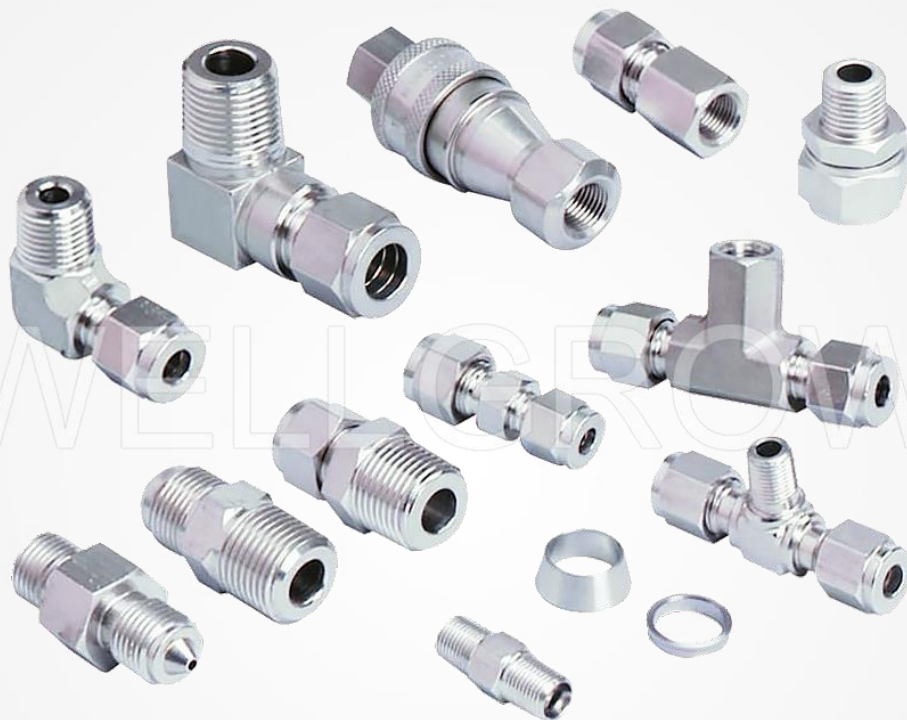


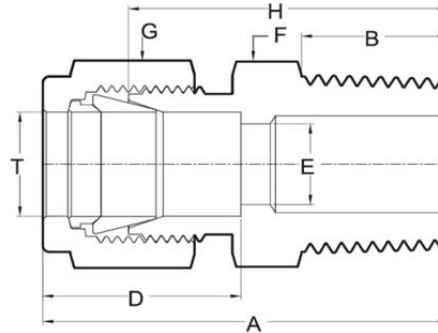
INSTRUMENT FITTINGS & VALVES

WELLGROW INDUSTRIES CORP.



- ▲ Tube Fittings
- ▲ Pipe Fittings
- ▲ 2 Piece Ball Valves
- ▲ 3 Piece Ball Valves
- ▲ Trunnion Ball Valves
- ▲ Needle Valves
- ▲ Check Valves
- ▲ Gauge Valves
- ▲ Valve Manifolds

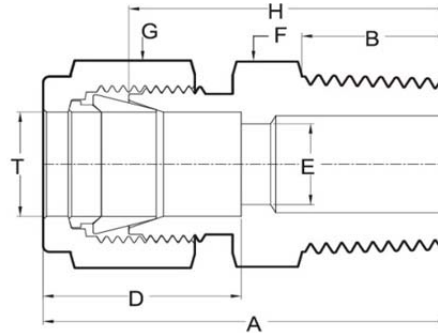
MC Male Connector



Metric

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|----------------|-------------|------|------|------|------|----|------|------|
| 3 | 1/8 | MC-3-1 | 31.7 | 10.0 | 12.9 | 2.5 | 12 | 7/16 | 25.0 |
| 3 | 1/4 | MC-3-2 | 34.7 | 13.0 | 12.9 | 2.5 | 14 | 7/16 | 28.0 |
| 4 | 1/8 | MC-4-1 | 32.1 | 10.0 | 13.7 | 2.5 | 12 | 12 | 25.0 |
| 4 | 1/4 | MC-4-2 | 35.1 | 13.0 | 13.7 | 2.5 | 14 | 12 | 28.0 |
| 4 | 3/8 | MC-4-3 | 37.1 | 14.0 | 13.7 | 2.5 | 17 | 12 | 30.0 |
| 4 | 1/2 | MC-4-4 | 41.1 | 17.0 | 13.7 | 2.5 | 22 | 12 | 34.0 |
| 4 | 3/4 | MC-4-6 | 44.1 | 19.0 | 13.7 | 2.5 | 27 | 9/16 | 37.0 |
| 4 | 1 | MC-4-8 | 50.1 | 22.0 | 13.7 | 2.5 | 35 | 9/16 | 43.0 |
| 6 | 1/8 | MC-6-1 | 33.6 | 10.0 | 15.3 | 5.0 | 12 | 9/16 | 26.0 |
| 6 | 1/4 | MC-6-2 | 36.6 | 13.0 | 15.3 | 5.0 | 14 | 9/16 | 29.0 |
| 6 | 3/8 | MC-6-3 | 38.6 | 14.0 | 15.3 | 5.0 | 17 | 9/16 | 31.0 |
| 6 | 1/2 | MC-6-4 | 42.6 | 17.0 | 15.3 | 5.0 | 22 | 9/16 | 35.0 |
| 6 | 3/4 | MC-6-6 | 45.6 | 19.0 | 15.3 | 5.0 | 27 | 9/16 | 38.0 |
| 6 | 1 | MC-6-8 | 51.6 | 22.0 | 15.3 | 5.0 | 35 | 9/16 | 44.0 |
| 8 | 1/8 | MC-8-1 | 34.8 | 10.0 | 16.2 | 5.0 | 14 | 5/8 | 27.0 |
| 8 | 1/4 | MC-8-2 | 37.8 | 13.0 | 16.2 | 6.0 | 14 | 5/8 | 30.0 |
| 8 | 3/8 | MC-8-3 | 39.8 | 14.0 | 16.2 | 6.0 | 17 | 5/8 | 32.0 |
| 8 | 1/2 | MC-8-4 | 43.8 | 17.0 | 16.2 | 6.0 | 22 | 5/8 | 36.0 |
| 8 | 3/4 | MC-8-6 | 46.8 | 19.0 | 16.2 | 6.0 | 27 | 5/8 | 39.0 |
| 8 | 1 | MC-8-8 | 52.8 | 22.0 | 16.2 | 6.0 | 35 | 5/8 | 45.0 |
| 10 | 1/8 | MC-10-1 | 36.9 | 10.0 | 17.2 | 5.0 | 17 | 19 | 29.0 |
| 10 | 1/4 | MC-10-2 | 39.9 | 13.0 | 17.2 | 7.0 | 17 | 19 | 32.0 |
| 10 | 3/8 | MC-10-3 | 40.9 | 14.0 | 17.2 | 8.0 | 17 | 19 | 33.0 |
| 10 | 1/2 | MC-10-4 | 44.9 | 17.0 | 17.2 | 8.0 | 22 | 19 | 37.0 |
| 10 | 3/4 | MC-10-6 | 47.9 | 19.0 | 17.2 | 8.0 | 27 | 19 | 40.0 |
| 10 | 1 | MC-10-8 | 53.9 | 22.0 | 17.2 | 8.0 | 35 | 19 | 46.0 |
| 12 | 1/8 | MC-12-1 | 39.7 | 10.0 | 22.8 | 5.0 | 19 | 7/8 | 30.0 |
| 12 | 1/4 | MC-12-2 | 42.7 | 13.0 | 22.8 | 7.0 | 19 | 7/8 | 33.0 |
| 12 | 3/8 | MC-12-3 | 43.7 | 14.0 | 22.8 | 10.0 | 19 | 7/8 | 34.0 |
| 12 | 1/2 | MC-12-4 | 46.7 | 17.0 | 22.8 | 10.0 | 22 | 7/8 | 37.0 |
| 12 | 3/4 | MC-12-6 | 49.7 | 19.0 | 22.8 | 10.0 | 27 | 7/8 | 40.0 |
| 12 | 1 | MC-12-8 | 55.7 | 22.0 | 22.8 | 10.0 | 35 | 7/8 | 46.0 |
| 14 | 1/8 | MC-14-1 | 40.4 | 10.0 | 24.4 | 5.0 | 24 | 25 | 30.0 |
| 14 | 1/4 | MC-14-2 | 43.4 | 13.0 | 24.4 | 7.0 | 24 | 25 | 33.0 |
| 14 | 3/8 | MC-14-3 | 44.4 | 14.0 | 24.4 | 9.5 | 24 | 25 | 34.0 |
| 14 | 1/2 | MC-14-4 | 47.4 | 17.0 | 24.4 | 12.0 | 24 | 25 | 37.0 |
| 14 | 3/4 | MC-14-6 | 50.4 | 19.0 | 24.4 | 12.0 | 27 | 25 | 40.0 |
| 14 | 1 | MC-14-8 | 56.4 | 22.0 | 24.4 | 12.0 | 35 | 25 | 46.0 |

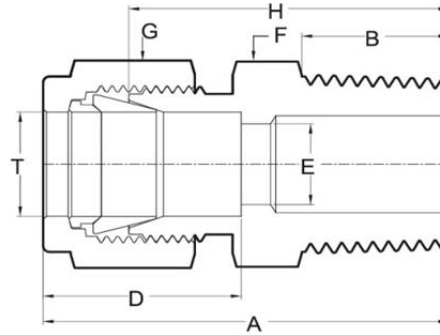
MC Male Connector



Metric

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|----------------|-------------|------|------|------|------|----|-------|------|
| 15 | 1/8 | MC-15-1 | 40.5 | 10.0 | 24.4 | 5.0 | 24 | 25 | 30.0 |
| 15 | 1/4 | MC-15-2 | 43.5 | 13.0 | 24.4 | 7.0 | 24 | 25 | 33.0 |
| 15 | 3/8 | MC-15-3 | 44.5 | 14.0 | 24.4 | 9.5 | 24 | 25 | 34.0 |
| 15 | 1/2 | MC-15-4 | 47.5 | 17.0 | 24.4 | 12.0 | 24 | 25 | 37.0 |
| 15 | 3/4 | MC-15-6 | 50.5 | 19.0 | 24.4 | 12.0 | 27 | 25 | 40.0 |
| 15 | 1 | MC-15-8 | 56.5 | 22.0 | 24.4 | 12.0 | 35 | 25 | 46.0 |
| 16 | 1/8 | MC-16-1 | 40.7 | 10.0 | 24.4 | 5.0 | 24 | 25 | 30.0 |
| 16 | 1/4 | MC-16-2 | 43.7 | 13.0 | 24.4 | 7.0 | 24 | 25 | 33.0 |
| 16 | 3/8 | MC-16-3 | 44.7 | 14.0 | 24.4 | 9.5 | 24 | 25 | 34.0 |
| 16 | 1/2 | MC-16-4 | 47.7 | 17.0 | 24.4 | 12.0 | 24 | 25 | 37.0 |
| 16 | 3/4 | MC-16-6 | 50.7 | 19.0 | 24.4 | 14.0 | 27 | 25 | 40.0 |
| 16 | 1 | MC-16-8 | 56.7 | 22.0 | 24.4 | 14.0 | 35 | 25 | 46.0 |
| 18 | 1/8 | MC-18-1 | 41.4 | 10.0 | 24.4 | 5.0 | 27 | 30 | 31.0 |
| 18 | 1/4 | MC-18-2 | 44.4 | 13.0 | 24.4 | 7.0 | 27 | 30 | 34.0 |
| 18 | 3/8 | MC-18-3 | 45.4 | 14.0 | 24.4 | 9.5 | 27 | 30 | 35.0 |
| 18 | 1/2 | MC-18-4 | 48.4 | 17.0 | 24.4 | 12.0 | 27 | 30 | 38.0 |
| 18 | 3/4 | MC-18-6 | 50.4 | 19.0 | 24.4 | 15.0 | 27 | 30 | 40.0 |
| 18 | 1 | MC-18-8 | 56.4 | 22.0 | 24.4 | 16.0 | 35 | 30 | 46.0 |
| 20 | 1/8 | MC-20-1 | 41.0 | 10.0 | 26.0 | 5.0 | 30 | 32 | 32.0 |
| 20 | 1/4 | MC-20-2 | 44.0 | 13.0 | 26.0 | 7.0 | 30 | 32 | 35.0 |
| 20 | 3/8 | MC-20-3 | 45.0 | 14.0 | 26.0 | 9.5 | 30 | 32 | 36.0 |
| 20 | 1/2 | MC-20-4 | 48.0 | 17.0 | 26.0 | 12.0 | 30 | 32 | 39.0 |
| 20 | 3/4 | MC-20-6 | 50.0 | 19.0 | 26.0 | 15.0 | 30 | 32 | 41.0 |
| 20 | 1 | MC-20-8 | 55.0 | 22.0 | 26.0 | 18.0 | 35 | 32 | 46.0 |
| 22 | 1/8 | MC-22-1 | 41.3 | 10.0 | 26.0 | 5.0 | 30 | 32 | 32.0 |
| 22 | 1/4 | MC-22-2 | 44.3 | 13.0 | 26.0 | 7.0 | 30 | 32 | 35.0 |
| 22 | 3/8 | MC-22-3 | 45.3 | 14.0 | 26.0 | 9.5 | 30 | 32 | 36.0 |
| 22 | 1/2 | MC-22-4 | 48.3 | 17.0 | 26.0 | 12.0 | 30 | 32 | 39.0 |
| 22 | 3/4 | MC-22-6 | 50.3 | 19.0 | 26.0 | 15.0 | 30 | 32 | 41.0 |
| 22 | 1 | MC-22-8 | 55.3 | 22.0 | 26.0 | 18.0 | 35 | 32 | 46.0 |
| 25 | 1/8 | MC-25-1 | 48.4 | 10.0 | 31.3 | 5.0 | 35 | 1-1/2 | 36.0 |
| 25 | 1/4 | MC-25-2 | 51.4 | 13.0 | 31.3 | 7.0 | 35 | 1-1/2 | 39.0 |
| 25 | 3/8 | MC-25-3 | 52.4 | 14.0 | 31.3 | 9.5 | 35 | 1-1/2 | 40.0 |
| 25 | 1/2 | MC-25-4 | 55.4 | 17.0 | 31.3 | 12.0 | 35 | 1-1/2 | 43.0 |
| 25 | 3/4 | MC-25-6 | 57.4 | 19.0 | 31.3 | 15.0 | 35 | 1-1/2 | 45.0 |
| 25 | 1 | MC-25-8 | 60.4 | 22.0 | 31.3 | 20.0 | 35 | 1-1/2 | 48.0 |

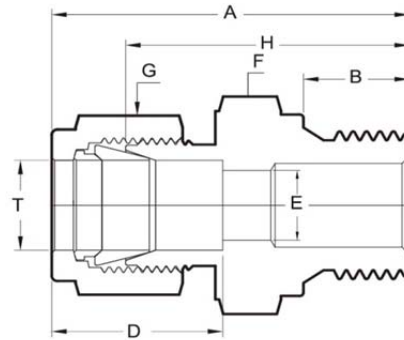
MC Male Connector



Fractional

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|----------------|-------------|------|------|------|------|----|-------|------|
| 1/16 | 1/8 | MC-005-1 | 27.0 | 10.0 | 8.6 | 1.5 | 10 | 10 | 23.0 |
| 1/16 | 1/4 | MC-005-2 | 30.0 | 13.0 | 8.6 | 1.5 | 14 | 10 | 26.0 |
| 1/8 | 1/8 | MC-01-1 | 31.9 | 10.0 | 12.7 | 2.5 | 10 | 7/16 | 25.0 |
| 1/8 | 1/4 | MC-01-2 | 34.9 | 13.0 | 12.7 | 2.5 | 14 | 7/16 | 28.0 |
| 1/8 | 3/8 | MC-01-3 | 36.9 | 14.0 | 12.7 | 2.5 | 17 | 7/16 | 30.0 |
| 1/8 | 1/2 | MC-01-4 | 40.9 | 17.0 | 12.7 | 2.5 | 22 | 7/16 | 34.0 |
| 1/8 | 3/4 | MC-01-6 | 43.9 | 19.0 | 12.7 | 2.5 | 27 | 7/16 | 37.0 |
| 1/8 | 1 | MC-01-8 | 49.9 | 22.0 | 12.7 | 2.5 | 35 | 7/16 | 43.0 |
| 3/16 | 1/8 | MC-015-1 | 31.9 | 10.0 | 13.7 | 2.5 | 12 | 12 | 25.0 |
| 3/16 | 1/4 | MC-015-2 | 34.9 | 13.0 | 13.7 | 2.5 | 14 | 12 | 28.0 |
| 1/4 | 1/8 | MC-02-1 | 33.8 | 10.0 | 15.2 | 5.0 | 12 | 9/16 | 26.0 |
| 1/4 | 1/4 | MC-02-2 | 36.8 | 13.0 | 15.2 | 5.0 | 14 | 9/16 | 29.0 |
| 1/4 | 3/8 | MC-02-3 | 38.8 | 14.0 | 15.2 | 5.0 | 17 | 9/16 | 31.0 |
| 1/4 | 1/2 | MC-02-4 | 42.8 | 17.0 | 15.2 | 5.0 | 22 | 9/16 | 35.0 |
| 1/4 | 3/4 | MC-02-6 | 45.8 | 19.0 | 15.2 | 5.0 | 27 | 9/16 | 38.0 |
| 1/4 | 1 | MC-02-8 | 51.8 | 22.0 | 15.2 | 5.0 | 35 | 9/16 | 44.0 |
| 3/8 | 1/8 | MC-03-1 | 35.7 | 10.0 | 16.8 | 5.0 | 14 | 11/16 | 28.0 |
| 3/8 | 1/4 | MC-03-2 | 38.7 | 13.0 | 16.8 | 7.7 | 14 | 11/16 | 31.0 |
| 3/8 | 3/8 | MC-03-3 | 40.7 | 14.0 | 16.8 | 7.7 | 17 | 11/16 | 33.0 |
| 3/8 | 1/2 | MC-03-4 | 44.7 | 17.0 | 16.8 | 7.7 | 22 | 11/16 | 37.0 |
| 3/8 | 3/4 | MC-03-6 | 47.7 | 19.0 | 16.8 | 7.7 | 27 | 11/16 | 40.0 |
| 3/8 | 1 | MC-03-8 | 53.7 | 22.0 | 16.8 | 7.7 | 35 | 11/16 | 46.0 |
| 1/2 | 1/8 | MC-04-1 | 39.9 | 10.0 | 22.9 | 5.0 | 19 | 7/8 | 30.0 |
| 1/2 | 1/4 | MC-04-2 | 42.9 | 13.0 | 22.9 | 7.0 | 19 | 7/8 | 33.0 |
| 1/2 | 3/8 | MC-04-3 | 43.9 | 14.0 | 22.9 | 10.0 | 19 | 7/8 | 34.0 |
| 1/2 | 1/2 | MC-04-4 | 46.9 | 17.0 | 22.9 | 10.0 | 22 | 7/8 | 37.0 |
| 1/2 | 3/4 | MC-04-6 | 49.9 | 19.0 | 22.9 | 10.0 | 27 | 7/8 | 40.0 |
| 1/2 | 1 | MC-04-8 | 55.9 | 22.0 | 22.9 | 10.0 | 35 | 7/8 | 46.0 |
| 5/8 | 3/8 | MC-05-3 | 44.4 | 14.0 | 24.4 | 10.0 | 24 | 25 | 34.0 |
| 5/8 | 1/2 | MC-05-4 | 48.4 | 17.0 | 24.4 | 12.0 | 24 | 25 | 38.0 |
| 5/8 | 3/4 | MC-05-6 | 50.4 | 19.0 | 24.4 | 14.0 | 27 | 25 | 40.0 |
| 3/4 | 1/8 | MC-06-1 | 41.9 | 10.0 | 24.4 | 5.0 | 27 | 1-1/8 | 31.0 |
| 3/4 | 1/4 | MC-06-2 | 44.9 | 13.0 | 24.4 | 7.0 | 27 | 1-1/8 | 34.0 |
| 3/4 | 3/8 | MC-06-3 | 45.9 | 14.0 | 24.4 | 9.5 | 27 | 1-1/8 | 35.0 |
| 3/4 | 1/2 | MC-06-4 | 48.9 | 17.0 | 24.4 | 12.0 | 27 | 1-1/8 | 38.0 |
| 3/4 | 3/4 | MC-06-6 | 50.9 | 19.0 | 24.4 | 15.0 | 27 | 1-1/8 | 40.0 |
| 3/4 | 1 | MC-06-8 | 56.9 | 22.0 | 24.4 | 16.0 | 35 | 1-1/8 | 46.0 |
| 1 | 1/8 | MC-08-1 | 48.4 | 10.0 | 31.2 | 5.0 | 35 | 1-1/2 | 36.0 |
| 1 | 1/4 | MC-08-2 | 51.4 | 13.0 | 31.2 | 7.0 | 35 | 1-1/2 | 39.0 |
| 1 | 3/8 | MC-08-3 | 52.4 | 14.0 | 31.2 | 9.5 | 35 | 1-1/2 | 40.0 |
| 1 | 1/2 | MC-08-4 | 55.4 | 17.0 | 31.2 | 12.0 | 35 | 1-1/2 | 43.0 |
| 1 | 3/4 | MC-08-6 | 57.4 | 19.0 | 31.2 | 16.0 | 35 | 1-1/2 | 45.0 |
| 1 | 1 | MC-08-8 | 60.4 | 22.0 | 31.2 | 20.0 | 35 | 1-1/2 | 48.0 |

MCGP1 Male Connector – Parallel G Thread P1 Type



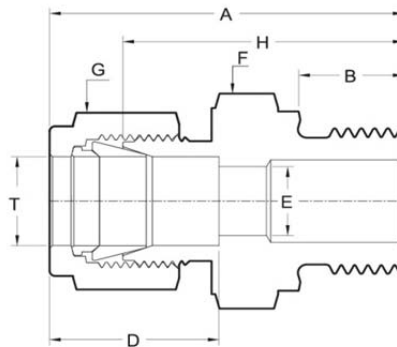
Metric

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|------|------|
| 6 | 1/8 | MCGP1-6-1 | 33.1 | 8.0 | 15.3 | 5.0 | 14 | 9/16 | 25.5 |
| 6 | 1/4 | MCGP1-6-2 | 37.6 | 11.2 | 15.3 | 5.0 | 19 | 9/16 | 30.0 |
| 6 | 3/8 | MCGP1-6-3 | 38.6 | 11.0 | 15.3 | 5.0 | 22 | 9/16 | 31.0 |
| 6 | 1/2 | MCGP1-6-4 | 43.6 | 14.2 | 15.3 | 5.0 | 27 | 9/16 | 36.0 |
| 8 | 1/8 | MCGP1-8-1 | 34.3 | 8.0 | 16.2 | 5.0 | 14 | 5/8 | 26.5 |
| 8 | 1/4 | MCGP1-8-2 | 38.8 | 11.2 | 16.2 | 6.0 | 19 | 5/8 | 31.0 |
| 8 | 3/8 | MCGP1-8-3 | 39.8 | 11.0 | 16.2 | 6.0 | 22 | 5/8 | 32.0 |
| 8 | 1/2 | MCGP1-8-4 | 44.8 | 14.2 | 16.2 | 6.0 | 27 | 5/8 | 37.0 |
| 10 | 1/4 | MCGP1-10-2 | 39.9 | 11.2 | 17.2 | 7.0 | 19 | 19 | 32.0 |
| 10 | 3/8 | MCGP1-10-3 | 40.9 | 11.0 | 17.2 | 8.0 | 22 | 19 | 33.0 |
| 10 | 1/2 | MCGP1-10-4 | 45.9 | 14.2 | 17.2 | 8.0 | 27 | 19 | 38.0 |
| 12 | 1/4 | MCGP1-12-2 | 41.7 | 11.2 | 22.8 | 7.0 | 19 | 7/8 | 32.0 |
| 12 | 3/8 | MCGP1-12-3 | 43.2 | 11.0 | 22.8 | 8.0 | 22 | 7/8 | 33.5 |
| 12 | 1/2 | MCGP1-12-4 | 47.7 | 14.2 | 22.8 | 10.0 | 27 | 7/8 | 38.0 |
| 12 | 3/4 | MCGP1-12-6 | 50.7 | 16.0 | 22.8 | 10.0 | 32 | 7/8 | 41.0 |

Fractional

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|-------|------|
| 1/8 | 1/8 | MCGP1-01-1 | 31.4 | 8.0 | 12.7 | 2.5 | 14 | 7/16 | 24.5 |
| 1/8 | 1/4 | MCGP1-01-2 | 35.9 | 11.2 | 12.7 | 2.5 | 19 | 7/16 | 29.0 |
| 1/4 | 1/8 | MCGP1-02-1 | 33.3 | 8.0 | 15.2 | 5.0 | 14 | 9/16 | 25.5 |
| 1/4 | 1/4 | MCGP1-02-2 | 37.8 | 11.2 | 15.2 | 5.0 | 19 | 9/16 | 30.0 |
| 1/4 | 3/8 | MCGP1-02-3 | 38.8 | 11.0 | 15.2 | 5.0 | 22 | 9/16 | 31.0 |
| 1/4 | 1/2 | MCGP1-02-4 | 43.8 | 14.2 | 15.2 | 5.0 | 27 | 9/16 | 36.0 |
| 3/8 | 1/4 | MCGP1-03-2 | 39.7 | 11.2 | 16.8 | 7.0 | 19 | 11/16 | 32.0 |
| 3/8 | 3/8 | MCGP1-03-3 | 40.7 | 11.0 | 16.8 | 7.0 | 22 | 11/16 | 33.0 |
| 3/8 | 1/2 | MCGP1-03-4 | 45.7 | 14.2 | 16.8 | 7.0 | 27 | 11/16 | 38.0 |
| 1/2 | 1/4 | MCGP1-04-2 | 41.9 | 11.2 | 22.9 | 8.0 | 19 | 7/8 | 32.0 |
| 1/2 | 3/8 | MCGP1-04-3 | 43.4 | 11.0 | 22.9 | 8.0 | 22 | 7/8 | 33.5 |
| 1/2 | 1/2 | MCGP1-04-4 | 47.9 | 14.2 | 22.9 | 10.0 | 27 | 7/8 | 38.0 |
| 3/4 | 1/2 | MCGP1-06-4 | 48.9 | 14.2 | 24.4 | 12.0 | 27 | 1-1/8 | 38.0 |
| 3/4 | 3/4 | MCGP1-06-6 | 51.9 | 16.0 | 24.4 | 15.0 | 32 | 1-1/8 | 41.0 |
| 1 | 1/2 | MCGP1-08-4 | 55.4 | 14.2 | 31.2 | 12.0 | 35 | 1-1/2 | 43.0 |
| 1 | 3/4 | MCGP1-08-6 | 57.4 | 16.0 | 31.2 | 15.0 | 35 | 1-1/2 | 45.0 |
| 1 | 1 | MCGP1-08-8 | 59.4 | 18.3 | 31.2 | 20.0 | 41 | 1-1/2 | 47.0 |

MCGP2 Male Connector – Parallel G Thread P2 Type



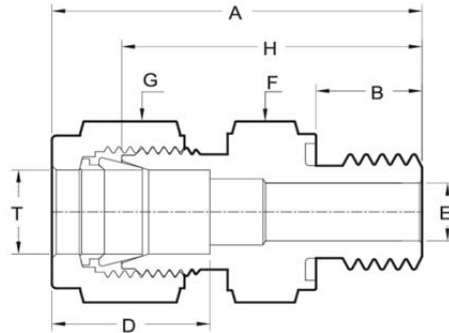
Metric

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|------|------|
| 6 | 1/8 | MCGP2-6-1 | 33.1 | 8.0 | 15.3 | 5.0 | 14 | 9/16 | 25.5 |
| 6 | 1/4 | MCGP2-6-2 | 39.6 | 12.0 | 15.3 | 5.0 | 19 | 9/16 | 32.0 |
| 6 | 3/8 | MCGP2-6-3 | 40.1 | 12.0 | 15.3 | 5.0 | 22 | 9/16 | 32.5 |
| 6 | 1/2 | MCGP2-6-4 | 43.6 | 14.0 | 15.3 | 5.0 | 27 | 9/16 | 36.0 |
| 8 | 1/8 | MCGP2-8-1 | 34.3 | 8.0 | 16.2 | 5.0 | 14 | 5/8 | 26.5 |
| 8 | 1/4 | MCGP2-8-2 | 40.8 | 12.0 | 16.2 | 6.0 | 19 | 5/8 | 33.0 |
| 8 | 3/8 | MCGP2-8-3 | 41.3 | 12.0 | 16.2 | 6.0 | 22 | 5/8 | 33.5 |
| 8 | 1/2 | MCGP2-8-4 | 44.8 | 14.0 | 16.2 | 6.0 | 27 | 5/8 | 37.0 |
| 10 | 1/4 | MCGP2-10-2 | 41.9 | 12.0 | 17.2 | 7.0 | 19 | 19 | 34.0 |
| 10 | 3/8 | MCGP2-10-3 | 42.4 | 12.0 | 17.2 | 8.0 | 22 | 19 | 34.5 |
| 10 | 1/2 | MCGP2-10-4 | 45.9 | 14.0 | 17.2 | 8.0 | 27 | 19 | 38.0 |
| 12 | 1/4 | MCGP2-12-2 | 43.7 | 12.0 | 22.8 | 7.0 | 19 | 7/8 | 34.0 |
| 12 | 3/8 | MCGP2-12-3 | 44.2 | 12.0 | 22.8 | 7.0 | 22 | 7/8 | 34.5 |
| 12 | 1/2 | MCGP2-12-4 | 47.7 | 14.0 | 22.8 | 10.0 | 27 | 7/8 | 38.0 |
| 12 | 3/4 | MCGP2-12-6 | 50.7 | 16.0 | 22.8 | 10.0 | 32 | 7/8 | 41.0 |

Fractional

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|-------|------|
| 1/8 | 1/8 | MCGP2-01-1 | 31.4 | 8.0 | 12.7 | 2.5 | 14 | 7/16 | 24.5 |
| 1/8 | 1/4 | MCGP2-01-2 | 36.9 | 12.0 | 12.7 | 2.5 | 19 | 7/16 | 30.0 |
| 1/4 | 1/8 | MCGP2-02-1 | 33.3 | 8.0 | 15.2 | 5.0 | 14 | 9/16 | 25.5 |
| 1/4 | 1/4 | MCGP2-02-2 | 39.8 | 12.0 | 15.2 | 5.0 | 19 | 9/16 | 32.0 |
| 1/4 | 3/8 | MCGP2-02-3 | 40.3 | 12.0 | 15.2 | 5.0 | 22 | 9/16 | 32.5 |
| 1/4 | 1/2 | MCGP2-02-4 | 43.8 | 14.0 | 15.2 | 5.0 | 27 | 9/16 | 36.0 |
| 3/8 | 1/4 | MCGP2-03-2 | 41.7 | 12.0 | 16.8 | 7.0 | 19 | 11/16 | 34.0 |
| 3/8 | 3/8 | MCGP2-03-3 | 42.2 | 12.0 | 16.8 | 7.0 | 22 | 11/16 | 34.5 |
| 3/8 | 1/2 | MCGP2-03-4 | 45.7 | 14.0 | 16.8 | 7.0 | 27 | 11/16 | 38.0 |
| 1/2 | 1/4 | MCGP2-04-2 | 43.9 | 12.0 | 22.9 | 8.0 | 19 | 7/8 | 34.0 |
| 1/2 | 3/8 | MCGP2-04-3 | 44.4 | 12.0 | 22.9 | 8.0 | 22 | 7/8 | 34.5 |
| 1/2 | 1/2 | MCGP2-04-4 | 47.9 | 14.0 | 22.9 | 10.0 | 27 | 7/8 | 38.0 |
| 3/4 | 1/2 | MCGP2-06-4 | 48.9 | 14.0 | 24.4 | 12.0 | 27 | 1-1/8 | 38.0 |
| 3/4 | 3/4 | MCGP2-06-6 | 51.9 | 16.0 | 24.4 | 15.0 | 32 | 1-1/8 | 41.0 |
| 1 | 1/2 | MCGP2-08-4 | 55.4 | 14.0 | 31.2 | 12.0 | 35 | 1-1/2 | 43.0 |
| 1 | 3/4 | MCGP2-08-6 | 57.4 | 16.0 | 31.2 | 15.0 | 35 | 1-1/2 | 45.0 |
| 1 | 1 | MCGP2-08-8 | 59.4 | 18.0 | 31.2 | 20.0 | 41 | 1-1/2 | 47.0 |

MCGE Male Connector – Parallel G Thread E Type



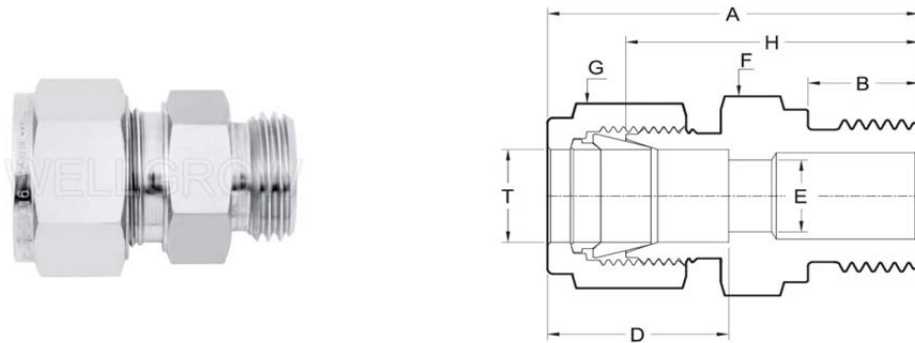
Metric

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|------|------|
| 6 | 1/8 | MCGE-6-1 | 33.1 | 8.0 | 15.3 | 5.0 | 14 | 9/16 | 25.5 |
| 6 | 1/4 | MCGE-6-2 | 39.6 | 12.0 | 15.3 | 5.0 | 19 | 9/16 | 32.0 |
| 6 | 3/8 | MCGE-6-3 | 40.1 | 12.0 | 15.3 | 5.0 | 22 | 9/16 | 32.5 |
| 6 | 1/2 | MCGE-6-4 | 43.6 | 14.0 | 15.3 | 5.0 | 27 | 9/16 | 36.0 |
| 8 | 1/8 | MCGE-8-1 | 34.3 | 8.0 | 16.2 | 5.0 | 14 | 5/8 | 26.5 |
| 8 | 1/4 | MCGE-8-2 | 40.8 | 12.0 | 16.2 | 6.0 | 19 | 5/8 | 33.0 |
| 8 | 3/8 | MCGE-8-3 | 41.3 | 12.0 | 16.2 | 6.0 | 22 | 5/8 | 33.5 |
| 8 | 1/2 | MCGE-8-4 | 44.8 | 14.0 | 16.2 | 6.0 | 27 | 5/8 | 37.0 |
| 10 | 1/4 | MCGE-10-2 | 41.9 | 12.0 | 17.2 | 7.0 | 19 | 19 | 34.0 |
| 10 | 3/8 | MCGE-10-3 | 42.4 | 12.0 | 17.2 | 7.0 | 22 | 19 | 34.5 |
| 10 | 1/2 | MCGE-10-4 | 45.9 | 14.0 | 17.2 | 8.0 | 27 | 19 | 38.0 |
| 12 | 1/4 | MCGE-12-2 | 43.7 | 12.0 | 22.8 | 7.0 | 19 | 7/8 | 34.0 |
| 12 | 3/8 | MCGE-12-3 | 44.2 | 12.0 | 22.8 | 7.0 | 22 | 7/8 | 34.5 |
| 12 | 1/2 | MCGE-12-4 | 47.7 | 14.0 | 22.8 | 10.0 | 27 | 7/8 | 38.0 |
| 12 | 3/4 | MCGE-12-6 | 50.7 | 16.0 | 22.8 | 10.0 | 32 | 7/8 | 41.0 |

Fractional

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|-------|------|
| 1/8 | 1/8 | MCGE-01-1 | 31.4 | 8.0 | 12.7 | 2.5 | 14 | 7/16 | 24.5 |
| 1/8 | 1/4 | MCGE-01-2 | 36.9 | 12.0 | 12.7 | 2.5 | 19 | 7/16 | 30.0 |
| 1/4 | 1/8 | MCGE-02-1 | 33.3 | 8.0 | 15.2 | 5.0 | 14 | 9/16 | 25.5 |
| 1/4 | 1/4 | MCGE-02-2 | 39.8 | 12.0 | 15.2 | 5.0 | 19 | 9/16 | 32.0 |
| 1/4 | 3/8 | MCGE-02-3 | 40.3 | 12.0 | 15.2 | 5.0 | 22 | 9/16 | 32.5 |
| 1/4 | 1/2 | MCGE-02-4 | 43.8 | 14.0 | 15.2 | 5.0 | 27 | 9/16 | 36.0 |
| 3/8 | 1/4 | MCGE-03-2 | 41.7 | 12.0 | 16.8 | 7.0 | 19 | 11/16 | 34.0 |
| 3/8 | 3/8 | MCGE-03-3 | 42.2 | 12.0 | 16.8 | 7.0 | 22 | 11/16 | 34.5 |
| 3/8 | 1/2 | MCGE-03-4 | 45.7 | 14.0 | 16.8 | 7.0 | 27 | 11/16 | 38.0 |
| 1/2 | 1/4 | MCGE-04-2 | 43.9 | 12.0 | 22.9 | 7.0 | 22 | 7/8 | 34.0 |
| 1/2 | 3/8 | MCGE-04-3 | 44.4 | 12.0 | 22.9 | 7.0 | 22 | 7/8 | 34.5 |
| 1/2 | 1/2 | MCGE-04-4 | 47.9 | 14.0 | 22.9 | 10.0 | 27 | 7/8 | 38.0 |
| 3/4 | 1/2 | MCGE-06-4 | 48.9 | 14.0 | 24.4 | 12.0 | 27 | 1-1/8 | 38.0 |
| 3/4 | 3/4 | MCGE-06-6 | 51.9 | 16.0 | 24.4 | 15.0 | 32 | 1-1/8 | 41.0 |
| 1 | 1/2 | MCGE-08-4 | 55.4 | 14.0 | 31.2 | 12.0 | 35 | 1-1/2 | 43.0 |
| 1 | 3/4 | MCGE-08-6 | 57.4 | 16.0 | 31.2 | 15.0 | 35 | 1-1/2 | 45.0 |
| 1 | 1 | MCGE-08-8 | 59.4 | 18.0 | 31.2 | 20.0 | 41 | 1-1/2 | 47.0 |

MCGS Male Connector – Parallel G Thread S Type



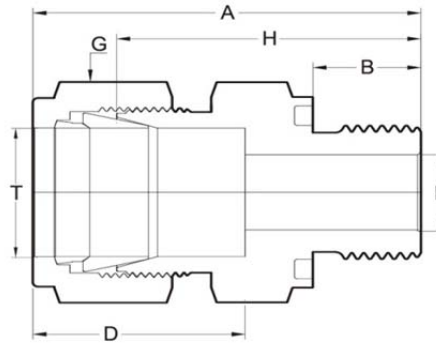
Metric

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|------|------|
| 6 | 1/8 | MCGS-6-1 | 33.1 | 8.0 | 15.3 | 5.0 | 14 | 9/16 | 25.5 |
| 6 | 1/4 | MCGS-6-2 | 38.6 | 12.0 | 15.3 | 5.0 | 19 | 9/16 | 31.0 |
| 6 | 3/8 | MCGS-6-3 | 40.1 | 12.0 | 15.3 | 5.0 | 22 | 9/16 | 32.5 |
| 6 | 1/2 | MCGS-6-4 | 42.6 | 14.0 | 15.3 | 5.0 | 27 | 9/16 | 35.0 |
| 8 | 1/8 | MCGS-8-1 | 34.3 | 8.0 | 16.2 | 5.0 | 14 | 5/8 | 26.5 |
| 8 | 1/4 | MCGS-8-2 | 39.8 | 12.0 | 16.2 | 6.0 | 17 | 5/8 | 32.0 |
| 8 | 3/8 | MCGS-8-3 | 41.3 | 12.0 | 16.2 | 6.0 | 19 | 5/8 | 33.5 |
| 8 | 1/2 | MCGS-8-4 | 43.8 | 14.0 | 16.2 | 6.0 | 24 | 5/8 | 36.0 |
| 10 | 1/4 | MCGS-10-2 | 40.9 | 12.0 | 17.2 | 7.0 | 17 | 19 | 33.0 |
| 10 | 3/8 | MCGS-10-3 | 42.4 | 12.0 | 17.2 | 8.0 | 19 | 19 | 34.5 |
| 10 | 1/2 | MCGS-10-4 | 44.9 | 14.0 | 17.2 | 8.0 | 24 | 19 | 37.0 |
| 12 | 1/4 | MCGS-12-2 | 43.7 | 12.0 | 22.8 | 7.0 | 19 | 7/8 | 34.0 |
| 12 | 3/8 | MCGS-12-3 | 44.2 | 12.0 | 22.8 | 8.0 | 19 | 7/8 | 34.5 |
| 12 | 1/2 | MCGS-12-4 | 46.7 | 14.0 | 22.8 | 10.0 | 24 | 7/8 | 37.0 |
| 12 | 3/4 | MCGS-12-6 | 50.7 | 16.0 | 22.8 | 10.0 | 32 | 7/8 | 41.0 |

Fractional

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|-------|------|
| 1/8 | 1/8 | MCGS-01-1 | 31.4 | 8.0 | 12.7 | 2.5 | 14 | 7/16 | 24.5 |
| 1/8 | 1/4 | MCGS-01-2 | 35.9 | 12.0 | 12.7 | 2.5 | 19 | 7/16 | 29.0 |
| 1/4 | 1/8 | MCGS-02-1 | 33.3 | 8.0 | 15.2 | 5.0 | 14 | 9/16 | 25.5 |
| 1/4 | 1/4 | MCGS-02-2 | 38.8 | 12.0 | 15.2 | 5.0 | 19 | 9/16 | 31.0 |
| 1/4 | 3/8 | MCGS-02-3 | 40.3 | 12.0 | 15.2 | 5.0 | 22 | 9/16 | 32.5 |
| 1/4 | 1/2 | MCGS-02-4 | 42.8 | 14.0 | 15.2 | 5.0 | 27 | 9/16 | 35.0 |
| 3/8 | 1/4 | MCGS-03-2 | 40.7 | 12.0 | 16.8 | 7.0 | 19 | 11/16 | 33.0 |
| 3/8 | 3/8 | MCGS-03-3 | 42.2 | 12.0 | 16.8 | 7.0 | 22 | 11/16 | 34.5 |
| 3/8 | 1/2 | MCGS-03-4 | 44.7 | 14.0 | 16.8 | 7.0 | 27 | 11/16 | 37.0 |
| 1/2 | 1/4 | MCGS-04-2 | 43.9 | 12.0 | 22.9 | 8.0 | 19 | 7/8 | 34.0 |
| 1/2 | 3/8 | MCGS-04-3 | 44.4 | 12.0 | 22.9 | 8.0 | 22 | 7/8 | 34.5 |
| 1/2 | 1/2 | MCGS-04-4 | 46.9 | 14.0 | 22.9 | 10.0 | 27 | 7/8 | 37.0 |
| 3/4 | 1/2 | MCGS-06-4 | 48.9 | 14.0 | 24.4 | 12.0 | 27 | 1-1/8 | 38.0 |
| 3/4 | 3/4 | MCGS-06-6 | 51.9 | 16.0 | 24.4 | 15.0 | 32 | 1-1/8 | 41.0 |
| 1 | 1/2 | MCGS-08-4 | 55.4 | 14.0 | 31.2 | 12.0 | 35 | 1-1/2 | 43.0 |
| 1 | 3/4 | MCGS-08-6 | 57.4 | 16.0 | 31.2 | 15.0 | 35 | 1-1/2 | 45.0 |
| 1 | 1 | MCGS-08-8 | 59.4 | 18.0 | 31.2 | 20.0 | 41 | 1-1/2 | 47.0 |

MCGO Male Connector – Parallel G Thread O Type



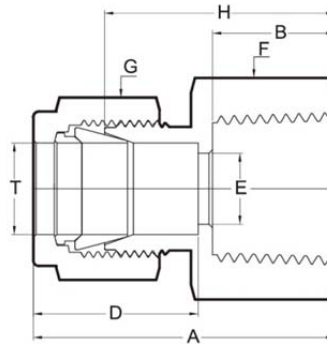
Metric

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|------|------|
| 6 | 1/8 | MCGO-6-1 | 35.6 | 8.0 | 15.3 | 5.0 | 19 | 9/16 | 28.0 |
| 6 | 1/4 | MCGO-6-2 | 40.1 | 12.0 | 15.3 | 5.0 | 24 | 9/16 | 32.5 |
| 6 | 3/8 | MCGO-6-3 | 40.6 | 12.0 | 15.3 | 5.0 | 30 | 9/16 | 33.0 |
| 6 | 1/2 | MCGO-6-4 | 44.6 | 14.0 | 15.3 | 5.0 | 35 | 9/16 | 37.0 |
| 8 | 1/8 | MCGO-8-1 | 36.8 | 8.0 | 16.2 | 5.0 | 19 | 5/8 | 29.0 |
| 8 | 1/4 | MCGO-8-2 | 41.3 | 12.0 | 16.2 | 6.0 | 24 | 5/8 | 33.5 |
| 8 | 3/8 | MCGO-8-3 | 41.8 | 12.0 | 16.2 | 6.0 | 30 | 5/8 | 34.0 |
| 8 | 1/2 | MCGO-8-4 | 45.8 | 14.0 | 16.2 | 6.0 | 35 | 5/8 | 38.0 |
| 10 | 1/4 | MCGO-10-2 | 42.4 | 12.0 | 17.2 | 7.0 | 24 | 19 | 34.5 |
| 10 | 3/8 | MCGO-10-3 | 42.9 | 12.0 | 17.2 | 8.0 | 30 | 19 | 35.0 |
| 10 | 1/2 | MCGO-10-4 | 46.9 | 14.0 | 17.2 | 8.0 | 35 | 19 | 39.0 |
| 12 | 1/4 | MCGO-12-2 | 44.2 | 12.0 | 22.8 | 7.0 | 24 | 7/8 | 34.5 |
| 12 | 3/8 | MCGO-12-3 | 44.7 | 12.0 | 22.8 | 8.0 | 30 | 7/8 | 35.0 |
| 12 | 1/2 | MCGO-12-4 | 48.7 | 14.0 | 22.8 | 10.0 | 35 | 7/8 | 39.0 |
| 12 | 3/4 | MCGO-12-6 | 52.7 | 16.0 | 22.8 | 10.0 | 38 | 7/8 | 43.0 |

Fractional

| TUBE O.D. | G MALE THREAD SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|--------------------|-------------|------|------|------|------|----|-------|------|
| 1/8 | 1/8 | MCGO-01-1 | 31.9 | 8.0 | 12.7 | 2.5 | 19 | 7/16 | 25.0 |
| 1/8 | 1/4 | MCGO-01-2 | 37.4 | 12.0 | 12.7 | 2.5 | 24 | 7/16 | 30.5 |
| 1/4 | 1/8 | MCGO-02-1 | 35.8 | 8.0 | 15.2 | 5.0 | 19 | 9/16 | 28.0 |
| 1/4 | 1/4 | MCGO-02-2 | 40.3 | 12.0 | 15.2 | 5.0 | 24 | 9/16 | 32.5 |
| 1/4 | 3/8 | MCGO-02-3 | 40.8 | 12.0 | 15.2 | 5.0 | 30 | 9/16 | 33.0 |
| 1/4 | 1/2 | MCGO-02-4 | 44.8 | 14.0 | 15.2 | 5.0 | 35 | 9/16 | 37.0 |
| 3/8 | 1/4 | MCGO-03-2 | 42.2 | 12.0 | 16.8 | 7.0 | 24 | 11/16 | 34.5 |
| 3/8 | 3/8 | MCGO-03-3 | 42.7 | 12.0 | 16.8 | 7.0 | 30 | 11/16 | 35.0 |
| 3/8 | 1/2 | MCGO-03-4 | 46.7 | 14.0 | 16.8 | 7.0 | 35 | 11/16 | 39.0 |
| 1/2 | 1/4 | MCGO-04-2 | 44.4 | 12.0 | 22.9 | 8.0 | 24 | 7/8 | 34.5 |
| 1/2 | 3/8 | MCGO-04-3 | 44.9 | 12.0 | 22.9 | 8.0 | 30 | 7/8 | 35.0 |
| 1/2 | 1/2 | MCGO-04-4 | 48.9 | 14.0 | 22.9 | 10.0 | 35 | 7/8 | 39.0 |
| 3/4 | 1/2 | MCGO-06-4 | 49.9 | 14.0 | 24.4 | 12.0 | 35 | 1-1/8 | 39.0 |
| 3/4 | 3/4 | MCGO-06-6 | 51.9 | 16.0 | 24.4 | 15.0 | 38 | 1-1/8 | 41.0 |
| 1 | 1/2 | MCGO-08-4 | 55.4 | 14.0 | 31.2 | 12.0 | 35 | 1-1/2 | 43.0 |
| 1 | 3/4 | MCGO-08-6 | 57.4 | 16.0 | 31.2 | 15.0 | 38 | 1-1/2 | 45.0 |
| 1 | 1 | MCGO-08-8 | 59.4 | 18.0 | 31.2 | 20.0 | 46 | 1-1/2 | 47.0 |

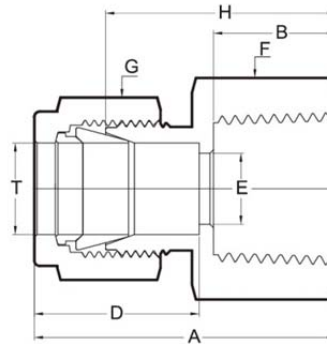
FC Female Connector



Metric

| T TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-------------------|---------------------|----------------|------|------|------|------|----|------|------|
| 4 | 1/8 | FC-4-1 | 31.1 | 12.0 | 13.7 | 2.5 | 14 | 12 | 24.0 |
| 4 | 1/4 | FC-4-2 | 32.1 | 13.0 | 13.7 | 2.5 | 17 | 12 | 25.0 |
| 4 | 3/8 | FC-4-3 | 33.1 | 14.0 | 13.7 | 2.5 | 22 | 12 | 26.0 |
| 4 | 1/2 | FC-4-4 | 36.1 | 17.0 | 13.7 | 2.5 | 27 | 12 | 29.0 |
| 4 | 3/4 | FC-4-6 | 38.1 | 18.0 | 13.7 | 2.5 | 32 | 12 | 31.0 |
| 4 | 1 | FC-4-8 | 45.1 | 24.0 | 13.7 | 2.5 | 41 | 12 | 38.0 |
| 6 | 1/8 | FC-6-1 | 32.6 | 12.0 | 15.3 | 5.0 | 14 | 9/16 | 25.0 |
| 6 | 1/4 | FC-6-2 | 33.6 | 13.0 | 15.3 | 5.0 | 17 | 9/16 | 26.0 |
| 6 | 3/8 | FC-6-3 | 34.6 | 14.0 | 15.3 | 5.0 | 22 | 9/16 | 27.0 |
| 6 | 1/2 | FC-6-4 | 37.6 | 17.0 | 15.3 | 5.0 | 27 | 9/16 | 30.0 |
| 6 | 3/4 | FC-6-6 | 39.6 | 18.0 | 15.3 | 5.0 | 32 | 9/16 | 32.0 |
| 6 | 1 | FC-6-8 | 46.6 | 24.0 | 15.3 | 5.0 | 41 | 9/16 | 39.0 |
| 8 | 1/8 | FC-8-1 | 33.8 | 12.0 | 16.2 | 6.0 | 14 | 5/8 | 26.0 |
| 8 | 1/4 | FC-8-2 | 34.8 | 13.0 | 16.2 | 6.0 | 17 | 5/8 | 27.0 |
| 8 | 3/8 | FC-8-3 | 35.8 | 14.0 | 16.2 | 6.0 | 22 | 5/8 | 28.0 |
| 8 | 1/2 | FC-8-4 | 38.8 | 17.0 | 16.2 | 6.0 | 27 | 5/8 | 31.0 |
| 8 | 3/4 | FC-8-6 | 40.8 | 18.0 | 16.2 | 6.0 | 32 | 5/8 | 33.0 |
| 8 | 1 | FC-8-8 | 47.8 | 24.0 | 16.2 | 6.0 | 41 | 5/8 | 40.0 |
| 10 | 1/8 | FC-10-1 | 34.9 | 12.0 | 17.2 | 8.0 | 17 | 19 | 27.0 |
| 10 | 1/4 | FC-10-2 | 35.9 | 13.0 | 17.2 | 8.0 | 17 | 19 | 28.0 |
| 10 | 3/8 | FC-10-3 | 36.9 | 14.0 | 17.2 | 8.0 | 22 | 19 | 29.0 |
| 10 | 1/2 | FC-10-4 | 39.9 | 17.0 | 17.2 | 8.0 | 27 | 19 | 32.0 |
| 10 | 3/4 | FC-10-6 | 41.9 | 18.0 | 17.2 | 8.0 | 32 | 19 | 34.0 |
| 10 | 1 | FC-10-8 | 48.9 | 24.0 | 17.2 | 8.0 | 41 | 19 | 41.0 |
| 12 | 1/8 | FC-12-1 | 38.7 | 12.0 | 22.8 | 8.0 | 19 | 7/8 | 29.0 |
| 12 | 1/4 | FC-12-2 | 38.7 | 13.0 | 22.8 | 10.0 | 19 | 7/8 | 29.0 |
| 12 | 3/8 | FC-12-3 | 38.7 | 14.0 | 22.8 | 10.0 | 22 | 7/8 | 29.0 |
| 12 | 1/2 | FC-12-4 | 43.7 | 17.0 | 22.8 | 10.0 | 27 | 7/8 | 34.0 |
| 12 | 3/4 | FC-12-6 | 43.7 | 18.0 | 22.8 | 10.0 | 32 | 7/8 | 34.0 |
| 12 | 1 | FC-12-8 | 50.7 | 24.0 | 22.8 | 10.0 | 41 | 7/8 | 41.0 |

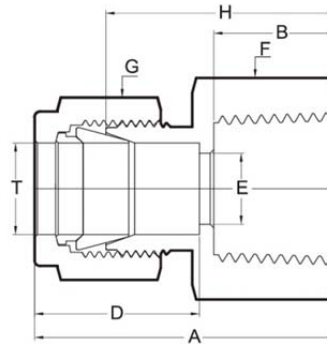
FC Female Connector



Metric

| T TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-------------------|---------------------|----------------|------|------|------|------|----|-------|------|
| 14 | 1/8 | FC-14-1 | 40.4 | 12.0 | 24.4 | 8.0 | 24 | 25 | 30.0 |
| 14 | 1/4 | FC-14-2 | 40.4 | 13.0 | 24.4 | 12.0 | 24 | 25 | 30.0 |
| 14 | 3/8 | FC-14-3 | 41.4 | 14.0 | 24.4 | 12.0 | 24 | 25 | 31.0 |
| 14 | 1/2 | FC-14-4 | 42.4 | 17.0 | 24.4 | 12.0 | 27 | 25 | 32.0 |
| 14 | 3/4 | FC-14-6 | 44.4 | 18.0 | 24.4 | 12.0 | 32 | 25 | 34.0 |
| 14 | 1 | FC-14-8 | 51.4 | 24.0 | 24.4 | 12.0 | 41 | 25 | 41.0 |
| 15 | 1/8 | FC-15-1 | 40.5 | 12.0 | 24.4 | 8.0 | 24 | 25 | 30.0 |
| 15 | 1/4 | FC-15-2 | 40.5 | 13.0 | 24.4 | 12.0 | 24 | 25 | 30.0 |
| 15 | 3/8 | FC-15-3 | 41.5 | 14.0 | 24.4 | 12.0 | 24 | 25 | 31.0 |
| 15 | 1/2 | FC-15-4 | 42.5 | 17.0 | 24.4 | 12.0 | 27 | 25 | 32.0 |
| 15 | 3/4 | FC-15-6 | 44.5 | 18.0 | 24.4 | 12.0 | 32 | 25 | 34.0 |
| 15 | 1 | FC-15-8 | 51.5 | 24.0 | 24.4 | 12.0 | 41 | 25 | 41.0 |
| 16 | 1/8 | FC-16-1 | 40.7 | 12.0 | 24.4 | 8.0 | 24 | 25 | 30.0 |
| 16 | 1/4 | FC-16-2 | 40.7 | 13.0 | 24.4 | 11.0 | 24 | 25 | 30.0 |
| 16 | 3/8 | FC-16-3 | 41.7 | 14.0 | 24.4 | 14.0 | 24 | 25 | 31.0 |
| 16 | 1/2 | FC-16-4 | 42.7 | 17.0 | 24.4 | 14.0 | 27 | 25 | 32.0 |
| 16 | 3/4 | FC-16-6 | 44.7 | 18.0 | 24.4 | 14.0 | 32 | 25 | 34.0 |
| 16 | 1 | FC-16-8 | 51.7 | 24.0 | 24.4 | 14.0 | 41 | 25 | 41.0 |
| 18 | 3/8 | FC-18-3 | 42.4 | 14.0 | 24.4 | 14.0 | 27 | 30 | 32.0 |
| 18 | 1/2 | FC-18-4 | 42.4 | 17.0 | 24.4 | 16.0 | 27 | 30 | 32.0 |
| 18 | 3/4 | FC-18-6 | 44.4 | 18.0 | 24.4 | 16.0 | 32 | 30 | 34.0 |
| 18 | 1 | FC-18-8 | 51.4 | 24.0 | 24.4 | 16.0 | 41 | 30 | 41.0 |
| 20 | 1/2 | FC-20-4 | 44.0 | 17.0 | 26.0 | 18.0 | 30 | 32 | 35.0 |
| 20 | 3/4 | FC-20-6 | 44.0 | 18.0 | 26.0 | 18.0 | 32 | 32 | 35.0 |
| 20 | 1 | FC-20-8 | 50.0 | 24.0 | 26.0 | 18.0 | 41 | 32 | 41.0 |
| 22 | 1/2 | FC-22-4 | 44.3 | 17.0 | 26.0 | 18.0 | 30 | 32 | 35.0 |
| 22 | 3/4 | FC-22-6 | 44.3 | 18.0 | 26.0 | 18.0 | 32 | 32 | 35.0 |
| 22 | 1 | FC-22-8 | 50.3 | 24.0 | 26.0 | 18.0 | 41 | 32 | 41.0 |
| 25 | 3/4 | FC-25-6 | 54.4 | 18.0 | 31.3 | 22.0 | 35 | 1-1/2 | 42.0 |
| 25 | 1 | FC-25-8 | 57.4 | 24.0 | 31.3 | 22.0 | 41 | 1-1/2 | 45.0 |

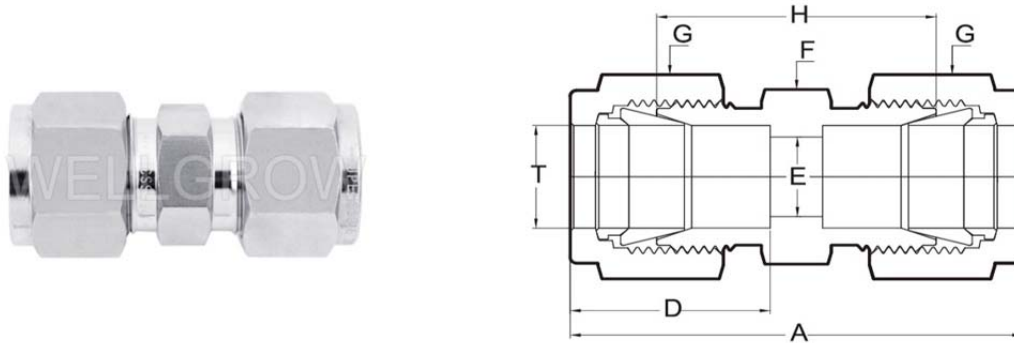
FC Female Connector



Fractional

| T TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-------------------|---------------------|----------------|------|------|------|------|----|-------|------|
| 1/8 | 1/8 | FC-01-1 | 29.9 | 12.0 | 12.7 | 2.5 | 14 | 7/16 | 23.0 |
| 1/8 | 1/4 | FC-01-2 | 31.9 | 13.0 | 12.7 | 2.5 | 17 | 7/16 | 25.0 |
| 1/8 | 3/8 | FC-01-3 | 32.9 | 14.0 | 12.7 | 2.5 | 22 | 7/16 | 26.0 |
| 1/8 | 1/2 | FC-01-4 | 35.9 | 17.0 | 12.7 | 2.5 | 27 | 7/16 | 29.0 |
| 1/8 | 3/4 | FC-01-6 | 37.9 | 18.0 | 12.7 | 2.5 | 32 | 7/16 | 31.0 |
| 1/8 | 1 | FC-01-8 | 44.9 | 24.0 | 12.7 | 2.5 | 41 | 7/16 | 38.0 |
| 1/4 | 1/8 | FC-02-1 | 31.8 | 12.0 | 15.2 | 5.0 | 14 | 9/16 | 24.0 |
| 1/4 | 1/4 | FC-02-2 | 33.8 | 13.0 | 15.2 | 5.0 | 17 | 9/16 | 26.0 |
| 1/4 | 3/8 | FC-02-3 | 34.8 | 14.0 | 15.2 | 5.0 | 22 | 9/16 | 27.0 |
| 1/4 | 1/2 | FC-02-4 | 37.8 | 17.0 | 15.2 | 5.0 | 27 | 9/16 | 30.0 |
| 1/4 | 3/4 | FC-02-6 | 39.8 | 18.0 | 15.2 | 5.0 | 32 | 9/16 | 32.0 |
| 1/4 | 1 | FC-02-8 | 46.8 | 24.0 | 15.2 | 5.0 | 41 | 9/16 | 39.0 |
| 3/8 | 1/8 | FC-03-1 | 33.7 | 12.0 | 16.8 | 7.7 | 14 | 11/16 | 26.0 |
| 3/8 | 1/4 | FC-03-2 | 35.7 | 13.0 | 16.8 | 7.7 | 17 | 11/16 | 28.0 |
| 3/8 | 3/8 | FC-03-3 | 36.7 | 14.0 | 16.8 | 7.7 | 22 | 11/16 | 29.0 |
| 3/8 | 1/2 | FC-03-4 | 39.7 | 17.0 | 16.8 | 7.7 | 27 | 11/16 | 32.0 |
| 3/8 | 3/4 | FC-03-6 | 41.7 | 18.0 | 16.8 | 7.7 | 32 | 11/16 | 34.0 |
| 3/8 | 1 | FC-03-8 | 48.7 | 24.0 | 16.8 | 7.7 | 41 | 11/16 | 41.0 |
| 1/2 | 1/8 | FC-04-1 | 36.9 | 12.0 | 22.9 | 8.0 | 19 | 7/8 | 27.0 |
| 1/2 | 1/4 | FC-04-2 | 39.9 | 13.0 | 22.9 | 10.0 | 19 | 7/8 | 30.0 |
| 1/2 | 3/8 | FC-04-3 | 40.9 | 14.0 | 22.9 | 10.0 | 22 | 7/8 | 31.0 |
| 1/2 | 1/2 | FC-04-4 | 41.9 | 17.0 | 22.9 | 10.0 | 27 | 7/8 | 32.0 |
| 1/2 | 3/4 | FC-04-6 | 43.9 | 18.0 | 22.9 | 10.0 | 32 | 7/8 | 34.0 |
| 1/2 | 1 | FC-04-8 | 50.9 | 24.0 | 22.9 | 10.0 | 41 | 7/8 | 41.0 |
| 5/8 | 3/8 | FC-05-3 | 41.4 | 15.0 | 24.4 | 10.0 | 24 | 25 | 31.0 |
| 5/8 | 1/2 | FC-05-4 | 42.4 | 17.0 | 24.4 | 14.0 | 27 | 25 | 32.0 |
| 5/8 | 3/4 | FC-05-6 | 44.4 | 18.0 | 24.4 | 14.0 | 32 | 25 | 34.0 |
| 3/4 | 1/8 | FC-06-1 | 39.9 | 12.0 | 24.4 | 8.0 | 27 | 1-1/8 | 29.0 |
| 3/4 | 1/4 | FC-06-2 | 41.9 | 13.0 | 24.4 | 10.0 | 27 | 1-1/8 | 31.0 |
| 3/4 | 3/8 | FC-06-3 | 41.9 | 14.0 | 24.4 | 14.0 | 27 | 1-1/8 | 31.0 |
| 3/4 | 1/2 | FC-06-4 | 44.9 | 17.0 | 24.4 | 16.0 | 27 | 1-1/8 | 34.0 |
| 3/4 | 3/4 | FC-06-6 | 44.9 | 18.0 | 24.4 | 16.0 | 32 | 1-1/8 | 34.0 |
| 3/4 | 1 | FC-06-8 | 51.9 | 24.0 | 24.4 | 16.0 | 41 | 1-1/8 | 41.0 |
| 1 | 3/4 | FC-08-6 | 52.4 | 18.0 | 31.2 | 22.0 | 35 | 1-1/2 | 40.0 |
| 1 | 1 | FC-08-8 | 57.4 | 24.0 | 31.2 | 22.0 | 41 | 1-1/2 | 45.0 |

U Equal Union



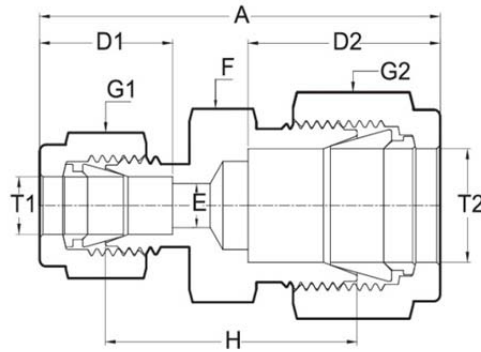
Metric

| TUBE O.D. | ITEM NUMBER | A | D | E | F | G | H |
|-----------|-------------|------|------|------|----|-------|------|
| 3 | U-3-0 | 35.3 | 12.9 | 2.0 | 10 | 10 | 22.1 |
| 4 | U-4-0 | 38.2 | 13.7 | 2.5 | 12 | 12 | 24.0 |
| 6 | U-6-0 | 41.2 | 15.3 | 5.0 | 12 | 9/16 | 26.0 |
| 8 | U-8-0 | 44.6 | 16.2 | 6.0 | 14 | 5/8 | 29.0 |
| 10 | U-10-0 | 46.8 | 17.2 | 8.0 | 17 | 19 | 31.0 |
| 12 | U-12-0 | 51.4 | 22.8 | 10.0 | 19 | 7/8 | 32.0 |
| 14 | U-14-0 | 52.8 | 24.4 | 12.0 | 24 | 25 | 32.0 |
| 15 | U-15-0 | 53.0 | 24.4 | 12.0 | 24 | 25 | 32.0 |
| 16 | U-16-0 | 53.4 | 24.4 | 14.0 | 24 | 25 | 32.0 |
| 18 | U-18-0 | 53.8 | 24.4 | 16.0 | 27 | 30 | 33.0 |
| 20 | U-20-0 | 52.0 | 26.0 | 18.0 | 30 | 32 | 34.0 |
| 22 | U-22-0 | 52.6 | 26.0 | 18.0 | 30 | 32 | 34.0 |
| 25 | U-25-0 | 64.8 | 31.3 | 22.0 | 35 | 1-1/2 | 40.0 |

Fractional

| TUBE O.D. | ITEM NUMBER | A | D | E | F | G | H |
|-----------|-------------|------|------|------|----|-------|------|
| 1/16 | U-005-0 | 28.0 | 8.6 | 1.3 | 10 | 10 | 20.0 |
| 1/8 | U-01-0 | 37.8 | 12.7 | 2.5 | 10 | 7/16 | 24.0 |
| 3/16 | U-015-0 | 37.8 | 13.7 | 2.5 | 12 | 12 | 24.0 |
| 1/4 | U-02-0 | 41.6 | 15.2 | 5.0 | 12 | 9/16 | 26.0 |
| 3/8 | U-03-0 | 45.4 | 16.8 | 7.7 | 14 | 11/16 | 30.0 |
| 1/2 | U-04-0 | 51.8 | 22.9 | 10.0 | 19 | 7/8 | 32.0 |
| 5/8 | U-05-0 | 52.8 | 24.4 | 14.0 | 24 | 25 | 32.0 |
| 3/4 | U-06-0 | 54.8 | 24.4 | 16.0 | 27 | 1-1/8 | 33.0 |
| 1 | U-08-0 | 64.8 | 31.2 | 22.0 | 35 | 1-1/2 | 40.0 |

RU Reducing Union



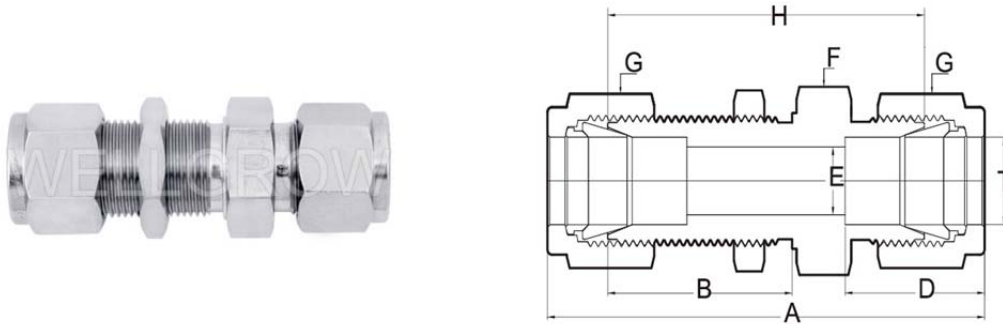
Metric

| TUBE O.D. | | ITEM NUMBER | A | D1 | D2 | E | G1 | G2 | F | H |
|-----------|----|-------------|------|------|------|------|------|-------|----|------|
| T1 | T2 | | | | | | | | | |
| 3 | 4 | RU-3-4 | 37.8 | 12.9 | 13.7 | 2.5 | 7/16 | 12 | 12 | 24.0 |
| 4 | 6 | RU-4-6 | 39.7 | 13.7 | 15.3 | 2.5 | 12 | 9/16 | 12 | 25.0 |
| 6 | 8 | RU-6-8 | 42.4 | 15.3 | 16.2 | 5.0 | 9/16 | 5/8 | 14 | 27.0 |
| 6 | 10 | RU-6-10 | 44.5 | 15.3 | 16.2 | 5.0 | 9/16 | 19 | 17 | 29.0 |
| 6 | 12 | RU-6-12 | 47.3 | 15.3 | 22.8 | 5.0 | 9/16 | 7/8 | 19 | 30.0 |
| 8 | 10 | RU-8-10 | 45.7 | 16.2 | 16.2 | 6.0 | 5/8 | 19 | 17 | 30.0 |
| 8 | 12 | RU-8-12 | 48.5 | 16.2 | 22.8 | 6.0 | 5/8 | 7/8 | 19 | 31.0 |
| 10 | 12 | RU-10-12 | 49.6 | 16.2 | 22.8 | 8.0 | 19 | 7/8 | 19 | 32.0 |
| 12 | 16 | RU-12-16 | 52.4 | 22.8 | 24.4 | 10.0 | 7/8 | 25 | 24 | 32.0 |
| 12 | 18 | RU-12-18 | 53.1 | 22.8 | 24.4 | 10.0 | 7/8 | 30 | 27 | 33.0 |
| 18 | 25 | RU-18-25 | 60.8 | 24.4 | 31.3 | 16.0 | 30 | 1-1/2 | 35 | 38.0 |
| 20 | 25 | RU-20-25 | 59.8 | 26.0 | 31.3 | 18.0 | 32 | 1-1/2 | 35 | 38.0 |

Fractional

| TUBE O.D. | | ITEM NUMBER | A | D1 | D2 | E | G1 | G2 | F | H |
|-----------|------|-------------|------|------|------|------|-------|-------|----|------|
| T1 | T2 | | | | | | | | | |
| 1/16 | 1/8 | RU-005-01 | 32.9 | 8.6 | 12.7 | 1.5 | 10 | 7/16 | 10 | 22.0 |
| 1/16 | 1/4 | RU-005-02 | 34.8 | 8.6 | 15.8 | 1.5 | 10 | 9/16 | 12 | 23.0 |
| 1/8 | 3/16 | RU-01-015 | 37.8 | 12.7 | 13.7 | 2.5 | 7/16 | 12 | 12 | 24.0 |
| 1/8 | 1/4 | RU-01-02 | 39.7 | 12.7 | 15.2 | 2.5 | 7/16 | 9/16 | 12 | 25.0 |
| 1/8 | 3/8 | RU-01-03 | 41.6 | 12.7 | 16.8 | 2.5 | 7/16 | 11/16 | 14 | 27.0 |
| 1/4 | 3/16 | RU-02-015 | 39.7 | 15.2 | 13.7 | 2.5 | 9/16 | 12 | 12 | 25.0 |
| 1/4 | 5/16 | RU-02-025 | 42.2 | 15.2 | 16.2 | 5.0 | 9/16 | 17 | 14 | 27.5 |
| 1/4 | 3/8 | RU-02-03 | 43.6 | 15.2 | 16.8 | 5.0 | 9/16 | 11/16 | 14 | 28.0 |
| 1/4 | 1/2 | RU-02-04 | 47.7 | 15.2 | 22.9 | 5.0 | 9/16 | 7/8 | 19 | 30.0 |
| 3/8 | 1/2 | RU-03-04 | 49.6 | 16.8 | 22.9 | 7.7 | 11/16 | 7/8 | 19 | 32.0 |
| 3/8 | 3/4 | RU-03-06 | 51.6 | 16.8 | 24.4 | 7.7 | 11/16 | 1-1/8 | 27 | 33.0 |
| 1/2 | 3/4 | RU-04-06 | 53.8 | 22.9 | 24.4 | 10.0 | 7/8 | 1-1/8 | 27 | 33.0 |
| 1/2 | 1 | RU-04-08 | 60.3 | 22.9 | 31.2 | 10.0 | 7/8 | 1-1/2 | 35 | 38.0 |
| 3/4 | 1 | RU-06-08 | 61.3 | 24.4 | 31.2 | 16.0 | 1-1/8 | 1-1/2 | 35 | 38.0 |

BU Bulkhead Union



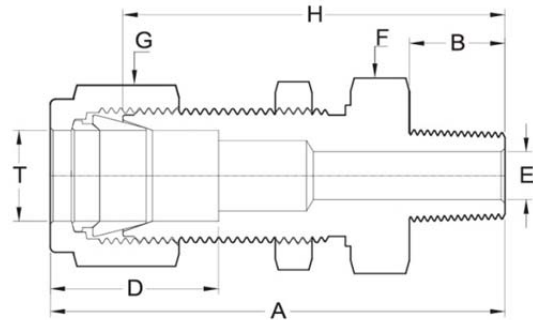
Metric

| TUBE O.D. | ITEM NUMBER | A | B | D | E | F | G | H | PANEL HOLE SIZE | MAX PANEL THICK |
|-----------|-------------|------|------|------|------|----|-------|------|-----------------|-----------------|
| 6 | BU-6-0 | 58.2 | 26.0 | 15.3 | 5.0 | 17 | 9/16 | 43.0 | 12.5 | 12 |
| 8 | BU-8-0 | 62.6 | 28.0 | 16.2 | 6.0 | 19 | 5/8 | 47.0 | 13.5 | 12 |
| 10 | BU-10-0 | 64.8 | 29.0 | 17.2 | 8.0 | 22 | 19 | 49.0 | 16.5 | 12 |
| 12 | BU-12-0 | 70.4 | 31.0 | 22.8 | 10.0 | 24 | 7/8 | 51.0 | 20.5 | 14 |
| 14 | BU-14-0 | 73.8 | 32.0 | 24.4 | 12.0 | 27 | 25 | 53.0 | 23.5 | 12 |
| 15 | BU-15-0 | 74.0 | 32.0 | 24.4 | 12.0 | 27 | 25 | 53.0 | 23.5 | 12 |
| 16 | BU-16-0 | 74.4 | 32.0 | 24.4 | 14.0 | 27 | 25 | 53.0 | 23.5 | 12 |
| 18 | BU-18-0 | 80.8 | 38.0 | 24.4 | 16.0 | 30 | 30 | 60.0 | 26.5 | 18 |
| 20 | BU-20-0 | 91.0 | 49.0 | 26.0 | 18.0 | 35 | 32 | 73.0 | 29.5 | 29 |
| 22 | BU-22-0 | 91.6 | 49.0 | 26.0 | 18.0 | 35 | 32 | 73.0 | 29.5 | 29 |
| 25 | BU-25-0 | 95.8 | 45.0 | 31.3 | 22.0 | 41 | 1-1/2 | 71.0 | 34.5 | 22 |

Fractional

| TUBE O.D. | ITEM NUMBER | A | B | D | E | F | G | H | PANEL HOLE SIZE | MAX PANEL THICK |
|-----------|-------------|------|------|------|------|----|-------|------|-----------------|-----------------|
| 1/8 | BU-01-0 | 51.8 | 23.0 | 12.7 | 2.5 | 12 | 7/16 | 38.0 | 8.5 | 10 |
| 1/4 | BU-02-0 | 58.6 | 26.0 | 15.2 | 5.0 | 17 | 9/16 | 43.0 | 12.5 | 12 |
| 3/8 | BU-03-0 | 64.4 | 29.0 | 16.8 | 7.7 | 19 | 11/16 | 49.0 | 15.5 | 12 |
| 1/2 | BU-04-0 | 71.8 | 31.0 | 22.9 | 10.0 | 24 | 7/8 | 52.0 | 20.5 | 14 |
| 3/4 | BU-06-0 | 81.8 | 38.0 | 24.4 | 16.0 | 30 | 1-1/8 | 60.0 | 26.5 | 18 |
| 1 | BU-08-0 | 95.7 | 45.0 | 31.2 | 22.0 | 41 | 1-1/2 | 71.0 | 34.5 | 22 |

BMC Bulkhead Male Connector



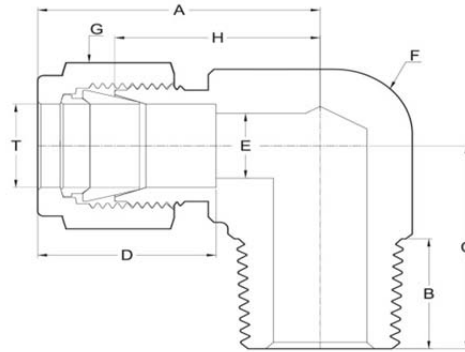
Metric

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H | PANEL HOLE SIZE | MAX PANEL THICK |
|-----------|----------------|-------------|------|------|------|------|----|------|------|-----------------|-----------------|
| 6 | 1/8 | BMC-6-1 | 50.6 | 10.0 | 15.3 | 5.0 | 17 | 9/16 | 43.0 | 12.5 | 12 |
| 6 | 1/4 | BMC-6-2 | 53.6 | 13.0 | 15.3 | 5.0 | 17 | 9/16 | 46.0 | 12.5 | 12 |
| 6 | 3/8 | BMC-6-3 | 55.6 | 14.0 | 15.3 | 5.0 | 22 | 9/16 | 48.0 | 12.5 | 12 |
| 6 | 1/2 | BMC-6-4 | 58.6 | 17.0 | 15.3 | 5.0 | 24 | 9/16 | 51.0 | 12.5 | 12 |
| 8 | 1/8 | BMC-8-1 | 52.8 | 10.0 | 16.2 | 6.0 | 19 | 5/8 | 45.0 | 13.5 | 12 |
| 8 | 1/4 | BMC-8-2 | 55.8 | 13.0 | 16.2 | 6.0 | 19 | 5/8 | 48.0 | 13.5 | 12 |
| 8 | 3/8 | BMC-8-3 | 57.8 | 14.0 | 16.2 | 6.0 | 22 | 5/8 | 50.0 | 13.5 | 12 |
| 8 | 1/2 | BMC-8-4 | 60.8 | 17.0 | 16.2 | 6.0 | 24 | 5/8 | 53.0 | 13.5 | 12 |
| 10 | 1/4 | BMC-10-2 | 57.9 | 13.0 | 17.2 | 8.0 | 19 | 19 | 50.0 | 16.5 | 12 |
| 10 | 3/8 | BMC-10-3 | 58.9 | 14.0 | 17.2 | 8.0 | 22 | 19 | 51.0 | 16.5 | 12 |
| 10 | 1/2 | BMC-10-4 | 61.9 | 17.0 | 17.2 | 8.0 | 24 | 19 | 54.0 | 16.5 | 12 |
| 12 | 1/4 | BMC-12-2 | 61.7 | 13.0 | 22.8 | 7.7 | 24 | 7/8 | 52.0 | 20.5 | 14 |
| 12 | 3/8 | BMC-12-3 | 62.7 | 14.0 | 22.8 | 10.0 | 24 | 7/8 | 53.0 | 20.5 | 14 |
| 12 | 1/2 | BMC-12-4 | 65.7 | 17.0 | 22.8 | 10.0 | 24 | 7/8 | 56.0 | 20.5 | 14 |

Fractional

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H | PANEL HOLE SIZE | MAX PANEL THICK |
|-----------|----------------|-------------|------|------|------|------|----|-------|------|-----------------|-----------------|
| 1/4 | 1/8 | BMC-02-1 | 50.8 | 10.0 | 15.2 | 5.0 | 17 | 9/16 | 43.0 | 12.5 | 12 |
| 1/4 | 1/4 | BMC-02-2 | 53.8 | 13.0 | 15.2 | 5.0 | 17 | 9/16 | 46.0 | 12.5 | 12 |
| 1/4 | 3/8 | BMC-02-3 | 54.8 | 14.0 | 15.2 | 5.0 | 17 | 9/16 | 47.0 | 12.5 | 12 |
| 1/4 | 1/2 | BMC-02-4 | 58.8 | 17.0 | 15.2 | 5.0 | 22 | 9/16 | 51.0 | 12.5 | 12 |
| 3/8 | 1/8 | BMC-03-1 | 54.7 | 10.0 | 16.8 | 5.0 | 19 | 11/16 | 47.0 | 15.5 | 12 |
| 3/8 | 1/4 | BMC-03-2 | 57.7 | 13.0 | 16.8 | 7.0 | 19 | 11/16 | 50.0 | 15.5 | 12 |
| 3/8 | 3/8 | BMC-03-3 | 58.7 | 14.0 | 16.8 | 7.0 | 19 | 11/16 | 51.0 | 15.5 | 12 |
| 3/8 | 1/2 | BMC-03-4 | 61.7 | 17.0 | 16.8 | 7.0 | 22 | 11/16 | 54.0 | 15.5 | 12 |
| 1/2 | 1/4 | BMC-04-2 | 61.9 | 13.0 | 22.9 | 7.7 | 24 | 7/8 | 52.0 | 20.5 | 14 |
| 1/2 | 3/8 | BMC-04-3 | 62.9 | 14.0 | 22.9 | 10.0 | 24 | 7/8 | 53.0 | 20.5 | 14 |
| 1/2 | 1/2 | BMC-04-4 | 65.9 | 17.0 | 22.9 | 10.0 | 24 | 7/8 | 56.0 | 20.5 | 14 |

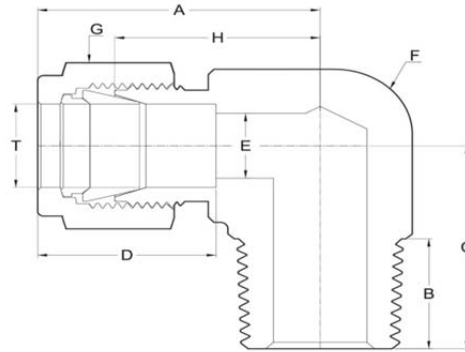
ME Male Elbow



Metric

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | C | D | E | F | G | H |
|-----------|----------------|-------------|------|------|------|------|------|----|------|------|
| 3 | 1/8 | ME-3-1 | 24.4 | 10.0 | 18.7 | 12.9 | 2.5 | 12 | 7/16 | 17.7 |
| 3 | 1/4 | ME-3-2 | 25.0 | 13.0 | 22.3 | 12.9 | 2.5 | 14 | 7/16 | 18.3 |
| 4 | 1/8 | ME-4-1 | 24.8 | 10.0 | 18.7 | 13.7 | 2.5 | 12 | 12 | 17.7 |
| 4 | 1/4 | ME-4-2 | 25.4 | 13.0 | 22.3 | 13.7 | 2.5 | 14 | 12 | 18.3 |
| 4 | 3/8 | ME-4-3 | 27.8 | 14.0 | 25.7 | 13.7 | 2.5 | 17 | 12 | 20.7 |
| 4 | 1/2 | ME-4-4 | 30.5 | 17.0 | 31.4 | 13.7 | 2.5 | 22 | 12 | 23.4 |
| 6 | 1/8 | ME-6-1 | 26.3 | 10.0 | 18.7 | 15.3 | 5.0 | 12 | 9/16 | 18.7 |
| 6 | 1/4 | ME-6-2 | 26.9 | 13.0 | 22.3 | 15.3 | 5.0 | 14 | 9/16 | 19.3 |
| 6 | 3/8 | ME-6-3 | 29.3 | 14.0 | 25.7 | 15.3 | 5.0 | 17 | 9/16 | 21.7 |
| 6 | 1/2 | ME-6-4 | 32.0 | 17.0 | 31.4 | 15.3 | 5.0 | 22 | 9/16 | 24.4 |
| 8 | 1/8 | ME-8-1 | 28.6 | 10.0 | 19.3 | 16.2 | 6.0 | 14 | 5/8 | 20.8 |
| 8 | 1/4 | ME-8-2 | 28.6 | 13.0 | 22.3 | 16.2 | 6.0 | 14 | 5/8 | 20.8 |
| 8 | 3/8 | ME-8-3 | 31.0 | 14.0 | 25.7 | 16.2 | 6.0 | 17 | 5/8 | 23.2 |
| 8 | 1/2 | ME-8-4 | 33.7 | 17.0 | 31.4 | 16.2 | 6.0 | 22 | 5/8 | 25.9 |
| 10 | 1/8 | ME-10-1 | 31.6 | 10.0 | 21.7 | 17.2 | 8.0 | 17 | 19 | 23.7 |
| 10 | 1/4 | ME-10-2 | 31.6 | 13.0 | 24.7 | 17.2 | 8.0 | 17 | 19 | 23.7 |
| 10 | 3/8 | ME-10-3 | 31.6 | 14.0 | 25.7 | 17.2 | 8.0 | 17 | 19 | 23.7 |
| 10 | 1/2 | ME-10-4 | 34.3 | 17.0 | 31.4 | 17.2 | 8.0 | 22 | 19 | 26.4 |
| 12 | 1/8 | ME-12-1 | 36.2 | 10.0 | 24.5 | 22.8 | 10.0 | 20 | 7/8 | 26.5 |
| 12 | 1/4 | ME-12-2 | 36.7 | 13.0 | 27.5 | 22.8 | 10.0 | 20 | 7/8 | 27.0 |
| 12 | 3/8 | ME-12-3 | 36.7 | 14.0 | 27.4 | 22.8 | 10.0 | 20 | 7/8 | 27.0 |
| 12 | 1/2 | ME-12-4 | 36.1 | 17.0 | 31.4 | 22.8 | 10.0 | 22 | 7/8 | 26.4 |
| 12 | 3/4 | ME-12-6 | 39.3 | 19.0 | 36.6 | 22.8 | 10.0 | 27 | 7/8 | 29.6 |
| 12 | 1 | ME-12-8 | 49.6 | 22.0 | 45.5 | 22.8 | 10.0 | 34 | 7/8 | 39.9 |
| 14 | 3/8 | ME-14-3 | 36.9 | 14.0 | 28.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 14 | 1/2 | ME-14-4 | 36.9 | 17.0 | 31.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 14 | 3/4 | ME-14-6 | 40.0 | 19.0 | 36.6 | 24.4 | 12.0 | 27 | 25 | 29.6 |
| 14 | 1 | ME-14-8 | 50.3 | 22.0 | 45.5 | 24.4 | 12.0 | 34 | 25 | 39.9 |

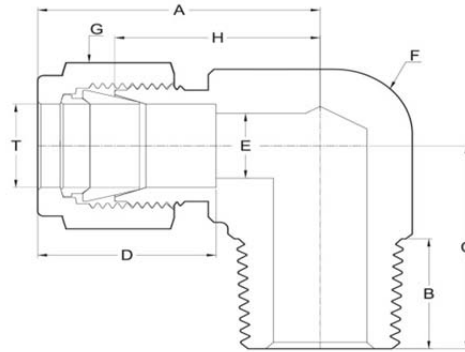
ME Male Elbow



Metric

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | C | D | E | F | G | H |
|-----------|----------------|-------------|------|------|------|------|------|----|-------|------|
| 15 | 3/8 | ME-15-3 | 37.0 | 14.0 | 28.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 15 | 1/2 | ME-15-4 | 37.0 | 17.0 | 31.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 15 | 3/4 | ME-15-6 | 40.1 | 19.0 | 36.6 | 24.4 | 12.0 | 27 | 25 | 29.6 |
| 16 | 3/8 | ME-16-3 | 37.2 | 14.0 | 28.0 | 24.4 | 14.0 | 24 | 25 | 26.5 |
| 16 | 1/2 | ME-16-4 | 37.2 | 17.0 | 31.0 | 24.4 | 14.0 | 24 | 25 | 26.5 |
| 16 | 3/4 | ME-16-6 | 40.3 | 19.0 | 36.6 | 24.4 | 14.0 | 27 | 25 | 29.6 |
| 16 | 1 | ME-16-8 | 50.6 | 22.0 | 45.5 | 24.4 | 14.0 | 34 | 25 | 39.9 |
| 18 | 3/8 | ME-18-3 | 40.0 | 14.0 | 31.6 | 24.4 | 16.0 | 27 | 30 | 29.6 |
| 18 | 1/2 | ME-18-4 | 40.0 | 17.0 | 34.6 | 24.4 | 16.0 | 27 | 30 | 29.6 |
| 18 | 3/4 | ME-18-6 | 40.0 | 19.0 | 36.6 | 24.4 | 16.0 | 27 | 30 | 29.6 |
| 18 | 1 | ME-18-8 | 50.3 | 22.0 | 45.5 | 24.4 | 16.0 | 34 | 30 | 39.9 |
| 20 | 3/8 | ME-20-3 | 43.7 | 14.0 | 36.2 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 20 | 1/2 | ME-20-4 | 43.7 | 17.0 | 38.7 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 20 | 3/4 | ME-20-6 | 43.7 | 19.0 | 38.7 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 20 | 1 | ME-20-8 | 48.9 | 22.0 | 45.5 | 26.0 | 18.0 | 34 | 32 | 39.9 |
| 22 | 3/8 | ME-22-3 | 44.0 | 14.0 | 36.2 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 22 | 1/2 | ME-22-4 | 44.0 | 17.0 | 38.7 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 22 | 3/4 | ME-22-6 | 44.0 | 19.0 | 38.7 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 22 | 1 | ME-22-8 | 49.2 | 22.0 | 45.5 | 26.0 | 18.0 | 34 | 32 | 39.9 |
| 25 | 1/2 | ME-25-4 | 52.9 | 17.0 | 43.0 | 31.3 | 22.0 | 34 | 1-1/2 | 40.5 |
| 25 | 3/4 | ME-25-6 | 52.9 | 19.0 | 45.0 | 31.3 | 22.0 | 34 | 1-1/2 | 40.5 |
| 25 | 1 | ME-25-8 | 52.9 | 22.0 | 45.5 | 31.3 | 22.0 | 34 | 1-1/2 | 40.5 |

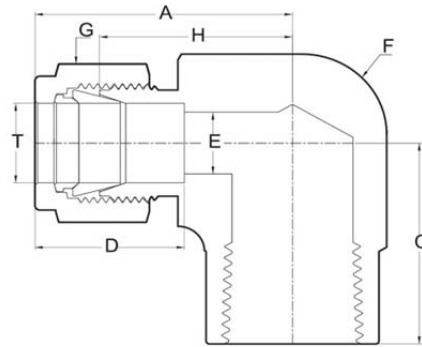
ME Male Elbow



Fractional

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | C | D | E | F | G | H |
|-----------|----------------|-------------|------|------|------|------|------|----|-------|------|
| 1/16 | 1/8 | ME-005-1 | 19.7 | 10.0 | 18.7 | 8.6 | 1.5 | 12 | 10 | 15.7 |
| 1/16 | 1/4 | ME-005-2 | 20.3 | 13.0 | 22.3 | 8.6 | 1.5 | 14 | 10 | 16.3 |
| 1/8 | 1/8 | ME-01-1 | 24.6 | 10.0 | 18.7 | 12.7 | 2.5 | 12 | 7/16 | 17.7 |
| 1/8 | 1/4 | ME-01-2 | 25.2 | 13.0 | 22.3 | 12.7 | 2.5 | 14 | 7/16 | 18.3 |
| 1/8 | 3/8 | ME-01-3 | 27.6 | 14.0 | 25.7 | 12.7 | 2.5 | 17 | 7/16 | 20.7 |
| 1/8 | 1/2 | ME-01-4 | 30.3 | 17.0 | 31.4 | 12.7 | 2.5 | 22 | 7/16 | 23.4 |
| 3/16 | 1/8 | ME-015-1 | 24.6 | 10.0 | 18.7 | 13.7 | 2.5 | 12 | 12 | 17.7 |
| 3/16 | 1/4 | ME-015-2 | 25.2 | 13.0 | 22.3 | 13.7 | 2.5 | 14 | 12 | 18.3 |
| 3/16 | 3/8 | ME-015-3 | 27.6 | 14.0 | 25.7 | 13.7 | 2.5 | 17 | 12 | 20.7 |
| 3/16 | 1/2 | ME-015-4 | 30.3 | 17.0 | 31.4 | 13.7 | 2.5 | 22 | 12 | 23.4 |
| 1/4 | 1/8 | ME-02-1 | 26.5 | 10.0 | 18.7 | 15.2 | 5.0 | 12 | 9/16 | 18.7 |
| 1/4 | 1/4 | ME-02-2 | 27.1 | 13.0 | 22.3 | 15.2 | 5.0 | 14 | 9/16 | 19.3 |
| 1/4 | 3/8 | ME-02-3 | 29.5 | 14.0 | 25.7 | 15.2 | 5.0 | 17 | 9/16 | 21.7 |
| 1/4 | 1/2 | ME-02-4 | 32.2 | 17.0 | 31.4 | 15.2 | 5.0 | 22 | 9/16 | 24.4 |
| 1/4 | 3/4 | ME-02-6 | 35.4 | 19.0 | 36.4 | 15.2 | 5.0 | 27 | 9/16 | 27.6 |
| 1/4 | 1 | ME-02-8 | 45.7 | 22.0 | 45.5 | 15.2 | 5.0 | 34 | 9/16 | 37.9 |
| 3/8 | 1/8 | ME-03-1 | 29.0 | 10.0 | 19.3 | 16.8 | 7.7 | 14 | 11/16 | 21.3 |
| 3/8 | 1/4 | ME-03-2 | 29.0 | 13.0 | 22.3 | 16.8 | 7.7 | 14 | 11/16 | 21.3 |
| 3/8 | 3/8 | ME-03-3 | 31.4 | 14.0 | 25.7 | 16.8 | 7.7 | 17 | 11/16 | 23.7 |
| 3/8 | 1/2 | ME-03-4 | 34.1 | 17.0 | 31.4 | 16.8 | 7.7 | 22 | 11/16 | 26.4 |
| 3/8 | 3/4 | ME-03-6 | 37.3 | 19.0 | 36.4 | 16.8 | 7.7 | 27 | 11/16 | 29.6 |
| 3/8 | 1 | ME-03-8 | 47.6 | 22.0 | 45.5 | 16.8 | 7.7 | 34 | 11/16 | 39.9 |
| 1/2 | 1/8 | ME-04-1 | 36.9 | 10.0 | 25.0 | 22.9 | 10.0 | 20 | 7/8 | 27.0 |
| 1/2 | 1/4 | ME-04-2 | 36.9 | 13.0 | 27.0 | 22.9 | 10.0 | 20 | 7/8 | 27.0 |
| 1/2 | 3/8 | ME-04-3 | 36.9 | 14.0 | 27.5 | 22.9 | 10.0 | 20 | 7/8 | 27.0 |
| 1/2 | 1/2 | ME-04-4 | 36.3 | 17.0 | 31.4 | 22.9 | 10.0 | 22 | 7/8 | 26.4 |
| 1/2 | 3/4 | ME-04-6 | 39.5 | 19.0 | 36.4 | 22.9 | 10.0 | 27 | 7/8 | 29.6 |
| 1/2 | 1 | ME-04-8 | 49.8 | 22.0 | 45.5 | 22.9 | 10.0 | 34 | 7/8 | 39.9 |
| 5/8 | 3/8 | ME-05-3 | 36.9 | 14.0 | 28.0 | 24.4 | 14.0 | 24 | 25 | 26.5 |
| 5/8 | 1/2 | ME-05-4 | 36.9 | 17.0 | 31.0 | 24.4 | 14.0 | 24 | 25 | 26.5 |
| 5/8 | 3/4 | ME-05-6 | 40.0 | 19.0 | 36.6 | 24.4 | 14.0 | 27 | 25 | 29.6 |
| 3/4 | 3/8 | ME-06-3 | 40.5 | 14.0 | 31.6 | 24.4 | 16.0 | 27 | 1-1/8 | 29.6 |
| 3/4 | 1/2 | ME-06-4 | 40.5 | 17.0 | 34.6 | 24.4 | 16.0 | 27 | 1-1/8 | 29.6 |
| 3/4 | 3/4 | ME-06-6 | 40.5 | 19.0 | 36.6 | 24.4 | 16.0 | 27 | 1-1/8 | 29.6 |
| 3/4 | 1 | ME-06-8 | 50.8 | 22.0 | 45.5 | 24.4 | 16.0 | 34 | 1-1/8 | 39.9 |
| 1 | 1/2 | ME-08-4 | 52.9 | 17.0 | 43.5 | 31.2 | 22.0 | 34 | 1-1/2 | 40.5 |
| 1 | 3/4 | ME-08-6 | 52.9 | 19.0 | 45.5 | 31.2 | 22.0 | 34 | 1-1/2 | 40.5 |
| 1 | 1 | ME-08-8 | 52.9 | 22.0 | 45.5 | 31.2 | 22.0 | 34 | 1-1/2 | 40.5 |

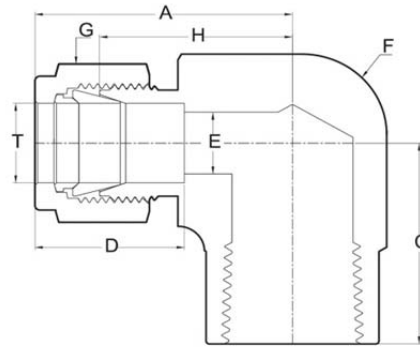
FE Female Elbow



Metric

| TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | C | D | E | F | G | H |
|-----------|------------------|-------------|------|------|------|------|----|------|------|
| 4 | 1/8 | FE-4-1 | 25.4 | 19.3 | 13.7 | 2.5 | 14 | 12 | 18.3 |
| 4 | 1/4 | FE-4-2 | 27.8 | 23.7 | 13.7 | 2.5 | 17 | 12 | 20.7 |
| 4 | 3/8 | FE-4-3 | 30.5 | 26.4 | 13.7 | 2.5 | 22 | 12 | 23.4 |
| 4 | 1/2 | FE-4-4 | 33.7 | 32.6 | 13.7 | 2.5 | 27 | 12 | 26.6 |
| 6 | 1/8 | FE-6-1 | 26.9 | 19.3 | 15.3 | 5.0 | 14 | 9/16 | 19.3 |
| 6 | 1/4 | FE-6-2 | 29.3 | 23.7 | 15.3 | 5.0 | 17 | 9/16 | 21.7 |
| 6 | 3/8 | FE-6-3 | 32.0 | 26.4 | 15.3 | 5.0 | 22 | 9/16 | 24.4 |
| 6 | 1/2 | FE-6-4 | 35.2 | 32.6 | 15.3 | 5.0 | 27 | 9/16 | 27.6 |
| 8 | 1/8 | FE-8-1 | 28.6 | 19.3 | 16.2 | 6.0 | 14 | 5/8 | 20.8 |
| 8 | 1/4 | FE-8-2 | 31.0 | 23.7 | 16.2 | 6.0 | 17 | 5/8 | 23.2 |
| 8 | 3/8 | FE-8-3 | 33.7 | 26.4 | 16.2 | 6.0 | 22 | 5/8 | 25.9 |
| 8 | 1/2 | FE-8-4 | 36.9 | 32.6 | 16.2 | 6.0 | 27 | 5/8 | 29.1 |
| 10 | 1/8 | FE-10-1 | 31.6 | 23.7 | 17.2 | 8.0 | 17 | 19 | 23.7 |
| 10 | 1/4 | FE-10-2 | 31.6 | 23.7 | 17.2 | 8.0 | 17 | 19 | 23.7 |
| 10 | 3/8 | FE-10-3 | 34.3 | 26.4 | 17.2 | 8.0 | 22 | 19 | 26.4 |
| 10 | 1/2 | FE-10-4 | 37.5 | 32.6 | 17.2 | 8.0 | 27 | 19 | 29.6 |
| 12 | 1/8 | FE-12-1 | 36.7 | 25.0 | 22.8 | 10.0 | 20 | 7/8 | 27.0 |
| 12 | 1/4 | FE-12-2 | 36.7 | 25.0 | 22.8 | 10.0 | 20 | 7/8 | 27.0 |
| 12 | 3/8 | FE-12-3 | 36.1 | 26.4 | 22.8 | 10.0 | 22 | 7/8 | 26.4 |
| 12 | 1/2 | FE-12-4 | 39.3 | 32.6 | 22.8 | 10.0 | 27 | 7/8 | 29.6 |
| 12 | 3/4 | FE-12-6 | 49.2 | 41.0 | 22.8 | 10.0 | 34 | 7/8 | 39.5 |
| 14 | 1/8 | FE-14-1 | 36.9 | 26.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 14 | 1/4 | FE-14-2 | 36.9 | 26.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 14 | 3/8 | FE-14-3 | 36.9 | 26.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 14 | 1/2 | FE-14-4 | 40.0 | 32.6 | 24.4 | 12.0 | 27 | 25 | 29.6 |
| 14 | 3/4 | FE-14-6 | 49.9 | 41.0 | 24.4 | 12.0 | 34 | 25 | 39.5 |

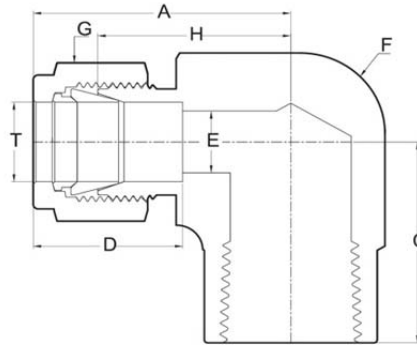
FE Female Elbow



Metric

| TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | C | D | E | F | G | H |
|-----------|------------------|-------------|------|------|------|------|----|-------|------|
| 15 | 1/8 | FE-15-1 | 37.0 | 26.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 15 | 1/4 | FE-15-2 | 37.0 | 26.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 15 | 3/8 | FE-15-3 | 37.0 | 26.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 15 | 1/2 | FE-15-4 | 40.1 | 32.6 | 24.4 | 12.0 | 27 | 25 | 29.6 |
| 15 | 3/4 | FE-15-6 | 50.0 | 41.0 | 24.4 | 12.0 | 34 | 25 | 39.5 |
| 16 | 1/8 | FE-16-1 | 37.0 | 26.0 | 24.4 | 14.0 | 24 | 25 | 26.5 |
| 16 | 1/4 | FE-16-2 | 37.2 | 26.0 | 24.4 | 14.0 | 24 | 25 | 26.5 |
| 16 | 3/8 | FE-16-3 | 37.2 | 26.0 | 24.4 | 14.0 | 24 | 25 | 26.5 |
| 16 | 1/2 | FE-16-4 | 40.3 | 32.6 | 24.4 | 14.0 | 27 | 25 | 29.6 |
| 16 | 3/4 | FE-16-6 | 50.2 | 41.0 | 24.4 | 14.0 | 34 | 25 | 39.5 |
| 18 | 3/8 | FE-18-3 | 40.0 | 32.6 | 24.4 | 16.0 | 27 | 30 | 29.6 |
| 18 | 1/2 | FE-18-4 | 40.0 | 32.6 | 24.4 | 16.0 | 27 | 30 | 29.6 |
| 18 | 3/4 | FE-18-6 | 49.9 | 41.0 | 24.4 | 16.0 | 34 | 30 | 39.5 |
| 20 | 3/8 | FE-20-3 | 43.7 | 34.7 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 20 | 1/2 | FE-20-4 | 43.7 | 34.7 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 20 | 3/4 | FE-20-6 | 48.5 | 41.0 | 26.0 | 18.0 | 34 | 32 | 39.5 |
| 22 | 3/8 | FE-22-3 | 44.0 | 34.7 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 22 | 1/2 | FE-22-4 | 44.0 | 34.7 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 22 | 3/4 | FE-22-6 | 48.8 | 41.0 | 26.0 | 18.0 | 34 | 32 | 39.5 |
| 25 | 1/2 | FE-25-4 | 52.9 | 41.0 | 31.3 | 22.0 | 34 | 1-1/2 | 40.5 |
| 25 | 3/4 | FE-25-6 | 52.9 | 41.0 | 31.3 | 22.0 | 34 | 1-1/2 | 40.5 |

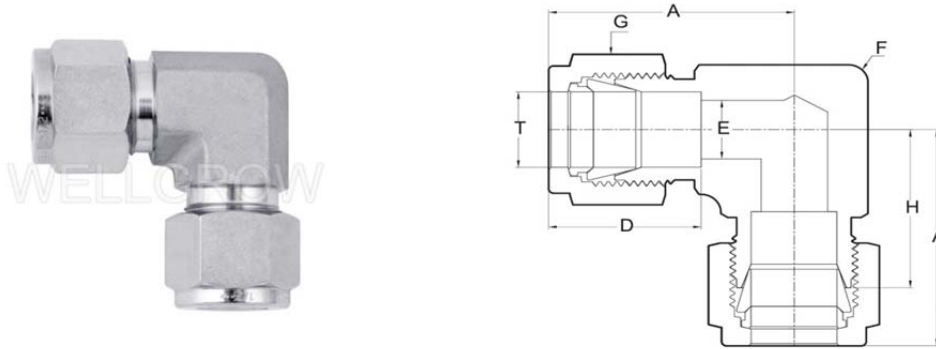
FE Female Elbow



Fractional

| TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | C | D | E | F | G | H |
|-----------|------------------|-------------|------|------|------|------|----|-------|------|
| 1/8 | 1/8 | FE-01-1 | 25.2 | 19.3 | 12.7 | 2.5 | 14 | 7/16 | 18.3 |
| 1/8 | 1/4 | FE-01-2 | 27.6 | 23.7 | 12.7 | 2.5 | 17 | 7/16 | 20.7 |
| 1/8 | 3/8 | FE-01-3 | 30.3 | 26.4 | 12.7 | 2.5 | 22 | 7/16 | 23.4 |
| 1/8 | 1/2 | FE-01-4 | 33.5 | 32.6 | 12.7 | 2.5 | 27 | 7/16 | 26.6 |
| 1/4 | 1/8 | FE-02-1 | 27.1 | 19.3 | 15.2 | 5.0 | 14 | 9/16 | 19.3 |
| 1/4 | 1/4 | FE-02-2 | 29.5 | 23.7 | 15.2 | 5.0 | 17 | 9/16 | 21.7 |
| 1/4 | 3/8 | FE-02-3 | 32.2 | 26.4 | 15.2 | 5.0 | 22 | 9/16 | 24.4 |
| 1/4 | 1/2 | FE-02-4 | 35.4 | 32.6 | 15.2 | 5.0 | 27 | 9/16 | 27.6 |
| 3/8 | 1/8 | FE-03-1 | 29.0 | 19.3 | 16.8 | 7.7 | 14 | 11/16 | 21.3 |
| 3/8 | 1/4 | FE-03-2 | 31.4 | 23.7 | 16.8 | 7.7 | 17 | 11/16 | 23.7 |
| 3/8 | 3/8 | FE-03-3 | 34.1 | 26.4 | 16.8 | 7.7 | 22 | 11/16 | 26.4 |
| 3/8 | 1/2 | FE-03-4 | 37.3 | 32.6 | 16.8 | 7.7 | 27 | 11/16 | 29.6 |
| 1/2 | 1/8 | FE-04-1 | 36.9 | 25.0 | 22.9 | 10.0 | 20 | 7/8 | 27.0 |
| 1/2 | 1/4 | FE-04-2 | 36.9 | 25.0 | 22.9 | 10.0 | 20 | 7/8 | 27.0 |
| 1/2 | 3/8 | FE-04-3 | 36.3 | 26.4 | 22.9 | 10.0 | 22 | 7/8 | 26.4 |
| 1/2 | 1/2 | FE-04-4 | 39.5 | 32.6 | 22.9 | 10.0 | 27 | 7/8 | 29.6 |
| 1/2 | 3/4 | FE-04-6 | 49.4 | 41.0 | 22.9 | 10.0 | 34 | 7/8 | 39.5 |
| 5/8 | 3/4 | FE-05-6 | 49.9 | 41.0 | 24.4 | 14.0 | 34 | 25 | 39.5 |
| 3/4 | 1/8 | FE-06-1 | 40.5 | 32.6 | 24.4 | 16.0 | 27 | 1-1/8 | 29.6 |
| 3/4 | 1/4 | FE-06-2 | 40.5 | 32.6 | 24.4 | 16.0 | 27 | 1-1/8 | 29.6 |
| 3/4 | 3/8 | FE-06-3 | 40.5 | 32.6 | 24.4 | 16.0 | 27 | 1-1/8 | 29.6 |
| 3/4 | 1/2 | FE-06-4 | 40.5 | 32.6 | 24.4 | 16.0 | 27 | 1-1/8 | 29.6 |
| 3/4 | 3/4 | FE-06-6 | 50.4 | 41.0 | 24.4 | 16.0 | 34 | 1-1/8 | 39.5 |
| 1 | 1/2 | FE-08-4 | 52.9 | 41.0 | 31.2 | 22.0 | 34 | 1-1/2 | 40.5 |
| 1 | 3/4 | FE-08-6 | 52.9 | 41.0 | 31.2 | 22.0 | 34 | 1-1/2 | 40.5 |

UE Union Elbow



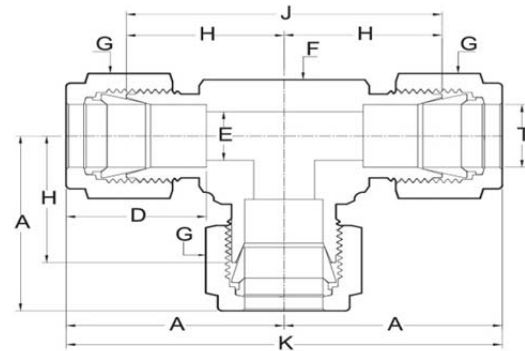
Metric

| TUBE O.D. | ITEM NUMBER | A | D | E | F | G | H |
|-----------|-------------|------|------|------|----|-------|------|
| 3 | UE-3-0 | 24.4 | 12.9 | 2.5 | 12 | 7/16 | 17.7 |
| 4 | UE-4-0 | 24.8 | 13.7 | 2.5 | 12 | 12 | 17.7 |
| 6 | UE-6-0 | 26.3 | 15.3 | 5.0 | 12 | 9/16 | 18.7 |
| 8 | UE-8-0 | 28.6 | 16.2 | 6.0 | 14 | 5/8 | 20.8 |
| 10 | UE-10-0 | 31.6 | 17.2 | 8.0 | 17 | 19 | 23.7 |
| 12 | UE-12-0 | 36.7 | 22.8 | 10.0 | 20 | 7/8 | 27.0 |
| 14 | UE-14-0 | 36.9 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 15 | UE-15-0 | 37.0 | 24.4 | 12.0 | 24 | 25 | 26.5 |
| 16 | UE-16-0 | 37.2 | 24.4 | 14.0 | 24 | 25 | 26.5 |
| 18 | UE-18-0 | 40.0 | 24.4 | 16.0 | 27 | 30 | 29.6 |
| 20 | UE-20-0 | 43.7 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 22 | UE-22-0 | 44.0 | 26.0 | 18.0 | 30 | 32 | 34.7 |
| 25 | UE-25-0 | 52.9 | 31.3 | 22.0 | 34 | 1-1/2 | 40.5 |

Fractional

| TUBE O.D. | ITEM NUMBER | A | D | E | F | G | H |
|-----------|-------------|------|------|------|----|-------|------|
| 1/16 | UE-005-0 | 19.7 | 8.6 | 1.5 | 12 | 10 | 15.7 |
| 1/8 | UE-01-0 | 24.6 | 12.7 | 2.5 | 12 | 7/16 | 17.7 |
| 3/16 | UE-015-0 | 24.6 | 13.7 | 2.5 | 12 | 12 | 17.7 |
| 1/4 | UE-02-0 | 26.5 | 15.2 | 5.0 | 12 | 9/16 | 18.7 |
| 3/8 | UE-03-0 | 29.0 | 16.8 | 7.7 | 14 | 11/16 | 21.3 |
| 1/2 | UE-04-0 | 36.9 | 22.9 | 10.0 | 20 | 7/8 | 27.0 |
| 5/8 | UE-05-0 | 36.9 | 24.4 | 14.0 | 24 | 25 | 26.5 |
| 3/4 | UE-06-0 | 40.5 | 24.4 | 16.0 | 27 | 1-1/8 | 29.6 |
| 1 | UE-08-0 | 52.9 | 31.2 | 22.0 | 34 | 1-1/2 | 40.5 |

UT Union Tee



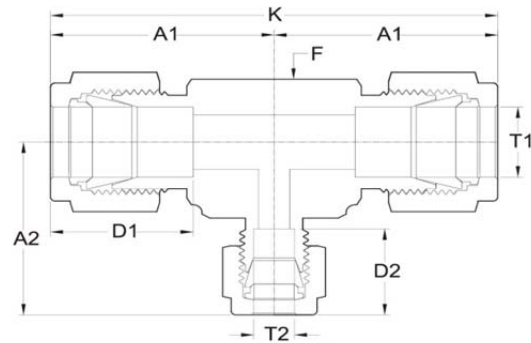
Metric

| TUBE O.D. | ITEM NUMBER | A | D | E | F | G | H | J | K |
|-----------|-------------|------|------|------|----|-------|------|------|-------|
| 3 | UT-3-0 | 23.7 | 12.9 | 2.5 | 12 | 7/16 | 17.0 | 34.0 | 47.4 |
| 4 | UT-4-0 | 24.6 | 13.7 | 2.5 | 12 | 12 | 17.5 | 35.0 | 49.2 |
| 6 | UT-6-0 | 26.1 | 15.3 | 5.0 | 12 | 9/16 | 18.5 | 37.0 | 52.2 |
| 8 | UT-8-0 | 28.6 | 16.2 | 6.0 | 14 | 5/8 | 20.8 | 41.6 | 57.2 |
| 10 | UT-10-0 | 31.4 | 17.2 | 8.0 | 17 | 19 | 24.2 | 48.3 | 64.1 |
| 12 | UT-12-0 | 35.7 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.4 |
| 14 | UT-14-0 | 37.9 | 24.4 | 12.0 | 24 | 25 | 27.5 | 55.0 | 75.8 |
| 15 | UT-15-0 | 38.0 | 24.4 | 12.0 | 24 | 25 | 27.5 | 55.0 | 76.0 |
| 16 | UT-16-0 | 38.2 | 24.4 | 14.0 | 24 | 25 | 27.5 | 55.0 | 76.4 |
| 18 | UT-18-0 | 39.9 | 24.4 | 16.0 | 27 | 30 | 29.5 | 59.1 | 79.9 |
| 20 | UT-20-0 | 46.6 | 26.0 | 18.0 | 30 | 32 | 37.6 | 75.1 | 93.1 |
| 22 | UT-22-0 | 46.9 | 26.0 | 18.0 | 30 | 32 | 37.6 | 75.1 | 93.7 |
| 25 | UT-25-0 | 52.4 | 31.3 | 22.0 | 34 | 1-1/2 | 40.0 | 80.0 | 104.8 |

Fractional

| TUBE O.D. | ITEM NUMBER | A | D | E | F | G | H | J | K |
|-----------|-------------|------|------|------|----|-------|------|------|-------|
| 1/16 | UT-005-0 | 19.0 | 8.6 | 1.5 | 12 | 10 | 15.0 | 30.0 | 38.0 |
| 1/8 | UT-01-0 | 23.9 | 12.7 | 2.5 | 12 | 7/16 | 17.0 | 34.0 | 47.8 |
| 3/16 | UT-015-0 | 23.9 | 13.7 | 2.5 | 12 | 12 | 17.0 | 34.0 | 47.8 |
| 1/4 | UT-02-0 | 25.8 | 15.2 | 5.0 | 12 | 9/16 | 18.0 | 36.0 | 51.6 |
| 3/8 | UT-03-0 | 29.0 | 16.8 | 7.7 | 14 | 11/16 | 21.3 | 42.6 | 58.0 |
| 1/2 | UT-04-0 | 35.9 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.8 |
| 5/8 | UT-05-0 | 37.9 | 24.4 | 14.0 | 24 | 25 | 27.5 | 55.0 | 75.8 |
| 3/4 | UT-06-0 | 39.9 | 24.4 | 16.0 | 27 | 1-1/8 | 29.0 | 58.0 | 79.8 |
| 1 | UT-08-0 | 52.4 | 31.2 | 22.0 | 34 | 1-1/2 | 40.0 | 80.0 | 104.8 |

RUT Reducing Union Tee



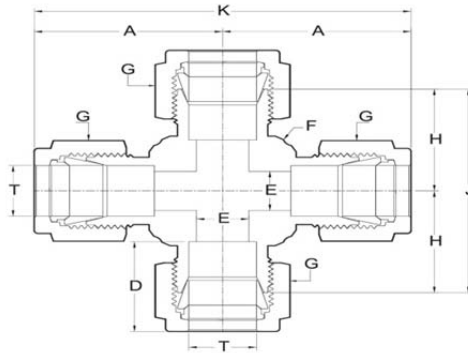
Metric

| T1 TUBE O.D. | T2 TUBE O.D. | ITEM NUMBER | A1 | A2 | D1 | D2 | E | F | K |
|--------------|--------------|-------------|------|-------|------|------|----|----|------|
| 8 | 6 | RUT-8-6 | 28.6 | 27.35 | 16.2 | 15.3 | 6 | 14 | 57.3 |
| 10 | 6 | RUT-10-6 | 31.4 | 29.07 | 17.2 | 15.3 | 8 | 17 | 62.8 |
| 10 | 8 | RUT-10-8 | 31.4 | 30.34 | 17.2 | 16.2 | 8 | 17 | 62.8 |
| 12 | 6 | RUT-12-6 | 35.7 | 31.57 | 22.8 | 15.3 | 10 | 20 | 71.4 |
| 12 | 8 | RUT-12-8 | 35.7 | 32.84 | 22.8 | 16.2 | 10 | 20 | 71.4 |

Fractional

| T1 TUBE O.D. | T2 TUBE O.D. | ITEM NUMBER | A1 | A2 | D1 | D2 | E | F | K |
|--------------|--------------|-------------|------|-------|------|------|------|----|-------|
| 3/8 | 1/4 | RUT-03-02 | 29.0 | 29.00 | 16.8 | 15.2 | 7.7 | 14 | 58.0 |
| 1/2 | 1/4 | RUT-04-02 | 35.9 | 31.83 | 22.9 | 15.2 | 10.0 | 20 | 71.8 |
| 1/2 | 3/8 | RUT-04-03 | 35.9 | 32.94 | 22.9 | 16.8 | 10.0 | 20 | 71.8 |
| 3/4 | 1/4 | RUT-06-02 | 39.9 | 34.83 | 24.4 | 15.2 | 16.0 | 27 | 79.9 |
| 3/4 | 1/2 | RUT-06-04 | 39.9 | 38.9 | 24.4 | 22.9 | 16.0 | 27 | 79.9 |
| 1 | 1/2 | RUT-08-04 | 52.4 | 47.9 | 31.2 | 22.9 | 22.0 | 34 | 104.8 |

UCR Union Cross



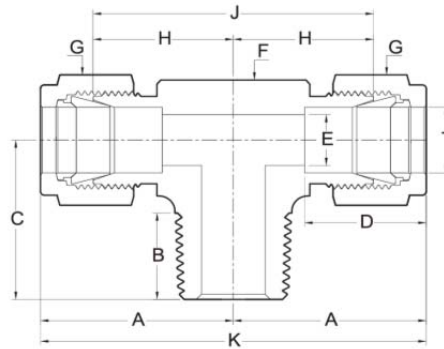
Metric

| TUBE O.D. | ITEM NUMBER | A | D | E | F | G | H | J | K |
|-----------|-------------|------|------|------|----|------|------|------|------|
| 3 | UCR-3-0 | 25.2 | 12.9 | 2.5 | 12 | 7/16 | 23.5 | 47.0 | 60.8 |
| 4 | UCR-4-0 | 30.6 | 13.7 | 2.5 | 14 | 12 | 23.5 | 47.0 | 61.2 |
| 6 | UCR-6-0 | 31.1 | 15.3 | 5.0 | 14 | 9/16 | 23.5 | 47.0 | 62.1 |
| 8 | UCR-8-0 | 31.3 | 16.2 | 6.0 | 14 | 5/8 | 23.5 | 47.0 | 62.6 |
| 10 | UCR-10-0 | 34.4 | 17.2 | 8.0 | 17 | 19 | 26.5 | 53.0 | 68.8 |
| 12 | UCR-12-0 | 35.7 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.4 |

Fractional

| TUBE O.D. | ITEM NUMBER | A | D | E | F | G | H | J | K |
|-----------|-------------|------|------|------|----|-------|------|------|------|
| 1/8 | UCR-01-0 | 30.4 | 13.7 | 2.5 | 12 | 7/16 | 23.5 | 47.0 | 60.8 |
| 1/4 | UCR-02-0 | 31.3 | 15.2 | 5.0 | 14 | 9/16 | 23.5 | 47.0 | 62.6 |
| 3/8 | UCR-03-0 | 34.2 | 16.8 | 7.7 | 17 | 11/16 | 26.5 | 53.0 | 68.4 |
| 1/2 | UCR-04-0 | 35.9 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.8 |

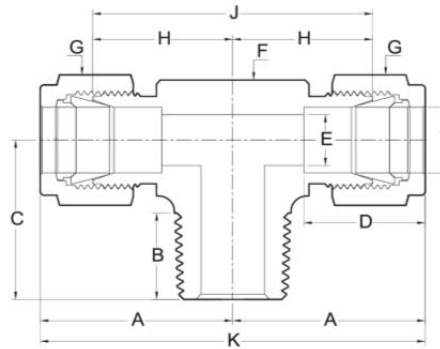
MBT Male Branch Tee



Metric

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | C | D | E | F | G | H | J | K |
|-----------|----------------|-------------|------|------|------|------|------|----|-------|------|------|-------|
| 4 | 1/8 | MBT-4-1 | 24.6 | 10.0 | 18.5 | 13.7 | 2.5 | 12 | 12 | 17.5 | 35.0 | 49.2 |
| 4 | 1/4 | MBT-4-2 | 25.4 | 13.0 | 22.3 | 13.7 | 2.5 | 14 | 12 | 18.3 | 36.6 | 50.8 |
| 6 | 1/8 | MBT-6-1 | 26.1 | 10.0 | 18.5 | 15.3 | 5.0 | 12 | 9/16 | 18.5 | 37.0 | 52.2 |
| 6 | 1/4 | MBT-6-2 | 26.9 | 13.0 | 22.3 | 15.3 | 5.0 | 14 | 9/16 | 19.3 | 38.6 | 53.8 |
| 6 | 3/8 | MBT-6-3 | 29.3 | 14.0 | 25.7 | 15.3 | 5.0 | 17 | 9/16 | 21.7 | 43.3 | 58.5 |
| 6 | 1/2 | MBT-6-4 | 32.0 | 17.0 | 31.4 | 15.3 | 5.0 | 22 | 9/16 | 24.4 | 48.8 | 64.0 |
| 8 | 1/8 | MBT-8-1 | 28.6 | 10.0 | 19.3 | 16.2 | 6.0 | 14 | 5/8 | 20.8 | 41.6 | 57.2 |
| 8 | 1/4 | MBT-8-2 | 28.6 | 13.0 | 22.3 | 16.2 | 6.0 | 14 | 5/8 | 20.8 | 41.6 | 57.2 |
| 8 | 3/8 | MBT-8-3 | 31.0 | 14.0 | 25.7 | 16.2 | 6.0 | 17 | 5/8 | 23.2 | 46.3 | 61.9 |
| 8 | 1/2 | MBT-8-4 | 33.7 | 17.0 | 31.4 | 16.2 | 6.0 | 22 | 5/8 | 25.9 | 51.8 | 67.4 |
| 10 | 1/8 | MBT-10-1 | 31.6 | 10.0 | 21.7 | 17.2 | 8.0 | 17 | 19 | 23.7 | 47.3 | 63.1 |
| 10 | 1/4 | MBT-10-2 | 31.6 | 13.0 | 24.7 | 17.2 | 8.0 | 17 | 19 | 23.7 | 47.3 | 63.1 |
| 10 | 3/8 | MBT-10-3 | 31.6 | 14.0 | 25.7 | 17.2 | 8.0 | 17 | 19 | 23.7 | 47.3 | 63.1 |
| 10 | 1/2 | MBT-10-4 | 34.3 | 17.0 | 31.4 | 17.2 | 8.0 | 22 | 19 | 26.4 | 52.8 | 68.6 |
| 12 | 1/8 | MBT-12-1 | 35.7 | 10.0 | 24.5 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.4 |
| 12 | 1/4 | MBT-12-2 | 35.7 | 13.0 | 27.4 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.4 |
| 12 | 3/8 | MBT-12-3 | 35.7 | 14.0 | 27.4 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.4 |
| 12 | 1/2 | MBT-12-4 | 36.1 | 17.0 | 31.4 | 22.8 | 10.0 | 22 | 7/8 | 26.4 | 52.8 | 72.2 |
| 12 | 3/4 | MBT-12-6 | 38.7 | 19.0 | 36.1 | 22.8 | 10.0 | 27 | 7/8 | 29.0 | 58.0 | 77.4 |
| 12 | 1 | MBT-12-8 | 49.7 | 22.0 | 45.0 | 22.8 | 10.0 | 34 | 7/8 | 40.0 | 80.0 | 99.4 |
| 14 | 3/8 | MBT-14-3 | 37.9 | 14.0 | 30.7 | 24.4 | 12.0 | 24 | 25 | 27.5 | 55.0 | 75.8 |
| 14 | 1/2 | MBT-14-4 | 37.9 | 17.0 | 33.7 | 24.4 | 12.0 | 24 | 25 | 27.5 | 55.0 | 75.8 |
| 14 | 3/4 | MBT-14-6 | 39.4 | 19.0 | 36.1 | 24.4 | 12.0 | 27 | 25 | 29.0 | 58.0 | 75.8 |
| 15 | 3/8 | MBT-15-3 | 38.0 | 14.0 | 30.7 | 24.4 | 12.0 | 24 | 25 | 27.5 | 55.0 | 76.0 |
| 15 | 1/2 | MBT-15-4 | 38.0 | 17.0 | 33.7 | 24.4 | 12.0 | 24 | 25 | 27.5 | 55.0 | 76.0 |
| 15 | 3/4 | MBT-15-6 | 39.5 | 19.0 | 36.1 | 24.4 | 12.0 | 27 | 25 | 29.0 | 58.0 | 76.0 |
| 16 | 3/8 | MBT-16-3 | 38.2 | 14.0 | 30.7 | 24.4 | 14.0 | 24 | 25 | 27.5 | 55.0 | 76.4 |
| 16 | 1/2 | MBT-16-4 | 38.2 | 17.0 | 33.7 | 24.4 | 14.0 | 24 | 25 | 27.5 | 55.0 | 76.4 |
| 16 | 3/4 | MBT-16-6 | 39.7 | 19.0 | 36.1 | 24.4 | 14.0 | 27 | 25 | 29.0 | 58.0 | 79.4 |
| 18 | 3/8 | MBT-18-3 | 39.4 | 14.0 | 31.1 | 24.4 | 16.0 | 27 | 30 | 29.0 | 58.0 | 78.8 |
| 18 | 1/2 | MBT-18-4 | 39.4 | 17.0 | 34.1 | 24.4 | 16.0 | 27 | 30 | 29.0 | 58.0 | 78.8 |
| 18 | 3/4 | MBT-18-6 | 39.4 | 19.0 | 36.1 | 24.4 | 16.0 | 27 | 30 | 29.0 | 58.0 | 78.8 |
| 20 | 1/2 | MBT-20-4 | 46.6 | 17.0 | 38.7 | 26.0 | 18.0 | 30 | 32 | 37.6 | 75.1 | 93.1 |
| 20 | 3/4 | MBT-20-6 | 46.6 | 19.0 | 38.7 | 26.0 | 18.0 | 30 | 32 | 37.6 | 75.1 | 93.1 |
| 22 | 1/2 | MBT-22-4 | 46.9 | 17.0 | 38.7 | 26.0 | 18.0 | 30 | 32 | 37.6 | 75.1 | 93.7 |
| 22 | 3/4 | MBT-22-6 | 46.9 | 19.0 | 38.7 | 26.0 | 18.0 | 30 | 32 | 37.6 | 75.1 | 93.7 |
| 25 | 1/2 | MBT-25-4 | 52.4 | 17.0 | 42.5 | 31.3 | 22.0 | 34 | 1-1/2 | 40.0 | 80.0 | 104.8 |
| 25 | 3/4 | MBT-25-6 | 52.4 | 19.0 | 44.5 | 31.3 | 22.0 | 34 | 1-1/2 | 40.0 | 80.0 | 104.8 |
| 25 | 1 | MBT-25-8 | 52.4 | 22.0 | 45.0 | 31.3 | 22.0 | 34 | 1-1/2 | 40.0 | 80.0 | 104.8 |

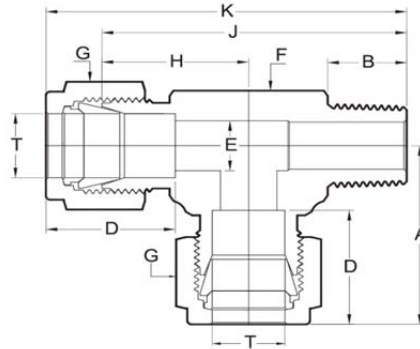
MBT Male Branch Tee



Fractional

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | C | D | E | F | G | H | J | K |
|-----------|----------------|-------------|------|------|------|------|------|----|-------|------|------|-------|
| 1/8 | 1/8 | MBT-01-1 | 23.9 | 10.0 | 18.0 | 12.7 | 2.5 | 12 | 7/16 | 17.0 | 34.0 | 47.8 |
| 1/8 | 1/4 | MBT-01-2 | 25.2 | 13.0 | 22.3 | 12.7 | 2.5 | 14 | 7/16 | 18.3 | 36.6 | 50.4 |
| 1/4 | 1/8 | MBT-02-1 | 25.8 | 10.0 | 18.0 | 15.2 | 5.0 | 12 | 9/16 | 18.0 | 36.0 | 51.6 |
| 1/4 | 1/4 | MBT-02-2 | 27.1 | 13.0 | 22.3 | 15.2 | 5.0 | 14 | 9/16 | 19.3 | 38.6 | 54.2 |
| 1/4 | 3/8 | MBT-02-3 | 29.5 | 14.0 | 25.7 | 15.2 | 5.0 | 17 | 9/16 | 21.7 | 43.3 | 59.0 |
| 1/4 | 1/2 | MBT-02-4 | 32.2 | 17.0 | 31.4 | 15.2 | 5.0 | 22 | 9/16 | 24.4 | 48.8 | 64.4 |
| 3/8 | 1/8 | MBT-03-1 | 29.0 | 10.0 | 19.3 | 16.8 | 7.7 | 14 | 11/16 | 21.3 | 42.6 | 58.0 |
| 3/8 | 1/4 | MBT-03-2 | 29.0 | 13.0 | 22.3 | 16.8 | 7.7 | 14 | 11/16 | 21.3 | 42.6 | 58.0 |
| 3/8 | 3/8 | MBT-03-3 | 31.4 | 14.0 | 25.7 | 16.8 | 7.7 | 17 | 11/16 | 23.7 | 47.4 | 62.8 |
| 3/8 | 1/2 | MBT-03-4 | 34.1 | 17.0 | 31.4 | 16.8 | 7.7 | 22 | 11/16 | 26.4 | 52.8 | 68.2 |
| 1/2 | 1/8 | MBT-04-1 | 35.9 | 10.0 | 25.0 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.8 |
| 1/2 | 1/4 | MBT-04-2 | 35.9 | 13.0 | 27.0 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.8 |
| 1/2 | 3/8 | MBT-04-3 | 35.9 | 14.0 | 27.5 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 52.0 | 71.8 |
| 1/2 | 1/2 | MBT-04-4 | 36.3 | 17.0 | 31.4 | 22.9 | 10.0 | 22 | 7/8 | 26.4 | 52.8 | 72.6 |
| 1/2 | 3/4 | MBT-04-6 | 38.9 | 19.0 | 36.1 | 22.9 | 10.0 | 27 | 7/8 | 29.0 | 58.0 | 77.8 |
| 1/2 | 1 | MBT-04-8 | 49.9 | 22.0 | 45.0 | 22.9 | 10.0 | 34 | 7/8 | 40.0 | 80.0 | 99.8 |
| 5/8 | 3/8 | MBT-05-3 | 37.9 | 14.0 | 30.7 | 24.4 | 14.0 | 24 | 25 | 27.5 | 55.0 | 75.8 |
| 5/8 | 1/2 | MBT-05-4 | 37.9 | 17.0 | 33.7 | 24.4 | 14.0 | 24 | 25 | 27.5 | 55.0 | 75.8 |
| 5/8 | 3/4 | MBT-05-6 | 39.4 | 19.0 | 36.1 | 24.4 | 14.0 | 27 | 25 | 29.0 | 58.0 | 75.8 |
| 3/4 | 1/2 | MBT-06-4 | 39.9 | 17.0 | 34.1 | 24.4 | 16.0 | 27 | 1-1/8 | 29.0 | 58.0 | 75.8 |
| 3/4 | 3/4 | MBT-06-6 | 39.9 | 19.0 | 36.1 | 24.4 | 16.0 | 27 | 1-1/8 | 29.0 | 58.0 | 75.8 |
| 3/4 | 1 | MBT-06-8 | 50.9 | 22.0 | 45.0 | 24.4 | 16.0 | 34 | 1-1/8 | 40.0 | 80.0 | 101.8 |
| 1 | 1/2 | MBT-08-4 | 52.4 | 17.0 | 43.0 | 31.2 | 22.0 | 34 | 1-1/2 | 40.0 | 80.0 | 104.8 |
| 1 | 3/4 | MBT-08-6 | 52.4 | 19.0 | 45.0 | 31.2 | 22.0 | 34 | 1-1/2 | 40.0 | 80.0 | 104.8 |
| 1 | 1 | MBT-08-8 | 52.4 | 22.0 | 45.0 | 31.2 | 22.0 | 34 | 1-1/2 | 40.0 | 80.0 | 104.8 |

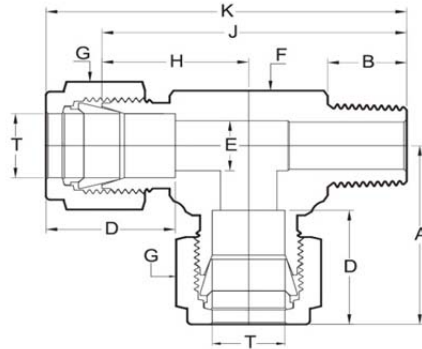
MRT Male Run Tee



Metric

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H | J | K |
|-----------|----------------|-------------|------|------|------|------|----|-------|------|------|------|
| 4 | 1/8 | MRT-4-1 | 24.1 | 10.0 | 13.7 | 2.5 | 12 | 12 | 17.0 | 35.0 | 42.1 |
| 4 | 1/4 | MRT-4-2 | 25.4 | 13.0 | 13.7 | 2.5 | 14 | 12 | 18.3 | 40.6 | 47.7 |
| 6 | 1/8 | MRT-6-1 | 25.6 | 10.0 | 15.3 | 5.0 | 12 | 9/16 | 18.0 | 36.0 | 43.6 |
| 6 | 1/4 | MRT-6-2 | 26.9 | 13.0 | 15.3 | 5.0 | 14 | 9/16 | 19.3 | 41.6 | 49.1 |
| 6 | 3/8 | MRT-6-3 | 29.3 | 14.0 | 15.3 | 5.0 | 17 | 9/16 | 21.7 | 47.3 | 54.9 |
| 6 | 1/2 | MRT-6-4 | 32.0 | 17.0 | 15.3 | 5.0 | 22 | 9/16 | 24.4 | 55.8 | 63.3 |
| 8 | 1/8 | MRT-8-1 | 28.1 | 10.0 | 16.2 | 6.0 | 14 | 5/8 | 20.3 | 39.6 | 47.4 |
| 8 | 1/4 | MRT-8-2 | 28.1 | 13.0 | 16.2 | 6.0 | 14 | 5/8 | 20.3 | 42.6 | 50.4 |
| 8 | 3/8 | MRT-8-3 | 31.0 | 14.0 | 16.2 | 6.0 | 17 | 5/8 | 23.2 | 48.8 | 56.7 |
| 8 | 1/2 | MRT-8-4 | 33.7 | 17.0 | 16.2 | 6.0 | 22 | 5/8 | 25.9 | 57.3 | 65.1 |
| 10 | 1/8 | MRT-10-1 | 31.6 | 10.0 | 17.2 | 8.0 | 17 | 19 | 23.7 | 45.3 | 53.2 |
| 10 | 1/4 | MRT-10-2 | 31.6 | 13.0 | 17.2 | 8.0 | 17 | 19 | 23.7 | 48.3 | 56.2 |
| 10 | 3/8 | MRT-10-3 | 31.6 | 14.0 | 17.2 | 8.0 | 17 | 19 | 23.7 | 49.3 | 57.2 |
| 10 | 1/2 | MRT-10-4 | 34.3 | 17.0 | 17.2 | 8.0 | 22 | 19 | 26.4 | 57.8 | 65.7 |
| 12 | 1/8 | MRT-12-1 | 35.7 | 10.0 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 50.5 | 60.2 |
| 12 | 1/4 | MRT-12-2 | 35.7 | 13.0 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 53.4 | 63.1 |
| 12 | 3/8 | MRT-12-3 | 35.7 | 14.0 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 53.4 | 63.1 |
| 12 | 1/2 | MRT-12-4 | 36.1 | 17.0 | 22.8 | 10.0 | 22 | 7/8 | 26.4 | 57.8 | 67.5 |
| 12 | 3/4 | MRT-12-6 | 38.7 | 19.0 | 22.8 | 10.0 | 27 | 7/8 | 29.0 | 65.0 | 74.7 |
| 12 | 1 | MRT-12-8 | 49.7 | 22.0 | 22.8 | 10.0 | 34 | 7/8 | 40.0 | 85.0 | 94.7 |
| 14 | 3/8 | MRT-14-3 | 37.9 | 14.0 | 24.4 | 12.0 | 24 | 25 | 27.5 | 56.5 | 66.9 |
| 14 | 1/2 | MRT-14-4 | 37.9 | 17.0 | 24.4 | 12.0 | 24 | 25 | 27.5 | 59.5 | 69.9 |
| 14 | 3/4 | MRT-14-6 | 39.4 | 19.0 | 24.4 | 12.0 | 27 | 25 | 29.0 | 65.0 | 75.4 |
| 15 | 3/8 | MRT-15-3 | 38.0 | 14.0 | 24.4 | 12.0 | 24 | 25 | 27.5 | 56.5 | 67.0 |
| 15 | 1/2 | MRT-15-4 | 38.0 | 17.0 | 24.4 | 12.0 | 24 | 25 | 27.5 | 59.5 | 70.0 |
| 15 | 3/4 | MRT-15-6 | 39.5 | 19.0 | 24.4 | 12.0 | 27 | 25 | 29.0 | 65.0 | 75.5 |
| 16 | 3/8 | MRT-16-3 | 38.2 | 14.0 | 24.4 | 14.0 | 24 | 25 | 27.5 | 56.5 | 67.2 |
| 16 | 1/2 | MRT-16-4 | 38.2 | 17.0 | 24.4 | 14.0 | 24 | 25 | 27.5 | 59.5 | 70.2 |
| 16 | 3/4 | MRT-16-6 | 39.7 | 19.0 | 24.4 | 14.0 | 27 | 25 | 29.0 | 65.0 | 75.7 |
| 18 | 3/8 | MRT-18-3 | 39.4 | 14.0 | 24.4 | 16.0 | 27 | 30 | 29.0 | 60.0 | 70.4 |
| 18 | 1/2 | MRT-18-4 | 39.4 | 17.0 | 24.4 | 16.0 | 27 | 30 | 29.0 | 63.0 | 73.4 |
| 18 | 3/4 | MRT-18-6 | 39.4 | 19.0 | 24.4 | 16.0 | 27 | 30 | 29.0 | 65.0 | 75.4 |
| 20 | 1/2 | MRT-20-4 | 46.6 | 17.0 | 26.0 | 18.0 | 30 | 32 | 37.6 | 76.2 | 85.2 |
| 20 | 3/4 | MRT-20-6 | 46.6 | 19.0 | 26.0 | 18.0 | 30 | 32 | 37.6 | 76.2 | 85.2 |
| 22 | 1/2 | MRT-22-4 | 46.9 | 17.0 | 26.0 | 18.0 | 30 | 32 | 37.6 | 76.2 | 85.5 |
| 22 | 3/4 | MRT-22-6 | 46.9 | 19.0 | 26.0 | 18.0 | 30 | 32 | 37.6 | 76.2 | 85.5 |
| 25 | 1/2 | MRT-25-4 | 52.4 | 17.0 | 31.3 | 22.0 | 34 | 1-1/2 | 40.0 | 83.0 | 95.4 |
| 25 | 3/4 | MRT-25-6 | 52.4 | 19.0 | 31.3 | 22.0 | 34 | 1-1/2 | 40.0 | 85.0 | 97.4 |
| 25 | 1 | MRT-25-8 | 52.4 | 22.0 | 31.3 | 22.0 | 34 | 1-1/2 | 40.0 | 85.0 | 97.4 |

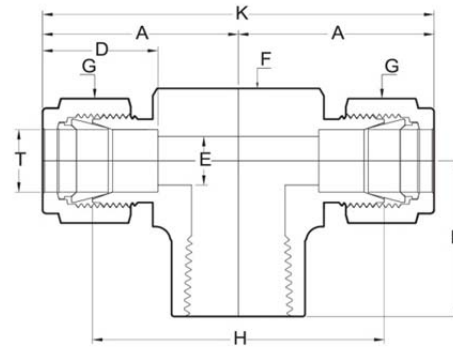
MRT Male Run Tee



Fractional

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H | J | K |
|-----------|----------------|-------------|------|------|------|------|----|-------|------|------|------|
| 1/8 | 1/8 | MRT-01-1 | 23.9 | 10.0 | 12.7 | 2.5 | 12 | 7/16 | 17.0 | 35.0 | 41.9 |
| 1/8 | 1/4 | MRT-01-2 | 25.2 | 13.0 | 12.7 | 2.5 | 14 | 7/16 | 18.3 | 40.6 | 47.5 |
| 1/4 | 1/8 | MRT-02-1 | 25.8 | 10.0 | 15.2 | 5.0 | 12 | 9/16 | 18.0 | 36.0 | 43.8 |
| 1/4 | 1/4 | MRT-02-2 | 27.1 | 13.0 | 15.2 | 5.0 | 14 | 9/16 | 19.3 | 41.6 | 49.4 |
| 1/4 | 3/8 | MRT-02-3 | 29.5 | 14.0 | 15.2 | 5.0 | 17 | 9/16 | 21.7 | 47.3 | 55.1 |
| 1/4 | 1/2 | MRT-02-4 | 32.2 | 17.0 | 15.2 | 5.0 | 22 | 9/16 | 24.4 | 55.8 | 63.6 |
| 3/8 | 1/8 | MRT-03-1 | 29.0 | 10.0 | 16.8 | 7.7 | 14 | 11/16 | 21.3 | 40.6 | 48.3 |
| 3/8 | 1/4 | MRT-03-2 | 29.0 | 13.0 | 16.8 | 7.7 | 14 | 11/16 | 21.3 | 43.6 | 51.3 |
| 3/8 | 3/8 | MRT-03-3 | 31.4 | 14.0 | 16.8 | 7.7 | 17 | 11/16 | 23.7 | 49.3 | 57.0 |
| 3/8 | 1/2 | MRT-03-4 | 34.1 | 17.0 | 16.8 | 7.7 | 22 | 11/16 | 26.4 | 57.8 | 65.5 |
| 1/2 | 1/8 | MRT-04-1 | 35.9 | 10.0 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 50.0 | 59.9 |
| 1/2 | 1/4 | MRT-04-2 | 35.9 | 13.0 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 53.0 | 62.9 |
| 1/2 | 3/8 | MRT-04-3 | 35.9 | 14.0 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 54.0 | 63.9 |
| 1/2 | 1/2 | MRT-04-4 | 36.3 | 17.0 | 22.9 | 10.0 | 22 | 7/8 | 26.4 | 57.8 | 67.7 |
| 1/2 | 3/4 | MRT-04-6 | 38.9 | 19.0 | 22.9 | 10.0 | 27 | 7/8 | 29.0 | 65.0 | 74.9 |
| 1/2 | 1 | MRT-04-8 | 49.9 | 22.0 | 22.9 | 10.0 | 34 | 7/8 | 40.0 | 85.0 | 94.9 |
| 5/8 | 3/8 | MRT-05-3 | 37.9 | 14.0 | 24.4 | 14.0 | 24 | 25 | 27.5 | 56.5 | 66.9 |
| 5/8 | 1/2 | MRT-05-4 | 37.9 | 17.0 | 24.4 | 14.0 | 24 | 25 | 27.5 | 59.5 | 69.9 |
| 5/8 | 3/4 | MRT-05-6 | 39.4 | 19.0 | 24.4 | 14.0 | 27 | 25 | 29.0 | 65.0 | 75.4 |
| 3/4 | 1/2 | MRT-06-4 | 39.9 | 17.0 | 24.4 | 16.0 | 27 | 1-1/8 | 29.0 | 63.0 | 73.9 |
| 3/4 | 3/4 | MRT-06-6 | 39.9 | 19.0 | 24.4 | 16.0 | 27 | 1-1/8 | 29.0 | 65.0 | 75.9 |
| 3/4 | 1 | MRT-06-8 | 50.9 | 22.0 | 24.4 | 16.0 | 34 | 1-1/8 | 40.0 | 85.0 | 95.9 |
| 1 | 1/2 | MRT-08-4 | 52.4 | 17.0 | 31.2 | 22.0 | 34 | 1-1/2 | 40.0 | 83.0 | 95.4 |
| 1 | 3/4 | MRT-08-6 | 52.4 | 19.0 | 31.2 | 22.0 | 34 | 1-1/2 | 40.0 | 85.0 | 97.4 |
| 1 | 1 | MRT-08-8 | 52.4 | 22.0 | 31.2 | 22.0 | 34 | 1-1/2 | 40.0 | 85.0 | 97.4 |

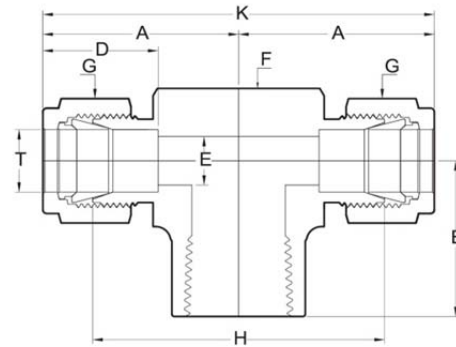
FBT Female Branch Tee



Metric

| TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H | K |
|-----------|------------------|-------------|------|------|------|------|----|-------|------|-------|
| 4 | 1/8 | FBT-4-1 | 25.4 | 19.3 | 13.7 | 2.5 | 14 | 12 | 36.6 | 50.8 |
| 4 | 1/4 | FBT-4-2 | 27.9 | 23.7 | 13.7 | 2.5 | 17 | 12 | 41.3 | 55.7 |
| 6 | 1/8 | FBT-6-1 | 26.9 | 19.3 | 15.3 | 5.0 | 14 | 9/16 | 38.6 | 53.8 |
| 6 | 1/4 | FBT-6-2 | 29.3 | 23.7 | 15.3 | 5.0 | 17 | 9/16 | 43.3 | 58.5 |
| 6 | 3/8 | FBT-6-3 | 32.0 | 26.4 | 15.3 | 5.0 | 22 | 9/16 | 48.8 | 64.0 |
| 6 | 1/2 | FBT-6-4 | 34.6 | 32.1 | 15.3 | 5.0 | 27 | 9/16 | 54.0 | 69.2 |
| 8 | 1/8 | FBT-8-1 | 28.6 | 19.3 | 16.2 | 6.0 | 14 | 5/8 | 41.6 | 57.2 |
| 8 | 1/4 | FBT-8-2 | 31.0 | 23.7 | 16.2 | 6.0 | 17 | 5/8 | 46.3 | 61.9 |
| 8 | 3/8 | FBT-8-3 | 33.7 | 26.4 | 16.2 | 6.0 | 22 | 5/8 | 51.8 | 67.4 |
| 8 | 1/2 | FBT-8-4 | 36.3 | 32.1 | 16.2 | 6.0 | 27 | 5/8 | 57.0 | 72.6 |
| 10 | 1/8 | FBT-10-1 | 31.6 | 23.7 | 17.2 | 8.0 | 17 | 19 | 47.3 | 63.1 |
| 10 | 1/4 | FBT-10-2 | 31.6 | 23.7 | 17.2 | 8.0 | 17 | 19 | 47.3 | 63.1 |
| 10 | 3/8 | FBT-10-3 | 34.3 | 26.4 | 17.2 | 8.0 | 22 | 19 | 52.8 | 68.6 |
| 10 | 1/2 | FBT-10-4 | 36.9 | 32.3 | 17.2 | 8.0 | 27 | 19 | 58.0 | 73.8 |
| 12 | 1/8 | FBT-12-1 | 35.7 | 25.0 | 22.8 | 10.0 | 20 | 7/8 | 52.0 | 71.4 |
| 12 | 1/4 | FBT-12-2 | 35.7 | 25.0 | 22.8 | 10.0 | 20 | 7/8 | 52.0 | 71.4 |
| 12 | 3/8 | FBT-12-3 | 36.1 | 26.4 | 22.8 | 10.0 | 22 | 7/8 | 52.8 | 72.2 |
| 12 | 1/2 | FBT-12-4 | 38.7 | 32.1 | 22.8 | 10.0 | 27 | 7/8 | 58.0 | 77.4 |
| 12 | 3/4 | FBT-12-6 | 49.7 | 41.0 | 22.8 | 10.0 | 34 | 7/8 | 80.0 | 99.4 |
| 14 | 3/8 | FBT-14-3 | 37.9 | 28.7 | 24.4 | 12.0 | 24 | 25 | 55.0 | 75.8 |
| 14 | 1/2 | FBT-14-4 | 39.4 | 32.1 | 24.4 | 12.0 | 27 | 25 | 58.0 | 78.8 |
| 14 | 3/4 | FBT-14-6 | 50.4 | 41.0 | 24.4 | 12.0 | 34 | 25 | 80.0 | 100.8 |
| 15 | 3/8 | FBT-15-3 | 38.0 | 28.7 | 24.4 | 12.0 | 24 | 25 | 55.0 | 76.0 |
| 15 | 1/2 | FBT-15-4 | 39.5 | 32.1 | 24.4 | 12.0 | 27 | 25 | 58.0 | 79.0 |
| 15 | 3/4 | FBT-15-6 | 50.5 | 41.0 | 24.4 | 12.0 | 34 | 25 | 80.0 | 101.0 |
| 16 | 3/8 | FBT-16-3 | 38.2 | 28.7 | 24.4 | 14.0 | 24 | 25 | 55.0 | 76.4 |
| 16 | 1/2 | FBT-16-4 | 39.7 | 32.1 | 24.4 | 14.0 | 27 | 25 | 58.0 | 79.4 |
| 16 | 3/4 | FBT-16-6 | 50.7 | 41.0 | 24.4 | 14.0 | 34 | 25 | 80.0 | 101.4 |
| 18 | 3/8 | FBT-18-3 | 39.4 | 32.1 | 24.4 | 16.0 | 27 | 30 | 58.0 | 78.8 |
| 18 | 1/2 | FBT-18-4 | 39.4 | 32.2 | 24.4 | 16.0 | 27 | 30 | 58.0 | 78.8 |
| 18 | 3/4 | FBT-18-6 | 50.4 | 41.0 | 24.4 | 16.0 | 34 | 30 | 80.0 | 100.8 |
| 20 | 1/2 | FBT-20-4 | 46.6 | 37.7 | 26.0 | 18.0 | 30 | 32 | 75.1 | 93.1 |
| 20 | 3/4 | FBT-20-6 | 49.0 | 41.0 | 26.0 | 18.0 | 34 | 32 | 80.0 | 98.0 |
| 22 | 1/2 | FBT-22-4 | 46.9 | 37.7 | 26.0 | 18.0 | 30 | 32 | 75.1 | 93.7 |
| 22 | 3/4 | FBT-22-6 | 49.3 | 41.0 | 26.0 | 18.0 | 34 | 32 | 80.0 | 98.6 |
| 25 | 1/2 | FBT-25-4 | 52.4 | 41.0 | 31.3 | 22.0 | 34 | 1-1/2 | 80.0 | 104.8 |
| 25 | 3/4 | FBT-25-6 | 52.4 | 41.0 | 31.3 | 22.0 | 34 | 1-1/2 | 80.0 | 104.8 |

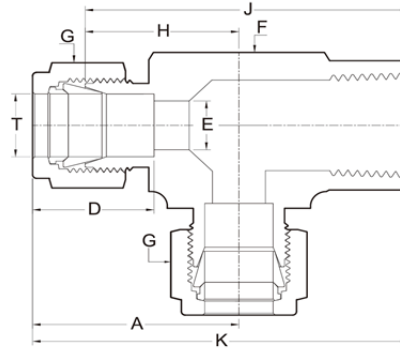
FBT Female Branch Tee



Fractional

| TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H | K |
|-----------|------------------|-------------|------|------|------|------|----|-------|------|-------|
| 1/8 | 1/8 | FBT-01-1 | 25.2 | 19.3 | 12.7 | 2.5 | 14 | 7/16 | 36.6 | 50.4 |
| 1/8 | 1/4 | FBT-01-2 | 27.6 | 23.7 | 12.7 | 2.5 | 17 | 7/16 | 41.3 | 55.1 |
| 1/4 | 1/8 | FBT-02-1 | 27.1 | 19.3 | 15.2 | 5.0 | 14 | 9/16 | 38.6 | 54.2 |
| 1/4 | 1/4 | FBT-02-2 | 29.5 | 23.7 | 15.2 | 5.0 | 17 | 9/16 | 43.3 | 58.9 |
| 1/4 | 3/8 | FBT-02-3 | 32.2 | 26.4 | 15.2 | 5.0 | 22 | 9/16 | 48.8 | 64.4 |
| 1/4 | 1/2 | FBT-02-4 | 34.8 | 32.1 | 15.2 | 5.0 | 27 | 9/16 | 54.0 | 69.6 |
| 3/8 | 1/8 | FBT-03-1 | 29.0 | 19.3 | 16.8 | 7.7 | 14 | 11/16 | 42.6 | 58.0 |
| 3/8 | 1/4 | FBT-03-2 | 31.4 | 23.7 | 16.8 | 7.7 | 17 | 11/16 | 47.3 | 62.7 |
| 3/8 | 3/8 | FBT-03-3 | 34.1 | 26.4 | 16.8 | 7.7 | 22 | 11/16 | 52.8 | 68.2 |
| 3/8 | 1/2 | FBT-03-4 | 36.7 | 32.1 | 16.8 | 7.7 | 27 | 11/16 | 58.0 | 73.4 |
| 1/2 | 1/8 | FBT-04-1 | 35.9 | 25.0 | 22.9 | 10.0 | 20 | 7/8 | 52.0 | 71.8 |
| 1/2 | 1/4 | FBT-04-2 | 35.9 | 25.0 | 22.9 | 10.0 | 20 | 7/8 | 52.0 | 71.8 |
| 1/2 | 3/8 | FBT-04-3 | 36.3 | 26.4 | 22.9 | 10.0 | 22 | 7/8 | 52.8 | 72.6 |
| 1/2 | 1/2 | FBT-04-4 | 38.9 | 32.1 | 22.9 | 10.0 | 27 | 7/8 | 58.0 | 77.8 |
| 1/2 | 3/4 | FBT-04-6 | 49.9 | 41.0 | 22.9 | 10.0 | 34 | 7/8 | 80.0 | 99.8 |
| 3/4 | 1/8 | FBT-06-1 | 39.9 | 32.1 | 24.4 | 16.0 | 27 | 1-1/8 | 58.0 | 79.8 |
| 3/4 | 1/4 | FBT-06-2 | 39.9 | 32.1 | 24.4 | 16.0 | 27 | 1-1/8 | 58.0 | 79.8 |
| 3/4 | 3/8 | FBT-06-3 | 39.9 | 32.1 | 24.4 | 16.0 | 27 | 1-1/8 | 58.0 | 79.8 |
| 3/4 | 1/2 | FBT-06-4 | 39.9 | 32.1 | 24.4 | 16.0 | 27 | 1-1/8 | 58.0 | 79.8 |
| 3/4 | 3/4 | FBT-06-6 | 50.9 | 41.0 | 24.4 | 16.0 | 34 | 1-1/8 | 80.0 | 101.8 |
| 1 | 1/2 | FBT-08-4 | 52.4 | 41.0 | 31.2 | 22.0 | 34 | 1-1/2 | 80.0 | 104.8 |
| 1 | 3/4 | FBT-08-6 | 52.4 | 41.0 | 31.2 | 22.0 | 34 | 1-1/2 | 80.0 | 104.8 |

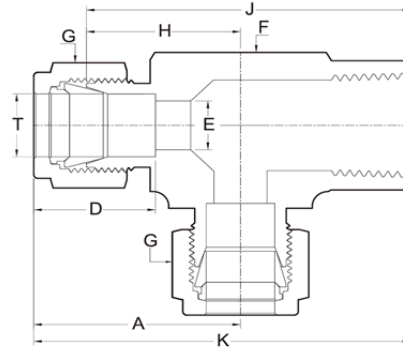
FRT Female Run Tee



Metric

| TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | D | E | F | G | H | J | K |
|-----------|------------------|-------------|------|------|------|----|-------|------|------|------|
| 4 | 1/8 | FRT-4-1 | 25.4 | 13.7 | 2.5 | 14 | 12 | 18.3 | 37.6 | 44.7 |
| 4 | 1/4 | FRT-4-2 | 27.8 | 13.7 | 2.5 | 17 | 12 | 20.7 | 44.3 | 51.4 |
| 6 | 1/8 | FRT-6-1 | 26.9 | 15.3 | 5.0 | 14 | 9/16 | 19.3 | 38.6 | 46.2 |
| 6 | 1/4 | FRT-6-2 | 29.3 | 15.3 | 5.0 | 17 | 9/16 | 21.7 | 45.3 | 52.9 |
| 6 | 3/8 | FRT-6-3 | 32.0 | 15.3 | 5.0 | 22 | 9/16 | 24.4 | 50.8 | 58.4 |
| 6 | 1/2 | FRT-6-4 | 34.6 | 15.3 | 5.0 | 27 | 9/16 | 27.0 | 59.0 | 66.6 |
| 8 | 1/8 | FRT-8-1 | 28.1 | 16.2 | 6.0 | 14 | 5/8 | 20.3 | 39.6 | 47.4 |
| 8 | 1/4 | FRT-8-2 | 30.5 | 16.2 | 6.0 | 17 | 5/8 | 22.7 | 46.3 | 54.1 |
| 8 | 3/8 | FRT-8-3 | 33.2 | 16.2 | 6.0 | 22 | 5/8 | 25.4 | 51.8 | 59.6 |
| 8 | 1/2 | FRT-8-4 | 35.8 | 16.2 | 6.0 | 27 | 5/8 | 28.0 | 60.0 | 67.8 |
| 10 | 1/8 | FRT-10-1 | 31.6 | 17.2 | 8.0 | 17 | 19 | 23.7 | 47.3 | 55.2 |
| 10 | 1/4 | FRT-10-2 | 31.6 | 17.2 | 8.0 | 17 | 19 | 23.7 | 47.3 | 55.2 |
| 10 | 3/8 | FRT-10-3 | 34.3 | 17.2 | 8.0 | 22 | 19 | 26.4 | 52.8 | 60.7 |
| 10 | 1/2 | FRT-10-4 | 36.9 | 17.2 | 8.0 | 27 | 19 | 29.0 | 61.0 | 68.9 |
| 12 | 1/8 | FRT-12-1 | 35.7 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 51.0 | 60.7 |
| 12 | 1/4 | FRT-12-2 | 35.7 | 22.8 | 10.0 | 20 | 7/8 | 26.0 | 51.0 | 60.7 |
| 12 | 3/8 | FRT-12-3 | 36.1 | 22.8 | 10.0 | 22 | 7/8 | 26.4 | 52.8 | 62.5 |
| 12 | 1/2 | FRT-12-4 | 38.7 | 22.8 | 10.0 | 27 | 7/8 | 29.0 | 61.0 | 70.7 |
| 12 | 3/4 | FRT-12-6 | 49.7 | 22.8 | 10.0 | 34 | 7/8 | 40.0 | 81.0 | 90.7 |
| 14 | 3/8 | FRT-14-3 | 37.9 | 24.4 | 12.0 | 24 | 25 | 27.5 | 55.0 | 65.4 |
| 14 | 1/2 | FRT-14-4 | 39.4 | 24.4 | 12.0 | 27 | 25 | 29.0 | 61.0 | 71.4 |
| 14 | 3/4 | FRT-14-6 | 50.4 | 24.4 | 12.0 | 34 | 25 | 40.0 | 81.0 | 91.4 |
| 15 | 3/8 | FRT-15-3 | 38.0 | 24.4 | 12.0 | 24 | 25 | 27.5 | 55.0 | 65.5 |
| 15 | 1/2 | FRT-15-4 | 39.5 | 24.4 | 12.0 | 27 | 25 | 29.0 | 61.0 | 71.5 |
| 15 | 3/4 | FRT-15-6 | 50.5 | 24.4 | 12.0 | 34 | 25 | 40.0 | 81.0 | 91.5 |
| 16 | 3/8 | FRT-16-3 | 38.2 | 24.4 | 14.0 | 24 | 25 | 27.5 | 55.0 | 65.7 |
| 16 | 1/2 | FRT-16-4 | 39.7 | 24.4 | 14.0 | 27 | 25 | 29.0 | 61.0 | 71.7 |
| 16 | 3/4 | FRT-16-6 | 50.7 | 24.4 | 14.0 | 34 | 25 | 40.0 | 81.0 | 91.7 |
| 18 | 3/8 | FRT-18-3 | 39.4 | 24.4 | 16.0 | 27 | 30 | 29.0 | 61.0 | 71.4 |
| 18 | 1/2 | FRT-18-4 | 39.4 | 24.4 | 16.0 | 27 | 30 | 29.0 | 61.0 | 71.4 |
| 18 | 3/4 | FRT-18-6 | 50.4 | 24.4 | 16.0 | 34 | 30 | 40.0 | 81.0 | 91.4 |
| 20 | 1/2 | FRT-20-4 | 46.6 | 26.0 | 18.0 | 30 | 32 | 37.6 | 75.1 | 84.1 |
| 20 | 3/4 | FRT-20-6 | 49.0 | 26.0 | 18.0 | 34 | 32 | 40.0 | 81.0 | 90.0 |
| 22 | 1/2 | FRT-22-4 | 46.9 | 26.0 | 18.0 | 30 | 32 | 37.6 | 75.1 | 84.4 |
| 22 | 3/4 | FRT-22-6 | 49.3 | 26.0 | 18.0 | 34 | 32 | 40.0 | 81.0 | 90.3 |
| 25 | 1/2 | FRT-25-4 | 52.4 | 31.3 | 22.0 | 34 | 1-1/2 | 40.0 | 81.0 | 93.4 |
| 25 | 3/4 | FRT-25-6 | 52.4 | 31.3 | 22.0 | 34 | 1-1/2 | 40.0 | 81.0 | 93.4 |

FRT Female Run Tee



Fractional

| TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | D | E | F | G | H | J | K |
|-----------|------------------|-------------|------|------|------|----|-------|------|------|------|
| 1/8 | 1/8 | FRT-01-1 | 25.2 | 12.7 | 2.5 | 14 | 7/16 | 18.3 | 37.6 | 44.5 |
| 1/8 | 1/4 | FRT-01-2 | 27.6 | 12.7 | 2.5 | 17 | 7/16 | 20.7 | 44.3 | 51.2 |
| 1/4 | 1/8 | FRT-02-1 | 27.1 | 15.2 | 5.0 | 14 | 9/16 | 19.3 | 38.6 | 46.4 |
| 1/4 | 1/4 | FRT-02-2 | 29.5 | 15.2 | 5.0 | 17 | 9/16 | 21.7 | 45.3 | 53.1 |
| 1/4 | 3/8 | FRT-02-3 | 32.2 | 15.2 | 5.0 | 22 | 9/16 | 24.4 | 50.8 | 58.6 |
| 1/4 | 1/2 | FRT-02-4 | 34.8 | 15.2 | 5.0 | 27 | 9/16 | 27.0 | 59.6 | 67.4 |
| 3/8 | 1/8 | FRT-03-1 | 29.0 | 16.8 | 7.7 | 14 | 11/16 | 21.3 | 40.6 | 48.3 |
| 3/8 | 1/4 | FRT-03-2 | 31.4 | 16.8 | 7.7 | 17 | 11/16 | 23.7 | 47.3 | 55.0 |
| 3/8 | 3/8 | FRT-03-3 | 34.1 | 16.8 | 7.7 | 22 | 11/16 | 26.4 | 52.8 | 60.5 |
| 3/8 | 1/2 | FRT-03-4 | 36.7 | 16.8 | 7.7 | 27 | 11/16 | 29.0 | 61.0 | 68.7 |
| 1/2 | 1/8 | FRT-04-1 | 35.9 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 51.0 | 60.9 |
| 1/2 | 1/4 | FRT-04-2 | 35.9 | 22.9 | 10.0 | 20 | 7/8 | 26.0 | 51.0 | 60.9 |
| 1/2 | 3/8 | FRT-04-3 | 36.3 | 22.9 | 10.0 | 22 | 7/8 | 26.4 | 52.8 | 62.7 |
| 1/2 | 1/2 | FRT-04-4 | 38.9 | 22.9 | 10.0 | 27 | 7/8 | 29.0 | 61.0 | 70.9 |
| 1/2 | 3/4 | FRT-04-6 | 49.9 | 22.9 | 10.0 | 34 | 7/8 | 40.0 | 81.0 | 90.9 |
| 5/8 | 3/8 | FRT-05-3 | 37.9 | 24.4 | 14.0 | 24 | 25 | 27.5 | 55.0 | 65.4 |
| 5/8 | 1/2 | FRT-05-4 | 39.4 | 24.4 | 14.0 | 27 | 25 | 29.0 | 61.0 | 71.7 |
| 5/8 | 3/4 | FRT-05-6 | 50.4 | 24.4 | 14.0 | 34 | 25 | 40.0 | 81.0 | 91.7 |
| 3/4 | 1/8 | FRT-06-1 | 39.9 | 24.4 | 16.0 | 27 | 1-1/8 | 29.0 | 61.0 | 71.9 |
| 3/4 | 1/4 | FRT-06-2 | 39.9 | 24.4 | 16.0 | 27 | 1-1/8 | 29.0 | 61.0 | 71.9 |
| 3/4 | 3/8 | FRT-06-3 | 39.9 | 24.4 | 16.0 | 27 | 1-1/8 | 29.0 | 61.0 | 71.9 |
| 3/4 | 1/2 | FRT-06-4 | 39.9 | 24.4 | 16.0 | 27 | 1-1/8 | 29.0 | 61.0 | 71.9 |
| 3/4 | 3/4 | FRT-06-6 | 50.9 | 24.4 | 16.0 | 34 | 1-1/8 | 40.0 | 81.0 | 91.9 |
| 1 | 1/2 | FRT-08-4 | 52.4 | 31.2 | 22.0 | 34 | 1-1/2 | 40.0 | 81.0 | 93.4 |
| 1 | 3/4 | FRT-08-6 | 52.4 | 31.2 | 22.0 | 34 | 1-1/2 | 40.0 | 81.0 | 93.4 |

FF Front Ferrule



Metric

| TUBE O.D. | ITEM NUMBER |
|-----------|-------------|
| 3 | FF-3 |
| 4 | FF-4 |
| 6 | FF-6 |
| 8 | FF-8 |
| 10 | FF-10 |
| 12 | FF-12 |
| 14 | FF-14 |
| 15 | FF-15 |
| 16 | FF-16 |
| 18 | FF-18 |
| 20 | FF-20 |
| 22 | FF-22 |
| 25 | FF-25 |

Fractional

| TUBE O.D. | ITEM NUMBER |
|-----------|-------------|
| 1/16 | FF-005 |
| 1/8 | FF-01 |
| 3/16 | FF-015 |
| 1/4 | FF-02 |
| 3/8 | FF-03 |
| 1/2 | FF-04 |
| 5/8 | FF-05 |
| 3/4 | FF-06 |
| 1 | FF-08 |

BF Back Ferrule



Metric

| TUBE O.D. | ITEM NUMBER |
|-----------|-------------|
| 3 | BF-3 |
| 4 | BF-4 |
| 6 | BF-6 |
| 8 | BF-8 |
| 10 | BF-10 |
| 12 | BF-12 |
| 14 | BF-14 |
| 15 | BF-15 |
| 16 | BF-16 |
| 18 | BF-18 |
| 20 | BF-20 |
| 22 | BF-22 |
| 25 | BF-25 |

Fractional

| TUBE O.D. | ITEM NUMBER |
|-----------|-------------|
| 1/16 | BF-005 |
| 1/8 | BF-01 |
| 3/16 | BF-015 |
| 1/4 | BF-02 |
| 3/8 | BF-03 |
| 1/2 | BF-04 |
| 5/8 | BF-05 |
| 3/4 | BF-06 |
| 1 | BF-08 |

N Nut



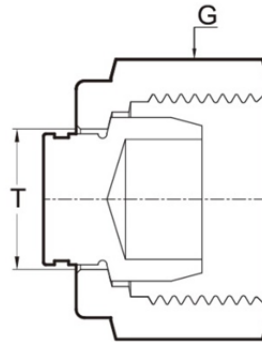
Metric

| TUBE O.D. | ITEM NUMBER | G | L |
|-----------|-------------|-------|------|
| 3 | N-3 | 7/16 | 12.0 |
| 4 | N-4 | 12 | 11.7 |
| 6 | N-6 | 9/16 | 12.7 |
| 8 | N-8 | 5/8 | 13.5 |
| 10 | N-10 | 19 | 15.0 |
| 12 | N-12 | 7/8 | 17.5 |
| 14 | N-14 | 25 | 17.5 |
| 15 | N-15 | 25 | 17.5 |
| 16 | N-16 | 25 | 17.5 |
| 18 | N-18 | 30 | 17.5 |
| 20 | N-20 | 32 | 17.5 |
| 22 | N-22 | 32 | 17.5 |
| 25 | N-25 | 1-1/2 | 20.5 |

Fractional

| TUBE O.D. | ITEM NUMBER | G | L |
|-----------|-------------|-------|------|
| 1/16 | N-005 | 10 | 8.0 |
| 1/8 | N-01 | 7/16 | 12.0 |
| 3/16 | N-015 | 12 | 12.0 |
| 1/4 | N-02 | 9/16 | 12.7 |
| 3/8 | N-03 | 11/16 | 14.3 |
| 1/2 | N-04 | 7/8 | 17.5 |
| 5/8 | N-05 | 25 | 17.5 |
| 3/4 | N-06 | 1-1/8 | 17.5 |
| 1 | N-08 | 1-1/2 | 20.6 |

P Plug



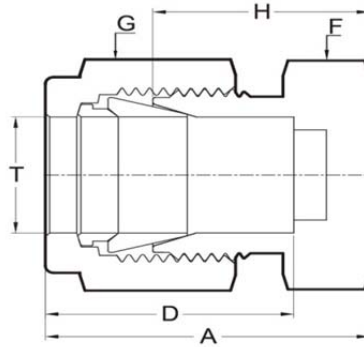
Metric

| TUBE O.D. | ITEM NUMBER | G |
|-----------|-------------|-------|
| 3 | P-3 | 7/16 |
| 4 | P-4 | 12 |
| 6 | P-6 | 9/16 |
| 8 | P-8 | 5/8 |
| 10 | P-10 | 19 |
| 12 | P-12 | 7/8 |
| 14 | P-14 | 25 |
| 15 | P-15 | 25 |
| 16 | P-16 | 25 |
| 18 | P-18 | 30 |
| 20 | P-20 | 32 |
| 22 | P-22 | 32 |
| 25 | P-25 | 1-1/2 |

Fractional

| TUBE O.D. | ITEM NUMBER | G |
|-----------|-------------|-------|
| 1/16 | P-005 | 10 |
| 1/8 | P-01 | 7/16 |
| 3/16 | P-015 | 12 |
| 1/4 | P-02 | 9/16 |
| 3/8 | P-03 | 11/16 |
| 1/2 | P-04 | 7/8 |
| 3/4 | P-06 | 1-1/8 |
| 1 | P-08 | 1-1/2 |

C Cap



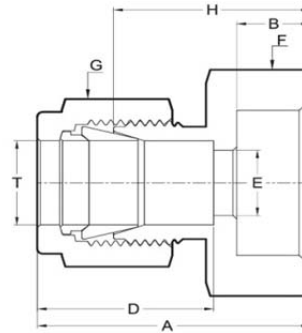
Metric

| TUBE O.D. | ITEM NUMBER | A | D | F | G | H |
|-----------|-------------|------|------|----|-------|------|
| 3 | C-3 | 21.7 | 12.9 | 10 | 7/16 | 15.0 |
| 4 | C-4 | 22.1 | 13.7 | 10 | 12 | 15.0 |
| 6 | C-6 | 23.6 | 15.3 | 12 | 9/16 | 16.0 |
| 8 | C-8 | 24.8 | 16.2 | 14 | 5/8 | 17.0 |
| 10 | C-10 | 26.9 | 17.2 | 17 | 19 | 19.0 |
| 12 | C-12 | 29.7 | 22.8 | 22 | 7/8 | 20.0 |
| 14 | C-14 | 31.4 | 24.4 | 24 | 25 | 21.0 |
| 15 | C-15 | 31.5 | 24.4 | 24 | 25 | 21.0 |
| 16 | C-16 | 31.7 | 24.4 | 24 | 25 | 21.0 |
| 18 | C-18 | 31.4 | 24.4 | 27 | 30 | 21.0 |
| 20 | C-20 | 31.0 | 26.0 | 30 | 32 | 22.0 |
| 22 | C-22 | 31.3 | 26.0 | 30 | 32 | 22.0 |
| 25 | C-25 | 38.4 | 31.3 | 35 | 1-1/2 | 26.0 |

Fractional

| TUBE O.D. | ITEM NUMBER | A | D | F | G | H |
|-----------|-------------|------|------|----|-------|------|
| 1/16 | C-005 | 15.0 | 8.6 | 10 | 10 | 11.2 |
| 1/8 | C-01 | 21.9 | 12.7 | 10 | 7/16 | 15.0 |
| 3/16 | C-015 | 21.9 | 13.7 | 10 | 12 | 15.0 |
| 1/4 | C-02 | 23.8 | 15.2 | 12 | 9/16 | 16.0 |
| 3/8 | C-03 | 26.7 | 16.8 | 17 | 11/16 | 19.0 |
| 1/2 | C-04 | 29.9 | 22.9 | 22 | 7/8 | 20.0 |
| 3/4 | C-06 | 31.9 | 24.4 | 27 | 1-1/8 | 21.0 |
| 1 | C-08 | 38.4 | 31.2 | 35 | 1-1/2 | 26.0 |

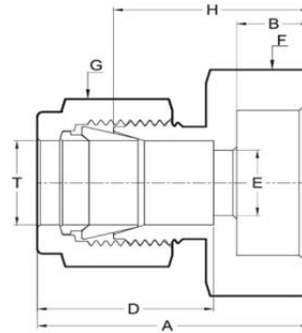
ODSW Socket Welding Pipe Connector



Metric

| TUBE O.D. | WELD PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|----------------|-------------|------|------|------|------|----|-------|------|
| 4 | 1/8 | ODSW-4-1 | 28.7 | 9.6 | 13.7 | 2.5 | 17 | 12 | 21.6 |
| 4 | 1/4 | ODSW-4-2 | 28.7 | 9.6 | 13.7 | 2.5 | 19 | 12 | 21.6 |
| 6 | 1/8 | ODSW-6-1 | 30.2 | 9.6 | 15.3 | 5.0 | 17 | 9/16 | 22.6 |
| 6 | 1/4 | ODSW-6-2 | 30.2 | 9.6 | 15.3 | 5.0 | 19 | 9/16 | 22.6 |
| 6 | 3/8 | ODSW-6-3 | 30.2 | 9.6 | 15.3 | 5.0 | 24 | 9/16 | 22.6 |
| 6 | 1/2 | ODSW-6-4 | 31.2 | 9.6 | 15.3 | 5.0 | 30 | 9/16 | 23.6 |
| 8 | 1/8 | ODSW-8-1 | 31.4 | 9.6 | 16.2 | 6.0 | 17 | 5/8 | 23.6 |
| 8 | 1/4 | ODSW-8-2 | 31.4 | 9.6 | 16.2 | 6.0 | 19 | 5/8 | 23.6 |
| 8 | 3/8 | ODSW-8-3 | 31.4 | 9.6 | 16.2 | 6.0 | 24 | 5/8 | 23.6 |
| 8 | 1/2 | ODSW-8-4 | 32.4 | 9.6 | 16.2 | 6.0 | 30 | 5/8 | 24.6 |
| 10 | 1/8 | ODSW-10-1 | 32.5 | 9.6 | 17.2 | 8.0 | 17 | 19 | 24.6 |
| 10 | 1/4 | ODSW-10-2 | 32.5 | 9.6 | 17.2 | 8.0 | 19 | 19 | 24.6 |
| 10 | 3/8 | ODSW-10-3 | 32.5 | 9.6 | 17.2 | 8.0 | 24 | 19 | 24.6 |
| 10 | 1/2 | ODSW-10-4 | 33.5 | 9.6 | 17.2 | 8.0 | 30 | 19 | 25.6 |
| 12 | 1/8 | ODSW-12-1 | 35.3 | 9.6 | 22.8 | 10.0 | 19 | 7/8 | 25.6 |
| 12 | 1/4 | ODSW-12-2 | 35.3 | 9.6 | 22.8 | 10.0 | 19 | 7/8 | 25.6 |
| 12 | 3/8 | ODSW-12-3 | 35.3 | 9.6 | 22.8 | 10.0 | 24 | 7/8 | 25.6 |
| 12 | 1/2 | ODSW-12-4 | 35.3 | 9.6 | 22.8 | 10.0 | 30 | 7/8 | 25.6 |
| 12 | 3/4 | ODSW-12-6 | 38.4 | 12.7 | 22.8 | 10.0 | 35 | 7/8 | 28.7 |
| 12 | 1 | ODSW-12-8 | 38.4 | 12.7 | 22.8 | 10.0 | 41 | 7/8 | 28.7 |
| 14 | 3/8 | ODSW-14-3 | 36.0 | 9.6 | 24.4 | 12.0 | 24 | 25 | 25.6 |
| 14 | 1/2 | ODSW-14-4 | 36.0 | 9.6 | 24.4 | 12.0 | 30 | 25 | 25.6 |
| 14 | 3/4 | ODSW-14-6 | 39.1 | 12.7 | 24.4 | 12.0 | 35 | 25 | 28.7 |
| 15 | 3/8 | ODSW-15-3 | 36.1 | 9.6 | 24.4 | 12.0 | 24 | 25 | 25.6 |
| 15 | 1/2 | ODSW-15-4 | 36.1 | 9.6 | 24.4 | 12.0 | 30 | 25 | 25.6 |
| 15 | 3/4 | ODSW-15-6 | 39.2 | 12.7 | 24.4 | 12.0 | 35 | 25 | 28.7 |
| 16 | 3/8 | ODSW-16-3 | 36.3 | 9.6 | 24.4 | 14.0 | 24 | 25 | 25.6 |
| 16 | 1/2 | ODSW-16-4 | 36.3 | 9.6 | 24.4 | 14.0 | 30 | 25 | 25.6 |
| 16 | 3/4 | ODSW-16-6 | 40.4 | 12.7 | 24.4 | 14.0 | 35 | 25 | 28.7 |
| 18 | 3/8 | ODSW-18-3 | 36.0 | 9.6 | 24.4 | 16.0 | 27 | 30 | 25.6 |
| 18 | 1/2 | ODSW-18-4 | 36.0 | 9.6 | 24.4 | 16.0 | 30 | 30 | 25.6 |
| 18 | 3/4 | ODSW-18-6 | 39.1 | 12.7 | 24.4 | 16.0 | 35 | 30 | 28.7 |
| 20 | 1/2 | ODSW-20-4 | 36.6 | 9.6 | 26.0 | 18.0 | 30 | 32 | 27.6 |
| 20 | 3/4 | ODSW-20-6 | 39.7 | 12.7 | 26.0 | 18.0 | 35 | 32 | 30.7 |
| 22 | 1/2 | ODSW-22-4 | 38.3 | 9.6 | 26.0 | 18.0 | 30 | 32 | 27.6 |
| 22 | 3/4 | ODSW-22-6 | 41.4 | 12.7 | 26.0 | 18.0 | 35 | 32 | 30.7 |
| 22 | 1 | ODSW-22-8 | 41.4 | 12.7 | 26.0 | 18.0 | 41 | 32 | 30.7 |
| 25 | 3/4 | ODSW-25-6 | 46.1 | 12.7 | 31.3 | 22.0 | 35 | 1-1/2 | 33.7 |
| 25 | 1 | ODSW-25-8 | 46.1 | 12.7 | 31.3 | 22.0 | 41 | 1-1/2 | 33.7 |

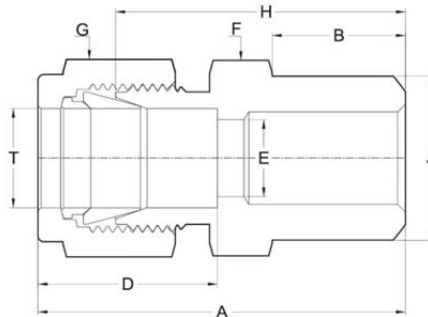
ODSW Socket Welding Pipe Connector



Fractional

| TUBE O.D. | WELD PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H |
|-----------|----------------|-------------|------|------|------|------|----|-------|------|
| 1/8 | 1/8 | ODSW-01-1 | 28.5 | 9.6 | 12.7 | 2.5 | 17 | 7/16 | 21.6 |
| 1/8 | 1/4 | ODSW-01-2 | 28.5 | 9.6 | 12.7 | 2.5 | 19 | 7/16 | 21.6 |
| 1/4 | 1/8 | ODSW-02-1 | 30.4 | 9.6 | 15.2 | 5.0 | 17 | 9/16 | 22.6 |
| 1/4 | 1/4 | ODSW-02-2 | 30.4 | 9.6 | 15.2 | 5.0 | 19 | 9/16 | 22.6 |
| 1/4 | 3/8 | ODSW-02-3 | 30.4 | 9.6 | 15.2 | 5.0 | 24 | 9/16 | 22.6 |
| 1/4 | 1/2 | ODSW-02-4 | 31.4 | 9.6 | 15.2 | 5.0 | 30 | 9/16 | 23.6 |
| 3/8 | 1/8 | ODSW-03-1 | 32.3 | 9.6 | 16.8 | 7.7 | 17 | 11/16 | 24.6 |
| 3/8 | 1/4 | ODSW-03-2 | 32.3 | 9.6 | 16.8 | 7.7 | 19 | 11/16 | 24.6 |
| 3/8 | 3/8 | ODSW-03-3 | 32.3 | 9.6 | 16.8 | 7.7 | 24 | 11/16 | 24.6 |
| 3/8 | 1/2 | ODSW-03-4 | 33.3 | 9.6 | 16.8 | 7.7 | 30 | 11/16 | 25.6 |
| 3/8 | 3/4 | ODSW-03-6 | 36.4 | 12.7 | 16.8 | 7.7 | 35 | 11/16 | 28.7 |
| 1/2 | 1/8 | ODSW-04-1 | 35.5 | 9.6 | 22.9 | 10.0 | 19 | 7/8 | 25.6 |
| 1/2 | 1/4 | ODSW-04-2 | 35.5 | 9.6 | 22.9 | 10.0 | 19 | 7/8 | 25.6 |
| 1/2 | 3/8 | ODSW-04-3 | 35.5 | 9.6 | 22.9 | 10.0 | 24 | 7/8 | 25.6 |
| 1/2 | 1/2 | ODSW-04-4 | 35.5 | 9.6 | 22.9 | 10.0 | 30 | 7/8 | 25.6 |
| 1/2 | 3/4 | ODSW-04-6 | 38.6 | 12.7 | 22.9 | 10.0 | 35 | 7/8 | 28.7 |
| 1/2 | 1 | ODSW-04-8 | 38.6 | 12.7 | 22.9 | 10.0 | 41 | 7/8 | 28.7 |
| 5/8 | 3/8 | ODSW-05-3 | 36.0 | 9.6 | 24.4 | 14.0 | 24 | 25 | 25.6 |
| 5/8 | 1/2 | ODSW-05-4 | 36.0 | 9.6 | 24.4 | 14.0 | 30 | 25 | 25.6 |
| 5/8 | 3/4 | ODSW-05-6 | 40.1 | 12.7 | 24.4 | 14.0 | 35 | 25 | 29.7 |
| 3/4 | 1/2 | ODSW-06-4 | 36.5 | 9.6 | 24.4 | 16.0 | 30 | 1-1/8 | 25.6 |
| 3/4 | 3/4 | ODSW-06-6 | 39.6 | 12.7 | 24.4 | 16.0 | 35 | 1-1/8 | 28.7 |
| 3/4 | 1 | ODSW-06-8 | 39.6 | 12.7 | 24.4 | 16.0 | 41 | 1-1/8 | 28.7 |
| 1 | 3/4 | ODSW-08-6 | 46.1 | 12.7 | 31.2 | 22.0 | 35 | 1-1/2 | 33.7 |
| 1 | 1 | ODSW-08-8 | 46.1 | 12.7 | 31.2 | 22.0 | 41 | 1-1/2 | 33.7 |

ODBW Butt Welding Pipe Connector



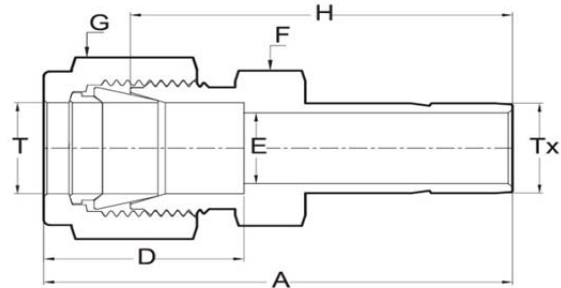
Metric

| TUBE O.D. | WELD PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H | J |
|-----------|----------------|-------------|------|------|------|------|----|-------|------|------|
| 3 | 1/8 | ODBW-3-1 | 31.7 | 10.0 | 12.9 | 2.5 | 12 | 7/16 | 25.0 | 10.2 |
| 4 | 1/8 | ODBW-4-1 | 32.1 | 10.0 | 13.7 | 2.5 | 12 | 12 | 25.0 | 10.2 |
| 6 | 1/8 | ODBW-6-1 | 33.6 | 10.0 | 15.3 | 5.0 | 12 | 9/16 | 26.0 | 10.2 |
| 6 | 1/4 | ODBW-6-2 | 37.6 | 14.0 | 15.3 | 5.0 | 14 | 9/16 | 30.0 | 13.7 |
| 8 | 1/8 | ODBW-8-1 | 34.8 | 10.0 | 16.2 | 5.0 | 14 | 5/8 | 27.0 | 10.2 |
| 8 | 1/4 | ODBW-8-2 | 38.8 | 14.0 | 16.2 | 6.0 | 14 | 5/8 | 31.2 | 13.7 |
| 8 | 3/8 | ODBW-8-3 | 40.8 | 14.0 | 16.2 | 6.0 | 19 | 5/8 | 33.0 | 17.1 |
| 8 | 1/2 | ODBW-8-4 | 43.8 | 17.0 | 16.2 | 6.0 | 22 | 5/8 | 36.0 | 21.3 |
| 10 | 1/4 | ODBW-10-2 | 40.9 | 14.0 | 17.2 | 7.0 | 17 | 19 | 33.0 | 13.7 |
| 10 | 3/8 | ODBW-10-3 | 41.9 | 14.0 | 17.2 | 8.0 | 19 | 19 | 34.0 | 17.1 |
| 10 | 1/2 | ODBW-10-4 | 44.9 | 17.0 | 17.2 | 8.0 | 22 | 19 | 37.0 | 21.3 |
| 12 | 1/4 | ODBW-12-2 | 43.7 | 14.0 | 22.8 | 7.0 | 19 | 7/8 | 34.0 | 13.7 |
| 12 | 3/8 | ODBW-12-3 | 43.7 | 14.0 | 22.8 | 10.0 | 19 | 7/8 | 34.0 | 17.1 |
| 12 | 1/2 | ODBW-12-4 | 46.7 | 17.0 | 22.8 | 10.0 | 22 | 7/8 | 37.0 | 21.3 |
| 12 | 3/4 | ODBW-12-6 | 49.7 | 19.0 | 22.8 | 10.0 | 27 | 7/8 | 40.0 | 26.7 |
| 14 | 3/8 | ODBW-14-3 | 44.4 | 14.0 | 24.4 | 10.0 | 24 | 25 | 34.0 | 17.1 |
| 15 | 1/2 | ODBW-15-4 | 47.5 | 17.0 | 24.4 | 12.0 | 24 | 25 | 37.0 | 21.3 |
| 16 | 1/2 | ODBW-16-4 | 47.7 | 17.0 | 24.4 | 12.0 | 24 | 25 | 37.0 | 21.3 |
| 18 | 1/2 | ODBW-18-4 | 48.4 | 17.0 | 24.4 | 12.0 | 27 | 30 | 38.0 | 21.3 |
| 18 | 3/4 | ODBW-18-6 | 50.4 | 19.0 | 24.4 | 15.0 | 27 | 30 | 40.0 | 26.7 |
| 20 | 3/4 | ODBW-20-6 | 50.0 | 19.0 | 26.0 | 15.0 | 30 | 32 | 41.0 | 26.7 |
| 22 | 3/4 | ODBW-22-6 | 50.3 | 19.0 | 26.0 | 15.0 | 30 | 32 | 41.0 | 26.7 |
| 25 | 1 | ODBW-25-8 | 60.4 | 22.0 | 31.3 | 20.0 | 35 | 1-1/2 | 48.0 | 33.4 |

Fractional

| TUBE O.D. | WELD PIPE SIZE | ITEM NUMBER | A | B | D | E | F | G | H | J |
|-----------|----------------|-------------|------|------|------|------|----|-------|------|------|
| 1/8 | 1/8 | ODBW-01-1 | 31.9 | 10.0 | 12.7 | 2.5 | 12 | 7/16 | 25.0 | 10.2 |
| 3/16 | 1/8 | ODBW-015-1 | 31.9 | 10.0 | 13.7 | 3.0 | 12 | 12 | 25.0 | 10.2 |
| 1/4 | 1/8 | ODBW-02-1 | 33.8 | 10.0 | 15.2 | 5.0 | 12 | 9/16 | 26.0 | 10.2 |
| 1/4 | 1/4 | ODBW-02-2 | 37.8 | 14.0 | 15.2 | 5.0 | 14 | 9/16 | 30.0 | 13.7 |
| 3/8 | 1/4 | ODBW-03-2 | 39.7 | 14.0 | 16.8 | 7.7 | 14 | 11/16 | 32.0 | 13.7 |
| 3/8 | 3/8 | ODBW-03-3 | 41.7 | 14.0 | 16.8 | 7.7 | 19 | 11/16 | 34.0 | 17.1 |
| 3/8 | 1/2 | ODBW-03-4 | 44.7 | 17.0 | 16.8 | 7.7 | 22 | 11/16 | 37.0 | 21.3 |
| 3/8 | 3/4 | ODBW-03-6 | 47.7 | 19.0 | 16.8 | 7.7 | 27 | 11/16 | 40.0 | 26.7 |
| 1/2 | 3/8 | ODBW-04-3 | 43.9 | 14.0 | 22.9 | 10.0 | 19 | 7/8 | 34.0 | 17.1 |
| 1/2 | 1/2 | ODBW-04-4 | 46.9 | 17.0 | 22.9 | 10.0 | 22 | 7/8 | 37.0 | 21.3 |
| 1/2 | 3/4 | ODBW-04-6 | 49.9 | 19.0 | 22.9 | 10.0 | 27 | 7/8 | 40.0 | 26.7 |
| 1/2 | 1 | ODBW-04-8 | 55.9 | 22.0 | 22.9 | 10.0 | 35 | 7/8 | 46.0 | 33.4 |
| 5/8 | 1/2 | ODBW-05-4 | 48.4 | 17.0 | 24.4 | 14.0 | 24 | 25 | 38.0 | 21.3 |
| 3/4 | 3/4 | ODBW-06-6 | 50.9 | 19.0 | 24.4 | 15.0 | 27 | 1-1/8 | 40.0 | 26.7 |
| 3/4 | 1 | ODBW-06-8 | 56.9 | 22.0 | 24.4 | 16.0 | 35 | 1-1/8 | 46.0 | 33.4 |
| 1 | 3/4 | ODBW-08-6 | 57.4 | 19.0 | 31.2 | 16.0 | 35 | 1-1/2 | 45.0 | 26.7 |
| 1 | 1 | ODBW-08-8 | 60.4 | 22.0 | 31.2 | 20.0 | 35 | 1-1/2 | 48.0 | 33.4 |

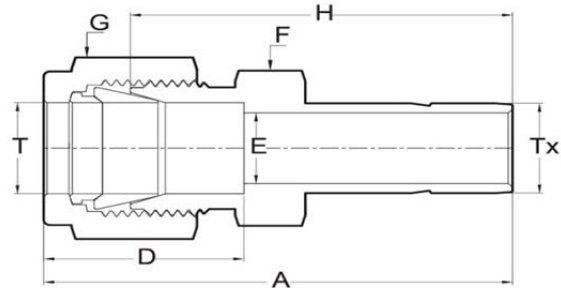
ODTA Reducer



Metric

| TUBE O.D. T | TUBE O.D. TX | ITEM NUMBER | A | D | E | F | G | H |
|-------------|--------------|-------------|------|------|------|----|------|------|
| 3 | 6 | ODTA-3-6 | 37.7 | 12.9 | 2.5 | 10 | 7/16 | 31.0 |
| 3 | 8 | ODTA-3-8 | 40.2 | 12.9 | 2.5 | 10 | 7/16 | 33.5 |
| 3 | 10 | ODTA-3-10 | 42.7 | 12.9 | 2.5 | 12 | 7/16 | 36.0 |
| 4 | 6 | ODTA-4-6 | 38.1 | 13.7 | 2.5 | 10 | 12 | 31.0 |
| 4 | 8 | ODTA-4-8 | 40.6 | 13.7 | 2.5 | 10 | 12 | 33.5 |
| 4 | 10 | ODTA-4-10 | 43.1 | 13.7 | 2.5 | 12 | 12 | 36.0 |
| 6 | 6 | ODTA-6-6 | 39.6 | 15.3 | 4.0 | 12 | 9/16 | 32.0 |
| 6 | 8 | ODTA-6-8 | 42.1 | 15.3 | 4.0 | 12 | 9/16 | 34.5 |
| 6 | 10 | ODTA-6-10 | 44.6 | 15.3 | 4.0 | 12 | 9/16 | 37.0 |
| 6 | 12 | ODTA-6-12 | 48.3 | 15.3 | 4.0 | 17 | 9/16 | 40.7 |
| 6 | 18 | ODTA-6-18 | 51.6 | 15.3 | 4.0 | 19 | 9/16 | 44.0 |
| 8 | 6 | ODTA-8-6 | 40.8 | 16.2 | 4.0 | 14 | 5/8 | 33.0 |
| 8 | 10 | ODTA-8-10 | 45.8 | 16.2 | 6.0 | 14 | 5/8 | 38.0 |
| 8 | 12 | ODTA-8-12 | 49.5 | 16.2 | 6.0 | 17 | 5/8 | 41.7 |
| 10 | 6 | ODTA-10-6 | 42.9 | 17.2 | 4.0 | 17 | 19 | 35.0 |
| 10 | 8 | ODTA-10-8 | 45.4 | 17.2 | 5.0 | 17 | 19 | 37.5 |
| 10 | 12 | ODTA-10-12 | 50.6 | 17.2 | 8.0 | 17 | 19 | 42.7 |
| 10 | 16 | ODTA-10-16 | 53.4 | 17.2 | 8.0 | 17 | 19 | 45.5 |
| 10 | 18 | ODTA-10-18 | 54.9 | 17.2 | 8.0 | 19 | 19 | 47.0 |
| 12 | 6 | ODTA-12-6 | 45.7 | 22.8 | 4.0 | 19 | 7/8 | 36.0 |
| 12 | 8 | ODTA-12-8 | 48.2 | 22.8 | 5.0 | 19 | 7/8 | 38.5 |
| 12 | 10 | ODTA-12-10 | 50.7 | 22.8 | 7.5 | 19 | 7/8 | 41.0 |
| 12 | 16 | ODTA-12-16 | 56.2 | 22.8 | 10.0 | 19 | 7/8 | 46.5 |
| 12 | 18 | ODTA-12-18 | 56.7 | 22.8 | 10.0 | 19 | 7/8 | 47.0 |
| 12 | 20 | ODTA-12-20 | 57.2 | 22.8 | 10.0 | 22 | 7/8 | 47.5 |
| 12 | 22 | ODTA-12-22 | 58.7 | 22.8 | 10.0 | 24 | 7/8 | 49.0 |
| 12 | 25 | ODTA-12-25 | 63.7 | 22.8 | 10.0 | 27 | 7/8 | 54.0 |

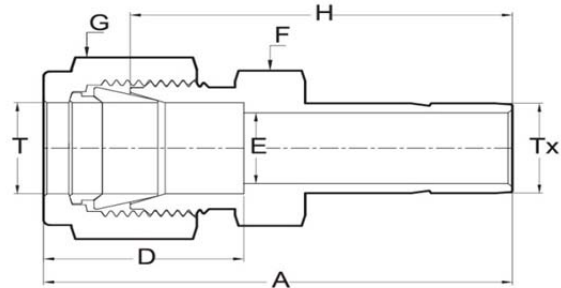
ODTA Reducer



Metric

| TUBE O.D. T | TUBE O.D. TX | ITEM NUMBER | A | D | E | F | G | H |
|-------------|--------------|-------------|------|------|------|----|-------|------|
| 14 | 10 | ODTA-14-10 | 51.4 | 24.4 | 7.5 | 22 | 25 | 41.0 |
| 16 | 12 | ODTA-16-12 | 54.4 | 24.4 | 9.5 | 24 | 25 | 43.7 |
| 16 | 18 | ODTA-16-18 | 57.7 | 24.4 | 14.0 | 24 | 25 | 47.0 |
| 16 | 20 | ODTA-16-20 | 58.2 | 24.4 | 14.0 | 24 | 25 | 47.5 |
| 16 | 22 | ODTA-16-22 | 59.7 | 24.4 | 14.0 | 24 | 25 | 49.0 |
| 16 | 25 | ODTA-16-25 | 64.7 | 24.4 | 14.0 | 27 | 25 | 54.0 |
| 18 | 12 | ODTA-18-12 | 55.1 | 24.4 | 9.5 | 27 | 30 | 44.7 |
| 18 | 16 | ODTA-18-16 | 57.9 | 24.4 | 12.0 | 27 | 30 | 47.5 |
| 18 | 20 | ODTA-18-20 | 58.9 | 24.4 | 16.0 | 27 | 30 | 48.5 |
| 18 | 22 | ODTA-18-22 | 60.4 | 24.4 | 16.0 | 27 | 30 | 50.0 |
| 18 | 25 | ODTA-18-25 | 64.4 | 24.4 | 16.0 | 27 | 30 | 54.0 |
| 20 | 16 | ODTA-20-16 | 57.5 | 26.0 | 12.0 | 30 | 32 | 48.5 |
| 20 | 18 | ODTA-20-18 | 58.0 | 26.0 | 14.0 | 30 | 32 | 49.0 |
| 20 | 22 | ODTA-20-22 | 60.0 | 26.0 | 18.0 | 30 | 32 | 51.0 |
| 20 | 25 | ODTA-20-25 | 64.0 | 26.0 | 18.0 | 30 | 32 | 55.0 |
| 22 | 18 | ODTA-22-18 | 58.3 | 26.0 | 14.0 | 30 | 32 | 49.0 |
| 22 | 20 | ODTA-22-20 | 58.8 | 26.0 | 15.0 | 30 | 32 | 49.5 |
| 22 | 25 | ODTA-22-25 | 64.3 | 26.0 | 18.0 | 30 | 32 | 55.0 |
| 25 | 18 | ODTA-25-18 | 65.4 | 31.3 | 14.0 | 35 | 1-1/2 | 53.0 |
| 25 | 20 | ODTA-25-20 | 65.9 | 31.3 | 15.0 | 35 | 1-1/2 | 53.5 |
| 25 | 22 | ODTA-25-22 | 67.4 | 31.3 | 18.0 | 35 | 1-1/2 | 55.0 |

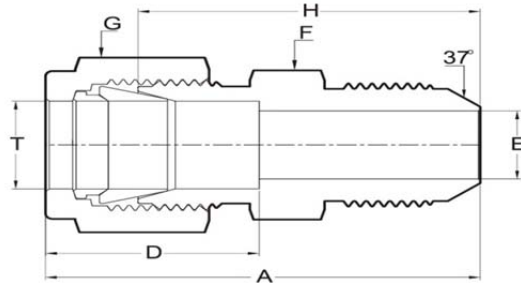
ODTA Reducer



Fractional

| TUBE O.D. T | TUBE O.D. TX | ITEM NUMBER | A | D | E | F | G | H |
|-------------|--------------|-------------|------|------|------|----|-------|------|
| 1/16 | 1/4 | ODTA-005-2 | 33.0 | 8.6 | 1.3 | 10 | 10 | 29.0 |
| 1/8 | 1/4 | ODTA-01-2 | 37.9 | 12.7 | 2.5 | 10 | 7/16 | 31.0 |
| 1/8 | 3/8 | ODTA-01-3 | 39.9 | 12.7 | 2.5 | 12 | 7/16 | 33.0 |
| 1/8 | 1/2 | ODTA-01-4 | 45.6 | 12.7 | 2.5 | 17 | 7/16 | 38.7 |
| 3/16 | 1/8 | ODTA-015-1 | 36.9 | 13.4 | 2.0 | 10 | 12 | 30.0 |
| 1/4 | 1/8 | ODTA-02-1 | 37.3 | 15.2 | 2.0 | 12 | 14 | 29.5 |
| 1/4 | 1/4 | ODTA-02-2 | 39.8 | 15.2 | 4.0 | 12 | 9/16 | 32.0 |
| 1/4 | 3/8 | ODTA-02-3 | 41.8 | 15.2 | 5.0 | 12 | 9/16 | 34.0 |
| 1/4 | 1/2 | ODTA-02-4 | 47.5 | 15.2 | 5.0 | 17 | 9/16 | 39.7 |
| 1/4 | 3/4 | ODTA-02-6 | 52.8 | 15.2 | 5.0 | 22 | 9/16 | 45.0 |
| 3/8 | 1/4 | ODTA-03-2 | 41.7 | 16.8 | 4.0 | 14 | 11/16 | 34.0 |
| 3/8 | 3/8 | ODTA-03-3 | 43.7 | 16.8 | 7.0 | 14 | 11/16 | 36.0 |
| 3/8 | 1/2 | ODTA-03-4 | 49.4 | 16.8 | 7.7 | 17 | 11/16 | 41.7 |
| 3/8 | 3/4 | ODTA-03-6 | 54.7 | 16.8 | 7.7 | 22 | 11/16 | 47.0 |
| 1/2 | 1/4 | ODTA-04-2 | 45.9 | 22.9 | 4.0 | 19 | 7/8 | 36.0 |
| 1/2 | 3/8 | ODTA-04-3 | 47.9 | 22.9 | 7.0 | 19 | 7/8 | 38.0 |
| 1/2 | 1/2 | ODTA-04-4 | 53.6 | 22.9 | 10.0 | 19 | 7/8 | 43.7 |
| 1/2 | 3/4 | ODTA-04-6 | 56.9 | 22.9 | 10.0 | 22 | 7/8 | 47.0 |
| 1/2 | 1 | ODTA-04-8 | 63.9 | 22.9 | 10.0 | 27 | 7/8 | 54.0 |
| 5/8 | 3/4 | ODTA-05-6 | 57.4 | 24.4 | 14.0 | 24 | 25 | 47.0 |
| 5/8 | 1 | ODTA-05-8 | 64.4 | 24.4 | 14.0 | 27 | 25 | 54.0 |
| 3/4 | 1/2 | ODTA-06-4 | 55.6 | 24.4 | 9.5 | 27 | 1-1/8 | 44.7 |
| 3/4 | 3/4 | ODTA-06-6 | 58.9 | 24.4 | 16.0 | 27 | 1-1/8 | 48.0 |
| 3/4 | 1 | ODTA-06-8 | 64.9 | 24.4 | 16.0 | 27 | 1-1/8 | 54.0 |
| 1 | 1 | ODTA-08-8 | 69.4 | 31.2 | 20.4 | 35 | 1-1/2 | 57.0 |

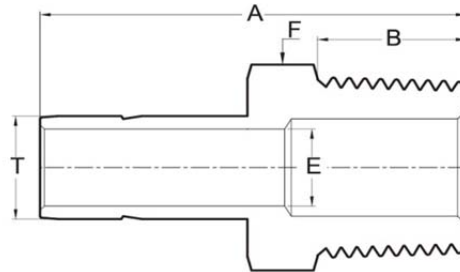
MCH An Union Connector



Fractional

| TUBE O.D. | AN MALE SIZE | ITEM NUMBER | A | D | E | F | G | H |
|------------|--------------|----------------------|--------------|--------------|--------------|----------|----------------|--------------|
| 1/4 1/4 | 1/4 3/8 | MCH-02-2 MCH-02-3 | 37.8 37.8 | 15.2 15.2 | 5.0 5.0 | 12 14 | 9/16 9/16 | 30.0 30.0 |
| 3/8 3/8 | 1/4 3/8 | MCH-03-2 MCH-03-3 | 39.7 39.7 | 16.8 16.8 | 5.0 7.0 | 14 14 | 11/16 11/16 | 32.0 32.0 |
| 1/2 1/2 | 3/8 1/2 | MCH-04-3 MCH-04-4 | 43.9 46.6 | 22.9 22.9 | 7.0 10.0 | 19 19 | 7/8 7/8 | 34.0 36.7 |
| 3/4 3/4 | 1/2 3/4 | MCH-06-4 MCH-06-6 | 48.6 51.9 | 24.4 24.4 | 10.0 14.0 | 27 27 | 1-1/8 1-1/8 | 37.7 41.0 |
| 1 | 1 | MCH-08-8 | 61.4 | 31.2 | 20.0 | 35 | 1-1/2 | 49.0 |

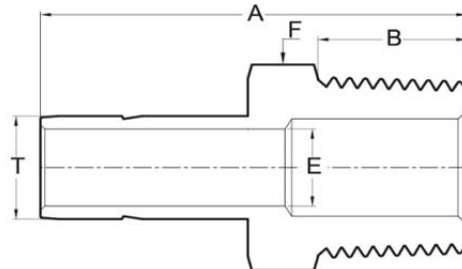
TAM Male Tube Adapter



Metric

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | E | F |
|-----------|----------------|-------------|------|------|------|----|
| 6 | 1/8 | TAM-6-1 | 32.0 | 10.0 | 4.0 | 12 |
| 6 | 1/4 | TAM-6-2 | 35.0 | 13.0 | 4.0 | 14 |
| 6 | 3/8 | TAM-6-3 | 37.0 | 14.0 | 4.0 | 17 |
| 6 | 1/2 | TAM-6-4 | 41.0 | 17.0 | 4.0 | 22 |
| 8 | 1/8 | TAM-8-1 | 34.5 | 10.0 | 5.0 | 12 |
| 8 | 1/4 | TAM-8-2 | 37.5 | 13.0 | 5.0 | 14 |
| 8 | 3/8 | TAM-8-3 | 39.5 | 14.0 | 5.0 | 17 |
| 8 | 1/2 | TAM-8-4 | 43.5 | 17.0 | 5.0 | 22 |
| 10 | 1/4 | TAM-10-2 | 40.0 | 13.0 | 7.5 | 14 |
| 10 | 3/8 | TAM-10-3 | 42.0 | 14.0 | 7.5 | 17 |
| 10 | 1/2 | TAM-10-4 | 46.0 | 17.0 | 7.5 | 22 |
| 12 | 1/4 | TAM-12-2 | 42.7 | 13.0 | 7.0 | 14 |
| 12 | 3/8 | TAM-12-3 | 44.7 | 14.0 | 9.5 | 17 |
| 12 | 1/2 | TAM-12-4 | 48.7 | 17.0 | 9.5 | 22 |
| 14 | 3/8 | TAM-14-3 | 47.5 | 14.0 | 10.0 | 14 |
| 14 | 1/2 | TAM-14-4 | 51.5 | 17.0 | 10.0 | 17 |
| 14 | 3/4 | TAM-14-6 | 54.0 | 19.0 | 10.0 | 22 |
| 16 | 1/2 | TAM-16-4 | 51.5 | 17.0 | 12.0 | 22 |
| 16 | 3/4 | TAM-16-6 | 54.5 | 19.0 | 12.0 | 27 |
| 18 | 1/2 | TAM-18-4 | 52.0 | 17.0 | 14.0 | 22 |
| 20 | 1/2 | TAM-20-4 | 52.5 | 17.0 | 15.0 | 22 |
| 22 | 1/2 | TAM-22-4 | 54.0 | 17.0 | 18.0 | 24 |
| 22 | 3/4 | TAM-22-6 | 57.0 | 19.0 | 18.0 | 27 |
| 25 | 1 | TAM-25-8 | 67.0 | 22.0 | 20.0 | 35 |

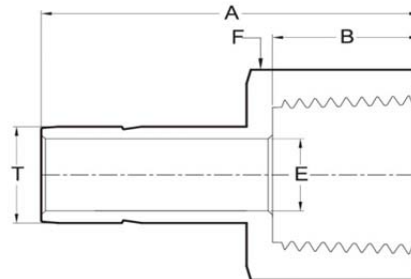
TAM Male Tube Adapter



Fractional

| TUBE O.D. | MALE PIPE SIZE | ITEM NUMBER | A | B | E | F |
|-----------|----------------|-------------|------|------|------|----|
| 1/4 | 1/8 | TAM-02-1 | 32.0 | 10.0 | 4.0 | 12 |
| 1/4 | 1/4 | TAM-02-2 | 35.0 | 13.0 | 4.0 | 14 |
| 1/4 | 3/8 | TAM-02-3 | 37.0 | 14.0 | 4.0 | 17 |
| 1/4 | 1/2 | TAM-02-4 | 41.0 | 17.0 | 4.0 | 22 |
| 3/8 | 1/8 | TAM-03-1 | 34.0 | 10.0 | 5.0 | 12 |
| 3/8 | 1/4 | TAM-03-2 | 37.0 | 13.0 | 7.0 | 14 |
| 3/8 | 3/8 | TAM-03-3 | 39.0 | 14.0 | 7.0 | 17 |
| 3/8 | 1/2 | TAM-03-4 | 43.0 | 17.0 | 7.0 | 22 |
| 1/2 | 1/4 | TAM-04-2 | 42.7 | 13.0 | 7.0 | 14 |
| 1/2 | 3/8 | TAM-04-3 | 44.7 | 14.0 | 9.5 | 17 |
| 1/2 | 1/2 | TAM-04-4 | 48.7 | 17.0 | 9.5 | 22 |
| 3/4 | 1/2 | TAM-06-4 | 52.0 | 17.0 | 12.0 | 22 |
| 3/4 | 3/4 | TAM-06-6 | 55.0 | 19.0 | 16.0 | 27 |
| 1 | 3/4 | TAM-08-6 | 58.0 | 19.0 | 15.0 | 27 |
| 1 | 1 | TAM-08-8 | 64.0 | 22.0 | 21.4 | 35 |

TAF Female Tube Adapter



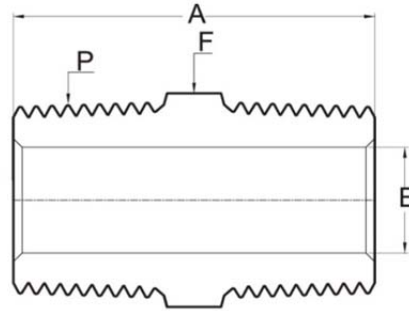
Metric

| TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | B | E | F |
|-----------|------------------|-------------|------|------|------|----|
| 6 | 1/8 | TAF-6-1 | 30.0 | 12.0 | 4.0 | 14 |
| 6 | 1/4 | TAF-6-2 | 32.0 | 13.0 | 4.0 | 17 |
| 6 | 1/2 | TAF-6-4 | 36.0 | 17.0 | 4.0 | 27 |
| 8 | 1/8 | TAF-8-1 | 33.5 | 12.0 | 5.0 | 14 |
| 8 | 1/4 | TAF-8-2 | 34.5 | 13.0 | 5.0 | 17 |
| 10 | 1/4 | TAF-10-2 | 37.0 | 13.0 | 7.5 | 17 |
| 10 | 3/8 | TAF-10-3 | 38.0 | 14.0 | 7.5 | 19 |
| 12 | 1/4 | TAF-12-2 | 39.7 | 13.0 | 9.5 | 17 |
| 12 | 3/8 | TAF-12-3 | 40.7 | 14.0 | 9.5 | 19 |
| 12 | 1/2 | TAF-12-4 | 43.7 | 17.0 | 9.5 | 27 |
| 14 | 1/2 | TAF-14-4 | 46.5 | 17.0 | 10.0 | 27 |
| 16 | 3/8 | TAF-16-3 | 43.5 | 14.0 | 12.0 | 22 |
| 18 | 1/2 | TAF-18-4 | 47.0 | 17.0 | 14.0 | 27 |

Fractional

| TUBE O.D. | FEMALE PIPE SIZE | ITEM NUMBER | A | B | E | F |
|-----------|------------------|-------------|------|------|------|----|
| 1/4 | 1/8 | TAF-02-1 | 30.0 | 12.0 | 4.0 | 14 |
| 1/4 | 1/4 | TAF-02-2 | 32.0 | 13.0 | 4.0 | 17 |
| 1/4 | 3/8 | TAF-02-3 | 33.0 | 14.0 | 4.0 | 22 |
| 1/4 | 1/2 | TAF-02-4 | 36.0 | 17.0 | 4.0 | 27 |
| 3/8 | 1/8 | TAF-03-1 | 32.0 | 12.0 | 7.0 | 14 |
| 3/8 | 1/4 | TAF-03-2 | 34.0 | 13.0 | 7.0 | 17 |
| 3/8 | 3/8 | TAF-03-3 | 35.0 | 14.0 | 7.0 | 22 |
| 3/8 | 1/2 | TAF-03-4 | 38.0 | 17.0 | 7.0 | 27 |
| 1/2 | 1/4 | TAF-04-2 | 39.7 | 13.0 | 9.5 | 17 |
| 1/2 | 3/8 | TAF-04-3 | 40.7 | 14.0 | 9.5 | 22 |
| 1/2 | 1/2 | TAF-04-4 | 43.7 | 17.0 | 9.5 | 27 |
| 3/4 | 1/2 | TAF06-4 | 47.0 | 17.0 | 16.0 | 27 |
| 3/4 | 3/4 | TAF06-6 | 49.0 | 19.0 | 16.0 | 32 |
| 1 | 3/4 | TAF08-6 | 52.0 | 19.0 | 21.4 | 32 |
| 1 | 1 | TAF08-8 | 61.0 | 24.0 | 21.4 | 41 |

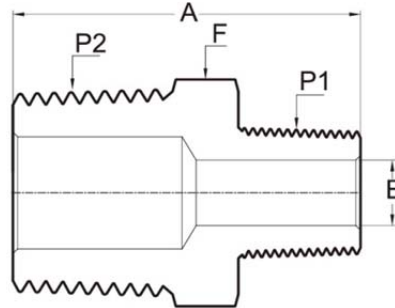
HN Hex Nipple



Fractional

| P MALE PIPE SIZE | ITEM NUMBER | A | | E MIN OPENING | F HEX FLAT |
|---------------------|-------------|------|------|------------------|---------------|
| | | BSPT | NPT | | |
| 1/8 | HN-01 | 26.0 | 27.0 | 5.0 | 10 |
| 1/4 | HN-02 | 32.0 | 33.0 | 7.0 | 14 |
| 3/8 | HN-03 | 35.0 | 36.0 | 9.5 | 17 |
| 1/2 | HN-04 | 41.0 | 42.0 | 12.0 | 21 |
| 3/4 | HN-06 | 46.0 | 47.0 | 16.0 | 27 |
| 1 | HN-08 | 53.0 | 54.0 | 22.0 | 35 |

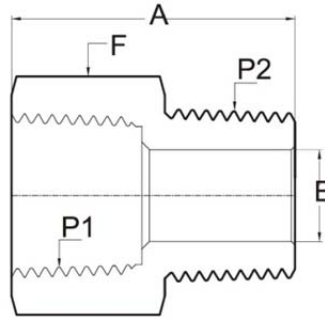
RHN Reducing Hex Nipple



Fractional

| P1 MALE PIPE SIZE | P2 MALE PIPE SIZE | ITEM NUMBER | A | | E MIN OPENING | F HEX FLAT | |
|----------------------|----------------------|-------------|-----------|------|------------------|---------------|----|
| | | | BSPT | NPT | | | |
| 1/4 | 1/8 | RHN-02-01 | 29.0 | 30.0 | 5.0 | 14 | |
| 3/8 | 1/8 | RHN-03-01 | 31.0 | 32.0 | 5.0 | 17 | |
| | 1/4 | RHN-03-02 | 34.0 | 35.0 | 7.0 | 17 | |
| 1/2 | 1/8 | RHN-04-01 | 34.0 | 35.0 | 5.0 | 21 | |
| | 1/4 | RHN-04-02 | 37.0 | 38.0 | 7.0 | 21 | |
| | 3/8 | RHN-04-03 | 38.0 | 39.0 | 9.5 | 21 | |
| 3/4 | 1/8 | RHN-06-01 | 37.0 | 38.0 | 5.0 | 27 | |
| | 1/4 | RHN-06-02 | 40.0 | 41.0 | 7.0 | 27 | |
| | 3/8 | RHN-06-03 | 41.0 | 42.0 | 9.5 | 27 | |
| | 1/2 | RHN-06-04 | 44.0 | 45.0 | 12.0 | 27 | |
| 1 | 1/8 | RHN-08-01 | 41.0 | 42.0 | 5.0 | 35 | |
| | 1/4 | RHN-08-02 | 44.0 | 45.0 | 7.5 | 35 | |
| | 3/8 | RHN-08-03 | 45.0 | 46.0 | 9.5 | 35 | |
| | 1/2 | RHN-08-04 | 48.0 | 49.0 | 12.0 | 35 | |
| | 1 | 3/4 | RHN-08-05 | 49.0 | 50.0 | 12.0 | 35 |
| | | | RHN-08-06 | 50.0 | 51.0 | 16.0 | 35 |

RA Reducing Adapter



Fractional

| P1 FEMALE PIPE SIZE | P2 MALE PIPE SIZE | ITEM NUMBER | A | E MIN OPENING | F HEX FLAT |
|------------------------|----------------------|-------------|------|------------------|---------------|
| 1/8 | 1/8 | RA-01-01 | 24.0 | 5.0 | 14 |
| 1/4 | 1/8 | RA-02-01 | 26.0 | 5.0 | 17 |
| 1/4 | 1/4 | RA-02-02 | 29.0 | 7.0 | 17 |
| 3/8 | 1/8 | RA-03-01 | 27.0 | 5.0 | 21 |
| 3/8 | 1/4 | RA-03-02 | 30.0 | 7.0 | 21 |
| 3/8 | 3/8 | RA-03-03 | 31.0 | 9.5 | 21 |
| 1/2 | 1/8 | RA-04-01 | 30.0 | 5.0 | 27 |
| 1/2 | 1/4 | RA-04-02 | 33.0 | 7.0 | 27 |
| 1/2 | 3/8 | RA-04-03 | 34.0 | 9.5 | 27 |
| 1/2 | 1/2 | RA-04-04 | 37.0 | 12.0 | 27 |
| 3/4 | 1/4 | RA-06-02 | 35.0 | 7.0 | 32 |
| 3/4 | 3/8 | RA-06-03 | 36.0 | 9.5 | 32 |
| 3/4 | 1/2 | RA-06-04 | 39.0 | 12.0 | 32 |
| 3/4 | 3/4 | RA-06-06 | 41.0 | 16.0 | 32 |
| 1 | 1/4 | RA-08-02 | 41.0 | 7.0 | 41 |
| 1 | 3/8 | RA-08-03 | 42.0 | 9.5 | 41 |
| 1 | 1/2 | RA-08-04 | 45.0 | 12.0 | 41 |
| 1 | 3/4 | RA-08-06 | 47.0 | 16.0 | 41 |
| 1 | 1 | RA-08-08 | 50.0 | 22.0 | 41 |

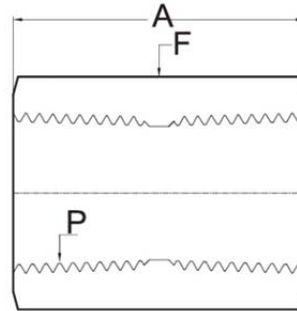
RB Reducing Bushing



Fractional

| P1 MALE PIPE SIZE | P2 FEMALE PIPE SIZE | ITEM NUMBER | A | | E MIN OPENING | F HEX FLAT | |
|--------------------------|------------------------|-------------|---------|------|------------------|---------------|----|
| | | | BSPT | NPT | | | |
| 1/4 | 1/8 | RB-02-1 | 19.0 | 20.0 | 6.0 | 14 | |
| 3/8 3/8 | 1/8 | RB-03-1 | 20.0 | 21.0 | 6.0 | 17 | |
| | 1/4 | RB-03-2 | 20.0 | 21.0 | 10.0 | 17 | |
| 1/2 1/2 1/2 | 1/8 | RB-04-1 | 24.0 | 25.0 | 6.0 | 21 | |
| | 1/4 | RB-04-2 | 24.0 | 25.0 | 10.0 | 21 | |
| | 3/8 | RB-04-3 | 24.0 | 25.0 | 14.0 | 21 | |
| 3/4 3/4 3/4 3/4 | 1/8 | RB-06-1 | 27.0 | 28.0 | 8.0 | 27 | |
| | 1/4 | RB-06-2 | 27.0 | 28.0 | 10.0 | 27 | |
| | 3/8 | RB-06-3 | 27.0 | 28.0 | 14.0 | 27 | |
| | 1/2 | RB-06-4 | 27.0 | 28.0 | 18.0 | 27 | |
| 1 1 1 1 1 | 1/8 | RB-08-1 | 31.0 | 32.0 | 8.0 | 35 | |
| | 1/4 | RB-08-2 | 31.0 | 32.0 | 10.0 | 35 | |
| | 3/8 | RB-08-3 | 31.0 | 32.0 | 14.0 | 35 | |
| | 1/2 | RB-08-4 | 31.0 | 32.0 | 18.0 | 35 | |
| | 3/4 | 1/2 | RB-08-5 | 31.0 | 32.0 | 18.0 | 35 |
| | | | RB-08-6 | 31.0 | 32.0 | 20.0 | 35 |

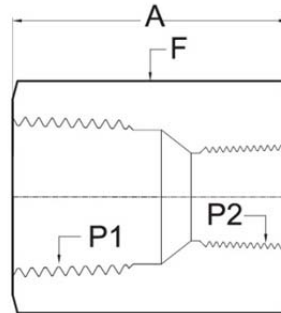
HCG Hex Coupling



Fractional

| P FEMALE PIPE SIZE | ITEM NUMBER | A | F HEX FLAT |
|-----------------------|-------------|------|---------------|
| 1/8 | HCG-01 | 21.0 | 14 |
| 1/4 | HCG-02 | 30.0 | 17 |
| 3/8 | HCG-03 | 33.0 | 21 |
| 1/2 | HCG-04 | 39.0 | 27 |
| 3/4 | HCG-06 | 40.0 | 32 |
| 1 | HCG-08 | 48.0 | 41 |

RHCG Reducing Hex Coupling



Fractional

| P1 FEMALE PIPE SIZE | P2 FEMALE PIPE SIZE | ITEM NUMBER | A | F |
|------------------------|------------------------|-------------|------|----|
| 1/4 | 1/8 | RHCG-02-1 | 30.0 | 17 |
| 3/8 | 1/8 | RHCG-03-1 | 32.0 | 21 |
| 3/8 | 1/4 | RHCG-03-2 | 32.0 | 21 |
| 1/2 | 1/8 | RHCG-04-1 | 37.0 | 27 |
| 1/2 | 1/4 | RHCG-04-2 | 37.0 | 27 |
| 1/2 | 3/8 | RHCG-04-3 | 37.0 | 27 |
| 3/4 | 1/8 | RHCG-06-1 | 40.0 | 32 |
| 3/4 | 1/4 | RHCG-06-2 | 40.0 | 32 |
| 3/4 | 3/8 | RHCG-06-3 | 40.0 | 32 |
| 3/4 | 1/2 | RHCG-06-4 | 40.0 | 32 |
| 1 | 1/8 | RHCG-08-1 | 48.0 | 41 |
| 1 | 1/4 | RHCG-08-2 | 48.0 | 41 |
| 1 | 3/8 | RHCG-08-3 | 48.0 | 41 |
| 1 | 1/2 | RHCG-08-4 | 48.0 | 41 |
| 1 | 3/4 | RHCG-08-6 | 48.0 | 41 |

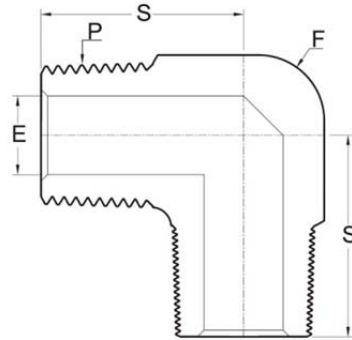
PTH Hex Plug



Fractional

| P MALE PIPE SIZE | ITEM NUMBER | A | F |
|---------------------|-------------|------|----|
| 1/8 | PTH-01 | 16.0 | 10 |
| 1/4 | PTH-02 | 20.0 | 14 |
| 3/8 | PTH-03 | 21.0 | 17 |
| 1/2 | PTH-04 | 25.0 | 21 |
| 3/4 | PTH-06 | 27.0 | 27 |
| 1 | PTH-08 | 32.0 | 35 |

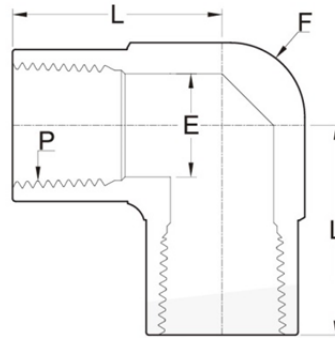
MET Male Elbow



Fractional

| P MALE PIPE SIZE | ITEM NUMBER | E | S | F |
|---------------------|-------------|------|------|----|
| 1/8 | MET-01 | 5.0 | 18.2 | 12 |
| 1/4 | MET-02 | 7.0 | 22.8 | 14 |
| 3/8 | MET-03 | 9.5 | 25.7 | 17 |
| 1/2 | MET-04 | 12.0 | 30.8 | 22 |
| 3/4 | MET-06 | 16.0 | 36.6 | 27 |
| 1 | MET-08 | 22.0 | 44.0 | 34 |

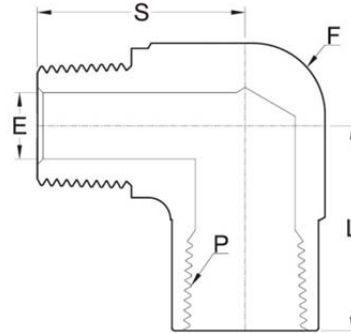
E Elbow



Fractional

| P FEMALE PIPE SIZE | ITEM NUMBER | E | L | F |
|-----------------------|-------------|------|------|----|
| 1/8 | E-01 | 7.5 | 22.8 | 14 |
| 1/4 | E-02 | 11.0 | 26.7 | 17 |
| 3/8 | E-03 | 12.0 | 32.0 | 22 |
| 1/2 | E-04 | 18.0 | 36.6 | 27 |
| 3/4 | E-06 | 22.0 | 44.5 | 34 |

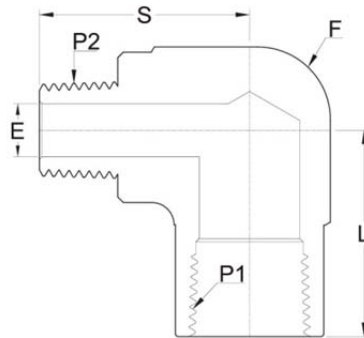
SE Street Elbow



Fractional

| P MALE/ FEMALE PIPE SIZE | ITEM NUMBER | E | L | S | F |
|--------------------------------|-------------|------|------|------|----|
| 1/8 | SE-01 | 5.0 | 22.8 | 22.8 | 14 |
| 1/4 | SE-02 | 7.0 | 26.7 | 26.7 | 17 |
| 3/8 | SE-03 | 9.5 | 32.0 | 32.0 | 22 |
| 1/2 | SE-04 | 12.0 | 37.1 | 37.6 | 27 |
| 3/4 | SE-06 | 16.0 | 39.0 | 39.0 | 34 |

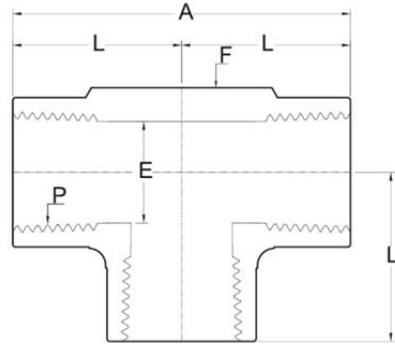
RSE Reducing Street Elbow



Fractional

| P1 FEMALE PIPE SIZE | P2 MALE PIPE SIZE | ITEM NUMBER | E | L | S | F |
|------------------------|----------------------|-------------|------|------|------|----|
| 1/4 | 1/8 | RSE-02-1 | 5.0 | 26.7 | 26.7 | 17 |
| 3/8 | 1/4 | RSE-03-2 | 7.0 | 32.0 | 32.0 | 22 |
| 1/2 | 1/4 | RSE-04-2 | 7.0 | 37.1 | 37.6 | 27 |
| 1/2 | 3/8 | RSE-04-3 | 9.5 | 37.1 | 37.6 | 27 |
| 3/4 | 3/8 | RSE-06-3 | 9.5 | 44.5 | 44.5 | 34 |
| 3/4 | 1/2 | RSE-06-4 | 12.0 | 44.5 | 44.5 | 34 |

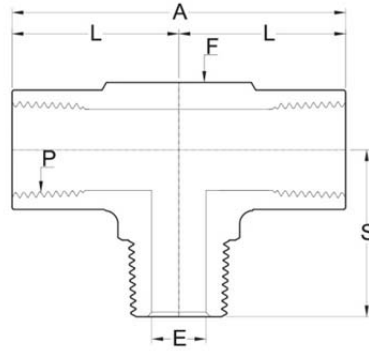
T Tee



Fractional

| P FEMALE PIPE SIZE | ITEM NUMBER | A | E | L | F |
|-----------------------|-------------|------|------|------|----|
| 1/8 | T-01 | 47.0 | 8.0 | 23.5 | 14 |
| 1/4 | T-02 | 50.0 | 11.0 | 25.0 | 17 |
| 3/8 | T-03 | 60.0 | 14.0 | 30.0 | 22 |
| 1/2 | T-04 | 60.0 | 18.0 | 30.0 | 27 |
| 3/4 | T-06 | 78.0 | 22.0 | 39.0 | 34 |

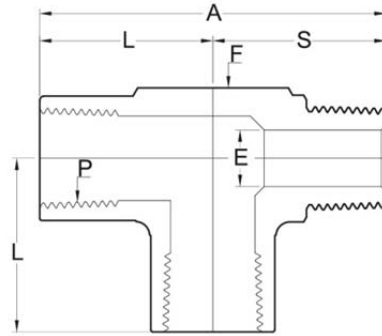
BT Branch Tee



Fractional

| P MALE/ FEMALE PIPE SIZE | ITEM NUMBER | A | E | L | S | F |
|--------------------------------|-------------|------|------|------|------|----|
| 1/8 | BT-01 | 47.0 | 5.0 | 23.5 | 21.8 | 14 |
| 1/4 | BT-02 | 50.0 | 7.0 | 25.0 | 25.0 | 17 |
| 3/8 | BT-03 | 60.0 | 9.5 | 30.0 | 30.0 | 22 |
| 1/2 | BT-04 | 60.0 | 12.0 | 30.0 | 37.1 | 27 |
| 3/4 | BT-06 | 78.0 | 16.0 | 39.0 | 44.5 | 34 |

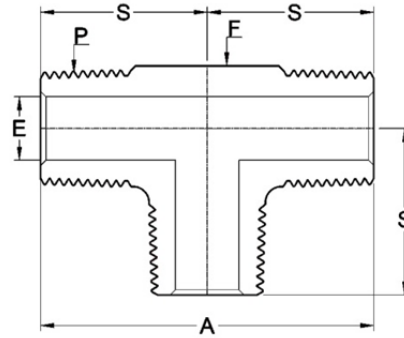
ST Street Tee



Fractional

| P MALE/ FEMALE PIPE SIZE | ITEM NUMBER | A | E | L | S | F |
|--------------------------------|-------------|------|------|------|------|----|
| 1/8 | ST-01 | 47.0 | 5.0 | 23.5 | 23.5 | 14 |
| 1/4 | ST-02 | 50.0 | 7.0 | 25.0 | 25.0 | 17 |
| 3/8 | ST-03 | 60.0 | 9.5 | 30.0 | 30.0 | 22 |
| 1/2 | ST-04 | 74.0 | 12.0 | 37.0 | 37.0 | 27 |
| 3/4 | ST-06 | 78.0 | 16.0 | 39.0 | 39.0 | 34 |

MT Male Tee



Fractional

| P MALE PIPE SIZE | ITEM NUMBER | A | E | S | F |
|---------------------|-------------|------|------|------|----|
| 1/8 | MT-01 | 38.0 | 5.0 | 19.0 | 12 |
| 1/4 | MT-02 | 47.6 | 7.0 | 23.8 | 14 |
| 3/8 | MT-03 | 52.0 | 9.5 | 26.0 | 17 |
| 1/2 | MT-04 | 63.0 | 12.0 | 31.5 | 22 |
| 3/4 | MT-06 | 72.0 | 16.0 | 36.0 | 27 |

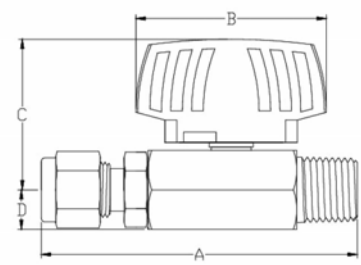
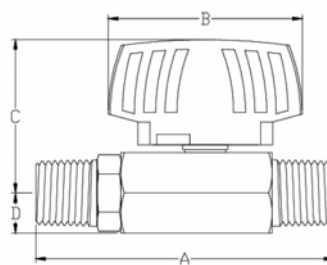
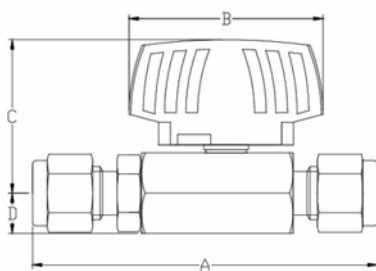
2BV 2 Piece Ball Valve 1000PSI

Features

1. Black handle with arrow indicates flow direction.
2. Max. allowed working pressure: 1000psi (69 bar).
3. End connections available with Tube end, NPT or BSPT Male thread.
4. With Viton O-ring.
5. 100% factory tested.

Material List

| Item | Part Name | Q'ty | Material |
|------|---------------|------|----------|
| 1 | Handle | 1 | Nylon |
| 2 | Locking Nut | 1 | SS304 |
| 3 | Spring Washer | 1 | SS304 |
| 4 | Washer | 2 | SS304 |
| 5 | Gland Packing | 2 | PTFE |
| 6 | Stem | 1 | SS316 |
| 7 | Body | 1 | SS316 |
| 8 | Ball | 1 | SS316 |
| 9 | Seat | 2 | PTFE |
| 10 | Body O-ring | 1 | Viton |
| 11 | End Cap | 1 | SS316 |



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | |
|------------------------|------------|--------------|---------|------|-----------------|------|------|------|
| | | Inlet/Outlet | mm | in. | A | B | C | D |
| Tube end | 2BV-6OD | 6mm | 5.0 | 0.19 | 72.6 | 41.0 | 31.4 | 8.5 |
| | 2BV-8OD | 8mm | 5.0 | 0.19 | 74.5 | 41.0 | 31.4 | 8.5 |
| | 2BV-10OD | 10mm | 7.0 | 0.27 | 78.5 | 41.0 | 33.1 | 9.5 |
| | 2BV-12OD | 12mm | 9.0 | 0.35 | 90.1 | 50.0 | 41.3 | 13.5 |
| | 2BV-18OD | 18mm | 12.5 | 0.49 | 108.9 | 58.5 | 48.5 | 16.0 |
| | 2BV-02OD | 1/4" | 5.0 | 0.19 | 72.9 | 41.0 | 31.4 | 8.5 |
| | 2BV-03OD | 3/8" | 7.0 | 0.27 | 78.2 | 41.0 | 33.1 | 9.5 |
| | 2BV-04OD | 1/2" | 9.0 | 0.35 | 90.5 | 50.0 | 41.3 | 13.5 |
| Male thread | 2BV-02M | 1/4" | 5.0 | 0.19 | 60.2 | 41.0 | 31.4 | 8.5 |
| Tube end x Male thread | 2BV-02ODxM | 1/4" | 5.0 | 0.19 | 65.0 | 41.0 | 31.4 | 8.5 |

3 Piece Ball Valve 50KG

Features

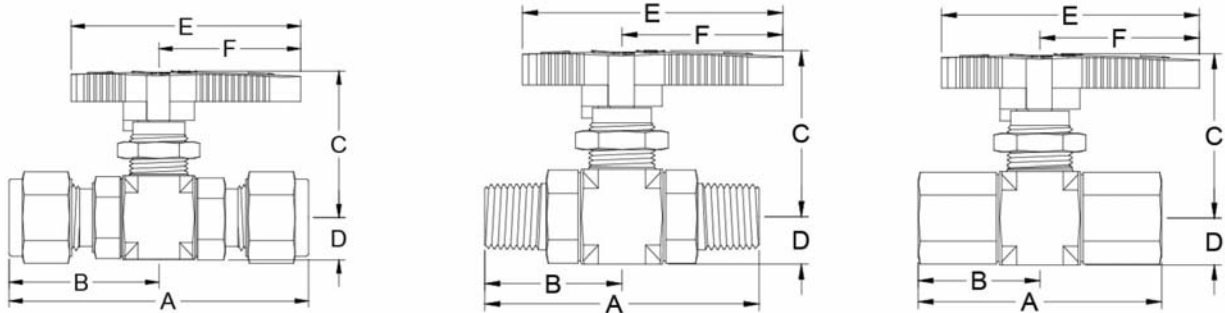
1. Max. allowed working pressure: 50kg.
2. End connections available with Tube end, NPT, BSPP or BSPT female & male thread.
3. Casting Ball Valve.
4. On/off service ball valve with 2-way pattern.
5. Panel mountable.
6. With Viton O-ring.
7. 100% factory tested.

Material Of Construction

| Item | Part Name | Q'ty | Material |
|------|------------------|------|---------------------|
| 1 | Handle | 1 | Nylon |
| 2 | Handle Set Screw | 1 | Chrome-Plated Steel |
| 3 | Stem | 1 | SS316 |
| 4 | Packing Bolt | 1 | SS316 |
| 5 | Gland Packing | 2 | TFM1600 |
| 6 | Stem O-ring | 1 | Viton |
| 7 | Panel Nut | 1 | SS304 |
| 8 | Body | 1 | CF8M |
| 9 | Ball | 1 | SS316 |
| 10 | Seat | 2 | TFM1600 |
| 11 | Body O-ring | 2 | Viton |
| 12 | End Cap | 2 | SS316 |



3BV-5K 3 Piece Ball Valve 50KG, 2-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|-------------|--------------|---------|------|-----------------|------|------|------|----|------|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Tube end | 3BV-5K-6OD | 6mm | 5.0 | 0.19 | 67.0 | 33.5 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-8OD | 8mm | 5.0 | 0.19 | 69.6 | 34.8 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-10OD | 10mm | 5.0 | 0.19 | 71.6 | 35.8 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-10OD | 10mm | 7.0 | 0.27 | 73.8 | 36.9 | 40.0 | 12.0 | 75 | 45 | 15.6 | 7.0 |
| | 3BV-5K-12OD | 12mm | 7.0 | 0.27 | 77.4 | 38.7 | 40.0 | 12.0 | 75 | 45 | 15.6 | 7.0 |
| | 3BV-5K-14OD | 14mm | 9.2 | 0.36 | 86.2 | 43.1 | 44.0 | 14.0 | 75 | 45 | 19.0 | 9.0 |
| | 3BV-5K-15OD | 15mm | 9.2 | 0.36 | 86.5 | 43.2 | 44.0 | 14.0 | 75 | 45 | 19.0 | 9.0 |
| | 3BV-5K-16OD | 16mm | 9.2 | 0.36 | 86.8 | 43.4 | 44.0 | 14.0 | 75 | 45 | 19.0 | 9.0 |
| | 3BV-5K-18OD | 18mm | 12.0 | 0.47 | 87.8 | 43.9 | 46.7 | 17.2 | 75 | 45 | 19.0 | 8.5 |
| | 3BV-5K-20OD | 20mm | 12.0 | 0.47 | 85.0 | 42.5 | 46.7 | 17.2 | 75 | 45 | 19.0 | 8.5 |
| | 3BV-5K-22OD | 22mm | 12.0 | 0.47 | 85.6 | 42.8 | 46.7 | 17.2 | 75 | 45 | 19.0 | 8.5 |
| | 3BV-5K-01OD | 1/8" | 5.0 | 0.19 | 63.8 | 31.9 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-02OD | 1/4" | 5.0 | 0.19 | 67.6 | 33.8 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-03OD | 3/8" | 5.0 | 0.19 | 71.4 | 35.7 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-03OD | 3/8" | 7.0 | 0.27 | 73.4 | 36.7 | 40.0 | 12.0 | 75 | 45 | 15.6 | 7.0 |
| | 3BV-5K-04OD | 1/2" | 9.2 | 0.36 | 84.2 | 42.1 | 44.0 | 14.0 | 75 | 45 | 19.0 | 9.0 |
| 3BV-5K-06OD | 3/4" | 12.0 | 0.47 | 87.8 | 43.9 | 46.7 | 17.2 | 75 | 45 | 19.0 | 8.5 | |
| Male thread | 3BV-5K-01M | 1/8" | 5.0 | 0.19 | 52.0 | 26.0 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-02M | 1/4" | 5.0 | 0.19 | 58.0 | 29.0 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-03M | 3/8" | 7.0 | 0.19 | 62.0 | 31.0 | 40.0 | 12.0 | 75 | 45 | 15.6 | 7.0 |
| | 3BV-5K-04M | 1/2" | 9.2 | 0.36 | 74.4 | 37.2 | 44.0 | 14.0 | 75 | 45 | 19.0 | 9.0 |
| | 3BV-5K-06M | 3/4" | 12.0 | 0.47 | 81.0 | 40.5 | 46.7 | 17.2 | 75 | 45 | 19.0 | 8.5 |
| Female thread | 3BV-5K-01F | 1/8" | 5.0 | 0.19 | 45.0 | 22.5 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-02F | 1/4" | 5.0 | 0.19 | 52.0 | 26.0 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-5K-03F | 3/8" | 7.0 | 0.27 | 57.0 | 28.5 | 40.0 | 12.0 | 75 | 45 | 15.6 | 7.0 |
| | 3BV-5K-04F | 1/2" | 9.2 | 0.36 | 65.4 | 32.7 | 44.0 | 14.0 | 75 | 45 | 19.0 | 9.0 |
| | 3BV-5K-06F | 3/4" | 12.0 | 0.47 | 73.0 | 36.5 | 46.7 | 17.2 | 75 | 45 | 19.0 | 8.5 |

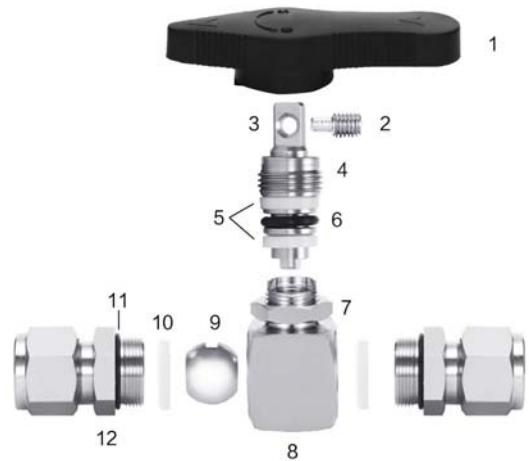
3 Piece Ball Valve 3000PSI

Features

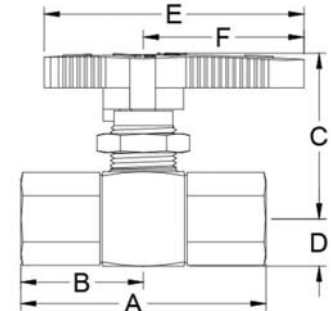
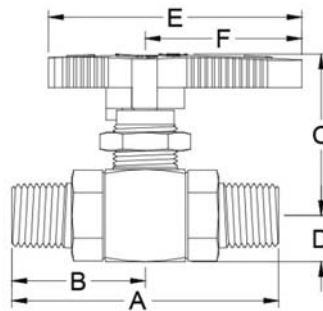
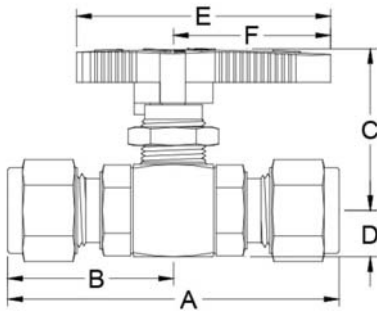
1. Max. allowed working pressure: 3000psi.
2. End connections available with Tube end, NPT, BSPP or BSPT female & male thread.
3. On/off service ball valve with 2-way pattern.
4. Diverter service ball valve with 3-way pattern.
5. Panel mountable.
6. With Viton O-ring.
7. 100% factory tested.

Material List

| Item | Part Name | Q'ty | Material |
|------|------------------|------|---------------------|
| 1 | Handle | 1 | Nylon |
| 2 | Handle Set Screw | 1 | Chrome-Plated Steel |
| 3 | Stem | 1 | SS316 |
| 4 | Packing Bolt | 1 | SS316 |
| 5 | Gland Packing | 2 | TFM1600 |
| 6 | Stem O-ring | 1 | Viton |
| 7 | Panel Nut | 1 | SS304 |
| 8 | Body | 1 | SS316 |
| 9 | Ball | 1 | SS316 |
| 10 | Seat | 2 | TFM1600 |
| 11 | Body O-ring | 2 | Viton |
| 12 | End Cap | 2 | SS316 |

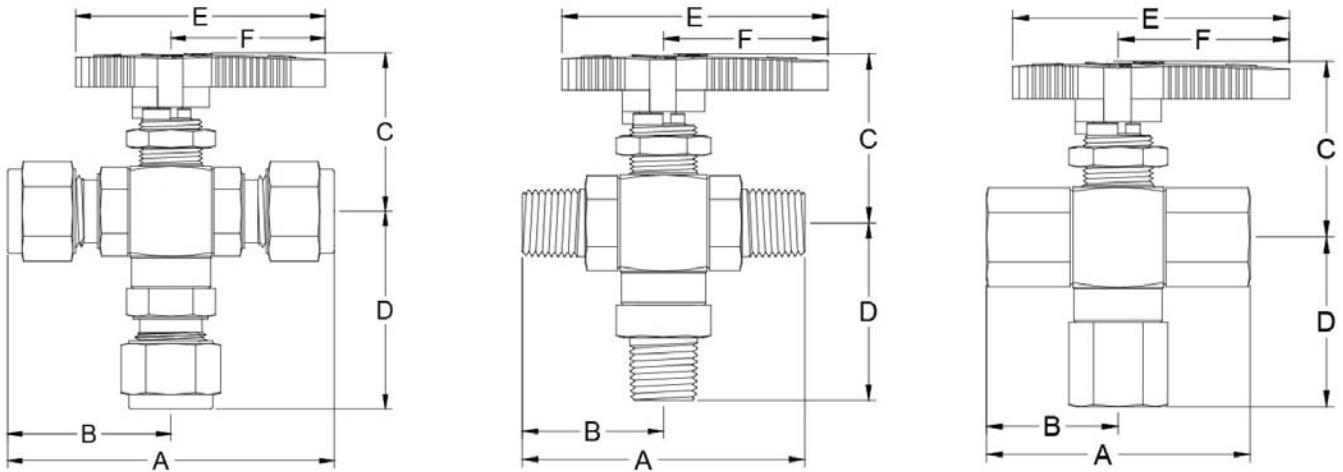


3BV-3 3 Piece Ball Valve 3000PSI, 2-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|------------|--------------|---------|------|-----------------|------|------|------|----|----|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Tube end | 3BV-3-6OD | 6mm | 5 | 0.19 | 67.6 | 33.8 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-8OD | 8mm | 5 | 0.19 | 70.0 | 35.0 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-10OD | 10mm | 5 | 0.19 | 72.2 | 36.1 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-12OD | 12mm | 10 | 0.39 | 83.4 | 41.7 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |
| | 3BV-3-14OD | 14mm | 10 | 0.39 | 84.8 | 42.4 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |
| | 3BV-3-18OD | 18mm | 10 | 0.39 | 84.8 | 42.4 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |
| | 3BV-3-01OD | 1/8" | 5 | 0.19 | 64.2 | 32.1 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-02OD | 1/4" | 5 | 0.19 | 68.0 | 34.0 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-03OD | 3/8" | 5 | 0.19 | 71.8 | 35.9 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-04OD | 1/2" | 10 | 0.39 | 83.8 | 41.9 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |
| Male thread | 3BV-3-06OD | 3/4" | 10 | 0.39 | 85.8 | 42.9 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |
| | 3BV-3-01M | 1/8" | 5 | 0.19 | 52.4 | 26.2 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-02M | 1/4" | 5 | 0.19 | 58.4 | 29.2 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-03M | 3/8" | 5 | 0.19 | 60.4 | 30.2 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| Female thread | 3BV-3-04M | 1/2" | 10 | 0.39 | 74.0 | 37.0 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |
| | 3BV-3-01F | 1/8" | 5 | 0.19 | 45.4 | 22.7 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-02F | 1/4" | 5 | 0.19 | 52.4 | 26.2 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-3-03F | 3/8" | 10 | 0.39 | 62.0 | 31.0 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |
| | 3BV-3-04F | 1/2" | 10 | 0.39 | 64.0 | 32.0 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |

3BVT-3 3 Piece Ball Valve 3000PSI, 3-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|-------------|--------------|---------|------|-----------------|------|------|------|----|----|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Tube end | 3BVT-3-6OD | 6mm | 5 | 0.19 | 67.6 | 33.8 | 35.0 | 41.3 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-3-8OD | 8mm | 5 | 0.19 | 70.0 | 35.0 | 35.0 | 42.5 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-3-10OD | 10mm | 10 | 0.39 | 79.8 | 39.9 | 42.3 | 51.4 | 75 | 45 | 15.5 | 6.0 |
| | 3BVT-3-12OD | 12mm | 10 | 0.39 | 83.4 | 41.7 | 42.3 | 53.2 | 75 | 45 | 15.8 | 6.0 |
| | 3BVT-3-14OD | 14mm | 10 | 0.39 | 84.8 | 42.4 | 42.3 | 53.9 | 75 | 45 | 15.8 | 6.0 |
| | 3BVT-3-18OD | 18mm | 10 | 0.39 | 84.8 | 42.4 | 42.3 | 53.9 | 75 | 45 | 15.8 | 6.0 |
| | 3BVT-3-01OD | 1/8" | 5 | 0.19 | 64.2 | 32.1 | 35.0 | 39.6 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-3-02OD | 1/4" | 5 | 0.19 | 68.0 | 34.0 | 35.0 | 41.5 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-3-03OD | 3/8" | 5 | 0.19 | 71.8 | 35.9 | 35.0 | 43.4 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-3-04OD | 1/2" | 10 | 0.39 | 83.8 | 41.9 | 42.3 | 53.4 | 75 | 45 | 15.8 | 6.0 |
| Male thread | 3BVT-3-06OD | 3/4" | 10 | 0.39 | 85.8 | 42.9 | 42.3 | 54.4 | 75 | 45 | 15.8 | 6.0 |
| | 3BVT-3-01M | 1/8" | 5 | 0.19 | 52.4 | 26.2 | 35.0 | 33.7 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-3-02M | 1/4" | 5 | 0.19 | 58.4 | 29.2 | 35.0 | 36.7 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-3-03M | 3/8" | 5 | 0.19 | 60.4 | 30.2 | 35.0 | 37.7 | 55 | 34 | 14.0 | 6.0 |
| Female thread | 3BVT-3-04M | 1/2" | 10 | 0.39 | 74.0 | 37.0 | 42.3 | 48.5 | 75 | 45 | 15.8 | 6.0 |
| | 3BVT-3-01F | 1/8" | 5 | 0.19 | 45.4 | 22.7 | 35.0 | 30.2 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-3-02F | 1/4" | 5 | 0.19 | 52.4 | 26.2 | 35.0 | 33.7 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-3-03F | 3/8" | 10 | 0.39 | 62.0 | 31.0 | 42.3 | 42.5 | 75 | 45 | 15.8 | 6.0 |
| | 3BVT-3-04F | 1/2" | 10 | 0.39 | 64.0 | 32.0 | 42.3 | 43.5 | 75 | 45 | 15.8 | 6.0 |

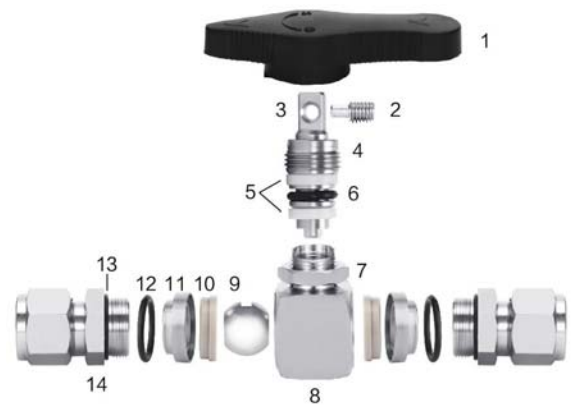
3 Piece Ball Valve 6000PSI

Features

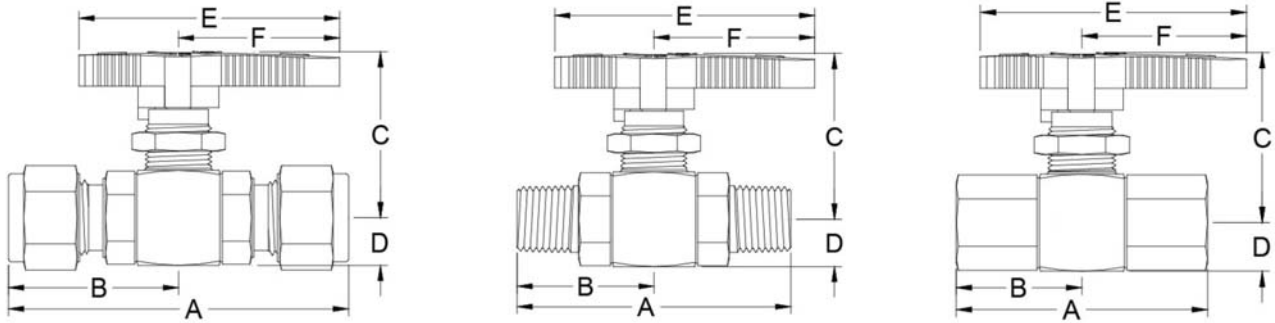
1. Max. allowed working pressure: 6000psi.
2. End connections available with Tube end, NPT, BSPP or BSPT female & male thread.
3. On/off service ball valve with 2-way pattern.
4. Diverter service ball valve with 3-way pattern.
5. Panel mountable.
6. With Viton O-ring.
7. 100% factory tested.

Material List

| Item | Part Name | Q'ty | Material |
|------|------------------|------|---------------------|
| 1 | Handle | 1 | Nylon |
| 2 | Handle Set Screw | 1 | Chrome-Plated Steel |
| 3 | Stem | 1 | SS316 |
| 4 | Packing Bolt | 1 | SS316 |
| 5 | Gland Packing | 2 | TFM1600 |
| 6 | Stem O-ring | 1 | Viton |
| 7 | Panel Nut | 1 | SS304 |
| 8 | Body | 1 | SS316 |
| 9 | Ball | 1 | SS316 |
| 10 | Seat | 2 | TFM1600 |
| 11 | Seat Carrier | 2 | SS316 |
| 12 | O-ring | 2 | Viton |
| 13 | O-ring | 2 | Viton |
| 14 | End Cap | 2 | SS316 |

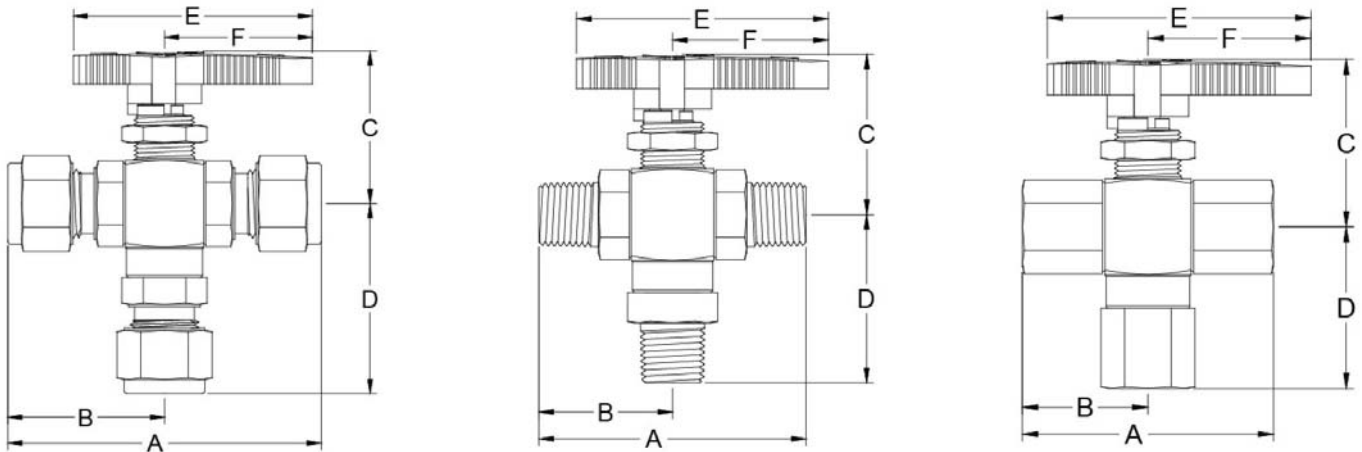


3BV-6 3 Piece Ball Valve 6000PSI, 2-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|------------|--------------|---------|------|-----------------|------|------|------|----|----|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Tube end | 3BV-6-6OD | 6mm | 5 | 0.19 | 67.6 | 33.8 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-6-8OD | 8mm | 5 | 0.19 | 70.0 | 35.0 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-6-10OD | 10mm | 5 | 0.19 | 72.2 | 36.1 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-6-12OD | 12mm | 10 | 0.39 | 86.4 | 43.2 | 42.0 | 14.0 | 75 | 45 | 19.0 | 7.0 |
| | 3BV-6-14OD | 14mm | 10 | 0.39 | 87.8 | 43.9 | 42.0 | 14.0 | 75 | 45 | 19.0 | 7.0 |
| | 3BV-6-01OD | 1/8" | 5 | 0.19 | 64.2 | 32.1 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-6-02OD | 1/4" | 5 | 0.19 | 68.0 | 34.0 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-6-03OD | 3/8" | 5 | 0.19 | 71.8 | 35.9 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| Male thread | 3BV-6-04OD | 1/2" | 10 | 0.39 | 85.8 | 42.9 | 42.0 | 14.0 | 75 | 45 | 19.0 | 7.0 |
| | 3BV-6-01M | 1/8" | 5 | 0.19 | 52.4 | 26.2 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-6-02M | 1/4" | 5 | 0.19 | 58.4 | 29.2 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-6-03M | 3/8" | 5 | 0.19 | 60.4 | 30.2 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| Female thread | 3BV-6-04M | 1/2" | 10 | 0.39 | 76.0 | 38.0 | 42.0 | 14.0 | 75 | 45 | 19.0 | 7.0 |
| | 3BV-6-01F | 1/8" | 5 | 0.19 | 45.4 | 22.7 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-6-02F | 1/4" | 5 | 0.19 | 52.4 | 26.2 | 35.0 | 10.0 | 55 | 34 | 14.0 | 6.0 |
| | 3BV-6-03F | 3/8" | 10 | 0.39 | 62.0 | 31.0 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |
| | 3BV-6-04F | 1/2" | 10 | 0.39 | 64.0 | 32.0 | 42.3 | 14.5 | 75 | 45 | 15.8 | 6.5 |

3BVT-6 3 Piece Ball Valve 6000PSI, 3-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|-------------|--------------|---------|------|-----------------|------|------|------|----|----|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Tube end | 3BVT-6-6OD | 6mm | 5 | 0.19 | 67.6 | 33.8 | 35.0 | 41.3 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-6-8OD | 8mm | 5 | 0.19 | 70.0 | 35.0 | 35.0 | 42.5 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-6-10OD | 10mm | 5 | 0.19 | 72.2 | 36.1 | 35.0 | 43.6 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-6-12OD | 12mm | 10 | 0.39 | 86.4 | 43.2 | 42.3 | 54.7 | 75 | 45 | 19.0 | 7.0 |
| | 3BVT-6-14OD | 14mm | 10 | 0.39 | 87.8 | 43.9 | 42.3 | 55.4 | 75 | 45 | 19.0 | 7.0 |
| | 3BVT-6-01OD | 1/8" | 5 | 0.19 | 64.2 | 32.1 | 35.0 | 39.6 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-6-02OD | 1/4" | 5 | 0.19 | 68.0 | 34.0 | 35.0 | 41.5 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-6-03OD | 3/8" | 5 | 0.19 | 71.8 | 35.9 | 35.0 | 43.4 | 55 | 34 | 14.0 | 6.0 |
| Male thread | 3BVT-6-04OD | 1/2" | 10 | 0.39 | 85.8 | 42.9 | 42.3 | 54.4 | 75 | 45 | 19.0 | 7.0 |
| | 3BVT-6-01M | 1/8" | 5 | 0.19 | 52.4 | 26.2 | 35.0 | 33.7 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-6-02M | 1/4" | 5 | 0.19 | 58.4 | 29.2 | 35.0 | 36.7 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-6-03M | 3/8" | 5 | 0.19 | 60.4 | 30.2 | 35.0 | 37.7 | 55 | 34 | 14.0 | 6.0 |
| Female thread | 3BVT-6-04M | 1/2" | 10 | 0.39 | 76.0 | 38.0 | 42.3 | 49.5 | 75 | 45 | 19.0 | 7.0 |
| | 3BVT-6-01F | 1/8" | 5 | 0.19 | 45.4 | 22.7 | 35.0 | 30.2 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-6-02F | 1/4" | 5 | 0.19 | 52.4 | 26.2 | 35.0 | 34.2 | 55 | 34 | 14.0 | 6.0 |
| | 3BVT-6-03F | 3/8" | 10 | 0.39 | 63.0 | 31.5 | 42.3 | 41.5 | 75 | 45 | 19.0 | 7.0 |
| | 3BVT-6-04F | 1/2" | 10 | 0.39 | 69.0 | 34.5 | 42.3 | 45.0 | 75 | 45 | 19.0 | 7.0 |

3 Piece Ball Valve 10000PSI

Features

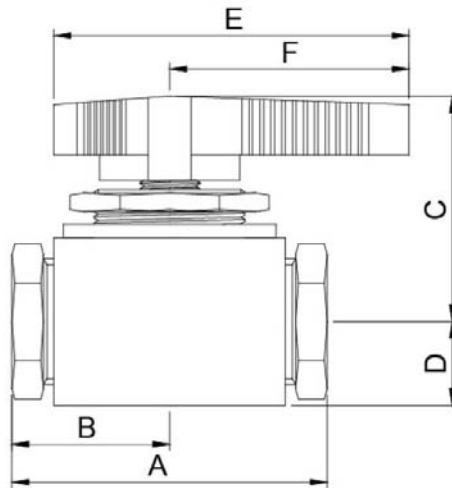
1. Max. allowed working pressure: 10000psi.
2. End connections available with NPT or BSPT female thread.
3. On/off service ball valve with 2-way pattern.
4. Panel mountable.
5. 100% factory tested.

Material List

| Item | Part Name | Q'ty | Material |
|------|------------------|------|---------------------|
| 1 | Handle | 1 | Zinc Alloy |
| 2 | Handle Set Screw | 1 | Chrome-Plated Steel |
| 3 | Packing Bolt | 1 | SS316 |
| 4 | Stem | 1 | SS316 |
| 5 | Sleeve | 1 | PTFE |
| 6 | Panel Nut | 1 | SS304 |
| 7 | Packing | 1 | SS304 |
| 8 | Washer | 3 | SS316 |
| 9 | Packing | 3 | PTFE |
| 10 | Stem Packing | 1 | PTFE |
| 11 | Ball | 1 | SS316 |
| 12 | Seat | 2 | PTFE |
| 13 | Seat Carrier | 2 | SS316 |
| 14 | Packing | 2 | PTFE |
| 15 | End Cap | 2 | SS316 |
| 16 | Body | 1 | SS316 |



3BV-10 3 Piece Ball Valve 10000PSI, 2-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|------------|--------------|---------|------|-----------------|------|------|----|------|----|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Female thread | 3BV-10-04F | 1/2" | 10 | 0.39 | 75.0 | 37.5 | 55.0 | 20 | 84.5 | 57 | 36 | 4 |
| | 3BV-10-06F | 3/4" | 10 | 0.39 | 75.0 | 37.5 | 55.0 | 20 | 84.5 | 57 | 36 | 4 |

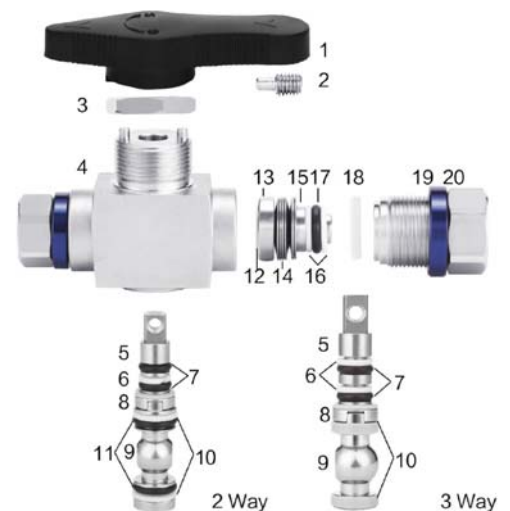
Trunnion Ball Valve 6000PSI

Features

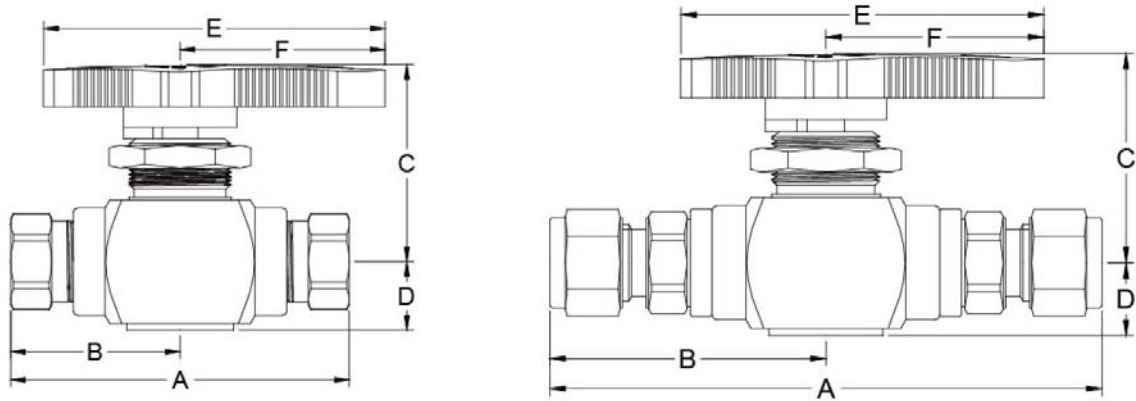
1. Black handles with arrow indicate flow direction as standard; metal handles for option.
2. Bottom-loaded stem prevents blowout and enhances system safety.
3. Panel mountable.
4. Bi-directional flow. Micro-finished floating ball ensures leak Proof shut off.
5. Spring-loaded seats for positive sealing torques and high cycle life.
6. Max. allowed working pressure: 6000psi.
7. End connections available with Tube end, NPT or BSPT female thread.
8. On/off service ball valve with 2-way pattern.
9. Diverter service ball valve with 3-way pattern.
10. Blowout proof two-piece stem/ trunnion ball.
11. With Viton O-ring.
12. 100% factory tested.

Material Of Construction

| Item | Part Name | Q'ty | | Material |
|------|---------------------------|-------|-------|------------------------|
| | | 2-way | 3-way | |
| 1 | Handle | 1 | 1 | Nylon |
| 2 | Handle Set Screw | 1 | 1 | Chrome-Plated Steel |
| 3 | Panel Nut | 1 | 1 | SS304 |
| 4 | Body | 1 | 1 | SS316 |
| 5 | Stem | 1 | 1 | SS316 |
| 6 | Stem Back-up Ring | 1 | 2 | TFM1600 |
| 7 | Stem O-ring | 2 | 2 | Viton |
| 8 | Stem Bearing | 1 | 1 | PEEK |
| 9 | Trunnion Ball | 1 | 1 | SS316 |
| 10 | Ball Back-up Ring | 2 | 2 | TFM1600 / PEEK (3-way) |
| 11 | Ball O-ring | 2 | - | Viton / - |
| 12 | Seat | 2 | 2 | PEEK |
| 13 | Seat Carrier | 2 | 2 | SS316 |
| 14 | Seat Spring | 2 | 2 | X-750 |
| 15 | Seat Carrier Guide | 2 | 2 | SS316 |
| 16 | Seat Carrier Back-up Ring | 4 | 4 | TFM1600 |
| 17 | Seat Carrier O-ring | 2 | 2 | Viton |
| 18 | End Packing | 2 | 2 | TFM1600 |
| 19 | Identification Ring | 2 | 2 | Aluminum |
| 20 | End Cap | 2 | 2 | SS316 |

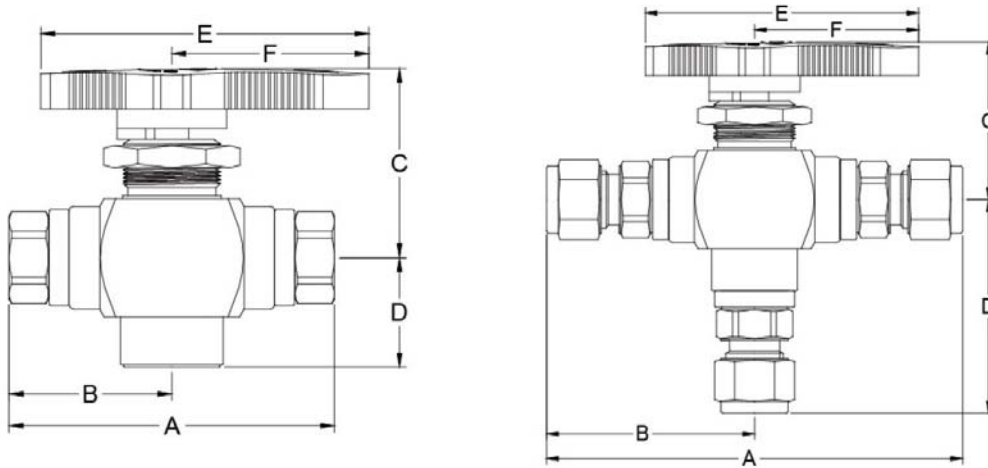


TBV-6 Trunnion Ball Valve 6000PSI, 2-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|------------|--------------|---------|------|-----------------|------|------|------|----|----|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Tube end | TBV-6-10OD | 10mm | 5 | 0.19 | 114.0 | 57.0 | 43.5 | 15.0 | 75 | 45 | 22.2 | 8 |
| Female thread | TBV-6-02F | 1/4" | 5 | 0.19 | 76.3 | 38.2 | 45.3 | 15.0 | 75 | 55 | 22.2 | 8 |

TBVT-6 Trunnion Ball Valve 6000PSI, 3-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|-------------|--------------|---------|------|-----------------|------|------|------|----|----|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Tube end | TBVT-6-10OD | 10mm | 5 | 0.19 | 114.0 | 57.0 | 43.5 | 25.0 | 75 | 45 | 22.2 | 8 |
| Female thread | TBVT-6-02F | 1/4" | 5 | 0.19 | 76.3 | 38.2 | 45.3 | 25.0 | 75 | 45 | 22.2 | 8 |

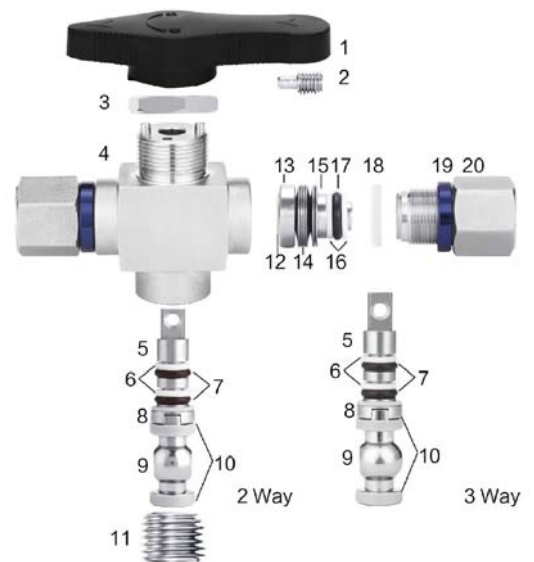
Trunnion Ball Valve 10000PSI

Features

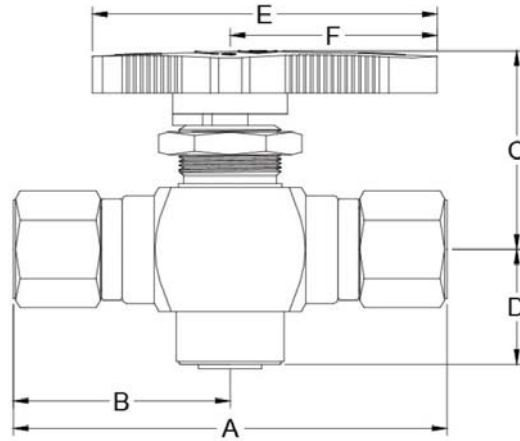
1. Black handles with arrow indicate flow direction as standard; metal handles for option.
2. Bottom-loaded stem prevents blowout and enhances system safety.
3. Panel mountable.
4. Bi-directional flow. Micro-finished floating ball ensures leak Proof shut off.
5. Spring-loaded seats for positive sealing torques and high cycle life.
6. Max. allowed working pressure: 10000psi.
7. End connections available with NPT or BSPT female thread.
8. On/off service ball valve with 2-way pattern.
9. Diverter service ball valve with 3-way pattern.
10. Blowout proof two-piece stem/ trunnion ball.
11. With Viton O-ring.
12. 100% factory tested.

Material List

| Item | Part Name | Q'ty | | Material |
|------|---------------------------|-------|-------|---------------------|
| | | 2-way | 3-way | |
| 1 | Handle | 1 | 1 | Nylon |
| 2 | Handle Set Screw | 1 | 1 | Chrome-Plated Steel |
| 3 | Panel Nut | 1 | 1 | SS304 |
| 4 | Body | 1 | 1 | SS316 |
| 5 | Stem | 1 | 1 | SS316 |
| 6 | Stem Back-up Ring | 2 | 2 | TFM1600 |
| 7 | Stem O-ring | 2 | 2 | Viton |
| 8 | Stem Bearing | 1 | 1 | PEEK |
| 9 | Trunnion Ball | 1 | 1 | SS316 |
| 10 | Ball Back-up Ring | 2 | 2 | PEEK |
| 11 | Plug | 1 | - | SS316 |
| 12 | Seat | 2 | 2 | PEEK |
| 13 | Seat Carrier | 2 | 2 | SS316 |
| 14 | Seat Spring | 2 | 2 | X-750 |
| 15 | Seat Carrier Guide | 2 | 2 | SS316 |
| 16 | Seat Carrier Back-up Ring | 4 | 4 | TFM1600 |
| 17 | Seat Carrier O-ring | 2 | 2 | Viton |
| 18 | End Packing | 2 | 2 | TFM1600 |
| 19 | Identification Ring | 2 | 2 | Aluminum |
| 20 | End Cap | 2 | 2 | SS316 |

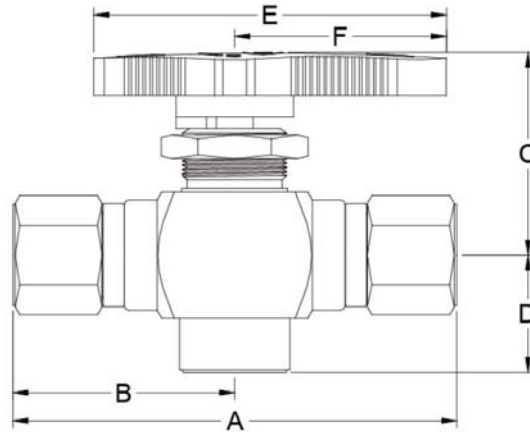


TBV-10 Trunnion Ball Valve 10000PSI, 2-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|------------|--------------|---------|------|-----------------|------|------|------|----|----|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Female thread | TBV-10-02F | 1/4" | 5 | 0.19 | 95.3 | 47.7 | 43.5 | 25.0 | 75 | 45 | 22.2 | 8 |

TBVT-10 Trunnion Ball Valve 10000PSI, 3-Way



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | | | |
|---------------|-------------|--------------|---------|------|-----------------|------|------|------|----|----|-----------------|---------------------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F | Panel Hole Size | Max Panel Thickness |
| Female thread | TBVT-10-02F | 1/4" | 5 | 0.19 | 95.3 | 47.7 | 43.5 | 25.0 | 75 | 45 | 22.2 | 8 |

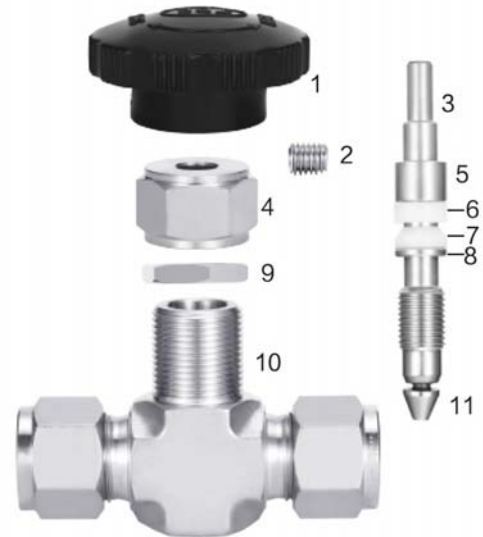
Integral Bonnet Needle Valve

Features

1. Forged body with inline and angle pattern.
2. Body material in Stainless Steel 316.
3. Max. working pressure to 6000 psig (413 bar) at 37°C (100°F).
4. Panel mountable.
5. TFM1600 packing as standard.
6. 100% factory tested with nitrogen at 1000 psig (69bar).

Options

1. Inline pattern: NV11
Angle pattern: NV12
2. Connection End: Tube OD, NPT or BSPT female & male thread.



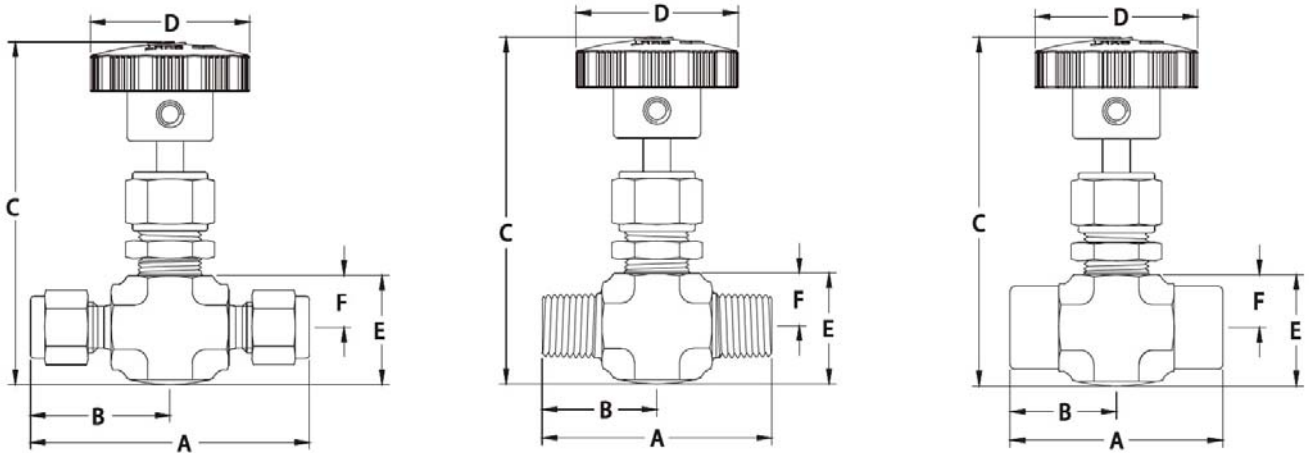
Pressure & Temperature ratings

| | |
|------------------------------|-----------------------------|
| Body Material | SS316 |
| Packing Material | TFM1600 |
| Temperature °C (°F) | Working Pressure psig (bar) |
| -53°C (-65°F)~ +37°C (100°F) | 6000 (413) |
| 93 (200) | 5160 (355) |
| 121 (250) | 4910 (338) |
| 148 (300) | 4660 (321) |
| 176 (350) | 4470 (307) |
| 204 (400) | 4280 (294) |

Material List

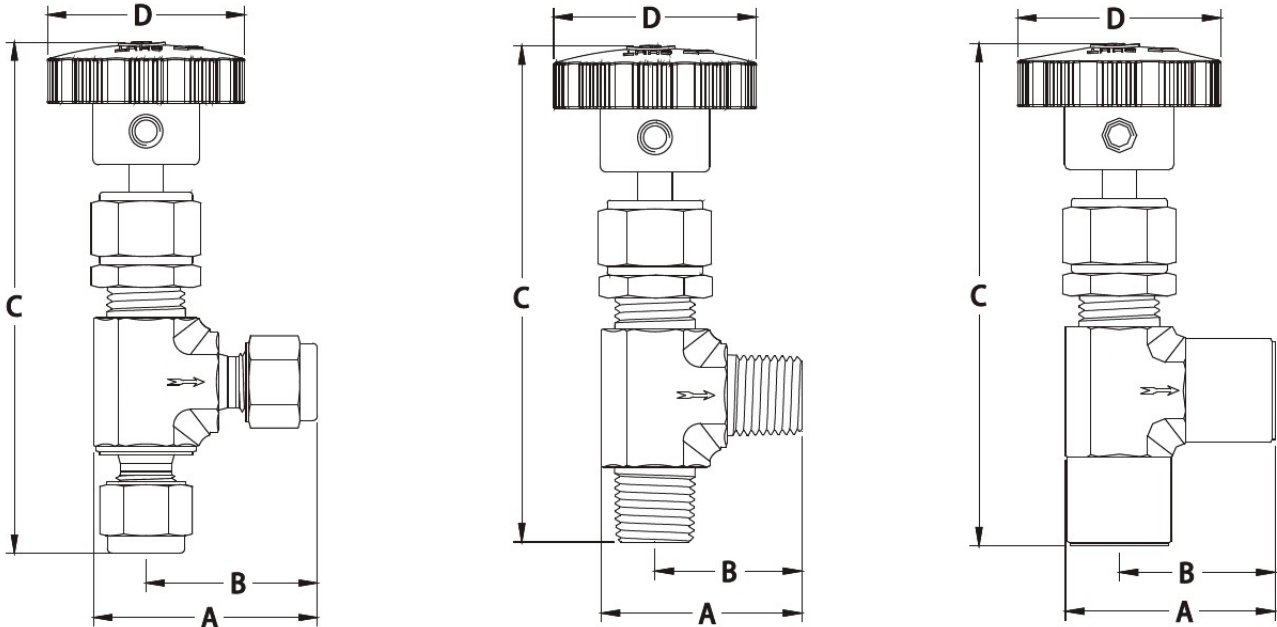
| Item | Part Name | Material |
|------|------------------|-----------------|
| 1 | Handle | Phenolic Resins |
| 2 | Handle Set Screw | SS304 |
| 3 | Stem | SS316 |
| 4 | Packing Nut | SS316 |
| 5 | Upper Gland | SS316 |
| 6 | Upper Packing | TFM1600 |
| 7 | Lower Packing | TFM1600 |
| 8 | Lower Gland | SS316 |
| 9 | Panel Nut | SS304 |
| 10 | Body | SS316 |
| 11 | Stem Tip | SS630 |

NV Integral Bonnet Needle Valve, Inline Type



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | | |
|---------------|----------|--------------|---------|------|-----------------|------|------|----|------|------|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E | F |
| Tube end | NV-4OD | 4mm | 2 | 0.08 | 60.2 | 30.1 | 72.7 | 36 | 24.2 | 11.5 |
| | NV-6OD | 6mm | 4 | 0.18 | 61.1 | 30.6 | 72.7 | 36 | 24.2 | 11.5 |
| | NV-8OD | 8mm | 4 | 0.18 | 63.7 | 31.9 | 72.7 | 36 | 24.2 | 11.5 |
| | NV-10OD | 10mm | 6 | 0.24 | 67.8 | 33.9 | 86.5 | 50 | 28.4 | 13.0 |
| | NV-12OD | 12mm | 6 | 0.24 | 71.4 | 35.7 | 86.5 | 50 | 28.4 | 13.0 |
| | NV-01OD | 1/8" | 2 | 0.08 | 59.8 | 29.9 | 72.7 | 36 | 24.2 | 11.5 |
| | NV-02OD | 1/4" | 4 | 0.18 | 61.7 | 30.9 | 72.7 | 36 | 24.2 | 11.5 |
| | NV-03OD | 3/8" | 6 | 0.24 | 67.5 | 33.8 | 86.5 | 50 | 28.4 | 13.0 |
| Male thread | NV-04OD | 1/2" | 6 | 0.24 | 71.8 | 35.9 | 86.5 | 50 | 28.4 | 13.0 |
| | NV-01M | 1/8" | 4 | 0.16 | 46.0 | 23.0 | 72.7 | 36 | 24.2 | 11.5 |
| | NV-02M | 1/4" | 4 | 0.16 | 50.0 | 25.0 | 72.7 | 36 | 24.2 | 11.5 |
| Female thread | NV-03M | 3/8" | 6 | 0.24 | 56.0 | 28.0 | 86.5 | 50 | 28.4 | 13.0 |
| | NV-01F | 1/8" | 4 | 0.16 | 46.0 | 23.0 | 72.7 | 36 | 24.2 | 11.5 |
| | NV-02F | 1/4" | 4 | 0.16 | 46.0 | 23.0 | 72.7 | 36 | 24.2 | 11.5 |
| | NV-03F | 3/8" | 6 | 0.24 | 52.0 | 26.0 | 86.5 | 50 | 28.4 | 13.0 |

NVA Integral Bonnet Needle Valve, Angle Type



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | |
|---------------|----------|--------------|---------|------|-----------------|------|------|----|
| | | Inlet/Outlet | mm | in. | A | B | C | D |
| Tube end | NVA-4OD | 4mm | 2 | 0.08 | 39.4 | 30.1 | 74.8 | 36 |
| | NVA-6OD | 6mm | 4 | 0.16 | 39.9 | 30.6 | 74.8 | 36 |
| | NVA-8OD | 8mm | 4 | 0.16 | 40.2 | 30.8 | 74.8 | 36 |
| | NVA-10OD | 10mm | 6 | 0.24 | 47.7 | 35.9 | 86.5 | 50 |
| | NVA-12OD | 12mm | 6 | 0.24 | 49.5 | 37.7 | 86.5 | 50 |
| | NVA-01OD | 1/8" | 2 | 0.08 | 39.2 | 29.9 | 74.8 | 36 |
| | NVA-02OD | 1/4" | 4 | 0.16 | 40.2 | 30.8 | 74.8 | 36 |
| | NVA-03OD | 3/8" | 6 | 0.24 | 47.6 | 35.7 | 86.5 | 50 |
| Male thread | NVA-01M | 1/8" | 4 | 0.16 | 32.3 | 23.0 | 74.8 | 36 |
| | NVA-02M | 1/4" | 4 | 0.16 | 36.8 | 27.5 | 79.3 | 36 |
| Female thread | NVA-01F | 1/8" | 4 | 0.16 | 32.3 | 23.0 | 74.8 | 36 |
| | NVA-02F | 1/4" | 4 | 0.16 | 36.8 | 27.0 | 79.3 | 36 |
| | NVA-03F | 3/8" | 6 | 0.24 | 39.8 | 28.0 | 90.0 | 50 |

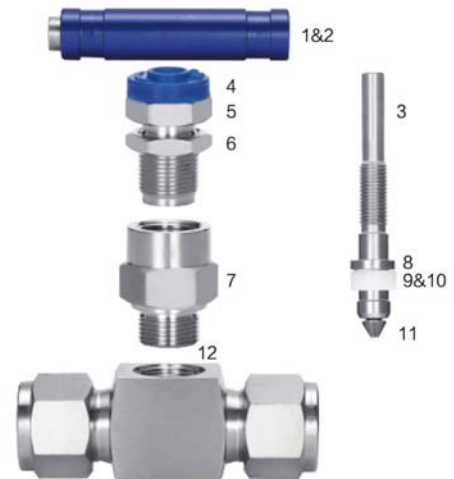
NVUB Union Bonnet Needle Valve, Inline Pattern

Features

1. Square bar stock body
2. Body material in Stainless Steel 316
3. Max. working pressure to 6000 psig (413 bar) at 37°C (100°F).
4. TFM1600 packing as standard; Graphite packing for option.
5. 100% factory tested.

Options

1. Packing material: TFM1600
Packing material: Graphite
2. Connection End: Tube OD, BSPT, NPT female & male thread
Butt Weld, Socket Weld



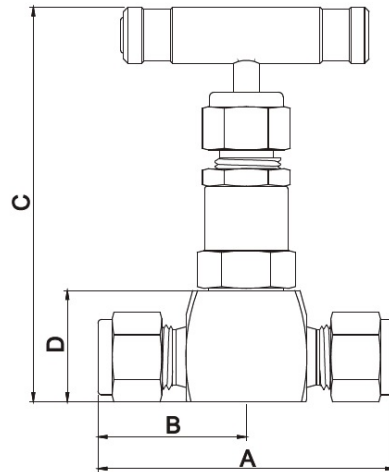
Pressure & Temperature ratings

| Body Material | SS316 | |
|------------------------------|----------------------------|-------------|
| Packing Material | TFM1600 | Graphite |
| Temperature °C (°F) | Working Pressure psig(bar) | |
| -53°C (-65°F)~ +37°C (100°F) | 6000 (413) | 6000 (413) |
| 93 (200) | 5160 (355) | 5160 (355) |
| 121 (250) | 4910 (338) | 4910 (338) |
| 148 (300) | 4660 (321) | 4660 (321) |
| 176 (350) | 4470 (307) | 4470 (307) |
| 204 (400) | 4280 (294) | 4280 (294) |
| 232 (450) | - | 4130 (284) |
| 260 (500) | - | 3980 (274) |
| 315 (600) | - | 3760 (259) |
| 371(700) | - | 3600 (248) |
| 426 (800) | - | 3460 (238) |
| 482 (900) | - | 3280 (225) |
| 537 (1000) | - | 3030 (208) |

Material List

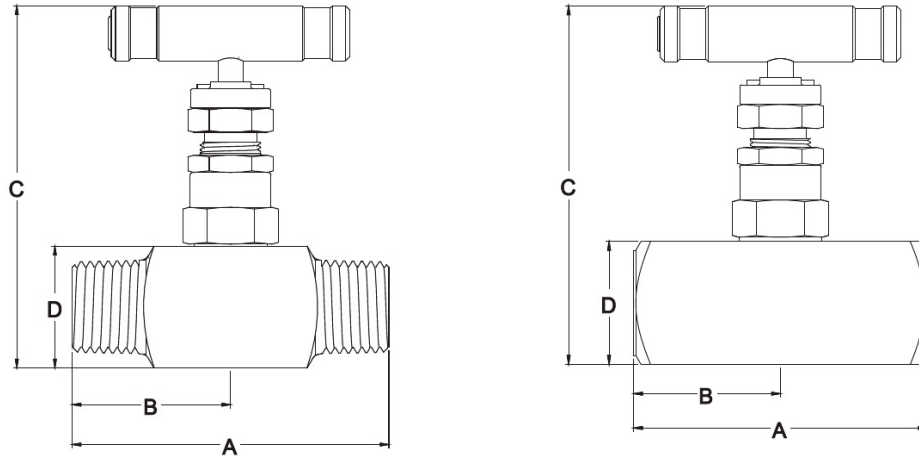
| Item | Part Name | Material |
|------|------------------|----------|
| 1 | Handle | Aluminum |
| 2 | Handle Set Screw | SS304 |
| 3 | Stem | SS316 |
| 4 | Dust Cap | PVC |
| 5 | Packing Bolt | SS316 |
| 6 | Locking Nut | SS304 |
| 7 | Bonnet | SS316 |
| 8 | Gland | SS316 |
| 9 | Upper Packing | TFM1600 |
| 10 | Lower Packing | TFM1600 |
| 11 | Stem Tip | SS630 |
| 12 | Body | SS316 |

NVUB Union Bonnet Needle Valve, Inline Pattern, Tube Ends



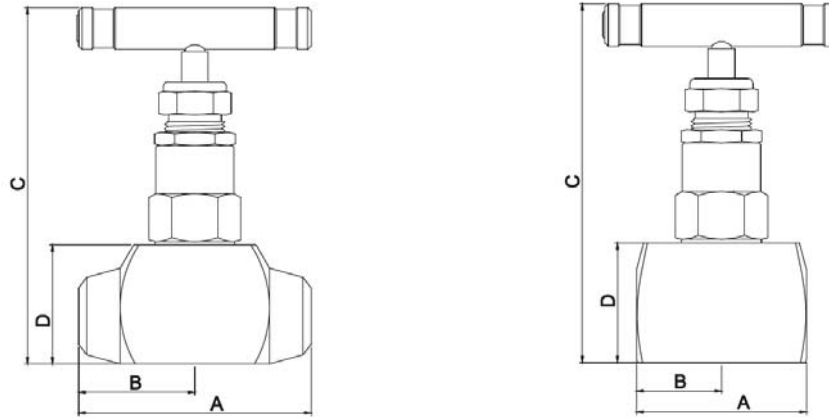
| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | |
|-----------|--------------|--------------|---------|-------|-----------------|-------|-------|----|
| | | Inlet/Outlet | mm | in. | A | B | C | D |
| Tube end | NVUB-4OD | 4mm | 4 | 0.16 | 59.2 | 29.6 | 80.4 | 25 |
| | NVUB-6OD | 6mm | 4 | 0.16 | 63.1 | 31.6 | 80.4 | 25 |
| | NVUB-8OD | 8mm | 4 | 0.16 | 66.7 | 33.4 | 80.4 | 25 |
| | NVUB-10OD | 10mm | 4 | 0.16 | 66.8 | 33.4 | 80.4 | 25 |
| | NVUB-12OD-4 | 12mm | 4 | 0.16 | 70.4 | 35.2 | 80.4 | 25 |
| | NVUB-12OD-6 | 12mm | 6 | 0.24 | 74.4 | 37.2 | 81.8 | 28 |
| | NVUB-14OD-6 | 14mm | 6 | 0.24 | 75.8 | 37.9 | 81.8 | 28 |
| | NVUB-14OD-8 | 14mm | 8 | 0.32 | 90.8 | 45.4 | 107.8 | 36 |
| | NVUB-15OD-6 | 15mm | 6 | 0.24 | 76.1 | 38.1 | 81.8 | 28 |
| | NVUB-15OD-8 | 15mm | 8 | 0.32 | 91.1 | 45.6 | 107.8 | 36 |
| | NVUB-16OD-6 | 16mm | 6 | 0.24 | 76.4 | 38.2 | 81.8 | 28 |
| | NVUB-16OD-8 | 16mm | 8 | 0.32 | 91.4 | 45.7 | 107.8 | 36 |
| | NVUB-18OD-8 | 18mm | 8 | 0.32 | 90.8 | 45.4 | 107.8 | 36 |
| | NVUB-10OD-10 | 20mm | 10 | 0.39 | 93.1 | 46.6 | 112.8 | 41 |
| | NVUB-22OD-10 | 22mm | 10 | 0.39 | 93.7 | 46.9 | 112.8 | 41 |
| | NVUB-25OD-12 | 25mm | 12 | 0.47 | 119.8 | 59.9 | 136.7 | 48 |
| | NVUB-01OD | 1/8" | 4 | 0.16 | 58.8 | 29.4 | 80.4 | 25 |
| | NVUB-02OD | 1/4" | 4 | 0.16 | 63.7 | 31.9 | 80.4 | 25 |
| | NVUB-03OD | 3/8" | 4 | 0.16 | 66.5 | 33.2 | 80.4 | 25 |
| | NVUB-04OD | 1/2" | 6 | 0.24 | 74.8 | 37.4 | 81.8 | 28 |
| NVUB-06OD | 3/4" | 8 | 0.32 | 91.9 | 46.0 | 107.8 | 36 | |
| NVUB-08OD | 1" | 12 | 0.47 | 119.8 | 59.9 | 136.7 | 48 | |

NVUB Union Bonnet Needle Valve, Inline Pattern, Thread Ends



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | |
|---------------|-------------|--------------|---------|------|-----------------|------|-------|----|
| | | Inlet/Outlet | mm | in. | A | B | C | D |
| Male thread | NVUB-01M | 1/8" | 4 | 0.16 | 48 | 24.0 | 80.4 | 25 |
| | NVUB-02M | 1/4" | 4 | 0.16 | 51 | 25.5 | 80.4 | 25 |
| | NVUB-03M-4 | 3/8" | 4 | 0.16 | 54 | 27.0 | 80.4 | 25 |
| | NVUB-03M-6 | 3/8" | 6 | 0.24 | 55 | 27.5 | 81.8 | 28 |
| | NVUB-04M-6 | 1/2" | 6 | 0.24 | 61 | 30.5 | 81.8 | 28 |
| | NVUB-04M-8 | 1/2" | 8 | 0.32 | 76 | 38.0 | 107.8 | 36 |
| | NVUB-06M-6 | 3/4" | 6 | 0.24 | 64 | 32.0 | 81.8 | 28 |
| | NVUB-06M-8 | 3/4" | 8 | 0.32 | 79 | 39.5 | 107.8 | 36 |
| | NVUB-08M | 1" | 12 | 0.47 | 95 | 47.5 | 136.7 | 48 |
| Female thread | NVUB-01F | 1/8" | 4 | 0.16 | 51 | 25.5 | 80.4 | 25 |
| | NVUB-02F | 1/4" | 4 | 0.16 | 57 | 28.5 | 80.4 | 25 |
| | NVUB-03F-6 | 3/8" | 6 | 0.24 | 61 | 30.5 | 81.8 | 28 |
| | NVUB-03F-8 | 3/8" | 8 | 0.32 | 70 | 35.0 | 107.8 | 36 |
| | NVUB-04F-6 | 1/2" | 6 | 0.24 | 67 | 33.5 | 81.8 | 28 |
| | NVUB-04F-8 | 1/2" | 8 | 0.32 | 70 | 35.0 | 107.8 | 36 |
| | NVUB-06F-6 | 3/4" | 6 | 0.24 | 70 | 35.0 | 80.8 | 32 |
| | NVUB-06F-10 | 3/4" | 10 | 0.39 | 69 | 34.5 | 112.8 | 41 |
| | NVUB-08F-10 | 1" | 10 | 0.39 | 87 | 43.5 | 112.8 | 41 |
| | NVUB-08F-12 | 1" | 12 | 0.47 | 83 | 41.5 | 136.7 | 48 |

NVUB Union Bonnet Needle Valve, Inline Pattern, Weld Ends



| Type | Item No. | Conn./Size | Orifice | | | Dimensions (mm) | | |
|-------------|-------------|--------------|---------|------|------|-----------------|-------|----|
| | | Inlet/Outlet | mm | in. | A | B | C | D |
| Butt weld | NVUB-12.7BW | 12.7mm | 4 | 0.16 | 51 | 25.5 | 80.4 | 25 |
| | NVUB-14BW | 14mm | 8 | 0.32 | 76 | 38.0 | 107.8 | 36 |
| | NVUB-15BW | 15mm | 8 | 0.32 | 76 | 38.0 | 107.8 | 36 |
| | NVUB-16BW | 16mm | 8 | 0.32 | 76 | 38.0 | 107.8 | 36 |
| | NVUB-18BW | 18mm | 8 | 0.32 | 76 | 38.0 | 107.8 | 36 |
| | NVUB-19BW | 19mm | 8 | 0.32 | 76 | 38.0 | 107.8 | 36 |
| | NVUB-20BW | 20mm | 12 | 0.47 | 80 | 40.0 | 136.7 | 48 |
| | NVUB-22BW | 22mm | 12 | 0.47 | 80 | 40.0 | 136.7 | 48 |
| | NVUB-25BW | 25mm | 12 | 0.47 | 92 | 46.0 | 136.7 | 48 |
| | NVUB-28BW | 28mm | 15 | 0.59 | 105 | 52.5 | 157.6 | 60 |
| Socket weld | NVUB-14SW | 14mm | 6 | 0.24 | 52 | 26.0 | 81.8 | 28 |
| | NVUB-16SW | 16mm | 6 | 0.24 | 52 | 26.0 | 81.8 | 28 |
| | NVUB-18SW | 18mm | 8 | 0.32 | 51 | 25.5 | 107.8 | 36 |
| | NVUB-20SW | 20mm | 8 | 0.32 | 60 | 30.0 | 107.8 | 36 |
| | NVUB-22SW | 22mm | 12 | 0.47 | 77 | 38.5 | 136.7 | 48 |
| | NVUB-25SW | 25mm | 12 | 0.47 | 77 | 38.5 | 136.7 | 48 |
| | NVUB-28SW | 28mm | 15 | 0.59 | 90 | 45.0 | 157.6 | 60 |
| | NVUB-32SW | 32mm | 15 | 0.59 | 90 | 45.0 | 157.6 | 60 |
| NVUB-34SW | 34mm | 15 | 0.59 | 90 | 45.0 | 157.6 | 60 | |

NVUW Union Weld Needle Valve, Inline Pattern

Features

1. Square bar stock body
2. Body material in Stainless Steel 316
3. Max. working pressure to 6000 psig (413 bar) at 37°C (100°F).
4. TFM1600 packing as standard; Graphite packing for option.
5. 100% factory tested.

Options

1. Packing material: TFM1600
Packing material: Graphite
2. Connection End: Union Weld



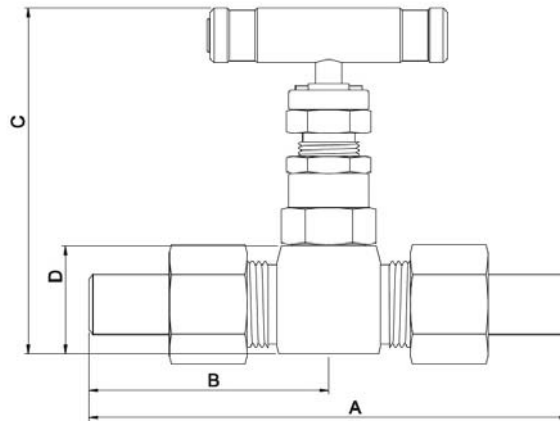
Pressure & Temperature ratings

| Body Material | SS316 | |
|------------------------------|----------------------------|-------------|
| Packing Material | TFM1600 | Graphite |
| Temperature °C (°F) | Working Pressure psig(bar) | |
| -53°C (-65°F)~ +37°C (100°F) | 6000 (413) | 6000 (413) |
| 93 (200) | 5160 (355) | 5160 (355) |
| 121 (250) | 4910 (338) | 4910 (338) |
| 148 (300) | 4660 (321) | 4660 (321) |
| 176 (350) | 4470 (307) | 4470 (307) |
| 204 (400) | 4280 (294) | 4280 (294) |
| 232 (450) | - | 4130 (284) |
| 260 (500) | - | 3980 (274) |
| 315 (600) | - | 3760 (259) |
| 371(700) | - | 3600 (248) |
| 426 (800) | - | 3460 (238) |
| 482 (900) | - | 3280 (225) |
| 537 (1000) | - | 3030 (208) |

Material List

| Item | Part Name | Q'ty | Material |
|------|------------------|------|----------|
| 1 | Handle | 1 | Aluminum |
| 2 | Handle Set Screw | 1 | SS304 |
| 3 | Stem | 1 | SS316 |
| 4 | Dust Cap | 1 | PVC |
| 5 | Packing Bolt | 1 | SS316 |
| 6 | Locking Nut | 1 | SS304 |
| 7 | Bonnet | 1 | SS316 |
| 8 | Gland | 1 | SS316 |
| 9 | Upper Packing | 1 | TFM1600 |
| 10 | Lower Packing | 1 | TFM1600 |
| 11 | Stem Tip | 1 | SS630 |
| 12 | Body | 1 | SS316 |
| 13 | Welding Nut | 2 | SS316 |
| 14 | Packing | 2 | PTFE |
| 15 | Welding Gland | 2 | SS316 |

NVUW Union Weld Needle Valve, Inline Pattern



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | |
|------------|------------|--------------|---------|------|-----------------|-------|-------|----|
| | | Inlet/Outlet | mm | in. | A | B | C | D |
| Union Weld | NVUW-10-4 | 10mm | 4 | 0.16 | 102.4 | 51.2 | 80.4 | 25 |
| | NVUW-12-4 | 12mm | 4 | 0.16 | 111 | 55.5 | 80.4 | 25 |
| | NVUW-14-4 | 14mm | 4 | 0.16 | 111 | 55.5 | 80.4 | 25 |
| | NVUW-14-6 | 14mm | 6 | 0.24 | 112 | 56.0 | 81.8 | 28 |
| | NVUW-16-6 | 16mm | 6 | 0.24 | 118 | 59.0 | 81.8 | 28 |
| | NVUW-16-8 | 16mm | 8 | 0.32 | 133 | 66.5 | 107.8 | 36 |
| | NVUW-18-8 | 18mm | 8 | 0.32 | 133 | 66.5 | 107.8 | 36 |
| | NVUW-18-10 | 18mm | 10 | 0.39 | 141 | 70.5 | 112.8 | 41 |
| | NVUW-20-8 | 20mm | 8 | 0.32 | 135 | 67.5 | 107.8 | 36 |
| | NVUW-20-10 | 20mm | 10 | 0.39 | 143 | 71.5 | 112.8 | 41 |
| | NVUW-22-10 | 22mm | 10 | 0.39 | 147 | 73.5 | 112.8 | 41 |
| | NVUW-22-12 | 22mm | 12 | 0.47 | 149 | 74.5 | 136.7 | 48 |
| | NVUW-25-12 | 25mm | 12 | 0.47 | 155 | 77.5 | 136.7 | 48 |
| | NVUW-25-15 | 25mm | 15 | 0.59 | 187 | 93.5 | 157.5 | 60 |
| | NVUW-28-15 | 28mm | 15 | 0.59 | 175 | 87.5 | 157.5 | 60 |
| NVUW-32-15 | 32mm | 15 | 0.59 | 177 | 88.5 | 157.5 | 60 | |

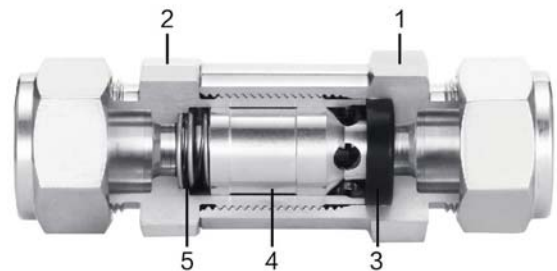
CV Check Valve 3000PSI

Features

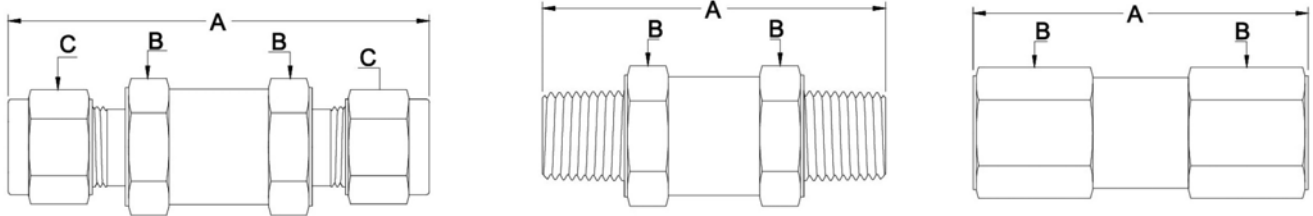
1. Various fixed cracking pressure springs, range from 1 to 25psig.
2. Max. allowed working pressure: 3000psi (206bar).
3. Back stopped poppet minimizes spring stress.
4. Inline check valve stops reversed flow in order to protect instrumentations.
5. End connections available with Tube, NPT or BSPT female & male thread.
6. Inline check valve stops reversed flow in order to project instrumentations.
7. With NBR O-ring ensures leak proof shut off.
8. 100% factory tested.

Material List

| Item | Part Name | Q'ty | Material |
|------|-------------|------|----------|
| 1 | Inlet Body | 1 | SS316 |
| 2 | Outlet Body | 1 | SS316 |
| 3 | Seal Ring | 1 | NBR |
| 4 | Poppet | 1 | SS316 |
| 5 | Spring | 1 | SS304 |



CV Check Valve 3000PSI



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | |
|---------------|----------|--------------|---------|------|-----------------|----|-------|
| | | Inlet/Outlet | mm | in. | A | B | C |
| Tube end | CV-6OD | 6mm | 5 | 0.19 | 65.1 | 19 | 9/16 |
| | CV-8OD | 8mm | 5 | 0.19 | 67.7 | 19 | 5/8 |
| | CV-10OD | 10mm | 5 | 0.19 | 70.3 | 19 | 19 |
| | CV-12OD | 12mm | 10 | 0.39 | 87.8 | 22 | 7/8 |
| | CV-01OD | 1/8" | 2.5 | 0.10 | 61.8 | 19 | 7/16 |
| | CV-02OD | 1/4" | 5 | 0.19 | 65.7 | 19 | 9/16 |
| | CV-03OD | 3/8" | 5 | 0.19 | 70.0 | 19 | 11/16 |
| | CV-04OD | 1/2" | 10 | 0.39 | 88.2 | 22 | 7/8 |
| | CV-06OD | 3/4" | 11 | 0.43 | 98.9 | 32 | 1 1/8 |
| | CV-08OD | 1" | 12 | 0.47 | 109.8 | 35 | 1 1/2 |
| Male thread | CV-01M | 1/8" | 5 | 0.19 | 56.0 | 19 | - |
| | CV-02M | 1/4" | 5 | 0.19 | 56.0 | 19 | - |
| | CV-03M | 3/8" | 10 | 0.39 | 69.0 | 22 | - |
| | CV-04M | 1/2" | 11 | 0.43 | 81.0 | 32 | - |
| | CV-06M | 3/4" | 11 | 0.43 | 85.0 | 32 | - |
| Female thread | CV-01F | 1/4" | 5 | 0.19 | 54.5 | 19 | - |
| | CV-02F | 3/8" | 5 | 0.39 | 69.0 | 22 | - |
| | CV-03F | 1/2" | 10 | 0.39 | 73.8 | 22 | - |

Gauge Valve

Features

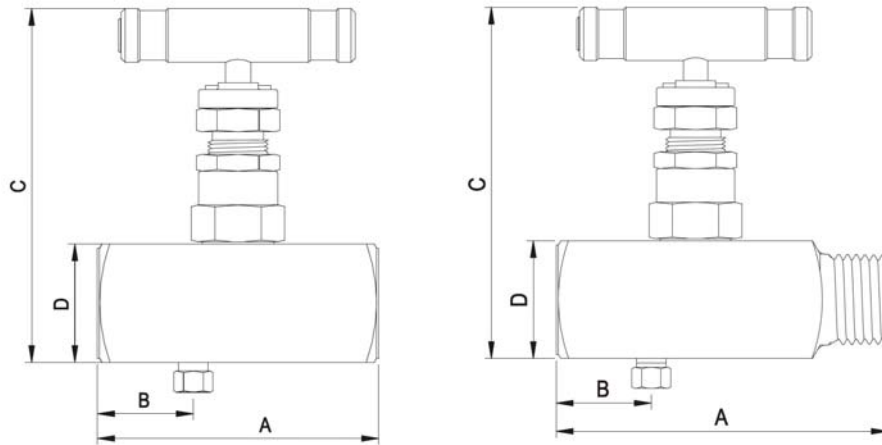
1. Body material in Stainless Steel 316 or 304.
2. Max. allowed working pressure: 6000psi (413 bar) at 37°C (100°F).
3. TFM1600 packing as standard; Graphite packing for option.
4. Lagging extension body available for insulation clearance.
5. 1/2" or 3/4" male NPT inlet port and 1/2" female NPT outlet port configuration.
6. 1/2" female NPT gauge port standard.
7. 100% factory teste.
8. Inlet connection type: NPT, BSPT female or male thread, raised face flange.
Outlet connection type: NPT, BSPT female or male thread.

Material List

| Item | Part Name | Material |
|------|------------------|----------|
| 1 | Handle | Aluminum |
| 2 | Handle Set Screw | SS304 |
| 3 | Stem | SS316 |
| 4 | Dust Cap | PVC |
| 5 | Packing Bolt | SS316 |
| 6 | Locking Nut | SS304 |
| 7 | Bonnet | SS316 |
| 8 | Gland | SS316 |
| 9 | Upper Packing | TFM1600 |
| 10 | Lower Packing | TFM1600 |
| 11 | Stem Tip | SS630 |
| 12 | Body | SS316 |

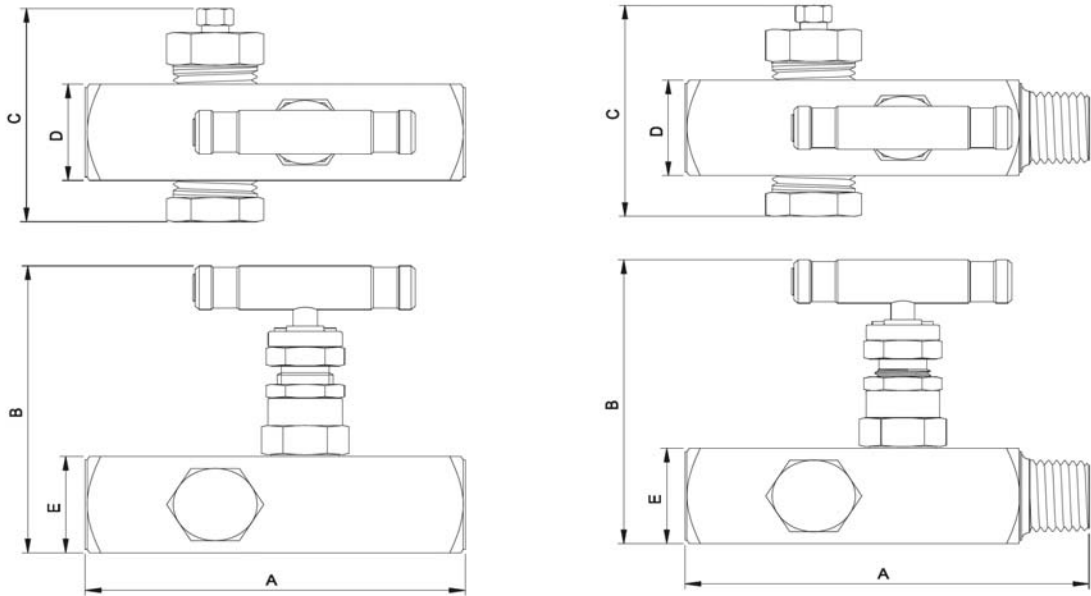


GVB Block & Bleed Gauge Valve



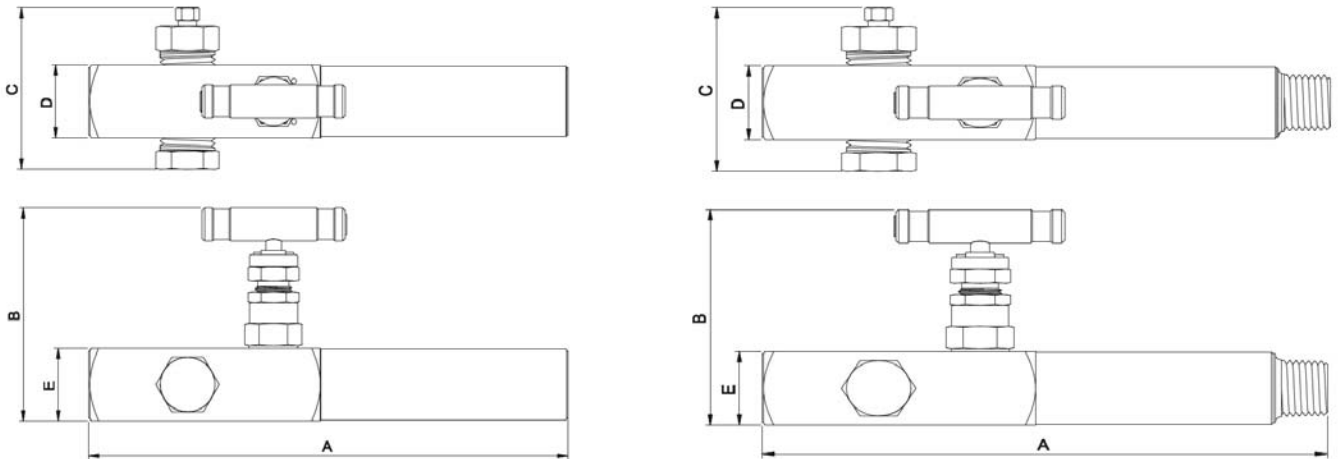
| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | |
|----------------------|----------|--------------|---------|------|-----------------|------|------|----|
| | | Inlet/Outlet | mm | in. | A | B | C | D |
| Female thread | GVB-02F | 1/4" | 4 | 0.16 | 58.5 | 22.5 | 80.4 | 25 |
| | GVB-04F | 1/2" | 4 | 0.16 | 66.0 | 22.5 | 83.4 | 28 |
| Female x Male thread | GVB-04FM | 1/2" | 4 | 0.16 | 79.5 | 22.5 | 83.4 | 28 |

GVMS Short Body Multi-Port Gauge Valve



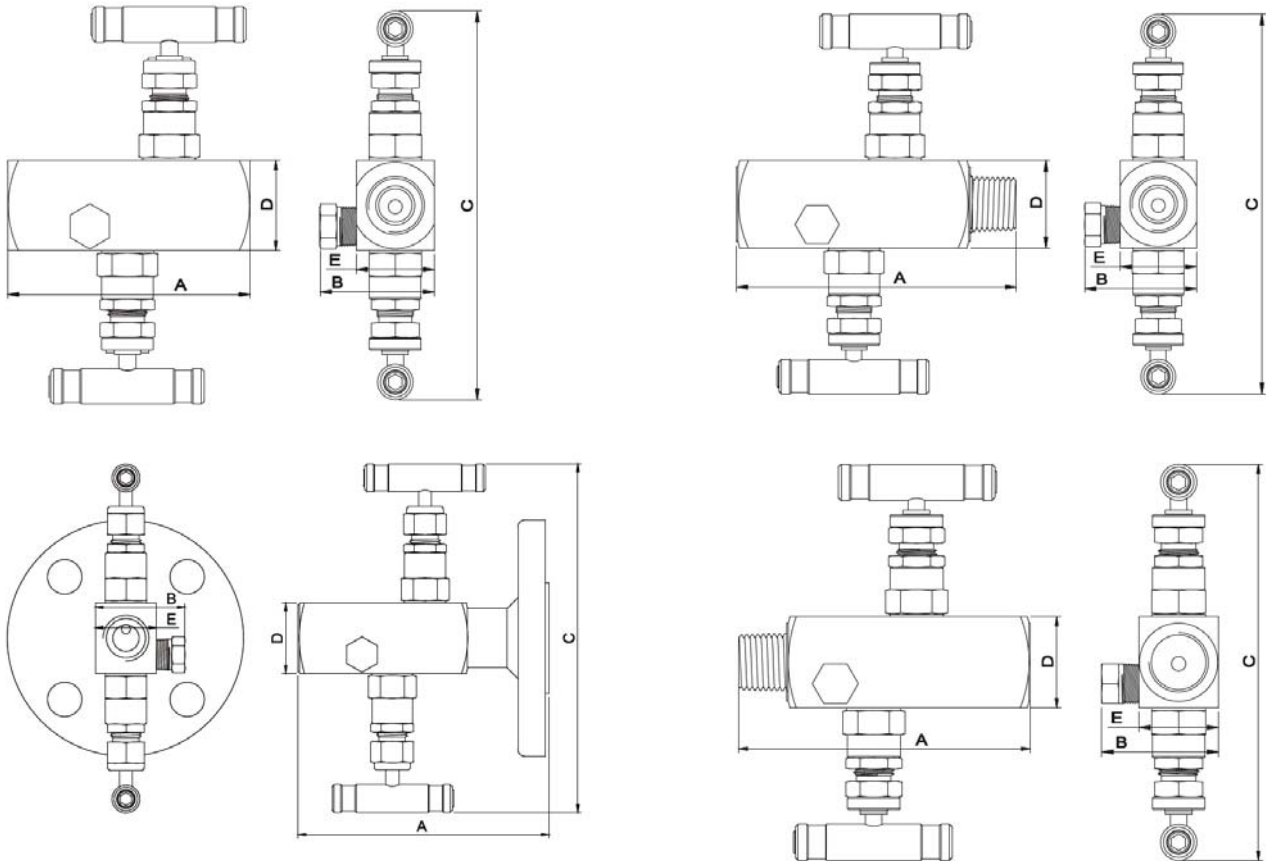
| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | |
|----------------------|-----------|--------------|---------|------|-----------------|------|----|----|
| | | Inlet/Outlet | mm | in. | A | B | C | D |
| Female thread | GVMS-04F | 1/2" | 4 | 0.18 | 95 | 87.4 | 66 | 32 |
| Female x Male thread | GVMS-04FM | 1/2" | 4 | 0.18 | 95 | 95.9 | 66 | 32 |

GVML Extension Body Multi-Port Gauge Valve



| Type | Item No. | Conn./Size | Orifice | | Dimensions (mm) | | | | |
|----------------------|-----------|--------------|---------|------|-----------------|------|----|----|----|
| | | Inlet/Outlet | mm | in. | A | B | C | D | E |
| Female thread | GVML-04F | 1/2" | 4 | 0.18 | 184 | 81.8 | 66 | 32 | 32 |
| Female x Male thread | GVML-04MF | 1/2" | 4 | 0.18 | 184 | 85.8 | 66 | 32 | 32 |

GV2 Gauge Dual Valve



| Type | Item No. | Conn./Size | | Dimensions (mm) | | | | |
|------------------------|--------------|------------|---------|-----------------|----|-------|----|----|
| | | Inlet | Outlet | A | B | C | D | E |
| Female thread | GV2-04F | 1/2"NPT | 1/2"NPT | 87 | 41 | 142.4 | 32 | 28 |
| Female x Male thread | GV2-04FM | 1/2"NPT | 1/2"NPT | 102.5 | 41 | 142.4 | 32 | 28 |
| Flange x Female thread | GV2-12G1-04F | Ø12 (150#) | 1/2"NPT | 114.7 | 41 | 142.4 | 32 | 28 |
| | GV2-12G3-04F | Ø12 (300#) | 1/2"NPT | 118 | 41 | 142.4 | 32 | 28 |
| | GV2-12G6-04F | Ø12 (600#) | 1/2"NPT | 124.4 | 41 | 142.4 | 32 | 28 |
| Male x Female thread | GV2-04MF | 1/2"NPT | 1/2"NPT | 102.5 | 41 | 142.4 | 32 | 28 |
| | GV2-04M-06F | 3/4"NPT | 1/2"NPT | 105.5 | 41 | 142.4 | 32 | 28 |

Valve Manifolds

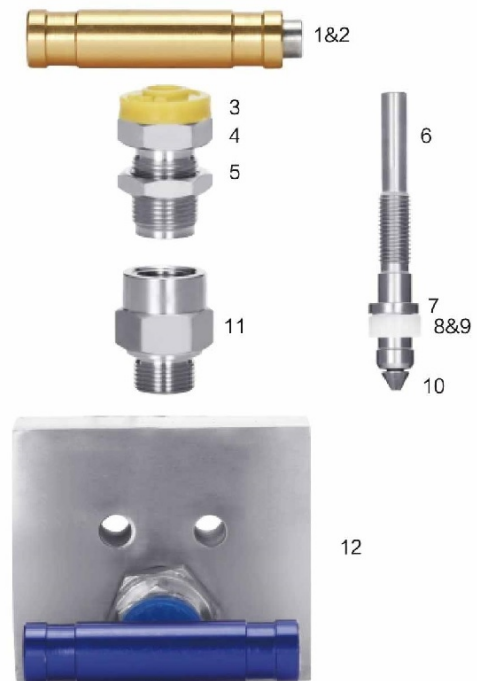
Features

1. Body material in Stainless Steel 316 or 304.
2. Max. allowed working pressure: 6000psi (413 bar) at 37°C (100°F).
3. TFM1600 packing as standard; Graphite packing for option.
4. Available with Direct-mounting (pipe to flange & flange to flange) or Remote-mounting (pipe to pipe).
5. Manifolds are supplied with Stainless Steel bolts and accessories.
6. 100% factory teste.
7. End connections available with BSPT, NPT female thread.
8. Color codes for handles and dust caps to identify the function of valves.

- ISOLATE/BLOCK
- VENT/TEST
- EQUALIZE

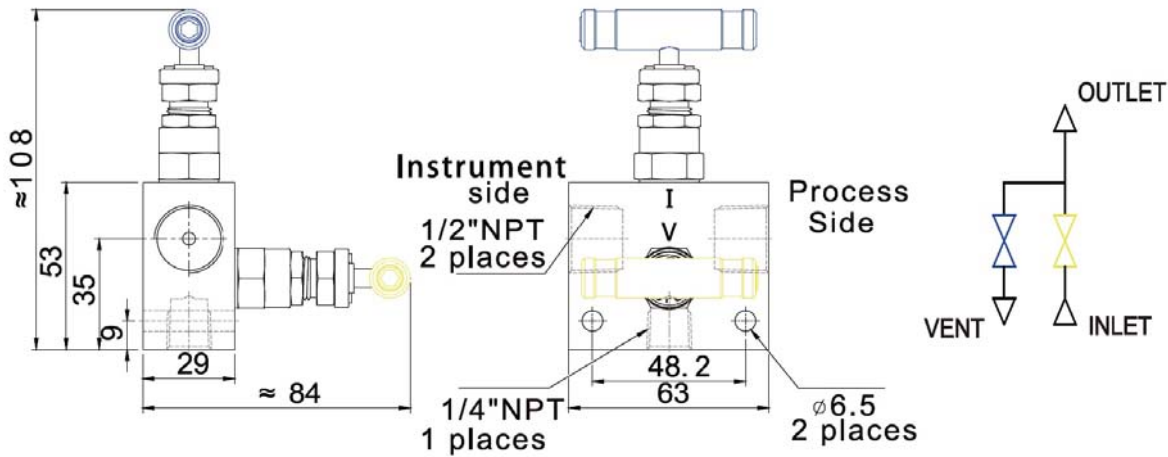
Material List

| Item | Part Name | Material |
|------|------------------|----------|
| 1 | Handle | Aluminum |
| 2 | Handle Set Screw | SS304 |
| 3 | Dust Cap | PVC |
| 4 | Packing Bolt | SS316 |
| 5 | Locking Nut | SS304 |
| 6 | Bonnet | SS316 |
| 7 | Gland | SS316 |
| 8 | Upper Packing | TFM1600 |
| 9 | Lower Packing | TFM1600 |
| 10 | Stem Tip | SS630 |
| 11 | Bonnet | SS316 |
| 12 | Body | SS316 |



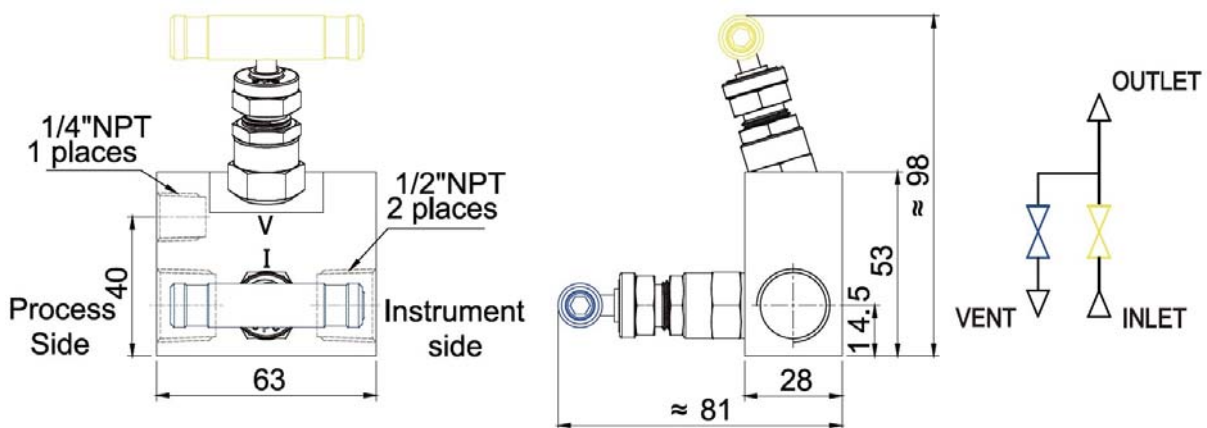
VM2 2 Valve Manifolds

R Type (Block Type)



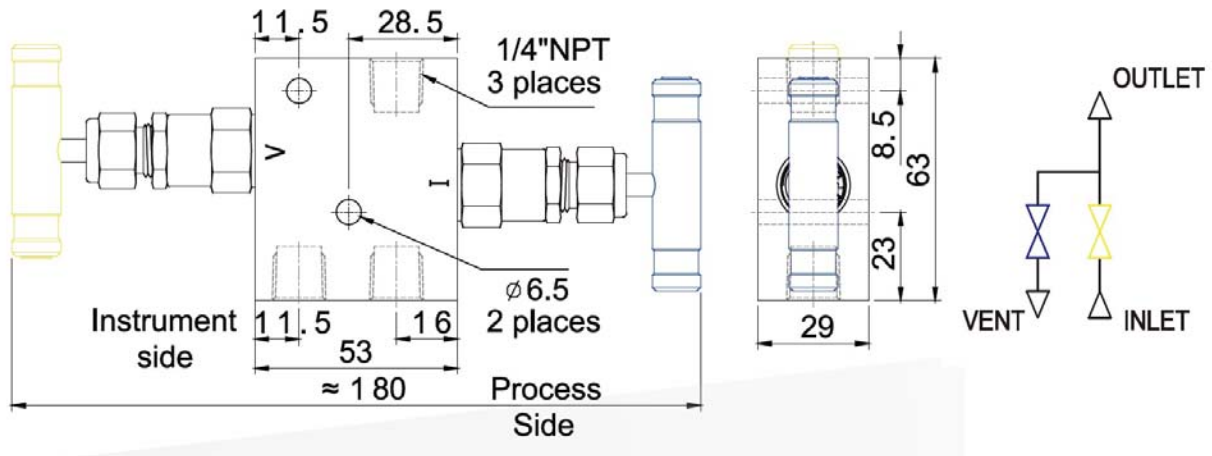
| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|------------|------------|-----------------|
| VM2-RTV-04FN | 1/2"NPT(F) | 1/2"NPT(F) | 1/4"NPT(F) x 1 |

R1 Type (Block Type)



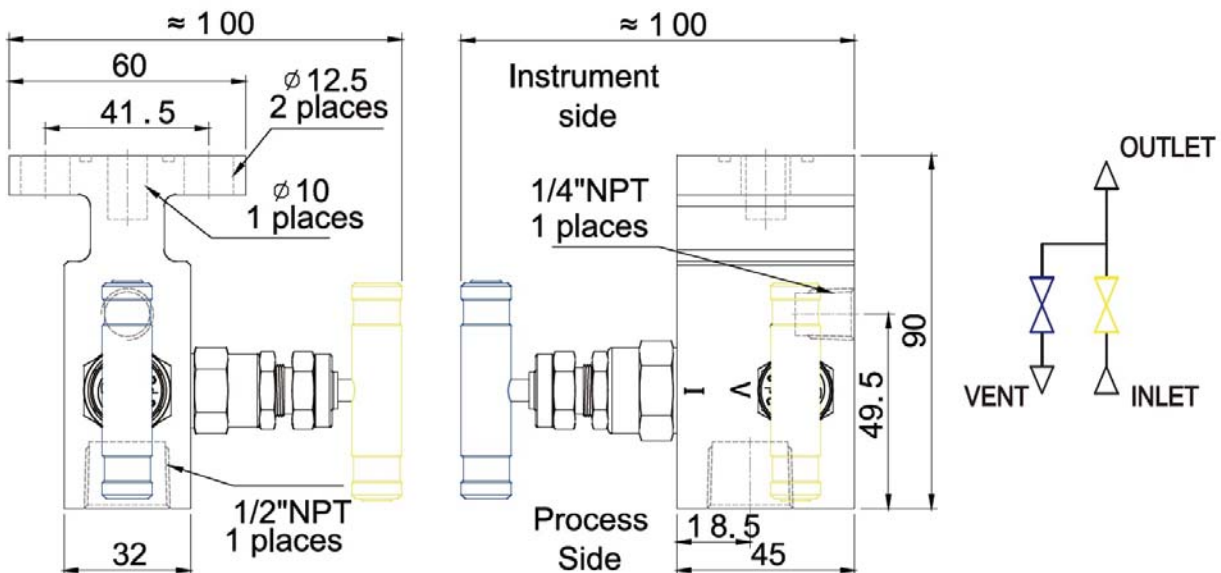
| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|---------------|------------|------------|-----------------|
| VM2-R1TV-04FN | 1/2"NPT(F) | 1/2"NPT(F) | 1/4"NPT(F) x 1 |

R2 Type (Block Type)



| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|---------------|-------------|-------------|-----------------|
| VM2-R2TV-02FN | 1/4" NPT(F) | 1/4" NPT(F) | 1/4" NPT(F) x 1 |
| VM2-R2TV-04FN | 1/2" NPT(F) | 1/2" NPT(F) | 1/4" NPT(F) x 1 |

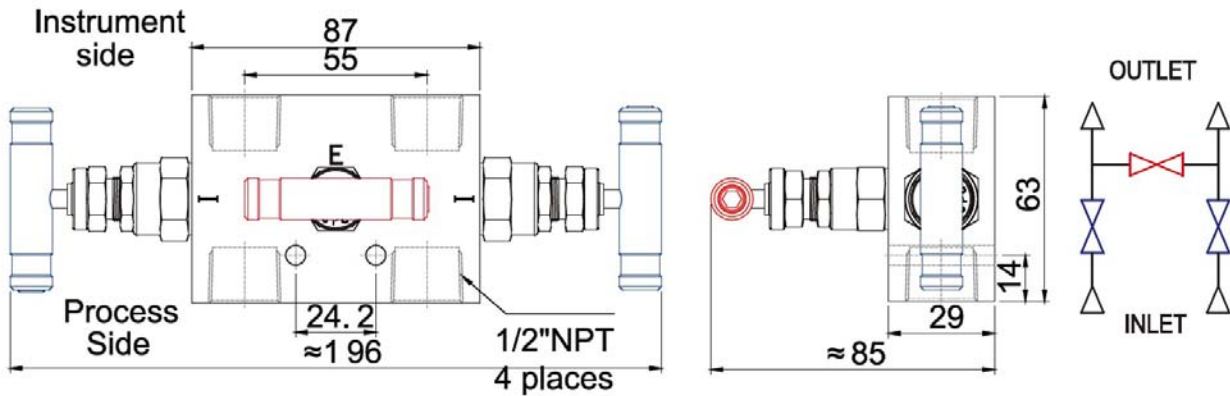
T Type (Single Flange Type)



| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|-------------|--------------|-----------------|
| VM2-TTV-04FN | 1/2" NPT(F) | Flange (MSS) | 1/4" NPT(F) x 1 |

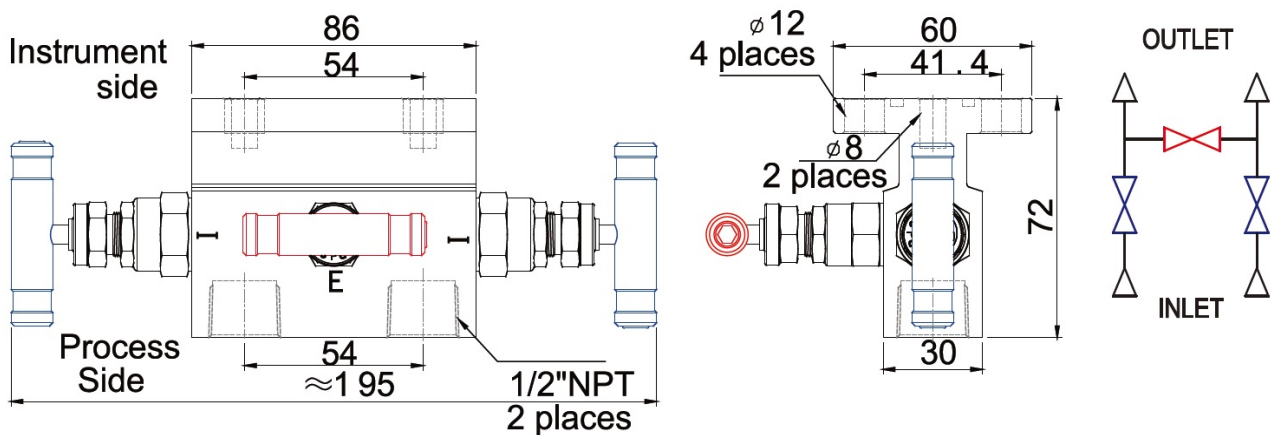
VM3 3 Valve Manifolds

R Type (Block Type)



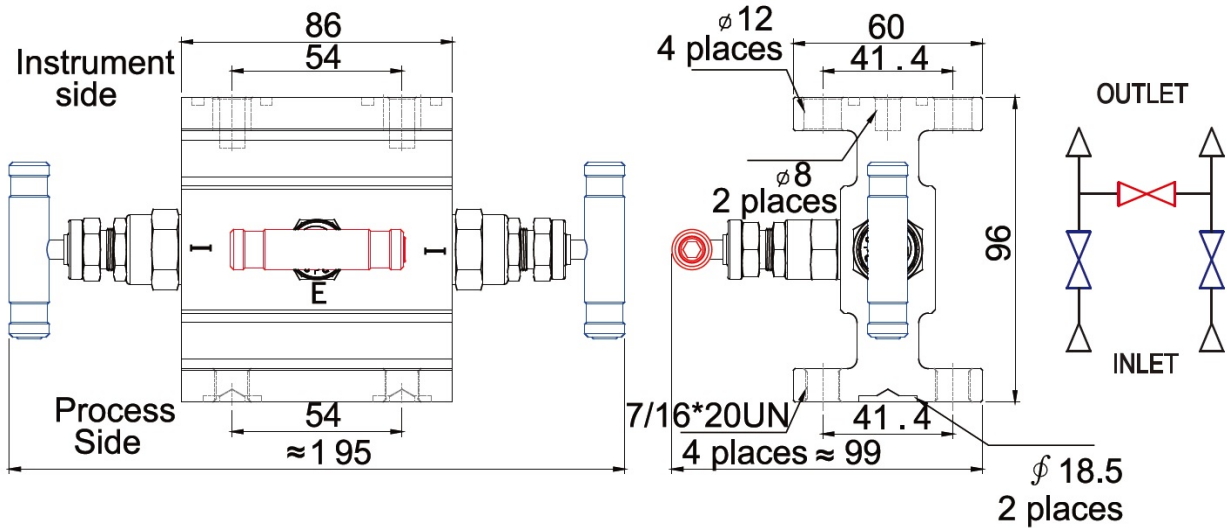
| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|------------|------------|-----------------|
| VM3-RTV-04FN | 1/2"NPT(F) | 1/2"NPT(F) | - |

T Type (Single Flange Type)



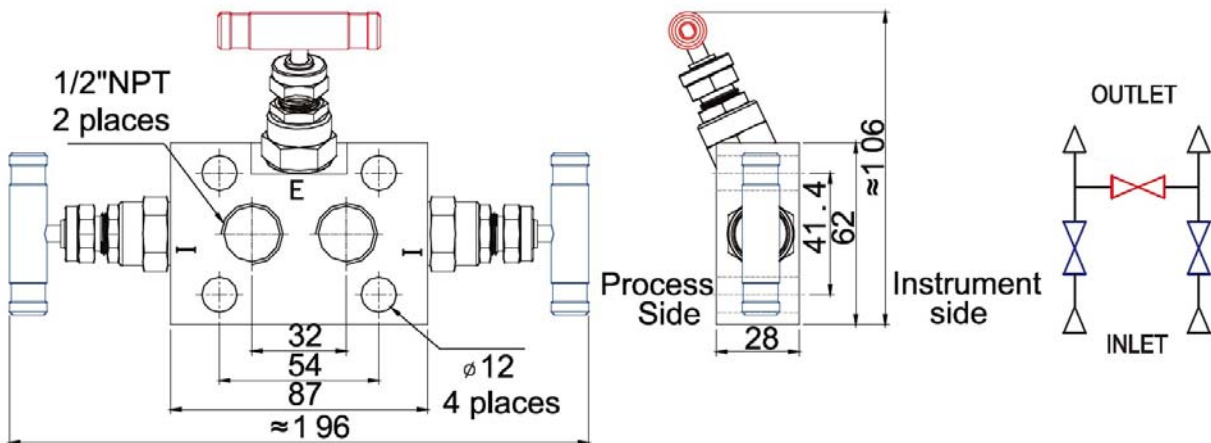
| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|------------|--------------|-----------------|
| VM3-TTV-04FN | 1/2"NPT(F) | Flange (MSS) | - |

H Type (Dual Flange Type)



| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|--------------|--------------|-----------------|
| VM3-HTV-04FN | Flange (MSS) | Flange (MSS) | - |

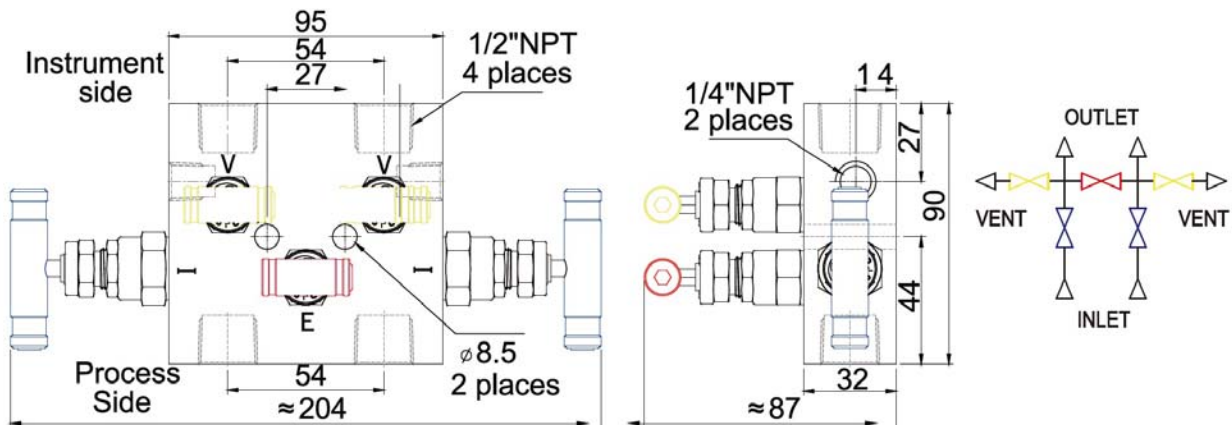
P Type (Single Flange Block Type)



| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|--------------|--------------|-----------------|
| VM3-PTV-04FN | Flange (MSS) | 1/2" NPT (F) | - |

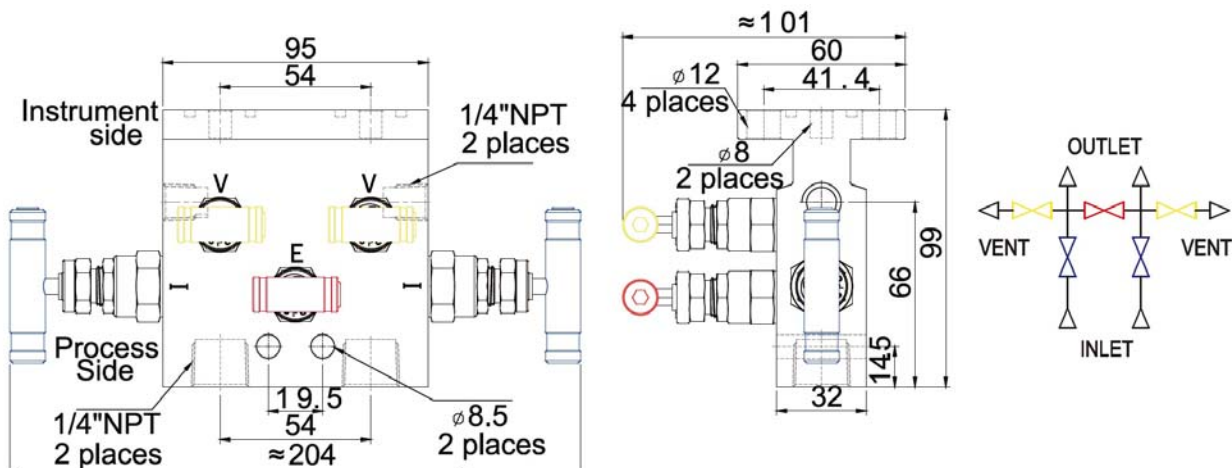
VM5 5 Valve Manifolds

R Type (Block Type)



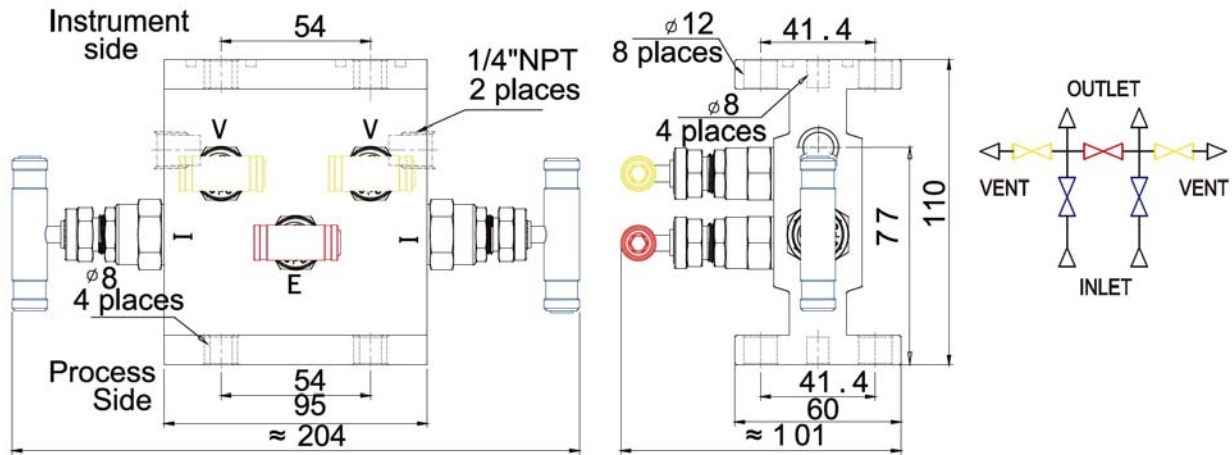
| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|-------------|-------------|-----------------|
| VM5-RTV-04FN | 1/2" NPT(F) | 1/2" NPT(F) | 1/4" NPT(F) x 2 |

T Type (Single Flange Type)



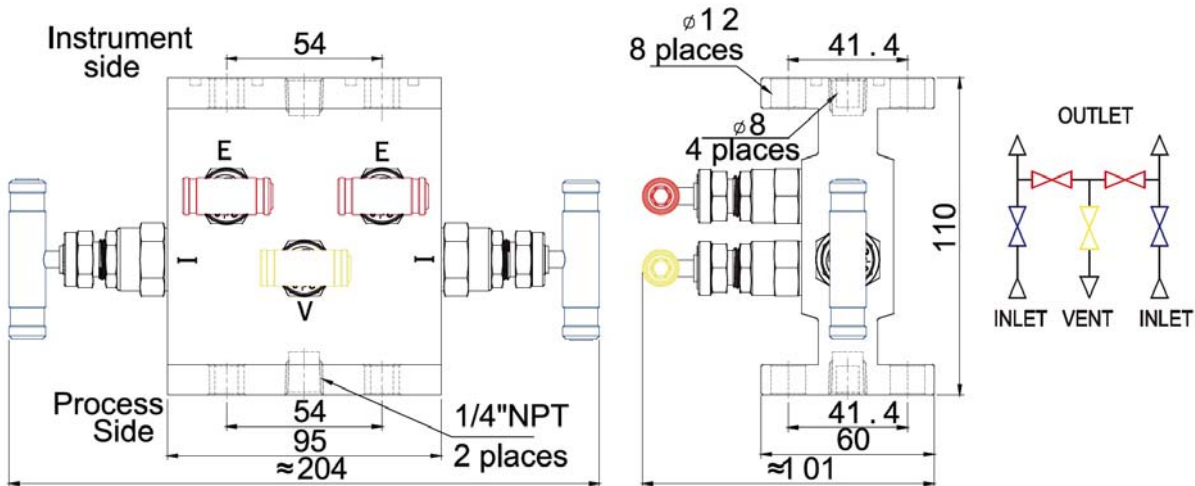
| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|-------------|--------------|-----------------|
| VM5-TTV-04FN | 1/2" NPT(F) | Flange (MSS) | 1/4" NPT(F) x 2 |

H Type (Dual Flange Type)



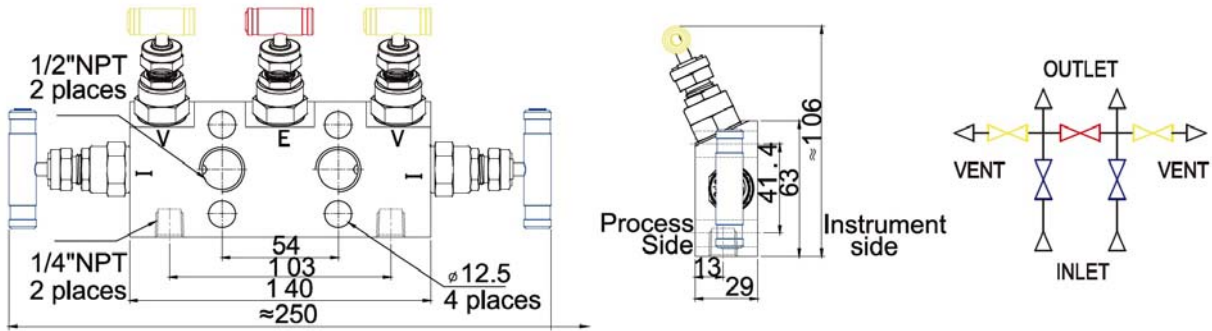
| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|--------------|--------------|-----------------|
| VM5-HTV-04FN | Flange (MSS) | Flange (MSS) | 1/4"NPT(F) x 2 |

H1 Type (Dual Flange Type)



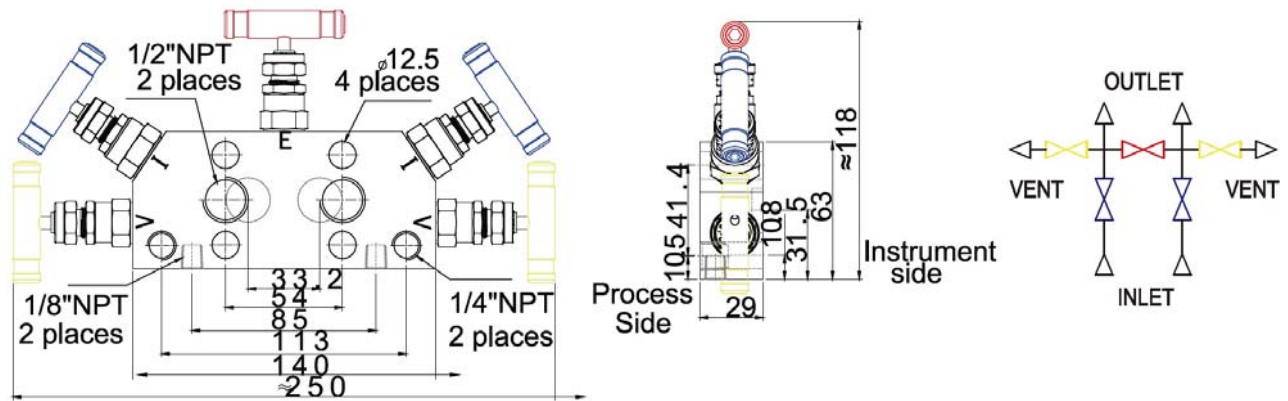
| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|---------------|--------------|--------------|-----------------|
| VM5-H1TV-04FN | Flange (MSS) | Flange (MSS) | 1/4"NPT(F) x 1 |

P Type (Single Flange Block Type)



| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|--------------|--------------|------------|-----------------|
| VM5-PTV-04FN | Flange (MSS) | 1/2"NPT(F) | 1/4"NPT(F) x 2 |

P1 Type (Single Flange Block Type)



| Item No. | Inlet | Outlet | Bleed/Vent/Test |
|---------------|--------------|------------|-----------------|
| VM5-P1TV-04FN | Flange (MSS) | 1/2"NPT(F) | 1/4"NPT(F) x 2 |