

# Insert Fittings

## KF Series

RoHS

### 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

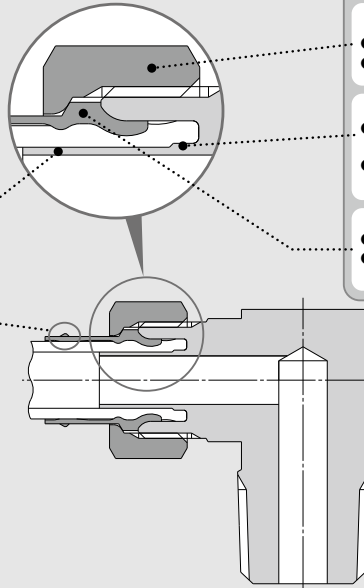
- No need to remove nuts
- Tube can be installed as-is

#### 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	
ø10	ø6.5	R3/8	KFH10U-03S	—	
		R1/2	KFH10U-04S	—	
	ø7.5	R1/4	KFH10N-02S	KFH10B-02S	
		R3/8	KFH10N-03S	KFH10B-03S	
	ø8	R1/2	KFH10N-04S	KFH10B-04S	
		R1/4	KFH12U-02S	—	
	ø12	ø8	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			



## Branch Tee

Use to branch line from female thread in both 90° 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	
ø10	ø6.5	R3/8	KFT10U-03S	—	
		R1/2	KFT10U-04S	—	
	ø7.5	R1/4	KFT10N-02S	KFT10B-02S	
		R3/8	KFT10N-03S	KFT10B-03S	
	ø8	R1/2	KFT10N-04S	KFT10B-04S	
		R1/4	KFT12U-02S	—	
	ø12	ø8	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 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	
ø10	ø6.5	R3/8	KFL10U-03S	—	
		R1/2	KFL10U-04S	—	
	ø7.5	R1/4	KFL10N-02S	KFL10B-02S	
		R3/8	KFL10N-03S	KFL10B-03S	
	ø8	R1/2	KFL10N-04S	KFL10B-04S	
		R1/4	KFL12U-02S	—	
	ø12	ø8	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			



## Male Run Tee

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

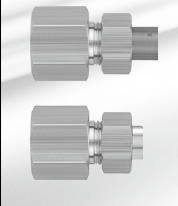
Applicable tubing size (mm)		Connection thread	Model		
O.D.	I.D.		Resin sleeve	Brass sleeve	
ø4	ø2.5	R1/8	KFY04-01S	KFY04B-01S	
		R1/4	KFY04-02S	KFY04B-02S	
ø6	ø4	R1/8	KFY06-01S	KFY06B-01S	
		R1/4	KFY06-02S	KFY06B-02S	
		R3/8	KFY06-03S	KFY06B-03S	
ø8	ø5	R1/8	KFY08U-01S	—	
		R1/4	KFY08U-02S	—	
		R3/8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



## Female Union

Use to pipe from male thread such as pressure gauge.

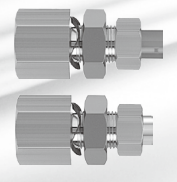
Applicable tubing size (mm)		Connection thread	Model	
O.D.	I.D.		Resin sleeve	Brass sleeve
ø4	ø2.5	R1/4	KFF04-02	KFF04B-02
		R1/4	KFF06-02	KFF06B-02
ø6	ø4	R3/8	KFF06-03	KFF06B-03
		R1/4	KFF08U-02	—
ø8	ø6	R1/4	KFF08N-02	KFF08B-02
		R1/4	KFF10U-02	—
ø10	ø7.5	R1/4	KFF10N-02	KFF10B-02
		R1/4	KFF12U-02	—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



## 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
		R3/8	KFE08U-03	—
ø8	ø6	R3/8	KFE08N-03	KFE08B-03
		R3/8	KFE10U-03	—
ø10	ø7.5	R3/8	KFE10N-03	KFE10B-03
		R3/8	KFE12U-03	—
ø12	ø9	R3/8	KFE12N-03	KFE12B-03



## Swivel Elbow

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

Applicable tubing size (mm)		Connec-tion 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	ø6	R1/8	KFV08B-01S	KFV08B-01S
		R1/4	KFV08B-02S	KFV08B-02S
		R3/8	KFV08B-03S	KFV08B-03S
ø10	ø6.5	R1/4	KFV10U-02S	—
		R3/8	KFV10U-03S	—
		R1/2	KFV10U-04S	—
ø7.5	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	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.

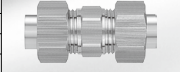
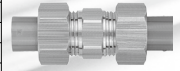
Applicable tubing size (mm)		Connec-tion thread	Model	
O.D.	I.D.		Resin sleeve	Brass sleeve
ø4	ø2.5	R1/8	KFW04-01S	KFW04B-01S
		R1/4	KFW04-02S	KFW04B-02S
ø6	ø4	R1/8	KFW06-01S	KFW06B-01S
		R1/4	KFW06-02S	KFW06B-02S
		R3/8	KFW06-03S	KFW06B-03S
ø8	ø5	R1/8	KFW08U-01S	—
		R1/4	KFW08U-02S	—
		R3/8	KFW08U-03S	—
ø6	ø6	R1/8	KFW08B-01S	KFW08B-01S
		R1/4	KFW08B-02S	KFW08B-02S
		R3/8	KFW08B-03S	KFW08B-03S
ø10	ø6.5	R1/4	KFW10U-02S	—
		R3/8	KFW10U-03S	—
		R1/2	KFW10U-04S	—
ø7.5	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	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
		KFH06-00	KFH06B-00
ø6	ø4	KFH08U-00	—
		KFH08N-00	KFH08B-00
ø8	ø6	KFH10U-00	—
		KFH10N-00	KFH10B-00
ø10	ø7.5	KFH12U-00	—
		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
		KFT06-00	KFT06B-00
ø6	ø4	KFT08U-00	—
		KFT08N-00	KFT08B-00
ø8	ø6	KFT10U-00	—
		KFT10N-00	KFT10B-00
ø10	ø7.5	KFT12U-00	—
		KFT12N-00	KFT12B-00



## Bulkhead Union

Use to connect tubes through a panel.

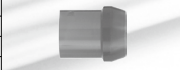
Applicable tubing size (mm)		Model	
O.D.	I.D.	Resin sleeve	Brass sleeve
ø4	ø2.5	KFE04-00	KFE04B-00
		KFE06-00	KFE06B-00
ø6	ø4	KFE08U-00	—
		KFE08N-00	KFE08B-00
ø10	ø6.5	KFE10U-00	—
		KFE10N-00	KFE10B-00
ø12	ø8	KFE12U-00	—
		KFE12N-00	KFE12B-00



## Plug

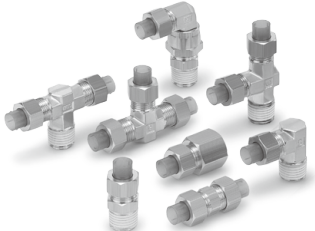
Use to plug unused fittings.

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



# Insert Fittings

# KF Series



Resin sleeve



Brass sleeve

## Specifications

Sleeve material	Resin	Brass
Fluid	Air, N <sub>2</sub> , Water, Turbine oil class 1 (ISO VG32) (Note 2) (Note 3) (Note 5)	Air, N <sub>2</sub> , Steam, Turbine oil class 1 (ISO VG32) (Note 2) (Note 3)
Ambient and fluid temperature	-5 to 60°C (No freezing) (Note 4) Water: 0 to 60°C (No freezing)	-5 to 150°C (No freezing) (Note 4)
Operating pressure range (Note 1)	-101.3 kPa to 1 MPa (Note 4)	
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, steam and turbine oil class 1 (ISO VG32).  
 Note 3) Consult with SMC regarding applicable tube separately.  
 Note 4) Check the operating pressure range and operating temperature range of the tubing.  
 Note 5) Deionized water is not recommended for use as it may affect the material used in the fittings. In addition, it is known to degrade the water quality.

## 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	●	●	—	●	—	●	—	●
TUS	Soft polyurethane	●	●	●	—	●	—	●	—
TUH	Hard polyurethane (High pressure)	●	●	●	—	●	—	●	—
TUZ	Wear resistant polyurethane	●	●	●	—	●	—	●	—

## How to Order

**KF H 06** — **01 S** —

Type	Description
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

● Made to Order  
Refer to page 295 for details.

● 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

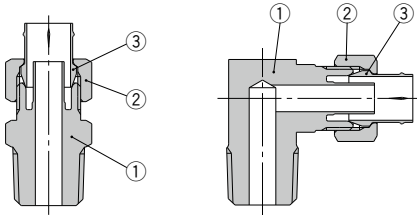
Sealant (Male thread)	
Nil	None
S	With sealant

● 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	—	—
	Brass	B	—	B	—	B	—	B	—
Polyolefin	Resin	Nil	—	N	—	N	—	N	—
	Brass	B	—	B	—	B	—	B	—
Soft polyolefin	Resin	Nil	U	—	U	—	U	—	—
	Brass	Nil	—	N	—	N	—	N	—
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	—
Soft polyurethane	Resin	Nil	U	—	U	—	U	—	—
	Hard polyurethane (High pressure)	Resin	Nil	U	—	U	—	U	—
Wear resistant polyurethane	Resin	Nil	U	—	U	—	U	—	

For details on applicable tubing O.D. and port size combinations for each model, refer to the charts on the Dimensions page.

## Construction

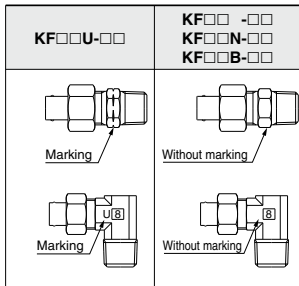


### Principal Parts Material

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

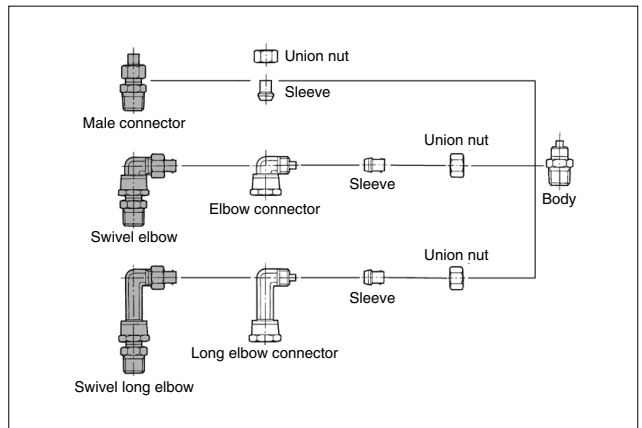
- Fittings used with polyurethane tube and soft polyolefin tube (Tube O.D.  $\phi 8$ ,  $\phi 10$  and  $\phi 12$ ) are identified by the following marks on the body.
- Union nut and sleeve are compatible.



### 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  $\phi 6$  tube.) Swivel fittings, elbow (KFV) and (KFW) constitute the combination with a male connector (KFH) and connector as shown in the diagram.



**Made to Order**

Symbol	Specifications
<b>X2</b>	Copper-free (Electroless nickel plated)

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

#### Elbow Connector: KFV

Part no.	Applicable tubing O.D./I.D.
<b>KFV-04</b>	$\phi 4/\phi 2.5$
<b>KFV-06</b>	$\phi 6/\phi 4$
<b>KFV-08U</b>	$\phi 8/\phi 5$
<b>KFV-08N</b>	$\phi 8/\phi 6$
<b>KFV-10U</b>	$\phi 10/\phi 6.5$
<b>KFV-10N</b>	$\phi 10/\phi 7.5$
<b>KFV-12U</b>	$\phi 12/\phi 8$
<b>KFV-12N</b>	$\phi 12/\phi 9$

#### Union Nut: KFN

Part no.	Applicable tubing O.D.
<b>KFN-04</b>	$\phi 4$
<b>KFN-06</b>	$\phi 6$
<b>KFN-08</b>	$\phi 8$
<b>KFN-10</b>	$\phi 10$
<b>KFN-12</b>	$\phi 12$

#### Long Elbow Connector: KFW

Part no.	Applicable tubing O.D./I.D.
<b>KFW-04</b>	$\phi 4/\phi 2.5$
<b>KFW-06</b>	$\phi 6/\phi 4$
<b>KFW-08U</b>	$\phi 8/\phi 5$
<b>KFW-08N</b>	$\phi 8/\phi 6$
<b>KFW-10U</b>	$\phi 10/\phi 6.5$
<b>KFW-10N</b>	$\phi 10/\phi 7.5$
<b>KFW-12U</b>	$\phi 12/\phi 8$
<b>KFW-12N</b>	$\phi 12/\phi 9$

#### Sleeve: KFS

Part no.		Applicable tubing O.D.
Resin sleeve	Brass sleeve	
<b>KFS-04</b>	<b>KFSB-04</b>	$\phi 4$
<b>KFS-06</b>	<b>KFSB-06</b>	$\phi 6$
<b>KFS-08</b>	<b>KFSB-08</b>	$\phi 8$
<b>KFS-10</b>	<b>KFSB-10</b>	$\phi 10$
<b>KFS-12</b>	<b>KFSB-12</b>	$\phi 12$

# KF Series

## Dimensions

### Male Connector: KFH

Applicable tubing size (mm)		Conne- tion thread	Model	Width across flats		L <sub>1</sub>	L <sub>2</sub>	M	ød	A*	Effective area (mm <sup>2</sup> )	Weight (g)		
O.D.	I.D.			H <sub>1</sub>	H <sub>2</sub>									
ø4	ø2.5	R1/8	KFH04-01S	10		29.6	22.9	15.5	1.5	1.6	13			
		R1/4	KFH04-02S	14		34	27.3							
		R1/8	KFH04B-01S	10	10	26.5	23.5	12.4	1.5	1.6	14			
		R1/4	KFH04B-02S	14		30.9	27.9							
ø6	ø4	R1/8	KFH06-01S	10		29.3	22.6	15.2	3	6	14			
		R1/4	KFH06-02S	14		33.7	27							
		R3/8	KFH06-03S	17	12	34.1	27.4	12.2	3	6	15			
		R1/8	KFH06B-01S	10		26.3	23.3							
		R1/4	KFH06B-02S	14		30.7	27.7	12.2	3	6	15			
		R3/8	KFH06B-03S	17		31.1	28.1							
ø8	ø5	R1/8	KFH08U-01S	12		29.3	22.6	16.2	4	11	16			
		R1/4	KFH08U-02S	14		33.7	27							
		R3/8	KFH08U-03S	17		34.1	27.4							
	ø6	ø5	R1/8	KFH08N-01S	12		29.3	22.6	16.2	5	17	16		
			R1/4	KFH08N-02S	14	14	33.7	27						
			R3/8	KFH08N-03S	17		34.1	27.4						
		ø6	ø5	R1/8	KFH08B-01S	12		26.4	23.4	13.3	5	17	17	
				R1/4	KFH08B-02S	14		30.8	27.8					
				R3/8	KFH08B-03S	17		31.2	28.2					
			ø10	ø6.5	R1/4	KFH10U-02S	17		35.3	28	18.8	5.5	21	32
					R3/8	KFH10U-03S	17		35.7	28.4				
					R1/2	KFH10U-04S	22		38.9	31.6				
ø7.5	ø6.5	R1/4		KFH10N-02S	17		35.3	28	18.8	6.5	30	31		
		R3/8		KFH10N-03S	17	17	35.7	28.4						
		R1/2		KFH10N-04S	22		38.9	31.6						
	ø7.5	ø6.5		R1/4	KFH10B-02S	17		31.5	28.5	15.0	6.5	30	33	
				R3/8	KFH10B-03S	17		31.9	28.9					
				R1/2	KFH10B-04S	22		35.1	32.1					
ø12	ø8	R1/4	KFH12U-02S	17		35.8	29	19.3	7	35	33			
		R3/8	KFH12U-03S	17		36.2	29.4							
		R1/2	KFH12U-04S	22		39.4	32.6							
	ø9	ø8	R1/4	KFH12N-02S	17		35.8	29	19.3	8	45	31		
			R3/8	KFH12N-03S	17	19	36.2	29.4						
			R1/2	KFH12N-04S	22		39.4	32.6						
		ø9	ø8	R1/4	KFH12B-02S	17		32.1	29.1	15.5	8	45	33	
				R3/8	KFH12B-03S	17		32.5	29.5					
				R1/2	KFH12B-04S	22		35.7	32.6					

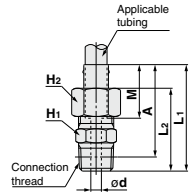
\* Reference dimensions after installation of R thread.



Resin sleeve

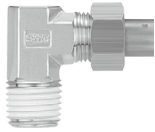


Brass sleeve



**Dimensions**

**Male Elbow: KFL**

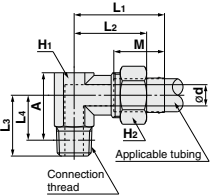


Resin sleeve



Brass sleeve

Applicable tubing size (mm)		Conne- tion thread	Model	Width across flats		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	M	ød	A*	Effective area (mm <sup>2</sup> )	Weight (g)						
O.D.	I.D.			H <sub>1</sub>	H <sub>2</sub>															
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											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											30.2	23.5	20	13.7	21	38	
		R1/4	KFL06B-02S											17	23					
ø6	ø4	R1/8	KFL06B-01S	10	12	24.2	21.2	17	13	12.2	3	19.3	6.0	23						
		R1/4	KFL06B-02S											19	28					
		R3/8	KFL06B-03S											27.2	24.2	20	13.7	21	39	
		R1/8	KFL08U-01S											28.2	21.5	18	14	21.3	9.5	30
ø8	ø5	R1/4	KFL08U-02S	12	14	28.2	21.5	21	15	16.2	4	22.3	11	32						
		R3/8	KFL08U-03S											30.2	23.5	20	13.7	21	39	
		R1/8	KFL08N-01S											28.2	21.5	18	14	21.3	12	31
		R1/4	KFL08N-02S											21	15	22.3	16	32		
ø8	ø6	R3/8	KFL08N-03S	12	14	30.2	23.5	20	13.7	13.3	5	21	16	37						
		R1/8	KFL08B-01S											25.3	22.3	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	22	20	38						
		R3/8	KFL10U-03S											21	14.7	25.3	18	44		
		R1/2	KFL10U-04S											33.8	26.5	25	16.8	22	66	
		R1/4	KFL10N-02S											22	16	23.3	23	36		
	ø10	ø7.5	R3/8	KFL10N-03S	12	17	31.8	24.5	21	14.7	15.0	6.5	22	26	43					
			R1/2	KFL10N-04S											33.8	26.5	25	16.8	25.3	65
			R1/4	KFL10B-02S											22	16	23.3	23	39	
			R3/8	KFL10B-03S											28.0	25.0	21	14.7	22	44
ø12	ø8	R1/2	KFL10B-04S	14	19	30.0	27.0	25	16.8	19.3	7	25.3	24	66						
		R1/4	KFL12U-02S											23	17	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			
	ø12	ø9	R1/4	KFL12N-02S	14	19	34.3	27.5	23	17	15.5	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											23	17	25.5	27	53	
ø12	ø9	R3/8	KFL12B-03S	14	19	30.6	27.6	22	15.7	15.5	8	24.2	35	54						
		R1/2	KFL12B-04S											25	16.8	25.3	69			



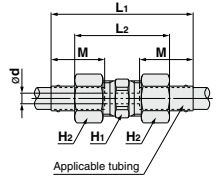
\* Reference dimensions after installation of R thread.

# KF Series

## Dimensions

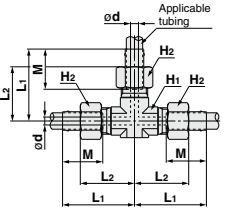
### Straight Union: KFH

Applicable tubing size (mm)		Model	Width across flats		L <sub>1</sub>	L <sub>2</sub>	M	ød	Effective area (mm <sup>2</sup> )	Weight (g)
O.D.	I.D.		H <sub>1</sub>	H <sub>2</sub>						
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
		KFH08B-00			35.5	29.6	13			22
ø10	ø6.5	KFH10U-00	17	17	44.6	30	18.8	5.5	21	36
		KFH10B-00			37.0	31.0	15.0			39
ø12	ø8	KFH12U-00	17	19	45.5	32	19.3	7	35	42
		KFH12B-00			38.1	32.2	15.5			41
	ø9	KFH12B-00						8	45	44



### Tee Union: KFT

Applicable tubing size (mm)		Model	Width across flats		L <sub>1</sub>	L <sub>2</sub>	M	ød	Effective area (mm <sup>2</sup> )	Weight (g)
O.D.	I.D.		H <sub>1</sub>	H <sub>2</sub>						
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
		KFT08B-00			27.3	24.3	13.3			53
ø10	ø6.5	KFT10U-00	12	17	31.8	24.5	18.8	5.5	21	65
		KFT10B-00			28.0	25.0	15.0			63
ø12	ø8	KFT12U-00	14	19	34.3	27.5	19.3	7	35	89
		KFT12B-00			30.6	27.6	15.5			85
	ø9	KFT12B-00						8	45	90





**Dimensions**

**Branch Tee: KFT**

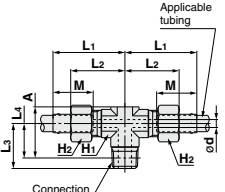


Resin sleeve



Brass sleeve

Applicable tubing size (mm)		Connection thread R	Model	Width across flats		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	M	ød	A*	Effective area (mm <sup>2</sup> )	Weight (g)			
O.D.	I.D.			H <sub>1</sub>	H <sub>2</sub>												
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					17						30			
		R1/4	KFT04B-02S					19						35			
ø6	ø4	R1/8	KFT06-01S	10	10	27.2	20.5	17	13	15.2	3	19.3	10	32			
		R1/4	KFT06-02S					19						37			
		R3/8	KFT06-03S	12	12	30.2	23.5	22	15.7	12.2	23	12	53				
		R1/8	KFT06B-01S	10	10	24.2	21.2	17	13					19.3	10	34	
		R1/4	KFT06B-02S					19		39							
		R3/8	KFT06B-03S	12	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	24.3	14	49			
		R1/4	KFT08U-02S					23						17	24.3	19	50
		R3/8	KFT08U-03S					22						15.7	23	56	
	R1/8	KFT08N-01S	12	14	27.3	24.3	20	16	13.3	5	23.3	16	46	46			
	R1/4	KFT08N-02S					23							17	24.3	49	
	R3/8	KFT08N-03S					22							15.7	23	54	
	R1/8	KFT08B-01S	12	14	27.3	24.3	20	16	15.0	6.5	24.3	16	48	48			
	R1/4	KFT08B-02S					23							17	24.3	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	63	
R1/2			KFT10U-04S	14					33.8						26.5	27	18.8
R1/4		KFT10N-02S	12	17	31.8	24.5	23	17	15.0	6.5	24.3	30	57	57			
R3/8		KFT10N-03S					22							15.7	23	62	
R1/2		KFT10N-04S					14							33.8	26.5	27	18.8
R1/4		KFT10B-02S	12	17	28.0	25.0	23	17	15.0	6.5	24.3	30	60	60			
R3/8		KFT10B-03S					22							15.7	23	65	
R1/2	KFT10B-04S	14					30.0							27.0	27	18.8	27.3
ø12	ø8	R1/4	KFT12U-02S	14	19	34.3	27.5	25	19	19.3	7	26.2	44	79			
		R3/8	KFT12U-03S					24						17.7	27.3	81	
		R1/2	KFT12U-04S					14						27	18.8	27.3	94
	R1/4	KFT12N-02S	14	19	30.6	27.6	25	19	15.5	8	27.5	32	78	75			
	R3/8	KFT12N-03S					24							17.7	26.2	48	78
	R1/2	KFT12N-04S					14							27	18.8	27.3	93
	R1/4	KFT12B-02S	14	19	30.6	27.6	24	17.7	15.5	8	26.2	48	81	81			
	R3/8	KFT12B-03S					27							18.8	27.3	96	
	R1/2	KFT12B-04S					14							27	18.8	27.3	96



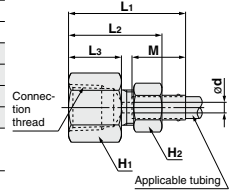
\* Reference dimensions after installation of R thread.

# KF Series

## Dimensions

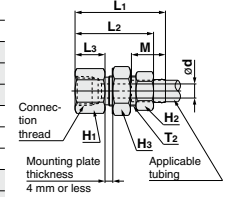
### Female Union: KFF

Applicable tubing size (mm)		Connection thread Rc	Model	Width across flats			L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	M	ød	Effective area (mm <sup>2</sup> )	Weight (g)	
				O.D.	I.D.	H <sub>1</sub>								H <sub>2</sub>
						H <sub>1</sub>								H <sub>2</sub>
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		
Resin sleeve ø6	ø4	Rc1/4	KFF06-02	17	12	33.2	26.5	15	15.2	3	6	27		
			KFF08N-02	19		35.2	28.5	17				30		
			KFF06B-03	17		30.2	27.2	15				28		
			KFF06B-03	19		32.2	29.2	17				12.2	31	
ø8	ø6	Rc1/4	KFF08U-02	17	14	33.2	26.5	15	16.2	4	11	28		
			KFF08B-02			30.3	27.3		13.3	5	17	29		
Brass sleeve ø10	ø6.5	Rc1/4	KFF10U-02	17	17	34.8	27.5	15	18.8	5.5	21	32		
			KFF10N-02						31.0	28.0	15.0	6.5	30	33
	KFF10B-02													
ø12	ø9	Rc1/4	KFF12U-02	17	19	35.3	28.5	15	19.3	7	35	35		
			KFF12N-02						31.6	28.6	15.5	8	45	36
			KFF12B-02									38		



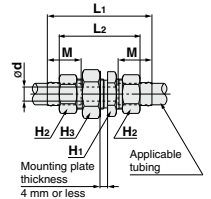
### Bulkhead Connector: KFE

Applicable tubing size (mm)		Connection thread Rc	Model	Width across flats			L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	M	ød	T <sub>2</sub>	Mounting hole	Effective area (mm <sup>2</sup> )	Weight (g)		
				O.D.	I.D.	H <sub>1</sub>										H <sub>2</sub>	H <sub>3</sub>
						H <sub>1</sub>										H <sub>2</sub>	H <sub>3</sub>
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							
Resin sleeve ø8	ø5	Rc3/8	KFE08U-03	19	14	19	46.2	39.5	17	16.2	4	M12 x 1	13	11	49		
			KFE08N-03							43.3	40.3			13.3	5	17	50
	ø6.5		ø7.5	Rc3/8	KFE10U-03	19	17	22	48.8	41.5	17	18.8	5.5	M15 x 1	16	21	63
					KFE10N-03							45.0	42.0			15.0	6.5
ø8	ø9	Rc3/8	KFE12U-03		22	19	24	51.3	44.5	17	19.3	7	M17 x 1	18	35	93	
			KFE12N-03								47.6	44.6			15.5	8	45
				KFE12B-03												93	



### Bulkhead Union: KFE

Applicable tubing size (mm)		Model	Width across flats			L <sub>1</sub>	L <sub>2</sub>	M	ød	Mounting hole	Effective area (mm <sup>2</sup> )	Weight (g)			
			O.D.	I.D.	H <sub>1</sub>								H <sub>2</sub>	H <sub>3</sub>	
					H <sub>1</sub>								H <sub>2</sub>	H <sub>3</sub>	
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	
Resin sleeve 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	Rc1/2	KFE08U-00	17	14	19	52.3	39	16.2	4	13	11	47		
			KFE08N-00						46.5			40.6	13	5	17
	ø6.5		ø7.5	Rc1/2	KFE10U-00	19	17	22	56.6	42	18.8	5.5	16	21	67
					KFE10N-00						49.0			43.0	15.0
ø8	ø9	Rc1/2	KFE12U-00		22	19	24	59.5	46	19.3	7	18	35	87	
			KFE12N-00							52.1			46.2	15.5	8
				KFE12B-00										88	

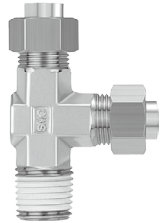


**Dimensions**

**Male Run Tee: KFY**

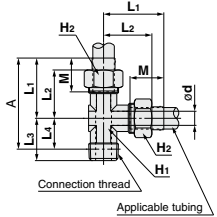


Resin sleeve



Brass sleeve

Applicable tubing size (mm)		Connection thread R	Model	Width across flats		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub> *	M	ød	A*	Effective area (mm <sup>2</sup> )	Weight (g)
O.D.	I.D.			H <sub>1</sub>	H <sub>2</sub>									
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											
			R1/8 KFY04B-01S											
			R1/4 KFY04B-02S											
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											
			R3/8 KFY06-03S	12	30.2	23.5	22	15.7	45.8	13	51			
			R1/8 KFY06B-01S											
			R1/4 KFY06B-02S	10	12	24.2	21.2	17	13	37.2	11	33		
			R3/8 KFY06B-03S										12	27.2
ø8	ø5		R1/8 KFY08U-01S	12	14	30.2	23.5	20	16	16.2	4	46.2		
			R1/4 KFY08U-02S											
			R3/8 KFY08U-03S											
	R1/8 KFY08N-01S	12	14	27.3	24.3	22	15.7	45.8	18	47				
	R1/4 KFY08N-02S													
	R3/8 KFY08N-03S													
	R1/8 KFY08B-01S	12	14	27.3	24.3	20	16	43.3	18	49				
	R1/4 KFY08B-02S													
	R3/8 KFY08B-03S													
	ø10	ø6.5		R1/4 KFY10U-02S	12	17	31.8	24.5	23	17	18.8	5.5	48.8	30
R3/8 KFY10U-03S														
R1/2 KFY10U-04S				14	33.8	26.5	27	18.8	52.6	38	89			
R1/4 KFY10N-02S														
R3/8 KFY10N-03S		12	17	31.8	24.5	23	17	47.4	46	62				
R1/2 KFY10N-04S														
R1/4 KFY10B-02S		12	17	28.0	25.0	23	17	45.0	33	60				
R3/8 KFY10B-03S														
R1/2 KFY10B-04S	14	17	30.0	27.0	22	15.7	43.6	46	65					
R1/2 KFY10B-04S														
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											
			R1/2 KFY12U-04S											
	R1/4 KFY12N-02S	14	19	30.6	27.6	25	19	49.6	36	76				
	R3/8 KFY12N-03S													
	R1/2 KFY12N-04S													
	R1/4 KFY12B-02S	14	19	30.6	27.6	24	17.7	48.2	54	81				
	R3/8 KFY12B-03S													
	R1/2 KFY12B-04S	14	19	30.6	27.6	27	18.8	49.4	54	95				
	R1/2 KFY12B-04S													



\* Reference dimensions after installation of R thread.

# KF Series

## Dimensions

### Swivel Elbow: KFV

(mm)

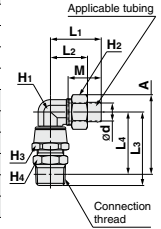


Resin sleeve



Brass sleeve

Applicable tubing size (mm)		Connection thread R	Model	Width across flats				L1	L2	L3	L4*	M	ød	A*	Effective area (mm <sup>2</sup> )	Weight (g)	
O.D.	I.D.			H1	H2	H3	H4										
ø4	ø2.5		R1/8	KFV04-01S	10	10	14	10	19.3	32.8	29.7	15.5	35.5	1.4		40	
			R1/4	KFV04-02S				14		37.2	31.7					50	
			R1/8	KFV04B-01S	10	22.9	19.9	10	32.8	29.7	12.4	35.5	41				
			R1/4	KFV04B-02S	14	37.2	31.7	14	37.2	31.7	37.5	51					
			R1/8	KFV06-01S	10	10	14	10	32.8	29.7	36.6	42					
ø6	ø4		R1/4	KFV06-02S	10	12	14	14	19	37.2	31.7	15.2	38.6	5		52	
			R3/8	KFV06-03S				17		37.6	32.4					64	
			R1/8	KFV06B-01S	10	10	14	10	32.8	29.7	36.6	43					
			R1/4	KFV06B-02S	14	22.7	19.7	14	37.2	31.7	12.2	38.6	53				
			R3/8	KFV06B-03S	17	37.6	32.4	17	37.6	32.4	39.3	65					
ø8	ø5		R1/8	KFV08U-01S	12	14	17	12	20.5	33.8	30.7	16.2	38.8	9.4		52	
			R1/4	KFV08U-02S				14		38.2	32.7					61	
			R3/8	KFV08U-03S				17		38.6	33.4					73	
	ø6		R1/8	KFV08N-01S	12	14	17	12	21.3	33.8	30.7	5	41.5	14		57	
			R1/4	KFV08N-02S				14		38.2	32.7					60	
			R3/8	KFV08N-03S	17	38.6	33.4	72									
			R1/8	KFV08B-01S	12	12	14	12	33.8	30.7	38.8	58					
			R1/4	KFV08B-02S	14	24.3	21.3	14	38.2	32.7	13.3	40.8	61				
			R3/8	KFV08B-03S	17	38.6	33.4	17	38.6	33.4	41.5	73					
ø10	ø6.5		R1/4	KFV10U-02S	14	17	19	17	21.5	40.2	34.7	18.8	44.5	18		73	
			R3/8	KFV10U-03S				22		40.6	35.4					81	
			R1/2	KFV10U-04S				22		43.8	36.5					104	
	ø7.5		R1/4	KFV10N-02S	14	17	19	17	22.0	40.2	34.7	6.5	44.5	25		72	
			R3/8	KFV10N-03S				22		40.6	35.4					80	
			R1/2	KFV10N-04S	22	43.8	36.5	104									
			R1/4	KFV10B-02S	17	25.0	22.0	17	40.2	34.7	15.0	45.2	81				
	R1/2	KFV10B-04S	22	43.8	36.5	22	43.8	36.5	46.3	105							
	ø12	ø8		R1/4	KFV12U-02S	17	19	22	17	23.5	41.2	35.7	19.3	46.7	30		92
				R3/8	KFV12U-03S				22		41.6	36.4					100
R1/2				KFV12U-04S	22				44.8		37.5	124					
ø9			R1/4	KFV12N-02S	17	19	22	17	26.6	41.2	35.7	8	46.7	38		92	
			R3/8	KFV12N-03S				22		41.6	36.4					98	
			R1/2	KFV12N-04S	22	44.8	37.5	123									
			R1/4	KFV12B-02S	17	17	19	17	41.2	35.7	46.7	92					
			R3/8	KFV12B-03S	22	26.6	23.6	22	41.6	36.4	15.5	47.4	100				
			R1/2	KFV12B-04S	22	44.8	37.5	22	44.8	37.5	48.5	125					



\* Reference dimensions after installation of R thread.

**Dimensions**

**Swivel Long Elbow: KFW**

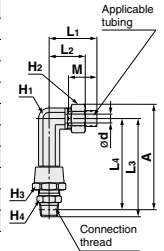


Resin sleeve



Brass sleeve

Applicable tubing size (mm)		Connection thread R	Model	Width across flats				L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub> *	M	ød	A*	Effective area (mm <sup>2</sup> )	Weight (g)					
O.D.	I.D.			H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>														
ø4	ø2.5		R1/8	10	10	14	10	19.3					1.5	55.5	1.4	58					
			R1/4													KFW04-02S	14	57.2	51.7	63	
			R1/8													KFW04B-01S	10	52.8	49.7	59	
			R1/4													KFW04B-02S	14	57.2	51.7	64	
			R1/8													KFW06-01S	10	53.8	50.7	61	
ø6	ø4		R1/4	10	12	14		19.0					3	57.6	5.0	61					
			R1/4													KFW06-02S	14	58.2	52.7	66	
			R3/8													KFW06-03S	17	58.6	53.4	77	
			R1/8													KFW06B-01S	10	53.8	50.7	62	
			R1/4													KFW06B-02S	14	58.2	52.7	67	
R3/8	KFW06B-03S	17	58.6	53.4	78																
ø8	ø5		R1/8	10	12	14		20.5					4	59.8	9.4	81					
			R1/4													KFW08U-02S	14	59.2	53.7	83	
			R3/8													KFW08U-03S	17	59.6	54.4	90	
	ø6			R1/8	12	14	17		21.3					5	59.8	14	81				
				R1/4													KFW08N-01S	12	54.8	51.7	82
				R1/4													KFW08N-02S	14	59.2	53.7	83
				R3/8													KFW08N-03S	17	59.6	54.4	88
				R1/8													KFW08B-01S	12	54.8	51.7	82
				R1/4													KFW08B-02S	14	59.2	53.7	84
R3/8	KFW08B-03S	17	59.6	54.4	89																
ø10	ø6.5		R1/4	14	17	19		21.5					5.5	65.5	18	100					
			R3/8													KFW10U-03S	17	61.2	55.7	106	
			R1/2													KFW10U-04S	22	64.8	57.5	128	
	ø7.5			R1/4	14	17	19		22.0					6.5	65.5	25	99				
				R3/8													KFW10N-03S	17	61.2	55.7	104
				R1/2													KFW10N-04S	22	64.8	57.5	126
				R1/4													KFW10B-02S	14	61.2	55.7	100
				R3/8													KFW10B-03S	17	61.6	56.4	105
				R1/2													KFW10B-04S	22	64.8	57.5	127
ø12	ø8		R1/4	17	19	22		23.5					7	69.7	30	146					
			R3/8													KFW12U-03S	17	64.2	58.7	146	
			R1/2													KFW12U-04S	22	67.8	60.5	161	
	ø9			R1/4	17	19	22		23.6					8	69.7	38	144				
				R3/8													KFW12N-02S	17	64.2	58.7	144
				R3/8													KFW12N-03S	17	64.6	59.4	145
				R1/2													KFW12N-04S	22	67.8	60.5	159
				R1/4													KFW12B-02S	17	64.2	58.7	146
				R3/8													KFW12B-03S	17	64.6	59.4	147
R1/2	KFW12B-04S	22	67.8	60.5	161																



\* Reference dimensions after installation of R thread.

**Plug: KFP**



(mm)				
Applicable tubing size (mm)	Model	L <sub>1</sub>	ød	Weight (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



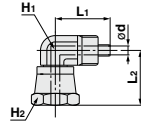
# KF Series

## Dimensions

### Elbow Connector: KFW



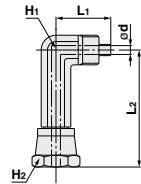
Applicable tubing size (mm)		Model	Width across flats		L <sub>1</sub>	L <sub>2</sub>	ød	Weight (g)
O.D.	I.D.		H <sub>1</sub>	H <sub>2</sub>				
ø4	ø2.5	KFW-04	10	14	18.5	18.5	1.5	21.1
ø6	ø4	KFW-06	10	14	18.5	18.5	3	21.6
ø8	ø5	KFW-08U	12	17	20	19.5	4	32.8
	ø6	KFW-08N					5	32.9
ø10	ø6.5	KFW-10U	14	19	21	21.5	5.5	41.9
	ø7.5	KFW-10N					6.5	41.7
ø12	ø8	KFW-12U	17	22	22	22.5	7	61.8
	ø9	KFW-12N					8	61.6



### Long Elbow Connector: KFW



Applicable tubing size (mm)		Model	Width across flats		L <sub>1</sub>	L <sub>2</sub>	ød	Weight (g)
O.D.	I.D.		H <sub>1</sub>	H <sub>2</sub>				
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



Resin sleeve



Brass sleeve

Applicable tubing size (mm)		Model	L	øD	Weight (g)
ø4	KFS-04				
	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



Applicable tubing size (mm)		Model	Width across flats	L	Weight (g)
			H		
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	





# KF Series

## Specific Product Precautions 1

Be sure to read this before handling the products.

Refer to page 11 for safety instructions and pages 14 to 18 for fittings and tubing precautions.

### Selection

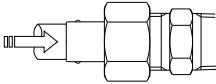
#### ⚠ Caution

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.



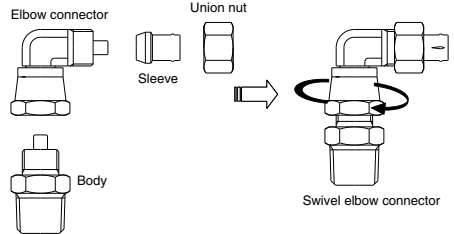
- 4) When the union is loose, tighten it additionally, temporarily by hand.
- 5) After fixing the body with the tightening tool, tighten the union nut with an appropriate wrench, applying the torque as shown below. After tightening the clearance between the union nut and the body in the axial direction 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)
<b>KF□04</b>	1.5 to 2.0	2 to 7	1.5	2 to 4
<b>KF□06</b>	1.5 to 2.0	3 to 8	1.5	4 to 6
<b>KF□08</b>	1.5 to 2.0	4 to 9	1.5	6 to 9
<b>KF□10</b>	1.5 to 2.0	6 to 9	1.5	10 to 12
<b>KF□12</b>	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)
<b>KF□-04</b>	1/6 to 1/3	3 to 7
<b>KF□-06</b>	1/6 to 1/3	3 to 7
<b>KF□-08</b>	1/6 to 1/3	3 to 7
<b>KF□-10</b>	1/6 to 1/3	5 to 10
<b>KF□-12</b>	1/6 to 1/3	5 to 10



## KF Series

# Specific Product Precautions 2

Be sure to read this before handling the products.

Refer to page 11 for safety instructions and pages 14 to 18 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.