



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 Straight union P. 014	USMOD Conversion union P. 014	URS Reducing union P. 015	UCS Bulkhead union P. 015	UMS - NPT Male union P. 016	
					
UMS - BSPT Male union P. 016	UMS - BSPP Male union P. 018	UMS - METRIC Male union P. 019	UMTS Thermocouple connector P. 019	UCMS Male bulkhead union P. 020	
					
UCOMS male bulkhead union with O-ring P. 020	UMS AN Straight union «AN» P. 021	UCMS AN Bulkhead union «AN» P. 021	UMOMS Male o-ring connector P. 022	UMOMSS Male O-ring connector «UN» P. 022	
					
UFS - NPT Female union P. 023	UFS - BSPT Female union P. 024	UFS - BSPP Female union P. 025	UCFS Female bulkhead union P. 026	UMSWS Tube socket weld union P. 027	UMBWS Male pipe weld connector P. 027















ELBOW UNIONS

				
EQS Elbow P. 028	EQM45S 45° male elbow P. 028	EQMS - NPT Male elbow P. 029	EQMS - BSPT Male elbow P. 030	EQMS - BSPP Male elbow P. 030
				
EQFS - NPT Female elbow P. 031	EQFS - BSPT Female elbow P. 032	EQFS - BSPP Female elbow P. 033	EQSWS Socket weld elbow P. 034	EQBWS Male pipe weld elbow P. 034








TEE & CROSS UNIONS

				
TS Union tee P. 035	TRS Reducing tee P. 036	TRS Reducing run tee P. 036	TMS Male branch tee P. 037	TMRS Male run tee P. 038
				
TFS Female branch tee P. 039	TFRS Female run tee P. 040	CS Cross P. 041		

















ADAPTORS

 APS Port connector P. 042	 APRS Reducing port connector P. 042	 ADRS Reducer P. 043	 ADTS Heat exchanger reducer P. 043	 UCAS Bulkhead reducer P. 044
 AMOD Converting reducer P. 044	 ADS - NPT Male adaptor P. 045	 ADS - BSPT Male adaptor P. 046	 ADS - BSPP Male adaptor P. 047	 ADS AN Male adaptor «AN» P. 048
 AOMSS Male O-ring adaptor «UN» P. 048	 AOMS Male O-ring adaptor «NPSM» P. 049	 AFS - NPT Female adaptor P. 050	 AFS - BSPT Female adaptor P. 051	 AFS - BSPP Female adaptor P. 052

CHROMATOGRAPH FITTINGS

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

COMPONENTS & ACCESSORIES

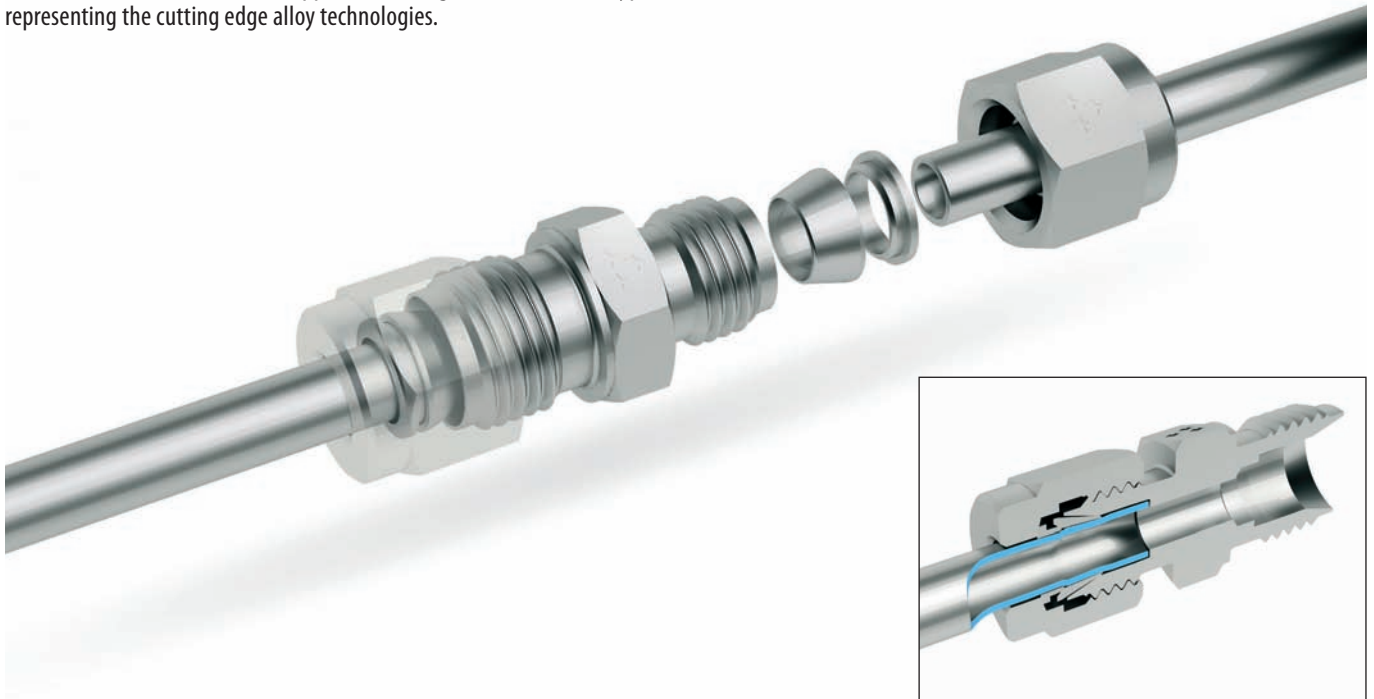
 BPS Cap P. 055	 OBS Plug P. 055	 FF Front ferrule P. 056	 BF Back ferrule P. 056	 SET Ferrule set (10 of each) P. 056
 ES Nut P. 057	 EMS Knurled nut P. 057	 ECS Bulkhead locknut P. 057	 INS Insert for plastic tube P. 058	 CCS Gauge P. 058
 PRE-ASSEMBLY TOOL P. 058	 GASKETS P. 059	 TUBE BENDER P. 060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

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



Tightening the nut exerts radial compression around the tube in two places creating an exceptional grip – able to withstand the very high working pressure rates – without undesired stress.

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

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



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.

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
- Service the system quicker

TECHNOLOGY OVERVIEW (continued)

INTERCHANGEABILITY

Rotarex compression tube fittings are designed and certified interchangeable with other 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 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



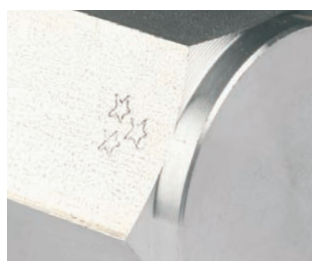
Not tight enough
if the gauge fits

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, raw brass and chrome plated brass, covering most major application needs. In addition, ten other speciality 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

Brass or chrome plated 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.



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 63:

O-RINGS

Rotarex O-ring fittings with Elastomer sealing technology are delivered with the O-ring specification as per the below chart. O-rings are covered with silicon based lubricant. 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 -40 to 212°F	70 (± 5)
Fluorocarbon rubber*	FPM	-28 to 204°C -18 to 400°F	90 (± 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	Basic 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	-
Upon request	SAF-2507	SD	ASTM A479	ASTM A162
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. Strongly recommended to be 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 or without a sealing gasket according to DIN 3852-2, form B. Strongly recommended to be 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 or without a sealing gasket according to DIN 3852-2, form B. Strongly recommended to be used with a GKF or GPA 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 thread and on the taper 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. Strongly recommended to be 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 sealing, 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.



Different tube diameters, wall thickness and materials have different pressure ratings. Confirm that your specifications are suitable for your intended operating pressure. See page 12 for a tube pressure rating reference and find more information at www.rotarex.com.

SELECTING THE RIGHT FITTING (continued)

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

The tube quality is the first key feature to create a reliable and leak-tight system.

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.

Allowable stress

Allowable stress values are based on the standard ASME B.31.3 (ambient temperature)

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.

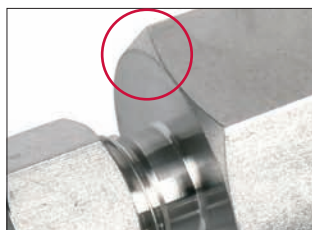
VISUAL IDENTIFICATION

Visual Differences of Metric vs. Inch Fittings:

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



Metric fittings (mm)



Fractional fittings (inch)

MAXIMUM ALLOWABLE STRESS (PRESSURE)

Thread Size		BRASS		STAINLESS STEEL 316L	
		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

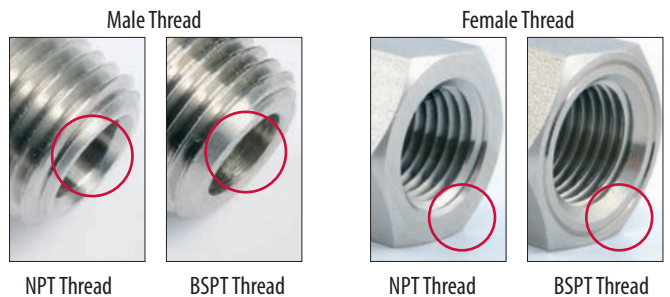
to determine the pressure in Mpa, multiply bar value by 0.10

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

	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 Differences between NPT and BSPT threads:

Male NPT end connection have a shoulder at the extremity (inside diameter). Female BSPT end connection have a shoulder outside.



SELECTING THE RIGHT FITTING (continued)

CLEANING AND PACKAGING

To maintain the proper purity of the fluid system, every Rotarex fitting is thoroughly cleaned of oil and metal particles from the machining process.

For special applications where higher purity is warranted, Rotarex offers the following additional cleaning and packaging options:

- **individual packaging:** fittings can be delivered individually packaged to maintain extra purity during transport and storage.

For ordering, please add **PKG** at the end of the reference
(example : USI 6 PKG)

- **For Oxygen systems,** Rotarex offers a specific cleaning to meet the stringent international safety standards for oxygen applications. For more information, please refer to Rotarex Special Cleaning and Packaging STQ/02

For ordering, please add **DO** at the end of the reference
(example : USI 6 DO)

- **For Absolut Cleaning** (all parts are lubricant free), thanks to refer to Rotarex Special Cleaning and Packaging STQ/02

For ordering, please add **DA** at the end of the reference
(example : USI 6 DA)

Example: To order a fitting oxygen clean in an individual packaging, mention as following: USI-6-DO-PKG



For further information, please refer to Rotarex Cleaning Standard STQ/01 on our web site: www.rotarex.com

ORDERING CODES & OPTIONS

At Rotarex, it is 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 look up 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-6-1/4-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

NPT (N) TUBE SIZE - METRIC (mm)

D	F (NPT)	Reference	A	E	H	P	B'Head Hole Drill Size	MA. 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

SELECTING THE RIGHT FITTING (continued)

TUBE SELECTION GUIDE - Stainless Steel tubing

Different tube diameters, wall thickness and material type 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 Ferric 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- Tolerance D4 for outside diameter and T4 for the thickness. (T3 for 14mm<O.D.<25mm)
- other equivalent specifications

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
-20 - 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
550 - 600	288 - 316	0,93
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			

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

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, rectangular, and square 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	-29 - 38	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 below)

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

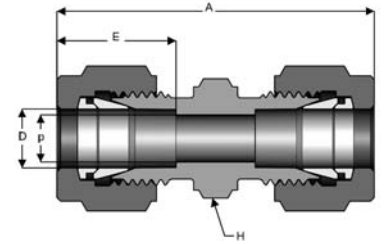
Not recommended for gas service - standard assembly OK for all fluid services using pre-assembly tool

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

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	13/32"
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"

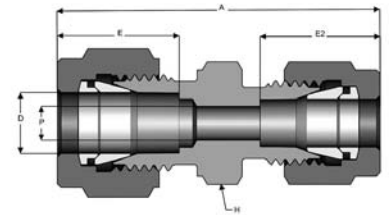
Hex flats (H) are metric. Fractional upon request

CONVERSION UNION | USMOD

APPLICATION

Join a metric tube to a fractional tube

Special requirements on request



TUBE SIZE-METRIC TO FRACTIONAL (mm)

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

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

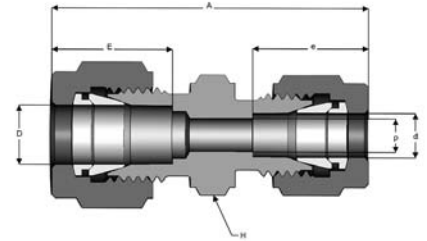
Hex flats (H) are metric. Fractional upon request

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

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"

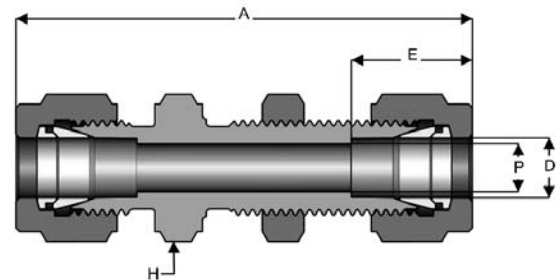
Hex flats (H) are metric. Fractional upon request

BULKHEAD UNION | UCS

APPLICATION

Join tubes of the same diameter through a wall panel

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	E	H	P	B'Head Hole Drill Size	MA. B'Head Thick.
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

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	E	H (mm)	P	B'Head Hole Drill Size	MA. B'Head Thick.
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"

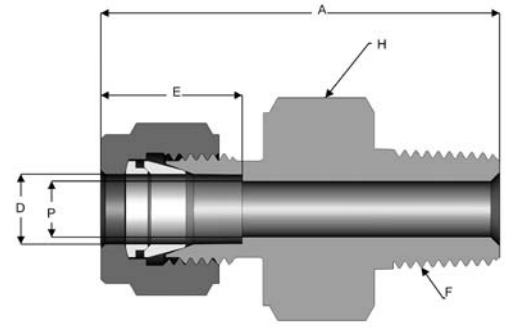
Hex flats (H) are metric. Fractional upon request

MALE UNION | UMS

APPLICATION

Connects a tube to 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

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

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

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

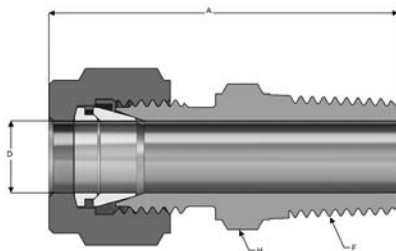
THERMOCOUPLE CONNECTOR | UMTS

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



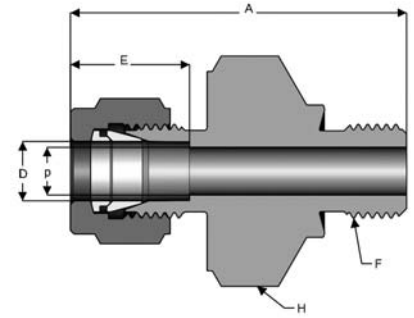
Depending on the UMTS reference, the operating pressure might be lower due to the lower wall thickness.

MALE UNION | UMS

APPLICATION

Connects a tube to a female parallel threaded apparatus

Special requirements on request



BSPP - ISO BSP Parallel Thread (G)

TOUBE 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

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

Strongly recommended to use a sealing gasket. See page 9 for further information. See page 59 for gaskets.

Metric Parallel Thread (MB)

TUBE SIZE - METRIC (mm)

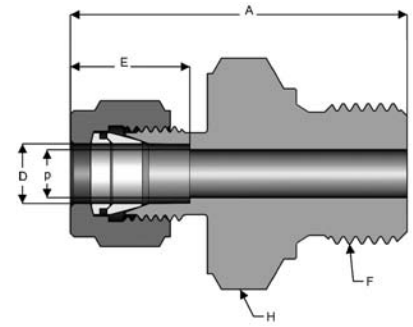
D	F	Reference	A	E	H	P
6	10 x 1	UMSI 6 10 x 1 MB	25,7	15,3	14	4
6	12 x 1	UMSI 6 12 x 1 MB	30,2	15,3	17	4,8
8	12 x 1	UMSI 8 12 x 1 MB	30,9	16,2	17	4,8
10	10 x 1	UMSI 10 10 x 1 MB	27,8	17,2	19	4
10	12 x 1	UMSI 10 12 x 1 MB	31,8	17,2	19	4,8

MALE UNION | UMS

APPLICATION

Connects a tube to 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

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"

Hex flats (H) are metric. Fractional upon request

Sealing gaskets must be used with BSPP (K) end connection. See page 9 for further information. See page 59 for gaskets.

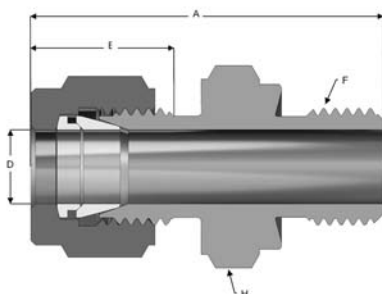
THERMOCOUPLE CONNECTOR | UMTS

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



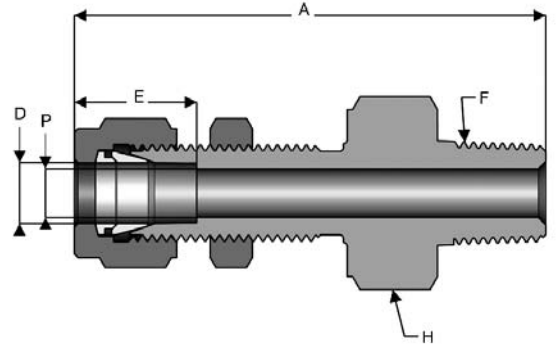
Depending on the UMTS reference, the operating pressure might be lower due to the lower wall thickness.

MALE BULKHEAD UNION | UCMS

APPLICATION (NPT)

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

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

D	F (NPT)	Reference	A	E	H	P	B'Head Hole Drill Size	MA. 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

TUBE SIZE - FRACTIONAL (inch)

D	F (NPT)	Reference	A	E	H (mm)	P	B'Head Hole Drill Size	MA. 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

BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F (NPT)	Reference	A	E	H	P	B'Head Hole Drill Size	MA. 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

TUBE SIZE - FRACTIONAL (inch)

D	F (NPT)	Reference	A	E	H (mm)	P	B'Head Hole Drill Size	MA. 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

MALE BULKHEAD UNION WITH O-RING | UCOMS

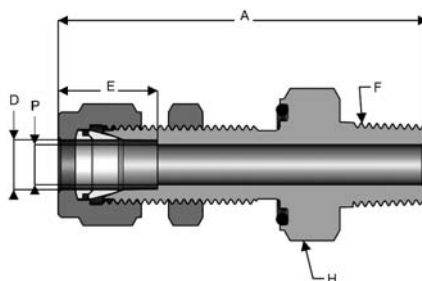
For ordering use UCOMS instead of UCMS

APPLICATION

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

The O-ring ensures a perfect tightness for isolators.

Special requirements on request

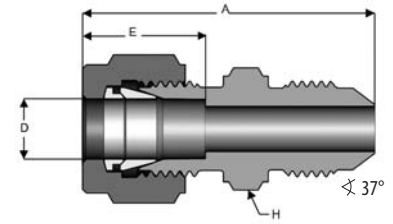


STRAIGHT UNION «AN» | UMS AN

APPLICATION

Connects tubes to a female AN-threaded apparatus

Special requirements on request



TUBE SIZE - METRIC (mm)

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

TUBE SIZE - FRACTIONAL (inch)

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

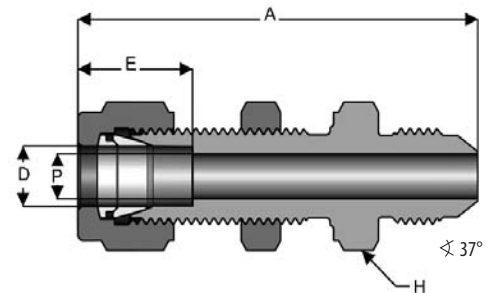
Hex flats (H) are metric. Fractional upon request

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 (UNJF)	Reference	A	E	H (mm)	P	B'Head Hole Drill Size	MA. B'Head Thick.
1/4"	7/16" - 20	UCMS* 1/4 1/4 AN	2.14	0.60	17	1 1/64"	29/64"	17/32"
3/8"	9/16" - 18	UCMS* 3/8 3/8 AN	2.28	0.68	19	19/64"	37/64"	9/16"
1/2"	3/4" - 16	UCMS* 1/2 1/2 AN	2.59	0.90	24	25/64"	49/64"	19/32"
3/4"	1 1/16" - 12	UCMS* 3/4 3/4 AN	3.08	0.96	36	39/64"	1 1/64"	25/32"
1	1 5/16" - 12	UCMS* 1" 1" AN	3.63	1.23	41	27/32"	1 21/64"	15/16"

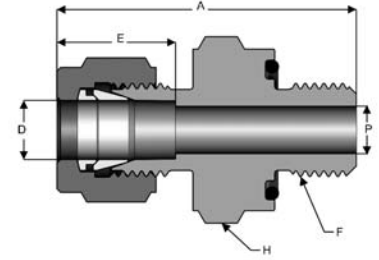
Hex flats (H) are metric. Fractional upon request

MALE O-RING CONNECTOR (NPSM) | UMOMS

APPLICATION

Connects a tube to a female threaded apparatus with an O-ring face seal connection - generally for hydraulic and pneumatic applications

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.

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"

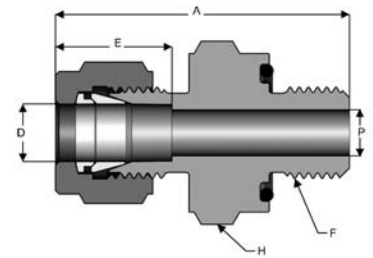
Hex flats (H) are metric. Fractional upon request



Do not mistake NPSM thread with BSPP threads

MALE O-RING CONNECTOR «UN» | UMOMSS

Connects a tube to a female threaded apparatus with an O-ring face seal connection - generally for hydraulic and pneumatic applications



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 1/16" - 12	UMOMSS* 20 1 1/16	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.

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"	5/16" - 24	UMOMSS* 1/8 5/16	1.29	0.51	14	3/32"
1/8"	9/16" - 18	UMOMSS* 1/8 9/16	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"

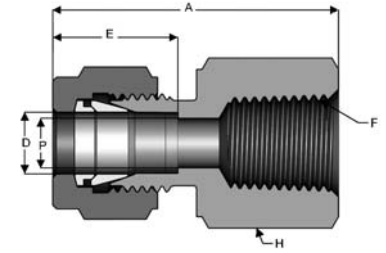
Hex flats (H) are metric. Fractional upon request

FEMALE UNION | UFS

APPLICATION

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

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

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"

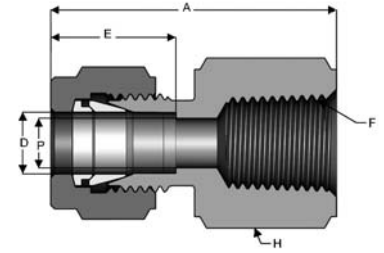
Hex flats (H) are metric. Fractional upon request

FEMALE UNION | UFS

APPLICATION

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

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

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"

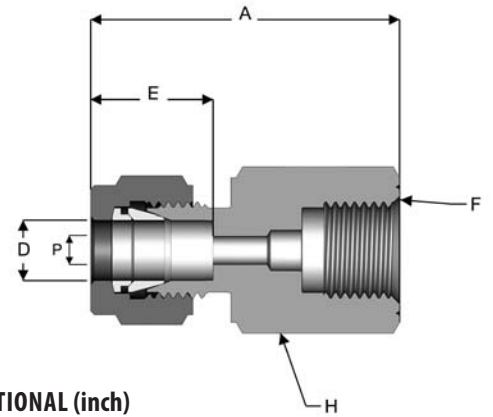
Hex flats (H) are metric. Fractional upon request

FEMALE UNION | UFS

APPLICATION

Connects a tube to a male BSPP parallel threaded apparatus or pipe fitting

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

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

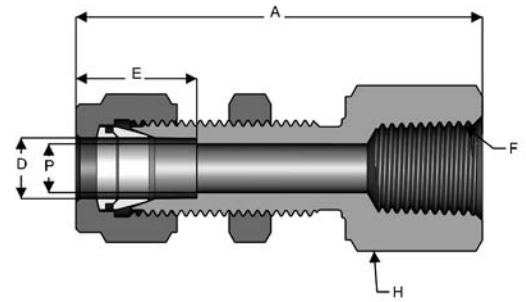
Strongly recommended to use a GPA or GKF sealing gasket. See page 9 for further information. See page 59 for gaskets.

FEMALE BULKHEAD UNION | UCFS

APPLICATION

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

Special requirements on request



NPT (N)

TUBE SIZE - METRIC (mm)

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

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H (mm)	P
1/8"	1/8"	UCFS* 1/8 1/8 N	1.76	0.51	14	3/32"
1/4"	1/8"	UCFS* 1/4 1/8 N	1.85	0.60	17	3/16"
1/4"	1/4"	UCFS* 1/4 1/4 N	2.04	0.60	19	3/16"
3/8"	1/4"	UCFS* 3/8 1/4 N	2.14	0.68	19	9/32"
3/8"	1/2"	UCFS* 3/8 1/2 N	2.43	0.68	27	9/32"
1/2"	3/8"	UCFS* 1/2 3/8 N	2.43	0.90	24	3/8"
1/2"	1/2"	UCFS* 1/2 1/2 N	2.62	0.90	27	3/8"

Hex flats (H) are metric. Fractional upon request

BSPT - ISO BSP Tapered Thread (T)

TUBE SIZE - METRIC (mm)

D	F (BSPP)	Reference	A	E	H	P
3	1/8"	UCFS* 3 1/8 T	44,6	12,9	14	2,4
6	1/4"	UCFS* 6 1/4 T	51,9	15,3	19	4,8
10	1/4"	UCFS* 10 1/4 T	54,3	17,2	19	7,9
12	1/2"	UCFS* 12 1/2 T	66,5	22,8	27	9,5

TUBE SIZE - FRACTIONAL (inch)

D	F (BSPT)	Reference	A	E	H (mm)	P
1/4"	1/4"	UCFS* 1/4 1/4 T	2.04	0.60	19	3/16"
3/8"	1/4"	UCFS* 3/8 1/4 T	2.14	0.68	19	9/32"

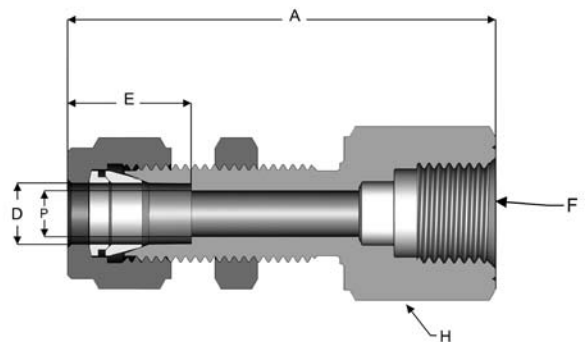
Hex flats (H) are metric. Fractional upon request

BSPP - ISO BSP Parallel Thread (G)

TUBE SIZE - METRIC (mm)

D	F (BSPT)	Reference	A	E	H	P
6	1/8"	UCFS* 6 1/8 G	47,1	15,3	17	4,8
8	1/4"	UCFS* 8 1/4 G	54,2	16,2	19	5,5
10	3/8"	UCFS* 10 3/8 G	56,6	17,2	22	6,4
12	3/8"	UCFS* 12 3/8 G	61,7	22,8	22	9,5
12	1/2"	UCFS* 12 1/2 G	66,5	22,8	27	9,5

Strongly recommended to use a GPA or GKF sealing gasket. See page 9 for further information. See page 59 for gaskets.

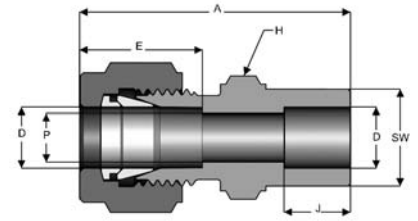


TUBE SOCKET WELD UNION | UMSWS

APPLICATION

Connects a tube to an apparatus or 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

TUBE SIZE - FRACTIONAL (inch)

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

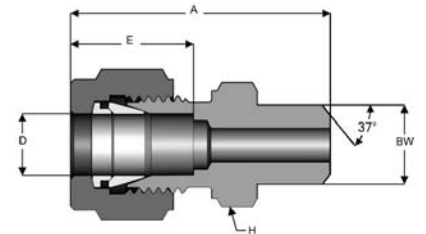
Hex flats (H) are metric. Fractional upon request

MALE PIPE WELD CONNECTOR | UMBWS

APPLICATION

Connects a tube to an apparatus or another tube 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

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

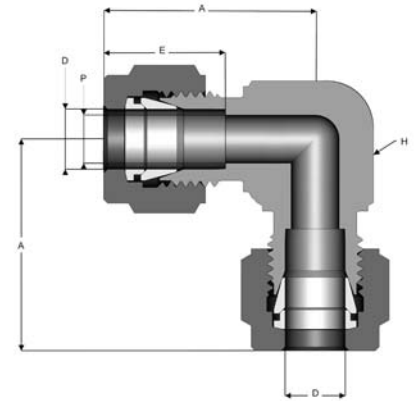
Hex flats (H) are metric. Fractional upon request

ELBOW | EQS

APPLICATION

Connects two tubes of the same diameter 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

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"

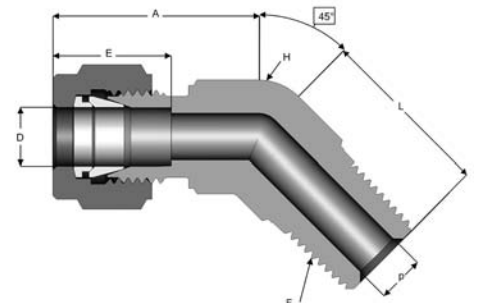
Hex flats (H) are metric. Fractional upon request

45° MALE ELBOW | EQM45S

APPLICATION

Connects a tube with a female taper-threaded apparatus or pipe fitting 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

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"

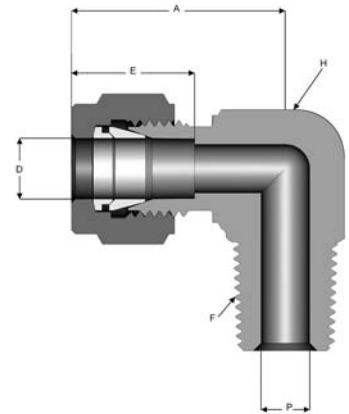
Hex flats (H) are metric. Fractional upon request

MALE ELBOW | EQMS

APPLICATION

Connects a tube to a female threaded apparatus or pipe fitting 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

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

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

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

BSPP - ISO BSP Parallel Thread (G)

TUBE SIZE - METRIC (mm)

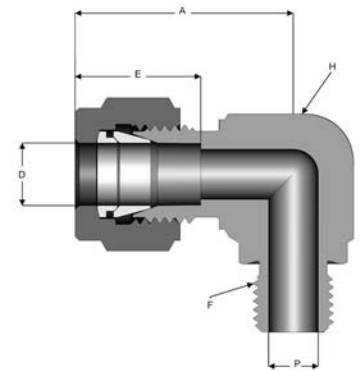
D	F	Reference	A	E	H (mm)	P
6	1/8"	EQMS* 6 1/8 G	27,2	15,3	14	4,8
6	1/4"	EQMS* 6 1/4 G	27,2	15,3	14	4,8
6	3/8"	EQMS* 6 3/8 G	29,7	15,3	19	4,8
12	3/8"	EQMS* 12 3/8 G	36,3	22,8	22	9,5
12	1/2"	EQMS* 12 1/2 G	36,3	22,8	22	9,5
12	3/4"	EQMS* 12 3/4 G	36,3	22,8	27	9,5
16	1/2"	EQMS* 16 1/2 G	37,1	24,4	24	11,9

Strongly recommended to use a sealing gasket.
See page 9 for further information. See page 59 for gaskets.

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	1.46	0.96	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

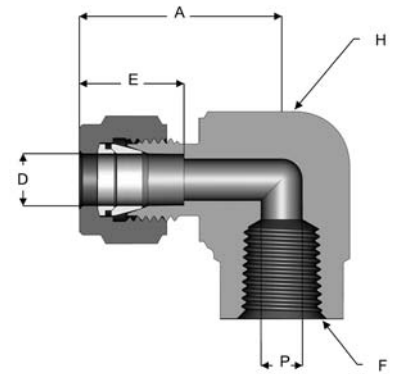


FEMALE ELBOW | EQFS

APPLICATION

Connects a tube to a male taper-threaded apparatus or pipe fitting 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

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	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"

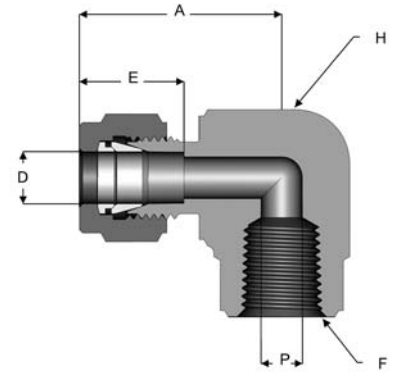
Hex flats (H) are metric. Fractional upon request

FEMALE ELBOW | EQFS

APPLICATION

Connects a tube to a male taper-threaded apparatus or pipe fitting 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	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

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	0,60	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"

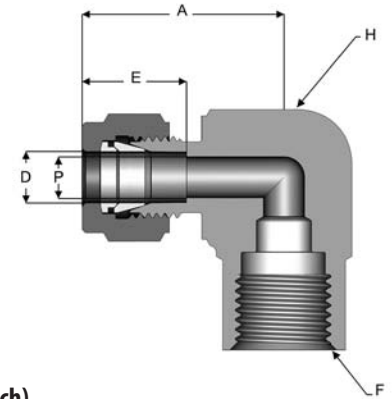
Hex flats (H) are metric. Fractional upon request

FEMALE ELBOW | EQFS

APPLICATION

Connects a tube to a male parallel-threaded apparatus or pipe fitting 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	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

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	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

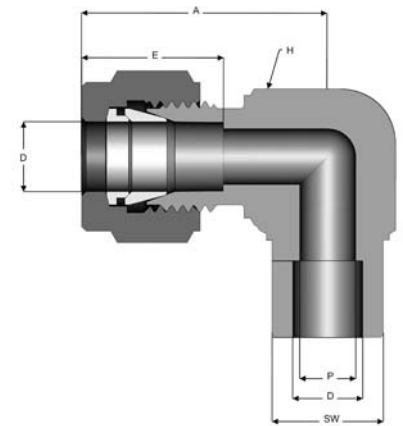
Strongly recommended to use a GPA or GKF sealing gasket. See page 9 for further information. See page 59 for gaskets.

SOCKET WELD | EQSWS

APPLICATION

Connects a tube to another tube or apparatus 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

TUBE SIZE - FRACTIONAL (inch)

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

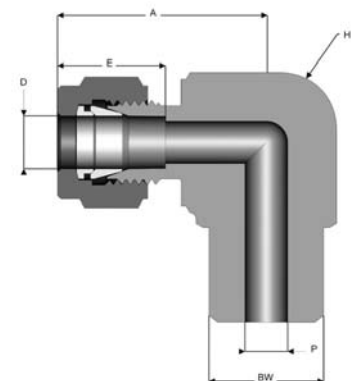
Hex flats (H) are metric. Fractional upon request

MALE PIPE WELD ELBOW | EQBWS

APPLICATION

Connects a tube to another tube or apparatus on 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

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

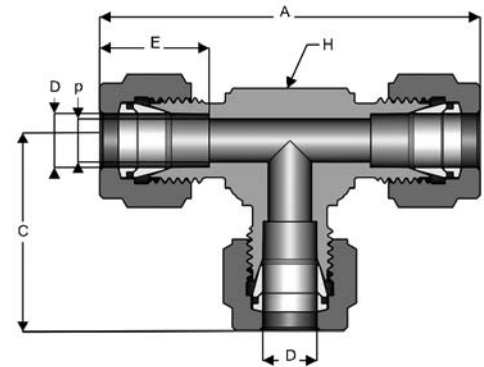
Hex flats (H) are metric. Fractional upon request

UNION TEE | TS

APPLICATION

Connects tubes of the same dimension in a T configuration

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	C	A	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

TUBE SIZE - FRACTIONAL (inch)

D	Reference	C	A	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"

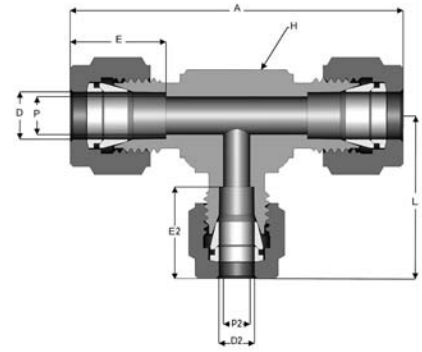
Hex flats (H) are metric. Fractional upon request

REDUCING TEE | TRS

APPLICATION

Connects tubes of different dimensions in a T configuration

Special requirements on request



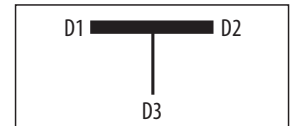
TUBE SIZE - METRIC (mm)

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

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

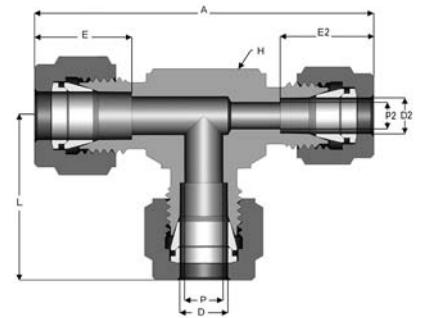


REDUCING RUN TEE | TRS

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

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

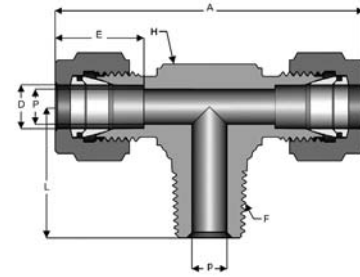


MALE BRANCH TEE | TMS

APPLICATION

Connects a female taper-threaded apparatus 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
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

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 3/16"	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

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

TUBE SIZE - FRACTIONAL (inch)

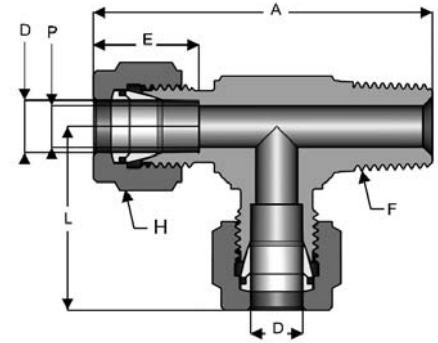
D	F	Reference	A	E	H (mm)	L	P
1/8"	1/4"	TMS* 1/8 1/4 T	1.96	0.51	14	1 5/16"	3/32"
3/16"	1/8"	TMS* 3/16 1/8 T	1.90	0.54	12	1 1/16"	3/32"
1/4"	1/8"	TMS* 1/4 1/8 T	2.14	0.60	14	3/4"	3/16"
1/4"	1/4"	TMS* 1/4 1/4 T	2.14	0.60	14	1 5/16"	3/16"
5/16"	1/8"	TMS* 5/16 1/8 T	2.22	0.64	14	3/4"	3/16"
5/16"	1/4"	TMS* 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 3/16"	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"

MALE RUN TEE | TMRS

APPLICATION

Connects a female taper-threaded apparatus 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

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

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

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"

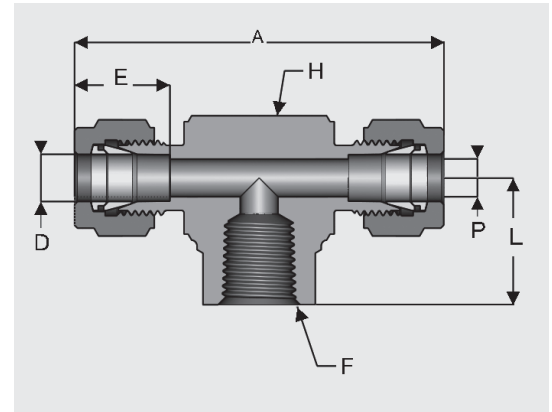
Hex flats (H) are metric. Fractional upon request

FEMALE BRANCH TEE | TFS

APPLICATION

Connects a male taper-threaded apparatus 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

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

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	30,4	15,3	19	21,4	4,8
8	1/8"	TFS* 8 1/8 T	31,3	16,2	14	19,1	6,4
8	1/4"	TFS* 8 1/4 T	31,3	16,2	19	21,4	6,4
10	1/4"	TFS* 10 1/4 T	32,2	17,2	19	21,4	8

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

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	30,4	15,3	14	19,1	4,8
6	1/4"	TFS* 6 1/4 G	30,4	15,3	19	21,4	4,8
8	1/4"	TFS* 8 1/4 G	31,3	16,2	19	21,4	6,4
10	1/4"	TFS* 10 1/4 G	32,2	17,2	19	21,4	8
12	1/4"	TFS* 12 1/4 G	36,3	22,8	22	21,4	9,5
12	3/8"	TFS* 12 3/8 G	36,3	22,8	22	21,4	9,5
14	1/2"	TFS* 14 1/2 G	39,5	24,4	27	28,6	11

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

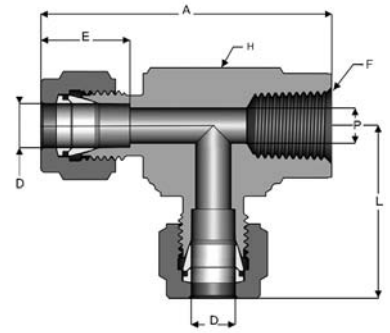
Strongly recommended to use a GPA or GKF sealing gasket. See page 9 for further information. See page 59 for gaskets.

FEMALE RUN TEE | TFRS

APPLICATION

Connects a female taper-threaded apparatus 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

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

BSPT

TUBE SIZE - METRIC (mm)

D	F	Reference	A	E	H	L	P
6	1/8"	TFRS* 6 1/8 T	27,2	15,3	14	19,1	4,8
6	1/4"	TFRS* 6 1/4 T	30,4	15,3	19	21,4	4,8
8	1/8"	TFRS* 8 1/8 T	28,1	16,2	14	19,1	6,4
8	1/4"	TFRS* 8 1/4 T	31,3	16,2	19	21,4	6,4
10	1/4"	TFRS* 10 1/4 T	33,7	17,2	19	21,4	7,1
12	3/8"	TFRS* 12 3/8 T	36,3	22,8	22	21,4	9,5
12	1/2"	TFRS* 12 1/2 T	39,5	22,8	27	21,4	9,5

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"

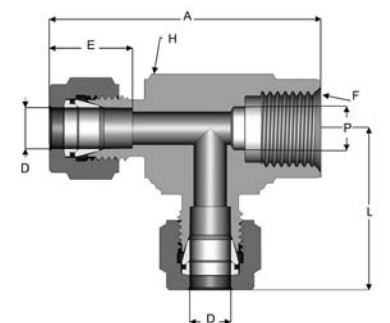
Hex flats (H) are metric. Fractional upon request

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	27,2	15,3	14	4,8
10	1/4"	TFRS* 10 1/4 G	33,7	17,2	19	7,1
22	3/4"	TFRS* 22 3/4 G	41,1	26,0	36	18,5

Strongly recommended to use a GPA or GKF sealing gasket. See page 9 for further information. See page 59 for gaskets.

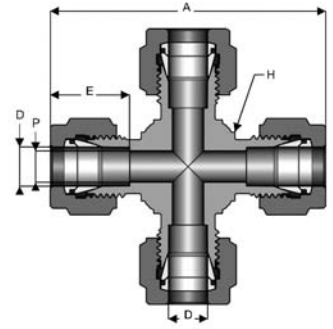


CROSS | CS

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	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

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"

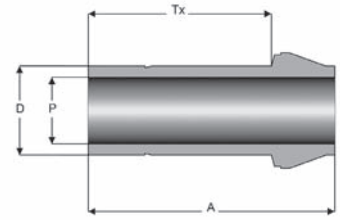
Hex flats (H) are metric. Fractional upon request

PORT CONNECTOR | APS

APPLICATION

Converts a tube fitting end to a tube stem of the same diameter

Special requirements on request



TUBE SIZE - METRIC (mm)

D	Reference	A	Tx	P
3	APS* 3	23,0	15,9	1,8
4	APS* 4	23,8	16,7	2,4
6	APS* 6	26,2	19,1	4
8	APS* 8	27,0	19,8	6
10	APS* 10	27,8	20,6	7,5
12	APS* 12	38,1	26,2	9,5
14	APS* 14	38,1	27,8	11
16	APS* 16	38,1	27,8	13
18	APS* 18	38,1	27,8	15
20	APS* 20	41,9	28,6	16

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	Tx	P
1/16"	APS* 1/16	2 1/32"	0.42	1/32"
1/8"	APS* 1/8	2 9/32"	0.62	5/64"
3/16"	APS* 3/16	1 5/16"	0.65	3/32"
1/4"	APS* 1/4	1 1 1/32"	0.75	3/16"
5/16"	APS* 5/16	1 5/32"	0.81	1/4"
3/8"	APS* 3/8	1 1/16"	0.81	15/64"
1/2"	APS* 1/2	1 1/2"	1.03	3/8"
5/8"	APS* 5/8	1 1/2"	1.09	1/2"
3/4"	APS* 3/4	1 1/2"	1.09	5/8"

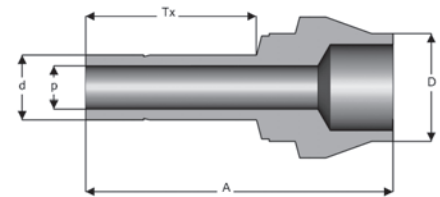
Hex flats (H) are metric. Fractional upon request

REDUCING PORT CONNECTOR | APRS

APPLICATION

Converts a tube fitting end to a tube stem of a different diameter

Special requirements on request



TUBE SIZE - METRIC (mm)

D	d	Reference	A	tx	P
4	3	APRS* 4 3	26,2	13,5	2,4
6	3	APRS* 6 3	26,2	13,5	2,4
6	4	APRS* 6 4	27,0	14,3	3,2
8	6	APRS* 8 6	27,8	15,9	4,8
10	6	APRS* 10 6	28,6	15,9	4,8
10	8	APRS* 10 8	30,3	16,7	6
12	6	APRS* 12 6	36,9	15,6	4,8
12	8	APRS* 12 8	37,6	16,7	6
12	10	APRS* 12 10	38,1	17,5	7,9
18	12	APRS* 18 12	44,1	23	9,5
20	12	APRS* 20 12	44,1	23	9,5

TUBE SIZE - FRACTIONAL (inch)

D	d	Reference	A	tx	P
1/8"	1/16"	APRS* 1/8 1/16	13/16"	3/8"	3/64"
1/4"	1/16"	APRS* 1/4 1/16	27/32"	3/8"	3/64"
1/4"	1/8"	APRS* 1/4 1/8	1 1/32"	17/32"	3/32"
1/4"	3/16"	APRS* 1/4 3/16	1 1/16"	9/16"	1/8"
5/16"	1/4"	APRS* 5/16 1/4	1 3/32"	5/8"	3/16"
3/8"	1/16"	APRS* 3/8 1/16	27/32"	3/8"	3/64"
3/8"	1/8"	APRS* 3/8 1/8	1 1/32"	17/32"	3/32"
3/8"	1/4"	APRS* 3/8 1/4	1 1/8"	5/8"	3/16"
1/2"	1/4"	APRS* 1/2 1/4	1 29/64"	5/8"	3/16"
1/2"	3/8"	APRS* 1/2 3/8	1 1/2"	11/16"	9/32"
3/4"	1/2"	APRS* 3/4 1/2	1 47/64"	29/32"	13/32"

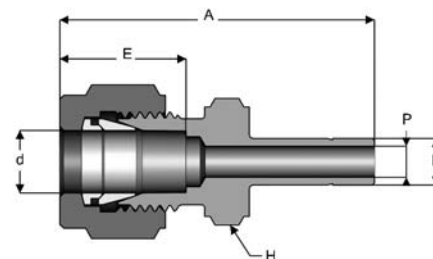
Hex flats (H) are metric. Fractional upon request

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	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	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	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* 22 20	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

TUBE SIZE - FRACTIONAL (inch)

d	D	Reference	A	E	H (mm)	P
1/16"	1/8"	ADRS* 1/16" 1/8"	1.1	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	1/8"
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"	1.5	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"	1.8	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"	2.1	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"

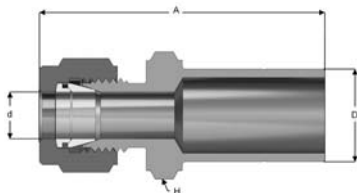
Hex flats (H) are metric. Fractional upon request

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



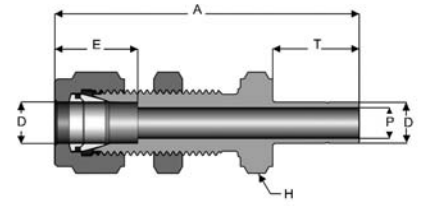
Depending on the ADTS reference, the operating pressure might be lower due to the lower wall thickness.

BULKHEAD REDUCER | UCAS

APPLICATION

Converts a tube fitting end to a tube stem through a wall or panel

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

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"

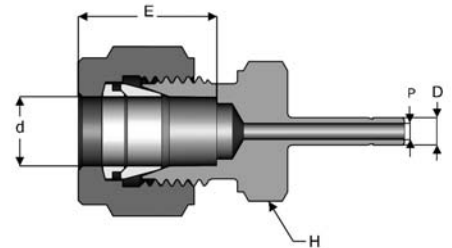
Hex flats (H) are metric. Fractional upon request

CONVERTING REDUCER | AMOD

APPLICATION

Converts a metric tube to a fractional tube stem.

Special requirements on request



TUBE SIZE - METRIC (mm) TO FRACTIONAL

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

TUBE SIZE - FRACTIONAL (inch) TO METRIC

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

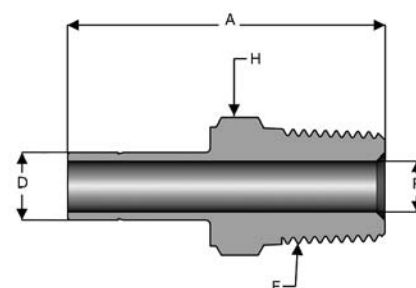
Hex flats (H) are metric. Fractional upon request

MALE ADAPTOR | ADS

APPLICATION

Converts a female tapered-thread (NPT/BSPT) 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

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/8"	1/8"	ADS* 1/8 1/8 N	1 5/32"	12	3/32"
1/8"	1/4"	ADS* 1/8 1/4 N	1 3/8"	14	3/32"
3/16"	1/8"	ADS* 3/16 1/8 N	1 3/16"	12	1/8"
3/16"	1/4"	ADS* 3/16 1/4 N	1 13/32"	14	1/8"
1/4"	1/8"	ADS* 1/4 1/8 N	1 1/4"	14	3/16"
1/4"	1/4"	ADS* 1/4 1/4 N	1 15/32"	14	3/16"
1/4"	3/8"	ADS* 1/4 3/8 N	1 31/32"	19	3/16"
1/4"	1/2"	ADS* 1/4 1/2 N	1 45/64"	22	3/16"
5/16"	1/8"	ADS* 5/16 1/8 N	1 19/64"	14	3/16"
5/16"	3/8"	ADS* 5/16 3/8 N	1 7/16"	14	1/4"
5/16"	1/4"	ADS* 5/16 1/4 N	1 1/2"	14	1/4"
3/8"	1/8"	ADS* 3/8 1/8 N	1 21/64"	17	3/16"
3/8"	1/4"	ADS* 3/8 1/4 N	1 17/32"	17	9/32"
3/8"	3/8"	ADS* 3/8 3/8 N	1 9/16"	19	9/32"
3/8"	1/2"	ADS* 3/8 1/2 N	1 25/32"	22	9/32"
1/2"	1/4"	ADS* 1/2 1/4 N	1 3/4"	14	9/32"
1/2"	3/8"	ADS* 1/2 3/8 N	1 25/32"	19	3/8"
1/2"	1/2"	ADS* 1/2 1/2 N	2"	22	13/32"
5/8"	1/2"	ADS* 5/8 1/2 N	2 1/16"	22	15/32"
3/4"	1/2"	ADS* 3/4 1/2 N	2 1/16"	22	15/32"
3/4"	3/4"	ADS* 3/4 3/4 N	2 1/16"	27	5/8"
1"	3/4"	ADS* 1" 3/4 N	2 5/16"	36	5/8"
1"	1"	ADS* 1" 1" N	2 39/64"	36	7/8"

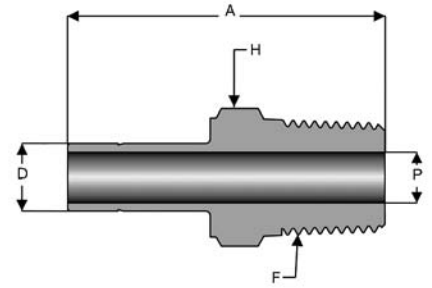
Hex flats (H) are metric. Fractional upon request

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

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/8"	1/8"	ADS* 1/8 1/8 T	1 1/2"	12	3/32"
1/8"	1/4"	ADS* 1/8 1/4 T	1 3/8"	14	3/32"
1/4"	1/8"	ADS* 1/4 1/8 T	1 1/4"	14	3/16"
1/4"	1/4"	ADS* 1/4 1/4 T	1 15/32"	14	3/16"
1/4"	3/8"	ADS* 1/4 3/8 T	1 31/32"	19	3/16"
1/4"	1/2"	ADS* 1/4 1/2 T	1 45/64"	22	3/16"
3/16"	1/4"	ADS* 3/16 1/4 T	1 1/2"	14	1/4"
3/8"	1/4"	ADS* 3/8 1/4 T	1 17/32"	17	9/32"
3/8"	3/8"	ADS* 3/8 3/8 T	1 9/16"	19	9/32"
3/8"	1/2"	ADS* 3/8 1/2 T	1 25/32"	22	9/32"
1/2"	1/4"	ADS* 1/2 1/4 T	1 3/4"	14	9/32"
1/2"	3/8"	ADS* 1/2 3/8 T	1 25/32"	19	3/8"
1/2"	1/2"	ADS* 1/2 1/2 T	2"	22	13/32"
3/4"	3/4"	ADS* 3/4 3/4 T	2 1/16"	27	5/8"
1"	1"	ADS* 1" 1" T	2 39/64"	36	7/8"

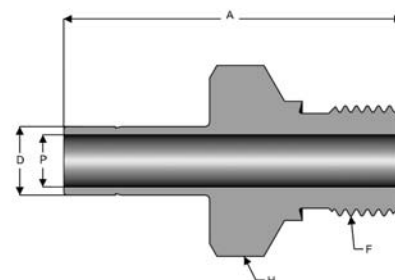
Hex flats (H) are metric. Fractional upon request

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

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/8"	1/8"	ADS* 1/8 1/8 G	17/32"	14	1/16"
1/8"	1/4"	ADS* 1/8 1/4 G	1 13/32"	19	1/16"
1/4"	1/8"	ADS* 1/4 1/8 G	1 1/4"	14	3/32"
1/4"	1/4"	ADS* 1/4 1/4 G	1 1/2"	19	3/32"
1/4"	3/8"	ADS* 1/4 3/8 G	1 1/2"	22	3/32"
3/8"	1/4"	ADS* 3/8 1/4 G	1 9/16"	19	15/64"
3/8"	3/8"	ADS* 3/8 3/8 G	1 19/32"	22	9/32"
1/2"	1/4"	ADS* 1/2 1/4 G	1 25/32"	19	9/32"
1/2"	3/8"	ADS* 1/2 3/8 G	1 13/16"	22	3/8"
3/4"	3/4"	ADS* 3/4 3/4 G	1 25/32"	36	5/8"

Hex flats (H) are metric. Fractional upon request

Strongly recommended to use a sealing gasket. 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

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/4"	1/8"	ADS* 1/4 1/8 K	1 1/4"	14	3/32"
1/4"	1/4"	ADS* 1/4 1/4 K	1 1/2"	19	3/32"
1/4"	3/8"	ADS* 1/4 3/8 K	1 1/2"	22	3/32"
1/4"	1/2"	ADS* 1/4 1/2 K	1 21/32"	27	5/32"
3/8"	1/8"	ADS* 3/8 1/8 K	1 3/8"	14	1/8"
3/8"	1/4"	ADS* 3/8 1/4 K	1 9/16"	19	15/64"
3/8"	1/2"	ADS* 3/8 1/2 K	1 23/32"	27	9/32"
1/2"	1/4"	ADS* 1/2 1/4 K	1 25/32"	19	9/32"
1/2"	3/8"	ADS* 1/2 3/8 K	1 13/16"	22	3/8"

Hex flats (H) are metric. Fractional upon request

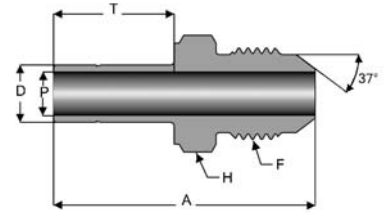
Sealing gaskets must be used with BSPP (K) end connection. See page 9 for further information. See page 59 for gaskets.

MALE ADAPTOR «AN» | ADS AN

APPLICATION

Converts a female AN thread end to a tube end.

Special requirements on request



AN 37 (AN)

TUBE SIZE - METRIC (mm)

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

TUBE SIZE - FRACTIONAL (inch)

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

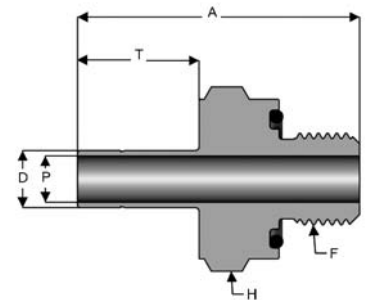
Hex flats (H) are metric. Fractional upon request

MALE O-RING ADAPTOR «UN» | AOMSS

APPLICATION

Converts an UN end connection apparatus to a 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 1/8" - 12	AOMSS* 20 1 1/8	55,6	38	16
22	1 1/4" - 12	AOMSS* 22 1 1/4	55,6	38	18,5
25	1 5/8" - 12	AOMSS* 25 1 5/8	62,7	46	22

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/8"	5/16" - 24	AOMSS* 1/8 5/16	1 7/32"	14	3/32"
3/16"	3/8" - 24	AOMSS* 3/16 3/8	1 9/32"	17	1/8"
1/4"	7/16" - 20	AOMSS* 1/4 7/16	1 7/16"	19	3/16"
5/16"	1/2" - 20	AOMSS* 5/16 1/2	1 17/32"	22	1/4"
3/8"	9/16" - 18	AOMSS* 3/8 9/16	1 19/32"	24	5/16"
1/2"	3/4" - 16	AOMSS* 1/2 3/4	1 27/32"	30	13/32"

Hex flats (H) are metric. Fractional upon request

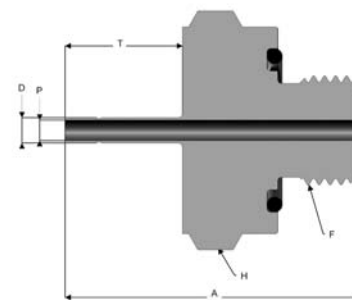
UN fittings are supplied with sealing O-rings in Nitrile (NBR).
Fluorocarbon (FFM) O-rings are available upon request.
See page 8 for additional information.

MALE O-RING ADAPTOR «NPSM» | AOMS

APPLICATION

Converts an NPSM end connection apparatus to a 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.

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)	P
1/16"	1/8"	AOMS* 1/8 1/16	1 1/32"	19	3/64"
1/8"	1/8"	AOMS* 1/8 1/8	1 7/32"	19	3/32"
1/8"	1/4"	AOMS* 1/8 1/4	1 11/32"	24	3/32"
3/16"	1/8"	AOMS* 3/16 1/8	1 1/4"	19	1/8"
3/16"	1/4"	AOMS* 3/16 1/4	1 3/8"	24	1/8"
1/4"	1/8"	AOMS* 1/4 1/8	1 5/16"	19	3/16"
1/4"	1/4"	AOMS* 1/4 1/4	1 7/16"	24	3/16"
1/4"	3/8"	AOMS* 1/4 3/8	1 1/2"	30	3/16"
5/16"	1/8"	AOMS* 5/16 1/8	1 11/32"	19	3/16"
5/16"	1/4"	AOMS* 5/16 1/4	1 15/32"	24	1/4"
3/8"	1/8"	AOMS* 3/8 1/8	1 3/8"	19	3/16"
3/8"	1/4"	AOMS* 3/8 1/4	1 1/2"	24	9/32"
3/8"	3/8"	AOMS* 3/8 3/8	1 9/16"	30	9/32"
1/2"	3/8"	AOMS* 1/2 3/8	1 25/32"	30	13/32"
5/8"	1/2"	AOMS* 5/8 1/2	2 1/16"	36	1/2"
3/4"	3/4"	AOMS* 3/4 3/4	2 5/32"	41	5/8"
1"	1"	AOMS* 1" 1"	2 9/16"	46	7/8"

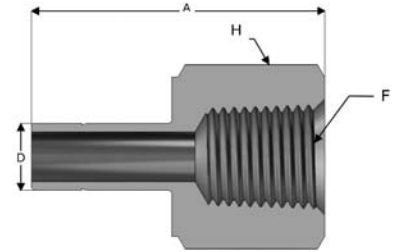
Hex flats (H) are metric. Fractional upon request

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

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)
1/8"	1/8"	AFS* 1/8 1/8 N	1 1/16"	14
1/8"	1/4"	AFS* 1/8 1/4 N	1 1/4"	19
3/16"	1/8"	AFS* 3/16 1/8 N	1 3/32"	14
3/16"	1/4"	AFS* 3/16 1/4 N	1 9/32"	19
1/4"	1/8"	AFS* 1/4 1/8 N	1 5/32"	14
1/4"	1/4"	AFS* 1/4 1/4 N	1 11/32"	19
1/4"	3/8"	AFS* 1/4 3/8 N	1 13/32"	22
1/4"	1/2"	AFS* 1/4 1/2 N	1 19/32"	27
5/16"	1/8"	AFS* 5/16 1/8 N	1 3/16"	14
5/16"	1/4"	AFS* 5/16 1/4 N	1 3/8"	19
5/16"	3/8"	AFS* 5/16 3/8 N	1 7/16"	22
5/16"	1/2"	AFS* 5/16 1/2 N	1 5/8"	27
3/8"	1/8"	AFS* 3/8 1/8 N	1 7/32"	17
3/8"	1/4"	AFS* 3/8 1/4 N	1 13/32"	19
3/8"	3/8"	AFS* 3/8 3/8 N	1 15/32"	22
3/8"	1/2"	AFS* 3/8 1/2 N	1 21/32"	27
1/2"	1/4"	AFS* 1/2 1/4 N	1 5/8"	22
1/2"	3/8"	AFS* 1/2 3/8 N	1 11/16"	22
1/2"	1/2"	AFS* 1/2 1/2 N	1 7/8"	27
5/8"	3/8"	AFS* 5/8 3/8 N	1 3/4"	24
5/8"	1/2"	AFS* 5/8 1/2 N	1 15/16"	27
5/8"	3/4"	AFS* 5/8 3/4 N	2 1/32"	32
3/4"	1/2"	AFS* 3/4 1/2 N	1 15/16"	27
3/4"	3/4"	AFS* 3/4 3/4 N	2 1/32"	32
3/4"	1"	AFS* 3/4 1" N	2 3/8"	41
7/8"	3/4"	AFS* 7/8 3/4 N	2 1/16"	32
1"	3/4"	AFS* 1" 3/4 N	2 5/16"	36
1"	1"	AFS* 1" 1" N	2 21/32"	41

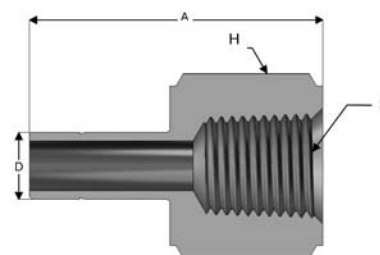
Hex flats (H) are metric. Fractional upon request

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

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)
1/8"	1/8"	AFS* 1/8 1/8 T	1 1/16"	14
1/8"	1/4"	AFS* 1/8 1/4 T	1 1/4"	19
3/16"	1/8"	AFS* 3/16 1/8 T	1 3/32"	14
3/16"	1/4"	AFS* 3/16 1/4 T	1 9/32"	19
1/4"	1/8"	AFS* 1/4 1/8 T	1 5/32"	14
1/4"	1/4"	AFS* 1/4 1/4 T	1 11/32"	19
1/4"	3/8"	AFS* 1/4 3/8 T	1 13/32"	22
1/4"	1/2"	AFS* 1/4 1/2 T	1 19/32"	27
5/16"	1/8"	AFS* 5/16 1/8 T	1 3/16"	14
5/16"	1/4"	AFS* 5/16 1/4 T	1 3/8"	19
5/16"	3/8"	AFS* 5/16 3/8 T	1 7/16"	22
5/16"	1/2"	AFS* 5/16 1/2 T	1 5/8"	27
3/8"	1/8"	AFS* 3/8 1/8 T	1 7/32"	17
3/8"	1/4"	AFS* 3/8 1/4 T	1 13/32"	19
3/8"	3/8"	AFS* 3/8 3/8 T	1 15/32"	22
3/8"	1/2"	AFS* 3/8 1/2 T	1 21/32"	27
1/2"	1/4"	AFS* 1/2 1/4 T	1 5/8"	22
1/2"	3/8"	AFS* 1/2 3/8 T	1 11/16"	22
1/2"	1/2"	AFS* 1/2 1/2 T	1 7/8"	27
5/8"	3/8"	AFS* 5/8 3/8 T	1 3/4"	24
5/8"	1/2"	AFS* 5/8 1/2 T	1 15/16"	27
5/8"	3/4"	AFS* 5/8 3/4 T	2 1/32"	32
3/4"	1/2"	AFS* 3/4 1/2 T	1 15/16"	27
3/4"	3/4"	AFS* 3/4 3/4 T	2 1/32"	32
3/4"	1"	AFS* 3/4 1" T	2 3/8"	41
7/8"	3/4"	AFS* 7/8 3/4 T	2 1/16"	32
1"	3/4"	AFS* 1" 3/4 T	2 5/16"	36
1"	1"	AFS* 1" 1" T	2 21/32"	41

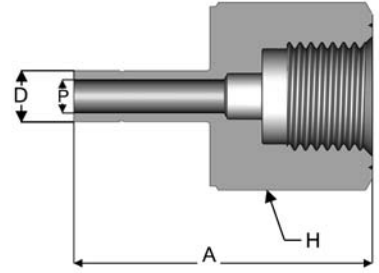
Hex flats (H) are metric. Fractional upon request

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

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	H (mm)
1/8"	1/4"	AFS* 1/8 1/4 G	1 1/4"	19
1/4"	1/4"	AFS* 1/4 1/4 G	1 11/32"	19
1/4"	3/8"	AFS* 1/4 3/8 G	1 13/32"	22
1/4"	1/2"	AFS* 1/4 1/2 G	1 19/32"	27
5/16"	1/4"	AFS* 5/16 1/4 G	1 3/8"	19
5/16"	1/2"	AFS* 5/16 1/2 G	1 5/8"	27
3/8"	1/4"	AFS* 3/8 1/4 G	1 64/32"	19
3/8"	3/8"	AFS* 3/8 3/8 G	1 15/32"	22
3/8"	1/2"	AFS* 3/8 1/2 G	1 21/32"	27
1/2"	1/4"	AFS* 1/2 1/4 G	1 5/8"	19
1/2"	1/2"	AFS* 1/2 1/2 G	1 7/8"	27
5/8"	1/2"	AFS* 5/8 1/2 G	1 15/16"	27
3/4"	1/2"	AFS* 3/4 1/2 G	1 15/16"	27
1"	3/4"	AFS* 1 3/4 G	58,8	32

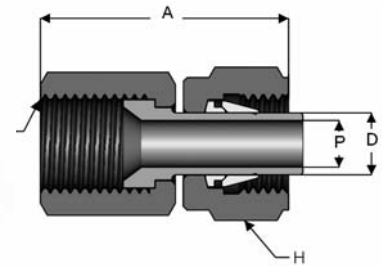
Hex flats (H) are metric. Fractional upon request

Strongly recommended to use a GPA or GKF sealing gasket. See page 9 for further information. See page 59 for gaskets.

AN 37 (AN)

TUBE SIZE - METRIC (mm)

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



TUBE SIZE - FRACTIONAL (inch)

D	AN tube flare size (UNJF)	Reference	A (mm)	H (mm)	P
1/8"	5/16" - 24	AFS* 1/8 1/8 AN	27	12	1/16"
1/8"	7/16" - 20	AFS* 1/8 1/4 AN	29,4	12	3/32"
1/4"	7/16" - 20	AFS* 1/4 1/4 AN	31,8	14	1/64"
3/8"	9/16" - 18	AFS* 3/8 3/8 AN	35,8	19	19/64"
1/2"	3/4" - 16	AFS* 1/2 1/2 AN	44,4	22	25/64"
1"	1 5/16" - 12	AFS* 1" 1" AN	60,4	38	27/32"

Hex flats (H) are metric. Fractional upon request

CHROMATOGRAPH FITTINGS

Rotarex chromatograph fittings are designed to cover a wide range of Analytical applications when installations involve tubing.

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 are benefiting of the proven Rotarex high quality standards for production and quality control.

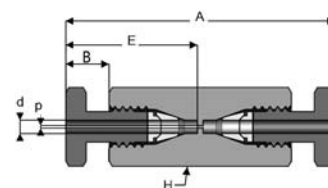
CHROMATOGRAPH STRAIGHT UNION - Low dead volume | USFVM

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	b	E	G	h	H	P
1/16"	USFVM I 1/16	31.8	5.1	15.5	21.3	8	8	0.25

SS 316L version only

Hex flats (H) are metric. Fractional upon request



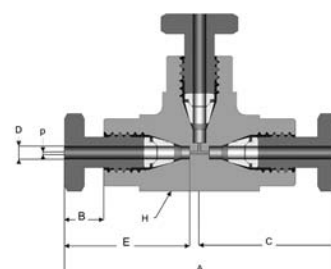
CHROMATOGRAPH UNION TEE - Low dead volume | TSFVM

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	B	C	E	H	P
1/16"	TSFVM I 1/16	0.65	0.43	1.3	0.34	1/4"	0.013

SS 316L version only

Hex flats (H) are metric. Fractional upon request



CHROMATOGRAPH MALE CONNECTOR - Low dead volume | UMSFVM

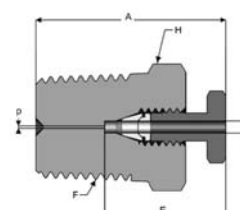
NPT (N)

TUBE SIZE - FRACTIONAL (inch)

D	F	Reference	A	E	H	P
1/16"	1/8"	UMSFVM 1/16 1/8 N	19.0	15.5	12	1.52
1/16"	1/4"	UMSFVM 1/16 1/4 N	34.3	15.5	14	1.52
1/16"	3/8"	UMSFVM 1/16 3/8 N	36.6	15.5	17	1.52

SS 316L version only

Hex flats (H) are metric. Fractional upon request



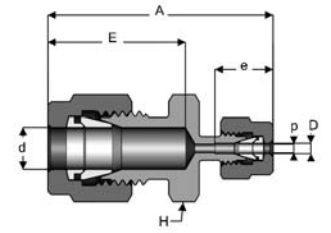
COLUMN END REDUCING UNION - Low dead volume | URSFVM

TUBE SIZE - FRACTIONAL (inch)

d	D	Reference	A	E	e	H	h	P
1/8"	1/16" (1.58)	URSFVM I 1/8 1/16	31.0	18.5	/	12	8	1.52
1/4"	1/16" (1.58)	URSFVM I 1/4 1/16	34.3	20.8	8.6	14	8	1.32
1/4"	1/16" (1.58)	URSFVM I 1/4 1/16	34.3	20.8	/	14	8	1.52
3/8"	1/16" (1.58)	URSFVM I 3/8 1/16	36.6	23.4	/	19	8	1.52

SS 316L version only

Hex flats (H) are metric. Fractional upon request



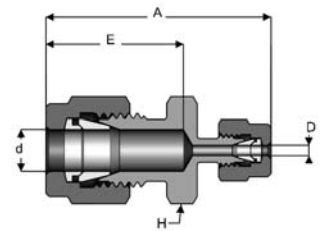
STRAIGHT UNION - Zero dead volume | URSZVM

TUBE SIZE - FRACTIONAL (inch)

d	D	Reference	A	E	H
1/8"	1/16" (1.58)	URSZVM I 1/8 1/16	31.0	18.5	12
1/4"	1/16" (1.58)	URSZVM I 1/4 1/16	34.3	20.8	14
1/4"	1/16" (1.58)	URSZVM I 1/4 1/16	34.3	20.8	14
3/8"	1/16" (1.58)	URSZVM I 3/8 1/16	36.6	23.4	19

SS 316L version only

Hex flats (H) are metric. Fractional upon request

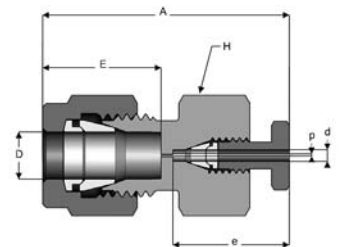


COLUMN END FEMALE CONNECTOR - Low dead volume | UFSFVM

TUBE SIZE - METRIC (mm)

d (mm)	D (mm)	Reference	A	E	e	H	P
1/16"	1/8"	UFSFVM I 1/8 1/16	29,6	12,9	15,5	12	1,52
1/16"	1/4"	UFSFVM I 1/4 1/16	31,8	15,3	15,5	14	1,52
1/16"	3/8"	UFSFVM I 3/8 1/16	34,3	17,2	15,5	19	1,52

SS 316L version only

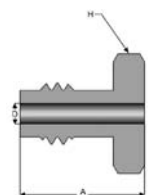


MALE NUT | EDS

TUBE SIZE - METRIC (mm)

D	Reference	A	H
1/16"	EDS 1/16	9,5	8
1/8"	EDS 1/8	13,5	12
1/4"	EDS 1/4	15,9	14

SS 316L version only

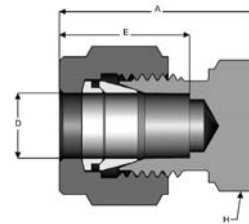


CAP | BPS

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

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

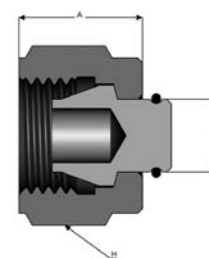
Hex flats (H) are metric. Fractional upon request

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

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	H (mm)
1/16"	OBS* 1/16	5/16"	8
1/8"	OBS* 1/8	15/32"	12
3/16"	OBS* 3/16	15/32"	12
1/4"	OBS* 1/4	1/2"	14
5/16"	OBS* 5/16	17/32"	17
3/8"	OBS* 3/8	9/16"	19
1/2"	OBS* 1/2	1 1/16"	22
5/8"	OBS* 5/8	1 1/16"	27
3/4"	OBS* 3/4	1 1/16"	30
7/8"	OBS* 7/8	1 1/16"	32
1"	OBS* 1"	1 3/16"	38

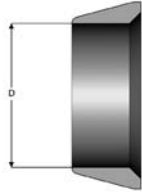
Hex flats (H) are metric. Fractional upon request

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

TUBE SIZE - FRACTIONAL (inch)

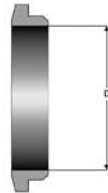
D	Reference
1/16"	FF* 1/16
1/8"	FF* 1/8
3/16"	FF* 3/16
1/4"	FF* 1/4
5/16"	FF* 5/16
3/8"	FF* 3/8
1/2"	FF* 1/2
5/8"	FF* 5/8
3/4"	FF* 3/4
7/8"	FF* 7/8
1"	FF* 1"

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

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"

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

TUBE SIZE - FRACTIONAL (inch)

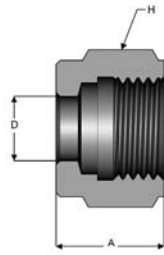
D	Reference
1/16"	SET* 1/16
1/8"	SET* 1/8
3/16"	SET* 3/16
1/4"	SET* 1/4
5/16"	SET* 5/16
3/8"	SET* 3/8
1/2"	SET* 1/2
5/8"	SET* 5/8
3/4"	SET* 3/4
7/8"	SET* 7/8
1"	SET* 1"

NUT | ES

APPLICATION

Spare part nut 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

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	H (mm)
1/16"	ES* 1/16	5/16"	8
1/8"	ES* 1/8	15/32"	12
3/16"	ES* 3/16	15/32"	12
1/4"	ES* 1/4	1/2"	14
5/16"	ES* 5/16	17/32"	17
3/8"	ES* 3/8	9/16"	19
1/2"	ES* 1/2	11/16"	22
5/8"	ES* 5/8	11/16"	27
3/4"	ES* 3/4	11/16"	30
7/8"	ES* 7/8	11/16"	32
1"	ES* 1"	13/16"	38

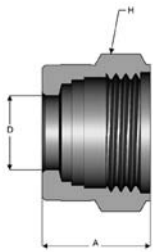
Hex flats (H) are metric. Fractional upon request

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

TUBE SIZE - FRACTIONAL (inch)

D	Reference	A	H (mm)
1/16"	EMS* 1/16	5/16"	8
1/8"	EMS* 1/8	15/32"	12
3/16"	EMS* 3/16	15/32"	12
1/4"	EMS* 1/4	1/2"	14
5/16"	EMS* 5/16	17/32"	17
3/8"	EMS* 3/8	9/16"	19
1/2"	EMS* 1/2	11/16"	22
5/8"	EMS* 5/8	11/16"	27
3/4"	EMS* 3/4	11/16"	30
7/8"	EMS* 7/8	11/16"	32
1"	EMS* 1"	13/16"	38

Hex flats (H) are metric. Fractional upon request

BULKHEAD LOCKNUT | ECS

APPLICATION

Spare part locknut for a double ferrule compression bulkhead fitting

Special requirements on request



TUBE SIZE - METRIC (mm)

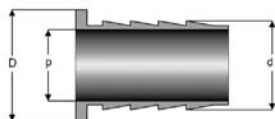
H	F (UNF)	Reference
14	5/16" - 20	ECS* H14 5/16
14	3/8" - 20	ECS* H14 3/8
17	7/16" - 20	ECS* H17 7/16
17	1/2" - 20	ECS* H17 1/2
19	9/16" - 20	ECS* H19 9/16
19	5/8" - 20	ECS* H19 5/8
24	3/4" - 20	ECS* H24 3/4
27	7/8" - 20	ECS* H27 7/8
30	1" - 20	ECS* H30 1"
36	1 1/8" - 20	ECS* H36 1 1/8
38	1 5/16" - 20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

INSERT FOR PLASTIC TUBE | INS

APPLICATION

Hose connector insert

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

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"

GAUGE | CCS

APPLICATION

Gauge to measure correct tightness of compression tube fittings

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

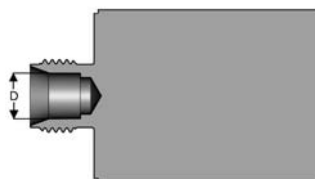
Dimensions D and D2 correspond to the tube dimension not to the gauge dimension

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)

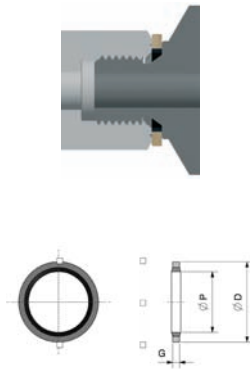
D	Reference
1/8"	PSS 1/8
3/16"	PSS 3/16
1/4"	PSS 1/4
5/16"	PSS 5/16
3/8"	PSS 3/8
1/2"	PSS 1/2
5/8"	PSS 5/8
7/8"	PSS 7/8
1"	PSS 1"

GASKETS (steel/elastomer) | GBS

APPLICATION

The GBS gasket provides a seal with male ISO/BSP 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.

Special requirements on request



ISO/BSP 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	

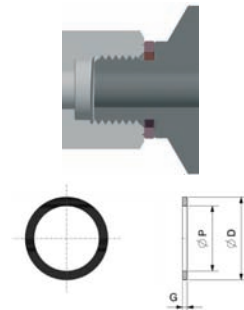
ISO thread size	Reference	D (mm / inch)	P (mm / inch)	G (mm / inch)
1/8"	GBS/FPM 1/8	15,88 / 0.63	10,35 / 0.41	2,00 / 0.08
1/4"	GBS/FPM 1/4	20,57 / 0.81	13,74 / 0.54	2,03 / 0.08
3/8"	GBS/FPM 3/8	23,80 / 0.94	17,28 / 0.68	
1/2"	GBS/FPM 1/2	28,58 / 1.13	21,54 / 0.85	
3/4"	GBS/FPM 3/4	34,93 / 1.38	27,05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

GASKETS (copper) | GCU

APPLICATION

The GCU gasket provides a seal with male ISO BSP parallel threads. The gasket material is copper.

Special requirements on request



ISO/BSP PARALLEL THREAD - FRACTIONAL

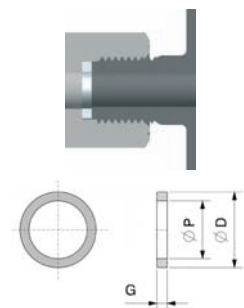
ISO thread size	Reference	D	P	G
1/8"	GCU 1/8	0.59	0.39	0.04
1/4"	GCU 1/4	0.71	0.55	
3/8"	GCU 3/8	0.91	0.67	0.06
1/2"	GCU 1/2	1.06	0.84	
3/4"	GCU 3/4	1.3	1.05	0.08
1"	GCU 1"	1.5	1.32	

GASKETS (PCTFE) | GKF

APPLICATION

The GKF gasket provides a seal on stainless steel pressure gauges equipped with ISO/BSP parallel male threads. The gasket material is PCTFE

Special requirements on request



ISO/BSP PARALLEL THREAD - METRIC

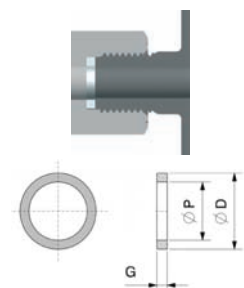
ISO thread size	Reference	D	P	G
Regular gaskets				
1/4"	GKF 1/4	11	5,2	2
3/8"	GKF 3/8	14,7	8	4
1/2"	GKF 1/2	18,3	14	2,5
Thin gaskets				
1/4"	GKF 1/4	11	5,2	1,5/1/0,5
3/8"	GKF 3/8	14,7	8	2,5/1/0,5

GASKETS (PTFE) | GPA

APPLICATION

The GPA gasket provides a seal on stainless steel pressure gauges equipped with ISO/BSP parallel male threads. The gasket material is PTFE

Special requirements on request



ISO/BSP PARALLEL THREAD - METRIC

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

MANUAL TUBE BENDER

APPLICATION

Hand tube benders provide 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 Ep<=1 mm Ø 3 à 10 mm
474900409	Tube bender Ep<=1 mm Ø ¼ à ½ mm R 3 - 3,5 D
474900610	Tube bender Ep<=1 mm Ø 6 à 10 mm R 3 - 3,5 D
474900611	Tube bender Ep<=1 mm Ø ¼" - ½" - R3 D
474900612	Tube bender Ep<=1 mm Ø 10 mm R 3,5 D
474900613	Tube bender Ep<=1 mm Ø 12 mm R 3,5 D
474901214	Tube bender Ep<=1 mm Ø 12 à 14 mm R 3 à 3,5 D
474901654	Tube bender Ep<=1 mm Ø ½" R 54 mm

DEBURRING TOOL

APPLICATION

The Rotarex tube deburring tools deburr stainless steel, steel and hard alloy tube ends. For deburring the inside and the outside diameters of 4 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 4 to 25 mm and ⅛ to 1 inch outside diameter.

Special requirements on request



PTFE TAPE

APPLICATION

Tape 12mm X 12mm
Reference 13008006

Special requirements on request



ASSEMBLY GUIDELINES

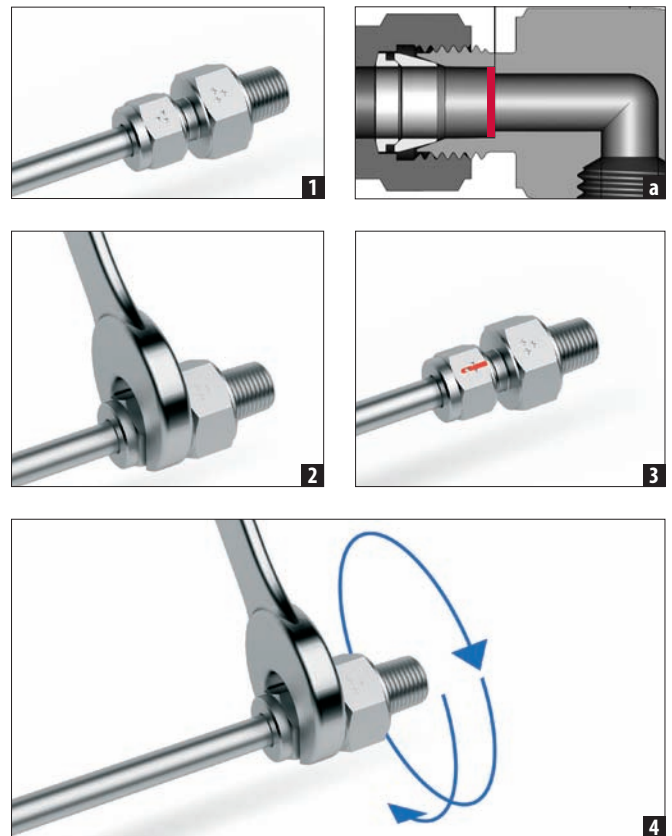
INITIAL ASSEMBLY

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: $1 \frac{1}{4}$ turn
 - Fittings for tubes $\frac{3}{16}$ " (4 mm) and lower: $\frac{3}{4}$ turn

Confirm proper tightness with the inspection gauge



DISASSEMBLY & REASSEMBLY

To disassemble:

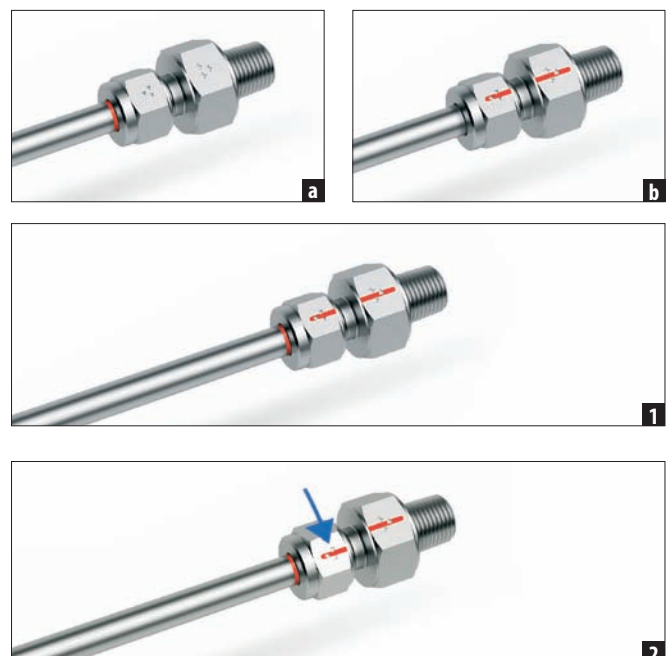
Before disassembling, mark the exact position of the nut as shown in images a and b. You will need these markings to return to the exact assembly position when reassembling:

- 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.
2. 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. Now, give a slight additional torque on the wrench to ensure tightness

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



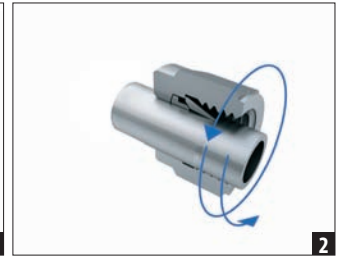
ASSEMBLY GUIDELINES (continued)

PORT CONNECTOR AND TUBE ADAPTORS

Port connector

1. To assemble the conical ferrule into a compression fitting, use a wrench to tighten the nut clockwise:

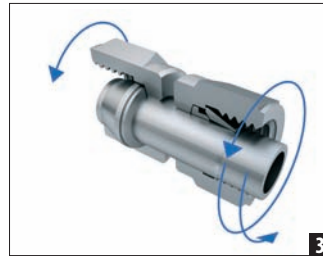
- for Port connector $\frac{1}{4}$ " (6 mm) and higher : $\frac{1}{4}$ turn from the hand tightening position.
- for port connector $\frac{3}{16}$ " (4 mm) and lower: $\frac{1}{8}$ turn from the hand tightening position.




Adaptor

2. 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



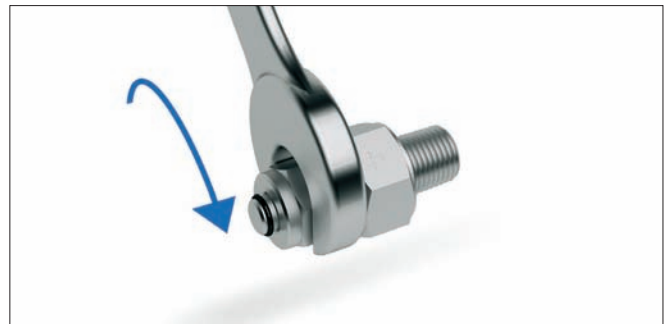
 When using port connectors, assemble the conical ferrule end first, then the tube adaptor end.

PLUGS AND CAPS

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.

For caps, you have to follow the standard Rotarex compression tube fitting instructions.



O-SEAL MALE CONNECTORS

Tighten by hand the male end into the female connector. Tighten slightly with a wrench until the male and female faces create a metal-to-metal sealing. Give a slight extra effort with the wrench.

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

REFERENCE CHARTS (continued)

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	0,986	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

COMPLETE SOLUTIONS FROM SOURCE TO PROCESS.

ROTAREX is helping engineers worldwide to get better gas results: from ultra high purity production and medical care facilities to everyday LPG barbecues, as well as alternative energy vehicles, fire suppression, diving, aerospace, cryogenics, petro-chemical, welding and industrial processing. ROTAREX applies over 90 years of know-how and experience to custom design, develop and manufacture the high pressure valves, regulators and fittings to suit your needs, all in one hand. Discover the difference ROTAREX can make in your world.

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EQUIPMENT

FIRETEC

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