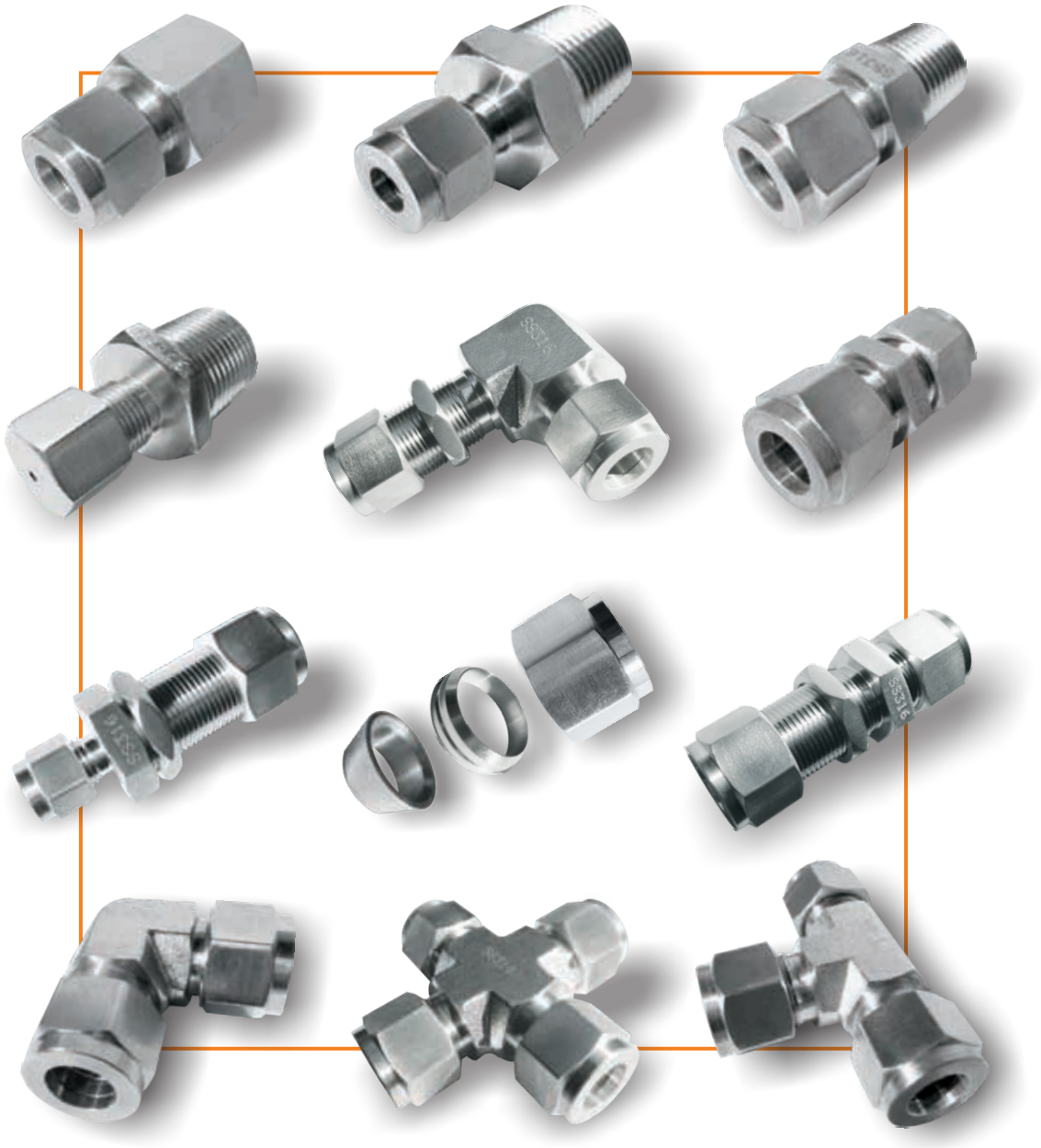
General
AN ISO 9001:2000 COMPANY



INSTRUMENT FITTINGS

Fitting Solution for Process Safety

INTRODUCTION

Over the years, General Instruments Consortium (GIC) built a first class reputation for designing and manufacturing state of the art fitting materials & valves. In striving for maximum Quality & Value, GIC set the industry standards for product safety, operability & reliability.

Compression Tube Fittings :
General compression tube fittings are Double Ferrule type fittings which provide leak proof torque free seals at the tubing connection. They provide safety and eliminates hazardous leaks of fluids in instrumentation field for process, pressure, hydraulic & other applicable tubing system.

The basic General tube fitting is a 4 piece fitting consisting of the nut, the back ferrule, front ferrule and the body. When installed, it becomes 5 piece connection with the addition of the tubing providing solid leak free joint.

The tube ferrule grasp tightly with no damage to the tube wall. The success of the ferrule lies in the combination of geometry & metallurgy. All the action in the fitting is by an axial movement along the tube instead of rotary motion to form a joint. This axial movements prevents any torque to be transmitted from a fitting to tubing, the making of the joint strengthens the tube futher.

Another advantage of the General Fittings is that the sequential action of the twin ferrule overcomes variations in the wall thickness, hardness and dimensional tolerance of the tubes. This way proper ferrule interaction compensates for most of the variables which lead to failure in fittings.

General Fittings are easy to install and require no special tools in the process. They are reusable several times and can withstand heavy impulse and vibration both in vacuum and pressure systems. Absence of damage to the tube surface prevents fatigue failure.

General Double Ferrule compression Tube Fittings have the following features :

DESIGN

- Its self aligning
- Works on thick and thin wall tubing
- Resists vibration
- Fits on a variety of tube materials
- Have all components made of the same material and hence possess thermal compatibility and corrosion resistance.
- Resistance to temperature cycling
- Compensates for the variables encountered in tube materials.
- Dimensions and metallurgy.

PERFORMANCE

- Works on vacuum as well as low and high pressures
- Seals at cryogenic temperatures as well as elevated temperatures rated for the tube
- Seals consistently over a wide range of temperature cycling
- Seals repeatedly under make and break conditions
- Resistant to pressure upto the burst point with the tubing without any leakage.

ASSEMBLY

- Uses geometry rather than torque for uniformity of make-up. It requires only one and quarter turn after snug tight to complete the joint.
- Does not require dismantling and inspection of ferrule swaging at every make-up.
- Does not require any special tools for assembly.

General

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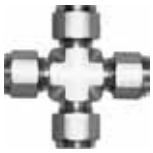

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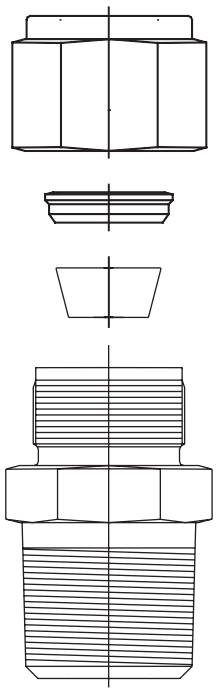
TUBING SPECIFICATION

We give below the specifications to be followed for the various tubings for use with GENERAL INSTRUMENTS CONSORTIUM Double Ferrule Compression Fittings.



CARBON STEEL TUBING

Soft, annealed carbon steel hydraulic tubing to ASTM A 179, Din 2391 or equivalent based on ultimate tensile strength of 47000 psi and for metal temperatures not to exceed 20° C to 100° C. For higher temperature service, reducing factors for elevated temperature operation as specified in table 302.3 1A and 304.1.2 of the code for pressure piping in ANSI B31.3 should be applied.

The hardness of the tube is recommended to RB 72 or less.

The tubes should be suitable for bending and flaring and free of all surface defects and imperfections.

STAINLESS STEEL TUBING

Annealed 304 or 316 Stainless Steel tubing to ASTM A 269 or A 213 or equivalent based on ultimate tensile strength of 75,000 psi and suitable for temperatures 20° C to 100° C.

The hardness of these tubes is not to exceed RB 80 and is preferred in the range RB 70-74.

Tubes to be suitable for bending and flaring and should be free of surface defects and imperfections.

COPPER TUBING

Annealed, soft, seamless copper tubing to ASTM B 75 or ASTM B 88 based on an ultimate tensile strength of 30,000 psi and for a temperature in the range of 20° C to 80° C. Maximum hardness of the tube not to exceed RB 50. Tubes preferred in the range RB 40-45.

MONEL 400 TUBING

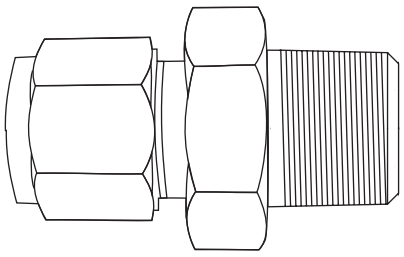
Fully annealed Monel 400 seamless tubing conforming ASTM B165 or equivalent and based on ultimate tensile strength of 70,000 psi. and for use with temperatures 20° C to 90° C.

Hardness of the tube must be RB 75 maximum and is preferred in the range RB 68-72.

These tubes should be suitable for blending and flaring and free from all surface defects and imperfections.

THREAD SPECIFICATIONS

GENERAL INSTRUMENTS CONSORTIUM connectors have one or more tubing end connections and the others with male or female pipe threads. There are a variety of pipe threads for which GENERAL INSTRUMENTS CONSORTIUM Double Ferrule Fittings are available. The most popular thread connections are the American National Pipe thread (NPT) British Standard Pipe threads (BSP) and metric threads. These threads belong to standards of individual countries as well as ISO where they have been codified. All
GENERAL INSTRUMENTS CONSORTIUM Fittings with pipe threads or stud end threads conforming to the specifications as detailed below.



- American National Pipe Thread (NPT) :
  Reference specification ANSI B1.20.1 : 1983
- ISO Parallel Pipe Thread (British Standard Pipe Thread) :
  Reference specifications BS 2779, ISO 228/1, DIN 259, JIS B 0202, IS 2643
- ISO Taper Pipe Thread (British Standard Pipe Taper Thread)
  Reference specification BS 21, ISO 7/1, DIN 2999, JIS B0203, IS 554
- Unified National Pipe Threads:
  Reference specifications ANCI B1.1 : 1964

General

TECHNICAL SPECIFICATIONS TO WHICH FITTINGS PERFORM

There are no standards available for Double Ferrule Compression fittings. The working pressure is restricted by the maximum working pressure of the tubes to be used with the fitting design is such that the tubes will burst before the breakage of the joint. Accordingly, the working pressure outlined in the section entitled 'Allowable Pressure Ratings for Tubing will prevail as the working pressure for these fittings.

The maximum working pressure of these fittings is also restricted by the pressure ratings for the pipe end connections adopted (see section entitled 'Pressure Ratings for Pipe Ends'). The lower of the two will be the maximum working pressure for the fittings.

There are no standard specifications available for type test requirement of Double Ferrule Compression Fittings. The attempt has been made by British Standards Institute to formulate a Standard BS 4368: Part IV 1984. A similar Standard has been formulated by the Indian Standards Institute vide IS 10103 : 1982. Both these Standards refer to Single Ferrule Fittings. They can however be adopted for Double Ferrule Fittings as well. The Standards cover the basic type test requirements for fittings assembled in a standard test assembly as outlined in the above Standards. The tests specified by these Standards are as follows :

PROOF PRESSURE TEST

Test assemblies to be subjected to a pressure of 1.5 times the maximum working pressure of the fittings applied at the rate of 200 kg/cm^2 per minute and maintained at final pressure for five minutes with out leak.

MINIMUM HYDRAULIC BURST PRESSURE

Apply hydraulic pressure to the test assembly upto a maximum of four times the working pressure at the rate not exceeding 200 kg/cm^2 per minute and maintain for five minutes without leak.

DISMANTLING & REASSEMBLE TEST

Assemblies successfully completing Proof test are to be obeued & assembled 25 times after which they must pass proof test.

MINIMUM STATIC VACUUM TEST

Test assemblies satisfactorily proof pressure tested are subjected to negative pressure upto 700 mbar and then isolated from the vacuum pump. The assembly must maintain the vacuum for fifteen minutes. The assemblies are suitably decreased before the test and total exhausted volume should not exceed 20% of the total assembly volume. This test can also be given at two temperature for cryogenic applications.

HYDRAULIC IMPULSE VIBRATION TEST

Test assemblies suitably proof pressure tested are connected to a hydraulic impulse and vibration test bench and subjected simultaneously to Pressure Impulses at 30 to 100 cycles per minute and vibration in two mutually perpendicular planes at 1,300 to 2,820 cycles per minute for a minimum of 5×10^6 pressure impulses and 20×10^5 vibration cycles. The method of choosing the displacement and the cycle is outlined in the Standards mentioned. The only permissible retightening is allowed after the first 1,000pressure impluses to allow for bedding-in. When subjected to the test described this coupling should not leak in the assembly. Couplings that fail shall be examined for signs of cracking due to fatigue stress.

The above tests have been specified in ths Standards BS 4369 Part IV : 1984. Some customers working with high temperature cycling test which requires test assemblies to be subjected to suitable temperature cycles and then subjected to the Proof Pressure Test without leakage. Other customers working with gases have specified a helium leak test with leak rates not exceeding 2×10^{-6} STD. CC/SEC. Fluid Controls undertakes all these tests at their recognized laboratories to satisfy all cuctomers technical requirements.

HIGH PRESSURE APPLICATIONS, HIGH SAFETY FACTOR SYSTEMS

Due to the variation of tubing diameters, a common starting point is desirable. Therefore, use a wrench to snug up the nut until the tubing will not turn (by hand) in the fitting. Now tighten the nut one-and-onequarter turns and the fitting is ready to hold pressure well above the working pressure of the tubing.

RE-TIGHTENING INSTRUCTIONS

Connections can be disconnected and re-tightened many, many times and the same reliable, leak-proof seal obtained every time the reconnection is made.

PRE-SWAGING

When GENERAL INSTRUMENTS CONSORTIUM fittings are to be installed in cramped quarters or overhead where ladders must be used is sometimes found advantageous to use a pre-swaging tool on the tubing in an open ground area, thus pre-swaging the ferrules onto the tubing. The tubing is then removed from the preswaging tool and the tubing (with nut and pre-swaging ferrules) can now be attached to the fitting merely by following the re-tightening instructions.

1. Assemble GENERAL INSTRUMENTS CONSORTIUM nut and ferrules to pre-swaging tool. Insert tubing until it bottoms in the fitting body, and tighten nut one-and-onequarter turns.
2. The nut is loosened and the tubing with pre-swaged ferrules is removed from the preswaging tool.
3. The connection can now be made by merely snugging up the nut as described in the re-tightening instructions.

GENERAL INSTRUMENTS CONSORTIUM Hydraulic swaging units are now available in ½", 5/8", 3/4"& 1" sizes for further information consult GENERAL INSTRUMENTS CONSORTIUM

NOTE:

GENERAL INSTRUMENTS CONSORTIUM has a continuous and dynamic research and development program for the development of fittings in different materials, higher presssures and temperatures. The dimensions and information given in the catalog are subject to change without notice as a result of the findings in these programs.

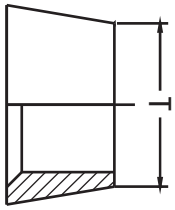
FRONT FERRULE

INCH OD Tubes

T Tube OD	Part No.
1/16	1 GFF
1/8	2 GFF
1/4	4 GFF
5/16	5 GFF
3/8	6 GFF
1/2	8 GFF
5/8	10 GFF
3/4	12 GFF
7/8	14 GFF
1	16 GFF
1.1/4	20 GFF
1.1/2	24 GFF
2	32 GFF

METRIC OD Tubes

T Tube OD	Part No.
4	GFF-4
6	GFF-6
8	GFF-8
10	GFF-10
12	GFF-12
14	GFF-14
15	GFF-15
16	GFF-16
18	GFF-18
20	GFF-20
22	GFF-22
25	GFF-25
28	GFF-28
30	GFF-30
32	GFF-32
38	GFF-38



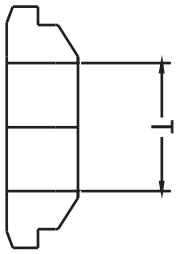
BACK FERRULE

INCH OD Tubes

T Tube OD	Part No.
1/16	1 GBF
1/8	2 GBF
1/4	4 GBF
5/16	5 GBF
3/8	6 GBF
1/2	8 GBF
5/8	10 GBF
3/4	12 GBF
7/8	14 GBF
1	16 GBF
1.1/4	20 GBF
1.1/2	24 GBF
2	32 GBF

METRIC OD Tubes

T Tube OD	Part No.
3	GBF-3
6	GBF-6
8	GBF-8
10	GBF-10
12	GBF-12
14	GBF-14
15	GBF-15
16	GBF-16
18	GBF-18
20	GBF-20
22	GBF-22
25	GBF-25
28	GBF-28
30	GBF-30
32	GBF-32
38	GBF-38



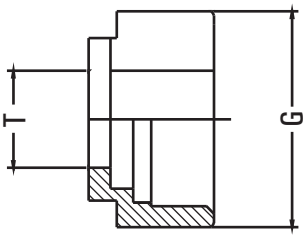
COUPLING CAP (NUTS)

INCH OD Tubes

T Tube OD	L	G A/F	Part No.
1/16	8.0	8	1 GN
1/8	12.0	11	2 GN
1/4	12.7	14	4 GN
5/16	14.0	16	5 GN
3/8	14.5	17	6 GN
1/2	17.5	22	8 GN
5/8	17.5	25	10 GN
3/4	17.5	28.5	12 GN
7/8	17.5	32	14 GN
1	20.6	38	16 GN
1.1/4	31.8	50	20 GN
1.1/2	38.0	57	24 GN
2	52.5	76	32 GN

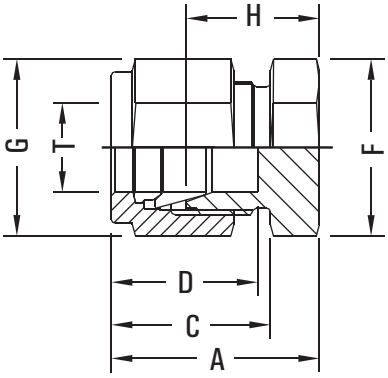
METRIC OD Tubes

T Tube OD	L	G A/F	Part No.
3	12.0	11	GN-3
6	12.7	14	GN-6
8	13.5	16	GN-8
10	15.1	22	GN-10
12	17.5	22	GN-12
14	17.5	25	GN-14
15	17.5	25	GN-15
16	17.5	25	GN-16
18	17.5	30	GN-18
20	17.5	32	GN-20
22	17.5	32	GN-22
25	20.6	38	GN-25
28	30.6	46	GN-28
30	32.7	50	GN-30
32	31.8	50	GN-32
38	38.1	57	GN-38



TUBE END CLOSURE

INCH OD Tubes

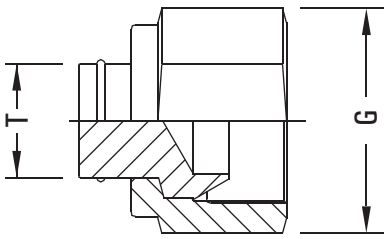


T Tube OD	A	C	D	F A/F	G A/F	H	Part No.
1/16	13.0	11.0	8.6	11	8	11.2	1 GTC
1/8	20.0	15.3	12.7	11	11	13.5	2 GTC
1/4	23.4	17.8	15.3	14	14	16.0	4 GTC
5/16	24.4	18.5	16.3	16	16	17.0	5 GTC
3/8	25.7	19.3	16.8	17	17	18.3	6 GTC
1/2	29.2	21.8	22.9	22	22	19.0	8 GTC
5/8	30.0	21.8	24.4	24	25	19.8	10GTC
3/4	31.5	21.8	24.4	27	28.5	21.4	12GTC
7/8	34.0	21.8	25.9	35	32	23.9	14GTC
1	38.4	26.4	31.2	35	38	26.2	16GTC
1.1/4	53.3	38.9	41.2	46	50	31.2	20GTC
1.1/2	64.5	45.2	50.0	55	57	37.4	24GTC
2	68.0	62.7	67.6	70.0	76.0	49.3	32GTC

METRIC OD Tubes

T Tube OD	A	C	D	F A/F	G A/F	H	Part No.
3	20.1	15.3	12.9	11	11	13.5	GTC-3
6	23.1	17.7	15.3	14	14	15.7	GTC-6
8	24.5	18.6	16.2	16	16	17.0	GTC-8
10	26.6	19.5	17.2	17	19	19.0	GTC-10
12	29.1	22.0	22.8	22	22	19.0	GTC-12
14	29.9	22.0	24.4	24	25	19.8	GTC-14
15	29.9	22.0	24.4	24	25	19.8	GTC-15
16	29.9	22.0	24.4	24	25	19.8	GTC-16
18	31.4	22.0	24.4	27	30	21.3	GTC-18
20	34.0	22.0	26.0	32	32	23.9	GTC-20
22	34.0	22.0	26.0	32	32	23.9	GTC-22
25	38.5	26.5	31.3	35	38	26.2	GTC-25
28	48.5	36.6	36.6	41	46	27.7	GTC-28
30	53.4	39.2	39.6	46	50	31.8	GTC-30
32	55.8	41.6	42.0	46	50	32.8	GTC-32
38	65.4	47.9	49.4	55	57	37.8	GTC-38

FITTING END CLOSURE



INCH OD Tubes

T Tube OD	G A/F	Part No.
1/16	8	1 GTP
1/8	11	2 GTP
1/4	14	4 GTP
5/16	16	5 GTP
3/8	17	6 GTP
1/2	22	8 GTP
5/8	25	10 GTP
3/4	28.5	12 GTP
7/8	32	14 GTP
1	38	16 GTP
1.1/4	50	20 GTP
1.1/2	57	24 GTP
2	76	32 GTP

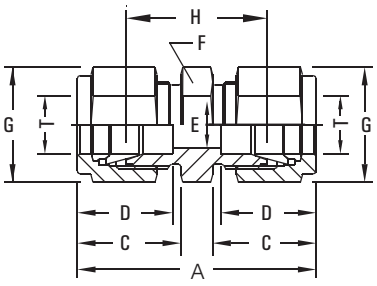
METRIC OD Tubes

T Tube OD	G A/F	Part No.
3	11	GTP-3
6	14	GTP-6
8	16	GTP-8
10	19	GTP-10
12	22	GTP-12
14	25	GTP-14
15	25	GTP-15
16	25	GTP-16
18	30	GTP-18
20	32	GTP-20
22	32	GTP-22
25	38	GTP-25
28	46	GTP-28
30	50	GTP-30
32	50	GTP-32
38	57	GTP-38

UNION

INCH OD Tubes

T Tube OD	A	C	D	E min.	F A/F	G A/F	H	Part No.
1/16	25.1	11.0	8.6	1.3	8	8	17.5	1 GU
1/8	35.6	15.3	12.7	2.4	11	11	22.4	2 GU
1/4	40.9	17.8	15.3	4.8	14	14	26.2	4 GU
5/16	42.9	18.5	16.3	6.3	14	16	28.2	5 GU
3/8	45.0	19.3	16.8	7.1	16	17	30.2	6 GU
1/2	51.3	21.8	22.9	10.4	22	22	31.0	8 GU
5/8	52.0	21.8	24.4	12.7	24	25	31.8	10 GU
3/4	53.6	21.8	24.4	15.8	27	28.5	33.3	12 GU
7/8	55.2	21.8	25.9	18.2	30	32	34.8	14 GU
1	64.8	26.4	31.2	22.3	35	38	40.4	16 GU
1.1/4	92.2	38.9	41.2	27.6	46	50	48.0	20 GU
1.1/2	108.0	45.2	50.0	34.0	55	57	53.6	24 GU
2	149.4	62.7	67.6	46.0	70	76	74.7	32 GU

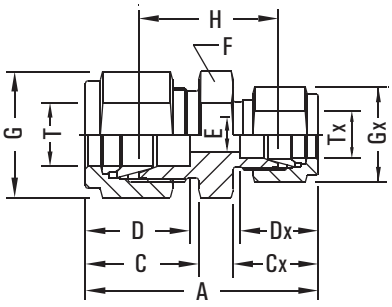


METRIC OD Tubes

T Tube OD	A	C	D	E min.	F A/F	G A/F	H	Part No.
3	35.3	15.3	12.9	2.4	11	11	22.1	GU-3
6	41.0	17.7	15.3	4.8	14	14	26.2	GU-6
8	43.2	18.6	16.2	6.3	16	16	28.2	GU-8
10	46.2	19.5	17.2	7.9	17	19	31.0	GU-10
12	51.2	22.0	22.8	9.5	22	22	31.0	GU-12
14	52.0	22.0	24.4	11.1	24	25	31.0	GU-14
15	52.0	22.0	24.4	11.9	24	25	31.8	GU-15
16	52.0	22.0	24.4	12.7	24	25	31.8	GU-16
18	53.5	22.0	24.4	15.1	27	30	33.3	GU-18
20	55.0	22.0	26.0	15.9	30	32	34.8	GU-20
22	55.0	22.0	26.0	18.3	30	32	34.8	GU-22
25	65.0	26.5	31.3	21.8	35	38	40.4	GU-25
28	85.0	36.6	36.6	21.8	41	46	43.4	GU-28
30	92.7	39.2	39.6	26.2	46	50	49.5	GU-30
32	97.3	41.6	42.0	28.6	46	50	51.3	GU-32
38	113.6	47.9	49.4	33.7	55	57	58.4	GU-38

REDUCING UNION

INCH OD Tubes



T Tube OD	Tx Tube OD	A	C	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	Part No.
1/4	1/8	38.6	17.8	15.3	15.3	12.7	2.4	14	14	11	24.6	4-2 GRU
5/16	1/8	39.6	18.6	15.3	16.3	12.7	2.4	14	16	11	25.7	5-2 GRU
5/16	1/4	42.2	18.6	17.8	16.3	15.3	4.8	14	16	14	27.5	5-4 GRU
3/8	1/8	40.9	19.3	15.3	16.8	12.7	2.4	16	17	11	26.9	6-2 GRU
3/8	1/4	43.2	19.3	17.8	16.8	15.3	4.8	16	17	14	28.5	6-4 GRU
1/2	1/8	45.2	21.8	15.3	22.9	12.7	2.4	22	22	11	28.5	8-2 GRU
1/2	1/4	47.0	21.8	17.8	22.9	15.3	4.8	22	22	14	29.5	8-4 GRU
1/2	3/8	48.5	21.8	19.3	22.9	16.8	7.1	22	22	17	31.0	8-6 GRU
5/8	3/8	49.3	21.8	19.3	24.4	16.8	7.1	24	25	17	31.8	10-6 GRU
5/8	1/2	52.0	21.8	21.8	24.4	22.9	10.4	24	25	22	31.8	10-8 GRU
3/4	1/4	49.3	21.8	17.8	24.4	15.3	4.8	27	28.5	14	31.8	12-4 GRU
3/4	3/8	50.8	21.8	19.3	24.4	16.8	7.1	27	28.5	17	33.3	12-6 GRU
3/4	1/2	53.6	21.8	21.8	24.4	22.9	10.4	27	28.5	22	33.3	12-8 GRU
1	1/2	60.5	26.5	21.8	31.2	22.9	10.4	35	38	22	38.1	16-8 GRU
1	3/4	60.5	26.5	21.8	31.2	24.4	15.8	35	38	28.5	38.1	16-12 GRU
1.1/4	1	92.2	38.9	26.4	41.2	31.2	22.3	45	50	38	48.0	20-16 GRU
1.1/2	1.1/4	60.5	26.5	21.8	31.2	24.4	15.8	55	57	50	53.6	24-20 GRU

METRIC OD Tubes

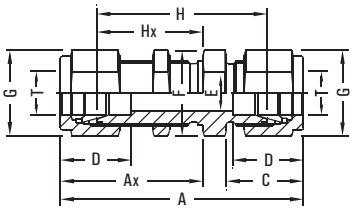
T Tube OD	Tx Tube OD	A	C	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	Part No.
6	3	38.6	17.7	15.3	15.3	12.9	2.4	14	14	11	24.6	GRU 6-3
8	6	42.3	18.6	17.7	16.2	15.3	4.8	14	16	14	27.4	GRU 8-6
10	6	44.5	19.5	17.7	17.2	15.3	4.8	17	19	14	29.5	GRU 10-6
10	8	45.1	19.5	18.6	17.2	16.2	6.3	17	19	16	30.0	GRU 10-8
12	6	47.0	22.0	17.7	22.8	15.3	4.8	22	22	14	29.5	GRU 12-6
12	8	47.8	22.0	18.6	22.8	16.2	6.4	22	22	16	30.2	GRU 12-8
12	10	48.7	22.0	19.5	22.8	17.2	7.9	22	22	19	31.0	GRU 12-10
16	10	49.5	22.0	19.5	24.4	17.2	7.9	24	25	19	31.8	GRU 16-10
16	12	52.0	22.0	22.0	24.4	22.8	9.5	24	25	22	31.8	GRU 16-12
22	18	55.0	22.0	22.0	26.0	24.4	15.1	30	32	30	34.8	GRU 22-18
22	20	55.0	22.0	22.0	26.0	26.6	15.9	30	32	32	34.8	GRU 22-20
25	12	65.0	26.5	22.0	31.3	22.8	9.5	35	38	22	40.4	GRU 25-12
25	20	65.0	26.5	22.0	31.3	26.0	15.9	35	38	32	40.4	GRU 25-20
30	20	75.4	39.2	22.0	39.6	26.0	15.9	45	50	32	43.7	GRU 30-20
30	25	80.1	39.2	26.5	39.6	31.3	21.8	45	50	38	46.2	GRU 30-25
32	20	77.8	41.6	22.0	42.0	26.0	15.9	45	50	32	44.7	GRU 32-20
32	25	82.3	41.6	26.5	42.0	31.3	21.8	45	50	38	47.0	GRU 32-25
38	20	92.0	47.9	26.5	49.4	31.3	21.8	55	57	38	52.1	GRU 38-20
38	25	104.6	47.9	39.2	49.4	39.6	26.2	55	57	50	55.4	SCR 38-25

NOTE : The combinations shown above are representative of various possibilities. Other combinations not shown are also available. Please consult us.

BULKHEAD UNION

INCH OD Tubes

T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
1/16	31.5	17.3	11.0	8.6	1.3	11	8	23.8	13.5	5.2	3.0	1 GBU
1/8	51.3	31.2	15.3	12.7	2.4	11	11	38.1	24.6	8.3	12.7	2 GBU
1/4	57.6	33.6	17.8	15.3	4.8	16	14	43.0	26.2	11.5	10.1	4 GBU
5/16	60.7	35.8	18.5	16.3	6.3	17	16	46.0	28.5	13.0	11.1	5 GBU
3/8	62.2	36.8	19.3	7.1	7.1	22	17	47.5	29.5	14.6	11.1	6 GBU
1/2	71.1	41.9	21.8	22.9	10.4	24	22	50.8	31.8	19.5	12.7	8 GBU
5/8	72.6	42.7	21.8	24.4	12.7	27	25	52.3	32.5	22.6	12.7	10 GBU
3/4	79.0	47.5	21.8	24.4	16.0	30	28.5	58.6	37.4	25.8	16.8	12 GBU
1	95.6	57.4	26.4	31.2	22.3	35	38	71.3	45.2	33.7	19.0	16 GBU
1.1/4	123.2	69.9	38.9	41.2	27.6	50	50	79.0	47.7	41.6	19.0	20 GBU
1.1/2	139.2	76.4	45.2	50.0	34.0	60	57	84.8	49.3	49.6	19.0	24 GBU
2	180.4	93.7	62.7	67.6	46.0	70	76	105.6	56.4	67.0	19.0	32 GBU



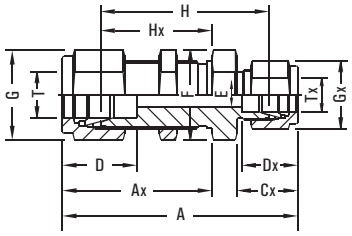
METRIC OD Tubes

T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
3	51.3	31.2	15.3	12.9	2.4	14	11	38.1	24.6	8.3	12.7	GBU-3
6	57.7	33.6	17.7	15.3	4.8	16	14	42.9	26.2	11.5	10.2	GBU-6
8	61.0	36.1	18.6	16.2	6.3	17	16	46.0	28.6	13.1	11.2	GBU-8
10	63.7	37.0	19.5	17.2	7.9	22	19	48.5	29.4	16.3	11.2	GBU-10
12	71.0	41.9	22.0	22.8	9.5	24	22	50.8	31.8	19.5	12.7	GBU-12
14	72.5	42.6	22.0	24.4	11.1	27	25	52.3	32.5	22.5	12.7	GBU-14
15	72.5	42.6	22.0	24.4	11.9	27	25	52.3	32.5	22.8	12.7	GBU-15
16	72.5	42.6	22.0	24.4	12.7	27	25	52.3	32.5	22.8	12.7	GBU-16
18	78.9	47.4	22.0	24.4	15.1	30	30	58.7	37.3	26.0	16.8	GBU-18
20	84.5	53.0	22.0	26.0	15.8	35	32	64.3	42.9	29.0	19.0	GBU-20
25	95.6	57.4	26.4	31.2	22.3	35	38	71.3	45.2	33.7	19.0	GBU-25
30	123.7	70.2	39.2	39.6	26.2	50	46	80.5	48.6	40.5	19.0	GBU-30
32	128.3	72.5	41.6	42.0	27.6	50	50	82.3	49.5	42.5	19.0	GBU-32
38	144.6	79.1	47.9	49.4	33.7	60	57	89.4	51.5	50.5	19.0	GBU-38

BULKHEAD REDUCING UNION

INCH OD Tubes

T Tube OD	T Tube OD	A	Ax	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
1/4	1/8	55.2	33.5	15.3	15.3	12.7	2.4	16	14	11	41.2	26.2	11.5	10.2	4-2 GBRU
3/8	1/4	60.7	36.6	17.8	16.8	15.3	4.8	22	17	14	46.0	29.5	14.6	11.2	6-4 GBRU
1/2	1/4	66.8	41.9	17.8	22.4	15.3	4.8	24	22	14	49.2	31.8	19.5	12.7	8-4 GBRU
1/2	3/8	66.8	41.9	17.8	22.4	16.8	7.1	24	22	17	49.2	31.8	19.5	12.7	8-6 GBRU



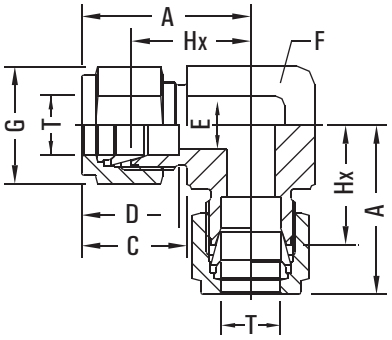
METRIC OD Tubes

T Tube OD	T Tube OD	A	Ax	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
6	3	56.0	33.6	17.7	15.3	12.9	2.4	16	14	11	41.2	26.2	11.5	10.2	GBRU-6-3
8	6	61.0	36.1	18.6	16.2	15.3	4.8	17	16	14	48.0	28.6	13.1	11.2	GBRU-8-6
10	6	63.7	37.0	19.5	17.2	15.3	4.8	22	19	14	48.5	29.4	16.3	11.2	GBRU-10-6
12	6	71.0	41.9	22.0	22.8	15.3	4.8	24	22	14	50.8	31.8	19.5	12.7	GBRU-12-6
12	10	71.0	41.9	22.0	22.8	17.2	7.9	24	22	17	50.8	31.8	19.5	12.7	GBRU-12-10

NOTE: The combinations shown above are representative of various possibilities. Other combinations not shown are also available. Please consult us.

UNION ELBOW

INCH OD Tubes



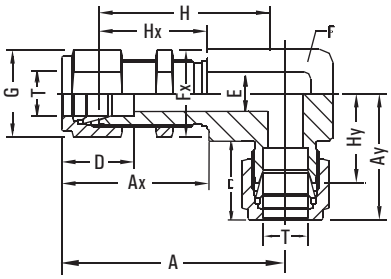
T Tube OD	A	C	D	E min.	F A/F	G	Hx	Part No.
1/16	17.8	11.0	8.6	1.3	11	8	14.0	GUE 1
1/8	22.4	15.3	12.7	2.4	11	11	15.8	GUE 2
1/4	26.9	17.8	15.3	4.8	14	14	19.6	GUE 4
5/16	28.7	18.5	16.3	6.3	16	16	21.3	GUE 5
3/8	30.5	19.3	16.8	7.1	17	17	23.2	GUE 6
1/2	36.0	21.8	22.9	10.4	22	22	25.9	GUE 8
5/8	38.1	21.8	24.4	12.7	24	25	27.9	GUE 10
3/4	39.9	21.8	24.4	15.8	27	28.5	29.7	GUE 12
7/8	44.7	21.8	25.9	18.2	35	32	34.6	GUE 14
1	49.0	26.4	31.2	22.3	35	38	36.8	GUE 16
1.1/4	66.6	38.9	41.2	27.6	46	50	44.5	GUE 20
1.1/2	78.0	45.2	50.0	34.0	55	57	50.8	GUE 24
2	107.2	62.7	67.6	46.0	70	76	69.9	GUE 32

METRIC OD Tubes

T Tube OD	A	C	D	E min.	F A/F	G	Hx	Part No.
3	22.3	15.3	12.9	2.4	11	11	15.7	GUE-3
6	27.0	17.7	15.3	4.8	14	14	19.6	GUE-6
8	28.8	18.6	16.2	6.3	16	16	21.3	GUE-8
10	31.5	19.5	17.2	7.9	17	19	23.9	GUE-10
12	36.0	22.0	22.8	9.5	22	22	25.9	GUE-12
14	38.0	22.0	24.4	11.1	24	25	27.9	GUE-14
15	38.0	22.0	24.4	11.9	24	25	27.9	GUE-15
16	38.0	22.0	24.4	12.7	24	25	27.9	GUE-16
18	39.8	22.0	24.4	15.1	27	30	29.7	GUE-18
20	44.6	22.0	26.0	15.9	32	32	34.5	GUE-20
22	44.6	22.0	26.0	18.3	32	32	34.5	GUE-22
25	49.1	26.5	31.3	21.8	35	38	36.8	GUE-25
28	64.0	36.6	36.6	21.8	41	46	43.5	GUE-28
30	69.9	39.2	39.6	26.2	46	50	48.3	GUE-30
32	72.3	41.6	42.0	28.6	46	50	49.3	GUE-32
38	84.0	47.9	49.4	33.7	55	57	56.4	GUE-38

BULKHEAD ELBOW

INCH OD Tubes



T Tube OD	A	Ax	Ay	C	D	E min.	F A/F	G A/F	H	Hx	Hy	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
1/8	43.1	31.2	22.4	15.3	12.7	2.4	11	11	36.5	24.6	15.8	8.3	12.7	2GBE
1/4	48.9	33.6	26.9	17.8	15.3	4.8	16	14	41.5	26.2	19.6	11.5	10.1	4GBE
3/8	54.1	36.8	30.5	19.3	16.8	7.1	22	17	46.8	29.5	23.2	14.6	11.1	6GBE
1/2	63.5	41.9	36.0	21.8	22.9	10.4	24	22	53.4	31.8	25.9	19.5	12.7	8GBE
3/4	75.3	47.5	39.9	21.8	24.4	16.0	30	29	65.2	37.4	29.7	25.8	16.8	12GBE
1	91.8	57.4	49.0	26.4	31.2	22.3	35	38	79.6	45.2	36.8	33.7	19.0	16GBE

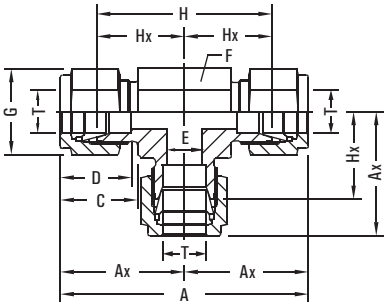
METRIC OD Tubes

T Tube OD	A	Ax	Ay	C	D	E min.	F A/F	G A/F	H	Hx	Hy	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
3	43.0	31.2	22.3	15.3	12.9	2.4	14	11	36.4	24.6	15.7	8.3	12.7	GBE-3
6	49.3	33.6	27.0	17.7	15.3	4.8	16	14	41.9	26.2	19.6	11.5	10.2	GBE-6
8	52.6	36.1	28.8	18.6	16.2	6.3	17	16	45.1	28.6	21.3	13.1	11.2	GBE-8
10	56.2	37.0	31.5	19.5	17.2	7.9	22	19	48.6	29.4	23.9	16.3	11.2	GBE-10
12	63.0	41.9	36.0	22.0	22.8	9.5	24	22	52.9	31.8	25.9	19.5	12.7	GBE-12
16	66.5	42.6	38.0	22.0	24.4	12.7	27	25	56.4	32.5	27.9	22.8	12.7	GBE-16
22	85.1	53.0	44.6	22.0	26.0	18.3	35	32	75.0	42.9	34.5	29.0	19.0	GBE-20
25	91.8	57.4	49.1	26.4	31.2	22.3	35	38	79.6	45.2	36.8	33.7	19.0	GBE-25

UNION TEE

INCH OD Tubes

T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	Part No.
1/16	35.6	17.8	11.0	8.6	1.3	11	8	28.0	14.0	1GUT
1/8	44.8	22.4	15.3	12.7	2.4	11	11	31.6	15.8	2GUT
1/4	53.8	26.9	17.8	15.3	4.8	14	14	39.2	19.6	4GUT
5/16	57.4	28.7	18.5	16.3	6.3	16	16	42.6	21.3	5GUT
3/8	61.0	30.5	19.3	16.8	7.1	17	17	46.4	23.2	6GUT
1/2	72.0	36.0	21.8	22.9	10.4	22	22	51.8	25.9	8GUT
5/8	76.2	38.1	21.8	24.4	12.7	24	25	55.8	27.9	10GUT
3/4	79.8	39.9	21.8	24.4	15.8	27	28.5	59.4	29.7	12GUT
7/8	89.4	44.7	21.8	25.9	18.2	35	32	69.2	34.6	14GUT
1	98.0	49.0	26.4	31.2	22.3	35	38	73.6	36.8	16GUT
1.1/4	133.2	66.6	38.9	41.2	27.6	46	50	89.0	44.5	20GUT
1.1/2	156.0	78.0	45.2	50.0	34.0	55	57	101.6	50.8	24GUT
2	214.4	107.4	62.7	67.9	46.0	70	76	139.8	69.9	32GUT

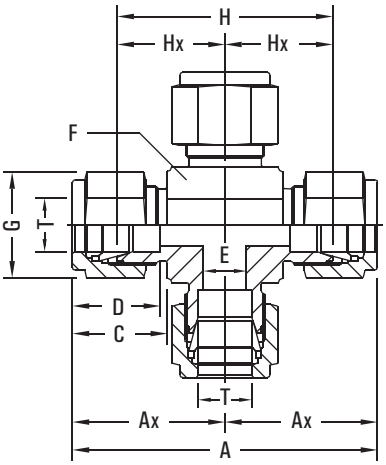


METRIC OD Tubes

T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	Part No.
3	44.6	22.3	15.3	12.9	2.4	11	11	31.4	15.7	GUT-3
6	54.0	27.0	17.7	15.3	4.8	14	14	39.2	19.6	GUT-6
8	57.6	28.8	18.6	16.2	6.3	16	16	42.6	21.3	GUT-8
10	63.0	31.5	19.5	17.2	7.9	17	19	47.8	23.9	GUT-10
12	72.0	36.0	22.0	22.8	9.5	22	22	51.8	25.9	GUT-12
14	76.0	38.0	22.0	24.4	11.1	24	25	55.8	27.9	GUT-14
15	76.0	38.0	22.0	24.4	11.9	24	25	55.8	27.9	GUT-15
16	76.0	38.0	22.0	24.4	12.7	24	25	55.8	27.9	GUT-16
18	79.6	39.8	22.0	24.4	15.1	27	30	59.4	29.7	GUT-18
20	89.2	44.6	22.0	26.0	15.9	32	32	69.0	34.5	GUT-20
22	89.2	44.6	22.0	26.0	18.3	32	32	69.0	34.5	GUT-22
25	98.2	49.1	26.5	31.3	21.8	35	38	73.6	36.8	GUT-25
28	128.0	64.0	36.6	36.6	21.8	41	46	87.0	43.5	GUT-28
30	139.8	69.9	39.2	39.6	26.2	46	50	96.6	48.3	GUT-30
32	144.6	72.3	41.6	42.0	28.6	46	50	98.6	49.3	GUT-32
38	168.0	84.0	47.9	49.4	33.7	55	57	112.8	56.4	GUT-38

UNION CROSS

INCH OD Tubes

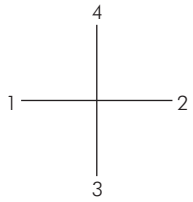


T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	Part No.
1/8	44.8	22.4	15.3	12.7	2.4	11	11	31.6	15.8	2 GUC
1/4	53.8	26.9	17.8	15.3	4.8	14	14	39.2	19.6	4 GUC
3/8	61.0	30.5	19.3	16.8	7.1	17	17	46.4	23.2	6 GUC
1/2	72.0	36.0	21.8	22.9	10.4	22	22	51.8	25.9	8 GUC
3/4	79.8	39.9	21.8	24.4	15.8	27	28.5	59.4	29.7	12 GUC
1	98.0	49.0	26.4	31.2	22.3	35	38	73.6	36.8	16 GUC

METRIC OD Tubes

T Tube OD	A	Ax	C	D	E min.	F A/F	G A/F	H	Hx	Part No.
3	44.6	22.3	15.3	12.9	2.4	11	11	31.4	15.7	GUC-3
6	54.0	27.0	17.7	15.3	4.8	14	14	39.2	19.6	GUC-6
8	57.6	28.8	18.6	16.2	6.3	16	16	42.6	21.3	GUC-8
10	63.0	31.5	19.5	17.2	7.9	17	19	47.8	23.9	GUC-10
12	72.0	36.0	22.0	22.8	9.5	22	22	51.8	25.9	GUC-12
16	76.0	38.0	22.0	24.4	12.7	24	25	55.8	27.9	GUC-16
22	89.2	44.6	22.0	26.0	18.3	32	32	69.0	34.5	GUC-22
25	98.2	49.1	26.5	31.3	21.8	35	38	73.6	36.8	GUC-25

NOTE: Reducing Cross with variation in the tube sizes are available. The tube sizes are designated in the order given below.

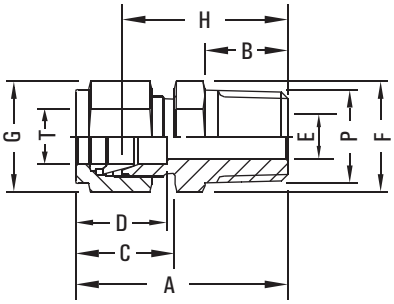


The tube sizes are indicated in the part number in the same order above.

MALE CONNECTOR

INCH OD Tubes X Male NPT Threads

T Tube OD	P NPT Male	A	B	C	D	E min.	F A/F	G A/F	H	Part No.
1/16	1/16	23.9	9.6	11.0	8.6	1.3	8	8	20.0	1 GMC-N
1/16	1/8	26.2	9.6	11.0	8.6	1.3	11	8	22.4	1-2 GMCH-N
1/8	1/8	30.5	9.6	15.3	12.7	2.4	11	11	23.9	2 GMC-N
1/8	1/4	35.6	14.3	15.3	12.7	2.4	14	11	29.0	2-4 GMCH-N
1/4	1/8	32.8	9.6	17.8	15.3	4.8	14	14	25.4	4-2 GMC-N
1/4	1/4	37.8	14.3	17.8	15.3	4.8	14	14	30.5	4 GMC-N
1/4	3/8	38.4	14.3	17.8	15.3	4.8	19	14	31.0	4-6 GMC-N
1/4	1/2	44.7	19.1	17.8	15.3	4.8	22	14	37.4	4-8 GMC-N
5/16	1/4	38.6	14.3	18.5	16.3	6.3	14	16	31.2	5-4 GMC-N
3/8	1/8	35.3	9.6	19.3	16.8	4.8	16	17	27.9	6-2 GMC-N
3/8	1/4	39.8	14.3	19.3	16.8	7.1	16	17	32.5	6-4 GMC-N
3/8	3/8	39.8	14.3	19.3	16.8	7.1	19	17	32.5	6 GMC-N
3/8	1/2	41.2	19.1	19.3	16.8	7.1	22	17	38.9	6-8 GMC-N
1/2	1/4	43.4	14.3	21.8	22.9	7.1	22	22	33.3	8-4 GMC-N
1/2	3/8	43.4	14.3	21.8	22.9	9.6	22	22	33.3	8-6 GMC-N
1/2	1/2	49.0	19.1	21.8	22.9	10.4	22	22	38.9	8 GMC-N
1/2	3/4	50.5	19.1	21.8	22.9	10.4	27	22	40.4	8-12 GMC-N
1/2	1	57.1	23.8	21.8	22.9	10.4	35	22	47.0	8-16 GMC-N
5/8	3/8	44.2	14.3	21.8	24.4	9.6	24	25	34.0	10-6 GMC-N
5/8	1/2	49.0	19.1	21.8	24.4	10.4	24	25	38.9	10-8 GMC-N
3/4	1/2	50.5	19.1	21.8	24.4	10.4	27	28.5	40.4	12-8 GMC-N
3/4	3/4	50.5	19.1	21.8	24.4	15.8	27	28.5	40.4	12 GMC-N
3/4	1	57.1	23.8	21.8	24.4	15.8	35	28.5	47.0	12-16 GMC-N
7/8	3/4	50.5	19.1	21.8	26.0	15.8	30	32	40.4	14-12 GMC-N
1	1/2	57.4	19.1	26.4	31.2	10.4	35	38	45.2	16-8 GMC-N
1	3/4	57.4	19.1	26.4	31.2	15.8	35	38	45.2	16-12 GMC-N
1	1	62.2	23.8	26.4	31.2	22.3	35	38	50.0	16 GMC-N
1.1/4	1	77.2	23.8	38.9	41.2	22.3	46	50	55.2	20-16 GMC-N
1.1/4	1.1/4	77.2	23.8	38.9	41.2	27.6	46	50	55.2	20 GMC-N
1.1/2	1.1/2	88.9	26.2	45.2	50.0	34.0	55	57	61.7	24 GMC-N
2	2	113.5	26.9	62.7	67.6	46.0	70	76	76.2	32 GMC-N



INCH OD Tubes X Male ISO* Tapered Pipe Threads

T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	G A/F	H	Part No.
1/8	1/8	30.5	9.6	15.3	12.7	2.4	11	11	23.9	2 GMC-Rx
1/8	1/4	35.6	14.3	15.3	12.7	2.4	14	11	29.0	2-4 GMCH-Rx
1/4	1/8	32.8	9.6	17.8	15.3	4.8	14	14	25.4	4-2 GMC-Rx
1/4	1/4	37.8	14.3	17.8	15.3	4.8	14	14	30.1	4 GMC-Rx
1/4	3/8	38.4	14.3	17.8	15.3	4.8	19	14	31.0	4-6 GMC-Rx
1/4	1/2	44.7	19.1	17.8	15.3	4.8	22	14	37.4	4-8 GMC-Rx
3/8	1/8	35.3	9.6	19.3	16.8	4.8	16	17	27.9	6-2 GMC-Rx
3/8	1/4	39.8	14.3	19.3	16.8	7.1	16	17	32.5	6-4 GMC-Rx
3/8	3/8	39.8	14.3	19.3	16.8	7.1	19	17	32.5	6 GMC-Rx
3/8	1/2	41.2	19.1	19.3	16.8	7.1	22	17	38.9	6-8 GMC-Rx
1/2	1/4	43.4	14.3	21.8	22.9	7.1	22	22	33.3	8-4 GMC-Rx
1/2	3/8	43.4	14.3	21.8	22.9	9.6	22	22	33.3	8-6 GMC-Rx
1/2	1/2	49.0	19.1	21.8	22.9	10.4	22	22	38.9	8 GMC-Rx
3/4	3/4	50.5	19.1	21.8	24.4	15.8	27	28.5	40.4	12 GMC-Rx
1	1	62.2	23.8	26.4	31.2	22.3	35	38	50.0	16 GMC-Rx
1.1/4	1	77.2	23.8	38.9	41.2	22.3	46	50	55.2	20-16 GMC-Rx
1.1/4	1.1/4	77.2	23.8	38.9	41.2	27.6	46	50	55.2	20 GMC-Rx
1.1/2	1.1/2	88.9	26.2	45.2	50.0	34.0	55	57	61.7	24 GMC-Rx

* Reference Specifications: BS 21 : ISO 7/1 : JIS B 0203 : DIN 2999 : IS 554

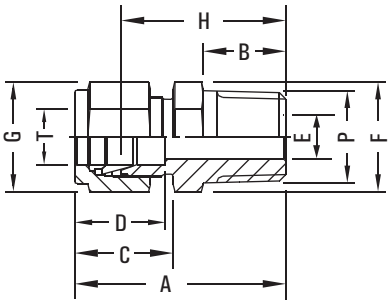
NOTE: The combination of tube OD and male threads are indicative of popular sizes. Other combinations, not shown, are available. Please Consult us.

BORED - THROUGH CONNECTORS available in all these sizes. Add suffix "BT" to the above part numbers to designate bored - trough male connector.

General

MALE CONNECTOR

METRIC OD Tubes x Male NPT Threads



T Tube OD	P NPT Male	A	B	C	D	E min.	F A/F	G A/F	H	Part No.
3	1/8	30.5	9.6	15.3	12.9	2.4	11	11	23.9	GMC 3-2N
3	1/4	35.6	14.3	15.3	12.9	2.4	14	11	29.0	GMC 3-4N
6	1/8	32.8	9.6	17.7	15.3	4.8	14	14	25.4	GMC 6-2N
6	1/4	37.9	14.3	17.7	15.3	4.8	14	14	30.5	GMC 6-4N
6	3/8	38.4	14.3	17.7	15.3	4.8	19	14	31.0	GMC 6-N
6	1/2	44.7	19.1	17.7	15.3	4.8	22	14	37.3	GMC 6-8N
8	1/8	34.2	9.6	18.6	16.2	4.8	14	16	26.7	GMC 8-2N
8	1/4	38.7	14.3	18.6	16.2	6.3	14	16	31.2	GMC 8-4N
8	3/8	39.3	14.3	18.6	16.2	6.3	19	16	31.8	GMC 8-6N
8	1/2	45.6	19.1	18.6	16.2	6.3	22	16	38.1	GMC 8-N
10	1/8	36.3	9.6	19.5	17.2	4.8	17	19	28.7	GMC 10-2N
10	1/4	40.9	14.3	19.5	17.2	7.9	19	19	33.3	GMC 10-4N
10	3/8	40.9	14.3	19.5	17.2	7.9	19	19	33.3	GMC 10-6N
10	1/2	46.5	19.1	19.5	17.2	7.9	22	19	38.9	GMC 10-8N
12	1/4	43.4	14.3	22.0	22.8	7.1	22	22	33.3	GMC 12-4N
12	3/8	43.4	14.3	22.0	22.8	9.5	22	22	33.3	GMC 12-6N
12	1/2	49.0	19.1	22.0	22.8	9.5	22	22	38.9	GMC 12-8N
12	3/4	50.5	19.1	22.0	22.8	9.5	27	22	40.4	GMC 12-N
12	1	57.1	23.8	22.0	22.8	9.5	35	22	47.0	GMC 12-16N
14	1/4	44.1	14.3	22.0	24.4	7.1	24	25	34.0	GMC 14-4N
14	3/8	44.1	14.3	22.0	24.4	9.5	24	25	34.0	GMC 14-6N
14	1/2	49.0	19.1	22.0	24.4	11.1	24	25	38.9	GMC 14-8N
15	1/2	49.0	19.1	22.0	24.4	11.9	24	25	38.9	GMC 15 8N
16	3/8	44.1	14.3	22.0	24.4	9.5	24	25	34.0	GMC 16-6N
16	1/2	49.0	19.1	22.0	24.4	11.9	24	25	38.9	GMC 16-8N
16	3/4	50.5	19.1	22.0	24.4	12.7	27	25	40.4	GMC 16-12N
18	1/2	50.5	19.1	22.0	24.4	11.9	27	30	40.4	GMC 18-8N
18	3/4	50.5	19.1	22.0	24.4	15.1	27	30	40.4	GMC 18-12N
20	1/2	52.3	19.1	22.0	26.0	11.9	30	32	42.2	GMC 20-8N
20	3/4	52.3	19.1	22.0	26.0	15.9	30	32	42.2	GMC 20-12N
22	3/4	52.3	19.1	22.0	26.0	15.9	30	32	42.2	GMC 22-12N
22	1	57.1	23.8	22.0	26.0	18.3	35	32	47.0	GMC 22 16N
25	1/2	57.5	19.1	26.5	31.3	11.9	35	38	45.2	GMC 25- 8N
25	3/4	57.5	19.1	26.5	31.3	15.8	35	38	45.2	GMC 25-12N
25	1	62.3	23.8	26.5	31.3	21.8	35	38	50.0	GMC 25-16N
28	1	72.4	23.8	36.6	36.6	21.8	41	46	51.6	GMC 28-16N
28	1.1/4	73.1	23.8	36.6	36.6	21.8	46	46	52.3	GMC 28-20N
30	1.1/4	77.2	23.8	39.2	39.6	26.2	46	50	55.6	GMC 30-20N
32	1.1/4	79.6	23.8	41.6	42.0	28.6	46	50	56.6	GMC 32-20N
38	1.1/2	96.6	26.2	47.9	49.4	33.7	55	57	64.0	GMC 38-24N

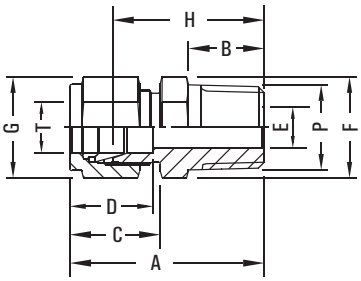
Bored-Through Fittings for Thermocouples

To order, add BT to the desired Fluid Controls Male Connector Part Number : 8 SCM - N. BT
Example : Bored Through Connection 1/2" OD x 1/2" NPT (M) with 1/2" OD through bore has part number.

MALE CONNECTOR

METRIC OD Tubes x Male ISO* Tapered Pipe Thread

T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	G A/F	H	Part No.
3	1/8	30.5	9.6	15.3	12.9	2.4	11	11	23.9	GMC 3-2 Rx
3	1/4	35.6	14.3	15.3	12.9	2.4	14	11	29.0	GMC 3-4 Rx
6	1/8	32.8	9.6	17.7	15.3	4.8	14	14	25.4	GMC 6-2 Rx
6	1/4	37.9	14.3	17.7	15.3	4.8	14	14	30.5	GMC 6-4 Rx
6	3/8	38.4	14.3	17.7	15.3	4.8	19	14	31.0	GMC 6 Rx
6	1/2	44.7	19.1	17.7	15.3	4.8	22	14	37.3	GMC 6-8 Rx
8	1/8	34.2	9.6	18.6	16.2	4.8	14	16	26.7	GMC 8-2 Rx
8	1/4	38.7	14.3	18.6	16.2	6.3	14	16	31.2	GMC 8-4 Rx
8	3/8	39.3	14.3	18.6	16.2	6.3	19	16	31.8	GMC 8-6 Rx
8	1/2	45.6	19.1	18.6	16.2	6.3	22	16	38.1	GMC 8 Rx
10	1/8	36.3	9.6	19.5	17.2	4.8	17	19	28.7	GMC 10-2 Rx
10	1/4	40.9	14.3	19.5	17.2	7.9	19	19	33.3	GMC 10-4 Rx
10	3/8	40.9	14.3	19.5	17.2	7.9	19	19	33.3	GMC 10-6 Rx
10	1/2	46.5	19.1	19.5	17.2	7.9	22	19	38.9	GMC 10-8 Rx
12	1/4	43.4	14.3	22.0	22.8	7.1	22	22	33.3	GMC 12-4 Rx
12	3/8	43.4	14.3	22.0	22.8	9.5	22	22	33.3	GMC 12-6 Rx
12	1/2	49.0	19.1	22.0	22.8	9.5	22	22	38.9	GMC 12-8 Rx
12	3/4	50.5	19.1	22.0	22.8	9.5	27	22	40.4	GMC 12 Rx
12	1	57.1	23.8	22.0	22.8	9.5	35	22	47.0	GMC 12-16 Rx
14	3/8	44.1	14.3	22.0	24.4	9.5	24	25	34.0	GMC 14-6 Rx
14	1/2	49.0	19.1	22.0	24.4	11.1	24	25	38.9	GMC 14-8 Rx
15	1/2	49.0	19.1	22.0	24.4	11.9	24	25	38.9	GMC 15 8 Rx
16	3/8	44.1	14.3	22.0	24.4	9.5	24	25	34.0	GMC 16-6 Rx
16	1/2	49.0	19.1	22.0	24.4	11.9	24	25	38.9	GMC 16-8 Rx
16	3/4	50.5	19.1	22.0	24.4	12.7	27	25	40.4	GMC 16-12 Rx
18	1/2	50.5	19.1	22.0	24.4	11.9	27	30	40.4	GMC 18-8 Rx
18	3/4	50.5	19.1	22.0	24.4	15.1	27	30	40.4	GMC 18-12 Rx
20	1/2	52.3	19.1	22.0	26.0	11.9	30	32	42.2	GMC 20-8 Rx
20	3/4	52.3	19.1	22.0	26.0	15.9	30	32	42.2	GMC 20-12 Rx
22	3/4	52.3	19.1	22.0	26.0	15.9	30	32	42.2	GMC 22-12 Rx
22	1	57.1	23.8	22.0	26.0	18.3	35	32	47.0	GMC 22 16 Rx
25	1/2	57.5	19.1	26.5	31.3	11.9	35	38	45.2	GMC 25- 8 Rx
25	3/4	57.5	19.1	26.5	31.3	15.8	35	38	45.2	GMC 25-12 Rx
25	1	62.3	23.8	26.5	31.3	21.8	35	38	50.0	GMC 25-16 Rx
28	1	72.4	23.8	36.6	36.6	21.8	41	46	51.6	GMC 28-16 Rx
28	1.1/4	73.1	23.8	36.6	36.6	21.8	46	46	52.3	GMC 28-20 Rx
30	1.1/4	77.2	23.8	39.2	39.6	26.2	46	50	55.6	GMC30-20 RX
32	1.1/4	79.6	23.8	41.6	42.0	28.6	46	50	56.6	GMC32-20 Rx
38	1.1/2	96.6	26.2	47.9	49.4	33.7	55	57	64.0	GMC 38-24 Rx



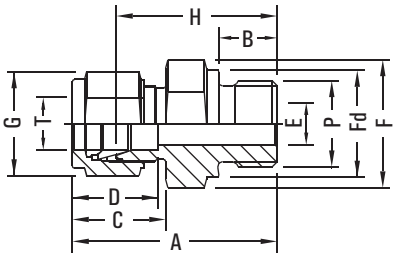
* Reference Specifications BS 21: ISO 7/1 : JIS B 0203 : DIN 2999 : IS 554

Bored-Through Fittings for Thermocouples

To order, add BT to the desired Fluid Controls Male Connector Part Number : 8 SCM - Rx. BT
Example : Bored Through Connection 1/2" OD x 1/2" ISO Tapered Male Pipe Thread 1/2" OD through bore has part number.

MALE CONNECTOR

INCH OD Tubes x Male ISO* Parallel Threads - RP



T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	Part No.
1/8	1/8	30.0	7.1	15.3	12.7	2.4	14	13.7	11	23.4	2 GMC-Rp
1/8	1/4	35.3	11.2	15.3	12.7	2.4	19	18.0	11	28.7	2-4 GMCH-Rp
1/4	1/8	32.3	7.1	17.8	15.3	4.8	14	13.7	14	24.9	4-2 GMC-Rp
1/4	1/4	37.6	11.2	17.8	15.3	4.8	19	18.0	14	30.2	4 GMC-Rp
1/4	3/8	38.9	11.2	17.8	15.3	4.8	22	21.8	14	31.5	4-6 GMC-Rp
1/4	1/2	44.7	14.2	17.8	15.3	4.8	27	26.0	14	37.4	4-8 GMC-Rp
3/8	1/4	39.2	11.2	19.3	16.8	5.8	19	18.0	17	31.8	6-4 GMC-Rp
3/8	3/8	40.4	11.2	19.3	16.8	7.1	22	21.8	17	33.0	6 GMC-Rp
3/8	1/2	46.3	14.2	19.3	16.8	7.1	27	26.0	17	38.9	6-8 GMC-Rp
1/2	1/4	42.7	11.2	21.8	22.9	5.8	22	18.0	22	32.5	8-4 GMC-Rp
1/2	3/8	43.2	11.2	21.8	22.9	7.9	22	21.8	22	33.0	8-6 GMC-Rp
1/2	1/2	49.0	14.2	21.8	22.9	10.4	27	26.0	22	38.9	8 GMC-Rp
1/2	3/4	52.8	15.7	21.8	22.9	10.4	35	32.0	22	42.7	8-12 GMC-Rp
3/4	1/2	49.0	14.2	21.8	24.4	11.9	27	26.0	28.5	38.9	12-8 GMC-Rp
3/4	3/4	52.8	15.7	21.8	24.4	15.8	35	32.0	28.5	42.7	12 GMC-Rp
3/4	1	55.4	18.3	21.8	24.4	15.8	41	39.0	28.5	45.6	12-16 GMC-Rp
1	1/2	55.9	14.2	26.4	31.2	11.9	35	26.0	38	43.7	16-8 GMC-Rp
1	3/4	57.5	15.7	26.4	31.2	15.8	35	32.0	38	45.2	16-12 GMC-Rp
1	1	60.0	18.3	26.4	31.2	19.8	41	39.0	38	47.8	16 GMC-Rp
1.1/4	1.1/4	78.9	19.8	38.9	41.2	25.0	50	49.0	50	55.9	20 GMC-Rp
1.1/2	1.1/2	90.8	22.1	45.2	50.0	31.8	60	54.7	57	63.2	24 GMC-Rp

METRIC OD Tubes x Male ISO* Parallel Threads - RP

T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd A/F	G	H	Part No.
3	1/8	30.0	7.1	15.3	12.9	2.4	14	13.8	11	23.4	GMC 3-2Rp
3	1/4	35.3	11.2	15.3	12.9	2.4	19	18.0	11	28.7	GMC 3-4Rp
6	1/8	32.3	7.1	17.7	15.3	4.8	14	13.8	14	24.9	GMC 6-2Rp
6	1/4	37.6	11.2	17.7	15.3	4.8	19	18.0	14	30.2	GMC 6-4Rp
6	3/8	38.9	11.2	17.7	15.3	4.8	22	21.8	14	31.5	GMC 6-Rp
6	1/2	44.7	14.2	17.7	15.3	4.8	27	26.0	14	37.3	GMC 6-8Rp
8	1/8	33.2	7.1	18.6	16.2	4.0	14	13.8	16	25.7	GMC 8-2Rp
8	1/4	38.5	11.2	18.6	16.2	6.4	19	18.0	16	31.0	GMC 8-4Rp
8	3/8	39.8	11.2	18.6	16.2	6.4	22	21.8	16	32.3	GMC 8-6Rp
8	1/2	45.6	14.2	18.6	16.2	6.4	27	26.0	16	38.1	GMC 8-Rp
10	1/4	39.4	11.2	19.5	17.2	5.9	19	18.0	19	31.8	GMC 10-4Rp
10	3/8	40.6	11.2	19.5	17.2	7.6	22	21.8	19	33.0	GMC 10-6Rp
10	1/2	46.5	14.2	19.5	17.2	7.9	27	26.0	19	38.9	GMC 10-8Rp
12	1/4	42.6	11.2	22.0	22.8	5.9	22	18.0	22	32.5	GMC 12-4Rp
12	3/8	43.1	11.2	22.0	22.8	7.9	22	21.8	22	33.0	GMC 12-6Rp
12	1/2	49.0	14.2	22.0	22.8	9.5	27	26.0	22	38.9	GMC 12-8Rp
12	3/4	52.8	15.7	22.0	22.8	9.5	35	32.0	22	42.7	GMC 12Rp
16	3/8	43.9	11.2	22.0	24.4	7.9	24	21.8	25	33.8	GMC 16-6Rp
16	1/2	49.0	14.2	22.0	24.4	11.9	27	26.0	25	38.9	GMC 16-8Rp
20	1/2	50.5	14.2	22.0	26.0	11.9	30	26.0	28.5	40.4	GMC 20-8Rp
20	3/4	52.3	15.7	22.0	26.0	15.9	35	32.0	28.5	42.7	GMC 22-12Rp
22	3/4	52.3	15.7	22.0	26.0	15.9	35	32.0	32	42.7	GMC 20-16Rp
22	1	55.3	18.3	22.0	26.0	18.3	41	39.0	32	45.2	GMC 25-12Rp
25	3/4	57.5	15.7	26.5	31.3	15.9	35	32.0	38	45.2	GMC 20-16Rp
25	1	60.1	18.3	26.5	31.3	19.8	41	39.0	38	47.8	GMC 20-12Rp
28	1	70.1	18.3	36.6	36.6	19.8	41	39.0	46	49.3	GMC 28-16Rp
30	1.1/4	76.5	19.8	39.2	39.6	25.0	50	49.0	50	54.9	GMC 30-20Rp
32	1.1/4	78.9	19.8	41.6	42.0	25.0	50	49.0	50	55.9	GMC 32-20Rp
38	1.1/2	90.8	22.1	47.9	49.4	31.8	55	54.7	57	63.2	GMC 38-24Rp

NOTE: The ISO parallel Thread System RP shown on this page does not create pressure tight seal against the threads. The seal is made by metal to metal contact against the female part. A Soft metal (usually annealed copper) gasket between the fitting and the part face.

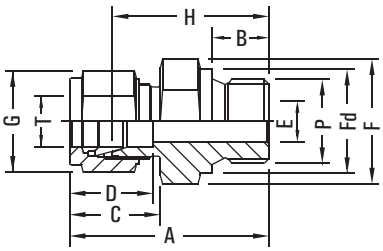
BORED-THROUGH FITTINGS FOR THERMOCOUPLE are available with ISO PARALLEL MALE THREADS. Add suffix "BT" to the above part numbers above.

* Reference Specifications : BS 2779 : ISO 228/1 : JIS B 0202 : DIN-ISO 228/1

MALE CONNECTOR

INCH OD Tubes x Male ISO* Parallel Threads - RS

T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	Part No..
1/8	1/8	30.0	7.1	15.3	12.7	2.4	14	13.7	11	23.4	2 GMC-Rs
1/8	1/4	35.3	11.2	15.3	12.7	2.4	19	18.0	11	28.7	2-4 GMCH-Rs
1/4	1/8	32.3	7.1	17.8	15.3	4.8	14	13.7	14	24.9	4-2 GMC-Rs
1/4	1/4	37.6	11.2	17.8	15.3	4.8	19	18.0	14	30.2	4 GMC-Rs
1/4	3/8	38.9	11.2	17.8	15.3	4.8	22	21.8	14	31.5	4-6 GMC-Rs
1/4	1/2	44.7	14.2	17.8	15.3	4.8	27	26.0	14	37.4	4-8 GMC-Rs
3/8	1/4	39.2	11.2	19.3	16.8	5.8	19	18.0	17	31.8	6-4 GMC-Rs
3/8	3/8	40.4	11.2	19.3	16.8	7.1	22	21.8	17	33.0	6 GMC-Rs
3/8	1/2	46.3	14.2	19.3	16.8	7.1	27	26.0	17	38.9	6-8 GMC-Rs
1/2	1/4	42.7	11.2	21.8	22.9	5.8	22	18.0	22	32.5	8-4 GMC-Rs
1/2	3/8	43.2	11.2	21.8	22.9	7.9	22	21.8	22	33.0	8-6 GMC-Rs
1/2	1/2	49.0	14.2	21.8	22.9	10.4	27	26.0	22	38.9	8 GMC-Rs
1/2	3/4	52.8	15.7	21.8	22.9	10.4	35	32.0	22	42.7	8-12 GMC-Rs
3/4	1/2	49.0	14.2	21.8	24.4	11.9	27	26.0	28.5	38.9	12-8 GMC-Rs
3/4	3/4	52.8	15.7	21.8	24.4	15.8	35	32.0	28.5	42.7	12 GMC-Rs
3/4	1	55.4	18.3	21.8	24.4	15.8	41	39.0	28.5	45.6	12-16 GMC-Rs
1	1/2	55.9	14.2	26.4	31.2	11.9	35	26.0	38	43.7	16-8 GMC-Rs
1	3/4	57.5	15.7	26.4	31.2	15.8	35	32.0	38	45.2	16-12 GMC-Rs
1	1	60.0	18.3	26.4	31.2	19.8	41	39.0	38	47.8	16 GMC-Rs
1.1/4	1.1/4	78.9	19.8	38.9	41.2	25.0	50	49.0	50	55.9	20 GMC-Rs
1.1/2	1.1/2	90.8	22.1	45.2	50.0	31.8	60	54.7	57	63.2	24 GMC-Rs



METRIC OD Tube x Male ISO* Parallel Threads - RS

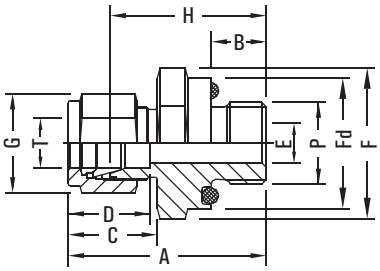
T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	Part No.
3	1/8	30.0	7.1	15.3	12.9	2.4	14	13.8	11	23.4	GMC 3-2 Rs
3	1/4	35.3	11.2	15.3	12.9	2.4	19	18.0	11	28.7	GMC 3-4 Rs
6	1/8	32.3	7.1	17.7	15.3	4.8	14	13.8	14	24.9	GMC 6-2 Rs
6	1/4	37.6	11.2	17.7	15.3	4.8	19	18.0	14	30.2	GMC 6-4 Rs
6	3/8	38.9	11.2	17.7	15.3	4.8	22	21.8	14	31.5	GMC 6- Rs
6	1/2	44.7	14.2	17.7	15.3	4.8	27	26.0	14	37.3	GMC 6-8 Rs
8	1/8	33.2	7.1	18.6	16.2	4.0	14	13.8	16	25.7	GMC 8-2 Rs
8	1/4	38.5	11.2	18.6	16.2	6.4	19	18.0	16	31.0	GMC 8-4 Rs
8	3/8	39.8	11.2	18.6	16.2	6.4	22	21.8	16	32.3	GMC 8-6 Rs
8	1/2	45.6	14.2	18.6	16.2	6.4	27	26.0	16	38.1	GMC 8 Rs
10	1/4	39.4	11.2	19.5	17.2	5.9	19	18.0	19	31.8	GMC 10-4 Rs
10	3/8	40.6	11.2	19.5	17.2	7.6	22	21.8	19	33.0	GMC 10-6 Rs
10	1/2	46.5	14.2	19.5	17.2	7.9	27	26.0	19	38.9	GMC 10-8 Rs
12	1/4	42.6	11.2	22.0	22.8	5.9	22	18.0	22	32.5	GMC 12-4 Rs
12	3/8	43.1	11.2	22.0	22.8	7.9	22	21.8	22	33.0	GMC 12-6 Rs
12	1/2	49.0	14.2	22.0	22.8	9.5	27	26.0	22	38.9	GMC 12-8 Rs
12	3/4	52.8	15.7	22.0	22.8	9.5	35	32.0	22	42.7	GMC 12 Rs
16	3/8	43.9	11.2	22.0	24.4	7.9	24	21.8	25	33.8	GMC 16-6 Rs
16	1/2	49.0	14.2	22.0	24.4	11.9	27	26.0	25	38.9	GMC 16-8 Rs
20	1/2	50.5	14.2	22.0	26.0	11.9	30	26.0	28.5	40.4	GMC 20-8 Rs
20	3/4	52.3	15.7	22.0	26.0	15.9	35	32.0	28.5	42.7	GMC 22-12 Rs
22	3/4	52.3	15.7	22.0	26.0	15.9	35	32.0	32	42.7	GMC 20-16 Rs
22	1	55.3	18.3	22.0	26.0	18.3	41	39.0	32	45.2	GMC 25-12 Rs
25	3/4	57.5	15.7	26.5	31.3	15.9	35	32.0	38	45.2	GMC 20-16 Rs
25	1	60.1	18.3	26.5	31.3	19.8	41	39.0	38	47.8	GMC 20-12 Rs
28	1	70.1	18.3	36.6	36.6	19.8	41	39.0	46	49.3	GMC 28-16 Rs
30	1.1/4	76.5	19.8	39.2	39.6	25.0	50	49.0	50	54.9	GMC 30-20 Rs
32	1.1/4	78.9	19.8	41.6	42.0	25.0	50	49.0	50	55.9	GMC 32-20 Rs
38	1.1/2	90.8	22.1	47.9	49.4	31.8	55	54.7	57	63.2	GMC 38-24 Rs

* Reference Specifications : BS 2779 : ISO 228/1 : JIS B0202 : DIN-ISO 228/1

NOTE : The ISO Parallel Thread system shown on this page does not create pressure tight seal against the threads. The seal is made by a bounded washer seal between the fitting and female part face. A soft metal (Copper) Gasket way also be used.

O SEAL MALE CONNECTOR

INCH OD Tubes x Male ISO* Parallel Threads

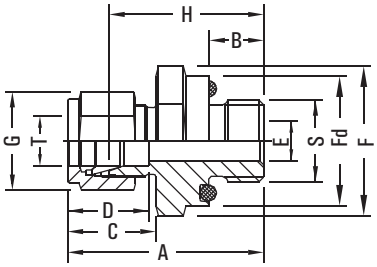


T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	O Ring Part No.	Part No.
1/8	1/8	32.8	7.1	15.3	12.7	2.4	19	18.8	11	26.2	2 OPN	2 GOMC-R
1/4	1/8	35.0	7.1	17.8	15.3	4.8	19	18.8	14	27.7	2 OPN	4-2 GOMC-R
1/4	1/4	40.0	11.2	17.8	15.3	7.1	24	23.6	14	32.6	4OPN	4 GOMC-R
3/8	1/4	41.5	11.2	19.3	16.8	7.1	24	23.6	17	34.1	4 OPN	6-4 GOMC-R
3/8	3/8	42.2	11.2	19.3	16.8	7.1	30	29.8	17	34.8	6 OPN	6 GOMC-R
3/8	1/2	47.7	14.2	19.3	16.8	9.6	32	31.8	17	40.3	8 OPN	6-8 GOMC-R
1/2	3/8	44.5	10.4	21.8	22.9	10.4	30	29.8	22	34.4	6 OPN	8-6 GOMC-R
1/2	1/2	50.4	14.2	21.8	22.9	11.9	32	31.8	22	40.3	8 OPN	8 GOMC-R
5/8	1/2	50.4	14.2	21.8	24.4	11.9	32	31.8	22	40.3	8 OPN	10-8 GOMC-R
3/4	1/2	50.4	14.2	21.8	24.4	15.8	32	31.8	28.5	40.3	8 OPN	12-8 GOMC-R
3/4	3/4	53.5	15.7	21.8	24.4	15.8	38	37.8	28.5	43.4	12 OPN	12 GOMC-R
1	3/4	58.2	15.7	26.4	31.2	22.3	38	37.8	38	46.0	12OPN	16-12 GOMC-R
1	1	62.2	18.3	26.4	31.2	27.6	45	44.0	38	50.0	16 OPN	16 GOMC-R
1.1/4	1.1/4	77.6	12.0	38.9	41.4	27.6	55	54.0	50	55.6	20 OPN	20 GOMC-R
1.1/2	1.1/2	88.9	12.0	45.2	50.0	34.0	60	58.0	57	61.7	24 OPN	24 GOMC-R

METRIC OD Tubes x Male ISO* Parallel Threads

T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	O Ring Part No.	Part No.
3	1/8	32.8	7.1	15.3	12.9	2.4	19	18.8	11	26.2	2 OPN	GOMC 3-2 R
3	1/4	37.6	11.2	15.3	12.9	2.4	24	23.8	11	31.0	4 OPN	GOMC 3-4 R
6	1/4	40.1	11.2	17.7	15.3	4.8	24	23.8	14	32.7	4 OPN	GOMC 6-4 R
6	3/8	40.8	11.2	17.7	15.3	4.8	30	29.8	14	33.4	6 OPN	GOMC 6 R
8	1/4	40.9	11.2	18.6	16.2	6.3	24	23.8	16	33.4	4 OPN	GOMC 8-4 R
10	1/4	41.0	11.2	19.5	17.2	7.1	24	23.8	17	33.4	4 OPN	GOMC 10-4 R
10	3/8	42.6	11.2	19.5	17.2	7.1	30	29.8	17	35.0	6 OPN	GOMC 10-6 R
10	1/2	48.0	14.2	19.5	17.2	7.9	32	31.8	17	40.4	8 OPN	GOMC 10-8 R
12	1/4	44.3	11.2	22.0	22.8	7.1	24	21.8	22	34.2	4 OPN	GOMC 12-4 R
12	3/8	45.1	11.2	22.0	22.8	7.9	30	29.8	22	34.0	6 OPN	GOMC 12-6 R
12	1/2	50.5	14.3	22.0	22.8	9.5	32	31.8	22	40.4	8 OPN	GOMC 12-8 R
16	1/2	50.5	14.3	22.0	24.4	11.9	32	31.8	25	40.4	8 OPN	GOMC 16-8 R
20	3/4	55.1	15.7	22.0	26.0	15.8	38	37.0	32	45.0	12 OPN	GOMC 20-2 R
25	3/4	58.1	15.7	26.5	31.3	15.8	38	37.0	38	45.8	12 OPN	GOMC 25-2 R
25	1	62.3	18.3	26.5	31.3	19.8	45	44.0	38	50.0	16 OPN	GOMC 25-16 R

* Reference Specifications : BS 2779 : ISO 228/1 : JIS B0202 : DIN-ISO 228/1



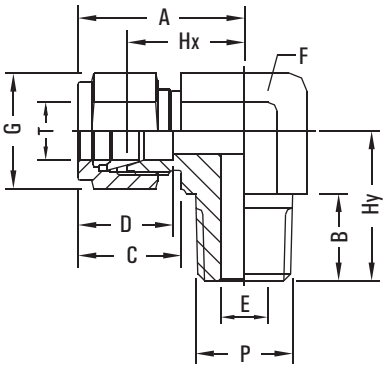
INCH OD Tube x Male Straight Threads - UNF

T Tube OD	S Thread Male	A	B	C	D	E min.	F A/F	Fd	G A/F	H	O Ring Part No.	Part No.
1/8	5/16 -24	32.8	8.6	15.3	12.7	2.4	14	13.8	11	26.2	1 OPU	2 GOMC-U
1/4	7/16 -20	38.4	10.4	17.8	15.3	4.8	19	18.8	14	31.0	2 OPU	4 GOMC-U
5/16	1/2 -20	40.6	11.2	18.5	16.3	6.3	22	21.8	16	33.3	3 OPU	5 GOMC-U
3/8	9/16 -18	42.4	12.0	19.3	16.8	7.1	24	23.6	17	35.0	4 OPU	6 GOMC-U
1/2	3/4 -16	46.0	12.0	21.8	22.9	10.4	28.5	28.0	22	35.8	6 OPU	8 GOMC-U
3/4	11/16 -12	52.4	14.3	21.8	24.4	15.8	38	37.8	28.5	42.2	12 OPU	12 GOMC-U
1	15/16-12	58.2	14.3	26.4	31.2	22.3	45	44.0	38	46.0	16 OPU	16 GOMC-U
1.1/4	15/8-12	76.2	18.3	38.9	41.4	27.6	55	54.0	50	54.1	20 OPU	20 GOMC-U
1.1/2	17/8 -12	86.6	19.8	45.2	50.0	34.0	60	58.0	57	59.4	24 OPU	24 GOMC-U

MALE ELBOW

INCH OD Tubes x Male NPT Thread

T Tube OD	P NPT Male	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	Part No.
1/16	1/16	19.0	9.6	10.9	8.6	1.3	11	11	15.3	17.8	1 GME-N
1/16	1/8	19.0	9.6	10.9	8.6	1.3	11	11	15.3	17.8	1-2 GME-N
1/8	1/8	23.6	9.6	15.3	12.7	2.4	11	11	17.0	17.8	2 GME-N
1/8	1/4	24.6	14.3	15.3	12.7	2.4	14	11	18.0	23.4	2-4 GME-N
1/4	1/8	26.9	9.6	17.8	5.3	4.8	14	14	19.6	18.8	4-2 GME-N
1/4	1/4	26.9	14.3	17.8	15.3	4.8	14	14	19.6	23.4	4 GME-N
1/4	3/8	29.7	14.3	17.8	15.3	4.8	19	14	22.4	26.2	4-6 GME-N
1/4	1/2	31.8	19.1	17.8	15.3	4.8	22	14	24.4	33.0	4-8 GME-N
5/16	1/4	28.7	9.6	18.5	16.3	6.3	14	16	21.3	24.4	5-4 GME-N
3/8	1/8	30.5	9.6	19.3	16.8	4.8	14	17	23.1	20.9	6-2 GME-N
3/8	1/4	30.5	14.3	19.3	16.8	7.1	17	17	23.1	25.4	6-4 GME-N
3/8	3/8	31.2	14.3	19.3	16.8	7.1	19	17	23.9	26.2	6 GME-N
3/8	1/2	33.3	19.1	19.3	16.8	7.1	22	17	25.9	33.0	6-8 GME-N
1/2	1/4	36.0	14.3	21.8	22.9	4.8	22	22	25.9	28.2	8-4 GME-N
1/2	3/8	36.0	14.3	21.8	22.9	9.6	22	22	25.9	28.2	8-6 GME-N
1/2	1/2	36.0	19.1	21.8	22.9	10.4	22	22	25.9	33.0	8 GME-N
1/2	3/4	39.9	19.1	21.8	22.9	10.4	27	22	29.7	36.8	8-12 GME-N
5/8	1/2	38.1	19.1	21.8	24.4	11.9	24	25	27.9	35.0	10-8 GME-N
3/4	1/2	39.9	19.1	21.8	24.4	11.9	27	28.5	29.7	36.8	12-8 GME-N
3/4	3/4	39.9	19.1	21.8	24.4	15.8	27	28.5	29.7	36.8	12 GME-N
7/8	3/4	44.7	19.1	21.8	25.9	15.8	35	32	34.5	41.6	14-12 GME-N
1	3/4	49.0	19.1	26.4	31.2	15.8	35	38	36.8	41.6	16-12 GME-N
1	1	49.0	23.8	26.4	31.2	22.3	35	38	36.8	46.5	16 GME-N
1.1/4	1.1/4	66.5	23.8	38.8	41.1	27.6	46	50	44.5	47.8	20 GME-N
1.1/2	1.1/2	78.0	26.2	45.2	50.0	34.0	55	57	50.8	60.4	24 GME-N
2	2	107.2	26.9	62.7	67.6	46.0	70	76	69.9	70.6	32 GME-N



INCH OD Tubes x Male ISO* Tapered Pipe Threads

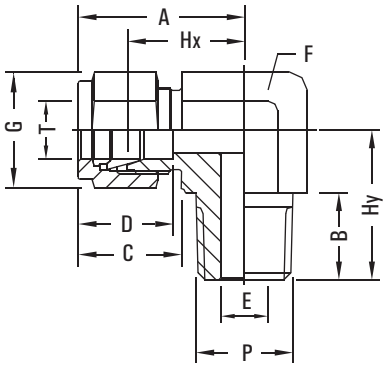
T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	Part No.
1/8	1/8	23.6	9.6	15.3	12.7	2.4	11	11	17.0	17.8	2 GME-Rx
1/8	1/4	24.6	14.3	15.3	12.7	2.4	14	11	18.0	23.4	2-4 GME-Rx
1/4	1/8	26.9	9.6	17.8	5.3	4.8	14	14	19.6	18.8	4-2 GME-Rx
1/4	1/4	26.9	14.3	17.8	15.3	4.8	14	14	19.6	23.4	4 GME-Rx
1/4	3/8	29.7	14.3	17.8	15.3	4.8	19	14	22.4	26.2	4-6 GME-Rx
1/4	1/2	31.8	19.1	17.8	15.3	4.8	22	14	24.4	33.0	4-8 GME-Rx
3/8	1/8	30.5	9.6	19.3	16.8	4.8	14	17	23.1	20.9	6-2 GME-Rx
3/8	1/4	30.5	14.3	19.3	16.8	7.1	17	17	23.1	25.4	6-4 GME-Rx
3/8	3/8	31.2	14.3	19.3	16.8	7.1	19	17	23.9	26.2	6 GME-Rx
3/8	1/2	33.3	19.1	19.3	16.8	7.1	22	17	25.9	33.0	6-8 GME-Rx
1/2	1/4	36.0	14.3	21.8	22.9	4.8	22	22	25.9	28.2	8-4 GME-Rx
1/2	3/8	36.0	14.3	21.8	22.9	9.6	22	22	25.9	28.2	8-6 GME-Rx
1/2	1/2	36.0	19.1	21.8	22.9	10.4	22	22	25.9	33.0	8 GME-Rx
1/2	3/4	39.9	19.1	21.8	22.9	10.4	27	22	29.7	36.8	8-12 GME-Rx
3/4	1/2	39.9	19.1	21.8	24.4	11.9	27	28.5	29.7	36.8	12-8 GME-Rx
3/4	3/4	39.9	19.1	21.8	24.4	15.8	27	28.5	29.7	36.8	12 GME-Rx
1	3/4	49.0	19.1	26.4	31.2	15.8	35	38	36.8	41.6	16-12 GME-Rx
1	1	49.0	23.8	26.4	31.2	22.3	35	38	36.8	46.5	16 GME-Rx
1.1/4	1.1/4	66.5	23.8	38.8	41.1	27.6	46	50	44.5	47.8	20 GME-Rx
1.1/2	1.1/2	78.0	26.2	45.2	50.0	34.0	55	57	50.8	60.4	24 GME-Rx

* Reference Specifications BS 21: ISO 7/1 : JIS B 0203 : DIN 2999 : IS 554

NOTE : The combination of tube OD and male threads are indicative of popular sizes. Other combinations, not shown, are available . Please Consult us.

MALE ELBOW

METRIC OD Tubes x Male NPT Threads



T Tube OD	P NPT Male	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	Part No.
3	1/8	23.6	9.6	15.3	12.9	2.4	11	11	17.0	17.8	GME-3-2N
3	1/4	24.6	14.3	15.3	12.9	2.4	14	11	18.0	23.4	GME-3-4N
6	1/8	27.0	9.6	17.7	15.3	4.8	14	14	19.6	18.8	GME-6-2N
6	1/4	27.0	14.3	17.7	15.3	4.8	14	14	19.6	23.4	GME-6-4N
6	3/8	29.8	14.3	17.7	15.3	4.8	19	14	22.4	26.2	GME-6N
6	1/2	31.8	19.1	17.7	15.3	4.8	22	14	24.4	33.0	GME-6-8N
8	1/8	28.8	9.6	18.6	16.2	4.8	14	16	21.3	19.8	GME-8-2N
8	1/4	28.8	14.3	18.6	16.2	6.3	14	16	21.3	24.4	GME-8-4N
8	3/8	30.6	14.3	18.6	16.2	6.3	19	16	23.1	26.2	GME-8-6N
8	1/2	32.6	19.1	18.6	16.2	6.3	22	16	25.1	33.0	GME-8N
10	1/8	31.5	9.6	19.5	17.2	4.8	17	19	23.9	21.6	GME-10-2N
10	1/4	31.5	14.3	19.5	17.2	7.1	17	19	23.9	26.2	GME-10-4N
10	3/8	31.5	14.3	19.5	17.2	7.9	19	19	23.9	26.2	GME-10-6N
10	1/2	33	19.1	19.5	17.2	7.9	22	19	25.9	33.0	GME-10-8N
12	1/4	36.0	14.3	22.0	22.8	7.1	22	22	25.9	26.2	GME-12-4N
12	3/8	36.0	14.3	22.0	22.8	9.5	22	22	25.9	38.2	GME-12-6N
12	1/2	36.0	19.1	22.0	22.8	9.5	22	22	25.9	33.0	GME-12-8N
12	3/4	39.8	19.1	22.0	22.8	9.5	27	22	29.7	36.8	GME-12N
15	1/2	38.0	19.1	22.0	24.4	11.9	24	25	27.9	35.1	GME-15-8N
16	1/2	38.0	19.1	22.0	24.4	11.9	24	25	27.9	35.1	GME-16-8N
16	3/4	39.8	19.1	22.0	24.4	27.7	27	25	29.7	36.8	GME-16-12N
18	1/2	39.8	19.1	22.0	24.4	11.9	27	30	29.7	36.8	GME-18-8N
18	3/4	39.8	19.1	22.0	24.4	15.1	27	30	29.7	36.8	GME-18-12N
20	1/2	44.6	19.1	22.0	26.0	11.9	35	32	34.5	41.7	GME-20-8N
20	3/4	44.6	19.1	22.0	26.0	15.9	35	32	34.5	41.7	GME-20-12N
22	3/4	44.6	19.1	22.0	26.0	15.9	35	32	34.5	41.7	GME-22-12N
22	1	44.6	23.9	22.0	26.0	18.3	35	32	34.5	46.5	GME-22-16N
25	3/4	49.1	19.1	26.5	31.3	59.9	35	38	36.8	41.7	GME-25-12N
25	1	41.1	23.9	26.5	31.3	21.8	35	38	36.8	46.5	GME-25-16N
30	1.1/4	69.9	23.9	39.2	39.6	26.2	45	50	48.3	53.1	GME-30-20N
32	1.1/4	72.3	23.9	41.6	42.0	27.6	45	50	49.3	53.1	GME-32-20N
38	1.1/2	84.0	26.2	47.9	49.4	33.7	55	57	56.4	60.4	GME-38-24N

METRIC OD Tubes x Male ISO* Tapered Pipe Threads

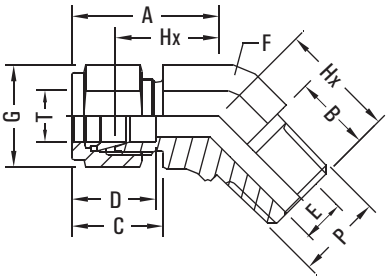
T Tube OD	P ISO Male	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	Part No.
3	1/8	23.6	9.6	15.3	12.9	2.4	11	11	17.0	17.8	GME-3-2Rx
3	1/4	24.6	14.3	15.3	12.9	2.4	14	11	18.0	23.4	GME-3-4Rx
6	1/8	27.0	9.6	17.7	15.3	4.8	14	14	19.6	18.8	GME-6-2Rx
6	1/4	27.0	14.3	17.7	15.3	4.8	14	14	19.6	23.4	GME-6-4Rx
6	3/8	29.8	14.3	17.7	15.3	4.8	19	14	22.4	26.2	GME-6Rx
6	1/2	31.8	19.1	17.7	15.3	4.8	22	14	24.4	33.0	GME-6-8Rx
8	1/4	28.8	14.3	18.6	16.2	6.3	14	16	21.3	24.4	GME-8-4Rx
8	3/8	30.6	14.3	18.6	16.2	6.3	19	16	23.1	26.2	GME-8-6Rx
8	1/2	32.6	19.1	18.6	16.2	6.3	22	16	25.1	33.0	GME-8Rx
10	1/4	31.5	14.3	19.5	17.2	7.1	17	19	23.9	26.2	GME-10-4Rx
10	3/8	31.5	14.3	19.5	17.2	7.9	19	19	23.9	26.2	GME-10-6Rx
10	1/2	33	19.1	19.5	17.2	7.9	22	19	25.9	33.0	GME-10-8Rx
12	1/4	36.0	14.3	22.0	22.8	7.1	22	22	25.9	26.2	GME-12-4Rx
12	3/8	36.0	14.3	22.0	22.8	9.5	22	22	25.9	38.2	GME-12-6Rx
12	1/2	36.0	19.1	22.0	22.8	9.5	22	22	25.9	33.0	GME-12-8Rx
15	1/2	38.0	19.1	22.0	24.4	11.9	24	25	27.9	35.1	GME-15-8Rx
16	1/2	38.0	19.1	22.0	24.4	11.9	24	25	27.9	35.1	GME-16-8Rx
16	3/4	39.8	19.1	22.0	24.4	27.7	27	25	29.7	36.8	GME-16-12Rx
22	3/4	44.6	19.1	22.0	26.0	15.9	35	32	34.5	41.7	GME-22-12Rx
22	1	44.6	23.9	22.0	26.0	18.3	35	32	34.5	46.5	GME-22-16Rx
25	3/4	49.1	19.1	26.5	31.3	59.9	35	38	36.8	41.7	GME-25-12Rx
25	1	41.1	23.9	26.5	31.3	21.8	35	38	36.8	46.5	GME-25-16Rx
30	1.1/4	69.9	23.9	39.2	39.6	26.2	45	50	48.3	53.1	GME-30-20Rx
32	1.1/4	72.3	23.9	41.6	42.0	27.6	45	50	49.3	53.1	GME-32-20Rx
38	1.1/2	84.0	26.2	47.9	49.4	33.7	55	57	56.4	60.4	GME-38-24Rx

* Reference Specifications: BS 21: ISO 7/1 : JIS B 0203 : DIN 2999 : IS 554

45 DEG. MALE ELBOW

INCH OD Tubes x Male NPT Threads

T Tube OD	P NPT Male	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	Part No.
1/4	1/8	24.6	9.6	17.8	15.3	4.8	14	14	17.3	16.5	4-2 GDME-N
1/4	1/4	24.6	14.3	17.8	15.3	4.8	14	14	17.3	21.0	4 GDME-N
3/8	1/8	27.9	9.6	19.3	16.8	4.8	14	17	20.6	18.3	6-2 GDME-N
3/8	1/4	27.9	14.3	19.3	16.8	7.1	17	17	20.6	22.9	6-4 GDME-N
3/8	3/8	29.2	14.3	19.3	16.8	7.1	19	17	21.8	24.1	6 GDME-N
1/2	3/8	32.0	14.3	21.8	22.9	9.6	22	22	21.8	24.1	8-6 GDME-N
1/2	1/2	32.0	19.1	21.8	22.9	10.4	22	22	21.8	29.0	8 GDME-N
3/4	3/4	34.0	19.1	21.8	24.4	15.8	27	28.5	23.9	31.8	12 GDME-N
1	1	40.4	23.8	26.4	31.2	22.3	35	38	26.2	37.8	16 GDME-N

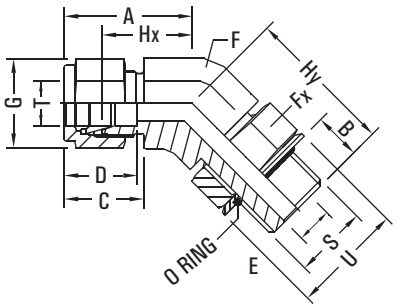


45 DEG. POSITIONABLE MALE ELBOW

INCH OD Tube x SAE/MS Straight Threads

T Tube OD	P SAE/MS Male	A	B	C	D	E min.	F	Fx A/F	G A/F	Hx A/F	Hy	U	O Ring Part No.	Part No.
1/4	7/16-20	25.7	9.9	17.8	15.3	4.8	14	14	14	18.3	25.6	16.5	4 OPU	4 GDPME-U
3/8	9/16-18	27.9	11.2	19.3	16.8	7.1	16	17	17	20.6	28.2	20.0	6 OPU	6 GDPME-U
1/2	3/4-16	32.0	12.7	21.8	22.9	10.4	22	22	22	21.8	32.3	25.7	8 OPU	8 GDPME-U
3/4	11/16-12	39.9	16.8	21.8	24.4	15.8	27	32	28.5	29.7	47.3	36.6	12 OPU	12 GDPME-U
1	15/16-12	47.5	16.8	26.4	31.2	19.8	35	38	38	35.3	50.6	44.0	16 OPU	16 GDPME-U

* Reference Specifications SAE Screw Thread standard conforms to American standard B1.1. Unified screw threads.



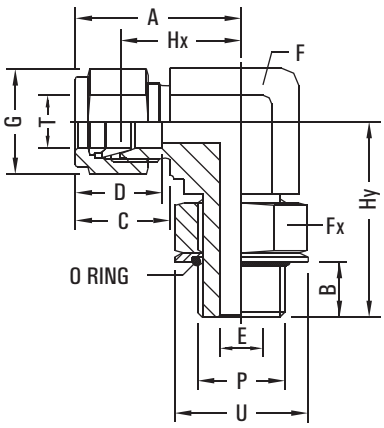
INCH OD Tube x Male ISO* Parallel Threads

T Tube OD	P ISO Male	A	B	C	D	E min.	F	Fx A/F	G A/F	Hx A/F	Hy	U	O Ring Part No.	Part No.
1/4	1/4	25.7	9.9	17.8	15.3	4.8	14	14	14	18.3	25.6	16.5	4 OPU	4 GDPME-U
3/8	3/8	27.9	11.2	19.3	16.8	7.1	16	17	17	20.6	28.2	20.0	6 OPU	6 GDPME-U
1/2	1/2	32.0	12.7	21.8	22.9	10.4	22	22	22	21.8	32.3	25.7	8 OPU	8 GDPME-U
3/4	3/4	39.9	16.8	21.8	24.4	15.8	27	32	28.5	29.7	47.3	36.6	12 OPU	12 GDPME-U
1	1	47.5	16.8	26.4	31.2	19.8	35	38	38	35.3	50.6	44.0	16 OPU	16 GDPME-U

* Reference Specifications BS 2779 : ISO 228/1 : JIS B0202 : DIN-ISO 228/1

POSITIONABLE MALE ELBOW

INCH OD Tubes X Male ISO* Parallel Threads



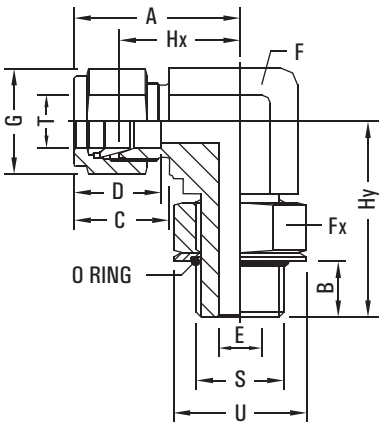
T Tube OD	P ISO Male	Ax	B	C	D	E min.	F	Fx A/F	G A/F	Hx A/F	Hy	U	O Ring Part No.	Part No.
1/4	1/8	27.0	8.2	17.8	15.3	4.0	14	14	14	19.6	26.4	17.3	2 Opn	4-2 GPME-R
1/4	1/4	29.0	9.2	17.8	15.3	4.8	16	19	14	21.6	32.3	22.9	4 Opn	4 GPME-R
3/8	1/4	30.5	9.2	19.3	16.8	5.8	16	19	17	23.2	32.3	22.9	4 Opn	6-4 GPME-R
3/8	3/8	33.0	9.2	19.3	16.8	7.1	22	22	17	25.9	37.0	26.4	6 Opn	6 GPME-R
1/2	1/4	36.0	9.2	21.8	22.9	5.8	22	19	22	25.9	35.0	22.9	4 Opn	8-4 GPME-R
1/2	3/8	36.0	9.4	21.8	22.9	7.8	22	22	22	25.9	37.0	26.4	6 Opn	8-6 GPME-R
1/2	1/2	38.1	13.0	21.8	24.4	10.4	24	27	22	27.9	43.4	32.0	8 Opn	8 GPME-R
5/8	1/2	38.1	13.0	21.8	24.4	10.4	24	27	25	27.9	43.4	32.0	8 Opn	10-8 GPME-R
3/4	1/2	39.9	13.0	21.8	24.4	10.4	27	27	28.5	29.7	45.2	32.0	8 Opn	12-8 GPME-R
3/4	3/4	39.9	13.0	21.8	24.4	15.8	27	35	28.5	29.7	48.8	41.2	12 Opn	12 GPME-R
1	3/4	49.0	13.0	26.4	31.2	15.8	35	35	38	36.8	53.3	41.2	12 Opn	16-12 GPME-R
1	1	49.0	14.0	26.4	31.2	19.8	35	41	38	36.8	53.6	48.5	16 Opn	16 GPME-R

METRIC OD Tubes X Male ISO* Parallel Threads

T Tube OD	P ISO Male	Ax	B	C	D	E min.	F	Fx A/F	G A/F	Hx A/F	Hy	U	O Ring Part No.	Part No.
6	1/8	27.0	8.1	17.7	15.3	4.0	14	14	14	19.6	26.4	17.3	2 Opn	GPME 6-2R
6	1/4	29.0	9.1	17.7	15.3	4.8	16	19	14	21.6	32.3	22.9	4 Opn	GPME 6-4R
8	1/8	28.8	8.1	18.6	16.2	4.0	14	14	16	21.3	27.4	17.3	2 Opn	GPME 8-2R
8	1/4	29.9	9.1	18.6	16.2	5.9	16	19	16	22.4	32.2	22.9	4 Opn	GPME 8-4R
10	1/4	33.5	9.1	19.5	17.2	5.9	19	19	19	25.9	35.0	22.9	4 Opn	GPME 10-4R
10	3/8	33.5	9.4	19.5	17.2	7.9	19	22	19	25.9	37.1	26.4	6 Opn	GPME 10-6R
12	3/8	36.0	9.4	22.0	22.8	7.9	22	22	22	25.9	37.1	26.4	6 Opn	GPME 12-6R
12	1/2	38.0	13.0	22.0	22.8	9.5	24	27	22	27.9	43.4	32.0	8 Opn	GPME 12-8R
12	3/4	39.8	13.0	22.0	22.8	9.5	27	35	22	29.7	48.8	41.1	12 Opn	GPME 12R
16	1/2	38.1	13.0	22.0	24.4	11.9	27	27	28.5	29.7	45.2	32.0	8 Opn	GPME 16-8R
22	3/4	44.6	13.0	22.0	26.0	15.8	27	35	28.5	34.5	48.8	41.2	12 Opn	GPME 22-12R
25	3/4	49.0	13.0	26.5	31.3	15.8	35	35	38	36.8	53.3	41.2	12 Opn	GPME 25-12R
25	1	49.0	14.0	26.5	31.3	21.8	35	41	38	36.8	53.6	48.5	16 Opn	GPME 25-16R

* Reference Specifications : BS 2779 : ISO 228/1 : JIS B0202 : DIN-ISO 228/1

INCH OD Tube x SAE/MS Straight Threads



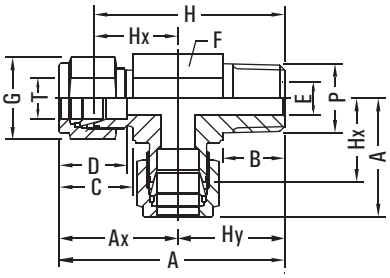
T Tube OD	P ISO Male	Ax	B	C	D	E min.	F	Fx A/F	G A/F	Hx	Hy	U	O Ring Part No.	Part No.
1/4	7/16-20	28.5	9.9	17.8	15.3	4.8	14	14	14	21.0	28.5	16.5	4 OPU	4 GPME-U
1/4	9/16-18	30.5	11.2	17.8	15.3	4.8	16	17	14	23.1	32.3	20.0	6 OPU	4-6 GPME-U
3/8	9/16-18	32.0	11.2	19.3	16.8	7.1	16	17	17	24.6	32.3	20.0	6 OPU	6 GPME-U
3/8	3/4-16	34.8	12.7	19.3	16.8	7.1	22	22	17	27.4	37.8	25.6	8 OPU	6-8 GPME-U
1/2	3/4-16	37.6	12.7	21.8	22.9	10.4	22	22	22	27.4	37.8	25.6	8 OPU	8 GPME-U
5/8	7/16-14	39.6	14.3	21.8	24.4	12.7	24	25	25	29.5	43.4	29.5	10 OPU	10 GPME-U
3/4	11/16-12	41.4	16.8	21.8	24.4	15.8	27	32	28.5	31.2	48.8	36.6	12 OPU	12 GPME-U
7/8	11/16-12	43.2	16.8	21.8	25.9	18.3	30	32	32	33	50.5	40.4	14 OPU	14 GPME-U
1	15/16-12	50.5	16.8	26.4	31.2	22.3	35	35	38	38.4	53.6	44.0	16 OPU	16 GPME-U
1.1/4	15/8-12	67.8	16.8	38.9	41.2	27.6	46	50	50	45.7	58.2	54.9	20 OPU	20 GPME-U
1.1/2	17/8-12	78.0	16.8	45.2	50.0	34.0	50	55	60	50.8	60.4	62.5	24 OPU	24 GPME-U

* Reference Specifications SAE Screw Thread standard conforms to American standard B1.1. Unified screw threads.

MALE RUN TEE

INCH OD Tubes X Male NPT Threads

T Tube OD	P NPT Male	A	Ax	B	C	D	E min.	F	G A/F	H A/F	Hx	Hy	Part No.
1/8	1/8	41.4	23.6	9.6	15.3	12.7	2.4	11	11	34.8	17.0	17.8	2 GMRT-N
1/8	1/4	48.0	24.6	14.3	15.3	12.7	2.4	14	11	41.4	18.0	23.4	2-4 GMRT-N
1/4	1/8	45.7	26.9	9.6	17.8	15.3	4.8	14	14	38.4	19.6	18.8	4-2 GMRT-N
1/4	1/4	50.3	26.9	14.3	17.8	15.3	4.8	14	14	43	19.6	23.4	4 GMRT-N
1/4	3/8	55.9	29.7	14.3	17.8	15.3	4.8	19	14	48.8	22.4	26.2	4-6 GMRT-N
1/4	1/2	64.8	31.8	19.1	17.8	15.3	4.8	22	14	57.4	24.4	33.0	4-8 GMRT-N
3/8	1/4	55.9	30.5	14.3	19.3	16.8	7.1	17	17	48.5	23.1	25.4	6-4 GMRT-N
3/8	3/8	57.4	31.2	14.3	19.3	16.8	7.1	19	17	50.1	23.9	26.2	6 GMRT-N
3/8	1/2	66.0	33.0	19.1	19.3	16.8	7.1	22	17	58.9	25.9	33.0	6-8 GMRT-N
1/2	1/4	64.2	36.0	14.3	21.8	22.9	4.8	22	22	54.1	25.9	28.2	8-4 GMRT-N
1/2	3/8	64.2	36.0	14.3	21.8	22.9	9.6	22	22	54.1	25.9	28.2	8-6 GMRT-N
1/2	1/2	69.0	36.0	19.1	21.8	22.9	10.4	22	22	58.9	25.9	33.0	8 GMRT-N
5/8	1/2	73.1	38.1	19.1	21.8	24.4	11.9	22	25	62.9	27.9	35.0	10-8 GMRT-N
3/4	1/2	76.7	39.9	19.1	21.8	24.4	11.9	27	29	66.5	29.7	36.8	12-8 GMRT-N
3/4	3/4	76.7	39.9	19.1	21.8	24.4	15.8	27	29	66.5	29.7	36.8	12 GMRT-N
1	3/4	90.6	49.0	19.1	26.4	31.2	15.8	35	38	78.4	36.8	41.6	16-12 GMRT N
1	1	95.5	49.0	23.8	26.4	31.2	22.3	35	38	83.3	36.8	46.5	16 GMRT-N
1.1/4	1.1/4	114.1	66.5	23.8	38.8	41.1	27.6	46	50	92.1	44.5	47.6	20 GMRT-N
1.1/2	1.1/2	138.4	78.0	26.2	45.2	50.0	34.0	55	57	111.2	50.8	60.4	24 GMRT-N



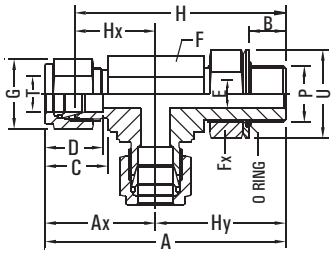
METRIC OD Tubes X Male NPT Threads

T Tube OD	P NPT Male	A	Ax	B	C	D	E min.	F	G A/F	H A/F	Hx	Hy	Part No.
3	1/8	41.4	23.6	9.6	15.3	12.9	2.4	11	11	34.8	17.0	17.8	GMRT 3-2N
3	1/4	48.0	24.6	14.3	15.3	12.9	2.4	14	11	41.4	18.0	23.4	GMRT 3-4N
6	1/8	45.8	27.0	9.6	17.7	15.3	4.8	14	14	38.9	19.6	18.8	GMRT 6-2N
6	1/4	50.4	27.0	14.3	17.7	15.3	4.8	14	14	43.0	19.6	23.4	GMRT 6-4N
6	3/8	56.0	29.8	14.3	17.7	15.3	4.8	19	14	48.6	22.4	26.2	GMRT 6-N
8	1/4	53.2	28.8	14.3	18.6	16.2	6.3	14	16	45.7	21.3	24.4	GMRT 8-4N
8	3/8	56.8	30.6	14.3	18.6	16.2	6.3	19	16	49.3	23.1	26.2	GMRT 8-6N
8	1/2	65.6	32.6	19.1	18.6	16.2	6.3	22	16	58.1	25.1	33.0	GMRT 8-N
10	1/4	57.7	31.5	14.3	19.5	17.2	7.1	17	19	50.1	23.9	26.2	GMRT 10-4N
10	3/8	57.7	31.5	14.3	19.5	17.2	7.9	19	19	50.1	23.9	26.2	GMRT 10-6N
10	1/2	66.5	33.5	19.1	19.5	17.2	7.9	22	19	58.9	25.9	33.0	GMRT 10-8N
12	1/4	62.2	36.0	14.3	22.0	22.8	7.1	22	22	52.1	25.9	26.2	GMRT 12-4N
12	3/8	62.2	36.0	14.3	22.0	22.8	9.5	22	22	52.1	25.9	28.2	GMRT 12-6N
12	1/2	69.0	36.0	19.1	22.0	22.8	9.5	22	22	58.9	25.9	33.0	GMRT 12-8N
16	1/2	73.1	38.0	19.1	22.0	24	11.9	24	25	64.0	27.9	35.1	GMRT 16-8N
25	3/4	90.8	49.1	19.1	26.5	31.3	15.8	35	38	78.5	36.8	41.7	GMRT 25-12N
25	1	95.6	49.1	23.8	26.5	31.3	21.8	35	38	83.3	36.8	46.5	GMRT 25-16N
30	1.1/4	120.0	66.9	23.8	39.2	39.6	26.2	45	50	101.4	48.3	53.1	GMRT 30-20N
32	1.1/4	125.4	72.3	23.8	41.6	42.0	27.6	45	50	102.4	49.3	53.1	GMRT 32-20N
38	1.1/2	144.4	84.0	26.2	47.9	50.0	33.7	55	57	116.8	56.4	60.4	GMRT 38-24N

NOTE : The combination of tube OD and male threads are indicative of popular sizes. Other combinations, not shown, are available . Please Consult us.

POSITIONABLE MALE RUN TEE

INCH OD Tubes X Male ISO* Parallel Threads



T Tube OD	P ISO Male	A	Ax	B	C	D	E min.	F A/F	Fx A/F	G A/F	H	Hx	Hy	U	O Ring Part No.	Part No.
1/4	1/8	53.4	27.0	8.2	17.8	15.3	4.0	14	14	14	46.0	19.6	26.4	17.3	2 Opn	4-2 GPMRT-R
1/4	1/4	61.3	29.0	9.2	17.8	15.3	4.8	16	19	14	53.9	21.6	32.3	22.9	4 Opn	4 GPMRT-R
3/8	1/4	62.8	30.5	9.2	19.3	16.8	5.8	16	19	17	55.5	23.2	32.3	22.9	4 Opn	6-4 GPMRT-R
1/2	3/8	73.0	36.0	9.4	21.8	22.9	7.8	22	22	22	62.9	25.9	37.0	26.4	6 Opn	8-6 GPMRT-R
1/2	1/2	81.5	38.1	13.0	21.8	24.4	10.4	24	27	22	71.3	27.9	43.4	32.0	8 Opn	8 GPMRT-R
5/8	1/2	81.5	38.1	13.0	21.8	24.4	10.4	24	27	25	71.3	27.9	43.4	32.0	8 Opn	10-8 GPMRT-R
3/4	1/2	85.1	39.9	13.0	21.8	24.4	10.4	27	27	28.5	74.9	29.7	45.2	32.0	8 Opn	12-8 GPMRT-R
3/4	3/4	88.7	39.9	13.0	21.8	24.4	15.8	27	35	28.5	78.5	29.7	48.8	41.2	12 Opn	12 GPMRT-R
1	1	102.6	49.0	14.0	26.4	31.2	19.8	35	41	38	90.4	36.8	53.6	48.5	16 Opn	16 GPMRT-R

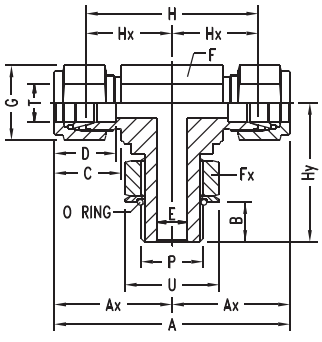
METRIC OD Tubes X Male ISO* Parallel Threads

T Tube OD	P ISO Male	A	Ax	B	C	D	E min.	F A/F	Fx A/F	G A/F	H	Hx	Hy	U	O Ring Part No.	Part No.
6	1/8	53.4	27.0	8.1	17.7	15.3	4.0	14	14	14	46.0	19.6	26.4	17.3	2 Opn	GPMRT 6-2R
6	1/4	61.3	29.0	9.1	17.7	15.3	4.8	16	19	14	53.9	21.6	32.3	22.9	4 Opn	GPMRT 6-4R
8	1/8	56.2	28.8	8.1	18.6	16.2	4.0	14	14	16	48.7	21.3	27.4	17.3	2 Opn	GPMRT 8-2R
8	1/4	62.1	29.9	9.1	18.6	16.2	5.9	16	19	16	54.6	22.4	32.2	22.9	4 Opn	GPMRT 8-4R
10	1/4	68.5	33.5	9.1	19.5	17.2	5.9	19	19	19	61.9	25.9	35.0	22.9	4 Opn	GPMRT 10-4R
12	3/8	73.1	36.0	9.4	22.0	22.8	7.9	22	22	22	63.0	25.9	37.1	26.4	6 Opn	GPMRT 12-6R
12	1/2	81.4	38.0	13.0	22.0	23	9.5	24	27	22	71.3	27.9	43.4	32.0	8 Opn	GPMRT 12-8R
16	1/2	83.3	38.1	13.0	22.0	24.4	11.9	27	27	28.5	74.9	29.7	45.2	32.0	8 Opn	GPMRT 16-8R
22	3/4	93.4	44.6	13.0	22.0	26.0	15.8	27	35	28.5	83.3	34.5	48.8	41.2	12 Opn	GPMRT 22-12R
25	3/4	102.3	49.0	13.0	26.5	31.3	15.8	35	35	38	90.1	36.8	53.3	41.2	12 Opn	GPMRT 25-12R
25	1	102.6	49.0	14.0	26.5	31.3	21.8	35	41	38	90.4	36.8	53.6	48.5	16 Opn	GPMRT 25-16R

* Reference Specifications : BS 2779 : ISO 228/1 : JIS B0202 : DIN-ISO 228/1

POSITIONABLE BRANCH TEE

Inch OD Tubes X Male ISO* Parallel Thread



T Tube OD	P ISO Male	A	Ax	B	C	D	E min.	F A/F	Fx A/F	G A/F	H	Hx	Hy	U	O Ring Part No.	Part No.
1/4	1/8	53.4	27.0	8.2	17.8	15.3	4.0	14	14	14	46.0	19.6	26.4	17.3	2 OPN	4-2 GPMBT-R
1/4	1/4	61.3	29.0	9.2	17.8	15.3	4.8	16	19	14	53.9	21.6	32.3	22.9	4 OPN	4 GPMBT-R
3/8	1/4	62.8	30.5	9.2	19.3	16.8	5.8	16	19	17	55.5	23.2	32.3	22.9	4 OPN	6-4 GPMBT-R
1/2	3/8	73.0	36.0	9.4	21.8	22.9	7.8	22	22	22	62.9	25.9	37.0	26.4	6 OPN	8-6 GPMBT-R
1/2	1/2	81.5	38.1	13.0	21.8	24.4	10.4	24	27	22	71.3	27.9	43.4	32.0	8 OPN	8 GPMBT-R
5/8	1/2	81.5	38.1	13.0	21.8	24.4	10.4	24	27	25	71.3	27.9	43.4	32.0	8 OPN	10-8 GPMBT-R
3/4	1/2	85.1	39.9	13.0	21.8	24.4	10.4	27	27	28.5	74.9	29.7	45.2	32.0	8 OPN	12-8 GPMBT-R
3/4	3/4	88.7	39.9	13.0	21.8	24.4	15.8	27	35	28.5	78.5	29.7	48.8	41.2	12 OPN	12 GPMBT-R
1	1	102.6	49.0	14.0	26.4	31.2	19.8	35	41	38	90.4	36.8	53.6	48.5	16 OPN	16 GPMBT-R

Metric OD Tubes X Male ISO* Parallel Threads

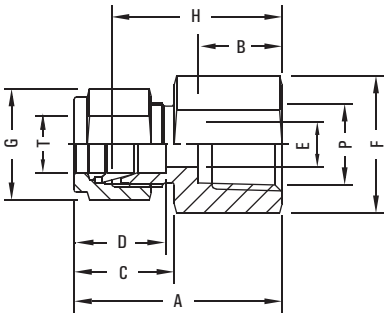
T Tube OD	P ISO MALE	A	AX	B	C	D	E min.	F	FX A/F	G A/F	H A/F	HX	HY	U	O Ring Part No.	Part No.
6	1/8	53.4	27.0	8.1	17.7	15.3	4.0	14	14	14	46.0	19.6	26.4	17.3	2 OPN	GPMBT 6-2R
6	1/4	61.3	29.0	9.1	17.7	15.3	4.8	16	19	14	53.9	21.6	32.3	22.9	4 OPN	GPMBT 6-4R
8	1/8	56.2	28.8	8.1	18.6	16.2	4.0	14	14	16	48.7	21.3	27.4	17.3	2 OPN	GPMBT 8-2R
8	1/4	62.1	29.9	9.1	18.6	16.2	5.9	16	19	16	54.6	22.4	32.2	22.9	4 OPN	GPMBT 8-4R
10	1/4	68.5	33.5	9.1	19.5	17.2	5.9	19	19	19	61.9	25.9	35.0	22.9	4 OPN	GPMBT 10-4R
12	3/8	73.1	36.0	9.4	22.0	22.8	7.9	22	22	22	63.0	25.9	37.1	26.4	6 OPN	GPMBT 12-6R
12	1/2	81.4	38.0	13.0	22.0	23	9.5	24	27	22	71.3	27.9	43.4	32.0	8 OPN	GPMBT 12-8R
16	1/2	83.3	38.1	13.0	22.0	24.4	11.9	27	27	28.5	74.9	29.7	45.2	32.0	8 OPN	GPMBT 16-8R
22	3/4	93.4	44.6	13.0	22.0	26.0	15.8	27	35	28.5	83.3	34.5	48.8	41.2	12 OPN	GPMBT 22-12R
25	3/4	102.3	49.0	13.0	26.5	31.3	15.8	35	35	38	90.1	36.8	53.3	41.2	12 OPN	GPMBT 25-12R
25	1	102.6	49.0	14.0	26.5	31.3	21.8	35	41	38	90.4	36.8	53.6	48.5	16 OPN	GPMBT 25-16R

* Reference Specifications: BS 2779 : ISO 228/1 : JIS B0202 : DIN-ISO 228/1

FEMALE CONNECTOR

INCH OD Tubes x Female NPT Threads

T Tube OD	P NPT Female	A	B	C	D	E min.	F A/F	G A/F	H	Part No.
1/16	1/16	23.6	9.9	11.0	8.6	1.3	11	8	19.8	1 GFC-N
1/16	18	24.4	10.4	11.0	8.6	1.3	14	8	20.6	1-2 GFC-N
1/8	1/8	28.7	10.4	15.3	12.7	2.4	14	11	22.1	2 GFC-N
1/8	1/4	33.6	15.0	15.3	12.7	2.4	19	11	26.9	2-4 GFC-N
1/4	1/8	31.2	9.9	17.8	15.3	4.8	14	14	23.9	4-2 GFC-N
1/4	1/4	35.8	15.0	17.8	15.3	4.8	19	14	28.5	4 GFC-N
1/4	3/8	37.6	15.0	17.8	15.3	4.8	22	14	30.2	4-6 GFC-N
1/4	1/2	42.4	19.8	17.8	15.3	4.8	27	14	35.0	4-8 GFC-N
5/16	1/8	32.0	10.4	18.5	16.3	6.3	14	16	24.6	5-2 GFC-N
5/16	1/4	36.8	15.0	18.5	16.3	6.3	19	16	29.5	5-4 GFC-N
3/8	1/8	32.8	10.4	19.3	16.8	7.1	16	17	25.4	6-2 GFC-N
3/8	1/4	37.6	15.0	19.3	16.8	7.1	19	17	30.2	6-4 GFC-N
3/8	3/8	39.1	15.0	19.3	16.8	7.1	22	17	31.8	6 GFC-N
3/8	1/2	43.9	19.8	19.3	16.8	7.1	27	17	36.6	6-8 GFC-N
1/2	1/4	40.4	15.0	21.8	22.9	10.4	22	22	30.2	8-4 GFC-N
1/2	3/8	41.9	15.0	21.8	22.9	10.4	22	22	30.2	8-6 GFC-N
1/2	1/2	46.7	19.8	21.8	22.9	10.4	27	22	36.6	8 GFC-N
1/2	3/4	48.3	20.6	21.8	22.9	10.4	32	22	38.1	8-12 GFC-N
5/8	3/8	41.9	15.0	21.8	24.4	12.7	24	25	31.8	10-6 GFC-N
5/8	1/2	46.7	19.8	21.8	24.4	12.7	27	25	36.6	10-8 GFC-N
3/4	1/2	46.7	19.8	21.8	24.4	15.8	27	28.5	36.6	12-8 GFC-N
3/4	3/4	48.3	20.6	21.8	24.4	15.8	35	28.5	38.1	12 GFC-N
7/8	3/4	49.8	20.6	21.8	25.9	18.3	35	32	39.6	14-12 GFC-N
1	3/4	53.4	20.6	26.4	31.2	22.3	35	38	41.2	16-12 GFC-N
1	1	62.3	25.4	26.4	31.2	22.3	41	38	50.0	16 GFC-N
1.1/4	1.1/4	74.6	25.4	38.9	41.2	27.6	55	50	52.6	20 GFC-N
1.1/2	1.1/2	83.3	27.6	45.2	50.0	34.0	60	60	56.2	24 GFC-N



INCH OD Tubes x Female ISO* Tapered Pipe Threads

T Tube OD	P ISO Female	A	B	C	D	E min.	F A/F	G A/F	H	Part No.
1/16	1/16	23.6	9.9	11.0	8.6	1.3	11	8	19.8	1 GFC-Rx
1/8	1/8	28.7	10.4	15.3	12.7	2.4	14	11	22.1	2 GFC-Rx
1/8	1/4	33.6	15.0	15.3	12.7	2.4	19	11	26.9	2-4 GFC-Rx
1/4	1/8	31.2	9.9	17.8	15.3	4.8	14	14	23.9	4-2 GFC-Rx
1/4	1/4	35.8	15.0	17.8	15.3	4.8	19	14	28.5	4 GFC-Rx
1/4	3/8	37.6	15.0	17.8	15.3	4.8	22	14	30.2	4-6 GFC-Rx
1/4	1/2	42.4	19.8	17.8	15.3	4.8	27	14	35.0	4-8 GFC-Rx
3/8	1/4	37.6	15.0	19.3	16.8	7.1	19	17	30.2	6-4 GFC-Rx
3/8	3/8	39.1	15.0	19.3	16.8	7.1	22	17	31.8	6 GFC-Rx
3/8	1/2	43.9	19.8	19.3	16.8	7.1	27	17	36.6	6-8 GFC-Rx
1/2	1/4	40.4	15.0	21.8	22.9	10.4	22	22	40.4	8-4 GFC-Rx
1/2	3/8	41.9	15.0	21.8	22.9	10.4	22	22	30.2	8-6 GFC-Rx
1/2	1/2	46.7	19.8	21.8	22.9	10.4	27	22	31.8	8 GFC-Rx
3/4	1/2	46.7	19.8	21.8	24.4	15.8	27	28.5	36.6	12-8 GFC-Rx
3/4	3/4	48.3	20.6	21.8	24.4	15.8	35	28.5	38.1	12 GFC-Rx
1	3/4	53.4	20.6	26.4	31.2	22.3	35	38	41.2	16-12 GFC-Rx
1	1	62.3	25.4	26.4	31.2	22.3	41	38	50.0	16 GFC-Rx
1.1/4	1.1/4	74.6	25.4	38.9	41.2	27.6	55	50	52.6	20 GFC-Rx
1.1/2	1.1/2	83.3	27.6	45.2	50.0	34.0	60	60	56.2	24 GFC-Rx

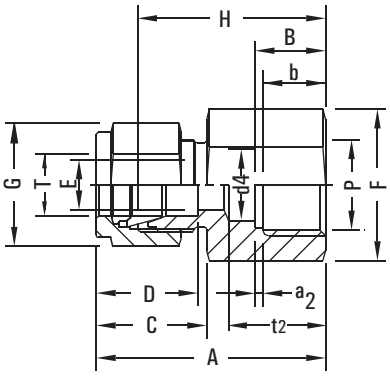
* Reference Specifications: BS 21: ISO 7/1 : JIS B 0203 : DIN 2999 : IS 554

* Female connectors with Parallel ISO Female Threads to BS:2779; ISO 228/1; JIS B6202; DIN 259 are also available. Their Dimensions are as same as ISO . Tapered Pipe Threads above. Please consult us.

NOTE : The combinations shown above are representative of various possibilities. Other combinations not shown are also available. Please consult us.

FEMALE MANOMETER CONNECTOR

Inch OD Tubes X Female ISO* Parallel Threads (gauge)



T Tube OD	P ISO Female	A	B	C	D	E min.	F A/F	G A/F	H	a2 min.	d4 min.	b	t2	Part No.
1/4	1/4	37.6	13.0	17.8	15.3	4.8	19	14	30.2	1.6	5.6	9.4	17.0	4 GFC-MAN
1/4	3/8	37.6	14.2	17.8	15.3	4.8	24	14	30.2	1.6	6.6	9.9	20.3	4-6 GFC-MAN
1/4	1/2	43.4	18.8	17.8	15.3	4.8	27	14	36.0	1.6	6.6	14.5	24.9	4-8 GFC-MAN
5/16	1/4	38.4	13.0	18.5	16.3	6.0	19	16	31.0	1.6	-	9.4	-	5-4 GFC-MAN
5/16	1/2	40.9	18.8	18.5	16.3	7.1	27	16	33.6	1.6	-	14.5	-	5-8 GFC-MAN
3/8	1/4	39.2	13.0	19.3	16.8	6.0	19	17	31.8	1.6	-	9.4	-	6-4 GFC-MAN
3/8	3/8	38.6	14.2	19.3	16.8	6.6	24	17	31.2	1.6	-	9.9	-	6 GFC-MAN
3/8	1/2	41.9	18.8	19.3	16.8	7.1	27	17	34.5	1.6	-	14.5	-	6-8 GFC-MAN
1/2	3/8	44.5	14.2	21.8	22.9	6.6	24	22	34.3	1.6	-	9.9	-	8-6 GFC-MAN
1/2	1/2	48.3	18.8	21.8	22.9	7.1	27	22	38.1	1.6	-	14.5	-	8 GFC-MAN

Metric OD Tubes X Female ISO* Parallel Thread (gauge)

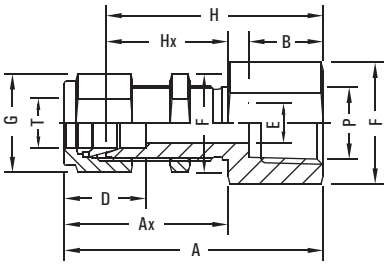
T Tube OD	P ISO Female	A	B	C	D	E min.	F A/F	G A/F	H	a2 min	b min	d4	t2	Part No.
3	1/4	35.3	12.9	15.3	12.9	2.4	19	11	28.7	1.6	9.5	5.5	17.0	GFC 3-4MAN
6	1/4	37.6	12.9	17.7	15.3	4.8	19	14	30.2	1.6	9.5	5.5	17.0	GFC 6-4MAN
6	3/8	37.6	14.1	17.7	15.3	4.8	24	14	30.2	1.6	10.0	6.5	20.3	GFC 6MAN
6	1/2	43.5	18.9	17.7	15.3	4.8	27	14	36.1	1.6	14.5	7.0	24.9	GFC 6-8MAN
8	1/4	38.5	12.9	18.6	16.2	5.5	19	16	31.0	1.6	9.5	5.5	-	GFC 8-4MAN
8	3/8	36.2	14.1	18.6	16.2	6.5	24	16	28.7	1.6	10.0	6.5	-	GFC 8-6MAN
8	1/2	41.0	18.9	18.6	16.2	7.1	27	16	33.5	1.6	14.5	7.0	-	GFC 8MAN
10	1/4	39.4	19.5	19.5	17.2	5.5	19	19	31.8	1.6	9.5	5.5	-	GFC 10-4MAN
10	3/8	38.8	19.5	19.5	17.2	6.5	24	19	31.2	1.6	10.0	6.5	-	GFC 10-6MAN
10	1/2	42.1	19.5	19.5	17.2	7.1	27	19	34.5	1.6	14.5	7.0	-	GFC 10-8MAN
12	1/4	41.9	12.9	22.0	22.8	5.5	22	22	31.8	1.6	9.5	5.5	-	GFC 12-4MAN
12	3/8	44.4	14.1	22.0	22.8	6.5	24	22	34.3	1.6	10.0	6.5	-	GFC12-6MAN
12	1/2	48.2	18.9	22.0	22.8	7.1	27	22	38.1	1.6	14.5	7.0	-	GFC 12-8MAN

No seal is made around the male thread. instead, a gasket is dropped into the flat bottom in the female thread, and the end of the male threaded end exerts a load on the gasket to seal. Details of gasket given below.

* Reference Specifications : BS 2779 : ISO 228/1 : JIS B0202 : DIN-259

BULKHEAD FEMALE CONNECTOR

INCH OD Tubes x Female NPT Threads



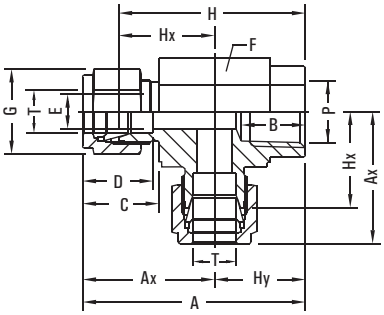
T Tube OD	P NPT Female	A	Ax	B	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
1/8	1/8	44.7	31.2	10.4	12.7	2.4	14	11	38.1	24.6	8.3	12.7	2 GBFC-N
1/4	1/8	47.0	33.5	10.4	15.3	4.8	16	14	39.7	26.2	11.5	10.2	4-2 GBFC-N
1/4	1/4	51.5	33.5	15.0	15.3	4.8	19	14	44.2	26.2	11.5	10.2	4 GBFC-N
3/8	1/4	54.8	36.8	15.0	16.8	7.1	19	17	47.5	29.5	14.7	11.2	6-4 GBFC-N
1/2	3/8	61.7	41.9	15.0	22.9	10.4	22	22	51.6	31.0	19.5	12.7	8-6 GBFC-N
1/2	1/2	66.7	41.9	19.8	22.9	10.4	27	22	56.6	31.0	19.5	12.7	8 GBFC-N
5/8	1/2	67.6	42.7	19.8	22.9	12.7	27	25	57.4	32.5	22.6	12.7	10-8 GBFC-N
3/4	1/2	72.4	47.5	19.8	24.4	16.0	35	28.5	62.3	37.4	25.8	16.8	12-8 GBFC-N
3/4	3/4	74.7	47.5	20.6	24.4	16.0	35	28.5	64.3	37.4	25.8	16.8	12 GBFC-N
1	3/4	84.3	57.4	20.6	31.2	16.0	35	38	72.1	45.2	33.7	19.0	16-12 GBFC-N
1	1	93.2	57.4	25.4	31.2	22.2	35	38	81.0	45.2	33.7	19.0	16 GBFC-N
1.1/4	1.1/4	105.7	69.9	25.4	41.2	27.6	50	50	83.5	47.7	41.6	19.0	20 GBFC-N
1.1/2	1.1/2	144.5	76.4	27.6	50.0	34.0	60	57	87.4	49.3	49.6	19.0	24 GBFC-N

Metric OD Tubes x Female NPT Threads

T Tube OD	P NPT Female	A	Ax	B	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
3	1/8	44.7	31.2	10.4	12.9	2.4	14	11	38.1	24.6	8.3	12.7	GBFC 3-2N
6	1/4	51.6	33.6	15.0	15.3	4.8	19	14	44.2	26.2	11.5	10.2	GBFC 6-4N
10	3/8	56.8	37.0	15.0	17.2	7.9	22	19	49.2	29.4	16.3	11.2	GBFC10-4N
12	3/8	61.8	41.9	15.0	22.8	9.5	24	22	51.7	31.8	19.5	12.7	GBFC12-6N
12	1/2	66.7	41.9	19.8	22.8	9.5	27	22	56.6	31.8	19.5	12.7	GBFC12-8N
16	1/2	67.5	42.6	20.6	24.4	12.7	27	25	57.4	32.5	22.8	12.7	GBFC16-8N
22	3/4	79.9	53.0	20.6	26.0	15.8	35	35	69.8	42.9	29.0	19.0	GBFC22-12N
25	3/4	84.3	57.4	20.6	31.2	15.8	35	38	72.1	45.2	33.7	19.0	GBFC25-12N
25	1	93.2	57.4	25.4	31.2	22.3	35	38	81.0	45.2	33.7	19.0	GBFC25-16N
32	1.1/4	105.7	69.9	25.4	42.0	27.6	50	50	83.5	44.7	41.6	19.0	GBFC32-20N
38	1.1/2	114.5	76.4	27.6	49.4	33.7	60	57	87.4	49.3	49.6	19.0	GBFC38-24N

NOTE : Bulkhead Female Connectors are also available with ISO Taper Female Threads, ISO Parallel Female Threads and ISO Female Micrometer connection. Please consult us.

FEMALE RUN TEE



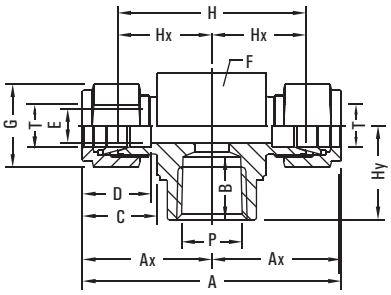
INCH OD Tubes X Female NPT Threads

T Tube OD	P NPT Female	A	Ax	B	C	D	E min.	F A/F	G A/F	H	Hx	Hy	Part No.
1/8	1/8	43.6	24.6	10.4	15.3	12.7	2.4	14	11	37.0	18.0	19.0	2 GFRT-N
1/4	1/8	45.9	26.9	10.4	17.8	15.3	4.8	14	14	38.6	19.6	19.0	4-2 GFRT-N
1/4	1/4	52.1	29.7	15.0	17.8	15.3	4.8	19	14	44.8	22.4	22.4	4 GFRT-N
3/8	1/4	53.6	31.2	15.0	19.3	16.8	7.1	19	17	46.3	23.9	22.4	6-4 GFRT-N
3/8	3/8	55.7	33.3	15.0	19.3	16.8	7.1	22	17	48.3	25.9	22.4	6 GFRT-N
1/2	3/8	58.4	36.0	15.0	21.8	22.9	10.4	22	22	48.3	25.9	22.4	8-6 GFRT-N
1/2	1/2	67.4	38.9	19.8	21.8	22.9	10.4	27	22	57.2	28.7	28.5	8 GFRT-N
3/4	3/4	76.5	44.7	20.6	21.8	24.4	15.8	35	29	66.4	34.6	31.8	12 GFRT-N
1	3/4	80.8	49.0	20.6	26.4	31	22.3	35	38	68.6	36.8	31.8	16-12 GFRT-N
1	1	91.7	53.6	25.4	26.4	31	22.3	41	38	79.5	41.4	38.1	16 GFRT-N

METRIC OD Tubes X Female NPT Threads

T Tube OD	P NPT Female	A	Ax	B	C	D	E min.	F A/F	G A/F	H	Hx	Hy	Part No.
3	1/8	43.6	24.6	10.4	15.3	12.9	2.4	14	11	37.0	18.0	19.0	GFRT 3-2N
6	1/8	46.0	27.0	10.4	17.7	15.3	4.8	14	14	38.6	19.6	19.0	GFRT 6-2N
6	1/4	52.2	29.8	15.0	17.7	15.3	4.8	19	14	44.8	22.4	22.4	GFRT 6-4N
8	1/8	48.9	29.9	10.4	18.6	16.2	6.3	16	16	41.4	22.4	19.0	GFRT 8-2N
8	1/4	53.0	30.6	15.0	18.6	16.2	6.3	19	16	45.5	23.1	22.4	GFRT 8-4N
10	1/4	55.9	33.5	15.0	19.5	17.2	7.9	19	19	48.3	25.9	22.4	GFRT 10-4N
12	3/8	58.4	36.0	15.0	22.0	22.8	9.5	22	22	48.3	25.9	22.4	GFRT 12-6N
12	1/2	67.3	38.8	19.8	22.0	22.8	9.5	27	22	57.2	28.7	28.5	GFRT 12-8N
16	1/2	68.0	39.5	19.8	22.0	24	12.7	27	25	58.2	29.7	28.5	GFRT 16-8N
25	1	91.7	53.6	25.4	26.5	31.3	22.3	41	38	79.5	41.4	38.1	GFRT 25-16N

FEMALE BRANCH TEE



INCH OD Tubes X Female NPT Threads

T Tube OD	P NPT Female	A	Ax	B	C	D	E min.	F A/F	G A/F	H	Hx	Hy	Part No.
1/8	1/8	49.2	24.6	10.4	15.3	12.7	2.4	14	11	36.0	18.0	19.0	2 GFBT-N
1/4	1/8	53.8	26.9	10.4	17.8	15.3	4.8	14	14	39.2	19.6	19.0	4-2 GFBT-N
1/4	1/4	59.4	27.9	15.0	17.8	15.3	4.8	19	14	44.8	22.4	22.4	4 GFBT-N
3/8	1/4	62.4	31.2	15.0	19.3	16.8	7.1	16	16	47.8	23.9	22.4	6-4 GFBT-N
3/8	3/8	66.6	33.3	15.0	19.3	16.8	7.1	19	16	51.8	25.9	22.4	6 GFBT-N
1/2	3/8	72.0	36.0	15.0	21.8	22.9	10.4	19	19	51.8	25.9	22.4	8-6 GFBT-N
1/2	1/2	77.8	38.9	19.8	21.8	22.9	10.4	22	22	57.4	28.7	28.5	8 GFBT-N
3/4	3/4	89.4	44.7	20.6	21.8	24.4	15.8	35	22	69.2	34.6	31.8	12 GFBT-N
1	3/4	98.0	49.0	20.6	26.4	31.2	22.3	35	25	73.6	36.8	31.8	16-12 GFBT-N
1	1	107.2	53.6	25.4	26.4	31.2	22.3	41	38	82.8	41.4	38.1	16 GFBT-6N

METRIC Tubes X Female NPT Threads

T Tube OD	P NPT Female	A	Ax	B	C	D	E min.	F A/F	G A/F	H	Hx	Hy	Part No.
3	1/8	49.2	24.6	10.4	15.3	12.9	2.4	14	11	36.0	18.0	19.0	GFBT 3-2N
6	1/8	54.0	27.0	10.4	17.7	15.3	4.8	14	14	39.2	19.6	19.0	GFBT 6-2N
6	1/4	59.6	29.8	15.0	17.7	15.3	4.8	19	14	44.8	22.4	22.4	GFBT 6-4N
8	1/8	59.8	29.9	10.4	18.6	16.2	6.3	16	16	44.8	22.4	19.0	GFBT 8-2N
8	1/4	61.2	30.6	15.0	18.6	16.2	6.3	19	16	46.2	23.1	22.4	GFBT 8-4N
10	1/4	67.0	33.5	15.0	19.5	17.2	7.9	19	19	51.8	25.9	22.4	GFBT 10-4N
12	3/8	72.0	36.0	15.0	22.0	22.8	9.5	22	22	51.8	25.9	22.4	GFBT 12-6N
12	1/2	77.6	38.8	19.8	22.0	22.8	9.5	27	22	57.4	28.7	28.5	GFBT 12-8N
16	1/2	79.0	39.5	19.8	22.0	24.4	12.7	27	25	59.4	29.7	28.5	GFBT 16-8N
25	1	107.2	53.6	25.4	26.5	31.3	22.3	41	38	82.8	41.4	38.1	GFBT 25-16N

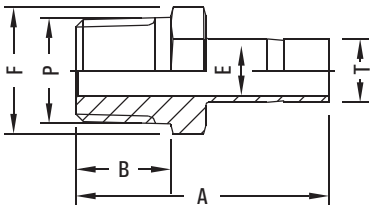
NOTE: The combinations shown above are representative of various possibilities. Other combinations not shown are also available. Please Consult us.

Bulkhead Female Connectors are also available with ISO Taper Female Threads, ISO Parallel Female Threads and ISO Female Micrometer connection. Please consult us.

MALE ADAPTER

INCH OD Tubes x Male NPT Threads

T Tube OD	P NPT Male	A	B	E min.	F A/F	Part No.
1/8	1/8	29.5	9.6	4.8	11	2 GMA-N
1/8	1/4	34.8	14.4	7.1	14	2-4 GMA-N
1/4	1/8	31.8	9.6	4.8	11	4-2 GMA-N
1/4	1/4	37.0	14.3	4.8	14	4 GMA-N
1/4	3/8	37.8	14.3	4.8	19	4-6 GMA-N
1/4	1/2	43.4	19.1	4.8	22	4-8 GMA-N
5/16	1/4	38.1	14.3	6.3	14	5-4 GMA-N
3/8	1/4	38.9	14.3	7.1	14	6-4 GMA-N
3/8	3/8	39.6	14.3	7.1	19	6 GMA-N
3/8	1/2	45.2	19.1	7.1	22	6-8 GMA-N
1/2	1/4	44.5	14.3	7.1	14	8-4 GMA-N
1/2	3/8	45.2	14.3	9.9	19	8-6 GMA-N
1/2	1/2	50.8	19.1	9.9	22	8 GMA-N
5/8	1/2	52.3	19.1	11.9	22	10-8 GMA-N
3/4	1/2	52.3	19.1	11.9	22	12-8 GMA-N
3/4	3/4	52.3	19.1	15.0	27	12 GMA-N
1	3/4	58.7	19.1	15.7	27	16 GMA-N
1	1	66.0	23.8	20.3	35	16-12 GMA-N
1.1/4	1.1/4	80.3	23.8	27.6	45	20 GMA-N
1.1/2	1.1/2	94.5	26.2	33.2	55	24 GMA-N



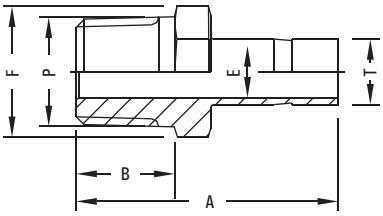
INCH OD Tubes x Male ISO* Tapered Pipe Threads

T Tube OD	P ISO Male	A	B	E min.	F A/F	Part No.
1/8	1/8	29.5	9.6	4.8	11	2 GMA-Rx
1/8	1/4	34.8	14.4	7.1	14	2-4 GMA-Rx
1/4	1/8	31.8	9.6	4.8	11	4-2 GMA-Rx
1/4	1/4	37.0	14.3	4.8	14	4 GMA-Rx
1/4	3/8	37.8	14.3	4.8	19	4-6 GMA-Rx
1/4	1/2	43.4	19.1	4.8	22	4-8 GMA-Rx
3/8	1/4	38.9	14.3	7.1	14	6-4 GMA-Rx
3/8	3/8	39.6	14.3	7.1	19	6 GMA-Rx
3/8	1/2	45.2	19.1	7.1	22	6-8 GMA-Rx
1/2	1/4	44.5	14.3	7.1	14	8-4 GMA-Rx
1/2	3/8	45.2	14.3	9.9	19	8-6 GMA-Rx
1/2	1/2	50.8	19.1	9.9	22	8 GMA-Rx
3/4	3/4	52.3	19.1	15.0	27	12 GMA-Rx
1	1	66.0	23.8	20.3	35	16-12 GMA-Rx
1.1/4	1.1/4	80.3	23.8	27.6	45	20 GMA-Rx
1.1/2	1.1/2	94.5	26.2	33.2	55	24 GMA-Rx

* Reference Specifications: BS 21: ISO 7/1 : JIS B 0203 : DIN 2999 : IS 554

MALE ADAPTER

METRIC OD Tubes x Male NPT Threads



T Tube OD	P NPT Male	A	B	E min.	F A/F	Part No.
3	1/4	34.8	9.6	7.1	14	GMA 3-2N
6	1/8	32.8	14.3	4.6	14	GMA 6-2N
6	1/4	38.1	14.3	4.6	14	GMA 6-4N
8	1/4	39.1	14.3	6.2	14	GMA 8-4N
10	1/4	39.9	14.3	7.7	14	GMA 10-4N
10	3/8	40.6	14.3	7.7	19	GMA 10-6N
12	1/4	46.5	14.3	7.1	14	GMA 12-4N
12	3/8	46.5	14.3	9.1	19	GMA 12-6N
12	1/2	52.0	14.3	9.1	22	GMA 12-8N
25	3/4	62.0	19.1	15.7	27	GMA 25-12N
25	1	66.8	23.8	15.7	35	GMA 25-16N
30	1	79.2	23.8	22.2	41	GMA 30-16N
30	1.1/4	80.0	23.8	24.6	45	GMA 30-20N
32	1.1/4	81.0	23.8	27.4	46	GMA32-20N
38	1.1/2	92.2	26.2	33.3	55	GMA 38-24N

METRIC OD Tubes x Male ISO* Tapered Pipe Threads

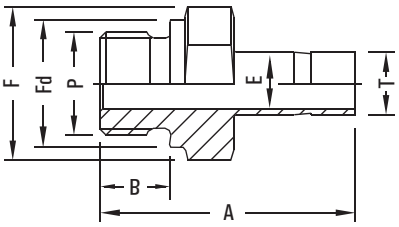
T Tube OD	P ISO Male	A	B	E min.	F A/F	Part No.
3	1/4	34.8	9.6	7.1	14	GMA 3-2Rx
6	1/8	32.8	14.3	4.6	14	GMA 6-2Rx
6	1/4	38.1	14.3	4.6	14	GMA 6-4Rx
8	1/4	39.1	14.3	6.2	14	GMA 8-4Rx
10	1/4	39.9	14.3	7.7	14	GMA 10-4Rx
10	3/8	40.6	14.3	7.7	19	GMA 10-6Rx
12	1/4	46.5	14.3	7.1	14	GMA 12-4Rx
12	3/8	46.5	14.3	9.1	19	GMA 12-6Rx
12	1/2	52.0	14.3	9.1	22	GMA 12-8Rx
25	3/4	62.0	19.1	15.7	27	GMA 25-12Rx
25	1	66.8	23.8	15.7	35	GMA 25-16Rx
30	1	79.2	23.8	22.2	41	GMA 30-16Rx
30	1.1/4	80.0	23.8	24.6	45	GMA 30-20Rx
32	1.1/4	81.0	23.8	27.4	46	GMA32-20Rx
38	1.1/2	92.2	26.2	33.3	55	GMA 38-24Rx

* Reference Specifications: BS 21: ISO 7/1 : JIS B 0203 : DIN 2999 : IS 554

MALE ADAPTER

INCH OD Tubes x Male ISO* Parallel Threads - RS

T Tube OD	P ISO Male	A	B	E min.	F A/F	Fd	Part No.
1/8	1/8	31.0	7.1	2.4	14	13.7	2 GMA-Rs
1/8	1/4	35.8	11.2	2.4	19	17.8	2-4 GMA-Rs
1/4	1/8	33.3	7.1	4.0	14	13.7	4-2 GMA-Rs
1/4	1/4	38.1	11.2	4.8	19	17.8	4 GMA-Rs
3/8	1/4	39.9	11.2	5.8	19	17.8	6-4 GMA-Rs
3/8	3/8	40.6	11.2	7.1	22	21.6	6 GMA-Rs
1/2	1/4	45.5	11.2	5.8	19	17.8	8-4 GMA-Rs
1/2	3/8	46.3	11.2	7.9	22	21.6	8-6 GMA-Rs
1/2	1/2	49.3	14.2	9.9	27	26.0	8 GMA-Rs
3/4	3/4	54.9	15.7	15.0	32	31.8	12 GMA-Rs
1	1	64.5	18.2	19.8	41	38.8	16-12 GMA-Rs
1.1/4	1.1/4	79.5	19.8	27.4	50	49.0	20 GMA-Rs
1.1/2	1.1/2	93.7	22.1	33.3	55	54.7	24 GMA-Rs



METRIC OD Tubes x Male ISO* Parallel Threads - RS

T Tube OD	P ISO Male	A	B	E min.	F A/F	Fd	Part No.
3	1/8	31.0	7.1	2.4	14	13.7	GMA 3-2Rs
3	1/4	35.8	11.2	22.0	19	17.8	GMA 3-4Rs
6	1/8	34.3	7.1	4.0	14	13.7	GMA 6-2Rs
6	1/4	39.1	11.2	4.6	19	17.8	GMA 6-4Rs
8	1/4	40.1	11.2	5.8	19	17.8	GMA 8-4Rs
10	1/4	40.9	11.2	5.8	19	17.8	GMA 10-4Rs
10	3/8	41.7	11.2	7.7	22	21.7	GMA 10-6Rs
10	1/2	44.7	14.2	7.7	27	25.9	GMA 10-8Rs
12	1/4	46.7	11.2	5.8	19	17.8	GMA 12-4Rs
12	3/8	47.2	11.2	7.9	22	21.7	GMA 12-6Rs
12	1/2	50.5	14.2	9.1	27	25.9	GMA 12-8Rs
16	1/2	50.5	14.2	12.7	27	25.9	GMA 16-8Rs
22	3/4	55.2	15.7	15.8	35	32.0	GMA 22-12Rs
22	1	64.5	18.3	19.8	41	39.0	GMA 22-16Rs
25	1.1/4	79.5	19.8	27.4	50	49.0	GMA 25-20Rs
25	1.1/2	93.7	22.1	33.3	55	54.7	GMA 25-24Rs

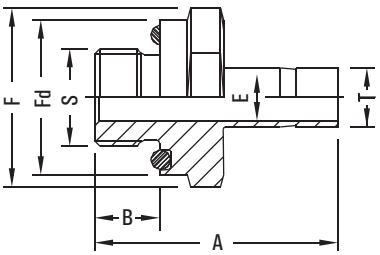
* Reference Specifications BS 2779 : ISO 228/1 : JIS B0202 : DIN-ISO 228/1

NOTE : 1. For use with soft metal gasket (usually copper) between fitting and female part face
2. Also available in ISO Parallel Threads - RP series for beaded metal gaskets.
See page 22/23 for explanation.

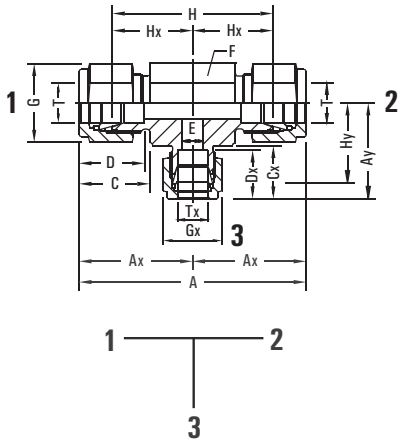
O SEAL MALE ADAPTER

INCH OD Tubes x Male Straight Threads - UNF

T Tube OD	S UNF Male	A	B	E min.	F	Fd A/F	O Ring Part No.	Part No.
1/8	5/16 - 24	32.5	8.6	2.4	14	13.8	1 OPU	2 GOMA-U
1/4	7/16 - 24	39.2	10.4	4.8	19	18.8	2 OPU	4 GOMA-U
5/16	1/2 - 24	41.7	11.2	6.3	22	21.8	3 OPU	5 GOMA-U
5/16	9/16 - 24	43.2	12.0	7.1	24	23.6	4 OPU	6 GOMA-U
1/2	3/4 - 24	49.5	12.0	9.9	27	26.8	6 OPU	8 GOMA-U
3/4	11/16 - 12	55.0	14.3	15.0	38	37.8	12 OPU	12 GOMA-U
1	15/16 - 12	62.5	14.3	19.8	45	44.0	16 OPU	16 GOMA-U
1.1/4	15/8 - 12	79.5	18.3	27.4	55	54.0	20 OPU	20 GOMA-U
1.1/2	17/8 - 12	92.2	19.8	33.3	60	58.0	24 OPU	24 GOMA-U

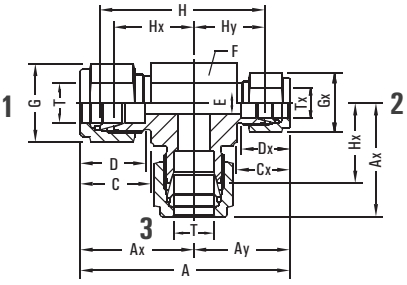


REDUCING UNION TEE



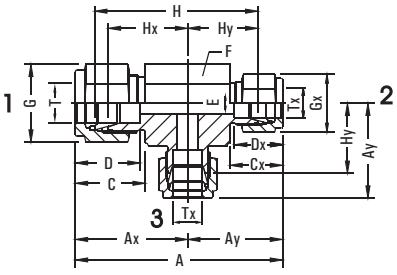
INCH OD Tubes

T Tube OD	Tx Tube OD	A	Ax	Ay	C	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	Hx	Hy	Part No.
3/8	1/4	61.0	30.5	29.0	19.3	17.8	16.8	15.3	4.8	16	17	14	46.2	23.1	21.6	6/6/4 GRUT
1/2	1/4	72.2	36.0	31.8	21.8	17.8	22.9	15.3	4.8	22	22	14	51.8	25.9	24.4	8/8/4 GRUT
1/2	3/8	72.2	36.0	33.3	21.8	19.3	22.9	16.8	7.1	22	22	17	51.8	25.9	25.9	8/8/6 GRUT
3/4	3/8	79.8	39.9	37.0	21.8	19.3	24.4	16.8	7.1	27	28.5	17	59.4	29.7	29.7	12/12/6 GRUT
3/4	1/2	79.8	39.9	39.9	21.8	21.8	24.4	22.9	10.4	27	28.5	22	59.4	29.7	29.7	12/12/ 8GRUT
1	3/8	98.0	49.0	41.9	26.4	19.3	31.2	16.8	7.1	35	38	17	73.6	36.8	34.5	16/16/A6 GRUT
1	1/2	98.0	49.0	44.7	26.4	22.9	31.2	21.8	10.4	35	38	22	73.6	36.8	34.5	16/16/8 GRUT
1	3/4	98.0	49.0	44.7	26.4	24.4	31.2	24.4	15.8	35	38	28.5	73.6	36.8	34.5	16/16/12 GRUT
1.1/4	1	135.6	67.8	55.1	38.9	26.4	41.2	31.2	22.3	46	50	38	91.4	45.7	42.9	20/20/16 GRUT
1.1/2	1	157.5	78.7	60.0	44.7	26.4	50.0	31.2	22.3	55	57	38	103.2	51.6	47.8	24/24/16 GRUT



INCH OD Tubes

T Tube OD	Tx Tube OD	A	Ax	Ay	C	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	Hx	Hy	Part No.
3/8	1/4	59.4	30.5	29.0	19.3	17.8	16.8	15.3	4.8	16	17	14	44.7	23.1	21.6	6/4/6 GRUT
1/2	1/4	67.7	36.0	31.7	21.8	17.8	22.9	15.3	4.8	22	22	14	50.2	25.9	24.3	8/4/8 GRUT
1/2	3/8	69.3	36.0	33.3	21.8	19.3	22.9	16.8	7.1	22	22	17	51.8	25.9	25.9	8/6/8 GRUT
3/4	3/8	77.0	39.9	37.1	21.8	19.3	24.4	16.8	7.1	27	28.5	17	59.4	29.7	29.7	12/6/12 GRUT
3/4	1/2	79.8	39.9	39.9	21.8	21.8	24.4	22.9	10.4	27	28.5	22	59.4	29.7	29.7	12/8/12GRUT
1	3/8	98.9	49.0	41.9	26.4	19.3	31.2	16.8	7.1	35	38	17	71.3	36.8	34.5	16/6/16 GRUT
1	1/2	93.7	49.0	44.7	26.4	21.8	31.2	21.8	10.4	35	38	22	71.3	36.8	34.5	16/8/16 GRUT
1	3/4	93.7	49.0	44.7	26.4	21.8	31.2	24.4	15.8	35	38	28.5	71.3	36.8	34.5	16/12/16 GRUT
1.1/4	1	119.6	67.8	53.0	38.9	26.4	41.2	31.2	18.2	46	50	38	85.3	45.7	40.8	20/16/20 GRUT
1.1/2	1	150.9	78.7	72.9	45.2	38.9	50.0	41.3	27.6	55	57	38	101.6	50.8	50.8	24/20/24 GRUT



INCH OD Tubes

T Tube OD	Tx Tube OD	A	Ax	Ay	C	Cx	D	Dx	E min.	F A/F	G A/F	Gx A/F	H	Hx	Hy	Part No.
3/8	1/4	59.6	30.6	29.0	19.3	17.8	16.8	15.3	4.8	16	17	14	44.8	23.2	21.6	6/4/4 GRUT
1/2	1/4	67.7	36.0	31.7	21.8	17.8	22.9	15.3	4.8	22	22	14	50.2	25.9	24.3	8/4/4 GRUT
1/2	3/8	69.3	36.0	33.2	21.8	19.3	22.9	16.8	7.1	22	22	17	51.8	25.9	25.9	8/6/6 GRUT
3/4	3/8	77.0	38.9	37.0	21.8	19.3	24.4	16.8	7.1	27	28.5	17	59.4	29.7	29.7	12/6/6 GRUT
3/4	1/2	79.8	39.9	39.9	21.8	21.8	24.4	22.9	10.4	27	28.5	22	59.4	29.7	29.7	12/8/ 8GRUT
1	3/8	99.9	39.9	41.9	26.4	19.3	31.2	16.8	7.1	35	38	17	71.3	36.8	34.5	16/6/6 GRUT
1	1/2	93.7	49.0	44.7	26.4	22.9	31.2	21.8	10.4	35	38	22	71.3	36.8	34.5	16/8/8 GRUT
1	3/4	93.7	49.0	44.7	26.4	24.4	31.2	24.4	15.8	35	38	28.5	71.3	36.8	34.5	16/12/12 GRUT
1.1/4	1	122.9	67.8	55.1	38.9	26.4	41.2	31.2	22.3	46	50	38	88.6	45.7	42.9	20/16/16 GRUT
1.1/2	1	138.7	78.7	60.0	44.7	26.4	50.0	31.2	22.3	50	57	38	99.4	51.6	47.8	24/16/16 GRUT

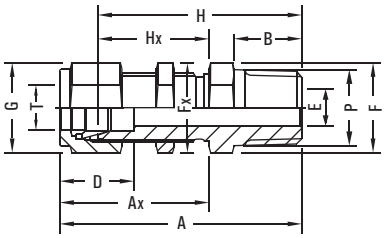
NOTE: 1. The order of the sizes is as per the designation (1-2-3) in figure shown above.

2. The combinations shown above are representative of various possibilities. Other combinations not shown are also available. Please consult us.

BULKHEAD MALE CONNECTOR

INCH OD Tubes x Male NPT Threads

T Tube OD	P NPT Male	A	Ax	B	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
1/8	1/8	46.4	31.2	9.6	12.7	2.4	14	11	39.8	24.6	8.3	12.7	2 GBMC-N
1/4	1/8	49.5	33.5	9.6	15.3	4.8	16	14	42.2	26.2	11.5	10.2	4-2 GBMC-N
1/4	1/4	54.1	33.5	14.3	15.3	4.8	16	14	46.7	26.2	11.5	10.2	4 GBMC-N
3/8	1/4	57.4	36.8	14.3	16.8	7.1	19	17	50.0	29.5	14.7	11.2	6-4 GBMC-N
3/8	3/8	57.4	36.8	14.3	16.8	7.1	19	17	50.0	29.5	14.7	11.2	6 GBMC-N
3/8	1/2	63.7	36.8	19.1	16.8	7.1	22	17	56.5	29.5	14.7	11.2	6-8 GBMC-N
1/2	3/8	63.3	41.9	14.3	22.9	9.6	24	22	53.0	31.8	19.5	12.7	8-6 GBMC-N
1/2	1/2	68.8	41.9	19.1	22.9	10.4	24	22	58.8	31.8	19.5	12.7	8 GBMC-N
3/4	3/4	76.2	47.5	19.1	24.4	15.8	30	28.5	66.9	37.4	25.8	16.8	12 GBMC-N
1	1	93.2	57.4	23.9	31.2	22.3	41	38	81.0	45.2	33.7	19.0	16 GBMC-N
1.1/4	1.1/4	110.5	72.5	23.9	41.2	27.6	50	50	87.5	49.5	42.5	19.0	20 GBMC-N
1.1/2	1.1/2	122.8	79.1	26.2	50.0	34.0	60	57	95.5	51.5	50.5	19.0	24 GBMC-N



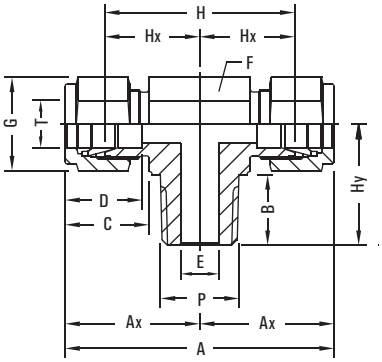
METRIC OD Tubes x Male NPT Threads

T Tube OD	P NPT Male	A	Ax	B	D	E min.	F A/F	G A/F	H	Hx	Panel Hole Drill Size	Max. Panel Thick-ness	Part No.
3	1/8	46.4	31.2	9.6	12.9	2.4	11	11	39.8	24.6	8.3	12.7	GBMC 3-2N
6	1/8	49.5	33.5	9.6	15.3	4.8	16	14	42.2	26.2	11.5	10.2	GBMC 6-2N
10	1/4	57.4	36.8	14.3	17.2	7.1	19	17	50.0	29.5	14.7	11.2	GBMC10-4N
10	3/8	57.4	36.8	14.3	17.2	7.1	19	17	50.0	29.5	14.7	11.2	GBMC10-4N
12	3/8	63.3	41.9	14.3	22.0	9.6	24	22	53.0	31.8	19.5	12.7	GBMC12-6N
12	1/2	68.8	41.9	19.1	22.0	10.4	24	22	58.8	31.8	19.5	12.7	GBMC12-8N
16	1/2	69.6	42.6	19.1	24.4	11.9	27	25	59.5	32.5	22.8	12.7	GBMC16-8N
22	3/4	83.3	53.0	19.1	26.0	15.8	35	25	73.2	42.9	29.0	19.0	GBMC22-12N
25	1	93.2	57.4	23.9	31.3	22.3	41	38	81.0	45.2	33.7	19.0	GBMC25-16N
32	1.1/4	110.5	72.5	23.9	42.0	28.6	50	50	87.5	49.5	42.5	19.0	GBMC32-20N
38	1.1/2	122.8	79.1	26.2	49.4	33.7	60	57	95.5	51.5	50.5	19.0	GBMC38-24N

NOTE : Bulkhead Male Connectors are also available with ISO Taper Male Threads, ISO Parallel Male Threads, ISO Parallel Male Therads - RP and RS and UNEF Threads. Please consult us for details.

MALE BRANCH TEE

INCH OD Tubes x Male NPT Threads



T Tube OD	P NPT Male	A	Ax	B	C	D	E min.	F	G A/F	H A/F	Hx	Hy	Part No.
1/8	1/8	47.2	23.6	9.6	15.3	12.7	2.4	11	11	34.0	17.0	17.8	2 GMBT-N
1/8	1/4	49.2	24.6	14.3	15.3	12.7	2.4	14	11	36.0	18.0	23.4	2-4 GMBT-N
1/4	1/8	53.8	26.9	9.6	17.8	5.3	4.8	14	14	39.2	19.6	18.8	4-2 GMBT-N
1/4	1/4	53.8	26.9	14.3	17.8	15.3	4.8	14	14	39.2	19.6	23.4	4 GMBT-N
1/4	3/8	59.4	29.7	14.3	17.8	15.3	4.8	19	14	44.8	22.4	26.2	4-6 GMBT-N
1/4	1/2	63.6	31.8	19.1	17.8	15.3	4.8	22	14	44.8	24.4	33.0	4-8 GMBT-N
3/8	1/4	61.0	30.5	14.3	19.3	16.8	7.1	17	17	46.2	23.1	25.4	6-4 GMBT-N
3/8	3/8	62.4	31.2	14.3	19.3	16.8	7.1	19	17	47.8	23.9	26.2	6 GMBT-N
3/8	1/2	66.0	33.0	19.1	19.3	16.8	7.1	22	17	51.8	25.9	33.0	6-8 GMBT-N
1/2	1/4	72.0	36.0	14.3	21.8	22.9	4.8	22	22	51.8	25.9	28.2	8-4 GMBT-N
1/2	3/8	72.0	36.0	14.3	21.8	22.9	9.6	22	22	51.8	25.9	28.2	8-6 GMBT-N
1/2	1/2	72.0	36.0	19.1	21.8	22.9	10.4	22	22	51.8	25.9	33.0	8 GMBT-N
5/8	1/2	76.2	38.1	19.1	21.8	24.4	11.9	22	25	55.8	27.9	35.0	10-8 GMBT-N
3/4	1/2	79.8	39.9	19.1	21.8	24.4	11.9	27	29	59.4	29.7	36.8	12-8 GMBT-N
3/4	3/4	79.8	39.9	19.1	21.8	24.4	15.8	27	29	59.4	29.7	36.8	12 GMBT-N
1	3/4	98.0	49.0	19.1	26.4	31	15.8	35	38	73.6	36.8	41.6	16-12 GMBT-N
1	1	98.0	49.0	23.8	26.4	31	22.3	35	38	73.6	36.8	46.5	16 GMBT-N
1.1/4	1.1/4	133.0	66.5	23.8	38.8	41.1	27.6	46	50	89.0	44.5	47.6	20 GMBT-N
1.1/2	1.1/2	156.0	78.0	26.2	45.2	50.0	34.0	55	57	101.6	50.8	60.4	24 GMBT-N

METRIC OD Tubes x Male NPT Threads

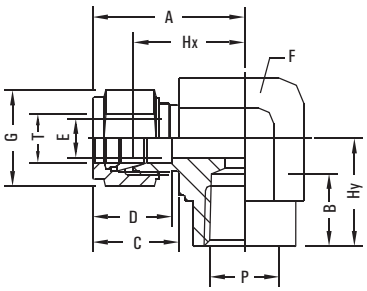
T Tube OD	P NPT Male	A	Ax	B	C	D	E min.	F	G A/F	H A/F	Hx	Hy	Part No.
3	1/8	47.2	23.6	9.6	15.3	12.9	2.4	11	11	34.0	17.0	17.8	GMBT 3-2N
3	1/4	49.2	24.6	14.3	15.3	12.9	2.4	14	11	36.0	18.0	23.4	GMBT 3-4N
6	1/8	54.0	27.0	9.6	17.7	15.3	4.8	14	14	39.2	19.6	18.8	GMBT 6-2N
6	1/4	54.0	27.0	14.3	17.7	15.3	4.8	14	14	39.2	19.6	23.4	GMBT 6-4N
6	3/8	59.6	29.8	14.3	17.7	15.3	4.8	19	14	44.8	22.4	26.2	GMBT 6-N
8	1/4	57.6	28.8	14.3	18.6	16.2	6.3	14	16	42.6	21.3	24.4	GMBT 8-4N
8	3/8	61.2	30.6	14.3	18.6	16.2	6.3	19	16	46.2	23.1	26.2	GMBT 8-6N
8	1/2	65.2	32.6	19.1	18.6	16.2	6.3	22	16	50.2	25.1	33.0	GMBT 8-N
10	1/4	63.0	31.5	14.3	19.5	17.2	7.1	17	19	47.8	23.9	26.2	GMBT 10-4N
10	3/8	63.0	31.5	14.3	19.5	17.2	7.9	19	19	47.8	23.9	26.2	GMBT 10-6N
10	1/2	67.0	33.5	19.1	19.5	17.2	7.9	22	19	51.8	25.9	33.0	GMBT 10-8N
12	1/4	72.0	36.0	14.3	22.0	22.8	7.1	22	22	51.8	25.9	26.2	GMBT 12-4N
12	3/8	72.0	36.0	14.3	22.0	22.8	9.5	22	22	51.8	25.9	28.2	GMBT 12-6N
12	1/2	72.0	36.0	19.1	22.0	22.8	9.5	22	22	51.8	25.9	33.0	GMBT 12-8N
16	1/2	76.0	38.0	19.1	22.0	24	11.9	24	25	55.8	27.9	35.1	GMBT 16-8N
25	3/4	98.2	49.1	19.1	26.5	31.3	15.8	35	38	73.6	36.8	41.7	GMBT 25-12N
25	1	98.2	49.1	23.8	26.5	31.3	21.8	35	38	73.6	36.8	46.5	GMBT 25-16N
30	1.1/4	139.8	66.9	23.8	39.2	39.6	26.2	45	50	96.6	48.3	53.1	GMBT 30-20N
32	1.1/4	144.6	72.3	23.8	41.6	42.0	27.6	45	50	98.6	49.3	53.1	GMBT 32-20N
38	1.1/2	168.0	84.0	26.2	47.9	50.0	33.7	55	57	112.8	56.4	60.4	GMBT 38-24N

NOTE : The combination of tube OD and male threads are indicative of popular sizes. Other combinations, not shown, are available . Please Consult us.

FEMALE ELBOW

INCH OD Tubes X Female NPT Threads

T Tube OD	P NPT Female	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	Part No.
1/8	1/8	24.6	10.4	15.3	12.7	2.4	14	11	18.0	19.0	2 GFE-N
1/8	1/4	27.4	15.0	15.3	12.7	2.4	19	11	20.8	22.4	2-4 GFE-N
1/4	1/8	26.9	10.4	17.8	15.3	4.8	14	14	19.6	19.0	4-2 GFE-N
1/4	1/4	29.7	15.0	17.8	15.3	4.8	19	14	22.4	22.4	4 GFE-N
1/4	3/8	31.8	15.0	17.8	15.3	4.8	22	14	24.4	22.4	4-6 GFE-N
1/4	1/2	34.6	19.8	17.8	15.3	4.8	27	14	27.2	28.5	4-8 GFE-N
5/16	1/8	28.7	10.4	17.8	15.3	6.3	19	14	21.4	19.1	5-2 GFE-N
5/16	1/4	30.5	15.0	18.5	16.3	6.3	22	16	23.2	22.4	5-4 GFE-N
3/8	1/8	30.5	10.4	19.3	16.8	7.1	17	17	23.2	19.1	6-2 GFE-N
3/8	1/4	31.2	15.0	19.3	16.8	7.1	19	17	23.9	22.4	6-4 GFE-N
3/8	3/8	33.3	15.0	19.3	16.8	7.1	22	17	25.9	22.4	6 GFE-N
3/8	1/2	36.0	19.8	19.3	16.8	7.1	27	17	28.7	28.5	6-8 GFE-N
1/2	1/4	36.0	15.0	21.8	22.9	7.1	22	22	25.9	22.4	8-4 GFE-N
1/2	3/8	36.0	15.0	21.8	22.9	10.4	22	22	25.9	22.4	8-6 GFE-N
1/2	1/2	38.9	19.8	21.8	22.9	10.4	27	22	28.7	28.5	8 GFE-N
5/8	3/8	38.1	15.0	21.8	22.9	12.7	24	22	28.0	22.4	10-6 GFE-N
5/8	1/2	39.9	19.8	21.8	24.4	12.7	27	25	29.7	28.5	10-8 GFE-N
3/4	1/2	39.9	19.8	21.8	24.4	15.8	27	28.5	29.7	28.5	12-8 GFE-N
3/4	3/4	44.7	20.6	21.8	24.4	15.8	35	28.5	34.6	31.8	12 GFE-N
7/8	3/4	44.7	20.6	21.8	25.9	18.2	35	32	34.6	31.8	14-12 GFE-N
1	3/4	49.0	20.6	26.4	31.2	22.3	35	38	36.8	31.8	16-12 GFE-N
1	1	53.6	25.4	26.4	31.2	22.3	41	38	41.4	38.1	16 GFE-N

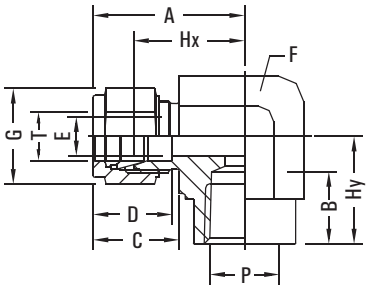


METRIC OD Tubes x Female NPT Threads

T Tube OD	P NPT Female	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	Part No.
3	1/8	24.6	10.4	15.3	12.9	2.4	14	11	18.0	19.0	GFE 3-2N
3	1/4	27.4	15.0	15.3	12.9	2.4	19	11	20.8	22.4	GFE 3-4N
6	1/8	27.0	10.4	17.7	15.3	4.8	14	14	19.6	19.0	GFE 6-2N
6	1/4	29.8	15.0	17.7	15.3	4.8	19	14	22.4	22.4	GFE 6-4N
6	1/2	34.6	19.8	17.7	15.3	4.8	27	14	27.2	28.5	GFE 6-8N
8	1/4	30.6	15.0	18.6	16.2	6.3	19	16	23.1	22.4	GFE 8-4N
8	3/8	32.6	15.0	18.6	16.2	6.3	22	16	25.1	22.4	GFE 8-6N
10	1/4	33.5	15.0	19.5	17.2	7.9	19	19	25.9	22.4	GFE 10-4N
10	3/8	33.5	15.0	19.5	17.2	7.9	22	19	25.9	22.4	GFE 10-6N
12	1/4	36.0	15.0	22.0	22.8	9.5	22	22	25.9	22.4	GFE 12-4N
12	3/8	36.0	15.0	22.0	22.8	9.5	22	22	25.9	22.4	GFE 12-6N
12	1/2	38.8	19.8	22.0	22.8	9.5	27	22	28.7	28.5	GFE 12-8N
16	1/2	39.5	19.8	22.0	24.4	12.7	27	25	29.7	28.5	GFE 16-8N
25	3/4	49.0	20.6	26.5	31.3	22.3	35	38	36.8	31.8	GFE 25-12N
25	1	53.6	25.4	26.5	31.3	22.3	41	38	41.4	38.1	GFE 25-16N

FEMALE ELBOW

INCH OD Tubes X Female ISO* tapered pipe threads



T Tube OD	P NPT Female	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	Part No.
1/8	1/8	24.6	10.4	15.3	12.7	2.4	14	11	18.0	19.0	2 GFE-Rx
1/8	1/4	27.4	15.0	15.3	12.7	2.4	19	11	20.8	22.4	2-4 GFE-Rx
1/4	1/8	26.9	10.4	17.8	15.3	4.8	14	14	19.6	19.0	4-2 GFE-Rx
1/4	1/4	29.7	15.0	17.8	15.3	4.8	19	14	22.4	22.4	4 GFE-Rx
1/4	3/8	31.8	15.0	17.8	15.3	4.8	22	14	24.4	22.4	4-6 GFE-Rx
1/4	1/2	34.6	19.8	17.8	15.3	4.8	27	14	27.2	28.5	4-8 GFE-Rx
5/16	1/8	28.7	10.4	17.8	15.3	6.3	19	14	21.4	19.1	5-2 GFE-Rx
5/16	1/4	30.5	15.0	18.5	16.3	6.3	22	16	23.2	22.4	5-4 GFE-Rx
3/8	1/8	30.5	10.4	19.3	16.8	7.1	17	17	23.2	19.1	6-2 GFE-Rx
3/8	1/4	31.2	15.0	19.3	16.8	7.1	19	17	23.9	22.4	6-4 GFE-Rx
3/8	3/8	33.3	15.0	19.3	16.8	7.1	22	17	25.9	22.4	6 GFE-Rx
3/8	1/2	36.0	19.8	19.3	16.8	7.1	27	17	28.7	28.5	6-8 GFE-Rx
1/2	1/4	36.0	15.0	21.8	22.9	7.1	22	22	25.9	22.4	8-4 GFE-Rx
1/2	3/8	36.0	15.0	21.8	22.9	10.4	22	22	25.9	22.4	8-6 GFE-Rx
1/2	1/2	38.9	19.8	21.8	22.9	10.4	27	22	28.7	28.5	8 GFE-Rx
5/8	3/8	38.1	15.0	21.8	22.9	12.7	24	22	28.0	22.4	10-6 GFE-Rx
5/8	1/2	39.9	19.8	21.8	24.4	12.7	27	25	29.7	28.5	10-8 GFE-Rx
3/4	1/2	39.9	19.8	21.8	24.4	15.8	27	28.5	29.7	28.5	12-8 GFE-Rx
3/4	3/4	44.7	20.6	21.8	24.4	15.8	35	28.5	34.6	31.8	12 GFE-Rx
7/8	3/4	44.7	20.6	21.8	25.9	18.2	35	32	34.6	31.8	14-12 GFE-Rx
1	3/4	49.0	20.6	26.4	31.2	22.3	35	38	36.8	31.8	16-12 GFE-Rx
1	1	53.6	25.4	26.4	31.2	22.3	41	38	41.4	38.1	16 GFE-Rx

METRIC OD Tubes x Female ISO* tapered pipe threads

T Tube OD	P NPT Female	A	B	C	D	E min.	F A/F	G A/F	Hx	Hy	Part No.
3	1/8	24.6	10.4	15.3	12.9	2.4	14	11	18.0	19.0	GFE 3-2Rx
3	1/4	27.4	15.0	15.3	12.9	2.4	19	11	20.8	22.4	GFE 3-4Rx
6	1/8	27.0	10.4	17.7	15.3	4.8	14	14	19.6	19.0	GFE 6-2Rx
6	1/4	29.8	15.0	17.7	15.3	4.8	19	14	22.4	22.4	SCF 6-4Rx
6	1/2	34.6	19.8	17.7	15.3	4.8	27	14	27.2	28.5	GFE 6-8Rx
8	1/4	30.6	15.0	18.6	16.2	6.3	19	16	23.1	22.4	GFE 8-4Rx
8	3/8	32.6	15.0	18.6	16.2	6.3	22	16	25.1	22.4	GFE 8-6Rx
10	1/4	33.5	15.0	19.5	17.2	7.9	19	19	25.9	22.4	GFE 10-4Rx
10	3/8	33.5	15.0	19.5	17.2	7.9	22	19	25.9	22.4	GFE 10-6Rx
12	1/4	36.0	15.0	22.0	22.8	9.5	22	22	25.9	22.4	GFE 12-4Rx
12	3/8	36.0	15.0	22.0	22.8	9.5	22	22	25.9	22.4	GFE 12-6Rx
12	1/2	38.8	19.8	22.0	22.8	9.5	27	22	28.7	28.5	GFE 12-8Rx
16	1/2	39.5	19.8	22.0	24.4	12.7	27	25	29.7	28.5	GFE 16-8Rx
25	3/4	49.0	20.6	26.5	31.3	22.3	35	38	36.8	31.8	GFE 25-12Rx
25	1	53.6	25.4	26.5	31.3	22.3	41	38	41.4	38.1	GFE 25-16Rx

* Reference Specifications : BS 21: ISO 7/1 : JIS B 0203 : DIN 2999 : IS 554

* Female connectors with Parallel ISO Female Threads to BS:2779; ISO 228/1; JIS B6202; DIN 259 are also available. Their Dimensions are as same as ISO. Tapered Pipe Threads above. Pleae consult us.

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