCST8	1.54	0.66	0.28	11/16	7/8	-908
3/8	7/8 -14	D6MCST10	1.66	0.66	0.28	11/16	1	-910
1/2	9/16 -18	D8MCST6	1.54	0.90	0.28	7/8	13/16	-906
1/2	3/4 -16	D8MCST8	1.65	0.90	0.41	7/8	7/8	-908
1/2	7/8 -14	D8MCST10	1.77	0.90	0.41	7/8	1	-910
1/2	1 1/16 -12	D8MCST12	1.93	0.90	0.41	7/8	1 1/4	-912
5/8	3/4 -16	D10MCST8	1.65	0.96	0.42	1	15/16	-908
5/8	7/8 -14	D10MCST10	1.78	0.96	0.50	1	1	-910
3/4	9/16-18	D12MCST6	1.72	0.96	0.28	1 1/8	1 1/16	-906
3/4	3/4 -16	D12MCST8	1.81	0.96	0.42	1 1/8	1 1/16	-908
3/4	7/8 -14	D12MCST10	1.84	0.96	0.53	1 1/8	1 1/16	-910
3/4	1 1/16 -12	D12MCST12	1.93	0.96	0.62	1 1/8	1 1/4	-912
3/4	1 5/16 -12	D12MCST16	1.96	0.96	0.63	1 1/8	1 1/2	-916
7/8	1 3/16 -12	D14MCST14	1.93	1.02	0.72	1 1/4	1 3/8	-914
1	1 1/16 -12	D16MCST12	2.10	1.23	0.66	1 1/2	1 3/8	-912
1	1 5/16 -12	D16MCST16	2.14	1.23	0.88	1 1/2	1 1/2	-916
1 1/4	1 5/8 -12	D20MCST20	2.69	1.62	1.09	1 7/8	1 7/8	-920
1 1/2	1 7/8 -12	D24MCST24	3.06	1.97	1.34	2 1/4	2 1/8	-924
2	2 1/2-12	D32MCST32	4.00	2.66	1.81	2 1/2	2 3/4	-932

*** 90 Durometer Viton O-Ring is standard. Other O-ring compounds are available**

Tube to O-Ring Seal & Tube to SAE / MS

45° Male Elbow to Straight Thread Boss (M45EST)



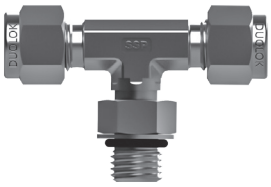


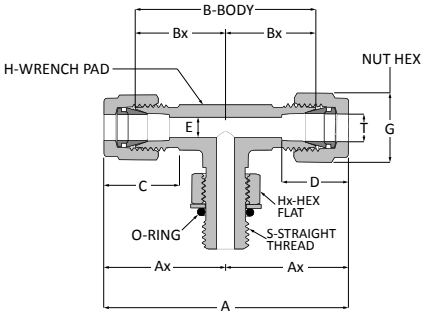
T Tube O.D.	S SAE/MS Thread Size	Part #	A	Bx	By	C	D	E	G Hex Flat	H Wrench Pad	Hx Hex Flat
1/4	7/16-20	D4M45EST4	1.01	0.72	1.01	0.70	0.60	0.19	9/16	1/2	9/16
3/8	9/16-18	D6M45EST6	1.10	0.81	1.11	0.76	0.66	0.28	11/16	5/8	11/16
1/2	3/4-16	D8M45EST8	1.26	0.86	1.27	0.86	0.90	0.41	7/8	13/16	7/8
3/4	1 1/16-12	D12M45EST12	1.57	1.17	1.86	0.86	0.96	0.62	1 1/8	1 1/8	1 1/4
1	1 5/16-12	D16M45EST16	1.87	1.39	1.99	1.04	1.23	0.88	1 1/2	1 3/8	1 1/2

***90 Durometer Viton O-Ring is standard. Other O-Ring compounds are available.**

Tube to O-Ring Seal & Tube to SAE / MS

Male Branch Tee to Straight Thread Boss (MBTST)





T Tube O.D.	S SAE/MS Thread	Part #	A	AX	C	B	Bx	By	D	E	H Wrench Pad	Hx Hex Flat	G Hex Flat
Fractional (in.)													
1/4	7/16-20	D4MBTST4	2.24	1.12	0.70	1.95	0.83	1.12	0.60	0.19	1/2	9/16	9/16
3/8	9/16-18	D6MBTST6	2.52	1.26	0.76	2.24	0.97	1.27	0.66	0.28	5/8	11/16	11/16
1/2	3/4-16	D8MBTST8	2.96	1.48	0.86	2.57	1.08	1.49	0.90	0.41	13/16	7/8	7/8
3/4	1 1/16-12	D12MBTST12	3.26	1.63	0.86	3.15	1.23	1.92	0.96	0.62	1 1/16	1 1/4	1 1/8
1	1 5/16-12	D16MBTST16	3.98	1.99	1.04	3.62	1.51	2.11	1.23	0.88	1 3/8	1 1/2	1 1/2

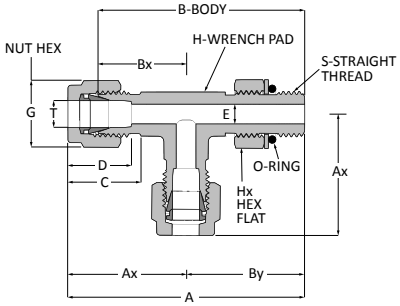
***90 Durometer Viton O-Ring is standard. Other O-Ring compounds are available.**

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Tube to O-Ring Seal & Tube to SAE / MS

Male Run Tee to Straight Thread Boss (MRTST)



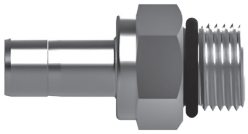


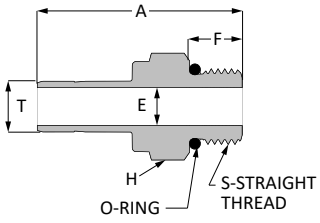
T Tube O.D.	S SAE/MS Thread	Part #	A	Ax	B	Bx	C	D	E	H Wrench Pad	Hx Hex Flat	G Hex Flat
Fractional (in.)												
1/4	7/16-20	D4MRTST4	2.24	1.12	1.66	0.83	0.70	0.60	0.19	1/2	9/16	9/16
3/8	9/16-18	D6MRTST6	2.53	1.26	1.94	0.97	0.76	0.66	0.28	5/8	11/16	11/16
1/2	3/4-16	D8MRTST8	2.97	1.48	2.16	1.08	0.86	0.90	0.41	13/16	7/8	7/8
3/4	1 1/16-12	D12MRTST12	3.55	1.63	2.46	1.23	0.86	0.96	0.62	1 1/16	1 1/4	1 1/8
1	1 5/16-12	D16MRTST16	4.10	1.99	3.02	1.51	1.04	1.23	0.88	1 3/8	1 1/2	1 1/2

***90 Durometer Viton O-Ring is standard. Other O-Ring compounds are available.**

Tube to O-Ring Seal & Tube to SAE / MS

Male Adapter to Straight Thread Boss (MAST)





T Tube O.D.	S SAE/MS Thread Size	Part #	A	E	F	H Hex Flat	AS568 O-Ring Uniform Size Number*
1/8	5/16-24	D2MAST2	1.20	0.09	0.30	7/16	-902
1/4	7/16-20	D4MAST4	1.39	0.19	0.36	9/16	-904
3/8	7/16-20	D6MAST4	1.46	0.19	0.36	9/16	-904
3/8	9/16-18	D6MAST6	1.52	0.28	0.39	11/16	-906
3/8	3/4-16	D6MAST8	1.60	0.28	0.44	7/8	-908
1/2	9/16-18	D8MAST6	1.74	0.39	0.39	11/16	-906
1/2	3/4-16	D8MAST8	1.82	0.39	0.44	7/8	-908
3/4	1 1/16-12	D12MAST12	2.10	0.59	0.59	1 1/4	-912
1	1 5/16-12	D16MAST16	2.41	0.80	0.59	1 1/2	-916

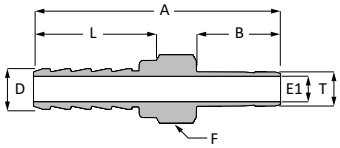
*90 Durometer Viton O-Ring is standard. Other O-Ring compounds are available.

Hose Connectors / Adapters

Hose Barb Adapter (HBA)

Poly Flex Tubing





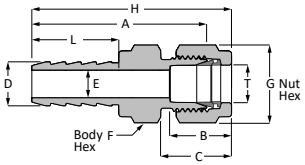
T	D	Part #	A	B	E	E1	F	L
1/8	0.15	D2HBA2	1.35	0.53	0.08	0.09	5/16	0.40
1/4	0.15	D2HBA4	1.44	0.62	0.08	0.19	3/8	0.40
1/4	0.30	D4HBA4	1.83	0.62	0.19	0.19	7/16	0.79
3/8	0.30	D4HBA6	1.90	0.70	0.19	0.28	7/16	0.79
1/4	0.37	D5HBA4	1.91	0.62	0.19	0.19	7/16	0.87
3/8	0.45	D6HBA6	1.98	0.70	0.30	0.28	9/16	0.87
1/2	0.45	D6HBA8	2.20	0.96	0.30	0.39	5/8	0.87
3/8	0.60	D8HBA6	2.05	0.70	0.38	0.28	11/16	0.94
1/2	0.60	D8HBA8	2.27	0.96	0.38	0.39	11/16	0.94
3/4	0.90	D12HBA12	2.44	1.02	0.63	0.59	1-1/16	1.05

Hose Connectors / Adapters

Hose Barb Connector (HBC)

Poly Flex Tubing

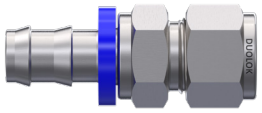


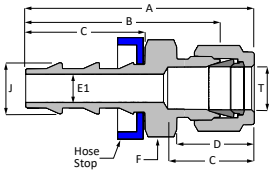


T	D	Part #	A	B	C	E	F	G	H	L
1/8	0.16	D2HBC2	1.17	0.50	0.60	0.08	7/16	7/16	1.42	0.41
1/4	0.30	D4HBC4	1.63	0.60	0.70	0.19	9/16	9/16	1.93	0.78
3/8	0.45	D6HBC6	1.77	0.66	0.76	0.28	11/16	11/16	2.06	0.88
1/2	0.60	D8HBC8	1.85	0.90	0.86	0.38	7/8	7/8	2.24	0.94

Hose Connectors / Adapters

Push-on Hose Barb Connector (HL)

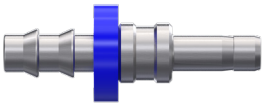


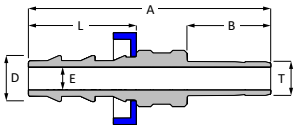


Connection 1	Connection 2	Part #	A	B	C	D	E1	F	G	J	L	T
1/4 in	1/4 in	ISSD4HL4	1.88	1.68	0.70	0.60	0.19	5/8	5/8	0.34	0.80	0.25
3/8 in	3/8 in	ISSD6HL6	2.00	1.81	0.76	0.66	0.28	6/8	6/8	0.47	0.95	0.38
1/2 in	1/2 in	ISSD8HL8	2.46	2.06	0.90	0.86	0.41	7/8	7/8	0.60	1.10	0.50

Hose Connectors / Adapters

Push-on Hose Barb Adapter (HLTA)



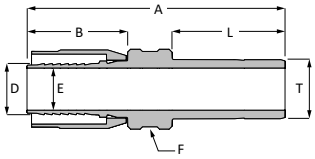


Connection 1	Connection 2	Part #	A	B	D	E	L	T
1/4 in	1/4 in	ISSD4HLTA4	1.80	0.62	0.34	0.17	0.8	0.24
3/8 in	3/8 in	ISSD6HLTA6	2.03	0.70	0.47	0.28	0.95	0.38
1/2 in	1/2 in	ISSD8HLTA8	2.43	0.96	0.60	0.38	1.10	0.50
3/4 in	3/4 in	ISSD12HLTA12	2.89	1.02	0.86	0.61	1.50	0.75

Hose Connectors / Adapters

SAE 100R14 Hose Adapter (TFHA)

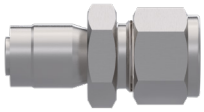


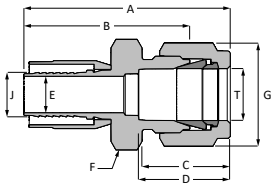


Connection 1	Connection 2	Part #	A	B	D	E	F	L	T
1/4 in	1/4 in	ISSD4TFHA4	1.67	0.67	0.22	0.16	0.44	0.62	0.25
3/8 in	3/8 in	ISSD6TFHA6	1.88	0.80	0.34	0.28	0.56	0.70	0.375
1/2 in	1/2 in	ISSD8TFHA8	2.18	0.85	0.43	0.36	0.69	0.96	0.50

Hose Connectors / Adapters

SAE 100R14 Hose Connector (TFHC)

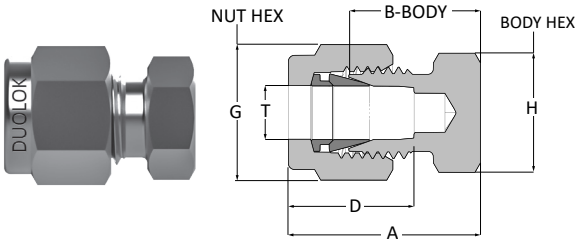




Connection 1	Connection 2	Part #	A	B	C	D	E1	F	G	J	T
1/4 in	1/4 in	ISSD4TFHC4	1.50	1.30	0.70	0.60	0.16	9/16	9/16	0.22	0.25
3/8 in	3/8 in	ISSD6TFHC6	1.76	1.57	0.76	0.66	0.28	3/4	11/16	0.34	0.375
1/2 in	1/2 in	ISSD8TFHC8	2.05	1.62	0.86	0.90	0.36	15/16	7/8	0.43	0.50

Caps

Cap (CP)

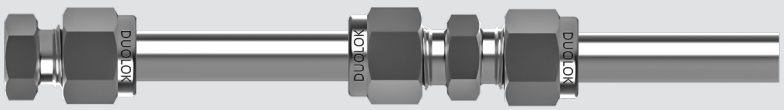


T Tube O.D.	Part #	A	D	G	H
Fractional (in.)					
1/16	D1CP	0.59	0.34	5/16	5/16
1/8	D2CP	0.79	0.50	7/16	7/16
3/16	D3CP	0.84	0.54	1/2	7/16
1/4	D4CP	0.92	0.60	9/16	1/2
5/16	D5CP	0.96	0.64	5/8	9/16
3/8	D6CP	1.01	0.66	11/16	5/8
1/2	D8CP	1.15	0.90	7/8	13/16
5/8	D10CP	1.18	0.96	1	15/16
3/4	D12CP	1.24	0.96	1 1/8	1 1/16
7/8	D14CP	1.34	1.02	1 1/4	1 3/16
1	D16CP	1.51	1.23	1 1/2	1 3/8
1 1/4	D20CP	2.10	1.62	1 7/8	1 3/4
1 1/2	D24CP	2.54	1.97	2 1/4	2 1/8
2	D32CP	3.41	2.66	3	2 3/4
Metric (mm)					
3	DM3CP	20.1	12.9	12	12
4	DM4CP	21.3	13.7	12	12
6	DM6CP	23.1	15.3	14	14
8	DM8CP	24.5	16.2	16	15
10	DM10CP	26.6	17.2	19	18
12	DM12CP	29.1	22.8	22	22
14	DM14CP	29.9	24.4	25	24
15	DM15CP	29.9	24.4	25	24
16	DM16CP	29.9	24.4	25	24
18	DM18CP	31.4	24.4	30	27
20	DM20CP	34.0	26.0	32	30
22	DM22CP	34.0	26.0	32	30
25	DM25CP	38.5	31.3	38	35

**Duolok metric tube fittings have a stepped shoulder on the body hex and the nut, shaped fittings have a stepped shoulder on the nut (see pg. 4)*

Cap Installation Instructions

The standard Duolok tube fitting installation instructions apply for proper installation of caps (see page 6).



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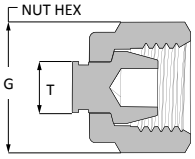
Plugs

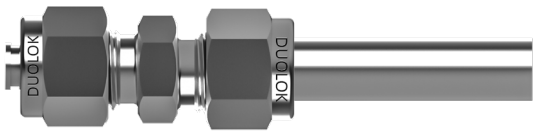
Plug (P)

T Tube O.D.	Part #	G
Fractional (in.)		
1/16	D1P	5/16
1/8	D2P	7/16
3/16	D3P	1/2
1/4	D4P	9/16
5/16	D5P	5/8
3/8	D6P	11/16
1/2	D8P	7/8
5/8	D10P	1
3/4	D12P	1 1/8
1	D16P	1 1/2
1 1/4	D20P	1 7/8
1 1/2	D24P	2 1/4
2	D32P	3

T TUBE O.D.	Part #	G
Metric (mm)		
2	DM2P	12
3	DM3P	12
4	DM4P	12
6	DM6P	14
8	DM8P	16
10	DM10P	19
12	DM12P	22
15	DM15P	25
16	DM16P	25
18	DM18P	30
20	DM20P	32
22	DM22P	32
25	DM25P	38







Plug Installation Instructions

1. Remove the nut and ferrules from the port of the tube fitting body to be plugged and replace with the Duolok plug.
2. Hand-tighten the Duolok plug and then while holding the tube fitting body steady with a back-up wrench, use a wrench to tighten the Duolok plug 1/4 of a turn.

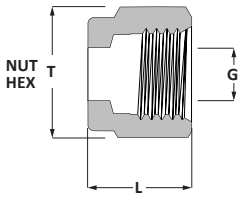
Components

Nut (N)

Part #	G Tube O.D.	T	L
Fractional (in.)			
D1N	1/16	5/16	0.31
D2N	1/8	7/16	0.47
D3N	3/16	1/2	0.47
D4N	1/4	9/16	0.50
D5N	5/16	5/8	0.53
D6N	3/8	11/16	0.56
D8N	1/2	7/8	0.69
D10N	5/8	1	0.69
D12N	3/4	1 1/8	0.69
D14N	7/8	1 1/4	0.69
D16N	1	1 1/2	0.81
D20N	1 1/4	1 7/8	1.25
D24N	1 1/2	2 1/4	1.50
D32N	2	3	2.06

Part #	G TUBE O.D.	T	L
Metric (mm)			
DM3N	3	12	11.9
DM4N	4	12	11.9
DM6N	6	14	12.7
DM8N	8	16	13.5
DM10N	10	19	15.1
DM12N	12	22	17.4
DM14N	14	25	17.4
DM15N	15	25	17.4
DM16N	16	25	17.4
DM18N	18	30	17.4
DM20N	20	32	17.4
DM22N	22	32	17.4
DM25N	25	38	20.6

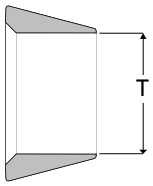




Components

Front Ferrule (FF)



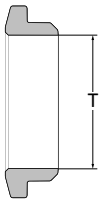


Part #	T Tube O.D.
Fractional (in.)	
D1FF	1/16
D2FF	1/8
D3FF	3/16
D4FF	1/4
D5FF	5/16
D6FF	3/8
D8FF	1/2
D10FF	5/8
D12FF	3/4
D14FF	7/8
D16FF	1
D20FF	11/4
D24FF	11/2
D32FF	2

Part #	T TUBE O.D.
Metric (mm)	
DM3FF	3
DM4FF	4
DM6FF	6
DM8FF	8
DM10FF	10
DM12FF	12
DM14FF	14
DM15FF	15
DM16FF	16
DM18FF	18
DM20FF	20
DM22FF	22
DM25FF	25

Back Ferrule (BF)





Part #	T Tube O.D.
Fractional (in.)	
D1BF	1/1 6
D2BF	1/8
D3BF	3/1 6
D4BF	1/4
D5BF	5/1 6
D6BF	3/8
D8BF	1/2
D10BF	5/8
D12BF	3/4
D14BF	7/8
D16BF	1
D20BF	11/4
D24BF	11/2
D32BF	2

Part #	T Tube O.D.
Metric (mm)	
DM3BF	3
DM4BF	4
DM6BF	6
DM8BF	8
DM10BF	10
DM12BF	12
DM14BF	14
DM15BF	15
DM16BF	16
DM18BF	18
DM20BF	20
DM22BF	22
DM25BF	25

Components

Ferrule Set (FS)



A Ferrule Set (FS) consists of one front ferrule and one back ferrule and is conveniently packaged and sold in multiples of ten sets per “holding tube” housing. To order twenty (20) sets of the 1/4” 316 Stainless Steel front and back ferrules, specify: 2 pcs. ISSD4FS.

Part #	T Tube O.D.
Fractional (in.)	
D4FS	1/4
D6FS	3/8
D8FS	1/2
Metric (mm)	
DM6FS	6
DM8FS	8
DM10FS	10
DM12FS	12

Nut & Ferrule Set (NFS)

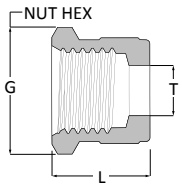


A Nut & Ferrule Set (NFS) consists of one nut, one front ferrule and one back ferrule and is conveniently packaged and sold in multiples of 5 sets per “holding tube” housing. To order twenty (20) sets of the 1/4” 316 Stainless Steel front and back ferrules, specify: 4 pcs.

Part #	T Tube O.D.
Fractional (in.)	
D4NFS	1/4
D6NFS	3/8
D8NFS	1/2
Metric (mm)	
DM6NFS	6
DM8NFS	8
DM10NFS	10
DM12NFS	12

Knurled Nut (KN)





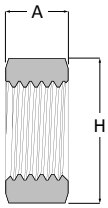
The knurled nut is designed for use with fittings used in applications where the user has determined that a finger-tight assembly is acceptable. Typical applications include low pressure laboratory use with plastic tubing.

Part #	T Tube O.D.	G	L
D1KN	1/16	5/16	0.31
D2KN	1/8	7/16	0.47
D3KN	3/16	1/2	0.47
D4KN	1/4	9/16	0.50
D5KN	5/16	5/8	0.53
D6KN	3/8	11/16	0.56
D8KN	1/2	7/8	0.69
D10KN	5/8	1	0.69
D12KN	3/4	1 1/8	0.69
D14KN	7/8	1 1/4	0.69
D16KN	1	1 1/2	0.81

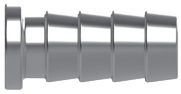
Bulkhead Locknut (BN)

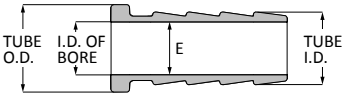
PART #	T TUBE O.D.	A	H
D1BN	1/1 6	0.13	5/1 6
D2BN	1/8	0.22	1/2
D3BN	3/1 6	0.22	9/1 6
D4BN	1/4	0.28	5/8
D5BN	5/1 6	0.28	11/1 6
D6BN	3/8	0.27	3/4
D8BN	1/2	0.31	15/1 6
D10BN	5/8	0.36	1 1/1 6
D12BN	3/4	0.41	1 3/1 6
D14BN	7/8	0.41	1 3/8
D16BN	1	0.41	1 5/8





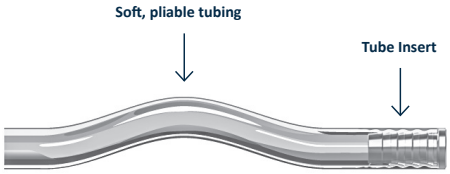
Tube Insert (TI)

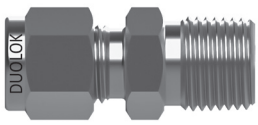




Tube O.D.	Tube I.D.	Part #	E I.D. of Bore
Fractional (in.)			
3/16	1/8	D3TI2	0.09
1/4	1/8	D4TI2	0.09
1/4	.170	D4TI170	0.11
1/4	3/16	D4TI3	0.14
5/16	1/8	D5TI2	0.09
5/16	3/16	D5TI3	0.12
5/16	1/4	D5TI4	0.19
3/8	3/16	D6TI3	0.12
3/8	1/4	D6TI4	0.19
1/2	1/4	D8TI4	0.19
1/2	3/8	D8TI6	0.31
5/8	3/8	D10TI6	0.31
5/8	1/2	D10TI8	0.44
3/4	1/2	D12TI8	0.44
3/4	5/8	D12TI10	0.56
1	3/4	D16TI12	0.69

Tube O.D.	Tube I.D.	Part #	I.D. of Bore
Metric (mm)			
6	4	DM6TIM4	2.8
8	6	DM8TIM6	4.4
10	8	DM10TIM8	6.4
12	8	DM12TIM8	6.4
12	10	DM12TIM10	8.3





In general, Duolok tube fittings may be used with a variety of poly-flex / plastic tube materials without any special preparation. However, very soft-wall, pliable tubing such as Tygon® needs a tube insert for support prior to insertion in the Duolok tube fitting. The standard Duolok tube fitting installation instructions (see page 6) are then followed for proper make-up.

Technical Information

Material Specifications

Material Standards		
Material	**Bar**	**Forging**
316 SS	ASTM A276, ASME SA479, EN 1.4401	ASTM A182, ASME SA182, EN 1.4401
Alloy 20	ASTM B473	ASTM B462
Alloy 400	ASTM B164	ASTM B564, ASME SB564
Alloy 600	ASTM B166, ASME SB166	ASTM B564, ASME SB564
Alloy 625	ASTM B446	ASTM B564, ASME SB564
Alloy 825	ASTM B425	ASTM B564, ASME SB564
Alloy C-276	ASTM B574	ASTM B564
Aluminum	ASTM B211	ASTM B247
Brass	ASTM B16, ASTM B453	ASTM B283
Carbon steel	ASTM A108	—
Nylon	ASTM D4066	—
PFA	—	ASTM D3307 Type I
PTFE	ASTM D1710	ASTM D3294
SAF 2507	ASTM A479	ASTM A182
Titanium (grade 4)	ASTM B348	ASTM B381

Additional Processing

The bodies listed below have additional processing.

Body Material	Process
Aluminum	Anodized, hydrocarbon film
Alloy 400, Alloy C-276	Hydrocarbon film
Carbon steel (except weld bodies)	Zinc plating
Carbon steel (weld bodies)	Hydrocarbon film chemical conversion coating

Temperature Ratings

Temperature Ratings - Fittings	
Material	**Max. Temperature °F (°C)**
316 SS	1200 (649)
Alloy 400	1200 (649)
Alloy C-276	400 (204)
Brass	400 (204)
Carbon Steel	375 (190)

Thread Standards		
Type	**Designator**	**Standard**
ISO/BSP (parallel) (Based on DIN 3852)	**RS, RJ**	ISO 228, JIS B0202
ISO/BSP (tapered) (Based on DIN 3852)	**RT**	ISO 7, BS EN 10226-1, JIS B0203
ISO/BSP (gauge) (Based on EN 837-1 and 837-3)	**RG**	ISO 228, JIS B0202
Unified (SAE)	**ST**	ASME B1.1

Cleaning and Packaging

All components, parts and products are thoroughly cleaned in order to remove any manufacturing dirt, oil and grease, stains, burrs, loose particles, and spots of any kind, which might remain after processing. Fittings are individually bagged; bulk packaging without individual bags is available upon request.

Parts are inspected prior to assembly and packaging. Brass components are chemically treated by immersion in a solution to remove stains and tarnish from exterior surfaces.

All threaded ends are capped for protection. Unless otherwise specified all fittings are individually bagged, boxed, and placed in a carton for shipment.

Temperature Ratings - Gasket & O-rings			
Component	**Material**	**Maximum °F (°C)**	**Minimum °F (°C)**
Dowty Washers RS Fittings	Buna	230 (110)	-13 (-25)
	FKM	400 (204)	5 (-15)
Copper Gaskets RG, RP Fittings	Copper	400 (204)	-325 (-198)
SAE O-rings	FKM	400 (204)	-20 (-28)

Pressure Ratings

SSP Tube Fittings

SSP tube fittings are rated to the working pressure of the tubing as listed on page 63 of this catalog.
Pressure ratings are subject to using high quality tubing and proper selection, handling and installation instructions.

The table below provides maximum pressure ratings for male and female tapered pipe thread ends available in our catalog. Male and female pipe threads of the same nominal pipe size may have different pressure ratings. Achieving the same pressure rating as a male pipe end typically requires a female pipe end with a substantially thicker wall, which may not be practical.

It is also important to note that specially designed fittings, bored-through fittings, and fittings with AN, O-ring seal, or integral gasket-sealed ends may have lower pressure ratings than the tubing itself. The tables below provide general pressure and temperature rating information. For specific pressure ratings applicable to individual fittings, please contact SSP Customer Service.

SSP NPT/BSPT Pipe End Pressure Ratings, ANSI/ASME B 31.3

NPT/ISO Pipe Size	Size	316 SS				Brass				Carbon Steel			
		Male		Female		Male		Female		Male		Female	
		psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar
1/16"	1	11,050	760	6,750	460	5,550	380	3,350	230	11,050	760	6,750	460
1/8"	2	10,050	690	6,550	450	5,050	350	3,250	220	10,050	690	6,550	450
1/4"	4	8,050	550	6,650	460	4,050	280	3,350	230	8,050	550	6,650	460
3/8"	6	7,850	540	5,350	370	3,950	270	2,650	180	7,850	540	5,350	370
1/2"	8	7,750	530	4,950	340	3,850	260	2,450	170	7,750	530	4,950	340
3/4"	12	7,350	510	4,650	320	3,650	250	2,350	160	7,350	510	4,650	320
1"	16	5,350	370	4,450	310	2,650	180	2,250	150	5,350	370	4,450	310
Reference: bar = 0.06895 × psig		*To obtain ANSI/ASME B 31.1 values, multiply ANSI/ASME B 31.3 values by .94.*											

Material Allowable Stress Values

Material	Value
316 SS	20,000 psi (1378 bar)
Brass	10,000 psi (689 bar)
Carbon Steel	20,000 psi (1378 bar)

Male AN (JIC) Fitting Pressure Ratings

	Fixed		Positionable	
Size	psig	bar	psig	bar
1/8	6000	413	5400	372
1/4	6000	413	5400	372
3/8	6000	413	5400	372
1/2	6000	413	4800	331
3/4	4800	331	4200	290
1	3600	248	2400	166
1 1/4	3000	206	2000	138
1 1/2	2400	166	1800	124
2	1800	124	1500	104

SAE/MS Parallel Threads 316 SS

	Fixed		Positionable	
Size	psig	bar	psig	bar
5/16-24	4568	314	4568	314
7/16-20	4568	314	4568	314
9/16-18	4568	314	4568	314
3/4-16	4568	314	3626	249
7/8-14	3625	249	2900	199
1 1/16-12	3625	249	2900	199
1 3/16-12	2900	199	2320	159
1 5/16-12	2900	199	2320	159
1 5/8-12	2320	159	1813	124
1 7/8-12	2320	159	1813	124
2 1/2-12	1813	124	1450	99

Gaskets & O-Ring Materials Temperature Ranges

Material	Temperature Range °F (°C)
FKM	5 to 400 (-15 to 204)
Nitrile	-13 to 230 (-25 to 230)
Copper	-315 to 400 (-192 to 204)

ISO/BSP Positionable Parallel Thread

Size, in.	
1/8 to 3/8	4568 (314)
1/2 to 1	2320 (159)

Pipe, O-Seal and AN Pressure Ratings

The pressure rating of a fitting is based on the lowest rating of all fitting end connections.

O-Seal Pressure Ratings

Stainless steel and carbon steel O-seal fittings up to 1 in. and 25 mm are rated to 3000 psig (206 bar).

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Pressure Temperature Derating

System temperatures may be limited by the thread sealant or when applicable, the gasket or O-ring materials.
Pressure derating factors of the application at temperatures greater than 100°F were determined from ANSI/ASME 31.

Instructions
To determine the maximum allowable working pressure for the piping systems at elevated temperatures, multiply the applicable tube or pipe maximum allowable working pressure by the corresponding temperature stress factor from the table below.

Stress Factors for Determining Tubing Pressure Ratings at Elevated Temperatures						
Temperature		**Stainless Steel**		**Carbon Steel**	**Copper**	**Monel® 400**
°F	**°C**	**304SS**	**316SS**			
100	38	1.00	1.00	1.00	1.00	1.00
200	93	1.00	1.00	0.96	0.80	0.88
300	149	1.00	1.00	0.90	0.78	0.82
400	204	0.94	0.97	0.86	0.50	0.79
500	260	0.88	0.90	0.82	n/a	0.79
600	316	0.82	0.85	0.77	n/a	0.79
700	371	0.80	0.82	0.73	n/a	0.79
800	427	0.76	0.80	0.59	n/a	0.76
900	482	0.73	0.78	0.41	n/a	0.43
1000	538	0.69	0.73	0.16	n/a	n/a
1200	649	0.30	0.37	n/a	n/a	n/a

Tube Fitting Pressure Ratings

Tube fitting pressure ratings are determined by the lowest-rated fitting end. Duolok, Griplok, and Unilok tube ends are rated to the working pressure of the tubing. For fittings with both tube fitting and pipe thread ends, the pressure rating is determined by the end connection with the lower pressure rating.

316 SS Tubing

316 Stainless Steel Tubing Pressure Ratings, Fractional, Seamless, psig																
	Wall Thickness, in.															
OD, in.	0.010	0.012	0.014	0.016	0.020	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.156	0.188
1/16	5600	6800	8100	9400	12 000											
1/8						8,500	10,900									
3/16						5,400	7,000	10,200								
1/4						4,000	51,00	7,500	10,200							
5/16							4,000	5,800	8,000							
3/8							3,300	4,800	6,500	7,500						
1/2							2,600	3,700	5,100	6,700						
5/8								2,900	4,000	5,200	6,000					
3/4								2,400	3300	4200	4,900	5,800				
7/8								2,000	2,800	3,600	4,200	4,800				
1									2,400	3,100	3,600	4,200	4,700			
1 1/4										2,400	2,800	3,300	3,600	4,100	4,900	
1 1/2											2,300	2,700	3,000	3,400	4,000	4,900
2												2,000	2,200	2,500	2,900	3,600

316 Stainless Steel Tubing Pressure Ratings, Metric, Seamless, bar														
	Wall Thickness, mm													
OD, mm	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0	3.5	4.0	4.5	5.0
3	670	790												
6	310	420	540	710										
8		310	390	520										
10		240	300	400	510	580								
12		200	250	330	410	470								
14		160	200	270	340	380	430							
15		150	190	250	310	360	400							
16			170	230	290	330	370	400						
18			150	200	260	290	320	370						
20			140	180	230	260	290	330	380					
22			140	160	200	230	260	300	340					
25					180	200	230	260	290	320				
28						180	200	230	260	280	330			
30						170	180	210	240	260	310			
32						160	170	200	220	240	290	330		
38							140	160	190	200	240	270	310	
50										150	180	210	240	270

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Carbon Steel Tubing

Carbon Steel Tubing Pressure Ratings, Fractional, Seamless, psig													
	Wall Thickness, in.												
OD, in.	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.148	0.165	0.180	0.220
1/8	8000	10 200											
3/16	5100	6 600	9600										
1/4	3700	4 800	7000	9600									
5/16		3 700	5500	7500									
3/8		3 100	4500	6200									
1/2		2 300	3200	4500	5900								
5/8		1 800	2600	3500	4600	5300							
3/4			2100	2900	3700	4300	5100						
7/8			1800	2400	3200	3700	4300						
1			1500	2100	2700	3200	3700	4100					
1 1/4				1600	2100	2500	2900	3200	3600	4000	4600	5000	
1 1/2					1800	2000	2400	2600	2900	3300	3700	4100	5100
2						1500	1700	1900	2100	2400	2700	3000	3700

Carbon Steel Tubing Pressure Ratings, Metric, Seamless, bar													
	Wall Thickness, mm												
OD, mm	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0	3.5	4.0	4.5
3	630	790											
6	290	370	460	590									
8		270	330	430									
10		210	260	330									
12		170	210	270	330	380	420						
14		150	180	230	280	320	350						
15		140	170	210	260	290	330						
16		130	150	200	240	270	300	350					
18			140	170	210	240	270	310					
20			120	160	190	210	240	270	310				
22			110	140	170	190	210	240	280				
25			100	120	150	170	180	210	240	260			
28						150	160	190	210	230	270		
30						140	150	170	200	210	250		
32						130	140	160	180	200	230	270	
38							120	130	150	160	190	230	260

Calculation Basis: Annealed, seamless carbon steel tubing ASTM A-179 or equivalent. System temperatures between -20°F and +100°F with allowable stress of 15,700 psi. Ultimate tensile strength of 47,500 psi. Safety factor of 4.

Reference: ANSI B 31.3 Code. (For more specific working pressure information regarding a particular tubing, consult with the actual manufacturer of the tubing.)

Note: For welded and drawn tubing, a derating factor must be utilized. For double welded tube, multiply the above pressure rating by 0.85; and for single welded tube by 0.80 (ANSI B 31, Table A-1B)

Alloy 400 Tubing

Alloy 400 Tubing Pressure Ratings, Fractional, Seamless, psig								
	Wall Thickness, in.							
OD, in.	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120
1/8	7900	10 100						
1/4	3700	4 800	7000	9500				
5/16		3 700	5400	7300				
3/8		3 100	4400	6100				
1/2		2 300	3200	4400				
3/4			2200	3000	4000	4600		
1				2200	2900	3400	3900	4300

Alloy 400 Tubing Pressure Ratings, Metric, Seamless, bar										
	Wall Thickness, mm									
OD, mm	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0
6	310	390	490	620						
8		290	350	450						
10		220	280	350						
12		180	230	290						
14		160	190	240	270					
18			150	200	240	270	300			
20				180	210	240	270	290		
25					170	190	210	240	270	290

Copper Tubing

Copper Tubing Pressure Ratings, Fractional, Seamless, psig										
	Wall Thickness, in.									
OD	0.028	0.030	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134
1/8	2700	3000	3600							
3/16	1800	1900	2300	3400						
1/4	1300	1400	1600	2500	3500					
5/16			1300	1900	2700					
3/8			1000	1600	2200					
1/2			800	1100	1600	2100				
5/8				900	1200	1600	1900			
3/4				700	1000	1300	1500	1800		
7/8				600	800	1100	1300	1500		
1				500	700	900	1100	1300	1500	
1 1/8					600	800	1000	1100	1300	1400

Copper Tubing Pressure Ratings, Metric, Seamless, bar										
	Wall Thickness, mm									
OD	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0
6	110	140	170	220						
8		100	120	160						
10		80	100	130						
12		60	80	100	130	140				
14		50	60	90	110	120				
15			60	80	100	110	120			
16				70	90	100	110	120		
18				60	80	90	100	110		
20				60	70	80	90	100	110	
22				50	60	70	80	90	100	
25				40	50	60	70	80	90	100
28					40	50	60	70	80	90

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Safety & Warranty

Safety

To help ensure the safe and reliable performance of tube fitting products, the entire system design must be carefully evaluated before installing tubing and tube fittings. System owners, designers, and users are responsible for verifying the compatibility of materials, media, flow rates, temperatures, and pressures, as well as ensuring proper installation, operation, and maintenance of the system.

SSP Safety Reminders

All SSP products are designed and manufactured with safety in mind. The following is a limited list of general good practices:

- Do not install, tighten or loosen a tube fitting while the system is under pressure.
- Do not loosen a tube fitting, nut or plug to relieve or bleed system pressure.
- Always use a back-up wrench to hold the tube fitting body steady when tightening or loosening tube fitting nuts.
- There is no need to disassemble a new tube fitting prior to use.
- Use proper thread lubricants and sealants on tapered pipe threads.
- Very soft, pliable plastic tubing requires a tube insert.
- Tube fitting and tubing material should be similar (stainless steel fittings on stainless steel tubing, brass fittings on copper tubing, etc.) with the tubing material being fully annealed.
- Do not weld tube fittings that are assembled. Prior to welding, remove the nut and ferrules and protect the seat and thread area of the tube fitting by covering with a plug or another nut.

SSP LIFETIME LIMITED WARRANTY

SSP guarantees all Duolok tube fittings and Duolok tube fitting components to be free from defects in materials and workmanship. Additionally, SSP guarantees Duolok product performance to the published catalog specifications when properly installed according to the catalog selection and installation instructions. To initiate a warranty claim, suspected defective product must be returned to SSP with the nature of potential defect documented for factory evaluation. Any product with a determined defect in material or workmanship will be replaced with equivalent product at no charge.

This warranty comprises the sole and entire warranty pertaining to items provided hereunder. There is no other warranty, guarantee, express or implied representation of any kind whatsoever. All other warranties including, but not limited to, merchantability and fitness for purpose, whether express, implied, or arising by operation of law, course of dealing, or trade usage are hereby disclaimed. There are no warranties which extend beyond the description on the face hereof; and this warranty does not apply in cases of abuse, mishandling, or normal use depreciation. In no event, whether alleged to arise from breach of contract, express or implied warranty, by operation of law, negligence or otherwise, will SSP be liable for any incidental, consequential, lost property, or other special damages of any kind whatsoever. The exclusive, only remedy under this warranty is the replacement of determined defective parts as set forth above.

More SSP Products



Tube Fittings

Duolok® and Griplok® (two-ferrule) and Unilok® (single-ferrule) tube fittings ensure leak-tight installation when intermixed with Swagelok®, Hoke® Gyrolok®, and Parker® CPI™ fittings, provided they are used in accordance with SSP Fittings' published installation and service recommendations.



Valves

The SSP valve offering includes ball, check, metering, needle, toggle, plug, bleed, proportional relief valves and purge valves for pressures up to 10,000 psig.



Quick Connects

SSP offers single-end shutoff, double-end shut off, and full-flow quick connects for instru-mentation and process applications.



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TruFit and TruFit 10K pipe fittings are available in a wide range of weld, threaded and flared connections.



Filters

SSP in-line and tee-type filters trap particles to clean sample fluids and protect sensitive process and analytical instrumen-tation components and equipment.



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