One-touch Fittings

RoHS New

◎ Improved tube insertion/removal

Max. Insertion force: 30% reduction

Max. Removal force: 20% reduction*

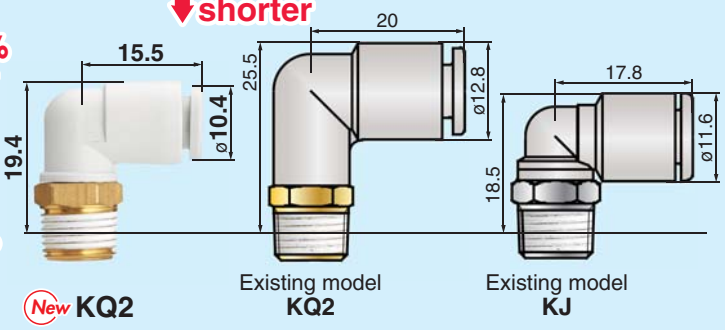
* Tube pulling out strength is ensured to be equivalent to existing model.

◎ Compact and lightweight

Dimensions Height direction: 24% shorter

Dimensions Horizontal direction: 23% shorter

Weight: 57% lighter



* Existing model KQ2 series Male elbow/Applicable tubing O.D.: ø6/Connection thread: R1/8

To New "KQ2"

KQ, KQ2 and KJ consolidated into "KQ2"

Enhanced variation

Light weight

Compact

New Series KQ2

Miniature One-touch Fittings Series KJ

Body type: totaled 51 models | **Seal method: 2 types** | **Thread material/Surface treatment: 2 types***

* Brass, Brass + Electroless nickel plated

Applicable tubing O.D.	Connection thread	Seal method: Sealant	Seal method: Gasket seal	
Metric size	M	●	●	P.1
	R	●		P.63
	Uni		●	P.33
Inch size	UNF		●	
	NPT	●		P.57
	M		●	
	R	●		P.69
	Uni		●	

Series KQ2

SMC

CAT.EUS50-37A-UK

Metric Size One-touch Fittings

Applicable Tubing: Metric Size, Connection Thread: M, R, Rc

Series KQ2

Guide

Chuck

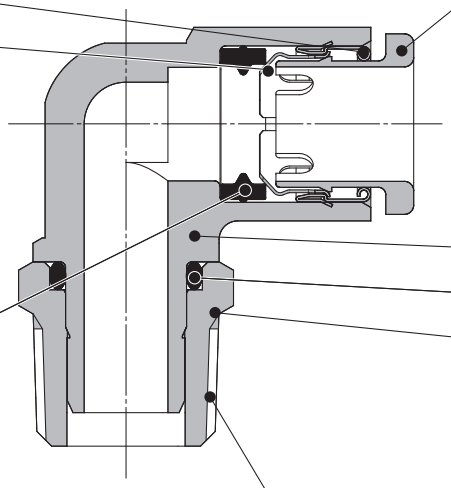
Suitable for use with nylon and urethane. Large retaining force.

The chuck provides secure retention and the collet increases the holding force on the tube.

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.



Release button (Light gray)

Requires little force for removal.

Releases the chuck collet to remove the tube as well as to prevent the chuck from biting too deeply into the tubing.

Body

O-ring

Stud

Effective when piping in a confined space.

Body part rotates allowing for positioning.

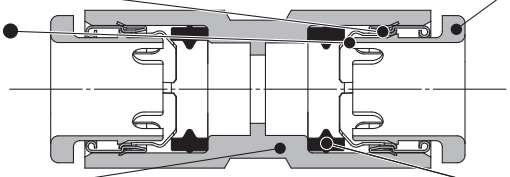
Connection thread

M, R, Rc

Guide

Chuck

Body



Release button (Light gray)

Seal

∗ Fittings with all resin body material (KQ2□□-□A) are copper free specification.

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

Applicable Tubing

Tubing material	FEP, PFA, Nylon, Soft nylon [Note 1)], Polyurethane
Tubing O.D.	ø2, ø3.2, ø4, ø6, ø8, ø10, ø12, ø16

Note 1) For soft nylon tubing, water cannot be used.

Specifications

Fluid		Air/Water [Note 2)]
Operating pressure range [Note 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		With sealant

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, Stainless steel 303
Stud	C3604 (Thread portion), Stainless steel 303 (Thread portion)
Chuck	Stainless steel 304
Guide	Stainless steel 304
Release button	POM
Seal, O-ring	NBR
Gasket	Stainless steel 304, NBR

How to Order

Threaded Type KQ2 H 06 – 01 A S

One-touch fittings

Model

Symbol	Model
H	Male connector
S	Hexagon socket head male connector
F	Female connector
L	Union elbow
LU	Male branch connector
K	45° male elbow
V	Universal male elbow
VS	Hexagon socket head universal male elbow
VF	Universal female elbow
LF	Female elbow
VD	Double universal male elbow
VT	Triple universal male elbow
Z	Branch universal male elbow
ZF	Branch universal female elbow
ZD	Double branch universal male elbow
ZT	Triple branch universal male elbow
W	Extended male elbow
T	Male branch tee
Y	Male run tee
D	Male delta union
U	Branch "Y"
UD	Delta branch
E	Bulkhead union
	Bulkhead connector
LE	Bulkhead male elbow
N	Adaptor

Male thread seal method

Symbol	Seal method
—	None
S	With thread sealant

Thread material/Surface treatment

Symbol		Thread material/Surface treatment
A		Brass
N[Note 1)]		Brass + Electroless nickel plated
G		Stainless steel 303 (Connection thread/Only male thread and M3)
Bulkhead union	□J[Note 2)]	Interchangeable with KJE

Note 1) Refer to the Dimensions to check the electroless nickel plated availability of each model.
Note 2) □/A, N

Port size/Applicable tubing O.D.

Symbol		Size
Tubing connection	00*	Same dia. tubing
Thread connection	M3	M3 x 0.5
	M5	M5 x 0.8
	M6	M6 x 1.0
	01	R1/8, Rc1/8
	02	R1/4, Rc1/4
	03	R3/8, Rc3/8
	04	R1/2, Rc1/2

* Only for "Bulkhead union" and "Bulkhead male elbow".

Applicable tubing O.D.

Symbol	Size
02	ø2
23	ø3.2
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12
16	ø16

Spare Parts

Use the part number below to order the gasket for M3, M5 and M6 threads.

Gasket for M3 thread: M-3G2
Gasket for M5 thread: M-5G2
Gasket for M6 thread: M-6G

Tube – Tube Type KQ2 H 06 – 00 A

One-touch fittings

Model

Symbol	Model
H	Straight union
	Different diameter straight
L	Union elbow
	Plug-in elbow
	Reducer elbow
LU	Branch union elbow
W	Extended plug-in elbow
T	Union tee
	Different diameter tee
TW	Cross
TX	Different diameter cross
TY	Different diameter cross
D	Delta union
U	Union "Y"
	Plug-in "Y"
	Different diameter union "Y"
UD	Different diameter double union "Y"
X	Different diameter plug-in "Y"
R	Plug-in reducer
XD	Double plug-in "Y"

Port size/Applicable tubing O.D.

Symbol		Size
Tubing (Rod) connection	00	Same diameter tubing
	99	Same diameter rod
Different dia. tubing (Reducer)	23	ø3.2
	04	ø4
	06	ø6
	08	ø8
	10	ø10
	12	ø12
	16	ø16

Applicable tubing O.D.

Symbol	Size
02	ø2
23	ø3.2
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12
16	ø16

Accessory

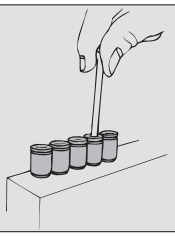
Symbol	Name
KQ2N	Nipple
	Reducer nipple
KQ2C	Tube cap
KQ2P	Plug

Metric Size One-touch Fittings

Variations

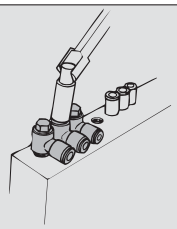
Hexagon socket head male connector
KQ2S P.7

Internal hexagon socket allows tightening with a hexagon wrench in confined spaces.



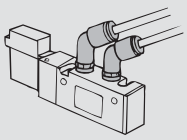
Universal male elbow
KQ2V P.12

Hexagon head of the body allows tightening with a box wrench in confined spaces.



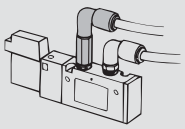
45° male elbow
KQ2K P.11

Use to pipe a female thread at a 45° angle. Model inbetween of male connector and male elbow.



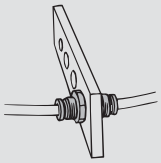
Extended male elbow
KQ2W P.18

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



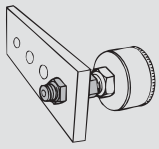
Bulkhead union
KQ2E P.28

Use to connect tubing through a panel, etc.



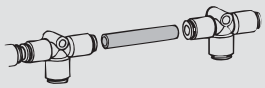
Bulkhead connector
KQ2E P.28

Use to connect male thead and tubing through a panel, etc.



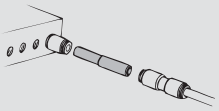
Nipple
KQ2N P.30

Use to connect One-touch fittings.



Reducer nipple
KQ2N P.30

Use to connect One-touch fittings of different sizes.



Universal female elbow
KQ2VF P.13

Use to branch a male or female thread at a 90° angle. Multiple connections possible.

Branch universal female elbow
KQ2ZF P.15

Use to two-branch a male or female thread at a 90° angle. Multiple connections possible.

Male connector
KQ2H P.5

Use to pipe a female thread. Most general model.

Cross
KQ2TW P.21

Use to four-branch line.

Reducer elbow
KQ2L P.9

Use to change the tube direction from One-touch fittings by 90° and to reduce size.

Female connector
KQ2F P.6

Use to pipe a male thread of a pressure gauge, etc.

Male elbow
KQ2L P.8

Use to pipe a female thread at right angles. Most general model.

Different diameter cross
KQ2TX P.21

Use to branch tubing with size reduced at both 90° angles.

Straight union
KQ2H P.5

Use to connect tubing in the same direction.

Union elbow
KQ2L P.9

Use to connect tubing at right angles.

Male branch tee
KQ2T P.19

Use to branch a female thread at both 90° angles.

Different diameter straight
KQ2H P.6

Use to connect tubing of different sizes.

Plug-in elbow
KQ2L P.9

Use to change the tube direction from One-touch fittings by 90°.

Union tee
KQ2T P.20

Use to branch tubing at both 90° angles.

Different diameter tee
KQ2T P.20

Use to connect tubing for branching at both 90° angles with size reduced.

Different diameter tee
KQ2T P.20

Use to connect tubing for branching at 90° angle with size reduced from the same piping.

Different diameter cross
KQ2TY P.21

Use to connect tubing for branching in three directions with size reduced.

Hexagon socket head universal male elbow
KQ2VS P.12

Hexagon socket on the top allows tightening with a hexagon wrench in confined spaces.

Male branch connector
KQ2LU P.10

Use to branch a female thread at right angles.

Female elbow
KQ2LF P.17

Use to pipe a male thread at right angles.

Double universal male elbow
KQ2VD P.14

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

Triple universal male elbow
KQ2VT P.14

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

Branch universal male elbow
KQ2Z P.15

Hexagon head of the body allows tightening with a box wrench. Use for branch connections.

Double branch universal male elbow
KQ2ZD P.16

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

Male run tee
KQ2Y P.22

Use to branch a female thread at a 90° angle.

Triple branch universal male elbow
KQ2ZT P.16

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

Branch union elbow
KQ2LU P.9

Use to branch tubing at right angles.

Extended plug-in elbow
KQ2W P.17

Use to change the tube direction of One-touch fittings by 90°. Multi-level piping is also possible with the plug-in elbow.

Male delta union
KQ2D P.23

Use to branch a female thread at two right angles.

Delta union
KQ2D P.24

Use to branch tubing at three right angles.

Delta branch
KQ2UD P.26

Use to four-branch a female thread.

Different diameter double union "Y"
KQ2UD P.26

Use to four-branch tubing with size reduced.

Different diameter plug-in "Y"
KQ2X P.27

Use to branch One-touch fittings with size reduced.

Double plug-in "Y"
KQ2XD P.27

Use to four-branch One-touch fittings.

Union "Y"
KQ2U P.25

Use to branch tubing in the same direction.

Different diameter union "Y"
KQ2U P.25

Use to connect tubing for branching with size reduced.

Plug-in "Y"
KQ2U P.25

Use to branch One-touch fittings.

Branch "Y"
KQ2U P.24

Use to branch a female thread.

Plug-in reducer
KQ2R P.28

Use to change size of One-touch fittings.

Bulkhead male elbow
KQ2LE P.29

Use to connect tubing through a panel, etc. and to change the tube direction by 90°.

Adaptor
KQ2N P.29

Use to connect One-touch fittings and R female thread.

Tube cap
KQ2C P.30

Use to plug unused tubing.

Plug
KQ2P P.29

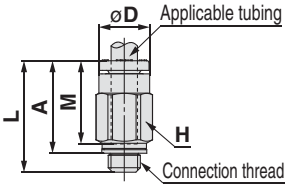
Use to plug unused One-touch fittings.

Dimensions

Male Connector: KQ2H (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	øD	L	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	M3 x 0.5	**KQ2H02-M3G**	7	5.5	15.6	13	11.9	—	0.9	1.2	1.5
	M5 x 0.8	**KQ2H02-M5□**	7	5.5	13.8	10.8	11.9	—	0.9	1.4	2
ø3.2	M3 x 0.5	**KQ2H23-M3G**	7	6.7	17	14.4	13.3	0.9	0.9	1.2	2.4
	M5 x 0.8	**KQ2H23-M5□**	7	6.7	17.3	14.3	13.3	3	2.5	2.5	2.7
ø4	M3 x 0.5	**KQ2H04-M3G**	8	7.7	17.1	14.5	13.3	0.9	0.9	1.2	2.9
	M5 x 0.8	**KQ2H04-M5□**	8	7.7	17.7	14.7	13.3	4	4	2.5	3.3
	M6 x 1.0	**KQ2H04-M6A**	8	7.7	18.7	14.7	13.3	4	4	3	3.6
ø6	M5 x 0.8	**KQ2H06-M5□**	10	9.7	17.7	14.7	13.3	4	4	2.5	4.1
	M6 x 1.0	**KQ2H06-M6A**	10	9.7	18.8	14.8	13.3	4	4	3	4.4

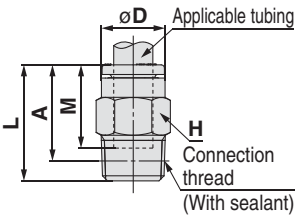
□/A: Brass, N: Brass + Electroless nickel plated



Male Connector: KQ2H (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	øD	L	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	1/8	**KQ2H23-01□S**	10	6.7	14	10.9	13.3	3.4	2.9	2.5	6
	1/4	**KQ2H23-02AS**	14	6.7	16.7	12	13.3	3.4	2.9	2.5	15.3
ø4	1/8	**KQ2H04-01□S**	10	7.7	14.3	11.2	13.3	5.6	4	3	5.6
	1/4	**KQ2H04-02AS**	14	7.7	16.7	12	13.3	5.6	4	3	14.6
ø6	1/8	**KQ2H06-01□S**	10	9.7	18.4	15.3	13.3	13.1	10.4	4.5	5.8
	1/4	**KQ2H06-02AS**	14	9.7	16.7	12	13.3	13.1	10.4	4.5	12.5
	3/8	**KQ2H06-03AS**	17	9.7	18.1	13	13.3	13.1	10.4	4.5	24.5
ø8	1/8	**KQ2H08-01AS**	14	12.2	22.5	19.4	14.2	26.1	18	6	11.9
	1/4	**KQ2H08-02AS**	14	12.2	22	17.3	14.2	26.1	18	6	13.9
	3/8	**KQ2H08-03AS**	17	12.2	18.1	13	14.2	26.1	18	6	21
ø10	1/8	**KQ2H10-01AS**	17	14.6	23.8	20.7	15.6	26.1	26.1	6	16.9
	1/4	**KQ2H10-02AS**	17	14.6	27.3	22.6	15.6	41.5	29.5	7.5	22.1
	3/8	**KQ2H10-03AS**	17	14.6	23.5	18.4	15.6	41.5	29.5	7.5	22.5
	1/2	**KQ2H10-04AS**	22	14.6	22.3	15.9	15.6	41.5	29.5	7.5	44.7
ø12	1/4	**KQ2H12-02AS**	19	17	28.7	24	17	58.3	46.1	9	24.3
	3/8	**KQ2H12-03AS**	19	17	25.9	20.8	17	58.3	46.1	9	25.2
	1/2	**KQ2H12-04AS**	22	17	22.3	15.9	17	58.3	46.1	9	37.7
ø16	New 1/4	**KQ2H16-02AS**	24	21.8	32.5	27.8	20.6	58.3	46.1	9	37.4
	3/8	**KQ2H16-03AS**	24	21.8	33.1	28	20.6	81	67	11	42.4
	1/2	**KQ2H16-04AS**	24	21.8	32.1	25.7	20.6	113	67	13	44.6

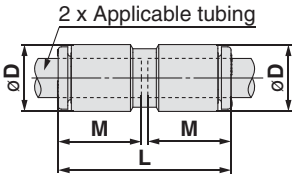
□/A: Brass, N: Brass + Electroless nickel plated
* Reference dimensions after installation of R thread



Straight Union: KQ2H

Applicable tubing O.D. [mm]	Model	øD Note)	L	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	**KQ2H02-00A**	5.8	24.8	11.9	—	0.9	1.4	0.8
ø3.2	**KQ2H23-00A**	7.1	27.6	13.3	3.4	2.9	2.5	2.7
ø4	**KQ2H04-00A**	8.2	27.6	13.3	5.6	4	3	3.2
ø6	**KQ2H06-00A**	10.4	27.6	13.3	13.1	10.4	4.5	4.2
ø8	**KQ2H08-00A**	13.2	29.4	14.2	26.1	18	6	3.7
ø10	**KQ2H10-00A**	15.9	32.2	15.6	41.5	29.5	7.5	5.5
ø12	**KQ2H12-00A**	18.5	35	17	58.3	46.1	9	8.2
ø16	**KQ2H16-00A**	23.8	42.2	20.6	113	67	13	15.2

Note) øD is maximum diameter.

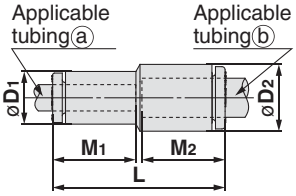


Dimensions

Different Diameter Straight: KQ2H

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	Min. port size	Weight [g]
ø2	ø3.2	KQ2H02-23A	5.8	7.1	26.2	11.9	13.3	—	0.9	1.4	1.1
ø2	ø4	KQ2H02-04A	5.8	8.2	26.2	11.9	13.3	—	0.9	1.4	1.2
ø3.2	ø4	KQ2H23-04A	7.1	8.2	27.6	13.3	13.3	3.4	2.9	2.5	3
ø3.2	ø6	KQ2H23-06A	7.1	10.4	27.6	13.3	13.3	3.4	2.9	2.5	1.8
ø4	ø6	KQ2H04-06A	8.2	10.4	27.6	13.3	13.3	5.6	5.6	3	3.9
ø6	ø8	KQ2H06-08A	10.4	13.2	28.5	13.3	14.2	13.1	10.4	4.5	2.9
ø8	ø10	KQ2H08-10A	13.2	15.9	30.8	14.2	15.6	26.1	18	6	4.9
ø10	ø12	KQ2H10-12A	15.9	18.5	33.6	15.6	17	41.5	29.5	7.5	7.2
ø12	ø16	KQ2H12-16A	18.5	23.8	38.6	17	20.6	58.3	46.1	9	12.4

Note) øD1, øD2 are maximum diameters.

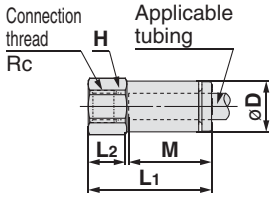


Female Connector: KQ2F

Applicable tubing O.D. [mm]	Connection thread Rc	Model	H (Width across flats)	øD Note)	L1	L2	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	M3 x 0.5	KQ2F23-M3□	7	6.9	17.3	5.7	13.3	3	2.5	2.5	3.1
	M5 x 0.8	KQ2F23-M5□	7	6.9	19.7	5.7	13.3	3	2.5	2.5	3.3
ø4	M3 x 0.5	KQ2F04-M3□	8	7.9	17.3	5.7	13.3	4	4	2.5	4.1
	M5 x 0.8	KQ2F04-M5□	8	7.9	19.6	5.7	13.3	4	4	3	4.5
	1/8	KQ2F04-01A	14	7.9	24.1	8.5	13.3	5.6	4	3	12
	1/4	KQ2F04-02A	17	7.9	29	12.9	13.3	5.6	4	3	21.5
ø6	M5 x 0.8	KQ2F06-M5□	10	9.9	17.6	5.7	13.3	10	10	4.1	5.5
	1/8	KQ2F06-01A	14	9.9	23.6	8.5	13.3	13.1	10.4	4.5	12.2
	1/4	KQ2F06-02A	17	9.9	28.5	12.9	13.3	13.1	10.4	4.5	21.6
	3/8	KQ2F06-03A	19	9.9	29.9	12.7	13.3	13.1	10.4	4.5	22.7
ø8	1/8	KQ2F08-01A	14	12.4	24.1	8.5	14.2	26.1	18	6	12.9
	1/4	KQ2F08-02A	17	12.4	29	12.2	14.2	26.1	18	6	22.1
	3/8	KQ2F08-03A	19	12.4	30.4	13.4	14.2	26.1	18	6	30.7
ø10	1/4	KQ2F10-02A	17	14.8	30	12.9	15.6	41.5	29.5	7.5	24.2
	3/8	KQ2F10-03A	19	14.8	31.3	13.3	15.6	41.5	29.5	7.5	25.5
ø12	1/4	KQ2F12-02A	19	17.2	30.9	12.1	17	58.3	46.1	9	32.6
	3/8	KQ2F12-03A	19	17.2	32.3	13.3	17	58.3	46.1	9	27.6
	1/2	KQ2F12-04A	24	17.2	36.3	15.9	17	58.3	46.1	9	46.3
ø16	3/8	KQ2F16-03A	24	22	34.7	12.6	20.6	81	67	13	53.8
	1/2	KQ2F16-04A	24	22	38.7	15.9	20.6	113	67	13	51.6

□/A: Brass, N: Brass + Electroless nickel plated

Note) øD is maximum diameter.

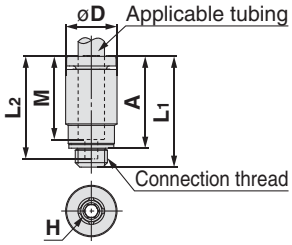


Dimensions

Hexagon Socket Head Male Connector: KQ2S (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD	L1	L2	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	M3 x 0.5	**KQ2S02-M3G**	1.5	6	15.7	14.7	13.1	11.9	—	0.9	1.5	1.7
ø3.2	M3 x 0.5	**KQ2S23-M3G**	1.5	7	17.1	16.1	14.5	13.3	1.4	1.4	1.5	2.2
	M5 x 0.8	**KQ2S23-M5A**	2	7	17.5	16.3	14.5	13.3	2.5	2.5	2	2.6
ø4	M3 x 0.5	**KQ2S04-M3G**	1.5	8	17.1	16.1	14.5	13.3	1.4	1.4	1.5	2.3
	M5 x 0.8	**KQ2S04-M5A**	2	8	17.6	16.3	14.6	13.3	4	4	2	3
	M6 x 1.0	**KQ2S04-M6A**	3	8	20.6	19.6	16.6	13.3	4	4	3.1	4.1
ø6	M5 x 0.8	**KQ2S06-M5A**	2	10	17.8	16.3	14.8	13.3	4	4	2	3.5
	M6 x 1.0	**KQ2S06-M6A**	3	10	20.6	19.6	16.6	13.3	4	4	3.1	5.1

Note) øD is maximum diameter.



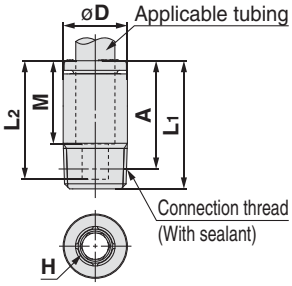
Hexagon Socket Head Male Connector: KQ2S (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD	L1	L2	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	**KQ2S04-01□S**	3	10	20.6	19.6	17.5	13.3	4.1	3.6	3.1	8.1
ø6	1/8	**KQ2S06-01□S**	4	10	20.3	18.8	17.2	13.3	10	9.9	4.1	6.5
	1/4	**KQ2S06-02AS**	4	14	19.8	18.8	15.1	13.3	10.7	10	4.1	13.4
ø8	1/8	**KQ2S08-01AS**	5	13	22.9	19.7	19.8	14.2	17.2	16.2	5.1	10.2
	1/4	**KQ2S08-02AS**	6	14	23.2	19.5	18.5	14.2	23.3	16.2	6.1	14.3
	3/8	**KQ2S08-03AS**	6	17	20.7	19.7	15.6	14.2	23.3	16.2	6.1	21.1
ø10	1/8	**KQ2S10-01AS**	5	15	24.3	21.1	21.2	15.6	17.2	16.2	5.1	12
	1/4	**KQ2S10-02AS**	8	15	24.6	20.1	19.9	15.6	39	26.6	8.1	12.4
	3/8	**KQ2S10-03AS**	8	17	25.1	20.1	20	15.6	39	26.6	8.1	23.2
	1/2	**KQ2S10-04AS**	8	22	21.1	20.1	14.7	15.6	39	26.6	8.1	37.4
ø12	1/4	**KQ2S12-02AS**	8	18	29	21.5	24.3	17	46	44.5	8.1	21
	3/8	**KQ2S12-03AS**	10	18	26.4	21.8	21.3	17	60	44.5	10.1	21.2
	1/2	**KQ2S12-04AS**	10	22	22.8	21.8	16.4	17	60	44.5	10.1	30.5
ø16	New 1/4	**KQ2S16-02AS**	8	23	32.5	25.1	27.8	20.6	44	44	8.1	25.7
	3/8	**KQ2S16-03AS**	10	23	33.5	25.4	28.4	20.6	81	67	10.1	38.3
	1/2	**KQ2S16-04AS**	12	23	33.4	26.1	27	20.6	113	67	12.1	43.5

□/A: Brass, N: Brass + Electroless nickel plated

∗ Reference dimensions after installation of R thread

Note) øD is maximum diameter.



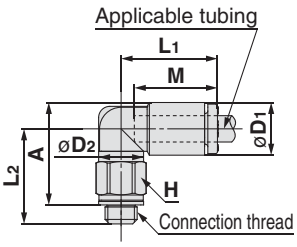
Dimensions

Male Elbow: KQ2L (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	M3 x 0.5	**KQ2L02-M3G**	5.5	5.8	5.5	12.6	12.5	12.8	11.9	—	0.8	1.2	1.6
	M5 x 0.8	**KQ2L02-M5□**	7	5.8	5.5	12.6	13	12.9	11.9	—	0.8	1.4	2.7
ø3.2	M3 x 0.5	**KQ2L23-M3G**	7	7.1	7	15.3	13.8	14.8	13.3	0.8	0.8	1.2	2.7
	M5 x 0.8	**KQ2L23-M5□**	7	7.1	7	15.3	14.3	14.9	13.3	2.6	2.2	2.5	3.1
ø4	M3 x 0.5	**KQ2L04-M3G**	7	8.2	7	15.4	14.3	15.8	13.3	0.8	0.8	1.2	2.7
	M5 x 0.8	**KQ2L04-M5□**	7	8.2	7	15.4	14.8	15.9	13.3	3.5	3.5	2.5	3.1
	M6 x 1.0	**KQ2L04-M6A**	8	8.2	7	15.4	15.8	15.9	13.3	3.5	3.5	2.5	4.2
ø6	M5 x 0.8	**KQ2L06-M5□**	7	10.4	7	14.55	16.5	18.7	13.3	3.5	3.5	2.5	3.2
	M6 x 1.0	**KQ2L06-M6A**	8	10.4	7	14.55	17.5	18.7	13.3	3.5	3.5	2.5	4.3

□/A: Brass, N: Brass + Electroless nickel plated

Note) øD1 is maximum diameter.



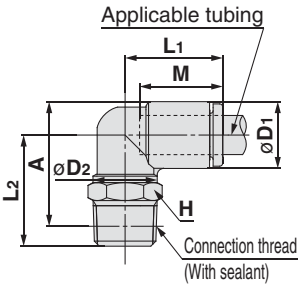
Male Elbow: KQ2L (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	1/8	**KQ2L23-01□S**	10	7.1	10	14.5	16.7	17.2	13.3	3	2.5	2.5	4.6
	1/4	**KQ2L23-02AS**	14	7.1	10	14.5	21.2	20.1	13.3	3	2.5	2.5	14.1
ø4	1/8	**KQ2L04-01AS**	10	8.2	10	14.8	16.2	17.2	13.3	4.2	4.2	3	4.8
	1/4	**KQ2L04-02AS**	14	8.2	10	14.8	21.7	21.1	13.3	4.2	4.2	3	14.3
ø6	1/8	**KQ2L06-01AS**	10	10.4	10	15.5	17.3	19.4	13.3	11.4	9	4.5	5.2
	1/4	**KQ2L06-02AS**	14	10.4	10	15.5	22.8	23.3	13.3	11.4	9	4.5	14.7
	3/8	**KQ2L06-03AS**	17	10.4	10	15.5	24.1	24.2	13.3	11.4	9	4.5	26.5
ø8	1/8	**KQ2L08-01AS**	10	13.2	10	16.4	18.7	22.2	14.2	11.4	11.4	4.5	6.1
	1/4	**KQ2L08-02AS**	14	13.2	12	17.2	25.4	27.3	14.2	21.6	14.9	6	17.7
	3/8	**KQ2L08-03AS**	17	13.2	12	17.2	25.5	27.0	14.2	21.6	14.9	6	24.7
ø10	1/8	**KQ2L10-01AS**	12	15.9	12	18.6	23.6	28.4	15.6	21.6	14.9	6	11.1
	1/4	**KQ2L10-02AS**	17	15.9	17	19.3	28.7	31.9	15.6	35.2	25	7.5	21.7
	3/8	**KQ2L10-03AS**	17	15.9	17	19.3	29.6	32.4	15.6	35.2	25	7.5	22.2
	1/2	**KQ2L10-04AS**	22	15.9	17	19.3	33.6	35.1	15.6	35.2	25	7.5	44.6
ø12	1/4	**KQ2L12-02AS**	17	18.5	17	21.5	30.0	34.5	17	50.2	39.7	9	23.5
	3/8	**KQ2L12-03AS**	17	18.5	17	21.5	30.9	35.0	17	50.2	39.7	9	24.1
	1/2	**KQ2L12-04AS**	22	18.5	17	21.5	34.9	37.7	17	50.2	39.7	9	46.5
ø16	New 1/4	**KQ2L16-02AS**	17	23.8	17	25.1	32.6	39.8	20.6	50.2	50.2	9	27.8
	3/8	**KQ2L16-03AS**	22	23.8	21	27.1	35.4	42.2	20.6	71	71	11	40.8
	1/2	**KQ2L16-04AS**	22	23.8	21	27.1	34.1	39.6	20.6	100	84	13	44.5

□/A: Brass, N: Brass + Electroless nickel plated

* Reference dimensions after installation of R thread

Note) øD1 is maximum diameter.

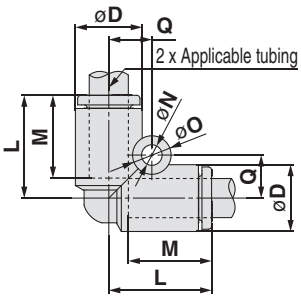


Dimensions

Union Elbow: KQ2L

Applicable tubing O.D. [mm]	Model	Note) øD	L	Q	M	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight (g)
ø3.2	KQ2L23-00A	7.1	14.9	5.4	13.3	6	3.2	3	2.5	2.5	3.1
ø4	KQ2L04-00A	8.2	15.3	5.7	13.3	6	3.2	4.2	4.2	3	3.8
ø6	KQ2L06-00A	10.4	16.3	6.8	13.3	6	3.2	11.4	9	4.5	5.3
ø8	KQ2L08-00A	13.2	18.2	8.4	14.2	8	4.2	21.6	14.9	6	4.7
ø10	KQ2L10-00A	15.9	20.6	9.6	15.6	8	4.2	35.2	25	7.5	7.1
ø12	KQ2L12-00A	18.5	23	10.7	17	8	4.2	50.2	39.7	9	10.3
ø16	KQ2L16-00A	23.8	28.6	13.4	20.6	8	4.2	100	84	13	19.7

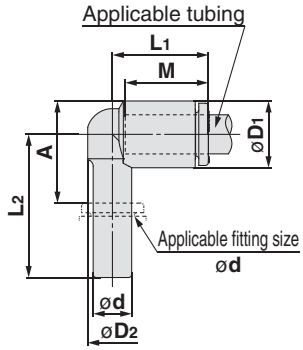
Note) øD is maximum diameter.



Plug-in 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	Min. port size	Weight (g)
ø3.2	ø3.2	KQ2L23-99A	7.1	6.4	14.4	20.9	11.1	13.3	3	2.5	2.2	1.8
ø4	ø4	KQ2L04-99A	8.2	7.2	14.5	21.1	11.9	13.3	4.2	4.2	2.5	2.3
ø6	ø6	KQ2L06-99A	10.4	8	15.3	22.3	14.2	13.3	9	9	4	3.5
ø8	ø8	KQ2L08-99A	13.2	10	17.2	26.2	18.6	14.2	21.6	14.9	6	3
ø10	ø10	KQ2L10-99A	15.9	12	19.3	28.2	20.5	15.6	35.2	25	7.5	4.7
ø12	ø12	KQ2L12-99A	18.5	14	21.5	31	23.2	17	50.2	39.7	9	7
ø16	ø16	KQ2L16-99A	23.8	20	27.1	36.8	28.1	20.6	100	84	13	13.7

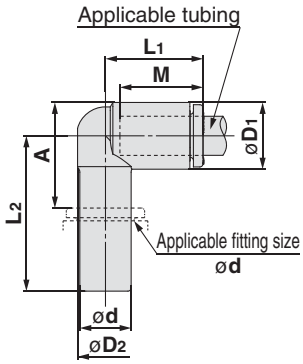
Note) øD1 is maximum diameter.



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	Min. port size	Weight (g)
ø3.2	ø4	KQ2L23-04A	7.1	6.4	14.5	23.9	14.1	13.3	3	2.5	2.5	2.1
	ø6	KQ2L23-06A	7.1	6.4	14.5	24.1	14.3	13.3	3	2.5	2.5	1.3
ø4	ø6	KQ2L04-06A	8.2	7.2	14.8	24.6	15.4	13.3	4.2	4.2	3	2.9
	ø8	KQ2L04-08A	8.2	7.2	14.8	29.5	19.4	13.3	4.2	4.2	3	1.8
ø6	ø8	KQ2L06-08A	10.4	9	15.5	24.2	15.2	13.3	11.4	9	4.5	2.1
	ø10	KQ2L06-10A	10.4	9	15.5	31.6	21.2	13.3	11.4	9	4.5	2.7
ø8	ø10	KQ2L08-10A	13.2	10	18.8	27.1	18.1	14.2	21.6	14.9	6	3.5
	ø12	KQ2L08-12A	13.2	10	18.8	34	23.6	14.2	21.6	14.9	6	4.9
ø10	ø12	KQ2L10-12A	15.9	12	19.3	35.6	26.5	15.6	35.2	25	7.5	5.6
ø12	ø16	KQ2L12-16A	18.5	14	21.5	42.6	31.2	17	50.2	39.7	9	8.7

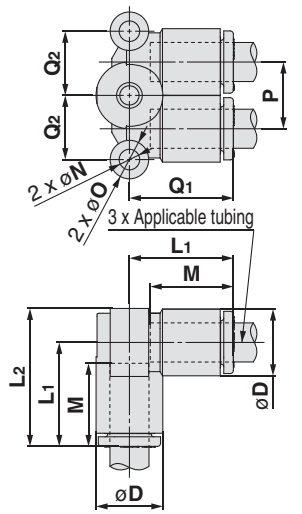
Note) øD1 is maximum diameter.



Branch Union Elbow: KQ2LU

Applicable tubing O.D. [mm]	Model	Note) øD	L1	L2	Q1	Q2	M	P	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight (g)
ø4	KQ2LU04-00A	8.2	15.8	15.8	15.8	7.9	13.3	8.2	6	3.2	6	4.1	3	3.1
ø6	KQ2LU06-00A	10.4	16.5	16.5	16.5	10	13.3	10.4	6	3.2	13.9	11	4.5	4.4
ø8	KQ2LU08-00A	13.2	18.2	18.2	18.2	13.1	14.2	13.2	8	4.2	26.3	18.2	6	8
ø10	KQ2LU10-00A	15.9	20.3	20.3	20.3	15.9	15.6	15.9	8	4.2	40.8	29	7.5	12.2
ø12	KQ2LU12-00A	18.5	22.5	22.5	22.5	17.9	17	18.5	8	4.2	57.2	45.2	9	18.1

Note) øD is maximum diameter.

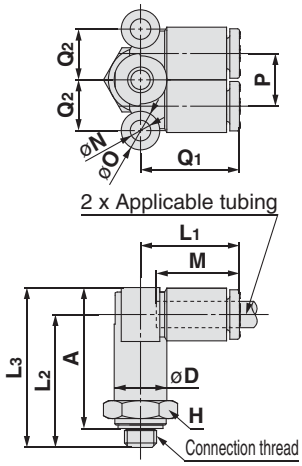


Dimensions

Male Branch Connector: KQ2LU (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD	L1	L2	L3	A	M	P	øO	øN	Q1	Q2	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	M5 x 0.8	KQ2LU04-M5A	10	8.2	15.8	20.7	24.8	21.8	13.3	8.2	6	3.2	15.8	7.9	4.3	4.1	1.8	6.9
	M6 x 1.0	KQ2LU04-M6A	10	8.2	15.8	21.7	25.8	21.8	13.3	8.2	6	3.2	15.8	7.9	4.3	4.1	3	6.8
ø6	M5 x 0.8	KQ2LU06-M5A	12	10.4	16.5	21.4	26.6	23.6	13.3	10.4	6	3.2	16.5	10	4.3	4.3	1.8	10.3
	M6 x 0.8	KQ2LU06-M6A	12	10.4	16.5	21.4	26.6	23.6	13.3	10.4	6	3.2	16.5	10	4.3	4.3	3	10.3

Note) øD is maximum diameter.

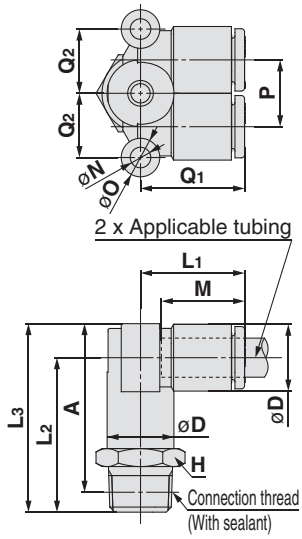


Male Branch Connector: KQ2LU (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD	L1	L2	L3	A*	M	P	øO	øN	Q1	Q2	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	KQ2LU04-01AS	10	8.2	15.8	23.3	27.4	24.3	13.3	8.2	6	3.2	15.8	7.9	6	4.1	3	9.5
	1/4	KQ2LU04-02AS	14	8.2	15.8	27.7	31.8	27.1	13.3	8.2	6	3.2	15.8	7.9	6	4.1	3	19.3
ø6	1/8	KQ2LU06-01AS	12	10.4	16.5	24	29.2	26.1	13.3	10.4	6	3.2	16.5	10	13.9	11	4.5	10.6
	1/4	KQ2LU06-02AS	14	10.4	16.5	28.4	33.6	28.9	13.3	10.4	6	3.2	16.5	10	13.9	11	4.5	19.5
	3/8	KQ2LU06-03AS	17	10.4	16.5	29.8	35	29.9	13.3	10.4	6	3.2	16.5	10	13.9	11	4.5	31.5
ø8	1/8	KQ2LU08-01AS	14	13.2	18.2	25.7	32.3	29.2	14.2	13.2	8	4.2	18.2	13.1	26.3	18.2	6	16.4
	1/4	KQ2LU08-02AS	14	13.2	18.2	30.1	36.7	32	14.2	13.2	8	4.2	18.2	13.1	26.3	18.2	6	21.5
	3/8	KQ2LU08-03AS	17	13.2	18.2	31.5	38.1	33	14.2	13.2	8	4.2	18.2	13.1	26.3	18.2	6	33.3
ø10	1/4	KQ2LU10-02AS	17	15.9	20.3	32.2	40.2	35.5	15.6	15.9	8	4.2	20.3	15.9	40.8	29	7.5	26.6
	3/8	KQ2LU10-03AS	17	15.9	20.3	33.6	41.6	36.5	15.6	15.9	8	4.2	20.3	15.9	40.8	29	7.5	34.4
	1/2	KQ2LU10-04AS	22	15.9	20.3	37.8	45.8	39.4	15.6	15.9	8	4.2	20.3	15.9	40.8	29	7.5	62.3
ø12	1/4	KQ2LU12-02AS	19	18.5	22.5	34.4	43.6	38.9	17	18.5	8	4.2	22.5	17.9	57.2	45.2	9	37.7
	3/8	KQ2LU12-03AS	19	18.5	22.5	35.8	45	39.9	17	18.5	8	4.2	22.5	17.9	57.2	45.2	9	40.6
	1/2	KQ2LU12-04AS	22	18.5	22.5	40	49.2	42.8	17	18.5	8	4.2	22.5	17.9	57.2	45.2	9	62.7

∗ Reference dimensions after installation of R thread

Note) øD is maximum diameter.

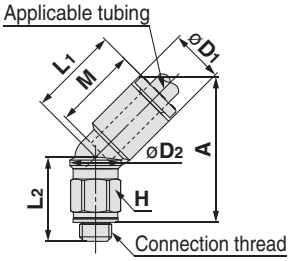


Dimensions

45° Male Elbow: KQ2K (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	M5 x 0.8	**KQ2K04-M5A**	7	8.2	7	14.4	13.1	22.8	13.3	3.4	3.4	2.5	3
	M6 x 1.0	**KQ2K04-M6A**	8	8.2	7	14.4	14.1	22.8	13.3	3.4	3.4	2.5	4.1
ø6	M5 x 0.8	**KQ2K06-M5A**	7	10.4	7	14.4	17	27.4	13.3	3.4	3.4	2.5	3.5
	M6 x 1.0	**KQ2K06-M6A**	8	10.4	7	14.4	18	27.4	13.3	3.4	3.4	2.5	4.5

Note) øD1 is maximum diameter.

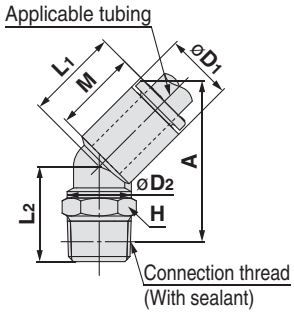


45° Male Elbow: KQ2K (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	**KQ2K04-01AS**	10	8.2	10	14.4	12.7	22.3	13.3	3.4	3.4	4.5	4.6
	1/4	**KQ2K04-02AS**	14	8.2	10	14.4	17.2	25.2	13.3	3.4	3.4	4.5	14.1
ø6	1/8	**KQ2K06-01AS**	10	10.4	10	14.7	14.8	25.3	13.3	8.7	6.9	4.5	5
	1/4	**KQ2K06-02AS**	14	10.4	10	14.7	19.3	28.2	13.3	8.7	6.9	4.5	14.5
	3/8	**KQ2K06-03AS**	17	10.4	10	14.7	20.6	29.1	13.3	8.7	6.9	4.5	26.2
ø8	1/8	**KQ2K08-01AS**	10	13.2	10	16	15.7	28	14.2	8.7	8.7	4.5	6
	1/4	**KQ2K08-02AS**	17	13.2	12	16	22.4	33.1	14.2	19.7	19.7	6	17.5
	3/8	**KQ2K08-03AS**	17	13.2	12	16	22.5	32.8	14.2	19.7	19.7	6	24.5
ø10	1/8	**KQ2K10-01AS**	12	15.9	12	18.2	21.5	36.2	15.6	30.9	23.2	6	11.1
	1/4	**KQ2K10-02AS**	17	15.9	17	17.6	29.1	41.8	15.6	30.9	23.2	7.5	21.8
	3/8	**KQ2K10-03AS**	17	15.9	17	17.6	24.3	36.6	15.6	30.9	23.2	7.5	21.7
	1/2	**KQ2K10-04AS**	22	15.9	17	17.6	28.3	39.3	15.6	30.9	23.2	7.5	44.1
ø12	1/4	**KQ2K12-02AS**	17	18.5	17	19.4	29	43.8	17	44.5	35.1	9	23.3
	3/8	**KQ2K12-03AS**	17	18.5	17	19.4	24.2	38.6	17	44.5	35.1	9	23.2
	1/2	**KQ2K12-04AS**	22	18.5	17	19.4	28.2	41.3	17	44.5	35.1	9	45.7
ø16	New 1/4	**KQ2K16-02AS**	17	23.8	17	24.3	29.6	49.2	20.6	44.5	44.5	9	27.7
	3/8	**KQ2K16-03AS**	22	23.8	21	23.8	31.4	50.2	20.6	65.8	58	11	39.2
	1/2	**KQ2K16-04AS**	22	23.8	21	23.8	30.1	47.6	20.6	91.9	58	13	42.9

∗ Reference dimensions after installation of R thread

Note) øD1 is maximum diameter.

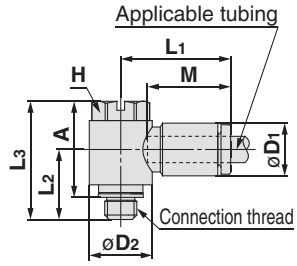


Dimensions

Universal Male Elbow: KQ2V (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	M5 x 0.8	KQ2V04-M5A	8	8.2	9.8	17.5	10.9	18.4	14.9	13.3	2.9	2.9	2.5	5.4
ø6	M5 x 0.8	KQ2V06-M5A	8	10.4	9.8	18.3	10.9	18.4	14.9	13.3	3.8	3.8	2.5	5.7

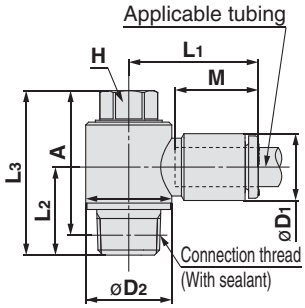
Note) øD1 is maximum diameter.



Universal Male Elbow: KQ2V (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	KQ2V04-01AS	8	8.2	13.4	19.3	13.7	25.6	22.5	13.3	2.9	2.9	3	13.2
ø6	1/8	KQ2V06-01AS	8	10.4	13.4	20.5	13.7	25.6	22.5	13.3	7.5	5.9	4.5	13.5
	1/4	KQ2V06-02AS	10	10.4	15.3	19.9	17.9	30.5	25.8	13.3	7.5	5.9	4.5	24.9
ø8	1/8	KQ2V08-01AS	12	13.2	17.6	23.5	15.1	27.6	24.5	14.2	16	11.2	6	22.6
	1/4	KQ2V08-02AS	12	13.2	17.6	23.5	18.5	31	26.3	14.2	16	11.2	6	29.1
	3/8	KQ2V08-03AS	14	13.2	20.6	23.1	19.5	35.3	30.2	14.2	16	11.2	6	44.4
ø10	1/4	KQ2V10-02AS	14	15.9	20.6	25.9	19.9	34.9	30.2	15.6	27	20.3	7.5	38.1
	3/8	KQ2V10-03AS	14	15.9	20.6	25.9	20.3	35.3	30.2	15.6	27	20.3	7.5	45.7
ø12	3/8	KQ2V12-03AS	17	18.5	25.2	28.5	21.4	37.6	32.5	17	39	30.8	9	59.6
	1/2	KQ2V12-04AS	17	18.5	25.2	28.5	24.6	40.8	34.4	17	39	30.8	9	78.2
ø16	3/8	KQ2V16-03AS	21	23.8	32.3	34.2	25.1	45.4	40.3	20.6	55	46	11	99.5
	1/2	KQ2V16-04AS	21	23.8	32.3	34.2	28.3	48.6	42.2	20.6	78	46	13	107.9

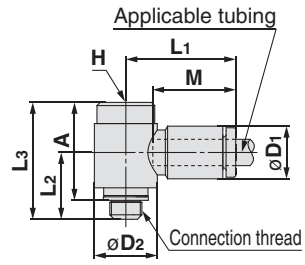
∗ Reference dimensions after installation of R thread
Note) øD1 is maximum diameter.



Hexagon Socket Head Universal Male Elbow: KQ2VS (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	M5 x 0.8	KQ2VS04-M5A	4	8.2	9.8	17.5	10.7	18.2	15.2	13.3	2.9	2.9	2.5	5.3
ø6	M5 x 0.8	KQ2VS06-M5A	4	10.4	9.8	18.3	10.7	18.2	15.2	13.3	3.8	3.8	2.5	5.6

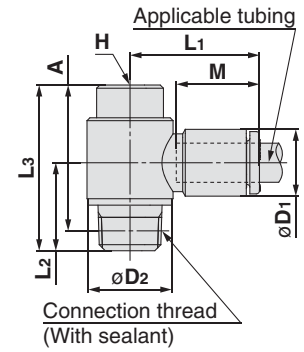
Note) øD1 is maximum diameter.



Hexagon Socket Head Universal Male Elbow: KQ2VS (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	KQ2VS04-01AS	6	8.2	13.4	19.3	13.7	25.8	22.7	13.3	2.9	2.9	3	13.2
ø6	1/8	KQ2VS06-01AS	6	10.4	13.4	20.5	13.7	25.8	22.7	13.3	7.5	5.9	4.5	13.5
	1/4	KQ2VS06-02AS	6	10.4	15.3	19.9	17.9	26.5	21.8	13.3	7.5	5.9	4.5	20.8
ø8	1/8	KQ2VS08-01AS	8	13.2	17.6	23.5	15.1	26	22.9	14.2	16	11.2	6	19.2
	1/4	KQ2VS08-02AS	8	13.2	17.6	23.5	18.5	29.5	24.8	14.2	16	11.2	6	25.7
	3/8	KQ2VS08-03AS	8	13.2	20.6	23.1	19.5	31.4	26.3	14.2	16	11.2	6	37
ø10	1/4	KQ2VS10-02AS	8	15.9	20.6	25.9	19.7	30.8	26.1	15.6	27	20.3	7.5	30.4
	3/8	KQ2VS10-03AS	8	15.9	20.6	25.9	20.3	31.4	26.3	15.6	27	20.3	7.5	38.3
ø12	3/8	KQ2VS12-03AS	10	18.5	25.2	28.5	21.4	35.1	30	17	39	30.8	9	51.4
	1/2	KQ2VS12-04AS	10	18.5	25.2	28.5	24.6	38.3	31.9	17	39	30.8	9	70

∗ Reference dimensions after installation of R thread
Note) øD1 is maximum diameter.

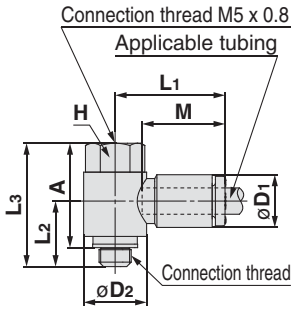


Dimensions

Universal Female Elbow: KQ2VF (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	M5 x 0.8	KQ2VF04-M5A	8	8.2	9.8	17.5	10.2	19.2	16.2	13.3	2.9	2.9	2.5	5.5
ø6	M5 x 0.8	KQ2VF06-M5A	8	10.4	9.8	18.3	10.2	19.2	16.2	13.3	3.8	3.8	2.5	5.8

Note) øD1 is maximum diameter.

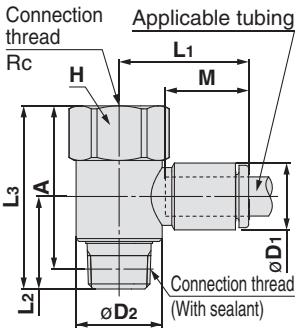


Universal Female Elbow: KQ2VF (Sealant)

Applicable tubing O.D. [mm]	Connection thread R, Rc	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	KQ2VF04-01AS	14	8.2	13.4	19.3	13	28.5	25.4	13.3	2.9	2.9	3	17.3
ø6	1/8	KQ2VF06-01AS	14	10.4	13.4	20.5	13	28.5	25.4	13.3	7.5	5.9	4.5	17.6
	1/4	KQ2VF06-02AS	17	10.4	17.6	21.2	17.3	37.9	33.2	13.3	7.5	5.9	6	37
ø8	1/8	KQ2VF08-01AS	17	13.2	17.6	23.5	14.4	30	26.9	14.2	16	11.2	6	27.5
	1/4	KQ2VF08-02AS	17	13.2	17.6	23.5	17.8	37.9	33.2	14.2	16	11.2	6	38.1
	3/8	KQ2VF08-03AS	22	13.2	25.2	24.9	19.2	44	38.9	14.2	16	11.2	6	64.5
ø10	1/4	KQ2VF10-02AS	19	15.9	20.6	25.9	19.2	40.3	35.6	15.6	27	20.3	7.5	46.4
	3/8	KQ2VF10-03AS	22	15.9	25.2	26.3	20	44	38.9	15.6	27	20.3	9	65.3
ø12	3/8	KQ2VF12-03AS	22	18.5	25.2	28.5	20.7	44	38.9	17	39	30.8	9	67.2
	1/2	KQ2VF12-04AS	24	18.5	27	29.9	22.7	48.9	42.5	17	39	30.8	9	95.6

∗ Reference dimensions after installation of R thread

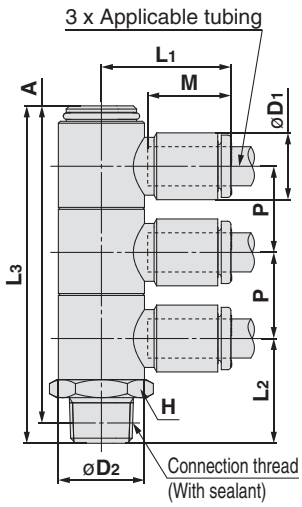
Note) øD1 is maximum diameter.



Dimensions

Triple Universal Male Elbow: KQ2VT (Sealant)

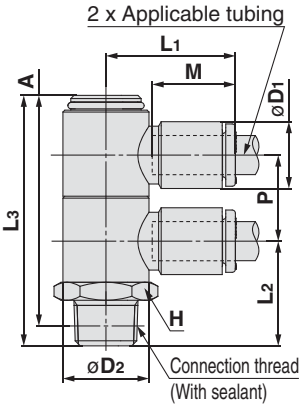
Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	P	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	KQ2VT04-01AS	14	8.2	13.4	19.3	16.3	52.5	49.4	13.3	13.4	2.9	2.9	3	25.3
	1/4	KQ2VT04-02AS	14	8.2	13.4	19.3	20.7	56.9	52.2	13.3	13.4	2.9	2.9	3	32.9
	3/8	KQ2VT04-03AS	17	8.2	13.4	19.3	22.1	58.3	53.2	13.3	13.4	2.9	2.9	3	44.8
ø6	1/8	KQ2VT06-01AS	14	10.4	13.4	20.5	16.3	52.5	49.4	13.3	13.4	7.5	5.9	4.5	26.2
	1/4	KQ2VT06-02AS	14	10.4	13.4	20.5	20.7	56.9	52.2	13.3	13.4	7.5	5.9	4.5	33.9
	3/8	KQ2VT06-03AS	17	10.4	13.4	20.5	22.1	58.3	53.2	13.3	13.4	7.5	5.9	4.5	45.8
ø8	1/8	KQ2VT08-01AS	19	13.2	17.6	23.7	19	61.8	58.7	14.2	15.9	16	11.2	6	59.6
	1/4	KQ2VT08-02AS	19	13.2	17.6	23.7	22.4	65.2	60.5	14.2	15.9	16	11.2	6	56.8
	3/8	KQ2VT08-03AS	19	13.2	17.6	23.7	23	65.8	60.7	14.2	15.9	16	11.2	6	64.9
	1/2	KQ2VT08-04AS	22	13.2	17.6	23.7	27.2	70	63.6	14.2	15.9	16	11.2	6	91.5
ø10	1/4	KQ2VT10-02AS	21	15.9	20.6	25.7	24.3	75.5	70.8	15.6	19.2	27	20.3	7.5	82
	3/8	KQ2VT10-03AS	21	15.9	20.6	25.7	24.7	75.9	70.8	15.6	19.2	27	20.3	7.5	81.9
	1/2	KQ2VT10-04AS	22	15.9	20.6	25.7	28.7	79.9	73.5	15.6	19.2	27	20.3	7.5	103.9
ø12	1/4	KQ2VT12-02AS	26	18.5	25.2	28.9	26.5	84.1	79.4	17	21.6	39	30.8	9	139.3
	3/8	KQ2VT12-03AS	26	18.5	25.2	28.9	26.9	84.5	79.4	17	21.6	39	30.8	9	129.7
	1/2	KQ2VT12-04AS	26	18.5	25.2	28.9	30.1	87.7	81.3	17	21.6	39	30.8	9	142.2



∗ Reference dimensions after installation of R thread
Note) øD1 is maximum diameter.

Double Universal Male Elbow: KQ2VD (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	P	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	KQ2VD04-01AS	14	8.2	13.4	19.3	16.3	39	35.9	13.3	13.4	2.9	2.9	3	19.7
	1/4	KQ2VD04-02AS	14	8.2	13.4	19.3	20.7	43.4	38.7	13.3	13.4	2.9	2.9	3	27.4
	3/8	KQ2VD04-03AS	17	8.2	13.4	19.3	22.1	44.8	39.7	13.3	13.4	2.9	2.9	3	39.3
ø6	1/8	KQ2VD06-01AS	14	10.4	13.4	20.5	16.3	39	35.9	13.3	13.4	7.5	5.9	4.5	20.3
	1/4	KQ2VD06-02AS	14	10.4	13.4	20.5	20.7	43.4	38.7	13.3	13.4	7.5	5.9	4.5	28
	3/8	KQ2VD06-03AS	17	10.4	13.4	20.5	22.1	44.8	39.7	13.3	13.4	7.5	5.9	4.5	39.9
ø8	1/8	KQ2VD08-01AS	19	13.2	17.6	23.7	19	45.8	42.7	14.2	15.9	16	11.2	6	45.1
	1/4	KQ2VD08-02AS	19	13.2	17.6	23.7	22.4	49.2	44.5	14.2	15.9	16	11.2	6	44.3
	3/8	KQ2VD08-03AS	19	13.2	17.6	23.7	23	49.8	44.7	14.2	15.9	16	11.2	6	52.3
	1/2	KQ2VD08-04AS	22	13.2	17.6	23.7	27.2	54	47.6	14.2	15.9	16	11.2	6	78.4
ø10	1/4	KQ2VD10-02AS	21	15.9	20.6	25.7	24.3	56.2	51.5	15.6	19.2	27	20.3	7.5	63.1
	3/8	KQ2VD10-03AS	21	15.9	20.6	25.7	24.7	56.6	51.5	15.6	19.2	27	20.3	7.5	65.1
	1/2	KQ2VD10-04AS	22	15.9	20.6	25.7	28.1	60	53.6	15.6	19.2	27	20.3	7.5	87
ø12	1/4	KQ2VD12-02AS	26	18.5	25.2	28.9	26.5	62.4	57.7	17	21.6	39	30.8	9	107
	3/8	KQ2VD12-03AS	26	18.5	25.2	28.9	26.9	62.8	57.7	17	21.6	39	30.8	9	102.1
	1/2	KQ2VD12-04AS	26	18.5	25.2	28.9	30.1	66	59.6	17	21.6	39	30.8	9	116.1



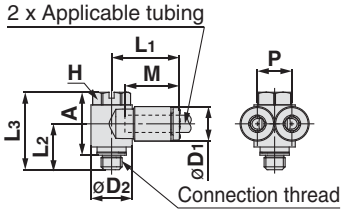
∗ Reference dimensions after installation of R thread
Note) øD1 is maximum diameter.

Dimensions

Branch Universal Male Elbow: KQ2Z (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A	M	P	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	M5 x 0.8	**KQ2Z04-M5A**	8	8.2	9.8	16.5	10.9	18.4	15.4	13.3	8.2	3.4	3.4	2.5	6.2

Note) øD1 is maximum diameter.

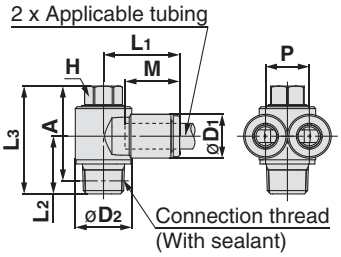


Branch Universal Male Elbow: KQ2Z (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	P	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	**KQ2Z04-01AS**	8	8.2	13.4	18.5	13.7	25.6	22.5	13.3	8.2	4.7	4.7	3	14
ø6	1/8	**KQ2Z06-01AS**	8	10.4	13.4	18.4	13.7	25.6	22.5	13.3	10.4	10.8	8.6	4.5	14.6
	1/4	**KQ2Z06-02AS**	14	10.4	20.6	21.5	19.1	34.9	30.2	13.3	10.4	10.8	8.6	4.5	37
	3/8	**KQ2Z06-03AS**	14	10.4	20.6	21.5	19.5	35.3	30.2	13.3	10.4	10.8	8.6	4.5	44.6
ø8	1/8	**KQ2Z08-01AS**	12	13.2	17.6	21.2	15.1	27.6	24.5	14.2	13.2	20.5	14.2	6	24.3
	1/4	**KQ2Z08-02AS**	12	13.2	17.6	21.2	18.5	31	26.3	14.2	13.2	20.5	14.2	6	30.8
	3/8	**KQ2Z08-03AS**	14	13.2	20.6	22.3	19.5	35.3	30.2	14.2	13.2	20.5	14.2	6	46.3
ø10	1/4	**KQ2Z10-02AS**	14	15.9	21.6	23.6	19.9	34.9	30.2	15.6	15.9	31.8	22.6	7.5	41.7
	3/8	**KQ2Z10-03AS**	14	15.9	21.6	23.6	20.3	35.3	30.2	15.6	15.9	31.8	22.6	7.5	49.3
ø12	3/8	**KQ2Z12-03AS**	17	18.5	24.1	26.9	21.2	37.6	32.5	17	18.5	44.6	35.3	9	63.4
	1/2	**KQ2Z12-04AS**	17	18.5	24.1	26.9	24.4	40.8	34.4	17	18.5	44.6	35.3	9	82

∗ Reference dimensions after installation of R thread

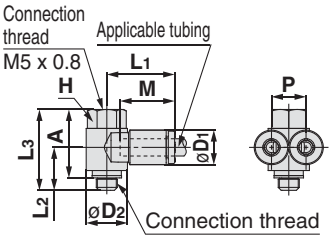
Note) øD1 is maximum diameter.



Branch Universal Female Elbow: KQ2ZF (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A	M	P	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	M5 x 0.8	**KQ2ZF04-M5A**	8	8.2	9.8	16.5	10.2	19.2	16.2	13.3	8.2	3.4	3.4	2.5	6.3

Note) øD1 is maximum diameter.

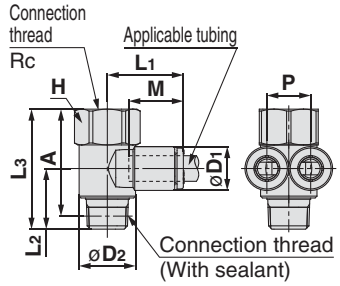


Branch Universal Female Elbow: KQ2ZF (Sealant)

Applicable tubing O.D. [mm]	Connection thread R, Rc	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	P	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	**KQ2ZF04-01AS**	14	8.2	13.4	18.5	13	28.5	25.4	13.3	8.2	4.7	4.7	3	18.1
ø6	1/8	**KQ2ZF06-01AS**	14	10.4	13.4	18.4	13	28.5	25.4	13.3	10.4	10.8	8.6	4.5	18.7
	1/4	**KQ2ZF06-02AS**	19	10.4	20.6	21.5	18.4	40.3	35.6	13.3	10.4	10.8	8.6	4.5	45.3
ø8	1/8	**KQ2ZF08-01AS**	17	13.2	17.6	21.2	14.4	30	26.9	14.2	13.2	20.5	14.2	6	29.3
	1/4	**KQ2ZF08-02AS**	19	13.2	20.6	22.3	18.4	40.3	35.6	14.2	13.2	20.5	14.2	6	47
ø10	1/4	**KQ2ZF10-02AS**	19	15.9	21.6	23.6	19.2	40.3	35.6	15.6	15.9	31.8	22.6	7.5	49.9
	3/8	**KQ2ZF10-03AS**	22	15.9	25.2	25.5	20	44	38.9	15.6	15.9	31.8	22.6	9	68.4
ø12	3/8	**KQ2ZF12-03AS**	22	18.5	24.1	26.9	20.5	44	38.9	17	18.5	44.6	35.3	9	71
	1/2	**KQ2ZF12-04AS**	24	18.5	27	29.9	22.7	48.9	42.5	17	18.5	44.6	35.3	9	100.5

∗ Reference dimensions after installation of R thread

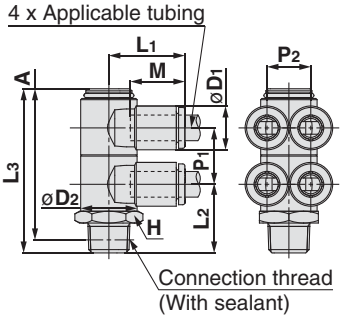
Note) øD1 is maximum diameter.



Dimensions

Double Branch Universal Male Elbow: KQ2ZD (Sealant)

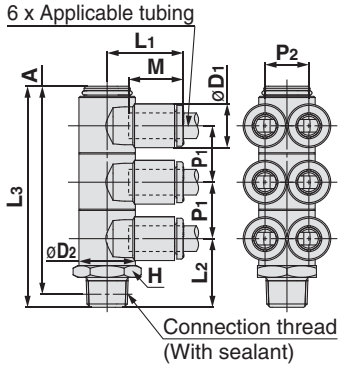
Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	P1	P2	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	KQ2ZD04-01AS	14	8.2	13.4	18.5	16.3	39	35.9	13.3	13.4	8.2	4.7	4.7	3	21.3
	1/4	KQ2ZD04-02AS	14	8.2	13.4	18.5	20.7	43.4	38.7	13.3	13.4	8.2	4.7	4.7	3	29
	3/8	KQ2ZD04-03AS	17	8.2	13.4	18.5	22.1	44.8	39.7	13.3	13.4	8.2	4.7	4.7	3	40.9
ø6	1/8	KQ2ZD06-01AS	14	10.4	13.4	18.4	16.3	39	35.9	13.3	13.4	10.4	10.8	8.6	4.5	22.5
	1/4	KQ2ZD06-02AS	14	10.4	13.4	18.4	20.7	43.4	38.7	13.3	13.4	10.4	10.8	8.6	4.5	30.2
	3/8	KQ2ZD06-03AS	17	10.4	13.4	18.4	22.1	44.8	39.7	13.3	13.4	10.4	10.8	8.6	4.5	42.1
ø8	1/8	KQ2ZD08-01AS	19	13.2	17.6	21.2	19	45.8	42.7	14.2	15.9	13.2	20.5	14.2	6	48.7
	1/4	KQ2ZD08-02AS	19	13.2	17.6	21.2	22.4	49.2	44.5	14.2	15.9	13.2	20.5	14.2	6	48
	3/8	KQ2ZD08-03AS	19	13.2	17.6	21.2	23	49.8	44.7	14.2	15.9	13.2	20.5	14.2	6	55.9
	1/2	KQ2ZD08-04AS	22	13.2	17.6	21.2	27.2	54	47.6	14.2	15.9	13.2	20.5	14.2	6	82.1
ø10	1/4	KQ2ZD10-02AS	21	15.9	20.6	23.6	24.3	56.2	51.5	15.6	19.2	15.9	31.8	21.6	9	69
	3/8	KQ2ZD10-03AS	21	15.9	20.6	23.6	24.7	56.6	51.5	15.6	19.2	15.9	31.8	21.6	10	71
	1/2	KQ2ZD10-04AS	22	15.9	20.6	23.6	28.1	60	53.6	15.6	19.2	15.9	31.8	21.6	10	92.9
ø12	1/4	KQ2ZD12-02AS	26	18.5	25.2	26.8	26.5	62.4	57.7	17	21.6	18.5	44.6	35.3	9	115.6
	3/8	KQ2ZD12-03AS	26	18.5	25.2	26.8	26.9	62.8	57.7	17	21.6	18.5	44.6	35.3	11	110.7
	1/2	KQ2ZD12-04AS	26	18.5	25.2	26.8	30.1	66	59.6	17	21.6	18.5	44.6	35.3	11.5	124.7



∗ Reference dimensions after installation of R thread
Note) øD1 is maximum diameter.

Triple Branch Universal Male Elbow: KQ2ZT (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	P1	P2	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	KQ2ZT04-01AS	14	8.2	13.4	18.5	16.3	52.5	49.4	13.3	13.4	8.2	4.7	4.7	3	27.7
	1/4	KQ2ZT04-02AS	14	8.2	13.4	18.5	20.7	56.9	52.2	13.3	13.4	8.2	4.7	4.7	3	35.3
	3/8	KQ2ZT04-03AS	17	8.2	13.4	18.5	22.1	58.3	53.2	13.3	13.4	8.2	4.7	4.7	3	47.2
ø6	1/8	KQ2ZT06-01AS	14	10.4	13.4	18.4	16.3	52.5	49.4	13.3	13.4	10.4	10.8	8.6	4.5	29.5
	1/4	KQ2ZT06-02AS	14	10.4	13.4	18.4	20.7	56.9	52.2	13.3	13.4	10.4	10.8	8.6	4.5	37.2
	3/8	KQ2ZT06-03AS	17	10.4	13.4	18.4	22.1	58.3	53.2	13.3	13.4	10.4	10.8	8.6	4.5	49.1
ø8	1/8	KQ2ZT08-01AS	19	13.2	17.6	21.2	19	61.8	58.7	14.2	15.9	13.2	20.5	14.2	6	65.1
	1/4	KQ2ZT08-02AS	19	13.2	17.6	21.2	22.4	65.2	60.5	14.2	15.9	13.2	20.5	14.2	6	62.3
	3/8	KQ2ZT08-03AS	19	13.2	17.6	21.2	23	65.8	60.7	14.2	15.9	13.2	20.5	14.2	6	70.4
	1/2	KQ2ZT08-04AS	22	13.2	17.6	21.2	27.2	70	63.6	14.2	15.9	13.2	20.5	14.2	6	97
ø10	1/4	KQ2ZT10-02AS	21	15.9	20.6	23.6	24.3	75.5	70.8	15.6	19.2	15.9	31.8	21.6	9	90.9
	3/8	KQ2ZT10-03AS	21	15.9	20.6	23.6	24.7	75.9	70.8	15.6	19.2	15.9	31.8	21.6	10	90.7
	1/2	KQ2ZT10-04AS	22	15.9	20.6	23.6	28.7	79.9	73.5	15.6	19.2	15.9	31.8	21.6	10	112.7
ø12	1/4	KQ2ZT12-02AS	26	18.5	25.2	26.8	26.5	84.1	79.4	17	21.6	18.5	44.6	35.3	9	152.2
	3/8	KQ2ZT12-03AS	26	18.5	25.2	26.8	26.9	84.5	79.4	17	21.6	18.5	44.6	35.3	11	142.6
	1/2	KQ2ZT12-04AS	26	18.5	25.2	26.8	30.1	87.7	81.3	17	21.6	18.5	44.6	35.3	11.5	155.1



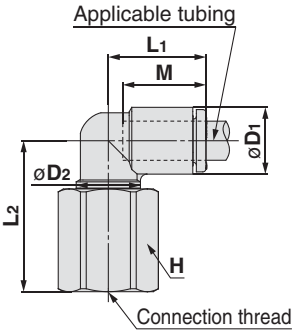
∗ Reference dimensions after installation of R thread
Note) øD1 is maximum diameter.

Dimensions

Female Elbow: KQ2LF

Applicable tubing O.D. [mm]	Connection thread M, Rc	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	M	Effective area [mm2] Nylon	Effective area [mm2] Urethane	Min. port size	Weight [g]
ø4	M5 x 0.8	KQ2LF04-M5A	8	8.2	7	15.4	15.3	13.3	3.5	3.5	2.5	4.7
	M6 x 1.0	KQ2LF04-M6A	8	8.2	7	15.4	16.1	13.3	3.5	3.5	2.5	4.6
	1/8	KQ2LF04-01A	14	8.2	10	14.8	22.4	13.3	4.2	4.2	3	17.6
	1/4	KQ2LF04-02A	17	8.2	10	14.8	26.9	13.3	4.2	4.2	3	29.6
ø6	M5 x 0.8	KQ2LF06-M5A	8	10.4	7	14.5	17	13.3	3.5	3.5	2.5	4.8
	M6 x 1.0	KQ2LF06-M6A	8	10.4	7	14.5	17.8	13.3	3.5	3.5	2.5	4.7
	1/8	KQ2LF06-01A	14	10.4	10	15.5	23.5	13.3	11.4	9	4.5	18
	1/4	KQ2LF06-02A	17	10.4	10	15.5	28	13.3	11.4	9	4.5	30.1
	3/8	KQ2LF06-03A	19	10.4	10	15.5	28.5	13.3	11.4	9	4.5	34
ø8	1/8	KQ2LF08-01A	14	13.2	10	16.4	24.9	14.2	11.4	11.4	4.5	18.8
	1/4	KQ2LF08-02A	17	13.2	12	17.2	28.8	14.2	21.6	14.9	6	28.7
	3/8	KQ2LF08-03A	19	13.2	12	17.2	29.3	14.2	21.6	14.9	6	32.3
ø10	1/4	KQ2LF10-02A	17	15.9	17	19.3	27.4	15.6	21.6	14.9	7.5	26.4
	3/8	KQ2LF10-03A	19	15.9	17	19.3	33.5	15.6	35.2	25	7.5	31
	1/2	KQ2LF10-04A	24	15.9	17	19.3	36.5	15.6	35.2	25	7.5	57.6
ø12	1/4	KQ2LF12-02A	17	18.5	17	21.5	28.7	17	50.2	39.7	9	28.2
	3/8	KQ2LF12-03A	19	18.5	17	21.5	34.8	17	50.2	39.7	9	32.9
	1/2	KQ2LF12-04A	24	18.5	17	21.5	37.8	17	50.2	39.7	9	59.5

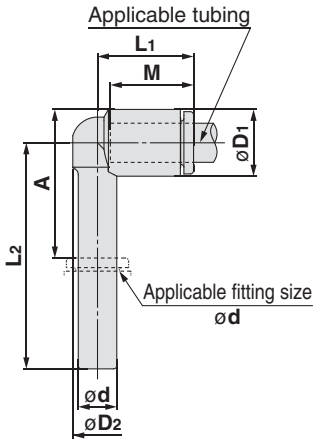
Note) øD1 is maximum diameter.



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	Min. port size	Weight [g]
ø3.2	ø3.2	KQ2W23-99A	7.1	6.4	14.4	30.5	20.8	13.3	3	2.5	2.5	1
ø4	ø4	KQ2W04-99A	8.2	7.2	14.5	31.8	22.6	13.3	4.2	4.2	3	1.3
ø6	ø6	KQ2W06-99A	10.4	8	15.3	35.2	27.1	13.3	9	9	4	2
ø8	ø8	KQ2W08-99A	13.2	10	17.2	41.9	34.3	14.2	21.6	14.9	6	3.5
ø10	ø10	KQ2W10-99A	15.9	12	19.3	46.6	38.9	15.6	35.2	25	7.5	5.5
ø12	ø12	KQ2W12-99A	18.5	14	21.5	52	44.2	17	50.2	39.7	9	8.4

Note) øD1 is maximum diameter.



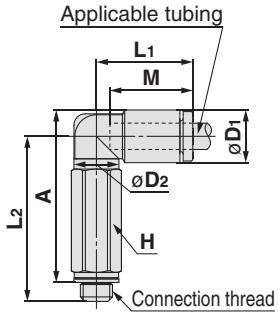
Dimensions

Extended Male Elbow: KQ2W (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	M3 x 0.5	KQ2W02-M3G	5.5	5.8	5.5	12.6	18.8	19.1	11.9	—	0.8	1.2	2.6
	M5 x 0.8	KQ2W02-M5□	7	5.8	5.5	12.6	19.3	19.2	11.9	—	0.8	1.2	4.6
ø3.2	M3 x 0.5	KQ2W23-M3G	7	7.1	7	15.3	22.5	23.4	13.3	0.8	0.8	1.2	4.8
	M5 x 0.8	KQ2W23-M5□	7	7.1	7	15.3	25.2	25.7	13.3	2.8	2.4	2.5	5.8
ø4	M3 x 0.5	KQ2W04-M3G	7	8.2	7	15.4	23	24.5	13.3	0.8	0.8	1.2	4.9
	M5 x 0.8	KQ2W04-M5□	7	8.2	7	15.4	25.7	26.8	13.3	3	3	2.5	5.8
ø6	M5 x 0.8	KQ2W06-M5□	7	10.4	7	14.5	27.4	29.6	13.3	3	3	2.5	5.9

□/A: Brass, N: Brass + Electroless nickel plated

Note) øD1 is maximum diameter.



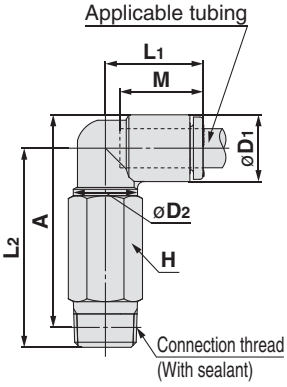
Extended Male Elbow: KQ2W (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	1/8	KQ2W23-01□S	10	7.1	10	14.5	30.3	30.8	13.3	2.8	2.4	2.5	10.8
	1/4	KQ2W23-02AS	14	7.1	10	14.5	32.8	31.7	13.3	2.8	2.4	2.5	27.3
ø4	1/8	KQ2W04-01□S	10	8.2	10	14.8	29.9	30.9	13.3	4	4	3	11
	1/4	KQ2W04-02AS	14	8.2	10	14.8	33.3	32.7	13.3	4	4	3	27.5
ø6	1/8	KQ2W06-01□S	10	10.4	10	15.5	31	33.1	13.3	10.9	8.6	4.5	11.4
	1/4	KQ2W06-02AS	14	10.4	10	15.5	34.4	34.9	13.3	10.9	8.6	4.5	28
	3/8	KQ2W06-03AS	17	10.4	10	15.5	35.7	35.8	13.3	10.9	8.6	4.5	47.4
ø8	1/8	KQ2W08-01AS	10	13.2	10	16.4	32.4	35.9	14.2	10.9	10.9	4.5	12.2
	1/4	KQ2W08-02AS	14	13.2	12	17.2	39.1	41	14.2	20.5	14.2	6	40
	3/8	KQ2W08-03AS	17	13.2	12	17.2	39.2	40.7	14.2	20.5	14.2	6	47
ø10	1/4	KQ2W10-02AS	17	15.9	17	19.3	52.9	56.2	15.6	33.5	23.8	7.5	59
	3/8	KQ2W10-03AS	17	15.9	17	19.3	48.5	51.4	15.6	33.5	23.8	7.5	51.3
	1/2	KQ2W10-04AS	22	15.9	17	19.3	52.5	54.1	15.6	33.5	23.8	7.5	92
ø12	1/4	KQ2W12-02AS	17	18.5	17	21.5	54.2	58.8	17	47.7	37.7	9	60.7
	3/8	KQ2W12-03AS	17	18.5	17	21.5	49.8	54	17	47.7	37.7	9	53.2
	1/2	KQ2W12-04AS	22	18.5	17	21.5	53.8	56.7	17	47.7	37.7	9	93.9
ø16	New 1/4	KQ2W16-02AS	17	23.8	21	27.1	59	66.2	20.6	47.7	47.7	9	67.4
	3/8	KQ2W16-03AS	22	23.8	21	27.1	59.7	66.5	20.6	71	71	11	105.5
	1/2	KQ2W16-04AS	22	23.8	21	27.1	58.4	63.9	20.6	100	84	13	101.7

□/A: Brass, N: Brass + Electroless nickel plated

∗ Reference dimensions after installation of R thread

Note) øD1 is maximum diameter.



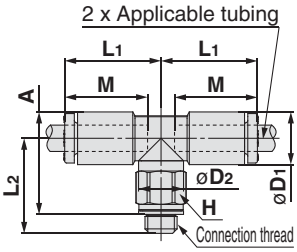
Dimensions

Male Branch Tee: KQ2T (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	M3 x 0.5	KQ2T02-M3G	5.5	5.8	5.5	12.6	12.5	12.8	11.9	—	0.9	1.2	1.9
	M5 x 0.8	KQ2T02-M5□	7	5.8	5.5	12.6	13	12.9	11.9	—	0.9	1.4	3
ø3.2	M3 x 0.5	KQ2T23-M3G	7	7.1	7	15.3	13.8	14.7	13.3	0.9	0.9	1.2	3.1
	M5 x 0.8	KQ2T23-M5□	7	7.1	7	15.3	14.3	14.8	13.3	3.2	2.7	2.5	3.5
ø4	M3 x 0.5	KQ2T04-M3G	7	8.2	7	15.4	14.3	15.8	13.3	0.9	0.9	1.2	3.4
	M5 x 0.8	KQ2T04-M5□	7	8.2	7	15.4	14.8	15.9	13.3	4.5	4.5	2.5	3.9
	M6 x 1.0	KQ2T04-M6A	8	8.2	7	15.4	15.8	15.9	13.3	4.5	4.5	2.5	4.9
ø6	M5 x 0.8	KQ2T06-M5□	7	10.4	7	14.55	16.5	18.7	13.3	4.5	4.5	2.5	4.4
	M6 x 1.0	KQ2T06-M6A	8	10.4	7	14.55	17.5	18.7	13.3	4.5	4.5	2.5	5.4

□/A: Brass, N: Brass + Electroless nickel plated

Note) øD1 is maximum diameter.



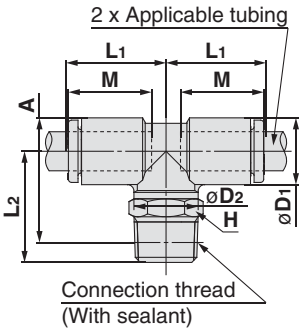
Male Branch Tee: KQ2T (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	1/8	KQ2T23-01□S	10	7.1	10	14.5	16.6	17.1	13.3	3.4	2.9	2.5	5.2
	1/4	KQ2T23-02AS	14	7.1	10	14.5	21.1	20	13.3	3.4	2.9	2.5	14.7
ø4	1/8	KQ2T04-01□S	10	8.2	10	14.8	16.2	17.2	13.3	6	4.1	3	5.5
	1/4	KQ2T04-02AS	14	8.2	10	14.8	21.7	21.1	13.3	6	4.1	3	15
ø6	1/8	KQ2T06-01□S	10	10.4	10	15.5	17.3	19.4	13.3	13.9	11	4.5	6.1
	1/4	KQ2T06-02AS	14	10.4	10	15.5	22.8	23.3	13.3	13.9	11	4.5	15.6
	3/8	KQ2T06-03AS	17	10.4	10	15.5	24.1	24.2	13.3	13.9	11	4.5	27.4
ø8	1/8	KQ2T08-01AS	10	13.2	10	16.4	18.7	22.2	14.2	14	14	4.5	7.9
	1/4	KQ2T08-02AS	14	13.2	12	17.2	25.4	27.3	14.2	26.3	18.2	6	19.4
	3/8	KQ2T08-03AS	17	13.2	12	17.2	25.5	27	14.2	26.3	18.2	6	26.5
ø10	1/8	KQ2T10-01AS	12	15.9	12	18.6	23.5	28.4	15.6	21.6	14.9	6	13.9
	1/4	KQ2T10-02AS	17	15.9	17	19.3	28.6	31.9	15.6	35.2	25	7.5	24.3
	3/8	KQ2T10-03AS	17	15.9	17	19.3	29.5	32.4	15.6	35.2	25	7.5	24.8
	1/2	KQ2T10-04AS	22	15.9	17	19.3	33.5	35.1	15.6	35.2	25	7.5	47.3
ø12	1/4	KQ2T12-02AS	17	18.5	17	21.5	29.9	34.5	17	57.2	45.2	9	27.3
	3/8	KQ2T12-03AS	17	18.5	17	21.5	30.8	35	17	57.2	45.2	9	28
	1/2	KQ2T12-04AS	22	18.5	17	21.5	34.8	37.7	17	57.2	45.2	9	50.4
ø16	New 1/4	KQ2T16-02AS	17	23.8	17	25.1	32.6	39.8	20.6	57.2	57.2	9	35.5
	3/8	KQ2T16-03AS	22	23.8	21	27.1	35.4	42.2	20.6	71	71	11	47.7
	1/2	KQ2T16-04AS	22	23.8	21	27.1	34.1	39.6	20.6	100	84	13	51.4

□/A: Brass, N: Brass + Electroless nickel plated

* Reference dimensions after installation of R thread

Note) øD1 is maximum diameter.

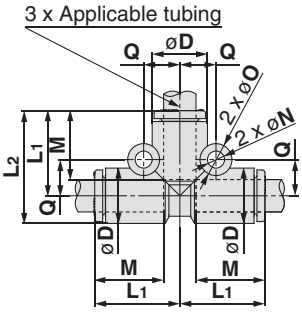


Dimensions

Union Tee: KQ2T

Applicable tubing O.D. [mm]	Model	Note) øD	L1	L2	M	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	**KQ2T02-00A**	5.8	12.9	15.8	11.9	4.5	6	3.2	—	0.9	1.4	1.4
ø3.2	**KQ2T23-00A**	7.1	14.9	18.5	13.3	5.4	6	3.2	3.4	2.9	2.5	4.6
ø4	**KQ2T04-00A**	8.2	15.3	19.4	13.3	5.7	6	3.2	6.4	4.4	3	5.5
ø6	**KQ2T06-00A**	10.4	16.3	21.5	13.3	6.8	6	3.2	13.4	10.6	4.5	7.6
ø8	**KQ2T08-00A**	13.2	18.6	25.2	14.2	8.4	8	4.2	25.6	17.7	6	7
ø10	**KQ2T10-00A**	15.9	22.4	30.4	15.6	9.6	8	4.2	40	28.4	7.5	11
ø12	**KQ2T12-00A**	18.5	24.4	33.7	17	10.7	8	4.2	57.4	45.4	9	15.7
ø16	**KQ2T16-00A**	23.8	31	42.9	20.6	13.4	8	4.2	100	84	13	29.8

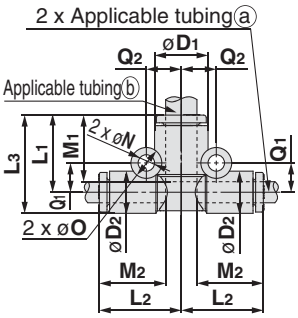
Note) øD is maximum diameter.



Different Diameter Tee: KQ2T

Applicable tubing O.D. [mm] ⓐ	Applicable tubing O.D. [mm] ⓑ	Model	Note) øD1	øD2	L1	L2	L3	M1	M2	Q1	Q2	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	ø4	**KQ2T23-04A**	8.2	7.1	14.9	15.3	18.5	13.3	13.3	5.4	5.8	6	3.2	3.8	3.5	2.5	5.1
ø4	ø6	**KQ2T04-06A**	10.4	8.2	15.3	16.3	19.4	13.3	13.3	5.7	6.8	6	3.2	7.1	6.6	3	6.5
ø6	ø8	**KQ2T06-08A**	13.2	10.4	17.2	17.3	22.4	14.2	13.3	7.3	8.4	8	4.2	16.4	16.4	4.5	5.3
ø8	ø10	**KQ2T08-10A**	15.9	13.2	19.6	19.2	26.2	15.6	14.2	8.4	9.6	8	4.2	36	27.2	6	8.3
ø10	ø12	**KQ2T10-12A**	18.5	15.9	22	21.6	30	17	15.6	9.6	10.7	8	4.2	56	44.5	7.5	12.2
ø12	ø16	**KQ2T12-16A**	23.8	18.5	26.6	25	35.9	20.6	17	10.7	13.4	8	4.2	108.5	74	9	20.1

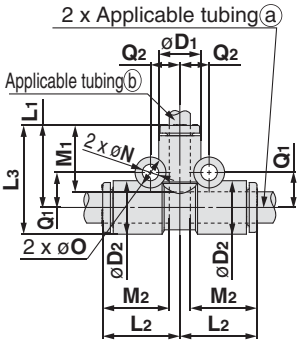
Note) øD1 is maximum diameter.



Different Diameter Tee: KQ2T

Applicable tubing O.D. [mm] ⓐ	Applicable tubing O.D. [mm] ⓑ	Model	Note) øD1	øD2	L1	L2	L3	M1	M2	Q1	Q2	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø6	ø4	**KQ2T06-04A**	8.2	10.4	16.3	15.3	21.5	13.3	13.3	6.8	5.7	6	3.2	6.4	4.4	3	3.5
ø8	ø6	**KQ2T08-06A**	10.4	13.2	17.3	17.2	23.9	13.3	14.2	8.4	7.3	8	4.2	13.4	10.6	4.5	6
ø10	ø8	**KQ2T10-08A**	13.2	15.9	19.2	19.6	27.2	14.2	15.6	9.6	8.4	8	4.2	25.6	17.7	6	9.5
ø12	ø10	**KQ2T12-10A**	15.9	18.5	21.6	22	30.9	15.6	17	10.7	9.6	8	4.2	40	28.4	7.5	13.4

Note) øD1 is maximum diameter.

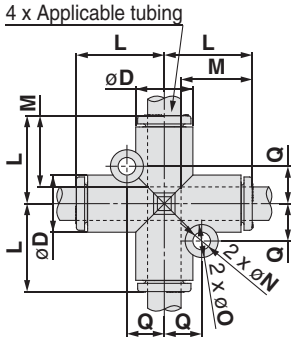


Dimensions

Cross: KQ2TW

Applicable tubing O.D. [mm]	Model	Note) øD	L	Q	M	øO	øN	Effective area [mm²]		Min. port size	Weight [g]
								Nylon	Urethane		
ø4	**KQ2TW04-00A**	8.2	15.3	5.7	13.3	6	3.2	6.4	4.4	3	3.5
ø6	**KQ2TW06-00A**	10.4	16.3	6.8	13.3	6	3.2	13.4	10.6	4.5	4.9
ø8	**KQ2TW08-00A**	13.2	18.2	8.4	14.2	8	4.2	25.6	17.7	6	8.5
ø10	**KQ2TW10-00A**	15.9	20.6	9.6	15.6	8	4.2	40	28.4	7.5	12.7
ø12	**KQ2TW12-00A**	18.5	23	10.7	17	8	4.2	57.4	45.4	9	18.4

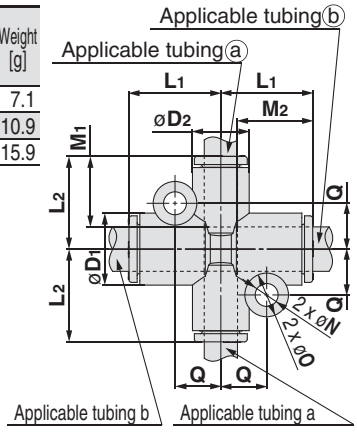
Note) øD is maximum diameter.



Different Diameter Cross: KQ2TX

Applicable tubing O.D. [mm]		Model	Note) øD1	Note) øD2	L1	L2	Q	M1	M2	øO	øN	Effective area [mm²]		Min. port size	Weight [g]
ⓐ	ⓑ											Nylon	Urethane		
ø6	ø8	**KQ2TX06-08A**	10.4	13.2	17.2	17.3	8.4	13.3	14.2	8	4.2	13.4	10.6	4.5	7.1
ø8	ø10	**KQ2TX08-10A**	13.2	15.9	19.6	19.2	9.6	14.2	15.6	8	4.2	25.6	17.7	6	10.9
ø10	ø12	**KQ2TX10-12A**	15.9	18.5	22	21.6	10.7	15.6	17	8	4.2	40	28.4	7.5	15.9

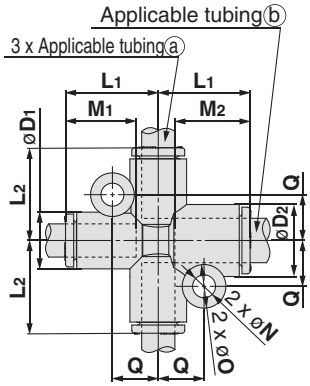
Note) øD1, øD2 are maximum diameters.



Different Diameter Cross: KQ2TY

Applicable tubing O.D. [mm]		Model	Note) øD1	Note) øD2	L1	L2	Q	M1	M2	øO	øN	Effective area		Min. port size	Weight [g]
ⓐ	ⓑ											Nylon	Urethane		
ø6	ø8	**KQ2TY06-08A**	10.4	13.2	17.3	17.2	8.4	13.3	14.2	8	4.2	13.4	10.6	4.5	6.5
ø8	ø10	**KQ2TY08-10A**	13.2	15.9	19.2	19.6	9.6	14.2	15.6	8	4.2	25.6	17.7	6	10.2
ø10	ø12	**KQ2TY10-12A**	15.9	18.5	21.6	22	10.7	15.6	17	8	4.2	40	28.4	7.5	14.9

Note) øD1, øD2 are maximum diameters.



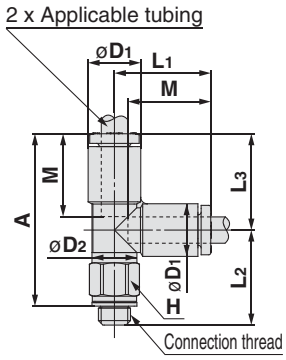
Dimensions

Male Run Tee: KQ2Y (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	M3 x 0.5	**KQ2Y02-M3G**	5.5	5.8	5.5	12.9	12.5	12.9	22.8	11.9	—	0.9	1.2	2
	M5 x 0.8	**KQ2Y02-M5□**	7	5.8	5.5	12.9	13	12.9	22.9	11.9	—	0.9	1.4	3.1
ø3.2	M3 x 0.5	**KQ2Y23-M3G**	7	7.1	7	15.3	13.8	15.3	26.5	13.3	0.9	0.9	1.2	3.1
	M5 x 0.8	**KQ2Y23-M5□**	7	7.1	7	15.3	14.3	15.3	26.6	13.3	3.2	2.7	2.5	3.5
ø4	M3 x 0.5	**KQ2Y04-M3G**	7	8.2	7	15.4	14.3	15.4	27.1	13.3	0.9	0.9	1.2	3.4
	M5 x 0.8	**KQ2Y04-M5□**	7	8.2	7	15.4	14.8	15.4	27.2	13.3	4.5	4.5	2.5	3.9
	M6 x 1.0	**KQ2Y04-M6A**	8	8.2	7	15.4	15.8	15.4	27.2	13.3	4.5	4.5	2.5	4.9
ø6	M5 x 0.8	**KQ2Y06-M5□**	7	10.4	7	16.35	16.5	16.3	29.8	13.3	4.5	4.5	2.5	4.6
	M6 x 1.0	**KQ2Y06-M6A**	8	10.4	7	16.35	17.5	16.3	29.8	13.3	4.5	4.5	2.5	5.7

□/A: Brass, N: Brass + Electroless nickel plated

Note) øD1 is maximum diameter.



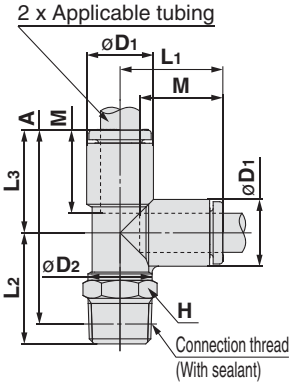
Male Run Tee: KQ2Y (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L1	L2	L3	A*	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	1/8	**KQ2Y23-01□S**	10	7.1	10	14.9	16.6	14.9	28.5	13.3	3.4	2.9	2.5	5.3
	1/4	**KQ2Y23-02AS**	14	7.1	10	14.9	21.1	14.9	31.4	13.3	3.4	2.9	2.5	14.7
ø4	1/8	**KQ2Y04-01□S**	10	8.2	10	15.3	16.2	15.3	28.4	13.3	6.4	4.4	3	5.6
	1/4	**KQ2Y04-02AS**	14	8.2	10	15.3	21.7	15.3	32.3	13.3	6.4	4.4	3	15
ø6	1/8	**KQ2Y06-01□S**	10	10.4	10	16.3	17.3	16.3	30.5	13.3	13.4	10.6	4.5	6.2
	1/4	**KQ2Y06-02AS**	14	10.4	10	16.3	22.8	16.3	34.4	13.3	13.4	10.6	4.5	15.8
	3/8	**KQ2Y06-03AS**	17	10.4	10	16.3	24.1	16.3	35.3	13.3	13.4	10.6	4.5	27.5
ø8	1/8	**KQ2Y08-01AS**	10	13.2	10	18.2	18.7	18.2	33.8	14.2	13.4	13.4	4.5	8
	1/4	**KQ2Y08-02AS**	14	13.2	12	18.2	25.4	18.2	38.9	14.2	25.6	17.7	6	19.5
	3/8	**KQ2Y08-03AS**	17	13.2	12	18.2	25.5	18.2	38.6	14.2	25.6	17.7	6	26.5
ø10	1/8	**KQ2Y10-01AS**	12	15.9	12	20.6	23.5	20.6	41.1	15.6	40	28.4	6	14
	1/4	**KQ2Y10-02AS**	17	15.9	17	20.6	28.6	20.6	44.6	15.6	40	28.4	7.5	24.5
	3/8	**KQ2Y10-03AS**	17	15.9	17	20.6	29.5	20.6	45.1	15.6	40	28.4	7.5	25
	1/2	**KQ2Y10-04AS**	22	15.9	17	20.6	33.5	20.6	47.8	15.6	40	28.4	7.5	47.4
ø12	1/4	**KQ2Y12-02AS**	17	18.5	17	23	29.9	23	48.3	17	57.4	45.4	9	27.6
	3/8	**KQ2Y12-03AS**	17	18.5	17	23	30.8	23	48.8	17	57.4	45.4	9	28.2
	1/2	**KQ2Y12-04AS**	22	18.5	17	23	34.8	23	51.5	17	57.4	45.4	9	50.7
ø16	New 1/4	**KQ2Y16-02AS**	17	23.8	17	28.6	32.6	28.6	56.5	20.6	57.4	45.4	9	36
	3/8	**KQ2Y16-03AS**	22	23.8	21	28.6	35.4	28.6	58.9	20.6	81	60	11	48.3
	1/2	**KQ2Y16-04AS**	22	23.8	21	28.6	34.1	28.6	56.3	20.6	113	60	13	52

□/A: Brass, N: Brass + Electroless nickel plated

* Reference dimensions after installation of R thread

Note) øD1 is maximum diameter.

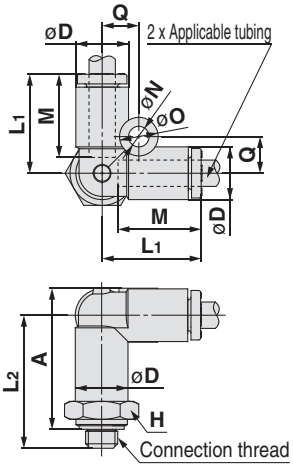


Dimensions

Male Delta Union: KQ2D (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD	L1	L2	A	M	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	M5 x 0.8	**KQ2D04-M5A**	10	8.2	15.8	20.7	21.8	13.3	5.7	6	3.2	2.2	2.2	1.8	6.6
	M6 x 1.0	**KQ2D04-M6A**	10	8.2	15.8	21.7	21.8	13.3	5.7	6	3.2	4.3	4.3	3	6.4
ø6	M5 x 0.8	**KQ2D06-M5A**	12	10.4	16.8	21.7	23.9	13.3	6.7	6	3.2	4.3	4.3	1.8	9.8
	M6 x 1.0	**KQ2D06-M6A**	12	10.4	16.8	22.7	23.9	13.3	6.7	6	3.2	4.3	4.3	3	9.7

Note) øD is maximum diameter.

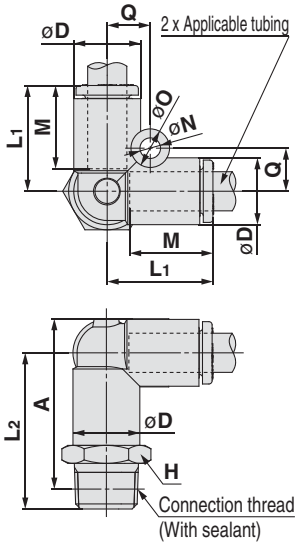


Male Delta Union: KQ2D (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD	L1	L2	A*	M	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	**KQ2D04-01AS**	10	8.2	15.8	23.3	24.3	13.3	5.7	6	3.2	6	6	3	9.2
	1/4	**KQ2D04-02AS**	14	8.2	15.8	27.7	27.1	13.3	5.7	6	3.2	6	6	3	19
ø6	1/8	**KQ2D06-01AS**	12	10.4	16.8	24.3	26.4	13.3	6.7	6	3.2	13.9	11	4.5	10.2
	1/4	**KQ2D06-02AS**	14	10.4	16.8	28.7	29.2	13.3	6.7	6	3.2	13.9	11	4.5	19.1
	3/8	**KQ2D06-03AS**	17	10.4	16.8	30.1	30.2	13.3	6.7	6	3.2	13.9	11	4.5	31
ø8	1/8	**KQ2D08-01AS**	14	13.2	18.8	26.3	29.8	14.2	8.4	8	4.2	26.3	18.2	6	15.3
	1/4	**KQ2D08-02AS**	14	13.2	18.8	30.7	32.6	14.2	8.4	8	4.2	26.3	18.2	6	20.4
	3/8	**KQ2D08-03AS**	17	13.2	18.8	32.1	33.6	14.2	8.4	8	4.2	26.3	18.2	6	32.1
ø10	1/4	**KQ2D10-02AS**	17	15.9	21.2	33.1	36.3	15.6	9.6	8	4.2	40.8	29	7.5	24.9
	3/8	**KQ2D10-03AS**	17	15.9	21.2	34.5	37.3	15.6	9.6	8	4.2	40.8	29	7.5	32.7
	1/2	**KQ2D10-04AS**	22	15.9	21.2	38.7	40.2	15.6	9.6	8	4.2	40.8	29	7.5	60.6
ø12	1/4	**KQ2D12-02AS**	19	18.5	23.6	35.5	40	17	10.7	8	4.2	57.2	45.2	9	35
	3/8	**KQ2D12-03AS**	19	18.5	23.6	36.9	41	17	10.7	8	4.2	57.2	45.2	9	38
	1/2	**KQ2D12-04AS**	22	18.5	23.6	41.1	43.9	17	10.7	8	4.2	57.2	45.2	9	60

∗ Reference dimensions after installation of R thread

Note) øD is maximum diameter.



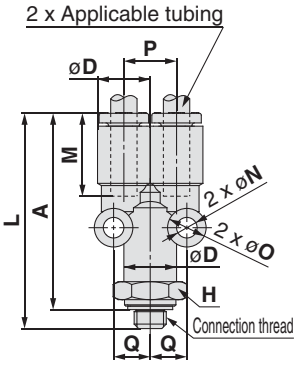
Dimensions

Branch "Y": KQ2U (Gasket seal)

Applicable tubing O.D. [mm]	Connection thread M	Model	H (Width across flats)	Note) øD	L	A	M	P	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	M5 x 0.8	KQ2U23-M5□	10	7.1	33.8	30.8	13.3	7.1	5.2	6	3.2	2.2	2.2	1.8	5.8
ø4	M5 x 0.8	KQ2U04-M5□	10	8.2	33.9	30.9	13.3	8.2	5.7	6	3.2	2.2	2.2	1.8	6.7
	M6 x 1.0	KQ2U04-M6A	10	8.2	34.9	30.9	13.3	8.2	5.7	6	3.2	2.2	2.2	3	6.6
ø6	M5 x 0.8	KQ2U06-M5□	12	10.4	35	32	13.3	10.4	6.8	6	3.2	2.2	2.2	1.8	10
	M6 x 1.0	KQ2U06-M6A	12	10.4	36	32	13.3	10.4	6.8	6	3.2	2.2	2.2	3	9.8

□/A: Brass, N: Brass + Electroless nickel plated

Note) øD is maximum diameter.



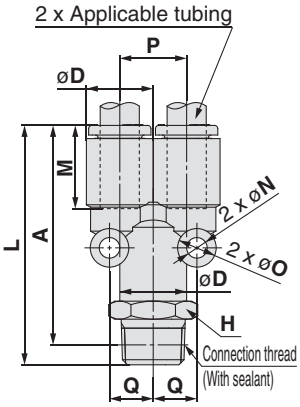
Branch "Y": KQ2U (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD	L	A*	M	P	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	1/8	KQ2U23-01□S	10	7.1	36.4	33.3	13.3	7.1	5.2	6	3.2	3.4	2.9	2.75	8.6
	1/4	KQ2U23-02AS	14	7.1	40.8	36.1	13.3	7.1	5.2	6	3.2	3.4	2.9	2.75	19
ø4	1/8	KQ2U04-01□S	10	8.2	36.5	33.4	13.3	8.2	5.7	6	3.2	4.2	4.2	3.6	9.3
	1/4	KQ2U04-02AS	14	8.2	40.9	36.2	13.3	8.2	5.7	6	3.2	4.2	4.2	3.6	19.1
ø6	1/8	KQ2U06-01□S	12	10.4	37.6	34.5	13.3	10.4	6.8	6	3.2	13.4	10.6	5.4	10.3
	1/4	KQ2U06-02AS	14	10.4	42	37.3	13.3	10.4	6.8	6	3.2	13.4	10.6	5.4	19.2
	3/8	KQ2U06-03AS	17	10.4	43.4	38.3	13.3	10.4	6.8	6	3.2	13.4	10.6	5.4	31.2
ø8	1/8	KQ2U08-01AS	14	13.2	40.7	37.6	14.2	13.2	8.7	8	4.2	25.6	17.7	6	15.8
	1/4	KQ2U08-02AS	14	13.2	45.1	40.4	14.2	13.2	8.7	8	4.2	25.6	17.7	7.3	20.9
	3/8	KQ2U08-03AS	17	13.2	46.5	41.4	14.2	13.2	8.7	8	4.2	25.6	17.7	7.3	32.7
ø10	1/4	KQ2U10-02AS	17	15.9	49	44.3	15.6	15.9	10.1	8	4.2	40	28.4	9	25.6
	3/8	KQ2U10-03AS	17	15.9	50.4	45.3	15.6	15.9	10.1	8	4.2	40	28.4	9.4	33.4
	1/2	KQ2U10-04AS	22	15.9	54.6	48.2	15.6	15.9	10.1	8	4.2	40	28.4	9.4	61.3
ø12	1/4	KQ2U12-02AS	19	18.5	53	48.3	17	18.5	11.4	8	4.2	57.4	45.4	9	36
	3/8	KQ2U12-03AS	19	18.5	54.4	49.3	17	18.5	11.4	8	4.2	57.4	45.4	11	38.9
	1/2	KQ2U12-04AS	22	18.5	58.6	52.2	17	18.5	11.4	8	4.2	57.4	45.4	11.6	61
ø16	New 1/4	KQ2U16-02AS	24	23.8	62.4	57.7	20.6	23.8	14	8	4.2	57.4	45.4	9	67.6
	3/8	KQ2U16-03AS	24	23.8	63.8	58.7	20.6	23.8	14	8	4.2	81	60	11	71.5
	1/2	KQ2U16-04AS	24	23.8	68	61.6	20.6	23.8	14	8	4.2	113	60	13	82.6

□/A: Brass, N: Brass + Electroless nickel plated

* Reference dimensions after installation of R thread

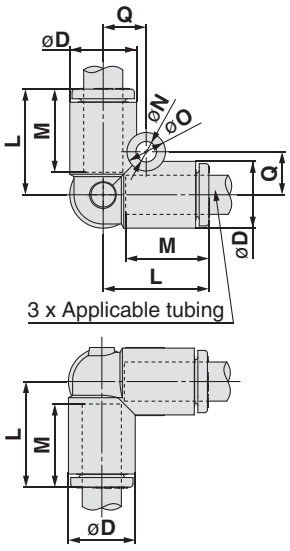
Note) øD is maximum diameter.



Delta Union: KQ2D

Applicable tubing O.D. [mm]	Model	Note) øD	L	M	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	KQ2D04-00A	8.2	15.8	13.3	5.7	6	3.2	6	4.1	3	2.7
ø6	KQ2D06-00A	10.4	16.8	13.3	6.7	6	3.2	13.9	11	4.5	3.8
ø8	KQ2D08-00A	13.2	18.8	14.2	8.4	8	4.2	26.3	18.2	6	6.8
ø10	KQ2D10-00A	15.9	21.2	15.6	9.6	8	4.2	40.8	29	7.5	10.3
ø12	KQ2D12-00A	18.5	23.6	17	10.7	8	4.2	57.2	45.2	9	15.2

Note) øD is maximum diameter.

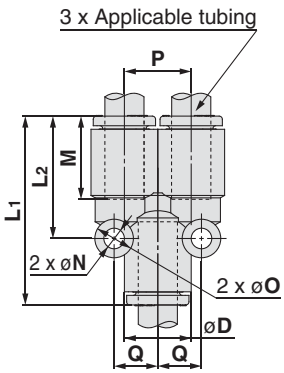


Dimensions

Union "Y": KQ2U

Applicable tubing O.D. [mm]	Model	Note) øD	L1	L2	P	M	Q	øO	øN	Effective area [mm²]		Min. port size	Weight [g]
										Nylon	Urethane		
ø2	KQ2U02-00A	5.8	25.8	16.1	5.8	11.9	4.5	6	3.2	—	0.9	1.2	1.6
ø3.2	KQ2U23-00A	7.1	28.9	18	7.15	13.3	5.2	6	3.2	3.4	2.9	2.5	4.8
ø4	KQ2U04-00A	8.2	29	18.2	8.2	13.3	5.7	6	3.2	4.2	4.2	3	5.8
ø6	KQ2U06-00A	10.4	30.1	19.4	10.4	13.3	6.8	6	3.2	13.4	10.6	4.5	8.1
ø8	KQ2U08-00A	13.2	33.2	22.3	13.2	14.2	8.7	8	4.2	25.6	17.7	6	7.4
ø10	KQ2U10-00A	15.9	37.1	25	15.9	15.6	10.1	8	4.2	40	28.4	7.5	11.2
ø12	KQ2U12-00A	18.5	41.1	27.8	18.5	17	11.4	8	4.2	57.4	45.4	9	16.4
ø16	KQ2U16-00A	23.8	51.5	35	23.8	20.6	14	8	4.2	113	60	13	30.6

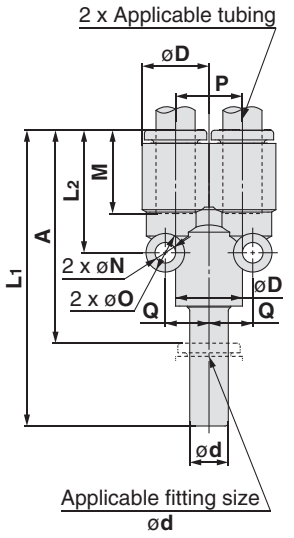
Note) øD is maximum diameter.



Plug-in "Y": KQ2U

Applicable tubing O.D. [mm]	Applicable fitting size ød	Model	Note) øD	L1	L2	P	A	M	Q	øO	øN	Effective area [mm²]		Min. port size	Weight [g]
												Nylon	Urethane		
ø3.2	ø3.2	KQ2U23-99A	7.1	45.1	18	7.15	31.8	13.3	5.2	6	3.2	3.4	2.9	2	4.9
ø4	ø4	KQ2U04-99A	8.2	44.8	18.2	8.2	31.5	13.3	5.7	6	3.2	4.2	4.2	2.5	6.1
ø6	ø6	KQ2U06-99A	10.4	46.3	19.4	10.4	33	13.3	6.8	6	3.2	13.4	10.6	4	9
ø8	ø8	KQ2U08-99A	13.2	52.1	22.3	13.2	37.9	14.2	8.7	8	4.2	25.6	17.7	6	8
ø10	ø10	KQ2U10-99A	15.9	57.3	25	15.9	41.7	15.6	10.1	8	4.2	40	28.4	7.5	12.3
ø12	ø12	KQ2U12-99A	18.5	63	27.8	18.5	46	17	11.4	8	4.2	57.4	45.4	9	18.3
ø16	ø16	KQ2U16-99A	23.8	75.9	35	23.8	55.3	20.6	14	8	4.2	113	60	13	33.5

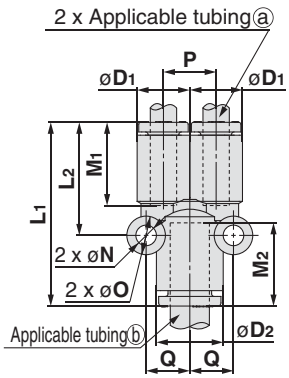
Note) øD is maximum diameter.



Different Diameter Union "Y": KQ2U

Applicable tubing O.D. [mm]		Model	Note) øD1	Note) øD2	L1	L2	P	M1	M2	Q	øO	øN	Effective area [mm²]		Min. port size	Weight [g]
ⓐ	ⓑ												Nylon	Urethane		
ø2	ø3.2	KQ2U02-23A	5.8	7.1	28.2	16.6	5.8	11.9	13.3	5.2	6	3.2	—	0.9	1.2	1.9
ø2	ø4	KQ2U02-04A	5.8	8.2	27.6	15.7	5.8	11.9	13.3	5.7	6	3.2	—	0.9	1.2	2.1
ø3.2	ø4	KQ2U23-04A	7.1	8.2	28.9	18	7.1	13.3	13.3	5.7	6	3.2	3.2	2.7	2.5	5.3
ø4	ø6	KQ2U04-06A	8.2	10.4	29	18	8.2	13.3	13.3	6.8	6	3.2	4.2	4.2	3	6.6
ø6	ø8	KQ2U06-08A	10.4	13.2	31	19.3	10.4	13.3	14.2	8.2	6	3.2	13.4	10.6	4.5	5
ø8	ø10	KQ2U08-10A	13.2	15.9	34.6	22.3	13.2	14.2	15.6	10.1	8	4.2	25.6	17.7	6	8.6
ø10	ø12	KQ2U10-12A	15.9	18.5	38.5	25	15.9	15.6	17	11.4	8	4.2	40	28.4	7.5	12.7
ø12	ø16	KQ2U12-16A	18.5	23.8	47.9	31	18.5	17	20.6	14	8	4.2	57.4	45.4	9	21.2

Note) øD1, øD2 are maximum diameters.



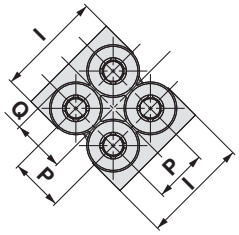
Dimensions

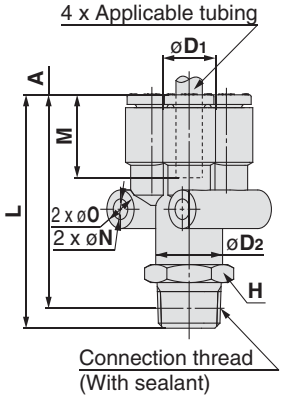
Delta Branch: KQ2UD (Sealant)

Applicable tubing O.D. [mm]	Connection thread R	Model	H (Width across flats)	Note) øD1	øD2	L	I	A*	M	P	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	1/8	KQ2UD04-01AS	12	8.2	10.4	36.7	16.6	33.6	13.3	8.2	6.8	6	3.2	4.2	4.2	3	11.7
	1/4	KQ2UD04-02AS	14	8.2	10.4	41.1	16.6	36.4	13.3	8.2	6.8	6	3.2	4.2	4.2	3	20.6
ø6	1/8	KQ2UD06-01AS	14	10.4	13.2	39.5	21	36.4	13.3	10.4	8.2	6	3.2	13.4	10.6	4.5	16.4
	1/4	KQ2UD06-02AS	14	10.4	13.2	43.9	21	39.2	13.3	10.4	8.2	6	3.2	13.4	10.6	4.5	21.6

* Reference dimensions after installation of R thread

Note) øD1 is maximum diameter.

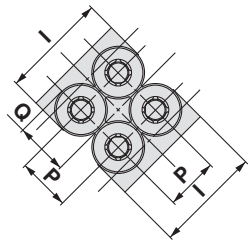


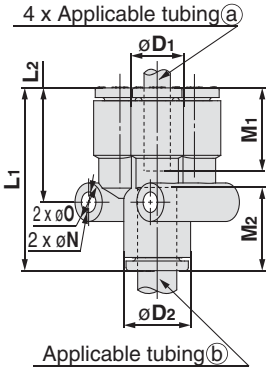


Different Diameter Double Union "Y": KQ2UD

Applicable tubing O.D. [mm] ⓐ	Applicable tubing O.D. [mm] ⓑ	Model	Note) øD1	Note) øD2	L1	L2	P	I	M1	M2	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	ø6	KQ2UD04-06A	8.2	10.4	29.2	18.2	8.2	16.6	13.3	13.3	6.8	6	3.2	4.2	4.2	3	5.4
ø6	ø8	KQ2UD06-08A	10.4	13.2	32	20.5	10.4	21	13.3	14.2	8.2	6	3.2	13.4	10.6	4.5	8.1

Note) øD1, øD2 are maximum diameters.



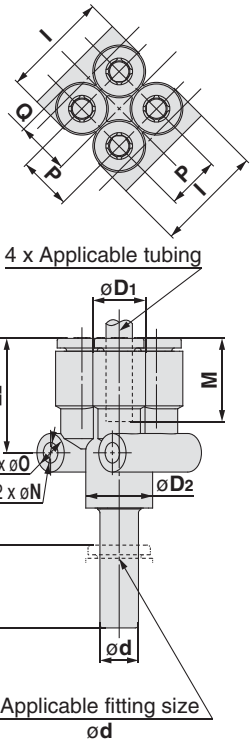


Dimensions

Plug-in "Y": KQ2XD

Applicable tubing O.D. [mm]	Applicable fitting size ød	Model	Note) øD1	øD2	L1	L2	A	I	P	M	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	ø6	KQ2XD04-06A	8.2	10.4	45.4	18.2	32.1	16.6	8.2	13.3	6.8	6	3.2	4.2	4.2	3	5.9
ø6	ø8	KQ2XD06-08A	10.4	13.2	50.9	20.5	36.7	21	10.4	13.3	8.2	6	3.2	13.4	10.6	4.5	8.6

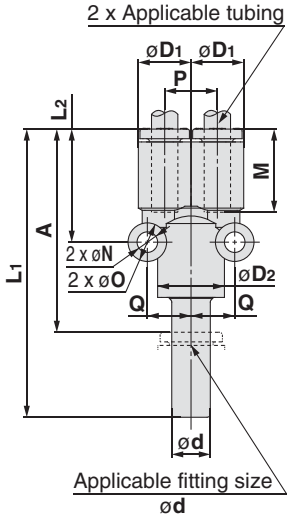
Note) øD1 is maximum diameter.



Different Diameter Plug-in "Y": KQ2X

Applicable tubing O.D. [mm]	Applicable fitting size ød	Model	Note) øD1	Note) øD2	L1	L2	A	P	M	Q	øO	øN	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	ø4	KQ2X23-04A	7.1	8.2	44.7	18	31.4	7.15	13.3	5.7	6	3.2	3.2	2.7	2.5	2.8
ø4	ø6	KQ2X04-06A	8.2	10.4	45.2	18	31.9	8.2	13.3	6.8	6	3.2	4.2	4.2	3	7.5
ø6	ø8	KQ2X06-08A	10.4	13.2	49.9	19.3	35.7	10.4	13.3	8.2	6	3.2	13.4	10.6	4.5	5.5
ø8	ø10	KQ2X08-10A	13.2	15.9	54.8	22.3	39.2	13.2	14.2	10.1	8	4.2	25.6	17.7	6	9.8
ø10	ø12	KQ2X10-12A	15.9	18.5	60.4	25	43.4	15.9	15.6	11.4	8	4.2	40	28.4	7.5	14.6

Note) øD1, øD2 are maximum diameters.

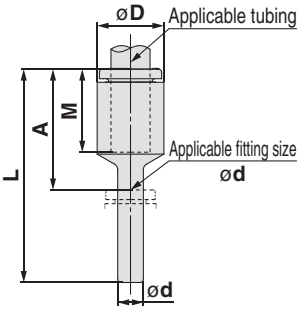


Dimensions

Plug-in Reducer: KQ2R

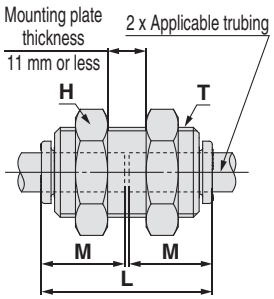
Applicable tubing O.D. [mm]	Applicable fitting size ød	Model	Note) øD	L	A	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	ø4	KQ2R02-04A	5.8	27.8	14.5	11.9	—	0.9	1.4	0.6
ø3.2	ø4	KQ2R23-04A	7.1	28.6	15.3	13.3	3.4	2.9	2.5	1.6
	ø6	KQ2R23-06A	7.1	29.1	15.8	13.3	3.4	2.9	2.5	1
ø4	ø6	KQ2R04-06A	8.2	28.6	15.3	13.3	5.6	4	3	2.2
	ø8	KQ2R04-08A	8.2	29.6	15.4	13.3	5.6	4	3	1.3
	ø10	KQ2R04-10A	10.4	31.7	16.1	13.3	5.6	4	3	2.2
ø6	ø4	KQ2R06-04A	10.4	33.6	20.3	13.3	4	4	2.5	1.4
	ø8	KQ2R06-08A	10.4	31.6	17.4	13.3	13.1	10.4	4.5	1.7
	ø10	KQ2R06-10A	10.4	33.9	18.3	13.3	13.1	10.4	4.5	2.1
	ø12	KQ2R06-12A	12	35.7	18.7	13.3	13.1	10.4	4.5	3.2
ø8	ø10	KQ2R08-10A	13.2	35.1	19.5	14.2	26.1	18	6	2.9
	ø12	KQ2R08-12A	13.2	36.5	19.5	14.2	26.1	18	6	3.4
ø10	ø12	KQ2R10-12A	15.9	39.2	22.2	15.6	41.5	32.8	7.5	4.5
	ø16	KQ2R10-16A	16	44.7	24.1	15.6	41.5	32.8	7.5	6
ø12	ø16	KQ2R12-16A	18.5	45.7	25.1	17	58.3	46.1	9	7

Note) øD is maximum diameter.



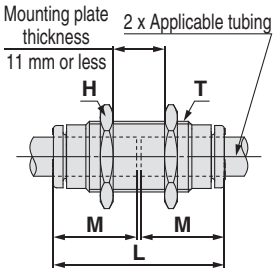
Bulkhead Union: KQ2E (Interchangeable with KQ)

Applicable tubing O.D. [mm]	Model	T (M)	H (Width across flats)	L	Mounting hole	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	KQ2E23-00A	M12 x 1	14	27.3	13	13.3	3.4	2.9	2.5	24.1
ø4	KQ2E04-00A	M12 x 1	14	27.3	13	13.3	5.6	4	3	22.9
ø6	KQ2E06-00A	M14 x 1	17	27.3	15	13.3	13.1	10.4	4.5	28
ø8	KQ2E08-00A	M16 x 1	19	29.1	17	14.2	26.1	18	6	34
ø10	KQ2E10-00A	M20 x 1	24	31.9	21	15.6	41.5	29.5	7.5	64.4
ø12	KQ2E12-00A	M22 x 1	27	34.7	23	17	58.3	46.1	9	63.8
ø16	KQ2E16-00A	M28 x 1.5	32	41.9	29	20.6	113	67	13	120.1



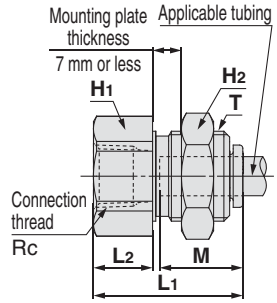
Bulkhead Union: KQ2E (Interchangeable with KJ)

Applicable tubing O.D. [mm]	Model	T (M)	H (Width across flats)	L	Mounting hole	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø2	KQ2E02-00AJ	M7 x 0.75	9	24.5	8	11.9	—	0.9	1.4	5.2
ø3.2	KQ2E23-00AJ	M8 x 0.75	10	27.3	9	13.3	3	2.5	2.5	6.9
ø4	KQ2E04-00AJ	M9 x 0.75	11	27.3	10	13.3	4	4	3	8.3
ø6	KQ2E06-00AJ	M11 x 0.75	14	27.3	12	13.3	10	10	4.5	11.2



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 [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø3.2	1/4	KQ2E23-02A	M12 x 1	17	14	28.7	14.3	13	13.3	3.4	2.9	2.5	31.2
ø4	1/8	KQ2E04-01A	M12 x 1	14	14	24.4	10	13	13.3	5.6	4	3	21.2
	1/4	KQ2E04-02A	M12 x 1	17	14	29	14.6	13	13.3	5.6	4	3	30.9
ø6	1/8	KQ2E06-01A	M14 x 1	17	17	23.6	9.2	15	13.3	13.1	10.4	4.5	28.9
	1/4	KQ2E06-02A	M14 x 1	17	17	28.4	14	15	13.3	13.1	10.4	4.5	32.4
	3/8	KQ2E06-03A	M14 x 1	19	17	30.7	16.3	15	13.3	13.1	10.4	4.5	35.9
ø8	1/8	KQ2E08-01A	M16 x 1	17	19	24.1	6.7	17	14.2	26.1	18	6	30.5
	1/4	KQ2E08-02A	M16 x 1	17	19	28.4	11	17	14.2	26.1	18	6	33.1
	3/8	KQ2E08-03A	M16 x 1	19	19	31.7	14.3	17	14.2	26.1	18	6	37.4
ø10	1/4	KQ2E10-02A	M20 x 1	22	24	29.3	9.9	21	15.6	41.5	29.5	7.5	63.8
	3/8	KQ2E10-03A	M20 x 1	22	24	31.4	12	21	15.6	41.5	29.5	7.5	71.6
ø12	3/8	KQ2E12-03A	M22 x 1	24	27	32.3	11.9	23	17	58.3	46.1	9	69.3
	1/2	KQ2E12-04A	M22 x 1	24	27	37.7	17.3	23	17	58.3	46.1	9	72.7
ø16	3/8	KQ2E16-03A	M28 x 1.5	30	32	34.4	11.5	29	20.6	96	67	13	122.2
	1/2	KQ2E16-04A	M28 x 1.5	30	32	38.8	15.9	29	20.6	113	67	13	132.1

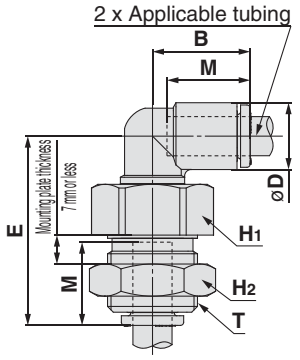


Dimensions

Bulkhead Male Elbow: KQ2LE

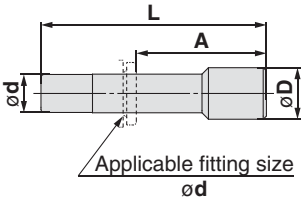
Applicable tubing O.D. [mm]	Model	T (M)	H_1 (Width across flats)	H_2 (Width across flats)	B	E	Note) øD	Mounting hole	M	Effective area [mm²] Nylon	Effective area [mm²] Urethane	Min. port size	Weight [g]
ø4	KQ2LE04-00A	M12 x 1	14	14	14.8	28.5	8.2	13	13.3	4.2	4.2	3	21.2
ø6	KQ2LE06-00A	M14 x 1	17	17	15.5	29.6	10.4	15	13.3	11.4	9	4.5	29.4
ø8	KQ2LE08-00A	M16 x 1	17	19	17.2	32.3	13.2	17	14.2	21.6	14.9	6	30.4
ø10	KQ2LE10-00A	M20 x 1	22	24	19.3	35.8	15.9	21	15.6	35.2	25	7.5	53.5
ø12	KQ2LE12-00A	M22 x 1	24	27	21.5	44.5	18.5	23	17	50.2	39.7	9	61

Note) øD is maximum diameter.



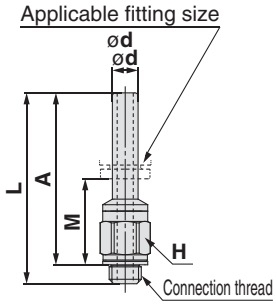
Plug: KQ2P

Applicable fitting size ød	Model	øD	L	A	Weight [g]
ø2	KJP-02	3	22.3	10.4	0.1
ø3.2	KQ2P-23	5	31.5	18.2	1
ø4	KQ2P-04	6	32	18.7	1
ø6	KQ2P-06	8	35	21.7	1
ø8	KQ2P-08	10	39	24.8	2
ø10	KQ2P-10	12	43	27.4	3.5
ø12	KQ2P-12	14	45.5	28.5	5
ø16	KQ2P-16	20.9	47	26.4	8



Adaptor: KQ2N (Gasket seal)

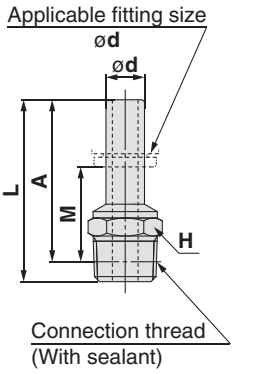
Applicable fitting size ød	Connection thread M	Model	H (Width across flats)	L	A	M	Min. port size	Weight [g]
ø4	M5 x 0.8	KQ2N04-M5A	7	29.7	26.7	13.4	2.5	2.4
ø6	M5 x 0.8	KQ2N06-M5A	7	29.7	26.7	13.4	2.5	2.6



Adaptor: KQ2N (Sealant)

Applicable fitting size ød	Connection thread R	Model	H (Width across flats)	L	A*	M	Min. port size	Weight [g]
ø4	1/8	KQ2N04-01AS	10	28.3	25.2	11.9	2.5	4
ø6	1/8	KQ2N06-01AS	10	28.3	25.2	11.9	4	4.1
	1/4	KQ2N06-02AS	14	32.8	28.1	14.8	4	13.6
ø8	1/4	KQ2N08-02AS	17	35.9	31.2	17	6	15.7
	3/8	KQ2N08-03AS	17	36	30.9	16.7	6	22.7
ø10	3/8	KQ2N10-03AS	17	40.6	35.5	19.9	7.5	19.1

* Reference dimensions after installation of R thread

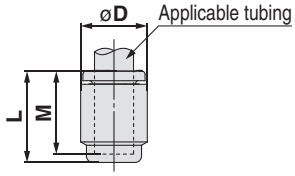


Dimensions

Tube Cap: KQ2C

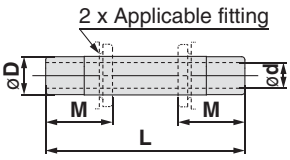
Applicable tubing O.D. [mm]	Model	øD Note)	L	M	Weight [g]
ø4	KQ2C04-00A	8.2	14.5	13.3	0.8
ø6	KQ2C06-00A	10.4	14.6	13.3	1.1
ø8	KQ2C08-00A	13.2	15.7	14.2	2
ø10	KQ2C10-00A	15.9	17.3	15.6	2.9
ø12	KQ2C12-00A	18.5	18.9	17	4.5
ø16	KQ2C16-00A	23.8	23	20.6	8.4

Note) øD is maximum diameter.



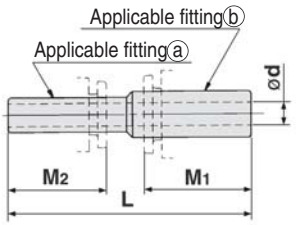
Nipple: KQ2N

Applicable fitting øD	Model	L	M	ød	Min. port size	Weight [g]
ø4	KQ2N04-99	37	13.3	2.5	2.5	1
ø6	KQ2N06-99	39	13.3	4	4	2
ø8	KQ2N08-99	43	14.2	6	6	2
ø10	KQ2N10-99	49	15.6	7.5	7.5	4
ø12	KQ2N12-99	52	17	9	9	3.3
ø16	KQ2N16-99	57	17	13	13	4.8



Reducer Nipple: KQ2N

Applicable fitting ⓐ	Applicable fitting ⓑ	Model	L	M1	M2	ød Min. port size	Weight [g]
ø4	ø6	KQ2N04-06	38	13.3	13.3	2.5	2
ø6	ø8	KQ2N06-08	42	14.2	13.3	4	2
ø8	ø10	KQ2N08-10	47	15.6	14.2	6	2
ø10	ø12	KQ2N10-12	51	17	15.6	7.5	3.1
ø12	ø16	KQ2N12-16	55	20.6	17	9	4.9



Spare Parts

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

Spare Parts

Description	Part no.	Applicable thread
Gasket	**M-3G2**	M3
	M-5G2	M5
	M-6G	M6

Brass

Description	Part no.	Applicable model
Pipe nut	**KQ02-P01AJ**	KQ2E02-00AJ
	KQ23-P01AJ	KQ2E23-00AJ
	KQ04-P01AJ	KQ2E04-00AJ
	KQ06-P01AJ	KQ2E06-00AJ
	KQ04-P01A	KQ2E23-00A, KQ2E04-00A, KQ2E23-02A
		KQ2E04-01A, KQ2E04-02A, KQ2LE04-00A
	KQ06-P01A	KQ2E06-00A, KQ2E06-01A, KQ2E06-02A
		KQ2E06-03A, KQ2LE06-00A
	KQ08-P01A	KQ2E08-00A, KQ2E08-01A, KQ2E08-02A
		KQ2E08-03A, KQ2LE08-00A
	KQ10-P01A	KQ2E10-00A, KQ2E10-02A, KQ2E10-03A
		KQ2LE10-00A
	KQ12-P01A	KQ2E12-00A, KQ2E12-03A, KQ2E12-04A
		KQ2LE12-00A
	KQ16-P01A	KQ2E16-00A
		KQ2E16-03A, KQ2E16-04A

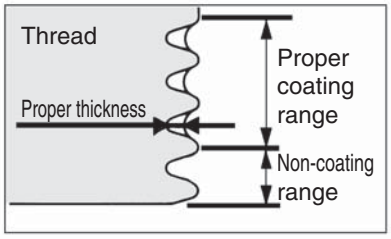
Brass + Electroless nickel plated

Description	Part no.	Applicable model
Pipe nut	**KQ02-P01NJ**	KQ2E02-00NJ
	KQ23-P01NJ	KQ2E23-00NJ
	KQ04-P01NJ	KQ2E04-00NJ
	KQ06-P01NJ	KQ2E06-00NJ
	KQ04-P01N	KQ2E23-00N, KQ2E04-00N, KQ2E23-02N
		KQ2E04-01N, KQ2E04-02N, KQ2LE04-00N
	KQ06-P01N	KQ2E06-00N, KQ2E06-01N, KQ2E06-02N
		KQ2E06-03N, KQ2LE06-00N
	KQ08-P01N	KQ2E08-00N, KQ2E08-01N, KQ2E08-02N
		KQ2E08-03N, KQ2LE08-00N
	KQ10-P01N	KQ2E10-00N, KQ2E10-02N, KQ2E10-03N
		KQ2LE10-00N
	KQ12-P01N	KQ2E12-00N, KQ2E12-03N, KQ2E12-04N
		KQ2LE12-00N
	KQ16-P01N	KQ2E16-00N
		KQ2E16-03N, KQ2E16-04N

Prior to Use

Fittings with Sealant

Seal material (fluororesin) is coated on the thread part with the proper thickness and range, that reduces the piping work, such as coating the seal on the thread.



Fittings & Tubing Precautions 1

Be sure to read this before handling.

Design/Selection

⚠Warning

1. Check the specifications.

The products in this catalogue are designed to be used in compressed air systems (including vacuum) only.
If the products are used in an environment where pressure or temperature is out of the specified range, damage and/or malfunction may result. Do not use under such conditions. (Refer to the specifications.)
Please consult with SMC when using a fluid other than compressed air (including vacuum).
We do not guarantee against any damage if the product is used outside of the specification range.

2. Do not disassemble the product or make any modifications, including additional machining.

It may cause human injury and/or an accident.

3. Check if PTFE can be used in application.

PTFE powder (Polytetrafluoroethylene resin) is included in the seal material. Confirm that the use of it will not cause any adverse affect on the system.

⚠Caution

1. Keep the connection part of fittings and tubing from rotating or oscillating movement. Use Rotary One-touch Fittings Series KS or KX in these cases.

The fittings may be damaged if they are used in the above manner.

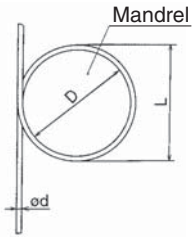
2. The tubing bending radius in the vicinity of the fitting should be at least the minimum bending radius of the tubing.

If the bending radius is less than the min. value, fittings may damage, or tubing may crack or be crushed. The minimum bending radius, with the exception of TS soft nylon tubing, TU polyurethane tubing, TUH hard polyurethane tubing, TUS soft polyurethane tubing, TRBU FR double layer polyurethane tubing, TH FEP tubing, TL PFA tubing, TD modified PTFE tubing, is measured as following in accordance with JIS B 8381-1995.
Tubing deformation ratio at the minimum bending radius is obtained through the following formula, based on tubing 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 : Tubing diameter [mm]
L : Measured length [mm]
D : Mandrel diameter [mm]
(Twice against the minimum bending radius)
Test temperature: 20 ±5°C
Relative humidity: 65 ±5%



3. Do not use fluids other than listed on the specifications.

Applicable fluids are air and water. Please consult with SMC if using other fluids.

4. When it is used with water, the fittings or tubing may be damaged depending on the surge pressure.

Mounting/Piping

⚠Warning

1. Operation manual

Install the products and operate them only after reading the operation manual carefully and understanding its contents. Also, keep the manual where it can be referred to as necessary.

2. Ensure sufficient space for maintenance activities.

When installing the products, allow access for maintenance.

3. Tighten threads with the proper tightening torque.

When installing the products, follow the listed torque specifications.

4. There may be cases of the tubing detaching from the fitting and thrashing around uncontrollably due to tubing degradation or fitting breakage.

To prevent the situation from becoming uncontrollable, fit the tubing with a protective cover or fix it in place.

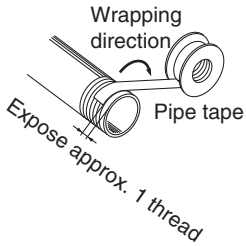
⚠Caution

1. Preparation before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

2. Wrapping of pipe tape

When screwing together pipes and fittings, etc., be certain that chips from the pipe threads and sealing material do not get inside the pipe. Also, when the pipe tape is used, leave approx. 1 thread ridges exposed at the end of the threads.



3. Check the model, type and size before installation. Also, confirm that there is no scratches, gouges or cracks on the product.

4. When connecting the tubing, take pressure or possible changes to the tubing length into account, and allow a sufficient margin.

Failure to do so may result in fitting breakage or detachment of the tubing. Refer to the recommended piping conditions.

5. Do not apply unnecessary forces such as twisting, pulling, moment loads, vibration and impact, etc. on fittings or tubing.

This will cause damage to fittings and will crush, burst or release tubing.

6. Tubing, with the exception of coiled tubing, requires stationary installation. Do not use standard tubing (non-coiled) in applications where tubing is required to travel. Tubing that travels may sustain abrasion, extention, or severance due to tensile force, or may result in removal of tubing from fitting. Use caution prior to use for proper application.

7. To install the fitting, screw the fitting into the hexagonal face of the body, and tighten with an appropriate wrench.

Affix the wrench at the base of the thread. If the size of hexagonal face and wrench do not match, or tightening takes place near the tube side, it may cause collapse or deformation of the hexagonal face, or damage to the equipment. After installing, confirm that there is no damage to the fitting, etc.

Fittings & Tubing Precautions 2

Be sure to read this before handling.

Air Supply

⚠Warning

1. Type of fluids
Please consult with SMC when using the product in applications other than compressed air.
Regarding products for general fluids, please contact SMC concerning applicable fluids.

2. When there is a large amount of drainage.
Compressed air containing a large amount of drainage can cause malfunction of pneumatic equipment. An air dryer or water separator should be installed upstream from filters.

3. Drain flushing
If condensation in the drain bowl is not emptied on a regular basis, the bowl will overflow and allow the condensation to enter the compressed air lines. It causes malfunction of pneumatic equipment.
If the drain bowl is difficult to check and remove, installation of a drain bowl with an auto drain option is recommended.

For details on the above compressed air quality, refer to our website www.smc.eu.

4. Use clean air.
Do not use compressed air that contains chemicals, synthetic oils including organic solvents, salt or corrosive gases, etc., as it can cause damage or malfunction.

⚠Caution

1. Install an air filter.
Install an air filter at the upstream side of valve.
Select an air filter with a filtration degree of 5 μm or finer.

2. Install an after-cooler, air dryer or water droplet separator, etc.
Compressed air that contains a large amount of drainage can cause malfunction of pneumatic equipment. Therefore, take appropriate measures to ensure air quality, such as by providing an aftercooler, air dryer, or water droplet separator.

3. Ensure that the fluid and ambient temperature are within the specified range.
If the fluid temperature is 5°C or less, the moisture in the circuit could freeze, causing damage to the seals and leading to equipment malfunction. Therefore, take appropriate measures to prevent freezing.

For details on the above compressed air quality, refer to our website www.smc.eu.

Operating Environment

⚠Warning

1. Do not use in an atmosphere having corrosive gases, chemicals, sea water, water, water steam, or where there is direct contact with any of these.
Refer to each construction drawing on the fittings and tubing material.

2. Do not expose the product to direct sunlight for an extended period of time.

3. Do not use in a place subject to heavy vibration and/or shock.

4. Do not mount the product in locations where it is exposed to radiant heat.

Operating Environment

⚠Warning

5. Do not use the ordinary fittings and tubing in locations where static electricity would be problematic.
It may result in the system failure and trouble. In such places, use of antistatic fittings (Series KA) and antistatic tubing (Series TA) are recommended.

6. Do not use the ordinary fittings and tubing in locations where spatter is generated.
Spattering may result in a fire hazard. In such a place, use of flame resistant fittings (Series KR/KRM) and flame resistant tubing (Series TRS/TRB) are recommended.

7. Do not use in an environment where the product is directly exposed to cutting oil, lubricant, coolant oil, etc.
Please contact SMC if using for an environment exposed to cutting oil, lubricant or coolant oil, etc.

8. Take note that if nylon tubing and soft nylon tubing are used in a clean room.
The antioxidant on the surface of the soft nylon tubing may come off, thereby lowering the cleanness level.

9. Do not use in environments where foreign matter may stick to the product or get mixed in the product's interior.
This may cause leakage or disconnection of the tubing.

Maintenance

⚠Warning

1. Perform maintenance inspection according to the procedures indicated in the operation manual.
If handled improperly, malfunction and damage of machinery or equipment may occur.

2. Maintenance work
If handled improperly, compressed air can be dangerous. Assembly, handling, repair and element replacement of pneumatic systems should be performed by a knowledgeable and experienced person.

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 off the supply pressure and electric 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.

Fittings & Tubing Precautions 3

Be sure to read this before handling.

Maintenance

⚠Caution

1. Be certain to wear safety glasses at all times during periodical inspections.

2. Replace fittings or tubing having the following problems.

1) Cracks, gouges, wearing, corrosion
2) Air leakage
3) Twists or crushing of tubing
4) Hardening, deterioration, softening of tubing

3. When replacing tubes or fittings, do not try to mend or repair and then reuse them.

One-touch Fittings
Mounting/Piping

⚠Caution

1. Installation and removal of tubing for One-touch fittings

1) Installation of tubing

(1) Cut the tubing perpendicularly, being careful not to damage the outside surface. Use an SMC tube cutter "TK-1", "TK-2" or "TK-3". Do not cut the tubing with pliers, nippers, scissors, etc., otherwise, the tubing will be deformed and trouble may result.

(2) The outside diameter of the polyurethane tubing swells when internal pressure is applied to it. Therefore, it may be possible that the tubing cannot be re-inserted into the One-touch fitting. Check the tubing outside diameter, and when the accuracy of the outside diameter is +0.07 mm or larger for ø2, +0.15 mm or larger for other sizes, insert into the One-touch fitting again, without cutting the tubing to use it. When the tubing is re-inserted into the One-touch fitting, confirm that the tubing goes through the release button smoothly.

(3) Grasp the tubing, slowly push it into the One-touch fitting until it comes to a stop.

(4) Pull the tubing back gently to make sure it has a positive seal. Insufficient installation may cause air to leak or the tubing to release.

2) Removal of tubing

(1) Push the release button flange evenly and sufficiently to release the tube.

(2) Pull out the tubing while keeping the release button depressed. If the release button is not held down sufficiently, the tubing cannot be withdrawn.

(3) To reuse the tubing, remove the previously lodged portion of the tubing. If the lodged portion is left on without being removed, it may result in air leakage and removal of the tubing difficult.

2. Connecting products with metal rods

Fittings with metal rod (Series KC and old Series KQ/KQ2) cannot be connected to One-touch fittings.

3. When mounting tubing, resin plugs, metal rods, etc., do not press the release button before mounting.

Also, do not press the release button before mounting. This may result in detachment.

Tightening the threaded portion of the connection thread

1. Connection thread: M3

First, tighten it by hand, then give it an additional 1/4 turn with a wrench.
A reference value for the tightening torque is 0.4 to 0.5 N·m.

2. Connection thread: M5, M6 and 10-32UNF

First, tighten it by hand, then give it an additional 1/6 turn to 1/4 turn with a wrench.
A reference value for the tightening torque is 1 to 1.5 N·m.

3. M6

First, tighten it by hand, then give it an additional 1/6 turn to 1/4 turn with a wrench.
Note) Excessive tightening may damage the thread portion or deform the gasket and cause air leakage.
If the screw is too shallowly screwed in, it may come loose or air may leak.

4. Fittings with sealant: R, NPT

1. The proper tightening torques of the fittings are as shown in the table below. As a guide, tighten by hand, then turn it two or three turns with a wrench.

Connection thread size (R, NPT)	Proper tightening torque [N·m]
1/16, 1/8	7 to 9
1/4	12 to 14
3/8	22 to 24
1/2	28 to 30

2. If the fitting is tightened with excessive torque, a large amount of sealant will seep out. Remove the excess sealant.
3. Insufficient tightening may loosen the threads, or cause air leakage.
4. Reuse
   1) Normally, fittings with a sealant can be reused 2 to 3 times.
   2) To prevent air leakage through the sealant, remove any loose sealant stuck to the fitting by blowing air over the threaded portion.
   3) If the sealant no longer provides effective sealing, wrap sealing tape over the sealant before reusing. Do not use the sealant in any form other than a tape type.
   4) Once the fitting has been tightened, backing it out to its original position often causes the sealant to become defective. Air leakage will occur.

Fittings & Tubing Precautions 4

Be sure to read this before handling.

Tightening the threaded portion of the connection thread

5. Uni Thread Fittings

1) First tighten by hand, then use a proper wrench, which could be suitable for the hexagon across flats on the body to tighten with the proper tightening torque shown below.

Connection Female Thread: Rc, NPT, NPTF

Uni thread size	Proper tightening torque [N·m]	Approx. wrench tightening angle after tightened by hand [deg]
1/8	5 to 7	30 to 60
1/4	11 to 13	30 to 60
3/8	14 to 16	15 to 45
1/2	20 to 22	15 to 30

Connection Female Thread: G

Uni thread size	Proper tightening torque [N·m]	Approx. wrench tightening angle after tightened by hand [deg]
1/8	3 to 4	30 to 45
1/4	4 to 5	15 to 30
3/8	8 to 9	15 to 30
1/2	14 to 15	15 to 30

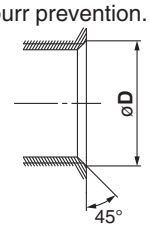
2) The gasket can be recycled up to 6 to 10 times. It can be replaced easily when it has sustained damage. A broken gasket can be removed by holding it and then turning it in the same direction as loosening the thread. If gasket is difficult to remove, cut it with nippers, etc. In such a case, use caution not to scratch the seat face because the seat face of 45° gasket of fitting is the sealing face.

Chamfer Dimension for Female Thread

⚠Caution

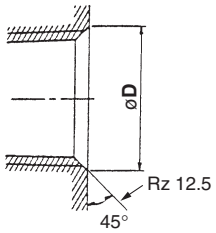
1. Chamfer dimension for female thread of the connection thread M3, M5, 10-32UNF

Confirming to ISO 16030 (air pressure fluid dynamics – connection – ports and stud ends), the chamfer dimensions shown below are recommended. By chamfering as shown in the following table, machining of threads is easier and effective for burr prevention.



Connection thread size	Chamfer dimension ø**D** (Recommended value) [mm]
M3	3.1 to 3.4
M5	5.1 to 5.4
10-32UNF	5.0 to 5.3

2. Chamfer dimension of R and NPT thread with sealant, and Uni thread



Connection thread size	Chamfer dimension ø**D** (Recommended value)		
	G	Rc	NPT, NPTF
1/16	—	—	8.2 to 8.4
1/8	10.2 to 10.6	10.2 to 10.4	10.5 to 10.7
1/4	13.6 to 14.0	13.6 to 13.8	14.1 to 14.3
3/8	17.1 to 17.5	17.1 to 17.3	17.4 to 17.6
1/2	21.4 to 21.8	21.4 to 21.6	21.7 to 21.9

∗ For Uni thread, Rz 12.5 is necessary for sealing at the chamfered part.

Recommended Piping Conditions

1. When connecting piping to the One-touch fitting, use pipe length with sufficient margin, in accordance with the piping conditions shown in Fig. 1.

Also, when using a tying band, etc., to bind the piping together, make sure that external force does not come to bear on the fitting. (See Fig. 2.)

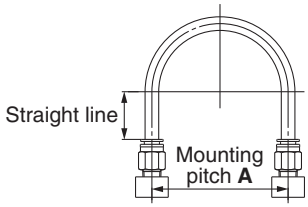


Fig. 1 Recommended piping

Unit: [mm]

Tubing size	Mounting pitch **A**			Straight line length
	Nylon tubing	Soft nylon tubing	Polyurethane tubing	
ø2	—	—	13 or more	10 or more
ø3.2, 1/8"	44 or more	35 or more	25 or more	16 or more
ø4, 5/32"	56 or more	44 or more	26 or more	20 or more
ø3/16"	67 or more	52 or more	38 or more	24 or more
ø6	84 or more	66 or more	39 or more	30 or more
ø1/4"	89 or more	70 or more	57 or more	32 or more
ø8, 5/16"	112 or more	88 or more	52 or more	40 or more
ø10	140 or more	110 or more	69 or more	50 or more
ø3/8"	134 or more	105 or more	69 or more	48 or more
ø12	168 or more	132 or more	88 or more	60 or more
ø1/2"	178 or more	140 or more	93 or more	64 or more
ø16	224 or more	176 or more	114 or more	80 or more

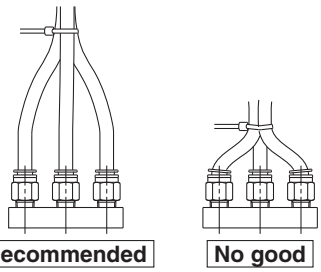


Fig. 2 When using a tying band to bind the piping together

Tubing
Design/Selection

⚠Caution

1. When using a tubing other than from SMC, be careful of the tolerance of the tubing O.D. and tubing material.

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

Do not use the tubing which does not satisfy the specified tubing O.D. accuracy, or if the tubing has a different I.D., material, hardness, or surface roughness from those of SMC's tubing. Please consult SMC if there is anything unclear. It may cause difficulty in connecting the tubing, leakage, disconnection of the tubing, or fitting damage.

When used with tubing other than those from SMC, due to their properties, the products listed below are not subject to warranty.

KQG2, KQB2, KFG2, KF, ø2M

2. When using fittings other than those from SMC, be certain to confirm that operating conditions are such that no problems will arise.

⚠ 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 catalogue 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 catalogue.
   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, wichever is first.*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 catalogue 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 (Europe)

Austria	☎+43 (0)2262622800	www.smc.at	office@smc.at
Belgium	☎+32 (0)33551464	www.smcpneumatics.be	info@smcpneumatics.be
Bulgaria	☎+359 (0)2807670	www.smc.bg	office@smc.bg
Croatia	☎+385 (0)13707288	www.smc.hr	office@smc.hr
Czech Republic	☎+420 541424611	www.smc.cz	office@smc.cz
Denmark	☎+45 70252900	www.smcdk.com	smc@smcdk.com
Estonia	☎+372 6510370	www.smcpneumatics.ee	smc@smcpneumatics.ee
Finland	☎+358 207513513	www.smc.fi	smcfi@smc.fi
France	☎+33 (0)164761000	www.smc-france.fr	promotion@smc-france.fr
Germany	☎+49 (0)61034020	www.smc.de	info@smc.de
Greece	☎+30 210 2717265	www.smchellas.gr	sales@smchellas.gr
Hungary	☎+36 23511390	www.smc.hu	office@smc.hu
Ireland	☎+353 (0)14039000	www.smcpneumatics.ie	sales@smcpneumatics.ie
Italy	☎+39 0292711	www.smcitalia.it	mailbox@smcitalia.it
Latvia	☎+371 67817700	www.smclv.lv	info@smclv.lv
Lithuania	☎+370 5 2308118	www.smclt.lt	info@smclt.lt
Netherlands	☎+31 (0)205318888	www.smcpneumatics.nl	info@smcpneumatics.nl
Norway	☎+47 67129020	www.smc-norge.no	post@smc-norge.no
Poland	☎+48 (0)222119616	www.smc.pl	office@smc.pl
Portugal	☎+351 226166570	www.smc.eu	postpt@smc.smces.es
Romania	☎+40 213205111	www.smcromania.ro	smcromania@smcromania.ro
Russia	☎+7 8127185445	www.smc-pneumatik.ru	info@smc-pneumatik.ru
Slovakia	☎+421 (0)413213212	www.smc.sk	office@smc.sk
Slovenia	☎+386 (0)73885412	www.smc.si	office@smc.si
Spain	☎+34 902184100	www.smc.eu	post@smc.smces.es
Sweden	☎+46 (0)86031200	www.smc.nu	post@smc.nu
Switzerland	☎+41 (0)523963131	www.smc.ch	info@smc.ch
Turkey	☎+90 212 489 0 440	www.smcpnomatik.com.tr	info@smcpnomatik.com.tr
UK	☎+44 (0)845 121 5122	www.smcpneumatics.co.uk	sales@smcpneumatics.co.uk

SMC CORPORATION Akihabara UDX 15F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN Phone: 03-5207-8249 FAX: 03-5298-5362

1st printing QY printing QY 00 Printed in Spain

Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.