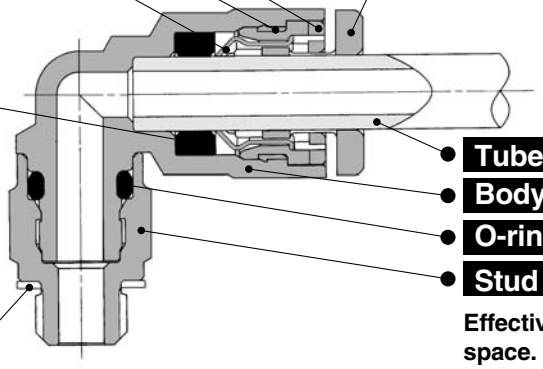
# Miniature One-touch Fittings
# One-touch Mini
# *Series KJ*

## Applicable Tubing: ø2, ø3.2, ø4, ø6
## Connection Thread: M3, M5, R 1/8

RoHS



**Guide 1**

**Guide 2**

**Chuck**

**Suitable for use with nylon, soft nylon and urethane.**
**Large retaining force.**
The chuck provides a secure bite, while retaining force is increased.

**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.

**Gasket**

**Release button (Light gray)**

**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 to an unnecessary degree. Unique shape allows easy tube release.

**Tube**

**Body (White)**

**O-ring**

**Stud**

**Effective when piping in a confined space.**
- The body and the threaded portion can rotate (for positioning to some extent).
- Stud is electroless nickel plated.
- Standard with preapplied sealant for R 1/8 thread

PAT.PEND

**Optimum piping in less space with 20% reduction of the outside diameter.**

**Thread with sealant is standard.**

**Copper-free specifications (With electroless nickel plated.)**

**Possible to use in vacuum to –100 kPa.**

Made to Order

**Made to Order**
(Refer to page 26 for details.)

### Applicable Tubing

| | |
|---|---|
| Tubing material | FEP, PFA, Nylon, Soft nylon(1), Polyurethane |
| Tubing O.D. | ø2, ø3.2, ø4, ø6 |

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

### Specifications

| | | |
|---|---|---|
| **Fluid** | | Air/Water (2) |
| **Operating pressure range** (3) | | –100 kPa to 1 MPa |
| **Proof pressure** | | 3 MPa |
| **Ambient and fluid temperature** | | –5 to 60°C, Water: 0 to 40°C (No freezing) |
| **Thread** | **Mounting section** | JIS B0203 (Taper thread for piping), JIS B0205 (Metric coarse thread) |
| | **Nut section** | JIS B0205 (Metric fine thread) |
| **Seal on the threads (Standard)** | | With sealant |
| **Copper-free (Standard)** | | Brass parts are all electroless nickel plated. |

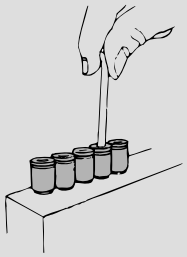
Note 2) The surge pressure must be under the maximum operating pressure.
Note 3) Do not use the fittings with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

### Principal Parts Material

| | |
|---|---|
| Body | Stainless steel 303, C3604, PBT |
| Stud | C3604 (Thread portion) |
| Chuck, Guide 2 | Stainless steel 304 |
| Release button | POM |
| Seal, O-ring | NBR |
| Gasket | PVC, Stainless steel 304, NBR |
| Guide, Guide 1 | PBT |
| Guide for ø2 | C3604 |

## Model

**Hex. socket head male connector**
**KJS** P.20

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


**Male connector**
**KJH** P.20

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

**Female connector**
**KJF** P.20

Use to pipe from male thread such as pressure gauge.

**Straight union**
**KJH** P.20

Use to connect tubes in the same direction.

**Different diameter straight**
**KJH** P.21

Use to connect different sized tubes.

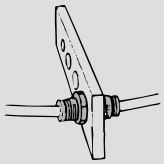
**Male elbow**
**KJL** P.21

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

**Union elbow**
**KJL** P.21

Use to connect tubes at right angles.

**Bulkhead union**
**KJE** P.25

Use to connect tubes through a panel.


**Plug-in elbow**
**KJL** P.21

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

**Reducer elbow**
**KJL** P.22

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

**Male branch tee**
**KJT** P.22

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

**Union tee**
**KJT** P.23

Use to connect tubes in both 90° directions.

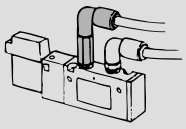
**Different diameter tee**
**KJT** P.23

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

**Male run tee**
**KJY** P.23

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

**Extended male elbow**
**KJW** P.22

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


**Union "Y"**
**KJU** P.24

Use to branch line in the same direction.

**Different dia. union "Y"**
**KJU** P.24

Use to branch line with size down in the same direction.

**Plug-in "Y"**
**KJU** P.24

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

**Different diameter plug-in "Y"**
**KJX** P.24

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

**Branch "Y"**
**KJU** P.25

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

**Plug-in reducer**
**KJR** P.25

Use to change size of One-touch fittings.

**Plug**
**KJP** P.25

Use to plug unused One-touch fittings.



# ⚠ 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.** Please do not attach metal rods or metal pipes. Metal rods or pipes cannot be secured and the fittings will shoot out. Also, if tubes are attached after metal rods or pipes have been attached, the tubes will not hold and may come loose.

### Tightening of KJ□02-M3 screw parts

## ⚠Caution

**1.** After tightening by hand, tighten further about 1/6 of a turn with a tightening tool.

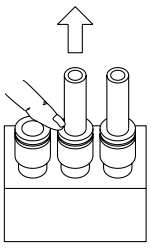
### Installation and Removal of One-touch Mini Fittings

## ⚠Caution

**Installation of tubing**

**1.** Cut the tube perpendicularly, using caution not to damage its surface. (Use tube cutter TK-1, 2 or 3. Do not cut the tube with cutting pliers, nippers, scissors, etc.)
**2.** Grasp the tube, then slowly push it until it comes to a stop.
**3.** Then, pull it back gently to make sure that it does not come out.

**Removal of tubing**

**1.** While pushing down on the rim of the release button, pull out the tube in the direction of the arrow (see illustration.)
The release button can also be pushed down with a flat-head screwdriver. However, be careful not to break or damage the release button.

**2.** To reuse the released tube, cut off the damaged portion of the tube.

## Male Connector: KJH

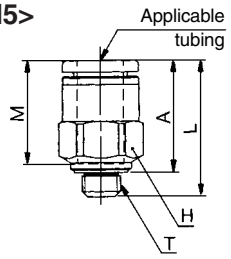
<M3, M5>

<R 1/8>

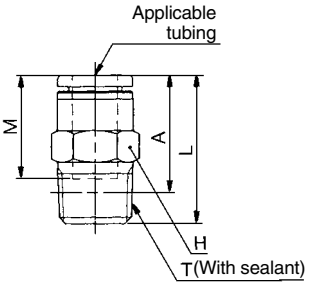
| Applicable tubing O.D. (mm) | Connection thread T | Model | H (width across flats) | L | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 2 | M3 x 0.5 | KJH02-M3 | 5.5 | 12.5 | 10 | 8.8 | — | 0.9 | 1.1 |
| | M5 x 0.8 | KJH02-M5 | 7 | 11.7 | 8.7 | | | | 1.9 |
| 3.2 | M3 x 0.5 | KJH23-M3 | 7 | 16.3 | 13.7 | 12.7 | 0.9 | 0.9 | 1.6 |
| | M5 x 0.8 | KJH23-M5 | | 16.7 | 13.6 | | 3 | 2.5 | 2 |
| | R 1/8 | KJH23-01S | 10 | 12.9 | 9.8 | 12.4 | | | 4.7 |
| 4 | M3 x 0.5 | KJH04-M3 | 8 | 16.3 | 13.7 | 12.7 | 0.9 | 0.9 | 1.9 |
| | M5 x 0.8 | KJH04-M5 | | 17 | 13.9 | | 4 | 4 | 2.4 |
| | R 1/8 | KJH04-01S | 10 | 13.9 | 10.8 | | | | 4.6 |
| 6 | M5 x 0.8 | KJH06-M5 | 10 | 17.8 | 14.7 | 13.5 | 4 | 4 | 3.3 |
| | R 1/8 | KJH06-01S | | 18.5 | 15.4 | | 10 | 10 | 5.2 |

* Reference dimensions after R thread installation.

<M3, M5>




<R 1/8>




## Hexagon Socket Head Male Connector: KJS

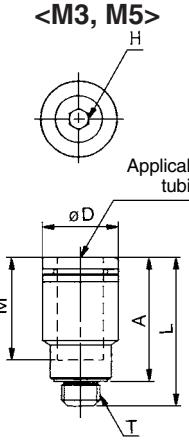
<M3, M5>

<R 1/8>

| Applicable tubing O.D. (mm) | Connection thread T | Model | H (width across flats) | Note) øD | L | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | M3 x 0.5 | KJS02-M3 | 1.5 | 5.5 | 12.5 | 10 | 8.8 | — | 0.9 | 1.1 |
| 3.2 | M3 x 0.5 | KJS23-M3 | 1.5 | 7 | 16.3 | 13.7 | 12.7 | 1.4 | 1.4 | 1.3 |
| | M5 x 0.8 | KJS23-M5 | 2 | | 19.7 | 16.6 | | 2.5 | 2.5 | 2.8 |
| 4 | M3 x 0.5 | KJS04-M3 | 1.5 | 8 | 16.3 | 13.7 | 12.7 | 1.4 | 1.4 | 1.6 |
| | M5 x 0.8 | KJS04-M5 | 2.5 | | 18.7 | 15.6 | | 4 | 4 | 2.7 |
| | R 1/8 | KJS04-01S | 3 | 9.8 | 19.7 | 15.7 | | | | 5.4 |
| 6 | M5 x 0.8 | KJS06-M5 | 2.5 | 10 | 19.5 | 16.4 | 13.5 | 4 | 4 | 3.3 |
| | R 1/8 | KJS06-01S | 4 | | 20 | 16 | | 10 | 10 | 5.2 |

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

<M3, M5>

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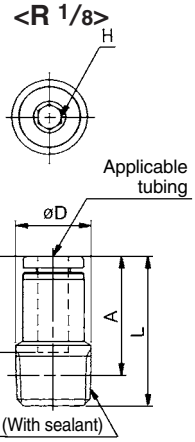
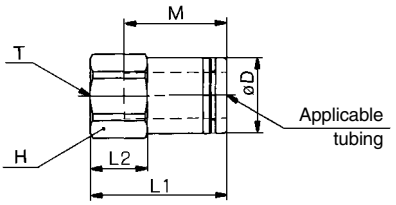



## Female Connector: KJF

| Applicable tubing O.D. (mm) | Connection thread T | Model | H (width across flats) | Note) øD | L1 | L2 | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M3 x 0.5 | KJF23-M3 | 7 | 7 | 16.5 | 6.8 | 12.7 | 3 | 2.5 | 2.6 |
| | M5 x 0.8 | KJF23-M5 | | | 18.8 | 7.9 | | | | 2.8 |
| 4 | M3 x 0.5 | KJF04-M3 | 8 | 8 | 16.1 | 6.4 | 12.7 | 4 | 4 | 3.2 |
| | M5 x 0.8 | KJF04-M5 | | | 18.7 | 7.8 | | | | 3.8 |
| 6 | M5 x 0.8 | KJF06-M5 | 10 | 10 | 18 | 7.5 | 13.5 | 10 | 10 | 5.3 |

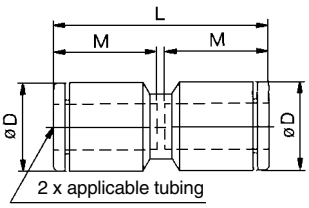
Note) øD: Max. diameter




## Straight Union: KJH

| Applicable tubing O.D. (mm) | Model | Note) øD | L | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|
| 2 | KJH02-00 | 6 | 17.8 | 8.8 | — | 0.8 | 1.0 |
| 3.2 | KJH23-00 | 8.4 | 26.3 | 12.7 | 3 | 2.5 | 1.4 |
| 4 | KJH04-00 | 9.3 | 26.3 | 12.7 | 4 | 4 | 1.7 |
| 6 | KJH06-00 | 11.6 | 28 | 13.5 | 10 | 10 | 2.5 |

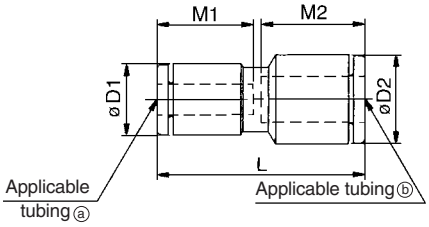
Note) øD: Max. diameter



## Different Diameter Straight: KJH

| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Model | Note) øD1 | Note) øD2 | L | M1 | M2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 3.2 | KJH02-23 | 8.4 | 8.4 | 26.6 | 8.8 | 12.7 | — | 0.9 | 2.4 |
| | 4 | KJH02-04 | 9.3 | 9.3 | | | | | | 3.2 |
| 3.2 | 4 | KJH23-04 | 8.4 | 9.3 | 26.3 | 12.7 | 12.7 | 3 | 2.5 | 1.6 |
| | 6 | KJH23-06 | | 11.6 | 27.2 | | 13.5 | | | 2 |
| 4 | 6 | KJH04-06 | 9.3 | 11.6 | 27.2 | 12.7 | 13.5 | 4 | 4 | 2.2 |

Note) øD1, øD2: Max. diameter




## Male Elbow: KJL

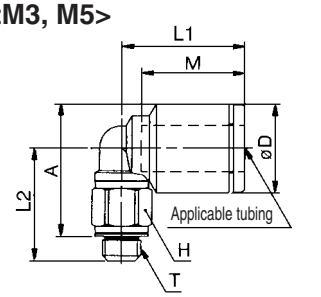
**<M3, M5>**

**<R 1/8>**

| Applicable tubing O.D. (mm) | Connection threads T | Model | H (width across flats) | Note) øD | L1 | L2 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | M3 x 0.5 | KJL02-M3 | 5.5 | 6 | 9.5 | 11.6 | 12.1 | 8.8 | — | 0.8 | 1.4 |
| | M5 x 0.8 | KJL02-M5 | 7 | | | 12.1 | | | | | 2.4 |
| 3.2 | M3 x 0.5 | KJL23-M3 | 7 | 8.4 | 15.3 | 12.5 | 14.1 | 12.7 | 0.8 | 0.8 | 2.1 |
| | M5 x 0.8 | KJL23-M5 | | | | 13.2 | 14.3 | | 2.6 | 2.2 | 2.5 |
| | R 1/8 | KJL23-01S | 10 | | | 14.3 | 15.4 | | | | 6.7 |
| 4 | M3 x 0.5 | KJL04-M3 | 7 | 9.3 | 15.6 | 13 | 15.1 | 12.7 | 0.8 | 0.8 | 2.2 |
| | M5 x 0.8 | KJL04-M5 | | | | 13.7 | 15.3 | | 3.5 | 3.5 | 2.7 |
| | R 1/8 | KJL04-01S | 10 | | | 14.8 | 16.4 | | | | 6.8 |
| 6 | M5 x 0.8 | KJL06-M5 | 7 | 11.6 | 16.1 | 14.7 | 17.4 | 13.5 | 3.5 | 3.5 | 3.2 |
| | R 1/8 | KJL06-01S | 10 | | | 17.8 | 15.8 | 18.5 | 9 | 9 | 6.4 |

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

**<M3, M5>**

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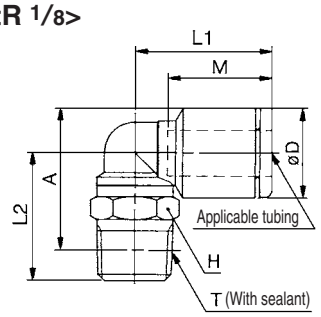
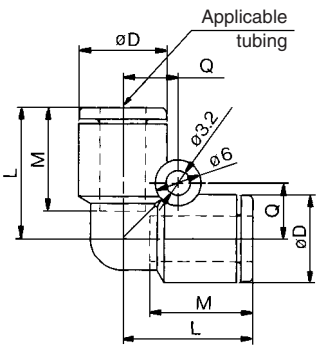



## Union Elbow: KJL

| Applicable tubing O.D. (mm) | Model | Note) øD | L | Q | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| 3.2 | KJL23-00 | 8.4 | 15 | 5.8 | 12.7 | 2.6 | 2.2 | 1.6 |
| 4 | KJL04-00 | 9.3 | 15.8 | 6.3 | 12.7 | 3.5 | 3.5 | 2 |
| 6 | KJL06-00 | 11.6 | 17.1 | 7.3 | 13.5 | 9 | 9 | 3.1 |

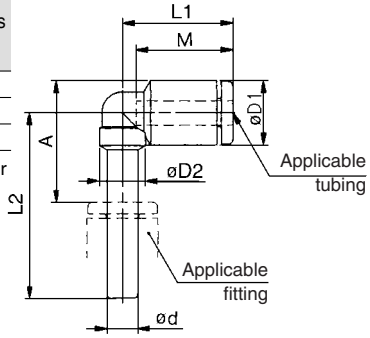
Note) øD: Max. diameter




## Plug-in Elbow: KJL

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | Note) øD1 | øD2 | L1 | L2 | A | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | 3.2 | KJL23-99 | 8.4 | 6 | 14.5 | 23.8 | 15.3 | 12.7 | 2.6 | 2.2 | 1 |
| 4 | 4 | KJL04-99 | 9.3 | 6 | 15.6 | 24.7 | 16.7 | 12.7 | 3.5 | 3.5 | 1.2 |
| 6 | 6 | KJL06-99 | 11.6 | 7 | 16.3 | 26.8 | 19.1 | 13.5 | 9 | 9 | 2 |

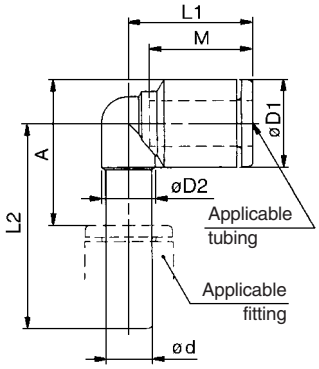
Note) øD1: Max. diameter



## Reducer Elbow: KJL

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | Note) øD1 | øD2 | L1 | L2 | A | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | 4 | KJL23-04 | 8.4 | 6 | 14.5 | 24.3 | 15.8 | 12.7 | 2.6 | 2.2 | 1.1 |
| | 6 | KJL23-06 | | | | 25.3 | 16 | | | | 1.2 |
| 4 | 6 | KJL04-06 | 9.3 | 6 | 15.6 | 25.7 | 16.9 | 12.7 | 3.5 | 3.5 | 1.4 |

Note) øD1: Max. diameter




## Extended Male Elbow: KJW

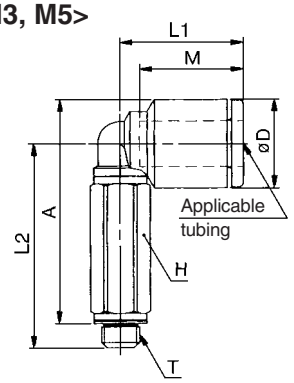
**<M3, M5>**

**<R 1/8>**

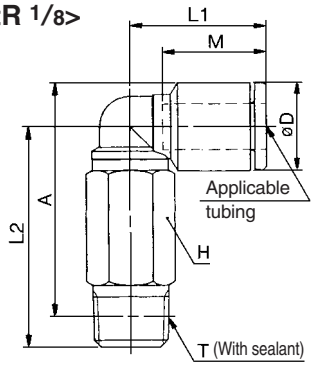
| Applicable tubing O.D. (mm) | Connection thread T | Model | H (width across flats) | Note) øD | L1 | L2 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | M3 x 0.5 | KJW02-M3 | 5.5 | 6 | 9.5 | 18.6 | 19.1 | 8.8 | — | 0.8 | 2.6 |
| | M5 x 0.8 | KJW02-M5 | 7 | | | 19.1 | | | | | 4.5 |
| 3.2 | M3 x 0.5 | KJW23-M3 | 7 | 8.4 | 15.3 | 22.5 | 24.1 | 12.7 | 0.8 | 0.8 | 5 |
| | M5 x 0.8 | KJW23-M5 | | | | 25.2 | 26.3 | | 2.6 | 2.2 | 6.2 |
| | R 1/8 | KJW23-01S | 10 | | | 24.3 | 25.4 | | | | 13.4 |
| 4 | M3 x 0.5 | KJW04-M3 | 7 | 9.3 | 15.6 | 23 | 25.1 | 12.7 | 0.8 | 0.8 | 5.1 |
| | M5 x 0.8 | KJW04-M5 | | | | 25.7 | 27.3 | | 3.5 | 3.5 | 6.4 |
| | R 1/8 | KJW04-01S | 10 | | | 24.8 | 26.4 | | | | 13.6 |
| 6 | M5 x 0.8 | KJW06-M5 | 7 | 11.6 | 16.1 | 26.7 | 29.4 | 13.5 | 3.5 | 3.5 | 6.9 |
| | R 1/8 | KJW06-01S | 10 | | 17.8 | 27.8 | 30.5 | | 9 | 9 | 13.2 |

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

**<M3, M5>**




**<R 1/8>**




## Male Branch Tee: KJT

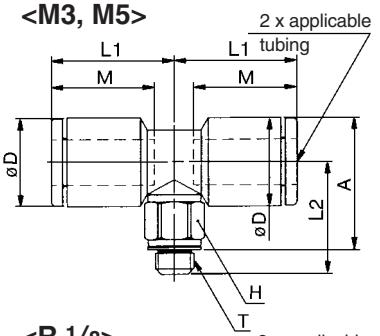
**<M3, M5>**

**<R 1/8>**

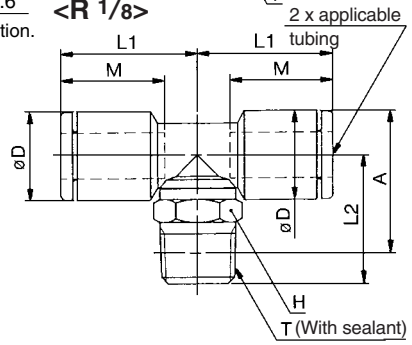
| Applicable tubing O.D. (mm) | Connection thread T | Model | H (width across flats) | Note) øD | L1 | L2 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | M3 x 0.5 | KJT02-M3 | 5.5 | 6 | 9.5 | 11.6 | 12.1 | 8.8 | — | 1.1 | 1.8 |
| | M5 x 0.8 | KJT02-M5 | 7 | | | 12.1 | | | | | 2.8 |
| 3.2 | M3 x 0.5 | KJT23-M3 | 7 | 8.4 | 15.3 | 12.5 | 14.1 | 12.7 | 0.9 | 0.9 | 2.8 |
| | M5 x 0.8 | KJT23-M5 | | | | 13.2 | 14.3 | | 3.2 | 2.7 | 3.2 |
| | R 1/8 | KJT23-01S | 10 | | | 14.3 | 15.4 | | | | 7.4 |
| 4 | M3 x 0.5 | KJT04-M3 | 7 | 9.3 | 15.6 | 13 | 15.1 | 12.7 | 0.9 | 0.9 | 3.1 |
| | M5 x 0.8 | KJT04-M5 | | | | 13.7 | 15.3 | | 4.5 | 4.5 | 3.5 |
| | R 1/8 | KJT04-01S | 10 | | | 14.8 | 16.4 | | | | 7.7 |
| 6 | M5 x 0.8 | KJT06-M5 | 7 | 11.6 | 16.1 | 14.7 | 17.4 | 13.5 | 4.5 | 4.5 | 4.4 |
| | R 1/8 | KJT06-01S | 10 | | 17.8 | 15.8 | 18.5 | | 11 | 11 | 7.6 |

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

**<M3, M5>**



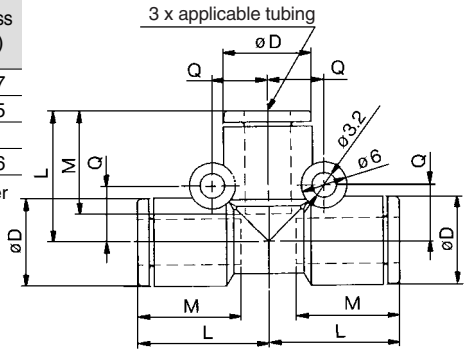

**<R 1/8>**



## Union Tee: KJT

| Applicable tubing O.D. (mm) | Model | Note) øD | L | Q | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Nylon | Urethane | |
| **2** | **KJT02-00** | 6 | 10 | 4.9 | 8.8 | — | 0.9 | 1.7 |
| **3.2** | **KJT23-00** | 8.4 | 15 | 5.8 | 12.7 | 3.2 | 2.7 | 2.5 |
| **4** | **KJT04-00** | 9.3 | 15.8 | 6.3 | 12.7 | 4.5 | 4.5 | 3 |
| **6** | **KJT06-00** | 11.6 | 17.1 | 7.3 | 13.5 | 11 | 11 | 4.6 |

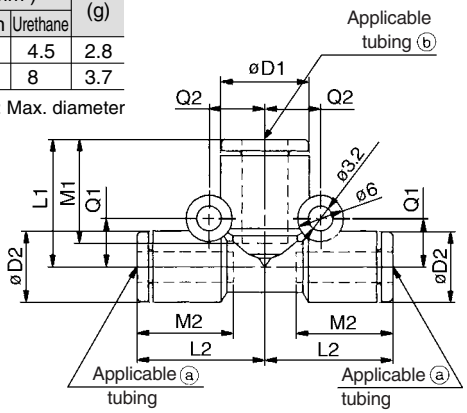
Note) øD: Max. diameter




## Different Diameter Tee: KJT

| Applicable tubing O.D. (mm) | | Model | Note) øD1 | Note) øD2 | L1 | L2 | Q1 | Q2 | M1 | M2 | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⓐ | ⓑ | | | | | | | | | | Nylon | Urethane | |
| **3.2** | **4** | **KJT23-04** | 9.3 | 8.4 | 15.3 | 15.8 | 5.8 | 6.3 | 12.7 | 12.7 | 4.5 | 4.5 | 2.8 |
| **4** | **6** | **KJT04-06** | 11.6 | 9.3 | 16.6 | 16.8 | 6.3 | 7.3 | 13.5 | 12.7 | 8 | 8 | 3.7 |

Note) øD1, øD2: Max. diameter




## Male Run Tee: KJY

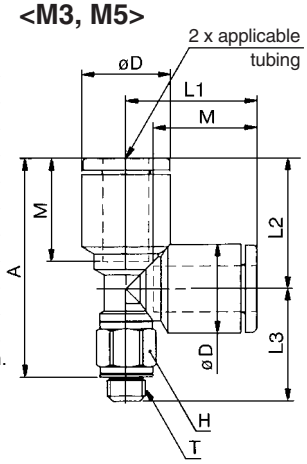
**<M3, M5>**

**<R 1/8>**

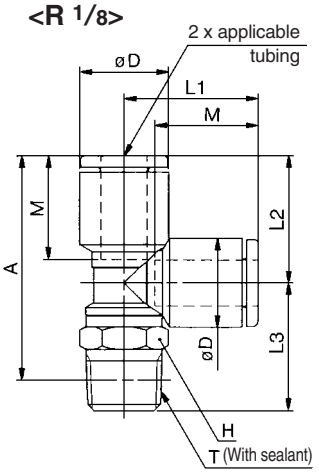
| Applicable tubing O.D. (mm) | Connection thread T | Model | H (width across flats) | Note) øD | L1 | L2 | L3 | A* | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Nylon | Urethane | |
| **2** | M3 x 0.5 | **KJY02-M3** | 5.5 | 6 | 10 | 10 | 11.6 | 19.1 | 8.8 | — | 1.1 | 1.9 |
| | M5 x 0.8 | **KJY02-M5** | 7 | | | | 12.1 | | | | 1.3 | 2.9 |
| **3.2** | M3 x 0.5 | **KJY23-M3** | 7 | 8.4 | 15.4 | 14.8 | 12.5 | 24.7 | 12.7 | 0.9 | 0.9 | 2.8 |
| | M5 x 0.8 | **KJY23-M5** | | | | | 13.2 | 24.9 | | 3.2 | 2.7 | 3.2 |
| | R 1/8 | **KJY23-01S** | 10 | | | | 14.3 | 26 | | | | 7.4 |
| **4** | M3 x 0.5 | **KJY04-M3** | 7 | 9.3 | 15.6 | 14.8 | 13 | 25.2 | 12.7 | 0.9 | 0.9 | 3.1 |
| | M5 x 0.8 | **KJY04-M5** | | | | | 13.7 | 25.4 | | 4.5 | 4.5 | 3.5 |
| | R 1/8 | **KJY04-01S** | 10 | | | | 14.8 | 26.5 | | | | 7.7 |
| **6** | M5 x 0.8 | **KJY06-M5** | 7 | 11.6 | 17.1 | 17.1 | 14.7 | 28.7 | 13.5 | 4.5 | 4.5 | 4.5 |
| | R 1/8 | **KJY06-01S** | 10 | | 17.5 | 16.6 | 15.8 | 29.3 | | 11 | 11 | 7.5 |

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

**<M3, M5>**



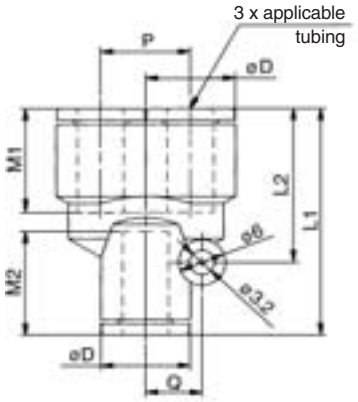

**<R 1/8>**



## Union "Y": KJU

| Applicable tubing O.D. (mm) | Model | Note) øD | L1 | L2 | P | Q | M1 | M2 | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Nylon | Urethane | |
| **2** | **KJU02-00** | 6 | 20.1 | 13.4 | 6.5 | 4.6 | 1.8 | 1.8 | — | 0.9 | 1.8 |
| **3.2** | **KJU23-00** | 8.4 | 28.5 | 19 | 8.4 | 5.8 | 12.7 | 12.9 | 3.2 | 2.7 | 2.6 |
| **4** | **KJU04-00** | 9.3 | 27.9 | 18.3 | 9.3 | 6.3 | 12.7 | 12.9 | 4.5 | 4.5 | 3 |
| **6** | **KJU06-00** | 11.6 | 31.2 | 21.6 | 11.6 | 7.3 | 13.5 | 13.7 | 11 | 11 | 4.7 |

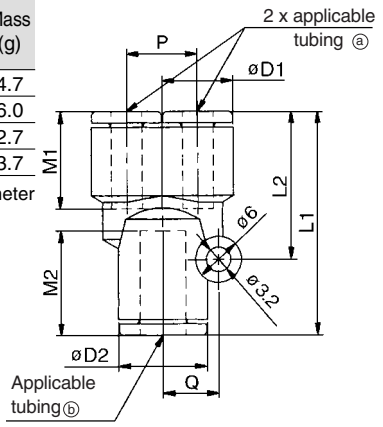
Note) øD: Max. diameter




## Different Diameter Union "Y": KJU

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2** | **3.2** | **KJU02-23** | 6 | 6 | 28.8 | 19.2 | 8.4 | 5.8 | 8.8 | 12.7 | — | 1.5 | 4.7 |
| | **4** | **KJU02-04** | | 7.8 | 28.2 | 18.5 | 9.3 | 6.3 | | | | 1.6 | 6.0 |
| **3.2** | **4** | **KJU23-04** | 8.4 | 9.3 | 27.5 | 18.3 | 8.4 | 6.3 | 12.7 | 12.9 | 3.2 | 2.7 | 2.7 |
| **4** | **6** | **KJU04-06** | 9.3 | 11.6 | 29.2 | 19.3 | 9.3 | 7.3 | 12.7 | 13.7 | 4.5 | 4.5 | 3.7 |

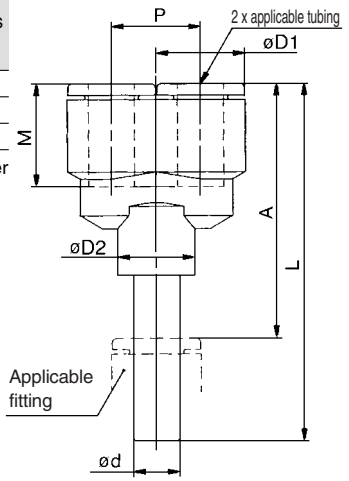
Note) øD1, øD2: Max. diameter




## Plug-in "Y": KJU

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | Note) øD1 | øD2 | L | P | A | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2** | 3.2 | **KJU23-99** | 8.4 | 10 | 43.5 | 8.4 | 34.1 | 12.7 | 3.2 | 2.7 | 2.7 |
| **4** | 4 | **KJU04-99** | 9.3 | 10 | 44.7 | 9.3 | 35.3 | 12.7 | 4.5 | 4.5 | 3.2 |
| **6** | 6 | **KJU06-99** | 11.6 | 10 | 47.8 | 11.6 | 37.6 | 13.5 | 11 | 11 | 4.5 |

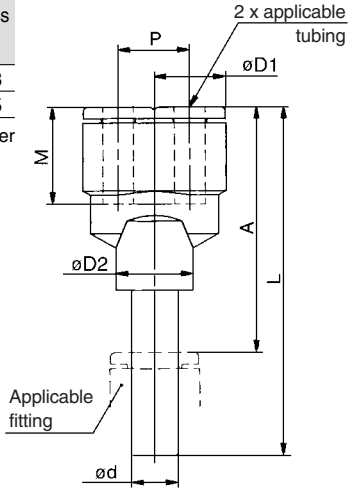
Note) øD1: Max. diameter




## Different Diameter Plug-in "Y": KJX

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | Note) øD1 | øD2 | L | P | A | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2** | 4 | **KJX23-04** | 8.4 | 10 | 44 | 8.4 | 34.6 | 12.7 | 4.5 | 4.5 | 2.8 |
| **4** | 6 | **KJX04-06** | 9.3 | 10 | 45.7 | 9.3 | 35.5 | 12.7 | 8 | 8 | 3.5 |

Note) øD1: Max. diameter



## Branch: KJU

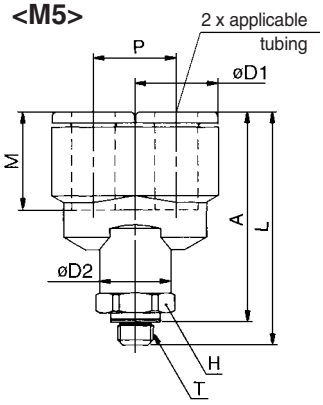
**<M5>**

| Applicable tubing O.D. (mm) | Connection thread T | Model | H (width across flats) | Note) øD1 | øD2 | L | P | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KJU23-M5 | 10 | 8.4 | 10 | 30.6 | 8.4 | 27.5 | 12.7 | 2.2 | 2.2 | 5.9 |
| | R 1/8 | KJU23-01S | | | | 33.2 | | 30.1 | | 3.2 | 2.7 | 8.3 |
| 4 | M5 x 0.8 | KJU04-M5 | 10 | 9.3 | 10 | 31.3 | 9.3 | 28.2 | 12.7 | 2.2 | 2.2 | 6.4 |
| | R 1/8 | KJU04-01S | | | | 33.9 | | 30.8 | | 4.5 | 4.5 | 8.8 |
| 6 | M5 x 0.8 | KJU06-M5 | 10 | 11.6 | 10 | 33.4 | 11.6 | 30.3 | 13.5 | 2.2 | 2.2 | 7.4 |
| | R 1/8 | KJU06-01S | | | | 36 | | 32.9 | | 11 | 11 | 9.9 |

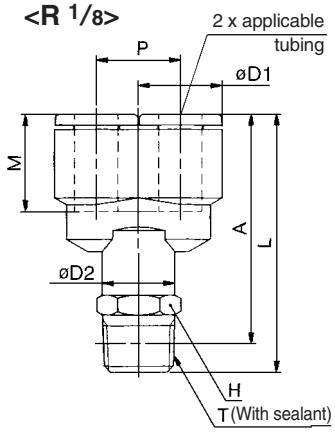
* Reference dimensions after R thread installation.
Note) øD1: Max. diameter

**<R 1/8>**

**<M5>**



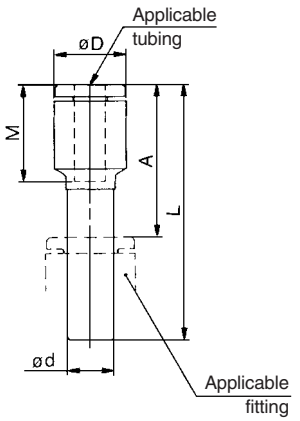

**<R 1/8>**




## Plug-in Reducer: KJR

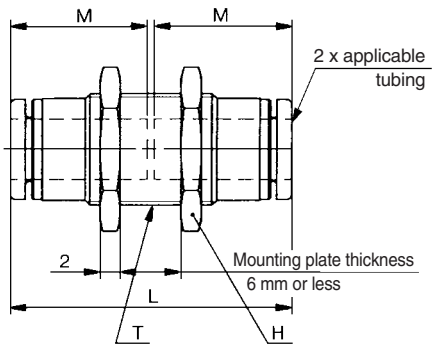
| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | Note) øD | L | A | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 4 | KJR02-04 | 6 | 28.3 | 15.6 | 8.8 | — | 0.9 | 0.7 |
| 3.2 | 4 | KJR23-04 | 8.4 | 32 | 19.3 | 12.7 | 3 | 2.5 | 0.9 |
| | 6 | KJR23-06 | | 33 | 19.5 | | | | 1.1 |
| 4 | 6 | KJR04-06 | 9.3 | 33.5 | 20 | 12.7 | 4 | 4 | 1.3 |

Note) øD: Max. diameter




## Bulkhead Union: KJE

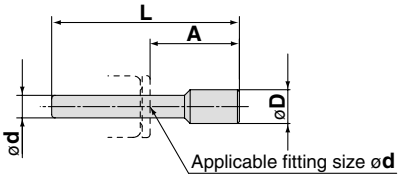
| Applicable tubing O.D. (mm) | Model | T | H (width across flats) | L | Mounting hole | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 2 | KJE02-00 | M7 x 0.75 | 9 | 18.1 | 8 | 8.8 | — | 0.8 | 3.7 |
| 3.2 | KJE23-00 | M8 x 0.75 | 10 | 26 | 9 | 12.7 | 3 | 2.5 | 4.6 |
| 4 | KJE04-00 | M9 x 0.75 | 11 | 26 | 10 | 12.7 | 4 | 4 | 5.6 |
| 6 | KJE06-00 | M11 x 0.75 | 14 | 27.7 | 12 | 13.5 | 10 | 10 | 8.5 |




## Plug: KJP

| Applicable tubing O.D. (mm) ød | Model | øD | L | A | Mass (g) |
|---|---|---|---|---|---|
| 2 | KJP-02 | 3 | 17 | 8.2 | 0.1 |

* Use KQ2P for ø3.2, 4 and 6.



# 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) **KJH06-01S-X17**

## 2 Other Specifications

| Symbol | Specifications |
|---|---|
| **X12** | Lubricant: White Vaseline<br>Release button color: White |
| **X34** | Rubber material: FKM |
| **X41** | With fixed throttle Note) |

Note) Compatible with male connector and male elbow only
Consult SMC separately for the available fixed throttle diameters.

## Spare Parts

| Description | Part no. | Applicable thread | Material |
|---|---|---|---|
| Gasket | M-3G | M3 | PVC |
| | IN-233-706 | M3 | Stainless steel 304, NBR |
| | M-5G2 | M5 | Stainless steel 304, NBR |

| Description | Part no. | Applicable model |
|---|---|---|
| Pipe nut | KJ02-P01 | KJE02-00 |
| | KJ23-P01 | KJE23-00 |
| | KJ04-P01 | KJE04-00 |
| | KJ06-P01 | KJE06-00 |

# One-touch Fittings
# *Series KQ2*
## Applicable Tubing: Metric Size
## Connection Thread: M, R, Rc

RoHS

## How to Order

**KQ 2 H 06 – 01 S –** ☐

**Made to Order**
Refer to page 58 for details.

**One-touch fittings**

**Product's color**

| Symbol | Body | Release button |
|---|---|---|
| **2** | White | Light gray |
| **Nil** | Black | Blue |

**With thread sealant (Male thread only)**

| | |
|---|---|
| **Nil** | None |
| **S** | With thread sealant |

Note) Port size with sealant: Only
R 1/8
R 1/4
R 3/8
R 1/2

**Applicable tubing O.D.**

| | |
|---|---|
| **23** | ø3.2 |
| **04** | ø4 |
| **06** | ø6 |
| **08** | ø8 |
| **10** | ø10 |
| **12** | ø12 |
| **16** | ø16 |

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

| | | | |
|---|---|---|---|
| Thread connection | **M5** | M5 x 0.8 | |
| | **M6** | M6 x 1.0 | |
| | **01** | R 1/8, Rc 1/8 | |
| | **02** | R 1/4, Rc 1/4 | |
| | **03** | R 3/8, Rc 3/8 | |
| | **04** | R 1/2, Rc 1/2 | |
| Tubing (Rod) connection | **00** | Same dia. tubing | |
| | **04** | ø4 | (Reducer) Different dia. tubing |
| | **06** | ø6 | |
| | **08** | ø8 | |
| | **10** | ø10 | |
| | **12** | ø12 | |
| | **16** | ø16 | |
| | **99** | Same dia. rod | |

**Model**

| | | | |
|---|---|---|---|
| **H** | Male connector | **T** | Male branch tee |
| | Straight union | | Union tee |
| | Different diameter straight | | Different diameter tee* |
| **S** | Hex. socket head male connector | **TW** | Cross* |
| **F** | Female connector | **TX** | Different diameter cross* |
| **L** | Male elbow | **TY** | Different diameter cross* |
| | Union elbow | **Y** | Male run tee |
| | Plug-in elbow | **D** | Male delta union |
| | Reducer elbow | | Delta union |
| **LU** | Male branch connector | **U** | Branch "Y" |
| | Branch union elbow | | Union "Y" |
| **K** | 45° male elbow | | Different dia. union "Y" |
| **V** | Universal male elbow | | Plug-in "Y" |
| **VS** | Hexagon socket head universal male elbow | **UD** | Delta branch |
| **VF** | Universal female elbow | | Different dia. double union "Y" |
| **LF** | Female elbow | **XD** | Double plug-in "Y" |
| **VD** | Double universal male elbow | **X** | Different diameter plug-in "Y" |
| **VT** | Triple universal male elbow | **R** | Plug-in reducer |
| **Z** | Branch universal male elbow | **E** | Bulkhead union |
| **ZF** | Branch universal female elbow | | Bulkhead connector |
| **ZD** | Double branch universal male elbow | **LE** | Bulkhead male elbow |
| **ZT** | Triple branch universal male elbow | | |
| **W** | Extended plug-in elbow | | |
| | Extended male elbow | | |

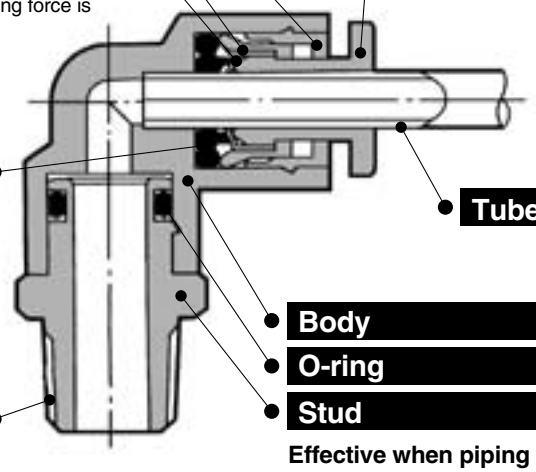
* Available only for white color body.

**Accessory**

| Symbol | Name |
|---|---|
| **KQ2N** | Nipple |
| | Reducer nipple |
| | Adaptor |
| **KQ2C** | Tube cap |
| **KQ2C** | Color cap |
| **KQ2P** | Plug (White) |
| **KQP** | Plug (Blue) |

Use the below part number to order the gasket for M5 and M6 threads.
Gasket for M5 thread: M-5G2
Gasket for M6 thread: M-6G

**Series KQ2: White body**
**Series KQ : Black body**



**Release button**

**Series KQ2: Light gray**
**Series KQ : Blue**
**Light force for removal**

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

**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.

**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.

**Connection thread**

M, R, Rc

**Tube**

**Body**

**O-ring**

**Stud**

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

The body and the threaded portion can rotate. (To the degree for positioning)

PAT.



## One-touch IN/OUT connection. Possible to use in vacuum to –100 kPa

Made to Order

**Made to Order**
(Refer to page 58 for details.)

### Applicable Tubing

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

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

### Product's Color

| Series | Body | Release button |
|---|---|---|
| Series KQ2 | White | Light gray |
| Series KQ | Black | Blue |

### Specifications

| | | |
|---|---|---|
| **Fluid** | | Air/Water (2) |
| **Operating pressure range** (3) | | –100 kPa to 1 MPa |
| **Proof pressure** | | 3 MPa |
| **Ambient and fluid temperature** | | –5 to 60°C, Water: 0 to 40°C (No freezing) |
| **Thread** | **Mounting section** | JIS B0203 (Taper thread for piping)<br>JIS B0205 (Metric coarse thread) |
| | **Nut section** | JIS B0205 (Metric fine thread) |
| **Seal on the threads** | | With sealant or none |

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.

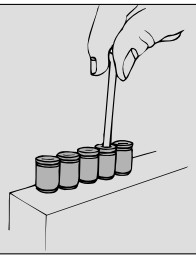
### Principal Parts Material

| | |
|---|---|
| Body | C3604, PBT, PP |
| Stud | C3604 (Thread portion) |
| Chuck | Stainless steel 304 |
| Guide | Stainless steel 304, C3604, PBT |
| Collet, Release button | POM |
| Seal, O-ring | NBR |
| Gasket | Stainless steel 304, NBR |

## Model

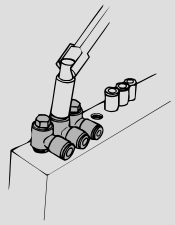
**Hex. socket head male connector**
**KQ2S** P. 42

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



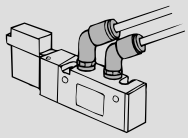
**Universal male elbow**
**KQ2V** P. 45

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



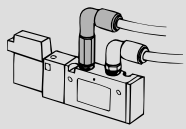
**45° male elbow**
**KQ2K** P. 44

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



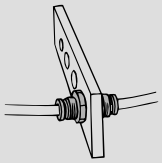
**Extended male elbow**
**KQ2W** P. 50

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



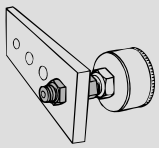
**Bulkhead union**
**KQ2E** P. 56

Use to connect tubes through a panel.



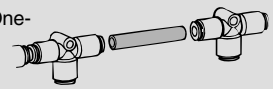
**Bulkhead connector**
**KQ2E** P. 56

Use to connect male thead and tube through a panel.



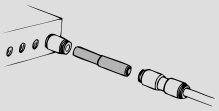
**Nipple**
**KQ2N** P. 57

Use to connect One-touch fittings.



**Reducer nipple**
**KQ2N** P. 57

Use to connect One-touch fittings that are different tubing O.D.s.



**Male connector**
**KQ2H** P. 42

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

**Male elbow**
**KQ2L** P. 43

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

**Male branch tee**
**KQ2T**

P. 50

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

**Female connector**
**KQ2F** P. 42

Use to pipe from male thread such as pressure gauge.

**Union elbow**
**KQ2L** P. 48

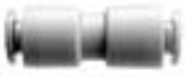
Use to connect tubes at right angles.

**Union tee**
**KQ2T**

P. 51

Use to connect tubes in both 90° directions.

**Straight union**
**KQ2H** P. 43



Use to connect tubes in the same direction.

**Plug-in elbow**
**KQ2L**

P. 49

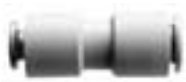
Use to change by 90° in a tube fetching direction from One-touch fittings.

**Different diameter tee**
**KQ2T**

P. 51

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

**Different diameter straight**
**KQ2H** P. 43



Use to connect different sized tubes.

**Reducer elbow**
**KQ2L**

P. 49

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

**Different diameter tee**
**KQ2T**

P. 51

Use to branch line with size down in both side 90° direction.

**Cross**
**KQ2TW**

P. 51

Use to four-branch line.

**Different diameter cross**
**KQ2TX**

P. 51

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

**Different diameter cross**
**KQ2TY**

P. 52

Use to branch line with size down in three directions.

**Hexagon socket head universal male elbow**
**KQ2VS** P. 45

Hex. on the top allows thread connection by using an allen wrench for confined spaces.

**Male branch connector**
**KQ2LU** P. 44

Use to branch piping at right angles to female thread.

**Universal female elbow**
**KQ2VF** P. 46

Use to branch line in the same direction or at the right angles from male or female thread. Multiplex connection possible.

**Female elbow**
**KQ2LF** P. 46

Use to pipe at right angles to male thread.

**Double universal male elbow**
**KQ2VD** P. 46

Use to branch line at right angles to female thread. Two individual parts rotate 360°.

**Triple universal male elbow**
**KQ2VT** P. 47

Use to three-branch line at right angles from female thread. Three individual parts rotate 360°.

**Branch universal male elbow**
**KQ2Z** P. 47

Hexagonal head allows thread connection by using a box wrench. Use for branch connection.

**Branch universal female elbow**
**KQ2ZF** P. 47

Use to branch line in the same direction or at right angles from male or female thread. Multiplex connection possible.

**Double branch universal male elbow**
**KQ2ZD** P. 48

Use to four-branch line at right angles from female thread. Two individual parts rotate 360°.

**Male run tee**
**KQ2Y** P. 52

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

**Triple branch universal male elbow**
**KQ2ZT** P. 48

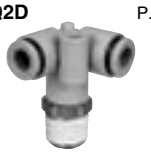
Use to six-branch line at right angles from female thread. Three individual parts rotate 360°.

**Branch union elbow**
**KQ2LU** P. 49

Use to branch line at right angles.

**Extended plug-in elbow**
**KQ2W** P. 49

When the elbow extends over a standard elbow for ease of connection/ disconnection of tube.

**Male delta union**
**KQ2D** P. 53

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

**Delta union**
**KQ2D** P. 53

Use to branch in tripple 90° direction.

**Delta branch**
**KQ2UD** P. 54

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

**Different dia. double union "Y"**
**KQ2UD** P. 54

Use to four-branch line in the same direction with size down.

**Different diameter plug-in "Y"**
**KQ2X** P. 55

Use to branch line from One-touch fitting with size down.

**Double plug-in "Y"**
**KQ2XD** P. 55

Use to four-branch line from One-touch fitting.

**Union "Y"**
**KQ2U** P. 54

Use to branch line in the same direction.

**Different dia. union "Y"**
**KQ2U** P. 54

Use to branch line with size down in the same direction.

**Plug-in "Y"**
**KQ2U** P. 55

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

**Branch "Y"**
**KQ2U** P. 53

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

**Plug-in reducer**
**KQ2R** P. 56

Use to change size of One-touch fittings.

**Bulkhead male elbow**
**KQ2LE** P. 56

Use to connect tubes through a panel, changing by 90° in a tube fetching direction.

**Adaptor**
**KQ2N** P. 57

Use to connect fitting and R female thread.

**Tube cap**
**KQ2C** P. 57

Use to plug unused tube.

**Color cap**
**KQ2C** P. 57

Mounted on the release button corresponding to its applications. Distinguished by color.

**Plug**
**KQ2P, KQP** P. 57

Use to plug unused One-touch fittings.
KQP (Blue)
KQ2P (White)

## Male Connector: KQ2H

**<M5, M6>**

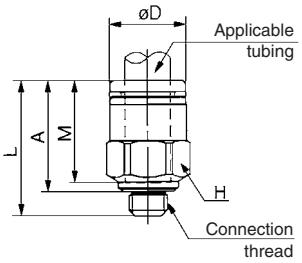
**<R>**

| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | øD (1) | L | A* | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KQ2H23-M5 | 7 | 7 | 16.7 | 13.6 | 12.7 | 3 | 2.5 | 2.1 |
| | 1/8 | KQ2H23-01S | 10 | – | 21.1 | 18 | 15.5 | 3.4 | 2.9 | 9 |
| | 1/4 | KQ2H23-02S | 14 | – | 19 | 13.5 | | | | 16 |
| 4 | M5 x 0.8 | KQ2H04-M5 | 8 | 8 | 17 | 13.9 | 12.7 | 4 | 4 | 2.4 |
| | M6 x 1.0 | KQ2H04-M6 | 8 | | 18 | | | | | 2.5 |
| | 1/8 | KQ2H04-01S | 10 | – | 21.1 | 18 | 16 | 5.6 | 4 | 9 |
| | 1/4 | KQ2H04-02S | 14 | – | 19 | 13.5 | | | | 16 |
| 6 | M5 x 0.8 | KQ2H06-M5 | 10 | 10 | 17.8 | 14.7 | 13.5 | 4 | 4 | 3.3 |
| | M6 x 1.0 | KQ2H06-M6 | 10 | | 19 | 14.9 | | | | 3.4 |
| | 1/8 | KQ2H06-01S | 12 | – | 21.6 | 18.5 | 17 | 13.1 | 10.4 | 16 |
| | 1/4 | KQ2H06-02S | 14 | – | 22.5 | 17 | | | | 14 |
| | 3/8 | KQ2H06-03S | 17 | – | 20.9 | 15.5 | | | | 27 |
| 8 | 1/8 | KQ2H08-01S | 14 | – | 27.1 | 24 | 18.5 | 26.1 | 18.0 | 21 |
| | 1/4 | KQ2H08-02S | | | 26 | 20.5 | | | | 19 |
| | 3/8 | KQ2H08-03S | 17 | | 20.9 | 15.5 | | | | 26 |
| 10 | 1/8 | KQ2H10-01S | 17 | – | 29.1 | 26 | 21 | 26.1 | 26.1 | 19 |
| | 1/4 | KQ2H10-02S | | | 33 | 27.5 | | 41.5 | 29.5 | 30 |
| | 3/8 | KQ2H10-03S | | | 27.9 | 22.5 | | | | 30 |
| | 1/2 | KQ2H10-04S | 22 | | 26.1 | 19 | | | | 53 |
| 12 | 1/4 | KQ2H12-02S | 19 | – | 34 | 28.5 | 22 | 58.3 | 46.1 | 42 |
| | 3/8 | KQ2H12-03S | | | 28.9 | 23.5 | | | | 34 |
| | 1/2 | KQ2H12-04S | 22 | | 29.1 | 22 | | | | 51 |
| 16 | 3/8 | KQ2H16-03S | 24 | 25.7 | 38.4 | 33 | 25 | 81 | (81) | 61 |
| | 1/2 | KQ2H16-04S | | | 34.6 | 27.5 | | 113 | (96) | 47 |

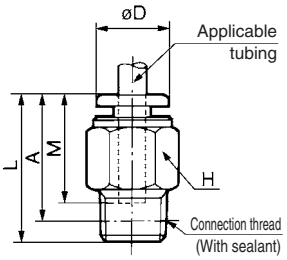
∗ Reference dimensions after R thread installation.

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

**<M5, M6>**




**<R>**




## Hexagon Socket Head Male Connector: KQ2S

**<M5, M6>**

**<R>**

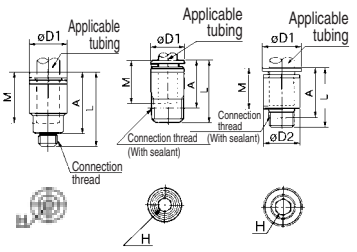
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | øD1 (1) | øD2 | L | A* | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2S04-M5 | 2.5 | 8 | – | 18.7 | 15.6 | 12.7 | 4 | 4 | 2.7 |
| | M6 x 1.0 | KQ2S04-M6 | 3 | | | 18.2 | 14.1 | | | | 2.8 |
| | 1/8 | KQ2S04-01S | | 9.8 | | 23 | 19 | 16 | 4.1 | 3.6 | 8 |
| 6 | M5 x 0.8 | KQ2S06-M5 | 2.5 | 10 | – | 19.5 | 16.4 | 13.5 | 4 | 4 | 3.3 |
| | M6 x 1.0 | KQ2S06-M6 | 3 | | | 19.1 | 15 | | | | 3.4 |
| | 1/8 | KQ2S06-01S | 4 | 11.8 | | 24 | 20 | 17 | 10.0 | 9.9 | 9 |
| | 1/4 | KQ2S06-02S | | 13.8 | | 24 | 18 | | 10.7 | 10.0 | 15 |
| 8 | 1/8 | KQ2S08-01S | 5 | 14 | – | 28 | 24 | 18.5 | 17.2 | 16.2 | 12 |
| | 1/4 | KQ2S08-02S | 6 | | | 25.5 | 19.5 | | 23.3 | | 11 |
| | 3/8 | KQ2S08-03S | | 17 | | 27.5 | 21 | | | | 24 |
| 10 | 1/8 | KQ2S10-01S | 5 | 17 | – | 30 | 26 | 21 | 17.2 | 16.2 | 18 |
| | 1/4 | KQ2S10-02S | 8 | | | 27.5 | 21.5 | | 39.0 | 26.6 | 12 |
| | 3/8 | KQ2S10-03S | | | | | 21 | | | | 19 |
| | 1/2 | KQ2S10-04S | | 22 | | 28 | 20 | | | | 35 |
| 12 | 1/4 | KQ2S12-02S | 8 | 19 | – | 34 | 28 | 22 | 46.0 | 44.5 | 23 |
| | 3/8 | KQ2S12-03S | 10 | | | 29 | 22.5 | | 60.0 | | 18 |
| | 1/2 | KQ2S12-04S | | 22 | | 28 | 20 | | | | 30 |
| 16 | 3/8 | KQ2S16-03S | 10 | 25.7 | 24 | 39 | 32.5 | 25 | 81 | (81) | 42 |
| | 1/2 | KQ2S16-04S | 12 | | | 35 | 27 | | 113 | (96) | 34 |

∗ Reference dimensions after R thread installation.

Note 1) øD1: Max. diameter
Note 2) ( ): Values for soft nylon.

**<M5, M6> <R>**

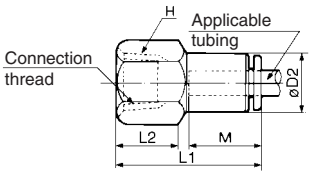
**KQ2S04 to 12** **KQ2S16**



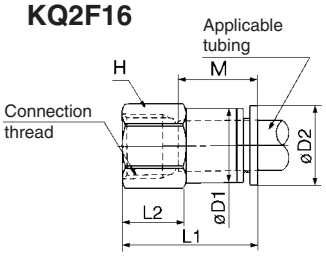

## Female Connector: KQ2F

| Applicable tubing O.D. (mm) | Connection thread Rc | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2F04-01 | 14 | – | 10 | 27 | 11 | 16 | 5.6 | 4 | 15 |
| | 1/4 | KQ2F04-02 | 17 | | | 31 | 14 | | | | 23 |
| 6 | 1/8 | KQ2F06-01 | 14 | – | 12 | 27.5 | 11 | 17 | 13.1 | 10.4 | 15 |
| | 1/4 | KQ2F06-02 | 17 | | | 31 | 13 | | | | 22 |
| | 3/8 | KQ2F06-03 | 19 | | | 33.5 | 15 | | | | 25 |
| 8 | 1/8 | KQ2F08-01 | 14 | – | 14 | 29 | 11 | 18.5 | 26.1 | 18.0 | 17 |
| | 1/4 | KQ2F08-02 | 17 | | | 32.5 | 13 | | | | 24 |
| | 3/8 | KQ2F08-03 | 19 | | | 33.5 | 14 | | | | 24 |
| 10 | 1/4 | KQ2F10-02 | 17 | – | 17 | 34.5 | 14 | 21 | 41.5 | 29.5 | 27 |
| | 3/8 | KQ2F10-03 | 19 | | | 36.5 | 15 | | | | 30 |
| 12 | 1/4 | KQ2F12-02 | 19 | – | 19 | 35 | 14 | 22 | 58.3 | 46.1 | 36 |
| | 3/8 | KQ2F12-03 | | | | 37 | | | | | 31 |
| | 1/2 | KQ2F12-04 | 24 | | | 41 | 18 | | | | 52 |
| 16 | 3/8 | KQ2F16-03 | 24 | 24 | 25.7 | 38 | 15 | 25 | 81 | (81) | 59 |
| | 1/2 | KQ2F16-04 | | | | 43 | 19 | | 113 | (96) | 58 |

**KQ2F04 to 12**

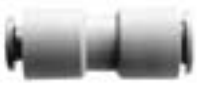



**KQ2F16**



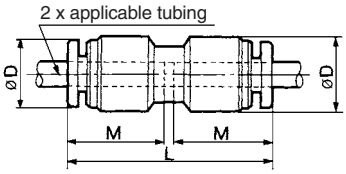

Note 1) øD2: Max. diameter
Note 2) ( ): Values for soft nylon

## Straight Union: KQ2H

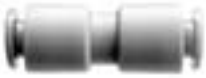


| Applicable tubing O.D. (mm) | Model | øD (1) | L | M | Effective area (2) (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|
| | | | | | Nylon | Urethane | |
| **3.2** | **KQ2H23-00** | 9.6 | 31.5 | 15.5 | 3.4 | 2.9 | 3 |
| **4** | **KQ2H04-00** | 10.4 | 32.5 | 16 | 5.6 | 4 | 3 |
| **6** | **KQ2H06-00** | 12.8 | 34.5 | 17 | 13.1 | 10.4 | 4 |
| **8** | **KQ2H08-00** | 15.2 | 38.5 | 18.5 | 26.1 | 18.0 | 6 |
| **10** | **KQ2H10-00** | 18.5 | 42.5 | 21 | 41.5 | 29.5 | 11 |
| **12** | **KQ2H12-00** | 20.9 | 44.5 | 22 | 58.3 | 46.1 | 14 |
| **16** | **KQ2H16-00** | 26.5 | 51 | 25 | 113 | (96) | 24 |

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

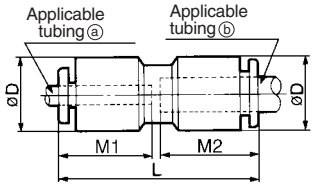



## Different Diameter Straight: KQ2H



| Applicable tubing O.D. (mm) | | Model | Note) øD | L | M1 | M2 | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| ⓐ | ⓑ | | | | | | Nylon | Urethane | |
| **3.2** | **4** | **KQ2H23-04** | 10.4 | 32.5 | 15.5 | 16 | 3.4 | 2.9 | 3 |
| **4** | **6** | **KQ2H04-06** | 12.8 | 34.5 | 16 | 17 | 5.6 | 5.6 | 5 |
| **6** | **8** | **KQ2H06-08** | 15.2 | 38.5 | 17 | 18.5 | 13.1 | 10.4 | 6 |
| **8** | **10** | **KQ2H08-10** | 18.5 | 42 | 18.5 | 21 | 26.1 | 18.0 | 11 |
| **10** | **12** | **KQ2H10-12** | 20.9 | 44.5 | 21 | 22 | 41.5 | 29.5 | 14 |
| **12** | **16** | **KQ2H12-16** | 26.5 | 56.5 | 22 | 25 | 58.3 | 46.1 | 47 |

Note) øD: Max. diameter




## Male Elbow: KQ2L

**<M5>**

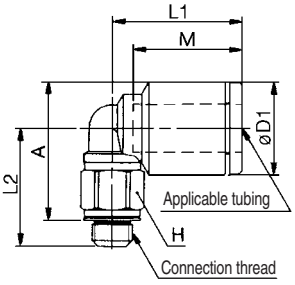
**<M6>**

**<R>**

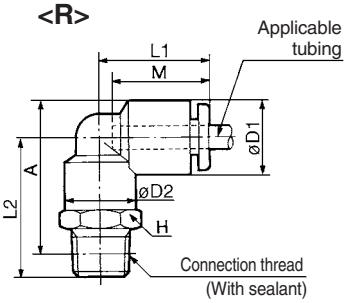
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | A* | M | Effective area (2) (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Nylon | Urethane | |
| **3.2** | M5 x 0.8 | **KQ2L23-M5** | 7 | 8.5 | — | 15.3 | 13.2 | 14.3 | 12.7 | 2.6 | 2.2 | 2.5 |
| | 1/8 | **KQ2L23-01S** | 10 | 9.6 | 10 | 17.5 | 20.6 | 22.5 | 15.5 | 3 | 2.5 | 8 |
| | 1/4 | **KQ2L23-02S** | 14 | | | | 25 | 24.5 | | | | 18 |
| **4** | M5 x 0.8 | **KQ2L04-M5** | 7 | 9.3 | — | 15.6 | 13.7 | 15.3 | 12.7 | 3.5 | 3.5 | 2.7 |
| | M6 x 1.0 | **KQ2L04-M6** | 8 | | | | 14.7 | | | | | 3.6 |
| | 1/8 | **KQ2L04-01S** | 10 | 10.4 | 10 | 18 | 21.1 | 23 | 16 | 4.2 | 4.2 | 10 |
| | 1/4 | **KQ2L04-02S** | 14 | | | | 25.5 | 25 | | | | 19 |
| **6** | M5 x 0.8 | **KQ2L06-M5** | 7 | 11.6 | — | 16.1 | 14.7 | 17.4 | 13.5 | 3.5 | 3.5 | 3.2 |
| | M6 x 1.0 | **KQ2L06-M6** | 8 | | | | 15.7 | | | | | 4.1 |
| | 1/8 | **KQ2L06-01S** | 10 | 12.8 | 10 | 20 | 22.1 | 25.5 | 17 | 11.4 | 9.0 | 12 |
| | 1/4 | **KQ2L06-02S** | 14 | | | | 26.5 | 27.5 | | | | 22 |
| | 3/8 | **KQ2L06-03S** | 17 | | | | 27.9 | 29 | | | | 33 |
| **8** | 1/8 | **KQ2L08-01S** | 12 | 15.2 | 12 | 23 | 23.6 | 28 | 18.5 | 21.6 | 14.9 | 13 |
| | 1/4 | **KQ2L08-02S** | 14 | | | | 28 | 30 | | | | 21 |
| | 3/8 | **KQ2L08-03S** | 17 | | | | 29.4 | 31.5 | | | | 35 |
| **10** | 1/8 | **KQ2L10-01S** | 17 | 18.5 | 17 | 26.5 | 26.1 | 32 | 21 | 21.6 | 14.9 | 25 |
| | 1/4 | **KQ2L10-02S** | | | | | 29.5 | 33 | | 35.2 | 25.0 | 26 |
| | 3/8 | **KQ2L10-03S** | | | | | 30.9 | 34.5 | | | | 36 |
| | 1/2 | **KQ2L10-04S** | 22 | | | | 35.1 | 37 | | | | 63 |
| **12** | 1/4 | **KQ2L12-02S** | 17 | 20.9 | 17 | 28.5 | 30.5 | 35.5 | 22 | 50.2 | 39.7 | 28 |
| | 3/8 | **KQ2L12-03S** | | | | | 31.9 | 37 | | | | 38 |
| | 1/2 | **KQ2L12-04S** | 22 | | | | 36.1 | 39.5 | | | | 65 |
| **16** | 3/8 | **KQ2L16-03S** | 22 | 26.5 | 20.9 | 34 | 36.9 | 44.5 | 25 | 71 | (71) | 101 |
| | 1/2 | **KQ2L16-04S** | | | | | 40.1 | 46 | | 100 | (84) | 105 |

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

**<M5, M6>**




**<R>**



## Male Branch Connector: KQ2LU

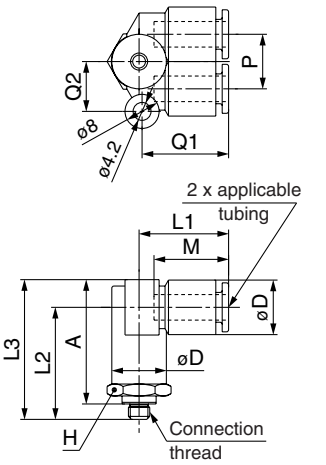
<M5, M6>

<R>

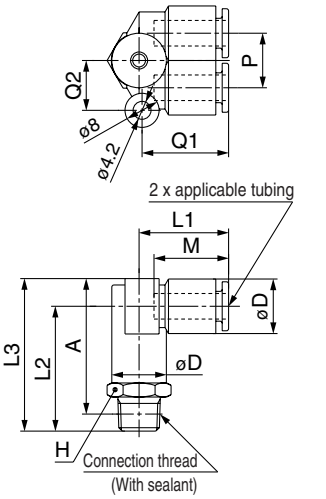
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | Note) øD | L1 | L2 | L3 | A* | M | P | Q1 | Q2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2LU04-M5 | 11 | 10.4 | 18.5 | 24 | 29.5 | 25.5 | 16 | 10.4 | 18.5 | 10 | 4.3 | 4.1 | 10 |
| | M6 x 1.0 | KQ2LU04-M6 | | | | 24.5 | 30 | | | | | | | | |
| | 1/8 | KQ2LU04-01S | | | | 25.6 | 31.1 | 27.5 | | | | | 6.0 | 4.1 | 12 |
| | 1/4 | KQ2LU04-02S | 14 | | | 30 | 35.5 | 30 | | | | | | | 21 |
| 6 | M5 x 0.8 | KQ2LU06-M5 | 13 | 12.8 | 21 | 26.5 | 33 | 29.5 | 17 | 12.8 | 20.5 | 12 | 4.3 | 4.3 | 13 |
| | M6 x 1.0 | KQ2LU06-M6 | | | | 27 | 33.5 | | | | | | | | |
| | 1/8 | KQ2LU06-01S | | | | 28.6 | 35.1 | 32 | | | | | 13.9 | 11.0 | 15 |
| | 1/4 | KQ2LU06-02S | 14 | | | 32.5 | 39 | 33.5 | | | | | | | 22 |
| | 3/8 | KQ2LU06-03S | 17 | | | 33.9 | 40.4 | 35 | | | | | | | 35 |
| 8 | 1/8 | KQ2LU08-01S | 17 | 15.2 | 24 | 33.1 | 40.6 | 38 | 18.5 | 15.2 | 24.5 | 14 | 26.3 | 18.2 | 27 |
| | 1/4 | KQ2LU08-02S | | | | 36.5 | 44 | 38.5 | | | | | | | |
| | 3/8 | KQ2LU08-03S | | | | 36.9 | 44.4 | 39 | | | | | | | 35 |
| 10 | 1/4 | KQ2LU10-02S | 19 | 18.5 | 27 | 39.5 | 49 | 43.5 | 21 | 18.5 | 28 | 16 | 40.8 | 29.0 | 41 |
| | 3/8 | KQ2LU10-03S | | | | 39.9 | 49.4 | 44 | | | | | | | 42 |
| | 1/2 | KQ2LU10-04S | 22 | | | 43.6 | 53.1 | 45.5 | | | | | | | 64 |
| 12 | 1/4 | KQ2LU12-02S | 22 | 20.9 | 29 | 42 | 52.5 | 47 | 22 | 20.9 | 30 | 18 | 57.2 | 45.2 | 57 |
| | 3/8 | KQ2LU12-03S | | | | 42.4 | 52.9 | 47.5 | | | | | | | 58 |
| | 1/2 | KQ2LU12-04S | | | | 45.6 | 56.1 | 49 | | | | | | | 65 |

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

<M5, M6>




<R>




## 45° Male Elbow: KQ2K

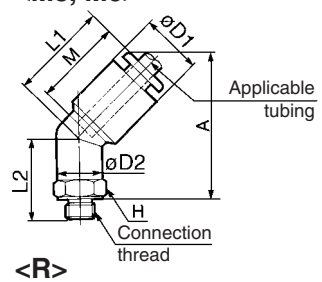
<M5, M6>

<R>

| Applicable tubing O.D. (mm) | Connection thread R M | 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 | KQ2K04-M5 | 8 | 10.4 | 8 | 17 | 14.5 | 26 | 16 | 3.4 | 3.4 | 4 |
| | M6 x 1.0 | KQ2K04-M6 | | | | | 15 | | | | | 5 |
| | 1/8 | KQ2K04-01S | 10 | | 10 | | 19.6 | 32 | | | | 10 |
| | 1/4 | KQ2K04-02S | 14 | | | | 24 | 34 | | | | 19 |
| 6 | M5 x 0.8 | KQ2K06-M5 | 8 | 12.8 | 8 | 18 | 14.5 | 27.5 | 17 | 3.4 | 3.4 | 6 |
| | M6 x 1.0 | KQ2K06-M6 | | | | 18.5 | 15 | | | | | 5 |
| | 1/8 | KQ2K06-01S | 10 | | 10 | 18 | 19.6 | 33 | | 8.7 | 6.9 | 12 |
| | 1/4 | KQ2K06-02S | 14 | | | | 24 | 35 | | | | 10 |
| | 3/8 | KQ2K06-03S | 17 | | | | 25.4 | 36.5 | | | | 33 |
| 8 | 1/8 | KQ2K08-01S | 12 | 15.2 | 12 | 20.5 | 21.1 | 37 | 18.5 | 19.7 | 19.7 | 13 |
| | 1/4 | KQ2K08-02S | 14 | | | | 25.5 | 39 | | | | 21 |
| | 3/8 | KQ2K08-03S | 17 | | | | 26.9 | 41 | | | | 35 |
| 10 | 1/8 | KQ2K10-01S | 17 | 18.5 | 17 | 24 | 23.1 | 42 | 21 | 30.9 | 23.2 | 25 |
| | 1/4 | KQ2K10-02S | | | | | 26.5 | 43.5 | | | | 26 |
| | 3/8 | KQ2K10-03S | | | | | 27.9 | 45 | | | | 36 |
| | 1/2 | KQ2K10-04S | 22 | | | | 32.1 | 47.5 | | | | 63 |
| 12 | 1/4 | KQ2K12-02S | 17 | 20.9 | 17 | 25 | 27 | 45.5 | 22 | 44.5 | 35.1 | 28 |
| | 3/8 | KQ2K12-03S | | | | | 28.4 | 47.5 | | | | 38 |
| | 1/2 | KQ2K12-04S | 22 | | | | 32.6 | 49.5 | | | | 65 |
| 16 | 3/8 | KQ2K16-03S | 22 | 26.5 | 20.9 | 30 | 30.9 | 55 | 25 | 65.8 | (65.8) | 52 |
| | 1/2 | KQ2K16-04S | | | | | 34.1 | 56.5 | | 91.9 | (78.3) | 58 |

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

<M5, M6>

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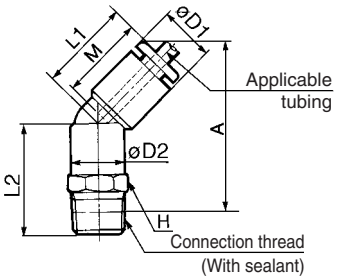


## Universal Male Elbow: KQ2V

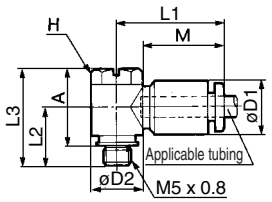
**<M5>**

**<R>**

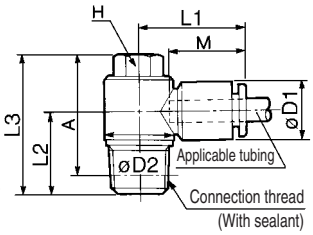
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | (1) øD1 | øD2 | L1 | L2 | L3 | A* | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2V04-M5 | 8 | 10.4 | 9.8 | 20.5 | 11 | 18.5 | 15 | 16 | 2.9 | 2.9 | 6 |
| | 1/8 | KQ2V04-01S | | | 13.4 | 22 | 13.6 | 25.6 | 22.5 | | | | 14 |
| 6 | M5 x 0.8 | KQ2V06-M5 | 8 | 12.8 | 9.8 | 23.5 | 12 | 18.5 | 15 | 17 | 3.8 | 3.8 | 7 |
| | 1/8 | KQ2V06-01S | | | 13.4 | 24 | 13.6 | 25.6 | 22.5 | | 7.5 | 5.9 | 15 |
| | 1/4 | KQ2V06-02S | 10 | | 15.4 | 23.5 | 18 | 30.5 | 25 | | | | 26 |
| 8 | 1/8 | KQ2V08-01S | 12 | 15.2 | 17.6 | 28.5 | 14.6 | 27.6 | 24.5 | 18.5 | 16 | 11.2 | 24 |
| | 1/4 | KQ2V08-02S | | | | | 18 | 31 | 25.5 | | | | 30 |
| | 3/8 | KQ2V08-03S | 14 | | 20.6 | 27.5 | 19.4 | 35.4 | 30 | | 20.5 | 14.3 | 47 |
| 10 | 1/4 | KQ2V10-02S | 14 | 18.5 | 20.6 | 31 | 19 | 35 | 29.5 | 21 | 27 | 20.3 | 40 |
| | 3/8 | KQ2V10-03S | | | | | 19.4 | 35.4 | 30 | | | | 49 |
| 12 | 3/8 | KQ2V12-03S | 17 | 20.9 | 25.2 | 34 | 20.9 | 37.4 | 32 | 22 | 39 | 30.8 | 63 |
| | 1/2 | KQ2V12-04S | | | | | 24.1 | 40.6 | 33.5 | | | | 80 |
| 16 | 3/8 | KQ2V16-03S | 21 | 26.5 | 32.3 | 39 | 25.4 | 45.4 | 40.5 | 25 | 55 | (55) | 103 |
| | 1/2 | KQ2V16-04S | | | | | 28.6 | 48.6 | 41.5 | | 78 | (65) | 110 |

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

**<M5>**




**<R>**




## Hexagon Socket Head Universal Male Elbow: KQ2VS

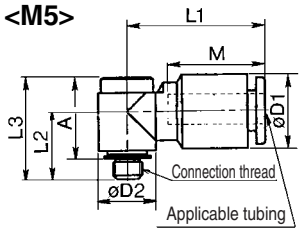
**<M5>**

**<R>**

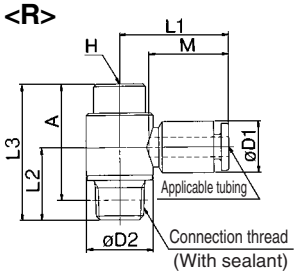
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2VS04-M5 | 4 | 10.4 | 9.8 | 20.5 | 10.5 | 18 | 15 | 16 | 2.9 | 2.9 | 6 |
| | 1/8 | KQ2VS04-01S | 6 | | 13.4 | 22 | 13.6 | 25.6 | 22.5 | | | | 14 |
| 6 | M5 x 0.8 | KQ2VS06-M5 | 4 | 12.8 | 9.8 | 23.5 | 12 | 18 | 15 | 17 | 3.8 | 3.8 | 7 |
| | 1/8 | KQ2VS06-01S | 6 | | 13.4 | 24 | 13.6 | 25.6 | 22.5 | | 7.5 | 5.9 | 15 |
| | 1/4 | KQ2VS06-02S | | | 15.3 | 23.5 | 18 | 26.5 | 21 | | | | 22 |
| 8 | 1/8 | KQ2VS08-01S | 8 | 15.2 | 17.6 | 28.5 | 14.6 | 26.1 | 23 | 18.5 | 16 | 11.2 | 24 |
| | 1/4 | KQ2VS08-02S | | | | | 18 | 29.5 | 24 | | | | 30 |
| | 3/8 | KQ2VS08-03S | | | 20.6 | 27.5 | 19.4 | 31.4 | 26 | | 20.5 | 14.3 | 47 |
| 10 | 1/4 | KQ2VS10-02S | 8 | 18.5 | 20.6 | 31 | 19 | 31 | 25 | 21 | 27 | 20.3 | 32 |
| | 3/8 | KQ2VS10-03S | | | | | 19.4 | 31.4 | 26 | | | | 39 |
| 12 | 3/8 | KQ2VS12-03S | 10 | 20.9 | 25.2 | 34 | 20.9 | 34.9 | 30 | 22 | 39 | 30.8 | 48 |
| | 1/2 | KQ2VS12-04S | | | | | 24.1 | 38.1 | 31 | | | | 67 |

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

**<M5>**




**<R>**



## Universal Female Elbow: KQ2VF

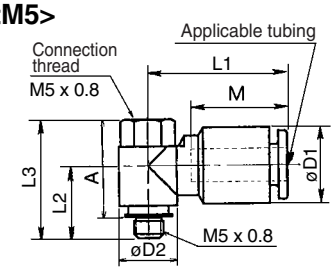
**<M5>**

**<R>**

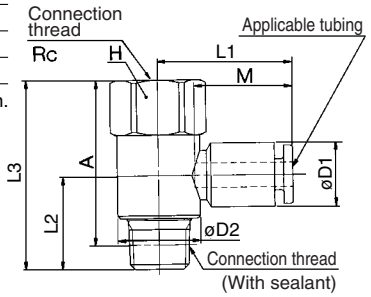
| Applicable tubing O.D. (mm) | Connection thread Rc R | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2VF04-M5 | 8 | 10.4 | 9.8 | 20.5 | 11 | 20 | 16 | 16 | 6 |
| | 1/8 | KQ2VF04-01S | 14 | | 13.4 | 22 | 14.6 | 28.6 | 25.5 | | 19 |
| 6 | M5 x 0.8 | KQ2VF06-M5 | 8 | 12.8 | 9.8 | 23.5 | 12.5 | 20 | 16 | 17 | 7 |
| | 1/8 | KQ2VF06-01S | 14 | | 13.4 | 24.5 | 14.6 | 28.6 | 25.5 | | 19 |
| | 1/4 | KQ2VF06-02S | 17 | | 17.6 | 25 | 19.5 | 38 | 32.5 | | 36 |
| 8 | 1/8 | KQ2VF08-01S | 17 | 15.2 | 17.6 | 28.5 | 16.1 | 30.1 | 27 | 18.5 | 29 |
| | 1/4 | KQ2VF08-02S | | | | | 19.5 | 38 | 32.5 | | 37 |
| | 3/8 | KQ2VF08-03S | 22 | | 25.2 | 29.5 | 24.4 | 44.4 | 39 | | 66 |
| 10 | 1/4 | KQ2VF10-02S | 19 | 18.5 | 20.6 | 31.5 | 21.5 | 40.5 | 35 | 21 | 48 |
| | 3/8 | KQ2VF10-03S | 22 | | 25.2 | | 23.4 | 44.4 | 39 | | 68 |
| 12 | 3/8 | KQ2VF12-03S | 22 | 20.9 | 25.2 | 34 | 23.4 | 44.4 | 39 | 22 | 70 |
| | 1/2 | KQ2VF12-04S | 24 | | 27 | 35 | 24.6 | 49.1 | 42 | | 93 |

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

**<M5>**




**<R>**




## Female Elbow: KQ2LF

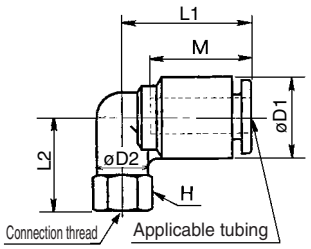
**<M5, M6>**

**<Rc>**

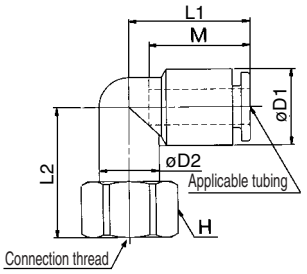
| Applicable tubing O.D. (mm) | Connection thread Rc | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2LF04-M5 | 8 | 10.4 | 8 | 18.5 | 14.5 | 16 | 3.5 | 3.5 | 5 |
| | M6 x 1.0 | KQ2LF04-M6 | | | | | 15.5 | | | | |
| | 1/8 | KQ2LF04-01 | 14 | | 10 | | 21 | | 4.2 | 4.2 | 13 |
| | 1/4 | KQ2LF04-02 | 17 | | | | 24.5 | | | | 20 |
| 6 | M5 x 0.8 | KQ2LF06-M5 | 8 | 12.8 | 8 | 20.5 | 15 | 17 | 3.5 | 3.5 | 5 |
| | M6 x 1.0 | KQ2LF06-M6 | | | | | 16 | | | | 6 |
| | 1/8 | KQ2LF06-01 | 14 | | 10 | | 22 | | 11.4 | 9.0 | 13 |
| | 1/4 | KQ2LF06-02 | 17 | | | | 25.5 | | | | 20 |
| | 3/8 | KQ2LF06-03 | 19 | | | | 26 | | | | |
| 8 | 1/8 | KQ2LF08-01 | 14 | 15.2 | 12 | 23.5 | 23 | 18.5 | 21.6 | 14.9 | 16 |
| | 1/4 | KQ2LF08-02 | 17 | | | | 26.5 | | | | 22 |
| | 3/8 | KQ2LF08-03 | 19 | | | | 27 | | | | 23 |
| 10 | 1/4 | KQ2LF10-02 | 17 | 18.5 | 17 | 26.5 | 28 | 21 | 21.6 | 14.9 | 27 |
| | 3/8 | KQ2LF10-03 | 19 | | | | 28.5 | | 35.2 | 25.0 | |
| | 1/2 | KQ2LF10-04 | 24 | | | | 32.5 | | | | 46 |
| 12 | 1/4 | KQ2LF12-02 | 17 | 20.9 | 17 | 28.5 | 29.5 | 22 | 50.2 | 39.7 | 29 |
| | 3/8 | KQ2LF12-03 | 19 | | | | 30 | | | | |
| | 1/2 | KQ2LF12-04 | 24 | | | | 34 | | | | 48 |

Note) øD1: Max. diameter

**<M5>**



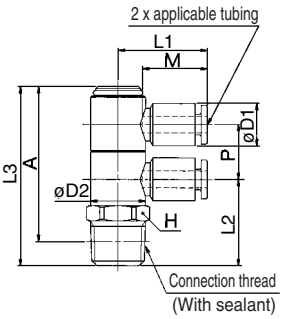

**<R>**




## Double Universal Male Elbow: KQ2VD

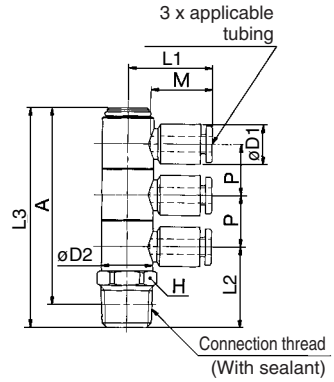
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | P | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2VD04-01S | 14 | 10.4 | 13.4 | 22 | 18.5 | 40.1 | 37 | 16 | 13.4 | 23 |
| | 1/4 | KQ2VD04-02S | | | | | 21.5 | 43.5 | 38 | | | 29 |
| | 3/8 | KQ2VD04-03S | 17 | | | | 23.5 | 44.9 | 40 | | | 42 |
| 6 | 1/8 | KQ2VD06-01S | 14 | 12.8 | 13.4 | 24.5 | 18.5 | 40.1 | 37 | 17 | 13.4 | 24 |
| | 1/4 | KQ2VD06-02S | | | | | 21.5 | 43.5 | 38 | | | 30 |
| | 3/8 | KQ2VD06-03S | 17 | | | | 23.5 | 44.9 | 40 | | | 42 |
| 8 | 1/8 | KQ2VD08-01S | 19 | 15.2 | 17.6 | 28.5 | 21 | 47.1 | 44 | 18.5 | 15.9 | 53 |
| | 1/4 | KQ2VD08-02S | | | | | 24 | 50.5 | 45 | | | 51 |
| | 3/8 | KQ2VD08-03S | | | | | 25 | 50.9 | 45.5 | | | 60 |
| | 1/2 | KQ2VD08-04S | 21 | | | | 28.5 | 54.6 | 47.5 | | | 82 |
| 10 | 1/4 | KQ2VD10-02S | 21 | 18.5 | 20.6 | 31.5 | 26.5 | 57.5 | 52 | 21 | 19.2 | 71 |
| | 3/8 | KQ2VD10-03S | | | | | 27.5 | 57.9 | 53 | | | 74 |
| | 1/2 | KQ2VD10-04S | | | | | 30.5 | 61.1 | 54 | | | 91 |
| 12 | 1/4 | KQ2VD12-02S | 26 | 20.9 | 25.2 | 34 | 28.5 | 64 | 58.5 | 22 | 21.6 | 118 |
| | 3/8 | KQ2VD12-03S | | | | | 29.5 | 64.4 | 59 | | | 113 |
| | 1/2 | KQ2VD12-04S | | | | | 32.5 | 67.6 | 60 | | | 125 |

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



## Triple Universal Male Elbow: KQ2VT

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | P | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2VT04-01S | 14 | 10.4 | 13.4 | 22 | 17.6 | 53.6 | 50.5 | 16 | 13.4 | 29 |
| | 1/4 | KQ2VT04-02S | | | | | 21 | 57 | 51.5 | | | 34 |
| | 3/8 | KQ2VT04-03S | 17 | | | | 22.4 | 58.4 | 53.5 | | | 48 |
| 6 | 1/8 | KQ2VT06-01S | 14 | 12.8 | 13.4 | 24.5 | 17.5 | 53.6 | 50.5 | 17 | 13.4 | 31 |
| | 1/4 | KQ2VT06-02S | | | | | 21 | 57 | 51.5 | | | 37 |
| | 3/8 | KQ2VT06-03S | 17 | | | | 21.9 | 58.4 | 53.5 | | | 50 |
| 8 | 1/8 | KQ2VT08-01S | 19 | 15.2 | 17.6 | 28.5 | 20.1 | 63.1 | 60 | 18.5 | 15.9 | 71 |
| | 1/4 | KQ2VT08-02S | | | | | 23.5 | 66.5 | 61 | | | 66 |
| | 3/8 | KQ2VT08-03S | | | | | 23.9 | 66.9 | 61.5 | | | 75 |
| | 1/2 | KQ2VT08-04S | 21 | | | | 27.6 | 70.6 | 63.5 | | | 96 |
| 10 | 1/4 | KQ2VT10-02S | 21 | 18.5 | 20.6 | 31.5 | 26 | 77 | 71.5 | 21 | 19.2 | 94 |
| | 3/8 | KQ2VT10-03S | | | | | 26.4 | 77.4 | 72 | | | |
| | 1/2 | KQ2VT10-04S | | | | | 29.6 | 80.6 | 73.5 | | | 111 |
| 12 | 1/4 | KQ2VT12-02S | 26 | 20.9 | 25.2 | 34 | 28.4 | 85.9 | 80 | 22 | 21.6 | 153 |
| | 3/8 | KQ2VT12-03S | | | | | 31.6 | 89.1 | 80.5 | | | 142 |
| | 1/2 | KQ2VT12-04S | | | | | 31.6 | 89.1 | 82 | | | 154 |




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

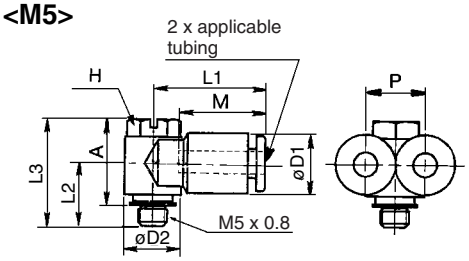
## Branch Universal Male Elbow: KQ2Z

**<M5>**

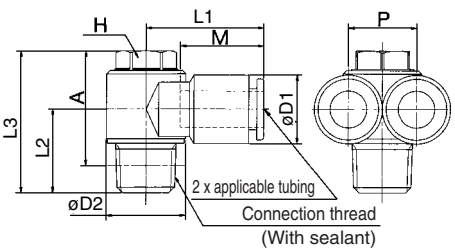
**<R>**

| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | P | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2Z04-M5 | 8 | 10.4 | 9.8 | 19.5 | 11 | 18.5 | 15 | 16 | 10.4 | 3.4 | 3.4 | 8 |
| | 1/8 | KQ2Z04-01S | | | 13.4 | 21 | 13.6 | 25.6 | 22.5 | | | 4.7 | 4.7 | 16 |
| 6 | 1/8 | KQ2Z06-01S | 8 | 12.8 | 13.4 | 22 | 13.6 | 25.6 | 22.5 | 17 | 12.8 | 10.8 | 8.6 | 17 |
| | 1/4 | KQ2Z06-02S | 14 | | 20.6 | 25.5 | 19 | 35 | 29.5 | | | | | 39 |
| | 3/8 | KQ2Z06-03S | | | | | 19.4 | 35.4 | 30 | | | | | 47 |
| 8 | 1/8 | KQ2Z08-01S | 12 | 15.2 | 17.6 | 26 | 14.6 | 27.6 | 24.5 | 18.5 | 15.2 | 20.5 | 14.2 | 27 |
| | 1/4 | KQ2Z08-02S | | | | | 18 | 31 | 25.5 | | | | | 33 |
| | 3/8 | KQ2Z08-03S | 14 | | 20.6 | 27 | 19.4 | 35.4 | 30 | | | | | 49 |
| 10 | 1/4 | KQ2Z10-02S | 14 | 18.5 | 20.6 | 29 | 19 | 35 | 29.5 | 21 | 18.5 | 31.8 | 22.6 | 46 |
| | 3/8 | KQ2Z10-03S | | | | | 19.4 | 35.4 | 30 | | | | | 54 |
| 12 | 3/8 | KQ2Z12-03S | 17 | 20.9 | 25.2 | 32.5 | 20.9 | 37.9 | 32.5 | 22 | 20.9 | 44.6 | 35.3 | 71 |
| | 1/2 | KQ2Z12-04S | | | | | 24.1 | 41.1 | 34 | | | | | 88 |

**<M5>**




**<R>**




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

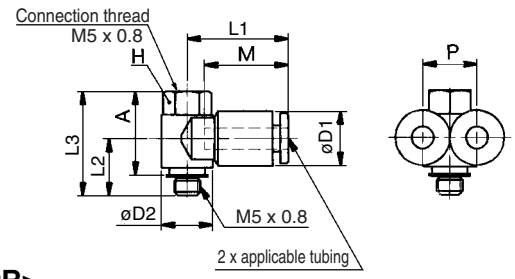
## Branch Universal Female Elbow: KQ2ZF

**<M5>**

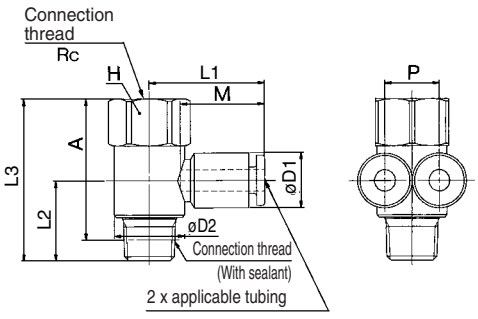
**<R>**

| Applicable tubing O.D. (mm) | Connection thread R M Rc | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | P | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2ZF04-M5 | 8 | 10.4 | 9.8 | 19.5 | 11 | 20 | 16.5 | 16 | 10.4 | 8 |
| | 1/8 | KQ2ZF04-01S | 14 | | 13.4 | 21 | 14.6 | 28.6 | 25.5 | | | 21 |
| 6 | 1/8 | KQ2ZF06-01S | 14 | 12.8 | 13.4 | 22 | 14.6 | 28.6 | 25.5 | 17 | 12.8 | 21 |
| | 1/4 | KQ2ZF06-02S | 19 | | 20.6 | 25.5 | 21.5 | 40.5 | 35 | | | 47 |
| 8 | 1/8 | KQ2ZF08-01S | 17 | 15.2 | 17.6 | 25.5 | 16.1 | 30.1 | 27 | 18.5 | 15.2 | 32 |
| | 1/4 | KQ2ZF08-02S | 19 | | 20.6 | 27 | 21.5 | 40.5 | 35 | | | 49 |
| 10 | 1/4 | KQ2ZF10-02S | 19 | 18.5 | 20.6 | 29 | 21.5 | 40.5 | 35 | 21 | 18.5 | 54 |
| | 3/8 | KQ2ZF10-03S | 22 | | 25.2 | 31.5 | 23.4 | 44.4 | 39 | | | 74 |
| 12 | 3/8 | KQ2ZF12-03S | 22 | 20.9 | 25.2 | 32.5 | 23.4 | 44.4 | 39 | 22 | 20.9 | 77 |
| | 1/2 | KQ2ZF12-04S | 24 | | 27 | 33 | 24.1 | 49.1 | 42 | | | 101 |

**<M5>**




**<R>**

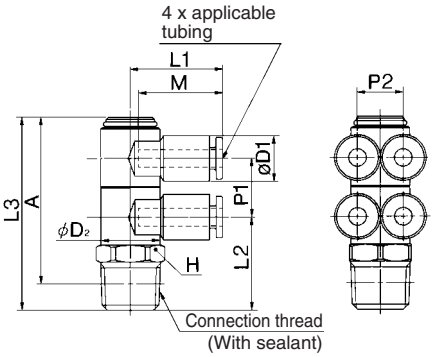



* Reference dimensions after R thread installation.
Note) øD1: Max. diameter

## Double Branch Universal Male Elbow: KQ2ZD

| Applicable tubing O.D. (mm) | Connection threads R | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | P1 | P2 | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2ZD04-01S | 14 | 10.4 | 13.4 | 21 | 17.6 | 40.1 | 37 | 16 | 13.4 | 10.4 | 25 |
| | 1/4 | KQ2ZD04-02S | | | | | 21 | 43.5 | 38 | | | | 31 |
| | 3/8 | KQ2ZD04-03S | 17 | | | | 22.4 | 44.9 | 40 | | | | 44 |
| 6 | 1/8 | KQ2ZD06-01S | 14 | 12.8 | 13.4 | 22 | 17.6 | 40.1 | 37 | 17 | 13.4 | 12.8 | 27 |
| | 1/4 | KQ2ZD06-02S | | | | | 21 | 43.5 | 38 | | | | 33 |
| | 3/8 | KQ2ZD06-03S | 17 | | | | 22.4 | 44.9 | 40 | | | | 46 |
| 8 | 1/8 | KQ2ZD08-01S | 19 | 15.2 | 17.6 | 26 | 20.1 | 47.1 | 44 | 18.5 | 15.9 | 15.2 | 56 |
| | 1/4 | KQ2ZD08-02S | | | | | 23.5 | 50.5 | 45 | | | | 54 |
| | 3/8 | KQ2ZD08-03S | | | | | 23.5 | 50.9 | 45.5 | | | | 62 |
| | 1/2 | KQ2ZD08-04S | 21 | | | | 27.6 | 54.6 | 47.5 | | | | 85 |
| 10 | 1/4 | KQ2ZD10-02S | 21 | 18.5 | 20.6 | 29 | 26 | 57.5 | 52 | 21 | 19.2 | 18.5 | 83 |
| | 3/8 | KQ2ZD10-03S | | | | | 26.4 | 57.9 | 53 | | | | 85 |
| | 1/2 | KQ2ZD10-04S | | | | | 29.6 | 61.1 | 54 | | | | 102 |
| 12 | 1/4 | KQ2ZD12-02S | 26 | 20.9 | 25.2 | 32 | 28 | 64 | 58.5 | 22 | 21.6 | 20.9 | 134 |
| | 3/8 | KQ2ZD12-03S | | | | | 28.5 | 64.4 | 59 | | | | 130 |
| | 1/2 | KQ2ZD12-04S | | | | | 31.6 | 67.6 | 60 | | | | 141 |

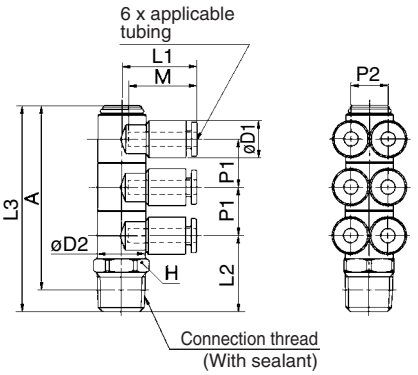
∗ Reference dimensions after R thread installation.
Note) øD1: Max. diameter




## Triple Branch Universal Male Elbow: KQ2ZT

| Applicable tubing O.D. (mm) | Connection threads R | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | P1 | P2 | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2ZT04-01S | 14 | 10.4 | 13.4 | 21 | 16.7 | 53.6 | 50.5 | 16 | 13.4 | 10.4 | 34 |
| | 1/4 | KQ2ZT04-02S | | | | | 20.5 | 57 | 51.5 | | | | 40 |
| | 3/8 | KQ2ZT04-03S | 17 | | | | 22.4 | 58.4 | 53.5 | | | | 53 |
| 6 | 1/8 | KQ2ZT06-01S | 14 | 12.8 | 13.4 | 22 | 17.6 | 53.6 | 50.5 | 17 | 13.4 | 12.8 | 38 |
| | 1/4 | KQ2ZT06-02S | | | | | 21 | 57 | 51.5 | | | | 43 |
| | 3/8 | KQ2ZT06-03S | 17 | | | | 22.4 | 58.4 | 53.5 | | | | 57 |
| 8 | 1/8 | KQ2ZT08-01S | 19 | 15.2 | 17.6 | 26 | 20.1 | 63.1 | 60 | 18.5 | 15.9 | 15.2 | 76 |
| | 1/4 | KQ2ZT08-02S | | | | | 23.5 | 66.5 | 61 | | | | 72 |
| | 3/8 | KQ2ZT08-03S | | | | | 23.5 | 66.9 | 61.5 | | | | 81 |
| | 1/2 | KQ2ZT08-04S | 21 | | | | 27.6 | 70.6 | 63.5 | | | | 102 |
| 10 | 1/4 | KQ2ZT10-02S | 21 | 18.5 | 20.6 | 29 | 26 | 77 | 71.5 | 21 | 19.2 | 18.5 | 111 |
| | 3/8 | KQ2ZT10-03S | | | | | 26.4 | 77.4 | 72 | | | | |
| | 1/2 | KQ2ZT10-04S | | | | | 29.6 | 80.6 | 73.5 | | | | 128 |
| 12 | 1/4 | KQ2ZT12-02S | 26 | 20.9 | 25.2 | 32 | 28 | 85.5 | 80 | 22 | 21.6 | 20.9 | 178 |
| | 3/8 | KQ2ZT12-03S | | | | | 28.5 | 85.9 | 80.5 | | | | 167 |
| | 1/2 | KQ2ZT12-04S | | | | | 31.6 | 89.1 | 82 | | | | 179 |

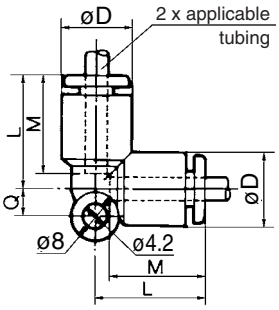
∗ Reference dimensions after R thread installation.
Note) øD1: Max. diameter




## Union Elbow: KQ2L

| Applicable tubing O.D. (mm) | Model | ø**D** (1) | **L** | **Q** | **M** | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| **3.2** | **KQ2L23-00** | 9.6 | 17.5 | 4.3 | 15.5 | 3 | 2.5 | 3 |
| **4** | **KQ2L04-00** | 10.4 | 18 | 4.5 | 16 | 4.2 | 4.2 | 6 |
| **6** | **KQ2L06-00** | 12.8 | 20 | 5.3 | 17 | 11.4 | 9.0 | 6 |
| **8** | **KQ2L08-00** | 15.2 | 23 | 6 | 18.5 | 21.6 | 14.9 | 10 |
| **10** | **KQ2L10-00** | 18.5 | 26.5 | 6.8 | 21 | 35.2 | 25.0 | 17 |
| **12** | **KQ2L12-00** | 20.9 | 28.5 | 7.5 | 22 | 50.2 | 39.7 | 21 |
| **16** | **KQ2L16-00** | 26.5 | 34 | 10 | 25 | 100 | (84) | 29 |

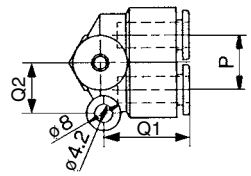
Note 1) øD: Max. diameter
Note 2) ( ): Valves for soft nylon.

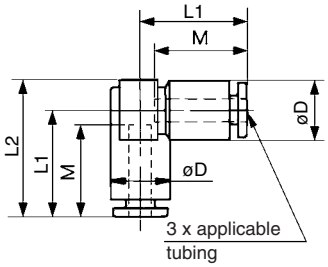


## Branch Union Elbow: KQ2LU

| Applicable tubing O.D. (mm) | Model | Note) øD | L1 | L2 | Q1 | Q2 | M | P | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | **KQ2LU04-00** | 10.4 | 18.5 | 24 | 18.5 | 10 | 16 | 10.4 | 6.0 | 4.1 | 6 |
| **6** | **KQ2LU06-00** | 12.8 | 21 | 27.5 | 20.5 | 12 | 17 | 12.8 | 13.9 | 11.0 | 8 |
| **8** | **KQ2LU08-00** | 15.2 | 24 | 32 | 24.5 | 14 | 18.5 | 15.2 | 26.3 | 18.2 | 15 |
| **10** | **KQ2LU10-00** | 18.5 | 27 | 36.5 | 28 | 16 | 21 | 18.5 | 40.8 | 29.0 | 25 |
| **12** | **KQ2LU12-00** | 20.9 | 29 | 40 | 30 | 18 | 22 | 20.9 | 57.2 | 45.2 | 32 |

Note) øD: Max. diameter

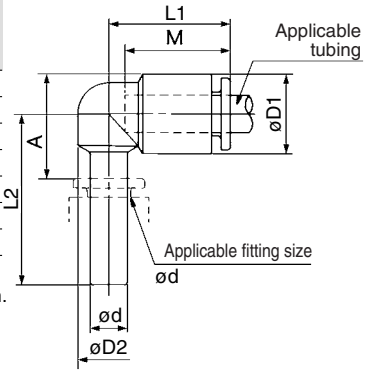



## Plug-in Elbow: KQ2L

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | (1) øD1 | øD2 | L1 | L2 | A | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2** | 3.2 | **KQ2L23-99** | 9.6 | 7 | 17 | 24.5 | 14 | 15.5 | 3 | 2.5 | 2 |
| **4** | 4 | **KQ2L04-99** | 10.4 | 8 | 18 | 25 | 14.5 | 16 | 4.2 | 4.2 | 3 |
| **6** | 6 | **KQ2L06-99** | 12.8 | 10 | 20 | 27.5 | 17 | 17 | 11.4 | 9.0 | 3 |
| **8** | 8 | **KQ2L08-99** | 15.2 | 12 | 22.5 | 31.5 | 21 | 18.5 | 21.6 | 14.9 | 5 |
| **10** | 10 | **KQ2L10-99** | 18.5 | 14 | 25.5 | 35.5 | 23.5 | 21 | 35.2 | 25.0 | 9 |
| **12** | 12 | **KQ2L12-99** | 20.9 | 16 | 27 | 37.5 | 26 | 22 | 50.2 | 39.7 | 10 |
| **16** | 16 | **KQ2L16-99** | 26.5 | 20.9 | 34 | 53 | 41 | 25 | 100 | (84) | 42 |

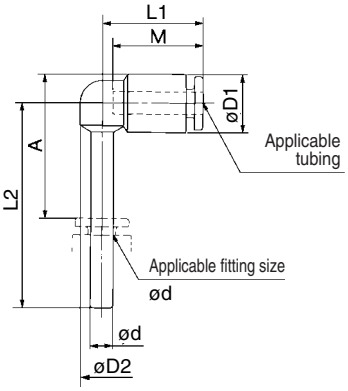
Note 1) øD1: Max. diameter
Note 2) ( ): Values for soft nylon.




## Extended Plug-in Elbow: KQ2W

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | Note) øD1 | øD2 | L1 | L2 | A | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2** | 3.2 | **KQ2W23-99** | 9.6 | 7 | 17.5 | 35 | 24.5 | 15.5 | 3 | 2.5 | 2 |
| **4** | 4 | **KQ2W04-99** | 10.4 | 8 | 18 | 37 | 26 | 16 | 4.2 | 4.2 | 3 |
| **6** | 6 | **KQ2W06-99** | 12.8 | 10 | 20 | 41.5 | 31 | 17 | 11.4 | 9.0 | 4 |
| **8** | 8 | **KQ2W08-99** | 15.2 | 10 | 22.5 | 48 | 37 | 18.5 | 21.6 | 14.9 | 6 |
| **10** | 10 | **KQ2W10-99** | 18.5 | 14 | 25.5 | 55 | 43.5 | 21 | 35.2 | 25.0 | 9 |
| **12** | 12 | **KQ2W12-99** | 20.9 | 16 | 27 | 59.5 | 48 | 22 | 50.2 | 39.7 | 13 |

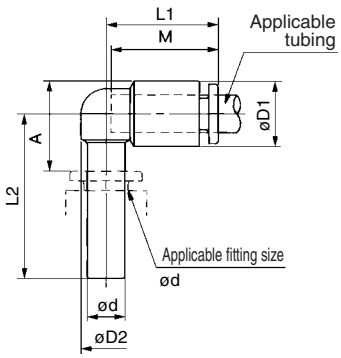
Note) øD1: Max. diameter




## Reducer Elbow: KQ2L

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | Note) øD1 | øD2 | L1 | L2 | A | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2** | 4 | **KQ2L23-04** | 9.6 | 7 | 17 | 25 | 13.5 | 15.5 | 3 | 2.5 | 2 |
| **4** | 6 | **KQ2L04-06** | 10.4 | 8 | 18 | 26 | 14.5 | 16 | 4.2 | 4.2 | 3 |
| | 8 | **KQ2L04-08** | | 10 | | 35 | 22 | | | | 11 |
| **6** | 8 | **KQ2L06-08** | 12.8 | 10 | 19.5 | 30.5 | 18 | 17 | 11.4 | 9.0 | 12 |
| | 10 | **KQ2L06-10** | | | 20 | 38.5 | 24 | | | | 19 |
| **8** | 10 | **KQ2L08-10** | 15.2 | 12 | 22.5 | 33.5 | 20.5 | 18.5 | 21.6 | 14.9 | 20 |
| | 12 | **KQ2L08-12** | | | 23 | 40.5 | 26 | | | | 27 |
| **10** | 12 | **KQ2L10-12** | 18.5 | 17 | 26.5 | 42 | 29.5 | 21 | 35.2 | 25.0 | 29 |
| **12** | 16 | **KQ2L12-16** | 20.9 | 17 | 28.5 | 49.5 | 34.5 | 22 | 50.2 | 39.7 | 53 |

Note) øD1: Max. diameter



## Extended Male Elbow: KQ2W

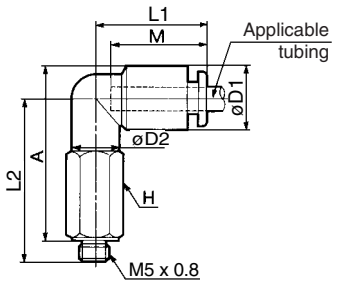
**<M5>**

**<R>**

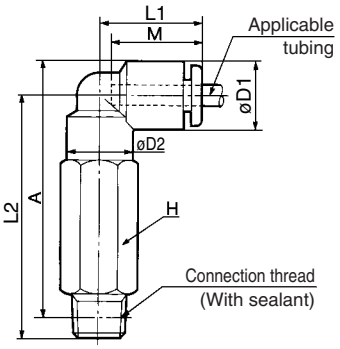
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | A* | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KQ2W23-M5 | 8 | 9.6 | 8 | 17.5 | 30 | 31 | 15.5 | 2.8 | 2.4 | 10 |
| | 1/8 | KQ2W23-01S | 10 | | 10 | | 37 | 38 | | | | 19 |
| | 1/4 | KQ2W23-02S | 14 | | | | 43 | 42 | | | | 41 |
| 4 | M5 x 0.8 | KQ2W04-M5 | 8 | 10.4 | 8 | 18 | 30 | 32 | 16 | 3.0 | 3.0 | 11 |
| | 1/8 | KQ2W04-01S | 10 | | 10 | | 36.6 | 38.5 | | 4.0 | 4.0 | 23 |
| | 1/4 | KQ2W04-02S | 14 | | | | 43 | 42.5 | | | | 38 |
| 6 | M5 x 0.8 | KQ2W06-M5 | 8 | 12.8 | 8 | 20 | 30.5 | 33.5 | 17 | 3 | 3 | 11 |
| | 1/8 | KQ2W06-01S | 10 | | 10 | | 39.1 | 42.5 | | 10.9 | 8.6 | 26 |
| | 1/4 | KQ2W06-02S | 14 | | | | 45.5 | 46.5 | | | | 41 |
| | 3/8 | KQ2W06-03S | 17 | | | | 46.9 | 48 | | | | 67 |
| 8 | 1/8 | KQ2W08-01S | 12 | 15.2 | 12 | 23 | 42.6 | 47 | 18.5 | 20.5 | 14.2 | 30 |
| | 1/4 | KQ2W08-02S | 14 | | | | 49 | 51 | | | | 47 |
| | 3/8 | KQ2W08-03S | 17 | | | | 50.4 | 52.5 | | | | 74 |
| 10 | 1/4 | KQ2W10-02S | 17 | 18.5 | 17 | 26.5 | 56 | 59.5 | 21 | 33.5 | 23.8 | 66 |
| | 3/8 | KQ2W10-03S | | | | | 57.4 | 61 | | | | 76 |
| | 1/2 | KQ2W10-04S | 22 | | | | 64.1 | 66 | | | | 145 |
| 12 | 1/4 | KQ2W12-02S | 17 | 20.9 | 17 | 28.5 | 57 | 62 | 22 | 47.7 | 37.7 | 68 |
| | 3/8 | KQ2W12-03S | | | | | 58.4 | 63.5 | | | | 78 |
| | 1/2 | KQ2W12-04S | 22 | | | | 65.1 | 68.5 | | | | 147 |
| 16 | 3/8 | KQ2W16-03S | 22 | 26.5 | 20.9 | 34 | 68.4 | 76 | 25 | 71 | (71) | 101 |
| | 1/2 | KQ2W16-04S | | | | | 72.1 | 78 | | 100 | (84) | 105 |

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

**<M5>**




**<R>**




## Male Branch Tee: KQ2T

**<M5>**

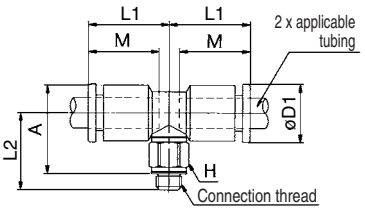
**<M6>**

**<R>**

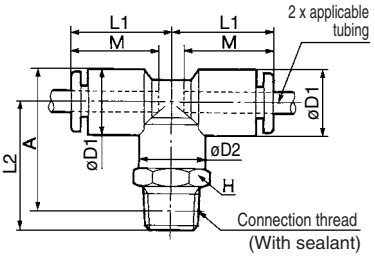
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | A* | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KQ2T23-M5 | 7 | 8.4 | — | 15.3 | 13.2 | 14.3 | 12.7 | 3.2 | 2.7 | 3.2 |
| | 1/8 | KQ2T23-01S | 10 | 9.6 | 10 | 17.5 | 20.6 | 22.5 | 15.5 | 3.4 | 2.9 | 10 |
| | 1/4 | KQ2T23-02S | 14 | | | | 25 | 24.5 | | | | 20 |
| 4 | M5 x 0.8 | KQ2T04-M5 | 7 | 9.3 | — | 15.6 | 13.7 | 15.3 | 12.7 | 4.5 | 4.5 | 3.5 |
| | M6 x 1.0 | KQ2T04-M6 | 8 | | | | 14.7 | | | | | 4.4 |
| | 1/8 | KQ2T04-01S | 10 | 10.4 | 10 | 18 | 21.1 | 23 | 16 | 6.0 | 4.1 | 13 |
| | 1/4 | KQ2T04-02S | 14 | | | | 25.5 | 25 | | | | 19 |
| 6 | M5 x 0.8 | KQ2T06-M5 | 7 | 11.6 | — | 16.1 | 14.7 | 17.4 | 13.5 | 4.5 | 4.5 | 4.4 |
| | M6 x 1.0 | KQ2T06-M6 | 8 | | | | 15.7 | | | | | 5.3 |
| | 1/8 | KQ2T06-01S | 10 | 12.8 | 10 | 21 | 22.1 | 25.5 | 17 | 13.9 | 11.0 | 12 |
| | 1/4 | KQ2T06-02S | 14 | | | | 26.5 | 27.5 | | | | 20 |
| | 3/8 | KQ2T06-03S | 17 | | | | 27.9 | 29 | | | | 34 |
| 8 | 1/8 | KQ2T08-01S | 12 | 15.2 | 12 | 24 | 23.6 | 28 | 18.5 | 26.3 | 18.2 | 14 |
| | 1/4 | KQ2T08-02S | 14 | | | | 28 | 30 | | | | 22 |
| | 3/8 | KQ2T08-03S | 17 | | | | 29.4 | 31.5 | | | | 36 |
| 10 | 1/8 | KQ2T10-01S | 17 | 18.5 | 17 | 26.5 | 26.1 | 32 | 21 | 21.6 | 14.9 | 31 |
| | 1/4 | KQ2T10-02S | | | | | 29.5 | 33 | | 35.2 | 25 | 29 |
| | 3/8 | KQ2T10-03S | | | | | 30.9 | 34.5 | | | | 39 |
| | 1/2 | KQ2T10-04S | 22 | | | | 35.1 | 37 | | | | 66 |
| 12 | 1/4 | KQ2T12-02S | 17 | 20.9 | 17 | 28.5 | 30.5 | 35.5 | 22 | 57.2 | 45.2 | 31 |
| | 3/8 | KQ2T12-03S | | | | | 31.9 | 37 | | | | 41 |
| | 1/2 | KQ2T12-04S | 22 | | | | 36.1 | 39.5 | | | | 68 |
| 16 | 3/8 | KQ2T16-03S | 22 | 26.5 | 20.9 | 34 | 36.9 | 44.5 | 25 | 71 | (71) | 112 |
| | 1/2 | KQ2T16-04S | | | | | 39.6 | 46 | | 100 | (100) | 116 |

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

**<M5, M6>**



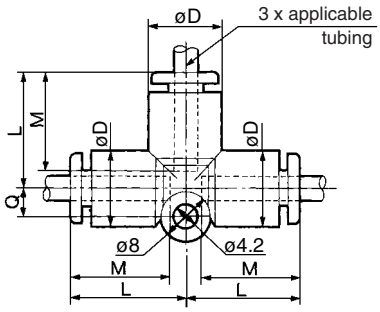

**<R>**



## Union Tee: KQ2T

| Applicable tubing O.D. (mm) | Model | (1) øD | L | Q | M | Effective area (2) (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Nylon | Urethane | |
| 3.2 | KQ2T23-00 | 9.6 | 17.5 | 4.3 | 15.5 | 3.4 | 2.9 | 5 |
| 4 | KQ2T04-00 | 10.4 | 18 | 4.5 | 16 | 6.4 | 4.4 | 7 |
| 6 | KQ2T06-00 | 12.8 | 21 | 5.3 | 17 | 13.4 | 10.6 | 10 |
| 8 | KQ2T08-00 | 15.2 | 24 | 6 | 18.5 | 25.6 | 17.7 | 15 |
| 10 | KQ2T10-00 | 18.5 | 26.5 | 6.8 | 21 | 40 | 28.4 | 25 |
| 12 | KQ2T12-00 | 20.9 | 28.5 | 7.5 | 22 | 57.4 | 45.4 | 29 |
| 16 | KQ2T16-00 | 26.5 | 34 | 10 | 25 | 100 | (84) | 40 |

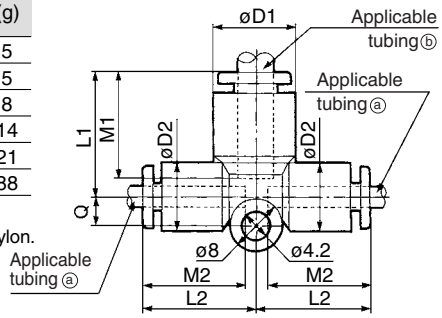
Note 1) øD: Max. diameter
Note 2) ( ): Valves for soft nylon.




## Different Diameter Tee: KQ2T

| Applicable tubing O.D. (mm) | | Model | (1) øD1 | øD2 | L1 | L2 | Q | M1 | M2 | Effective area (2) (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⓐ | ⓑ | | | | | | | | | Nylon | Urethane | |
| 3.2 | 4 | KQ2T23-04 | 10.4 | 9.6 | 18 | 17.5 | 4.3 | 16 | 15.5 | 3.8 | 3.5 | 5 |
| 4 | 6 | KQ2T04-06 | 12.8 | 10.4 | 19.5 | 18 | 4.5 | 17 | 16 | 7.1 | 6.5 | 5 |
| 6 | 8 | KQ2T06-08 | 15.2 | 12.8 | 22.5 | 21 | 5.3 | 18.5 | 17 | 16.4 | 16.4 | 8 |
| 8 | 10 | KQ2T08-10 | 18.5 | 15.2 | 26.5 | 24 | 6 | 21 | 18.5 | 36 | 27.2 | 14 |
| 10 | 12 | KQ2T10-12 | 20.9 | 18.5 | 28.5 | 26.5 | 6.8 | 22 | 21 | 56 | 44.5 | 21 |
| 12 | 16 | KQ2T12-16 | 26.5 | 26.5 | 34 | 39 | 10 | 25 | 22 | 108.5 | (92.2) | 88 |

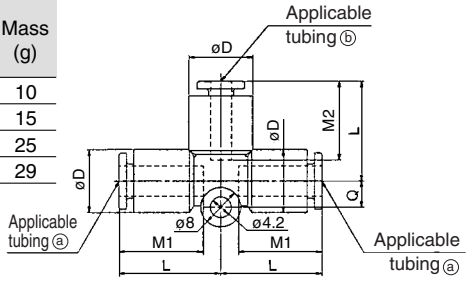
Note 1) øD1: Max. diameter
Note 2) ( ): Values for soft nylon.




## Different Diameter Tee: KQ2T

| Applicable tubing O.D. (mm) | | Model | Note) øD | L | Q | M1 | M2 | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ⓐ | ⓑ | | | | | | | Nylon | Urethane | |
| 6 | 4 | KQ2T06-04 | 12.8 | 21 | 5.3 | 17 | 16 | 6.4 | 4.4 | 10 |
| 8 | 6 | KQ2T08-06 | 15.2 | 24 | 6 | 18.5 | 17 | 13.4 | 10.6 | 15 |
| 10 | 8 | KQ2T10-08 | 18.5 | 26.5 | 6.8 | 21 | 18.5 | 25.6 | 17.7 | 25 |
| 12 | 10 | KQ2T12-10 | 20.9 | 28.5 | 7.5 | 22 | 21 | 40 | 28.4 | 29 |

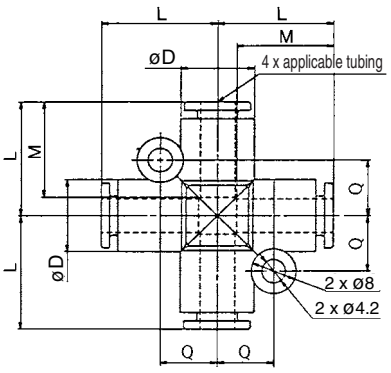
Note) øD: Max. diameter




## Cross: KQ2TW

| Applicable tubing O.D. (mm) | Model | Note) øD | L | Q | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Nylon | Urethane | |
| 4 | KQ2TW04-00 | 10.4 | 18 | 8.7 | 16 | 6.4 | 4.4 | 9 |
| 6 | KQ2TW06-00 | 12.8 | 21 | 9.9 | 17 | 13.4 | 10.6 | 13 |
| 8 | KQ2TW08-00 | 15.2 | 24 | 11.1 | 18.5 | 25.6 | 17.7 | 20 |
| 10 | KQ2TW10-00 | 18.5 | 26.5 | 12.8 | 21 | 40 | 28.4 | 33 |
| 12 | KQ2TW12-00 | 20.9 | 28.5 | 13.9 | 22 | 57.4 | 45.4 | 39 |

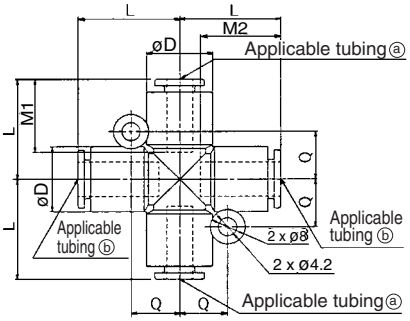
Note) øD: Max. diameter




## Different Diameter Cross: KQ2TX

| Applicable tubing O.D. (mm) | | Model | Note) øD | L | Q | M1 | M2 | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ⓐ | ⓑ | | | | | | | Nylon | Urethane | |
| 6 | 8 | KQ2TX06-08 | 15.2 | 23 | 11.1 | 18.5 | 17 | 13.4 | 10.6 | 13 |
| 8 | 10 | KQ2TX08-10 | 18.5 | 26.5 | 12.8 | 21 | 18.5 | 25.6 | 17.7 | 27 |
| 10 | 12 | KQ2TX10-12 | 20.9 | 28.5 | 13.9 | 22 | 21 | 40 | 28.4 | 36 |

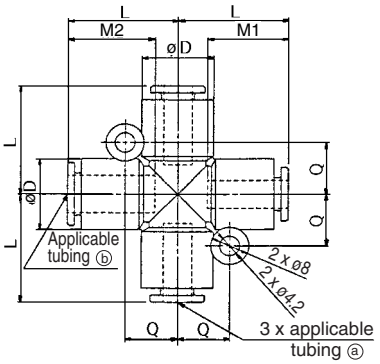
Note) øD: Max. diameter



## Different Diameter Cross: KQ2TY

| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Model | Note) øD | L | Q | M1 | M2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 8 | KQ2TY06-08 | 15.2 | 23 | 11.1 | 17 | 18.5 | 13.4 | 10.6 | 15 |
| 8 | 10 | KQ2TY08-10 | 18.5 | 26.5 | 12.8 | 18.5 | 21 | 25.6 | 17.7 | 23 |
| 10 | 12 | KQ2TY10-12 | 20.9 | 28.5 | 13.9 | 21 | 22 | 40 | 28.4 | 35 |

Note) øD: max. diameter




## Male Run Tee: KQ2Y

**<M5>**

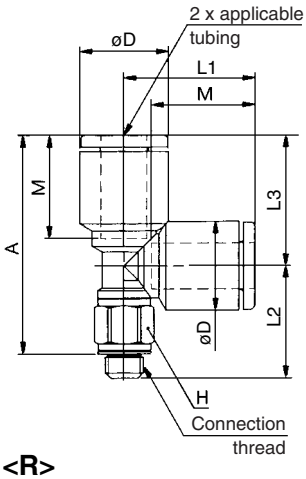
**<M6>**

**<R>**

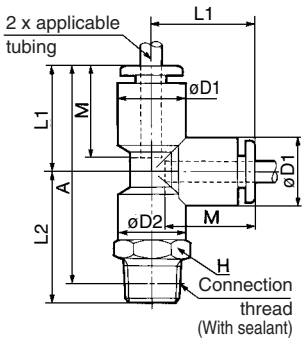
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | (1) øD1 | øD2 | L1 | L2 | L3 | A* | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KQ2Y23-M5 | 7 | 8.4 | — | 15.4 | 13.2 | 14.8 | 24.9 | 12.7 | 3.2 | 2.7 | 3.2 |
| | 1/8 | KQ2Y23-01S | 10 | 9.6 | 10 | 17.5 | 20.6 | — | 35 | 15.5 | 3.4 | 2.9 | 10 |
| | 1/4 | KQ2Y23-02S | 14 | | | | 25 | | 37 | | | | 20 |
| 4 | M5 x 0.8 | KQ2Y04-M5 | 7 | 9.3 | — | 15.6 | 13.7 | 14.8 | 25.4 | 12.7 | 4.5 | 4.5 | 3.5 |
| | M6 x 1.0 | KQ2Y04-M6 | 8 | | | | 14.7 | | | | | | 6 |
| | 1/8 | KQ2Y04-01S | 10 | 10.4 | 10 | 18 | 21.1 | — | 36 | 16 | 6.4 | 4.4 | 13 |
| | 1/4 | KQ2Y04-02S | 14 | | | | 25.5 | | 38 | | | | 19 |
| 6 | M5 x 0.8 | KQ2Y06-M5 | 7 | 11.6 | — | 17.1 | 14.7 | 17.1 | 28.7 | 13.5 | 4.5 | 4.5 | 4.5 |
| | M6 x 1.0 | KQ2Y06-M6 | 8 | | | | 15.7 | | | | | | 7 |
| | 1/8 | KQ2Y06-01S | 10 | 12.8 | 10 | 20 | 22.1 | — | 39 | 17 | 13.4 | 10.6 | 12 |
| | 1/4 | KQ2Y06-02S | 14 | | | | 26.5 | | 41 | | | | 20 |
| | 3/8 | KQ2Y06-03S | 17 | | | | 27.9 | | 42.5 | | | | 34 |
| 8 | 1/8 | KQ2Y08-01S | 12 | 15.2 | 12 | 23 | 23.6 | — | 43.5 | 18.5 | 25.6 | 17.7 | 14 |
| | 1/4 | KQ2Y08-02S | 14 | | | | 28 | | 45.5 | | | | 22 |
| | 3/8 | KQ2Y08-03S | 17 | | | | 29.4 | | 47 | | | | 36 |
| 10 | 1/8 | KQ2Y10-01S | 17 | 18.5 | 17 | 26.5 | 26.1 | — | 49.5 | 21 | 40.0 | 28.4 | 31 |
| | 1/4 | KQ2Y10-02S | | | | | 29.5 | | 50.5 | | | | 29 |
| | 3/8 | KQ2Y10-03S | | | | | 30.9 | | 52 | | | | 39 |
| | 1/2 | KQ2Y10-04S | 22 | | | | 35.1 | | 54.5 | | | | 66 |
| 12 | 1/4 | KQ2Y12-02S | 17 | 20.9 | 17 | 28.5 | 30.5 | — | 53.5 | 22 | 57.4 | 45.4 | 31 |
| | 3/8 | KQ2Y12-03S | | | | | 31.9 | | 55 | | | | 41 |
| | 1/2 | KQ2Y12-04S | 22 | | | | 36.1 | | 57.5 | | | | 68 |
| 16 | 3/8 | KQ2Y16-03S | 22 | 26.5 | 20.9 | 34 | 36.9 | — | 65.5 | 25 | 81 | (81) | 112 |
| | 1/2 | KQ2Y16-04S | | | | | 40.1 | | 67 | | 113 | (113) | 116 |

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

**<M5, M6>**




**<R>**



## Male Delta Union: KQ2D

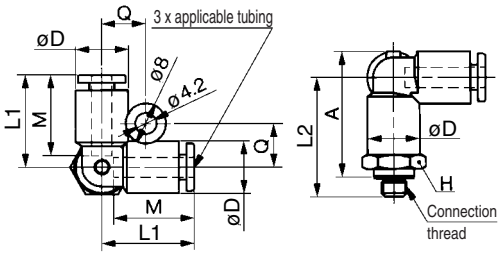
**<M5, M6>**

**<R>**

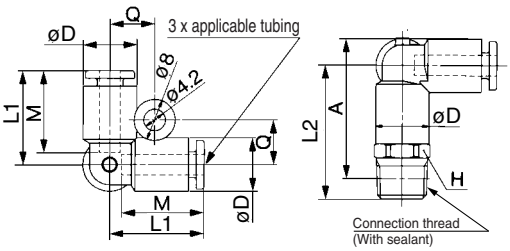
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | Note) øD | L1 | L2 | A* | M | Q | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2D04-M5 | 11 | 10.4 | 18.5 | 24 | 25.5 | 16 | 8.7 | 2.2 | 2.2 | 10 |
| | M6 x 1.0 | KQ2D04-M6 | | | | 24.5 | | | | 4.3 | 4.3 | |
| | 1/8 | KQ2D04-01S | | | | 25.6 | 27.5 | | | 6.0 | 6.0 | 12 |
| | 1/4 | KQ2D04-02S | 14 | | | 30 | 29.5 | | | | | 21 |
| 6 | M5 x 0.8 | KQ2D06-M5 | 13 | 12.8 | 20.5 | 26 | 28.5 | 17 | 9.9 | 4.3 | 4.3 | 12 |
| | M6 x 1.0 | KQ2D06-M6 | | | | 26.5 | | | | | | |
| | 1/8 | KQ2D06-01S | | | | 28.1 | 31.5 | | | 13.9 | 11.0 | 14 |
| | 1/4 | KQ2D06-02S | 14 | | | 32 | 33 | | | | | 21 |
| | 3/8 | KQ2D06-03S | 17 | | | 33.4 | 34.5 | | | | | 34 |
| 8 | 1/8 | KQ2D08-01S | 17 | 15.2 | 23.5 | 32.6 | 37 | 18.5 | 11.1 | 26.3 | 18.2 | 26 |
| | 1/4 | KQ2D08-02S | | | | 36 | 38 | | | | | |
| | 3/8 | KQ2D08-03S | | | | 36.4 | 38.5 | | | | | 35 |
| 10 | 1/4 | KQ2D10-02S | 19 | 18.5 | 26.5 | 39 | 43 | 21 | 12.8 | 40.8 | 29.0 | 39 |
| | 3/8 | KQ2D10-03S | | | | 39.4 | 43.5 | | | | | 40 |
| | 1/2 | KQ2D10-04S | 22 | | | 43.1 | 45 | | | | | 62 |
| 12 | 1/4 | KQ2D12-02S | 22 | 20.9 | 28.5 | 41.5 | 46.5 | 22 | 13.9 | 57.2 | 45.2 | 55 |
| | 3/8 | KQ2D12-03S | | | | 41.9 | 47 | | | | | 56 |
| | 1/2 | KQ2D12-04S | | | | 45.1 | 48.5 | | | | | 63 |

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

**<M5, M6>**



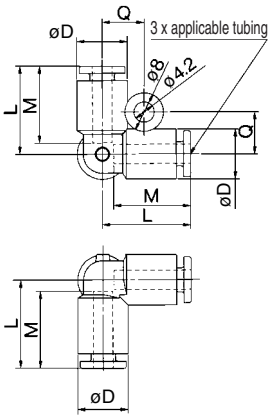

**<R>**




## Delta Union: KQ2D

| Applicable tubing O.D. (mm) | Model | Note) øD | L | Q | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| 4 | KQ2D04-00 | 10.4 | 18.5 | 8.7 | 16 | 6.0 | 4.1 | 5 |
| 6 | KQ2D06-00 | 12.8 | 20.5 | 9.9 | 17 | 13.9 | 11.0 | 7 |
| 8 | KQ2D08-00 | 15.2 | 23.5 | 11.1 | 18.5 | 26.3 | 18.2 | 11 |
| 10 | KQ2D10-00 | 18.5 | 26.5 | 12.8 | 21 | 40.8 | 29.0 | 19 |
| 12 | KQ2D12-00 | 20.9 | 28.5 | 13.9 | 22 | 57.2 | 45.2 | 24 |

Note) øD: Max. diameter




## Branch "Y": KQ2U

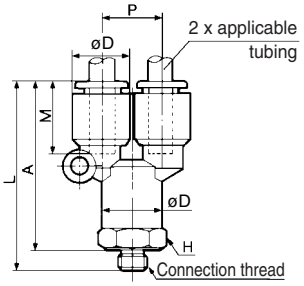
**<M5, M6>**

**<R>**

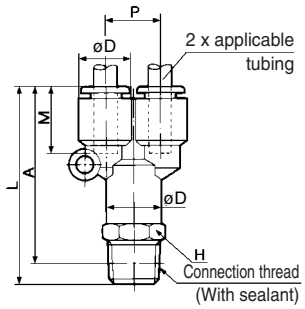
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | øD (1) | L | P | A* | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | M5 x 0.8 | KQ2U23-M5 | 10 | 9.6 | 38 | 9.6 | 34.5 | 15.5 | 2.2 | 2.2 | 9 |
| | 1/8 | KQ2U23-01S | 11 | | 40.1 | | 37 | | 3.4 | 2.9 | 14 |
| | 1/4 | KQ2U23-02S | 14 | | 43.5 | | 38 | | | | |
| 4 | M5 x 0.8 | KQ2U04-M5 | 11 | 10.4 | 39.5 | 10.4 | 36 | 16 | 2.2 | 2.2 | 4 |
| | M6 x 1.0 | KQ2U04-M6 | | | 40 | | | | | | 10 |
| | 1/8 | KQ2U04-01S | | | 41.1 | | 38 | | 4.2 | 4.2 | 11 |
| | 1/4 | KQ2U04-02S | 14 | | 45.5 | | 40 | | | | 20 |
| 6 | M5 x 0.8 | KQ2U06-M5 | 13 | 12.8 | 42.5 | 12.8 | 39 | 17 | 2.2 | 2.2 | 12 |
| | M6 x 1.0 | KQ2U06-M6 | | | 43 | | | | | | |
| | 1/8 | KQ2U06-01S | | | 44.6 | | 41.5 | | 13.4 | 10.6 | 11 |
| | 1/4 | KQ2U06-02S | 14 | | 48.5 | | 43 | | | | 21 |
| | 3/8 | KQ2U06-03S | 17 | | 49.9 | | 44.5 | | | | 34 |
| 8 | 1/8 | KQ2U08-01S | 17 | 15.2 | 51.6 | 15.2 | 48.5 | 18.5 | 25.6 | 17.7 | 15 |
| | 1/4 | KQ2U08-02S | | | 55 | | 49.5 | | | | 23 |
| | 3/8 | KQ2U08-03S | | | 55.4 | | 50 | | | | 35 |
| 10 | 1/4 | KQ2U10-02S | 19 | 18.5 | 60.5 | 18.5 | 55 | 21 | 40 | 28.4 | 30 |
| | 3/8 | KQ2U10-03S | | | 60.9 | | 55.5 | | | | 40 |
| | 1/2 | KQ2U10-04S | 22 | | 64.1 | | 57 | | | | 65 |
| 12 | 1/4 | KQ2U12-02S | 22 | 20.9 | 64 | 20.9 | 58.5 | 22 | 57.4 | 45.4 | 32 |
| | 3/8 | KQ2U12-03S | | | 64.4 | | 59 | | | | 40 |
| | 1/2 | KQ2U12-04S | | | 67.6 | | 60.5 | | | | 65 |
| 16 | 3/8 | KQ2U16-03S | 27 | 26.5 | 74.9 | 26.5 | 69.5 | 25 | 81 | (81) | 106 |
| | 1/2 | KQ2U16-04S | | | 78.1 | | 71 | | 113 | (96) | 111 |

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

**<M5, M6>**




**<R>**

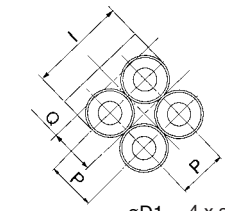


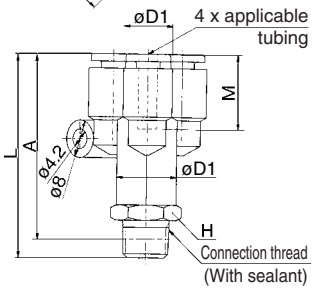
## Delta Branch: KQ2UD

| Applicable tubing O.D. (mm) | Connection thread R | Model | H (width across flats) | Note) øD1 | øD2 | L | I | A* | Q | M | P | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2UD04-01S | 13 | 10.4 | 12.8 | 42.6 | 21 | 39.5 | 9.7 | 16 | 10.4 | 4.2 | 4.2 | 17 |
| | 1/4 | KQ2UD04-02S | 14 | | | 46.5 | | 41 | | | | | | 25 |
| 6 | 1/8 | KQ2UD06-01S | 17 | 12.8 | 15.2 | 49.6 | 26 | 46.5 | 11.7 | 17 | 12.8 | 13.4 | 10.6 | 29 |
| | 1/4 | KQ2UD06-02S | | | | 53 | | 47.5 | | | | | | |

∗ Reference dimensions after R thread installation.

Note) øD1: Max. diameter

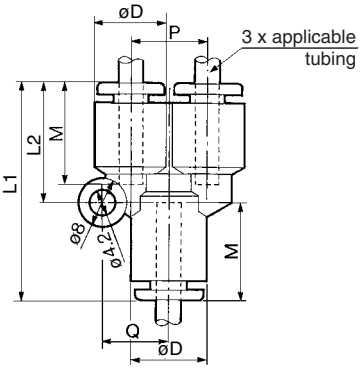



## Union "Y": KQ2U

| Applicable tubing O.D. (mm) | Model | (1) øD | L1 | L2 | P | Q | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | KQ2U23-00 | 9.6 | 33 | 17.5 | 9.6 | 9 | 15.5 | 3.4 | 2.9 | 5 |
| 4 | KQ2U04-00 | 10.4 | 34 | 18 | 10.4 | 9.7 | 16 | 4.2 | 4.2 | 7 |
| 6 | KQ2U06-00 | 12.8 | 37 | 20 | 12.8 | 11.7 | 17 | 13.4 | 10.6 | 9 |
| 8 | KQ2U08-00 | 15.2 | 42.5 | 24.5 | 15.2 | 13.7 | 18.5 | 25.6 | 17.7 | 11 |
| 10 | KQ2U10-00 | 18.5 | 48 | 27.5 | 18.5 | 16.1 | 21 | 40 | 28.4 | 16 |
| 12 | KQ2U12-00 | 20.9 | 51 | 30 | 20.9 | 18.1 | 22 | 57.4 | 45.4 | 23 |
| 16 | KQ2U16-00 | 26.5 | 61.5 | 36.5 | 26.5 | 23 | 25 | 113 | (96) | 54 |

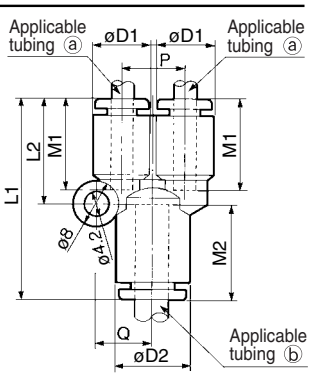
Note 1) øD: Max. diameter
Note 2) ( ): Values for soft nylon.




## Different Diameter Union "Y": KQ2U

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | 4 | KQ2U23-04 | 9.6 | 10.4 | 33.5 | 17.5 | 9.6 | 9 | 15.5 | 16 | 3.2 | 2.7 | 5 |
| 4 | 6 | KQ2U04-06 | 10.4 | 12.8 | 35 | 18 | 10.4 | 9.7 | 16 | 17 | 4.2 | 4.2 | 6 |
| 6 | 8 | KQ2U06-08 | 12.8 | 15.2 | 39.5 | 20 | 12.8 | 11.7 | 17 | 18.5 | 13.4 | 10.6 | 11 |
| 8 | 10 | KQ2U08-10 | 15.2 | 18.5 | 45 | 24.5 | 15.2 | 13.7 | 18.5 | 21 | 25.6 | 17.7 | 18 |
| 10 | 12 | KQ2U10-12 | 18.5 | 20.9 | 49 | 27.5 | 18.5 | 16.1 | 21 | 22 | 40 | 28.4 | 27 |
| 12 | 16 | KQ2U12-16 | 26.5 | 26.5 | 66.5 | 41.5 | 26.5 | 23 | 22 | 25 | 57.4 | 45.4 | 100 |

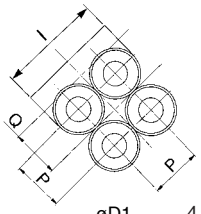
Note) øD1, øD2: Max. diameter

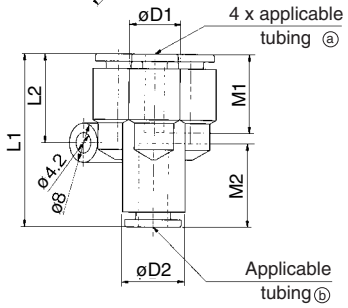



## Different Diameter Double Union "Y": KQ2UD

| 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 | KQ2UD04-06 | 10.4 | 12.8 | 35.5 | 18.2 | 10.4 | 21 | 9.7 | 16 | 17 | 4.2 | 4.2 | 10 |
| 6 | 8 | KQ2UD06-08 | 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

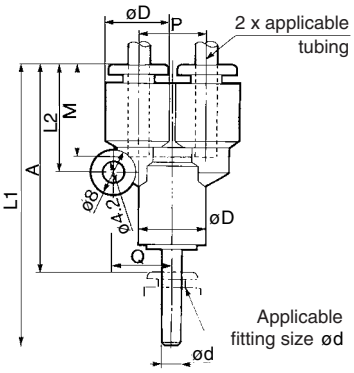


## Plug-in "Y": KQ2U

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | (1) øD | L1 | L2 | P | Q | A | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.2** | 3.2 | **KQ2U23-99** | 9.6 | 50 | 17.5 | 9.6 | 9 | 35 | 15.5 | 3.4 | 2.9 | 6 |
| **4** | 4 | **KQ2U04-99** | 10.4 | 51.5 | 18 | 10.4 | 9.7 | 35.5 | 16 | 4.2 | 4.2 | 12 |
| **6** | 6 | **KQ2U06-99** | 12.8 | 55.5 | 20 | 12.8 | 11.7 | 38.5 | 17 | 13.4 | 10.6 | 18 |
| **8** | 8 | **KQ2U08-99** | 15.2 | 64.5 | 24.5 | 15.2 | 13.7 | 46 | 18.5 | 25.6 | 17.7 | 21 |
| **10** | 10 | **KQ2U10-99** | 18.5 | 71.5 | 27.5 | 18.5 | 16.1 | 50.5 | 21 | 40 | 28.4 | 26 |
| **12** | 12 | **KQ2U12-99** | 20.9 | 75.5 | 30 | 20.9 | 18.1 | 53.5 | 22 | 57.4 | 45.4 | 32 |
| **16** | 16 | **KQ2U16-99** | 26.5 | 90 | 36.5 | 26.5 | 23 | 65 | 25 | 113 | (96) | 78 |

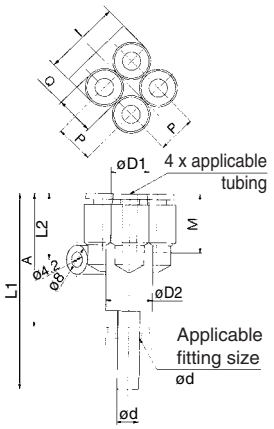
Note 1) øD: Max. diameter
Note 2) ( ): Values for soft nylon.




## Double Plug-in "Y": KQ2XD

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | Note) øD1 | øD2 | L1 | L2 | I | Q | A | P | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | 6 | **KQ2XD04-06** | 10.4 | 12.8 | 54 | 18.2 | 21 | 9.7 | 37 | 10.4 | 16 | 4.2 | 4.2 | 10 |
| **6** | 8 | **KQ2XD06-08** | 12.8 | 15.2 | 62.5 | 20.3 | 26 | 11.7 | 44 | 12.8 | 17 | 13.4 | 10.6 | 23 |

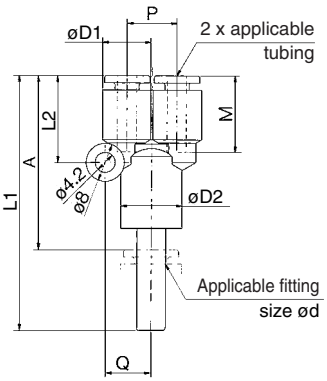
Note) øD1: Max. diameter




## Different Diameter Plug-in "Y": KQ2X

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | Note) øD1 | øD2 | L1 | L2 | A | P | Q | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | 6 | **KQ2X04-06** | 10.4 | 12.8 | 53.5 | 18.5 | 36.5 | 10.4 | 9.7 | 16 | 4.2 | 4.2 | 7 |
| **6** | 8 | **KQ2X06-08** | 12.8 | 15.2 | 61.5 | 20.5 | 43 | 12.8 | 11.7 | 17 | 13.4 | 10.6 | 18 |
| **8** | 10 | **KQ2X08-10** | 15.2 | 18.5 | 68.5 | 24.5 | 47.5 | 15.2 | 13.7 | 18.5 | 25.6 | 17.7 | 28 |
| **10** | 12 | **KQ2X10-12** | 18.5 | 20.9 | 73.5 | 27.5 | 51.5 | 18.5 | 16.1 | 21 | 40 | 28.4 | 42 |

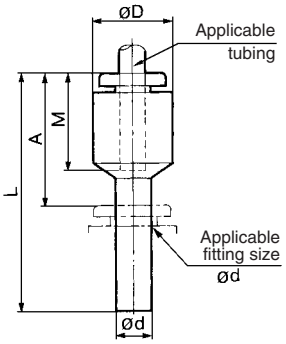
Note) øD1: Max. diameter



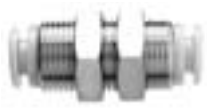
## Plug-in Reducer: KQ2R

| Applicable tubing O.D. (mm) | Applicable fitting size ød | Model | øD (1) | L | A | M | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 3.2 | 4 | KQ2R23-04 | 9.6 | 33.5 | 18.5 | 15.5 | 3.4 | 2.9 | 2 |
| 4 | 6 | KQ2R04-06 | 10.4 | 34.5 | 17.5 | 16 | 5.6 | 4 | 1.8 |
| | 8 | KQ2R04-08 | | 36.5 | 18 | | | | 2.0 |
| | 10 | KQ2R04-10 | 12.8 | 39.5 | 18.5 | | | | 3.3 |
| 6 | 4 | KQ2R06-04 | 12.8 | 37 | 21 | 17 | 4 | 4 | 2.5 |
| | 8 | KQ2R06-08 | 12.8 | 37 | 18.5 | | 13.1 | 10.4 | 2.5 |
| | 10 | KQ2R06-10 | | 39.5 | 18.5 | | | | 3 |
| | 12 | KQ2R06-12 | 15.2 | 42 | 20 | | | | 4.7 |
| 8 | 10 | KQ2R08-10 | 15.2 | 41 | 20 | 18.5 | 26.1 | 18.0 | 4.0 |
| | 12 | KQ2R08-12 | | 42 | | | | | 4.6 |
| 10 | 12 | KQ2R10-12 | 18.5 | 44.5 | 23 | 21 | 41.5 | 32.8 | 33 |
| | 16 | KQ2R10-16 | 20.9 | 50.5 | 25.5 | | | (29.5) | 42 |
| 12 | 16 | KQ2R12-16 | 20.9 | 50.5 | 25.5 | 22 | 58.3 | (46.1) | 37 |

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

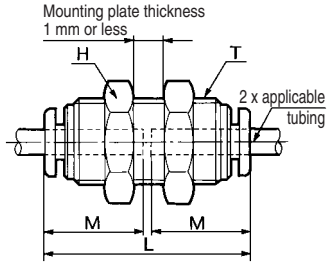



## Bulkhead Union: KQ2E



| Applicable tubing O.D. (mm) | Model | T (M) | H (width across flats) | L | Mounting hole | M | Effective area Note) (mm²) Nylon | Effective area Note) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 3.2 | KQ2E23-00 | M12 x 1 | 14 | 31.5 | 13 | 15.5 | 3.4 | 2.9 | 26 |
| 4 | KQ2E04-00 | M12 x 1 | 14 | 32.5 | 13 | 16 | 5.6 | 4 | 26 |
| 6 | KQ2E06-00 | M14 x 1 | 17 | 34.5 | 15 | 17 | 13.1 | 10.4 | 33 |
| 8 | KQ2E08-00 | M16 x 1 | 19 | 38 | 17 | 18.5 | 26.1 | 18.0 | 52 |
| 10 | KQ2E10-00 | M20 x 1 | 24 | 42.5 | 21 | 21 | 41.5 | 29.5 | 70 |
| 12 | KQ2E12-00 | M22 x 1 | 27 | 44 | 23 | 22 | 58.3 | 46.1 | 90 |
| 16 | KQ2E16-00 | M28 x 1.5 | 32 | 51 | 29 | 25 | 113 | (96) | 115 |

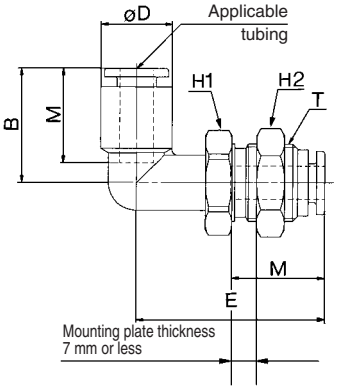
Note) ( ): Values for soft nylon.




## Bulkhead Male Elbow: KQ2LE

| Applicable tubing O.D. (mm) | Model | T (M) | H1 (width across flats) | H2 (width across flats) | B | E | Note) øD | Mounting hole | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | KQ2LE04-00 | M12 x 1 | 14 | 14 | 18.5 | 31 | 10.4 | 13 | 16 | 4.2 | 4.2 | 18 |
| 6 | KQ2LE06-00 | M14 x 1 | 17 | 17 | 20.5 | 34 | 12.8 | 15 | 17 | 11.4 | 9.0 | 25 |
| 8 | KQ2LE08-00 | M16 x 1 | 17 | 19 | 23.5 | 38.5 | 15.2 | 17 | 18.5 | 21.6 | 14.9 | 33 |
| 10 | KQ2LE10-00 | M20 x 1 | 22 | 24 | 26.5 | 43.5 | 18.5 | 21 | 21 | 35.2 | 25.0 | 63 |
| 12 | KQ2LE12-00 | M22 x 1 | 24 | 27 | 28.5 | 45.5 | 20.9 | 23 | 22 | 50.2 | 39.7 | 77 |

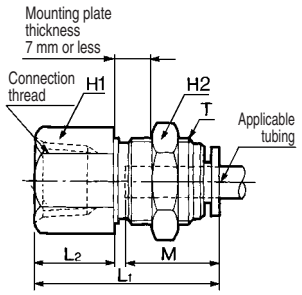
Note) øD: Max. diameter




## Bulkhead Connector: KQ2E

| 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 Note) (mm²) Nylon | Effective area Note) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3.2 | 1/4 | KQ2E23-02 | M12 x 1 | 17 | 14 | 31.5 | 15 | 13 | 15.5 | 3.4 | 2.9 | 13 |
| 4 | 1/8 | KQ2E04-01 | M12 x 1 | 14 | 14 | 27.5 | 11 | 13 | 16 | 5.6 | 4 | 16 |
| | 1/4 | KQ2E04-02 | | 17 | | 31 | 15 | | | | | 35 |
| 6 | 1/8 | KQ2E06-01 | M14 x 1 | 17 | 17 | 28 | 11 | 15 | 17 | 13.1 | 10.4 | 30 |
| | 1/4 | KQ2E06-02 | | | | 31.5 | 15 | | | | | 30 |
| | 3/8 | KQ2E06-03 | | 19 | | 33.5 | 17 | | | | | 34 |
| 8 | 1/8 | KQ2E08-01 | M16 x 1 | 17 | 19 | 27.5 | 7.5 | 17 | 18.5 | 26.1 | 18.0 | 28 |
| | 1/4 | KQ2E08-02 | | | | 33 | 13 | | | | | 33 |
| | 3/8 | KQ2E08-03 | | 19 | | 35 | 15 | | | | | 34 |
| 10 | 1/4 | KQ2E10-02 | M20 x 1 | 22 | 24 | 34.5 | 12.5 | 21 | 21 | 41.5 | 29.5 | 53 |
| | 3/8 | KQ2E10-03 | | 22 | | 36.5 | 14 | | | | | 67 |
| 12 | 3/8 | KQ2E12-03 | M22 x 1 | 24 | 27 | 37 | 14 | 23 | 22 | 58.3 | 46.1 | 92 |
| | 1/2 | KQ2E12-04 | | | | 41 | 18 | | | | | 59 |
| 16 | 3/8 | KQ2E16-03 | M28 x 1.5 | 30 | 32 | 40 | 14 | 29 | 25 | 96 | (96) | 127 |
| | 1/2 | KQ2E16-04 | | | | 44 | 18 | | | 113 | | 132 |

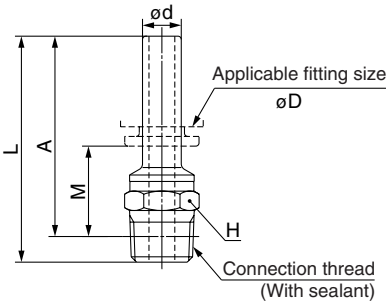
Note) ( ): Values for soft nylon.



## Adaptor: KQ2N

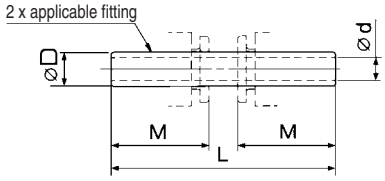
| Applicable fitting size ød | Connection thread R | Model | H (width across flats) | L | A* | M | ød | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KQ2N04-M5 | 7 | 32 | 29 | 13 | 2.5 | 2 |
| | 1/8 | KQ2N04-01S | 10 | 33.1 | 30 | 14 | | 6 |
| 6 | M5 x 0.8 | KQ2N06-M5 | 7 | 33 | 30 | 13 | 2.5 | 2 |
| | 1/8 | KQ2N06-01S | 10 | 34.1 | 31 | 14 | 4.5 | 5 |
| | 1/4 | KQ2N06-02S | 14 | 37 | 31.5 | 14.5 | | 14 |
| 8 | 1/4 | KQ2N08-02S | 14 | 38.5 | 33 | 14.5 | 6 | 17 |
| | 3/8 | KQ2N08-03S | 17 | 39.9 | 34.5 | 16 | | 30 |
| 10 | 3/8 | KQ2N10-03S | 17 | 44.9 | 39.5 | 18.5 | 7.5 | 31 |

* Reference dimensions after R thread is screwed in.



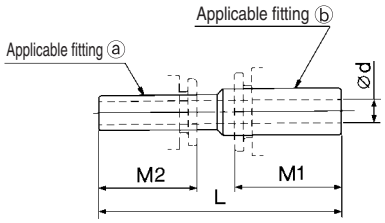

## Nipple: KQ2N

| Applicable fitting øD | Model | L | M | ød | Mass (g) |
|---|---|---|---|---|---|
| 4 | KQ2N04-99 | 37 | 16 | 2.5 | 1 |
| 6 | KQ2N06-99 | 39 | 17 | 4 | 2 |
| 8 | KQ2N08-99 | 43 | 18.5 | 6 | 2 |
| 10 | KQ2N10-99 | 49 | 21 | 7.5 | 4 |
| 12 | KQ2N12-99 | 52 | 22 | 9 | 20.6 |
| 16 | KQ2N16-99 | 57 | 25 | 13 | 31 |




## Reducer Nipple: KQ2N

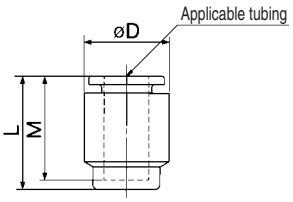
| Applicable fitting ⓐ | Applicable fitting ⓑ | Model | L | M1 | M2 | ød | Mass (g) |
|---|---|---|---|---|---|---|---|
| 4 | 6 | KQ2N04-06 | 38 | 17 | 16 | 2.5 | 2 |
| 6 | 8 | KQ2N06-08 | 42 | 18.5 | 17 | 4 | 2 |
| 8 | 10 | KQ2N08-10 | 47 | 21 | 18.5 | 6 | 2 |
| 10 | 12 | KQ2N10-12 | 51 | 22 | 21 | 8 | 18.2 |
| 12 | 16 | KQ2N12-16 | 55 | 25 | 22 | 9 | 29 |




## Tube Cap: KQ2C

| Applicable tubing O.D. (mm) | Model | Note) øD | L | M | Mass (g) |
|---|---|---|---|---|---|
| 4 | KQ2C04-00 | 10.4 | 17 | 16 | 3 |
| 6 | KQ2C06-00 | 12.8 | 18.5 | 17 | 3 |
| 8 | KQ2C08-00 | 15.2 | 20.5 | 18.5 | 4 |
| 10 | KQ2C10-00 | 18.5 | 23 | 21 | 6 |
| 12 | KQ2C12-00 | 20.9 | 24 | 22 | 8 |
| 16 | KQ2C16-00 | 26.5 | 28 | 25 | 13 |

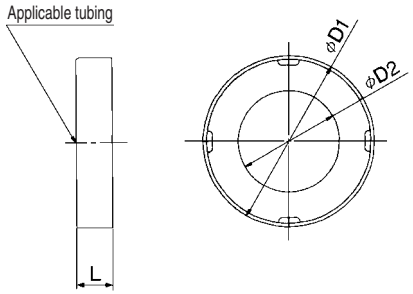
Note) øD: Max. diameter




## Color Cap: KQ2C

| Applicable tubing O.D. (mm) | Model | øD1 | øD2 | L | Mass (g) | Application |
|---|---|---|---|---|---|---|
| 4 | KQ2C-04□ | 10.1 | 5.2 | 2.9 | 0.1 | |
| 4 | KQ2C-04A-□ | 8.5 | 5 | 2.2 | 0.1 | KQH, KQ2H04-M5, M6<br>KQS, KQ2S04-M5, M6 |
| 4 | KQ2C-04B-□ | 9.7 | 5 | 2.2 | 0.1 | KQL, KQ2L04-M5, M6<br>KQT, KQ2T04-M5, M6<br>KQY, KQ2Y04-M5, M6 |
| 6 | KQ2C-06□ | 12.1 | 7.2 | 2.9 | 0.1 | |
| 6 | KQ2C-06A-□ | 10.5 | 7 | 2.2 | 0.1 | KQH, KQ2H06-M5, M6<br>KQS, KQ2S06-M5, M6 |
| 6 | KQ2C-06B-□ | 12.0 | 7 | 2.2 | 0.1 | KQL, KQ2L06-M5, M6<br>KQT, KQ2T06-M5, M6<br>KQY, KQ2Y06-M5, M6 |
| 8 | KQ2C-08□ | 14.1 | 9.2 | 2.9 | 0.1 | |
| 10 | KQ2C-10□ | 17.1 | 11.2 | | 0.2 | |
| 12 | KQ2C-12□ | 19.1 | 13.2 | | 0.2 | |
| 16 | KQ2C-16□ | 26.3 | 17.2 | 3.9 | 0.3 | |

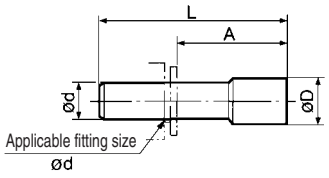
□ → B (Black), R (Red), YR (Orange), BR (Brown), Y (Yellow), G (Green), CB (Sky blue), GR (Gray), W (White), BU (Blue)




## Plug: KQ2P, KQP

| Applicable fitting size ød | Model Note) | | øD | L | A | Mass (g) |
|---|---|---|---|---|---|---|
| 3.2 | KQ2P-23 | KQP-23 | 5 | 31.5 | 16 | 1 |
| 4 | KQ2P-04 | KQP-04 | 6 | 32 | 16 | 1 |
| 6 | KQ2P-06 | KQP-06 | 8 | 35 | 18 | 1 |
| 8 | KQ2P-08 | KQP-08 | 10 | 39 | 20.5 | 2 |
| 10 | KQ2P-10 | KQP-10 | 12 | 43 | 22 | 3.5 |
| 12 | KQ2P-12 | KQP-12 | 14 | 45.5 | 24 | 5 |
| 16 | KQ2P-16 | KQP-16 | 20.9 | 47 | 22 | 8 |

Note) KQ2P (White), KQP (Blue)



# 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 |
| **X29** | Grease-free<br>Rubber material: NBR (With fluorine coating)<br>Release button color: Light blue<br>Copper-free (Electroless nickel plated) |
| **X39** | Grease-free<br>Rubber material: NBR (With fluorine coating)<br>Release button color: Light blue<br>Clean (Copper-free, air blow, double package, resin body: white) |
| **X94** | Grease-free<br>Rubber material: FKM (With fluorine coating)<br>Release button color: Light blue |

## 2 Other Specifications

| Symbol | Specifications |
|---|---|
| **X2** | Copper-free (With electroless nickel plated) |
| **X12** | Lubricant: White Vaseline<br>Release button color: White |
| **X34** | Rubber material: FKM |
| **X41** | With fixed throttle Note) |

Note) Compatible with male connector and male elbow only
Consult SMC separately for the available fixed throttle diameters.

## Spare Parts

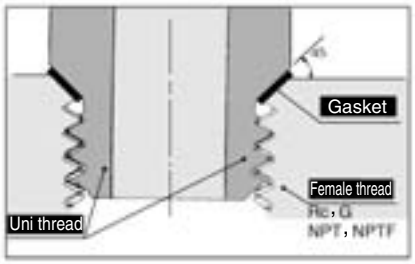
| Description | Part no. | Applicable thread | Material | Applicable model |
|---|---|---|---|---|
| Gasket | M-5G2 | M5 | Stainless steel 304, NBR | — |
| | M-6G | M6 | | — |
| Pipe nut | KQ04-P01 | — | — | KQ2E23-00, KQ2E04-00, KQ2E23-02<br>KQ2E04-01, KQ2E04-02, KQ2LE04-00 |
| | KQ06-P01 | — | — | KQ2E06-00, KQ2E06-01<br>KQ2E06-02, KQ2E06-03, KQ2LE06-00 |
| | KQ08-P01 | — | — | KQ2E08-00, KQ2E08-01<br>KQ2E08-02, KQ2E08-03, KQ2LE08-00 |
| | KQ10-P01 | — | — | KQ2E10-00, KQ2E10-02<br>KQ2E10-03, KQ2LE10-00 |
| | KQ12-P01 | — | — | KQ2E12-00, KQ2E12-03<br>KQ2E12-04, KQ2LE12-00 |
| | KQ16-P01 | — | — | KQ2E16-00<br>KQ2E16-03, KQ2E16-04 |

# Metric-size Uni One-touch Fittings

# *Series KQ2*

## Applicable Tubing: Metric Size
## Connection Thread: Rc, G, NPT, NPTF

## New-stand male thread for piping that reduces the screw-in time by 1/3.

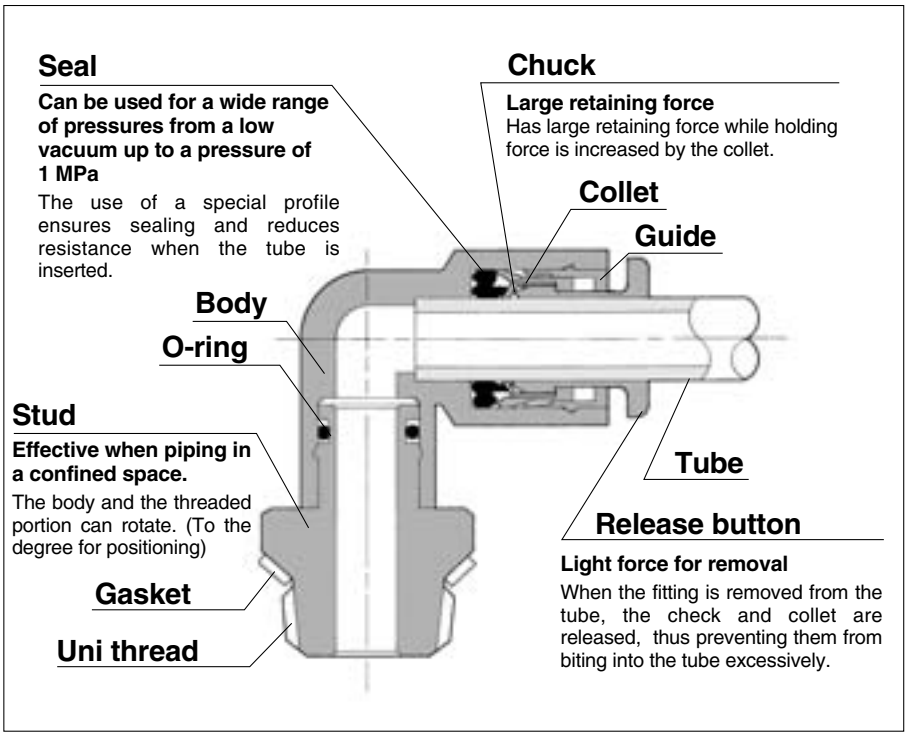



### Uni thread ridge shape

A gasket made of a stainless sheet covered with laminated NBR on both sides is seated on the chamfer of a female thread for a perfect sealing construction irrespective of the difference in thread diameters due to the difference in the types of female threads, variation in tolerance, or difference in the size of chamfer. (It is applicable to any female thread with an ordinary chamfer.)

**A ridge shape has been created as a Uni thread for common applications for Rc, G, NPT and NPTF.**

**The male thread for piping drastically cuts piping man-hours.**




### 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.

### Product's Color

| Series | Body | Release button |
|---|---|---|
| Series KQ2 | White | Light gray |
| Series KQ | Black | Blue |

### Specifications

| | |
|---|---|
| **Fluid** | Air/Water (2) |
| **Operating pressure range** (3) | –100 kPa to 1 MPa |
| **Proof pressure** | 3 MPa |
| **Ambient and fluid temperature** | –5 to 60°C, Water: 0 to 40°C (No freezing) |

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.

### Principal Parts Material

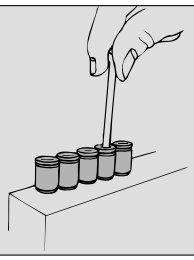
| | |
|---|---|
| Body | C3604, PBT |
| Stud | C3604 (Thread portion) |
| Chuck | Stainless steel 304 |
| Guide | Stainless steel 304, C3604, PBT |
| Collet, Release button | POM |
| Seal, O-ring | NBR |
| Gasket | Stainless steel 304, NBR |

**Made to Order**
(Refer to page 90 for details.)

## Model

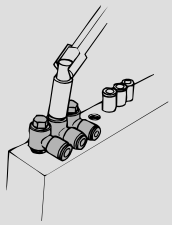
**Hex. socket head male connector**
**KQ2S** P. 89

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



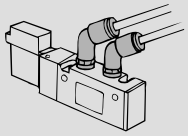
**Universal male elbow**
**KQ2V** P. 89

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



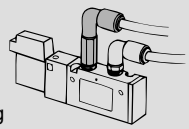
**45° male elbow**
**KQ2K** P. 89

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



**Extended male elbow**
**KQ2W** P. 88

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



**Male connector**
**KQ2H** P. 86

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

**Male elbow**
**KQ2L** P. 86

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

**Male branch tee**
**KQ2T** P. 87

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

**Branch "Y"**
**KQ2U** P. 88

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

**Male run tee**
**KQ2Y** P. 87

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

## How to Order

**KQ 2 H 06 – U01 –** ☐

**Made to Order**
Refer to page 90 for details.

**One-touch fittings**

**Product's color**

| Symbol | Body | Release button |
|---|---|---|
| **2** | White | Light gray |
| **Nil** | Black | Blue |

**Applicable tubing O.D.**

| | |
|---|---|
| **04** | ø4 |
| **06** | ø6 |
| **08** | ø8 |
| **10** | ø10 |
| **12** | ø12 |
| **16** | ø16 |

**Port size**

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

**Model**

| | | | |
|---|---|---|---|
| **H** | Male connector | **T** | Male branch tee |
| **S** | Hex. socket head male connector | **Y** | Male run tee |
| **L** | Male elbow | **U** | Branch |
| **K** | 45° male elbow | | |
| **V** | Universal male elbow | | |
| **W** | Extended male elbow | | |

### How to Order Gasket

**KQG – U01**

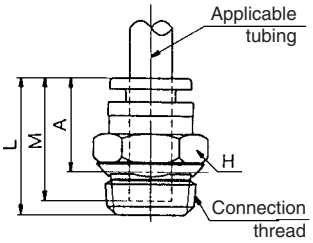
**Gasket for Uni One-touch fittings**

**Applicable port size**

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

## Male Connector: KQ2H

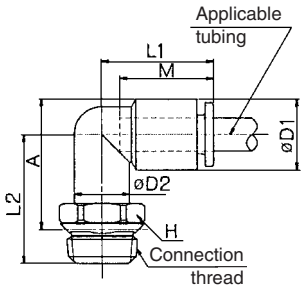
| Applicable tubing O.D. (mm) | Connection thread Uni One-touch fittings | Model | H (width across flats) | L | A* | M | Effective area (Note) (mm²) Nylon | Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2H04-U01 | 10 | 18.5 | 13.5 | 16 | 5.6 | 5.6 | 5 |
| | 1/4 | KQ2H04-U02 | 14 | 16.5 | 10.5 | | | | 10 |
| 6 | 1/8 | KQ2H06-U01 | 12 | 19.5 | 14.5 | 17 | 13.1 | 13.1 | 5 |
| | 1/4 | KQ2H06-U02 | 14 | | 13 | | | | 10 |
| | 3/8 | KQ2H06-U03 | 17 | 17.5 | 11.5 | | | | 16 |
| 8 | 1/8 | KQ2H08-U01 | 14 | 25 | 20.5 | 18.5 | 26.1 | 18.0 | 11 |
| | 1/4 | KQ2H08-U02 | | 21.5 | 15.5 | | | | 27 |
| | 3/8 | KQ2H08-U03 | 17 | 19.5 | 13.5 | | | | 33 |
| 10 | 1/8 | KQ2H10-U01 | 17 | 28 | 23 | 21 | 26.1 | 26.1 | 17 |
| | 1/4 | KQ2H10-U02 | | | 22 | | 41.5 | 29.5 | 17 |
| | 3/8 | KQ2H10-U03 | | 24 | 18 | | | | 14 |
| | 1/2 | KQ2H10-U04 | 22 | 22 | 14 | | | | 28 |
| 12 | 1/4 | KQ2H12-U02 | 19 | 30.5 | 24.5 | 22 | 58.3 | 46.1 | 22 |
| | 3/8 | KQ2H12-U03 | | 25.5 | 19.5 | | | | 16 |
| | 1/2 | KQ2H12-U04 | 22 | 24.5 | 16.5 | | | | 28 |
| 16 | 3/8 | KQ2H16-U03 | 24 | 33.5 | 27.5 | 24 | 81 | (81) | 39 |
| | 1/2 | KQ2H16-U04 | | 28.5 | 20.5 | | 113 | (96) | 25 |




* Reference dimensions after Uni thread installation. Note) Dimensions in ( ) are the case of soft nylon tubing.

## Male Elbow: KQ2L

| Applicable tubing O.D. (mm) | Connection thread Uni One-touch fittings | Model | H (width across flats) | (1) øD1 | øD2 | L1 | L2 | A* | M | Effective area (2) (mm²) Nylon | Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2L04-U01 | 10 | 10.4 | 10 | 18 | 20 | 20.5 | 16 | 4.2 | 4.2 | 8 |
| | 1/4 | KQ2L04-U02 | 14 | | | | 22 | 21.5 | | | | 14 |
| 6 | 1/8 | KQ2L06-U01 | 10 | 12.8 | 10 | 20 | 21.5 | 23.5 | 17 | 11.4 | 11.4 | 9 |
| | 1/4 | KQ2L06-U02 | 14 | | | | 23 | | | | | 15 |
| | 3/8 | KQ2L06-U03 | 17 | | | | 24 | 24.5 | | | | 23 |
| 8 | 1/8 | KQ2L08-U01 | 12 | 15.2 | 12 | 23 | 22.5 | 25.5 | 18.5 | 21.6 | 14.9 | 11 |
| | 1/4 | KQ2L08-U02 | 14 | | | | 24.5 | 26 | | | | 16 |
| | 3/8 | KQ2L08-U03 | 17 | | | | 25.5 | 27 | | | | 24 |
| 10 | 1/8 | KQ2L10-U01 | 17 | 18.5 | 17 | 26.5 | 25 | 29.5 | 21 | 21.6 | 14.9 | 24 |
| | 1/4 | KQ2L10-U02 | | | | | 26.5 | 30 | | 35.2 | 25.0 | 21 |
| | 3/8 | KQ2L10-U03 | | | | | 27 | 30.5 | | | | 25 |
| | 1/2 | KQ2L10-U04 | 22 | | | | 30 | 31.5 | | | | 45 |
| 12 | 1/4 | KQ2L12-U02 | 17 | 20.9 | 17 | 28.5 | 27 | 31.5 | 22 | 50.2 | 39.7 | 23 |
| | 3/8 | KQ2L12-U03 | | | | | 28 | 32.5 | | | | 27 |
| | 1/2 | KQ2L12-U04 | 22 | | | | 31 | 33.5 | | | | 48 |
| 16 | 3/8 | KQ2L16-U03 | 22 | 26.5 | 21 | 33 | 33 | 40.5 | 24 | 71 | (71) | 49 |
| | 1/2 | KQ2L16-U04 | | | | | 35 | 40.5 | | 100 | (84) | 50 |




* Reference dimensions after Uni thread installation.
Note 1) øD1: Max. diameter
Note 2) Dimensions in ( ) are the case of soft nylon tubing.

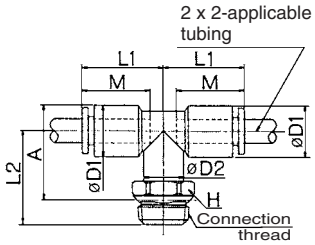
## Male Branch Tee: KQ2T

| Applicable tubing O.D. (mm) | Connection thread Uni One-touch fittings | Model | H (width across flats) | ø**D1** (1) | ø**D2** | **L1** | **L2** | **A**∗ | **M** | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | 1/8 | **KQ2T04-U01** | 10 | 10.4 | 10 | 18 | 20 | 21.5 | 16 | 6.0 | 6.0 | 9 |
| | 1/4 | **KQ2T04-U02** | 14 | | | | 22 | | | | | 15 |
| **6** | 1/8 | **KQ2T06-U01** | 10 | 12.8 | 10 | 20 | 21.5 | 23.5 | 17 | 13.9 | 13.9 | 11 |
| | 1/4 | **KQ2T06-U02** | 14 | | | | 23 | | | | | 17 |
| | 3/8 | **KQ2T06-U03** | 17 | | | | 24 | 24.5 | | | | 26 |
| **8** | 1/8 | **KQ2T08-U01** | 12 | 15.2 | 12 | 23 | 22.5 | 26 | 18.5 | 26.3 | 18.2 | 15 |
| | 1/4 | **KQ2T08-U02** | 14 | | | | 24.5 | | | | | 20 |
| | 3/8 | **KQ2T08-U03** | 17 | | | | 25.5 | 27 | | | | 28 |
| **10** | 1/8 | **KQ2T10-U01** | 17 | 18.5 | 17 | 26.5 | 25 | 29.5 | 21 | 35.2 | 25 | 30 |
| | 1/4 | **KQ2T10-U02** | | | | | 26.5 | 30 | | | | 27 |
| | 3/8 | **KQ2T10-U03** | | | | | 27 | 30.5 | | | | 31 |
| | 1/2 | **KQ2T10-U04** | 22 | | | | 30 | 31.5 | | | | 51 |
| **12** | 1/4 | **KQ2T12-U02** | 17 | 20.9 | 17 | 28.5 | 27 | 31.5 | 22 | 57.2 | 45.2 | 31 |
| | 3/8 | **KQ2T12-U03** | | | | | 28 | 32.5 | | | | 34 |
| | 1/2 | **KQ2T12-U04** | 22 | | | | 31 | 33.5 | | | | 54 |
| **16** | 3/8 | **KQ2T16-U03** | 22 | 26.5 | 21 | 33 | 33 | 40.5 | 24 | 71 | (71) | 62 |
| | 1/2 | **KQ2T16-U04** | | | | | 35 | 40.5 | | 100 | (100) | 63 |

∗ Reference dimensions after Uni thread installation.

Note 1) øD1: Max. diameter

Note 2) Dimensions in ( ) are the case of soft nylon tubing.



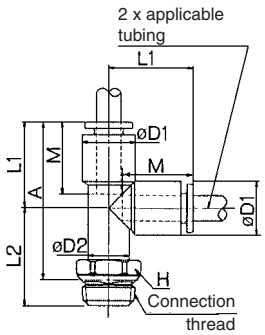

## Male Run Tee: KQ2Y

| Applicable tubing O.D. (mm) | Connection thread Uni One-touch fittings | Model | H (width across flats) | ø**D1** (1) | ø**D2** | **L1** | **L2** | **A**∗ | **M** | Effective area (2) (mm²) Nylon | Effective area (2) (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | 1/8 | **KQ2Y04-U01** | 10 | 10.4 | 10 | 18 | 20 | 34 | 16 | 6.4 | 6.4 | 9 |
| | 1/4 | **KQ2Y04-U02** | 14 | | | | 22 | 34.5 | | | | 15 |
| **6** | 1/8 | **KQ2Y06-U01** | 10 | 12.8 | 10 | 20 | 21.5 | 37.5 | 17 | 13.4 | 13.4 | 11 |
| | 1/4 | **KQ2Y06-U02** | 14 | | | | 23 | 37 | | | | 17 |
| | 3/8 | **KQ2Y06-U03** | 17 | | | | 24 | 38 | | | | 26 |
| **8** | 1/8 | **KQ2Y08-U01** | 12 | 15.2 | 12 | 23 | 22.5 | 41.5 | 18.5 | 25.6 | 17.7 | 15 |
| | 1/4 | **KQ2Y08-U02** | 14 | | | | 24.5 | | | | | 19 |
| | 3/8 | **KQ2Y08-U03** | 17 | | | | 25.5 | 42.5 | | | | 28 |
| **10** | 1/8 | **KQ2Y10-U01** | 17 | 18.5 | 17 | 26.5 | 25 | 46.5 | 21 | 40.0 | 28.4 | 30 |
| | 1/4 | **KQ2Y10-U02** | | | | | 26.5 | 47.5 | | | | 27 |
| | 3/8 | **KQ2Y10-U03** | | | | | 27 | 48 | | | | 31 |
| | 1/2 | **KQ2Y10-U04** | 22 | | | | 30 | 49 | | | | 51 |
| **12** | 1/4 | **KQ2Y12-U02** | 17 | 20.9 | 17 | 28.5 | 27 | 49.5 | 22 | 57.4 | 45.4 | 31 |
| | 3/8 | **KQ2Y12-U03** | | | | | 28 | 50.5 | | | | 35 |
| | 1/2 | **KQ2Y12-U04** | 22 | | | | 31 | 51.5 | | | | 55 |
| **16** | 3/8 | **KQ2Y16-U03** | 22 | 26.5 | 21 | 33 | 40.5 | 66 | 24 | 81 | (81) | 61 |
| | 1/2 | **KQ2Y16-U04** | | | | | | 63 | | 113 | (113) | 62 |

∗ Reference dimensions after Uni thread installation.

Note 1) øD1: Max. diameter

Note 2) Dimensions in ( ) are the case of soft nylon tubing.

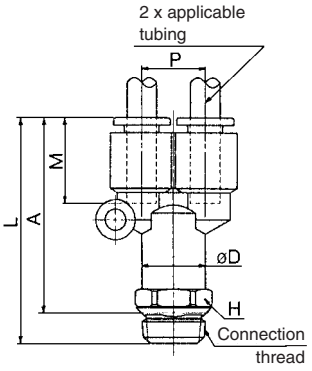


## Branch "Y": KQ2U

| Applicable tubing O.D. (mm) | Connection thread Uni One-touch fittings | Model | H (width across flats) | øD1 (1) | L | P | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2U04-U01 | 11 | 10.4 | 40 | 10.4 | 36 | 16 | 4.2 | 4.2 | 11 |
| | 1/4 | KQ2U04-U02 | 14 | | 42 | | | | | | 16 |
| 6 | 1/8 | KQ2U06-U01 | 13 | 12.8 | 43.5 | 12.8 | 39.5 | 17 | 13.4 | 13.4 | 14 |
| | 1/4 | KQ2U06-U02 | 14 | | 45 | | 39 | | | | 18 |
| | 3/8 | KQ2U06-U03 | 17 | | 46 | | 40 | | | | 26 |
| 8 | 1/8 | KQ2U08-U01 | 17 | 15.2 | 50.5 | 15.2 | 46.5 | 18.5 | 25.6 | 17.7 | 27 |
| | 1/4 | KQ2U08-U02 | | | 52 | | 46 | | | | 25 |
| | 3/8 | KQ2U08-U03 | | | 51.5 | | 45.5 | | | | 28 |
| 10 | 1/4 | KQ2U10-U02 | 19 | 18.5 | 57.5 | 18.5 | 51.5 | 21 | 40 | 28.4 | 38 |
| | 3/8 | KQ2U10-U03 | | | | | | | | | 36 |
| | 1/2 | KQ2U10-U04 | 22 | | 59 | | 51 | | | | 51 |
| 12 | 1/4 | KQ2U12-U02 | 22 | 20.9 | 61 | 20.9 | 55 | 22 | 57.4 | 45.4 | 53 |
| | 3/8 | KQ2U12-U03 | | | | | | | | | 52 |
| | 1/2 | KQ2U12-U04 | | | 62.5 | | 54.5 | | | | 52 |

∗ Reference dimensions after Uni thread installation.

Note 1) øD: Max. diameter

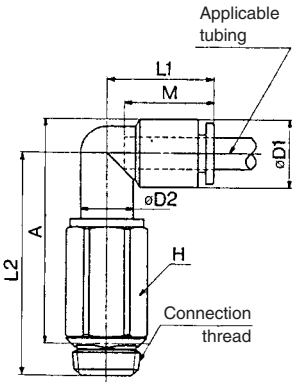



## Extended Male Elbow: KQ2W

| Applicable tubing O.D. (mm) | Connection thread Uni One-touch fittings | Model | H (width across flats) | øD1 (1) | øD2 | L1 | L2 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2W04-U01 | 10 | 10.4 | 10 | 18 | 34.5 | 35.5 | 16 | 4.0 | 4.0 | 16 |
| | 1/4 | KQ2W04-U02 | 14 | | | | 37 | 38.5 | | | | 26 |
| 6 | 1/8 | KQ2W06-U01 | 10 | 12.8 | 10 | 20 | 38.5 | 41 | 17 | 10.9 | 10.9 | 18 |
| | 1/4 | KQ2W06-U02 | 14 | | | | 40.5 | | | | | 29 |
| | 3/8 | KQ2W06-U03 | 17 | | | | 41.5 | 42 | | | | 40 |
| 8 | 1/8 | KQ2W08-U01 | 12 | 15.2 | 12 | 23 | 43.5 | 46.5 | 18 | 20.5 | 14.2 | 28 |
| | 1/4 | KQ2W08-U02 | 14 | | | | 45.5 | 47 | | | | 35 |
| | 3/8 | KQ2W08-U03 | 17 | | | | 46 | 48 | | | | 46 |
| 10 | 1/4 | KQ2W10-U02 | 17 | 18.5 | 17 | 26.5 | 52.5 | 56 | 21 | 33.5 | 23.8 | 67 |
| | 3/8 | KQ2W10-U03 | | | | | | | | | | 57 |
| | 1/2 | KQ2W10-U04 | 22 | | | | 54.5 | | | | | 98 |
| 12 | 1/4 | KQ2W12-U02 | 17 | 20.9 | 17 | 28.5 | 54 | 58.5 | 22 | 47.7 | 37.7 | 69 |
| | 3/8 | KQ2W12-U03 | | | | | | | | | | 59 |
| | 1/2 | KQ2W12-U04 | 22 | | | | 56 | | | | | 99 |

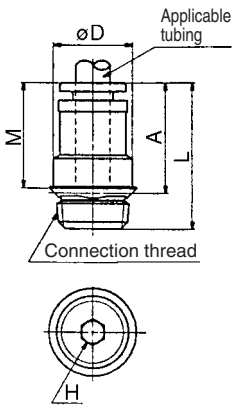
∗ Reference dimensions after Uni thread installation.

Note 1) øD1: Max. diameter



## Hexagon Socket Head Male Connector: KQ2S

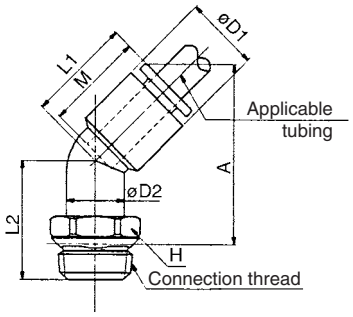
| Applicable tubing O.D. (mm) | Connection thread Uni One-touch fittings | Model | H (width across flats) | (Note) øD1 | L | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2S04-U01 | 3 | 10 | 23.5 | 18.5 | 16 | 4.1 | 3.6 | 7 |
| 6 | 1/8 | KQ2S06-U01 | 4 | 11.8 | 24 | 19 | 17 | 10.0 | 9.9 | 9 |
| | 1/4 | KQ2S06-U02 | | 13.5 | | 18 | | 10.7 | 10.0 | 12 |
| 8 | 1/8 | KQ2S08-U01 | 5 | 14 | 27.5 | 22.5 | 18.5 | 17.2 | 16.2 | 12 |
| | 1/4 | KQ2S08-U02 | 6 | | 28 | 22 | | 23.3 | | 14 |
| | 3/8 | KQ2S08-U03 | | 17 | 27.5 | 21.5 | | | | 24 |
| 10 | 1/8 | KQ2S10-U01 | 5 | 17 | 30 | 25 | 21 | 17.2 | 10.0 | 18 |
| | 1/4 | KQ2S10-U02 | 8 | | 29 | 23 | | 39.0 | 26.6 | 17 |
| | 3/8 | KQ2S10-U03 | | | 28.5 | 22.5 | | | | 19 |
| | 1/2 | KQ2S10-U04 | | 21 | 29 | 21 | | | | 36 |
| 12 | 1/4 | KQ2S12-U02 | 8 | 19 | 30.5 | 25 | 22 | 46.0 | 44.5 | 20 |
| | 3/8 | KQ2S12-U03 | 9 | | 31 | | | 60.0 | | 22 |
| | 1/2 | KQ2S12-U04 | | 21 | 28.5 | 20.5 | | | | 30 |




∗ Reference dimensions after Uni thread installation. Note) øD: Max. diameter

## 45° Male Elbow: KQ2K

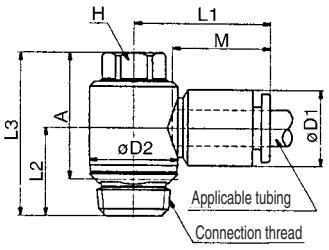
| Applicable tubing O.D. (mm) | Connection thread Uni One-touch fittings | Model | H (width across flats) | (Note) øD1 | øD2 | L1 | L2 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2K04-U01 | 10 | 10.4 | 10 | 17 | 18.5 | 30 | 16 | 3.4 | 3.4 | 6 |
| | 1/4 | KQ2K04-U02 | 14 | | | | 20.5 | 30.5 | | | | 13 |
| 6 | 1/8 | KQ2K06-U01 | 10 | 12.8 | 10 | 18 | 18.5 | 31 | 17 | 8.7 | 8.7 | 7 |
| | 1/4 | KQ2K06-U02 | 14 | | | | 20.5 | | | | | 13 |
| | 3/8 | KQ2K06-U03 | 17 | | | | 21.5 | 32 | | | | 23 |
| 8 | 1/8 | KQ2K08-U01 | 12 | 15.2 | 12 | 20.5 | 20 | 35 | 18.5 | 19.7 | 13.6 | 11 |
| | 1/4 | KQ2K08-U02 | 14 | | | | 22 | | | | | 15 |
| | 3/8 | KQ2K08-U03 | 17 | | | | 23 | 36 | | | | 24 |
| 10 | 1/8 | KQ2K10-U01 | 17 | 18.5 | 17 | 24 | 22 | 38 | 21 | 21.6 | 14.9 | 24 |
| | 1/4 | KQ2K10-U02 | | | | | 23.5 | 40.5 | | 30.9 | 23.2 | 21 |
| | 3/8 | KQ2K10-U03 | | | | | 24 | 41 | | | | 25 |
| | 1/2 | KQ2K10-U04 | 22 | | | | 27 | 42 | | | | 45 |
| 12 | 1/4 | KQ2K12-U02 | 17 | 20.9 | 17 | 25 | 24 | 42 | 22 | 44.5 | 35.1 | 23 |
| | 3/8 | KQ2K12-U03 | | | | | 24.5 | 42.5 | | | | 27 |
| | 1/2 | KQ2K12-U04 | 22 | | | | 27.5 | 43.5 | | | | 46 |




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

## Universal Male Elbow: KQ2V

| Applicable tubing O.D. (mm) | Connection thread Uni One-touch fittings | Model | H (width across flats) | (Note) øD1 | øD2 | L1 | L2 | L3 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | KQ2V04-U01 | 8 | 10.4 | 13.4 | 22 | 13.5 | 25.5 | 20.5 | 16 | 2.9 | 2.9 | 12 |
| 6 | 1/8 | KQ2V06-U01 | 8 | 12.8 | 13.4 | 24 | 13.5 | 25.5 | 20.5 | 17 | 7.5 | 7.5 | 13 |
| | 1/4 | KQ2V06-U02 | 10 | | 15.4 | 23.5 | 15.5 | 28 | 22 | | | | 21 |
| 8 | 1/8 | KQ2V08-U01 | 12 | 15.2 | 17.6 | 28.5 | 14.5 | 27.5 | 22.5 | 18.5 | 11.2 | 24 | 22 |
| | 1/4 | KQ2V08-U02 | | | | | 16.5 | 29.5 | 23.5 | | | 30 | 25 |
| | 3/8 | KQ2V08-U03 | 14 | | 20.6 | 27.5 | 18.5 | 34 | 28 | | 14.3 | 47 | 36 |
| 10 | 1/4 | KQ2V10-U02 | 14 | 18.5 | 20.6 | 31 | 18.5 | 34 | 28 | 21 | 27 | 20.3 | 35 |
| | 3/8 | KQ2V10-U03 | | | | | | | | | | | 38 |
| 12 | 3/8 | KQ2V12-U03 | 17 | 20.9 | 25.2 | 34 | 20 | 36.5 | 30.5 | 22 | 39 | 30.8 | 52 |
| | 1/2 | KQ2V12-U04 | | | | | 22.5 | 39.5 | 31.5 | | | | 62 |




∗ Reference dimensions after Uni thread installation. Note) øD1: 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 |
| **X29** | Grease-free<br>Rubber material: NBR (With fluorine coating)<br>Release button color: Light blue<br>Copper-free (With electroless nickel plated) |
| **X39** | Grease-free<br>Rubber material: NBR (With fluorine coating)<br>Release button color: Light blue<br>Clean (Copper-free, air blow, double package, resin body: white) |

## 2 Other Specifications

| Symbol | Specifications |
|---|---|
| **X2** | Copper-free (With electroless nickel plated) |
| **X12** | Lubricant: White Vaseline<br>Release button color: White |
| **X41** | With fixed throttle Note) |

Note) Compatible with male connector and male elbow only
Consult SMC separately for the available fixed throttle diameters.

## Spare Parts

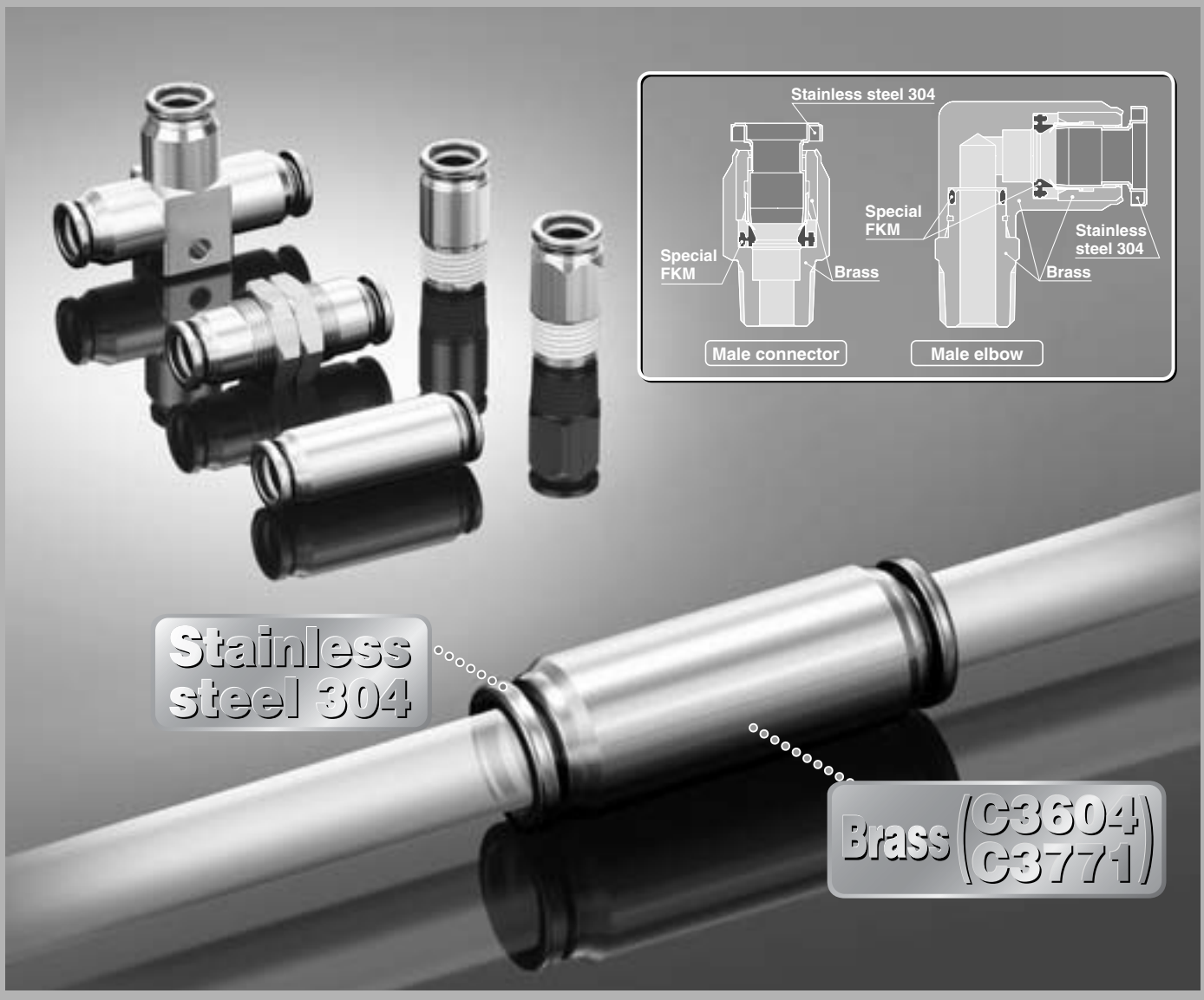
| Description | Part no. | Applicable thread |
|---|---|---|
| Gasket | KQG-U01 | Uni 1/8 |
| | KQG-U02 | Uni 1/4 |
| | KQG-U03 | Uni 3/8 |
| | KQG-U04 | Uni 1/2 |

# Brass One-touch Fittings

## Series *KQB*

- Fluid temperature: **–5 to 150**°C
- **Grease-free**
- Applicable tubing material: **• FEP • PFA • Nylon • Soft nylon • Polyurethane • Polyolefin**
- Electroless nickel plated (Brass parts): **Made to Order (-X2)**





## Male Connector

| Applicable tubing O.D. (mm) | Connection thread | Model |
|---|---|---|
| ø4 | M5 | **KQBH04-M5** |
| | R1/8 | **KQBH04-01S** |
| ø6 | M5 | **KQBH06-M5** |
| | R1/8 | **KQBH06-01S** |
| | R1/4 | **KQBH06-02S** |
| ø8 | R1/8 | **KQBH08-01S** |
| | R1/4 | **KQBH08-02S** |
| | R3/8 | **KQBH08-03S** |
| ø10 | R1/4 | **KQBH10-02S** |
| | R3/8 | **KQBH10-03S** |
| ø12 | R3/8 | **KQBH12-03S** |
| | R1/2 | **KQBH12-04S** |

## Hexagon Socket Head Male Connector

| Applicable tubing O.D. (mm) | Connection thread | Model |
|---|---|---|
| ø4 | M5 | **KQBS04-M5** |
| | R1/8 | **KQBS04-01S** |
| ø6 | M5 | **KQBS06-M5** |
| | R1/8 | **KQBS06-01S** |
| | R1/4 | **KQBS06-02S** |
| ø8 | R1/8 | **KQBS08-01S** |
| | R1/4 | **KQBS08-02S** |
| | R3/8 | **KQBS08-03S** |
| ø10 | R1/4 | **KQBS10-02S** |
| | R3/8 | **KQBS10-03S** |
| ø12 | R3/8 | **KQBS12-03S** |
| | R1/2 | **KQBS12-04S** |

## Straight Union

| Applicable tubing O.D. (mm) | Model |
|---|---|
| ø4 | **KQBH04-00** |
| ø6 | **KQBH06-00** |
| ø8 | **KQBH08-00** |
| ø10 | **KQBH10-00** |
| ø12 | **KQBH12-00** |

## Male Elbow

| Applicable tubing O.D. (mm) | Connection thread | Model |
|---|---|---|
| ø4 | M5 | **KQBL04-M5** |
| | R1/8 | **KQBL04-01S** |
| ø6 | M5 | **KQBL06-M5** |
| | R1/8 | **KQBL06-01S** |
| | R1/4 | **KQBL06-02S** |
| ø8 | R1/8 | **KQBL08-01S** |
| | R1/4 | **KQBL08-02S** |
| | R3/8 | **KQBL08-03S** |
| ø10 | R1/4 | **KQBL10-02S** |
| | R3/8 | **KQBL10-03S** |
| ø12 | R3/8 | **KQBL12-03S** |
| | R1/2 | **KQBL12-04S** |

## Union Elbow

| Applicable tubing O.D. (mm) | Model |
|---|---|
| ø4 | **KQBL04-00** |
| ø6 | **KQBL06-00** |
| ø8 | **KQBL08-00** |
| ø10 | **KQBL10-00** |
| ø12 | **KQBL12-00** |

## Male Branch Tee

| Applicable tubing O.D. (mm) | Connection thread | Model |
|---|---|---|
| ø4 | M5 | **KQBT04-M5** |
| | R1/8 | **KQBT04-01S** |
| ø6 | M5 | **KQBT06-M5** |
| | R1/8 | **KQBT06-01S** |
| | R1/4 | **KQBT06-02S** |
| ø8 | R1/8 | **KQBT08-01S** |
| | R1/4 | **KQBT08-02S** |
| | R3/8 | **KQBT08-03S** |
| ø10 | R1/4 | **KQBT10-02S** |
| | R3/8 | **KQBT10-03S** |
| ø12 | R3/8 | **KQBT12-03S** |
| | R1/2 | **KQBT12-04S** |

## Union Tee

| Applicable tubing O.D. (mm) | Model |
|---|---|
| ø4 | **KQBT04-00** |
| ø6 | **KQBT06-00** |
| ø8 | **KQBT08-00** |
| ø10 | **KQBT10-00** |
| ø12 | **KQBT12-00** |

## Union "Y"

| Applicable tubing O.D. (mm) | Model |
|---|---|
| ø4 | **KQBU04-00** |
| ø6 | **KQBU06-00** |
| ø8 | **KQBU08-00** |
| ø10 | **KQBU10-00** |
| ø12 | **KQBU12-00** |

## Bulkhead Union

| Applicable tubing O.D. (mm) | Model |
|---|---|
| ø4 | **KQBE04-00** |
| ø6 | **KQBE06-00** |
| ø8 | **KQBE08-00** |
| ø10 | **KQBE10-00** |
| ø12 | **KQBE12-00** |

# One-touch Fittings
# *Series KQB*



## 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 |
| **Operating pressure range** [Note 1)] | –100 kPa to 1 MPa |
| **Proof pressure** | 3.0 MPa |
| **Ambient and fluid temperature** [Note 2)] | –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) Please avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 5) 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.

**Made to Order**
(Refer to page 104 for details.)

### Temperature Conditions

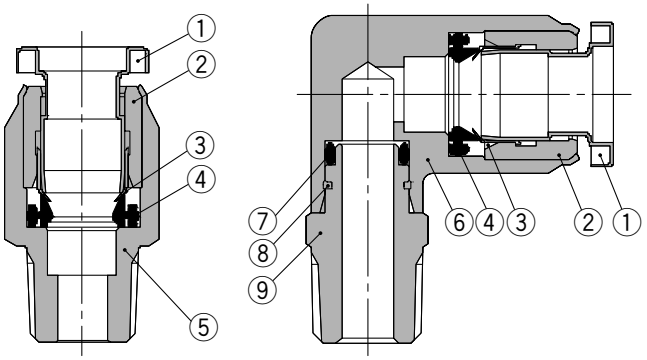
| Operating tube | Temperature |
|---|---|
| FEP tubing/TH series | 80°C or more |
| PFA tubing/TL series | 120°C or more |

| 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 | — | — | ● | — | **TJ-0402** | 18 |
| | 0425 | ● | ● | ● | — | **TJ-0425** | 18 |
| | 0403 | — | — | — | ● | **TJ-0403** | 18 |
| ø6 | 0604 | ● | ● | ● | ● | **TJ-0604** | 19 |
| ø8 | 0805 | ● | ● | — | — | **TJ-0805** | 20.5 |
| | 0806 | — | — | ● | ● | **TJ-0806** | 20.5 |
| ø10 | 1065 | ● | ● | — | — | **TJ-1065** | 23 |
| | 1075 | — | — | ● | — | **TJ-1075** | 23 |
| | 1008 | — | — | ● | ● | **TJ-1208** | 24 |
| ø12 | 1208 | ● | ● | — | — | | |
| | 1209 | — | — | ● | — | **TJ-1209** | 24 |
| | 1210 | — | — | ● | ● | **TJ-1210** | 24 |

### Spare Parts

| Description | Model | Material |
|---|---|---|
| Gasket | **M-5G3** | Stainless steel 316, Special FKM |
| Bulkhead nut | **KQB04-P01** | C3604 |
| | **KQB06-P01** | |
| | **KQB08-P01** | |
| | **KQB10-P01** | |
| | **KQB12-P01** | |

## Construction




| No. | Description | Material | Note |
|---|---|---|---|
| **1** | **Release button** | Stainless steel 304 | |
| **2** | **Guide** | C3604 | |
| **3** | **Chuck** | Stainless steel 304 | |
| **4** | **Seal** | Special FKM | Fluoro coated |
| **5** | **Male connector body** | C3604 | |
| **6** | **Male elbow body** | C3771 | |
| **7** | **O-ring** | Special FKM | Fluoro coated |
| **8** | **Stopper ring** | Stainless steel 316 | |
| **9** | **Stud** | C3604 | |

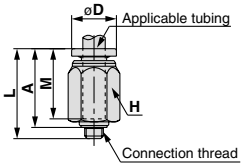
## Dimensions

### Male Connector: KQBH

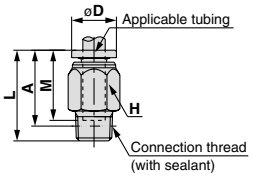
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (Width across flats) | Note 1) øD | L | A* | M | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | M5 | **KQBH04-M5** | 10 | 10 | 22.3 | 19.3 | 18 | 4 | 7.7 |
| | 1/8 | **KQBH04-01S** | | | 24 | 20 | | 5.6 | 10 |
| ø6 | M5 | **KQBH06-M5** | 12 | 12 | 24.1 | 21.1 | 18.8 | 4 | 12 |
| | 1/8 | **KQBH06-01S** | | | 24.3 | 20.3 | | 10.4 | 12 |
| | 1/4 | **KQBH06-02S** | | | 25.8 | 19.8 | | | 19 |
| ø8 | 1/8 | **KQBH08-01S** | 14 | 14 | 30.5 | 26.5 | 20.9 | 26.1 | 19 |
| | 1/4 | **KQBH08-02S** | | | 28.5 | 22.5 | | | 19 |
| | 3/8 | **KQBH08-03S** | | | 24 | 17.7 | | | 25 |
| ø10 | 1/4 | **KQBH10-02S** | 17 | 17 | 35.5 | 29.5 | 23 | 41.5 | 30 |
| | 3/8 | **KQBH10-03S** | | | 31 | 24.7 | | | 30 |
| ø12 | 3/8 | **KQBH12-03S** | 19 | 19 | 32.8 | 26.5 | 24.8 | 58.3 | 32 |
| | 1/2 | **KQBH12-04S** | 22 | | | 24.6 | | | 53 |

∗ 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)**

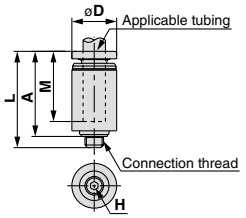



### Hexagon Socket Head Male Connector: KQBS

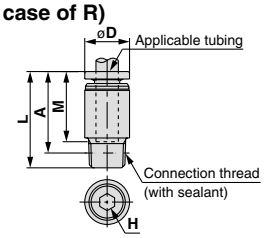
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (Width across flats) | Note 1) øD | L | A* | M | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | M5 | **KQBS04-M5** | 2 | 10 | 25 | 22 | 18 | 4 | 9 |
| | 1/8 | **KQBS04-01S** | 3 | | | 21 | | 4.1 | 10 |
| ø6 | M5 | **KQBS06-M5** | 2 | 12 | 25.8 | 22.8 | 18.8 | 4 | 13 |
| | 1/8 | **KQBS06-01S** | 4 | | | 21.8 | | 9.9 | 13 |
| | 1/4 | **KQBS06-02S** | | | | 19.8 | | 10 | 21 |
| ø8 | 1/8 | **KQBS08-01S** | 5 | 14 | 30.5 | 26.5 | 20.9 | 17.2 | 18 |
| | 1/4 | **KQBS08-02S** | 6 | | 28.5 | 22.5 | | 23.3 | 19 |
| | 3/8 | **KQBS08-03S** | | | 30.1 | 23.8 | | | 37 |
| ø10 | 1/4 | **KQBS10-02S** | 8 | 17 | 35.5 | 29.5 | 23 | 39 | 29 |
| | 3/8 | **KQBS10-03S** | | | 31 | 24.7 | | | 30 |
| ø12 | 3/8 | **KQBS12-03S** | 10 | 19 | 32.8 | 26.5 | 24.8 | 60 | 31 |
| | 1/2 | **KQBS12-04S** | | 22 | | 24.6 | | | 56 |

∗ 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)**



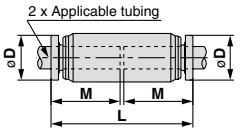

**(In case of R)**




### Straight Union: KQBH

| Applicable tubing O.D. (mm) | Model | Note 1) øD | L | M | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|
| ø4 | **KQBH04-00** | 11 | 37 | 18 | 5.6 | 17 |
| ø6 | **KQBH06-00** | 13 | 38.6 | 18.8 | 13.1 | 23 |
| ø8 | **KQBH08-00** | 15 | 42.8 | 20.9 | 26.1 | 32 |
| ø10 | **KQBH10-00** | 19 | 47 | 23 | 41.5 | 56 |
| ø12 | **KQBH12-00** | 21 | 50.6 | 24.8 | 58.3 | 69 |

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

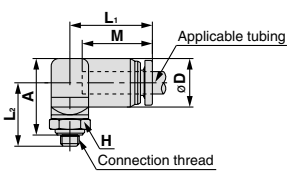



### Male Elbow: KQBL

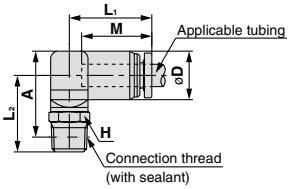
| Applicable tubing O.D. (mm) | Connection thread R | Model | H (Width across flats) | Note 1) øD | $L_1$ | $L_2$ | A* | M | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | M5 | **KQBL04-M5** | 10 | 11.6 | 20.5 | 16 | 18.8 | 18 | 3.5 | 19 |
| | 1/8 | **KQBL04-01S** | | | | 19.5 | 21.3 | | 4.2 | 21 |
| ø6 | M5 | **KQBL06-M5** | | 14 | 22.1 | 17 | 21 | 18.8 | 3.5 | 26 |
| | 1/8 | **KQBL06-01S** | | | | 20.5 | 23.5 | | 9 | 27 |
| | 1/4 | **KQBL06-02S** | 14 | | | 24.5 | 25.5 | | | 37 |
| ø8 | 1/8 | **KQBL08-01S** | 12 | 15 | 24.9 | 21.9 | 25.7 | 20.9 | 21.6 | 39 |
| | 1/4 | **KQBL08-02S** | 14 | | | 25.9 | 27.7 | | | 47 |
| | 3/8 | **KQBL08-03S** | | | | 27.9 | 29.4 | | | 59 |
| ø10 | 1/4 | **KQBL10-02S** | 17 | 18 | 27.8 | 27.7 | 30.9 | 23 | 35.2 | 72 |
| | 3/8 | **KQBL10-03S** | | | | 29.7 | 32.6 | | | 76 |
| ø12 | 3/8 | **KQBL12-03S** | | 20.8 | 31.3 | 30.7 | 35.3 | 24.8 | 50.2 | 98 |
| | 1/2 | **KQBL12-04S** | 22 | | | 34.7 | 37.4 | | | 127 |

∗ 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)**



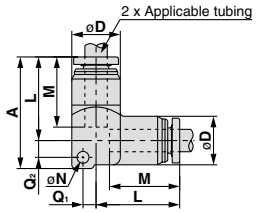

**(In case of R)**



## Dimensions

### Union Elbow: KQBL

| 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 | **KQBL04-00** | 11.6 | 20.6 | 27.3 | 2.8 | 3.7 | 18 | 3.2 | 4.2 | 22 |
| ø6 | **KQBL06-00** | 14 | 22.4 | 29.4 | 4 | 4 | 18.8 | | 9 | 33 |
| ø8 | **KQBL08-00** | 15.6 | 25.5 | 35.1 | 3.8 | 5.6 | 20.9 | 4.2 | 21.6 | 51 |
| ø10 | **KQBL10-00** | 18.4 | 28.6 | 38.8 | 5.2 | 6.2 | 23 | | 35.2 | 79 |
| ø12 | **KQBL12-00** | 21.2 | 31.4 | 42 | 6.6 | 6.6 | 24.8 | | 50.2 | 113 |

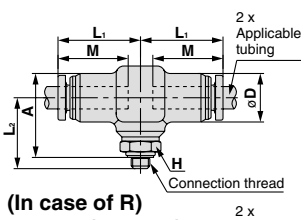



Note 1) øD is maximum diameter.
Note 2) Figures shown when using FEP tubing

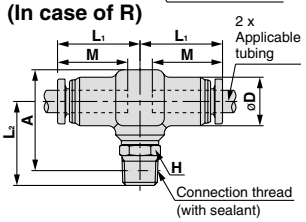
### Male Branch Tee: KQBT

| 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 | **KQBT04-M5** | 10 | 11.6 | 20.5 | 18 | 23.1 | 18 | 4.5 | 27 |
| | 1/8 | **KQBT04-01S** | | | | 21.5 | 25.6 | | 6 | 28 |
| ø6 | M5 | **KQBT06-M5** | | 14 | 22.1 | 19 | 25 | 18.8 | 4.5 | 41 |
| | 1/8 | **KQBT06-01S** | | | | 22.5 | 27.5 | | 11 | 43 |
| | 1/4 | **KQBT06-02S** | 14 | | | 26.5 | 29.5 | | | 52 |
| ø8 | 1/8 | **KQBT08-01S** | 12 | 15.6 | 24.9 | 23.9 | 30.7 | 20.9 | 26.3 | 64 |
| | 1/4 | **KQBT08-02S** | 14 | | | 27.9 | 32.7 | | | 73 |
| | 3/8 | **KQBT08-03S** | | | | 29.9 | 34.4 | | | 87 |
| ø10 | 1/4 | **KQBT10-02S** | 17 | 18.4 | 27.8 | 29.7 | 35.7 | 23 | 40.8 | 101 |
| | 3/8 | **KQBT10-03S** | | | | 31.7 | 37.4 | | | 106 |
| ø12 | 3/8 | **KQBT12-03S** | | 21.2 | 31.3 | 32.7 | 39.5 | 24.8 | 57.2 | 139 |
| | 1/2 | **KQBT12-04S** | 22 | | | 36.7 | 41.6 | | | 166 |

**(In case of M5)**



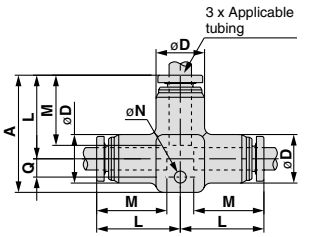

**(In case of R)**




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

### Union Tee: KQBT

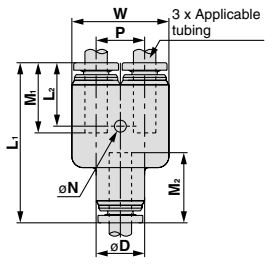
| Applicable tubing O.D. (mm) | Model | Note 1) øD | L | A | Q | M | øN | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | **KQBT04-00** | 11.6 | 20.6 | 28.7 | 4.1 | 18 | 3.2 | 6.4 | 29 |
| ø6 | **KQBT06-00** | 14 | 22.4 | 31.4 | 4.9 | 18.8 | | 10.6 | 44 |
| ø8 | **KQBT08-00** | 15.6 | 25.5 | 36.3 | 6.1 | 20.9 | 4.2 | 25.6 | 60 |
| ø10 | **KQBT10-00** | 18.4 | 28.6 | 40.6 | 7.1 | 23 | | 40 | 99 |
| ø12 | **KQBT12-00** | 21.2 | 31.4 | 44.5 | 8.1 | 24.8 | | 57.4 | 135 |




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

### Union "Y": KQBU

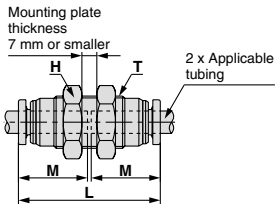
| Applicable tubing O.D. (mm) | Model | Note 1) øD | W | $L_1$ | $L_2$ | P | $M_1$ | $M_2$ | øN | Effective area Note 2) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | **KQBU04-00** | 11.6 | 22.2 | 41.2 | 16.8 | 10.6 | 18 | 17 | 3.2 | 2.9 | 37 |
| ø6 | **KQBU06-00** | 14 | 27 | 43.1 | 17 | 13 | 18.8 | 17.8 | | 7.4 | 56 |
| ø8 | **KQBU08-00** | 15.6 | 30.6 | 47.9 | 18.7 | 15 | 20.9 | 19.9 | 4.2 | 17.9 | 78 |
| ø10 | **KQBU10-00** | 18.4 | 36.4 | 53 | 20.5 | 18 | 23 | 22 | | 28 | 119 |
| ø12 | **KQBU12-00** | 21.2 | 42.2 | 58 | 21.9 | 21 | 24.8 | 23.8 | | 40.2 | 183 |




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

### Bulkhead Union: KQBE

| Applicable tubing O.D. (mm) | Model | T (M) | H (Width across flats) | L | Mounting hole | M | Effective area Note) ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| ø4 | **KQBE04-00** | M12X1 | 14 | 37 | 13 | 18 | 5.6 | 22 |
| ø6 | **KQBE06-00** | M14X1 | 17 | 38.6 | 15 | 18.8 | 10.4 | 30 |
| ø8 | **KQBE08-00** | M16X1 | 19 | 42.8 | 17 | 20.9 | 26.1 | 42 |
| ø10 | **KQBE10-00** | M20X1 | 24 | 47 | 21 | 23 | 41.5 | 74 |
| ø12 | **KQBE12-00** | M22X1 | 27 | 50.6 | 23 | 24.8 | 58.3 | 99 |




Note) Figures shown when using FEP tubing

# *Series KQB*
# Made to Order

Please contact SMC for detailed dimensions, specifications, and lead times.


## 1 Electroless Nickel Plated

Symbol **-X2**

All brass parts are electroless nickel plated.

Example) **KQBH04-01S-X2**

**Electroless nickel plated**

# Series KQB
# Specific Product 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.**

## 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 | 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 |

**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 KQB 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.

# Metal One-touch Fittings

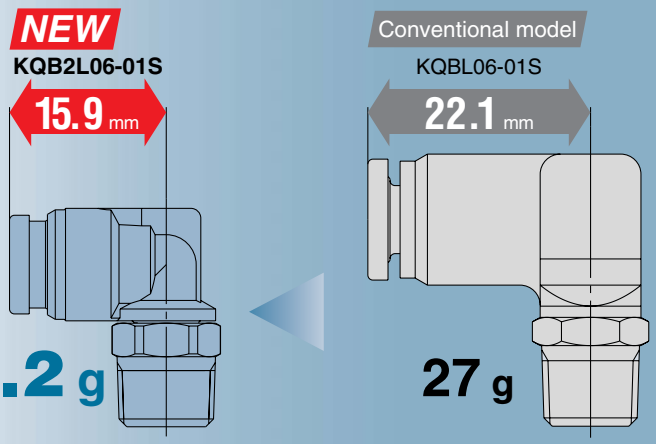
New

RoHS

## Compact and Light

**Dimensions** Approx. **30%** Down
* Comparison with KQBL06-01S

**Weight** Approx. **62%** Down
* Comparison with KQBL06-01S




- More configuration variations
  **17** models ◀ **9** models

**Fluid temperature** **−5 to 150°C**

**Connection thread** M, R, Rc, UNF, NPT, G

**Applicable tube material** FEP • PFA • Nylon • Soft nylon
Polyurethane • Polyolefin

- Electroless nickel plated (Brass parts)
- Grease-free

### Variations

● Added size

| Connection thread | Applicable tube O.D. (mm) ø3.2 | ø4 | ø6 | ø8 | ø10 | ø12 | ø16 |
|---|---|---|---|---|---|---|---|
| M5 | ● | ◆ | ● | ● | ● | ◆ | ◆ |
| R1/8 | ● | ◆ | ◆ | ◆ | ● | ◆ | ◆ |
| G1/8 | ◆ | ● | ● | ● | ● | ◆ | ◆ |
| R1/4 | ● | ◆ | ◆ | ◆ | ◆ | ● | ◆ |
| G1/4 | ◆ | ● | ● | ● | ● | ● | ◆ |
| R3/8 | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ● |
| G3/8 | ◆ | ◆ | ● | ● | ● | ● | ● |
| R1/2 | ◆ | ◆ | ◆ | ◆ | ● | ● | ● |
| G1/2 | ◆ | ◆ | ◆ | ◆ | ● | ● | ● |
| No thread | ● | ◆ | ◆ | ◆ | ● | ● | ● |

| Connection thread | Applicable tube O.D. (inch) ø1/8" | ø5/32" | ø1/4" | ø5/16" | ø3/8" | ø1/2" |
|---|---|---|---|---|---|---|
| 10-32 UNF | ● | ● | ● | ◆ | ◆ | ◆ |
| NPT1/8 | ● | ● | ● | ● | ● | ◆ |
| NPT1/4 | ● | ● | ● | ● | ● | ● |
| NPT3/8 | ◆ | ◆ | ● | ● | ● | ● |
| NPT1/2 | ◆ | ◆ | ◆ | ◆ | ● | ● |
| No thread | ● | ● | ● | ● | ● | ● |

## Series KQB2

SMC

CAT.ES50-34A

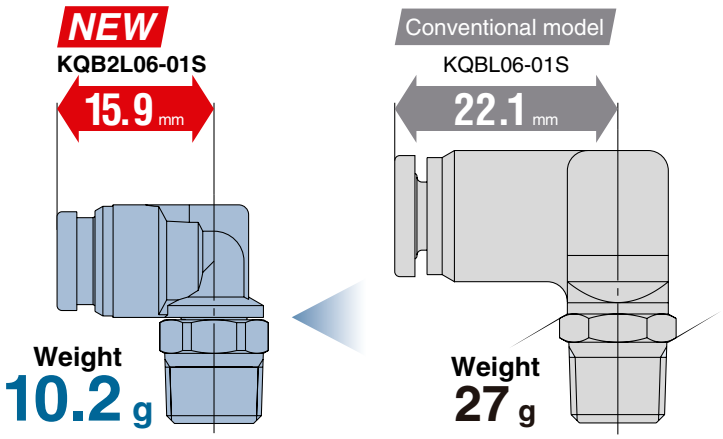
# Metal One-touch Fittings

## Series KQB2

### Compact and light

**Dimensions: Approx. 30% down**
* Comparison with KQBL06-01S

**Weight: Approx. 62% down**
* Comparison with KQBL06-01S




### More tube sizes added

**ø3.2 (ø1.8") and ø16 have been added.**

### More configuration variations

**17 models ◀ 9 models**

### Inch size x UNF/NPT thread, Metric size x G thread added

### Applicable tube size

**ø3.2 to ø16, ø1/8" to ø1/2"**

### Connection thread: M, R, Rc, UNF, NPT, G

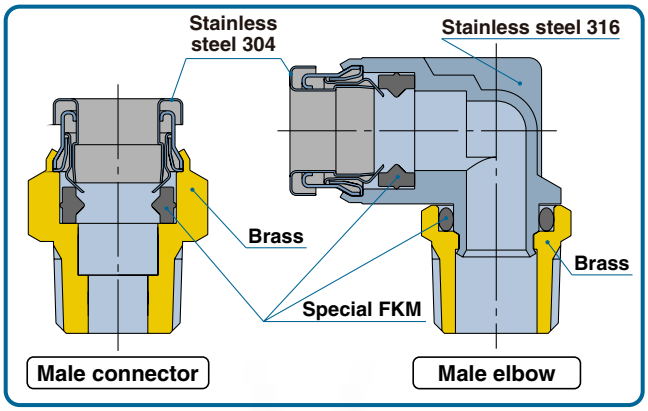
### Fluid temperature: –5 to 150°C

### Grease-free

### Applicable tube material

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

### Electroless nickel plated (Brass parts)




## Variations

### Male Connector KQB2H

Metric
R thread ····· P. 3
G thread ··· P. 16
Inch ····· P. 10

### Hexagon Socket Head Male Connector KQB2S

Metric
R thread ····· P. 3
G thread ··· P. 16
Inch ····· P. 10

### Straight Union KQB2H

Metric ····· P. 3
Inch ····· P. 10

### Male Elbow KQB2L

Metric
R thread ····· P. 4
G thread ··· P. 17
Inch ····· P. 11

### Male Branch Tee KQB2T

Metric
R thread ···· P. 4
G thread ··· P. 17
Inch ····· P. 11

### Union Elbow KQB2L

Metric ····· 5
Inch ····· P. 11

### Bulkhead Union KQB2E

Metric ····· P. 5
Inch ····· P. 12

### Union Tee KQB2T

Metric ····· P. 5
Inch ····· P. 12

### Union "Y" KQB2U

Metric ····· P. 5
Inch ····· P. 12

### Different Diameter Tee KQB2T

Metric ····· P. 6
Inch ····· P. 12

### Plug-in Reducer KQB2R

Metric ····· P. 6
Inch ····· P. 12

### Different Diameter Straight KQB2H

Metric ····· P. 6
Inch ····· P. 13

### Different Diameter Union "Y" KQB2U

Metric ····· P. 6
Inch ····· P. 13

### Bulkhead Connector KQB2E

Metric
Rc thread ···· P. 7
G thread ··· P. 18
Inch ····· P. 13

### Extended Male Elbow KQB2W

Metric
R thread ····· P. 7
G thread ··· P. 18
Inch ····· P. 13

### Female Connector KQB2F

Metric
Rc thread ····· P. 8
G thread ··· P. 18
Inch ····· P. 14

### Plug KQB2P

Metric ····· P. 8
Inch ····· P. 14

# Metal One-touch Fittings

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

# Series KQB2

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

Note 1) For soft nylon tube, water cannot be used.
Note 2) Avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 3) Check the operating pressure range and operating temperature range of the tube.
Note 4) 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

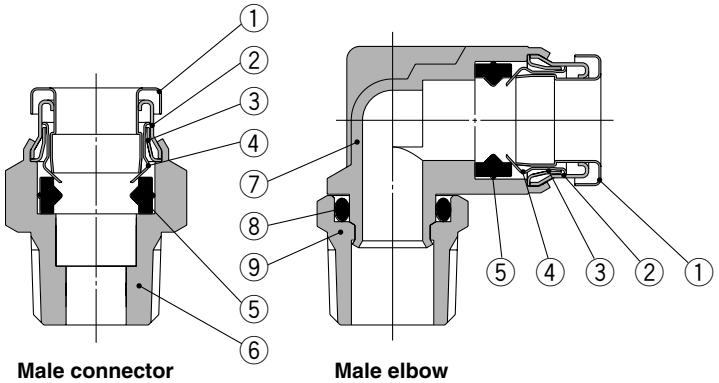
| Description | Tube O.D. | Part no. | Material |
|---|---|---|---|
| Gasket | — | **M-5G3** | Stainless steel 316, Special FKM |
| Bulkhead nut | ø3.2 ø4 | **KQB223-P01** | C3604 (Electroless nickel plated) |
| | ø6 | **KQB206-P01** | |
| | ø8 | **KQB208-P01** | |
| | ø10 | **KQB210-P01** | |
| | ø12 | **KQB212-P01** | |
| | ø16 | **KQB216-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 | — | **TJ-0402** | 18 |
| | TUS0425 | TH0425 | — | **TJ-0425** | 18 |
| | — | — | TL0403 | **TJ-0403** | 18 |
| ø6 | TUS0604 | TH0604 | TL0604 | **TJ-0604** | 19 |
| ø8 | TUS0805 | — | — | **TJ-0805** | 20.5 |
| | — | TH0806 | TL0806 | **TJ-0806** | 20.5 |
| ø10 | TUS1065 | — | — | **TJ-1065** | 23 |
| | — | TH1075 | — | **TJ-1075** | 23 |
| | — | TH1008 | TL1008 | **TJ-1008** | 23 |
| ø12 | TUS1208 | — | — | **TJ-1208** | 24 |
| | — | TH1209 | — | **TJ-1209** | 24 |
| | — | TH1210 | TL1210 | **TJ-1210** | 24 |

∗ C2700 + Electroless nickel plated is used for the TJ series.

## Construction




**Male connector** **Male elbow**

### Component Parts

| No. | Description | Material |
|---|---|---|
| 1 | **Release button** | Stainless steel 304 |
| 2 | **Guide 1** | Stainless steel 304 |
| 3 | **Guide 2** | Stainless steel 304 |
| 4 | **Chuck** | Stainless steel 304 |
| 5 | **Seal** | Special FKM (Fluoro coated) |
| 6 | **Male connector body** | C3604 (Electroless nickel plated) |
| 7 | **Male elbow body** | Stainless steel 316 |
| 8 | **O-ring** | Special FKM (Fluoro coated) |
| 9 | **Stud** | C3604 (Electroless nickel plated) |

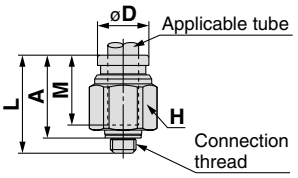
## Dimensions

### Male Connector: KQB2H

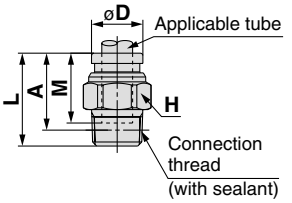
| Applicable tube O.D. (mm) | Connection thread R, M | Model | H (Width across flat) | Note 1) øD | L | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | M5 x 0.8 | KQB2H23-M5 | 8 | 8 | 16.5 | 13.5 | 12 | 3 | 3.4 |
| | 1/8 | KQB2H23-01S | 10 | | 15.4 | 12.3 | | 3.4 | 6 |
| | 1/4 | KQB2H23-02S | 14 | | 21 | 16.3 | | | 17.8 |
| ø4 | M5 x 0.8 | KQB2H04-M5 | 10 | 8.7 | 17.1 | 14.1 | 12.6 | 4 | 5.3 |
| | 1/8 | KQB2H04-01S | | | 15.3 | 12.2 | | 5.6 | 5.6 |
| | 1/4 | KQB2H04-02S | 14 | | 20.9 | 16.2 | | | 17.2 |
| ø6 | M5 x 0.8 | KQB2H06-M5 | 12 | 11.1 | 19.1 | 16.1 | 13.6 | 4 | 8 |
| | 1/8 | KQB2H06-01S | | | 18.1 | 15 | | 13.1 | 7.3 |
| | 1/4 | KQB2H06-02S | 14 | | 20.8 | 16.1 | | | 15.2 |
| | 3/8 | KQB2H06-03S | 17 | | 23 | 17.9 | | | 28.8 |
| ø8 | 1/8 | KQB2H08-01S | 14 | 13.4 | 24.5 | 21.4 | 16.1 | 26.1 | 13.5 |
| | 1/4 | KQB2H08-02S | | | 22.3 | 17.6 | | | |
| | 3/8 | KQB2H08-03S | 17 | | 23.7 | 18.6 | | | 26 |
| ø10 | 1/8 | KQB2H10-01S | 17 | 16.4 | 25.5 | 22.4 | 17 | 26.1 | 19.8 |
| | 1/4 | KQB2H10-02S | | | 27.9 | 23.2 | | 41.5 | 22.7 |
| | 3/8 | KQB2H10-03S | | | 23 | 17.9 | | | 21.6 |
| | 1/2 | KQB2H10-04S | 22 | | 28.6 | 22.2 | | | 53.9 |
| ø12 | 1/4 | KQB2H12-02S | 19 | 18.5 | 30.5 | 25.8 | 18.6 | 58.3 | 28.8 |
| | 3/8 | KQB2H12-03S | | | 24.7 | 19.6 | | | 21.5 |
| | 1/2 | KQB2H12-04S | 22 | | 28.7 | 22.3 | | | 47 |
| ø16 | 3/8 | KQB2H16-03S | 24 | 24.6 | 33.6 | 28.5 | 20.8 | 81 | 48.3 |
| | 1/2 | KQB2H16-04S | | | 29.5 | 23.1 | | 113 | 39.2 |

∗ 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.

(M5)




(R)

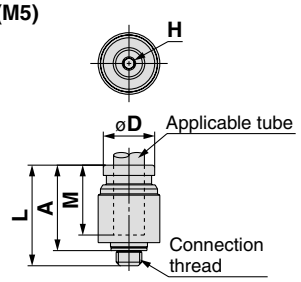



### Hexagon Socket Head Male Connector: KQB2S

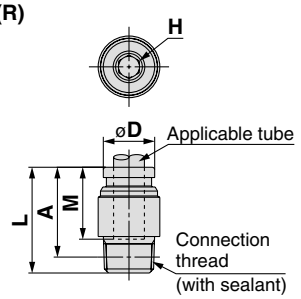
| Applicable tube O.D. (mm) | Connection thread R, M | Model | H (Width across flat) | Note 1) øD | L | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | M5 x 0.8 | KQB2S23-M5 | 2 | 9 | 16.5 | 13.5 | 12 | 3 | 4 |
| ø4 | M5 x 0.8 | KQB2S04-M5 | 2 | 9 | 17.1 | 14.1 | 12.6 | 4 | 3.9 |
| | 1/8 | KQB2S04-01S | 3 | 10 | 20.4 | 17.3 | | 4.1 | 7.9 |
| ø6 | M5 x 0.8 | KQB2S06-M5 | 2 | 12 | 19.6 | 16.6 | 13.6 | 4 | 7.8 |
| | 1/8 | KQB2S06-01S | 4 | | 20.6 | 17.5 | | 10 | 9.1 |
| | 1/4 | KQB2S06-02S | | 14 | | 15.9 | | 10.7 | 14.7 |
| ø8 | 1/8 | KQB2S08-01S | 5 | 14 | 24.7 | 21.6 | 16.1 | 17.2 | 13 |
| | 1/4 | KQB2S08-02S | 6 | | 22.9 | 18.2 | | 23.3 | 13.5 |
| | 3/8 | KQB2S08-03S | | 17 | 23.1 | 18 | | | 24 |
| ø10 | 1/8 | KQB2S10-01S | 5 | 17 | 25.6 | 22.5 | 17 | 17.2 | 18.6 |
| | 1/4 | KQB2S10-02S | 8 | | 27.5 | 22.8 | | 39 | 20 |
| | 3/8 | KQB2S10-03S | | 24 | | 18.9 | | | 22 |
| | 1/2 | KQB2S10-04S | | 22 | | 17.6 | | | 39.2 |
| ø12 | 1/4 | KQB2S12-02S | 8 | 19 | 30.6 | 25.9 | 18.6 | 46 | 26 |
| | 3/8 | KQB2S12-03S | 10 | 24.9 | | 19.8 | | 60 | 20.2 |
| | 1/2 | KQB2S12-04S | | 22 | | 18.5 | | | 35.3 |
| ø16 | 3/8 | KQB2S16-03S | 10 | 24.6 | 33.2 | 28.1 | 20.8 | 81 | 43.6 |
| | 1/2 | KQB2S16-04S | 12 | | 29.4 | 23 | | 113 | 40.3 |

∗ 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.

(M5)



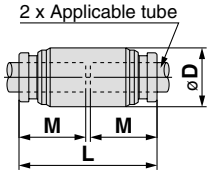

(R)




### Straight Union: KQB2H

| Applicable tube O.D. (mm) | Model | øD Note 1) | L | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|
| ø3.2 | KQB2H23-00 | 9 | 25 | 12 | 3.4 | 6.8 |
| ø4 | KQB2H04-00 | 9 | 26.2 | 12.6 | 5.6 | 6.8 |
| ø6 | KQB2H06-00 | 12 | 28.2 | 13.6 | 13.1 | 12 |
| ø8 | KQB2H08-00 | 14 | 33.2 | 16.1 | 26.1 | 17.4 |
| ø10 | KQB2H10-00 | 17 | 35 | 17 | 41.5 | 27.2 |
| ø12 | KQB2H12-00 | 19 | 38.2 | 18.6 | 58.3 | 33.7 |
| ø16 | KQB2H16-00 | 24.6 | 42.6 | 20.8 | 113 | 56.1 |

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

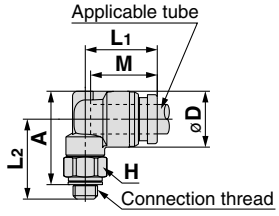


## Dimensions

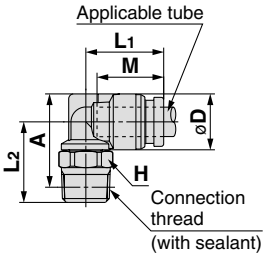
### Male Elbow: KQB2L

| 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 | KQB2L23-M5 | 8 | 8.3 | 13.1 | 14.8 | 16 | 12 | 2.6 | 6.5 |
| | 1/8 | KQB2L23-01S | 10 | | 13.6 | 14.9 | 15.9 | | 3 | 8 |
| | 1/4 | KQB2L23-02S | 14 | | | 18.7 | 18.1 | | | 16.6 |
| ø4 | M5 x 0.8 | KQB2L04-M5 | 8 | 9.1 | 13.7 | 15.2 | 16.8 | 12.6 | 3.5 | 7 |
| | 1/8 | KQB2L04-01S | 10 | | 14.4 | 15.3 | 16.7 | | 4.2 | 8.6 |
| | 1/4 | KQB2L04-02S | 14 | | | 19.1 | 18.9 | | | 17.5 |
| ø6 | M5 x 0.8 | KQB2L06-M5 | 8 | 11.4 | 14.7 | 16.3 | 19 | 13.6 | 3.5 | 9 |
| | 1/8 | KQB2L06-01S | 10 | | 15.9 | 16.4 | | | 11.4 | 10.2 |
| | 1/4 | KQB2L06-02S | 14 | | | 20.2 | 21.2 | | | 19.1 |
| | 3/8 | KQB2L06-03S | 17 | | | 21.6 | 22.2 | | | 31.2 |
| ø8 | 1/8 | KQB2L08-01S | 12 | 13.7 | 18.6 | 18.3 | 22 | 16.1 | 21.6 | 14.8 |
| | 1/4 | KQB2L08-02S | 14 | | 19.1 | 21.5 | 23.6 | | | 20.8 |
| | 3/8 | KQB2L08-03S | 17 | | | 22.9 | 24.6 | | | 32.8 |
| ø10 | 1/8 | KQB2L10-01S | 12 | 16.6 | 20 | 19.7 | 24.9 | 17 | 21.6 | 20.4 |
| | 1/4 | KQB2L10-02S | 14 | | 21 | 22.9 | 26.5 | | 35.2 | 23.7 |
| | 3/8 | KQB2L10-03S | 17 | | | 24.3 | 27.5 | | | 34.5 |
| | 1/2 | KQB2L10-04S | 22 | | | 28.5 | 30.4 | | | 62.6 |
| ø12 | 1/4 | KQB2L12-02S | 14 | 18.7 | 22.6 | 24 | 28.6 | 18.6 | 50.2 | 27.4 |
| | 3/8 | KQB2L12-03S | 17 | | 23.6 | 25.3 | 29.5 | | | 34.3 |
| | 1/2 | KQB2L12-04S | 22 | | | 29.5 | 32.4 | | | 60.8 |
| ø16 | 3/8 | KQB2L16-03S | 19 | 24.6 | 26.3 | 28 | 34.5 | 20.8 | 71 | 47 |
| | 1/2 | KQB2L16-04S | 22 | | 27.3 | 31.8 | 37 | | 100 | 62.6 |

(M5)




(R)

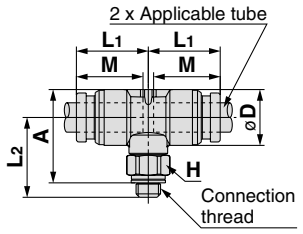



∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

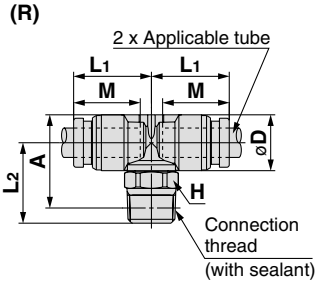
### Male Branch Tee: KQB2T

| 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 | KQB2T23-M5 | 8 | 8.3 | 13.1 | 14.8 | 16 | 12 | 3.2 | 8.2 |
| | 1/8 | KQB2T23-01S | 10 | | 13.6 | 14.9 | 15.9 | | 3.4 | 9.6 |
| | 1/4 | KQB2T23-02S | 14 | | | 18.7 | 18.1 | | | 18.4 |
| ø4 | M5 x 0.8 | KQB2T04-M5 | 8 | 9.1 | 13.7 | 15.2 | 16.8 | 12.6 | 4.5 | 9.1 |
| | 1/8 | KQB2T04-01S | 10 | | 14.4 | 15.3 | 16.7 | | 6 | 10.6 |
| | 1/4 | KQB2T04-02S | 14 | | | 19.1 | 18.9 | | | 19.4 |
| ø6 | M5 x 0.8 | KQB2T06-M5 | 8 | 11.4 | 14.7 | 16.3 | 19 | 13.6 | 4.5 | 12.1 |
| | 1/8 | KQB2T06-01S | 10 | | 15.9 | 16.4 | | | 13.9 | 13.6 |
| | 1/4 | KQB2T06-02S | 14 | | | 20.2 | 21.2 | | | 22.5 |
| | 3/8 | KQB2T06-03S | 17 | | | 21.6 | 22.2 | | | 35 |
| ø8 | 1/8 | KQB2T08-01S | 12 | 13.7 | 18.6 | 18.3 | 22 | 16.1 | 26.3 | 20 |
| | 1/4 | KQB2T08-02S | 14 | | 19.1 | 21.5 | 23.6 | | | 26.1 |
| | 3/8 | KQB2T08-03S | 17 | | | 22.9 | 24.6 | | | 38 |
| ø10 | 1/8 | KQB2T10-01S | 12 | 16.6 | 20 | 19.7 | 24.9 | 17 | 40.8 | 28.6 |
| | 1/4 | KQB2T10-02S | 14 | | 21 | 22.9 | 26.5 | | | 31.5 |
| | 3/8 | KQB2T10-03S | 17 | | | 24.3 | 27.5 | | | 42.4 |
| | 1/2 | KQB2T10-04S | 22 | | | 28.5 | 30.4 | | | 70.4 |
| ø12 | 1/4 | KQB2T12-02S | 14 | 18.7 | 22.6 | 24 | 28.6 | 18.6 | 57.2 | 38.1 |
| | 3/8 | KQB2T12-03S | 17 | | 23.6 | 25.3 | 29.5 | | | 39.7 |
| | 1/2 | KQB2T12-04S | 22 | | | 29.5 | 32.4 | | | 70.8 |
| ø16 | 3/8 | KQB2T16-03S | 19 | 24.6 | 26.3 | 28 | 34.5 | 20.8 | 71 | 64.4 |
| | 1/2 | KQB2T16-04S | 22 | | 27.3 | 31.8 | 37 | | 100 | 79 |

(M5)




(R)



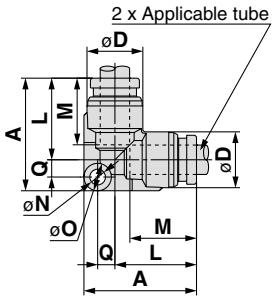

∗ Reference dimensions after installation of R thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

## Dimensions

### Union Elbow: KQB2L

| Applicable tube O.D. (mm) | Model | Note 1) øD | L | A | Q | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | KQB2L23-00 | 8.3 | 13.6 | 19.3 | 2.9 | 12 | 3.2 | 5.6 | 3 | 6.3 |
| ø4 | KQB2L04-00 | 9.1 | 14.6 | 20.5 | 3.1 | 12.6 | 3.2 | 5.6 | 4.2 | 7.4 |
| ø6 | KQB2L06-00 | 11.4 | 16.6 | 23 | 3.6 | 13.6 | 3.2 | 5.6 | 11.4 | 11 |
| ø8 | KQB2L08-00 | 13.7 | 20.1 | 29.1 | 5 | 16.1 | 4.2 | 8 | 21.6 | 20.2 |
| ø10 | KQB2L10-00 | 16.6 | 22 | 31.7 | 5.7 | 17 | 4.2 | 8 | 35.2 | 29.6 |
| ø12 | KQB2L12-00 | 18.7 | 24.6 | 35 | 6.4 | 18.6 | 4.2 | 8 | 50.2 | 37.1 |
| ø16 | KQB2L16-00 | 24.6 | 28.8 | 40.5 | 7.7 | 20.8 | 4.2 | 8 | 100 | 59.7 |

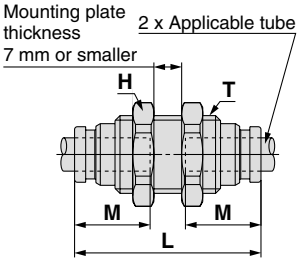
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.




### Bulkhead Union: KQB2E

| 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 | KQB2E23-00 | M10 x 1 | 12 | 32.2 | 11 | 12 | 3.4 | 14.8 |
| ø4 | KQB2E04-00 | M10 x 1 | 12 | 32.4 | 11 | 12.6 | 5.6 | 14.7 |
| ø6 | KQB2E06-00 | M14 x 1 | 17 | 35.4 | 15 | 13.6 | 13.1 | 29.2 |
| ø8 | KQB2E08-00 | M15 x 1 | 19 | 38.8 | 16 | 16.1 | 26.1 | 34.9 |
| ø10 | KQB2E10-00 | M18 x 1 | 21 | 40 | 19 | 17 | 41.5 | 47.1 |
| ø12 | KQB2E12-00 | M20 x 1 | 24 | 42.4 | 21 | 18.6 | 58.3 | 58.7 |
| ø16 | KQB2E16-00 | M27 x 1 | 30 | 46.8 | 28 | 20.8 | 113 | 107.2 |

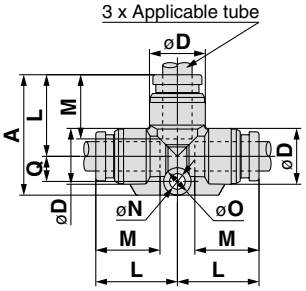
Note) Value of FEP tube.
Value of nylon tube for ø16 only.




### Union Tee: KQB2T

| Applicable tube O.D. (mm) | Model | Note 1) øD | L | A | Q | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | KQB2T23-00 | 8.3 | 13.6 | 20.5 | 4.1 | 12 | 3.2 | 5.6 | 3.4 | 7.9 |
| ø4 | KQB2T04-00 | 9.1 | 14.6 | 21.8 | 4.4 | 12.6 | 3.2 | 5.6 | 6.4 | 9.5 |
| ø6 | KQB2T06-00 | 11.4 | 16.6 | 24.6 | 5.2 | 13.6 | 3.2 | 5.6 | 13.4 | 14.2 |
| ø8 | KQB2T08-00 | 13.7 | 20.1 | 31.1 | 7 | 16.1 | 4.2 | 8 | 25.6 | 24.4 |
| ø10 | KQB2T10-00 | 16.6 | 22 | 34 | 8 | 17 | 4.2 | 8 | 40 | 36.8 |
| ø12 | KQB2T12-00 | 18.7 | 24.6 | 37.7 | 9.1 | 18.6 | 4.2 | 8 | 57.4 | 47 |
| ø16 | KQB2T16-00 | 24.6 | 28.8 | 43.4 | 10.6 | 20.8 | 4.2 | 8 | 100 | 75.5 |

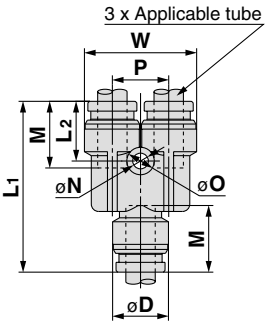
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.




### Union "Y": KQB2U

| Applicable tube O.D. (mm) | Model | Note 1) øD | W | $L_1$ | $L_2$ | P | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | KQB2U23-00 | 8.3 | 16.4 | 29 | 11 | 8.1 | 12 | 3.2 | 5.6 | 3.4 | 9.2 |
| ø4 | KQB2U04-00 | 9.1 | 18.2 | 30.4 | 11.3 | 9.1 | 12.6 | 3.2 | 5.6 | 4.2 | 11.1 |
| ø6 | KQB2U06-00 | 11.4 | 22.9 | 34.9 | 12.2 | 11.5 | 13.6 | 3.2 | 5.6 | 13.4 | 18.8 |
| ø8 | KQB2U08-00 | 13.7 | 28.3 | 40.1 | 14.1 | 14.6 | 16.1 | 4.2 | 8 | 25.6 | 29.7 |
| ø10 | KQB2U10-00 | 16.6 | 34.2 | 44 | 14.4 | 17.6 | 17 | 4.2 | 8 | 40 | 47.4 |
| ø12 | KQB2U12-00 | 18.7 | 38.5 | 48.4 | 15.8 | 19.8 | 18.6 | 4.2 | 8 | 57.4 | 62.1 |
| ø16 | KQB2U16-00 | 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.

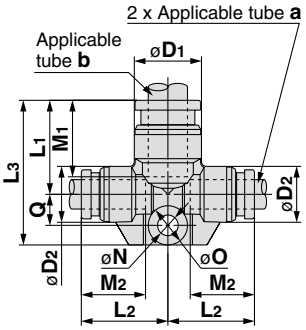


## Dimensions

### Different Diameter Tee: KQB2T

| 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 | KQB2T23-04 | 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 | KQB2T04-06 | 11.4 | 9.1 | 15.6 | 15.7 | 22.8 | 4.4 | 13.6 | 12.6 | 3.2 | 5.6 | 7.1 | 11 |
| ø6 | ø8 | KQB2T06-08 | 13.7 | 11.4 | 19.1 | 17.7 | 29.5 | 6.4 | 16.1 | 13.6 | 4.2 | 8 | 16.4 | 20 |
| ø8 | ø10 | KQB2T08-10 | 16.6 | 13.7 | 21 | 21.2 | 32.1 | 7.1 | 17 | 16.1 | 4.2 | 8 | 36 | 29.8 |
| ø10 | ø12 | KQB2T10-12 | 18.7 | 16.6 | 23.6 | 23.1 | 35.7 | 8.1 | 18.6 | 17 | 4.2 | 8 | 56 | 41.3 |
| ø12 | ø16 | KQB2T12-16 | 24.6 | 18.7 | 26.8 | 26.7 | 39.9 | 9.1 | 20.8 | 18.6 | 4.2 | 8 | 108.5 | 58 |

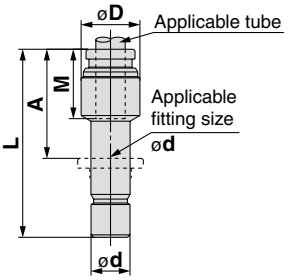
Note 1) øD1, øD2 are maximum diameters.
Note 2) Value of FEP tube.




### Plug-in Reducer: KQB2R

| 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 | KQB2R23-04 | 9 | 32.9 | 20.3 | 12 | 3.4 | 4.9 |
| ø4 | ø6 | KQB2R04-06 | 9 | 34.4 | 20.8 | 12.6 | 5.6 | 7 |
| ø6 | ø8 | KQB2R06-08 | 12 | 38.4 | 22.3 | 13.6 | 13.1 | 12.7 |
| ø8 | ø10 | KQB2R08-10 | 14 | 41.9 | 24.9 | 16.1 | 26.1 | 19.2 |
| ø10 | ø12 | KQB2R10-12 | 17 | 44.8 | 26.2 | 17 | 41.5 | 27.8 |
| ø12 | ø16 | KQB2R12-16 | 19 | 42.9 | 22.1 | 18.6 | 58.3 | 37.2 |

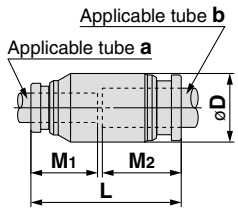
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Different Diameter Straight: KQB2H

| Applicable tube O.D. (mm) a | Applicable tube O.D. (mm) b | Model | øD Note 1) | L | M1 | M2 | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|
| ø3.2 | ø4 | KQB2H23-04 | 9 | 25.6 | 12 | 12.6 | 3.4 | 6.8 |
| ø4 | ø6 | KQB2H04-06 | 12 | 27.2 | 12.6 | 13.6 | 5.6 | 12.1 |
| ø6 | ø8 | KQB2H06-08 | 14 | 30.7 | 13.6 | 16.1 | 13.1 | 17.1 |
| ø8 | ø10 | KQB2H08-10 | 17 | 34.1 | 16.1 | 17 | 26.1 | 27.2 |
| ø10 | ø12 | KQB2H10-12 | 19 | 36.6 | 17 | 18.6 | 41.5 | 34.8 |
| ø12 | ø16 | KQB2H12-16 | 24.6 | 40.4 | 18.6 | 20.8 | 58.3 | 57.3 |

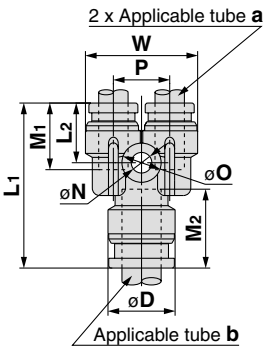
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Different Diameter Union "Y": KQB2U

| 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 | KQB2U23-04 | 9.1 | 27 | 10.8 | 8.1 | 16.4 | 12 | 12.6 | 3.2 | 5.6 | 3.2 | 8.5 |
| ø4 | ø6 | KQB2U04-06 | 11.4 | 29.3 | 11.2 | 9.1 | 18.2 | 12.6 | 13.6 | 3.2 | 5.6 | 4.2 | 11.9 |
| ø6 | ø8 | KQB2U06-08 | 13.7 | 33.7 | 12.2 | 11.5 | 22.9 | 13.6 | 16.1 | 4.2 | 8 | 13.4 | 19.3 |
| ø8 | ø10 | KQB2U08-10 | 16.6 | 38.3 | 13.8 | 14.6 | 28.3 | 16.1 | 17 | 4.2 | 8 | 25.6 | 32 |
| ø10 | ø12 | KQB2U10-12 | 18.7 | 43 | 14 | 17.6 | 34.2 | 17 | 18.6 | 4.2 | 8 | 40 | 47.6 |
| ø12 | ø16 | KQB2U12-16 | 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.

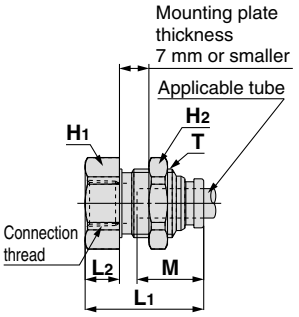


## Dimensions

### Bulkhead Connector: KQB2E

| 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 | KQB2E23-02 | M10 x 1 | 17 | 12 | 31 | 14.8 | 11 | 12 | 3.4 | 27.5 |
| ø4 | 1/8 | KQB2E04-01 | M10 x 1 | 14 | 12 | 25.8 | 9.7 | 11 | 12.6 | 5.6 | 16.9 |
| | 1/4 | KQB2E04-02 | | 17 | | 30.9 | 14.8 | | | | 27.1 |
| ø6 | 1/8 | KQB2E06-01 | M14 x 1 | 17 | 17 | 24.2 | 6.1 | 15 | 13.6 | 13.1 | 25 |
| | 1/4 | KQB2E06-02 | | | | 31.6 | 13.5 | | | | 33.2 |
| | 3/8 | KQB2E06-03 | | 19 | | 33 | 14.9 | | | | 34.8 |
| ø8 | 1/8 | KQB2E08-01 | M15 x 1 | 17 | 19 | 26.3 | 6.9 | 16 | 16.1 | 26.1 | 28.7 |
| | 1/4 | KQB2E08-02 | | | | 32.4 | 13 | | | | 34.2 |
| | 3/8 | KQB2E08-03 | | 19 | | 34 | 14.6 | | | | 35.9 |
| ø10 | 1/4 | KQB2E10-02 | M18 x 1 | 19 | 21 | 31.6 | 11.6 | 19 | 17 | 41.5 | 44 |
| | 3/8 | KQB2E10-03 | | | | 33.6 | 13.6 | | | | 40.2 |
| ø12 | 3/8 | KQB2E12-03 | M20 x 1 | 21 | 24 | 34 | 12.8 | 21 | 18.6 | 58.3 | 52 |
| | 1/2 | KQB2E12-04 | | 24 | | 39.6 | 18.4 | | | | 62.5 |
| ø16 | 3/8 | KQB2E16-03 | M27 x 1 | 29 | 30 | 35.3 | 11.2 | 28 | 20.8 | 96 | 111 |
| | 1/2 | KQB2E16-04 | | | | 40.6 | 16.5 | | | 113 | 118.2 |

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

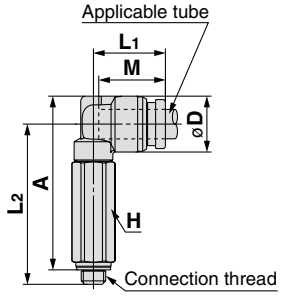



### Extended Male Elbow: KQB2W

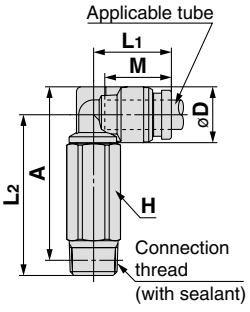
| Applicable tube O.D. (mm) | Connection thread R, M | Model | H (Width across flat) | Note 1) øD | L1 | L2 | A* | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | M5 x 0.8 | KQB2W23-M5 | 8 | 8.3 | 13.1 | 31.2 | 32.4 | 12 | 2.8 | 13.5 |
| | 1/8 | KQB2W23-01S | 10 | | 13.6 | 31.3 | 32.3 | | | 15.3 |
| | 1/4 | KQB2W23-02S | 14 | | | 35.1 | 34.5 | | | 34.7 |
| ø4 | M5 x 0.8 | KQB2W04-M5 | 8 | 9.1 | 13.7 | 31.6 | 33.2 | 12.6 | 3 | 14.1 |
| | 1/8 | KQB2W04-01S | 10 | | 14.4 | 31.7 | 33.1 | | 4 | 16.2 |
| | 1/4 | KQB2W04-02S | 14 | | | 35.5 | 35.3 | | | 35.6 |
| ø6 | M5 x 0.8 | KQB2W06-M5 | 8 | 11.4 | 14.7 | 32.7 | 35.4 | 13.6 | 3 | 16 |
| | 1/8 | KQB2W06-01S | 10 | | 15.9 | 32.8 | | | 10.9 | 17.8 |
| | 1/4 | KQB2W06-02S | 14 | | | 36.6 | 37.6 | | | 37.2 |
| | 3/8 | KQB2W06-03S | 17 | | | 38 | 38.6 | | | 60.3 |
| ø8 | 1/8 | KQB2W08-01S | 12 | 13.7 | 18.6 | 37 | 40.7 | 16.1 | 20.5 | 28.9 |
| | 1/4 | KQB2W08-02S | 14 | | 19.1 | 40.2 | 42.3 | | | 39.2 |
| | 3/8 | KQB2W08-03S | 17 | | | 41.6 | 43.3 | | | 63.7 |
| ø10 | 1/4 | KQB2W10-02S | 14 | 16.6 | 21 | 46.6 | 50.2 | 17 | 33.5 | 42.1 |
| | 3/8 | KQB2W10-03S | 17 | | | 45.9 | 49.1 | | | 64.5 |
| | 1/2 | KQB2W10-04S | 22 | | | 50.1 | 52 | | | 123 |
| ø12 | 1/4 | KQB2W12-02S | 14 | 18.7 | 22.6 | 47.7 | 52.3 | 18.6 | 47.7 | 46 |
| | 3/8 | KQB2W12-03S | 17 | | 23.6 | 49 | 53.2 | | | 58.2 |
| | 1/2 | KQB2W12-04S | 22 | | | 53.2 | 56.1 | | | 118 |
| ø16 | 3/8 | KQB2W16-03S | 19 | 24.6 | 26.3 | 57.6 | 64.1 | 20.8 | 71 | 89.6 |
| | 1/2 | KQB2W16-04S | 22 | | 27.3 | 61.4 | 66.6 | | 100 | 116 |

* 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.

**(M5)**



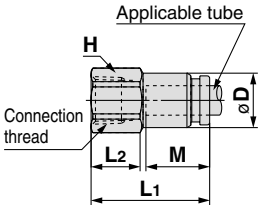

**(R)**



## Dimensions

### Female Connector: KQB2F

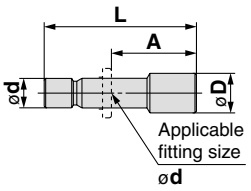
| Applicable tube O.D. (mm) | Connection thread Rc | Model | H (Width across flat) | Note 1) øD | L1 | L2 | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø3.2 | 1/8 | KQB2F23-01 | 12 | 8 | 23.3 | 9.8 | 12 | 3.4 | 9.3 |
| ø4 | 1/8 | KQB2F04-01 | 12 | 8.7 | 23.7 | 9.8 | 12.6 | 5.6 | 9.7 |
| | 1/4 | KQB2F04-02 | 17 | | 28.7 | 13.2 | | | 22.7 |
| ø6 | 1/8 | KQB2F06-01 | 12 | 11.1 | 24.2 | 10 | 13.6 | 13.1 | 11.1 |
| | 1/4 | KQB2F06-02 | 17 | | 29.2 | 13.4 | | | 24.3 |
| | 3/8 | KQB2F06-03 | 19 | | 30.6 | 14.2 | | | 25.8 |
| ø8 | 1/8 | KQB2F08-01 | 14 | 13.4 | 26.3 | 9.6 | 16.1 | 26.1 | 17.1 |
| | 1/4 | KQB2F08-02 | 17 | | 31.3 | 13.7 | | | 26.8 |
| | 3/8 | KQB2F08-03 | 19 | | 32.7 | 14.4 | | | 28.4 |
| ø10 | 1/4 | KQB2F10-02 | 17 | 16.4 | 31.6 | 13.9 | 17 | 41.5 | 30.3 |
| | 3/8 | KQB2F10-03 | 19 | | 33 | 14.7 | | | 32 |
| ø12 | 1/4 | KQB2F12-02 | 19 | 18.5 | 32.6 | 13.3 | 18.6 | 58.3 | 39.4 |
| | 3/8 | KQB2F12-03 | | | 34 | 14.7 | | | 33.9 |
| | 1/2 | KQB2F12-04 | 24 | | 39.3 | 18.4 | | | 52.9 |
| ø16 | 3/8 | KQB2F16-03 | 24 | 24.6 | 35.3 | 13.5 | 20.8 | 81 | 62.8 |
| | 1/2 | KQB2F16-04 | | | 40.6 | 18.8 | | 113 | 59.9 |




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

### Plug: KQB2P

| Applicable fitting size ød | Model | øD | L | A | Weight (g) |
|---|---|---|---|---|---|
| ø3.2 | KQB2P-23 | 5 | 28.9 | 16.9 | 2.8 |
| ø4 | KQB2P-04 | 6 | 29.6 | 17 | 4.3 |
| ø6 | KQB2P-06 | 8 | 30.8 | 17.2 | 9 |
| ø8 | KQB2P-08 | 10 | 33.7 | 17.6 | 16.3 |
| ø10 | KQB2P-10 | 12 | 34.6 | 17.6 | 25.4 |
| ø12 | KQB2P-12 | 14 | 36.5 | 17.9 | 37.8 |
| ø16 | KQB2P-16 | 18 | 38.6 | 17.8 | 69.2 |



# Metal One-touch Fittings

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

# Series KQB2

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

Note 1) For soft nylon tube, water cannot be used.
Note 2) Avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 3) Check the operating pressure range and operating temperature range of the tube.
Note 4) 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

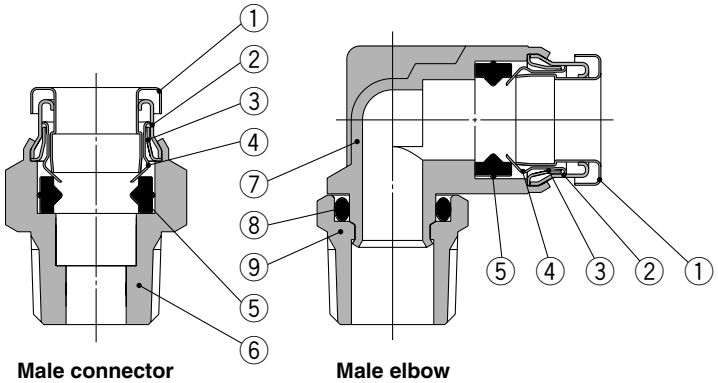
| Description | Tube O.D. | Part no. | Material |
|---|---|---|---|
| Gasket | — | **M-5G3** | Stainless steel 316, Special FKM |
| Bulkhead nut | ø1/8" ø5/32" | **KQB201-P01** | C3604 (Electroless nickel plated) |
| | ø1/4" | **KQB207-P01** | |
| | ø5/16" | **KQB209-P01** | |
| | ø3/8" | **KQB211-P01** | |
| | ø1/2" | **KQB213-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 | — | **TJ-0402** | 18 |
| | TH0425 | — | **TJ-0425** | 18 |
| | — | TL0403 | **TJ-0403** | 18 |
| ø1/4" | TIHB07 | TIL07 | **TJ-0604** | 19 |
| | TIHA07 | — | **TJ-0746** | 19 |
| ø5/16" | TH0806 | TL0806 | **TJ-0806** | 20.5 |
| ø3/8" | TIHB11 | TIL11 | **TJ-1065** | 23 |
| | TIHA11 | — | **TJ-1107** | 23 |
| ø1/2" | TIH13 | TIL13 | **TJ-1395** | 24 |

∗ C2700 + Electroless nickel plated is used for the TJ series.

## Construction




Male connector Male elbow

### Component Parts

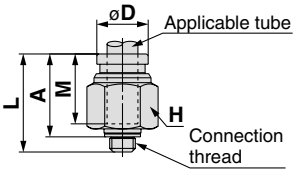
| No. | Description | Material |
|---|---|---|
| 1 | **Release button** | Stainless steel 304 |
| 2 | **Guide 1** | Stainless steel 304 |
| 3 | **Guide 2** | Stainless steel 304 |
| 4 | **Chuck** | Stainless steel 304 |
| 5 | **Seal** | Special FKM (Fluoro coated) |
| 6 | **Male connector body** | C3604 (Electroless nickel plated) |
| 7 | **Male elbow body** | Stainless steel 316 |
| 8 | **O-ring** | Special FKM (Fluoro coated) |
| 9 | **Stud** | C3604 (Electroless nickel plated) |

## Dimensions

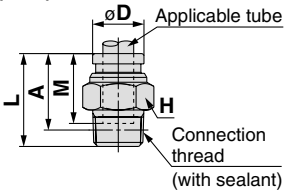
### Male Connector: KQB2H

| 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 | **KQB2H01-32** | 8 | 8 | 16.5 | 13.5 | 12 | 3 | 3.5 |
| | 1/8 | **KQB2H01-N01S** | 11.11 | | 17.1 | 13.9 | | 3.4 | 7.9 |
| | 1/4 | **KQB2H01-N02S** | 14.29 | | 20.9 | 16.5 | | | 18 |
| ø5/32" | 10-32UNF | **KQB2H03-32** | 11.11 | 8.7 | 17.1 | 14.1 | 12.6 | 4 | 6.5 |
| | 1/8 | **KQB2H03-N01S** | | | 17 | 13.8 | | 5.6 | 7.4 |
| | 1/4 | **KQB2H03-N02S** | 14.29 | | 20.9 | 16.5 | | | 17.5 |
| ø1/4" | 10-32UNF | **KQB2H07-32** | 12.7 | 11.2 | 19 | 16 | 13.5 | 4 | 9 |
| | 1/8 | **KQB2H07-N01S** | | | 20 | 16.8 | | 13.1 | 9.8 |
| | 1/4 | **KQB2H07-N02S** | 14.29 | | 20.6 | 16.2 | | | 15.1 |
| | 3/8 | **KQB2H07-N03S** | 17.46 | | 23.8 | 19.1 | | | 31 |
| ø5/16" | 1/8 | **KQB2H09-N01S** | 14.29 | 13.4 | 24.2 | 21 | 16.1 | 26.1 | 13.8 |
| | 1/4 | **KQB2H09-N02S** | | | 23.1 | 18.7 | | | 14.9 |
| | 3/8 | **KQB2H09-N03S** | 17.46 | | 24.6 | 19.9 | | | 28.3 |
| ø3/8" | 1/8 | **KQB2H11-N01S** | 17.46 | 16 | 25 | 21.8 | 16.6 | 26.1 | 21.5 |
| | 1/4 | **KQB2H11-N02S** | | | 26.3 | 21.9 | | 41.5 | 22.3 |
| | 3/8 | **KQB2H11-N03S** | | | 23.6 | 18.9 | | | 24.4 |
| | 1/2 | **KQB2H11-N04S** | 22.23 | | 28.3 | 21.9 | | | 55 |
| ø1/2" | 1/4 | **KQB2H13-N02S** | 22.23 | 19.3 | 30.5 | 26.1 | 18.5 | 58.3 | 39.4 |
| | 3/8 | **KQB2H13-N03S** | | | 28.4 | 23.7 | | | 36.8 |
| | 1/2 | **KQB2H13-N04S** | | | | 22 | | | 46.1 |

**(10-32UNF)**




**(NPT)**

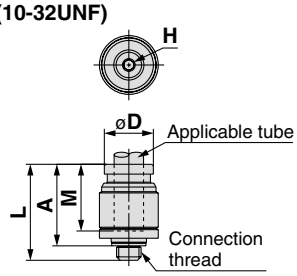



∗ Reference dimensions after installation of NPT thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

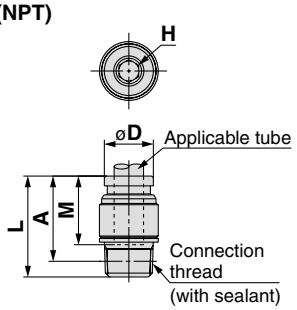
### Hexagon Socket Head Male Connector: KQB2S

| 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 | **KQB2S01-32** | 2 | 9 | 16.5 | 13.5 | 12 | 3 | 3.9 |
| ø5/32" | 10-32UNF | **KQB2S03-32** | 2 | 9 | 17.1 | 14.1 | 12.6 | 4 | 3.9 |
| | 1/8 | **KQB2S03-N01S** | 2.78 | 11 | 21.4 | 18.2 | | 4.1 | 8.9 |
| ø1/4" | 10-32UNF | **KQB2S07-32** | 2 | 12 | 19.5 | 16.5 | 13.5 | 4 | 7.5 |
| | 1/8 | **KQB2S07-N01S** | 4.76 | | 20.5 | 17.3 | | 10 | 8.5 |
| | 1/4 | **KQB2S07-N02S** | | 14 | | 16.1 | | 10.7 | 14.1 |
| | 3/8 | **KQB2S07-N03S** | | 18 | 21.5 | 16.8 | | | 23.8 |
| ø5/16" | 1/8 | **KQB2S09-N01S** | 5.56 | 14 | 24.7 | 21.5 | 16.1 | 17.2 | 12.6 |
| | 1/4 | **KQB2S09-N02S** | 6.35 | | 23.1 | 18.7 | | 23.3 | 13.4 |
| | 3/8 | **KQB2S09-N03S** | | 18 | | 18.4 | | | 24.7 |
| ø3/8" | 1/8 | **KQB2S11-N01S** | 5.56 | 17 | 25.2 | 22 | 16.6 | 17.2 | 18.7 |
| | 1/4 | **KQB2S11-N02S** | 6.35 | | 27.1 | 22.7 | | 39 | 22.2 |
| | 3/8 | **KQB2S11-N03S** | | 18 | 23.6 | 18.9 | | | 25 |
| | 1/2 | **KQB2S11-N04S** | | 22 | | 17.2 | | | 40.6 |
| ø1/2" | 1/4 | **KQB2S13-N02S** | 8 | 20 | 30.5 | 26.1 | 18.5 | 46 | 27.9 |
| | 3/8 | **KQB2S13-N03S** | 9.53 | | 29.4 | 24.7 | | 60 | 30.4 |
| | 1/2 | **KQB2S13-N04S** | | 22 | 25.5 | 19.1 | | | 36.5 |

**(10-32UNF)**



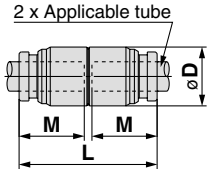

**(NPT)**




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

### Straight Union: KQB2H

| Applicable tube O.D. (inch) | Model | øD Note 1) | L | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|
| ø1/8" | **KQB2H01-00** | 9 | 25 | 12 | 3.4 | 6.8 |
| ø5/32" | **KQB2H03-00** | 9 | 26.2 | 12.6 | 5.6 | 6.8 |
| ø1/4" | **KQB2H07-00** | 12 | 28 | 13.5 | 13.1 | 11.5 |
| ø5/16" | **KQB2H09-00** | 14 | 33.2 | 16.1 | 26.1 | 17.4 |
| ø3/8" | **KQB2H11-00** | 16 | 34.2 | 16.6 | 41.5 | 23.7 |
| ø1/2" | **KQB2H13-00** | 20 | 38 | 18.5 | 58.3 | 37 |



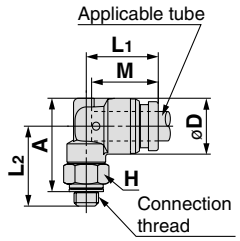

Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

# Dimensions

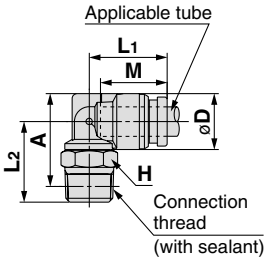
## Male Elbow: KQB2L

| 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 | **KQB2L01-32** | 8 | 8.3 | 13.1 | 14.8 | 16 | 12 | 2.6 | 6.5 |
| | 1/8 | **KQB2L01-N01S** | 11.11 | | 13.6 | 14.9 | 15.8 | | 3 | 8.8 |
| | 1/4 | **KQB2L01-N02S** | 14.29 | | | 18.7 | 18.4 | | | 17.7 |
| ø5/32" | 10-32UNF | **KQB2L03-32** | 8 | 9.1 | 13.7 | 15.2 | 16.8 | 12.6 | 3.5 | 7 |
| | 1/8 | **KQB2L03-N01S** | 11.11 | | 14.4 | 15.3 | 16.6 | | 4.2 | 9.7 |
| | 1/4 | **KQB2L03-N02S** | 14.29 | | | 19.1 | 19.2 | | | 18.5 |
| ø1/4" | 10-32UNF | **KQB2L07-32** | 8 | 11.7 | 14.7 | 16.5 | 19.3 | 13.5 | 3.5 | 9.1 |
| | 1/8 | **KQB2L07-N01S** | 11.11 | | 15.9 | 16.6 | 19.2 | | 11.4 | 11.4 |
| | 1/4 | **KQB2L07-N02S** | 14.29 | | | 20.4 | 21.8 | | | 20.3 |
| | 3/8 | **KQB2L07-N03S** | 17.46 | | | 22.2 | 23.3 | | | 33.7 |
| ø5/16" | 1/8 | **KQB2L09-N01S** | 12.7 | 13.7 | 18.6 | 18.3 | 21.9 | 16.1 | 21.6 | 15.8 |
| | 1/4 | **KQB2L09-N02S** | 14.29 | | 19.1 | 21.5 | 23.9 | | | 21.9 |
| | 3/8 | **KQB2L09-N03S** | 17.46 | | | 23.3 | 25.4 | | | 35 |
| ø3/8" | 1/8 | **KQB2L11-N01S** | 12.7 | 16 | 20 | 19.4 | 24.2 | 16.6 | 21.6 | 20.5 |
| | 1/4 | **KQB2L11-N02S** | 14.29 | | 21 | 22.6 | 26.2 | | 35.2 | 23.9 |
| | 3/8 | **KQB2L11-N03S** | 17.46 | | | 24.4 | 27.7 | | | 35.8 |
| | 1/2 | **KQB2L11-N04S** | 22.23 | | | 28.2 | 29.8 | | | 63.1 |
| ø1/2" | 1/4 | **KQB2L13-N02S** | 14.29 | 19.6 | 22.7 | 24.4 | 29.8 | 18.5 | 50.2 | 30.1 |
| | 3/8 | **KQB2L13-N03S** | 17.46 | | 23.7 | 26.1 | 31.2 | | | 37.9 |
| | 1/2 | **KQB2L13-N04S** | 22.23 | | | 29.9 | 33.3 | | | 63.8 |

**(10-32UNF)**




**(NPT)**

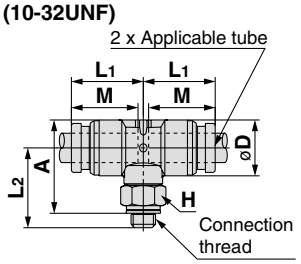



∗ Reference dimensions after installation of NPT thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

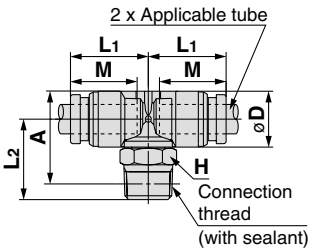
## Male Branch Tee: KQB2T

| 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 | **KQB2T01-32** | 8 | 8.3 | 13.1 | 14.8 | 16 | 12 | 3.2 | 8.2 |
| | 1/8 | **KQB2T01-N01S** | 11.11 | | 13.6 | 14.9 | 15.8 | | 3.4 | 10.6 |
| | 1/4 | **KQB2T01-N02S** | 14.29 | | | 18.7 | 18.4 | | | 19.5 |
| ø5/32" | 10-32UNF | **KQB2T03-32** | 8 | 9.1 | 13.7 | 15.2 | 16.8 | 12.6 | 4.5 | 9.1 |
| | 1/8 | **KQB2T03-N01S** | 11.11 | | 14.4 | 15.3 | 16.6 | | 6 | 11.6 |
| | 1/4 | **KQB2T03-N02S** | 14.29 | | | 19.1 | 19.2 | | | 20.5 |
| ø1/4" | 10-32UNF | **KQB2T07-32** | 8 | 11.7 | 14.7 | 16.5 | 19.3 | 13.5 | 4.5 | 12.3 |
| | 1/8 | **KQB2T07-N01S** | 11.11 | | 15.9 | 16.6 | 19.2 | | 13.9 | 14.9 |
| | 1/4 | **KQB2T07-N02S** | 14.29 | | | 20.4 | 21.8 | | | 23.8 |
| | 3/8 | **KQB2T07-N03S** | 17.46 | | | 22.2 | 23.3 | | | 37.1 |
| ø5/16" | 1/8 | **KQB2T09-N01S** | 12.7 | 13.7 | 18.6 | 18.3 | 21.9 | 16.1 | 26.3 | 21.2 |
| | 1/4 | **KQB2T09-N02S** | 14.29 | | 19.1 | 21.5 | 23.9 | | | 27.1 |
| | 3/8 | **KQB2T09-N03S** | 17.46 | | | 23.3 | 25.4 | | | 40.3 |
| ø3/8" | 1/8 | **KQB2T11-N01S** | 12.7 | 16 | 20 | 19.4 | 24.2 | 16.6 | 40.8 | 28.1 |
| | 1/4 | **KQB2T11-N02S** | 14.29 | | 21 | 22.6 | 26.2 | | | 31.1 |
| | 3/8 | **KQB2T11-N03S** | 17.46 | | | 24.4 | 27.7 | | | 43.1 |
| | 1/2 | **KQB2T11-N04S** | 22.23 | | | 28.2 | 29.8 | | | 70.4 |
| ø1/2" | 1/4 | **KQB2T13-N02S** | 14.29 | 19.6 | 22.7 | 24.4 | 29.8 | 18.5 | 57.2 | 41.8 |
| | 3/8 | **KQB2T13-N03S** | 17.46 | | 23.7 | 26.1 | 31.2 | | | 49 |
| | 1/2 | **KQB2T13-N04S** | 22.23 | | | 29.9 | 33.3 | | | 74.9 |

**(10-32UNF)**




**(NPT)**

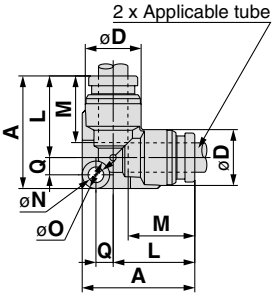



∗ Reference dimensions after installation of NPT thread
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.

## Union Elbow: KQB2L

| Applicable tube O.D. (inch) | Model | Note 1) øD | L | A | Q | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | **KQB2L01-00** | 8.3 | 13.6 | 19.3 | 2.9 | 12 | 3.2 | 5.6 | 3 | 6.3 |
| ø5/32" | **KQB2L03-00** | 9.1 | 14.6 | 20.5 | 3.1 | 12.6 | 3.2 | 5.6 | 4.2 | 7.4 |
| ø1/4" | **KQB2L07-00** | 11.7 | 16.7 | 23.2 | 3.7 | 13.5 | 3.2 | 5.6 | 11.4 | 11.5 |
| ø5/16" | **KQB2L09-00** | 13.7 | 20.1 | 29.1 | 5 | 16.1 | 4.2 | 8 | 21.6 | 20.2 |
| ø3/8" | **KQB2L11-00** | 16 | 21.4 | 31.1 | 5.7 | 16.6 | 4.2 | 8 | 35.2 | 28.2 |
| ø1/2" | **KQB2L13-00** | 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.

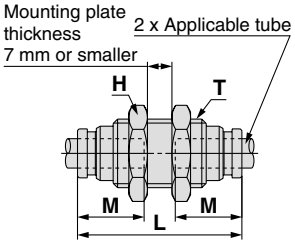


## Dimensions

### Bulkhead Union: KQB2E

| 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" | **KQB2E01-00** | 7/16-20UNF | 14.29 | 34.2 | 12.5 | 12 | 3.4 | 21.8 |
| ø5/32" | **KQB2E03-00** | 7/16-20UNF | 14.29 | 34.4 | 12.5 | 12.6 | 5.6 | 21.6 |
| ø1/4" | **KQB2E07-00** | 1/2-20UNF | 17.46 | 36.2 | 14 | 13.5 | 13.1 | 30.2 |
| ø5/16" | **KQB2E09-00** | 5/8-18UNF | 22.23 | 41.2 | 17 | 16.1 | 26.1 | 43.9 |
| ø3/8" | **KQB2E11-00** | 3/4-16UNF | 22.23 | 42.4 | 20.5 | 16.6 | 41.5 | 64.2 |
| ø1/2" | **KQB2E13-00** | 7/8-14UNF | 25.4 | 47 | 23.5 | 18.5 | 58.3 | 94.2 |

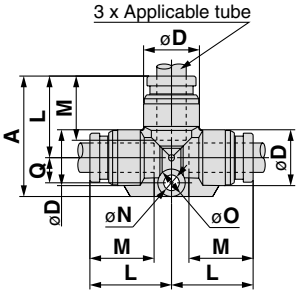
Note) Value of FEP tube.




### Union Tee: KQB2T

| Applicable tube O.D. (inch) | Model | Note 1) øD | L | A | Q | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | **KQB2T01-00** | 8.3 | 13.6 | 20.5 | 4.1 | 12 | 3.2 | 5.6 | 3.4 | 7.9 |
| ø5/32" | **KQB2T03-00** | 9.1 | 14.6 | 21.8 | 4.4 | 12.6 | 3.2 | 5.6 | 6.4 | 9.5 |
| ø1/4" | **KQB2T07-00** | 11.7 | 16.7 | 24.7 | 5.2 | 13.5 | 3.2 | 5.6 | 13.4 | 14.7 |
| ø5/16" | **KQB2T09-00** | 13.7 | 20.1 | 31.1 | 7 | 16.1 | 4.2 | 8 | 25.6 | 24.4 |
| ø3/8" | **KQB2T11-00** | 16 | 21.4 | 33.4 | 8 | 16.6 | 4.2 | 8 | 40 | 34.7 |
| ø1/2" | **KQB2T13-00** | 19.6 | 24.9 | 37.9 | 9 | 18.5 | 4.2 | 8 | 57.4 | 52.3 |

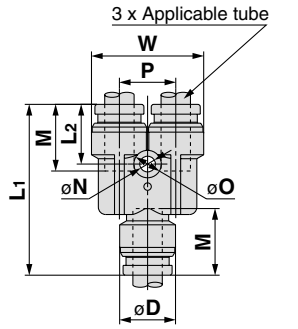
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Union "Y": KQB2U

| Applicable tube O.D. (inch) | Model | Note 1) øD | W | $L_1$ | $L_2$ | P | M | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | **KQB2U01-00** | 8.3 | 16.4 | 29 | 11 | 8.1 | 12 | 3.2 | 5.6 | 3.4 | 9.2 |
| ø5/32" | **KQB2U03-00** | 9.1 | 18.2 | 30.4 | 11.3 | 9.1 | 12.6 | 3.2 | 5.6 | 4.2 | 11.1 |
| ø1/4" | **KQB2U07-00** | 11.7 | 23.9 | 34.5 | 12.1 | 12.2 | 13.5 | 3.2 | 5.6 | 13.4 | 19.6 |
| ø5/16" | **KQB2U09-00** | 13.7 | 28.3 | 40.1 | 14.1 | 14.6 | 16.1 | 4.2 | 8 | 25.6 | 29.7 |
| ø3/8" | **KQB2U11-00** | 16 | 33.2 | 42.2 | 14 | 17.2 | 16.6 | 4.2 | 8 | 40 | 43.1 |
| ø1/2" | **KQB2U13-00** | 19.6 | 40.2 | 47.3 | 15.8 | 20.6 | 18.5 | 4.2 | 8 | 57.4 | 66.4 |

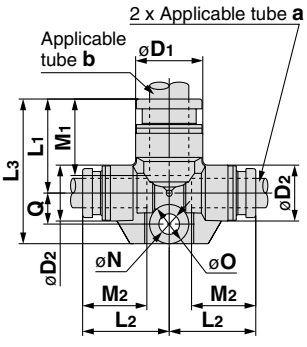
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Different Diameter Tee: KQB2T

| Applicable tube O.D. (inch) a | Applicable tube O.D. (inch) b | Model | Note 1) øD1 | Note 1) øD2 | $L_1$ | $L_2$ | $L_3$ | Q | $M_1$ | $M_2$ | øN | øO | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | ø5/32" | **KQB2T01-03** | 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" | **KQB2T03-07** | 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" | **KQB2T07-09** | 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" | **KQB2T09-11** | 16 | 13.7 | 20.6 | 21 | 31.7 | 7.1 | 16.6 | 16.1 | 4.2 | 8 | 36 | 28.9 |
| ø3/8" | ø1/2" | **KQB2T11-13** | 19.6 | 16 | 23.3 | 23 | 35.4 | 8.1 | 18.5 | 16.6 | 4.2 | 8 | 56 | 41.8 |

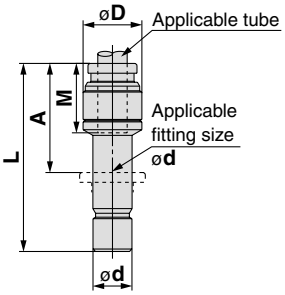
Note 1) $øD_1$, $øD_2$ are maximum diameters.
Note 2) Value of FEP tube.




### Plug-in Reducer: KQB2R

| 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" | **KQB2R01-03** | 9 | 32.9 | 20.3 | 12 | 3.4 | 4.9 |
| ø5/32" | ø1/4" | **KQB2R03-07** | 9 | 33.7 | 20.2 | 12.6 | 5.6 | 7.4 |
| ø1/4" | ø5/16" | **KQB2R07-09** | 12 | 38.4 | 22.3 | 13.5 | 13.1 | 12.5 |
| ø5/16" | ø3/8" | **KQB2R09-11** | 14 | 41.6 | 25 | 16.1 | 26.1 | 17.7 |
| ø3/8" | ø1/2" | **KQB2R11-13** | 17 | 39.8 | 21.3 | 16.6 | 41.5 | 24.7 |

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

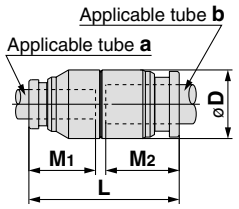


## Dimensions

### Different Diameter Straight: KQB2H

| 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" | **KQB2H01-03** | 9 | 25.6 | 12 | 12.6 | 3.4 | 6.8 |
| ø5/32" | ø1/4" | **KQB2H03-07** | 12 | 27.1 | 12.6 | 13.5 | 5.6 | 11.9 |
| ø1/4" | ø5/16" | **KQB2H07-09** | 14 | 30.6 | 13.5 | 16.1 | 13.1 | 16.8 |
| ø5/16" | ø3/8" | **KQB2H09-11** | 16 | 33.7 | 16.1 | 16.6 | 26.1 | 23.9 |
| ø3/8" | ø1/2" | **KQB2H11-13** | 20 | 36.1 | 16.6 | 18.5 | 41.5 | 38.8 |

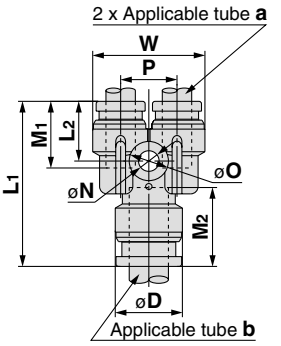
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Different Diameter Union "Y": KQB2U

| 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" | **KQB2U01-03** | 9.1 | 27 | 10.8 | 8.1 | 16.4 | 12 | 12.6 | 3.2 | 5.6 | 3.2 | 8.5 |
| ø5/32" | ø1/4" | **KQB2U03-07** | 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" | **KQB2U07-09** | 13.7 | 33.8 | 12 | 12.2 | 23.9 | 13.5 | 16.1 | 4.2 | 8 | 13.4 | 20 |
| ø5/16" | ø3/8" | **KQB2U09-11** | 16 | 38.3 | 13.8 | 14.6 | 28.3 | 16.1 | 16.6 | 4.2 | 8 | 25.6 | 31 |
| ø3/8" | ø1/2" | **KQB2U11-13** | 19.6 | 40.5 | 13.7 | 17.2 | 33.2 | 16.6 | 18.5 | 4.2 | 8 | 40 | 45 |

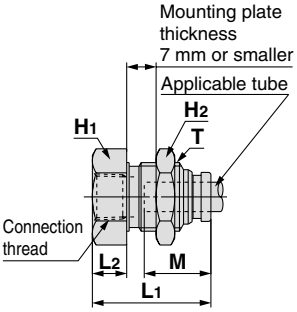
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.




### Bulkhead Connector: KQB2E

| 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 | **KQB2E01-N02** | 7/16-20UNF | 17.46 | 14.29 | 32.8 | 15.3 | 12.5 | 12 | 3.4 | 34.1 |
| ø5/32" | 1/4 | **KQB2E03-N02** | 7/16-20UNF | 17.46 | 14.29 | 32.6 | 15.3 | 12.5 | 12.6 | 5.6 | 33.5 |
| ø1/4" | 1/4 | **KQB2E07-N02** | 1/2-20UNF | 17.46 | 17.46 | 33.1 | 14.8 | 14 | 13.5 | 13.1 | 36.5 |
| ø5/16" | 3/8 | **KQB2E09-N03** | 5/8-18UNF | 22.23 | 22.23 | 35.8 | 15.1 | 17 | 16.1 | 26.1 | 56.1 |
| ø3/8" | 3/8 | **KQB2E11-N03** | 3/4-16UNF | 22.23 | 22.23 | 35.2 | 13.7 | 20.5 | 16.6 | 41.5 | 62.9 |
| ø1/2" | 3/8 | **KQB2E13-N03** | 7/8-14UNF | 23.81 | 25.4 | 34.6 | 11 | 23.5 | 18.5 | 58.3 | 76.6 |
| | 1/2 | **KQB2E13-N04** | | | | 42.2 | 18.6 | | | | 80.2 |

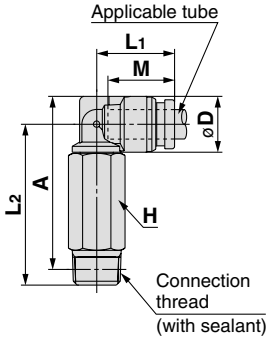
Note) Value of FEP tube.




### Extended Male Elbow: KQB2W

| 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 | **KQB2W01-N01S** | 11.11 | 8.3 | 13.6 | 31.6 | 32.5 | 12 | 2.8 | 19.5 |
| | 1/4 | **KQB2W01-N02S** | 14.29 | | | 35.4 | 35.1 | | | 37.3 |
| ø5/32" | 1/8 | **KQB2W03-N01S** | 11.11 | 9.1 | 14.4 | 32 | 33.3 | 12.6 | 4 | 20.3 |
| | 1/4 | **KQB2W03-N02S** | 14.29 | | | 35.8 | 35.9 | | | 38.2 |
| ø1/4" | 1/8 | **KQB2W07-N01S** | 11.11 | 11.7 | 15.9 | 33.3 | 35.9 | 13.5 | 10.9 | 22.1 |
| | 1/4 | **KQB2W07-N02S** | 14.29 | | | 37.1 | 38.5 | | | 39.9 |
| | 3/8 | **KQB2W07-N03S** | 17.46 | | | 38.9 | 40 | | | 65.6 |
| ø5/16" | 1/8 | **KQB2W09-N01S** | 12.7 | 13.7 | 18.6 | 34.7 | 38.3 | 16.1 | 20.5 | 30.4 |
| | 1/4 | **KQB2W09-N02S** | 14.29 | | 19.1 | 40.2 | 42.6 | | | 41.6 |
| | 3/8 | **KQB2W09-N03S** | 17.46 | | | 42 | 44.1 | | | 68.5 |
| ø3/8" | 1/4 | **KQB2W11-N02S** | 14.29 | 16 | 21 | 47.2 | 50.8 | 16.6 | 33.5 | 44.9 |
| | 3/8 | **KQB2W11-N03S** | 17.46 | | | 45.4 | 48.7 | | | 67.8 |
| | 1/2 | **KQB2W11-N04S** | 22.23 | | | 49.2 | 50.8 | | | 124.2 |
| ø1/2" | 1/4 | **KQB2W13-N02S** | 14.29 | 19.6 | 22.7 | 49 | 54.4 | 18.5 | 47.7 | 51.1 |
| | 3/8 | **KQB2W13-N03S** | 17.46 | | 23.7 | 50.7 | 55.8 | | | 66 |
| | 1/2 | **KQB2W13-N04S** | 22.23 | | | 54.5 | 57.9 | | | 125.9 |

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

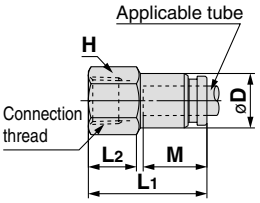


## Dimensions

### Female Connector: KQB2F

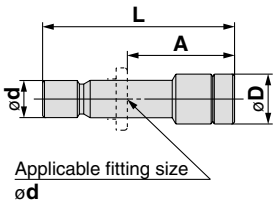
| Applicable tube O.D. (inch) | Connection thread NPT | Model | **H** (Width across flat) | Note 1) ø**D** | **L1** | **L2** | **M** | Note 2) Effective area ($mm^2$) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø1/8" | 1/8 | **KQB2F01-N01** | 12.7 | 8 | 24.1 | 10.4 | 12 | 3.4 | 11.3 |
| | 1/4 | **KQB2F01-N02** | 17.46 | | 29.1 | 13.7 | | | 25.4 |
| ø5/32" | 1/8 | **KQB2F03-N01** | 12.7 | 8.7 | 24.6 | 10.5 | 12.6 | 5.6 | 11.8 |
| | 1/4 | **KQB2F03-N02** | 17.46 | | 29.6 | 13.8 | | | 25.9 |
| ø1/4" | 1/8 | **KQB2F07-N01** | 12.7 | 11.2 | 25 | 10.7 | 13.5 | 13.1 | 13 |
| | 1/4 | **KQB2F07-N02** | 17.46 | | 30 | 14.1 | | | 27.5 |
| | 3/8 | **KQB2F07-N03** | 22.23 | | 31.2 | 14.6 | | | 41.1 |
| ø5/16" | 1/8 | **KQB2F09-N01** | 14.29 | 13.4 | 27.2 | 10.3 | 16.1 | 26.1 | 18.8 |
| | 1/4 | **KQB2F09-N02** | 17.46 | | 32.2 | 14.3 | | | 30.1 |
| | 3/8 | **KQB2F09-N03** | 22.23 | | 33.4 | 14.8 | | | 44 |
| ø3/8" | 1/4 | **KQB2F11-N02** | 17.46 | 16 | 32.1 | 14.4 | 16.6 | 41.5 | 32.9 |
| | 3/8 | **KQB2F11-N03** | 22.23 | | 33.3 | 14.9 | | | 47 |
| | 1/2 | **KQB2F11-N04** | 23.81 | | 38.6 | 18.6 | | | 50.4 |
| ø1/2" | 3/8 | **KQB2F13-N03** | 22.23 | 19.3 | 34.6 | 14.7 | 18.5 | 58.3 | 51.3 |
| | 1/2 | **KQB2F13-N04** | 23.81 | | 39.9 | 18.8 | | | 55.1 |

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




### Plug: KQB2P

| Applicable fitting size ø**d** | Model | ø**D** | **L** | **A** | Weight (g) |
|---|---|---|---|---|---|
| ø1/8" | **KQB2P-01** | 5 | 28.9 | 16.9 | 2.8 |
| ø5/32" | **KQB2P-03** | 6 | 29.6 | 17 | 4.3 |
| ø1/4" | **KQB2P-07** | 8 | 30.3 | 16.8 | 9.4 |
| ø5/16" | **KQB2P-09** | 10 | 33.7 | 17.6 | 16.3 |
| ø3/8" | **KQB2P-11** | 11 | 34.1 | 17.5 | 22.2 |
| ø1/2" | **KQB2P-13** | 14 | 36.4 | 17.9 | 40.7 |



# Metal One-touch Fittings

## Applicable Tube: Metric Size, Connection Thread: G

# Series KQB2

RoHS

## Applicable Tube

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

## Specifications

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

Note 1) For soft nylon tube, water cannot be used.
Note 2) Avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 3) Check the operating pressure range and operating temperature range of the tube.
Note 4) 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 Condition of Mounting the Inner Sleeve

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

### 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 | — | **TJ-0402** | 18 |
| | TUS0425 | TH0425 | — | **TJ-0425** | 18 |
| | — | — | TL0403 | **TJ-0403** | 18 |
| ø6 | TUS0604 | TH0604 | TL0604 | **TJ-0604** | 19 |
| ø8 | TUS0805 | — | — | **TJ-0805** | 20.5 |
| | — | TH0806 | TL0806 | **TJ-0806** | 20.5 |
| ø10 | TUS1065 | — | — | **TJ-1065** | 23 |
| | — | TH1075 | — | **TJ-1075** | 23 |
| | — | TH1008 | TL1008 | **TJ-1008** | 23 |
| ø12 | TUS1208 | — | — | **TJ-1208** | 24 |
| | — | TH1209 | — | **TJ-1209** | 24 |
| | — | TH1210 | TL1210 | **TJ-1210** | 24 |

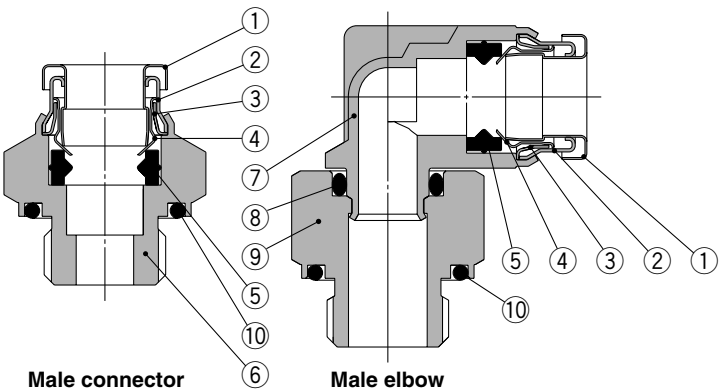
∗ C2700 + Electroless nickel plated is used for the TJ series.

## Spare Parts

| Description | Tube O.D. | Part no. | Material |
|---|---|---|---|
| Bulkhead nut | ø4 | **KQB223-P01** | C3604 (Electroless nickel plated) |
| | ø6 | **KQB206-P01** | |
| | ø8 | **KQB208-P01** | |
| | ø10 | **KQB210-P01** | |
| | ø12 | **KQB212-P01** | |
| | ø16 | **KQB216-P01** | |

| Description | Thread size | Part no. | Material |
|---|---|---|---|
| G thread O-ring | G1/8 | **KQB2-G01** | Special FKM (Fluoro coated) |
| | G1/4 | **KQB2-G02** | |
| | G3/8 | **KQB2-G03** | |
| | G1/2 | **KQB2-G04** | |

## Construction




**Male connector** **Male elbow**

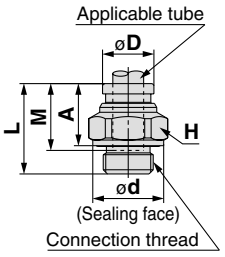
### Component Parts

| No. | Description | Material |
|---|---|---|
| **1** | **Release button** | Stainless steel 304 |
| **2** | **Guide 1** | Stainless steel 304 |
| **3** | **Guide 2** | Stainless steel 304 |
| **4** | **Chuck** | Stainless steel 304 |
| **5** | **Seal** | Special FKM (Fluoro coated) |
| **6** | **Male connector body** | C3604 (Electroless nickel plated) |
| **7** | **Male elbow body** | Stainless steel 316 |
| **8** | **O-ring** | Special FKM (Fluoro coated) |
| **9** | **Stud** | C3604 (Electroless nickel plated) |
| **10** | **G thread O-ring** | Special FKM (Fluoro coated) |

## Dimensions

### Male Connector: KQB2H

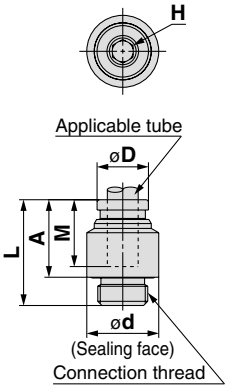
| Applicable tube O.D. (mm) | Connection thread G | Model | H (Width across flat) | Note 1) øD | ød | L | A | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | 1/8 | KQB2H04-G01 | 14 | 8.7 | 13.8 | 16.6 | 11.1 | 12.6 | 5.6 | 9.2 |
| | 1/4 | KQB2H04-G02 | 19 | | 17.8 | 20.6 | 14.1 | | | 23.6 |
| ø6 | 1/8 | KQB2H06-G01 | 14 | 11.1 | 13.8 | 17.6 | 12.1 | 13.6 | 13.1 | 8.9 |
| | 1/4 | KQB2H06-G02 | 19 | | 17.8 | 20.5 | 14 | | | 21.6 |
| | 3/8 | KQB2H06-G03 | 22 | | 21.8 | 23.4 | 15.9 | | | 38.3 |
| ø8 | 1/8 | KQB2H08-G01 | 14 | 13.4 | 13.8 | 23.9 | 18.4 | 16.1 | 26.1 | 13.2 |
| | 1/4 | KQB2H08-G02 | 19 | | 17.8 | 21.2 | 14.7 | | | 19.1 |
| | 3/8 | KQB2H08-G03 | 22 | | 21.8 | 24 | 16.5 | | | 35.2 |
| ø10 | 1/8 | KQB2H10-G01 | 17 | 16.4 | 13.8 | 25.1 | 19.6 | 17 | 26.1 | 19.9 |
| | 1/4 | KQB2H10-G02 | 19 | | 17.8 | 24.9 | 18.4 | | 41.5 | 24.8 |
| | 3/8 | KQB2H10-G03 | 22 | | 21.8 | 23.3 | 15.8 | | | 30.9 |
| | 1/2 | KQB2H10-G04 | 27 | | 26.5 | 27.7 | 18.7 | | | 64.4 |
| ø12 | 1/4 | KQB2H12-G02 | 19 | 18.5 | 17.8 | 27.7 | 21.2 | 18.6 | 58.3 | 26.3 |
| | 3/8 | KQB2H12-G03 | 22 | | 21.8 | 23.5 | 16 | | | 25.5 |
| | 1/2 | KQB2H12-G04 | 27 | | 26.5 | 27.9 | 18.9 | | | 58 |
| ø16 | 3/8 | KQB2H16-G03 | 24 | 24.6 | 21.8 | 31.3 | 23.8 | 20.8 | 81 | 44.5 |
| | 1/2 | KQB2H16-G04 | 27 | | 26.5 | 27.3 | 18.3 | | 113 | 43 |




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

### Hexagon Socket Head Male Connector: KQB2S

| Applicable tube O.D. (mm) | Connection thread G | Model | H (Width across flat) | Note 1) øD | ød | L | A | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | 1/8 | KQB2S04-G01 | 3 | 14 | 14 | 20.4 | 14.9 | 12.6 | 4.1 | 13.5 |
| ø6 | 1/8 | KQB2S06-G01 | 4 | 14 | 14 | 20.6 | 15.1 | 13.6 | 10 | 12.1 |
| | 1/4 | KQB2S06-G02 | | 18 | 18 | | 14.1 | | 10.7 | 19.9 |
| ø8 | 1/8 | KQB2S08-G01 | 5 | 14 | 14 | 23.9 | 18.4 | 16.1 | 17.2 | 12.5 |
| | 1/4 | KQB2S08-G02 | 6 | 18 | 18 | 22.9 | 16.4 | | 23.3 | 20.1 |
| | 3/8 | KQB2S08-G03 | | 22 | 22 | 23.1 | 15.6 | | | 31.1 |
| ø10 | 1/8 | KQB2S10-G01 | 5 | 17 | 14 | 25.1 | 19.6 | 17 | 17.2 | 18.5 |
| | 1/4 | KQB2S10-G02 | 8 | 18 | 18 | 24.9 | 18.4 | | 39 | 20.4 |
| | 3/8 | KQB2S10-G03 | | 22 | 22 | 24 | 16.5 | | | 31.2 |
| | 1/2 | KQB2S10-G04 | | 27 | 26.5 | | 15 | | | 45.3 |
| ø12 | 1/4 | KQB2S12-G02 | 8 | 19 | 18 | 27.7 | 21.2 | 18.6 | 46 | 23.6 |
| | 3/8 | KQB2S12-G03 | 10 | 22 | 22 | 24.9 | 17.4 | | 60 | 27.4 |
| | 1/2 | KQB2S12-G04 | | 27 | 26.5 | | 15.9 | | | 42.6 |
| ø16 | 3/8 | KQB2S16-G03 | 10 | 24.6 | 22 | 31.3 | 23.8 | 20.8 | 81 | 41 |
| | 1/2 | KQB2S16-G04 | 12 | 27 | 26.5 | 27.8 | 18.8 | | 113 | 42.9 |



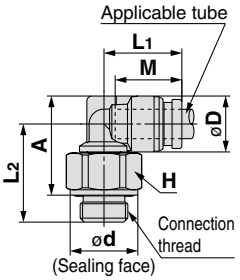

Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.

## Dimensions

### Male Elbow: KQB2L

| Applicable tube O.D. (mm) | Connection thread G | Model | H (Width across flat) | Note 1) øD | ød | L1 | L2 | A | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | 1/8 | KQB2L04-G01 | 14 | 9.1 | 13.8 | 14.4 | 18.9 | 17.9 | 12.6 | 4.2 | 15.6 |
| | 1/4 | KQB2L04-G02 | 19 | | 17.8 | | 22.3 | 20.3 | | | 33 |
| ø6 | 1/8 | KQB2L06-G01 | 14 | 11.4 | 13.8 | 15.9 | 20 | 20.2 | 13.6 | 11.4 | 17.2 |
| | 1/4 | KQB2L06-G02 | 19 | | 17.8 | | 23.4 | 22.6 | | | 34.6 |
| | 3/8 | KQB2L06-G03 | 22 | | 21.8 | | 25.9 | 24.1 | | | 54.5 |
| ø8 | 1/8 | KQB2L08-G01 | 14 | 13.7 | 13.8 | 18.6 | 21.3 | 22.6 | 16.1 | 21.6 | 20.2 |
| | 1/4 | KQB2L08-G02 | 19 | | 17.8 | 19.1 | 24.7 | 25 | | | 36 |
| | 3/8 | KQB2L08-G03 | 22 | | 21.8 | | 27.2 | 26.5 | | | 55.6 |
| ø10 | 1/8 | KQB2L10-G01 | 14 | 16.6 | 13.8 | 20 | 22.7 | 25.5 | 17 | 21.6 | 25.7 |
| | 1/4 | KQB2L10-G02 | 19 | | 17.8 | 21 | 26.1 | 27.9 | | 35.2 | 38.2 |
| | 3/8 | KQB2L10-G03 | 22 | | 21.8 | | 28.6 | 29.4 | | | 56.2 |
| | 1/2 | KQB2L10-G04 | 27 | | 26.5 | | 32.6 | 31.9 | | | 97.9 |
| ø12 | 1/4 | KQB2L12-G02 | 19 | 18.7 | 17.8 | 22.6 | 27.2 | 30 | 18.6 | 50.2 | 41.9 |
| | 3/8 | KQB2L12-G03 | 22 | | 21.8 | 23.6 | 29.6 | 31.4 | | | 54.3 |
| | 1/2 | KQB2L12-G04 | 27 | | 26.5 | | 33.6 | 33.9 | | | 94.6 |
| ø16 | 3/8 | KQB2L16-G03 | 22 | 24.6 | 21.8 | 26.3 | 32.4 | 36.5 | 20.8 | 71 | 64.7 |
| | 1/2 | KQB2L16-G04 | 27 | | 26.5 | 27.3 | 36.4 | 39 | | 100 | 95.7 |

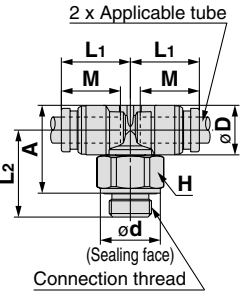
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.




### Male Branch Tee: KQB2T

| Applicable tube O.D. (mm) | Connection thread G | Model | H (Width across flat) | Note 1) øD | ød | L1 | L2 | A | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | 1/8 | KQB2T04-G01 | 14 | 9.1 | 13.8 | 14.4 | 18.9 | 17.9 | 12.6 | 6 | 17.5 |
| | 1/4 | KQB2T04-G02 | 19 | | 17.8 | | 22.3 | 20.3 | | | 34.9 |
| ø6 | 1/8 | KQB2T06-G01 | 14 | 11.4 | 13.8 | 15.9 | 20 | 20.2 | 13.6 | 13.9 | 21 |
| | 1/4 | KQB2T06-G02 | 19 | | 17.8 | | 23.4 | 22.6 | | | 38 |
| | 3/8 | KQB2T06-G03 | 22 | | 21.8 | | 25.9 | 24.1 | | | 57.9 |
| ø8 | 1/8 | KQB2T08-G01 | 14 | 13.7 | 13.8 | 18.6 | 21.3 | 22.6 | 16.1 | 26.3 | 25.6 |
| | 1/4 | KQB2T08-G02 | 19 | | 17.8 | 19.1 | 24.7 | 25 | | | 41.2 |
| | 3/8 | KQB2T08-G03 | 22 | | 21.8 | | 27.2 | 26.5 | | | 60.8 |
| ø10 | 1/8 | KQB2T10-G01 | 14 | 16.6 | 13.8 | 20 | 22.7 | 25.5 | 17 | 40.8 | 34 |
| | 1/4 | KQB2T10-G02 | 19 | | 17.8 | 21 | 26.1 | 27.9 | | | 46 |
| | 3/8 | KQB2T10-G03 | 22 | | 21.8 | | 28.6 | 29.4 | | | 64 |
| | 1/2 | KQB2T10-G04 | 27 | | 26.5 | | 32.6 | 31.9 | | | 105.8 |
| ø12 | 1/4 | KQB2T12-G02 | 19 | 18.7 | 17.8 | 22.6 | 27.2 | 30 | 18.6 | 57.2 | 53 |
| | 3/8 | KQB2T12-G03 | 22 | | 21.8 | 23.6 | 29.6 | 31.4 | | | 54.3 |
| | 1/2 | KQB2T12-G04 | 27 | | 26.5 | | 33.6 | 33.9 | | | 105 |
| ø16 | 3/8 | KQB2T16-G03 | 22 | 24.6 | 21.8 | 26.3 | 32.4 | 36.5 | 20.8 | 71 | 82.2 |
| | 1/2 | KQB2T16-G04 | 27 | | 26.5 | 27.3 | 36.4 | 39 | | 100 | 112.1 |

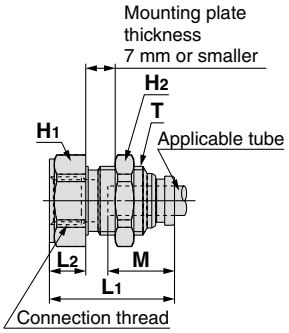
Note 1) øD is maximum diameter.
Note 2) Value of FEP tube.
Value of nylon tube for ø16 only.



## Dimensions

### Bulkhead Connector: KQB2E

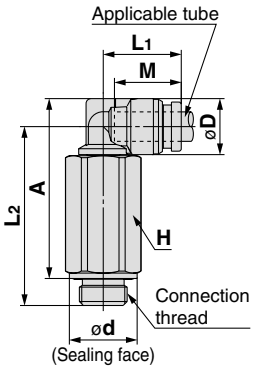
| Applicable tube O.D. (mm) | Connection thread G | Model | T (M) | Width across flat H1 | Width across flat H2 | L1 | L2 | Mounting hole | M | Note) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | 1/8 | KQB2E04-G01 | M10 x 1 | 17 | 12 | 27.1 | 11 | 11 | 12.6 | 5.6 | 25.1 |
| | 1/4 | KQB2E04-G02 | | 19 | | 32.7 | 16.6 | | | | 36.9 |
| ø6 | 1/8 | KQB2E06-G01 | M14 x 1 | 17 | 17 | 25.5 | 7.4 | 15 | 13.6 | 13.1 | 26.8 |
| | 1/4 | KQB2E06-G02 | | 19 | | 33.5 | 15.4 | | | | 42.7 |
| | 3/8 | KQB2E06-G03 | | 24 | | 35 | 16.9 | | | | 62 |
| ø8 | 1/8 | KQB2E08-G01 | M15 x 1 | 17 | 19 | 27.6 | 8.2 | 16 | 16.1 | 26.1 | 30.4 |
| | 1/4 | KQB2E08-G02 | | 19 | | 34.5 | 15.1 | | | | 43.9 |
| | 3/8 | KQB2E08-G03 | | 24 | | 36 | 16.6 | | | | 66.2 |
| ø10 | 1/4 | KQB2E10-G02 | M18 x 1 | 19 | 21 | 33.5 | 13.5 | 19 | 17 | 41.5 | 46.8 |
| | 3/8 | KQB2E10-G03 | | 24 | | 35.6 | 15.6 | | | | 65.4 |
| ø12 | 3/8 | KQB2E12-G03 | M20 x 1 | 24 | 24 | 35.9 | 14.7 | 21 | 18.6 | 58.3 | 119.2 |
| | 1/2 | KQB2E12-G04 | | 27 | | 42.2 | 21 | | | | 91.9 |
| ø16 | 3/8 | KQB2E16-G03 | M27 x 1 | 29 | 30 | 37.2 | 13.1 | 28 | 20.8 | 96 | 118.2 |
| | 1/2 | KQB2E16-G04 | | | | 43.1 | 19 | | | 113 | 128.7 |




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

### Extended Male Union: KQB2W

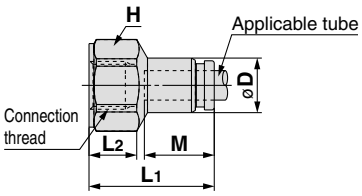
| Applicable tube O.D. (mm) | Connection thread G | Model | H (Width across flat) | Note 1) øD | ød | L1 | L2 | A | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | 1/8 | KQB2W04-G01 | 14 | 9.1 | 13.8 | 14.4 | 35.3 | 34.3 | 12.6 | 4 | 34.5 |
| | 1/4 | KQB2W04-G02 | 19 | | 17.8 | | 38.7 | 36.7 | | | 70.6 |
| ø6 | 1/8 | KQB2W06-G01 | 14 | 11.4 | 13.8 | 15.9 | 36.4 | 36.6 | 13.6 | 10.9 | 36.1 |
| | 1/4 | KQB2W06-G02 | 19 | | 17.8 | | 39.8 | 39 | | | 72.2 |
| | 3/8 | KQB2W06-G03 | 22 | | 21.8 | | 42.3 | 40.5 | | | 106.7 |
| ø8 | 1/8 | KQB2W08-G01 | 14 | 13.7 | 13.8 | 18.6 | 40 | 41.3 | 16.1 | 20.5 | 41.3 |
| | 1/4 | KQB2W08-G02 | 19 | | 17.8 | 19.1 | 43.4 | 43.7 | | | 76.7 |
| | 3/8 | KQB2W08-G03 | 22 | | 21.8 | | 45.9 | 45.2 | | | 112.9 |
| ø10 | 1/4 | KQB2W10-G02 | 19 | 16.6 | 17.8 | 21 | 49.8 | 51.6 | 17 | 33.5 | 84.8 |
| | 3/8 | KQB2W10-G03 | 22 | | 21.8 | | 50.2 | 51 | | | 116.6 |
| | 1/2 | KQB2W10-G04 | 27 | | 26.5 | | 54.2 | 53.5 | | | 196.6 |
| ø12 | 1/4 | KQB2W12-G02 | 19 | 18.7 | 17.8 | 22.6 | 50.9 | 53.7 | 18.6 | 47.7 | 88.7 |
| | 3/8 | KQB2W12-G03 | 22 | | 21.8 | 23.6 | 53.3 | 55.1 | | | 111.6 |
| | 1/2 | KQB2W12-G04 | 27 | | 26.5 | | 57.3 | 57.6 | | | 193.8 |
| ø16 | 3/8 | KQB2W16-G03 | 22 | 24.6 | 21.8 | 26.3 | 62 | 66.1 | 20.8 | 71 | 133.6 |
| | 1/2 | KQB2W16-G04 | 27 | | 26.5 | 27.3 | 66 | 68.6 | | 100 | 201.6 |




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

### Female Connector: KQB2F

| Applicable tube O.D. (mm) | Connection thread G | Model | H (Width across flat) | Note 1) øD | L1 | L2 | M | Note 2) Effective area (mm²) | Weight (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø4 | 1/8 | KQB2F04-G01 | 17 | 8.7 | 25 | 9.5 | 12.6 | 5.6 | 21 |
| | 1/4 | KQB2F04-G02 | 19 | | 30.6 | 14.5 | | | 32 |
| ø6 | 1/8 | KQB2F06-G01 | 17 | 11.1 | 25.5 | 9.7 | 13.6 | 13.1 | 22.6 |
| | 1/4 | KQB2F06-G02 | 19 | | 31.1 | 14.7 | | | 33 |
| | 3/8 | KQB2F06-G03 | 24 | | 32.6 | 14.6 | | | 51.1 |
| ø8 | 1/8 | KQB2F08-G01 | 17 | 13.4 | 27.6 | 10 | 16.1 | 26.1 | 25.1 |
| | 1/4 | KQB2F08-G02 | 19 | | 33.2 | 14.9 | | | 36.3 |
| | 3/8 | KQB2F08-G03 | 24 | | 34.6 | 14.7 | | | 53.8 |
| ø10 | 1/4 | KQB2F10-G02 | 19 | 16.4 | 33.5 | 15.2 | 17 | 41.5 | 39.9 |
| | 3/8 | KQB2F10-G03 | 24 | | 34.9 | 15 | | | 57.7 |
| ø12 | 1/4 | KQB2F12-G02 | 19 | 18.5 | 34.5 | 15.2 | 18.6 | 58.3 | 41.8 |
| | 3/8 | KQB2F12-G03 | 24 | | 35.9 | 15 | | | 59.7 |
| | 1/2 | KQB2F12-G04 | 27 | | 41.8 | 19.9 | | | 81.6 |
| ø16 | 3/8 | KQB2F16-G03 | 24 | 24.6 | 37.2 | 15.4 | 20.8 | 81 | 66.6 |
| | 1/2 | KQB2F16-G04 | 27 | | 43.1 | 20.4 | | 113 | 89.1 |




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

# Series KQB2
# 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 KQB2 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 KQB2 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.**

## Installation and Removal of Tube

### ⚠Caution

1. **Installation of tube**
   1) Grease is not used for the KQB2 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.

## G Thread Fittings

### ⚠Caution

1. **The standard thread torques of the fittings are as shown in the below table.**

| Connection thread size | Proper tightening torque N·m |
|---|---|
| G1/8 | 2.9 to 3.2 |
| G1/4 | 5.7 to 6.3 |
| G3/8 | 9.5 to 10.5 |
| G1/2 | 14.3 to 15.8 |

# ⚠ 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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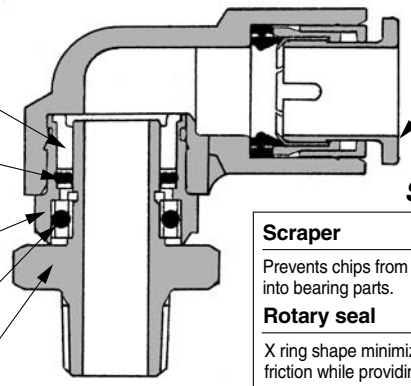
# Rotary One-touch Fittings
## Standard Type/High Speed Type
# *Series KS/KX*

RoHS



**Slide bearing**
Smooth operation and longer life from an oil containing slide bearing.

**Rotary seal**
A special rotary seal minimizes friction while providing an excellent seal.

**Holder**
Standard nickel plated allows copper-free applications.

**Ball bearing**
A ball bearing ensures low torque rotation.

**Stud**
- Electroless nickel plated
- With thread sealant (R thread only)

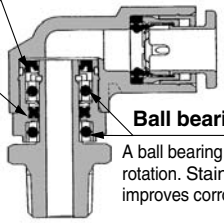
***Series KS*** **(Standard)**

**Cassette**
The male connector is equipped with a "tuberotation prevention mechanism".
**Series KS** — Blue
**Series KX** — Light grey

***Series KX*** **(High speed)**

**Scraper**
Prevents chips from intruding into bearing parts.

**Rotary seal**
X ring shape minimizes friction while providing an excellent seal. Seal is fire and shock proof fluorine rubber. Proves against high friction heat in high speed rotation and longer life.



**Ball bearing**
A ball bearing ensures low torque rotation. Stainless steel 440C improves corrosion resistance.

∗ Other parts' specifications are same as those of Series KS.

**Low torque rotation style Rotary One-touch fittings**

**Applicable to use for oscillating and rotating sections in robots.**

**Copper-free specifications Brass parts are all electroless nickel plated.**

**Sealant is standard.**

**Male elbow**

**Male connector**

## Applicable Tubing

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

## Specifications

| | |
|---|---|
| **Fluid** | Air |
| **Operating pressure range** (1) | –100 kPa to 1 MPa |
| **Proof pressure** | 3 MPa |
| **Ambient and fluid temperature** | –5 to 60°C (No freezing) |
| **Thread** | JIS B 0203 (Taper thread for piping), JIS B 0205 (Metric coarse thread) |

Note 1) Please avoid using in a vacuum holding application such as a leak tester, since there is leakage. Also, when using in a vacuum, grease may enter the inside due to the nature of its construction.

## Rotating Torque/Allowable Number of Rotations

| Applicable tubing O.D. | | ø4 | ø6 | ø8 | ø10 | ø12 |
|---|---|---|---|---|---|---|
| Rotating torque (N·m) (2) | | 0.006 | 0.012 | 0.014 | 0.020 | 0.022 |
| Allowable number of rotations($S^{-1}$) (3) | Series KS | 8.4 | 8.4 | 6.7 | 5 | 4.2 |
| | Series KX | 25 | 20 | 20 | 16.7 | 16.7 |

Note 2) Rotating torque under pressure 0.5 MPa
Note 3) Number of rotations per second

## Principal Parts Material

| Principal parts | Series KS | Series KX |
|---|---|---|
| Body | PBT | |
| Stud, Holder, Guide | C3604 (Electroless nickel plated), Stainless steel 304 | |
| Chuck, Retainer | Stainless steel (Stainless steel 304) | (Retainer (C) of Series KX: C3604 (electroless nickel plated)) |
| Collet, Release button, Snap ring | Polyacetal | |
| O-ring, Packing | NBR | |
| Rotary seal | NBR | FKM |
| Slide bearing | Oil-containing polyacetal | — |
| Scraper | — | NBR |
| Ball bearing | Bearing steel | Stainless steel 440C |
| Gasket | Stainless steel 304, NBR | |

### Series KS/Series KX

| Model | Connection thread | Applicable tubing O.D. (mm) ø4 | ø6 | ø8 | ø10 | ø12 |
|---|---|---|---|---|---|---|
| Male connector **KSH** **KXH**  | M5 x 0.8 | ● | ● | | | |
| | M6 x 1 | ● | ● | | | |
| | R 1⁄8 | ● | ● | ● | | |
| | R 1⁄4 | | ● | ● | ● | |
| | R 3⁄8 | | | ● | ● | ● |
| | R 1⁄2 | | | | ● | ● |
| Male elbow **KSL** **KXL**  | M5 x 0.8 | ● | ● | | | |
| | M6 x 1 | ● | ● | | | |
| | R 1⁄8 | ● | ● | ● | | |
| | R 1⁄4 | | ● | ● | ● | |
| | R 3⁄8 | | | ● | ● | ● |
| | R 1⁄2 | | | | ● | ● |

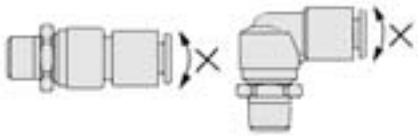


## ⚠Precautions

**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. Implement the tube piping in such a way that lateral load should not be applied on the ball bearings at the rotating part, otherwise it may adversely affect the life expectancy.
   A flexible polyurethane tube is recommended when lateral load is applied.



2. Do not use in an environment where it will be exposed to water.
   Contact with water will cause outflow of the lubricating oil used in the ball bearings, and adversely affect rotating performance and equipment lifespan.
3. Fluorine grease is used on the rotating portions.

## Male connector: KSH (Standard)

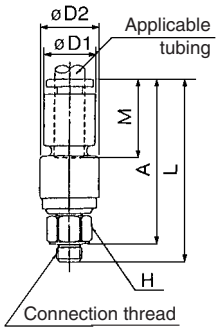
**<M5, M6>**

**<R>**

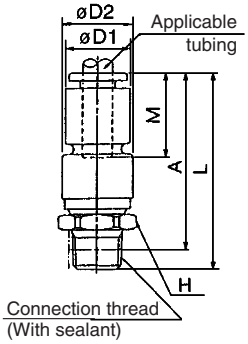
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | D1 | D2 | L | A * | M | Min. port size | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KSH04-M5 | 8 | 10.4 | 12 | 36.5 | 33 | 16 | 2.5 | 4.0 | 4.0 | 9 |
| | M6 x 1 | KSH04-M6 | | | | 37 | | | | | | |
| | 1/8 | KSH04-01S | 12 | | | 37.1 | 34 | | | | | 14 |
| 6 | M5 x 0.8 | KSH06-M5 | 8 | 12.8 | 14 | 37.5 | 33.5 | 17 | 2.5 | 4.0 | 4.0 | 12 |
| | M6 x 1 | KSH06-M6 | | | | 38 | 34 | | 3 | 5.6 | 5.6 | |
| | 1/8 | KSH06-01S | 14 | | | 38.6 | 35.5 | | 4 | 10.4 | 10.4 | 17 |
| | 1/4 | KSH06-02S | | | | 42 | 36.5 | | | | | 23 |
| 8 | 1/8 | KSH08-01S | 17 | 15.2 | 17 | 43.1 | 40 | 18.5 | 6 | 26.1 | 18.0 | 23 |
| | 1/4 | KSH08-02S | | | | 46.5 | 41 | | | | | 29 |
| | 3/8 | KSH08-03S | | | | 46.9 | 41.5 | | | | | 37 |
| 10 | 1/4 | KSH10-02S | 22 | 18.5 | 22 | 53.5 | 48 | 21 | 7 | 36.3 | 29.5 | 55 |
| | 3/8 | KSH10-03S | | | | 53.9 | 48.5 | | | | | 63 |
| | 1/2 | KSH10-04S | | | | 56.6 | 49.5 | | | | | 81 |
| 12 | 3/8 | KSH12-03S | 24 | 20.9 | 24 | 55.9 | 50.5 | 22 | 8 | 46.1 | 16.1 | 75 |
| | 1/2 | KSH12-04S | | | | 59.1 | 52 | | | | | 92 |

* Reference dimensions after R thread installation.

**<M5, M6>**




**<R>**




## Male Connector: KXH (High speed)

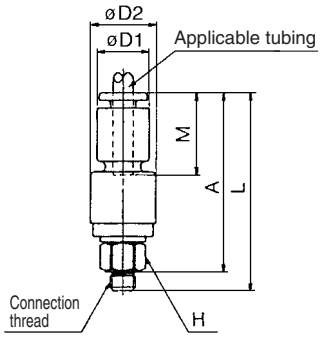
**<M5, M6>**

**<R>**

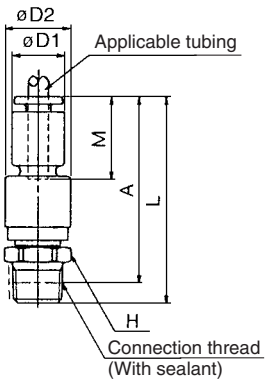
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | D1 | D2 | L | A * | M | Min. port size | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KXH04-M5 | 8 | 10.4 | 13 | 38.5 | 35 | 16 | 2.5 | 4.0 | 4.0 | 11 |
| | M6 x 1 | KXH04-M6 | | | | 39 | | | | | | |
| | 1/8 | KXH04-01S | 12 | | | 39.1 | 36 | | | | | 16 |
| 6 | M5 x 0.8 | KXH06-M5 | 8 | 12.8 | 15 | 39.5 | 36 | 17 | 2.5 | 4.0 | 4.0 | 15 |
| | M6 x 1 | KXH06-M6 | | | | 40 | | | 3 | 5.6 | 5.6 | |
| | 1/8 | KXH06-01S | 14 | | | 41.1 | 38 | | 4 | 10.4 | 10.4 | 20 |
| | 1/4 | KXH06-02S | | | | 44.5 | 39 | | | | | 26 |
| 8 | 1/8 | KXH08-01S | 17 | 15.2 | 18 | 45.1 | 42 | 18.5 | 6 | 26.1 | 18.0 | 28 |
| | 1/4 | KXH08-02S | | | | 48.5 | 43 | | | | | 34 |
| | 3/8 | KXH08-03S | | | | 48.9 | 44 | | | | | 42 |
| 10 | 1/4 | KXH10-02S | 22 | 18.5 | 23.5 | 57.5 | 52 | 21 | 7 | 36.3 | 29.5 | 68 |
| | 3/8 | KXH10-03S | | | | 57.9 | | | | | | 76 |
| | 1/2 | KXH10-04S | | | | 61.1 | 53 | | | | | 94 |
| 12 | 3/8 | KXH12-03S | 24 | 20.9 | 26 | 58.9 | 54 | 22 | 8 | 46.1 | 46.1 | 88 |
| | 1/2 | KXH12-04S | | | | 62.1 | 55 | | | | | 105 |

* Reference dimensions after R thread installation.

**<M5, M6>**




**<R>**



## Male Elbow: KSL (Standard)

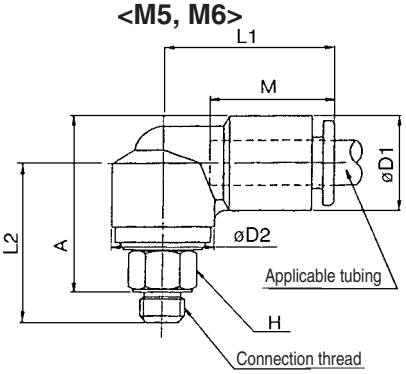
**<M5, M6>**

**<R>**

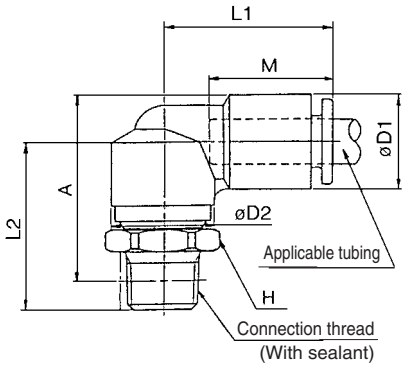
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | D1 | D2 | L1 | L2 | A * | M | Min. port size | Effective area ($mm^2$) Nylon | Effective area ($mm^2$) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KSL04-M5 | 8 | 10.4 | 12 | 21 | 20.5 | 22 | 16 | 2.5 | 3.5 | 3.5 | 9 |
| | M6 x 1 | KSL04-M6 | | | | | 21 | | | | | | |
| | 1/8 | KSL04-01S | 12 | | | | 21.1 | 23.5 | | | | | 14 |
| 6 | M5 x 0.8 | KSL06-M5 | 8 | 12.8 | 14 | 23 | 21 | 23.5 | 17 | 2.5 | 3.5 | 3.5 | 12 |
| | M6 x 1 | KSL06-M6 | | | | | 21.5 | 24 | | 3 | 5.0 | 5.0 | |
| | 1/8 | KSL06-01S | 14 | | | | 22.1 | 25.5 | | 4 | 8.6 | 8.6 | 17 |
| | 1/4 | KSL06-02S | | | | | 25.5 | 26.5 | | | | | 23 |
| 8 | 1/8 | KSL08-01S | 17 | 15.2 | 17 | 26 | 25.6 | 30 | 18.5 | 6 | 21.6 | 14.9 | 23 |
| | 1/4 | KSL08-02S | | | | | 29 | 31 | | | | | 29 |
| | 3/8 | KSL08-03S | | | | | 29.9 | 32 | | | | | 38 |
| 10 | 1/4 | KSL10-02S | 22 | 18.5 | 22 | 31.5 | 33.5 | 37.5 | 21 | 7 | 30.5 | 25.0 | 56 |
| | 3/8 | KSL10-03S | | | | | 33.9 | 38 | | | | | 64 |
| | 1/2 | KSL10-04S | | | | | 37.1 | 39.5 | | | | | 82 |
| 12 | 3/8 | KSL12-03S | 24 | 20.9 | 24 | 34 | 35.4 | 40.5 | 22 | 8 | 35.1 | 35.1 | 76 |
| | 1/2 | KSL12-04S | | | | | 38.6 | 42 | | | | | 93 |

* Reference dimensions after R thread installation.

**<M5, M6>**




**<R>**




## Male Elbow: KXL (High speed)

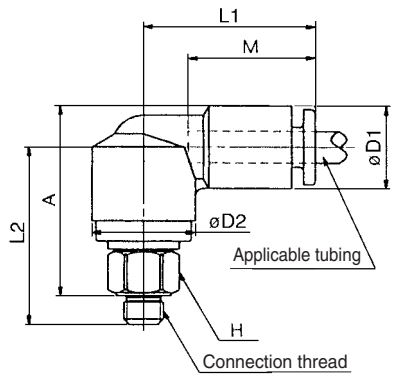
**<M5, M6>**

**<R>**

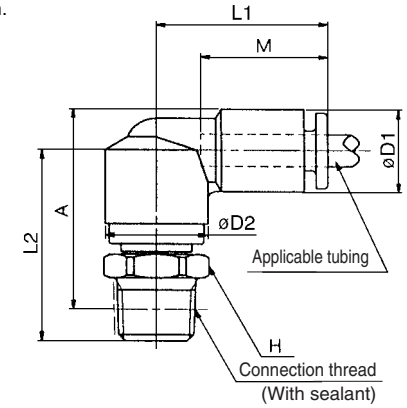
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | D1 | D2 | L1 | L2 | A * | M | Min. port size | Effective area ($mm^2$) Nylon | Effective area ($mm^2$) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KXL04-M5 | 8 | 10.4 | 13 | 22 | 22.5 | 24 | 16 | 2.5 | 3.5 | 3.5 | 11 |
| | M6 x 1 | KXL04-M6 | | | | | 23 | | | | | | |
| | 1/8 | KXL04-01S | 12 | | | | 23.1 | 25 | | | | | 16 |
| 6 | M5 x 0.8 | KXL06-M5 | 8 | 12.8 | 15 | 24 | 23.5 | 26 | 17 | 2.5 | 3.5 | 3.5 | 15 |
| | M6 x 1 | KXL06-M6 | | | | | 24 | | | 3 | 5.0 | 5.0 | |
| | 1/8 | KXL06-01S | 14 | | | | 24.1 | 28 | | 4 | 8.6 | 8.6 | 20 |
| | 1/4 | KXL06-02S | | | | | 27.5 | 29 | | | | | 26 |
| 8 | 1/8 | KXL08-01S | 17 | 15.2 | 18 | 27 | 28.1 | 32 | 18.5 | 6 | 21.6 | 14.9 | 28 |
| | 1/4 | KXL08-02S | | | | | 31.5 | 33 | | | | | 34 |
| | 3/8 | KXL08-03S | | | | | 31.9 | 34 | | | | | 43 |
| 10 | 1/4 | KXL10-02S | 22 | 18.5 | 23.5 | 32 | 37.5 | 42 | 21 | 7 | 30.5 | 25.0 | 69 |
| | 3/8 | KXL10-03S | | | | | 37.9 | | | | | | 77 |
| | 1/2 | KXL10-04S | | | | | 41.1 | 43 | | | | | 95 |
| 12 | 3/8 | KXL12-03S | 24 | 20.9 | 26 | 35 | 38.9 | 44 | 22 | 8 | 35.1 | 35.1 | 89 |
| | 1/2 | KXL12-04S | | | | | 42.1 | 45 | | | | | 106 |

* Reference dimensions after R thread installation.

**<M5, M6>**




**<R>**

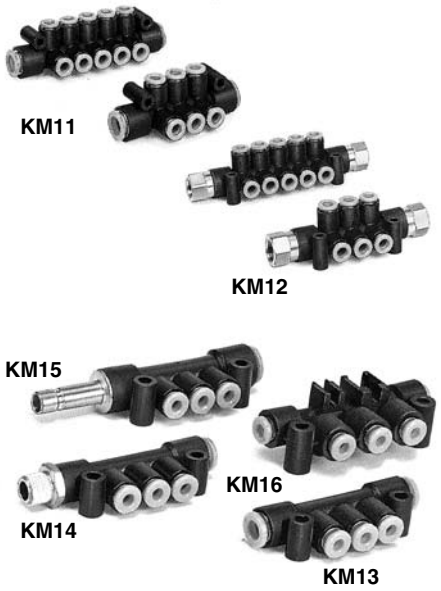


# One-touch Fittings Manifold

# *Series KM*

RoHS

**Compact piping possible.**
**Manifold piping possible.**
**Many varieties (40 types) are available.**
**One-touch fittings give the most efficient operation.**




## Model

| Model | Porting | | No. of Port A | Port B size | Port A size | | |
|---|---|---|---|---|---|---|---|
| | Port A | Port B | | | ø4 | ø6 | ø8 |
| **KM11** | One-touch fitting | One-touch fitting | 6, 10 | ø8 | ● | | |
| | | | | ø10 | | ● | |
| | | | | ø12 | | | ● |
| **KM12** | One-touch fitting | Rc female thread | 6, 10 | Rc 1/4 | ● | ● | |
| | | | | Rc 3/8 | | | ● |
| **KM13** | One-touch fitting | One-touch fitting | 3 | ø6 | ● | | |
| | | | | ø8 | ● | ● | |
| | | | | ø10 | | ● | ● |
| **KM14** | One-touch fitting | One-touch fitting R male thread | 3 | ø6, R 1/8 | ● | | |
| | | | | ø6, R 1/4 | ● | | |
| | | | | ø6, R 3/8 | ● | | |
| | | | | ø8, R 1/8 | ● | ● | |
| | | | | ø8, R 1/4 | ● | ● | |
| | | | | ø8, R 3/8 | ● | ● | |
| | | | | ø10, R 1/4 | | ● | ● |
| | | | | ø10, R 3/8 | | ● | ● |
| | | | | ø10, R 1/2 | | ● | ● |
| **KM15** | One-touch fitting | One-touch fitting Rod | 3 | ø6 | ● | | |
| | | | | ø8 | ● | ● | |
| | | | | ø10 | | ● | ● |
| **KM16** | One-touch fitting | One-touch fitting | 3 | ø4 | ● | | |
| | | | | ø6 | ● | ● | |

Made to Order **Made to Order**
(Refer to page 118 for details.)

## Applicable Tubing

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

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

## Specifications

| Model | KM11 | KM12 | KM13 | KM14 | KM15 | KM16 |
|---|---|---|---|---|---|---|
| Fluid | Air/Water (2) | | | | | |
| Maximum operating pressure | 1 MPa | | | | | |
| Proof pressure | 3 MPa | | | | | |
| Ambient and fluid temperature | –5 to 60°C, Water: 0 to 40°C (No freezing) | | | | | |
| Thread | — | JIS B 0203 (Taper thread for piping) | — | JIS B 0203 (Taper thread for piping) | — | — |
| Accessory | None | Hexagon socket head blank plug with seal: 1 pc. | None | None | None | None |

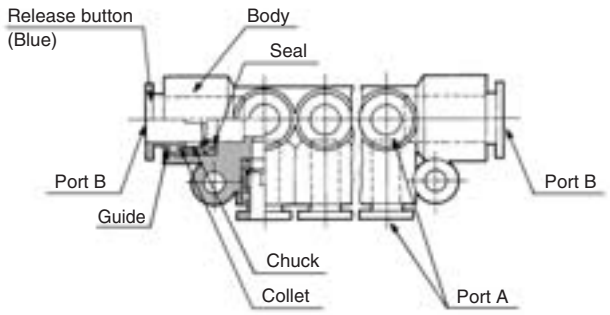
Note 2) The surge pressure must be under the maximum operating pressure.

## Principal Parts Material

| Model | KM11 | KM12 | KM13 | KM14 | KM15 | KM16 |
|---|---|---|---|---|---|---|
| Body | PBT | | | | | |
| Stud | — | C3604 | — | C3604 | C3604·PBT | — |
| Chuck | Stainless steel 304 | | | | | |
| Guide | Stainless steel 304 | | | | | |
| Collet, Release button | POM | | | | | |
| Seal, O-ring | NBR | | | | | |

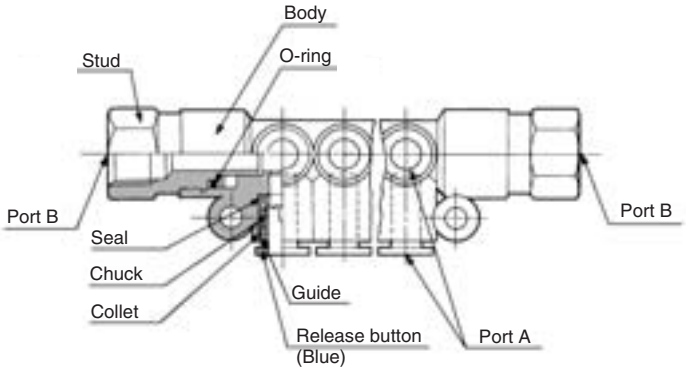
## Construction

### KM11



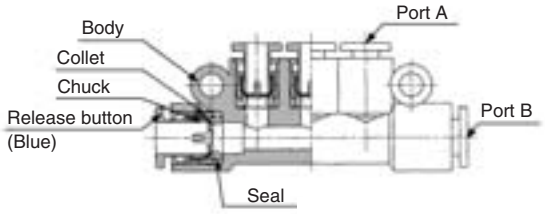

Port A: One-touch fitting
Port B: One-touch fitting

### KM12



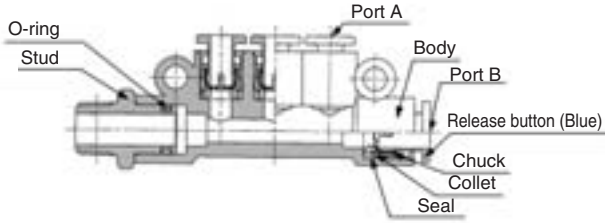

Port A: One-touch fitting
Port B: Rc female thread

### KM13



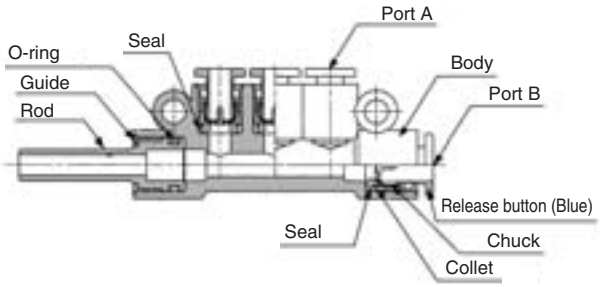

Port A: One-touch fitting
Port B: One-touch fitting

### KM14



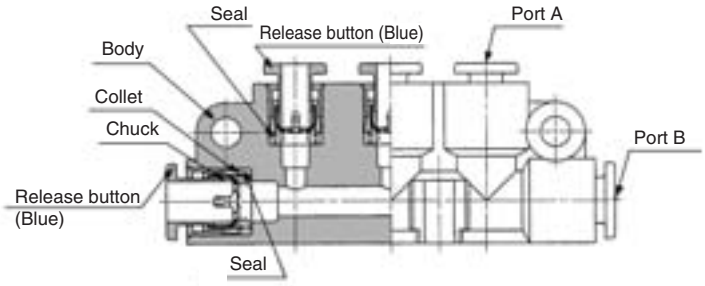

Port A: One-touch fitting
Port B: One-touch fitting, R male thread

### KM15




Port A: One-touch fitting
Port B: One-touch fitting
Stud

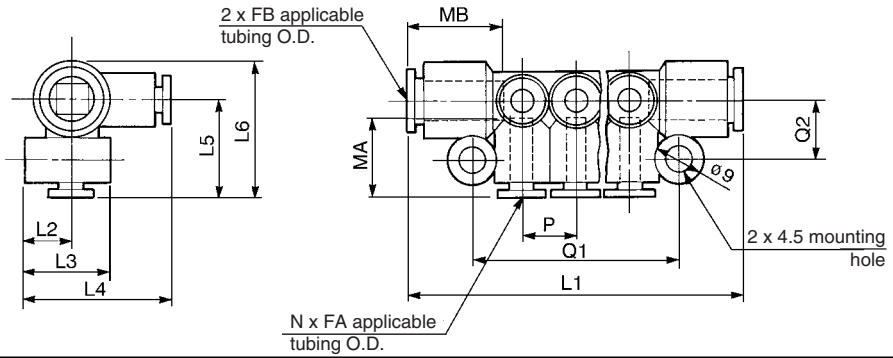
### KM16




Port A: One-touch fitting
Port B: One-touch fitting

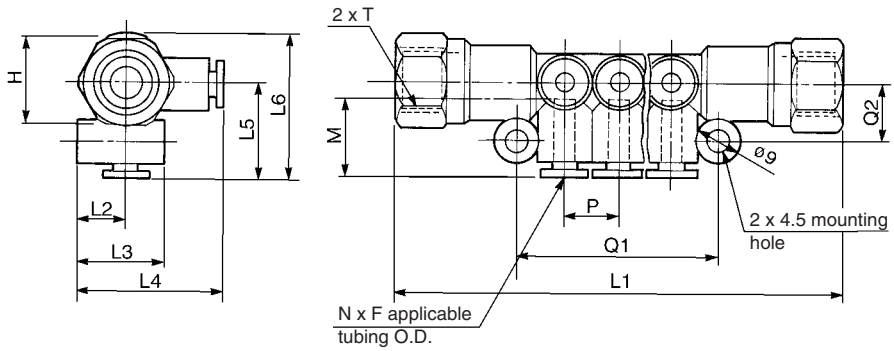
## Dimensions

### KM11



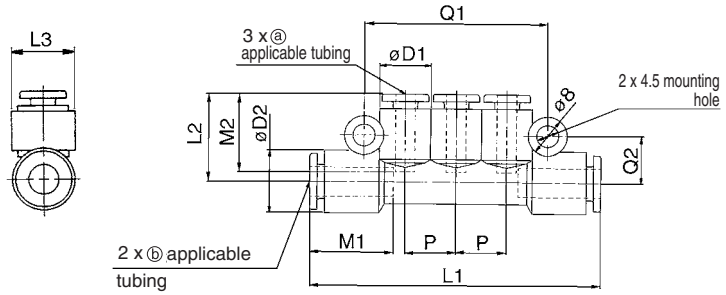

| Applicable tubing O.D. (mm) FA | Applicable tubing O.D. (mm) FB | Model | N | L1 | L2 | L3 | L4 | L5 | L6 | P | Q1 | Q2 | MA | MB | Port B Min. port size | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 8 | KM11-04-08-6 | 6 | 65 | 10 | 18 | 29.5 | 19.5 | 27 | 10.6 | 40 | 12 | 16 | 18.5 | 6 | 19 |
| | | KM11-04-08-10 | 10 | 86 | | | | | | | 61.5 | | | | | 26 |
| 6 | 10 | KM11-06-10-6 | 6 | 76 | 10 | 19.5 | 31.5 | 21.5 | 31 | 13 | 47 | 13.5 | 17 | 21 | 7.5 | 29 |
| | | KM11-06-10-10 | 10 | 102 | | | | | | | 73 | | | | | 39 |
| 8 | 12 | KM11-08-12-6 | 6 | 85 | 11.5 | 22.5 | 35.5 | 24 | 34.5 | 15.5 | 55 | 14.7 | 18.5 | 22 | 9 | 41 |
| | | KM11-08-12-10 | 10 | 116 | | | | | | | 86 | | | | | 57 |

### KM12




| Applicable tubing O.D. F (mm) | Connection thread Rc T | Model | N | H (Width across flats) | L1 | L2 | L3 | L4 | L5 | L6 | P | Q1 | Q2 | M | Port B Min. port size | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/4 | KM12-04-02-6 | 6 | 17 | 89 | 10 | 18 | 29.5 | 19.5 | 29 | 10.6 | 40 | 12 | 16 | 6 | 65 |
| | | KM12-04-02-10 | 10 | | 110 | | | | | | | 61.5 | | | | 72 |
| 6 | 1/4 | KM12-06-02-6 | 6 | 17 | 99 | 10 | 19.5 | 31.5 | 21.5 | 31 | 13 | 47 | 13.5 | 17 | 7.5 | 81 |
| | | KM12-06-02-10 | 10 | | 125 | | | | | | | 73 | | | | 91 |
| 8 | 3/8 | KM12-08-03-6 | 6 | 19 | 108 | 11.5 | 22.5 | 35.5 | 24 | 34.5 | 15.5 | 55 | 14.7 | 18.5 | 9 | 97 |
| | | KM12-08-03-10 | 10 | | 139 | | | | | | | 86 | | | | 112 |

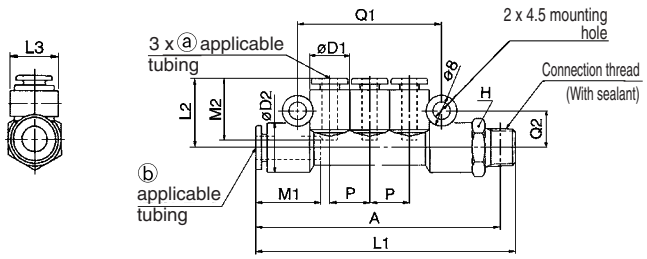
### KM13




| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Model | øD1 | øD2 | L1 | L2 | L3 | P | Q1 | Q2 | M1 | M2 | Port B Min. port size | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | KM13-04-06-3 | 10.4 | 12.8 | 60 | 18 | 13 | 10.4 | 38.2 | 9.9 | 17 | 16 | 4.5 | 11 |
| | 8 | KM13-04-08-3 | | 15.2 | 63.5 | 19 | 15.5 | | | 11.1 | 18.5 | | 6 | 14 |
| 6 | 8 | KM13-06-08-3 | 12.8 | 15.2 | 70.5 | 20 | 15.5 | 12.8 | 45.4 | 11.1 | 18.5 | 17 | 6 | 16 |
| | 10 | KM13-06-10-3 | | 18.5 | 74.5 | 21 | 19 | | | 12.8 | 21 | | 7.5 | 22 |
| 8 | 10 | KM13-08-10-3 | 15.2 | 18.5 | 81.5 | 22.5 | 19 | 15.2 | 52.6 | 12.8 | 21 | 18.5 | 7.5 | 26 |

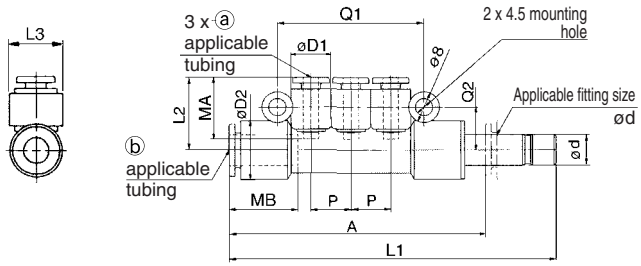
## Dimensions

### KM14



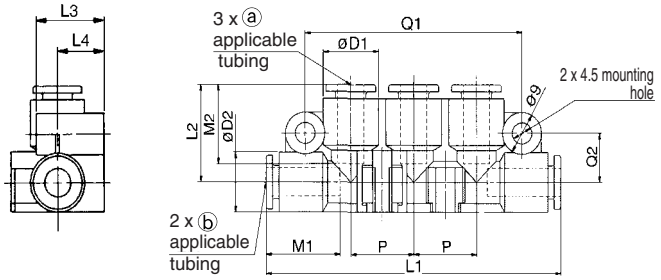

| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Connection thread R | Model | H (Width across flats) | øD1 | øD2 | L1 | L2 | L3 | P | A | Q1 | Q2 | M1 | M2 | Port B Min. port size | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | 1/8 | KM14-04-06-01S-3 | 13 | 10.4 | 12.8 | 67.1 | 18 | 13 | 10.4 | 64 | 38.2 | 9.9 | 17 | 16 | 4.5 | 18 |
| | | 1/4 | KM14-04-06-02S-3 | 14 | | | 71 | | | | 65.5 | | | | | | 25 |
| | | 3/8 | KM14-04-06-03S-3 | 17 | | | 72.4 | | | | 67.5 | | | | | | 38 |
| 4 | 8 | 1/8 | KM14-04-08-01S-3 | 17 | 10.4 | 15.2 | 72.6 | 19 | 15.5 | 10.4 | 69.5 | 38.2 | 11.1 | 18.5 | 16 | 6 | 30 |
| | | 1/4 | KM14-04-08-02S-3 | | | | 76 | | | | 70.5 | | | | | | |
| | | 3/8 | KM14-04-08-03S-3 | | | | 76.4 | | | | 71 | | | | | | 38 |
| 6 | 8 | 1/8 | KM14-06-08-01S-3 | 17 | 12.8 | 15.2 | 79.1 | 20 | 15.5 | 12.8 | 76.5 | 45.4 | 11.1 | 18.5 | 17 | 6 | 31 |
| | | 1/4 | KM14-06-08-02S-3 | | | | 82.5 | | | | 77 | | | | | | |
| | | 3/8 | KM14-06-08-03S-3 | | | | 82.9 | | | | 78 | | | | | | 39 |
| 6 | 10 | 1/4 | KM14-06-10-02S-3 | 19 | 12.8 | 18.5 | 87 | 21 | 19 | 12.8 | 81.5 | 45.4 | 12.8 | 21 | 17 | 7.5 | 43 |
| | | 3/8 | KM14-06-10-03S-3 | | | | 87.4 | | | | 82 | | | | | | 44 |
| | | 1/2 | KM14-06-10-04S-3 | 22 | | | 91.1 | | | | 84 | | | | | | 66 |
| 8 | 10 | 1/4 | KM14-08-10-02S-3 | 19 | 15.2 | 18.5 | 93.5 | 22.5 | 19 | 15.2 | 88 | 52.6 | 12.8 | 21 | 18.5 | 7.5 | 47 |
| | | 3/8 | KM14-08-10-03S-3 | | | | 93.9 | | | | 89 | | | | | | |
| | | 1/2 | KM14-08-10-04S-3 | 22 | | | 97.6 | | | | 90.5 | | | | | | 70 |

### KM15




| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Applicable fitting size ød | Model | øD1 | øD2 | L1 | L2 | L3 | P | Q1 | Q2 | A | MA | MB | Port B min. port size | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | 6 | KM15-04-06-3 | 10.4 | 12.8 | 78.5 | 18 | 13 | 10.4 | 38.2 | 9.9 | 61.5 | 16 | 17 | 4.5 | 12 |
| | 8 | 8 | KM15-04-08-3 | | 15.2 | 85.5 | 19 | 15.5 | | | 11.1 | 67 | | 18.5 | 6 | 24 |
| 6 | 8 | 8 | KM15-06-08-3 | 12.8 | 15.2 | 92.5 | 20 | 15.5 | 12.8 | 45.4 | 11.1 | 74 | 17 | 18.5 | 6 | 25 |
| | 10 | 10 | KM15-06-10-3 | | 18.5 | 98 | 21 | 19 | | | 12.8 | 77 | | 21 | 7.5 | 37 |
| 8 | 10 | 10 | KM15-08-10-3 | 15.2 | 18.5 | 105 | 22.5 | 19 | 15.2 | 52.6 | 12.8 | 85 | 18.5 | 21 | 7.5 | 41 |

### KM16




| Applicable tubing O.D. (mm) ⓐ | Applicable tubing O.D. (mm) ⓑ | Model | øD1 | øD2 | L1 | L2 | L3 | L4 | P | Q1 | Q2 | M1 | M2 | Port B Min. port size | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 4 | KM16-04-04-3 | 12.8 | 12.8 | 68 | 20.9 | 16 | 11 | 14.5 | 50 | 10.5 | 16 | 16 | 3 | 18 |
| 4 | 6 | KM16-04-06-3 | | | | | | | | | | 17 | 16 | 4.5 | 16 |
| 6 | 6 | KM16-06-06-3 | | | | | | | | | | 17 | 17 | 4.5 | 15 |

## Handling of One-touch Fittings

### ⚠Caution

1. Refer to P. 15 “Fittings & Tubing Precautions” for the details of installation/removal of One-touch fittings.
2. After attaching the KM15 series rod to the fitting and using it, do not attach tubes to the fitting. The tubes will not hold and may come loose.

# 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 |
| **X29** | Grease-free<br>Rubber material: NBR (With fluorine coating)<br>Release button color: Light blue<br>Copper-free (With electroless nickel plated) |
| **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) **KM11-04-08-10-X17**

## 2 Other Specifications

| Symbol | Specifications |
|---|---|
| **X2** | Copper-free (With electroless nickel plated) |
| **X12** | Lubricant: White Vaseline<br>Release button color: White |
| **X34** | Rubber material: FKM |

Suffix "-X2" to the end of part number.
Example) **KM11-04-08-6-X2**

# Insert Fittings

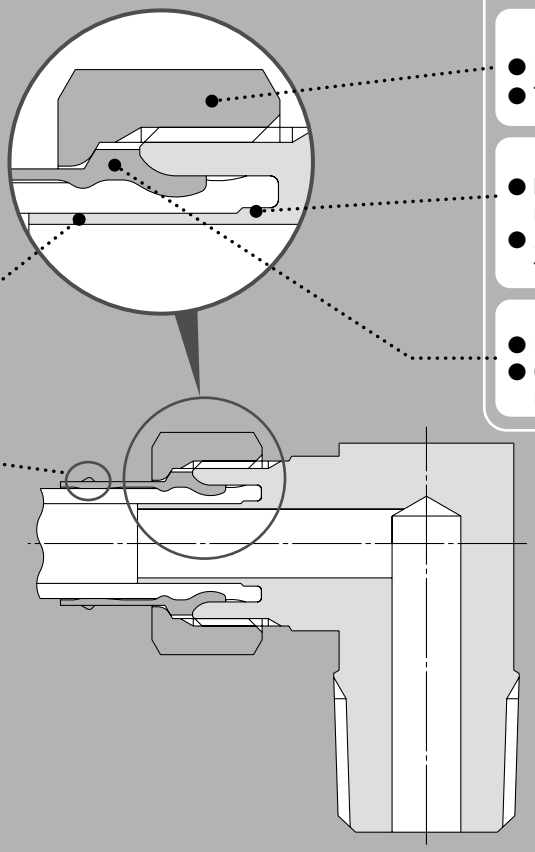
## Series KF



### 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

**Tube grip** (resin sleeve)
- Tube is easily held by a unique configuration
- Slipping and dropping of sleeve and union nut is prevented



### Superior tube mounting

**Union nut**
- No need to remove nuts
- Tube can be installed as-is

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

**Sleeve**
- Light tightening torque
- Can be used from medium vacuum up to 1 MPa

- Material / Body, Union nut: Brass
  Sleeve: Resin or Brass
- Maximum operating temperature / 150°C (Brass sleeve)
  60°C (Resin sleeve)
- Applicable tubing material /
  FEP • PFA • Modified PTFE • Nylon
  Soft nylon • Polyurethane
  Polyolefin • Soft polyolefin
- Can be used with steam. (For brass sleeve)
- Grease-free

## Male Connector

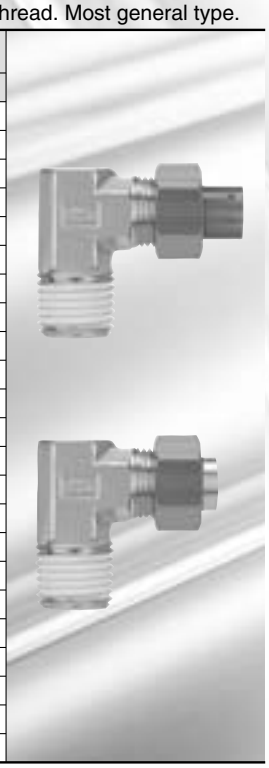
Use to connect tubes in the same direction from female thread. Most general type.

| Applicable tubing size (mm) | | Connection thread | Model | |
|---|---|---|---|---|
| O.D. | I.D. | | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | R1/8 | **KFH04-01S** | **KFH04B-01S** |
| | | R1/4 | **KFH04-02S** | **KFH04B-02S** |
| ø6 | ø4 | R1/8 | **KFH06-01S** | **KFH06B-01S** |
| | | R1/4 | **KFH06-02S** | **KFH06B-02S** |
| | | R3/8 | **KFH06-03S** | **KFH06B-03S** |
| ø8 | ø5 | R1/8 | **KFH08U-01S** | — |
| | | R1/4 | **KFH08U-02S** | — |
| | | R3/8 | **KFH08U-03S** | — |
| | ø6 | R1/8 | **KFH08N-01S** | **KFH08B-01S** |
| | | R1/4 | **KFH08N-02S** | **KFH08B-02S** |
| | | R3/8 | **KFH08N-03S** | **KFH08B-03S** |
| ø10 | ø6.5 | R1/4 | **KFH10U-02S** | — |
| | | R3/8 | **KFH10U-03S** | — |
| | | R1/2 | **KFH10U-04S** | — |
| | ø7.5 | R1/4 | **KFH10N-02S** | **KFH10B-02S** |
| | | R3/8 | **KFH10N-03S** | **KFH10B-03S** |
| | | R1/2 | **KFH10N-04S** | **KFH10B-04S** |
| ø12 | ø8 | R1/4 | **KFH12U-02S** | — |
| | | R3/8 | **KFH12U-03S** | — |
| | | R1/2 | **KFH12U-04S** | — |
| | ø9 | R1/4 | **KFH12N-02S** | **KFH12B-02S** |
| | | R3/8 | **KFH12N-03S** | **KFH12B-03S** |
| | | R1/2 | **KFH12N-04S** | **KFH12B-04S** |

## Male Elbow

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

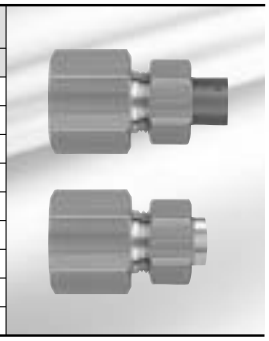
| Applicable tubing size (mm) | | Connection thread | Model | |
|---|---|---|---|---|
| O.D. | I.D. | | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | R1/8 | **KFL04-01S** | **KFL04B-01S** |
| | | R1/4 | **KFL04-02S** | **KFL04B-02S** |
| ø6 | ø4 | R1/8 | **KFL06-01S** | **KFL06B-01S** |
| | | R1/4 | **KFL06-02S** | **KFL06B-02S** |
| | | R3/8 | **KFL06-03S** | **KFL06B-03S** |
| ø8 | ø5 | R1/8 | **KFL08U-01S** | — |
| | | R1/4 | **KFL08U-02S** | — |
| | | R3/8 | **KFL08U-03S** | — |
| | ø6 | R1/8 | **KFL08N-01S** | **KFL08B-01S** |
| | | R1/4 | **KFL08N-02S** | **KFL08B-02S** |
| | | R3/8 | **KFL08N-03S** | **KFL08B-03S** |
| ø10 | ø6.5 | R1/4 | **KFL10U-02S** | — |
| | | R3/8 | **KFL10U-03S** | — |
| | | R1/2 | **KFL10U-04S** | — |
| | ø7.5 | R1/4 | **KFL10N-02S** | **KFL10B-02S** |
| | | R3/8 | **KFL10N-03S** | **KFL10B-03S** |
| | | R1/2 | **KFL10N-04S** | **KFL10B-04S** |
| ø12 | ø8 | R1/4 | **KFL12U-02S** | — |
| | | R3/8 | **KFL12U-03S** | — |
| | | R1/2 | **KFL12U-04S** | — |
| | ø9 | R1/4 | **KFL12N-02S** | **KFL12B-02S** |
| | | R3/8 | **KFL12N-03S** | **KFL12B-03S** |
| | | R1/2 | **KFL12N-04S** | **KFL12B-04S** |



## Female Union

Use to pipe from male thread such as pressure gauge.

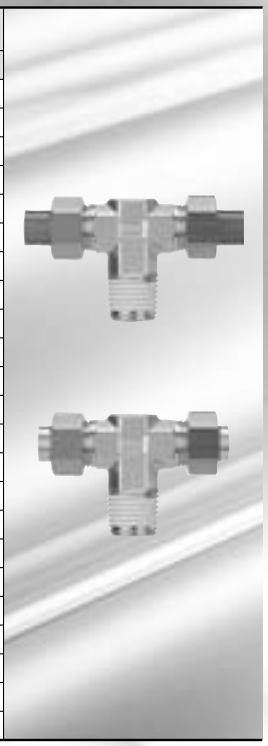
| Applicable tubing size (mm) | | Connection thread | Model | |
|---|---|---|---|---|
| O.D. | I.D. | | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | R1/4 | **KFF04-02** | **KFF04B-02** |
| ø6 | ø4 | R1/4 | **KFF06-02** | **KFF06B-02** |
| | | R3/8 | **KFF06-03** | **KFF06B-03** |
| ø8 | ø5 | R1/4 | **KFF08U-02** | — |
| | ø6 | | **KFF08N-02** | **KFF08B-02** |
| ø10 | ø6.5 | R1/4 | **KFF10U-02** | — |
| | ø7.5 | | **KFF10N-02** | **KFF10B-02** |
| ø12 | ø8 | R1/4 | **KFF12U-02** | — |
| | ø9 | | **KFF12N-02** | **KFF12B-02** |



## Branch Tee

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

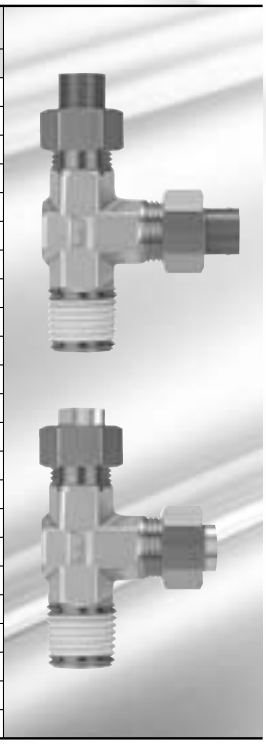
| Applicable tubing size (mm) | | Connection thread | Model | |
|---|---|---|---|---|
| O.D. | I.D. | | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | R1/8 | **KFT04-01S** | **KFT04B-01S** |
| | | R1/4 | **KFT04-02S** | **KFT04B-02S** |
| ø6 | ø4 | R1/8 | **KFT06-01S** | **KFT06B-01S** |
| | | R1/4 | **KFT06-02S** | **KFT06B-02S** |
| | | R3/8 | **KFT06-03S** | **KFT06B-03S** |
| ø8 | ø5 | R1/8 | **KFT08U-01S** | — |
| | | R1/4 | **KFT08U-02S** | — |
| | | R3/8 | **KFT08U-03S** | — |
| | ø6 | R1/8 | **KFT08N-01S** | **KFT08B-01S** |
| | | R1/4 | **KFT08N-02S** | **KFT08B-02S** |
| | | R3/8 | **KFT08N-03S** | **KFT08B-03S** |
| ø10 | ø6.5 | R1/4 | **KFT10U-02S** | — |
| | | R3/8 | **KFT10U-03S** | — |
| | | R1/2 | **KFT10U-04S** | — |
| | ø7.5 | R1/4 | **KFT10N-02S** | **KFT10B-02S** |
| | | R3/8 | **KFT10N-03S** | **KFT10B-03S** |
| | | R1/2 | **KFT10N-04S** | **KFT10B-04S** |
| ø12 | ø8 | R1/4 | **KFT12U-02S** | — |
| | | R3/8 | **KFT12U-03S** | — |
| | | R1/2 | **KFT12U-04S** | — |
| | ø9 | R1/4 | **KFT12N-02S** | **KFT12B-02S** |
| | | R3/8 | **KFT12N-03S** | **KFT12B-03S** |
| | | R1/2 | **KFT12N-04S** | **KFT12B-04S** |



## Male Run Tee

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

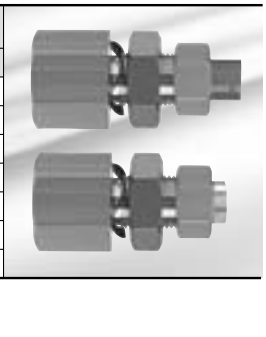
| Applicable tubing size (mm) | | Connection thread | Model | |
|---|---|---|---|---|
| O.D. | I.D. | | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | R1/8 | **KFY04-01S** | **KFY04B-01S** |
| | | R1/4 | **KFY04-02S** | **KFY04B-02S** |
| ø6 | ø4 | R1/8 | **KFY06-01S** | **KFY06B-01S** |
| | | R1/4 | **KFY06-02S** | **KFY06B-02S** |
| | | R3/8 | **KFY06-03S** | **KFY06B-03S** |
| ø8 | ø5 | R1/8 | **KFY08U-01S** | — |
| | | R1/4 | **KFY08U-02S** | — |
| | | R3/8 | **KFY08U-03S** | — |
| | ø6 | R1/8 | **KFY08N-01S** | **KFY08B-01S** |
| | | R1/4 | **KFY08N-02S** | **KFY08B-02S** |
| | | R3/8 | **KFY08N-03S** | **KFY08B-03S** |
| ø10 | ø6.5 | R1/4 | **KFY10U-02S** | — |
| | | R3/8 | **KFY10U-03S** | — |
| | | R1/2 | **KFY10U-04S** | — |
| | ø7.5 | R1/4 | **KFY10N-02S** | **KFY10B-02S** |
| | | R3/8 | **KFY10N-03S** | **KFY10B-03S** |
| | | R1/2 | **KFY10N-04S** | **KFY10B-04S** |
| ø12 | ø8 | R1/4 | **KFY12U-02S** | — |
| | | R3/8 | **KFY12U-03S** | — |
| | | R1/2 | **KFY12U-04S** | — |
| | ø9 | R1/4 | **KFY12N-02S** | **KFY12B-02S** |
| | | R3/8 | **KFY12N-03S** | **KFY12B-03S** |
| | | R1/2 | **KFY12N-04S** | **KFY12B-04S** |



## Bulkhead Connector

Use to connect male thread and tube through a panel.

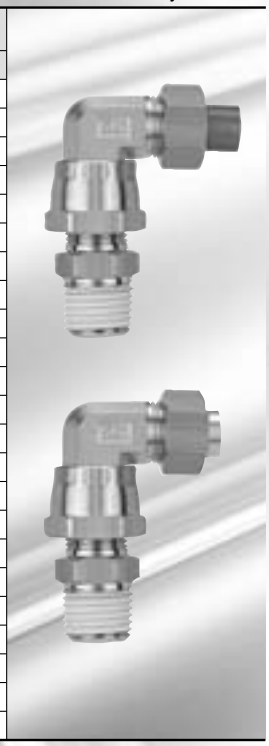
| Applicable tubing size (mm) | | Connection thread | Model | |
|---|---|---|---|---|
| O.D. | I.D. | | Resin sleeve | Brass sleeve |
| ø6 | ø4 | R1/4 | **KFE06-02** | **KFE06B-02** |
| ø8 | ø5 | R3/8 | **KFE08U-03** | — |
| | ø6 | | **KFE08N-03** | **KFE08B-03** |
| ø10 | ø6.5 | R3/8 | **KFE10U-03** | — |
| | ø7.5 | | **KFE10N-03** | **KFE10B-03** |
| ø12 | ø8 | R3/8 | **KFE12U-03** | — |
| | ø9 | | **KFE12N-03** | **KFE12B-03** |



## Swivel Elbow

Use to pipe at right angles to female thread. Swiveled at any direction.

| Applicable tubing size (mm) | | Connection thread | Model | |
|---|---|---|---|---|
| O.D. | I.D. | | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | R1/8 | **KFV04-01S** | **KFV04B-01S** |
| | | R1/4 | **KFV04-02S** | **KFV04B-02S** |
| ø6 | ø4 | R1/8 | **KFV06-01S** | **KFV06B-01S** |
| | | R1/4 | **KFV06-02S** | **KFV06B-02S** |
| | | R3/8 | **KFV06-03S** | **KFV06B-03S** |
| ø8 | ø5 | R1/8 | **KFV08U-01S** | — |
| | | R1/4 | **KFV08U-02S** | — |
| | | R3/8 | **KFV08U-03S** | — |
| | ø6 | R1/8 | **KFV08N-01S** | **KFV08B-01S** |
| | | R1/4 | **KFV08N-02S** | **KFV08B-02S** |
| | | R3/8 | **KFV08N-03S** | **KFV08B-03S** |
| ø10 | ø6.5 | R1/4 | **KFV10U-02S** | — |
| | | R3/8 | **KFV10U-03S** | — |
| | | R1/2 | **KFV10U-04S** | — |
| | ø7.5 | R1/4 | **KFV10N-02S** | **KFV10B-02S** |
| | | R3/8 | **KFV10N-03S** | **KFV10B-03S** |
| | | R1/2 | **KFV10N-04S** | **KFV10B-04S** |
| ø12 | ø8 | R1/4 | **KFV12U-02S** | — |
| | | R3/8 | **KFV12U-03S** | — |
| | | R1/2 | **KFV12U-04S** | — |
| | ø9 | R1/4 | **KFV12N-02S** | **KFV12B-02S** |
| | | R3/8 | **KFV12N-03S** | **KFV12B-03S** |
| | | R1/2 | **KFV12N-04S** | **KFV12B-04S** |



## Swivel Long Elbow

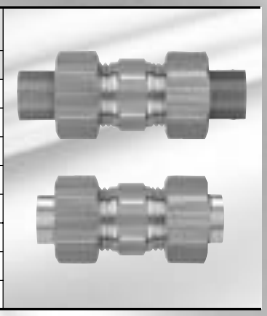
Use to pipe at right angles to female thread. Swiveled at any direction. Solid piece moves fittings up from workpiece.

| Applicable tubing size (mm) | | Connection thread | Model | |
|---|---|---|---|---|
| O.D. | I.D. | | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | R1/8 | **KFW04-01S** | **KFW04B-01S** |
| | | R1/4 | **KFW04-02S** | **KFW04B-02S** |
| ø6 | ø4 | R1/8 | **KFW06-01S** | **KFW06B-01S** |
| | | R1/4 | **KFW06-02S** | **KFW06B-02S** |
| | | R3/8 | **KFW06-03S** | **KFW06B-03S** |
| ø8 | ø5 | R1/8 | **KFW08U-01S** | — |
| | | R1/4 | **KFW08U-02S** | — |
| | | R3/8 | **KFW08U-03S** | — |
| | ø6 | R1/8 | **KFW08N-01S** | **KFW08B-01S** |
| | | R1/4 | **KFW08N-02S** | **KFW08B-02S** |
| | | R3/8 | **KFW08N-03S** | **KFW08B-03S** |
| ø10 | ø6.5 | R1/4 | **KFW10U-02S** | — |
| | | R3/8 | **KFW10U-03S** | — |
| | | R1/2 | **KFW10U-04S** | — |
| | ø7.5 | R1/4 | **KFW10N-02S** | **KFW10B-02S** |
| | | R3/8 | **KFW10N-03S** | **KFW10B-03S** |
| | | R1/2 | **KFW10N-04S** | **KFW10B-04S** |
| ø12 | ø8 | R1/4 | **KFW12U-02S** | — |
| | | R3/8 | **KFW12U-03S** | — |
| | | R1/2 | **KFW12U-04S** | — |
| | ø9 | R1/4 | **KFW12N-02S** | **KFW12B-02S** |
| | | R3/8 | **KFW12N-03S** | **KFW12B-03S** |
| | | R1/2 | **KFW12N-04S** | **KFW12B-04S** |

## Straight Union

Use to connect tubes in the same direction.

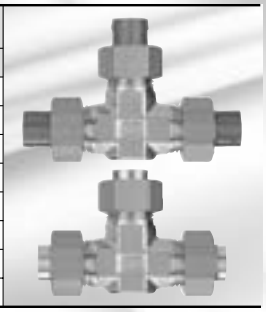
| Applicable tubing size (mm) | | Model | |
|---|---|---|---|
| O.D. | I.D. | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | **KFH04-00** | **KFH04B-00** |
| ø6 | ø4 | **KFH06-00** | **KFH06B-00** |
| ø8 | ø5 | **KFH08U-00** | — |
| | ø6 | **KFH08N-00** | **KFH08B-00** |
| ø10 | ø6.5 | **KFH10U-00** | — |
| | ø7.5 | **KFH10N-00** | **KFH10B-00** |
| ø12 | ø8 | **KFH12U-00** | — |
| | ø9 | **KFH12N-00** | **KFH12B-00** |



## Tee Union

Use to connect tubes in both 90° directions.

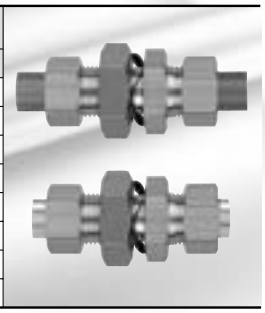
| Applicable tubing size (mm) | | Model | |
|---|---|---|---|
| O.D. | I.D. | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | **KFT04-00** | **KFT04B-00** |
| ø6 | ø4 | **KFT06-00** | **KFT06B-00** |
| ø8 | ø5 | **KFT08U-00** | — |
| | ø6 | **KFT08N-00** | **KFT08B-00** |
| ø10 | ø6.5 | **KFT10U-00** | — |
| | ø7.5 | **KFT10N-00** | **KFT10B-00** |
| ø12 | ø8 | **KFT12U-00** | — |
| | ø9 | **KFT12N-00** | **KFT12B-00** |



## Bulkhead Union

Use to connect tubes through a panel.

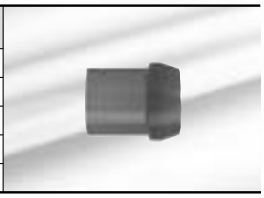
| Applicable tubing size (mm) | | Model | |
|---|---|---|---|
| O.D. | I.D. | Resin sleeve | Brass sleeve |
| ø4 | ø2.5 | **KFE04-00** | **KFE04B-00** |
| ø6 | ø4 | **KFE06-00** | **KFE06B-00** |
| ø8 | ø5 | **KFE08U-00** | — |
| | ø6 | **KFE08N-00** | **KFE08B-00** |
| ø10 | ø6.5 | **KFE10U-00** | — |
| | ø7.5 | **KFE10N-00** | **KFE10B-00** |
| ø12 | ø8 | **KFE12U-00** | — |
| | ø9 | **KFE12N-00** | **KFE12B-00** |



## Plug

Use to plug unused fittings.

| Applicable tubing size (mm) | Model |
|---|---|
| ø4 | **KFP-04** |
| ø6 | **KFP-06** |
| ø8 | **KFP-08** |
| ø10 | **KFP-10** |
| ø12 | **KFP-12** |



# Insert Fittings
# *Series KF*

RoHS

**Resin sleeve**

**Brass sleeve**

## Specifications

| | | |
|---|---|---|
| **Sleeve material** | Resin | Brass |
| **Fluid** | Air, Water Note 2) | Air, Steam Note 2) |
| **Ambient and fluid temperature** | –5 to 60°C (No freezing)<br>Water: 0 to 60°C (No freezing) | –5 to 150°C (No freezing) |
| **Operating pressure range** Note 1) | –101.3 kPa to 1 MPa | |
| **Proof pressure** | 7.0 MPa (at 60°C) | |
| **Lubricant** | Grease-free | |
| **Seal on the threads** | None or with sealant | |

Note 1) Do not use the fittings with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.
Note 2) Swivel type is not compatible with water and steam.

## Applicable Tubing

| Series | Tubing O.D. | Tubing O.D. x I.D. (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | ø4 x ø2.5 | ø6 x ø4 | ø8 x ø5 | ø8 x ø6 | ø10 x ø6.5 | ø10 x ø7.5 | ø12 x ø8 | ø12 x ø9 |
| **T** | Nylon | ● | ● | — | ● | — | ● | — | ● |
| **TS** | Soft nylon | ● | ● | — | ● | — | ● | — | ● |
| **TU** | Polyurethane | ● | ● | ● | — | ● | — | ● | — |
| **TPH** | Polyolefin | ● | ● | — | ● | — | ● | — | ● |
| **TPS** | Soft polyolefin | ● | ● | ● | — | ● | — | ● | — |
| **TH** | FEP | ● | ● | — | ● | — | ● | — | ● |
| **TL** | Super PFA | — | ● | — | ● | — | — | — | — |
| **TD** | Modified PTFE | ● | ● | — | ● | — | ● | — | ● |

## How to Order

**KF H 06 □ — 01 S — □**

**Type**

| | |
|---|---|
| **H** | Male connector |
| | Straight union |
| **L** | Male elbow |
| **T** | Branch tee |
| | Tee union |
| **F** | Female union |
| **E** | Bulkhead connector |
| | Bulkhead union |
| **Y** | Male run tee |
| **V** | Swivel elbow |
| **W** | Swivel long elbow |

**Applicable tubing O.D.**

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

**Bore size**
**Applicable tubing O.D.**

| | | |
|---|---|---|
| Thread connection | **01** | R1/8 |
| | **02** | R1/4, Rc1/4 |
| | **03** | R3/8, Rc3/8 |
| | **04** | R1/2, Rc1/2 |
| Tubing connection | **00** | Same tubing size |

**Sealant (Male thread)**

| | |
|---|---|
| **Nil** | None |
| **S** | With sealant |

**Made to Order**
Refer to page 127 for details.

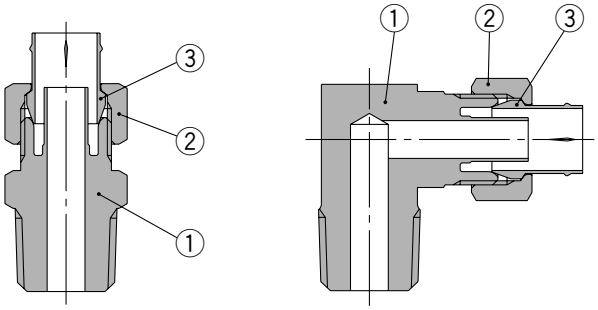
**Applicable tubing / Sleeve material**

| Applicable tubing material | Sleeve material | Tubing size (O.D. x I.D.) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | ø4 x ø2.5 | ø6 x ø4 | ø8 x ø5 | ø8 x ø6 | ø10 x ø6.5 | ø10 x ø7.5 | ø12 x ø8 | ø12 x ø9 |
| Nylon | Resin | **Nil** | | — | **N** | — | **N** | — | **N** |
| | Brass | **B** | | — | **B** | — | **B** | — | **B** |
| Soft nylon | Resin | **Nil** | | — | **N** | — | **N** | — | **N** |
| | Brass | **B** | | — | **B** | — | **B** | — | **B** |
| Polyurethane | Resin | **Nil** | | **U** | — | **U** | — | **U** | — |
| Polyolefin | Resin | **Nil** | | — | **N** | — | **N** | — | **N** |
| | Brass | **B** | | — | **B** | — | **B** | — | **B** |
| Soft polyolefin | Resin | **Nil** | | **U** | — | **U** | — | **U** | — |
| FEP | Resin | **Nil** | | — | **N** | — | **N** | — | **N** |
| | Brass | **B** | | — | **B** | — | **B** | — | **B** |
| Super PFA | Resin | — | **Nil** | — | **N** | — | — | — | — |
| | Brass | — | **B** | — | **B** | — | — | — | — |
| Modified PTFE | Resin | **Nil** | | — | **N** | — | **N** | — | **N** |
| | Brass | **B** | | — | **B** | — | **B** | — | **B** |



SMC

## Construction



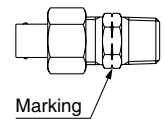
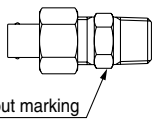
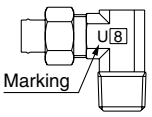
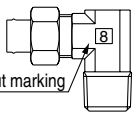

**Principal Parts Material**

| No | Part no. | Material |
|---|---|---|
| 1 | **Body** | C3604, C3771 |
| 2 | **Union nut** | C3604 |
| 3 | **Resin sleeve, plug** | Nylon 66 |
| | **Brass sleeve** | C2700 |



### Identification of Fitting Body Exterior by Applicable Tubing

- Fittings used with polyurethane tube and soft polyolefin tube (Tube O.D. ø8, ø10 and ø12) are identified by the following marks on the body.
- Union nut and sleeve are compatible.

| **KF□□U-□□** | **KF□□ -□□**<br>**KF□□N-□□**<br>**KF□□B-□□** |
|---|---|
|  |  |
|  |  |

### Made to Order

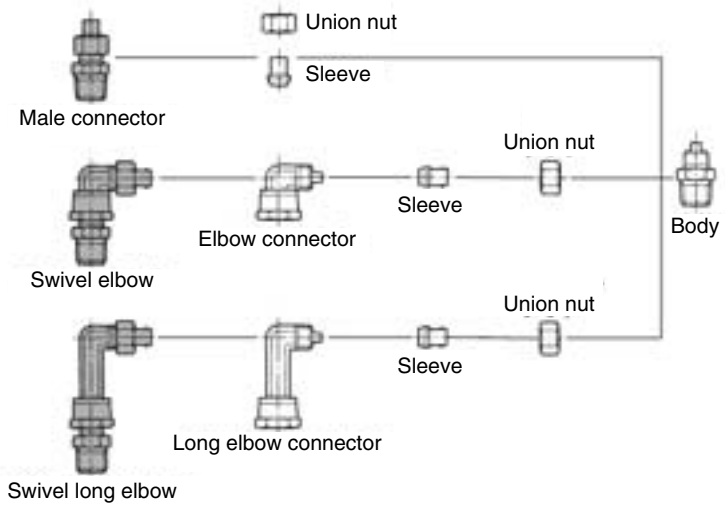
| Symbol | Specifications |
|---|---|
| **X2** | Copper-free<br>(Electroless nickel plated) |

Suffix "-X2" to the end of part number.
Ex.) **KFH06-01S-X2**

### Swivel Type / Part No.

**Swivel type fitting parts lineup**

The bodies of elbow connectors and extended elbow connectors are compatible with almost any fitting. (Exceptions are "KFV-04" and "KFW-04" which are for the body of a ø6 tube.) Swivel fittings, elbow (KFV) and (KFW) constitute the combination with a male connector (KFH) and connector as shown in the diagram.




**Elbow Connector: KFV**

| Part no. | Applicable tubing O.D./I.D. |
|---|---|
| **KFV-04** | ø4/ø2.5 |
| **KFV-06** | ø6/ø4 |
| **KFV-08U** | ø8/ø5 |
| **KFV-08N** | ø8/ø6 |
| **KFV-10U** | ø10/ø6.5 |
| **KFV-10N** | ø10/ø7.5 |
| **KFV-12U** | ø12/ø8 |
| **KFV-12N** | ø12/ø9 |

**Union Nut: KFN**

| Part no. | Applicable tubing O.D |
|---|---|
| **KFN-04** | ø4 |
| **KFN-06** | ø6 |
| **KFN-08** | ø8 |
| **KFN-10** | ø10 |
| **KFN-12** | ø12 |

**Long Elbow Connector: KFW**

| Part no. | Applicable tubing O.D./I.D. |
|---|---|
| **KFW-04** | ø4/ø2.5 |
| **KFW-06** | ø6/ø4 |
| **KFW-08U** | ø8/ø5 |
| **KFW-08N** | ø8/ø6 |
| **KFW-10U** | ø10/ø6.5 |
| **KFW-10N** | ø10/ø7.5 |
| **KFW-12U** | ø12/ø8 |
| **KFW-12N** | ø12/ø9 |

**Sleeve: KFS**

| Part no. | | Applicable tubing O.D. |
|---|---|---|
| Resin sleeve | Brass sleeve | |
| **KFS-04** | **KFSB-04** | ø4 |
| **KFS-06** | **KFSB-06** | ø6 |
| **KFS-08** | **KFSB-08** | ø8 |
| **KFS-10** | **KFSB-10** | ø10 |
| **KFS-12** | **KFSB-12** | ø12 |

## Dimensions

### Male Connector: KFH

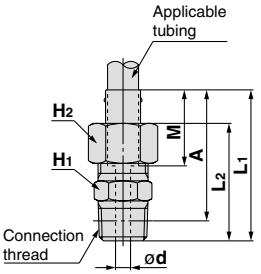
(mm)

Resin sleeve

Brass sleeve

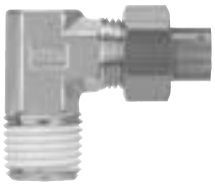
| Applicable tubing size (mm) | | Connection thread | Model | Width across flats | | $L_1$ | $L_2$ | M | ød | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O.D. | I.D. | | | $H_1$ | $H_2$ | | | | | | | |
| ø4 | ø2.5 | R1/8 | KFH04-01S | 10 | 10 | 29.6 | 22.9 | 15.5 | 1.5 | 26.5 | 1.6 | 13 |
| | | R1/4 | KFH04-02S | 14 | | 34 | 27.3 | | | 28.5 | | 23 |
| | | R1/8 | KFH04B-01S | 10 | | 26.5 | 23.5 | 12.4 | | 23.4 | | 14 |
| | | R1/4 | KFH04B-02S | 14 | | 30.9 | 27.9 | | | 25.4 | | 24 |
| ø6 | ø4 | R1/8 | KFH06-01S | 10 | 12 | 29.3 | 22.6 | 15.2 | 3 | 26.2 | 6 | 14 |
| | | R1/4 | KFH06-02S | 14 | | 33.7 | 27 | | | 28.2 | | 25 |
| | | R3/8 | KFH06-03S | 17 | | 34.1 | 27.4 | | | 28.9 | | 36 |
| | | R1/8 | KFH06B-01S | 10 | | 26.3 | 23.3 | 12.2 | | 23.2 | | 15 |
| | | R1/4 | KFH06B-02S | 14 | | 30.7 | 27.7 | | | 25.2 | | 26 |
| | | R3/8 | KFH06B-03S | 17 | | 31.1 | 28.1 | | | 25.9 | | 37 |
| ø8 | ø5 | R1/8 | KFH08U-01S | 12 | 14 | 29.3 | 22.6 | 16.2 | 4 | 26.2 | 11 | 16 |
| | | R1/4 | KFH08U-02S | 14 | | 33.7 | 27 | | | 28.2 | | 25 |
| | | R3/8 | KFH08U-03S | 17 | | 34.1 | 27.4 | | | 28.9 | | 37 |
| | ø6 | R1/8 | KFH08N-01S | 12 | | 29.3 | 22.6 | | 5 | 26.2 | 17 | 16 |
| | | R1/4 | KFH08N-02S | 14 | | 33.7 | 27 | | | 28.2 | | 24 |
| | | R3/8 | KFH08N-03S | 17 | | 34.1 | 27.4 | | | 28.9 | | 36 |
| | | R1/8 | KFH08B-01S | 12 | | 26.4 | 23.4 | 13.3 | | 23.3 | | 17 |
| | | R1/4 | KFH08B-02S | 14 | | 30.8 | 27.8 | | | 25.3 | | 25 |
| | | R3/8 | KFH08B-03S | 17 | | 31.2 | 28.2 | | | 26.0 | | 37 |
| ø10 | ø6.5 | R1/4 | KFH10U-02S | 17 | 17 | 35.3 | 28 | 18.8 | 5.5 | 29.8 | 21 | 32 |
| | | R3/8 | KFH10U-03S | | | 35.7 | 28.4 | | | 30.5 | | 40 |
| | | R1/2 | KFH10U-04S | 22 | | 38.9 | 31.6 | | | 31.6 | | 65 |
| | ø7.5 | R1/4 | KFH10N-02S | 17 | | 35.3 | 28 | | 6.5 | 29.8 | 30 | 31 |
| | | R3/8 | KFH10N-03S | | | 35.7 | 28.4 | | | 30.5 | | 39 |
| | | R1/2 | KFH10N-04S | 22 | | 38.9 | 31.6 | | | 31.6 | | 64 |
| | | R1/4 | KFH10B-02S | 17 | | 31.5 | 28.5 | 15.0 | | 26.0 | | 33 |
| | | R3/8 | KFH10B-03S | | | 31.9 | 28.9 | | | 26.7 | | 41 |
| | | R1/2 | KFH10B-04S | 22 | | 35.1 | 32.1 | | | 27.8 | | 66 |
| ø12 | ø8 | R1/4 | KFH12U-02S | 17 | 19 | 35.8 | 29 | 19.3 | 7 | 30.3 | 35 | 33 |
| | | R3/8 | KFH12U-03S | | | 36.2 | 29.4 | | | 31.0 | | 41 |
| | | R1/2 | KFH12U-04S | 22 | | 39.4 | 32.6 | | | 32.1 | | 65 |
| | ø9 | R1/4 | KFH12N-02S | 17 | | 35.8 | 29 | | 8 | 30.3 | 45 | 31 |
| | | R3/8 | KFH12N-03S | | | 36.2 | 29.4 | | | 31.0 | | 39 |
| | | R1/2 | KFH12N-04S | 22 | | 39.4 | 32.6 | | | 32.1 | | 64 |
| | | R1/4 | KFH12B-02S | 17 | | 32.1 | 29.1 | 15.5 | | 26.6 | | 33 |
| | | R3/8 | KFH12B-03S | | | 32.5 | 29.5 | | | 27.3 | | 41 |
| | | R1/2 | KFH12B-04S | 22 | | 35.7 | 32.6 | | | 28.4 | | 66 |

* Reference dimensions after installation of R thread.

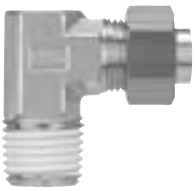


## Dimensions

### Male Elbow: KFL



Resin sleeve

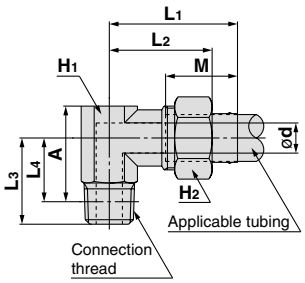


Brass sleeve

(mm)

| Applicable tubing size (mm) O.D. | Applicable tubing size (mm) I.D. | Connection thread | Model | Width across flats $H_1$ | Width across flats $H_2$ | $L_1$ | $L_2$ | $L_3$ | $L_4$ | M | ød | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | R1/8 | KFL04-01S | 10 | 10 | 27.5 | 20.8 | 17 | 13 | 15.5 | 1.5 | 19.3 | 1.6 | 21 |
| | | R1/4 | KFL04-02S | | | | | 19 | | | | | | 25 |
| | | R1/8 | KFL04B-01S | | | 24.4 | 21.4 | 17 | | 12.4 | | | | 22 |
| | | R1/4 | KFL04B-02S | | | | | 19 | | | | | | 26 |
| ø6 | ø4 | R1/8 | KFL06-01S | 10 | 12 | 27.2 | 20.5 | 17 | 13 | 15.2 | 3 | 19.3 | 6.0 | 22 |
| | | R1/4 | KFL06-02S | | | | | 19 | | | | | | 27 |
| | | R3/8 | KFL06-03S | 12 | | 30.2 | 23.5 | 20 | 13.7 | | | 21 | | 38 |
| | | R1/8 | KFL06B-01S | 10 | 12 | 24.2 | 21.2 | 17 | 13 | 12.2 | | 19.3 | | 23 |
| | | R1/4 | KFL06B-02S | | | | | 19 | | | | | | 28 |
| | | R3/8 | KFL06B-03S | 12 | | 27.2 | 24.2 | 20 | 13.7 | | | 21 | | 39 |
| ø8 | ø5 | R1/8 | KFL08U-01S | 12 | 14 | 28.2 | 21.5 | 18 | 14 | 16.2 | 4 | 21.3 | 9.5 | 30 |
| | | R1/4 | KFL08U-02S | | | | | 21 | 15 | | | 22.3 | 11 | 32 |
| | | R3/8 | KFL08U-03S | | | 30.2 | 23.5 | 20 | 13.7 | | | 21 | | 39 |
| | ø6 | R1/8 | KFL08N-01S | | | 28.2 | 21.5 | 18 | 14 | | 5 | 21.3 | 12 | 31 |
| | | R1/4 | KFL08N-02S | | | | | 21 | 15 | | | 22.3 | 16 | 32 |
| | | R3/8 | KFL08N-03S | | | 30.2 | 23.5 | 20 | 13.7 | | | 21 | | 37 |
| | | R1/8 | KFL08B-01S | | | 25.3 | 22.3 | 18 | 14 | 13.3 | | 21.3 | 12 | 32 |
| | | R1/4 | KFL08B-02S | | | | | 21 | 15 | | | 22.3 | 16 | 33 |
| | | R3/8 | KFL08B-03S | | | 27.3 | 24.3 | 20 | 13.7 | | | 21 | | 38 |
| ø10 | ø6.5 | R1/4 | KFL10U-02S | 12 | 17 | 31.8 | 24.5 | 22 | 16 | 18.8 | 5.5 | 23.3 | 18 | 38 |
| | | R3/8 | KFL10U-03S | | | | | 21 | 14.7 | | | 22 | 20 | 44 |
| | | R1/2 | KFL10U-04S | 14 | | 33.8 | 26.5 | 25 | 16.8 | | | 25.3 | | 66 |
| | ø7.5 | R1/4 | KFL10N-02S | 12 | | 31.8 | 24.5 | 22 | 16 | | 6.5 | 23.3 | 23 | 38 |
| | | R3/8 | KFL10N-03S | | | | | 21 | 14.7 | | | 22 | 26 | 43 |
| | | R1/2 | KFL10N-04S | 14 | | 33.8 | 26.5 | 25 | 16.8 | | | 25.3 | | 65 |
| | | R1/4 | KFL10B-02S | 12 | | 28.0 | 25.0 | 22 | 16 | 15.0 | | 23.3 | 23 | 39 |
| | | R3/8 | KFL10B-03S | | | | | 21 | 14.7 | | | 22 | 26 | 44 |
| | | R1/2 | KFL10B-04S | 14 | | 30.0 | 27.0 | 25 | 16.8 | | | 25.3 | | 66 |
| ø12 | ø8 | R1/4 | KFL12U-02S | 14 | 19 | 34.3 | 27.5 | 23 | 17 | 19.3 | 7 | 25.5 | 24 | 53 |
| | | R3/8 | KFL12U-03S | | | | | 22 | 15.7 | | | 24.2 | 30 | 53 |
| | | R1/2 | KFL12U-04S | | | | | 25 | 16.8 | | | 25.3 | | 68 |
| | ø9 | R1/4 | KFL12N-02S | | | | | 23 | 17 | | 8 | 25.5 | 27 | 51 |
| | | R3/8 | KFL12N-03S | | | | | 22 | 15.7 | | | 24.2 | 35 | 52 |
| | | R1/2 | KFL12N-04S | | | | | 25 | 16.8 | | | 25.3 | | 67 |
| | | R1/4 | KFL12B-02S | | | 30.6 | 27.6 | 23 | 17 | 15.5 | | 25.5 | 27 | 53 |
| | | R3/8 | KFL12B-03S | | | | | 22 | 15.7 | | | 24.2 | 35 | 54 |
| | | R1/2 | KFL12B-04S | | | | | 25 | 16.8 | | | 25.3 | | 69 |

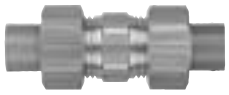
* Reference dimensions after installation of R thread.



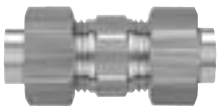
## Dimensions

### Straight Union: KFH

(mm)

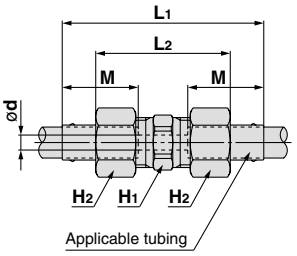


Resin sleeve



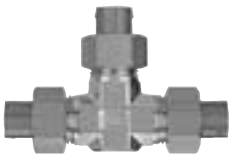
Brass sleeve

| Applicable tubing size (mm) | | Model | Width across flats | | $L_1$ | $L_2$ | M | ød | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| O.D. | I.D. | | $H_1$ | $H_2$ | | | | | | |
| ø4 | ø2.5 | KFH04-00 | 8 | 10 | 40.9 | 27.6 | 15.5 | 1.5 | 1.6 | 13 |
| | | KFH04B-00 | | | 34.7 | 28.8 | 12.4 | | | 14 |
| ø6 | ø4 | KFH06-00 | 10 | 12 | 40.3 | 27 | 15.2 | 3 | 6 | 17 |
| | | KFH06B-00 | | | 34.3 | 28.4 | 12.2 | | | 19 |
| ø8 | ø5 | KFH08U-00 | 12 | 14 | 41.3 | 28 | 16.2 | 4 | 11 | 23 |
| | ø6 | KFH08N-00 | | | | | | 5 | 17 | 22 |
| | | KFH08B-00 | | | 35.5 | 29.6 | 13 | | | 24 |
| ø10 | ø6.5 | KFH10U-00 | 17 | 17 | 44.6 | 30 | 18.8 | 5.5 | 21 | 36 |
| | ø7.5 | KFH10N-00 | | | | | | 6.5 | 30 | |
| | | KFH10B-00 | | | 37.0 | 31.0 | 15.0 | | | 39 |
| ø12 | ø8 | KFH12U-00 | 17 | 19 | 45.5 | 32 | 19.3 | 7 | 35 | 42 |
| | ø9 | KFH12N-00 | | | | | | 8 | 45 | 41 |
| | | KFH12B-00 | | | 38.1 | 32.2 | 15.5 | | | 44 |

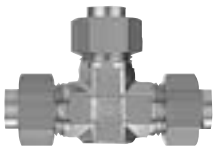



### Tee Union: KFT

(mm)

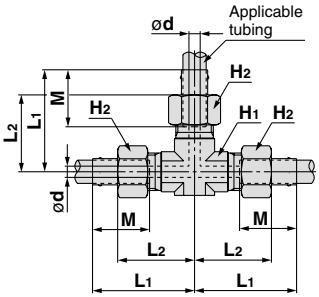


Resin sleeve



Brass sleeve

| Applicable tubing size (mm) | | Model | Width across flats | | $L_1$ | $L_2$ | M | ød | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| O.D. | I.D. | | $H_1$ | $H_2$ | | | | | | |
| ø4 | ø2.5 | KFT04-00 | 10 | 10 | 27.5 | 20.8 | 15.5 | 1.5 | 1.6 | 33 |
| | | KFT04B-00 | | | 24.4 | 21.4 | 12.4 | | | 35 |
| ø6 | ø4 | KFT06-00 | 10 | 12 | 27.2 | 20.5 | 15.2 | 3 | 6 | 37 |
| | | KFT06B-00 | | | 24.2 | 21.2 | 12.2 | | | 39 |
| ø8 | ø5 | KFT08U-00 | 12 | 14 | 30.2 | 23.5 | 16.2 | 4 | 11 | 54 |
| | ø6 | KFT08N-00 | | | | | | 5 | 17 | 53 |
| | | KFT08B-00 | | | 27.3 | 24.3 | 13.3 | | | 56 |
| ø10 | ø6.5 | KFT10U-00 | 12 | 17 | 31.8 | 24.5 | 18.8 | 5.5 | 21 | 65 |
| | ø7.5 | KFT10N-00 | | | | | | 6.5 | 30 | 63 |
| | | KFT10B-00 | | | 28.0 | 25.0 | 15.0 | | | 67 |
| ø12 | ø8 | KFT12U-00 | 14 | 19 | 34.3 | 27.5 | 19.3 | 7 | 35 | 89 |
| | ø9 | KFT12N-00 | | | | | | 8 | 45 | 85 |
| | | KFT12B-00 | | | 30.6 | 27.6 | 15.5 | | | 90 |



## Dimensions

### Branch Tee: KFT

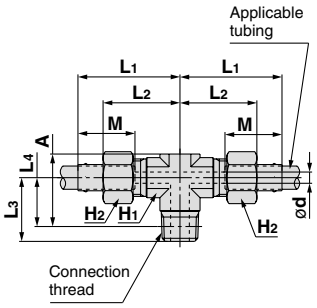
Resin sleeve

Brass sleeve

(mm)

| Applicable tubing size (mm) O.D. | Applicable tubing size (mm) I.D. | Connection thread R | Model | Width across flats $H_1$ | Width across flats $H_2$ | $L_1$ | $L_2$ | $L_3$ | $L_4$ | M | ød | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | R1/8 | **KFT04-01S** | 10 | 10 | 27.5 | 20.8 | 17 | 13 | 15.5 | 1.5 | 19.3 | 3 | 29 |
| | | R1/4 | **KFT04-02S** | | | | | 19 | | | | | | 34 |
| | | R1/8 | **KFT04B-01S** | | | 24.4 | 21.4 | 17 | | 12.4 | | | | 30 |
| | | R1/4 | **KFT04B-02S** | | | | | 19 | | | | | | 35 |
| ø6 | ø4 | R1/8 | **KFT06-01S** | 10 | 12 | 27.2 | 20.5 | 17 | 13 | 15.2 | 3 | 19.3 | 10 | 32 |
| | | R1/4 | **KFT06-02S** | | | | | 19 | | | | | | 37 |
| | | R3/8 | **KFT06-03S** | 12 | | 30.2 | 23.5 | 22 | 15.7 | | | 23 | 12 | 53 |
| | | R1/8 | **KFT06B-01S** | 10 | | 24.2 | 21.2 | 17 | 13 | 12.2 | | 19.3 | 10 | 34 |
| | | R1/4 | **KFT06B-02S** | | | | | 19 | | | | | | 39 |
| | | R3/8 | **KFT06B-03S** | 12 | | 27.2 | 24.2 | 22 | 15.7 | | | 23 | 12 | 55 |
| ø8 | ø5 | R1/8 | **KFT08U-01S** | 12 | 14 | 30.2 | 23.5 | 20 | 16 | 16.2 | 4 | 23.3 | 14 | 49 |
| | | R1/4 | **KFT08U-02S** | | | | | 23 | 17 | | | 24.3 | 19 | 50 |
| | | R3/8 | **KFT08U-03S** | | | | | 22 | 15.7 | | | 23 | | 56 |
| | ø6 | R1/8 | **KFT08N-01S** | | | | | 20 | 16 | | 5 | 23.3 | 16 | 46 |
| | | R1/4 | **KFT08N-02S** | | | | | 23 | 17 | | | 24.3 | 25 | 49 |
| | | R3/8 | **KFT08N-03S** | | | | | 22 | 15.7 | | | 23 | | 54 |
| | | R1/8 | **KFT08B-01S** | | | 27.3 | 24.3 | 20 | 16 | 13.3 | | 23.3 | 16 | 48 |
| | | R1/4 | **KFT08B-02S** | | | | | 23 | 17 | | | 24.3 | 25 | 51 |
| | | R3/8 | **KFT08B-03S** | | | | | 22 | 15.7 | | | 23 | | 56 |
| ø10 | ø6.5 | R1/4 | **KFT10U-02S** | 12 | 17 | 31.8 | 24.5 | 23 | 17 | 18.8 | 5.5 | 24.3 | 27 | 46 |
| | | R3/8 | **KFT10U-03S** | | | | | 22 | 15.7 | | | 23 | 34 | 63 |
| | | R1/2 | **KFT10U-04S** | 14 | | 33.8 | 26.5 | 27 | 18.8 | | | 27.3 | | 90 |
| | ø7.5 | R1/4 | **KFT10N-02S** | 12 | | 31.8 | 24.5 | 23 | 17 | | 6.5 | 24.3 | 30 | 57 |
| | | R3/8 | **KFT10N-03S** | | | | | 22 | 15.7 | | | 23 | | 62 |
| | | R1/2 | **KFT10N-04S** | 14 | | 33.8 | 26.5 | 27 | 18.8 | | | 27.3 | 41 | 88 |
| | | R1/4 | **KFT10B-02S** | 12 | | 28.0 | 25.0 | 23 | 17 | 15.0 | | 24.3 | 30 | 60 |
| | | R3/8 | **KFT10B-03S** | | | | | 22 | 15.7 | | | 23 | | 65 |
| | | R1/2 | **KFT10B-04S** | 14 | | 30.0 | 27.0 | 27 | 18.8 | | | 27.3 | 41 | 91 |
| ø12 | ø8 | R1/4 | **KFT12U-02S** | 14 | 19 | 34.3 | 27.5 | 25 | 19 | 19.3 | 7 | 27.5 | 31 | 79 |
| | | R3/8 | **KFT12U-03S** | | | | | 24 | 17.7 | | | 26.2 | 44 | 81 |
| | | R1/2 | **KFT12U-04S** | | | | | 27 | 18.8 | | | 27.3 | | 94 |
| | ø9 | R1/4 | **KFT12N-02S** | | | | | 25 | 19 | | 8 | 27.5 | 32 | 75 |
| | | R3/8 | **KFT12N-03S** | | | | | 24 | 17.7 | | | 26.2 | 48 | 78 |
| | | R1/2 | **KFT12N-04S** | | | | | 27 | 18.8 | | | 27.3 | | 93 |
| | | R1/4 | **KFT12B-02S** | | | 30.6 | 27.6 | 25 | 19 | 15.5 | | 27.5 | 32 | 78 |
| | | R3/8 | **KFT12B-03S** | | | | | 24 | 17.7 | | | 26.2 | 48 | 81 |
| | | R1/2 | **KFT12B-04S** | | | | | 27 | 18.8 | | | 27.3 | | 96 |

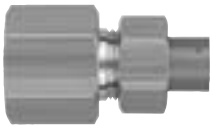
* Reference dimensions after installation of R thread.



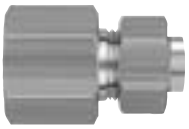
## Dimensions

### Female Union: KFF

(mm)

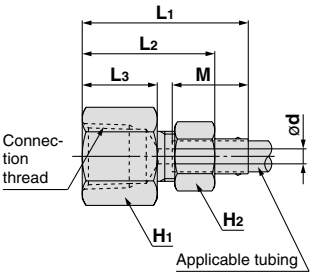


Resin sleeve



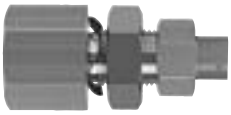
Brass sleeve

| Applicable tubing size (mm) O.D. | Applicable tubing size (mm) I.D. | Connection thread Rc | Model | Width across flats $H_1$ | Width across flats $H_2$ | $L_1$ | $L_2$ | $L_3$ | M | ød | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | Rc1/4 | **KFF04-02** | 17 | 10 | 33.5 | 26.8 | 15 | 15.5 | 1.5 | 1.6 | 25 |
| | | | **KFF04B-02** | | | 30.4 | 27.4 | | 12.4 | | | 26 |
| ø6 | ø4 | Rc1/4 | **KFF06-02** | 17 | 12 | 33.2 | 26.5 | 15 | 15.2 | 3 | 6 | 27 |
| | | Rc3/8 | **KFF06-03** | 19 | | 35.2 | 28.5 | 17 | | | | 30 |
| | | Rc1/4 | **KFF06B-02** | 17 | | 30.2 | 27.2 | 15 | 12.2 | | | 28 |
| | | Rc3/8 | **KFF06B-03** | 19 | | 32.2 | 29.2 | 17 | | | | 31 |
| ø8 | ø5 | Rc1/4 | **KFF08U-02** | 17 | 14 | 33.2 | 26.5 | 15 | 16.2 | 4 | 11 | 28 |
| | ø6 | | **KFF08N-02** | | | | | | | 5 | 17 | |
| | | | **KFF08B-02** | | | 30.3 | 27.3 | | 13.3 | | | 29 |
| ø10 | ø6.5 | Rc1/4 | **KFF10U-02** | 17 | 17 | 34.8 | 27.5 | 15 | 18.8 | 5.5 | 21 | 32 |
| | ø7.5 | | **KFF10N-02** | | | | | | | 6.5 | 30 | |
| | | | **KFF10B-02** | | | 31.0 | 28.0 | | 15.0 | | | 33 |
| ø12 | ø8 | Rc1/4 | **KFF12U-02** | 17 | 19 | 35.3 | 28.5 | 15 | 19.3 | 7 | 35 | 35 |
| | ø9 | | **KFF12N-02** | | | | | | | 8 | 45 | 36 |
| | | | **KFF12B-02** | | | 31.6 | 28.6 | | 15.5 | | | 38 |

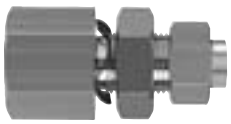



### Bulkhead Connector: KFE

(mm)

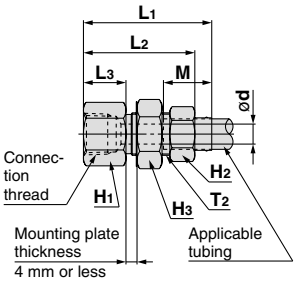


Resin sleeve



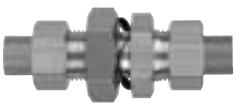
Brass sleeve

| Applicable tubing size (mm) O.D. | Applicable tubing size (mm) I.D. | Connection thread Rc | Model | Width across flats $H_1$ | Width across flats $H_2$ | Width across flats $H_3$ | $L_1$ | $L_2$ | $L_3$ | M | ød | $T_2$ | Mounting hole | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø6 | ø4 | Rc1/4 | **KFE06-02** | 17 | 12 | 17 | 44.2 | 37.5 | 16 | 15.2 | 3 | M10 x 1 | 11 | 6 | 41 |
| | | | **KFE06B-02** | | | | 41.2 | 38.2 | | 12.2 | | | | | 42 |
| ø8 | ø5 | Rc3/8 | **KFE08U-03** | 19 | 14 | 19 | 46.2 | 39.5 | 17 | 16.2 | 4 | M12 x 1 | 13 | 11 | 49 |
| | ø6 | | **KFE08N-03** | | | | | | | | 5 | | | 17 | 50 |
| | | | **KFE08B-03** | | | | 43.3 | 40.3 | | 13.3 | | | | | 51 |
| ø10 | ø6.5 | Rc3/8 | **KFE10U-03** | 19 | 17 | 22 | 48.8 | 41.5 | 17 | 18.8 | 5.5 | M15 x 1 | 16 | 21 | 63 |
| | ø7.5 | | **KFE10N-03** | | | | | | | | 6.5 | | | 30 | 62 |
| | | | **KFE10B-03** | | | | 45.0 | 42.0 | | 15.0 | | | | | 63 |
| ø12 | ø8 | Rc3/8 | **KFE12U-03** | 22 | 19 | 24 | 51.3 | 44.5 | 17 | 19.3 | 7 | M17 x 1 | 18 | 35 | 93 |
| | ø9 | | **KFE12N-03** | | | | | | | | 8 | | | 45 | 91 |
| | | | **KFE12B-03** | | | | 47.6 | 44.6 | | 15.5 | | | | | 93 |

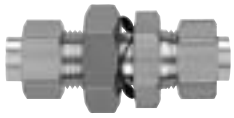



### Bulkhead Union: KFE

(mm)

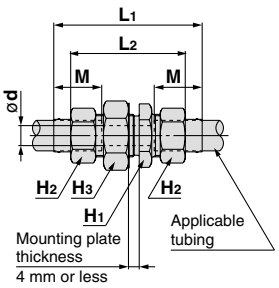


Resin sleeve



Brass sleeve

| Applicable tubing size (mm) O.D. | Applicable tubing size (mm) I.D. | Model | Width across flats $H_1$ | Width across flats $H_2$ | Width across flats $H_3$ | $L_1$ | $L_2$ | M | ød | Mounting hole | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | **KFE04-00** | 12 | 10 | 13 | 50.9 | 37.6 | 15.5 | 1.5 | 9 | 1.6 | 23 |
| | | **KFE04B-00** | | | | 44.7 | 38.8 | 12.4 | | | | 24 |
| ø6 | ø4 | **KFE06-00** | 14 | 12 | 17 | 51.3 | 38 | 15.2 | 3 | 11 | 6 | 34 |
| | | **KFE06B-00** | | | | 45.3 | 39.4 | 12.2 | | | | 36 |
| ø8 | ø5 | **KFE08U-00** | 17 | 14 | 19 | 52.3 | 39 | 16.2 | 4 | 13 | 11 | 47 |
| | ø6 | **KFE08N-00** | | | | | | | 5 | | 17 | 46 |
| | | **KFE08B-00** | | | | 46.5 | 40.6 | 13 | | | | 48 |
| ø10 | ø6.5 | **KFE10U-00** | 19 | 17 | 22 | 56.6 | 42 | 18.8 | 5.5 | 16 | 21 | 67 |
| | ø7.5 | **KFE10N-00** | | | | | | | 6.5 | | 30 | 66 |
| | | **KFE10B-00** | | | | 49.0 | 43.0 | 15.0 | | | | 69 |
| ø12 | ø8 | **KFE12U-00** | 22 | 19 | 24 | 59.5 | 46 | 19.3 | 7 | 18 | 35 | 87 |
| | ø9 | **KFE12N-00** | | | | | | | 8 | | 45 | 85 |
| | | **KFE12B-00** | | | | 52.1 | 46.2 | 15.5 | | | | 88 |

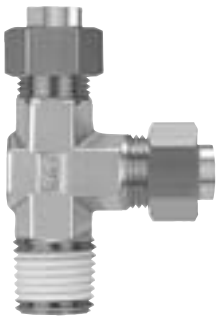


## Dimensions

### Male Run Tee: KFY

(mm)

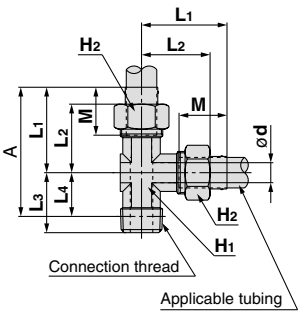
Resin sleeve



Brass sleeve

| Applicable tubing size (mm) O.D. | Applicable tubing size (mm) I.D. | Connection thread R | Model | Width across flats $H_1$ | Width across flats $H_2$ | $L_1$ | $L_2$ | $L_3$ | $L_4$* | M | ød | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | R1/8 | **KFY04-01S** | 10 | 10 | 27.5 | 20.8 | 17 | 13 | 15.5 | 1.5 | 40.5 | 3.5 | 28 |
| | | R1/4 | **KFY04-02S** | | | | | 19 | | | | | | 32 |
| | | R1/8 | **KFY04B-01S** | | | 24.4 | 21.4 | 17 | | 12.4 | | 37.4 | | 29 |
| | | R1/4 | **KFY04B-02S** | | | | | 19 | | | | | | 33 |
| ø6 | ø4 | R1/8 | **KFY06-01S** | 10 | 12 | 27.2 | 20.5 | 17 | 13 | 15.2 | 3 | 40.2 | 11 | 31 |
| | | R1/4 | **KFY06-02S** | | | | | 19 | | | | | | 37 |
| | | R3/8 | **KFY06-03S** | 12 | | 30.2 | 23.5 | 22 | 15.7 | | | 45.8 | 13 | 51 |
| | | R1/8 | **KFY06B-01S** | 10 | 12 | 24.2 | 21.2 | 17 | 13 | 12.2 | | 37.2 | 11 | 33 |
| | | R1/4 | **KFY06B-02S** | | | | | 19 | | | | | | 39 |
| | | R3/8 | **KFY06B-03S** | 12 | | 27.2 | 24.2 | 22 | 15.7 | | | 42.8 | 13 | 53 |
| ø8 | ø5 | R1/8 | **KFY08U-01S** | 12 | 14 | 30.2 | 23.5 | 20 | 16 | 16.2 | 4 | 46.2 | 15 | 48 |
| | | R1/4 | **KFY08U-02S** | | | | | 23 | 17 | | | 47.2 | 21 | 50 |
| | | R3/8 | **KFY08U-03S** | | | | | 22 | 15.7 | | | 45.8 | | 55 |
| | ø6 | R1/8 | **KFY08N-01S** | | | | | 20 | 16 | | 5 | 46.2 | 18 | 47 |
| | | R1/4 | **KFY08N-02S** | | | | | 23 | 17 | | | 47.2 | 27 | 48 |
| | | R3/8 | **KFY08N-03S** | | | | | 22 | 15.7 | | | 45.8 | | 53 |
| | | R1/8 | **KFY08B-01S** | | | 27.3 | 24.3 | 20 | 16 | 13.3 | | 43.3 | 18 | 49 |
| | | R1/4 | **KFY08B-02S** | | | | | 23 | 17 | | | 44.3 | 27 | 50 |
| | | R3/8 | **KFY08B-03S** | | | | | 22 | 15.7 | | | 42.9 | | 55 |
| ø10 | ø6.5 | R1/4 | **KFY10U-02S** | 12 | 17 | 31.8 | 24.5 | 23 | 17 | 18.8 | 5.5 | 48.8 | 30 | 58 |
| | | R3/8 | **KFY10U-03S** | | | | | 22 | 15.7 | | | 47.4 | 38 | 63 |
| | | R1/2 | **KFY10U-04S** | 14 | | 33.8 | 26.5 | 27 | 18.8 | | | 52.6 | | 89 |
| | ø7.5 | R1/4 | **KFY10N-02S** | 12 | | 31.8 | 24.5 | 23 | 17 | | 6.5 | 48.8 | 33 | 57 |
| | | R3/8 | **KFY10N-03S** | | | | | 22 | 15.7 | | | 47.4 | 46 | 62 |
| | | R1/2 | **KFY10N-04S** | 14 | | 33.8 | 26.5 | 27 | 18.8 | | | 52.6 | | 88 |
| | | R1/4 | **KFY10B-02S** | 12 | | 28.0 | 25.0 | 23 | 17 | 15.0 | | 45.0 | 33 | 60 |
| | | R3/8 | **KFY10B-03S** | | | | | 22 | 15.7 | | | 43.6 | 46 | 65 |
| | | R1/2 | **KFY10B-04S** | 14 | | 30.0 | 27.0 | 27 | 18.8 | | | 48.8 | | 91 |
| ø12 | ø8 | R1/4 | **KFY12U-02S** | 14 | 19 | 34.3 | 27.5 | 25 | 19 | 19.3 | 7 | 53.3 | 34 | 79 |
| | | R3/8 | **KFY12U-03S** | | | | | 24 | 17.7 | | | 51.9 | 49 | 79 |
| | | R1/2 | **KFY12U-04S** | | | | | 27 | 18.8 | | | 53.1 | | 93 |
| | ø9 | R1/4 | **KFY12N-02S** | | | | | 25 | 19 | | 8 | 53.3 | 36 | 76 |
| | | R3/8 | **KFY12N-03S** | | | | | 24 | 17.7 | | | 51.9 | 54 | 78 |
| | | R1/2 | **KFY12N-04S** | | | | | 27 | 18.8 | | | 53.1 | | 92 |
| | | R1/4 | **KFY12B-02S** | | | 30.6 | 27.6 | 25 | 19 | 15.5 | | 49.6 | 36 | 79 |
| | | R3/8 | **KFY12B-03S** | | | | | 24 | 17.7 | | | 48.2 | 54 | 81 |
| | | R1/2 | **KFY12B-04S** | | | | | 27 | 18.8 | | | 49.4 | | 95 |

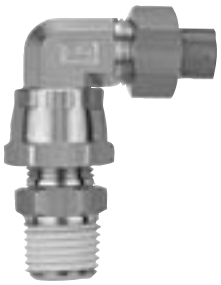
∗ Reference dimensions after installation of R thread.



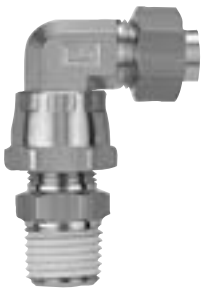
## Dimensions

### Swivel Elbow: KFV

(mm)

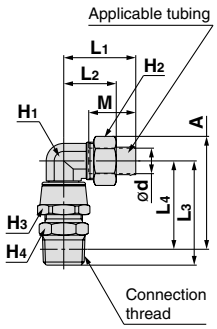


Resin sleeve



Brass sleeve

| Applicable tubing size (mm) | | Connection thread R | Model | Width across flats | | | | $L_1$ | $L_2$ | $L_3$ | $L_4$* | M | ød | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O.D. | I.D. | | | $H_1$ | $H_2$ | $H_3$ | $H_4$ | | | | | | | | | |
| ø4 | ø2.5 | R1/8 | KFV04-01S | 10 | 10 | 14 | 10 | 26 | 19.3 | 32.8 | 29.7 | 15.5 | 1.5 | 35.5 | 1.4 | 40 |
| | | R1/4 | KFV04-02S | | | | 14 | | | 37.2 | 31.7 | | | 37.5 | | 50 |
| | | R1/8 | KFV04B-01S | | | | 10 | 22.9 | 19.9 | 32.8 | 29.7 | 12.4 | | 35.5 | | 41 |
| | | R1/4 | KFV04B-02S | | | | 14 | | | 37.2 | 31.7 | | | 37.5 | | 51 |
| ø6 | ø4 | R1/8 | KFV06-01S | 10 | 12 | 14 | 10 | 25.7 | 19 | 32.8 | 29.7 | 15.2 | 3 | 36.6 | 5 | 42 |
| | | R1/4 | KFV06-02S | | | | 14 | | | 37.2 | 31.7 | | | 38.6 | | 52 |
| | | R3/8 | KFV06-03S | | | | 17 | | | 37.6 | 32.4 | | | 39.3 | | 64 |
| | | R1/8 | KFV06B-01S | | | | 10 | 22.7 | 19.7 | 32.8 | 29.7 | 12.2 | | 36.6 | | 43 |
| | | R1/4 | KFV06B-02S | | | | 14 | | | 37.2 | 31.7 | | | 38.6 | | 53 |
| | | R3/8 | KFV06B-03S | | | | 17 | | | 37.6 | 32.4 | | | 39.3 | | 65 |
| ø8 | ø5 | R1/8 | KFV08U-01S | 12 | 14 | 17 | 12 | 27.2 | 20.5 | 33.8 | 30.7 | 16.2 | 4 | 38.8 | 9.4 | 52 |
| | | R1/4 | KFV08U-02S | | | | 14 | | | 38.2 | 32.7 | | | 40.8 | | 61 |
| | | R3/8 | KFV08U-03S | | | | 17 | | | 38.6 | 33.4 | | | 41.5 | | 73 |
| | ø6 | R1/8 | KFV08N-01S | | | | 12 | | | 33.8 | 30.7 | | 5 | 38.8 | 14 | 57 |
| | | R1/4 | KFV08N-02S | | | | 14 | | | 38.2 | 32.7 | | | 40.8 | | 60 |
| | | R3/8 | KFV08N-03S | | | | 17 | | | 38.6 | 33.4 | | | 41.5 | | 72 |
| | | R1/8 | KFV08B-01S | | | | 12 | 24.3 | 21.3 | 33.8 | 30.7 | 13.3 | | 38.8 | | 58 |
| | | R1/4 | KFV08B-02S | | | | 14 | | | 38.2 | 32.7 | | | 40.8 | | 61 |
| | | R3/8 | KFV08B-03S | | | | 17 | | | 38.6 | 33.4 | | | 41.5 | | 73 |
| ø10 | ø6.5 | R1/4 | KFV10U-02S | 14 | 17 | 19 | 17 | 28.8 | 21.5 | 40.2 | 34.7 | 18.8 | 5.5 | 44.5 | 18 | 73 |
| | | R3/8 | KFV10U-03S | | | | | | | 40.6 | 35.4 | | | 45.2 | | 81 |
| | | R1/2 | KFV10U-04S | | | | 22 | | | 43.8 | 36.5 | | | 46.3 | | 104 |
| | ø7.5 | R1/4 | KFV10N-02S | | | | 17 | | | 40.2 | 34.7 | | 6.5 | 44.5 | 25 | 72 |
| | | R3/8 | KFV10N-03S | | | | | | | 40.6 | 35.4 | | | 45.2 | | 80 |
| | | R1/2 | KFV10N-04S | | | | 22 | | | 43.8 | 36.5 | | | 46.3 | | 104 |
| | | R1/4 | KFV10B-02S | | | | 17 | 25.0 | 22.0 | 40.2 | 34.7 | 15.0 | | 44.5 | | 73 |
| | | R3/8 | KFV10B-03S | | | | | | | 40.6 | 35.4 | | | 45.2 | | 81 |
| | | R1/2 | KFV10B-04S | | | | 22 | | | 43.8 | 36.5 | | | 46.3 | | 105 |
| ø12 | ø8 | R1/4 | KFV12U-02S | 17 | 19 | 22 | 17 | 30.3 | 23.5 | 41.2 | 35.7 | 19.3 | 7 | 46.7 | 30 | 92 |
| | | R3/8 | KFV12U-03S | | | | | | | 41.6 | 36.4 | | | 47.4 | | 100 |
| | | R1/2 | KFV12U-04S | | | | 22 | | | 44.8 | 37.5 | | | 48.5 | | 124 |
| | ø9 | R1/4 | KFV12N-02S | | | | 17 | | | 41.2 | 35.7 | | 8 | 46.7 | 38 | 90 |
| | | R3/8 | KFV12N-03S | | | | | | | 41.6 | 36.4 | | | 47.4 | | 98 |
| | | R1/2 | KFV12N-04S | | | | 22 | | | 44.8 | 37.5 | | | 48.5 | | 123 |
| | | R1/4 | KFV12B-02S | | | | 17 | 26.6 | 23.6 | 41.2 | 35.7 | 15.5 | | 46.7 | | 92 |
| | | R3/8 | KFV12B-03S | | | | | | | 41.6 | 36.4 | | | 47.4 | | 100 |
| | | R1/2 | KFV12B-04S | | | | 22 | | | 44.8 | 37.5 | | | 48.5 | | 125 |




* Reference dimensions after installation of R thread.

## Dimensions

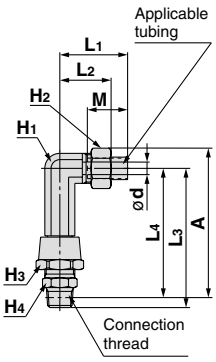
### Swivel Long Elbow: KFW

(mm)

Resin sleeve

Brass sleeve

| Applicable tubing size (mm) O.D. | Applicable tubing size (mm) I.D. | Connection thread R | Model | Width across flats $H_1$ | Width across flats $H_2$ | Width across flats $H_3$ | Width across flats $H_4$ | $L_1$ | $L_2$ | $L_3$ | $L_4$* | M | ød | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø4 | ø2.5 | R1/8 | **KFW04-01S** | 10 | 10 | 14 | 10 | 26 | 19.3 | 52.8 | 49.7 | 15.5 | 1.5 | 55.5 | 1.4 | 58 |
| | | R1/4 | **KFW04-02S** | | | | 14 | | | 57.2 | 51.7 | | | 57.5 | | 63 |
| | | R1/8 | **KFW04B-01S** | | | | 10 | 22.9 | 19.9 | 52.8 | 49.7 | 12.4 | | 55.5 | | 59 |
| | | R1/4 | **KFW04B-02S** | | | | 14 | | | 57.2 | 51.7 | | | 57.5 | | 64 |
| ø6 | ø4 | R1/8 | **KFW06-01S** | 10 | 12 | 14 | 10 | 25.7 | 19.0 | 53.8 | 50.7 | 15.2 | 3 | 57.6 | 5.0 | 61 |
| | | R1/4 | **KFW06-02S** | | | | 14 | | | 58.2 | 52.7 | | | 59.6 | | 66 |
| | | R3/8 | **KFW06-03S** | | | | 17 | | | 58.6 | 53.4 | | | 60.3 | | 77 |
| | | R1/8 | **KFW06B-01S** | | | | 10 | 22.7 | 19.7 | 53.8 | 50.7 | 12.2 | | 57.6 | | 62 |
| | | R1/4 | **KFW06B-02S** | | | | 14 | | | 58.2 | 52.7 | | | 59.6 | | 67 |
| | | R3/8 | **KFW06B-03S** | | | | 17 | | | 58.6 | 53.4 | | | 60.3 | | 78 |
| ø8 | ø5 | R1/8 | **KFW08U-01S** | 12 | 14 | 17 | 12 | 27.2 | 20.5 | 54.8 | 51.7 | 16.2 | 4 | 59.8 | 9.4 | 81 |
| | | R1/4 | **KFW08U-02S** | | | | 14 | | | 59.2 | 53.7 | | | 61.8 | | 83 |
| | | R3/8 | **KFW08U-03S** | | | | 17 | | | 59.6 | 54.4 | | | 62.5 | | 90 |
| | ø6 | R1/8 | **KFW08N-01S** | | | | 12 | | | 54.8 | 51.7 | | 5 | 59.8 | 14 | 81 |
| | | R1/4 | **KFW08N-02S** | | | | 14 | | | 59.2 | 53.7 | | | 61.8 | | 83 |
| | | R3/8 | **KFW08N-03S** | | | | 17 | | | 59.6 | 54.4 | | | 62.5 | | 88 |
| | | R1/8 | **KFW08B-01S** | | | | 12 | 24.3 | 21.3 | 54.8 | 51.7 | 13.3 | | 59.8 | | 82 |
| | | R1/4 | **KFW08B-02S** | | | | 14 | | | 59.2 | 53.7 | | | 61.8 | | 84 |
| | | R3/8 | **KFW08B-03S** | | | | 17 | | | 59.6 | 54.4 | | | 62.5 | | 89 |
| ø10 | ø6.5 | R1/4 | **KFW10U-02S** | 14 | 17 | 19 | 17 | 28.8 | 21.5 | 61.2 | 55.7 | 18.8 | 5.5 | 65.5 | 18 | 100 |
| | | R3/8 | **KFW10U-03S** | | | | | | | 61.6 | 56.4 | | | 66.2 | | 106 |
| | | R1/2 | **KFW10U-04S** | | | | 22 | | | 64.8 | 57.5 | | | 67.3 | | 128 |
| | ø7.5 | R1/4 | **KFW10N-02S** | | | | 17 | | | 61.2 | 55.7 | | 6.5 | 65.5 | 25 | 99 |
| | | R3/8 | **KFW10N-03S** | | | | | | | 61.6 | 56.4 | | | 66.2 | | 104 |
| | | R1/2 | **KFW10N-04S** | | | | 22 | | | 64.8 | 57.5 | | | 67.3 | | 126 |
| | | R1/4 | **KFW10B-02S** | | | | 17 | 25.0 | 22.0 | 61.2 | 55.7 | 15.0 | | 65.5 | | 100 |
| | | R3/8 | **KFW10B-03S** | | | | | | | 61.6 | 56.4 | | | 66.2 | | 105 |
| | | R1/2 | **KFW10B-04S** | | | | 22 | | | 64.8 | 57.5 | | | 67.3 | | 127 |
| ø12 | ø8 | R1/4 | **KFW12U-02S** | 17 | 19 | 22 | 17 | 30.3 | 23.5 | 64.2 | 58.7 | 19.3 | 7 | 69.7 | 30 | 146 |
| | | R3/8 | **KFW12U-03S** | | | | | | | 64.6 | 59.4 | | | 70.4 | | 146 |
| | | R1/2 | **KFW12U-04S** | | | | 22 | | | 67.8 | 60.5 | | | 71.5 | | 161 |
| | ø9 | R1/4 | **KFW12N-02S** | | | | 17 | | | 64.2 | 58.7 | | 8 | 69.7 | 38 | 144 |
| | | R3/8 | **KFW12N-03S** | | | | | | | 64.6 | 59.4 | | | 70.4 | | 145 |
| | | R1/2 | **KFW12N-04S** | | | | 22 | | | 67.8 | 60.5 | | | 71.5 | | 159 |
| | | R1/4 | **KFW12B-02S** | | | | 17 | 26.6 | 23.6 | 64.2 | 58.7 | 15.5 | | 69.7 | | 146 |
| | | R3/8 | **KFW12B-03S** | | | | | | | 64.6 | 59.4 | | | 70.4 | | 147 |
| | | R1/2 | **KFW12B-04S** | | | | 22 | | | 67.8 | 60.5 | | | 71.5 | | 161 |

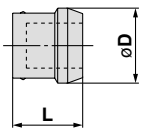



∗ Reference dimensions after installation of R thread.

### Plug: KFP

(mm)

| Applicable tubing size (mm) | Model | $L_1$ | ød | Mass (g) |
|---|---|---|---|---|
| ø4 | **KFP-04** | 12 | 6.5 | 0.3 |
| ø6 | **KFP-06** | 12 | 8.5 | 0.5 |
| ø8 | **KFP-08** | 12 | 10.4 | 0.7 |
| ø10 | **KFP-10** | 13.5 | 13 | 1.0 |
| ø12 | **KFP-12** | 14 | 15 | 1.4 |

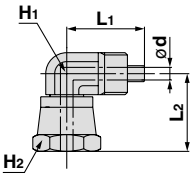


## Dimensions

### Elbow Connector: KFV

(mm)

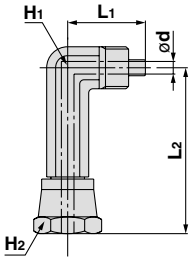
| Applicable tubing size (mm) | | Model | Width across flats | | $L_1$ | $L_2$ | ød | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | $H_1$ | $H_2$ | | | | |
| O.D. | I.D. | | | | | | | |
| ø4 | ø2.5 | KFV-04 | 10 | 14 | 18.5 | 18.5 | 1.5 | 21.1 |
| ø6 | ø4 | KFV-06 | 10 | 14 | 18.5 | 18.5 | 3 | 21.6 |
| ø8 | ø5 | KFV-08U | 12 | 17 | 20 | 19.5 | 4 | 32.8 |
| | ø6 | KFV-08N | | | | | 5 | 32.9 |
| ø10 | ø6.5 | KFV-10U | 14 | 19 | 21 | 21.5 | 5.5 | 41.9 |
| | ø7.5 | KFV-10N | | | | | 6.5 | 41.7 |
| ø12 | ø8 | KFV-12U | 17 | 22 | 22 | 22.5 | 7 | 61.8 |
| | ø9 | KFV-12N | | | | | 8 | 61.6 |




### Long Elbow Connector: KFW

(mm)

| Applicable tubing size (mm) | | Model | Width across flats | | $L_1$ | $L_2$ | ød | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | $H_1$ | $H_2$ | | | | |
| O.D. | I.D. | | | | | | | |
| ø4 | ø2.5 | KFW-04 | 10 | 14 | 18.5 | 38.5 | 1.5 | 31.7 |
| ø6 | ø4 | KFW-06 | 10 | 14 | 18.5 | 39.5 | 3 | 33.0 |
| ø8 | ø5 | KFW-08U | 12 | 17 | 20 | 40.5 | 4 | 48.0 |
| | ø6 | KFW-08N | | | | | 5 | 46.8 |
| ø10 | ø6.5 | KFW-10U | 14 | 19 | 21 | 42.5 | 5.5 | 62.4 |
| | ø7.5 | KFW-10N | | | | | 6.5 | 63.4 |
| ø12 | ø8 | KFW-12U | 17 | 22 | 22 | 45.5 | 7 | 94.0 |
| | ø9 | KFW-12N | | | | | 8 | 94.5 |



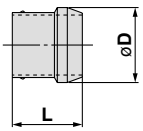

### Sleeve: KFS

(mm)

Resin sleeve

Brass sleeve

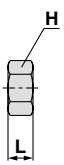
| Applicable tubing size (mm) | Model | L | øD | Mass (g) |
|---|---|---|---|---|
| ø4 | KFS-04 | 12 | 6.5 | 0.1 |
| | KFSB-04 | 8.7 | | 0.6 |
| ø6 | KFS-06 | 12 | 8.5 | 0.1 |
| | KFSB-06 | 8.8 | | 0.9 |
| ø8 | KFS-08 | 12 | 10.5 | 0.2 |
| | KFSB-08 | 8.8 | | 1.2 |
| ø10 | KFS-10 | 13.5 | 13 | 0.3 |
| | KFSB-10 | 9.6 | | 1.7 |
| ø12 | KFS-12 | 14 | 15 | 0.4 |
| | KFSB-12 | 10.1 | | 2.1 |




### Union Nut: KFN

(mm)

| Applicable tubing size (mm) | Model | Width across flats H | L | Mass (g) |
|---|---|---|---|---|
| ø4 | KFN-04 | 10 | 8 | 3.0 |
| ø6 | KFN-06 | 12 | 8 | 3.8 |
| ø8 | KFN-08 | 14 | 8 | 4.7 |
| ø10 | KFN-10 | 17 | 9 | 7.0 |
| ø12 | KFN-12 | 19 | 10 | 9.5 |



# 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

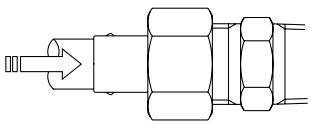
### ⚠ Caution

1. Please consult with SMC regarding fluids other than air and steam.

## Piping

### ⚠ Caution

1. Installation of tubing
   1) Take a tube having no flaws on its periphery and cut it off at right angles. 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.



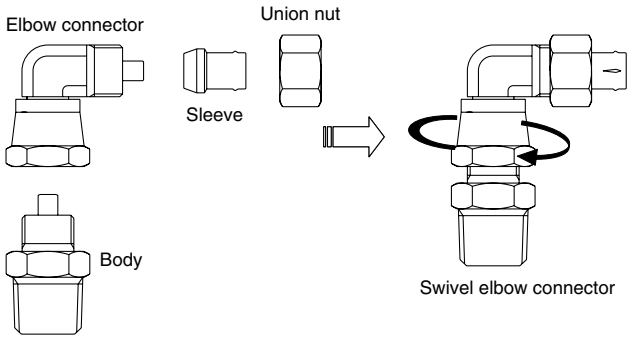
   4) When the union is loose, tighten it additionally, temporarily by hand.
   5) After fixing the body with the tightening tool, tighten the union nut with an appropriate wrench, applying the torque as shown below. After tightening the clearance between the union nut and the body in the axial direction is about 2 mm.

| Fitting size | Sleeve material | | | |
|---|---|---|---|---|
| | Resin | | Brass | |
| | Appropriate tightening rotations | Equivalent tightening torque (N•m) | Appropriate tightening rotations | Equivalent tightening torque (N•m) |
| **KF□04** | 1.5 to 2.0 | 2 to 7 | 1.5 | 2 to 4 |
| **KF□06** | 1.5 to 2.0 | 3 to 8 | 1.5 | 4 to 6 |
| **KF□08** | 1.5 to 2.0 | 4 to 9 | 1.5 | 6 to 9 |
| **KF□10** | 1.5 to 2.0 | 6 to 9 | 1.5 | 10 to 12 |
| **KF□12** | 1.5 to 2.0 | 9 to 12 | 1.5 | 10 to 12 |

## Piping

### ⚠ Caution

2. How to connect elbow type connector
   1) First tighten by hand, then use an appropriate wrench to tighten 1/6 to 1/3 turns additionally. Refer to the table below for equivalent tightening torque.




| Fitting size | Appropriate tightening rotations | Equivalent tightening torque (N • m) |
|---|---|---|
| **KF□-04** | 1/6 to 1/3 | 3 to 7 |
| **KF□-06** | 1/6 to 1/3 | 3 to 7 |
| **KF□-08** | 1/6 to 1/3 | 3 to 7 |
| **KF□-10** | 1/6 to 1/3 | 5 to 10 |
| **KF□-12** | 1/6 to 1/3 | 5 to 10 |

# *Series KF*
# 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 the 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. But in case of the brass sleeve, the limit for additional tightening is 1/2 turns.
   When there is a leak even after additional tightening, replace the sleeve with new one.
5. Sleeve is not recyclable. Replace it every time piping is performed.

# Miniature Fittings

# *Series M*

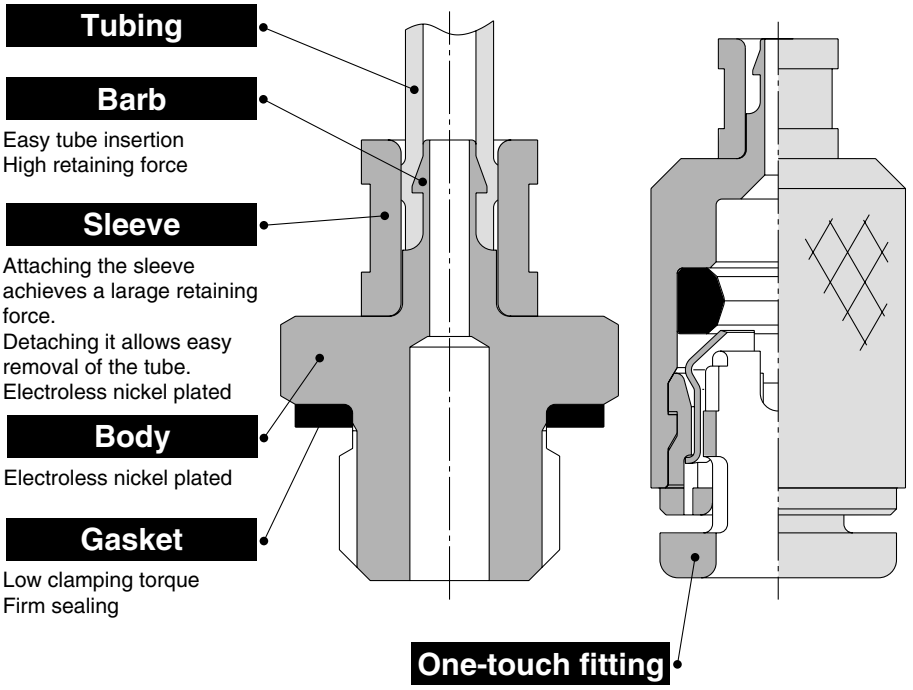
RoHS

## Applicable Tubing: ø2 Connection Thread: M3, M5

Made to Order

**Made to Order**
(Refer to page 141 for details.)

**Applicable tubing O.D. x I.D.:** ø2 x ø1.2
**Connection thread:** M3 x 0.5 / M5 x 0.8
**One-touch fitting size:** ø3.2 / ø4

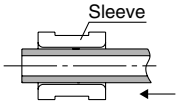




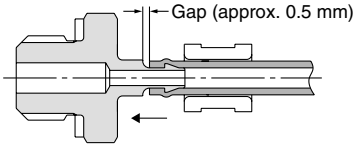

## Tubing Connection and Removal

**Connection of tubing**

1. Cut the tubing perpendicularly allowing additional length.
2. Insert the tubing into the sleeve.

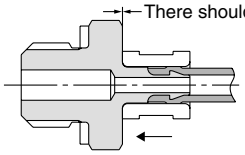



3. Insert the tubing slowly into the fittings. Make sure to secure a gap of approx. 0.5 mm between the tubing end and the barb end.




4. Insert the sleeve slowly. Make sure not to allow any gap between the sleeve end side and the body end side. (Please refer to the illustration below.)
   If you feel any strong resistance and cannot push the sleeve completely to the end side, this may be caused due to jamming. Remove and repeat again by starting from step **1** making sure to secure a gap in the step **3**.

   Note) When installing the tubing, the sleeve must be attached. Operation without attaching the sleeve may cause tubing disconnection.




**Removal of tubing**

1. Withdraw the sleeve straight along the tubing. Use a tool such as long-nose pliers if it is difficult to pull out by hand.
2. Withdraw the tubing straight.
3. When reusing the tubing, cut off the previously installed portion of the tubing to avoid possible leakage and/or disconnection of the tubing.

## Specifications

| | |
|---|---|
| **Applicable tubing material** | Polyurethane |
| **Applicable tubing (O.D. / I.D.)** | ø2 / ø1.2 |
| **Fluid** | Air, Water (1) |
| **Max. operating pressure** | 1 MPa (2) |
| **Ambient and fluid temperature** | –5 to 60°C, Water: 0 to 40 (No freezing) |
| **Port size** | M3, M5, ø3.2, ø4 |
| **Thread** | JIS B0205 (Metric fine thread) |

Note 1) The surge voltage pressure must be under the maximum operating pressure.
Note 2) Apply the maximum operating pressure to the tube during the tube connection.

## How to Order

**M – 5 AU – 2 – □**

**Miniature fitting**

**Made to Order**
Refer to page 141 for details.

**Applicable tubing (O.D. / I.D.)**

| | |
|---|---|
| **2** | ø2 / ø1.2 |

**Model**

| | | |
|---|---|---|
| **AU** | Barb fitting | M3, M5 |
| **ALU** | Barb elbow | M3 |
| **ALHU** | | M5 |
| **F** | Barb One-touch | ø3.2, ø4 |
| **R** | Plug-in reducer | |

**Port size**

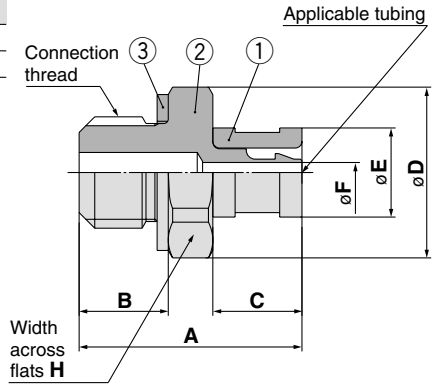
| | |
|---|---|
| **3** | M3 x 0.5 |
| **5** | M5 x 0.8 |
| **32** | ø3.2 |
| **04** | ø4 |

## Barb fitting: M-3AU-2, M-5AU-2

| Applicable tubing O.D. / I.D. (mm) | Connection thread | Model | H | A | B | C | D | E | F | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| ø2 / ø1.2 | M3 x 0.5 | M-3AU-2 | 4.5 | 9 | 3 | 4 | 5 | 4 | 0.9 | 0.7 |
| | M5 x 0.8 | M-5AU-2 | 7 | 10 | 4 | | 7.7 | | | 1.5 |

### Component Parts

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | Sleeve | C3604 | Electroless nickel plated |
| 2 | Barb fitting | C3604 | Electroless nickel plated |
| 3 | Gasket | NBR, Stainless steel 304 | — |

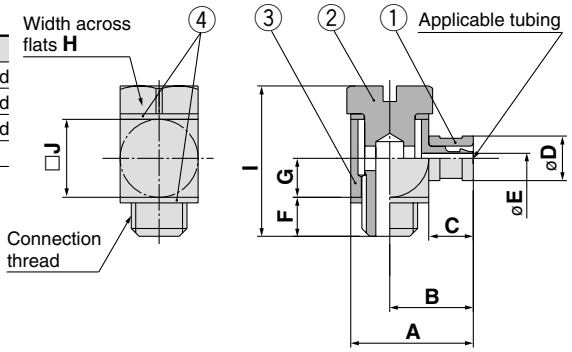



## Barb elbow: M-3ALU-2, M-5ALHU-2

| Applicable tubing O.D. / I.D. (mm) | Connection thread | Model | H | A | B | C | D | E | F | G | I | J | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ø2 / ø1.2 | M3 x 0.5 | M-3ALU-2 | 5 | 9 | 6.5 | 4 | 4 | 0.9 | 2.5 | 2.5 | 9.4 | 5 | 1.6 |
| | M5 x 0.8 | M-5ALHU-2 | 7 | 11 | 7.5 | | | | 3 | 3.5 | 13.5 | 7 | 3.5 |

### Component Parts

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | Sleeve | C3604 | Electroless nickel plated |
| 2 | Stud | C3604 | Electroless nickel plated |
| 3 | Barb elbow | C3604 | Electroless nickel plated |
| 4 | Gasket | NBR, Stainless steel 304 | — |

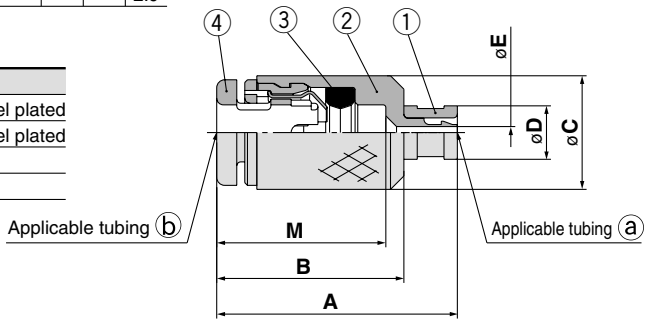



## Barb One-touch: M-32F-2, M-04F-2

| Applicable tubing (mm) ⓐ (O.D. / I.D.) | Applicable tubing (mm) ⓑ (O.D.) | Model | A | B | C | D | E | M | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø2 / ø1.2 | ø3.2 | M-32F-2 | 17.7 | 13.7 | 7.5 | 4 | 0.9 | 12.7 | 2.4 |
| | ø4 | M-04F-2 | 18 | 14 | 8.5 | | | | 2.9 |

### Component Parts

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | Sleeve | C3604 | Electroless nickel plated |
| 2 | Body | C3604 | Electroless nickel plated |
| 3 | Seal | NBR | — |
| 4 | Cassette | POM, Stainless steel 304 | — |



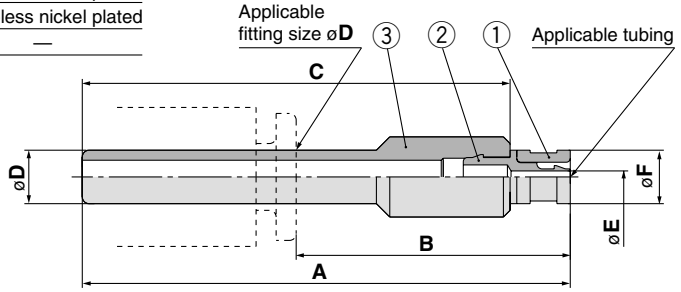

## Plug-in reducer: M-32R-2, M-04R-2

| Applicable tubing O.D. / I.D. (mm) | Fitting size øD | Model | A | B (1) | B (2) | C | E | F | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| ø2 / ø1.2 | ø3.2 | M-32R-2 | 36 | 23.3 | 20.5 | 31.5 | 0.9 | 4 | 0.7 |
| | ø4 | M-04R-2 | 36.5 | 23.8 | 20.5 | 32 | | | 0.8 |

Note 1) Dimensions when connected to the M5 and M6 connection threads for Series KJ and Series KQ.
Note 2) Dimensions when connected to Series KQ.

### Component Parts

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | Sleeve | C3604 | Electroless nickel plated |
| 2 | Studded body | C3604 | Electroless nickel plated |
| 3 | Stem | PP | — |



# Made to Order Specifications

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

## 1 Gasket Material Modification

| Symbol | Specifications | |
|---|---|---|
| **X226** | Gasket material: Stainless steel 304, FKM | |
| | Applicable thread | Gasket part no. |
| | M3 | M3G-DPH00489 |
| **X112** | Gasket material: Stainless steel 316, Special FKM | |
| | Applicable thread | Gasket part no. |
| | M5 | M-5G3 |



## Spare Parts

| Description | Part no. | Applicable thread | Material |
|---|---|---|---|
| Gasket | IN-233-706 | M3 | Stainless steel 304, NBR |
| | M-5G2 | M5 | Stainless steel 304, NBR |
| | M-5G3 | | Stainless steel 316, Special FKM |
| Sleeve | M-5-2-P02 | — | C3604 (With electroless nickel plated) |

## ⚠ Specific Product 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.**

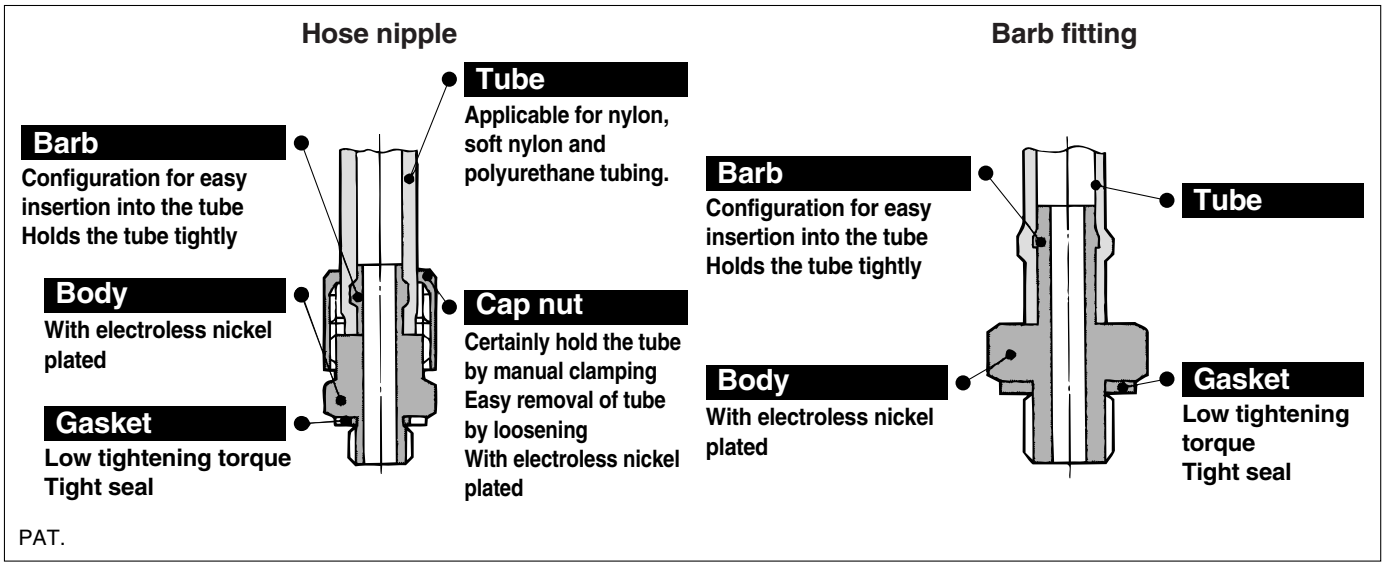
### ⚠Caution

1. Tightening of M3/M5 Threads
   1) Tighten a barb fitting by hand, and give it an additional 1/6 turn with a wrench.
   2) Tighten a barb elbow by hand, and give it an additional 1/3 turn with a wrench.

# Miniature Fittings

# *Series M*

## Applicable Tubing: ø3.2, ø4, ø6 Connection Thread: M3, M5, R 1/8




PAT.

### Compact piping space
Hose nipple tubing connection/disconnection is simple while keeping a large retaining force.

### Line up various styles
For air connection in confined areas.

### Accepts many styles of plastic tubing
Hose nipple and hose elbow accepts nylon, soft nylon, and polyurethane tubing.

**Made to Order**
(Refer to page 148 for details.)

### Specifications

| Applicable tubing material | | Nylon | Soft nylon (1) | | Polyurethane | FEP (2) | Modified PTFE (3) |
|---|---|---|---|---|---|---|---|
| Applicable tubing O.D. / I.D. | M3 | — | ø3.18/ø2.18 | ø4/ø2.5 | ø3.18/ø2<br>ø4/ø2.5 | — | — |
| | M5, R 1/8 | ø4/ø2.5<br>ø6/ø4 | | 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) | | | | | |
| Max. operating pressure (at 20°C) | | 1.5 MPa | 1 MPa | | 0.8 MPa | 1.5 MPa | 1.4 MPa |
| Ambient and fluid temperature | | –5 to 60°C, Water: 0 to 40 (No freezing) | | | | | |
| Connection size | | M3, M5, R 1/8 | | | | M5, R 1/8 | |
| Thread | | JIS B0205 (Metric fine thread)<br>JIS B0203 (Taper thread for piping) | | | | JIS B0205<br>(Metric fine thread) | |

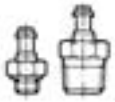
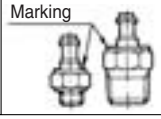
Note 1) Soft nylon tubing is not compatible with water.
Note 2), Note 3) Compatible only with hose nipple type.
Note 4) Barb fitting, barb elbow, barb elbow (H) are not compatible with water.

### Principal Parts Material

| | | |
|---|---|---|
| Material | Body | C3604 (Nipple M-3N, M-5N: Stainless steel 303) |
| | Gasket | Nylon 66: GF30%, Stainless steel 304, NBR (PVC for M3) |

### Fitting Markings for Applicable Tubing Material (Barb fitting, Barb elbow, Barb elbow (H))

Tubing material determines the compatible fittings. (Refer to the table below.)

| Connection | Tubing | Fitting marking for applicable tubing material | | | Surface treatment (Color) |
|---|---|---|---|---|---|
| | | Barb fittings | Barb elbow | Barb elbow (H) | |
| M3 | Soft nylon tubing<br>Polyurethane tubing |  | —— |  | Electroless nickel plated (Silver color) |
| R 1/8, M5 | Nylon tubing |  |  |  | Electroless nickel plated (Silver color) |
| | Soft nylon tubing<br>Polyurethane tubing |  Marking |  Marking |  Marking | Electroless nickel plated (Black color) [Except stud] |

∗ Body of M-5E, M-5ER, M-5M is not surface-treated.
Electroless nickle plate treated is available as option -X2.

## Series M3, R 1/8

| Series | Model | Description | Application | | Note |
|---|---|---|---|---|---|
| M3 | M-3AU-3 | Barb fitting for soft tube  P.144 | For soft nylon tubing | | ø3.18/2.18 x M3 |
| | | | For polyure-thane tubing | | ø3.18/2 x M3 |
| | M-3AU-4 | | For soft nylon and polyure-thane tubing | | ø4/2.5 x M3 |
| | M-3ALU-3 | Barb elbow for soft tubing  P.144 | Body rotates at 360° around the stud axis | For soft nylon tubing | ø3.18/2.18 x M3 |
| | | | | For poly-urethane tubing | ø3.18/2 x M3 |
| | M-3ALU-4 | | | For soft nylon and poly-urethane tubing | ø4/2.5 x M3 |
| | M-3UL | Universal elbow  P.144 | Body rotates at 360° around the stud axis | | M3 female x M3 male |
| | M-3UT | Universal tee  P.144 | Body rotates at 360° around the stud axis | | M3 female x M3 female x M3 male |
| | M-3N | Nipple  P.144 | Fitting to workpiece and fitting to fitting connection | | M3 male x M3 male |
| | M-3P | Plug  P.144 | Use to plug unused M3 port | | |

| Series | Model | Description | Application | Note |
|---|---|---|---|---|
| R 1/8 | M-01AN-4 | Barb fitting for nylon tubing  P.144 | For nylon tubing | ø4/2.5 x R 1/8 |
| | M-01AN-6 | | | ø6/4 x R 1/8 |
| | M-01AU-4 | Barb fitting for soft tubing  P.144 | For soft nylon and polyure-thane tubing | ø4/2.5 x R 1/8 |
| | M-01AU-6 | | | ø6/4 x R 1/8 |
| | M-01H-4 | Hose nipple  P.144 | For nylon, soft nylon and poly-urethane tubing | ø4/2.5 x R 1/8 |
| | M-01H-6 | | | ø6/4 x R 1/8 |

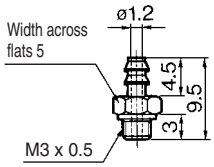
## Series M5

| Series | Model | Description | Application | | Note |
|---|---|---|---|---|---|
| M5 | M-5AN-4 | Barb fitting for nylon tubing  P.145 | For nylon tubing | | ø4/2.5 x M5 |
| | M-5AN-6 | | | | ø6/4 x M5 |
| | M-5AU-3 | Barb fitting for soft tubing  P.145 | For soft nylon tubing | | ø3.18/2.18 x M5 |
| | | | For polyure-thane tubing | | ø3.18/2 x M5 |
| | M-5AU-4 | | For soft nylon and polyure-thane tubing | | ø4/2.5 x M5 |
| | M-5AU-6 | | | | ø6/4 x M5 |
| | M-5ALN-4 | Barb elbow for nylon tubing  P.145 | • For nylon • Body rotates at 360° around the stud axis | | ø4/2.5 x M5 |
| | M-5ALN-6 | | | | ø6/4 x M5 |
| | M-5ALU-3 | Barb elbow for soft tubing  P.145 | Body rotates at 360° around the stud axis | For soft nylon tubing | ø3.18/2.18 x M5 |
| | | | | For poly-urethane tubing | ø3.18/2 x M5 |
| | M-5ALU-4 | | | For soft nylon and poly-urethane tubing | ø4/2.5 x M5 |
| | M-5ALU-6 | | | | ø6/4 x M5 |
| | M-5ALHN-4 | Barb elbow (H) for nylon tubing  P.145 | Body rotates at 360° around the stud axis | For nylon tubing | ø4/2.5 x M5 |
| | M-5ALHN-6 | | | | ø6/4 x M5 |
| | M-5ALHU-3 | Barb elbow (H) for soft tubing  P.145 | Body rotates at 360° around the stud axis | For soft nylon tubing | ø3.18/2.18 x M5 |
| | | | | For poly-urethane tubing | ø3.18/2 x M5 |
| | M-5ALHU-4 | | | For soft nylon and polyure-thane tubing | ø4/2.5 x M5 |
| | M-5ALHU-6 | | | | ø6/4 x M5 |
| | M-5H-4 | Hose nipple  P.145 | For nylon, soft nylon and polyurethane tubing | | ø4/2.5 x M5 |
| | M-5H-6 | | | | ø6/4 x M5 |
| | M-5HL-4 | Hose elbow  P.146 | • For nylon, soft nylon and polyurethane tubing • Body rotates at 360° around the stud axis | | ø4/2.5 x M5 |
| | M-5HL-6 | | | | ø6/4 x M5 |
| | M-5HLH-4 | Hose elbow (H)  P.146 | | | ø4/2.5 x M5 |
| | M-5HLH-6 | | | | ø6/4 x M5 |
| | M-5L | Elbow  P.146 | One-sided 90° elbow | | M5 female x M5 female |

| Series | Model | Description | Application | Note |
|---|---|---|---|---|
| M5 | M-5T | tee  P.146 | Both sides allow 90° connection | M5 female x M5 female x M5 female |
| | M-5UL | Universal elbow  P.146 | Body rotates at 360° around the stud axis | M5 female x M5 male |
| | M-5UT | Universal tee  P.146 | Body rotates at 360° around the stud axis | M5 female x M5 female x M5 male |
| | M-5J | Extention fitting  P.146 | Solid piece moves fitting up from workpiece | M5 male x M5 female |
| | M-5N | Nipple  P.146 | Fitting to workpiece and fitting to fitting connection | M5 male x M5 male |
| | M-5UN | Universal nipple  P.146 | Body rotates at 360° around the stud axis | M5 male x M5 male PAT. |
| | M-5E | Bulkhead union  P.146 | Panel-mount connection | M5 female x M5 female |
| | M-5ER | Bulkhead reducer  P.147 | Reduction from Rc 1/8 to M5 including panel or bracket mounting | Rc 1/8 x M5 female |
| | M-5M | Manifold  P.147 | For reducing Rc 1/8 female be diverted to up to 9, M5 stations, including panel or bracket mounting | Rc 1/8 x M5 female (9 stations) |
| | M-5B | Bushing  P.147 | For reducing R 1/8 female to M5. | R 1/8 x M5 female |
| | M-5P | Plug  P.147 | Use to plug unused M5 port. | |

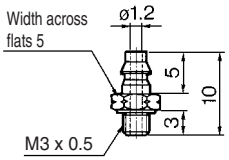
## Series M3

### Barb Fitting for Soft Tubing: M-3AU-3



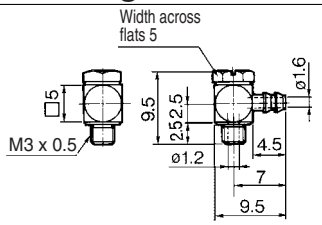

Effective area: 0.9 mm² Mass: 0.6 g

### Barb Fitting for Soft Tubing: M-3AU-4



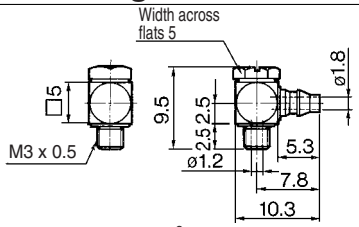

Effective area: 0.9 mm² Mass: 0.7 g

### Barb Elbow for Soft Tubing: M-3ALU-3



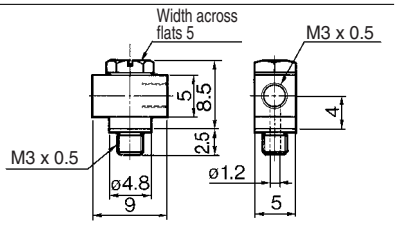

Effective area: 0.6 mm² Mass: 0.8 g

### Barb Elbow for Soft Tubing: M-3ALU-4



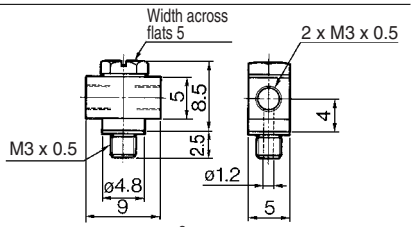

Effective area: 0.6 mm² Mass: 0.9 g

### Universal Elbow: M-3UL



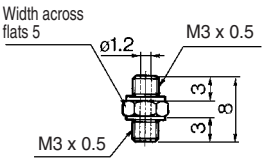

Effective area: 0.6 mm² Mass: 1.6 g

### Universal Tee: M-3UT



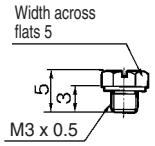

Effective area: 0.6 mm² Mass: 1.4 g

### Nipple: M-3N




Mass: 0.6 g
Effective area: 0.9 mm²

### Plug: M-3P

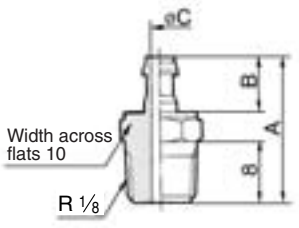



Mass: 0.5 g

## Series R 1/8

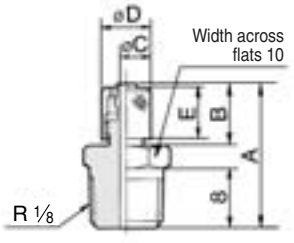
### Barb Fitting for Nylon Tubing, Soft Tubing: M-01A□-4/-6

| Applicable tubing | Model | A | B | øC | Effective area (mm²) | Mass (g) |
|---|---|---|---|---|---|---|
| Nylon tubing | **M-01AN-4** | 16 | 5 | 1.8 | 2.1 | 6.4 |
| | **M-01AN-6** | 18 | 7 | 2.5 | 4.0 | 6.6 |
| Soft tubing | **M-01AU-4** | 16 | 5 | 1.8 | 2.1 | 6.5 |
| | **M-01AU-6** | 18 | 7 | 2.5 | 4.0 | 6.7 |




### Hose Nipple: M-01H-4/-6

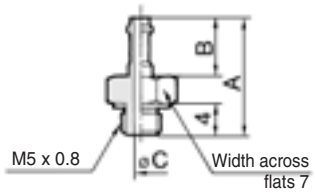
| Model | A | B | øC | øD | E | Effective area (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|
| **M-01H-4** | 19.5 | 8.5 | 1.8 | 6.5 | 7 | 2.1 | 7.1 |
| **M-01H-6** | 20.5 | 9.5 | 3 | 8.5 | 8 | 5.5 | 7.7 |



## Series M5

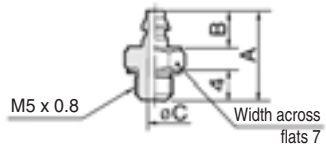
### Barb Fitting for Nylon Tubing: M-5AN-4/-6

| Model | A | B | øC | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|
| **M-5AN-4** | 12 | 5 | 1.8 | 2.1 | 1.6 |
| **M-5AN-6** | 14 | 8 | 2.5 | 4.0 | 1.7 |




### Barb Fitting for Soft Tubing: M-5AU-3/-4/-6

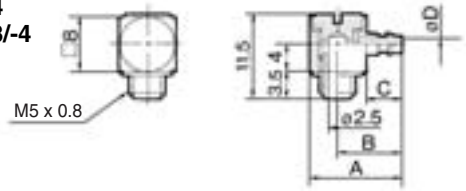
| Model | A | B | øC | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|
| **M-5AU-3** | 11.5 | 4.5 | 1.6 | 1.7 | 1.5 |
| **M-5AU-4** | 12 | 5 | 1.8 | 2.1 | 1.6 |
| **M-5AU-6** | 14 | 7 | 2.5 | 4.0 | 1.8 |



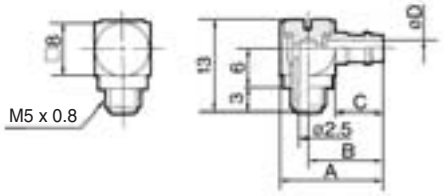

### Barb Elbow for Nylon Tubing: M-5ALN-4/-6
### Barb Elbow for Soft Tubing: M-5ALU-3/-4/-6

| Model | A | B | C | øD | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|
| **M-5ALN-4** | 13 | 9 | 5 | 1.8 | 1.4 | 4.0 |
| **M-5ALN-6** | 15 | 11 | 7 | 2.5 | 2.4 | 4.4 |
| **M-5ALU-3** | 12.5 | 8.5 | 4.5 | 1.6 | 1.1 | 4.0 |
| **M-5ALU-4** | 13.3 | 9.3 | 5 | 1.8 | 1.4 | 4.1 |
| **M-5ALU-6** | 15.3 | 11.3 | 7 | 2.5 | 2.4 | 4.5 |

**M-5ALN-4**
**M-5ALU-3/-4**



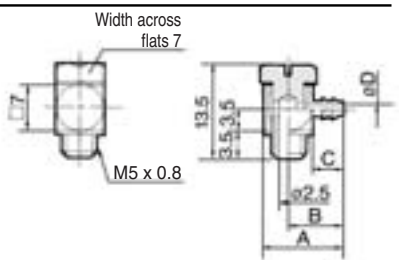

**M-5ALN-6**
**M-5ALU-6**



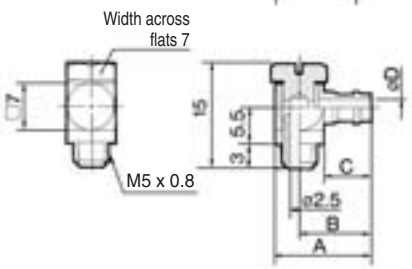

### Barb Elbow for Nylon Tubing: M-5ALHN-4/-6
### Barb Elbow for Soft Tubing: M-5ALHU-3/-4/-6

| Model | A | B | C | øD | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|
| **M-5ALHN-4** | 12 | 8.5 | 5 | 1.8 | 1.4 | 3.2 |
| **M-5ALHN-6** | 14 | 10.5 | 7 | 2.5 | 2.4 | 3.7 |
| **M-5ALHU-3** | 11.5 | 8 | 4.5 | 1.6 | 1.1 | 3.2 |
| **M-5ALHU-4** | 12.3 | 8.8 | 5 | 1.8 | 1.4 | 3.3 |
| **M-5ALHU-6** | 14.3 | 10.8 | 7 | 2.5 | 2.4 | 3.9 |

**M-5ALHN-4**
**M-5ALHU-3/-4**

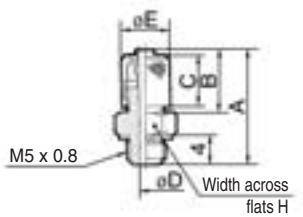



**M-5ALHN-6**
**M-5ALHU-6**




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

| Model | A | B | C | øD | øE | H | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| **M-5H-4** | 15.5 | 8.5 | 7 | 1.8 | 6.5 | 7 | 2.1 | 2.7 |
| **M-5H-6** | 16.5 | 9.5 | 8 | 2.5 | 8.5 | 8 | 4.0 | 3.9 |



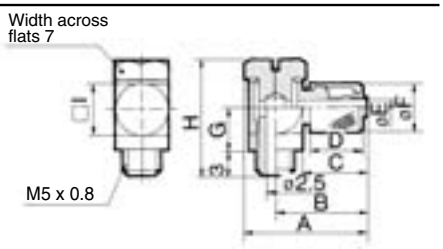
## Series M5

### Hose Elbow: M-5HL-4/-6

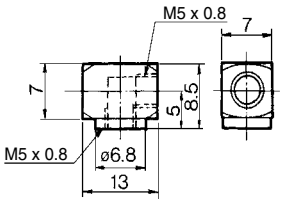
| Model | A | B | C | D | øE | øF | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| **M-5HL-4** | 16.5 | 12.5 | 8.5 | 7 | 1.8 | 6.5 | 1.4 | 4.4 |
| **M-5HL-6** | 17.5 | 13.5 | 9.5 | 8 | 2.5 | 8.5 | 2.4 | 5.2 |


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

| Model | A | B | C | D | øE | øF | G | H | □I | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **M-5HLH-4** | 15.5 | 12 | 8.5 | 7 | 1.8 | 6.5 | 5.5 | 15 | 7 | 1.4 | 4.5 |
| **M-5HLH-6** | 17.5 | 13.5 | 9.5 | 8 | 2.5 | 8.5 | 6 | 16 | 8 | 2.4 | 6.6 |

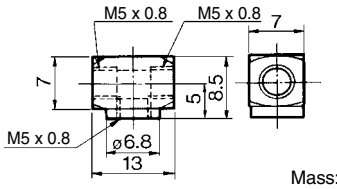



### Elbow: M-5L



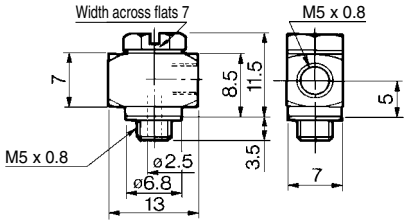

Mass: 4.2 g

### Tee: M-5T



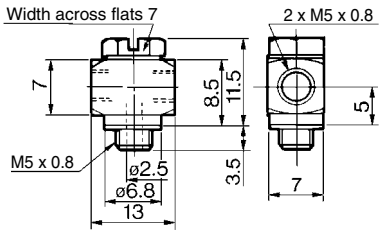

Mass: 3.5 g

### Universal Elbow: M-5UL



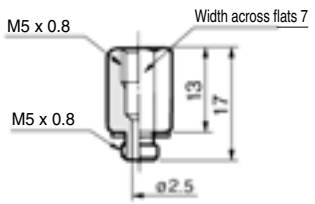

Effective area: 2.4 $mm^2$ Mass: 5.3 g

### Universal Tee: M-5UT



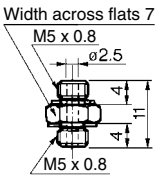

Effective area: 2.4 $mm^2$ Mass: 4.8 g

### Extension Fitting: M-5J



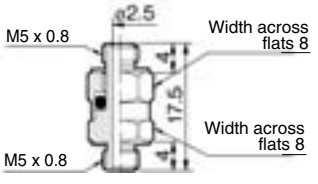

Effective area: 4.0 $mm^2$ Mass: 3.6 g

### Nipple: M-5N



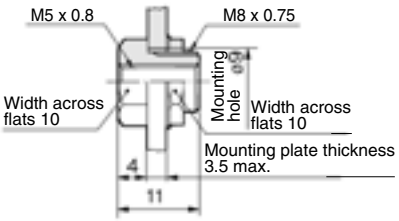

Effective area: 4.0 $mm^2$ Mass: 1.5 g

### Universal Nipple: M-5UN




Effective area: 4.0 $mm^2$ Mass: 3.9 g

### Bulkhead Union: M-5E

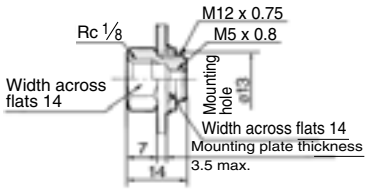



For the plate thickness 3.5 to 6 mm, give the plate tapping M8 x 0.75, and then screw-in.

Mass: 4.6 g

## Series M5

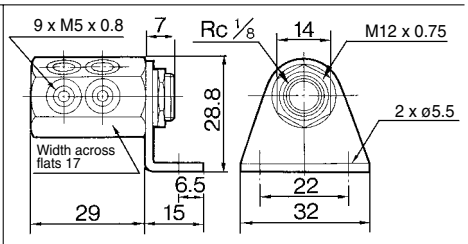
### Bulkhead Reducer: M-5ER




For the plate thinkness 3.5 to 6 mm, give the plate tapping M12 x 0.75, and then screw-in.

Mass: 12 g

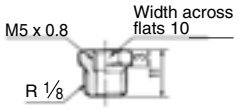
### Manifold: M-5M




Panel mounting plate thickness max. 3.5 mm
For the plate thinkness 3.5 to 6 mm, give the plate tapping M12 x 0.75, and then screw-in.

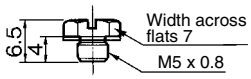
Mass: 59 g

### Bushing: M-5B




Mass: 5.8 g

### Plug: M-5P




Mass: 1.3 g

## ⚠ 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.**

### Tightening of M3/M5 Threads

#### ⚠Caution

**1.** Tighten by hand, and give it an additional turn 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 |
|---|---|---|
| M3 | M-3AU-□ | Approx. 1/4 rotations |
| | M-3N | |
| | M-3P | |
| | M-3ALU-□ | Approx. 1/2 rotations |
| | M-3UL | |
| | M-3UT | |
| M5 | M-5AN-□ | Approx. 1/6 to 1/4 rotations Note) |
| | M-5AU-□ | |
| | M-5H-□ | |
| | M-5J | |
| | M-5N | |
| | M-5UN | |
| | M-5P | |
| | M-5ALN-6 | Approx. 1/2 rotations Note) |
| | M-5ALU-6 | |
| | M-5ALHN-6 | |
| | M-5ALHU-6 | |
| | M-5HL-□ | |
| | M-5HLH-□ | |
| | M-5ALN-4 | |
| | M-5ALU-3,4 | |
| | M-5ALHN-4 | |
| | M-5ALHU-3,4 | |
| | M-5UL | |
| | M-5UT | |

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 than required length. (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 than required length. (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.

# 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. |
| | M3 | IN-233-706 |
| | M5 Note) | M-5G2 |
| **X226** | Gasket material: Stainless steel 304, FKM | |
| | Applicable thread | Gasket part no. |
| | M3 | M3G-DPH00489 |
| **X112** | Gasket material: Stainless steel 316, Special FKM | |
| | Applicable thread | Gasket part no. |
| | M5 | M-5G3 |

Note) Compatible with only models using M-5GH.

## Spare Parts

| Description | Part no. | Applicable thread | Material | Applicable model |
|---|---|---|---|---|
| Gasket | M-3G | M3 | PVC | — |
| | M-5G1 | M5 | PVC | — |
| | M-5G2 | | Stainless steel 304, NBR | — |
| | M-5G3 | | Stainless steel 316, Special FKM | — |
| | M-5GH | | Nylon 66, GF30% | M-5AL□-6, M-5ALH□-6<br>M-5HL-4, 6, M-5HLH4, 6 |
| | M-6G | M6 | Stainless steel 304, NBR | For KQ2 M6 thread |
| | M-10/32G | 10-32 UNF | | Series KQ2, 10-32 UNF |
| Cap nut | M-5-4-P01 | — | C3604<br>(With electroless nickel plated) | M-01H-4, M-5H-4<br>M-5HL-4, M-5HLH-4 |
| | M-5-6-P01 | — | C3604<br>(With electroless nickel plated) | M-01H-6, M-5H-6<br>M-5HL-6, M-5HLH-6 |

# Self-align Fittings

RoHS

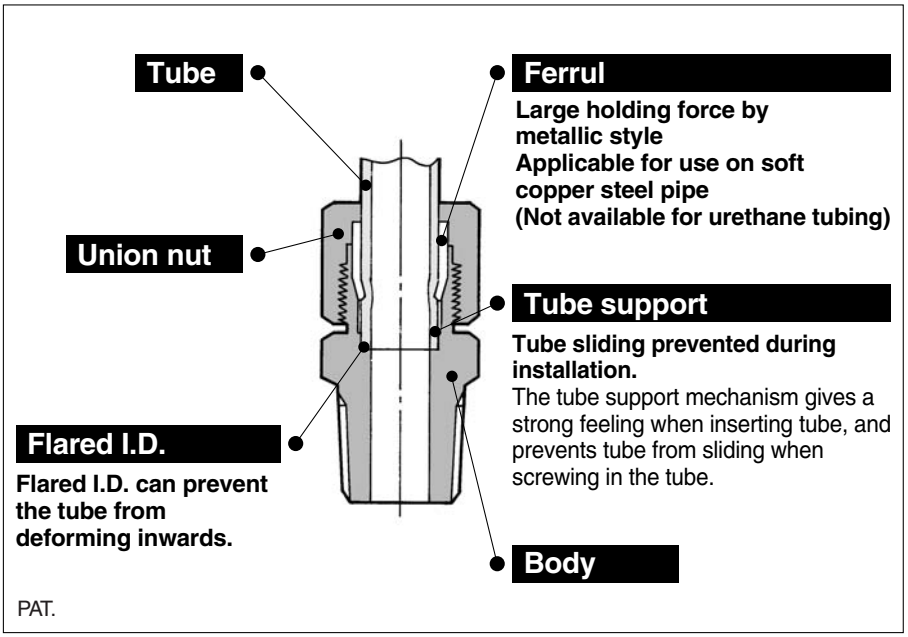
# Series H/DL/L/LL

### Flared ridge ferrule
Prevents accidental loss of ferrule when inserting tubing into the fitting body.

### Hardened ridge ferrule
Prevents breakage of ferrule when tightening nut.

### Flared I.D.
Provides low flow resistance inside the fitting.

### Wide variety of styles and sizes
Ten styles and five tube O.D's provide a wide range of fittings that will fit any application.




## Specifications

| | | |
|---|---|---|
| **Applicable tubing material** | | Nylon, Soft nylon, Soft copper steel pipe (C1220T-0) |
| **Applicable tubing O.D.** | | ø4, ø6, ø8, ø10, ø12 |
| **Maximum operating pressure** | | 1 MPa |
| **Proof pressure** | | 10 MPa |
| **Fluid** | | Air |
| **Thread** | **Mounting section** | JIS B 0203 (Taper thread for piping) |
| | **Nut section** | JIS B 0205 (Metric fine thread) |
| **Seal on the threads** (1) | | None or with sealant |

Note 1) Male elbow, Male branch tee, Male run tee with sealant is manufactured upon receipt of order. Suffix "S" to the end of part number if w/ sealant is desired.

**Made to Order**

| Symbol | Specifications |
|---|---|
| **X2** | Applicable to non-copper style (With electroless nickel plated) |

Add -X2 at the end of the model number.
Ex.) H04-01-X2

## Principal Parts Material

| | |
|---|---|
| Body | C3604, C3771BE |
| Nut | C3604 |
| Ferrul | C2700 |

## Model

**Male connector**

**H** P. 152

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

**Male run tee**

**DY** P. 153

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

**Male elbow**

**DL** P. 152

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

**Bulkhead union**

**DE** P. 153

Use to connect tubes through a panel.

**Union tee**

**DT** P. 152

Use to connect tubes in both 90° directions.

**Bulkhead connector**

**DEF** P. 153

Use to connect male thead and tube through a panel.

**Female connector**

**DHF** P. 152

Use to pipe from male thread such as pressure gauge.

**Plug**

**DP** P. 154

Use to plug unused fittings.

**Male branch tee**

**DT** P. 153

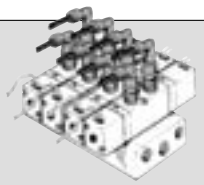
Use to branch line from female thread in both 90° directions.

**Swivel elbow**

**L**

P. 154

Use to pipe at right angles to female thread.
Swiveled at any direction.

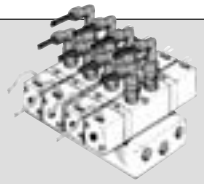


**Swivel extended elbow**

**LL**

P. 154

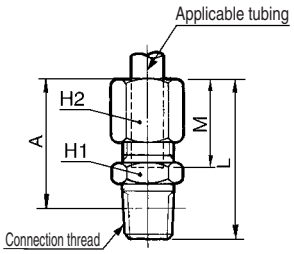
Use to pipe at right angles to female thread.
Swiveled at any direction.
Solid piece moves fittings up from workpiece.



## Male Connector: H

| Applicable tubing O.D. (mm) | Connection threads R | Model | H1 (width across flats) | H2 (width across flats) | L | M | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | H04-01 | 10 | 10 | 24.2 | 15 | 21.1 | 4 | 10 |
| | 1/4 | H04-02 | 14 | | 28.6 | | 23.1 | | 17 |
| 6 | 1/8 | H06-01 | 10 | 12 | 24.2 | 16 | 21.1 | 11 | 12 |
| | 1/4 | H06-02 | 14 | | 28.6 | | 23.1 | | 19 |
| | 3/8 | H06-03 | 17 | | 30 | | 24.8 | | 31 |
| 8 | 1/8 | H08-01 | 12 | 14 | 24.2 | 16 | 21.1 | 20 | 16 |
| | 1/4 | H08-02 | 14 | | 28.6 | | 23.1 | | 21 |
| | 3/8 | H08-03 | 17 | | 30 | | 24.8 | | 30 |
| 10 | 1/4 | H10-02 | 14 | 17 | 28.6 | 17 | 23.1 | 34 | 28 |
| | 3/8 | H10-03 | 17 | | 30 | | 24.8 | | 37 |
| | 1/2 | H10-04 | 22 | | 33.2 | | 25.9 | | 53 |
| 12 | 1/4 | H12-02 | 17 | 19 | 29.6 | 17 | 24.1 | 51 | 30 |
| | 3/8 | H12-03 | 17 | | 30 | | 24.8 | | 39 |
| | 1/2 | H12-04 | 22 | | 33.2 | | 25.9 | | 59 |

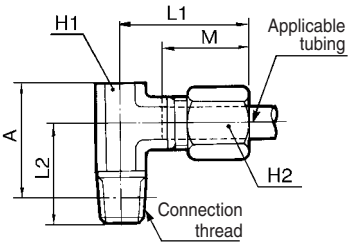
* Reference dimensions after R thread installation.




## Male Elbow: DL

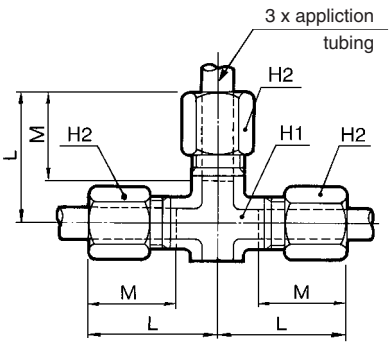
| Applicable tubing O.D. (mm) | Connection threads R | Model | H1 (width across flats) | H2 (width across flats) | L1 | L2 | M | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | DL04-01 | 10 | 10 | 23.5 | 17 | 15 | 19.6 | 3.5 | 23 |
| | 1/4 | DL04-02 | | | | 19 | | | | 30 |
| 6 | 1/8 | DL06-01 | 10 | 12 | 23.5 | 17 | 16 | 19.6 | 9 | 25 |
| | 1/4 | DL06-02 | | | | 19 | | | | 31 |
| | 3/8 | DL06-03 | 14 | | 26.5 | 22 | | 24.5 | | 53 |
| 8 | 1/8 | DL08-01 | 12 | 14 | 24.5 | 18 | 16 | 21.6 | 19 | 32 |
| | 1/4 | DL08-02 | | | | 21 | | 22.6 | | 38 |
| | 3/8 | DL08-03 | 14 | | 26.5 | 22 | | 24.5 | | 54 |
| 10 | 1/4 | DL10-02 | 14 | 17 | 26.5 | 23 | 17 | 25.8 | 31 | 51 |
| | 3/8 | DL10-03 | | | | 22 | | 24.5 | | 57 |
| | 1/2 | DL10-04 | 17 | | 28.5 | 27 | | 29.4 | | 100 |
| 12 | 1/4 | DL12-02 | 17 | 19 | 28.5 | 25 | 17 | 29.6 | 43 | 76 |
| | 3/8 | DL12-03 | | | | 26 | | 30.3 | | 85 |
| | 1/2 | DL12-04 | | | | 27 | | 29.4 | | 91 |

* Reference dimensions after R thread installation.



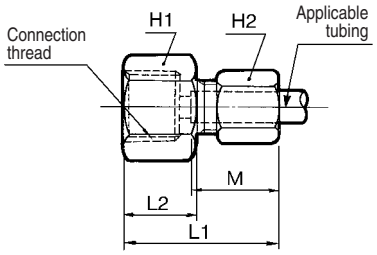

## Union Tee: DT

| Applicable tubing O.D. (mm) | Model | H1 (width across flats) | H2 (width across flats) | L | M | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|
| 4 | DT04-00 | 10 | 10 | 23.5 | 15 | 5.7 | 32 |
| 6 | DT06-00 | 10 | 12 | 23.5 | 16 | 14 | 36 |
| 8 | DT08-00 | 12 | 14 | 24.5 | 16 | 25 | 47 |
| 10 | DT10-00 | 14 | 17 | 26.5 | 17 | 49 | 70 |
| 12 | DT12-00 | 17 | 19 | 28.5 | 17 | 55 | 70 |




## Female Connector: DHF

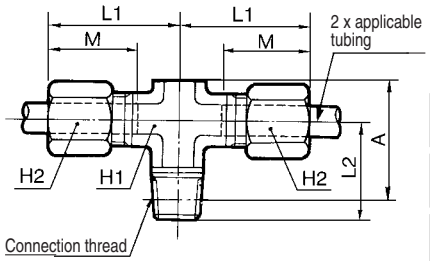
| Applicable tubing O.D. (mm) | Connection threads Rc | Model | H1 (width across flats) | H2 (width across flats) | L1 | L2 | M | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/4 | DHF04-02 | 17 | 10 | 30.3 | 16 | 15 | 4 | 27 |
| 6 | 1/4 | DHF06-02 | 17 | 12 | 30.8 | 16.5 | 16 | 11 | 28 |
| | 3/8 | DHF06-03 | 19 | | 32.8 | 18.5 | | | 31 |
| 8 | 1/4 | DHF08-02 | 17 | 14 | 29.8 | 15.5 | 16 | 20 | 30 |
| 10 | 1/4 | DHF10-02 | 17 | 17 | 30.8 | 16.5 | 17 | 34 | 37 |
| 12 | 1/4 | DHF12-02 | 17 | 19 | 30.8 | 16.5 | 17 | 51 | 40 |



## Male Branch Tee: DT

| Applicable tubing O.D. (mm) | Connection threads R | Model | H1 (width across flats) | H2 (width across flats) | L1 | L2 | M | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | DT04-01 | 10 | 10 | 23.5 | 17 | 15 | 19.6 | 5.7 | 33 |
| | 1/4 | DT04-02 | | | | 19 | | | | 40 |
| 6 | 1/8 | DT06-01 | 10 | 12 | 23.5 | 17 | 16 | 19.6 | 14 | 35 |
| | 1/4 | DT06-02 | | | | 19 | | | | 44 |
| | 3/8 | DT06-03 | 14 | | 26.5 | 22 | | 24.5 | | 70 |
| 8 | 1/8 | DT08-01 | 12 | 14 | 24.5 | 18 | 16 | 21.6 | 25 | 45 |
| | 1/4 | DT08-02 | | | | 21 | | 22.6 | | 52 |
| | 3/8 | DT08-03 | 14 | | 26.5 | 22 | | 24.5 | | 73 |
| 10 | 1/4 | DT10-02 | 14 | 17 | 26.5 | 23 | 17 | 25.8 | 49 | 72 |
| | 3/8 | DT10-03 | | | | 22 | | 24.5 | | 78 |
| | 1/2 | DT10-04 | 17 | | 28.5 | 27 | | 29.4 | | 120 |
| 12 | 1/4 | DT12-02 | 17 | 19 | 28.5 | 25 | 17 | 29.6 | 55 | 106 |
| | 3/8 | DT12-03 | | | | 26 | | 30.3 | | 111 |
| | 1/2 | DT12-04 | | | | 27 | | 29.4 | | 120 |

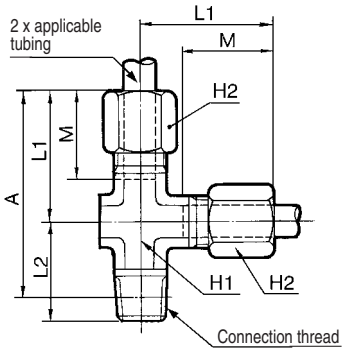
* Reference dimensions after R thread installation.




## Male Run Tee: DY

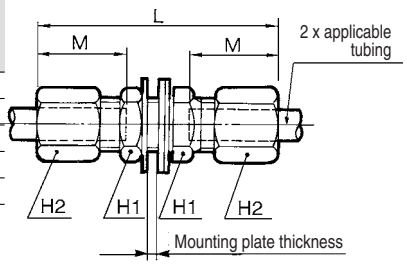
| Applicable tubing O.D. (mm) | Connection threads R | Model | H1 (width across flats) | H2 (width across flats) | L1 | L2 | M | A* | Effective area ($mm^2$) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1/8 | DY04-01 | 10 | 10 | 23.5 | 17 | 15 | 36.5 | 6.9 | 32 |
| | 1/4 | DY04-02 | | | | 19 | | | | 40 |
| 6 | 1/8 | DY06-01 | 10 | 12 | 23.5 | 17 | 16 | 36.5 | 16 | 36 |
| | 1/4 | DY06-02 | | | | 19 | | | | 42 |
| | 3/8 | DY06-03 | 14 | | 26.5 | 22 | | 42.2 | | 66 |
| 8 | 1/8 | DY08-01 | 12 | 14 | 24.5 | 18 | 16 | 38.5 | 32 | 44 |
| | 1/4 | DY08-02 | | | | 21 | | 39.5 | | 51 |
| | 3/8 | DY08-03 | 14 | | 26.5 | 22 | | 42.2 | | 69 |
| 10 | 1/4 | DY10-02 | 14 | 17 | 26.5 | 23 | 17 | 43.5 | 56 | 70 |
| | 3/8 | DY10-03 | | | | 22 | | 42.2 | | 77 |
| | 1/2 | DY10-04 | 17 | | 28.5 | 27 | | 47.3 | | 116 |
| 12 | 1/4 | DY12-02 | 17 | 19 | 28.5 | 25 | 17 | 47.5 | 62 | 106 |
| | 3/8 | DY12-03 | | | | 26 | | 47.2 | | 112 |
| | 1/2 | DY12-04 | | | | 27 | | 47.3 | | 119 |

* Reference dimensions after R thread installation.



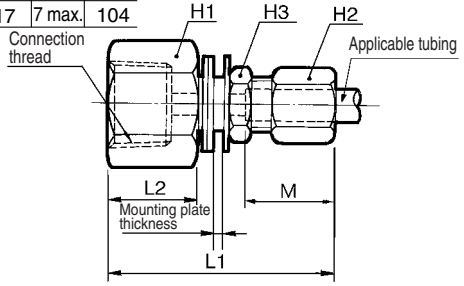

## Bulkhead Union: DE

| Applicable tubing O.D. (mm) | Model | H1 (width across flats) | H2 (width across flats) | L | M | Effective area ($mm^2$) | Mounting hole | Mounting plate thickness | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 4 | DE04-00 | 10 | 10 | 47.5 | 15 | 4 | 9 | 4 max. | 29 |
| 6 | DE06-00 | 12 | 12 | 50.5 | 16 | 11 | 11 | 4 max. | 43 |
| 8 | DE08-00 | 14 | 14 | 52.5 | 16 | 20 | 13 | 6 max. | 62 |
| 10 | DE10-00 | 17 | 17 | 55.5 | 17 | 34 | 15 | 7 max. | 93 |
| 12 | DE12-00 | 19 | 19 | 56.5 | 17 | 51 | 17 | 7 max. | 112 |



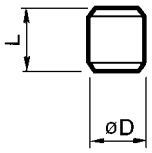

## Bulkhead Connector: DEF

| Applicable tubing O.D. (mm) | Connection threads Rc | Model | H1 (width across flats) | H2 (width across flats) | H3 (width across flats) | L1 | L2 | M | Effective area ($mm^2$) | Mounting hole | Mounting plate thickness | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 1/4 | DEF06-02 | 17 | 12 | 12 | 46.5 | 15 | 16 | 11 | 11 | 4 max. | 48 |
| 8 | 3/8 | DEF08-03 | 19 | 14 | 14 | 50.5 | 17 | 16 | 20 | 13 | 6 max. | 66 |
| 10 | 3/8 | DEF10-03 | 19 | 17 | 17 | 53.5 | 17 | 17 | 34 | 15 | 7 max. | 89 |
| 12 | 3/8 | DEF12-03 | 19 | 19 | 19 | 54.5 | 17 | 17 | 51 | 17 | 7 max. | 104 |



## Plug: DP

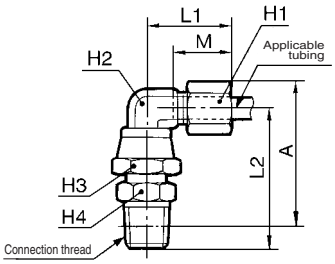
| Applicable fitting (mm) | Model | L | øD | Mass (g) |
|---|---|---|---|---|
| **4** | **DP-04** | 8 | 5.6 | 0.2 |
| **6** | **DP-06** | | 7.6 | 0.5 |
| **8** | **DP-08** | | 9.6 | 0.8 |
| **10** | **DP-10** | | 11.6 | 1.2 |
| **12** | **DP-12** | | 13.6 | 1.6 |




## Swivel Elbow: L

| Applicable tubing O.D. (mm) | Connection thread R | Model | H1 (width across flats) | H2 (width across flats) | H3 (width across flats) | H4 (width across flats) | L1 | L2 | M | A* | Effective area (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | 1/8 | **L04-01** | 10 | 10 | 14 | 10 | 21.8 | 30 | 15 | 32.7 | 3.5 | 33 |
| | 1/4 | **L04-02** | | | | 14 | | 34.4 | | 34.7 | | 40 |
| **6** | 1/8 | **L06-01** | 12 | 10 | 14 | 10 | 21.8 | 30 | 16 | 33.8 | 9 | 36 |
| | 1/4 | **L06-02** | | | | 14 | | 34.4 | | 35.8 | | 43 |
| | 3/8 | **L06-03** | | | | 17 | | 35.8 | | 37.5 | | 55 |
| **8** | 1/8 | **L08-01** | 14 | 12 | 17 | 12 | 23.3 | 31 | 16 | 36 | 19 | 46 |
| | 1/4 | **L08-02** | | | | 14 | | 35.4 | | 38 | | 52 |
| | 3/8 | **L08-03** | | | | 17 | | 36.8 | | 39.7 | | 61 |
| **10** | 1/4 | **L10-02** | 17 | 14 | 19 | 14 | 23.3 | 36.4 | 17 | 40.7 | 31 | 68 |
| | 3/8 | **L10-03** | | | | 17 | | 37.8 | | 42.4 | | 76 |
| | 1/2 | **L10-04** | | | | 22 | | 41 | | 43.5 | | 96 |
| **12** | 1/4 | **L12-02** | 19 | 17 | 22 | 17 | 24.3 | 39.4 | 17 | 44.9 | 43 | 86 |
| | 3/8 | **L12-03** | | | | | | 39.8 | | 45.6 | | 94 |
| | 1/2 | **L12-04** | | | | 22 | | 43 | | 46.7 | | 118 |

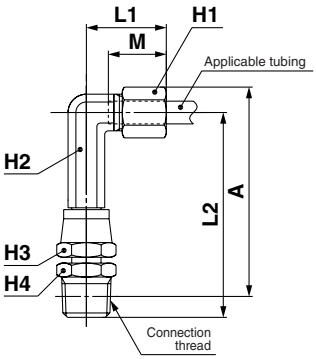
∗ Reference dimensions after R thread installation.




## Swivel Extended Elbow: LL

| Applicable tubing O.D. (mm) | Connection thread R | Model | H1 (width across flats) | H2 (width across flats) | H3 (width across flats) | H4 (width across flats) | L1 | L2 | M | A* | Effective area (mm²) | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | 1/8 | **LL04-01** | 10 | 10 | 14 | 10 | 21.8 | 50 | 15 | 52.7 | 3.5 | 45 |
| | 1/4 | **LL04-02** | | | | 14 | | 54.4 | | 54.7 | | 53 |
| **6** | 1/8 | **LL06-01** | 12 | 10 | 14 | 10 | 21.8 | 51 | 16 | 54.8 | 9 | 47 |
| | 1/4 | **LL06-02** | | | | 14 | | 55.4 | | 56.8 | | 44 |
| | 3/8 | **LL06-03** | | | | 17 | | 56.8 | | 58.5 | | 66 |
| **8** | 1/8 | **LL08-01** | 14 | 12 | 17 | 12 | 23.3 | 52 | 16 | 57 | 19 | 63 |
| | 1/4 | **LL08-02** | | | | 14 | | 56.4 | | 59 | | 68 |
| | 3/8 | **LL08-03** | | | | 17 | | 57.8 | | 60.7 | | 77 |
| **10** | 1/4 | **LL10-02** | 17 | 14 | 19 | 14 | 23.3 | 58.4 | 17 | 62.7 | 31 | 89 |
| | 3/8 | **LL10-03** | | | | 17 | | 59.8 | | 64.4 | | 98 |
| | 1/2 | **LL10-04** | | | | 22 | | 63 | | 65.5 | | 117 |
| **12** | 1/4 | **LL12-02** | 19 | 17 | 22 | 17 | 24.3 | 62.4 | 17 | 67.8 | 43 | 121 |
| | 3/8 | **LL12-03** | | | | | | 62.8 | | 68.5 | | 129 |
| | 1/2 | **LL12-04** | | | | 22 | | 66 | | 69.7 | | 153 |

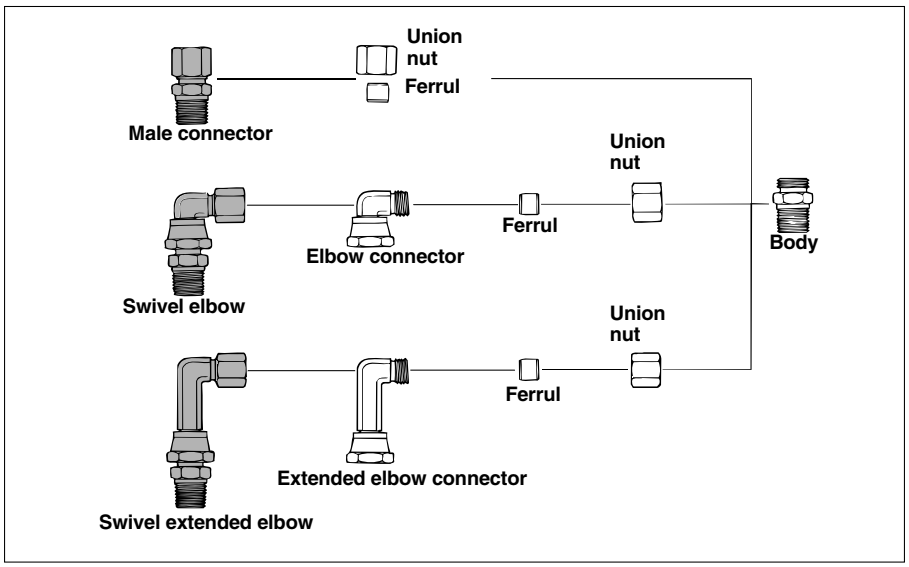
∗ Reference dimensions after R thread installation.



## Swivel Type/Parts No.

### Swivel type fitting parts lineup

The body of elbow connectors and extended elbow connectors are compatible with almost any fitting. (Except "L-04" and "LL-04" which are for the body of ø6 tube.) Swivel fittings, elbow (L) and (LL) constitute the combination with a male connector (H) and connector as shown in the diagram.




Note) How to install elbow fittings
After tightening by hand, tighten an additional 1/6 to 1/3 turn with a wrench.

**Union Nut: N**

| Part no. | Applicable tubing O.D. | Mass (g) |
|---|---|---|
| **N-04** | ø4 | 5 |
| **N-06** | ø6 | 7 |
| **N-08** | ø8 | 8 |
| **N-10** | ø10 | 13 |
| **N-12** | ø12 | 14 |

**Elbow Connector: L**

| Part no. | Applicable tubing O.D. |
|---|---|
| **L-04** | ø4 |
| **L-06** | ø6 |
| **L-08** | ø8 |
| **L-10** | ø10 |
| **L-12** | ø12 |

**Ferrul: S**

| Part no. | Applicable tubing O.D. | Mass (g) |
|---|---|---|
| **S-04** | ø4 | 0.7 |
| **S-06** | ø6 | 1.1 |
| **S-08** | ø8 | 1.4 |
| **S-10** | ø10 | 1.7 |
| **S-12** | ø12 | 2.0 |

**Extended Elbow Connector: LL**

| Part no. | Applicable tubing O.D. |
|---|---|
| **LL-04** | ø4 |
| **LL-06** | ø6 |
| **LL-08** | ø8 |
| **LL-10** | ø10 |
| **LL-12** | ø12 |

## ⚠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.**

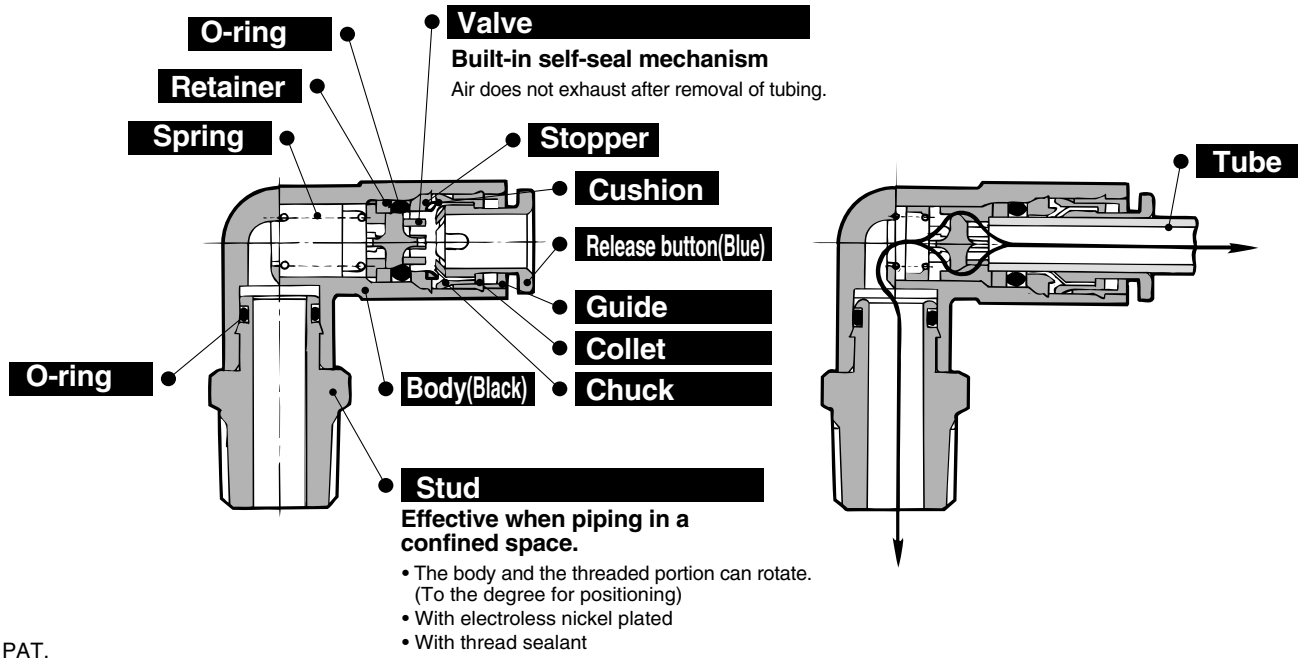
### Installation

## ⚠Caution

1. Cut the tube perpendicular to the tube axis a little longer than the required length. (Use tube cutter TK-1, 2 or 3.)
2. Then, push the cut tube in until it comes to the flared edge, and tighten the nut by hand.
3. Furthermore, give the nut an additional 1.5 turns with a tightening tool. Leave no space between the screwed-in nut and the tube in-line with the tube axis. If tightened insufficiently, nut may be loosened and it may result in air leakage or may come off.
4. When using soft copper tube, first tighten the nut by hand and then give it an additional one turn with wrench. Use JIS H3300, equivalent to seamless tube C1220T-0, as soft copper tube. If using any other style, it may cause the air leakage or tube to come off.

# Self-seal Fittings
# *Series KC*

RoHS




**One-touch fitting (built-in self-seal mechanism) to prevent air exhaust when removing tube.**

**Best for multiple use areas when pressure cannot be shut down.**

**10 styles are available.**

**Electroless nickel plated for copper-free applications.**

**Sealant is standard.**

## Applicable Tubing

| | |
|---|---|
| Tubing material | Nylon, Soft nylon, Polyurethane |
| Tubing O.D. | ø4, ø6, ø8, ø10, ø12 |

## Specifications

| | | |
|---|---|---|
| **Fluid** | | Air |
| **Maximum operating pressure** | | 1 MPa |
| **Proof pressure** | | 3 MPa |
| **Ambient and fluid temperature** | | –5 to 60°C (No freezing) |
| **Thread** | **Mounting section** | JIS B 0203 (Taper thread for piping)<br>JIS B 0205 (Metric fine thread) |
| | **Nut section** | JIS B 0205 (Metric fine thread) |
| **Seal on the threads (Standard)** | | With thread seal |
| **Copper-free (Standard)** | | Brass parts are all electroless nickel plated |

## Principal Parts Material

| | |
|---|---|
| Body | C3604, PBT |
| Stud | C3604 (Thread portion) |
| Chuck, Spring | Stainless steel 304 |
| Guide | Stainless steel 304, PBT |
| Collet, Release button | POM |
| Valve, Retainer | POM |
| Stopper | C3604, POM |
| Seal, O-ring | NBR |
| Gasket | Stainless steel 304, NBR |

## Model

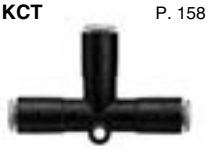
**Male connector**
**KCH** P. 158

Use to pipe in the same direction from female thread.

**Male elbow**
**KCL** P. 158

Use to pipe at right angles to female thread.

**Union tee**
**KCT** P. 158



Use to connect tubes in both 90° directions.

**Union "Y"**
**KCU** P. 159

Use to branch line in the same direction. 2 branched ports has a self-seal function.

**Check adaptor**
**KCJ** P. 159

Use to add the self-seal mechanism to the usual One-touch fittings, Series KQ.

**Bulkhead union**
**KCE** P. 159

Use to connect tubes through a panel. One of two ports has a self-seal function.

**Bulkhead connector**
**KCE** P. 159

Use to connect male thead and tube through a panel.

**Straight union**
**KCH** P. 160

Use to connect tubes in the same direction. One of two ports has a self-seal function.

**Straight plug for frequent use**
**KCH** P. 160

It can save tube cutting labor in the case of frequent tube installation and removal.
Use to connect a self-seal fitting and a tube in the same dierection.

**Elbow plug for frequent use**
**KCL** P. 160

It can save tube cutting labor in the case of frequent tube installation and removal.
Use to connect a self-seal fitting and a tube at the right angles to a self-seal fitting.

## Male Connector: KCH

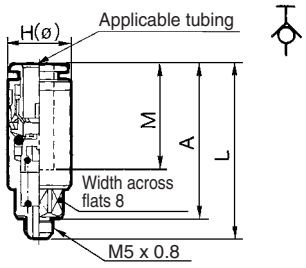
<M5>

<R>

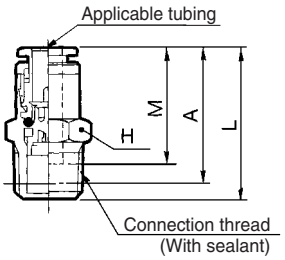
| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | L | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KCH04-M5 | 9.8 | 30.8 | 27.3 | 18 | 2.1 | 2.1 | 8 |
| | 1/8 | KCH04-01S | 10 | 26.1 | 22.1 | | 2.6 | 2.6 | |
| 6 | M5 x 0.8 | KCH06-M5 | 11.8 | 32.4 | 28.9 | 19.5 | 2.4 | 2.4 | 10 |
| | 1/8 | KCH06-01S | 12 | 37.4 | 33.4 | 19 | 6.8 | 6.8 | 16 |
| | 1/4 | KCH06-02S | 14 | 28.9 | 22.9 | | | | 14 |
| 8 | 1/8 | KCH08-01S | 14 | 42.4 | 38.4 | 21.5 | 16.2 | 13.1 | 20 |
| | 1/4 | KCH08-02S | | 45.7 | 39.7 | | | | 27 |
| | 3/8 | KCH08-03S | 17 | 34 | 27.5 | | | | 25 |
| 10 | 1/4 | KCH10-02S | 17 | 50.5 | 44.5 | 24 | 25.6 | 20.4 | 34 |
| | 3/8 | KCH10-03S | | 51.5 | 45 | | | | 43 |
| 12 | 3/8 | KCH12-03S | 19 | 54.2 | 47.7 | 25.5 | 35.4 | 30.4 | 48 |
| | 1/2 | KCH12-04S | 22 | 41.6 | 33.6 | | | | 41 |

* Reference dimensions after R thread installation.

<M5>




<R>

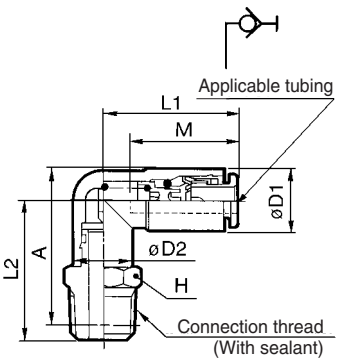



## Male Elbow: KCL

| Applicable tubing O.D. (mm) | Connection thread R M | Model | H (width across flats) | Note) øD1 | øD2 | L1 | L2 | A* | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | M5 x 0.8 | KCL04-M5 | 8 | 10.4 | 8 | 25.3 | 16.7 | 18.4 | 18 | 1.9 | 1.9 | 6 |
| | 1/8 | KCL04-01S | 10 | | 10 | | 22.1 | 24.2 | | 2.3 | 2.3 | 11 |
| 6 | M5 x 0.8 | KCL06-M5 | 8 | 12.8 | 8 | 26.8 | 17.4 | 20.3 | 19.5 | 2.2 | 2.2 | 7 |
| | 1/8 | KCL06-01S | 12 | | 12 | 28 | 24.2 | 27.5 | 19 | 6.2 | 6.2 | 13 |
| | 1/4 | KCL06-02S | 14 | | | | 28.6 | 29.5 | | | | 21 |
| 8 | 1/8 | KCL08-01S | 14 | 15.2 | 14 | 34.1 | 26.2 | 30.7 | 21.5 | 13.0 | 10.5 | 16 |
| | 1/4 | KCL08-02S | | | | | 30.6 | 32.7 | | | | 24 |
| | 3/8 | KCL08-03S | 17 | | | | 30 | 34.2 | | | | 37 |
| 10 | 1/4 | KCL10-02S | 17 | 18.5 | 17 | 38 | 33.4 | 37.2 | 24 | 19.5 | 16.5 | 29 |
| | 3/8 | KCL10-03S | | | | | 34.8 | 38.7 | | | | 38 |
| 12 | 3/8 | KCL12-03S | 22 | 20.9 | 20.9 | 40.7 | 39.2 | 44.3 | 25.5 | 24.8 | 21.3 | 63 |
| | 1/2 | KCL12-04S | | | | | 42.3 | 45.7 | | | | 81 |

* Reference dimensions after R thread installation.

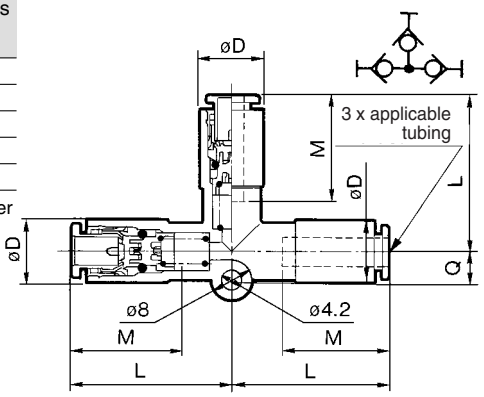
Note) øD1: Max. diameter




## Union Tee: KCT

| Applicable tubing O.D. (mm) | Model | Note) øD | L | Q | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| 4 | KCT04-00 | 10.4 | 28.6 | 5.3 | 18 | 2.8 | 2.8 | 8 |
| 6 | KCT06-00 | 12.8 | 32.7 | 6.1 | 19 | 7.6 | 7.6 | 15 |
| 8 | KCT08-00 | 15.2 | 39.2 | 7.1 | 21.5 | 13.7 | 11.1 | 23 |
| 10 | KCT10-00 | 18.5 | 45.5 | 7.9 | 24 | 21.1 | 19.0 | 39 |
| 12 | KCT12-00 | 20.9 | 49.2 | 8.6 | 25.5 | 28.3 | 24.3 | 52 |

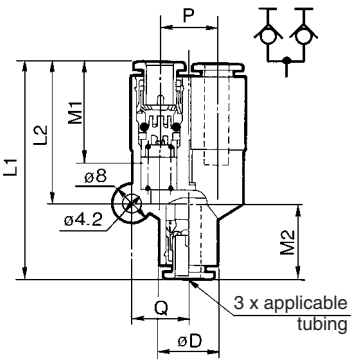
Note) øD: Max. diameter



## Union "Y": KCU

| Applicable tubing O.D. (mm) | Model | Note) øD | L1 | L2 | P | Q | M1 | M2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | **KCU04-00** | 10.4 | 43.1 | 27.3 | 10.4 | 10.6 | 18 | 16 | 3.7 | 3.7 | 8 |
| **6** | **KCU06-00** | 12.8 | 48 | 31.2 | 12.8 | 12.5 | 19 | 17 | 10.0 | 10.0 | 14 |
| **8** | **KCU08-00** | 15.2 | 57.6 | 38.9 | 15.2 | 14.7 | 21.5 | 18.5 | 21.7 | 15.1 | 22 |
| **10** | **KCU10-00** | 18.5 | 65.2 | 44.9 | 18.5 | 17.1 | 24 | 21 | 33.3 | 25.6 | 37 |
| **12** | **KCU12-00** | 20.9 | 70.1 | 48.8 | 20.9 | 19.1 | 25.5 | 22 | 48.9 | 38.7 | 49 |

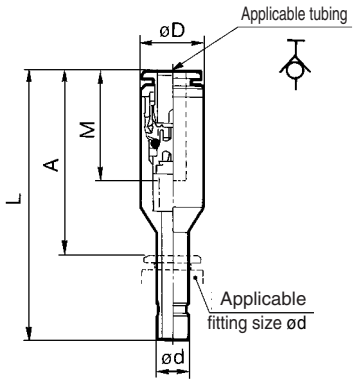
Note) øD: Max. diameter




## Check Adaptor: KCJ

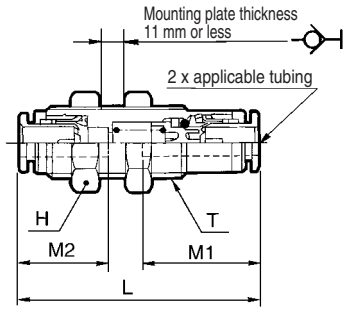
| Applicable tubing O.D. (mm) | Model | Applicable fitting size ød | Note) øD | L | A | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| **4** | **KCJ04-99** | 4 | 9.8 | 49.5 | 33.5 | 18 | 2.6 | 2.6 | 9 |
| **6** | **KCJ06-99** | 6 | 11.8 | 54 | 37 | 19 | 6.8 | 6.8 | 13 |
| **8** | **KCJ08-99** | 8 | 14 | 61 | 42.5 | 21.5 | 16.2 | 13.1 | 20 |
| **10** | **KCJ10-99** | 10 | 17 | 70.4 | 49.4 | 24 | 25.6 | 20.4 | 33 |
| **12** | **KCJ12-99** | 12 | 19 | 74.4 | 52.4 | 25.5 | 35.4 | 30.4 | 43 |

Note) øD: Max. diameter



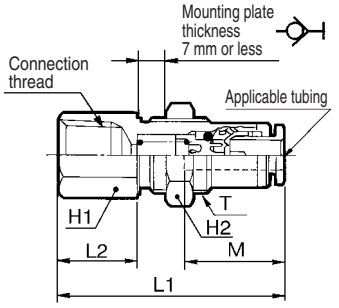

## Bulkhead Union: KCE

| Applicable tubing O.D. (mm) | Model | T (M) | H (width across flats) | L | Mounting hole | M1 | M2 | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| **4** | **KCE04-00** | M12 x 1 | 14 | 42 | 13 | 18 | 16 | 2.6 | 2.6 | 21 |
| **6** | **KCE06-00** | M14 x 1 | 17 | 45.5 | 15 | 19 | 17 | 6.8 | 6.8 | 30 |
| **8** | **KCE08-00** | M16 x 1 | 19 | 52.5 | 17 | 21.5 | 18.5 | 16.2 | 13.1 | 39 |
| **10** | **KCE10-00** | M20 x 1 | 24 | 59.5 | 21 | 24 | 21 | 25.6 | 20.4 | 84 |
| **12** | **KCE12-00** | M22 x 1 | 27 | 63.2 | 23 | 25.5 | 22 | 35.4 | 30.4 | 115 |




## Bulkhead Connector: KCE

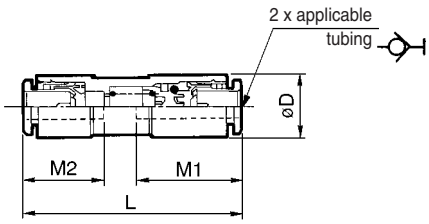
| Applicable tubing O.D. (mm) | Connection thread Rc | Model | T (M) | H1 (width across flats) | H2 (width across flats) | L1 | L2 | Mounting hole | M | Effective area (mm²) Nylon | Effective area (mm²) Urethane | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | 1/4 | **KCE04-02** | M12 x 1 | 17 | 14 | 40.5 | 14.7 | 13 | 18 | 2.6 | 2.6 | 32 |
| **6** | 1/4 | **KCE06-02** | M14 x 1 | 17 | 17 | 42.7 | 14.7 | 15 | 19 | 6.8 | 6.8 | 36 |
| **8** | 3/8 | **KCE08-03** | M16 x 1 | 19 | 19 | 49.4 | 15 | 17 | 21.5 | 16.2 | 13.1 | 42 |
| **10** | 3/8 | **KCE10-03** | M20 x 1 | 22 | 24 | 53.9 | 14.2 | 21 | 24 | 25.6 | 20.4 | 79 |
| **12** | 3/8 | **KCE12-03** | M22 x 1 | 24 | 27 | 56.1 | 13.7 | 23 | 25.5 | 35.4 | 30.4 | 105 |



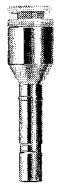
## Straight Union: KCH

| Applicable tubing O.D. (mm) | Model | Note) øD | L | M1 | M2 | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Nylon | Urethane | |
| 4 | KCH04-00 | 10.4 | 42.1 | 18 | 16 | 2.6 | 2.6 | 5 |
| 6 | KCH06-00 | 12.8 | 45.8 | 19 | 17 | 6.8 | 6.8 | 7 |
| 8 | KCH08-00 | 15.2 | 52.8 | 21.5 | 18.5 | 16.2 | 13.1 | 10 |
| 10 | KCH10-00 | 18.5 | 59.8 | 24 | 21 | 25.6 | 20.4 | 18 |
| 12 | KCH12-00 | 20.9 | 63.5 | 25.5 | 22 | 35.4 | 30.4 | 24 |

Note) øD: Max. diameter

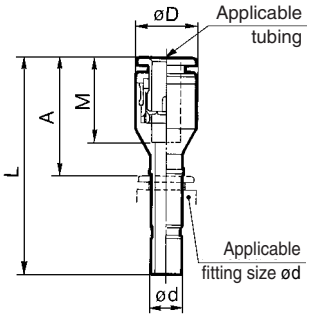



## Straight Plug for Frequent Use:KCH

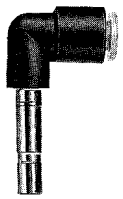


| Applicable tubing O.D. (mm) | Model | Applicable fitting size ød | Note) øD | L | A | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Nylon | Urethane | |
| 4 | KCH04-99 | 4 | 9.8 | 40.6 | 22.6 | 16 | 5.6 | 4 | 5 |
| 6 | KCH06-99 | 6 | 11.8 | 43.1 | 24.1 | 17 | 13.1 | 10.4 | 8 |
| 8 | KCH08-99 | 8 | 14 | 46.7 | 25.2 | 18.5 | 26.1 | 18.0 | 11 |
| 10 | KCH10-99 | 10 | 17 | 52.6 | 28.6 | 21 | 41.5 | 29.5 | 18 |
| 12 | KCH12-99 | 12 | 19 | 54.9 | 29.4 | 22 | 58.3 | 46.1 | 24 |

Note) øD: Max. diameter

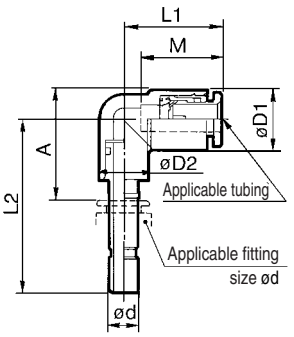



## Elbow Plug for Frequent Use: KCL



| Applicable tubing O.D. (mm) | Model | Applicable fitting size ød | Note) øD1 | Note) øD2 | L1 | L2 | A | M | Effective area (mm²) | | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Nylon | Urethane | |
| 4 | KCL04-99 | 4 | 10.4 | 10 | 18 | 34.3 | 22.6 | 16 | 4.2 | 4.2 | 7 |
| 6 | KCL06-99 | 6 | 12.8 | 10 | 20 | 36.5 | 24.1 | 17 | 11.4 | 9.0 | 8 |
| 8 | KCL08-99 | 8 | 15.2 | 12 | 23 | 40.3 | 25.2 | 18.5 | 21.6 | 14.9 | 12 |
| 10 | KCL10-99 | 10 | 18.5 | 17 | 26.5 | 44.3 | 28.6 | 21 | 35.2 | 25.0 | 25 |
| 12 | KCL12-99 | 12 | 20.9 | 17 | 28.5 | 46.8 | 29.4 | 22 | 50.2 | 39.7 | 30 |

Note) øD1, øD2: Max. diameter



# *Series KC*
# Specific Product 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.**

## No. of Insertions and Removals from Self-seal Fittings

### ⚠Caution

**1.** The number of insertions and removals as a rough guide is as follows.
- Tube·····300 times
- Metal stem·····1000 times

Self-seal fittings that have once been attached to connecting plugs cannot be used for tube connection.
It cannot be secured and the fittings will be lurched.

## Installation of Self-seal Fittings

### ⚠Caution

**1.** The fitting should be installed (installation of R thread portion) by screwing with a spanner at the hexagonal portion of the body. The position of spanner should be a root as close as possible to R thread.
Hex. across flats may be deformed, if using an improper wrench for hex. across flats.

## Tightening the Thread Portion of an M5 Size Fittings

### ⚠Caution

**1.** First, tighten it by hand, then give it an additional 1/6 turn with the wrench.
Excessive tightening may damage the threaded portion or deform the gasket to cause air leakage. Insufficient tightening may leave the thread loosened or cause air leakage.

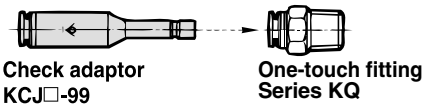
## Distinction of Plug and Applicable Fittings

### ⚠Caution

**1.** The applicable fitting should be chosen depending on the style of plug.

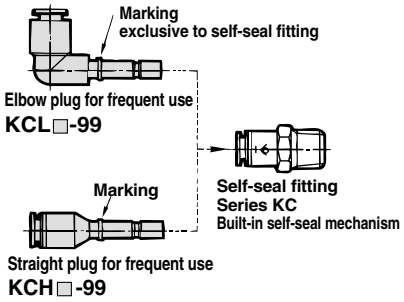
● **Check Adaptor**

**1.** How to use: Use it for addition of self-seal mechanism to a standard One-touch fitting series KQ. Self-seal fittings with check adaptor are not available. It causes air leakage.




**2.** Do not insert check adaptor into the port thread sizes M5 and M6 of KJ and KQ fittings.
It cannot be secured and the fittings will shoot out.

● **Elbow plug for frequent use, straight plug for frequent use.**
How to use: For use in the case of frequent tube installation and removal, tube cutting labor can be saved. These plugs are not available for a standard One-touch fittings Series KQ.
If trying to install the plug into a KQ, plug will jump out of the fitting. Note the exclusive marking for self-seal fittings before use.




## Tube Insertion and Removal under Pressurized Condition

### ⚠Caution

**1.** When inserting/removing the tubing is difficult under a pressurized condition, it should be inserted or removed by lowering the pressure or after fully exhausting.

# S Couplers

## Series KK/KKH/KK13



## Series KK

- With sleeve lock (Except for KK2)
- Effective area 3.8 to 82 mm²

Series KK2

Sleeve cover standardized

Series KK3/4/6

## Series KKH

- Without sleeve lock
- Effective area is equivalent to that of Series KK.

**The pulling strength for the plugs and sockets has been improved.**
**Twice as strong as the conventional models.**

## Series KK13

Manufactured by RECTUS AG

# Variations

## Series KK ..... 165 to 173

**Male thread type**

| Series | Port size | | | | | |
|---|---|---|---|---|---|---|
| | M5 | R1/8 | R1/4 | R3/8 | R1/2 | R3/4 |
| KK2 | ○ | ○ | | | | |
| KK3 | | ○ | ○ | ○ | | |
| KK4 | | ○ | ○ | ○ | ○ | |
| KK6 | | | | ○ | ○ | ○ |

**Female thread type**

| Series | Port size | | | | |
|---|---|---|---|---|---|
| | M5 | Rc1/8 | Rc1/4 | Rc3/8 | Rc1/2 |
| KK2 | ○ | | | | |
| KK3 | | ○ | ○ | ○ | |
| KK4 | | | ○ | ○ | |
| KK6 | | | | ○ | ○ |

**Nut fitting type (for fiber reinforced urethane hose)**

| Series | Applicable hose I.D./O.D. mm | | | | | |
|---|---|---|---|---|---|---|
| | 5/8 | 6/9 | 6.5/10 | 8/12 | 8.5/12.5 | 11/16 |
| KK3 | ○ | ○ | ○ | | | |
| KK4 | ○ | ○ | ○ | ○ | ○ | |
| KK6 | | | | ○ | ○ | ○ |

**One-touch fitting type (Straight/Elbow/Bulkhead)**

| Series | Applicable tubing O.D. mm | | | | | | |
|---|---|---|---|---|---|---|---|
| | ø3.2 | ø4 | ø6 | ø8 | ø10 | ø12 | ø16 |
| KK2 | ○ | ○ | ○ | | | | |
| KK3 | | ○ | ○ | ○ | ○ | | |
| KK4 | | | ○ | ○ | ○ | ○ | |
| KK6 | | | | | | ○ | ○ |

Series KK3/4/6

Series KK2

## Series KKH ..... 174 to 176

**Male thread type**

| Series | Port size | | | |
|---|---|---|---|---|
| | R1/8 | R1/4 | R3/8 | R1/2 |
| KKH3 | ○ | ○ | ○ | |
| KKH4 | ○ | ○ | ○ | ○ |

**Female thread type**

| Series | Port size | | |
|---|---|---|---|
| | Rc1/8 | Rc1/4 | Rc3/8 |
| KKH3 | ○ | ○ | ○ |
| KKH4 | | ○ | ○ |

**Nut fitting type (for fiber reinforced urethane hose)**

| Series | Applicable hose I.D./O.D. mm | | | | |
|---|---|---|---|---|---|
| | 5/8 | 6/9 | 6.5/10 | 8/12 | 8.5/12.5 |
| KKH3 | ○ | ○ | ○ | | |
| KKH4 | ○ | ○ | ○ | ○ | ○ |

## Series KK13 Manufactured by RECTUS AG ..... 177 to 181

**Male thread type**

| Series | Port size | | | |
|---|---|---|---|---|
| | R1/8 | R1/4 | R3/8 | R1/2 |
| KK13 | ○ | ○ | ○ | ○ |

**Female thread type**

| Series | Port size | | | |
|---|---|---|---|---|
| | Rc1/4 | Rc3/8 | Rc1/2 | G1/4 |
| KK13 | ○ | ○ | ○ | ○ |

**Barb fitting type**

| Series | Applicable hose I.D. | | | |
|---|---|---|---|---|
| | 1/4" | 1/4" | 3/8" | 1/2" |
| KK13 | ○ | ○ | ○ | ○ |

**Plug nut fitting type (for fiber reinforced urethane hose)**

| Series | Applicable hose I.D./O.D. mm | | | | | |
|---|---|---|---|---|---|---|
| | 5/8 | 6/9 | 6.5/10 | 8/12 | 8.5/12.5 | 11/16 |
| KK13 | ○ | ○ | ○ | ○ | ○ | ○ |

## Series KKA Stainless steel type ..... 267 to 275

**Male/Female thread type**

| Series | Port size | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | R·Rc1/8 | R·Rc1/4 | R·Rc3/8 | R·Rc1/2 | R·Rc3/4 | R·Rc1 | R·Rc1 1/4 | R·Rc1 1/2 |
| KKA3 | ○ | ○ | ○ | | | | | |
| KKA4 | | ○ | ○ | ○ | | | | |
| KKA6 | | | ○ | ○ | ○ | | | |
| KKA7 | | | | ○ | ○ | ○ | | |
| KKA8 | | | | | ○ | ○ | ○ | |
| KKA9 | | | | | | ○ | ○ | ○ |

# Series KK

## The pulling strength for the plugs and sockets has been improved.

## Twice

**as strong as the conventional models**

**We standardized the product with a sleeve cover. Changing the lock ring material to a shock absorbent PBT further improved the shock absorbent performance.**

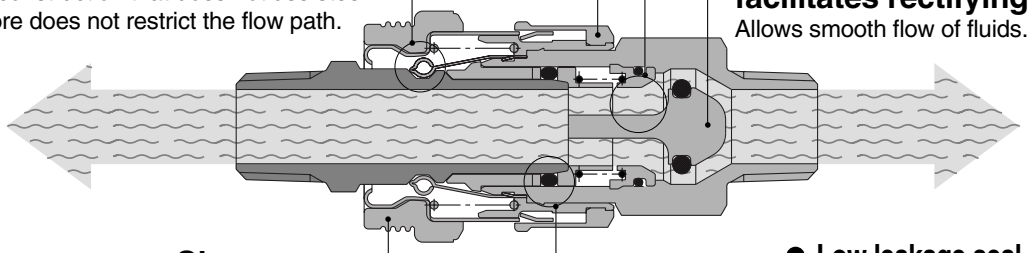


**Lock ring**
Shock absorbent PBT

**No spring located in the flow path**
Loss of effective area is minimized because there is no valve spring to block the flow path.

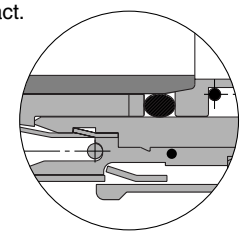
**Employs a unique connection method**
A slim body design and large effective area are achieved with a construction that does not use steel balls and therefore does not restrict the flow path.

**Check valve end configuration facilitates rectifying effect**
Allows smooth flow of fluids.



**Sleeve cover**
(Except for Series KK2)

**Low leakage seal construction**
Reliable sealing is achieved by surface contact.



## ●Light weight

Together with a reduction of the body size, pressing parts and resin parts are used to achieve an overall weight reduction.

| Series | Plug no. | Socket no. | Effective area (mm²) Note 1) | Body O.D. (mm) | Mass (g) Note 2) |
|---|---|---|---|---|---|
| Series **KK2** | KK2P-M5M | KK2S-M5M | 3.8 | ø10.0 | 6.1 |
| Series **KK3** | KK3P-01MS | KK3S-01MS | 20 | ø20.2 | 20.1 |
| Series **KK4** | KK4P-02MS | KK4S-02MS | 39 | ø28.0 | 44.1 |
| Series **KK6** | KK6P-04MS | KK6S-04MS | 82 | ø31.6 | 90.1 |

Note 1) Values when plug and socket are connected.
Note 2) Values for socket only.

### ■ One-touch fitting type standardized

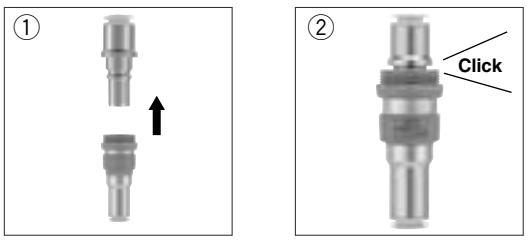
Four types from ø3.2 to ø16 added to series.


### ■ Flow is possible from the plug side or socket side.

### ■ Fluids: Air and Water

### ■ One-touch connection

Simple connection with one hand simplifies work.




### ■ Sleeve lock mechanism

Prevents accidents caused by unexpected separation.


Note) Except for M5 type (Series KK2).

## Plug (P)

### Male thread type

| Body size | Port size | Part no. |
|---|---|---|
| M5 | M5 x 0.8 | KK2P-M5M |
| | R 1/8 | -01MS |
| 1/8 | R 1/8 | KK3P-01MS |
| | R 1/4 | -02MS |
| | R 3/8 | -03MS |
| 1/4 | R 1/8 | KK4P-01MS |
| | R 1/4 | -02MS |
| | R 3/8 | -03MS |
| | R 1/2 | -04MS |
| 1/2 | R 3/8 | KK6P-03MS |
| | R 1/2 | -04MS |
| | R 3/4 | -06MS |

### Female thread type

| Body size | Port size | Part no. |
|---|---|---|
| M5 | M5 x 0.8 | KK2P-M5F |
| 1/8 | Rc 1/8 | KK3P-01F |
| | Rc 1/4 | -02F |
| | Rc 3/8 | -03F |
| 1/4 | Rc 1/4 | KK4P-02F |
| | Rc 3/8 | -03F |
| 1/2 | Rc 3/8 | KK6P-03F |
| | Rc 1/2 | -04F |

### Nut fitting type (for fiber reinforced urethane hose)

| Body size | Applicable hose I.D./O.D. mm | Part no. |
|---|---|---|
| 1/8 | 5/8 | KK3P-50N |
| | 6/9 | -60N |
| | 6.5/10 | -65N |
| 1/4 | 5/8 | KK4P-50N |
| | 6/9 | -60N |
| | 6.5/10 | -65N |
| | 8/12 | -80N |
| | 8.5/12.5 | -85N |
| 1/2 | 8/12 | KK6P-80N |
| | 8.5/12.5 | -85N |
| | 11/16 | -110N |

### Straight type with One-touch fitting

| Body size | Applicable tubing O.D. mm | Part no. |
|---|---|---|
| M5 | 3.2 | KK2P-23H |
| | 4 | -04H |
| | 6 | -06H |
| 1/8 | 4 | KK3P-04H |
| | 6 | -06H |
| | 8 | -08H |
| | 10 | -10H |
| 1/4 | 6 | KK4P-06H |
| | 8 | -08H |
| | 10 | -10H |
| | 12 | -12H |
| 1/2 | 12 | KK6P-12H |
| | 16 | -16H |

### Elbow type with One-touch fitting

| Body size | Applicable tubing O.D. mm | Part no. |
|---|---|---|
| M5 | 3.2 | KK2P-23L |
| | 4 | -04L |
| | 6 | -06L |
| 1/8 | 4 | KK3P-04L |
| | 6 | -06L |
| | 8 | -08L |
| | 10 | -10L |
| 1/4 | 6 | KK4P-06L |
| | 8 | -08L |
| | 10 | -10L |
| | 12 | -12L |
| 1/2 | 12 | KK6P-12L |
| | 16 | -16L |

### Bulkhead type with One-touch fitting

| Body size | Applicable tubing O.D. mm | Part no. |
|---|---|---|
| M5 | 3.2 | KK2P-23E |
| | 4 | -04E |
| | 6 | -06E |
| 1/8 | 4 | KK3P-04E |
| | 6 | -06E |
| | 8 | -08E |
| | 10 | -10E |
| 1/4 | 6 | KK4P-06E |
| | 8 | -08E |
| | 10 | -10E |
| | 12 | -12E |
| 1/2 | 12 | KK6P-12E |
| | 16 | -16E |

## Socket (S)

### Male thread type

| Body size | Port size | Part no. |
|---|---|---|
| M5 | M5 x 0.8 | KK2S-M5M |
| | R 1/8 | -01MS |
| 1/8 | R 1/8 | KK3S-01MS |
| | R 1/4 | -02MS |
| | R 3/8 | -03MS |
| 1/4 | R 1/8 | KK4S-01MS |
| | R 1/4 | -02MS |
| | R 3/8 | -03MS |
| | R 1/2 | -04MS |
| 1/2 | R 3/8 | KK6S-03MS |
| | R 1/2 | -04MS |
| | R 3/4 | -06MS |

### Female thread type

| Body size | Port size | Part no. |
|---|---|---|
| M5 | M5 x 0.8 | KK2S-M5F |
| 1/8 | Rc 1/8 | KK3S-01F |
| | Rc 1/4 | -02F |
| | Rc 3/8 | -03F |
| 1/4 | Rc 1/4 | KK4S-02F |
| | Rc 3/8 | -03F |
| 1/2 | Rc 3/8 | KK6S-03F |
| | Rc 1/2 | -04F |

### Nut fitting type (for fiber reinforced urethane hose)

| Body size | Applicable hose I.D./O.D. mm | Part no. |
|---|---|---|
| 1/8 | 5/8 | KK3S-50N |
| | 6/9 | -60N |
| | 6.5/10 | -65N |
| 1/4 | 5/8 | KK4S-50N |
| | 6/9 | -60N |
| | 6.5/10 | -65N |
| | 8/12 | -80N |
| | 8.5/12.5 | -85N |
| 1/2 | 8/12 | KK6S-80N |
| | 8.5/12.5 | -85N |
| | 11/16 | -110N |

### Straight type with One-touch fitting

| Body size | Applicable tubing O.D. mm | Part no. |
|---|---|---|
| M5 | 3.2 | KK2S-23H |
| | 4 | -04H |
| | 6 | -06H |
| 1/8 | 4 | KK3S-04H |
| | 6 | -06H |
| | 8 | -08H |
| | 10 | -10H |
| 1/4 | 6 | KK4S-06H |
| | 8 | -08H |
| | 10 | -10H |
| | 12 | -12H |
| 1/2 | 12 | KK6S-12H |
| | 16 | -16H |

### Elbow type with One-touch fitting

| Body size | Applicable tubing O.D. mm | Part no. |
|---|---|---|
| M5 | 3.2 | KK2S-23L |
| | 4 | -04L |
| | 6 | -06L |
| 1/8 | 4 | KK3S-04L |
| | 6 | -06L |
| | 8 | -08L |
| | 10 | -10L |
| 1/4 | 6 | KK4S-06L |
| | 8 | -08L |
| | 10 | -10L |
| | 12 | -12L |
| 1/2 | 12 | KK6S-12L |
| | 16 | -16L |

### Bulkhead type with One-touch fitting

| Body size | Applicable tubing O.D. mm | Part no. |
|---|---|---|
| M5 | 3.2 | KK2S-23E |
| | 4 | -04E |
| | 6 | -06E |
| 1/8 | 4 | KK3S-04E |
| | 6 | -06E |
| | 8 | -08E |
| | 10 | -10E |
| 1/4 | 6 | KK4S-06E |
| | 8 | -08E |
| | 10 | -10E |
| | 12 | -12E |
| 1/2 | 12 | KK6S-12E |
| | 16 | -16E |

# S Couplers
# *Series KK*

RoHS

Series KK2

Series KK3/4/6

## Specifications

| | |
|---|---|
| **Fluid** | Air, Water |
| **Operating pressure range** Note) | KK2: –100 kPa to 1 MPa<br>KK3: –90 kPa to 1 MPa<br>KK4/6: 0 to 1 MPa |
| **Proof pressure** | 1.5 MPa |
| **Ambient and fluid temperature** | Air: –5 to 60°C<br>Water: 5 to 40°C<br>(No freezing) |
| **Plating, Sealant** | Electroless nickel plated (copper-free and fluorine-free application), With male thread sealant |

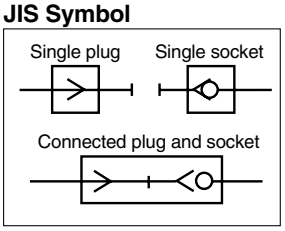
Note) Do not use the S couplers with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

## Performance

| | |
|---|---|
| **Plug and socket connection** | One-touch connection and release |
| **Check valve** | Socket: Built-in check valve (standard) |
| **Sleeve lock mechanism** Note) | Manual locking type (standard) |

Note) Series KK2 is not provided with lock mechanism.

**JIS Symbol**




## Effective Area

| Body size | Plug | Socket | Effective area mm² |
|---|---|---|---|
| M5 | **KK2P-M5M** | **KK2S-M5M** | 3.8 |
| 1/8 | **KK3P-01MS** | **KK3S-01MS** | 20 |
| 1/4 | **KK4P-02MS** | **KK4S-02MS** | 39 |
| 1/2 | **KK6P-04MS** | **KK6S-04MS** | 82 |

## How to Order

**KK 4 S – 02 M S**

**Body size**

| | |
|---|---|
| **2** | M5 |
| **3** | 1/8 |
| **4** | 1/4 |
| **6** | 1/2 |

**Socket/Plug designation**

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

**With sealant (male thread)**

**Connection type**

| Symbol | Type |
|---|---|
| **M** | Male thread |
| **F** | Female thread |
| **N** | With nut fitting |
| **H** | Straight with One-touch fitting |
| **L** | Elbow with One-touch fitting |
| **E** | Bulkhead with One-touch fitting |

**Piping port size variation**

**Male/Female thread type**

| Symbol | Thread size |
|---|---|
| **M5** | M5 x 0.8 |
| **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 |

**One-touch fitting type**

| Symbol | Applicable tubing O.D. mm |
|---|---|
| **23** | ø3.2 |
| **04** | ø4 |
| **06** | ø6 |
| **08** | ø8 |
| **10** | ø10 |
| **12** | ø12 |
| **16** | ø16 |

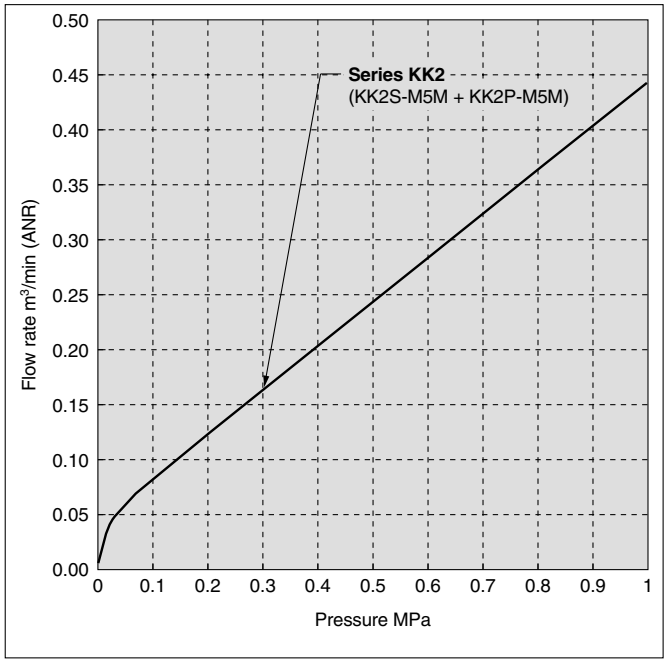
**Nut fitting type**

| Symbol | Applicable hose I.D./O.D. mm |
|---|---|
| **50** | 5/8 |
| **60** | 6/9 |
| **65** | 6.5/10 |
| **80** | 8/12 |
| **85** | 8.5/12.5 |
| **110** | 11/16 |

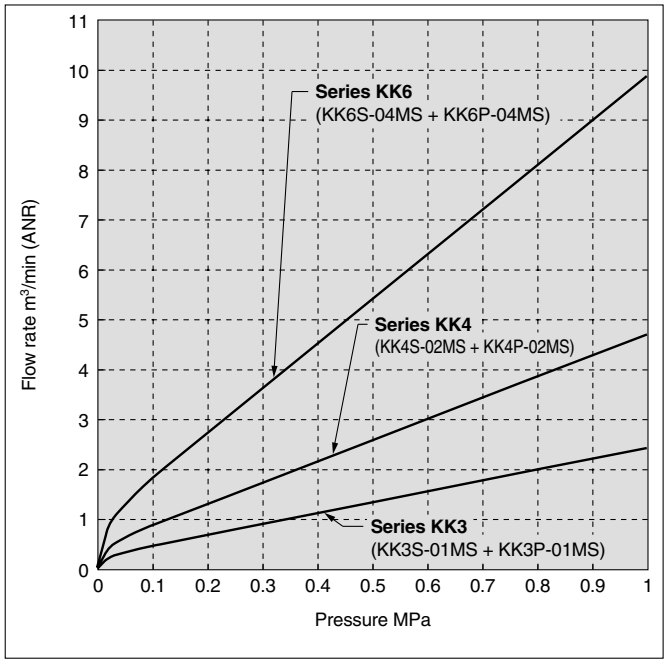
## Flow Characteristics

Air (0 to 1 MPa)

### KK2

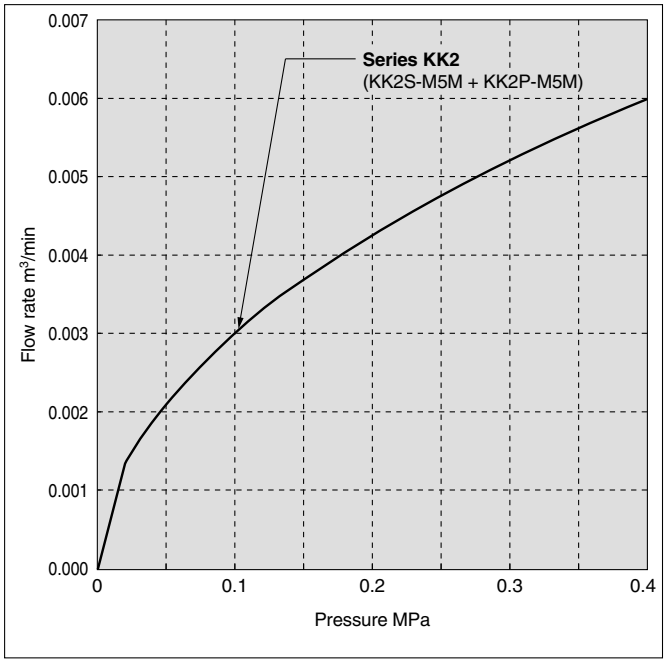



### KK3/4/6

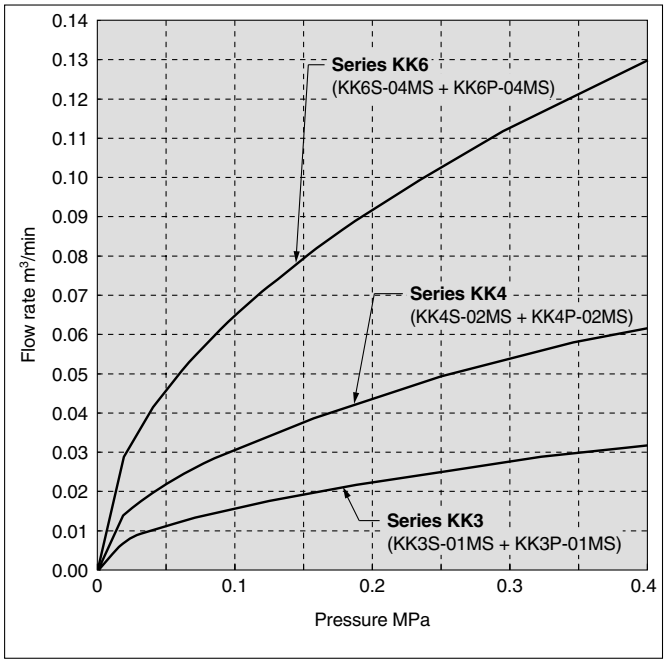



Water (0 to 0.4 MPa)

### KK2

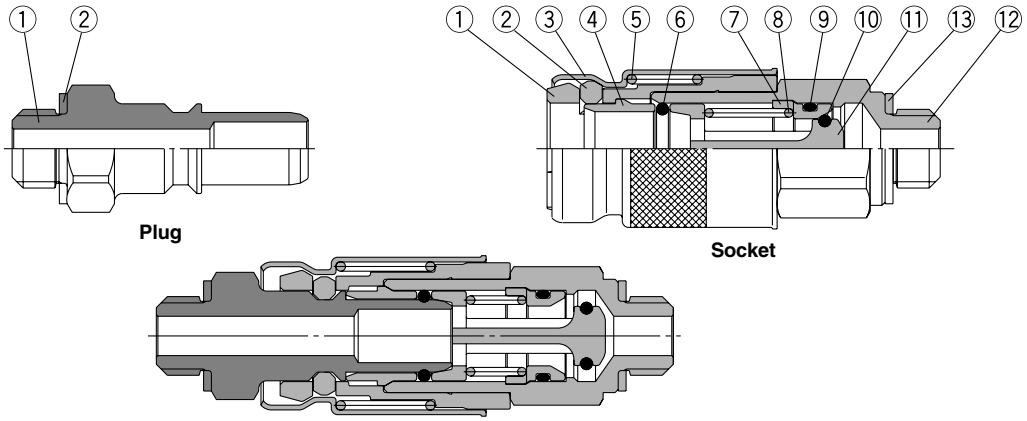



### KK3/4/6



## Construction

### KK2




**Plug**

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Stem** | C3604 | Electroless nickel plated |
| 2 | **Gasket** | Stainless steel 304, NBR | |

**Series KK2 Spare Parts**

| Description | Part no. | No. |
|---|---|---|
| **Gasket** | M-5G2 | Plug② |
| | | Socket⑬ |

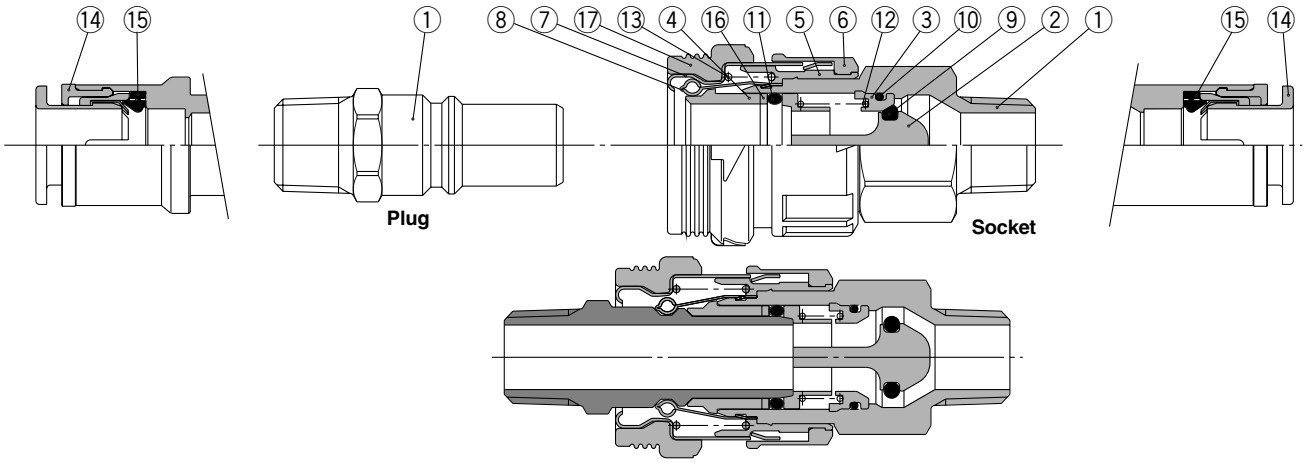
**Socket**

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Spacer** | PBT | |
| 2 | **Chuck** | PBT | |
| 3 | **Sleeve** | C2680 | Electroless nickel plated |
| 4 | **Collar** | C3604 | Electroless nickel plated |
| 5 | **Sleeve spring** | Stainless steel 304 | |
| 6 | **Plug O-ring** | NBR | |
| 7 | **Valve seat** | PBT | |
| 8 | **Valve spring** | Stainless steel 304 | |
| 9 | **Valve seat O-ring** | NBR | |
| 10 | **Valve O-ring** | FKM | |
| 11 | **Valve** | PBT | |
| 12 | **Socket body** | C3604 | Electroless nickel plated |
| 13 | **Gasket** | Stainless steel 304, NBR | |

### KK3/4/6

**<With One-touch fitting >**

**<With One-touch fitting >**




**Plug**

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Stem** | C3604 | Electroless nickel plated |
| 14 | **Cassette** | — | |
| 15 | **Seal** | NBR | |

**Series KK/KKH Spare Parts**

| Description | Part no. | No. |
|---|---|---|
| **Sleeve cover** | KK3S-P01 | Socket⑰ |
| | KK4S-P01 | |
| | KK6S-P01 | |

**Socket**

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Body** | C3604 | Electroless nickel plated |
| 2 | **Valve** | PBT | |
| 3 | **Valve seat** | PBT | |
| 4 | **Collar** | PBT | |
| 5 | **Spacer** | PBT | |
| 6 | **Lock ring** | Shock absorbent PBT | |
| 7 | **Sleeve** | Cold rolled carbon steel sheet | Electroless nickel plated |
| 8 | **Chuck** | Stainless steel 304 | |
| 9 | **Valve O-ring** | FKM | |
| 10 | **Valve seat O-ring** | NBR | |
| 11 | **Plug O-ring** | NBR | |
| 12 | **Valve spring** | Stainless steel 304 | |
| 13 | **Sleeve spring** | Stainless steel 304 | |
| 14 | **Cassette** | — | |
| 15 | **Seal** | NBR | |
| 16 | **Collar 2** | Stainless steel 304 | |
| 17 | **Sleeve cover** | Weather resistant NBR | |

## Dimensions/Plug (P)

### Male thread type

(mm)

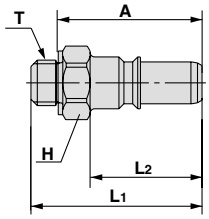
KK2

KK3/4/6

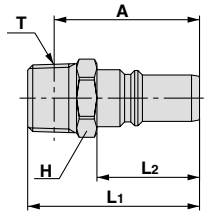
| Body size | Model | T Connection port size | H Width across flats | $L_1$ | $L_2$ | A* | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| M5 | **KK2P-M5M** | M5 x 0.8 | 7 | 18.8 | 12.3 | 15.8 | 2.5 | 4.4 | 2.6 |
| | **-01MS** | R 1/8 | 10 | 22.3 | | 19.2 | 3.4 | 8.1 | 3.0 |
| 1/8 | **KK3P-01MS** | R 1/8 | | 29.5 | 18.4 | 26.4 | 6.0 | 22.6 | 8.4 |
| | **-02MS** | R 1/4 | 14 | 32.9 | | 27.4 | | | 14.2 |
| | **-03MS** | R 3/8 | 17 | 34.3 | 19.9 | 28.9 | | | 28.1 |
| 1/4 | **KK4P-01MS** | R 1/8 | 14 | 36.1 | 25.2 | 33.0 | | | 17.0 |
| | **-02MS** | R 1/4 | | 39.7 | | 34.2 | 9.0 | 50.9 | 20.2 |
| | **-03MS** | R 3/8 | 17 | 41.1 | | 35.7 | | | 32.5 |
| | **-04MS** | R 1/2 | 22 | 45.3 | | 38.2 | | | 57.4 |
| 1/2 | **KK6P-03MS** | R 3/8 | 19 | 46.9 | 31.0 | 41.5 | 11.0 | 76.0 | 44.7 |
| | **-04MS** | R 1/2 | 22 | 51.1 | | 44.0 | 13.0 | 106.2 | 53.7 |
| | **-06MS** | R 3/4 | 27 | 55 | | 45.5 | | | 94.4 |

* Reference dimension for R threads after installation.

KK2



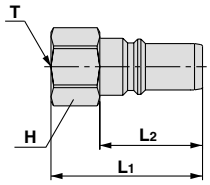

KK3/4/6




### Female thread type

(mm)

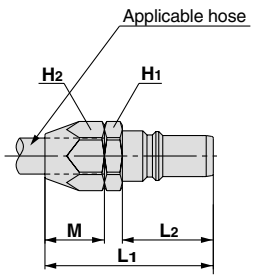
| Body size | Model | T Connection port size | H Width across flats | $L_1$ | $L_2$ | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|
| M5 | **KK2P-M5F** | M5 x 0.8 | 8 | 17.6 | 12.3 | 3.4 | 8.1 | 2.6 |
| 1/8 | **KK3P-01F** | Rc 1/8 | 14 | 28.3 | 18.4 | 6.0 | 22.6 | 10.4 |
| | **-02F** | Rc 1/4 | 17 | 33.5 | 19.9 | | | 20.8 |
| | **-03F** | Rc 3/8 | 19 | 35.3 | | | | 23.2 |
| 1/4 | **KK4P-02F** | Rc 1/4 | 17 | 37.2 | 25.2 | 9.0 | 50.9 | 23.9 |
| | **-03F** | Rc 3/8 | 19 | 39.8 | | | | 24.6 |
| 1/2 | **KK6P-03F** | | | 43.3 | 31.0 | 13.0 | 106.2 | 28.6 |
| | **-04F** | Rc 1/2 | 24 | 50.2 | | | | 43.9 |




### Nut fitting type (for fiber reinforced urethane hose)

(mm)

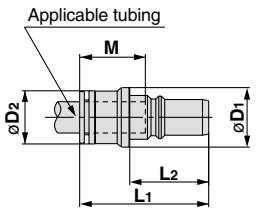
| Body size | Model | Applicable hose I.D./O.D. | $H_1$ Width across flats | $H_2$ Width across flats | $L_1$ | $L_2$ | M | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/8 | **KK3P-50N** | 5/8 | 14 | 14 | 36.1 | 18.4 | 13.7 | 4.5 | 12.7 | 21.4 |
| | **-60N** | 6/9 | 17 | 17 | 39.9 | | 16.5 | 5.4 | 18.3 | 38.8 |
| | **-65N** | 6.5/10 | | | | | | 5.9 | 21.9 | 35.9 |
| 1/4 | **KK4P-50N** | 5/8 | 17 | 14 | 43.9 | 25.2 | 13.7 | 4.5 | 12.7 | 34.7 |
| | **-60N** | 6/9 | | 17 | 46.7 | | 16.5 | 5.4 | 18.3 | 48.4 |
| | **-65N** | 6.5/10 | | | | | | 5.9 | 21.9 | 45.1 |
| | **-80N** | 8/12 | 19 | 19 | 47.6 | | 17.4 | 7.4 | 34.4 | 53.2 |
| | **-85N** | 8.5/12.5 | | | | | | 7.8 | 38.2 | 55.6 |
| 1/2 | **KK6P-80N** | 8/12 | | | 53.4 | 31.0 | | 7.4 | 34.4 | 60.5 |
| | **-85N** | 8.5/12.5 | | | | | | 7.8 | 38.2 | 62.8 |
| | **-110N** | 11/16 | 24 | 24 | 57.2 | | 20.1 | 10.2 | 65.4 | 96.5 |



## Straight type with One-touch fitting

(mm)

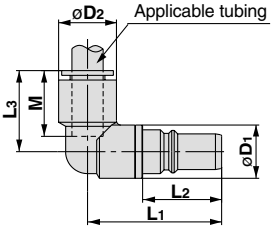
| Body size | Model | Applicable tubing O.D. | øD1 | øD2 | L1 | L2 | M | Min. bore size | Effective area mm² Urethane tubing | Effective area mm² Nylon tubing | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M5 | KK2P-23H | ø3.2 | 10.0 | 7.0 | 23.7 | 12.3 | 12.7 | 2.5 | 3.7 | 4.4 | 3.3 |
| | -04H | ø4 | | 8.0 | | | | 3.4 | 8.1 | 8.1 | 3.4 |
| | -06H | ø6 | | 10.0 | 26.7 | | 13.5 | | | | 4.0 |
| 1/8 | KK3P-04H | ø4 | 12.0 | 10.0 | 35.4 | 18.4 | 16.0 | 3.2 | 3.9 | 5.6 | 7.9 |
| | -06H | ø6 | 14.0 | 12.0 | | | 17.0 | 4.7 | 10.1 | 12.8 | 9.1 |
| | -08H | ø8 | 16.0 | 14.0 | 38.6 | | 18.5 | 6.0 | 15.7 | 22.6 | 13.2 |
| | -10H | ø10 | 19.0 | 17.0 | 39.7 | | 21.0 | | 22.6 | | 17.6 |
| 1/4 | KK4P-06H | ø6 | 14.0 | 12.0 | 46.2 | 25.2 | 17.0 | 4.7 | 10.1 | 12.8 | 22.3 |
| | -08H | ø8 | 16.0 | 14.0 | | | 18.5 | 6.2 | 19.8 | 22.6 | 23.0 |
| | -10H | ø10 | 19.0 | 17.0 | | | 21.0 | 7.7 | 27.6 | 35.3 | 27.1 |
| | -12H | ø12 | 21.0 | 19.0 | 47.5 | | 22.0 | 9.0 | 40.2 | 50.9 | 30.0 |
| 1/2 | KK6P-12H | | | | 56.1 | 31.0 | | 9.2 | 41.2 | | 44.4 |
| | -16H | ø16 | 26.0 | 23.8 | | | 25.0 | 13.0 | — | 106.2 | 50.7 |




## Elbow type with One-touch fitting

(mm)

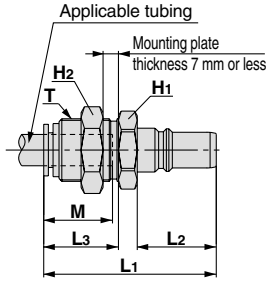
| Body size | Model | Applicable tubing O.D. | øD1 | øD2 | L1 | L2 | L3 | M | Min. bore size | Effective area mm² Urethane tubing | Effective area mm² Nylon tubing | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M5 | KK2P-23L | ø3.2 | 10.0 | 9.3 | 24.0 | 12.3 | 16.5 | 12.7 | 2.5 | 3.6 | 4.3 | 5.8 |
| | -04L | ø4 | | | | | | | | | | |
| | -06L | ø6 | | 11.6 | 25.1 | | 16.6 | 13.5 | 3.4 | 7.8 | 7.8 | 6.4 |
| 1/8 | KK3P-04L | ø4 | | 10.4 | 31.6 | 18.4 | 18.0 | 16.0 | 3.0 | 3.7 | 5.3 | 7.2 |
| | -06L | ø6 | | 12.8 | 32.8 | | 20.0 | 17.0 | 4.5 | 10.1 | 11.4 | 8.0 |
| | -08L | ø8 | 12.0 | 15.2 | 34.0 | | 23.0 | 18.5 | 6.0 | 15.0 | 16.8 | 9.7 |
| | -10L | ø10 | 17.0 | 18.5 | 36.0 | | 26.5 | 21.0 | | 18.0 | 18.5 | 23.0 |
| 1/4 | KK4P-06L | ø6 | 14.0 | 12.8 | 40.2 | 25.2 | 20.0 | 17.0 | 4.5 | 10.1 | 11.4 | 19.6 |
| | -08L | ø8 | | 15.2 | 41.4 | | 23.0 | 18.5 | 6.0 | 17.5 | 19.8 | 21.3 |
| | -10L | ø10 | 17.0 | 18.5 | 42.8 | | 26.5 | 21.0 | 7.5 | 24.7 | 27.5 | 25.7 |
| | -12L | | | 20.9 | 44.0 | | 28.5 | 22.0 | 9.0 | 29.0 | 29.6 | 28.0 |
| 1/2 | KK6P-12L | ø12 | 19.0 | | 49.9 | 31.0 | | | | 38.1 | 39.7 | 40.3 |
| | -16L | ø16 | 21.0 | 26.5 | 53.5 | | 34.0 | 25.0 | 13.0 | — | 58.7 | 48.7 |




## Bulkhead type with One-touch fitting

(mm)

| Body size | Model | Applicable tubing O.D. | T Threads | H1 Width across flats | H2 Width across flats | L1 | L2 | L3 | M | Min. bore size | Effective area mm² Urethane tubing | Effective area mm² Nylon tubing | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M5 | KK2P-23E | ø3.2 | M8 x 0.75 | 10 | 10 | 28.3 | 12.3 | 12.5 | 12.7 | 2.5 | 3.7 | 4.4 | 6.0 |
| | -04E | ø4 | M9 x 0.75 | | 11 | | | | | 3.4 | 8.1 | 8.1 | 6.6 |
| | -06E | ø6 | M11 x 0.75 | 14 | 14 | 28.6 | | 12.7 | 13.5 | | | | 9.7 |
| 1/8 | KK3P-04E | ø4 | M12 x 1 | | | 39.3 | 18.4 | 16.9 | 16.0 | 3.2 | 3.9 | 5.6 | 16.6 |
| | -06E | ø6 | M14 x 1 | 17 | 17 | 40.2 | | 16.8 | 17.0 | 4.7 | 10.1 | 12.8 | 22.3 |
| | -08E | ø8 | M16 x 1 | | 19 | 43.4 | | 20.0 | 18.5 | 6.0 | 15.7 | 22.6 | 30.2 |
| | -10E | ø10 | M20 x 1 | 22 | 24 | 46.4 | | 22.0 | 21.0 | | 22.6 | | 54.7 |
| 1/4 | KK4P-06E | ø6 | M14 x 1 | 17 | 17 | 47.0 | 25.2 | 16.8 | 17.0 | 4.7 | 10.1 | 12.8 | 30.6 |
| | -08E | ø8 | M16 x 1 | | 19 | 50.2 | | 20.0 | 18.5 | 6.2 | 19.8 | 22.6 | 38.2 |
| | -10E | ø10 | M20 x 1 | 22 | 24 | 53.2 | | 22.0 | 21.0 | 7.7 | 27.6 | 35.3 | 61.4 |
| | -12E | ø12 | M22 x 1 | 24 | 27 | 54.2 | | 23.0 | 22.0 | 9.0 | 40.2 | 50.9 | 75.2 |
| 1/2 | KK6P-12E | | | | | 60.1 | 31.0 | | | 9.2 | 41.2 | | 86.1 |
| | -16E | ø16 | M28 x 1.5 | 30 | 32 | 62.6 | | 24.5 | 25.0 | 13.0 | — | 106.2 | 125.0 |



## Dimensions/Socket (S)

### Male thread type

(mm)

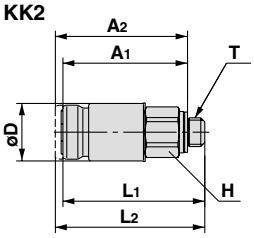
KK2

KK3/4/6

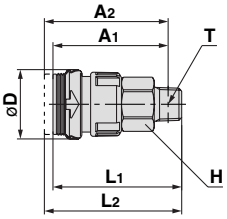
| Body size | Model | T Connection port size | H Width across flats | øD | L1 | L2 When connected | A1* | A2* When connected | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M5 | KK2S-M5M | M5 x 0.8 | 8 | 10.0 | 24.7 | 26.2 | 21.7 | 23.7 | 2.5 | 3.8 | 6.1 |
| | -01MS | R 1/8 | 10 | | 24.4 | 25.9 | | 22.8 | 4.7 | 5.8 | 9.1 |
| 1/8 | KK3S-01MS | R 1/8 | 14 | 20.2 | 36.6 | 39.1 | 33.5 | 36.0 | 6.0 | 20.4 | 20.1 |
| | -02MS | R 1/4 | | | 37.0 | 39.5 | 31.5 | 34.0 | 9.0 | 21.1 | 19.2 |
| | -03MS | R 3/8 | 17 | | 37.6 | 40.1 | 32.2 | 34.5 | | | 29.0 |
| 1/4 | KK4S-01MS | R 1/8 | 19 | 28.0 | 49.5 | 53.2 | 46.4 | 50.1 | 6.0 | 22.9 | 47.5 |
| | -02MS | R 1/4 | | | 50.5 | 54.2 | 45.0 | 48.7 | 9.0 | 38.9 | 44.1 |
| | -03MS | R 3/8 | | | 48.9 | 52.6 | 43.5 | 47.2 | 11.0 | 40.4 | 50.9 |
| | -04MS | R 1/2 | 22 | | 48.8 | 52.5 | 41.7 | 45.4 | 13.0 | 42.7 | 61.2 |
| 1/2 | KK6S-03MS | R 3/8 | 24 | 31.6 | 59.1 | 64.4 | 53.7 | 59.0 | 11.0 | 71.7 | 87.9 |
| | -04MS | R 1/2 | | | 59.3 | 64.6 | 52.2 | 57.5 | 13.0 | 82.3 | 90.1 |
| | -06MS | R 3/4 | 27 | | 60.2 | 65.5 | 50.7 | 56.0 | 15.0 | 83.8 | 113.3 |

* Reference dimension for R threads after installation.

KK2




KK3/4/6




### Female thread type

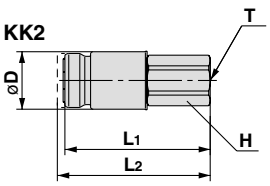
(mm)

KK2

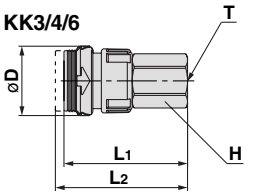
KK3/4/6

| Body size | Model | T Connection port size | H Width across flats | øD | L1 | L2 When connected | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| M5 | KK2S-M5F | M5 x 0.8 | 8 | 10.0 | 25.3 | 26.8 | 4.2 | 5.4 | 6.4 |
| 1/8 | KK3S-01F | Rc 1/8 | 14 | 20.2 | 36.0 | 38.5 | 8.2 | 20.6 | 23.6 |
| | -02F | Rc 1/4 | 17 | | 40.1 | 42.6 | | 21.1 | 34.4 |
| | -03F | Rc 3/8 | | | 41.9 | 44.4 | | | 38.8 |
| 1/4 | KK4S-02F | Rc 1/4 | 19 | 28.0 | 50.4 | 54.1 | 10.9 | 39.6 | 56.9 |
| | -03F | Rc 3/8 | | | 51.1 | 54.8 | 14.4 | 42.7 | 46.2 |
| 1/2 | KK6S-03F | | 24 | 31.6 | 58.6 | 63.9 | | 83.1 | 93.6 |
| | -04F | Rc 1/2 | | | 61.0 | 66.3 | 18.0 | 83.8 | 87.4 |

KK2



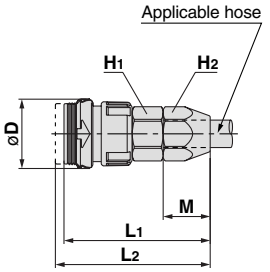

KK3/4/6




### Nut fitting type (for fiber reinforced urethane hose)

(mm)

| Body size | Model | Applicable hose I.D./O.D. | H1 Width across flats | H2 Width across flats | øD | L1 | L2 When connected | M | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/8 | KK3S-50N | 5/8 | 14 | 14 | 20.2 | 42.6 | 45.1 | 13.7 | 4.5 | 12.2 | 32.1 |
| | -60N | 6/9 | 17 | 17 | | 44.4 | 46.9 | 16.5 | 5.4 | 18.3 | 48.7 |
| | -65N | 6.5/10 | | | | | | | 5.9 | 19.2 | 46.4 |
| 1/4 | KK4S-50N | 5/8 | 19 | 14 | 28.0 | 54.1 | 57.8 | 13.7 | 4.5 | 12.2 | 55.8 |
| | -60N | 6/9 | | 17 | | 56.8 | 60.5 | 16.5 | 5.4 | 20.4 | 69.3 |
| | -65N | 6.5/10 | | | | | | | 5.9 | 24.1 | 66.8 |
| | -80N | 8/12 | | 19 | | 55.4 | 59.1 | 17.4 | 7.4 | 35.1 | 68.5 |
| | -85N | 8.5/12.5 | | | | | | | 7.8 | 36.6 | 71.1 |
| 1/2 | KK6S-80N | 8/12 | 24 | | 31.6 | 66.0 | 71.3 | | 7.4 | | 107.5 |
| | -85N | 8.5/12.5 | | | | | | | 7.8 | 41.2 | 110.2 |
| | -110N | 11/16 | | 24 | | 64.4 | 69.7 | 20.1 | 10.2 | 68.4 | 119.8 |



## Straight type with One-touch fitting

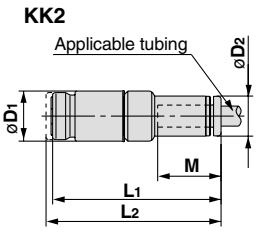
(mm)

**KK2**

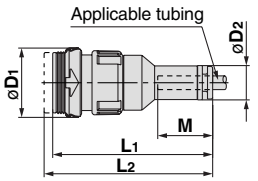
**KK3/4/6**

| Body size | Model | Applicable tubing O.D. | øD1 | øD2 | L1 | L2 When connected | M | Min. bore size | Effective area mm² Urethane tubing | Effective area mm² Nylon tubing | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M5 | **KK2S-23H** | ø3.2 | 10.0 | 7.0 | 33.8 | 35.3 | 12.7 | 2.5 | 3.8 | 4.6 | 6.4 |
| | **-04H** | ø4 | | 8.0 | 33.6 | 35.1 | | 3.4 | 4.0 | 4.8 | 6.5 |
| | **-06H** | ø6 | | 10.0 | 33.9 | 35.4 | 13.5 | 4.7 | 5.8 | 5.8 | 7.9 |
| 1/8 | **KK3S-04H** | ø4 | 20.2 | 10.0 | 46.6 | 49.1 | 16.0 | 3.2 | 3.8 | 5.8 | 22.5 |
| | **-06H** | ø6 | | 12.0 | 47.1 | 49.6 | 17.0 | 4.7 | 10.4 | 13.4 | 24.4 |
| | **-08H** | ø8 | | 14.0 | 48.9 | 51.4 | 18.5 | 6.2 | 16.8 | 18.9 | 27.3 |
| | **-10H** | ø10 | | 17.0 | 49.9 | 52.4 | 21.0 | 7.7 | 19.1 | 19.1 | 37.1 |
| 1/4 | **KK4S-06H** | ø6 | 28.0 | 12.0 | 58.2 | 61.9 | 17.0 | 4.7 | 10.4 | 13.4 | 51.4 |
| | **-08H** | ø8 | | 14.0 | 60.1 | 63.8 | 18.5 | 6.2 | 18.3 | 21.8 | 51.3 |
| | **-10H** | ø10 | | 17.0 | 61.5 | 65.2 | 21.0 | 7.7 | 27.0 | 29.4 | 54.8 |
| | **-12H** | ø12 | | 19.0 | 62.5 | 66.2 | 22.0 | 9.2 | 30.5 | 32.0 | 59.4 |
| 1/2 | **KK6S-12H** | | 31.6 | | 70.1 | 75.4 | | | 42.7 | 48.8 | 84.1 |
| | **-16H** | ø16 | | 25.7 | 72.3 | 77.6 | 25.0 | 13.2 | 53.4 | 62.5 | 99.9 |

**KK2**




**KK3/4/6**

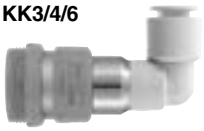



## Elbow type with One-touch fitting

(mm)

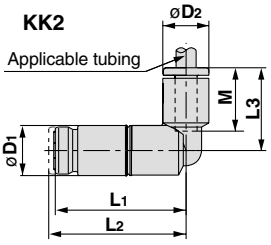
**KK2**

**KK3/4/6**

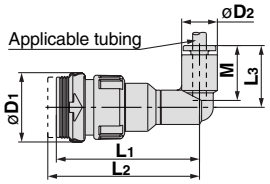


| Body size | Model | Applicable tubing O.D. | øD1 | øD2 | L1 | L2 When connected | L3 | M | Min. bore size | Effective area mm² Urethane tubing | Effective area mm² Nylon tubing | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M5 | **KK2S-23L** | ø3.2 | 10.0 | 9.3 | 26.0 | 27.5 | 16.5 | 12.7 | 2.5 | 3.7 | 4.4 | 6.7 |
| | **-04L** | ø4 | | | | | | | | | | |
| | **-06L** | ø6 | | 11.6 | 27.2 | 28.3 | 16.6 | 13.5 | 4.5 | 5.6 | 5.6 | 7.2 |
| 1/8 | **KK3S-04L** | ø4 | 20.2 | 10.4 | 41.7 | 44.2 | 18.0 | 16.0 | 3.0 | 3.7 | 5.3 | 23.2 |
| | **-06L** | ø6 | | 12.8 | 42.9 | 45.4 | 20.0 | 17.0 | 4.5 | 10.1 | 11.4 | 24.0 |
| | **-08L** | ø8 | | 15.2 | 43.1 | 45.6 | 23.0 | 18.5 | 6.0 | 15.0 | 16.8 | 25.0 |
| | **-10L** | ø10 | | 18.5 | 42.9 | 45.4 | 26.5 | 21.0 | 7.5 | 18.0 | 18.5 | 34.4 |
| 1/4 | **KK4S-06L** | ø6 | 28.0 | 12.8 | 54.3 | 58.0 | 20.0 | 17.0 | 4.5 | 10.1 | 11.4 | 53.5 |
| | **-08L** | ø8 | | 15.2 | 55.5 | 59.2 | 23.0 | 18.5 | 6.0 | 17.5 | 19.8 | 53.1 |
| | **-10L** | ø10 | | 18.5 | 54.2 | 57.9 | 26.5 | 21.0 | 7.5 | 24.7 | 27.5 | 54.7 |
| | **-12L** | ø12 | | 20.9 | 55.4 | 59.1 | 28.5 | 22.0 | 9.0 | 29.0 | 29.6 | 57.0 |
| 1/2 | **KK6S-12L** | | 31.6 | | 66.3 | 71.6 | | | 13.0 | 38.1 | 39.7 | 91.4 |
| | **-16L** | ø16 | | 26.5 | 66.9 | 72.2 | 34.0 | 25.0 | | 50.3 | 58.7 | 93.5 |

**KK2**




**KK3/4/6**




## Bulkhead type with One-touch fitting

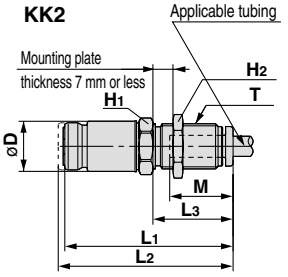
(mm)

**KK2**

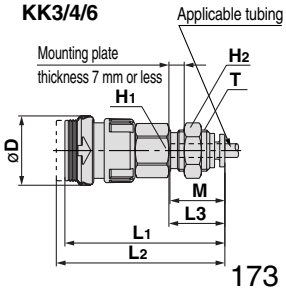
**KK3/4/6**

| Body size | Model | Applicable tubing O.D. | T Threads | H1 Width across flats | H2 Width across flats | øD | L1 | L2 When connected | L3 | M | Min. bore size | Effective area mm² Urethane tubing | Effective area mm² Nyrlon tubing | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M5 | **KK2S-23E** | ø3.2 | M8 x 0.75 | 10 | 10 | 10.0 | 33.8 | 35.3 | 13.0 | 12.7 | 2.5 | 3.8 | 4.6 | 9.6 |
| | **-04E** | ø4 | M9 x 0.75 | | 11 | | 33.5 | 35.0 | | | 3.4 | 4.0 | 4.8 | 9.1 |
| | **-06E** | ø6 | M11 x 0.75 | 14 | 14 | | 33.9 | 35.4 | 13.1 | 13.5 | 4.7 | 5.8 | 5.8 | 12.6 |
| 1/8 | **KK3S-04E** | ø4 | M12 x 1 | | 14 | 20.2 | 46.6 | 49.1 | 16.9 | 16.0 | 3.2 | 3.8 | 5.8 | 29.0 |
| | **-06E** | ø6 | M14 x 1 | 17 | 17 | | 47.1 | 49.6 | 16.8 | 17.0 | 4.7 | 10.4 | 13.4 | 39.4 |
| | **-08E** | ø8 | M16 x 1 | | 19 | | 49.0 | 51.5 | 20.0 | 18.5 | 6.2 | 16.8 | 18.9 | 43.4 |
| | **-10E** | ø10 | M20 x 1 | 22 | 24 | | 49.9 | 52.4 | 22.0 | 21.0 | 7.7 | 19.1 | 19.1 | 68.3 |
| 1/4 | **KK4S-06E** | ø6 | M14 x 1 | 19 | 17 | 28.0 | 58.2 | 61.9 | 16.8 | 17.0 | 4.7 | 10.4 | 13.4 | 57.2 |
| | **-08E** | ø8 | M16 x 1 | | 19 | | 60.1 | 63.8 | 20.0 | 18.5 | 6.2 | 18.3 | 21.8 | 60.6 |
| | **-10E** | ø10 | M20 x 1 | 22 | 24 | | 61.7 | 65.4 | 22.0 | 21.0 | 7.7 | 27.0 | 29.4 | 86.8 |
| | **-12E** | ø12 | M22 x 1 | 24 | 27 | | 62.7 | 66.4 | 23.0 | 22.0 | 9.2 | 30.5 | 32.0 | 105.7 |
| 1/2 | **KK6S-12E** | | | | | 31.6 | 70.1 | 75.4 | 24.5 | 25.0 | | 42.7 | 48.8 | 116.0 |
| | **-16E** | ø16 | M28 x 1.5 | 30 | 32 | | 72.5 | 77.8 | | | 13.2 | 53.4 | 62.5 | 183.2 |

**KK2**

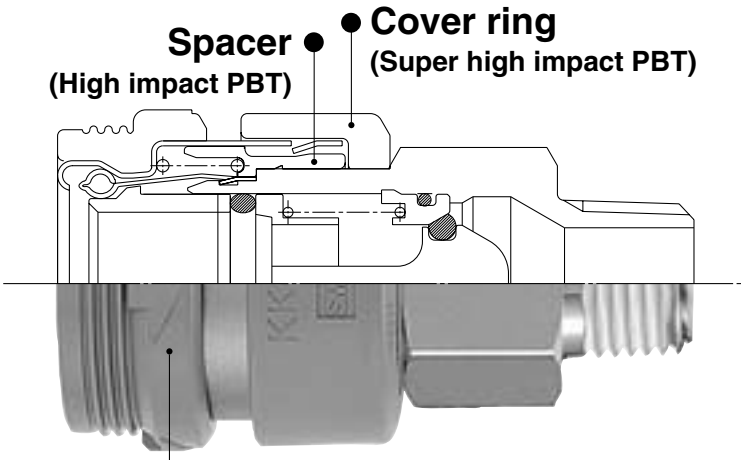



**KK3/4/6**



# Series KKH

- **Able to absorb drop impact (equivalent to impact energy of 0.5 J).**
- **The pulling strength for the plugs and sockets has been improved. Twice as strong as the conventional models.**




- **Same effective sectional area as that of Series KK.**

## Plug (P)

### Male thread type

| Body size | Connection port size | Part no. |
|---|---|---|
| 1/8 | R 1/8 | **KK3P-01MS** |
| | R 1/4 | **-02MS** |
| | R 3/8 | **-03MS** |
| 1/4 | R 1/8 | **KK4P-01MS** |
| | R 1/4 | **-02MS** |
| | R 3/8 | **-03MS** |
| | R 1/2 | **-04MS** |

### Female thread type

| Body size | Connection port size | Part no. |
|---|---|---|
| 1/8 | Rc 1/8 | **KK3P-01F** |
| | Rc 1/4 | **-02F** |
| | Rc 3/8 | **-03F** |
| 1/4 | Rc 1/4 | **KK4P-02F** |
| | Rc 3/8 | **-03F** |

### Nut fitting type (for fiber reinforced urethane hose)

| Body size | Applicable hose I.D./O.D. mm | Part no. |
|---|---|---|
| 1/8 | 5/8 | **KK3P-50N** |
| | 6/9 | **-60N** |
| | 6.5/10 | **-65N** |
| 1/4 | 5/8 | **KK4P-50N** |
| | 6/9 | **-60N** |
| | 6.5/10 | **-65N** |
| | 8/12 | **-80N** |
| | 8.5/12.5 | **-85N** |

## Socket (S)

### Male thread type

| Body size | Connection port size | Part no. |
|---|---|---|
| 1/8 | R 1/8 | **KKH3S-01MS** |
| | R 1/4 | **-02MS** |
| | R 3/8 | **-03MS** |
| 1/4 | R 1/8 | **KKH4S-01MS** |
| | R 1/4 | **-02MS** |
| | R 3/8 | **-03MS** |
| | R 1/2 | **-04MS** |

### Female thread type

| Body size | Connection port size | Part no. |
|---|---|---|
| 1/8 | Rc 1/8 | **KKH3S-01F** |
| | Rc 1/4 | **-02F** |
| | Rc 3/8 | **-03F** |
| 1/4 | Rc 1/4 | **KKH4S-02F** |
| | Rc 3/8 | **-03F** |

### Nut fitting type (for fiber reinforced urethane hose)

| Body size | Applicable hose I.D./O.D. mm | Part no. |
|---|---|---|
| 1/8 | 5/8 | **KKH3S-50N** |
| | 6/9 | **-60N** |
| | 6.5/10 | **-65N** |
| 1/4 | 5/8 | **KKH4S-50N** |
| | 6/9 | **-60N** |
| | 6.5/10 | **-65N** |
| | 8/12 | **-80N** |
| | 8.5/12.5 | **-85N** |

Series KKH are only available as sockets.
Series KK should be used as plugs.

# S Couplers
# Series KKH

RoHS

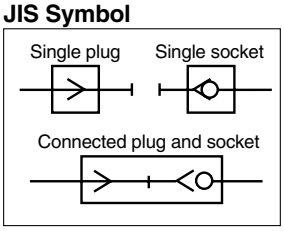


## Specifications

| | |
|---|---|
| **Fluid** | Air, Water |
| **Operating pressure range** Note) | KKH3: –90 kPa to 1 MPa<br>KKH4: 0 to 1 MPa |
| **Proof pressure** | 1.5 MPa |
| **Ambient and fluid temperature** | Air: –5 to 60°C<br>Water: 5 to 40°C<br>(No freezing) |
| **Plating, Sealant** | Electroless nickel plated (copper-free and fluorine-free application), With male thread sealant |
| **Connection plug** | Series KK plug |

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

**JIS Symbol**




## Performance

| | |
|---|---|
| **Plug and socket connection** | One-touch connection and release |
| **Check valve** | Socket: Built-in check valve (standard) |
| **Sleeve lock mechanism** | ——— |

## Effective Area

| Body size | Plug | Socket | Effective area mm² |
|---|---|---|---|
| 1/8 | **KK3P-01MS** | **KKH3S-01MS** | 20 |
| 1/4 | **KK4P-02MS** | **KKH4S-02MS** | 39 |

The flow characteristics are the same as those of Series KK.
Please refer to page 168.

## How to Order

**KKH 4 S – 02 M S**

**Body size**

| | |
|---|---|
| **3** | 1/8 |
| **4** | 1/4 |

**Socket/Plug designation**

| | |
|---|---|
| **S** | Socket |

**With sealant (male thread)**

**Connection type**

| Symbol | Type |
|---|---|
| **M** | Male thread |
| **F** | Female thread |
| **N** | With nut fitting |

**Piping port size variation**

**Male/Female thread type**

| Symbol | Connection port size |
|---|---|
| **01** | R, Rc 1/8 |
| **02** | R, Rc 1/4 |
| **03** | R, Rc 3/8 |
| **04** | R, Rc 1/2 |

**Nut fitting type**

| Symbol | Hose I.D./O.D. mm |
|---|---|
| **50** | 5/8 |
| **60** | 6/9 |
| **65** | 6.5/10 |
| **80** | 8/12 |
| **85** | 8.5/12.5 |

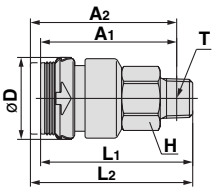
## Dimensions/Socket (S)

### Male thread type

(mm)

| Body size | Model | T Connection port size | H Width across flats | øD | L1 | L2 When connected | A1* | A2* When connected | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/8 | KKH3S-01MS | R 1/8 | 14 | 20.2 | 36.6 | 39.1 | 33.5 | 36.0 | 6.0 | 20.4 | 20.3 |
| | -02MS | R 1/4 | | | 37.0 | 39.5 | 31.5 | 34.0 | 9.0 | 21.1 | 19.4 |
| | -03MS | R 3/8 | 17 | | 37.6 | 40.1 | 32.2 | 34.5 | 9.0 | | 27.7 |
| 1/4 | KKH4S-01MS | R 1/8 | 19 | 28.0 | 49.5 | 53.2 | 46.4 | 50.1 | 6.0 | 22.9 | 48.7 |
| | -02MS | R 1/4 | | | 50.5 | 54.2 | 45.0 | 48.7 | 9.0 | 38.9 | 45.3 |
| | -03MS | R 3/8 | | | 48.9 | 52.6 | 43.5 | 47.2 | 11.0 | 40.4 | 52.1 |
| | -04MS | R 1/2 | 22 | | 48.8 | 52.5 | 41.7 | 45.4 | 13.0 | 42.7 | 62.4 |

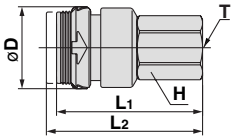
* Reference dimension for R threads after installation.




### Female thread type

(mm)

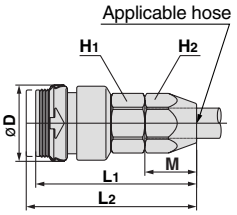
| Body size | Model | T Connection port size | H Width across flats | øD | L1 | L2 When connected | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|
| 1/8 | KKH3S-01F | Rc 1/8 | 14 | 20.2 | 36.0 | 38.5 | 8.2 | 20.6 | 23.8 |
| | -02F | Rc 1/4 | 17 | | 40.1 | 42.4 | | 21.1 | 33.1 |
| | -03F | Rc 3/8 | 19 | | 41.9 | 44.3 | | | 37.1 |
| 1/4 | KKH4S-02F | Rc 1/4 | 19 | 28.0 | 50.4 | 54.1 | 10.9 | 39.6 | 58.1 |
| | -03F | Rc 3/8 | | | 51.1 | 54.8 | 14.4 | 42.7 | 47.4 |




### Nut fitting type (for fiber reinforced urethane hose)

(mm)

| Body size | Model | Applicable hose I.D./O.D. | H1 Width across flats | H2 Width across flats | øD | L1 | L2 When connected | M | Min. bore size | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/8 | KKH3S-50N | 5/8 | 14 | 14 | 20.2 | 42.6 | 45.1 | 13.7 | 4.5 | 12.2 | 32.3 |
| | -60N | 6/9 | 17 | 17 | | 44.4 | 46.9 | 16.5 | 5.4 | 18.3 | 48.9 |
| | -65N | 6.5/10 | | | | | | | 5.9 | 19.2 | 46.6 |
| 1/4 | KKH4S-50N | 5/8 | 19 | 14 | 28.0 | 54.1 | 57.8 | 13.7 | 4.5 | 12.2 | 57.0 |
| | -60N | 6/9 | | 17 | | 56.8 | 60.5 | 16.5 | 5.4 | 20.4 | 70.5 |
| | -65N | 6.5/10 | | | | | | | 5.9 | 24.1 | 68.0 |
| | -80N | 8/12 | | 19 | | 55.4 | 59.1 | 17.4 | 7.4 | 35.1 | 69.7 |
| | -85N | 8.5/12.5 | | | | | | | 7.8 | 36.6 | 72.3 |




Series KKH are only available as sockets. Series KK should be used as plugs. For dimensions, please refer to page 170.

# Series KK13

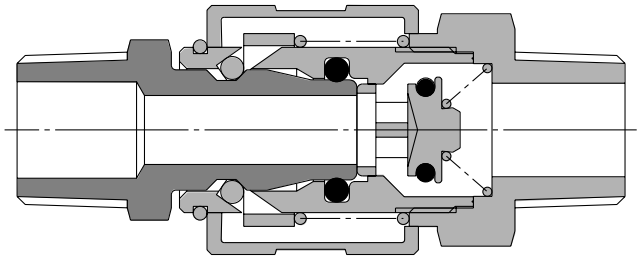
## Manufactured by RECTUS AG

RECTUS



## ● One-touch connection

- Can be connected by simply pushing the plug into the socket.
- Manipulation with one hand improves work efficiency.



## ● Flow is possible from the plug side or socket side.

## ● O-ring seal construction for outstanding air tightness and durability.

### Plug (P)

#### Male thread type

| Port size | Part no. |
|---|---|
| R 1/8 | **KK13P-01M** |
| R 1/4 | **-02M** |
| R 3/8 | **-03M** |
| R 1/2 | **-04M** |

#### Female thread type

| Port size | Part no. |
|---|---|
| Rc 1/4 | **KK13P-02F** |
| Rc 3/8 | **-03F** |
| Rc 1/2 | **-04F** |
| G 1/4 | **-G02F** |

#### Barb fitting type

| Applicable hose I.D. | Part no. |
|---|---|
| 1/4" | **KK13P-07B** |
| 1/4" | **-09B** |
| 3/8" | **-11B** |
| 1/2" | **-13B** |

#### Nut fitting type (for fiber reinforced urethane hose)

| Applicable hose I.D./O.D. | Part no. |
|---|---|
| 5/8 | **KK13P-50N** |
| 6/9 | **-60N** |
| 6.5/10 | **-65N** |
| 8/12 | **-80N** |
| 8.5/12.5 | **-85N** |
| 11/16 | **-110N** |

### Socket (S)

#### Male thread type

| Port size | Part no. |
|---|---|
| R 1/8 | **KK13S-01M** |
| R 1/4 | **-02M** |
| R 3/8 | **-03M** |
| R 1/2 | **-04M** |

#### Female thread type

| Port size | Part no. |
|---|---|
| Rc 1/4 | **KK13S-02F** |
| Rc 3/8 | **-03F** |
| Rc 1/2 | **-04F** |

#### Barb fitting type

| Applicable hose I.D. | Part no. |
|---|---|
| 1/4" | **KK13S-07B** |
| 1/4" | **-09B** |
| 3/8" | **-11B** |
| 1/2" | **-13B** |

#### Nut fitting type (for fiber reinforced urethane hose)

| Applicable hose I.D./O.D. | Part no. |
|---|---|
| 5/8 | **KK13S-50N** |
| 6/9 | **-60N** |
| 6.5/10 | **-65N** |
| 8/12 | **-80N** |
| 8.5/12.5 | **-85N** |
| 11/16 | **-110N** |

# S Couplers

RoHS

# Series KK13

**Manufactured by RECTUS AG**

## Specifications

| | |
|---|---|
| **Fluid** | Air Note) |
| **Operating pressure range** | 0 to 1.5 MPa |
| **Proof pressure** | 2 MPa |
| **Ambient and fluid temperature** | –5 to 60°C |
| **Plating** | Nickel plated external metal parts |

Note) Cannot be used with water.

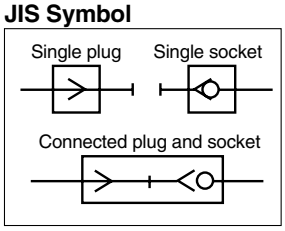
## Performance

| | |
|---|---|
| **Plug and socket connection** | One-touch connection and release |
| **Check valve** | Socket: Built-in check valve (standard) |

## Effective Area

| Body size | Plug | Socket | Effective area mm$^2$ |
|---|---|---|---|
| 1/4 | **KK13P-02M** | **KK13S-02M** | 24.1 |
| | **KK13P-03M** | **KK13S-03M** | 31.1 |

**JIS Symbol**




## How to Order

**KK 13 S – 02 M**

**Series 13**

**Socket/Plug designation**

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

**Port size variation**

**Male/Female thread type**

| Symbol | Thread size |
|---|---|
| **01** | R, Rc 1/8 |
| **02** | R, Rc 1/4 |
| **03** | R, Rc 3/8 |
| **04** | R, Rc 1/2 |
| **G02** | G 1/4 |

**Barb fitting type**

| Symbol | Hose nominal |
|---|---|
| **07** | 6(1/4") |
| **09** | 8(1/4") |
| **11** | 9(3/8") |
| **13** | 12(1/2") |

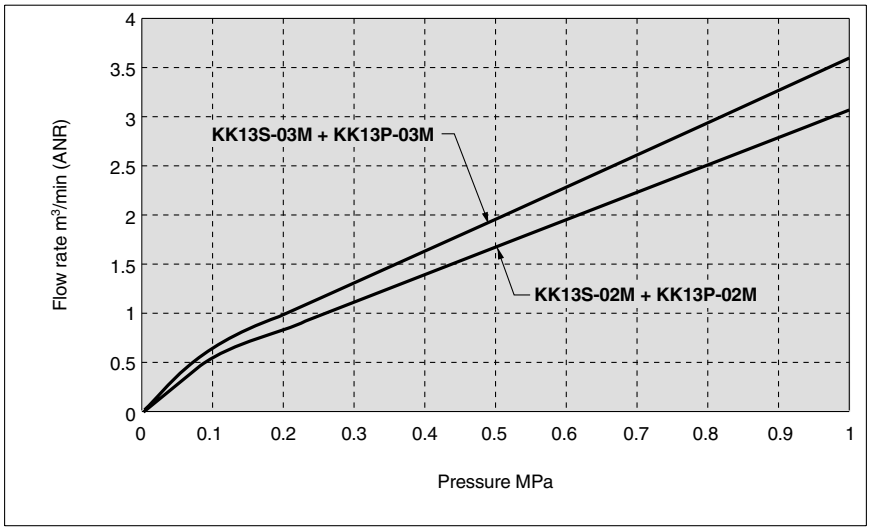
**Nut fitting type**

| Symbol | Applicable hose I.D./O.D. (mm) |
|---|---|
| **50** | 5/8 |
| **60** | 6/9 |
| **65** | 6.5/10 |
| **80** | 8/12 |
| **85** | 8.5/12.5 |
| **110** | 11/16 |

**Connection type**

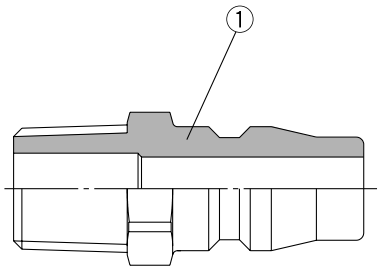
| | |
|---|---|
| **M** | Male thread |
| **F** | Female thread |
| **B** | With barb fitting |
| **N** | With nut fitting |

## Flow Characteristics

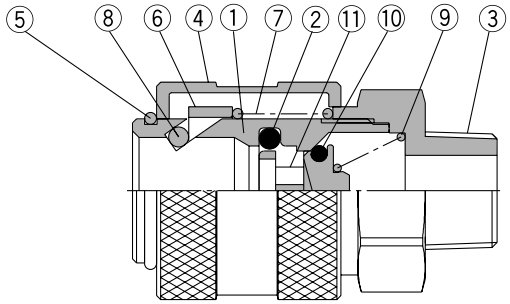




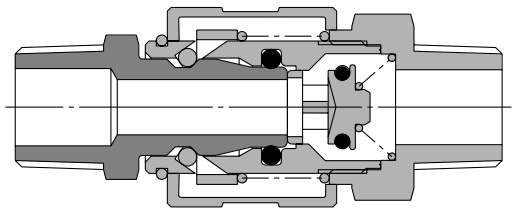

## Construction




**Plug**




**Socket**



### Plug

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Stem** | Steel | Nickel plated |

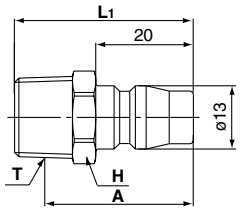
### Socket

| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Coupling body** | Brass | Nickel plated |
| 2 | **Plug O-ring** | NBR | |
| 3 | **Body** | Brass | Nickel plated |
| 4 | **Sleeve** | Brass | Nickel plated |
| 5 | **Snap ring** | Stainless steel | |
| 6 | **Collar** | Brass | |
| 7 | **Sleeve spring** | Stainless steel | |
| 8 | **Locking pin** | Stainless steel | |
| 9 | **Valve spring** | Stainless steel | |
| 10 | **Valve O-ring** | NBR | |
| 11 | **Valve** | Brass | |

## Dimensions

### Plug (P)

#### Male thread type

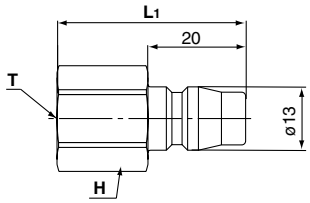



(mm)

| Model | T Connection male threads | H Width across flats | L1 | A* | Min. bore size | Effective area mm2 | Mass g |
|---|---|---|---|---|---|---|---|
| KK13P-01M | R 1/8 | 14 | 34.0 | 30.0 | 6.0 | 22.6 | 18 |
| -02M | R 1/4 | | 37.0 | 31.0 | | | 22 |
| -03M | R 3/8 | 17 | | 30.6 | 7.5 | 35.3 | 27 |
| -04M | R 1/2 | 22 | 44.0 | 35.8 | | | 51 |

* Reference dimension after installation.

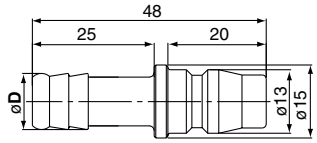
#### Female thread type




(mm)

| Model | T Connection female threads | H Width across flats | L1 | Min. bore size | Effective area mm2 | Mass g |
|---|---|---|---|---|---|---|
| KK13P-02F | Rc 1/4 | 17 | 35.5 | | | 27 |
| -03F | Rc 3/8 | 19 | 39.0 | 7.5 | 35.3 | 32 |
| -04F | Rc 1/4 | 24 | 42.5 | | | 51 |
| -G02F | G 1/4 | 17 | 32.0 | | | 27 |

#### Barb fitting type (for rubber hose)

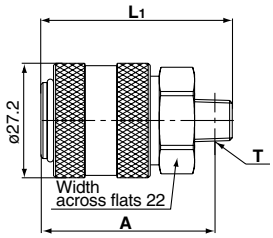



(mm)

| Model | Hose I.D. | øD | Min. bore size | Effective area mm2 | Mass g |
|---|---|---|---|---|---|
| KK13P-07B | 6(1/4") | 7.5 | 4.1 | 10.6 | 17 |
| -09B | 8(1/4") | 9.4 | 6.0 | 22.6 | 18 |
| -11B | 9(3/8") | 11.5 | 7.5 | 35.3 | 21 |
| -13B | 12(1/2") | 14.5 | | | 25 |

### Socket (S)

#### Male thread type

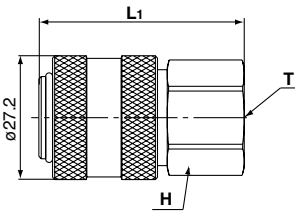



(mm)

| Model | T Connection male threads | L1 | A* | Min. bore size | Effective area mm2 | Mass g |
|---|---|---|---|---|---|---|
| KK13S-01M | R 1/8 | 45.5 | 41.5 | 6.0 | 19.0 | 81 |
| -02M | R 1/4 | 48.5 | 42.5 | 7.0 | 24.1 | 86 |
| -03M | R 3/8 | | 42.1 | 10.2 | 31.1 | 89 |
| -04M | R 1/2 | 53.0 | 44.8 | | 32.1 | 108 |

* Reference dimension after installation.

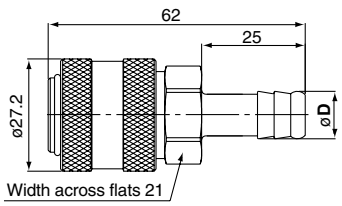
#### Female thread type




(mm)

| Model | T Connection female threads | H Width across flats | L1 | Min. bore size | Effective area mm2 | Mass g |
|---|---|---|---|---|---|---|
| KK13S-02F | Rc 1/4 | 22 | 47.0 | 10.5 | 25.7 | 103 |
| -03F | Rc 3/8 | | 52.0 | 10.2 | 31.1 | 107 |
| -04F | Rc 1/2 | 24 | 55.5 | | 32.1 | 117 |

#### Barb fitting type (for rubber hose)



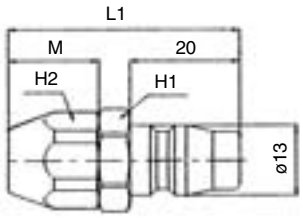

(mm)

| Model | Hose I.D. | øD | Min. bore size | Effective area mm2 | Mass g |
|---|---|---|---|---|---|
| KK13S-07B | 6(1/4") | 7.5 | 4.1 | 8.0 | 81 |
| -09B | 8(1/4") | 9.5 | 6.0 | 16.1 | 83 |
| -11B | 9(3/8") | 11.5 | 8.0 | 25.4 | |
| -13B | 12(1/2") | 14.5 | 10.2 | 31.9 | 88 |

## Dimensions

### Plug (P)

**Nut fitting type (for fiber reinforced urethane hose)**

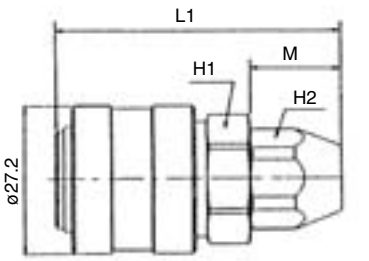



(mm)

| Model | Applicable hose I.D./O.D. | H1 Width across flats | H2 Width across flats | L1 | M | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|
| **KK13P-50N** | 5/8 | | | | | 10.6 | |
| **-60N** | 6/9 | 17 | 17 | 43.0 | 17.0 | 16.3 | 42 |
| **-65N** | 6.5/10 | | | | | | |
| **-80N** | 8/12 | 19 | 19 | 45.0 | 19.0 | 28.5 | 52 |
| **-85N** | 8.5/12.5 | | | | | | |
| **-110N** | 11/16 | 23 | 23 | 52.0 | 23.0 | 30.9 | 98 |

### Socket (S)

**Nut fitting type (for fiber reinforced urethane hose)**




(mm)

| Model | Applicable hose I.D./O.D. | H1 Width across flats | H2 Width across flats | L1 | M | Effective area mm² | Mass g |
|---|---|---|---|---|---|---|---|
| **KK13S-50N** | 5/8 | | | | | 8.5 | |
| **-60N** | 6/9 | | 17 | 53.2 | 17.0 | 14.0 | 98 |
| **-65N** | 6.5/10 | 21 | | | | | |
| **-80N** | 8/12 | | 19 | 55.2 | 19.0 | 22.9 | 105 |
| **-85N** | 8.5/12.5 | | | | | | |
| **-110N** | 11/16 | 24 | 23 | 59.2 | 23.0 | 25.0 | 142 |

# S Couplers
# 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

### ⚠ Warning

1. Make sure to confirm the specifications.
   Please do not use with pressures or temperatures outside the range of specifications, as this may result in damage and malfunction (Refer to specifications).
   SMC takes no responsibility for damage incurred by use in excess of the specification range.
2. Prohibition of disassembly and modification
   Do not disassemble or modify (including additional machining) the main body.
   False use may cause an injury or accident.
3. Confirm that PTFE can be used in application.
   Thread sealant contains PTFE (polytetrafluoroethylene) powder. Confirm if the use of it may cause any adverse effect in the system.
4. Cannot be used as a stop valve that requires zero leakage.
   A certain amount of leakage is allowed during operation.
5. Series KK and Series KKH cannot be connected with Series KKA. Also, SMC's S coupler cannot be connected with quick couplers of other brands.
   This will cause leakage, damage, and disconnection of the plug.
   With series KK13, manufactured by RECTUS AG, verify the manufacturer of applicable couplers before use.
6. Do not couple or uncouple the S coupler during pressurization or while residual pressure remains. The coupler may shoot out under the influence of the pressure.
7. Never apply pressure to an S coupler without check valve when it is uncoupled. The piping may move violently and cause danger.
8. An S coupler without check valve experiences leakage of fluid inside piping when it is uncoupled. Pay special attention in using fluid that can cause danger such as fluid of a high temperature and pressure. Additional use of a stop valve is recommended.
9. The S coupler is heated when used at a high temperature. Take precautions not to touch it since touching it can cause burns.

### ⚠ Caution

1. For a plug and socket connection, select a plug and socket with the same body size. If their body sizes are different, they cannot be connected. This will cause leakage, damage, and disconnection of the plug. Inserting a plug other than the specialized plug into the socket may result in equipment damage.
2. Do not use in locations where the connecting threads and tubing connection will slide or rotate. The connecting threads and tubing connection will come apart under these conditions.
3. Do not use couplers with flammable, explosive, or toxic substances, such as gas, gas fuel, and refrigerant. They may leak from inside the tubing to the outside.
4. Operate with a surge pressure of no more than the maximum operating pressure. If the surge pressure exceeds the maximum operating pressure, it will cause damage to couplers and tubing.
5. Do not use the S coupler with steam. Corrosion of the metal material and deterioration of the sealing material may result from long-term use with steam.

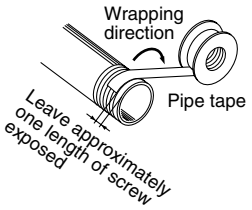
## Mounting

### ⚠ Warning

1. Mount and operate the product after reading the instruction manual carefully and understanding its contents. Also, keep the manual where it can be referred to as necessary.
2. Ensure sufficient space for maintenance.
   Be sure to allow the space required for maintenance and inspection.
3. Tightening torque
   When installing the products, please tighten the screw with the recommended tightening torque.
4. During use, tube deterioration or damage to fitting can result in disconnection of the tube from the fitting and uncontrollable behavior of the tube.
   To stop the tube from going out of control, use a protective cover or fix the tube in place.
5. Do not use couplers where rotation normally occurs. The couplers may be damaged.
6. Avoid applications in which vibration or shock is directly applied to the fittings.
7. Fittings with sleeve lock mechanism must be locked during operation in order to prevent sudden disconnection.
8. Install a stop valve at the supply pressure side of the socket. Emergency shutdown may not be possible without it.

### ⚠ Caution

1. Preparation before piping
   Before piping is connected, it should be thoroughly blown out by air (flushed) or washed to eliminate cutting chips, cutting oil, and other debris from inside the pipe.
2. Wrapping of pipe tape
   When screwing in the pipes or fittings, make sure to prevent cutting chips or the sealing material on the threaded portion of the pipe from entering the piping. Also, if pipe tape is used, leave about 1 thread ridges exposed at the end of the threads.




3. Before mounting confirm the model and size, etc. Also, confirm that there are no blemishes, nicks or cracks in the product.
4. When connecting a tube, consider factors such as changes in the tubing length due to pressure, and allow sufficient leeway.
5. Mount so that couplers and tubing are not subjected to twisting, pulling or moment loads. This can cause damage to couplers and flattening, bursting or disconnection of tubing, etc.
6. Mount so that tubing is not damaged due to tangling and abrasion. This can cause flattening, bursting or disconnection of tubing, etc.

# S Couplers
# 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.**

### Air Supply

## ⚠ Warning

1. Excessive drainage
   Compressed air containing large amounts of drainage can cause malfunction of pneumatic equipment. As a countermeasure, install an air dryer or drain catch before the filter.
2. Drain flushing
   If the drain removal from air filter is missed, drain will be flown out to the outlet side and may result in a malfunction of the pneumatic equipment. When removing drain is difficult, use of a filter with an auto drain is recommended.

Refer to SMC's “Air Cleaning Equipment” catalog for further details on compressed air quality.

3. Use clean air.
   If the compressed air includes chemicals, synthetic oils containing organic solvents, salt or corrosive gases, etc., it can cause damage or malfunctions in the system.

## ⚠ Caution

1. Install an air filter.
   Install an air filter upstream, near the valve.
   Select an air filter with a filtration degree of 5 μm or finer.
2. Compressed air containing large amounts of drainage can cause malfunction of pneumatic equipment. As a countermeasure, install an aftercooler, air dryer or drain catch.
3. Ensure that the fluid and ambient temperature are within the specified range.
   If the fluid temperature is 5°C or below, the moisture in the circuit could freeze, causing damage to the seals and leading to equipment malfunction. Therefore, take appropriate measures to prevent freezing.

Refer to SMC's “Air Cleaning Equipment” catalog for further details on compressed air quality.

### Operating Environment

## ⚠ Warning

1. Do not use in atmospheres of corrosive gases, chemicals, salt water, water, steam, or where there is direct contact with any of these.
2. Do not use in direct sunlight.
3. In locations near heat sources, protect against radiated heat.
4. Do not use in locations where static electric charges will be a problem. Consult with SMC regarding use in this kind of environment.
5. Do not use in locations where spatter occurs.
   There is a danger of spatter causing a fire. Consult with SMC regarding use in this kind of environment.

### Operating Environment

## ⚠ Warning

6. Do not use in environments where there is direct contact with liquids such as cutting oil, lubricating oil or coolant oil, etc. Consult SMC regarding use in environments where there will be direct contact with cutting oil, lubricating oil or coolant oil, etc.
7. Do not use in locations influenced by vibrations or impacts. This may cause air leakage and fitting damage. Consult SMC regarding use in this kind of environment.
8. Do not use in places or environments where foreign matter sticks to the product or gets inside the product. It may cause air leakage or tube release.

### Maintenance

## ⚠ Caution

1. Follow the procedures given in the operation manual to perform a maintenance inspection.
   Improper handling could lead to malfunction or damage the machinery and equipment.
2. Maintenance work
   If handled improperly, compressed air can be dangerous. Assembly, handling, repair and element replacement of pneumatic systems should be performed by qualified personnel only.
3. Drain flushing
   Remove drainage from air filters regularly.
4. Removal of equipment, and supply/exhaust of compressed air
   When components are removed, first confirm that measures are in place to prevent workpieces from dropping, run-away equipment, etc. Then, cut the supply pressure and power, and exhaust all compressed air from the system using the residual pressure release function.
   When machinery is restarted, proceed with caution after confirming that appropriate measures are in place to prevent cylinders from sudden movement.
5. Be absolutely sure to wear safety glasses when conducting periodic inspections.
6. Check for the following during regular maintenance, and replace components as necessary.
   a) Scratches, gouges, abrasion, corrosion
   b) Leakage
   c) Twisting, flattening or distortion of tubing
   d) Hardening, deterioration or softness of tubing
7. Do not repair or patch the replaced tubing or couplers for reuse.
   Do not disassemble the S coupler.

# S Couplers
# Specific Product Precautions 3

**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.**

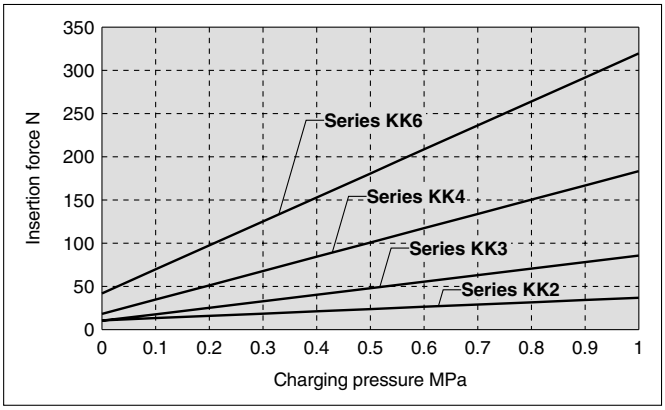
## Handling

### ⚠ Caution

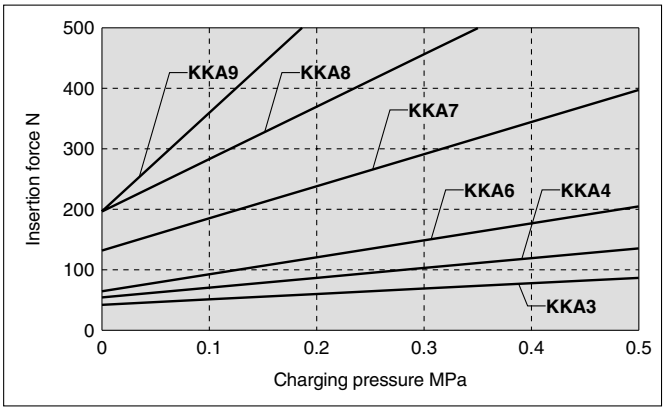
1. When connecting the plug, hold the plug securely.
   The plug may be uncoupled due to reaction at the time of connection.
2. When connecting a plug, insert it securely until a click sound is heard from the socket. After the connection, gently pull the plug to see whether it will release.
   If not securely inserted, the plug may pop out due to the pressure. Also, do not touch the sleeve until the plug is securely inserted.
   Otherwise, it may lead to a malfunction.
3. When connecting the plug, insert it straight into the socket. If not inserted straight, the socket and/or plug may be damaged or cause a malfunction.
4. When releasing the plug, hold it securely. The connection pipe may move due to reacting stress and/or residual pressure on the plug side.
5. Do not press the inside of the socket with an incompatible plug and/or with a stick. The internal fluid may be ejected and cause a dangerous situation. Also, the ejecting internal fluid may cause the sealings to come apart resulting in the product not functioning.

## Plug Insertion Force in Pressurized Condition

### Insertion Force of Series KK




### Insertion Force of Series KKA




## Handling of One-touch Fittings

### ⚠ Caution

1. Tube attachment/detachment for One-touch fittings
   1) Attaching 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. If cutting is done with tools other than tubing cutters, the tubing may be cut diagonally or become flattened, etc. This can make a secure installation impossible, and cause problems such as the tubing pulling out after installation or air leakage. Allow some extra length in the tubing.
      (2) Outside diameter of polyurethane tubing is swelled by applying internal pressure. As such, it may be that the tubing cannot be re-inserted into a one-touch fittings. Make sure to confirm the tubing outside diameter, and when the accuracy of the outside diameter is more than + 0.15, insert into a one-touch fitting again, not cutting the tubing to use it. When tubing is re-inserted into a one-touch fitting, make sure to confirm that the tubing was able to go through the release bushing smoothly.
      (3) Grasp the tubing and push it in slowly, inserting it securely all the way into the fitting.
      (4) After inserting the tubing, pull on it lightly to confirm that it will not come out. If it is not installed securely all the way into the fitting, this can cause problems such as air leakage or the tubing pulling out.
      (5) When attaching tubes, resin plugs, metal rods, etc., do not push the release button while attaching.
      Also, do not push the release button before attaching. This may cause releasing.
   2) Detaching of tubing
      (1) Push in the release bushing sufficiently. When doing this, push the collar evenly.
      (2) Pull out the tubing while holding down the release bushing so that it does not come out. If the release bushing is not pressed down sufficiently, there will be increased bite on the tubing and it will become more difficult to pull it out.
      (3) When the removed tubing is to be used again, cut off the portion which has been chewed before reusing it. If the chewed portion of the tubing is used as is, this can cause trouble such as air leakage or difficulty in removing the tubing.
   3) When attaching resin plugs or metal rods to the tube, do not push the release button while attaching. This may cause releasing.
   4) Connecting products with attached metal rods
      (1) After attaching products with attached metal rods such as the KC series, to the one-touch fitting, please do not use tubes, resin plugs, or reducers, etc. This may cause releasing.

# S Couplers
# Specific Product Precautions 4

**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.**

## Recommended piping conditions

1. When installing piping in the one-touch fitting, please make sure there is sufficient slack to the tube length as per the recommended piping conditions shown in Figure 1.
   Also, when binding pipes together with a unifying band, etc., make sure piping is carried out without receiving external force (See Fig. 2).

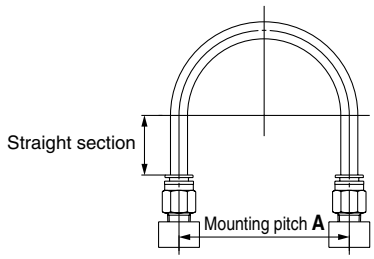



**Fig. 1 Recommended piping**

Unit: mm

| Tubing size | Mounting pitch **A** | | | Straight section |
|---|---|---|---|---|
| | Nylon tube | Soft nylon tube | Polyurethane tube | |
| ø3.2, 1/8" | 44 or more | 29 or more | 25 or more | 16 or more |
| ø4, 5/32" | 56 or more | 30 or more | 26 or more | 20 or more |
| ø3/16" | 67 or more | 38 or more | 38 or more | 24 or more |
| ø6 | 84 or more | 39 or more | 39 or more | 30 or more |
| ø1/4" | 89 or more | 56 or more | 57 or more | 32 or more |
| ø8, 5/16" | 112 or more | 58 or more | 52 or more | 40 or more |
| ø10 | 140 or more | 70 or more | 69 or more | 50 or more |
| ø3/8" | 134 or more | 76 or more | 69 or more | 48 or more |
| ø12 | 168 or more | 82 or more | 88 or more | 60 or more |
| ø1/2" | 178 or more | 118 or more | 93 or more | 64 or more |
| ø16 | 224 or more | 144 or more | 114 or more | 80 or more |

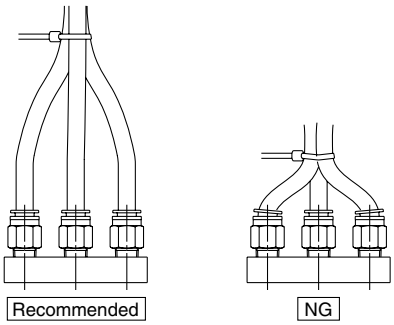



**Fig. 2 When using a unifying band to bind together the pipes**

## Handling of Barb Fittings and Nut Fittings

### ⚠ Caution

1. When using a nut fitting, insert the hose all the way to the end and securely tighten it with the nut. When the insertion of the hose or the tightening of the nut are not sufficient, the hose may slip out.
2. Disconnection may occur depending on the material or the O.D. accuracy of the hose; therefore be sure to confirm the applicability of the hose.

## Handling of Fittings

### ⚠ Caution

1. Tightening of the M5-size connection threads
   1) Tighten it by hand, then give it an additional 1/6 turn with a wrench. As a guideline, the tightening torque should be 1 to 1.5 N·m.
   2) Over tightening can cause damage to the threads and/or air leakage due to deformation of the gasket.
   3) Insufficient tightening can cause the threads to loosen and/or air to leak out.
2. Tightening of the fittings with a sealant
   1) Tighten fittings with sealant using the proper tightening torques in the table below. As a rule, they should be tightened 2 to 3 turns with a tool after first tightening by hand.

| Connection thread size | Proper tightening torque N·m |
|---|---|
| NPT, R 1/8 | 7 to 9 |
| NPT, R 1/4 | 12 to 14 |
| NPT, R 3/8 | 22 to 24 |
| NPT, R 1/2 | 28 to 30 |
| NPT, R 3/4 | 28 to 30 |
| NPT, R 1 | 36 to 38 |
| NPT, R 1 1/4 | 40 to 42 |
| NPT, R 1 1/2 | 48 to 50 |

   2) When a fitting is over tightened, more of the sealant material is squeezed out. Remove the squeezed out sealant material.
   3) When tightening is not sufficient, it will cause sealant failure or a loose fitting.
   4) Re-using
      (1) Normally, a fitting with sealant can be re-used 2 to 3 times.
      (2) Remove the sealant material that is separated and adhering to a removed fitting with air blow, etc. If the separated sealant enters into nearby equipment, it will cause air leakage or malfunction.
      (3) When the sealant is no longer effective, wrap sealant tape over the sealant material and re-use the fitting. Do not use a sealant material other than sealant tape.
   5) In cases where positioning is required, turning the fitting in the reverse direction after tightening will cause air leakage.

## Precautions on Other Tubing Brands

### ⚠ Caution

1. When using tubing brands other than SMC, confirm that the tubing outside diameter tolerances satisfy the following specifications.
   1) Nylon tubing within ±0.1 mm
   2) Soft nylon tubing within ±0.1 mm
   3) Polyurethane tubing within +0.15 mm
      within –0.2 mm

   When the tube O.D. accuracy is not satisfactory and measurement of the internal diameter dimensions does not match the dimensions provided by SMC, do not use. The tube may not connect, or leaks, tube disconnection, or damage to fittings may occur.

PAT. PEND.

# S Couplers

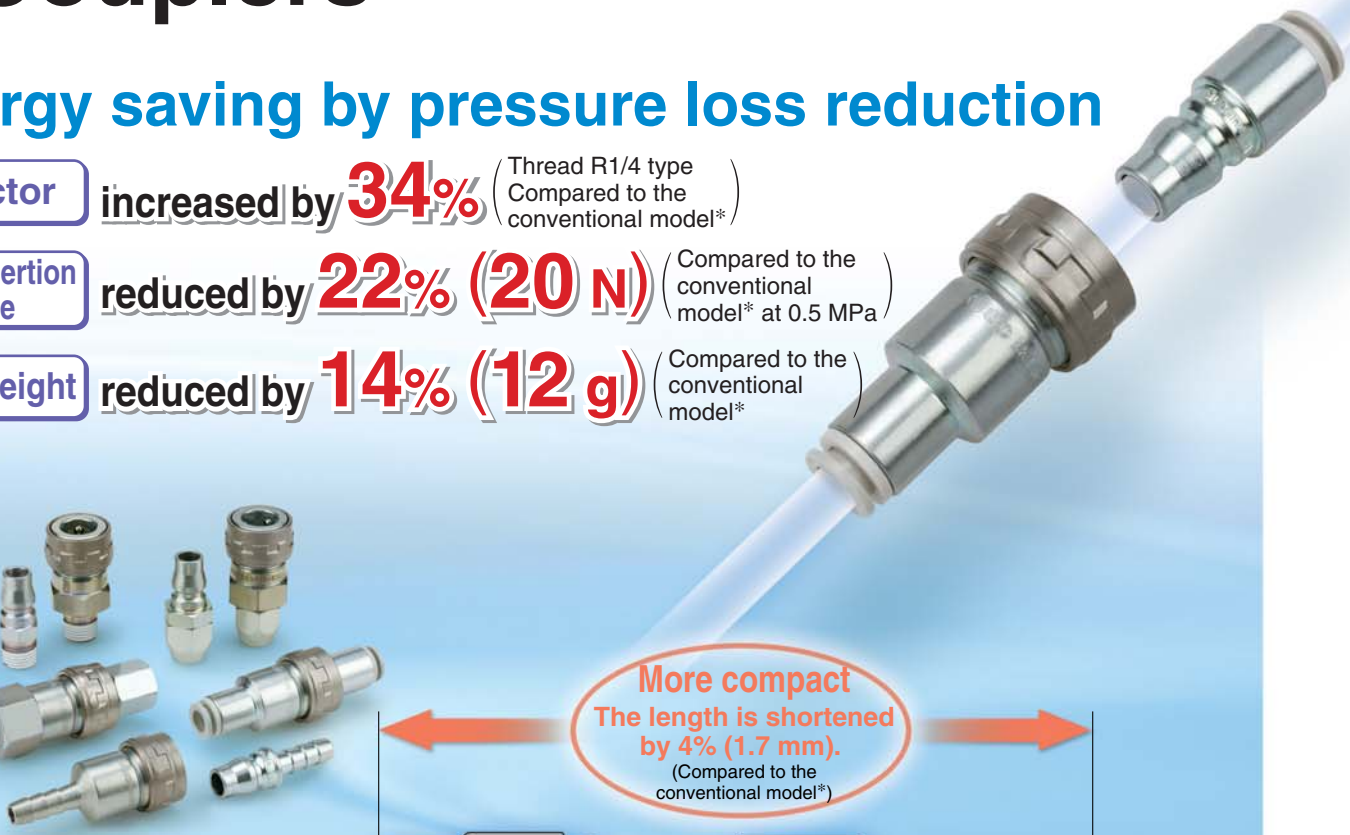
## Energy saving by pressure loss reduction

**C factor** increased by **34%** (Thread R1/4 type Compared to the conventional model*)

**Plug insertion force** reduced by **22% (20 N)** (Compared to the conventional model* at 0.5 MPa)

**Lightweight** reduced by **14% (12 g)** (Compared to the conventional model*)





**More compact**
The length is shortened by 4% (1.7 mm).
(Compared to the conventional model*)

**Plug**
Denting, deformation and wearing is reduced by heat treatment.

**Dual directional flow**

**Sleeve**
Denting, deformation and wearing is reduced by heat treatment.

**O-ring**
Air blowing and noise when mounting and removing the plug can be prevented by seal around the plug.

**With sealant**
Sealant is provided.
(Male thread type is available as standard.)

**Valve**
Pressure loss is reduced by special configuration.

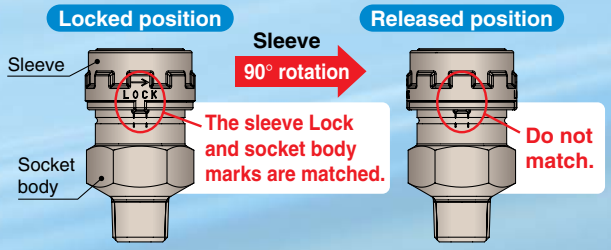
* Conventional model: Series KK13

### One-touch fitting provided type is standardized.

Metric size: ø6, ø8, ø10, ø12
Inch size: ø1/4", ø5/16", ø3/8", ø1/2"

### With lock mechanism (Semi-standard)

Removal by unexpected impact can be prevented.
Locked and released position can be maintained by the detent on the sleeve.




## Series KK130

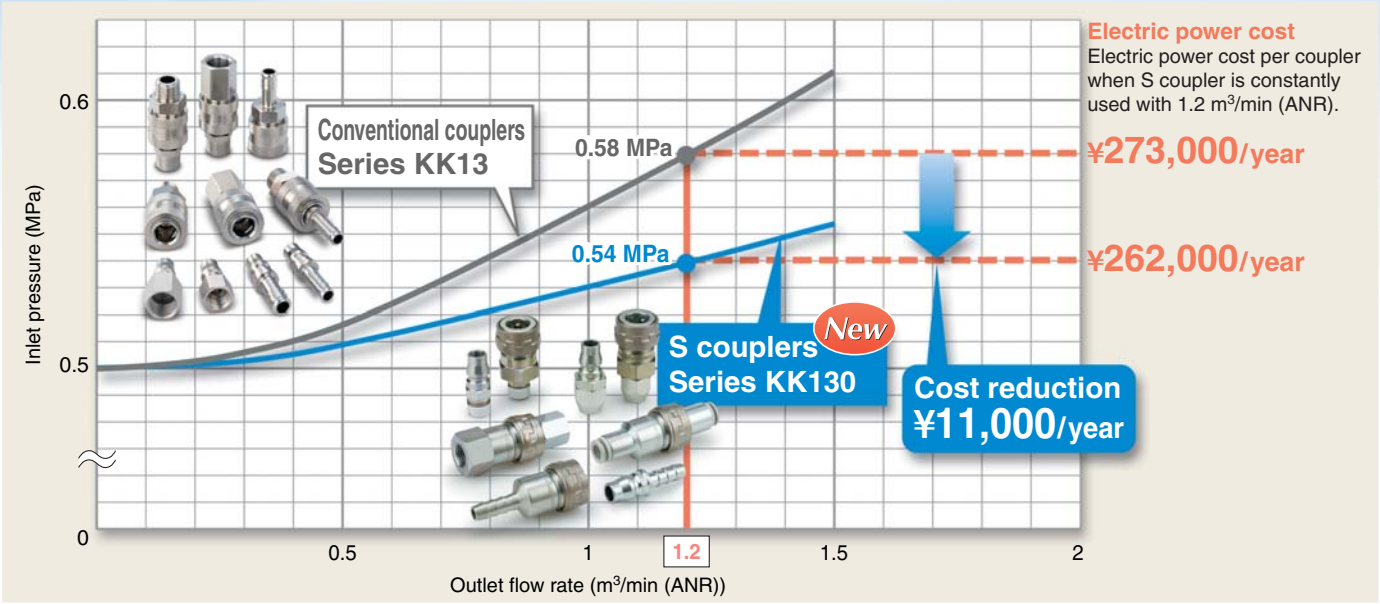
SMC

CAT.ES50-32B

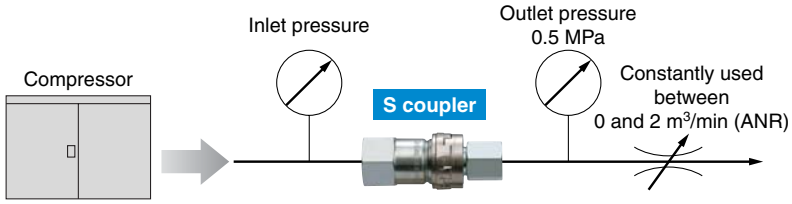
# Energy saving and cost reduction

Since pressure loss is smaller than the conventional product (Series KK13), even if inlet pressure is reduced, equivalent outlet pressure and flow rate can be achieved when it is used for air blow. It is possible to reduce the cost with lower air and energy consumption of compressors.

## Inlet pressure and compressor electric power cost against operating flow rate (per coupler)




**[Calculation conditions]**
Operating pressure at the outlet: 0.5 MPa
Compressor efficiency: 0.7
Electric power cost: 15 yen/kWh
Annual operating time: 2500 hours



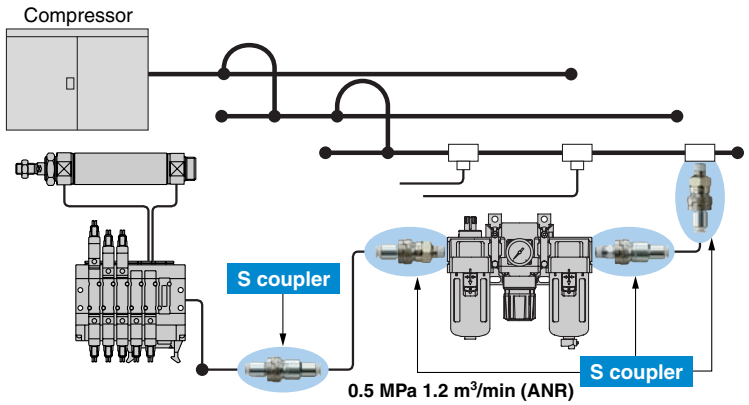

## Cost reduction effect by using S couplers in a factory

**It is possible to achieve a large cost reduction when looking at the effect on a factory scale.**


| | | | | | |
|---|---|---|---|---|---|
| **Quantity of S couplers used in a factory** | (pcs.) | 500 | 1,000 | 1,500 | 2,000 |
| **Air consumption of whole factory** | (m³/hr (ANR)) | 3,600 | 7,200 | 10,800 | 14,400 |
| **Compressor capacity of whole factory** | (kWh) | 650 | 1,300 | 1,950 | 2,600 |

Note) The relationship between the total compressor capacity, air consumption and quantity of S couplers is shown as a general guideline.

**[Calculation conditions]**
50% of the total air consumed in the factory passes through the S coupler, and 4 S couplers are used at the end of the line.
Operating pressure at the outlet: 0.5 MPa
Air consumption of one line at end: 1.2 m³/min (ANR)
Air consumption time: 20% of annual operating time of 2500 hours
Compressor efficiency: 0.7
Electric power cost: 15 yen/kWh
Compressor capacity: 8 m³/kWh



# Series KK130 Variations

## Plug (P)

### Male thread type

| Port size | Model |
|---|---|
| R1/8 | **KK130P-01MS** |
| R1/4 | **-02MS** |
| R3/8 | **-03MS** |
| R1/2 | **-04MS** |
| NPT1/8 | **-N01MS** |
| NPT1/4 | **-N02MS** |
| NPT3/8 | **-N03MS** |
| NPT1/2 | **-N04MS** |

### Female thread type

| Port size | Model |
|---|---|
| Rc1/8 | **KK130P-01F** |
| Rc1/4 | **-02F** |
| Rc3/8 | **-03F** |
| Rc1/2 | **-04F** |
| NPT1/8 | **-N01F** |
| NPT1/4 | **-N02F** |
| NPT3/8 | **-N03F** |
| NPT1/2 | **-N04F** |

### Barb fitting type (for rubber hose)

| Hose nominal | Model |
|---|---|
| 6 (1/4") | **KK130P-07B** |
| 8 (1/4") | **-09B** |
| 9 (3/8") | **-11B** |
| 12 (1/2") | **-13B** |

∗ The figures in ( ) indicate the internal diameter of the applicable hose.

### Nut fitting type (for fiber reinforced urethane hose)

| Applicable hose I.D./O.D. | Model |
|---|---|
| 5/8 | **KK130P-50N** |
| 6/9 | **-60N** |
| 6.5/10 | **-65N** |
| 8/12 | **-80N** |
| 8.5/12.5 | **-85N** |
| 11/16 | **-110N** |

### One-touch fitting type

| | Applicable tube O.D. | Model |
|---|---|---|
| Metric size mm | 6 | **KK130P-06H** |
| | 8 | **-08H** |
| | 10 | **-10H** |
| | 12 | **-12H** |
| Inch size | 1/4" | **-07H** |
| | 5/16" | **-09H** |
| | 3/8" | **-11H** |
| | 1/2" | **-13H** |

## Socket (S)

### Male thread type

| Port size | Model* |
|---|---|
| R1/8 | **KK130S-01MS** |
| R1/4 | **-02MS** |
| R3/8 | **-03MS** |
| R1/2 | **-04MS** |
| NPT1/8 | **-N01MS** |
| NPT1/4 | **-N02MS** |
| NPT3/8 | **-N03MS** |
| NPT1/2 | **-N04MS** |

∗ Refer to the how to order on page 1 for the sleeve lock mechanism provided type.

### Female thread type

| Port size | Model* |
|---|---|
| Rc1/8 | **KK130S-01F** |
| Rc1/4 | **-02F** |
| Rc3/8 | **-03F** |
| Rc1/2 | **-04F** |
| NPT1/8 | **-N01F** |
| NPT1/4 | **-N02F** |
| NPT3/8 | **-N03F** |
| NPT1/2 | **-N04F** |

∗ Refer to the how to order on page 1 for the sleeve lock mechanism provided type.

### Barb fitting type (for rubber hose)

| Hose nominal | Model* |
|---|---|
| 6 (1/4") | **KK130S-07B** |
| 8 (1/4") | **-09B** |
| 9 (3/8") | **-11B** |
| 12 (1/2") | **-13B** |

∗ Refer to the how to order on page 1 for the sleeve lock mechanism provided type.
∗ The figures in ( ) indicate the internal diameter of the applicable hose.

### Nut fitting type (for fiber reinforced urethane hose)

| Applicable hose I.D./O.D. | Model* |
|---|---|
| 5/8 | **KK130S-50N** |
| 6/9 | **-60N** |
| 6.5/10 | **-65N** |
| 8/12 | **-80N** |
| 8.5/12.5 | **-85N** |
| 11/16 | **-110N** |

∗ Refer to the how to order on page 1 for the sleeve lock mechanism provided type.

### One-touch fitting type

| | Applicable tube O.D. | Model* |
|---|---|---|
| Metric size mm | 6 | **KK130S-06H** |
| | 8 | **-08H** |
| | 10 | **-10H** |
| | 12 | **-12H** |
| Inch size | 1/4" | **-07H** |
| | 5/16" | **-09H** |
| | 3/8" | **-11H** |
| | 1/2" | **-13H** |

∗ Refer to the how to order on page 1 for the sleeve lock mechanism provided type.

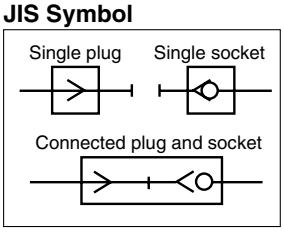
# S Couplers
# *Series KK130*

## Specifications

| | |
|---|---|
| **Fluid** | Air Note) |
| **Operating pressure range** | 0 to 1.5 MPa |
| | One-touch fitting type: 0 to 1.0 MPa |
| **Proof pressure** | 2.0 MPa |
| **Ambient and fluid temperature** | –20 to 80°C (No freezing) |
| | One-touch fitting type: –5 to 60°C (No freezing) |
| **Plating** | Sleeve: Electroless nickel plated<br>Other external metal parts: Zinc chromated |
| **Sealant** | Male thread with sealant |

Note) Cannot be used for water.

**JIS Symbol**




## Performance

| | |
|---|---|
| Plug and socket connection | Sleeve slide detachable type |
| Check valve | Socket: Built-in check valve |
| Flow direction | Dual directional |
| Sleeve lock mechanism | Manual locking type (with detent) Semi-standard |

## How to Order

**KK130 P – 02 MS**

**130 series**

**Socket/Plug**

| Symbol | Type |
|---|---|
| **P** | Plug |
| **S** | Socket |
| **L** | Semi-standard Socket (With sleeve lock mechanism) |

**Connection type**

| Symbol | Type |
|---|---|
| **MS** | Male thread (With sealant) |
| **F** | Female thread |
| **B** | With barb fitting |
| **N** | With nut fitting |
| **H** | With One-touch fitting |

**Port size variations**

**Male/Female thread type**

| Symbol | Thread size |
|---|---|
| **01** | R, Rc1/8 |
| **02** | R, Rc1/4 |
| **03** | R, Rc3/8 |
| **04** | R, Rc1/2 |
| **N01** | NPT1/8 |
| **N02** | NPT1/4 |
| **N03** | NPT3/8 |
| **N04** | NPT1/2 |

**Barb fitting type**

| Symbol | Hose nominal |
|---|---|
| **07** | 6 (1/4") |
| **09** | 8 (1/4") |
| **11** | 9 (3/8") |
| **13** | 12 (1/2") |

∗ The figures in ( ) indicate the internal diameter of the applicable hose.

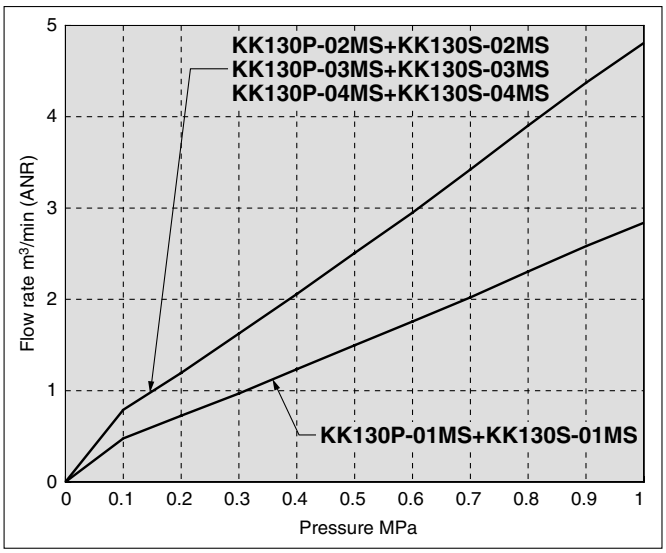
**Nut fitting type**

| Symbol | Applicable hose I.D./O.D. mm |
|---|---|
| **50** | 5/8 |
| **60** | 6/9 |
| **65** | 6.5/10 |
| **80** | 8/12 |
| **85** | 8.5/12.5 |
| **110** | 11/16 |

**One-touch fitting type**

| Symbol | Applicable tube O.D. mm | |
|---|---|---|
| **06** | ø6 | Metric size |
| **08** | ø8 | |
| **10** | ø10 | |
| **12** | ø12 | |
| **07** | ø1/4" | Inch size |
| **09** | ø5/16" | |
| **11** | ø3/8" | |
| **13** | ø1/2" | |

## Flow-rate Characteristics [Representative Value]

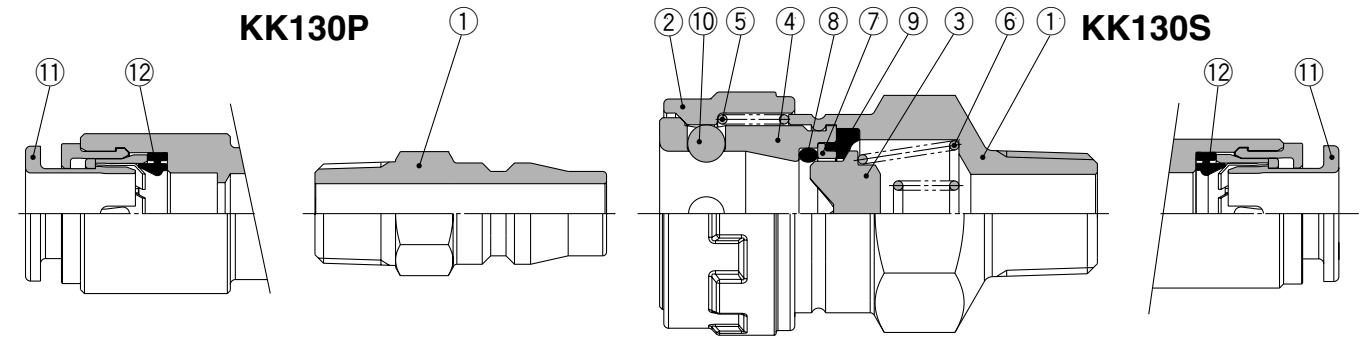



∗ This flow-rate characteristic test method complies with JIS B 8390 (Pneumatic fluid power – Components using compressible fluids – Determination of flow-rate characteristics)
∗ The figures are representative values when the same type of plug and socket are connected.

| Connection type | | | Sonic conductance C [dm³/(s·bar)] | Critical pressure ratio b | Flow coefficient Cv | Effective area S [mm²] |
|---|---|---|---|---|---|---|
| Type | Symbol | Connection | | | | |
| Male thread | **-01MS** | R1/8 | 4.2 | 0.4 | 1.2 | 21 |
| | **-02MS** | R1/4 | 7.0 | 0.4 | 1.9 | 35 |
| | **-03MS** | R3/8 | 7.0 | 0.5 | 2.1 | 35 |
| | **-04MS** | R1/2 | 7.0 | 0.5 | 2.1 | 35 |
| Female thread | **-01F** | Rc1/8 | 6.0 | 0.5 | 1.8 | 30 |
| | **-02F** | Rc1/4 | 7.0 | 0.5 | 2.1 | 35 |
| | **-03F** | Rc3/8 | 7.0 | 0.5 | 2.1 | 35 |
| | **-04F** | Rc1/2 | 7.0 | 0.5 | 2.1 | 35 |
| With barb fitting | **-07B** | 6 (1/4") | 2.0 | 0.4 | 0.5 | 10 |
| | **-09B** | 8 (1/4") | 3.0 | 0.4 | 0.8 | 15 |
| | **-11B** | 10 (3/8") | 6.0 | 0.5 | 1.8 | 30 |
| | **-13B** | 12 (1/2") | 7.0 | 0.5 | 2.1 | 35 |
| With nut fitting | **-50N** | 5/8 | 2.0 | 0.4 | 0.5 | 10 |
| | **-60N** | 6/9 | 3.5 | 0.4 | 1.0 | 18 |
| | **-65N** | 6.5/10 | 4.2 | 0.4 | 1.2 | 21 |
| | **-80N** | 8/12 | 7.0 | 0.4 | 1.9 | 35 |
| | **-85N** | 8.5/12.5 | 7.0 | 0.4 | 1.9 | 35 |
| | **-110N** | 11/16 | 7.0 | 0.5 | 2.1 | 35 |
| With One-touch fitting | **-06H** | ø6 | 2.0 | 0.4 | 0.5 | 10 |
| | **-08H** | ø8 | 4.4 | 0.5 | 1.3 | 22 |
| | **-10H** | ø10 | 7.0 | 0.5 | 1.8 | 35 |
| | **-12H** | ø12 | 7.0 | 0.5 | 2.1 | 35 |

## Construction

**<With One-touch fitting>** **<With One-touch fitting>**




**Plug** **Socket**

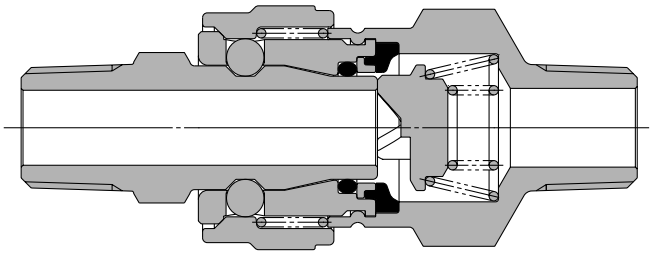


**Figure: Connected plug and socket**

### Plug

| No. | Description | Material | Note |
|---|---|---|---|
| **1** | **Plug** | Structural steel | Zinc chromated |
| **11** | **Cassette** | — | |
| **12** | **Seal** | NBR | |

### Socket

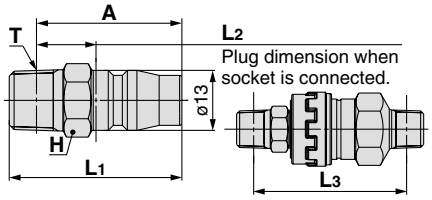
| No. | Description | Material | Note |
|---|---|---|---|
| **1** | **Socket body** | Structural steel | Zinc chromated |
| **2** | **Sleeve** | Steel wire | Electroless nickel plated |
| **3** | **Valve** | Steel wire | Zinc chromated |
| **4** | **Main body** | Steel wire | Zinc chromated |
| **5** | **Sleeve spring** | Stainless steel | |
| **6** | **Valve spring** | Stainless steel | |
| **7** | **Holder** | Steel band | Zinc chromated |
| **8** | **Plug O-ring** | NBR | |
| **9** | **Seal** | NBR | |
| **10** | **Steel ball** | SUJ | |
| **11** | **Cassette** | — | |
| **12** | **Seal** | NBR | |

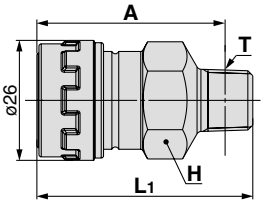
## Dimensions

### Plug (KK130P)

### Socket (KK130S, L)

### Male thread type




(mm)

| Model | T Connection male thread | H Width across flats | L1 | L2 | A *1 | Min. hole size | Weight g | When connected Full length L3 |
|---|---|---|---|---|---|---|---|---|
| **KK130P-01MS** | R1/8 | 14 | 34.0 | 11.1 | 30.0 | 6.0 | 18 | 51.1 |
| **-02MS** | R1/4 | 14 | 38.0 | 13.1 | 32.0 | 8.0 | 22 | 53.9 |
| **-03MS** | R3/8 | 19 | 39.0 | 13.6 | 32.5 | 8.0 | 37 | 53.3 |
| **-04MS** | R1/2 | 22 | 43.0 | 16.1 | 35.0 | 8.0 | 52 | 55.9 |
| **KK130P-N01MS** | NPT1/8 | 14 | 34.0 | 10.1 | 29.0 | 6.0 | 18 | 49.4 |
| **-N02MS** | NPT1/4 | 14 | 38.0 | 11.6 | 30.5 | 8.0 | 22 | 51.5 |
| **-N03MS** | NPT3/8 | 19 | 39.0 | 12.6 | 31.5 | 8.0 | 37 | 51.7 |
| **-N04MS** | NPT1/2 | 22 | 43.0 | 14.1 | 33.0 | 8.0 | 52 | 52.3 |

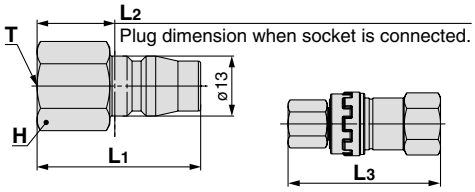
*1 Reference dimension after installation

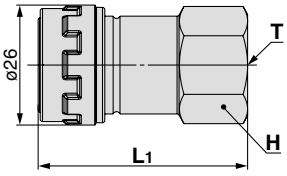
(mm)

| Model | T Connection male thread | H Width across flats | L1 | A *1 | Min. hole size | Weight g |
|---|---|---|---|---|---|---|
| **KK130S(L)-01MS** | R1/8 | 22 | 44.0 | 40.0 | 6.0 | 73 |
| **-02MS** | R1/4 | 22 | 46.8 | 40.8 | 8.5 | 74 |
| **-03MS** | R3/8 | 22 | 46.2 | 39.7 | 8.5 | 82 |
| **-04MS** | R1/2 | 22 | 47.8 | 39.8 | 14.0 | 83 |
| **KK130S(L)-N01MS** | NPT1/8 | 22 | 44.3 | 39.3 | 6.0 | 73 |
| **-N02MS** | NPT1/4 | 22 | 47.4 | 39.9 | 8.5 | 74 |
| **-N03MS** | NPT3/8 | 22 | 46.6 | 39.1 | 8.5 | 82 |
| **-N04MS** | NPT1/2 | 22 | 48.2 | 38.2 | 14.0 | 83 |

*1 Reference dimension after installation

### Female thread type



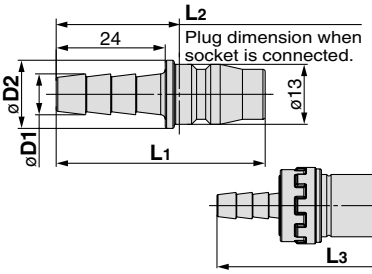

(mm)

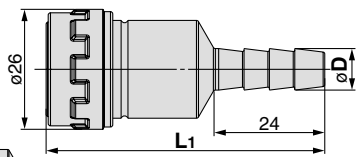
| Model | T Connection male thread | H Width across flats | L1 | L2 | Min. hole size | Weight g | When connected Full length L3 |
|---|---|---|---|---|---|---|---|
| **KK130P-01F** | Rc1/8 | 14 | 30.0 | 11.1 | 8.0 | 18 | 53.0 |
| **-02F** | Rc1/4 | 17 | 36.0 | 17.1 | 8.0 | 28 | 62.5 |
| **-03F** | Rc3/8 | 21 | 37.0 | 18.1 | 8.0 | 38 | 66.5 |
| **-04F** | Rc1/2 | 27 | 42.0 | 23.1 | 8.0 | 73 | 76.0 |
| **KK130P-N01F** | NPT1/8 | 14 | 30.0 | 11.1 | 8.0 | 18 | 53.0 |
| **-N02F** | NPT1/4 | 17 | 36.0 | 17.1 | 8.0 | 28 | 62.5 |
| **-N03F** | NPT3/8 | 21 | 37.0 | 18.1 | 8.0 | 38 | 66.5 |
| **-N04F** | NPT1/2 | 27 | 42.0 | 23.1 | 8.0 | 73 | 76.0 |

(mm)

| Model | T Connection male thread | H Width across flats | L1 | Min. hole size | Weight g |
|---|---|---|---|---|---|
| **KK130S(L)-01F** | Rc1/8 | 22 | 41.9 | 8.0 | 90 |
| **-02F** | Rc1/4 | 22 | 45.4 | 11.0 | 92 |
| **-03F** | Rc3/8 | 22 | 48.4 | 11.0 | 91 |
| **-04F** | Rc1/2 | 27 | 52.9 | 14.0 | 117 |
| **KK130S(L)-N01F** | NPT1/8 | 22 | 41.9 | 8.0 | 90 |
| **-N02F** | NPT1/4 | 22 | 45.4 | 11.0 | 92 |
| **-N03F** | NPT3/8 | 22 | 48.4 | 11.0 | 91 |
| **-N04F** | NPT1/2 | 22 | 52.9 | 14.0 | 117 |

### Barb fitting type (for rubber hose)




(mm)

| Model | Hose nominal | øD1 | øD2 | L1 | L2 | Min. hole size | Weight g | When connected Full length L3 |
|---|---|---|---|---|---|---|---|---|
| **KK130P-07B** | 6 (1/4") | 7.2 | 14.0 | 46.0 | 27.1 | 4.5 | 16 | 88.0 |
| **-09B** | 8 (1/4") | 9.0 | 15.0 | 46.0 | 27.1 | 5.0 | 19 | 87.5 |
| **-11B** | 9 (3/8") | 11.3 | 16.0 | 46.0 | 27.1 | 8.0 | 19 | 87.0 |
| **-13B** | 12 (1/2") | 15.0 | 18.0 | 46.0 | 27.1 | 8.0 | 33 | 86.0 |

* The figures in ( ) indicate the internal diameter of the applicable hose.

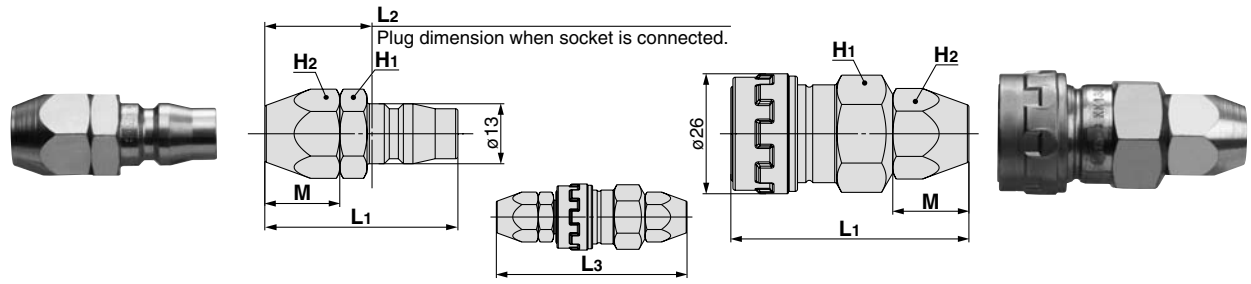
(mm)

| Model | Hose nominal | øD1 | L1 | Min. hole size | Weight g |
|---|---|---|---|---|---|
| **KK130S(L)-07B** | 6 (1/4") | 7.2 | 60.9 | 4.5 | 70 |
| **-09B** | 8 (1/4") | 9.0 | 60.4 | 5.0 | 72 |
| **-11B** | 9 (3/8") | 11.3 | 59.9 | 7.7 | 73 |
| **-13B** | 12 (1/2") | 15.0 | 58.9 | 9.0 | 81 |

* The figures in ( ) indicate the internal diameter of the applicable hose.

**Plug (KK130P)** **Socket (KK130S, L)**

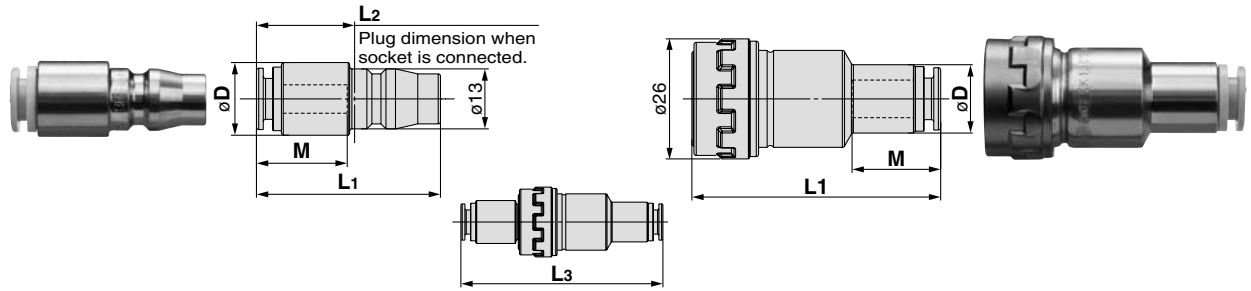
## Nut fitting type (for fiber reinforced urethane hose)




| Model | Applicable hose I.D./O.D. | H1 | H2 | L1 | L2 | M | Min. hole size | Weight g | When connected Full length L3 |
|---|---|---|---|---|---|---|---|---|---|
| **KK130P-50N** | 5/8 | 14 | 14 | 39.7 | 20.8 | 13.7 | 4.5 | 27 | 70.4 |
| **-60N** | 6/9 | 17 | 17 | 42.4 | 23.5 | 16.4 | 5.5 | 42 | 75.1 |
| **-65N** | 6.5/10 | 17 | 17 | 42.5 | 23.6 | 16.5 | 6.0 | 39 | 75.2 |
| **-80N** | 8/12 | 19 | 19 | 43.4 | 24.5 | 17.4 | 8.0 | 46 | 77.1 |
| **-85N** | 8.5/12.5 | 19 | 19 | 43.4 | 24.5 | 17.4 | 8.0 | 48 | 77.1 |
| **-110N** | 11/16 | 24 | 24 | 49.1 | 30.2 | 20.1 | 8.0 | 86 | 82.8 |

| Model | Applicable hose I.D./O.D. | H1 | H2 | L1 | M | Min. hole size | Weight g |
|---|---|---|---|---|---|---|---|
| **KK130S(L)-50N** | 5/8 | 22 | 14 | 49.6 | 13.7 | 4.5 | 85 |
| **-60N** | 6/9 | 22 | 17 | 51.6 | 16.4 | 5.5 | 95 |
| **-65N** | 6.5/10 | 22 | 17 | 51.6 | 16.5 | 6.0 | 92 |
| **-80N** | 8/12 | 22 | 19 | 52.6 | 17.4 | 8.0 | 97 |
| **-85N** | 8.5/12.5 | 22 | 19 | 52.6 | 17.4 | 8.0 | 101 |
| **-110N** | 11/16 | 24 | 24 | 52.6 | 20.1 | 10.0 | 119 |

## One-touch fitting type



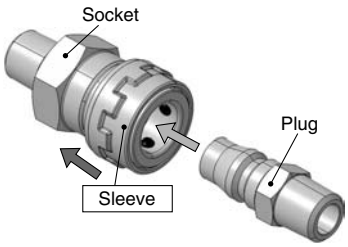

| Model | Applicable tube O.D. mm | D | L1 | L2 | M | Min. hole size | Weight g | When connected Full length L3 |
|---|---|---|---|---|---|---|---|---|
| **KK130P-06H** | 6 | 15.0 | 39.9 | 21.0 | 16.7 | 4.5 | 24 | 73.3 |
| **-08H** | 8 | 16.0 | 39.9 | 21.0 | 18.6 | 6.0 | 24 | 74.3 |
| **-10H** | 10 | 18.0 | 40.4 | 21.5 | 20.7 | 8.0 | 24 | 76.8 |
| **-12H** | 12 | 20.0 | 42.7 | 23.8 | 21.7 | 8.0 | 29 | 79.1 |
| **-07H** | 1/4" | 15.0 | 39.9 | 21.0 | 16.7 | 4.5 | 24 | 73.3 |
| **-09H** | 5/16" | 16.0 | 39.9 | 21.0 | 18.6 | 6.0 | 24 | 74.3 |
| **-11H** | 3/8" | 18.0 | 40.4 | 21.5 | 20.7 | 7.0 | 25 | 76.8 |
| **-13H** | 1/2" | 20.0 | 42.7 | 23.8 | 21.7 | 8.0 | 27 | 79.1 |

| Model | Applicable tube O.D. mm | D | L1 | M | Min. hole size | Weight g |
|---|---|---|---|---|---|---|
| **KK130S(L)-06H** | 6 | 13.0 | 52.3 | 16.7 | 4.5 | 72 |
| **-08H** | 8 | 14.8 | 53.3 | 18.6 | 6.0 | 74 |
| **-10H** | 10 | 17.8 | 55.3 | 20.7 | 9.0 | 77 |
| **-12H** | 12 | 20.0 | 55.3 | 21.7 | 9.0 | 80 |
| **-07H** | 1/4" | 13.0 | 52.3 | 16.7 | 4.5 | 72 |
| **-09H** | 5/16" | 14.8 | 53.3 | 18.6 | 6.0 | 74 |
| **-11H** | 3/8" | 17.6 | 55.3 | 20.7 | 7.0 | 79 |
| **-13H** | 1/2" | 20.0 | 55.3 | 21.7 | 9.0 | 78 |

## How to Operate

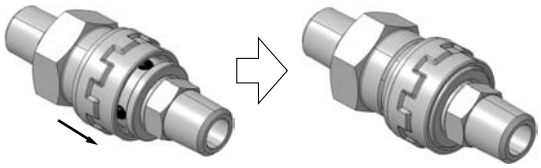
### Mounting

**1**




Pull out the sleeve straight in the direction of the arrow, and insert the plug straight into the socket.

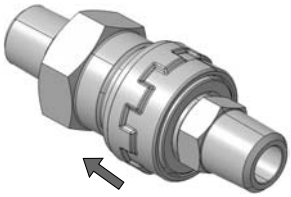
**2**



Insert the plug completely until it stops. After connection, pull it gently to check that the plug does not come off.

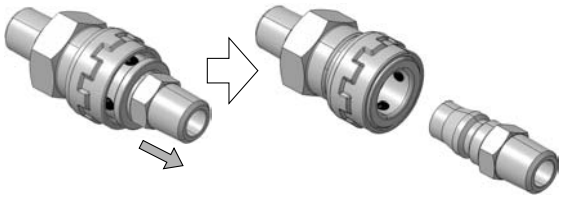
### Releasing

**1**



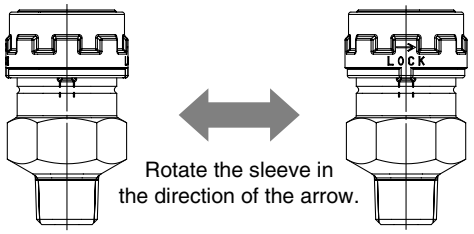
Pull out the sleeve straight in the direction of the arrow.

**2**



The plug is released.

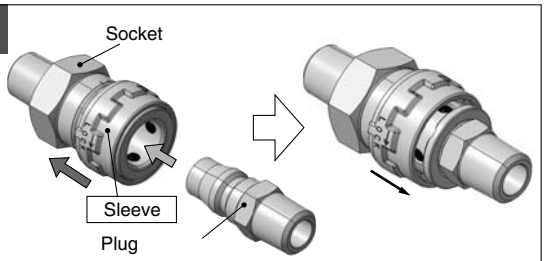
### With sleeve lock mechanism (Semi-standard)




Note) Do not apply pressure when rotating the sleeve. If it is pressurized, the detent of the locked and released position may become unclear due to the pressure.

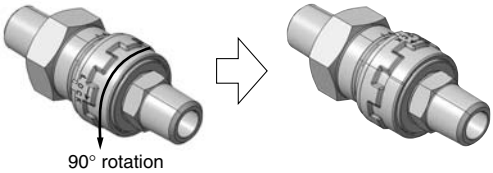
### Mounting

**1**




Make sure that the sleeve is in the released position and pull it out straight. Then, insert the plug straight into the socket.

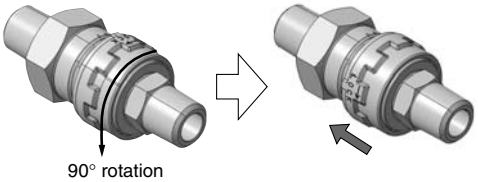
**2**




Insert the plug completely until it stops. After connection, pull it gently to check that the plug does not come off. Rotate the sleeve by 90 degrees in the direction of the arrow to match it to the locked position. Since detent is provided, the released position can be maintained.

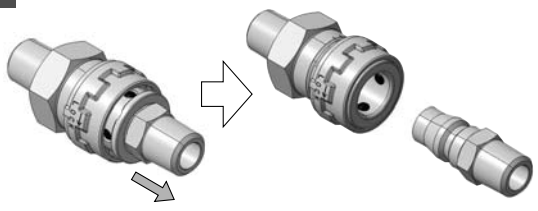
### Releasing

**1**




Rotate the sleeve by 90 degrees in the direction of the arrow from the locked position to release the lock. Since detent is provided, the released position can be maintained. Pull out the sleeve straight in the direction of the arrow.

**2**



The plug is released.

# Series KK130
# 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

## ⚠ Warning

**1. Make sure to confirm the specifications.**

Do not use with pressures or temperatures outside the range of specifications, as this may result in damage and malfunction. (Refer to the specifications on page 1.) SMC takes no responsibility for damage incurred by use in excess of the specification range.

**2. Prohibition of disassembly and modification**

Do not disassemble or modify (including additional machining) the main body. False use may cause an injury or accident.

**3. Confirm that PTFE can be used in application.**

Thread sealant contains PTFE (polytetrafluoroethylene) powder. Confirm if the use of it may cause any adverse effect on the system.

**4. Cannot be used as a stop valve that requires zero leakage.**

A certain amount of leakage is allowed during operation.

**5. Refer to the table below for whether the S coupler can be connected.**

| Series | KK | KKH | KKA | KKG | KK13 | KK130 |
|---|---|---|---|---|---|---|
| **KK13** | — | — | — | — | ○ | ○ |
| **KK130** | — | — | — | — | ○ | ○ |

When the KK130 series is connected to other companies' products, confirm manufacturers and other information before using it.

## ⚠ Caution

**1. When connecting the plug to the socket, select the series suitable for the connection.**

If the series are not matched, they cannot be connected. Mismatches will cause leakage, damage, and disconnection of the plug. Inserting a plug other than the specialized plug into the socket may result in equipment damage.

**2. Do not rotate or turn the S coupler and piping to which it is connected.**

The connection of the piping might be damaged or come undone.

**3. Do not use couplers with flammable, explosive, or toxic substances, such as gas, gas fuel, and refrigerant.**

They may leak from the S coupler or from inside the tubing to the outside.

**4. Operate with a surge pressure of no more than the maximum operating pressure.**

If the surge pressure exceeds the maximum operating pressure, it will cause damage to couplers and tubing.

**5. Do not use the S coupler with water or steam.**

Corrosion of the metal material and deterioration of the sealing material may result from long-term use with water or steam.

**6. The tube bending radius in the vicinity of the fitting should be at least the minimum bending radius of the tube.**

If the bending radius is less than the minimum value, fittings may damage, or tube may crack or be crushed. The minimum bending radius, with the exception of TU polyurethane tube, TUH hard polyurethane tube, TUS soft polyurethane tube, TRBU FR double layer polyurethane tube, TH FEP tube, TL PFA tube, TD modified PTFE tube, is measured as following in accordance with JIS B 8381-1995.

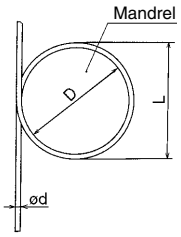
Tube deformation ratio at the minimum bending radius is obtained through the following formula, based on tube diameter and mandrel diameter by wrapping the same radius mandrel tube.

**Tube deformation ratio at the minimum bending radius**

$$\eta = \left(1 - \frac{L - D}{2d}\right) \times 100$$

Here, η : Deformation ratio (%)
d : Tube O.D. (mm)
L : Measured length (mm)
D: Mandrel diameter (mm)
(Twice against the minimum bending radius)

Test temperature: 20 ±5°C
Relative humidity: 65 ±5%




**7. Applicable for air.**

Consult with SMC if using other fluids.

## Mounting

## ⚠ Warning

**1. Instruction manual**

Mount and operate the product after reading the instruction manual carefully and understanding its contents. Also, keep the manual where it can be referred to as necessary.

**2. Ensure sufficient space for maintenance.**

Be sure to allow the space required for maintenance and inspection.

**3. Tightening torque**

When installing the products, tighten the screw with the recommended tightening torque.

**4. During use, pipe deterioration or damage to S couplers can result in disconnection of the piping and uncontrollable behavior of the piping.**

To stop the piping from going out of control, use a protective cover or fix the piping in place.

**5. Do not use couplers where rotation normally occurs.**

The couplers may be damaged.

**6. Avoid applications in which vibration or shock is directly applied to the fittings.**

When mounting the S coupler to a piece of equipment that generates impact or vibration, do not connect the S coupler to the equipment directly. In that case, connect a hose whose length is 300 mm or more between the S couplers.

# Series KK130
# 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.**

## Mounting

### ⚠ Warning

**7. S couplers with sleeve lock mechanism must be locked during operation in order to prevent sudden disconnection.**

**8. Install a stop valve at the supply pressure side of the socket.**

Emergency shutdown may not be possible without it.

### ⚠ Caution

**1. Preparation before piping**

Before piping is connected, it should be thoroughly blown out by air (flushed) or washed to eliminate cutting chips, cutting oil, and other debris from inside the pipe.

**2. Before mounting, confirm the model and size, etc.**

Also, confirm that there are no blemishes, nicks or cracks in the product.

**3. When connecting a pipe, consider factors such as changes in the piping length due to pressure, and allow sufficient leeway.**

**4. Mount so that S couplers and piping are not subjected to twisting, pulling or moment loads.**

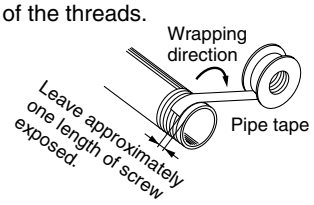
This can cause damage to S couplers and flattening, bursting or disconnection of piping, etc.

**5. Mount so that piping is not damaged due to tangling and abrasion.**

This can cause flattening, bursting or disconnection of piping, etc.

**6. When screwing in the pipes or fittings, make sure to prevent cutting chips or the sealing material on the threaded portion of the pipe from entering the piping.**

Also, if pipe tape is used, leave about 1 thread ridge exposed at the end of the threads.




## Air Supply

### ⚠ Warning

**1. Excessive drainage**

Compressed air containing large amounts of drainage can cause malfunction of pneumatic equipment. As a countermeasure, install an air dryer or water separator before the filter.

**2. Drain flushing**

If the drain removal from air filter is missed, drain will be flown out to the outlet side and may result in malfunction of pneumatic equipment. When removing drain is difficult, use of a filter with an auto drain is recommended.

Refer to SMC's "Air Preparation Equipment" catalog for further details on compressed air quality.

**3. Use clean air.**

If the compressed air includes chemicals, synthetic oils containing organic solvents, salt or corrosive gases, etc., it can cause damage or malfunction in the system.

## Air Supply

### ⚠ Caution

**1. Install an air filter.**

Install an air filter upstream, near the valve. Select an air filter with a filtration degree of 5 μm or finer.

**2. As a countermeasure, install an aftercooler, air dryer or water separator.**

Compressed air containing large amounts of drainage can cause malfunction of pneumatic equipment. As a countermeasure, install an aftercooler, air dryer or water separator.

**3. Ensure that the fluid and ambient temperature are within the specified range.**

If the fluid temperature is 5°C or below, the moisture in the circuit could freeze, causing damage to the seals and leading to equipment malfunction. Therefore, take appropriate measures to prevent freezing.

Refer to SMC's "Air Preparation Equipment" catalog for further details on compressed air quality.

## Operating Environment

### ⚠ Warning

**1. Do not use in atmospheres of corrosive gases, chemicals, sea water, water, water steam, or where there is direct contact with any of these.**

**2. Do not use in direct sunlight.**

**3. In locations near heat sources, protect against radiated heat.**

**4. Do not use in locations where static electric charges will be a problem.**

This may cause system failure. Consult with SMC regarding use in this kind of environment.

**5. Do not use in locations where spatter occurs.**

There is a danger of spatter causing a fire. Consult with SMC regarding use in this kind of environment.

**6. Do not use in environments where there is direct contact with liquids such as cutting oil, lubricating oil, coolant oil, or paints, etc.**

This may cause connection and release failure and/or leakage. Consult with SMC regarding use in this kind of environment.

**7. Do not use in locations influenced by vibrations or impacts.**

This may cause air leakage and S couplers damage. Consult with SMC regarding use in this kind of environment.

**8. Do not use in an environment where foreign matter such as spatter, metal powder or sand splashes onto or enters the product.**

This may cause connection and release failure and/or leakage.

**9. Do not use in an environment where the product is constantly exposed to water.**

Rust may occur.

**10. When the socket and plug are stored or not in use, make sure dust does not get stuck to them.**

This may cause connection and release failure and/or leakage.

# Series KK130
# Specific Product Precautions 3

**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.**

## Operating Environment

### ⚠ Warning

**11. Do not use in places or environments where foreign matter sticks to the product or gets inside the product.**

It may cause air leakage or tube release.

## Maintenance

### ⚠ Caution

**1. Maintenance work**

If handled improperly, compressed air can be dangerous. Assembly, handling, repair and element replacement of pneumatic systems should be performed by qualified personnel only.

**2. Drain flushing**

Remove drainage from air filters regularly.

**3. Removal of equipment, and supply/exhaust of compressed air**

When components are removed, first confirm that measures are in place to prevent workpieces from dropping, run-away equipment, etc. Then, cut the supply pressure and power, and exhaust all compressed air from the system using the residual pressure release function.
When machinery is restarted, proceed with caution after confirming that appropriate measures are in place to prevent cylinders from sudden movement.

**4. Be absolutely sure to wear safety glasses when conducting periodic inspections.**

**5. Check for the following during regular maintenance, and replace components as necessary.**

a) Scratches, gouges, abrasion, corrosion, rust
b) Leakage
c) Twisting, flattening or distortion of tubes and hoses
d) Hardening, deterioration or softening

**6. Do not repair or patch the replaced tubing, hoses or couplers for reuse.**

Do not disassemble the S coupler.

## Handling

### ⚠ Warning

**1. When connecting the plug, hold the plug securely.**

The plug may be uncoupled due to reaction at the time of connection.

**2. When connecting the plug, pull out the sleeve straight and insert the plug completely until it stops.**

After the connection, gently pull the plug to see whether it will release. If not securely inserted, the plug may pop out due to the pressure.

**3. When connecting the plug, insert it straight into the socket.**

If not inserted straight, the socket and/or plug may be damaged or cause a disconnection.

**4. When releasing the plug, hold it securely.**

When releasing the plug, hold it securely. The connection pipe may go out of control due to reacting stress and/or residual pressure on the plug side.

**5. Do not press the inside of the socket with an incompatible plug and/or with a tool.**

The internal fluid may be ejected and cause a dangerous situation. Also, the ejecting internal fluid may cause the sealings to come apart resulting in the product not functioning.

**6. Do not connect and remove the coupler when it is pressurized and residual pressure exists.**

The coupler may fly out.

**7. Do not apply lateral load vertically to the connection direction of the plug or socket.**

This may cause leakage and damage the coupler.

**8. Never pressurize when the plug is removed.**

This may cause the connection piping to flap and be dangerous.

**9. When removing the plug, fluid in the piping leaks out.**

Handle the fluid carefully, especially when using dangerous fluids such as a fluid with high temperature and pressure. The use of a stop valve is recommended.

**10. When using a fluid with high temperature, the S coupler will be heated, too.**

Do not touch the coupler to prevent burning.

**11. When sleeve lock mechanism is provided, do not apply pressure when rotating the sleeve.**

If it is pressurized, the detent of the locked and released position may become unclear due to the pressure.

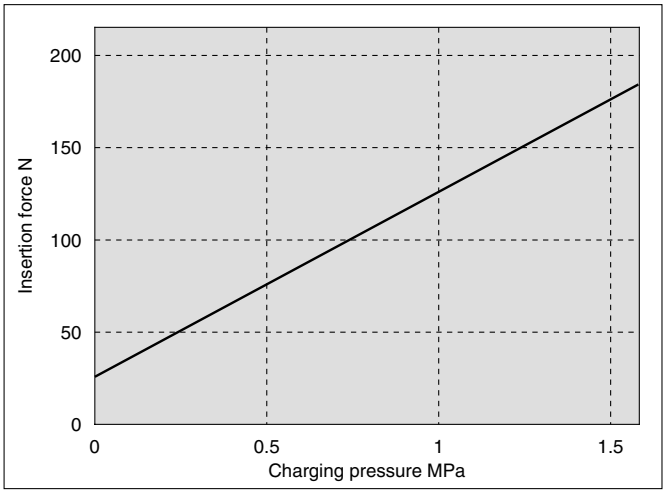
**12. Do not disassemble the S coupler.**

# Series KK130
# Specific Product Precautions 4

**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.**

## Plug Insertion Force in Pressurized Condition

**Insertion Force of Series KK130**




## Handling of Thread Type

## ⚠ Caution

**1. Screw the fitting into the hexagonal face of the S coupler, applying the appropriate wrench as close to the thread as possible.**

Place the wrench as close as possible to the thread. Do not apply pliers and pipe wrench to any other part other than the wrench flats. This may cause breakage or leakage.

**2. Tightening torque**

Tighten fittings with sealant using the proper tightening torques in the table below. As a rule, they should be tightened 2 to 3 turns with a tool after first tightening by hand.

| Connection thread size | Proper tightening torque N·m |
|---|---|
| NPT, R, Rc1/8 | 7 to 9 |
| NPT, R, Rc1/4 | 12 to 14 |
| NPT, R, Rc3/8 | 22 to 24 |
| NPT, R, Rc1/2 | 28 to 30 |

**3. When a fitting is over tightened, more of the sealant material is squeezed out.**

Remove the squeezed out sealant material.

**4. When tightening is not sufficient, it will cause sealing failure or a loose fitting.**

**5. Re-using**

1) Normally, a fitting with sealant can be re-used 2 to 3 times.
2) Remove the sealant material that is separated and adhering to a removed fitting with air blow, etc. If the separated sealant enters into nearby equipment, it will cause air leakage or malfunction.
3) When the sealant is no longer effective, wrap pipe tape over the sealant material and re-use the fitting. Do not use a sealant material other than pipe tape.

**6. In cases where positioning is required, turning the fitting in the reverse direction after tightening will cause air leakage.**

## Handling of Barb Fittings and Nut Fittings

## ⚠ Caution

**1. Prepare a hose band separately when using a barb fitting.**

If the hose band is not used, the hose may come off.

**2. When using a nut fitting, insert the hose all the way to the end and securely tighten it with the nut.**

When the insertion of the hose or the tightening of the nut are not sufficient, the hose may come off.

**3. Disconnection may occur depending on the material or the O.D. accuracy of the hose; therefore be sure to confirm the applicability of the hose.**

# Series KK130
# Specific Product Precautions 5

**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.**

## Handling of One-touch Fittings

## ⚠ Caution

**1. Do not use in locations where static electric charges will be a problem.**

This may cause system failure. Consult with SMC regarding use in this kind of environment.

**2. Do not use in locations where spatter occurs.**

There is a danger of spatter causing a fire. Consult with SMC regarding use in this kind of environment.

**3. Tube attachment/detachment for One-touch fittings**

**1) Attaching of tubing**

(1) Take a tube having no flaws on its periphery and cut it off at a right angle. When cutting the tube, use tube cutters TK-1, 2 or 3. Do not use pinchers, nippers or scissors, etc. If cutting is done with tools other than tube cutters, the tube may become flattened, etc. This can make a secure installation impossible, and cause problems such as the tube pulling out after installation or air leakage.

(2) Polyurethane tube O.D. is swelled by applying internal pressure. As such, it may be that the tube cannot be re-inserted into a One-touch fitting. Make sure to confirm the tube O.D., and when the O.D. accuracy is more than +0.07 mm for ø2 and +0.15 mm for other sizes, insert into a One-touch fitting again without cutting the tube to use it. When the tube is re-inserted into a One-touch fitting, make sure to confirm that the tube is able to go through the release button smoothly.

(3) Grasp the tube and push it in slowly, inserting it securely all the way into the fitting.

(4) After inserting the tube, pull on it lightly to confirm that it will not come out. If it is not installed securely all the way into the fitting, this can cause problems such as air leakage or the tube pulling out.

**2) Detaching of tubing**

(1) Push in the release button sufficiently. When doing this, push the collar evenly.

(2) Pull out the tube while holding down the release button so that it does not come out. If the release button is not pressed down sufficiently, there will be increased bite on the tube and it will become more difficult to pull it out.

(3) When the removed tube is to be used again, cut off the portion which has been chewed before re-using it. If the chewed portion of the tube is used as is, this can cause trouble such as air leakage or difficulty in removing the tube.

**4. Connecting products with attached metal rods**

After attaching products with attached metal rods such as the KC series, to the One-touch fitting, do not use tubes, resin plugs, or reducers, etc. This may cause releasing.

**5. When mounting tubes, resin plugs, metal rods etc., do not press the release button.**

Also, do not press the release button unnecessarily before mounting them. This may cause those parts to come off.

**Recommended piping conditions**

**1. When installing piping in the One-touch fitting, make sure there is sufficient slack to the tube length as per the recommended piping conditions shown in Figure 1.**

Also, when binding pipes together with a unifying band, etc., make sure piping is carried out without receiving external force. (See Fig. 2.)

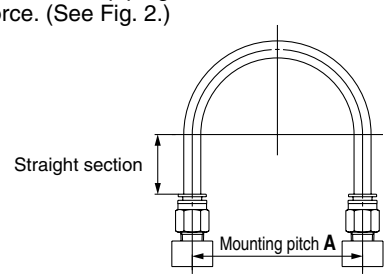



**Fig. 1 Recommended piping**

Unit: mm

| Tube size | Mounting pitch **A** | | | Straight section |
|---|---|---|---|---|
| | Nylon tube | Soft nylon tube | Polyurethane tube | |
| ø6 | 84 or more | 39 or more | 39 or more | 30 or more |
| ø8 | 112 or more | 58 or more | 52 or more | 40 or more |
| ø10 | 140 or more | 70 or more | 69 or more | 50 or more |
| ø12 | 168 or more | 82 or more | 88 or more | 60 or more |
| ø1/4" | 89 or more | 56 or more | 57 or more | 32 or more |
| ø5/16" | 112 or more | 58 or more | 52 or more | 40 or more |
| ø3/8" | 134 or more | 76 or more | 69 or more | 48 or more |
| ø1/2" | 178 or more | 118 or more | 93 or more | 64 or more |

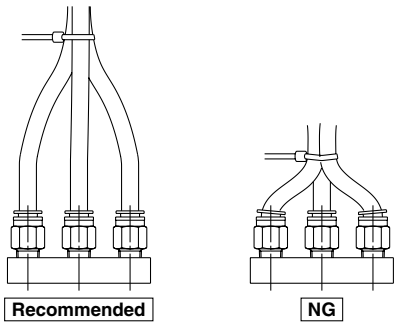



**Fig. 2 When using a unifying band to bind together the pipes**

## Precautions on Other Tubing Brands

## ⚠ Caution

**1. When using tubing brands other than SMC, confirm that the tube outside diameter tolerances satisfy the following specifications.**

1) Nylon tube within ±0.1 mm
2) Soft nylon tube within ±0.1 mm
3) Polyurethane tube within +0.15 mm, within –0.2 mm

If the tube O.D. accuracy is satisfactory but measurement of the internal diameter dimensions does not match the dimensions provided by SMC, do not use.
The tube may not connect, or leaks, tube disconnection, or damage to fittings may occur.

# ⚠ 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.

**Revision history**

Edition B ∗ Addition of type with lock mechanism (semi-standard). OZ

**⚠ Safety Instructions** Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.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URL http://www.smcworld.com



Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
D-DN
1st printing NT printing OZ 7150SZ Printed in Japan.

# Multi-connector
# *Series DM*

RoHS

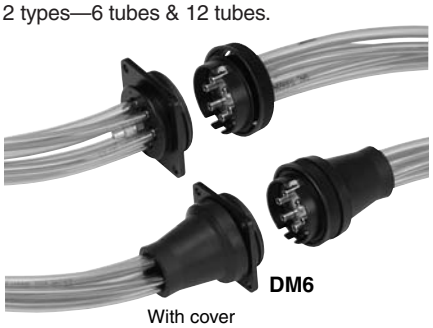
**The use of the multiconnector enables panel mount connections with other apparatus and can provide the reliability of one-touch installation and removal of multi-tubes (nylon, polyurethane). As a result, separate transportation of panel, machinery, and backup units is made easy.**

### One-touch installation and removal
Employs the unique built-in keying mechanism which provides one-touch installation and removal capability even in hard to see locations. In addition, it prevents installation mistakes when re-connecting.

### Installation processes are reduced considerably
As compared with the use of many bulkhead unions, this installation is very easy and installation time is reduced considerably.

### Reliable tube retaining force
This construction mechanism enables clamping and unclamping of every tube in use by one operation and can provide a reliable tube retaining force.

### No. of connecting tubes
2 types—6 tubes & 12 tubes.

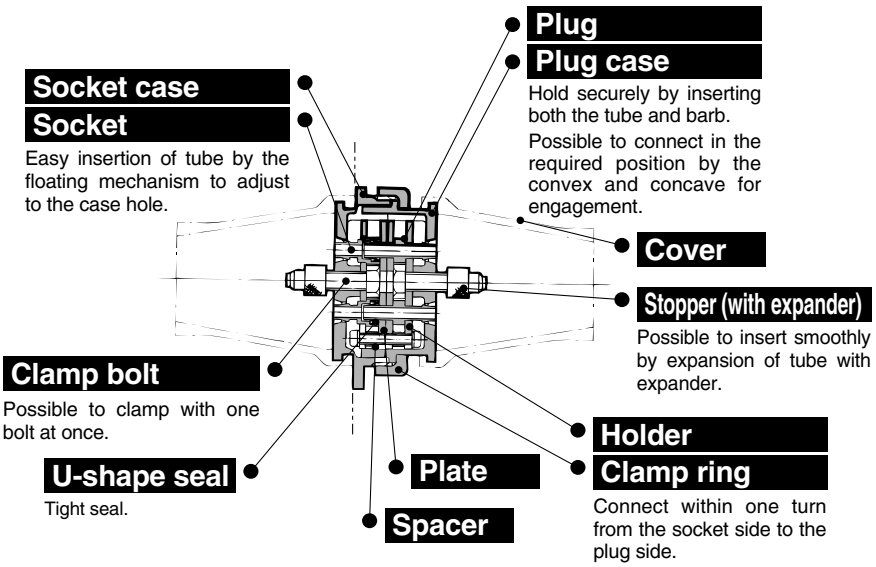


**DM6**

With cover

**DM12**

With cover




PAT.

## Model

| No. of connecting tubes | Model | | | Applicable tubing | | | Replacement parts no. | |
|---|---|---|---|---|---|---|---|---|
| | Multi-connector | Plug side | Socket side | Nylon | Soft nylon | Polyurethane | Cover | Clamp ring |
| 6 | **DM6-04N** | **DM6P-04N** | **DM6S-04N** | T0425 | — | — | DM-C-6 | DM6-P01 |
| | **DM6-04NU** | **DM6P-04NU** | **DM6S-04NU** | T0403 | TS0425 | TU0425 | | |
| | **DM6-06N** | **DM6P-06N** | **DM6S-06N** | T0604 | — | — | | |
| | **DM6-06NU** | **DM6P-06NU** | **DM6S-06NU** | T0645 | TS0604 | TU0604 | | |
| 12 | **DM12-04N** | **DM12P-04N** | **DM12S-04N** | T0425 | — | — | DM-C-12 | DM12-P01 |
| | **DM12-04NU** | **DM12P-04NU** | **DM12S-04NU** | T0403 | TS0425 | TU0425 | | |
| | **DM12-06N** | **DM12P-06N** | **DM12S-06N** | T0604 | — | — | | |
| | **DM12-06NU** | **DM12P-06NU** | **DM12S-06NU** | T0645 | TS0604 | TU0604 | | |

## Specifications

| | |
|---|---|
| **Fluid** | Air |
| **Maximum operating pressure** | 1 MPa |
| **Ambient and fluid temperature** | –5 to 60°C (No freezing) |

## Principal Parts Material

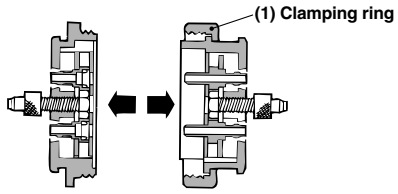
| | |
|---|---|
| Socket case, Plug case, Clamp ring | ADC12 black anodized |
| Plate | SPCC, Chromated |
| Holder | SPCC, Zinc chromated |
| Socket, Plug, Stopper | C3604 |
| U packing | NBR |
| Cover | CR |
| Cross-recessed head machine screw, Clamp bolt | SWRM Zinc chromated |
| Spacer | SPC Zinc chromated |

## How to Use

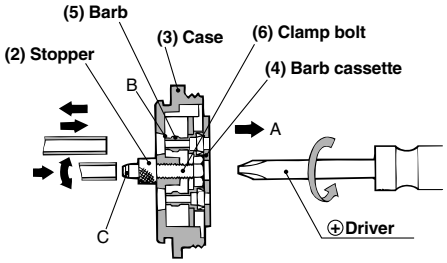
### ⚠Caution

**Removing**

Loosen clamp ring (1), and separate the multiconnector into two parts, multiconnector into two parts, socket side and plug side.



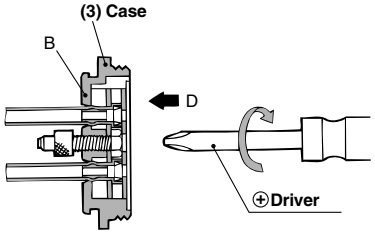

**Insertion and removal of tube**




1. Turn the clamp bolt (6) to the left with a screwdriver, loosen until the stopper (2) touches the case (3), and barb cassette (4) will be pulled out in the direction A. Then clamp portion B, consisting of barb (5) and case (3), will be freed. Next, insert or remove the tube.
2. The corresponding numbers are stamped on both the socket and plug sides for each tube connection.
3. If it is hard to insert the tube, enlarge the tube end with the head of stopper (2), expander C, before inserting tube.
4. Insert tube until it clears mounting of barb (5) completely.

**Clamping of tube**

1. After inserting tube, tighten clamp bolt (6) clockwise with a screwdriver.
2. Barb cassette creeps into the direction D and the tube will be clamped at the B clamp portion (5) consisting of barb (3) and case.

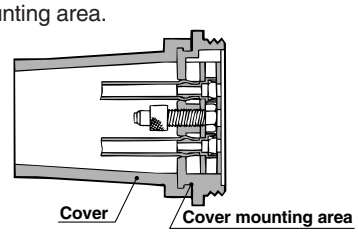



**Connection**

1. Push together and rotate both of the cases, and the plug side will slide into the socket side at the proper position.
2. The ring E, male and female, of the plug side and socket side will interlock with each other at the proper position by pushing together and rotating.
3. Final process of connection is to screw-in the clamp ring.


**Cover mounting**

1. Cover is mountable on both sides, plug side and socket side.
2. Enlarge cover and mount cover onto mounting area.




## How to Order

**DM 6 ☐ – 04 N – ☐**

**Number of connecting tubes**

| | |
|---|---|
| 6 | 6 |
| 12 | 12 |

**Style**

| | |
|---|---|
| Nil | Multi-connector |
| P | Plug side |
| S | Socket side |

**Tubing O.D.**

| | |
|---|---|
| 04 | 4mm |
| 06 | 6mm |

**Tube material**

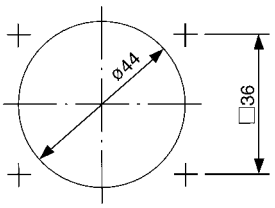
| | |
|---|---|
| N | Nylon |
| NU | Soft nylon Polyurethane |

**Accessory (Option)**

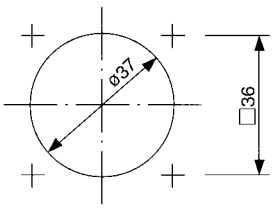
| | |
|---|---|
| C1 | 1 cover (Single side) |
| C2 | 2 covers (Both sides) |

## Dimensions: DM6/12

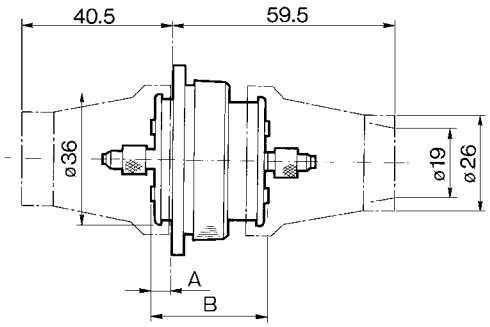
### DM6

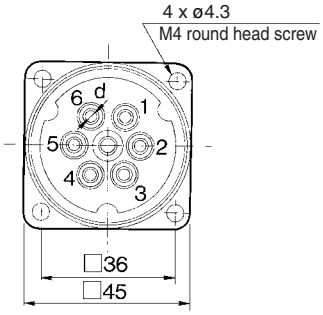



Panel mounting hole
(with the cover at socket side)

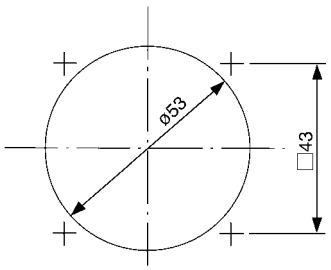



Panel mounting hole

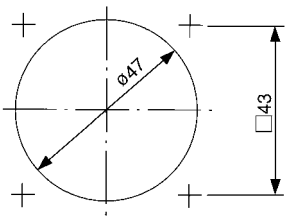


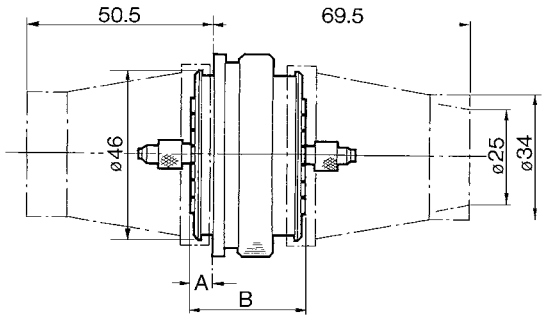

### DM12

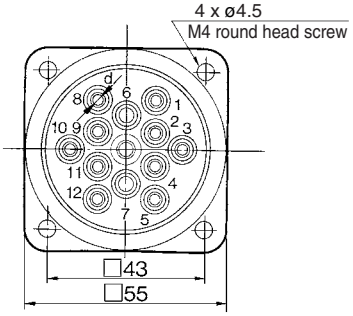



Panel mounting hole
(with the cover at socket side)




Panel mounting hole




| Mode | | Barb I.D. (**d**) | **A** | **B** |
|---|---|---|---|---|
| **DM6-04N** | **DM12-04N** | 1.6 | 5 | 31 |
| **DM6-06N** | **DM12-06N** | 3 | | |
| **DM6-04NU** | **DM12-04NU** | 1.6 | 6 | 31 |
| **DM6-06NU** | **DM12-06NU** | 3 | | |

# *Series DM*
# Specific Product 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.**

## Installing of Tube

### ⚠Caution

**1.** Be sure to insert the tube slowly so that you will feel it move smoothly and can feel it touch the end. Once the tube has been properly inserted, pull it back gently, to make sure that it has a positive seal. If not inserted properly, it may cause air to leak or tube to release.

**2.** When the number of tubes to be used is less than 6 (DM6) or 12 (DM12), the positioning of the tube should be symmetrical to the center.

# Multi-connector with One-touch Fittings

# *Series DMK*

## No. of Connecting Tubes: 6, 12

RoHS

**Multi-connector with One-touch fittings provide quick and easy installation and removal of multiple tubing (nylon, soft nylon, and polyurethane) when connecting to a panel of a device.**

**A unique positioning mechanism allows accurate installation and removal of tubing with ease even in a hard-to-see locations, while preventing piping errors when reconnecting.**

### Built-in One-touch fittings
Applicable to nylon, soft nylon, and polyurethane tubes.

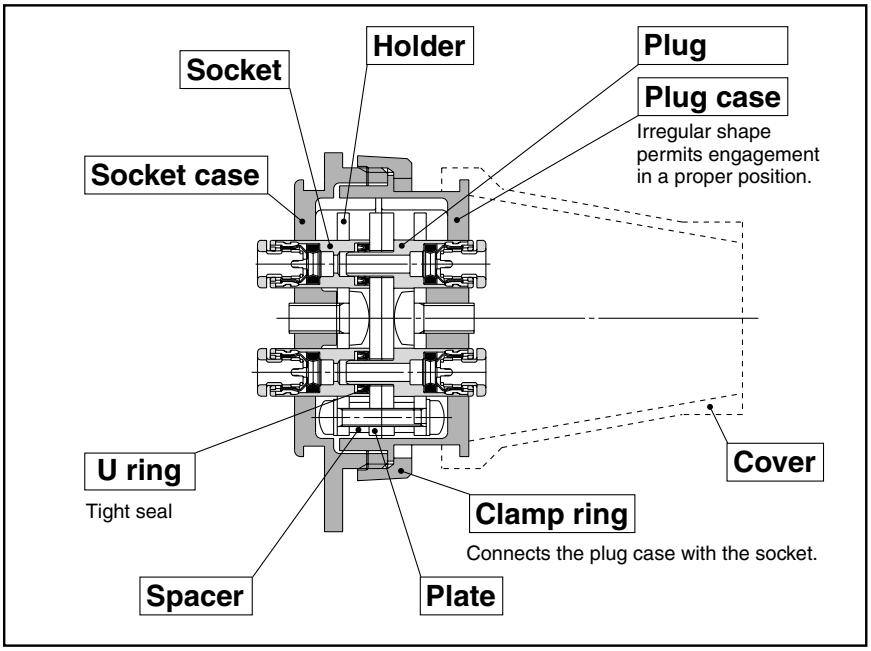
### Saves installation time
Unlike the use of multiple bulkhead unions for panel, Series DMK with built-in One-touch fittings significantly reduces the piping time.

### Secure tube connection
Tubes are easily and securely connected to the multi-connector with built-in One-touch fittings.

### No. of connecting tubes:
2 types of multi-connectors are available: 6 tubes and 12 tubes.

DMK6

DMK12




## Model

| No. of connecting tubes | Model | | | Replacement parts no. | |
|---|---|---|---|---|---|
| | Multi-connector | Plug side only | Socket side only | Cover | Clamp ring |
| 6 | DMK6-23 | DMK6P-23 | DMK6S-23 | DMK-C-6 | DMK6-P01 |
| | DMK6-04 | DMK6P-04 | DMK6S-04 | | |
| 12 | DMK12-23 | DMK12P-23 | DMK12S-23 | DMK-C-12 | DMK12-P01 |
| | DMK12-04 | DMK12P-04 | DMK12S-04 | | |

## Specifications

| | |
|---|---|
| **Applicable tubing materials** | Nylon, Soft nylon, Polyurethane |
| **Applicable tubing O.D. (mm)** | ø3.2, ø4 |
| **Fluid** | Air |
| **Maximum operating pressure** | 1 MPa |
| **Ambient and fluid temperature** | –5 to 60°C (No freezing) |

## Principal Parts Material

| | DMK6 | DMK12 |
|---|---|---|
| Socket case, Plug case Clamp ring | ADC12, White half-polished finish | |
| Plate | SPCC, Chromated | |
| Holder | SPCC, Zinc chromated | A5052, Hard anodized |
| Socket, Plug | C3604 Electroless nickel plated, POM, Stainless steel 304 | |
| U ring | NBR | |
| Cover | Silicon rubber | |
| Round head phillips screw | SWRM, Nickel plated | |
| Round head phillips screw with flat washer | SWRM, Zinc chromated | |
| Spacer | SPC, Zinc chromated | |

## How to Order

**DMK** **6** □ – **04** – □

**Number of connecting tubes**

| | |
|---|---|
| **6** | 6 |
| **12** | 12 |

**Style**

| | |
|---|---|
| **Nil** | Multi-connector |
| **P** | Plug side only |
| **S** | Socket side only |

**Tubing O.D.**

| | |
|---|---|
| **23** | ø3.2 |
| **04** | ø4 |

**Accessory (Option)**

| | |
|---|---|
| **Nil** | None |
| **C1** | Cover single side 1 pc. |
| **C2** | Cover both sides 2 pcs. |



# ⚠ Precautions

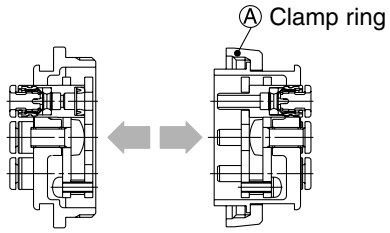
**Be sure to read before handling.**
**Refer to front matters 58 and 59 for Safety Instructions and pages 13 to 16 for Fittings and Tubing Precautions.**

### How to Use

## ⚠ Caution

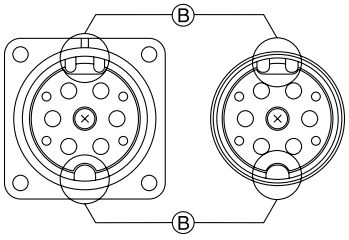
**Disassembly**

(1) Loosen clamp ring A and disassemble the connector into the plug case and socket case.



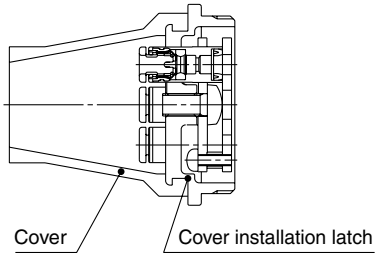

**Connection**

(1) Turn the cases while pressing them against each other until the plug case slides into the socket case at a proper position.
(2) Align at mark B of the plug and socket cases and turn them against each other to connect the two cases.
(3) Screw in the clamp ring to complete the connection.




**Installation of cover**

(1) The cover can be installed on both the plug case or socket case.
(2) Stretch the cover to install on the cover installation latch.




## ⚠ Caution

Please do not attach metal rods or metal pipes. Metal rods or pipes cannot be secured and the fittings will shoot out. Also, if tubes are attached after metal rods or pipes have been attached, the tubes will not hold and may come loose.

### Installation and Removal of One-touch Mini Fittings

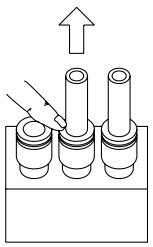
## ⚠ Caution

**Installation of tubing**

1. Cut the tube perpendicularly, using caution not to damage its surface. (Use tube cutter TK-1, 2 or 3. Do not cut the tube with cutting pliers, nippers, scissors, etc.)
2. Grasp the tube, then slowly push it until it comes to a stop.
3. Then, pull it back gently to make sure that it does not come out.

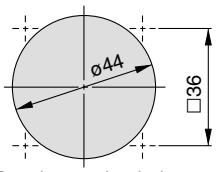
**Removal of tubing**

1. While pushing down on the rim of the release button, pull out the tube in the direction of the arrow (see illustration.) The release button can also be pushed down with a flat-head screwdriver. However, be careful not to break or damage the release button.
2. To reuse the released tube, cut off the damaged portion of the tube.

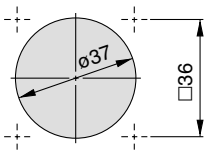


## Dimensions

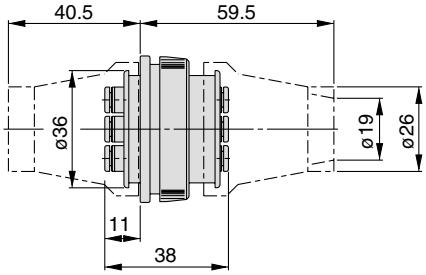
### DMK6

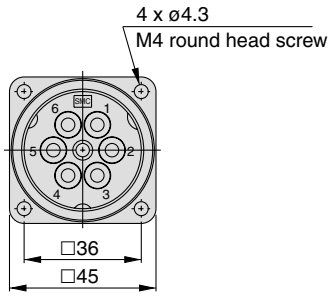



Panel mounting hole
(Socket side: With a cover)

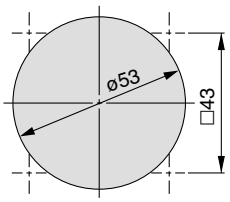



Panel mounting hole

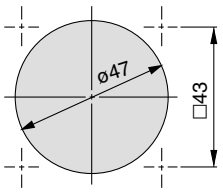


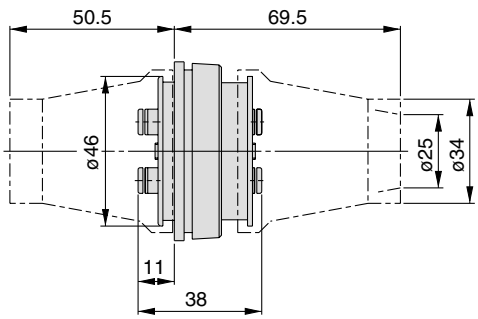

### DMK12

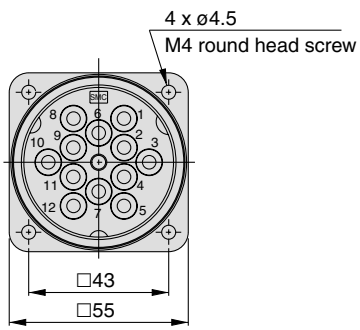



Panel mounting hole
(Socket side: With a cover)




Panel mounting hole



# Rectangular Multi-connector

# *Series KDM*

## No. of Connecting Tubes: 10, 20

RoHS

**Multi-connector is effective in saving labor for separate transportation of the panel and the machine, and for exchanging units due to failure.**

### Substantial reduction in mounting space

In comparison with a model requiring many union joints for panels and partitions, this model needs only a small space.

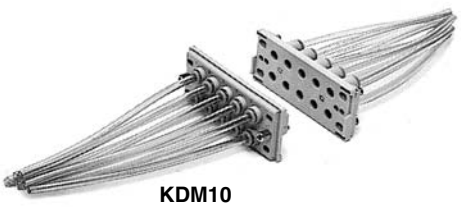
### One-touch connection/disconnection of connector

Multiple pipes can be connected/disconnected in one-touch operation without connection error. Thus man-hours for connection/dis-connection are cut down substantially.

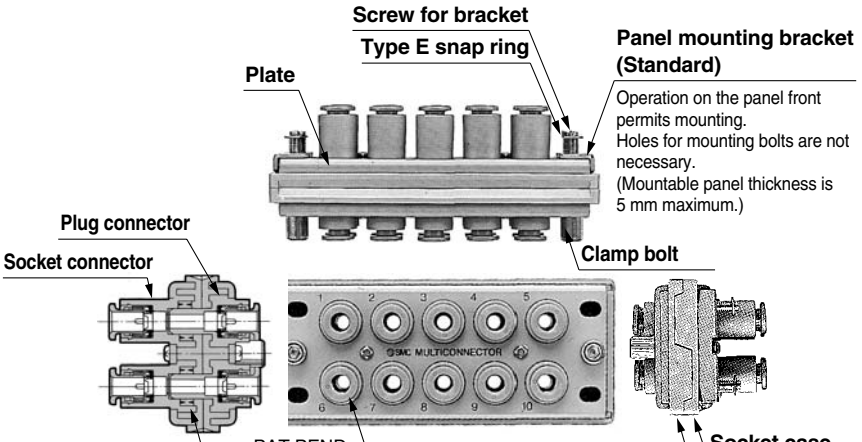
### One-touch tube connection

One-touch fittings substantially cuts down man-hours for piping.

**KDM20**



**KDM10**




## Model

| No. of connecting tubes | Tubing O.D. | Model | Mass (g) | Color of release button |
|---|---|---|---|---|
| 10 | ø3.2 | KDM10-23 | 300 | Blue |
| | ø4 | KDM10-04 | | |
| | ø6 | KDM10-06 | | |
| | ø8 | KDM10-08 | 520 | |
| 20 | ø3.2 | KDM20-23 | 520 | |
| | ø4 | KDM20-04 | | |
| | ø6 | KDM20-06 | | |
| | ø8 | KDM20-08 | 950 | |

## Applicable Tubing

| | |
|---|---|
| Tubing material | FEP, PFA, Nylon, Soft nylon, Polyurethane |
| Tubing O.D. | ø3.2, ø4, ø6, ø8 |

## Specifications

| | |
|---|---|
| **Fluid** | Air |
| **Operating pressure range** Note) | –100 kPa to 1 MPa |
| **Proof pressure** | 1.5 MPa |
| **Ambient and fluid temperature** | –5 to 60°C (No freezing) |

Note) Please avoid using in a vacuum holding application such as a leak tester, since there is leakage.

Made to Order **Made to Order**
(Refer to page 197 for details.)

## ⚠Caution

**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.**

## Principal Parts Material

| | | |
|---|---|---|
| Plug case, Socket case | | POM |
| Plate, Bracket | | SPCC plated |
| Plug connector, Socket connector | Body | PBT, C3604 Electroless nickel plated (ø8) |
| | Chuck | Stainless steel 304 |
| | Guide | Stainless steel 304, C3604 Electroless nickel plated, PBT (ø8) |
| | Collet, Release button | POM |
| | Seal | NBR |
| Clamp bolt, Screw for bracket, Cross-recessed head machine screw | | SWRM (Nickel plated) |
| Type E snap ring | | Stainless steel 304 |

## Model

| No. of connection tubes | Tubing O.D. | Model | | Color of release button |
|---|---|---|---|---|
| | | Plug | Socket | |
| 10 | ø3.2 | KDM10P-23 | KDM10S-23 | Blue |
| | ø4 | KDM10P-04 | KDM10S-04 | |
| | ø6 | KDM10P-06 | KDM10S-06 | |
| | ø8 | KDM10P-08 | KDM10S-08 | |
| 20 | ø3.2 | KDM20P-23 | KDM20S-23 | |
| | ø4 | KDM20P-04 | KDM20S-04 | |
| | ø6 | KDM20P-06 | KDM20S-06 | |
| | ø8 | KDM20P-08 | KDM20S-08 | |

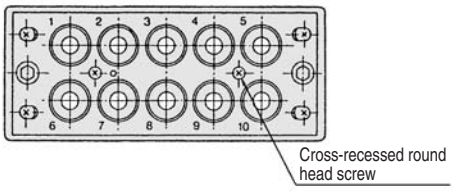
## Mixed Sizes of Plug Connectors and Socket Connectors

The rectangular multi-connector permits connector exchange in any desired position, thus allowing use of different sizes of tubes.

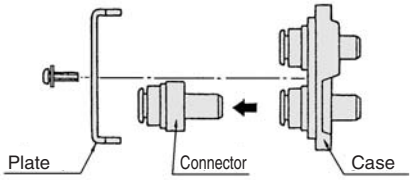
## Model

| Connector | Tubing O.D. | Model | Color of release button |
|---|---|---|---|
| Plug connector | ø3.2 | KDMP-23 | Blue |
| | ø4 | KDMP-04 | |
| | ø6 | KDMP-06 | |
| | ø8 | KDMP-08 | |
| Socket connector (with seal) | ø3.2 | KDMS-23 | |
| | ø4 | KDMS-04 | |
| | ø6 | KDMS-06 | |
| | ø8 | KDMS-08 | |

**1.** Loosen the cross-recessed head machine screw by using a Phillips screwdriver to remove the plate from the case.




**2.** After exchanging connectors in desired places, fix the plate to the case by using a Phillips screwdriver.

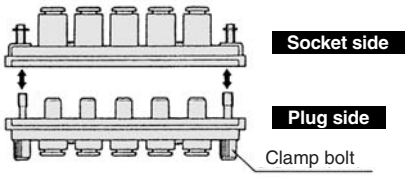



## How to Use

## ⚠Caution

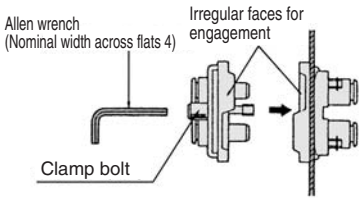
### Separation

Loosen the clamp bolt to separate the plug side from the socket side.



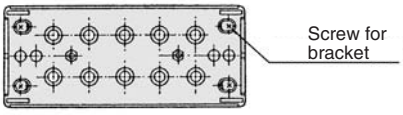

### Connection

Put together the irregular faces for engagement and connect the plug case to the socket. After tightening the clamp bolt by hand, tighten it further with allen wrench (nominal width across flats: 4).

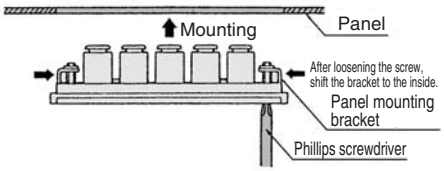



### Panel mounting

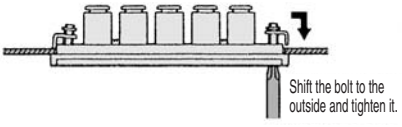
**1.** Loosen (4) screws for bracket on the socket side using a Phillips screwdriver (JIS nominal No. 2) until the bracket touches the stop ring.



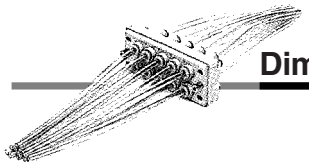

**2.** Shift the panel mounting bracket to the inside (Move the screw for bracket in the longitudinal direction of the slot) and put the connector in the panel mounting hole. (Panel-mounting hole: See Dimensions.)




**3.** After shifting the bolt for bracket to the outside, tighten the bolt by a Phillips screwdriver to fix the socket case.



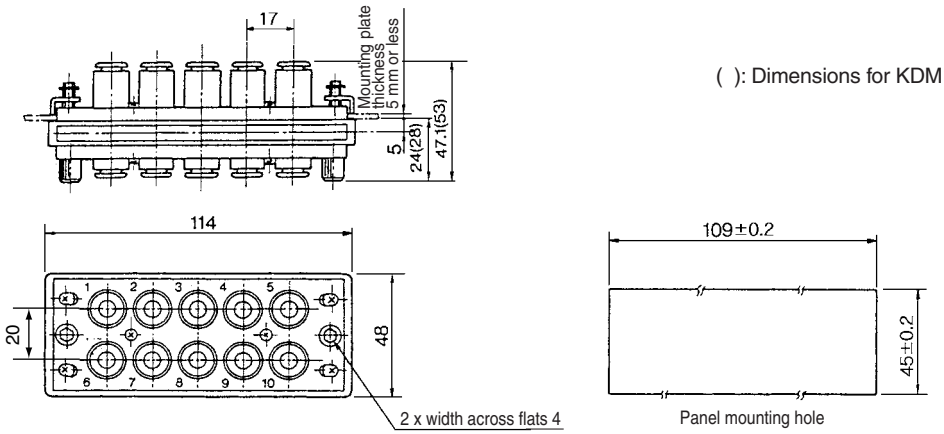

**4.** Loosen the screw for bracket until the bracket touches the stop ring and shift the bracket to the inside to remove the connector from the panel.



## Dimensions

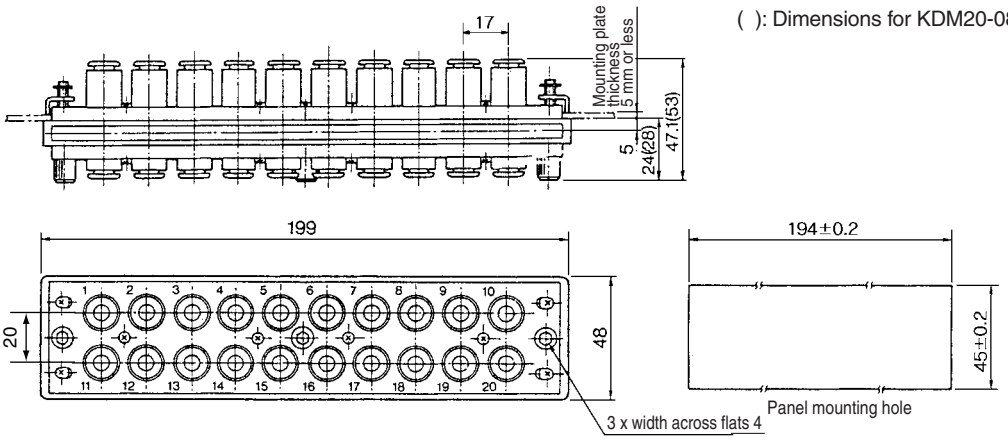
### KDM10

( ): Dimensions for KDM10-08




### KDM20

( ): Dimensions for KDM20-08



# Made to Order Specifications

Made to Order

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) |

Suffix "-X17" to the end of part number.
Example) **KDM10-04-X17**

## 2 Other Specifications

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

## 3 Mixed Tubing Size Type and Other Tubing Size

### ■ Mixed Tubing Size Type

Mixed tubing size manifolds are available to meet your individual requirements. Please consult with SMC for availability.

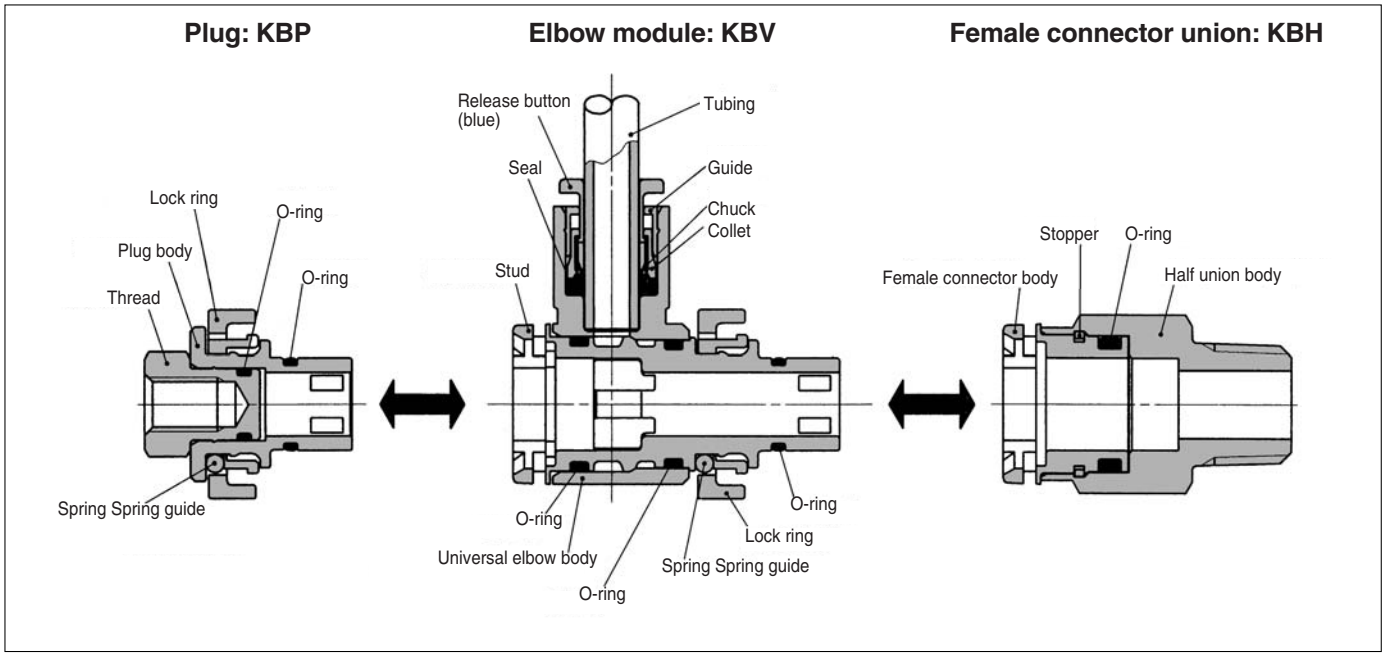
### ■ Other Tubing Size

| Tubing size O.D. | Connection no. | Part no. |
|---|---|---|
| **ø10** | 6 | IN-254-52 |
| **ø12** | 6 | IN-254-53 |

# Piping Module
# *Series KB*

RoHS






## Suitable for centralized distribution of supply air

## Easy distribution utilizing One-touch fittings

## One-touch fitting installation without the use of tools

Locking system makes the use of tools unnecessary and piping more efficient.

## Air output direction possible through 360°

Universal construction allows for changes in air output direction after connections are completed.

## Applicable Tubing

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

## Applicable Thread Size

| | |
|---|---|
| Male thread | R1/8, R1/4, R3/8, R1/2 |
| Female thread | M5 x 0.8, M6 x 1, Rc 1/8, Rc 1/4, Rc 3/8, Rc 1/2 |

## Specifications

| | | |
|---|---|---|
| **Fluid** | | Air |
| **Operating pressure range** Note) | | –100 kPa to 1 MPa |
| **Proof pressure** | | 3 MPa |
| **Ambient and fluid temperature** | | –5 to 60°C (No freezing) |
| **Thread** | **Mounting section** | JIS B 0203 (Taper thread for piping) |
| | | JIS B 0205 (Metric coarse thraed) |
| | **Nut section** | JIS B 0205 (Metric fine thread) |
| **Seal on the threads (Standard)** | | With thread sealant |
| **Copper-free (Standard)** | | Brass parts are all electroless nickel plated |

Note) Please avoid using in a vacuum holding application such as a leak tester, since there is leakage.

## Principal Parts Material

| | |
|---|---|
| Body | C3604, PBT, POM |
| Stud | POM |
| Lock ring | POM |
| Spring | Stainless steel 304 |
| Spring guide | POM |
| Stopper | POM |
| Thread | C3604 |
| Guide | Stainless steel 304, PBT |
| Collet, Release button | POM |
| Seal, O-ring | NBR |
| Chuck | Stainless steel 304 |

## How to Order

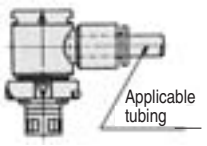
### 1 Air Output Port: KBV, KBZ (P.207)

**KB V 1 – 04**

- V: Model
- 1: Body size
- 04: Tube size/Connecting female thread size

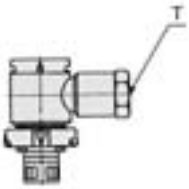
#### Elbow Module: KBV

| Model | Applicable tubing O.D. |
|---|---|
| KBV1-04 | 4 |
| KBV1-06 | 6 |
| KBV2-06 | |
| KBV2-08 | 8 |
| KBV3-08 | |
| KBV3-10 | 10 |
| KBV3-12 | 12 |
| KBV4-12 | |
| KBV4-16 | 16 |



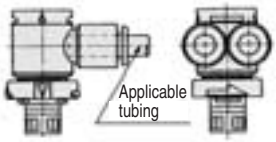

#### Elbow Socket Module: KBV

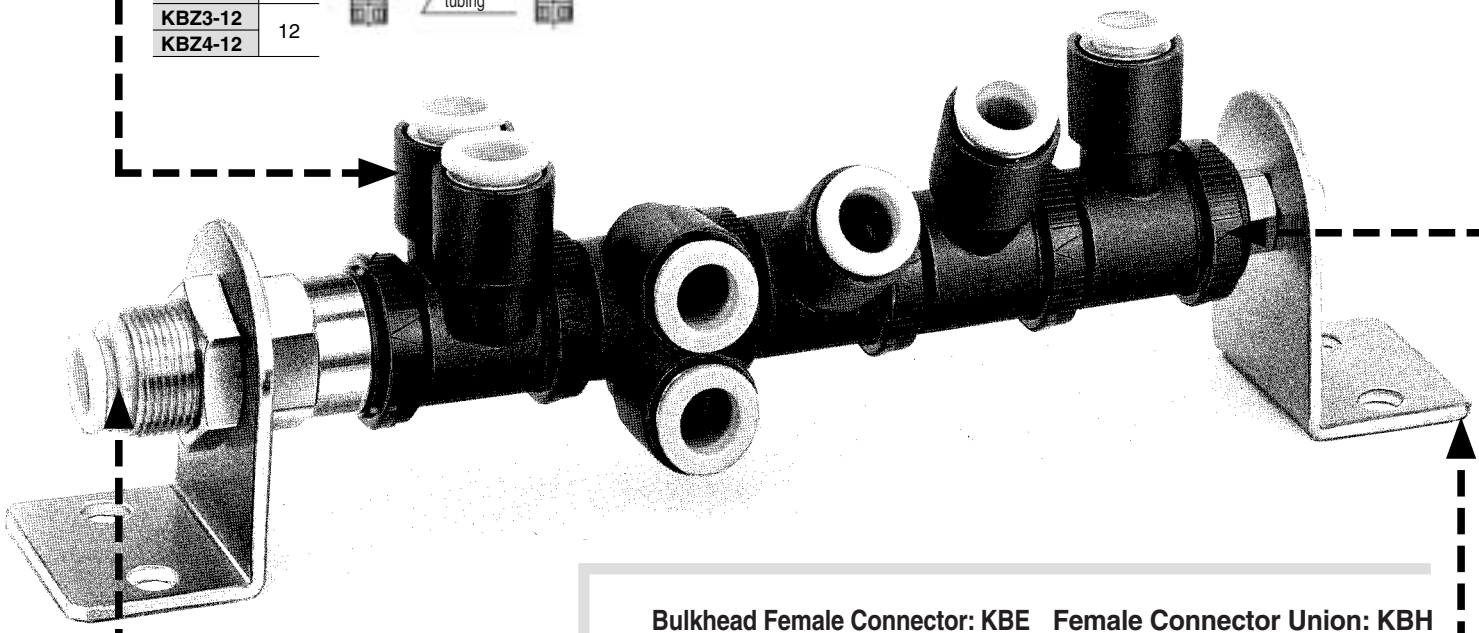
| Model | T Connection thread |
|---|---|
| KBV1-M5 | M5 x 0.8 |
| KBV1-M6 | M6 x 1 |
| KBV2-M5 | M5 x 0.8 |
| KBV2-M6 | M6 x 1 |
| KBV2-R1 | Rc 1/8 |
| KBV3-R1 | |
| KBV3-R2 | Rc 1/4 |
| KBV4-R2 | |
| KBV4-R3 | Rc 3/8 |




#### Branch Elbow Module: KBZ

| Model | Applicable tubing O.D. |
|---|---|
| KBZ1-04 | 4 |
| KBZ1-06 | 6 |
| KBZ2-08 | 8 |
| KBZ3-10 | 10 |
| KBZ3-12 | 12 |
| KBZ4-12 | |



### 2 Air Supply Port: KBE, KBH, KBB, KBS, KBL

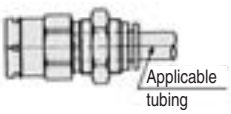
(P.208, 209)

**KB H 1 – R1 S**

- H: Model
- 1: Body size
- R1: Tube size/Connection thread size
- S: With sealant (Male thread only) ····· Standard specifications

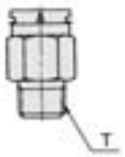
#### Bulkhead Female Connector: KBE

| Model | Applicable tubing O.D. |
|---|---|
| KBE1-04 | 4 |
| KBE1-06 | 6 |
| KBE2-06 | |
| KBE2-08 | 8 |
| KBE2-10 | 10 |
| KBE3-08 | 8 |
| KBE3-10 | 10 |
| KBE3-12 | 12 |
| KBE4-12 | |



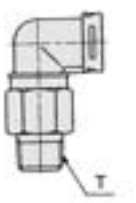

#### Female Connector Union: KBH

| Model | T Connection thread |
|---|---|
| KBH1-R1S | R 1/8 |
| KBH2-R1S | |
| KBH2-R2S | R 1/4 |
| KBH2-R3S | R 3/8 |
| KBH3-R2S | R 1/4 |
| KBH3-R3S | R 3/8 |
| KBH3-R4S | R 1/2 |
| KBH4-R3S | R 3/8 |
| KBH4-R4S | R 1/2 |




#### Female Connector Elbow Union: KBL

| Model | T Connection thread |
|---|---|
| KBL1-R1S | R 1/8 |
| KBL2-R1S | |
| KBL2-R2S | R 1/4 |
| KBL2-R3S | R 3/8 |
| KBL3-R2S | R 1/4 |
| KBL3-R3S | R 3/8 |
| KBL3-R4S | R 1/2 |
| KBL4-R3S | R 3/8 |
| KBL4-R4S | R 1/2 |




#### Male Connector Socket: KBB

| Model | T Connection thread |
|---|---|
| KBB1-M5 | M5 x 0.8 |
| KBB2-M6 | M6 x 1 |
| KBB3-R1 | Rc 1/8 |
| KBB4-R2 | Rc 1/4 |


#### Female Connector Socket: KBS

| Model | T Connection thread |
|---|---|
| KBS1-R1 | Rc 1/8 |
| KBS2-R2 | Rc 1/4 |
| KBS3-R3 | Rc 3/8 |
| KBS4-R4 | Rc 1/2 |

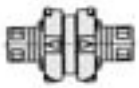
## 3 Other Pipng Material: KBN, KBD, KBR(P.210)

**KB N 1**
Model
Body size

**KB D 2 – 1**
Model
Body size
Body size

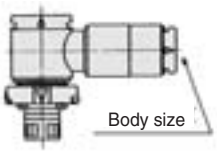
### Nipple: KBN

| Model |
|---|
| KBN1 |
| KBN2 |
| KBN3 |
| KBN4 |



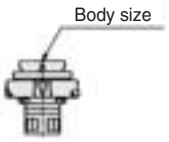
### Elbow Different Diameter Female Connector Module: KBD

| Model |
|---|
| KBD2-1 |
| KBD3-2 |
| KBD4-3 |




### Different Diameter Module: KBR

| Model |
|---|
| KBR2-1 |
| KBR3-2 |
| KBR4-3 |

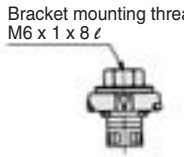



## 4 Plug/Cap: KBP, KBC(P.211)

**KB P 1**
Body size
Model

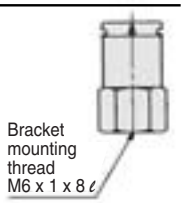
### Plug: KBP

| Model |
|---|
| KBP1 |
| KBP2 |
| KBP3 |
| KBP4 |




### Cap: KBC

| Model |
|---|
| KBC1 |
| KBC2 |
| KBC3 |
| KBC4 |



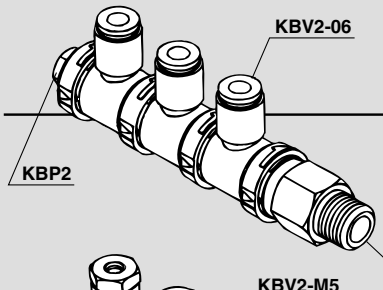

## 5 Bracket: KBX(P.211)

**KB X 6**
Applicable thread size
Model

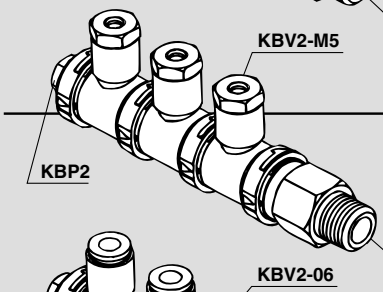
### Bracket: KBX

| Model |
|---|
| KBX6 |
| KBX12 |
| KBX14 |
| KBX16 |
| KBX20 |
| KBX22 |

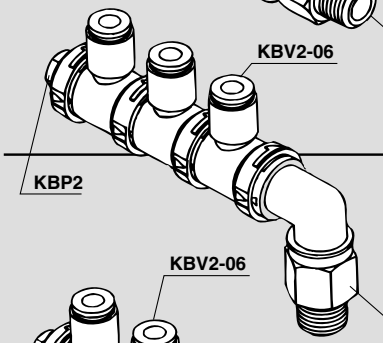
## Combination Examples



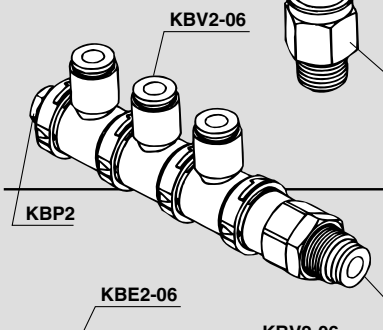

Component module
KBV2-06 ·····3
KBH2-R2S ·····1
KBP2 ·····1



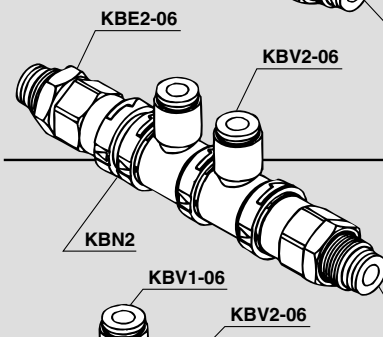

Component module
KBV2-M5 ·····3
KBH2-R2S ·····1
KBP2 ·····1



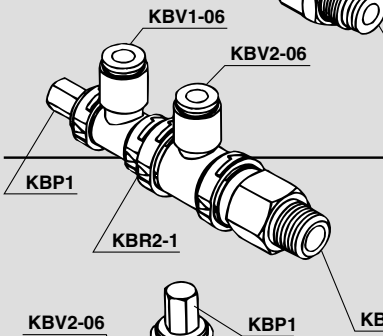

Component module
KBV2-06 ·····3
KBL2-R2S ·····1
KBP2 ·····1



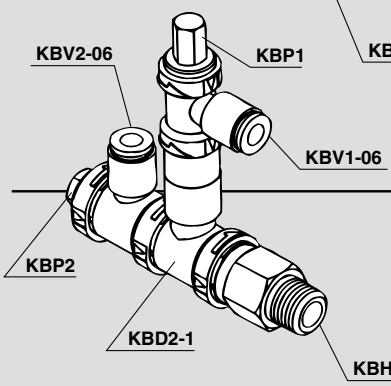

Component module
KBV2-06 ·····3
KBL2-R2S ·····1
KBP2 ·····1




Component module
KBV2-06 ·····2
KBE2-06 ·····2
KBN2 ·····1




Component module
KBV2-06 ·····1
KBV1-06 ·····1
KBR2-1 ·····1
KBH2-R2S ·····1
KBP1 ·····1




Component module
KBV2-06 ·····1
KBV1-06 ·····1
KBD2-1 ·····1
KBH2-R2S ·····1
KBP2 ·····1
KBP1 ·····1

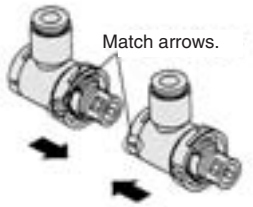
# ⚠Precautions

**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.**

## How to Install

### ⚠Caution

**1.** Insert each piping module by matching the arrows on the lock ring and the body of the other module. Insert together. If it becomes difficult to match both modules, rotate modules to left and right while pushing together. When a match is not done, piping material will eject under pressure.



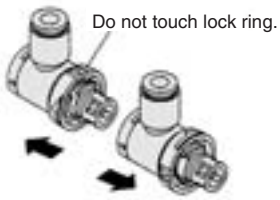

**2.** Confirm insertion by turning modules to right and left or pulling on them. But do not touch the lock ring in the process.


## How to Remove

### ⚠Caution

**1.** Exhaust the pressure in pipe before removing. If lock is released under pressure, piping material will eject. Turn the lock ring 90° clockwise (in the direction of the arrow). This will cancel out the affects of the lock ring. You need not hold lock ring in place. Lock ring will hold automatically in this position.


**2.** Remove the modules by pulling apart. Do not touch the lock ring. After removal, the lock ring will return to normal position automatically beause of a return spring.
When removed, it automatically rotates 90° in the opposite direction as its spring is built into the lock ring.



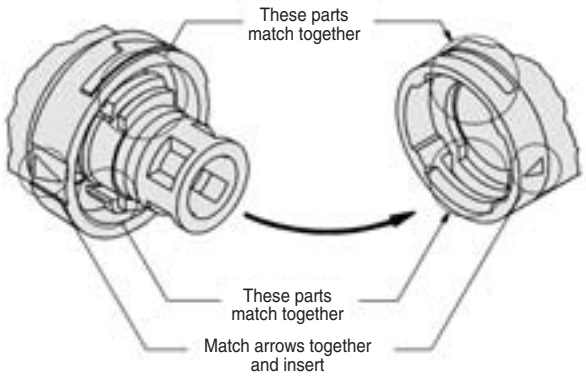

## Others

### ⚠Caution

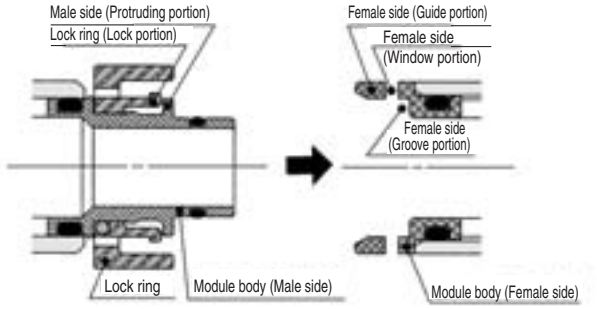
**1.** When connecting piping material to each other, do not apply a bending force, etc. Piping material may be deformed or damaged. If unit is longer than 5 stations, please use brackets or it may result in deformation of the piping material by bends, deflection, etc.
**2.** Each type of module materials is capable of being piped with all other materials.
**3.** When attaching female connector union and female connector elbow union, use the body's hexagon surface and tighten threads with a suitable wrench.
Use the root nearest the thread when tightening with a wrench.
Hex. across flats may be deformed, if using an improper wrench for hex. across flats.

## Piping Module-Insertion and Removal Structual Drawing

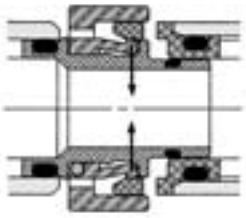
**Piping module-Male side** **Piping module-Female side**



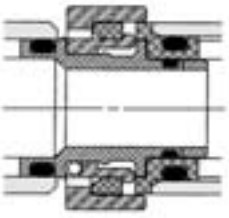

**1.** Match arrows together and insert piping module male side into female side.




**2.** By inserting the lock ring, the lock portion touches female side guide portion and falls into the direction shown with the arrow.



**3.** By pushing tighter, lock portion goes over female side guide portion and snaps into window slot portion. Male side protruding portion snaps into female side groove portion. This performs the function of a detent.



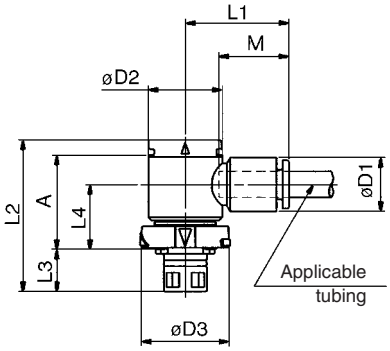
Male module inserted fully into position.

**4.** To remove, rotate lock ring 90° to release lock portion from female side window slot, then the lock is released. Removal is complete.

## 1 Air Output Port

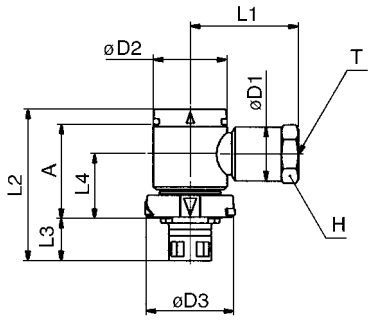
### Elbow Module: KBV

| Model | Applicable tubing O.D. | D1 | D2 | D3 | L1 | L2 | L3 | L4 | A | M | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **KBV1-04** | 4 | 10.4 | 13.6 | 16.8 | 22.0 | 33.0 | 10.4 | 13.0 | 19.5 | 16.0 | 4.3 |
| **KBV1-06** | 6 | 12.8 | | | 24.0 | | | | | 17.0 | 4.9 |
| **KBV2-06** | | | 17.6 | 21.0 | 25.0 | 36.0 | 10.1 | 15.5 | 22.5 | | 7.3 |
| **KBV2-08** | 8 | 15.2 | | | 28.5 | | | | | 18.5 | 8.3 |
| **KBV3-08** | | | 25.2 | 28.6 | 29.5 | 42.6 | 11.4 | 20.5 | 27.0 | | 15.0 |
| **KBV3-10** | 10 | 18.5 | | | 31.5 | | | 19.5 | | 21.0 | 17.5 |
| **KBV3-12** | 12 | 20.9 | | | 34.0 | | | | | 22.0 | 19.3 |
| **KBV4-12** | | | 27.0 | 30.4 | 35.0 | 41.4 | 12.2 | 18.0 | 25.0 | | 20.2 |
| **KBV4-16** | 16 | 26.5 | 32.3 | | 39.0 | 55.0 | | 24.0 | 38.5 | 25.0 | 36.4 |



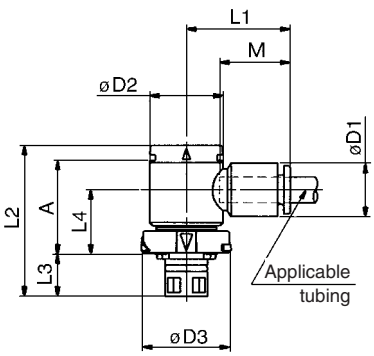

### Elbow Socket Module: KBV

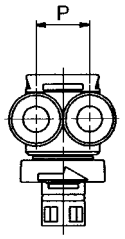
| Model | T Connection thread | H width across flats | D1 | D2 | D3 | L1 | L2 | L3 | L4 | A | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **KBV1-M5** | M5 x 0.8 | 12 | 12.8 | 13.6 | 16.8 | 25.0 | 33.0 | 10.4 | 13.0 | 19.5 | 12.4 |
| **KBV1-M6** | M6 x 1 | | | | | | | | | | 11.6 |
| **KBV2-M5** | M5 x 0.8 | | | 17.6 | 21.0 | 26.0 | 36.0 | 10.1 | 15.5 | 22.5 | 14.8 |
| **KBV2-M6** | M6 x 1 | | | | | | | | | | 14.0 |
| **KBV2-R1** | Rc1/8 | 14 | 15.2 | | | 29.5 | | | | | 15.3 |
| **KBV3-R1** | | | | 25.2 | 28.6 | 30.5 | 42.6 | 11.4 | 20.5 | 27.0 | 22.0 |
| **KBV3-R2** | Rc1/4 | 19 | 18.5 | | | 32.0 | | | 19.5 | | 27.0 |
| **KBV4-R2** | | 22 | 20.9 | 27.0 | 30.4 | 36.5 | 41.4 | 12.2 | 18.0 | 25.0 | 40.6 |
| **KBV4-R3** | Rc3/8 | | | | | 43.0 | | | | | 44.7 |




### Branch Elbow Module: KBZ

| Model | Applicable tubing O.D. | D1 | D2 | D3 | L1 | L2 | L3 | L4 | A | M | P | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KBZ1-04** | 4 | 10.4 | 13.6 | 16.8 | 22.0 | 33.0 | 10.4 | 13.0 | 19.5 | 16.0 | 10.4 | 5.8 |
| **KBZ1-06** | 6 | 12.8 | | | 24.0 | | | | | 17.0 | 12.8 | 7.1 |
| **KBZ2-08** | 8 | 15.2 | 17.6 | 21.0 | 28.5 | 36.0 | 10.1 | 15.5 | 22.5 | 18.5 | 15.2 | 11.6 |
| **KBZ3-10** | 10 | 18.5 | 25.2 | 28.6 | 31.5 | 42.6 | 11.4 | 19.5 | 27.0 | 21.0 | 18.5 | 24.4 |
| **KBZ3-12** | 12 | 20.9 | | | 34.0 | | | | | 22.0 | 20.9 | 27.1 |
| **KBZ4-12** | | | 27.0 | 30.4 | 35.0 | 41.4 | 12.2 | 18.0 | 25.0 | | | 28.5 |



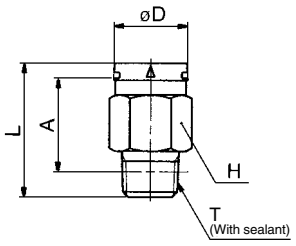



## 2 Air Supply Port

### Female Connector Union: KBH

| Model | T Connection thread | H width across flats | D | L | A* | Mass (g) |
|---|---|---|---|---|---|---|
| **KBH1-R1S** | R 1/8 | 14 | 13.6 | 27.0 | 20.0 | 13.4 |
| **KBH2-R1S** | R 1/8 | 17 | 17.6 | 29.0 | 21.5 | 19.2 |
| **KBH2-R2S** | R 1/4 | | | 32.0 | 22.5 | 23.3 |
| **KBH2-R3S** | R 3/8 | | | 27.5 | 17.5 | 22.5 |
| **KBH3-R2S** | R 1/4 | 19 | 25.2 | 35.5 | 25.4 | 26.5 |
| **KBH3-R3S** | R 3/8 | | | 31.0 | 20.5 | 23.2 |
| **KBH3-R4S** | R 1/2 | 22 | | | 19.0 | 41.5 |
| **KBH4-R3S** | R 3/8 | 24 | 27.0 | 35.5 | 24.5 | 44.5 |
| **KBH4-R4S** | R 1/2 | | | 31.5 | 19.0 | 36.5 |

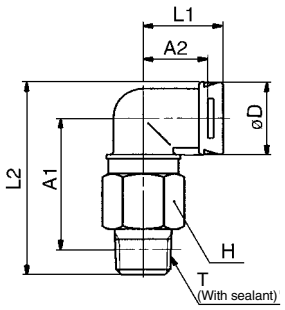
* Reference dimensions after R thread




### Female Connector Elbow Union: KBL

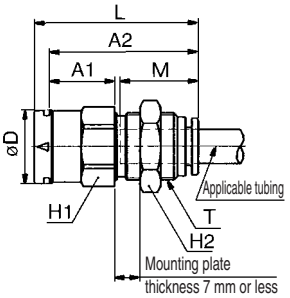
| Model | T Connection thread | H width across flats | D | L1 | L2 | A1* | A2 | Mass (g) |
|---|---|---|---|---|---|---|---|---|
| **KBL1-R1S** | R 1/8 | 14 | 13.6 | 18 | 38.0 | 27.0 | 15.0 | 14.8 |
| **KBL2-R1S** | R 1/8 | 17 | 17.6 | 19 | 43.5 | 30.5 | 15.5 | 23.2 |
| **KBL2-R2S** | R 1/4 | | | | 46.5 | 31.5 | | 27.3 |
| **KBL2-R3S** | R 3/8 | | | | 42.0 | 26.5 | | 26.5 |
| **KBL3-R2S** | R 1/4 | 19 | 25.2 | 22 | 56.0 | 37.5 | 18.0 | 32.6 |
| **KBL3-R3S** | R 3/8 | | | | 51.5 | 32.5 | | 29.3 |
| **KBL3-R4S** | R 1/2 | 22 | | | | 31.0 | | 47.6 |
| **KBL4-R3S** | R 3/8 | 24 | 27.0 | 24 | 61.5 | 41.5 | 19.5 | 57.6 |
| **KBL4-R4S** | R 1/2 | | | | 57.5 | 36.0 | | 48.8 |

* Reference dimensions after R thread




### Bulkhead Female Connector: KBE

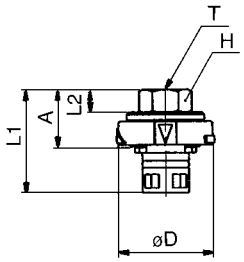
| Model | Applicable tubing O.D. | T (M) | H1 width across flats | H2 width across flats | D | L | A1 | A2 | M | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| **KBE1-04** | 4 | M12 x 1 | 14 | 14 | 13.6 | 34.5 | 15.0 | 31.5 | 16.0 | 17.9 |
| **KBE1-06** | 6 | M14 x 1 | 17 | 17 | | 35.5 | 15.5 | 32.0 | 17.0 | 27.0 |
| **KBE2-06** | | | | | 17.6 | 37.5 | 17.0 | 33.5 | | 26.0 |
| **KBE2-08** | 8 | M16 x 1 | 22 | 19 | | 39.0 | 15.5 | 35.5 | 18.5 | 29.5 |
| **KBE2-10** | 10 | M20 x 1 | | 24 | | 41.5 | 15.5 | 38.0 | 21.0 | 57.5 |
| **KBE3-08** | 8 | M16 x 1 | | 19 | 25.2 | 43.5 | 19.5 | 39.5 | 18.5 | 51.6 |
| **KBE3-10** | 10 | M20 x 1 | | 24 | | 45.0 | 18.5 | 41.0 | 21.0 | 63.0 |
| **KBE3-12** | 12 | M22 x 1 | 24 | 27 | | 46.0 | | 42.0 | 22.0 | 83.4 |
| **KBE4-12** | | | | | 27.0 | 44.0 | 16.5 | 40.0 | | 66.6 |



## 2 Air Supply Port

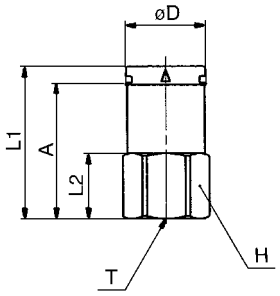
### Male Connector Socket: KBB

| Model | T Connection thread | H width across flats | D | L1 | L2 | A | Mass (g) |
|---|---|---|---|---|---|---|---|
| **KBB1-M5** | M5 x 0.8 | 8 | 16.8 | 29.5 | 11.5 | 19.0 | 6.0 |
| **KBB2-M6** | M6 x 1 | 10 | 21.0 | 23.0 | 5.0 | 12.5 | 6.3 |
| **KBB3-R1** | Rc 1/8 | 14 | 28.6 | 27.5 | 6.5 | 16.0 | 11.4 |
| **KBB4-R2** | Rc 1/4 | 19 | 30.4 | 31.5 | 9.5 | 19.5 | 24.1 |




### Female Connector Socket: KBS

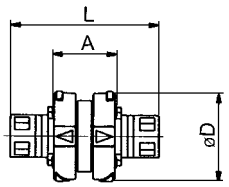
| Model | T Connection thread | H width across flats | D | L1 | L2 | A | Mass (g) |
|---|---|---|---|---|---|---|---|
| **KBS1-R1** | Rc 1/8 | 14 | 13.6 | 28.0 | 11.0 | 25.0 | 17.8 |
| **KBS2-R2** | Rc 1/4 | 17 | 17.6 | 33.5 | 14.0 | 30.0 | 28.5 |
| **KBS3-R3** | Rc 3/8 | 19 | 25.2 | 38.5 | 17.0 | 34.5 | 33.8 |
| **KBS4-R4** | Rc 1/2 | 24 | 27.0 | 39.0 | 20.0 | 35.0 | 57.1 |



## 3 Other Piping Material

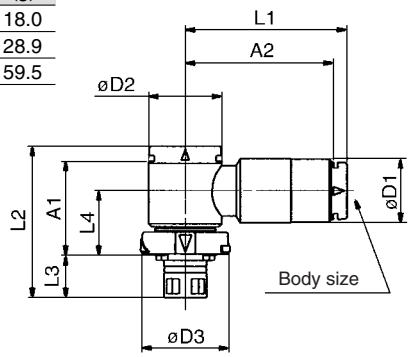
### Nipple: KBN

| Model | D | L | A | Mass (g) |
|---|---|---|---|---|
| **KBN1** | 16.8 | 35.0 | 14.0 | 2.9 |
| **KBN2** | 21.0 | | 15.0 | 4.6 |
| **KBN3** | 28.6 | 39.0 | 16.5 | 7.2 |
| **KBN4** | 30.4 | 41.5 | 17.0 | 10.2 |



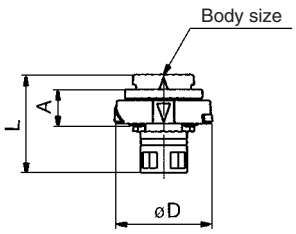

### Elbow Different Diameter Female Connector Module: KBD

| Model | D1 | D2 | D3 | L1 | L2 | L3 | L4 | A1 | A2 | Mass (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| **KBD2-1** | 15.2 | 17.6 | 21.0 | 39.0 | 36.0 | 10.1 | 15.5 | 22.5 | 35.5 | 18.0 |
| **KBD3-2** | 20.9 | 25.2 | 28.6 | 38.0 | 42.6 | 11.4 | 19.5 | 27.0 | 34.5 | 28.9 |
| **KBD4-3** | 26.5 | 32.3 | 30.4 | 44.5 | 55.0 | 12.2 | 24.0 | 38.5 | 40.0 | 59.5 |




### Different Diameter Module: KBR

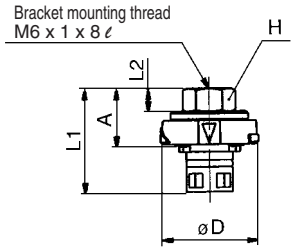
| Model | D | L | A | Mass (g) |
|---|---|---|---|---|
| **KBR2-1** | 21.0 | 21.5 | 8.0 | 2.8 |
| **KBR3-2** | 28.6 | 25.0 | 10.0 | 4.3 |
| **KBR4-3** | 30.4 | 30.5 | 14.0 | 8.8 |



## 4 Plug / Cap

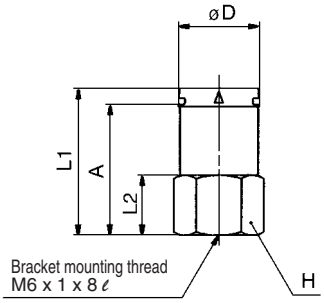
### Plug: KBP

| Model | H width across flats | D | L1 | L2 | A | Mass (g) |
|---|---|---|---|---|---|---|
| **KBP1** | 8 | 16.8 | 29.5 | 11.5 | 19.0 | 5.6 |
| **KBP2** | 10 | 21.0 | 23.0 | 5.0 | 12.5 | 6.8 |
| **KBP3** | 14 | 28.6 | 25.5 | | 14.0 | 13.4 |
| **KBP4** | 19 | 30.4 | 27.0 | | 15.0 | 24.0 |




### Cap: KBC

| Model | H width across flats | D | L1 | L2 | A | Mass (g) |
|---|---|---|---|---|---|---|
| **KBC1** | 14 | 13.6 | 30.0 | 13.0 | 26.5 | 23.4 |
| **KBC2** | 17 | 17.6 | 32.5 | | 28.5 | 37.0 |
| **KBC3** | 19 | 25.2 | 35.5 | 14.0 | 31.5 | 46.7 |
| **KBC4** | 24 | 27.0 | 34.0 | 15.0 | 29.5 | 74.4 |




## 5 Bracket

### Bracket: KBX

| Model | A | Applicable model | Mass (g) |
|---|---|---|---|
| **KBX6** | 7 | KBP, KBC | 27.5 |
| **KBX12** | 13 | KBE1-04 | 26.1 |
| **KBX14** | 15 | KBE1-06, KBE2-06 | 25.4 |
| **KBX16** | 17 | KBE2-08, KBE3-08 | 24.4 |
| **KBX20** | 21 | KBE2-10, KBE3-10 | 22.6 |
| **KBX22** | 23 | KBE3-12, KBE4-12 | 21.6 |

∗ In the case of KBX6, use the enclosed mounting screws designed for KBP (plug) and KBC (cap).
Screw size: Cross recessed round head screw (M6 x 1 x 8ℓ)
Screw color: Black