

U-PRO

TUBE

FITTINGS

Fractional



優普洛科技股份有限公司
U-PRO Fittings Inc.

PREFACE

U-PRO Fittings Inc. have served industries on Instrument tube and pipe fittings, Quick Coupler, Check valve, Needle valves, Ball valves and Manifold valves etc..

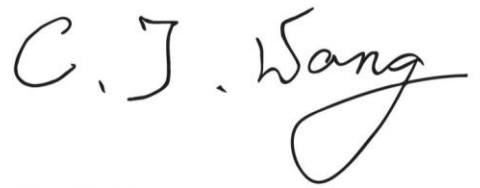
Since our company has produced industrial products by mean of our zeal and accept domestic research institutions technical direct and our research & development department hard work. Our company are ISO 9001 certified in 1994.

We have strictly quality control and make kinds of test machine to our quality continually.

We have got international laboratories test institutions approved. Our products can be using high pressure, acid and alkali conditions. Our products as well as advanced country's and it's popular for every petrochemical filed.

The local leading companies currently using our products are: Chinese Petroleum Corp., Taiwan Power Company & Nuclear Power Plants, Formosa Plastic Corporations and Formosa Petroleum Corporation, CTCL Corp., Taiwan Semiconductor Manufacturing Company (TSMC) and other petrochemical works plastic etc. However will continue to keep abreast of the ever-changing requirements of the industrial world and strive to server every filed we can.

UPRO fittings Inc.



President

前言

優普洛科技股份有限公司，為一專業製造廠。專營儀表管配件（雙卡套式接頭）、快速接頭及各式閥門。如針閥、球塞閥、逆止閥、分歧閥、二向、三向、四向、五向閥等。

本公司研製各項產品以來，憑著一股服務熱忱與力爭上游的決心，接受國內外研究機構技術指導和本公司研發部門不斷地努力，本公司產品通過國際認證更於1994年通過 ISO 9001國際品保認證。

各項產品製造過程中，嚴格品質管制並自制各式尖端科技測試機械，不斷精益求精，使得本公司所生產的儀表管配件在國內外公證機構證實耐高壓、耐強酸鹼。產品凌駕外貨。深獲各界好評！

目前採用本公司的產品有中國石油、台灣電力核能四廠、中國鋼鐵、台灣塑膠、中鼎工程、造船廠、各大石化工廠及下游廠商等。本公司願秉持以往創業精神，不但在技術方面更求精進，確保產品品質，並且將不斷開發新產品，加強服務。尚祈各界不吝指教。

負責人



敬誌
2009年1月

Features

The *U-PRO* tube fitting has been specifically designed for use on instrumentation, process control systems and equipment employed in chemical, petroleum, power generating and pulp and paper plants.

The *U-PRO* Tube fittings provide aleak-proof, torque-freeseal at all tubing connections and eliminate costly, hazardous leaks in instrumentations and process tubings.

All action in the fitting moves along the tube axially instead of with a rotary motion. Since tubing, there is no initial strain which might weaken the tubing.

Materials

U-PRO tube fittings are available as standard in 316 stainless steel, brass. Straight fittings are machined from cold finished bar stock and shaped bodies are machined from close grain forgings.

Basic Material	316 Stainless Steel	Brass
Stainless Steel	ASTM A-479 Type 316SS	ASTM A-182 F316
Brass	ASTM B16 Alloy 360	ASTM B16 Alloy 360

Product Test

The test includes air pressure, temperture, vibration, static pressure and vacuum. *U-PRO* tube fittings have been carefully tested to withstand the demand of high performance tube fittings.

Air Pressure Test : This test's purpose is to check for *U-PRO* tube fittings bears air pressure.

Temperature Test : A test of the *U-PRO* tube fittings, whose purpose is to check maximum and minimum temperature at which the tube fittings can be used.

Static Pressure Test : Test's purpose is to check for maximum static pressure. It is done at fittings to burst apart, with oil.

Vibration Test : It's purpose also is to check for *U-PRO* tube fittings distortion or leakage.

Vacuum Test : Test's purpose is to check for change sharp of tube fittings bears negative pressure.



Pressure & Temperture Ratings

U-PRO tube fittings are rated to the maximum working pressure & temperture of tubing as shown in the Tab 1 and Tab 2.

Pressure rating for fittings with both tube fitting and pipe thread ends are determined by the end connection with lower pressure rating.

For more further information,contact our company or your local *U-PRO* agent.

All working pressures have been calculated using the maximum allowable stress levels in accordance with ASNI B31.3 Chemical Plant and Petroleum Refinery Piping.

Tab 1.

Maximum working Temperature table

Tubing Material	316 Stainless Steel	Brass
Temperature Ratings	-425°F to 1200°F (-255°C to 605°C)	-40°F to 400°F (-40°C to 205°C)

Tab 2.

Maximum working Pressure table

Tube O.D. Size	316 Stainless Steel		Brass	
In.	psig	bar	psig	bar
1/16	11000	759	5500	380
1/8	10500	725	5000	345
3/16	10000	690	4800	331
1/4	8000	552	4000	276
5/16	8000	552	3900	269
3/8	7700	531	3900	269
1/2	7500	518	3800	262
5/8	7300	504	3700	255
3/4	7200	497	3600	248
7/8	7000	483	3400	235
1	5300	366	2600	179

System Temperature

Factors used to determine tubings pressure rating at elevated temperatures.

Ex. 1/4 In. x 0.035 wall seamless 316 stainless steel tubing has a working pressure of 5100 psig at room temperature (according ASME B31.3 pressure piping,process piping). If the system were to operate at 800°F, a factor of 0.80 would apply and the "at temperature" system pressure would be 5100 psig multiply 0.80 equal 4800 psig.

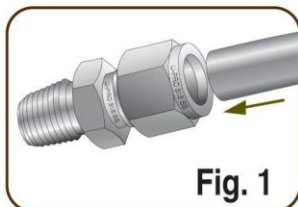
Temperature °F (°C)	316 SS tubing	Cooper Tubing
100 (38)	1.00	1.00
200 (96)	1.00	0.80
300 (149)	1.00	0.78
400 (204)	0.97	0.50
600 (316)	0.85	
800 (427)	0.80	
1000 (538)	0.77	
1200 (649)	0.37	

Installation

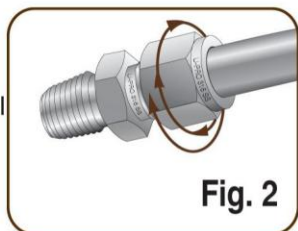
U-PRO tube fittings are completely assembled and read for immediate use. Disassembly before use unnecessary and can result in dirt or foreign material getting into fitting and causing leaks.

Tightening Procedure

1. Simply insert the tube as Fig.1 until it bottoms in the fitting body.



2. Tighten nut finger tight. Hold fitting body with a second wrench to prevent body from turning. Then tighten nut with a first wrench an additional 1 1/4 turns indicated below. See Fig.2



3. Use of the gauge (1 1/4 turns from finger tight) ensures sufficient pull up.

Gaugeability

Select the proper size inspection gauge and try place it, between the nut and the body hex Gauge fits between nut and body hex.



No	Fitting Size (Tube O.D.)
	in.
MS-IG-200	1/16
MS-IG-200	1/8
MS-IG-300	3/16
MS-IG-400	1/4
MS-IG-400	5/16
MS-IG-600	3/8
MS-IG-810	1/2
MS-IG-1010	5/8
MS-IG-1210	3/4
MS-IG-1410	7/8
MS-IG-1610	1

SIZE :

1/4 in. thru 1 in.



1 1/4 turns from finger-tight

SIZE :

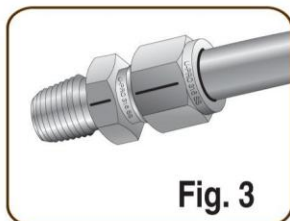
1/16 in. thru 3/16 in.



Only 3/4 turns from finger tight is necessary

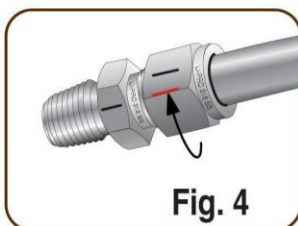
Retightening Procedure

1. To disconnect the tube, provide a match mark at the fully tightened position of the nut with a marker as shown in Fig. 3, and then remove the nut.



2. To reconnect, tighten the nut slightly further (Red line) beyond match marked position (Black line).

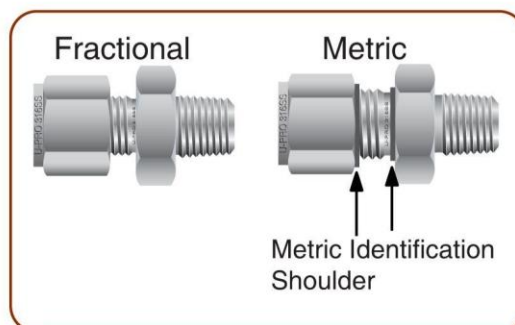
By tightening the nut 10-20 degrees further each time (less than 1/3 of a hex flat) as shown in Fig. 4, disconnection and reconnection of at least 25 times is possible.



Do not use inspection gauge with retightened U-PRO tube fittings.

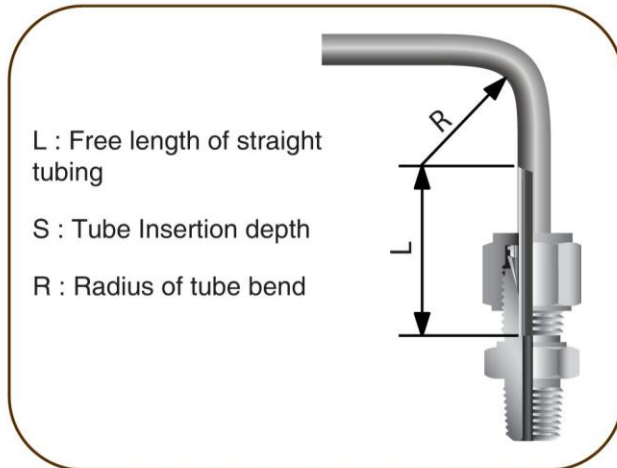
Identification of INCH or METRIC

Due to the external similarity between metric and fractional sizes, a stepped shoulder has been machined into the body hex of barstock fittings and the nut hex for easy identification of Metric Tube Fittings.



Tube Bending Dimensions

To make reliable tightness, the minimum lengths of straight portions are required as per the below table. It is desirable to keep the straight portion as long as possible to eliminate harmful effect caused by bending.

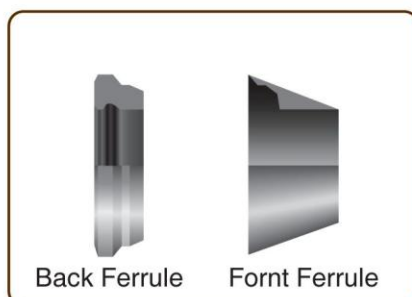


Standard Dimension of Bending Tubing				
Tube O.D.	L		R	
In.	In.	mm	In.	mm
1/16	1/2	12.70	3/16	4.76
1/8	23/32	18.26	3/8	9.53
3/16	3/4	19.05	9/16	14.29
1/4	13/16	20.64	9/16	14.29
5/16	7/8	22.23	15/16	23.81
3/8	15/16	23.81	15/16	23.81
1/2	1 3/16	30.16	1 1/2	38.10
5/8	1 1/4	31.75	2 1/2	50.80
3/4	1 1/4	31.75	3	76.20
7/8	1 5/16	33.34	3 1/2	66.68
1	1 1/2	38.10	3 1/2	88.90

Improved dual ferrule

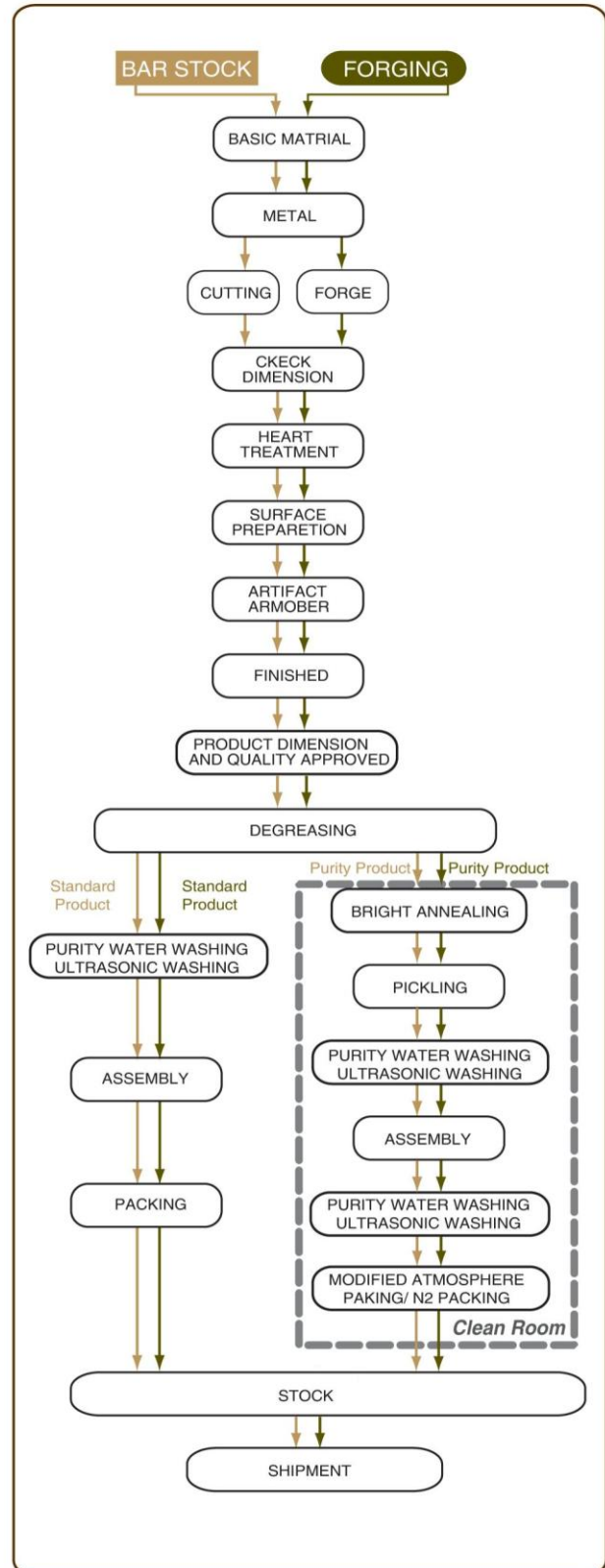
UPRO tube fittings are supplied with improved back ferrule installed that provide reduce leakage-related costs and low installation torque when joining stainless steel tubing.

The improved back ferrule design was tested. The results indicate that you can have a reliable.



Production Process

The flow diagram below traces the production of U-PRO tube fittings.



MALE CONNECTORS

MC

page 7

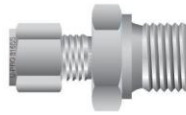
Male connector
Tube to Male NPT (P.T.)
Tube to Male SCH. Pipe



MC

page 9

Male connector
Tube to Male ISO Parallel Threads (PR)



TMC

page 11

Thermocouple connector
Tube to Male NPT (P.T.)



ELBOWS

UME

page 10

90° Elbow
Tube to Male NPT (P.T.)



BMC

page 8

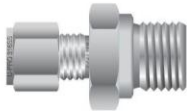
Bulkhead Male connector
Tube to Male NPT (P.T.)



MC

page 9

Male connector
Tube to Male ISO Parallel Threads (PS)



TEES

MBT

page 11

Male Branch Tee
Tube to Male NPT (P.T.)



MRT

page 12

Male Run Tee
Tube to Male NPT (P.T.)



FEMALE CONNECTORS

FC

page 13

Female connector
Tube to Female NPT (P.T.)



BFC

page 13

Bulkhead Female connector
Tube to Female NPT (P.T.)



ELBOWS

UFE

page 14

90° Elbow
Tube to Female NPT (P.T.)



TEES

FRT

page 14

Female Branch Tee
Tube to Female NPT (P.T.)



FBT

page 15

Female Branch Tee
Tube to Female NPT (P.T.)



UNIONS

U

page 15

Union
Tube to Tube



BU

page 17

Bulkhead Union
Tube to Tube



BRU

page 17

Bulkhead Reducing Union
Tube to Tube



ELBOWS

UE

page 17

90° Elbow
Tube to Tube



TEES

UT

page 18

Union Tee
Tube to Tube



RUT

page 18

Reducing Union Tee
Tube to Tube



CROSS

UC

page 18

Union Cross
Tube to Tube



AN FITTINGS

ANU

page 19

37° Flare Fitting
Tube to 37° Flare(AN)



ANBU

page 19

37° Flare Bulkhead Fitting
Tube to 37° Flare(AN)



ANA

page 19

37° Flare Adapter
Port to 37° Flare(AN)



Weld Connectors

SWU

page 20

Socket Weld end
Tube to Tube



BWC

page 21

Butt-Weld end
Tube to Pipe Butt-Weld



SWUE

page 20

Socket Weld 90° Elbow
Tube to Tube



BWE

page 21

Butt-Weld 90° Elbow
Tube to Pipe Butt-Weld



Port Connectors

RD

page 22

Tube to Tube



FA

page 24

Tube to Female Pipe NPT (P.T.)



PC

page 25

Port Connector
Port to port



BRD

page 23

Tube to Port



BWA

page 25

Butt-Weld Adapter
Port to Butt-weld Pipe



RPC

page 25

Reducing Port Connector
Port to Port



MA

page 24

Tube to Male Pipe NPT (P.T.)



Vent Plug Fittings

VPM

page 25

Vent Plug End Male Connector
Male NPT (P.T.) Pipe to Vent Plug



VP

page 26

Vent Plug End
Tube to Vent Plug



TEES

VRT

page 26

Vent Plug End
Tube to Vent Plug



VBT

page 26

Vent Plug End
Tube to Vent Plug



COMPONENTS

INSERT

page 27

Insert
Soft Plastic tube to U-PRO lok



TC

page 27

Tube Cap



TN

page 28



TP

page 27

Tube Plug



BLN

page 28



BFE

page 28

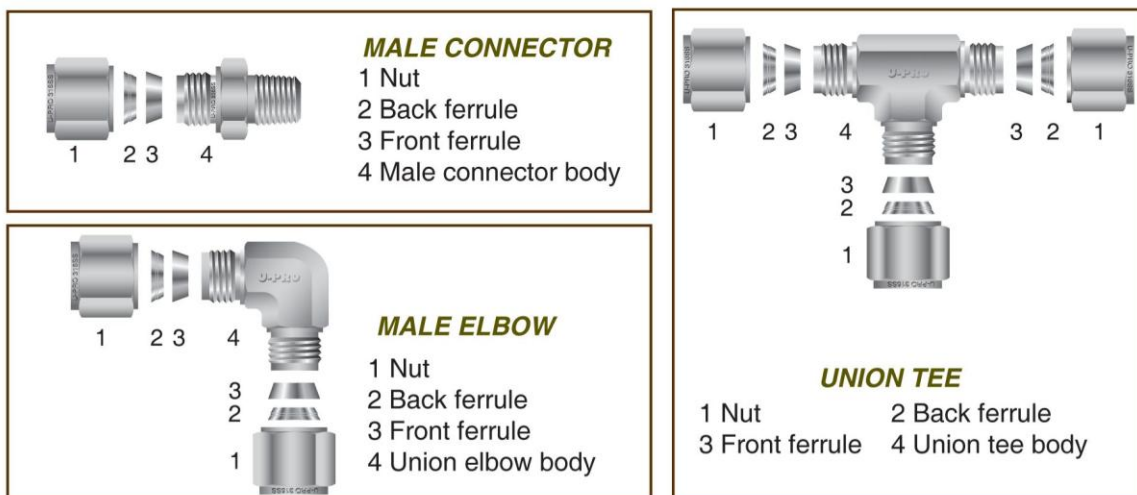


FFE

page 28

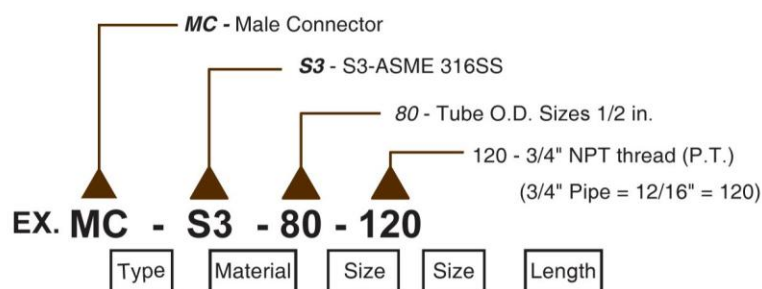


Fittings Analytic Drawings

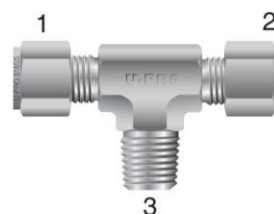
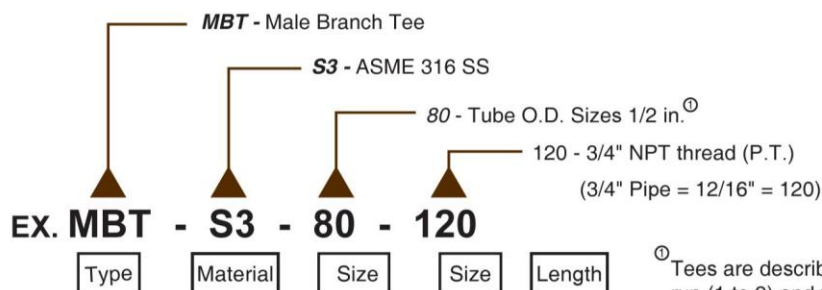


How to Order

U-PRO tube fittings are ordered by part number as listed in this catalog.



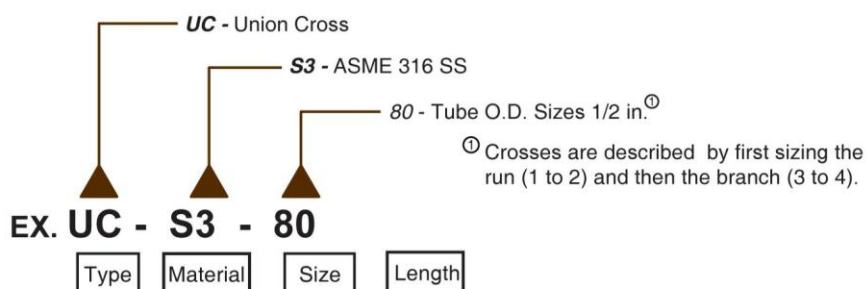
Straights and elbow are described by first sizing the tube end 1 and then the tube end or pipe thread 2.



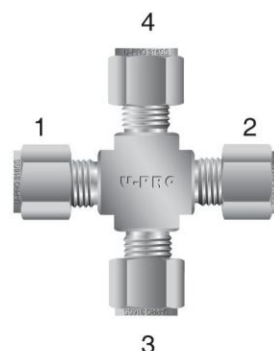
^⓪ Tees are described by first sizing the run (1 to 2) and then the branch (3).

Note :

If there is any question as to the fitting desired, particularly for special fittings configurations, it is suggested that ask tech be submitted with the fitting order.



^⓪ Crosses are described by first sizing the run (1 to 2) and then the branch (3 to 4).

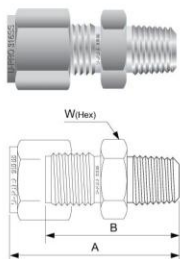


For special fittings, consult our company or connector division.

TUBE TO MALE PIPE

Tube to
Male Pipe

Male Connector



Tube to Male Pipe NPT
(P.T.)

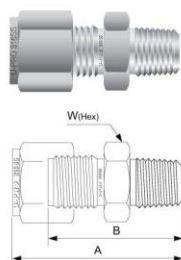
No.	Tube O.D.	Pipe Thread	A		B		W(Hex)
			in.	mm	in.	mm	in
MC-S3-10-10	1/16	1/16	0.93	23.6	0.78	19.8	5/16
MC-B1-10-10	1/16	1/16	0.93	23.6	0.78	19.8	5/16
MC-S3-10-20	1/16	1/8	1.03	26.2	0.88	22.4	7/16
MC-B1-10-20	1/16	1/8	1.03	26.2	0.88	22.4	7/16
MC-S3-10-40	1/16	1/4	1.23	31.2	1.08	27.4	9/16
MC-B1-10-40	1/16	1/4	1.23	31.2	1.08	27.4	9/16
MC-S3-20-10	1/8	1/16	1.17	29.7	0.91	23.1	7/16
MC-B1-20-10	1/8	1/16	1.17	29.7	0.91	23.1	7/16
MC-S3-20-20	1/8	1/8	1.20	30.5	0.94	23.9	7/16
MC-B1-20-20	1/8	1/8	1.20	30.5	0.94	23.9	7/16
MC-S3-20-40	1/8	1/4	1.40	35.6	1.14	29.0	9/16
MC-B1-20-40	1/8	1/4	1.40	35.6	1.14	29.0	9/16
MC-S3-20-60	1/8	3/8	1.41	35.8	1.15	29.2	11/16
MC-B1-20-60	1/8	3/8	1.41	35.8	1.15	29.2	11/16
MC-S3-20-80	1/8	1/2	1.65	41.9	1.39	35.3	7/8
MC-B1-20-80	1/8	1/2	1.65	41.9	1.39	35.3	7/8
MC-S3-30-10	3/16	1/16	1.23	31.2	0.97	24.6	7/16
MC-B1-30-10	3/16	1/16	1.23	31.2	0.97	24.6	7/16
MC-S3-30-20	3/16	1/8	1.23	31.2	0.97	24.6	7/16
MC-B1-30-20	3/16	1/8	1.23	31.2	0.97	24.6	7/16
MC-S3-30-40	3/16	1/4	1.43	36.3	1.17	29.7	9/16
MC-B1-30-40	3/16	1/4	1.43	36.3	1.17	29.7	9/16
MC-S3-40-10	1/4	1/16	1.29	32.8	1.00	25.4	1/2
MC-B1-40-10	1/4	1/16	1.29	32.8	1.00	25.4	1/2
MC-S3-40-20	1/4	1/8	1.29	32.8	1.00	25.4	1/2
MC-B1-40-20	1/4	1/8	1.29	32.8	1.00	25.4	1/2
MC-S3-40-40	1/4	1/4	1.49	37.8	1.20	30.5	9/16
MC-B1-40-40	1/4	1/4	1.49	37.8	1.20	30.5	9/16
MC-S3-40-60	1/4	3/8	1.51	38.4	1.22	31.0	11/16
MC-B1-40-60	1/4	3/8	1.51	38.4	1.22	31.0	11/16
MC-S3-40-80	1/4	1/2	1.76	44.7	1.47	37.3	7/8
MC-B1-40-80	1/4	1/2	1.76	44.7	1.47	37.3	7/8
MC-S3-40-120	1/4	3/4	1.82	46.2	1.53	38.9	1 1/16
MC-B1-40-120	1/4	3/4	1.82	46.2	1.53	38.9	1 1/16
MC-S3-50-20	5/16	1/8	1.34	34.0	1.05	26.7	9/16
MC-B1-50-20	5/16	1/8	1.34	34.0	1.05	26.7	9/16
MC-S3-50-40	5/16	1/4	1.52	38.6	1.23	31.2	9/16
MC-B1-50-40	5/16	1/4	1.52	38.6	1.23	31.2	9/16
MC-S3-50-60	5/16	3/8	1.54	39.1	1.25	31.8	9/16
MC-B1-50-60	5/16	3/8	1.54	39.1	1.25	31.8	9/16
MC-S3-60-20	3/8	1/8	1.38	35.1	1.09	27.7	5/8
MC-B1-60-20	3/8	1/8	1.38	35.1	1.09	27.7	5/8
MC-S3-60-40	3/8	1/4	1.57	39.9	1.28	32.5	5/8
MC-B1-60-40	3/8	1/4	1.57	39.9	1.28	32.5	5/8
MC-S3-60-60	3/8	3/8	1.57	39.9	1.28	32.5	11/16
MC-B1-60-60	3/8	3/8	1.57	39.9	1.28	32.5	11/16
MC-S3-60-80	3/8	1/2	1.83	46.5	1.53	38.9	7/8
MC-B1-60-80	3/8	1/2	1.83	46.5	1.53	38.9	7/8
MC-S3-60-120	3/8	3/4	1.88	47.8	1.59	40.4	1 1/16
MC-B1-60-120	3/8	3/4	1.88	47.8	1.59	40.4	1 1/16
MC-S3-80-20	1/2	1/8	1.53	38.9	1.13	28.7	13/16
MC-B1-80-20	1/2	1/8	1.53	38.9	1.13	28.7	13/16
MC-S3-80-40	1/2	1/4	1.71	43.4	1.31	33.3	13/16
MC-B1-80-40	1/2	1/4	1.71	43.4	1.31	33.3	13/16
MC-S3-80-60	1/2	3/8	1.71	43.4	1.31	33.3	13/16
MC-B1-80-60	1/2	3/8	1.71	43.4	1.31	33.3	13/16
MC-S3-80-80	1/2	1/2	1.93	49.0	1.53	38.9	7/8
MC-B1-80-80	1/2	1/2	1.93	49.0	1.53	38.9	7/8
MC-S3-80-120	1/2	3/4	1.99	50.5	1.59	40.4	1 1/16
MC-B1-80-120	1/2	3/4	1.99	50.5	1.59	40.4	1 1/16
MC-S3-80-160	1/2	1	2.28	57.9	1.88	47.8	1 3/8
MC-B1-80-160	1/2	1	2.28	57.9	1.88	47.8	1 3/8
MC-S3-100-60	5/8	3/8	1.74	44.2	1.34	34.0	15/16
MC-B1-100-60	5/8	3/8	1.74	44.2	1.34	34.0	15/16
MC-S3-100-80	5/8	1/2	1.93	49.0	1.53	38.9	15/16
MC-B1-100-80	5/8	1/2	1.93	49.0	1.53	38.9	15/16
MC-S3-100-120	5/8	3/4	1.99	50.5	1.59	40.4	1 1/16
MC-B1-100-120	5/8	3/4	1.99	50.5	1.59	40.4	1 1/16
MC-S3-120-80	3/4	1/2	1.99	50.5	1.59	40.4	1 1/16
MC-B1-120-80	3/4	1/2	1.99	50.5	1.59	40.4	1 1/16
MC-S3-120-120	3/4	3/4	1.99	50.5	1.59	40.4	1 1/16
MC-B1-120-120	3/4	3/4	1.99	50.5	1.59	40.4	1 1/16
MC-S3-120-160	3/4	1	2.25	57.2	1.85	47.0	1 3/8
MC-B1-120-160	3/4	1	2.25	57.2	1.85	47.0	1 3/8
MC-S3-140-120	7/8	3/4	1.99	50.5	1.59	40.4	1 3/16
MC-B1-140-120	7/8	3/4	1.99	50.5	1.59	40.4	1 3/16
MC-S3-140-160	7/8	1	2.25	57.2	1.85	47.0	1 3/8
MC-B1-140-160	7/8	1	2.25	57.2	1.85	47.0	1 3/8
MC-S3-160-80	1	1/2	2.26	57.4	1.78	45.2	1 3/8
MC-B1-160-80	1	1/2	2.26	57.4	1.78	45.2	1 3/8
MC-S3-160-120	1	3/4	2.26	57.4	1.78	45.2	1 3/8
MC-B1-160-120	1	3/4	2.26	57.4	1.78	45.2	1 3/8
MC-S3-160-160	1	1	2.45	62.2	1.97	50.0	1 3/8
MC-B1-160-160	1	1	2.45	62.2	1.97	50.0	1 3/8

Includes Body, Nut, and Ferrules.

S3 : Stainless Steel B1 : Brass

Dimensions for reference only, subject to change.

Male Connector



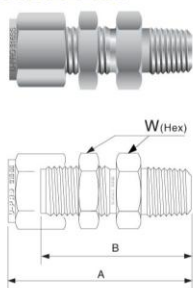
SCHEDULE

Tube to Schedule Pipe

No.	Pipe SCH.	Pipe Thread	A		B		W(Hex) in
			in.	mm	in.	mm	
MC-S3-10.5-20	1/8 B	1/8	1.54	39.1	1.18	30.0	3/4
MC-B1-10.5-20	1/8 B	1/8	1.54	39.1	1.18	30.0	3/4
MC-S3-10.5-40	1/8 B	1/4	1.62	41.1	1.26	32.0	3/4
MC-B1-10.5-40	1/8 B	1/4	1.62	41.1	1.26	32.0	3/4
MC-S3-10.5-60	1/8 B	3/8	1.66	42.2	1.30	33.0	3/4
MC-B1-10.5-60	1/8 B	3/8	1.66	42.2	1.30	33.0	3/4
MC-S3-10.5-80	1/8 B	1/2	1.87	47.5	1.51	38.4	3/4
MC-B1-10.5-80	1/8 B	1/2	1.87	47.5	1.51	38.4	3/4
MC-S3-13.8-40	1/4 B	1/4	1.69	42.9	1.30	33.0	1
MC-B1-13.8-40	1/4 B	1/4	1.69	42.9	1.30	33.0	1
MC-S3-13.8-60	1/4 B	3/8	1.77	45.0	1.38	35.1	1
MC-B1-13.8-60	1/4 B	3/8	1.77	45.0	1.38	35.1	1
MC-S3-13.8-80	1/4 B	1/2	1.50	38.1	1.56	39.6	1
MC-B1-13.8-80	1/4 B	1/2	1.50	38.1	1.56	39.6	1
MC-S3-13.8-120	1/4 B	3/4	2.07	52.6	1.67	42.4	1
MC-B1-13.8-120	1/4 B	3/4	2.07	52.6	1.67	42.4	1
MC-S3-17.3-60	3/8 B	3/8	1.99	50.5	1.56	39.6	1 1/16
MC-B1-17.3-60	3/8 B	3/8	1.99	50.5	1.56	39.6	1 1/16
MC-S3-17.3-80	3/8 B	1/2	2.09	53.1	1.65	41.9	1 1/16
MC-B1-17.3-80	3/8 B	1/2	2.09	53.1	1.65	41.9	1 1/16
MC-S3-17.3-120	3/8 B	3/4	2.16	54.9	1.73	43.9	1 1/16
MC-B1-17.3-120	3/8 B	3/4	2.16	54.9	1.73	43.9	1 1/16
MC-S3-21.7-80	1/2 B	1/2	2.14	54.4	1.69	42.9	1 1/16
MC-B1-21.7-80	1/2 B	1/2	2.14	54.4	1.69	42.9	1 1/16
MC-S3-21.7-120	1/2 B	3/4	2.22	56.4	1.77	45.0	1 1/16
MC-B1-21.7-120	1/2 B	3/4	2.22	56.4	1.77	45.0	1 1/16

Includes Body, Nut, and Ferrules.

Bulkhead Male Connector



Tube to Male Pipe NPT (P.T.)

No.	Tube O.D.	Pipe Thread	A		B		W(Hex) in	Bulkhead Hole Drill Size in	Max. Bulkhead Thickness in
			in	mm	in	mm			
BMC-S3-20-20	1/8	1/8	1.82	46.2	1.56	39.6	1/2	1/2	1/2
BMC-B1-20-20	1/8	1/8	1.82	46.2	1.56	39.6	1/2	1/2	1/2
BMC-S3-40-20	1/4	1/8	1.95	49.5	1.66	42.2	5/8	5/8	5/8
BMC-B1-40-20	1/4	1/8	1.95	49.5	1.66	42.2	5/8	5/8	5/8
BMC-S3-40-40	1/4	1/4	2.13	54.1	1.84	46.7	5/8	5/8	5/8
BMC-B1-40-40	1/4	1/4	2.13	54.1	1.84	46.7	5/8	5/8	5/8
BMC-S3-60-40	3/8	1/4	2.26	57.4	1.97	50.0	3/4	3/4	3/4
BMC-B1-60-40	3/8	1/4	2.26	57.4	1.97	50.0	3/4	3/4	3/4
BMC-S3-60-60	3/8	3/8	2.26	57.4	1.97	50.0	3/4	3/4	3/4
BMC-B1-60-60	3/8	3/8	2.26	57.4	1.97	50.0	3/4	3/4	3/4
BMC-S3-60-80	3/8	1/2	2.50	63.5	2.21	56.1	7/8	7/8	7/8
BMC-B1-60-80	3/8	1/2	2.50	63.5	2.21	56.1	7/8	7/8	7/8
BMC-S3-80-60	1/2	3/8	2.49	63.2	2.09	53.1	15/16	15/16	15/16
BMC-B1-80-60	1/2	3/8	2.49	63.2	2.09	53.1	15/16	15/16	15/16
BMC-S3-80-80	1/2	1/2	2.71	68.8	2.31	58.7	15/16	15/16	15/16
BMC-B1-80-80	1/2	1/2	2.71	68.8	2.31	58.7	15/16	15/16	15/16
BMC-S3-120-120	3/4	3/4	3.00	76.2	2.60	66.0	1 3/16	1 3/16	1 3/16
BMC-B1-120-120	3/4	3/4	3.00	76.2	2.60	66.0	1 3/16	1 3/16	1 3/16
BMC-S3-160-160	1	1	3.67	93.2	3.19	81.0	1 5/8	1 5/8	1 5/8
BMC-B1-160-160	1	1	3.67	93.2	3.19	81.0	1 5/8	1 5/8	1 5/8

Includes Body, Nut, and Ferrules.

S3 : Stainless Steel B1 : Brass

Dimensions for reference only, subject to change.

American Standard Pipe Threads (NPT)

tapered thread 1 to 47'

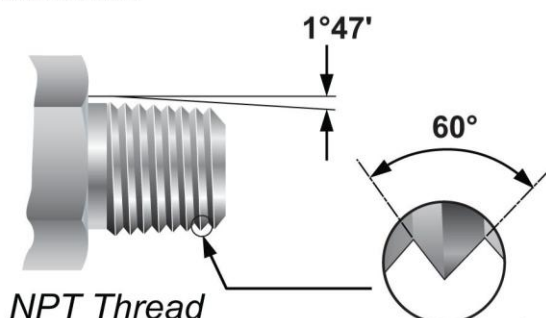
truncation of roots and crests are flat

60o thread angle

pitch is measured in threads per inch

Reference specifications :

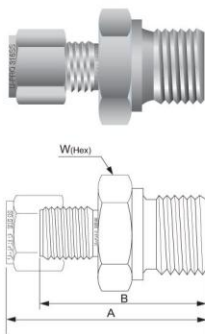
ANSI B1.20.1



NPT - American Standard Pipe Thread Taper

Pipe Size	Threads per Inch TPI - pitch	Nominal Outside Diameter OD
in.		in.
1/16"	27	0.313"
1/8"	27	0.405"
1/4"	18	0.540"
3/8"	18	0.675"
1/2"	14	0.840"
3/4"	14	1.050"

Male Connector



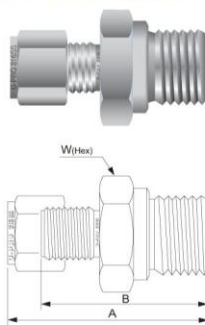
Tube to Male Pipe ISO/BSP
Parallel Threads (PS)

No.	Tube O.D.	Pipe Thread	A		B		W(Hex)
			in.	mm	in.	mm	in.
MC-S3-40-40PS	1/4	1/4	1.48	37.6	1.19	30.2	3/4
MC-B1-40-40PS	1/4	1/4	1.48	37.6	1.19	30.2	3/4
MC-S3-40-60PS	1/4	3/8	1.53	38.9	1.24	31.5	7/8
MC-B1-40-60PS	1/4	3/8	1.53	38.9	1.24	31.5	7/8
MC-S3-40-80PS	1/4	1/2	1.76	44.7	1.47	37.3	1 1/16
MC-B1-40-80PS	1/4	1/2	1.76	44.7	1.47	37.3	1 1/16
MC-S3-60-40PS	3/8	1/4	1.54	39.1	1.25	31.8	3/4
MC-B1-60-40PS	3/8	1/4	1.54	39.1	1.25	31.8	3/4
MC-S3-60-60PS	3/8	3/8	1.59	40.4	1.30	33.0	7/8
MC-B1-60-60PS	3/8	3/8	1.59	40.4	1.30	33.0	7/8
MC-S3-60-80PS	3/8	1/2	1.82	46.2	1.53	38.9	1 1/16
MC-B1-60-80PS	3/8	1/2	1.82	46.2	1.53	38.9	1 1/16
MC-S3-80-40PS	1/2	1/4	1.68	42.7	1.28	32.5	13/16
MC-B1-80-40PS	1/2	1/4	1.68	42.7	1.28	32.5	13/16
MC-S3-80-60PS	1/2	3/8	1.70	43.2	1.30	33.0	7/8
MC-B1-80-60PS	1/2	3/8	1.70	43.2	1.30	33.0	7/8
MC-S3-80-80PS	1/2	1/2	1.93	49.0	1.53	38.9	1 1/16
MC-B1-80-80PS	1/2	1/2	1.93	49.0	1.53	38.9	1 1/16
MC-S3-120-80PS	3/4	1/2	1.93	49.0	1.53	38.9	1 1/16
MC-B1-120-80PS	3/4	1/2	1.93	49.0	1.53	38.9	1 1/16
MC-S3-120-120PS	3/4	3/4	2.08	52.8	1.68	42.7	1 5/16
MC-B1-120-120PS	3/4	3/4	2.08	52.8	1.68	42.7	1 5/16
MC-S3-160-80PS	1	1/2	2.19	55.6	1.71	43.4	1 1/16
MC-B1-160-80PS	1	1/2	2.19	55.6	1.71	43.4	1 1/16
MC-S3-160-160PS	1	1	2.35	59.7	1.87	47.4	1 1/16
MC-B1-160-160PS	1	1	2.35	59.7	1.87	47.4	1 1/16

Includes Body, Nut, and Ferrules.

Tube to
Male Pipe

Male Connector



Tube to Male Pipe ISO/BSP
Parallel Threads (PR)

No.	Tube O.D.	Pipe Thread	A		B		W(Hex)
			in.	mm	in.	mm	in.
MC-S3-40-40PR	1/4	1/4	1.48	37.6	1.19	30.2	3/4
MC-B1-40-40PR	1/4	1/4	1.48	37.6	1.19	30.2	3/4
MC-S3-80-80PR	1/2	1/2	1.93	49.0	1.53	38.9	1 1/2
MC-B1-80-80PR	1/2	1/2	1.93	49.0	1.53	38.9	1 1/2

Includes Body, Nut, and Ferrules.

S3 : Stainless Steel B1 : Brass

Dimensions for reference only, subject to change.

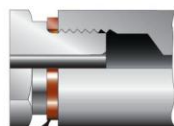
The ISO parallel threads of explanation

The ISO 228/1 threads were created the International Standards Organization to standardize the of several International pipe threads. The 228/1 is a parallel threads system where a pressure tight seal is not made on thread. With the 228/1, the seal is usually made metal to metal against the female port or with a gasket. Following are different descriptions of the 228/1 threads.

Example : 1/4 in. Pipe

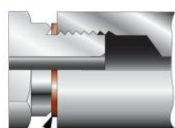
MC-S3-40-40PR

Bonded washer Seal



MC-S3-40-40PS

Matel Gasket Seal

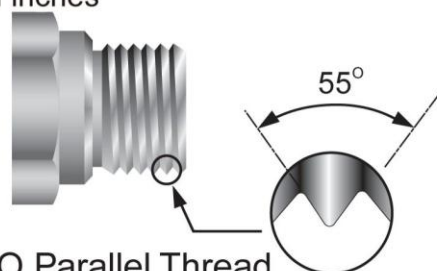


55° thread angle Pitch measured in inches

Truncation of root and crest are round

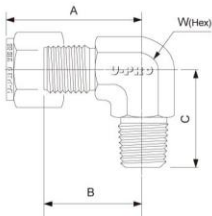
Diameter measured in inches

Reference specifications :
BS 2779 (BSPP)
DIN-ISO 228/1
JIS B0202
ISO 228/1



ISO Parallel Thread

Male Elbow

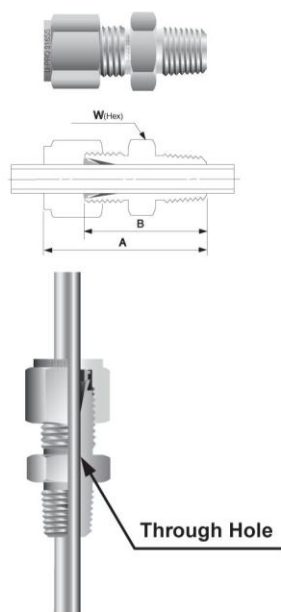


Tube to Male Pipe NPT
(P.T.)

No.	Tube O.D.	Pipe Thread	A		B		C		W(Hex) in
			in.	mm	in.	mm	in.	mm	
UME-S3-20-20	1/8	1/8	0.93	23.6	0.67	17.0	0.70	17.8	7/16
UME-B1-20-20	1/8	1/8	0.93	23.6	0.67	17.0	0.70	17.8	7/16
UME-S3-20-40	1/8	1/4	0.96	24.4	0.71	18.0	0.92	23.4	1/2
UME-B1-20-40	1/8	1/4	0.96	24.4	0.71	18.0	0.92	23.4	1/2
UME-S3-30-20	3/16	1/8	1.00	25.4	0.74	18.8	0.74	18.8	1/2
UME-B1-30-20	3/16	1/8	1.00	25.4	0.74	18.8	0.74	18.8	1/2
UME-S3-30-40	3/16	1/4	1.00	25.4	0.74	18.8	0.92	23.4	1/2
UME-B1-30-40	3/16	1/4	1.00	25.4	0.74	18.8	0.92	23.4	1/2
UME-S3-40-20	1/4	1/8	1.06	26.9	0.77	19.6	0.74	18.8	1/2
UME-B1-40-20	1/4	1/8	1.06	26.9	0.77	19.6	0.74	18.8	1/2
UME-S3-40-40	1/4	1/4	1.06	26.9	0.77	19.6	0.92	23.4	1/2
UME-B1-40-40	1/4	1/4	1.06	26.9	0.77	19.6	0.92	23.4	1/2
UME-S3-40-60	1/4	3/8	1.17	29.7	0.88	22.4	1.03	26.2	11/16
UME-B1-40-60	1/4	3/8	1.17	29.7	0.88	22.4	1.03	26.2	11/16
UME-S3-40-80	1/4	1/2	1.25	31.8	0.96	24.4	1.30	33.0	13/16
UME-B1-40-80	1/4	1/2	1.25	31.8	0.96	24.4	1.30	33.0	13/16
UME-S3-50-20	5/16	1/8	1.13	28.7	0.84	21.3	0.78	19.8	9/16
UME-B1-50-20	5/16	1/8	1.13	28.7	0.84	21.3	0.78	19.8	9/16
UME-S3-50-40	5/16	1/4	1.13	28.7	0.84	21.3	0.96	24.4	9/16
UME-B1-50-40	5/16	1/4	1.13	28.7	0.84	21.3	0.96	24.4	9/16
UME-S3-50-60	5/16	3/8	1.20	30.5	0.91	23.1	1.03	26.2	11/16
UME-B1-50-60	5/16	3/8	1.20	30.5	0.91	23.1	1.03	26.2	11/16
UME-S3-60-20	3/8	1/8	1.20	30.5	0.91	23.1	0.82	20.8	5/8
UME-B1-60-20	3/8	1/8	1.20	30.5	0.91	23.1	0.82	20.8	5/8
UME-S3-60-40	3/8	1/4	1.20	30.5	0.91	23.1	1.00	25.4	5/8
UME-B1-60-40	3/8	1/4	1.20	30.5	0.91	23.1	1.00	25.4	5/8
UME-S3-60-60	3/8	3/8	1.23	31.2	0.94	23.9	1.03	26.2	11/16
UME-B1-60-60	3/8	3/8	1.23	31.2	0.94	23.9	1.03	26.2	11/16
UME-S3-60-80	3/8	1/2	1.31	33.3	1.02	25.9	1.30	33.0	13/16
UME-B1-60-80	3/8	1/2	1.31	33.3	1.02	25.9	1.30	33.0	13/16
UME-S3-60-120	3/8	3/4	1.46	37.1	1.17	29.7	1.45	36.8	1 1/16
UME-B1-60-120	3/8	3/4	1.46	37.1	1.17	29.7	1.45	36.8	1 1/16
UME-S3-80-40	1/2	1/4	1.42	36.1	1.02	25.9	1.11	28.2	13/16
UME-B1-80-40	1/2	1/4	1.42	36.1	1.02	25.9	1.11	28.2	13/16
UME-S3-80-60	1/2	3/8	1.42	36.1	1.02	25.9	1.11	28.2	13/16
UME-B1-80-60	1/2	3/8	1.42	36.1	1.02	25.9	1.11	28.2	13/16
UME-S3-80-80	1/2	1/2	1.42	36.1	1.02	25.9	1.30	33.0	13/16
UME-B1-80-80	1/2	1/2	1.42	36.1	1.02	25.9	1.30	33.0	13/16
UME-S3-80-120	1/2	3/4	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
UME-B1-80-120	1/2	3/4	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
UME-S3-100-60	5/8	3/8	1.50	38.1	1.10	27.9	1.19	30.2	15/16
UME-B1-100-60	5/8	3/8	1.50	38.1	1.10	27.9	1.19	30.2	15/16
UME-S3-100-80	5/8	1/2	1.50	38.1	1.10	27.9	1.38	35.1	15/16
UME-B1-100-80	5/8	1/2	1.50	38.1	1.10	27.9	1.38	35.1	15/16
UME-S3-100-120	5/8	3/4	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
UME-B1-100-120	5/8	3/4	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
UME-S3-120-80	3/4	1/2	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
UME-B1-120-80	3/4	1/2	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
UME-S3-120-120	3/4	3/4	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
UME-B1-120-120	3/4	3/4	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
UME-S3-140-120	7/8	3/4	1.76	44.7	1.17	29.7	1.45	36.8	1 3/8
UME-B1-140-120	7/8	3/4	1.76	44.7	1.17	29.7	1.45	36.8	1 3/8
UME-S3-160-120	1	3/4	1.93	49.0	1.45	36.8	1.64	41.7	1 3/8
UME-B1-160-120	1	3/4	1.93	49.0	1.45	36.8	1.64	41.7	1 3/8
UME-S3-160-160	1	1	1.93	49.0	1.45	36.8	1.83	46.5	1 3/8
UME-B1-160-160	1	1	1.93	49.0	1.45	36.8	1.83	46.5	1 3/8

Includes Body, Nut, and Ferrules.

Thermocouple Connector

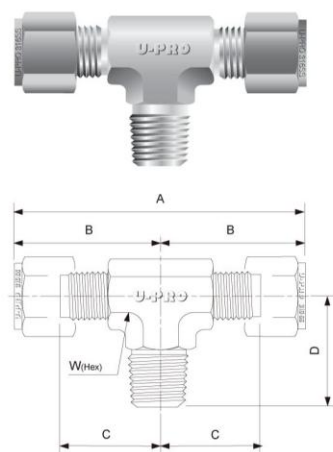


No.	Tube O.D.	Pipe Thread	A		B		W(Hex) in.
			in.	mm	in.	mm	
TMC-S3-10-10	1/16	1/16	0.93	23.6	0.78	19.8	5/16
TMC-B1-10-10		1/16					
TMC-S3-10-20		1/8	1.03	26.2	0.88	22.4	7/16
TMC-B1-10-20	1/8	1/8	1.17	29.7	0.91	23.1	7/16
TMC-S3-20-10		1/16	1.20	30.5	0.94	23.9	7/16
TMC-B1-20-10		1/8	1.20	30.5	0.94	23.9	7/16
TMC-S3-20-20	1/8	1/8	1.40	35.6	1.14	29.0	9/16
TMC-B1-20-20		1/8	1.40	35.6	1.14	29.0	9/16
TMC-S3-20-40		1/4	1.23	31.2	0.97	24.6	7/16
TMC-B1-20-40	3/16	1/8	1.43	36.3	1.17	29.7	9/16
TMC-S3-30-20		1/8	1.29	32.8	1.00	25.4	1/2
TMC-B1-30-20		1/8	1.29	32.8	1.00	25.4	1/2
TMC-S3-40-20	1/4	1/8	1.49	37.8	1.20	30.5	9/16
TMC-B1-40-20		1/8	1.49	37.8	1.20	30.5	9/16
TMC-S3-40-40		1/4	1.52	38.6	1.23	31.2	9/16
TMC-B1-40-40	5/16	1/4	1.57	39.9	1.28	32.5	5/8
TMC-S3-50-40		1/4	1.57	39.9	1.28	32.5	11/16
TMC-B1-50-40		1/4	1.57	39.9	1.28	32.5	11/16
TMC-S3-60-40	3/8	1/4	1.83	46.5	1.53	38.9	7/8
TMC-B1-60-40		1/4	1.83	46.5	1.53	38.9	7/8
TMC-S3-60-60		3/8	1.93	49.0	1.53	38.9	7/8
TMC-B1-60-60	3/8	1/2	1.99	50.5	1.59	40.4	1 1/16
TMC-S3-80-80		1/2	1.99	50.5	1.59	40.4	1 1/16
TMC-B1-80-80		1/2	1.99	50.5	1.59	40.4	1 1/16
TMC-S3-100-120	5/8	3/4	2.45	62.2	1.97	50.0	1 3/8
TMC-B1-100-120		3/4	2.45	62.2	1.97	50.0	1 3/8
TMC-S3-120-120		3/4	2.45	62.2	1.97	50.0	1 3/8
TMC-B1-120-120	1	1	2.45	62.2	1.97	50.0	1 3/8
TMC-S3-160-160		1	2.45	62.2	1.97	50.0	1 3/8
TMC-B1-160-160		1	2.45	62.2	1.97	50.0	1 3/8

Tube to
Male Pipe

Includes Body, Nut, and Ferrules.

Male Branch Tee



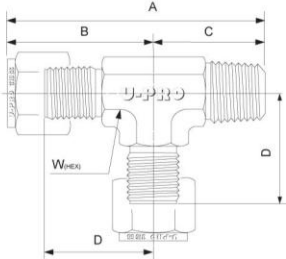
Tube to Male Pipe NPT
(P.T.)

No.	Tube O.D.	Pipe Thread	A		B		C		D		W(Hex) in.
			in.	mm	in.	mm	in.	mm	in.	mm	
MBT-S3-20-20-20	1/8	1/8	1.86	47.2	0.93	23.6	0.67	17.0	0.70	17.8	7/16
MBT-B1-20-20-20		1/8	1.94	49.3	0.97	24.6	0.71	18.0	0.92	23.4	1/2
MBT-S3-20-20-40		1/4	1.92	48.8	0.96	24.4	0.70	17.8	0.70	17.8	7/16
MBT-B1-20-20-40	3/16	1/8	2.12	53.8	1.06	26.9	0.77	19.6	0.74	18.8	1/2
MBT-S3-30-30-20		1/8	2.12	53.8	1.06	26.9	0.77	19.6	0.92	23.4	1/2
MBT-B1-30-30-20		1/8	2.12	53.8	1.06	26.9	0.77	19.6	0.92	23.4	1/2
MBT-S3-40-40-20	1/4	1/8	2.34	59.4	1.17	29.7	0.88	22.4	0.82	20.8	5/8
MBT-B1-40-40-20		1/8	2.40	61.0	1.20	30.5	0.91	23.1	1.00	25.4	5/8
MBT-S3-50-50-20		1/8	2.62	66.5	1.31	33.3	1.02	25.9	1.11	28.2	13/16
MBT-B1-50-50-20	3/8	1/4	2.84	72.1	1.42	36.1	1.02	25.9	1.11	28.2	13/16
MBT-S3-60-60-40		1/4	2.84	72.1	1.42	36.1	1.02	25.9	1.30	33.0	13/16
MBT-B1-60-60-40		1/4	2.84	72.1	1.42	36.1	1.02	25.9	1.30	33.0	13/16
MBT-S3-60-60-60	1/2	3/8	3.06	77.7	1.53	38.9	1.13	28.7	1.41	35.8	1
MBT-B1-60-60-60		3/8	3.14	79.8	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
MBT-S3-80-80-60		1/2	3.54	89.9	1.77	45.0	1.37	34.8	1.45	36.8	1 3/8
MBT-B1-80-80-60	7/8	3/4	3.90	99.1	1.95	49.5	1.46	37.1	1.64	41.7	1 3/8
MBT-S3-80-80-80		1/2	3.90	99.1	1.95	49.5	1.46	37.1	1.83	46.5	1 3/8
MBT-B1-80-80-80		1/2	3.90	99.1	1.95	49.5	1.46	37.1	1.83	46.5	1 3/8
MBT-S3-100-100-80	5/8	1/2	3.06	77.7	1.53	38.9	1.13	28.7	1.41	35.8	1
MBT-B1-100-100-80		1/2	3.06	77.7	1.53	38.9	1.13	28.7	1.41	35.8	1
MBT-S3-120-120-120		3/4	3.14	79.8	1.57	39.9	1.17	29.7	1.45	36.8	1 1/16
MBT-B1-120-120-120	3/4	3/4	3.54	89.9	1.77	45.0	1.37	34.8	1.45	36.8	1 3/8
MBT-S3-140-140-120		3/4	3.90	99.1	1.95	49.5	1.46	37.1	1.64	41.7	1 3/8
MBT-B1-140-140-120		3/4	3.90	99.1	1.95	49.5	1.46	37.1	1.64	41.7	1 3/8
MBT-S3-160-160-120	1	1	3.90	99.1	1.95	49.5	1.46	37.1	1.83	46.5	1 3/8
MBT-B1-160-160-120		1	3.90	99.1	1.95	49.5	1.46	37.1	1.83	46.5	1 3/8
MBT-S3-160-160-160		1	3.90	99.1	1.95	49.5	1.46	37.1	1.83	46.5	1 3/8
MBT-B1-160-160-160		1	3.90	99.1	1.95	49.5	1.46	37.1	1.83	46.5	1 3/8

Includes Body, Nuts, and Ferrules.

Tube to
Male Pipe

Male Run Tee



Tube to Male Pipe NPT
(P.T.)

No.	Tube O.D.	Pipe Thread	Tube O.D.	A		B		C		D	
	T		Tx	in	mm	in	mm	in	mm	in	mm
MRT-S3-20-20-20	1/8	1/8	1/8	1.63	41.4	0.93	23.6	0.70	17.8	0.67	17.0
MRT-B1-20-20-20	1/8	1/8	1/8	1.63	41.4	0.93	23.6	0.70	17.8	0.67	17.0
MRT-S3-20-40-20	1/8	1/4	1/8	1.89	48.0	0.97	24.6	0.92	23.4	0.71	18.0
MRT-B1-20-40-20	1/8	1/4	1/8	1.89	48.0	0.97	24.6	0.92	23.4	0.71	18.0
MRT-S3-30-20-30	3/16	1/8	3/16	1.66	42.2	0.96	24.4	0.70	17.8	0.70	17.8
MRT-B1-30-20-30	3/16	1/8	3/16	1.66	42.2	0.96	24.4	0.70	17.8	0.70	17.8
MRT-S3-40-20-40	1/4	1/8	1/4	1.80	45.7	1.06	26.9	0.74	18.8	0.77	19.6
MRT-B1-40-20-40	1/4	1/8	1/4	1.80	45.7	1.06	26.9	0.74	18.8	0.77	19.6
MRT-S3-40-40-40	1/4	1/4	1/4	1.98	50.3	1.06	26.9	0.92	23.4	0.77	19.6
MRT-B1-40-40-40	1/4	1/4	1/4	1.98	50.3	1.06	26.9	0.92	23.4	0.77	19.6
MRT-S3-50-20-50	5/16	1/8	5/16	1.99	50.5	1.17	29.7	0.82	20.8	0.88	22.4
MRT-B1-50-20-50	5/16	1/8	5/16	1.99	50.5	1.17	29.7	0.82	20.8	0.88	22.4
MRT-S3-60-40-60	3/8	1/4	3/8	2.20	55.9	1.20	30.5	1.00	25.4	0.91	23.1
MRT-B1-60-40-60	3/8	1/4	3/8	2.20	55.9	1.20	30.5	1.00	25.4	0.91	23.1
MRT-S3-60-60-60	3/8	3/8	3/8	2.42	61.5	1.31	33.3	1.11	28.2	1.02	25.9
MRT-B1-60-60-60	3/8	3/8	3/8	2.42	61.5	1.31	33.3	1.11	28.2	1.02	25.9
MRT-S3-80-60-80	1/2	3/8	1/2	2.53	64.3	1.42	36.1	1.11	28.2	1.02	25.9
MRT-B1-80-60-80	1/2	3/8	1/2	2.53	64.3	1.42	36.1	1.11	28.2	1.02	25.9
MRT-S3-80-80-80	1/2	1/2	1/2	2.72	69.1	1.42	36.1	1.30	33.0	1.02	25.9
MRT-B1-80-80-80	1/2	1/2	1/2	2.72	69.1	1.42	36.1	1.30	33.0	1.02	25.9
MRT-S3-100-80-100	5/8	1/2	5/8	2.88	73.2	1.50	38.1	1.38	35.1	1.10	27.9
MRT-B1-100-80-100	5/8	1/2	5/8	2.88	73.2	1.50	38.1	1.38	35.1	1.10	27.9
MRT-S3-120-120-120	3/4	3/4	3/4	3.02	76.7	1.57	39.9	1.45	36.8	1.17	29.7
MRT-B1-120-120-120	3/4	3/4	3/4	3.02	76.7	1.57	39.9	1.45	36.8	1.17	29.7
MRT-S3-140-120-140	7/8	3/4	7/8	3.19	81.0	1.68	42.7	1.45	36.8	1.36	34.5
MRT-B1-140-120-140	7/8	3/4	7/8	3.19	81.0	1.68	42.7	1.45	36.8	1.36	34.5
MRT-S3-160-120-160	1	3/4	1	3.47	88.1	1.79	45.5	1.66	42.2	1.45	36.8
MRT-B1-160-120-160	1	3/4	1	3.47	88.1	1.79	45.5	1.66	42.2	1.45	36.8
MRT-S3-160-160-160	1	1	1	3.63	92.2	1.79	45.5	1.85	47.0	1.45	36.8
MRT-B1-160-160-160	1	1	1	3.63	92.2	1.79	45.5	1.85	47.0	1.45	36.8

Includes Body, Nuts, and Ferrules.

S3 : Stainless Steel B1 : Brass

Dimensions for reference only, subject to change.

International Organization of Standardization (ISO) 7/1 Thread (P.T.)

tapered thread 147'

truncation of roots and crests are rounded

55 thread angle

pitch is measured in threads per inch

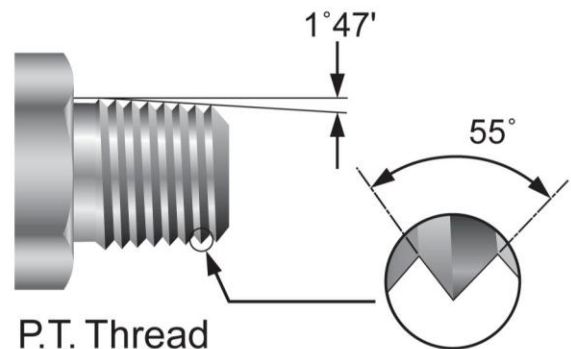
Reference specifications :

ISO 7/1

DIN-ISO 2999

JIS B0203

BS 21(BSPT)



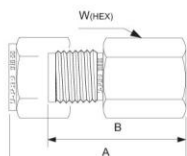
P.T. Thread

ISO 7-1 Tapered Threads

Pipe Size	Threads per Inch TPI - pitch	Outside Diameter OD	Distance between threads
in.		in.	in.
1/16"	28	0.312"	0.036"
1/8"	28	0.402"	0.036"
1/4"	19	0.532"	0.053"
3/8"	19	0.677"	0.053"
1/2"	14	0.838"	0.071"
3/4"	14	1.060"	0.071"
1"	11	1.327"	0.091"

TUBE TO FEMALE PIPE

Female Connector

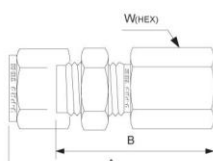


Tube to Female Pipe NPT
(P.T.)

No.	Tube O.D.	Pipe Thread	A		B		W(HEX)
			in.	mm	in.	mm	in.
FC-S3-40-40	1/4	1/4	1.41	35.8	1.12	28.4	3/4
FC-B1-40-40		1/4					
FC-S3-40-60		3/8	1.48	37.6	1.19	30.2	7/8
FC-B1-40-60	1/4	1/2	1.67	42.4	1.38	35.1	1 1/16
FC-S3-40-80		1/2					
FC-B1-40-80		3/4	1.88	47.8	1.59	40.4	1 5/16
FC-S3-50-40	5/16	1/4	1.45	36.8	1.16	29.5	3/4
FC-B1-50-40		1/4					
FC-S3-60-40		1/4	1.48	37.6	1.19	30.2	3/4
FC-B1-60-40	3/8	1/4	1.48	37.6	1.19	30.2	3/4
FC-S3-60-60		3/8	1.54	39.1	1.26	31.9	7/8
FC-B1-60-60		3/8	1.54	39.1	1.26	31.9	7/8
FC-S3-60-80	3/8	1/2	1.73	43.9	1.44	36.6	1 1/16
FC-B1-60-80		1/2					
FC-S3-60-120		3/4	1.88	47.8	1.59	40.4	1 5/16
FC-B1-60-120	1/2	1/4	1.59	40.4	1.19	30.2	13/16
FC-S3-80-40		1/4	1.59	40.4	1.19	30.2	13/16
FC-B1-80-40		1/4	1.59	40.4	1.19	30.2	13/16
FC-S3-80-60	1/2	3/8	1.65	41.9	1.25	31.8	7/8
FC-B1-80-60		3/8	1.65	41.9	1.25	31.8	7/8
FC-S3-80-80		1/2	1.84	46.7	1.44	36.6	1 1/16
FC-B1-80-80	1/2	1/2	1.84	46.7	1.44	36.6	1 1/16
FC-S3-80-120		3/4	1.90	48.3	1.50	38.1	1 5/16
FC-B1-80-120		3/4	1.90	48.3	1.50	38.1	1 5/16
FC-S3-100-60	5/8	3/8	1.65	41.9	1.25	31.8	15/16
FC-B1-100-60		3/8	1.65	41.9	1.25	31.8	15/16
FC-S3-100-80		1/2	1.84	46.7	1.44	36.6	1 1/16
FC-B1-100-80	5/8	1/2	1.84	46.7	1.44	36.6	1 1/16
FC-S3-100-120		3/4	1.90	48.3	1.50	38.1	1 5/16
FC-B1-100-120		3/4	1.90	48.3	1.50	38.1	1 5/16
FC-S3-120-80	3/4	1/2	1.84	46.7	1.44	36.6	1 1/16
FC-B1-120-80		1/2	1.84	46.7	1.44	36.6	1 1/16
FC-S3-120-120		3/4	1.90	48.3	1.50	38.1	1 5/16
FC-B1-120-120	7/8	3/4	1.96	49.8	1.56	39.6	1 5/16
FC-S3-140-120		3/4	1.96	49.8	1.56	39.6	1 5/16
FC-B1-140-120		3/4	1.96	49.8	1.56	39.6	1 5/16
FC-S3-160-120	1	3/4	2.10	53.3	1.62	41.1	1 3/8
FC-B1-160-120		3/4	2.10	53.3	1.62	41.1	1 3/8
FC-S3-160-160		1	2.45	62.2	1.97	50.0	1 5/8
FC-B1-160-160	1	1	2.45	62.2	1.97	50.0	1 5/8

Includes Body, Nut, and Ferrules.

Bulkhead Female Connector



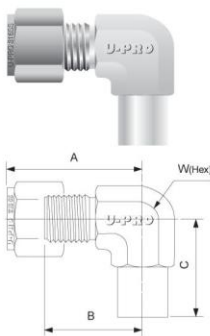
Tube to Female Pipe NPT
(P.T.)

No.	Tube O.D.	Pipe Thread	A		B		W(HEX)	Bulkhead Hole Drill Size	Max. Bulkhead Thickness
			in.	mm	in.	mm	in.	in.	in.
BFC-S3-40-40	1/4	1/4	2.04	51.8	1.75	44.5	3/4	29/64	13/32
BFC-B1-40-40		1/4							
BFC-S3-50-80		1/2	2.38	60.5	2.08	52.8	3/4	33/64	7/16
BFC-B1-50-80	5/16	1/2	2.38	60.5	2.08	52.8	3/4	33/64	7/16
BFC-S3-60-40		1/4	2.17	55.1	1.88	47.8	3/4	37/64	7/16
BFC-B1-60-40		1/4	2.17	55.1	1.88	47.8	3/4	37/64	7/16
BFC-S3-80-60	1/2	3/8	2.43	61.7	2.03	51.6	15/16	49/64	1/2
BFC-B1-80-60		3/8	2.43	61.7	2.03	51.6	15/16	49/64	1/2
BFC-S3-80-80		1/2	2.63	66.8	2.23	56.6	1 1/16	49/64	1/2
BFC-B1-80-80	1/2	1/2	2.63	66.8	2.23	56.6	1 1/16	49/64	1/2
BFC-S3-100-80		1/2	2.65	67.3	2.25	57.2	1 1/16	57/64	1/2
BFC-B1-100-80		1/2	2.65	67.3	2.25	57.2	1 1/16	57/64	1/2
BFC-S3-120-120	3/4	3/4	2.90	73.7	2.5	63.5	1 3/8	1 1/64	21/32
BFC-B1-120-120		3/4	2.90	73.7	2.5	63.5	1 3/8	1 1/64	21/32
BFC-S3-140-120		3/4	3.18	80.8	2.78	70.6	1 3/8	1 9/64	3/4
BFC-B1-140-120	7/8	3/4	3.18	80.8	2.78	70.6	1 3/8	1 9/64	3/4
BFC-S3-160-160		1	3.68	93.5	3.19	81.0	1 5/8	1 21/64	3/4
BFC-B1-160-160		1	3.68	93.5	3.19	81.0	1 5/8	1 21/64	3/4

Includes Body, Nut, and Ferrules.

S3 : Stainless Steel B1 : Brass
Dimensions for reference only, subject to change.

Female Elbow



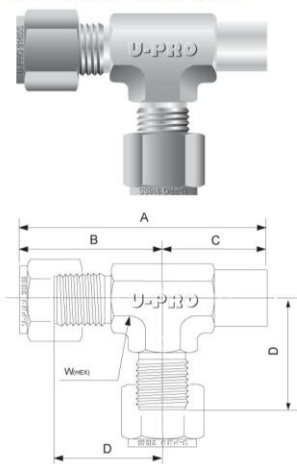
Tube to
Female Pipe

Tube to Female Pipe NPT
(P.T.)

No.	Tube O.D.	Pipe Thread	A		B		C		W(Hex) in.
			in.	mm	in.	mm	in.	mm	
UFE-S3-40-40	1/4	1/4	1.16	29.5	0.87	22.1	0.87	22.1	11/16
UFE-B1-40-40	1/4	1/4	1.16	29.5	0.87	22.1	0.87	22.1	11/16
UFE-S3-40-60	1/4	3/8	1.25	31.8	0.96	24.4	0.87	22.1	13/16
UFE-B1-40-60	1/4	3/8	1.25	31.8	0.96	24.4	0.87	22.1	13/16
UFE-S3-40-80	1/4	1/2	1.36	34.5	1.07	27.2	1.11	28.2	1
UFE-B1-40-80	1/4	1/2	1.36	34.5	1.07	27.2	1.11	28.2	1
UFE-S3-50-40	5/16	1/4	1.20	30.5	0.91	23.1	0.87	22.1	11/16
UFE-B1-50-40	5/16	1/4	1.20	30.5	0.91	23.1	0.87	22.1	11/16
UFE-S3-60-40	3/8	1/4	1.23	31.2	0.94	23.9	0.87	22.1	11/16
UFE-B1-60-40	3/8	1/4	1.23	31.2	0.94	23.9	0.87	22.1	11/16
UFE-S3-60-60	3/8	3/8	1.31	33.3	1.02	25.9	0.87	22.1	13/16
UFE-B1-60-60	3/8	3/8	1.31	33.3	1.02	25.9	0.87	22.1	13/16
UFE-S3-60-80	3/8	1/2	1.42	36.1	1.13	28.7	1.11	28.2	1
UFE-B1-60-80	3/8	1/2	1.42	36.1	1.13	28.7	1.11	28.2	1
UFE-S3-80-40	1/2	1/4	1.42	36.1	1.02	25.9	0.87	22.1	13/16
UFE-B1-80-40	1/2	1/4	1.42	36.1	1.02	25.9	0.87	22.1	13/16
UFE-S3-80-60	1/2	3/8	1.42	36.1	1.02	25.9	0.87	22.1	13/16
UFE-B1-80-60	1/2	3/8	1.42	36.1	1.02	25.9	0.87	22.1	13/16
UFE-S3-80-80	1/2	1/2	1.53	38.9	1.13	28.7	1.11	28.2	1
UFE-B1-80-80	1/2	1/2	1.53	38.9	1.13	28.7	1.11	28.2	1
UFE-S3-100-60	5/8	3/8	1.50	38.1	1.10	27.9	0.87	22.1	15/16
UFE-B1-100-60	5/8	3/8	1.50	38.1	1.10	27.9	0.87	22.1	15/16
UFE-S3-100-80	5/8	1/2	1.57	39.9	1.17	29.7	1.11	28.2	1 1/16
UFE-B1-100-80	5/8	1/2	1.57	39.9	1.17	29.7	1.11	28.2	1 1/16
UFE-S3-120-80	3/4	1/2	1.57	39.9	1.17	29.7	1.11	28.2	1 1/16
UFE-B1-120-80	3/4	1/2	1.57	39.9	1.17	29.7	1.11	28.2	1 1/16
UFE-S3-120-120	3/4	3/4	1.76	44.7	1.36	34.5	1.25	31.8	1 3/8
UFE-B1-120-120	3/4	3/4	1.76	44.7	1.36	34.5	1.25	31.8	1 3/8
UFE-S3-140-120	7/8	3/4	1.76	44.7	1.36	34.5	1.25	31.8	1 3/8
UFE-B1-140-120	7/8	3/4	1.76	44.7	1.36	34.5	1.25	31.8	1 3/8
UFE-S3-160-120	1	3/4	1.93	49.0	1.45	36.8	1.25	31.8	1 3/8
UFE-B1-160-120	1	3/4	1.93	49.0	1.45	36.8	1.25	31.8	1 3/8
UFE-S3-160-160	1	1	2.11	53.6	1.63	41.4	1.50	38.1	1 11/16
UFE-B1-160-160	1	1	2.11	53.6	1.63	41.4	1.50	38.1	1 11/16

Includes Body, Nut, and Ferrules.

Female Run Tee

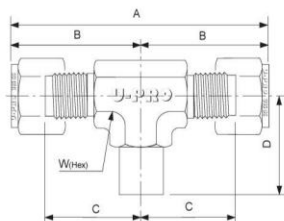


Tube to Female Pipe NPT
(P.T.)

No.	Tube O.D.	Pipe Thread	A		B		C		D		W(Hex) in.
			in.	mm	in.	mm	in.	mm	in.	mm	
FRT-S3-20-20-20	1/8	1/8	1.71	43.4	0.97	24.6	0.74	18.80	0.70	17.78	1/2
FRT-B1-20-20-20	1/8	1/8	1.71	43.4	0.97	24.6	0.74	18.80	0.70	17.78	1/2
FRT-S3-40-40-20	1/4	1/8	1.79	45.5	1.05	26.7	0.74	18.80	0.77	19.56	1/2
FRT-B1-40-40-20	1/4	1/8	1.79	45.5	1.05	26.7	0.74	18.80	0.77	19.56	1/2
FRT-S3-40-40-40	1/4	1/4	2.05	52.1	1.17	29.7	0.88	22.35	0.88	22.35	11/16
FRT-B1-40-40-40	1/4	1/4	2.05	52.1	1.17	29.7	0.88	22.35	0.88	22.35	11/16
FRT-S3-60-60-40	3/8	1/4	2.11	53.6	1.23	31.2	0.88	22.35	0.94	23.88	11/16
FRT-B1-60-60-40	3/8	1/4	2.11	53.6	1.23	31.2	0.88	22.35	0.94	23.88	11/16
FRT-S3-80-80-60	1/2	3/8	2.30	58.4	1.42	36.1	0.88	22.35	1.02	25.91	13/16
FRT-B1-80-80-60	1/2	3/8	2.30	58.4	1.42	36.1	0.88	22.35	1.02	25.91	13/16
FRT-S3-80-80-80	1/2	1/2	2.69	68.3	1.56	39.6	1.13	28.70	1.17	29.72	1 1/16
FRT-B1-80-80-80	1/2	1/2	2.69	68.3	1.56	39.6	1.13	28.70	1.17	29.72	1 1/16
FRT-S3-120-120-120	3/4	3/4	3.01	76.5	1.76	44.7	1.25	31.75	1.36	34.54	1 3/8
FRT-B1-120-120-120	3/4	3/4	3.01	76.5	1.76	44.7	1.25	31.75	1.36	34.54	1 3/8
FRT-S3-160-160-120	1	3/4	3.18	80.8	1.93	49.0	1.25	31.75	1.45	36.83	1 3/8
FRT-B1-160-160-120	1	3/4	3.18	80.8	1.93	49.0	1.25	31.75	1.45	36.83	1 3/8
FRT-S3-160-160-160	1	1	3.62	91.9	2.11	53.6	1.51	38.35	1.63	41.40	1 11/16
FRT-B1-160-160-160	1	1	3.62	91.9	2.11	53.6	1.51	38.35	1.63	41.40	1 11/16

Includes Body, Nuts, and Ferrules.

Female Branch Tee



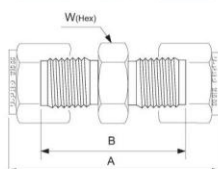
Tube to Female Pipe NPT
(P.T.)

No.	Tube O.D.	Pipe Thread	A		B		C		D		W(HeX) in.
			in.	mm	in.	mm	in.	mm	in.	mm	
FBT-S3-20-20-20	1/8	1/8	1.94	49.3	0.97	24.6	0.71	18.0	0.75	19.1	1/2
FBT-B1-20-20-20	1/8	1/8	1.94	49.3	0.97	24.6	0.71	18.0	0.75	19.1	1/2
FBT-S3-40-40-20	1/4	1/8	2.12	53.8	1.06	26.9	0.77	19.6	0.75	19.1	1/2
FBT-B1-40-40-20	1/4	1/8	2.12	53.8	1.06	26.9	0.77	19.6	0.75	19.1	1/2
FBT-S3-40-40-40	1/4	1/4	2.34	59.4	1.17	29.7	0.88	22.4	0.88	22.4	11/16
FBT-B1-40-40-40	1/4	1/4	2.34	59.4	1.17	29.7	0.88	22.4	0.88	22.4	11/16
FBT-S3-60-60-40	3/8	1/4	2.46	62.5	1.23	31.2	0.94	23.9	0.88	22.4	11/16
FBT-B1-60-60-40	3/8	1/4	2.46	62.5	1.23	31.2	0.94	23.9	0.88	22.4	11/16
FBT-S3-60-60-60	3/8	3/8	2.62	66.5	1.31	33.3	1.02	25.9	0.88	22.4	13/16
FBT-B1-60-60-60	3/8	3/8	2.62	66.5	1.31	33.3	1.02	25.9	0.88	22.4	13/16
FBT-S3-60-60-80	3/8	1/2	2.84	72.1	1.42	36.1	1.13	28.7	1.12	28.4	1
FBT-B1-60-60-80	3/8	1/2	2.84	72.1	1.42	36.1	1.13	28.7	1.12	28.4	1
FBT-S3-80-80-40	1/2	1/4	2.84	72.1	1.42	36.1	1.02	25.9	0.88	22.4	13/16
FBT-B1-80-80-40	1/2	1/4	2.84	72.1	1.42	36.1	1.02	25.9	0.88	22.4	13/16
FBT-S3-80-80-60	1/2	3/8	2.84	72.1	1.42	36.1	1.02	25.9	0.88	22.4	13/16
FBT-B1-80-80-60	1/2	3/8	2.84	72.1	1.42	36.1	1.02	25.9	0.88	22.4	13/16
FBT-S3-80-80-80	1/2	1/2	3.06	77.7	1.53	38.9	1.13	28.7	1.12	28.4	1
FBT-B1-80-80-80	1/2	1/2	3.06	77.7	1.53	38.9	1.13	28.7	1.12	28.4	1
FBT-S3-100-100-80	5/8	1/2	3.06	77.7	1.53	38.9	1.13	28.7	1.12	28.4	1
FBT-B1-100-100-80	5/8	1/2	3.06	77.7	1.53	38.9	1.13	28.7	1.12	28.4	1
FBT-S3-120-120-120	3/4	3/4	3.52	89.4	1.76	44.7	1.36	34.5	1.25	31.8	1 3/8
FBT-B1-120-120-120	3/4	3/4	3.52	89.4	1.76	44.7	1.36	34.5	1.25	31.8	1 3/8
FBT-S3-160-160-120	1	3/4	3.86	98.0	1.93	49.0	1.45	36.8	1.25	31.8	1 3/8
FBT-B1-160-160-120	1	3/4	3.86	98.0	1.93	49.0	1.45	36.8	1.25	31.8	1 3/8
FBT-S3-160-160-160	1	1	4.22	107.2	2.11	53.6	1.63	41.4	1.50	38.1	1 11/16
FBT-B1-160-160-160	1	1	4.22	107.2	2.11	53.6	1.63	41.4	1.50	38.1	1 11/16

Includes Body, Nuts, and Ferrules.

Tube to
Female Pipe

Union



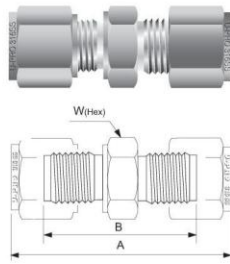
Tube to Tube

No.	Tube O.D.	A		B		W(HeX) in.
		in.	mm	in.	mm	
U-S3-10-10	1/16	0.99	25.1	0.69	17.5	5/16
U-B1-10-10	1/16	0.99	25.1	0.69	17.5	5/16
U-S3-20-20	1/8	1.39	35.3	0.87	22.1	7/16
U-B1-20-20	1/8	1.39	35.3	0.87	22.1	7/16
U-S3-30-30	3/16	1.47	37.3	0.95	24.1	7/16
U-B1-30-30	3/16	1.47	37.3	0.95	24.1	7/16
U-S3-40-40	1/4	1.61	40.9	1.03	26.2	1/2
U-B1-40-40	1/4	1.61	40.9	1.03	26.2	1/2
U-S3-50-50	5/16	1.70	43.2	1.12	28.4	9/16
U-B1-50-50	5/16	1.70	43.2	1.12	28.4	9/16
U-S3-60-60	3/8	1.77	45.0	1.19	30.2	13/16
U-B1-60-60	3/8	1.77	45.0	1.19	30.2	13/16
U-S3-80-80	1/2	2.02	51.3	1.22	31.0	15/16
U-B1-80-80	1/2	2.02	51.3	1.22	31.0	15/16
U-S3-100-100	5/8	2.05	52.1	1.25	31.8	11/16
U-B1-100-100	5/8	2.05	52.1	1.25	31.8	11/16
U-S3-120-120	3/4	2.11	53.6	1.31	33.3	1 1/16
U-B1-120-120	3/4	2.11	53.6	1.31	33.3	1 1/16
U-S3-140-140	7/8	2.17	55.1	1.37	34.8	13/16
U-B1-140-140	7/8	2.17	55.1	1.37	34.8	13/16
U-S3-160-160	1	2.56	65.0	1.60	40.6	1 3/8
U-B1-160-160	1	2.56	65.0	1.60	40.6	1 3/8

Includes Body, Nuts, and Ferrules.

S3 : Stainless Steel B1 : Brass
 Dimensions for reference only, subject to change.

Conversion Reducing Union



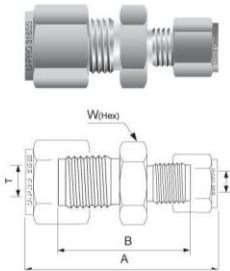
Fractional Tube to Metric Tube

Tube to Tube
Unions

No.	Tube O.D.		A		B		W(Hex)
	T	Tx	in.	mm	in.	mm	mm
CRU-S3-03M-20	3	1/8	1.43	36.3	0.89	22.6	12.0
CRU-B1-03M-20							
CRU-S3-04M-20	4	1/8	1.44	36.6	0.93	23.6	12.0
CRU-B1-04M-20							
CRU-S3-04M-40	4	1/4	1.55	39.4	1.04	26.5	14.0
CRU-B1-04M-40							
CRU-S3-06M-20	6	1/8	1.51	38.4	0.97	24.6	14.0
CRU-B1-06M-20							
CRU-S3-06M-40	6	1/4	1.62	41.1	1.02	26.0	14.0
CRU-B1-06M-40							
CRU-S3-06M-50	6	5/16	1.66	42.2	1.07	27.2	17.0
CRU-B1-06M-50							
CRU-S3-08M-40	8	1/4	1.66	42.2	1.08	27.5	14.0
CRU-B1-08M-40							
CRU-S3-08M-60	8	3/8	1.73	43.9	1.15	29.1	17.0
CRU-B1-08M-60							
CRU-S3-10M-20	10	1/8	1.66	42.2	1.07	27.1	17.0
CRU-B1-10M-20							
CRU-S3-10M-40	10	1/4	1.73	43.9	1.12	28.5	17.0
CRU-B1-10M-40							
CRU-S3-10M-60	10	3/8	1.81	46.0	1.16	29.5	17.0
CRU-B1-10M-60							
CRU-S3-12M-60	12	3/8	1.91	48.5	1.24	31.5	21.0
CRU-B1-12M-60							
CRU-S3-12M-80	12	1/2	2.01	51.1	1.28	32.5	21.0
CRU-B1-12M-80							
CRU-S3-15M-80	15	1/2	2.05	52.1	1.28	32.5	24.0
CRU-B1-15M-80							
CRU-S3-16M-60	16	3/8	2.05	52.1	1.30	33.1	24.0
CRU-B1-16M-60							
CRU-S3-18M-120	18	3/4	2.11	53.6	1.34	34.0	27.0
CRU-B1-18M-120							

Includes Body, Nuts, and Ferrules.

Reducing Union



Tube to Tube

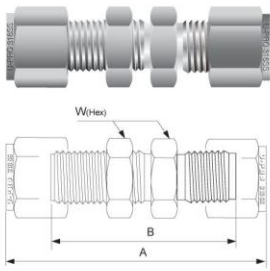
No.	Tube O.D.		A		B		W(Hex)
	T	Tx	in.	mm	in.	mm	in.
RU-S3-20-10	1/8	1/16	1.22	31.0	0.81	20.6	7/16
RU-B1-20-10							
RU-S3-30-10	3/16	1/16	1.27	32.3	0.86	21.8	7/16
RU-B1-30-10							
RU-S3-30-20	3/16	1/8	1.44	36.6	0.92	23.4	7/16
RU-B1-30-20							
RU-S3-40-10	1/4	1/16	1.35	34.3	0.91	23.1	1/2
RU-B1-40-10							
RU-S3-40-20	1/4	1/8	1.52	38.6	0.96	24.4	1/2
RU-B1-40-20							
RU-S3-40-30	1/4	3/16	1.55	39.4	1.00	25.4	1/2
RU-B1-40-30							
RU-S3-50-20	5/16	1/8	1.56	39.6	1.00	25.4	9/16
RU-B1-50-20							
RU-S3-50-40	5/16	1/4	1.66	42.2	1.08	27.4	9/16
RU-B1-50-40							
RU-S3-60-10	3/8	1/16	1.44	36.6	1.00	25.4	5/8
RU-B1-60-10							
RU-S3-60-20	3/8	1/8	1.61	40.9	1.06	26.9	5/8
RU-B1-60-20							
RU-S3-60-40	3/8	1/4	1.70	43.2	1.12	28.4	5/8
RU-B1-60-40							
RU-S3-60-50	3/8	5/16	1.74	44.2	1.16	29.5	5/8
RU-B1-60-50							
RU-S3-80-20	1/2	1/8	1.78	45.2	1.12	28.4	13/16
RU-B1-80-20							
RU-S3-80-40	1/2	1/4	1.85	47.0	1.16	29.5	13/16
RU-B1-80-40							
RU-S3-80-60	1/2	3/8	1.91	48.5	1.22	31.0	13/16
RU-B1-80-60							
RU-S3-100-60	5/8	3/8	1.94	49.3	1.25	31.8	15/16
RU-B1-100-60							
RU-S3-100-80	5/8	1/2	2.05	52.1	1.25	31.8	15/16
RU-B1-100-80							
RU-S3-120-40	3/4	1/4	1.94	49.3	1.25	31.8	1 1/16
RU-B1-120-40							
RU-S3-120-60	3/4	3/8	2.00	50.8	1.31	33.3	1 1/16
RU-B1-120-60							
RU-S3-120-80	3/4	1/2	2.11	53.6	1.31	33.3	1 1/16
RU-B1-120-80							
RU-S3-120-100	3/4	5/8	2.11	53.6	1.31	33.3	1 1/16
RU-B1-120-100							
RU-S3-160-80	1	1/2	2.39	60.7	1.51	38.4	1 3/8
RU-B1-160-80							
RU-S3-160-120	1	3/4	2.36	59.9	1.51	38.4	1 3/8
RU-B1-160-120							

Includes Body, Nuts, and Ferrules.

S3 : Stainless Steel B1 : Brass

Dimensions for reference only, subject to change.

Bulkhead Union

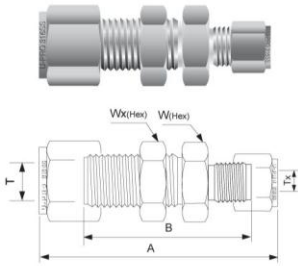


Tube to Tube

No.	Tube O.D.	A		B		W(Hex)		Bulkhead Hole Drill Size	Max. Bulkhead Thickness
		in.	mm	in.	mm	in.	in.		
BU-S3-10-10	$1/16$	1.23	31.2	0.93	23.6	$5/16$	$13/64$		0.12
BU-B1-10-10	$1/16$	1.23	31.2	0.93	23.6	$5/16$	$13/64$		0.12
BU-S3-20-20	$1/8$	2.02	51.3	1.50	38.1	$1/2$	$21/64$		0.50
BU-B1-20-20	$1/8$	2.02	51.3	1.50	38.1	$1/2$	$21/64$		0.50
BU-S3-30-30	$3/16$	2.11	53.6	1.59	40.4	$9/16$	$25/64$		0.50
BU-B1-30-30	$3/16$	2.11	53.6	1.59	40.4	$9/16$	$25/64$		0.50
BU-S3-40-40	$1/4$	2.27	57.7	1.69	42.9	$5/8$	$29/64$		0.40
BU-B1-40-40	$1/4$	2.27	57.7	1.69	42.9	$5/8$	$29/64$		0.40
BU-S3-50-50	$5/16$	2.39	60.7	1.81	46.0	$11/16$	$33/64$		0.44
BU-B1-50-50	$5/16$	2.39	60.7	1.81	46.0	$11/16$	$33/64$		0.44
BU-S3-60-60	$3/8$	2.45	62.2	1.87	47.5	$3/4$	$37/64$		0.44
BU-B1-60-60	$3/8$	2.45	62.2	1.87	47.5	$3/4$	$37/64$		0.44
BU-S3-80-80	$1/2$	2.80	71.1	2.00	50.8	$15/16$	$49/64$		0.50
BU-B1-80-80	$1/2$	2.80	71.1	2.00	50.8	$15/16$	$49/64$		0.50
BU-S3-100-100	$5/8$	2.86	72.6	2.06	52.3	$1 1/16$	$57/64$		0.50
BU-B1-100-100	$5/8$	2.86	72.6	2.06	52.3	$1 1/16$	$57/64$		0.50
BU-S3-120-120	$3/4$	3.12	79.2	2.32	58.9	$1 3/16$	$1 1/64$		0.66
BU-B1-120-120	$3/4$	3.12	79.2	2.32	58.9	$1 3/16$	$1 1/64$		0.66
BU-S3-160-160	1	3.77	95.8	2.81	71.4	$1 5/8$	$1 21/64$		0.75
BU-B1-160-160	1	3.77	95.8	2.81	71.4	$1 5/8$	$1 21/64$		0.75

Includes Body, Nuts, Locknut and Ferrules.

Bulkhead Reducing Union

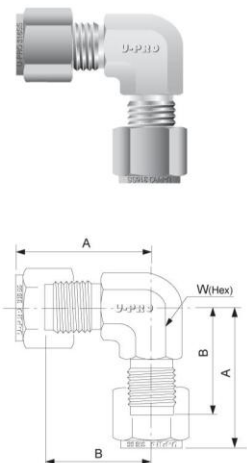


Tube to Reducing Tube

No.	Tube O.D.		A		B		W(Hex) Wx(Hex)		Bulkhead Hole Drill Size	Max. Bulkhead Thickness
	T	Tx	in.	mm	in.	mm	in.	in.		
BRU-S3-40-20	$1/4$	$1/8$	2.16	54.9	1.61	40.9	$5/8$	$5/8$	$29/64$	0.40
BRU-B1-40-20	$1/4$	$1/8$	2.16	54.9	1.61	40.9	$5/8$	$5/8$	$29/64$	0.40
BRU-S3-60-40	$3/8$	$1/4$	2.39	60.7	1.81	46.0	$3/4$	$3/4$	$37/64$	0.44
BRU-B1-60-40	$3/8$	$1/4$	2.39	60.7	1.81	46.0	$3/4$	$3/4$	$37/64$	0.44
BRU-S3-80-40	$1/2$	$1/4$	2.65	67.3	1.96	49.8	$15/16$	$15/16$	$49/64$	0.50
BRU-B1-80-40	$1/2$	$1/4$	2.65	67.3	1.96	49.8	$15/16$	$15/16$	$49/64$	0.50

Includes Body, Nuts, Locknut and Ferrules.

Union Elbow

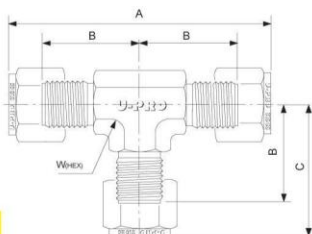


Tube to Tube

No.	Tube O.D.	A		B		W(Hex)
		in.	mm	in.	mm	
UE-S3-10-10	$1/16$	0.71	18.0	0.56	14.2	$3/8$
UE-B1-10-10	$1/16$	0.71	18.0	0.56	14.2	$3/8$
UE-S3-20-20	$1/8$	0.90	22.9	0.65	16.5	$3/8$
UE-B1-20-20	$1/8$	0.90	22.9	0.65	16.5	$3/8$
UE-S3-30-30	$3/16$	1.00	25.4	0.73	18.5	$1/2$
UE-B1-30-30	$3/16$	1.00	25.4	0.73	18.5	$1/2$
UE-S3-40-40	$1/4$	1.06	26.9	0.77	19.6	$1/2$
UE-B1-40-40	$1/4$	1.06	26.9	0.77	19.6	$1/2$
UE-S3-50-50	$5/16$	1.13	28.7	0.84	21.3	$9/16$
UE-B1-50-50	$5/16$	1.13	28.7	0.84	21.3	$9/16$
UE-S3-60-60	$3/8$	1.21	30.7	0.91	23.1	$5/8$
UE-B1-60-60	$3/8$	1.21	30.7	0.91	23.1	$5/8$
UE-S3-80-80	$1/2$	1.37	34.8	1.02	25.9	$13/16$
UE-B1-80-80	$1/2$	1.37	34.8	1.02	25.9	$13/16$
UE-S3-100-100	$5/8$	1.50	38.1	1.03	26.2	$15/16$
UE-B1-100-100	$5/8$	1.50	38.1	1.03	26.2	$15/16$
UE-S3-120-120	$3/4$	1.57	39.9	1.16	29.5	$1 1/16$
UE-B1-120-120	$3/4$	1.57	39.9	1.16	29.5	$1 1/16$
UE-S3-140-140	$7/8$	1.76	44.7	1.36	34.5	$1 3/8$
UE-B1-140-140	$7/8$	1.76	44.7	1.36	34.5	$1 3/8$
UE-S3-160-160	1	1.79	45.5	1.45	36.8	$1 3/8$
UE-B1-160-160	1	1.79	45.5	1.45	36.8	$1 3/8$

Includes Body, Nuts, and Ferrules.

Union Tees

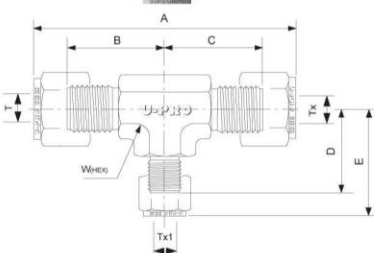


Tube to Tube

No.	Tube O.D.	A		B		C		W(Hex)
		in.	mm	in.	mm	in.	mm	
UT-S3-10	1/16	1.41	35.8	0.56	14.2	0.69	17.5	3/8
UT-B1-10								
UT-S3-20								
UT-B1-20	1/8	1.73	43.9	0.62	15.7	0.87	22.1	3/8
UT-S3-30								
UT-B1-30								
UT-S3-40	3/16	1.92	48.8	0.71	18.0	0.95	24.1	7/16
UT-B1-40								
UT-S3-50								
UT-B1-50	1/4	2.13	54.1	0.77	19.6	1.06	26.9	1/2
UT-S3-60								
UT-B1-60								
UT-S3-80	5/16	2.34	59.4	0.88	22.4	1.16	29.5	5/8
UT-B1-80								
UT-S3-100								
UT-B1-100	3/8	2.42	61.5	0.94	23.9	1.20	30.5	5/8
UT-S3-120								
UT-B1-120								
UT-S3-140	1/2	2.87	72.9	1.02	25.9	1.40	35.6	13/16
UT-B1-140								
UT-S3-160								
UT-B1-160	5/8	3.04	77.2	1.13	28.7	1.53	38.9	1
UT-S3-120								
UT-B1-120								
UT-S3-140	3/4	3.11	79.0	1.17	29.7	1.57	39.9	1 1/16
UT-B1-140								
UT-S3-160								
UT-B1-160	7/8	3.52	89.4	1.37	34.8	1.73	43.9	1 3/8
UT-S3-160								
UT-B1-160								
UT-S3-160	1	3.85	97.8	1.45	36.8	1.99	50.5	1 3/8
UT-B1-160								
UT-S3-160								

Includes Body, Nuts, and Ferrules.

Reducing Union Tee

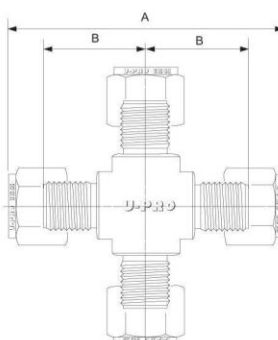


Tube to Tube

No.	Tube O.D.			A		B		C		D		E		W(Hex)
	T	Tx	Tx1	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	
RUT-S3-60-40-60	3/8	1/4	3/8	2.36	59.9	0.91	23.1	0.85	21.6	0.91	23.1	1.12	28.4	5/8
RUT-B1-60-40-60														
RUT-S3-60-60-40	3/8	3/8	1/4	2.41	61.2	0.91	23.1	0.91	23.1	0.85	21.6	1.12	28.4	5/8
RUT-B1-60-60-40														
RUT-S3-80-60-60	1/2	3/8	3/8	2.75	69.9	1.03	26.2	1.03	26.2	1.03	26.2	1.33	33.8	5/8
RUT-B1-80-60-60														
RUT-S3-80-80-40	1/2	1/2	1/4	2.88	73.2	1.03	26.2	1.03	26.2	0.96	24.4	1.33	33.8	7/8
RUT-B1-80-80-40														
RUT-S3-80-80-60	1/2	1/2	3/8	2.88	73.2	1.03	26.2	1.03	26.2	1.03	26.2	1.33	33.8	7/8
RUT-B1-80-80-60														
RUT-S3-100-60-100	5/8	3/8	5/8	3.06	77.7	1.13	28.7	1.13	28.7	1.13	28.7	1.40	35.6	1
RUT-B1-100-60-100														
RUT-S3-100-80-60	5/8	1/2	3/8	3.06	77.7	1.13	28.7	1.13	28.7	1.13	28.7	1.40	35.6	1
RUT-B1-100-80-60														
RUT-S3-100-100-60	5/8	5/8	3/8	3.06	77.7	1.13	28.7	1.13	28.7	1.40	35.6	1.40	35.6	1
RUT-B1-100-100-60														
RUT-S3-120-60-120	3/4	3/8	3/4	3.14	79.8	1.17	29.7	1.17	29.7	1.17	29.7	1.46	37.1	1 1/16
RUT-B1-120-60-120														
RUT-S3-120-80-60	3/4	1/2	3/8	3.14	79.8	1.17	29.7	1.17	29.7	1.17	29.7	1.47	37.3	1 1/16
RUT-B1-120-80-60														
RUT-S3-120-80-120	3/4	1/2	3/4	3.14	79.8	1.17	29.7	1.17	29.7	1.17	29.7	1.57	39.9	1 1/16
RUT-B1-120-80-120														
RUT-S3-120-120-60	3/4	3/4	3/8	3.03	77.0	1.17	29.7	1.17	29.7	1.17	29.7	1.47	37.3	1 1/16
RUT-B1-120-120-60														
RUT-S3-160-60-160	1	3/8	1	3.85	97.8	1.45	36.8	1.45	36.8	1.36	34.5	1.66	42.2	1 3/8
RUT-B1-160-60-160														

Includes Body, Nuts, and Ferrules.

Union Cross



No.	Tube O.D.	A		B	
		in.	mm	in.	mm
UC-S3-20	1/8	1.78	45.2	0.64	16.3
UC-B1-20					
UC-S3-40					
UC-B1-40	1/4	2.15	54.6	0.80	20.3
UC-S3-50					
UC-B1-50					
UC-S3-60	5/16	2.33	59.2	0.87	22.1
UC-B1-60					
UC-S3-80					
UC-B1-80	3/8	2.40	61.0	0.91	23.1
UC-S3-100					
UC-B1-100					
UC-S3-120	1/2	2.85	72.4	1.04	26.4
UC-B1-120					
UC-S3-140					
UC-B1-140	3/4	3.15	80.0	1.18	30.0
UC-S3-160					
UC-B1-160					
UC-S3-160	1	3.86	98.0	2.89	73.4
UC-B1-160					
UC-S3-160					

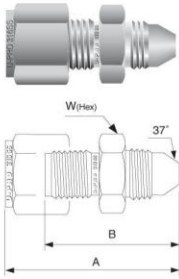
Includes Body, Nuts, and Ferrules.

Tube to Tube

S3 : Stainless Steel B1 : Brass
Dimensions for reference only, subject to change.

37° FLARE (AN)

37° Flare Union (AN)

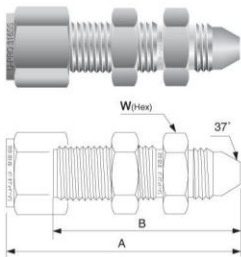


Tube to Flared Tube

No.	Tube O.D.	37° Flare	A		B		W(Hex)
			in.	mm	in.	mm	in.
ANU-S3-10-20	1/16	1/8	1.10	27.9	0.95	24.1	7/16
ANU-B1-10-20							
ANU-S3-20-20	1/8	1/8	1.27	32.3	1.01	25.7	7/16
ANU-B1-20-20							
ANU-S3-20-40	1/8	1/4	1.38	35.1	1.12	28.4	1/2
ANU-B1-20-40							
ANU-S3-40-40	1/4	1/4	1.48	37.6	1.19	30.2	1/2
ANU-B1-40-40							
ANU-S3-50-50	5/16	5/16	1.51	38.4	1.22	31.0	9/16
ANU-B1-50-50							
ANU-S3-60-40	3/8	1/4	1.60	40.6	1.31	33.3	5/8
ANU-B1-60-40							
ANU-S3-60-60	3/8	3/8	1.60	40.6	1.31	33.3	5/8
ANU-B1-60-60							
ANU-S3-80-80	1/2	1/2	1.81	46.0	1.41	35.8	13/16
ANU-B1-80-80							
ANU-S3-120-120	3/4	3/4	2.10	53.3	1.70	43.2	1 1/8
ANU-B1-120-120							
ANU-S3-160-160	1	1	2.45	62.2	1.97	50.0	1 3/8
ANU-B1-160-160							

Includes Body, Nut and Ferrules.

37° Flare Bulkhead Union



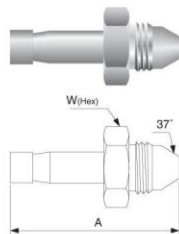
Tube to Flared Tube

No.	Tube O.D.	37° Flare Size	A		B		W(Hex)	Bulkhead Hole Drill Size	Max. Bulkhead Thickness
			in.	mm	in.	mm	in.	in.	in.
ANBU-S3-40-40	1/4	1/4	2.15	54.6	1.83	46.5	5/8	29/64	13/32
ANBU-B1-40-40									
ANBU-S3-60-60	3/8	3/8	2.25	57.2	1.96	49.8	3/4	37/64	7/16
ANBU-B1-60-60									
ANBU-S3-80-80	1/2	1/2	2.60	66.0	2.19	55.6	15/16	49/64	1/2
ANBU-B1-80-80									
ANBU-S3-120-120	3/4	3/4	3.12	79.2	2.70	68.6	1 3/16	1 1/64	21/32
ANBU-B1-120-120									
ANBU-S3-160-160	1	1	3.67	93.2	3.17	80.5	1 5/8	1 21/64	3/4
ANBU-B1-160-160									

Includes Body, Nut, Locknut, and Ferrules.

Tube to 37°
Flare(AN)

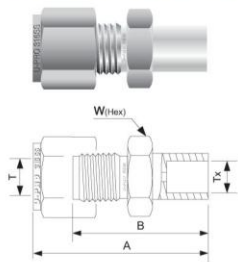
AN Adapter



Port to Flared Tube

No.	Tube O.D.	37° Flare Size	A		W(Hex)
			in.	mm	in.
ANA-S3-40-40	1/4	1/4	1.46	37.1	1/2
ANA-B1-40-40					
ANA-S3-60-40	3/8	1/4	1.52	38.6	1/2
ANA-B1-60-40					
ANA-S3-60-60	3/8	3/8	1.56	39.6	5/8
ANA-B1-60-60					
ANA-S3-80-80	1/2	1/2	1.90	48.3	13/16
ANA-B1-80-80					
ANA-S3-120-120	3/4	3/4	2.20	55.9	1 1/8
ANA-B1-120-120					
ANA-S3-160-160	1	1	2.60	66.0	1 3/8
ANA-B1-160-160					

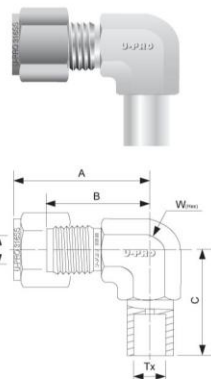
S3 : Stainless Steel B1 : Brass
 Dimensions for reference only, subject to change.

WELD SYSTEM
Socket Weld Union


Tube to Tube

No.	Tube O.D.		A		B		W(Hex)
	T	Tx	in.	mm	in.	mm	in.
SWU-S3-20-20	1/8	1/8	1.15	29.2	0.89	22.6	7/10
SWU-B1-20-20	1/8	1/8	1.15	29.2	0.89	22.6	7/10
SWU-S3-40-40	1/4	1/4	1.32	33.5	1.03	26.2	9/16
SWU-B1-40-40	1/4	1/4	1.32	33.5	1.03	26.2	9/16
SWU-S3-60-60	3/8	3/8	1.48	37.6	1.19	30.2	11/16
SWU-B1-60-60	3/8	3/8	1.48	37.6	1.19	30.2	11/16
SWU-S3-80-80	1/2	1/2	1.62	41.1	1.22	31.0	7/8
SWU-B1-80-80	1/2	1/2	1.62	41.1	1.22	31.0	7/8
SWU-S3-120-120	3/4	3/4	1.71	43.4	1.31	33.3	1 1/16
SWU-B1-120-120	3/4	3/4	1.71	43.4	1.31	33.3	1 1/16
SWU-S3-160-160	1	1	2.10	53.3	1.62	41.1	1 3/8
SWU-B1-160-160	1	1	2.10	53.3	1.62	41.1	1 3/8

Includes Body, Nut and Ferrules.

Socket Weld Elbow


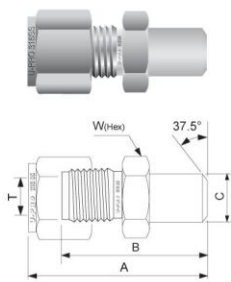
Tube to Tube

No.	Tube O.D.		A		B		C		W(Hex)
	T	Tx	in.	mm	in.	mm	in.	mm	in.
SWUE-S3-40-40	1/4	1/4	1.05	26.7	0.76	19.3	0.76	19.3	1/2
SWUE-B1-40-40	1/4	1/4	1.05	26.7	0.76	19.3	0.76	19.3	1/2
SWUE-S3-60-60	3/8	3/8	1.22	31.0	0.93	23.6	0.93	23.6	5/8
SWUE-B1-60-60	3/8	3/8	1.22	31.0	0.93	23.6	0.93	23.6	5/8
SWUE-S3-80-80	1/2	1/2	1.40	35.6	1.00	25.4	1.00	25.4	13/16
SWUE-B1-80-80	1/2	1/2	1.40	35.6	1.00	25.4	1.00	25.4	13/16
SWUE-S3-120-120	3/4	3/4	1.57	39.9	1.18	30.0	1.18	30.0	1 1/16
SWUE-B1-120-120	3/4	3/4	1.57	39.9	1.18	30.0	1.18	30.0	1 1/16
SWUE-S3-160-160	1	1	1.90	48.3	1.42	36.1	1.42	36.1	1 3/8
SWUE-B1-160-160	1	1	1.90	48.3	1.42	36.1	1.42	36.1	1 3/8

Includes Body, Nut and Ferrules.

S3 : Stainless Steel B1 : Brass
 Dimensions for reference only, subject to change.

Butt-Weld Connector

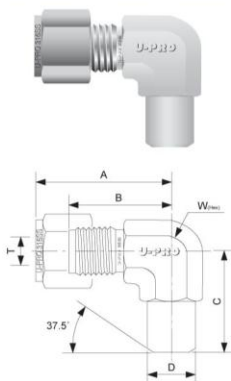


Tube to Pipe Butt-Weld

No.	Tube O.D. T	Pipe Thread Weld	A		B		C		W(Hex) in.
			in.	mm	in.	mm	in.	mm	
BWC-S3-20-20	1/8	1/8	1.20	30.5	0.92	23.4	0.41	10.3	7/16
BWC-B1-20-20	1/8	1/8	1.20	30.5	0.92	23.4	0.41	10.3	7/16
BWC-S3-30-20	3/16	1/8	1.23	31.2	0.97	24.6	0.41	10.3	7/16
BWC-B1-30-20	3/16	1/8	1.23	31.2	0.97	24.6	0.41	10.3	7/16
BWC-S3-40-20	1/4	1/8	1.30	33.0	1.00	25.4	0.41	10.3	1/2
BWC-B1-40-20	1/4	1/8	1.30	33.0	1.00	25.4	0.41	10.3	1/2
BWC-S3-40-40	1/4	1/4	1.49	37.8	1.20	30.5	0.54	13.7	1/4
BWC-B1-40-40	1/4	1/4	1.49	37.8	1.20	30.5	0.54	13.7	1/4
BWC-S3-50-20	5/16	1/8	1.34	34.0	1.04	26.4	0.41	10.4	9/16
BWC-B1-50-20	5/16	1/8	1.34	34.0	1.04	26.4	0.41	10.4	9/16
BWC-S3-50-40	5/16	1/4	1.52	38.6	1.23	31.2	0.54	13.7	9/16
BWC-B1-50-40	5/16	1/4	1.52	38.6	1.23	31.2	0.54	13.7	9/16
BWC-S3-60-40	3/8	1/4	1.57	39.9	1.28	32.5	0.54	13.7	5/8
BWC-B1-60-40	3/8	1/4	1.57	39.9	1.28	32.5	0.54	13.7	5/8
BWC-S3-60-60	3/8	3/8	1.57	39.9	1.28	32.5	0.68	17.3	11/16
BWC-B1-60-60	3/8	3/8	1.57	39.9	1.28	32.5	0.68	17.3	11/16
BWC-S3-60-80	3/8	1/2	1.82	46.2	1.53	38.9	0.84	21.3	7/8
BWC-B1-60-80	3/8	1/2	1.82	46.2	1.53	38.9	0.84	21.3	7/8
BWC-S3-60-120	3/8	3/4	1.88	47.8	1.59	40.4	1.05	26.7	1 1/16
BWC-B1-60-120	3/8	3/4	1.88	47.8	1.59	40.4	1.05	26.7	1 1/16
BWC-S3-80-60	1/2	3/8	1.71	43.4	1.31	33.3	0.68	17.3	13/16
BWC-B1-80-60	1/2	3/8	1.71	43.4	1.31	33.3	0.68	17.3	13/16
BWC-S3-80-80	1/2	1/2	1.93	49.0	1.53	38.9	0.84	21.3	7/8
BWC-B1-80-80	1/2	1/2	1.93	49.0	1.53	38.9	0.84	21.3	7/8
BWC-S3-80-120	1/2	3/4	1.99	50.5	1.59	40.4	1.05	26.7	1 1/16
BWC-B1-80-120	1/2	3/4	1.99	50.5	1.59	40.4	1.05	26.7	1 1/16
BWC-S3-100-80	5/8	1/2	1.93	49.0	1.53	38.9	0.85	21.6	15/16
BWC-B1-100-80	5/8	1/2	1.93	49.0	1.53	38.9	0.85	21.6	15/16
BWC-S3-120-80	3/4	1/2	1.99	50.5	1.59	40.4	1.01	25.7	1 1/16
BWC-B1-120-80	3/4	1/2	1.99	50.5	1.59	40.4	1.01	25.7	1 1/16
BWC-S3-160-160	1	1	2.45	62.2	1.97	50.0	1.32	33.5	1 3/8
BWC-B1-160-160	1	1	2.45	62.2	1.97	50.0	1.32	33.5	1 3/8

Includes Body, Nut and Ferrules.

Butt-Weld Elbow



Tube to Pipe Butt-Weld

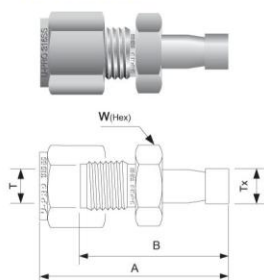
No.	Tube O.D. T	Butt-Weld Pipe Size	A		B		C		D		W(Hex) in.
			in.	mm	in.	mm	in.	mm	in.	mm	
BWE-S3-40-20	1/4	1/8	1.07	27.2	0.78	19.8	0.74	18.8	0.41	10.4	1/2
BWE-B1-40-20	1/4	1/8	1.07	27.2	0.78	19.8	0.74	18.8	0.41	10.4	1/2
BWE-S3-40-40	1/4	1/4	1.07	27.2	0.78	19.8	0.92	23.4	0.41	10.4	1/2
BWE-B1-40-40	1/4	1/4	1.07	27.2	0.78	19.8	0.92	23.4	0.41	10.4	1/2
BWE-S3-60-40	3/8	1/4	1.20	30.5	0.91	23.1	1.01	25.7	0.54	13.7	5/8
BWE-B1-60-40	3/8	1/4	1.20	30.5	0.91	23.1	1.01	25.7	0.54	13.7	5/8
BWE-S3-80-80	1/2	1/2	1.44	36.6	1.04	26.4	1.29	32.8	0.84	21.3	13/16
BWE-B1-80-80	1/2	1/2	1.44	36.6	1.04	26.4	1.29	32.8	0.84	21.3	13/16
BWE-S3-120-120	3/4	3/4	1.54	39.1	1.14	29.0	1.45	36.8	1.45	36.8	1 1/16
BWE-B1-120-120	3/4	3/4	1.54	39.1	1.14	29.0	1.45	36.8	1.45	36.8	1 1/16

Includes Body, Nut and Ferrules.

Tube to
Welded System

PORT CONNECTORS

Reducer



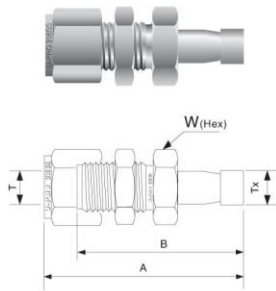
Tube to Port

No.	Tube O.D.		A		B		W(Hex) in.
	T	Tx	in.	mm	in.	mm	
RD-S3-10-20	1/16	1/8	1.15	29.2	0.99	25.1	5/16
RD-B1-10-20	1/16	1/8	1.15	29.2	0.99	25.1	5/16
RD-S3-10-40	1/16	1/4	1.25	31.8	1.09	27.7	5/16
RD-B1-10-40	1/16	1/4	1.25	31.8	1.09	27.7	5/16
RD-S3-20-10	1/8	1/16	1.14	29.0	0.87	22.1	7/16
RD-B1-20-10	1/8	1/16	1.14	29.0	0.87	22.1	7/16
RD-S3-20-20	1/8	1/8	1.32	33.5	1.05	26.7	7/16
RD-B1-20-20	1/8	1/8	1.32	33.5	1.05	26.7	7/16
RD-S3-20-30	1/8	3/16	1.35	34.3	1.08	27.4	7/16
RD-B1-20-30	1/8	3/16	1.35	34.3	1.08	27.4	7/16
RD-S3-20-40	1/8	1/4	1.40	35.6	1.16	29.5	7/16
RD-B1-20-40	1/8	1/4	1.40	35.6	1.16	29.5	7/16
RD-S3-20-60	1/8	3/8	1.48	37.6	1.21	30.7	7/16
RD-B1-20-60	1/8	3/8	1.48	37.6	1.21	30.7	7/16
RD-S3-20-80	1/8	1/2	1.74	44.2	1.48	37.6	9/16
RD-B1-20-80	1/8	1/2	1.74	44.2	1.48	37.6	9/16
RD-S3-30-20	3/16	1/8	1.37	34.8	1.11	28.2	7/16
RD-B1-30-20	3/16	1/8	1.37	34.8	1.11	28.2	7/16
RD-S3-30-40	3/16	1/4	1.46	37.1	1.20	30.5	7/16
RD-B1-30-40	3/16	1/4	1.46	37.1	1.20	30.5	7/16
RD-S3-40-20	1/4	1/8	1.46	37.1	1.16	29.5	1/2
RD-B1-40-20	1/4	1/8	1.46	37.1	1.16	29.5	1/2
RD-S3-40-30	1/4	3/16	1.48	37.6	1.20	30.5	1/2
RD-B1-40-30	1/4	3/16	1.48	37.6	1.20	30.5	1/2
RD-S3-40-40	1/4	1/4	1.54	39.1	1.24	31.5	1/2
RD-B1-40-40	1/4	1/4	1.54	39.1	1.24	31.5	1/2
RD-S3-40-50	1/4	5/16	1.57	39.9	1.28	32.5	1/2
RD-B1-40-50	1/4	5/16	1.57	39.9	1.28	32.5	1/2
RD-S3-40-60	1/4	3/8	1.61	40.9	1.31	33.3	1/2
RD-B1-40-60	1/4	3/8	1.61	40.9	1.31	33.3	1/2
RD-S3-40-80	1/4	1/2	1.81	46.0	1.53	38.9	9/8
RD-B1-40-80	1/4	1/2	1.81	46.0	1.53	38.9	9/8
RD-S3-40-100	1/4	5/8	1.90	48.3	1.60	40.6	11/16
RD-B1-40-100	1/4	5/8	1.90	48.3	1.60	40.6	11/16
RD-S3-40-120	1/4	3/4	1.88	47.8	1.59	40.4	13/16
RD-B1-40-120	1/4	3/4	1.88	47.8	1.59	40.4	13/16
RD-S3-50-60	5/16	3/8	1.65	41.9	1.36	34.5	9/16
RD-B1-50-60	5/16	3/8	1.65	41.9	1.36	34.5	9/16
RD-S3-50-80	5/16	1/2	1.88	47.8	1.58	40.1	9/16
RD-B1-50-80	5/16	1/2	1.88	47.8	1.58	40.1	9/16
RD-S3-60-40	3/8	1/4	1.63	41.4	1.34	34.0	5/8
RD-B1-60-40	3/8	1/4	1.63	41.4	1.34	34.0	5/8
RD-S3-60-60	3/8	3/8	1.70	43.2	1.41	35.8	5/8
RD-B1-60-60	3/8	3/8	1.70	43.2	1.41	35.8	5/8
RD-S3-60-80	3/8	1/2	1.91	48.5	1.62	41.1	5/8
RD-B1-60-80	3/8	1/2	1.91	48.5	1.62	41.1	5/8
RD-S3-60-100	3/8	5/8	1.98	50.3	1.69	42.9	11/16
RD-B1-60-100	3/8	5/8	1.98	50.3	1.69	42.9	11/16
RD-S3-60-120	3/8	3/4	1.98	50.3	1.69	42.9	13/16
RD-B1-60-120	3/8	3/4	1.98	50.3	1.69	42.9	13/16
RD-S3-80-40	1/2	1/4	1.77	45.0	1.37	34.8	13/16
RD-B1-80-40	1/2	1/4	1.77	45.0	1.37	34.8	13/16
RD-S3-80-60	1/2	3/8	1.84	46.7	1.44	36.6	13/16
RD-B1-80-60	1/2	3/8	1.84	46.7	1.44	36.6	13/16
RD-S3-80-80	1/2	1/2	2.06	52.3	1.66	42.2	13/16
RD-B1-80-80	1/2	1/2	2.06	52.3	1.66	42.2	13/16
RD-S3-80-100	1/2	5/8	2.12	53.8	1.72	43.7	13/16
RD-B1-80-100	1/2	5/8	2.12	53.8	1.72	43.7	13/16
RD-S3-80-120	1/2	3/4	2.37	60.2	1.72	43.7	13/16
RD-B1-80-120	1/2	3/4	2.37	60.2	1.72	43.7	13/16
RD-S3-80-160	1/2	1	2.15	54.6	1.98	50.3	1 1/16
RD-B1-80-160	1/2	1	2.15	54.6	1.98	50.3	1 1/16
RD-S3-100-120	5/8	3/4	2.21	56.1	1.75	44.5	15/16
RD-B1-100-120	5/8	3/4	2.21	56.1	1.75	44.5	15/16
RD-S3-100-140	5/8	7/8	2.40	61.0	1.81	46.0	15/16
RD-B1-100-140	5/8	7/8	2.40	61.0	1.81	46.0	15/16
RD-S3-100-160	5/8	1	2.15	54.6	2.01	51.1	1 1/16
RD-B1-100-160	5/8	1	2.15	54.6	2.01	51.1	1 1/16
RD-S3-120-80	3/4	1/2	2.15	54.6	1.75	44.5	1 1/16
RD-B1-120-80	3/4	1/2	2.15	54.6	1.75	44.5	1 1/16
RD-S3-120-160	3/4	1	2.46	62.5	2.06	52.3	1 1/16
RD-B1-120-160	3/4	1	2.46	62.5	2.06	52.3	1 1/16
RD-S3-160-80	1	1/2	2.37	60.2	1.98	50.3	1 1/16
RD-B1-160-80	1	1/2	2.37	60.2	1.98	50.3	1 1/16
RD-S3-160-120	1	3/4	2.47	62.7	2.07	52.6	1 1/16
RD-B1-160-120	1	3/4	2.47	62.7	2.07	52.6	1 1/16

Includes Body, Nuts and Ferrules.

S3 : Stainless Steel B1 : Brass
 Dimensions for reference only, subject to change.

Bulkhead Reducer



Tube to Port

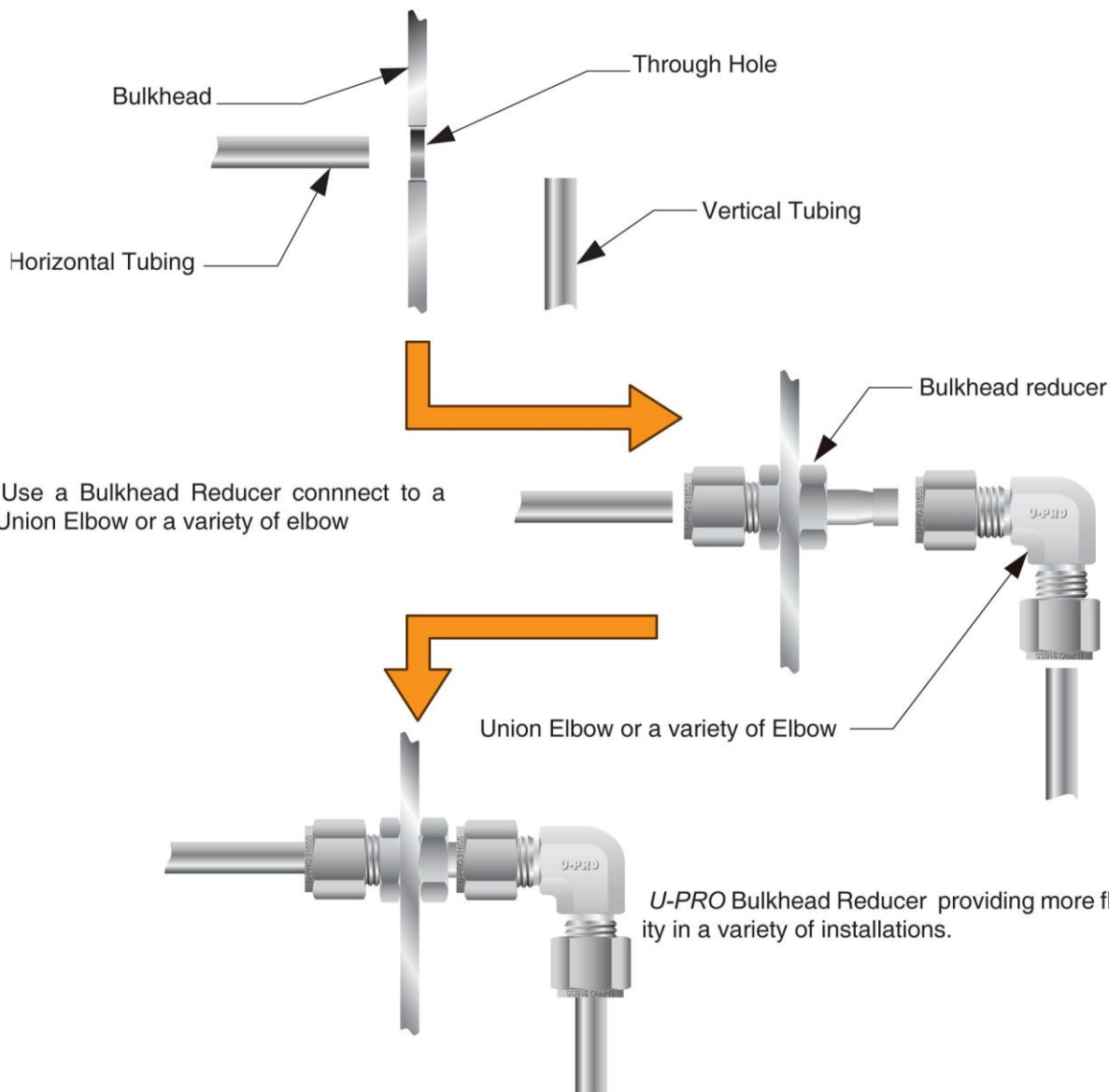
No.	Tube O.D.		A		B		W(Hex)	Bulkhead Hole Drill Size	Max. Bulkhead Thickness
	T	Tx	in.	mm	in.	mm	in.	in.	in.
BRD-S3-20-20	1/8	1/8	1.95	49.5	1.69	42.9	1/2	21/64	1/2
BRD-B1-20-20	1/8	1/8	1.95	49.5	1.69	42.9	1/2	21/64	1/2
BRD-S3-40-40	1/4	1/4	2.21	56.1	1.92	48.8	5/8	29/64	13/32
BRD-B1-40-40	1/4	1/4	2.21	56.1	1.92	48.8	5/8	29/64	13/32
BRD-S3-60-60	3/8	3/8	2.41	61.2	2.12	53.8	3/4	37/64	7/16
BRD-B1-60-60	3/8	3/8	2.41	61.2	2.12	53.8	3/4	37/64	7/16
BRD-S3-80-80	1/2	1/2	2.87	72.9	2.47	62.7	15/16	49/64	1/2
BRD-B1-80-80	1/2	1/2	2.87	72.9	2.47	62.7	15/16	49/64	1/2
BRD-S3-100-100	5/8	5/8	2.97	75.4	2.57	65.3	1 1/16	57/64	1/2
BRD-B1-100-100	5/8	5/8	2.97	75.4	2.57	65.3	1 1/16	57/64	1/2
BRD-S3-160-160	1	1	3.93	99.8	3.45	87.6	1 5/8	1 21/64	3/4
BRD-B1-160-160	1	1	3.93	99.8	3.45	87.6	1 5/8	1 21/64	3/4

Includes Body, Nut, Locknut and Ferrules.

S3 : Stainless Steel B1 : Brass
Dimensions for reference only, subject to change.

Bulkhead Reducer Assemble with U-PRO Fittings

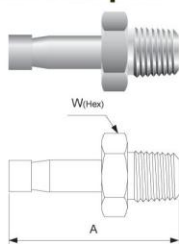
Require the installation of the horizontal tubing through the bulkhead and the vertical tube connect



Use a Bulkhead Reducer connect to a Union Elbow or a variety of elbow

U-PRO Bulkhead Reducer providing more flexibility in a variety of installations.

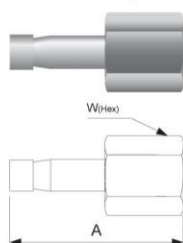
Male Adapter



Port to Male NPT(P.T.)

No.	Tube O.D.	Pipe Thread	A		W(Hex)
			in.	mm	in.
MA-S3-20-20	1/8	1/8	1.16	29.5	7/16
MA-B1-20-20	1/8	1/8	1.16	29.5	7/16
MA-S3-20-40	1/8	1/4	1.37	34.8	9/16
MA-B1-20-40	1/8	1/4	1.37	34.8	9/16
MA-S3-30-20	3/16	1/8	1.19	30.2	7/16
MA-B1-30-20	3/16	1/8	1.19	30.2	7/16
MA-S3-30-40	3/16	1/4	1.40	35.6	9/16
MA-B1-30-40	3/16	1/4	1.40	35.6	9/16
MA-S3-40-20	1/4	1/8	1.25	31.8	1/2
MA-B1-40-20	1/4	1/8	1.25	31.8	1/2
MA-S3-40-40	1/4	1/4	1.47	37.3	9/16
MA-B1-40-40	1/4	1/4	1.47	37.3	9/16
MA-S3-40-60	1/4	3/8	1.50	38.1	11/16
MA-B1-40-60	1/4	3/8	1.50	38.1	11/16
MA-S3-40-80	1/4	1/2	1.72	43.7	7/8
MA-B1-40-80	1/4	1/2	1.72	43.7	7/8
MA-S3-50-20	5/16	1/8	1.30	33.0	9/16
MA-B1-50-20	5/16	1/8	1.30	33.0	9/16
MA-S3-50-40	5/16	1/4	1.50	38.1	9/16
MA-B1-50-40	5/16	1/4	1.50	38.1	9/16
MA-S3-60-20	3/8	1/8	1.32	33.5	5/8
MA-B1-60-20	3/8	1/8	1.32	33.5	5/8
MA-S3-60-40	3/8	1/4	1.53	38.9	5/8
MA-B1-60-40	3/8	1/4	1.53	38.9	5/8
MA-S3-60-60	3/8	3/8	1.56	39.6	11/16
MA-B1-60-60	3/8	3/8	1.56	39.6	11/16
MA-S3-60-80	3/8	1/2	1.78	45.2	7/8
MA-B1-60-80	3/8	1/2	1.78	45.2	7/8
MA-S3-80-40	1/2	1/4	1.75	44.5	13/16
MA-B1-80-40	1/2	1/4	1.75	44.5	13/16
MA-S3-80-60	1/2	3/8	1.78	45.2	13/16
MA-B1-80-60	1/2	3/8	1.78	45.2	13/16
MA-S3-80-80	1/2	1/2	2.01	51.1	7/8
MA-B1-80-80	1/2	1/2	2.01	51.1	7/8
MA-S3-120-80	3/4	1/2	2.06	52.3	1 1/16
MA-B1-120-80	3/4	1/2	2.06	52.3	1 1/16
MA-S3-120-120	3/4	3/4	2.06	52.3	1 1/16
MA-B1-120-120	3/4	3/4	2.06	52.3	1 1/16
MA-S3-160-120	1	3/4	2.31	58.7	1 3/8
MA-B1-160-120	1	3/4	2.31	58.7	1 3/8
MA-S3-160-160	1	1	2.60	66.0	1 3/8
MA-B1-160-160	1	1	2.60	66.0	1 3/8

Female Adapter

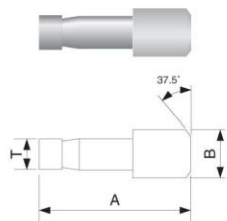


Port to Female NPT(P.T.)

No.	Tube O.D.	Pipe Thread	A		W(Hex)
			in.	mm	in.
FA-S3-20-20	1/8	1/8	1.24	31.5	9/16
FA-B1-20-20	1/8	1/8	1.24	31.5	9/16
FA-S3-20-40	1/8	1/4	1.40	35.6	3/4
FA-B1-20-40	1/8	1/4	1.40	35.6	3/4
FA-S3-40-20	1/4	1/8	1.30	33.0	9/16
FA-B1-40-20	1/4	1/8	1.30	33.0	9/16
FA-S3-40-40	1/4	1/4	1.47	37.3	3/4
FA-B1-40-40	1/4	1/4	1.47	37.3	3/4
FA-S3-40-60	1/4	3/8	1.50	38.1	7/8
FA-B1-40-60	1/4	3/8	1.50	38.1	7/8
FA-S3-40-80	1/4	1/2	1.78	45.2	1 1/16
FA-B1-40-80	1/4	1/2	1.78	45.2	1 1/16
FA-S3-60-20	3/8	1/8	1.35	34.3	9/16
FA-B1-60-20	3/8	1/8	1.35	34.3	9/16
FA-S3-60-40	3/8	1/4	1.50	38.1	3/4
FA-B1-60-40	3/8	1/4	1.50	38.1	3/4
FA-S3-60-60	3/8	3/8	1.59	40.4	7/8
FA-B1-60-60	3/8	3/8	1.59	40.4	7/8
FA-S3-60-80	3/8	1/2	1.84	46.7	1 1/16
FA-B1-60-80	3/8	1/2	1.84	46.7	1 1/16
FA-S3-80-40	1/2	1/4	1.71	43.4	3/4
FA-B1-80-40	1/2	1/4	1.71	43.4	3/4
FA-S3-80-60	1/2	3/8	1.78	45.2	7/8
FA-B1-80-60	1/2	3/8	1.78	45.2	7/8
FA-S3-80-80	1/2	1/2	2.04	51.8	1 1/16
FA-B1-80-80	1/2	1/2	2.04	51.8	1 1/16
FA-S3-120-80	3/4	1/2	2.08	52.8	1 1/16
FA-B1-120-80	3/4	1/2	2.08	52.8	1 1/16
FA-S3-120-120	3/4	3/4	2.16	54.9	1 5/16
FA-B1-120-120	3/4	3/4	2.16	54.9	1 5/16
FA-S3-120-160	3/4	1	2.31	58.7	1 5/8
FA-B1-120-160	3/4	1	2.31	58.7	1 5/8
FA-S3-160-120	1	3/4	2.39	60.7	1 5/16
FA-B1-160-120	1	3/4	2.39	60.7	1 5/16
FA-S3-160-160	1	1	2.53	64.3	1 5/8
FA-B1-160-160	1	1	2.53	64.3	1 5/8

S3 : Stainless Steel B1 : Brass
 Dimensions for reference only, subject to change.

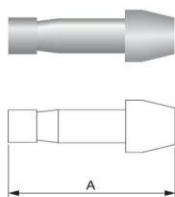
Butt-Weld Adapter



Port to Pipe Butt-Weld

No.	Tube O.D.	Male pipe weld	A		B	
			in.	mm	in.	mm
BWA-S3-40-40	1/4	1/4	1.14	29.0	0.54	13.7
BWA-B1-40-40						
BWA-S3-60-80	3/8	1/2	1.46	37.1	0.84	21.3
BWA-B1-60-80						
BWA-S3-80-80	1/2	1/2	1.66	42.2	0.84	21.3
BWA-B1-80-80						
BWA-S3-80-120	1/2	3/4	1.68	42.7	1.05	26.7
BWA-B1-80-120						
BWA-S3-120-120	3/4	3/4	2.20	55.9	1.05	26.7
BWA-B1-120-120						

Port Connector



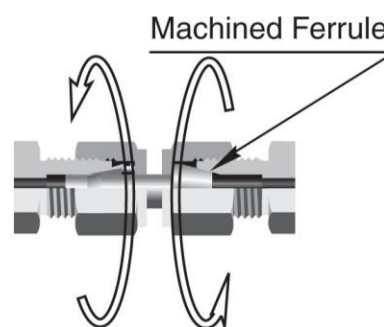
Port to Port

No.	Tube O.D.	A	
		in.	mm
PC-S3-10-10	1/16	0.54	13.7
PC-B1-10-10			
PC-S3-20-20	1/8	0.88	22.4
PC-B1-20-20			
PC-S3-40-40	1/4	0.97	24.6
PC-B1-40-40			
PC-S3-50-50	5/16	1.02	25.9
PC-B1-50-50			
PC-S3-60-60	3/8	1.03	26.2
PC-B1-60-60			
PC-S3-80-80	1/2	1.41	35.8
PC-B1-80-80			
PC-S3-120-120	3/4	1.47	37.3
PC-B1-120-120			
PC-S3-160-160	1	1.88	47.8
PC-B1-160-160			

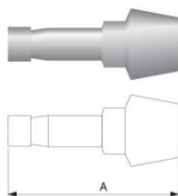
Port Assemble Instructions

For Closed-Connect two Ports

Tighten nut finger tight. Then tighten nut with wrench an additional 1-1/4 turns indicated below.



Reducing Port Connector

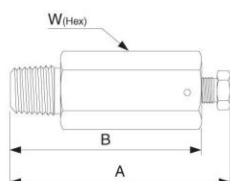


Port to Port

No.	Tube O.D.	Reduced Tube O.D.	A	
			in.	mm
RPC-S3-20-10	1/8	1/16	0.68	17.3
RPC-B1-20-10				
RPC-S3-40-10	1/4	1/16	0.71	18.0
RPC-B1-40-10				
RPC-S3-40-20	1/4	1/8	0.89	22.6
RPC-B1-40-20				
RPC-S3-60-20	3/8	1/8	0.91	23.1
RPC-B1-60-20				
RPC-S3-60-40	3/8	1/4	0.98	24.9
RPC-B1-60-40				
RPC-S3-80-40	1/2	1/4	1.15	29.2
RPC-B1-80-40				
RPC-S3-80-60	1/2	3/8	1.21	30.7
RPC-B1-80-60				
RPC-S3-120-80	3/4	1/2	1.51	38.4
RPC-B1-120-80				
RPC-S3-160-80	1	1/2	1.68	42.7
RPC-B1-160-80				
RPC-S3-160-120	1	3/4	1.73	43.9
RPC-B1-160-120				

VENT PLUG END

Vent Plug End Pipe



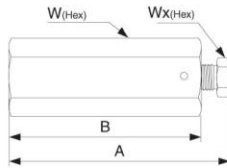
Male NPT(P.T.)Pipe to Vent Plug

No.	Pipe Thread	A		B		W(Hex)	Wx(Hex)
		in.	mm	in.	mm	in.	in.
VPM-S3-40	1/4	1.50	38.1	1.22	31.0	3/4	9/16
VPM-B1-40							
VPM-S3-80	1/2	2.20	55.9	1.65	41.9	1	3/4
VPM-B1-80							

Includes Body, Nut, and Vent plug.

S3 : Stainless Steel B1 : Brass
Dimensions for reference only, subject to change.

Vent Plug End Pipe

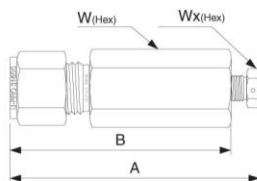


Female NPT(P.T.) Pipe to Vent Plug

No.	Pipe Thread	A		B		W(Hex)	WX(Hex)
		in.	mm	in.	mm	in.	in.
VPF-S3-80	1/2	2.32	58.9	1.77	45.0	1 1/4	3/4
VPF-B1-80							

Includes Body and Vent plug.

Vent Plug End Pipe

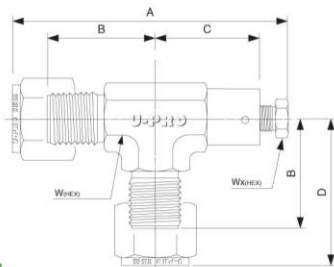


Tube to Vent Plug

No.	Tube O.D.	A		B		W(Hex)	WX(Hex)	WX1(Hex)
		in.	mm	in.	mm	in.	in.	in.
VP-S3-40	1/4	2.26	57.4	1.58	40.1	9/16	1/2	9/16
VP-B1-40								
VP-S3-50	5/16	2.28	57.9	1.59	40.4	5/8	9/16	9/16
VP-B1-50								
VP-S3-60	3/8	2.74	69.6	2.03	51.6	11/16	13/16	3/4
VP-B1-60								
VP-S3-80	1/2	2.87	72.9	2.06	52.3	7/8	15/16	3/4
VP-B1-80								

Includes Body, Nut, Ferrules, and Vent plug.

Vent Plug Run Tee

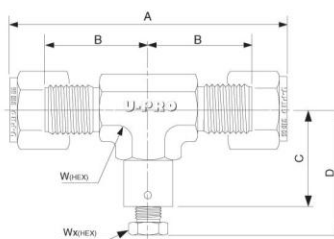


Tube to Vent Plug

No.	Tube O.D.	A		B		C		D		W(Hex)	WX(Hex)
		in.	mm	in.	mm	in.	mm	in.	mm	in.	in.
VRT-S3-60	3/8	2.78	70.6	0.94	23.9	1.02	25.9	1.20	30.5	13/16	9/16
VRT-B1-60											
VRT-S3-80	1/2	3.21	81.5	1.02	25.9	1.13	28.7	1.40	35.6	1	3/4
VRT-B1-80											

Includes Body, Nuts, Ferrules, and Vent plug.

Vent Plug Branch Tee



Tube to Vent Plug

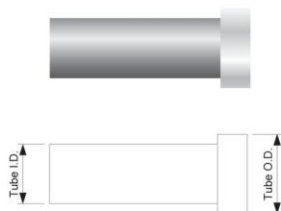
No.	Tube O.D.	A		B		C		D		W(Hex)	WX(Hex)
		in.	mm	in.	mm	in.	mm	in.	mm	in.	in.
VBT-S3-60	3/8	2.42	61.5	0.94	23.9	0.94	23.9	1.51	38.4	5/8	9/16
VBT-B1-60											
VBT-S3-80	1/2	2.87	72.9	1.02	25.9	1.17	29.7	2.49	63.2	1 1/16	3/4
VBT-B1-80											

Includes Body, Nuts, Ferrules, and Vent plug.

S3 : Stainless Steel B1 : Brass
Dimensions for reference only, subject to change.

COMPONENTS

Insert



Soft plastic tube to *U-PRO* lok

No.	Tube O.D.	Tube I.D.
INSERT-S3-30-20	3/16	1/8
INSERT-B1-30-20	3/16	1/8
INSERT-S3-40-20	1/4	1/8
INSERT-B1-40-20	1/4	1/8
INSERT-S3-40-30	1/4	3/16
INSERT-B1-40-30	1/4	3/16
INSERT-S3-50-20	5/16	1/8
INSERT-B1-50-20	5/16	1/8
INSERT-S3-50-30	5/16	3/16
INSERT-B1-50-30	5/16	3/16
INSERT-S3-50-40	5/16	1/4
INSERT-B1-50-40	5/16	1/4
INSERT-S3-60-30	3/8	3/16
INSERT-B1-60-30	3/8	3/16
INSERT-S3-60-40	3/8	1/4
INSERT-B1-60-40	3/8	1/4
INSERT-S3-80-40	1/2	1/4
INSERT-B1-80-40	1/2	1/4
INSERT-S3-80-60	1/2	3/8
INSERT-B1-80-60	1/2	3/8
INSERT-S3-100-60	5/8	3/8
INSERT-B1-100-60	5/8	3/8
INSERT-S3-100-80	5/8	1/2
INSERT-B1-100-80	5/8	1/2
INSERT-S3-120-80	3/4	1/2
INSERT-B1-120-80	3/4	1/2
INSERT-S3-120-100	3/4	5/8
INSERT-B1-120-100	3/4	5/8
INSERT-S3-160-120	1	3/4
INSERT-B1-160-120	1	3/4

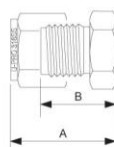


U-PRO tube fittings may be used with various types of plastic tube material without any special preparation. Use tube *INSERT* to support soft types of tubing, such as plasticized *PVC* or *TYGON* tubing, prior to insertion into a *U-PRO* end. In table, Tube O.D. is soft plastic tubing outside diameter. Tube I.D. is soft plastic tubing inside diameter.

Usage Instructions

1. Fully insert Tube Insert into plastic tubing, where appropriate.
2. If using standard nut, follow standard *U-PRO* Tube fittings assembly instructions, (hand-tighten, then tighten 1 1/4 turns with wrench.)

Tube Cap



No.	Tube O.D.	A	B	W(Hex)
		in.	mm	in.
TC-S3-10	1/16	0.60	15.2	5/16
TC-B1-10	1/16	0.60	15.2	5/16
TC-S3-20	1/8	0.80	20.3	7/16
TC-B1-20	1/8	0.80	20.3	7/16
TC-S3-30	3/16	0.85	21.6	7/16
TC-B1-30	3/16	0.85	21.6	7/16
TC-S3-40	1/4	0.91	23.1	1/2
TC-B1-40	1/4	0.91	23.1	1/2
TC-S3-50	5/16	0.96	24.4	9/16
TC-B1-50	5/16	0.96	24.4	9/16
TC-S3-60	3/8	1.00	25.4	5/8
TC-B1-60	3/8	1.00	25.4	5/8
TC-S3-80	1/2	1.15	29.2	13/16
TC-B1-80	1/2	1.15	29.2	13/16
TC-S3-100	5/8	1.18	30.0	15/16
TC-B1-100	5/8	1.18	30.0	15/16
TC-S3-120	3/4	1.24	31.5	1 1/16
TC-B1-120	3/4	1.24	31.5	1 1/16
TC-S3-140	7/8	1.34	34.0	1 3/16
TC-B1-140	7/8	1.34	34.0	1 3/16
TC-S3-160	1	1.51	38.4	1 3/8
TC-B1-160	1	1.51	38.4	1 3/8

Tube Plug

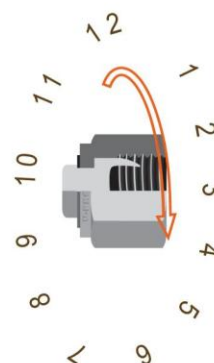


Plugs unused port of fittings

No.	Tube O.D.	W(Hex)
		in.
TP-S3-10	1/16	5/16
TP-B1-10	1/16	5/16
TP-S3-20	1/8	7/16
TP-B1-20	1/8	7/16
TP-S3-30	3/16	1/2
TP-B1-30	3/16	1/2
TP-S3-40	1/4	9/16
TP-B1-40	1/4	9/16
TP-S3-50	5/16	5/8
TP-B1-50	5/16	5/8
TP-S3-60	3/8	11/16
TP-B1-60	3/8	11/16
TP-S3-80	1/2	7/8
TP-B1-80	1/2	7/8
TP-S3-100	5/8	1
TP-B1-100	5/8	1
TP-S3-120	3/4	1 1/8
TP-B1-120	3/4	1 1/8
TP-S3-140	7/8	1 1/4
TP-B1-140	7/8	1 1/4
TP-S3-160	1	1 1/2
TP-B1-160	1	1 1/2

How to Assemble

wrench tighten only 1/4 turn from finger tight position.



S3 : Stainless Steel B1 : Brass
 Dimensions for reference only, subject to change.

Tube Nut



No.	Tube O.D.	A in.	A mm	W(Hex) in.
TN-S3-10	1/16	0.31	7.9	5/16
TN-B1-10	1/16	0.31	7.9	5/16
TN-S3-20	1/8	0.47	11.9	7/16
TN-B1-20	1/8	0.47	11.9	7/16
TN-S3-30	3/16	0.47	11.9	1/2
TN-B1-30	3/16	0.47	11.9	1/2
TN-S3-40	1/4	0.50	12.7	9/16
TN-B1-40	1/4	0.50	12.7	9/16
TN-S3-50	5/16	0.53	13.5	5/8
TN-B1-50	5/16	0.53	13.5	5/8
TN-S3-60	3/8	0.56	14.2	11/16
TN-B1-60	3/8	0.56	14.2	11/16
TN-S3-80	1/2	0.70	17.8	7/8
TN-B1-80	1/2	0.70	17.8	7/8
TN-S3-100	5/8	0.70	17.8	1
TN-B1-100	5/8	0.70	17.8	1
TN-S3-120	3/4	0.70	17.8	1 1/8
TN-B1-120	3/4	0.70	17.8	1 1/8
TN-S3-140	7/8	0.70	17.8	1 1/4
TN-B1-140	7/8	0.70	17.8	1 1/4
TN-S3-160	1	0.80	20.3	1 1/2
TN-B1-160	1	0.80	20.3	1 1/2

Bulkhead Locknut



No.	Tube O.D.	A in.	A mm	W(Hex) in.
BLN-S3-10	1/16	0.12	3.0	5/16
BLN-B1-10	1/16	0.12	3.0	5/16
BLN-S3-20	1/8	0.16	4.1	1/2
BLN-B1-20	1/8	0.16	4.1	1/2
BLN-S3-30	3/16	0.20	5.1	9/16
BLN-B1-30	3/16	0.20	5.1	9/16
BLN-S3-40	1/4	0.20	5.1	5/8
BLN-B1-40	1/4	0.20	5.1	5/8
BLN-S3-50	5/16	0.21	5.3	11/16
BLN-B1-50	5/16	0.21	5.3	11/16
BLN-S3-60	3/8	0.24	6.1	3/4
BLN-B1-60	3/8	0.24	6.1	3/4
BLN-S3-80	1/2	0.28	7.1	15/16
BLN-B1-80	1/2	0.28	7.1	15/16
BLN-S3-100	5/8	0.31	7.9	1 1/16
BLN-B1-100	5/8	0.31	7.9	1 1/16
BLN-S3-120	3/4	0.34	8.6	1 3/16
BLN-B1-120	3/4	0.34	8.6	1 3/16
BLN-S3-140	7/8	0.36	9.1	1 3/8
BLN-B1-140	7/8	0.36	9.1	1 3/8
BLN-S3-160	1	0.36	9.1	1 9/16
BLN-B1-160	1	0.36	9.1	1 9/16

Back Ferrule



No.	Tube O.D.
BFE-S3-10	1/16
BFE-B1-10	1/16
BFE-S3-20	1/8
BFE-B1-20	1/8
BFE-S3-30	3/16
BFE-B1-30	3/16
BFE-S3-40	1/4
BFE-B1-40	1/4
BFE-S3-50	5/16
BFE-B1-50	5/16
BFE-S3-60	3/8
BFE-B1-60	3/8
BFE-S3-80	1/2
BFE-B1-80	1/2
BFE-S3-100	5/8
BFE-B1-100	5/8
BFE-S3-120	3/4
BFE-B1-120	3/4
BFE-S3-140	7/8
BFE-B1-140	7/8
BFE-S3-160	1
BFE-B1-160	1

Front Ferrule



No.	Tube O.D.
FFE-S3-10	1/16
FFE-B1-10	1/16
FFE-S3-20	1/8
FFE-B1-20	1/8
FFE-S3-30	3/16
FFE-B1-30	3/16
FFE-S3-40	1/4
FFE-B1-40	1/4
FFE-S3-50	5/16
FFE-B1-50	5/16
FFE-S3-60	3/8
FFE-B1-60	3/8
FFE-S3-80	1/2
FFE-B1-80	1/2
FFE-S3-100	5/8
FFE-B1-100	5/8
FFE-S3-120	3/4
FFE-B1-120	3/4
FFE-S3-140	7/8
FFE-B1-140	7/8
FFE-S3-160	1
FFE-B1-160	1

S3 : Stainless Steel B1 : Brass
Dimensions for reference only, subject to change.

