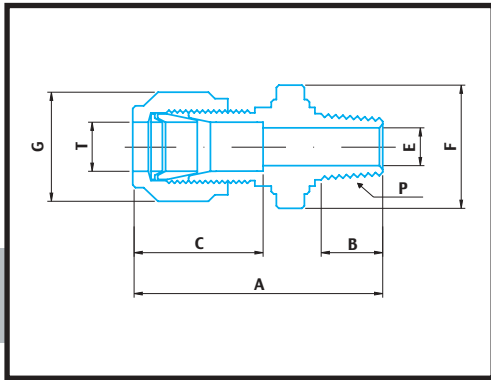


# DOUBLE FERRULE FITTINGS



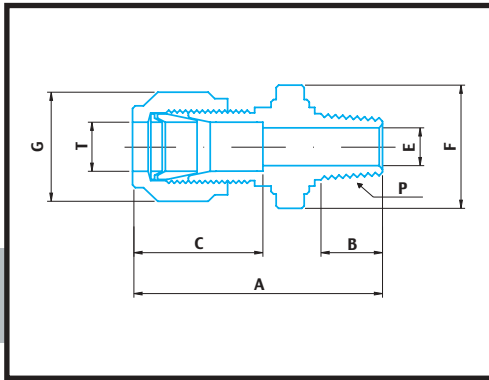


## MALE CONNECTOR

DM

Metric OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	B	C	E	F	G	PART No.
3	1/8"	30.5	9.6	12.9	2.4	11	11	M - 3 - 2 - DM
3	1/4"	35.6	14.3	12.9	2.4	14	11	M - 3 - 4 - DM
6	1/8"	32.8	9.6	15.3	4.8	14	14	M - 6 - 2 - DM
6	1/4"	37.9	14.3	15.3	4.8	14	14	M - 6 - 4 - DM
6	3/8"	38.4	14.3	15.3	4.8	19	14	M - 6 - 6 - DM
6	1/2"	44.7	19.1	15.3	4.8	22	14	M - 6 - 8 - DM
8	1/8"	34.2	9.6	16.2	4.8	14	16	M - 8 - 2 - DM
8	1/4"	38.7	14.3	16.2	6.3	14	16	M - 8 - 4 - DM
8	3/8"	39.3	14.3	16.2	6.3	19	16	M - 8 - 6 - DM
8	1/2"	45.6	19.1	16.2	6.3	22	16	M - 8 - 8 - DM
10	1/8"	36.3	9.6	17.2	4.8	17	19	M - 10 - 2 - DM
10	1/4"	40.9	14.3	17.2	7.9	19	19	M - 10 - 4 - DM
10	3/8"	40.9	14.3	17.2	7.9	19	19	M - 10 - 6 - DM
10	1/2"	46.5	19.1	17.2	7.9	22	19	M - 10 - 8 - DM
12	1/4"	43.4	14.3	22.8	7.1	22	22	M - 12 - 4 - DM
12	3/8"	43.4	14.3	22.8	9.5	22	22	M - 12 - 6 - DM
12	1/2"	49.0	19.1	22.8	9.5	22	22	M - 12 - 8 - DM
12	3/4"	50.5	19.1	22.8	9.5	27	22	M - 12 - 12 - DM
12	1"	57.1	23.8	22.8	9.5	35	22	M - 12 - 16 - DM
14	1/4"	44.1	14.3	24.4	7.1	24	25	M - 14 - 4 - DM
14	3/8"	44.1	14.3	24.4	9.5	24	25	M - 14 - 6 - DM
14	1/2"	49.0	19.1	24.4	11.1	24	25	M - 14 - 8 - DM
15	1/2"	49.0	19.1	24.4	11.9	24	25	M - 15 - 8 - DM
16	3/8"	44.1	14.3	24.4	9.5	24	25	M - 16 - 6 - DM
16	1/2"	49.0	19.1	24.4	11.9	24	25	M - 16 - 8 - DM
16	3/4"	50.5	19.1	24.4	12.7	27	25	M - 16 - 12 - DM
18	1/2"	50.5	19.1	24.4	11.9	27	30	M - 18 - 8 - DM
18	3/4"	50.5	19.1	24.4	15.1	27	30	M - 18 - 12 - DM
20	1/2"	52.3	19.1	26.0	11.9	30	32	M - 20 - 8 - DM
20	3/4"	52.3	19.1	26.0	15.9	30	32	M - 20 - 12 - DM
22	3/4"	52.3	19.1	26.0	15.9	30	32	M - 22 - 12 - DM
22	1"	57.1	23.8	26.0	18.3	35	32	M - 22 - 16 - DM
25	1/2"	57.5	19.1	31.3	11.9	35	38	M - 25 - 8 - DM
25	3/4"	57.5	19.1	31.3	15.8	35	38	M - 25 - 12 - DM
25	1"	62.3	23.8	31.3	21.8	35	38	M - 25 - 16 - DM
28	1"	72.4	23.8	36.6	21.8	41	46	M - 28 - 16 - DM
28	1.1/4"	73.1	23.8	36.6	21.8	46	46	M - 28 - 20 - DM
30	1.1/4"	77.2	23.8	39.6	26.2	46	50	M - 30 - 20 - DM
32	1.1/4"	79.6	23.8	42.0	28.6	46	50	M - 32 - 20 - DM
38	1.1/2"	96.6	26.2	49.4	33.7	55	60	M - 38 - 20 - DM

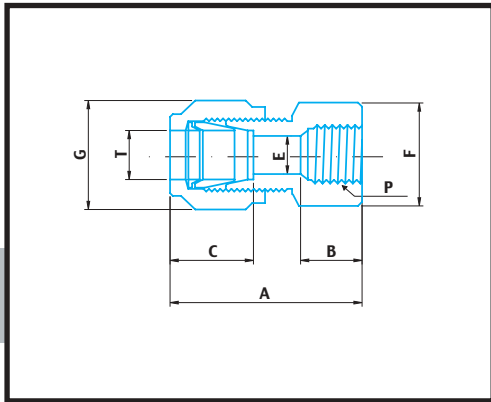


## MALE CONNECTOR

## DM

Inch OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	B	C	E	F	G	PART No.
1/16"	1/16"	23.9	9.6	8.6	1.3	8	8	P - 1 - 1 - DM
1/16"	1/8"	26.2	9.6	8.6	1.3	14	8	P - 1 - 2 - DM
1/8"	1/8"	30.5	9.6	12.7	2.4	11	11	P - 2 - 2 - DM
1/8"	1/4"	35.6	14.3	12.7	2.4	14	11	P - 2 - 4 - DM
1/4"	1/8"	32.8	9.6	15.3	4.8	14	14	P - 4 - 2 - DM
1/4"	1/4"	37.8	14.3	15.3	4.8	14	14	P - 4 - 4 - DM
1/4"	3/8"	38.4	14.3	15.3	4.8	19	14	P - 4 - 6 - DM
1/4"	1/2"	44.7	19.1	15.3	4.8	22	14	P - 4 - 8 - DM
5/16"	1/4"	38.6	14.3	16.3	6.3	14	16	P - 5 - 4 - DM
3/8"	1/8"	35.3	9.6	16.8	4.8	16	17	P - 6 - 2 - DM
3/8"	1/4"	39.8	14.3	16.8	7.1	16	17	P - 6 - 4 - DM
3/8"	3/8"	39.8	14.3	16.8	7.1	19	17	P - 6 - 6 - DM
3/8"	1/2"	41.2	19.1	16.8	7.1	22	17	P - 6 - 8 - DM
1/2"	1/4"	43.4	14.3	22.9	7.1	22	22	P - 8 - 4 - DM
1/2"	3/8"	43.4	14.3	22.9	9.6	22	22	P - 8 - 6 - DM
1/2"	1/2"	49.0	19.1	22.9	10.4	22	22	P - 8 - 8 - DM
1/2"	3/4"	50.5	19.1	22.9	10.4	27	22	P - 8 - 12 - DM
1/2"	1"	57.1	23.8	22.9	10.4	35	22	P - 8 - 16 - DM
5/8"	3/8"	44.2	14.3	24.4	9.6	24	25	P - 10 - 6 - DM
5/8"	1/2"	49.0	19.1	24.4	10.4	24	25	P - 10 - 8 - DM
3/4"	1/2"	50.5	19.1	24.4	10.4	27	28.5	P - 12 - 8 - DM
3/4"	3/4"	50.5	19.1	24.4	15.8	27	28.5	P - 12 - 12 - DM
3/4"	1"	57.1	23.8	24.4	15.8	35	28.5	P - 12 - 16 - DM
7/8"	3/4"	50.5	19.1	26.0	15.8	30	32	P - 14 - 12 - DM
1"	1/2"	57.4	19.1	31.2	10.4	35	38	P - 16 - 8 - DM
1"	3/4"	57.4	19.1	31.2	15.8	35	38	P - 16 - 12 - DM
1"	1"	62.2	23.8	31.2	22.3	35	38	P - 16 - 16 - DM
1.1/4"	1"	77.2	23.8	41.2	22.3	46	50	P - 20 - 16 - DM
1.1/4"	1.1/4"	77.2	23.8	41.2	27.6	46	50	P - 20 - 20 - DM
1.1/2"	1.1/2"	88.9	26.2	50.0	34.0	55	60	P - 24 - 24 - DM

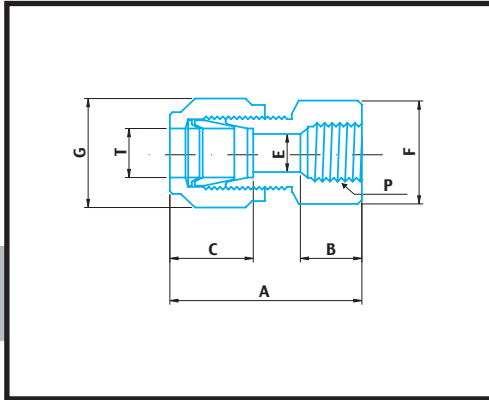


## FEMALE CONNECTOR

## DF

Metric OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	B	C	E	F	G	PART No.
3	1/8"	28.7	10.4	12.9	2.4	14	11	M - 3 - 2 - DF
3	1/4"	33.5	15.0	12.9	2.4	19	11	M - 3 - 4 - DF
6	1/8"	31.3	10.4	15.3	4.8	14	14	M - 6 - 2 - DF
6	1/4"	35.8	15.0	15.3	4.8	19	14	M - 6 - 4 - DF
6	3/8"	37.6	15.0	15.3	4.8	22	14	M - 6 - 6 - DF
6	1/2"	42.5	19.8	15.3	4.8	27	14	M - 6 - 8 - DF
8	1/8"	32.1	10.4	16.2	6.3	14	16	M - 8 - 2 - DF
8	1/4"	37.0	15.0	16.2	6.3	19	16	M - 8 - 4 - DF
8	3/8"	38.5	15.0	16.2	6.3	22	16	M - 8 - 6 - DF
8	1/2"	43.3	19.8	16.2	6.3	27	16	M - 8 - 8 - DF
10	1/4"	37.8	15.0	17.2	7.9	19	19	M - 10 - 4 - DF
10	3/8"	39.4	15.0	17.2	7.9	22	19	M - 10 - 6 - DF
10	1/2"	44.2	19.8	17.2	7.9	27	19	M - 10 - 8 - DF
12	1/4"	40.3	15.0	22.8	9.5	22	22	M - 12 - 4 - DF
12	3/8"	41.9	15.0	22.8	9.5	22	22	M - 12 - 6 - DF
12	1/2"	46.7	19.8	22.8	9.5	27	22	M - 12 - 8 - DF
15	1/2"	46.7	19.8	24.4	11.9	27	25	M - 15 - 8 - DF
16	1/2"	46.9	19.8	24.4	12.7	27	25	M - 16 - 8 - DF
20	1/2"	47.9	19.8	26.0	15.9	30	32	M - 20 - 8 - DF
20	3/4"	49.7	20.6	26.0	15.9	35	32	M - 20 - 12 - DF
22	3/4"	49.7	20.6	26.0	18.3	35	32	M - 22 - 12 - DF
22	1"	57.9	25.4	26.0	18.3	41	32	M - 22 - 16 - DF
25	3/4"	53.4	20.6	31.3	21.8	35	38	M - 25 - 12 - DF
25	1"	62.3	25.4	31.3	21.8	41	38	M - 25 - 16 - DF
32	1.1/4"	74.6	25.4	42.0	27.6	55	50	M - 32 - 20 - DF
38	1.1/2"	83.3	27.6	49.4	34.0	60	60	M - 38 - 24 - DF

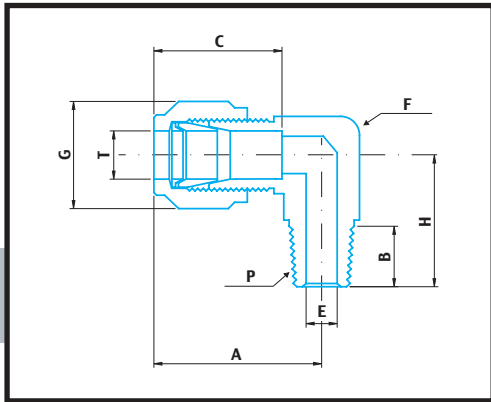


## FEMALE CONNECTOR

## DF

Inch OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	B	C	E	F	G	PART No.
1/16"	1/16"	23.6	9.9	8.6	1.3	11	8	P - 1 - 1 - DF
1/16"	1/8"	24.4	10.4	8.6	1.3	14	8	P - 1 - 2 - DF
1/8"	1/8"	28.7	10.4	12.7	2.4	14	11	P - 2 - 2 - DF
1/8"	1/4"	33.6	15.0	12.7	2.4	19	11	P - 2 - 4 - DF
1/4"	1/8"	31.2	9.9	15.3	4.8	14	14	P - 4 - 2 - DF
1/4"	1/4"	35.8	15.0	15.3	4.8	19	14	P - 4 - 4 - DF
1/4"	3/8"	37.6	15.0	15.3	4.8	22	14	P - 4 - 6 - DF
1/4"	1/2"	42.4	19.8	15.3	4.8	27	14	P - 4 - 8 - DF
5/16"	1/8"	32.0	10.4	16.3	6.3	14	16	P - 5 - 2 - DF
5/16"	1/4"	36.8	15.0	16.3	6.3	19	16	P - 5 - 4 - DF
3/8"	1/8"	32.8	10.4	16.8	7.1	16	17	P - 6 - 2 - DF
3/8"	1/4"	37.6	15.0	16.8	7.1	19	17	P - 6 - 4 - DF
3/8"	3/8"	39.1	15.0	16.8	7.1	22	17	P - 6 - 6 - DF
3/8"	1/2"	43.9	19.8	16.8	7.1	27	17	P - 6 - 8 - DF
1/2"	1/4"	40.4	15.0	22.9	10.4	22	22	P - 8 - 4 - DF
1/2"	3/8"	41.9	15.0	22.9	10.4	22	22	P - 8 - 6 - DF
1/2"	1/2"	46.7	19.8	22.9	10.4	27	22	P - 8 - 8 - DF
1/2"	3/4"	48.3	20.6	22.9	10.4	32	22	P - 8 - 12 - DF
5/8"	3/8"	41.9	15.0	24.4	12.7	24	25	P - 10 - 6 - DF
5/8"	1/2"	46.7	19.8	24.4	12.7	27	25	P - 10 - 8 - DF
3/4"	1/2"	46.7	19.8	24.4	15.8	27	28.5	P - 12 - 8 - DF
3/4"	3/4"	48.3	20.6	24.4	15.8	32	28.5	P - 12 - 12 - DF
7/8"	3/4"	49.8	20.6	25.9	18.3	35	32	P - 14 - 12 - DF
1"	3/4"	53.4	20.6	31.2	22.3	35	38	P - 16 - 12 - DF
1"	1"	62.3	25.4	31.2	22.3	41	38	P - 16 - 16 - DF
1.1/4"	1.1/4"	74.6	25.4	41.2	27.6	55	50	P - 20 - 20 - DF
1.1/2"	1.1/2"	83.3	27.6	50.0	34.0	60	60	P - 24 - 24 - DF

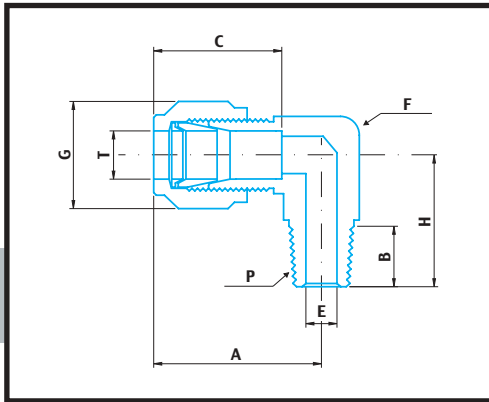


## MALE ELBOW

**GM**

Metric OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	B	C	E	F	G	H	PART No.
3	1/8"	23.6	9.6	12.9	2.4	11	11	17.8	M - 3 - 2 - GM
3	1/4"	24.6	14.3	12.9	2.4	14	11	23.4	M - 3 - 4 - GM
6	1/8"	27.0	9.6	15.3	4.8	14	14	18.8	M - 6 - 2 - GM
6	1/4"	27.0	14.3	15.3	4.8	14	14	23.4	M - 6 - 4 - GM
6	3/8"	29.8	14.3	15.3	4.8	17	14	26.2	M - 6 - 6 - GM
6	1/2"	31.8	19.1	15.3	4.8	22	14	33.0	M - 6 - 8 - GM
8	1/8"	28.8	9.6	16.2	4.8	14	16	19.8	M - 8 - 2 - GM
8	1/4"	28.8	14.3	16.2	6.3	14	16	24.4	M - 8 - 4 - GM
8	3/8"	30.6	14.3	16.2	6.3	17	16	26.2	M - 8 - 6 - GM
8	1/2"	32.6	19.1	16.2	6.3	22	16	33.0	M - 8 - 8 - GM
10	1/8"	31.5	9.6	17.2	4.8	17	19	21.6	M - 10 - 2 - GM
10	1/4"	31.5	14.3	17.2	7.1	17	19	26.2	M - 10 - 4 - GM
10	3/8"	31.5	14.3	17.2	7.9	17	19	26.2	M - 10 - 6 - GM
10	1/2"	33.5	19.1	17.2	7.9	22	19	33.0	M - 10 - 8 - GM
12	1/4"	36.0	14.3	22.8	7.1	22	22	26.2	M - 12 - 4 - GM
12	3/8"	36.0	14.3	22.8	9.5	22	22	28.2	M - 12 - 6 - GM
12	1/2"	36.0	19.1	22.8	9.5	22	22	33.0	M - 12 - 8 - GM
12	3/4"	39.8	19.1	22.8	9.5	27	22	36.8	M - 12 - 12 - GM
15	1/2"	38.0	19.1	24.4	11.9	24	25	35.1	M - 15 - 8 - GM
16	1/2"	38.0	19.1	24.4	11.9	24	25	35.1	M - 16 - 8 - GM
16	3/4"	39.8	19.1	24.4	12.7	27	25	36.8	M - 16 - 12 - GM
18	1/2"	39.8	19.1	24.4	11.9	27	30	36.8	M - 18 - 8 - GM
18	3/4"	39.8	19.1	24.4	15.1	27	30	36.8	M - 18 - 12 - GM
20	1/2"	44.6	19.1	26.0	11.9	35	32	41.7	M - 20 - 8 - GM
20	3/4"	44.6	19.1	26.0	15.9	35	32	41.7	M - 20 - 12 - GM
22	3/4"	44.6	19.1	26.0	15.9	35	32	41.7	M - 22 - 12 - GM
22	1"	44.6	23.8	26.0	18.3	35	32	46.5	M - 22 - 16 - GM
25	3/4"	49.1	19.1	31.3	15.8	35	38	41.7	M - 25 - 12 - GM
25	1"	49.1	23.8	31.3	21.8	35	38	46.5	M - 25 - 16 - GM
30	1.1/4"	69.9	23.8	39.6	26.2	45	50	53.1	M - 30 - 20 - GM
32	1.1/4"	72.3	23.8	42.0	27.6	45	50	53.1	M - 32 - 20 - GM
38	1.1/2"	84.0	26.2	49.4	33.7	55	60	60.4	M - 38 - 24 - GM

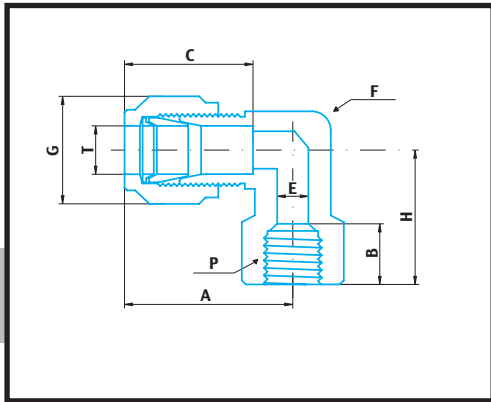


## MALE ELBOW

GM

Inch OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	B	C	E	F	G	H	PART No.
1/16"	1/16"	19.0	9.6	8.6	1.3	11	8	17.8	P - 1 - 1 - GM
1/16"	1/8"	19.0	9.6	8.6	1.3	11	8	17.8	P - 1 - 2 - GM
1/8"	1/8"	23.6	9.6	12.7	2.4	11	11	17.8	P - 2 - 2 - GM
1/8"	1/4"	24.6	14.3	12.7	2.4	14	11	23.4	P - 2 - 4 - GM
1/4"	1/8"	26.9	9.6	15.3	4.8	14	14	18.8	P - 4 - 2 - GM
1/4"	1/4"	26.9	14.3	15.3	4.8	14	14	23.4	P - 4 - 4 - GM
1/4"	3/8"	29.7	14.3	15.3	4.8	17	14	26.2	P - 4 - 6 - GM
1/4"	1/2"	31.8	19.1	15.3	4.8	22	14	33.0	P - 4 - 8 - GM
5/16"	1/4"	28.7	9.6	16.3	6.3	14	16	24.4	P - 5 - 4 - GM
3/8"	1/8"	30.5	9.6	16.8	4.8	14	17	20.9	P - 6 - 2 - GM
3/8"	1/4"	30.5	14.3	16.8	7.1	17	17	25.4	P - 6 - 4 - GM
3/8"	3/8"	31.2	14.3	16.8	7.1	17	17	26.2	P - 6 - 6 - GM
3/8"	1/2"	33.3	19.1	16.8	7.1	22	17	33.0	P - 6 - 8 - GM
1/2"	1/4"	36.0	14.3	22.9	4.8	22	22	28.2	P - 8 - 4 - GM
1/2"	3/8"	36.0	14.3	22.9	9.6	22	22	28.2	P - 8 - 6 - GM
1/2"	1/2"	36.0	19.1	22.9	10.4	22	22	33.0	P - 8 - 8 - GM
1/2"	3/4"	39.9	19.1	22.9	10.4	27	22	36.8	P - 8 - 12 - GM
5/8"	1/2"	38.1	19.1	24.4	11.9	24	25	35.0	P - 10 - 8 - GM
3/4"	1/2"	39.9	19.1	24.4	11.9	27	28.5	36.8	P - 12 - 8 - GM
3/4"	3/4"	39.9	19.1	24.4	15.8	27	28.5	36.8	P - 12 - 12 - GM
7/8"	3/4"	44.7	19.1	25.9	15.8	35	32	41.6	P - 14 - 12 - GM
1"	3/4"	49.0	19.1	31.2	15.8	35	38	41.6	P - 16 - 12 - GM
1"	1"	49.0	23.8	31.2	22.3	35	38	46.5	P - 16 - 16 - GM
1.1/4"	1.1/4"	66.5	23.8	41.2	27.6	46	50	47.8	P - 20 - 20 - GM
1.1/2"	1.1/2"	78.0	26.2	50.0	34.0	55	60	60.4	P - 24 - 24 - GM



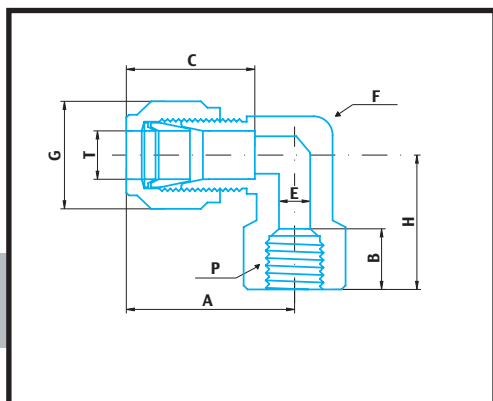
## FEMALE ELBOW

GF

Metric OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	B	C	E	F	G	H	PART No.
3	1/8"	24.6	10.4	12.9	2.4	14	11	19.0	M - 3 - 2 - GF
3	1/4"	27.4	15.0	12.9	2.4	19	11	22.4	M - 3 - 4 - GF
6	1/8"	27.0	10.4	15.3	4.8	14	14	19.0	M - 6 - 2 - GF
6	1/4"	29.8	15.0	15.3	4.8	19	14	22.4	M - 6 - 4 - GF
6	1/2"	34.6	19.8	15.3	4.8	27	14	28.5	M - 6 - 8 - GF
8	1/4"	30.6	15.0	16.2	6.3	19	16	22.4	M - 8 - 4 - GF
8	3/8"	32.6	15.0	16.2	6.3	22	16	22.4	M - 8 - 6 - GF
10	1/4"	33.5	15.0	17.2	7.9	19	19	22.4	M - 10 - 4 - GF
10	3/8"	33.5	15.0	17.2	7.9	22	19	22.4	M - 10 - 6 - GF
12	1/4"	36.0	15.0	22.8	9.5	22	22	22.4	M - 12 - 4 - GF
12	3/8"	36.0	15.0	22.8	9.5	22	22	22.4	M - 12 - 6 - GF
12	1/2"	38.8	19.8	22.8	9.5	27	22	28.5	M - 12 - 8 - GF
16	1/2"	39.5	19.8	24.4	12.7	27	25	28.5	M - 16 - 8 - GF
25	3/4"	49.0	20.6	31.3	22.3	35	38	31.8	M - 25 - 12 - GF
25	1"	53.6	25.4	31.3	22.3	41	38	38.1	M - 25 - 16 - GF



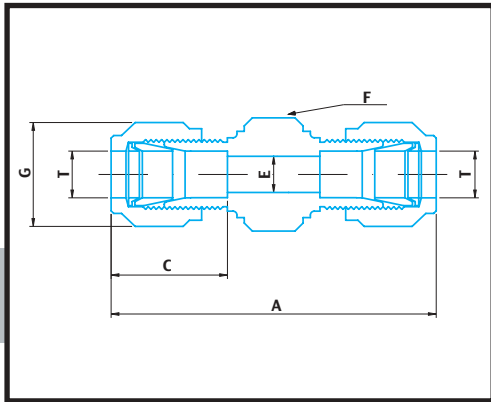


## FEMALE ELBOW

GF

Inch OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	B	C	E	F	G	H	PART No.
1/8"	1/8"	24.6	10.4	12.7	2.4	14	11	19.0	P - 2 - 2 - GF
1/8"	1/4"	27.4	15.0	12.7	2.4	19	11	22.4	P - 2 - 4 - GF
1/4"	1/8"	26.9	10.4	15.3	4.8	14	14	19.0	P - 4 - 2 - GF
1/4"	1/4"	29.7	15.0	15.3	4.8	19	14	22.4	P - 4 - 4 - GF
1/4"	3/8"	31.8	15.0	15.3	4.8	22	14	22.4	P - 4 - 6 - GF
1/4"	1/2"	34.6	19.8	15.3	4.8	27	14	28.5	P - 4 - 8 - GF
5/16"	1/8"	28.7	10.4	16.3	6.3	19	16	19.1	P - 5 - 2 - GF
5/16"	1/4"	30.5	15.0	16.3	6.3	22	16	22.4	P - 5 - 4 - GF
3/8"	1/8"	30.5	10.4	16.8	7.1	17	17	19.1	P - 6 - 2 - GF
3/8"	1/4"	31.2	15.0	16.8	7.1	19	17	22.4	P - 6 - 4 - GF
3/8"	3/8"	33.3	15.0	16.8	7.1	22	17	22.4	P - 6 - 6 - GF
3/8"	1/2"	36.0	19.8	16.8	7.1	27	17	28.5	P - 6 - 8 - GF
1/2"	1/4"	36.0	15.0	22.9	7.1	22	22	22.4	P - 8 - 4 - GF
1/2"	3/8"	36.0	15.0	22.9	10.4	22	22	22.4	P - 8 - 6 - GF
1/2"	1/2"	38.9	19.8	22.9	10.4	27	22	28.5	P - 8 - 8 - GF
5/8"	3/8"	38.1	15.0	24.4	12.7	24	25	22.4	P - 10 - 6 - GF
5/8"	1/2"	39.9	19.8	24.4	12.7	27	25	28.5	P - 10 - 8 - GF
3/4"	1/2"	39.9	19.8	24.4	15.8	27	28.5	28.5	P - 12 - 8 - GF
3/4"	3/4"	44.7	20.6	24.4	15.8	35	28.5	31.8	P - 12 - 12 - GF
7/8"	3/4"	44.7	20.6	25.9	18.2	35	32	31.8	P - 14 - 12 - GF
1"	3/4"	49.0	20.6	31.2	22.3	35	38	31.8	P - 16 - 12 - GF
1"	1"	53.6	25.4	31.2	22.3	41	38	38.1	P - 16 - 16 - GF



## UNION

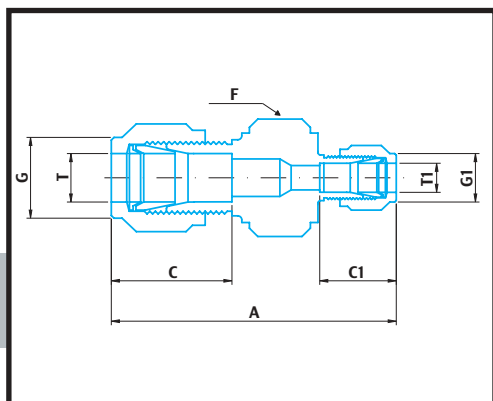
## UD

### Metric OD tubes

T TUBE OD	A	C	E	F	G	PART No.
3	35.3	12.9	2.4	11	11	M - 3 - UD
6	41.0	15.3	4.8	14	14	M - 6 - UD
8	43.2	16.2	6.3	16	16	M - 8 - UD
10	46.2	17.2	7.9	17	19	M - 10 - UD
12	51.2	22.8	9.5	22	22	M - 12 - UD
14	52.0	24.4	11.1	24	25	M - 14 - UD
15	52.0	24.4	11.9	24	25	M - 15 - UD
16	52.0	24.4	12.7	24	25	M - 16 - UD
18	53.5	24.4	15.1	27	30	M - 18 - UD
20	55.0	26.0	15.9	30	32	M - 20 - UD
22	55.0	26.0	18.3	30	32	M - 22 - UD
25	65.0	31.3	21.8	35	38	M - 25 - UD
28	85.0	36.6	21.8	41	46	M - 28 - UD
30	92.7	39.6	26.2	46	50	M - 30 - UD
32	97.3	42.0	28.6	46	50	M - 32 - UD
38	113.6	49.4	33.7	55	60	M - 38 - UD

### Inch OD tubes

T TUBE OD	A	C	E	F	G	PART No.
1/16"	25.1	8.6	1.3	8	8	P - 1 - UD
1/8"	35.6	12.7	2.4	11	11	P - 2 - UD
1/4"	40.9	15.3	4.8	14	14	P - 4 - UD
5/16"	42.9	16.3	6.3	14	16	P - 5 - UD
3/8"	45.0	16.8	7.1	16	17	P - 6 - UD
1/2"	51.3	22.9	10.4	22	22	P - 8 - UD
5/8"	52.0	24.4	12.7	24	25	P - 10 - UD
3/4"	53.6	24.4	15.8	27	28.5	P - 12 - UD
7/8"	55.2	25.9	18.2	30	32	P - 14 - UD
1"	64.8	31.2	22.3	35	38	P - 16 - UD
1.1/4"	92.2	41.2	27.6	46	50	P - 20 - UD
1.1/2"	108.0	50.0	34.0	55	60	P - 24 - UD



## REDUCING UNION

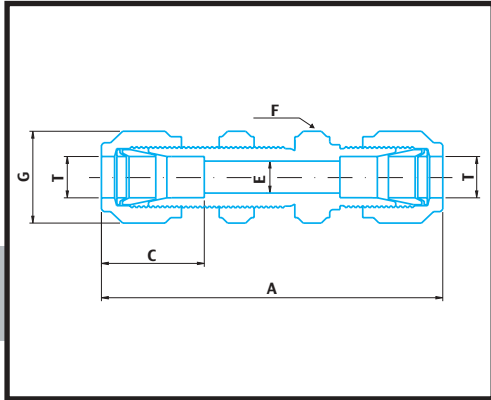
## UR

### Metric OD tubes

T TUBE OD	T1 TUBE OD	A	C	C1	F	G	G1	PART No.
6	3	38.6	15.3	12.9	14	14	11	M - 6 - 3 - UR
8	6	42.3	16.2	15.3	14	16	14	M - 8 - 6 - UR
10	6	44.5	17.2	15.3	17	19	14	M - 10 - 6 - UR
10	8	45.1	17.2	16.2	17	19	16	M - 10 - 8 - UR
12	6	47.0	22.8	15.3	22	22	14	M - 12 - 6 - UR
12	8	47.8	22.8	16.2	22	22	16	M - 12 - 8 - UR
12	10	48.7	22.8	17.2	22	22	19	M - 12 - 10 - UR
16	10	49.5	24.4	17.2	24	25	19	M - 16 - 10 - UR
16	12	52.0	24.4	22.8	24	25	22	M - 16 - 12 - UR
22	18	55.0	26.0	24.4	30	32	30	M - 22 - 18 - UR
22	20	55.0	26.0	26.6	30	32	32	M - 22 - 20 - UR
25	12	65.0	31.3	22.8	35	38	22	M - 25 - 12 - UR
25	20	65.0	31.3	26.0	35	38	32	M - 25 - 20 - UR
30	20	75.4	39.6	26.0	45	50	32	M - 30 - 20 - UR
30	25	80.1	39.6	31.3	45	50	38	M - 30 - 25 - UR
32	20	77.8	42.0	26.0	45	50	32	M - 32 - 20 - UR
32	25	82.3	42.0	31.3	45	50	38	M - 32 - 25 - UR
38	20	92.0	49.4	31.3	55	60	38	M - 38 - 20 - UR
38	25	104.6	49.4	39.6	55	60	50	M - 38 - 25 - UR

### Inch OD tubes

T TUBE OD	T1 TUBE OD	A	C	C1	F	G	G1	PART No.
1/4"	1/8"	38.6	15.3	12.7	14	14	11	P - 4 - 2 - UR
5/16"	1/8"	39.6	16.3	12.7	14	16	11	P - 5 - 2 - UR
5/16"	1/4"	42.2	16.3	15.3	14	16	14	P - 5 - 4 - UR
3/8"	1/8"	40.9	16.8	12.7	16	17	11	P - 6 - 2 - UR
3/8"	1/4"	43.2	16.8	15.3	16	17	14	P - 6 - 4 - UR
1/2"	1/8"	45.2	22.9	12.7	22	22	11	P - 8 - 2 - UR
1/2"	1/4"	47.0	22.9	15.3	22	22	14	P - 8 - 4 - UR
1/2"	3/8"	48.5	22.9	16.8	22	22	17	P - 8 - 6 - UR
5/8"	3/8"	49.3	24.4	16.8	24	25	17	P - 10 - 6 - UR
5/8"	1/2"	52.0	24.4	22.9	24	25	22	P - 10 - 8 - UR
3/4"	1/4"	49.3	24.4	15.3	27	28.5	14	P - 12 - 4 - UR
3/4"	3/8"	50.8	24.4	16.8	27	28.5	17	P - 12 - 6 - UR
3/4"	1/2"	53.6	24.4	22.9	27	28.5	22	P - 12 - 8 - UR
1"	1/2"	60.5	31.2	22.9	35	38	22	P - 16 - 8 - UR
1"	3/4"	60.5	31.2	24.4	35	38	28.5	P - 16 - 12 - UR
1.1/4"	1"	92.2	41.2	31.2	45	50	38	P - 20 - 16 - UR
1.1/2"	1.1/4"	60.5	31.2	24.4	35	38	50	P - 24 - 20 - UR



## BULKHEAD UNION

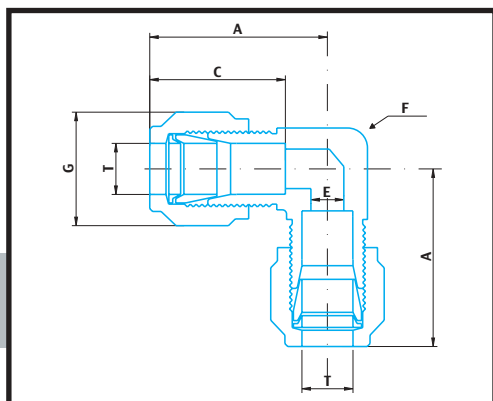
UP

### Metric OD tubes

T TUBE OD	A	C	E	F	G	Panel Hole Drill Size	Max. Panel Thickness	PART No.
3	51.3	12.9	2.4	14	11	8.3	12.7	M - 3 - UP
6	57.7	15.3	4.8	16	14	11.5	10.2	M - 6 - UP
8	61.0	16.2	6.3	17	16	13.1	11.2	M - 8 - UP
10	63.7	17.2	7.9	22	19	16.3	11.2	M - 10 - UP
12	71.0	22.8	9.5	24	22	19.5	12.7	M - 12 - UP
14	72.5	24.4	11.1	27	25	22.5	12.7	M - 14 - UP
15	72.5	24.4	11.9	27	25	22.8	12.7	M - 15 - UP
16	72.5	24.4	12.7	27	25	22.8	12.7	M - 16 - UP
18	78.9	24.4	15.1	30	30	26.0	16.8	M - 18 - UP
20	84.5	26.0	15.8	35	32	29.0	19.0	M - 20 - UP
25	95.6	31.2	22.3	35	38	33.7	19.0	M - 25 - UP
30	123.7	39.6	26.2	50	46	40.5	19.0	M - 30 - UP
32	128.3	42.0	27.6	50	50	42.5	19.0	M - 32 - UP
38	144.6	49.4	33.7	60	60	50.5	19.0	M - 38 - UP

### Inch OD tubes

T TUBE OD	A	C	E	F	G	Panel Hole Drill Size	Max. Panel Thickness	PART No.
1/16"	31.5	8.6	1.3	11	8	5.2	3.0	P - 1 - UP
1/8"	51.3	12.7	2.4	11	11	8.3	12.7	P - 2 - UP
1/4"	57.6	15.3	4.8	16	14	11.5	10.2	P - 4 - UP
5/16"	60.7	16.3	6.3	17	16	13.0	11.2	P - 5 - UP
3/8"	62.2	16.8	7.1	22	17	14.6	11.2	P - 6 - UP
1/2"	71.1	22.9	10.4	24	22	19.5	12.7	P - 8 - UP
5/8"	72.6	24.4	12.7	27	25	22.6	12.7	P - 10 - UP
3/4"	79.0	24.4	16.0	30	28.5	25.8	16.8	P - 12 - UP
1"	95.6	31.2	22.3	35	38	33.7	19.0	P - 16 - UP
1.1/4"	123.2	41.2	27.6	50	50	41.6	19.0	P - 20 - UP
1.1/2"	139.2	50.0	34.0	60	60	49.6	19.0	P - 24 - UP



## UNION ELBOW

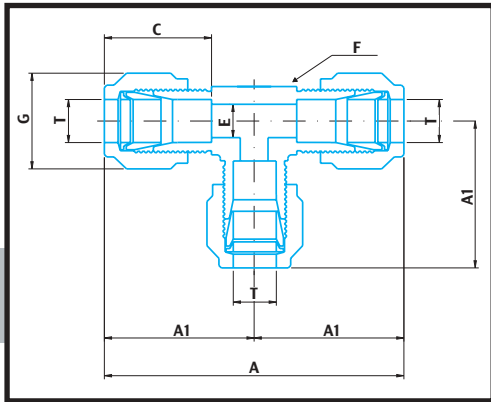
UG

### Metric OD tube

T TUBE OD	A	C	E	F	G	PART No.
3	22.3	12.9	2.4	11	11	M - 3 - UG
6	27.0	15.3	4.8	14	14	M - 6 - UG
8	28.8	16.2	6.3	16	16	M - 8 - UG
10	31.5	17.2	7.9	17	19	M - 10 - UG
12	36.0	22.8	9.5	22	22	M - 12 - UG
14	38.0	24.4	11.1	24	25	M - 14 - UG
15	38.0	24.4	11.9	24	25	M - 15 - UG
16	38.0	24.4	12.7	24	25	M - 16 - UG
18	39.8	24.4	15.1	27	30	M - 18 - UG
20	44.6	26.0	15.9	32	32	M - 20 - UG
22	44.6	26.0	18.3	32	32	M - 22 - UG
25	49.1	31.2	21.8	35	38	M - 25 - UG
28	64.0	36.6	21.8	41	46	M - 28 - UG
30	69.9	39.6	26.2	46	50	M - 30 - UG
32	72.3	42.0	28.6	46	50	M - 32 - UG
38	84.0	49.4	33.7	55	60	M - 38 - UG

### Inch OD tube

T TUBE OD	A	C	E	F	G	PART No.
1/16"	17.8	8.6	1.3	11	8	P - 1 - UG
1/8"	22.4	12.7	2.4	11	11	P - 2 - UG
1/4"	26.9	15.3	4.8	14	14	P - 4 - UG
5/16"	28.7	16.3	6.3	16	16	P - 5 - UG
3/8"	30.5	16.8	7.1	17	17	P - 6 - UG
1/2"	36.0	22.9	10.4	22	22	P - 8 - UG
5/8"	38.1	24.4	12.7	24	25	P - 10 - UG
3/4"	39.9	24.4	15.8	27	28.5	P - 12 - UG
7/8"	44.7	25.9	18.2	35	32	P - 14 - UG
1"	49.0	31.2	22.3	35	38	P - 16 - UG
1.1/4"	66.6	41.2	27.6	46	50	P - 20 - UG
1.1/2"	78.0	50.0	34.0	55	60	P - 24 - UG



## UNION TEE

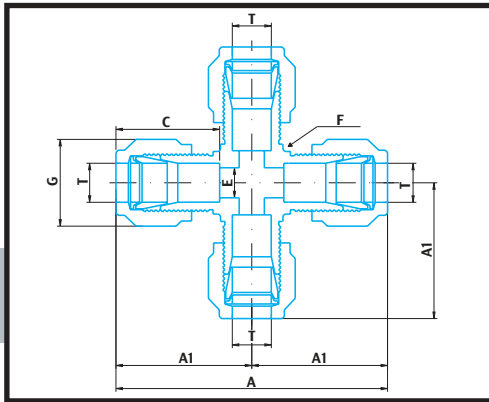
## UT

### Metric OD tube

T TUBE OD	A	A1	C	E	F	G	PART No.
3	44.6	22.3	12.9	2.4	11	11	M - 3 - UT
6	54.0	27.0	15.3	4.8	14	14	M - 6 - UT
8	57.6	28.8	16.2	6.3	16	16	M - 8 - UT
10	63.0	31.5	17.2	7.9	17	19	M - 10 - UT
12	72.0	36.0	22.8	9.5	22	22	M - 12 - UT
14	76.0	38.0	24.4	11.1	24	25	M - 14 - UT
15	76.0	38.0	24.4	11.9	24	25	M - 15 - UT
16	76.0	38.0	24.4	12.7	24	25	M - 16 - UT
18	79.6	39.8	24.4	15.1	27	30	M - 18 - UT
20	89.2	44.6	26.0	15.9	32	32	M - 20 - UT
22	89.2	44.6	26.0	18.3	32	32	M - 22 - UT
25	98.2	49.1	31.2	21.8	35	38	M - 25 - UT
28	128.0	64.0	36.6	21.8	41	46	M - 28 - UT
30	139.8	69.9	39.6	26.2	46	50	M - 30 - UT
32	144.6	72.3	42.0	28.6	46	50	M - 32 - UT
38	168.0	84.0	49.4	33.7	55	60	M - 38 - UT

### Inch OD tube

T TUBE OD	A	A1	C	E	F	G	PART No.
1/16"	35.6	17.8	8.6	1.3	11	8	P - 1 - UT
1/8"	44.8	22.4	12.7	2.4	11	11	P - 2 - UT
1/4"	53.8	26.9	15.3	4.8	14	14	P - 4 - UT
5/16"	57.4	28.7	16.3	6.3	16	16	P - 5 - UT
3/8"	61.0	30.5	16.8	7.1	17	17	P - 6 - UT
1/2"	72.0	36.0	22.9	10.4	22	22	P - 8 - UT
5/8"	76.2	38.1	24.4	12.7	24	25	P - 10 - UT
3/4"	79.8	39.9	24.4	15.8	27	28.5	P - 12 - UT
7/8"	89.4	44.7	25.9	18.2	35	32	P - 14 - UT
1"	98.0	49.0	31.2	22.3	35	38	P - 16 - UT
1.1/4"	133.2	66.6	41.2	27.6	46	50	P - 20 - UT
1.1/2"	156.0	78.0	50.0	34.0	55	60	P - 24 - UT



## UNION CROSS

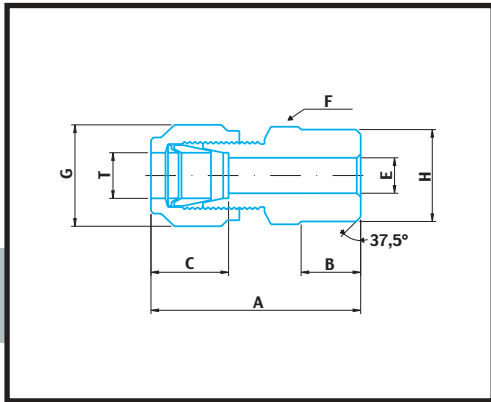
## UC

### Metric OD tube

T TUBE OD	A	A1	C	E	F	G	PART No.
3	44.6	22.3	12.9	2.4	11	11	M - 3 - UC
6	54.0	27.0	15.3	4.8	14	14	M - 6 - UC
8	57.6	28.8	16.2	6.3	16	16	M - 8 - UC
10	63.0	31.5	17.2	7.9	17	19	M - 10 - UC
12	72.0	36.0	22.8	9.5	22	22	M - 12 - UC
16	76.0	38.0	24.4	12.7	24	25	M - 16 - UC
22	89.2	44.6	26.0	18.3	32	32	M - 22 - UC
25	98.2	49.1	31.2	21.8	35	38	M - 25 - UC

### Inch OD tube

T TUBE OD	A	A1	C	E	F	G	PART No.
1/8"	44.8	22.4	12.7	2.4	11	11	P - 2 - UC
1/4"	53.8	26.9	15.3	4.8	14	14	P - 4 - UC
3/8"	61.0	30.5	16.8	7.1	17	17	P - 6 - UC
1/2"	72.0	36.0	22.9	10.4	22	22	P - 8 - UC
3/4"	79.8	39.9	24.4	15.8	27	28.5	P - 12 - UC
1"	98.0	49.0	31.2	22.3	35	38	P - 16 - UC



## BUTT WELD PIPE CONNECTOR

## DBW

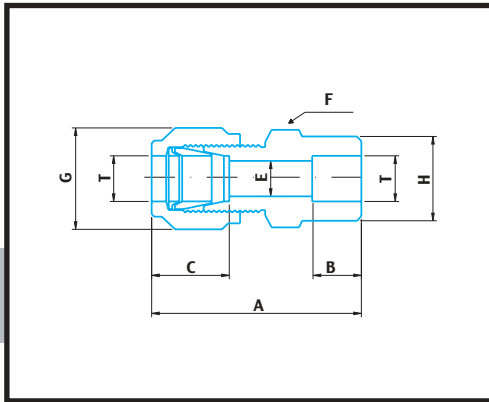
### Metric OD tube x ANSI B 36.19 Pipe

T TUBE OD	PIPE WELD MALE	A	B	C	E	F	G	H	PART No.
3	1/8"	30.5	9.6	12.9	2.4	11	11	10.3	M - 3 - 2 - DBW
6	1/8"	32.8	9.6	15.3	4.8	14	14	10.3	M - 6 - 2 - DBW
6	1/4"	37.9	14.3	15.3	4.8	14	14	13.7	M - 6 - 4 - DBW
8	1/8"	34.2	9.6	16.3	5.1	16	16	10.3	M - 8 - 2 - DBW
8	1/4"	38.7	14.3	16.3	6.3	16	16	13.7	M - 8 - 4 - DBW
8	1/2"	45.6	19.1	16.3	6.3	22	16	21.3	M - 8 - 8 - DBW
10	1/4"	40.9	14.3	17.2	7.1	19	19	13.7	M - 10 - 4 - DBW
10	3/8"	40.9	14.3	17.2	7.9	19	19	17.2	M - 10 - 6 - DBW
10	1/2"	46.5	19.1	17.2	7.9	22	19	21.3	M - 10 - 8 - DBW
12	1/4"	43.4	14.3	22.9	7.1	22	22	13.7	M - 12 - 4 - DBW
12	3/8"	43.4	14.3	22.9	9.5	22	22	17.2	M - 12 - 6 - DBW
12	1/2"	49.0	19.1	22.9	9.5	22	22	21.3	M - 12 - 8 - DBW
16	1/2"	49.0	19.1	24.4	12.7	24	25	21.3	M - 16 - 8 - DBW
20	3/4"	52.3	19.1	26.0	15.9	30	32	26.7	M - 20 - 12 - DBW
22	3/4"	52.3	19.1	26.0	15.9	30	32	26.7	M - 22 - 12 - DBW
25	1"	62.3	23.8	31.2	21.8	35	38	33.4	M - 25 - 16 - DBW
30	1.1/4"	77.2	23.8	39.6	26.2	45	50	42.2	M - 30 - 20 - DBW
32	1.1/4"	79.6	23.8	42.0	28.6	45	50	42.2	M - 32 - 20 - DBW
38	1.1/2"	91.6	26.2	49.4	33.7	55	60	48.3	M - 38 - 24 - DBW

### Inch OD tube x ANSI B 36.19 Pipe

T TUBE OD	PIPE WELD MALE	A	B	C	E	F	G	H	PART No.
1/8"	1/8"	30.5	9.6	12.7	2.4	11	11	10.3	P - 2 - 2 - DBW
1/4"	1/8"	32.8	9.6	15.3	4.8	14	14	10.3	P - 4 - 2 - DBW
1/4"	1/4"	37.8	14.3	15.3	4.8	14	14	13.7	P - 4 - 4 - DBW
5/16"	1/8"	34.0	9.6	16.3	5.1	14	16	10.3	P - 5 - 2 - DBW
5/16"	1/4"	38.6	14.3	16.3	6.3	16	16	13.7	P - 5 - 4 - DBW
3/8"	1/4"	39.9	14.3	16.8	7.1	16	17	13.7	P - 6 - 4 - DBW
3/8"	3/8"	39.9	14.3	16.8	7.1	17	17	17.2	P - 6 - 6 - DBW
3/8"	1/2"	46.3	19.1	16.8	7.1	22	17	21.3	P - 6 - 8 - DBW
1/2"	3/8"	43.4	14.3	22.9	10.4	22	22	17.2	P - 8 - 6 - DBW
1/2"	1/2"	49.0	19.1	22.9	10.4	22	22	21.3	P - 8 - 8 - DBW
1/2"	3/4"	50.5	19.1	22.9	10.4	27	22	26.7	P - 8 - 12 - DBW
5/8"	1/2"	49.0	19.1	24.4	12.7	24	25	21.3	P - 10 - 8 - DBW
3/4"	3/4"	50.5	19.1	24.4	15.8	27	28.5	26.7	P - 12 - 12 - DBW
1"	1"	62.2	23.8	31.2	22.3	35	38	33.4	P - 16 - 16 - DBW
1.1/4"	1.1/4"	77.2	23.8	41.2	27.6	46	50	42.2	P - 20 - 20 - DBW
1.1/2"	1.1/2"	88.9	26.2	50.0	34	55	60	48.3	P - 24 - 24 - DBW





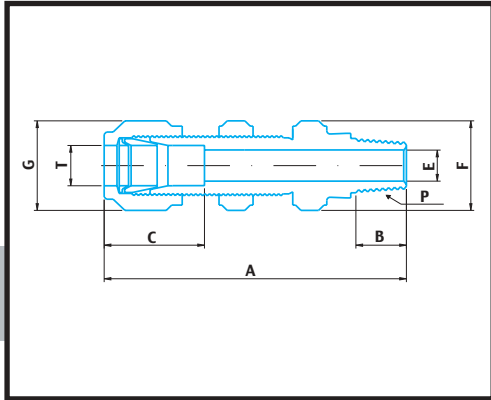
## SOCKET WELD TUBE CONNECTOR DSW

### Metric OD tube

T TUBE OD	A	B	C	E	F	G	H	PART No.
3	29.0	6.4	12.9	2.4	11	11	22.9	M - 3 - 3 - DSW
6	33.5	7.9	15.3	4.8	14	14	26.2	M - 6 - 6 - DSW
10	37.6	9.6	17.2	7.1	16	19	30.3	M - 10 - 10 - DSW
12	41.2	12.7	22.8	10.4	22	22	31.0	M - 12 - 12 - DSW
20	43.4	14.3	26.0	15.8	27	32	33.3	M - 20 - 20 - DSW
25	52.6	19.1	31.3	22.3	35	38	40.4	M - 25 - 25 - DSW
32	72.4	19.1	42.0	27.6	45	50	50.3	M - 32 - 32 - DSW
38	81.8	23.8	49.4	34.0	55	60	54.6	M - 38 - 38 - DSW

### Inch OD tube

T TUBE OD	A	B	C	E	F	G	H	PART No.
1/8"	29.0	6.4	12.7	2.4	11	11	22.9	P - 2 - 2 - DSW
1/4"	33.5	7.9	15.3	4.8	14	14	26.2	P - 4 - 4 - DSW
3/8"	37.6	9.6	16.8	7.1	16	17	30.3	P - 6 - 6 - DSW
1/2"	41.2	12.7	22.9	10.4	22	22	31.0	P - 8 - 8 - DSW
3/4"	43.4	14.3	24.4	15.8	27	28.5	33.3	P - 12 - 12 - DSW
1"	52.6	19.1	31.2	22.3	35	38	40.4	P - 16 - 16 - DSW
1.1/4"	72.4	19.1	41.2	27.6	45	50	50.3	P - 20 - 20 - DSW
1.1/2"	81.8	23.8	50.0	34.0	55	60	54.6	P - 24 - 24 - DSW



## BULKHEAD MALE CONNECTOR

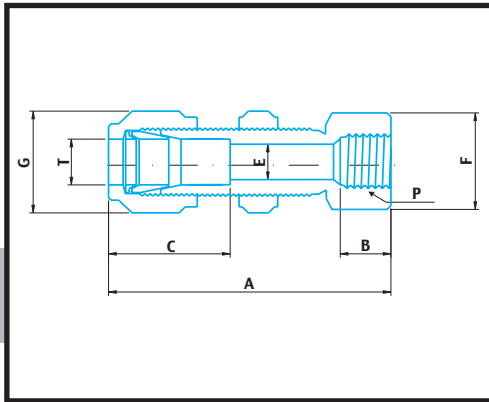
## DMP

### Metric OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	B	C	E	F	G	Panel Hole Drill Size	Max. Panel Thickness	PART No.
3	1/8"	46.4	9.6	12.9	2.4	11	11	8.3	12.7	M - 3 - 2 - DMP
6	1/8"	49.5	9.6	15.3	4.8	16	14	11.5	10.2	M - 6 - 2 - DMP
10	1/4"	57.4	14.3	17.2	7.1	19	17	14.7	11.2	M - 10 - 4 - DMP
10	3/8"	57.4	14.3	17.2	7.1	19	17	14.7	11.2	M - 10 - 6 - DMP
12	3/8"	63.3	14.3	22.8	9.6	24	22	19.5	12.7	M - 12 - 6 - DMP
12	1/2"	68.8	19.1	22.8	10.4	24	22	19.5	12.7	M - 12 - 8 - DMP
16	1/2"	69.6	19.1	24.4	11.9	27	25	22.8	12.7	M - 16 - 8 - DMP
22	3/4"	83.3	19.1	26.0	15.8	35	25	29.0	19.0	M - 22 - 12 - DMP
25	1"	93.2	23.9	31.2	22.3	41	38	33.7	19.0	M - 25 - 16 - DMP
32	1.1/4"	110.5	23.9	42.0	28.6	50	50	42.5	19.0	M - 32 - 20 - DMP
38	1.1/2"	122.8	26.2	49.4	33.7	60	60	50.5	19.0	M - 38 - 24 - DMP

### Inch OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	B	C	E	F	G	Panel Hole Drill Size	Max. Panel Thickness	PART No.
1/8"	1/8"	46.4	9.6	12.7	2.4	14	11	8.3	12.7	P - 2 - 2 - DMP
1/4"	1/8"	49.5	9.6	15.3	4.8	16	14	11.5	10.2	P - 4 - 2 - DMP
1/4"	1/4"	54.1	14.3	15.3	4.8	16	14	11.5	10.2	P - 4 - 4 - DMP
3/8"	1/4"	57.4	14.3	16.8	7.1	19	17	14.7	11.2	P - 6 - 4 - DMP
3/8"	3/8"	57.4	14.3	16.8	7.1	19	17	14.7	11.2	P - 6 - 6 - DMP
3/8"	1/2"	63.7	19.1	16.8	7.1	22	17	14.7	11.2	P - 6 - 8 - DMP
1/2"	3/8"	63.3	14.3	22.9	9.6	24	22	19.5	12.7	P - 8 - 6 - DMP
1/2"	1/2"	68.8	19.1	22.9	10.4	24	22	19.5	12.7	P - 8 - 8 - DMP
3/4"	3/4"	76.2	19.1	24.4	15.8	30	28.5	25.8	16.8	P - 12 - 12 - DMP
1"	1"	93.2	23.9	31.2	22.3	41	38	33.7	19.0	P - 16 - 16 - DMP
1.1/4"	1.1/4"	110.5	23.9	41.2	27.6	50	50	42.5	19.0	P - 20 - 20 - DMP
1.1/2"	1.1/2"	122.8	26.2	50.0	34.0	60	60	50.5	19.0	P - 24 - 24 - DMP



## BULKHEAD FEMALE CONNECTOR

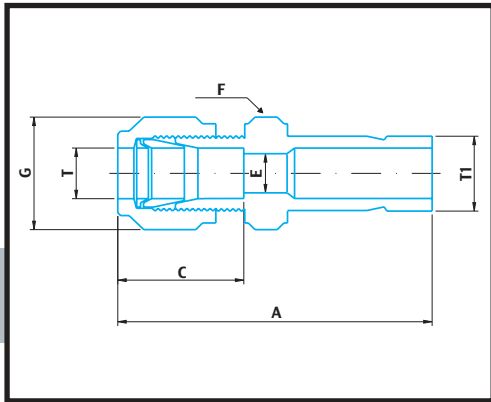
## DFP

### Metric OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	B	C	E	F	G	Panel Hole Drill Size	Max. Panel Thickness	PART No.
3	1/8"	44.7	10.4	12.9	2.4	14	11	8.3	12.7	M - 3 - 2 - DFP
6	1/4"	51.6	15.0	15.3	4.8	19	14	11.5	10.2	M - 6 - 4 - DFP
10	3/8"	56.8	15.0	17.2	7.9	22	19	16.3	11.2	M - 10 - 6 - DFP
12	3/8"	61.8	15.0	22.8	9.5	24	22	19.5	12.7	M - 12 - 6 - DFP
12	1/2"	66.7	19.8	22.8	9.5	27	22	19.5	12.7	M - 12 - 8 - DFP
16	1/2"	67.5	20.6	24.4	12.7	27	25	22.8	12.7	M - 16 - 8 - DFP
22	3/4"	79.9	20.6	26.0	15.8	35	32	29.0	19.0	M - 22 - 12 - DFP
25	3/4"	84.3	20.6	31.2	15.8	35	38	33.7	19.0	M - 25 - 12 - DFP
25	1"	93.2	25.4	31.2	22.3	35	38	33.7	19.0	M - 25 - 16 - DFP
32	1.1/4"	105.7	25.4	42.0	27.6	50	50	41.6	19.0	M - 32 - 20 - DFP
38	1.1/2"	114.5	27.6	49.4	33.7	60	60	49.6	19.0	M - 38 - 24 - DFP

### Inch OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	B	C	E	F	G	Panel Hole Drill Size	Max. Panel Thickness	PART No.
1/8"	1/8"	44.7	10.4	12.7	2.4	14	11	8.3	12.7	P - 2 - 2 - DFP
1/4"	1/8"	47.0	10.4	15.3	4.8	16	14	11.5	10.2	P - 4 - 2 - DFP
1/4"	1/4"	51.5	15.0	15.3	4.8	19	14	11.5	10.2	P - 4 - 4 - DFP
3/8"	1/4"	54.8	15.0	16.8	7.1	19	17	14.7	11.2	P - 6 - 4 - DFP
1/2"	3/8"	61.7	15.0	22.9	10.4	22	22	19.5	12.7	P - 8 - 6 - DFP
1/2"	1/2"	66.7	19.8	22.9	10.4	27	22	19.5	12.7	P - 8 - 8 - DFP
5/8"	1/2"	67.6	19.8	24.4	12.7	27	25	22.6	12.7	P - 10 - 8 - DFP
3/4"	1/2"	72.4	19.8	24.4	16.0	30	28.5	25.8	16.8	P - 12 - 8 - DFP
3/4"	3/4"	74.4	20.6	24.4	16.0	30	28.5	25.8	16.8	P - 12 - 12 - DFP
1"	3/4"	84.3	20.6	31.2	16.0	35	38	33.7	19.0	P - 16 - 12 - DFP
1"	1"	93.2	25.4	31.2	22.3	35	38	33.7	19.0	P - 16 - 16 - DFP
1.1/4"	1.1/4"	105.7	25.4	41.2	27.6	50	50	41.6	19.0	P - 20 - 20 - DFP
1.1/2"	1.1/2"	114.5	27.6	50.0	34.0	60	60	49.6	19.0	P - 24 - 24 - DFP

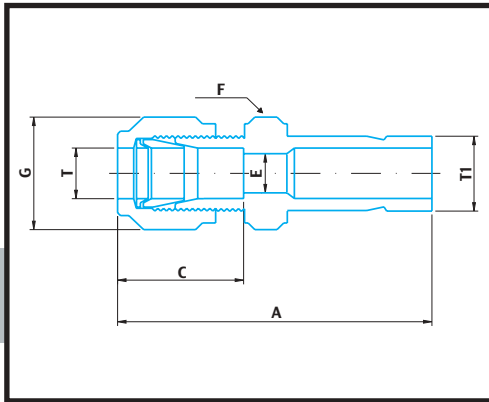


### REDUCER

R

Metric OD tube x Metric OD port

T TUBE OD	T1 TUBE OD	A	C	E	F	G	PART No.
3	6	36.1	12.9	2.4	11	11	M - 3 - 6 - R
3	10	38.4	12.9	2.4	14	11	M - 3 - 10 - R
6	3	36.9	15.3	1.8	14	14	M - 6 - 3 - R
6	8	39.9	15.3	4.8	14	14	M - 6 - 8 - R
6	10	40.7	15.3	4.8	14	14	M - 6 - 10 - R
6	12	46.3	15.3	4.8	14	14	M - 6 - 12 - R
8	6	40.3	16.2	4.6	14	16	M - 8 - 6 - R
8	10	42.0	16.2	6.4	14	16	M - 8 - 10 - R
8	12	47.6	16.2	6.4	14	16	M - 8 - 12 - R
10	6	42.4	17.2	4.6	17	17	M - 10 - 6 - R
10	8	43.4	17.2	6.2	17	17	M - 10 - 8 - R
10	12	49.8	17.2	7.9	17	17	M - 10 - 12 - R
12	6	44.9	22.8	4.6	22	22	M - 12 - 6 - R
12	8	45.9	22.8	6.2	22	22	M - 12 - 8 - R
12	10	46.7	22.8	7.7	22	22	M - 12 - 10 - R
12	16	53.8	22.8	9.5	22	22	M - 12 - 16 - R
12	20	56.1	22.8	9.5	22	22	M - 12 - 20 - R
12	22	56.1	22.8	9.5	24	22	M - 12 - 22 - R
12	25	62.4	22.8	9.5	27	22	M - 12 - 25 - R
16	12	53.0	24.4	9.1	24	25	M - 16 - 12 - R
18	12	54.6	24.4	9.1	27	30	M - 18 - 12 - R
18	16	56.1	24.4	12.7	27	30	M - 18 - 16 - R
20	16	57.9	26.0	12.7	30	32	M - 20 - 16 - R
20	25	64.2	26.0	15.8	30	32	M - 20 - 25 - R
22	20	59.4	26.0	15.1	30	32	M - 22 - 20 - R
22	25	64.2	26.0	18.3	30	32	M - 22 - 25 - R
25	18	63.1	31.2	13.9	35	38	M - 25 - 18 - R
25	20	64.6	31.2	15.1	35	38	M - 25 - 20 - R

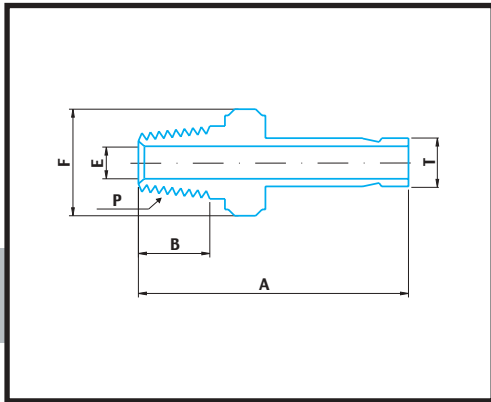


## REDUCER

R

Inch OD tube x Inch OD port

T TUBE OD	T1 TUBE OD	A	C	E	F	G	PART No.
1/8"	1/8"	33.5	12.7	2.0	11	11	P - 2 - 2 - R
1/8"	1/4"	36.0	12.7	4.8	11	11	P - 2 - 4 - R
1/4"	1/8"	36.8	15.3	2.0	14	14	P - 4 - 2 - R
1/4"	1/4"	39.1	15.3	4.8	14	14	P - 4 - 4 - R
1/4"	3/8"	40.6	15.3	4.8	14	14	P - 4 - 6 - R
1/4"	1/2"	46.3	15.3	4.8	14	14	P - 4 - 8 - R
5/16"	3/8"	41.9	16.3	6.3	14	16	P - 5 - 6 - R
5/16"	1/2"	46.5	16.3	6.3	14	16	P - 5 - 8 - R
3/8"	1/4"	41.4	16.8	7.1	16	17	P - 6 - 4 - R
3/8"	3/8"	43.2	16.8	7.1	16	17	P - 6 - 6 - R
3/8"	1/2"	48.5	16.8	7.1	16	17	P - 6 - 8 - R
1/2"	1/4"	45.0	22.9	4.8	22	22	P - 8 - 4 - R
1/2"	3/8"	46.7	22.9	7.1	22	22	P - 8 - 6 - R
1/2"	1/2"	52.3	22.9	9.9	22	22	P - 8 - 8 - R
1/2"	3/4"	53.8	22.9	10.4	22	22	P - 8 - 12 - R
1/2"	1"	60.2	22.9	10.4	22	22	P - 8 - 16 - R
5/8"	3/4"	54.6	24.4	12.7	24	25	P - 10 - 12 - R
5/8"	7/8"	56.2	24.4	12.7	24	25	P - 10 - 14 - R
3/4"	1/2"	54.6	24.4	9.9	27	28.5	P - 12 - 8 - R
3/4"	1"	62.5	24.4	15.8	27	28.5	P - 12 - 16 - R
1"	1.1/4"	80.5	31.2	22.3	35	38	P - 16 - 20 - R
1"	1.1/2"	89.2	31.2	22.3	41	38	P - 16 - 24 - R



## MALE ADAPTER

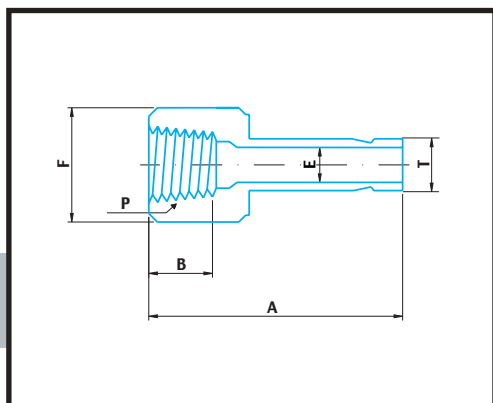
## AM

### Metric OD tube x Male NPT thread

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

### Inch OD tube x Male NPT thread

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



## FEMALE ADAPTER

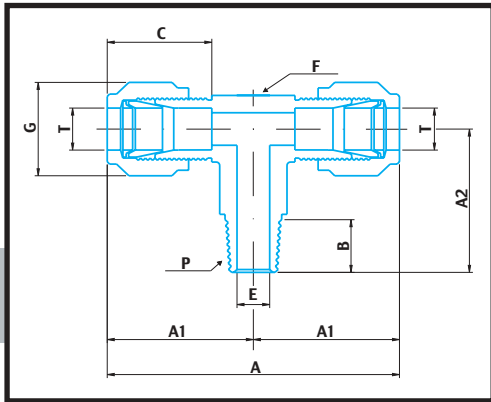
## AF

### Metric OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	B	E	F	PART No.
3	1/4"	31.7	15.0	2.4	14	M - 3 - 4 - AF
6	1/8"	32.5	9.9	4.6	14	M - 6 - 2 - AF
6	1/4"	37.1	15.0	4.6	19	M - 6 - 4 - AF
8	1/4"	37.6	15.0	6.4	19	M - 8 - 4 - AF
10	1/4"	38.1	15.0	7.7	19	M - 10 - 4 - AF
10	3/8"	40.1	15.0	7.7	22	M - 10 - 6 - AF
10	1/2"	46.5	19.8	7.7	27	M - 10 - 8 - AF
12	1/4"	43.7	15.0	9.1	19	M - 12 - 4 - AF
12	1/2"	52.3	19.8	9.1	27	M - 12 - 8 - AF
16	1/2"	47.7	19.8	9.1	27	M - 16 - 8 - AF
22	3/4"	52.0	20.6	15.0	35	M - 22 - 12 - AF
25	3/4"	51.2	20.6	15.0	35	M - 25 - 12 - AF
25	1"	66.5	25.4	19.8	41	M - 25 - 16 - AF
32	1.1/4"	78.0	25.4	27.4	55	M - 32 - 20 - AF
38	1.1/2"	88.9	27.6	33.3	60	M - 38 - 24 - AF

### Inch OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	B	E	F	PART No.
1/8"	1/8"	31.5	10.4	2.4	14	P - 2 - 2 - AF
1/8"	1/4"	35.3	15.0	2.4	19	P - 2 - 4 - AF
1/4"	1/8"	33.0	10.4	4.8	14	P - 4 - 2 - AF
1/4"	1/4"	37.0	15.0	4.8	19	P - 4 - 4 - AF
1/4"	3/8"	39.4	15.0	4.8	22	P - 4 - 6 - AF
1/4"	1/2"	45.5	19.8	4.8	27	P - 4 - 8 - AF
5/16"	1/4"	37.6	15.0	6.3	19	P - 5 - 4 - AF
3/8"	1/4"	38.1	15.0	7.1	19	P - 6 - 4 - AF
3/8"	3/8"	40.4	15.0	7.1	22	P - 6 - 6 - AF
3/8"	1/2"	46.7	19.8	7.1	27	P - 6 - 8 - AF
1/2"	1/4"	43.5	15.0	9.9	19	P - 8 - 4 - AF
1/2"	3/8"	45.5	15.0	9.9	22	P - 8 - 6 - AF
1/2"	1/2"	51.8	19.8	9.9	27	P - 8 - 8 - AF
5/8"	1/2"	53.0	19.8	12.7	27	P - 10 - 8 - AF
3/4"	1/2"	52.8	19.8	15.0	27	P - 12 - 8 - AF
3/4"	3/4"	52.8	20.6	15.0	32	P - 12 - 12 - AF
3/4"	1"	58.4	25.4	15.0	41	P - 12 - 16 - AF
1"	3/4"	60.7	20.6	20.3	32	P - 16 - 12 - AF
1"	1"	64.3	25.4	20.3	41	P - 16 - 16 - AF
1.1/4"	1.1/4"	77.7	25.4	27.6	55	P - 20 - 20 - AF
1.1/2"	1.1/2"	88.9	27.6	33.2	60	P - 24 - 24 - AF



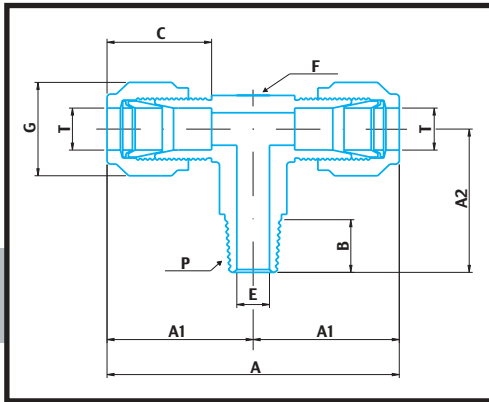
## MALE BRANCH TEE

TMC

Metric OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	A1	A2	B	C	E	F	G	PART No.
3	1/8"	47.2	23.6	17.8	9.6	12.9	2.4	11	11	M - 3 - 2 - TMC
3	1/4"	49.2	24.6	23.4	14.3	12.9	2.4	14	11	M - 3 - 4 - TMC
6	1/8"	54.0	27.0	18.8	9.6	15.3	4.8	14	14	M - 6 - 2 - TMC
6	1/4"	54.0	27.0	23.4	14.3	15.3	4.8	14	14	M - 6 - 4 - TMC
6	3/8"	59.6	29.8	26.2	14.3	15.3	4.8	17	14	M - 6 - 6 - TMC
8	1/4"	57.6	28.8	24.4	14.3	16.2	6.3	14	16	M - 8 - 4 - TMC
8	3/8"	61.2	30.6	26.2	14.3	16.2	6.3	17	16	M - 8 - 6 - TMC
8	1/2"	65.2	32.6	33.0	19.1	16.2	6.3	22	16	M - 8 - 8 - TMC
10	1/4"	63.0	31.5	36.2	14.3	17.2	7.1	17	19	M - 10 - 4 - TMC
10	3/8"	63.0	31.5	26.2	14.3	17.2	7.9	17	19	M - 10 - 6 - TMC
10	1/2"	67.0	33.5	33.0	19.1	17.2	7.9	22	19	M - 10 - 8 - TMC
12	1/4"	72.0	36.0	26.2	14.3	22.8	7.1	22	22	M - 12 - 4 - TMC
12	3/8"	72.0	36.0	28.2	14.3	22.8	9.5	22	22	M - 12 - 6 - TMC
12	1/2"	72.0	36.0	33.0	19.1	22.8	9.5	22	22	M - 12 - 8 - TMC
16	1/2"	76.0	38.0	35.1	19.1	24.4	11.9	24	25	M - 16 - 8 - TMC
25	3/4"	98.2	49.1	41.7	19.1	31.2	15.8	35	38	M - 25 - 12 - TMC
25	1"	98.2	49.1	46.5	23.8	31.2	21.8	35	38	M - 25 - 16 - TMC
30	1.1/4"	139.8	66.9	53.1	23.8	39.6	26.2	45	50	M - 30 - 20 - TMC
32	1.1/4"	144.6	72.3	53.1	23.8	42.0	27.6	45	50	M - 32 - 20 - TMC
38	1.1/2"	168.0	84.0	60.4	26.2	49.4	33.7	55	60	M - 38 - 24 - TMC



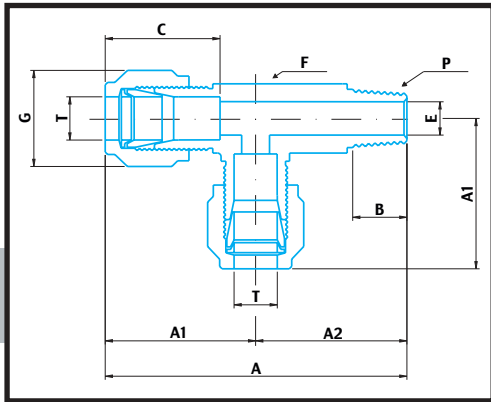


## MALE BRANCH TEE

TMC

Inch OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	A1	A2	B	C	E	F	G	PART No.
1/8"	1/8"	47.2	23.6	17.8	9.6	12.7	2.4	11	11	P - 2 - 2 - TMC
1/8"	1/4"	49.2	24.6	23.4	14.3	12.7	2.4	14	11	P - 2 - 4 - TMC
1/4"	1/8"	53.8	26.9	18.8	9.6	15.3	4.8	14	14	P - 4 - 2 - TMC
1/4"	1/4"	53.8	26.9	23.4	14.3	15.3	4.8	14	14	P - 4 - 4 - TMC
1/4"	3/8"	59.4	29.7	26.2	14.3	15.3	4.8	17	14	P - 4 - 6 - TMC
1/4"	1/2"	63.6	31.8	33.0	19.1	15.3	4.8	22	14	P - 4 - 8 - TMC
3/8"	1/4"	61.0	30.5	25.4	14.3	16.8	7.1	17	17	P - 6 - 4 - TMC
3/8"	3/8"	62.4	31.2	26.2	14.3	16.8	7.1	17	17	P - 6 - 6 - TMC
3/8"	1/2"	66.0	33.0	33.0	19.1	16.8	7.1	22	17	P - 6 - 8 - TMC
1/2"	1/4"	72.0	36.0	28.2	14.3	22.9	4.8	22	22	P - 8 - 4 - TMC
1/2"	3/8"	72.0	36.0	28.2	14.3	22.9	9.6	22	22	P - 8 - 6 - TMC
1/2"	1/2"	72.0	36.0	33.0	19.1	22.9	10.4	22	22	P - 8 - 8 - TMC
5/8"	1/2"	76.2	38.1	35.0	19.1	24.4	11.9	22	25	P - 10 - 8 - TMC
3/4"	1/2"	79.8	39.9	36.8	19.1	24.4	11.9	27	28.5	P - 12 - 8 - TMC
3/4"	3/4"	79.8	39.9	36.8	19.1	24.4	15.8	27	28.5	P - 12 - 12 - TMC
1"	3/4"	98.0	49.0	41.6	19.1	31.2	15.8	35	38	P - 16 - 12 - TMC
1"	1"	98.0	49.0	46.5	23.8	31.2	22.3	35	38	P - 16 - 16 - TMC
1.1/4"	1.1/4"	133.0	66.5	47.6	23.8	41.2	27.6	46	50	P - 20 - 20 - TMC
1.1/2"	1.1/2"	156.0	78.0	60.4	26.2	50.0	34.0	55	60	P - 24 - 24 - TMC

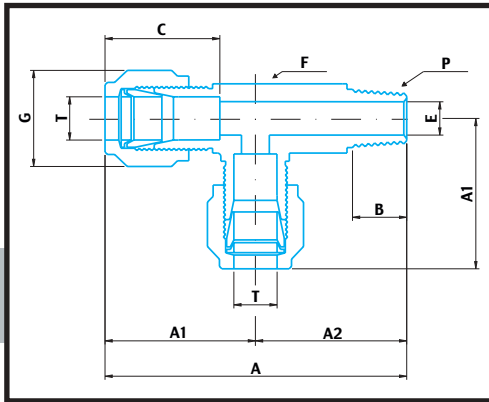


## MALE RUN TEE

TML

### Metric OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	A1	A2	B	C	E	F	G	PART No.
3	1/8"	41.4	23.6	17.8	9.6	12.9	2.4	11	11	M - 3 - 2 - TML
3	1/4"	48.0	24.6	23.4	14.3	12.9	2.4	14	11	M - 3 - 4 - TML
6	1/8"	45.8	27.0	18.8	9.6	15.3	4.8	14	14	M - 6 - 2 - TML
6	1/4"	50.4	27.0	23.4	14.3	15.3	4.8	14	14	M - 6 - 4 - TML
6	3/8"	56.0	29.8	26.2	14.3	15.3	4.8	17	14	M - 6 - 6 - TML
8	1/4"	53.2	28.8	24.4	14.3	16.2	6.3	14	16	M - 8 - 4 - TML
8	3/8"	56.8	30.6	26.2	14.3	16.2	6.3	17	16	M - 8 - 6 - TML
8	1/2"	65.6	32.6	33.0	19.1	16.2	6.3	22	16	M - 8 - 8 - TML
10	1/4"	57.7	31.5	26.2	14.3	17.2	7.1	17	19	M - 10 - 4 - TML
10	3/8"	57.7	31.5	26.2	14.3	17.2	7.9	17	19	M - 10 - 6 - TML
10	1/2"	66.5	33.5	33.0	19.1	17.2	7.9	22	19	M - 10 - 8 - TML
12	1/4"	62.2	36.0	26.2	14.3	22.8	7.1	22	22	M - 12 - 4 - TML
12	3/8"	62.2	36.0	28.2	14.3	22.8	9.5	22	22	M - 12 - 6 - TML
12	1/2"	69.0	36.0	33.0	19.1	22.8	9.5	22	22	M - 12 - 8 - TML
16	1/2"	73.1	38.0	35.1	19.1	24.4	11.9	24	25	M - 16 - 8 - TML
25	3/4"	90.8	49.1	41.7	19.1	31.3	15.8	35	38	M - 25 - 12 - TML
25	1"	95.6	49.1	46.5	23.8	31.3	21.8	35	38	M - 25 - 16 - TML
30	1.1/4"	120.0	66.9	53.1	23.8	39.6	26.2	45	50	M - 30 - 20 - TML
32	1.1/4"	125.4	72.3	53.1	23.8	42.0	27.6	45	50	M - 32 - 20 - TML
38	1.1/2"	144.4	84.0	60.4	26.2	49.4	33.7	55	60	M - 38 - 24 - TML

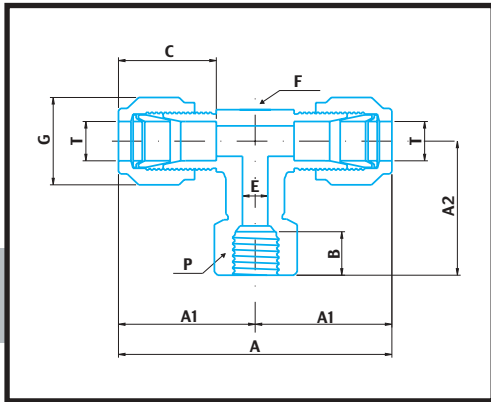


## MALE RUN TEE

TML

Inch OD tube x Male NPT thread

T TUBE OD	P NPT MALE	A	A1	A2	B	C	E	F	G	PART No.
1/8"	1/8"	41.4	23.6	17.8	9.6	12.7	2.4	11	11	P - 2 - 2 - TML
1/8"	1/4"	48.0	24.6	23.4	14.3	12.7	2.4	14	11	P - 2 - 4 - TML
1/4"	1/8"	45.7	26.9	18.8	9.6	15.3	4.8	14	14	P - 4 - 2 - TML
1/4"	1/4"	50.3	23.4	26.9	14.3	15.3	4.8	14	14	P - 4 - 4 - TML
1/4"	3/8"	55.9	29.7	26.2	14.3	15.3	4.8	17	14	P - 4 - 6 - TML
1/4"	1/2"	64.8	31.8	33.0	19.1	15.3	4.8	22	14	P - 4 - 8 - TML
3/8"	1/4"	55.9	30.5	25.4	14.3	16.8	7.1	17	17	P - 6 - 4 - TML
3/8"	3/8"	57.4	31.2	26.2	14.3	16.8	7.1	17	17	P - 6 - 6 - TML
3/8"	1/2"	66.0	33.0	33.0	19.1	16.8	7.1	22	17	P - 6 - 8 - TML
1/2"	1/4"	64.2	36.0	28.2	14.3	22.9	4.8	22	22	P - 8 - 4 - TML
1/2"	3/8"	64.2	36.0	28.2	14.3	22.9	9.6	22	22	P - 8 - 6 - TML
1/2"	1/2"	69.0	36.0	33.0	19.1	22.9	10.4	22	22	P - 8 - 8 - TML
5/8"	1/2"	73.1	38.1	35.0	19.1	24.4	11.9	22	25	P - 10 - 8 - TML
3/4"	1/2"	76.7	39.9	36.8	19.1	24.4	11.9	27	28.5	P - 12 - 8 - TML
3/4"	3/4"	76.7	39.9	36.8	19.1	24.4	15.8	27	28.5	P - 12 - 12 - TML
1"	3/4"	90.6	49.0	41.6	19.1	31.2	15.8	35	38	P - 16 - 12 - TML
1"	1"	95.5	49.0	46.5	23.8	31.2	22.3	35	38	P - 16 - 16 - TML
1.1/4"	1.1/4"	114.1	66.5	47.6	23.8	41.2	27.6	46	50	P - 20 - 20 - TML
1.1/2"	1.1/2"	138.4	78.0	60.4	26.2	50.0	34.0	55	60	P - 24 - 24 - TML



## FEMALE BRANCH TEE

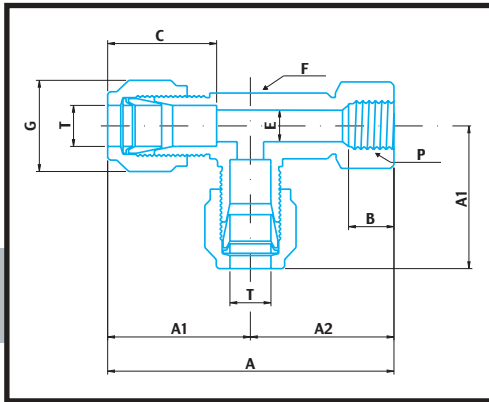
## TFC

### Metric OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	A1	A2	B	C	E	F	G	PART No.
3	1/8"	49.2	24.6	19.0	10.4	12.9	2.4	14	11	M - 3 - 2 - TFC
6	1/8"	54.0	27.0	19.0	10.4	15.3	4.8	14	14	M - 6 - 2 - TFC
6	1/4"	59.6	29.8	22.4	15.0	15.3	4.8	19	14	M - 6 - 4 - TFC
8	1/8"	59.8	29.9	19.0	10.4	16.2	6.3	16	16	M - 8 - 2 - TFC
8	1/4"	61.2	30.6	22.4	15.0	16.2	6.3	19	16	M - 8 - 4 - TFC
10	1/4"	67.0	33.5	22.4	15.0	17.2	7.9	19	19	M - 10 - 4 - TFC
12	3/8"	72.0	36.0	22.4	15.0	22.8	9.5	22	22	M - 12 - 6 - TFC
12	1/2"	77.6	38.8	28.5	19.8	22.8	9.5	27	22	M - 12 - 8 - TFC
16	1/2"	79.0	39.5	28.5	19.8	24.4	12.7	27	25	M - 16 - 8 - TFC
25	1"	107.2	53.6	38.1	25.4	31.3	22.3	41	38	M - 25 - 16 - TFC

### Inch OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	A1	A2	B	C	E	F	G	PART No.
1/8"	1/8"	49.2	24.6	19.0	10.4	12.7	2.4	14	11	P - 2 - 2 - TFC
1/4"	1/8"	53.8	26.9	19.0	10.4	15.3	4.8	14	14	P - 4 - 2 - TFC
1/4"	1/4"	59.4	29.7	22.4	15.0	15.3	4.8	19	14	P - 4 - 4 - TFC
3/8"	1/4"	62.4	31.2	22.4	15.0	16.8	7.1	19	17	P - 6 - 4 - TFC
3/8"	3/8"	66.6	33.3	22.4	15.0	16.8	7.1	22	17	P - 6 - 6 - TFC
1/2"	3/8"	72.0	36.0	22.4	15.0	22.9	10.4	22	22	P - 8 - 6 - TFC
1/2"	1/2"	77.8	38.9	28.5	19.8	22.9	10.4	27	22	P - 8 - 8 - TFC
3/4"	3/4"	89.4	44.7	31.8	20.6	24.4	15.8	35	28.5	P - 12 - 12 - TFC
1"	3/4"	98.0	49.0	31.8	20.6	31.2	22.3	35	38	P - 16 - 12 - TFC
1"	1"	107.2	53.6	38.1	25.4	31.2	22.3	41	38	P - 16 - 16 - TFC



## FEMALE RUN TEE

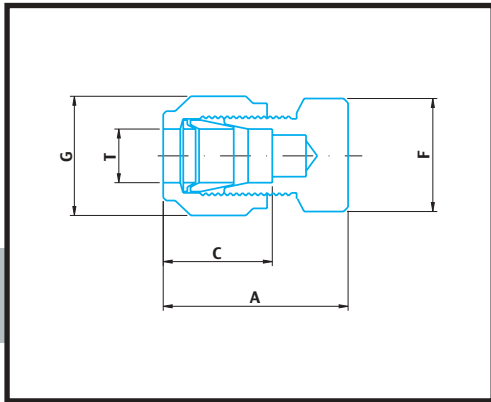
TFL

### Metric OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	A1	A2	B	C	E	F	G	PART No.
3	1/8"	43.6	24.6	19.0	10.4	12.9	2.4	14	11	M - 3 - 2 - TFL
6	1/8"	46.0	27.0	19.0	10.4	15.3	4.8	14	14	M - 6 - 2 - TFL
6	1/4"	52.2	29.8	22.4	15.0	15.3	4.8	19	14	M - 6 - 4 - TFL
8	1/8"	48.9	29.9	19.0	10.4	16.2	6.3	16	16	M - 8 - 2 - TFL
8	1/4"	53.0	30.6	22.4	15.0	16.2	6.3	19	16	M - 8 - 4 - TFL
10	1/4"	55.9	33.5	22.4	15.0	17.2	7.9	19	19	M - 10 - 4 - TFL
12	3/8"	58.4	36.0	22.4	15.0	22.8	9.5	22	22	M - 12 - 6 - TFL
12	1/2"	67.3	38.8	28.5	19.8	22.8	9.5	27	22	M - 12 - 8 - TFL
16	1/2"	68.0	39.5	28.5	19.8	24.4	12.7	27	25	M - 16 - 8 - TFL
25	1"	91.7	53.6	38.1	25.4	31.3	22.3	41	38	M - 25 - 16 - TFL

### Inch OD tube x Female NPT thread

T TUBE OD	P NPT FEMALE	A	A1	A2	B	C	E	F	G	PART No.
1/8"	1/8"	43.6	24.6	19.0	10.4	12.7	2.4	14	11	P - 2 - 2 - TFL
1/4"	1/8"	45.9	26.9	19.0	10.4	15.3	4.8	14	14	P - 4 - 2 - TFL
1/4"	1/4"	52.1	29.7	22.4	15.0	15.3	4.8	19	14	P - 4 - 4 - TFL
3/8"	1/4"	53.6	31.2	22.4	15.0	16.8	7.1	19	17	P - 6 - 4 - TFL
3/8"	3/8"	55.7	33.3	22.4	15.0	16.8	7.1	22	17	P - 6 - 6 - TFL
1/2"	3/8"	58.4	36.0	22.4	15.0	22.9	10.4	22	22	P - 8 - 6 - TFL
1/2"	1/2"	67.4	38.9	28.5	19.8	22.9	10.4	27	22	P - 8 - 8 - TFL
3/4"	3/4"	76.5	44.7	31.8	20.6	24.4	15.8	35	28.5	P - 12 - 12 - TFL
1"	3/4"	80.8	49.0	31.8	20.6	31.2	22.3	35	38	P - 16 - 12 - TFL
1"	1"	91.7	53.6	38.1	25.4	31.2	22.3	41	38	P - 16 - 16 - TFL



## TUBE END CLOSURE

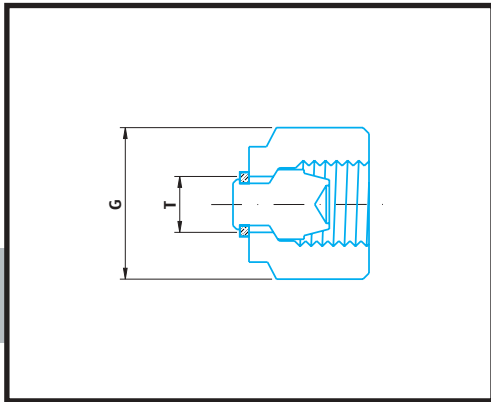
TT

### Metric OD tube

T TUBE OD	A	C	F	G	PART No.
3	20.1	12.9	11	11	M - 3 - TT
6	23.1	15.3	14	14	M - 6 - TT
8	24.5	16.2	16	16	M - 8 - TT
10	26.6	17.2	17	19	M - 10 - TT
12	29.1	22.8	22	22	M - 12 - TT
14	29.9	24.4	24	25	M - 14 - TT
15	29.9	24.4	24	25	M - 15 - TT
16	29.9	24.4	24	25	M - 16 - TT
18	31.4	24.4	27	30	M - 18 - TT
20	34.0	26.0	32	32	M - 20 - TT
22	34.0	26.0	32	32	M - 22 - TT
25	38.5	31.3	35	38	M - 25 - TT
28	48.5	36.6	41	46	M - 28 - TT
30	53.4	39.6	46	50	M - 30 - TT
32	55.8	42.0	46	50	M - 32 - TT
38	65.4	49.4	55	60	M - 38 - TT

### Inch OD tube

T TUBE OD	A	C	F	G	PART No.
1/16"	13.0	8.6	11	8	P - 1 - TT
1/8"	20.0	12.7	11	11	P - 2 - TT
1/4"	23.4	15.3	14	14	P - 4 - TT
5/16"	24.4	16.3	16	16	P - 5 - TT
3/8"	25.7	16.8	17	17	P - 6 - TT
1/2"	29.2	22.9	22	22	P - 8 - TT
5/8"	30.0	24.4	24	25	P - 10 - TT
3/4"	31.5	24.4	27	28.5	P - 12 - TT
7/8"	34.0	25.9	35	32	P - 14 - TT
1"	38.4	31.2	35	38	P - 16 - TT
1.1/4"	53.3	41.2	46	50	P - 20 - TT
1.1/2"	64.5	50.0	55	60	P - 24 - TT



## FITTING END CLOSURE

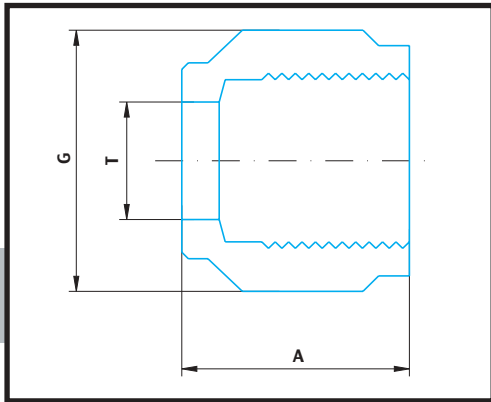
# TR

### Metric OD tube

T TUBE OD	G	PART No.
3	11	M - 3 - TR
6	14	M - 6 - TR
8	16	M - 8 - TR
10	19	M - 10 - TR
12	22	M - 12 - TR
14	25	M - 14 - TR
15	25	M - 15 - TR
16	25	M - 16 - TR
18	30	M - 18 - TR
20	32	M - 20 - TR
22	32	M - 22 - TR
25	38	M - 25 - TR
28	46	M - 28 - TR
30	50	M - 30 - TR
32	50	M - 32 - TR
38	60	M - 38 - TR

### Inch OD tube

T TUBE OD	G	PART No.
1/16"	8	P - 1 - TR
1/8"	11	P - 2 - TR
1/4"	14	P - 4 - TR
5/16"	16	P - 5 - TR
3/8"	17	P - 6 - TR
1/2"	22	P - 8 - TR
5/8"	25	P - 10 - TR
3/4"	28.5	P - 12 - TR
7/8"	32	P - 14 - TR
1"	38	P - 16 - TR
1.1/4"	50	P - 20 - TR
1.1/2"	60	P - 24 - TR



**NUT**

**D**

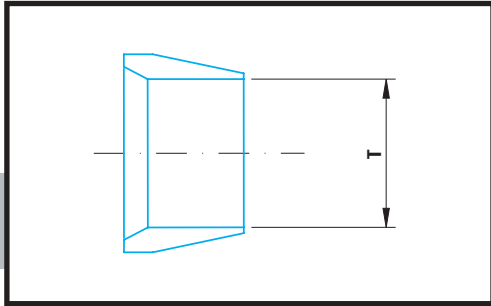
### Metric OD tube

T TUBE OD	A	G	PART No.
3	12	11	M - 3 - D
6	12.7	14	M - 6 - D
8	13.5	16	M - 8 - D
10	15.1	19	M - 10 - D
12	17.5	22	M - 12 - D
14	17.5	25	M - 14 - D
15	17.5	25	M - 15 - D
16	17.5	25	M - 16 - D
18	17.5	30	M - 18 - D
20	17.5	32	M - 20 - D
22	17.5	32	M - 22 - D
25	20.6	38	M - 25 - D
28	30.6	46	M - 28 - D
30	32.7	50	M - 30 - D
32	31.8	50	M - 32 - D
38	38.1	60	M - 38 - D

### Inch OD tube

T TUBE OD	A	G	PART No.
1/16"	17.8	8	P - 1 - D
1/8"	12.0	11	P - 2 - D
1/4"	12.7	14	P - 4 - D
5/16"	14.0	16	P - 5 - D
3/8"	14.5	17	P - 6 - D
1/2"	17.5	22	P - 8 - D
5/8"	17.5	25	P - 10 - D
3/4"	17.5	28.5	P - 12 - D
7/8"	17.5	32	P - 14 - D
1"	20.6	38	P - 16 - D
1.1/4"	31.8	50	P - 20 - D
1.1/2"	38.0	60	P - 24 - D





## FRONT FERRULE

FA

### Metric OD tube

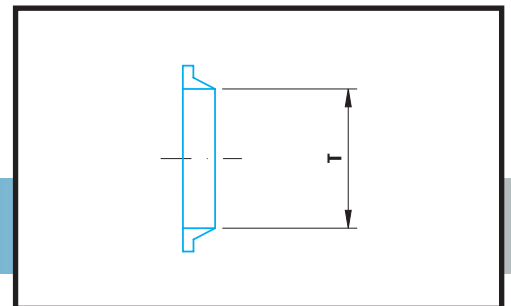
T TUBE OD	PART No.
3	M - 3 - FA
6	M - 6 - FA
8	M - 8 - FA
10	M - 10 - FA
12	M - 12 - FA
14	M - 14 - FA
15	M - 15 - FA
16	M - 16 - FA
18	M - 18 - FA
20	M - 20 - FA
22	M - 22 - FA
25	M - 25 - FA
28	M - 28 - FA
30	M - 30 - FA
32	M - 32 - FA
38	M - 38 - FA

### Inch OD tube

T TUBE OD	PART No.
1/16"	P - 1 - FA
1/8"	P - 2 - FA
1/4"	P - 4 - FA
5/16"	P - 5 - FA
3/8"	P - 6 - FA
1/2"	P - 8 - FA
5/8"	P - 10 - FA
3/4"	P - 12 - FA
7/8"	P - 14 - FA
1"	P - 16 - FA
1.1/4"	P - 20 - FA
1.1/2"	P - 24 - FA

## BACK FERRULE

FP



### Metric OD tube

T TUBE OD	PART No.
3	M - 3 - FP
6	M - 6 - FP
8	M - 8 - FP
10	M - 10 - FP
12	M - 12 - FP
14	M - 14 - FP
15	M - 15 - FP
16	M - 16 - FP
18	M - 18 - FP
20	M - 20 - FP
22	M - 22 - FP
25	M - 25 - FP
28	M - 28 - FP
30	M - 30 - FP
32	M - 32 - FP
38	M - 38 - FP

### Inch OD tube

T TUBE OD	PART No.
1/16"	P - 1 - FP
1/8"	P - 2 - FP
1/4"	P - 4 - FP
5/16"	P - 5 - FP
3/8"	P - 6 - FP
1/2"	P - 8 - FP
5/8"	P - 10 - FP
3/4"	P - 12 - FP
7/8"	P - 14 - FP
1"	P - 16 - FP
1.1/4"	P - 20 - FP
1.1/2"	P - 24 - FP