



ROTAREX
EQUIPMENT



COMPRESSION TUBE FITTINGS

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All Rotarex compression tube fittings are produced in Europe in accordance with international standards (ISO; CGA..) and are guaranteed to provide safe and reliable performance in operation. All locations are ISO 9001.



STRAIGHT UNIONS



US P. 014
Straight union



USMOD P. 014
Conversion union



URS P. 015
Reducing union



UCS P. 015
Bulkhead union



UMS NPT / BSPT / BSPP G / BSPP K / METRIC / THERMOCOUPLE CONNECTOR P. 016
Male union



UCMS NPT / BSPT P. 020
Male bulkhead union



UCOMS NPT / BSPT P. 020
Male bulkhead union with O-ring



UMS AN P. 021
Straight union «AN»



UCMS AN P. 021
Bulkhead union «AN»



UMOMS P. 022
Male O-ring connector



UMOMS P. 022
Male O-ring connector «UN»



UFS NPT / BSPT / BSPP P. 023
Female union



UCFS NPT / BSPT / BSPP P. 026
Female bulkhead union



UMSWS P. 027
Tube socket weld union



UMBWS P. 027
Male pipe weld connector

ELBOW UNIONS



EQS P. 028
Elbow



EQM45S P. 028
45° male elbow



EQMS NPT / BSPT / BSPP P. 029
Male elbow



EQFS NPT / BSPT / BSPP P. 031
Female elbow



EQSWS P. 034
Socket weld elbow



EQBWS P. 034
Male pipe weld elbow

TEE & CROSS UNIONS



TS P. 035
Union tee



TRS P. 036
Reducing tee



TRS P. 036
Reducing run tee



TMS NPT / BSPT P. 037
Male branch tee



TMRS NPT / BSPT P. 038
Male run tee



TFS NPT / BSPT / BSPP P. 039
Female branch tee



TFRS NPT / BSPT / BSPP P. 040
Female run tee



CS P. 041
Cross

ADAPTORS

				
APS Port connector	APRS Reducing port connector	ADRS Reducer	ADTS Heat exchanger reducer	UCAS Bulkhead reducer
P. 042	P. 042	P. 043	P. 043	P. 044
				
AMOD Converting reducer	ADS NPT / BSPT / BSPP G / BSPP K Male adaptor			
P. 044	P. 045			
				
AOMS Male O-ring adaptor «NPSM»	AFS NPT / BSPT / BSPP Female adaptor			
P. 049	P. 050			
				
		AFS AN Female adaptor		AOMSS Male O-ring adaptor «UN»
		P. 052		P. 048

CHROMATOGRAPH FITTINGS

			
USFVM Straight union - low dead volume	TSFVM Union tee - low dead volume	UMSFVM Male connector - low dead volume	URSFVM Column end reducing union - low dead volume
P. 053	P. 053	P. 053	P. 054
			
URSVM Column end reducing union - zero dead volume	UFSFVM Column end female connector - low dead volume	EDS Male nut	
P. 054	P. 054	P. 054	

COMPONENTS & ACCESSORIES

				
BPS Cap	OBS Plug	FF Front ferrule	BF Back ferrule	SET Ferrule set (10 of each)
P. 055	P. 055	P. 056	P. 056	P. 056
				
ES Nut	EMS Knurled nut	ECS Bulkhead locknut	INS Insert for plastic tube	CCS Gauge
P. 057	P. 057	P. 057	P. 058	P. 058
				
PRE-ASSEMBLY TOOL	GASKETS	TUBE BENDER	DEBURRING TOOL	TUBE CUTTER
P. 058	P. 059	P. 060	P. 060	P. 060
				
				PTFE TAPE
				P. 060

TECHNOLOGY OVERVIEW

ROTAREX COMPRESSION TUBE FITTINGS TECHNOLOGY

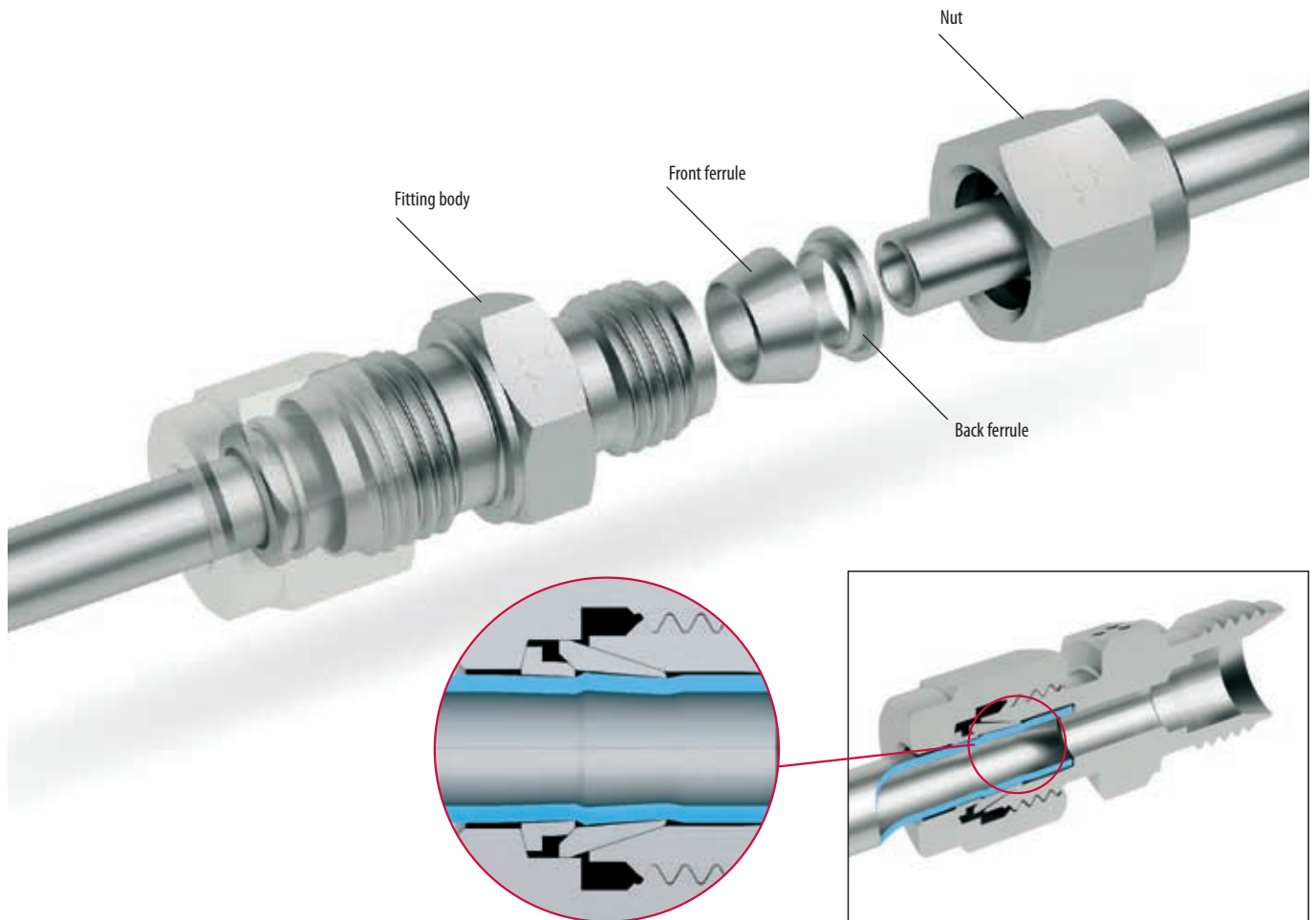
Rotarex double-ring compression tube fitting technology combines leak-free confidence and strength with maximum ease and flexibility... and is the recommended technology for all instrumentation applications maximizing safety, control and productivity.

Rotarex offers one of the largest selections of fittings in the industry – and specializes in non-standard dimensions with over 100 unique configurations not available from other supplies, and a choice of over 12 material types representing the cutting edge alloy technologies.



BEST PRACTICE:

For best results minimize the use of threaded connections in your installation. Compression fittings have a higher pressure rating, are quicker and easier to install and are much more resistant to vibration.



Tightening the nut exerts radial compression around the tube in two places creating an exceptional grip – able to withstand very high working pressure – and vibration.

Easy to install: just insert the tube and tighten

Rotarex ferrules utilize an advanced design geometry where the ferrule force-displacement vectors are optimized to deliver an exceptionally efficient double-grip compression into the tube's outer surface when tightened.

Exceptionally precise machining tolerances ensures a leak-tight grip around the entire tube circumference.

All Rotarex stainless steel alloy back ferrules are hardened by a low temperature carburization process that significantly increases surface hardness,

increases compression strength and improves resistance to wear and galling. This back ferrule differential hardness is essential to tightly grip into the tube and provide a robust leak-tight compression seal.

Reusable: The Rotarex compression tube fitting is re-usable several times, making possible configuration changes and quicker servicing of the system.

TECHNOLOGY OVERVIEW (continued)

DESIGNED FOR BETTER OPERATING RESULTS

SAFETY:

- Leak-tight confidence
- Exceptional tube grip
- Gaugeable to ensure proper tightness
- Stays tight even with vibration
- High temperature resistant

CONTROL:

- A vast range of sizes and shapes enables your optimal installation configuration

PRODUCTIVITY:

- Fast & Easy to install
- Long lasting and reusable
- Quicker maintenance

INTERCHANGEABILITY

Rotarex compression tube fittings are designed and certified interchangeable with double-ferrule components from other leading manufacturers. That means superior choice, flexibility and productivity for your operations.



Certified by TÜV Rheinland – a leading independent 3rd party testing & certification facility based in Germany.



BEST PRACTICE:

Although you can intermix components, it is strongly recommended to use exclusively Rotarex components throughout your entire gas installation. Rotarex fittings are designed and manufactured to the same demanding specifications as our leading valves and regulators for maximum warranted performance.

GAUGEABILITY

Rotarex compression tube fittings allow installers to verify the proper tightness using a gap inspection gauge – for greater safety and leak-free confidence.

When properly tightened, the gauge should not be able to fit between the body and shoulder of the nut.

The inspection gauge is only to be used on the first assembly.



Properly tightened,
the gauge will not fit



Not tight enough
if the gauge fits

TRACEABILITY

Each stainless steel component is compliant with high and ultra-high purity traceability requirements, and most stringent applications such as automotive. For greater quality assurance, a material-specific identification

code is visible on every component in addition to the Rotarex 3-star quality assurance symbol.



3-star quality assurance symbol
on forged bodies



3-star quality assurance
symbol on hex flats and nuts



New material coding system
(from September 2011)



Former material coding system
(before September 2011)

SELECTING THE RIGHT FITTING

STANDARD MATERIALS

All Rotarex compression fittings are standardly available in stainless steel 316L and raw brass, covering most major application needs. In addition, ten other speciality alloy materials are available upon request for specific applications. Which material is best for your installation?

Stainless steel 316L: The recommended option for corrosive gases and high purity applications due to its superior resistance, non-reactivity, exceptional durability and high-surface finish properties. It is compatible with most gas types and low-velocity oxygen applications.

Rotarex uses stainless steel type 316L, an austenitic chromium nickel stainless steel containing Molybdenum. It offers:

- Exceptional corrosion resistance - particularly against sulfuric, hydrochloric, acetic, formic and tartaric acids, acid sulfates and alkaline chlorides;
- resistance to pitting from chloride-ion solutions; and
- outstanding strength even at elevated temperatures

Raw brass: The most commonly used material for industrial and high velocity oxygen applications due to its cost effectiveness versus stainless steel, good strength, resistance and low-friction flow properties.

All raw brass fittings can be chrome plated on request (see page 11).



Gas Compatibility: make sure the body material is compatible with the gas type you will be using. Consult the gas compatibility reference chart on page 64.

O-RINGS

Rotarex O-ring fittings with elastomer sealing technology are delivered with the O-ring specification as per the below chart. Special cleaning of the parts in the manufacturing process might modify the performances. Other materials are available upon request.

TYPE	DESIGNATION	TEMPERATURE RATING	HARDNESS
Nitrile rubber	NBR	-30 to 100°C -22 to 212°F	79 (± 5)
Fluorocarbon rubber*	FPM	-28 to 204°C -18 to 400°F	78 (± 5)
Ethylene propylene rubber	EPDM	-50 to 140°C -58 to 284°F	83 (± 5)

*Fluorocarbon rubber designation: - FPM is the international abbreviation according to DIN/ISO
- FKM is the short form for the fluoroelastomer category to ASTM.

Materials compliant with enforceable norms

Status	Fitting Material	Rotarex code	Bar stock	Forging
Standard	Brass	B	ASTM B16, ASTM B453	ASTM B124
Standard	Stainless steel 316L	I	ASTM A276, ASME SA 479, EN 1.4404	ASTM A182, ASME SA182, EN 1.4404
Upon request	Stainless steel 904L	W	ASTM A182, EN 1.4539	ASTM A182
Upon request	Super duplex stainless steel 2507	SD	ASTM A479	ASTM A182
Upon request	Alloy 400	M	ASTM B164	ASTM B564
Upon request	Alloy 600	O	ASTM B166	ASTM B564
Upon request	Alloy 625	Q	ASTM B446	ASTM B564
Upon request	Alloy 825	Y	ASTM B425	ASTM B564
Upon request	Alloy C-276	H	ASTM B574	ASTM B564
Upon request	Steel	C	ASTM A108	-
Upon request	Alloy 20	R	ASTM B473	ASTM B462, ASTM B472
Upon request	Titanium	T	ASTM B348	ASTM B381

Need more information? One of our material engineers would be happy to discuss the pros and cons of each option to help you choose the best solution.

Rotarex Fittings in Stainless Steel 316L with O-rings, for connections up to 25 mm and 1 inch, are to be used up to 206 bars or 3000 psi.

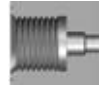
UNIFORM DASH NUMBERING, ACCORDING TO AEROSPACE STANDARD AS568B

Straight thread type (inch)	NBR	FPM
5/16"-24	-011	-902
3/8"-24	-012	-903
7/16"-20	-013	-904
1/2"-20	-112	-905
9/16"-18	-113	-906
3/4"-16	-116	-908
1 1/16"-12	-121	-912

SELECTING THE RIGHT FITTING (continued)

THREADS AND END CONNECTIONS

Rotarex offers a complete range of thread options compliant with world-wide norms & standards. Please ask us if you do not see what you require.

Family	thread configuration	Rotarex thread identification code	Description	International standards for threads and end connections
NPT-BSPT Tapered Pipe Thread		N	National Pipe Tapered thread (NPT) - Seal is made on the thread. - Thread angle 60° - Thread sealant is required.	ASME B1.20.1(part1) ASME B1.20.1(part2)
		T	British Standard Pipe Tapered thread (BSPT) (Whitworth Conical) - Seal is made on the thread. - Thread angle 55° - Thread sealant is required.	ISO 7/1 EN 10226-1/2 DIN 3852-2, Form C
BSPP Parallel Pipe Thread		K	British Standard Pipe Parallel thread (BSPP) (Whitworth Cylindrical) - Must be used with the sealing gasket according to DIN 3852-2, form A. Used with a GBS gasket (sealing gasket sold separately).	ISO 228/1 DIN 3852-2 Form A JIS B0202
		G	British Standard Pipe Parallel thread (BSPP) (Whitworth Cylindrical) - Seals with a sealing gasket according to DIN 3852-2, form B. Used with a GCU gasket (sealing gasket sold separately).	ISO 228/1 BS 2779 JIS B0202 DIN 3852-2 Form B
		G	British Standard Pipe Parallel thread (BSPP) (Whitworth Cylindrical) - Seals with a sealing gasket according to DIN 3852-2, form B. Used with a GKF or GTE gasket (sealing gasket sold separately). - Compatible with all BSPP male threads. - Flat bottom for manometer connection	ISO 228/1 BS 2779 JIS B0202 EN 837-1 & EN 837-3
Unified Screw thread		UN	Unified Screw Thread (UN) - Straight thread with a groove for an O-ring (included)	ASME B1.1
		AN37	Army and Navy application (AN) - Seals on the tapered face - Tube must be flared to 37°, according to SAE standard	ASME B1.1 SAE J514
		NPSM	National Pipe Straight Mechanical (NPSM) - American Standard for straight pipe threads - Straight thread with a groove for an O-ring (included)	ASME B1.20.1
Metric Thread		MB	Metric Parallel Thread - Seals using a sealing gasket to DIN 3852-1, form B. - Used with a GCU gasket (sealing gasket sold separately).	DIN13 ISO 261 DIN 3852-1 Form B

Sealants

- When assembling tapered pipe thread, it is mandatory to use pipe thread sealant. This will ensure a leak free seal, as well as prevent thread galling.
- Rotarex recommends using PTFE tape due to its ease of application (see page 60 for PTFE tape).



To apply, wrap the tape clockwise starting from under the first thread to avoid potential contact between the PTFE and the gas.

SELECTING THE RIGHT FITTING (continued)

FOR NPT AND BSPT(ISO 7/1) TAPERED PIPE THREADS:

Pressure ratings change according to thread size, thread type (male or female thread) and material type. Be certain to use the right threads for your application.

The chart on the right represents the pressures rates for male and female threads in Brass and SS 316L.

Pressure ratings are based on the ASME code for pressure piping B31.3, process piping at ambient temperature



Female thread pressure ratings are lower than those for male threads of the same diameter. Take the lower female thread ratings into account when choosing thread dimensions.

MAXIMUM ALLOWABLE STRESS (PRESSURE)

		BRASS		STAINLESS STEEL 316L	
Thread Size		Male	Female	Male	Female
1/16"	bar	379	227	717	434
	psi	5500	3300	10400	6300
1/8"	bar	345	221	648	420
	psi	5000	3200	9400	6100
1/4"	bar	276	200	517	427
	psi	4000	3000	7500	6200
3/8"	bar	269	179	503	345
	psi	3900	2600	7300	5000
1/2"	bar	262	165	496	317
	psi	3800	2400	7200	4600
3/4"	bar	248	159	469	296
	psi	3600	2300	6800	4300
1"	bar	179	152	345	283
	psi	2600	2200	5000	4100

to determine the pressure in Mpa, multiply bar value by 0.10

Allowable stress values are based on the standard ASME B31.3 (ambient temperature)

Material	bar	psi
Stainless Steel 316L	1378	20000
Brass	689	10000

FOR SAE STRAIGHT THREADS :

Pressure ratings are based on connector SAE J1926. Depending on the reference, Rotarex fittings with SAE threads might have lower pressure rates.

	bar	psi
5/16-24	315	4568
7/16-20	315	4568
1/2-20	315	4568
9/16-18	315	4568
3/4-16	315	4568
7/8-14	250	3626
1 1/16-12	250	3626
1 3/16-12	200	2900
1 5/16-12	200	2900

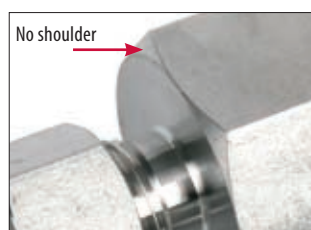
VISUAL IDENTIFICATION

Visual Differences of Metric vs. Fractional Fittings:

Components for metric tube dimensions have visible shoulders. Fractional dimension fittings do not.



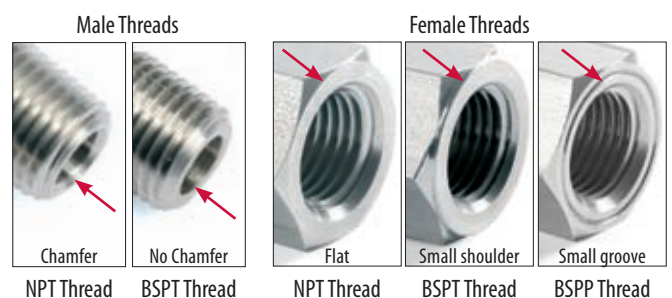
Metric compression tube fittings (mm)



Fractional compression tube fittings (inch)

Visual Differences between NPT and BSPT threads:

Male NPT end connections have a chamfer at the inside diameter. Female BSPT end connections have a small shoulder on the outside face and BSPP G connections have a groove on the outside face.



SELECTING THE RIGHT FITTING (continued)

ORDERING CODES & OPTIONS

Rotarex makes it easy to choose the exact material, diameter, thread size and thread type to meet your specific needs. Each product page has a configuration table where you can quickly find the available dimensions, thread types and the corresponding reference number. Where you see an asterisk (*), you will need to specify the material. See page 8 for available materials and codes.

Example: Product number: UCMS I 6 ¼ N

Don't see what you want? We can custom-manufacture any product to your exact specifications. Just ask one of our engineers.

Need help choosing the optimal solution? One of our engineers will be happy to discuss your project in more detail and help you choose the best solution.

www.rotarex.com

14 STRAIGHT UNIONS

STRAIGHT UNIONS 15

STRAIGHT UNION | US

APPLICATION

Connect tubes of the same dimension in a straight configuration.

Special requirements on request

TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	P
3	US15	15.3	12.9	12	2.4
4	US16	15.3	13.7	12	3.2
6	US17	43.3	13.3	14	4.8
8	US18	48.2	16.2	16	6.4
10	US19	86.2	17.2	17	7.2
12	US20	112	20.8	20	9.6
14	US21	122	24.4	24	11.2
16	US22	128	26.8	26	12.8
18	US23	153	24.4	27	15.2
20	US24	158	26.8	30	15.8
22	US25	172	26.8	30	18.2
24	US26	182	33.2	36	22.2

*Special requirements on request for sizes not shown

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H	P
3/8"	US15	0.99	0.34	8	3/16"
1/2"	US16	1.09	0.54	12	1/8"
3/4"	US17	1.47	0.60	12	1/4"
1"	US18	1.61	0.68	16	3/8"
1 1/4"	US19	1.70	0.68	16	1/2"
1 1/2"	US20	1.71	0.80	20	5/8"
1 3/4"	US21	2.02	0.96	22	3/4"
2"	US22	2.05	0.96	24	7/8"
2 1/4"	US23	2.11	0.96	27	1"
2 1/2"	US24	2.11	1.00	30	1 1/8"
2 3/4"	US25	2.30	1.00	30	1 1/4"
3"	US26	2.32	1.20	36	1 1/2"

*Special requirements on request for sizes not shown

CONVERSION UNION | US/DO

APPLICATION

Join a metric tube to a fractional tube.

Special requirements on request

TUBE SIZE - METRIC TO FRACTIONAL (mm to inch)

D	D2	Reference	A	E	H	P
3	1/8"	US27-1	15.3	12.9	12	2.4
4	1/8"	US28-1	15.3	13.7	12	2.4
6	1/4"	US29-1	38.1	13.7	12	2.4
8	1/4"	US30-1	38.1	15.3	14	2.4
10	3/8"	US31-1	48.2	15.3	14	2.4
12	3/8"	US32-1	48.2	16.2	16	2.4
14	1/2"	US33-1	86.2	17.2	17	2.4
16	1/2"	US34-1	86.2	18.2	18	2.4
18	3/4"	US35-1	112	17.2	17	2.4
20	3/4"	US36-1	112	18.2	18	2.4
22	7/8"	US37-1	128	18.2	18	2.4
24	1"	US38-1	128	19.2	19	2.4

*Special requirements on request for sizes not shown

TUBE SIZE - METRIC TO FRACTIONAL (mm to inch)

D	D2	Reference	A	E	H	P
10	3/8"	US27-2	48.2	17.2	12	2.4
12	1/2"	US28-2	48.2	17.2	12	2.4
14	1/2"	US29-2	48.2	17.2	12	2.4
16	3/4"	US30-2	48.2	17.2	12	2.4
18	3/4"	US31-2	48.2	17.2	12	2.4
20	1"	US32-2	48.2	17.2	12	2.4
22	1"	US33-2	48.2	17.2	12	2.4
24	1 1/4"	US34-2	48.2	17.2	12	2.4
26	1 1/4"	US35-2	48.2	17.2	12	2.4
28	1 1/2"	US36-2	48.2	17.2	12	2.4
30	1 1/2"	US37-2	48.2	17.2	12	2.4
32	1 3/4"	US38-2	48.2	17.2	12	2.4

*Special requirements on request for sizes not shown

REDUCING UNION | US

APPLICATION

Connect tubes of different dimensions.

Special requirements on request

TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	P
4	US41-1	36.5	15.2	12.9	12
6	US42-1	36.5	15.2	12.9	12
8	US43-1	36.5	15.2	12.9	12
10	US44-1	36.5	15.2	12.9	12
12	US45-1	42.5	15.2	12.9	12
14	US46-1	42.5	15.2	12.9	12
16	US47-1	42.5	15.2	12.9	12
18	US48-1	42.5	15.2	12.9	12
20	US49-1	42.5	15.2	12.9	12
22	US50-1	42.5	15.2	12.9	12
24	US51-1	42.5	15.2	12.9	12
26	US52-1	42.5	15.2	12.9	12
28	US53-1	42.5	15.2	12.9	12
30	US54-1	42.5	15.2	12.9	12
32	US55-1	42.5	15.2	12.9	12
34	US56-1	42.5	15.2	12.9	12
36	US57-1	42.5	15.2	12.9	12
38	US58-1	42.5	15.2	12.9	12
40	US59-1	42.5	15.2	12.9	12
42	US60-1	42.5	15.2	12.9	12
44	US61-1	42.5	15.2	12.9	12
46	US62-1	42.5	15.2	12.9	12
48	US63-1	42.5	15.2	12.9	12
50	US64-1	42.5	15.2	12.9	12
52	US65-1	42.5	15.2	12.9	12
54	US66-1	42.5	15.2	12.9	12
56	US67-1	42.5	15.2	12.9	12
58	US68-1	42.5	15.2	12.9	12
60	US69-1	42.5	15.2	12.9	12
62	US70-1	42.5	15.2	12.9	12
64	US71-1	42.5	15.2	12.9	12
66	US72-1	42.5	15.2	12.9	12
68	US73-1	42.5	15.2	12.9	12
70	US74-1	42.5	15.2	12.9	12
72	US75-1	42.5	15.2	12.9	12
74	US76-1	42.5	15.2	12.9	12
76	US77-1	42.5	15.2	12.9	12
78	US78-1	42.5	15.2	12.9	12
80	US79-1	42.5	15.2	12.9	12
82	US80-1	42.5	15.2	12.9	12
84	US81-1	42.5	15.2	12.9	12
86	US82-1	42.5	15.2	12.9	12
88	US83-1	42.5	15.2	12.9	12
90	US84-1	42.5	15.2	12.9	12
92	US85-1	42.5	15.2	12.9	12
94	US86-1	42.5	15.2	12.9	12
96	US87-1	42.5	15.2	12.9	12
98	US88-1	42.5	15.2	12.9	12
100	US89-1	42.5	15.2	12.9	12
102	US90-1	42.5	15.2	12.9	12
104	US91-1	42.5	15.2	12.9	12
106	US92-1	42.5	15.2	12.9	12
108	US93-1	42.5	15.2	12.9	12
110	US94-1	42.5	15.2	12.9	12
112	US95-1	42.5	15.2	12.9	12
114	US96-1	42.5	15.2	12.9	12
116	US97-1	42.5	15.2	12.9	12
118	US98-1	42.5	15.2	12.9	12
120	US99-1	42.5	15.2	12.9	12
122	US100-1	42.5	15.2	12.9	12
124	US101-1	42.5	15.2	12.9	12
126	US102-1	42.5	15.2	12.9	12
128	US103-1	42.5	15.2	12.9	12
130	US104-1	42.5	15.2	12.9	12
132	US105-1	42.5	15.2	12.9	12
134	US106-1	42.5	15.2	12.9	12
136	US107-1	42.5	15.2	12.9	12
138	US108-1	42.5	15.2	12.9	12
140	US109-1	42.5	15.2	12.9	12
142	US110-1	42.5	15.2	12.9	12
144	US111-1	42.5	15.2	12.9	12
146	US112-1	42.5	15.2	12.9	12
148	US113-1	42.5	15.2	12.9	12
150	US114-1	42.5	15.2	12.9	12
152	US115-1	42.5	15.2	12.9	12
154	US116-1	42.5	15.2	12.9	12
156	US117-1	42.5	15.2	12.9	12
158	US118-1	42.5	15.2	12.9	12
160	US119-1	42.5	15.2	12.9	12
162	US120-1	42.5	15.2	12.9	12
164	US121-1	42.5	15.2	12.9	12
166	US122-1	42.5	15.2	12.9	12
168	US123-1	42.5	15.2	12.9	12
170	US124-1	42.5	15.2	12.9	12
172	US125-1	42.5	15.2	12.9	12
174	US126-1	42.5	15.2	12.9	12
176	US127-1	42.5	15.2	12.9	12
178	US128-1	42.5	15.2	12.9	12
180	US129-1	42.5	15.2	12.9	12
182	US130-1	42.5	15.2	12.9	12
184	US131-1	42.5	15.2	12.9	12
186	US132-1	42.5	15.2	12.9	12
188	US133-1	42.5	15.2	12.9	12
190	US134-1	42.5	15.2	12.9	12
192	US135-1	42.5	15.2	12.9	12
194	US136-1	42.5	15.2	12.9	12
196	US137-1	42.5	15.2	12.9	12
198	US138-1	42.5	15.2	12.9	12
200	US139-1	42.5	15.2	12.9	12
202	US140-1	42.5	15.2	12.9	12
204	US141-1	42.5	15.2	12.9	12
206	US142-1	42.5	15.2	12.9	12
208	US143-1	42.5	15.2	12.9	12
210	US144-1	42.5	15.2	12.9	12
212	US145-1	42.5	15.2	12.9	12
214	US146-1	42.5	15.2	12.9	12
216	US147-1	42.5	15.2	12.9	12
218	US148-1	42.5	15.2	12.9	12
220	US149-1	42.5	15.2	12.9	12
222	US150-1	42.5	15.2	12.9	12
224	US151-1	42.5	15.2	12.9	12
226	US152-1	42.5	15.2	12.9	12
228	US153-1	42.5	15.2	12.9	12
230	US154-1	42.5	15.2	12.9	12
232	US155-1	42.5	15.2	12.9	12
234	US156-1	42.5	15.2	12.9	12
236	US157-1	42.5	15.2	12.9	12
238	US158-1	42.5	15.2	12.9	12
240	US159-1	42.5	15.2	12.9	12
242	US160-1	42.5	15.2	12.9	12
244	US161-1	42.5	15.2	12.9	12
246	US162-1	42.5	15.2	12.9	12
248	US163-1	42.5	15.2	12.9	12
250	US164-1	42.5	15.2	12.9	12
252	US165-1	42.5	15.2	12.9	12
254	US166-1	42.5	15.2	12.9	12
256	US167-1	42.5	15.2	12.9	12
258	US168-1	42.5	15.2	12.9	12
260	US169-1	42.5	15.2	12.9	12
262	US170-1	42.5	15.2	12.9	12
264	US171-1	42.5	15.2	12.9	12
266	US172-1	42.5	15.2	12.9	12
268	US173-1	42.5	15.2	12.9	12
270	US174-1	42.5	15.2	12.9	12
272	US175-1	42.5	15.2	12.9	12
274	US176-1	42.5	15.2	12.9	12
276	US177-1	42.5	15.2	12.9	12
278	US178-1	42.5	15.2	12.9	12
280	US179-1	42.5	15.2	12.9	

SELECTING THE RIGHT FITTING (continued)

TUBE SELECTION GUIDE - Stainless Steel tubing

Different tube diameters, wall thicknesses and material types have different pressure ratings. Please confirm that you are using the correct materials for your intended operating pressure.

The below pressure rates are to be considered for annealed stainless steel tubing (304, 316, etc.) in compliance with:

- **ASTM 269** - for Seamless and welded Austenitic Stainless Steel Tubing (General service).
- **ASTM 213** - for Seamless Ferritic and Austenitic Alloy Steel Boiler, Superheated and Heat Exchanger Tubes (General Service) or equivalent specifications.
- **EN ISO 1127** - Stainless Steel tubes: Dimensions, tolerances and conventional mass per unit length
 For diameters ≤ 14 mm: Tolerance D4 = diameter
 T4 = thickness.
 For diameters > 14 mm: Tolerance D4 = outside diameter
 T3 = outside diameter.

Following ASME B31.3, the temperature range to be considered is -28°C to 37°C (-20°F to 100°F). Recommended tube hardness 80 HRB(50HV). Maximum acceptable hardness 90 HRB (200HV).

PRESSURE ADJUSTMENT FOR HIGHER TEMPERATURES (FACTOR K)

At operating temperatures above 93° C / 200° F, multiply the pressure ratings by the appropriate Factor K.

F°	C°	Factor K
-4 - 200	-20 - 93	1,00
200 - 250	93 - 121	0,99
250 - 300	121 - 149	0,98
300 - 350	149 - 177	0,97
350 - 400	177 - 204	0,96
400 - 450	204 - 232	0,95
450 - 500	232 - 260	0,94
500 - 550	260 - 288	0,93
550 - 600	288 - 316	0,91
600 - 650	316 - 343	0,91
650 - 700	343 - 371	0,90
700 - 750	371 - 399	0,89
750 - 800	399 - 427	0,88
800 - 850	427 - 454	0,87
850 - 900	454 - 482	0,86
900 - 950	482 - 510	0,85
950 - 1000	510 - 538	0,84



Welded joints do not have the same pressure resiliency as the tube. Reduce the pressure by the following factors:

- 0,80 for single welded tubing
- 0,85 for double welded tubing

STAINLESS STEEL - METRIC

Ø (mm)	Unit	Wall thickness (mm)									
		0,8	1,0	1,2	1,5	1,8	2,0	2,2	2,5	3,0	3,5
3	bar	670									
	psi	9715									
6	bar	310	420	540	710						
	psi	4495	6090	7830	10295						
8	bar	310	390	520							
	psi		4495	5655	7540						
10	bar		240	300	440	510	580				
	psi		3480	4350	6380	7395	8410				
12	bar		200	250	330	410	470				
	psi		2900	3625	4785	5945	6815				
14	bar		160	200	270	340	380	430			
	psi		2320	2900	3915	4930	5510	6235			
15	bar		150	190	250	310	360	400			
	psi		2175	2755	3625	4495	5220	5800			
16	bar			170	230	290	330	370	400		
	psi			2465	3335	4205	4785	5365	5800		
18	bar			150	200	260	290	320	370		
	psi			2175	2900	3770	4205	4640	5365		
20	bar			140	180	230	260	290	330	380	
	psi			2030	2610	3335	3770	4205	4785	5510	
22	bar			180	200	200	230	260	300	340	
	psi			2610	2900	2900	3335	3770	4350	4930	
25	bar					180	200	230	260	290	320
	psi					2610	2900	3335	3770	4205	4640

STAINLESS STEEL - FRACTIONAL

Ø (inch)	Unit	Wall thickness (inches)													
		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	
1/16"	psi	5600	6800	8100	9400	12000									
	bar	386	469	559	648	828									
1/8"	psi						8500	9000							
	bar						586	621							
3/16"	psi						5400	7000	10200						
	bar						372	483							
1/4"	psi						4000	5100	7500	10200					
	bar						276	352	517	703					
5/16"	psi							4000	5800	8000					
	bar							276	400	552					
3/8"	psi							3300	4800	6500	7500				
	bar							228	331	448					
1/2"	psi							2600	3700	5100	6700				
	bar							179	255	352	462				
5/8"	psi								2900	4000	5200	6000			
	bar								200	276	359	414			
3/4"	psi								2400	3300	4200	4900	5800		
	bar								166	228	290	338	400		
7/8"	psi								2000	2800	3600	4200	4800		
	bar								138	193	248	290	331		
1"	psi									2400	3100	3600	4100	4900	
	bar									166	214	248	283	338	

☐ OK for all fluid services - standard assembly
 ☐ OK for all fluid services using pre-assembly tool
☐ Not recommended for gas service

SELECTING THE RIGHT FITTING (continued)

TUBE SELECTION GUIDE - Copper – annealed seamless tubing (ASTM B-75 or equivalent)

The below pressure rates are to be considered for copper tubing in compliance with:

- **ASTM B75** - for seamless round copper tube suitable for general engineering applications.
- **ASTM B88** - Standard specification for seamless copper water tube
- **EN ISO 1057**- seamless round bar copper and copper alloy tubes for water and heating applications.
- other equivalent specifications

Following ASME B31.3 and B31.1, the standard temperature range is -28°C to 37°C (-20°F to 100°F)

PRESSURE ADJUSTMENT FOR HIGHER TEMPERATURES (FACTOR K)

At operating temperatures above 38° C / 100° F, multiply the above pressure ratings by the appropriate Factor K.

F°	C°	Factor K
-20 - 100	-28 - 37	1,00
100 - 150	38 - 66	0,85
150 - 200	66 - 93	0,80
200 - 250	93 - 121	0,80
250 - 300	121 - 149	0,78
300 - 350	149 - 177	0,67
350 - 400	177 - 204	0,50
400 +	204 +	



Apply Factor K when operating at higher temperatures (see chart above)

COPPER - METRIC

Ø (mm)	Unit	Wall thickness (mm)									
		0,8	1,0	1,2	1,5	1,8	2,0	2,2	2,5	2,8	3,0
6	bar	110	140	170	220						
	psi	1595	2030	2465	3190						
8	bar		100	120	160						
	psi		1450	1740	2320						
10	bar		80	100	130						
	psi		1160	1450	1885						
12	bar		60	80	100	130	140				
	psi		870	1160	1450	1885	2030				
14	bar		50	60	90	110	120				
	psi		725	870	1305	1595	1740				
15	bar			60	80	100	110	120			
	psi			870	1160	1450	1595	1740			
16	bar				70	90	100	110	120		
	psi				1015	1305	1450	1595	1740		
18	bar				60	80	90	100	110		
	psi				870	1160	1305	1450	1595		
20	bar				60	70	80	90	100	110	
	psi				870	1015	1160	1305	1450	1595	
22	bar				50	60	70	80	90	100	
	psi				725	870	1015	1160	1305	1450	
25	bar				40	50	60	70	80	90	100
	psi				580	725	870	1015	1160	1305	1450

COPPER - FRACTIONAL

Ø (inch)	Unit	Wall thickness (inches)							
		0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120
1/8"	psi	2700	3600						
	bar	186	248						
3/16"	psi	1800	2300	3400	3750				
	bar	124	159	234	259				
1/4"	psi	1300	1600	2500	3500				
	bar	90	110	172	241				
5/16"	psi		1300	1900	2700				
	bar		90	131	186				
3/8"	psi		1000	1600	2200				
	bar		69	110	152				
1/2"	psi		800	1100	1600	2100			
	bar		55	76	110	145			
5/8"	psi			900	1200	1600	1900		
	bar			62	83	110	131		
3/4"	psi			700	1000	1300	1500	1800	
	bar			48	69	90	103	124	
7/8"	psi			600	800	1100	1300	1500	
	bar			41	55	76	90	103	
1"	psi			500	700	900	1100	1300	1400
	bar			34	48	62	76	90	97

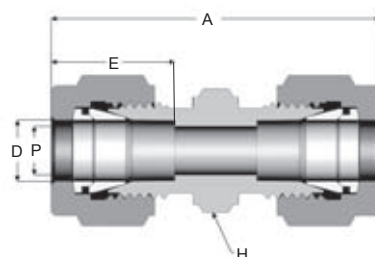
☐ OK for all fluid services - standard assembly
 ☐ OK for all fluid services using pre-assembly tool
☐ Not recommended for gas service

STRAIGHT UNION | US

APPLICATION

Connects tubes of the same dimension in a straight configuration.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	P
3	US*3	35,3	12,9	12	2,4
4	US*4	37,3	13,7	12	3,2
6	US*6	41,0	15,3	14	4,8
8	US*8	43,2	16,2	14	6,4
10	US*10	46,2	17,2	17	7,9
12	US*12	51,2	22,8	22	9,5
14	US*14	52,0	24,4	24	11,1
16	US*16	52,0	24,4	24	12,7
18	US*18	53,5	24,4	27	15,1
20	US*20	55,0	26,0	30	15,9
22	US*22	55,0	26,0	30	18,3
25	US*25	65,0	31,3	36	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	P
1/16"	US*1/16	0.99	0.34	8	3/64"
1/8"	US* 1/8	1.39	0.54	12	3/32"
3/16"	US* 3/16	1.47	0.60	12	1/8"
1/4"	US* 1/4	1.61	0.64	14	3/16"
5/16"	US* 5/16	1.70	0.68	14	1/4"
3/8"	US* 3/8	1.77	0.90	17	9/32"
1/2"	US* 1/2	2.02	0.96	22	1 3/32"
5/8"	US* 5/8	2.05	0.96	24	1/2"
3/4"	US* 3/4	2.11	0.96	37	5/8"
7/8"	US* 7/8	2.17	1.02	30	3/4"
1"	US* 1"	2.56	1.23	36	7/8"

Hex flats (H) are metric. Fractional upon request

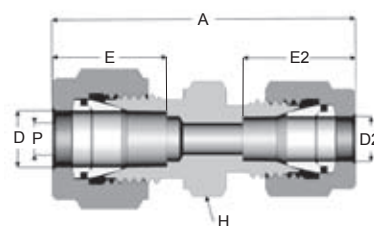
*Specify material when ordering. See page 8 for materials and codes.

CONVERSION UNION | USMOD

APPLICATION

Join a metric tube to a fractional tube.

Special requirements on request



TUBE SIZE-METRIC TO FRACTIONAL (mm to inch)

D	D2	Reference	A	E	E2	H	P
3	1/8"	USMOD* 3 1/8	35.2	12.9	12.8	12	2.4
4	1/8"	USMOD* 4 1/8	36.5	13.7	12.8	12	2.4
4	3/16"	USMOD* 4 3/16	38.6	13.7	13.7	12	2.4
4	1/4"	USMOD* 4 1/4	39.4	13.7	15.3	14	2.4
6	1/8"	USMOD* 6 1/8	38.5	15.3	12.8	14	2.4
6	3/16"	USMOD* 6 3/16	39.8	15.3	13.7	14	3.2
6	1/4"	USMOD* 6 1/4	41.0	15.3	15.3	14	4.8
6	5/16"	USMOD* 6 5/16	42.3	15.3	16.2	14	4.8
6	3/8"	USMOD* 6 3/8	43.7	15.3	17.2	17	4.8
8	1/4"	USMOD* 8 1/4	42.3	16.2	15.3	14	6.4
8	5/16"	USMOD* 8 5/16	43.2	16.2	16.2	14	6.4
8	3/8"	USMOD* 8 3/8	44.3	16.2	16.9	17	6.4

*Specify material when ordering. See page 8 for materials and codes.

D	D2	Reference	A	E	E2	H	P
10	1/8"	USMOD*10 1/8	41.8	17.2	12.8	17	2.4
10	1/4"	USMOD*10 1/4	44.5	17.2	15.3	17	4.8
10	5/16"	USMOD*10 5/16	45.1	17.2	16.2	17	6.4
10	3/8"	USMOD* 10 3/8	45.9	17.2	17.2	17	7.1
12	1/4"	USMOD* 12 1/4	47.3	22.8	15.3	22	4.8
12	3/8"	USMOD* 12 3/8	48.4	22.8	16.9	22	7.1
12	1/2"	USMOD* 12 1/2	51.2	22.8	22.8	22	9.5
16	5/8"	USMOD* 16 5/8	52	24.4	24.4	24	12.7
18	3/4"	USMOD* 18 3/4	53.5	24.4	24.4	27	15.1
20	1/2"	USMOD* 20 1/2	55	26	22.8	30	10.3
25	1"	USMOD* 25 1	65	31.3	31.3	36	21.8

Hex flats (H) are metric. Fractional upon request

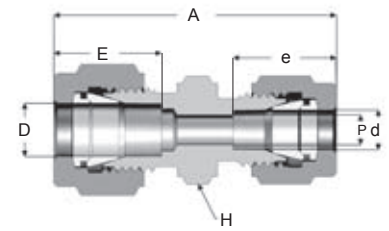
*Specify material when ordering. See page 8 for materials and codes.

REDUCING UNION | URS

APPLICATION

Connects tubes of different dimensions.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	d	Reference	A	E	e	H	P
4	3	URS* 4 3	36,6	13,7	12,9	12	2,4
6	3	URS* 6 3	38,6	15,7	12,9	14	2,4
6	4	URS* 6 4	39,4	15,7	13,7	14	3,2
8	6	URS* 8 6	42,3	16,2	15,3	14	4,8
10	6	URS* 10 6	44,5	17,2	15,3	17	4,8
10	8	URS* 10 8	45,1	17,2	16,2	17	6,4
12	6	URS* 12 6	47,0	22,8	15,3	22	4,8
12	8	URS* 12 8	47,8	22,8	16,2	22	6,4
12	10	URS* 12 10	48,7	22,8	17,2	22	7,9
16	10	URS* 16 10	49,5	24,4	17,2	24	7,9
16	12	URS* 16 12	52,0	24,4	22,8	24	9,5
18	12	URS* 18 12	53,5	24,4	22,8	27	9,5
20	12	URS* 20 12	54,0	26,0	22,8	30	9,5
22	20	URS* 22 20	55,6	26,0	26,0	30	15,9
25	20	URS* 25 20	62,3	31,3	26,0	36	15,9
25	22	URS* 25 22	62,3	31,3	26,0	36	19,1

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	d	Reference	A	E	e	H (mm)	P
1/8"	1/16"	URS* 1/8 1/16	1.22	0.50	0.34	12	3/64"
3/16"	1/8"	URS* 3/16 1/8	1.44	0.54	0.51	12	3/32"
1/4"	1/16"	URS* 1/4 1/16	1.35	0.60	0.34	14	3/64"
1/4"	1/8"	URS* 1/4 1/8	1.52	0.62	0.51	14	3/32"
1/4"	3/16"	URS* 1/4 3/16	1.55	0.62	0.54	14	1/8"
5/16"	1/4"	URS* 5/16 1/4	1.67	0.64	0.60	14	3/16"
3/8"	1/4"	URS* 3/8 1/4	1.75	0.68	0.60	17	3/16"
3/8"	5/16"	URS* 3/8 5/16	1.78	0.68	0.64	17	1/4"
1/2"	1/4"	URS* 1/2 1/4	1.85	0.90	0.60	17	3/16"
1/2"	3/8"	URS* 1/2 3/8	1.92	0.90	0.68	17	9/32"
5/8"	3/8"	URS* 5/8 3/8	1.95	0.96	0.68	24	9/32"
5/8"	1/2"	URS* 5/8 1/2	2.05	0.96	0.90	24	13/32"
3/4"	1/2"	URS* 3/4 1/2	2.13	1.02	0.90	30	3/8"
3/4"	5/8"	URS* 3/4 5/8	2.13	1.02	0.96	30	1/2"
1"	1/2"	URS* 1" 1/2	2.38	1.23	0.9	36	3/8"
1"	3/4"	URS* 1" 3/4	2.45	1.23	0.96	36	5/8"

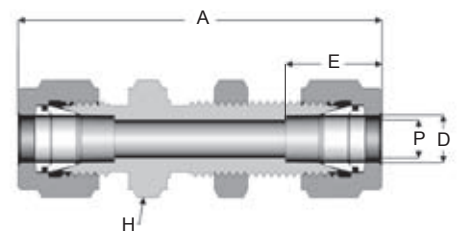
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

BULKHEAD UNION | UCS

APPLICATION

Join tubes of the same dimension through a wall panel.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	P	B'Head Hole Drill Size	Max. B'Head Thickness
3	UCS* 3	51,3	12,9	12	2,4	8,3	12,7
4	UCS* 4	53,6	13,7	14	3,2	9,8	12,7
6	UCS* 6	57,7	15,3	17	4,8	11,5	10,3
8	UCS* 8	61,0	16,2	17	6,4	13,1	11,1
10	UCS* 10	63,7	17,2	19	7,9	16,3	11,1
12	UCS* 12	71,0	22,8	24	9,5	19,5	12,7
14	UCS* 14	72,5	24,4	27	11,1	21,0	12,7
16	UCS* 16	72,5	24,4	27	12,7	22,5	12,7
18	UCS* 18	78,9	24,4	30	15,1	26,0	16,7
20	UCS* 20	84,5	26,0	36	15,9	29,0	19,1
22	UCS* 22	84,9	26,0	36	19,1	29,0	20,6
25	UCS* 25	95,8	31,3	41	22,2	33,8	23,8

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	P	B'Head Hole Drill Size	Max. B'Head Thickness
1/8"	UCS* 1/8	2.02	0.51	12	3/32"	21/64"	1/2"
3/16"	UCS* 3/16	2.11	0.54	14	1/8"	25/64"	1/2"
1/4"	UCS* 1/4	2.27	0.60	17	3/16"	29/64"	17/32"
5/16"	UCS* 5/16	2.40	0.64	17	1/4"	33/64"	9/16"
3/8"	UCS* 3/8	2.45	0.68	19	9/32"	37/64"	9/16"
1/2"	UCS* 1/2	2.80	0.90	24	13/32"	49/64"	19/32"
5/8"	UCS* 5/8	2.85	0.96	27	1/2"	57/64"	19/32"
3/4"	UCS* 3/4	3.11	0.96	27	5/8"	1 1/64"	25/32"
1"	UCS* 1"	3.77	1.23	41	7/8"	1 21/64"	15/16"

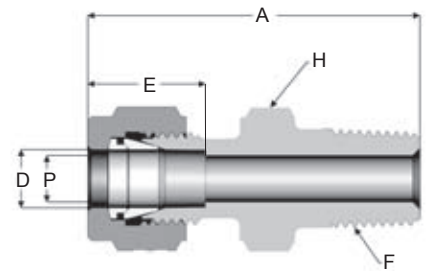
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

MALE UNION | UMS

APPLICATION

Connects a tube to a pipe or a female taper-threaded apparatus.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	1/16"	UMS* 3 1/16 N	30,5	12,9	12	2,4
3	1/8"	UMS* 3 1/8 N	30,5	12,9	12	2,4
3	1/4"	UMS* 3 1/4 N	35,6	12,9	14	2,4
4	1/8"	UMS* 4 1/8 N	31,2	13,7	12	3,2
4	1/4"	UMS* 4 1/4 N	36,3	13,7	14	3,2
6	1/8"	UMS* 6 1/8 N	32,8	15,3	14	4,8
6	1/4"	UMS* 6 1/4 N	37,9	15,3	14	4,8
6	3/8"	UMS* 6 3/8 N	38,4	15,3	19	4,8
6	1/2"	UMS* 6 1/2 N	44,7	15,3	22	4,8
8	1/8"	UMS* 8 1/8 N	34,2	16,2	14	4,8
8	1/4"	UMS* 8 1/4 N	38,7	16,2	14	6,4
8	3/8"	UMS* 8 3/8 N	39,3	16,2	19	6,4
8	1/2"	UMS* 8 1/2 N	45,6	16,2	22	6,4
10	1/8"	UMS* 10 1/8 N	36,3	17,2	17	4,8
10	1/4"	UMS* 10 1/4 N	40,9	17,2	17	7,9
10	3/8"	UMS* 10 3/8 N	40,9	17,2	19	7,9
10	1/2"	UMS* 10 1/2 N	46,5	17,2	22	7,9
10	3/4"	UMS* 10 3/4 N	48,0	17,2	27	7,9
12	1/8"	UMS* 12 1/8 N	38,8	22,8	22	4,8
12	1/4"	UMS* 12 1/4 N	43,4	22,8	22	7,1
12	3/8"	UMS* 12 3/8 N	43,4	22,8	22	9,5
12	1/2"	UMS* 12 1/2 N	49,0	22,8	22	9,5
12	3/4"	UMS* 12 3/4 N	50,5	22,8	27	9,5
14	1/4"	UMS* 14 1/4 N	44,1	24,4	24	7,1
14	3/8"	UMS* 14 3/8 N	44,1	24,4	24	9,5
14	1/2"	UMS* 14 1/2 N	44,1	24,4	24	11,1
14	3/4"	UMS* 14 3/4 N	49,0	24,4	27	11,1
15	3/8"	UMS* 15 3/8 N	45,6	24,3	24	9,5
15	1/2"	UMS* 15 1/2 N	50,5	24,3	24	11,1
16	3/8"	UMS* 16 3/8 N	44,1	24,4	24	7,1
16	1/2"	UMS* 16 1/2 N	49,0	24,4	24	11,1
16	3/4"	UMS* 16 3/4 N	50,5	24,4	27	12,7
18	1/2"	UMS* 18 1/2 N	50,5	24,4	27	11,1
18	3/4"	UMS* 18 3/4 N	50,5	24,4	27	15,9
18	1"	UMS* 18 1" N	57,2	24,4	36	15,9
20	1/2"	UMS* 20 1/2 N	52,3	26,0	30	11,1
20	3/4"	UMS* 20 3/4 N	52,3	26,0	30	15,9
20	1"	UMS* 20 1" N	56,4	26,0	36	15,9
22	1/2"	UMS* 22 1/2 N	52,1	26	30	11,1
22	3/4"	UMS* 22 3/4 N	52,3	26,0	30	15,9
22	1"	UMS* 22 1" N	57,1	26,0	36	19,1
25	1/2"	UMS* 25 1/2 N	56,9	31,3	36	11,1
25	3/4"	UMS* 25 3/4 N	57,5	31,3	36	15,9
25	1"	UMS* 25 1" N	62,3	31,3	36	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/16"	UMS* 1/16 1/16 N	0.94	0.34	8	3/16"
1/16"	1/8"	UMS* 1/16 1/8 N	1.03	0.34	12	3/16"
1/8"	1/16"	UMS* 1/8 1/16 N	1.20	0.50	12	3/32"
1/8"	1/8"	UMS* 1/8 1/8 N	1.20	0.50	12	3/32"
1/8"	1/4"	UMS* 1/8 1/4 N	1.40	0.50	14	3/32"
3/16"	1/8"	UMS* 3/16 1/8 N	1.23	0.54	12	1/8"
3/16"	1/4"	UMS* 3/16 1/4 N	1.43	0.54	14	1/8"
1/4"	1/8"	UMS* 1/4 1/8 N	1.29	0.60	14	3/16"
1/4"	1/4"	UMS* 1/4 1/4 N	1.49	0.60	14	3/16"
1/4"	3/8"	UMS* 1/4 3/8 N	1.51	0.60	19	3/16"
1/4"	1/2"	UMS* 1/4 1/2 N	1.76	0.60	22	3/16"
5/16"	1/8"	UMS* 5/16 1/8 N	1.35	0.64	14	3/16"
5/16"	1/4"	UMS* 5/16 1/4 N	1.52	0.64	14	1/4"
3/8"	1/8"	UMS* 3/8 1/8 N	1.43	0.66	17	3/16"
3/8"	1/4"	UMS* 3/8 1/4 N	1.61	0.66	17	9/32"
3/8"	3/8"	UMS* 3/8 3/8 N	1.61	0.66	19	9/32"
3/8"	1/2"	UMS* 3/8 1/2 N	1.83	0.66	22	9/32"
3/8"	3/4"	UMS* 3/8 3/4 N	1.89	0.66	27	9/32"
1/2"	1/4"	UMS* 1/2 1/4 N	1.71	0.90	22	9/32"
1/2"	3/8"	UMS* 1/2 3/8 N	1.71	0.90	22	3/8"
1/2"	1/2"	UMS* 1/2 1/2 N	1.93	0.90	22	3/8"
1/2"	3/4"	UMS* 1/2 3/4 N	1.99	0.90	27	3/8"
5/8"	3/8"	UMS* 5/8 3/8 N	1.74	0.96	24	3/8"
5/8"	1/2"	UMS* 5/8 1/2 N	1.93	0.96	24	3/8"
5/8"	3/4"	UMS* 5/8 3/4 N	1.99	0.96	27	1/2"
3/4"	1/2"	UMS* 3/4 1/2 N	1.99	0.96	27	15/32"
3/4"	3/4"	UMS* 3/4 3/4 N	1.99	0.96	27	5/8"
3/4"	1"	UMS* 3/4 1" N	2.25	0.96	36	5/8"
7/8"	3/4"	UMS* 7/8 3/4 N	2.06	1.02	30	5/8"
7/8"	1"	UMS* 7/8 1" N	2.25	1.02	36	3/4"
1"	3/4"	UMS* 1" 3/4 N	2.26	1.23	36	5/8"
1"	1"	UMS* 1" 1" N	2.45	1.23	36	7/8"

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	1/8"	UMS* 3 1/8 T	30,5	12,9	12	2,4
3	1/4"	UMS* 3 1/4 T	35,6	12,9	14	2,4
4	1/8"	UMS* 4 1/8 T	31,2	13,7	12	3,2
4	1/4"	UMS* 4 1/4 T	36,3	13,7	14	3,2
6	1/8"	UMS* 6 1/8 T	32,8	15,3	14	4,8
6	1/4"	UMS* 6 1/4 T	37,9	15,3	14	4,8
6	3/8"	UMS* 6 3/8 T	38,4	15,3	19	4,8
6	1/2"	UMS* 6 1/2 T	44,7	15,3	22	4,8
8	1/8"	UMS* 8 1/8 T	34,2	16,2	14	4,8
8	1/4"	UMS* 8 1/4 T	38,7	16,2	14	6,4
8	3/8"	UMS* 8 3/8 T	39,3	16,2	19	6,4
8	1/2"	UMS* 8 1/2 T	45,6	16,2	22	6,4
10	1/8"	UMS* 10 1/8 T	36,3	17,2	17	4,8
10	1/4"	UMS* 10 1/4 T	40,9	17,2	17	7,9
10	3/8"	UMS* 10 3/8 T	40,9	17,2	19	7,9
10	1/2"	UMS* 10 1/2 T	46,5	17,2	22	7,9
10	3/4"	UMS* 10 3/4 T	48,0	17,2	27	7,9
12	1/4"	UMS* 12 1/4 T	43,4	22,8	22	7,1
12	3/8"	UMS* 12 3/8 T	43,4	22,8	22	9,5
12	1/2"	UMS* 12 1/2 T	49,0	22,8	22	9,5
12	3/4"	UMS* 12 3/4 T	50,5	22,8	27	9,5
14	1/4"	UMS* 14 1/4 T	44,1	24,4	24	7,1
14	3/8"	UMS* 14 3/8 T	44,1	24,4	24	9,5
14	1/2"	UMS* 14 1/2 T	44,1	24,4	24	11,1
14	3/4"	UMS* 14 3/4 T	49,0	24,4	27	11,1
15	1/2"	UMS* 15 1/2 T	50,5	24,3	24	11,1
16	3/8"	UMS* 16 3/8 T	44,1	24,4	24	7,1
16	1/2"	UMS* 16 1/2 T	49,0	24,4	24	11,1
16	3/4"	UMS* 16 3/4 T	50,5	24,4	27	12,7
18	1/2"	UMS* 18 1/2 T	50,5	24,4	27	11,1
18	3/4"	UMS* 18 3/4 T	50,5	24,4	27	15,9
20	1/2"	UMS* 20 1/2 T	52,3	26,0	30	11,1
20	3/4"	UMS* 20 3/4 T	52,3	26,0	30	15,9
22	3/4"	UMS* 22 3/4 T	52,3	26,0	30	15,9
22	1"	UMS* 22 1" T	57,1	26,0	36	19,1
25	3/4"	UMS* 25 3/4 T	57,5	31,3	36	15,9
25	1"	UMS* 25 1" T	62,3	31,3	36	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/16"	UMS* 1/16 1/16 T	0.94	0.34	8	3/16"
1/16"	1/8"	UMS* 1/16 1/8 T	1.03	0.34	12	3/16"
1/8"	1/8"	UMS* 1/8 1/8 T	1.20	0.50	12	3/32"
1/8"	1/4"	UMS* 1/8 1/4 T	1.40	0.50	14	3/32"
1/8"	3/8"	UMS* 1/8 3/8 T	1.42	0.5	19	3/32"
3/16"	1/4"	UMS* 3/16 1/4 T	1.43	0.54	14	1/8"
1/4"	1/8"	UMS* 1/4 1/8 T	1.29	0.60	14	3/16"
1/4"	1/4"	UMS* 1/4 1/4 T	1.49	0.60	14	3/16"
1/4"	3/8"	UMS* 1/4 3/8 T	1.51	0.60	19	3/16"
1/4"	1/2"	UMS* 1/4 1/2 T	1.76	0.60	22	3/16"
5/16"	1/8"	UMS* 5/16 1/8 T	1.35	0.64	14	3/16"
5/16"	1/4"	UMS* 5/16 1/4 T	1.52	0.64	14	1/4"
3/8"	1/8"	UMS* 3/8 1/8 T	1.43	0.66	17	3/16"
3/8"	1/4"	UMS* 3/8 1/4 T	1.61	0.66	17	9/32"
3/8"	3/8"	UMS* 3/8 3/8 T	1.61	0.66	19	9/32"
3/8"	1/2"	UMS* 3/8 1/2 T	1.83	0.66	22	9/32"
3/8"	3/4"	UMS* 3/8 3/4 T	1.89	0.66	27	9/32"
1/2"	1/4"	UMS* 1/2 1/4 T	1.71	0.90	22	9/32"
1/2"	3/8"	UMS* 1/2 3/8 T	1.71	0.90	22	3/8"
1/2"	1/2"	UMS* 1/2 1/2 T	1.93	0.90	22	3/8"
1/2"	3/4"	UMS* 1/2 3/4 T	1.99	0.90	27	3/8"
5/8"	3/8"	UMS* 5/8 3/8 T	1.74	0.96	24	3/8"
5/8"	1/2"	UMS* 5/8 1/2 T	1.93	0.96	24	3/8"
3/4"	3/4"	UMS* 3/4 3/4 T	1.99	0.96	27	5/8"
3/4"	1"	UMS* 3/4 1" T	2.25	0.96	36	5/8"
1"	3/4"	UMS* 1" 3/4 T	2.26	1.23	36	5/8"
1"	1"	UMS* 1" 1" T	2.45	1.23	36	7/8"

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

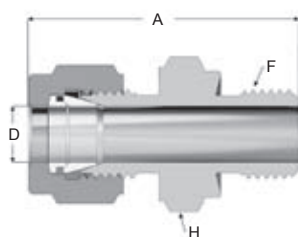
THERMOCOUPLE CONNECTOR | UMTS

For ordering use UMTS
instead of UMS

APPLICATION

Straight-through
bore to join apparatus
such as dip tubes and
thermocouple sensors.

Special requirements on request



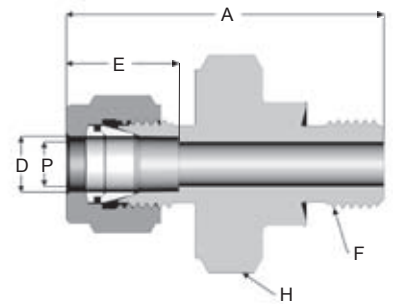
Depending on the UMTS reference, the
operating pressure might be lower due
to the lower wall thickness.

MALE UNION | UMS

APPLICATION

Connects a tube to a pipe or a female parallel-threaded apparatus.

Special requirements on request



BSPP - ISO BSP Parallel Thread (G)

TUBE SIZE - METRIC

D	F	Reference	A	E	H	P
3	1/8"	UMS* 3 1/8 G	30,0	12,9	14	2,4
3	1/4"	UMS* 3 1/4 G	35,3	12,9	19	2,4
4	1/8"	UMS* 4 1/8 G	30,7	13,7	14	3,2
4	1/4"	UMS* 4 1/4 G	35,9	13,7	19	3,2
6	1/8"	UMS* 6 1/8 G	32,3	15,3	14	4
6	1/4"	UMS* 6 1/4 G	37,6	15,3	19	4,8
6	3/8"	UMS* 6 3/8 G	38,9	15,3	22	4,8
6	1/2"	UMS* 6 1/2 G	44,7	15,3	27	4,8
8	1/8"	UMS* 8 1/8 G	33,2	16,2	14	4,8
8	1/4"	UMS* 8 1/4 G	38,5	16,2	19	5,9
8	3/8"	UMS* 8 3/8 G	39,8	16,2	22	6,4
8	1/2"	UMS* 8 1/2 G	45,6	16,2	27	6,4
8	3/4"	UMS* 8 3/4 G	50,8	16,2	36	6,4
10	1/8"	UMS* 10 1/8 G	36,5	17,2	17	4
10	1/4"	UMS* 10 1/4 G	39,4	17,2	19	5,9
10	3/8"	UMS* 10 3/8 G	40,6	17,2	22	7,9
10	1/2"	UMS* 10 1/2 G	46,5	17,2	27	7,9
10	3/4"	UMS* 10 3/4 G	50,7	17,2	36	7,9
12	1/4"	UMS* 12 1/4 G	42,6	22,8	22	5,9
12	3/8"	UMS* 12 3/8 G	43,1	22,8	22	7,9
12	1/2"	UMS* 12 1/2 G	49,0	22,8	27	9,5
12	3/4"	UMS* 12 3/4 G	52,8	22,8	36	9,5
14	1/4"	UMS* 14 1/4 G	43,4	24,4	24	5,9
14	3/8"	UMS* 14 3/8 G	43,3	24,4	24	7,9
14	1/2"	UMS* 14 1/2 G	49,2	24,4	27	9,5
16	3/8"	UMS* 16 3/8 G	43,9	24,4	24	7,9
16	1/2"	UMS* 16 1/2 G	49,0	24,4	27	11,9
16	3/4"	UMS* 16 3/4 G	53,0	24,4	36	12,7
18	1/2"	UMS* 18 1/2 G	49,0	24,4	27	11,9
18	3/4"	UMS* 18 3/4 G	52,8	24,4	36	15,1
20	1/2"	UMS* 20 1/2 G	50,5	26,0	30	11,9
20	3/4"	UMS* 20 3/4 G	52,8	26,0	36	15,9
22	1/2"	UMS* 22 1/2 G	50,5	26	30	11,9
22	3/4"	UMS* 22 3/4 G	52,8	26,0	36	15,9
22	1"	UMS* 22 1 G	55,3	26,0	41	18,3
25	3/4"	UMS* 25 3/4 G	57,5	31,3	36	15,9
25	1"	UMS* 25 1 G	60,1	31,3	41	19,8

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/8"	UMS* 1/16 1/8 G	0.98	0.35	14	3/64
1/8"	1/8"	UMS* 1/8 1/8 G	1.18	0.50	14	3/32"
1/8"	1/4"	UMS* 1/8 1/4 G	1.39	0.50	19	3/32"
1/8"	3/8"	UMS* 1/8 3/8 G	1.44	0.5	22	3/32"
3/16"	1/4"	UMS* 3/16 1/4 G	1.21	0.54	19	3/32"
1/4"	1/8"	UMS* 1/4 1/8 G	1.27	0.60	14	5/32"
1/4"	1/4"	UMS* 1/4 1/4 G	1.48	0.60	19	3/16"
1/4"	3/8"	UMS* 1/4 3/8 G	1.53	0.60	22	3/16"
1/4"	1/2"	UMS* 1/4 1/2 G	1.76	0.60	27	3/16"
3/8"	1/8"	UMS* 3/8 1/8 G	1.44	0.66	17	5/32"
3/8"	1/4"	UMS* 3/8 1/4 G	1.55	0.66	19	7/32"
3/8"	3/8"	UMS* 3/8 3/8 G	1.60	0.66	22	9/32"
1/2"	1/4"	UMS* 1/2 1/4 G	1.68	0.90	22	7/32"
1/2"	3/8"	UMS* 1/2 3/8 G	1.70	0.90	22	3/8"
1/2"	1/2"	UMS* 1/2 1/2 G	1.93	0.90	27	3/8"
5/8"	3/8"	UMS* 5/8 3/8 G	1.73	0.96	24	3/8"
5/8"	1/2"	UMS* 5/8 1/2 G	1.93	0.96	27	15/32"
5/8"	3/4"	UMS* 5/8 3/4 G	2.09	0.96	36	1/2"
3/4"	1/2"	UMS* 3/4 1/2 G	1.93	0.96	27	15/32"
3/4"	3/4"	UMS* 3/4 3/4 G	2.08	0.96	36	5/8"
1"	1"	UMS* 1" 1" G	2.37	1.23	41	7/8"

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

BSPP G end connections should be used with sealing gaskets.
See page 9 for further information. See page 59 for gaskets.

Metric Parallel Thread (MB)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
6	10 x 1	UMSI 6 10 x 1 MB	25,7	15,3	14	4
6	12 x 1	UMSI 6 12 x 1 MB	30,2	15,3	17	4,8
8	12 x 1	UMSI 8 12 x 1 MB	30,9	16,2	17	4,8
10	10 x 1	UMSI 10 10 x 1 MB	27,8	17,2	19	4
10	12 x 1	UMSI 10 12 x 1 MB	31,8	17,2	19	4,8

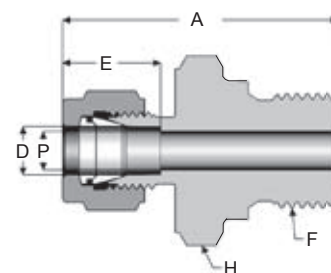
*Specify material when ordering. See page 8 for materials and codes.

MALE UNION | UMS

APPLICATION

Connects a tube to a pipe or a female parallel-threaded apparatus.

Special requirements on request



BSPP - ISO BSP Parallel Thread (K)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	1/8"	UMS* 3 1/8 K	30,0	12,9	14	2,4
3	1/4"	UMS* 3 1/4 K	35,3	12,9	19	2,4
4	1/8"	UMS* 4 1/8 K	30,7	13,7	14	3,2
6	1/8"	UMS* 6 1/8 K	32,3	15,3	14	4
6	1/4"	UMS* 6 1/4 K	37,6	15,3	19	4,8
6	3/8"	UMS* 6 3/8 K	38,9	15,3	22	4,8
6	1/2"	UMS* 6 1/2 K	44,7	15,3	27	4,8
8	1/8"	UMS* 8 1/8 K	33,2	16,2	14	4,8
8	1/4"	UMS* 8 1/4 K	38,5	16,2	19	5,9
8	3/8"	UMS* 8 3/8 K	39,8	16,2	22	6,4
8	1/2"	UMS* 8 1/2 K	45,6	16,2	27	6,4
10	1/4"	UMS* 10 1/4 K	39,4	17,2	19	5,9
10	3/8"	UMS* 10 3/8 K	40,6	17,2	22	7,9
10	1/2"	UMS* 10 1/2 K	46,5	17,2	27	7,9
12	1/4"	UMS* 12 1/4 K	42,6	22,8	22	5,9
12	3/8"	UMS* 12 3/8 K	43,1	22,8	22	7,9
12	1/2"	UMS* 12 1/2 K	49,0	22,8	27	9,5
12	3/4"	UMS* 12 3/4 K	52,8	22,8	36	9,5
14	3/8"	UMS* 14 3/8 K	43,3	24,4	24	7,9
14	1/2"	UMS* 14 1/2 K	49,2	24,4	27	9,5
16	3/8"	UMS* 16 3/8 K	43,9	24,4	24	7,9
16	1/2"	UMS* 16 1/2 K	49,0	24,4	27	11,9
16	3/4"	UMS* 16 3/4 K	53,0	24,4	36	12,7
18	1/2"	UMS* 18 1/2 K	49,0	24,4	27	11,9
18	3/4"	UMS* 18 3/4 K	52,8	24,4	36	15,1
20	1/2"	UMS* 20 1/2 K	50,5	26,0	30	11,9
20	3/4"	UMS* 20 3/4 K	52,8	26,0	36	15,9
22	3/4"	UMS* 22 3/4 K	52,8	26,0	36	15,9
22	1"	UMS* 22 1 K	55,3	26,0	41	18,3
25	3/4"	UMS* 25 3/4 K	57,5	31,3	36	15,9
25	1"	UMS* 25 1 K	60,1	31,3	41	19,8

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/8"	1/8"	UMS* 1/8 1/8 K	1.18	0.50	14	3/32"
1/8"	1/4"	UMS* 1/8 1/4 K	1.39	0.50	19	3/32"
3/16"	1/8"	UMS* 3/16 1/8 K	1.21	0.54	14	3/32"
1/4"	1/8"	UMS* 1/4 1/8 K	1.27	0.60	14	5/32"
1/4"	1/4"	UMS* 1/4 1/4 K	1.48	0.60	19	3/16"
1/4"	3/8"	UMS* 1/4 3/8 K	1.53	0.60	22	3/16"
1/4"	1/2"	UMS* 1/4 1/2 K	1.76	0.60	27	3/16"
5/16"	1/4"	UMS* 5/16 1/4 K	1.52	0.64	19	7/32"
3/8"	1/8"	UMS* 3/8 1/8 K	1.44	0.66	17	5/32"
3/8"	1/4"	UMS* 3/8 1/4 K	1.55	0.66	19	7/32"
3/8"	3/8"	UMS* 3/8 3/8 K	1.60	0.66	22	9/32"
3/8"	1/2"	UMS* 3/8 1/2 K	1.83	0.66	27	9/32"
1/2"	1/4"	UMS* 1/2 1/4 K	1.68	0.90	22	7/32"
1/2"	3/8"	UMS* 1/2 3/8 K	1.70	0.90	22	3/8"
1/2"	1/2"	UMS* 1/2 1/2 K	1.93	0.90	27	3/8"
1/2"	3/4"	UMS* 1/2 3/4 K	2.08	0.90	36	3/8"
3/4"	1/2"	UMS* 3/4 1/2 K	1.93	0.96	27	15/32"
3/4"	3/4"	UMS* 3/4 3/4 K	2.08	0.96	36	5/8"
1"	3/4"	UMS* 1" 3/4 K	2.26	1.23	36	5/8"
1"	1"	UMS* 1" 1" K	2.37	1.23	41	7/8"

BSPP K end connections must be used with sealing gaskets. See page 9 for further information. See page 59 for gaskets.

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

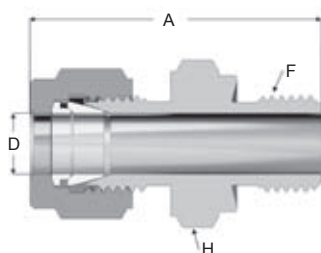
THERMOCOUPLE CONNECTOR | UMTS

For ordering use UMTS instead of UMS

APPLICATION

Straight-through bore to join apparatus such as dip tubes and thermocouple sensors.

Special requirements on request



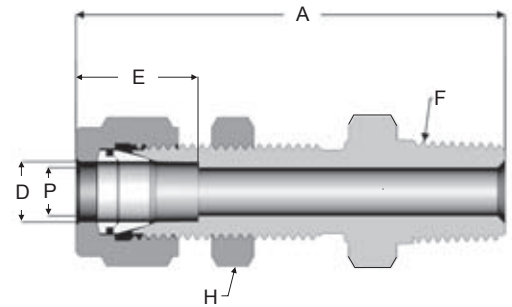
Depending on the UMTS reference, the operating pressure might be lower due to the lower wall thickness.

MALE BULKHEAD UNION | UCMS

APPLICATION (NPT)

Connects a tube to a female taper-threaded apparatus or pipe through a wall or panel.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P	B'Head Hole Drill Size	Max. B'Head Thick.
3	1/8"	UCMS* 3 1/8 N	46,5	12,9	12	2,4	8,3	12,7
4	1/8"	UCMS* 4 1/8 N	47,2	13,7	12	3,2	9,8	12,7
6	1/8"	UCMS* 6 1/8 N	49,5	15,3	17	4,8	11,5	10,3
6	1/4"	UCMS* 6 1/4 N	49,5	15,3	17	4,8	11,5	10,3
6	3/8"	UCMS* 6 3/8 N	53,3	15,3	17	4,8	11,5	10,3
8	1/8"	UCMS* 8 1/8 N	51,9	16,2	17	4,8	13,1	11,1
8	1/4"	UCMS* 8 1/4 N	56,6	16,2	17	6,4	13,1	11,1
10	1/4"	UCMS* 10 1/4 N	57,4	17,2	19	7,9	16,3	11,1
12	3/8"	UCMS* 12 3/8 N	63,2	22,8	24	9,5	19,5	12,7
12	1/2"	UCMS* 12 1/2 N	68,8	22,8	24	9,5	19,5	12,7

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P	B'Head Hole Drill Size	Max. B'Head Thick.
1/8"	1/8"	UCMS* 1/8 1/8 N	1.83	0.51	12	3/32"	21/64"	1/2"
3/16"	1/8"	UCMS* 3/16 1/8 N	1.86	0.54	12	1/8"	25/64"	1/2"
1/4"	1/8"	UCMS* 1/4 1/8 N	1.95	0.60	17	3/16"	29/64"	17/32"
1/4"	1/4"	UCMS* 1/4 1/4 N	2.10	0.60	17	3/16"	29/64"	17/32"
3/8"	1/4"	UCMS* 3/8 1/4 N	2.26	0.68	19	9/32"	37/64"	9/16"
3/8"	3/8"	UCMS* 3/8 3/8 N	2.26	0.68	19	9/32"	37/64"	9/16"
3/8"	1/2"	UCMS* 3/8 1/2 N	2.51	0.68	22	9/32"	37/64"	9/16"
1/2"	3/8"	UCMS* 1/2 3/8 N	2.49	0.90	24	3/8"	49/64"	19/32"
1/2"	1/2"	UCMS* 1/2 1/2 N	2.71	0.90	24	3/8"	49/64"	19/32"
3/4"	3/4"	UCMS* 3/4 3/4 N	3	0.96	30	5/8"	1 1/64"	25/32"
1"	1"	UCMS* 1" 1" N	3.67	1.23	41	7/8"	1 21/64"	15/16"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P	B'Head Hole Drill Size	Max. B'Head Thick.
3	1/8"	UCMS* 3 1/8 T	46,5	12,9	12	2,4	8,3	12,7
4	1/8"	UCMS* 4 1/8 T	47,2	13,7	12	3,2	9,8	12,7
6	1/8"	UCMS* 6 1/8 T	49,5	15,3	17	4,8	11,5	10,3
6	1/4"	UCMS* 6 1/4 T	49,5	15,3	17	4,8	11,5	10,3
8	3/8"	UCMS* 8 3/8 T	56,6	16,2	19	6,4	13,1	11,1

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P	B'Head Hole Drill Size	Max. B'Head Thick.
1/8"	1/8"	UCMS* 1/8 1/8 T	1.83	0.51	12	3/32"	21/64"	1/2"
1/4"	1/4"	UCMS* 1/4 1/4 T	2.10	0.60	17	3/16"	29/64"	17/32"
3/8"	1/4"	UCMS* 3/8 1/4 T	2.26	0.68	19	9/32"	37/64"	9/16"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

MALE BULKHEAD UNION WITH O-RING | UCOMS

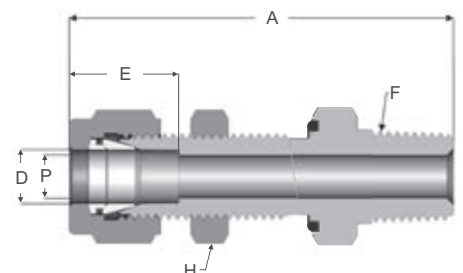
For ordering use UCOMS instead of UCMS

APPLICATION

Connects a tube to a female taper-threaded apparatus or pipe through a wall or panel.

The O-ring ensures a perfect tightness for isolators.

Special requirements on request

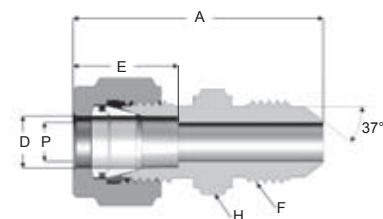


STRAIGHT UNION «AN» | UMS AN

APPLICATION

Connects tubes to a female AN-threaded apparatus.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	AN tube flare size	Reference	A	E	H	F
4	3/16"	UMS*4 3/16 AN	34,1	13,7	12	3/16" - 24
10	1/4"	UMS* 10 1/4 AN	40,1	17,2	17	7/16" - 20
10	3/8"	UMS* 10 3/8 AN	40,5	17,2	17	9/16" - 18
12	1/2"	UMS* 12 1/2 AN	46,0	22,8	22	3/4" - 16
18	3/4"	UMS* 18 3/4 AN	54,0	24,4	27	1 1/16" - 12

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	AN tube flare size	Reference	A	E	H	F
1/8"	1/8"	UMS* 1/8 1/8 AN	1.25	0.51	12	5/16" - 24
1/8"	1/4"	UMS* 1/8 1/4 AN	1.41	0.51	14	7/16" - 20
3/16"	3/16"	UMS* 3/16 3/16 AN	1.34	0.54	12	3/16" - 24
1/4"	1/4"	UMS* 1/4 1/4 AN	1.50	0.60	14	7/16" - 20
5/16"	5/16"	UMS* 5/16 5/16 AN	1.53	0.64	14	1/2" - 20
3/8"	1/4"	UMS* 3/8 1/4 AN	1.58	0.68	17	7/16" - 20
3/8"	3/8"	UMS* 3/8 3/8 AN	1.59	0.68	17	9/16" - 18
1/2"	1/2"	UMS* 1/2 1/2 AN	1.81	0.90	22	3/4" - 16
3/4"	1/4"	UMS* 3/4 3/4 AN	2.13	0.96	27	1 1/16" - 12
1"	1"	UMS* 1" 1" AN	2.43	1.23	36	1 5/16" - 12

Hex flats (H) are metric. Fractional upon request

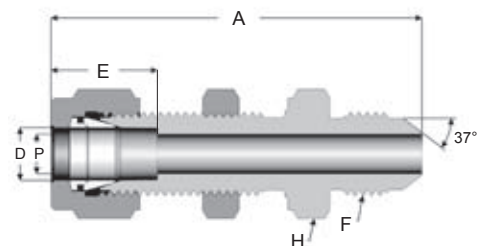
*Specify material when ordering. See page 8 for materials and codes.

BULKHEAD UNION «AN» | UCMS AN

APPLICATION

Connects tubes to a female AN-threaded apparatus through a wall or panel.

Special requirements on request



TUBE SIZE - FRACTIONAL (inch)

D	AN tube flare size	Reference	A	E	H (mm)	P	B'Head Hole Drill Size	Max. B'Head Thick.	F
1/4"	1/4"	UCMS* 1/4 1/4 AN	2.14	0.60	17	1 1/64"	29/64"	17/32"	7/16" - 20
3/8"	3/8"	UCMS* 3/8 3/8 AN	2.28	0.68	19	19/64"	37/64"	9/16"	9/16" - 18
1/2"	1/2"	UCMS* 1/2 1/2 AN	2.59	0.90	24	25/64"	49/64"	19/32"	3/4" - 16
3/4"	3/4"	UCMS* 3/4 3/4 AN	3.08	0.96	36	39/64"	1 1/64"	25/32"	1 1/16" - 12
1	1"	UCMS* 1" 1" AN	3.63	1.23	41	27/32"	1 2 1/64"	15/16"	1 5/16" - 12

Hex flats (H) are metric. Fractional upon request

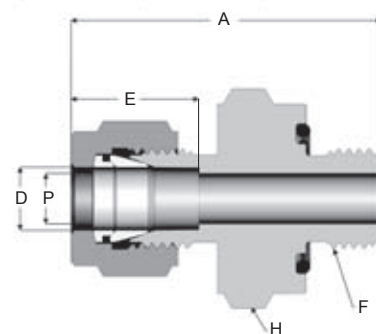
*Specify material when ordering. See page 8 for materials and codes.

MALE O-RING CONNECTOR (NPSM) | UMOMS

APPLICATION

Connects a tube to a female threaded apparatus with an O-ring face seal connection.

Special requirements on request



NPSM (NM)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	1/8"	UMOMS* 3 1/8	32,8	12,9	19	2,4
6	1/8"	UMOMS* 6 1/8	35,2	15,3	19	4,8
6	3/8"	UMOMS* 6 3/8	39,9	15,3	30	4,8
8	1/4"	UMOMS* 8 1/4	39,3	16,2	24	6,4
10	1/4"	UMOMS* 10 1/4	40,1	17,2	24	7,1
10	1/2"	UMOMS* 10 1/2	47,3	17,2	36	7,1
12	1/2"	UMOMS* 12 1/2	49,8	22,8	36	9,5
16	1/2"	UMOMS* 16 1/2	49,8	24,4	36	13

NPSM fittings are supplied with sealing O-rings in Nitrile (NBR). Fluorocarbon (FPM) O-rings are available upon request. See page 8 for additional information.

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/8"	UMOMS* 1/16 1/8	1.13	0.34	19	3/64"
1/8"	1/8"	UMOMS* 1/8 1/8	1.29	0.5	19	3/32"
1/8"	1/4"	UMOMS* 1/8 1/4	1.44	0.5	24	3/32"
3/16"	1/8"	UMOMS* 3/16 1/8	1.34	0.54	19	1/8"
1/4"	1/8"	UMOMS* 1/4 1/8	1.41	0.60	19	3/16"
1/4"	1/4"	UMOMS* 1/4 1/4	1.51	0.60	24	3/16"
1/4"	1/2"	UMOMS* 1/4 1/2	1.81	0.6	36	3/16"
1/4"	3/8"	UMOMS* 1/4 3/8	1.59	0.60	30	3/16"
3/8"	1/8"	UMOMS* 3/8 1/8	1.47	0.68	19	3/16"
3/8"	1/4"	UMOMS* 3/8 1/4	1.59	0.68	24	9/32"
3/8"	3/8"	UMOMS* 3/8 3/8	1.66	0.68	30	9/32"
3/8"	1/2"	UMOMS* 3/8 1/2	1.87	0.68	36	9/32"
1/2"	1/4"	UMOMS* 1/2 1/4	1.69	0.90	24	9/32"
1/2"	3/8"	UMOMS* 1/2 3/8	1.75	0.90	30	3/8"
1/2"	1/2"	UMOMS* 1/2 1/2	1.96	0.90	36	3/8"
5/8"	1/2"	UMOMS* 5/8 1/2	1.97	0.96	36	1/2"
5/8"	3/4"	UMOMS* 5/8 3/4	2.06	0.96	41	1/2"
3/4"	1/2"	UMOMS* 3/4 1/2	1.97	1.02	36	1/2"
3/4"	3/4"	UMOMS* 3/4 3/4	2.06	1.02	41	5/8"
1"	3/4"	UMOMS* 1" 3/4	2.22	1.23	41	5/8"
1"	1"	UMOMS* 1" 1"	2.37	1.23	46	7/8"

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

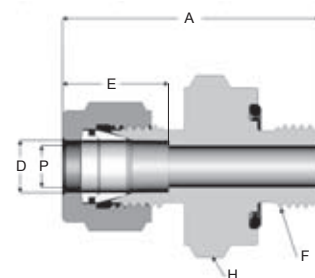


Do not mistake NPSM thread with BSPP threads

MALE O-RING CONNECTOR «UN» | UMOMSS

APPLICATION

Connects a tube to a female threaded apparatus with an O-ring face seal connection.



UN (UN)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	5/16" - 24	UMOMSS* 3 5/16	32,8	12,9	14	2,4
4	3/8" - 24	UMOMSS* 4 3/8	34,4	13,7	17	3,2
6	7/16" - 20	UMOMSS* 6 7/16	38,4	15,3	19	4,8
8	1/2" - 20	UMOMSS* 8 1/2	40,9	16,2	22	6,4
10	9/16" - 18	UMOMSS* 10 9/16	42,4	17,2	24	8
12	5/8" - 18	UMOMSS* 12 5/8	45,7	22,8	24	9,5
12	3/4" - 16	UMOMSS* 12 3/4	45,8	22,8	30	9,5
18	1 1/16" - 12	UMOMSS* 18 1 1/16	50,6	24,4	38	15
20	1 1/8" - 12	UMOMSS* 20 1 1/8	52,2	26,0	38	16

UN fittings are supplied with sealing O-rings in Nitrile (NBR). Fluorocarbon (FPM) O-rings are available upon request. See page 8 for additional information.

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	5/16" - 24	UMOMSS* 1/16 5/16	1.29	0.34	14	3/64"
1/8"	3/8" - 24	UMOMSS* 1/8 3/8	1.29	0.51	14	3/32"
1/8"	7/16" - 18	UMOMSS* 1/8 7/16	1.59	0.51	24	3/16"
3/16"	3/8" - 24	UMOMSS* 3/16 3/8	1.35	0.54	17	1/8"
1/4"	7/16" - 20	UMOMSS* 1/4 7/16	1.51	0.60	19	3/16"
5/16"	1/2" - 20	UMOMSS* 5/16 1/2	1.61	0.64	22	1/4"
3/8"	9/16" - 18	UMOMSS* 3/8 9/16	1.67	0.66	24	5/8"
1/2"	3/4" - 16	UMOMSS* 1/2 3/4	1.8	0.90	30	3/8"
3/4"	1 1/16" - 12	UMOMSS* 3/4 1 1/16	1.98	0.96	38	19/32"

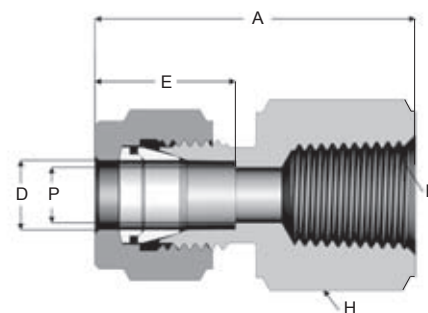
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

FEMALE UNION | UFS

APPLICATION

Connects a tube to a male NPT-tapered apparatus or pipe.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	1/8"	UFS* 3 1/8 N	28,7	12,9	14	2,4
3	1/4"	UFS* 3 1/4 N	33,5	12,9	19	2,4
4	1/8"	UFS* 4 1/8 N	29,7	13,7	14	2,4
6	1/8"	UFS* 6 1/8 N	31,3	15,3	14	4,8
6	1/4"	UFS* 6 1/4 N	35,8	15,3	19	4,8
6	3/8"	UFS* 6 3/8 N	37,6	15,3	22	4,8
6	1/2"	UFS* 6 1/2 N	42,5	15,3	27	4,8
8	1/8"	UFS* 8 1/8 N	32,1	16,2	14	6,4
8	1/4"	UFS* 8 1/4 N	37,0	16,2	19	6,4
8	3/8"	UFS* 8 3/8 N	38,5	16,2	22	6,4
8	1/2"	UFS* 8 1/2 N	43,3	16,2	27	6,4
10	1/8"	UFS* 10 1/8 N	33,3	17,2	17	7,9
10	1/4"	UFS* 10 1/4 N	37,8	17,2	19	7,9
10	3/8"	UFS* 10 3/8 N	39,4	17,2	22	7,9
10	1/2"	UFS* 10 1/2 N	44,2	17,2	27	7,9
12	1/4"	UFS* 12 1/4 N	40,3	22,8	22	9,5
12	3/8"	UFS* 12 3/8 N	41,9	22,8	22	9,5
12	1/2"	UFS* 12 1/2 N	46,7	22,8	27	9,5
12	3/4"	UFS* 12 3/4 N	48,9	22,8	32	9,5
14	3/8"	UFS* 14 3/8 N	42,1	24,4	24	11,1
14	1/2"	UFS* 14 1/2 N	46,9	24,4	27	11,1
16	1/4"	UFS* 16 1/4 N	41,7	24,4	24	9,5
16	3/8"	UFS* 16 3/8 N	46,9	24,4	24	12,7
16	1/2"	UFS* 16 1/2 N	46,9	24,4	27	12,7
16	3/4"	UFS* 16 3/4 N	48,9	24,4	32	12,7
18	1/2"	UFS* 18 1/2 N	46,9	24,4	27	12,7
18	3/4"	UFS* 18 3/4 N	48,4	24,4	30	12,7
20	1/2"	UFS* 20 1/2 N	47,9	26,0	30	15,9
20	3/4"	UFS* 20 3/4 N	49,7	26,0	36	15,9
22	3/4"	UFS* 22 3/4 N	49,7	26,0	36	18,5
22	1"	UFS* 22 1" N	57,9	26,0	41	18,5
25	3/4"	UFS* 25 3/4 N	53,4	31,3	36	22,2
25	1"	UFS* 25 1" N	62,3	31,3	41	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/16"	UFS* 1/16 1/16 N	0.93	0.34	12	3/64"
1/16"	1/8"	UFS* 1/16 1/8 N	0.96	0.34	12	3/64"
1/16"	1/4"	UFS* 1/16 1/4 N	1.15	0.34	19	3/64"
1/8"	1/8"	UFS* 1/8 1/8 N	1.13	0.51	14	3/32"
1/8"	1/4"	UFS* 1/8 1/4 N	1.32	0.51	19	3/32"
3/16"	1/8"	UFS* 3/16 1/8 N	1.17	0.54	14	1/8"
1/4"	1/16"	UFS* 1/4 1/16 N	1.23	0.6	14	3/16"
1/4"	1/8"	UFS* 1/4 1/8 N	1.23	0.60	14	3/16"
1/4"	1/4"	UFS* 1/4 1/4 N	1.41	0.60	19	3/16"
1/4"	3/8"	UFS* 1/4 3/8 N	1.48	0.60	22	3/16"
1/4"	1/2"	UFS* 1/4 1/2 N	1.67	0.60	27	3/16"
5/16"	1/8"	UFS* 5/16 1/8 N	1.26	0.64	14	1/4"
5/16"	1/4"	UFS* 5/16 1/4 N	1.46	0.64	19	1/4"
3/8"	1/8"	UFS* 3/8 1/8 N	1.31	0.68	17	9/32"
3/8"	1/4"	UFS* 3/8 1/4 N	1.49	0.68	19	9/32"
3/8"	3/8"	UFS* 3/8 3/8 N	1.55	0.68	22	9/32"
3/8"	1/2"	UFS* 3/8 1/2 N	1.74	0.68	27	9/32"
3/8"	3/4"	UFS* 3/8 3/4 N	1.88	0.68	30	9/32"
1/2"	1/8"	UFS* 1/2 1/8 N	1.4	0.9	22	9/32"
1/2"	1/4"	UFS* 1/2 1/4 N	1.59	0.90	22	13/32"
1/2"	3/8"	UFS* 1/2 3/8 N	1.65	0.90	22	13/32"
1/2"	1/2"	UFS* 1/2 1/2 N	1.84	0.90	27	13/32"
1/2"	3/4"	UFS* 1/2 3/4 N	1.9	0.90	30	13/32"
5/8"	3/8"	UFS* 5/8 3/8 N	1.64	0.96	24	1/2"
5/8"	1/2"	UFS* 5/8 1/2 N	1.85	0.96	27	1/2"
5/8"	3/4"	UFS* 5/8 3/4 N	1.9	0.96	30	1/2"
3/4"	1/2"	UFS* 3/4 1/2 N	1.85	0.96	27	5/8"
3/4"	3/4"	UFS* 3/4 3/4 N	1.91	0.96	30	5/8"
7/8"	3/4"	UFS* 7/8 3/4 N	1.96	1.02	30	3/4"
1"	3/4"	UFS* 1" 3/4 N	2.10	1.23	36	7/8"
1"	1"	UFS* 1" 1" N	2.45	1.23	41	7/8"

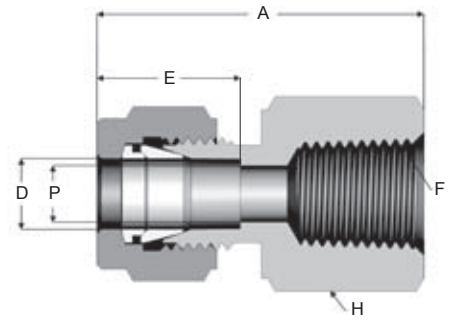
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

FEMALE UNION

APPLICATION

Connects a tube to a male BSPT-tapered apparatus or pipe.

Special requirements on request



BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	1/8"	UFS* 3 1/8 T	28,7	12,9	14	2,4
4	1/8"	UFS* 4 1/8 T	29,7	13,7	14	2,4
6	1/8"	UFS* 6 1/8 T	31,3	15,3	14	4,8
6	1/4"	UFS* 6 1/4 T	35,8	15,3	19	4,8
6	3/8"	UFS* 6 3/8 T	37,6	15,3	22	4,8
6	1/2"	UFS* 6 1/2 T	42,5	15,3	27	4,8
8	1/8"	UFS* 8 1/8 T	32,1	16,2	14	6,4
8	1/4"	UFS* 8 1/4 T	37,0	16,2	19	6,4
8	3/8"	UFS* 8 3/8 T	38,5	16,2	22	6,4
8	1/2"	UFS* 8 1/2 T	43,3	16,2	27	6,4
10	1/8"	UFS* 10 1/8 T	33,3	17,2	17	7,9
10	1/4"	UFS* 10 1/4 T	37,8	17,2	19	7,9
10	3/8"	UFS* 10 3/8 T	39,4	17,2	22	7,9
10	1/2"	UFS* 10 1/2 T	44,2	17,2	27	7,9
12	1/4"	UFS* 12 1/4 T	40,3	22,8	22	9,5
12	3/8"	UFS* 12 3/8 T	41,9	22,8	22	9,5
12	1/2"	UFS* 12 1/2 T	46,7	22,8	27	9,5
14	3/8"	UFS* 14 3/8 T	42,1	24,4	24	11,1
14	1/2"	UFS* 14 1/2 T	46,9	24,4	27	11,1
16	3/8"	UFS* 16 3/8 T	46,9	24,4	24	12,7
16	1/2"	UFS* 16 1/2 T	46,9	24,4	27	12,7
16	3/4"	UFS* 16 3/4 T	48,9	24,4	32	12,7
18	1/2"	UFS* 18 1/2 T	46,9	24,4	27	12,7
20	1/2"	UFS* 20 1/2 T	47,9	26,0	30	15,9
20	3/4"	UFS* 20 3/4 T	49,7	26,0	36	15,9
22	3/4"	UFS* 22 3/4 T	49,7	26,0	36	18,5
22	1"	UFS* 22 1" T	57,9	26,0	41	18,5
25	3/4"	UFS* 25 3/4 T	53,4	31,3	36	22,2
25	1"	UFS* 25 1" T	62,3	31,3	41	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/8"	UFS* 1/16 1/8 T	0.96	0.34	12	3/64"
1/8"	1/8"	UFS* 1/8 1/8 T	1.13	0.51	14	3/32"
1/8"	1/4"	UFS* 1/8 1/4 T	1.32	0.51	19	3/32"
1/4"	1/8"	UFS* 1/4 1/8 T	1.23	0.60	14	3/16"
1/4"	1/4"	UFS* 1/4 1/4 T	1.41	0.60	19	3/16"
1/4"	3/8"	UFS* 1/4 3/8 T	1.48	0.60	22	3/16"
1/4"	1/2"	UFS* 1/4 1/2 T	1.67	0.60	27	3/16"
3/8"	1/8"	UFS* 3/8 1/8 T	1.31	0.68	17	9/32"
3/8"	1/4"	UFS* 3/8 1/4 T	1.49	0.68	19	9/32"
3/8"	3/8"	UFS* 3/8 3/8 T	1.55	0.68	22	9/32"
3/8"	1/2"	UFS* 3/8 1/2 T	1.74	0.68	27	9/32"
1/2"	1/4"	UFS* 1/2 1/4 T	1.59	0.90	22	13/32"
1/2"	3/8"	UFS* 1/2 3/8 T	1.65	0.90	22	13/32"
1/2"	1/2"	UFS* 1/2 1/2 T	1.84	0.90	27	13/32"
1/2"	3/4"	UFS* 1/2 3/4 T	1.9	0.90	30	13/32"
3/4"	3/4"	UFS* 3/4 3/4 T	1.91	0.96	30	5/8"

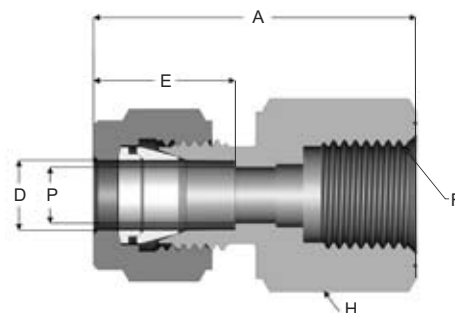
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

FEMALE UNION | UFS

APPLICATION

Connects a tube to a male BSPP parallel-threaded apparatus or pipe.

Special requirements on request



BSPP - ISO BSPP Parallel Thread (G)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H (mm)	P
3	1/4"	UFS* 3 1/4 G	35,3	12,9	19	2,4
4	1/8"	UFS* 4 1/8 G	29,6	13,7	14	2,4
4	1/4"	UFS* 4 1/4 G	35,9	13,7	19	2,4
4	3/8"	UFS* 4 3/8 G	39,2	13,7	22	2,4
4	1/2"	UFS* 4 1/2 G	40,6	13,7	27	2,4
6	1/8"	UFS* 6 1/8 G	31,3	15,3	14	4,8
6	1/4"	UFS* 6 1/4 G	37,6	15,3	19	4,8
6	3/8"	UFS* 6 3/8 G	37,6	15,3	22	4,8
6	1/2"	UFS* 6 1/2 G	43,5	15,3	27	4,8
8	1/8"	UFS* 8 1/8 G	32,0	16,2	14	4,5
8	1/4"	UFS* 8 1/4 G	38,5	16,2	19	5,5
8	3/8"	UFS* 8 3/8 G	36,2	16,2	22	6,4
8	1/2"	UFS* 8 1/2 G	41,0	16,2	27	6,4
10	1/8"	UFS* 10 1/8 G	33,1	17,2	17	4,5
10	1/4"	UFS* 10 1/4 G	39,4	17,2	19	5,5
10	3/8"	UFS* 10 3/8 G	38,8	17,2	22	6,4
10	1/2"	UFS* 10 1/2 G	42,1	17,2	27	7,0
12	1/4"	UFS* 12 1/4 G	41,9	22,8	22	5,5
12	3/8"	UFS* 12 3/8 G	44,4	22,8	22	6,4
12	1/2"	UFS* 12 1/2 G	48,2	22,8	27	7,0
12	3/4"	UFS* 12 3/4 G	48,9	22,8	32	9,5
14	3/8"	UFS* 14 3/8 G	41,7	24,4	24	6,5
14	1/2"	UFS* 14 1/2 G	46,5	24,4	27	7,1
16	1/2"	UFS* 16 1/2 G	46,5	24,4	27	7,1
18	1/2"	UFS* 18 1/2 G	46,5	24,4	27	7,1
18	3/4"	UFS* 18 3/4 G	48,9	24,4	32	15
20	1/2"	UFS* 16 1/2 G	54,3	26,0	30	7,0
22	1/2"	UFS* 22 1/2 G	54,3	26,0	30	7,0

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/8"	1/4"	UFS* 1/8 1/4 G	1.39	0.51	19	3/32"
1/4"	1/8"	UFS* 1/4 1/8 G	1.25	0.6	14	3/16"
1/4"	1/4"	UFS* 1/4 1/4 G	1.48	0.60	19	3/16"
1/4"	3/8"	UFS* 1/4 3/8 G	1.48	0.60	22	3/16"
1/4"	1/2"	UFS* 1/4 1/2 G	1.71	0.60	27	3/16"
5/16"	1/4"	UFS* 5/16 1/4 G	1.52	0.64	19	7/32"
5/16"	1/2"	UFS* 5/16 1/2 G	1.61	0.64	27	9/32"
3/8"	1/4"	UFS* 3/8 1/4 G	1.55	0.66	19	7/32"
3/8"	3/8"	UFS* 3/8 3/8 G	1.53	0.66	22	17/64"
3/8"	1/2"	UFS* 3/8 1/2 G	1.66	0.66	27	9/32"
1/2"	3/8"	UFS* 1/2 3/8 G	1.75	0.9	22	17/64"
1/2"	1/2"	UFS* 1/2 1/2 G	1.90	0.9	27	9/32"
1/2"	3/4"	UFS* 1/2 3/4 G	1.94	0.9	32	3/8"

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

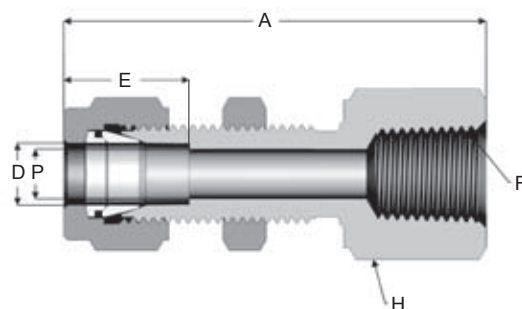
BSPP G end connections should be used with sealing gaskets.
See page 9 for further information. See page 59 for gaskets.

FEMALE BULKHEAD UNION | UCFS

APPLICATION

Connects a tube to a male threaded apparatus or pipe through a wall or panel.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P	B'head Hole drill size	Max. B'head Thickness
4	1/4"	UCFS* 4 1/4 N	50,3	13,7	19	2,4	9,8	12,7
6	1/8"	UCFS* 6 1/8 N	47,1	15,3	17	4,8	11,5	10,3
6	1/4"	UCFS* 6 1/4 N	51,9	15,3	19	4,8	11,5	10,3
10	1/4"	UCFS* 10 1/4 N	54,3	17,2	19	7,9	16,3	11,1
12	1/4"	UCFS* 12 1/4 N	60,0	22,8	22	9,5	19,5	12,7
12	3/8"	UCFS* 12 3/8 N	61,7	22,8	22	9,5	19,5	12,7
12	1/2"	UCFS* 12 1/2 N	66,5	22,8	27	9,5	19,5	12,7
16	1/2"	UCFS* 16 1/2 N	67,1	24,4	27	12,7	22,5	12,7

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P	B'head Hole drill size	Max. B'head Thickness
1/8"	1/8"	UCFS* 1/8 1/8 N	1.76	0.51	14	3/32"	21/64"	1/2"
1/4"	1/8"	UCFS* 1/4 1/8 N	1.85	0.60	17	3/16"	29/64"	17/32"
1/4"	1/4"	UCFS* 1/4 1/4 N	2.04	0.60	19	3/16"	29/64"	17/32"
3/8"	1/4"	UCFS* 3/8 1/4 N	2.14	0.68	19	9/32"	37/64"	9/16"
3/8"	1/2"	UCFS* 3/8 1/2 N	2.43	0.68	27	9/32"	37/64"	9/16"
1/2"	3/8"	UCFS* 1/2 3/8 N	2.43	0.90	24	3/8"	49/64"	19/32"
1/2"	1/2"	UCFS* 1/2 1/2 N	2.62	0.90	27	3/8"	49/64"	19/32"

Hex flats (H) are metric. Fractional upon request.
*Specify material when ordering. See page 8 for materials and codes.

BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F (BSPT)	Reference	A	E	H	P	B'head Hole drill size	Max. B'head Thickness
3	1/8"	UCFS* 3 1/8 T	44,6	12,9	14	2,4	8,3	12,7
6	1/4"	UCFS* 6 1/4 T	51,9	15,3	19	4,8	11,5	10,3
10	1/4"	UCFS* 10 1/4 T	54,3	17,2	19	7,9	16,3	11,1
12	1/2"	UCFS* 12 1/2 T	66,5	22,8	27	9,5	19,5	12,7

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F (BSPT)	Reference	A	E	H (mm)	P	B'head Hole drill size	Max. B'head Thickness
1/4"	1/4"	UCFS* 1/4 1/4 T	2.04	0.60	19	3/16"	29/64"	17/32"
3/8"	1/4"	UCFS* 3/8 1/4 T	2.14	0.68	19	9/32"	37/64"	9/16"

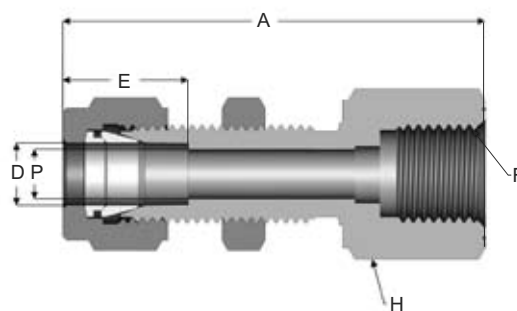
Hex flats (H) are metric. Fractional upon request.
*Specify material when ordering. See page 8 for materials and codes.

BSPP - ISO BSP Parallel Thread (G)

TUBE SIZE - METRIC (mm)

D	F (BSPT)	Reference	A	E	H	P	B'head Hole drill size	Max. B'head Thickness
6	1/8"	UCFS* 6 1/8 G	47,1	15,3	17	4,8	11,5	10,3
8	1/4"	UCFS* 8 1/4 G	54,2	16,2	19	5,5	13,1	11,1
10	3/8"	UCFS* 10 3/8 G	56,6	17,2	22	6,4	16,3	11,1
12	3/8"	UCFS* 12 3/8 G	61,7	22,8	22	9,5	19,5	12,7
12	1/2"	UCFS* 12 1/2 G	66,5	22,8	27	9,5	19,5	12,7

BSPP G end connections should be used with sealing gaskets.
See page 9 for further information. See page 59 for gaskets.
*Specify material when ordering. See page 8 for materials and codes.

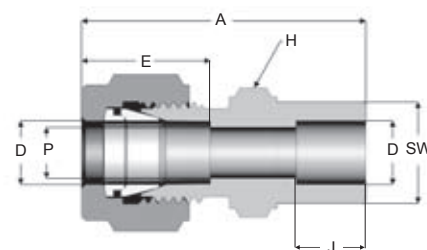


TUBE SOCKET WELD UNION | UMSWS

APPLICATION

Connects a tube to another tube via a socket weld.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	J	P	SW
3	UMSWS* 3	29,0	12,9	12	6,4	2,4	7,9
4	UMSWS* 4	31,4	13,7	12	7,1	3,2	9,5
6	UMSWS* 6	33,5	15,3	14	7,9	4,8	11,1
8	UMSWS* 8	35,5	16,2	14	8,7	6,4	12,7
10	UMSWS* 10	37,6	17,2	17	9,5	7,9	15,9
12	UMSWS* 12	41,1	22,8	22	12,7	9,5	19,1
14	UMSWS* 14	42,1	24,4	24	14,3	11	22,2
16	UMSWS* 16	42,1	24,4	24	14,3	13	22,2
20	UMSWS* 20	45,2	26,0	30	15,9	16	27,0

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	J	P	SW
1/8"	UMSWS* 1/8	1.14	0.5	12	0.25	3/32"	0.31
1/4"	UMSWS* 1/4	1.32	0.60	14	0.31	3/16"	0.44
3/8"	UMSWS* 3/8	1.48	0.66	17	0.38	9/32"	0.63
1/2"	UMSWS* 1/2	1.62	0.90	22	0.50	13/32"	0.75
5/8"	UMSWS* 5/8	1.66	0.96	24	0.56	1/2"	0.88
3/4"	UMSWS* 3/4	1.71	0.96	27	0.56	5/8"	1.06
1"	UMSWS* 1"	2.07	1.23	36	0.75	7/8"	1.31

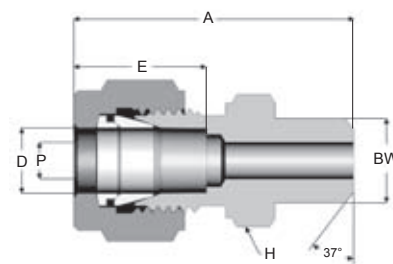
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

MALE PIPE WELD CONNECTOR | UMBWS

APPLICATION

Connects a tube to a pipe via a butt weld.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Nominal Pipe size	Reference	A	E	H	BW
3	1/8"	UMBWS* 3 1/8	30,5	12,9	12	10,28
4	1/8"	UMBWS* 4 1/8	31,2	13,7	12	10,28
6	1/8"	UMBWS* 6 1/8	32,8	15,3	14	10,28
6	1/4"	UMBWS* 6 1/4	37,9	15,3	14	13,72
6	1/2"	UMBWS* 6 1/2	44,8	15,3	22	21,34
8	1/8"	UMBWS* 8 1/8	34,2	16,2	14	10,28
8	1/4"	UMBWS* 8 1/4	38,7	16,2	14	13,72
8	3/8"	UMBWS* 8 3/8	39,1	16,2	19	17,15
8	1/2"	UMBWS* 8 1/2	45,6	16,2	22	21,34
10	1/4"	UMBWS* 10 1/4	40,9	17,2	17	13,72
10	3/8"	UMBWS* 10 3/8	40,9	17,2	19	17,15
10	1/2"	UMBWS* 10 1/2	46,5	17,2	22	21,34
12	3/8"	UMBWS* 12 3/8	43,4	22,8	22	17,15
12	1/2"	UMBWS* 12 1/2	49,0	22,8	22	21,34
12	3/4"	UMBWS* 12 3/4	50,5	22,8	27	26,67
14	1/4"	UMBWS* 14 1/4	44,1	24,4	24	13,72
14	1/2"	UMBWS* 14 1/2	44,1	24,4	24	21,34
14	3/8"	UMBWS* 14 3/8	44,1	24,4	24	17,15
16	1/2"	UMBWS* 16 1/2	49,0	24,4	24	21,34

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Nominal Pipe size	Reference	A	E	H (mm)	BW
1/8"	1/8"	UMBWS* 1/8 1/8	1.20	0.50	12	0.405
3/16"	1/8"	UMBWS* 3/16 1/8	1.23	0.54	12	0.405
1/4"	1/8"	UMBWS* 1/4 1/8	1.29	0.60	14	0.405
1/4"	1/4"	UMBWS* 1/4 1/4	1.49	0.60	14	0.540
5/16"	1/8"	UMBWS* 5/16 1/8	1.35	0.64	14	0.405
5/16"	1/4"	UMBWS* 5/16 1/4	1.56	0.64	14	0.540
3/8"	1/4"	UMBWS* 3/8 1/4	1.61	0.66	17	0.540
3/8"	3/8"	UMBWS* 3/8 3/8	1.61	0.66	19	0.675
3/8"	1/2"	UMBWS* 3/8 1/2	1.83	0.66	22	0.840
1/2"	3/8"	UMBWS* 1/2 3/8	1.71	0.90	22	0.675
1/2"	1/2"	UMBWS* 1/2 1/2	1.93	0.90	22	0.840
1/2"	3/4"	UMBWS* 1/2 3/4	1.99	0.90	27	1.050
5/8"	1/2"	UMBWS* 5/8 1/2	1.93	0.96	24	0.840
3/4"	1/2"	UMBWS* 3/4 1/2	1.99	0.96	27	0.840
3/4"	3/4"	UMBWS* 3/4 3/4	1.99	0.96	27	1.050
1"	1"	UMBWS* 1" 1"	2.45	1.23	36	1.315

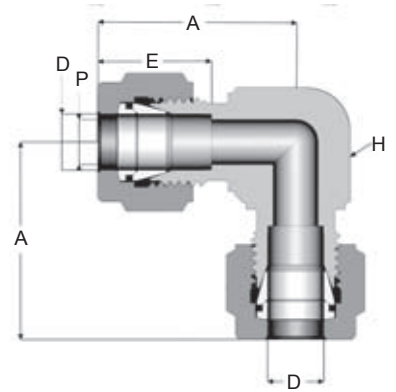
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

ELBOW | EQS

APPLICATION

Connects two tubes of the same dimension at a 90° angle.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	P
3	EQS* 3	23,25	12,9	12	2,4
4	EQS* 4	24,05	13,7	12	3,2
6	EQS* 6	27,2	15,3	14	4,8
8	EQS* 8	28,1	16,2	14	6,4
10	EQS* 10	32,6	17,2	19	7,1
12	EQS* 12	36,3	22,8	22	9,5
14	EQS* 14	37,1	24,4	24	11,1
16	EQS* 16	37,1	24,4	24	12,7
18	EQS* 18	39,5	24,4	27	15,1
20	EQS* 20	41,85	26,0	30	15,9
22	EQS* 22	41,05	26,0	30	19,1
25	EQS* 25	45,55	31,3	36	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	P
1/16"	EQS* 1/16	0.70	0.34	12	3/64"
1/8"	EQS* 1/8	0.91	0.51	12	3/32"
3/16"	EQS* 3/16	0.94	0.54	12	1/8"
1/4"	EQS* 1/4	1.07	0.60	14	3/16"
5/16"	EQS* 5/16	1.11	0.64	14	1/4"
3/8"	EQS* 3/8	1.27	0.68	19	9/32"
1/2"	EQS* 1/2	1.43	0.90	22	13/32"
5/8"	EQS* 5/8	1.46	0.96	24	1/2"
3/4"	EQS* 3/4	1.56	0.96	27	5/8"
7/8"	EQS* 7/8	1.62	1.02	30	3/4"
1"	EQS* 1"	1.80	1.23	36	7/8"

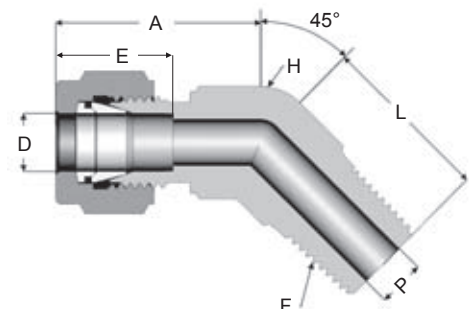
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

45° MALE ELBOW | EQM45S

APPLICATION

Connects a tube with a female taper-threaded apparatus or pipe at a 45° angle.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
6	1/8"	EQM45S* 6 1/8 N	27,2	15,3	14	19,1	4,8
6	1/4"	EQM45S* 6 1/4 N	27,2	15,3	14	23,8	4,8

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	L	P
1/4"	1/8"	EQM45S* 1/4 1/8 N	1.07	0.60	14	3/4"	3/16"
1/4"	1/4"	EQM45S* 1/4 1/4 N	1.07	0.60	14	15/16"	3/16"
3/8"	1/8"	EQM45S* 3/8 1/8 N	1.27	0.68	19	7/8"	3/16"
3/8"	1/4"	EQM45S* 3/8 1/4 N	1.27	0.68	19	1 1/16"	9/32"
1/2"	1/4"	EQM45S* 1/2 1/4 N	1.43	0.90	22	1 1/8"	9/32"
1/2"	3/8"	EQM45S* 1/2 3/8 N	1.43	0.90	22	1 1/8"	3/8"

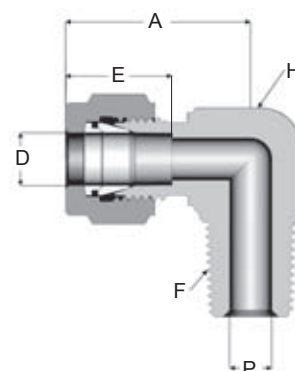
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

MALE ELBOW | EQMS

APPLICATION

Connects a tube to a female threaded apparatus or pipe on a 90° angle.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H (mm)	P
3	1/8"	EQMS* 3 1/8 N	23,3	12,9	12	2,4
3	1/4"	EQMS* 3 1/4 N	24,9	12,9	14	2,4
4	1/8"	EQMS* 4 1/8 N	24,1	13,7	12	3,2
6	1/8"	EQMS* 6 1/8 N	27,2	15,3	14	4,8
6	1/4"	EQMS* 6 1/4 N	27,2	15,3	14	4,8
6	3/8"	EQMS* 6 3/8 N	29,7	15,3	19	4,8
6	1/2"	EQMS* 6 1/2 N	31,9	15,3	22	4,8
8	1/8"	EQMS* 8 1/8 N	28,1	16,2	14	4,8
8	1/4"	EQMS* 8 1/4 N	28,1	16,2	14	6,4
8	3/8"	EQMS* 8 3/8 N	28,1	16,2	19	6,4
8	1/2"	EQMS* 8 1/2 N	28,1	16,2	22	6,4
10	1/8"	EQMS* 10 1/8 N	32,2	17,2	19	7,1
10	1/4"	EQMS* 10 1/4 N	32,2	17,2	19	7,1
10	3/8"	EQMS* 10 3/8 N	31,0	17,2	19	7,1
10	1/2"	EQMS* 10 1/2 N	31,8	17,2	22	7,1
12	1/4"	EQMS* 12 1/4 N	36,3	22,8	22	7,1
12	3/8"	EQMS* 12 3/8 N	36,3	22,8	22	9,5
12	1/2"	EQMS* 12 1/2 N	36,3	22,8	22	9,5
12	3/4"	EQMS* 12 3/4 N	36,3	22,8	27	9,5
14	3/8"	EQMS* 14 3/8 N	36,6	24,4	24	7,1
14	1/2"	EQMS* 14 1/2 N	36,6	24,4	24	9,5
16	3/8"	EQMS* 16 3/8 N	37,1	24,4	24	9,5
16	1/2"	EQMS* 16 1/2 N	37,1	24,4	24	11,9
16	3/4"	EQMS* 16 3/4 N	37,1	24,4	27	13
18	1/2"	EQMS* 18 1/2 N	39,5	26,0	27	11,9
18	3/4"	EQMS* 18 3/4 N	39,5	26,0	27	15,1
20	1/2"	EQMS* 20 1/2 N	41,1	26,0	30	11,9
20	3/4"	EQMS* 20 3/4 N	41,1	26,0	30	15,9
22	3/4"	EQMS* 22 3/4 N	41,1	26,0	30	15,9
22	1"	EQMS* 22 1 N	41,1	26	36	18,5
25	3/4"	EQMS* 25 3/4 N	45,6	31,3	36	15,9
25	1"	EQMS* 25 1 N	45,6	31,3	36	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/16"	EQMS* 1/16 1/16 N	0.70	0.34	8	3/16"
1/16"	1/8"	EQMS* 1/16 1/8 N	0.92	0.34	12	3/16"
1/8"	1/8"	EQMS* 1/8 1/8 N	0.92	0.51	12	3/32"
1/8"	1/4"	EQMS* 1/8 1/4 N	0.98	0.51	14	3/32"
3/16"	1/8"	EQMS* 3/16 1/8 N	0.95	0.54	12	3/32"
1/4"	1/8"	EQMS* 1/4 1/8 N	1.46	0.96	14	3/16"
1/4"	1/4"	EQMS* 1/4 1/4 N	1.56	1.02	14	3/16"
1/4"	3/8"	EQMS* 1/4 3/8 N	1.17	0.60	19	3/16"
1/4"	1/2"	EQMS* 1/4 1/2 N	1.20	0.60	22	3/16"
5/16"	1/8"	EQMS* 5/16 1/8 N	1.11	0.64	14	3/16"
5/16"	1/4"	EQMS* 5/16 1/4 N	1.11	0.64	14	1/4"
3/8"	1/8"	EQMS* 3/8 1/8 N	1.80	1.23	19	3/16"
3/8"	1/4"	EQMS* 3/8 1/4 N	1.80	1.23	19	9/32"
3/8"	3/8"	EQMS* 3/8 3/8 N	1.22	0.68	19	9/32"
3/8"	1/2"	EQMS* 3/8 1/2 N	1.25	0.68	22	9/32"
1/2"	1/4"	EQMS* 1/2 1/4 N	1.43	0.90	22	9/32"
1/2"	3/8"	EQMS* 1/2 3/8 N	1.43	0.90	22	3/8"
1/2"	1/2"	EQMS* 1/2 1/2 N	1.43	0.90	22	3/8"
1/2"	3/4"	EQMS* 1/2 3/4 N	1.56	0.90	22	3/8"
5/8"	3/8"	EQMS* 5/8 3/8 N	1.46	0.96	24	3/8"
5/8"	1/2"	EQMS* 5/8 1/2 N	1.46	0.96	24	1/2"
3/4"	1/2"	EQMS* 3/4 1/2 N	1.56	1.02	27	5/8"
3/4"	3/4"	EQMS* 3/4 3/4 N	1.56	1.02	27	5/8"
7/8"	3/4"	EQMS* 7/8 3/4 N	1.62	1.02	30	3/4"
1"	3/4"	EQMS* 1" 3/4 N	1.80	1.23	36	5/8"
1"	1"	EQMS* 1" 1 N	1.80	1.23	36	7/8"

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

MALE ELBOW | EQMS

BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H (mm)	P
3	1/8"	EQMS* 3 1/8 T	23,3	12,9	12	2,4
3	1/4"	EQMS* 3 1/4 T	24,9	12,9	14	2,4
4	1/8"	EQMS* 4 1/8 T	24,1	13,7	12	3,2
6	1/8"	EQMS* 6 1/8 T	27,2	15,3	14	4,8
6	1/4"	EQMS* 6 1/4 T	27,2	15,3	14	4,8
6	3/8"	EQMS* 6 3/8 T	29,7	15,3	19	4,8
6	1/2"	EQMS* 6 1/2 T	31,9	15,3	22	4,8
8	1/8"	EQMS* 8 1/8 T	28,1	16,2	14	4,8
8	1/4"	EQMS* 8 1/4 T	28,1	16,2	14	6,4
8	3/8"	EQMS* 8 3/8 T	28,1	16,2	19	6,4
8	1/2"	EQMS* 8 1/2 T	28,1	16,2	22	6,4
10	1/8"	EQMS* 10 1/8 T	32,2	17,2	19	7,1
10	1/4"	EQMS* 10 1/4 T	32,2	17,2	19	7,1
10	3/8"	EQMS* 10 3/8 T	31,0	17,2	19	7,1
10	1/2"	EQMS* 10 1/2 T	31,8	17,2	22	7,1
12	1/4"	EQMS* 12 1/4 T	36,3	22,8	22	7,1
12	3/8"	EQMS* 12 3/8 T	36,3	22,8	22	9,5
12	1/2"	EQMS* 12 1/2 T	36,3	22,8	22	9,5
12	3/4"	EQMS* 12 3/4 T	36,3	22,8	27	9,5
14	3/8"	EQMS* 14 3/8 T	36,6	24,4	24	7,1
14	1/2"	EQMS* 14 1/2 T	36,6	24,4	24	9,5
16	3/8"	EQMS* 16 3/8 T	37,1	24,4	24	9,5
16	1/2"	EQMS* 16 1/2 T	37,1	24,4	24	11,9
18	1/2"	EQMS* 18 1/2 T	39,5	26,0	27	11,9
18	3/4"	EQMS* 18 3/4 T	39,5	26,0	27	15,1
20	1/2"	EQMS* 20 1/2 T	41,1	26,0	30	11,9
20	3/4"	EQMS* 20 3/4 T	41,1	26,0	30	15,9
22	3/4"	EQMS* 22 3/4 T	41,1	26,0	30	15,9
22	1"	EQMS* 22 1 T	41,1	26	36	18,5
25	3/4"	EQMS* 25 3/4 T	45,6	31,3	36	15,9
25	1"	EQMS* 25 1 T	45,6	31,3	36	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/16"	EQMS* 1/16 1/16 T	0.70	0.34	8	3/16"
1/16"	1/8"	EQMS* 1/16 1/8 T	0.92	0.34	12	3/16"
1/8"	1/8"	EQMS* 1/8 1/8 T	0.92	0.51	12	3/32"
1/8"	1/4"	EQMS* 1/8 1/4 T	0.98	0.51	14	3/32"
1/4"	1/8"	EQMS* 1/4 1/8 T	1.46	0.96	14	3/16"
1/4"	1/4"	EQMS* 1/4 1/4 T	1.56	1.02	14	3/16"
1/4"	3/8"	EQMS* 1/4 3/8 T	1.17	0.60	19	3/16"
1/4"	1/2"	EQMS* 1/4 1/2 T	1.20	0.60	22	3/16"
5/16"	1/4"	EQMS* 5/16 1/4 T	1.11	0.64	14	1/4"
3/8"	1/8"	EQMS* 3/8 1/8 T	1.80	1.23	19	3/16"
3/8"	1/4"	EQMS* 3/8 1/4 T	1.80	1.23	19	9/32"
3/8"	3/8"	EQMS* 3/8 3/8 T	1.22	0.68	19	9/32"
1/2"	1/4"	EQMS* 1/2 1/4 T	1.43	0.90	22	9/32"
1/2"	3/8"	EQMS* 1/2 3/8 T	1.43	0.90	22	3/8"
1/2"	1/2"	EQMS* 1/2 1/2 T	1.43	0.90	22	3/8"
3/4"	1/2"	EQMS* 3/4 1/2 T	1.56	1.02	27	5/8"
1"	1"	EQMS* 1" 1 T	1.80	1.23	36	7/8"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPP - ISO BSP Parallel Thread (G)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H (mm)	P
6	1/8"	EQMS* 6 1/8 G	27,2	15,3	14	4,8
6	1/4"	EQMS* 6 1/4 G	27,2	15,3	14	4,8
6	3/8"	EQMS* 6 3/8 G	29,7	15,3	19	4,8
12	3/8"	EQMS* 12 3/8 G	36,3	22,8	22	9,5
12	1/2"	EQMS* 12 1/2 G	36,3	22,8	22	9,5
12	3/4"	EQMS* 12 3/4 G	36,3	22,8	27	9,5
16	1/2"	EQMS* 16 1/2 G	37,1	24,4	24	11,9

BSPP G end connections should be used with sealing gaskets.

See page 9 for further information. See page 59 for gaskets.

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/8"	1/4"	EQMS* 1/8 1/4 G	0.98	0.51	14	3/32"
1/4"	1/8"	EQMS* 1/4 1/8 G	1.10	0.60	14	3/16"
1/4"	3/8"	EQMS* 1/4 3/8 G	1.17	0.60	19	3/16"
1/4"	1/2"	EQMS* 1/4 1/2 G	1.20	0.60	22	3/16"
3/8"	3/8"	EQMS* 3/8 3/8 G	1.22	0.68	19	9/32"
1/2"	3/8"	EQMS* 1/2 3/8 G	1.43	0.90	22	3/8"
1/2"	1/2"	EQMS* 1/2 1/2 G	1.43	0.90	22	3/8"
3/4"	3/4"	EQMS* 3/4 3/4 G	1.56	1.02	27	5/8"

Hex flats (H) are metric. Fractional upon request

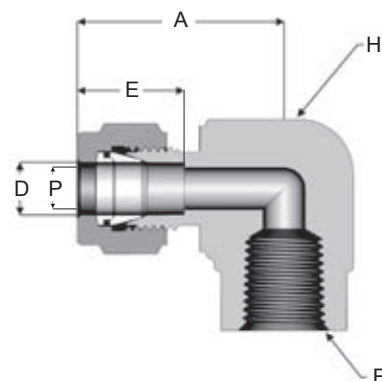
*Specify material when ordering. See page 8 for materials and codes.

FEMALE ELBOW | EQFS

APPLICATION

Connects a tube to a male taper-threaded apparatus or pipe at a 90° angle.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	1/4"	EQFS* 3 1/4 N	28	12,9	19	2,4
6	1/8"	EQFS* 6 1/8 N	27,2	15,3	14	4,8
6	1/4"	EQFS* 6 1/4 N	30,4	15,3	19	4,8
6	1/2"	EQFS* 6 1/2 N	34,6	15,3	27	4,8
8	1/4"	EQFS* 8 1/4 N	31,3	16,2	19	6,4
10	1/8"	EQFS* 10 1/8 N	32,2	17,2	19	8
10	1/4"	EQFS* 10 1/4 N	32,2	17,2	19	8
10	3/8"	EQFS* 10 3/8 N	33,8	17,2	22	8
10	1/2"	EQFS* 10 1/2 N	37,0	17,2	27	8
12	1/4"	EQFS* 12 1/4 N	36,3	22,8	22	7,1
12	1/2"	EQFS* 12 1/2 N	39,5	22,8	27	9,5
16	1/2"	EQFS* 16 1/2 N	39,5	24,4	27	11,9
20	3/4"	EQFS* 20 3/4 N	41,1	26,0	36	15,9

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/16"	EQFS* 1/16 1/16 N	0,7	0.5	12	3/16"
1/8"	1/8"	EQFS* 1/8 1/8 N	0.97	0.51	14	3/32"
1/8"	1/4"	EQFS* 1/8 1/4 N	1.09	0.51	19	3/32"
3/16"	1/8"	EQFS* 3/16 1/8 N	0.95	0.54	14	5/16"
1/4"	1/8"	EQFS* 1/4 1/8 N	1.00	0.60	14	3/16"
1/4"	1/4"	EQFS* 1/4 1/4 N	1.17	0.60	19	3/16"
1/4"	3/8"	EQFS* 1/4 3/8 N	1.26	0.60	22	3/16"
1/4"	1/2"	EQFS* 1/4 1/2 N	1.44	0.60	27	9/32"
5/16"	1/8"	EQFS* 5/16 1/8 N	1.11	0.64	14	1/4"
5/16"	1/4"	EQFS* 5/16 1/4 N	1.23	0.64	19	1/4"
3/8"	1/8"	EQFS* 3/8 1/8 N	1.26	0.66	19	9/32"
3/8"	1/4"	EQFS* 3/8 1/4 N	1.26	0.66	19	9/32"
3/8"	3/8"	EQFS* 3/8 3/8 N	1.32	0.66	22	9/32"
3/8"	1/2"	EQFS* 3/8 1/2 N	1.48	0.66	27	9/32"
1/2"	1/4"	EQFS* 1/2 1/4 N	1.46	0.90	22	3/8"
1/2"	3/8"	EQFS* 1/2 3/8 N	1.46	0.90	22	3/8"
1/2"	1/2"	EQFS* 1/2 1/2 N	1.56	0.90	27	3/8"
5/8"	3/8"	EQFS* 5/8 3/8 N	1.45	0.96	24	1/2"
5/8"	1/2"	EQFS* 5/8 1/2 N	1.56	0.96	27	1/2"
3/4"	1/2"	EQFS* 3/4 1/2 N	1.55	0.96	27	5/8"
3/4"	3/4"	EQFS* 3/4 3/4 N	1.61	0.96	36	5/8"
7/8"	3/4"	EQFS* 7/8 3/4 N	1.68	1.02	36	47/64"
1"	3/4"	EQFS* 1" 3/4 N	1.80	1.23	36	7/8"
1"	1"	EQFS* 1" 1" N	2.04	1.23	41	7/8"

Hex flats (H) are metric. Fractional upon request

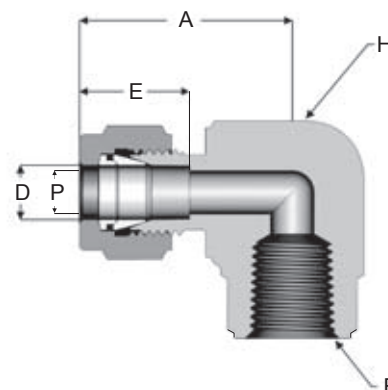
*Specify material when ordering. See page 8 for materials and codes.

FEMALE ELBOW | EQFS

APPLICATION

Connects a tube to a male taper-threaded apparatus or pipe at a 90° angle.

Special requirements on request



BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	1/8"	EQFS* 3 1/8 T	24,9	12,9	14	2,4
3	1/4"	EQFS* 3 1/4 T	28,0	12,9	19	2,4
4	1/8"	EQFS* 4 1/8 T	25,7	13,7	14	3,2
6	1/8"	EQFS* 6 1/8 T	27,2	15,3	14	4,8
6	1/4"	EQFS* 6 1/4 T	30,4	15,3	19	4,8
6	1/2"	EQFS* 6 1/2 T	34,6	15,3	27	4,8
8	1/8"	EQFS* 8 1/8 T	28,1	16,2	14	6,4
8	1/4"	EQFS* 8 1/4 T	31,3	16,2	19	6,4
10	1/8"	EQFS* 10 1/8 T	32,2	17,2	19	8
10	1/4"	EQFS* 10 1/4 T	32,2	17,2	19	8
10	3/8"	EQFS* 10 3/8 T	33,8	17,2	22	8
10	1/2"	EQFS* 10 1/2 T	37,0	17,2	27	8
12	1/4"	EQFS* 12 1/4 T	36,3	22,8	22	7,1
12	3/8"	EQFS* 12 3/8 T	36,3	22,8	22	9,5
12	1/2"	EQFS* 12 1/2 T	39,5	22,8	27	9,5
14	3/8"	EQFS* 14 3/8 T	37,1	24,4	24	7,1
14	1/2"	EQFS* 14 1/2 T	39,5	24,4	27	9,5
16	3/8"	EQFS* 16 3/8 T	37,1	24,4	24	9,5
16	1/2"	EQFS* 16 1/2 T	39,5	24,4	27	11,9
18	1/2"	EQFS* 18 1/2 T	39,5	24,4	27	11,9
20	1/2"	EQFS* 20 1/2 T	41,1	26,0	30	11,9
20	3/4"	EQFS* 20 3/4 T	41,1	26,0	36	15,9
22	3/4"	EQFS* 22 3/4 T	41,1	26,0	36	15,9
25	3/4"	EQFS* 25 3/4 T	45,5	31,3	36	15,9
25	1"	EQFS* 25 1" T	51,9	31,3	41	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/16"	EQFS* 1/16 1/16 T	0,7	0,5	12	3/16"
1/16"	1/8"	EQFS* 1/16 1/8 T	0,7	0,5	12	3/16"
1/8"	1/8"	EQFS* 1/8 1/8 T	0,97	0,51	14	3/32"
1/8"	1/4"	EQFS* 1/8 1/4 T	1,09	0,51	19	3/32"
3/16"	1/8"	EQFS* 3/16 1/8 T	0,95	0,54	14	5/16"
1/4"	1/8"	EQFS* 1/4 1/8 T	1,0	0,60	14	3/16"
1/4"	1/4"	EQFS* 1/4 1/4 T	1,17	0,60	19	3/16"
1/4"	3/8"	EQFS* 1/4 3/8 T	1,26	0,60	22	3/16"
1/4"	1/2"	EQFS* 1/4 1/2 T	1,44	0,60	27	9/32"
5/16"	1/8"	EQFS* 5/16 1/8 T	1,11	0,64	14	1/4"
5/16"	1/4"	EQFS* 5/16 1/4 T	1,23	0,64	19	1/4"
3/8"	1/8"	EQFS* 3/8 1/8 T	1,26	0,66	19	9/32"
3/8"	1/4"	EQFS* 3/8 1/4 T	1,26	0,66	19	9/32"
3/8"	3/8"	EQFS* 3/8 3/8 T	1,32	0,66	22	9/32"
3/8"	1/2"	EQFS* 3/8 1/2 T	1,48	0,66	27	9/32"
1/2"	1/4"	EQFS* 1/2 1/4 T	1,46	0,90	22	3/8"
1/2"	3/8"	EQFS* 1/2 3/8 T	1,46	0,90	22	3/8"
1/2"	1/2"	EQFS* 1/2 1/2 T	1,56	0,90	27	3/8"
5/8"	3/8"	EQFS* 5/8 3/8 T	1,45	0,96	24	1/2"
5/8"	1/2"	EQFS* 5/8 1/2 T	1,56	0,96	27	1/2"
3/4"	1/2"	EQFS* 3/4 1/2 T	1,55	0,96	27	5/8"
3/4"	3/4"	EQFS* 3/4 3/4 T	1,61	0,96	36	5/8"
7/8"	3/4"	EQFS* 7/8 3/4 T	1,68	1,02	36	47/64"
1"	3/4"	EQFS* 1" 3/4 T	1,80	1,23	36	7/8"
1"	1"	EQFS* 1" 1" T	2,04	1,23	41	7/8"

Hex flats (H) are metric. Fractional upon request

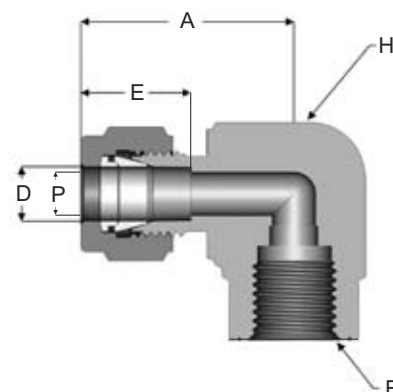
*Specify material when ordering. See page 8 for materials and codes.

FEMALE ELBOW | EQFS

APPLICATION

Connects a tube to a male parallel-threaded apparatus or pipe at a 90° angle.

Special requirements on request



BSPP - ISO BSP Parallel Thread (G)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
3	1/8"	EQFS* 3 1/8 G	24,9	12,9	14	2,4
3	1/4"	EQFS* 3 1/4 G	28,0	12,9	19	2,4
4	1/8"	EQFS* 4 1/8 G	25,7	13,7	14	3,2
6	1/8"	EQFS* 6 1/8 G	27,2	15,3	14	4,8
6	1/4"	EQFS* 6 1/4 G	30,4	15,3	19	4,8
6	1/2"	EQFS* 6 1/2 G	34,6	15,3	27	4,8
8	1/8"	EQFS* 8 1/8 G	28,1	16,2	14	6,4
8	1/4"	EQFS* 8 1/4 G	31,3	16,2	19	6,4
10	1/8"	EQFS* 10 1/8 G	32,2	17,2	19	8
10	1/4"	EQFS* 10 1/4 G	32,2	17,2	19	8
10	3/8"	EQFS* 10 3/8 G	33,8	17,2	22	8
10	1/2"	EQFS* 10 1/2 G	37,0	17,2	27	8
12	1/4"	EQFS* 12 1/4 G	36,3	22,8	22	7,1
12	3/8"	EQFS* 12 3/8 G	36,3	22,8	22	9,5
12	1/2"	EQFS* 12 1/2 G	39,5	22,8	27	9,5
14	3/8"	EQFS* 14 3/8 G	37,1	24,4	24	7,1
14	1/2"	EQFS* 14 1/2 G	39,5	24,4	27	9,5
16	3/8"	EQFS* 16 3/8 G	37,1	24,4	24	9,5
16	1/2"	EQFS* 16 1/2 G	39,5	24,4	27	11,9
18	1/2"	EQFS* 18 1/2 G	39,5	24,4	27	11,9
18	3/4"	EQFS* 18 3/4 G	41,1	24,4	30	15,1
20	1/2"	EQFS* 20 1/2 G	41,1	26,0	30	11,9
20	3/4"	EQFS* 20 3/4 G	41,1	26,0	36	15,9
22	3/4"	EQFS* 22 3/4 G	41,1	26,0	36	15,9
25	3/4"	EQFS* 25 3/4 G	45,5	31,3	36	15,9
25	1"	EQFS* 25 1" G	51,9	31,3	41	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/8"	1/8"	EQFS* 1/8 1/8 G	0.97	0.51	14	3/32"
1/8"	1/4"	EQFS* 1/8 1/4 G	1.09	0.51	19	3/32"
3/16"	1/8"	EQFS* 3/16 1/8 G	0.95	0.54	14	5/16"
1/4"	1/8"	EQFS* 1/4 1/8 G	1.00	0.60	14	3/16"
1/4"	1/4"	EQFS* 1/4 1/4 G	1.17	0.60	19	3/16"
1/4"	3/8"	EQFS* 1/4 3/8 G	1.26	0.60	22	3/16"
1/4"	1/2"	EQFS* 1/4 1/2 G	1.44	0.60	27	9/32"
5/16"	1/8"	EQFS* 5/16 1/8 G	1.11	0.64	14	1/4"
5/16"	1/4"	EQFS* 5/16 1/4 G	1.23	0.64	19	1/4"
3/8"	1/8"	EQFS* 3/8 1/8 G	1.26	0.66	19	9/32"
3/8"	1/4"	EQFS* 3/8 1/4 G	1.26	0.66	19	9/32"
3/8"	3/8"	EQFS* 3/8 3/8 G	1.32	0.66	22	9/32"
3/8"	1/2"	EQFS* 3/8 1/2 G	1.48	0.66	27	9/32"
1/2"	1/4"	EQFS* 1/2 1/4 G	1.46	0.90	22	3/8"
1/2"	3/8"	EQFS* 1/2 3/8 G	1.46	0.90	22	3/8"
1/2"	1/2"	EQFS* 1/2 1/2 G	1.56	0.90	27	3/8"
5/8"	3/8"	EQFS* 5/8 3/8 G	1.45	0.96	24	1/2"
5/8"	1/2"	EQFS* 5/8 1/2 G	1.56	0.96	27	1/2"
3/4"	1/2"	EQFS* 3/4 1/2 G	1.55	0.96	27	5/8"
3/4"	3/4"	EQFS* 3/4 3/4 G	1.61	0.96	36	5/8"
7/8"	3/4"	EQFS* 7/8 3/4 G	1.68	1.02	36	47/64"
1"	3/4"	EQFS* 1" 3/4 G	1.80	1.23	36	7/8"
1"	1"	EQFS* 1" 1" G	2.04	1.23	41	7/8"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPP G end connections should be used with sealing gaskets.

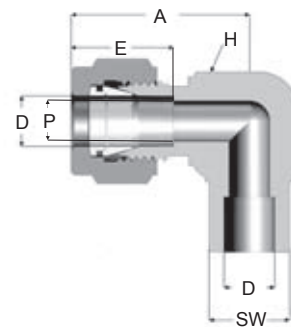
See page 9 for further information. See page 59 for gaskets.

SOCKET WELD | EQSWS

APPLICATION

Connects a tube to another tube of the same diameter at a 90° angle via a socket weld.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	P	SW
12	EQSWS* 12	36,3	22,8	22	9,5	19,1

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	P	SW
1/4"	EQSWS* 1/4	1.07	0.60	14	3/16"	0.44
5/16"	EQSWS* 5/16	1.11	0.64	14	1/4"	0.50
3/8"	EQSWS* 3/8	1.26	0.66	19	9/32"	0.63
1/2"	EQSWS* 1/2	1.42	0.90	22	13/32"	0.75
3/4"	EQSWS* 3/4	1.56	0.96	27	5/8"	1.06
1"	EQSWS* 1"	1.79	1.23	36	7/8"	1.31

Hex flats (H) are metric. Fractional upon request

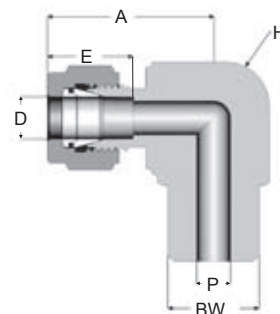
*Specify material when ordering. See page 8 for materials and codes.

MALE PIPE WELD ELBOW | EQBWS

APPLICATION

Connects a tube to a pipe at a 90° angle via a butt weld.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Nominal Pipe Size	Reference	A	E	H	P	BW
6	1/8"	EQBWS* 6 1/8	25,8	15,3	14	4,8	10,28
6	1/4"	EQBWS* 6 1/4	25,8	15,3	14	4,8	13,72
10	1/4"	EQBWS* 10 1/4	28,7	17,2	17	7,9	13,72

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Nominal Pipe Size	Reference	A	E	H (mm)	P	BW
1/4"	1/8"	EQBWS* 1/4 1/8	1.07	0.60	14	3/16"	0.405
1/4"	1/4"	EQBWS* 1/4 1/4	1.07	0.60	14	3/16"	0.54
3/8"	1/4"	EQBWS* 3/8 1/4	1.26	0.66	19	9/32"	0.54
1/2"	1/2"	EQBWS* 1/2 1/2	1.42	0.90	22	3/8"	0.84
3/4"	3/4"	EQBWS* 3/4 3/4	1.55	0.96	27	5/8"	1.05
1"	3/4"	EQBWS* 1" 3/4	1.79	1.23	36	7/8"	1.05

Hex flats (H) are metric. Fractional upon request

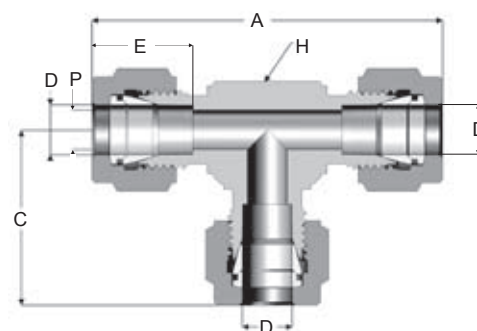
*Specify material when ordering. See page 8 for materials and codes.

UNION TEE | TS

APPLICATION

Connects tubes of the same dimension in a T configuration.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	C	E	H	P
3	TS* 3	46,5	23,25	12,9	12	2,4
4	TS* 4	48,1	24,05	13,7	12	3,2
6	TS* 6	54,4	27,2	15,3	14	4,8
8	TS* 8	56,2	28,1	16,2	14	6,4
10	TS* 10	65,2	32,6	17,2	19	7,9
12	TS* 12	72,6	36,3	22,8	22	9,5
14	TS* 14	74,2	37,1	24,4	24	11,1
16	TS* 16	74,2	37,1	24,4	24	12,7
18	TS* 18	79,0	39,5	24,4	27	15,1
20	TS* 20	83,7	41,85	26,0	30	15,9
22	TS* 22	82,1	41,05	26,0	30	19,1
25	TS* 25	91,1	45,55	31,3	36	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	C	E	H (mm)	P
1/16"	TS* 1/16	1.4	0.70	0.34	12	3/64"
1/8"	TS* 1/8	1.84	0.92	0.51	12	3/32"
3/16"	TS* 3/16	1.9	0.95	0.54	12	1/8"
1/4"	TS* 1/4	2.04	1.02	0.60	14	3/16"
5/16"	TS* 5/16	2.22	1.11	0.64	14	1/4"
3/8"	TS* 3/8	2.26	1.13	0.68	19	9/32"
1/2"	TS* 1/2	2.74	1.37	0.90	22	3/8"
5/8"	TS* 5/8	2.88	1.44	0.96	24	1/2"
3/4"	TS* 3/4	3.12	1.56	0.96	27	5/8"
7/8"	TS* 7/8	3.24	1.62	1.02	30	3/4"
1"	TS* 1"	3.6	1.80	1.23	36	7/8"

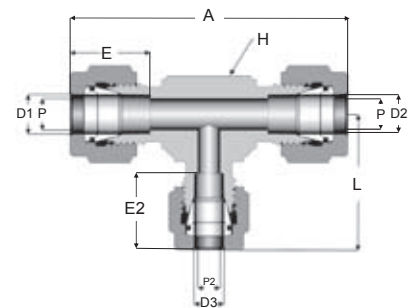
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

REDUCING TEE | TRS

APPLICATION

Connects tubes of different dimensions in a T configuration.

Special requirements on request



TUBE SIZE - METRIC (mm)

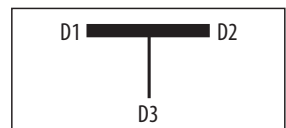
D1	D2	D3	Reference	A	E	P	L	E2	P2	H
8	8	12	TRS* 8 8 12	64	16,2	6,4	36,2	22,8	9,5	22
10	10	6	TRS* 10 10 6	65,2	17,2	7,9	30,6	15,3	4,8	19
10	10	8	TRS* 10 10 8	65,2	17,2	7,9	31,2	16,2	6,4	19
12	12	6	TRS* 12 12 6	72,6	22,8	9,5	32,1	15,3	4,8	22
12	12	8	TRS* 12 12 8	72,6	22,8	9,5	32,8	16,2	6,4	22
12	12	10	TRS* 12 12 10	72,6	22,8	9,5	33,6	17,2	7,9	22
14	14	6	TRS* 14 14 6	74,2	24,4	11,1	32,1	15,3	4,8	24
14	14	10	TRS* 14 14 10	74,2	24,4	11,1	33,6	17,2	7,9	24
16	16	6	TRS* 16 16 6	74,2	24,4	12,7	32,9	15,3	4,8	24
16	16	8	TRS* 16 16 8	74,2	24,4	12,7	33,6	16,2	6,4	24
16	16	10	TRS* 16 16 10	74,2	24,4	12,7	34,4	17,2	7,9	24
16	16	12	TRS* 16 16 12	74,2	24,4	12,7	37	22,8	9,5	24
22	22	10	TRS* 22 22 10	82,1	26	19,1	38,4	17,2	7,9	30

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D1	D2	D3	Reference	A	E	P	L	E2	P2	H (mm)
1/8"	1/8"	1/16"	TRS* 1/8 1/8 1/16"	1.84	0.51	3/32"	0.75	0.34	3/64"	12
1/4"	1/4"	1/16"	TRS* 1/4 1/4 1/16"	2.04	0.6	3/16"	0.82	0.34	3/64"	14
1/4"	1/4"	1/8"	TRS* 1/4 1/4 1/8"	2.04	0.6	3/16"	0.99	0.51	3/32"	14
1/4"	1/4"	5/16"	TRS* 1/4 1/4 5/16"	2.04	0.6	3/16"	1.1	0.64	1/4"	14
1/4"	1/4"	1/2"	TRS* 1/4 1/4 1/2"	2.5	0.6	3/16"	1.44	0.9	3/8"	22
3/8"	3/8"	1/4"	TRS* 3/8 3/8 1/4"	2.26	0.68	9/32"	1.22	0.6	3/16"	19
1/2"	1/2"	1/4"	TRS* 1/2 1/2 1/4"	2.74	0.9	3/8"	1.28	0.9	3/16"	22
1/2"	1/2"	3/8"	TRS* 1/2 1/2 3/8"	2.74	0.9	3/8"	1.33	0.68	9/32"	22
3/4"	3/4"	3/8"	TRS* 3/4 3/4 3/8"	3.12	0.96	5/8"	1.46	0.68	9/32"	27
3/4"	3/4"	1/2"	TRS* 3/4 3/4 1/2"	3.12	0.96	5/8"	1.57	0.9	3/8"	27

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

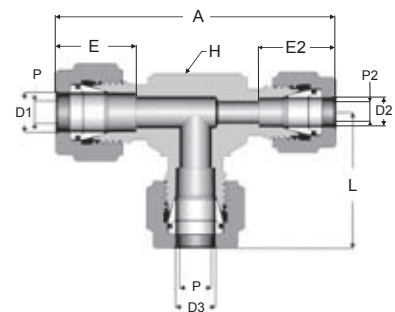


REDUCING RUN TEE | TRS

APPLICATION

Connects tubes of different dimensions in a T configuration.

Special requirements on request



TUBE SIZE - METRIC (mm)

D1	D2	D3	Reference	A	E	P	L	E2	P2	H
6	10	6	TRS* 6 10 6	62,6	15,3	4,8	30,6	17,2	7,9	19
6	12	6	TRS* 6 12 6	68,3	15,3	4,8	32,1	22,8	9,5	22
8	12	8	TRS* 8 12 8	69,0	16,2	6,4	32,8	22,8	9,5	22
10	6	10	TRS* 10 6 10	62,6	17,2	7,9	32	15,3	4,8	19
10	8	10	TRS* 10 8 10	63,2	17,2	7,9	32	16,2	6,4	19
10	14	10	TRS* 10 14 10	69,6	17,2	7,9	33,4	24,4	11,1	24
12	6	12	TRS* 12 6 12	68,3	22,8	9,5	36,2	15,3	4,8	22
12	8	12	TRS* 12 8 12	69,0	22,8	9,5	36,2	16,2	6,4	22
12	10	12	TRS* 12 10 12	69,8	22,8	9,5	36,2	17,2	7,9	22
22	10	22	TRS* 22 10 22	79,3	26	19,1	40,9	17,2	7,9	30
22	16	22	TRS* 22 16 22	81,9	26	19,1	40,9	24,4	12,7	30

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D1	D2	D3	Reference	A	E	P	L	E2	P2	H (mm)
1/8"	1/4"	1/8"	TRS* 1/8 1/4 1/8"	2.08	0.51	3/32"	0.99	0.6	3/16"	14
3/8"	1/8"	3/8"	TRS* 3/8 1/8 3/8"	2.38	0.68	9/32"	1.27	0.51	3/32"	19
3/8"	1/4"	3/8"	TRS* 3/8 1/4 3/8"	2.49	0.68	9/32"	1.27	0.6	3/16"	19
1"	1/2"	1"	TRS* 1 1/2 1"	3.4	1.24	7/8"	1.79	0.9	3/8"	36

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

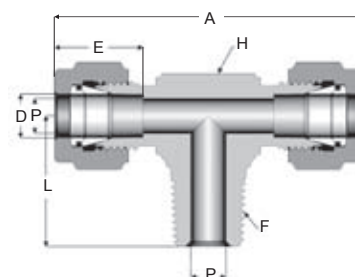


MALE BRANCH TEE | TMS

APPLICATION

Connects a female taper-threaded apparatus or a pipe to a gas line of two tubes with the same dimension in a T configuration.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
3	1/8"	TMS* 3 1/8 N	46,6	12,9	12	17,5	2,4
3	1/4"	TMS* 3 1/4 N	49,8	12,9	14	23,8	2,4
4	1/8"	TMS* 4 1/8 N	48,2	13,7	12	17,5	3,2
6	1/8"	TMS* 6 1/8 N	54,4	15,3	14	19,1	4,8
6	1/4"	TMS* 6 1/4 N	54,4	15,3	14	23,8	4,8
8	1/8"	TMS* 8 1/8 N	56,2	16,2	14	19,1	4,8
8	1/4"	TMS* 8 1/4 N	56,2	16,2	14	23,8	6,4
10	1/4"	TMS* 10 1/4 N	64,4	17,2	19	27,0	7,1
12	1/4"	TMS* 12 1/4 N	72,6	22,8	22	28,6	7,1
12	3/8"	TMS* 12 3/8 N	72,6	22,8	22	28,6	9,5
12	1/2"	TMS* 12 1/2 N	72,6	22,8	22	33,3	9,5
14	1/2"	TMS* 14 1/2 N	73,2	24,4	24	34,1	9,5
16	1/2"	TMS* 16 1/2 N	74,2	24,4	24	34,1	11,9
18	3/4"	TMS* 18 3/4 N	79	26,0	27	36,5	15,1
22	3/4"	TMS* 22 3/4 N	82,2	26,0	30	38,1	15,9

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	L	P
1/16"	1/16"	TMS* 1/16 1/16 N	1.88	0.34	8	2 1/32"	3/16"
1/8"	1/8"	TMS* 1/8 1/8 N	1.84	0.51	12	1 1/16"	3/32"
1/8"	1/4"	TMS* 1/8 1/4 N	1.96	0.51	14	1 5/16"	3/32"
3/16"	1/8"	TMS* 3/16 1/8 N	1.9	0.54	12	1 1/16"	3/32"
1/4"	1/8"	TMS* 1/4 1/8 N	2.14	0.60	14	3/4"	3/16"
1/4"	1/4"	TMS* 1/4 1/4 N	2.14	0.60	14	1 5/16"	3/16"
5/16"	1/8"	TMS* 5/16 1/8 N	2.22	0.64	14	3/4"	3/16"
5/16"	1/4"	TMS* 5/16 1/4 N	2.22	0.64	14	1 5/16"	1/4"
3/8"	1/4"	TMS* 3/8 1/4 N	2.54	0.68	19	1 1/16"	9/32"
1/2"	1/4"	TMS* 1/2 1/4 N	2.86	0.90	22	1 1/8"	9/32"
1/2"	3/8"	TMS* 1/2 3/8 N	2.86	0.90	22	1 1/8"	3/8"
1/2"	1/2"	TMS* 1/2 1/2 N	2.86	0.90	22	1 5/16"	3/8"
5/8"	1/2"	TMS* 5/8 1/2 N	2.92	0.96	24	1 11/32"	1/2"
3/4"	3/8"	TMS* 3/4 3/8 N	3.12	1.02	27	1 1/4"	5/8"
3/4"	3/4"	TMS* 3/4 3/4 N	3.12	1.02	27	1 1/2"	5/8"
1"	1"	TMS* 1" 1" N	3.6	1.23	36	1 11/16"	7/8"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
3	1/8"	TMS* 3 1/8 T	46,6	12,9	12	17,5	2,4
3	1/4"	TMS* 3 1/4 T	49,8	12,9	14	23,8	2,4
6	1/8"	TMS* 6 1/8 T	54,4	15,3	14	19,1	4,8
6	1/4"	TMS* 6 1/4 T	54,4	15,3	14	23,8	4,8
8	1/8"	TMS* 8 1/8 T	56,2	16,2	14	19,1	4,8
8	1/4"	TMS* 8 1/4 T	56,2	16,2	14	23,8	6,4
10	1/4"	TMS* 10 1/4 T	64,4	17,2	19	27,0	7,1
12	1/4"	TMS* 12 1/4 T	72,6	22,8	22	28,6	7,1
12	3/8"	TMS* 12 3/8 T	72,6	22,8	22	28,6	9,5
12	1/2"	TMS* 12 1/2 T	72,6	22,8	22	33,3	9,5
14	1/2"	TMS* 14 1/2 T	73,2	24,4	24	34,1	9,5
16	1/2"	TMS* 16 1/2 T	74,2	24,4	24	34,1	11,9

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	L	P
1/8"	1/4"	TMS* 1/8 1/4 T	1.96	0.51	14	1 5/16"	3/32"
3/16"	1/8"	TMS* 3/16 1/8 T	1.90	0.54	12	1 1/16"	3/32"
1/4"	1/8"	TMS* 1/4 1/8 T	2.14	0.60	14	3/4"	3/16"
1/4"	1/4"	TMS* 1/4 1/4 T	2.14	0.60	14	1 5/16"	3/16"
5/16"	1/8"	TMS* 5/16 1/8 T	2.22	0.64	14	3/4"	3/16"
5/16"	1/4"	TMS* 5/16 1/4 T	2.22	0.64	14	1 5/16"	1/4"
3/8"	1/4"	TMS* 3/8 1/4 T	2.54	0.68	19	1 1/16"	9/32"
1/2"	3/8"	TMS* 1/2 3/8 T	2.86	0.90	22	1 1/8"	3/8"
1/2"	1/2"	TMS* 1/2 1/2 T	2.86	0.90	22	1 5/16"	3/8"
5/8"	1/2"	TMS* 5/8 1/2 T	2.92	0.96	24	1 11/32"	1/2"
3/4"	3/4"	TMS* 3/4 3/4 T	3.12	1.02	27	1 1/2"	5/8"
7/8"	3/4"	TMS* 7/8 3/4 T	3.24	1.02	30	1 1/2"	3/4"
1"	1"	TMS* 1" 1" T	3.60	1.23	36	1 11/16"	7/8"

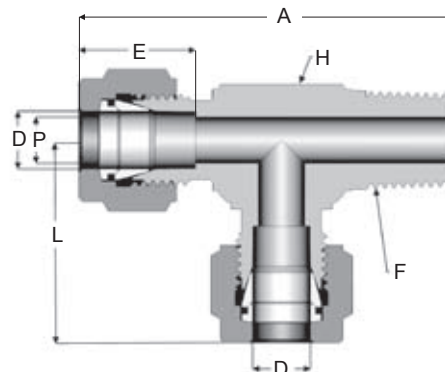
*Specify material when ordering. See page 8 for materials and codes.

MALE RUN TEE | TMRS

APPLICATION

Connects a female taper-threaded apparatus or pipe to a gas line at a 90° elbow.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
3	1/8"	TMRS* 3 1/8 N	40,8	12,9	14	23,3	2,4
6	1/8"	TMRS* 6 1/8 N	46,3	15,3	14	27,2	4,8
6	1/4"	TMRS* 6 1/4 N	51,0	15,3	14	27,2	4,8
8	1/8"	TMRS* 8 1/8 N	47,2	16,2	14	28,1	4,8
8	1/4"	TMRS* 8 1/4 N	51,9	16,2	14	28,1	6,4
10	1/4"	TMRS* 10 1/4 N	59,2	17,2	19	32,2	7,1
12	1/4"	TMRS* 12 1/4 N	64,9	22,8	22	36,3	7,1
12	3/8"	TMRS* 12 3/8 N	64,9	22,8	22	36,3	9,5
12	1/2"	TMRS* 12 1/2 N	69,6	22,8	22	36,3	9,5
16	1/2"	TMRS* 16 1/2 N	71,2	24,4	24	37,1	11,9

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H	L	P
1/16"	1/16"	TMRS* 1/16 1/16 N	1.60	0.34	14	0.94	3/16"
1/8"	1/8"	TMRS* 1/8 1/8 N	1.61	0.51	14	0.92	3/32"
1/8"	1/4"	TMRS* 1/8 1/4 N	1.92	0.51	14	0.98	3/32"
3/16"	1/8"	TMRS* 3/16 1/8 N	1.64	0.54	14	0.95	3/32"
1/4"	1/8"	TMRS* 1/4 1/8 N	1.82	0.60	14	1.07	3/16"
1/4"	1/4"	TMRS* 1/4 1/4 N	2.01	0.60	14	1.07	3/16"
5/16"	1/8"	TMRS* 5/16 1/8 N	1.86	0.64	14	1.11	3/16"
3/8"	1/4"	TMRS* 3/8 1/4 N	2.33	0.68	19	1.27	9/32"
1/2"	1/4"	TMRS* 1/2 1/4 N	2.56	0.90	22	1.43	9/32"
1/2"	3/8"	TMRS* 1/2 3/8 N	2.56	0.90	22	1.43	3/8"
1/2"	1/2"	TMRS* 1/2 1/2 N	2.74	0.90	22	1.43	3/8"
5/8"	1/2"	TMRS* 5/8 1/2 N	2.80	0.96	24	1.46	1/2"
3/4"	3/4"	TMRS* 3/4 3/4 N	3.06	1.02	27	1.56	5/8"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
3	1/4"	TMRS* 3 1/4 T	42,4	12,9	14	24,9	2,4
6	1/8"	TMRS* 6 1/8 T	46,3	15,3	14	27,2	4,8
6	1/4"	TMRS* 6 1/4 T	51,0	15,3	14	27,2	4,8
8	1/8"	TMRS* 8 1/8 T	47,2	16,2	14	28,1	4,8
8	1/4"	TMRS* 8 1/4 T	51,9	16,2	14	28,1	6,4
10	1/4"	TMRS* 10 1/4 T	59,2	17,2	19	32,2	7,1
12	3/8"	TMRS* 12 3/8 T	64,9	22,8	22	36,3	9,5
12	1/2"	TMRS* 12 1/2 T	64,9	22,8	22	36,3	9,5
16	1/2"	TMRS* 16 1/2 T	70,4	24,4	24	37,1	11,9

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	L	P
1/4"	1/8"	TMRS* 1/4 1/8 T	1.82	0.60	14	1.07	3/16"
1/4"	1/4"	TMRS* 1/4 1/4 T	2.01	0.60	14	1.07	3/16"
3/8"	1/4"	TMRS* 3/8 1/4 T	2.33	0.68	19	1.27	9/32"
1/2"	3/8"	TMRS* 1/2 3/8 T	2.56	0.90	22	1.43	3/8"
1/2"	1/2"	TMRS* 1/2 1/2 T	2.74	0.90	22	1.43	3/8"
5/8"	1/2"	TMRS* 5/8 1/2 T	2.80	0.96	24	1.46	1/2"
3/4"	3/4"	TMRS* 3/4 3/4 T	3.06	1.02	27	1.56	5/8"
1"	1"	TMRS* 1" 1" T	3.49	1.23	36	1.80	7/8"

Hex flats (H) are metric. Fractional upon request

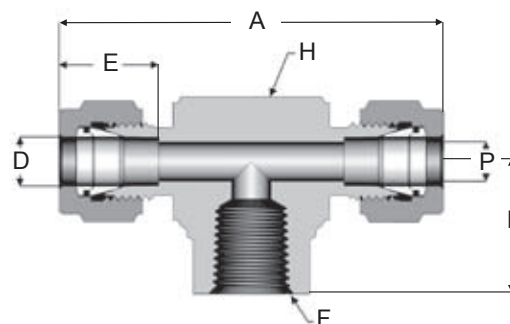
*Specify material when ordering. See page 8 for materials and codes.

FEMALE BRANCH TEE | TFS

APPLICATION

Connects a male taper-threaded apparatus or pipe to a gas line in a T configuration.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
6	1/8"	TFS* 6 1/8 N	52,5	15,3	14	19,1	4,8
6	1/4"	TFS* 6 1/4 N	60,8	15,3	19	21,4	4,8
8	1/8"	TFS* 8 1/8 N	56,2	16,2	14	19,1	6,4
8	1/4"	TFS* 8 1/4 N	62,6	16,2	19	21,4	6,4
10	1/4"	TFS* 10 1/4 N	64,4	17,2	19	21,4	8
12	1/4"	TFS* 12 1/4 N	72,6	22,8	22	21,4	9,5
12	3/8"	TFS* 12 3/8 N	72,6	22,8	22	21,4	9,5
12	1/2"	TFS* 12 1/2 N	79,0	22,8	27	28,6	9,5
16	1/2"	TFS* 16 1/2 N	79,0	24,4	27	28,6	13
20	3/4"	TFS* 20 3/4 N	82,2	26,0	36	31,8	16
22	3/4"	TFS* 22 3/4 N	82,2	26,0	36	31,8	18,5

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	L	P
1/8"	1/8"	TFS* 1/8 1/8 N	1.94	0.5	14	0.75	3/32"
1/8"	1/4"	TFS* 1/8 1/4 N	2.08	0.5	19	0.84	3/32"
1/4"	1/8"	TFS* 1/4 1/8 N	2.08	0.60	14	0.75	3/16"
1/4"	1/4"	TFS* 1/4 1/4 N	2.40	0.60	19	0.84	3/16"
3/8"	1/4"	TFS* 3/8 1/4 N	2.52	0.66	19	0.84	9/32"
1/2"	1/4"	TFS* 1/2 1/4 N	2.84	0.90	22	0.84	3/8"
1/2"	3/8"	TFS* 1/2 3/8 N	2.84	0.90	22	0.84	3/8"
1/2"	1/2"	TFS* 1/2 1/2 N	3.10	0.90	27	1.13	3/8"
5/8"	1/2"	TFS* 5/8 1/2 N	3.10	0.96	27	1.13	33/64"
3/4"	3/4"	TFS* 3/4 3/4 N	3.22	0.96	36	1.25	33/64"
1"	3/4"	TFS* 1" 3/4 N	3.60	1.23	36	1.25	55/64"
1"	1"	TFS* 1" 1" N	4.04	1.23	41	1.50	55/64"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
6	1/4"	TFS* 6 1/4 T	60,8	15,3	19	21,4	4,8
8	1/8"	TFS* 8 1/8 T	62,6	16,2	14	19,1	6,4
8	1/4"	TFS* 8 1/4 T	62,6	16,2	19	21,4	6,4
10	1/4"	TFS* 10 1/4 T	64,4	17,2	19	21,4	8

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	L	P
1/4"	1/4"	TFS* 1/4 1/4 T	2.40	0.60	19	0.84	3/16"
3/8"	1/4"	TFS* 3/8 1/4 T	2.52	0.66	19	0.84	9/32"
1/2"	1/4"	TFS* 1/2 1/4 T	2.84	0.90	22	0.84	3/8"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPP - ISO BSP Parallel Thread (G)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
6	1/8"	TFS* 6 1/8 G	60,8	15,3	14	19,1	4,8
6	1/4"	TFS* 6 1/4 G	60,8	15,3	19	21,4	4,8
8	1/4"	TFS* 8 1/4 G	62,6	16,2	19	21,4	6,4
10	1/4"	TFS* 10 1/4 G	64,4	17,2	19	21,4	8
12	1/4"	TFS* 12 1/4 G	72,6	22,8	22	21,4	9,5
12	3/8"	TFS* 12 3/8 G	72,6	22,8	22	21,4	9,5
14	1/2"	TFS* 14 1/2 G	79	24,4	27	28,6	11

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	L	P
1/4"	1/4"	TFS* 1/4 1/4 G	2.40	0.60	19	0.84	3/16"
5/16"	1/4"	TFS* 5/16 1/4 G	2.07	0.64	19	1.23	1/4"
3/8"	1/4"	TFS* 3/8 1/4 G	2.52	0.66	19	0.84	9/32"
1/2"	3/8"	TFS* 1/2 3/8 G	2.84	0.90	22	0.84	3/8"
3/4"	3/4"	TFS* 3/4 3/4 G	3.22	0.96	36	1.25	33/64"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPP G end connections should be used with sealing gaskets.

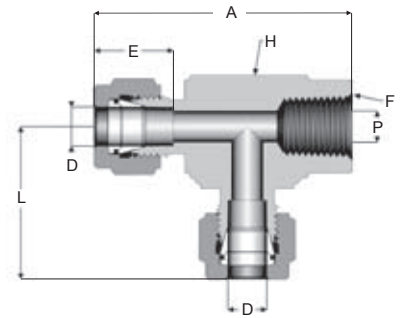
See page 9 for further information. See page 59 for gaskets.

FEMALE RUN TEE | TFRS

APPLICATION

Connects a female taper-threaded apparatus or pipe to a gas line at a 90° elbow.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
6	1/8"	TFRS* 6 1/8 N	54,4	15,3	14	19,1	4,8
6	1/4"	TFRS* 6 1/4 N	60,8	15,3	19	21,4	4,8
8	1/8"	TFRS* 8 1/8 N	56,2	16,2	14	19,1	6,4
8	1/4"	TFRS* 8 1/4 N	62,6	16,2	19	21,4	6,4
10	1/4"	TFRS* 10 1/4 N	67,4	17,2	19	21,4	7,1
12	1/4"	TFRS* 12 1/4 N	72,6	22,8	22	21,4	9,5
12	3/8"	TFRS* 12 3/8 N	72,6	22,8	22	21,4	9,5
12	1/2"	TFRS* 12 1/2 N	79,0	22,8	27	28,6	9,5
16	1/2"	TFRS* 16 1/2 N	79,0	24,4	27	28,6	13

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H(mm)	L	P
1/16"	1/16"	TFRS* 1/16 1/16 N	1.48	0.34	12	0.92	3/16"
1/8"	1/8"	TFRS* 1/8 1/8 N	1.72	0.5	14	0.97	3/32"
3/16"	1/8"	TFRS* 3/16 1/8 N	1.75	0.54	14	1,00	1/8"
1/4"	1/8"	TFRS* 1/4 1/8 N	1.82	0.60	14	1.07	3/16"
1/4"	1/4"	TFRS* 1/4 1/4 N	2.04	0.60	19	1.2	3/16"
3/8"	1/4"	TFRS* 3/8 1/4 N	2.16	0.66	19	1.32	9/32"
1/2"	3/8"	TFRS* 1/2 3/8 N	2.26	0.90	22	1.42	3/8"
1/2"	1/2"	TFRS* 1/2 1/2 N	2.68	0.90	27	1.55	3/8"
3/4"	3/4"	TFRS* 3/4 3/4 N	2.86	0.96	36	1.61	5/8"
1"	3/4"	TFRS* 1" 3/4 N	3.04	1.23	36	1.79	7/8"
1"	1"	TFRS* 1" 1" N	3.54	1.23	41	2.04	7/8"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPT

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
6	1/8"	TFRS* 6 1/8 T	54,4	15,3	14	19,1	4,8
6	1/4"	TFRS* 6 1/4 T	60,8	15,3	19	21,4	4,8
8	1/8"	TFRS* 8 1/8 T	56,2	16,2	14	19,1	6,4
8	1/4"	TFRS* 8 1/4 T	62,6	16,2	19	21,4	6,4
10	1/4"	TFRS* 10 1/4 T	67,4	17,2	19	21,4	7,1
12	3/8"	TFRS* 12 3/8 T	72,6	22,8	22	21,4	9,5
12	1/2"	TFRS* 12 1/2 T	79	22,8	27	21,4	9,5

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H(mm)	L	P
1/4"	1/8"	TFRS* 1/4 1/8 T	1.82	0.60	14	1.07	3/16"
1/4"	1/4"	TFRS* 1/4 1/4 T	2.04	0.60	19	1.2	3/16"
3/8"	1/4"	TFRS* 3/8 1/4 T	2.16	0.66	19	1.32	9/32"
1/2"	3/8"	TFRS* 1/2 3/8 T	2.26	0.90	22	1.42	3/8"
1/2"	1/2"	TFRS* 1/2 1/2 T	2.68	0.90	27	1.55	3/8"
5/8"	1/2"	TFRS* 5/8 1/2 T	2.68	0.96	27	1.55	33/64"
3/4"	3/4"	TFRS* 3/4 3/4 T	2.86	0.96	36	1.61	5/8"
1"	1"	TFRS* 1" 1" T	3.54	1.23	41	2.04	7/8"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPP - ISO BSP Parallel Thread (G)

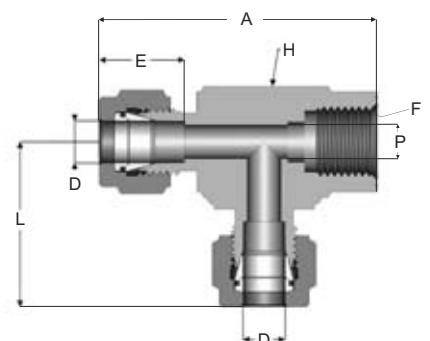
TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	P
6	1/8"	TFRS* 6 1/8 G	54,4	15,3	14	4,8
10	1/4"	TFRS* 10 1/4 G	67,4	17,2	19	7,1
22	3/4"	TFRS* 22 3/4 G	82,2	26,0	36	18,5

BSPP G end connections should be used with sealing gaskets.

See page 9 for further information. See page 59 for gaskets.

*Specify material when ordering. See page 8 for materials and codes.

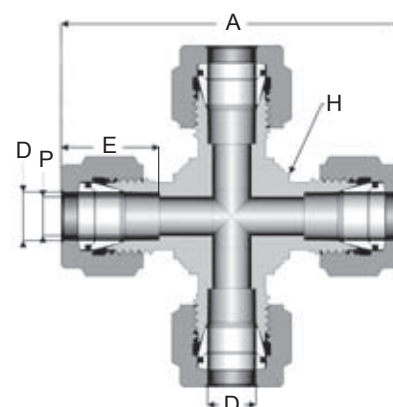


CROSS | CS

APPLICATION

Connects tubes of the same dimension in a cross configuration.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	P
3	CS* 3	46,5	12,9	12	2,4
4	CS* 4	48,1	13,7	12	3,2
6	CS* 6	54,4	15,3	14	4,8
8	CS* 8	56,2	16,2	14	6,4
10	CS* 10	65,2	17,2	19	7,9
12	CS* 12	72,6	22,8	22	9,5
14	CS* 14	74,2	24,4	24	11,1
16	CS* 16	74,2	24,4	24	12,7
18	CS* 18	79,0	24,4	27	15,1
20	CS* 20	83,7	26,0	30	15,9
22	CS* 22	82,1	26,0	30	19,1
25	CS* 25	91,1	31,3	36	22,2

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	P
1/16"	CS* 1/16	1.4	0.34	12	3/64"
1/8"	CS* 1/8	1.84	0.51	12	3/32"
1/4"	CS* 1/4	2.04	0.60	14	3/16"
5/16"	CS* 5/16	2.22	0.64	14	1/4"
3/8"	CS* 3/8	2.26	0.68	19	9/32"
1/2"	CS* 1/2	2.74	0.90	22	3/8"
3/4"	CS* 3/4	3.12	0.96	27	5/8"
1"	CS* 1"	3.6	1.23	36	7/8"

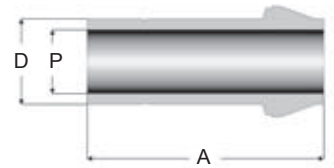
Hex flats (H) are metric. Fractional upon request
 *Specify material when ordering. See page 8 for materials and codes.

PORT CONNECTOR | APS

APPLICATION

Converts a female tube fitting end to a male tube stem of the same diameter.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	P
3	APS* 3	23,0	1,8
4	APS* 4	23,8	2,4
6	APS* 6	26,2	4
8	APS* 8	27,0	6
10	APS* 10	27,8	7,5
12	APS* 12	38,1	9,5
14	APS* 14	38,1	11
16	APS* 16	38,1	13
18	APS* 18	38,1	15
20	APS* 20	41,9	16

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	P
1/16"	APS* 1/16	0.66	1/32"
1/8"	APS* 1/8	0.91	5/64"
3/16"	APS* 3/16	0.94	3/32"
1/4"	APS* 1/4	1.03	3/16"
5/16"	APS* 5/16	1.16	1/4"
3/8"	APS* 3/8	1.06	15/64"
1/2"	APS* 1/2	1.50	3/8"
5/8"	APS* 5/8	1.50	1/2"
3/4"	APS* 3/4	1.50	5/8"

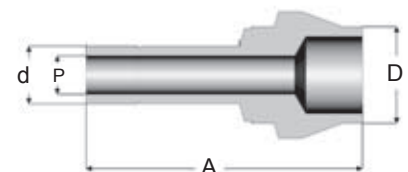
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

REDUCING PORT CONNECTOR | APRS

APPLICATION

Converts a female tube fitting end to a male tube stem of a different diameter.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	d	Reference	A	P
4	3	APRS* 4 3	26,2	2,4
6	3	APRS* 6 3	26,2	2,4
6	4	APRS* 6 4	27,0	3,2
8	6	APRS* 8 6	27,8	4,8
10	6	APRS* 10 6	28,6	4,8
10	8	APRS* 10 8	30,3	6
12	6	APRS* 12 6	36,9	4,8
12	8	APRS* 12 8	37,6	6
12	10	APRS* 12 10	38,1	7,9
18	12	APRS* 18 12	44,1	9,5
20	12	APRS* 20 12	44,1	9,5

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	d	Reference	A	P
1/8"	1/16"	APRS* 1/8 1/16	0.81	3/64"
1/4"	1/16"	APRS* 1/4 1/16	0.84	3/64"
1/4"	1/8"	APRS* 1/4 1/8	1.03	3/32"
1/4"	3/16"	APRS* 1/4 3/16	1.06	1/8"
5/16"	1/4"	APRS* 5/16 1/4	1.09	3/16"
3/8"	1/16"	APRS* 3/8 1/16	0.84	3/64"
3/8"	1/8"	APRS* 3/8 1/8	1.03	3/32"
3/8"	1/4"	APRS* 3/8 1/4	1.13	3/16"
1/2"	1/4"	APRS* 1/2 1/4	1.45	3/16"
1/2"	3/8"	APRS* 1/2 3/8	1.50	9/32"
3/4"	1/2"	APRS* 3/4 1/2	1.73	13/32"

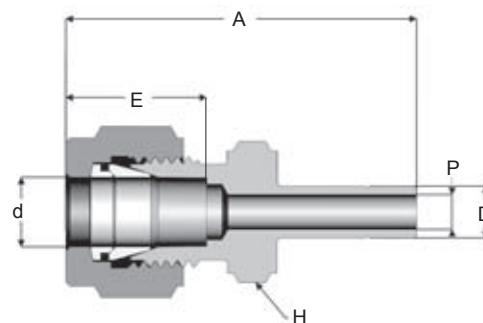
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

REDUCER | ADRS

APPLICATION

Converts a tube of one diameter to a tube stem of a larger or smaller diameter.

Special requirements on request



TUBE SIZE - METRIC (mm)

d	D	Reference	A	E	H	P
3	4	ADRS* 3 4	34,4	12,9	8	2,0
3	6	ADRS* 3 6	36,1	12,9	8	2,0
3	8	ADRS* 3 8	36,8	12,9	12	2,0
3	10	ADRS* 3 10	37,6	12,9	12	2,0
4	6	ADRS* 4 6	36,8	13,7	12	3,0
4	8	ADRS* 4 8	37,6	13,7	12	3,0
6	3	ADRS* 6 3	36,8	15,3	14	1,8
6	4	ADRS* 6 4	37,6	15,3	14	2,4
6	6	ADRS* 6 6	39,2	15,3	14	4,0
6	8	ADRS* 6 8	40,1	15,3	14	4,0
6	10	ADRS* 6 10	40,7	15,3	14	4,5
6	12	ADRS* 6 12	46,3	15,3	14	4,5
8	6	ADRS* 8 6	40,4	16,2	14	4,0
8	10	ADRS* 8 10	42,0	16,2	14	6,4
8	12	ADRS* 8 12	47,6	16,2	14	9,5
10	6	ADRS* 10 6	42,4	17,2	17	4,0
10	8	ADRS* 10 8	42,5	17,2	17	6,0
10	12	ADRS* 10 12	48,9	17,2	17	8,0
10	18	ADRS* 10 18	51,3	17,2	22	8,0
10	22	ADRS* 10 22	52,1	17,2	24	8,0
12	6	ADRS* 12 6	45,0	22,8	22	4,0
12	10	ADRS* 12 10	46,6	22,8	22	7,5
12	16	ADRS* 12 16	53,8	22,8	22	9,5
12	18	ADRS* 12 18	53,8	22,8	22	9,5
12	25	ADRS* 12 25	60,1	22,8	24	9,5
16	12	ADRS* 16 12	53,0	24,4	24	13,0
16	18	ADRS* 16 18	54,6	24,4	24	13,0
18	12	ADRS* 18 12	55,4	24,4	27	9,5
18	16	ADRS* 18 16	56,9	24,4	27	13,0
18	22	ADRS* 18 22	56,9	24,4	27	15,0
18	25	ADRS* 18 25	64,1	24,4	27	15,0
22	20	ADRS* 22 20	61,7	24,4	30	19,1
22	25	ADRS* 22 25	64,9	24,4	30	19,1

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

d	D	Reference	A	E	H (mm)	P
1/16"	1/8"	ADRS* 1/16" 1/8"	1.10	0.34	8	1/16"
1/8"	1/8"	ADRS* 1/8" 1/8"	1.29	0.5	8	1/16"
1/8"	3/16"	ADRS* 1/8" 3/16"	1.32	0.5	8	5/64"
1/8"	1/4"	ADRS* 1/8" 1/4"	1.39	0.5	8	5/64"
3/16"	1/8"	ADRS* 3/16" 1/8"	1.31	0.54	12	1/16"
3/16"	1/4"	ADRS* 3/16" 1/4"	1.41	0.54	12	1/16"
1/4"	1/8"	ADRS* 1/4" 1/8"	1.41	0.6	14	1/16"
1/4"	3/16"	ADRS* 1/4" 3/16"	1.44	0.6	14	3/16"
1/4"	1/4"	ADRS* 1/4" 1/4"	1.50	0.6	14	5/32"
1/4"	5/16"	ADRS* 1/4" 5/16"	1.54	0.6	14	3/16"
1/4"	3/8"	ADRS* 1/4" 3/8"	1.57	0.6	14	3/16"
1/4"	1/2"	ADRS* 1/4" 1/2"	1.79	0.6	14	3/16"
1/4"	3/4"	ADRS* 1/4" 3/4"	1.97	0.6	22	3/16"
1/4"	5/8"	ADRS* 1/4" 5/8"	1.89	0.6	17	3/16"
5/16"	3/8"	ADRS* 5/16" 3/8"	1.58	0.64	14	1/4"
5/16"	1/2"	ADRS* 5/16" 1/2"	1.80	0.64	14	1/4"
3/8"	1/4"	ADRS* 3/8" 1/4"	1.59	0.66	17	5/32"
3/8"	3/8"	ADRS* 3/8" 3/8"	1.65	0.66	17	9/32"
3/8"	1/2"	ADRS* 3/8" 1/2"	1.87	0.66	17	9/32"
3/8"	5/8"	ADRS* 3/8" 5/8"	1.94	0.66	19	9/32"
3/8"	3/4"	ADRS* 3/8" 3/4"	2.02	0.66	22	9/32"
1/2"	1/4"	ADRS* 1/2" 1/4"	1.78	0.9	22	5/32"
1/2"	3/8"	ADRS* 1/2" 3/8"	1.83	0.9	22	9/32"
1/2"	1/2"	ADRS* 1/2" 1/2"	1.06	0.9	22	3/8"
1/2"	5/8"	ADRS* 1/2" 5/8"	2.13	0.9	22	3/8"
1/2"	3/4"	ADRS* 1/2" 3/4"	2.13	0.9	22	3/8"
5/8"	3/8"	ADRS* 5/8" 3/8"	1.88	0.96	24	9/32"
5/8"	1/2"	ADRS* 5/8" 1/2"	2.10	0.96	24	3/8"
5/8"	3/4"	ADRS* 5/8" 3/4"	2.16	0.96	24	1/2"
5/8"	7/8"	ADRS* 5/8" 7/8"	1.29	0.96	24	1/2"
5/8"	1"	ADRS* 5/8" 1"	2.45	0.96	27	1/2"
3/4"	1/2"	ADRS* 3/4" 1/2"	2.14	0.96	27	3/8"
3/4"	1"	ADRS* 3/4" 1"	2.48	0.96	27	5/8"

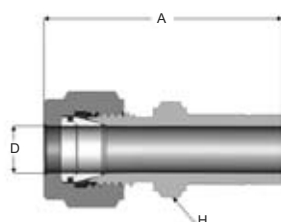
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

HEAT EXCHANGER REDUCER | ADTS

For ordering use ADTS instead of ADRS

Same as the ADRS with a straight bore-through to accommodate heat exchanger and sensor apparatus.

Special requirements on request

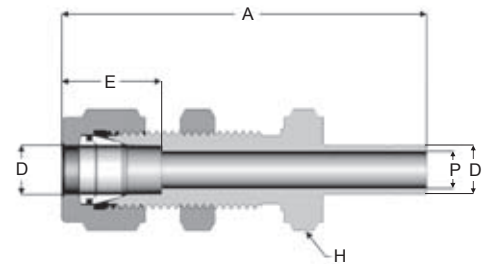


BULKHEAD REDUCER | UCAS

APPLICATION

Converts a tube fitting end to a tube stem through a wall panel. The tube stem is useful to set the direction through a panel construction.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	P	B'Head Hole Drill Size	MA. B'Head Thick.
3	UCAS* 3	50,2	12,9	14	1,8	8,3	12,7
4	UCAS* 4	51,9	13,7	14	2,4	9,8	12,7
6	UCAS* 6	55,8	15,3	17	4,8	11,5	10,3
8	UCAS* 8	59,1	16,2	17	6,4	13,1	11,1
10	UCAS* 10	61,6	17,2	22	7,5	16,3	11,1
12	UCAS* 12	72,8	22,8	24	9,5	19,5	12,7
14	UCAS* 14	75,2	24,4	27	11,0	21,0	12,7
16	UCAS* 16	76,8	24,4	27	12,7	22,5	12,7
18	UCAS* 18	83,1	24,4	30	12,7	26,0	16,7
20	UCAS* 20	83,9	26,0	32	15,9	29,0	19,1
22	UCAS* 22	90,3	26,0	36	18,5	29,0	20,6
25	UCAS* 25	101,1	31,3	38	22,0	33,8	23,8

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	P	B'Head Hole Drill Size	MA. B'Head Thick.
1/8"	UCAS* 1/8	1.98	0.5	14	1/32"	21/64"	1/2"
1/4"	UCAS* 1/4	2.20	0.6	17	3/64"	29/64"	17/32"
3/8"	UCAS* 3/8	2.42	0.66	22	9/32"	37/64"	9/16"
1/2"	UCAS* 1/2	2.86	0.9	24	3/8"	49/64"	19/32"
5/8"	UCAS* 5/8	3.02	0.96	27	1/2"	57/64"	19/32"
3/4"	UCAS* 3/4	3.27	0.96	30	5/8"	1 1/64"	25/32"
1"	UCAS* 1"	3.98	1.23	38	7/8"	1 21/64"	15/16"

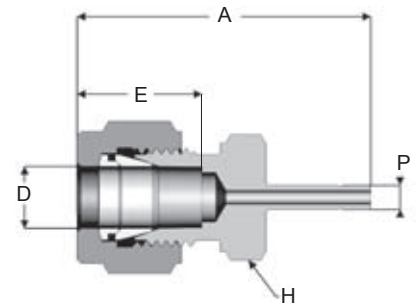
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

CONVERTING REDUCER | AMOD

APPLICATION

Converts a metric tube to a fractional tube stem or vice-versa.

Special requirements on request



TUBE SIZE - METRIC TO FRACTIONAL - (mm)

d	D	Reference	A	E	H	P
3	1/8"	AMOD* 3 1/8	33,6	12,9	12	2,4
3	1/4"	AMOD* 3 1/4	34,4	12,9	12	2,4
4	1/4"	AMOD* 4 1/4	36,8	13,7	12	3,2
6	1/8"	AMOD* 6 1/8	36,8	15,3	14	4,8
6	1/4"	AMOD* 6 1/4	37,6	15,3	14	4,8
6	5/16"	AMOD* 6 5/16	40,2	15,3	14	4,8
6	3/8"	AMOD* 6 3/8	40,7	15,3	14	4,8
6	1/2"	AMOD* 6 1/2	46,3	15,3	14	4,8
8	3/8"	AMOD* 8 3/8	42,0	16,2	14	7,9
8	1/2"	AMOD* 8 1/2	47,6	16,2	14	7,9
10	3/8"	AMOD* 10 3/8	43,1	17,2	17	7,9
10	1/2"	AMOD* 10 1/2	48,9	17,2	17	7,9
12	1/2"	AMOD* 12 1/2	52,2	22,8	22	9,5
12	3/4"	AMOD* 12 3/4	53,8	22,8	22	9,5
18	3/4"	AMOD* 18 3/4	56,1	24,4	27	12,7
18	1"	AMOD* 18 1"	62,4	24,4	27	12,7
25	1"	AMOD* 25 1"	70,1	31,3	36	19,1

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL TO METRIC - (inch)

d	D	Reference	A	E	H (mm)	P
1/8"	6	AMOD* 1/8 6	1.46	0.5	8	2.4

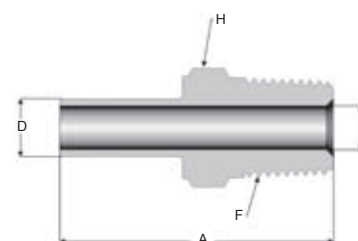
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

MALE ADAPTOR | ADS

APPLICATION

Converts a female tapered-thread (NPT) end to a tube stem.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	H	P
4	1/8"	ADS* 4 1/8 N	28,6	12	3,2
4	1/4"	ADS* 4 1/4 N	34,1	14	3,2
6	1/8"	ADS* 6 1/8 N	31,0	14	4,8
6	1/4"	ADS* 6 1/4 N	35,7	14	4,8
6	3/8"	ADS* 6 3/8 N	36,5	19	4,8
6	1/2"	ADS* 6 1/2 N	42,1	22	4,8
8	1/8"	ADS* 8 1/8 N	31,8	14	4,8
8	1/4"	ADS* 8 1/4 N	37,3	14	6,4
8	3/8"	ADS* 8 3/8 N	37,3	19	6,4
10	1/8"	ADS* 10 1/8 N	33,3	17	4,8
10	1/4"	ADS* 10 1/4 N	38,1	17	7,9
10	3/8"	ADS* 10 3/8 N	38,1	19	7,9
10	1/2"	ADS* 10 1/2 N	43,7	22	7,9
12	1/4"	ADS* 12 1/4 N	42,9	14	7,1
12	3/8"	ADS* 12 3/8 N	43,7	19	9,5
12	1/2"	ADS* 12 1/2 N	49,2	22	9,5
14	3/8"	ADS* 14 3/8 N	45,2	19	7,1
16	3/8"	ADS* 16 3/8 N	45,2	19	9,5
16	1/2"	ADS* 16 1/2 N	50,8	22	11,9
16	3/4"	ADS* 16 3/4 N	50,8	27	12,7
20	3/4"	ADS* 20 3/4 N	54,0	27	15,9
22	3/4"	ADS* 22 3/4 N	54,0	27	15,9
25	3/4"	ADS* 25 3/4***	60,3	27	15,9

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/8"	1/8"	ADS* 1/8 1/8 N	1.16	12	3/32"
1/8"	1/4"	ADS* 1/8 1/4 N	1.38	14	3/32"
3/16"	1/8"	ADS* 3/16 1/8 N	1.19	12	1/8"
3/16"	1/4"	ADS* 3/16 1/4 N	1.41	14	1/8"
1/4"	1/8"	ADS* 1/4 1/8 N	1.25	14	3/16"
1/4"	1/4"	ADS* 1/4 1/4 N	1.47	14	3/16"
1/4"	3/8"	ADS* 1/4 3/8 N	1.97	19	3/16"
1/4"	1/2"	ADS* 1/4 1/2 N	1.70	22	3/16"
5/16"	1/8"	ADS* 5/16 1/8 N	1.30	14	3/16"
5/16"	3/8"	ADS* 5/16 3/8 N	1.44	14	1/4
5/16"	1/4"	ADS* 5/16 1/4 N	1.50	14	1/4"
3/8"	1/8"	ADS* 3/8 1/8 N	1.33	17	3/16"
3/8"	1/4"	ADS* 3/8 1/4 N	1.53	17	9/32"
3/8"	3/8"	ADS* 3/8 3/8 N	1.56	19	9/32"
3/8"	1/2"	ADS* 3/8 1/2 N	1.78	22	9/32"
1/2"	1/4"	ADS* 1/2 1/4 N	1.75	14	9/32"
1/2"	3/8"	ADS* 1/2 3/8 N	1.78	19	3/8"
1/2"	1/2"	ADS* 1/2 1/2 N	2.00	22	13/32"
5/8"	1/2"	ADS* 5/8 1/2 N	2.06	22	15/32"
3/4"	1/2"	ADS* 3/4 1/2 N	2.06	22	15/32"
3/4"	3/4"	ADS* 3/4 3/4 N	2.06	27	5/8"
1"	3/4"	ADS* 1" 3/4 N	2.31	36	5/8"
1"	1"	ADS* 1" 1" N	2.61	36	7/8"

Hex flats (H) are metric. Fractional upon request

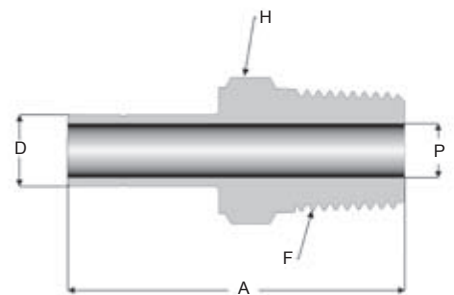
*Specify material when ordering. See page 8 for materials and codes.

MALE ADAPTOR | ADS

APPLICATION

Converts a female tapered-thread (BSPT) end to a tube stem.

Special requirements on request



BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	H	P
3	1/8"	ADS* 3 1/8 T	27,8	12	2,4
3	1/4"	ADS* 3 1/4 T	33,3	14	2,4
4	1/8"	ADS* 4 1/8 T	28,6	12	3,2
4	1/4"	ADS* 4 1/4 T	34,1	14	3,2
6	1/8"	ADS* 6 1/8 T	31,0	14	4,8
6	1/4"	ADS* 6 1/4 T	35,7	14	4,8
6	3/8"	ADS* 6 3/8 T	36,5	19	4,8
8	1/8"	ADS* 8 1/8 T	31,8	14	4,8
8	1/4"	ADS* 8 1/4 T	37,3	14	6,4
8	3/8"	ADS* 8 3/8 T	37,3	19	6,4
10	1/8"	ADS* 10 1/8 T	33,3	17	4,8
10	1/4"	ADS* 10 1/4 T	38,1	17	7,9
10	3/8"	ADS* 10 3/8 T	38,1	19	7,9
10	1/2"	ADS* 10 1/2 T	43,7	22	7,9
12	1/4"	ADS* 12 1/4 T	42,9	14	7,1
12	3/8"	ADS* 12 3/8 T	43,7	19	9,5
12	1/2"	ADS* 12 1/2 T	49,2	22	9,5
14	3/8"	ADS* 14 3/8 T	45,2	19	7,1
16	3/8"	ADS* 16 3/8 T	45,2	19	9,5
16	1/2"	ADS* 16 1/2 T	50,8	22	11,9
16	3/4"	ADS* 16 3/4 T	50,8	27	12,7
20	1/2"	ADS* 20 1/2 T	51,6	22	11,9
20	3/4"	ADS* 20 3/4 T	54,0	27	15,9
25	3/4"	ADS* 25 3/4 T	60,3	27	15,9

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/8"	1/8"	ADS* 1/8 1/8 T	1.16	12	3/32"
1/8"	1/4"	ADS* 1/8 1/4 T	1.38	14	3/32"
1/4"	1/8"	ADS* 1/4 1/8 T	1.25	14	3/16"
1/4"	1/4"	ADS* 1/4 1/4 T	1.47	14	3/16"
1/4"	3/8"	ADS* 1/4 3/8 T	1.97	19	3/16"
1/4"	1/2"	ADS* 1/4 1/2 T	1.70	22	3/16"
5/16"	1/4"	ADS* 5/16 1/4 T	1.50	14	1/4"
3/8"	1/4"	ADS* 3/8 1/4 T	1.53	17	9/32"
3/8"	3/8"	ADS* 3/8 3/8 T	1.56	19	9/32"
3/8"	1/2"	ADS* 3/8 1/2 T	1.78	22	9/32"
1/2"	1/4"	ADS* 1/2 1/4 T	1.75	14	9/32"
1/2"	3/8"	ADS* 1/2 3/8 T	1.78	19	3/8"
1/2"	1/2"	ADS* 1/2 1/2 T	2.00	22	13/32"
3/4"	3/4"	ADS* 3/4 3/4 T	2.06	27	5/8"
1"	1"	ADS* 1" 1" T	2.61	36	7/8"

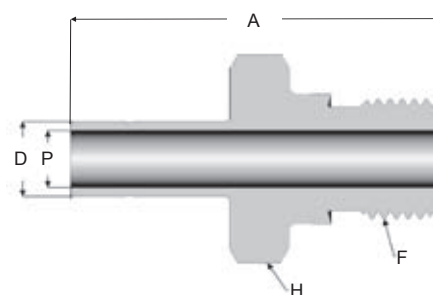
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

MALE ADAPTOR | ADS

APPLICATION

Converts a female parallel thread (BSPP) end to a tube stem.

Special requirements on request



BSPP - ISO BSP Parallel Thread (G)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	H	P
3	1/8"	ADS* 3 1/8 G	31,0	14	1,8
3	1/4"	ADS* 3 1/4 G	35,7	19	1,8
4	1/8"	ADS* 4 1/8 G	31,8	14	2,4
6	1/8"	ADS* 6 1/8 G	33,3	14	4,8
6	1/4"	ADS* 6 1/4 G	38,1	19	4,8
6	3/8"	ADS* 6 3/8 G	38,9	22	4,0
8	1/8"	ADS* 8 1/8 G	34,2	14	4,0
8	1/4"	ADS* 8 1/4 G	38,9	19	6,0
8	3/8"	ADS* 8 3/8 G	39,7	22	6,0
8	1/2"	ADS* 8 1/2 G	43,7	27	6,0
10	1/4"	ADS* 10 1/4 G	39,7	19	6,0
10	3/8"	ADS* 10 3/8 G	40,5	22	7,1
10	1/2"	ADS* 10 1/2 G	43,7	27	7,1
12	1/4"	ADS* 12 1/4 G	45,3	19	6,0
12	3/8"	ADS* 12 3/8 G	46,0	22	7,9
12	1/2"	ADS* 12 1/2 G	49,2	27	9,5
16	3/4"	ADS* 16 3/4 G	54,8	36	13,0

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/8"	1/8"	ADS* 1/8 1/8 G	1.53	14	1/16"
1/8"	1/4"	ADS* 1/8 1/4 G	1.11	19	1/16"
1/4"	1/8"	ADS* 1/4 1/8 G	1.25	14	3/32"
1/4"	1/4"	ADS* 1/4 1/4 G	1.50	19	3/32"
1/4"	3/8"	ADS* 1/4 3/8 G	1.50	22	3/32"
3/8"	1/4"	ADS* 3/8 1/4 G	1.56	19	15/64"
3/8"	3/8"	ADS* 3/8 3/8 G	1.59	22	9/32"
1/2"	1/4"	ADS* 1/2 1/4 G	1.78	19	9/32"
1/2"	3/8"	ADS* 1/2 3/8 G	1.81	22	3/8"
3/4"	3/4"	ADS* 3/4 3/4 G	1.78	36	5/8"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPP G end connections should be used with sealing gaskets.

See page 9 for further information. See page 59 for gaskets.

BSPP - ISO BSP Parallel Thread (K)

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H	P
6	1/8"	ADS* 6 1/8 K	33,3	14	4,8
6	1/4"	ADS* 6 1/4 K	38,1	19	4,8
8	1/4"	ADS* 8 1/4 K	38,9	19	6
10	1/4"	ADS* 10 1/4 K	39,7	19	6
10	3/8"	ADS* 10 3/8 K	40,5	22	7,1
10	1/2"	ADS* 10 1/2 K	43,7	27	7,1
12	1/4"	ADS* 12 1/4 K	45,3	19	6
12	3/8"	ADS* 12 3/8 K	46,0	22	7,9
12	1/2"	ADS* 12 1/2 K	49,2	27	9,5

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/4"	1/8"	ADS* 1/4 1/8 K	1.25	14	3/32"
1/4"	1/4"	ADS* 1/4 1/4 K	1.50	19	3/32"
1/4"	3/8"	ADS* 1/4 3/8 K	1.50	22	3/32"
1/4"	1/2"	ADS* 1/4 1/2 K	1.66	27	5/32"
3/8"	1/8"	ADS* 3/8 1/8 K	1.38	14	1/8"
3/8"	1/4"	ADS* 3/8 1/4 K	1.56	19	15/64"
3/8"	1/2"	ADS* 3/8 1/2 K	1.72	27	9/32"
1/2"	1/4"	ADS* 1/2 1/4 K	1.78	19	9/32"
1/2"	3/8"	ADS* 1/2 3/8 K	1.81	22	3/8"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

BSPP K end connections must be used with sealing gaskets.

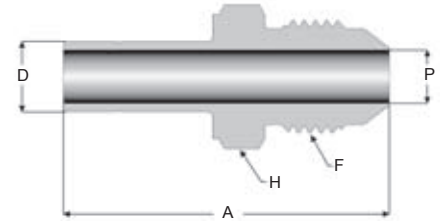
See page 9 for further information. See page 59 for gaskets.

MALE ADAPTOR «AN» | ADS AN

APPLICATION

Converts a female AN thread end to a male tube stem.

Special requirements on request



AN 37 (AN)

TUBE SIZE - METRIC (mm)

D	AN tube flare size	Reference	A	H	P	F
6	1/4"	ADS* 6 1/4 AN	37,3	14	4,8	7/16" - 20
10	1/4"	ADS* 10 1/4 AN	38,9	14	7,1	7/16" - 20
10	3/8"	ADS* 10 3/8 AN	39,7	17	7,1	9/16" - 18
12	1/2"	ADS* 12 1/2 AN	48,4	22	9,5	3/4" - 16
18	3/4"	ADS* 18 3/4 AN	56,4	27	9,5	1 1/16" - 12
25	1"	ADS* 25 1" AN	65,5	36	21,4	1 5/16" - 12

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	AN tube flare size	Reference	A	H (mm)	P	F
1/4"	1/4"	ADS* 1/4 1/4 AN	1 15/32"	14	3/16"	7/16" - 20
3/8"	1/4"	ADS* 3/8 1/4 AN	1 17/32"	14	9/32"	7/16" - 20
3/8"	3/8"	ADS* 3/8 3/8 AN	1 9/16"	17	9/32"	9/16" - 18
1/2"	1/2"	ADS* 1/2 1/2 AN	1 29/32"	22	3/8"	3/4" - 16
3/4"	3/4"	ADS* 3/4 3/4 AN	2 7/32"	27	3/8"	1 1/16" - 12
1"	1"	ADS* 1" 1" AN	2 37/64"	36	7/8"	1 5/16" - 12

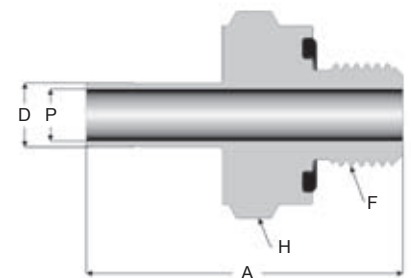
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

MALE O-RING ADAPTOR «UN» | AOMSS

APPLICATION

Converts a female UN threaded end connection apparatus to a male tube stem.

Special requirements on request



UN (UN)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	H	P
3	5/16" - 24	AOMSS* 3 5/16	31,0	14	2,4
4	3/8" - 24	AOMSS* 4 3/8	32,5	17	3,2
6	7/16" - 20	AOMSS* 6 7/16	36,5	19	4,8
8	1/2" - 20	AOMSS* 8 1/2	38,9	22	6,4
10	9/16" - 18	AOMSS* 10 9/16	40,5	24	8
12	3/4" - 16	AOMSS* 12 3/4	46,8	30	9,5
16	7/8" - 14	AOMSS* 16 7/8	50,8	36	13
18	1 1/16" - 12	AOMSS* 18 1 1/16	53,2	38	15
20	1 1/16" - 12	AOMSS* 20 1 1/16	55,6	38	16
22	1 1/16" - 12	AOMSS* 22 1 1/16	55,6	38	18,5
25	1 5/16" - 12	AOMSS* 25 1 5/16	62,7	46	22

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/8"	5/16" - 24	AOMSS* 1/8 5/16	1.22	14	3/32"
3/16"	3/8" - 24	AOMSS* 3/16 3/8	1.28	17	1/8"
1/4"	7/16" - 20	AOMSS* 1/4 7/16	1.44	19	3/16"
5/16"	1/2" - 20	AOMSS* 5/16 1/2	1.53	22	1/4"
3/8"	9/16" - 18	AOMSS* 3/8 9/16	1.59	24	5/16"
1/2"	3/4" - 16	AOMSS* 1/2 3/4	1.84	30	13/32"

Hex flats (H) are metric. Fractional upon request

*Specify material when ordering. See page 8 for materials and codes.

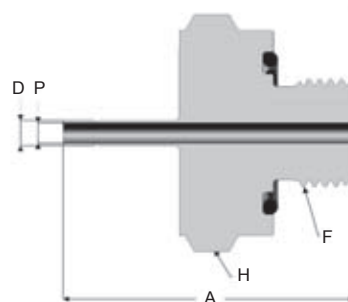
UN fittings are supplied with sealing O-rings in Nitrile (NBR).
Fluorocarbon (FPM) O-rings are available upon request.
See page 8 for additional information.

MALE O-RING ADAPTOR «NPSM» | AOMS

APPLICATION

Converts a female NPSM threaded end connection apparatus to a male tube stem.

Special requirements on request



NPSM (NPSM)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	H	P
6	1/8"	AOMS* 6 1/8	33,3	19	4,8
6	1/4"	AOMS* 6 1/4	36,5	24	4,8
6	3/8"	AOMS* 6 3/8	38,1	30	4,8
10	1/4"	AOMS* 10 1/4	38,1	24	7,1

NPSM fittings are supplied with sealing O-rings in Nitrile (NBR). Fluorocarbon (FPM) O-rings are available upon request. See page 8 for additional information.

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/16"	1/8"	AOMS* 1/8 1/16	1.03	19	3/64"
1/8"	1/8"	AOMS* 1/8 1/8	1.22	19	3/32"
1/8"	1/4"	AOMS* 1/8 1/4	1.34	24	3/32"
3/16"	1/8"	AOMS* 3/16 1/8	1.25	19	1/8"
3/16"	1/4"	AOMS* 3/16 1/4	1.38	24	1/8"
1/4"	1/8"	AOMS* 1/4 1/8	1.31	19	3/16"
1/4"	1/4"	AOMS* 1/4 1/4	1.44	24	3/16"
1/4"	3/8"	AOMS* 1/4 3/8	1.50	30	3/16"
5/16"	1/8"	AOMS* 5/16 1/8	1.34	19	3/16"
5/16"	1/4"	AOMS* 5/16 1/4	1.47	24	1/4"
3/8"	1/8"	AOMS* 3/8 1/8	1.38	19	3/16"
3/8"	1/4"	AOMS* 3/8 1/4	1.50	24	9/32"
3/8"	3/8"	AOMS* 3/8 3/8	1.56	30	9/32"
1/2"	3/8"	AOMS* 1/2 3/8	1.78	30	13/32"
5/8"	1/2"	AOMS* 5/8 1/2	2.06	36	1/2"
3/4"	3/4"	AOMS* 3/4 3/4	2.16	41	5/8"
1"	1"	AOMS* 1" 1"	2.56	46	7/8"

Hex flats (H) are metric. Fractional upon request

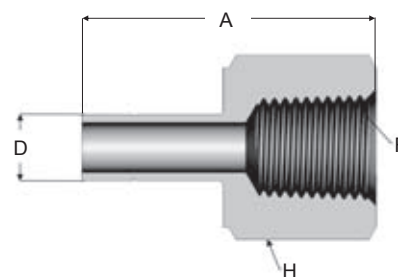
*Specify material when ordering. See page 8 for materials and codes.

FEMALE ADAPTOR | AFS

APPLICATION

Converts a male tapered-thread (NPT) end to a tube stem.

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	H
3	1/8"	AFS* 3 1/8 N	27,0	14
3	1/4"	AFS* 3 1/4 N	31,8	19
4	1/8"	AFS* 4 1/8 N	27,8	14
4	1/4"	AFS* 4 1/4 N	32,5	19
6	1/8"	AFS* 6 1/8 N	29,4	14
6	1/4"	AFS* 6 1/4 N	34,1	19
6	3/8"	AFS* 6 3/8 N	35,7	22
6	1/2"	AFS* 6 1/2 N	40,5	27
8	1/8"	AFS* 8 1/8 N	30,2	14
8	1/4"	AFS* 8 1/4 N	34,9	19
8	3/8"	AFS* 8 3/8 N	36,5	22
8	1/2"	AFS* 8 1/2 N	41,3	27
10	1/8"	AFS* 10 1/8 N	31,0	14
10	1/4"	AFS* 10 1/4 N	35,7	19
10	3/8"	AFS* 10 3/8 N	37,3	22
10	1/2"	AFS* 10 1/2 N	42,1	27
12	1/4"	AFS* 12 1/4 N	41,3	19
12	3/8"	AFS* 12 3/8 N	42,9	22
12	1/2"	AFS* 12 1/2 N	47,6	27
14	3/8"	AFS* 14 3/8 N	44,5	22
14	1/2"	AFS* 14 1/2 N	49,2	27
14	3/4"	AFS* 14 3/4 N	51,6	32
16	3/8"	AFS* 16 3/8 N	44,5	22
16	1/2"	AFS* 16 1/2 N	49,2	27
16	3/4"	AFS* 16 3/4 N	51,6	32
18	1/2"	AFS* 18 1/2 N	49,2	27
18	3/4"	AFS* 18 3/4 N	51,5	32
18	1"	AFS* 18 1" N	60,3	41
22	3/4"	AFS* 22 3/4 N	52,4	32
25	3/4"	AFS* 25 3/4 N	58,8	32
25	1"	AFS* 25 1" N	67,5	41

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)
1/8"	1/8"	AFS* 1/8 1/8 N	1.06	14
1/8"	1/4"	AFS* 1/8 1/4 N	1.25	19
3/16"	1/8"	AFS* 3/16 1/8 N	1.09	14
3/16"	1/4"	AFS* 3/16 1/4 N	1.28	19
1/4"	1/8"	AFS* 1/4 1/8 N	1.16	14
1/4"	1/4"	AFS* 1/4 1/4 N	1.34	19
1/4"	3/8"	AFS* 1/4 3/8 N	1.41	22
1/4"	1/2"	AFS* 1/4 1/2 N	1.59	27
5/16"	1/8"	AFS* 5/16 1/8 N	1.19	14
5/16"	1/4"	AFS* 5/16 1/4 N	1.38	19
5/16"	3/8"	AFS* 5/16 3/8 N	1.44	22
5/16"	1/2"	AFS* 5/16 1/2 N	1.63	27
3/8"	1/8"	AFS* 3/8 1/8 N	1.22	17
3/8"	1/4"	AFS* 3/8 1/4 N	1.41	19
3/8"	3/8"	AFS* 3/8 3/8 N	1.47	22
3/8"	1/2"	AFS* 3/8 1/2 N	1.66	27
1/2"	1/4"	AFS* 1/2 1/4 N	1.63	22
1/2"	3/8"	AFS* 1/2 3/8 N	1.69	22
1/2"	1/2"	AFS* 1/2 1/2 N	1.88	27
5/8"	3/8"	AFS* 5/8 3/8 N	1.75	24
5/8"	1/2"	AFS* 5/8 1/2 N	1.94	27
5/8"	3/4"	AFS* 5/8 3/4 N	2.03	32
3/4"	1/2"	AFS* 3/4 1/2 N	1.94	27
3/4"	3/4"	AFS* 3/4 3/4 N	2.03	32
3/4"	1"	AFS* 3/4 1" N	2.38	41
7/8"	3/4"	AFS* 7/8 3/4 N	2.06	32
1"	3/4"	AFS* 1" 3/4 N	2.31	36
1"	1"	AFS* 1" 1" N	2.66	41

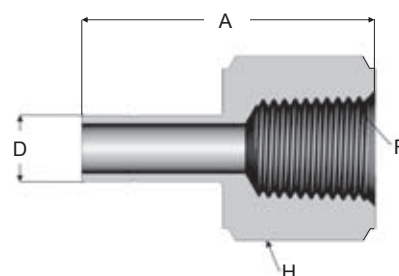
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

FEMALE ADAPTOR | AFS

APPLICATION

Converts a male tapered-thread (BSPT) end to a tube stem.

Special requirements on request



BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	H
3	1/8"	AFS* 3 1/8 T	27,0	14
3	1/4"	AFS* 3 1/4 T	31,8	19
4	1/8"	AFS* 4 1/8 T	27,8	14
4	1/4"	AFS* 4 1/4 T	32,5	19
6	1/8"	AFS* 6 1/8 T	29,4	14
6	1/4"	AFS* 6 1/4 T	34,1	19
6	3/8"	AFS* 6 3/8 T	35,7	22
6	1/2"	AFS* 6 1/2 T	40,5	27
8	1/8"	AFS* 8 1/8 T	30,2	14
8	1/4"	AFS* 8 1/4 T	34,9	19
8	3/8"	AFS* 8 3/8 T	36,5	22
8	1/2"	AFS* 8 1/2 T	41,3	27
10	1/4"	AFS* 10 1/4 T	35,7	19
10	3/8"	AFS* 10 3/8 T	37,3	22
10	1/2"	AFS* 10 1/2 T	42,1	27
12	1/4"	AFS* 12 1/4 T	41,3	19
12	3/8"	AFS* 12 3/8 T	42,9	22
12	1/2"	AFS* 12 1/2 T	47,6	27
14	3/8"	AFS* 14 3/8 T	44,5	22
16	3/8"	AFS* 16 3/8 T	44,5	22
16	1/2"	AFS* 16 1/2 T	49,2	27
18	1/2"	AFS* 18 1/2 T	49,2	27
18	3/4"	AFS* 18 3/4 T	51,5	32
22	3/4"	AFS* 22 3/4 T	52,4	32
25	1"	AFS* 25 1" T	67,5	41

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)
1/8"	1/8"	AFS* 1/8 1/8 T	1.06	14
1/8"	1/4"	AFS* 1/8 1/4 T	1.25	19
3/16"	1/8"	AFS* 3/16 1/8 T	1.09	14
3/16"	1/4"	AFS* 3/16 1/4 T	1.28	19
1/4"	1/8"	AFS* 1/4 1/8 T	1.16	14
1/4"	1/4"	AFS* 1/4 1/4 T	1.34	19
1/4"	3/8"	AFS* 1/4 3/8 T	1.41	22
1/4"	1/2"	AFS* 1/4 1/2 T	1.59	27
5/16"	1/8"	AFS* 5/16 1/8 T	1.19	14
5/16"	1/4"	AFS* 5/16 1/4 T	1.38	19
5/16"	3/8"	AFS* 5/16 3/8 T	1.44	22
5/16"	1/2"	AFS* 5/16 1/2 T	1.63	27
3/8"	1/8"	AFS* 3/8 1/8 T	1.22	17
3/8"	1/4"	AFS* 3/8 1/4 T	1.41	19
3/8"	3/8"	AFS* 3/8 3/8 T	1.47	22
3/8"	1/2"	AFS* 3/8 1/2 T	1.66	27
1/2"	1/4"	AFS* 1/2 1/4 T	1.63	22
1/2"	3/8"	AFS* 1/2 3/8 T	1.69	22
1/2"	1/2"	AFS* 1/2 1/2 T	1.88	27
5/8"	3/8"	AFS* 5/8 3/8 T	1.75	24
5/8"	1/2"	AFS* 5/8 1/2 T	1.94	27
5/8"	3/4"	AFS* 5/8 3/4 T	2.03	32
3/4"	1/2"	AFS* 3/4 1/2 T	1.94	27
3/4"	3/4"	AFS* 3/4 3/4 T	2.03	32
3/4"	1"	AFS* 3/4 1" T	2.38	41
7/8"	3/4"	AFS* 7/8 3/4 T	2.06	32
1"	3/4"	AFS* 1" 3/4 T	2.31	36
1"	1"	AFS* 1" 1" T	2.66	41

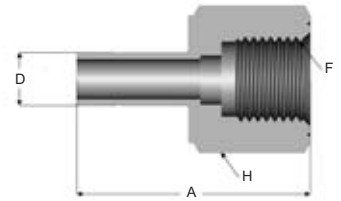
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

FEMALE ADAPTOR | AFS

APPLICATION

Converts a male parallel thread (BSPP) end to a tube stem.

Special requirements on request



BSPP - ISO BSP Parallel Thread (G)

TUBE SIZE - METRIC (mm)

D	F	Reference	A	H
3	1/4"	AFS* 3 1/4 G	33,5	19
6	1/8"	AFS* 6 1/8 G	29,4	14
6	1/4"	AFS* 6 1/4 G	34,1	19
6	3/8"	AFS* 6 3/8 G	35,7	22
6	1/2"	AFS* 6 1/2 G	40,5	27
8	1/4"	AFS* 8 1/4 G	34,9	19
8	3/8"	AFS* 8 3/8 G	36,5	22
8	1/2"	AFS* 8 1/2 G	41,3	27
10	1/8"	AFS* 10 1/8 G	30,95	14
10	1/4"	AFS* 10 1/4 G	35,7	19
10	3/8"	AFS* 10 3/8 G	37,3	22
10	1/2"	AFS* 10 1/2 G	42,1	27
12	1/4"	AFS* 12 1/4 G	41,3	19
12	1/2"	AFS* 12 1/2 G	47,6	27
14	3/8"	AFS* 14 3/8 G	42,9	22
16	3/8"	AFS* 16 3/8 G	44,5	22
16	1/2"	AFS* 16 1/2 G	49,2	27
18	1/2"	AFS* 18 1/2 G	49,2	27
18	3/4"	AFS* 18 3/4 G	51,6	32
22	3/4"	AFS* 22 3/4 G	52,4	32

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)
1/8"	1/4"	AFS* 1/8 1/4 G	1.25	19
1/4"	1/4"	AFS* 1/4 1/4 G	1.34	19
1/4"	3/8"	AFS* 1/4 3/8 G	1.41	22
1/4"	1/2"	AFS* 1/4 1/2 G	1.59	27
5/16"	1/4"	AFS* 5/16 1/4 G	1.38	19
5/16"	1/2"	AFS* 5/16 1/2 G	1.63	27
3/8"	1/4"	AFS* 3/8 1/4 G		19
3/8"	3/8"	AFS* 3/8 3/8 G	1.47	22
3/8"	1/2"	AFS* 3/8 1/2 G	1.66	27
1/2"	1/4"	AFS* 1/2 1/4 G	1.63	19
1/2"	1/2"	AFS* 1/2 1/2 G	1.88	27
5/8"	1/2"	AFS* 5/8 1/2 G	1.94	27
3/4"	1/2"	AFS* 3/4 1/2 G	1.94	27
1"	3/4"	AFS* 1 3/4 G	2.31	32

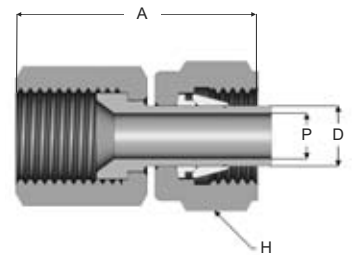
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

BSPP G end connections should be used with sealing gaskets.
See page 9 for further information. See page 59 for gaskets.

FEMALE ADAPTOR «AN» | AFS AN



Note that the ferrules are already pre-swaged on the fitting, that means you have to use the re-assembling instructions.



AN 37 (AN)

TUBE SIZE - METRIC (mm)

D	AN tube flare size	Reference	A	H	P	F
3	1/8"	AFS* 3 1/8 AN	27	12	1,6	5/16" - 24
3	1/4"	AFS* 3 1/4 AN	29,4	12	2,4	7/16" - 20
4	3/16"	AFS* 4 3/16 AN	30,2	12	3,2	3/8" - 24
6	1/4"	AFS* 6 1/4 AN	31,8	14	4,4	7/16" - 20
8	5/16"	AFS* 8 5/16 AN	33,4	17	5,9	1/2" - 20
10	3/8"	AFS* 10 3/8 AN	35,8	19	9,9	9/16" - 18
12	1/2"	AFS* 12 1/2 AN	44,4	22	9,9	3/4" - 16
16	5/8"	AFS* 16 5/8 AN	49,2	27	12,3	7/8" - 14
25	1"	AFS* 25 1" AN	60,4	38	21,4	1 5/16" - 12

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	AN tube flare size	Reference	A (mm)	H (mm)	P	F
1/8"	1/8"	AFS* 1/8 1/8 AN	1.06	12	1/16"	5/16" - 24
1/8"	1/4"	AFS* 1/8 1/4 AN	1.16	12	3/32"	7/16" - 20
1/4"	1/4"	AFS* 1/4 1/4 AN	1.25	14	1/64"	7/16" - 20
3/8"	3/8"	AFS* 3/8 3/8 AN	1.41	19	19/64"	9/16" - 18
1/2"	1/2"	AFS* 1/2 1/2 AN	1.75	22	25/64"	3/4" - 16
1"	1"	AFS* 1 1" AN	2.38	38	27/32"	1 5/16" - 12

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

CHROMATOGRAPH FITTINGS

Rotarex chromatograph fittings are designed to cover a wide range of analytical applications.

Rotarex technology allows to maintain a laminar flow for liquid chromatography, where turbulences are not permitted. Also, to avoid impacting the resolution of the chromatograph, the design is minimizing internal cavities.

Rotarex chromatograph column end and union embodies the proven Rotarex high quality standards for production and quality control.

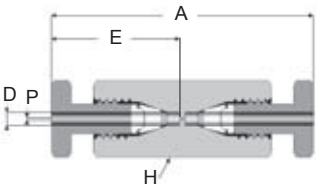
CHROMATOGRAPH STRAIGHT UNION - Low dead volume | USFVM

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	P
1/16"	USFVM I 1/16	1.25	0.61	8	0.013

SS 316L version only

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.



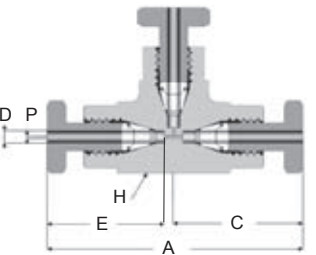
CHROMATOGRAPH UNION TEE - Low dead volume | TSFVM

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	P
1/16"	TSFVM I 1/16	1,30	0.61	12	0.013

SS 316L version only

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.



CHROMATOGRAPH MALE CONNECTOR - Low dead volume | UMSFVM

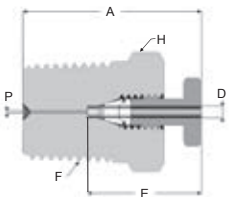
NPT (N)

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/16"	1/8"	UMSFVM 1/16 1/8 N	0.75	0.61	12	0.013
1/16"	1/4"	UMSFVM 1/16 1/4 N	1.35	0.61	14	0.013
1/16"	3/8"	UMSFVM 1/16 3/8 N	1.44	0.61	17	0.013

SS 316L version only

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.



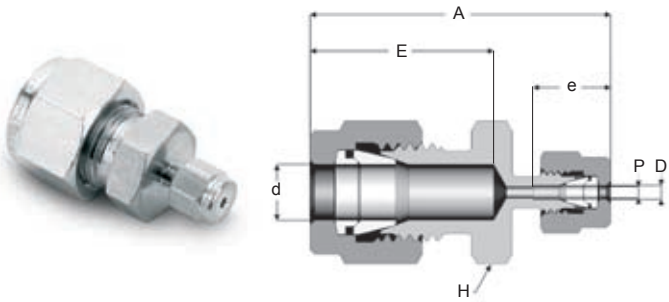
COLUMN END REDUCING UNION - Low dead volume | URSFVM

TUBE SIZE - FRACTIONAL (inch)

d	D	Reference	A	E	e	H (mm)	P
1/8"	1/16" (1.58)	URSFVM I 1/8 1/16	1.22	0.73	/	12	0.013
1/4"	1/16" (1.58)	URSFVM I 1/4 1/16	1.35	0.82	0.33	14	0.013
1/4"	1/16" (1.58)	URSFVM I 1/4 1/16	1.35	0.82	/	14	0.013
3/8"	1/16" (1.58)	URSFVM I 3/8 1/16	1.44	0.92	/	19	0.013

SS 316L version only

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.



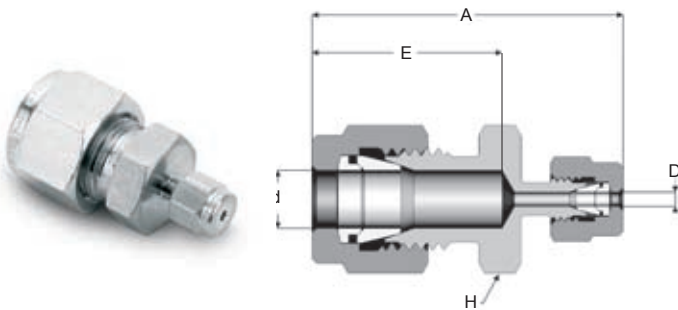
COLUMN END REDUCING UNION - Zero dead volume | URSZVM

TUBE SIZE - FRACTIONAL (inch)

d	D	Reference	A	E	H (mm)
1/8"	1/16" (1.58)	URSZVM I 1/8 1/16	1.22	0.73	12
1/4"	1/16" (1.58)	URSZVM I 1/4 1/16	1.35	0.82	14
1/4"	1/16" (1.58)	URSZVM I 1/4 1/16	1.35	0.82	14
3/8"	1/16" (1.58)	URSZVM I 3/8 1/16	1.44	0.92	19

SS 316L version only

Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.



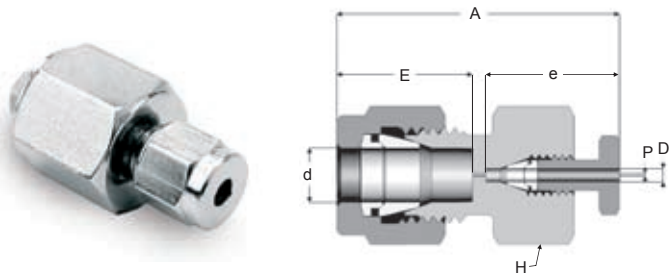
COLUMN END FEMALE CONNECTOR - Low dead volume | UFSFVM

TUBE SIZE - FRACTIONAL (inch)

d (mm)	D (mm)	Reference	A	E	e	H (mm)	P
1/16"	1/8"	UFSFVM I 1/8 1/16	1.17	0.51	0.61	12	0.013
1/16"	1/4"	UFSFVM I 1/4 1/16	1.25	0.60	0.61	14	0.013
1/16"	3/8"	UFSFVM I 3/8 1/16	1.35	0.68	0.61	19	0.013

SS 316L version only

*Specify material when ordering. See page 8 for materials and codes.



MALE NUT | EDS

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	H (mm)
1/16"	EDS 1/16	0.38	8
1/8"	EDS 1/8	0.53	12
1/4"	EDS 1/4	0.63	14

SS 316L version only

*Specify material when ordering. See page 8 for materials and codes.

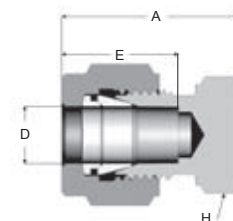


CAP | BPS

APPLICATION

Compression fitting to cap a tube.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	E	H
3	BPS* 3	20,1	12,9	12
4	BPS* 4	21,3	13,7	12
6	BPS* 6	23,3	15,3	14
8	BPS* 8	24,6	16,2	17
10	BPS* 10	25,9	17,2	19
12	BPS* 12	29,2	22,8	22
14	BPS* 14	29,9	24,4	24
16	BPS* 16	29,9	24,4	27
18	BPS* 18	31,5	24,4	30
20	BPS* 20	33,9	26,0	32
22	BPS* 22	33,9	26,0	32
25	BPS* 25	38,4	31,3	38

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)
1/16"	BPS* 1/16	0.99	0.34	8
1/8"	BPS* 1/8	0.79	0.50	12
3/16"	BPS* 3/16	0.84	0.54	12
1/4"	BPS* 1/4	0.91	0.60	14
5/16"	BPS* 5/16	0.96	0.64	17
3/8"	BPS* 3/8	1.77	0.66	19
1/2"	BPS* 1/2	1.15	0.90	22
5/8"	BPS* 5/8	1.18	0.96	27
3/4"	BPS* 3/4	1.24	0.96	30
7/8"	BPS* 7/8	1.34	1.02	32
1"	BPS* 1"	1.52	1.23	38

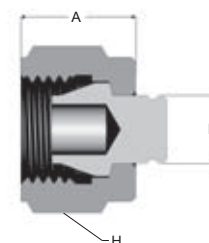
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

PLUG | OBS

APPLICATION

Plug to seal an apparatus with a compression fitting end.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	H
3	OBS* 3	11,9	12
4	OBS* 4	11,9	12
6	OBS* 6	12,7	14
8	OBS* 8	13,5	17
10	OBS* 10	15,1	19
12	OBS* 12	17,5	22
14	OBS* 14	17,5	24
16	OBS* 16	17,5	27
18	OBS* 18	17,5	30
20	OBS* 20	17,5	32
22	OBS* 22	17,5	32
25	OBS* 25	20,6	38

*Specify material when ordering. See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	H (mm)
1/16"	OBS* 1/16	0.31	8
1/8"	OBS* 1/8	0.47	12
3/16"	OBS* 3/16	0.47	12
1/4"	OBS* 1/4	0.50	14
5/16"	OBS* 5/16	0.53	17
3/8"	OBS* 3/8	0.56	19
1/2"	OBS* 1/2	0.69	22
5/8"	OBS* 5/8	0.69	27
3/4"	OBS* 3/4	0.69	30
7/8"	OBS* 7/8	0.69	32
1"	OBS* 1"	0.81	38

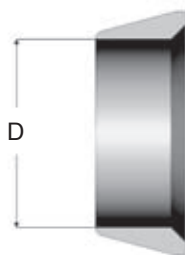
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering. See page 8 for materials and codes.

FRONT FERRULE | FF

APPLICATION

Spare part for a double ferrule compression tube fitting.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference
3	FF* 3
4	FF* 4
6	FF* 6
8	FF* 8
10	FF* 10
12	FF* 12
14	FF* 14
15	FF* 15
16	FF* 16
18	FF* 18
20	FF* 20
22	FF* 22
25	FF* 25

*Specify material when ordering.
See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference
1/16"	FF* 1/16
1/8"	FF* 1/8
3/16"	FF* 3/16
1/4"	FF* 1/4
5/16"	FF* 5/16
3/8"	FF* 3/8
1/2"	FF* 1/2
5/8"	FF* 5/8
3/4"	FF* 3/4
7/8"	FF* 7/8
1"	FF* 1"

*Specify material when ordering.
See page 8 for materials and codes.

BACK FERRULE | BF

APPLICATION

Spare part for a double ferrule compression tube fitting.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference
3	BF* 3
4	BF* 4
6	BF* 6
8	BF* 8
10	BF* 10
12	BF* 12
14	BF* 14
15	BF* 15
16	BF* 16
18	BF* 18
20	BF* 20
22	BF* 22
25	BF* 25

*Specify material when ordering.
See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference
1/16"	BF* 1/16
1/8"	BF* 1/8
3/16"	BF* 3/16
1/4"	BF* 1/4
5/16"	BF* 5/16
3/8"	BF* 3/8
1/2"	BF* 1/2
5/8"	BF* 5/8
3/4"	BF* 3/4
7/8"	BF* 7/8
1"	BF* 1"

*Specify material when ordering.
See page 8 for materials and codes.

FERRULE SET (10 of each) | SET

APPLICATION

Set of 10 front and back ferrules.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference
3	SET* 3
4	SET* 4
6	SET* 6
8	SET* 8
10	SET* 10
12	SET* 12
14	SET* 14
15	SET* 15
16	SET* 16
18	SET* 18
20	SET* 20
22	SET* 22
25	SET* 25

*Specify material when ordering.
See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference
1/16"	SET* 1/16
1/8"	SET* 1/8
3/16"	SET* 3/16
1/4"	SET* 1/4
5/16"	SET* 5/16
3/8"	SET* 3/8
1/2"	SET* 1/2
5/8"	SET* 5/8
3/4"	SET* 3/4
7/8"	SET* 7/8
1"	SET* 1"

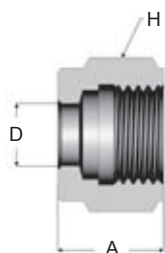
*Specify material when ordering.
See page 8 for materials and codes.

NUT | ES

APPLICATION

Spare part for a double ferrule compression tube fitting.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	H
3	ES* 3	11,9	12
4	ES* 4	11,9	12
6	ES* 6	12,7	14
8	ES* 8	13,5	17
10	ES* 10	15,1	19
12	ES* 12	17,5	22
14	ES* 14	17,5	27
15	ES* 15	17,5	27
16	ES* 16	17,5	27
18	ES* 18	17,5	30
20	ES* 20	17,5	32
22	ES* 22	17,5	32
25	ES* 25	20,6	38

*Specify material when ordering.
See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	H (mm)
1/16"	ES* 1/16	0.31	8
1/8"	ES* 1/8	0.47	12
3/16"	ES* 3/16	0.47	12
1/4"	ES* 1/4	0.50	14
5/16"	ES* 5/16	0.53	17
3/8"	ES* 3/8	0.56	19
1/2"	ES* 1/2	0.69	22
5/8"	ES* 5/8	0.69	27
3/4"	ES* 3/4	0.69	30
7/8"	ES* 7/8	0.69	32
1"	ES* 1"	0.81	38

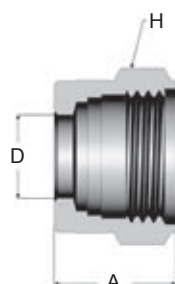
Hex flats (H) are metric. Fractional upon request
*Specify material when ordering.
See page 8 for materials and codes.

KNURLED NUT | EMS

APPLICATION

Alternative knurled nut for a double ferrule compression tube fitting. Design for easier finger tightening.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	H
3	EMS* 3	11,9	12
4	EMS* 4	11,9	12
6	EMS* 6	12,7	14
8	EMS* 8	13,5	17
10	EMS* 10	15,1	19
12	EMS* 12	17,5	22
14	EMS* 14	17,5	27
16	EMS* 16	17,5	27
18	EMS* 18	17,5	30
20	EMS* 20	17,5	32
22	EMS* 22	17,5	32

*Specify material when ordering.
See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	H (mm)
1/16"	EMS* 1/16	0.31	8
1/8"	EMS* 1/8	0.47	12
3/16"	EMS* 3/16	0.47	12
1/4"	EMS* 1/4	0.50	14
5/16"	EMS* 5/16	0.53	17
3/8"	EMS* 3/8	0.56	19
1/2"	EMS* 1/2	0.69	22
5/8"	EMS* 5/8	0.69	27
3/4"	EMS* 3/4	0.69	30
7/8"	EMS* 7/8	0.69	32
1"	EMS* 1"	0.81	38

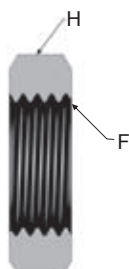
*Specify material when ordering.
See page 8 for materials and codes.

BULKHEAD LOCKNUT | ECS

APPLICATION

Spare part for a double ferrule compression bulkhead fitting.

Special requirements on request



TUBE SIZE

Metric	Fractional	Reference	H	F (UNF)
3	1/8"	ECS* H14 5/16	14	5/16" - 20
4	3/16"	ECS* H14 3/8	14	3/8" - 20
6	1/4"	ECS* H17 7/16	17	7/16" - 20
8	5/16"	ECS* H17 1/2	17	1/2" - 20
-	3/8"	ECS* H19 9/16	19	9/16" - 20
10	-	ECS* H19 5/8	19	5/8" - 20
12	1/2"	ECS* H24 3/4	24	3/4" - 20
14-15-16	5/8"	ECS* H27 7/8	27	7/8" - 20
18	3/4"	ECS* H30 1	30	1" - 20
20-22	7/8"	ECS* H36 1 1/8	36	1 1/8" - 20
25	1"	ECS* H38 1 5/16	38	1 5/16" - 20

*Specify material when ordering.
See page 8 for materials and codes.

INSERT FOR PLASTIC TUBE | INS

APPLICATION

Hose connector insert. Allows connection of a flexible hose and/or to increase the rigidity.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	d	P
4	INS* 4 2	2	0,8
6	INS* 6 4	4	2
8	INS* 8 6	6	4
10	INS* 10 8	8	6,4
12	INS* 12 8	8	7,5
12	INS* 12 10	10	10,3
14	INS* 14 12	12	11,1
16	INS* 16 13	13	11,9
16	INS* 16 14	14	14,3
18	INS* 18 16	16	15,8

*Specify material when ordering.
See page 8 for materials and codes.

TUBE SIZE - FRACTIONAL (inch)

D	Reference	d	P
1/8"	INS* 1/8 2	2	13/16"
3/16"	INS* 3/16 1/8	1/8"	3/32"
1/4"	INS* 1/4 1/8	1/8"	3/32"
1/4"	INS* 1/4 3/16	3/16"	1/8"
5/16"	INS* 5/16 3/16	3/16"	1/8"
5/16"	INS* 5/16 1/4	1/4"	3/16"
3/8"	INS* 3/8 3/16	3/16"	1/8"
3/8"	INS* 3/8 1/4	1/4"	3/16"
1/2"	INS* 1/2 1/4	1/4"	3/16"
1/2"	INS* 1/2 3/8	3/8"	5/16"
5/8"	INS* 5/8 3/8	3/8"	5/16"
5/8"	INS* 5/8 1/2	1/2"	7/16"
3/4"	INS* 3/4 1/2	1/2"	7/16"
3/4"	INS* 3/4 5/8	5/8"	9/16"
1"	INS* 1" 3/4	3/4"	11/16"

*Specify material when ordering.
See page 8 for materials and codes.

GAUGE | CCS

APPLICATION

Gauge to measure correct tightness of compression tube fittings (see page 7).

Special requirements on request



TUBE SIZE - FRACTIONAL & METRIC

D (inch)	D2 (mm)	Reference
1/8"	3	1/8 CCS 3
3/16"	4	3/16 CCS 4
1/4"	6	1/4 CCS 6
5/16"	8	5/16 CCS 8
3/8"	-	3/8 CCS
-	10	CCS 10
1/2"	12	1/2 CCS 12
-	14	CCS 14
5/8"	16	5/8 CCS 16
3/4"	18	3/4 CCS 18
-	20	CCS 20
7/8"	22	7/8 CCS 22
1"	25	1" CCS 25

Dimensions D and D2 correspond to the tube dimension not to the gauge dimension

PRE-ASSEMBLY TOOL | PSS

APPLICATION

Tool to pre-tighten compression tube fittings before first-time installation. Ideal for access restricted installations.

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference
3	PSS 3
4	PSS 4
6	PSS 6
8	PSS 8
10	PSS 10
12	PSS 12
14	PSS 14
16	PSS 16
18	PSS 18
20	PSS 20
22	PSS 22
25	PSS 25

TUBE SIZE - FRACTIONAL (inch)

D	Reference
1/8"	PSS 1/8
3/16"	PSS 3/16
1/4"	PSS 1/4
5/16"	PSS 5/16
3/8"	PSS 3/8
1/2"	PSS 1/2
5/8"	PSS 5/8
7/8"	PSS 7/8
1"	PSS 1"

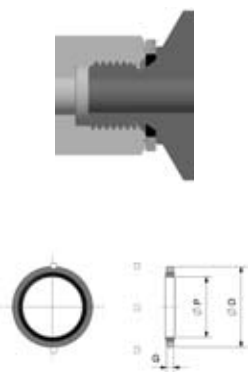


GASKETS (steel/elastomer) | GBS

APPLICATION

- Provides a seal with male ISO/BSPP K parallel thread. The standard gasket is composed of a nitrile NBR inner ring bonded to a carbon steel outer ring. To order a fluorocarbon gasket, add FPM.
- See page 9 for details.

Special requirements on request



ISO/BSPP PARALLEL THREAD

ISO thread size	Reference	D (mm / inch)	P (mm / inch)	G (mm / inch)
1/8"	GBS 1/8	15,88 / 0.63	10,35 / 0.41	2,00 / 0.08
1/4"	GBS 1/4	20,57 / 0.81	13,74 / 0.54	2,03 / 0.08
3/8"	GBS 3/8	23,80 / 0.94	17,28 / 0.68	
1/2"	GBS 1/2	28,58 / 1.13	21,54 / 0.85	
3/4"	GBS 3/4	34,93 / 1.38	27,05 / 1.06	2,50 / 0.10
1"	GBS 1"	42,80 / 1.69	33,89 / 1.33	

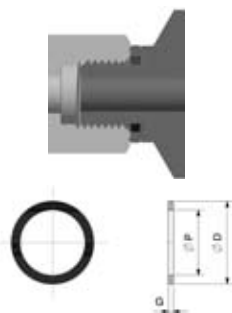
ISO thread size	Reference	D (mm / inch)	P (mm / inch)	G (mm / inch)
1/8"	GBS/FPM 1/8	15,88 / 0.63	10,35 / 0.41	2,00 / 0.08
1/4"	GBS/FPM 1/4	20,57 / 0.81	13,74 / 0.54	2,03 / 0.08
3/8"	GBS/FPM 3/8	23,80 / 0.94	17,28 / 0.68	
1/2"	GBS/FPM 1/2	28,58 / 1.13	21,54 / 0.85	
3/4"	GBS/FPM 3/4	34,93 / 1.38	27,05 / 1.06	2,50 / 0.10
1"	GBS/FPM 1"	42,80 / 1.69	33,89 / 1.33	

GASKETS (copper) | GCU

APPLICATION

- Provides a seal with male ISO BSPP G parallel threads.
- The gasket material is copper.
- See page 9 for details.

Special requirements on request



ISO/BSPP PARALLEL THREAD

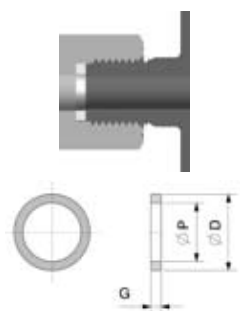
ISO thread size	Reference	D (mm / inch)	P (mm / inch)	G (mm / inch)
1/8"	GCU 1/8	14,98 / 0.59	9,91 / 0.39	1,0 / 0.04
1/4"	GCU 1/4	18,03 / 0.71	13,97 / 0.55	
3/8"	GCU 3/8	23,11 / 0.91	17,02 / 0.67	1,5 / 0.06
1/2"	GCU 1/2	26,92 / 1.06	21,34 / 0.84	
3/4"	GCU 3/4	33,02 / 1.30	26,67 / 1.05	2,0 / 0.08
1"	GCU 1"	38,10 / 1.50	33,53 / 1.32	

GASKETS (PCTFE) | GKF

APPLICATION

- Provides a seal on stainless steel pressure gauges equipped with ISO/BSPP G parallel female threads.
- The gasket material is PCTFE.
- See page 9 for details.

Special requirements on request



ISO/BSPP PARALLEL THREAD

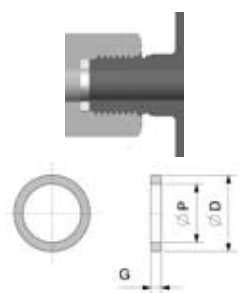
	ISO thread size	Reference	D (mm / inch)	P (mm / inch)	G (mm / inch)
Regular gaskets	1/4"	GKF 1/4	11,0 / 0.43	5,2 / 0.20	2,0 / 0.08
	3/8"	GKF 3/8	14,7 / 0.58	8,0 / 0.31	4,0 / 0.16
	1/2"	GKF 1/2	18,3 / 0.72	14,0 / 0.5	2,5 / 0.10
Thin gaskets	1/4"	GKF 1/4	11,0 / 0.43	5,2 / 0.20	1,5 / 0.06
	1/4"	GKF 1/4	11,0 / 0.43	5,2 / 0.20	1,0 / 0.04
	1/4"	GKF 1/4	11,0 / 0.43	5,2 / 0.20	0,5 / 0.02
	3/8"	GKF 3/8	14,7 / 0.58	8,0 / 0.31	1,5 / 0.06
	3/8"	GKF 3/8	14,7 / 0.58	8,0 / 0.31	1,0 / 0.04
	3/8"	GKF 3/8	14,7 / 0.58	8,0 / 0.31	0,5 / 0.02

GASKETS (PTFE) | GTE

APPLICATION

- Provides a seal on stainless steel pressure gauges equipped with ISO/BSPP G parallel female threads. The gasket material is PTFE.
- See page 9 for details.

Special requirements on request



ISO/BSPP PARALLEL THREAD

	ISO thread size	Reference	D	P	G
Regular gaskets	1/4"	GTE 1/4	11,0	5,2	2,0
	3/8"	GTE 3/8	14,7	8,0	2,0
	3/4"	GTE 3/4	18,3	14,0	2,5
	1/2"	GTE 1/2	23,8	18,0	3,0
Thin gaskets	1/4"	GTE 1/4	11,0	5,2	1,5
	1/4"	GTE 1/4	11,0	5,2	1,0
	1/4"	GTE 1/4	11,0	5,2	0,5

MANUAL TUBE BENDER

APPLICATION

Enables reliable and high precision bends in tubing made from materials that can be used with Rotarex tube fittings. Bending range from 3 to 14 mm, and ¼ to ¾ inch, according to the selected model, Perfect handling by pre-molded wrists.

Special requirements on request



Reference	Description
474900312	Tube bender thickness ≤ 1 mm Ø 3 to 10 mm
474900409	Tube bender Thickness ≤ 1 mm Ø ¼ to ½ mm R 3 - 3,5 D
474900610	Tube bender Thickness ≤ 1 mm Ø 6 to 10 mm R 3 - 3,5 D
474900611	Tube bender Thickness ≤ 1 mm Ø ¼" - ½" - R3 D
474900612	Tube bender Thickness ≤ 1 mm Ø 10 mm R 3,5 D
474900613	Tube bender Thickness ≤ 1 mm Ø 12 mm R 3,5 D
474901214	Tube bender Thickness ≤ 1 mm Ø 12 to 14 mm R 3 to 3,5 D
474901654	Tube bender Thickness ≤ 1 mm Ø ⅝" R 54 mm

DEBURRING TOOL

APPLICATION

To deburr copper tubing. Deburs the inside and outside diameters of 4 mm to 25 mm, and ⅛" to 1" inch tubing.

Reference: 47490000.

Special requirements on request



TUBE CUTTER

APPLICATION

The Rotarex tube cutter cuts stainless steel, soft copper and aluminium tubing from 3 to 25 mm and ⅛ to 1 inch outside diameter.

Special requirements on request



PTFE TAPE

APPLICATION

Tape 12 mm x 0,1 mm x 12 m
Density: 1g/cm³
Reference 13008006.

Special requirements on request



NOTES

ASSEMBLY GUIDELINES

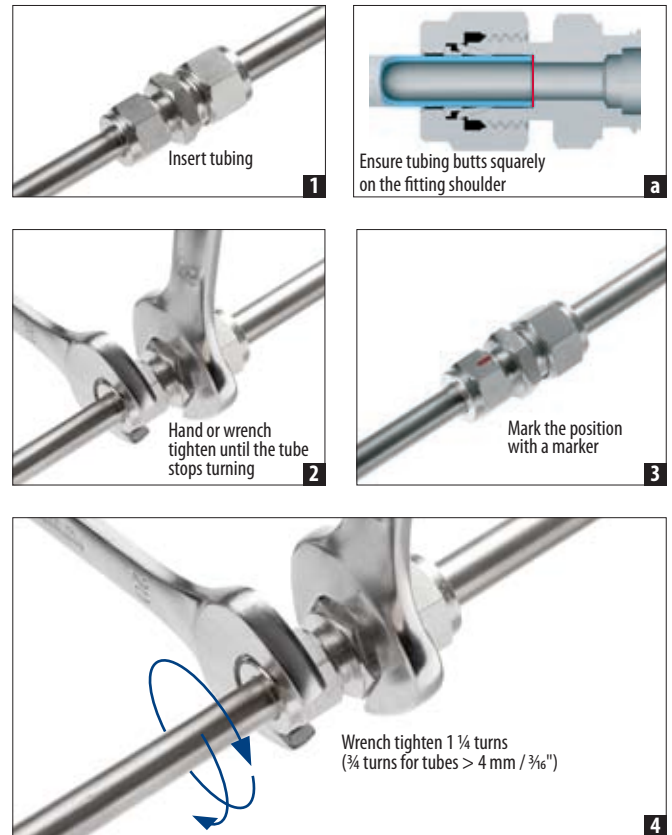
INITIAL ASSEMBLY

Rotarex Compression Tube Fittings are quick & easy to assemble:

Initial Assembly in 4 easy steps

1. Insert the tube in the ready-to-use fitting so that the tube end rests squarely against the shoulder (a).
2. Finger-tighten the nut on the body. The tube should not be able to turn freely. If the tube turns by hand or axially in the fitting, tighten the nut lightly with a wrench until the tube stops turning.
3. Mark the initial position of the nut with a marking pen. This is necessary to control the exact rotation to achieve the proper tightness.
4. Use a wrench to tighten the nut clockwise:
 - Fittings for tubes $\frac{1}{4}$ " (6 mm) and higher: $1 \frac{1}{4}$ turns
 - Fittings for tubes $\frac{3}{16}$ " (4 mm) and lower: $\frac{3}{4}$ turn

Confirm proper tightness with the inspection gauge (see page 7).



DISASSEMBLY & REASSEMBLY

To disassemble:

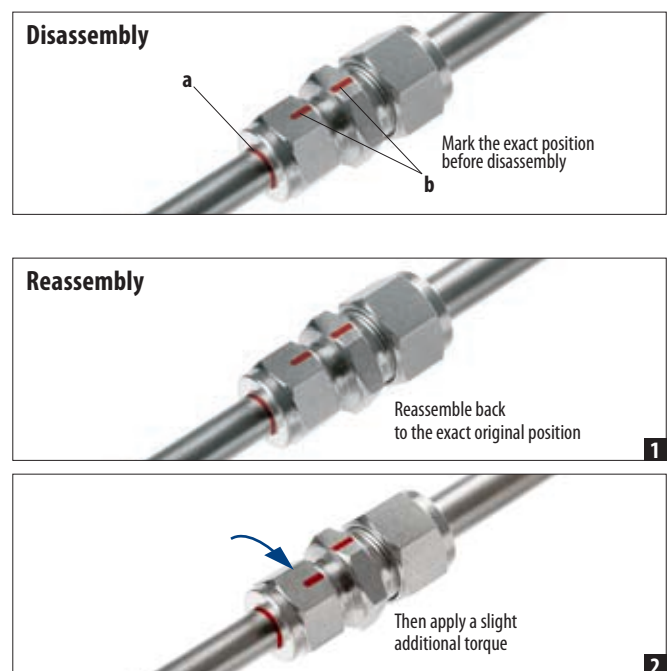
Before disassembling, mark the exact position of the nut as shown in images a and b. You will need these markings to return to the exact assembly position when reassembling:

- a - Mark the depth of the nut on the tube (at the back of the nut)
- b - Mark the alignment between the nut and the body (use the flats).

To reassemble:

1. Insert the tube with the crimped ferrules into the fitting. Make sure the tube end sits squarely against the fitting seat and that the front ferrule realigns with the tube crimp. Hand tighten as far as possible. Then, tighten the nut with a wrench until the nut returns to its exact original position. The marks are now aligned and you feel a significant resistance in the torque.
2. Now, give a slight additional torque on the wrench to ensure tightness

N.B: Inspection gauges are not relevant when reassembling fittings.



ASSEMBLY GUIDELINES (continued)

PORT CONNECTOR AND TUBE ADAPTORS

Port connector

- To assemble the conical ferrule into a compression fitting, use a wrench to tighten the nut clockwise:
 - for Port connector $\frac{1}{4}$ " (6 mm) and higher : $\frac{1}{4}$ turn from the hand tightening position.
 - for port connector $\frac{3}{16}$ " (4 mm) and lower: $\frac{1}{8}$ turn from the hand tightening position.



Adaptor

- To assembly the tube adaptor end into a Rotarex compression tube fitting, use a wrench to tighten the nut clockwise:
 - Fittings for tube $\frac{1}{4}$ " (6 mm) and higher : $1 \frac{1}{4}$ turn
 - Fittings for tube $\frac{3}{16}$ " (4 mm) and lower: $\frac{3}{4}$ turn



! When using port connectors, assemble the conical ferrule end first, then the tube adaptor end.

PLUGS

- For plugs, use a wrench to tighten the nut clockwise:
- for plugs $\frac{1}{4}$ " (6 mm) and higher : Use $\frac{1}{4}$ turn from the hand tightening position.
 - for plugs $\frac{3}{16}$ " (4 mm) and lower: $\frac{1}{8}$ turn from the hand tightening position.



O-RING MALE CONNECTORS

- To assembly an O-ring fitting:
- Lubricate the O-ring with a lubricant compatible to both the O-ring material and the system fluid
 - Tighten by hand the male end into the female connector
 - Tighten slightly with a wrench until the male and female faces creates a metal-to-metal sealing
 - Give a slight extra effort with the wrench.



We advise you to keep the fitting still during assembly and disassembly.

WELD CONNECTORS

- For weld connectors, proceed as follows:
- Remove the nut and ferrules from the tube fitting end
 - Protect the tube fitting end with an OBS plug (or other type of protection)
 - Tack weld the fitting on the pipe or tube
 - You can control the alignement before completing the welding.
 - Remove the OBS.



N.B.: A simple hand tightening of the OBS is enough

INSERT FOR PLASTIC TUBE

- An INS insert helps to support plastic tubing within the fitting to prevent it from collapsing:
- Fully insert the INS into the soft tube

- Place the INS against the shoulder within the body
- Tighten the nut and the ferrules following the standard assembling instructions.

GAS COMPATIBILITY

Best Practice requires that you always verify the gas compatibility of any gas handling equipment before installation and operation. The chart below can help you verify the right material for your gas type.

Rotarex Fittings are standardly available in 2 material types, Brass and Stainless Steel 316, each with its own advantage in different applications. For highly specialized applications, we offer 10 additional materials on request (see page 8). Please go to www.rotarex.com for gas compatibility of these optional materials.

KEY TO GAS COMPATIBILITY:

Locate your gas type in the below chart and see the gas compatibility of each standard material type. Only select materials that are compatible with your gas type.

GAS COMPATIBILITY WITH MATERIALS

GAS		Brass	SS 316L	PA 6.6	PTFE	PCTFE	NBR	FPM	EPDM
Acetylene	C_2H_2	OK	OK		OK	OK			
Ammonia	NH_3		OK	OK	OK	OK			OK
Argon	Ar	OK	OK	OK	OK	OK	OK	OK	OK
Butane	C_4H_{10}	OK	OK	OK	OK	OK	OK	OK	
Carbon dioxide	CO_2	OK	OK	OK	OK	OK	OK		OK
Carbon monoxide	CO	OK	OK	OK	OK	OK	OK		OK
Ethane	C_2H_6	OK	OK	OK	OK	OK	OK	OK	
Ethylene	C_2H_4	OK	OK	OK	OK	OK			
Helium	He	OK	OK	OK		OK	OK	OK	OK
Hydrogen	H_2	OK	OK	OK		OK	OK	OK	OK
Hydrogen Sulfide	H_2S		OK	OK	OK	OK		OK	OK
Krypton	Kr	OK	OK	OK	OK	OK	OK	OK	
Methane	CH_4	OK	OK	OK	OK	OK	OK	OK	
Nitric Oxide	NO		OK		Please consult - depends on proportion of NO in the mixture				
Nitrogen	N_2	OK	OK	OK	OK	OK	OK	OK	OK
Nitrous Oxide	N_2O		OK		Please consult - depends on proportion of N_2O in the mixture				
Oxygen	O_2	OK						OK	OK
Propane	C_3H_8	OK	OK	OK	OK	OK	OK		
Silane	SiH_4		OK		OK	OK		OK	
Sulphur Dioxide	SO_2		OK		OK	OK			OK
Sulphur Hexafluoride	SF_6	OK	OK	OK	OK	OK	OK	OK	OK

CONVERSION CHARTS

FLOW CONVERSION

	m ³ /h	l/h	foot ³ /min	l/s	cm ³ /s
m ³ /h	1	1 x 10 ³	0.589	0,2778	277,78
l/h	1 x 10 ⁻³	1	5.885 x 10 ⁻⁴	2,778 x 10 ⁻⁴	0,2778
foot ³ /min	1,69	1,699 x 10 ³	1	0,4719	471,95
l/s	3,6	3,6 x 10 ³	2.119	1	10 ³
cm ³ /s	3,6 x 10 ⁻³	3,6	2.119 x 10 ⁻³	10 ⁻³	1

PRESSURE CONVERSION

	bar	mbar	kPa	MPa	atm	psi
bar	1	10 ³	100	0,1	0,987	14.5
mbar	10 ⁻³	1	0,1	10 ⁻⁴	9,869 x 10 ⁻⁴	14.5 x 10 ⁻³
kPa	10 ⁻²	10	1	10 ⁻³	9,869 x 10 ⁻³	0.145
MPa	10	10 ⁴	10 ³	1	9,869	145
atm	1,013	1013	101,3	1,013 x 10 ⁻¹	1	14.69
psi	6,89 x 10 ⁻²	68,9	6,89	6,89 x 10 ⁻³	6,8 x 10 ⁻²	1

TEMPERATURE

C°	F°	K°	R°
-20	-4	253	456
-10	14	263	474
0	32	273	492
10	50	283	510
20	68	293	528
30	86	303	546
40	104	313	564
50	122	323	582
60	140	333	600
70	158	343	618
80	176	353	636
90	194	363	654
100	212	373	672
200	392	473	852
300	572	573	1032
400	752	673	1212
500	932	773	1392
600	1112	873	1572
700	1292	973	1752
800	1472	1073	1932
900	1652	1173	2112
1000	1832	1273	2292

DIMENSION

metric	inches	inch fractional	inch decimal	metric (mm)
3	0.135	1/16"	0.063	1,59
6	0.270	1/8"	0.125	3,18
8	0.360	3/16"	0.188	4,76
10	0.450	1/4"	0.250	6,35
12	0.540	5/16"	0.313	7,94
14	0.630	3/8"	0.375	9,53
16	0.720	1/2"	0.500	12,70
18	0.810	7/16"	0.438	11,11
20	0.900	5/8"	0.625	15,88
22	0.990	3/4"	0.750	19,05
25	1.125	7/8"	0.875	22,23
		1"	1.000	25,40

A WORLD OF GAS SOLUTIONS

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CYLINDER VALVES

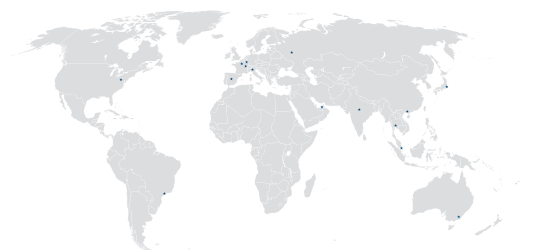
EQUIPMENT

FIRETEC

AUTOMOTIVE

LPG/SRG

MEDITEC

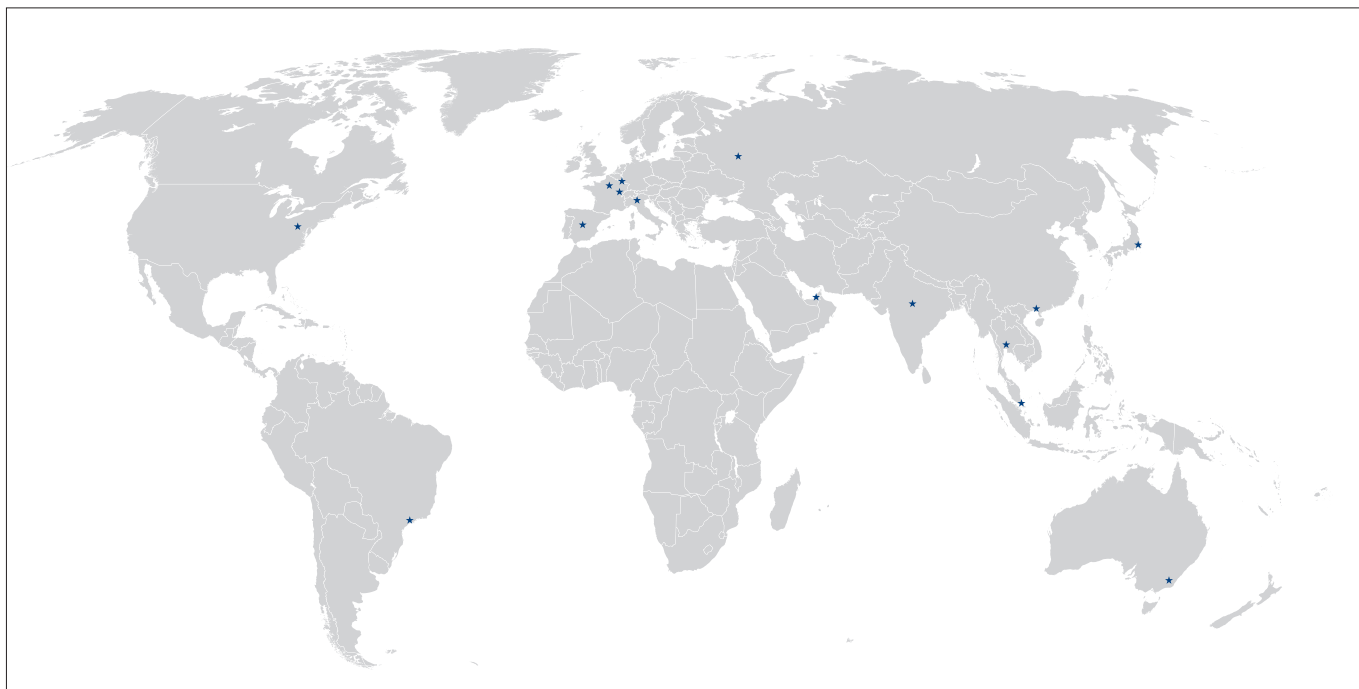


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