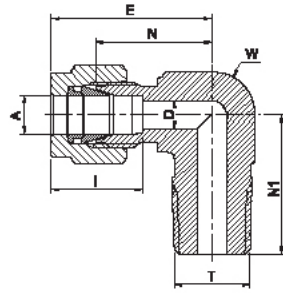


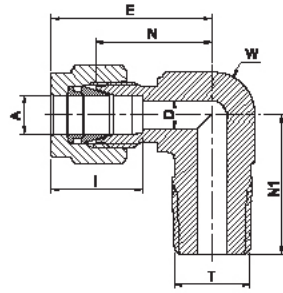
MALE 90° ELBOW



A Tube O.D.	T NPT	D	W Wrench flat		N	E	N1	I
			in	mm				
3	1/8	2.4	7/16	11.1	17.0	23.6	17.8	12.9
3	1/4	2.4	1/2	12.7	18.0	24.6	23.4	12.9
4	1/8	2.4	1/2	12.7	18.8	25.4	18.8	13.7
4	1/4	2.4	1/2	12.7	18.8	25.4	23.4	13.7
6	1/8	4.8	1/2	12.7	19.6	27.0	18.8	15.3
6	1/4	4.8	1/2	12.7	19.6	27.0	23.4	15.3
6	3/8	4.8	11/16	17.5	22.4	29.8	26.2	15.3
6	1/2	4.8	13/16	20.6	24.4	31.8	33.0	15.3
8	1/8	4.8	9/16	14.3	21.3	28.8	19.8	16.2
8	1/4	6.4	9/16	14.3	21.3	28.8	24.4	16.2
8	3/8	6.4	11/16	17.5	23.1	30.6	26.2	16.2
8	1/2	6.4	13/16	20.6	25.1	32.6	33.0	16.2
10	1/8	4.8	11/16	17.5	23.9	31.5	21.6	17.2
10	1/4	7.1	11/16	17.5	23.9	31.5	26.2	17.2
10	3/8	7.9	11/16	17.5	23.9	31.5	26.2	17.2
10	1/2	7.9	13/16	20.6	25.9	33.5	33.0	17.2
12	1/8	4.8	13/16	20.6	25.9	36.0	23.6	22.8
12	1/4	7.1	13/16	20.6	25.9	36.0	28.2	22.8
12	3/8	9.5	13/16	20.6	25.9	36.0	28.2	22.8
12	1/2	9.5	13/16	20.6	25.9	36.0	33.0	22.8
12	3/4	9.5	1-1/16	27.0	29.7	39.8	36.8	22.8
15	1/2	11.9	15/16	23.8	27.9	38.0	35.1	24.4
16	3/8	9.5	15/16	23.8	27.9	38.0	30.2	24.4
16	1/2	11.9	15/16	23.8	27.9	38.0	35.1	24.4
16	3/4	12.7	1-1/16	27.0	29.7	39.8	36.8	24.4
18	1/2	11.9	1-1/16	27.0	29.7	39.8	36.8	24.4
18	3/4	15.1	1-1/16	27.0	29.7	39.8	36.8	24.4
20	1/2	11.9	1-3/8	34.9	34.5	44.6	41.7	26.0
20	3/4	15.9	1-3/8	34.9	34.5	44.6	41.7	26.0
22	3/4	15.9	1-3/8	34.9	34.5	44.6	41.7	26.0
22	1	18.3	1-3/8	34.9	34.5	44.6	46.5	26.0
25	3/4	15.9	1-3/8	34.9	36.8	49.1	41.7	31.3
25	1	21.8	1-3/8	34.9	36.8	49.1	46.5	31.3

For inches, see next page

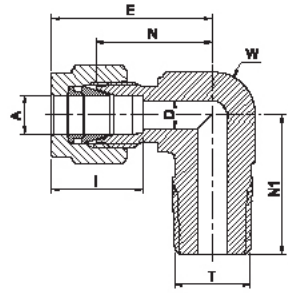
MALE 90° ELBOW



TUBE (INCH) MALE NPT THREAD

A Tube O.D.		T NPT	D		W Wrench flat		N		E		N1		I	
in	mm	in	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16	1.58	1/16	0.05	1.27	7/16	11.1	0.60	15.24	0.75	19.05	0.70	17.78	0.34	8.6
1/16	1.58	1/8	0.05	1.27	7/16	11.1	0.60	15.24	0.75	19.05	0.70	17.78	0.34	8.6
1/8	3.17	1/8	0.09	2.28	7/16	11.1	0.67	17.02	0.93	23.62	0.70	17.78	0.50	12.7
1/8	3.17	1/4	0.09	2.28	1/2	12.7	0.71	18.03	0.97	24.64	0.92	23.37	0.50	12.7
3/16	4.76	1/8	0.12	3.04	1/2	12.7	0.74	18.80	1.00	25.40	0.74	18.80	0.54	13.7
3/16	4.76	1/4	0.12	3.04	1/2	12.7	0.74	18.80	1.00	25.40	0.92	23.37	0.54	13.7
1/4	6.35	1/16	0.12	3.04	1/2	12.7	0.77	19.55	1.06	26.9	0.74	18.79	0.60	15.3
1/4	6.35	1/8	0.19	4.82	1/2	12.7	0.77	19.56	1.06	26.92	0.74	18.80	0.60	15.3
1/4	6.35	1/4	0.19	4.82	1/2	12.7	0.77	19.56	1.06	26.92	0.92	23.37	0.60	15.3
1/4	6.35	3/8	0.19	4.82	11/16	17.5	0.88	22.35	1.17	29.71	1.03	26.16	0.60	15.3
1/4	6.35	1/2	0.19	4.82	13/16	20.6	0.96	24.38	1.25	31.75	1.30	33.02	0.60	15.3
5/16	7.93	1/8	0.19	4.82	9/16	14.3	0.84	21.34	1.13	28.70	0.78	19.81	0.64	16.2
5/16	7.93	1/4	0.25	6.35	9/16	14.3	0.84	21.34	1.13	28.70	0.96	24.38	0.64	16.2
5/16	7.93	3/8	0.25	6.35	11/16	17.5	0.91	23.11	1.20	30.48	1.03	26.16	0.64	16.2
3/8	9.52	1/8	0.19	4.82	5/8	15.9	0.91	23.11	1.20	30.48	0.82	20.83	0.66	16.9
3/8	9.52	1/4	0.28	7.11	5/8	15.9	0.91	23.11	1.20	30.48	1.00	25.40	0.66	16.9
3/8	9.52	3/8	0.28	7.11	11/16	17.5	0.94	23.87	1.23	31.24	1.03	26.16	0.66	16.9
3/8	9.52	1/2	0.28	7.11	13/16	20.6	1.02	25.90	1.31	33.28	1.30	33.02	0.66	16.9
3/8	9.52	3/4	0.28	7.11	1-1/16	27.0	1.17	29.71	1.46	37.08	1.45	36.83	0.66	16.9
1/2	12.70	1/4	0.28	7.11	13/16	20.6	1.02	25.90	1.42	36.07	1.11	28.19	0.90	22.9
1/2	12.70	3/8	0.38	9.65	13/16	20.6	1.02	25.90	1.42	36.07	1.11	28.19	0.90	22.9
1/2	12.70	1/2	0.41	10.41	13/16	20.6	1.02	25.90	1.42	36.07	1.30	33.02	0.90	22.9
1/2	12.70	3/4	0.41	10.41	1-1/16	27.0	1.17	29.71	1.57	39.88	1.45	36.83	0.90	22.9
5/8	15.87	3/8	0.38	9.61	15/16	23.8	1.10	27.94	1.50	38.10	1.18	30.23	0.96	24.4
5/8	15.87	1/2	0.47	11.94	15/16	23.8	1.10	27.94	1.50	38.10	1.38	35.05	0.96	24.4
5/8	15.87	3/4	0.50	12.70	1-1/16	27.0	1.17	29.71	1.57	39.88	1.45	36.83	0.96	24.4
3/4	19.05	1/2	0.47	15.74	1-1/16	27.0	1.17	29.71	1.57	39.88	1.45	36.83	0.96	24.5
3/4	19.05	3/4	0.62	15.74	1-1/16	27.0	1.17	29.71	1.57	39.88	1.45	36.83	0.96	24.5
7/8	22.22	3/4	0.62	15.74	1-3/16	34.9	1.36	34.54	1.76	44.70	1.64	41.66	1.02	25.9
1	25.40	3/4	0.62	15.74	1-3/8	34.9	1.45	36.83	1.93	49.02	1.64	41.66	1.23	31.2
1	25.4	1	0.88	22.35	1-3/8	34.9	1.45	36.83	1.93	49.02	1.83	46.48	1.23	31.2
1-1/4	31.75	1-1/4	1.09	27.7	1-11/16	42.9	1.75	44.45	2.62	66.5	1.88	47.75	1.62	41.2
1-1/2	38.1	1-1/2	1.34	34	2	50.8	2.0	50.8	3.07	78.0	2.38	60.45	1.97	50.0
2	50.8	2	1.81	45.97	2-3/4	69.9	2.75	69.85	4.22	107.19	2.78	70.61	2.66	67.6

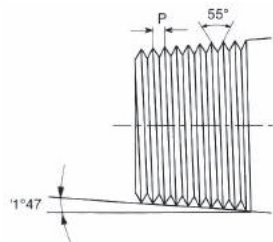
MALE 90° ELBOW



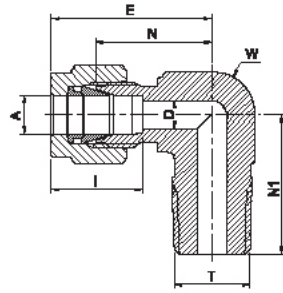
TUBE (METRIC) ISO TAPERED THREAD								
A Tube O.D.	T ISO	D	W Wrench flat		N	E	N1	I
mm	in	mm	in	mm	mm	mm	mm	mm
3	R 1/8	2.4	7/16	11.1	17.0	23.6	17.8	12.9
3	R 1/4	2.4	1/2	12.7	18.0	24.6	23.4	12.9
4	R 1/8	2.4	1/2	12.7	18.8	25.4	18.8	13.7
4	R 1/4	2.4	1/2	12.7	18.8	25.4	23.4	13.7
6	R 1/8	4.8	1/2	12.7	19.6	27.0	18.8	15.3
6	R 1/4	4.8	1/2	12.7	19.6	27.0	23.4	15.3
6	R 3/8	4.8	11/16	17.5	22.4	29.8	26.2	15.3
6	R 1/2	4.8	13/16	20.6	24.4	31.8	33.0	15.3
8	R 1/8	4.8	9/16	14.3	21.3	28.8	19.8	16.2
8	R 1/4	6.4	9/16	14.3	21.3	28.8	24.4	16.2
8	R 3/8	6.4	11/16	17.5	23.1	30.6	26.2	16.2
8	R 1/2	6.4	13/16	20.6	25.1	32.6	33.0	16.2
10	R 1/8	4.8	11/16	17.5	23.9	31.5	21.6	17.2
10	R 1/4	7.1	11/16	17.5	23.9	31.5	26.2	17.2
10	R 3/8	7.9	11/16	17.5	23.9	31.5	26.2	17.2
10	R 1/2	7.9	13/16	20.6	25.9	33.5	33.0	17.2
12	R 1/8	4.8	13/16	20.6	25.9	36.0	23.6	22.8
12	R 1/4	7.1	13/16	20.6	25.9	36.0	28.2	22.8
12	R 3/8	9.5	13/16	20.6	25.9	36.0	28.2	22.8
12	R 1/2	9.5	13/16	20.6	25.9	36.0	33.0	22.8
12	R 3/4	9.5	1-1/16	27.0	29.7	39.8	36.8	22.8
16	R 3/8	9.5	15/16	23.8	27.9	38.0	30.2	24.4
16	R 1/2	11.9	15/16	23.8	27.9	38.0	35.1	24.4
18	R 1/2	11.9	1-1/16	27.0	29.7	39.8	36.8	24.4
18	R 3/4	15.1	1-1/16	27.0	29.7	39.8	36.8	24.4
20	R 1/2	11.9	1-3/8	34.9	34.5	44.6	41.7	26.0
20	R 3/4	15.9	1-3/8	34.9	34.5	44.6	41.7	26.0
22	R 3/4	15.9	1-3/8	34.9	34.5	44.6	41.7	26.0
22	R 1	18.3	1-3/8	34.9	34.5	44.6	46.5	26.0
25	R 3/4	15.9	1-3/8	34.9	36.8	49.1	41.7	31.3
25	R 1	21.8	1-3/8	34.9	36.8	49.1	46.5	31.3

Reference Specifications :

- DIN - ISO 2999 •55° Thread angle
- BS - 21 •Truncation of root and crest are round
- JIS - B0203 •Taper angle 1° 47'



MALE 90° ELBOW



A Tube O.D.		T ISO	D		W Wrench flat		N		E		N1		I	
in	mm	in	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/16	1.58	R 1/16	0.05	1.27	7/16	11.1	0.60	15.24	0.75	19.05	0.70	17.78	0.34	8.6
1/16	1.58	R 1/8	0.05	1.27	7/16	11.1	0.60	15.24	0.75	19.05	0.70	17.78	0.34	8.6
1/8	3.17	R 1/8	0.09	2.28	7/16	11.1	0.67	17.02	0.93	23.62	0.70	17.78	0.50	12.7
1/8	3.17	R 1/4	0.09	2.28	1/2	12.7	0.71	18.03	0.97	24.64	0.92	23.37	0.50	12.7
3/16	4.76	R 1/8	0.12	3.04	1/2	12.7	0.74	18.80	1.00	25.40	0.74	18.80	0.54	13.7
3/16	4.76	R 1/4	0.12	3.04	1/2	12.7	0.74	18.80	1.00	25.40	0.92	23.37	0.54	13.7
1/4	6.35	R 1/16	0.12	3.04	1/2	12.7	0.77	19.55	1.06	26.9	0.74	18.79	0.60	15.3
1/4	6.35	R 1/8	0.19	4.82	1/2	12.7	0.77	19.56	1.06	26.92	0.74	18.80	0.60	15.3
1/4	6.35	R 1/4	0.19	4.82	1/2	12.7	0.77	19.56	1.06	26.92	0.92	23.37	0.60	15.3
1/4	6.35	R 3/8	0.19	4.82	11/16	17.5	0.88	22.35	1.17	29.71	1.03	26.16	0.60	15.3
1/4	6.35	R 1/2	0.19	4.82	13/16	20.6	0.96	24.38	1.25	31.75	1.30	33.02	0.60	15.3
5/16	7.93	R 1/8	0.19	4.82	9/16	14.3	0.84	21.34	1.13	28.70	0.78	19.81	0.64	16.2
5/16	7.93	R 1/4	0.25	6.35	9/16	14.3	0.84	21.34	1.13	28.70	0.96	24.38	0.64	16.2
5/16	7.93	R 3/8	0.25	6.35	11/16	17.5	0.91	23.11	1.20	30.48	1.03	26.16	0.64	16.2
3/8	9.52	R 1/8	0.19	4.82	5/8	15.9	0.91	23.11	1.20	30.48	0.82	20.83	0.66	16.9
3/8	9.52	R 1/4	0.28	7.11	5/8	15.9	0.91	23.11	1.20	30.48	1.00	25.40	0.66	16.9
3/8	9.52	R 3/8	0.28	7.11	11/16	17.5	0.94	23.87	1.23	31.24	1.03	26.16	0.66	16.9
3/8	9.52	R 1/2	0.28	7.11	13/16	20.6	1.02	25.90	1.31	33.28	1.30	33.02	0.66	16.9
3/8	9.52	R 3/4	0.28	7.11	1-1/16	27.0	1.17	29.71	1.46	37.08	1.45	36.83	0.66	16.9
1/2	12.70	R 1/4	0.28	7.11	13/16	20.6	1.02	25.90	1.42	36.07	1.11	28.19	0.90	22.9
1/2	12.70	R 3/8	0.38	9.65	13/16	20.6	1.02	25.90	1.42	36.07	1.11	28.19	0.90	22.9
1/2	12.70	R 1/2	0.41	10.41	13/16	20.6	1.02	25.90	1.42	36.07	1.30	33.02	0.90	22.9
1/2	12.70	R 3/4	0.41	10.41	1-1/16	27.0	1.17	29.71	1.57	39.88	1.45	36.83	0.90	22.9
5/8	15.87	R 3/8	0.38	9.65	15/16	23.8	1.10	27.94	1.50	38.10	1.18	30.23	0.96	24.4
5/8	15.87	R 1/2	0.47	11.94	15/16	23.8	1.10	27.94	1.50	38.10	1.38	35.05	0.96	24.4
5/8	15.87	R 3/4	0.50	12.70	1-1/16	27.0	1.17	29.71	1.57	39.88	1.45	36.83	0.96	24.4
3/4	19.05	R 1/2	0.47	15.74	1-1/16	27.0	1.17	29.71	1.57	39.88	1.45	36.83	0.96	24.5
3/4	19.05	R 3/4	0.62	15.74	1-1/16	27.0	1.17	29.71	1.57	39.88	1.45	36.83	0.96	24.5
7/8	22.22	R 3/4	0.62	15.74	1-3/16	34.9	1.36	34.54	1.76	44.70	1.64	41.66	1.02	25.9
1	25.40	R 3/4	0.62	15.74	1-3/8	34.9	1.45	36.83	1.93	49.02	1.64	41.66	1.23	31.2
1	25.4	R 1	0.88	22.35	1-3/8	34.9	1.45	36.83	1.93	49.02	1.83	46.48	1.23	31.2
1-1/4	31.75	R 1-1/4	1.09	27.7	1-11/16	42.9	1.75	44.45	2.62	66.5	1.88	47.75	1.62	41.2
1-1/2	38.1	R 1-1/2	1.34	34.0	2	50.8	2.0	50.8	3.07	78.0	2.38	60.45	1.97	50.0
2	50.8	R 2	1.81	45.97	2-3/4	69.9	2.75	69.85	4.22	107.19	2.78	70.61	2.66	67.6