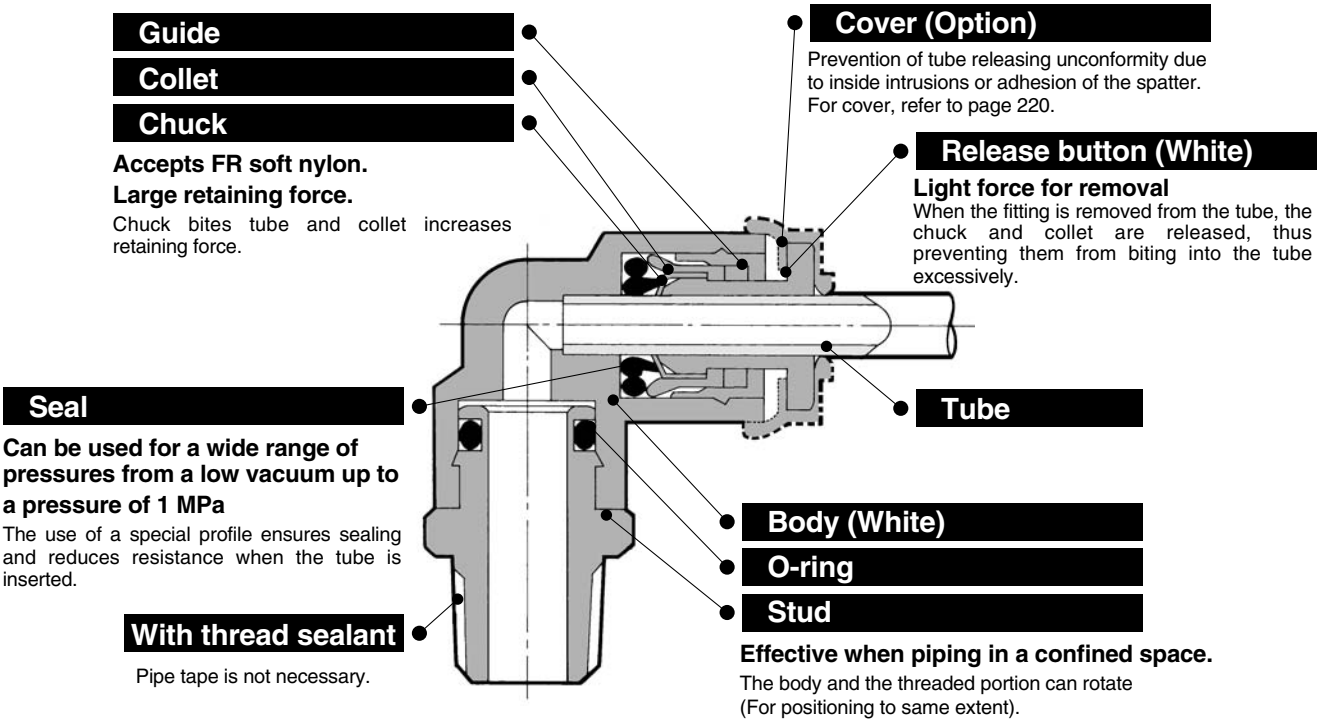
## Flame Resistant (Equivalent to UL-94 Standard V-0)

# FR One-touch Fittings

# *Series KR-W2*

RoHS




PAT. PEND

Made to Order **Made to Order**

| Symbol | Specifications |
|---|---|
| **X2** | Copper-free (With electroless nickel plated) |

Suffix "-X2" to the end of part number.
Example) KRH06-01SW2-X2

## Applicable Tubing

| | |
|---|---|
| Tubing material | FR double layer, FR soft nylon |
| Tubing O.D. | ø6, ø8, ø10, ø12 |

## Specifications

| | | |
|---|---|---|
| **Fluid** | | Air/Water (1) |
| **Operating pressure range** (2) | | –100kPa to 1MPa |
| **Proof pressure** | | 3MPa |
| **Ambient and fluid temperature** | | –5 to 60°C (Water: 0 to 60°C) (No freezing) |
| **Thread** | **Mounting section** | JIS B 0203 (Taper thread for piping) |
| | **Nut section** | JIS B 0205 (Metric fine thread) |
| **Seal on the threads** | | With sealant |

Note 1) The surge pressure must be under the maximum operating pressure.
Note 2) Do not use the fittings with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

## Principal Parts Material

| | |
|---|---|
| Body | C3604, Flame resistant PBT (UL-94 standard V-0) |
| Stud | C3604 (Thread portion) |
| Chuck | Stainless steel 304 |
| Guide | Stainless steel 304, Flame resistant PBT (UL-94 standard V-0) |
| Collet | POM |
| Release button | Flame resistant PBT (UL-94 standard V-0) |
| Seal, O-ring | NBR |
| Cover (Option) | Flame resistant PBT, Flame resistant CR (UL-94 standard V-0) |

## Model

**Male connector**
**KRH-W2** P.216

Use to pipe in the same direction from female thread. Most general style.

**Straight union**
**KRH-W2** P.216

Use to connect tubes in the same direction.

**Male elbow**
**KRL-W2** P.216

Use to pipe at right angles to female thread. Most general style.

**45° male elbow**
**KRK-W2** P.216

Use to pipe in 45° angle direction from female thread. Model in-between of male connector and male elbow.

**Universal male elbow**
**KRV-W2** P.217

Universal male elbow allows thread connection by using a socket wrench for confined spaces.

**Plug-in elbow**
**KRL-W2** P.219

Use to change by 90° in a tube fetching direction from One-touch fittings.

**Spatter cover**
**KR** P.220

Prevention of tube releasing unconformity due to an inside intrusion or adhesion of the spatter.

**Union elbow**
**KRL-W2** P.217

Use to connect tubes at right angles.

**Extended male elbow**
**KRW-W2** P.217

Basically, it is used together with male elbow. Different point is that it is used for fittings to avoid from interfering with each other by making the piping two-level.

**Extended plug-in elbow**
**KRW-W2** P.219

Use to change by 90° in a tube fetching direction from One-touch fittings. Can be used with the plug-in elbow for three-dimensional pipe arrangement.

**Male branch tee**
**KRT-W2** P.217

Use to branch line from female thread in both 90° directions.

**Union tee**
**KRT-W2** P.217

Use to connect tubes in both 90° directions.

**Male run tee**
**KRY-W2** P.218

Use to branch line in the same direction from female thread and in 90° direction.

**Spatter cover**
**KR-□C1** P.220

Prevention of tube releasing unconformity due to an inside intrusion or adhesion of the spatter.

**Plug-in reducer**
**KRR-W2** P.219

Use to size down One-touch fittings.

**Union "Y"**
**KRU-W2** P.218

Use to branch line in the same direction.

**Plug-in "Y"**
**KRU-W2** P.218

Use to branch line in the same direction from One-touch fittings.

**Branch**
**KRU-W2** P.218

Use to branch line in the same direction from female thread.

**Bulkhead union**
**KRE-W2** P.219

Use to connect tubes through a panel.

**Bulkhead Connector**
**KRE-W2** P.219

Use to connect male thread and tube through a panel.

**Plug**
**KRP** P.220

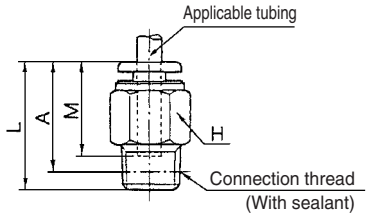
Use to plug unused One-touch fittings.

## Dimensions

### Male Connector: KRH-W2

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | L | A* | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 1/8 | KRH06-01SW2 | 12 | 21.6 | 18.5 | 17 | 10.4 | 5.6 | 16 |
| | 1/4 | KRH06-02SW2 | 14 | 22.5 | 17 | | | | 14 |
| | 3/8 | KRH06-03SW2 | 17 | 20.9 | 15.5 | | | | 27 |
| 8 | 1/8 | KRH08-01SW2 | 14 | 27.1 | 24 | 18.5 | 26.1 | 18.0 | 21 |
| | 1/4 | KRH08-02SW2 | | 26 | 20.5 | | | | 19 |
| | 3/8 | KRH08-03SW2 | 17 | 20.9 | 15.5 | | | | 26 |
| 10 | 1/8 | KRH10-01SW2 | 17 | 29.1 | 26 | 21 | 26.1 | 26.1 | 19 |
| | 1/4 | KRH10-02SW2 | | 33 | 27.5 | | 41.5 | 29.5 | 30 |
| | 3/8 | KRH10-03SW2 | | 27.9 | 22.5 | | | | |
| | 1/2 | KRH10-04SW2 | 22 | 26.1 | 19 | | | | 53 |
| 12 | 1/4 | KRH12-02SW2 | 19 | 34 | 28.5 | 22 | 58.3 | 46.1 | 42 |
| | 3/8 | KRH12-03SW2 | | 28.9 | 23.5 | | | | 34 |
| | 1/2 | KRH12-04SW2 | 22 | 29.1 | 22 | | | | 51 |

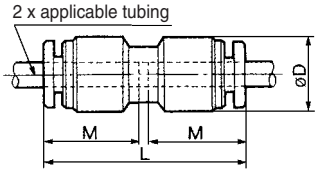
* Reference dimensions after R thread installation.




### Straight Union: KRH-W2

| Applicable tubing O.D. (mm) | Model | øD Note) | L | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|
| 6 | KRH06-00W2 | 12.8 | 34.5 | 17 | 10.4 | 5.6 | 4 |
| 8 | KRH08-00W2 | 15.2 | 38.5 | 18.5 | 26.1 | 18.0 | 6 |
| 10 | KRH10-00W2 | 18.5 | 42.5 | 21 | 41.5 | 29.5 | 11 |
| 12 | KRH12-00W2 | 20.9 | 44.5 | 22 | 58.3 | 46.1 | 14 |

Note) øD: Max. diameter

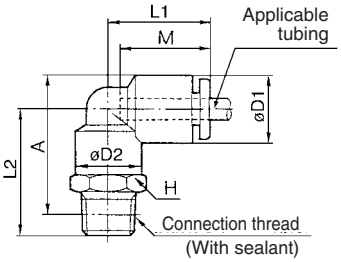



### Male Elbow: KRL-W2

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | A* | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 1/8 | KRL06-01SW2 | 10 | 12.8 | 10 | 20 | 22.1 | 25.5 | 19 | 9.0 | 4.2 | 12 |
| | 1/4 | KRL06-02SW2 | 14 | | | | 26.5 | 27.5 | | | | 22 |
| | 3/8 | KRL06-03SW2 | 17 | | | | 27.9 | 29 | | | | 33 |
| 8 | 1/8 | KRL08-01SW2 | 12 | 15.2 | 12 | 23 | 23.6 | 28 | 20.5 | 21.6 | 14.9 | 13 |
| | 1/4 | KRL08-02SW2 | 14 | | | | 28 | 30 | | | | 21 |
| | 3/8 | KRL08-03SW2 | 17 | | | | 29.4 | 31.5 | | | | 35 |
| 10 | 1/8 | KRL10-01SW2 | 17 | 18.5 | 17 | 26.5 | 26.1 | 32 | 23 | 21.6 | 14.9 | 25 |
| | 1/4 | KRL10-02SW2 | | | | | 29.5 | 33 | | 35.2 | 25.0 | 26 |
| | 3/8 | KRL10-03SW2 | | | | | 30.9 | 34.5 | | | | 36 |
| | 1/2 | KRL10-04SW2 | 22 | | | | 35.1 | 37 | | | | 63 |
| 12 | 1/4 | KRL12-02SW2 | 17 | 20.9 | 17 | 28.5 | 30.5 | 35.5 | 24 | 50.2 | 39.7 | 28 |
| | 3/8 | KRL12-03SW2 | | | | | 31.9 | 37 | | | | 38 |
| | 1/2 | KRL12-04SW2 | 22 | | | | 36.1 | 39.5 | | | | 65 |

* Reference dimensions after R thread installation.

Note 1) øD1: Max. diameter

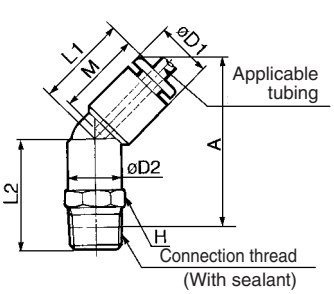



### 45° Male Elbow: KRK-W2

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | A* | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 1/8 | KRK06-01SW2 | 10 | 12.8 | 10 | 18 | 19.6 | 33 | 19 | 6.9 | 3.4 | 12 |
| | 1/4 | KRK06-02SW2 | 14 | | | | 24 | 35 | | | | 10 |
| | 3/8 | KRK06-03SW2 | 17 | | | | 25.4 | 36.5 | | | | 33 |
| 8 | 1/8 | KRK08-01SW2 | 12 | 15.2 | 12 | 20.5 | 21.1 | 37 | 20.5 | 19.7 | | 13 |
| | 1/4 | KRK08-02SW2 | 14 | | | | 25.5 | 39 | | | | 21 |
| | 3/8 | KRK08-03SW2 | 17 | | | | 26.9 | 41 | | | | 35 |
| 10 | 1/8 | KRK10-01SW2 | 17 | 18.5 | 17 | 24 | 23.1 | 42 | 23 | 30.9 | 23.2 | 25 |
| | 1/4 | KRK10-02SW2 | | | | 24 | 26.5 | 43.5 | | | | 26 |
| | 3/8 | KRK10-03SW2 | | | | | 27.9 | 45 | | | | 36 |
| | 1/2 | KRK10-04SW2 | 22 | | | | 32.1 | 47.5 | | | | 63 |
| 12 | 1/4 | KRK12-02SW2 | 17 | 20.9 | 17 | 25 | 27 | 45.5 | 24 | 44.5 | 35.1 | 28 |
| | 3/8 | KRK12-03SW2 | | | | | 28.4 | 47.5 | | | | 38 |
| | 1/2 | KRK12-04SW2 | 22 | | | | 32.6 | 49.5 | | | | 65 |

* Reference dimensions after R thread installation.

Note 1) øD1: Max. diameter

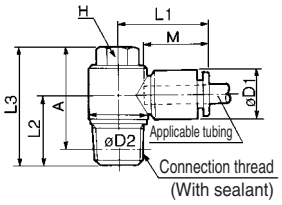


## Universal Male Elbow: KRV-W2

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | L3 | A* | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 1/8 | KRV06-01SW2 | 8 | 12.8 | 13.4 | 24 | 13.6 | 25.6 | 22.5 | 17 | 5.9 | 2.9 | 15 |
| | 1/4 | KRV06-02SW2 | 10 | | 15.4 | 23.5 | 18 | 30.5 | 25 | | | | 26 |
| 8 | 1/8 | KRV08-01SW2 | 12 | 15.2 | 17.6 | 28.5 | 14.6 | 27.6 | 24.5 | 18.5 | 16 | 11.2 | 24 |
| | 1/4 | KRV08-02SW2 | | | | | 18 | 31 | 25.5 | | | | 30 |
| | 3/8 | KRV08-03SW2 | 14 | | 20.6 | 27.5 | 19.4 | 35.4 | 30 | | 20.5 | 14.3 | 47 |
| 10 | 1/4 | KRV10-02SW2 | 14 | 18.5 | 20.6 | 31 | 19 | 35 | 29.5 | 21 | 27 | 20.3 | 40 |
| | 3/8 | KRV10-03SW2 | | | | | 19.4 | 35.4 | 30 | | | | 49 |
| 12 | 3/8 | KRV12-03SW2 | 17 | 20.9 | 25.2 | 34 | 20.9 | 37.4 | 32 | 22 | 39 | 30.8 | 63 |
| | 1/2 | KRV12-04SW2 | | | | | 24.1 | 40.6 | 33.5 | | | | 80 |

∗ Reference dimensions after R thread installation.

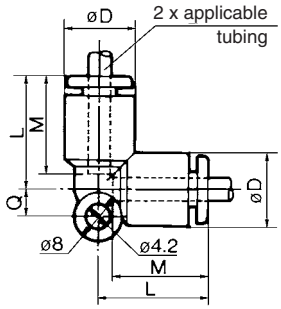
Note 1) øD1: Max. diameter




## Union Elbow: KRL-W2

| Applicable tubing O.D. (mm) | Model | øD (1) | L | Q | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| 6 | KRL06-00W2 | 12.8 | 20 | 5.3 | 17 | 9.0 | 4.2 | 6 |
| 8 | KRL08-00W2 | 15.2 | 23 | 6 | 18 | 21.6 | 14.9 | 10 |
| 10 | KRL10-00W2 | 18.5 | 26.5 | 6.8 | 21 | 35.2 | 25.0 | 17 |
| 12 | KRL12-00W2 | 20.9 | 28.5 | 7.5 | 22 | 50.2 | 39.7 | 21 |

Note 1) øD: Max. diameter

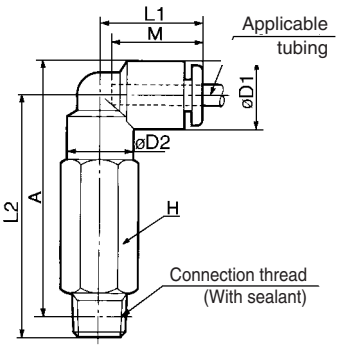



## Extended Male Elbow: KRW-W2

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | A* | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 1/8 | KRW06-01SW2 | 10 | 12.8 | 10 | 20 | 39.1 | 42.5 | 17 | 8.6 | 4.0 | 26 |
| | 1/4 | KRW06-02SW2 | 14 | | | | 45.5 | 46.5 | | | | 41 |
| | 3/8 | KRW06-03SW2 | 17 | | | | 46.9 | 48 | | | | 67 |
| 8 | 1/8 | KRW08-01SW2 | 12 | 15.2 | 12 | 23 | 42.6 | 47 | 18.5 | 20.5 | 14.2 | 30 |
| | 1/4 | KRW08-02SW2 | 14 | | | | 49 | 51 | | | | 47 |
| | 3/8 | KRW08-03SW2 | 17 | | | | 50.4 | 52.5 | | | | 74 |
| 10 | 1/4 | KRW10-02SW2 | 17 | 18.5 | 17 | 26.5 | 56 | 59.5 | 21 | 33.5 | 23.8 | 66 |
| | 3/8 | KRW10-03SW2 | | | | | 57.4 | 61 | | | | 76 |
| | 1/2 | KRW10-04SW2 | 22 | | | | 64.1 | 66 | | | | 145 |
| 12 | 1/4 | KRW12-02SW2 | 17 | 20.9 | 17 | 28.5 | 57 | 62 | 22 | 47.7 | 37.7 | 68 |
| | 3/8 | KRW12-03SW2 | | | | | 58.4 | 63.5 | | | | 78 |
| | 1/2 | KRW12-04SW2 | 22 | | | | 65.1 | 68.5 | | | | 147 |

∗ Reference dimensions after R thread installation.

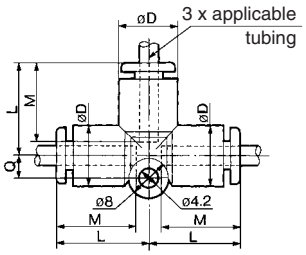
Note 1) øD1: Max. diameter




## Union Tee: KRT-W2

| Applicable tubing O.D. (mm) | Model | øD (1) | L | Q | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| 6 | KRT06-00W2 | 12.8 | 20 | 5.3 | 17 | 10.6 | 6.4 | 10 |
| 8 | KRT08-00W2 | 15.2 | 23 | 6 | 18.5 | 25.6 | 17.7 | 15 |
| 10 | KRT10-00W2 | 18.5 | 26.5 | 6.8 | 21 | 40 | 28.4 | 25 |
| 12 | KRT12-00W2 | 20.9 | 28.5 | 7.5 | 22 | 57.4 | 45.4 | 29 |

Note 1) øD: Max. diameter

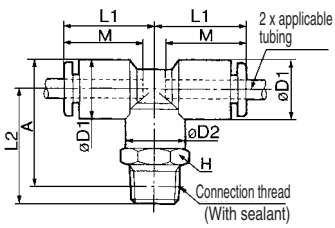



## Male Branch Tee: KRT-W2

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | A* | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 1/8 | KRT06-01SW2 | 10 | 12.8 | 10 | 20 | 22.1 | 25.5 | 17 | 11.0 | 6.0 | 12 |
| | 1/4 | KRT06-02SW2 | 14 | | | | 26.5 | 27.5 | | | | 20 |
| | 3/8 | KRT06-03SW2 | 17 | | | | 27.9 | 29 | | | | 34 |
| 8 | 1/8 | KRT08-01SW2 | 12 | 15.2 | 12 | 23 | 23.6 | 28 | 18.5 | 26.3 | 18.2 | 14 |
| | 1/4 | KRT08-02SW2 | 14 | | | | 28 | 30 | | | | 22 |
| | 3/8 | KRT08-03SW2 | 17 | | | | 29.4 | 31.5 | | | | 36 |
| 10 | 1/8 | KRT10-01SW2 | 17 | 18.5 | 17 | 26.5 | 26.1 | 32 | 21 | 40.8 | 29.0 | 31 |
| | 1/4 | KRT10-02SW2 | | | | | 29.5 | 33 | | | | 29 |
| | 3/8 | KRT10-03SW2 | | | | | 30.9 | 34.5 | | | | 39 |
| | 1/2 | KRT10-04SW2 | 22 | | | | 35.1 | 37 | | | | 66 |
| 12 | 1/4 | KRT12-02SW2 | 17 | 20.9 | 17 | 28.5 | 30.5 | 35.5 | 22 | 57.2 | 45.2 | 31 |
| | 3/8 | KRT12-03SW2 | | | | | 31.9 | 37 | | | | 41 |
| | 1/2 | KRT12-04SW2 | 22 | | | | 36.1 | 39.5 | | | | 68 |

∗ Reference dimensions after R thread installation.

Note 1) øD1: Max. diameter

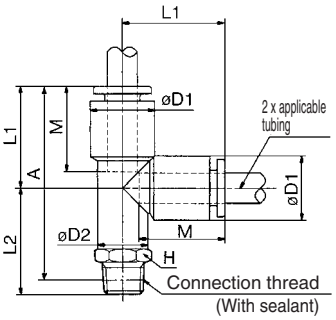


## Male Run Tee: KRY-W2

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | A * | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 1/8 | KRY06-01SW2 | 10 | 12.8 | 10 | 20 | 22.1 | 39 | 19 | 10.6 | 6.4 | 12 |
| | 1/4 | KRY06-02SW2 | 14 | | | | 26.5 | 41 | | | | 20 |
| | 3/8 | KRY06-03SW2 | 17 | | | | 27.9 | 42.5 | | | | 34 |
| 8 | 1/8 | KRY08-01SW2 | 12 | 15.2 | 12 | 23 | 23.6 | 43.5 | 20.5 | 25.6 | 17.7 | 14 |
| | 1/4 | KRY08-02SW2 | 14 | | | | 28 | 45.5 | | | | 22 |
| | 3/8 | KRY08-03SW2 | 17 | | | | 29.4 | 47 | | | | 36 |
| 10 | 1/8 | KRY10-01SW2 | 17 | 18.5 | 17 | 26.5 | 26.1 | 49.5 | 23 | 40.0 | 28.4 | 31 |
| | 1/4 | KRY10-02SW2 | | | | | 29.5 | 50.5 | | | | 29 |
| | 3/8 | KRY10-03SW2 | | | | | 30.9 | 52 | | | | 39 |
| | 1/2 | KRY10-04SW2 | 22 | | | | 35.1 | 54.5 | | | | 66 |
| 12 | 1/4 | KRY12-02SW2 | 17 | 20.9 | 17 | 28.5 | 30.5 | 53.5 | 24 | 57.4 | 45.4 | 31 |
| | 3/8 | KRY12-03SW2 | | | | | 31.9 | 55 | | | | 41 |
| | 1/2 | KRY12-04SW2 | 22 | | | | 36.1 | 57.5 | | | | 68 |

* Reference dimensions after R thread installation.

Note 1) øD: Max. diameter

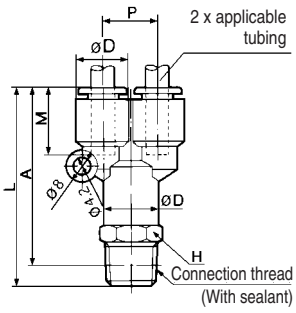



## Branch: KRU-W2

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD (1) | L | P | A * | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 1/8 | KRU06-01SW2 | 13 | 12.8 | 44.6 | 12.8 | 41.5 | 17 | 10.4 | 4.2 | 12 |
| | 1/4 | KRU06-02SW2 | 14 | | 48.5 | | 43 | | | | 22 |
| | 3/8 | KRU06-03SW2 | 17 | | 49.9 | | 44.5 | | | | 35 |
| 8 | 1/8 | KRU08-01SW2 | 17 | 15.2 | 51.6 | 15.2 | 48.5 | 18.5 | 25.6 | 17.7 | 16 |
| | 1/4 | KRU08-02SW2 | | | 55 | | 49.5 | | | | 24 |
| | 3/8 | KRU08-03SW2 | | | 55.4 | | 50 | | | | 36 |
| 10 | 1/4 | KRU10-02SW2 | 19 | 18.5 | 60.5 | 18.5 | 55 | 21 | 40 | 28.4 | 30 |
| | 3/8 | KRU10-03SW2 | | | 60.9 | | 55.5 | | | | 40 |
| | 1/2 | KRU10-04SW2 | 22 | | 64.1 | | 57 | | | | 65 |
| 12 | 1/4 | KRU12-02SW2 | 22 | 20.9 | 64 | 20.9 | 58.5 | 22 | 57.4 | 45.4 | 32 |
| | 3/8 | KRU12-03SW2 | | | 64.4 | | 59 | | | | 40 |
| | 1/2 | KRU12-04SW2 | | | 67.6 | | 60.5 | | | | 65 |

* Reference dimensions after R thread installation.

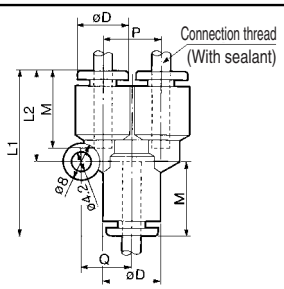
Note 1) øD: Max. diameter




## Union "Y": KRU-W2

| Applicable tubing O.D. (mm) | Model | øD (1) | L1 | L2 | P | Q | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | KRU06-00W2 | 12.8 | 37 | 20 | 12.8 | 11.7 | 17 | 10.4 | 4.2 | 10 |
| 8 | KRU08-00W2 | 15.2 | 42.5 | 24.5 | 15.2 | 13.7 | 18.5 | 25.6 | 17.7 | 12 |
| 10 | KRU10-00W2 | 18.5 | 48 | 27.5 | 18.5 | 16.1 | 21 | 40 | 28.4 | 16 |
| 12 | KRU12-00W2 | 20.9 | 51 | 30 | 20.9 | 18.1 | 22 | 57.4 | 45.4 | 23 |

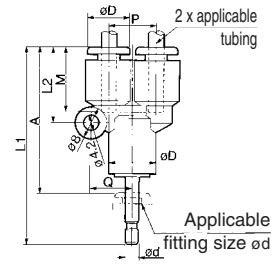
Note 1) øD: Max. diameter




## Plug-in "Y": KRU-W2

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | øD (1) | L1 | L2 | P | Q | A | M | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 6 | KRU06-99W2 | 12.8 | 55.5 | 20 | 12.8 | 11.7 | 38.5 | 17 | 10.4 | 4.2 | 19 |
| 8 | 8 | KRU08-99W2 | 15.2 | 64.5 | 24.5 | 15.2 | 13.7 | 46 | 18.5 | 25.6 | 17.7 | 22 |
| 10 | 10 | KRU10-99W2 | 18.5 | 71.5 | 27.5 | 18.5 | 16.1 | 50.5 | 21 | 40 | 28.4 | 26 |
| 12 | 12 | KRU12-99W2 | 20.9 | 75.5 | 30 | 20.9 | 18.1 | 53.5 | 22 | 57.4 | 45.4 | 32 |

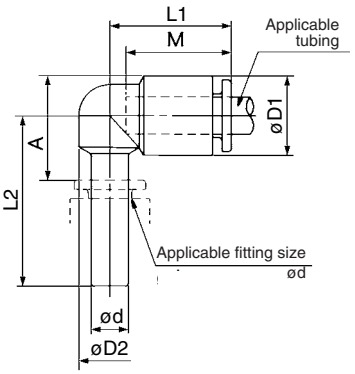
Note 1) øD: Max. diameter



## Plug-in elbow: KRL-W2

| Applicable tubing O.D. (mm) | Applicable fitting size **ød** | Model | (1) **øD1** | **øD2** | **L1** | **L2** | **A** | **M** | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6** | 6 | **KRL06-99W2** | 12.8 | 10 | 20 | 27.5 | 17 | 17 | 9.0 | 4.2 | 3 |
| **8** | 8 | **KRL08-99W2** | 15.2 | 12 | 22.5 | 31.5 | 21 | 18.5 | 21.6 | 14.9 | 5 |
| **10** | 10 | **KRL10-99W2** | 18.5 | 14 | 25.5 | 35.5 | 23.5 | 21 | 35.2 | 25.0 | 9 |
| **12** | 12 | **KRL12-99W2** | 20.9 | 16 | 27 | 37.5 | 26 | 22 | 50.2 | 39.7 | 10 |

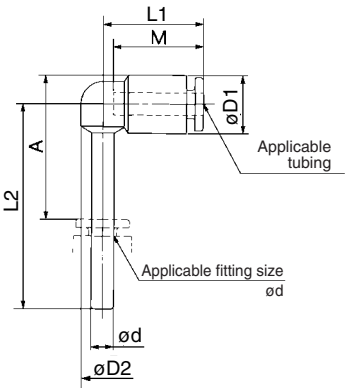
Note 1) øD1: Max. diameter




## Extended plug-in elbow: KRW-W2

| Applicable tubing O.D. (mm) | Applicable fitting size **ød** | Model | (1) **øD1** | **øD2** | **L1** | **L2** | **A** | **M** | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **6** | 6 | **KRW06-99W2** | 12.8 | 10 | 20 | 41.5 | 31 | 17 | 9.0 | 4.2 | 4 |
| **8** | 8 | **KRW08-99W2** | 15.2 | 10 | 22.5 | 48 | 37 | 18.5 | 21.6 | 14.9 | 6 |
| **10** | 10 | **KRW10-99W2** | 18.5 | 14 | 25.5 | 55 | 43.5 | 21 | 35.2 | 25.0 | 9 |
| **12** | 12 | **KRW12-99W2** | 20.9 | 16 | 27 | 59.5 | 48 | 22 | 50.2 | 39.7 | 13 |

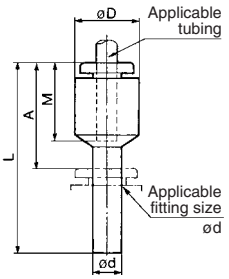
Note 1) øD1: Max. diameter




## Plug-in Reducer: KRR-W2

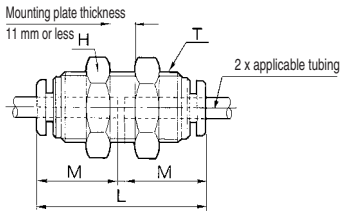
| Applicable tubing O.D. (mm) | Applicable fitting size **ød** | Model | (1) **øD1** | **L** | **A** | **M** | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| **6** | 8 | **KRR06-08W2** | 12.8 | 37 | 18.5 | 17 | 10.4 | 5.6 | 2.5 |
| | 10 | **KRR06-10W2** | | 39.5 | | | | | 9.3 |
| **8** | 10 | **KRR08-10W2** | 15.2 | 41 | 20 | 18.5 | 26.1 | 18.0 | 4.0 |
| | 12 | **KRR08-12W2** | | 42 | | | | | 4.6 |
| **10** | 12 | **KRR10-12W2** | 18.5 | 44.5 | 23 | 21 | 41.5 | 32.8 | 33 |

Note 1) øD: Max. diameter



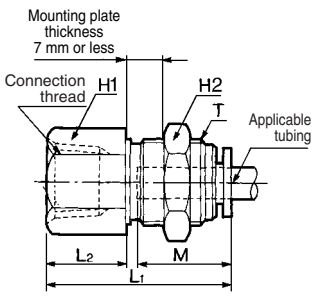

## Bulkhead Union: KRE-W2

| Applicable tubing O.D. (mm) | Model | **T** (M) | **H** (width across flats) | **L** | Mounting hole | **M** | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| **6** | **KRE06-00W2** | M14 x 1 | 17 | 34.5 | 15 | 17 | 10.4 | 5.6 | 33 |
| **8** | **KRE08-00W2** | M16 x 1 | 19 | 38 | 17 | 18.5 | 26.1 | 18.0 | 52 |
| **10** | **KRE10-00W2** | M20 x 1 | 24 | 42.5 | 21 | 21 | 41.5 | 29.5 | 70 |
| **12** | **KRE12-00W2** | M22 x 1 | 27 | 44 | 23 | 22 | 58.3 | 46.1 | 90 |




## Bulkhead Connector: KRE-W2

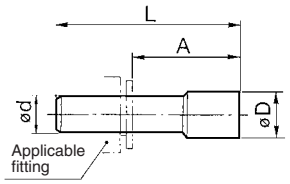
| Applicable tubing O.D. (mm) | Connection thread Rc | Model | **T** (M) | **H1** (width across flats) | **H2** (width across flats) | **L1** | **L2** | Mounting hole | **M** | Effective area (mm²) FR double layer | Effective area (mm²) FR soft nylon | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6** | 1/8 | **KRE06-01W2** | M14 x 1 | 17 | 17 | 28 | 11 | 15 | 17 | 10.4 | 5.6 | 25 |
| | 1/4 | **KRE06-02W2** | | | | 31.5 | 15 | | | | | 40 |
| | 3/8 | **KRE06-03W2** | | 19 | | 33.5 | 17 | | | | | 29 |
| **8** | 1/8 | **KRE08-01W2** | M16 x 1 | 17 | 19 | 27.5 | 7.5 | 17 | 18.5 | 26.1 | 18.0 | 28 |
| | 1/4 | **KRE08-02W2** | | | | 33 | 13 | | | | | 27 |
| | 3/8 | **KRE08-03W2** | | 19 | | 35 | 15 | | | | | 48 |
| **10** | 1/4 | **KRE10-02W2** | M20 x 1 | 22 | 24 | 34.5 | 12.5 | 21 | 21 | 41.5 | 29.5 | 53 |
| | 3/8 | **KRE10-03W2** | | 22 | | 36.5 | 15 | | | | | 67 |
| **12** | 3/8 | **KRE12-03W2** | M22 x 1 | 24 | 27 | 37 | 14 | 23 | 22 | 58.3 | 46.1 | 92 |
| | 1/2 | **KRE12-04W2** | | | | 41 | 18 | | | | | 59 |



## Plug: KRP

| Applicable fitting size ød | Model | øD | L | A | Mass (g) |
|---|---|---|---|---|---|
| 6 | **KRP-06** | 8 | 35 | 18 | 1 |
| 8 | **KRP-08** | 10 | 39 | 20.5 | 2 |
| 10 | **KRP-10** | 12 | 43 | 22 | 3.5 |
| 12 | **KRP-12** | 14 | 45.5 | 24 | 5 |

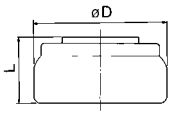
∗ Color: Green




## Spatter Cover 1: KR (Applicable tube: FR soft nylon)

| Applicable fitting size | Model | øD | L | Mass (g) |
|---|---|---|---|---|
| 6 | **KR-06C** | 15.5 | 9 | 0.9 |
| 8 | **KR-08C** | 17 | 9 | 1.0 |
| 10 | **KR-10C** | 20.8 | 10.5 | 1.5 |
| 12 | **KR-12C** | 22.8 | 10.5 | 1.6 |

∗ When tube insert parts are in line as KQU Union "Y", use KR-□□C1.
∗ Color: Gray

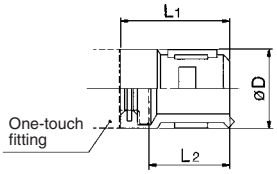



## Spatter Cover 2: KR (Applicable tube: FR soft nylon, FR double layer)

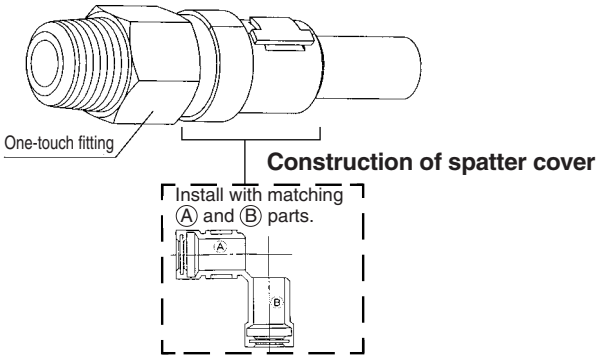
| Applicable fitting size | Model | $L_1$ | $L_2$ | øD |
|---|---|---|---|---|
| 6 | **KR-06C1** | 18 | 13.7 | 12.8 |
| 8 | **KR-08C1** | 20 | 15.7 | 15 |
| 10 | **KR-10C1** | 22 | 17.2 | 18 |
| 12 | **KR-12C1** | 22 | 17.2 | 20 |

∗ Color: Gray

**Installed**




### How to install




## Made to Order

**Spatter Cover 2-Metal Type (Applicable tube: FR double layer)**

| Applicable fitting size | Model |
|---|---|
| 6 | **KR-06C2** |
| 8 | **KR-08C2** |
| 10 | **KR-10C2** |
| 12 | **KR-12C2** |

## Flame Resistant (Equivalent to UL-94 Standard V-0)

# FR One-touch Fittings Manifold

# *Series KRM*

RoHS

**Compact piping possible.**

**Manifold piping possible.**

**Many varieties (8 types) are available.**

**One-touch fittings give the most efficient operation.**

**Cover (Option)**

**KRM12**



**KRM11**

### Model

| Model | Porting | | No. of Port A | Port A size | Port B size |
|---|---|---|---|---|---|
| | Port A | Port B | | | |
| **KRM11** | One-touch fitting | One-touch fitting | 6, 10 | ø6 tube | ø10 tube |
| | | | | ø8 tube | ø12 tube |
| **KRM12** | One-touch fitting | Rc female thread | 6, 10 | ø6 tube | Rc 1/4 |
| | | | | ø8 tube | Rc 3/8 |

### Applicable Tubing

| | |
|---|---|
| Tubing material | FR double layer, FR soft nylon |
| Tubing O.D. | ø6, ø8, ø10, ø12 |

### Specifications

| Model | KRM11 | KRM12 |
|---|---|---|
| **Fluid** | Air/Water (1) | |
| **Maximum operating pressure** | 1MPa | |
| **Proof pressure** | 3MPa | |
| **Ambient and fluid temperature** | –5 to 60°C (Water: 0 to 60°C) (No freezing) | |
| **Thread** | — | JIS B 0203 (Taper threads for piping) |
| **Accessory** | None | Hexagon socket head blank plug with sealant: 1 pc. |

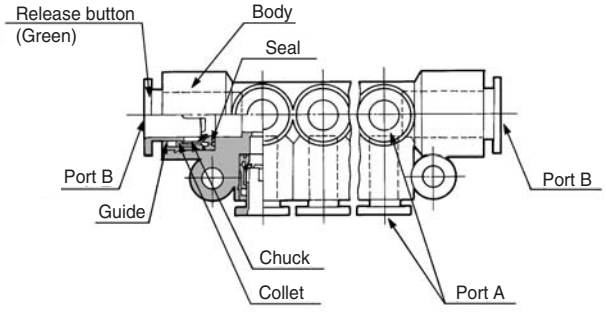
Note 1) The surge pressure must be under the maximum operating pressure.

### Principal Parts Material

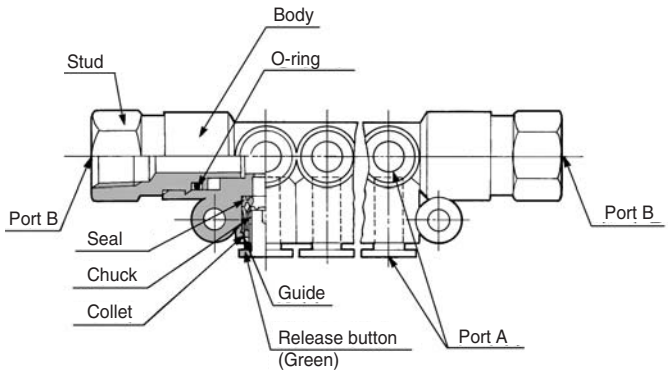
| Model | KRM11 | KRM12 |
|---|---|---|
| Body | Flame resistant PBT (UL-94 standard V-0) | |
| Stud | — | C3604 |
| Chuck | Stainless steel 304 | |
| Guide | Stainless steel 304 | |
| Collet | POM | |
| Seal | NBR | |
| Release button | Flame resistant PBT (UL-94 standard V-0) | |
| Cover | Flame resistant CR (UL-94 standard V-0) | |

## Construction

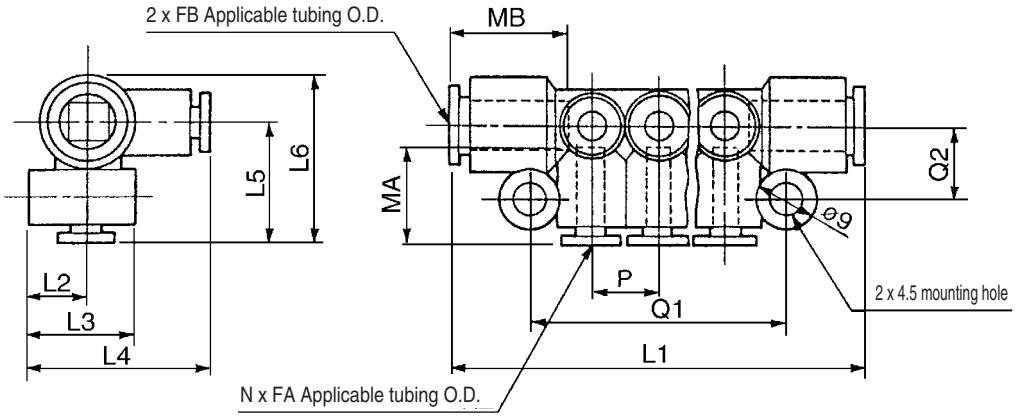
**KRM11**




**KRM12**

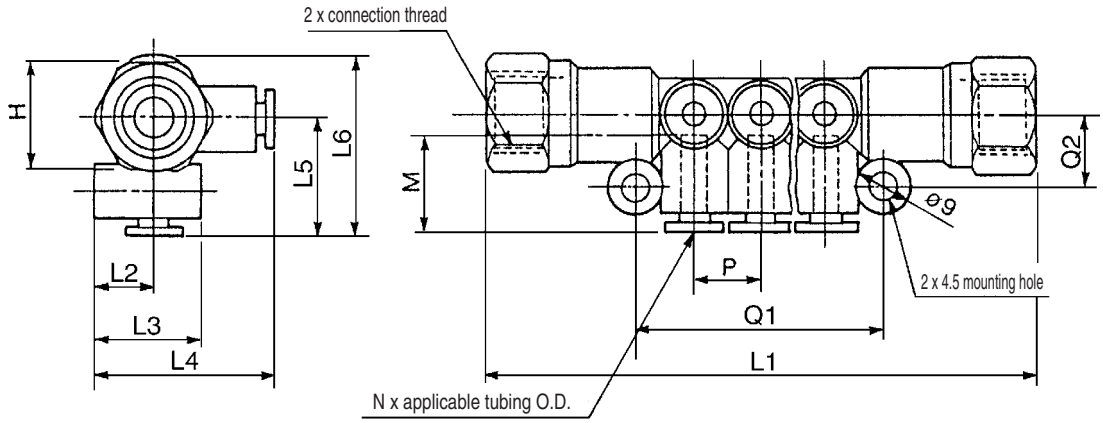


## Dimensions: KRM11




| Applicable tubing O.D. (mm) | | Model | N | L1 | L2 | L3 | L4 | L5 | L6 | P | Q1 | Q2 | MA | MB | Port B Min. bore | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FA | FB | | | | | | | | | | | | | | | |
| **6** | **10** | **KRM11-06-10-6** | 6 | 76 | 10 | 19.5 | 31.5 | 21.5 | 31 | 13 | 47 | 13.5 | 17 | 21 | 7.5 | 29 |
| | | **KRM11-06-10-10** | 10 | 102 | | | | | | | 73 | | | | | 39 |
| **8** | **12** | **KRM11-08-12-6** | 6 | 85 | 11.5 | 22.5 | 35.5 | 24 | 34.5 | 15.5 | 55 | 14.7 | 18.5 | 22 | 9 | 41 |
| | | **KRM11-08-12-10** | 10 | 116 | | | | | | | 86 | | | | | 57 |

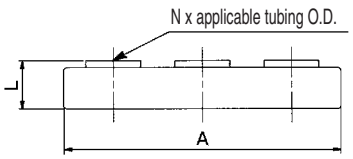
## Dimensions: KRM12




| Applicable tubing O.D. (mm) | Connection thread $R_c$ | Model | N | H (width across flats) | L1 | L2 | L3 | L4 | L5 | L6 | P | Q1 | Q2 | M | Port B Min. bore | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6** | 1/4 | **KRM12-06-02-6** | 6 | 17 | 99 | 10 | 19.5 | 31.5 | 21.5 | 31 | 13 | 47 | 13.5 | 17 | 7.5 | 81 |
| | | **KRM12-06-02-10** | 10 | | 125 | | | | | | | 73 | | | | 91 |
| **8** | 3/8 | **KRM12-08-03-6** | 6 | 19 | 108 | 11.5 | 22.5 | 35.5 | 24 | 34.5 | 15.5 | 55 | 14.7 | 18.5 | 9 | 97 |
| | | **KRM12-08-03-10** | 10 | | 139 | | | | | | | 86 | | | | 112 |

## Spatter Cover 3: KRMC (Applicable: FR soft nylon)

| Applicable tubing O.D. (mm) | N | Model | L | A | Mass (g) |
|---|---|---|---|---|---|
| **6** | 6 | **KRMC-06-6** | 40.5 | 7 | 2.5 |
| | 10 | **KRMC-06-10** | 66.5 | 7 | 4 |
| **8** | 6 | **KRMC-08-6** | 48 | 8 | 3 |
| | 10 | **KRMC-08-10** | 79 | 8 | 4.5 |




Refer to page 220 for spatter cover 1 and 2.

# Antistatic One-touch Fittings
## Applicable Tubing: Metric Size/Connection Thread: M, Rc, G, NPT, NPTF
# Series KA

RoHS

**One-touch fitting with antistatic prevention.**

**One-touch IN/OUT connection.**

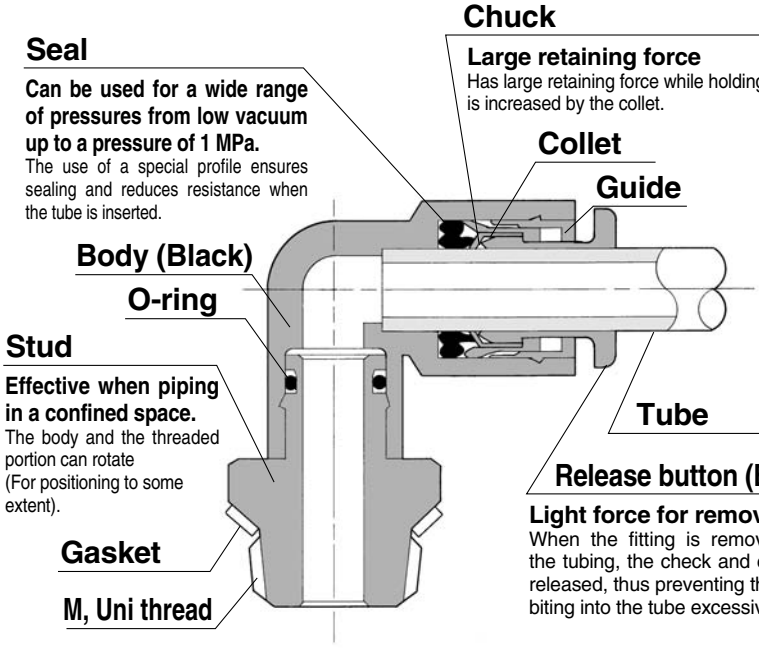
**Possible to use from vacuum (–100 kPa).**

**Can be used in copper-free application.**

**Flame resistance (Equivalent to UL-94 standard, material V-0)**

**Surface resistance $10^4$ to $10^7$ Ω**

**Conductive resin is used for body and seals in fittings and tubing.**




### Principal Parts Material

| | |
|---|---|
| Body | C3604, PBT |
| Stud | C3604 |
| Chuck | Stainless steel 304 |
| Guide | Stainless steel 304, C3604, PBT |
| Collet, Release button | PBT |
| Seal, O-ring | NBR |
| Gasket | Stainless steel 304, NBR |

- C3604 is all electroless nickel plated.
- PBT parts have conductive ($10^4$ to $10^7$ Ω) and flame resistant applications. (UL-94 standard, V-0)
- Conductive NBR ($10^4$ to $10^7$Ω) is used for seals.

### Applicable Tubing

| | |
|---|---|
| Tubing material | Antistatic soft nylon, Antistatic polyurethane |
| Tubing O.D. | ø3.2, ø4, ø6, ø8, ø10, ø12 |

### Specifications

| | |
|---|---|
| **Fluid** | Air |
| **Operating pressure range** | –100kPa to 1MPa |
| **Proof pressure** | 3MPa |
| **Ambient and fluid temperature** | 0 to 40°C |
| **Thread** | Uni thread<br>JIS B 0209 (Metric coarse thread) |
| **Seal (Thread portion)** | Gasket |
| **Copper-free** | Brass parts are all electroless nickel plated. |
| **Surface resistance** | $10^4$ to $10^7$Ω |

### Gasket (Thread portion)

**Model** **M-5G2 (For M5 thread)**
**M-6G (For M6 thread)**
**KQG-U□□ (For Uni thread)**

### How to Order Gasket for Uni Thread

**KQG-U01**

**Gasket for Uni thread**

**Applicable port size**

| | |
|---|---|
| **U01** | Uni 1/8 |
| **U02** | Uni 1/4 |
| **U03** | Uni 3/8 |
| **U04** | Uni 1/2 |

## Male Connector: KAH

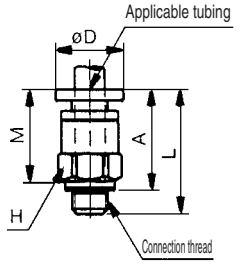
**<M5, M6>**

**<Uni thread>**

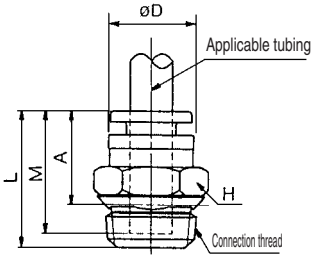
| Applicable tubing O.D. (mm) | Connection thread M thread / Uni thread | Model | H (width across flats) | øD | L | A* | M | Effective area (mm²) Soft nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KAH23-M5 | 7 | 8.5 | 17 | 14 | 13 | 3.4 | 2.9 | 2.1 |
| | M6 x 1 | KAH23-M6 | 8 | | 17.5 | | | | | |
| | 1/8 | KAH23-U01 | 10 | | 12.5 | 8.5 | | | | 4 |
| 4 | M5 x 0.8 | KAH04-M5 | 8 | 9.5 | 17 | 14 | 13 | 4 | 4 | 2 |
| | M6 x 1 | KAH04-M6 | | | 17.5 | | | | | |
| | 1/8 | KAH04-U01 | 10 | 10 | 18.5 | 13.5 | 16 | 5.6 | 5.6 | 5 |
| | 1/4 | KAH04-U02 | 14 | | 16.5 | 10.5 | | | | 10 |
| 6 | M5 x 0.8 | KAH06-M5 | 10 | 11.5 | 18.5 | 15 | 14 | 4 | 4 | 3 |
| | M6 x 1 | KAH06-M6 | | | 19 | | | | | |
| | 1/8 | KAH06-U01 | 12 | 12 | 19.5 | 14.5 | 17 | 13.1 | 13.1 | 5 |
| | 1/4 | KAH06-U02 | 14 | | | 13 | | | | 10 |
| | 3/8 | KAH06-U03 | 17 | | 17.5 | 11.5 | | | | 16 |
| 8 | 1/8 | KAH08-U01 | 14 | 14 | 25 | 20.5 | 18.5 | 18.0 | 18.0 | 11 |
| | 1/4 | KAH08-U02 | | | 21.5 | 15.5 | | | | 27 |
| | 3/8 | KAH08-U03 | 17 | | 19.5 | 13.5 | | | | 33 |
| 10 | 1/8 | KAH10-U01 | 17 | 17 | 28 | 23 | 21 | 29.5 | 29.5 | 17 |
| | 1/4 | KAH10-U02 | | | | 22 | | | | |
| | 3/8 | KAH10-U03 | | | 24 | 18 | | | | 14 |
| | 1/2 | KAH10-U04 | 22 | | 22 | 14 | | | | 28 |
| 12 | 1/4 | KAH12-U02 | 19 | 19 | 30.5 | 24.5 | 22 | 46.1 | 46.1 | 22 |
| | 3/8 | KAH12-U03 | | | 25.5 | 19.5 | | | | 16 |
| | 1/2 | KAH12-U04 | 22 | | 24.5 | 16.5 | | | | 28 |

* Reference dimensions after Uni thread installation.

**<M5, M6>**




**<Uni thread>**




## Male Elbow: KAL

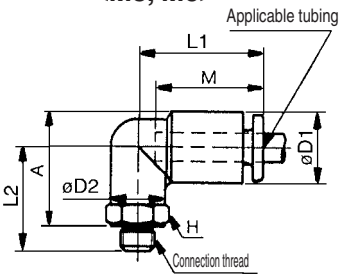
**<M5, M6>**

**<Uni thread>**

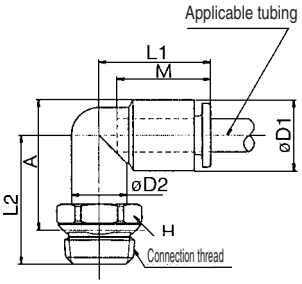
| Applicable tubing O.D. (mm) | Connection thread M thread / Uni thread | Model | H (width across flats) | øD1 | øD2 | L1 | L2 | A* | M | Effective area (mm²) Soft nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KAL23-M5 | 8 | 9.6 | 8 | 17.5 | 15 | 16 | 15.5 | 3.4 | 2.9 | 6 |
| | M6 x 1 | KAL23-M6 | | | | | 15.5 | | | | | 7 |
| | 1/8 | KAL23-U01 | 10 | | 10 | | 19.5 | 21 | | | | 8 |
| 4 | M5 x 0.8 | KAL04-M5 | 8 | 10.4 | 8 | 18 | 15.5 | 16 | 16 | 3.5 | 3.5 | 4 |
| | M6 x 1 | KAL04-M6 | | | | | 16 | | | | | 5 |
| | 1/8 | KAL04-U01 | 10 | | 10 | | 20 | 20.5 | | 4.2 | 4.2 | 8 |
| | 1/4 | KAL04-U02 | 14 | | | | 22 | 21.5 | | | | 14 |
| 6 | M5 x 0.8 | KAL06-M5 | 8 | 12.8 | 8 | 20 | 16 | 18 | 17 | 3.5 | 3.5 | 6 |
| | M6 x 1 | KAL06-M6 | | | | | 16.5 | | | | | 5 |
| | 1/8 | KAL06-U01 | 10 | | 10 | | 21.5 | 23.5 | | 11.4 | 11.4 | 9 |
| | 1/4 | KAL06-U02 | 14 | | | | 23 | | | | | 15 |
| | 3/8 | KAL06-U03 | 17 | | | | 24 | 24.5 | | | | 23 |
| 8 | 1/8 | KAL08-U01 | 12 | 15.2 | 12 | 23 | 22.5 | 25.5 | 18.5 | 14.9 | 14.9 | 11 |
| | 1/4 | KAL08-U02 | 14 | | | | 24.5 | 26 | | | | 16 |
| | 3/8 | KAL08-U03 | 17 | | | | 25.5 | 27 | | | | 24 |
| 10 | 1/8 | KAL10-U01 | 17 | 18.5 | 17 | 26.5 | 25 | 29.5 | 21 | 14.9 | 14.9 | 24 |
| | 1/4 | KAL10-U02 | | | | | 26.5 | 30 | | 25.0 | 25.0 | 21 |
| | 3/8 | KAL10-U03 | | | | | 27 | 30.5 | | | | 25 |
| | 1/2 | KAL10-U04 | 22 | | | | 30 | 31.5 | | | | 45 |
| 12 | 1/4 | KAL12-U02 | 17 | 20.9 | 17 | 28.5 | 27 | 31.5 | 22 | 39.7 | 39.7 | 23 |
| | 3/8 | KAL12-U03 | | | | | 28 | 32.5 | | | | 27 |
| | 1/2 | KAL12-U04 | 22 | | | | 31 | 33.5 | | | | 48 |

* Reference dimensions after Uni thread installation.

**<M5, M6>**

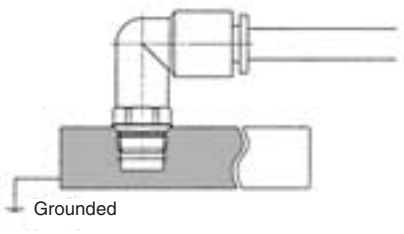



**<Uni thread>**




# ⚠Precautions

**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions and pages 13 to 16 for Fittings and Tubing Precautions.**




## ⚠Caution

**1.** Female thread portion connected with fitting must be grounded, otherwise static electricity will remain in the fittings and tubes.

## Male Branch Tee: KAT

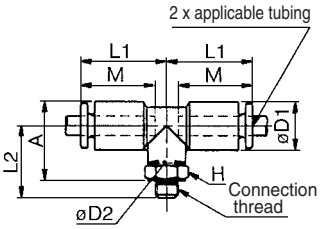
<M5, M6>

<Uni thread>

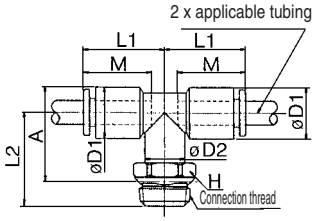
| Applicable tubing O.D. (mm) | Connection thread M thread / Uni thread | Model | H (width across flats) | øD1 | øD2 | L1 | L2 | A* | M | Effective area (mm²) Soft nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KAT23-M5 | 8 | 9.6 | 8 | 17.5 | 15 | 16 | 15.5 | 3.4 | 2.9 | 8 |
| | M6 x 1 | KAT23-M6 | | | | | 15.5 | | | | | |
| | 1/8 | KAT23-U01 | 10 | | 10 | | 19.5 | 21 | | | | 9 |
| 4 | M5 x 0.8 | KAT04-M5 | 8 | 10.4 | 8 | 18 | 15.5 | 17 | 16 | 4.3 | 4.3 | 6 |
| | M6 x 1 | KAT04-M6 | | | | | 16 | | | | | |
| | 1/8 | KAT04-U01 | 10 | | 10 | | 20 | 21.5 | | 6.0 | 6.0 | 9 |
| | 1/4 | KAT04-U02 | 14 | | | | 22 | | | | | 15 |
| 6 | M5 x 0.8 | KAT06-M5 | 8 | 12.8 | 8 | 20 | 16 | 18 | 17 | 4.3 | 4.3 | 7 |
| | M6 x 1 | KAT06-M6 | | | | | 16.5 | | | | | |
| | 1/8 | KAT06-U01 | 10 | | 10 | | 21.5 | 23.5 | | 13.9 | 13.9 | 10 |
| | 1/4 | KAT06-U02 | 14 | | | | 23 | | | | | 16 |
| | 3/8 | KAT06-U03 | 17 | | | | 24 | 24.5 | | | | 25 |
| 8 | 1/8 | KAT08-U01 | 12 | 15.2 | 12 | 23 | 22.5 | 26 | 18.5 | 18.2 | 18.2 | 14 |
| | 1/4 | KAT08-U02 | 14 | | | | 24.5 | | | | | 19 |
| | 3/8 | KAT08-U03 | 17 | | | | 25.5 | 27 | | | | 27 |
| 10 | 1/8 | KAT10-U01 | 17 | 18.5 | 17 | 26.5 | 25 | 29.5 | 21 | 29.0 | 29.0 | 30 |
| | 1/4 | KAT10-U02 | | | | | 26.5 | 30 | | | | 27 |
| | 3/8 | KAT10-U03 | | | | | 27 | 30.5 | | | | 31 |
| | 1/2 | KAT10-U04 | 22 | | | | 30 | 31.5 | | | | 51 |
| 12 | 1/4 | KAT12-U02 | 17 | 20.9 | 17 | 28.5 | 27 | 31.5 | 22 | 45.2 | 45.2 | 31 |
| | 3/8 | KAT12-U03 | | | | | 28 | 32.5 | | | | 34 |
| | 1/2 | KAT12-U04 | 22 | | | | 31 | 33.5 | | | | 54 |

∗ Reference dimensions after Uni thread installation.

<M5, M6>




<Uni thread>




## Male Run Tee: KAY

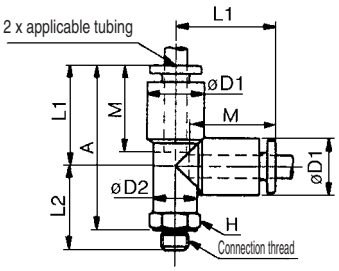
<M5, M6>

<Uni thread>

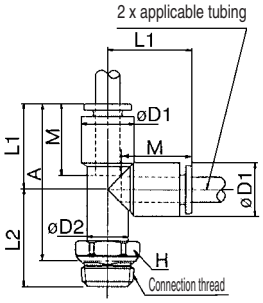
| Applicable tubing O.D. (mm) | Connection thread M thread / Uni thread | Model | H (width across flats) | øD1 | øD2 | L1 | L2 | A* | M | Effective area (mm²) Soft nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KAY23-M5 | 8 | 9.6 | 8 | 17.5 | 15 | 28.5 | 15.5 | 3.4 | 2.9 | 8 |
| | M6 x 1 | KAY23-M6 | | | | | 15.5 | | | | | |
| | 1/8 | KAY23-U01 | 10 | | 10 | | 19.5 | 33 | | | | 9 |
| 4 | M5 x 0.8 | KAY04-M5 | 8 | 10.4 | 8 | 18 | 15.5 | 29.5 | 16 | 4.6 | 4.6 | 6 |
| | M6 x 1 | KAY04-M6 | | | | 18.5 | 16 | | | | | |
| | 1/8 | KAY04-U01 | 10 | | 10 | 18 | 20 | 34 | | 6.4 | 6.4 | 9 |
| | 1/4 | KAY04-U02 | 14 | | | | 22 | 34.5 | | | | 15 |
| 6 | M5 x 0.8 | KAY06-M5 | 8 | 12.8 | 8 | 20 | 16 | 32 | 17 | 4.6 | 4.6 | 7 |
| | M6 x 1 | KAY06-M6 | | | | 20.5 | 16.5 | | | | | |
| | 1/8 | KAY06-U01 | 10 | | 10 | 20 | 21.5 | 37.5 | | 13.4 | 13.4 | 10 |
| | 1/4 | KAY06-U02 | 14 | | | | 23 | 37 | | | | 16 |
| | 3/8 | KAY06-U03 | 17 | | | | 24 | 38 | | | | 25 |
| 8 | 1/8 | KAY08-U01 | 12 | 15.2 | 12 | 23 | 22.5 | 41.5 | 18.5 | 17.7 | 17.7 | 14 |
| | 1/4 | KAY08-U02 | 14 | | | | 24.5 | | | | | 18 |
| | 3/8 | KAY08-U03 | 17 | | | | 25.5 | 42.5 | | | | 27 |
| 10 | 1/8 | KAY10-U01 | 17 | 18.5 | 17 | 26.5 | 25 | 46.5 | 21 | 28.4 | 28.4 | 30 |
| | 1/4 | KAY10-U02 | | | | | 26.5 | 47.5 | | | | 27 |
| | 3/8 | KAY10-U03 | | | | | 27 | 48 | | | | 31 |
| | 1/2 | KAY10-U04 | 22 | | | | 30 | 49 | | | | 51 |
| 12 | 1/4 | KAY12-U02 | 17 | 20.9 | 17 | 28.5 | 27 | 49.5 | 22 | 45.4 | 45.4 | 31 |
| | 3/8 | KAY12-U03 | | | | | 28 | 50.5 | | | | 35 |
| | 1/2 | KAY12-U04 | 22 | | | | 31 | 51.5 | | | | 55 |

∗ Reference dimensions after Uni thread installation.

<M5, M6>




<Uni thread>



## Branch "Y": KAU

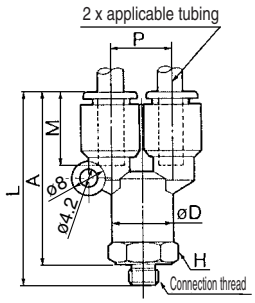
<M5, M6>

<Uni thread>

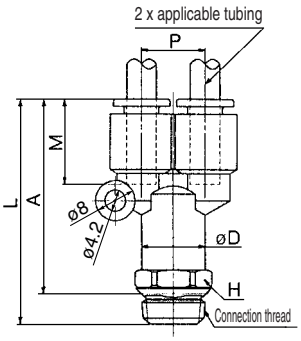
| Applicable tubing O.D. (mm) | Connection thread M thread / Uni thread | Model | H (width across flats) | øD | L | P | A* | M | Effective area (mm²) Soft nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KAU23-M5 | 10 | 9.6 | 38 | 9.6 | 34.5 | 15.5 | 2.2 | 2.2 | 9 |
| | M6 x 1 | KAU23-M6 | | | 38.5 | | | | | | |
| | 1/8 | KAU23-U01 | 11 | | | | | | 3.4 | 2.9 | 11 |
| 4 | M5 x 0.8 | KAU04-M5 | 11 | 10.4 | 39.5 | 10.4 | 36 | 16 | 2.2 | 2.2 | 4 |
| | M6 x 1 | KAU04-M6 | | | 40 | | | | | | 10 |
| | 1/8 | KAU04-U01 | | | | | | | 4.2 | 4.2 | 11 |
| | 1/4 | KAU04-U02 | 14 | | 42 | | | | | | 16 |
| 6 | M5 x 0.8 | KAU06-M5 | 13 | 12.8 | 42.5 | 12.8 | 39 | 17 | 2.2 | 2.2 | 12 |
| | M6 x 1 | KAU06-M6 | | | 43 | | | | | | |
| | 1/8 | KAU06-U01 | | | 43.5 | | 39.5 | | 13.4 | 13.4 | 13 |
| | 1/4 | KAU06-U02 | 14 | | 45 | | 39 | | | | 17 |
| | 3/8 | KAU06-U03 | 17 | | 46 | | 40 | | | | 25 |
| 8 | 1/8 | KAU08-U01 | 17 | 15.2 | 50.5 | 15.2 | 46.5 | 18.5 | 17.7 | 17.7 | 26 |
| | 1/4 | KAU08-U02 | | | 52 | | 46 | | | | 24 |
| | 3/8 | KAU08-U03 | | | 51.5 | | 45.5 | | | | 27 |
| 10 | 1/4 | KAU10-U02 | 19 | 18.5 | 57.5 | 18.5 | 51.5 | 21 | 28.4 | 28.4 | 38 |
| | 3/8 | KAU10-U03 | | | | | | | | | 36 |
| | 1/2 | KAU10-U04 | 22 | | 59 | | 51 | | | | 51 |
| 12 | 1/4 | KAU12-U02 | 22 | 20.9 | 61 | 20.9 | 55 | 22 | 45.4 | 45.4 | 53 |
| | 3/8 | KAU12-U03 | | | | | | | | | 52 |
| | 1/2 | KAU12-U04 | | | 62.5 | | 54.5 | | | | |

* Reference dimensions after Uni thread installation.

<M5, M6>

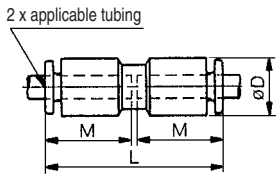



<Uni thread>



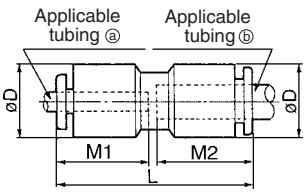

## Straight Union: KAH

| Applicable tubing O.D. (mm) | Model | øD | L | M | Effective area (mm²) Soft nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|
| 3.2 | KAH23-00 | 9.6 | 31.5 | 15.5 | 3.4 | 2.9 | 3 |
| 4 | KAH04-00 | 10.4 | 32.5 | 16 | 5.6 | 5.6 | 3 |
| 6 | KAH06-00 | 12.8 | 34.5 | 17 | 13.1 | 13.1 | 4 |
| 8 | KAH08-00 | 15.2 | 38.5 | 18.5 | 18.0 | 18.0 | 6 |
| 10 | KAH10-00 | 18.5 | 42.5 | 21 | 29.5 | 29.5 | 11 |
| 12 | KAH12-00 | 20.9 | 44.5 | 22 | 46.1 | 46.1 | 14 |



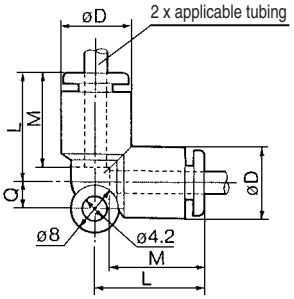

## Different Diameter Straight: KAH

| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Model | øD | L | M1 | M2 | Effective area (mm²) Soft nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 3.2 | 4 | KAH23-04 | 10.4 | 32.5 | 15.5 | 16 | 3.2 | 2.7 | 3 |
| 4 | 6 | KAH04-06 | 12.8 | 34.5 | 16 | 17 | 4.2 | 4.2 | 4 |
| 6 | 8 | KAH06-08 | 15.2 | 38.5 | 17 | 18.5 | 10.7 | 10.7 | 6 |
| 8 | 10 | KAH08-10 | 18.5 | 42 | 18.5 | 21 | 16.7 | 16.7 | 11 |
| 10 | 12 | KAH10-12 | 20.9 | 44.5 | 21 | 22 | 28.2 | 28.2 | 14 |



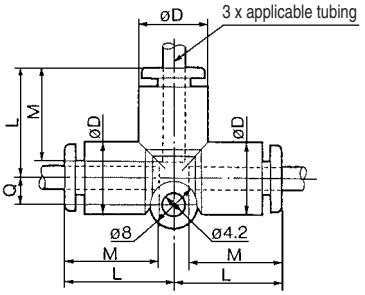
## Union Elbow: KAL

| Applicable tubing O.D. (mm) | Model | øD | L | Q | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Soft nylon | Urethane | |
| **3.2** | **KAL23-00** | 9.6 | 17.5 | 4.3 | 15.5 | 3.4 | 2.9 | 3 |
| **4** | **KAL04-00** | 10.4 | 18 | 4.5 | 16 | 4.2 | 4.2 | 6 |
| **6** | **KAL06-00** | 12.8 | 20 | 5.3 | 17 | 11.4 | 11.4 | 6 |
| **8** | **KAL08-00** | 15.2 | 23 | 6 | 18.5 | 14.9 | 14.9 | 10 |
| **10** | **KAL10-00** | 18.5 | 26.5 | 6.8 | 21 | 25.0 | 25.0 | 17 |
| **12** | **KAL12-00** | 20.9 | 28.5 | 7.5 | 22 | 39.7 | 39.7 | 21 |



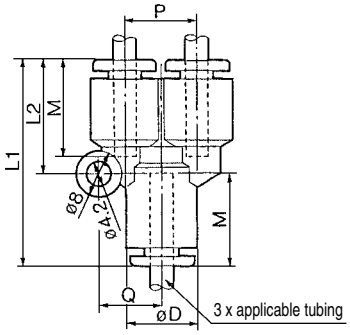

## Union Tee: KAT

| Applicable tubing O.D. (mm) | Model | øD | L | Q | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Soft nylon | Urethane | |
| **3.2** | **KAT23-00** | 9.6 | 17.5 | 4.3 | 15.5 | 3.4 | 2.9 | 5 |
| **4** | **KAT04-00** | 10.4 | 18 | 4.5 | 16 | 6.4 | 6.9 | 7 |
| **6** | **KAT06-00** | 12.8 | 20 | 5.3 | 17 | 13.4 | 13.4 | 10 |
| **8** | **KAT08-00** | 15.2 | 23 | 6 | 18.5 | 17.7 | 17.7 | 15 |
| **10** | **KAT10-00** | 18.5 | 26.5 | 6.8 | 21 | 28.4 | 28.4 | 25 |
| **12** | **KAT12-00** | 20.9 | 28.5 | 7.5 | 22 | 45.4 | 45.4 | 29 |



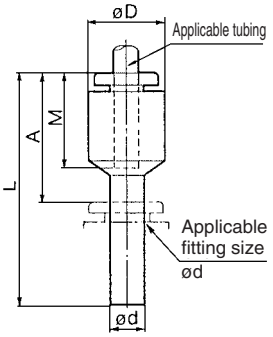

## Union "Y": KAU

| Applicable tubing O.D. (mm) | Model | øD | L1 | L2 | P | Q | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Soft nylon | Urethane | |
| **3.2** | **KAU23-00** | 9.6 | 33 | 17.5 | 9.6 | 9 | 15.5 | 3.4 | 2.9 | 5 |
| **4** | **KAU04-00** | 10.4 | 34 | 18 | 10.4 | 9.7 | 16 | 4.2 | 4.2 | 7 |
| **6** | **KAU06-00** | 12.8 | 37 | 20 | 12.8 | 11.7 | 17 | 13.4 | 13.4 | 9 |
| **8** | **KAU08-00** | 15.2 | 42.5 | 24.5 | 15.2 | 13.7 | 18.5 | 17.7 | 17.7 | 11 |
| **10** | **KAU10-00** | 18.5 | 48 | 27.5 | 18.5 | 16.1 | 21 | 28.4 | 28.4 | 16 |
| **12** | **KAU12-00** | 20.9 | 51 | 30 | 20.9 | 18.1 | 22 | 45.4 | 45.4 | 23 |




## Plug-in Reducer: KAR

| Applicable tubing O.D. (mm) | Applicable fitting size **ød** | Model | øD | L | A | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Soft nylon | Urethane | |
| **3.2** | 4 | **KAR23-04** | 9.6 | 33.5 | 18.5 | 15.5 | 3.4 | 2.9 | 5 |
| **4** | 6 | **KAR04-06** | 10.4 | 34.5 | 17.5 | 16 | 5.6 | 5.6 | 1.8 |
| | 8 | **KAR04-08** | | 36.5 | 18 | | | | 2.0 |
| | 10 | **KAR04-10** | 12.8 | 39.5 | 18.5 | | | | 3.3 |
| **6** | 8 | **KAR06-08** | 12.8 | 37 | 18.5 | 17 | 13.1 | 13.1 | 2.5 |
| | 10 | **KAR06-10** | | 39.5 | | | | | 3.0 |
| | 12 | **KAR06-12** | | 42 | 20 | | | | 4.7 |
| **8** | 10 | **KAR08-10** | 15.2 | 41 | 20 | 18.5 | 18.0 | 18.0 | 4.0 |
| | 12 | **KAR08-12** | | 42 | | | | | 4.6 |
| **10** | 12 | **KAR10-12** | 18.5 | 44.5 | 23 | 21 | 32.8 | 32.8 | 33 |



# Stainless Steel 316 Fittings

New

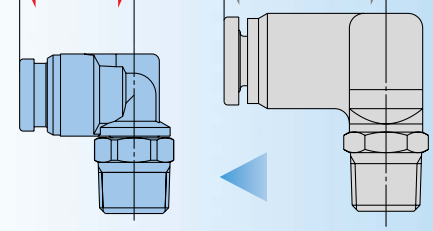
RoHS

## Compact and Light

### One-touch Fittings

NEW **KQG2L06-01S** — 15.9 mm

Conventional model **KQGL06-01S** — 22.1 mm



Approx. **30%** Down — Dimensions

**10.1 g** ◀ 26 g

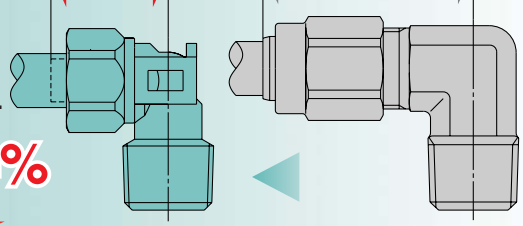
Approx. **62%** Down — Weight

- More configuration variations
  **17** models ◀ **9** models
- Tube size: **ø3.2** and **ø16** have been added.

### Insert Fittings

NEW **KFG2L0806-02** — 17.4 mm

Conventional model **KFGL0806-02S** — 31.2 mm



Approx. **44%** Down — Dimensions

Approx. **37%** Down — Weight

**24 g** ◀ 38 g

- More configuration variations
  **9** models ◀ **5** models
- Inch sizes have been added.

## One-touch Fittings

### *Series KQG2*

Seal parts: Special **FKM**

## Insert Fittings

### *Series KFG2*

Rubber material is not used.
(Except swivel elbow)

Material

**Stainless steel 316**

Fluid temperature

**–5 to 150°C**

**–65 to 260°C**
(Swivel elbow: –5 to 150°C)

**Grease-free/Can be used with steam.**

Metric size, Inch size — Applicable tube — Metric size, Inch size

M, R, Rc, UNF, NPT — Connection thread — R, Rc, NPT

Certified to meet current Food Sanitation Law standards.
(Component materials have met apparatuses and container-packages standards.)

SMC

CAT.ES50-33A

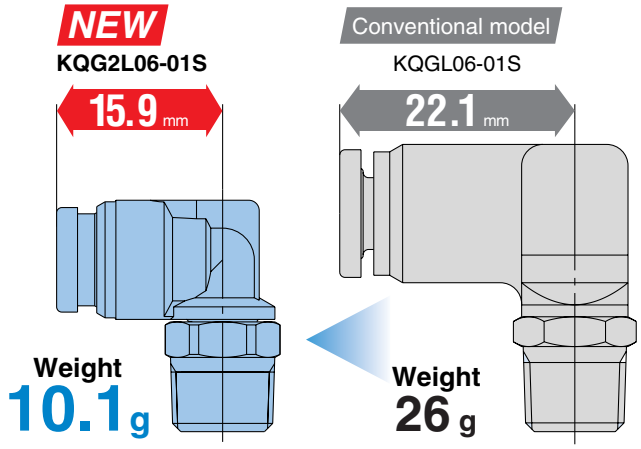
# Stainless Steel 316 One-touch Fittings *Series KQG2*

## Compact and light

**Dimensions: Approx. 30% down**

**Weight: Approx. 62% down**

∗ Comparison with KQGL06-01S




## More configuration variations

**17 models ◀ 9 models**

## More tube sizes added

**ø3.2 and ø16 have been added.**

## Material

**Metal parts: Stainless steel 316**

**Seal parts: Special FKM**

## Applicable tube material

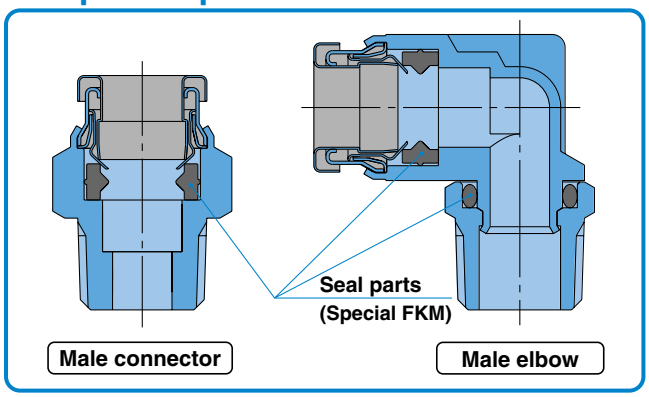
**FEP • PFA • Nylon • Soft nylon**
**Polyurethane • Polyolefin**

## Fluid temperature: −5 to 150°C

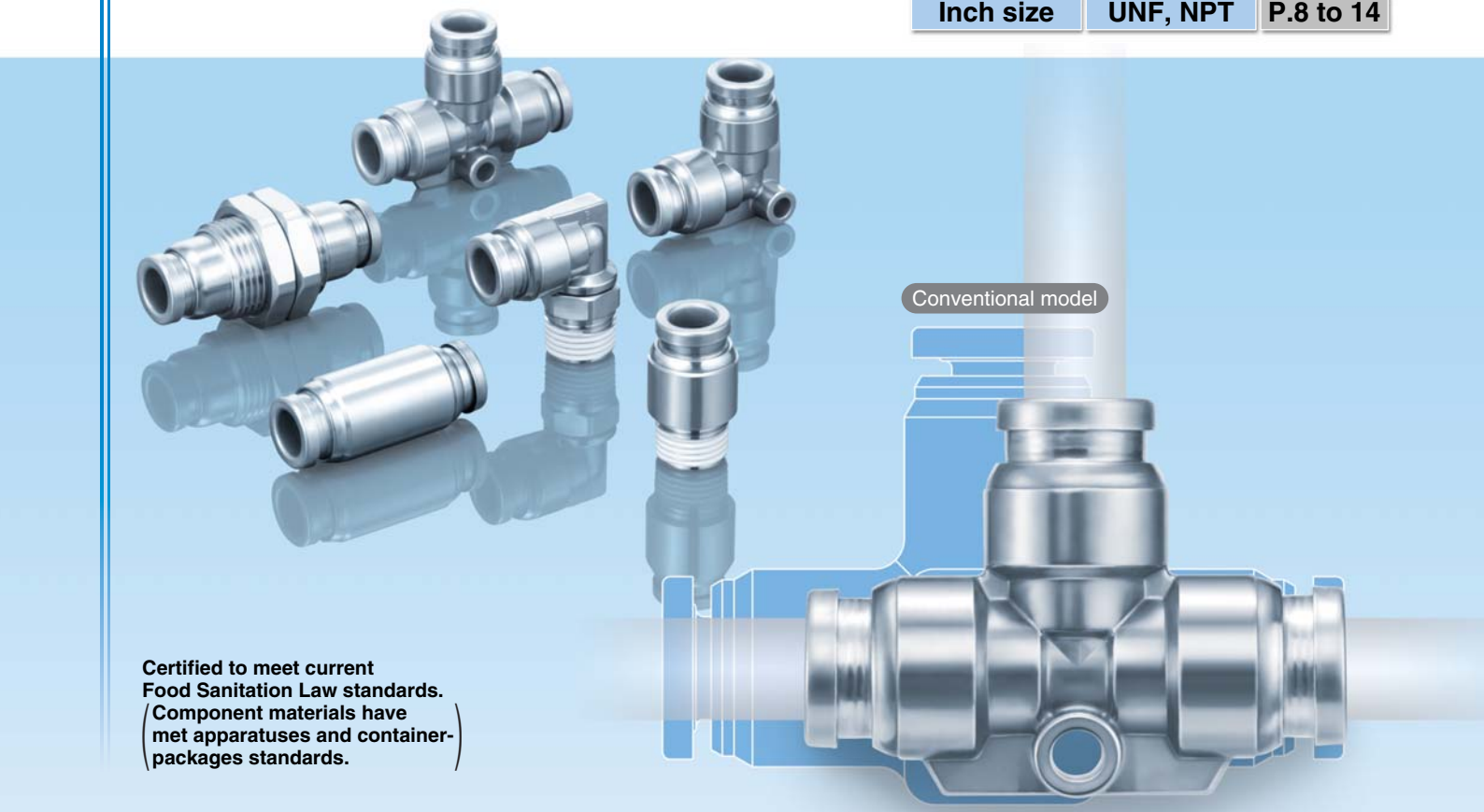
## Grease-free

## Can be used with steam.

**All Stainless steel 316**
**except seal parts**




| Applicable tube | Connection thread | Page |
|---|---|---|
| Metric size | M, R, Rc | P.1 to 7 |
| Inch size | UNF, NPT | P.8 to 14 |




**Certified to meet current Food Sanitation Law standards.**
**(Component materials have met apparatuses and container-packages standards.)**

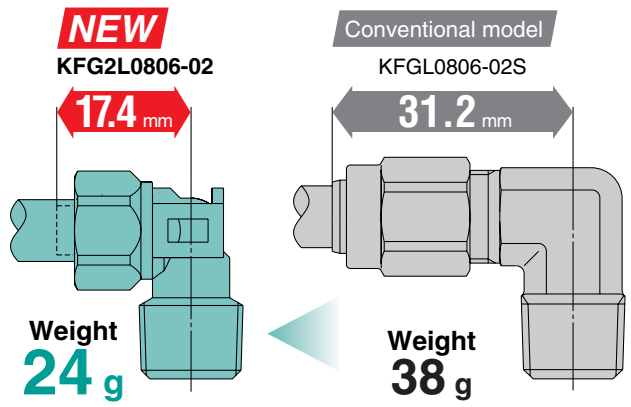
# Stainless Steel 316 Insert Fittings *Series KFG2*

## Compact and light

**Dimensions: Approx. 44% down**

**Weight: Approx. 37% down**

∗ Comparison with KFGL0806-02S




## More configuration variations

**9 models ◀ 5 models**

## Material: Stainless steel 316

**Rubber material is not used.**
**(Except swivel elbow)**

## Fluid temperature

**−65 to 260°C**
**(Swivel elbow: −5 to 150°C)**

## Applicable tube material

**FEP • PFA • Modified PTFE**
**Nylon • Soft nylon • Polyolefin**
**Polyurethane* • Soft polyurethane***
**Hard polyurethane***
**Soft polyolefin***
**Antistatic soft nylon* • Antistatic polyurethane***

Note) For tubes marked *, check the appropriate size. (Page 16, 21)

## Grease-free

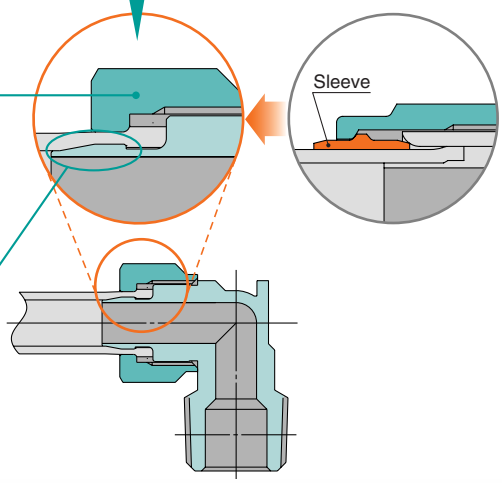
## Can be used with steam.

**Sleeveless** Sleeveless sealing structure makes replacement parts for maintenance unnecessary.

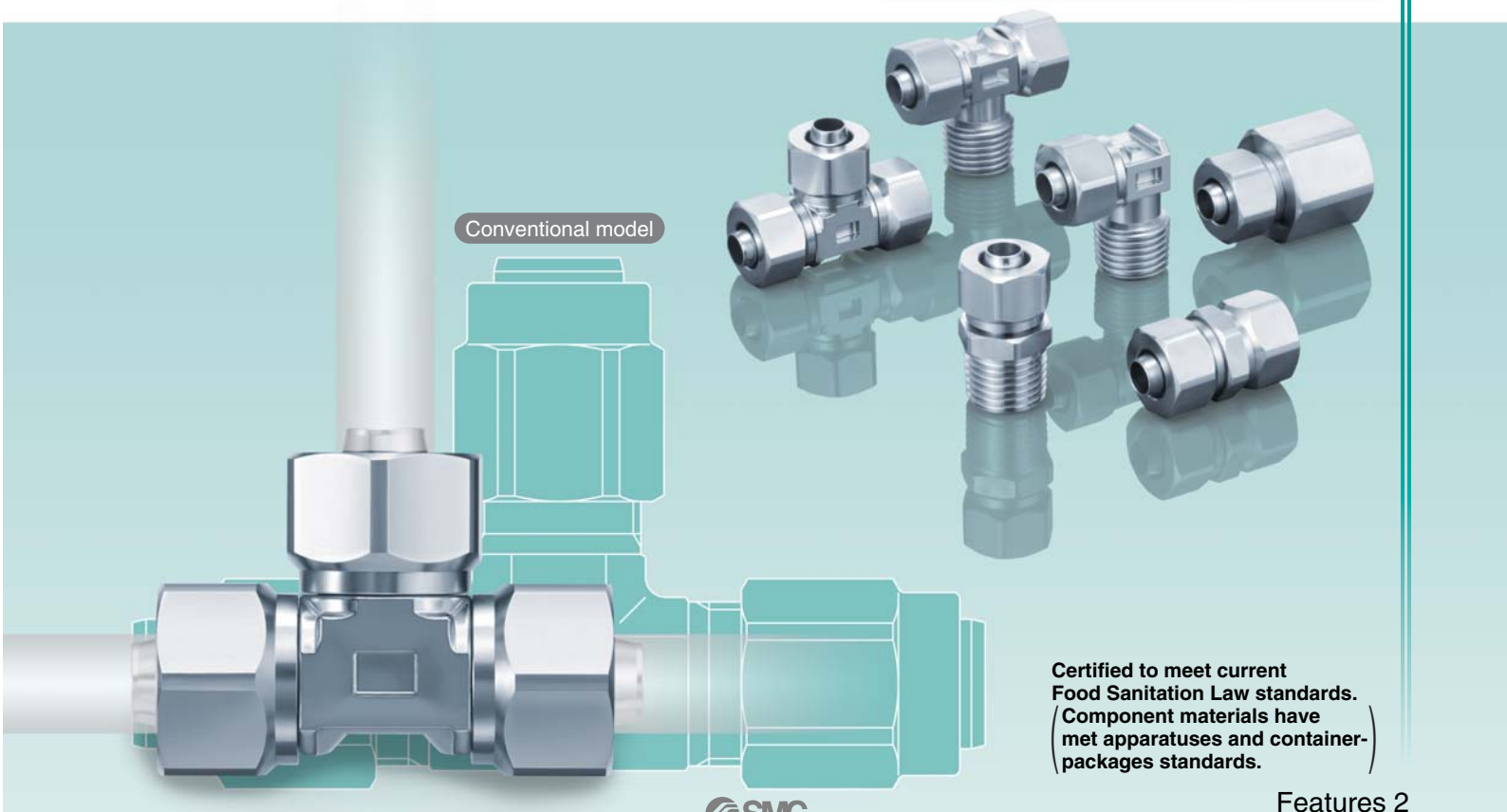
**Superior tube mounting**

**Union nut**
Light tightening torque
Comparison with conventional model
Approx. 60% down
∗ Comparison with KFG□0806

**Barb**
Sealing performance and holding of tube are secured by back-up from the barb.




| Applicable tube | Connection thread | Page |
|---|---|---|
| Metric size | R, Rc | P.16 to 20 |
| Inch size | NPT | P.21 to 24 |




**Certified to meet current Food Sanitation Law standards. (Component materials have met apparatuses and container-packages standards.)**

# Stainless Steel 316 One-touch Fittings *Series KQG2*

## Variations

**Male Connector** KQG2H

Metric ····· P. 3
Inch ····· P. 9

**Hexagon Socket Head Male Connector** KQG2S

Metric ····· P. 3
Inch ····· P. 9

**Straight Union** KQG2H

Metric ····· P. 3
Inch ····· P. 9

**Male Elbow** KQG2L

Metric ····· P. 4
Inch ····· P. 10

**Male Branch Tee** KQG2T

Metric ····· P. 4
Inch ····· P. 10

**Union Elbow** KQG2L

Metric ····· P. 4
Inch ····· P. 10

**Bulkhead Union** KQG2E

Metric ····· P. 5
Inch ····· P. 11

**Union Tee** KQG2T

Metric ····· P. 5
Inch ····· P. 11

**Union "Y"** KQG2U

Metric ····· P. 5
Inch ····· P. 11

**Different Diameter Tee** KQG2T

Metric ····· P. 5
Inch ····· P. 11

**Plug-in Reducer** KQG2R

Metric ····· P. 5
Inch ····· P. 11

**Different Diameter Straight** KQG2H

Metric ····· P. 6
Inch ····· P. 12

**Different Diameter Union "Y"** KQG2U

Metric ····· P. 6
Inch ····· P. 12

**Bulkhead Connector** KQG2E

Metric ····· P. 6
Inch ····· P. 12

**Extended Male Elbow** KQG2W

Metric ····· P. 7
Inch ····· P. 12

**Female Connector** KQG2F

Metric ····· P. 7
Inch ····· P. 13

**Plug** KQG2P

Metric ····· P. 7
Inch ····· P. 13

# Stainless Steel 316 One-touch Fittings

## Applicable Tube: Metric Size, Connection Thread: M, R, Rc

# Series KQG2

RoHS

## Applicable Tube

| | |
|---|---|
| Tube material | FEP, PFA, Nylon, Soft nylon Note 1), Polyurethane, Polyolefin |
| Tube O.D. | ø3.2, ø4, ø6, ø8, ø10, ø12, ø16 |

## Specifications

| | |
|---|---|
| **Fluid** | Air, Water, Steam Note 2) |
| **Operating pressure range** Note 3) | –100 kPa to 1 MPa Note 4) |
| **Proof pressure** | 3.0 MPa |
| **Ambient and fluid temperature** Note 5) | –5 to 150°C (No freezing) Note 4) |
| **Lubricant** | Grease-free specification |
| **Seal on the threads** | With sealant |

Note 1) For soft nylon tube, water cannot be used.
Note 2) Consult with SMC regarding applicable tube separately.
Note 3) Avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 4) Check the operating pressure range and operating temperature range of the tube.
Note 5) It is recommended that you use the inner sleeve in the following conditions (Except ø3.2):
- When using in an environment where the fluid temperature changes drastically.
- When using at a high temperature.

### ∗ Temperature Condition of Mounting the Inner Sleeve

| Tube | Temperature |
|---|---|
| FEP tube/TH series | 80°C or more |
| PFA tube/TL series | 120°C or more |

### Spare Parts

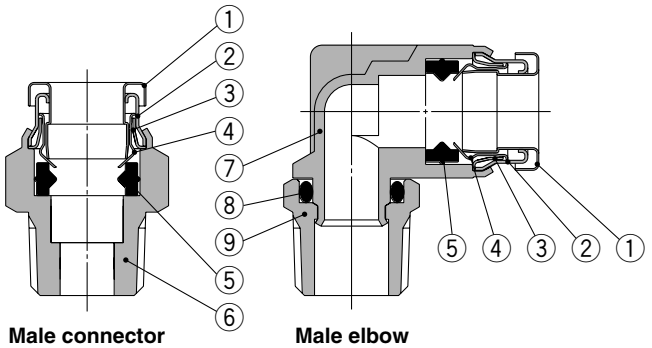
| Description | Tube O.D. | Part no. | Material |
|---|---|---|---|
| Gasket | — | **M-5G3** | Stainless steel 316, Special FKM |
| Bulkhead nut | ø3.2, ø4 | **KQG223-P01** | Stainless steel 316 |
| | ø6 | **KQG206-P01** | |
| | ø8 | **KQG208-P01** | |
| | ø10 | **KQG210-P01** | |
| | ø12 | **KQG212-P01** | |
| | ø16 | **KQG216-P01** | |

### Cross Reference Table of the Inner Sleeve

| Tube O.D. | Tube material | | | Applicable inner sleeve | |
|---|---|---|---|---|---|
| | **TUS** (Soft polyurethane) | **TH/TIH** (FEP) | **TL/TIL** (PFA) | Part no. | Length |
| ø4 | — | TH0402 | — | **TJG-0402** | 18 |
| | TUS0425 | TH0425 | — | **TJG-0425** | 18 |
| | — | — | TL0403 | **TJG-0403** | 18 |
| ø6 | TUS0604 | TH0604 | TL0604 | **TJG-0604** | 19 |
| ø8 | TUS0805 | — | — | **TJG-0805** | 20.5 |
| | — | TH0806 | TL0806 | **TJG-0806** | 20.5 |
| ø10 | TUS1065 | — | — | **TJG-1065** | 23 |
| | — | TH1075 | — | **TJG-1075** | 23 |
| | — | TH1008 | TL1008 | **TJG-1008** | 23 |
| ø12 | TUS1208 | — | — | **TJG-1208** | 24 |
| | — | TH1209 | — | **TJG-1209** | 24 |
| | — | TH1210 | TL1210 | **TJG-1210** | 24 |

∗ Stainless steel 316 is used for the TJG series.

## Construction




### Component Parts

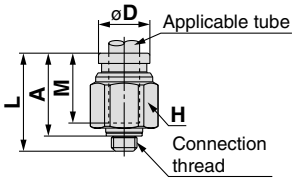
| No. | Description | Material |
|---|---|---|
| 1 | **Release button** | Stainless steel 316 |
| 2 | **Guide 1** | Stainless steel 316 |
| 3 | **Guide 2** | Stainless steel 316 |
| 4 | **Chuck** | Stainless steel 316 |
| 5 | **Seal** | Special FKM (Fluoro coated) |
| 6 | **Male connector body** | Stainless steel 316 |
| 7 | **Male elbow body** | Stainless steel 316 |
| 8 | **O-ring** | Special FKM (Fluoro coated) |
| 9 | **Stud** | Stainless steel 316 |

## Dimensions

### Male Connector: KQG2H

| Applicable tube O.D. (mm) | Connection thread R, M | Model | H (Width across flat) | Note 1) øD | L | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | M5 x 0.8 | KQG2H23-M5 | 8 | 8 | 16.5 | 13.5 | 12 | 3 | 3.3 |
| | 1/8 | KQG2H23-01S | 10 | | 15.4 | 12.3 | | 3.4 | 5.7 |
| | 1/4 | KQG2H23-02S | 14 | | 21 | 16.3 | | | 16.9 |
| ø4 | M5 x 0.8 | KQG2H04-M5 | 10 | 8.7 | 17.1 | 14.1 | 12.6 | 4 | 5 |
| | 1/8 | KQG2H04-01S | | | 15.3 | 12.2 | | 5.6 | 4.7 |
| | 1/4 | KQG2H04-02S | 14 | | 20.9 | 16.2 | | | 15.8 |
| ø6 | M5 x 0.8 | KQG2H06-M5 | 12 | 11.1 | 19.1 | 16.1 | 13.6 | 4 | 7.7 |
| | 1/8 | KQG2H06-01S | | | 18.1 | 15 | | 13.1 | 7 |
| | 1/4 | KQG2H06-02S | 14 | | 20.8 | 16.1 | | | 14.5 |
| | 3/8 | KQG2H06-03S | 17 | | 23 | 17.9 | | | 27.3 |
| ø8 | 1/8 | KQG2H08-01S | 14 | 13.4 | 24.5 | 21.4 | 16.1 | 26.1 | 12.8 |
| | 1/4 | KQG2H08-02S | | | 22.3 | 17.6 | | | 12.9 |
| | 3/8 | KQG2H08-03S | 17 | | 23.7 | 18.6 | | | 24.7 |
| ø10 | 1/8 | KQG2H10-01S | 17 | 16.4 | 25.5 | 22.4 | 17 | 26.1 | 18.9 |
| | 1/4 | KQG2H10-02S | | | 27.9 | 23.2 | | 41.5 | 21.6 |
| | 3/8 | KQG2H10-03S | | | 23 | 17.9 | | | 20.6 |
| | 1/2 | KQG2H10-04S | 22 | | 28.6 | 22.2 | | | 51.1 |
| ø12 | 1/4 | KQG2H12-02S | 19 | 18.5 | 30.5 | 25.8 | 18.6 | 58.3 | 27.4 |
| | 3/8 | KQG2H12-03S | | | 24.7 | 19.6 | | | 20.5 |
| | 1/2 | KQG2H12-04S | 22 | | 28.7 | 22.3 | | | 44.6 |
| ø16 | 3/8 | KQG2H16-03S | 24 | 24.6 | 33.6 | 28.5 | 20.8 | 81 | 46 |
| | 1/2 | KQG2H16-04S | | | 29.5 | 23.1 | | 113 | 37.4 |

(M5)

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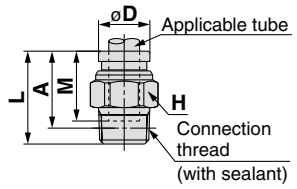
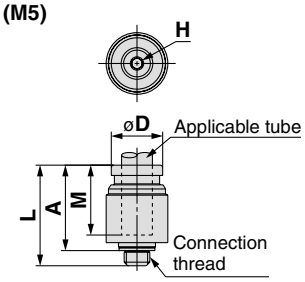



∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

### Hexagon Socket Head Male Connector: KQG2S

| Applicable tube O.D. (mm) | Connection thread R, M | Model | H (Width across flat) | Note 1) øD | L | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | M5 x 0.8 | KQG2S23-M5 | 2 | 9 | 16.5 | 13.5 | 12 | 3 | 3.8 |
| ø4 | M5 x 0.8 | KQG2S04-M5 | 2 | 9 | 17.1 | 14.1 | 12.6 | 4 | 3.7 |
| | 1/8 | KQG2S04-01S | 3 | 10 | 19.6 | 16.5 | | 4.1 | 7.6 |
| ø6 | M5 x 0.8 | KQG2S06-M5 | 2 | 12 | 19.6 | 16.6 | 13.6 | 4 | 7.4 |
| | 1/8 | KQG2S06-01S | 4 | | 20.6 | 17.5 | | 10 | 8.7 |
| | 1/4 | KQG2S06-02S | | 14 | | 15.9 | | 10.7 | 14 |
| ø8 | 1/8 | KQG2S08-01S | 5 | 14 | 24.7 | 21.6 | 16.1 | 17.2 | 12.3 |
| | 1/4 | KQG2S08-02S | 6 | | 22.9 | 18.2 | | 23.3 | 12.8 |
| | 3/8 | KQG2S08-03S | | 17 | 23.1 | 18 | | | 22.8 |
| ø10 | 1/8 | KQG2S10-01S | 5 | 17 | 25.6 | 22.5 | 17 | 17.2 | 17.7 |
| | 1/4 | KQG2S10-02S | 8 | | 27.5 | 22.8 | | 39 | 19.1 |
| | 3/8 | KQG2S10-03S | | 24 | | 18.9 | | | 20.9 |
| | 1/2 | KQG2S10-04S | | 22 | | 17.6 | | | 37.2 |
| ø12 | 1/4 | KQG2S12-02S | 8 | 19 | 30.6 | 25.9 | 18.6 | 46 | 24.8 |
| | 3/8 | KQG2S12-03S | 10 | 24.9 | | 19.8 | | 60 | 19.3 |
| | 1/2 | KQG2S12-04S | | 22 | | 18.5 | | | 33.6 |
| ø16 | 3/8 | KQG2S16-03S | 10 | 24.6 | 33.2 | 28.1 | 20.8 | 81 | 41.6 |
| | 1/2 | KQG2S16-04S | 12 | | 29.4 | 23 | | 113 | 38.4 |

(M5)

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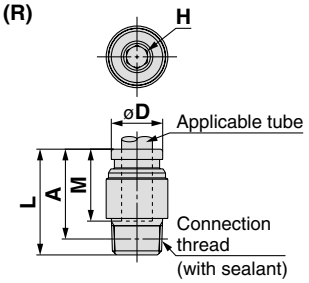
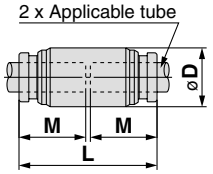



∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

### Straight Union: KQG2H

| Applicable tube O.D. (mm) | Model | øD Note 1) | L | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|
| ø3.2 | KQG2H23-00 | 9 | 25 | 12 | 3.4 | 6.5 |
| ø4 | KQG2H04-00 | 9 | 26.2 | 12.6 | 5.6 | 6.5 |
| ø6 | KQG2H06-00 | 12 | 28.2 | 13.6 | 13.1 | 11.5 |
| ø8 | KQG2H08-00 | 14 | 33.2 | 16.1 | 26.1 | 16.6 |
| ø10 | KQG2H10-00 | 17 | 35 | 17 | 41.5 | 26 |
| ø12 | KQG2H12-00 | 19 | 38.2 | 18.6 | 58.3 | 32.2 |
| ø16 | KQG2H16-00 | 24.6 | 42.6 | 20.8 | 113 | 53.7 |



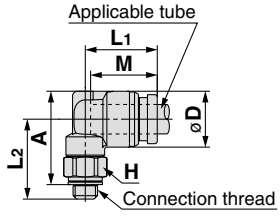

Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

## Dimensions

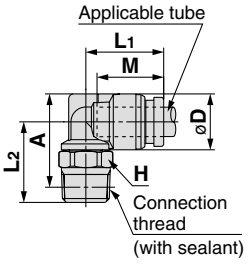
### Male Elbow: KQG2L

| Applicable tube O.D. (mm) | Connection thread R, M | Model | H (Width across flat) | Note 1) øD | L1 | L2 | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | M5 x 0.8 | KQG2L23-M5 | 8 | 8.3 | 13.1 | 14.8 | 16 | 12 | 2.6 | 6.3 |
| | 1/8 | KQG2L23-01S | 10 | | 13.6 | 14.9 | 15.9 | | 3 | 7.6 |
| | 1/4 | KQG2L23-02S | 14 | | | 18.7 | 18.1 | | | 16 |
| ø4 | M5 x 0.8 | KQG2L04-M5 | 8 | 9.1 | 13.7 | 15.2 | 16.8 | 12.6 | 3.5 | 6.9 |
| | 1/8 | KQG2L04-01S | 10 | | 14.4 | 15.3 | 16.7 | | 4.2 | 8.5 |
| | 1/4 | KQG2L04-02S | 14 | | | 19.1 | 18.9 | | | 16.8 |
| ø6 | M5 x 0.8 | KQG2L06-M5 | 8 | 11.4 | 14.7 | 16.3 | 19 | 13.6 | 3.5 | 8.8 |
| | 1/8 | KQG2L06-01S | 10 | | 15.9 | 16.4 | | | 11.4 | 10.1 |
| | 1/4 | KQG2L06-02S | 14 | | | 20.2 | 21.2 | | | 18.4 |
| | 3/8 | KQG2L06-03S | 17 | | | 21.6 | 22.2 | | | 29.9 |
| ø8 | 1/8 | KQG2L08-01S | 12 | 13.7 | 18.6 | 18.3 | 22 | 16.1 | 21.6 | 14.6 |
| | 1/4 | KQG2L08-02S | 14 | | 19.1 | 21.5 | 23.6 | | | 20.3 |
| | 3/8 | KQG2L08-03S | 17 | | | 22.9 | 24.6 | | | 31.6 |
| ø10 | 1/8 | KQG2L10-01S | 12 | 16.6 | 20 | 19.7 | 24.9 | 17 | 21.6 | 20.2 |
| | 1/4 | KQG2L10-02S | 14 | | 21 | 22.9 | 26.5 | | 35.2 | 23.3 |
| | 3/8 | KQG2L10-03S | 17 | | | 24.3 | 27.5 | | | 33.6 |
| | 1/2 | KQG2L10-04S | 22 | | | 28.5 | 30.4 | | | 60.1 |
| ø12 | 1/4 | KQG2L12-02S | 14 | 18.7 | 22.6 | 24 | 28.6 | 18.6 | 50.2 | 27.1 |
| | 3/8 | KQG2L12-03S | 17 | | 23.6 | 25.3 | 29.5 | | | 33.7 |
| | 1/2 | KQG2L12-04S | 22 | | | 29.5 | 32.4 | | | 58.7 |
| ø16 | 3/8 | KQG2L16-03S | 19 | 24.6 | 26.3 | 28 | 34.5 | 20.8 | 71 | 46.3 |
| | 1/2 | KQG2L16-04S | 22 | | 27.3 | 31.8 | 37 | | 100 | 61.3 |

(M5)




(R)

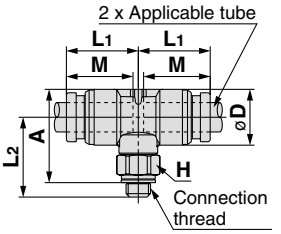



∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

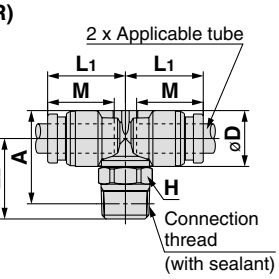
### Male Branch Tee: KQG2T

| Applicable tube O.D. (mm) | Connection thread R, M | Model | H (Width across flat) | Note 1) øD | L1 | L2 | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | M5 x 0.8 | KQG2T23-M5 | 8 | 8.3 | 13.1 | 14.8 | 16 | 12 | 3.2 | 8.1 |
| | 1/8 | KQG2T23-01S | 10 | | 13.6 | 14.9 | 15.9 | | 3.4 | 9.4 |
| | 1/4 | KQG2T23-02S | 14 | | | 18.7 | 18.1 | | | 17.7 |
| ø4 | M5 x 0.8 | KQG2T04-M5 | 8 | 9.1 | 13.7 | 15.2 | 16.8 | 12.6 | 4.5 | 9 |
| | 1/8 | KQG2T04-01S | 10 | | 14.4 | 15.3 | 16.7 | | 6 | 10.4 |
| | 1/4 | KQG2T04-02S | 14 | | | 19.1 | 18.9 | | | 18.8 |
| ø6 | M5 x 0.8 | KQG2T06-M5 | 8 | 11.4 | 14.7 | 16.3 | 19 | 13.6 | 4.5 | 11.9 |
| | 1/8 | KQG2T06-01S | 10 | | 15.9 | 16.4 | | | 13.9 | 13.4 |
| | 1/4 | KQG2T06-02S | 14 | | | 20.2 | 21.2 | | | 21.8 |
| | 3/8 | KQG2T06-03S | 17 | | | 21.6 | 22.2 | | | 33.3 |
| ø8 | 1/8 | KQG2T08-01S | 12 | 13.7 | 18.6 | 18.3 | 22 | 16.1 | 26.3 | 20 |
| | 1/4 | KQG2T08-02S | 14 | | 19.1 | 21.5 | 23.6 | | | 25.5 |
| | 3/8 | KQG2T08-03S | 17 | | | 22.9 | 24.6 | | | 36.8 |
| ø10 | 1/8 | KQG2T10-01S | 12 | 16.6 | 20 | 19.7 | 24.9 | 17 | 40.8 | 28.4 |
| | 1/4 | KQG2T10-02S | 14 | | 21 | 22.9 | 26.5 | | | 31.1 |
| | 3/8 | KQG2T10-03S | 17 | | | 24.3 | 27.5 | | | 41.4 |
| | 1/2 | KQG2T10-04S | 22 | | | 28.5 | 30.4 | | | 68 |
| ø12 | 1/4 | KQG2T12-02S | 14 | 18.7 | 22.6 | 24 | 28.6 | 18.6 | 57.2 | 37.8 |
| | 3/8 | KQG2T12-03S | 17 | | 23.6 | 25.3 | 29.5 | | | 39.3 |
| | 1/2 | KQG2T12-04S | 22 | | | 29.5 | 32.4 | | | 68.8 |
| ø16 | 3/8 | KQG2T16-03S | 19 | 24.6 | 26.3 | 28 | 34.5 | 20.8 | 71 | 63.7 |
| | 1/2 | KQG2T16-04S | 22 | | 27.3 | 31.8 | 37 | | 100 | 77.6 |

(M5)



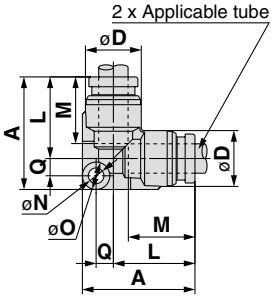

(R)




∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

### Union Elbow: KQG2L

| Applicable tube O.D. (mm) | Model | Note 1) øD | L | A | Q | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | KQG2L23-00 | 8.3 | 13.6 | 19.3 | 2.9 | 12 | 3.2 | 5.6 | 3 | 6.3 |
| ø4 | KQG2L04-00 | 9.1 | 14.6 | 20.5 | 3.1 | 12.6 | 3.2 | 5.6 | 4.2 | 7.4 |
| ø6 | KQG2L06-00 | 11.4 | 16.6 | 23 | 3.6 | 13.6 | 3.2 | 5.6 | 11.4 | 11 |
| ø8 | KQG2L08-00 | 13.7 | 20.1 | 29.1 | 5 | 16.1 | 4.2 | 8 | 21.6 | 20.2 |
| ø10 | KQG2L10-00 | 16.6 | 22 | 31.7 | 5.7 | 17 | 4.2 | 8 | 35.2 | 29.6 |
| ø12 | KQG2L12-00 | 18.7 | 24.6 | 35 | 6.4 | 18.6 | 4.2 | 8 | 50.2 | 37.1 |
| ø16 | KQG2L16-00 | 24.6 | 28.8 | 40.5 | 7.7 | 20.8 | 4.2 | 8 | 100 | 59.7 |



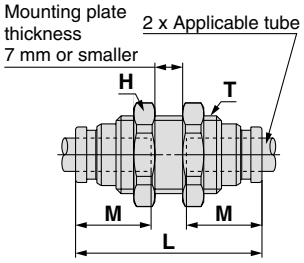

Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

## Dimensions

### Bulkhead Union: KQG2E

| Applicable tube O.D. (mm) | Model | T (M) | H (Width across flat) | L | Mounting hole | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| ø3.2 | KQG2E23-00 | M10 x 1 | 12 | 32.2 | 11 | 12 | 3.4 | 14 |
| ø4 | KQG2E04-00 | M10 x 1 | 12 | 32.4 | 11 | 12.6 | 5.6 | 14 |
| ø6 | KQG2E06-00 | M14 x 1 | 17 | 33.6 | 15 | 13.6 | 13.1 | 25.8 |
| ø8 | KQG2E08-00 | M15 x 1 | 19 | 36.4 | 16 | 16.1 | 26.1 | 30.4 |
| ø10 | KQG2E10-00 | M18 x 1 | 21 | 37.2 | 19 | 17 | 41.5 | 40.3 |
| ø12 | KQG2E12-00 | M20 x 1 | 24 | 39.2 | 21 | 18.6 | 58.3 | 49.9 |
| ø16 | KQG2E16-00 | M27 x 1 | 30 | 42.6 | 28 | 20.8 | 113 | 87.3 |

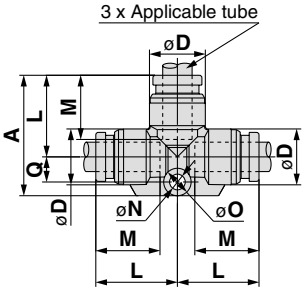
Note) Value of FEP tube.
Value of nylon tube for ø16 only.




### Union Tee: KQG2T

| Applicable tube O.D. (mm) | Model | Note 1) øD | L | A | Q | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | KQG2T23-00 | 8.3 | 13.6 | 20.5 | 4.1 | 12 | 3.2 | 5.6 | 3.4 | 7.9 |
| ø4 | KQG2T04-00 | 9.1 | 14.6 | 21.8 | 4.4 | 12.6 | 3.2 | 5.6 | 6.4 | 9.5 |
| ø6 | KQG2T06-00 | 11.4 | 16.6 | 24.6 | 5.2 | 13.6 | 3.2 | 5.6 | 13.4 | 14.2 |
| ø8 | KQG2T08-00 | 13.7 | 20.1 | 31.1 | 7 | 16.1 | 4.2 | 8 | 25.6 | 24.4 |
| ø10 | KQG2T10-00 | 16.6 | 22 | 34 | 8 | 17 | 4.2 | 8 | 40 | 36.8 |
| ø12 | KQG2T12-00 | 18.7 | 24.6 | 37.7 | 9.1 | 18.6 | 4.2 | 8 | 57.4 | 46.9 |
| ø16 | KQG2T16-00 | 24.6 | 28.8 | 43.4 | 10.6 | 20.8 | 4.2 | 8 | 100 | 75.5 |

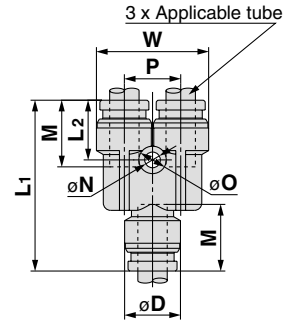
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.




### Union "Y": KQG2U

| Applicable tube O.D. (mm) | Model | Note 1) øD | W | L1 | L2 | P | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | KQG2U23-00 | 8.3 | 16.4 | 29 | 11 | 8.1 | 12 | 3.2 | 5.6 | 3.4 | 9.2 |
| ø4 | KQG2U04-00 | 9.1 | 18.2 | 30.4 | 11.3 | 9.1 | 12.6 | 3.2 | 5.6 | 4.2 | 11.1 |
| ø6 | KQG2U06-00 | 11.4 | 22.9 | 34.9 | 12.2 | 11.5 | 13.6 | 3.2 | 5.6 | 13.4 | 18.8 |
| ø8 | KQG2U08-00 | 13.7 | 28.3 | 40.1 | 14.1 | 14.6 | 16.1 | 4.2 | 8 | 25.6 | 29.7 |
| ø10 | KQG2U10-00 | 16.6 | 34.2 | 44 | 14.4 | 17.6 | 17 | 4.2 | 8 | 40 | 47.4 |
| ø12 | KQG2U12-00 | 18.7 | 38.5 | 48.4 | 15.8 | 19.8 | 18.6 | 4.2 | 8 | 57.4 | 62.1 |
| ø16 | KQG2U16-00 | 24.6 | 49.3 | 56.6 | 17.3 | 26 | 20.8 | 4.2 | 8 | 113 | 110.2 |

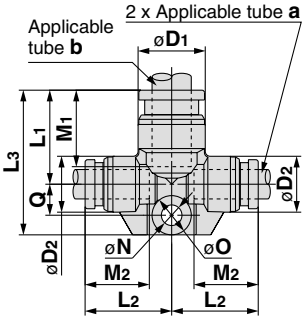
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.




### Different Diameter Tee: KQG2T

| Applicable tube O.D. (mm) a | Applicable tube O.D. (mm) b | Model | Note 1) øD1 | Note 1) øD2 | L1 | L2 | L3 | Q | M1 | M2 | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | ø4 | KQG2T23-04 | 9.1 | 8.3 | 14.2 | 14.1 | 21.1 | 4.1 | 12.6 | 12 | 3.2 | 5.6 | 3.8 | 8.5 |
| ø4 | ø6 | KQG2T04-06 | 11.4 | 9.1 | 15.6 | 15.7 | 22.8 | 4.4 | 13.6 | 12.6 | 3.2 | 5.6 | 7.1 | 11.5 |
| ø6 | ø8 | KQG2T06-08 | 13.7 | 11.4 | 19.1 | 17.7 | 29.5 | 6.4 | 16.1 | 13.6 | 4.2 | 8 | 16.4 | 20 |
| ø8 | ø10 | KQG2T08-10 | 16.6 | 13.7 | 21 | 21.2 | 32.1 | 7.1 | 17 | 16.1 | 4.2 | 8 | 36 | 29.8 |
| ø10 | ø12 | KQG2T10-12 | 18.7 | 16.6 | 23.6 | 23.1 | 35.7 | 8.1 | 18.6 | 17 | 4.2 | 8 | 56 | 41.3 |
| ø12 | ø16 | KQG2T12-16 | 24.6 | 18.7 | 26.8 | 26.7 | 39.9 | 9.1 | 20.8 | 18.6 | 4.2 | 8 | 108.5 | 58 |

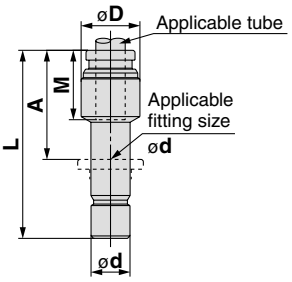
Note 1) øD1, øD2 are maximum diameters.
Note 2) Value of FEP tube.




### Plug-in Reducer: KQG2R

| Applicable tube O.D. (mm) | Applicable fitting size ød | Model | Note 1) øD | L | A | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| ø3.2 | ø4 | KQG2R23-04 | 9 | 32.9 | 20.3 | 12 | 3.4 | 4.7 |
| ø4 | ø6 | KQG2R04-06 | 9 | 34.4 | 20.8 | 12.6 | 5.6 | 6.7 |
| ø6 | ø8 | KQG2R06-08 | 12 | 38.4 | 22.3 | 13.6 | 13.1 | 12.1 |
| ø8 | ø10 | KQG2R08-10 | 14 | 41.9 | 24.9 | 16.1 | 26.1 | 18.3 |
| ø10 | ø12 | KQG2R10-12 | 17 | 44.8 | 26.2 | 17 | 41.5 | 26.5 |
| ø12 | ø16 | KQG2R12-16 | 19 | 42.9 | 22.1 | 18.6 | 58.3 | 35.4 |

Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

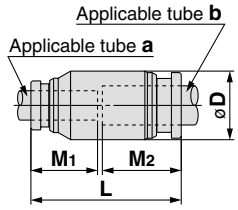


## Dimensions

### Different Diameter Straight: KQG2H

| Applicable tube O.D. (mm) a | Applicable tube O.D. (mm) b | Model | Note 1) øD | L | M1 | M2 | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| ø3.2 | ø4 | **KQG2H23-04** | 9 | 25.6 | 12 | 12.6 | 3.4 | 6.5 |
| ø4 | ø6 | **KQG2H04-06** | 12 | 27.2 | 12.6 | 13.6 | 5.6 | 11.6 |
| ø6 | ø8 | **KQG2H06-08** | 14 | 30.7 | 13.6 | 16.1 | 13.1 | 16.3 |
| ø8 | ø10 | **KQG2H08-10** | 17 | 34.1 | 16.1 | 17 | 26.1 | 26 |
| ø10 | ø12 | **KQG2H10-12** | 19 | 36.6 | 17 | 18.6 | 41.5 | 33.3 |
| ø12 | ø16 | **KQG2H12-16** | 24.6 | 40.4 | 18.6 | 20.8 | 58.3 | 54.7 |

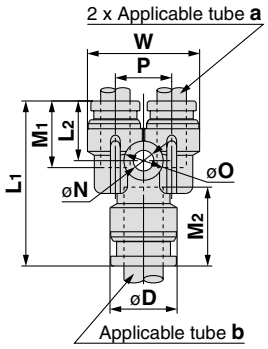
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Different Diameter Union "Y": KQG2U

| Applicable tube O.D. (mm) a | Applicable tube O.D. (mm) b | Model | Note 1) øD | L1 | L2 | P | W | M1 | M2 | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | ø4 | **KQG2U23-04** | 9.1 | 27 | 10.8 | 8.1 | 16.4 | 12 | 12.6 | 3.2 | 5.6 | 3.2 | 8.5 |
| ø4 | ø6 | **KQG2U04-06** | 11.4 | 29.3 | 11.2 | 9.1 | 18.2 | 12.6 | 13.6 | 3.2 | 5.6 | 4.2 | 11.9 |
| ø6 | ø8 | **KQG2U06-08** | 13.7 | 33.7 | 12.2 | 11.5 | 22.9 | 13.6 | 16.1 | 4.2 | 8 | 13.4 | 19.3 |
| ø8 | ø10 | **KQG2U08-10** | 16.6 | 38.3 | 13.8 | 14.6 | 28.3 | 16.1 | 17 | 4.2 | 8 | 25.6 | 31.6 |
| ø10 | ø12 | **KQG2U10-12** | 18.7 | 43 | 14 | 17.6 | 34.2 | 17 | 18.6 | 4.2 | 8 | 40 | 47.6 |
| ø12 | ø16 | **KQG2U12-16** | 24.6 | 47.4 | 15.6 | 19.8 | 38.5 | 18.6 | 20.8 | 4.2 | 8 | 57.4 | 67.6 |

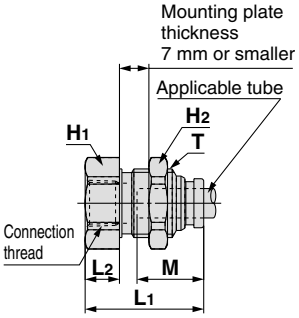
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Bulkhead Connector: KQG2E

| Applicable tube O.D. (mm) | Connection thread Rc | Model | T (M) | Width across flat H1 | Width across flat H2 | L1 | L2 | Mounting hole | M | Note) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | 1/4 | **KQG2E23-02** | M10 x 1 | 17 | 12 | 31 | 14.8 | 11 | 12 | 3.4 | 26.1 |
| ø4 | 1/8 | **KQG2E04-01** | M10 x 1 | 14 | 12 | 25.8 | 9.7 | 11 | 12.6 | 5.6 | 16 |
| | 1/4 | **KQG2E04-02** | | 17 | | 30.9 | 14.8 | | | | 25.6 |
| ø6 | 1/8 | **KQG2E06-01** | M14 x 1 | 17 | 17 | 24.2 | 7 | 15 | 13.6 | 13.1 | 24.4 |
| | 1/4 | **KQG2E06-02** | | | | 30.9 | 13.7 | | | | 30.9 |
| | 3/8 | **KQG2E06-03** | | 19 | | 32.1 | 14.9 | | | | 32 |
| ø8 | 1/8 | **KQG2E08-01** | M15 x 1 | 17 | 19 | 26.3 | 8.1 | 16 | 16.1 | 26.1 | 28 |
| | 1/4 | **KQG2E08-02** | | | | 31.3 | 13.1 | | | | 31.2 |
| | 3/8 | **KQG2E08-03** | | 19 | | 32.8 | 14.6 | | | | 32.7 |
| ø10 | 1/4 | **KQG2E10-02** | M18 x 1 | 19 | 21 | 31.6 | 13 | 19 | 17 | 41.5 | 42.8 |
| | 3/8 | **KQG2E10-03** | | | | 33 | 14.4 | | | | 37.5 |
| ø12 | 3/8 | **KQG2E12-03** | M20 x 1 | 21 | 24 | 34 | 14.4 | 21 | 18.6 | 58.3 | 50.3 |
| | 1/2 | **KQG2E12-04** | | 24 | | 39.3 | 19.7 | | | | 60.7 |
| ø16 | 3/8 | **KQG2E16-03** | M27 x 1 | 29 | 30 | 35.3 | 13.3 | 28 | 20.8 | 96 | 107.8 |
| | 1/2 | **KQG2E16-04** | | | | 40.6 | 18.6 | | | 113 | 114.6 |

Note) Value of FEP tube.
Value of nylon tube for ø16 only.

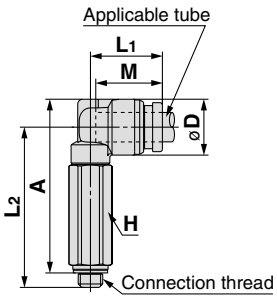


## Dimensions

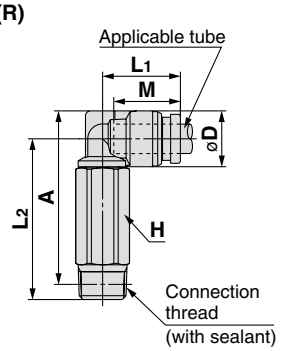
### Extended Male Elbow: KQG2W

| Applicable tube O.D. (mm) | Connection thread R, M | Model | H (Width across flat) | Note 1) øD | L1 | L2 | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | M5 x 0.8 | KQG2W23-M5 | 8 | 8.3 | 13.1 | 31.2 | 32.4 | 12 | 2.8 | 13 |
| | 1/8 | KQG2W23-01S | 10 | | 13.6 | 31.3 | 32.3 | | | 14.7 |
| | 1/4 | KQG2W23-02S | 14 | | | 35.1 | 34.5 | | | 33.1 |
| ø4 | M5 x 0.8 | KQG2W04-M5 | 8 | 9.1 | 13.7 | 31.6 | 33.2 | 12.6 | 3 | 13.6 |
| | 1/8 | KQG2W04-01S | 10 | | 14.4 | 31.7 | 33.1 | | 4 | 15.6 |
| | 1/4 | KQG2W04-02S | 14 | | | 35.5 | 35.3 | | | 33.9 |
| ø6 | M5 x 0.8 | KQG2W06-M5 | 8 | 11.4 | 14.7 | 32.7 | 35.4 | 13.6 | 3 | 15.5 |
| | 1/8 | KQG2W06-01S | 10 | | 15.9 | 32.8 | | | 10.9 | 17.2 |
| | 1/4 | KQG2W06-02S | 14 | | | 36.6 | 37.6 | | | 35.5 |
| | 3/8 | KQG2W06-03S | 17 | | | 38 | 38.6 | | | 57.4 |
| ø8 | 1/8 | KQG2W08-01S | 12 | 13.7 | 18.6 | 37 | 40.7 | 16.1 | 20.5 | 28 |
| | 1/4 | KQG2W08-02S | 14 | | 19.1 | 40.2 | 42.3 | | | 37.7 |
| | 3/8 | KQG2W08-03S | 17 | | | 41.6 | 43.3 | | | 60.9 |
| ø10 | 1/4 | KQG2W10-02S | 14 | 16.6 | 21 | 46.6 | 50.2 | 17 | 33.5 | 40.7 |
| | 3/8 | KQG2W10-03S | 17 | | | 45.9 | 49.1 | | | 61.9 |
| | 1/2 | KQG2W10-04S | 22 | | | 50.1 | 52 | | | 117.3 |
| ø12 | 1/4 | KQG2W12-02S | 14 | 18.7 | 22.6 | 47.7 | 52.3 | 18.6 | 47.7 | 44.6 |
| | 3/8 | KQG2W12-03S | 17 | | 23.6 | 49 | 53.2 | | | 56.3 |
| | 1/2 | KQG2W12-04S | 22 | | | 53.2 | 56.1 | | | 112.9 |
| ø16 | 3/8 | KQG2W16-03S | 19 | 24.6 | 26.3 | 57.6 | 64.1 | 20.8 | 71 | 86.6 |
| | 1/2 | KQG2W16-04S | 22 | | 27.3 | 61.4 | 66.6 | | 100 | 111.8 |

(M5)



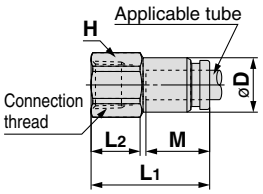

(R)




∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

### Female Connector: KQG2F

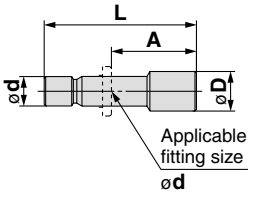
| Applicable tube O.D. (mm) | Connection thread Rc | Model | H (Width across flat) | Note 1) øD | L1 | L2 | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | 1/8 | KQG2F23-01 | 12 | 8 | 23.3 | 9.8 | 12 | 3.4 | 8.9 |
| ø4 | 1/8 | KQG2F04-01 | 12 | 8.7 | 23.7 | 9.8 | 12.6 | 5.6 | 9.2 |
| | 1/4 | KQG2F04-02 | 17 | | 28.7 | 13.2 | | | 21.6 |
| ø6 | 1/8 | KQG2F06-01 | 12 | 11.1 | 24.2 | 10 | 13.6 | 13.1 | 10.5 |
| | 1/4 | KQG2F06-02 | 17 | | 29.2 | 13.4 | | | 23.1 |
| | 3/8 | KQG2F06-03 | 19 | | 30.6 | 14.2 | | | 24.5 |
| ø8 | 1/8 | KQG2F08-01 | 14 | 13.4 | 26.3 | 9.6 | 16.1 | 26.1 | 16.3 |
| | 1/4 | KQG2F08-02 | 17 | | 31.3 | 13.7 | | | 25.5 |
| | 3/8 | KQG2F08-03 | 19 | | 32.7 | 14.4 | | | 27 |
| ø10 | 1/4 | KQG2F10-02 | 17 | 16.4 | 31.6 | 13.9 | 17 | 41.5 | 28.8 |
| | 3/8 | KQG2F10-03 | 19 | | 33 | 14.7 | | | 30.4 |
| ø12 | 1/4 | KQG2F12-02 | 19 | 18.5 | 32.6 | 13.3 | 18.6 | 58.3 | 37.5 |
| | 3/8 | KQG2F12-03 | | | 34 | 14.7 | | | 32.3 |
| | 1/2 | KQG2F12-04 | 24 | | 39.3 | 18.4 | | | 50.2 |
| ø16 | 3/8 | KQG2F16-03 | 24 | 24.6 | 35.3 | 13.5 | 20.8 | 81 | 59.7 |
| | 1/2 | KQG2F16-04 | | | 40.6 | 18.8 | | 113 | 57 |




Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

### Plug: KQG2P

| Applicable fitting size ød | Model | øD | L | A | Weight (g) |
|---|---|---|---|---|---|
| ø3.2 | KQG2P-23 | 5 | 28.9 | 16.9 | 2.7 |
| ø4 | KQG2P-04 | 6 | 29.6 | 17 | 4.1 |
| ø6 | KQG2P-06 | 8 | 30.8 | 17.2 | 8.5 |
| ø8 | KQG2P-08 | 10 | 33.7 | 17.6 | 15.5 |
| ø10 | KQG2P-10 | 12 | 34.6 | 17.6 | 24.1 |
| ø12 | KQG2P-12 | 14 | 36.5 | 17.9 | 35.8 |
| ø16 | KQG2P-16 | 18 | 38.6 | 17.8 | 65.5 |



# Stainless Steel 316 One-touch Fittings

## Applicable Tube: Inch Size, Connection Thread: UNF, NPT

# Series KQG2

RoHS

## Applicable Tube

| | |
|---|---|
| Tube material | FEP, PFA, Nylon, Soft nylon Note 1), Polyurethane, Polyolefin |
| Tube O.D. | ø1/8", ø5/32", ø1/4", ø5/16", ø3/8", ø1/2" |

## Specifications

| | |
|---|---|
| **Fluid** | Air, Water, Steam Note 2) Note 3) |
| **Operating pressure range** Note 4) | –100 kPa to 1 MPa Note 5) |
| **Proof pressure** | 3.0 MPa |
| **Ambient and fluid temperature** Note 6) | –5 to 150°C (No freezing) Note 5) |
| **Lubricant** | Grease-free specification |
| **Seal on the threads** | With sealant |

Note 1) For soft nylon tube, water cannot be used.
Note 2) Consult with SMC regarding applicable tube separately.
Note 3) Using special FKM that is resistant even when steam is used.
Note 4) Avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 5) Check the operating pressure range and operating temperature range of the tube.
Note 6) It is recommended that you use the inner sleeve in the following conditions (Except ø1/8"):
- When using in an environment where the fluid temperature changes drastically.
- When using at a high temperature.

### ∗ Temperature Condition of Mounting the Inner Sleeve

| Tube | Temperature |
|---|---|
| FEP tube/TH series | 80°C or more |
| PFA tube/TL series | 120°C or more |

### Spare Parts

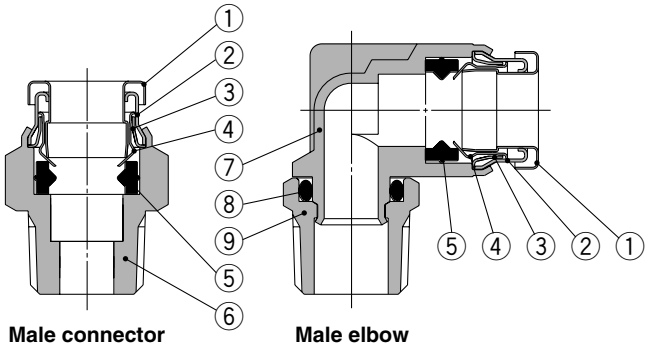
| Description | Tube O.D. | Part no. | Material |
|---|---|---|---|
| Gasket | — | **M-5G3** | Stainless steel 316, Special FKM |
| Bulkhead nut | ø1/8", ø5/32" | **KQG201-P01** | Stainless steel 316 |
| | ø1/4" | **KQG207-P01** | |
| | ø5/16" | **KQG209-P01** | |
| | ø3/8" | **KQG211-P01** | |
| | ø1/2" | **KQG213-P01** | |

### Cross Reference Table of the Inner Sleeve

| Tube O.D. | Tube material | | Applicable inner sleeve | |
|---|---|---|---|---|
| | **TH/TIH** (FEP) | **TL/TIL** (PFA) | Part no. | Length |
| ø5/32" | TH0402 | — | **TJG-0402** | 18 |
| | TH0425 | — | **TJG-0425** | 18 |
| | — | TL0403 | **TJG-0403** | 18 |
| ø1/4" | TIHB07 | TIL07 | **TJG-0604** | 19 |
| | TIHA07 | — | **TJG-0746** | 19 |
| ø5/16" | TH0806 | TL0806 | **TJG-0806** | 20.5 |
| ø3/8" | TIHB11 | TIL11 | **TJG-1065** | 23 |
| | TIHA11 | — | **TJG-1107** | 23 |
| ø1/2" | TIH13 | TIL13 | **TJG-1395** | 24 |

∗ Stainless steel 316 is used for the TJG series.

## Construction




### Component Parts

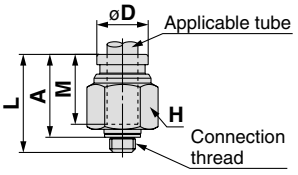
| No. | Description | Material |
|---|---|---|
| 1 | **Release button** | Stainless steel 316 |
| 2 | **Guide 1** | Stainless steel 316 |
| 3 | **Guide 2** | Stainless steel 316 |
| 4 | **Chuck** | Stainless steel 316 |
| 5 | **Seal** | Special FKM (Fluoro coated) |
| 6 | **Male connector body** | Stainless steel 316 |
| 7 | **Male elbow body** | Stainless steel 316 |
| 8 | **O-ring** | Special FKM (Fluoro coated) |
| 9 | **Stud** | Stainless steel 316 |

## Dimensions

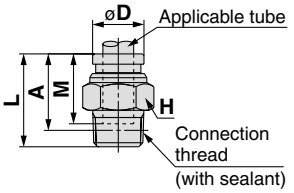
### Male Connector: KQG2H

| Applicable tube O.D. (inch) | Connection thread UNF, NPT | Model | H (Width across flat) | Note 1) øD | L | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | 10-32UNF | **KQG2H01-32** | 8 | 8 | 16.5 | 13.5 | 12 | 3 | 3.3 |
| | 1/8 | **KQG2H01-N01S** | 12 | | 17.1 | 13.9 | | 3.4 | 8.1 |
| | 1/4 | **KQG2H01-N02S** | 14 | | 20.9 | 16.5 | | | 16.9 |
| ø5/32" | 10-32UNF | **KQG2H03-32** | 10 | 8.7 | 17.1 | 14.1 | 12.6 | 4 | 5 |
| | 1/8 | **KQG2H03-N01S** | 12 | | 17 | 13.8 | | 5.6 | 7.6 |
| | 1/4 | **KQG2H03-N02S** | 14 | | 20.9 | 16.5 | | | 16.4 |
| ø1/4" | 10-32UNF | **KQG2H07-32** | 12 | 11.2 | 19 | 16 | 13.5 | 4 | 7.5 |
| | 1/8 | **KQG2H07-N01S** | | | 20 | 16.8 | | 13.1 | 8.6 |
| | 1/4 | **KQG2H07-N02S** | 14 | | 20.6 | 16.2 | | | 14.2 |
| | 3/8 | **KQG2H07-N03S** | 19 | | 23.8 | 19.1 | | | 31.4 |
| ø5/16" | 1/8 | **KQG2H09-N01S** | 14 | 13.4 | 24.2 | 21 | 16.1 | 26.1 | 12.6 |
| | 1/4 | **KQG2H09-N02S** | | | 23.1 | 18.7 | | | 13.9 |
| | 3/8 | **KQG2H09-N03S** | 19 | | 24.6 | 19.9 | | | 28.9 |
| ø3/8" | 1/8 | **KQG2H11-N01S** | 17 | 16 | 25 | 21.8 | 16.6 | 26.1 | 19.4 |
| | 1/4 | **KQG2H11-N02S** | | | 26.3 | 21.9 | | 41.5 | 20.3 |
| | 3/8 | **KQG2H11-N03S** | 19 | | 23.6 | 18.9 | | | 25.2 |
| | 1/2 | **KQG2H11-N04S** | 22 | | 28.3 | 21.9 | | | 51.8 |
| ø1/2" | 1/4 | **KQG2H13-N02S** | 22 | 19.3 | 30.5 | 26.1 | 18.5 | 58.3 | 36.7 |
| | 3/8 | **KQG2H13-N03S** | | | 28.4 | 23.7 | | | 34.4 |
| | 1/2 | **KQG2H13-N04S** | | | | 22 | | | 43.4 |

(10-32UNF)




(NPT)

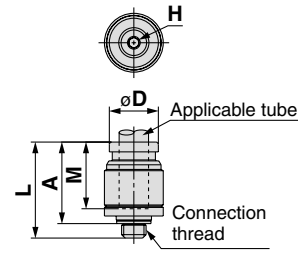



∗ Reference dimensions after installation of NPT thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

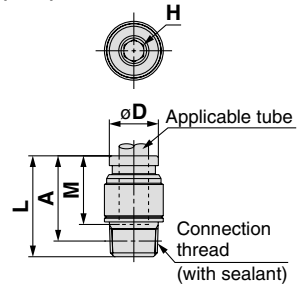
### Hexagon Socket Head Male Connector: KQG2S

| Applicable tube O.D. (inch) | Connection thread UNF, NPT | Model | H (Width across flat) | Note 1) øD | L | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | 10-32UNF | **KQG2S01-32** | 2 | 9 | 16.5 | 13.5 | 12 | 3 | 3.8 |
| ø5/32" | 10-32UNF | **KQG2S03-32** | 2 | 9 | 17.1 | 14.1 | 12.6 | 4 | 3.7 |
| | 1/8 | **KQG2S03-N01S** | 2.78 | 11 | 19.6 | 16.4 | | 4.1 | 8.5 |
| ø1/4" | 10-32UNF | **KQG2S07-32** | 2 | 12 | 19.5 | 16.5 | 13.5 | 4 | 7.2 |
| | 1/8 | **KQG2S07-N01S** | 4.76 | | 20.5 | 17.3 | | 10 | 8.1 |
| | 1/4 | **KQG2S07-N02S** | | 14 | | 16.1 | | 10.7 | 13.4 |
| | 3/8 | **KQG2S07-N03S** | | 18 | | 15.8 | | | 22.6 |
| ø5/16" | 1/8 | **KQG2S09-N01S** | 5.56 | 14 | 24.7 | 21.5 | 16.1 | 17.2 | 12 |
| | 1/4 | **KQG2S09-N02S** | 6.35 | | 23.1 | 18.7 | | 23.3 | 12.8 |
| | 3/8 | **KQG2S09-N03S** | | 18 | | 18.4 | | | 23.5 |
| ø3/8" | 1/8 | **KQG2S11-N01S** | 5.56 | 17 | 25.2 | 22 | 16.6 | 17.2 | 17.8 |
| | 1/4 | **KQG2S11-N02S** | 6.35 | | 27.1 | 22.7 | | 39 | 21.2 |
| | 3/8 | **KQG2S11-N03S** | | 18 | 23.6 | 18.9 | | | 23.8 |
| | 1/2 | **KQG2S11-N04S** | | 22 | | 17.2 | | | 38.6 |
| ø1/2" | 1/4 | **KQG2S13-N02S** | 8 | 20 | 30.5 | 26.1 | 18.5 | 46 | 26.6 |
| | 3/8 | **KQG2S13-N03S** | 9.53 | | 29.4 | 24.7 | | 60 | 29 |
| | 1/2 | **KQG2S13-N04S** | | 22 | 25.5 | 19.1 | | | 34.8 |

(10-32UNF)



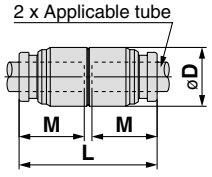

(NPT)




∗ Reference dimensions after installation of NPT thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

### Straight Union: KQG2H

| Applicable tube O.D. (inch) | Model | øD Note 1) | L | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|
| ø1/8" | **KQG2H01-00** | 9 | 25 | 12 | 3.4 | 6.5 |
| ø5/32" | **KQG2H03-00** | 9 | 26.2 | 12.6 | 5.6 | 6.5 |
| ø1/4" | **KQG2H07-00** | 12 | 28 | 13.5 | 13.1 | 11 |
| ø5/16" | **KQG2H09-00** | 14 | 33.2 | 16.1 | 26.1 | 16.6 |
| ø3/8" | **KQG2H11-00** | 16 | 34.2 | 16.6 | 41.5 | 22.7 |
| ø1/2" | **KQG2H13-00** | 20 | 38 | 18.5 | 58.3 | 35.5 |



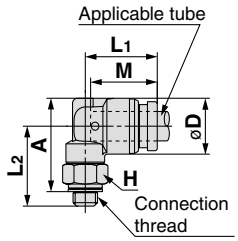

Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

## Dimensions

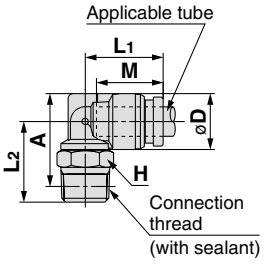
### Male Elbow: KQG2L

| Applicable tube O.D. (inch) | Connection thread UNF, NPT | Model | H (Width across flat) | Note 1) øD | L1 | L2 | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | 10-32UNF | **KQG2L01-32** | 8 | 8.3 | 13.1 | 14.8 | 16 | 12 | 2.6 | 6.3 |
| | 1/8 | **KQG2L01-N01S** | 12 | | 13.6 | 14.9 | 15.8 | | 3 | 9 |
| | 1/4 | **KQG2L01-N02S** | 14 | | | 18.7 | 18.4 | | | 16.7 |
| ø5/32" | 10-32UNF | **KQG2L03-32** | 8 | 9.1 | 13.7 | 15.2 | 16.8 | 12.6 | 3.5 | 6.9 |
| | 1/8 | **KQG2L03-N01S** | 12 | | 14.4 | 15.3 | 16.6 | | 4.2 | 9.9 |
| | 1/4 | **KQG2L03-N02S** | 14 | | | 19.1 | 19.2 | | | 17.6 |
| ø1/4" | 10-32UNF | **KQG2L07-32** | 8 | 11.7 | 14.7 | 16.5 | 19.3 | 13.5 | 3.5 | 8.9 |
| | 1/8 | **KQG2L07-N01S** | 12 | | 15.9 | 16.6 | 19.2 | | 11.4 | 11.7 |
| | 1/4 | **KQG2L07-N02S** | 14 | | | 20.4 | 21.8 | | | 19.4 |
| | 3/8 | **KQG2L07-N03S** | 19 | | | 22.2 | 23.3 | | | 34.2 |
| ø5/16" | 1/8 | **KQG2L09-N01S** | 12 | 13.7 | 18.6 | 18.3 | 21.9 | 16.1 | 21.6 | 15.1 |
| | 1/4 | **KQG2L09-N02S** | 14 | | 19.1 | 21.5 | 23.9 | | | 21.1 |
| | 3/8 | **KQG2L09-N03S** | 19 | | | 23.3 | 25.4 | | | 35.7 |
| ø3/8" | 1/8 | **KQG2L11-N01S** | 12 | 16 | 20 | 19.4 | 24.2 | 16.6 | 21.6 | 19.7 |
| | 1/4 | **KQG2L11-N02S** | 14 | | 21 | 22.6 | 26.2 | | 35.2 | 23.2 |
| | 3/8 | **KQG2L11-N03S** | 19 | | | 24.4 | 27.7 | | | 36.7 |
| | 1/2 | **KQG2L11-N04S** | 22 | | | 28.2 | 29.8 | | | 60.2 |
| ø1/2" | 1/4 | **KQG2L13-N02S** | 14 | 19.6 | 22.7 | 24.4 | 29.8 | 18.5 | 50.2 | 29.4 |
| | 3/8 | **KQG2L13-N03S** | 19 | | 23.7 | 26.1 | 31.2 | | | 39.2 |
| | 1/2 | **KQG2L13-N04S** | 22 | | | 29.9 | 33.3 | | | 61.3 |

(10-32UNF)




(NPT)

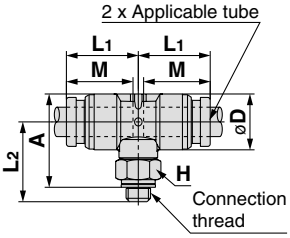



∗ Reference dimensions after installation of NPT thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

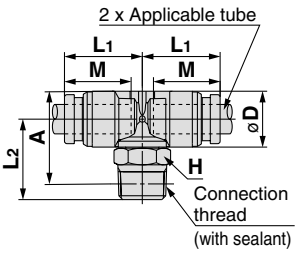
### Male Branch Tee: KQG2T

| Applicable tube O.D. (inch) | Connection thread UNF, NPT | Model | H (Width across flat) | Note 1) øD | L1 | L2 | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | 10-32UNF | **KQG2T01-32** | 8 | 8.3 | 13.1 | 14.8 | 16 | 12 | 3.2 | 8.1 |
| | 1/8 | **KQG2T01-N01S** | 12 | | 13.6 | 14.9 | 15.8 | | 3.4 | 10.8 |
| | 1/4 | **KQG2T01-N02S** | 14 | | | 18.7 | 18.4 | | | 18.5 |
| ø5/32" | 10-32UNF | **KQG2T03-32** | 8 | 9.1 | 13.7 | 15.2 | 16.8 | 12.6 | 4.5 | 9 |
| | 1/8 | **KQG2T03-N01S** | 12 | | 14.4 | 15.3 | 16.6 | | 6 | 11.8 |
| | 1/4 | **KQG2T03-N02S** | 14 | | | 19.1 | 19.2 | | | 19.5 |
| ø1/4" | 10-32UNF | **KQG2T07-32** | 8 | 11.7 | 14.7 | 16.5 | 19.3 | 13.5 | 4.5 | 12.1 |
| | 1/8 | **KQG2T07-N01S** | 12 | | 15.9 | 16.6 | 19.2 | | 13.9 | 15.1 |
| | 1/4 | **KQG2T07-N02S** | 14 | | | 20.4 | 21.8 | | | 22.8 |
| | 3/8 | **KQG2T07-N03S** | 19 | | | 22.2 | 23.3 | | | 37.7 |
| ø5/16" | 1/8 | **KQG2T09-N01S** | 12 | 13.7 | 18.6 | 18.3 | 21.9 | 16.1 | 26.3 | 20.4 |
| | 1/4 | **KQG2T09-N02S** | 14 | | 19.1 | 21.5 | 23.9 | | | 26.3 |
| | 3/8 | **KQG2T09-N03S** | 19 | | | 23.3 | 25.4 | | | 41 |
| ø3/8" | 1/8 | **KQG2T11-N01S** | 12 | 16 | 20 | 19.4 | 24.2 | 16.6 | 40.8 | 27.3 |
| | 1/4 | **KQG2T11-N02S** | 14 | | 21 | 22.6 | 26.2 | | | 30.5 |
| | 3/8 | **KQG2T11-N03S** | 19 | | | 24.4 | 27.7 | | | 44 |
| | 1/2 | **KQG2T11-N04S** | 22 | | | 28.2 | 29.8 | | | 67.4 |
| ø1/2" | 1/4 | **KQG2T13-N02S** | 14 | 19.6 | 22.7 | 24.4 | 29.8 | 18.5 | 57.2 | 41.1 |
| | 3/8 | **KQG2T13-N03S** | 19 | | 23.7 | 26.1 | 31.2 | | | 50.2 |
| | 1/2 | **KQG2T13-N04S** | 22 | | | 29.9 | 33.3 | | | 72.3 |

(10-32UNF)



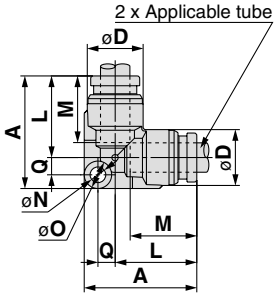

(NPT)




∗ Reference dimensions after installation of NPT thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

### Union Elbow: KQG2L

| Applicable tube O.D. (inch) | Model | Note 1) øD | L | A | Q | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | **KQG2L01-00** | 8.3 | 13.6 | 19.3 | 2.9 | 12 | 3.2 | 5.6 | 3 | 6.3 |
| ø5/32" | **KQG2L03-00** | 9.1 | 14.6 | 20.5 | 3.1 | 12.6 | 3.2 | 5.6 | 4.2 | 7.4 |
| ø1/4" | **KQG2L07-00** | 11.7 | 16.7 | 23.2 | 3.7 | 13.5 | 3.2 | 5.6 | 11.4 | 11.5 |
| ø5/16" | **KQG2L09-00** | 13.7 | 20.1 | 29.1 | 5 | 16.1 | 4.2 | 8 | 21.6 | 20.2 |
| ø3/8" | **KQG2L11-00** | 16 | 21.4 | 31.1 | 5.7 | 16.6 | 4.2 | 8 | 35.2 | 28.2 |
| ø1/2" | **KQG2L13-00** | 19.6 | 24.9 | 35.3 | 6.4 | 18.5 | 4.2 | 8 | 50.2 | 41.7 |



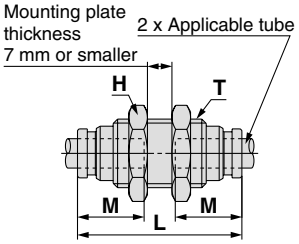

Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

## Dimensions

### Bulkhead Union: KQG2E

| Applicable tube O.D. (inch) | Model | T (UNF) | H (Width across flat) | L | Mounting hole | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| ø1/8" | **KQG2E01-00** | 7/16-20UNF | 14 | 34.2 | 12.5 | 12 | 3.4 | 20.7 |
| ø5/32" | **KQG2E03-00** | 7/16-20UNF | 14 | 34.4 | 12.5 | 12.6 | 5.6 | 20.5 |
| ø1/4" | **KQG2E07-00** | 1/2-20UNF | 17 | 35.4 | 14 | 13.5 | 13.1 | 28 |
| ø5/16" | **KQG2E09-00** | 5/8-18UNF | 19 | 39.6 | 17 | 16.1 | 26.1 | 39.5 |
| ø3/8" | **KQG2E11-00** | 3/4-16UNF | 22 | 40.4 | 20.5 | 16.6 | 41.5 | 57.3 |
| ø1/2" | **KQG2E13-00** | 7/8-14UNF | 26 | 44.4 | 23.5 | 18.5 | 58.3 | 83.2 |

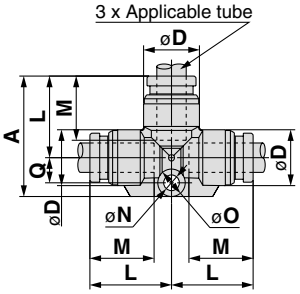
Note) Value of FEP tube.




### Union Tee: KQG2T

| Applicable tube O.D. (inch) | Model | Note 1) øD | L | A | Q | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | **KQG2T01-00** | 8.3 | 13.6 | 20.5 | 4.1 | 12 | 3.2 | 5.6 | 3.4 | 7.9 |
| ø5/32" | **KQG2T03-00** | 9.1 | 14.6 | 21.8 | 4.4 | 12.6 | 3.2 | 5.6 | 6.4 | 9.5 |
| ø1/4" | **KQG2T07-00** | 11.7 | 16.7 | 24.7 | 5.2 | 13.5 | 3.2 | 5.6 | 13.4 | 14.7 |
| ø5/16" | **KQG2T09-00** | 13.7 | 20.1 | 31.1 | 7 | 16.1 | 4.2 | 8 | 25.6 | 24.4 |
| ø3/8" | **KQG2T11-00** | 16 | 21.4 | 33.4 | 8 | 16.6 | 4.2 | 8 | 40 | 34.7 |
| ø1/2" | **KQG2T13-00** | 19.6 | 24.9 | 37.9 | 9 | 18.5 | 4.2 | 8 | 57.4 | 52.3 |

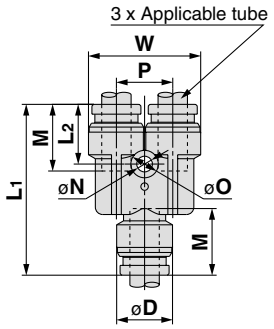
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Union "Y": KQG2U

| Applicable tube O.D. (inch) | Model | Note 1) øD | W | L1 | L2 | P | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | **KQG2U01-00** | 8.3 | 16.4 | 29 | 11 | 8.1 | 12 | 3.2 | 5.6 | 3.4 | 9.2 |
| ø5/32" | **KQG2U03-00** | 9.1 | 18.2 | 30.4 | 11.3 | 9.1 | 12.6 | 3.2 | 5.6 | 4.2 | 11.1 |
| ø1/4" | **KQG2U07-00** | 11.7 | 23.9 | 34.5 | 12.1 | 12.2 | 13.5 | 3.2 | 5.6 | 13.4 | 19.6 |
| ø5/16" | **KQG2U09-00** | 13.7 | 28.3 | 40.1 | 14.1 | 14.6 | 16.1 | 4.2 | 8 | 25.6 | 29.7 |
| ø3/8" | **KQG2U11-00** | 16 | 33.2 | 42.2 | 14 | 17.2 | 16.6 | 4.2 | 8 | 40 | 43.1 |
| ø1/2" | **KQG2U13-00** | 19.6 | 40.2 | 47.3 | 15.8 | 20.6 | 18.5 | 4.2 | 8 | 57.4 | 66.4 |

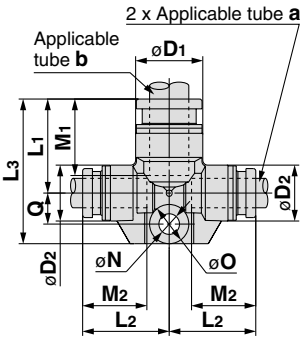
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Different Diameter Tee: KQG2T

| Applicable tube O.D. (inch) a | Applicable tube O.D. (inch) b | Model | Note 1) øD1 | Note 1) øD2 | L1 | L2 | L3 | Q | M1 | M2 | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | ø5/32" | **KQG2T01-03** | 9.1 | 8.3 | 14.2 | 14.1 | 21.1 | 4.1 | 12.6 | 12 | 3.2 | 5.6 | 3.8 | 8.5 |
| ø5/32" | ø1/4" | **KQG2T03-07** | 11.7 | 9.1 | 15.5 | 15.9 | 22.7 | 4.4 | 13.5 | 12.6 | 3.2 | 5.6 | 7.1 | 11.7 |
| ø1/4" | ø5/16" | **KQG2T07-09** | 13.7 | 11.7 | 19.3 | 17.6 | 29.6 | 6.3 | 16.1 | 13.5 | 4.2 | 8 | 16.4 | 20.2 |
| ø5/16" | ø3/8" | **KQG2T09-11** | 16 | 13.7 | 20.6 | 21 | 31.7 | 7.1 | 16.6 | 16.1 | 4.2 | 8 | 36 | 28.9 |
| ø3/8" | ø1/2" | **KQG2T11-13** | 19.6 | 16 | 23.3 | 23 | 35.4 | 8.1 | 18.5 | 16.6 | 4.2 | 8 | 56 | 41.8 |

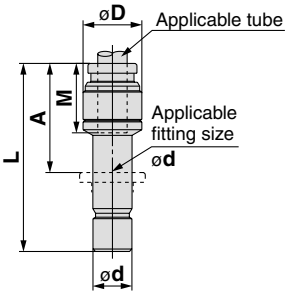
Note 1) øD1, øD2 are maximum diameters.
Note 2) Value of FEP tube.




### Plug-in Reducer: KQG2R

| Applicable tube O.D. (inch) | Applicable fitting size ød | Model | Note 1) øD | L | A | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| ø1/8" | ø5/32" | **KQG2R01-03** | 9 | 32.9 | 20.3 | 12 | 3.4 | 4.7 |
| ø5/32" | ø1/4" | **KQG2R03-07** | 9 | 33.7 | 20.2 | 12.6 | 5.6 | 7.1 |
| ø1/4" | ø5/16" | **KQG2R07-09** | 12 | 38.4 | 22.3 | 13.5 | 13.1 | 11.9 |
| ø5/16" | ø3/8" | **KQG2R09-11** | 14 | 41.6 | 25 | 16.1 | 26.1 | 16.8 |
| ø3/8" | ø1/2" | **KQG2R11-13** | 17 | 39.8 | 21.3 | 16.6 | 41.5 | 23.5 |

Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

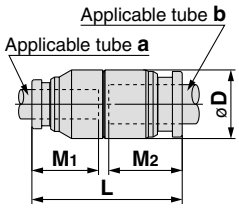


## Dimensions

### Different Diameter Straight: KQG2H

| Applicable tube O.D. (inch) a | Applicable tube O.D. (inch) b | Model | øD Note 1) | L | M1 | M2 | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| ø1/8" | ø5/32" | **KQG2H01-03** | 9 | 25.6 | 12 | 12.6 | 3.4 | 6.5 |
| ø5/32" | ø1/4" | **KQG2H03-07** | 12 | 27.1 | 12.6 | 13.5 | 5.6 | 11.3 |
| ø1/4" | ø5/16" | **KQG2H07-09** | 14 | 30.6 | 13.5 | 16.1 | 13.1 | 16.1 |
| ø5/16" | ø3/8" | **KQG2H09-11** | 16 | 33.7 | 16.1 | 16.6 | 26.1 | 22.8 |
| ø3/8" | ø1/2" | **KQG2H11-13** | 20 | 36.1 | 16.6 | 18.5 | 41.5 | 37.1 |

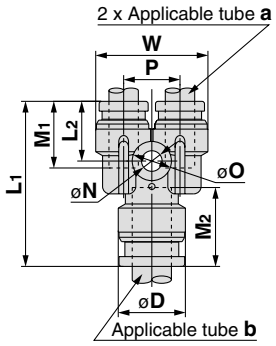
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Different Diameter Union "Y": KQG2U

| Applicable tube O.D. (inch) a | Applicable tube O.D. (inch) b | Model | Note 1) øD | L1 | L2 | P | W | M1 | M2 | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | ø5/32" | **KQG2U01-03** | 9.1 | 27 | 10.8 | 8.1 | 16.4 | 12 | 12.6 | 3.2 | 5.6 | 3.2 | 8.5 |
| ø5/32" | ø1/4" | **KQG2U03-07** | 11.7 | 28.8 | 11.4 | 9.1 | 18.2 | 12.6 | 13.5 | 3.2 | 5.6 | 4.2 | 11.8 |
| ø1/4" | ø5/16" | **KQG2U07-09** | 13.7 | 33.8 | 12 | 12.2 | 23.9 | 13.5 | 16.1 | 4.2 | 8 | 13.4 | 20 |
| ø5/16" | ø3/8" | **KQG2U09-11** | 16 | 38.3 | 13.8 | 14.6 | 28.3 | 16.1 | 16.6 | 4.2 | 8 | 25.6 | 31 |
| ø3/8" | ø1/2" | **KQG2U11-13** | 19.6 | 40.5 | 13.7 | 17.2 | 33.2 | 16.6 | 18.5 | 4.2 | 8 | 40 | 45 |

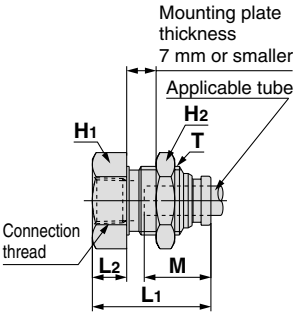
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Bulkhead Connector: KQG2E

| Applicable tube O.D. (inch) | Connection thread NPT | Model | T (UNF) | Width across flat H1 | Width across flat H2 | L1 | L2 | Mounting hole | M | Note) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | 1/4 | **KQG2E01-N02** | 7/16-20UNF | 17 | 14 | 32.8 | 15.3 | 12.5 | 12 | 3.4 | 30.6 |
| ø5/32" | 1/4 | **KQG2E03-N02** | 7/16-20UNF | 17 | 14 | 32.6 | 15.3 | 12.5 | 12.6 | 5.6 | 30.1 |
| ø1/4" | 1/4 | **KQG2E07-N02** | 1/2-20UNF | 17 | 17 | 32.7 | 14.8 | 14 | 13.5 | 13.1 | 32.6 |
| ø5/16" | 3/8 | **KQG2E09-N03** | 5/8-18UNF | 19 | 19 | 35 | 15.1 | 17 | 16.1 | 26.1 | 38.2 |
| ø3/8" | 3/8 | **KQG2E11-N03** | 3/4-16UNF | 21 | 22 | 33.8 | 13.3 | 20.5 | 16.6 | 41.5 | 51.7 |
| ø1/2" | 3/8 | **KQG2E13-N03** | 7/8-14UNF | 24 | 26 | 34.6 | 12.3 | 23.5 | 18.5 | 58.3 | 73.2 |
| | 1/2 | **KQG2E13-N04** | | | | 41.4 | 19.1 | | | | 74.7 |

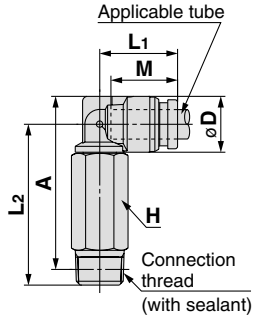
Note) Value of FEP tube.




### Extended Male Elbow: KQG2W

| Applicable tube O.D. (inch) | Connection thread NPT | Model | H (Width across flat) | Note 1) øD | L1 | L2 | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | 1/8 | **KQG2W01-N01S** | 12 | 8.3 | 13.6 | 31.6 | 32.5 | 12 | 2.8 | 21.5 |
| | 1/4 | **KQG2W01-N02S** | 14 | | | 35.4 | 35.1 | | | 34.4 |
| ø5/32" | 1/8 | **KQG2W03-N01S** | 12 | 9.1 | 14.4 | 32 | 33.3 | 12.6 | 4 | 22.4 |
| | 1/4 | **KQG2W03-N02S** | 14 | | | 35.8 | 35.9 | | | 35.2 |
| ø1/4" | 1/8 | **KQG2W07-N01S** | 12 | 11.7 | 15.9 | 33.3 | 35.9 | 13.5 | 10.9 | 24.1 |
| | 1/4 | **KQG2W07-N02S** | 14 | | | 37.1 | 38.5 | | | 37 |
| | 3/8 | **KQG2W07-N03S** | 19 | | | 38.9 | 40 | | | 70.9 |
| ø5/16" | 1/8 | **KQG2W09-N01S** | 12 | 13.7 | 18.6 | 34.7 | 38.3 | 16.1 | 20.5 | 26.9 |
| | 1/4 | **KQG2W09-N02S** | 14 | | 19.1 | 40.2 | 42.6 | | | 38.7 |
| | 3/8 | **KQG2W09-N03S** | 19 | | | 42 | 44.1 | | | 74.7 |
| ø3/8" | 1/4 | **KQG2W11-N02S** | 14 | 16 | 21 | 47.2 | 50.8 | 16.6 | 33.5 | 41.8 |
| | 3/8 | **KQG2W11-N03S** | 19 | | | 45.4 | 48.7 | | | 75.2 |
| | 1/2 | **KQG2W11-N04S** | 22 | | | 49.2 | 50.8 | | | 116.5 |
| ø1/2" | 1/4 | **KQG2W13-N02S** | 14 | 19.6 | 22.7 | 49 | 54.4 | 18.5 | 47.7 | 47.9 |
| | 3/8 | **KQG2W13-N03S** | 19 | | 23.7 | 50.7 | 55.8 | | | 75.3 |
| | 1/2 | **KQG2W13-N04S** | 22 | | | 54.5 | 57.9 | | | 118.3 |

* Reference dimensions after installation of NPT thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

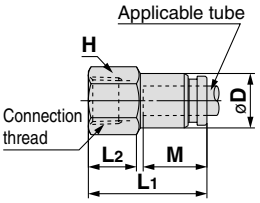


## Dimensions

### Female Connector: KQG2F

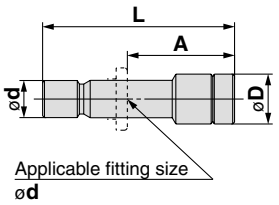
| Applicable tube O.D. (inch) | Connection thread NPT | Model | H (Width across flat) | Note 1) øD | $L_1$ | $L_2$ | M | Note 2) Effective area ($mm^2$) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | 1/8 | **KQG2F01-N01** | 12 | 8 | 24.1 | 10.4 | 12 | 3.4 | 9.4 |
| | 1/4 | **KQG2F01-N02** | 17 | | 29.1 | 13.7 | | | 22.5 |
| ø5/32" | 1/8 | **KQG2F03-N01** | 12 | 8.7 | 24.6 | 10.5 | 12.6 | 5.6 | 9.9 |
| | 1/4 | **KQG2F03-N02** | 17 | | 29.6 | 13.8 | | | 23 |
| ø1/4" | 1/8 | **KQG2F07-N01** | 12 | 11.2 | 25 | 10.7 | 13.5 | 13.1 | 11.1 |
| | 1/4 | **KQG2F07-N02** | 17 | | 30 | 14.1 | | | 24.5 |
| | 3/8 | **KQG2F07-N03** | 19 | | 31.2 | 14.6 | | | 25.5 |
| ø5/16" | 1/8 | **KQG2F09-N01** | 14 | 13.4 | 27.2 | 10.3 | 16.1 | 26.1 | 17.3 |
| | 1/4 | **KQG2F09-N02** | 17 | | 32.2 | 14.3 | | | 26.9 |
| | 3/8 | **KQG2F09-N03** | 19 | | 33.4 | 14.8 | | | 28.1 |
| ø3/8" | 1/4 | **KQG2F11-N02** | 17 | 16 | 32.1 | 14.4 | 16.6 | 41.5 | 29.7 |
| | 3/8 | **KQG2F11-N03** | 19 | | 33.3 | 14.9 | | | 30.9 |
| | 1/2 | **KQG2F11-N04** | 24 | | 38.6 | 18.6 | | | 49.1 |
| ø1/2" | 3/8 | **KQG2F13-N03** | 21 | 19.3 | 34.6 | 14.7 | 18.5 | 58.3 | 43.3 |
| | 1/2 | **KQG2F13-N04** | 24 | | 39.9 | 18.8 | | | 53.5 |

Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Plug: KQG2P

| Applicable fitting size ø**d** | Model | ø**D** | **L** | **A** | Weight (g) |
|---|---|---|---|---|---|
| ø1/8" | **KQG2P-01** | 5 | 28.9 | 16.9 | 2.7 |
| ø5/32" | **KQG2P-03** | 6 | 29.6 | 17 | 4.1 |
| ø1/4" | **KQG2P-07** | 8 | 30.3 | 16.8 | 8.9 |
| ø5/16" | **KQG2P-09** | 10 | 33.7 | 17.6 | 15.5 |
| ø3/8" | **KQG2P-11** | 11 | 34.1 | 17.5 | 21 |
| ø1/2" | **KQG2P-13** | 14 | 36.4 | 17.9 | 38.5 |



# Series KQG2
# Specific Product Precautions

**Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for Fittings and Tubing Precautions.**

## Selection

### ⚠Caution

1. **The surge pressure must be under the maximum operating pressure. If the surge pressure exceeds the maximum operating pressure, it will result in damage to fittings and tubes or the tube may result in being fallen out.**
2. **If using a fluororesin tube in an environment where the fluid temperature changes drastically, it is recommended to use an inner sleeve. Otherwise, air leakage may occur or the tube may release from fitting due to deformation of the tube.**
3. **The particle generation of the KQG2 series depends on the operating conditions and operating environment. If you are concerned about the effects on machinery and equipment, check the particle generation with your machine before use.**
   The components of the KQG2 series may slide due to changes in the internal pressure, which may generate particles. When using male elbow, male branch tee, and extended male elbow fittings, particles may be generated by rotation for positioning after connecting.

## Mounting

### ⚠Caution

1. **The union elbow, union tee, union "Y", different diameter tee, and different diameter union "Y" fittings should be fixed through the mounting hole.**
   Otherwise, air leakage or breaking can occur due to a pulling force or moment load created by the product's weight.
2. **The male elbow, male branch tee, and extended male elbow fittings can be rotated for positioning, but they cannot be used rotating.**
   This will cause metal debris by wearing, which may enter the operating fluid or cause fitting damage.
3. **Keep the connection part of fittings and tubes from rotating or oscillating movement.**

## Operating Environment

### ⚠Warning

1. **Avoid installing and using fittings inside a food zone.**

**Not installable**

Food zone ····· An environment where food which will be sold as merchandize, directly touches the fitting components.

**Installable**

Splash zone ····· An environment where food which will not be sold as merchandize, directly touches the fitting components.

Non-food zone ····· An environment where there is no contact with food.

## Installation and Removal of Tube

### ⚠Caution

1. **Installation of tube**
   1) Grease is not used for the KQG2 series, therefore a greater insertion force is required when the tube is installed. In particular, polyurethane tube may fold when inserted due to its softness. Hold the end of the tube, and insert it all the way in slowly and securely. Refer to dimension "M" in the dimension drawings for guidance on the insertion depth of tube.
2. **Removal of tube**
   1) For tube used at a high temperature or for an extended period of time, there is a possibility that it will not fit into a one-touch fitting again due to an enlarged O.D. Dispose of the tube and replace it with a new one.

**Stainless steel**

Metal exists in nature as ore (like oxide or sulfide). This means that oxide or sulfide is more stable than pure metal. Accordingly, metallic material chemically oxidizes (metallic constituent becomes ion and melts out). It corrodes in the natural environment.

Even though corrosion of metal easily occurs in an environment where oxidizing tendency is stronger, some kinds of metal have a characteristic for which corrosion never happens if the level of oxidizing goes higher than a specific point. In such a case, it is called "metal in passive state".

Stainless steel has corrosion resistance because of a thin coat of passive state on its surface. However, there does not exist stainless steel with absolute corrosion resistance; therefore, many types of stainless steel have been developed for improved corrosion resistance performance.

## Variations

### Male Connector — KFG2H

Metric ····· P. 17
Inch ····· P. 22

### Bulkhead Union — KFG2E

Metric ····· P. 19
Inch ····· P. 23

### Male Elbow — KFG2L

Metric ····· P. 17
Inch ····· P. 22

### Union Elbow — KFG2L

Metric ····· P. 19
Inch ····· P. 23

### Male Branch Tee — KFG2T

Metric ····· P. 18
Inch ····· P. 22

### Swivel Elbow — KFG2V

Metric ····· P. 19
Inch ····· P. 24

### Straight Union — KFG2H

Metric ····· P. 18
Inch ····· P. 23

### Female Connector — KFG2F

Metric ····· P. 20
Inch ····· P. 24

### Union Tee — KFG2T

Metric ····· P. 18
Inch ····· P. 23

### Union Nut — KFG2N

Metric ····· P. 20
Inch ····· P. 24

# Stainless Steel 316 Insert Fittings

## Applicable Tube: Metric Size, Connection Thread: R, Rc

# Series KFG2

RoHS

## Applicable Tube

| | |
|---|---|
| Tube material Note) | FEP, PFA, Modified PTFE, Nylon, Soft nylon Note), Polyurethane, Soft polyurethane, Polyolefin, Soft polyolefin, Antistatic soft nylon, Antistatic polyurethane, Hard polyurethane |
| Tube size | ø4 x ø2.5, ø4 x ø3, ø6 x ø4, ø8 x ø6, ø10 x ø7.5<br>ø10 x ø8, ø12 x ø9, ø12 x ø10, ø16 x ø13 |

Note) For soft nylon tube, soft polyurethane tube, hard polyurethane tube, antistatic polyurethane tube, water cannot be used.

| Series | Tube material | Tube O.D. x I.D. (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ø4 x ø2.5 | ø4 x ø3 | ø6 x ø4 | ø8 x ø6 | ø10 x ø7.5 | ø10 x ø8 | ø12 x ø9 | ø12 x ø10 | ø16 x ø13 |
| **TH** | FEP | ● | — | ● | ● | ● | ● | ● | ● | — |
| **TL** | PFA | — | ● | ● | ● | — | ● | — | ● | — |
| **TD** | Modified PTFE | ● | — | ● | ● | ● | — | ● | — | — |
| **T** | Nylon | ● | ● | ● | ● | ● | — | ● | — | ● |
| **TS** | Soft nylon | ● | — | ● | ● | ● | — | ● | — | — |
| **TU** | Polyurethane | ● | — | ● | — | — | — | — | — | — |
| **TPH** | Polyolefin | ● | — | ● | ● | ● | — | ● | — | — |
| **TUS** | Soft polyurethane | ● | — | ● | — | — | — | — | — | — |
| **TUH** | Hard polyurethane (High pressure) | ● | — | ● | — | — | — | — | — | — |
| **TPS** | Soft polyolefin | ● | — | ● | — | — | — | — | — | — |
| **TAS** | Antistatic soft nylon | ● | — | ● | — | — | — | — | — | — |
| **TAU** | Antistatic polyurethane | ● | — | ● | — | — | — | — | — | — |

## Spare Parts

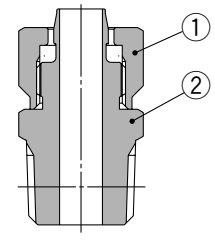
| Description | Tube O.D. | Part no. | Material |
|---|---|---|---|
| Bulkhead nut | ø4 | **KFG204-P01** | Stainless steel 316 (Fluoro coated) |
| | ø6 | **KFG206-P01** | |
| | ø8 | **KFG208-P01** | |
| | ø10 | **KFG210-P01** | |
| | ø12 | **KFG212-P01** | |
| | ø16 | **KFG216-P01** | |

## Specifications

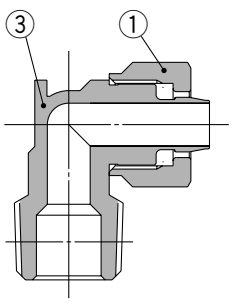
| | |
|---|---|
| **Fluid** | Air, Water, Steam Note 2) Note 3) |
| **Operating pressure range** Note 1) | –100 kPa to 1 MPa Note 4) |
| **Proof pressure** | 3.0 MPa |
| **Ambient and fluid temperature** | –65 to 260°C (No freezing) Note 4)<br>[Swivel elbow and with sealant types: –5 to 150°C] |
| **Lubricant** | Grease-free specification |
| **Seal on the threads** | Without sealant (With sealant type compatible) Note 5) |

Note 1) Avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 2) Consult with SMC regarding applicable tube separately.
Note 3) Using special FKM that is resistant even when steam is used.
Note 4) Check the operating pressure range and operating temperature range of the tube.
Note 5) With sealant: Suffix "S" to the end of part number.
Note 6) Union nut is shipped together.

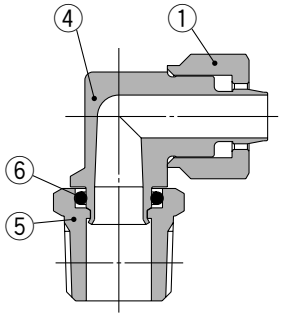
## Construction




**Male connector**




**Male elbow**




**Swivel elbow**

### Principal Parts Material

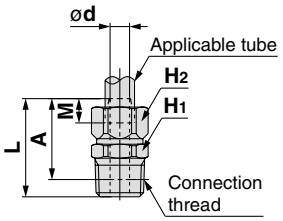
| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Union nut** | Stainless steel 316 | Fluoro coated |
| 2 | **Male connector body** | Stainless steel 316 | |
| 3 | **Male elbow body** | Stainless steel 316 | |
| 4 | **Swivel elbow body** | Stainless steel 316 | |
| 5 | **Stud** | Stainless steel 316 | |
| 6 | **O-ring** | Special FKM | Fluoro coated |

## Dimensions

### Male Connector: KFG2H

| Applicable tube size (mm) O.D. | Applicable tube size (mm) I.D. | Connection thread R | Model | Width across flat H1 | Width across flat H2 | L | M | ød | A* | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | 1/8 | KFG2H0425-01 | 10 | 8 | 19.4 | 5 | 1.8 | 16.3 | 1.6 | 8 |
| | | 1/4 | KFG2H0425-02 | 14 | | 23.8 | | | 19.1 | | 14 |
| ø4 | ø3 | 1/8 | KFG2H0403-01 | 10 | | 19.4 | | 2.3 | 16.3 | 2.6 | 8 |
| | | 1/4 | KFG2H0403-02 | 14 | | 23.8 | | | 19.1 | | 14 |
| ø6 | ø4 | 1/8 | KFG2H0604-01 | 10 | 10 | 20.9 | 5.8 | 3.3 | 17.8 | 6 | 10 |
| | | 1/4 | KFG2H0604-02 | 14 | | 25.3 | | | 20.6 | | 16 |
| ø8 | ø6 | 1/8 | KFG2H0806-01 | 14 | 14 | 23.3 | 6.6 | 5.3 | 20.2 | 17 | 18 |
| | | 1/4 | KFG2H0806-02 | | | 26.7 | | | 22 | | 24 |
| | | 3/8 | KFG2H0806-03 | 17 | | 28.1 | | | 23 | | 36 |
| ø10 | ø7.5 | 1/4 | KFG2H1075-02 | 17 | 17 | 29.7 | 7.6 | 6.8 | 25 | 30 | 34 |
| | | 3/8 | KFG2H1075-03 | | | 30.1 | | | | | 41 |
| | | 1/2 | KFG2H1075-04 | 22 | | 33.5 | | | 27.1 | | 67 |
| ø10 | ø8 | 1/4 | KFG2H1008-02 | 17 | | 29.7 | | 7.3 | 25 | 35 | 33 |
| | | 3/8 | KFG2H1008-03 | | | 30.1 | | | | | 40 |
| | | 1/2 | KFG2H1008-04 | 22 | | 33.5 | | | 27.1 | | 66 |
| ø12 | ø9 | 1/4 | KFG2H1209-02 | 17 | 17 | 31.3 | 8.5 | 8 | 26.6 | 45 | 33 |
| | | 3/8 | KFG2H1209-03 | | | 31.7 | | | | | 40 |
| | | 1/2 | KFG2H1209-04 | 22 | | 35.1 | | | 28.7 | | 66 |
| ø12 | ø10 | 1/4 | KFG2H1210-02 | 17 | | 31.3 | | 9 | 26.6 | 57 | 30 |
| | | 3/8 | KFG2H1210-03 | | | 31.7 | | | | | 38 |
| | | 1/2 | KFG2H1210-04 | 22 | | 35.1 | | | 28.7 | | 63 |
| ø16 | ø13 | 3/8 | KFG2H1613-03 | 22 | 22 | 33.1 | 9.3 | 12 | 28 | 101 | 51 |
| | | 1/2 | KFG2H1613-04 | | | 36.3 | | | 29.9 | | 67 |

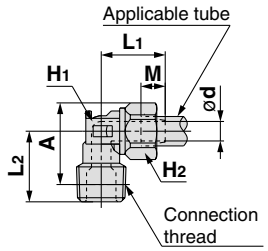
∗ Reference dimensions after installation of R thread




### Male Elbow: KFG2L

| Applicable tube size (mm) O.D. | Applicable tube size (mm) I.D. | Connection thread R | Model | Width across flat H1 | Width across flat H2 | L1 | L2 | M | ød | A* | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | 1/8 | KFG2L0425-01 | 10 | 8 | 13.5 | 12.5 | 5 | 1.8 | 13.8 | 1.6 | 10 |
| | | 1/4 | KFG2L0425-02 | | | | 15.9 | | | 15.6 | | 14 |
| ø4 | ø3 | 1/8 | KFG2L0403-01 | | | | 12.5 | | 2.3 | 13.8 | 2.6 | 10 |
| | | 1/4 | KFG2L0403-02 | | | | 15.9 | | | 15.6 | | 14 |
| ø6 | ø4 | 1/8 | KFG2L0604-01 | 10 | 10 | 15 | 13.6 | 5.8 | 3.3 | 16 | 6 | 12 |
| | | 1/4 | KFG2L0604-02 | | | | 17 | | | 17.8 | | 16 |
| ø8 | ø6 | 1/8 | KFG2L0806-01 | 12 | 14 | 17.4 | 15.8 | 6.6 | 5.3 | 20.4 | 12 | 20 |
| | | 1/4 | KFG2L0806-02 | | | | 19.2 | | | 22.2 | 16 | 24 |
| | | 3/8 | KFG2L0806-03 | | | | 19.6 | | | | | 27 |
| ø10 | ø7.5 | 1/4 | KFG2L1075-02 | 15 | 17 | 20.9 | 20.9 | 7.6 | 6.8 | 25.6 | 23 | 38 |
| | | 3/8 | KFG2L1075-03 | | | | 21.3 | | | | 26 | 41 |
| | | 1/2 | KFG2L1075-04 | | | | 24.5 | | | 27.5 | | 51 |
| ø10 | ø8 | 1/4 | KFG2L1008-02 | | | | 20.9 | | 7.3 | 25.6 | 27 | 37 |
| | | 3/8 | KFG2L1008-03 | | | | 21.3 | | | | 30 | 41 |
| | | 1/2 | KFG2L1008-04 | | | | 24.5 | | | 27.5 | | 50 |
| ø12 | ø9 | 1/4 | KFG2L1209-02 | 16 | 17 | 23.5 | 20.9 | 8.5 | 8 | 25.6 | 27 | 41 |
| | | 3/8 | KFG2L1209-03 | | | | 21.3 | | | | 35 | 45 |
| | | 1/2 | KFG2L1209-04 | | | | 24.5 | | | 27.5 | | 57 |
| ø12 | ø10 | 1/4 | KFG2L1210-02 | | | | 20.9 | | 9 | 25.6 | 34 | 42 |
| | | 3/8 | KFG2L1210-03 | | | | 21.3 | | | | 44 | 43 |
| | | 1/2 | KFG2L1210-04 | | | | 24.5 | | | 27.5 | | 53 |
| ø16 | ø13 | 3/8 | KFG2L1613-03 | 21 | 22 | 26.2 | 24 | 9.3 | 12 | 31 | 79 | 72 |
| | | 1/2 | KFG2L1613-04 | | | | 27.2 | | | 32.9 | | 78 |

∗ Reference dimensions after installation of R thread

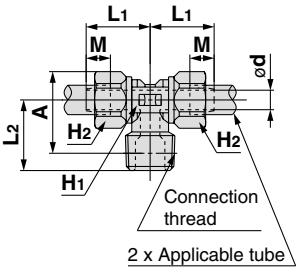


## Dimensions

### Male Branch Tee: KFG2T

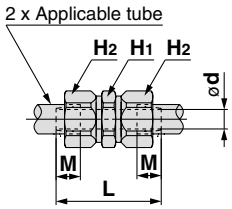
| Applicable tube size (mm) O.D. | Applicable tube size (mm) I.D. | Connection thread R | Model | Width across flat H1 | Width across flat H2 | L1 | L2 | M | ød | A* | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | 1/8 | KFG2T0425-01 | 10 | 8 | 13.5 | 12.5 | 5 | 1.8 | 13.8 | 3 | 13 |
| | | 1/4 | KFG2T0425-02 | | | | 15.9 | | | 15.6 | | 17 |
| ø4 | ø3 | 1/8 | KFG2T0403-01 | | | | 12.5 | | 2.3 | 13.8 | 5 | 12 |
| | | 1/4 | KFG2T0403-02 | | | | 15.9 | | | 15.6 | | 17 |
| ø6 | ø4 | 1/8 | KFG2T0604-01 | 10 | 10 | 15 | 13.6 | 5.8 | 3.3 | 16 | 10 | 17 |
| | | 1/4 | KFG2T0604-02 | | | | 17 | | | 17.8 | | 21 |
| ø8 | ø6 | 1/8 | KFG2T0806-01 | 12 | 14 | 17.4 | 15.8 | 6.6 | 5.3 | 20.4 | 16 | 30 |
| | | 1/4 | KFG2T0806-02 | | | | 19.2 | | | 22.2 | 25 | 34 |
| | | 3/8 | KFG2T0806-03 | | | | 19.6 | | | | | 38 |
| ø10 | ø7.5 | 1/4 | KFG2T1075-02 | 15 | 17 | 20.9 | 20.9 | 7.6 | 6.8 | 25.6 | 30 | 55 |
| | | 3/8 | KFG2T1075-03 | | | | 21.3 | | | | | 59 |
| | | 1/2 | KFG2T1075-04 | | | | 24.5 | | | 27.5 | 41 | 68 |
| ø10 | ø8 | 1/4 | KFG2T1008-02 | | | | 20.9 | | 7.3 | 25.6 | 35 | 54 |
| | | 3/8 | KFG2T1008-03 | | | | 21.3 | | | | | 58 |
| | | 1/2 | KFG2T1008-04 | | | | 24.5 | | | 27.5 | 47 | 67 |
| ø12 | ø9 | 1/4 | KFG2T1209-02 | 16 | 17 | 23.5 | 20.9 | 8.5 | 8 | 25.6 | 32 | 59 |
| | | 3/8 | KFG2T1209-03 | | | | 21.3 | | | | 48 | 63 |
| | | 1/2 | KFG2T1209-04 | | | | 24.5 | | | 27.5 | | 72 |
| ø12 | ø10 | 1/4 | KFG2T1210-02 | | | | 20.9 | | 9 | 25.6 | 41 | 57 |
| | | 3/8 | KFG2T1210-03 | | | | 21.3 | | | | 61 | 60 |
| | | 1/2 | KFG2T1210-04 | | | | 24.5 | | | 27.5 | | 69 |
| ø16 | ø13 | 3/8 | KFG2T1613-03 | 21 | 22 | 26.2 | 24 | 9.3 | 12 | 31 | 108 | 98 |
| | | 1/2 | KFG2T1613-04 | | | | 27.2 | | | 32.9 | | 106 |

∗ Reference dimensions after installation of R thread



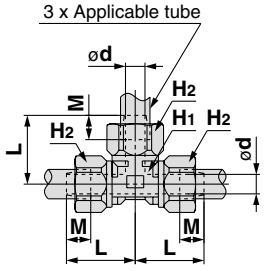

### Straight Union: KFG2H

| Applicable tube size (mm) O.D. | Applicable tube size (mm) I.D. | Model | Width across flat H1 | Width across flat H2 | L | M | ød | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | KFG2H0425-00 | 8 | 8 | 21.8 | 5 | 1.8 | 1.6 | 7 |
| ø4 | ø3 | KFG2H0403-00 | | | | | 2.3 | 2.6 | |
| ø6 | ø4 | KFG2H0604-00 | 10 | 10 | 24.8 | 5.8 | 3.3 | 6 | 11 |
| ø8 | ø6 | KFG2H0806-00 | 14 | 14 | 28.6 | 6.6 | 5.3 | 17 | 25 |
| ø10 | ø7.5 | KFG2H1075-00 | 17 | 17 | 33.6 | 7.6 | 6.8 | 30 | 43 |
| ø10 | ø8 | KFG2H1008-00 | | | | | 7.3 | 35 | 42 |
| ø12 | ø9 | KFG2H1209-00 | 17 | 17 | 37 | 8.5 | 8 | 45 | 44 |
| ø12 | ø10 | KFG2H1210-00 | | | | | 9 | 57 | 42 |
| ø16 | ø13 | KFG2H1613-00 | 22 | 22 | 39.4 | 9.3 | 12 | 101 | 71 |




### Union Tee: KFG2T

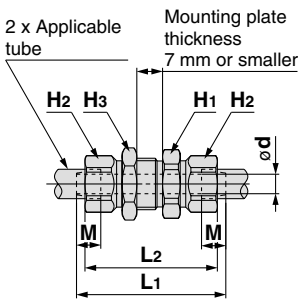
| Applicable tube size (mm) O.D. | Applicable tube size (mm) I.D. | Model | Width across flat H1 | Width across flat H2 | L | M | ød | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | KFG2T0425-00 | 7 | 8 | 13.3 | 5 | 1.8 | 1.6 | 11 |
| ø4 | ø3 | KFG2T0403-00 | | | | | 2.3 | 2.6 | 10 |
| ø6 | ø4 | KFG2T0604-00 | 9 | 10 | 15.8 | 5.8 | 3.3 | 6 | 18 |
| ø8 | ø6 | KFG2T0806-00 | 12 | 14 | 18.7 | 6.6 | 5.3 | 17 | 39 |
| ø10 | ø7.5 | KFG2T1075-00 | 15 | 17 | 22.2 | 7.6 | 6.8 | 30 | 67 |
| ø10 | ø8 | KFG2T1008-00 | | | | | 7.3 | 35 | 65 |
| ø12 | ø9 | KFG2T1209-00 | 16 | 17 | 24.3 | 8.5 | 8 | 45 | 71 |
| ø12 | ø10 | KFG2T1210-00 | | | | | 9 | 57 | 67 |
| ø16 | ø13 | KFG2T1613-00 | 21 | 22 | 28 | 9.3 | 12 | 101 | 122 |



## Dimensions

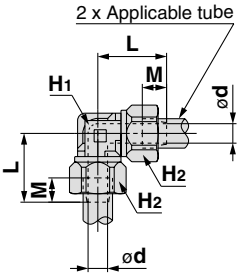
### Bulkhead Union: KFG2E

| Applicable tube size (mm) O.D. | Applicable tube size (mm) I.D. | Model | Width across flat H1 | Width across flat H2 | Width across flat H3 | L1 | L2 | M | ød | Mounting hole | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | KFG2E0425-00 | 12 | 8 | 12 | 32.6 | 29 | 5 | 1.8 | 11 | 1.6 | 16 |
| ø4 | ø3 | KFG2E0403-00 | | | | | | | 2.3 | | 2.6 | |
| ø6 | ø4 | KFG2E0604-00 | 14 | 10 | 14 | 36.6 | 32.2 | 5.8 | 3.3 | 13 | 6 | 25 |
| ø8 | ø6 | KFG2E0806-00 | 17 | 14 | 17 | 40.4 | 35.8 | 6.6 | 5.3 | 15 | 17 | 43 |
| ø10 | ø7.5 | KFG2E1075-00 | 21 | 17 | 21 | 44.8 | 39.4 | 7.6 | 6.8 | 18 | 30 | 69 |
| ø10 | ø8 | KFG2E1008-00 | | | | | | | 7.3 | | 35 | 68 |
| ø12 | ø9 | KFG2E1209-00 | 21 | 17 | 21 | 48.1 | 41.7 | 8.5 | 8 | 19 | 45 | 71 |
| ø12 | ø10 | KFG2E1210-00 | | | | | | | 9 | | 57 | 68 |
| ø16 | ø13 | KFG2E1613-00 | 27 | 22 | 27 | 52.3 | 45.9 | 9.3 | 12 | 25 | 101 | 122 |




### Union Elbow: KFG2L

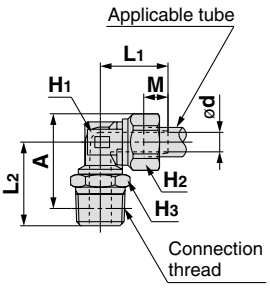
| Applicable tube size (mm) O.D. | Applicable tube size (mm) I.D. | Model | Width across flat H1 | Width across flat H2 | L | M | ød | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | KFG2L0425-00 | 7 | 8 | 13.3 | 5 | 1.8 | 1.6 | 8 |
| ø4 | ø3 | KFG2L0403-00 | | | | | 2.3 | 2.6 | |
| ø6 | ø4 | KFG2L0604-00 | 9 | 10 | 15.8 | 5.8 | 3.3 | 6 | 13 |
| ø8 | ø6 | KFG2L0806-00 | 12 | 14 | 18.7 | 6.6 | 5.3 | 17 | 28 |
| ø10 | ø7.5 | KFG2L1075-00 | 15 | 17 | 22.2 | 7.6 | 6.8 | 30 | 47 |
| ø10 | ø8 | KFG2L1008-00 | | | | | 7.3 | 35 | 46 |
| ø12 | ø9 | KFG2L1209-00 | 16 | 17 | 24.3 | 8.5 | 8 | 45 | 51 |
| ø12 | ø10 | KFG2L1210-00 | | | | | 9 | 57 | 48 |
| ø16 | ø13 | KFG2L1613-00 | 21 | 22 | 28 | 9.3 | 12 | 101 | 89 |




### Swivel Elbow: KFG2V

| Applicable tube size (mm) O.D. | Applicable tube size (mm) I.D. | Connection thread R | Model | Width across flat H1 | Width across flat H2 | Width across flat H3 | L1 | L2 | M | ød | A* | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | 1/8 | KFG2V0425-01 | 7 | 8 | 10 | 14.5 | 16.1 | 5 | 1.8 | 17.4 | 1.4 | 9 |
| | | 1/4 | KFG2V0425-02 | | | 14 | | 19.9 | | | 19.6 | | 18 |
| ø4 | ø3 | 1/8 | KFG2V0403-01 | | | 10 | | 16.1 | | 2.3 | 17.4 | 2.3 | 9 |
| | | 1/4 | KFG2V0403-02 | | | 14 | | 19.9 | | | 19.6 | | 18 |
| ø6 | ø4 | 1/8 | KFG2V0604-01 | 9 | 10 | 10 | 16 | 17.2 | 5.8 | 3.3 | 19.6 | 5 | 12 |
| | | 1/4 | KFG2V0604-02 | | | 14 | | 21 | | | 21.8 | | 21 |
| ø8 | ø6 | 1/8 | KFG2V0806-01 | 12 | 14 | 12 | 18.4 | 20.1 | 6.6 | 5.3 | 24.7 | 14 | 22 |
| | | 1/4 | KFG2V0806-02 | | | 14 | | 23.3 | | | 26.3 | | 30 |
| | | 3/8 | KFG2V0806-03 | | | 17 | | 24.7 | | | 27.3 | | 42 |
| ø10 | ø7.5 | 1/4 | KFG2V1075-02 | 15 | 17 | 14 | 21.4 | 25 | 7.6 | 6.8 | 29.6 | 25 | 37 |
| | | 3/8 | KFG2V1075-03 | | | 17 | | 26.4 | | | 30.6 | | 47 |
| | | 1/2 | KFG2V1075-04 | | | 22 | | 30.6 | | | 33.5 | | 74 |
| ø10 | ø8 | 1/4 | KFG2V1008-02 | | | 14 | | 25 | | 7.3 | 29.6 | 29 | 36 |
| | | 3/8 | KFG2V1008-03 | | | 17 | | 26.4 | | | 30.6 | | 46 |
| | | 1/2 | KFG2V1008-04 | | | 22 | | 30.6 | | | 33.5 | | 73 |
| ø12 | ø9 | 1/4 | KFG2V1209-02 | 16 | 17 | 14 | 23 | 25 | 8.5 | 8 | 29.6 | 38 | 38 |
| | | 3/8 | KFG2V1209-03 | | | 17 | | 26.4 | | | 30.6 | | 49 |
| | | 1/2 | KFG2V1209-04 | | | 22 | | 30.6 | | | 33.5 | | 75 |
| ø12 | ø10 | 1/4 | KFG2V1210-02 | | | 14 | 24.5 | 25 | | 9 | 29.6 | 48 | 40 |
| | | 3/8 | KFG2V1210-03 | | | 17 | | 26.4 | | | 30.6 | | 51 |
| | | 1/2 | KFG2V1210-04 | | | 22 | | 30.6 | | | 33.5 | | 77 |
| ø16 | ø13 | 3/8 | KFG2V1613-03 | 21 | 22 | 19 | 26.7 | 29.3 | 9.3 | 12 | 36.3 | 86 | 75 |
| | | 1/2 | KFG2V1613-04 | | | 22 | | 33.3 | | | 39 | | 96 |

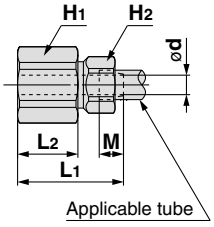
∗ Reference dimensions after installation of R thread



## Dimensions

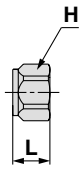
### Female Connector: KFG2F

| Applicable tube size (mm) O.D. | Applicable tube size (mm) I.D. | Connection thread Rc | Model | Width across flat $H_1$ | Width across flat $H_2$ | $L_1$ | $L_2$ | M | ød | Effective area ($mm^2$) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | 1/4 | KFG2F0425-02 | 17 | 8 | 25.9 | 16.4 | 5 | 1.8 | 1.6 | 24 |
| ø4 | ø3 | 1/4 | KFG2F0403-02 | | | | | | 2.3 | 2.6 | |
| ø6 | ø4 | 1/4 | KFG2F0604-02 | 17 | 10 | 26.8 | 15.8 | 5.8 | 3.3 | 6 | 25 |
| ø8 | ø6 | 3/8 | KFG2F0806-03 | 19 | 14 | 28.8 | 16.4 | 6.6 | 5.3 | 17 | 31 |
| ø10 | ø7.5 | 3/8 | KFG2F1075-03 | 19 | 17 | 30 | 15.6 | 7.6 | 6.8 | 30 | 36 |
| ø10 | ø8 | 3/8 | KFG2F1008-03 | | | | | | 7.3 | 35 | |
| ø12 | ø9 | 3/8 | KFG2F1209-03 | 19 | 17 | 31.2 | 15.2 | 8.5 | 8 | 45 | 36 |
| ø12 | ø10 | 3/8 | KFG2F1210-03 | | | | | | 9 | 57 | |
| ø16 | ø13 | 1/2 | KFG2F1613-04 | 24 | 22 | 37.7 | 20.5 | 9.3 | 12 | 101 | 71 |




### Union Nut: KFG2N

| Applicable tube O.D. (mm) | Model | H (Width across flat) | L | Weight (g) |
|---|---|---|---|---|
| ø4 | KFG2N-04 | 8 | 7.7 | 1.9 |
| ø6 | KFG2N-06 | 10 | 8.8 | 3 |
| ø8 | KFG2N-08 | 14 | 10.1 | 6.7 |
| ø10 | KFG2N-10 | 17 | 11.7 | 10.5 |
| ø12 | KFG2N-12 | 17 | 12.8 | 9.6 |
| ø16 | KFG2N-16 | 22 | 14 | 15.3 |



# Stainless Steel 316 Insert Fittings

## Applicable Tube: Inch Size, Connection Thread: NPT

# Series KFG2

RoHS

## Applicable Tube

| | |
|---|---|
| Tube material Note) | FEP, PFA, Modified PTFE, Nylon, Soft nylon Note), Polyurethane, Soft polyurethane, Polyolefin, Soft polyolefin, Antistatic soft nylon, Antistatic polyurethane, Hard polyurethane |
| Tube size | ø1/8" x ø0.086", ø5/32" x 0.098", ø1/4" x ø5/32" ø5/16" x 0.236", ø3/8" x ø1/4", ø1/2" x ø3/8" |

Note) For soft nylon tube, soft polyurethane tube, hard polyurethane tube, antistatic polyurethane tube, water cannot be used.

| Series | Tube material | Tube O.D. x I.D. (inch) | | | | | |
|---|---|---|---|---|---|---|---|
| | | ø1/8" x ø0.086" (ø3.18 x ø2.18) | ø5/32" x ø0.098" (ø4 x ø2.5) | ø1/4" x ø5/32" (ø6.35 x ø3.95) | ø5/16" x ø0.236" (ø8 x ø6) | ø3/8" x ø1/4" (ø9.53 x ø6.35) | ø1/2" x ø3/8" (ø12.7 x ø9.53) |
| **TH/TIH** | FEP | ● | ● | ● | ● | ● | ● |
| **TL/TIL** | PFA | ● | — | ● | ● | ● | ● |
| **TD/TID** | Modified PTFE | ● | ● | ● | ● | ● | ● |
| **T/TIA** | Nylon | ● | ● | — | ● | — | ● |
| **TS/TISA** | Soft nylon | ● | ● | — | ● | — | ● |
| **TU/TIUB** | Polyurethane | — | ● | — | — | ● | — |
| **TPH** | Polyolefin | — | ● | — | ● | — | — |
| **TUS** | Soft polyurethane | — | ● | — | — | — | — |
| **TUH** | Hard polyurethane (High pressure) | — | ● | — | — | — | — |
| **TPS** | Soft polyolefin | — | ● | — | — | — | — |
| **TAS** | Antistatic soft nylon | — | ● | — | — | — | — |
| **TAU** | Antistatic polyurethane | — | ● | — | — | — | — |

## Spare Parts

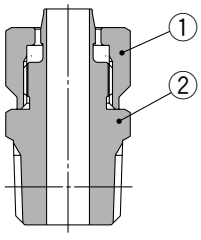
| Description | Tube O.D. | Part no. | Material |
|---|---|---|---|
| Bulkhead nut | ø1/8" | **KFG201-P01** | Stainless steel 316 (Fluoro coated) |
| | ø5/32" | **KFG203-P01** | |
| | ø1/4" | **KFG207-P01** | |
| | ø5/16" | **KFG209-P01** | |
| | ø3/8" | **KFG211-P01** | |
| | ø1/2" | **KFG213-P01** | |

## Specifications

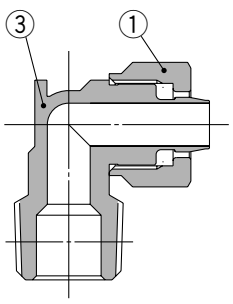
| | |
|---|---|
| **Fluid** | Air, Water, Steam Note 2) Note 3) |
| **Operating pressure range** Note 1) | –100 kPa to 1 MPa Note 4) |
| **Proof pressure** | 3.0 MPa |
| **Ambient and fluid temperature** | –65 to 260°C (No freezing) Note 4) [Swivel elbow and with sealant types: –5 to 150°C] |
| **Lubricant** | Grease-free specification |
| **Seal on the threads** | Without sealant (With sealant type compatible) Note 5) |

Note 1) Avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 2) Consult with SMC regarding applicable tube separately.
Note 3) Using special FKM that is resistant even when steam is used.
Note 4) Check the operating pressure range and operating temperature range of the tube.
Note 5) With sealant: Suffix "S" to the end of part number.
Note 6) Union nut is shipped together.

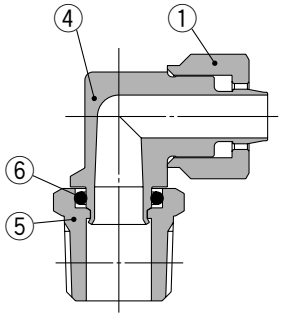
## Construction




**Male connector**




**Male elbow**




**Swivel elbow**

### Principal Parts Material

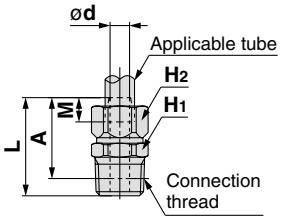
| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Union nut** | Stainless steel 316 | Fluoro coated |
| 2 | **Male connector body** | Stainless steel 316 | |
| 3 | **Male elbow body** | Stainless steel 316 | |
| 4 | **Swivel elbow body** | Stainless steel 316 | |
| 5 | **Stud** | Stainless steel 316 | |
| 6 | **O-ring** | Special FKM | Fluoro coated |

## Dimensions

### Male Connector: KFG2H

| Applicable tube size (inch) O.D. | Applicable tube size (inch) I.D. | Connection thread NPT | Model | Width across flat H1 | Width across flat H2 | L | M | ød | A* | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" (ø3.18) | ø0.086" (ø2.18) | 1/8 | **KFG2H0122-N01** | 12 | 8 | 19.4 | 5 | 1.5 | 16.2 | 1.1 | 9 |
| | | 1/4 | **KFG2H0122-N02** | 14 | | 23.8 | | | 19.4 | | 15 |
| ø5/32" (ø4) | ø0.098" (ø2.5) | 1/8 | **KFG2H0325-N01** | 12 | 8 | 19.4 | 5 | 1.8 | 16.2 | 1.6 | 9 |
| | | 1/4 | **KFG2H0325-N02** | 14 | | 23.8 | | | 19.4 | | 15 |
| ø1/4" (ø6.35) | ø5/32" (ø3.95) | 1/8 | **KFG2H0704-N01** | 12 | 12 | 21.1 | 6 | 3.3 | 17.9 | 6 | 13 |
| | | 1/4 | **KFG2H0704-N02** | 14 | | 25.5 | | | 21.1 | | 19 |
| ø5/16" (ø8) | ø0.236" (ø6) | 1/8 | **KFG2H0906-N01** | 14 | 14 | 23.3 | 6.6 | 5.3 | 20.1 | 17 | 18 |
| | | 1/4 | **KFG2H0906-N02** | | | 26.7 | | | 22.3 | | 25 |
| | | 3/8 | **KFG2H0906-N03** | 19 | | 28.3 | | | 23.6 | | 40 |
| ø3/8" (ø9.53) | ø1/4" (ø6.35) | 1/4 | **KFG2H1163-N02** | 17 | 17 | 29.7 | 7.6 | 5.6 | 25.3 | 19 | 37 |
| | | 3/8 | **KFG2H1163-N03** | 19 | | 30.3 | | | 25.6 | | 47 |
| | | 1/2 | **KFG2H1163-N04** | 22 | | 33.5 | | | 27.1 | | 70 |
| ø1/2" (ø12.7) | ø3/8" (ø9.53) | 1/4 | **KFG2H1395-N02** | 19 | 19 | 31.5 | 8.5 | 8.5 | 27.1 | 40.1 | 40 |
| | | 3/8 | **KFG2H1395-N03** | | | 31.9 | | | 27.2 | | 48 |
| | | 1/2 | **KFG2H1395-N04** | 22 | | 35.1 | | | 28.7 | | 70 |

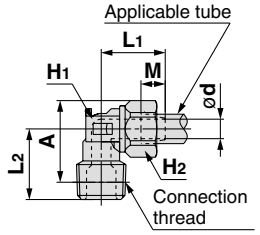
∗ Reference dimensions after installation of NPT thread




### Male Elbow: KFG2L

| Applicable tube size (inch) O.D. | Applicable tube size (inch) I.D. | Connection thread NPT | Model | Width across flat H1 | Width across flat H2 | L1 | L2 | M | ød | A* | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" (ø3.18) | ø0.086" (ø2.18) | 1/8 | **KFG2L0122-N01** | 10 | 8 | 13.5 | 12.5 | 5 | 1.5 | 13.7 | 1.1 | 10 |
| | | 1/4 | **KFG2L0122-N02** | | | | 15.9 | | | 15.9 | | 15 |
| ø5/32" (ø4) | ø0.098" (ø2.5) | 1/8 | **KFG2L0325-N01** | 10 | 8 | 13.5 | 12.5 | 5 | 1.8 | 13.7 | 1.6 | 10 |
| | | 1/4 | **KFG2L0325-N02** | | | | 15.9 | | | 15.9 | | 15 |
| ø1/4" (ø6.35) | ø5/32" (ø3.95) | 1/8 | **KFG2L0704-N01** | 10 | 12 | 15.2 | 14.7 | 6 | 3.3 | 18.1 | 6 | 15 |
| | | 1/4 | **KFG2L0704-N02** | | | | 18.1 | | | 20.3 | | 19 |
| ø5/16" (ø8) | ø0.236" (ø6) | 1/8 | **KFG2L0906-N01** | 12 | 14 | 17.4 | 15.8 | 6.6 | 5.3 | 20.3 | 12 | 20 |
| | | 1/4 | **KFG2L0906-N02** | | | | 19.2 | | | 22.5 | 16 | 25 |
| | | 3/8 | **KFG2L0906-N03** | | | | 19.6 | | | 22.6 | | 28 |
| ø3/8" (ø9.53) | ø1/4" (ø6.35) | 1/4 | **KFG2L1163-N02** | 15 | 17 | 20.4 | 20.9 | 7.6 | 5.6 | 25.9 | 13 | 39 |
| | | 3/8 | **KFG2L1163-N03** | | | | 21.3 | | | 26.0 | 18 | 42 |
| | | 1/2 | **KFG2L1163-N04** | | | | 24.5 | | | 27.5 | | 52 |
| ø1/2" (ø12.7) | ø3/8" (ø9.53) | 1/4 | **KFG2L1395-N02** | 17 | 19 | 23.3 | 21.9 | 8.5 | 8.5 | 27.9 | 30 | 48 |
| | | 3/8 | **KFG2L1395-N03** | | | | 22.3 | | | 28 | 40 | 51 |
| | | 1/2 | **KFG2L1395-N04** | | | | 25.5 | | | 29.5 | | 61 |

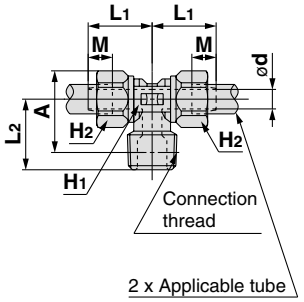
∗ Reference dimensions after installation of NPT thread




### Male Branch Tee: KFG2T

| Applicable tube size (inch) O.D. | Applicable tube size (inch) I.D. | Connection thread NPT | Model | Width across flat H1 | Width across flat H2 | L1 | L2 | M | ød | A* | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" (ø3.18) | ø0.086" (ø2.18) | 1/8 | **KFG2T0122-N01** | 10 | 8 | 13.5 | 12.5 | 5 | 1.5 | 13.7 | 2 | 13 |
| | | 1/4 | **KFG2T0122-N02** | | | | 15.9 | | | 15.9 | | 17 |
| ø5/32" (ø4) | ø0.098" (ø2.5) | 1/8 | **KFG2T0325-N01** | 10 | 8 | 13.5 | 12.5 | 5 | 1.8 | 13.7 | 3 | 13 |
| | | 1/4 | **KFG2T0325-N02** | | | | 15.9 | | | 15.9 | | 17 |
| ø1/4" (ø6.35) | ø5/32" (ø3.95) | 1/8 | **KFG2T0704-N01** | 10 | 12 | 15.2 | 14.7 | 6 | 3.3 | 18.1 | 10 | 22 |
| | | 1/4 | **KFG2T0704-N02** | | | | 18.1 | | | 20.3 | | 26 |
| ø5/16" (ø8) | ø0.236" (ø6) | 1/8 | **KFG2T0906-N01** | 12 | 14 | 17.4 | 15.8 | 6.6 | 5.3 | 20.3 | 16 | 31 |
| | | 1/4 | **KFG2T0906-N02** | | | | 19.2 | | | 22.5 | 25 | 35 |
| | | 3/8 | **KFG2T0906-N03** | | | | 19.6 | | | 22.6 | | 38 |
| ø3/8" (ø9.53) | ø1/4" (ø6.35) | 1/4 | **KFG2T1163-N02** | 15 | 17 | 20.4 | 20.9 | 7.6 | 5.6 | 25.9 | 18 | 58 |
| | | 3/8 | **KFG2T1163-N03** | | | | 21.3 | | | 26.0 | 28 | 61 |
| | | 1/2 | **KFG2T1163-N04** | | | | 24.5 | | | 27.5 | | 71 |
| ø1/2" (ø12.7) | ø3/8" (ø9.53) | 1/4 | **KFG2T1395-N02** | 17 | 19 | 23.3 | 21.9 | 8.5 | 8.5 | 27.9 | 36 | 70 |
| | | 3/8 | **KFG2T1395-N03** | | | | 22.3 | | | 28 | 54 | 74 |
| | | 1/2 | **KFG2T1395-N04** | | | | 25.5 | | | 29.5 | | 83 |

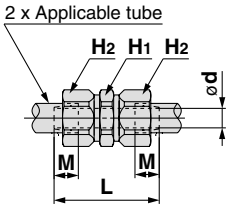
∗ Reference dimensions after installation of NPT thread



## Dimensions

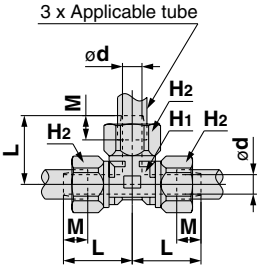
### Straight Union: KFG2H

| Applicable tube size (inch) O.D. | Applicable tube size (inch) I.D. | Model | Width across flat $H_1$ | Width across flat $H_2$ | L | M | ød | Effective area ($mm^2$) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø1/8" (ø3.18) | ø0.086" (ø2.18) | **KFG2H0122-00** | 8 | 8 | 21.8 | 5 | 1.5 | 1.1 | 7 |
| ø5/32" (ø4) | ø0.098" (ø2.5) | **KFG2H0325-00** | 8 | 8 | 21.8 | 5 | 1.8 | 1.6 | 7 |
| ø1/4" (ø6.35) | ø5/32" (ø3.95) | **KFG2H0704-00** | 12 | 12 | 25.2 | 6 | 3.3 | 6 | 16 |
| ø5/16" (ø8) | ø0.236" (ø6) | **KFG2H0906-00** | 14 | 14 | 28.6 | 6.6 | 5.3 | 17 | 25 |
| ø3/8" (ø9.53) | ø1/4" (ø6.35) | **KFG2H1163-00** | 17 | 17 | 33.6 | 7.6 | 5.6 | 19 | 45 |
| ø1/2" (ø12.7) | ø3/8" (ø9.53) | **KFG2H1395-00** | 19 | 19 | 37 | 8.5 | 8.5 | 51 | 55 |



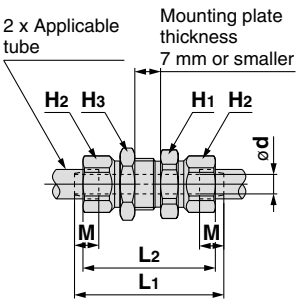

### Union Tee: KFG2T

| Applicable tube size (inch) O.D. | Applicable tube size (inch) I.D. | Model | Width across flat $H_1$ | Width across flat $H_2$ | L | M | ød | Effective area ($mm^2$) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø1/8" (ø3.18) | ø0.086" (ø2.18) | **KFG2T0122-00** | 7 | 8 | 13.3 | 5 | 1.5 | 1.1 | 11 |
| ø5/32" (ø4) | ø0.098" (ø2.5) | **KFG2T0325-00** | 7 | 8 | 13.3 | 5 | 1.8 | 1.6 | 11 |
| ø1/4" (ø6.35) | ø5/32" (ø3.95) | **KFG2T0704-00** | 10 | 12 | 16.5 | 6 | 3.3 | 6 | 26 |
| ø5/16" (ø8) | ø0.236" (ø6) | **KFG2T0906-00** | 12 | 14 | 18.7 | 6.6 | 5.3 | 17 | 39 |
| ø3/8" (ø9.53) | ø1/4" (ø6.35) | **KFG2T1163-00** | 15 | 17 | 22.2 | 7.6 | 5.6 | 19 | 70 |
| ø1/2" (ø12.7) | ø3/8" (ø9.53) | **KFG2T1395-00** | 17 | 19 | 24.8 | 8.5 | 8.5 | 51 | 87 |



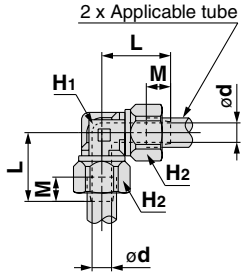

### Bulkhead Union: KFG2E

| Applicable tube size (inch) O.D. | Applicable tube size (inch) I.D. | Model | Width across flat $H_1$ | Width across flat $H_2$ | Width across flat $H_3$ | $L_1$ | $L_2$ | M | ød | Mounting hole | Effective area ($mm^2$) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" (ø3.18) | ø0.086" (ø2.18) | **KFG2E0122-00** | 12 | 8 | 12 | 32.8 | 29.4 | 5 | 1.5 | 10 | 1.1 | 16 |
| ø5/32" (ø4) | ø0.098" (ø2.5) | **KFG2E0325-00** | 12 | 8 | 12 | 32.6 | 29 | 5 | 1.8 | 11 | 1.6 | 16 |
| ø1/4" (ø6.35) | ø5/32" (ø3.95) | **KFG2E0704-00** | 17 | 12 | 17 | 39 | 34.6 | 6 | 3.3 | 13.5 | 6 | 39 |
| ø5/16" (ø8) | ø0.236" (ø6) | **KFG2E0906-00** | 17 | 14 | 17 | 40.4 | 35.8 | 6.6 | 5.3 | 15 | 17 | 43 |
| ø3/8" (ø9.53) | ø1/4" (ø6.35) | **KFG2E1163-00** | 22 | 17 | 22 | 46.8 | 41.4 | 7.6 | 5.6 | 20 | 19 | 84 |
| ø1/2" (ø12.7) | ø3/8" (ø9.53) | **KFG2E1395-00** | 26 | 19 | 26 | 51.9 | 45.5 | 8.5 | 8.5 | 23 | 51 | 117 |




### Union Elbow: KFG2L

| Applicable tube size (inch) O.D. | Applicable tube size (inch) I.D. | Model | Width across flat $H_1$ | Width across flat $H_2$ | L | M | ød | Effective area ($mm^2$) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø1/8" (ø3.18) | ø0.086" (ø2.18) | **KFG2L0122-00** | 7 | 8 | 13.3 | 5 | 1.5 | 1.1 | 8 |
| ø5/32" (ø4) | ø0.098" (ø2.5) | **KFG2L0325-00** | 7 | 8 | 13.3 | 5 | 2.3 | 1.6 | 8 |
| ø1/4" (ø6.35) | ø5/32" (ø3.95) | **KFG2L0704-00** | 10 | 12 | 16.5 | 6 | 3.3 | 6 | 18 |
| ø5/16" (ø8) | ø0.236" (ø6) | **KFG2L0906-00** | 12 | 14 | 18.7 | 6.6 | 5.3 | 17 | 28 |
| ø3/8" (ø9.53) | ø1/4" (ø6.35) | **KFG2L1163-00** | 15 | 17 | 22.2 | 7.6 | 5.6 | 19 | 50 |
| ø1/2" (ø12.7) | ø3/8" (ø9.53) | **KFG2L1395-00** | 17 | 19 | 24.8 | 8.5 | 8.5 | 51 | 62 |

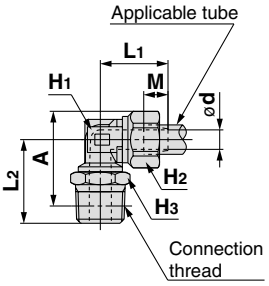


## Dimensions

### Swivel Elbow: KFG2V

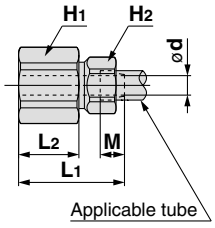
| Applicable tube size (inch) O.D. | Applicable tube size (inch) I.D. | Connection thread NPT | Model | Width across flat H1 | Width across flat H2 | Width across flat H3 | L1 | L2 | M | ød | A* | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" (ø3.18) | ø0.086" (ø2.18) | 1/8 | **KFG2V0122-N01** | 7 | 8 | 12 | 14.5 | 16.1 | 5 | 1.5 | 17.3 | 1 | 11 |
| | | 1/4 | **KFG2V0122-N02** | | | 14 | | 19.8 | | | 19.8 | | 19 |
| ø5/32" (ø4) | ø0.098" (ø2.5) | 1/8 | **KFG2V0325-N01** | 7 | 8 | 12 | 14.5 | 16.1 | 5 | 1.8 | 17.3 | 1.4 | 11 |
| | | 1/4 | **KFG2V0325-N02** | | | 14 | | 19.8 | | | 19.8 | | 19 |
| ø1/4" (ø6.35) | ø5/32" (ø3.95) | 1/8 | **KFG2V0704-N01** | 10 | 12 | 12 | 16.2 | 18.3 | 6 | 3.3 | 21.7 | 5 | 16 |
| | | 1/4 | **KFG2V0704-N02** | | | 14 | | 22 | | | 24.2 | | 25 |
| ø5/16" (ø8) | ø0.236" (ø6) | 1/8 | **KFG2V0906-N01** | 12 | 14 | 12 | 18.4 | 19.6 | 6.6 | 5.3 | 24.1 | 14 | 23 |
| | | 1/4 | **KFG2V0906-N02** | | | 14 | | 23.3 | | | 26.6 | | 31 |
| | | 3/8 | **KFG2V0906-N03** | | | 19 | | 25.1 | | | 28.1 | | 45 |
| ø3/8" (ø9.53) | ø1/4" (ø6.35) | 1/4 | **KFG2V1163-N02** | 15 | 17 | 14 | 21.4 | 24.7 | 7.6 | 5.6 | 29.7 | 16 | 38 |
| | | 3/8 | **KFG2V1163-N03** | | | 19 | | 26.8 | | | 31.4 | | 51 |
| | | 1/2 | **KFG2V1163-N04** | | | 22 | | 30.6 | | | 33.5 | | 75 |
| ø1/2" (ø12.7) | ø3/8" (ø9.53) | 1/4 | **KFG2V1395-N02** | 17 | 19 | 14 | 23 | 25.8 | 8.5 | 8.5 | 31.8 | 43 | 46 |
| | | 3/8 | **KFG2V1395-N03** | | | 19 | | 27.8 | | | 33.5 | | 59 |
| | | 1/2 | **KFG2V1395-N04** | | | 22 | | 31.6 | | | 35.6 | | 83 |

∗ Reference dimensions after installation of NPT thread



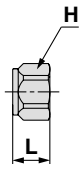

### Female Connector: KFG2F

| Applicable tube size (inch) O.D. | Applicable tube size (inch) I.D. | Connection thread NPT | Model | Width across flat H1 | Width across flat H2 | L1 | L2 | M | ød | Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" (ø3.18) | ø0.086" (ø2.18) | 1/4 | **KFG2F0122-N02** | 17 | 8 | 26.7 | 17.2 | 5 | 1.5 | 1.1 | 25 |
| ø5/32" (ø4) | ø0.098" (ø2.5) | 1/4 | **KFG2F0325-N02** | 17 | 8 | 26.7 | 17.2 | 5 | 1.8 | 1.6 | 23 |
| ø1/4" (ø6.35) | ø5/32" (ø3.95) | 1/4 | **KFG2F0704-N02** | 17 | 12 | 27.5 | 16.3 | 6 | 3.3 | 6 | 28 |
| ø5/16" (ø8) | ø0.236" (ø6) | 3/8 | **KFG2F0906-N03** | 19 | 14 | 29.4 | 17 | 6.6 | 5.3 | 17 | 32 |
| ø3/8" (ø9.53) | ø1/4" (ø6.35) | 3/8 | **KFG2F1163-N03** | 19 | 17 | 30.5 | 16.1 | 7.6 | 5.6 | 19 | 38 |
| ø1/2" (ø12.7) | ø3/8" (ø9.53) | 3/8 | **KFG2F1395-N03** | 19 | 19 | 31.6 | 15.6 | 8.5 | 8.5 | 51 | 42 |




### Union Nut: KFG2N

| Applicable tube O.D. (inch) | Model | H (Width across flat) | L | Weight (g) |
|---|---|---|---|---|
| ø1/8" (ø3.18) | **KFG2N-01** | 8 | 7.8 | 1.9 |
| ø5/32" (ø4) | **KFG2N-03** | 8 | 7.7 | 1.9 |
| ø1/4" (ø6.35) | **KFG2N-07** | 12 | 9 | 4.6 |
| ø5/16" (ø8) | **KFG2N-09** | 14 | 10.1 | 6.7 |
| ø3/8" (ø9.53) | **KFG2N-11** | 17 | 11.7 | 10.7 |
| ø1/2" (ø12.7) | **KFG2N-13** | 19 | 12.8 | 13 |



# Series KFG2
# Specific Product Precautions 1

**Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for Fittings and Tubing Precautions.**

## Selection

### ⚠Caution

**1. Consult with SMC regarding fluids other than air, water and steam.**

**2. When using the swivel elbow fittings, particles may be generated by rotation for positioning after connecting. If you are concerned about the effects on machinery and equipment, check the particle generation with your machine before use.**

## Mounting

### ⚠Caution

**1. The swivel elbow fittings can be rotated for positioning, but they cannot be used rotating.**

This will cause metal debris by wearing, which may enter the operating fluid or cause fitting damage.

**2. Keep the connection part of fittings and tubes from rotating or oscillating movement.**

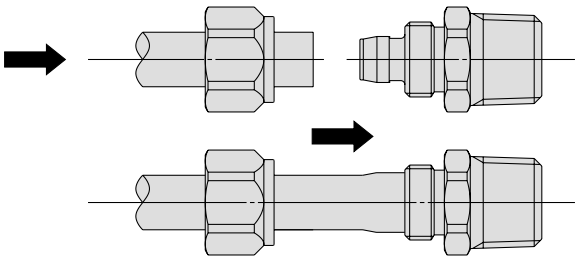
## Piping

### ⚠Caution

**1. Take a tube having no flaws on its periphery and cut it off at right angles.**

(Use a tube cutter TK-1, 2, 3. Do not use pinchers, nippers or scissors, etc.)
The tube might be cut diagonally or flattened, making installation impossible or causing problems such as disconnection and leakage.

**2. Insert the tube into the union nut with the union nut removed. Grab the tube and gently push it thoroughly into the fitting.**



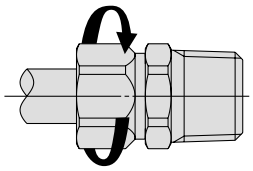
**3. After insertion, tighten the union nut temporarily by hand.**

## Piping

### ⚠Caution

**4. Fix the body with a tightening tool. Tighten the union nut to the end surface of the body using a suitable wrench.**

Hex. across flats may be deformed, if using an improper wrench for hex. across flats. Tighten the union nut with the proper tightening torque shown below.



| Fitting size | Proper tightening torque N·m |
|---|---|
| KFG2□01 | 2 to 3 |
| KFG2□03 | |
| KFG2□04 | |
| KFG2□06 | 3 to 4 |
| KFG2□07 | |
| KFG2□08 | 5 to 6 |
| KFG2□09 | |
| KFG2□10 | 8 to 10 |
| KFG2□11 | |
| KFG2□12 | 10 to 12 |
| KFG2□13 | |
| KFG2□16 | 16 to 18 |

## Operating Environment

### ⚠Warning

**1. Avoid installing and using fittings inside a food zone.**

**Not installable**

Food zone ····· An environment where food which will be sold as merchandize, directly touches the fitting components.

**Installable**

Splash zone ····· An environment where food which will not be sold as merchandize, directly touches the fitting components.

Non-food zone ····· An environment where there is no contact with food.

## Maintenance

### ⚠Caution

**1. Pre-maintenance inspection**

When the product is removed, turn off the power, cut off the supply pressure, and confirm that fluid in the piping has been discharged.

**2. During regular maintenance, check for the following and replace any components as necessary.**

a) Scratches, gouges, abrasion, corrosion
b) Leakage
c) Flattening or distortion of the tube
d) Hardening, deterioration or softness of the tube
e) Loosening of the union nut

**3. Do not repair the fittings or patch the tube for reuse.**

# Specific Product Precautions 2

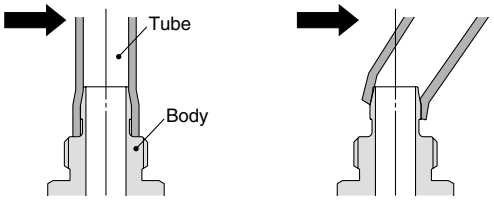
**Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) for Fittings and Tubing Precautions.**

**Maintenance**

## ⚠Caution

**4. After operation at a high temperature, leakage may occur due to time dependent change of the tube material. If leakage occurs, remove the tube, cut off the connecting part of the tube, and connect to the piping again.**

Check if the tube dimension accuracy is within the recommended tolerance. If it is difficult to take the tube out of the body, bend the tube to the side to remove.




**Stainless steel**

Metal exists in nature as ore (like oxide or sulfide). This means that oxide or sulfide is more stable than pure metal. Accordingly, metallic material chemically oxidizes (metallic constituent becomes ion and melts out). It corrodes in the natural environment.

Even though corrosion of metal easily occurs in an environment where oxidizing tendency is stronger, some kinds of metal have a characteristic for which corrosion never happens if the level of oxidizing goes higher than a specific point. In such a case, it is called "metal in passive state".

Stainless steel has corrosion resistance because of a thin coat of passive state on its surface. However, there does not exist stainless steel with absolute corrosion resistance; therefore, many types of stainless steel have been developed for improved corrosion resistance performance.

# Series KQG2/KFG2
# Applicable Fluid List

How to Read the Table
◎: Completely unaffected or largely unaffected.
○: May be slightly affected, but, dependent upon condition, can sufficiently withstand.
△: Advisable to use as little as possible.
×: Not applicable, as substantially affected.
—: No data is available.

## Compatibility Checklist for Used Materials and Fluids

| Chemical | Body | Seal |
|---|---|---|
| | Stainless steel 316 | Special FKM |
| **Acrylonitrile** | ◎ | × |
| **Acetamide** | ○ | ○ |
| **Acetaldehyde** | ◎ | × |
| **Acetone** | ◎ | × |
| **Aniline** | ○ | ◎ |
| **Amylene** | ◎ | — |
| **Sulphurous acid gas (Humid gas)** | ◎ | — |
| **Sodium bisulfite [50%]** | ◎ | — |
| **Allyl alcohol** | ◎ | — |
| **Benzoic acid** | ◎ | — |
| **Ammonia (Compressed gas)** | ◎ | × |
| **Isopropyl alcohol** | ○ | ◎ |
| **Isophorone** | × | — |
| **Ethyl alcohol** | ◎ | ○ |
| **Ethyl ether** | ○ | × |
| **Ethylene** | ◎ | — |
| **Ethylene glycol** | ○ | ◎ |
| **Ethylene diamine** | ◎ | — |
| **Ethylene dichloride** | ◎ | — |
| **Epichlorohydrine** | ◎ | × |
| **Methyl tertiary butyl ether** | — | × |
| **Allyl chloride** | × | — |
| **Ammonium chloride** | ◎ | — |
| **Calcium chloride** | ◎ | — |
| **Iron(II) chloride [5%]** | × | — |
| **Sodium chloride** | ○ | — |
| **Magnesium chloride** | ◎ | — |
| **Hydrochloric acid [5%]** | × | — |
| **Chlorine gas (Humid gas)** | × | — |
| **Carbitol** | × | — |
| **Formic acid [50%]** | ○ | × |
| **o-Xylene** | △ | △ |
| **p-Xylene** | △ | △ |
| **Citric acid** | ◎ | — |
| **Cumene** | × | — |
| **Glycerin** | ◎ | ◎ |
| **Cresol** | ◎ | △ |

| Chemical | Body | Seal |
|---|---|---|
| | Stainless steel 316 | Special FKM |
| **Chromic acid [10%]** | ◎ | — |
| **Chlorosulfonic acid** | ○ | × |
| **Chlorofluorocarbon (CFC) 11** | — | × |
| **Chlorofluorocarbon (CFC) 113** | — | × |
| **Chlorofluorocarbon (CFC) 12** | ○ | × |
| **Chlorofluorocarbon (CFC) 13B1** | — | × |
| **Chlorofluorocarbon (CFC) 14** | — | ◎ |
| **Chlorofluorocarbon (CFC) 22** | ○ | × |
| **Chlorobenzene** | × | ○ |
| **Chloroform (Trichloromethane)** | ○ | ○ |
| **Acetic acid** | ○ | × |
| **Amyl acetate** | ◎ | × |
| **Isopropyl acetate [20%]** | ◎ | × |
| **Ethyl acetate** | × | × |
| **Butyl acetate** | × | × |
| **Methyl acetate** | ◎ | × |
| **Calcium hypochlorite** | ◎ | — |
| **Sodium hypochlorite [5%]** | ◎ | ◎ |
| **Potassium cyanide [50%]** | ◎ | — |
| **Copper cyanide** | ◎ | — |
| **Diisobutyl ketone** | ◎ | — |
| **Diisobutylene** | — | ◎ |
| **Diethanolamine** | ◎ | — |
| **Diethylamine** | × | × |
| **Diethylene glycol** | ◎ | — |
| **Carbon tetrachloride** | ◎ | ◎ |
| **Cyclohexanol** | × | — |
| **Cyclohexanone** | × | × |
| **Cyclohexane** | × | ○ |
| **Dichloroethylene** | — | △ |
| **Dichlorobenzene** | — | △ |
| **Dichloromethane (Methylene chloride)** | △ | △ |
| **Ethylene bromide** | × | — |
| **Potassium bromide [30%]** | ◎ | — |
| **Potassium dichromate [25%]** | ◎ | — |
| **Oxalic acid** | ◎ | — |
| **Bromine gas** | × | — |

# Applicable Fluid List

| Chemical | Body | Seal |
|---|---|---|
| | Stainless steel 316 | Special FKM |
| **Tartaric acid** | ◎ | — |
| **Nitric acid [65%]** | ◎ | ◎ |
| **Ammonium nitrate** | ◎ | — |
| **Ammonium hydroxide** | — | ○ |
| **Calcium hydroxide** | ◎ | — |
| **Sodium hydroxide [50%]** | ◎ | ○ |
| **Barium hydroxide** | ◎ | — |
| **Solvent naphtha** | ◎ | — |
| **Carbonic acid (Humid gas and aqueous solution)** | ◎ | — |
| **Tetrachloroethylene** | × | ◎ |
| **Tetrahydrofuran** | — | × |
| **Dodecylbenzene** | ◎ | — |
| **Trichloroethane** | △ | — |
| **Trichloroethylene** | ◎ | ○ |
| **Trichloroacetic acid** | — | — |
| **Toluene** | ◎ | ◎ |
| **Naphtha** | ○ | ○ |
| **Naphthenic acid** | ◎ | — |
| **Lactic acid** | ◎ | — |
| **Carbon disulfide** | ○ | ◎ |
| **Picric acid** | ◎ | — |
| **Pyridine** | × | × |
| **Phenol** | × | ○ |
| **Butyl phthalate** | × | — |
| **Butyl alcohol** | △ | — |
| **Hydrofluoric acid [50%]** | ◎ | — |
| **Furfurol** | × | × |
| **n-Propyl alcohol** | ◎ | — |
| **Propylene glycol** | ◎ | — |
| **Bromochloroethane** | — | × |
| **n-Hexane** | ○ | ◎ |
| **n-Hexyl alcohol** | ◎ | — |
| **n-Heptane** | ◎ | — |
| **Benzene** | × | × |
| **n-Pentane** | × | — |
| **Boric acid** | ◎ | — |
| **Gallic acid** | ◎ | — |

| Chemical | Body | Seal |
|---|---|---|
| | Stainless steel 316 | Special FKM |
| **Formic aldehyde** | ◎ | × |
| **Methyl methacrylate** | × | × |
| **Methyl alcohol** | ◎ | ○ |
| **Methyl isobutyl ketone** | × | × |
| **Methyl ethyl ketone** | × | × |
| **Ethyleneglycol monomethyl ether** | × | — |
| **Monoethanolamine** | ◎ | — |
| **Morpholine** | ◎ | — |
| **Butyric acid** | ◎ | — |
| **Hydrogen sulfide (Humid gas and aqueous solution)** | ◎ | × |
| **Sulphuric acid [10%]** | ◎ | ◎ |
| **Ammonium sulfate** | ◎ | × |
| **Sodium bisulfate [10%]** | ◎ | — |
| **Iron(II) sulfate** | ○ | — |
| **Sodium sulfate** | ◎ | — |
| **Phosphoric acid [85%]** | ◎ | — |

**Note 1) [ ] denotes the concentration. Aqueous solutions without condensation notes are in a saturated state.**

**Note 2) The above data is based on a room temperature of 20°C. Note that you may obtain different figures, depending on temperature conditions.**

**Note 3) The above data shows compatibility guidelines based upon component parts. Therefore, it is no guarantee of product performance. In addition, using fluids other than those specified in the catalog are not covered by the product's warranty.**

# ⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

**⚠ Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

**⚠ Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

**⚠ Danger :** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

## ⚠ Warning

**1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

**2. Only personnel with appropriate training should operate machinery and equipment.**
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

**3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

**4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

## ⚠ Caution

**1. The product is provided for use in manufacturing industries.**
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

# Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".
Read and accept them before using the product.

## Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) **Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

## Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

| ⚠ Safety Instructions | Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using. |
|---|---|

**SMC Corporation**
Akihabara UDX 15F,
4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN
Phone: 03-5207-8249 Fax: 03-5298-5362
URL http://www.smcworld.com


Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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# Stainless Steel 316 One-touch Fittings

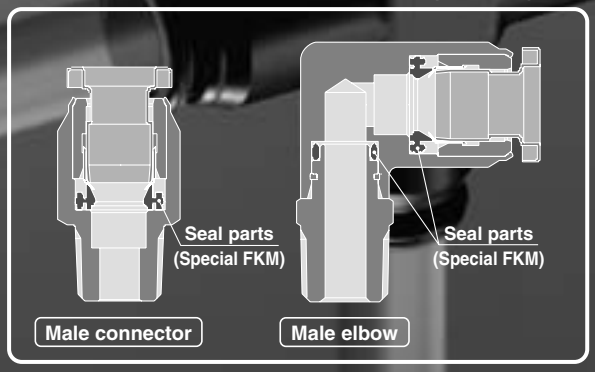
## Series KQG



- Material
  Metal parts: **Stainless steel 316**
  Seal parts: **Special FKM**
- **Grease-free**
- Fluid temperature
  **–5 to 150°C**
- **Can be used with steam.**

- ***Applicable tubing material***
  - ***FEP, PFA, Nylon, Soft nylon, Polyurethane***
  - ***Polyolefin***

**All stainless steel 316** except seal parts




- **Certified to meet current Food Sanitation Law standards.**
  (**Component materials have met apparatuses and container-packages standards, based on Directive 85 of the Japanese Ministry of Health and Safety in 1986.**)

# Stainless Steel 316 One-touch Fittings

## Applicable tubing: Metric size/Connection thread: M, R

# *Series KQG*

## Applicable Tubing

| | |
|---|---|
| Tubing material | FEP, PFA, Nylon, Soft nylon Note 1), Polyurethane Note 2) Note 3), Polyolefin |
| Tubing O.D. | ø4, ø6, ø8, ø10, ø12 |

## Specifications

| | |
|---|---|
| **Fluid** | Air, Water, Steam Note 3) Note 4) |
| **Operating pressure range** Note 5) | –100 kPa to 1 MPa |
| **Proof pressure** | 3.0 MPa |
| **Ambient and fluid temperature** Note 6) | –5 to 150°C (No freezing) |
| **Lubricant** | Grease-free specification |
| **Seal on the threads** | With sealant |

Note 1) For soft nylon tubing, water cannot be used.
Note 2) The pulling strength of polyurethane tube is as follows. The pulling load of the tube used for verifying the mounting of the tube within the fitting should be the values as shown or less in the table below. As reference, the thrust force occurring between the tube and the fitting at 0.8 MPa is shown on the table below.

**Pulling Strength**

| Model | TU0425 | TU0604 | TU0805 | TU1065 | TU1208 |
|---|---|---|---|---|---|
| Without inner sleeve | 50 N | 80 N | 110 N | 140 N | 140 N |
| With inner sleeve | 160 N | 180 N | 250 N | 450 N | 500 N |

**Reference: Thrust Force Occurring at 0.8 MPa**

| Model | TU0425 | TU0604 | TU0805 | TU1065 | TU1208 |
|---|---|---|---|---|---|
| Load | 10 N | 25 N | 40 N | 65 N | 90 N |

Note 3) Please consult with SMC regarding applicable tube separately.
Note 4) Special FKM that is resistant even when steam is used.
Note 5) Please avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 6) It is recommended that you use the inner sleeve in the following conditions:
- When using in an environment where the fluid temperature changes drastically.
- When using at a high temperature.

**Temperature Conditions**

| Operating tube | Temperature |
|---|---|
| FEP tubing/TH series | 80°C or more |
| PFA tubing/TL series | 120°C or more |

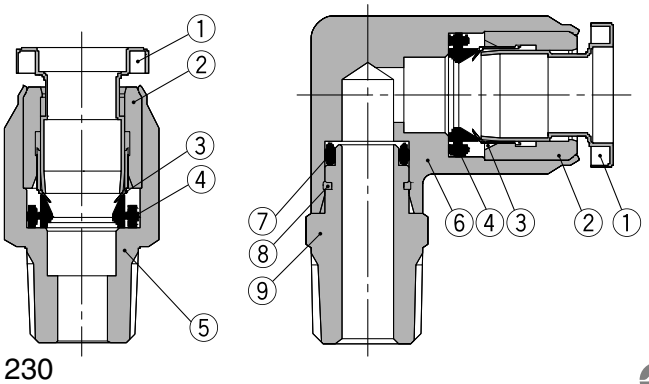
| Tube size | | Tubing model (Material) | | | | Applicable inner sleeve | |
|---|---|---|---|---|---|---|---|
| O.D. | Model | **TU** (Polyurethane) | **TUS** (Soft polyurethane) | **TH** (FEP) | **TL** (PFA) | Model | Length (mm) |
| ø4 | 0402 | — | — | ● | — | **TJG-0402** | 18 |
| | 0425 | ● | ● | ● | — | **TJG-0425** | 18 |
| | 0403 | — | — | — | ● | **TJG-0403** | 18 |
| ø6 | 0604 | ● | ● | ● | ● | **TJG-0604** | 19 |
| ø8 | 0805 | ● | ● | — | — | **TJG-0805** | 20.5 |
| | 0806 | — | — | ● | ● | **TJG-0806** | 20.5 |
| ø10 | 1065 | ● | ● | — | — | **TJG-1065** | 23 |
| | 1075 | — | — | ● | — | **TJG-1075** | 23 |
| | 1008 | — | — | ● | ● | **TJG-1008** | 23 |
| ø12 | 1208 | ● | ● | — | — | **TJG-1208** | 24 |
| | 1209 | — | — | ● | — | **TJG-1209** | 24 |
| | 1210 | — | — | ● | ● | **TJG-1210** | 24 |

∗ Material for the TJG series is stainless steel 316.

**Spare Parts**

| Description | Model | Material |
|---|---|---|
| Gasket | **M-5G3** | Stainless steel 316, Special FKM |
| Bulkhead nut | **KQG04-P01** | Stainless steel 316 |
| | **KQG06-P01** | |
| | **KQG08-P01** | |
| | **KQG10-P01** | |
| | **KQG12-P01** | |

## Construction




| No. | Description | Material |
|---|---|---|
| 1 | **Release bushing** | Stainless steel 316 |
| 2 | **Guide** | Stainless steel 316 |
| 3 | **Chuck** | Stainless steel 316 |
| 4 | **Seal** | Special FKM (Fluoro coated) |
| 5 | **Male connector body** | Stainless steel 316 |
| 6 | **Male elbow body** | Stainless steel 316 |
| 7 | **O-ring** | Special FKM (Fluoro coated) |
| 8 | **Stopper ring** | Stainless steel 316 |
| 9 | **Stud** | Stainless steel 316 |

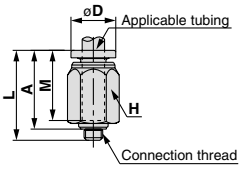
## Dimensions

### Male Connector: KQGH

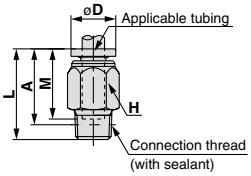
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (Width across flats) | Note 1) øD | L | A* | M | Effective area Note 2) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | M5 x 0.8 | KQGH04-M5 | 10 | 10 | 22.3 | 19.3 | 18 | 4 | 7.4 |
| | 1/8 | KQGH04-01S | | | 24 | 20 | | 5.6 | 9.4 |
| ø6 | M5 x 0.8 | KQGH06-M5 | 12 | 12 | 24.1 | 21.1 | 18.8 | 4 | 11 |
| | 1/8 | KQGH06-01S | | | 24.3 | 20.3 | | 10.4 | 11 |
| | 1/4 | KQGH06-02S | | | 25.8 | 19.8 | | | 18 |
| ø8 | 1/8 | KQGH08-01S | 14 | 14 | 30.5 | 26.5 | 20.9 | 26.1 | 18 |
| | 1/4 | KQGH08-02S | | | 28.5 | 22.5 | | | 18 |
| | 3/8 | KQGH08-03S | | | 24 | 17.7 | | | 24 |
| ø10 | 1/4 | KQGH10-02S | 17 | 17 | 35.5 | 29.5 | 23 | 41.5 | 29 |
| | 3/8 | KQGH10-03S | | | 31 | 24.7 | | | 29 |
| ø12 | 3/8 | KQGH12-03S | 19 | 19 | 32.8 | 26.5 | 24.8 | 58.3 | 31 |
| | 1/2 | KQGH12-04S | 22 | | | 24.6 | | | 51 |

∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

**(In case of M5)**




**(In case of R)**

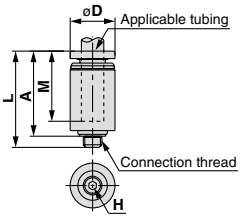



### Hexagon Socket Head Male Connector: KQGS

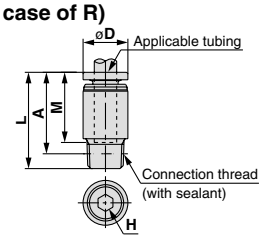
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (Width across flats) | Note 1) øD | L | A* | M | Effective area Note 2) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | M5 x 0.8 | KQGS04-M5 | 2 | 10 | 25 | 22 | 18 | 4 | 8.6 |
| | 1/8 | KQGS04-01S | 3 | | | 21 | | 4.1 | 9.8 |
| ø6 | M5 x 0.8 | KQGS06-M5 | 2 | 12 | 25.8 | 22.8 | 18.8 | 4 | 12 |
| | 1/8 | KQGS06-01S | 4 | | | 21.8 | | 9.9 | 12 |
| | 1/4 | KQGS06-02S | | | | 19.8 | | 10 | 20 |
| ø8 | 1/8 | KQGS08-01S | 5 | 14 | 30.5 | 26.5 | 20.9 | 17.2 | 17 |
| | 1/4 | KQGS08-02S | 6 | | 28.5 | 22.5 | | 23.3 | 18 |
| | 3/8 | KQGS08-03S | | | 30.1 | 23.8 | | | 35 |
| ø10 | 1/4 | KQGS10-02S | 8 | 17 | 35.5 | 29.5 | 23 | 39 | 28 |
| | 3/8 | KQGS10-03S | | | 31 | 24.7 | | | 29 |
| ø12 | 3/8 | KQGS12-03S | 10 | 19 | 32.8 | 26.5 | 24.8 | 60 | 30 |
| | 1/2 | KQGS12-04S | | 22 | | 24.6 | | | 54 |

∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

**(In case of M5)**



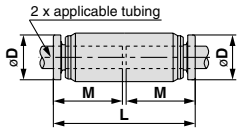

**(In case of R)**




### Straight Union: KQGH

| Applicable tubing O.D. (mm) | Model | Note 1) øD | L | M | Effective area Note 2) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|
| ø4 | KQGH04-00 | 11 | 37 | 18 | 5.6 | 16 |
| ø6 | KQGH06-00 | 13 | 38 | 18.5 | 13.1 | 22 |
| ø8 | KQGH08-00 | 15 | 42.8 | 20.9 | 26.1 | 31 |
| ø10 | KQGH10-00 | 19 | 47 | 23 | 41.5 | 54 |
| ø12 | KQGH12-00 | 21 | 50.6 | 24.8 | 58.3 | 66 |

Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

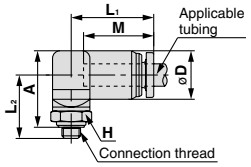



### Male Elbow: KQGL

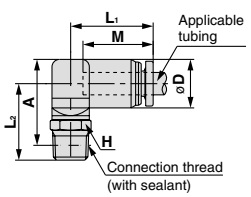
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (Width across flats) | Note 1) øD | $L_1$ | $L_2$ | A* | M | Effective area Note 2) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | M5 x 0.8 | KQGL04-M5 | 10 | 10.6 | 20.5 | 16 | 18.3 | 18 | 3.5 | 18 |
| | 1/8 | KQGL04-01S | | | | 19.5 | 20.8 | | 4.2 | 20 |
| ø6 | M5 x 0.8 | KQGL06-M5 | | 13 | 22.1 | 17 | 20.5 | 18.8 | 3.5 | 25 |
| | 1/8 | KQGL06-01S | | | | 20.5 | 23 | | 9 | 26 |
| | 1/4 | KQGL06-02S | 14 | | | 24.5 | 25 | | | 35 |
| ø8 | 1/8 | KQGL08-01S | 12 | 15 | 24.9 | 21.9 | 25.4 | 20.9 | 21.6 | 37 |
| | 1/4 | KQGL08-02S | 14 | | | 25.9 | 27.4 | | | 45 |
| | 3/8 | KQGL08-03S | | | | 27.9 | 29.1 | | | 56 |
| ø10 | 1/4 | KQGL10-02S | 17 | 18 | 27.8 | 27.7 | 30.7 | 23 | 35.2 | 69 |
| | 3/8 | KQGL10-03S | | | | 29.7 | 32.4 | | | 73 |
| ø12 | 3/8 | KQGL12-03S | | 20.8 | 31.3 | 30.7 | 35.1 | 24.8 | 50.2 | 94 |
| | 1/2 | KQGL12-04S | 22 | | | 34.7 | 37.2 | | | 121 |

∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

**(In case of M5)**




**(In case of R)**

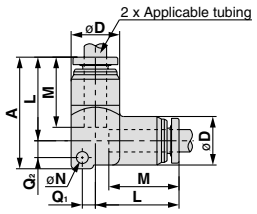


## Dimensions

### Union Elbow: KQGL

| Applicable tubing O.D. (mm) | Model | Note 1) øD | L | A | $Q_1$ | $Q_2$ | M | øN | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | **KQGL04-00** | 10.6 | 20.6 | 27.3 | 2.3 | 3.7 | 18 | 3.2 | 4.2 | 21 |
| ø6 | **KQGL06-00** | 13 | 22.4 | 28.9 | 3.5 | 3.5 | 18.8 | | 9 | 32 |
| ø8 | **KQGL08-00** | 15 | 25.5 | 35.1 | | 5.6 | 20.9 | | 21.6 | 49 |
| ø10 | **KQGL10-00** | 18 | 28.6 | 38.2 | 5 | | 23 | 4.2 | 35.2 | 76 |
| ø12 | **KQGL12-00** | 20.8 | 31.4 | 41.8 | 6.4 | 6.4 | 24.8 | | 50.2 | 108 |

Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

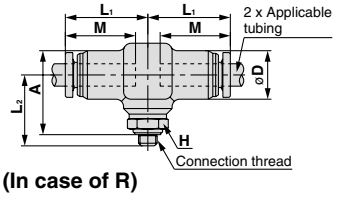



### Male Branch Tee: KQGT

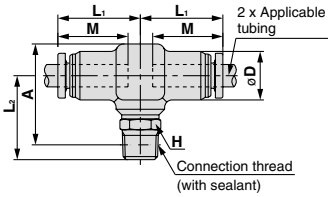
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (Width across flats) | Note 1) øD | $L_1$ | $L_2$ | A* | M | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | M5 x 0.8 | **KQGT04-M5** | 10 | 10.6 | 20.5 | 18 | 23.1 | 18 | 4.5 | 26 |
| | 1/8 | **KQGT04-01S** | | | | 21.5 | 25.6 | | 6 | 27 |
| ø6 | M5 x 0.8 | **KQGT06-M5** | | 13 | 22.1 | 19 | 25 | 18.8 | 4.5 | 39 |
| | 1/8 | **KQGT06-01S** | | | | 22.5 | 27.5 | | 11 | 41 |
| | 1/4 | **KQGT06-02S** | 14 | | | 26.5 | 29.5 | | | 50 |
| ø8 | 1/8 | **KQGT08-01S** | 12 | 15 | 24.9 | 23.9 | 30.7 | 20.9 | 26.3 | 61 |
| | 1/4 | **KQGT08-02S** | 14 | | | 27.9 | 32.7 | | | 70 |
| | 3/8 | **KQGT08-03S** | | | | 29.9 | 34.4 | | | 83 |
| ø10 | 1/4 | **KQGT10-02S** | 17 | 18 | 27.8 | 29.7 | 35.7 | 23 | 40.8 | 97 |
| | 3/8 | **KQGT10-03S** | | | | 31.7 | 37.4 | | | 101 |
| ø12 | 3/8 | **KQGT12-03S** | | 20.8 | 31.3 | 32.7 | 39.5 | 24.8 | 57.2 | 133 |
| | 1/2 | **KQGT12-04S** | 22 | | | 36.7 | 41.6 | | | 159 |

∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

**(In case of M5)**



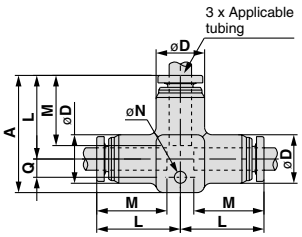

**(In case of R)**




### Union Tee: KQGT

| Applicable tubing O.D. (mm) | Model | Note 1) øD | L | A | Q | M | øN | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | **KQGT04-00** | 10.6 | 20.6 | 28.7 | 4.1 | 18 | 3.2 | 6.4 | 28 |
| ø6 | **KQGT06-00** | 13 | 22.4 | 31.4 | 4.9 | 18.8 | | 10.6 | 42 |
| ø8 | **KQGT08-00** | 15 | 25.5 | 36.3 | 6.1 | 20.9 | | 25.6 | 57 |
| ø10 | **KQGT10-00** | 18 | 28.6 | 40.6 | 7.1 | 23 | 4.2 | 40 | 95 |
| ø12 | **KQGT12-00** | 20.8 | 31.4 | 44.5 | 8.1 | 24.8 | | 57.4 | 129 |

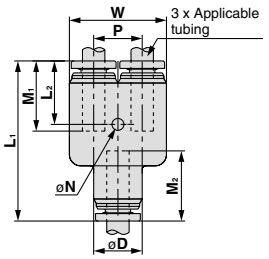
Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing




### Union "Y": KQGU

| Applicable tubing O.D. (mm) | Model | Note 1) øD | W | $L_1$ | $L_2$ | P | $M_1$ | $M_2$ | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | **KQGU04-00** | 10.6 | 21.2 | 41 | 16.8 | 10.6 | 18 | 17 | 4.2 | 35 |
| ø6 | **KQGU06-00** | 13 | 26 | 42.9 | 17 | 13 | 18.8 | 17.8 | 10.6 | 54 |
| ø8 | **KQGU08-00** | 15 | 30 | 47.7 | 18.7 | 15 | 20.9 | 19.9 | 25.6 | 75 |
| ø10 | **KQGU10-00** | 18 | 36 | 52.8 | 20.5 | 18 | 23 | 22 | 40 | 114 |
| ø12 | **KQGU12-00** | 20.8 | 41.6 | 57.8 | 21.9 | 21 | 24.8 | 23.8 | 57.4 | 175 |

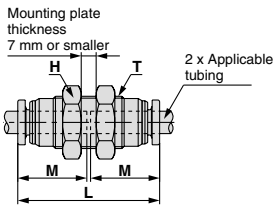
Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing




### Bulkhead Union: KQGE

| Applicable tubing O.D. (mm) | Model | T (M) | H (Width across flats) | L | Mounting hole | M | Effective area Note) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| ø4 | **KQGE04-00** | M12X1 | 14 | 37 | 13 | 18 | 5.6 | 21 |
| ø6 | **KQGE06-00** | M14X1 | 17 | 38 | 15 | 18.5 | 10.4 | 29 |
| ø8 | **KQGE08-00** | M16X1 | 19 | 42.8 | 17 | 20.9 | 26.1 | 40 |
| ø10 | **KQGE10-00** | M20X1 | 24 | 47 | 21 | 23 | 41.5 | 71 |
| ø12 | **KQGE12-00** | M22X1 | 27 | 50.6 | 23 | 24.8 | 58.3 | 95 |

Note) Figures shown when using FEP tubing



# Stainless Steel 316 One-touch Fittings

## Applicable tubing: Inch size/Connection thread: UNF, NPT

# Series KQG



## Applicable Tubing

| | |
|---|---|
| Tubing material | FEP, PFA, Nylon, Soft nylon [Note 1)], Polyurethane [Note 2)], Polyolefin |
| Tubing O.D. | ø5/32", ø1/4", ø5/16", ø3/8", ø1/2" |

## Specifications

| | |
|---|---|
| **Fluid** | Air, Water, Steam [Note 3) Note 4)] |
| **Operating pressure range** [Note 5)] | –100 kPa to 1 MPa |
| **Proof pressure** | 3.0 MPa |
| **Ambient and fluid temperature** [Note 6)] | –5 to 150°C (No freezing) |
| **Lubricant** | Grease-free specification |
| **Seal on the threads** | With sealant |

Note 1) For soft nylon tubing, water cannot be used.
Note 2) The pulling strength of polyurethane tube is as follows. The pulling load of the tube used for verifying the mounting of the tube within the fitting should be the values as shown or less in the table below. As reference, the thrust force occurring between the tube and the fitting at 0.8 MPa is shown on the table below.

### Pulling Strength

| Model | TU0425 | TIUB07 | TU0805 | TIUB11 | TIUB13 |
|---|---|---|---|---|---|
| Without inner sleeve | 50 N | 80 N | 110 N | 140 N | 140 N |
| With inner sleeve | 160 N | 180 N | 250 N | 450 N | 500 N |

### Reference: Thrust Force Occurring at 0.8 MPa

| Model | TU0425 | TIUB07 | TU0805 | TIUB11 | TIUB13 |
|---|---|---|---|---|---|
| Load | 10 N | 25 N | 40 N | 65 N | 90 N |

Note 3) Please consult with SMC regarding applicable tube separately.
Note 4) Special FKM that is resistant even when steam is used.
Note 5) Please avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 6) It is recommended that you use the inner sleeve in the following conditions:
- When using in an environment where the fluid temperature changes drastically.
- When using at a high temperature.

### Temperature Conditions

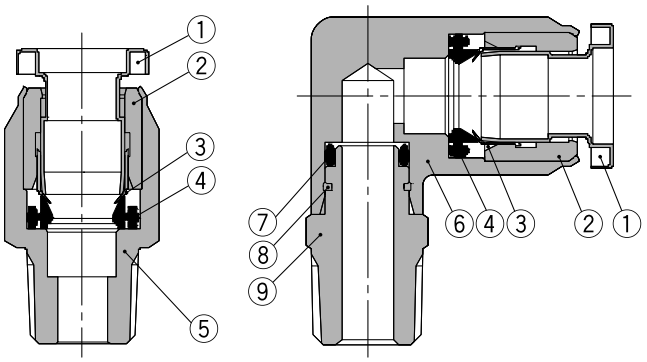
| Operating tube | Temperature |
|---|---|
| FEP tubing/TH series | 80°C or more |
| PFA tubing/TL series | 120°C or more |

| Tubing O.D. | Tubing model (Material) | | | Applicable inner sleeve | |
|---|---|---|---|---|---|
| | **TU/TIU** (Polyurethane) | **TH/TIH** (FEP) | **TL/TIL** (PFA) | Model | Length (mm) |
| ø5/32" | — | TH0402 | — | **TJG-0402** | 18 |
| | TU0425 | TH0425 | — | **TJG-0425** | 18 |
| | — | — | TL0403 | **TJG-0403** | 18 |
| ø1/4" | — | TIHB07 | TIL07 | **TJG-0604** | 19 |
| | TIUB07 | — | — | **TJG-0742** | 19 |
| | — | TIHA07 | — | **TJG-0746** | 19 |
| ø5/16" | TU0805 | — | — | **TJG-0805** | 20.5 |
| | — | TH0806 | TL0806 | **TJG-0806** | 20.5 |
| ø3/8" | TIUB11 | TIHB11 | TIL11 | **TJG-1065** | 23 |
| | — | TIHA11 | — | **TJG-1107** | 23 |
| ø1/2" | TIUB13 | — | — | **TJG-1384** | 24 |
| | — | TIH13 | TIL13 | **TJG-1395** | 24 |

### Spare Parts

| Description | Model | Material |
|---|---|---|
| Gasket | **M-5G3** | Stainless steel 316, Special FKM |
| Bulkhead nut | **KQG03-P01** | Stainless steel 316 |
| | **KQG07-P01** | |
| | **KQG09-P01** | |
| | **KQG11-P01** | |
| | **KQG13-P01** | |

## Construction




| No. | Description | Material |
|---|---|---|
| 1 | **Release bushing** | Stainless steel 316 |
| 2 | **Guide** | Stainless steel 316 |
| 3 | **Chuck** | Stainless steel 316 |
| 4 | **Seal** | Special FKM (Fluoro coated) |
| 5 | **Male connector body** | Stainless steel 316 |
| 6 | **Male elbow body** | Stainless steel 316 |
| 7 | **O-ring** | Special FKM (Fluoro coated) |
| 8 | **Stopper ring** | Stainless steel 316 |
| 9 | **Stud** | Stainless steel 316 |

## Dimensions

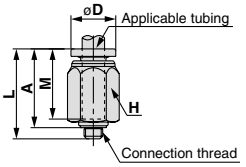
### Male Connector: KQGH

| Applicable tubing O.D. (inch) | Connection thread NPT | Model | H (Width across flats) | Note 1) øD | L | A* | M | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 5/32 | 10-32UNF | **KQGH03-32** | 10 | 10 | 22.3 | 19.3 | 18 | 4 | 7.4 |
| | NPT1/8 | **KQGH03-N01S** | 12 | | 24 | 19.9 | | 5.6 | 10 |
| 1/4 | 10-32UNF | **KQGH07-32** | 13 | 12 | 24.1 | 21.1 | 18.8 | 4 | 12 |
| | NPT1/8 | **KQGH07-N01S** | | | 24.3 | 20.2 | | 10.4 | 12 |
| | NPT1/4 | **KQGH07-N02S** | | | 25.8 | 20 | | | 18 |
| 5/16 | NPT1/8 | **KQGH09-N01S** | 14 | 14 | 30.5 | 26.4 | 20.9 | 26.1 | 18 |
| | NPT1/4 | **KQGH09-N02S** | | | 28.5 | 22.7 | | | 18 |
| | NPT3/8 | **KQGH09-N03S** | | | 24 | 17.9 | | | 24 |
| 3/8 | NPT1/4 | **KQGH11-N02S** | 19 | 17 | 35.5 | 29.7 | 23 | 41.5 | 31 |
| | NPT3/8 | **KQGH11-N03S** | | | 31 | 24.9 | | | 31 |
| 1/2 | NPT3/8 | **KQGH13-N03S** | 22 | 19 | 32.8 | 26.7 | 24.8 | 58.3 | 37 |
| | NPT1/2 | **KQGH13-N04S** | | | | 24.7 | | | 51 |

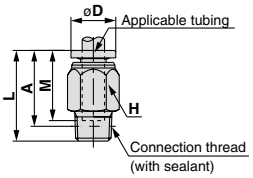
∗ Reference dimensions after installation of NPT thread

Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

**(In case of M5)**




**(In case of R)**



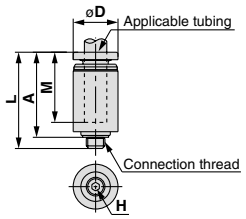

### Hexagon Socket Head Male Connector: KQGS

| Applicable tubing O.D. (inch) | Connection thread NPT | Model | H (Width across flats) | Note 1) øD | L | A* | M | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 5/32 | 10-32UNF | **KQGS03-32** | 2.5 | 10 | 25 | 22 | 18 | 4 | 8.6 |
| | NPT1/8 | **KQGS03-N01S** | 2.78 | 12 | | 20.9 | | 4.1 | 11 |
| 1/4 | 10-32UNF | **KQGS07-32** | 2.5 | 13 | 25.8 | 22.8 | 18.8 | 4 | 13 |
| | NPT1/8 | **KQGS07-N01S** | 4.76 | | | 21.7 | | 9.9 | 13 |
| | NPT1/4 | **KQGS07-N02S** | | | | 20 | | 10 | 20 |
| 5/16 | NPT1/8 | **KQGS09-N01S** | 5.56 | 14 | 30.5 | 26.4 | 20.9 | 17.2 | 17 |
| | NPT1/4 | **KQGS09-N02S** | 6.35 | | 28.5 | 22.7 | | 23.3 | 18 |
| | NPT3/8 | **KQGS09-N03S** | | 19 | 30.1 | 24 | | | 37 |
| 3/8 | NPT1/4 | **KQGS11-N02S** | | 17 | 35.5 | 29.7 | 23 | 39 | 28 |
| | NPT3/8 | **KQGS11-N03S** | | 19 | 31 | 24.9 | | | 31 |
| 1/2 | NPT3/8 | **KQGS13-N03S** | 9.53 | 22 | 32.8 | 26.7 | 24.8 | 60 | 36 |
| | NPT1/2 | **KQGS13-N04S** | | | | 24.7 | | | 54 |

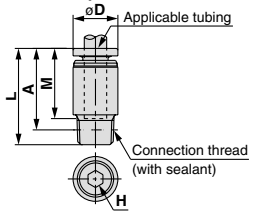
∗ Reference dimensions after installation of NPT thread

Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

**(In case of M5)**



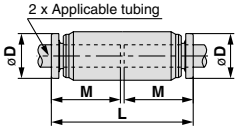

**(In case of R)**




### Straight Union: KQGH

| Applicable tubing O.D. (inch) | Model | Note 1) øD | L | M | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|
| 5/32 | **KQGH03-00** | 11 | 37 | 18 | 5.6 | 16 |
| 1/4 | **KQGH07-00** | 14 | 38.6 | 18.8 | 13.1 | 22 |
| 5/16 | **KQGH09-00** | 15 | 42.8 | 20.9 | 26.1 | 31 |
| 3/8 | **KQGH11-00** | 19 | 47 | 23 | 41.5 | 54 |
| 1/2 | **KQGH13-00** | 22 | 50.6 | 24.8 | 58.3 | 66 |

Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing



## Dimensions

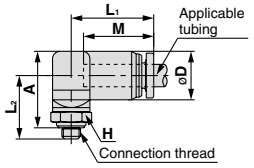
### Male Elbow: KQGL

| Applicable tubing O.D. (inch) | Connection thread NPT | Model | H (Width across flats) | Note 1) øD | L1 | L2 | A* | M | Effective area Note 2) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32 | 10-32UNF | **KQGL03-32** | 10 | 10.6 | 20.5 | 16 | 18.3 | 18 | 3.5 | 18 |
| | NPT1/8 | **KQGL03-N01S** | 12 | | | 19.5 | 20.7 | | 4.2 | 21 |
| 1/4 | 10-32UNF | **KQGL07-32** | 10 | 13 | 22.1 | 17 | 20.5 | 18.8 | 3.5 | 25 |
| | NPT1/8 | **KQGL07-N01S** | 12 | | | 20.5 | 22.9 | | 9 | 27 |
| | NPT1/4 | **KQGL07-N02S** | 14 | | | 24.5 | 25.2 | | | 35 |
| 5/16 | NPT1/8 | **KQGL09-N01S** | 12 | 15 | 24.9 | 21.9 | 25.3 | 20.9 | 21.6 | 37 |
| | NPT1/4 | **KQGL09-N02S** | 14 | | | 25.9 | 27.6 | | | 45 |
| | NPT3/8 | **KQGL09-N03S** | | | | 27.9 | 29.3 | | | 58 |
| 3/8 | NPT1/4 | **KQGL11-N02S** | 19 | 18 | 27.8 | 27.7 | 30.9 | 23 | 35.2 | 71 |
| | NPT3/8 | **KQGL11-N03S** | | | | 29.7 | 32.6 | | | 75 |
| 1/2 | NPT3/8 | **KQGL13-N03S** | | 20.8 | 31.3 | 31 | 35.3 | 23.4 | 50.2 | 96 |
| | NPT1/2 | **KQGL13-N04S** | 22 | | | 35 | 37.3 | | | 121 |

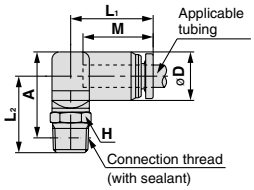
∗ Reference dimensions after installation of NPT thread

Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

**(In case of M5)**



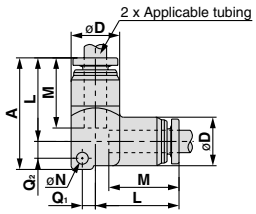

**(In case of R)**




### Union Elbow: KQGL

| Applicable tubing O.D. (inch) | Model | Note 1) øD | L | A | Q1 | Q2 | M | øN | Effective area Note 2) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32 | **KQGL03-00** | 10.6 | 20.6 | 27.3 | 2.3 | 3.7 | 18 | 3.2 | 4.2 | 21 |
| 1/4 | **KQGL07-00** | 13 | 22.4 | 28.9 | 3.5 | 3.5 | 18.8 | | 9 | 32 |
| 5/16 | **KQGL09-00** | 15 | 25.5 | 35.1 | | 5.6 | 20.9 | | 21.6 | 49 |
| 3/8 | **KQGL11-00** | 18 | 28.6 | 38.2 | 5 | | 23 | 4.2 | 35.2 | 76 |
| 1/2 | **KQGL13-00** | 20.8 | 31.4 | 41.8 | 6.4 | 6.4 | 23.4 | | 50.2 | 108 |

Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

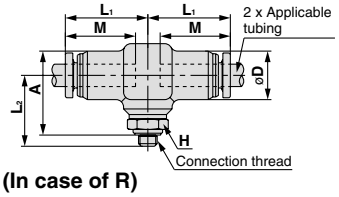



### Male Branch Tee: KQGT

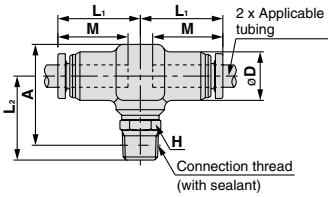
| Applicable tubing O.D. (inch) | Connection thread NPT | Model | H (Width across flats) | Note 1) øD | L1 | L2 | A* | M | Effective area Note 2) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5/32 | 10-32UNF | **KQGT03-32** | 10 | 10.6 | 20.5 | 18 | 23.1 | 18 | 4.5 | 26 |
| | NPT1/8 | **KQGT03-N01S** | 12 | | | 21.5 | 25.5 | | 6 | 28 |
| 1/4 | 10-32UNF | **KQGT07-32** | 10 | 13 | 22.1 | 19 | 25 | 18.8 | 4.5 | 39 |
| | NPT1/8 | **KQGT07-N01S** | 12 | | | 22.5 | 27.4 | | 11 | 42 |
| | NPT1/4 | **KQGT07-N02S** | 14 | | | 26.5 | 29.7 | | | 50 |
| 5/16 | NPT1/8 | **KQGT09-N01S** | 12 | 15 | 24.9 | 23.9 | 30.6 | 20.9 | 26.3 | 61 |
| | NPT1/4 | **KQGT09-N02S** | 14 | | | 27.9 | 32.9 | | | 70 |
| | NPT3/8 | **KQGT09-N03S** | | | | 29.9 | 34.6 | | | 85 |
| 3/8 | NPT1/4 | **KQGT11-N02S** | 19 | 18 | 27.8 | 29.7 | 35.9 | 23 | 40.8 | 99 |
| | NPT3/8 | **KQGT11-N03S** | | | | 31.7 | 37.6 | | | 103 |
| 1/2 | NPT3/8 | **KQGT13-N03S** | | 20.8 | 31.3 | 32.7 | 39.7 | 23.4 | 57.2 | 135 |
| | NPT1/2 | **KQGT13-N04S** | 22 | | | 36.7 | 41.7 | | | 159 |

∗ Reference dimensions after installation of NPT thread
Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

**(In case of M5)**




**(In case of R)**

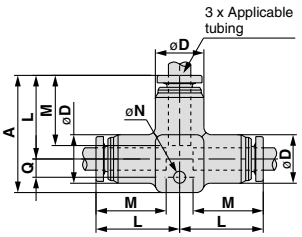


## Dimensions

### Union Tee: KQGT

| Applicable tubing O.D. (inch) | Model | Note 1) øD | L | A | Q | M | øN | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 5/32 | **KQGT03-00** | 10.6 | 20.6 | 28.7 | 4.1 | 18 | 3.2 | 6.4 | 28 |
| 1/4 | **KQGT07-00** | 13 | 22.4 | 31.4 | 4.9 | 18.8 | | 10.6 | 42 |
| 5/16 | **KQGT09-00** | 15 | 25.5 | 36.3 | 6.1 | 20.9 | | 25.6 | 57 |
| 3/8 | **KQGT11-00** | 18 | 28.6 | 40.6 | 7.1 | 23 | 4.2 | 40 | 95 |
| 1/2 | **KQGT13-00** | 20.8 | 31.4 | 44.5 | 8.1 | 23.4 | | 57.4 | 129 |

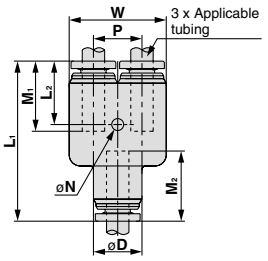
Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing




### Union "Y": KQGU

| Applicable tubing O.D. (inch) | Model | Note 1) øD | W | $L_1$ | $L_2$ | P | $M_1$ | $M_2$ | øN | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5/32 | **KQGU03-00** | 10.6 | 21.2 | 41 | 16.8 | 10.6 | 18 | 17 | 3.2 | 4.2 | 35 |
| 1/4 | **KQGU07-00** | 13 | 26.3 | 42.9 | 17 | 13 | 18.8 | 17.8 | | 10.6 | 54 |
| 5/16 | **KQGU09-00** | 15 | 30 | 47.7 | 18.7 | 15 | 20.9 | 19.9 | | 25.6 | 75 |
| 3/8 | **KQGU11-00** | 18 | 36 | 52.8 | 20.5 | 18 | 23 | 22 | 4.2 | 40 | 114 |
| 1/2 | **KQGU13-00** | 20.8 | 41.8 | 57.8 | 21.9 | 21 | 24.8 | 23.8 | | 57.4 | 175 |

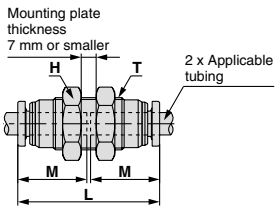
Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing




### Bulkhead Union: KQGE

| Applicable tubing O.D. (inch) | Model | T (M) | H (Width across flats) | L | Mounting hole | M | Effective area Note) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| 5/32 | **KQGE03-00** | 1/2-20UNF | 14 | 38 | 13.5 | 18 | 5.6 | 22 |
| 1/4 | **KQGE07-00** | 9/16-18UNF | 17 | 40.6 | 15 | 18.8 | 10.4 | 31 |
| 5/16 | **KQGE09-00** | 3/4-16UNF | 22 | 45.8 | 20 | 20.9 | 26.1 | 46 |
| 3/8 | **KQGE11-00** | 7/8-14UNF | 26 | 50 | 23 | 23 | 41.5 | 76 |
| 1/2 | **KQGE13-00** | 1-12UNF | 29 | 54.6 | 26 | 24.8 | 58.3 | 101 |

Note) Figures shown when using FEP tubing



# Series KQG
# Applicable Fluid List

## Compatibility Checklist for Used Materials and Fluids

| Chemical | Main body | Seal |
|---|---|---|
| | Stainless steel 316 | Special FKM |
| **Acrylonitrile** | ◎ | × |
| **Acetamide** | ○ | ○ |
| **Acetaldehyde** | ◎ | × |
| **Acetone** | ◎ | × |
| **Aniline** | ○ | ◎ |
| **Amylene** | ◎ | — |
| **Sulphurous acid gas (Humid gas)** | ◎ | — |
| **Sodium bisulfite [50%]** | ◎ | — |
| **Allyl alcohol** | ◎ | — |
| **Benzoic acid** | ◎ | — |
| **Ammonia (Compressed gas)** | ◎ | × |
| **Isopropyl alcohol** | ○ | ◎ |
| **Isophorone** | × | — |
| **Ethyl alcohol** | ◎ | ○ |
| **Ethyl ether** | ○ | × |
| **Ethylene** | ◎ | — |
| **Ethylene glycol** | × | ◎ |
| **Ethylene diamine** | ◎ | — |
| **Ethylene dichloride** | ◎ | — |
| **Epichlorohydrine** | ◎ | × |
| **Methyl tertiary butyl ether** | — | × |
| **Allyl chloride** | × | — |
| **Ammonium chloride** | ◎ | — |
| **Calcium chloride** | ◎ | — |
| **Iron(II) chloride [5%]** | × | — |
| **Sodium chloride** | ○ | — |
| **Magnesium chloride** | ◎ | — |
| **Hydrochloric acid [5%]** | × | — |
| **Chlorine gas (Humid gas)** | × | — |
| **Carbitol** | × | — |
| **Formic acid [50%]** | ○ | × |
| **o-Xylene** | △ | △ |
| **p-Xylene** | △ | △ |

| Chemical | Main body | Seal |
|---|---|---|
| | Stainless steel 316 | Special FKM |
| **Citric acid** | ◎ | — |
| **Cumene** | × | — |
| **Glycerin** | ◎ | ◎ |
| **Cresol** | ◎ | △ |
| **Chromic acid [10%]** | ◎ | — |
| **Chlorosulfonic acid** | ○ | × |
| **Chlorofluorocarbon (CFC) 11** | — | × |
| **Chlorofluorocarbon (CFC) 113** | — | × |
| **Chlorofluorocarbon (CFC) 12** | ○ | × |
| **Chlorofluorocarbon (CFC) 13B1** | — | × |
| **Chlorofluorocarbon (CFC) 14** | — | ◎ |
| **Chlorofluorocarbon (CFC) 22** | ○ | × |
| **Chlorobenzene** | × | ○ |
| **Chloroform (Trichloromethane)** | ○ | ○ |
| **Acetic acid** | ○ | × |
| **Amyl acetate** | ◎ | × |
| **Isopropyl acetate [20%]** | ◎ | × |
| **Ethyl acetate** | × | × |
| **Butyl acetate** | × | × |
| **Methyl acetate** | ◎ | × |
| **Calcium hypochlorite** | ◎ | — |
| **Sodium hypochlorite [5%]** | ◎ | ◎ |
| **Potassium cyanide [50%]** | ◎ | — |
| **Copper cyanide** | ◎ | — |
| **Diisobutyl ketone** | ◎ | — |
| **Diisobutylene** | — | ◎ |
| **Diethanolamine** | ◎ | — |
| **Diethylamine** | × | × |
| **Diethylene glycol** | ◎ | — |
| **Carbon tetrachloride** | ◎ | ◎ |
| **Cyclohexanol** | × | — |
| **Cyclohexanone** | × | × |
| **Cyclohexane** | × | ○ |

**Note 1) [ ] denotes the concentration. Aqueous solutions without condensation notes are in a saturated state.**
**Note 2) The above data is based on a room temperature of 20°C. Note that you may obtain different figures, depending on temperature conditions.**
**Note 3) The above data shows compatibility guidelines based upon component parts. Therefore, it is no guarantee of product performance. In addition, using fluids other than those specified in the catalog are not covered by the product's warranty.**

How to Read the Table
◎: Completely unaffected or largely unaffected.
○: May be slightly affected, but, dependent upon condition, can sufficiently withstand.
△: Advisable to use as little as possible.
×: Not applicable, as substantially affected.
—: No data is available.

# Series KQG
# Applicable Fluid List

## Compatibility Checklist for Used Materials and Fluids

| Chemical | Main body | Seal |
|---|---|---|
| | Stainless steel 316 | Special FKM |
| **Dichloroethylene** | — | △ |
| **Dichlorobenzene** | — | △ |
| **Dichloromethane (Methylene chloride)** | △ | △ |
| **Ethylene bromide** | × | — |
| **Potassium bromide [30%]** | ◎ | — |
| **Potassium dichromate [25%]** | ◎ | — |
| **Oxalic acid** | ◎ | — |
| **Bromine gas** | × | — |
| **Tartaric acid** | ◎ | — |
| **Nitric acid [65%]** | ◎ | ◎ |
| **Ammonium nitrate** | ◎ | — |
| **Ammonium hydroxide** | — | ○ |
| **Calcium hydroxide** | ◎ | — |
| **Sodium hydroxide [50%]** | ◎ | ○ |
| **Barium hydroxide** | ◎ | — |
| **Solvent naphtha** | ◎ | — |
| **Carbonic acid (Humid gas and aqueous solution)** | ◎ | — |
| **Tetrachloroethylene** | × | ◎ |
| **Tetrahydrofuran** | — | × |
| **Dodecylbenzene** | ◎ | — |
| **Trichloroethane** | △ | — |
| **Trichloroethylene** | ◎ | ○ |
| **Trichloroacetic acid** | — | — |
| **Toluene** | ◎ | ◎ |
| **Naphtha** | ○ | ○ |
| **Naphthenic acid** | ◎ | — |
| **Lactic acid** | ◎ | — |
| **Carbon disulfide** | ○ | ◎ |
| **Picric acid** | ◎ | — |
| **Pyridine** | × | × |
| **Phenol** | × | ○ |

| Chemical | Main body | Seal |
|---|---|---|
| | Stainless steel 316 | Special FKM |
| **Butyl phthalate** | × | — |
| **Butyl alcohol** | △ | — |
| **Hydrofluoric acid [50%]** | ◎ | — |
| **Furfurol** | × | × |
| **n-Propyl alcohol** | ◎ | — |
| **Propylene glycol** | ◎ | — |
| **Bromochloroethane** | — | × |
| **n-Hexane** | ○ | ◎ |
| **n-Hexyl alcohol** | ◎ | — |
| **n-Heptane** | ◎ | — |
| **Benzene** | × | × |
| **n-Pentane** | × | — |
| **Boric acid** | ◎ | — |
| **Gallic acid** | ◎ | — |
| **Formic aldehyde** | ◎ | × |
| **Methyl methacrylate** | × | × |
| **Methyl alcohol** | ◎ | ○ |
| **Methyl isobutyl ketone** | × | × |
| **Methyl ethyl ketone** | × | × |
| **Ethyleneglycol monomethyl ether** | × | — |
| **Monoethanolamine** | ◎ | — |
| **Morpholine** | ◎ | — |
| **Butyric acid** | ◎ | — |
| **Hydrogen sulfide (Humid gas and aqueous solution)** | ◎ | × |
| **Sulphuric acid [10%]** | ◎ | ◎ |
| **Ammonium sulfate** | ◎ | × |
| **Sodium bisulfate [10%]** | ◎ | — |
| **Iron(II) sulfate** | ○ | — |
| **Sodium sulfate** | ◎ | — |
| **Phosphoric acid [85%]** | ◎ | — |

**Note 1) [ ] denotes the concentration. Aqueous solutions without condensation notes are in a saturated state.**
**Note 2) The above data is based on a room temperature of 20°C. Note that you may obtain different figures, depending on temperature conditions.**
**Note 3) The above data shows compatibility guidelines based upon component parts. Therefore, it is no guarantee of product performance. In addition, using fluids other than those specified in the catalog are not covered by the product's warranty.**

How to Read the Table
◎: Completely unaffected or largely unaffected.
○: May be slightly affected, but, dependent upon condition, can sufficiently withstand.
△: Advisable to use as little as possible.
×: Not applicable, as substantially affected.
—: No data is available.

# Series KQG
# Specific Product Precautions

**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions and pages 3 to 11 for Actuator Precautions and Auto Switch Precautions.**

## Selection

### ⚠ Caution

**1. The pulling strength of polyurethane tube is as follows. The pulling load of the tube used for verifying the mounting of the tube within the fitting should be the values as shown or less in the table below. As reference, the thrust force occurring between the tube and the fitting at 0.8 MPa is shown on the table below.**

**Pulling Strength**

| Model | TU0425 | TU0604 TIUB07 | TU0805 | TU1065 TIUB11 | TU1208 TIUB13 |
|---|---|---|---|---|---|
| Without inner sleeve | 50 N | 80 N | 110 N | 140 N | 140 N |
| With inner sleeve | 160 N | 180 N | 250 N | 450 N | 500 N |

**Reference: Thrust Force Occurring at 0.8 MPa**

| Model | TU0425 | TU0604 TIUB07 | TU0805 | TU1065 TIUB11 | TU1208 TIUB13 |
|---|---|---|---|---|---|
| Load | 10 N | 25 N | 40 N | 65 N | 90 N |

**2. If using water, it is recommended to use an inner sleeve. (Tube may release due to pressure pulsation or water hammer effect.)**

**3. If using a fluoro-resin tube in an environment where the fluid temperature changes drastically, it is recommended to use an inner sleeve. Otherwise, air leakage may occur or the tube may release from fitting due to deformation of the tube.**

## Mounting

### ⚠ Caution

**1. The union elbow, union fee and union "Y" should be fixed through the mounting hole.**

Otherwise, air leakage or breaking can occur due to a pulling force or moment load created by the product's weight.

## Installation and Removal of Tubing

### ⚠ Caution

**1. Installation of tubing**

1) Grease is not used for the KQG series, therefore a greater insertion force is required when the tubing is installed. In particular, polyurethane tubing may fold when inserted due to its softness. Hold the end of the tubing, and insert it all the way in slowly and securely. Refer to dimension "M" in the dimension drawings for guidance on the insertion depth of tubing.

**2. Removal of tubing**

1) For tubing used at a high temperature or for an extended period of time, there is a possibility that it will not fit into a one-touch fitting again due to an enlarged O.D. Dispose of the tubing and replace it with a new one.

# Stainless Steel 316 Insert Fittings

## Series KFG



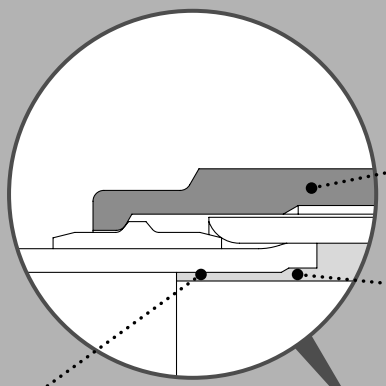
### Superior tube mounting

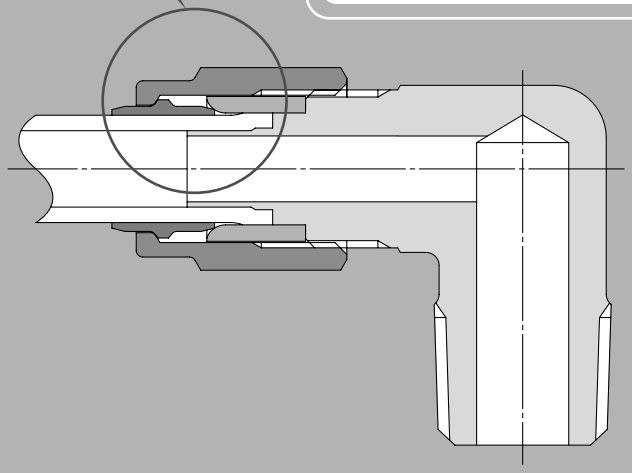
**Union nut**
- No need to remove nuts
- Tube can be installed as-is
- Light tightening, and adhesion prevention as well

**Tube holder**
- Prevents tubes from being disconnected during piping
- A strong feeling when inserting tube

### A reliable seal Holds the tube tightly

**Insert**
An insert mechanism can provide reliable retaining force on tubes made of a wide variety of materials





## Material: Stainless steel 316

- Max. operating temperature 150°C
- Applicable tubing material FEP, PFA, Modified PTFE, Nylon, Soft nylon, Polyurethane, Polyolefin, Soft polyolefin
- Can be used with steam.
- Grease-free

Certified to meet current Food Sanitation Law standards. (Component materials have met apparatuses and container-packages standards.)

## Male Connector: KFGH

| Applicable tubing size | | Connection thread | Model |
|---|---|---|---|
| O.D. | I.D. | | |
| ø4 | ø2.5 | R1/8 | KFGH0425-01S |
| | | R1/4 | KFGH0425-02S |
| ø6 | ø4 | R1/8 | KFGH0604-01S |
| | | R1/4 | KFGH0604-02S |
| ø8 | ø6 | R1/8 | KFGH0806-01S |
| | | R1/4 | KFGH0806-02S |
| | | R3/8 | KFGH0806-03S |
| ø10 | ø7.5 | R1/4 | KFGH1075-02S |
| | | R3/8 | KFGH1075-03S |
| | | R1/2 | KFGH1075-04S |
| ø12 | ø9 | R1/4 | KFGH1209-02S |
| | | R3/8 | KFGH1209-03S |
| | | R1/2 | KFGH1209-04S |

## Male Branch Tee: KFGT

| Applicable tubing size | | Connection thread | Model |
|---|---|---|---|
| O.D. | I.D. | | |
| ø4 | ø2.5 | R1/8 | KFGT0425-01S |
| | | R1/4 | KFGT0425-02S |
| ø6 | ø4 | R1/8 | KFGT0604-01S |
| | | R1/4 | KFGT0604-02S |
| ø8 | ø6 | R1/8 | KFGT0806-01S |
| | | R1/4 | KFGT0806-02S |
| | | R3/8 | KFGT0806-03S |
| ø10 | ø7.5 | R1/4 | KFGT1075-02S |
| | | R3/8 | KFGT1075-03S |
| | | R1/2 | KFGT1075-04S |
| ø12 | ø9 | R1/4 | KFGT1209-02S |
| | | R3/8 | KFGT1209-03S |
| | | R1/2 | KFGT1209-04S |

## Male Elbow: KFGL

| Applicable tubing size | | Connection thread | Model |
|---|---|---|---|
| O.D. | I.D. | | |
| ø4 | ø2.5 | R1/8 | KFGL0425-01S |
| | | R1/4 | KFGL0425-02S |
| ø6 | ø4 | R1/8 | KFGL0604-01S |
| | | R1/4 | KFGL0604-02S |
| ø8 | ø6 | R1/8 | KFGL0806-01S |
| | | R1/4 | KFGL0806-02S |
| | | R3/8 | KFGL0806-03S |
| ø10 | ø7.5 | R1/4 | KFGL1075-02S |
| | | R3/8 | KFGL1075-03S |
| | | R1/2 | KFGL1075-04S |
| ø12 | ø9 | R1/4 | KFGL1209-02S |
| | | R3/8 | KFGL1209-03S |
| | | R1/2 | KFGL1209-04S |

## Straight Union: KFGH

| Applicable tubing size | | Model |
|---|---|---|
| O.D. | I.D. | |
| ø4 | ø2.5 | KFGH0425-00 |
| ø6 | ø4 | KFGH0604-00 |
| ø8 | ø6 | KFGH0806-00 |
| ø10 | ø7.5 | KFGH1075-00 |
| ø12 | ø9 | KFGH1209-00 |

## Union Tee: KFGT

| Applicable tubing size | | Model |
|---|---|---|
| O.D. | I.D. | |
| ø4 | ø2.5 | KFGT0425-00 |
| ø6 | ø4 | KFGT0604-00 |
| ø8 | ø6 | KFGT0806-00 |
| ø10 | ø7.5 | KFGT1075-00 |
| ø12 | ø9 | KFGT1209-00 |

**Related Product**

### Stainless Steel 316 One-touch Fittings

***Series KQG***

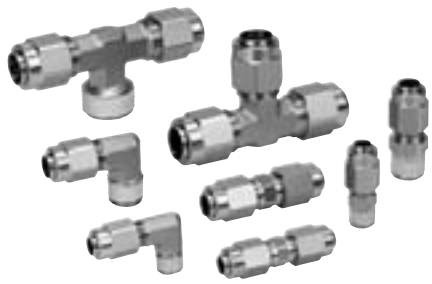
- Material: Metal parts/ Stainless steel 316
  Seal parts/Special FKM
- Operating fluid temperature: –5 to 150°C
- Grease-free

| Port size | Applicable tubing O.D. | | | | |
|---|---|---|---|---|---|
| | ø4 | ø6 | ø8 | ø10 | ø12 |
| M5 | ● | ● | | | |
| R1/8 | ● | ● | ● | | |
| R1/4 | | ● | ● | ● | |
| R3/8 | | | ● | ● | ● |
| R1/2 | | | | | ● |

# Stainless Steel 316
## Insert Fittings
# *Series KFG*

**Certified to meet current Food Sanitation Law standards.**

(Component materials have met apparatuses and container-packages standards.)



## Specifications

| | | |
|---|---|---|
| **Operating fluid** | | Air, Water Note 1), Steam Note 2) |
| **Operating pressure range** Note 3) | | –100 kPa to 1 MPa |
| **Proof pressure** | | 3 MPa |
| **Ambient and Operating fluid temperature** | | –5 to 150°C (No freezing) |
| **Lubricant** | | Grease-free specification |
| **Thread** | **Mounting section** | JIS B0203 (Taper thread for piping) |
| | **Nut section** | JIS B0205 (Metric fine thread) |
| **Seal on the threads** | | With sealant |

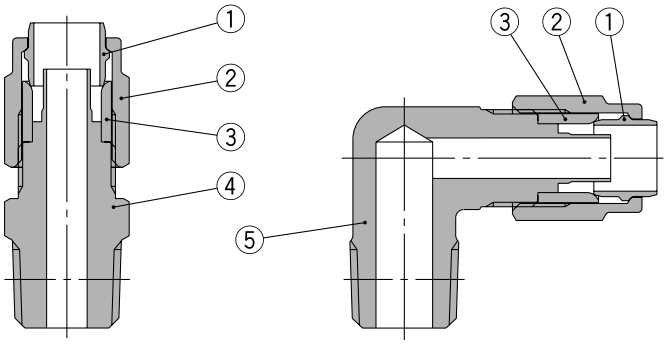
Note 1) The surge pressure must be under the maximum operating pressure.
Note 2) Please consult SMC for applicable tubing.
Note 3) Do not use the fittings with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

## Applicable Tubing

| Series | Tubing O.D. | Tubing O.D. x I.D. (mm) | | | | |
|---|---|---|---|---|---|---|
| | | ø4 x ø2.5 | ø6 x ø4 | ø8 x ø6 | ø10 x ø7.5 | ø12 x ø9 |
| **TH** | FEP | ● | ● | ● | ● | ● |
| **TL** | PFA | — | ● | ● | — | — |
| **TD** | Modified PTFE | ● | ● | ● | ● | ● |
| **T** | Nylon | ● | ● | ● | ● | ● |
| **TS** | Soft nylon Note 4) | ● | ● | ● | ● | ● |
| **TU** | Polyurethane | ● | ● | — | — | — |
| **TPH** | Polyolefin | ● | ● | ● | ● | ● |
| **TPS** | Soft polyolefin | ● | ● | — | — | — |

Note 4) Soft nylon tubing is not compatible with water.

## Construction




**Component Parts**

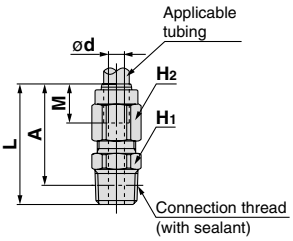
| No. | Description | Material | Note |
|---|---|---|---|
| **1** | **Sleeve** | Stainless steel 316 | |
| **2** | **Union nut** | | Silver plated inner surface |
| **3** | **Guide** | | Fluorine coating |
| **4** | **Male connector body** | | |
| **5** | **Male elbow body** | | |

## Dimensions

### Male Connector: KFGH

| Applicable tubing size | | Connection thread | Model | Width across flats | | L | M | ød | A* | Effective area Note) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| O.D. | I.D. | | | $H_1$ | $H_2$ | | | | | | |
| ø4 | ø2.5 | R1/8 | **KFGH0425-01S** | 10 | 10 | 32 | 11.5 | 1.5 | 28 | 1.6 | 16 |
| | | R1/4 | **KFGH0425-02S** | 14 | | 36 | | | 30 | | 25 |
| ø6 | ø4 | R1/8 | **KFGH0604-01S** | 10 | 12 | 32.7 | 11.2 | 3 | 28.7 | 6 | 19 |
| | | R1/4 | **KFGH0604-02S** | 14 | | 36.7 | | | 30.7 | | 29 |
| ø8 | ø6 | R1/8 | **KFGH0806-01S** | 12 | 14 | 33.7 | 12.2 | 5 | 29.7 | 17 | 24 |
| | | R1/4 | **KFGH0806-02S** | 14 | | 37.7 | | | 31.7 | | 32 |
| | | R3/8 | **KFGH0806-03S** | | | 38.7 | | | 32.4 | | 44 |
| ø10 | ø7.5 | R1/4 | **KFGH1075-02S** | 17 | 17 | 39.7 | 14.2 | 6.5 | 33.7 | 30 | 44 |
| | | R3/8 | **KFGH1075-03S** | | | 40.7 | | | 34.4 | | 52 |
| | | R1/2 | **KFGH1075-04S** | 22 | | 43.7 | | | 35.5 | | 75 |
| ø12 | ø9 | R1/4 | **KFGH1209-02S** | 17 | 19 | 39.7 | | 8 | 33.7 | 45 | 47 |
| | | R3/8 | **KFGH1209-03S** | | | 40.7 | | | 34.4 | | 55 |
| | | R1/2 | **KFGH1209-04S** | 22 | | 43.7 | | | 35.5 | | 78 |

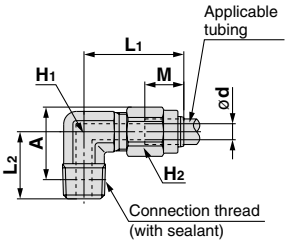
∗ Reference dimensions after installation of R thread
Note) Figures shown when using FEP tubing




### Male Elbow: KFGL

| Applicable tubing size | | Connection thread | Model | Width across flats | | $L_1$ | $L_2$ | M | ød | A* | Effective area Note) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O.D. | I.D. | | | $H_1$ | $H_2$ | | | | | | | |
| ø4 | ø2.5 | R1/8 | **KFGL0425-01S** | 10 | 10 | 29 | 17 | 11.5 | 1.5 | 19 | 1.6 | 22 |
| | | R1/4 | **KFGL0425-02S** | | | | 19 | | | | | 27 |
| ø6 | ø4 | R1/8 | **KFGL0604-01S** | | 12 | 29.7 | 17 | 11.2 | 3 | 20 | 6 | 25 |
| | | R1/4 | **KFGL0604-02S** | | | | 19 | | | | | 30 |
| ø8 | ø6 | R1/8 | **KFGL0806-01S** | 12 | 14 | 31.2 | 18 | 12.2 | 5 | 22.1 | 12 | 35 |
| | | R1/4 | **KFGL0806-02S** | | | | 21 | | | 23.1 | 16 | 38 |
| | | R3/8 | **KFGL0806-03S** | | | 33.2 | 20 | | | 21.8 | | 44 |
| ø10 | ø7.5 | R1/4 | **KFGL1075-02S** | 14 | 17 | 36.7 | 21 | 14.2 | 6.5 | 24.8 | 23 | 58 |
| | | R3/8 | **KFGL1075-03S** | | | | | | | 24.5 | 26 | 64 |
| | | R1/2 | **KFGL1075-04S** | | | 39.7 | 25 | | | 26.6 | | 77 |
| ø12 | ø9 | R1/4 | **KFGL1209-02S** | | 19 | 36.7 | 21 | | 8 | 26 | 27 | 61 |
| | | R3/8 | **KFGL1209-03S** | | | | | | | 25.6 | 35 | 64 |
| | | R1/2 | **KFGL1209-04S** | | | 39.7 | 25 | | | 27.7 | | 80 |

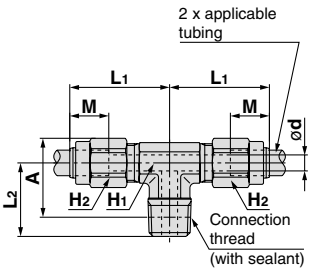
∗ Reference dimensions after installation of R thread
Note) Figures shown when using FEP tubing




### Male Branch Tee: KFGT

| Applicable tubing size | | Connection thread | Model | Width across flats | | $L_1$ | $L_2$ | M | ød | A* | Effective area Note) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O.D. | I.D. | | | $H_1$ | $H_2$ | | | | | | | |
| ø4 | ø2.5 | R1/8 | **KFGT0425-01S** | 10 | 10 | 29 | 17 | 11.5 | 1.5 | 19 | 3 | 35 |
| | | R1/4 | **KFGT0425-02S** | | | | 19 | | | | | 39 |
| ø6 | ø4 | R1/8 | **KFGT0604-01S** | | 12 | 29.7 | 17 | 11.2 | 3 | 20 | 10 | 41 |
| | | R1/4 | **KFGT0604-02S** | | | | 19 | | | | | 46 |
| ø8 | ø6 | R1/8 | **KFGT0806-01S** | 12 | 14 | 31.2 | 20 | 12.2 | 5 | 24.1 | 16 | 58 |
| | | R1/4 | **KFGT0806-02S** | | | | 23 | | | 25.1 | 25 | 60 |
| | | R3/8 | **KFGT0806-03S** | | | 33.2 | 22 | | | 23.8 | | 69 |
| ø10 | ø7.5 | R1/4 | **KFGT1075-02S** | 14 | 17 | 36.7 | 23 | 14.2 | 6.5 | 26.8 | 30 | 95 |
| | | R3/8 | **KFGT1075-03S** | | | | 22 | | | 25.5 | | 101 |
| | | R1/2 | **KFGT1075-04S** | | | 39.7 | 27 | | | 28.6 | 41 | 117 |
| ø12 | ø9 | R1/4 | **KFGT1209-02S** | | 19 | 36.7 | 24 | | 8 | 29 | 32 | 104 |
| | | R3/8 | **KFGT1209-03S** | | | | | | | 28.6 | 48 | 106 |
| | | R1/2 | **KFGT1209-04S** | | | 39.7 | 27 | | | 29.7 | | 124 |

∗ Reference dimensions after installation of R thread
Note) Figures shown when using FEP tubing

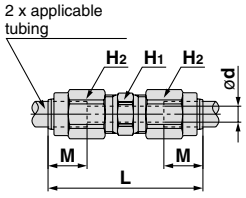


## Dimensions

### Straight Union: KFGH

| Applicable tubing size | | Model | Width across flats | | L | M | ød | Effective area Note) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| O.D. | I.D. | | H1 | H2 | | | | | |
| ø4 | ø2.5 | KFGH0425-00 | 8 | 10 | 43.9 | 11.5 | 1.5 | 1.6 | 20 |
| ø6 | ø4 | KFGH0604-00 | 10 | 12 | 45.4 | 11.2 | 3 | 6 | 28 |
| ø8 | ø6 | KFGH0806-00 | 12 | 14 | 48.4 | 12.2 | 5 | 17 | 39 |
| ø10 | ø7.5 | KFGH1075-00 | 17 | 17 | 52.4 | 14.2 | 6.5 | 30 | 63 |
| ø12 | ø9 | KFGH1209-00 | | 19 | 52.3 | | 8 | 45 | 73 |

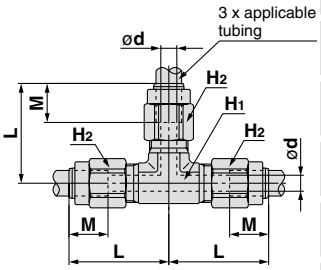
Note) Figures shown when using FEP tubing.




### Union Tee: KFGT

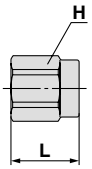
| Applicable tubing size | | Model | Width across flats | | L | M | ød | Effective area Note) (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| O.D. | I.D. | | H1 | H2 | | | | | |
| ø4 | ø2.5 | KFGT0425-00 | 10 | 10 | 29 | 11.5 | 1.5 | 1.6 | 42 |
| ø6 | ø4 | KFGT0604-00 | | 12 | 29.7 | 11.2 | 3 | 6 | 52 |
| ø8 | ø6 | KFGT0806-00 | 12 | 14 | 31.2 | 12.2 | 5 | 17 | 70 |
| ø10 | ø7.5 | KFGT1075-00 | 14 | 17 | 36.7 | 14.2 | 6.5 | 30 | 117 |
| ø12 | ø9 | KFGT1209-00 | | 19 | | | 8 | 45 | 128 |

Note) Figures shown when using FEP tubing.




### Union Nut: KFGN

| Applicable tubing O.D. | Model | Width across flats H | L | Mass (g) |
|---|---|---|---|---|
| ø4 | KFGN-04 | 10 | 15 | 5 |
| ø6 | KFGN-06 | 12 | | 6 |
| ø8 | KFGN-08 | 14 | 16 | 8 |
| ø10 | KFGN-10 | 17 | 18 | 11.5 |
| ø12 | KFGN-12 | 19 | | 13.5 |




### Sleeve: KFGS

| Applicable tubing O.D. | Model | øD | L | Mass (g) |
|---|---|---|---|---|
| ø4 | KFGS-04 | 6.5 | 8 | 0.7 |
| ø6 | KFGS-06 | 8.5 | | 0.9 |
| ø8 | KFGS-08 | 10.5 | | 1.2 |
| ø10 | KFGS-10 | 13 | 9 | 2.1 |
| ø12 | KFGS-12 | 15 | | 2.2 |

# Series KFG
# Applicable Fluid Compatibility List 1

## Compatibility Checklist for Used Materials and Fluids

| Chemical | Main body |
|---|---|
| | Stainless steel 316 |
| **Acrylonitrile** | ◎ |
| **Acetamide** | ○ |
| **Acetaldehyde** | ◎ |
| **Acetone** | ◎ |
| **Aniline** | ○ |
| **Amylene** | ◎ |
| **Sulphurous acid gas (Humid gas)** | ◎ |
| **Sodium bisulfite [50%]** | ◎ |
| **Allyl alcohol** | ◎ |
| **Benzoic acid** | ◎ |
| **Ammonia (Compressed gas)** | ◎ |
| **Isopropyl alcohol** | ○ |
| **Isophorone** | × |
| **Ethyl alcohol** | ◎ |
| **Ethyl ether** | ○ |
| **Ethylene** | ◎ |
| **Ethylene glycol** | × |
| **Ethylene diamine** | ◎ |
| **Ethylene dichloride** | ◎ |
| **Epichlorohydrine** | ◎ |
| **Methyl tertiary butyl ether** | — |
| **Allyl chloride** | × |
| **Ammonium chloride** | ◎ |
| **Calcium chloride** | ◎ |
| **Iron chloride (II) [5%]** | × |
| **Sodium chloride** | ○ |
| **Magnesium chloride** | ◎ |
| **Hydrochloric acid [5%]** | × |
| **Chlorine gas (Humid gas)** | × |
| **Carbitol** | × |
| **Formic acid [50%]** | ○ |
| **o-Xylene** | △ |
| **p-Xylene** | △ |

| Chemical | Main body |
|---|---|
| | Stainless steel 316 |
| **Citric acid** | ◎ |
| **Cumene** | × |
| **Glycerin** | ◎ |
| **Cresol** | ◎ |
| **Chromic acid [10%]** | ◎ |
| **Chlorosulfonic acid** | ○ |
| **Chlorofluorocarbon (CFC) 11** | — |
| **Chlorofluorocarbon (CFC) 113** | — |
| **Chlorofluorocarbon (CFC) 12** | ○ |
| **Chlorofluorocarbon (CFC) 13B1** | — |
| **Chlorofluorocarbon (CFC) 14** | — |
| **Chlorofluorocarbon (CFC) 22** | ○ |
| **Chlorobenzene** | × |
| **Chloroform (Trichloromethane)** | ○ |
| **Acetic acid** | ○ |
| **Amyl acetate** | ◎ |
| **Isopropyl acetate [20%]** | ◎ |
| **Ethyl acetate** | × |
| **Butyl acetate** | × |
| **Methyl acetate** | ◎ |
| **Calcium hypochlorite** | ◎ |
| **Sodium hypochlorite [5%]** | ◎ |
| **Potassium cyanide [50%]** | ◎ |
| **Copper cyanide** | ◎ |
| **Diisobutyl ketone** | ◎ |
| **Diisobutylene** | — |
| **Diethanolamine** | ◎ |
| **Diethylamine** | × |
| **Diethylene glycol** | ◎ |
| **Carbon tetrachloride** | ◎ |
| **Cyclohexanol** | × |
| **Cyclohexanone** | × |
| **Cyclohexane** | × |

**Note 1) [ ] denotes the concentration. Aqueous solutions without condensation notes are in a saturated state.**
**Note 2) The above data is based on a room temperature of 20°C. Note that you may obtain different figures, depending on temperature conditions.**
**Note 3) The above data shows compatibility guidelines based upon component parts. Therefore, it is no guarantee of product performance. In addition, using fluids other than those specified in the catalog are not covered by the product's warranty.**

How to Read the Table
◎: Completely unaffected or largely unaffected.
○: May be slightly affected, but, dependent upon condition, can sufficiently withstand.
△: Advisable to use as little as possible.
×: Not applicable, as substantially affected.
—: No data is available.

# Series KFG
# Applicable Fluid Compatibility List 2

## Compatibility Checklist for Used Materials and Fluids

| Chemical | Main body |
|---|---|
| | Stainless steel 316 |
| Dichloroethylene | — |
| Dichlorobenzene | — |
| Dichloromethane (Methylene chloride) | △ |
| Ethylene bromide | × |
| Potassium bromide [30%] | ◎ |
| Potassium dichromate [25%] | ◎ |
| Oxalic acid | ◎ |
| Bromine gas | × |
| Tartaric acid | ◎ |
| Nitric acid [65%] | ◎ |
| Ammonium nitrate | ◎ |
| Ammonium hydroxide | — |
| Calcium hydroxide | ◎ |
| Sodium hydroxide [50%] | ◎ |
| Barium hydroxide | ◎ |
| Solvent naphtha | ◎ |
| Carbonic acid (Humid gas and aqueous solution) | ◎ |
| Tetrachloroethylene | × |
| Tetrahydrofuran | — |
| Dodecylbenzene | ◎ |
| Trichloroethane | △ |
| Trichloroethylene | ◎ |
| Trichloroacetic acid | — |
| Toluene | ◎ |
| Naphtha | ○ |
| Naphthenic acid | ◎ |
| Lactic acid | ◎ |
| Carbon disulfide | ○ |
| Picric acid | ◎ |
| Pyridine | × |
| Phenol | × |

| Chemical | Main body |
|---|---|
| | Stainless steel 316 |
| Butyl phthalate | × |
| Butyl alcohol | △ |
| Hydrofluoric acid [50%] | ◎ |
| Furfurol | × |
| n-Propyl alcohol | ◎ |
| Propylene glycol | ◎ |
| Bromochloroethane | — |
| n-Hexane | ○ |
| n-Hexyl alcohol | ◎ |
| n-Heptane | ◎ |
| Benzene | × |
| n-Pentane | × |
| Boric acid | ◎ |
| Gallic acid | ◎ |
| Formic aldehyde | ◎ |
| Methyl methacrylate | × |
| Methyl alcohol | ◎ |
| Methyl isobutyl ketone | × |
| Methyl ethyl ketone | × |
| Ethyleneglycol monomethyl ether | × |
| Monoethanolamine | ◎ |
| Morpholine | ◎ |
| Butyric acid | ◎ |
| Hydrogen sulfide (Humid gas and aqueous solution) | ◎ |
| Sulphuric acid [10%] | ◎ |
| Ammonium sulfate | ◎ |
| Sodium bisulfate [10%] | ◎ |
| Iron sulfate (II) | ○ |
| Sodium sulfate | ◎ |
| Phosphoric acid [85%] | ◎ |

**Note 1) [ ] denotes the concentration. Aqueous solutions without condensation notes are in a saturated state.**
**Note 2) The above data is based on a room temperature of 20°C. Note that you may obtain different figures, depending on temperature conditions.**
**Note 3) The above data shows compatibility guidelines based upon component parts. Therefore, it is no guarantee of product performance. In addition, using fluids other than those specified in the catalog are not covered by the product's warranty.**

How to Read the Table
◎: Completely unaffected or largely unaffected.
○: May be slightly affected, but, dependent upon condition, can sufficiently withstand.
△: Advisable to use as little as possible.
×: Not applicable, as substantially affected.
—: No data is available.

# Series KFG
# Specific Product Precautions

**Be sure to read this before handling. Refer to front matters 58 and 59 for Safety Instructions and pages 13 to 16 for Fittings and Tubing Precautions.**

## Selection

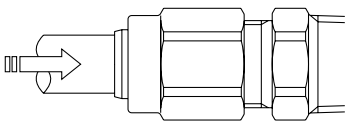
### ⚠ Caution

1. **Consult with SMC regarding fluids other than air, water and steam.**

## Installation and Removal of Tubing

### ⚠ Caution

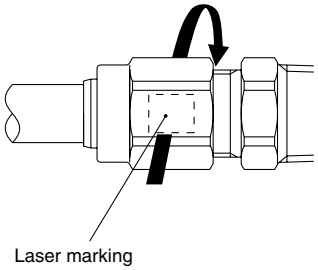
1. **Installation of tubing**
   1) Take a tube having no flaws on its periphery and cut it off at a right angle. When cutting the tubing, use tubing cutters TK-1, 2 or 3. Do not use pinchers, nippers or scissors, etc. The tubing might be cut diagonally or flattened, making installation impossible or causing problems such as disconnection and leakage.
   2) Without loosening the union nut, grab the tube and gently push it thoroughly into the fitting.
   3) After insertion, confirm that the tube will not disconnect.



   4) When the union is loose, tighten it additionally, temporarily by hand.
   5) After fixing the body with the tightening tool, tighten the union nut by 1.5 turns, using an appropriate wrench. Shown below is the equivalent tightening torque.

| Fitting size | Equivalent tightening torque N•m |
|---|---|
| **KFG□0425** | 7 to 9 |
| **KFG□0604** | 11 to 13 |
| **KFG□0806** | 13 to 15 |
| **KFG□1075** | 16 to 18 |
| **KFG□1209** | 16 to 18 |

When tightening the nut, the laser marking can be used for reference.




## Operating Environment

### ⚠ Warning

1. **Do not use in environments or locations where there is a danger of damage to fittings and tubing.**
   For fitting and tubing materials, refer to specifications and construction drawings, etc.

## Maintenance

### ⚠ Caution

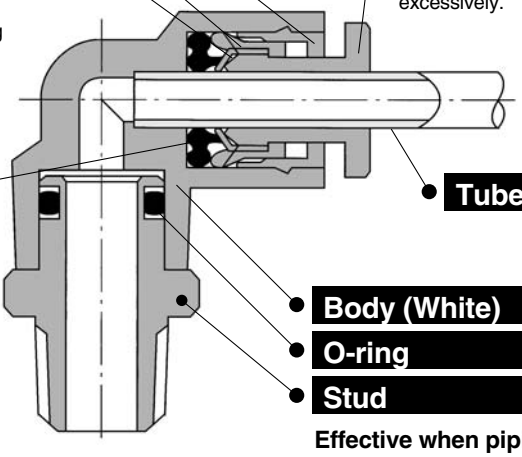
1. **Pre-maintenance inspection**
   When the product is removed, turn off the power, cut off the supply pressure, and confirm that fluid in the piping has been discharged.
2. **During regular maintenance, check for the following and replace any components as necessary.**
   a) Scratches, gouges, abrasion, corrosion
   b) Leakage
   c) Flattening or distortion of tubing
   d) Hardening, deterioration or softness of tubing
3. **Do not repair the fittings or patch the tubing for reuse.**
4. **Using this product for extended periods of time can result in leaks due to the material change. In such cases, tighten the union nut additionally.**
   A guide for the additional tightening is 1/6 to 1/4 turns. The limit for additional tightening is 1/2 turns.
   When there is a leak even after additional tightening, replace the sleeve and union nuts with new ones.
   Also, the outside diameter of tubes that have been used at high temperatures or for long periods of time will expand, and in some cases pipe fittings cannot be reattached. Tubes that cannot be attached should be discarded and replaced with new ones.
5. **Sleeve is not recyclable.**
   Replace it every time piping is performed.
   Body and union nut are recyclable. Refer to the table below for recyclable life.

**Recyclable Life for Body and Union Nut**

| Tubing | | Recyclable life |
|---|---|---|
| Series | Material | |
| TH<br>TL<br>TD | FEP<br>PFA<br>Modified PTFE | 5 times |
| T<br>TS<br>TU<br>TPH<br>TPS | Nylon<br>Soft nylon<br>Polyurethane<br>Polyolefin<br>Soft polyolefin | Twice |

# Stainless One-touch Fittings
# *Series KG*

RoHS



**Guide**

**Collet**

**Chuck**

**Suitable for use with nylon and urethane.**
**Large retaining force.**

Has large retaining force while holding force is increased by the collet.

**Release button (White)**

**Light force for removal**

When the fitting is removed from the tubing, the chuck and collet are released, thus preventing them from biting into the tube excessively.

**Seal**

**Can be used for a wide range of pressures from a low vacuum up to a pressure of 1 MPa**

The use of a special profile ensures sealing and reduces resistance when the tube is inserted.

**Tube**

**Body (White)**

**O-ring**

**Stud**

**Effective when piping in a confined space.**

The body and the threaded portion can rotate.

PAT.

**Stainless specifications applicable to corrosive environments**

**Stainless steel 303 adopted for metal elements**

**Suitable for use in CRT production lines where contact with copper must be avoided, food processing machines where water or salt water splashes and clean room where discoloration of copper material and corrosion must be avoided.**

## Applicable Tubing

| | |
|---|---|
| Tubing material | FEP, PFA, Nylon, Soft nylon,(1) Polyurethane |
| Tubing O.D. | ø4, ø6, ø8, ø10, ø12, ø16 |

Note 1) Soft nylon tubing is not compatible with water.

## Specifications

| | | |
|---|---|---|
| **Fluid** | | Air/Water (2) |
| **Operating pressure range** (3) | | –100kPa to 1MPa |
| **Proof pressure** | | 3MPa |
| **Ambient and fluid temperature** | | –5 to 60°C (Water: 0 to 40°C) (No freezing) |
| **Thread** | **Mounting section** | JIS B 0203 (Taper thread for piping)<br>JIS B 0205 (Metric coarse thread) |
| | **Nut section** | JIS B 0205 (Metric fine thread) |
| **Seal on the threads** | | With sealant or none (4) |

Note 2) The surge pressure must be under the maximum operating pressure.
Note 3) Do not use the fittings with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.
Note 4) Suffix "S" to the part number, if w/ seal is desired.

## Principal Parts Material

| | |
|---|---|
| Body | Stainless steel 303, PBT |
| Stud | Stainless steel 303 (Thread portion) |
| Chuck | Stainless steel 304 |
| Guide | Stainless steel 304, Stainless steel 303, PBT |
| Collet, Release button | POM |
| Seal, O-ring | NBR |
| Gasket | Stainless steel 304, NBR |

Made to Order **Made to Order**
(Refer to page 251 for details.)



SMC

## Model

**Hex. socket head male connector**
**KGS** P.242

Internal hex. allows thread connection by using an allen wrench for confined spaces.

**Universal male elbow**
**KGV** P.244

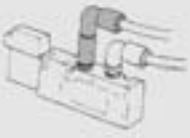
Universal male elbow allows thread connection by using a socket wrench for confined spaces.

**Bulkhead union**
**KGE** P.250

Use to connect tubes through a panel.

**Extended male elbow**
**KGW** P.246

Basically, it is used together with male elbow. Different point is that it is used for fittings to avoid from interfering with each other by making the pipin two-level.



**Bulkhead connector**
**KGE** P.250

Use to connect male thead and tube through a panel.

**Male connector**
**KGH** P.242

Use to pipe in the same direction from female thread. Most general style.

**Male elbow**
**KGL** P.243

Use to pipe at right angles to female thread. Most general style.

**Male branch tee**
**KGT** P.246

Use to branch line from female thread in both 90° directions.

**Female connector**
**KGF** P.243

Use to pipe from male thread such as pressure gauge.

**Union elbow**
**KGL** P.245

Use to connect tubes at right angles.

**Union tee**
**KGT** P.246

Use to connect tubes in both 90° directions.

**Straight union**
**KGH** P.243

Use to connect tubes in the same direction.

**Plug-in elbow**
**KGL** P.245

Use to change by 90° in a tube fetching direction from One-touch fittings.

**Different diameter tee**
**KGT** P.247

Use to connect tubes with size down in both 90° directions.

**Different diameter straight**
**KGH** P.243

Use to connect different sized tubes.

**Male delta union**
**KGD** P.247

Use to branch line in 90° direction from female thread.

**Male run tee**
**KGY** P.247

Use to branch line in the same direction from female thread and in 90° direction.

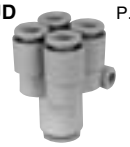
**Male branch connector**
**KGLU** P.244

Use to branch line at right angles to female thread.

**Delta union**
**KGD** P.248

Use to branch line in tripple 90° direction.

**Different dia. double union "Y"**
**KGUD** P.249



Use to four-branch line in the same direction.

**Branch union elbow**
**KGLU** P.245

Use to branch line at right angles.

**Delta branch**
**KGUD** P.248

Use to four-branch line in the same direction from female thread.

**Union "Y"**
**KGU** P.249

Use to branch line in the same direction.

## Model

**Different dia. union "Y"**

**KGU** P.249

Use to connect tubes in the same direction, reducing the size of tubes.

**Plug-in reducer**

**KGR** P.249

Use to change size of One-touch fittings.

**Tube cap**

**KGC** P.250

Use to plug unused tubing.

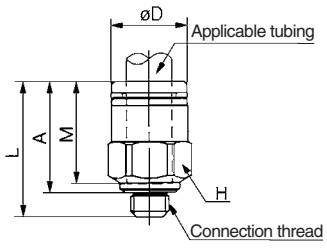
**Branch**

**KGU** P.248

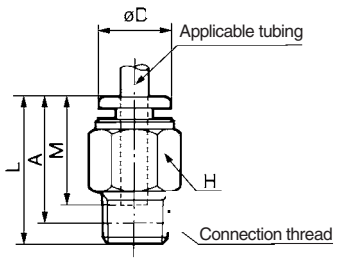
Use to branch line in the same direction from the female thread.

## Male Connector: KGH

**<M5>**




**<R>**

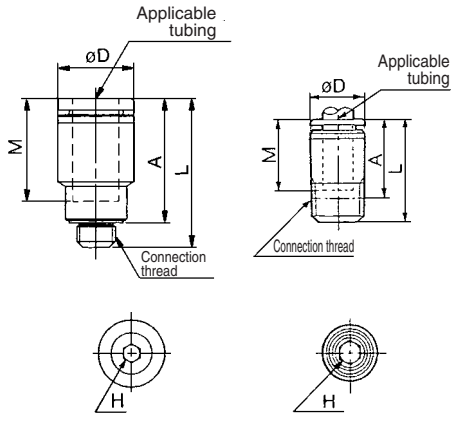



| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | øD (1) | L | A* | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | **KGH04-M5** | 8 | 8 | 17 | 13.9 | 12.7 | 4 | 4 | 2.4 |
| | 1/8 | **KGH04-01** | 10 | — | 21.1 | 18 | 16 | 5.6 | 4 | 9 |
| | 1/4 | **KGH04-02** | 14 | — | 19 | 13.5 | | | | 16 |
| 6 | M5 x 0.8 | **KGH06-M5** | 10 | 10 | 17.8 | 14.7 | 13.5 | 4 | 4 | 3.4 |
| | 1/8 | **KGH06-01** | 12 | — | 21.6 | 18.5 | 17 | 13.1 | 10.4 | 16 |
| | 1/4 | **KGH06-02** | 14 | — | 22.5 | 17 | | | | 14 |
| | 3/8 | **KGH06-03** | 17 | — | 20.9 | 15.5 | | | | 27 |
| 8 | 1/8 | **KGH08-01** | 14 | — | 27.1 | 24 | 18.5 | 26.1 | 18.0 | 21 |
| | 1/4 | **KGH08-02** | | | 26 | 20.5 | | | | 19 |
| | 3/8 | **KGH08-03** | 17 | — | 20.9 | 15.5 | | | | 26 |
| 10 | 1/8 | **KGH10-01** | 17 | — | 29.1 | 26 | 21 | 41.5 | 29.5 | 19 |
| | 1/4 | **KGH10-02** | | | 33 | 27.5 | | | | 30 |
| | 3/8 | **KGH10-03** | | | 27.9 | 22.5 | | | | 30 |
| | 1/2 | **KGH10-04** | 22 | — | 26.1 | 19 | | | | 53 |
| 12 | 1/4 | **KGH12-02** | 19 | — | 34 | 28.5 | 22 | 58.3 | 46.1 | 42 |
| | 3/8 | **KGH12-03** | | | 28.9 | 23.5 | | | | 34 |
| | 1/2 | **KGH12-04** | 22 | | 29.1 | 22 | | | | 51 |
| 16 | 3/8 | **KGH16-03** | 24 | — | 38.4 | 32 | 24 | 81 | (81) | 61 |
| | 1/2 | **KGH16-04** | | | 34.6 | 26.5 | | 113 | (96) | 47 |

* Reference dimensions after R thread installation.
Note 1) øD: Max. diameter
Note 2) ( ): Values for soft nylon.

## Hexagon Socket Head Male Connector: KGS

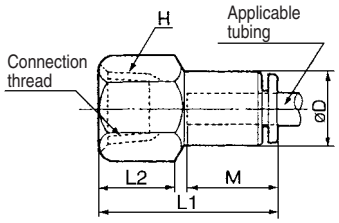
**<M5>** **<R>**




| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | øD Note) | L | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | **KGS04-M5** | 2.5 | 8 | 18.7 | 15.6 | 12.7 | 4 | 4 | 2.6 |
| | 1/8 | **KGS04-01** | 3 | 9.8 | 23 | 19 | 16 | 4.1 | 3.6 | 8 |
| 6 | M5 x 0.8 | **KGS06-M5** | 2.5 | 10 | 19.5 | 16.4 | 13.5 | 4 | 4 | 3.2 |
| | 1/8 | **KGS06-01** | 4 | 11.8 | 24 | 20 | 17 | 10.0 | 9.9 | 9 |
| | 1/4 | **KGS06-02** | | 13.8 | | 18 | | 10.7 | 10.0 | 15 |
| 8 | 1/8 | **KGS08-01** | 5 | 14 | 28 | 24 | 18.5 | 17.2 | 16.2 | 12 |
| | 1/4 | **KGS08-02** | 6 | | 25.5 | 19.5 | | 23.3 | | 11 |
| | 3/8 | **KGS08-03** | | 17 | 27.5 | 21.5 | | | | 24 |
| 10 | 1/8 | **KGS10-01** | 5 | 17 | 30 | 26 | 21 | 17.2 | 10.0 | 18 |
| | 1/4 | **KGS10-02** | 8 | | 27.5 | 21.5 | | 39.0 | 26.6 | 12 |
| | 3/8 | **KGS10-03** | | | | 21 | | | | 19 |
| | 1/2 | **KGS10-04** | | 22 | 28 | 20 | | | | 35 |
| 12 | 1/4 | **KGS12-02** | 8 | 19 | 33.5 | 27.5 | 22 | 46.0 | 44.5 | 23 |
| | 3/8 | **KGS12-03** | 10 | | 29 | 22.5 | | 60.0 | | 18 |
| | 1/2 | **KGS12-04** | | 22 | 28 | 20 | | | | 30 |

* Reference dimensions after R thread installation.
Note) øD: Max. diameter

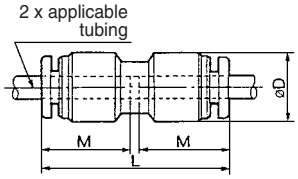
## Female Connector: KGF




| Applicable tubing O.D. (mm) | Connection thread Rc thread | Model | H (width across flats) | Note) øD | L1 | L2 | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KGF04-01 | 14 | 10 | 27 | 11 | 16 | 5.6 | 4 | 15 |
| | 1/4 | KGF04-02 | 17 | | 31 | 14 | | | | 23 |
| 6 | 1/8 | KGF06-01 | 14 | 12 | 27.5 | 11 | 17 | 13.1 | 10.4 | 15 |
| | 1/4 | KGF06-02 | 17 | | 31 | 13 | | | | 22 |
| | 3/8 | KGF06-03 | 19 | | 33.5 | 15 | | | | 25 |
| 8 | 1/8 | KGF08-01 | 14 | 14 | 29 | 11 | 18.5 | 26.1 | 18.0 | 17 |
| | 1/4 | KGF08-02 | 17 | | 32.5 | 13 | | | | 24 |
| | 3/8 | KGF08-03 | 19 | | 33.5 | 14 | | | | 24 |
| 10 | 1/4 | KGF10-02 | 17 | 17 | 34.5 | 14 | 21 | 41.5 | 29.5 | 27 |
| | 3/8 | KGF10-03 | 19 | | 36.5 | 15 | | | | 30 |
| 12 | 1/4 | KGF12-02 | 19 | 19 | 35 | 14 | 22 | 58.3 | 46.1 | 36 |
| | 3/8 | KGF12-03 | | | 37 | | | | | 31 |
| | 1/2 | KGF12-04 | 24 | | 41 | 18 | | | | 52 |

Note) øD: Max. diameter

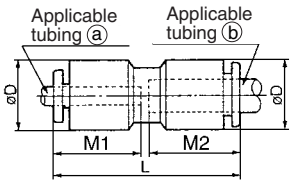
## Straight Union: KGH




| Applicable tubing O.D. (mm) | Model | Note) øD | L | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|
| 4 | KGH04-00 | 10.4 | 32.5 | 16 | 5.6 | 4 | 3 |
| 6 | KGH06-00 | 12.8 | 34.5 | 17 | 13.1 | 10.4 | 4 |
| 8 | KGH08-00 | 15.2 | 38.5 | 18.5 | 26.1 | 18.0 | 6 |
| 10 | KGH10-00 | 18.5 | 42.5 | 21 | 41.5 | 29.5 | 11 |
| 12 | KGH12-00 | 20.9 | 44.5 | 22 | 58.3 | 46.1 | 14 |

Note) øD: Max. diameter

## Different Diameter Straight: KGH

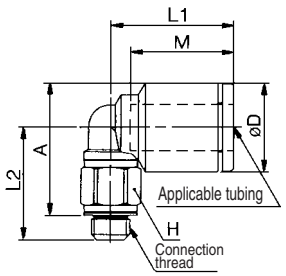



| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Model | Note) øD | L | M1 | M2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | KGH04-06 | 12.8 | 34.5 | 16 | 17 | 5.6 | 4 | 5 |
| 6 | 8 | KGH06-08 | 15.2 | 38.5 | 17 | 18.5 | 13.1 | 10.4 | 6 |
| 8 | 10 | KGH08-10 | 18.5 | 42 | 18.5 | 21 | 26.1 | 18.0 | 11 |
| 10 | 12 | KGH10-12 | 20.9 | 44.5 | 21 | 22 | 41.5 | 29.5 | 14 |

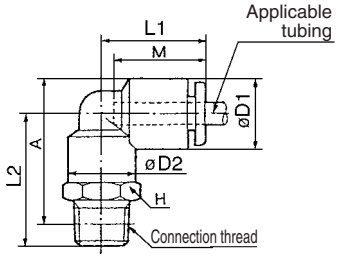
Note) øD: Max. diameter

## Male Elbow: KGL

**<M5>**




**<R>**

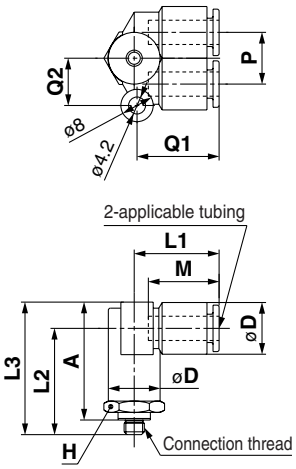



| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | (1) øD1 | øD2 | L1 | L2 | A* | M | Effective area (2) mm² Nylon | Effective area (2) mm² Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KGL04-M5 | 7 | 9.3 | – | 15.6 | 13.7 | 15.3 | 12.7 | 3.5 | 3.5 | 2.7 |
| | 1/8 | KGL04-01 | 10 | 10.4 | 10 | 18 | 21.1 | 23 | 16 | 4.2 | 4.2 | 10 |
| | 1/4 | KGL04-02 | 14 | | | | 25.5 | 25 | | | | 19 |
| 6 | M5 x 0.8 | KGL06-M5 | 7 | 11.6 | – | 16.1 | 14.7 | 17.4 | 13.5 | 3.5 | 3.5 | 3.1 |
| | 1/8 | KGL06-01 | 10 | 12.8 | 10 | 20 | 22.1 | 25.5 | 17 | 11.4 | 9.0 | 12 |
| | 1/4 | KGL06-02 | 14 | | | | 26.5 | 27.5 | | | | 10 |
| | 3/8 | KGL06-03 | 17 | | | | 27.9 | 29 | | | | 33 |
| 8 | 1/8 | KGL08-01 | 12 | 15.2 | 12 | 23 | 23.6 | 28 | 18.5 | 21.6 | 14.9 | 13 |
| | 1/4 | KGL08-02 | 14 | | | | 28 | 30 | | | | 21 |
| | 3/8 | KGL08-03 | 17 | | | | 29.4 | 31.5 | | | | 35 |
| 10 | 1/8 | KGL10-01 | 17 | 18.5 | 17 | 26.5 | 26.1 | 32 | 21 | 21.6 | 14.9 | 25 |
| | 1/4 | KGL10-02 | | | | | 29.5 | 33 | | 35.2 | 25.0 | 26 |
| | 3/8 | KGL10-03 | | | | | 30.9 | 34.5 | | | | 36 |
| | 1/2 | KGL10-04 | 22 | | | | 35.1 | 37 | | | | 63 |
| 12 | 1/4 | KGL12-02 | 17 | 20.9 | 17 | 28.5 | 30.5 | 35.5 | 22 | 50.2 | 39.7 | 28 |
| | 3/8 | KGL12-03 | | | | | 31.9 | 37 | | | | 38 |
| | 1/2 | KGL12-04 | 22 | | | | 36.1 | 39.5 | | | | 65 |
| 16 | 3/8 | KGL16-03 | 22 | 26.5 | 20.9 | 34 | 36.9 | 44.5 | 24 | 71 | (71) | 101 |
| | 1/2 | KGL16-04 | | | | | 40.1 | 46 | | 100 | (84) | 105 |

* Reference dimensions after R thread installation.
Note 1) øD1: Max. diameter
Note 2) ( ): Values for soft nylon.

## Male Branch Connector: KGLU

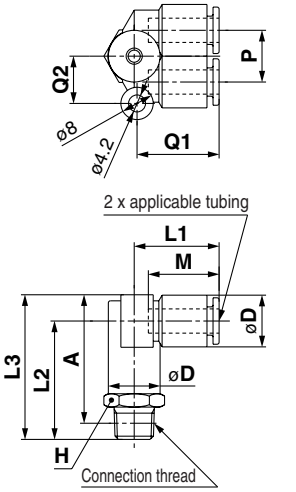
<M5>




| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | Note) øD | L1 | L2 | L3 | A* | M | P | Q1 | Q2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KGLU04-M5 | 11 | 10.4 | 18.5 | 24 | 29.5 | 25.5 | 16 | 10.4 | 18.5 | 10 | 4.3 | 4.1 | 10 |
| | 1/8 | KGLU04-01 | | | | 25.6 | 31.1 | 27.5 | | | | | 6.0 | 4.1 | 12 |
| | 1/4 | KGLU04-02 | 14 | | | 30 | 35.5 | 30 | | | | | | | 21 |
| 6 | M5 x 0.8 | KGLU06-M5 | 13 | 12.8 | 21 | 26.5 | 33 | 29.5 | 17 | 12.8 | 20.5 | 12 | 4.3 | 4.3 | 13 |
| | 1/8 | KGLU06-01 | | | | 28.6 | 35.1 | 32 | | | | | 13.9 | 11.0 | 15 |
| | 1/4 | KGLU06-02 | 14 | | | 32.5 | 39 | 33.5 | | | | | | | 22 |
| | 3/8 | KGLU06-03 | 17 | | | 33.9 | 40.4 | 35 | | | | | | | 35 |
| 8 | 1/8 | KGLU08-01 | 17 | 15.2 | 24 | 33.1 | 40.6 | 38 | 18.5 | 15.2 | 24.5 | 14 | 26.3 | 18.2 | 27 |
| | 1/4 | KGLU08-02 | | | | 36.5 | 44 | 38.5 | | | | | | | |
| | 3/8 | KGLU08-03 | | | | 36.9 | 44.4 | 39 | | | | | | | 35 |
| 10 | 1/4 | KGLU10-02 | 19 | 18.5 | 27 | 39.5 | 49 | 43.5 | 21 | 18.5 | 28 | 16 | 40.8 | 29.0 | 41 |
| | 3/8 | KGLU10-03 | | | | 39.9 | 49.4 | 44 | | | | | | | 42 |
| | 1/2 | KGLU10-04 | 22 | | | 43.6 | 53.1 | 45.5 | | | | | | | 64 |
| 12 | 1/4 | KGLU12-02 | 22 | 20.9 | 29 | 42 | 52.5 | 47 | 22 | 20.9 | 30 | 18 | 57.2 | 45.2 | 57 |
| | 3/8 | KGLU12-03 | | | | 42.4 | 52.9 | 47.5 | | | | | | | 58 |
| | 1/2 | KGLU12-04 | | | | 45.6 | 56.1 | 49 | | | | | | | 65 |

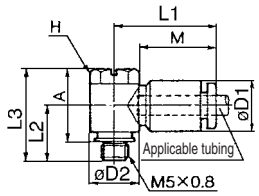
* Reference dimensions after R thread installation.
Note) øD: Max. diameter

<R>

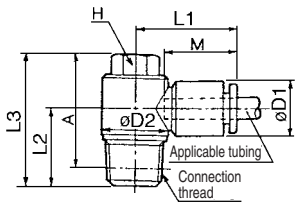



## Universal Male Elbow: KGV

<M5>



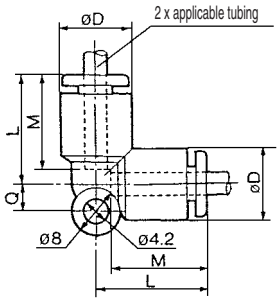

<R>




| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KGV04-M5 | 8 | 10.4 | 9.8 | 20.5 | 11 | 18.5 | 15 | 16 | 2.9 | 2.9 | 6 |
| | 1/8 | KGV04-01 | | | 13.4 | 22 | 13.6 | 25.6 | 22.5 | | | | 14 |
| 6 | M5 x 0.8 | KGV06-M5 | 8 | 12.8 | 9.8 | 23.5 | 12 | 18.5 | 15 | 17 | 3.8 | 3.8 | 7 |
| | 1/8 | KGV06-01 | | | 13.4 | 24 | 13.6 | 25.6 | 22.5 | | 7.5 | 5.9 | 15 |
| | 1/4 | KGV06-02 | 10 | | 15.3 | 23.5 | 18 | 30.5 | 25 | | | | 26 |
| 8 | 1/8 | KGV08-01 | 12 | 15.2 | 17.6 | 28.5 | 14.6 | 27.6 | 24.5 | 18.5 | 16 | 11.2 | 24 |
| | 1/4 | KGV08-02 | | | | | 18 | 31 | 25.5 | | | | 30 |
| | 3/8 | KGV08-03 | 14 | | 20.6 | 27.5 | 19.4 | 35.4 | 30 | | 20.5 | 14.3 | 47 |
| 10 | 1/4 | KGV10-02 | 14 | 18.5 | 20.6 | 31 | 19 | 35 | 29.5 | 21 | 27 | 20.3 | 40 |
| | 3/8 | KGV10-03 | | | | | 19.4 | 35.4 | 30 | | | | 49 |
| 12 | 3/8 | KGV12-03 | 17 | 20.9 | 25.2 | 34 | 20.9 | 37.4 | 32 | 22 | 39 | 30.8 | 63 |
| | 1/2 | KGV12-04 | | | | | 24.1 | 40.6 | 33.5 | | | | 80 |

* Reference dimensions after R thread installation.
Note) øD1: Max. diameter

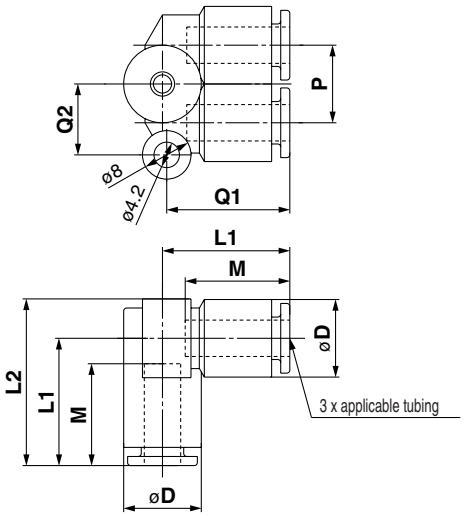
## Union Elbow: KGL




| Applicable tubing O.D. (mm) | Model | øD (1) | L | Q | M2 | Effective area (2) (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Nylon | Urethane | |
| **4** | **KGL04-00** | 10.4 | 18 | 4.5 | 16 | 4.2 | 4.2 | 6 |
| **6** | **KGL06-00** | 12.8 | 20 | 5.3 | 17 | 11.4 | 9.0 | 6 |
| **8** | **KGL08-00** | 15.2 | 23 | 6 | 18.5 | 21.6 | 14.9 | 10 |
| **10** | **KGL10-00** | 18.2 | 26.5 | 6.8 | 21 | 35.2 | 25.0 | 17 |
| **12** | **KGL12-00** | 20.9 | 28.5 | 7.5 | 22 | 50.2 | 39.7 | 21 |
| **16** | **KGL16-00** | 26.5 | 34 | 10 | 25 | 100 | (84) | 29 |

Note 1) øD: Max. diameter
Note 2) ( ): Values for soft nylon.

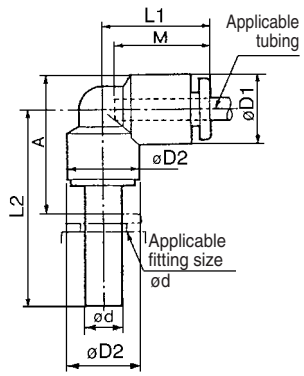
## Branch Union Elbow: KGLU




| Applicable tubing O.D. (mm) | Model | Note) øD | L1 | L2 | Q1 | Q2 | M | P | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Nylon | Urethane | |
| **4** | **KGLU04-00** | 10.4 | 18.5 | 24 | 18.5 | 10 | 16 | 10.4 | 6.0 | 4.1 | 6 |
| **6** | **KGLU06-00** | 12.8 | 21 | 27.5 | 20.5 | 12 | 17 | 12.8 | 13.9 | 11.0 | 8 |
| **8** | **KGLU08-00** | 15.2 | 24 | 32 | 24.5 | 14 | 18.5 | 15.2 | 26.3 | 18.2 | 15 |
| **10** | **KGLU10-00** | 18.5 | 27 | 36.5 | 28 | 16 | 21 | 18.5 | 40.8 | 29.0 | 25 |
| **12** | **KGLU12-00** | 20.9 | 29 | 40 | 30 | 18 | 22 | 20.9 | 57.2 | 45.2 | 32 |

Note) øD: Max. diameter

## Plug-in Elbow: KGL

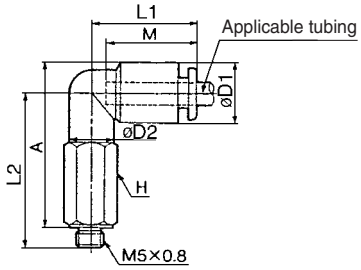



| Applicable tube O.D. mm | Applicable fitting size ød | Model | Note) øD1 | øD2 | L1 | L2 | A | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Nylon | Urethane | |
| **4** | 4 | **KGL04-99** | 10.4 | 8 | 18 | 25 | 14.5 | 16 | 4.2 | 4.2 | 8 |
| **6** | 6 | **KGL06-99** | 12.8 | 10 | 20 | 27.5 | 17 | 17 | 11.4 | 9.0 | 10 |
| **8** | 8 | **KGL08-99** | 15.2 | 12 | 22.5 | 31.5 | 21 | 18.5 | 21.6 | 14.9 | 14 |
| **10** | 10 | **KGL10-99** | 18.5 | 14 | 25.5 | 35.5 | 23.5 | 21 | 35.2 | 25.0 | 25 |
| **12** | 12 | **KGL12-99** | 20.9 | 16 | 27 | 37.5 | 26 | 22 | 50.2 | 39.7 | 28 |

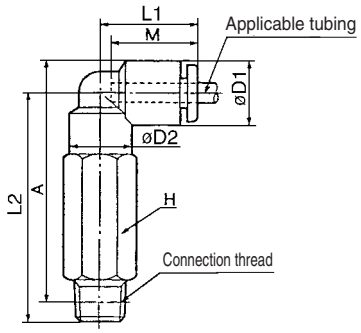
Note) øD1: Max. diameter

## Extended Male Elbow: KGW

**<M5>**

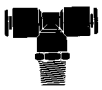



**<R>**



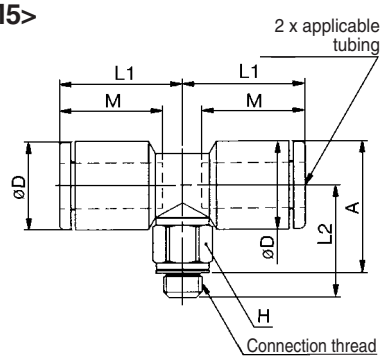

| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5x0.8 | KGW04-M5 | 8 | 10.4 | 8 | 18 | 30 | 32 | 16 | 3.0 | 3.0 | 11 |
| | 1/8 | KGW04-01 | 10 | | 10 | | 36.6 | 38.5 | | 4.0 | 4.0 | 23 |
| | 1/4 | KGW04-02 | 14 | | | | 43 | 42.5 | | | | 38 |
| 6 | M5x0.8 | KGW06-M5 | 8 | 12.8 | 8 | 20 | 30.5 | 33.5 | 17 | 3.0 | 3.0 | 11 |
| | 1/8 | KGW06-01 | 10 | | 10 | | 39.1 | 42.5 | | 10.9 | 8.6 | 26 |
| | 1/4 | KGW06-02 | 14 | | | | 45.5 | 46.5 | | | | 41 |
| | 3/8 | KGW06-03 | 17 | | | | 46.9 | 48 | | | | 67 |
| 8 | 1/8 | KGW08-01 | 12 | 15.2 | 12 | 23 | 42.6 | 47 | 18.5 | 20.5 | 14.2 | 30 |
| | 1/4 | KGW08-02 | 14 | | | | 49 | 51 | | | | 47 |
| | 3/8 | KGW08-03 | 17 | | | | 50.4 | 52.5 | | | | 74 |
| 10 | 1/4 | KGW10-02 | 17 | 18.5 | 17 | 26.5 | 56 | 59.5 | 21 | 33.5 | 23.8 | 66 |
| | 3/8 | KGW10-03 | | | | | 57.4 | 61 | | | | 76 |
| | 1/2 | KGW10-04 | 22 | | | | 64.1 | 66 | | | | 145 |
| 12 | 1/4 | KGW12-02 | 17 | 20.9 | 17 | 28.5 | 57 | 62 | 22 | 47.7 | 37.7 | 68 |
| | 3/8 | KGW12-03 | | | | | 58.4 | 63.5 | | | | 78 |
| | 1/2 | KGW12-04 | 22 | | | | 65.1 | 68.5 | | | | 147 |

∗ Reference dimensions after R thread installation.
Note) øD1: Max. diameter

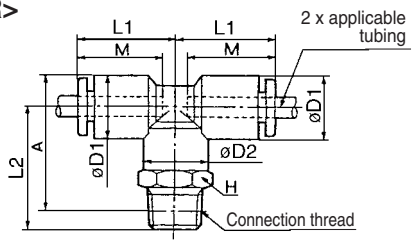


## Male Branch Tee: KGT

**<M5>**

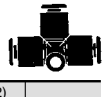



**<R>**

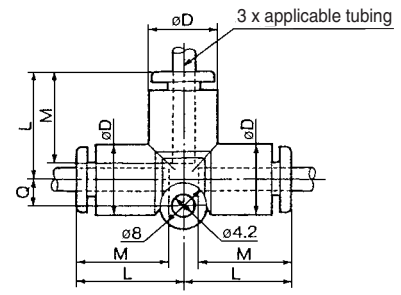



| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | (1) øD1 | øD2 | L1 | L2 | A* | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5x0.8 | KGT04-M5 | 7 | 9.3 | — | 15.6 | 13.7 | 15.3 | 12.7 | 4.3 | 4.3 | 3.5 |
| | 1/8 | KGT04-01 | 10 | 10.4 | 10 | 18 | 21.1 | 23 | 16 | 6.0 | 4.1 | 13 |
| | 1/4 | KGT04-02 | 14 | | | | 25.5 | 25 | | | | 19 |
| 6 | M5x0.8 | KGT06-M5 | 7 | 11.6 | — | 16.1 | 14.7 | 17.4 | 13.5 | 4.3 | 4.3 | 4.2 |
| | 1/8 | KGT06-01 | 10 | 12.8 | 10 | 20 | 22.1 | 25.5 | 17 | 13.9 | 11.0 | 12 |
| | 1/4 | KGT06-02 | 14 | | | | 26.5 | 27.5 | | | | 20 |
| | 3/8 | KGT06-03 | 17 | | | | 27.9 | 29 | | | | 34 |
| 8 | 1/8 | KGT08-01 | 12 | 15.2 | 12 | 23 | 23.6 | 28 | 18.5 | 26.3 | 18.2 | 14 |
| | 1/4 | KGT08-02 | 14 | | | | 28 | 30 | | | | 22 |
| | 3/8 | KGT08-03 | 17 | | | | 29.4 | 31.5 | | | | 36 |
| 10 | 1/8 | KGT10-01 | 17 | 18.5 | 17 | 26.5 | 26.1 | 32 | 21 | 40.8 | 29.0 | 31 |
| | 1/4 | KGT10-02 | | | | | 29.5 | 33 | | | | 29 |
| | 3/8 | KGT10-03 | | | | | 30.9 | 34.5 | | | | 39 |
| | 1/2 | KGT10-04 | 22 | | | | 35.1 | 37 | | | | 66 |
| 12 | 1/4 | KGT12-02 | 17 | 20.9 | 17 | 28.5 | 30.5 | 35.5 | 22 | 57.2 | 45.2 | 31 |
| | 3/8 | KGT12-03 | | | | | 31.9 | 37 | | | | 41 |
| | 1/2 | KGT12-04 | 22 | | | | 36.1 | 39.5 | | | | 68 |
| 16 | 3/8 | KGT16-03 | 22 | 26.5 | 20.9 | 34 | 36.9 | 44.5 | 25 | 71 | (71) | 112 |
| | 1/2 | KGT16-04 | | | | | 39.6 | 46 | | 100 | (100) | 116 |

∗ Reference dimensions after R thread installation.
Note 1) øD1: Max. diameter
Note 2) ( ): Values for soft nylon



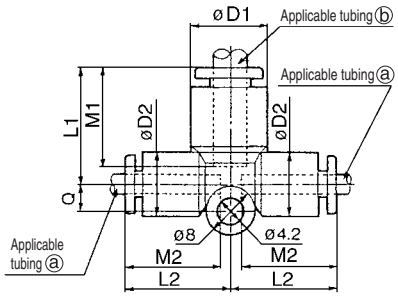
## Union Tee: KGT




| Applicable tubing O.D. (mm) | Model | (1) øD | L | Q | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| 4 | KGT04-00 | 10.4 | 18 | 4.5 | 16 | 6.4 | 4.4 | 7 |
| 6 | KGT06-00 | 12.8 | 20 | 5.3 | 17 | 13.4 | 10.6 | 10 |
| 8 | KGT08-00 | 15.2 | 23 | 6 | 18.5 | 25.6 | 17.7 | 15 |
| 10 | KGT10-00 | 18.5 | 26.5 | 6.8 | 21 | 40 | 28.4 | 25 |
| 12 | KGT12-00 | 20.9 | 28.5 | 7.5 | 22 | 57.4 | 45.4 | 29 |
| 16 | KGT16-00 | 26.5 | 34 | 10 | 25 | 100 | (84) | 40 |

Note 1) øD: Max. diameter
Note 2) ( ): Values for soft nylon.

## Different Diameter Tee: KGT

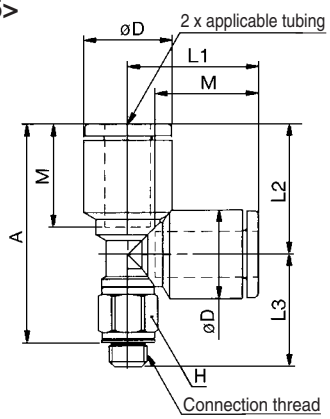



| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Model | Note) øD1 | øD2 | L1 | L2 | Q | M1 | M2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | KGT04-06 | 12.8 | 10.4 | 19.5 | 18 | 4.5 | 17 | 16 | 7.1 | 6.5 | 5 |
| 6 | 8 | KGT06-08 | 15.2 | 12.8 | 22.5 | 20 | 5.3 | 18.5 | 17 | 16.4 | 16.4 | 8 |
| 8 | 10 | KGT08-10 | 18.5 | 15.2 | 26.5 | 23 | 6 | 21 | 18.5 | 36 | 27.2 | 14 |
| 10 | 12 | KGT10-12 | 20.9 | 18.5 | 28.5 | 26.5 | 6.8 | 22 | 21 | 56 | 44.5 | 21 |

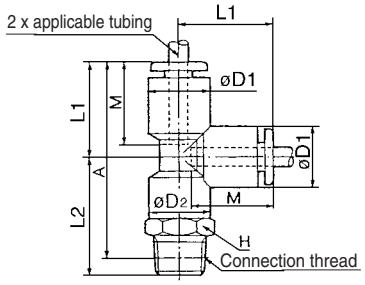
Note) øD1: Max. diameter

## Male Run Tee: KGY

**<M5>**




**<R>**

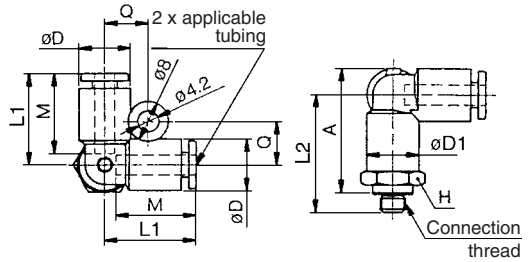



| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | (1) øD1 | øD2 | L1 | L2 | L3 | A* | M | Effective area(2) (mm²) Nylon | Effective area(2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KGY04-M5 | 7 | 9.3 | — | 15.6 | 13.7 | 13.7 | 25.4 | 12.7 | 4.6 | 4.6 | 3.5 |
| | 1/8 | KGY04-01 | 10 | 10.4 | 10 | 18 | 21.1 | — | 36 | 16 | 6.4 | 4.4 | 13 |
| | 1/4 | KGY04-02 | 14 | | | | 25.5 | | 38 | | | | 19 |
| 6 | M5 x 0.8 | KGY06-M5 | 7 | 11.6 | — | 17.1 | 14.7 | 17.1 | 28.7 | 13.5 | 4.6 | 4.6 | 4.3 |
| | 1/8 | KGY06-01 | 10 | 12.8 | 10 | 20 | 22.1 | | 39 | 17 | 13.4 | 10.6 | 12 |
| | 1/4 | KGY06-02 | 14 | | | | 26.5 | | 41 | | | | 20 |
| | 3/8 | KGY06-03 | 17 | | | | 27.9 | | 42.5 | | | | 34 |
| 8 | 1/8 | KGY08-01 | 12 | 15.2 | 12 | 23 | 23.6 | | 43.5 | 17 | 13.4 | 10.6 | 14 |
| | 1/4 | KGY08-02 | 14 | | | | 28 | | 45.5 | 18.5 | 25.6 | 17.7 | 22 |
| | 3/8 | KGY08-03 | 17 | | | | 29.4 | | 47 | | | | 36 |
| 10 | 1/8 | KGY10-01 | 17 | 18.5 | 17 | 26.5 | 26.1 | — | 49.5 | 21 | 40.0 | 28.4 | 31 |
| | 1/4 | KGY10-02 | | | | | 29.5 | | 50.5 | | | | 29 |
| | 3/8 | KGY10-03 | | | | | 30.9 | | 52 | | | | 39 |
| | 1/2 | KGY10-04 | 22 | | | | 35.1 | | 54.5 | | | | 66 |
| 12 | 1/4 | KGY12-02 | 17 | 20.9 | 17 | 28.5 | 30.5 | | 53.5 | 22 | 57.4 | 45.4 | 31 |
| | 3/8 | KGY12-03 | | | | | 31.9 | | 55 | | | | 41 |
| | 1/2 | KGY12-04 | 22 | | | | 36.1 | | 57.5 | | | | 68 |
| 16 | 3/8 | KGY16-03 | 22 | 26.5 | 20.9 | 34 | 36.9 | | 65.5 | 25 | 81 | (81) | 112 |
| | 1/2 | KGY16-04 | | | | | 40.1 | | 67 | | 113 | (113) | 116 |

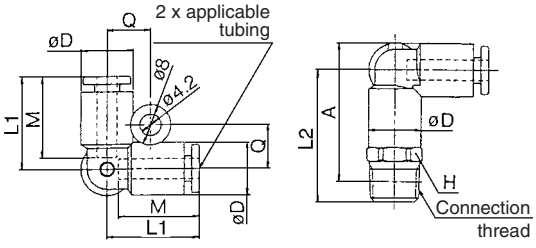
* Reference dimensions after R thread installation.
Note 1) øD1: Max. diameter
Note 2) ( ): Values for soft nylon.

## Male Delta Union: KGD

**<M5>**



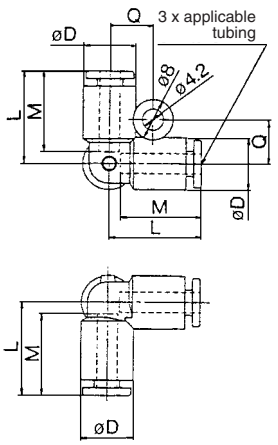

**<R>**




| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | Note) øD | L1 | L2 | A* | M | Q | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KGD04-M5 | 11 | 10.4 | 18.5 | 24 | 25.5 | 16 | 8.7 | 4.3 | 4.3 | 10 |
| | 1/8 | KGD04-01 | | | | 25.6 | 27.5 | | | 6.0 | 6.0 | 12 |
| | 1/4 | KGD04-02 | 14 | | | 30 | 30 | | | | | 21 |
| 6 | M5 x 0.8 | KGD06-M5 | 13 | 12.8 | 20.5 | 26 | 28.5 | 17 | 9.9 | 4.3 | 4.3 | 12 |
| | 1/8 | KGD06-01 | | | | 28.1 | 31.5 | | | 13.9 | 11.0 | 14 |
| | 1/4 | KGD06-02 | 14 | | | 32 | 33 | | | | | 21 |
| | 3/8 | KGD06-03 | 17 | | | 33.4 | 34.5 | | | | | 34 |
| 8 | 1/8 | KGD08-01 | 17 | 15.2 | 23.5 | 32.6 | 37 | 18.5 | 11.1 | 26.3 | 18.2 | 26 |
| | 1/4 | KGD08-02 | | | | 36 | 38 | | | | | |
| | 3/8 | KGD08-03 | | | | 36.4 | 38.5 | | | | | 35 |
| 10 | 1/4 | KGD10-02 | 19 | 18.5 | 26.5 | 39 | 43 | 21 | 12.8 | 40.8 | 29.0 | 39 |
| | 3/8 | KGD10-03 | | | | 39.4 | 43.5 | | | | | 40 |
| | 1/2 | KGD10-04 | 22 | | | 43.1 | 45 | | | | | 62 |
| 12 | 1/4 | KGD12-02 | 22 | 20.9 | 28.5 | 41.5 | 46.5 | 22 | 13.9 | 57.2 | 45.2 | 55 |
| | 3/8 | KGD12-03 | | | | 41.9 | 47 | | | | | 56 |
| | 1/2 | KGD12-04 | | | | 45.1 | 48.5 | | | | | 63 |

* Reference dimensions after R thread installation.
Note) øD: Max. diameter

## Delta Union: KGD

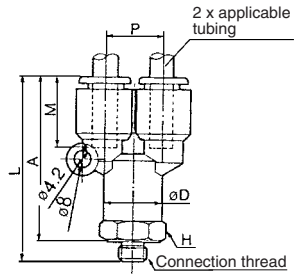



| Applicable tubing O.D. (mm) | Model | Note) øD | L | Q | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Nylon | Urethane | |
| **4** | **KGD04-00** | 10.4 | 18.5 | 8.7 | 16 | 6.0 | 4.1 | 5 |
| **6** | **KGD06-00** | 12.8 | 20.5 | 9.9 | 17 | 13.9 | 11.0 | 7 |
| **8** | **KGD08-00** | 15.2 | 23.5 | 11.1 | 18.5 | 26.3 | 18.2 | 11 |
| **10** | **KGD10-00** | 18.5 | 26.5 | 12.8 | 21 | 40.8 | 29.0 | 19 |
| **12** | **KGD12-00** | 20.9 | 28.5 | 13.9 | 22 | 57.2 | 45.2 | 24 |

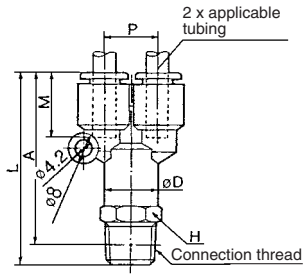
Note) øD: Max. diameter

## Branch "Y": KGU

**<M5>**



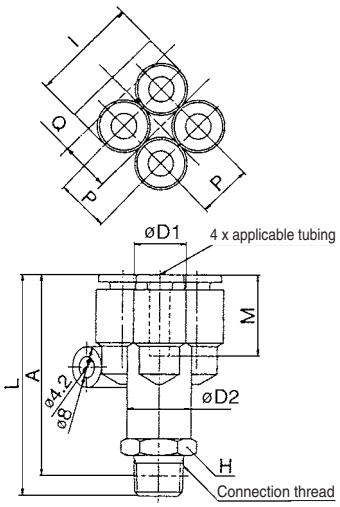

**<R>**




| Applicable tubing O.D. (mm) | Connection thread M R | Model | H (width across flats) | øD | L | P | A* | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Nylon | Urethane | |
| **4** | M5 x 0.8 | **KGU04-M5** | 11 | 10.4 | 39.5 | 10.4 | 36 | 16 | 2.2 | 2.2 | 4 |
| | 1/8 | **KGU04-01** | | | 41.1 | | 38 | | 4.2 | 4.2 | 11 |
| | 1/4 | **KGU04-02** | 14 | | 45.5 | | 40 | | | | 20 |
| **6** | M5 x 0.8 | **KGU06-M5** | 13 | 12.8 | 42.5 | 12.8 | 39 | 17 | 2.2 | 2.2 | 12 |
| | 1/8 | **KGU06-01** | | | 44.6 | | 41.5 | | 13.4 | 10.6 | 11 |
| | 1/4 | **KGU06-02** | 14 | | 48.5 | | 43 | | | | 21 |
| | 3/8 | **KGU06-03** | 17 | | 49.9 | | 44.5 | | | | 34 |
| **8** | 1/8 | **KGU08-01** | 17 | 15.2 | 51.6 | 15.2 | 48.5 | 18.5 | 25.6 | 17.7 | 15 |
| | 1/4 | **KGU08-02** | | | 55 | | 49.5 | | | | 23 |
| | 3/8 | **KGU08-03** | | | 55.4 | | 50 | | | | 35 |
| **10** | 1/4 | **KGU10-02** | 19 | 18.5 | 60.5 | 18.5 | 55 | 21 | 40 | 28.4 | 30 |
| | 3/8 | **KGU10-03** | | | 60.9 | | 55.5 | | | | 40 |
| | 1/2 | **KGU10-04** | 22 | | 64.1 | | 57 | | | | 65 |
| **12** | 1/4 | **KGU12-02** | 22 | 20.9 | 64 | 20.9 | 58.5 | 22 | 57.4 | 45.4 | 32 |
| | 3/8 | **KGU12-03** | | | 64.4 | | 59 | | | | 40 |
| | 1/2 | **KGU12-04** | | | 67.6 | | 60.5 | | | | 65 |

* Reference dimensions after R thread installation.
Note) øD: Max. diameter

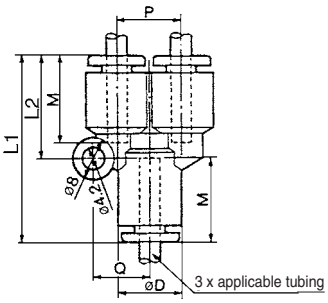
## Delta Branch: KGUD




| Applicable tubing O.D. (mm) | Connection thread R thread | Model | H (width across flats) | Note) øD1 | øD2 | L | I | A* | Q | M | P | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Nylon | Urethane | |
| **4** | 1/8 | **KGUD04-01** | 13 | 10.4 | 12.8 | 42.6 | 21 | 39.5 | 9.7 | 16 | 10.4 | 4.2 | 4.2 | 17 |
| | 1/4 | **KGUD04-02** | 14 | | | 46.5 | | 41 | | | | | | 25 |
| **6** | 1/8 | **KGUD06-01** | 17 | 12.8 | 15.2 | 49.6 | 26 | 46.5 | 11.7 | 17 | 12.8 | 13.4 | 10.6 | 29 |
| | 1/4 | **KGUD06-02** | | | | 53 | | 47.5 | | | | | | |

* Reference dimensions after R thread installation.
Note) øD1: Max. diameter

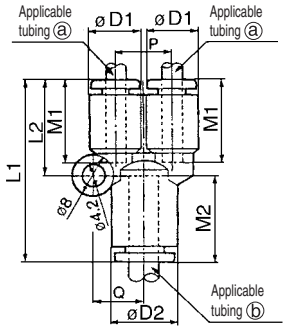
## Union "Y": KGU




| Applicable tubing O.D. (mm) | Model | Note) øD | L1 | L2 | P | Q | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | KGU04-00 | 10.4 | 34 | 18 | 10.4 | 9.7 | 16 | 4.2 | 4.2 | 7 |
| 6 | KGU06-00 | 12.8 | 37 | 20 | 12.8 | 11.7 | 17 | 13.4 | 10.6 | 9 |
| 8 | KGU08-00 | 15.2 | 42.5 | 24.5 | 15.2 | 13.7 | 18.5 | 25.6 | 17.7 | 11 |
| 10 | KGU10-00 | 18.5 | 48 | 27.5 | 18.5 | 16.1 | 21 | 40 | 28.4 | 16 |
| 12 | KGU12-00 | 20.9 | 51 | 30 | 20.9 | 18.1 | 22 | 57.4 | 45.4 | 23 |

Note) øD: Max. diameter

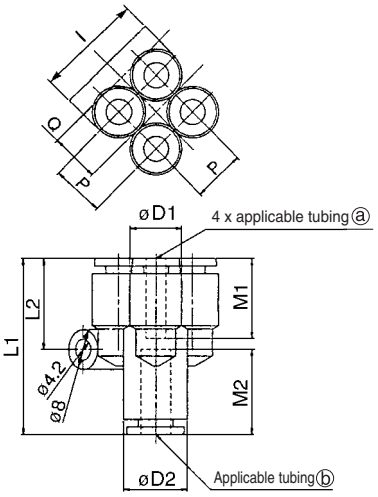
## Different Diameter Union "Y": KGU




| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Model | Note) øD1 | Note) øD2 | L1 | L2 | P | Q | M1 | M2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | KGU04-06 | 10.4 | 12.8 | 35 | 18 | 10.4 | 9.7 | 16 | 17 | 4.2 | 4.2 | 6 |
| 6 | 8 | KGU06-08 | 12.8 | 15.2 | 39.5 | 20 | 12.8 | 11.7 | 17 | 18.5 | 13.4 | 10.6 | 11 |
| 8 | 10 | KGU08-10 | 15.2 | 18.5 | 45 | 24.5 | 15.2 | 13.7 | 18.5 | 21 | 25.6 | 17.7 | 18 |
| 10 | 12 | KGU10-12 | 18.5 | 20.9 | 49 | 27.5 | 18.5 | 16.1 | 21 | 22 | 40 | 28.4 | 27 |

Note) øD1, øD2: Max. diameter

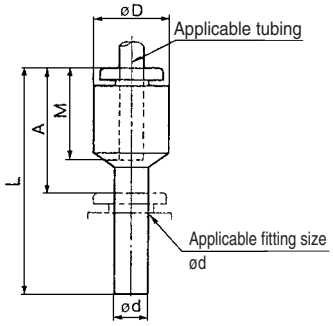
## Different Diameter Double Union "Y": KGUD




| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Model | Note) øD1 | Note) øD2 | L1 | L2 | P | I | Q | M1 | M2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | KGUD04-06 | 10.4 | 12.8 | 35.5 | 18.2 | 10.4 | 21 | 9.7 | 16 | 17 | 4.2 | 4.2 | 10 |
| 6 | 8 | KGUD06-08 | 12.8 | 15.2 | 40.5 | 20.3 | 12.8 | 26 | 11.7 | 17 | 18.5 | 13.4 | 10.6 | 17 |

Note) øD1, øD2: Max. diameter

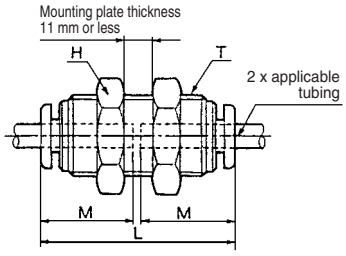
## Plug-in Reducer: KGR




| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | ø**D** (1) | L | A | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | KGR04-06 | 10.4 | 34.5 | 17.5 | 16 | 5.6 | 4 | 1.8 |
| | 8 | KGR04-08 | | 36.5 | 18 | | | | 2.0 |
| | 10 | KGR04-10 | 12.8 | 39.5 | 18.5 | | | | 3.3 |
| 6 | 4 | KGR06-04 | 12.8 | 37 | 21 | 17 | 4 | 4 | 3 |
| | 8 | KGR06-08 | | 37 | 18.5 | | 13.1 | 10.4 | 2.5 |
| | 10 | KGR06-10 | | 39.5 | | | | | 3 |
| | 12 | KGR06-12 | 15.2 | 42 | 20 | | | | 4.7 |
| 8 | 10 | KGR08-10 | 15.2 | 41 | 20 | 18.5 | 26.1 | 18.0 | 4.0 |
| | 12 | KGR08-12 | | 42 | | | | | 4.6 |
| 10 | 12 | KGR10-12 | 18.5 | 44.5 | 23 | 21 | 41.5 | 32.8 | 33 |
| | 16 | KGR10-16 | 20.9 | 50.5 | 25.5 | | | (29.5) | 42 |
| 12 | 16 | KGR12-16 | 20.9 | 50.5 | 25.5 | 22 | 58.3 | (46.1) | 37 |

Note 1) øD: Max. diameter
Note 2) ( ): Values for soft nylon.

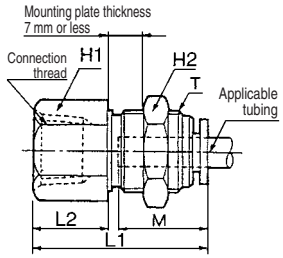
## Bulkhead Union: KGE




| Applicable tubing O.D. (mm) | Model | T(M) | H (width across flats) | L | Mounting hole | M | Effective area Note) (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Nylon | Urethane | |
| 4 | KGE04-00 | M12 x 1 | 14 | 32.5 | 13 | 16 | 5.6 | 4 | 26 |
| 6 | KGE06-00 | M14 x 1 | 17 | 34.5 | 15 | 17 | 13.1 | 10.4 | 33 |
| 8 | KGE08-00 | M16 x 1 | 19 | 38 | 17 | 18.5 | 26.1 | 18.0 | 52 |
| 10 | KGE10-00 | M20 x 1 | 24 | 42.5 | 21 | 21 | 41.5 | 29.5 | 70 |
| 12 | KGE12-00 | M22 x 1 | 27 | 44 | 23 | 22 | 58.3 | 46.1 | 90 |
| 16 | KGE16-00 | M28 x 1.5 | 32 | 51 | 29 | 25 | 113 | (96) | 115 |

Note) ( ): Values for soft nylon.

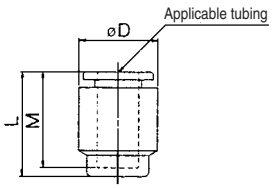
## Bulkhead Connector: KGE




| Applicable tubing O.D. (mm) | Connection thread Rc thread | Model | T(M) | H1 (width across flats) | H2 (width across flats) | L1 | L2 | Mounting hole | M | Effective area Note) (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Nylon | Urethane | |
| 4 | 1/8 | KGE04-01 | M12 x 1 | 14 | 14 | 27.5 | 11 | 13 | 16 | 5.6 | 4 | 16 |
| | 1/4 | KGE04-02 | | 17 | | 31 | 15 | | | | | 35 |
| 6 | 1/8 | KGE06-01 | M14 x 1 | 17 | 17 | 28 | 11 | 15 | 17 | 13.1 | 10.4 | 30 |
| | 1/4 | KGE06-02 | | | | 31.5 | 15 | | | | | |
| | 3/8 | KGE06-03 | | 19 | | 33.5 | 17 | | | | | 29 |
| 8 | 1/8 | KGE08-01 | M16 x 1 | 17 | 19 | 27.5 | 7.5 | 17 | 18.5 | 26.1 | 18.0 | 28 |
| | 1/4 | KGE08-02 | | | | 33 | 13 | | | | | 27 |
| | 3/8 | KGE08-03 | | 19 | | 35 | 15 | | | | | 48 |
| 10 | 1/4 | KGE10-02 | M20 x 1 | 22 | 24 | 34.5 | 12.5 | 21 | 21 | 41.5 | 29.5 | 53 |
| | 3/8 | KGE10-03 | | | | 36.5 | 14 | | | | | 67 |
| 12 | 3/8 | KGE12-03 | M22 x 1 | 24 | 27 | 37 | 14 | 23 | 22 | 58.3 | 46.1 | 92 |
| | 1/2 | KGE12-04 | | | | 41 | 18 | | | | | 59 |
| 16 | 3/8 | KGE16-03 | M28 x 1.5 | 30 | 32 | 40 | 14 | 29 | 25 | 96 | (96) | 127 |
| | 1/2 | KGE16-04 | | | | 44 | 18 | | | 113 | | 132 |

Note) ( ): Values for soft nylon.

## Tube Cap: KGC




| Applicable tubing O.D. (mm) | Model | Note) øD | L | M | Mass (g) |
|---|---|---|---|---|---|
| 4 | KGC04-00 | 10.4 | 17 | 16 | 3 |
| 6 | KGC06-00 | 12.8 | 18.5 | 17 | 3 |
| 8 | KGC08-00 | 15.2 | 20.5 | 18.5 | 4 |
| 10 | KGC10-00 | 18.5 | 23 | 21 | 6 |
| 12 | KGC12-00 | 20.9 | 24 | 22 | 8 |
| 16 | KGC16-00 | 26.5 | 28 | 25 | 13 |

Note) øD: Max. diameter

# Made to Order Specifications

Please contact SMC for detailed dimensions, specifications, and delivery.

## 1 Grease-free Specifications

| Symbol | Specifications |
|---|---|
| **X17** | Grease-free<br>Rubber material: NBR (With fluorine coating)<br>Release button color: Light blue |
| **X39** | Grease-free<br>Rubber material: NBR (With fluorine coating)<br>Release button color: Light blue<br>Clean (Copper-free, air blow, double package) |
| **X94** | Grease-free<br>Rubber material: FKM (With fluorine coating)<br>Release button color: Light blue |

Suffix "-X17" to the end of part number.
Example) **KGH06-01-X17**

## 2 Other Specifications

| Symbol | Specifications |
|---|---|
| **X12** | Lubricant: White Vaseline<br>Release button color: White |
| **X34** | Rubber material: FKM |

## Spare Parts

| Description | Part no. | Applicable thread | Applicable model |
|---|---|---|---|
| Gasket | M-5G2 | M5 | — |
| Pipe nut | KG04-P01 | — | KGE04-00, KGE04-01, KGE04-02 |
| | KG06-P01 | — | KGE06-00, KGE06-01<br>KGE06-02, KGE06-03 |
| | KG08-P01 | — | KGE08-00, KGE08-01<br>KGE08-02, KGE08-03 |
| | KG10-P01 | — | KGE10-00, KGE10-02, KGE10-03 |
| | KG12-P01 | — | KGE12-00, KGE12-03, KGE12-04 |
| | KG16-P01 | — | KGE16-00, KGE16-03, KGE16-04 |

# Miniature Fittings
# Stainless Steel 316
# *Series MS*

RoHS

## Applicable Tubes: ø3.2, ø4, ø6 Connection Thread: M5, R 1/8

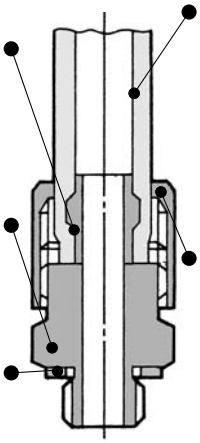
### For use in corrosive environments
### Stainless steel 316
### Compact piping space
Tube has a large retaining force. Hose nipple assures easy installation and removal.

### Line up various types
Possible for special tubing in the same direction. Accepts many styles of plastic tubing

### Hose nipple and hose elbow
Accepts nylon, soft nylon, and polyurethane tubing.

Made to Order
(Refer to page 266 for details.)

**Hose nipple**



**Barb**
Configuration for easy insertion into the tube
Holds the tube tightly.

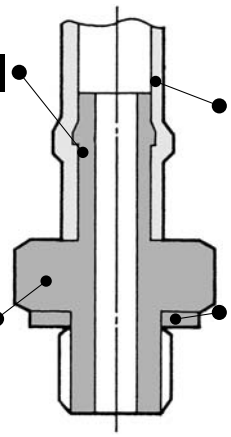
**Body**
Stainless steel 316

**Gasket**
Low tightening torque
Tight seal

**Tube**
Possible for combination use of nylon tubing and polyurethane tubing.

**Cap nut**
Certainly hold the tube by manual clamping
Easy removal of tube by loosening
Stailess steel 316

**Barb fitting**



**Barb**
Configuration for easy insertion into the tube
Holds the tube tightly.

**Body**
Stainless steel 316

**Tube**

**Gasket**
Low tightening torque
Tight seal

### Specifications

| Applicable tubing material | Nylon | Soft nylon (1) | | Polyurethane | FEP (2) | Modified PTFE (3) |
|---|---|---|---|---|---|---|
| Applicable tubing O.D./I.D. | ø4/ø2.5<br>ø6/ø4 | ø3.18/ø2.18 | ø4/ø2.5<br>ø6/ø4 | ø3.18/ø2<br>ø4/ø2.5<br>ø6/ø4 | ø4/ø2.5<br>ø6/ø4 | ø4/ø2.5<br>ø6/ø4 |
| Fluid | Air/Water (4) | | | | | |
| Maximum operating pressure (at 20°C) | 1.5MPa | 1MPa | | 0.8MPa | 1.5MPa | 1.4MPa |
| Ambient and fluid temperature | –5 to 60°C (Water: 0 to 60°C) (No freezing) | | | | | |
| Connection size | M5, R1/8 | | | | M5 | |
| Thread | JIS B0205 (Metric fine thread)<br>JIS B0203 (Taper thread for piping) | | | | JIS B0205,<br>(Metric fine thread) | |

Note 1) Soft nylon tubing is not compatible with water.
Note 2) , Note 3) Applicable only for hose nipple type
Note 4) Barb fitting, barb elbow and barb tee are not compatible with water.

### Principal Parts Material

| | | |
|---|---|---|
| Material | Body | Stainless steel 316 |
| | Gasket | PVC, Nylon 66, GF30% |

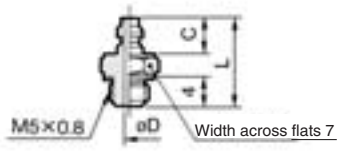
## Model

| Model | Description | Application | | Note |
|---|---|---|---|---|
| **MS-5AU-3** | **Barb fitting for soft tube**  P.264 | For soft nylon tube | | ø3.18/ø2.18 x M5 |
| | | For polyurethane tube | | ø3.18/ø2 x M5 |
| **MS-5AU-4** | | For soft nylon and polyurethane tube | | ø4/ø2.5 x M5 |
| **MS-5AU-6** | | | | ø6/ø4 x M5 |
| **MS-5ALHU-3** | **Barb elbow for soft tube**  P.264 | For soft nylon tube | Body rotates at 360° around the stud axis | ø3.18/ø2.18 x M5 |
| | | For polyurethane tube | | ø3.18/ø2 x M5 |
| **MS-5ALHU-4** | | For soft nylon and polyurethane tube | | ø4/ø2.5 x M5 |
| **MS-5ALHU-6** | | | | ø6/ø4 x M5 |
| **MS-5H-4** | **Hose nipple**  P.264 | For nylon, soft nylon, and polyurethane tube | | ø4/ø2.5 x M5 |
| **MS-5H-6** | | | | ø6/ø4 x M5 |
| **MS-5HLH-4** | **Hose elbow**  P.264 | • For nylon, soft nylon, and polyurethane tube<br>• Body rotates at 360° around the stud axis | | ø4/ø2.5 x M5 |
| **MS-5HLH-6** | | | | ø6/ø4 x M5 |

| Model | Description | Application | | Note |
|---|---|---|---|---|
| **MS-5UL** | **Universal elbow**  P.264 | Body rotates at 360° around the stud axis | | M5 female x M5 male |
| **MS-5UT** | **Universal tee**  P.264 | Body rotates at 360° around the stud axis | | M5 female x M5 female x M5 male |
| **MS-5B** | **Push**  P.265 | For reducing Rc 1/8 female to M5 female | | R 1/8 x M5 female |
| **MS-5P** | **Plug**  P.265 | Use to plug unused M5 port. | | |
| **MS-5J** | **Extention fitting**  P.265 | Solid piece moves fitting up from work piece | | M5 male x M5 female |
| **MS-5N** | **Nipple**  P.265 | Fitting to workpiece and fitting to fitting connection | | M5 male x M5 male |
| **MS-5UN** | **Universal nipple**  P.265 | Body rotates at 360° around the stud axis | | M5 male x M5 male |
| **MS-5ATHU-3** | **Barb tee for soft tube**  P.265 | For soft nylon tube | Body rotates at 360° around the stud axis | ø3.18/ø2.18 x M5 |
| | | polyurethane tube | | ø3.18/ø2 x M5 |
| **MS-5ATHU-4** | | For soft nylon and polyurethane tube | | ø4/ø2.5 x M5 |
| **MS-5ATHU-6** | | | | ø6/ø4 x M5 |

## Barb Fitting for Soft Tube: MS-5AU-3/4/6

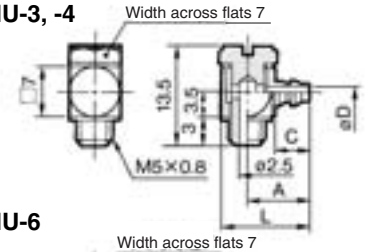
| Model | C | øD | L | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|
| **MS-5AU-3** | 4.5 | 1.6 | 11.5 | 1.7 | 1.4 |
| **MS-5AU-4** | 5 | 1.8 | 12 | 2.1 | 1.5 |
| **MS-5AU-6** | 7 | 2.5 | 14 | 4.0 | 1.7 |



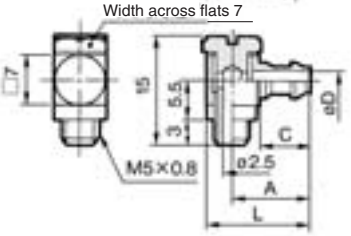

## Barb Elbow for Soft Nylon: MS-5ALHU-3/4/6

| Model | A | C | øD | L | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|
| **MS-5ALHU-3** | 8 | 4.5 | 1.6 | 11.8 | 1.1 | 3 |
| **MS-5ALHU-4** | 8.8 | 5 | 1.8 | 12.6 | 1.4 | 3.1 |
| **MS-5ALHU-6** | 10.8 | 7 | 2.5 | 14.6 | 2.4 | 3.7 |

**MS-5ALHU-3, -4**

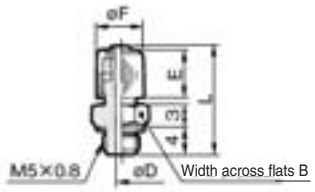



**MS-5ALHU-6**



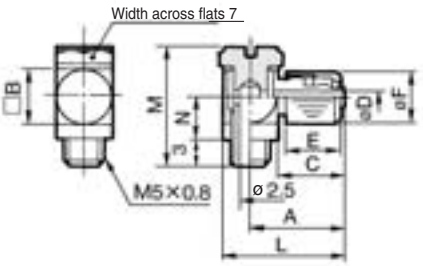

## Hose Nipple: MS-5H-4/6

| Model | B | øD | L | E | øF | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|
| **MS-5H-4** | 7 | 1.8 | 15.5 | 7 | 6.5 | 2.1 | 2.5 |
| **MS-5H-6** | 8 | 2.5 | 16.5 | 8 | 8.5 | 4.0 | 3.7 |

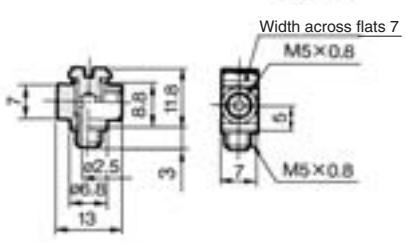



## Hose Elbow: MS-5HLH-4/6

| Model | A | □B | C | øD | E | øF | L | M | N | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MS-5HLH-4** | 12 | 7 | 8.5 | 1.8 | 7 | 6.5 | 15.8 | 15 | 5.5 | 1.4 | 4.2 |
| **MS-5HLH-6** | 13.5 | 8 | 9.5 | 2.5 | 8 | 8.5 | 17.8 | 16 | 6 | 2.5 | 6.2 |

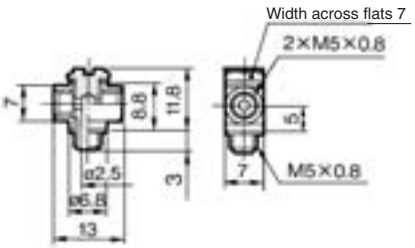



## Universal Elbow: MS-5UL



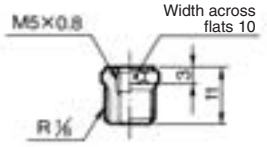

Effective area: 2.4 $mm^2$
Mass: 4.5 g

## Universal Tee: MS-5UT



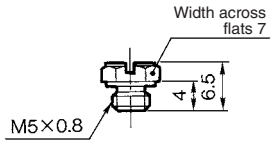

Effective area: 2.4 $mm^2$
Mass: 4.5 g

## Bushing: MS-5B



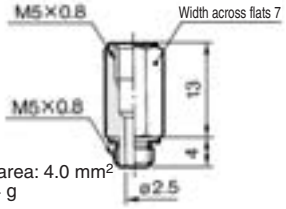

Effective area: 12 mm²
Mass: 5.5 g

## Plug: MS-5P



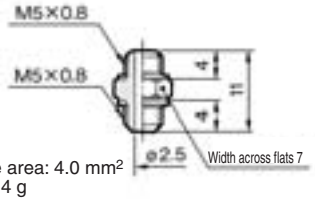

Mass: 1.2 g

## Extension Fitting: MS-5J




Effective area: 4.0 mm²
Mass: 3.4 g

## Nipple: MS-5N

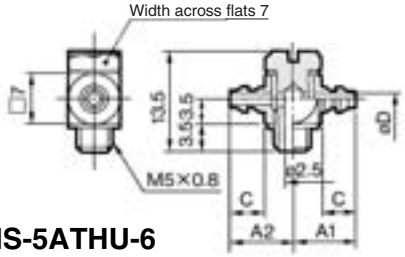



Effective area: 4.0 mm²
Mass: 1.4 g

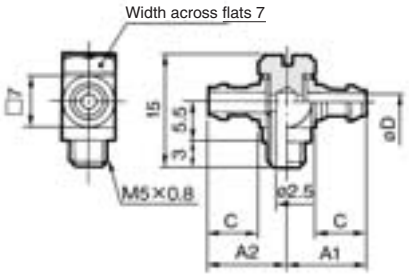
## Barb Tee for Soft Tube: MS-5ATHU-3/4/6

| Model | A1 | A2 | C | øD | Effective area (mm²) | Mass (g) |
|---|---|---|---|---|---|---|
| **MS-5ATHU-3** | 8 | 8.3 | 4.5 | 1.6 | 1.1 | 3.4 |
| **MS-5ATHU-4** | 8.8 | 8.8 | 5 | 1.8 | 1.4 | 3.6 |
| **MS-5ATHU-6** | 10.8 | 10.8 | 7 | 2.5 | 2.4 | 4.2 |

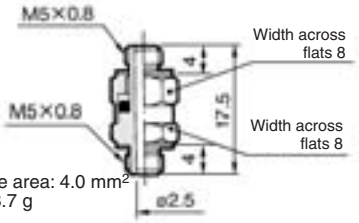
### MS-5ATHU-3, -4




### MS-5ATHU-6




## Universal Nipple: MS-5UN




Effective area: 4.0 mm²
Mass: 3.7 g

# Series MS
# Made to Order Specifications

Please contact SMC for detailed dimensions, specifications, and delivery.

## 1 Gasket Material Modification

| Symbol | Specifications | |
|---|---|---|
| **X83** | Gasket material: Stainless steel 304, NBR | |
| | Applicable thread | Gasket part no. |
| | M5 | M-5G2 |
| **X112** | Gasket material: Stainless steel 316, Special FKM | |
| | Applicable thread | Gasket part no. |
| | M5 | M-5G3 |

Suffix "-X83" to the end of part number.
Example) **MS-5AU-4-X83**

## Spare Parts

| Description | Part no. | Applicable thread | Material | Applicable model |
|---|---|---|---|---|
| Gasket | M-5G1 | M5 | PVC | — |
| | M-5G2 | | Stainless steel 304, NBR | — |
| | M-5G3 | | Stainless steel 316, Special FKM | — |
| | M-5GH | | Nylon 66, GF30% | MS-5ALHU-6<br>MS-5HLH-4<br>MS-5HLH-6<br>MS-5ATHU-6 |
| Cap nut | MS-5-4-P01 | — | Stainless steel 316 | MS-5H-4<br>MS-5HL-4<br>MS-5HLH-4 |
| | MS-5-6-P02 | — | Stainless steel 316 | MS-5H-6<br>MS-5HL-6<br>MS-5HLH-6 |

## ⚠Precautions

**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions and pages 13 to 16 for Fittings and Tubing Precautions.**

### Tightening of M5 Thread

#### ⚠Caution

**1.** Tighten by hand, and give it an additional rotation with a wrench.
Please check the number of tightening revolutions using the table below. If tightened excessively, thread portion may be damaged and gasket may be deformed. This will cause air leakage. On the contrary, if tightened insufficiently, thread may loosen causing air leakage.

| Thread | Model | Number of tightening rotations |
|---|---|---|
| M5 | MS-5AU-□ | Approx. 1/6 to 1/4 rotation Note) |
| | MS-5H-□ | |
| | MS-5P | |
| | MS-5J | |
| | MS-5N | |
| | MS-5UN | |
| | MS-5ALHU-6 | Approx. 1/2 rotation Note) |
| | MS-5HLH-□ | |
| | MS-5ATHU-6 | |
| | MS-5ALHU-3, 4 | |
| | MS-5UL | |
| | MS-5UT | |
| | MS-5ATHU-3, 4 | |

Note) As a guideline, the tightening torque should be 1 to 1.5 N·m.

### Use of Tube with Hose Nipple

#### ⚠Caution

**1.** Cut the tube perpendicularly to the tube axis to a little longer length than required (use tube cutter "TK-1", "TK-2" or "TK-3").
**2.** Pass the tube through the cap nut.
**3.** Push the tube until it comes to the end of the barb portion, or it may cause air leakage or hose releasing.
**4.** Tighten the cap nut firmly by hand on the fitting.

### Use of Tube with Barb Fitting

#### ⚠Caution

**1.** Cut the tube perpendicularly to the tube axis to a little longer length than required (use tube cutter "TK-1", "TK-2" or "TK-3").
**2.** Push the tube until it comes to the end of the barb portion, or it may cause air leakage or release hose.

# S Couplers

## *Series* KKA

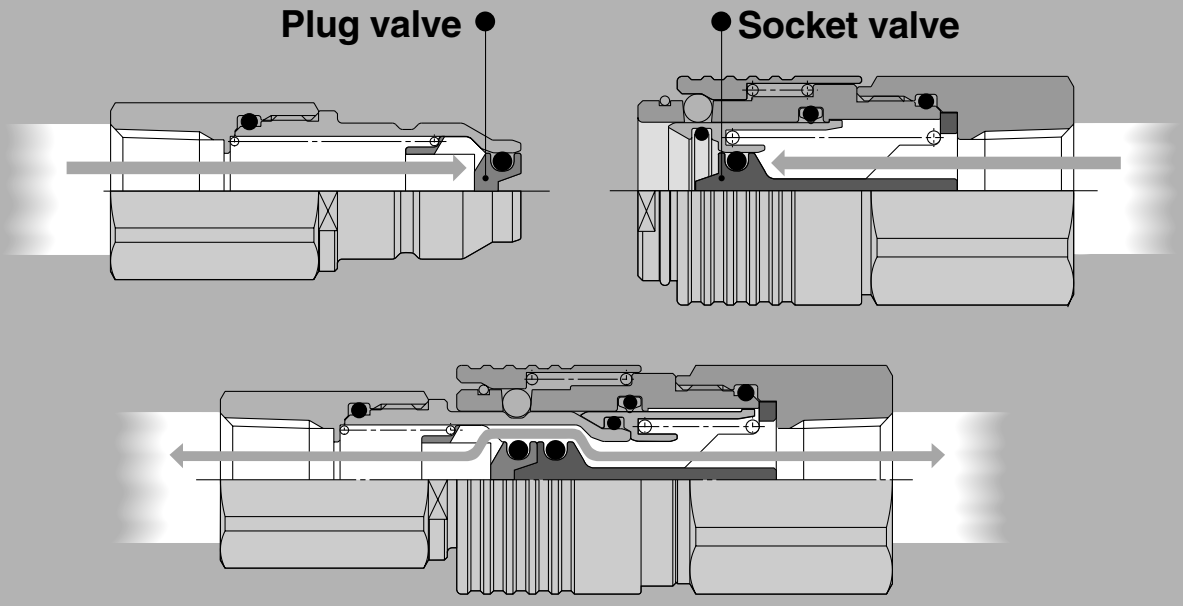
### Stainless steel type



- **Body material: Stainless steel 304**
  **Seal material: Fluororubber (Special FKM)**

- **Both plug and socket have an integral check valve.**
  Available with and without check valves depending on the operating conditions.

- **Reduces liquid dripping when the plug and socket are uncoupled.**
  Liquid dripping: 0.02 to 0.77 $cm^3$ at each removal
  Aeration: 0.1 to 2.7 $cm^3$ at each removal




- **Non-greased specification (standard)**
  Allows smooth installation and removal even without grease
  • O-ring: Fluorine coated
  • Sliding parts of plug and socket: Fluorine coated is used.

- **Fluid: Water, Air**

- **Operating temperature range: –5 to 150°C**
  Note) This product should not be used with steam.

## Plug (P)

### Male thread type

With check valve

Without check valve

| Body size | Port size | Part no. | |
|---|---|---|---|
| | | With check valve | Without check valve |
| 1/8 | R 1/8 | KKA3P-01M | KKA3P-01M-1 |
| | R 1/4 | -02M | -02M-1 |
| | R 3/8 | -03M | -03M-1 |
| 1/4 | R 1/4 | KKA4P-02M | KKA4P-02M-1 |
| | R 3/8 | -03M | -03M-1 |
| | R 1/2 | -04M | -04M-1 |
| 1/2 | R 3/8 | KKA6P-03M | KKA6P-03M-1 |
| | R 1/2 | -04M | -04M-1 |
| | R 3/4 | -06M | -06M-1 |
| 3/4 | R 1/2 | KKA7P-04M | — |
| | R 3/4 | -06M | — |
| | R 1 | -10M | — |
| 1 | R 3/4 | KKA8P-06M | — |
| | R 1 | -10M | — |
| | R 1 1/4 | -12M | — |
| 1 1/4 | R 1 | KKA9P-10M | — |
| | R 1 1/4 | -12M | — |
| | R 1 1/2 | -14M | — |

### Female thread type

With check valve

Without check valve

| Body size | Port size | Part no. | |
|---|---|---|---|
| | | With check valve | Without check valve |
| 1/8 | Rc 1/8 | KKA3P-01F | KKA3P-01F-1 |
| | Rc 1/4 | -02F | -02F-1 |
| | Rc 3/8 | -03F | -03F-1 |
| 1/4 | Rc 1/4 | KKA4P-02F | KKA4P-02F-1 |
| | Rc 3/8 | -03F | -03F-1 |
| | Rc 1/2 | -04F | -04F-1 |
| 1/2 | Rc 3/8 | KKA6P-03F | KKA6P-03F-1 |
| | Rc 1/2 | -04F | -04F-1 |
| | Rc 3/4 | -06F | -06F-1 |
| 3/4 | Rc 1/2 | KKA7P-04F | — |
| | Rc 3/4 | -06F | — |
| | Rc 1 | -10F | — |
| 1 | Rc 3/4 | KKA8P-06F | — |
| | Rc 1 | -10F | — |
| | Rc 1 1/4 | -12F | — |
| 1 1/4 | Rc 1 | KKA9P-10F | — |
| | Rc 1 1/4 | -12F | — |
| | Rc 1 1/2 | -14F | — |

## Socket (S)

### Male thread type

| Body size | Port size | Part no. | |
|---|---|---|---|
| | | With check valve | Without check valve |
| 1/8 | R 1/8 | KKA3S-01M | KKA3S-01M-1 |
| | R 1/4 | -02M | -02M-1 |
| | R 3/8 | -03M | -03M-1 |
| 1/4 | R 1/4 | KKA4S-02M | KKA4S-02M-1 |
| | R 3/8 | -03M | -03M-1 |
| | R 1/2 | -04M | -04M-1 |
| 1/2 | R 3/8 | KKA6S-03M | KKA6S-03M-1 |
| | R 1/2 | -04M | -04M-1 |
| | R 3/4 | -06M | -06M-1 |
| 3/4 | R 1/2 | KKA7S-04M | — |
| | R 3/4 | -06M | — |
| | R 1 | -10M | — |
| 1 | R 3/4 | KKA8S-06M | — |
| | R 1 | -10M | — |
| | R 1 1/4 | -12M | — |
| 1 1/4 | R 1 | KKA9S-10M | — |
| | R 1 1/4 | -12M | — |
| | R 1 1/2 | -14M | — |

### Female thread type

| Body size | Port size | Part no. | |
|---|---|---|---|
| | | With check valve | Without check valve |
| 1/8 | Rc 1/8 | KKA3S-01F | KKA3S-01F-1 |
| | Rc 1/4 | -02F | -02F-1 |
| | Rc 3/8 | -03F | -03F-1 |
| 1/4 | Rc 1/4 | KKA4S-02F | KKA4S-02F-1 |
| | Rc 3/8 | -03F | -03F-1 |
| | Rc 1/2 | -04F | -04F-1 |
| 1/2 | Rc 3/8 | KKA6S-03F | KKA6S-03F-1 |
| | Rc 1/2 | -04F | -04F-1 |
| | Rc 3/4 | -06F | -06F-1 |
| 3/4 | Rc 1/2 | KKA7S-04F | — |
| | Rc 3/4 | -06F | — |
| | Rc 1 | -10F | — |
| 1 | Rc 3/4 | KKA8S-06F | — |
| | Rc 1 | -10F | — |
| | Rc 1 1/4 | -12F | — |
| 1 1/4 | Rc 1 | KKA9S-10F | — |
| | Rc 1 1/4 | -12F | — |
| | Rc 1 1/2 | -14F | — |

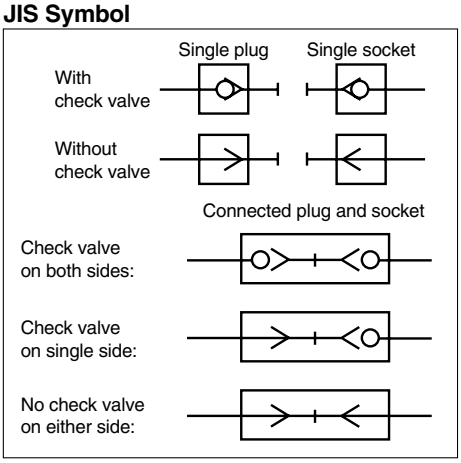
# S Couplers

RoHS

# Series KKA

## Stainless steel type

### JIS Symbol




### Characteristics with check valve on both sides

| Body size | Liquid dripping cm³ at each removal | Aeration cm³ at each removal |
|---|---|---|
| KKA3 | 0.02 | 0.1 |
| KKA4 | 0.04 | 0.1 |
| KKA6 | 0.06 | 0.2 |
| KKA7 | 0.14 | 0.5 |
| KKA8 | 0.27 | 0.9 |
| KKA9 | 0.77 | 2.7 |

**Liquid dripping:**
Volume of water leakage at the time when the plug and socket are uncoupled.

**Aeration:**
Volume of external air entrained when the plug and socket are connected.

## Specifications

| | |
|---|---|
| **Fluid** | Water, Air |
| **Operating pressure range** Note 1) | KKA3: –100 kPa to 1 MPa<br>KKA4/6/7/8/9: 0 to 1 MPa |
| **Proof pressure** | 10 MPa |
| **Ambient and fluid temperature** | –5 to 150°C (No freezing)<br>Note) This product should not be used with steam. |
| **Non-greased specification** | No grease is used.<br>(Rubber, Metal sliding parts: Fluorine coated) |
| **Material** | Metal part: Stainless steel 304, Rubber material: Fluororubber (Special FKM) |
| **Seal** | With male thread sealant |

Note 1) Do not use the S couplers with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

## Performance

| | |
|---|---|
| **Plug and socket connection** | One-touch connection and release |
| **Check valve** | Check valve on both sides, Without check valve |

Note) Series KKA cannot be connected with Series KK or Series KKH.

## Effective Area

| Built-in check valve | Plug | Socket | Effective area mm² |
|---|---|---|---|
| Plug: With check valve<br>Socket: With check valve | **KKA3P-01F** | **KKA3S-01F** | 17.4 |
| | **KKA4P-02F** | **KKA4S-02F** | 26.4 |
| | **KKA6P-04F** | **KKA6S-04F** | 54.2 |
| | **KKA7P-06F** | **KKA7S-06F** | 99.6 |
| | **KKA8P-10F** | **KKA8S-10F** | 168.3 |
| | **KKA9P-12F** | **KKA9S-12F** | 332.1 |
| Plug: Without check valve<br>Socket: With check valve | **KKA3P-01M-1** | **KKA3S-01M** | 18.5 |
| | **KKA4P-02M-1** | **KKA4S-02M** | 31.8 |
| | **KKA6P-04M-1** | **KKA6S-04M** | 55.3 |
| Plug: Without check valve<br>Socket: Without check valve | **KKA3P-01M-1** | **KKA3S-01M-1** | 22.6 |
| | **KKA4P-02M-1** | **KKA4S-02M-1** | 40.2 |
| | **KKA6P-04M-1** | **KKA6S-04M-1** | 76.0 |

## How to Order

**KKA** [4] [P] – [02] [M] [ ]

**Body size**

| | |
|---|---|
| **3** | 1/8 |
| **4** | 1/4 |
| **6** | 1/2 |
| **7** | 3/4 |
| **8** | 1 |
| **9** | 1 1/4 |

**Socket/Plug designation**

| | |
|---|---|
| **P** | Plug |
| **S** | Socket |

**Port size**

| Symbol | Thread size |
|---|---|
| **01** | R, Rc 1/8 |
| **02** | R, Rc 1/4 |
| **03** | R, Rc 3/8 |
| **04** | R, Rc 1/2 |
| **06** | R, Rc 3/4 |
| **10** | R, Rc 1 |
| **12** | R, Rc 1 1/4 |
| **14** | R, Rc 1 1/2 |

**Connection type**

| Symbol | Type |
|---|---|
| **M** | Male thread (with sealant) |
| **F** | Female thread |

**Built-in check valve**

| | |
|---|---|
| Nil | With check valve |
| **-1** | Without check valve |

Note) KKA7/8/9 is not available without a check valve. Contact us when such a type is needed.

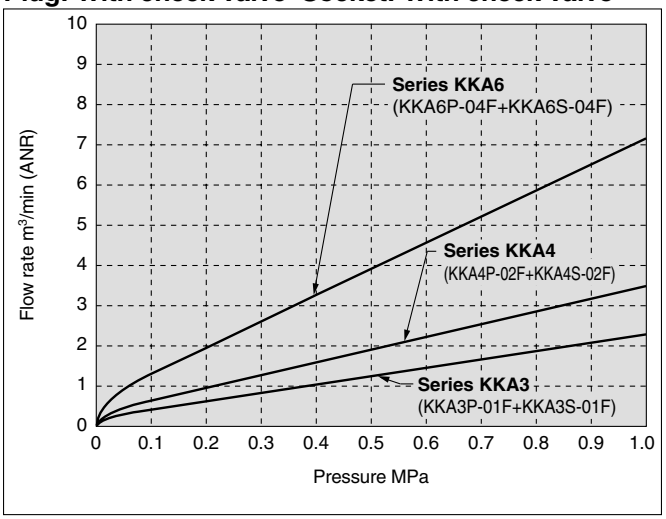
| | Plug | Socket | Availability |
|---|---|---|---|
| Built-in check valve | Yes | Yes | ○ |
| | No | Yes | ○ |
| | No | No | ○ |
| | Yes | No | × |

Note) A plug with check valve should be used in combination with a socket with check valve.
If a socket without check valve is used, the check valve of the plug will not open.

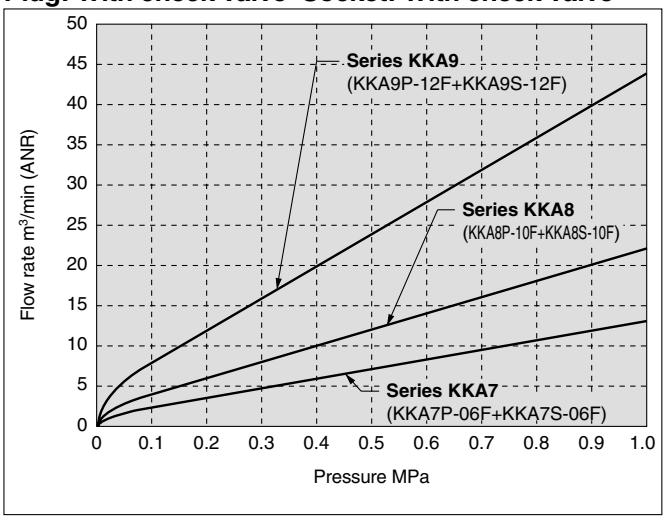
## Flow Characteristics

Air

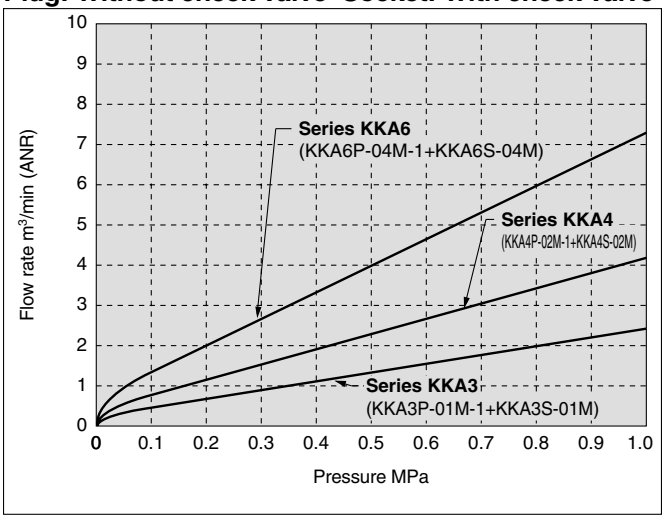
**Plug: With check valve Socket: With check valve**



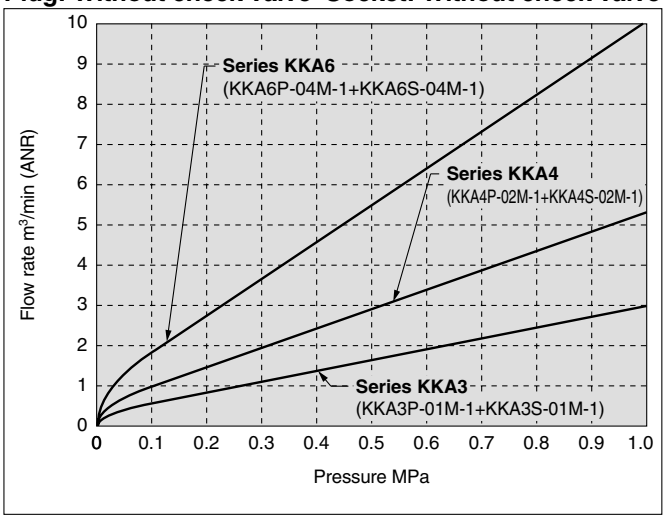

**Plug: With check valve Socket: With check valve**




**Plug: Without check valve Socket: With check valve**



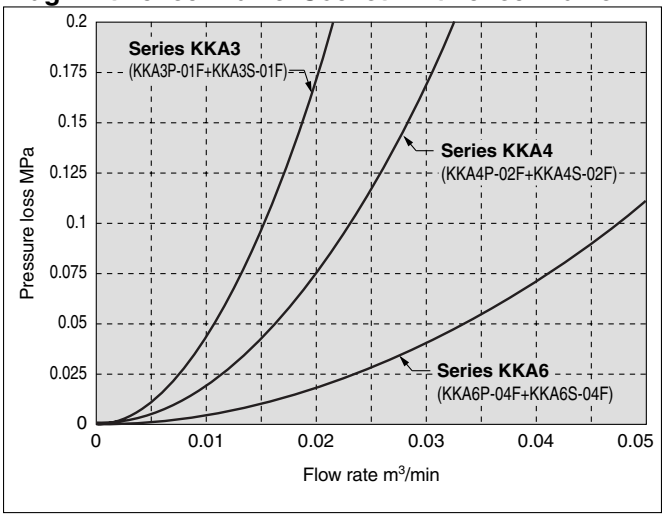

**Plug: Without check valve Socket: Without check valve**



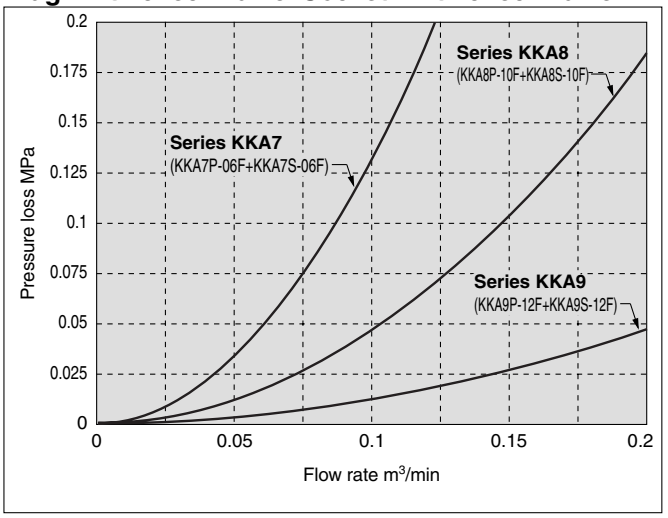

## Pressure Loss

Water

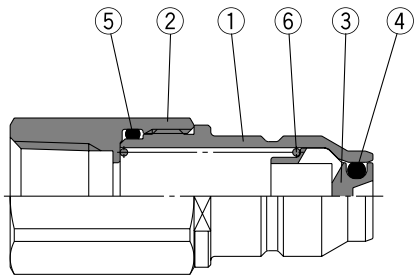
**Plug: With check valve Socket: With check valve**



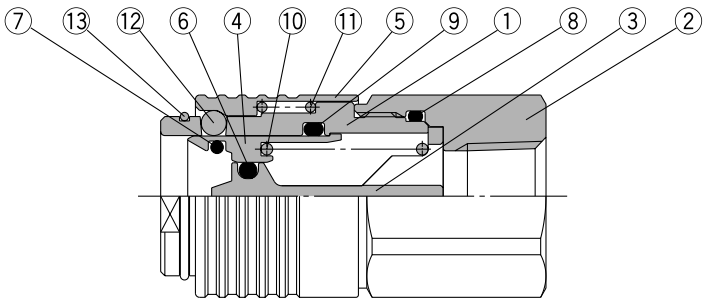

**Plug: With check valve Socket: With check valve**



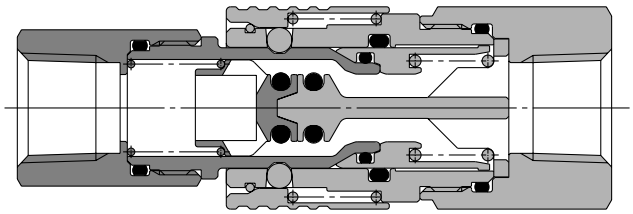
## Construction




**Plug**




**Socket**



### Plug

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Stem** | Stainless steel 304 | Fluorine coated |
| 2 | **Rear stem** | Stainless steel 304 | |
| 3 | **Plug valve** | Stainless steel 304 | |
| 4 | **Valve O-ring** | Special FKM | Fluorine coated |
| 5 | **Stem O-ring** | Special FKM | Fluorine coated |
| 6 | **Plug valve spring** | Equivalent to Stainless steel 304 | KKA3 |
| | | Stainless steel 304 | KKA4, 6, 7, 8, 9 |

### Socket

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Body** | Stainless steel 304 | |
| 2 | **Rear body** | Stainless steel 304 | |
| 3 | **Socket valve** | Stainless steel 304 | |
| 4 | **Collar** | Stainless steel 304 | Fluorine coated |
| 5 | **Sleeve** | Stainless steel 304 | Plated with fluorine-contained material |
| 6 | **Valve O-ring** | Special FKM | Fluorine coated |
| 7 | **Plug O-ring** | Special FKM | Fluorine coated |
| 8 | **Body O-ring** | Special FKM | Fluorine coated |
| 9 | **Collar seal** | Special FKM | Fluorine coated |
| 10 | **Collar spring** | Equivalent to Stainless steel 304 | KKA3, 4, 6 |
| | | Stainless steel 304 | KKA7, 8, 9 |
| 11 | **Sleeve spring** | Stainless steel 304 | |
| 12 | **Steel ball** | Stainless steel 304 | |
| 13 | **Stopper ring** | Stainless steel 304 | |

### Series KKA Spare Parts

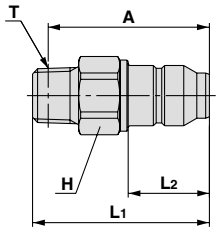
| Description | Product no. | No. |
|---|---|---|
| Plug O-ring | KKA3S-P01 | Socket ⑦ |
| | KKA4S-P01 | |
| | KKA6S-P01 | |
| | KKA7S-P01 | |
| | KKA8S-P01 | |
| | KKA9S-P01 | |

## Dimensions/Plug (P)

### With check valve

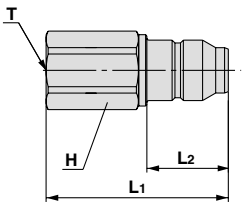
**Male thread type** (mm)

| Body size | Model | T Connection port size | H Width across flats | $L_1$ | $L_2$ | A | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| 1/8 | KKA3P-01M | R 1/8 | 14 | 35.4 | 16.0 | 31.4 | 5.6 | 17.4 | 15.4 |
| | -02M | R 1/4 | | 38.4 | | 32.4 | | | 19.8 |
| | -03M | R 3/8 | | 39.4 | | 32.9 | | | 32.9 |
| 1/4 | KKA4P-02M | R 1/4 | 17 | 42.2 | 18.9 | 36.2 | 6.9 | 26.4 | 28.3 |
| | -03M | R 3/8 | | 43.2 | | 36.7 | | | 36.6 |
| | -04M | R 1/2 | 22 | 46.2 | | 38.2 | | | 65.9 |
| 1/2 | KKA6P-03M | R 3/8 | 24 | 47.1 | 20.4 | 40.6 | 10.0 | 54.2 | 60.3 |
| | -04M | R 1/2 | | 47.9 | | 39.9 | | | 69.2 |
| | -06M | R 3/4 | 30 | 49.9 | | 40.4 | | | 119.0 |
| 3/4 | KKA7P-04M | R 1/2 | 32 | 66.3 | 27.6 | 58.1 | 13.5 | 99.6 | 173.9 |
| | -06M | R 3/4 | | 69.4 | | 59.9 | | | 209.6 |
| | -10M | R 1 | 36 | 69.9 | | 59.5 | | | 275.0 |
| 1 | KKA8P-06M | R 3/4 | 41 | 82.9 | 35.6 | 73.4 | 17.5 | 168.3 | 362.8 |
| | -10M | R 1 | | 85.4 | | 75.0 | | | 403.9 |
| | -12M | R 1 1/4 | 46 | 85.4 | | 72.7 | | | 538.6 |
| 1 1/4 | KKA9P-10M | R 1 | 55 | 109.5 | 49.1 | 99.1 | 22.0 | 264.9 | 824.1 |
| | -12M | R 1 1/4 | | 109.0 | | 96.3 | 24.6 | 332.1 | 861.4 |
| | -14M | R 1 1/2 | | 109.0 | | 96.3 | | | 936.3 |




**Female thread type** (mm)

| Body size | Model | T Connection port size | H Width across flats | $L_1$ | $L_2$ | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|
| 1/8 | KKA3P-01F | Rc 1/8 | 14 | 36.0 | 16.0 | 5.6 | 17.4 | 20.2 |
| | -02F | Rc 1/4 | 17 | 39.6 | | | | 31.8 |
| | -03F | Rc 3/8 | 19 | 40.4 | | | | 35.8 |
| 1/4 | KKA4P-02F | Rc 1/4 | 17 | 43.4 | 18.9 | 6.9 | 26.4 | 36.1 |
| | -03F | Rc 3/8 | 19 | 44.4 | | | | 40.2 |
| | -04F | Rc 1/2 | | 48.6 | | | | 69.7 |
| 1/2 | KKA6P-03F | Rc 3/8 | 24 | 48.7 | 20.4 | 10.0 | 54.2 | 84.1 |
| | -04F | Rc 1/2 | | 52.9 | | | | 79.7 |
| | -06F | Rc 3/4 | 30 | 54.6 | | | | 123.8 |
| 3/4 | KKA7P-04F | Rc 1/2 | 32 | 67.7 | 27.6 | 13.5 | 99.6 | 217.1 |
| | -06F | Rc 3/4 | | 69.4 | | | | 196.8 |
| | -10F | Rc 1 | | 72.4 | | | | 325.9 |
| 1 | KKA8P-06F | Rc 3/4 | 41 | 82.0 | 35.6 | 17.5 | 168.3 | 420.5 |
| | -10F | Rc 1 | | 85.0 | | | | 391.3 |
| | -12F | Rc 1 1/4 | 50 | 87.3 | | | | 552.8 |
| 1 1/4 | KKA9P-10F | Rc 1 | 55 | 107.8 | 49.1 | 24.6 | 332.1 | 986.9 |
| | -12F | Rc 1 1/4 | | 110.1 | | | | 925.6 |
| | -14F | Rc 1 1/2 | | 110.1 | | | | 848.2 |



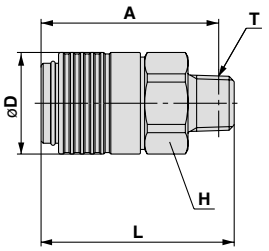
## Dimensions/Socket (S)

### With check valve

**Male thread type**

(mm)

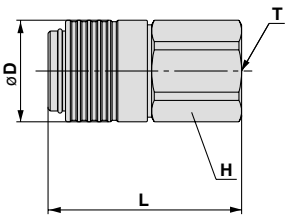
| Body size | Model | T Connection port size | H Width across flats | øD | L | A | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| 1/8 | **KKA3S-01M** | R 1/8 | 17 | 18.5 | 38.1 | 34.1 | 5.9 | 18.5 | 38.5 |
| | **-02M** | R 1/4 | | | 41.1 | 35.1 | | | 41.8 |
| | **-03M** | R 3/8 | | | 42.1 | 35.6 | | | 46.3 |
| 1/4 | **KKA4S-02M** | R 1/4 | 22 | 24.2 | 46.0 | 40.0 | 7.7 | 31.8 | 76.8 |
| | **-03M** | R 3/8 | | | 47.0 | 40.5 | | | 78.5 |
| | **-04M** | R 1/2 | | | 50.0 | 42.0 | | | 86.6 |
| 1/2 | **KKA6S-03M** | R 3/8 | 30 | 30.7 | 51.4 | 44.9 | 10.2 | 55.3 | 149.1 |
| | **-04M** | R 1/2 | | | 54.4 | 46.4 | | | 160.4 |
| | **-06M** | R 3/4 | | | 56.4 | 46.9 | | | 184.8 |
| 3/4 | **KKA7S-04M** | R 1/2 | 36 | 42.5 | 76.3 | 68.1 | 13.6 | 101.5 | 426.1 |
| | **-06M** | R 3/4 | | | 79.3 | 69.8 | | | 457.8 |
| | **-10M** | R 1 | | | 82.8 | 72.4 | | | 514.0 |
| 1 | **KKA8S-06M** | R 3/4 | 46 | 55 | 94.9 | 85.4 | 17.6 | 169.9 | 873.5 |
| | **-10M** | R 1 | | | 98.4 | 88.0 | | | 931.1 |
| | **-12M** | R 1 1/4 | | | 100.4 | 87.7 | | | 1012.9 |
| 1 1/4 | **KKA9S-10M** | R 1 | 63 | 69 | 125.5 | 115.1 | 22.0 | 264.9 | 1680.7 |
| | **-12M** | R 1 1/4 | | | 127.5 | 114.8 | 25.1 | 344.9 | 1758.1 |
| | **-14M** | R 1 1/2 | | | 127.5 | 114.8 | | | 1819.4 |




**Female thread type**

(mm)

| Body size | Model | T Connection port size | H Width across flats | øD | L | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|
| 1/8 | **KKA3S-01F** | Rc 1/8 | 17 | 18.5 | 37.6 | 5.9 | 18.5 | 46.9 |
| | **-02F** | Rc 1/4 | | | 41.2 | | | 47.2 |
| | **-03F** | Rc 3/8 | 19 | | 43.1 | | | 52.3 |
| 1/4 | **KKA4S-02F** | Rc 1/4 | 22 | 24.2 | 46.1 | 7.7 | 31.8 | 97.1 |
| | **-03F** | Rc 3/8 | | | 46.9 | | | 91.1 |
| | **-04F** | Rc 1/2 | 24 | | 52.3 | | | 104.3 |
| 1/2 | **KKA6S-03F** | Rc 3/8 | 30 | 30.7 | 50.5 | 10.2 | 55.3 | 189.6 |
| | **-04F** | Rc 1/2 | | | 56.2 | | | 202.0 |
| | **-06F** | Rc 3/4 | | | 57.9 | | | 180.6 |
| 3/4 | **KKA7S-04F** | Rc 1/2 | 36 | 42.5 | 75.1 | 13.6 | 101.5 | 477.2 |
| | **-06F** | Rc 3/4 | | | 76.5 | | | 457.4 |
| | **-10F** | Rc 1 | 41 | | 82.3 | | | 550.9 |
| 1 | **KKA8S-06F** | Rc 3/4 | 46 | 55 | 90.9 | 17.6 | 169.9 | 935.2 |
| | **-10F** | Rc 1 | | | 93.9 | | | 914.7 |
| | **-12F** | Rc 1 1/4 | 50 | | 99.2 | | | 1002.1 |
| 1 1/4 | **KKA9S-10F** | Rc 1 | 63 | 69 | 121.8 | 25.1 | 344.9 | 1919.1 |
| | **-12F** | Rc 1 1/4 | | | 121.8 | | | 1810.0 |
| | **-14F** | Rc 1 1/2 | | | 121.8 | | | 1732.6 |

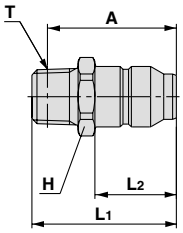


## Dimensions/Plug (P)

### Without check valve

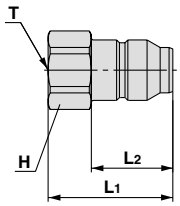
**Male thread type** (mm)

| Body size | Model | T Connection port size | H Width across flats | $L_1$ | $L_2$ | A | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| 1/8 | KKA3P-01M-1 | R 1/8 | 12 | 28.5 | 16.0 | 24.5 | 6.0 | 22.6 | 9.8 |
| | -02M-1 | R 1/4 | 14 | 31.5 | | 25.5 | | | 14.6 |
| | -03M-1 | R 3/8 | | 32.5 | | 26.0 | | | 23.6 |
| 1/4 | KKA4P-02M-1 | R 1/4 | 17 | 34.4 | 18.9 | 28.4 | 8.0 | 40.2 | 21.0 |
| | -03M-1 | R 3/8 | | 35.4 | | 28.9 | | | 27.9 |
| | -04M-1 | R 1/2 | | 39.4 | | 31.4 | | | 50.2 |
| 1/2 | KKA6P-03M-1 | R 3/8 | 22 | 37.9 | 20.4 | 31.4 | 11.0 | 76.0 | 41.9 |
| | -04M-1 | R 1/2 | | 40.9 | | 32.9 | | | 56.0 |
| | -06M-1 | R 3/4 | 30 | 42.9 | | 33.4 | | | 98.7 |




**Female thread type** (mm)

| Body size | Model | T Connection port size | H Width across flats | $L_1$ | $L_2$ | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|
| 1/8 | KKA3P-01F-1 | Rc 1/8 | 14 | 23.2 | 16.0 | 6.0 | 22.6 | 9.6 |
| | -02F-1 | Rc 1/4 | 17 | 30.3 | | | | 20.2 |
| | -03F-1 | Rc 3/8 | 19 | 32.0 | | | | 26.2 |
| 1/4 | KKA4P-02F-1 | Rc 1/4 | 17 | 29.7 | 18.9 | 8.0 | 40.2 | 20.0 |
| | -03F-1 | Rc 3/8 | 19 | 34.0 | | | | 25.8 |
| | -04F-1 | Rc 1/2 | 24 | 39.4 | | | | 46.1 |
| 1/2 | KKA6P-03F-1 | Rc 3/8 | 22 | 30.9 | 20.4 | 11.0 | 76.0 | 34.3 |
| | -04F-1 | Rc 1/2 | 24 | 39.6 | | | | 50.0 |
| | -06F-1 | Rc 3/4 | 30 | 42.8 | | | | 78.6 |

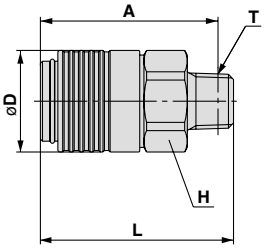



## Dimensions/Socket (S)

### Without check valve

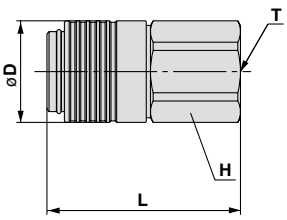
**Male thread type** (mm)

| Body size | Model | T Connection port size | H Width across flats | øD | L | A | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| 1/8 | KKA3S-01M-1 | R 1/8 | 17 | 18.5 | 38.1 | 34.1 | 6.1 | 23.4 | 36.1 |
| | -02M-1 | R 1/4 | | | 41.1 | 35.1 | | | 39.4 |
| | -03M-1 | R 3/8 | | | 42.1 | 35.6 | | | 43.9 |
| 1/4 | KKA4S-02M-1 | R 1/4 | 22 | 24.2 | 46.0 | 40.0 | 8.1 | 41.2 | 71.9 |
| | -03M-1 | R 3/8 | | | 47.0 | 40.5 | | | 73.6 |
| | -04M-1 | R 1/2 | | | 50.0 | 42.0 | | | 81.7 |
| 1/2 | KKA6S-03M-1 | R 3/8 | 30 | 30.7 | 51.4 | 44.9 | 11.4 | 81.6 | 138.3 |
| | -04M-1 | R 1/2 | | | 54.4 | 46.4 | | | 149.6 |
| | -06M-1 | R 3/4 | | | 56.4 | 46.9 | | | 174.0 |




**Female thread type** (mm)

| Body size | Model | T Connection port size | H Width across flats | øD | L | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|
| 1/8 | KKA3S-01F-1 | Rc 1/8 | 17 | 18.5 | 37.6 | 6.1 | 23.4 | 44.5 |
| | -02F-1 | Rc 1/4 | | | 41.2 | | | 44.8 |
| | -03F-1 | Rc 3/8 | 19 | | 43.1 | | | 49.9 |
| 1/4 | KKA4S-02F-1 | Rc 1/4 | 22 | 24.2 | 46.1 | 8.1 | 41.2 | 92.2 |
| | -03F-1 | Rc 3/8 | | | 46.9 | | | 86.2 |
| | -04F-1 | Rc 1/2 | 24 | | 52.3 | | | 99.4 |
| 1/2 | KKA6S-03F-1 | Rc 3/8 | 30 | 30.7 | 50.5 | 11.4 | 81.6 | 178.8 |
| | -04F-1 | Rc 1/2 | | | 56.2 | | | 191.2 |
| | -06F-1 | Rc 3/4 | | | 57.9 | | | 169.8 |

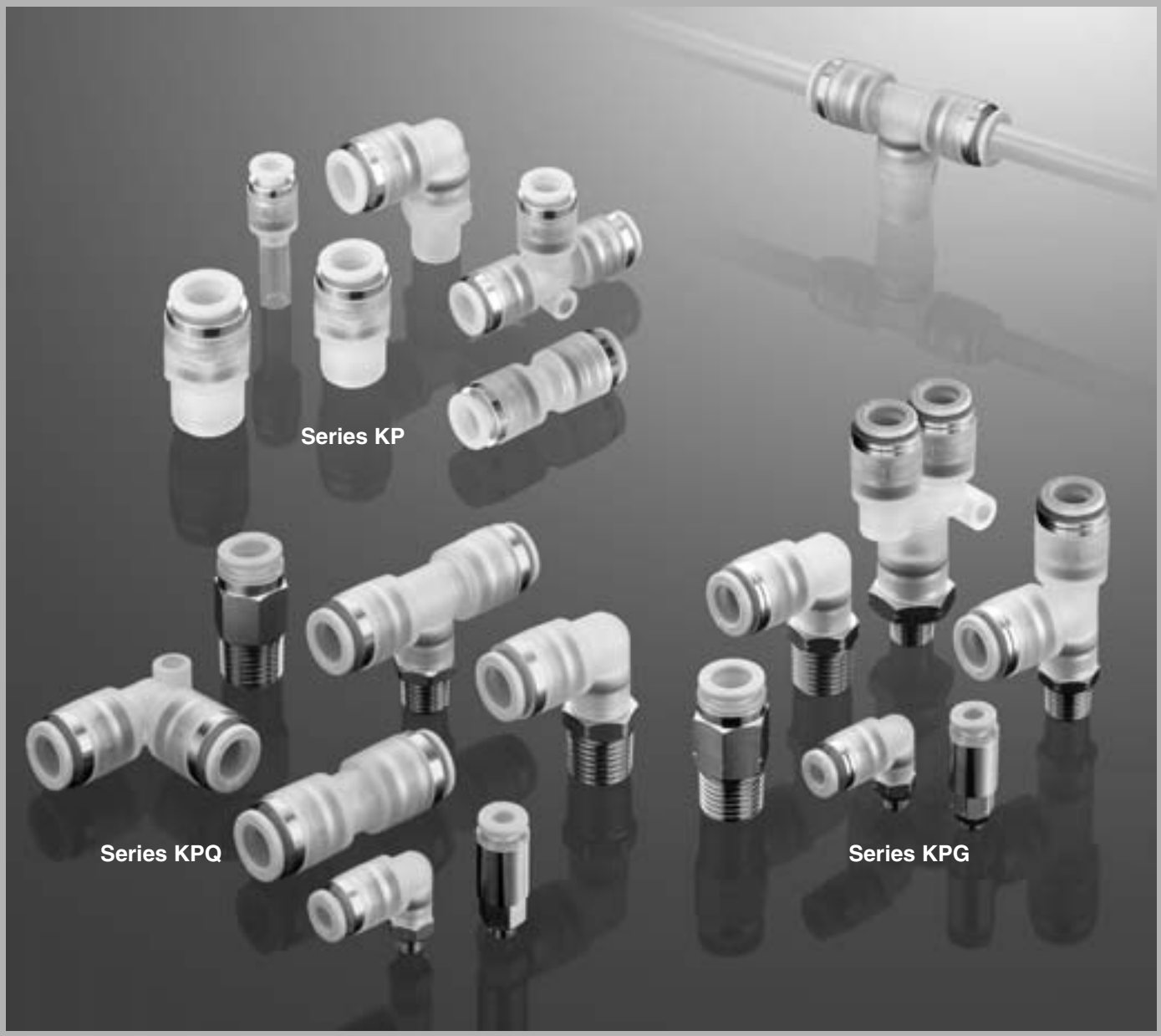


**Refer to pages 182 to 185 for Specific Product Precautions.**

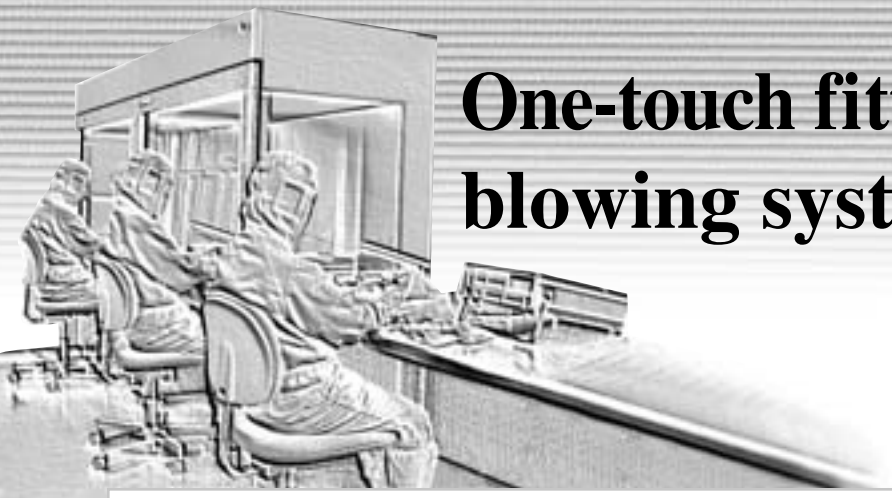
# Clean One-touch Fittings

## *Series KP/KPQ/KPG*





# One-touch fittings and tubing for blowing systems and drive air

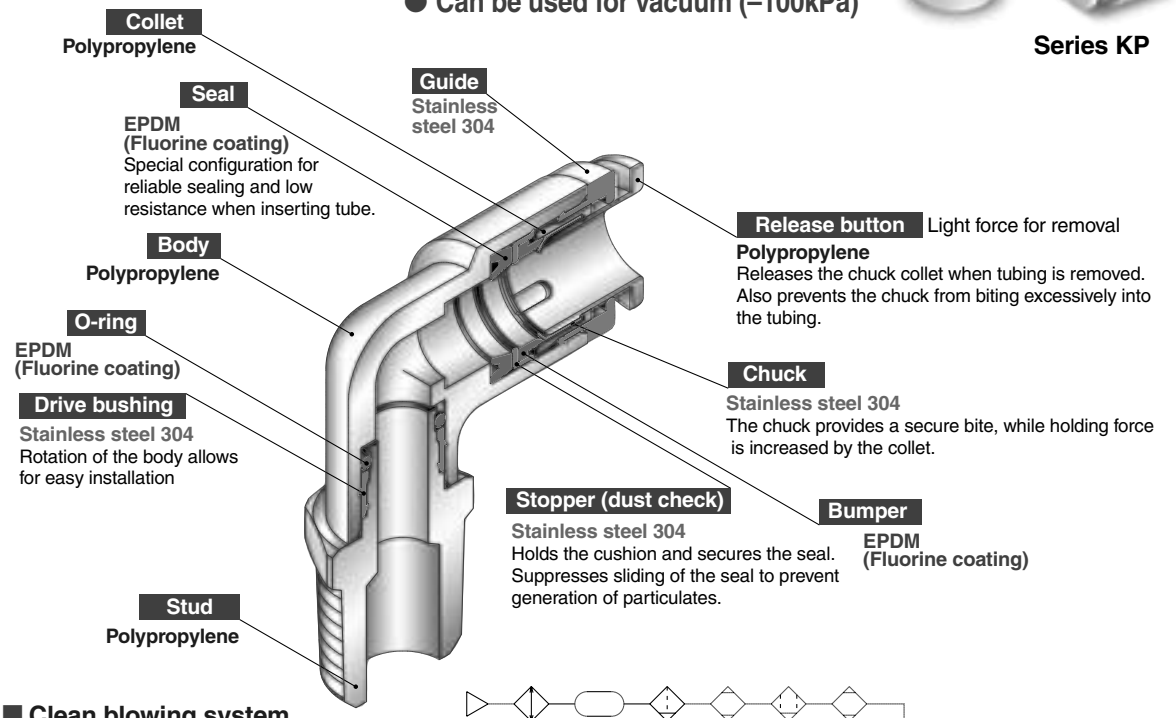


**One-touch fittings (for blowing)**

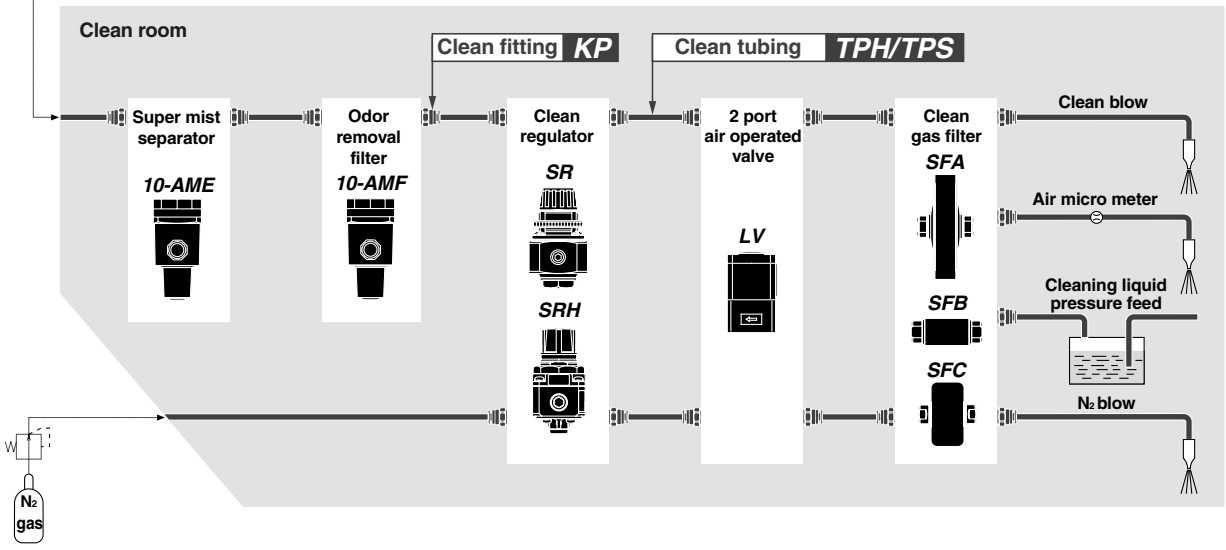
## *Series KP*

- Completely oil free (Rubber parts are fluorine-coated.)
- Liquid-contact areas are non-metallic
- Parts cleaning, assembly and double packaging in a clean room
- Can be used for vacuum (–100kPa)

**Series KP**



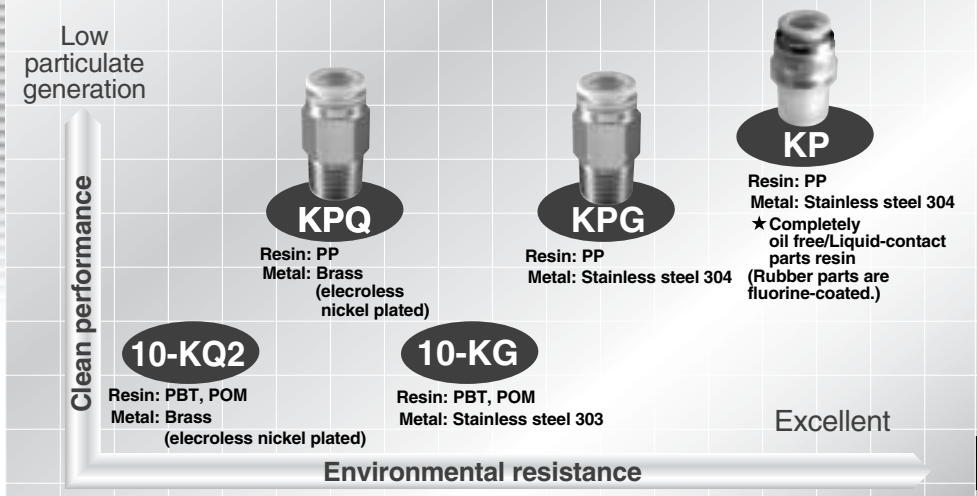

### ■ Clean blowing system






SMC

# clean room systems






One-touch fittings (for drive system air piping)

# Series KPQ/KPG

**Brass (electroless nickel plated)** **Stainless steel 304**

● **Resin parts are P.P. (Polypropylene)**

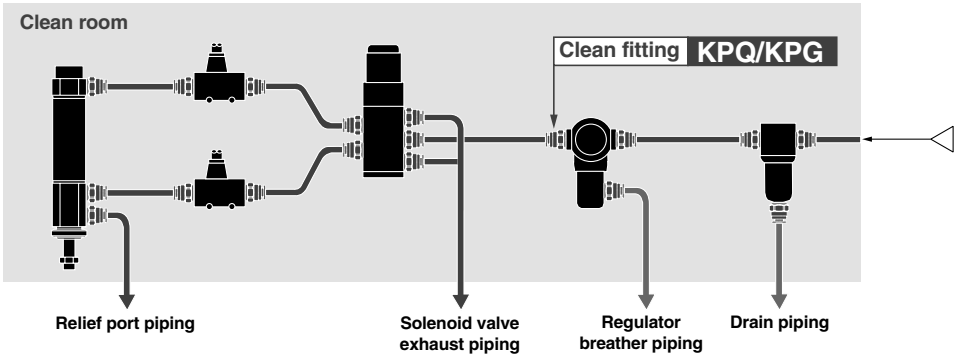
Series KPQ

Series KPG



Male connector

■ **Drive air piping system**



# Clean One-touch Fittings For Blowing

# *Series KP*

RoHS

## ⚠ Caution

**Series KP is a line of special One-touch fittings for use in clean room blowing and washing lines.**

Please consult with SMC regarding other types of applications.

Seal material: The durability of EPDM with respect to mineral oils is inferior, which makes it unsuitable for piping in general pneumatic equipment.

## Applicable Tubing

| | |
|---|---|
| **Tubing material** | PFA, Polyolefin<br>Soft polyolefin, Polyurethane |
| **Tubing O.D.** | ø4, ø6, ø8, ø10, ø12 |

Note 1) FEP, nylon and soft nylon tubing, and tubing not compatible with the clean series can also be used. However, the degree of clean performance will be reduced.

Note 2) Due to the softness of polyurethane tubing, it may fold when being inserted. Hold the end of the tubing and insert it all the way in.

## Specifications

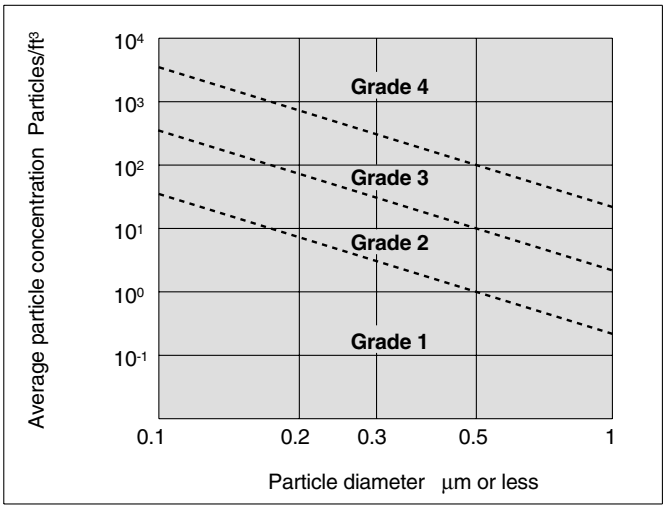
| | |
|---|---|
| **Particulate generation grade** | Grade 1 Note 1) |
| **Fluid** | Air/Nitrogen gas/Water (pure water) Note 2) |
| **Maximum operating pressure (20°C)** | 1 MPa Note 3) |
| **Operating vacuum pressure** | –100 kPa {10 Torr} |
| **Proof pressure (20°C)** | 3 MPa |
| **Ambient and fluid temperature** | – 20°C to 80°C |
| **Threads** | JIS B0203 (Taper thread for piping) |

Note 1) Refer to particulate generation grade classifications.
Note 2) The surge pressure must be under the maximum operating pressure.
Note 3) The maximum operating pressure is the value at 20°C. Refer to the operating pressure curve for other temperatures.
Note 4) Do not use the fittings with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

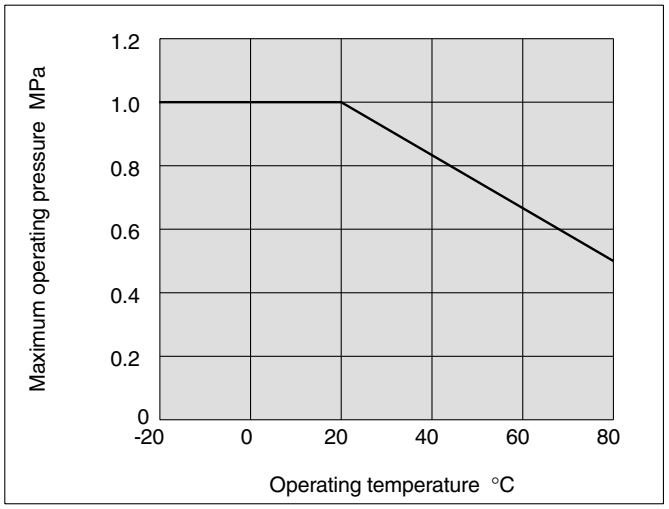
Made to Order

**Made to Order**
**(Refer to page 281 for details.)**

## Particulate Generation Grade Classifications




## Relation between Operating Temperature and Maximum Operating Pressure




Note) Refer to Features 2 in CAT. E02-23A, "SMC Pneumatic Clean Series" for details.

## How to Order

**KP H 06 – 01 – □**

**Clean One-touch fittings (for blowing)**

**Model**

| | |
|---|---|
| **H** | Male connector, Straight union |
| **L** | Union elbow, Male elbow |
| **T** | Male branch tee, Union tee |
| **Y** | Male run tee |
| **U** | Male branch, Union "Y" |
| **R** | Plug-in reducer |

**Applicable tubing O.D.**

| | |
|---|---|
| **04** | ø4 |
| **06** | ø6 |
| **08** | ø8 |
| **10** | ø10 |
| **12** | ø12 |

**Port size/Applicable tubing O.D.**

| | | | |
|---|---|---|---|
| Thread connection | **01** | R 1/8 | |
| | **02** | R 1/4 | |
| | **03** | R 3/8 | |
| | **04** | R 1/2 | |
| Tubing (rod) connection | **00** | Same dia. tubing | |
| | **04** | ø4 | Different dia. tubing (plug-in reducer) |
| | **06** | ø6 | |
| | **08** | ø8 | |
| | **10** | ø10 | |
| | **12** | ø12 | |

**Made to Order**

| | |
|---|---|
| **X53** | With pipe tape |

**KP P 08**

**Clean One-touch fittings**

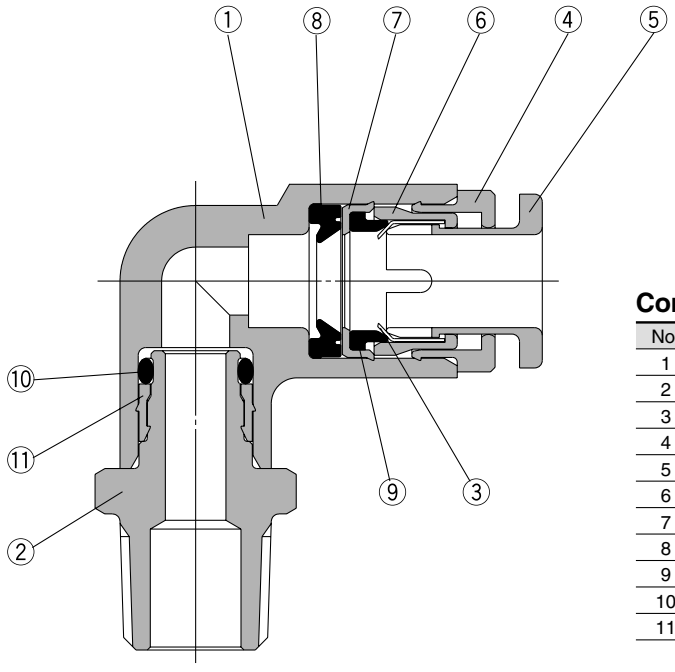
**Plug**

**Applicable fitting size**

| | |
|---|---|
| **04** | ø4 |
| **06** | ø6 |
| **08** | ø8 |
| **10** | ø10 |
| **12** | ø12 |



## Construction




### Component Parts

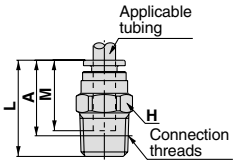
| No. | Description | Material |
|---|---|---|
| 1 | Body | PP |
| 2 | Stud | PP |
| 3 | Chuck | Stainless steel 304 |
| 4 | Guide | Stainless steel 304 |
| 5 | Release button | PP (color: light green) |
| 6 | Collet | PP |
| 7 | Stopper | Stainless steel 304 |
| 8 | Seal | EPDM (Fluorine-coated) |
| 9 | Bumper | EPDM (Fluorine-coated) |
| 10 | O-ring | EPDM (Fluorine-coated) |
| 11 | Drive bushing | Stainless steel 304 |

## Dimensions

### Male Connector: KPH

| Applicable tubing O.D. mm | Connection thread R | Model | H (width across flats) | L | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KPH04-01 | 12 | 24.4 | 20.5 | 17 | 4 | 4 | 3 |
| | 1/4 | KPH04-02 | | | 18.5 | | | | 4 |
| 6 | 1/8 | KPH06-01 | 14 | 24.9 | 21 | 18.5 | 10 | 10 | 4 |
| | 1/4 | KPH06-02 | | 25.4 | 19.5 | | | | 5 |
| 8 | 1/8 | KPH08-01 | 17 | 31.3 | 27.5 | 20.5 | 26 | 18 | 6 |
| | 1/4 | KPH08-02 | | 29.3 | 23.5 | | | | 7 |
| 10 | 1/4 | KPH10-02 | 19 | 36.5 | 31 | 23 | 41 | 29 | 10 |
| | 3/8 | KPH10-03 | | 32 | 26 | | | | 11 |
| 12 | 3/8 | KPH12-03 | 22 | 33 | 27 | 24 | 58 | 46 | 12 |
| | 1/2 | KPH12-04 | | 33.5 | 26 | | | | 13 |

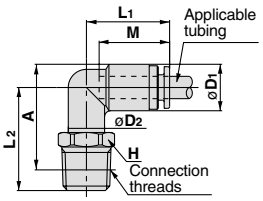
∗ Reference dimension for R threads after installation




### Male Elbow: KPL

| Applicable tubing O.D. mm | Connection thread R | Model | H (width across flats) | Note 1) øD1 | øD2 | L1 | L2 | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KPL04-01 | 12 | 10.4 | 10 | 19.7 | 23.2 | 24.5 | 17 | 3.5 | 3.5 | 4 |
| | 1/4 | KPL04-02 | 14 | | | | 27.2 | 26.5 | | | | 5 |
| 6 | 1/8 | KPL06-01 | 12 | 12.8 | | 21.8 | 24.4 | 27 | 18.5 | 9 | 9 | 5 |
| | 1/4 | KPL06-02 | | | | | 28.4 | 29 | | | | 6 |
| 8 | 1/8 | KPL08-01 | 14 | 15.2 | 12 | 25.3 | 26.6 | 30 | 20.5 | 22 | 15 | 8 |
| | 1/4 | KPL08-02 | | | | | 29.4 | 31.5 | | | | 9 |
| 10 | 1/4 | KPL10-02 | 17 | 18.5 | 17 | 28.4 | 32.1 | 35.5 | 23 | 35 | 25 | 13 |
| | 3/8 | KPL10-03 | | | | | 33.1 | 36.5 | | | | 14 |
| 12 | 3/8 | KPL12-03 | 22 | 20.9 | 22 | 30.4 | 34.3 | 38.5 | 24 | 50 | 40 | 15 |
| | 1/2 | KPL12-04 | | | | | 38.3 | 41.5 | | | | 18 |

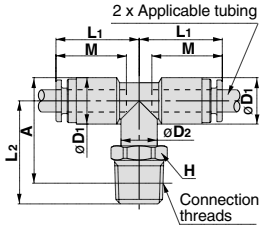
∗ Reference dimension for R threads after installation Note 1) ø**D1** indicates the maximum diameter.




### Male Branch Tee: KPT

| Applicable tubing O.D. mm | Connection thread R | Model | H (width across flats) | Note 1) øD1 | øD2 | L1 | L2 | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KPT04-01 | 12 | 10.4 | 10 | 19.7 | 23.2 | 24.5 | 17 | 4.1 | 4.1 | 6 |
| | 1/4 | KPT04-02 | 14 | | | | 27.2 | 26.5 | | | | 7 |
| 6 | 1/8 | KPT06-01 | 12 | 12.8 | | 21.8 | 24.4 | 27 | 18.5 | 11 | 11 | 8 |
| | 1/4 | KPT06-02 | | | | | 28.4 | 29 | | | | 9 |
| 8 | 1/8 | KPT08-01 | 14 | 15.2 | 12 | 25.3 | 26.6 | 30 | 20.5 | 26.3 | 18.2 | 12 |
| | 1/4 | KPT08-02 | | | | | 29.4 | 31.5 | | | | 13 |
| 10 | 1/4 | KPT10-02 | 17 | 18.5 | 17 | 28.4 | 32.1 | 35.5 | 23 | 40.8 | 29 | 20 |
| | 3/8 | KPT10-03 | | | | | 33.1 | 36.5 | | | | 21 |
| 12 | 3/8 | KPT12-03 | 22 | 20.9 | 22 | 30.4 | 34.3 | 38.5 | 24 | 57.2 | 45.2 | 24 |
| | 1/2 | KPT12-04 | | | | | 38.3 | 41.5 | | | | 27 |

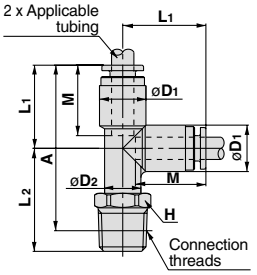
∗ Reference dimension for R threads after installation Note 1) ø**D1** indicates the maximum diameter.




### Male Run Tee: KPY

| Applicable tubing O.D. mm | Connection thread R | Model | H (width across flats) | Note 1) øD1 | øD2 | L1 | L2 | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KPY04-01 | 12 | 10.4 | 10 | 19.7 | 23.2 | 39 | 17 | 7.5 | 7.5 | 6 |
| | 1/4 | KPY04-02 | 14 | | | | 27.2 | 41 | | | | 7 |
| 6 | 1/8 | KPY06-01 | 12 | 12.8 | | 21.8 | 24.4 | 42 | 18.5 | 11 | 11 | 8 |
| | 1/4 | KPY06-02 | | | | | 28.4 | 44.5 | | | | 9 |
| 8 | 1/8 | KPY08-01 | 14 | 15.2 | 12 | 25.3 | 26.6 | 48 | 20.5 | 21 | 21 | 12 |
| | 1/4 | KPY08-02 | | | | | 29.4 | 49 | | | | 13 |
| 10 | 1/4 | KPY10-02 | 17 | 18.5 | 17 | 28.4 | 32.1 | 55 | 23 | 45 | 45 | 19 |
| | 3/8 | KPY10-03 | | | | | 33.1 | 55.5 | | 57 | 52 | 20 |
| 12 | 3/8 | KPY12-03 | 22 | 20.9 | 22 | 30.4 | 34.3 | 58.5 | 24 | 57 | 57 | 21 |
| | 1/2 | KPY12-04 | | | | | 38.3 | 61.5 | | | | 24 |

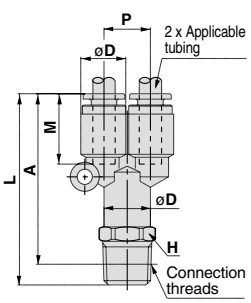
∗Reference dimension for R threads after installation Note 1) ø**D1** indicates the maximum diameter.




### Male Branch "Y": KPU

| Applicable tubing O.D. mm | Connection thread R | Model | H (width across flats) | Note 1) øD | L | P | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KPU04-01 | 12 | 10.4 | 44.4 | 10.4 | 40.5 | 17 | 7.5 | 7.5 | 7 |
| | 1/4 | KPU04-02 | | | 48.4 | | 42.5 | | | | 8 |
| 6 | 1/8 | KPU06-01 | 14 | 12.8 | 48.6 | 12.8 | 44.5 | 18.5 | 18 | 18 | 9 |
| | 1/4 | KPU06-02 | | | 51.4 | | 45.5 | | | | 10 |
| 8 | 1/8 | KPU08-01 | 17 | 15.2 | 55.7 | 15.2 | 51.5 | 20.5 | 26 | 26 | 15 |
| | 1/4 | KPU08-02 | 19 | | 60.3 | | 54.5 | | 45 | 35 | 17 |
| 10 | 1/4 | KPU10-02 | | 18.5 | 63.5 | 18.5 | 58 | 23 | 45 | 45 | 23 |
| | 3/8 | KPU10-03 | | | 66.5 | | 60.5 | | 70 | 55 | 25 |
| 12 | 3/8 | KPU12-03 | 22 | 20.9 | 68.7 | 20.9 | 62.5 | 24 | 70 | 70 | 29 |
| | 1/2 | KPU12-04 | | | 71.7 | | 64.5 | | 100 | 90 | 30 |

∗ Reference dimension for R threads after installation Note 1) ø**D** indicates the maximum diameter.

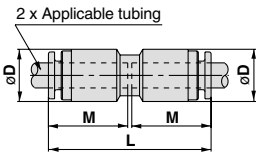


## Dimensions

### Straight Union: KPH

| Applicable tubing O.D. mm | Model | Note 1) øD | L | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|
| | | | | | TPH | TPS | |
| 4 | KPH04-00 | 10.4 | 35.4 | 17 | 4 | 4 | 4 |
| 6 | KPH06-00 | 12.8 | 37.6 | 18.5 | 10 | 10 | 6 |
| 8 | KPH08-00 | 15.2 | 42.4 | 20.5 | 26 | 18 | 10 |
| 10 | KPH10-00 | 18.5 | 46.6 | 23 | 41 | 29 | 15 |
| 12 | KPH12-00 | 20.9 | 48.6 | 24 | 58 | 46 | 18 |

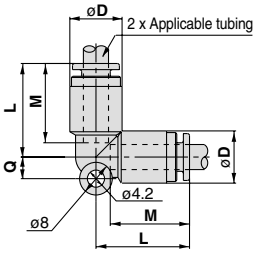
Note 1) ø**D** indicates the maximum diameter.




### Elbow: KPL

| Applicable tubing O.D. mm | Model | Note 1) øD | L | Q | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | TPS | |
| 4 | KPL04-00 | 10.4 | 19.7 | 4.5 | 17 | 3.5 | 3.5 | 3 |
| 6 | KPL06-00 | 12.8 | 21.8 | 5.3 | 18.5 | 9 | 9 | 7 |
| 8 | KPL08-00 | 15.2 | 25.3 | 6 | 20.5 | 22 | 15 | 11 |
| 10 | KPL10-00 | 18.5 | 28.4 | 6.8 | 23 | 35 | 25 | 16 |
| 12 | KPL12-00 | 20.9 | 30.4 | 7.5 | 24 | 50 | 40 | 20 |

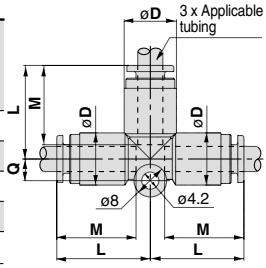
Note 1) ø**D** indicates the maximum diameter.




### Union Tee: KPT

| Applicable tubing O.D. mm | Model | Note 1) øD | L | Q | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | TPS | |
| 4 | KPT04-00 | 10.4 | 19.7 | 4.5 | 17 | 4 | 4 | 7 |
| 6 | KPT06-00 | 12.8 | 21.8 | 5.3 | 18.5 | 10 | 10 | 9 |
| 8 | KPT08-00 | 15.2 | 25.3 | 6 | 20.5 | 26 | 18 | 16 |
| 10 | KPT10-00 | 18.5 | 28.4 | 6.8 | 23 | 41 | 29 | 25 |
| 12 | KPT12-00 | 20.9 | 30.4 | 7.5 | 24 | 58 | 46 | 29 |

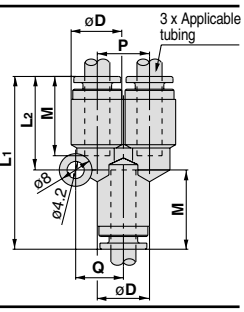
Note 1) ø**D** indicates the maximum diameter.




### Union "Y": KPU

| Applicable tubing O.D. mm | Model | Note 1) øD | L1 | L2 | P | Q | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | TPH | TPS | |
| 4 | KPU04-00 | 10.4 | 36.8 | 19.6 | 10.4 | 9.7 | 17 | 4 | 4 | 7 |
| 6 | KPU06-00 | 12.8 | 40.1 | 21.8 | 12.8 | 11.7 | 18.5 | 10 | 10 | 10 |
| 8 | KPU08-00 | 15.2 | 46.7 | 26.5 | 15.2 | 13.7 | 20.5 | 26 | 18 | 17 |
| 10 | KPU10-00 | 18.5 | 52 | 29.7 | 18.5 | 16.1 | 23 | 41 | 29 | 26 |
| 12 | KPU12-00 | 20.9 | 55.2 | 31.9 | 20.9 | 18.1 | 24 | 58 | 46 | 32 |

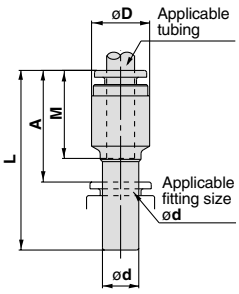
Note 1) ø**D** indicates the maximum diameter.




### Plug-in Reducer: KPR

| Applicable tubing O.D. mm | Applicable fitting size ød | Model | Note 1) øD | L | A | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TPH | TPS | |
| 4 | 6 | KPR04-06 | 10.4 | 38.4 | 19.1 | 17 | 4 | 4 | 3 |
| | 8 | KPR04-08 | | 40.9 | 19.2 | | | | 4 |
| 6 | | KPR06-08 | 12.8 | 41.5 | 19.8 | 18.5 | 10 | 10 | 4 |
| | 10 | KPR06-10 | | 44 | 20.2 | | | | 5 |
| 8 | | KPR08-10 | 15.2 | 46 | 22.2 | 20.5 | 26 | 18 | 5 |
| | 12 | KPR08-12 | | 47 | | | | | 6 |
| 10 | | KPR10-12 | 18.5 | 49.5 | 24.7 | 23 | 41 | 29 | 9 |

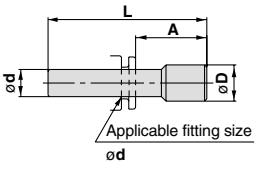
Note 1) ø**D** indicates the maximum diameter.




### Plug: KPP



| Applicable fitting size ød | Model | øD | L | A | Mass g |
|---|---|---|---|---|---|
| 4 | KPP-04 | 6 | 32 | 13.8 | 0.4 |
| 6 | KPP-06 | 8 | 35 | 15.7 | 0.7 |
| 8 | KPP-08 | 10 | 39 | 17.3 | 1.1 |
| 10 | KPP-10 | 12 | 43 | 19.2 | 1.7 |
| 12 | KPP-12 | 14 | 45.5 | 20.7 | 2.5 |



# Clean One-touch Fittings For Driving Air Piping

RoHS

# Series KPQ/KPG

**Series KPQ**
**Brass (electroless nickel plated)**
**Release button: Light gray**

**Series KPG**
**Stainless steel 304**
**Release button: Light blue**

Made to Order

**Made to Order**
**(Refer to page 285 for details.)**

## Applicable Tubing

| | |
|---|---|
| **Tubing material** | PFA, Polyurethane |
| **Tubing O.D.** | ø4, ø6, ø8, ø10, ø12 |

FEP, nylon and soft nylon tubing, and tubing not compatible with the clean series can also be used. However, the degree of clean performance will be reduced.

## Specifications

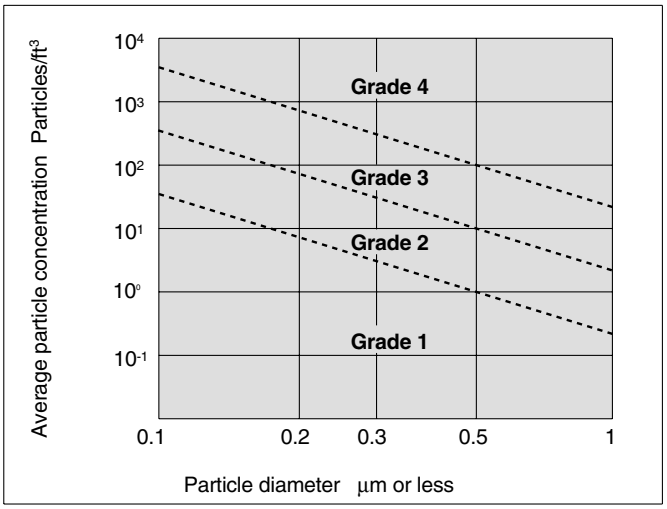
| | |
|---|---|
| **Particulate generation grade** | Grade 1 Note 1) |
| **Fluid** | Air |
| **Maximum operating pressure (20°C)** | 1 MPa Note 2) |
| **Operating vacuum pressure** | –100 kPa |
| **Proof pressure (20°C)** | 3 MPa |
| **Ambient and fluid temperature** | –5°C to 60°C |
| **Threads** | JIS B0203 (Taper thread for piping) |
| **Oil** | Fluorine-based grease |

Note 1) Refer to particulate generation grade classifications
This falls outside of the grade because fluorine grease is applied to the internal seal materials.

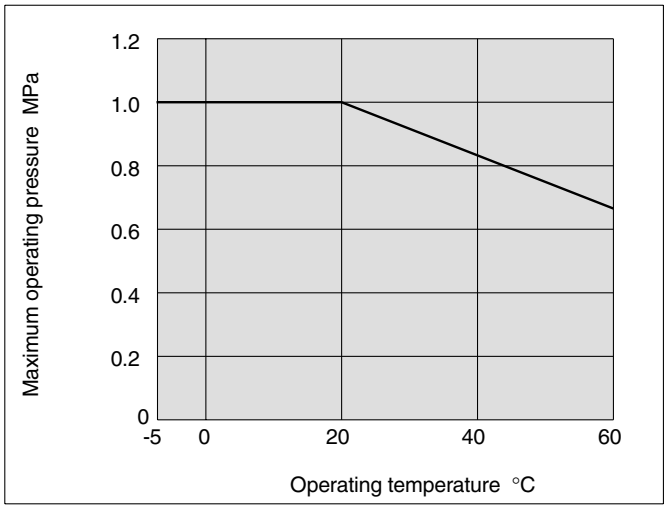
Note 2) The maximum operating pressure is the value at 20°C. Refer to the operating pressure curve for other temperatures.

Note 3) Do not use the fittings with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

## Particulate Generation Grade Classifications




## Relation between Operating Temperature and Maximum Operating Pressure




Note) Refer to Features 2 in CAT. E02-23A, "SMC Pneumatic Clean Series" for details.

## How to Order

**KP Q H 06 – 01 – [ ]**

**Clean One-touch fittings**

**Specifications**

| Symbol | Specifications (metal part materials) |
|---|---|
| **Q** | Brass (electroless nickel plated) |
| **G** | Stainless steel 304 |

**Model**

| | |
|---|---|
| **H** | Male connector, Straight union |
| **L** | Union elbow, Male elbow |
| **T** | Male branch tee, Union tee |
| **Y** | Male run tee |
| **U** | Male branch, Union "Y" |
| **R** | Plug-in reducer |

**Applicable tubing O.D.**

| | |
|---|---|
| **04** | ø4 |
| **06** | ø6 |
| **08** | ø8 |
| **10** | ø10 |
| **12** | ø12 |

**Made to Order**

| | |
|---|---|
| **X53** | With pipe tape |
| **X193** Note 1) | Grease-free<br>Rubber material: EPDM (Fluorine-coated)<br>Gasket: M-5G3 (Stainless steel 316, Special FKM) Note 2)<br>With release bushing, Guide color: Natural |

Note 1) Series KPG: Compatible with products with threads only
Note 2) M5 thread

**Port size/Applicable tubing O.D.**

| | | | |
|---|---|---|---|
| **Thread connection** | **M5** | M5 x 0.8 | |
| | **01** | R 1/8 | |
| | **02** | R 1/4 | |
| | **03** | R 3/8 | |
| | **04** | R 1/2 | |
| **Tubing (rod) connection** | **00** | Same dia. tubing | |
| | **04** | ø4 | Different dia. tubing (plug-in reducer) |
| | **06** | ø6 | |
| | **08** | ø8 | |
| | **10** | ø10 | |
| | **12** | ø12 | |

**KP P 08**

**Clean One-touch fittings**

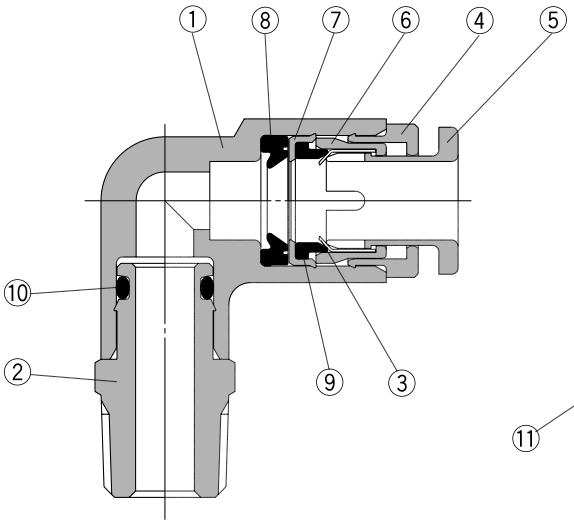
**Plug**

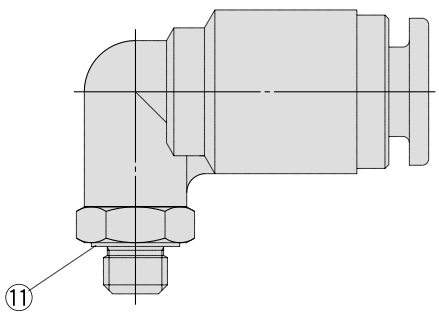
**Applicable fitting size**

| | |
|---|---|
| **04** | ø4 |
| **06** | ø6 |
| **08** | ø8 |
| **10** | ø10 |
| **12** | ø12 |

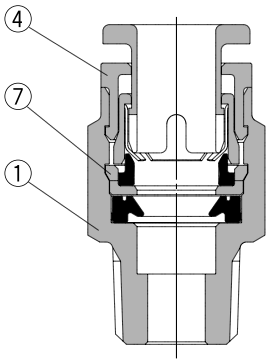


## Construction




**M5 type**




**Male connector**

### Component Parts

| No. | Description | | Material | |
|---|---|---|---|---|
| | | | **Series KPQ** | **Series KPG** |
| 1 | **Body** | | PP | |
| | | **With male connector** | C3604 (electroless nickel plated) | Stainless steel 304 |
| 2 | **Stud** | | C3604 (electroless nickel plated) | Stainless steel 304 |
| 3 | **Chuck** | | Stainless steel 304 | |
| 4 | **Guide** | | C3604 (electroless nickel plated) | Stainless steel 304 |
| | | **With male connector** | PP | |
| 5 | **Release button** | | PP (color: light gray) | PP (color: light blue) |
| 6 | **Collet** | | PP | |
| 7 | **Stopper** | | Stainless steel 304 | |
| | | **With male connector** | PP | |
| 8 | **Seal** | | NBR | |
| 9 | **Bumper** | | NBR | |
| 10 | **O-ring** | | NBR | |
| 11 | **Gasket** | | Stainless steel 304, NBR | |

## Dimensions

### Male Connector: KPQH, KPGH

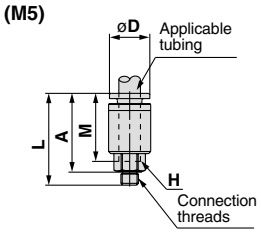
(M5)

(R)

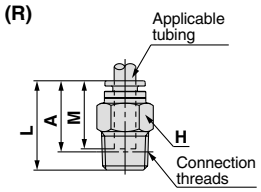
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | øD | L | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQH04-M5 | — | 8 | 10 | 24.4 | 21.5 | 17 | 4 | 4 | 4 |
| | | — | KPGH04-M5 | | | 24.9 | | | | | |
| | 1/8 | KPQH04-01 | KPGH04-01 | 10 | — | 23.5 | 18.5 | | | | 7 |
| | 1/4 | KPQH04-02 | KPGH04-02 | 14 | — | 21.4 | 16 | | | | 12 |
| 6 | M5 x 0.8 | KPQH06-M5 | — | 8 | 12 | 25.3 | 22 | 18.5 | 10 | 10 | 5 |
| | | — | KPGH06-M5 | | | 25.8 | | | | | |
| | 1/8 | KPQH06-01 | KPGH06-01 | 12 | — | 23.7 | 18.5 | | | | 7 |
| | 1/4 | KPQH06-02 | KPGH06-02 | 14 | — | 24.6 | 19 | | | | 14 |
| 8 | 1/8 | KPQH08-01 | KPGH08-01 | 14 | — | 30.7 | 25.5 | 20.5 | 26 | 18 | 14 |
| | 1/4 | KPQH08-02 | KPGH08-02 | | — | 29.1 | 23.5 | | | | 13 |
| 10 | 1/4 | KPQH10-02 | KPGH10-02 | 17 | — | 36.1 | 30.5 | 23 | 41 | 29 | 24 |
| | 3/8 | KPQH10-03 | KPGH10-03 | | — | 30.9 | 25.5 | | | | 23 |
| 12 | 3/8 | KPQH12-03 | KPGH12-03 | 19 | — | 32 | 26.5 | 24 | 58 | 46 | 23 |
| | 1/2 | KPQH12-04 | KPGH12-04 | 22 | — | 32.2 | 25 | | | | 46 |

∗ Reference dimension for R threads after installation

(M5)




(R)




### Male Elbow: KPQL, KPGL

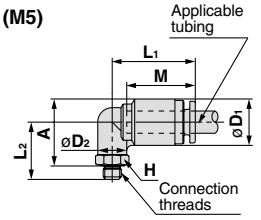
(M5)

(R)

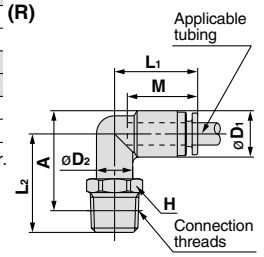
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | Note 1) øD1 | øD2 | L1 | L2 | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQL04-M5 | KPGL04-M5 | 8 | 10.4 | 8 | 19.7 | 15.3 | 17 | 17 | 4 | 4 | 4 |
| | 1/8 | KPQL04-01 | KPGL04-01 | 10 | | 10 | | 21.1 | 21 | | | | 10 |
| | 1/4 | KPQL04-02 | KPGL04-02 | 14 | | | | 25.5 | 25 | | | | 19 |
| 6 | M5 x 0.8 | KPQL06-M5 | KPGL06-M5 | 8 | 12.8 | 8 | 21.8 | 15.8 | 18.5 | 18.5 | 10 | 10 | 6 |
| | 1/8 | KPQL06-01 | KPGL06-01 | 10 | | 10 | | 22.3 | 23.5 | | | | 12 |
| | 1/4 | KPQL06-02 | KPGL06-02 | 14 | | | | 26.7 | 27.5 | | | | 20 |
| 8 | 1/8 | KPQL08-01 | KPGL08-01 | 12 | 15.2 | 12 | 25.3 | 23.5 | 26 | 20.5 | 26 | 18 | 13 |
| | 1/4 | KPQL08-02 | KPGL08-02 | 14 | | | | 27.9 | 30 | | | | 21 |
| 10 | 1/4 | KPQL10-02 | KPGL10-02 | 17 | 18.5 | 17 | 28.4 | 29.4 | 33 | 23 | 41 | 29 | 26 |
| | 3/8 | KPQL10-03 | KPGL10-03 | | | | | 30.8 | 34.5 | | | | 36 |
| 12 | 3/8 | KPQL12-03 | KPGL12-03 | | 20.9 | | 30.4 | 32 | 37 | 24 | 58 | 46 | 38 |
| | 1/2 | KPQL12-04 | KPGL12-04 | 22 | | | | 36.2 | 39.5 | | | | 65 |

∗ Reference dimension for R threads after installation  Note 1) øD1 indicates the maximum diameter.

(M5)




(R)




### Union Tee: KPQT, KPGT

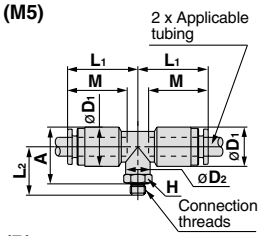
(M5)

(R)

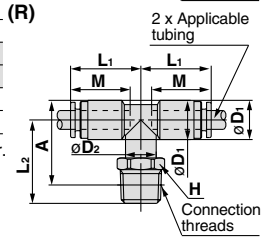
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | Note 1) øD1 | øD2 | L1 | L2 | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQT04-M5 | KPGT04-M5 | 8 | 10.4 | 8 | 19.7 | 15.3 | 17 | 17 | 4 | 4 | 6 |
| | 1/8 | KPQT04-01 | KPGT04-01 | 10 | | 10 | | 21.1 | 21 | | | | 13 |
| | 1/4 | KPQT04-02 | KPGT04-02 | 14 | | | | 25.5 | 25 | | | | 19 |
| 6 | M5 x 0.8 | KPQT06-M5 | KPGT06-M5 | 8 | 12.8 | 8 | 21.8 | 15.8 | 18.5 | 18.5 | 10 | 10 | 7 |
| | 1/8 | KPQT06-01 | KPGT06-01 | 10 | | 10 | | 22.3 | 23.5 | | | | 14 |
| | 1/4 | KPQT06-02 | KPGT06-02 | 14 | | | | 26.7 | 27.5 | | | | 20 |
| 8 | 1/8 | KPQT08-01 | KPGT08-01 | 12 | 15.2 | 12 | 25.3 | 23.5 | 26 | 20.5 | 26 | 18 | 14 |
| | 1/4 | KPQT08-02 | KPGT08-02 | 14 | | | | 27.9 | 30 | | | | 22 |
| 10 | 1/4 | KPQT10-02 | KPGT10-02 | 17 | 18.5 | 17 | 28.4 | 29.4 | 33 | 23 | 41 | 29 | 29 |
| | 3/8 | KPQT10-03 | KPGT10-03 | | | | | 30.8 | 34.5 | | | | 39 |
| 12 | 3/8 | KPQT12-03 | KPGT12-03 | | 20.9 | | 30.4 | 32 | 37 | 24 | 58 | 46 | 41 |
| | 1/2 | KPQT12-04 | KPGT12-04 | 22 | | | | 36.2 | 39.5 | | | | 38 |

∗ Reference dimension for R threads after installation  Note 1) øD1 indicates the maximum diameter.

(M5)




(R)



## Dimensions

### Male Run Tee: KPQY, KPGY

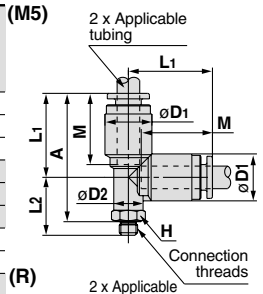
(M5)

(R)

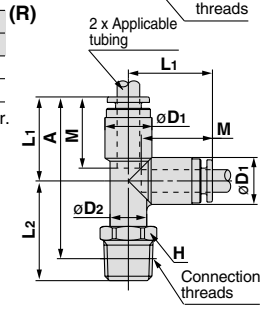
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | Note1) øD1 | øD2 | L1 | L2 | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQY04-M5 | KPGY04-M5 | 8 | 10.4 | 8 | 19.7 | 15.3 | 31.5 | 17 | 4 | 4 | 6 |
| | 1/8 | KPQY04-01 | KPGY04-01 | 10 | | 10 | | 21.1 | 35.5 | | | | 13 |
| | 1/4 | KPQY04-02 | KPGY04-02 | 14 | | | | 25.5 | 39.5 | | | | 19 |
| 6 | M5 x 0.8 | KPQY06-M5 | KPGY06-M5 | 8 | 12.8 | 8 | 21.8 | 15.8 | 34 | 18.5 | 10 | 10 | 7 |
| | 1/8 | KPQY06-01 | KPGY06-01 | 10 | | 10 | | 22.3 | 39 | | | | 14 |
| | 1/4 | KPQY06-02 | KPGY06-02 | 14 | | | | 26.7 | 43 | | | | 20 |
| 8 | 1/8 | KPQY08-01 | KPGY08-01 | 12 | 15.2 | 12 | 25.3 | 23.5 | 43.5 | 20.5 | 26 | 18 | 14 |
| | 1/4 | KPQY08-02 | KPGY08-02 | 14 | | | | 27.9 | 47.5 | | | | 22 |
| 10 | 1/4 | KPQY10-02 | KPGY10-02 | 17 | 18.5 | 17 | 28.4 | 29.4 | 52.5 | 23 | 41 | 29 | 29 |
| | 3/8 | KPQY10-03 | KPGY10-03 | | | | | 30.8 | 54 | | | | 39 |
| 12 | 3/8 | KPQY12-03 | KPGY12-03 | | 20.9 | | 30.4 | 32 | 57 | 24 | 58 | 46 | 41 |
| | 1/2 | KPQY12-04 | KPGY12-04 | 22 | | | | 36.2 | 59.5 | | | | 68 |

∗ Reference dimension for R threads after installation Note 1) **øD1** indicates the maximum diameter.

(M5)




(R)




### Male Branch: KPQU, KPGU

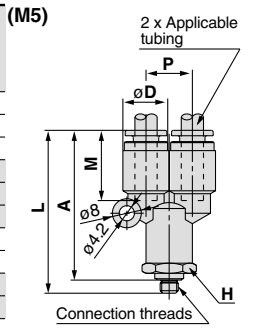
(M5)

(R)

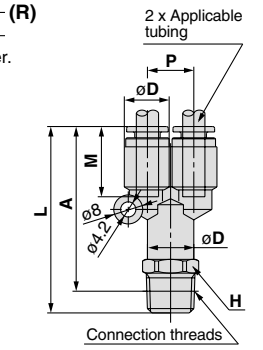
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | Note1) øD | L | P | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQU04-M5 | KPGU04-M5 | 11 | 10.4 | 40.7 | 10.4 | 37 | 17 | 4 | 4 | 10 |
| | 1/8 | KPQU04-01 | KPGU04-01 | | | 42.3 | | | | | | 11 |
| | 1/4 | KPQU04-02 | KPGU04-02 | 14 | | 46.7 | | 41 | | | | 20 |
| 6 | M5 x 0.8 | KPQU06-M5 | KPGU06-M5 | 13 | 12.8 | 43.9 | 12.8 | 40.5 | 18.5 | 10 | 10 | 12 |
| | 1/8 | KPQU06-01 | KPGU06-01 | | | 45.5 | | | | | | 11 |
| | 1/4 | KPQU06-02 | KPGU06-02 | 14 | | 49.9 | | 44.5 | | | | 21 |
| 8 | 1/8 | KPQU08-01 | KPGU08-01 | 17 | 15.2 | 53.6 | 15.2 | 48.5 | 20.5 | 26 | 18 | 15 |
| | 1/4 | KPQU08-02 | KPGU08-02 | | | 59.1 | | 53.5 | | | | 23 |
| 10 | 1/4 | KPQU10-02 | KPGU10-02 | 19 | 18.5 | 62.3 | 18.5 | 57 | 23 | 41 | 29 | 30 |
| | 3/8 | KPQU10-03 | KPGU10-03 | | | 59.2 | | 54 | | | | 40 |
| 12 | 3/8 | KPQU12-03 | KPGU12-03 | 22 | 20.9 | 64.9 | 20.9 | 59.5 | 24 | 58 | 46 | 40 |
| | 1/2 | KPQU12-04 | KPGU12-04 | | | 69.5 | | 62.5 | | | | 65 |

∗ Reference dimension for R threads after installation Note 1) **øD** indicates the maximum diameter.

(M5)



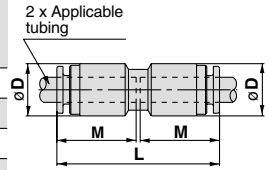

(R)




### Straight Union: KPQH, KPGH

| Applicable tubing O.D. mm | Model | | Note 1) øD | L | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|
| 4 | KPQH04-00 | KPGH04-00 | 10.4 | 35.4 | 17 | 4 | 4 | 4 |
| 6 | KPQH06-00 | KPGH06-00 | 12.8 | 37.6 | 18.5 | 10 | 10 | 6 |
| 8 | KPQH08-00 | KPGH08-00 | 15.2 | 42.4 | 20.5 | 26 | 18 | 10 |
| 10 | KPQH10-00 | KPGH10-00 | 18.5 | 46.6 | 23 | 41 | 29 | 15 |
| 12 | KPQH12-00 | KPGH12-00 | 20.9 | 48.6 | 24 | 58 | 46 | 18 |

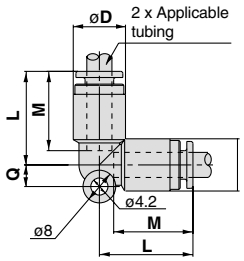
Note 1) **øD** indicates the maximum diameter.



## Elbow: KPQL, KPGL

| Applicable tubing O.D. mm | Model | | Note 1) øD | L | Q | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TPH | TPS | |
| 4 | KPQL04-00 | KPGL04-00 | 10.4 | 19.7 | 4.5 | 17 | 3.5 | 3.5 | 3 |
| 6 | KPQL06-00 | KPGL06-00 | 12.8 | 21.8 | 5.3 | 18.5 | 9 | 9 | 7 |
| 8 | KPQL08-00 | KPGL08-00 | 15.2 | 25.3 | 6 | 20.5 | 22 | 15 | 11 |
| 10 | KPQL10-00 | KPGL10-00 | 18.5 | 28.4 | 6.8 | 23 | 35 | 25 | 16 |
| 12 | KPQL12-00 | KPGL12-00 | 20.9 | 30.4 | 7.5 | 24 | 50 | 40 | 20 |

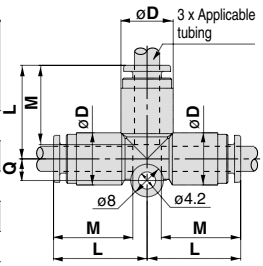
Note 1) ø**D** indicates the maximum diameter.




## Union Tee: KPQT, KPGT

| Applicable tubing O.D. mm | Model | | Note 1) øD | L | Q | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TPH | TPS | |
| 4 | KPQT04-00 | KPGT04-00 | 10.4 | 19.7 | 4.5 | 17 | 4 | 4 | 7 |
| 6 | KPQT06-00 | KPGT06-00 | 12.8 | 21.8 | 5.3 | 18.5 | 10 | 10 | 9 |
| 8 | KPQT08-00 | KPGT08-00 | 15.2 | 25.3 | 6 | 20.5 | 26 | 18 | 16 |
| 10 | KPQT10-00 | KPGT10-00 | 18.5 | 28.4 | 6.8 | 23 | 41 | 29 | 25 |
| 12 | KPQT12-00 | KPGT12-00 | 20.9 | 30.4 | 7.5 | 24 | 58 | 46 | 29 |

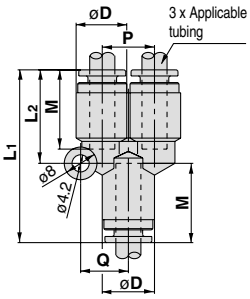
Note 1) ø**D** indicates the maximum diameter.




## Union "Y": KPQU, KPGU

| Applicable tubing O.D. mm | Model | | Note 1) øD | $L_1$ | $L_2$ | P | Q | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | TPH | TPS | |
| 4 | KPQU04-00 | KPGU04-00 | 10.4 | 36.8 | 19.6 | 10.4 | 9.7 | 17 | 4 | 4 | 7 |
| 6 | KPQU06-00 | KPGU06-00 | 12.8 | 40.1 | 21.8 | 12.8 | 11.7 | 18.5 | 10 | 10 | 10 |
| 8 | KPQU08-00 | KPGU08-00 | 15.2 | 46.7 | 26.5 | 15.2 | 13.7 | 20.5 | 26 | 18 | 17 |
| 10 | KPQU10-00 | KPGU10-00 | 18.5 | 52 | 29.7 | 18.5 | 16.1 | 23 | 41 | 29 | 26 |
| 12 | KPQU12-00 | KPGU12-00 | 20.9 | 55.2 | 31.9 | 20.9 | 18.1 | 24 | 58 | 46 | 32 |

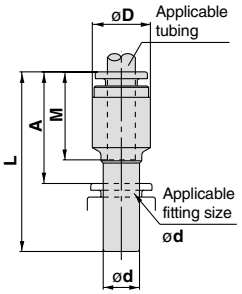
Note 1) ø**D** indicates the maximum diameter.




## Plug-in Reducer: KPQR, KPGR

| Applicable tubing O.D. mm | Applicable fitting size ød | Model | | Note 1) øD | L | A | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | TPH | TPS | |
| 4 | 6 | KPQR04-06 | KPGR04-06 | 10.4 | 38.4 | 19.1 | 17 | 4 | 4 | 3 |
| | 8 | KPQR04-08 | KPGR04-08 | | 40.9 | 19.2 | | | | 4 |
| 6 | | KPQR06-08 | KPGR06-08 | 12.8 | 41.5 | 19.8 | 18.5 | 10 | 10 | 4 |
| | 10 | KPQR06-10 | KPGR06-10 | | 44 | 20.2 | | | | 5 |
| 8 | | KPQR08-10 | KPGR08-10 | 15.2 | 46 | 22.2 | 20.5 | 26 | 18 | 5 |
| | 12 | KPQR08-12 | KPGR08-12 | | 47 | | | | | 6 |
| 10 | | KPQR10-12 | KPGR10-12 | 18.5 | 49.5 | 24.7 | 23 | 41 | 29 | 9 |

Note 1) ø**D** indicates the maximum diameter.

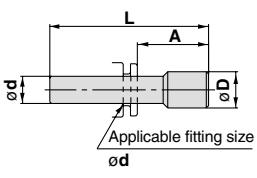



## Plug: KPP



| Applicable fitting size ød | Model | øD | L | A | Mass g |
|---|---|---|---|---|---|
| 4 | KPP-04 | 6 | 32 | 13.8 | 0.4 |
| 6 | KPP-06 | 8 | 35 | 15.7 | 0.7 |
| 8 | KPP-08 | 10 | 39 | 17.3 | 1.1 |
| 10 | KPP-10 | 12 | 43 | 19.2 | 1.7 |
| 12 | KPP-12 | 14 | 45.5 | 20.7 | 2.5 |

∗ The plug is commom for series KPQ, KPG and KP.



# *Series KP/KPQ/KPG*
# Specific Product Precautions 1

**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions and pages 13 to 16 for Fittings and Tubing Precautions.**

## Selection

### ⚠Caution

**1. Please consult with SMC regarding fluids other than air, water and nitrogen gas.**

## Handling

### ⚠Caution

**1. Store away from direct sunlight at 40°C or less.**

**2. Open the inner package of double packaging in a clean room or other clean environment.**

## Installation of Threads

### ⚠Caution

**Be sure to wrap sealing tape around the taper threads for both resin and metal threads.**
**If used without sealing tape air leakage can occur.**

**1. Series KP (with resin thread)**

1) Wrapping of pipe tape
Wrap the pipe tape 2 to 3 times around the threads, leaving 1.5 to 2 thread ridges exposed at the end of the threads.

2) Tightening
After tightening by hand, tighten an additional 2 to 3 turns using a tightening tool.

**2. Series KPQ/KPG (with metal thread)**

1) For M5
After tightening by hand, tighten approximately 1/6 turn further using a tightening tool. Reference values for the tightening torque are 1 to 1.5 N·m. Excessive tightening can cause air leakage due to thread damage or deformation of the gasket, etc. Insufficient tightening can cause loose threads and air leakage, etc.

## Installation of Threads

### ⚠Caution

2) Taper thread

(1) Wrapping of pipe tape
Wrap the pipe tape 2 to 3 times around the threads, leaving 1 thread ridges exposed at the end of the threads.

(2) When installing, tighten with the proper torque shown in the table below. As a rule, this corresponds to two or three turns with a tool after tightening by hand.

| Connection thread size | Proper tightening torque (N·m) |
|---|---|
| R 1/8 | 7 to 9 |
| R 1/4 | 12 to 14 |
| R 3/8 | 22 to 24 |
| R 1/2 | 28 to 30 |

**3. Tightening tools**

Tighten with an appropriate wrench using the hexagon wrench flats on the body.
Position the wrench on the base as close as possible to the threads. If the size of the wrench is not suitable for the hexagon wrench flats, the wrench flats may be crushed.

## Installation and Removal of Tubing

### ⚠Caution

**1. Installation of tubing**

1) Grease is not used due to the Series KP oil-free specifications. For this reason, greater insertion force is required when tubing is installed. In particular, polyurethane tubing may fold when inserted due to its softness. Hold the end of the tubing, and insert it all the way in slowly and securely. Refer to dimension “M” in the dimension drawings for guidance on the insertion depth of tubing.

**2. Removal of tubing**

1) The outside diameter of tubes that have been used at high temperatures or for long periods of time will expand, and in some cases pipe fittings cannot be reattached. Tubes that cannot be attached should be discarded and replaced with new ones.

# *Series KP/KPQ/KPG*
# Specific Product Precautions 2

**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions and pages 13 to 16 for Fittings and Tubing Precautions.**

## Operating Environment

## ⚠Warning

1. **Do not use in environments or locations where there is a danger of damage to fittings and tubing.**
   For fitting and tubing materials, refer to specifications and construction drawings, etc.
2. **Provide shade in locations which receive direct sunlight.**

## ⚠Caution

1. **Series KP are special One-touch fittings for use on clean blowing and washing lines.**
   Please consult with SMC regarding other types of applications.

   Seal material: The durability of EPDM with respect to mineral oils is inferior, making it unsuitable for piping in general pneumatic equipment.
   Use Series KPQ and KPG for piping to general pneumatic equipment.

## Maintenance

## ⚠Caution

1. **Tightening of blow fittings (resin taper threads for piping)**
   Since Series KP taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections, and if leakage is detected correct the problem by further tightening. If additional tightening becomes ineffective, replace the fitting with a new product.
2. **Check for the following during regular maintenance, and replace components as necessary.**
   a) Scratches, gouges, abrasion, corrosion
   b) Leakage, refer to item 3 regarding taper thread leakage.
   c) Twisting, flattening or distortion of tubing
   d) Hardening, deterioration or softness of tubing
3. **Do not repair or patch the replaced tubing or fittings for reuse.**

## How to Order

**KP Q H 06 – 01 – [ ]**

**Clean One-touch fittings**

**Specifications**

| Symbol | Specifications (metal part materials) |
|---|---|
| **Q** | Brass (electroless nickel plated) |
| **G** | Stainless steel 304 |

**Model**

| | |
|---|---|
| **H** | Male connector, Straight union |
| **L** | Union elbow, Male elbow |
| **T** | Male branch tee, Union tee |
| **Y** | Male run tee |
| **U** | Male branch, Union "Y" |
| **R** | Plug-in reducer |

**Applicable tubing O.D.**

| | |
|---|---|
| **04** | ø4 |
| **06** | ø6 |
| **08** | ø8 |
| **10** | ø10 |
| **12** | ø12 |

**Made to Order**

| | |
|---|---|
| **X53** | With pipe tape |
| **X193** Note 1) | Grease-free<br>Rubber material: EPDM (Fluorine-coated)<br>Gasket: M-5G3 (Stainless steel 316, Special FKM) Note 2)<br>With release bushing, Guide color: Natural |

Note 1) Series KPG: Compatible with products with threads only
Note 2) M5 thread

**Port size/Applicable tubing O.D.**

| | | | |
|---|---|---|---|
| **Thread connection** | **M5** | M5 x 0.8 | |
| | **01** | R 1/8 | |
| | **02** | R 1/4 | |
| | **03** | R 3/8 | |
| | **04** | R 1/2 | |
| **Tubing (rod) connection** | **00** | Same dia. tubing | |
| | **04** | ø4 | Different dia. tubing (plug-in reducer) |
| | **06** | ø6 | |
| | **08** | ø8 | |
| | **10** | ø10 | |
| | **12** | ø12 | |

**KP P 08**

**Clean One-touch fittings**

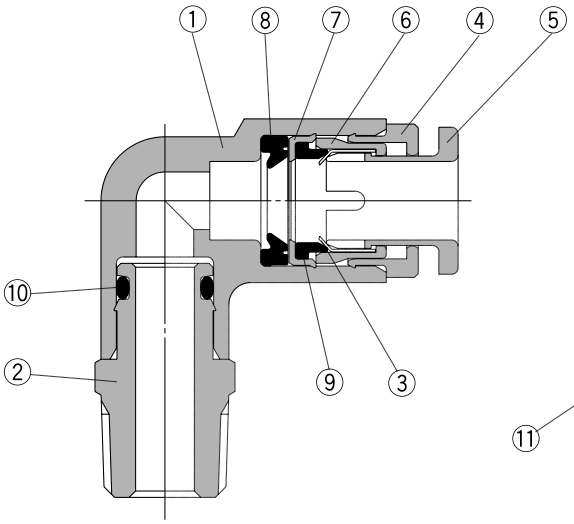
**Plug**

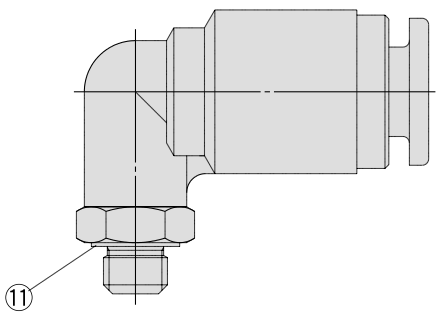
**Applicable fitting size**

| | |
|---|---|
| **04** | ø4 |
| **06** | ø6 |
| **08** | ø8 |
| **10** | ø10 |
| **12** | ø12 |

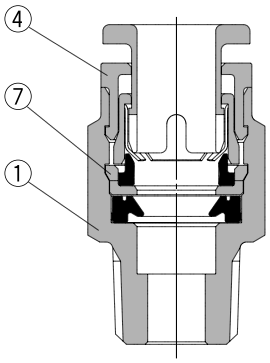


## Construction




**M5 type**




**Male connector**

### Component Parts

| No. | Description | | Material | |
|---|---|---|---|---|
| | | | **Series KPQ** | **Series KPG** |
| 1 | **Body** | | PP | |
| | | **With male connector** | C3604 (electroless nickel plated) | Stainless steel 304 |
| 2 | **Stud** | | C3604 (electroless nickel plated) | Stainless steel 304 |
| 3 | **Chuck** | | Stainless steel 304 | |
| 4 | **Guide** | | C3604 (electroless nickel plated) | Stainless steel 304 |
| | | **With male connector** | PP | |
| 5 | **Release button** | | PP (color: light gray) | PP (color: light blue) |
| 6 | **Collet** | | PP | |
| 7 | **Stopper** | | Stainless steel 304 | |
| | | **With male connector** | PP | |
| 8 | **Seal** | | NBR | |
| 9 | **Bumper** | | NBR | |
| 10 | **O-ring** | | NBR | |
| 11 | **Gasket** | | Stainless steel 304, NBR | |

## Dimensions

### Male Connector: KPQH, KPGH

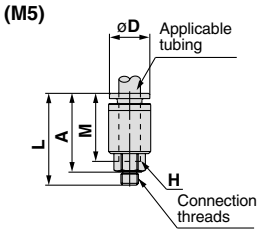
(M5)

(R)

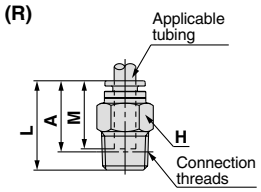
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | øD | L | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQH04-M5 | — | 8 | 10 | 24.4 | 21.5 | 17 | 4 | 4 | 4 |
| | | — | KPGH04-M5 | | | 24.9 | | | | | |
| | 1/8 | KPQH04-01 | KPGH04-01 | 10 | — | 23.5 | 18.5 | | | | 7 |
| | 1/4 | KPQH04-02 | KPGH04-02 | 14 | — | 21.4 | 16 | | | | 12 |
| 6 | M5 x 0.8 | KPQH06-M5 | — | 8 | 12 | 25.3 | 22 | 18.5 | 10 | 10 | 5 |
| | | — | KPGH06-M5 | | | 25.8 | | | | | |
| | 1/8 | KPQH06-01 | KPGH06-01 | 12 | — | 23.7 | 18.5 | | | | 7 |
| | 1/4 | KPQH06-02 | KPGH06-02 | 14 | — | 24.6 | 19 | | | | 14 |
| 8 | 1/8 | KPQH08-01 | KPGH08-01 | 14 | — | 30.7 | 25.5 | 20.5 | 26 | 18 | 14 |
| | 1/4 | KPQH08-02 | KPGH08-02 | | — | 29.1 | 23.5 | | | | 13 |
| 10 | 1/4 | KPQH10-02 | KPGH10-02 | 17 | — | 36.1 | 30.5 | 23 | 41 | 29 | 24 |
| | 3/8 | KPQH10-03 | KPGH10-03 | | — | 30.9 | 25.5 | | | | 23 |
| 12 | 3/8 | KPQH12-03 | KPGH12-03 | 19 | — | 32 | 26.5 | 24 | 58 | 46 | 23 |
| | 1/2 | KPQH12-04 | KPGH12-04 | 22 | — | 32.2 | 25 | | | | 46 |

∗ Reference dimension for R threads after installation

(M5)




(R)




### Male Elbow: KPQL, KPGL

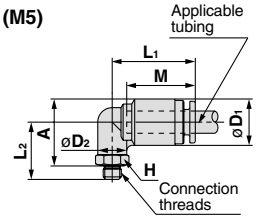
(M5)

(R)

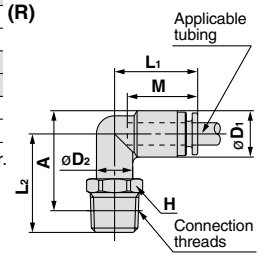
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | Note 1) øD1 | øD2 | L1 | L2 | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQL04-M5 | KPGL04-M5 | 8 | 10.4 | 8 | 19.7 | 15.3 | 17 | 17 | 4 | 4 | 4 |
| | 1/8 | KPQL04-01 | KPGL04-01 | 10 | | 10 | | 21.1 | 21 | | | | 10 |
| | 1/4 | KPQL04-02 | KPGL04-02 | 14 | | | | 25.5 | 25 | | | | 19 |
| 6 | M5 x 0.8 | KPQL06-M5 | KPGL06-M5 | 8 | 12.8 | 8 | 21.8 | 15.8 | 18.5 | 18.5 | 10 | 10 | 6 |
| | 1/8 | KPQL06-01 | KPGL06-01 | 10 | | 10 | | 22.3 | 23.5 | | | | 12 |
| | 1/4 | KPQL06-02 | KPGL06-02 | 14 | | | | 26.7 | 27.5 | | | | 20 |
| 8 | 1/8 | KPQL08-01 | KPGL08-01 | 12 | 15.2 | 12 | 25.3 | 23.5 | 26 | 20.5 | 26 | 18 | 13 |
| | 1/4 | KPQL08-02 | KPGL08-02 | 14 | | | | 27.9 | 30 | | | | 21 |
| 10 | 1/4 | KPQL10-02 | KPGL10-02 | 17 | 18.5 | 17 | 28.4 | 29.4 | 33 | 23 | 41 | 29 | 26 |
| | 3/8 | KPQL10-03 | KPGL10-03 | | | | | 30.8 | 34.5 | | | | 36 |
| 12 | 3/8 | KPQL12-03 | KPGL12-03 | | 20.9 | | 30.4 | 32 | 37 | 24 | 58 | 46 | 38 |
| | 1/2 | KPQL12-04 | KPGL12-04 | 22 | | | | 36.2 | 39.5 | | | | 65 |

∗ Reference dimension for R threads after installation  Note 1) øD1 indicates the maximum diameter.

(M5)




(R)




### Union Tee: KPQT, KPGT

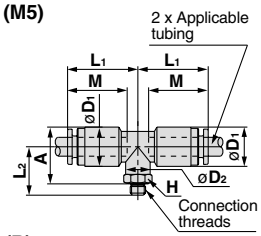
(M5)

(R)

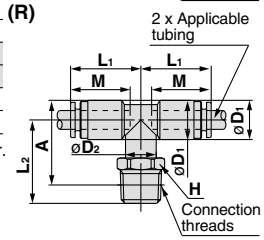
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | Note 1) øD1 | øD2 | L1 | L2 | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQT04-M5 | KPGT04-M5 | 8 | 10.4 | 8 | 19.7 | 15.3 | 17 | 17 | 4 | 4 | 6 |
| | 1/8 | KPQT04-01 | KPGT04-01 | 10 | | 10 | | 21.1 | 21 | | | | 13 |
| | 1/4 | KPQT04-02 | KPGT04-02 | 14 | | | | 25.5 | 25 | | | | 19 |
| 6 | M5 x 0.8 | KPQT06-M5 | KPGT06-M5 | 8 | 12.8 | 8 | 21.8 | 15.8 | 18.5 | 18.5 | 10 | 10 | 7 |
| | 1/8 | KPQT06-01 | KPGT06-01 | 10 | | 10 | | 22.3 | 23.5 | | | | 14 |
| | 1/4 | KPQT06-02 | KPGT06-02 | 14 | | | | 26.7 | 27.5 | | | | 20 |
| 8 | 1/8 | KPQT08-01 | KPGT08-01 | 12 | 15.2 | 12 | 25.3 | 23.5 | 26 | 20.5 | 26 | 18 | 14 |
| | 1/4 | KPQT08-02 | KPGT08-02 | 14 | | | | 27.9 | 30 | | | | 22 |
| 10 | 1/4 | KPQT10-02 | KPGT10-02 | 17 | 18.5 | 17 | 28.4 | 29.4 | 33 | 23 | 41 | 29 | 29 |
| | 3/8 | KPQT10-03 | KPGT10-03 | | | | | 30.8 | 34.5 | | | | 39 |
| 12 | 3/8 | KPQT12-03 | KPGT12-03 | | 20.9 | | 30.4 | 32 | 37 | 24 | 58 | 46 | 41 |
| | 1/2 | KPQT12-04 | KPGT12-04 | 22 | | | | 36.2 | 39.5 | | | | 38 |

∗ Reference dimension for R threads after installation  Note 1) øD1 indicates the maximum diameter.

(M5)




(R)



## Dimensions

### Male Run Tee: KPQY, KPGY

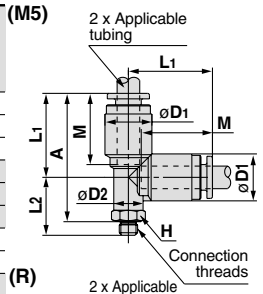
(M5)

(R)

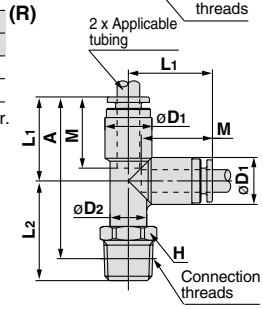
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | Note1) øD1 | øD2 | L1 | L2 | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQY04-M5 | KPGY04-M5 | 8 | 10.4 | 8 | 19.7 | 15.3 | 31.5 | 17 | 4 | 4 | 6 |
| | 1/8 | KPQY04-01 | KPGY04-01 | 10 | | 10 | | 21.1 | 35.5 | | | | 13 |
| | 1/4 | KPQY04-02 | KPGY04-02 | 14 | | | | 25.5 | 39.5 | | | | 19 |
| 6 | M5 x 0.8 | KPQY06-M5 | KPGY06-M5 | 8 | 12.8 | 8 | 21.8 | 15.8 | 34 | 18.5 | 10 | 10 | 7 |
| | 1/8 | KPQY06-01 | KPGY06-01 | 10 | | 10 | | 22.3 | 39 | | | | 14 |
| | 1/4 | KPQY06-02 | KPGY06-02 | 14 | | | | 26.7 | 43 | | | | 20 |
| 8 | 1/8 | KPQY08-01 | KPGY08-01 | 12 | 15.2 | 12 | 25.3 | 23.5 | 43.5 | 20.5 | 26 | 18 | 14 |
| | 1/4 | KPQY08-02 | KPGY08-02 | 14 | | | | 27.9 | 47.5 | | | | 22 |
| 10 | 1/4 | KPQY10-02 | KPGY10-02 | 17 | 18.5 | 17 | 28.4 | 29.4 | 52.5 | 23 | 41 | 29 | 29 |
| | 3/8 | KPQY10-03 | KPGY10-03 | | | | | 30.8 | 54 | | | | 39 |
| 12 | 3/8 | KPQY12-03 | KPGY12-03 | | 20.9 | | 30.4 | 32 | 57 | 24 | 58 | 46 | 41 |
| | 1/2 | KPQY12-04 | KPGY12-04 | 22 | | | | 36.2 | 59.5 | | | | 68 |

∗ Reference dimension for R threads after installation Note 1) **øD1** indicates the maximum diameter.

(M5)




(R)




### Male Branch: KPQU, KPGU

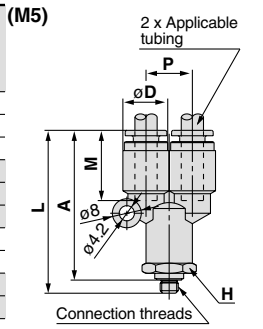
(M5)

(R)

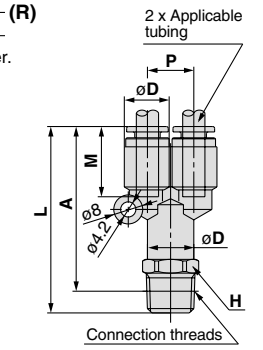
| Applicable tubing O.D. mm | Connection thread R M | Model | | H (width across flats) | Note1) øD | L | P | A* | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KPQU04-M5 | KPGU04-M5 | 11 | 10.4 | 40.7 | 10.4 | 37 | 17 | 4 | 4 | 10 |
| | 1/8 | KPQU04-01 | KPGU04-01 | | | 42.3 | | | | | | 11 |
| | 1/4 | KPQU04-02 | KPGU04-02 | 14 | | 46.7 | | 41 | | | | 20 |
| 6 | M5 x 0.8 | KPQU06-M5 | KPGU06-M5 | 13 | 12.8 | 43.9 | 12.8 | 40.5 | 18.5 | 10 | 10 | 12 |
| | 1/8 | KPQU06-01 | KPGU06-01 | | | 45.5 | | | | | | 11 |
| | 1/4 | KPQU06-02 | KPGU06-02 | 14 | | 49.9 | | 44.5 | | | | 21 |
| 8 | 1/8 | KPQU08-01 | KPGU08-01 | 17 | 15.2 | 53.6 | 15.2 | 48.5 | 20.5 | 26 | 18 | 15 |
| | 1/4 | KPQU08-02 | KPGU08-02 | | | 59.1 | | 53.5 | | | | 23 |
| 10 | 1/4 | KPQU10-02 | KPGU10-02 | 19 | 18.5 | 62.3 | 18.5 | 57 | 23 | 41 | 29 | 30 |
| | 3/8 | KPQU10-03 | KPGU10-03 | | | 59.2 | | 54 | | | | 40 |
| 12 | 3/8 | KPQU12-03 | KPGU12-03 | 22 | 20.9 | 64.9 | 20.9 | 59.5 | 24 | 58 | 46 | 40 |
| | 1/2 | KPQU12-04 | KPGU12-04 | | | 69.5 | | 62.5 | | | | 65 |

∗ Reference dimension for R threads after installation Note 1) **øD** indicates the maximum diameter.

(M5)



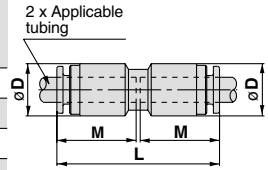

(R)




### Straight Union: KPQH, KPGH

| Applicable tubing O.D. mm | Model | | Note 1) øD | L | M | Effective area mm² TPH | Effective area mm² TPS | Mass g |
|---|---|---|---|---|---|---|---|---|
| 4 | KPQH04-00 | KPGH04-00 | 10.4 | 35.4 | 17 | 4 | 4 | 4 |
| 6 | KPQH06-00 | KPGH06-00 | 12.8 | 37.6 | 18.5 | 10 | 10 | 6 |
| 8 | KPQH08-00 | KPGH08-00 | 15.2 | 42.4 | 20.5 | 26 | 18 | 10 |
| 10 | KPQH10-00 | KPGH10-00 | 18.5 | 46.6 | 23 | 41 | 29 | 15 |
| 12 | KPQH12-00 | KPGH12-00 | 20.9 | 48.6 | 24 | 58 | 46 | 18 |

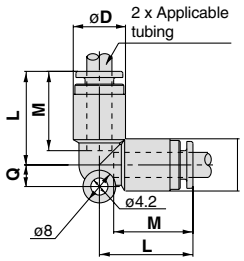
Note 1) **øD** indicates the maximum diameter.



## Elbow: KPQL, KPGL

| Applicable tubing O.D. mm | Model | | Note 1) øD | L | Q | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TPH | TPS | |
| 4 | KPQL04-00 | KPGL04-00 | 10.4 | 19.7 | 4.5 | 17 | 3.5 | 3.5 | 3 |
| 6 | KPQL06-00 | KPGL06-00 | 12.8 | 21.8 | 5.3 | 18.5 | 9 | 9 | 7 |
| 8 | KPQL08-00 | KPGL08-00 | 15.2 | 25.3 | 6 | 20.5 | 22 | 15 | 11 |
| 10 | KPQL10-00 | KPGL10-00 | 18.5 | 28.4 | 6.8 | 23 | 35 | 25 | 16 |
| 12 | KPQL12-00 | KPGL12-00 | 20.9 | 30.4 | 7.5 | 24 | 50 | 40 | 20 |

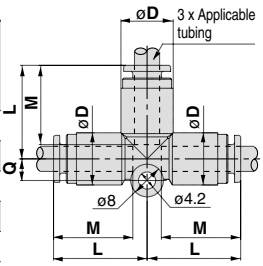
Note 1) ø**D** indicates the maximum diameter.




## Union Tee: KPQT, KPGT

| Applicable tubing O.D. mm | Model | | Note 1) øD | L | Q | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TPH | TPS | |
| 4 | KPQT04-00 | KPGT04-00 | 10.4 | 19.7 | 4.5 | 17 | 4 | 4 | 7 |
| 6 | KPQT06-00 | KPGT06-00 | 12.8 | 21.8 | 5.3 | 18.5 | 10 | 10 | 9 |
| 8 | KPQT08-00 | KPGT08-00 | 15.2 | 25.3 | 6 | 20.5 | 26 | 18 | 16 |
| 10 | KPQT10-00 | KPGT10-00 | 18.5 | 28.4 | 6.8 | 23 | 41 | 29 | 25 |
| 12 | KPQT12-00 | KPGT12-00 | 20.9 | 30.4 | 7.5 | 24 | 58 | 46 | 29 |

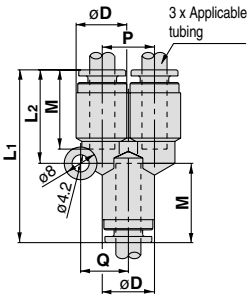
Note 1) ø**D** indicates the maximum diameter.




## Union "Y": KPQU, KPGU

| Applicable tubing O.D. mm | Model | | Note 1) øD | $L_1$ | $L_2$ | P | Q | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | TPH | TPS | |
| 4 | KPQU04-00 | KPGU04-00 | 10.4 | 36.8 | 19.6 | 10.4 | 9.7 | 17 | 4 | 4 | 7 |
| 6 | KPQU06-00 | KPGU06-00 | 12.8 | 40.1 | 21.8 | 12.8 | 11.7 | 18.5 | 10 | 10 | 10 |
| 8 | KPQU08-00 | KPGU08-00 | 15.2 | 46.7 | 26.5 | 15.2 | 13.7 | 20.5 | 26 | 18 | 17 |
| 10 | KPQU10-00 | KPGU10-00 | 18.5 | 52 | 29.7 | 18.5 | 16.1 | 23 | 41 | 29 | 26 |
| 12 | KPQU12-00 | KPGU12-00 | 20.9 | 55.2 | 31.9 | 20.9 | 18.1 | 24 | 58 | 46 | 32 |

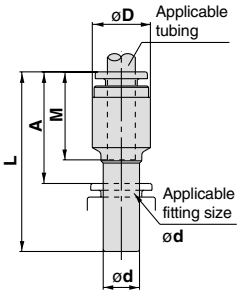
Note 1) ø**D** indicates the maximum diameter.




## Plug-in Reducer: KPQR, KPGR

| Applicable tubing O.D. mm | Applicable fitting size ød | Model | | Note 1) øD | L | A | M | Effective area mm² | | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | TPH | TPS | |
| 4 | 6 | KPQR04-06 | KPGR04-06 | 10.4 | 38.4 | 19.1 | 17 | 4 | 4 | 3 |
| | 8 | KPQR04-08 | KPGR04-08 | | 40.9 | 19.2 | | | | 4 |
| 6 | | KPQR06-08 | KPGR06-08 | 12.8 | 41.5 | 19.8 | 18.5 | 10 | 10 | 4 |
| | 10 | KPQR06-10 | KPGR06-10 | | 44 | 20.2 | | | | 5 |
| 8 | | KPQR08-10 | KPGR08-10 | 15.2 | 46 | 22.2 | 20.5 | 26 | 18 | 5 |
| | 12 | KPQR08-12 | KPGR08-12 | | 47 | | | | | 6 |
| 10 | | KPQR10-12 | KPGR10-12 | 18.5 | 49.5 | 24.7 | 23 | 41 | 29 | 9 |

Note 1) ø**D** indicates the maximum diameter.

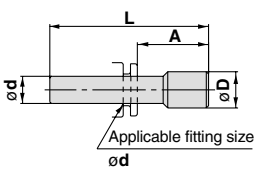



## Plug: KPP



| Applicable fitting size ød | Model | øD | L | A | Mass g |
|---|---|---|---|---|---|
| 4 | KPP-04 | 6 | 32 | 13.8 | 0.4 |
| 6 | KPP-06 | 8 | 35 | 15.7 | 0.7 |
| 8 | KPP-08 | 10 | 39 | 17.3 | 1.1 |
| 10 | KPP-10 | 12 | 43 | 19.2 | 1.7 |
| 12 | KPP-12 | 14 | 45.5 | 20.7 | 2.5 |

∗ The plug is commom for series KPQ, KPG and KP.



# *Series KP/KPQ/KPG*
# Specific Product Precautions 1

**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions and pages 13 to 16 for Fittings and Tubing Precautions.**

## Selection

### ⚠Caution

**1. Please consult with SMC regarding fluids other than air, water and nitrogen gas.**

## Handling

### ⚠Caution

**1. Store away from direct sunlight at 40°C or less.**

**2. Open the inner package of double packaging in a clean room or other clean environment.**

## Installation of Threads

### ⚠Caution

**Be sure to wrap sealing tape around the taper threads for both resin and metal threads.**
**If used without sealing tape air leakage can occur.**

**1. Series KP (with resin thread)**

1) Wrapping of pipe tape
Wrap the pipe tape 2 to 3 times around the threads, leaving 1.5 to 2 thread ridges exposed at the end of the threads.

2) Tightening
After tightening by hand, tighten an additional 2 to 3 turns using a tightening tool.

**2. Series KPQ/KPG (with metal thread)**

1) For M5
After tightening by hand, tighten approximately 1/6 turn further using a tightening tool. Reference values for the tightening torque are 1 to 1.5 N·m. Excessive tightening can cause air leakage due to thread damage or deformation of the gasket, etc. Insufficient tightening can cause loose threads and air leakage, etc.

## Installation of Threads

### ⚠Caution

2) Taper thread

(1) Wrapping of pipe tape
Wrap the pipe tape 2 to 3 times around the threads, leaving 1 thread ridges exposed at the end of the threads.

(2) When installing, tighten with the proper torque shown in the table below. As a rule, this corresponds to two or three turns with a tool after tightening by hand.

| Connection thread size | Proper tightening torque (N·m) |
|---|---|
| R 1/8 | 7 to 9 |
| R 1/4 | 12 to 14 |
| R 3/8 | 22 to 24 |
| R 1/2 | 28 to 30 |

**3. Tightening tools**

Tighten with an appropriate wrench using the hexagon wrench flats on the body.
Position the wrench on the base as close as possible to the threads. If the size of the wrench is not suitable for the hexagon wrench flats, the wrench flats may be crushed.

## Installation and Removal of Tubing

### ⚠Caution

**1. Installation of tubing**

1) Grease is not used due to the Series KP oil-free specifications. For this reason, greater insertion force is required when tubing is installed. In particular, polyurethane tubing may fold when inserted due to its softness. Hold the end of the tubing, and insert it all the way in slowly and securely. Refer to dimension “M” in the dimension drawings for guidance on the insertion depth of tubing.

**2. Removal of tubing**

1) The outside diameter of tubes that have been used at high temperatures or for long periods of time will expand, and in some cases pipe fittings cannot be reattached. Tubes that cannot be attached should be discarded and replaced with new ones.

# *Series KP/KPQ/KPG*
# Specific Product Precautions 2

**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions and pages 13 to 16 for Fittings and Tubing Precautions.**

## Operating Environment

## ⚠Warning

1. **Do not use in environments or locations where there is a danger of damage to fittings and tubing.**
   For fitting and tubing materials, refer to specifications and construction drawings, etc.
2. **Provide shade in locations which receive direct sunlight.**

## ⚠Caution

1. **Series KP are special One-touch fittings for use on clean blowing and washing lines.**
   Please consult with SMC regarding other types of applications.

   Seal material: The durability of EPDM with respect to mineral oils is inferior, making it unsuitable for piping in general pneumatic equipment.
   Use Series KPQ and KPG for piping to general pneumatic equipment.

## Maintenance

## ⚠Caution

1. **Tightening of blow fittings (resin taper threads for piping)**
   Since Series KP taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections, and if leakage is detected correct the problem by further tightening. If additional tightening becomes ineffective, replace the fitting with a new product.
2. **Check for the following during regular maintenance, and replace components as necessary.**
   a) Scratches, gouges, abrasion, corrosion
   b) Leakage, refer to item 3 regarding taper thread leakage.
   c) Twisting, flattening or distortion of tubing
   d) Hardening, deterioration or softness of tubing
3. **Do not repair or patch the replaced tubing or fittings for reuse.**

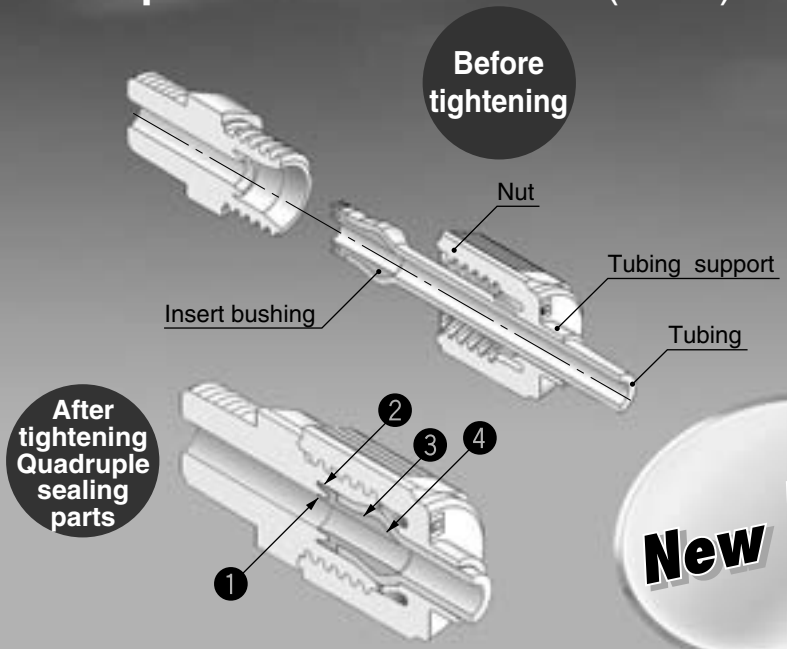
# Fluoropolymer Fittings Hyper Fitting

## Series LQ1

Clean Wet Series



● **Quadruple seal construction** (PAT.)




New PFA

## Quadruple sealing construction

The quadruple sealing construction (PAT.) based on SMC's original idea results in highly reliable sealing characteristics with outstanding leakage prevention effect.

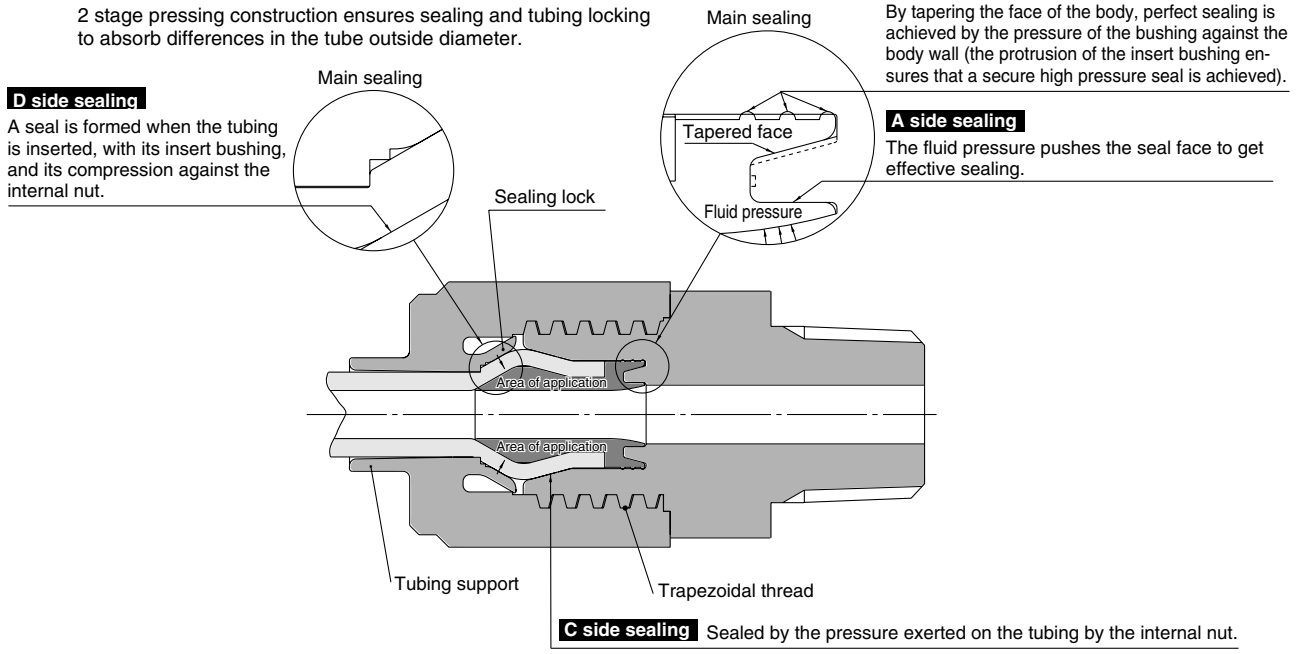
## Flow-through characteristics

Excellent flow-through characteristics are achieved by minimizing liquid deposit.

## Locking

- Locking mechanism utilizes sealing lock by the nut.
- Trapezoidal thread allows application of high torque
- 2 stage pressing by the tubing holder of the nut ensures secure tube holding.

**Basic**




## Strong resistance to tube bending and deformation.

Able to withstand lateral loads with the tubing support.

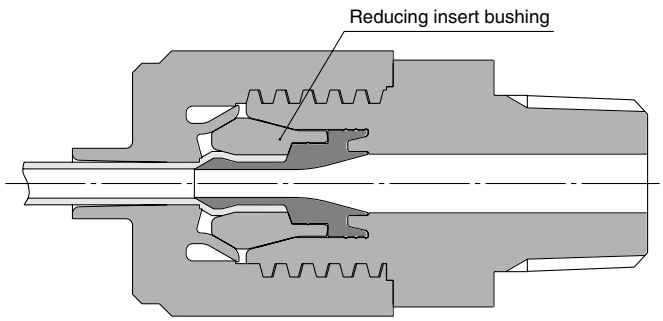
## Easy tightening of nuts.

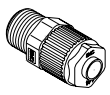
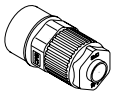
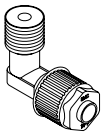
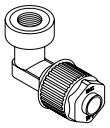
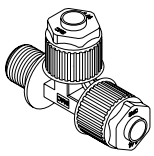
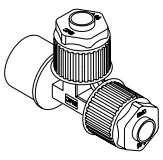
- No positioning guide is required, simply tighten up the tubing to the end of the fitting body.
- The trapezoidal thread prevents oblique nut insertion.

## Tubing sizes are interchangeable.

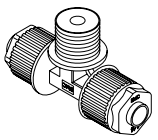
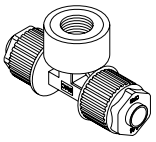
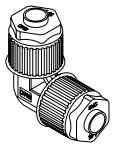
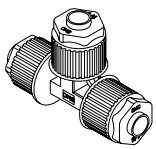
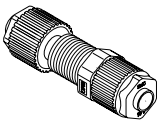
- The reducer method allows tubing size changes without replacing the body.
- Helps standardize fitting items resulting in less stock requirements.

**Reducing type**



| Series | | Appearance | Class | Port size | | | | | | | Tubing O.D. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Metric size | | | | | | | | Inch size | | | | | | |
| | | | | None | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | ø3 | ø4 | ø6 | ø8 | ø10 | ø12 | ø19 | ø25 | 1/8" | 3/16" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| **Connector LQ1H** | **Male** |  P.299 | **1** | – | ○ | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | **2** | – | ○ | ○ | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | **3** | – | – | ○ | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | **4** | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | **5** | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | **6** | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| | **Female** |  P.300 | **1** | – | ○ | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | **2** | – | ○ | ○ | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | **3** | – | – | ○ | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | **4** | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | **5** | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | **6** | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| **Elbow LQ1L** | **Male** |  P.301 | **1** | – | ○ | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | **2** | – | ○ | ○ | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | **3** | – | – | ○ | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | **4** | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | **5** | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | **6** | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| | **Female** |  P.302 | **1** | – | ○ | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | **2** | – | ○ | ○ | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | **3** | – | – | ○ | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | **4** | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | **5** | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | **6** | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| **Run tee LQ1R** | **Male** |  P.303 | **1** | – | ○ | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | **2** | – | ○ | ○ | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | **3** | – | – | ○ | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | **4** | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | **5** | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | **6** | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| | **Female** |  P.304 | **1** | – | ○ | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | **2** | – | ○ | ○ | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | **3** | – | – | ○ | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | **4** | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | **5** | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | **6** | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |

Note) ○Basic size ●With reducer

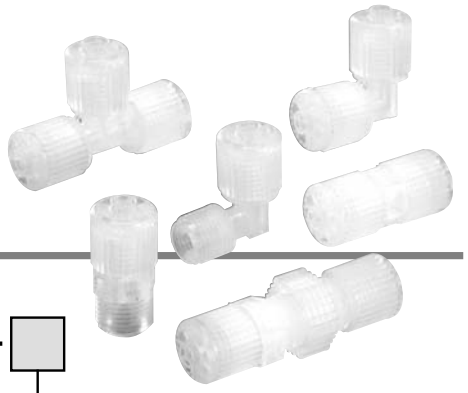
| Series | | Appearance | Class | Port size | | | | | | | Tubing O.D. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Metric size | | | | | | | | Inch size | | | | | | |
| | | | | None | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | ø3 | ø4 | ø6 | ø8 | ø10 | ø12 | ø19 | ø25 | 1/8" | 3/16" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| **Branch tee** **LQ1B** | Male |  P.305 | 1 | – | ○ | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | 2 | – | ○ | ○ | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | 3 | – | – | ○ | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | 4 | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | 5 | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | 6 | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| | Female |  P.306 | 1 | – | ○ | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | 2 | – | ○ | ○ | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | 3 | – | – | ○ | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | 4 | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | 5 | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | 6 | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| **Union elbow** **LQ1E** | |  P.307 | 1 | ○ | – | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | 2 | ○ | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | 3 | ○ | – | – | – | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | 4 | ○ | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | 5 | ○ | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | 6 | ○ | – | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| **Union tee** **LQ1T** | |  P.308 | 1 | ○ | – | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | 2 | ○ | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | 3 | ○ | – | – | – | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | 4 | ○ | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | 5 | ○ | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | 6 | ○ | – | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| **Panel mount union** **LQ1P** | |  P.309 | 1 | ○ | – | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | 2 | ○ | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | 3 | ○ | – | – | – | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | 4 | ○ | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | 5 | ○ | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | 6 | ○ | – | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| **Union** **LQ1U** | |  P.310 | 1 | ○ | – | – | – | – | – | – | ○ | ○ | – | – | – | – | – | – | ○ | – | – | – | – | – | – |
| | | | 2 | ○ | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ● | ○ | – | – | – | – |
| | | | 3 | ○ | – | – | – | – | – | – | – | – | ● | ● | ○ | – | – | – | – | – | ● | ○ | – | – | – |
| | | | 4 | ○ | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | 5 | ○ | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | 6 | ○ | – | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |
| **Union flange** **LQ1F** | | P.310 | 4 | ○ | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – | – |
| | | | 5 | ○ | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ | – |
| | | | 6 | ○ | – | – | – | – | – | – | – | – | – | – | – | – | ● | ○ | – | – | – | – | – | ● | ○ |

Note) ○Basic size ●With reducer

# Fluoropolymer Fittings
# Hyper Fitting

RoHS

# Series LQ1



## How to Order

**Threaded connection**

**LQ1 H 11 [ ] – M [ ] – [ ]**

**Fitting type**

| Symbol | Type |
|---|---|
| H | Connector |
| L | Elbow |
| B | Branch tee |
| R | Run tee |

**Thread type**

| Symbol | Type |
|---|---|
| Nil | R, Rc |
| N | NPT |

**Piping type**

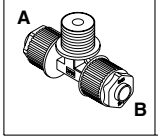
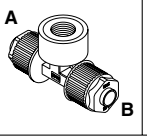
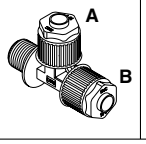
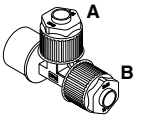
| Symbol | Type |
|---|---|
| M | Male |
| F | Female |

**Packaging**

| | |
|---|---|
| Nil | Clean packaging equivalent to Class M3.5 |
| 1 | Standard packaging equivalent to Class M5.5 |

**For different diameter (on B side)**

| Symbol | Application |
|---|---|
| Nil | Same tubiing size |
| Refer to the applicable tubing table. | Different diameter tubing can be selected within the same body class. |

| LQ1B | | LQ1R | |
|---|---|---|---|
| Branch tee male | Branch tee female | Run tee male | Run tee female |
|  |  |  |  |

The table of combination is the same as that for A side.
Note 1) Only branch tees and run tees can take different diameters.
Note 2) Use of different diameters is not available with size 1.

**Size combination**

| Class | No. | Applicable tubing size (mm) | Tubing O.D. |
|---|---|---|---|
| 1 | 1 | 4 x 3 | 1/8" |
| 1 | 2 | 3 x 2 | |
| 2 | 1 | 6 x 4 | 1/8" |
| 2 | 2 | 4 x 3 | |
| 2 | C | 3 x 2 | |
| 2 | 3 | 6 x 4 | 1/4" |
| 2 | 4 | 4 x 3 | |
| 2 | F | 3 x 2 | |
| 3 | 1 | 10 x 8 | 1/4" |
| 3 | 2 | 8 x 6 | |
| 3 | 3 | 6 x 4 | |
| 3 | 4 | 10 x 8 | 3/8" |
| 3 | 5 | 8 x 6 | |
| 3 | 6 | 6 x 4 | |
| 4 | 1 | 12 x 10 | 3/8" |
| 4 | 2 | 10 x 8 | |
| 4 | 3 | 12 x 10 | 1/2" |
| 4 | 4 | 10 x 8 | |
| 5 | 1 | 19 x 16 | 1/2" |
| 5 | 2 | 12 x 10 | |
| 5 | 3 | 19 x 16 | 3/4" |
| 5 | 4 | 12 x 10 | |
| 6 | 1 | 25 x 22 | 3/4" |
| 6 | 2 | 19 x 16 | |
| 6 | 3 | 25 x 22 | 1" |
| 6 | 4 | 19 x 16 | |

| Class | No. | Applicable tubing size (inch) | Tubing O.D. |
|---|---|---|---|
| 1 | A | 1/8" x 0.086" | 1/8" |
| — | — | —— | —— |
| 2 | A | 1/4" x 5/32" | 1/8" |
| 2 | B | 3/16" x 1/8" | |
| 2 | C | 1/8" x 0.086" | |
| 2 | D | 1/4" x 5/32" | 1/4" |
| 2 | E | 3/16" x 1/8" | |
| 2 | F | 1/8" x 0.086" | |
| 3 | A | 3/8" x 1/4" | 1/4" |
| 3 | B | 1/4" x 5/32" | |
| 3 | C | 3/8" x 1/4" | 3/8" |
| 3 | D | 1/4" x 5/32" | |
| 4 | A | 1/2" x 3/8" | 3/8" |
| 4 | B | 3/8" x 1/4" | |
| 4 | C | 1/2" x 3/8" | 1/2" |
| 4 | D | 3/8" x 1/4" | |
| 5 | A | 3/4" x 5/8" | 1/2" |
| 5 | B | 1/2" x 3/8" | |
| 5 | C | 3/4" x 5/8" | 3/4" |
| 5 | D | 1/2" x 3/8" | |
| 6 | A | 1" x 7/8" | 3/4" |
| 6 | B | 3/4" x 5/8" | |
| 6 | C | 1" x 7/8" | 1" |
| 6 | D | 3/4" x 5/8" | |

Note) For each body class, the second and later numbers or symbols indicate reducing. However, in case of size 1, the tubing cannot be changed by reducing.

## How to Order

**Tubing connection**

**LQ1 E 11 — □**

**Packaging**

| | |
|---|---|
| Nil | Clean packaging equivalent to Class M3.5 |
| 1 | Standard packaging equivalent to Class M5.5 |

**Fitting type**

| Symbol | Type |
|---|---|
| E | Union elbow |
| T | Union tee |
| P | Panel mount union |
| U | Union |
| F | Union flange |

**Combination of different diameter (on B side)**

| Class | No. | Applicable tubing size (mm) |
|---|---|---|
| 1 | 1 | 4 x 3 |
| 1 | 2 | 3 x 2 |
| 2 | 1 | 6 x 4 |
| 2 | 2 | 4 x 3 |
| 2 | C | 3 x 2 |
| 3 | 1 | 10 x 8 |
| 3 | 2 | 8 x 6 |
| 3 | 3 | 6 x 4 |
| 4 | 1 | 12 x 10 |
| 4 | 2 | 10 x 8 |
| 5 | 1 | 19 x 16 |
| 5 | 2 | 12 x 10 |
| 6 | 1 | 25 x 22 |
| 6 | 2 | 19 x 16 |

| Class | No. | Applicable tubing size (inch) |
|---|---|---|
| 1 | A | 1/8" x 0.086" |
| — | — | —— |
| 2 | A | 1/4" x 5/32" |
| 2 | B | 3/16" x 1/8" |
| 2 | C | 1/8" x 0.086" |
| 3 | A | 3/8" x 1/4" |
| 3 | B | 1/4" x 5/32" |
| 4 | A | 1/2" x 3/8" |
| 4 | B | 3/8" x 1/4" |
| 5 | A | 3/4" x 5/8" |
| 5 | B | 1/2" x 3/8" |
| 6 | A | 1" x 7/8" |
| 6 | B | 3/4" x 5/8" |

Note) For each body class, the second and later numbers or symbols indicate reducing. However, in case of size 1, the tubing cannot be changed by reducing.

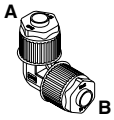
**Size combination**

| Class | No. | Applicable tubing size (mm) |
|---|---|---|
| 1 | 1 | 4 x 3 |
| 1 | 2 | 3 x 2 |
| 2 | 1 | 6 x 4 |
| 2 | 2 | 4 x 3 |
| 2 | C | 3 x 2 |
| 3 | 1 | 10 x 8 |
| 3 | 2 | 8 x 6 |
| 3 | 3 | 6 x 4 |
| 4 | 1 | 12 x 10 |
| 4 | 2 | 10 x 8 |
| 5 | 1 | 19 x 16 |
| 5 | 2 | 12 x 10 |
| 6 | 1 | 25 x 22 |
| 6 | 2 | 19 x 16 |

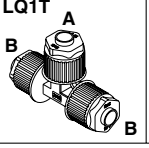
| Class | No. | Applicable tubing size (inch) | Applicable flange |
|---|---|---|---|
| 1 | A | 1/8" x 0.086" | — |
| — | — | —— | |
| 2 | A | 1/4" x 5/32" | — |
| 2 | B | 3/16" x 1/8" | |
| 2 | C | 1/8" x 0.086" | — |
| 3 | A | 3/8" x 1/4" | |
| 3 | B | 1/4" x 5/32" | |
| 4 | A | 1/2" x 3/8" | 15 A |
| 4 | B | 3/8" x 1/4" | |
| 5 | A | 3/4" x 5/8" | 20 A |
| 5 | B | 1/2" x 3/8" | |
| 6 | A | 1" x 7/8" | 25 A |
| 6 | B | 3/4" x 5/8" | |

| Symbol | Application |
|---|---|
| Nil | Same tubing size |
| Refer to the applicable tubing table. | Different diameter tubing can be selected within the same body class. |

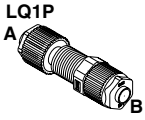
Union elbow **LQ1E**



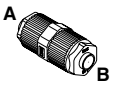

Union tee **LQ1T**




Panel mount union **LQ1P**




Union **LQ1U**



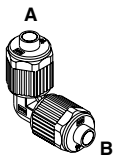

Note 1) For each body class, the second and later numbers or symbols indicate reducing. However, in case of size 1, the tubing cannot be changed by reducing.

Note 2) Sizes 1 to 3 are not available for the union flange

Note 3) For Union flange, nut sizes 4 and 5 are as shown below.
LQ1F4□: LQ-4N□□
LQ1F5□: LQ-5N□□

### Different diameter tubing order example

Different diameter tubing (with plug-in reducer) can be selected within the same body class.
(Example) Union elbow
Body class 3
A side: ø10 x ø8
B side: ø8 x ø6
Order as shown below.



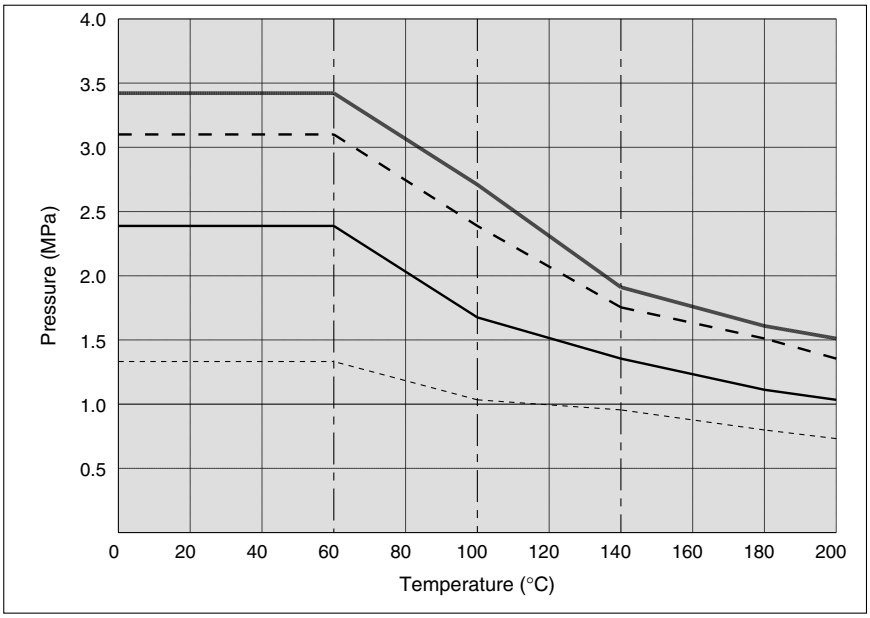

**LQ1 E 31 32**

- **Only select combinations from the same body class.**
- **Different dia. tubing size (B side)**
- **Applicable tubing size (A side)**
- **Union elbow**

## Specifications

| Feature \ Model | LQ1□10 | LQ1□20 | LQ1□30 | LQ1□40 | LQ1□50 | LQ1□60 |
|---|---|---|---|---|---|---|
| Material | NEW PFA | | | | | |
| Maximum operating pressure (at 20°C) | 1.0 MPa | | | | | |
| Proof pressure | Refer to the withstand pressure and heat resistance performance curves. | | | | | |
| Operating temperature | 0 to 200°C | | | | | |

## Burst Pressure and Heat Resistance Performance




# ⚠ Precautions

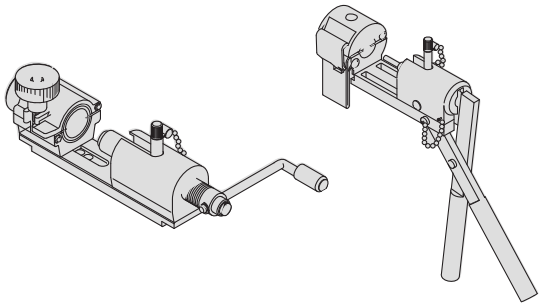
**Be sure to read before handling. Refer to front matters 58 and 59 for Safety Instructions.**

**Piping**

## ⚠ Caution

**1. Connect tubing with special tools**

Please refer to the LQ1, 2 series mounting method in "High Purity Fluoropolymer Fittings: HYPER FITTINGS®" (M-E05-1) for tubing connection and special tools.



## ⚠ Caution

**2. Tighten the nut to the end surface of the body. As a guide, refer to the proper tightening torque shown below.**

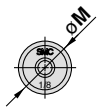
**Tightening torque for piping**

| Body class | Torque (N·m) |
|---|---|
| **2** | 0.3 to 0.4 |
| **3** | 0.8 to 1.0 |
| **4** | 1.0 to 1.2 |
| **5** | 2.5 to 3.0 |
| **6** | 5.5 to 6.0 |

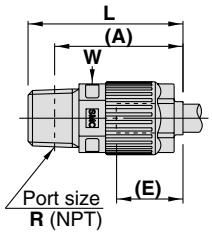
Note) In the case of body class 1, the nut should be tightened manually.

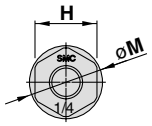
## Dimensions

### Male Connector: LQ1H-M

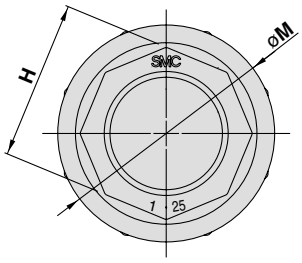



Class 1




Class 2 to 5




Class 6

(A) shows the reference dimension after connection.
(E) shows the approximate dimension of the inserted tubing from the end of the nut.
"W" is width across flats dimension.

#### Metric sizes

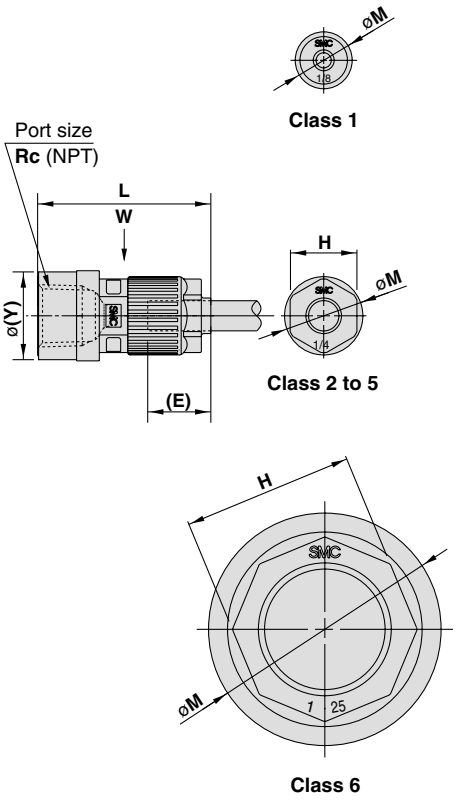
| Model | Applicable tubing O.D. | Connection threads R/NPT | A | E | H | L | M | W |
|---|---|---|---|---|---|---|---|---|
| **LQ1H11-M□** | ø**4** | 1/8" | 21 | 10 | — | 25 | 11.5 | 10 |
| **LQ1H12-M□** | ø**3** | | | | | | | |
| **LQ1H21-M□** | ø**6** | 1/8" | 31.5 | 15 | 14 | 35 | 16.5 | 14 |
| **LQ1H22-M□** | ø**4** | | | | | | | |
| **LQ1H2C-M□** | ø**3** | | | | | | | |
| **LQ1H23-M□** | ø**6** | 1/4" | 29 | | | | | |
| **LQ1H24-M□** | ø**4** | | | | | | | |
| **LQ1H2F-M□** | ø**3** | | | | | | | |
| **LQ1H31-M□** | ø**10** | 1/4" | 36.5 | 20 | 17 | 42.5 | 23 | 19 |
| **LQ1H32-M□** | ø**8** | | | | | | | |
| **LQ1H33-M□** | ø**6** | | | | | | | |
| **LQ1H34-M□** | ø**10** | 3/8" | 36 | | | | | |
| **LQ1H35-M□** | ø**8** | | | | | | | |
| **LQ1H36-M□** | ø**6** | | | | | | | |
| **LQ1H41-M□** | ø**12** | 3/8" | 46 | 24 | 21 | 52 | 28 | 23 |
| **LQ1H42-M□** | ø**10** | | | | | | | |
| **LQ1H43-M□** | ø**12** | 1/2" | 44 | | | | | |
| **LQ1H44-M□** | ø**10** | | | | | | | |
| **LQ1H51-M□** | ø**19** | 1/2" | 55 | 29 | 26 | 62.5 | 39 | 32 |
| **LQ1H52-M□** | ø**12** | | | | | | | |
| **LQ1H53-M□** | ø**19** | 3/4" | 53.5 | | | | | |
| **LQ1H54-M□** | ø**12** | | | | | | | |
| **LQ1H61-M□** | ø**25** | 3/4" | 72 | 39.5 | 36 | 81 | 49 | 46 |
| **LQ1H62-M□** | ø**19** | | | | | | | |
| **LQ1H63-M□** | ø**25** | 1" | 71 | | | | | |
| **LQ1H64-M□** | ø**19** | | | | | | | |

#### Inch sizes

| Model | Applicable tubing O.D. | Connection threads R/NPT | A | E | H | L | M | W |
|---|---|---|---|---|---|---|---|---|
| **LQ1H1A-M□** | 1/8" | 1/8" | 21 | 10 | — | 25 | 11.5 | 10 |
| **LQ1H2A-M□** | 1/4" | 1/8" | 31.5 | 15 | 14 | 35 | 16.5 | 14 |
| **LQ1H2B-M□** | 3/16" | | | | | | | |
| **LQ1H2C-M□** | 1/8" | | | | | | | |
| **LQ1H2D-M□** | 1/4" | 1/4" | 29 | | | | | |
| **LQ1H2E-M□** | 3/16" | | | | | | | |
| **LQ1H2F-M□** | 1/8" | | | | | | | |
| **LQ1H3A-M□** | 3/8" | 1/4" | 36.5 | 20 | 17 | 42.5 | 23 | 19 |
| **LQ1H3B-M□** | 1/4" | | | | | | | |
| **LQ1H3C-M□** | 3/8" | 3/8" | 36 | | | | | |
| **LQ1H3D-M□** | 1/4" | | | | | | | |
| **LQ1H4A-M□** | 1/2" | 3/8" | 46 | 24 | 21 | 52 | 28 | 23 |
| **LQ1H4B-M□** | 3/8" | | | | | | | |
| **LQ1H4C-M□** | 1/2" | 1/2" | 44 | | | | | |
| **LQ1H4D-M□** | 3/8" | | | | | | | |
| **LQ1H5A-M□** | 3/4" | 1/2" | 55 | 29 | 26 | 62.5 | 39 | 32 |
| **LQ1H5B-M□** | 1/2" | | | | | | | |
| **LQ1H5C-M□** | 3/4" | 3/4" | 53.5 | | | | | |
| **LQ1H5D-M□** | 1/2" | | | | | | | |
| **LQ1H6A-M□** | 1" | 3/4" | 72 | 39.5 | 36 | 81 | 49 | 46 |
| **LQ1H6B-M□** | 3/4" | | | | | | | |
| **LQ1H6C-M□** | 1" | 1" | 71 | | | | | |
| **LQ1H6D-M□** | 3/4" | | | | | | | |

## Dimensions

### Female Connector: LQ1H-F




(E) shows the reference of the inserted tubing from the end of the nut.
"W" is width across flats dimension.

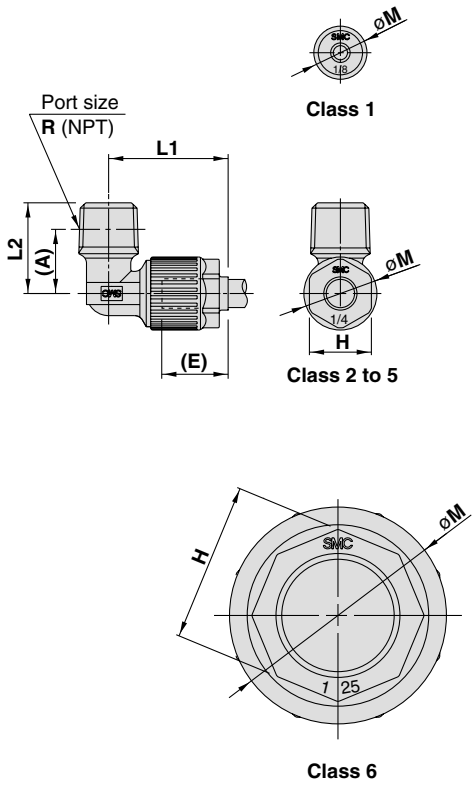
**Metric sizes**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | E | H | L | M | W | Y |
|---|---|---|---|---|---|---|---|---|
| LQ1H11-F□ | ø4 | 1/8" | 10 | – | 26.5 | Ø11.5 | 10 | Ø18.5 |
| LQ1H12-F□ | ø3 | | | | | | | |
| LQ1H21-F□ | ø6 | 1/8" | 15 | 14 | 35 | Ø16.5 | 14 | Ø18.5 |
| LQ1H22-F□ | ø4 | | | | | | | |
| LQ1H2C-F□ | ø3 | | | | | | | |
| LQ1H23-F□ | ø6 | 1/4" | | | 36.5 | | | Ø21.5 |
| LQ1H24-F□ | ø4 | | | | | | | |
| LQ1H2F-F□ | ø3 | | | | | | | |
| LQ1H31-F□ | ø10 | 1/4" | 20 | 17 | 42.5 | Ø23 | 19 | Ø21.5 |
| LQ1H32-F□ | ø8 | | | | | | | |
| LQ1H33-F□ | ø6 | | | | | | | |
| LQ1H34-F□ | ø10 | 3/8" | | | | | | Ø25 |
| LQ1H35-F□ | ø8 | | | | | | | |
| LQ1H36-F□ | ø6 | | | | | | | |
| LQ1H41-F□ | ø12 | 3/8" | 24 | 21 | 47.5 | Ø28 | 23 | Ø25 |
| LQ1H42-F□ | ø10 | | | | | | | |
| LQ1H43-F□ | ø12 | 1/2" | | | 50 | | | Ø29.5 |
| LQ1H44-F□ | ø10 | | | | | | | |
| LQ1H51-F□ | ø19 | 1/2" | 29 | 26 | 58.5 | Ø39 | 32 | Ø29.5 |
| LQ1H52-F□ | ø12 | | | | | | | |
| LQ1H53-F□ | ø19 | 3/4" | | | 60 | | | Ø36 |
| LQ1H54-F□ | ø12 | | | | | | | |
| LQ1H61-F□ | ø25 | 3/4" | 39.5 | 36 | 75 | Ø49 | 46 | Ø36 |
| LQ1H62-F□ | ø19 | | | | | | | |
| LQ1H63-F□ | ø25 | 1" | | | 78.5 | | | Ø44.5 |
| LQ1H64-F□ | ø19 | | | | | | | |

**Inch sizes**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | E | H | L | M | W | Y |
|---|---|---|---|---|---|---|---|---|
| LQ1H1A-F□ | 1/8" | 1/8" | 10 | – | 26.5 | Ø11.5 | 10 | Ø18.5 |
| LQ1H2A-F□ | 1/4" | 1/8" | 15 | 14 | 35 | Ø16.5 | 14 | Ø18.5 |
| LQ1H2B-F□ | 3/16" | | | | | | | |
| LQ1H2C-F□ | 1/8" | | | | | | | |
| LQ1H2D-F□ | 1/4" | 1/4" | | | 36.5 | | | Ø21.5 |
| LQ1H2E-F□ | 3/16" | | | | | | | |
| LQ1H2F-F□ | 1/8" | | | | | | | |
| LQ1H3A-F□ | 3/8" | 1/4" | 20 | 17 | 42.5 | Ø23 | 19 | Ø21.5 |
| LQ1H3B-F□ | 1/4" | | | | | | | |
| LQ1H3C-F□ | 3/8" | 3/8" | | | | | | Ø25 |
| LQ1H3D-F□ | 1/4" | | | | | | | |
| LQ1H4A-F□ | 1/2" | 3/8" | 24 | 21 | 47.5 | Ø28 | 23 | Ø25 |
| LQ1H4B-F□ | 3/8" | | | | | | | |
| LQ1H4C-F□ | 1/2" | 1/2" | | | 50 | | | Ø29.5 |
| LQ1H4D-F□ | 3/8" | | | | | | | |
| LQ1H5A-F□ | 3/4" | 1/2" | 29 | 26 | 58.5 | Ø39 | 32 | Ø29.5 |
| LQ1H5B-F□ | 1/2" | | | | | | | |
| LQ1H5C-F□ | 3/4" | 3/4" | | | 60 | | | Ø36 |
| LQ1H5D-F□ | 1/2" | | | | | | | |
| LQ1H6A-F□ | 1" | 3/4" | 39.5 | 36 | 75 | Ø49 | 46 | Ø36 |
| LQ1H6B-F□ | 3/4" | | | | | | | |
| LQ1H6C-F□ | 1" | 1" | | | 78.5 | | | Ø44.5 |
| LQ1H6D-F□ | 3/4" | | | | | | | |

## Male Elbow: LQ1L-M




(A) shows the reference dimension after connection.
(E) shows the approximate dimension of the inserted tubing from the end of the nut.

### Metric sizes

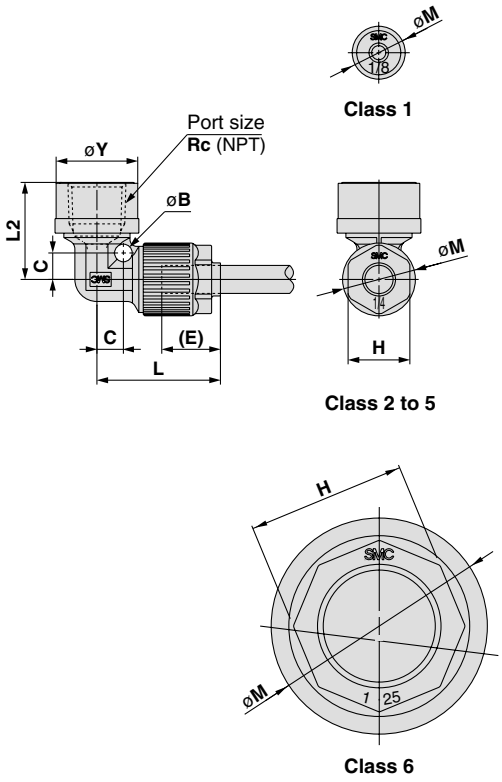
| Model | Applicable tubing O.D. | Connection threads R/NPT | A | E | H | L1 | L2 | M |
|---|---|---|---|---|---|---|---|---|
| LQ1L11-M□ | ø4 | 1/8" | 11.5 | 10 | — | 18 | 15 | Ø11.5 |
| LQ1L12-M□ | ø3 | | | | | | | |
| LQ1L21-M□ | ø6 | 1/8" | 14.5 | 15 | 14 | 27 | 20.5 | Ø16.5 |
| LQ1L22-M□ | ø4 | | | | | | | |
| LQ1L2C-M□ | ø3 | | | | | | | |
| LQ1L23-M□ | ø6 | 1/4" | | | | | | |
| LQ1L24-M□ | ø4 | | | | | | | |
| LQ1L2F-M□ | ø3 | | | | | | | |
| LQ1L31-M□ | ø10 | 1/4" | 20 | 20 | 17 | 35 | 26.5 | Ø23 |
| LQ1L32-M□ | ø8 | | | | | | | |
| LQ1L33-M□ | ø6 | | | | | | | |
| LQ1L34-M□ | ø10 | 3/8" | | | | | | |
| LQ1L35-M□ | ø8 | | | | | | | |
| LQ1L36-M□ | ø6 | | | | | | | |
| LQ1L41-M□ | ø12 | 3/8" | 25 | 24 | 21 | 45 | 33 | Ø28 |
| LQ1L42-M□ | ø10 | | | | | | | |
| LQ1L43-M□ | ø12 | 1/2" | | | | | | |
| LQ1L44-M□ | ø10 | | | | | | | |
| LQ1L51-M□ | ø19 | 1/2" | 30.5 | 29 | 26 | 54 | 40 | Ø39 |
| LQ1L52-M□ | ø12 | | | | | | | |
| LQ1L53-M□ | ø19 | 3/4" | | | | | | |
| LQ1L54-M□ | ø12 | | | | | | | |
| LQ1L61-M□ | ø25 | 3/4" | 35 | 39.5 | 36 | 68.5 | 46 | Ø49 |
| LQ1L62-M□ | ø19 | | | | | | | |
| LQ1L63-M□ | ø25 | 1" | | | | | | |
| LQ1L64-M□ | ø19 | | | | | | | |

### Inch sizes

| Model | Applicable tubing O.D. | Connection threads R/NPT | A | E | H | L1 | L2 | M |
|---|---|---|---|---|---|---|---|---|
| LQ1L1A-M□ | 1/8" | 1/8" | 11.5 | 10 | — | 18 | 15 | Ø11.5 |
| LQ1L2A-M□ | 1/4" | 1/8" | 14.5 | 15 | 14 | 27 | 20.5 | Ø16.5 |
| LQ1L2B-M□ | 3/16" | | | | | | | |
| LQ1L2C-M□ | 1/8" | | | | | | | |
| LQ1L2D-M□ | 1/4" | 1/4" | | | | | | |
| LQ1L2E-M□ | 3/16" | | | | | | | |
| LQ1L2F-M□ | 1/8" | | | | | | | |
| LQ1L3A-M□ | 3/8" | 1/4" | 20 | 20 | 17 | 35 | 26.5 | Ø23 |
| LQ1L3B-M□ | 1/4" | | | | | | | |
| LQ1L3C-M□ | 3/8" | 3/8" | | | | | | |
| LQ1L3D-M□ | 1/4" | | | | | | | |
| LQ1L4A-M□ | 1/2" | 3/8" | 25 | 24 | 21 | 45 | 33 | Ø28 |
| LQ1L4B-M□ | 3/8" | | | | | | | |
| LQ1L4C-M□ | 1/2" | 1/2" | | | | | | |
| LQ1L4D-M□ | 3/8" | | | | | | | |
| LQ1L5A-M□ | 3/4" | 1/2" | 30.5 | 29 | 26 | 54 | 40 | Ø39 |
| LQ1L5B-M□ | 1/2" | | | | | | | |
| LQ1L5C-M□ | 3/4" | 3/4" | | | | | | |
| LQ1L5D-M□ | 1/2" | | | | | | | |
| LQ1L6A-M□ | 1" | 3/4" | 35 | 39.5 | 36 | 68.5 | 46 | Ø49 |
| LQ1L6B-M□ | 3/4" | | | | | | | |
| LQ1L6C-M□ | 1" | 1" | | | | | | |
| LQ1L6D-M□ | 3/4" | | | | | | | |

## Dimensions

### Female Elbow: LQ1L-F




(E) shows the reference dimension of the inserted tubing from the end of the nut.

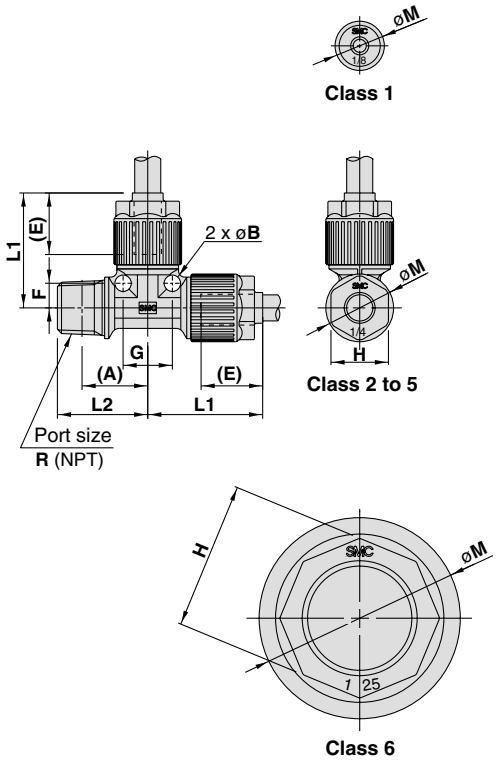
**Metric sizes**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | C | E | H | L1 | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|
| LQ1L11-F□ | ø4 | 1/8" | ø2 | 4 | 10 | — | 18 | 17 | ø11.5 | ø18.5 |
| LQ1L12-F□ | ø3 | | | | | | | | | |
| LQ1L21-F□ | ø6 | 1/8" | ø4 | 6 | 15 | 14 | 27 | 19.5 | ø16.5 | ø18.5 |
| LQ1L22-F□ | ø4 | | | | | | | | | |
| LQ1L2C-F□ | ø3 | | | | | | | | | |
| LQ1L23-F□ | ø6 | 1/4" | | | | | | 22.5 | | ø21.5 |
| LQ1L24-F□ | ø4 | | | | | | | | | |
| LQ1L2F-F□ | ø3 | | | | | | | | | |
| LQ1L31-F□ | ø10 | 1/4" | ø5 | 9 | 20 | 17 | 35 | 23 | ø23 | ø21.5 |
| LQ1L32-F□ | ø8 | | | | | | | | | |
| LQ1L33-F□ | ø6 | | | | | | | | | |
| LQ1L34-F□ | ø10 | 3/8" | | | | | | 25 | | ø25 |
| LQ1L35-F□ | ø8 | | | | | | | | | |
| LQ1L36-F□ | ø6 | | | | | | | | | |
| LQ1L41-F□ | ø12 | 3/8" | ø6 | 9 | 24 | 21 | 45 | 29 | ø28 | ø25 |
| LQ1L42-F□ | ø10 | | | | | | | | | |
| LQ1L43-F□ | ø12 | 1/2" | | | | | | 32.5 | | ø29.5 |
| LQ1L44-F□ | ø10 | | | | | | | | | |
| LQ1L51-F□ | ø19 | 1/2" | ø7 | 14 | 29 | 26 | 54 | 37.5 | ø39 | ø29.5 |
| LQ1L52-F□ | ø12 | | | | | | | | | |
| LQ1L53-F□ | ø19 | 3/4" | | | | | | 39.5 | | ø36 |
| LQ1L54-F□ | ø12 | | | | | | | | | |
| LQ1L61-F□ | ø25 | 3/4" | ø8 | 18 | 39.5 | 36 | 68.5 | 44.5 | ø49 | ø36 |
| LQ1L62-F□ | ø19 | | | | | | | | | |
| LQ1L63-F□ | ø25 | 1" | | | | | | 48 | | ø44.5 |
| LQ1L64-F□ | ø19 | | | | | | | | | |

**Inch sizes**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | C | E | H | L1 | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|
| LQ1L1A-F□ | 1/8" | 1/8" | ø2 | 4 | 10 | — | 18 | 17 | ø11.5 | ø18.5 |
| LQ1L2A-F□ | 1/4" | 1/8" | ø4 | 6 | 15 | 14 | 27 | 19.5 | ø16.5 | ø18.5 |
| LQ1L2B-F□ | 3/16" | | | | | | | | | |
| LQ1L2C-F□ | 1/8" | | | | | | | | | |
| LQ1L2D-F□ | 1/4" | 1/4" | | | | | | 22.5 | | ø21.5 |
| LQ1L2E-F□ | 3/16" | | | | | | | | | |
| LQ1L2F-F□ | 1/8" | | | | | | | | | |
| LQ1L3A-F□ | 3/8" | 1/4" | ø5 | 9 | 20 | 17 | 35 | 23 | ø23 | ø21.5 |
| LQ1L3B-F□ | 1/4" | | | | | | | | | |
| LQ1L3C-F□ | 3/8" | 3/8" | | | | | | 25 | | ø25 |
| LQ1L3D-F□ | 1/4" | | | | | | | | | |
| LQ1L4A-F□ | 1/2" | 3/8" | ø6 | 9 | 24 | 21 | 45 | 29 | ø28 | ø25 |
| LQ1L4B-F□ | 3/8" | | | | | | | | | |
| LQ1L4C-F□ | 1/2" | 1/2" | | | | | | 32.5 | | ø29.5 |
| LQ1L4D-F□ | 3/8" | | | | | | | | | |
| LQ1L5A-F□ | 3/4" | 1/2" | ø7 | 14 | 29 | 26 | 54 | 37.5 | ø39 | ø29.5 |
| LQ1L5B-F□ | 1/2" | | | | | | | | | |
| LQ1L5C-F□ | 3/4" | 3/4" | | | | | | 39.5 | | ø36 |
| LQ1L5D-F□ | 1/2" | | | | | | | | | |
| LQ1L6A-F□ | 1" | 3/4" | ø8 | 18 | 39.5 | 36 | 68.5 | 44.5 | ø49 | ø36 |
| LQ1L6B-F□ | 3/4" | | | | | | | | | |
| LQ1L6C-F□ | 1" | 1" | | | | | | 48 | | ø44.5 |
| LQ1L6D-F□ | 3/4" | | | | | | | | | |

## Male Run Tee: LQ1R-M




(A) shows the reference dimension after connection.
(E) shows the approximate dimension of the inserted tubing from the end of the nut.

### Metric sizes

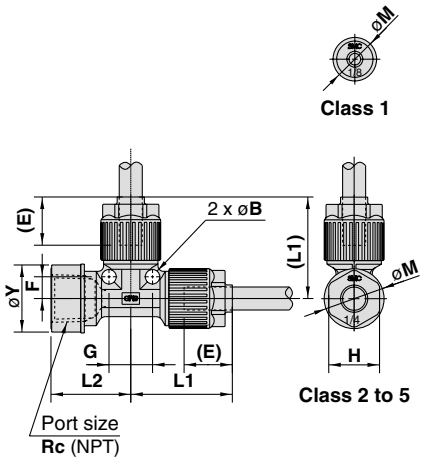
| Model | Applicable tubing O.D. | Connection threads R/NPT | A | B | E | F | G | H | L1 | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LQ1R11-M□ | ø4 | 1/8" | 12 | Ø2 | 10 | 4 | 8 | — | 18.5 | 15.5 | 11.5 |
| LQ1R12-M□ | ø3 | | | | | | | | | | |
| LQ1R21-M□ | ø6 | 1/8" | 16 | Ø4 | 15 | 6 | 12 | 14 | 28 | 19.5 | 16.5 |
| LQ1R22-M□ | ø4 | | | | | | | | | | |
| LQ1R2C-M□ | ø3 | | | | | | | | | | |
| LQ1R23-M□ | ø6 | 1/4" | | | | | | | | 22 | |
| LQ1R24-M□ | ø4 | | | | | | | | | | |
| LQ1R2F-M□ | ø3 | | | | | | | | | | |
| LQ1R31-M□ | ø10 | 1/4" | 19 | Ø5 | 20 | 9 | 18 | 17 | 36.5 | 25 | 23 |
| LQ1R32-M□ | ø8 | | | | | | | | | | |
| LQ1R33-M□ | ø6 | | | | | | | | | | |
| LQ1R34-M□ | ø10 | 3/8" | 21 | | | | | | | 27 | |
| LQ1R35-M□ | ø8 | | | | | | | | | | |
| LQ1R36-M□ | ø6 | | | | | | | | | | |
| LQ1R41-M□ | ø12 | 3/8" | 23 | Ø6 | 24 | 9 | 18 | 21 | 43 | 29 | 28 |
| LQ1R42-M□ | ø10 | | | | | | | | | | |
| LQ1R43-M□ | ø12 | 1/2" | 24.5 | | | | | | | 32 | |
| LQ1R44-M□ | ø10 | | | | | | | | | | |
| LQ1R51-M□ | ø19 | 1/2" | 30.5 | Ø7 | 29 | 14 | 28 | 26 | 54 | 38 | 39 |
| LQ1R52-M□ | ø12 | | | | | | | | | | |
| LQ1R53-M□ | ø19 | 3/4" | 30 | | | | | | | 39 | |
| LQ1R54-M□ | ø12 | | | | | | | | | | |
| LQ1R61-M□ | ø25 | 3/4" | 36 | Ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 45 | 49 |
| LQ1R62-M□ | ø19 | | | | | | | | | | |
| LQ1R63-M□ | ø25 | 1" | 35 | | | | | | | | |
| LQ1R64-M□ | ø19 | | | | | | | | | | |

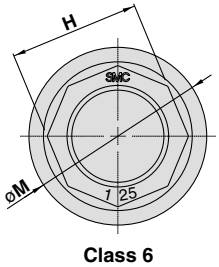
### Inch sizes

| Model | Applicable tubing O.D. | Connection threads R/NPT | A | B | E | F | G | H | L1 | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LQ1R1A-M□ | 1/8" | 1/8" | 12 | Ø2 | 10 | 4 | 8 | — | 18.5 | 15.5 | 11.5 |
| LQ1R2A-M□ | 1/4" | 1/8" | 16 | Ø4 | 15 | 6 | 12 | 14 | 28 | 19.5 | 16.5 |
| LQ1R2B-M□ | 3/16" | | | | | | | | | | |
| LQ1R2C-M□ | 1/8" | | | | | | | | | | |
| LQ1R2D-M□ | 1/4" | 1/4" | | | | | | | | 22 | |
| LQ1R2E-M□ | 3/16" | | | | | | | | | | |
| LQ1R2F-M□ | 1/8" | | | | | | | | | | |
| LQ1R3A-M□ | 3/8" | 1/4" | 19 | Ø5 | 20 | 9 | 18 | 17 | 36.5 | 25 | 23 |
| LQ1R3B-M□ | 1/4" | | | | | | | | | | |
| LQ1R3C-M□ | 3/8" | 3/8" | 21 | | | | | | | 27 | |
| LQ1R3D-M□ | 1/4" | | | | | | | | | | |
| LQ1R4A-M□ | 1/2" | 3/8" | 23 | Ø6 | 24 | 9 | 18 | 21 | 43 | 29 | 28 |
| LQ1R4B-M□ | 3/8" | | | | | | | | | | |
| LQ1R4C-M□ | 1/2" | 1/2" | 24.5 | | | | | | | 32 | |
| LQ1R4D-M□ | 3/8" | | | | | | | | | | |
| LQ1R5A-M□ | 3/4" | 1/2" | 30.5 | Ø7 | 29 | 14 | 28 | 26 | 54 | 38 | 39 |
| LQ1R5B-M□ | 1/2" | | | | | | | | | | |
| LQ1R5C-M□ | 3/4" | 3/4" | 30 | | | | | | | 39 | |
| LQ1R5D-M□ | 1/2" | | | | | | | | | | |
| LQ1R6A-M□ | 1" | 3/4" | 36 | Ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 45 | 49 |
| LQ1R6B-M□ | 3/4" | | | | | | | | | | |
| LQ1R6C-M□ | 1" | 1" | 35 | | | | | | | | |
| LQ1R6D-M□ | 3/4" | | | | | | | | | | |

## Dimensions

### Female Run Tee: LQ1R-F




(E) shows the approximate dimension of the inserted tubing from the end of the nut.

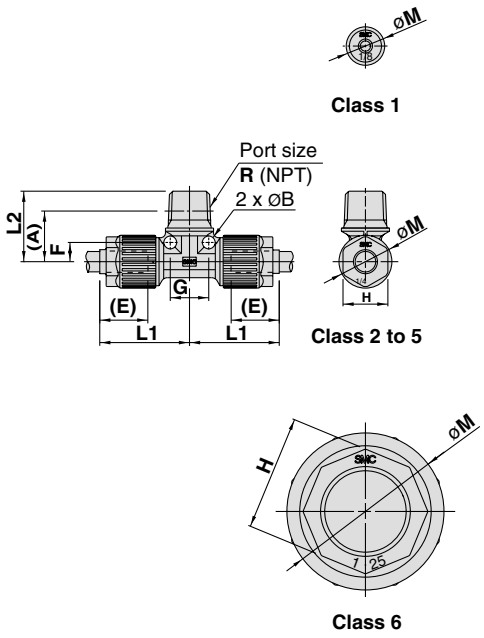
**Metric sizes**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | E | F | G | H | L1 | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LQ1R11-F□ | ø4 | 1/8" | Ø2 | 10 | 4 | 8 | — | 18.5 | 16 | Ø11.5 | Ø18.5 |
| LQ1R12-F□ | ø3 | | | | | | | | | | |
| LQ1R21-F□ | ø6 | 1/8" | Ø4 | 15 | 6 | 12 | 14 | 28 | 19.5 | Ø16.5 | Ø18.5 |
| LQ1R22-F□ | ø4 | | | | | | | | | | |
| LQ1R2C-F□ | ø3 | | | | | | | | | | |
| LQ1R23-F□ | ø6 | 1/4" | | | | | | | 22 | | Ø21.5 |
| LQ1R24-F□ | ø4 | | | | | | | | | | |
| LQ1R2F-F□ | ø3 | | | | | | | | | | |
| LQ1R31-F□ | ø10 | 1/4" | Ø5 | 20 | 9 | 18 | 17 | 36.5 | 24 | Ø23 | Ø21.5 |
| LQ1R32-F□ | ø8 | | | | | | | | | | |
| LQ1R33-F□ | ø6 | | | | | | | | | | |
| LQ1R34-F□ | ø10 | 3/8" | | | | | | | 25.5 | | Ø25 |
| LQ1R35-F□ | ø8 | | | | | | | | | | |
| LQ1R36-F□ | ø6 | | | | | | | | | | |
| LQ1R41-F□ | ø12 | 3/8" | Ø6 | 24 | 9 | 18 | 21 | 43 | 25 | Ø28 | Ø25 |
| LQ1R42-F□ | ø10 | | | | | | | | | | |
| LQ1R43-F□ | ø12 | 1/2" | | | | | | | 31.5 | | Ø29.5 |
| LQ1R44-F□ | ø10 | | | | | | | | | | |
| LQ1R51-F□ | ø19 | 1/2" | Ø7 | 29 | 14 | 28 | 26 | 54 | 35.5 | Ø39 | Ø29.5 |
| LQ1R52-F□ | ø12 | | | | | | | | | | |
| LQ1R53-F□ | ø19 | 3/4" | | | | | | | 37 | | Ø36 |
| LQ1R54-F□ | ø12 | | | | | | | | | | |
| LQ1R61-F□ | ø25 | 3/4" | Ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 42.5 | Ø49 | Ø36 |
| LQ1R62-F□ | ø19 | | | | | | | | | | |
| LQ1R63-F□ | ø25 | 1" | | | | | | | 46 | | Ø44.5 |
| LQ1R64-F□ | ø19 | | | | | | | | | | |

**Inch sizes**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | E | F | G | H | L1 | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LQ1R1A-F□ | 1/8" | 1/8" | Ø2 | 10 | 4 | 8 | — | 18.5 | 16 | Ø11.5 | Ø18.5 |
| LQ1R2A-F□ | 1/4" | 1/8" | Ø4 | 15 | 6 | 12 | 14 | 28 | 19.5 | Ø16.5 | Ø18.5 |
| LQ1R2B-F□ | 3/16" | | | | | | | | | | |
| LQ1R2C-F□ | 1/8" | | | | | | | | | | |
| LQ1R2D-F□ | 1/4" | 1/4" | | | | | | | 22 | | Ø21.5 |
| LQ1R2E-F□ | 3/16" | | | | | | | | | | |
| LQ1R2F-F□ | 1/8" | | | | | | | | | | |
| LQ1R3A-F□ | 3/8" | 1/4" | Ø5 | 20 | 9 | 18 | 17 | 36.5 | 24 | Ø23 | Ø21.5 |
| LQ1R3B-F□ | 1/4" | | | | | | | | | | |
| LQ1R3C-F□ | 3/8" | 3/8" | | | | | | | 25.5 | | Ø25 |
| LQ1R3D-F□ | 1/4" | | | | | | | | | | |
| LQ1R4A-F□ | 1/2" | 3/8" | Ø6 | 24 | 9 | 18 | 21 | 43 | 25 | Ø28 | Ø25 |
| LQ1R4B-F□ | 3/8" | | | | | | | | | | |
| LQ1R4C-F□ | 1/2" | 1/2" | | | | | | | 31.5 | | Ø29.5 |
| LQ1R4D-F□ | 3/8" | | | | | | | | | | |
| LQ1R5A-F□ | 3/4" | 1/2" | Ø7 | 29 | 14 | 28 | 26 | 54 | 35.5 | Ø39 | Ø29.5 |
| LQ1R5B-F□ | 1/2" | | | | | | | | | | |
| LQ1R5C-F□ | 3/4" | 3/4" | | | | | | | 37 | | Ø36 |
| LQ1R5D-F□ | 1/2" | | | | | | | | | | |
| LQ1R6A-F□ | 1" | 3/4" | Ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 42.5 | Ø49 | Ø36 |
| LQ1R6B-F□ | 3/4" | | | | | | | | | | |
| LQ1R6C-F□ | 1" | 1" | | | | | | | 46 | | Ø44.5 |
| LQ1R6D-F□ | 3/4" | | | | | | | | | | |

## Male Branch Tee: LQ1B-M




(A) shows the reference dimension after connection.
(E) shows the approximate dimension of the inserted tubing from the end of the nut.

### Metric sizes

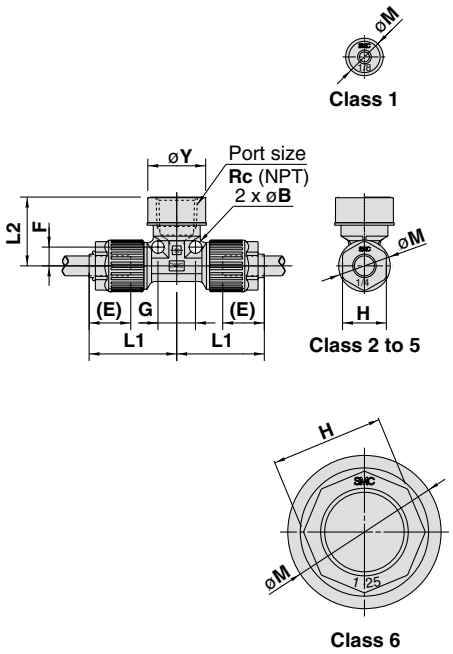
| Model | Applicable tubing O.D. | Connection threads R/NPT | A | B | E | F | G | H | L1 | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LQ1B11-M□ | ø4 | 1/8" | 12 | Ø2 | 10 | 4 | 8 | — | 18.5 | 15.5 | 11.5 |
| LQ1B12-M□ | ø3 | | | | | | | | | | |
| LQ1B21-M□ | ø6 | 1/8" | 16 | Ø4 | 15 | 6 | 12 | 14 | 28 | 19.5 | 16.5 |
| LQ1B22-M□ | ø4 | | | | | | | | | | |
| LQ1B2C-M□ | ø3 | | | | | | | | | | |
| LQ1B23-M□ | ø6 | 1/4" | | | | | | | | 22 | |
| LQ1B24-M□ | ø4 | | | | | | | | | | |
| LQ1B2F-M□ | ø3 | | | | | | | | | | |
| LQ1B31-M□ | ø10 | 1/4" | 19 | Ø5 | 20 | 9 | 18 | 17 | 36.5 | 25 | 23 |
| LQ1B32-M□ | ø8 | | | | | | | | | | |
| LQ1B33-M□ | ø6 | | | | | | | | | | |
| LQ1B34-M□ | ø10 | 3/8" | 21 | | | | | | | 27 | |
| LQ1B35-M□ | ø8 | | | | | | | | | | |
| LQ1B36-M□ | ø6 | | | | | | | | | | |
| LQ1B41-M□ | ø12 | 3/8" | 23 | Ø6 | 24 | 9 | 18 | 21 | 43 | 29 | 28 |
| LQ1B42-M□ | ø10 | | | | | | | | | | |
| LQ1B43-M□ | ø12 | 1/2" | 24.5 | | | | | | | 32 | |
| LQ1B44-M□ | ø10 | | | | | | | | | | |
| LQ1B51-M□ | ø19 | 1/2" | 30.5 | Ø7 | 29 | 14 | 28 | 26 | 54 | 38 | 39 |
| LQ1B52-M□ | ø12 | | | | | | | | | | |
| LQ1B53-M□ | ø19 | 3/4" | 30 | | | | | | | 39 | |
| LQ1B54-M□ | ø12 | | | | | | | | | | |
| LQ1B61-M□ | ø25 | 3/4" | 36 | Ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 45 | 49 |
| LQ1B62-M□ | ø19 | | | | | | | | | | |
| LQ1B63-M□ | ø25 | 1" | 35 | | | | | | | | |
| LQ1B64-M□ | ø19 | | | | | | | | | | |

### Inch sizes

| Model | Applicable tubing O.D. | Connection threads R/NPT | A | B | E | F | G | H | L1 | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LQ1B1A-M□ | 1/8" | 1/8" | 12 | Ø2 | 10 | 4 | 8 | — | 18.5 | 15.5 | 11.5 |
| LQ1B2A-M□ | 1/4" | 1/8" | 16 | Ø4 | 15 | 6 | 12 | 14 | 28 | 19.5 | 16.5 |
| LQ1B2B-M□ | 3/16" | | | | | | | | | | |
| LQ1B2C-M□ | 1/8" | | | | | | | | | | |
| LQ1B2D-M□ | 1/4" | 1/4" | | | | | | | | 22 | |
| LQ1B2E-M□ | 3/16" | | | | | | | | | | |
| LQ1B2F-M□ | 1/8" | | | | | | | | | | |
| LQ1B3A-M□ | 3/8" | 1/4" | 19 | Ø5 | 20 | 9 | 18 | 17 | 36.5 | 25 | 23 |
| LQ1B3B-M□ | 1/4" | | | | | | | | | | |
| LQ1B3C-M□ | 3/8" | 3/8" | 21 | | | | | | | 27 | |
| LQ1B3D-M□ | 1/4" | | | | | | | | | | |
| LQ1B4A-M□ | 1/2" | 3/8" | 23 | Ø6 | 24 | 9 | 18 | 21 | 43 | 29 | 28 |
| LQ1B4B-M□ | 3/8" | | | | | | | | | | |
| LQ1B4C-M□ | 1/2" | 1/2" | 24.5 | | | | | | | 32 | |
| LQ1B4D-M□ | 3/8" | | | | | | | | | | |
| LQ1B5A-M□ | 3/4" | 1/2" | 30.5 | Ø7 | 29 | 14 | 28 | 26 | 54 | 38 | 39 |
| LQ1B5B-M□ | 1/2" | | | | | | | | | | |
| LQ1B5C-M□ | 3/4" | 3/4" | 30 | | | | | | | 39 | |
| LQ1B5D-M□ | 1/2" | | | | | | | | | | |
| LQ1B6A-M□ | 1" | 3/4" | 36 | Ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 45 | 49 |
| LQ1B6B-M□ | 3/4" | | | | | | | | | | |
| LQ1B6C-M□ | 1" | 1" | 35 | | | | | | | | |
| LQ1B6D-M□ | 3/4" | | | | | | | | | | |

## Dimensions

### Female Branch Tee: LQ1B-F




(E) shows the approximate dimension of the inserted tubing from the end of the nut.

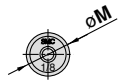
**Metric sizes**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | E | F | G | H | L1 | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LQ1B11-F□ | ø4 | 1/8" | Ø2 | 10 | 4 | 8 | — | 18.5 | 16 | Ø11.5 | Ø18.5 |
| LQ1B12-F□ | ø3 | | | | | | | | | | |
| LQ1B21-F□ | ø6 | 1/8" | Ø4 | 15 | 6 | 12 | 14 | 28 | 19.5 | Ø16.5 | Ø18.5 |
| LQ1B22-F□ | ø4 | | | | | | | | | | |
| LQ1B2C-F□ | ø3 | | | | | | | | | | |
| LQ1B23-F□ | ø6 | 1/4" | | | | | | | 22 | | Ø21.5 |
| LQ1B24-F□ | ø4 | | | | | | | | | | |
| LQ1B2F-F□ | ø3 | | | | | | | | | | |
| LQ1B31-F□ | ø10 | 1/4" | Ø5 | 20 | 9 | 18 | 17 | 36.5 | 23.7 | Ø23 | Ø21.5 |
| LQ1B32-F□ | ø8 | | | | | | | | | | |
| LQ1B33-F□ | ø6 | | | | | | | | | | |
| LQ1B34-F□ | ø10 | 3/8" | | | | | | | 25.5 | | Ø25 |
| LQ1B35-F□ | ø8 | | | | | | | | | | |
| LQ1B36-F□ | ø6 | | | | | | | | | | |
| LQ1B41-F□ | ø12 | 3/8" | Ø6 | 24 | 9 | 18 | 21 | 43 | 25 | Ø28 | Ø25 |
| LQ1B42-F□ | ø10 | | | | | | | | | | |
| LQ1B43-F□ | ø12 | 1/2" | | | | | | | 31.5 | | Ø29.5 |
| LQ1B44-F□ | ø10 | | | | | | | | | | |
| LQ1B51-F□ | ø19 | 1/2" | Ø7 | 29 | 14 | 28 | 26 | 54 | 35.5 | Ø39 | Ø29.5 |
| LQ1B52-F□ | ø12 | | | | | | | | | | |
| LQ1B53-F□ | ø19 | 3/4" | | | | | | | 37 | | Ø36 |
| LQ1B54-F□ | ø12 | | | | | | | | | | |
| LQ1B61-F□ | ø25 | 3/4" | Ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 42.5 | Ø49 | Ø36 |
| LQ1B62-F□ | ø19 | | | | | | | | | | |
| LQ1B63-F□ | ø25 | 1" | | | | | | | 46 | | Ø44.5 |
| LQ1B64-F□ | ø19 | | | | | | | | | | |

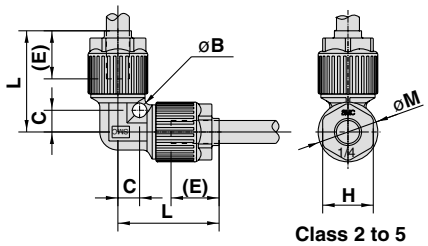
**Inch sizes**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | E | F | G | H | L1 | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LQ1B1A-F□ | 1/8" | 1/8" | Ø2 | 10 | 4 | 8 | — | 18.5 | 16 | Ø11.5 | Ø18.5 |
| LQ1B2A-F□ | 1/4" | 1/8" | Ø4 | 15 | 6 | 12 | 14 | 28 | 19.5 | Ø16.5 | Ø18.5 |
| LQ1B2B-F□ | 3/16" | | | | | | | | | | |
| LQ1B2C-F□ | 1/8" | | | | | | | | | | |
| LQ1B2D-F□ | 1/4" | 1/4" | | | | | | | 22 | | Ø21.5 |
| LQ1B2E-F□ | 3/16" | | | | | | | | | | |
| LQ1B2F-F□ | 1/8" | | | | | | | | | | |
| LQ1B3A-F□ | 3/8" | 1/4" | Ø5 | 20 | 9 | 18 | 17 | 36.5 | 23.7 | Ø23 | Ø21.5 |
| LQ1B3B-F□ | 1/4" | | | | | | | | | | |
| LQ1B3C-F□ | 3/8" | 3/8" | | | | | | | 25.5 | | Ø25 |
| LQ1B3D-F□ | 1/4" | | | | | | | | | | |
| LQ1B4A-F□ | 1/2" | 3/8" | Ø6 | 24 | 9 | 18 | 21 | 43 | 25 | Ø28 | Ø25 |
| LQ1B4B-F□ | 3/8" | | | | | | | | | | |
| LQ1B4C-F□ | 1/2" | 1/2" | | | | | | | 31.5 | | Ø29.5 |
| LQ1B4D-F□ | 3/8" | | | | | | | | | | |
| LQ1B5A-F□ | 3/4" | 1/2" | Ø7 | 29 | 14 | 28 | 26 | 54 | 35.5 | Ø39 | Ø29.5 |
| LQ1B5B-F□ | 1/2" | | | | | | | | | | |
| LQ1B5C-F□ | 3/4" | 3/4" | | | | | | | 37 | | Ø36 |
| LQ1B5D-F□ | 1/2" | | | | | | | | | | |
| LQ1B6A-F□ | 1" | 3/4" | Ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 42.5 | Ø49 | Ø36 |
| LQ1B6B-F□ | 3/4" | | | | | | | | | | |
| LQ1B6C-F□ | 1" | 1" | | | | | | | 46 | | Ø44.5 |
| LQ1B6D-F□ | 3/4" | | | | | | | | | | |

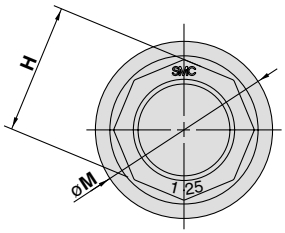
## Union Elbow: LQ1E




Class 1




Class 2 to 5




Class 6

(E) shows the approximate dimension of the inserted tubing from the end of the nut.

### Metric sizes

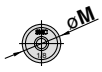
| Model | Applicable tubing O.D. | B | C | E | H | L | M |
|---|---|---|---|---|---|---|---|
| LQ1E11□□ | ø4 | ø2 | 4 | 10 | — | 18.5 | ø11.5 |
| LQ1E12□□ | ø3 | | | | | | |
| LQ1E21□□ | ø6 | ø4 | 6 | 15 | 14 | 28 | ø16.5 |
| LQ1E22□□ | ø4 | | | | | | |
| LQ1E2C□□ | ø3 | | | | | | |
| LQ1E31□□ | ø10 | ø5 | 9 | 20 | 17 | 36.5 | ø23 |
| LQ1E32□□ | ø8 | | | | | | |
| LQ1E33□□ | ø6 | | | | | | |
| LQ1E41□□ | ø12 | ø6 | 9 | 24 | 21 | 43 | ø28 |
| LQ1E42□□ | ø10 | | | | | | |
| LQ1E51□□ | ø19 | ø7 | 14 | 29 | 26 | 54 | ø39 |
| LQ1E52□□ | ø12 | | | | | | |
| LQ1E61□□ | ø25 | ø8 | 18 | 39.5 | 36 | 69.5 | ø49 |
| LQ1E62□□ | ø19 | | | | | | |

### Inch sizes

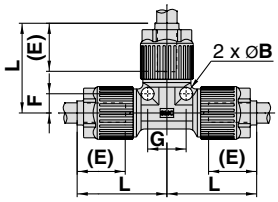
| Model | Applicable tubing O.D. | B | C | E | H | L | M |
|---|---|---|---|---|---|---|---|
| LQ1E1A□□ | 1/8" | ø2 | 4 | 10 | — | 18.5 | ø11.5 |
| LQ1E2A□□ | 1/4" | ø4 | 6 | 15 | 14 | 28 | ø16.5 |
| LQ1E2B□□ | 3/16" | | | | | | |
| LQ1E2C□□ | 1/8" | | | | | | |
| LQ1E3A□□ | 3/8" | ø5 | 9 | 20 | 17 | 36.5 | ø23 |
| LQ1E3B□□ | 1/4" | | | | | | |
| LQ1E4A□□ | 1/2" | ø6 | 9 | 24 | 21 | 43 | ø28 |
| LQ1E4B□□ | 3/8" | | | | | | |
| LQ1E5A□□ | 3/4" | ø7 | 14 | 29 | 26 | 54 | ø39 |
| LQ1E5B□□ | 1/2" | | | | | | |
| LQ1E6A□□ | 1" | ø8 | 18 | 39.5 | 36 | 69.5 | ø49 |
| LQ1E6B□□ | 3/4" | | | | | | |

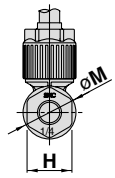
## Dimensions

### Union Tee: LQ1T

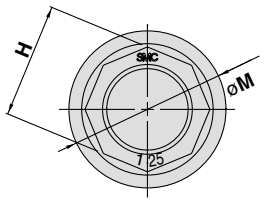



Class 1




Class 2 to 5




Class 6

(E) shows the approximate dimension of the inserted tubing from the end of the nut.

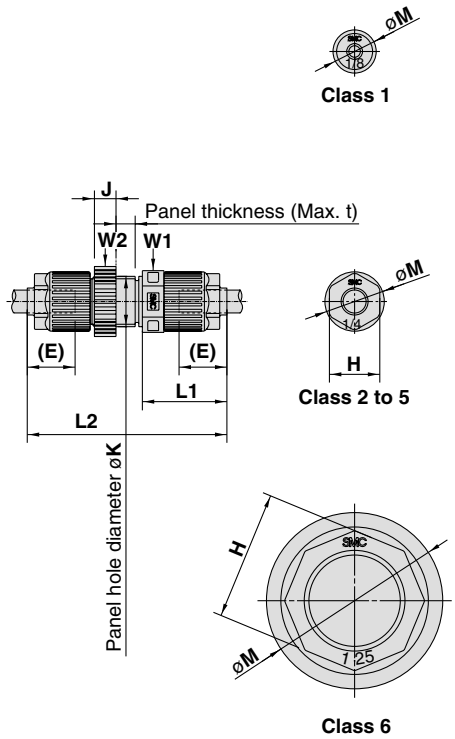
**Metric sizes**

| Model | Applicable tubing O.D. | B | E | F | G | H | L | M |
|---|---|---|---|---|---|---|---|---|
| LQ1T11□□ | ø4 | ø2 | 10 | 4 | 8 | — | 18.5 | 11.5 |
| LQ1T12□□ | ø3 | | | | | | | |
| LQ1T21□□ | ø6 | ø4 | 15 | 6 | 12 | 14 | 28 | 16.5 |
| LQ1T22□□ | ø4 | | | | | | | |
| LQ1T2C□□ | ø3 | | | | | | | |
| LQ1T31□□ | ø10 | ø5 | 20 | 9 | 18 | 17 | 36.5 | 23 |
| LQ1T32□□ | ø8 | | | | | | | |
| LQ1T33□□ | ø6 | | | | | | | |
| LQ1T41□□ | ø12 | ø6 | 24 | 9 | 18 | 21 | 43 | 28 |
| LQ1T42□□ | ø10 | | | | | | | |
| LQ1T51□□ | ø19 | ø7 | 29 | 14 | 28 | 26 | 54 | 39 |
| LQ1T52□□ | ø12 | | | | | | | |
| LQ1T61□□ | ø25 | ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 49 |
| LQ1T62□□ | ø19 | | | | | | | |

**Inch sizes**

| Model | Applicable tubing O.D. | B | E | F | G | H | L | M |
|---|---|---|---|---|---|---|---|---|
| LQ1T1A□□ | 1/8" | ø2 | 10 | 4 | 8 | — | 18.5 | 11.5 |
| LQ1T2A□□ | 1/4" | ø4 | 15 | 6 | 12 | 14 | 28 | 16.5 |
| LQ1T2B□□ | 3/16" | | | | | | | |
| LQ1T2C□□ | 1/8" | | | | | | | |
| LQ1T3A□□ | 3/8" | ø5 | 20 | 9 | 18 | 17 | 36.5 | 23 |
| LQ1T3B□□ | 1/4" | | | | | | | |
| LQ1T4A□□ | 1/2" | ø6 | 24 | 9 | 18 | 21 | 43 | 28 |
| LQ1T4B□□ | 3/8" | | | | | | | |
| LQ1T5A□□ | 3/4" | ø7 | 29 | 14 | 28 | 26 | 54 | 39 |
| LQ1T5B□□ | 1/2" | | | | | | | |
| LQ1T6A□□ | 1" | ø8 | 39.5 | 18 | 36 | 36 | 69.5 | 49 |
| LQ1T6B□□ | 3/4" | | | | | | | |

## Panel Mount Union: LQ1P




(E) shows the approximate dimension of the inserted tubing from the end of the nut.
"W" is width across flats dimension.

### Metric sizes

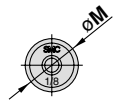
| Model | Applicable tubing O.D. | E | H | J | K | L1 | L2 | M | t | W1 | W2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ1P11□□** | ø4 | 10 | — | 6 | 10.5 | 17 | 44 | ø11.5 | 8 | 11 | 13 |
| **LQ1P12□□** | ø3 | | | | | | | | | | |
| **LQ1P21□□** | ø6 | 15 | 14 | 6 | 14.5 | 23.5 | 55.5 | ø16.5 | 8 | 15 | 17 |
| **LQ1P22□□** | ø4 | | | | | | | | | | |
| **LQ1P2C□□** | ø3 | | | | | | | | | | |
| **LQ1P31□□** | ø10 | 20 | 17 | 7 | 20.5 | 30 | 69 | ø23 | 8 | 21 | 24 |
| **LQ1P32□□** | ø8 | | | | | | | | | | |
| **LQ1P33□□** | ø6 | | | | | | | | | | |
| **LQ1P41□□** | ø12 | 24 | 21 | 7 | 24.5 | 35 | 78.5 | ø28 | 8 | 26 | 28 |
| **LQ1P42□□** | ø10 | | | | | | | | | | |
| **LQ1P51□□** | ø19 | 29 | 26 | 9 | 36.5 | 43.5 | 100 | ø39 | 9 | 39 | 43 |
| **LQ1P52□□** | ø12 | | | | | | | | | | |
| **LQ1P61□□** | ø25 | 39.5 | 36 | 10 | 48.5 | 58.5 | 133 | ø49 | 10 | 51 | 55 |
| **LQ1P62□□** | ø19 | | | | | | | | | | |

### Inch sizes

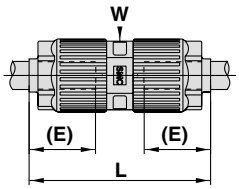
| Model | Applicable tubing O.D. | E | H | J | K | L1 | L2 | M | t | W1 | W2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ1P1A□□** | 1/8" | 10 | — | 6 | 10.5 | 17 | 44 | ø11.5 | 8 | 11 | 13 |
| **LQ1P2A□□** | 1/4" | 15 | 14 | 6 | 14.5 | 23.5 | 55.5 | ø16.5 | 8 | 15 | 17 |
| **LQ1P2B□□** | 3/16" | | | | | | | | | | |
| **LQ1P2C□□** | 1/8" | | | | | | | | | | |
| **LQ1P3A□□** | 3/8" | 20 | 17 | 7 | 20.5 | 30 | 69 | ø23 | 8 | 21 | 24 |
| **LQ1P3B□□** | 1/4" | | | | | | | | | | |
| **LQ1P4A□□** | 1/2" | 24 | 21 | 7 | 24.5 | 35 | 78.5 | ø28 | 8 | 26 | 28 |
| **LQ1P4B□□** | 3/8" | | | | | | | | | | |
| **LQ1P5A□□** | 3/4" | 29 | 26 | 9 | 36.5 | 43.5 | 100 | ø39 | 9 | 39 | 43 |
| **LQ1P5B□□** | 1/2" | | | | | | | | | | |
| **LQ1P6A□□** | 1" | 39.5 | 36 | 10 | 48.5 | 58.5 | 133 | ø49 | 10 | 51 | 55 |
| **LQ1P6B□□** | 3/4" | | | | | | | | | | |

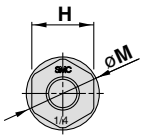
## Dimensions

### Union: LQ1U

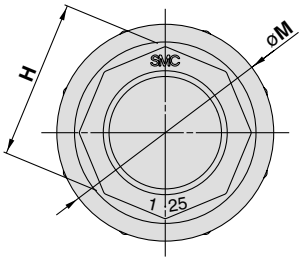



Class 1




Class 2 to 5




Class 6

(E) shows the approximate dimension of the inserted tubing from the end of the nut.
"W" is width across flats dimension.

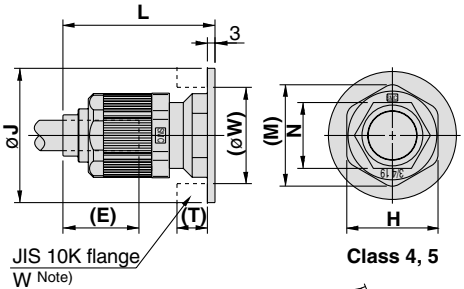
#### Metric sizes

| Model | Applicable tubing O.D. | E | H | L | M | W |
|---|---|---|---|---|---|---|
| LQ1U11□□ | ø4 | 10 | – | 29 | 11.5 | 10 |
| LQ1U12□□ | ø3 | | | | | |
| LQ1U21□□ | ø6 | 15 | 14 | 41 | 16.5 | 14 |
| LQ1U22□□ | ø4 | | | | | |
| LQ1U2C□□ | ø3 | | | | | |
| LQ1U31□□ | ø10 | 20 | 17 | 54 | 23 | 17 |
| LQ1U32□□ | ø8 | | | | | |
| LQ1U33□□ | ø6 | | | | | |
| LQ1U41□□ | ø12 | 24 | 21 | 63 | 28 | 21 |
| LQ1U42□□ | ø10 | | | | | |
| LQ1U51□□ | ø19 | 29 | 26 | 77 | 39 | 26 |
| LQ1U52□□ | ø12 | | | | | |
| LQ1U61□□ | ø25 | 39.5 | 36 | 102 | 49 | 36 |
| LQ1U62□□ | ø19 | | | | | |

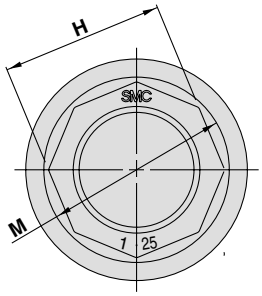
#### Inch sizes

| Model | Applicable tubing O.D. | E | H | L | M | W |
|---|---|---|---|---|---|---|
| LQ1U1A□□ | 1/8" | 10 | – | 29 | 11.5 | 10 |
| LQ1U2A□□ | 1/4" | 15 | 14 | 41 | 16.5 | 14 |
| LQ1U2B□□ | 3/16" | | | | | |
| LQ1U2C□□ | 1/8" | | | | | |
| LQ1U3A□□ | 3/8" | 20 | 17 | 54 | 23 | 17 |
| LQ1U3B□□ | 1/4" | | | | | |
| LQ1U4A□□ | 1/2" | 24 | 21 | 63 | 28 | 21 |
| LQ1U4B□□ | 3/8" | | | | | |
| LQ1U5A□□ | 3/4" | 29 | 26 | 77 | 39 | 26 |
| LQ1U5B□□ | 1/2" | | | | | |
| LQ1U6A□□ | 1" | 39.5 | 36 | 102 | 49 | 36 |
| LQ1U6B□□ | 3/4" | | | | | |

### Union Flange: LQ1F




Class 4, 5




Class 6

#### Metric sizes

| Model | Applicable tubing O.D. | E | H | J | L | N | M | W | (T) |
|---|---|---|---|---|---|---|---|---|---|
| LQ1F41 | ø12 | 28 | 30 | ø53 | 60 | 21 | 33.1 | ø34 | 12 |
| LQ1F42 | ø10 | | | | 58 | | | | |
| LQ1F51 | ø19 | 32 | 36 | ø58 | 65.2 | 26 | 40 | ø41 | 14 |
| LQ1F52 | ø12 | | | | 63.2 | | | | |
| LQ1F61 | ø25 | 39.5 | 36 | ø69 | 81.5 | – | 49 | ø51 | 14 |
| LQ1F62 | ø19 | | | | | | | | |

#### Inch sizes

| Model | Applicable tubing O.D. | E | H | J | L | N | M | W | (T) |
|---|---|---|---|---|---|---|---|---|---|
| LQ1F4A | 1/2" | 28 | 30 | ø53 | 60 | 21 | 33.1 | ø34 | 12 |
| LQ1F4B | 3/8" | | | | 58 | | | | |
| LQ1F5A | 3/4" | 32 | 36 | ø58 | 65.2 | 26 | 40 | ø41 | 14 |
| LQ1F5B | 1/2" | | | | 63.2 | | | | |
| LQ1F6A | 1" | 39.5 | 36 | ø69 | 81.5 | – | 49 | ø51 | 14 |
| LQ1F6B | 3/4" | | | | | | | | |

(E) shows the approximate dimension of the inserted tubing from the end of the nut.
(W) is the bore size of the JIS flange required for mounting. This flange is sold separately.
When ordering nuts as spare parts, size 4 and 5 are as shown below.
LQ1F4□: LQ-4N□□
LQ1F5□: LQ-5N□□

## Options

### Panel mounting nut

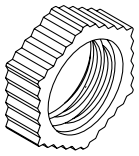
**LQN P 2 – □**

**Applicable fitting**

| Symbol | Class |
|---|---|
| 11 | 1 |
| 12 | 2 |
| 13 | 3 |
| 14 | 4 |
| 15 | 5 |
| 16 | 6 |

**Packaging**

| | |
|---|---|
| Nil | Clean packaging Class M3.5 |
| 1 | Standard packaging Class M5.5 |



**Used to secure a panel with a panel mount union.**

### Nut insert bushing

**LQ 1 – 2 U 03 – □**

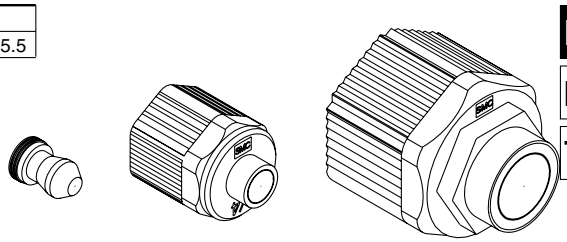
∗ The U type is recommended when changing tubing sizes.

**Applicable fitting**

| Symbol | Application |
|---|---|
| 1 | For LQ1 |

**Packaging**

| | |
|---|---|
| Nil | Clean packaging Class M3.5 |
| 1 | Standard packaging Class M5.5 |



**Class**

| Symbol | Class |
|---|---|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |

**Type of parts**

| Symbol | Parts |
|---|---|
| U | Nut + Insert bushing |
| B | Insert bushing |
| N | Nut |

**Applicable tubing size**

| Symbol | Connection tubing size | Class 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| **Metric sizes** | | | | | | | |
| 03 | ø3 x ø2 | ○ | ○ | | | | |
| 04 | ø4 x ø3 | ○ | ○ | | | | |
| 06 | ø6 x ø4 | | ○ | ○ | | | |
| 08 | ø8 x ø6 | | | ○ | | | |
| 10 | ø10 x ø8 | | | ○ | ○ | | |
| 12 | ø12 x ø10 | | | | ○ | ○ | |
| 19 | ø19 x ø16 | | | | | ○ | ○ |
| 25 | ø25 x ø22.5 | | | | | | ○ |

| Symbol | Connection tubing size | Class 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| **Inch sizes** | | | | | | | |
| 03 | 1/8" x 0.086" | ○ | ○ | | | | |
| 05 | 3/16" x 1/8" | | ○ | | | | |
| 07 | 1/4" x 5/32" | | ○ | ○ | | | |
| 11 | 3/8" x 1/4" | | | ○ | ○ | | |
| 13 | 1/2" x 3/8" | | | | ○ | ○ | |
| 19 | 3/4" x 5/8" | | | | | ○ | ○ |
| 25 | 1" x 7/8" | | | | | | ○ |

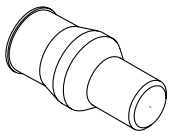
Note) In case of class 1, the tubing cannot be changed by reducing.

### Blanking plug

**LQ – 2 P 07 – □**

**Packaging**

| | |
|---|---|
| Nil | Clean packaging Class M3.5 |
| 1 | Standard packaging Class M5.5 |



**Used to block fittings which are not being used.**

**Applicable fitting**

| Symbol LQ1 | Class |
|---|---|
| 11 | 1 |
| 12 | 2 |
| 13 | 3 |
| 14 | 4 |
| 15 | 5 |
| 16 | 6 |

**Applicable tubing size**

| Symbol | Connection tubing size | Class 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| **Metric sizes** | | | | | | | |
| 03 | ø3 x ø2 | ○ | ● | | | | |
| 04 | ø4 x ø3 | ○ | ● | | | | |
| 06 | ø6 x ø4 | | ○ | ● | | | |
| 08 | ø8 x ø6 | | | ● | | | |
| 10 | ø10 x ø8 | | | ○ | ● | | |
| 12 | ø12 x ø10 | | | | ○ | ● | |
| 19 | ø19 x ø16 | | | | | ○ | ● |
| 25 | ø25 x ø22.5 | | | | | | ○ |

○ Basic size ● With reducer

| Symbol | Connection tubing size | Class 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| **Inch sizes** | | | | | | | |
| 03 | 1/8" x 0.086" | ○ | ● | | | | |
| 05 | 3/16" x 1/8" | | ● | | | | |
| 07 | 1/4" x 5/32" | | ○ | ● | | | |
| 11 | 3/8" x 1/4" | | | ○ | ● | | |
| 13 | 1/2" x 3/8" | | | | ○ | ● | |
| 19 | 3/4" x 5/8" | | | | | ○ | ● |
| 25 | 1" x 7/8" | | | | | | ○ |

○ Basic size ● With reducer

# *Series LQ1*
# Insertion Tool

## Fittings

### Changing tubing sizes

The tubing size can be changed within the same body class (body size) by replacing the nut and insert bushing. However, in case of class 1, the tubing cannot be changed by reducing.

| Body class | Tubing O.D. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Metric sizes | | | | | | | | Inch sizes | | | | | | |
| | ø3 | ø4 | ø6 | ø8 | ø10 | ø12 | ø19 | ø25 | 1/8" | 3/16" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| **1** | ○ | ○ | — | — | — | — | — | — | ○ | — | — | — | — | — | — |
| **2** | ● | ● | ○ | — | — | — | — | — | ● | ● | ○ | — | — | — | — |
| **3** | — | — | ● | ● | ○ | — | — | — | — | — | ● | ○ | — | — | — |
| **4** | — | — | — | — | ● | ○ | — | — | — | — | — | ● | ○ | — | — |
| **5** | — | — | — | — | — | ● | ○ | — | — | — | — | — | ● | ○ | — |
| **6** | — | — | — | — | — | — | ● | ○ | — | — | — | — | — | ● | ○ |

**Parts composition**

| | Component parts | | |
|---|---|---|---|
| | Nut | Insert | Collar (Insert assembly) |
| ○ Basic size | Yes | Yes | No |
| ● Reducer type | Yes | Yes | Yes |

## ⚠ Caution

**1. Connect tubing with special tools**

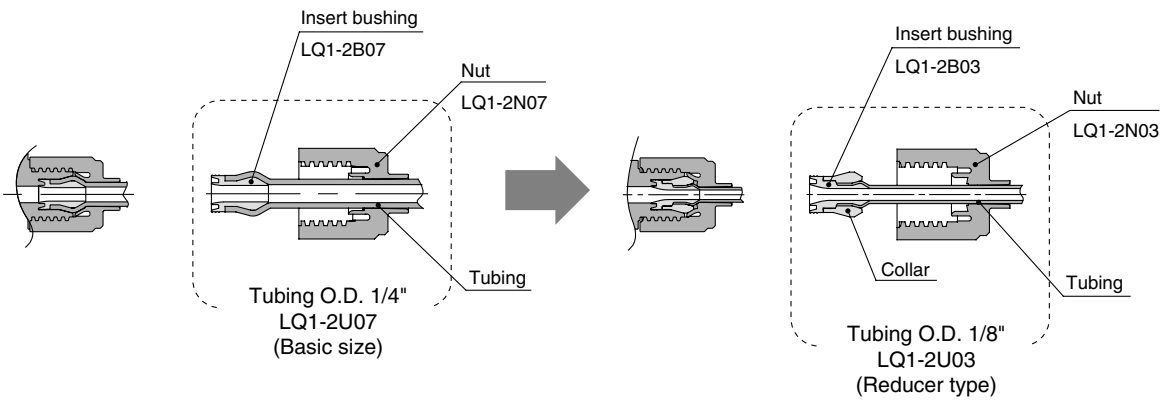
Please refer to the LQ1, 2 series mounting method in “High Purity Fluoropolymer Fittings: HYPER FITTINGS®” (M-E05-1) for tubing connection and special tools.

### Changing the tubing size

Example) Changing the tubing from an O.D. 1/4" to O.D. 1/8" in LQ1 body class 2.

Prepare an insert bushing and nut for 1/8" O.D. tubing (LQ1-2U03) and change the tubing size.
(Refer to the section on how to order fitting parts.)

Note) Tubing is sold separately.



# Applicable Fluids

## Material and fluid compatibility check list for high purity fluoropolymer fittings

| Chemical | | Compatibility |
|---|---|---|
| **Acetic acid** | 100% | ○ |
| **Acetone** | 100% | ○ Note 1) |
| **Ammonium fluoride** | 40% | ○ |
| **Ammonium hydroxide** | 30% | ○ |
| **Butyl acetate** | 100% | ○ |
| **Methylne chloride** | 100% | ○ |
| **Hydrochloric acid** | 38% | ○ |
| **Hydrofluoric acid** | 50% | ○ |
| **Hydrogen peroxide** | 60% | ○ |
| **Methanol** | 100% | ○ |
| **Methyl ethyl Ketone** | — | ○ |
| **Nitric acid** | 70% | ○ |
| **Phosphoric acid** | 86% | ○ |
| **Caustic potash** | 85% | ○ |
| **Sulfuric acid** | 100% | ○ |
| **Toluene** | — | ○ Note 1) |
| **Xylene** | — | ○ |
| **Sodium hydroxide** | 100% | ○ |
| **1.1.1-Trichloroethane** | 100% | ○ |
| **Rhosphorus pentachloride** | — | ○ |
| **Isobutyl alcohol** | — | ○ Note 1) |
| **Isopropyl alcohol** | — | ○ Note 1) |
| **Ozone** | — | ○ |
| **Ethyl acetate** | — | ○ Note 1) |
| **Deionized water** | — | ○ |
| **Nitrogen** | — | ○ |
| **Ultrapure water** | — | ○ |
| **Tmah** | — | ○ |

The material and fluid compatibility check list provides reference values as a guide only.
Note 1) Since static electricity may be generated, implement suitable countermeasures.

Table symbol ○ can be used.

- Compatibility is indicated for fluid temperatures of 200°C or less.
- The material and fluid compatibility check list provides reference values as a guide only, therefore we do not guarantee the application to our product.
- The data above is based on the information presented by the material manufacturers.
- SMC is not responsible for its accuracy and any damage happened because of this data.

# Series LQ1
# Fluoropolymer Fittings
# Special Product Precautions 1

**Be sure to read before handling. Refer to front matters 58 and 59 for Safety Instructions.**

## Design and Selection

## ⚠ Warning

**1. Confirm the specifications.**

Give careful consideration to operating conditions such as the application, fluid and environment, and use within the operating ranges specified in this catalog.

**2. Fluid**

Operate within the indicated fluid temperature range.

**3. Maintenance space**

Ensure the necessary space for maintenance and inspections.

**4. Fluid pressure range**

Keep the supplied fluid pressure within the operating pressure range shown in the catalog.

**5. Countermeasures for static electricity**

Since static electricity may be generated depending on the fluid being used, implement suitable countermeasures.

## Mounting

## ⚠ Warning

**1. After mounting, perform suitable function and leak tests to confirm that the mounting is correct.**

**2. Instruction manual**

Mount and operate the product after reading the manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.

## Piping

## ⚠ Caution

**1. Connect tubing with special tools**

Please refer to the LQ1, 2 series mounting method in “High Purity Fluoropolymer Fittings: HYPER FITTINGS®” (M-E05-1) for tubing connection and special tools.

**2. Tighten the nut to the end surface of the body, and then tighten it an addition 1/8 turn. As a guide, refer to the proper tightening torques shown below.**

**Tightening torque for piping**

| Body class | Torque (N·m) |
|---|---|
| **2** | 0.3 to 0.4 |
| **3** | 0.8 to 1.0 |
| **4** | 1.0 to 1.2 |
| **5** | 2.5 to 3.0 |
| **6** | 5.5 to 6.0 |

Note) Tighten the body class 1 by hand.
In the case of body class 1, the nut should be tightened manually.

**3. Use sealant tape for the piping of taper thread parts such as LQ1H and LQ1L.**

Tape the ridges tightly with the sealant tape, starting one ridge width left from thread end side. 3 to 4 sealant tapes are required.

**Taper thread mounting torque**

| Bore size | Torque (N·m) |
|---|---|
| 1/8 | 0.6 to 0.9 |
| 1/4 | 0.8 to 1.2 |
| 3/8 | 1.0 to 1.6 |
| 1/2 | 1.5 to 2.0 |
| 3/4 | 2.0 to 2.7 |
| 1 | 2.5 to 3.6 |

# Series LQ1
# Fluoropolymer Fittings
# Special Product Precautions 2

**Be sure to read before handling. Refer to front matters 58 and 59 for Safety Instructions.**

## Operating Environment

### ⚠ Warning

1. **Do not use in locations having an explosive atmosphere.**
2. **Do not operate in locations where vibration or impact occurs.**
3. **In locations near heat sources, block off radiated heat.**

## Maintenance

### ⚠ Warning

1. **Perform maintenance in accordance with the procedures in the instruction manual.**
   Improper handling can cause damage.
2. **When removing or reinstalling fittings, remove any remaining chemicals and carefully replace them with deionized water or air, etc., before beginning work activities.**
3. **Tightening of taper threads for piping**
   Because the taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections, and if leakage is detected correct the problem by additional tightening. If additional tightening becomes ineffective, replace the fitting with a new product.
4. **Check the following during regular maintenance, and replace components as necessary.**
   a) Scratches, gouges, abrasion, corrosion
   b) Twisting, flattening or distortion of tubing
   c) Hardening, deterioration or softening of tubing
5. **Do not repair or patch the replaced tubing or fittings for reuse.**

## Operating Precautions

### ⚠ Warning

1. **Operate within the range of the maximum operating pressure.**

### ⚠ Caution

1. **After a long period of non-use, perform inspections before beginning operation.**
2. **Use sufficient care in the handling of series LQ clean packaging types when their packaging is opened.**

## Installation of Tubing

### ⚠ Caution

1. **Cut the end of the tubing at a right angle and pass it through the fitting nut. After placing the tubing in the holder, push it onto the insert bushing until it stops and clamp it with the knob. As a guide when tightening the tubing with the knob, maintain a uniform gap (approx. 2 mm) on both sides of the holder.**
   - **When the tubing is curved, straighten it out before using it.**
   - **The tubing may slip if there is oil or dust, etc., on the holder. Remove the contamination using alcohol or another suitable cleaner.**

## Use of Tubing

### ⚠ Caution

1. **Refer to the applicable tubing sizes shown below for tubing to be used.**

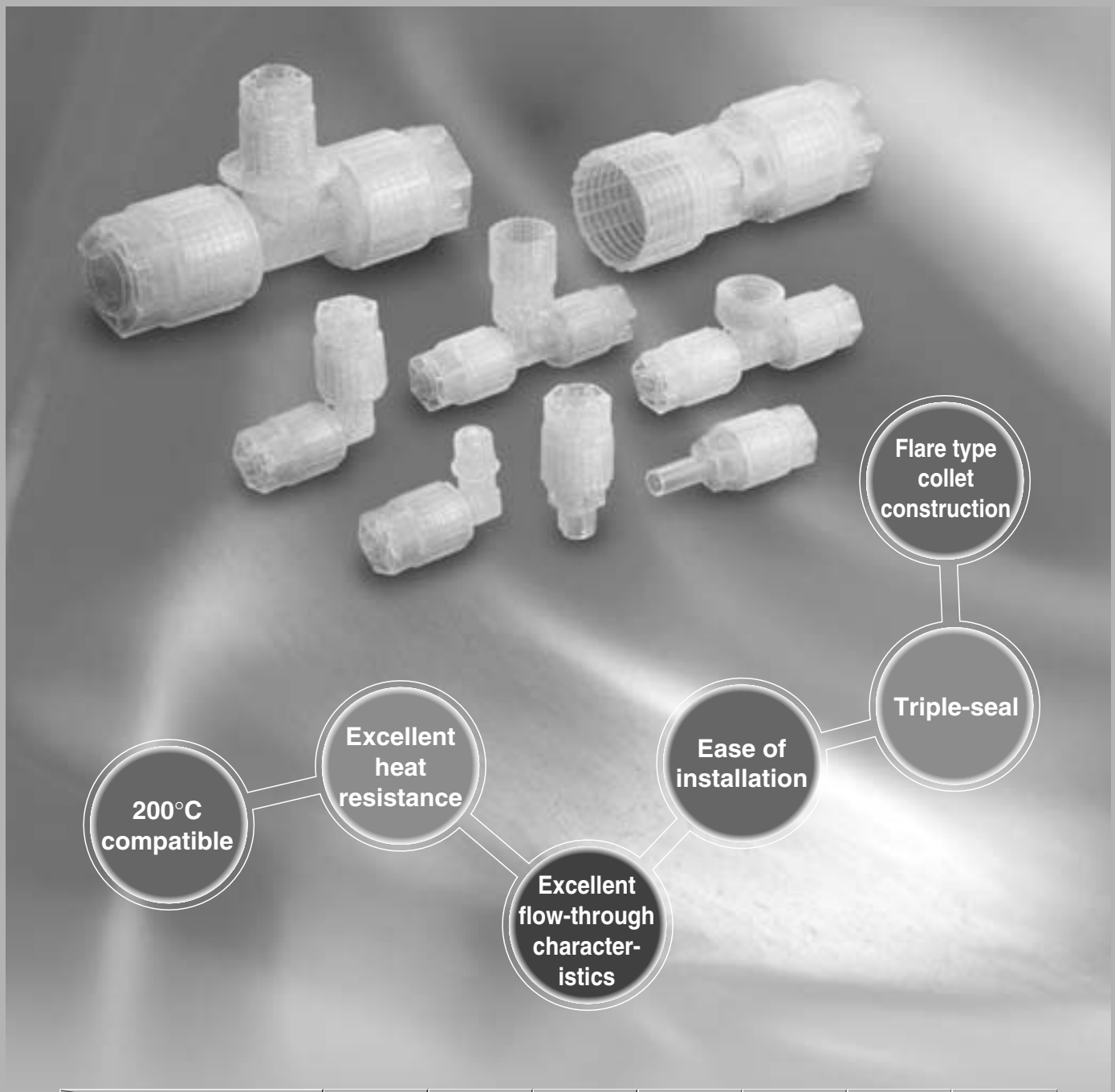
**Applicable tubing sizes**

| | Connection tubing size | O.D. (mm) | | Internal thickness (mm) | |
|---|---|---|---|---|---|
| | | Standard size | Tolerance | Standard size | Tolerance |
| Metric sizes | ø3 x ø2 | 3.0 | +0.2 –0.1 | 0.5 | ±0.06 |
| | ø4 x ø3 | 4.0 | | | |
| | ø6 x ø4 | 6.0 | | 1.0 | ±0.1 |
| | ø8 x ø6 | 8.0 | | | |
| | ø10 x ø8 | 10.0 | | | |
| | ø12 x ø10 | 12.0 | | | |
| | ø19 x ø16 | 19.0 | +0.3 –0.1 | 1.5 | ±0.15 |
| | ø25 x ø22 | 25.0 | | | |
| Inch sizes | 1/8" x 0.086" | 3.18 | +0.2 –0.1 | 0.5 | ±0.1 |
| | 3/16" x 1/8" | 4.75 | | 0.8 | |
| | 1/4" x 5/32" | 6.35 | | 1.2 | ±0.12 |
| | 3/8" x 1/4" | 9.53 | | 1.6 | ±0.15 |
| | 1/2" x 3/8" | 12.7 | | | |
| | 3/4" x 5/8" | 19.0 | +0.3 –0.1 | | |
| | 1" x 7/8" | 25.4 | | | |

# Fluoropolymer Fittings Hyper Fitting / Flare Type

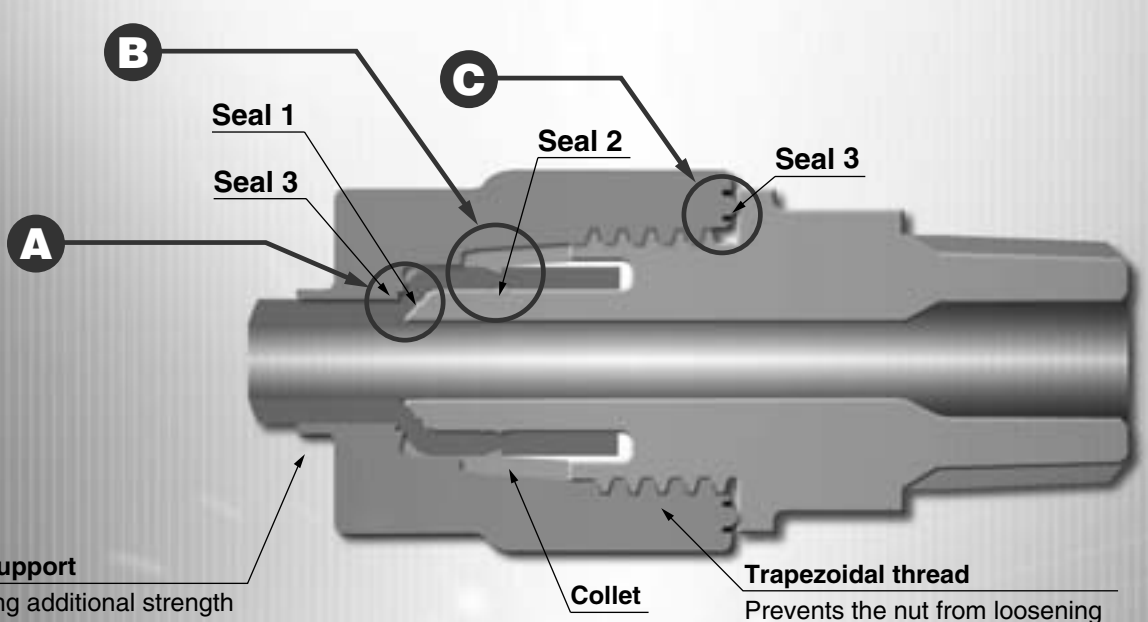
## Series LQ3



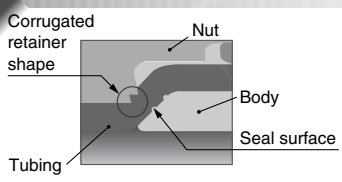



| Feature \ Model | | LQ3□10 | LQ3□20 | LQ3□30 | LQ3□40 | LQ3□50 | LQ3□60 | LQ3□70 |
|---|---|---|---|---|---|---|---|---|
| Material | | New PFA | | | | | | |
| Maximum operating pressure (at 20°C) | | 1.0 MPa | | | | | | |
| Operating temperature | Nut material PVDF | 0 to 150°C | | | | | | |
| | Nut material PFA | 0 to 200°C | | | | | | |
| Applicable tubing size | Metric | ø3 to ø25 | | | | | | |
| | Inch | 1/8" to 1 1/4" | | | | | | |

# Triple-Seal Construction

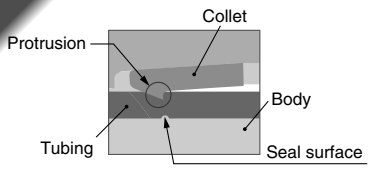



## A



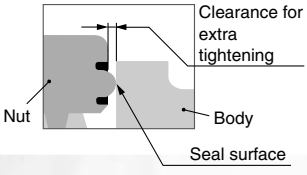

- Tube retainer of the nut is made from a two-stage structure, enabling it to hold the tubing firmly.
- Fitting's seal surface to the tubing adopts a unique design to the area's pressure, resulting in improved sealing performance.

## B




- Strengthening the prevention of the tube release by means of the collet structure.
- Sealing performance is highly maintained in a circumferential seal surface having a unique shape even under thermal stress conditions.

## C




- To establish the tightening position, a gauge control is not required as the nut is designed to be tightened until the end surface of the fitting's main body.

| Series | Appearance | Size | Port size | | | | | | | | Tubing O.D. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Metric size | | | | | | | | Inch size | | | | | | |
| | | | None | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | ø3 | ø4 | ø6 | ø8 | ø10 | ø12 | ø19 | ø25 | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" |
| **Connector** **LQ3H** | **Male** | P.326 | 1 | – | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | – | ● | ● | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | – | ● | ● | ● | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | – | – | ● | ● | ● | ● | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | | | 7 | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● |
| | **Female** | P.327 | 1 | – | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | – | ● | ● | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | – | ● | ● | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| **Elbow** **LQ3L** | **Male** | P.328 | 1 | – | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | – | ● | ● | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | – | ● | ● | ● | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | **Female** | P.329 | 1 | – | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | – | ● | ● | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | – | ● | ● | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| **Branch tee** **LQ3B** | **Male** | P.330 | 1 | – | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | – | ● | ● | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | – | ● | ● | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | **Female** | P.331 | 1 | – | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | – | ● | ● | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | – | ● | ● | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| **Run tee** **LQ3R** | **Male** | P.332 | 1 | – | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | – | ● | ● | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | – | ● | ● | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | **Female** | P.333 | 1 | – | ● | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | – | ● | ● | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | – | ● | ● | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| **Union elbow** **LQ3E** | | P.334 | 1 | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | ● | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | ● | – | – | – | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | ● | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | | | 7 | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● |
| **Union tee** **LQ3T** | | P.334 | 1 | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | | 2 | ● | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | | 3 | ● | – | – | – | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | | 4 | ● | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | | 5 | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | | 6 | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |

| Series | Appearance | Size | Port size | | | | | | | | Tubing O.D. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Metric size | | | | | | | | Inch size | | | | | | |
| | | | None | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" | ø3 | ø4 | ø6 | ø8 | ø10 | ø12 | ø19 | ø25 | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" |
| **Panel mount union** **LQ3P** | P.335 | 1 | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | 2 | ● | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | ● | – | – | – | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | ● | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| **Union** **LQ3U** | P.335 | 1 | ● | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | 2 | ● | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | ● | – | – | – | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | ● | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | | 7 | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● |

| Series | Appearance | Size | Tubing O.D. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Metric size | | | | | | | | Inch size | | | | | | |
| | | | ø3 | ø4 | ø6 | ø8 | ø10 | ø12 | ø19 | ø25 | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" |
| **Union reducing** **LQ3U-R** | P.336 ●: A side ○: B side | 1 | ○ | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | 2 | ○ | ○ | ● | – | – | – | – | – | ○ | ● | – | – | – | – | – |
| | | 3 | – | ○ | ○ | ●/○ | ● | – | – | – | ○ | ○ | ● | – | – | – | – |
| | | 4 | – | – | – | ○ | ○ | ● | – | – | – | ○ | ○ | ● | – | – | – |
| | | 5 | – | – | – | – | – | ○ | ● | – | – | ○ | ○ | ○ | ● | – | – |
| | | 6 | – | – | – | – | – | ● | ○ | ● | – | – | – | ○ | ○ | ● | – |
| | | 7 | – | – | – | – | – | – | – | – | – | – | – | – | – | ○ | ● |
| **Union elbow reducing** **LQ3E-R** | P.338 ●: A side ○: B side | 1 | ○ | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | 2 | ○ | ○ | ● | – | – | – | – | – | ○ | ● | – | – | – | – | – |
| | | 3 | – | ○ | ○ | ●/○ | ● | – | – | – | ○ | ○ | ● | – | – | – | – |
| | | 4 | – | – | – | ○ | ○ | ● | – | – | – | ○ | ○ | ● | – | – | – |
| | | 5 | – | – | – | – | – | ○ | ● | – | – | ○ | ○ | ○ | ● | – | – |
| | | 6 | – | – | – | – | – | ● | ○ | ● | – | – | – | ○ | ○ | ● | – |
| **Union tee reducing** **LQ3T-R** | P.340 ○: B side ●: A side ◎: C side | 1 | ○/◎ | ●/○/◎ | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | 2 | ○/◎ | ○/◎ | ●/○/◎ | – | – | – | – | – | ○/◎ | ●/○/◎ | – | – | – | – | – |
| | | 3 | – | – | ○/◎ | ●/○/◎ | ●/○/◎ | – | – | – | ○ | ●/○/◎ | ●/○/◎ | – | – | – | – |
| | | 4 | – | – | – | – | ○/◎ | ●/○/◎ | – | – | – | ○/◎ | ●/○/◎ | ●/○/◎ | – | – | – |
| | | 5 | – | – | – | – | – | ○/◎ | ●/○/◎ | – | – | ○/◎ | ●/○/◎ | ●/○/◎ | ●/○/◎ | – | – |
| | | 6 | – | – | – | – | – | – | ○/◎ | ●/○/◎ | – | ○/◎ | ○/◎ | ●/○/◎ | ●/○/◎ | ●/○/◎ | – |

Note) ●: A side tubing O.D. ○: B side tubing O.D. ◎: C side tubing O.D.

| Series | Appearance | Size | Tubing O.D. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Metric size | | | | | | | | Inch size | | | | | | |
| | | | ø3 | ø4 | ø6 | ø8 | ø10 | ø12 | ø19 | ø25 | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" |
| **Space saving union elbow** **LQ3E-S** | P.342 | 2 | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | | 7 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● |
| **Space saving branch tee** **LQ3T-SB** | P.343 | 2 | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| **Space saving run tee** **LQ3T-SR** | P.344 | 2 | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| **Tube extension straight connector** **LQ3H-T** | P.345 | 2 | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | | 7 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● |

| Series | Appearance | Size | Tubing O.D. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Metric size | | | | | | | | Inch size | | | | | | |
| | | | ø3 | ø4 | ø6 | ø8 | ø10 | ø12 | ø19 | ø25 | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" |
| **Straight adapter** **LQ3A** | P.346 | 2 | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | | 7 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● |
| **Union flange** **LQ3F** | P.348 | 2 | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | | 4 | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |

| Series | Appearance | Size | Tubing O.D. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Metric size | | | | | | | | Inch size | | | | | | |
| | | | ø3 | ø4 | ø6 | ø8 | ø10 | ø12 | ø19 | ø25 | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1 1/4" |
| **Blanking plug** **LQ3-P-1** | P.349 | 1 | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | 2 | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | | 7 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● |
| **Tubing plug** **LQ3-P-2** | P.349 | 1 | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | 2 | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | | 7 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● |
| **Nut** **LQ3-N** | P.349 | 1 | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| | | 2 | – | – | ● | – | – | – | – | – | – | ● | – | – | – | – | – |
| | | 3 | – | – | – | ● | ● | – | – | – | – | – | ● | – | – | – | – |
| | | 4 | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – | – |
| | | 5 | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| | | 6 | – | – | – | – | – | – | – | ● | – | – | – | – | – | ● | – |
| | | 7 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | ● |

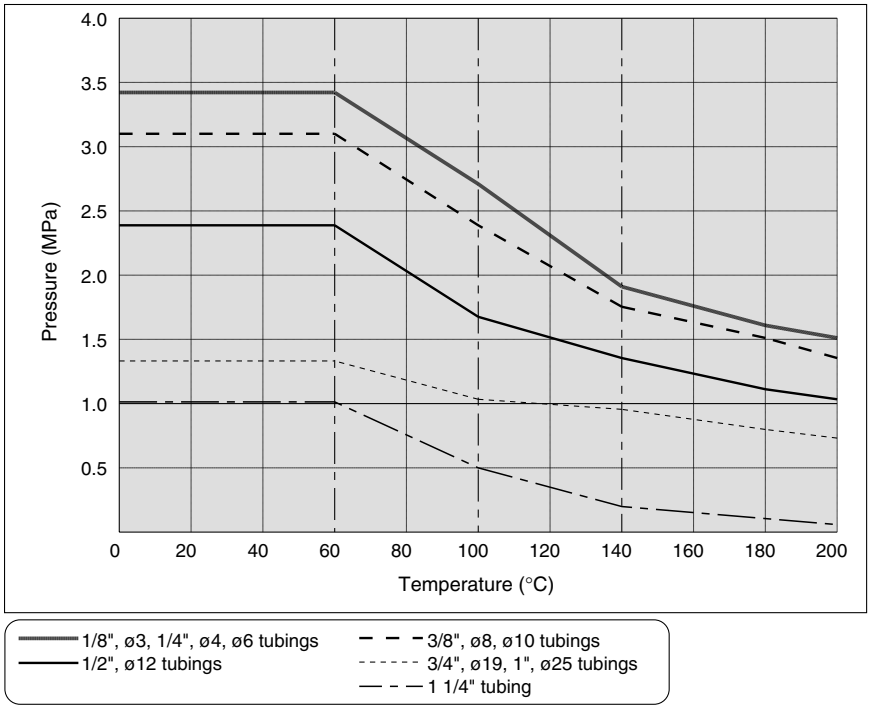
# Fluoropolymer Fittings
# Hyper Fitting / Flare Type
# Series LQ3

RoHS

## Specifications

| Feature \ Model | | LQ3□10 | LQ3□20 | LQ3□30 | LQ3□40 | LQ3□50 | LQ3□60 | LQ3□70 |
|---|---|---|---|---|---|---|---|---|
| Material | | New PFA | | | | | | |
| Maximum operating pressure (at 20°C) | | 1.0 MPa | | | | | | |
| Proof pressure | | Refer to the withstand pressure and heat resistance performance data. | | | | | | |
| Operating temperature | Nut material PVDF | 0 to 150°C | | | | | | |
| | Nut material PFA | 0 to 200°C | | | | | | |

## Withstand Pressure and Heat Resistance Performance




## ⚠ Precautions

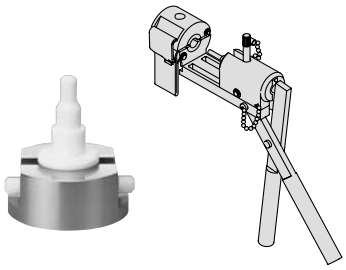
**Be sure to read before handling. Refer to front matters 58 and 59 for Safety Instructions.**

### Piping

## ⚠ Caution

**1. Connect tubing with special tools**

Please refer to the LQ3 series mounting method in "High Purity Fluoropolymer Fittings: Hyper Fittings/Flare Type" (M-E06-4) for tubing connection and special tools.



**2. Tighten the nut to the end surface of the body. As a guide, refer to the proper tightening torque shown below.**

**Tightening torque for piping**

| Body class | Torque (N·m) |
|---|---|
| **1** | 0.7 to 0.9 |
| **2** | 1.6 to 1.8 |
| **3** | 3.2 to 3.5 |
| **4** | 5.0 to 5.3 |
| **5** | 10.0 to 10.5 |
| **6** | 22.5 to 23.0 |
| **7** | 23.0 to 26.5 |

## How to Order

**Threaded connection**

**LQ3 H 11 – M □ – □**

### Fitting type

| Symbol | Type |
|---|---|
| **H** | Connector |
| **L** | Elbow |
| **B** | Branch tee |
| **R** | Run tee |

### Nut material, packaging

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

### Thread type

| Symbol | Type |
|---|---|
| **Nil** | R, Rc |
| **N** | NPT |

### Piping type

| Symbol | Type |
|---|---|
| **M** | Male |
| **F** | Female |

### Size combination

| Size | No. | Applicable tubing size (mm) | Port size |
|---|---|---|---|
| **1** | **1** | 4 x 3 | 1/8" |
| **1** | **2** | 3 x 2 | |
| **2** | **1** | 6 x 4 | 1/8" |
| **2** | **2** | | 1/4" |
| **3** | **1** | 10 x 8 | 1/8" |
| **3** | **2** | 8 x 6 | |
| **3** | **3** | 10 x 8 | 1/4" |
| **3** | **4** | 8 x 6 | |
| **3** | **5** | 10 x 8 | 3/8" |
| **3** | **6** | 8 x 6 | |
| **3** | **8** | | 1/2" |
| **4** | **1** | 12 x 10 | 1/4" |
| **4** | **2** | | 3/8" |
| **4** | **3** | | 1/2" |
| **4** | **4** | | 3/4" |
| **5** | **1** | 19 x 16 | 3/8" |
| **5** | **2** | | 1/2" |
| **5** | **3** | | 3/4" |
| **6** | **1** | 25 x 22 | 1/2" |
| **6** | **2** | | 3/4" |
| **6** | **3** | | 1" |

| Size | No. | Applicable tubing size (inch) | Port size |
|---|---|---|---|
| **1** | **A** | 1/8" x 0.086" | 1/8" |
| **2** | **A** | 1/4" x 5/32" | 1/8" |
| **2** | **B** | | 1/4" |
| **3** | **A** | 3/8" x 1/4" | 1/8" |
| **3** | **B** | | 1/4" |
| **3** | **C** | | 3/8" |
| **3** | **D** | | 1/2" |
| **4** | **A** | 1/2" x 3/8" | 1/4" |
| **4** | **B** | | 3/8" |
| **4** | **C** | | 1/2" |
| **4** | **D** | | 3/4" |
| **5** | **A** | 3/4" x 5/8" | 3/8" |
| **5** | **B** | | 1/2" |
| **5** | **C** | | 3/4" |
| **6** | **A** | 1" x 7/8" | 1/2" |
| **6** | **B** | | 3/4" |
| **6** | **C** | | 1" |
| **7*** | **A*** | 1 1/4" x 1.1" | 3/4" |
| **7*** | **B*** | | 1" |
| **7*** | **C*** | | 1 1/4" |

* H: Connector only

## How to Order

**Tubing connection**

**LQ3 E 11 –** □

### Fitting type

| Symbol | Type |
|---|---|
| **E** | Union elbow |
| **T** | Union tee |
| **P** | Panel mount union |
| **U** | Union |

### Nut material, packaging

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

### Size combination

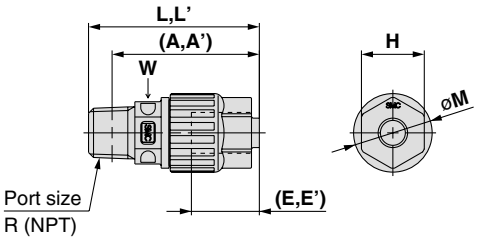
| Size | No. | Applicable tubing size (mm) |
|---|---|---|
| **1** | **1** | 4 x 3 |
| **1** | **2** | 3 x 2 |
| **2** | **1** | 6 x 4 |
| **3** | **1** | 10 x 8 |
| **3** | **2** | 8 x 6 |
| **4** | **1** | 12 x 10 |
| **5** | **1** | 19 x 16 |
| **6** | **1** | 25 x 22 |

| Size | Symbol | Applicable tubing size (inch) |
|---|---|---|
| **1** | **A** | 1/8" x 0.086" |
| **2** | **A** | 1/4" x 5/32" |
| **3** | **A** | 3/8" x 1/4" |
| **4** | **A** | 1/2" x 3/8" |
| **5** | **A** | 3/4" x 5/8" |
| **6** | **A** | 1" x 7/8" |
| **7*** | **A*** | 1 1/4" x 1.1" |

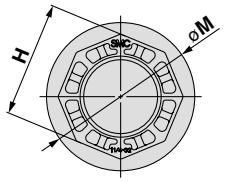
* E: Union Elbow and U: Union only

## Dimensions

### Male connector: LQ3H-M




(A,A'): Reference dimension after installation
(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(A'),L',E': Nut material PVDF dimensions
W: Width across flats dimension




**Class 7**

**Metric Size**

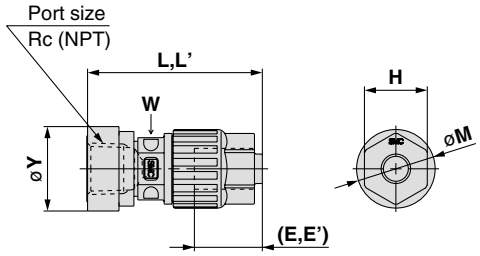
| Model | Applicable tubing O.D. | Connection threads R/NPT | A | A' | E | E' | H | L | L' | M | W |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3H11-M□** | **ø4** | 1/8" | 29.5 | 28.5 | 10 | 9 | 11 | 33.5 | 32.5 | 14 | 10 |
| **LQ3H12-M□** | **ø3** | | | | | | | | | | |
| **LQ3H21-M□** | **ø6** | 1/8" | 39.5 | 38.5 | 17 | 16 | 16 | 43.5 | 42.5 | 20 | 14 |
| **LQ3H22-M□** | | 1/4" | 37.5 | 36.5 | | | | | | | |
| **LQ3H31-M□** | **ø10** | 1/8" | 51 | 48 | 22.5 | 19.5 | 21 | 55 | 52 | 25 | 18 |
| **LQ3H32-M□** | **ø8** | | | | | | | | | | |
| **LQ3H33-M□** | **ø10** | 1/4" | 49 | 46 | | | | | | | |
| **LQ3H34-M□** | **ø8** | | | | | | | | | | |
| **LQ3H35-M□** | **ø10** | 3/8" | 48.5 | 45.5 | | | | | | | |
| **LQ3H36-M□** | **ø8** | | | | | | | | | | |
| **LQ3H38-M□** | | 1/2" | 54 | 51 | | | | 62 | 59 | | |
| **LQ3H41-M□** | **ø12** | 1/4" | 58 | 56 | 24 | 22 | 24 | 64 | 62 | 29 | 22 |
| **LQ3H42-M□** | | 3/8" | 57.5 | 55.5 | | | | | | | |
| **LQ3H43-M□** | | 1/2" | 56 | 54 | | | | | | | |
| **LQ3H44-M□** | | 3/4" | 59.8 | 57.6 | | | | 69.3 | 67.1 | | |
| **LQ3H51-M□** | **ø19** | 3/8" | 69.5 | 67 | 26.5 | 24 | 32 | 76 | 73.5 | 37 | 30 |
| **LQ3H52-M□** | | 1/2" | 68 | 65.5 | | | | | | | |
| **LQ3H53-M□** | | 3/4" | 66.5 | 64 | | | | | | | |
| **LQ3H61-M□** | **ø25** | 1/2" | 80 | 76 | 30 | 26 | 41 | 88 | 84 | 49 | 36 |
| **LQ3H62-M□** | | 3/4" | 78.5 | 74.5 | | | | | | | |
| **LQ3H63-M□** | | 1" | 77.5 | 73.5 | | | | | | | |

**Inch Size**

| Model | Applicable tubing O.D. | Connection threads R/NPT | A | A' | E | E' | H | L | L' | M | W |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3H1A-M□** | 1/8" | 1/8" | 29.5 | 28.5 | 10 | 9 | 11 | 33.5 | 32.5 | 14 | 10 |
| **LQ3H2A-M□** | 1/4" | 1/8" | 39.5 | 38.5 | 17 | 16 | 16 | 43.5 | 42.5 | 20 | 14 |
| **LQ3H2B-M□** | | 1/4" | 37.5 | 36.5 | | | | | | | |
| **LQ3H3A-M□** | 3/8" | 1/8" | 51 | 48 | 22.5 | 19.5 | 21 | 55 | 52 | 25 | 18 |
| **LQ3H3B-M□** | | 1/4" | 49 | 46 | | | | | | | |
| **LQ3H3C-M□** | | 3/8" | 48.5 | 45.5 | | | | | | | |
| **LQ3H3D-M□** | | 1/2" | 54 | 51 | | | | 62 | 59 | | |
| **LQ3H4A-M□** | 1/2" | 1/4" | 58 | 56 | 24.5 | 22.5 | 24 | 64 | 62 | 29 | 22 |
| **LQ3H4B-M□** | | 3/8" | 57.5 | 55.5 | | | | | | | |
| **LQ3H4C-M□** | | 1/2" | 56 | 54 | | | | | | | |
| **LQ3H4D-M□** | | 3/4" | 59.8 | 57.6 | | | | 69.3 | 67.1 | | |
| **LQ3H5A-M□** | 3/4" | 3/8" | 69.5 | 67 | 26.5 | 24 | 32 | 76 | 73.5 | 37 | 30 |
| **LQ3H5B-M□** | | 1/2" | 68 | 65.5 | | | | | | | |
| **LQ3H5C-M□** | | 3/4" | 66.5 | 64 | | | | | | | |
| **LQ3H6A-M□** | 1" | 1/2" | 80 | 76 | 30 | 26 | 41 | 88 | 84 | 49 | 36 |
| **LQ3H6B-M□** | | 3/4" | 78.5 | 74.5 | | | | | | | |
| **LQ3H6C-M□** | | 1" | 77.5 | 73.5 | | | | | | | |
| **LQ3H7A-M□** | 1 1/4" | 3/4" | 96.5 | 96.5 | 35 | 35 | 50 | 106 | 106 | 64 | 46 |
| **LQ3H7B-M□** | | 1" | 95.5 | 95.5 | | | | | | | |
| **LQ3H7C-M□** | | 1 1/4" | 93.3 | 93.3 | | | | | | | |

## Dimensions

### Female connector: LQ3H-F




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L': Nut material PVDF dimensions
W: Width across flats dimension

**Metric Size**

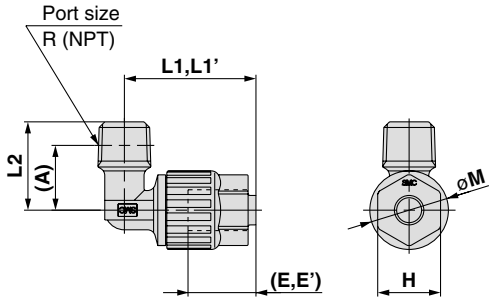
| Model | Applicable tubing O.D. | Connection threads Rc/NPT | E | E' | H | L | L' | M | W | Y |
|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3H11-F□** | **ø4** | 1/8" | 10 | 9 | 11 | 35 | 34 | 14 | 10 | 18.5 |
| **LQ3H12-F□** | **ø3** | | | | | | | | | |
| **LQ3H21-F□** | **ø6** | 1/8" | 17 | 16 | 16 | 40 | 39 | 20 | 14 | 18.5 |
| **LQ3H22-F□** | | 1/4" | | | | 45 | 44 | | | 21.5 |
| **LQ3H31-F□** | **ø10** | 1/8" | 22.5 | 19.5 | 21 | 50.5 | 47.5 | 25 | 18 | 18.5 |
| **LQ3H32-F□** | **ø8** | | | | | | | | | |
| **LQ3H33-F□** | **ø10** | 1/4" | | | | 55 | 52 | | | 21.5 |
| **LQ3H34-F□** | **ø8** | | | | | | | | | |
| **LQ3H35-F□** | **ø10** | 3/8" | | | | 55.5 | 52.5 | | | 25 |
| **LQ3H36-F□** | **ø8** | | | | | | | | | |
| **LQ3H41-F□** | **ø12** | 1/4" | 24 | 22 | 24 | 55.5 | 53 | 29 | 22 | 21.5 |
| **LQ3H42-F□** | | 3/8" | | | | 58 | 56 | | | 25 |
| **LQ3H43-F□** | | 1/2" | | | | 66 | 64 | | | 29.5 |
| **LQ3H51-F□** | **ø19** | 3/8" | 26.5 | 24 | 32 | 67 | 64.5 | 37 | 30 | 25 |
| **LQ3H52-F□** | | 1/2" | | | | 72 | 69.5 | | | 29.5 |
| **LQ3H53-F□** | | 3/4" | | | | 73.5 | 71 | | | 36 |
| **LQ3H61-F□** | **ø25** | 1/2" | 30 | 26 | 41 | 81.5 | 77.5 | 49 | 36 | 29.5 |
| **LQ3H62-F□** | | 3/4" | | | | 83 | 79 | | | 36 |
| **LQ3H63-F□** | | 1" | | | | 90.5 | 86.5 | | | 44.5 |

**Inch Size**

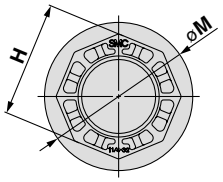
| Model | Applicable tubing O.D. | Connection threads Rc/NPT | E | E' | H | L | L' | M | W | Y |
|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3H1A-F□** | 1/8" | 1/8" | 10 | 9 | 11 | 35 | 34 | 14 | 10 | 18.5 |
| **LQ3H2A-F□** | 1/4" | 1/8" | 17 | 16 | 16 | 40 | 39 | 20 | 14 | 18.5 |
| **LQ3H2B-F□** | | 1/4" | | | | 45 | 44 | | | 21.5 |
| **LQ3H3A-F□** | 3/8" | 1/8" | 22.5 | 19.5 | 21 | 50.5 | 47.5 | 25 | 18 | 18.5 |
| **LQ3H3B-F□** | | 1/4" | | | | 55 | 52 | | | 21.5 |
| **LQ3H3C-F□** | | 3/8" | | | | 55.5 | 52.5 | | | 25 |
| **LQ3H4A-F□** | 1/2" | 1/4" | 24.5 | 22.5 | 24 | 55.5 | 53 | 29 | 22 | 21.5 |
| **LQ3H4B-F□** | | 3/8" | | | | 58 | 56 | | | 25 |
| **LQ3H4C-F□** | | 1/2" | | | | 66 | 64 | | | 29.5 |
| **LQ3H5A-F□** | 3/4" | 3/8" | 26.5 | 24 | 32 | 67 | 64.5 | 37 | 30 | 25 |
| **LQ3H5B-F□** | | 1/2" | | | | 72 | 69.5 | | | 29.5 |
| **LQ3H5C-F□** | | 3/4" | | | | 73.5 | 71 | | | 36 |
| **LQ3H6A-F□** | 1" | 1/2" | 30 | 26 | 41 | 81.5 | 77.5 | 49 | 36 | 29.5 |
| **LQ3H6B-F□** | | 3/4" | | | | 83 | 79 | | | 36 |
| **LQ3H6C-F□** | | 1" | | | | 90.5 | 86.5 | | | 44.5 |

## Dimensions

### Male elbow: LQ3L-M




(A): Reference dimension after installation
(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L1': Nut material PVDF dimensions




**Class 7**

**Metric Size**

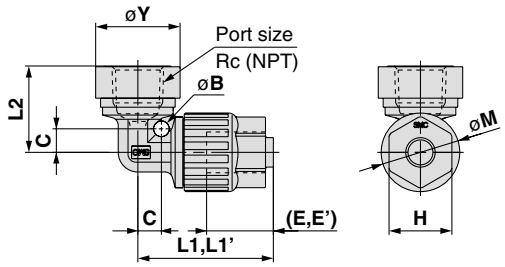
| Model | Applicable tubing O.D. | Connection threads R/NPT | A | E | E' | H | L1 | L1' | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3L11-M□** | **ø4** | 1/8" | 12.5 | 10 | 9 | 11 | 26 | 25 | 16.5 | 14 |
| **LQ3L12-M□** | **ø3** | | | | | | | | | |
| **LQ3L21-M□** | **ø6** | 1/8" | 18.5 | 17 | 16 | 16 | 33.5 | 32.5 | 22.5 | 20 |
| **LQ3L22-M□** | | 1/4" | 16.5 | | | | | | | |
| **LQ3L31-M□** | **ø10** | 1/8" | 24 | 22.5 | 19.5 | 21 | 46 | 43 | 28 | 25 |
| **LQ3L32-M□** | **ø8** | | | | | | | | | |
| **LQ3L33-M□** | **ø10** | 1/4" | 22 | | | | | | | |
| **LQ3L34-M□** | **ø8** | | | | | | | | | |
| **LQ3L35-M□** | **ø10** | 3/8" | 21.5 | | | | | | | |
| **LQ3L36-M□** | **ø8** | | | | | | | | | |
| **LQ3L38-M□** | | 1/2" | 24.5 | | | | 47.5 | 44.5 | 32.5 | |
| **LQ3L41-M□** | **ø12** | 1/4" | 27 | 24 | 22 | 24 | 54.5 | 52.5 | 33 | 29 |
| **LQ3L42-M□** | | 3/8" | 26.5 | | | | | | | |
| **LQ3L43-M□** | | 1/2" | 25 | | | | | | | |
| **LQ3L51-M□** | **ø19** | 3/8" | 33.5 | 26.5 | 24 | 32 | 64 | 61.5 | 40 | 37 |
| **LQ3L52-M□** | | 1/2" | 32 | | | | | | | |
| **LQ3L53-M□** | | 3/4" | 30.5 | | | | | | | |
| **LQ3L61-M□** | **ø25** | 1/2" | 38 | 30 | 26 | 41 | 77 | 73 | 46 | 49 |
| **LQ3L62-M□** | | 3/4" | 36.5 | | | | | | | |
| **LQ3L63-M□** | | 1" | 35.5 | | | | | | | |

**Inch Size**

| Model | Applicable tubing O.D. | Connection threads R/NPT | A | E | E' | H | L1 | L1' | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3L1A-M□** | 1/8" | 1/8" | 12.5 | 10 | 9 | 11 | 26 | 25 | 16.5 | 14 |
| **LQ3L2A-M□** | 1/4" | 1/8" | 18.5 | 17 | 16 | 16 | 33.5 | 32.5 | 22.5 | 20 |
| **LQ3L2B-M□** | | 1/4" | 16.5 | | | | | | | |
| **LQ3L3A-M□** | 3/8" | 1/8" | 24 | 22.5 | 19.5 | 21 | 46 | 43 | 28 | 25 |
| **LQ3L3B-M□** | | 1/4" | 22 | | | | | | | |
| **LQ3L3C-M□** | | 3/8" | 21.5 | | | | | | | |
| **LQ3L3D-M□** | | 1/2" | 24.5 | | | | 47.5 | 44.5 | 32.5 | |
| **LQ3L4A-M□** | 1/2" | 1/4" | 27 | 24.5 | 22.5 | 24 | 54.5 | 52.5 | 33 | 29 |
| **LQ3L4B-M□** | | 3/8" | 26.5 | | | | | | | |
| **LQ3L4C-M□** | | 1/2" | 25 | | | | | | | |
| **LQ3L5A-M□** | 3/4" | 3/8" | 33.5 | 26.5 | 24 | 32 | 64 | 61.5 | 40 | 37 |
| **LQ3L5B-M□** | | 1/2" | 32 | | | | | | | |
| **LQ3L5C-M□** | | 3/4" | 30.5 | | | | | | | |
| **LQ3L6A-M□** | 1" | 1/2" | 38 | 30 | 26 | 41 | 77 | 73 | 46 | 49 |
| **LQ3L6B-M□** | | 3/4" | 36.5 | | | | | | | |
| **LQ3L6C-M□** | | 1" | 35.5 | | | | | | | |

## Dimensions

### Female elbow: LQ3L-F




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L1': Nut material PVDF dimensions

**Metric Size**

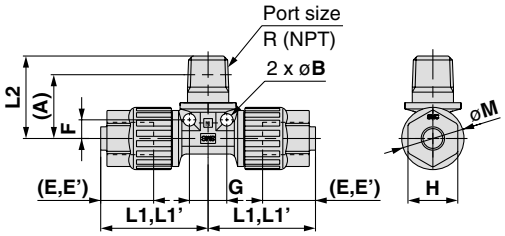
| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | C | E | E' | H | L1 | L1' | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3L11-F□** | **ø4** | 1/8" | 3.5 | 4.8 | 10 | 9 | 11 | 28.5 | 27.5 | 19.5 | 14 | 18.5 |
| **LQ3L12-F□** | **ø3** | | | | | | | | | | | |
| **LQ3L21-F□** | **ø6** | 1/8" | 4 | 6 | 17 | 16 | 16 | 34.5 | 33.5 | 20 | 20 | 18.5 |
| **LQ3L22-F□** | | 1/4" | | | | | | | | 22 | | 21.5 |
| **LQ3L31-F□** | **ø10** | 1/8" | 5 | 9 | 22.5 | 19.5 | 21 | 47.5 | 44.5 | 23 | 25 | 18.5 |
| **LQ3L32-F□** | **ø8** | | | | | | | | | | | |
| **LQ3L33-F□** | **ø10** | 1/4" | | | | | | | | 24 | | 21.5 |
| **LQ3L34-F□** | **ø8** | | | | | | | | | | | |
| **LQ3L35-F□** | **ø10** | 3/8" | | | | | | | | 25.5 | | 25 |
| **LQ3L36-F□** | **ø8** | | | | | | | | | | | |
| **LQ3L41-F□** | **ø12** | 1/4" | 6 | 10 | 24 | 22 | 24 | 52.5 | 50.5 | 23.5 | 29 | 21.5 |
| **LQ3L42-F□** | | 3/8" | | | | | | | | 26 | | 25 |
| **LQ3L43-F□** | | 1/2" | | | | | | | | 30 | | 29.5 |
| **LQ3L51-F□** | **ø19** | 3/8" | 7 | 14 | 26.5 | 24 | 32 | 64 | 61.5 | 30.5 | 37 | 25 |
| **LQ3L52-F□** | | 1/2" | | | | | | | | 35.5 | | 29.5 |
| **LQ3L53-F□** | | 3/4" | | | | | | | | 37 | | 36 |
| **LQ3L61-F□** | **ø25** | 1/2" | 8 | 18 | 30 | 26 | 41 | 78 | 74 | 41 | 49 | 29.5 |
| **LQ3L62-F□** | | 3/4" | | | | | | | | 42.5 | | 36 |
| **LQ3L63-F□** | | 1" | | | | | | | | 46 | | 44.5 |

**Inch Size**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | C | E | E' | H | L1 | L1' | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3L1A-F□** | 1/8" | 1/8" | 3.5 | 4.8 | 10 | 9 | 11 | 28.5 | 27.5 | 19.5 | 14 | 18.5 |
| **LQ3L2A-F□** | 1/4" | 1/8" | 4 | 6 | 17 | 16 | 16 | 34.5 | 33.5 | 20 | 20 | 18.5 |
| **LQ3L2B-F□** | | 1/4" | | | | | | | | 22 | | 21.5 |
| **LQ3L3A-F□** | 3/8" | 1/8" | 5 | 9 | 22.5 | 19.5 | 21 | 47.5 | 44.5 | 23 | 25 | 18.5 |
| **LQ3L3B-F□** | | 1/4" | | | | | | | | 24 | | 21.5 |
| **LQ3L3C-F□** | | 3/8" | | | | | | | | 25.5 | | 25 |
| **LQ3L4A-F□** | 1/2" | 1/4" | 6 | 10 | 24.5 | 22.5 | 24 | 52.5 | 50.5 | 23.5 | 29 | 21.5 |
| **LQ3L4B-F□** | | 3/8" | | | | | | | | 26 | | 25 |
| **LQ3L4C-F□** | | 1/2" | | | | | | | | 30 | | 29.5 |
| **LQ3L5A-F□** | 3/4" | 3/8" | 7 | 14 | 26.5 | 24 | 32 | 64 | 61.5 | 30.5 | 37 | 25 |
| **LQ3L5B-F□** | | 1/2" | | | | | | | | 35.5 | | 29.5 |
| **LQ3L5C-F□** | | 3/4" | | | | | | | | 37 | | 36 |
| **LQ3L6A-F□** | 1" | 1/2" | 8 | 18 | 30 | 26 | 41 | 78 | 74 | 41 | 49 | 29.5 |
| **LQ3L6B-F□** | | 3/4" | | | | | | | | 42.5 | | 36 |
| **LQ3L6C-F□** | | 1" | | | | | | | | 46 | | 44.5 |

## Dimensions

### Male branch tee: LQ3B-M




(A): Reference dimension after installation
(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
E',L1': Nut material PVDF dimensions

**Metric Size**

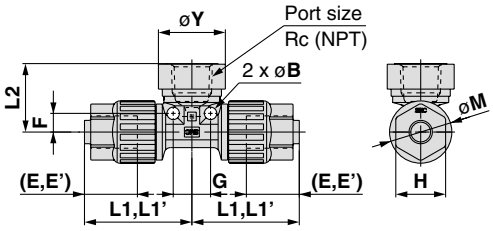
| Model | Applicable tubing O.D. | Connection threads R/NPT | A | B | E | E' | F | G | H | L1 | L1' | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3B11-M□** | **ø4** | 1/8" | 15 | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 19 | 14 |
| **LQ3B12-M□** | **ø3** | | | | | | | | | | | | |
| **LQ3B21-M□** | **ø6** | 1/8" | 19.5 | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 23.5 | 20 |
| **LQ3B22-M□** | | 1/4" | 20.5 | | | | | | | | | 26.5 | |
| **LQ3B31-M□** | **ø10** | 1/8" | 22.5 | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 26.5 | 25 |
| **LQ3B32-M□** | **ø8** | | | | | | | | | | | | |
| **LQ3B33-M□** | **ø10** | 1/4" | 23.5 | | | | | | | | | 29.5 | |
| **LQ3B34-M□** | **ø8** | | | | | | | | | | | | |
| **LQ3B35-M□** | **ø10** | 3/8" | 24 | | | | | | | | | 30.5 | |
| **LQ3B36-M□** | **ø8** | | | | | | | | | | | | |
| **LQ3B41-M□** | **ø12** | 1/4" | 27 | 6 | 24 | 22 | 10 | 20 | 24 | 52.5 | 50.5 | 33 | 29 |
| **LQ3B42-M□** | | 3/8" | 27.5 | | | | | | | | | 34 | |
| **LQ3B43-M□** | | 1/2" | 29 | | | | | | | | | 37 | |
| **LQ3B51-M□** | **ø19** | 3/8" | 32.5 | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 39 | 37 |
| **LQ3B52-M□** | | 1/2" | 34 | | | | | | | | | 42 | |
| **LQ3B53-M□** | | 3/4" | 34.5 | | | | | | | | | 44 | |
| **LQ3B61-M□** | **ø25** | 1/2" | 42 | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 50 | 49 |
| **LQ3B62-M□** | | 3/4" | 42.5 | | | | | | | | | 52 | |
| **LQ3B63-M□** | | 1" | | | | | | | | | | 53 | |

**Inch Size**

| Model | Applicable tubing O.D. | Connection threads R/NPT | A | B | E | E' | F | G | H | L1 | L1' | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3B1A-M□** | 1/8" | 1/8" | 15 | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 19 | 14 |
| **LQ3B2A-M□** | 1/4" | 1/8" | 19.5 | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 23.5 | 20 |
| **LQ3B2B-M□** | | 1/4" | 20.5 | | | | | | | | | 26.5 | |
| **LQ3B3A-M□** | 3/8" | 1/8" | 22.5 | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 26.5 | 25 |
| **LQ3B3B-M□** | | 1/4" | 23.5 | | | | | | | | | 29.5 | |
| **LQ3B3C-M□** | | 3/8" | 24 | | | | | | | | | 30.5 | |
| **LQ3B4A-M□** | 1/2" | 1/4" | 27 | 6 | 24.5 | 22.5 | 10 | 20 | 24 | 52.5 | 50.5 | 33 | 29 |
| **LQ3B4B-M□** | | 3/8" | 27.5 | | | | | | | | | 34 | |
| **LQ3B4C-M□** | | 1/2" | 29 | | | | | | | | | 37 | |
| **LQ3B5A-M□** | 3/4" | 3/8" | 32.5 | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 39 | 37 |
| **LQ3B5B-M□** | | 1/2" | 34 | | | | | | | | | 42 | |
| **LQ3B5C-M□** | | 3/4" | 34.5 | | | | | | | | | 44 | |
| **LQ3B6A-M□** | 1" | 1/2" | 42 | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 50 | 49 |
| **LQ3B6B-M□** | | 3/4" | 42.5 | | | | | | | | | 52 | |
| **LQ3B6C-M□** | | 1" | | | | | | | | | | 53 | |

## Dimensions

### Female branch tee: LQ3B-F




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L1': Nut material PVDF dimensions

**Metric Size**

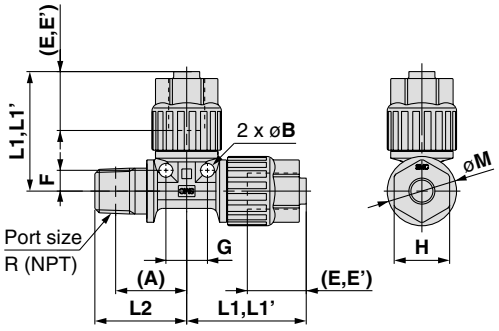
| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | E | E' | F | G | H | L1 | L1' | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3B11-F□** | **ø4** | 1/8" | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 19.5 | 14 | 18.5 |
| **LQ3B12-F□** | **ø3** | | | | | | | | | | | | |
| **LQ3B21-F□** | **ø6** | 1/8" | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 20 | 20 | 18.5 |
| **LQ3B22-F□** | | 1/4" | | | | | | | | | 22 | | 21.5 |
| **LQ3B31-F□** | **ø10** | 1/8" | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 23 | 25 | 18.5 |
| **LQ3B32-F□** | **ø8** | | | | | | | | | | | | |
| **LQ3B33-F□** | **ø10** | 1/4" | | | | | | | | | 24 | | 21.5 |
| **LQ3B34-F□** | **ø8** | | | | | | | | | | | | |
| **LQ3B35-F□** | **ø10** | 3/8" | | | | | | | | | 25.5 | | 25 |
| **LQ3B36-F□** | **ø8** | | | | | | | | | | | | |
| **LQ3B41-F□** | **ø12** | 1/4" | 6 | 24 | 22 | 10 | 20 | 24 | 52.5 | 50.5 | 23.5 | 29 | 21.5 |
| **LQ3B42-F□** | | 3/8" | | | | | | | | | 26 | | 25 |
| **LQ3B43-F□** | | 1/2" | | | | | | | | | 30 | | 29.5 |
| **LQ3B51-F□** | **ø19** | 3/8" | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 30.5 | 37 | 25 |
| **LQ3B52-F□** | | 1/2" | | | | | | | | | 35.5 | | 29.5 |
| **LQ3B53-F□** | | 3/4" | | | | | | | | | 37 | | 36 |
| **LQ3B61-F□** | **ø25** | 1/2" | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 41 | 49 | 29.5 |
| **LQ3B62-F□** | | 3/4" | | | | | | | | | 42.5 | | 36 |
| **LQ3B63-F□** | | 1" | | | | | | | | | 46 | | 44.5 |

**Inch Size**

| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | E | E' | F | G | H | L1 | L1' | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3B1A-F□** | 1/8" | 1/8" | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 19.5 | 14 | 18.5 |
| **LQ3B2A-F□** | 1/4" | 1/8" | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 20 | 20 | 18.5 |
| **LQ3B2B-F□** | | 1/4" | | | | | | | | | 22 | | 21.5 |
| **LQ3B3A-F□** | 3/8" | 1/8" | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 23 | 25 | 18.5 |
| **LQ3B3B-F□** | | 1/4" | | | | | | | | | 24 | | 21.5 |
| **LQ3B3C-F□** | | 3/8" | | | | | | | | | 25.5 | | 25 |
| **LQ3B4A-F□** | 1/2" | 1/4" | 6 | 24.5 | 22.5 | 10 | 20 | 24 | 52.5 | 50.5 | 23.5 | 29 | 21.5 |
| **LQ3B4B-F□** | | 3/8" | | | | | | | | | 26 | | 25 |
| **LQ3B4C-F□** | | 1/2" | | | | | | | | | 30 | | 29.5 |
| **LQ3B5A-F□** | 3/4" | 3/8" | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 30.5 | 37 | 25 |
| **LQ3B5B-F□** | | 1/2" | | | | | | | | | 35.5 | | 29.5 |
| **LQ3B5C-F□** | | 3/4" | | | | | | | | | 37 | | 36 |
| **LQ3B6A-F□** | 1" | 1/2" | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 41 | 49 | 29.5 |
| **LQ3B6B-F□** | | 3/4" | | | | | | | | | 42.5 | | 36 |
| **LQ3B6C-F□** | | 1" | | | | | | | | | 46 | | 44.5 |

## Dimensions

### Male run tee: LQ3R-M




(A): Reference dimension after installation
(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L': Nut material PVDF dimensions

**Metric Size**

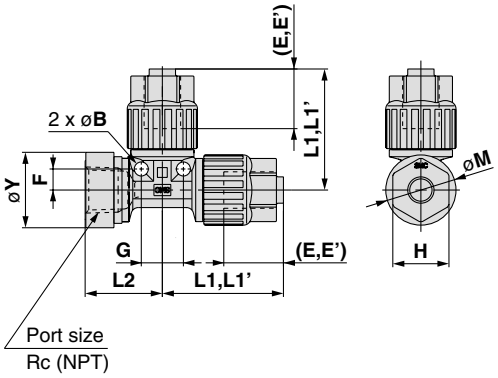
| Model | Applicable tubing O.D. | Connection threads R/NPT | A | B | E | E' | F | G | H | L1 | L1' | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3R11-M□** | **ø4** | 1/8" | 15 | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 19 | 14 |
| **LQ3R12-M□** | **ø3** | | | | | | | | | | | | |
| **LQ3R21-M□** | **ø6** | 1/8" | 19.5 | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 23.5 | 20 |
| **LQ3R22-M□** | | 1/4" | 20.5 | | | | | | | | | 26.5 | |
| **LQ3R31-M□** | **ø10** | 1/8" | 22.5 | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 26.5 | 25 |
| **LQ3R32-M□** | **ø8** | | | | | | | | | | | | |
| **LQ3R33-M□** | **ø10** | 1/4" | 23.5 | | | | | | | | | 29.5 | |
| **LQ3R34-M□** | **ø8** | | | | | | | | | | | | |
| **LQ3R35-M□** | **ø10** | 3/8" | 24 | | | | | | | | | 30.5 | |
| **LQ3R36-M□** | **ø8** | | | | | | | | | | | | |
| **LQ3R41-M□** | **ø12** | 1/4" | 27 | 6 | 24 | 22 | 10 | 20 | 24 | 52.5 | 50.5 | 33 | 29 |
| **LQ3R42-M□** | | 3/8" | 27.5 | | | | | | | | | 34 | |
| **LQ3R43-M□** | | 1/2" | 29 | | | | | | | | | 37 | |
| **LQ3R51-M□** | **ø19** | 3/8" | 32.5 | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 39 | 37 |
| **LQ3R52-M□** | | 1/2" | 34 | | | | | | | | | 42 | |
| **LQ3R53-M□** | | 3/4" | 34.5 | | | | | | | | | 44 | |
| **LQ3R61-M□** | **ø25** | 1/2" | 42 | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 50 | 49 |
| **LQ3R62-M□** | | 3/4" | 42.5 | | | | | | | | | 52 | |
| **LQ3R63-M□** | | 1" | | | | | | | | | | 53 | |

**Inch Size**

| Model | Applicable tubing O.D. | Connection threads R/NPT | A | B | E | E' | F | G | H | L1 | L1' | L2 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3R1A-M□** | 1/8" | 1/8" | 15 | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 19 | 14 |
| **LQ3R2A-M□** | 1/4" | 1/8" | 19.5 | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 23.5 | 20 |
| **LQ3R2B-M□** | | 1/4" | 20.5 | | | | | | | | | 26.5 | |
| **LQ3R3A-M□** | 3/8" | 1/8" | 22.5 | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 26.5 | 25 |
| **LQ3R3B-M□** | | 1/4" | 23.5 | | | | | | | | | 29.5 | |
| **LQ3R3C-M□** | | 3/8" | 24 | | | | | | | | | 30.5 | |
| **LQ3R4A-M□** | 1/2" | 1/4" | 27 | 6 | 24.5 | 22.5 | 10 | 20 | 24 | 52.5 | 50.5 | 33 | 29 |
| **LQ3R4B-M□** | | 3/8" | 27.5 | | | | | | | | | 34 | |
| **LQ3R4C-M□** | | 1/2" | 29 | | | | | | | | | 37 | |
| **LQ3R5A-M□** | 3/4" | 3/8" | 32.5 | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 39 | 37 |
| **LQ3R5B-M□** | | 1/2" | 34 | | | | | | | | | 42 | |
| **LQ3R5C-M□** | | 3/4" | 34.5 | | | | | | | | | 44 | |
| **LQ3R6A-M□** | 1" | 1/2" | 42 | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 50 | 49 |
| **LQ3R6B-M□** | | 3/4" | 42.5 | | | | | | | | | 52 | |
| **LQ3R6C-M□** | | 1" | | | | | | | | | | 53 | |

## Dimensions

### Female run tee: LQ3R-F




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L1': Nut material PVDF dimensions

**Metric Size**

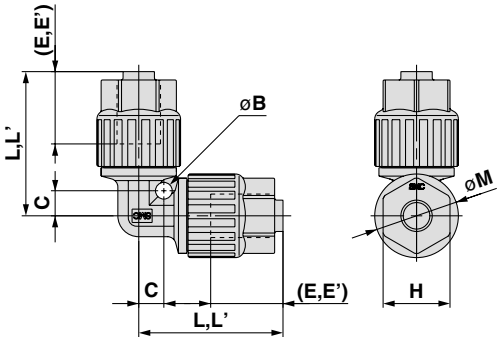
| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | E | E' | F | G | H | L1 | L1' | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3R11-F□** | **ø4** | 1/8" | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 19.5 | 14 | 18.5 |
| **LQ3R12-F□** | **ø3** | | | | | | | | | | | | |
| **LQ3R21-F□** | **ø6** | 1/8" | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 20 | 20 | 18.5 |
| **LQ3R22-F□** | | 1/4" | | | | | | | | | 22 | | 21.5 |
| **LQ3R31-F□** | **ø10** | 1/8" | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 23 | 25 | 18.5 |
| **LQ3R32-F□** | **ø8** | | | | | | | | | | | | |
| **LQ3R33-F□** | **ø10** | 1/4" | | | | | | | | | 24 | | 21.5 |
| **LQ3R34-F□** | **ø8** | | | | | | | | | | | | |
| **LQ3R35-F□** | **ø10** | 3/8" | | | | | | | | | 25.5 | | 25 |
| **LQ3R36-F□** | **ø8** | | | | | | | | | | | | |
| **LQ3R41-F□** | **ø12** | 1/4" | 6 | 24 | 22 | 10 | 20 | 24 | 52.5 | 50.5 | 23.5 | 29 | 21.5 |
| **LQ3R42-F□** | | 3/8" | | | | | | | | | 26 | | 25 |
| **LQ3R43-F□** | | 1/2" | | | | | | | | | 30 | | 29.5 |
| **LQ3R51-F□** | **ø19** | 3/8" | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 30.5 | 37 | 25 |
| **LQ3R52-F□** | | 1/2" | | | | | | | | | 35.5 | | 29.5 |
| **LQ3R53-F□** | | 3/4" | | | | | | | | | 37 | | 36 |
| **LQ3R61-F□** | **ø25** | 1/2" | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 41 | 49 | 29.5 |
| **LQ3R62-F□** | | 3/4" | | | | | | | | | 42.5 | | 36 |
| **LQ3R63-F□** | | 1" | | | | | | | | | 46 | | 44.5 |

**Inch Size**

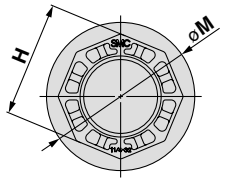
| Model | Applicable tubing O.D. | Connection threads Rc/NPT | B | E | E' | F | G | H | L1 | L1' | L2 | M | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3R1A-F□** | 1/8" | 1/8" | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 19.5 | 14 | 18.5 |
| **LQ3R2A-F□** | 1/4" | 1/8" | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 20 | 20 | 18.5 |
| **LQ3R2B-F□** | | 1/4" | | | | | | | | | 22 | | 21.5 |
| **LQ3R3A-F□** | 3/8" | 1/8" | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 23 | 25 | 18.5 |
| **LQ3R3B-F□** | | 1/4" | | | | | | | | | 24 | | 21.5 |
| **LQ3R3C-F□** | | 3/8" | | | | | | | | | 25.5 | | 25 |
| **LQ3R4A-F□** | 1/2" | 1/4" | 6 | 24.5 | 22.5 | 10 | 20 | 24 | 52.5 | 50.5 | 23.5 | 29 | 21.5 |
| **LQ3R4B-F□** | | 3/8" | | | | | | | | | 26 | | 25 |
| **LQ3R4C-F□** | | 1/2" | | | | | | | | | 30 | | 29.5 |
| **LQ3R5A-F□** | 3/4" | 3/8" | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 30.5 | 37 | 25 |
| **LQ3R5B-F□** | | 1/2" | | | | | | | | | 35.5 | | 29.5 |
| **LQ3R5C-F□** | | 3/4" | | | | | | | | | 37 | | 36 |
| **LQ3R6A-F□** | 1" | 1/2" | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 41 | 49 | 29.5 |
| **LQ3R6B-F□** | | 3/4" | | | | | | | | | 42.5 | | 36 |
| **LQ3R6C-F□** | | 1" | | | | | | | | | 46 | | 44.5 |

## Dimensions

### Union elbow: LQ3E




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L': Nut material PVDF dimensions




Class 7

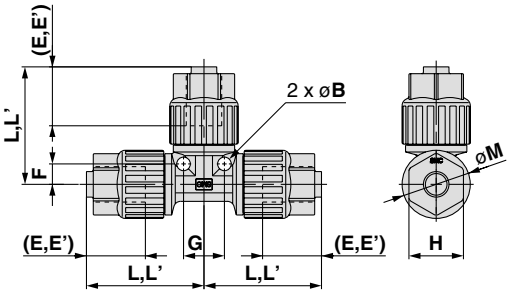
**Metric Size**

| Model | Applicable tubing O.D. | B | C | E | E' | H | L | L' | M |
|---|---|---|---|---|---|---|---|---|---|
| **LQ3E11** | **ø4** | 3.5 | 4.8 | 10 | 9 | 11 | 28.5 | 27.5 | 14 |
| **LQ3E12** | **ø3** | | | | | | | | |
| **LQ3E21** | **ø6** | 4 | 6 | 17 | 16 | 16 | 34.5 | 33.5 | 20 |
| **LQ3E31** | **ø10** | 5 | 9 | 22.5 | 19.5 | 21 | 47.5 | 44.5 | 25 |
| **LQ3E32** | **ø8** | | | | | | | | |
| **LQ3E41** | **ø12** | 6 | 10 | 24 | 22 | 24 | 52.5 | 50.5 | 29 |
| **LQ3E51** | **ø19** | 7 | 14 | 26.5 | 24 | 32 | 64 | 61.5 | 37 |
| **LQ3E61** | **ø25** | 8 | 18 | 30 | 26 | 41 | 78 | 74 | 49 |

**Inch Size**

| Model | Applicable tubing O.D. | B | C | E | E' | H | L | L' | M |
|---|---|---|---|---|---|---|---|---|---|
| **LQ3E1A** | 1/8" | 3.5 | 4.8 | 10 | 9 | 11 | 28.5 | 27.5 | 14 |
| **LQ3E2A** | 1/4" | 4 | 6 | 17 | 16 | 16 | 34.5 | 33.5 | 20 |
| **LQ3E3A** | 3/8" | 5 | 9 | 22.5 | 19.5 | 21 | 47.5 | 44.5 | 25 |
| **LQ3E4A** | 1/2" | 6 | 10 | 24.5 | 22.5 | 24 | 52.5 | 50.5 | 29 |
| **LQ3E5A** | 3/4" | 7 | 14 | 26.5 | 24 | 32 | 64 | 61.5 | 37 |
| **LQ3E6A** | 1" | 8 | 18 | 30 | 26 | 41 | 78 | 74 | 49 |
| **LQ3E7A** | 1 1/4" | 9 | 22 | 35 | 35 | 50 | 92.5 | 92.5 | 64 |

### Union tee: LQ3T




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L': Nut material PVDF dimensions

**Metric Size**

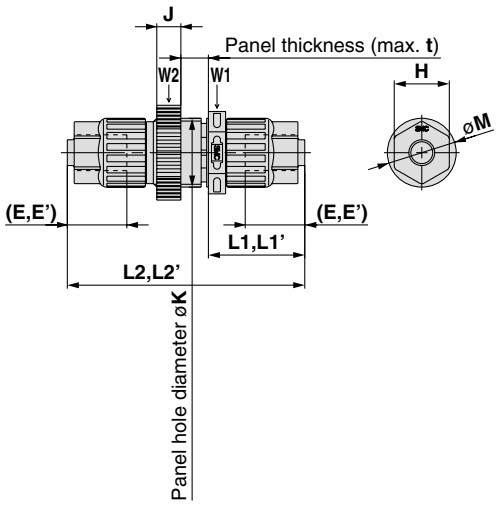
| Model | Applicable tubing O.D. | B | E | E' | F | G | H | L | L' | M |
|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3T11** | **ø4** | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 14 |
| **LQ3T12** | **ø3** | | | | | | | | | |
| **LQ3T21** | **ø6** | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 20 |
| **LQ3T31** | **ø10** | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 25 |
| **LQ3T32** | **ø8** | | | | | | | | | |
| **LQ3T41** | **ø12** | 6 | 24 | 22 | 10 | 20 | 24 | 52.5 | 50.5 | 29 |
| **LQ3T51** | **ø19** | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 37 |
| **LQ3T61** | **ø25** | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 49 |

**Inch Size**

| Model | Applicable tubing O.D. | B | E | E' | F | G | H | L | L' | M |
|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3T1A** | 1/8" | 3.5 | 10 | 9 | 4.8 | 9.5 | 11 | 28.5 | 27.5 | 14 |
| **LQ3T2A** | 1/4" | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 20 |
| **LQ3T3A** | 3/8" | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 25 |
| **LQ3T4A** | 1/2" | 6 | 24.5 | 22.5 | 10 | 20 | 24 | 52.5 | 50.5 | 29 |
| **LQ3T5A** | 3/4" | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 37 |
| **LQ3T6A** | 1" | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 49 |

## Dimensions

### Panel mount union: LQ3P




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L1',L2': Nut material PVDF dimensions
W: Width across flats dimension

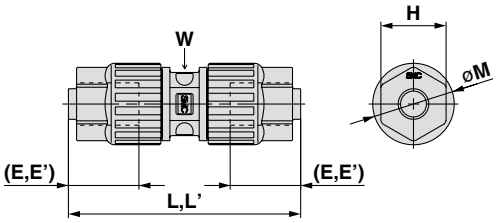
**Metric Size**

| Model | Applicable tubing O.D. | E | E' | H | J | K | L1 | L1' | L2 | L2' | M | t | W1 | W2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3P11** | **ø4** | 10 | 9 | 11 | 6 | 14.5 | 23.5 | 22.5 | 58 | 56 | 14 | 8 | 16 | 17 |
| **LQ3P12** | **ø3** | | | | | | | | | | | | | |
| **LQ3P21** | **ø6** | 17 | 16 | 16 | 7 | 20.5 | 28 | 27 | 69 | 67 | 20 | 8 | 21 | 24 |
| **LQ3P31** | **ø10** | 22.5 | 19.5 | 21 | 7 | 24.5 | 39 | 36 | 89 | 83 | 25 | 8 | 26 | 28 |
| **LQ3P32** | **ø8** | | | | | | | | | | | | | |
| **LQ3P41** | **ø12** | 24 | 22 | 24 | 9 | 30.5 | 44.5 | 42.5 | 100 | 96 | 29 | 8 | 32 | 36 |
| **LQ3P51** | **ø19** | 26.5 | 24 | 32 | 9 | 36.5 | 50.5 | 48 | 117 | 112 | 37 | 13 | 41 | 43 |
| **LQ3P61** | **ø25** | 30 | 26 | 41 | 10 | 48.5 | 60 | 56 | 136 | 127.5 | 49 | 13 | 50 | 55 |

**Inch Size**

| Model | Applicable tubing O.D. | E | E' | H | J | K | L1 | L1' | L2 | L2' | M | t | W1 | W2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3P1A** | 1/8" | 10 | 9 | 11 | 6 | 14.5 | 23.5 | 22.5 | 58 | 56 | 14 | 8 | 16 | 17 |
| **LQ3P2A** | 1/4" | 17 | 16 | 16 | 7 | 20.5 | 28 | 27 | 69 | 67 | 20 | 8 | 21 | 24 |
| **LQ3P3A** | 3/8" | 22.5 | 19.5 | 21 | 7 | 24.5 | 39 | 36 | 89 | 83 | 25 | 8 | 26 | 28 |
| **LQ3P4A** | 1/2" | 24.5 | 22.5 | 24 | 9 | 30.5 | 44.5 | 42.5 | 100 | 96 | 29 | 8 | 32 | 36 |
| **LQ3P5A** | 3/4" | 26.5 | 24 | 32 | 9 | 36.5 | 50.5 | 48 | 117 | 112 | 37 | 13 | 41 | 43 |
| **LQ3P6A** | 1" | 30 | 26 | 41 | 10 | 48.5 | 60 | 56 | 136 | 127.5 | 49 | 13 | 50 | 55 |

### Union: LQ3U



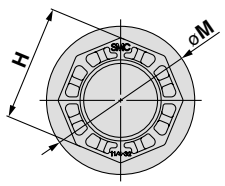

(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L': Nut material PVDF dimensions
W: Width across flats dimension

**Metric Size**

| Model | Applicable tubing O.D. | E | E' | H | L | L' | M | W |
|---|---|---|---|---|---|---|---|---|
| **LQ3U11** | **ø4** | 10 | 9 | 11 | 46.5 | 44.5 | 14 | 10 |
| **LQ3U12** | **ø3** | | | | | | | |
| **LQ3U21** | **ø6** | 17 | 16 | 16 | 57 | 55 | 20 | 14 |
| **LQ3U31** | **ø10** | 22.5 | 19.5 | 21 | 79 | 73 | 25 | 18 |
| **LQ3U32** | **ø8** | | | | | | | |
| **LQ3U41** | **ø12** | 24 | 22 | 24 | 88 | 84 | 29 | 22 |
| **LQ3U51** | **ø19** | 26.5 | 24 | 32 | 103 | 98 | 37 | 30 |
| **LQ3U61** | **ø25** | 30 | 26 | 41 | 122 | 113.5 | 49 | 36 |

**Inch Size**

| Model | Applicable tubing O.D. | E | E' | H | L | L' | M | W |
|---|---|---|---|---|---|---|---|---|
| **LQ3U1A** | 1/8" | 10 | 9 | 11 | 46.5 | 44.5 | 14 | 10 |
| **LQ3U2A** | 1/4" | 17 | 16 | 16 | 57 | 55 | 20 | 14 |
| **LQ3U3A** | 3/8" | 22.5 | 19.5 | 21 | 79 | 73 | 25 | 18 |
| **LQ3U4A** | 1/2" | 24.5 | 22.5 | 24 | 88 | 84 | 29 | 22 |
| **LQ3U5A** | 3/4" | 26.5 | 24 | 32 | 103 | 98 | 37 | 30 |
| **LQ3U6A** | 1" | 30 | 26 | 41 | 122 | 113.5 | 49 | 36 |
| **LQ3U7A** | 1 1/4" | 35 | 35 | 50 | 142 | 142 | 64 | 46 |




**Class 7**

# *Series LQ3*
# Union Reducing

## How to Order

**Tubing connection**

**LQ3 U 2 1 – R1 – □**

**Fitting type**

| Symbol | Type |
|---|---|
| **U** | Union |

**Body size (according to the combination table)**

**Tubing type**

| Symbol | Type |
|---|---|
| **A** | Inch |
| **1, 2** | Metric |

**Type of piping (according to the combination table)**

| Symbol | Type |
|---|---|
| **R□** | Reducing |

**Nut material, packaging**

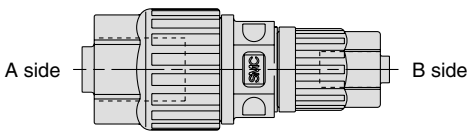
| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

**Size combination (Metric)**

| Size | Model | A side | B side |
|---|---|---|---|
| | | Applicable tubing size (mm) | Applicable tubing size (mm) |
| **1** | **LQ3U11-R1** | 4 x 3 | 3 x 2 |
| **2** | **LQ3U21-R1** | 6 x 4 | 4 x 3 |
| | **LQ3U21-R2** | | 3 x 2 |
| **3** | **LQ3U31-R1** | 10 x 8 | 8 x 6 |
| | **LQ3U31-R2** | | 6 x 4 |
| | **LQ3U32-R1** | 8 x 6 | 6 x 4 |
| | **LQ3U32-R2** | | 4 x 3 |
| **4** | **LQ3U41-R1** | 12 x 10 | 10 x 8 |
| | **LQ3U41-R2** | | 8 x 6 |
| **5** | **LQ3U51-R1** | 19 x 16 | 12 x 10 |
| | **LQ3U51-R2** | | 10 x 8 |
| **6** | **LQ3U61-R1** | 25 x 22 | 19 x 16 |
| | **LQ3U61-R2** | | 12 x 10 |

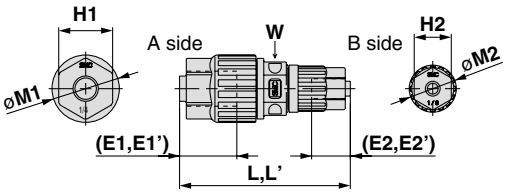
**Size combination (Inch)**

| Size | Model | A side | B side |
|---|---|---|---|
| | | Applicable tubing size (inch) | Applicable tubing size (inch) |
| **2** | **LQ3U2A-R1** | 1/4" x 5/32" | 1/8" x 0.086" |
| **3** | **LQ3U3A-R1** | 3/8" x 1/4" | 1/4" x 5/32" |
| | **LQ3U3A-R2** | | 1/8" x 0.086" |
| **4** | **LQ3U4A-R1** | 1/2" x 3/8" | 3/8" x 1/4" |
| | **LQ3U4A-R2** | | 1/4" x 5/32" |
| **5** | **LQ3U5A-R1** | 3/4" x 5/8" | 1/2" x 3/8" |
| | **LQ3U5A-R2** | | 3/8" x 1/4" |
| | **LQ3U5A-R3** | | 1/4" x 5/32" |
| **6** | **LQ3U6A-R1** | 1" x 7/8" | 3/4" x 5/8" |
| | **LQ3U6A-R2** | | 1/2" x 3/8" |
| **7** | **LQ3U7A-R1** | 1 1/4" x 1.1" | 1" x 7/8" |

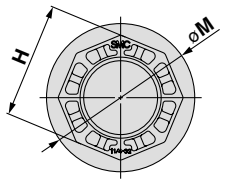


## Dimensions

### Union reducing: LQ3U-R




(E1,E1',E2,E2'): Reference dimension for the inserted tubing from the end surface of the nut
(E1',E2'),L': Nut material PVDF dimensions




**Class 7**

**Metric Size**

| Model | A side Applicable tubing O.D. | B side Applicable tubing O.D. | E1 | E1' | E2 | E2' | H1 | H2 | L | L' | M1 | M2 | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3U11-R1** | ø4 | ø3 | 10 | 9 | 10 | 9 | 11 | 11 | 46.5 | 44.5 | 14 | 14 | 10 |
| **LQ3U21-R1** | ø6 | ø4 | 17 | 16 | 10 | 9 | 16 | 11 | 51 | 48.5 | 20 | 14 | 14 |
| **LQ3U21-R2** | | ø3 | | | | | | | | | | | |
| **LQ3U31-R1** | ø10 | ø8 | 22.5 | 19.5 | 22.5 | 19.5 | 21 | 21 | 79 | 73 | 25 | 25 | 18 |
| **LQ3U31-R2** | | ø6 | | | 17 | 16 | | 16 | 66.5 | 62 | | 20 | |
| **LQ3U32-R1** | ø8 | ø6 | 22.5 | 19.5 | 17 | 16 | 21 | 16 | 66.5 | 62 | 25 | 20 | 18 |
| **LQ3U32-R2** | | ø4 | | | 10 | 9 | | 11 | 62 | 58 | | 14 | |
| **LQ3U41-R1** | ø12 | ø10 | 24 | 22 | 22.5 | 19.5 | 24 | 21 | 82.5 | 77 | 29 | 25 | 22 |
| **LQ3U41-R2** | | ø8 | | | | | | | | | | | |
| **LQ3U51-R1** | ø19 | ø12 | 26.5 | 24 | 24 | 22 | 32 | 24 | 95.5 | 91 | 37 | 29 | 30 |
| **LQ3U51-R2** | | ø10 | | | 22.5 | 19.5 | | 21 | 91 | 85.5 | | 25 | |
| **LQ3U61-R1** | ø25 | ø19 | 30 | 26 | 26.5 | 24 | 41 | 32 | 112.5 | 105.5 | 49 | 37 | 36 |
| **LQ3U61-R2** | | ø12 | | | 24 | 22 | | 24 | 106.5 | 100 | | 29 | |

**Inch Size**

| Model | A side Applicable tubing O.D. | B side Applicable tubing O.D. | E1 | E1' | E2 | E2' | H1 | H2 | L | L' | M1 | M2 | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3U2A-R1** | 1/4" | 1/8" | 17 | 16 | 10 | 9 | 16 | 11 | 51 | 48.5 | 20 | 14 | 14 |
| **LQ3U3A-R1** | 3/8" | 1/4" | 22.5 | 19.5 | 17 | 16 | 21 | 16 | 66.5 | 62 | 25 | 20 | 18 |
| **LQ3U3A-R2** | | 1/8" | | | 10 | 9 | | 11 | 62 | 58 | | 14 | |
| **LQ3U4A-R1** | 1/2" | 3/8" | 24.5 | 22.5 | 22.5 | 19.5 | 24 | 21 | 82.5 | 77 | 29 | 25 | 22 |
| **LQ3U4A-R2** | | 1/4" | | | 17 | 16 | | 16 | 72.5 | 69 | | 20 | |
| **LQ3U5A-R1** | 3/4" | 1/2" | 26.5 | 24 | 24.5 | 22.5 | 32 | 24 | 95.5 | 91 | 37 | 29 | 30 |
| **LQ3U5A-R2** | | 3/8" | | | 22.5 | 19.5 | | 21 | 91 | 85.5 | | 25 | |
| **LQ3U5A-R3** | | 1/4" | | | 17 | 16 | | 16 | 81 | 77 | | 20 | |
| **LQ3U6A-R1** | 1" | 3/4" | 30 | 26 | 26.5 | 24 | 41 | 32 | 112.5 | 105.5 | 49 | 37 | 36 |
| **LQ3U6A-R2** | | 1/2" | | | 24.5 | 22.5 | | 24 | 106.5 | 100 | | 29 | |
| **LQ3U7A-R1** | 1 1/4" | 1" | 35 | 35 | 30 | 26 | 50 | 41 | 132.5 | 128.2 | 64 | 49 | 46 |

# *Series LQ3*
# Union Elbow Reducing

## How to Order

**Tubing connection**

**LQ3 E 2 1 – R1 – ☐**

**Fitting type**

| Symbol | Type |
|---|---|
| **E** | Union elbow |

**Body size (according to the combination table)**

**Tubing type**

| Symbol | Type |
|---|---|
| **A** | Inch |
| **1, 2** | Metric |

**Type of piping (according to the combination table)**

| Symbol | Type |
|---|---|
| **R☐** | Reducing |

**Nut material, packaging**

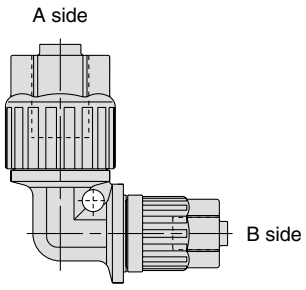
| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

**Size combination (Metric)**

| Size | Model | A side | B side |
|---|---|---|---|
| | | Applicable tubing size (mm) | Applicable tubing size (mm) |
| **1** | **LQ3E11-R1** | 4 x 3 | 3 x 2 |
| **2** | **LQ3E21-R1** | 6 x 4 | 4 x 3 |
| | **LQ3E21-R2** | | 3 x 2 |
| **3** | **LQ3E31-R1** | 10 x 8 | 8 x 6 |
| | **LQ3E31-R2** | | 6 x 4 |
| | **LQ3E32-R1** | 8 x 6 | 6 x 4 |
| | **LQ3E32-R2** | | 4 x 3 |
| **4** | **LQ3E41-R1** | 12 x 10 | 10 x 8 |
| | **LQ3E41-R2** | | 8 x 6 |
| **5** | **LQ3E51-R1** | 19 x 16 | 12 x 10 |
| | **LQ3E51-R2** | | 10 x 8 |
| **6** | **LQ3E61-R1** | 25 x 22 | 19 x 16 |
| | **LQ3E61-R2** | | 12 x 10 |

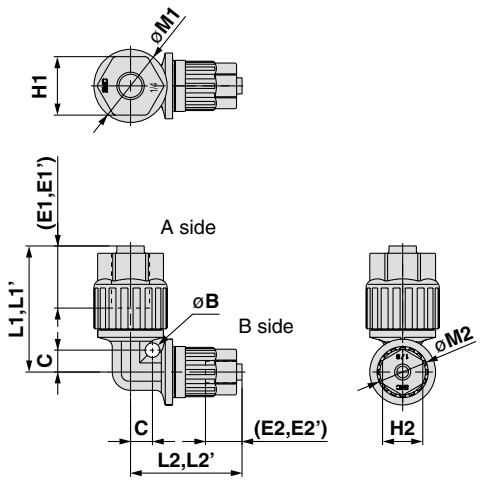
**Size combination (Inch)**

| Size | Model | A side | B side |
|---|---|---|---|
| | | Applicable tubing size (inch) | Applicable tubing size (inch) |
| **2** | **LQ3E2A-R1** | 1/4" x 5/32" | 1/8" x 0.086" |
| **3** | **LQ3E3A-R1** | 3/8" x 1/4" | 1/4" x 5/32" |
| | **LQ3E3A-R2** | | 1/8" x 0.086" |
| **4** | **LQ3E4A-R1** | 1/2" x 3/8" | 3/8" x 1/4" |
| | **LQ3E4A-R2** | | 1/4" x 5/32" |
| **5** | **LQ3E5A-R1** | 3/4" x 5/8" | 1/2" x 3/8" |
| | **LQ3E5A-R2** | | 3/8" x 1/4" |
| | **LQ3E5A-R3** | | 1/4" x 5/32" |
| **6** | **LQ3E6A-R1** | 1" x 7/8" | 3/4" x 5/8" |
| | **LQ3E6A-R2** | | 1/2" x 3/8" |



## Dimensions

### Union elbow reducing: LQ3E-R




(E1,E1',E2,E2'): Reference dimension for the inserted tubing from the end surface of the nut
(E1',E2'),L1',L2': Nut material PVDF dimensions

**Metric Size**

| Model | A side | B side | B | C | E1 | E1' | E2 | E2' | H1 | H2 | L1 | L1' | L2 | L2' | M1 | M2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Applicable tubing O.D. | Applicable tubing O.D. | | | | | | | | | | | | | | |
| **LQ3E11-R1** | ø4 | ø3 | 3.5 | 4.8 | 10 | 9 | 10 | 9 | 11 | 11 | 28.5 | 27.5 | 28.5 | 27.5 | 14 | 14 |
| **LQ3E21-R1** | ø6 | ø4 | 4 | 6 | 17 | 16 | 10 | 9 | 16 | 11 | 34.5 | 33.5 | 30.5 | 29.5 | 20 | 14 |
| **LQ3E21-R2** | | ø3 | | | | | | | | | | | | | | |
| **LQ3E31-R1** | ø10 | ø8 | 5 | 9 | 22.5 | 19.5 | 22.5 | 19.5 | 21 | 21 | 47.5 | 44.5 | 47.5 | 44.5 | 25 | 25 |
| **LQ3E31-R2** | | ø6 | | | | | 17 | 16 | | 16 | | | 38 | 37 | | 20 |
| **LQ3E32-R1** | ø8 | ø6 | 5 | 9 | 22.5 | 19.5 | 17 | 16 | 21 | 16 | 47.5 | 44.5 | 38 | 37 | 25 | 20 |
| **LQ3E32-R2** | | ø4 | | | | | 10 | 9 | | 11 | | | 33.5 | 32.5 | | 14 |
| **LQ3E41-R1** | ø12 | ø10 | 6 | 10 | 24 | 22 | 22.5 | 19.5 | 24 | 21 | 52.5 | 50.5 | 48.5 | 45.5 | 29 | 25 |
| **LQ3E41-R2** | | ø8 | | | | | | | | | | | | | | |
| **LQ3E51-R1** | ø19 | ø12 | 7 | 14 | 26.5 | 24 | 24 | 22 | 32 | 24 | 64 | 61.5 | 58.5 | 56.5 | 37 | 29 |
| **LQ3E51-R2** | | ø10 | | | | | 22.5 | 19.5 | | 21 | | 61.5 | 53.5 | 50.5 | | 25 |
| **LQ3E61-R1** | ø25 | ø19 | 8 | 18 | 30 | 26 | 26.5 | 24 | 41 | 32 | 78 | 74 | 70 | 67.5 | 49 | 37 |
| **LQ3E61-R2** | | ø12 | | | | | 24 | 22 | | 24 | | 74 | 64.5 | 62.5 | | 29 |

**Inch Size**

| Model | A side | B side | B | C | E1 | E1' | E2 | E2' | H1 | H2 | L1 | L1' | L2 | L2' | M1 | M2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Applicable tubing O.D. | Applicable tubing O.D. | | | | | | | | | | | | | | |
| **LQ3E2A-R1** | 1/4" | 1/8" | 4 | 6 | 17 | 16 | 10 | 9 | 16 | 11 | 34.5 | 33.5 | 30.5 | 29.5 | 20 | 14 |
| **LQ3E3A-R1** | 3/8" | 1/4" | 5 | 9 | 22.5 | 19.5 | 17 | 16 | 21 | 16 | 47.5 | 44.5 | 38 | 37 | 25 | 20 |
| **LQ3E3A-R2** | | 1/8" | | | | | 10 | 9 | | 11 | | | 33.5 | 32.5 | | 14 |
| **LQ3E4A-R1** | 1/2" | 3/8" | 6 | 10 | 24.5 | 22.5 | 22.5 | 19.5 | 24 | 21 | 52.5 | 50.5 | 48.5 | 45.5 | 29 | 25 |
| **LQ3E4A-R2** | | 1/4" | | | | | 17 | 16 | | 16 | | | 39 | 38 | | 20 |
| **LQ3E5A-R1** | 3/4" | 1/2" | 7 | 14 | 26.5 | 24 | 24.5 | 22.5 | 32 | 24 | 64 | 61.5 | 58.5 | 56.5 | 37 | 29 |
| **LQ3E5A-R2** | | 3/8" | | | | | 22.5 | 19.5 | | 21 | | | 53.5 | 50.5 | | 25 |
| **LQ3E5A-R3** | | 1/4" | | | | | 17 | 16 | | 16 | | | 43.5 | 42.5 | | 20 |
| **LQ3E6A-R1** | 1" | 3/4" | 8 | 18 | 30 | 26 | 26.5 | 24 | 41 | 32 | 78 | 74 | 70 | 67.5 | 49 | 37 |
| **LQ3E6A-R2** | | 1/2" | | | | | 24.5 | 22.5 | | 24 | | | 64.5 | 62.5 | | 29 |

# *Series LQ3*
# Union Tee Reducing

## How to Order

**Tubing connection**

**LQ3 T 2 A – R1 – □**

**Fitting type**

| Symbol | Type |
|---|---|
| **T** | Union tee |

**Body size (according to the combination table)**

**Tubing type**

| Symbol | Type |
|---|---|
| **A** | Inch |
| **1, 2** | Metric |

**Type of piping (according to the combination table)**

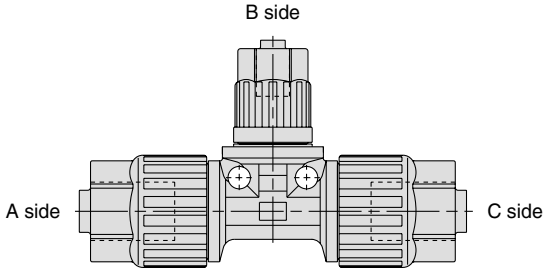
| Symbol | Type |
|---|---|
| **R□** | Reducing |

**Nut material, packaging**

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

**Size combination (Metric)**

| Size | Model | A side (Left) | B side (Center) | C side (Right) |
|---|---|---|---|---|
| | | Applicable tubing size (mm) | Applicable tubing size (mm) | Applicable tubing size (mm) |
| **1** | **LQ3T11-R1** | 4 x 3 | 3 x 2 | 4 x 3 |
| | **LQ3T11-R5** | | 4 x 3 | 3 x 2 |
| **2** | **LQ3T21-R1** | 6 x 4 | 4 x 3 | 6 x 4 |
| | **LQ3T21-R2** | | 3 x 2 | 6 x 4 |
| | **LQ3T21-R5** | | 6 x 4 | 4 x 3 |
| | **LQ3T21-R6** | | 6 x 4 | 3 x 2 |
| **3** | **LQ3T31-R1** | 10 x 8 | 8 x 6 | 10 x 8 |
| | **LQ3T31-R2** | | 6 x 4 | 10 x 8 |
| | **LQ3T31-R5** | | 10 x 8 | 8 x 6 |
| | **LQ3T31-R6** | | 10 x 8 | 6 x 4 |
| | **LQ3T32-R1** | 8 x 6 | 6 x 4 | 8 x 6 |
| | **LQ3T32-R5** | | 8 x 6 | 6 x 4 |
| **4** | **LQ3T41-R1** | 12 x 10 | 10 x 8 | 12 x 10 |
| | **LQ3T41-R5** | | 12 x 10 | 10 x 8 |
| **5** | **LQ3T51-R1** | 19 x 16 | 12 x 10 | 19 x 16 |
| | **LQ3T51-R5** | | 19 x 16 | 12 x 10 |
| **6** | **LQ3T61-R1** | 25 x 22 | 19 x 16 | 25 x 22 |
| | **LQ3T61-R5** | | 25 x 22 | 19 x 16 |

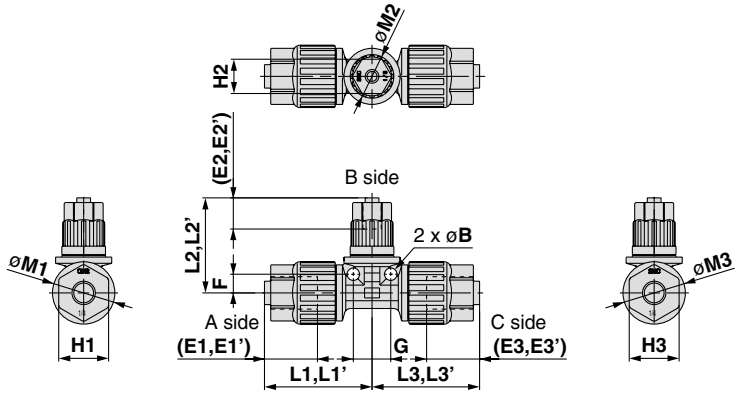



**Size combination (Inch)**

| Size | Model | A side (Left) | B side (Center) | C side (Right) |
|---|---|---|---|---|
| | | Applicable tubing size (inch) | Applicable tubing size (inch) | Applicable tubing size (inch) |
| **2** | **LQ3T2A-R1** | 1/4" x 5/32" | 1/8" x 0.086" | 1/4" x 5/32" |
| | **LQ3T2A-R5** | | 1/4" x 5/32" | 1/8" x 0.086" |
| **3** | **LQ3T3A-R1** | 3/8" x 1/4" | 1/4" x 5/32" | 3/8" x 1/4" |
| | **LQ3T3A-R2** | | 1/8" x 0.086" | 3/8" x 1/4" |
| | **LQ3T3A-R5** | | 3/8" x 1/4" | 1/4" x 5/32" |
| | **LQ3T3A-R7** | | 1/4" x 5/32" | 1/4" x 5/32" |
| | **LQ3T3A-R9** | 1/4" x 5/32" | 3/8" x 1/4" | 1/4" x 5/32" |
| **4** | **LQ3T4A-R1** | 1/2" x 3/8" | 3/8" x 1/4" | 1/2" x 3/8" |
| | **LQ3T4A-R2** | | 1/4" x 5/32" | 1/2" x 3/8" |
| | **LQ3T4A-R5** | | 1/2" x 3/8" | 3/8" x 1/4" |
| | **LQ3T4A-R6** | | 1/2" x 3/8" | 1/4" x 5/32" |
| | **LQ3T4A-R7** | | 3/8" x 1/4" | 3/8" x 1/4" |
| | **LQ3T4A-R8** | | 1/4" x 5/32" | 1/4" x 5/32" |
| | **LQ3T4A-R9** | 3/8" x 1/4" | 1/2" x 3/8" | 3/8" x 1/4" |
| **5** | **LQ3T5A-R1** | 3/4" x 5/8" | 1/2" x 3/8" | 3/4" x 5/8" |
| | **LQ3T5A-R2** | | 3/8" x 1/4" | 3/4" x 5/8" |
| | **LQ3T5A-R3** | | 1/4" x 5/32" | 3/4" x 5/8" |
| | **LQ3T5A-R5** | | 3/4" x 5/8" | 1/2" x 3/8" |
| | **LQ3T5A-R6** | | 3/4" x 5/8" | 3/8" x 1/4" |
| | **LQ3T5A-R7** | | 1/2" x 3/8" | 1/2" x 3/8" |
| | **LQ3T5A-R9** | 1/2" x 3/8" | 3/4" x 5/8" | 1/2" x 3/8" |
| | **LQ3T5A-R10** | 3/8" x 1/4" | 3/4" x 5/8" | 3/8" x 1/4" |
| | **LQ3T5A-R11** | 3/4" x 5/8" | 1/2" x 3/8" | 1/4" x 5/32" |
| | **LQ3T5A-R12** | | 3/4" x 5/8" | 1/4" x 5/32" |
| **6** | **LQ3T6A-R1** | 1" x 7/8" | 3/4" x 5/8" | 1" x 7/8" |
| | **LQ3T6A-R2** | | 1/2" x 3/8" | 1" x 7/8" |
| | **LQ3T6A-R3** | | 3/8" x 1/4" | 1" x 7/8" |
| | **LQ3T6A-R4** | | 1/4" x 5/32" | 1" x 7/8" |
| | **LQ3T6A-R5** | | 1" x 7/8" | 3/4" x 5/8" |
| | **LQ3T6A-R6** | | 1" x 7/8" | 1/2" x 3/8" |
| | **LQ3T6A-R7** | | 3/4" x 5/8" | 3/4" x 5/8" |
| | **LQ3T6A-R9** | 3/4" x 5/8" | 1" x 7/8" | 3/4" x 5/8" |
| | **LQ3T6A-R10** | 1/2" x 3/8" | 1" x 7/8" | 1/2" x 3/8" |
| | **LQ3T6A-R12** | 1" x 7/8" | 1" x 7/8" | 3/8" x 1/4" |
| | **LQ3T6A-R13** | | 1" x 7/8" | 1/4" x 5/32" |
| | **LQ3T6A-R14** | 3/4" x 5/8" | 1" x 7/8" | 1/4" x 5/32" |

## Dimensions

### Union tee reducing: LQ3T-R




(E1,E1',E2,E2',E3,E3'): Reference dimension for the inserted tubing from the end surface of the nut
(E1',E2',E3'),L1',L2',L3': Nut material PVDF dimensions

#### Metric Size

| Model | A side (Left) | B side (Center) | C side (Right) | B | E1 | E1' | E2 | E2' | E3 | E3' | F | G | H1 | H2 | H3 | L1 | L1' | L2 | L2' | L3 | L3' | M1 | M2 | M3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Applicable tubing O.D. | Applicable tubing O.D. | Applicable tubing O.D. | | | | | | | | | | | | | | | | | | | | | |
| **LQ3T11-R1** | ø4 | ø3 | ø4 | 3.5 | 10 | 9 | 10 | 9 | 10 | 9 | 4.8 | 9.5 | 11 | 11 | 11 | 28.5 | 27.5 | 28.5 | 27.5 | 28.5 | 27.5 | 14 | 14 | 14 |
| **LQ3T11-R5** | | ø4 | ø3 | | | | | | | | | | | | | | | | | | | | | |
| **LQ3T21-R1** | ø6 | ø4 | ø6 | 4 | 17 | 16 | 10 | 9 | 17 | 16 | 6 | 12 | 16 | 11 | 16 | 34.5 | 33.5 | 30.5 | 29.5 | 34.5 | 33.5 | 20 | 14 | 20 |
| **LQ3T21-R2** | | ø3 | ø6 | | | | | | | | | | | | | | | | | | | | | |
| **LQ3T21-R5** | | ø6 | ø4 | | | | 17 | 16 | 10 | 9 | | | | 16 | 11 | | | 34.5 | 33.5 | 30.5 | 29.5 | | 20 | 14 |
| **LQ3T21-R6** | | ø6 | ø3 | | | | | | | | | | | | | | | | | | | | | |
| **LQ3T31-R1** | ø10 | ø8 | ø10 | 5 | 22.5 | 19.5 | 22.5 | 19.5 | 22.5 | 19.5 | 9 | 18 | 21 | 21 | 21 | 47.5 | 44.5 | 47.5 | 44.5 | 47.5 | 44.5 | 25 | 25 | 25 |
| **LQ3T31-R2** | | ø6 | ø10 | | | | 17 | 16 | | | | | | 16 | | | | 38 | 37 | | | | 20 | |
| **LQ3T31-R5** | | ø10 | ø8 | | | | 22.5 | 19.5 | | | | | | 21 | 21 | | | 47.5 | 44.5 | | | | 25 | 25 |
| **LQ3T31-R6** | | ø10 | ø6 | | | | | | 17 | 16 | | | | | 16 | | | | | 38 | 37 | | | 20 |
| **LQ3T32-R1** | ø8 | ø6 | ø8 | 5 | 22.5 | 19.5 | 17 | 16 | 22.5 | 19.5 | 9 | 18 | 21 | 16 | 21 | 47.5 | 44.5 | 38 | 37 | 47.5 | 44.5 | 25 | 20 | 25 |
| **LQ3T32-R5** | | ø8 | ø6 | | | | 22.5 | 19.5 | 17 | 16 | | | | 21 | 16 | | | 47.5 | 44.5 | 38 | 37 | | 25 | 20 |
| **LQ3T41-R1** | ø12 | ø10 | ø12 | 6 | 24 | 22 | 22.5 | 19.5 | 24 | 22 | 10 | 20 | 24 | 21 | 24 | 52.5 | 50.5 | 48.5 | 45.5 | 52.5 | 50.5 | 29 | 25 | 29 |
| **LQ3T41-R5** | | ø12 | ø10 | | | | 24 | 22 | 22.5 | 19.5 | | | | 24 | 21 | | | 52.5 | 50.5 | 48.5 | 45.5 | | 29 | 25 |
| **LQ3T51-R1** | ø19 | ø12 | ø19 | 7 | 26.5 | 24 | 24 | 22 | 26.5 | 24 | 14 | 28 | 32 | 24 | 32 | 64 | 61.5 | 58.5 | 56.5 | 64 | 61.5 | 37 | 29 | 37 |
| **LQ3T51-R5** | | ø19 | ø12 | | | | 26.5 | 24 | 24 | 22 | | | | 32 | 24 | | | 64 | 61.5 | 58.5 | 56.5 | | 37 | 29 |
| **LQ3T61-R1** | ø25 | ø19 | ø25 | 8 | 30 | 26 | 26.5 | 24 | 30 | 26 | 18 | 36 | 41 | 32 | 41 | 78 | 74 | 70 | 67.5 | 78 | 74 | 49 | 37 | 49 |
| **LQ3T61-R5** | | ø25 | ø19 | | | | 30 | 26 | 26.5 | 24 | | | | 41 | 32 | | | 78 | 74 | 70 | 67.5 | | 49 | 37 |

#### Inch Size

| Model | A side (Left) | B side (Center) | C side (Right) | B | E1 | E1' | E2 | E2' | E3 | E3' | F | G | H1 | H2 | H3 | L1 | L1' | L2 | L2' | L3 | L3' | M1 | M2 | M3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Applicable tubing O.D. | Applicable tubing O.D. | Applicable tubing O.D. | | | | | | | | | | | | | | | | | | | | | |
| **LQ3T2A-R1** | 1/4" | 1/8" | 1/4" | 4 | 17 | 16 | 10 | 9 | 17 | 16 | 6 | 12 | 16 | 11 | 16 | 34.5 | 33.5 | 30.5 | 29.5 | 34.5 | 33.5 | 20 | 14 | 20 |
| **LQ3T2A-R5** | | 1/4" | 1/8" | | | | 17 | 16 | 10 | 9 | | | | 16 | 11 | | | 34.5 | 33.5 | 30.5 | 29.5 | | 20 | 14 |
| **LQ3T3A-R1** | 3/8" | 1/4" | 3/8" | 5 | 22.5 | 19.5 | 17 | 16 | 22.5 | 19.5 | 9 | 18 | 21 | 16 | 21 | 47.5 | 44.5 | 38 | 37 | 47.5 | 44.5 | 25 | 20 | 25 |
| **LQ3T3A-R2** | | 1/8" | 3/8" | | | | 10 | 9 | | | | | | 11 | | | | 33.5 | 32.5 | | | | 14 | |
| **LQ3T3A-R5** | | 3/8" | 1/4" | | | | 22.5 | 19.5 | | | | | | 21 | | | | 47.5 | 44.5 | | | | 25 | |
| **LQ3T3A-R7** | | 1/4" | 1/4" | | | | 17 | 16 | 17 | 16 | | | | 16 | 16 | | | 38 | 37 | 38 | 37 | | 20 | 20 |
| **LQ3T3A-R9** | 1/4" | 3/8" | 1/4" | | 17 | 16 | 22.5 | 19.5 | | | | | 16 | 21 | | 38 | 37 | 47.5 | 44.5 | | | 20 | 25 | |
| **LQ3T4A-R1** | 1/2" | 3/8" | 1/2" | 6 | 24.5 | 22.5 | 22.5 | 19.5 | 24.5 | 22.5 | 10 | 20 | 24 | 21 | 24 | 52.5 | 50.5 | 48.5 | 45.5 | 52.5 | 50.5 | 29 | 25 | 29 |
| **LQ3T4A-R2** | | 1/4" | 1/2" | | | | 17 | 16 | | | | | | 16 | | | | 39 | 38 | | | | 20 | |
| **LQ3T4A-R5** | | 1/2" | 3/8" | | | | 24.5 | 22.5 | 22.5 | 19.5 | | | | 24 | 21 | | | 52.5 | 50.5 | 48.5 | 45.5 | | 29 | 25 |
| **LQ3T4A-R6** | | 1/2" | 1/4" | | | | | | 17 | 16 | | | | | 16 | | | | | 39 | 38 | | | 20 |
| **LQ3T4A-R7** | | 3/8" | 3/8" | | | | 22.5 | 19.5 | 22.5 | 19.5 | | | | 21 | 21 | | | 48.5 | 45.5 | 48.5 | 45.5 | | 25 | 25 |
| **LQ3T4A-R8** | | 1/4" | 1/4" | | | | 17 | 16 | 17 | 16 | | | | 16 | 16 | | | 39 | 38 | 39 | 38 | | 20 | 20 |
| **LQ3T4A-R9** | 3/8" | 1/2" | 3/8" | | 22.5 | 19.5 | 24.5 | 22.5 | 22.5 | 19.5 | | | 21 | 24 | 21 | 48.5 | 45.5 | 52.5 | 50.5 | 48.5 | 45.5 | 25 | 29 | 25 |
| **LQ3T5A-R1** | 3/4" | 1/2" | 3/4" | 7 | 26.5 | 24 | 24.5 | 22.5 | 26.5 | 24 | 14 | 28 | 32 | 24 | 32 | 64 | 61.5 | 58.5 | 56.5 | 64 | 61.5 | 37 | 29 | 37 |
| **LQ3T5A-R2** | | 3/8" | 3/4" | | | | 22.5 | 19.5 | | | | | | 21 | | | | 54.5 | 51.5 | | | | 25 | |
| **LQ3T5A-R3** | | 1/4" | 3/4" | | | | 17 | 16 | | | | | | 16 | | | | 44.5 | 43.5 | | | | 20 | |
| **LQ3T5A-R5** | | 3/4" | 1/2" | | | | 26.5 | 24 | 24.5 | 22.5 | | | | 32 | 24 | | | 64 | 61.5 | 58.5 | 56.5 | | 37 | 29 |
| **LQ3T5A-R6** | | 3/4" | 3/8" | | | | | | 22.5 | 19.5 | | | | | 21 | | | | | 54.5 | 51.5 | | | 25 |
| **LQ3T5A-R7** | | 1/2" | 1/2" | | | | 24.5 | 22.5 | 24.5 | 22.5 | | | | 24 | 24 | | | 58.5 | 56.5 | 58.5 | 56.5 | | 29 | 29 |
| **LQ3T5A-R9** | 1/2" | 3/4" | 1/2" | | 24.5 | 22.5 | 26.5 | 24 | | | | | 24 | 32 | | 58.5 | 56.5 | 64 | 61.5 | | | 29 | 37 | |
| **LQ3T5A-R10** | 3/8" | 3/4" | 3/8" | | 22.5 | 19.5 | | | 22.5 | 19.5 | | | 21 | | 21 | 54.5 | 51.5 | | | 54.5 | 51.5 | 25 | | 25 |
| **LQ3T5A-R11** | 3/4" | 1/2" | 1/4" | | 26.5 | 24 | 24.5 | 22.5 | 17 | 16 | | | 32 | 24 | 16 | 64 | 61.5 | 58.5 | 56.5 | 44.5 | 43.5 | 37 | 29 | 20 |
| **LQ3T5A-R12** | | 3/4" | 1/4" | | | | 26.5 | 24 | | | | | | 32 | | | | 64 | 61.5 | | | | 37 | |
| **LQ3T6A-R1** | 1" | 3/4" | 1" | 8 | 30 | 26 | 26.5 | 24 | 30 | 26 | 18 | 36 | 41 | 32 | 41 | 78 | 74 | 70 | 67.5 | 78 | 74 | 49 | 37 | 49 |
| **LQ3T6A-R2** | | 1/2" | 1" | | | | 24.5 | 22.5 | | | | | | 24 | | | | 64.5 | 62.5 | | | | 29 | |
| **LQ3T6A-R3** | | 3/8" | 1" | | | | 22.5 | 19.5 | | | | | | 21 | | | | 60 | 57 | | | | 25 | |
| **LQ3T6A-R4** | | 1/4" | 1" | | | | 17 | 16 | | | | | | 16 | | | | 50 | 49 | | | | 20 | |
| **LQ3T6A-R5** | | 1" | 3/4" | | | | 30 | 26 | 26.5 | 24 | | | | 41 | 32 | | | 78 | 74 | 70 | 67.5 | | 49 | 37 |
| **LQ3T6A-R6** | | 1" | 1/2" | | | | 30 | 26 | 24.5 | 22.5 | | | | | 24 | | | | | 64.5 | 62.5 | | | 29 |
| **LQ3T6A-R7** | | 3/4" | 3/4" | | | | 26.5 | 24 | 26.5 | 24 | | | | 32 | 32 | | | 70 | 67.5 | 70 | 67.5 | | 37 | 37 |
| **LQ3T6A-R9** | 3/4" | 1" | 3/4" | | 26.5 | 24 | 30 | 26 | | | | | 32 | 41 | | 70 | 67.5 | 78 | 74 | 70 | 67.5 | 37 | 49 | 49 |
| **LQ3T6A-R10** | 1/2" | 1" | 1/2" | | 24.5 | 22.5 | | | 24.5 | 22.5 | | | 24 | | 24 | 64.5 | 62.5 | | | 64.5 | 62.5 | 29 | | 29 |
| **LQ3T6A-R12** | 1" | 1" | 3/8" | | 30 | 26 | | | 22.5 | 19.5 | | | 41 | | 21 | 78 | 74 | | | 60 | 57 | 49 | | 25 |
| **LQ3T6A-R13** | | 1" | 1/4" | | | | | | 17 | 16 | | | | | 16 | | | | | 50 | 49 | | | 20 |
| **LQ3T6A-R14** | 3/4" | 1" | 1/4" | | 26.5 | 24 | | | | | | | 32 | | | 70 | 67.5 | | | | | 37 | | |

## *Series LQ3*

# Space Saving Union Elbow

## How to Order

**Tubing connection**

**LQ3 E 21 – S –** ☐

**Fitting type**

| Symbol | Type |
|---|---|
| **E** | Union elbow |

**Nut material, packaging**

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

**Thread type**

| Symbol | Type |
|---|---|
| **S** | Space saving |

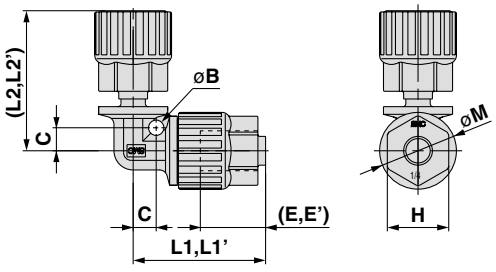
**Size combination**

| Size | No. | Applicable tubing size (mm) |
|---|---|---|
| **2** | **1** | 6 x 4 |
| **3** | **1** | 10 x 8 |
| **3** | **2** | 8 x 6 |
| **4** | **1** | 12 x 10 |
| **5** | **1** | 19 x 16 |
| **6** | **1** | 25 x 22 |

| Size | Symbol | Applicable tubing size (inch) |
|---|---|---|
| **2** | **A** | 1/4" x 5/32" |
| **3** | **A** | 3/8" x 1/4" |
| **4** | **A** | 1/2" x 3/8" |
| **5** | **A** | 3/4" x 5/8" |
| **6** | **A** | 1" x 7/8" |
| **7** | **A** | 1 1/4" x 1.1" |

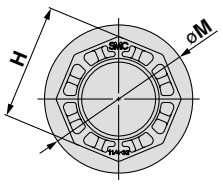
## Dimensions

### Space saving union elbow: LQ3E-S




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut

(E'),L1',L2': Nut material PVDF dimensions




**Class 7**

**Metric Size**

| Model | Applicable tubing O.D. | B | C | E | E' | H | L1 | L1' | L2 | L2' | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3E21-S** | **ø6** | 4 | 6 | 17 | 16 | 16 | 34.5 | 33.5 | 39.5 | 38.5 | 20 |
| **LQ3E31-S** | **ø10** | 5 | 9 | 22.5 | 19.5 | 21 | 47.5 | 44.5 | 52.5 | 49.5 | 25 |
| **LQ3E32-S** | **ø8** | | | | | | | | 49.5 | 46.5 | |
| **LQ3E41-S** | **ø12** | 6 | 10 | 24 | 22 | 24 | 52.5 | 50.5 | 54.5 | 52.5 | 29 |
| **LQ3E51-S** | **ø19** | 7 | 14 | 26.5 | 24 | 32 | 64 | 61.5 | 66 | 63.5 | 37 |
| **LQ3E61-S** | **ø25** | 8 | 18 | 30 | 26 | 41 | 78 | 74 | 80 | 76 | 49 |

**Inch Size**

| Model | Applicable tubing O.D. | B | C | E | E' | H | L1 | L1' | L2 | L2' | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3E2A-S** | 1/4" | 4 | 6 | 17 | 16 | 16 | 34.5 | 33.5 | 39.5 | 38.5 | 20 |
| **LQ3E3A-S** | 3/8" | 5 | 9 | 22.5 | 19.5 | 21 | 47.5 | 44.5 | 49.5 | 46.5 | 25 |
| **LQ3E4A-S** | 1/2" | 6 | 10 | 24.5 | 22.5 | 24 | 52.5 | 50.5 | 54.5 | 52.5 | 29 |
| **LQ3E5A-S** | 3/4" | 7 | 14 | 26.5 | 24 | 32 | 64 | 61.5 | 66 | 63.5 | 37 |
| **LQ3E6A-S** | 1" | 8 | 18 | 30 | 26 | 41 | 78 | 74 | 80 | 76 | 49 |
| **LQ3E7A-S** | 1 1/4" | 9 | 22 | 35 | 35 | 50 | 92.5 | 92.5 | 97.5 | 97.5 | 64 |

# Space Saving Branch Tee

## How to Order

**Tubing connection**

**LQ3 T 21 – S B –** ☐

**Fitting type**

| Symbol | Type |
|---|---|
| **T** | Union tee |

**Nut material, packaging**

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

**Thread type**

| Symbol | Type |
|---|---|
| **B** | Branch tee |

**Tubing type**

| Symbol | Type |
|---|---|
| **S** | Space saving |

**Size combination**

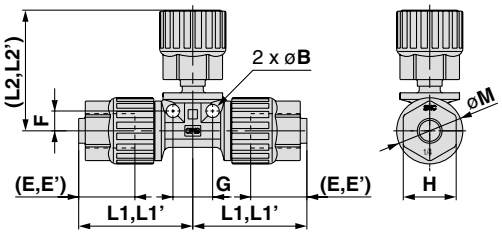
| Size | No. | Applicable tubing size (mm) |
|---|---|---|
| **2** | **1** | 6 x 4 |
| **3** | **1** | 10 x 8 |
| **3** | **2** | 8 x 6 |
| **4** | **1** | 12 x 10 |
| **5** | **1** | 19 x 16 |
| **6** | **1** | 25 x 22 |

| Size | Symbol | Applicable tubing size (inch) |
|---|---|---|
| **2** | **A** | 1/4" x 5/32" |
| **3** | **A** | 3/8" x 1/4" |
| **4** | **A** | 1/2" x 3/8" |
| **5** | **A** | 3/4" x 5/8" |
| **6** | **A** | 1" x 7/8" |



## Dimensions

### Space saving branch tee: LQ3T-SB




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L1',L2': Nut material PVDF dimensions

**Metric Size**

| Model | Applicable tubing O.D. | B | E | E' | F | G | H | L1 | L1' | L2 | L2' | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3T21-SB** | **ø6** | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 39.5 | 38.5 | 20 |
| **LQ3T31-SB** | **ø10** | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 52.5 | 49.5 | 25 |
| **LQ3T32-SB** | **ø8** | | | | | | | | | 49.5 | 46.5 | |
| **LQ3T41-SB** | **ø12** | 6 | 24 | 22 | 10 | 20 | 24 | 52.5 | 50.5 | 54.5 | 52.5 | 29 |
| **LQ3T51-SB** | **ø19** | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 66 | 63.5 | 37 |
| **LQ3T61-SB** | **ø25** | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 80 | 76 | 49 |

**Inch Size**

| Model | Applicable tubing O.D. | B | E | E' | F | G | H | L1 | L1' | L2 | L2' | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3T2A-SB** | 1/4" | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 39.5 | 38.5 | 20 |
| **LQ3T3A-SB** | 3/8" | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 49.5 | 46.5 | 25 |
| **LQ3T4A-SB** | 1/2" | 6 | 24.5 | 22.5 | 10 | 20 | 24 | 52.5 | 50.5 | 54.5 | 52.5 | 29 |
| **LQ3T5A-SB** | 3/4" | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 66 | 63.5 | 37 |
| **LQ3T6A-SB** | 1" | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 80 | 76 | 49 |

# *Series LQ3*
# Space Saving Run Tee

## How to Order

**Tubing connection**

**LQ3 T 21 – S R –** ☐

**Fitting type**

| Symbol | Type |
|---|---|
| **T** | Union tee |

**Size combination**

| Size | No. | Applicable tubing size (mm) |
|---|---|---|
| **2** | **1** | 6 x 4 |
| **3** | **1** | 10 x 8 |
| **3** | **2** | 8 x 6 |
| **4** | **1** | 12 x 10 |
| **5** | **1** | 19 x 16 |
| **6** | **1** | 25 x 22 |

| Size | Symbol | Applicable tubing size (inch) |
|---|---|---|
| **2** | **A** | 1/4" x 5/32" |
| **3** | **A** | 3/8" x 1/4" |
| **4** | **A** | 1/2" x 3/8" |
| **5** | **A** | 3/4" x 5/8" |
| **6** | **A** | 1" x 7/8" |

**Tubing type**

| Symbol | Type |
|---|---|
| **S** | Space saving |

**Thread type**

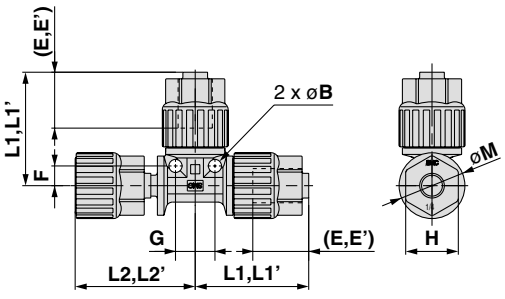
| Symbol | Type |
|---|---|
| **R** | Run tee |

**Nut material, packaging**

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

## Dimensions

### Space saving run tee: LQ3T-SR




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut

(E'),L1',L2': Nut material PVDF dimensions

**Metric Size**

| Model | Applicable tubing O.D. | B | E | E' | F | G | H | L1 | L1' | L2 | L2' | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3T21-SR** | **ø6** | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 39.5 | 38.5 | 20 |
| **LQ3T31-SR** | **ø10** | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 52.5 | 49.5 | 25 |
| **LQ3T32-SR** | **ø8** | | | | | | | | | 49.5 | 46.5 | |
| **LQ3T41-SR** | **ø12** | 6 | 24 | 22 | 10 | 20 | 24 | 52.5 | 50.5 | 54.5 | 52.5 | 29 |
| **LQ3T51-SR** | **ø19** | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 66 | 63.5 | 37 |
| **LQ3T61-SR** | **ø25** | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 80 | 76 | 49 |

**Inch Size**

| Model | Applicable tubing O.D. | B | E | E' | F | G | H | L1 | L1' | L2 | L2' | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3T2A-SR** | 1/4" | 4 | 17 | 16 | 6 | 12 | 16 | 34.5 | 33.5 | 39.5 | 38.5 | 20 |
| **LQ3T3A-SR** | 3/8" | 5 | 22.5 | 19.5 | 9 | 18 | 21 | 47.5 | 44.5 | 49.5 | 46.5 | 25 |
| **LQ3T4A-SR** | 1/2" | 6 | 24.5 | 22.5 | 10 | 20 | 24 | 52.5 | 50.5 | 54.5 | 52.5 | 29 |
| **LQ3T5A-SR** | 3/4" | 7 | 26.5 | 24 | 14 | 28 | 32 | 64 | 61.5 | 66 | 63.5 | 37 |
| **LQ3T6A-SR** | 1" | 8 | 30 | 26 | 18 | 36 | 41 | 78 | 74 | 80 | 76 | 49 |

# Tube Extension Straight Connector



## How to Order

**Tubing connection**

**LQ3 H 2A – T –**

**Fitting type**

| Symbol | Type |
|---|---|
| **H** | Connector |

**Nut material, packaging**

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

**Thread type**

| Symbol | Type |
|---|---|
| **T** | Tube extension |

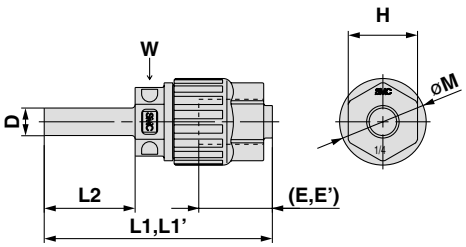
**Size combination**

| Size | No. | Applicable tubing size (mm) |
|---|---|---|
| **2** | **1** | 6 x 4 |
| **3** | **1** | 10 x 8 |
| **3** | **2** | 8 x 6 |
| **4** | **1** | 12 x 10 |
| **5** | **1** | 19 x 16 |
| **6** | **1** | 25 x 22 |

| Size | Symbol | Applicable tubing size (inch) |
|---|---|---|
| **2** | **A** | 1/4" x 5/32" |
| **3** | **A** | 3/8" x 1/4" |
| **4** | **A** | 1/2" x 3/8" |
| **5** | **A** | 3/4" x 5/8" |
| **6** | **A** | 1" x 7/8" |
| **7** | **A** | 1 1/4" x 1.1" |

## Dimensions

### Tube extension straight connector: LQ3H-T



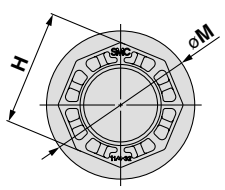

**Metric Size**

| Model | Applicable tubing O.D. | D | E | E' | H | L1 | L1' | L2 | M | W |
|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3H21-T** | **ø6** | ø6 | 17 | 16 | 16 | 53 | 51.5 | 18 | 20 | 14 |
| **LQ3H31-T** | **ø10** | ø10 | 22.5 | 19.5 | 21 | 67.5 | 64.5 | 22.5 | 25 | 18 |
| **LQ3H32-T** | **ø8** | ø8 | | | | | | | | |
| **LQ3H41-T** | **ø12** | ø12 | 24 | 22 | 24 | 74 | 72 | 24 | 29 | 22 |
| **LQ3H51-T** | **ø19** | ø19 | 26.5 | 24 | 32 | 83.5 | 81 | 26.5 | 37 | 30 |
| **LQ3H61-T** | **ø25** | ø25 | 30 | 26 | 41 | 97.5 | 93.5 | 31 | 49 | 36 |

(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L': Nut material PVDF dimensions
W: Width across flats dimension

**Inch Size**

| Model | Applicable tubing O.D. | D | E | E' | H | L1 | L1' | L2 | M | W |
|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3H2A-T** | 1/4" | 1/4" | 17 | 16 | 16 | 53 | 51.5 | 18 | 20 | 14 |
| **LQ3H3A-T** | 3/8" | 3/8" | 22.5 | 19.5 | 21 | 65.5 | 62.5 | 23.5 | 25 | 18 |
| **LQ3H4A-T** | 1/2" | 1/2" | 24.5 | 22.5 | 24 | 72 | 70 | 25 | 29 | 22 |
| **LQ3H5A-T** | 3/4" | 3/4" | 26.5 | 24 | 32 | 83.5 | 81 | 26.5 | 37 | 30 |
| **LQ3H6A-T** | 1" | 1" | 30 | 26 | 41 | 97.5 | 93.5 | 31 | 49 | 36 |
| **LQ3H7A-T** | 1 1/4" | 1 1/4" | 35 | 35 | 50 | 120.5 | 120.5 | 41.5 | 64 | 46 |




**Class 7**

# *Series LQ3*
# Straight Adapter

## How to Order

**Tubing connection**

**LQ3 A 21 –** ☐

**Fitting type**

| Symbol | Type |
|---|---|
| **A** | Straight adapter |

**Nut material, packaging**

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

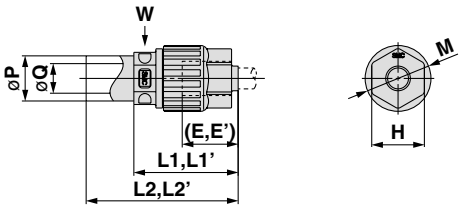
**Size combination**

| Size | No. | Applicable tubing size (mm) | Applicable piping size |
|---|---|---|---|
| **2** | **1** | 6 x 4 | ø13.7 x ø9 |
| **2** | **2** | | ø21.3 x ø15.4 |
| **2** | **3** | | ø26.7 x ø20.5 |
| **2** | **4** | | ø33.4 x ø26.3 |
| **2** | **5** | | ø60.3 x ø52.5 |
| **3** | **1** | 10 x 8 | ø13.7 x ø9 |
| **3** | **2** | 8 x 6 | |
| **3** | **3** | 10 x 8 | ø21.3 x ø15.4 |
| **3** | **4** | 8 x 6 | |
| **3** | **5** | 10 x 8 | ø26.7 x ø20.5 |
| **3** | **6** | 8 x 6 | |
| **3** | **7** | 10 x 8 | ø33.4 x ø26.3 |
| **3** | **8** | 8 x 6 | |
| **4** | **1** | 12 x 10 | ø21.3 x ø15.4 |
| **4** | **2** | | ø26.7 x ø20.5 |
| **4** | **3** | | ø33.4 x ø26.3 |
| **4** | **4** | | ø60.3 x ø52.5 |
| **5** | **1** | 19 x 16 | ø21.3 x ø15.4 |
| **5** | **2** | | ø26.7 x ø20.5 |
| **5** | **3** | | ø33.4 x ø26.3 |
| **6** | **1** | 25 x 22 | ø26.7 x ø20.5 |
| **6** | **2** | | ø33.4 x ø26.3 |
| **6** | **3** | | ø60.3 x ø52.5 |

| Size | No. | Applicable tubing size (inch) | Applicable piping size |
|---|---|---|---|
| **2** | **A** | 1/4" x 5/32" | ø13.7 x ø9 |
| **2** | **B** | | ø21.3 x ø15.4 |
| **2** | **C** | | ø26.7 x ø20.5 |
| **2** | **D** | | ø33.4 x ø26.3 |
| **2** | **E** | | ø60.3 x ø52.5 |
| **3** | **A** | 3/8" x 1/4" | ø13.7 x ø9 |
| **3** | **B** | | ø21.3 x ø15.4 |
| **3** | **C** | | ø26.7 x ø20.5 |
| **4** | **A** | 1/2" x 3/8" | ø21.3 x ø15.4 |
| **4** | **B** | | ø26.7 x ø20.5 |
| **4** | **C** | | ø33.4 x ø26.3 |
| **4** | **D** | | ø60.3 x ø52.5 |
| **5** | **A** | 3/4" x 5/8" | ø21.3 x ø15.4 |
| **5** | **B** | | ø26.7 x ø20.5 |
| **5** | **C** | | ø33.4 x ø26.3 |
| **6** | **A** | 1" x 3/4" | ø26.7 x ø20.5 |
| **6** | **B** | | ø33.4 x ø26.3 |
| **6** | **C** | | ø60.3 x ø52.5 |
| **7** | **A** | 1 1/4" x 1.1" | ø33.4 x ø26.3 |

## Dimensions

### Straight Adapter: LQ3A




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L1',L2': Nut material PVDF dimensions
W: Width across flats dimension

**Metric Size**

| Model | E | E' | H | L1 | L1' | L2 | L2' | M | P | Q | W |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3A21** | 17 | 16 | 16 | 32 | 30.5 | 46 | 44.5 | 20 | 13.7 | 9 | 14 |
| **LQ3A22** | | | | | | 58 | 56.5 | | 21.3 | 15.4 | |
| **LQ3A23** | | | | | | | | | 26.7 | 20.5 | |
| **LQ3A24** | | | | 32.5 | 31 | 70.5 | 69 | | 33.4 | 26.3 | |
| **LQ3A25** | | | | | | 74.5 | 73 | | 60.3 | 52.5 | |
| **LQ3A31** | 22.5 | 19.5 | 21 | 42 | 39 | 56 | 53 | 25 | 13.7 | 9 | 18 |
| **LQ3A32** | | | | 40 | | 54 | | | | | |
| **LQ3A33** | | | | 42 | | 68 | 65 | | 21.3 | 15.4 | |
| **LQ3A34** | | | | 40 | | 66 | | | | | |
| **LQ3A35** | | | | 42 | | 68 | | | 26.7 | 20.5 | |
| **LQ3A36** | | | | 40 | | 66 | | | | | |
| **LQ3A37** | | | | 44 | 41 | 82 | 79 | | 33.4 | 26.3 | |
| **LQ3A38** | | | | 42 | | 80 | | | | | |
| **LQ3A41** | 24 | 22 | 24 | 47 | 45 | 80 | 78 | 29 | 21.3 | 15.4 | 22 |
| **LQ3A42** | | | | | | | | | 26.7 | 20.5 | |
| **LQ3A43** | | | | | | | | | 33.4 | 26.3 | |
| **LQ3A44** | | | | 49 | 47 | 88 | 86 | | 60.3 | 52.5 | |
| **LQ3A51** | 26.5 | 24 | 32 | 57 | 54.5 | 95 | 92.5 | 37 | 21.3 | 15.4 | 30 |
| **LQ3A52** | | | | | | | | | 26.7 | 20.5 | |
| **LQ3A53** | | | | | | | | | 33.4 | 26.3 | |
| **LQ3A61** | 30 | 26 | 41 | 66.5 | 62.5 | 104.5 | 100.5 | 49 | 26.7 | 20.5 | 36 |
| **LQ3A62** | | | | | | | | | 33.4 | 26.3 | |
| **LQ3A63** | | | | 68.5 | 64.5 | 107.5 | 103.5 | | 60.3 | 52.5 | |

**Inch Size**

| Model | E | E' | H | L1 | L1' | L2 | L2' | M | P | Q | W |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3A2A** | 17 | 16 | 16 | 32 | 30.5 | 46 | 44.5 | 20 | 13.7 | 9 | 14 |
| **LQ3A2B** | | | | | | 58 | 56.5 | | 21.3 | 15.4 | |
| **LQ3A2C** | | | | | | | | | 26.7 | 20.5 | |
| **LQ3A2D** | | | | 32.5 | 31 | 70.5 | 69 | | 33.4 | 26.3 | |
| **LQ3A2E** | | | | | | 74.5 | 73 | | 60.3 | 52.5 | |
| **LQ3A3A** | 22.5 | 19.5 | 21 | 40 | 39 | 56 | 53 | 25 | 13.7 | 9 | 18 |
| **LQ3A3B** | | | | | | 66 | 65 | | 21.3 | 15.4 | |
| **LQ3A3C** | | | | | | | | | 26.7 | 20.5 | |
| **LQ3A4A** | 24.5 | 22.5 | 24 | 47 | 45 | 80 | 78 | 29 | 21.3 | 15.4 | 22 |
| **LQ3A4B** | | | | | | | | | 26.7 | 20.5 | |
| **LQ3A4C** | | | | | | | | | 33.4 | 26.3 | |
| **LQ3A4D** | | | | 49 | 47 | 88 | 86 | | 60.3 | 52.5 | |
| **LQ3A5A** | 26.5 | 24 | 32 | 57 | 54.5 | 95 | 92.5 | 37 | 21.3 | 15.4 | 30 |
| **LQ3A5B** | | | | | | | | | 26.7 | 20.5 | |
| **LQ3A5C** | | | | | | | | | 33.4 | 26.3 | |
| **LQ3A6A** | 30 | 26 | 41 | 66.5 | 62.5 | 104.5 | 100.5 | 49 | 26.7 | 20.5 | 36 |
| **LQ3A6B** | | | | | | | | | 33.4 | 26.3 | |
| **LQ3A6C** | | | | 68.5 | 64.5 | 107.5 | 103.5 | | 60.3 | 52.5 | |
| **LQ3A7A** | 35 | 35 | 50 | 79 | 79 | 117 | 117 | 64 | 33.4 | 26.3 | 46 |

# *Series LQ3*
# Union Flange

## How to Order

**Tubing connection**

**LQ3 F 22 –** ☐

**Fitting type**

| Symbol | Type |
|---|---|
| **F** | Union flange |

**Nut material, packaging**

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

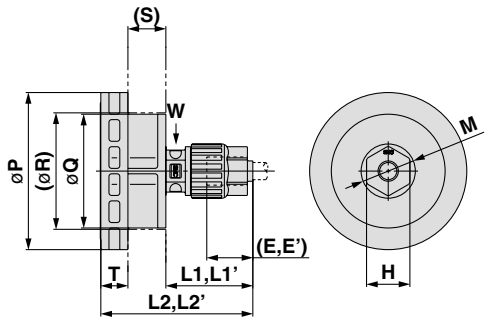
**Size combination**

| Size | No. | Applicable tubing size (mm) | Applicable piping size |
|---|---|---|---|
| **2** | **2** | 6 x 4 | 10K-20A |
| **4** | **2** | 12 x 10 | 10K-20A |
| **4** | **3** | | 10K-25A |
| **5** | **1** | 19 x 16 | 10K-15A |
| **5** | **2** | | 10K-20A |
| **5** | **3** | | 10K-25A |
| **6** | **2** | 25 x 22 | 10K-20A |
| **6** | **3** | | 10K-25A |
| **6** | **4** | | 10K-40A |

| Size | No. | Applicable tubing size (inch) | Applicable piping size |
|---|---|---|---|
| **2** | **B** | 1/4" x 5/32" | 10K-20A |
| **4** | **B** | 1/2" x 3/8" | 10K-20A |
| **4** | **C** | | 10K-25A |
| **5** | **A** | 3/4" x 5/8" | 10K-15A |
| **5** | **B** | | 10K-20A |
| **5** | **C** | | 10K-25A |
| **6** | **B** | 1" x 7/8" | 10K-20A |
| **6** | **C** | | 10K-25A |
| **6** | **D** | | 10K-40A |

## Dimensions

### Union Flange: LQ3F




(E,E'): Reference dimension for the inserted tubing from the end surface of the nut
(E'),L1',L2': Nut material PVDF dimensions
W: Width across flats dimension
(R): I.D. of JIS flange necessary to mount this product. (Additional modification is needed.)
JIS flange is not included in the product.

**Metric Size**

| Model | E | E' | H | L1 | L1' | L2 | L2' | M | P | Q | R | S | T | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3F22** | 17 | 16 | 16 | 32.1 | 30.9 | 56.1 | 54.9 | 20 | 58 | 42 | 43 | 14 | 10 | 14 |
| **LQ3F42** | 24 | 22 | 24 | 49 | 46.8 | 73 | 70.8 | 29 | 58 | 42 | 43 | 14 | 10 | 22 |
| **LQ3F43** | | | | | | | | | 69 | | | | | |
| **LQ3F51** | 26.5 | 24 | 32 | 58 | 55.3 | 80 | 77.3 | 37 | 53 | 42 | 43 | 12 | 10 | 30 |
| **LQ3F52** | | | | | | 82 | 79.3 | | 58 | | | 14 | | |
| **LQ3F53** | | | | | | | | | 69 | | | | | |
| **LQ3F62** | 30 | 26 | 41 | 68.5 | 64.2 | 92.5 | 88.2 | 49 | 58 | 47 | 48 | 16 | 10 | 36 |
| **LQ3F63** | | | | | | | | | 69 | 55 | 56 | | | |
| **LQ3F64** | | | | | | 94.5 | 90.2 | | 84 | | | | | |

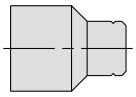
**Inch Size**

| Model | E | E' | H | L1 | L1' | L2 | L2' | M | P | Q | R | S | T | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LQ3F2B** | 17 | 16 | 16 | 32.1 | 30.9 | 56.1 | 54.9 | 20 | 58 | 42 | 43 | 14 | 10 | 14 |
| **LQ3F4B** | 24.5 | 22.5 | 24 | 49 | 46.8 | 73 | 70.8 | 29 | 58 | 42 | 43 | 14 | 10 | 22 |
| **LQ3F4C** | | | | | | | | | 69 | | | | | |
| **LQ3F5A** | 26.5 | 24 | 32 | 58 | 55.3 | 80 | 77.3 | 37 | 53 | 42 | 43 | 12 | 10 | 30 |
| **LQ3F5B** | | | | | | 82 | 79.3 | | 58 | | | 14 | | |
| **LQ3F5C** | | | | | | | | | 69 | | | | | |
| **LQ3F6B** | 30 | 26 | 41 | 68.5 | 64.2 | 92.5 | 88.2 | 49 | 58 | 47 | 48 | 16 | 10 | 36 |
| **LQ3F6C** | | | | | | | | | 69 | 55 | 56 | | | |
| **LQ3F6D** | | | | | | 94.5 | 90.2 | | 84 | | | | | |

## Options

### Blanking plug

**LQ3 – 1 P 03 – 1 – □**



Used to block fittings which are not being used.

**Size**

| Symbol | Size |
|---|---|
| **1** | 1 |
| **2** | 2 |
| **3** | 3 |
| **4** | 4 |
| **5** | 5 |
| **6** | 6 |
| **7** | 7 |

**Thread type**

| Symbol | Type |
|---|---|
| **1** | Male |

**Packaging**

| Symbol | Packaging |
|---|---|
| **Nil** | Clean packaging equivalent to Class M3.5 |
| **1** | Standard packaging equivalent to Class M5.5 |

**Fitting type**

| Symbol | Type |
|---|---|
| **P** | Plug |

**Applicable tubing size**

**Metric Size**

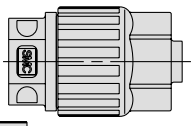
| Symbol | Applicable tubing size | Size |
|---|---|---|
| **03** | ø3 x ø2 | 1 |
| **04** | ø4 x ø3 | |
| **06** | ø6 x ø4 | 2 |
| **08** | ø8 x ø6 | 3 |
| **10** | ø10 x ø8 | |
| **12** | ø12 x ø10 | 4 |
| **19** | ø19 x ø16 | 5 |
| **25** | ø25 x ø22 | 6 |

**Inch Size**

| Symbol | Applicable tubing size | Size |
|---|---|---|
| **03** | 1/8" x 0.086" | 1 |
| **07** | 1/4" x 5/32" | 2 |
| **11** | 3/8" x 1/4" | 3 |
| **13** | 1/2" x 3/8" | 4 |
| **19** | 3/4" x 5/8" | 5 |
| **25** | 1" x 7/8" | 6 |
| **32** | 1 1/4" x 1.1" | 7 |

### Tubing plug

**LQ3 – 1 P 03 – 2 – □**



Used to block fittings which are not being used.

**Size**

| Symbol | Size |
|---|---|
| **1** | 1 |
| **2** | 2 |
| **3** | 3 |
| **4** | 4 |
| **5** | 5 |
| **6** | 6 |

**Type of piping**

| Symbol | Type |
|---|---|
| **2** | Tubing |

**Nut material, packaging**

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

**Fitting type**

| Symbol | Type |
|---|---|
| **P** | Plug |

**Applicable tubing size**

**Metric Size**

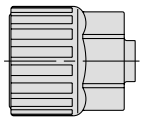
| Symbol | Applicable tubing size | Size |
|---|---|---|
| **03** | ø3 x ø2 | 1 |
| **04** | ø4 x ø3 | |
| **06** | ø6 x ø4 | 2 |
| **08** | ø8 x ø6 | 3 |
| **10** | ø10 x ø8 | |
| **12** | ø12 x ø10 | 4 |
| **19** | ø19 x ø16 | 5 |
| **25** | ø25 x ø22 | 6 |

**Inch Size**

| Symbol | Applicable tubing size | Size |
|---|---|---|
| **03** | 1/8" x 0.086" | 1 |
| **07** | 1/4" x 5/32" | 2 |
| **11** | 3/8" x 1/4" | 3 |
| **13** | 1/2" x 3/8" | 4 |
| **19** | 3/4" x 5/8" | 5 |
| **25** | 1" x 7/8" | 6 |

### Nut

**LQ3 – 1 N 03 – □**



**Size**

| Symbol | Size |
|---|---|
| **1** | 1 |
| **2** | 2 |
| **3** | 3 |
| **4** | 4 |
| **5** | 5 |
| **6** | 6 |
| **7** | 7 |

**Nut material, packaging**

| Symbol | Nut material | Packaging |
|---|---|---|
| **Nil** | PFA | Clean packaging equivalent to Class M3.5 |
| **1** | PFA | Standard packaging equivalent to Class M5.5 |
| **2** | PVDF | Clean packaging equivalent to Class M3.5 |
| **3** | PVDF | Standard packaging equivalent to Class M5.5 |

**Fitting type**

| Symbol | Type |
|---|---|
| **N** | Nut |

**Applicable tubing size**

**Metric Size**

| Symbol | Applicable tubing size | Size |
|---|---|---|
| **03** | ø3 x ø2 | 1 |
| **04** | ø4 x ø3 | |
| **06** | ø6 x ø4 | 2 |
| **08** | ø8 x ø6 | 3 |
| **10** | ø10 x ø8 | |
| **12** | ø12 x ø10 | 4 |
| **19** | ø19 x ø16 | 5 |
| **25** | ø25 x ø22 | 6 |

**Inch Size**

| Symbol | Applicable tubing size | Size |
|---|---|---|
| **03** | 1/8" x 0.086" | 1 |
| **07** | 1/4" x 5/32" | 2 |
| **11** | 3/8" x 1/4" | 3 |
| **13** | 1/2" x 3/8" | 4 |
| **19** | 3/4" x 5/8" | 5 |
| **25** | 1" x 7/8" | 6 |
| **32** | 1 1/4" x 1.1" | 7 |

# Applicable Fluids

## Material and Fluid Compatibility Check List for High Purity Fluoropolymer Fittings

| Chemical | | Compatibility |
|---|---|---|
| **Acetic acid** | 100% | ○ |
| **Acetone** | 100% | ○ Note 1, 2) |
| **Ammonium fluoride** | 40% | ○ |
| **Ammonium hydroxide** | 30% | ○ |
| **Butyl acetate** | 100% | ○ |
| **Methylne chloride** | 100% | ○ |
| **Hydrochloric acid** | 38% | ○ |
| **Hydrofluoric acid** | 50% | ○ |
| **Hydrogen peroxide** | 60% | ○ |
| **Methanol** | 100% | ○ |
| **Methyl ethyl ketone** | — | ○ Note 2) |
| **Nitric acid** | 70% | ○ Note 2) |
| **Phosphoric acid** | 86% | ○ |
| **Caustic potash** | 85% | ○ |
| **Sulfuric acid** | 100% | ○ Note 2) |
| **Toluene** | — | ○ Note 1, 2) |
| **Xylene** | — | ○ Note 2) |
| **Sodium hydroxide** | 100% | ○ Note 2) |
| **1.1.1-Trichloroethane** | 100% | ○ Note 2) |
| **Rhosphorus pentachloride** | — | ○ |
| **Isobutyl alcohol** | — | ○ Note 1) |
| **Isopropyl alcohol** | — | ○ Note 1) |
| **Ozone** | — | ○ |
| **Ethyl acetate** | — | ○ Note 1, 2) |
| **Pure water** | — | ○ |
| **Nitrogen** | — | ○ |
| **Ultrapure water** | — | ○ |
| **Tmah** | — | ○ Note 2) |

Table symbol ○: can be used.

The material and fluid compatibility check list provides reference values as a guide only.
Note 1) Since static electricity may be generated, implement suitable countermeasures.
Note 2) Use the nut material made of PFA because the nut material, PVDF can be used depending on the environment or temperature.

- Compatibility is indicated for fluid temperatures of 200°C or less (In the case of the nut material made of PVDF: 150°C or less)
- The material and fluid compatibility check list provides reference values as a guide only, therefore we do not guarantee the application to our product.
- The data above is based on the information presented by the material manufacturers.
- SMC is not responsible for its accuracy and any damage happened because of this data.

# Series LQ3
# Fluoropolymer Fittings
# Specific Product Precautions 1

**Be sure to read before handling. Refer to front matters 58 and 59 for Safety Instructions.**

## Design and Selection

### ⚠ Warning

**1. Confirm the specifications.**

Give careful consideration to operating conditions such as the application, fluid and environment, and use within the operating ranges specified in this catalog.

**2. Fluid**

Operate within the indicated fluid temperature range.

**3. Maintenance space**

Ensure the necessary space for maintenance and inspections.

**4. Fluid pressure range**

Keep the supplied fluid pressure within the operating pressure range shown in the catalog.

**5. Countermeasures for static electricity**

Since static electricity may be generated depending on the fluid being used, implement suitable countermeasures.

## Mounting

### ⚠ Warning

**1. After mounting, perform suitable function and leak tests to confirm that the mounting is correct.**

**2. Instruction manual**

Mount and operate the product after reading the manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.

## Piping

### ⚠ Caution

**1. Connect tubing with special tools**

Please refer to the LQ3 series mounting method in “High Purity Fluoropolymer Fittings: Hyper Fittings/Flare Type” (M-E06-4) for tubing connection and special tools.

**2. Tighten the nut until it touches the end surface of the body, and then tighten it an addition 1/8 turn. As a guide, refer to the proper tightening torques shown below.**
**Also, when the nut requires extra tightening, please conduct this job in accordance with the instruction manual.**

**Nut Tightening Torque for Piping**

| Body size | Torque (N·m) |
|---|---|
| 1 | 0.7 to 0.9 |
| 2 | 1.6 to 1.8 |
| 3 | 3.2 to 3.5 |
| 4 | 5.0 to 5.3 |
| 5 | 10.0 to 10.5 |
| 6 | 22.5 to 23.0 |
| 7 | 23 to 26.5 |

**3. Use sealant tape for piping the taper thread parts such as the LQ3H and LQ3L.**

Tape the ridges tightly with the sealant tape, starting one ridge width left from thread end side. 3 to 4 sealant tapes are required.

**Taper Thread Mounting Torque**

| Port size | Torque (N·m) |
|---|---|
| 1/8 | 0.6 to 0.9 |
| 1/4 | 0.8 to 1.2 |
| 3/8 | 1.0 to 1.6 |
| 1/2 | 1.5 to 2.0 |
| 3/4 | 2.0 to 2.7 |
| 1 | 2.5 to 3.6 |
| 1 1/4 | 5.5 to 7.5 |

**4. Nut tightening torque for a panel mount union**

**Nut Tightening Torque for a Panel Mount Union**

| Body size | Torque (N·m) |
|---|---|
| 1 | 0.5 to 0.6 |
| 2 | 0.6 to 0.7 |
| 3 | 1.2 to 1.3 |
| 4 | 4.5 to 4.6 |
| 5 | 6.8 to 6.9 |
| 6 | 12.4 to 12.5 |

# Series LQ3
# Fluoropolymer Fittings
# Specific Product Precautions 2

**Be sure to read before handling. Refer to front matters 58 and 59 for Safety Instructions.**

## Operating Environment

### ⚠ Warning

1. **Do not use in locations having an explosive atmosphere.**
2. **Do not operate in locations where vibration or impact occurs.**
3. **In locations near heat sources, block off radiated heat.**

## Maintenance

### ⚠ Warning

1. **Perform maintenance in accordance with the procedures in the instruction manual.**

   Improper handling can cause damage.
2. **When removing or reinstalling fittings, remove any remaining chemicals and carefully replace them with deionized water or air, etc., before beginning work activities.**
3. **Tightening of taper threads for piping**

   Because the taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections, and if leakage is detected correct the problem by additional tightening. If additional tightening becomes ineffective, replace the fitting with a new product.
4. **Check the following during regular maintenance, and replace components as necessary.**

   a) Scratches, gouges, abrasion, corrosion
   b) Twisting, flattening or distortion of tubing
   c) Hardening, deterioration or softening of tubing
5. **Do not repair or patch the replaced tubing or fittings for reuse.**

## Operating Precautions

### ⚠ Warning

1. **Operate within the range of the maximum operating pressure.**

### ⚠ Caution

1. **After a long period of non-use, perform inspections before beginning operation.**
2. **Use sufficient care in the handling of the LQ series clean packaging types when opening the package.**

## Use of Tubing

### ⚠ Caution

1. **Refer to the applicable tubing sizes shown below for tubing to be used.**

**Applicable Tubing Size**

| | Connection tubing size | O.D. (mm) | | Internal thickness (mm) | |
|---|---|---|---|---|---|
| | | Standard size | Tolerance | Standard size | Tolerance |
| Metric size | ø3 x ø2 | 3.0 | +0.2 –0.1 | 0.5 | ±0.06 |
| | ø4 x ø3 | 4.0 | | | |
| | ø6 x ø4 | 6.0 | | 1.0 | ±0.1 |
| | ø8 x ø6 | 8.0 | | | |
| | ø10 x ø8 | 10.0 | | | |
| | ø12 x ø10 | 12.0 | | | |
| | ø19 x ø16 | 19.0 | +0.3 –0.1 | 1.5 | ±0.15 |
| | ø25 x ø22 | 25.0 | | | |
| Inch size | 1/8" x 0.086" | 3.18 | +0.2 –0.1 | 0.5 | ±0.1 |
| | 3/16" x 1/8" | 4.75 | | 0.8 | |
| | 1/4" x 5/32" | 6.35 | | 1.2 | ±0.12 |
| | 3/8" x 1/4" | 9.53 | | 1.6 | ±0.15 |
| | 1/2" x 3/8" | 12.7 | | | |
| | 3/4" x 5/8" | 19.0 | +0.3 –0.1 | | |
| | 1" x 7/8" | 25.4 | | | |
| | 1 1/4" x 1.1" | | | | |

# Low Torque Rotary Joint

## *Series MQR*

### Metal Seal Type



**Long service life**

**1 billion rotations**

**MQR1 : 1 billion rotations**
**MQR2 : 0.5 billion rotations**
**MQR4 : 0.3 billion rotations**
**MQR8 : 0.2 billion rotations**
**MQR12: 0.1 billion rotations**
**MQR16: 0.1 billion rotations**

* Under SMC's life test conditions.

**Low rotational torque**

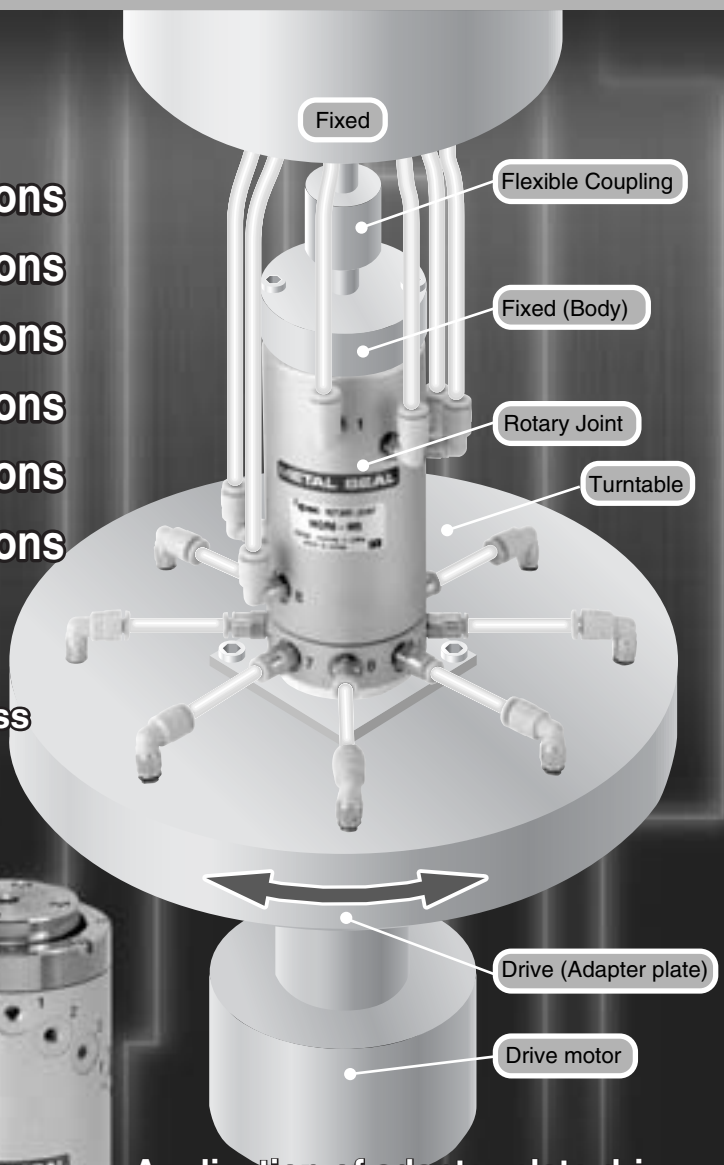
**0.003 to 0.50 N·m or less**

**Allowable RPM**

**200 to 3000 $min^{-1}$(r.p.m)**

**Operating temperature**

**−10 to 80°C**

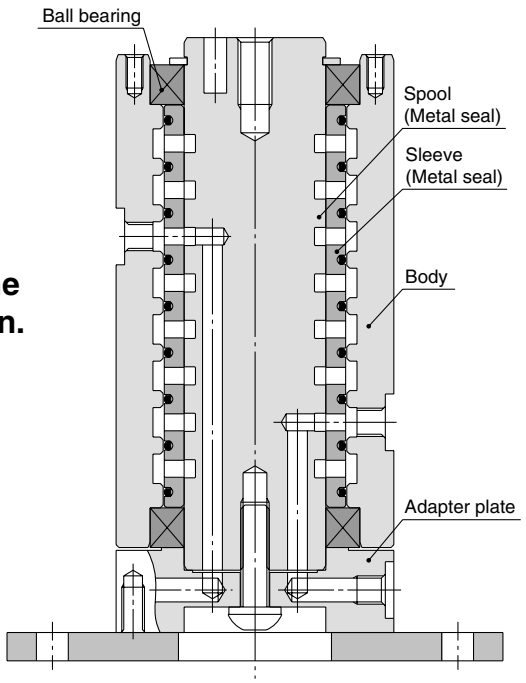




**Application of adapter plate drive**

* Not suitable for transmission of drive

# Low Torque Metal Seal Type Rotary Joint

# Series MQR



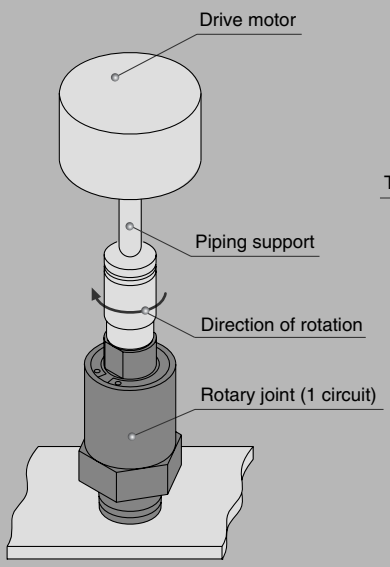

**Rotational torque unaffected by supply pressure and temperature fluctuations**

**Use of metal seals prevents the spool from sticking to the rotating surface even after a long period of non-operation.**

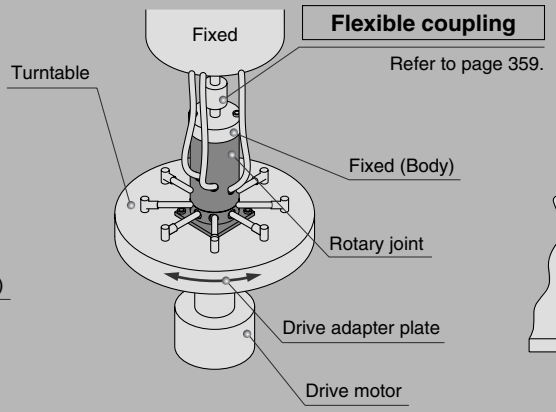
**Operating pressure –100 kPa to 1 MPa**

**Piping ports are aligned in a spiral line for easy piping**

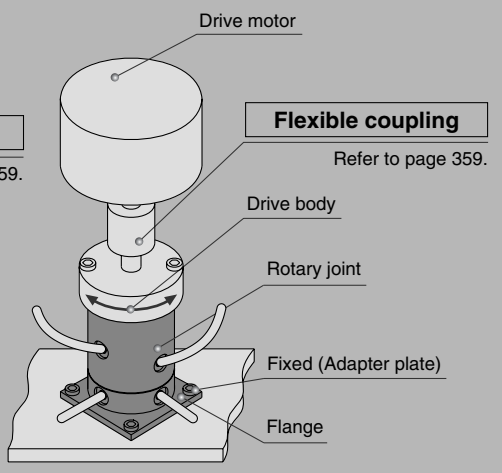
## Applications: Air supply to rotary/pivot shafts of turntables and robot arms




**Example of 1 circuit**




**Example of adapter plate drive**




* This series cannot be used for drive transmission. (Refer to page 359.)

**Example of body drive**

## Made to Order

- **Contact SMC if you wish to use rotary joints at temperatures outside the range of –10°C to 80°C or to have joints made with 20 circuits or more or a through hole specification.**

Metal Seal Type

## Low Torque Rotary Joint

# Series MQR

**1 circuit, 2 circuits, 4 circuits, 8 circuits, 12 circuits, 16 circuits**



## How to Order

**MQR** **F** **4** – **M5**

**Low torque rotary joint (Metal seal type)**

**Options**

| | |
|---|---|
| Nil | Standard |
| F Note) | Flange |

Note: No flange type in 1 circuit system

**Number of circuits**

| | |
|---|---|
| **1** | 1 circuit |
| **2** | 2 circuits |
| **4** | 4 circuits |
| **8** | 8 circuits |
| **12** | 12 circuits |
| **16** | 16 circuits |

**Connection diameter**

| | |
|---|---|
| **M5** | M5 x 0.8 |

## Options/Mounting Bracket

| Number of circuits | Flange part number |
|---|---|
| 2 circuits | MQR2-F |
| 4 circuits | MQR4-F |
| 8 circuits | MQR8-F |
| 12 circuits | MQR12-F |
| 16 circuits | MQR16-F |

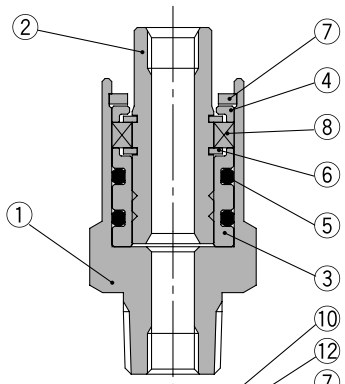

## Specifications

| Model | | MQR1-M5 | MQR2-M5 | MQR4-M5 | MQR8-M5 | MQR12-M5 | MQR16-M5 |
|---|---|---|---|---|---|---|---|
| Number of circuits (Number of ports) | | 1 | 2 | 4 | 8 | 12 | 16 |
| Fluid | | Air / Inert gas | | | | | |
| Seal structure | | Metal seal | | | | | |
| Guide structure | | Bearing supported | Bearing supported at both ends | | | | |
| Port size | | Male R 1/8 | M5 x 0.8 | | | | |
| | | Female M5 x 0.8 | | | | | |
| Flow rate characteristics | C | 0.50 [dm³/(s·bar)] | | | | | |
| | b | 0.40 | | | | | |
| | Cv | 0.17 | | | | | |
| Lubrication | | Not required | | | | | |
| Min. operating pressure | | –100 kPa | | | | | |
| Max. operating pressure | | 1.0 MPa | | | | | |
| Ambient temperature and operating fluid temperature Note 1) | | –10 to 80°C | | | | | |
| Maximum start-up rotation torque Note 2) | | 0.003 N·m or less | 0.03 N·m or less | 0.05 N·m or less | 0.10 N·m or less | 0.20 N·m or less | 0.50 N·m or less |
| Allowable rotation number | | 3000 min⁻¹ (r.p.m.) or less Note 3) | 2000 min⁻¹ (r.p.m.) or less | 1500 min⁻¹ (r.p.m.) or less | 900 min⁻¹ (r.p.m.) or less | 600 min⁻¹ (r.p.m.) or less | 200 min⁻¹ (r.p.m.) or less |
| Allowable radial load (allowable coupling axis reaction) Note 4) | | 1N or less | 15N or less | 30N or less | 40N or less | 50N or less | 50N or less |
| Allowable axial load | | | | | | | |
| Weight | | 0.025kg | 0.16kg | 0.39kg | 0.76kg | 1.26kg | 2.80kg |

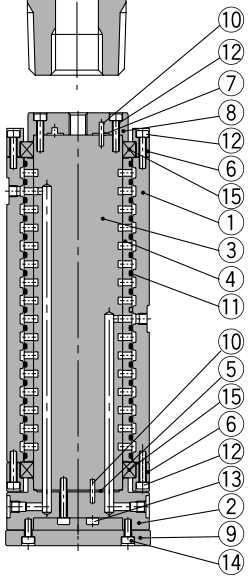
Note 1) The temperature 80°C includes temperature rise during rotation.
Note 2) The start-up torque does not change with the supply pressure or with non-use (remains within the maximum start-up rotation torque), but it does change with the rotation number. (Refer to page 356).
Note 3) If using at a speed above 600 min⁻¹ (r.p.m.), ensure rotation is in the direction in which the joint is fastened.
**Note 4) Rubber / resin couplings are recommended due to their excellent absorption of off center, shocks, and vibrations.**

## Construction

**MQR1-M5**




**MQR2 to 16-M5**



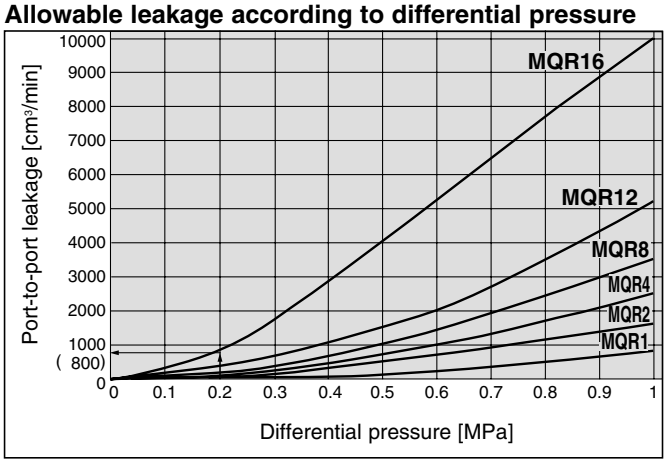

**Component Parts/(MQR1 - M5, 1 circuit)**

| No. | Name | Material | Remarks |
|---|---|---|---|
| 1 | Body | Stainless steel | |
| 2 | Spool | Special stainless steel | |
| 3 | Sleeve | Special stainless steel | |
| 4 | Plate | Aluminium | |
| 5 | O-ring | H-NBR | |
| 6 | Retaining ring | Carbon steel | |
| 7 | Retaining ring | Carbon steel | |
| 8 | Radial bearing | | |

**Component Parts/(MQR2 to 16 - M5, 2 to 16 circuits)**

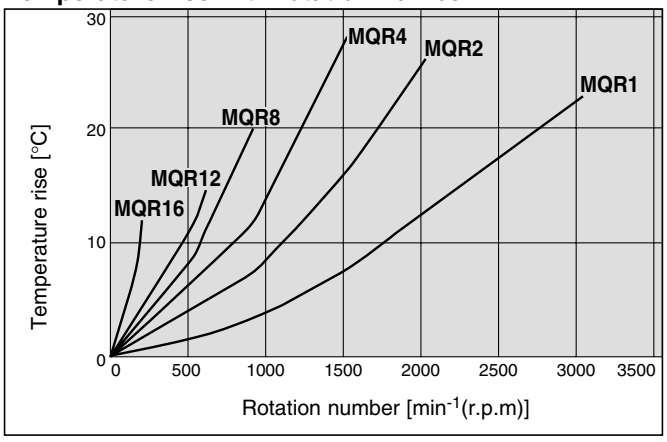
| No. | Name | Material | Remarks |
|---|---|---|---|
| 1 | Body | Aluminum | |
| 2 | Adapter plate | Aluminum | |
| 3 | Spool | Special stainless steel | |
| 4 | Sleeve | Special stainless steel | |
| 5 | Gasket | H-NBR | |
| 6 | Bearing holder | Stainless steel | 16 circuits only |
| 7 | Gasket | H-NBR | 16 circuits only |
| 8 | Plate | Aluminum | 16 circuits only |
| 9 | Flange | Aluminum | |
| 10 | Parallel pin | Carbon steel | Except for 2 circuits |
| 11 | O-ring | H-NBR | |
| 12 | Bolt | Carbon steel | 16 circuits only |
| 13 | Bolt | Carbon steel | |
| 14 | Bolt | Carbon steel | |
| 15 | Radial bearing | — | |

**Allowable leakage according to differential pressure**



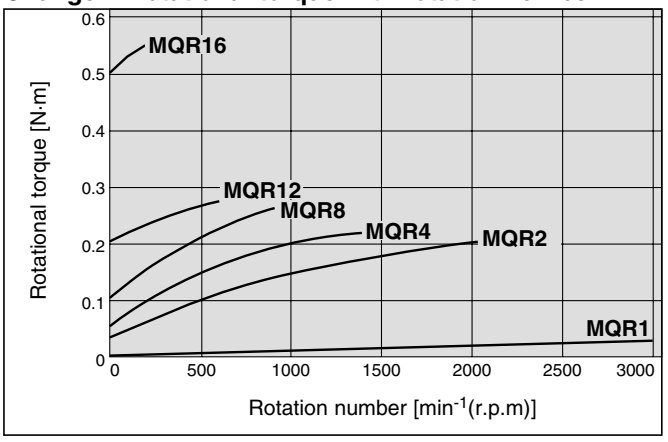

e.g.: If adjacent ports are connected to vacuum pressure of -0.1 MPa and positive pressure of 0.1 MPa in MQR16, then differential pressure is 0.2 MPa, and leakage is 800 (cm³/min).

**Temperature rise with rotation number**




Note 1: Value when no pressure applied. Temperature rise is reduced by supply of air.

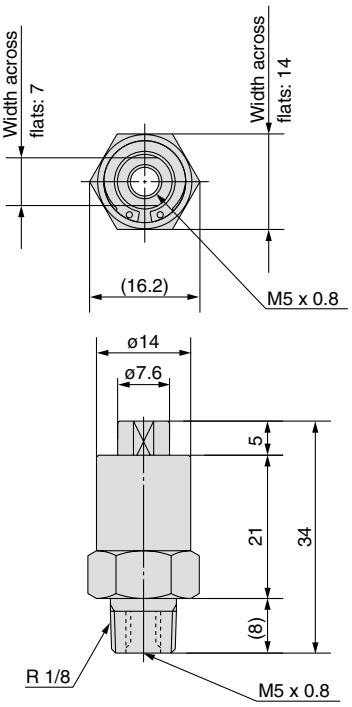
**Change in rotational torque with rotation number**



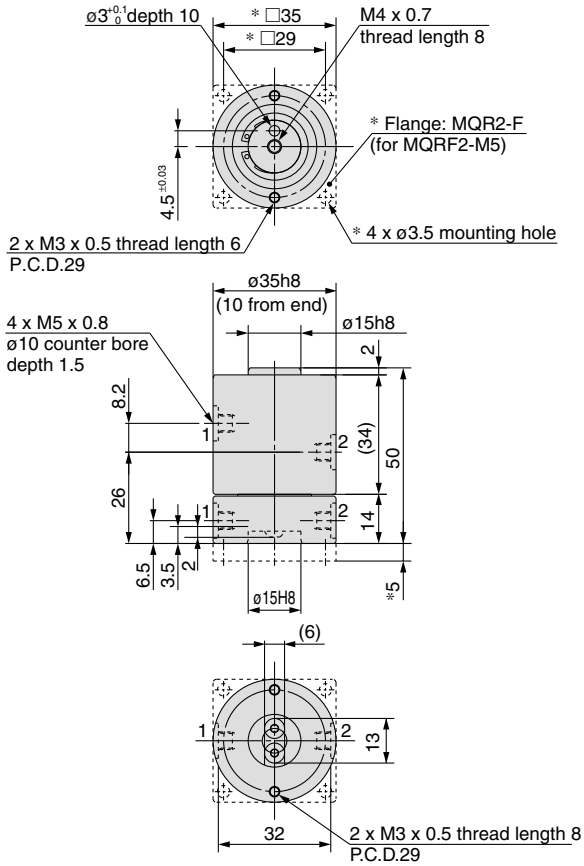
## Dimensions: Standard Type/Flange Type

∗ symbol indicates flange dimensions

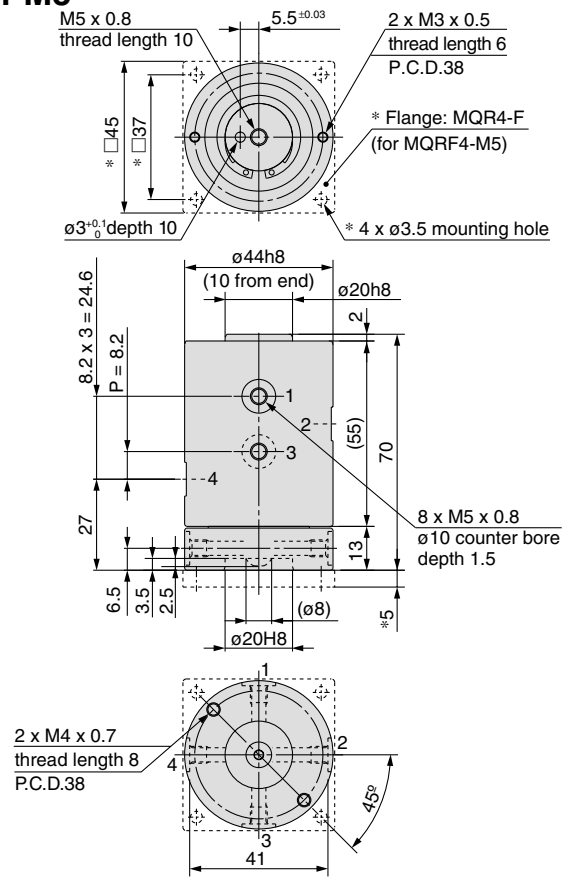
### MQR1-M5



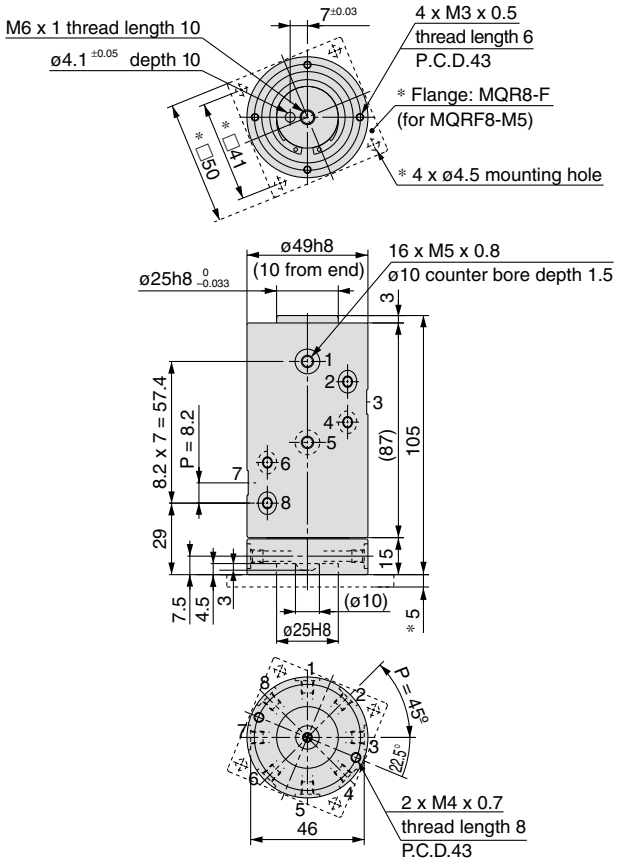

### MQR2-M5




### MQR4-M5



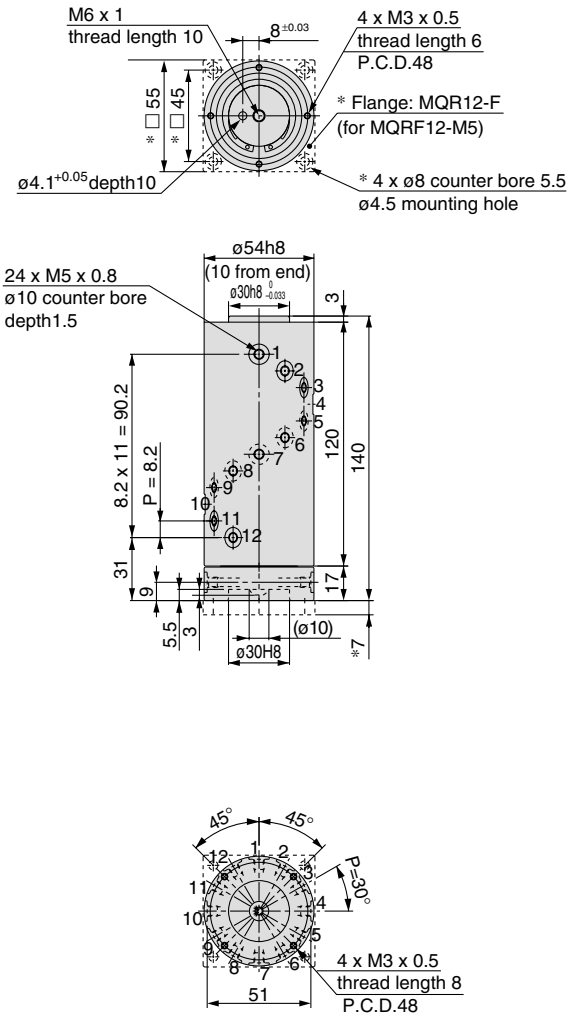

### MQR8-M5



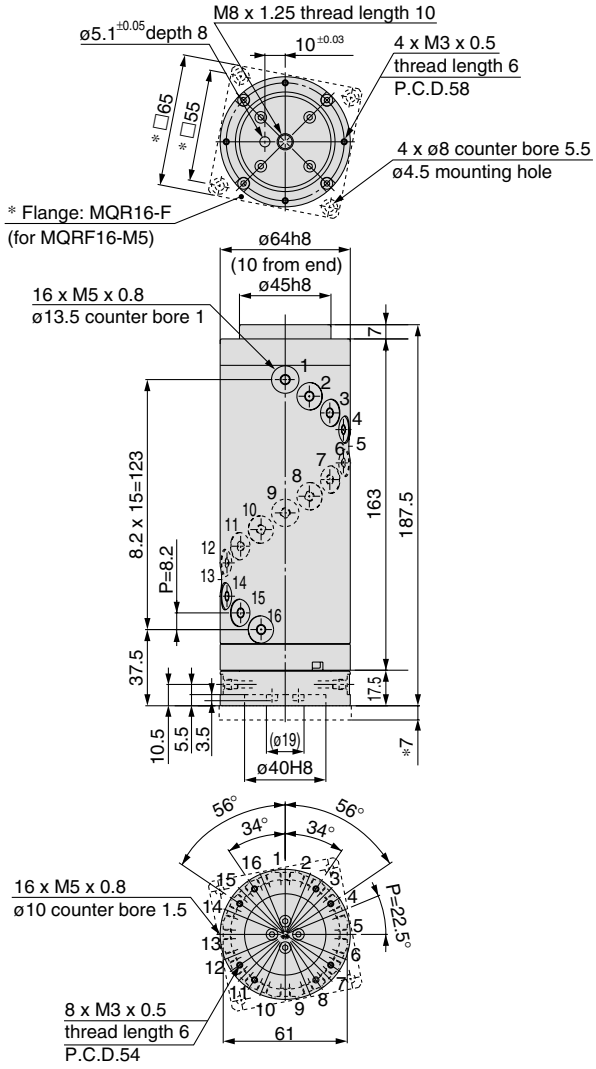
## Dimensions: Standard Type/Flange Type

∗ symbol indicates flange dimensions

### MQR12-M5

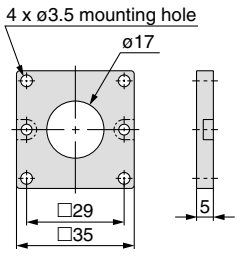



### MQR16-M5

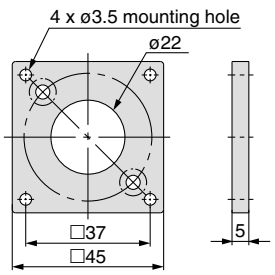



## Mounting Bracket/Flange

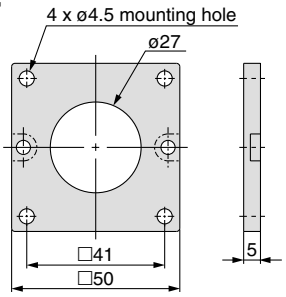
### MQR2-F



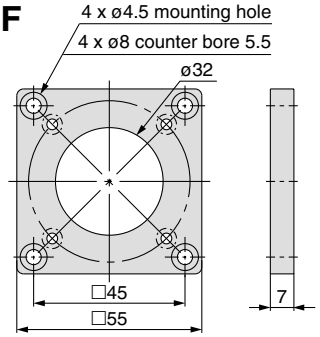

### MQR4-F



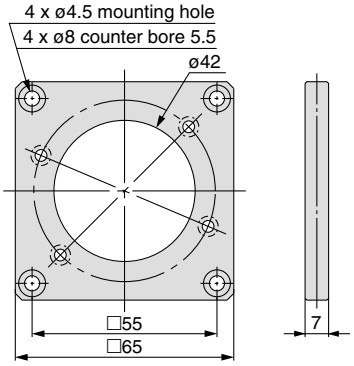

### MQR8-F




### MQR12-F




### MQR16-F



# *Series MQR*
# Rotary Joint/Precautions 1

**Be sure to read before handling.**

## Design

## ⚠ Warning

1. **A protective cover is recommended to minimize the risk of human injury.**
   If a moving part poses a risk of human injury and/or damage to machinery/equipment, then a structure which prevents direct contact with that part should be adopted.
2. **Securely tighten all stationary parts and connected parts so that they will not become loose.**
   Secure fastening is particularly important when the rotary joint has a high operating frequency.
3. **Provide safety devices in drive circuit.**
   Collisions, or foreign material introduced by the air source, may cause scuffing or burning of rotating parts, which in turn leads to increased rotational torque. Install safety devices in the drive circuit accordingly.
4. **Pressure**
   Air leakage occurs in these products. They cannot be used for pressure holding in pressure vessels, etc.
5. **Do not use in an emergency shutdown air circuit.**
   These products are not designed for use in a safety circuit performing emergency shutdown. Other reliable safety protection means should be adopted for such systems.
6. **Ensure room for maintenance.**
   Leave sufficient space for maintenance work.
7. **Releasing residual pressure.**
   Provide a residual pressure release function in order to carry out maintenance work.
8. **Using vacuum supply.**
   When using a vacuum air supply, install a suction filter, or equivalent, to prevent infiltration of dirt and foreign material via the absorption pad or exhaust port.

## Selection

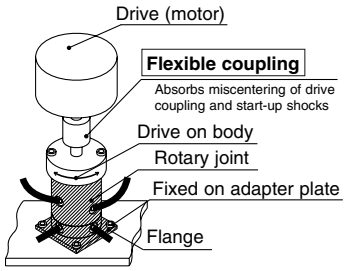
## ⚠ Warning

1. **Confirm the specifications.**
   The products advertised in this catalog are designed according to use in industrial compressed air systems. If the products are used in conditions where pressure, temperature, etc., are out of specification, damage and/or malfunction may be caused. Do not use in these conditions. (Refer to specifications.)
2. **Do not use for power transmission.**
   These products are not designed to be used as bearings for transmitting power from a drive source, such as a motor. Such use may lead to rotation faults, or damage.

## Mounting

## ⚠ Warning

1. **Prevent impacts on shaft when drive source is started.**
   If excessive offset load is applied to the product, it may cause malfunction, breakdown, or personal injury or damage to machinery and equipment. Use a flexible coupling as illustrated below, to avoid direct radial load or axial load on the shaft. A rubber/resin coupling is recommended, due to its excellent absorption of off cente, shocks, and rvibrations. Please consult the coupling manufacturer to discuss the detailed operating conditions.




2. **Do not make additions to this product.**
   Any additions made to this product will weaken it and may cause product failure, leading to human injury and/or damage to machinery/equipment.
3. **Allow freedom of movement when securing the shaft.**
   If you do not allow some freedom of movement when fixing the shaft, then any eccentricity will cause abnormal wear, leading to malfunction, breakdown, and possible human injury and/or damage to machinery/equipment.
4. **When the top is fixed, install a relief port (ø1 or more).**
   This product leaks air to the outside. When the top is made airtight, an excessively large load may occur. This may lead to malfunction.

## ⚠ Caution

1. **Confirm the model and size before installation. Check that there are no scratches, impact marks, cracks, or the like, on the product.**
2. **When connecting tubes, take account of variations in pressure according to tube length.**
3. **Do not wipe model designation on nameplate with organic solvents, etc.**
   This will cause designation to disappear.
4. **Do not knock rotary shaft when main unit is fixed, or knock main unit when rotary shaft is fixed.**
   This may bend the rotary shaft and cause damage to the bearings. The rotary shaft should be fixed when attaching a load, etc. to it.

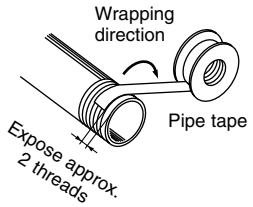
# Series MQR
# Rotary Joint/Precautions 2

**Be sure to read before handling.**

## Piping

### ⚠ Caution

1. **Preparation before piping.**
   Before piping is connected, it should be thoroughly blown out with air (flushed), to remove chips, cutting oil and other debris from inside the piping.
2. **Wrapping of pipe tape.**
   When screwing together pipes and fittings, etc., be certain that chips from the pipe threads and sealant material do not get inside the piping. Also, when pipe tape is used, leave approximately 2 thread ridges exposed at the end of the threads.




3. **Screw tightening and tightening torque.**
   Use the tightening torques in the table below, when screwing a fitting onto a piping port. Particular attention is required in the case of MQR1 (1 circuit), as this joint supports the piping.

**Tightening Torque for Piping**

| Connecting threads | Suitable tightening torque |
|---|---|
| M5 | 1.5 to 2 N·m |
| Rc 1/8 | 7 to 9 N·m |

∗ Comments

Fastening M5 thread fittings

Tighten manually, and then tighten a further quarter-turn using the fastening tool. If using miniature fittings, tighten manually, and then tighten a further quarter-turn using the fastening tool. If there are two gaskets, such as a universal elbow or universal tee, the final tightening should be doubled to a half-turn.

Note: Over-tightening of fittings may cause fracturing of the thread sections or deformation of the gaskets, leading to air leaks. If the fittings are under-tightened, the loosening of thread and air leaks may occur.

## Lubrication

### ⚠ Caution

1. **Lubrication**
   1. Due to the initial lubricant provided, the product can be used without lubrication.
   2. Do not lubricate if using the product at low torque. Lubrication may cause an increase in the rotational torque, due to the viscosity and surface tension of the oil.
   3. In the event that lubrication is applied, use turbine oil class 1 (without additives) ISO VG32.

   Refer to the brands of each turbine oil class 1 (without additives) ISO VG32 manufacturer shown below.

**Turbine Oil Class 1 (Without Additives) ISO VG32**

| Viscosity cst (40°C) | ISO viscosity grade | 32 |
|---|---|---|
| Idemitsu Kosan Co., Ltd. | | Turbine oil P-32 |
| Nippon Oil Co., Ltd. | | Turbine oil 32 |
| Cosmo Oil Co., Ltd. | | Cosmo turbine oil 32 |
| Japan Energy Corp. | | Kyoseki turbine 32 |
| KYGNUS | | Turbine oil 32 |

| Viscosity cst (40°C) | ISO viscosity grade | 32 |
|---|---|---|
| Kyushu Oil Co., Ltd. | | Stork turbine 32 |
| Mitsubishi Oil Co., Ltd. | | Mitsubishi turbine 32 |
| Showa Shell Sekiyu K.K. | | Turbine oil 32 |
| TonenGeneral Sekiyu K.K | | General R turbine oil 32 |
| Fuji Kosan Co., Ltd. | | Fucoal turbine 32 |

Please consult SMC regarding use of turbine oil class 2 (with additives) ISO VG32.

## Air Supply

### ⚠ Warning

1. **Use clean air.**
   Do not use compressed air containing chemicals, synthetic oils containing organic solvents, salts, or corrosive gases, etc., as these can cause damage or malfunction.

### ⚠ Caution

1. **Use the product within the range of specifications for fluid and ambient temperature.**
   Take measures to prevent freezing when used at 5°C or less, since moisture in circuits can freeze, causing malfunction.
2. **Install air filters.**
   Install air filters near valves on their upstream side. The filtration degree should be 5 μm or less. Furthermore, when using at low friction, it is also recommended to use clean air (atmospheric pressure dew point temperature of –10°C) and install mist separator series AM (filtration degree 0.3 μm or less) or series AM + AMD (filtration degree 0.01 μm or less).
3. **Install an after-cooler, air dryer or water separator (Drain Catch), etc.**
   Air containing excessive drainage can cause malfunction of valves and other pneumatic equipment. To prevent this, install an after-cooler, air dryer or water separator, etc.

Refer to the SMC's "Air Cleaning Equipment" catalog for further details on compressed air quality.

## Operating Environment

### ⚠ Warning

1. **Do not use in environments where there is a danger of corrosion.**
   Refer to the construction drawings regarding rotary joint materials.
2. **Do not use in dusty locations or where water, oil, etc., will splash on the equipment.**

## Maintenance

### ⚠ Warning

1. **Perform maintenance according to the procedures indicated in the instruction manual.**
   If handled improperly, malfunction and damage of machinery or equipment may occur.
2. **During maintenance, do not perform any disassembly or assembly whilst the air supply is connected.**

### ⚠ Caution

1. **Drain flushing**
   Remove condensate from air filters at regular intervals.

## Disassembly

### ⚠ Caution

1. **The component parts of these products are manufactured to precision tolerances, and therefore cannot be disassembled.**

# Series MQR
# Specific Product Precautions 1

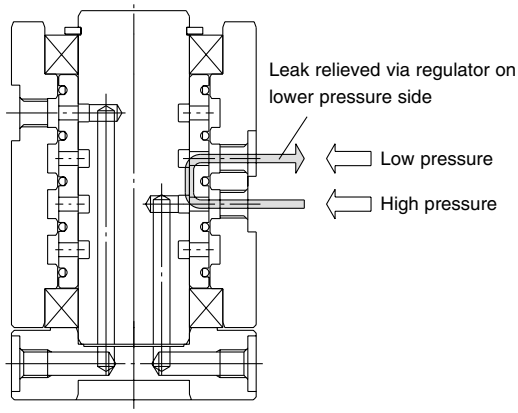
**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions.**

## Operation

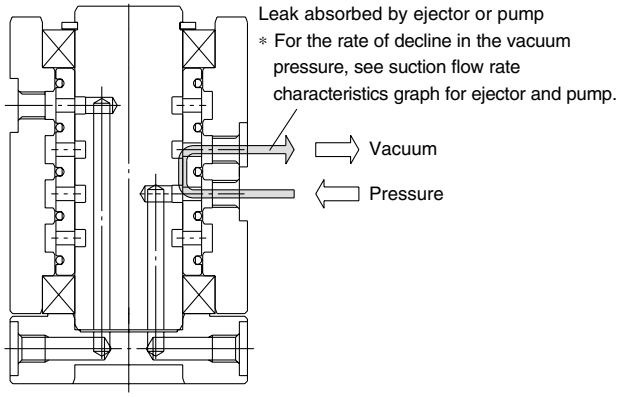
## ⚠ Caution

**1. The metal seal structure means that port-to-port leaking occurs. Therefore, please note the following points when using different pressures at neighbouring ports.**

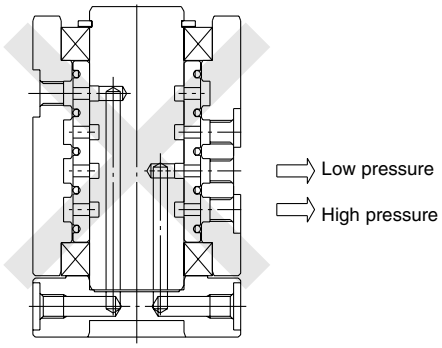
**When using different pressures at normal pressure**
Use relieving type regulators.
Leaks between ports are to be exhausted via the relief port of the regulator on the lower pressure side.



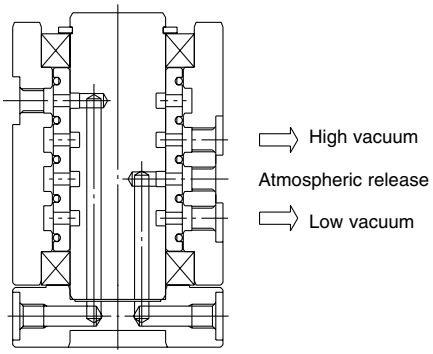

**When combination of vacuum and normal pressures**
When using a compact vacuum ejector (suction flow rate approx. 10 L/min), the vacuum pressure drop is several kPa or so, depending on the supply source characteristics and the piping conditions. For more details, please refer to the flow rate characteristics graph provided in the vacuum pump catalogue, instruction manual, etc.



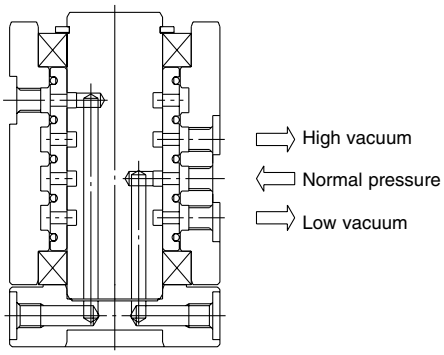

**Using different pressures in vacuum**
As neither the ejector nor the vacuum pump has a relief function, pressure interference may occur. Install an atmospheric release port (blanking port) or normal pressure circuit between the pressure ports having different vacuum pressures.




* If neighbouring ports are used at different vacuum pressures, the vacuum pressure on the lower vacuum side will increase and hence it cannot be used.




Using atmospheric release port



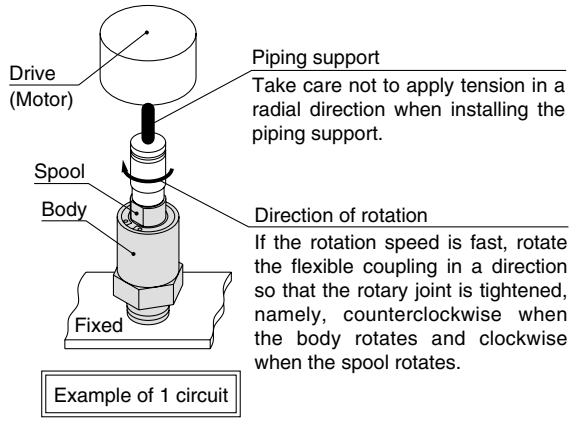

Using normal pressure port

* If using two or more ports at different vacuum pressures, an atmospheric release port or a normal pressure supply should be provided between the ports.

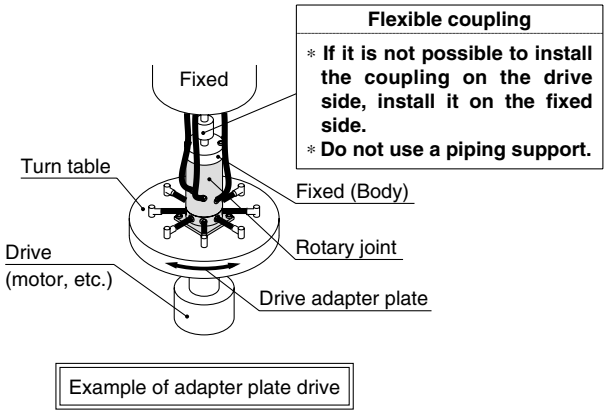
# Series MQR
# Specific Product Precautions 2

**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions.**

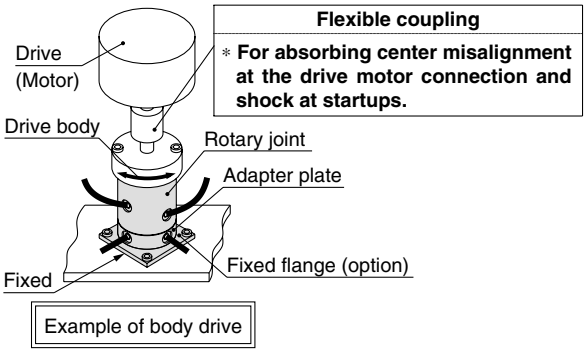
## Mounting




Example of 1 circuit



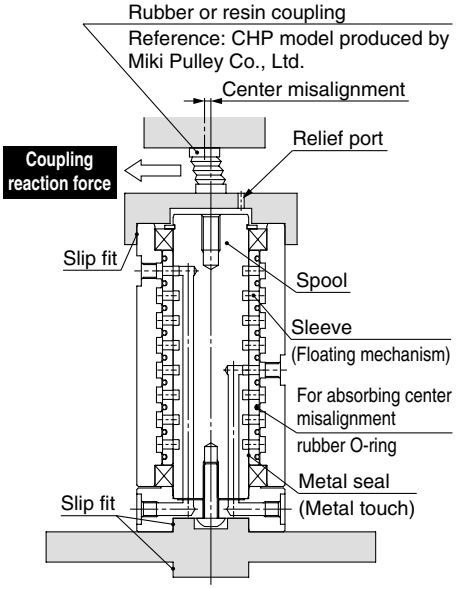

Example of adapter plate drive




Example of body drive

## ⚠ Caution

1. **Although the center misalignment of the drive shaft and fixed shaft is different due to the flexible coupling type and size, keep adjustments to 0.3 mm or less as a guide.**
   **Do not use piping support for 2 or more circuits. If used for 2 or more circuits, excessive radial load may occur momentarily (particularly at the start) due to piping tension and deflection, and it may cause excessive abrasion.**
2. **This product has a floating mechanism on the sleeve in order to keep the surface pressure of the metal seal part at a lower level even when rotating with the accumulated center misalignment of parts. If instantaneous shock occurs when starting and stopping rotation, the surface pressure may rise without working the floating mechanism and excessive abrasion may occur. Flexible coupling should be installed at the drive motor connection in order to protect the rotary joint from direct shocks. The recommended coupling is made by rubber or resin. These are excellent in center misalignment and adsorption of impact and vibration.**
   **(Reference coupling: Bellow Flex (Plastic bellows coupling) CHP model produced by Miki Pulley Co., Ltd.)**
   **For applicable reaction force of the coupling, refer to specifications on page 355.**
   **Select coupling with twice the safety factor against the value supplied by the coupling maker as the reaction force may be applied as a drive load especially with intermittent operation.**
3. **When the rotary joint is secured, align the drive shaft and the fixed shaft using the slip fit of the body adapter plate. Using the slip fit facilitates alignment of the axes. Relief port over ø1 should be installed when securing the top side. Since this product has slight air leakage, offset load may occur if sealing top side when mounting, and excessive abrasion may occur.**




**Reference coupling/Bellow Flex (Plastic bellows coupling) CHP Model produced by Miki Pulley Co., Ltd.**

| Rotary joint type | MQR2 | MQR4 | MQR8 | MQR12 | MQR16 |
|---|---|---|---|---|---|
| Coupling part no. | CHP-20 | CHP-20 | CHP-20<br>CHP-26 | CHP-26<br>CHP-34 | CHP-34 |