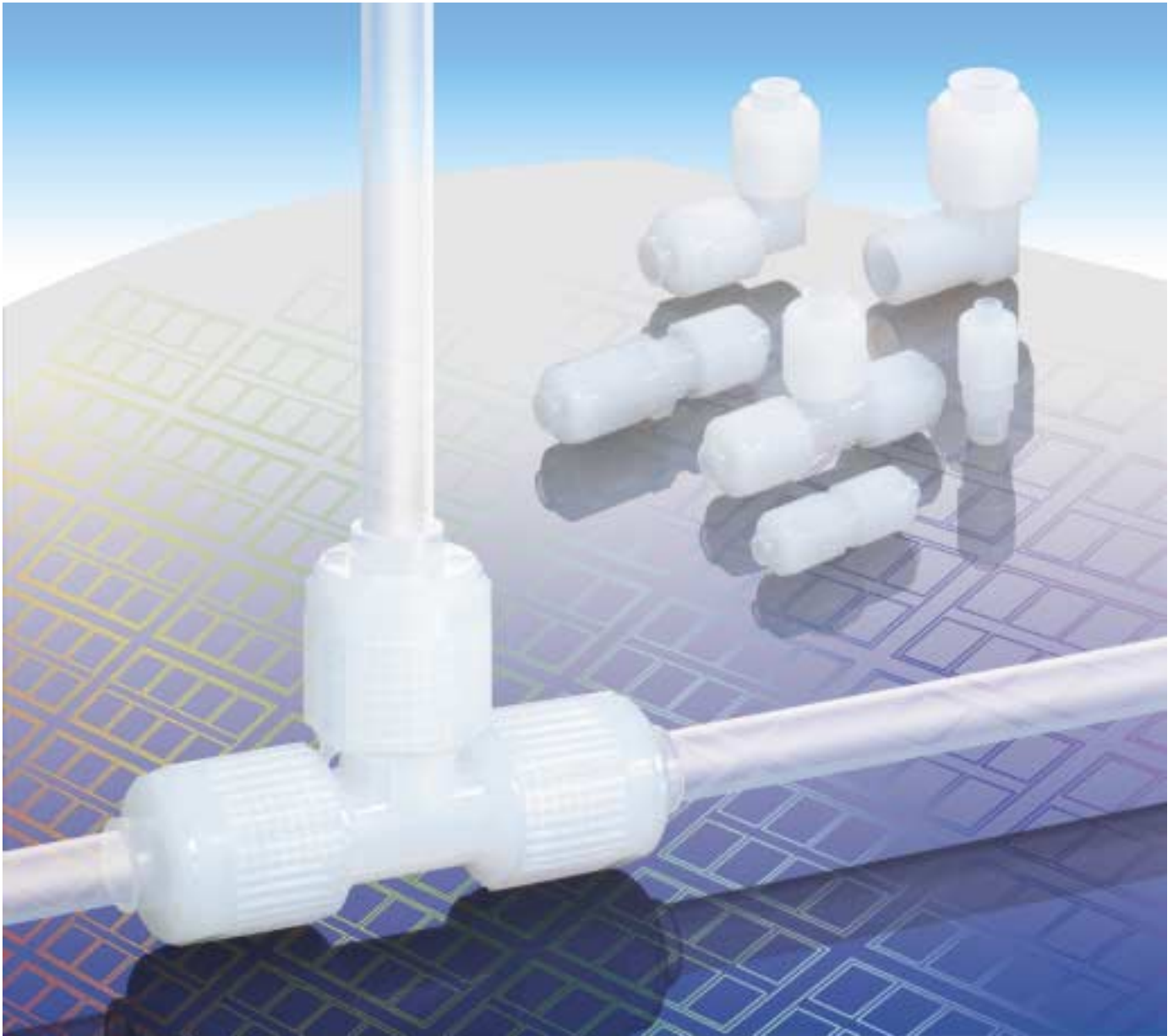




# High Purity Fluoropolymer Fittings & Tubing



PAT.

HYPER FITTING® *Series LQ<sup>1</sup>/<sub>2</sub>*

Tubing *Series TL/TIL*

# SMC high purity series responding to the latest demands in process control

High levels of purity are increasingly required in the handling of fluids for advanced processing applications of semiconductors, pharmaceuticals, medicine, instrumentation, cleaning and food processing. SMC high purity series products incorporate many new and unique innovations that minimize both particulate and chemical contamination to levels compatible with the most demanding requirements. Cleaning, assembly and packaging are performed in a clean room to ensure the ultimate in product integrity.

Series LQ2

## High Purity Fluoropolymer Fittings & Tubing

Series LQ1

HYPER FITTING®

# Series LQ<sub>1/2</sub>

Tubing

# Series TL/TIL

### Quadruple seal construction

Our new patented high-performance quadruple seal construction, as well as our precision insertion tooling provide maximum leak protection in your process circuitry.

### High conductivity and swept flow path

Our quadruple seal construction allows minimal dead space for impurities and contaminants.

### Excellent heat resistance

The use of a nut with locking mechanism and trapezoidal screw threads maximizes seal performance even when subjected to heat cycles, maintaining integrity up to 200°C.

### Compression nut design resists side loading

Tube support resists crimping and deformation of tubing.

### Tube diameters can be changed quickly and easily

If chemistries or flow requirements are changed during process, our face seal design allows for quick change of tubing, and/or tube diameters, using the same fitting body.

### Easy tightening of nuts

Tightening to the end surface makes a positioning gauge unnecessary for easy work operations.

### ● Clean specifications

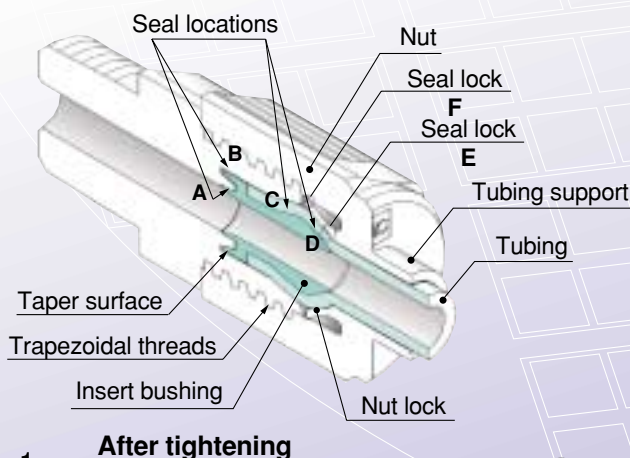
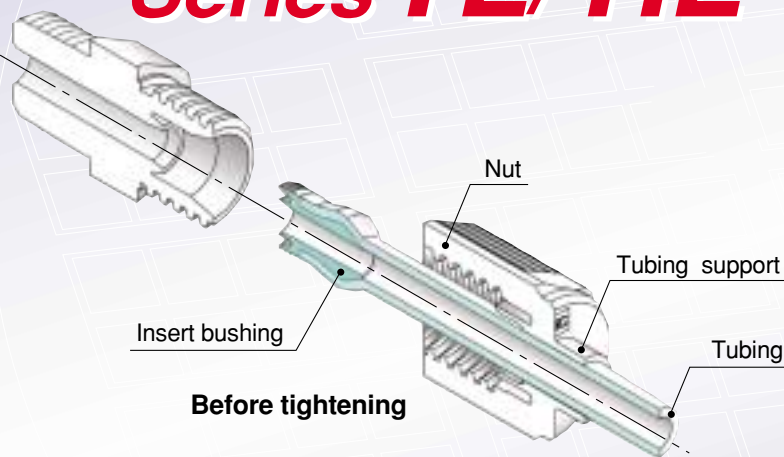
From parts cleaning to assembly and packaging, all processes are controlled for cleanliness, and the use of NEW PFA virtually eliminates particle generation and TOC (total organic carbon) allowing confident use for the most demanding applications.

### ● Outstanding corrosion resistance

Compatible with chemicals such as acids, bases and ultrapure water.

### ● Numerous variations


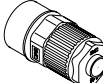
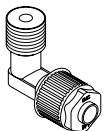
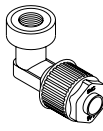
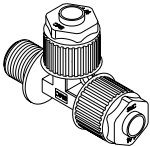
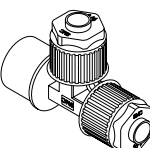
### ● Compatible with maximum fluid temperatures up to 200°C



Features 1

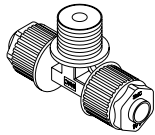
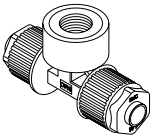
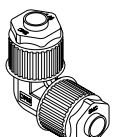
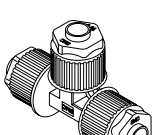
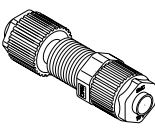
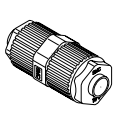
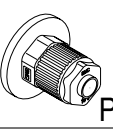


## Series LQ1 Variations

Series	Appearance	Class	Port size							Tube O.D.																	
										Metric size							Inch size										
			None	1/8"	1/4"	3/8"	1/2"	3/4"	1"	ø3	ø4	ø6	ø8	ø10	ø12	ø19	ø25	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"			
<b>Connector LQ1H</b>	<b>Male</b>  <b>P.5</b>	1	-	○	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-	-			
		2	-	○	○	-	-	-	-	-	●	○	-	-	-	-	-	-	●	●	○	-	-	-	-		
		3	-	-	○	○	-	-	-	-	-	●	●	○	-	-	-	-	-	-	●	○	-	-	-		
		4	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-	-		
		5	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-	
		6	-	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	
	<b>Female</b>  <b>P.6</b>	1	-	○	-	-	-	-	-	○	○	-	-	-	-	-	-	-	○	-	-	-	-	-	-		
		2	-	○	○	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	●	○	-	-	-	-	
		3	-	-	○	○	-	-	-	-	-	●	●	○	-	-	-	-	-	-	-	●	○	-	-	-	
		4	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	○	-	-	
		5	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-	
		6	-	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	
<b>Elbow LQ1L</b>	<b>Male</b>  <b>P.7</b>	1	-	○	-	-	-	-	-	○	○	-	-	-	-	-	-	-	○	-	-	-	-	-	-		
		2	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	●	○	-	-	-	-	
		3	-	-	○	○	-	-	-	-	-	●	●	○	-	-	-	-	-	-	-	●	○	-	-	-	
		4	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	○	-	-	
		5	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-	
		6	-	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	
	<b>Female</b>  <b>P.8</b>	1	-	○	-	-	-	-	-	-	○	○	-	-	-	-	-	-	-	○	-	-	-	-	-	-	
		2	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	●	○	-	-	-	-
		3	-	-	○	○	-	-	-	-	-	-	●	●	○	-	-	-	-	-	-	-	●	○	-	-	-
		4	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	○	-	-
		5	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	○	-
		6	-	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	○
<b>Run tee LQ1R</b>	<b>Male</b>  <b>P.9</b>	1	-	○	-	-	-	-	-	○	○	-	-	-	-	-	-	-	○	-	-	-	-	-	-		
		2	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	●	○	-	-	-	-
		3	-	-	○	○	-	-	-	-	-	-	●	●	○	-	-	-	-	-	-	-	●	○	-	-	-
		4	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	○	-	-
		5	-	-	-	-	○	○	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-
		6	-	-	-	-	-	○	○	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○
	<b>Female</b>  <b>P.10</b>	1	-	○	-	-	-	-	-	-	○	○	-	-	-	-	-	-	-	○	-	-	-	-	-	-	
		2	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	●	○	-	-	-	-
		3	-	-	○	○	-	-	-	-	-	-	●	●	○	-	-	-	-	-	-	-	●	○	-	-	-
		4	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	-	●	○	-	-
		5	-	-	-	-	○	○	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-
		6	-	-	-	-	-	○	○	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○

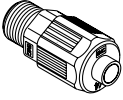
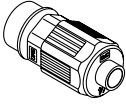
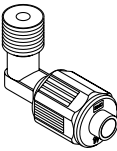
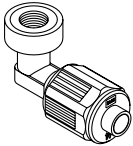
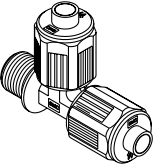
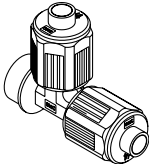
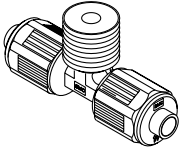
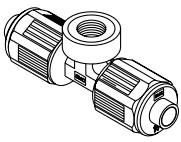
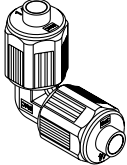
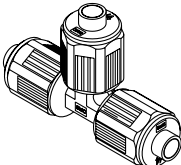
Note) ○ Standard size ● With insert bushing and nut reducer

# Series LQ<sub>1</sub><sup>1</sup>, TL/TIL

Series	Appearance	Class	Port size							Tube O.D.																
										Metric size						Inch size										
			None	1/8"	1/4"	3/8"	1/2"	3/4"	1"	ø3	ø4	ø6	ø8	ø10	ø12	ø19	ø25	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"		
<b>Branch tee LQ1B</b>	<b>Male</b> 	P.11	1	-	○	-	-	-	-	-	○	○	-	-	-	-	-	○	-	-	-	-	-	-		
			2	-	○	○	-	-	-	-	-	●	○	-	-	-	-	-	●	●	○	-	-	-	-	
			3	-	-	○	○	-	-	-	-	-	●	●	○	-	-	-	-	-	●	○	-	-	-	-
			4	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-	-
			5	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
			6	-	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
	<b>Female</b> 	P.12	1	-	○	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-	-	
			2	-	○	○	-	-	-	-	-	●	○	-	-	-	-	-	-	●	●	○	-	-	-	-
			3	-	-	○	○	-	-	-	-	-	●	●	○	-	-	-	-	-	-	●	○	-	-	-
			4	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-	-
			5	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
			6	-	-	-	-	-	○	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
<b>Union elbow LQ1E</b>		P.13	1	○	-	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-		
			2	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	●	○	-	-	-	-
			3	○	-	-	-	-	-	-	-	-	●	●	○	-	-	-	-	-	-	●	○	-	-	-
			4	○	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-	-
			5	○	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
			6	○	-	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
<b>Union tee LQ1T</b>		P.14	1	○	-	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-		
			2	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	●	○	-	-	-	-
			3	○	-	-	-	-	-	-	-	-	●	●	○	-	-	-	-	-	-	●	○	-	-	-
			4	○	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-	-
			5	○	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
			6	○	-	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
<b>Panel mount union LQ1P</b>		P.15	1	○	-	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-		
			2	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	●	○	-	-	-	-
			3	○	-	-	-	-	-	-	-	-	●	●	○	-	-	-	-	-	-	●	○	-	-	-
			4	○	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-	-
			5	○	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
			6	○	-	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
<b>Union LQ1U</b>		P.16	1	○	-	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-		
			2	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	●	○	-	-	-	-
			3	○	-	-	-	-	-	-	-	-	●	●	○	-	-	-	-	-	-	●	○	-	-	-
			4	○	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	-	●	○	-	-
			5	○	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
			6	○	-	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
<b>Union flange LQ1F</b>		P.16	4	○	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-		
			5	○	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	
			6	○	-	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○

Note) ○ Standard size ● With insert bushing and nut reducer

## Series LQ<sub>2</sub> Variations

Series	Appearance	Class	Port size						Tube O.D.													
									Metric size					Inch size								
			None	1/8"	1/4"	3/8"	1/2"	3/4"	ø4	ø6	ø8	ø10	ø12	ø19	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"		
Connector <b>LQ2H</b>	Male		P.21	2	○	○	—	—	—	●	○	—	—	—	—	●	●	○	—	—	—	
				3	—	—	○	○	—	—	—	●	●	○	—	—	—	—	●	○	—	—
				4	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○	—
				5	—	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○
	Female		P.22	2	—	○	○	—	—	—	●	○	—	—	—	—	●	●	○	—	—	
				3	—	—	○	○	—	—	—	●	●	○	—	—	—	—	●	○	—	—
				4	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○	—
				5	—	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○
Elbow <b>LQ2L</b>	Male		P.23	2	—	○	○	—	—	—	●	○	—	—	—	—	●	●	○	—	—	
				3	—	—	○	○	—	—	—	●	●	○	—	—	—	—	●	○	—	—
				4	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○	—
				5	—	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○
	Female		P.24	2	—	○	○	—	—	—	●	○	—	—	—	—	●	●	○	—	—	
				3	—	—	○	○	—	—	—	●	●	○	—	—	—	—	●	○	—	—
				4	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○	—
				5	—	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○
Run tee <b>LQ2R</b>	Male		P.25	2	—	○	○	—	—	—	●	○	—	—	—	—	●	●	○	—	—	
				3	—	—	○	○	—	—	—	●	●	○	—	—	—	—	●	○	—	—
				4	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○	—
				5	—	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○
	Female		P.26	2	—	○	○	—	—	—	●	○	—	—	—	—	●	●	○	—	—	
				3	—	—	○	○	—	—	—	●	●	○	—	—	—	—	●	○	—	—
				4	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○	—
				5	—	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○
Branch tee <b>LQ2B</b>	Male		P.27	2	—	○	○	—	—	—	●	○	—	—	—	—	●	●	○	—	—	
				3	—	—	○	○	—	—	—	●	●	○	—	—	—	—	●	○	—	—
				4	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○	—
				5	—	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○
	Female		P.28	2	—	○	○	—	—	—	●	○	—	—	—	—	●	●	○	—	—	
				3	—	—	○	○	—	—	—	●	●	○	—	—	—	—	●	○	—	—
				4	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○	—
				5	—	—	—	—	○	○	—	—	—	—	●	○	—	—	—	—	●	○
Union elbow <b>LQ2E</b>		P.29	2	○	—	—	—	—	—	●	○	—	—	—	—	●	●	○	—	—		
			3	○	—	—	—	—	—	●	●	○	—	—	—	—	●	○	—	—	—	
			4	○	—	—	—	—	—	—	—	●	○	—	—	—	—	●	○	—	—	
			5	○	—	—	—	—	—	—	—	—	●	○	—	—	—	—	●	○	—	
Union tee <b>LQ2T</b>		P.29	2	○	—	—	—	—	—	●	○	—	—	—	—	●	●	○	—	—		
			3	○	—	—	—	—	—	●	●	○	—	—	—	—	●	○	—	—	—	
			4	○	—	—	—	—	—	—	—	●	○	—	—	—	—	●	○	—	—	
			5	○	—	—	—	—	—	—	—	—	●	○	—	—	—	—	●	○	—	

Note) ○ Standard size ● With insert bushing and nut reducer





# Applicable Fluids

## Material and fluid compatibility check list for high purity fluoropolymer fittings

Chemical	Material
	Fluoro resin PFA
Acetone	<input type="radio"/> Note 1)
Ammonium hydroxide	<input type="radio"/>
Isobutyl alcohol	<input type="radio"/> Note 1)
Isopropyl alcohol	<input type="radio"/> Note 1)
Hydrochloric acid	<input type="radio"/>
Ozone (dry)	<input type="radio"/>
Hydrogen peroxide Concentration 5% or less, 50°C or less	<input type="radio"/>
Ethyl acetate	<input type="radio"/> Note 1)
Butyl acetate	<input type="radio"/> Note 1)
Nitric acid (except fuming nitric acid) Concentration 10% or less	<input type="radio"/>
Pure water	<input type="radio"/>
Sodium hydroxide Concentration 50% or less	<input type="radio"/>
Nitrogen gas	<input type="radio"/>
Super pure water	<input type="radio"/>
Toluene	<input type="radio"/> Note 1)
Hydrofluoric acid	<input type="radio"/>
Sulfuric acid (except fuming sulfuric acid)	<input type="radio"/>
Phosphoric acid Concentration 80% or less	<input type="radio"/>



The material and fluid compatibility check list provides reference values as a guide only.  
Note 1) Since static electricity may be generated, implement suitable countermeasures.

- Compatibility is indicated for fluid temperatures of 200°C or less.
- Consult SMC regarding fluids other than the above.
- Consult SMC regarding operating conditions.

Table symbols : Can be used

# High Purity Fluoropolymer Fittings HYPER FITTING® Series LQ1

## How to Order

Threaded connection **LQ1 H 11** [ ] - **M** [ ]

**Fitting type**

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

**Thread type**

Symbol	Type
Nil	R, Rc
N	NPT

**Piping type**

Symbol	Type
M	Male
F	Female

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

The table of combination is the same as that for A side.

Note 1) Only branch tees and run tees can take different diameters.

Note 2) Use of different diameters is not available with size 1.

**Size combination**

Class	No.	Applicable tubing size (mm)	Connection threads
1	1	4 x 3	1/8"
1	2	3 x 2	
2	1	6 x 4	1/8"
2	2	4 x 3	
2	3	6 x 4	1/4"
2	4	4 x 3	
3	1	10 x 8	1/4"
3	2	8 x 6	
3	3	6 x 4	
3	4	10 x 8	3/8"
3	5	8 x 6	
3	6	6 x 4	
4	1	12 x 10	3/8"
4	2	10 x 8	
4	3	12 x 10	1/2"
4	4	10 x 8	
5	1	19 x 16	1/2"
5	2	12 x 10	
5	3	19 x 16	3/4"
5	4	12 x 10	
6	1	25 x 22	3/4"
6	2	19 x 16	
6	3	25 x 22	1"
6	4	19 x 16	

Class	Symbol	Applicable tubing size (inch)	Connection threads
1	A	1/8" x 0.086"	1/8"
—	—	—	—
2	A	1/4" x 5/32"	1/8"
2	B	3/16" x 0.127"	
2	C	1/8" x 0.086"	
2	D	1/4" x 5/32"	1/4"
2	E	3/16" x 0.127"	
2	F	1/8" x 0.086"	
3	A	3/8" x 1/4"	1/4"
3	B	1/4" x 5/32"	
3	C	3/8" x 1/4"	3/8"
3	D	1/4" x 5/32"	
4	A	1/2" x 3/8"	3/8"
4	B	3/8" x 1/4"	
4	C	1/2" x 3/8"	1/2"
4	D	3/8" x 1/4"	
5	A	3/4" x 5/8"	1/2"
5	B	1/2" x 3/8"	
5	C	3/4" x 5/8"	3/4"
5	D	1/2" x 3/8"	
6	A	1" x 7/8"	3/4"
6	B	3/4" x 5/8"	
6	C	1" x 7/8"	1"
6	D	3/4" x 5/8"	

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



## How to Order

### Tubing connection

**LQ1 E 11**

#### Fitting type

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

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

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

Class	Symbol	Applicable tubing size (inch)
1	A	1/8" x 0.086"
—	—	—
2	A	1/4" x 5/32"
2	B	3/16" x 0.127"
2	C	1/8" x 0.086"
3	A	3/8" x 1/4"
3	B	1/4" x 5/32"
4	A	1/2" x 3/8"
4	B	3/8" x 1/4"
5	A	3/4" x 5/8"
5	B	1/2" x 3/8"
6	A	1" x 7/8"
6	B	3/4" x 5/8"



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

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

#### Size combination

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

Class	Symbol	Applicable tubing size (inch)	Applicable flange
1	A	1/8" x 0.086"	—
—	—	—	—
2	A	1/4" x 5/32"	—
2	B	3/16" x 0.127"	—
2	C	1/8" x 0.086"	—
3	A	3/8" x 1/4"	—
3	B	1/4" x 5/32"	—
4	A	1/2" x 3/8"	15A
4	B	3/8" x 1/4"	—
5	A	3/4" x 5/8"	20A
5	B	1/2" x 3/8"	—
6	A	1" x 7/8"	25A
6	B	3/4" x 5/8"	—



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

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

### Different diameter tubing order example

Different diameter tubing (with plug-in reducer) can be selected within the same body class.

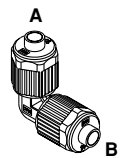
(Example) Union elbow

Body class 3

A side:  $\varnothing 10 \times \varnothing 8$

B side:  $\varnothing 8 \times \varnothing 6$

Order as shown below.



**LQ1 E 31 32**

• Different dia. tubing size (B side)

• Applicable tubing size (A side)

• Union elbow

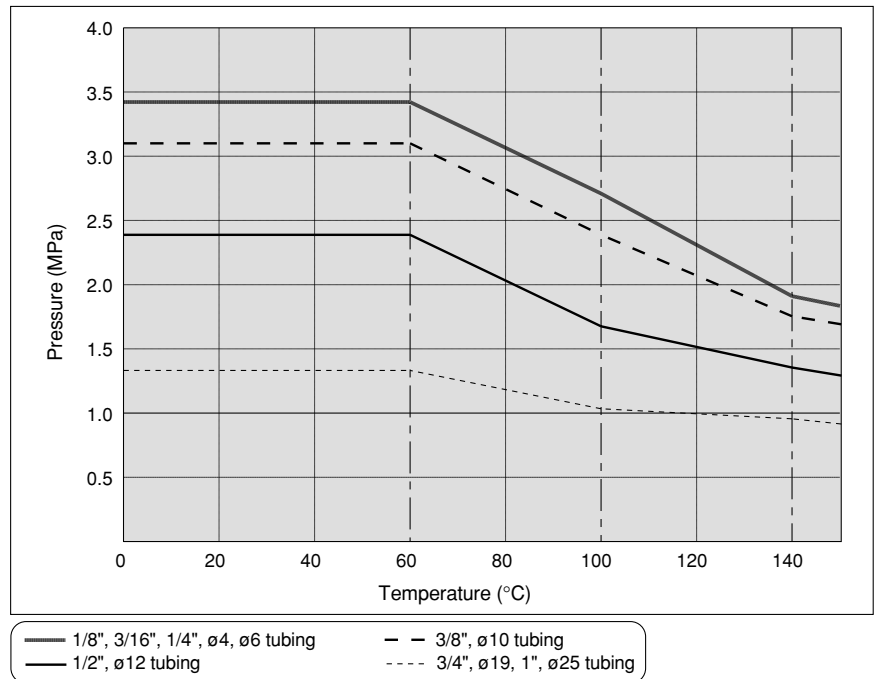
# Series LQ1



## Specifications

Feature	Model	LQ1□10	LQ1□20	LQ1□30	LQ1□40	LQ1□50	LQ1□60
Maximum operating pressure (at 20°C)		0.7MPa					
Proof pressure		Refer to the withstand pressure and heat resistance performance curves.					
Operating temperature		0 to 150°C					

## Burst Pressure and Heat Resistance Performance



## Construction

### Quadruple sealing construction

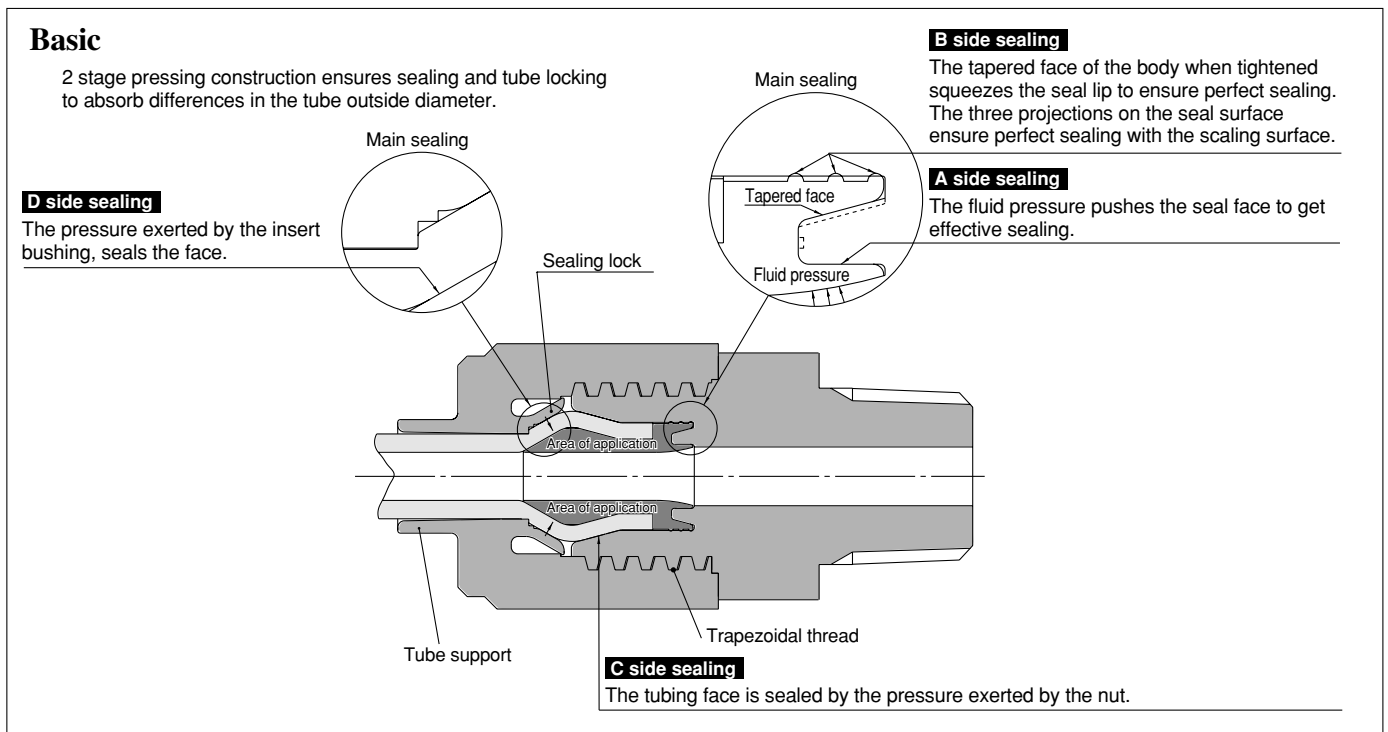
The quadruple sealing construction (PAT.) based on SMC's original idea results in highly reliable sealing characteristics with outstanding leakage prevention effect.

### Flow-through characteristics

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

### Locking

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



### Strong resistance to tube bending and deformation.

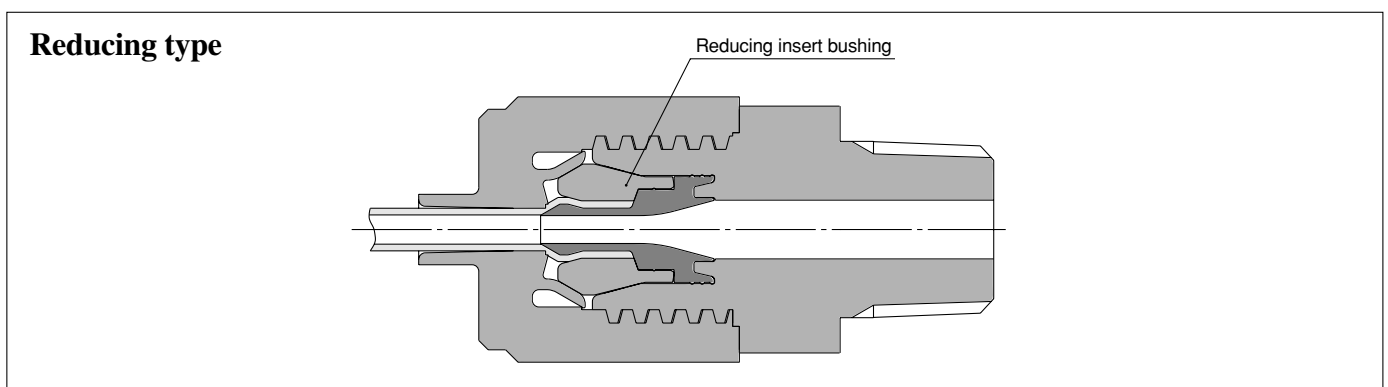
Able to withstand lateral loads with the tube support.

### The nut can be easily assembled into the fitting body with no need of alignment.

### Tubing sizes are interchangeable.

- Tubing size is interchangeable by use of a reducer bushing on the same body.
- Helps to standardize fitting items and reduce stock.

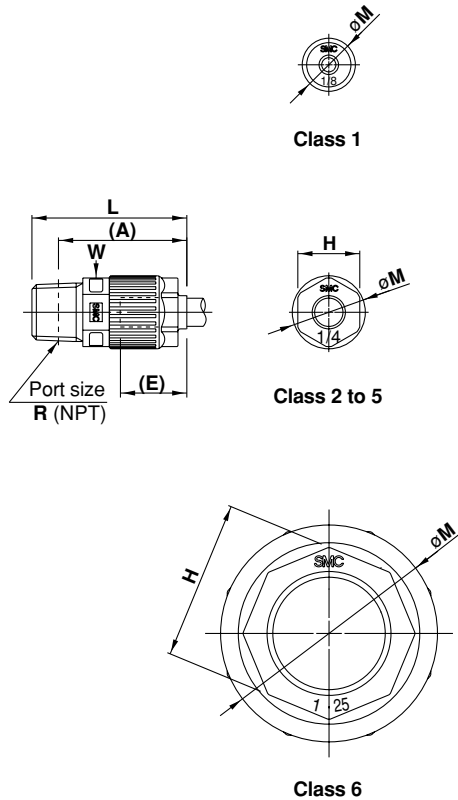
- The nut can be easily assembled in to the fitting body without worrying about the tightening torque and still getting perfect sealing.
- The trapezoidal thread prevents oblique nut insertion.



# Series LQ1

## Dimensions

### Male Connector: LQ1H-M



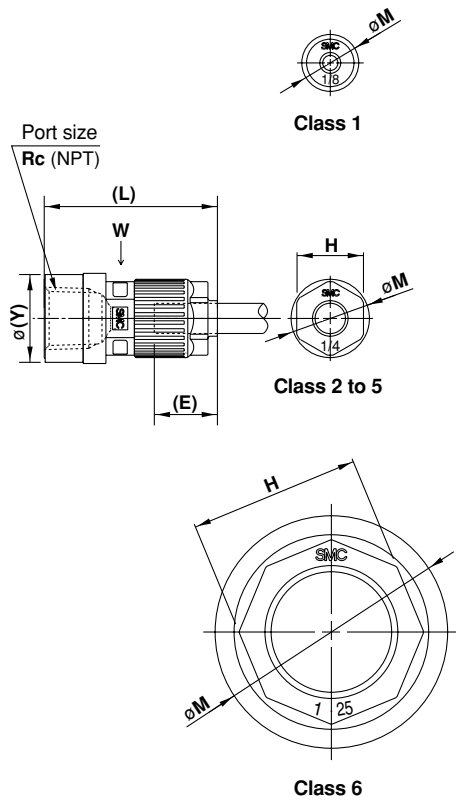
### Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L	M	W
LQ1H11-M□	ø4	1/8"	21	10	—	25	11.5	10
LQ1H12-M□	ø3							
LQ1H21-M□	ø6	1/8"	31.5	15	14	35	16.5	14
LQ1H22-M□	ø4							
LQ1H23-M□	ø6	1/4"	29					
LQ1H24-M□	ø4							
LQ1H31-M□	ø10	1/4"	36.5	20	17	42.5	23	19
LQ1H32-M□	ø8							
LQ1H33-M□	ø6	3/8"	36					
LQ1H34-M□	ø10							
LQ1H35-M□	ø8	3/8"	36					
LQ1H36-M□	ø6							
LQ1H41-M□	ø12	3/8"	46	24	21	52	28	23
LQ1H42-M□	ø10							
LQ1H43-M□	ø12	1/2"	44					
LQ1H44-M□	ø10							
LQ1H51-M□	ø19	1/2"	55	29	26	62.5	39	32
LQ1H52-M□	ø12							
LQ1H53-M□	ø19	3/4"	53.5					
LQ1H54-M□	ø12							
LQ1H61-M□	ø25	3/4"	72	39.5	36	81	49	46
LQ1H62-M□	ø19							
LQ1H63-M□	ø25	1"	71					
LQ1H64-M□	ø19							

### Inch sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	A	E	H	L	M	W
LQ1H1A-M□	1/8"	1/8"	21	10	—	25	11.5	10
LQ1H2A-M□	1/4"							
LQ1H2B-M□	3/16"	1/8"	31.5	15	14	35	16.5	14
LQ1H2C-M□	1/8"							
LQ1H2D-M□	1/4"	1/4"	29					
LQ1H2E-M□	3/16"							
LQ1H2F-M□	1/8"	1/4"	36.5	20	17	42.5	23	19
LQ1H3A-M□	3/8"							
LQ1H3B-M□	1/4"	3/8"	36					
LQ1H3C-M□	3/8"							
LQ1H3D-M□	1/4"	3/8"	46	24	21	52	28	23
LQ1H4A-M□	1/2"							
LQ1H4B-M□	3/8"	1/2"	44					
LQ1H4C-M□	1/2"							
LQ1H4D-M□	3/8"	1/2"	55	29	26	62.5	39	32
LQ1H5A-M□	3/4"							
LQ1H5B-M□	1/2"	3/4"	53.5					
LQ1H5C-M□	3/4"							
LQ1H5D-M□	1/2"	3/4"	72	39.5	36	81	49	46
LQ1H6A-M□	1"							
LQ1H6B-M□	3/4"	1"	71					
LQ1H6C-M□	1"							
LQ1H6D-M□	3/4"							

**Female Connector: LQ1H-F**



**Metric sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L	M	W	Y
LQ1H11-F□	Ø4	1/8"	10	—	26.5	Ø11.5	10	Ø18.5
LQ1H12-F□	Ø3							
LQ1H21-F□	Ø6	1/8"	15	14	35	Ø16.5	14	Ø18.5
LQ1H22-F□	Ø4							
LQ1H23-F□	Ø6	1/4"	20	17	42.5	Ø23	19	Ø21.5
LQ1H24-F□	Ø4							
LQ1H31-F□	Ø10	1/4"	20	17	42.5	Ø23	19	Ø21.5
LQ1H32-F□	Ø8							
LQ1H33-F□	Ø6	3/8"	24	21	47.5	Ø28	23	Ø25
LQ1H34-F□	Ø10							
LQ1H35-F□	Ø8	1/2"	24	21	50	Ø28	23	Ø29.5
LQ1H36-F□	Ø6							
LQ1H41-F□	Ø12	1/2"	29	26	58.5	Ø39	32	Ø29.5
LQ1H42-F□	Ø10							
LQ1H43-F□	Ø12	3/4"	39.5	36	75	Ø49	46	Ø36
LQ1H44-F□	Ø10							
LQ1H51-F□	Ø19	1/2"	29	26	60	Ø39	32	Ø29.5
LQ1H52-F□	Ø12							
LQ1H53-F□	Ø19	3/4"	39.5	36	78.5	Ø49	46	Ø36
LQ1H54-F□	Ø12							
LQ1H61-F□	Ø25	3/4"	39.5	36	75	Ø49	46	Ø36
LQ1H62-F□	Ø19							
LQ1H63-F□	Ø25	1"	39.5	36	78.5	Ø49	46	Ø44.5
LQ1H64-F□	Ø19							

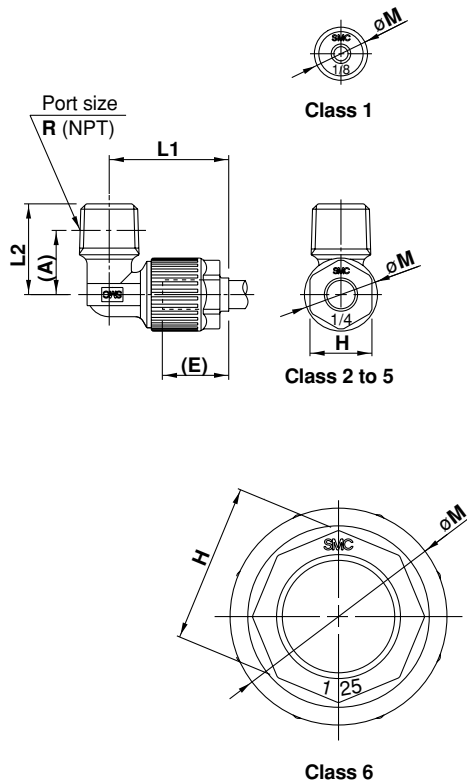
**Inch sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L	M	W	Y
LQ1H1A-F□	1/8"	1/8"	10	—	26.5	Ø11.5	10	Ø18.5
LQ1H2A-F□	1/4"							
LQ1H2B-F□	3/16"	1/8"	15	14	35	Ø16.5	14	Ø18.5
LQ1H2C-F□	1/8"							
LQ1H2D-F□	1/4"	1/4"	20	17	42.5	Ø23	19	Ø21.5
LQ1H2E-F□	3/16"							
LQ1H2F-F□	1/8"	3/8"	24	21	47.5	Ø28	23	Ø25
LQ1H3A-F□	3/8"							
LQ1H3B-F□	1/4"	1/4"	29	26	58.5	Ø39	32	Ø29.5
LQ1H3C-F□	3/8"							
LQ1H3D-F□	1/4"	3/8"	39.5	36	75	Ø49	46	Ø36
LQ1H4A-F□	1/2"							
LQ1H4B-F□	3/8"	1/2"	24	21	50	Ø28	23	Ø29.5
LQ1H4C-F□	1/2"							
LQ1H4D-F□	3/8"	1/2"	29	26	58.5	Ø39	32	Ø29.5
LQ1H5A-F□	3/4"							
LQ1H5B-F□	1/2"	3/4"	39.5	36	78.5	Ø49	46	Ø44.5
LQ1H5C-F□	3/4"							
LQ1H5D-F□	1/2"	3/4"	39.5	36	75	Ø49	46	Ø36
LQ1H6A-F□	1"							
LQ1H6B-F□	3/4"	1"	39.5	36	78.5	Ø49	46	Ø44.5
LQ1H6C-F□	1"							
LQ1H6D-F□	3/4"	1"	39.5	36	78.5	Ø49	46	Ø44.5
LQ1H6E-F□	3/4"							

# Series LQ1

## Dimensions

### Male Elbow: LQ1L-M



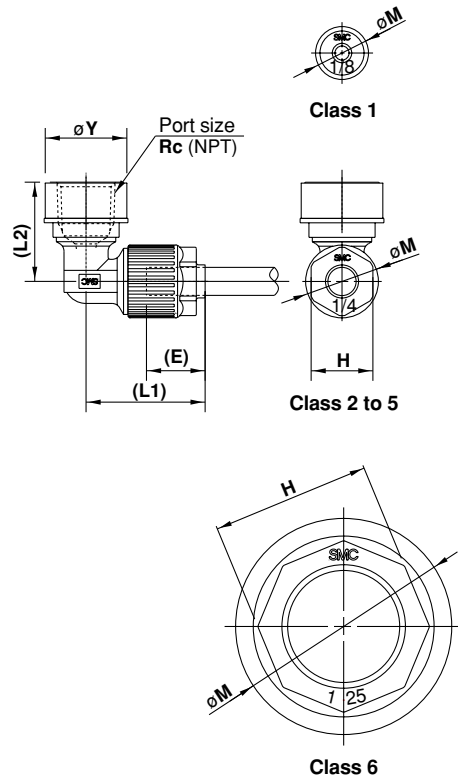
### Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L1	L2	M
LQ1L11-M□	ø4	1/8"	11.5	10	—	18	15.5	ø11.5
LQ1L12-M□	ø3							
LQ1L21-M□	ø6	1/8"	14.5	15	14	27	20.5	ø16.5
LQ1L22-M□	ø4							
LQ1L23-M□	ø6	1/4"	20	20	17	35	26.5	ø23
LQ1L24-M□	ø4							
LQ1L31-M□	ø10	1/4"	25	24	21	45	33	ø28
LQ1L32-M□	ø8							
LQ1L33-M□	ø6	3/8"	30.5	29	26	54	40	ø39
LQ1L34-M□	ø10							
LQ1L35-M□	ø8	3/8"	35	39.5	36	68.5	46	ø49
LQ1L36-M□	ø6							
LQ1L41-M□	ø12	3/8"	35	39.5	36	68.5	46	ø49
LQ1L42-M□	ø10							
LQ1L43-M□	ø12	1/2"	30.5	29	26	54	40	ø39
LQ1L44-M□	ø10							
LQ1L51-M□	ø19	1/2"	35	39.5	36	68.5	46	ø49
LQ1L52-M□	ø12							
LQ1L53-M□	ø19	3/4"	35	39.5	36	68.5	46	ø49
LQ1L54-M□	ø12							
LQ1L61-M□	ø25	3/4"	35	39.5	36	68.5	46	ø49
LQ1L62-M□	ø19							
LQ1L63-M□	ø25	1"	35	39.5	36	68.5	46	ø49
LQ1L64-M□	ø19							

### Inch sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L1	L2	M
LQ1L1A-M□	1/8"	1/8"	11.5	10	—	18	18.5	ø11.5
LQ1L2A-M□	1/4"							
LQ1L2B-M□	3/16"	1/8"	14.5	15	14	27	20.5	ø16.5
LQ1L2C-M□	1/8"							
LQ1L2D-M□	1/4"	1/4"	20	20	17	35	26.5	ø23
LQ1L2E-M□	3/16"							
LQ1L2F-M□	1/8"	3/8"	25	24	21	45	33	ø28
LQ1L3A-M□	3/8"							
LQ1L3B-M□	1/4"	3/8"	30.5	29	26	54	40	ø39
LQ1L3C-M□	3/8"							
LQ1L3D-M□	1/4"	1/2"	35	39.5	36	68.5	46	ø49
LQ1L4A-M□	1/2"							
LQ1L4B-M□	3/8"	3/8"	35	39.5	36	68.5	46	ø49
LQ1L4C-M□	1/2"							
LQ1L4D-M□	3/8"	1/2"	30.5	29	26	54	40	ø39
LQ1L5A-M□	3/4"							
LQ1L5B-M□	1/2"	1/2"	35	39.5	36	68.5	46	ø49
LQ1L5C-M□	3/4"							
LQ1L5D-M□	1/2"	3/4"	35	39.5	36	68.5	46	ø49
LQ1L6A-M□	1"							
LQ1L6B-M□	3/4"	3/4"	35	39.5	36	68.5	46	ø49
LQ1L6C-M□	1"							
LQ1L6D-M□	3/4"	1"	35	39.5	36	68.5	46	ø49

**Female Elbow: LQ1L-F**



**Metric sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L1	L2	M	Y
LQ1L11-F□	ø4	1/8"	10	—	18	17	ø11.5	ø18.5
LQ1L12-F□	ø3							
LQ1L21-F□	ø6	1/8"	15	14	27	19.5	ø16.5	ø18.5
LQ1L22-F□	ø4							
LQ1L23-F□	ø6	1/4"	20	17	35	22.5	ø23	ø21.5
LQ1L24-F□	ø4							
LQ1L31-F□	ø10	1/4"	20	17	35	23	ø23	ø21.5
LQ1L32-F□	ø8							
LQ1L33-F□	ø6	3/8"	24	21	45	25	ø28	ø25
LQ1L34-F□	ø10							
LQ1L35-F□	ø8	1/2"	29	26	54	29	ø39	ø25
LQ1L36-F□	ø6							
LQ1L41-F□	ø12	1/2"	29	26	54	37.5	ø39	ø29.5
LQ1L42-F□	ø10							
LQ1L43-F□	ø12	3/4"	39.5	36	68.5	32.5	ø49	ø29.5
LQ1L44-F□	ø10							
LQ1L51-F□	ø19	3/4"	39.5	36	68.5	44.5	ø49	ø36
LQ1L52-F□	ø12							
LQ1L53-F□	ø19	1"	48	—	—	48	ø49	ø44.5
LQ1L54-F□	ø12							
LQ1L61-F□	ø25	1"	48	—	—	48	ø49	ø36
LQ1L62-F□	ø19							
LQ1L63-F□	ø25	3/4"	39.5	36	68.5	44.5	ø49	ø36
LQ1L64-F□	ø19							

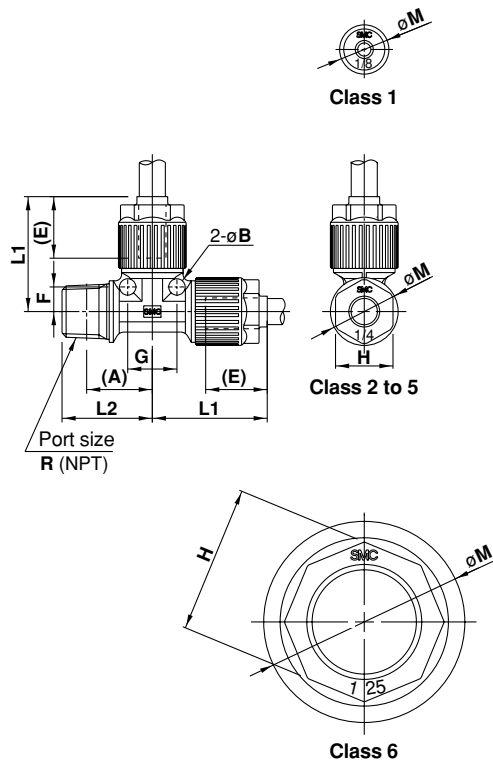
**Inch sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L1	L2	M	Y
LQ1L1A-F□	1/8"	1/8"	10	—	18	17	ø11.5	ø18.5
LQ1L2A-F□	1/4"							
LQ1L2B-F□	3/16"	1/8"	15	14	27	19.5	ø16.5	ø18.5
LQ1L2C-F□	1/8"							
LQ1L2D-F□	1/4"	1/4"	20	17	35	22.5	ø23	ø21.5
LQ1L2E-F□	3/16"							
LQ1L2F-F□	1/8"	3/8"	24	21	45	23	ø28	ø25
LQ1L3A-F□	3/8"							
LQ1L3B-F□	1/4"	3/8"	29	26	54	25	ø39	ø29.5
LQ1L3C-F□	3/8"							
LQ1L3D-F□	1/4"	1/2"	39.5	36	68.5	29	ø49	ø36
LQ1L4A-F□	1/2"							
LQ1L4B-F□	3/8"	3/8"	48	—	—	32.5	ø49	ø44.5
LQ1L4C-F□	1/2"							
LQ1L4D-F□	3/8"	1/2"	39.5	36	68.5	37.5	ø39	ø29.5
LQ1L5A-F□	3/4"							
LQ1L5B-F□	1/2"	3/4"	48	—	—	39.5	ø49	ø36
LQ1L5C-F□	3/4"							
LQ1L5D-F□	1/2"	1"	48	—	—	44.5	ø49	ø36
LQ1L6A-F□	1"							
LQ1L6B-F□	3/4"	1"	48	—	—	48	ø49	ø44.5
LQ1L6C-F□	1"							
LQ1L6D-F□	3/4"	3/4"	39.5	36	68.5	44.5	ø49	ø36
LQ1L6E-F□	1"							

# Series LQ1

## Dimensions

### Male Run Tee: LQ1R-M



### Metric sizes

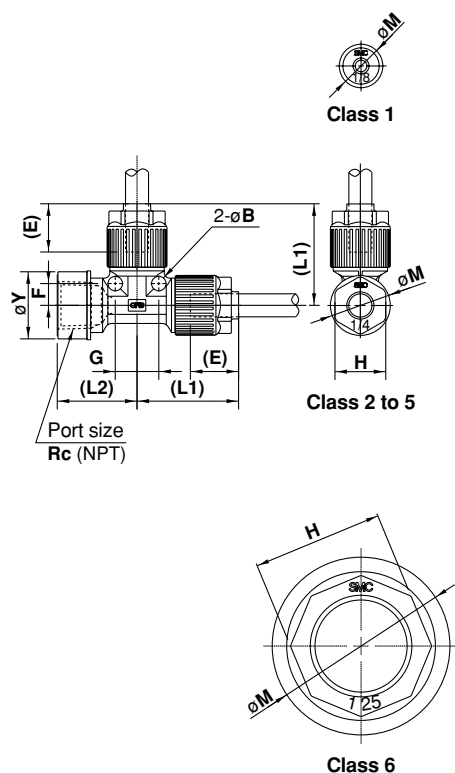
Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M
LQ1R11-M□	ø4	1/8"	12	ø2	10	4	8	—	18.5	15.5	11.5
LQ1R12-M□	ø3										
LQ1R21-M□	ø6	1/8"	16	ø4	15	6	12	14	28	19.5	16.5
LQ1R22-M□	ø4										
LQ1R23-M□	ø6	1/4"								22	
LQ1R24-M□	ø4										
LQ1R31-M□	ø10	1/4"	19								25
LQ1R32-M□	ø8										
LQ1R33-M□	ø6	3/8"	21	ø5	20	9	18	17	36.5		23
LQ1R34-M□	ø10										
LQ1R35-M□	ø8	3/8"									27
LQ1R36-M□	ø6										
LQ1R41-M□	ø12	3/8"	23								29
LQ1R42-M□	ø10										
LQ1R43-M□	ø12	1/2"	24.5	ø6	24	11	22	21	45		28
LQ1R44-M□	ø10										
LQ1R51-M□	ø19	1/2"	30.5	ø7	29	14	28	26	54		38
LQ1R52-M□	ø12										
LQ1R53-M□	ø19	3/4"	30								39
LQ1R54-M□	ø12										
LQ1R61-M□	ø25	3/4"	36	ø8	39.5	18	36	36	69.5	45	49
LQ1R62-M□	ø19										
LQ1R63-M□	ø25	1"	35								
LQ1R64-M□	ø19										

### Inch sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M
LQ1R1A-M□	1/8"	1/8"	12	ø2	10	4	8	—	18.5	15.5	11.5
LQ1R2A-M□	1/4"	1/8"								19.5	16.5
LQ1R2B-M□	3/16"										
LQ1R2C-M□	1/8"	1/4"	16	ø4	15	6	12	14	28	22	
LQ1R2D-M□	1/4"										
LQ1R2E-M□	3/16"	1/4"									
LQ1R2F-M□	1/8"										
LQ1R3A-M□	3/8"	1/4"	19	ø5	20	9	18	17	36.5	25	23
LQ1R3B-M□	1/4"										
LQ1R3C-M□	3/8"	3/8"	21							27	
LQ1R3D-M□	1/4"										
LQ1R4A-M□	1/2"	3/8"	23	ø6	24	11	22	21	45	29	28
LQ1R4B-M□	3/8"										
LQ1R4C-M□	1/2"	1/2"	24.5							32	
LQ1R4D-M□	3/8"										
LQ1R5A-M□	3/4"	1/2"	30.5	ø7	29	14	28	26	54	38	39
LQ1R5B-M□	1/2"										
LQ1R5C-M□	3/4"	3/4"	30							39	
LQ1R5D-M□	1/2"										
LQ1R6A-M□	1"	3/4"	36	ø8	39.5	18	36	36	69.5	45	49
LQ1R6B-M□	3/4"										
LQ1R6C-M□	1"	1"	35								
LQ1R6D-M□	3/4"										



## Female Run Tee: LQ1R-F



### Metric sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	Y
LQ1R11-F□	ø4	1/8"	ø2	10	4	8	—	18.5	16	ø11.5	ø18.5
LQ1R12-F□	ø3										
LQ1R21-F□	ø6	1/8"	ø4	15	6	12	14	28	19.5	ø16.5	ø18.5
LQ1R22-F□	ø4										
LQ1R23-F□	ø6	1/4"	ø4	15	6	12	14	28	22	ø16.5	ø21.5
LQ1R24-F□	ø4										
LQ1R31-F□	ø10	1/4"	ø4	15	6	12	14	28	22	ø16.5	ø21.5
LQ1R32-F□	ø8										
LQ1R33-F□	ø6	3/8"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1R34-F□	ø10										
LQ1R35-F□	ø8	3/8"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1R36-F□	ø6										
LQ1R41-F□	ø12	3/8"	ø6	24	11	22	21	45	31.5	ø28	ø29.5
LQ1R42-F□	ø10										
LQ1R43-F□	ø12	1/2"	ø6	24	11	22	21	45	31.5	ø28	ø29.5
LQ1R44-F□	ø10										
LQ1R51-F□	ø19	1/2"	ø7	29	14	28	26	54	37	ø39	ø36
LQ1R52-F□	ø12										
LQ1R53-F□	ø19	3/4"	ø7	29	14	28	26	54	37	ø39	ø36
LQ1R54-F□	ø12										
LQ1R61-F□	ø25	3/4"	ø8	39.5	18	36	36	69.5	46	ø49	ø44.5
LQ1R62-F□	ø19										
LQ1R63-F□	ø25	1"	ø8	39.5	18	36	36	69.5	46	ø49	ø44.5
LQ1R64-F□	ø19										

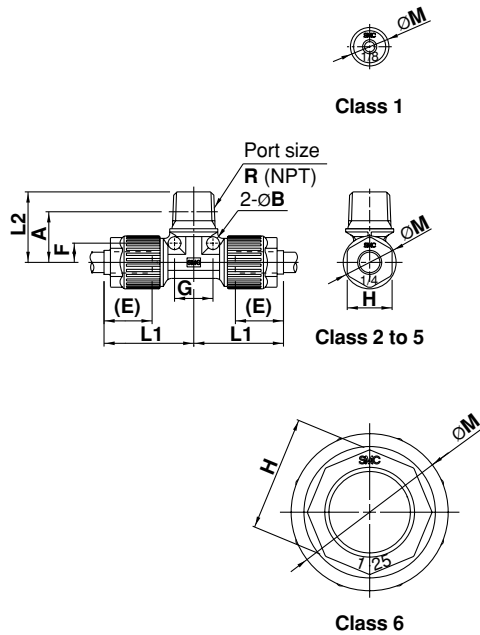
### Inch sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	Y
LQ1R1A-F□	1/8"	1/8"	ø2	10	4	8	—	18.5	16	ø11.5	ø18.5
LQ1R2A-F□	1/4"										
LQ1R2B-F□	3/16"	1/8"	ø4	15	6	12	14	28	19.5	ø16.5	ø18.5
LQ1R2C-F□	1/8"										
LQ1R2D-F□	1/4"	1/4"	ø4	15	6	12	14	28	22	ø16.5	ø21.5
LQ1R2E-F□	3/16"										
LQ1R2F-F□	1/8"	1/4"	ø4	15	6	12	14	28	22	ø16.5	ø21.5
LQ1R3A-F□	3/8"										
LQ1R3B-F□	1/4"	1/4"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1R3C-F□	3/8"										
LQ1R3D-F□	1/4"	3/8"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1R4A-F□	1/2"										
LQ1R4B-F□	3/8"	3/8"	ø6	24	11	22	21	45	31.5	ø28	ø29.5
LQ1R4C-F□	1/2"										
LQ1R4D-F□	3/8"	1/2"	ø6	24	11	22	21	45	31.5	ø28	ø29.5
LQ1R5A-F□	3/4"										
LQ1R5B-F□	1/2"	1/2"	ø7	29	14	28	26	54	37	ø39	ø36
LQ1R5C-F□	3/4"										
LQ1R5D-F□	1/2"	3/4"	ø7	29	14	28	26	54	37	ø39	ø36
LQ1R6A-F□	1"										
LQ1R6B-F□	3/4"	3/4"	ø8	39.5	18	36	36	69.5	46	ø49	ø44.5
LQ1R6C-F□	1"										
LQ1R6D-F□	3/4"	1"	ø8	39.5	18	36	36	69.5	46	ø49	ø44.5
LQ1R6E-F□	1"										

# Series LQ1

## Dimensions

### Male Branch Tee: LQ1B-M



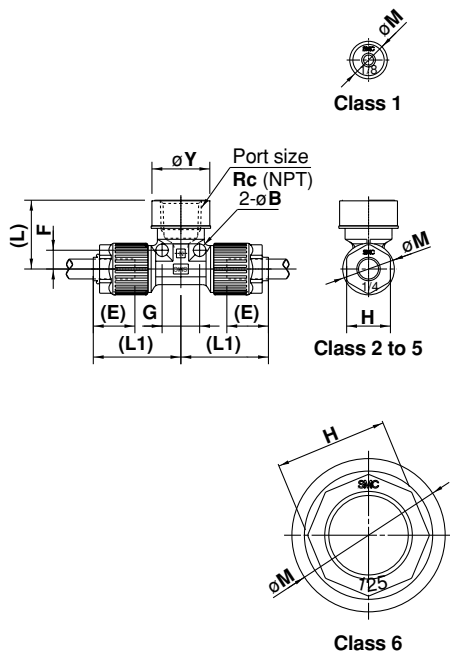
### Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M
LQ1B11-M□	ø4	1/8"	12	ø2	10	4	8	—	18.5	15.5	11.5
LQ1B12-M□	ø3										
LQ1B21-M□	ø6	1/8"	16	ø4	15	6	12	14	28	19.5	16.5
LQ1B22-M□	ø4										
LQ1B23-M□	ø6	1/4"								22	
LQ1B24-M□	ø4										
LQ1B31-M□	ø10	1/4"	19							25	
LQ1B32-M□	ø8										
LQ1B33-M□	ø6	3/8"	21	ø5	20	9	18	17	36.5	23	
LQ1B34-M□	ø10										
LQ1B35-M□	ø8	3/8"	21							27	
LQ1B36-M□	ø6										
LQ1B41-M□	ø12	3/8"	23	ø6	20	11	22	21	45	29	28
LQ1B42-M□	ø10										
LQ1B43-M□	ø12	1/2"	24.5							32	
LQ1B44-M□	ø10										
LQ1B51-M□	ø19	1/2"	30.5	ø7	29	14	28	26	54	38	39
LQ1B52-M□	ø12										
LQ1B53-M□	ø19	3/4"	30							39	
LQ1B54-M□	ø12										
LQ1B61-M□	ø25	3/4"	36	ø8	39.5	18	36	36	69.5	45	49
LQ1B62-M□	ø19										
LQ1B63-M□	ø25	1"	35								
LQ1B64-M□	ø19										

### Inch sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M
LQ1B1A-M□	1/8"	1/8"	12	ø2	10	4	8	—	18.5	15.5	11.5
LQ1B2A-M□	1/4"										
LQ1B2B-M□	3/16"	1/8"	16	ø4	15	6	12	14	28	19.5	16.5
LQ1B2C-M□	1/8"										
LQ1B2D-M□	1/4"	1/4"								22	
LQ1B2E-M□	3/16"										
LQ1B2F-M□	1/8"	1/4"	19	ø5	20	9	18	17	36.5	25	23
LQ1B3A-M□	3/8"										
LQ1B3B-M□	1/4"	3/8"	21							27	
LQ1B3C-M□	3/8"										
LQ1B3D-M□	1/4"	3/8"	23	ø6	20	11	22	21	45	38	28
LQ1B4A-M□	1/2"										
LQ1B4B-M□	3/8"	1/2"	24.5							39	
LQ1B4C-M□	1/2"										
LQ1B4D-M□	3/8"	1/2"	30.5	ø7	29	14	28	26	54	38	39
LQ1B5A-M□	3/4"										
LQ1B5B-M□	1/2"	3/4"	30							39	
LQ1B5C-M□	3/4"										
LQ1B5D-M□	1/2"	3/4"	36	ø8	39.5	18	36	36	69.5	45	49
LQ1B6A-M□	1"										
LQ1B6B-M□	3/4"	1"	35								
LQ1B6C-M□	1"										
LQ1B6D-M□	3/4"										

## Female Branch Tee: LQ1B-F



### Metric sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	Y
LQ1B11-F□	ø4	1/8"	ø2	10	4	8	—	18.5	16	ø11.5	ø18.5
LQ1B12-F□	ø3										
LQ1B21-F□	ø6	1/8"	ø4	15	6	12	14	28	19.5	ø16.5	ø18.5
LQ1B22-F□	ø4										
LQ1B23-F□	ø6	1/4"	ø4	15	6	12	14	28	22	ø16.5	ø21.5
LQ1B24-F□	ø4										
LQ1B31-F□	ø10	1/4"	ø5	20	9	18	17	36.5	23.7	ø23	ø21.5
LQ1B32-F□	ø8										
LQ1B33-F□	ø6	3/8"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1B34-F□	ø10										
LQ1B35-F□	ø8	3/8"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1B36-F□	ø6										
LQ1B41-F□	ø12	3/8"	ø6	24	11	22	21	45	25	ø28	ø25
LQ1B42-F□	ø10										
LQ1B43-F□	ø12	1/2"	ø6	24	11	22	21	45	31.5	ø28	ø29.5
LQ1B44-F□	ø10										
LQ1B51-F□	ø19	1/2"	ø7	29	14	28	26	54	35.5	ø39	ø29.5
LQ1B52-F□	ø12										
LQ1B53-F□	ø19	3/4"	ø7	29	14	28	26	54	37	ø39	ø36
LQ1B54-F□	ø12										
LQ1B61-F□	ø25	3/4"	ø8	39.5	18	36	36	69.5	42.5	ø49	ø36
LQ1B62-F□	ø19										
LQ1B63-F□	ø25	1"	ø8	39.5	18	36	36	69.5	46	ø49	ø44.5
LQ1B64-F□	ø19										

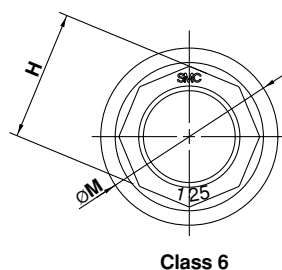
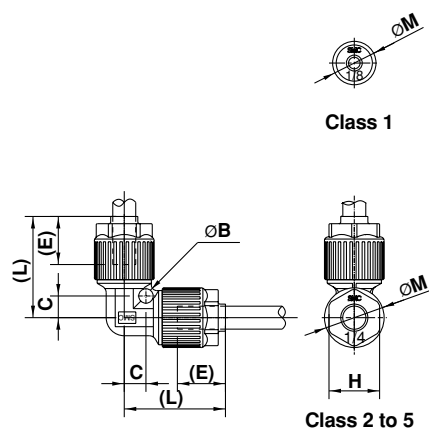
### Inch sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	Y
LQ1B1A-F□	1/8"	1/8"	ø2	10	4	8	—	18.5	16	ø11.5	ø18.5
LQ1B2A-F□	1/4"										
LQ1B2B-F□	3/16"	1/8"	ø4	15	6	12	14	28	19.5	ø16.5	ø18.5
LQ1B2C-F□	1/8"										
LQ1B2D-F□	1/4"	1/4"	ø4	15	6	12	14	28	22	ø16.5	ø21.5
LQ1B2E-F□	3/16"										
LQ1B2F-F□	1/8"	1/4"	ø4	15	6	12	14	28	22	ø16.5	ø21.5
LQ1B3A-F□	3/8"										
LQ1B3B-F□	1/4"	1/4"	ø5	20	9	18	17	36.5	24	ø23	ø21.5
LQ1B3C-F□	3/8"										
LQ1B3D-F□	1/4"	3/8"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1B4A-F□	1/2"										
LQ1B4B-F□	3/8"	3/8"	ø6	24	11	22	21	45	25	ø28	ø25
LQ1B4C-F□	1/2"										
LQ1B4D-F□	3/8"	1/2"	ø6	24	11	22	21	45	31.5	ø28	ø29.5
LQ1B5A-F□	3/4"										
LQ1B5B-F□	1/2"	1/2"	ø7	29	14	28	26	54	35.5	ø39	ø29.5
LQ1B5C-F□	3/4"										
LQ1B5D-F□	1/2"	3/4"	ø7	29	14	28	26	54	37	ø39	ø36
LQ1B6A-F□	1"										
LQ1B6B-F□	3/4"	3/4"	ø8	39.5	18	36	36	69.5	42.5	ø49	ø36
LQ1B6C-F□	1"										
LQ1B6D-F□	3/4"	1"	ø8	39.5	18	36	36	69.5	46	ø49	ø44.5
LQ1B6E-F□	1"										

# Series LQ1

## Dimensions

### Union Elbow: LQ1E



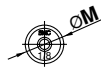
### Metric sizes

Model	Applicable tubing O.D.	B	C	E	H	L	M
LQ1E11□□	ø4	ø2	4	10	—	18.5	ø11.5
LQ1E12□□	ø3						
LQ1E21□□	ø6	ø4	6	15	14	28	ø16.5
LQ1E22□□	ø4						
LQ1E31□□	ø10	ø5	9	20	17	36.5	ø23
LQ1E32□□	ø8						
LQ1E33□□	ø6						
LQ1E41□□	ø12	ø6	9	24	21	43	ø28
LQ1E42□□	ø10						
LQ1E51□□	ø19	ø7	14	29	26	54	ø39
LQ1E52□□	ø12						
LQ1E61□□	ø25	ø8	18	39.5	36	69.5	ø49
LQ1E62□□	ø19						

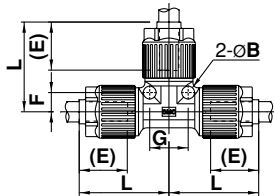
### Inch sizes

Model	Applicable tubing O.D.	B	C	E	H	L	M
LQ1E1A□□	1/8"	ø2	4	10	—	18.5	ø11.5
LQ1E2A□□	1/4"						
LQ1E2B□□	3/16"	ø4	6	15	14	28	ø16.5
LQ1E2C□□	1/8"						
LQ1E3A□□	3/8"	ø5	9	20	17	36.5	ø23
LQ1E3B□□	1/4"						
LQ1E4A□□	1/2"						
LQ1E4B□□	3/8"	ø6	9	24	21	43	ø28
LQ1E5A□□	3/4"						
LQ1E5B□□	1/2"	ø7	14	29	26	54	ø39
LQ1E6A□□	1"						
LQ1E6B□□	3/4"	ø8	18	39.5	36	69.5	ø49
LQ1E6B□□	3/4"						

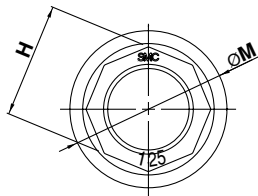
## Union Tee: LQ1T



Class 1



Class 2 to 5



Class 6

### Metric sizes

Model	Applicable tubing O.D.	B	E	F	G	H	L	M
LQ1T11□□	ø4	ø2	10	4	8	—	18.5	11.5
LQ1T12□□	ø3							
LQ1T21□□	ø6	ø4	15	6	12	14	28	16.5
LQ1T22□□	ø4							
LQ1T31□□	ø10	ø5	20	9	18	17	36.5	23
LQ1T32□□	ø8							
LQ1T33□□	ø6							
LQ1T41□□	ø12	ø6	20	11	22	21	45	28
LQ1T42□□	ø10							
LQ1T51□□	ø19	ø7	29	14	28	26	54	39
LQ1T52□□	ø12							
LQ1T61□□	ø25	ø8	39.5	18	36	36	69.5	49
LQ1T62□□	ø19							

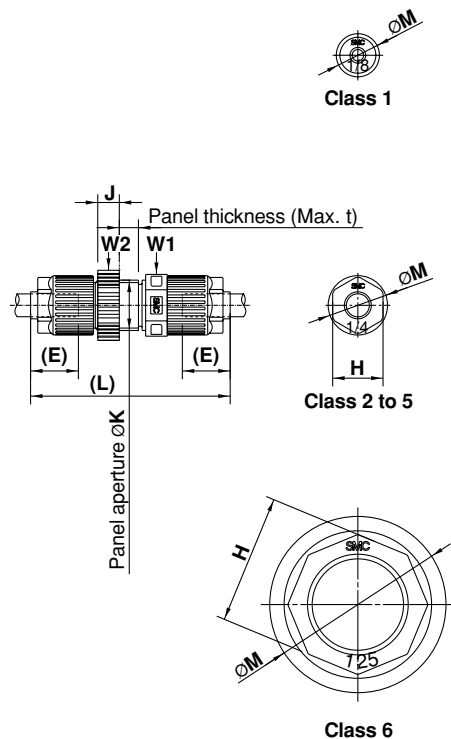
### Inch sizes

Model	Applicable tubing O.D.	B	E	F	G	H	L	M
LQ1T1A□□	1/8"	ø2	10	4	8	—	18.5	11.5
LQ1T2A□□	1/4"							
LQ1T2B□□	3/16"	ø4	15	6	12	14	28	16.5
LQ1T2C□□	1/8"							
LQ1T3A□□	3/8"	ø5	20	9	18	17	36.5	23
LQ1T3B□□	1/4"							
LQ1T4A□□	1/2"	ø6	20	11	22	21	45	28
LQ1T4B□□	3/8"							
LQ1T5A□□	3/4"	ø7	29	14	28	26	54	39
LQ1T5B□□	1/2"							
LQ1T6A□□	1"	ø8	39.5	18	36	36	69.5	49
LQ1T6B□□	3/4"							

# Series LQ1

## Dimensions

### Panel Mount Union: LQ1P



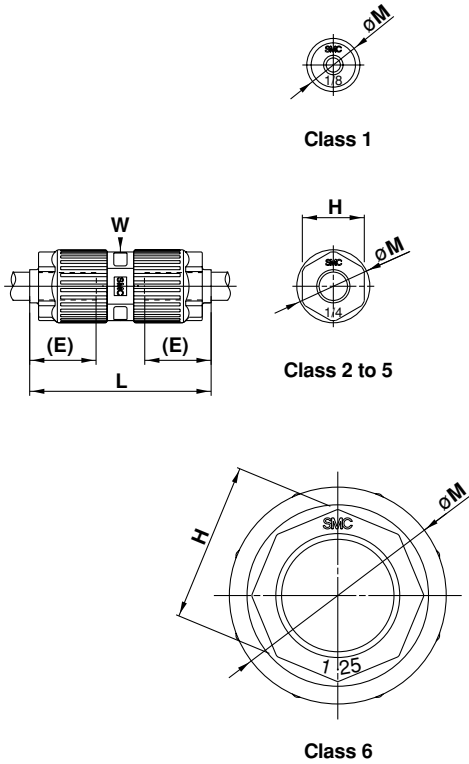
### Metric sizes

Model	Applicable tubing O.D.	E	H	J	K	L	M	t	W1	W2
LQ1P11□□	ø4	10	—	6	10.5	44	ø11.5	8	11	13
LQ1P12□□	ø3									
LQ1P21□□	ø6	15	14	6	14.5	55.5	ø16.5	8	15	17
LQ1P22□□	ø4									
LQ1P31□□	ø10	20	17	7	20.5	69	ø23	8	21	24
LQ1P32□□	ø8									
LQ1P33□□	ø6									
LQ1P41□□	ø12	24	21	7	24.5	78.5	ø28	8	26	28
LQ1P42□□	ø10									
LQ1P51□□	ø19	29	26	9	36.5	100	ø39	9	39	43
LQ1P52□□	ø12									
LQ1P61□□	ø25	39.5	36	10	48.5	133	ø49	10	51	55
LQ1P62□□	ø19									

### Inch sizes

Model	Applicable tubing O.D.	E	H	J	K	L	M	t	W1	W2
LQ1P1A□□	1/8"	10	—	6	10.5	44	ø11.5	8	11	13
LQ1P2A□□	1/4"									
LQ1P2B□□	3/16"	15	14	6	14.5	55.5	ø16.5	8	15	17
LQ1P2C□□	1/8"									
LQ1P3A□□	3/8"	20	17	7	20.5	69	ø23	8	21	24
LQ1P3B□□	1/4"									
LQ1P4A□□	1/2"									
LQ1P4B□□	3/8"	24	21	7	24.5	78.5	ø28	8	26	28
LQ1P5A□□	3/4"									
LQ1P5B□□	1/2"	29	26	9	36.5	100	ø39	13	39	43
LQ1P6A□□	1"									
LQ1P6B□□	3/4"	39.5	36	10	48.5	133	ø49	20	51	55
LQ1P6B□□	3/4"									

**Union: LQ1U**



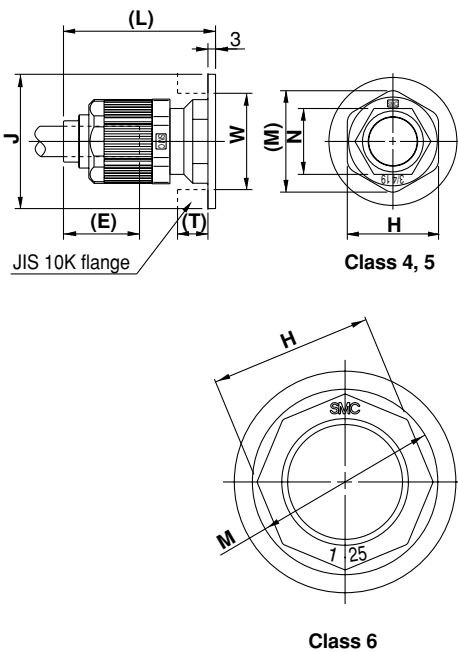
**Metric sizes**

Model	Applicable tubing O.D.	E	H	L	M	W
LQ1U11□□	ø4	10	—	29	11.5	10
LQ1U12□□	ø3					
LQ1U21□□	ø6	15	14	41	16.5	14
LQ1U22□□	ø4					
LQ1U31□□	ø10	20	17	54	23	17
LQ1U32□□	ø8					
LQ1U33□□	ø6					
LQ1U41□□	ø12	24	21	63	28	21
LQ1U42□□	ø10					
LQ1U51□□	ø19	29	26	77	39	26
LQ1U52□□	ø12					
LQ1U61□□	ø25	39.5	36	102	49	36
LQ1U62□□	ø19					

**Inch sizes**

Model	Applicable tubing O.D.	E	H	L	M	W
LQ1U1A□□	1/8"	10	—	29	11.5	10
LQ1U2A□□	1/4"					
LQ1U2B□□	3/16"	15	14	41	16.5	14
LQ1U2C□□	1/8"					
LQ1U3A□□	3/8"	20	17	54	23	17
LQ1U3B□□	1/4"					
LQ1U4A□□	1/2"					
LQ1U4B□□	3/8"	24	21	63	28	21
LQ1U5A□□	3/4"					
LQ1U5B□□	1/2"	29	26	77	39	26
LQ1U6A□□	1"					
LQ1U6B□□	3/4"	39.5	36	102	49	36
LQ1U6B□□	3/4"					

**Union Flange: LQ1F**



**Metric sizes**

Model	Applicable tubing O.D.	E	H	J	L	N	M	W	(T)
LQ1F41□□	ø12	28	30	ø53	60	21	33.1	ø34	12
LQ1F42□□	ø10				58				
LQ1F51□□	ø19	32	36	ø58	65.2	26	40	ø41	14
LQ1F52□□	ø12				63.2				
LQ1F61□□	ø25	39.5	36	ø69	81.5	—	49	ø51	14
LQ1F62□□	ø19								

**Inch sizes**

Model	Applicable tubing O.D.	E	H	J	L	N	M	W	(T)
LQ1F4A□□	1/2"	28	30	30	60	21	33.1	ø34	12
LQ1F4B□□	3/8"				58				
LQ1F5A□□	3/4"	32	36	36	65.2	26	40	ø41	14
LQ1F5B□□	1/2"				63.2				
LQ1F6A□□	1"	39.5	36	—	81.5	—	49	ø51	14
LQ1F6B□□	3/4"								

# High Purity Fluoropolymer Fittings HYPER FITTING® Series LQ2

## How to Order

Threaded connection **LQ2** **H** **21** **—** **M**

**Fitting type**

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

**Thread type**

Symbol	Type
Nil	R, Rc
N	NPT

**Piping type**

Symbol	Type
M	Male
F	Female

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

The table of combination is the same as that for A side.

Note) Only branch tees and run tees can take different diameters.

**Size combination**

Class	No.	Applicable tubing size (mm)	Connection threads
2	1	6 x 4	1/8"
	2	4 x 3	
2	3	6 x 4	1/4"
	4	4 x 3	
3	1	10 x 8	1/4"
	2	8 x 6	
3	3	6 x 4	3/8"
	4	10 x 8	
3	5	8 x 6	3/8"
	6	6 x 4	
4	1	12 x 10	3/8"
	2	10 x 8	
4	3	12 x 10	1/2"
	4	10 x 8	
5	1	19 x 16	1/2"
	2	12 x 10	
5	3	19 x 16	3/4"
	4	12 x 10	

Class	Symbol	Applicable tubing size (inch)	Connection threads
2	A	1/4" x 5/32"	1/8"
	B	3/16" x 0.127"	
	C	1/8" x 0.086"	
2	D	1/4" x 5/32"	1/4"
	E	3/16" x 0.127"	
	F	1/8" x 0.086"	
3	A	3/8" x 1/4"	1/4"
	B	1/4" x 5/32"	
3	C	3/8" x 1/4"	3/8"
	D	1/4" x 5/32"	
4	A	1/2" x 3/8"	3/8"
	B	3/8" x 1/4"	
4	C	1/2" x 3/8"	1/2"
	D	3/8" x 1/4"	
5	A	3/4" x 5/8"	1/2"
	B	1/2" x 3/8"	
5	C	3/4" x 5/8"	3/4"
	D	1/2" x 3/8"	

Note) For each piping diameter for each body size, the second and later numbers or symbols indicate reducing.



## How to Order

### Tubing connection

**LQ2 E 21**  

#### Fitting type

Symbol	Type
E	Union elbow
T	Union tee
P	Panel mount union
U	Union

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

Class	No.	Applicable tubing size (mm)	Class	Symbol	Applicable tubing size (inch)
2	1	6 x 4	2	A	1/4" x 5/32"
2	2	4 x 3	2	B	3/16" x 0.127"
3	1	10 x 8	2	C	1/8" x 0.086"
3	2	8 x 6	3	A	3/8" x 1/4"
3	3	6 x 4	3	B	1/4" x 5/32"
4	1	12 x 10	4	A	1/2" x 3/8"
4	2	10 x 8	4	B	3/8" x 1/4"
5	1	19 x 16	5	A	3/4" x 5/8"
5	2	12 x 10	5	B	1/2" x 3/8"



Note) For each piping diameter for each body size, the second and later numbers or symbols indicate reducing.

#### Size combination

Class	No.	Applicable tubing size (mm)	Class	Symbol	Applicable tubing size (inch)
2	1	6 x 4	2	A	1/4" x 5/32"
2	2	4 x 3	2	B	3/16" x 0.127"
3	1	10 x 8	2	C	1/8" x 0.086"
3	2	8 x 6	3	A	3/8" x 1/4"
3	3	6 x 4	3	B	1/4" x 5/32"
4	1	12 x 10	4	A	1/2" x 3/8"
4	2	10 x 8	4	B	3/8" x 1/4"
5	1	19 x 16	5	A	3/4" x 5/8"
5	2	12 x 10	5	B	1/2" x 3/8"



Note) For each piping diameter for each body size, the second and later numbers or symbols indicate reducing.

### Different diameter tubing order example

Different diameter tubing (with plug-in reducer) can be selected within the same body class.

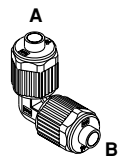
(Example) Union elbow

Body class 3

A side:  $\varnothing 10 \times \varnothing 8$

B side:  $\varnothing 8 \times \varnothing 6$

Order as shown below.



**LQ2 E 31 32**

- Different dia. tubing size (B side)
- Applicable tubing size (A side)
- Union elbow

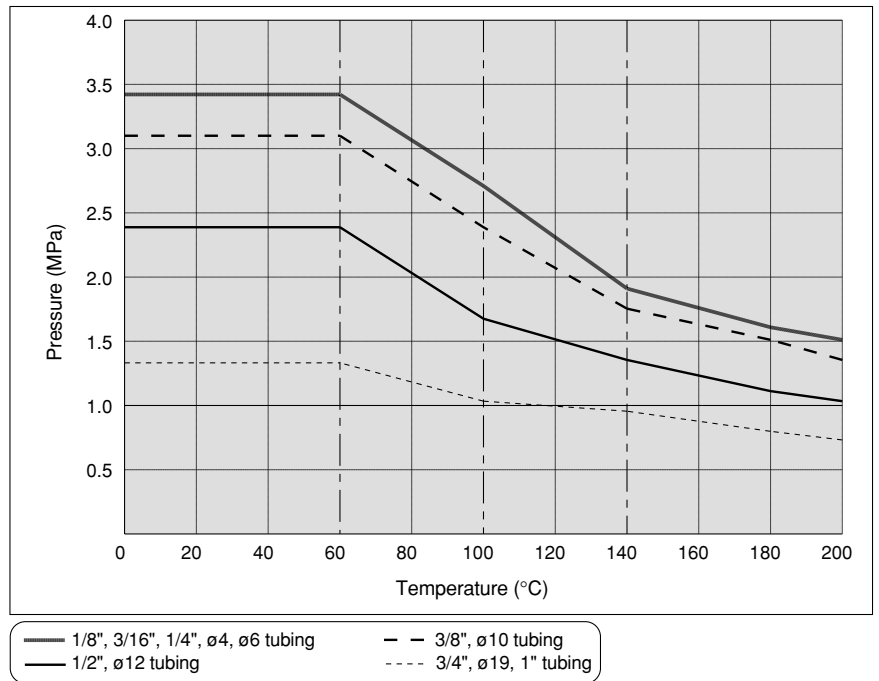
# Series LQ2



## Specifications

Feature	Model	LQ2□20	LQ2□30	LQ2□40	LQ2□50
Maximum operating pressure (at 20°C)		1.0MPa			
Proof pressure		Refer to the withstand pressure and heat resistance performance curves.			
Operating temperature		0 to 200°C			

## Burst Pressure and Heat Resistance Performance



## Construction

### Quadruple sealing construction

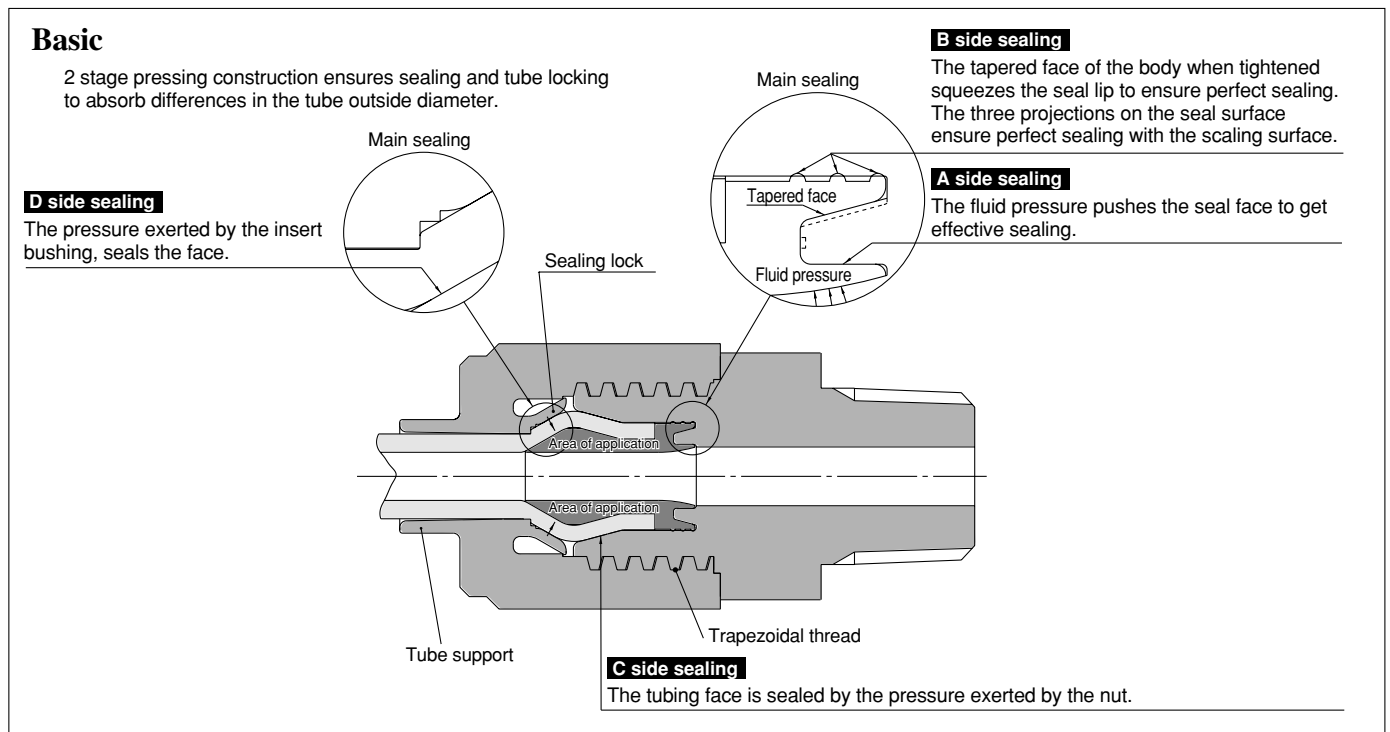
The quadruple sealing construction (PAT.) based on SMC's original idea results in highly reliable sealing characteristics with outstanding leakage prevention effect.

### Flow-through characteristics

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

### Locking

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



### Strong resistance to tube bending and deformation.

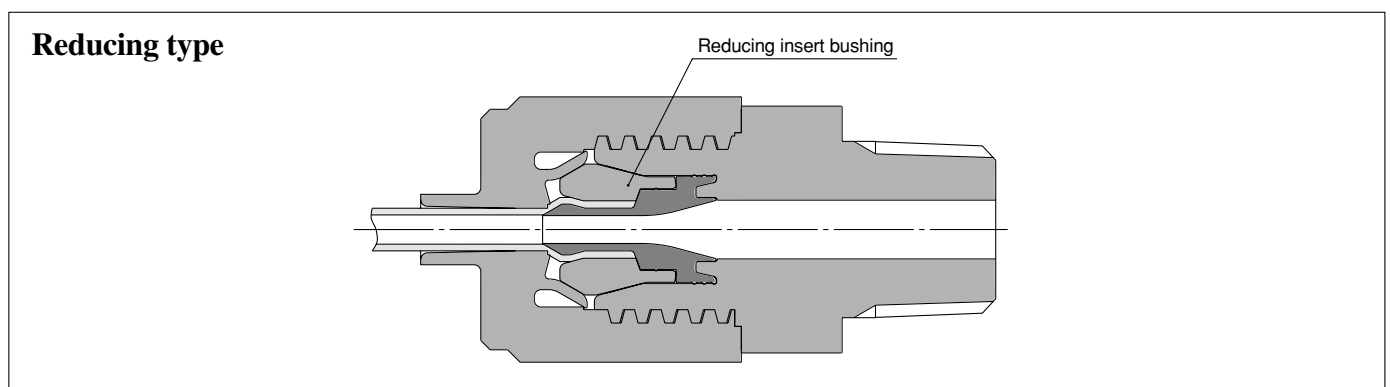
Able to withstand lateral loads with the tube support.

### The nut can be easily assembled into the fitting body with no need of alignment.

### Tubing sizes are interchangeable.

- Tubing size is interchangeable by use of a reducer bushing on the same body.
- Helps to standardize fitting items and reduce stock.

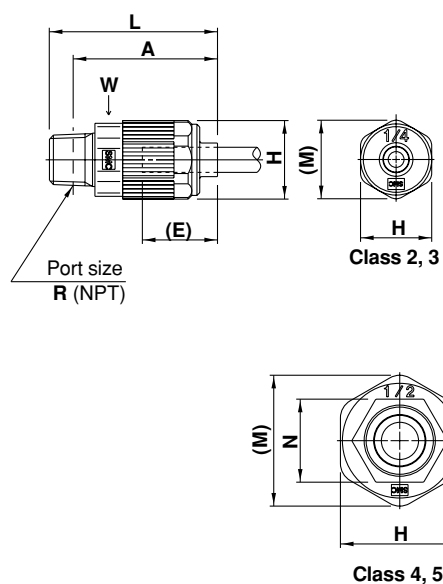
- The nut can be easily assembled in to the fitting body without worrying about the tightening torque and still getting perfect sealing.
- The trapezoidal thread prevents oblique nut insertion.



# Series LQ2

## Dimensions

### Male Connector: LQ2H-M



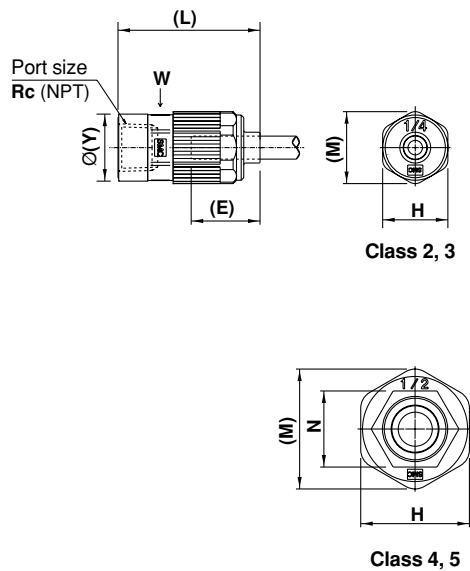
### Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L	M	N	W
LQ2H21-M□	ø6	1/8"	39	19	18	42.5	19.9	—	16
LQ2H22-M□	ø4								
LQ2H23-M□	ø6	1/4"	36.5	22	24	49	26.2	—	24
LQ2H24-M□	ø4								
LQ2H31-M□	ø10	1/4"	43	22	24	49	26.2	—	24
LQ2H32-M□	ø8								
LQ2H33-M□	ø6	3/8"	42.5	28	30	59	33.1	21	30
LQ2H34-M□	ø10								
LQ2H35-M□	ø8	1/2"	51	32	36	68	40	26	36
LQ2H36-M□	ø6								
LQ2H41-M□	ø12	3/8"	53	28	30	59	33.1	21	30
LQ2H42-M□	ø10								
LQ2H43-M□	ø12	1/2"	51	32	36	68	40	26	36
LQ2H44-M□	ø10								
LQ2H51-M□	ø19	1/2"	60.5	32	36	68	40	26	36
LQ2H52-M□	ø12								
LQ2H53-M□	ø19	3/4"	58.5	32	36	68	40	26	36
LQ2H54-M□	ø12								

### Inch sizes

Model	Applicable tubing O.D.	Connection threads NPT	A	E	H	L	M	N	W
LQ2H2A-M□	1/4"	1/8"	39	19	18	42.5	19.9	—	16
LQ2H2B-M□	3/16"								
LQ2H2C-M□	1/8"	1/4"	36.5	22	24	49	26.2	—	24
LQ2H2D-M□	1/4"								
LQ2H2E-M□	3/16"	3/8"	42.5	28	30	59	33.1	21	30
LQ2H2F-M□	1/8"								
LQ2H3A-M□	3/8"	1/4"	43	22	24	49	26.2	—	24
LQ2H3B-M□	1/4"								
LQ2H3C-M□	3/8"	3/8"	42.5	32	36	68	40	26	36
LQ2H3D-M□	1/4"								
LQ2H4A-M□	1/2"	3/8"	53	28	30	59	33.1	21	30
LQ2H4B-M□	3/8"								
LQ2H4C-M□	1/2"	1/2"	51	32	36	68	40	26	36
LQ2H4D-M□	3/8"								
LQ2H5A-M□	3/4"	1/2"	60.5	32	36	68	40	26	36
LQ2H5B-M□	1/2"								
LQ2H5C-M□	3/4"	3/4"	58.5	32	36	68	40	26	36
LQ2H5D-M□	1/2"								

**Female Connector: LQ2H-F**



**Metric sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L	M	N	W	Y
LQ2H21-F□	ø6	1/8"	19	18	39.2	19.9	—	16	18.5
LQ2H22-F□	ø4								21.5
LQ2H23-F□	ø6	1/4"	22	24	44.2	26.2	—	24	21.5
LQ2H24-F□	ø4				43.7				
LQ2H31-F□	ø10	1/4"	22	24	46	26.2	—	24	25
LQ2H32-F□	ø8				45.5				
LQ2H33-F□	ø6	3/8"	28	30	52	33.1	21	30	25
LQ2H34-F□	ø10				51				
LQ2H35-F□	ø8	3/8"	28	30	57	33.1	21	30	29.5
LQ2H36-F□	ø6				56				
LQ2H41-F□	ø12	1/2"	32	36	63.5	40	26	36	29.5
LQ2H42-F□	ø10				64.5				
LQ2H43-F□	ø12	1/2"	32	36	65	40	26	36	36
LQ2H44-F□	ø10				66				
LQ2H51-F□	ø19	3/4"	32	36	63.5	40	26	36	29.5
LQ2H52-F□	ø12				64.5				
LQ2H53-F□	ø19	3/4"	32	36	65	40	26	36	36
LQ2H54-F□	ø12				66				

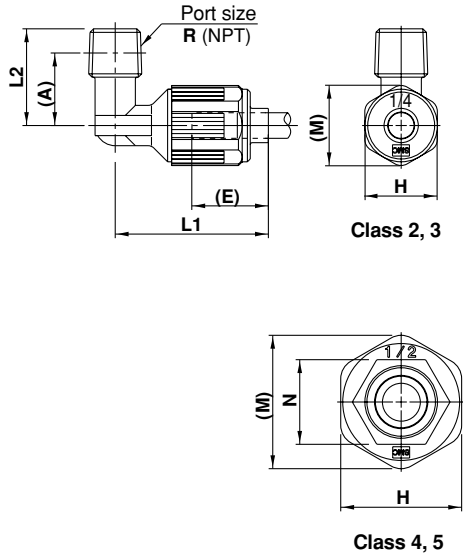
**Inch sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L	M	N	W	Y
LQ2H2A-F□	1/4"	1/8"	19	18	39.2	19.9	—	16	18.5
LQ2H2B-F□	3/16"								21.5
LQ2H2C-F□	1/8"	1/4"	22	24	44.2	26.2	—	24	21.5
LQ2H2D-F□	1/4"				43.7				
LQ2H2E-F□	3/16"	3/8"	22	24	46	26.2	—	24	25
LQ2H2F-F□	1/8"				45.5				
LQ2H3A-F□	3/8"	1/4"	22	24	52	26.2	—	24	25
LQ2H3B-F□	1/4"				51				
LQ2H3C-F□	3/8"	3/8"	28	30	57	33.1	21	30	29.5
LQ2H3D-F□	1/4"				56				
LQ2H4A-F□	1/2"	1/2"	32	36	63.5	40	26	36	29.5
LQ2H4B-F□	3/8"				64.5				
LQ2H4C-F□	1/2"	3/4"	32	36	65	40	26	36	36
LQ2H4D-F□	3/8"				66				
LQ2H5A-F□	3/4"	3/4"	32	36	63.5	40	26	36	29.5
LQ2H5B-F□	1/2"				64.5				
LQ2H5C-F□	3/4"	3/4"	32	36	65	40	26	36	36
LQ2H5D-F□	1/2"				66				

# Series LQ2

## Dimensions

### Male Elbow: LQ2L-M



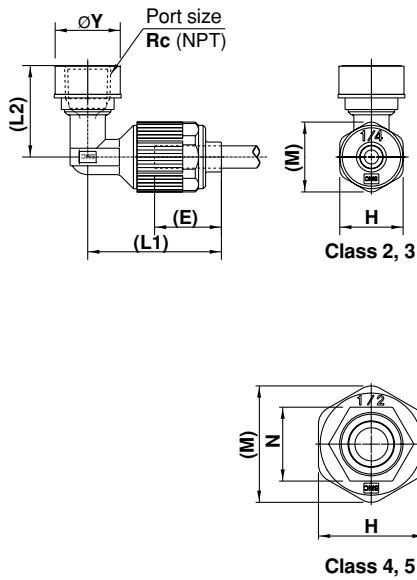
### Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L <sub>1</sub>	L <sub>2</sub>	M	N
LQ2L21-M□	ø6	1/8"	20.5	19	18	38	24	19.9	—
LQ2L22-M□	ø4								
LQ2L23-M□	ø6	1/4"	18	22	24	43	28	26.2	—
LQ2L24-M□	ø4								
LQ2L31-M□	ø10	1/4"	22	22	24	43	28	26.2	—
LQ2L32-M□	ø8								
LQ2L33-M□	ø6	3/8"	21.5	28	30	43	35	33.1	21
LQ2L34-M□	ø10								
LQ2L35-M□	ø8	1/2"	27	32	36	42.5	43	40	26
LQ2L36-M□	ø6								
LQ2L41-M□	ø12	3/8"	29	28	30	52	35	33.1	21
LQ2L42-M□	ø10								
LQ2L43-M□	ø12	1/2"	27	32	36	51	43	40	26
LQ2L44-M□	ø10								
LQ2L51-M□	ø19	1/2"	35.5	32	36	59	43	40	26
LQ2L52-M□	ø12								
LQ2L53-M□	ø19	3/4"	33.5	32	36	59	43	40	26
LQ2L54-M□	ø12								

### Inch sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L <sub>1</sub>	L <sub>2</sub>	M	N
LQ2L2A-M□	1/4"	1/8"	20.5	19	18	38	24	19.9	—
LQ2L2B-M□	3/16"								
LQ2L2C-M□	1/8"	1/4"	18	22	24	43	28	26.2	—
LQ2L2D-M□	1/4"								
LQ2L2E-M□	3/16"	3/8"	21.5	28	30	42.5	35	33.1	21
LQ2L2F-M□	1/8"								
LQ2L3A-M□	3/8"	1/4"	22	22	24	43	28	26.2	—
LQ2L3B-M□	1/4"								
LQ2L3C-M□	3/8"	3/8"	21.5	28	30	43	35	33.1	21
LQ2L3D-M□	1/4"								
LQ2L4A-M□	1/2"	3/8"	29	28	30	52	35	33.1	21
LQ2L4B-M□	3/8"								
LQ2L4C-M□	1/2"	1/2"	27	32	36	51	43	40	26
LQ2L4D-M□	3/8"								
LQ2L5A-M□	3/4"	1/2"	35.5	32	36	59	43	40	26
LQ2L5B-M□	1/2"								
LQ2L5C-M□	3/4"	3/4"	33.5	32	36	59	43	40	26
LQ2L5D-M□	1/2"								

## Female Elbow: LQ2L-F



### Metric sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L <sub>1</sub>	L <sub>2</sub>	M	N
LQ2L21-F□	ø6	1/8"	19	18	38	24	19.9	—
LQ2L22-F□	ø4							
LQ2L23-F□	ø6	1/4"						
LQ2L24-F□	ø4							
LQ2L31-F□	ø10	1/4"	22	24	28	26.2	—	
LQ2L32-F□	ø8							43
LQ2L33-F□	ø6							42.5
LQ2L34-F□	ø10	3/8"						43
LQ2L35-F□	ø8							42.5
LQ2L36-F□	ø6	3/8"						28
LQ2L41-F□	ø12		52					
LQ2L42-F□	ø10		51					
LQ2L43-F□	ø12	1/2"	52					
LQ2L44-F□	ø10		51					
LQ2L51-F□	ø19	1/2"	32	36	43	40	26	
LQ2L52-F□	ø12							59
LQ2L53-F□	ø19	3/4"						58
LQ2L54-F□	ø12							59
								58

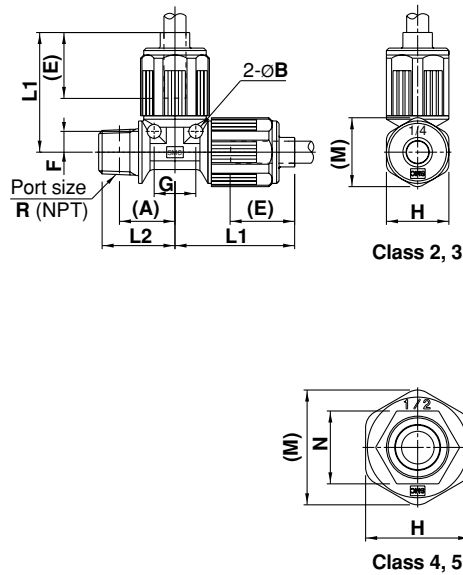
### Inch sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L <sub>1</sub>	L <sub>2</sub>	M	N									
LQ2L2A-F□	1/4"	1/8"	19	18	38	24	19.9	—									
LQ2L2B-F□	3/16"																
LQ2L2C-F□	1/8"																
LQ2L2D-F□	1/4"	1/4"				22			24	28	26.2	—					
LQ2L2E-F□	3/16"												43				
LQ2L2F-F□	1/8"												42.5				
LQ2L3A-F□	3/8"	1/4"	22	24	28		26.2	—									
LQ2L3B-F□	1/4"												43				
LQ2L3C-F□	3/8"	3/8"											28	30	50.5	33.1	21
LQ2L3D-F□	1/4"					42.5											
LQ2L4A-F□	1/2"	3/8"				28			30	54	40	26					
LQ2L4B-F□	3/8"																
LQ2L4C-F□	1/2"	1/2"	32	36	43		40	26									
LQ2L4D-F□	3/8"																
													52				
LQ2L5A-F□	3/4"	1/2"											32	36	43	40	26
LQ2L5B-F□	1/2"					59											
LQ2L5C-F□	3/4"	3/4"				32			36	43	40	26					
LQ2L5D-F□	1/2"		58														
			59														

# Series LQ2

## Dimensions

### Male Run Tee: LQ2R-M



### Metric sizes

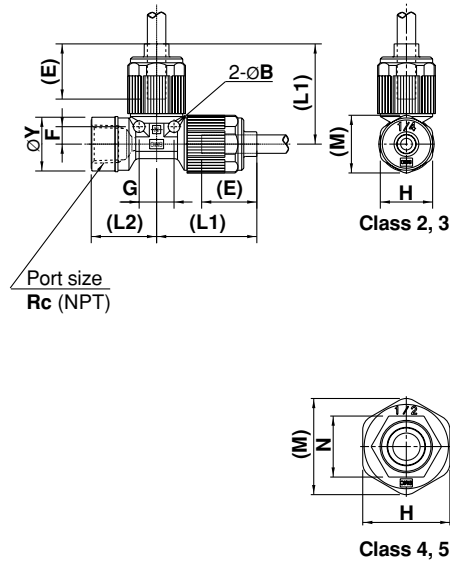
Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M	N
LQ2R21-M□	ø6	1/8"	18.5	ø4	19	6	12	18	34.5	22	19.9	—
LQ2R22-M□	ø4											
LQ2R23-M□	ø6	1/4"	16.5	ø4	19	6	12	18	34.5	22	19.9	—
LQ2R24-M□	ø4											
LQ2R31-M□	ø10	1/4"	23.5	ø5	22	9	18	24	43	29.5	26.2	—
LQ2R32-M□	ø8											
LQ2R33-M□	ø6	3/8"	23	ø5	22	9	18	24	42.5	29.5	26.2	—
LQ2R34-M□	ø10											
LQ2R35-M□	ø8	3/8"	23	ø5	22	9	18	24	42.5	29.5	26.2	—
LQ2R36-M□	ø6											
LQ2R41-M□	ø12	3/8"	30	ø6	28	11	22	30	52	30	33.1	21
LQ2R42-M□	ø10											
LQ2R43-M□	ø12	1/2"	28.5	ø6	28	11	22	30	52	30	33.1	21
LQ2R44-M□	ø10											
LQ2R51-M□	ø19	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	46
LQ2R52-M□	ø12											
LQ2R53-M□	ø19	3/4"	33.5	ø7	32	14	28	36	58.5	42.5	40	46
LQ2R54-M□	ø12											

### Inch sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M	N
LQ2R2A-M□	1/4"	1/8"	18.5	ø4	19	6	12	18	34.5	22	19.9	—
LQ2R2B-M□	3/16"											
LQ2R2C-M□	1/8"	1/4"	16.5	ø4	19	6	12	18	34.5	22	19.9	—
LQ2R2D-M□	1/4"											
LQ2R2E-M□	3/16"	1/4"	16.5	ø4	19	6	12	18	34.5	22	19.9	—
LQ2R2F-M□	1/8"											
LQ2R3A-M□	3/8"	1/4"	23.5	ø5	22	9	18	24	43	29.5	26.2	—
LQ2R3B-M□	1/4"											
LQ2R3C-M□	3/8"	3/8"	23	ø5	22	9	18	24	42.5	29.5	26.2	—
LQ2R3D-M□	1/4"											
LQ2R4A-M□	1/2"	3/8"	30	ø6	28	11	22	30	52	30	33.1	21
LQ2R4B-M□	3/8"											
LQ2R4C-M□	1/2"	1/2"	28.5	ø6	28	11	22	30	52	30	33.1	21
LQ2R4D-M□	3/8"											
LQ2R5A-M□	3/4"	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	46
LQ2R5B-M□	1/2"											
LQ2R5C-M□	3/4"	3/4"	33.5	ø7	32	14	28	36	59.5	42.5	40	46
LQ2R5D-M□	1/2"											



**Female Run Tee: LQ2R-F**



**Metric sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	N	Y
LQ2R21-F□	ø6	1/8"	ø4	19	6	12	18	14	18.7	19.9	—	ø18.5
LQ2R22-F□	ø4								22.5			ø21.5
LQ2R23-F□	ø6	1/4"	ø5	22	9	18	24	19	23.5	26.2	—	ø21.5
LQ2R24-F□	ø4								26			ø25
LQ2R31-F□	ø10	1/4"	ø6	28	11	22	30	23	27	33.1	21	ø25
LQ2R32-F□	ø8								32			ø29.5
LQ2R33-F□	ø6	3/8"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2R34-F□	ø10								37			ø36
LQ2R35-F□	ø8	1/2"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2R36-F□	ø6								37			ø36
LQ2R41-F□	ø12	3/8"	ø6	28	11	22	30	23	27	33.1	21	ø25
LQ2R42-F□	ø10								32			ø29.5
LQ2R43-F□	ø12	1/2"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2R44-F□	ø10								37			ø36
LQ2R51-F□	ø19	1/2"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2R52-F□	ø12								37			ø36
LQ2R53-F□	ø19	3/4"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2R54-F□	ø12								37			ø36

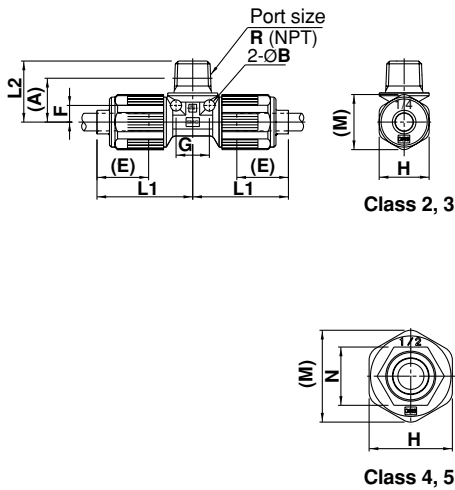
**Inch sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	N	Y
LQ2R2A-F□	1/4"	1/8"	ø4	19	6	12	18	14	18.7	19.9	—	ø18.5
LQ2R2B-F□	3/16"								22.5			ø21.5
LQ2R2C-F□	1/8"	1/4"	ø5	22	9	18	24	19	23.5	26.2	—	ø21.5
LQ2R2D-F□	1/4"								26			ø25
LQ2R2E-F□	3/16"	3/8"	ø6	28	11	22	30	23	27	33.1	21	ø25
LQ2R2F-F□	1/8"								32			ø29.5
LQ2R3A-F□	3/8"	1/4"	ø5	22	9	18	24	19	23.5	26.2	—	ø21.5
LQ2R3B-F□	1/4"								26			ø25
LQ2R3C-F□	3/8"	3/8"	ø6	28	11	22	30	23	27	33.1	21	ø25
LQ2R3D-F□	1/4"								32			ø29.5
LQ2R4A-F□	1/2"	1/2"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2R4B-F□	3/8"								37			ø36
LQ2R4C-F□	1/2"	3/4"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2R4D-F□	3/8"								37			ø36
LQ2R5A-F□	3/4"	1/2"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2R5B-F□	1/2"								37			ø36
LQ2R5C-F□	3/4"	3/4"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2R5D-F□	1/2"								37			ø36

# Series LQ2

## Dimensions

### Male Branch Tee: LQ2B-M



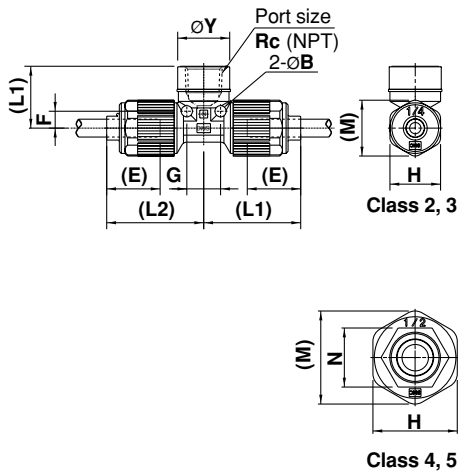
### Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M	N
LQ2B21-M□	ø6	1/8"	18.5	ø4	19	6	12	18	34.5	22	19.9	—
LQ2B22-M□	ø4											
LQ2B23-M□	ø6	1/4"	16.5	ø5	22	9	18	24	43	29.5	26.2	—
LQ2B24-M□	ø4											
LQ2B31-M□	ø10	1/4"	23.5	ø5	22	9	18	24	43	29.5	26.2	—
LQ2B32-M□	ø8											
LQ2B33-M□	ø6	3/8"	23	ø6	28	11	22	30	52	36	33.1	21
LQ2B34-M□	ø10											
LQ2B35-M□	ø8	1/2"	28.5	ø7	32	14	28	36	52	42.5	40	46
LQ2B36-M□	ø6											
LQ2B41-M□	ø12	1/2"	30	ø6	28	11	22	30	51	36	33.1	21
LQ2B42-M□	ø10											
LQ2B43-M□	ø12	3/4"	33.5	ø7	32	14	28	36	52	42.5	40	46
LQ2B44-M□	ø10											
LQ2B51-M□	ø19	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	46
LQ2B52-M□	ø12											
LQ2B53-M□	ø19	3/4"	33.5	ø7	32	14	28	36	59.5	42.5	40	46
LQ2B54-M□	ø12											

### Inch sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M	N
LQ2B2A-M□	1/4"	1/8"	18.5	ø4	19	6	12	18	34.5	22	19.9	—
LQ2B2B-M□	3/16"											
LQ2B2C-M□	1/8"	1/4"	16.5	ø5	22	9	18	24	43	29.5	26.2	—
LQ2B2D-M□	1/4"											
LQ2B2E-M□	3/16"	3/8"	23	ø5	22	9	18	24	43	29.5	26.2	—
LQ2B2F-M□	1/8"											
LQ2B3A-M□	3/8"	1/4"	23.5	ø5	22	9	18	24	43	29.5	26.2	—
LQ2B3B-M□	1/4"											
LQ2B3C-M□	3/8"	3/8"	23	ø6	28	11	22	30	52	36	33.1	21
LQ2B3D-M□	1/4"											
LQ2B4A-M□	1/2"	3/8"	30	ø6	28	11	22	30	51	36	33.1	21
LQ2B4B-M□	3/8"											
LQ2B4C-M□	1/2"	1/2"	28.5	ø7	32	14	28	36	52	42.5	40	46
LQ2B4D-M□	3/8"											
LQ2B5A-M□	3/4"	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	46
LQ2B5B-M□	1/2"											
LQ2B5C-M□	3/4"	3/4"	33.5	ø7	32	14	28	36	59.5	42.5	40	46
LQ2B5D-M□	1/2"											

**Female Branch Tee: LQ2B-F**



**Metric sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	N	Y
LQ2B21-F□	ø6	1/8"	ø4	19	6	12	18	14	18.7	19.9	—	ø18.5
LQ2B22-F□	ø4								22			ø21.5
LQ2B23-F□	ø6	1/4"	ø5	22	9	18	24	19	22.2	26.2	—	ø21.5
LQ2B24-F□	ø4								24			ø25
LQ2B31-F□	ø10	1/4"	ø6	28	11	22	30	23	27	33.1	21	ø25
LQ2B32-F□	ø8								32			ø29.5
LQ2B33-F□	ø6	3/8"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2B34-F□	ø10								37			ø36
LQ2B35-F□	ø8	1/2"	ø7	32	14	28	36	32	37	40	26	ø36
LQ2B36-F□	ø6								—			—
LQ2B41-F□	ø12	1/2"	ø7	32	14	28	36	32	37	40	26	ø36
LQ2B42-F□	ø10								—			—
LQ2B43-F□	ø12	3/4"	ø7	32	14	28	36	32	37	40	26	ø36
LQ2B44-F□	ø10								—			—
LQ2B51-F□	ø19	1/2"	ø7	32	14	28	36	32	37	40	26	ø36
LQ2B52-F□	ø12								—			—
LQ2B53-F□	ø19	3/4"	ø7	32	14	28	36	32	37	40	26	ø36
LQ2B54-F□	ø12								—			—

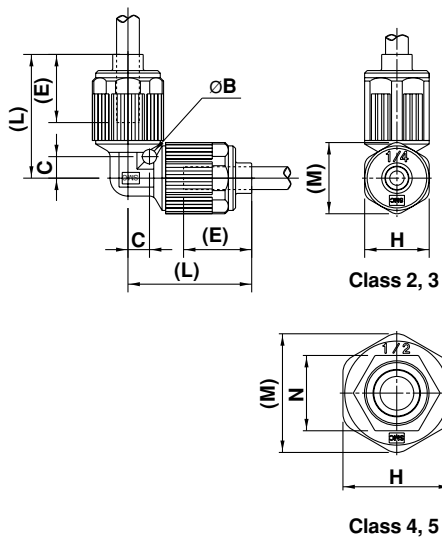
**Inch sizes**

Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	N	Y
LQ2B2A-F□	1/4"	1/8"	ø4	19	6	12	18	14	18.7	19.9	—	ø18.5
LQ2B2B-F□	3/16"								22.5			ø21.5
LQ2B2C-F□	1/8"	1/4"	ø5	22	9	18	24	19	23.5	26.2	—	ø21.5
LQ2B2D-F□	1/4"								26			ø25
LQ2B2E-F□	3/16"	3/8"	ø6	28	11	22	30	23	27	33.1	21	ø25
LQ2B2F-F□	1/8"								32			ø29.5
LQ2B3A-F□	3/8"	1/4"	ø5	22	9	18	24	19	23.5	26.2	—	ø21.5
LQ2B3B-F□	1/4"								26			ø25
LQ2B3C-F□	3/8"	3/8"	ø6	28	11	22	30	23	27	33.1	21	ø25
LQ2B3D-F□	1/4"								32			ø29.5
LQ2B4A-F□	1/2"	1/2"	ø7	32	14	28	36	32	35.5	40	26	ø29.5
LQ2B4B-F□	3/8"								37			ø36
LQ2B4C-F□	1/2"	3/4"	ø7	32	14	28	36	32	37	40	26	ø36
LQ2B4D-F□	3/8"								—			—
LQ2B5A-F□	3/4"	1/2"	ø7	32	14	28	36	32	37	40	26	ø36
LQ2B5B-F□	1/2"								—			—
LQ2B5C-F□	3/4"	3/4"	ø7	32	14	28	36	32	37	40	26	ø36
LQ2B5D-F□	1/2"								—			—

# Series LQ2

## Dimensions

### Union Elbow: LQ2E



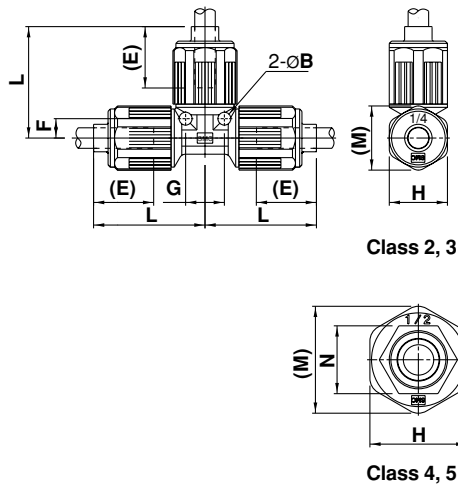
### Metric sizes

Model	Applicable tubing O.D.	B	C	E	H	L	M	N
LQ2E21□□	ø6	ø4	6	19	18	34.5	19.9	—
LQ2E22□□	ø4							
LQ2E31□□	ø10	ø5	9	22	24	43	26.2	—
LQ2E32□□	ø8							
LQ2E33□□	ø6							
LQ2E41□□	ø12	ø6	11	28	30	52	33.1	21
LQ2E42□□	ø10					51		
LQ2E51□□	ø19	ø7	14	32	36	59.5	40	26
LQ2E52□□	ø12					58.5		

### Inch sizes

Model	Applicable tubing O.D.	B	C	E	H	L	M	N
LQ2E2A□□	1/4"	ø4	6	19	18	34.5	19.9	—
LQ2E2B□□	3/16"							
LQ2E2C□□	1/8"							
LQ2E3A□□	3/8"	ø5	9	22	24	43	26.2	—
LQ2E3B□□	1/4"					42.5		
LQ2E4A□□	1/2"	ø6	11	28	30	52	33.1	21
LQ2E4B□□	3/8"					51		
LQ2E5A□□	3/4"	ø7	14	32	36	59.5	40	26
LQ2E5B□□	1/2"					58.5		

### Union Tee: LQ2T



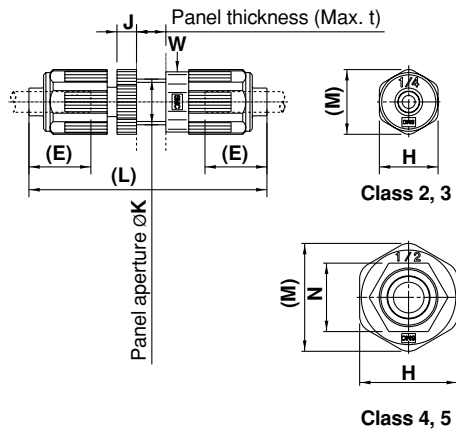
### Metric sizes

Model	Applicable tubing O.D.	B	E	F	G	H	L	M	N
LQ2T21□□	ø6	ø4	19	6	12	18	34.5	19.9	—
LQ2T22□□	ø4								
LQ2T31□□	ø10	ø5	22	9	18	24	43	26.2	—
LQ2T32□□	ø8								
LQ2T33□□	ø6								
LQ2T41□□	ø12	ø6	28	11	22	30	52	33.1	21
LQ2T42□□	ø10						51		
LQ2T51□□	ø19	ø7	32	14	28	36	59.5	40	46
LQ2T52□□	ø12						58.5		

### Inch sizes

Model	Applicable tubing O.D.	B	E	F	G	H	L	M	N
LQ2T2A□□	1/4"	ø4	19	6	12	18	34.5	19.9	—
LQ2T2B□□	3/16"								
LQ2T2C□□	1/8"								
LQ2T3A□□	3/8"	ø5	22	9	18	24	43	26.2	—
LQ2T3B□□	1/4"						42.5		
LQ2T4A□□	1/2"	ø6	28	11	22	30	52	33.1	21
LQ2T4B□□	3/8"						51		
LQ2T5A□□	3/4"	ø7	32	14	28	36	59.5	40	46
LQ2T5B□□	1/2"						58.5		

## Panel Mount Union: LQ2P



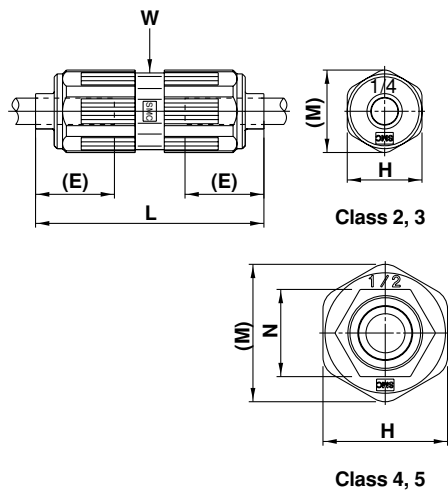
### Metric sizes

Model	Applicable tubing O.D.	E	H	J	K	L	M	N	T	W
LQ2P21□□	ø6	19	18	6	ø14.5	73	19.9	—	7	16
LQ2P22□□	ø4									
LQ2P31□□	ø10	22	24	6	ø20.5	83	26.2	—	7	24
LQ2P32□□	ø8					82				
LQ2P33□□	ø6	28	30	9	ø24.5	95	33.1	21	7	30
LQ2P41□□	ø12					93				
LQ2P42□□	ø10	32	36	9	ø30.5	110	40	26	10	36
LQ2P51□□	ø19					108				
LQ2P52□□	ø12									

### Inch sizes

Model	Applicable tubing O.D.	E	H	J	K	L	M	N	T	W
LQ2P2A□□	1/4"	19	18	6	ø14.5	73	19.9	—	7	16
LQ2P2B□□	3/16"									
LQ2P2C□□	1/8"									
LQ2P3A□□	3/8"	22	24	6	ø20.5	83	26.2	—	7	24
LQ2P3B□□	1/4"					82				
LQ2P4A□□	1/2"	28	30	9	ø24.5	95	33.1	21	7	30
LQ2P4B□□	3/8"					93				
LQ2P5A□□	3/4"	32	36	9	ø30.5	110	40	26	10	36
LQ2P5B□□	1/2"					108				

## Union: LQ2U



### Metric sizes

Model	Applicable tubing O.D.	E	H	L	M	N	W
LQ2U21□□	ø6	19	18	55	19.9	—	16
LQ2U22□□	ø4						
LQ2U31□□	ø10	22	24	65	26.2	—	24
LQ2U32□□	ø8			64			
LQ2U33□□	ø6	28	30	77	33.1	21	30
LQ2U41□□	ø12			75			
LQ2U42□□	ø10	32	36	88	40	26	36
LQ2U51□□	ø19			86			
LQ2U52□□	ø12						

### Inch sizes

Model	Applicable tubing O.D.	E	H	L	M	N	W
LQ2U2A□□	1/4"	19	18	55	19.9	—	16
LQ2U2B□□	3/16"						
LQ2U2C□□	1/8"						
LQ2U3A□□	3/8"	22	24	65	26.2	—	24
LQ2U3B□□	1/4"			64			
LQ2U4A□□	1/2"	28	30	77	33.1	21	30
LQ2U4B□□	3/8"			75			
LQ2U5A□□	3/4"	32	36	88	40	26	36
LQ2U5B□□	1/2"			86			

# Series LQ<sup>1</sup><sub>2</sub>

## Options

### Panel mounting nut

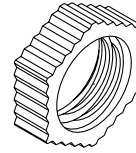
LQN P **2** — 

Class

Symbol	LQ1	LQ2
1	11	—
2	12	2
3	13	3
4	14	4
5	15	5
6	16	—

• Packaging

Nil	Clean packaging Class M3.5
1	Standard packaging Class M5.5



Used to secure a panel with a panel mount union.

### Nut insert bushing

LQ  — **2** **U** **03** — 

\* The U type is recommended when changing tubing sizes.

Class

Symbol	Applicable
Nil	For LQ2
1	For LQ1

• Packaging

Nil	Clean packaging Class M3.5
1	Standard packaging Class M5.5

Class

Symbol	Class
1	1
2	2
3	3
4	4
5	5
6	6

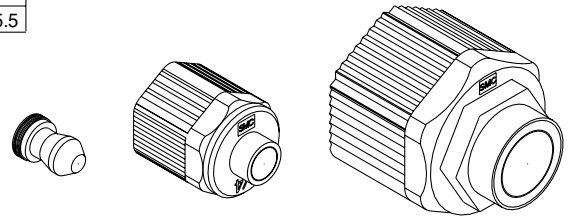
• Applicable tubing size

Symbol	Connection tubing size	Class					
		1	2	3	4	5	6
<b>Metric sizes</b>							
03	ø3 x ø2	○	○				
04	ø4 x ø3	○	○				
06	ø6 x ø4		○	○			
08	ø8 x ø6			○			
10	ø10 x ø8			○	○		
12	ø12 x ø10				○	○	
19	ø19 x ø16					○	○
25	ø25 x ø22.5						○

Symbol	Connection tubing size	Class					
		1	2	3	4	5	6
<b>Inch sizes</b>							
03	1/8" x 0.086"	○	○				
05	3/16" x 0.127"		○				
07	1/4" x 5/32"	○	○				
11	3/8" x 1/4"			○	○		
13	1/2" x 3/8"				○	○	
19	3/4" x 5/8"					○	○
25	1" x 0.886"						○

Type of parts

Symbol	Parts
U	Insert bushing + Nut
B	Insert bushing
N	Nut



Note) In case of size 1, the tubing cannot be changed by reducing.

### Blanking plug

LQ — **2** P **07** — 

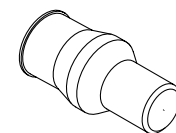
• Packaging

Nil	Clean packaging Class M3.5
1	Standard packaging Class M5.5

• Applicable tubing size

Symbol	Connection tubing size	Class					
		1	2	3	4	5	6
<b>Metric sizes</b>							
03	ø3 x ø2	○					
04	ø4 x ø3	○	●				
06	ø6 x ø4		○	●			
08	ø8 x ø6			○	●		
10	ø10 x ø8				○	●	
12	ø12 x ø10					○	●
19	ø19 x ø16						○
25	ø25 x ø22.5						○

Symbol	Connection tubing size	Class					
		1	2	3	4	5	6
<b>Inch sizes</b>							
03	1/8" x 0.086"	○	●				
05	3/16" x 0.127"		○	●			
07	1/4" x 5/32"	○		○	●		
11	3/8" x 1/4"			○		○	●
13	1/2" x 3/8"				○		○
19	3/4" x 5/8"					○	○
25	1" x 0.886"						○



Used to block fittings which are not being used.

Class

Symbol	LQ1	LQ2
1	11	—
2	12	2
3	13	3
4	14	4
5	15	5
6	16	—

○ Standard size ● With insert bushing and nut reducer

# Series LQ<sub>2</sub><sup>1</sup> Insertion Tool

## Fittings

### Changing tubing sizes

The tubing size can be changed within the same body class (body size) by replacing the nut and insert bushing. However, in case of size 1, the tubing cannot be changed by reducing.

Body class	Tubing outside diameter														
	Metric sizes								Inch sizes						
	ø3	ø4	ø6	ø8	ø10	ø12	ø19	ø25	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1
1	○	○	—	—	—	—	—	—	○	—	—	—	—	—	—
2	●	●	○	—	—	—	—	—	●	●	○	—	—	—	—
3	—	—	●	●	○	—	—	—	—	—	●	○	—	—	—
4	—	—	—	—	●	○	—	—	—	—	—	●	○	—	—
5	—	—	—	—	—	●	○	—	—	—	—	—	●	○	—
6	—	—	—	—	—	—	●	○	—	—	—	—	—	●	○

### Parts composition

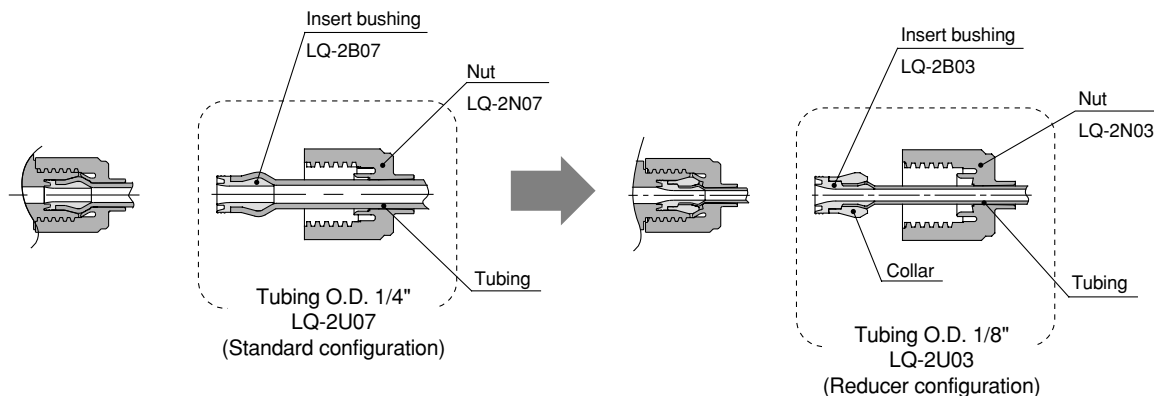
	Component parts		
	Nut	Insert	Collar (insert assembly)
○ Standard size	Yes	Yes	No
● Reducer type	Yes	Yes	Yes

### Changing the tubing size

Example) Changing the tubing from an outside diameter of 1/4" to 1/8" in body class 2.

Procure an insert bushing and nut for 1/8" O.D. tubing (LQ-2U03) and change the tubing size.  
(Refer to the section on how to order fitting parts.)

🔍 Note) Tubing is sold separately.



# Series LQ<sub>2</sub><sup>1</sup> Insertion Tool

## Special Tools

### How to order insertion tool

**LQ-G J** [ ] - [ ] - [ ]

**Insert pin material**

Nil	Resin
S	Stainless (J/K type only)

**Insert pin/Holder type**

Nil	Metric size
N	Inch size

Note 1) Compatible pins and holders are included with all sizes. (in parts case)

**Option (L/M type only)**

Symbol	Option
Nil	None
B	With brackets

**Type**

Symbol	Body class	Diagram	
J · K	1, 2		
		J type	K type
L · M	1, 2, 3, 4, 5, 6		
		L type	M type (for short piping)

**Option**

Description	Part no.
Bracket assembly	LQ-GBL

**Table 1 Tubing size symbols**

Type	Body class	Tubing outside diameter															
		Metric sizes								Inch sizes							
		ø3	ø4	ø6	ø8	ø10	ø12	ø19	ø25	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"	
J	1	03	04	—	—	—	—	—	—	03	—	—	—	—	—	—	
	2	—	04	06	—	—	—	—	—	03	05	07	—	—	—	—	
L	1	03	04	—	—	—	—	—	—	03	—	—	—	—	—	—	
	2	—	04	06	—	—	—	—	—	03	05	07	—	—	—	—	
	3	—	—	06	08	10	—	—	—	—	—	07	11	—	—	—	
	4	—	—	—	—	10	12	—	—	—	—	—	11	13	—	—	
	5	—	—	—	—	—	12	19	—	—	—	—	—	13	19	—	
	6	—	—	—	—	—	—	19	25	—	—	—	—	—	19	25	

### Replacement parts

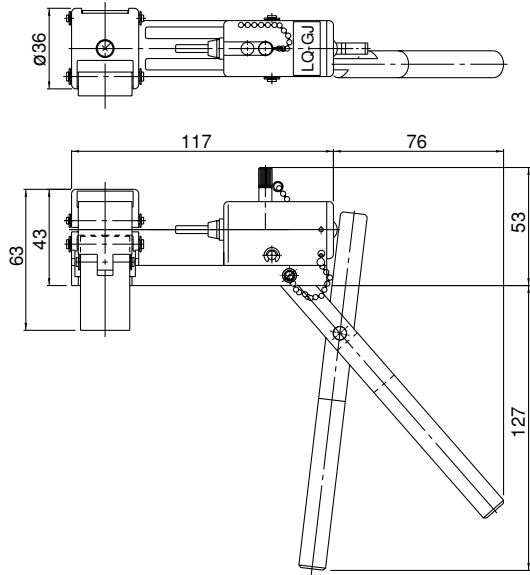
Description	Part No.								
Insert pin holder assembly (with the parts case)	<p><b>LQ-GP J</b> [ ] - [ ]</p> <p>Type</p> <p>Insert pin material (J/K type only)</p> <table border="1"> <tr><td>Nil</td><td>Resin</td></tr> <tr><td>S</td><td>Stainless</td></tr> </table> <p>Holder type</p> <table border="1"> <tr><td>Nil</td><td>Metric sizes</td></tr> <tr><td>N</td><td>Inch sizes</td></tr> </table>	Nil	Resin	S	Stainless	Nil	Metric sizes	N	Inch sizes
Nil	Resin								
S	Stainless								
Nil	Metric sizes								
N	Inch sizes								
Insert pin (single)	<p><b>LQ-GP 2 J</b> [ ] - [ ] - [ ] - [ ]</p> <p>Body class (refer to Table 1)</p> <p>Type</p> <p>Tubing size symbol (refer to Table 1)</p> <p>Insert pin material (J/K type only)</p> <table border="1"> <tr><td>Nil</td><td>Resin</td></tr> <tr><td>S</td><td>Stainless</td></tr> </table>	Nil	Resin	S	Stainless				
Nil	Resin								
S	Stainless								
Holder (single)	<p><b>LQ-GH J</b> - [ ] - [ ]</p> <p>Tubing size symbol (refer to Table 1)</p> <p>Type</p>								

Note 1) Replacement part type J shows the parts for LQ-GJ and LQ-GK. Replacement part type L shows the parts for LQ-GL and LQ-GM.

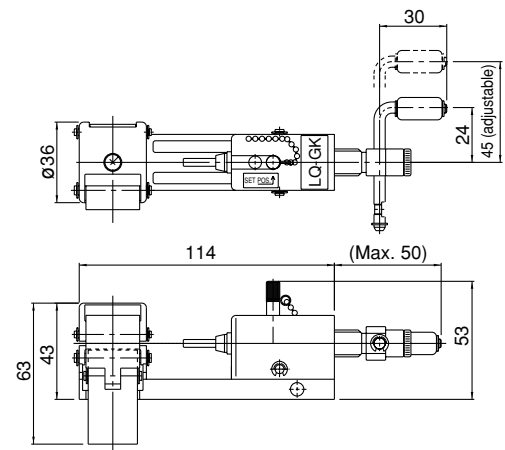


**Dimensions**

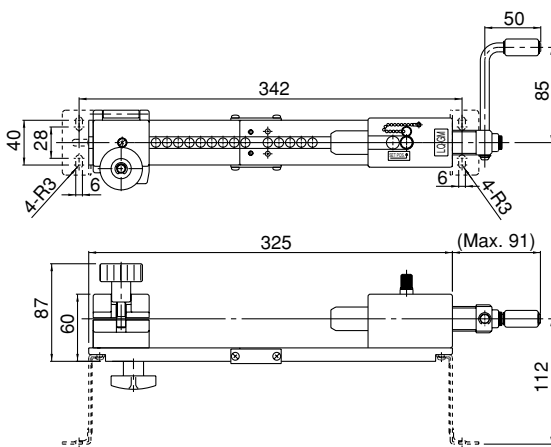
**LQ-GJ**



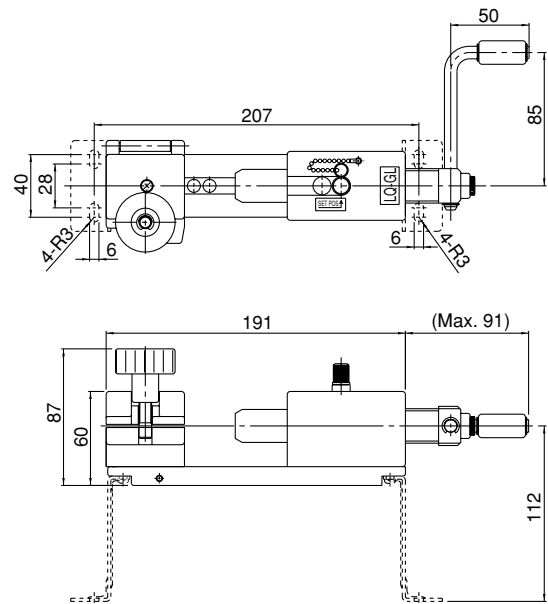
**LQ-GK**



**LQ-GM**



**LQ-GL**

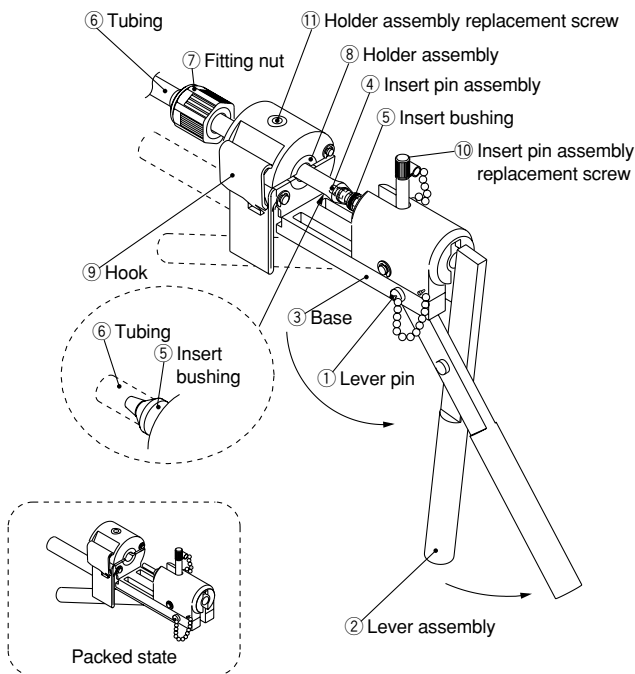


# Series LQ<sub>2</sub> Insertion Tool

## Fitting Assembly Procedure

Assemble fittings following the procedure shown below.

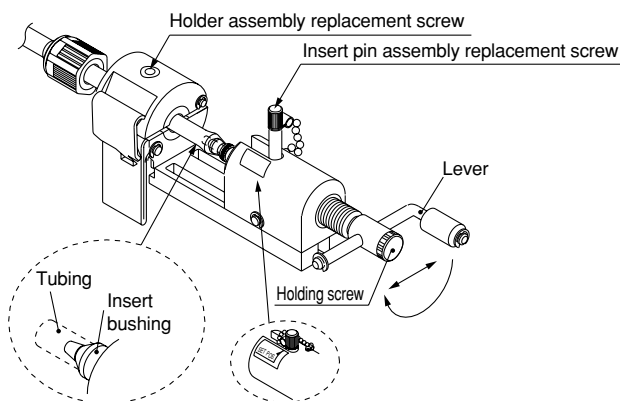
### J type



### J type fitting assembly procedure

- 1 Pull out the **lever pin** ①. Rotate the **lever assembly** ② to align the holes on the **lever assembly** ② and the **base** ③. Insert the **lever pin** ① into the holes to fix the **lever assembly** ②.
  - 2 Place the **insert bushing** ⑤ on the **insert pin assembly** ④.
  - 3 Cut the end of the **tubing** ⑥ at a right angle and pass it through the **fitting nut** ⑦. After placing the **tubing** ⑥ in the **holder assembly** ⑧, push it onto the **insert bushing** ⑤ until it stops and clamp it with the **hook** ⑨.
- ⚠ Caution**
- When the **tubing** ⑥ is curved, straighten it out before using it.
  - The **tubing** ⑥ may slip if there is oil or dust, etc., on the **holder assembly** ⑧. Remove the contamination using alcohol or another suitable cleaner.
- 4 Press the **insert bushing** ⑤ into the **tubing** ⑥ by turning the **lever assembly** ②.
  - 5 To replace the **insert pin assembly** ④ and **holder assembly** ⑧, use the **insert pin assembly replacement screw** ⑩ and the **holder assembly replacement screws** ⑪, respectively.

### K type



### K type fitting assembly procedure

- For procedure to set and press fit the insert pin assembly, refer to L, M type fitting assembly procedures.
- For procedure to set the tubing, refer to J type procedure.

- 1 } Refer to J type assembly procedure.
- 5 }
- 6 Tighten the **fitting nut** ⑦ until it reaches the prescribed position on the body (end face). As a guide, refer to the proper tightening torques shown below.

#### Nut tightening torque for piping

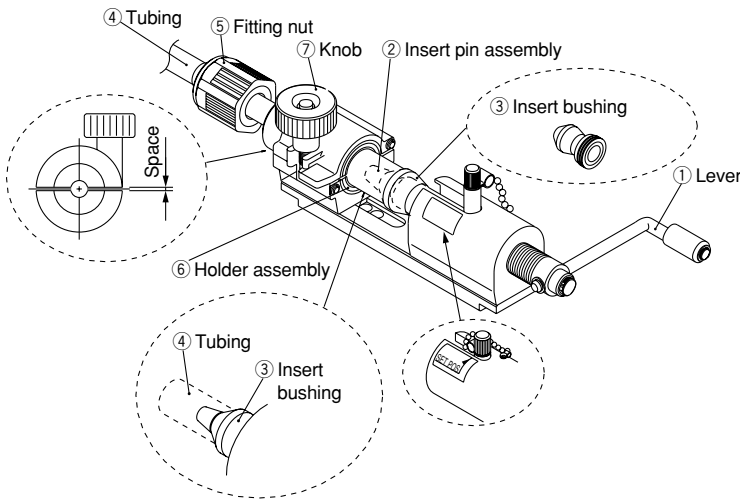
Body class	Torque (Nm)	
	LQ1	LQ2
2	0.3 to 0.4	1.5 to 2.0

**🔍** Note 1) In case of body size 1, the nut should be tightened manually.

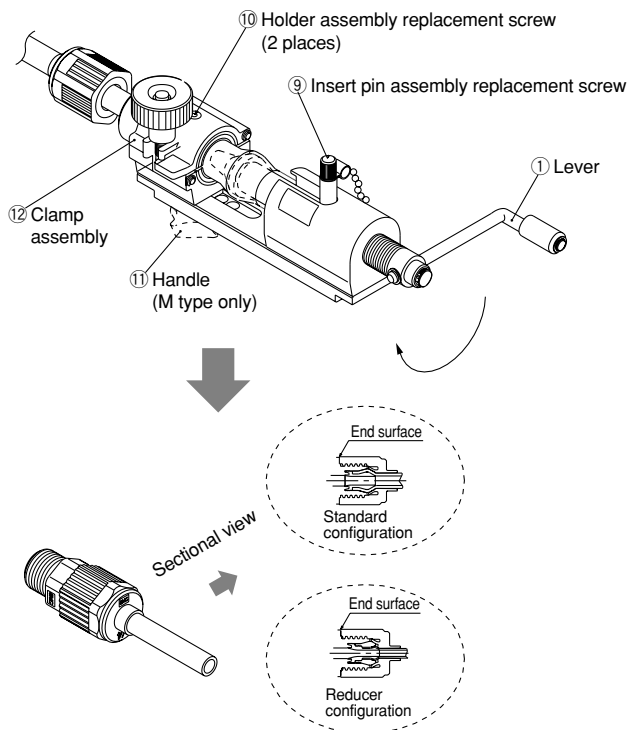
- For procedure to set and press fit the insert pin assembly, refer to L, M type fitting assembly procedures.
- For procedure to set the tubing, refer to J type procedure.

Assemble fittings following the procedure shown below.

## L type



## M type




## L/M type fitting assembly procedure

- 1 Turn the lever ① and move to SET POS.
  - 2 Place the insert bushing ③ on the insert pin assembly ②.
  - 3 Cut the end of the tubing ④ at a right angle and pass it through the fitting nut ⑤. After placing the tubing ④ in the holder assembly ⑥, push it onto the insert bushing ③ until it stops and clamp it with the knob ⑦. When tightening the tube ④ with the knob ⑦, maintain uniform clearance on both sides of the holder.
- ⚠ Caution**
- When the tubing ④ is curved, straighten it out before using it.
  - The tubing ④ may slip if there is oil or dust, etc., on the holder assembly ⑥. Remove the contamination using alcohol or another suitable cleaner.
- 4 Press the insert bushing ③ into the tubing ④ by turning the lever ①. (Pressing in can be accomplished with 2 or 3 turns of the lever ①.)
  - 5 To replace the insert pin assembly ② and holder assembly ⑥, use the insert pin assembly replacement screw ⑨ and the holder assembly replacement screws ⑩, respectively.
  - 6 In case of M type for short piping, remove the handle ⑪, slide the clamp assembly ⑫ to attain the specified length, then secure it again with the handle.
  - 7 Tighten the fitting nut ⑤ until it reaches the prescribed position on the body (end face). As a guide, refer to the proper tightening torques shown below.

### Nut tightening torque for piping

Body class	Torque (Nm)	
	LQ1	LQ2
2	0.3 to 0.4	1.5 to 2.0
3	0.8 to 1.0	3.0 to 3.5
4	1.0 to 1.2	7.5 to 9
5	2.5 to 3.0	11 to 13
6	5.5 to 6.0	—

 Note 1) In case of body size 1, the nut should be tightened manually.

# High Purity Fluoropolymer Tubing

## Series TL/TIL



Material: Super PFA

### Series and Specifications

Tubing model		Metric sizes (Series TL)						Inch sizes (Series TIL)						
		TL0403	TL0604	TL0806	TL1008	TL1210	TL1916	TIL01	TIL05	TIL07	TIL11	TIL13	TIL19	TIL25
Nominal diameter		—	—	—	—	—	—	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"
O.D. x I.D. (mm)		ø4 x ø3	ø6 x ø4	ø8 x ø6	ø10 x ø8	ø12 x ø10	ø19 x ø16	ø3.18 x ø2.18	ø4.75 x ø3.15	ø6.35 x ø3.95	ø9.53 x ø6.33	ø12.7 x ø9.50	ø19.05 x ø15.85	ø25.4 x ø22.2
O.D. (mm)	Basic diameter	4	6	8	10	12	19	3.18	4.75	6.35	9.53	12.7	19.05	25.4
	Tolerance	±0.1					+0.2 -0.1		±0.1				+0.2 -0.1	
Thickness (mm)	Basic diameter	0.5	1.0				1.5	0.5	0.8	1.2	1.6			
	Tolerance	±0.05	±0.1				±0.15	±0.05	±0.08	±0.12	±0.15			
Bundle	10m	—	—	—	●	●	●	—	—	—	●	●	—	—
	20m	●	●	●	●	●	●	●	●	●	●	●	●	●
	50m	●	●	●	●	●	●	●	●	●	●	●	●	●
	100m	●	●	●	●	●	●	●	●	●	●	●	●	—
Straight pipe	2m	●	●	●	●	●	●	●	●	●	●	●	●	●
Color		Translucent (color of material)												
Applicable fluid		Please refer to the applicable fluid in Feature 6.												
Max. operating pressure (at 20°C) <small>Note 1)</small>		1.0MPa			0.9MPa	0.7MPa	0.6MPa	1.0MPa					0.7MPa	0.5MPa
Burst pressure (at 20°C)		4.9MPa	6.9MPa	4.7MPa	3.6MPa	2.9MPa	2.6MPa	6.4MPa	6.7MPa	7.9MPa	6.7MPa	4.6MPa	2.8MPa	2.0MPa
Min. bending radius (mm) <small>Note 2)</small>		20		40	65	110	160	12	20		30	60	160	290
Max. operating temperature (Fixed use)		260°C												
Material		Super PFA												



Note 1) • The maximum operating pressure is the value at 20°C. For other temperatures, calculate from the burst pressure drop coefficient.

Furthermore, an abnormal temperature increase due to adiabatic compression can cause tubing to burst.

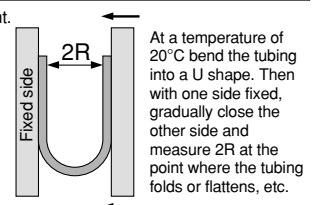
To operate at a temperature other than 20°C, the operating pressure must be no more than the value calculated using the equation below:

$$(\text{Max. operating pressure}) = 1/4 \times (\text{burst pressure drop coefficient}) \times (\text{burst pressure at } 20^\circ\text{C})$$

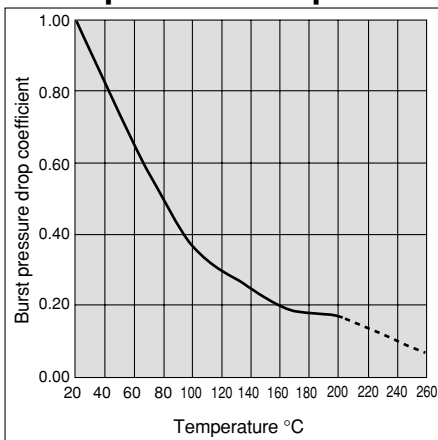
- When using a fluid in liquid form, the surge pressure must be no more than the maximum operating pressure.

A surge pressure higher than the maximum operating pressure can cause breakage of the fitting or bursting of the tube.

Note 2) The minimum bending radius is measured using the method shown in the figure at the right.



### Burst pressure drop curve



### How to Order

Metric sizes

TL0604

— 20

Length

Inch sizes

TIL01

— 20

• Tubing Model

Symbol	Type	Length
20	Roll	20 m
50		50 m
100		100 m
2S	Straight	2 m

Please refer to the series chart and specifications.

### Eluting fluorine ion amount (μg/g)

Type	Fluorine ion
Eluting amount	0.1 or less

A 15 g piece of fluororesin tubing is cut off, washed in pure water and immersed in 15 ml of 25% methyl alcohol extract at room temperature for 24 hours. Then the extract is diluted with pure water to be subjected to a quantitative analysis of fluorine ions.

### Eluting metal ion amount (ng/cm<sup>2</sup>)


Metal	Al	Fe	Ni	Na	Ca
Eluting amount	4.5	0.3	0.2	7.1	1.3


The interior of the fluororesin tube is washed with super pure water. Approximately 20g of super high purity hydrofluoric acid (48%) is measured and injected into the tube. The interior wall of the tube is immersed at normal temperature for one week with both ends of the tube plugged. Then the extract was diluted with super pure water to be subjected to a quantitative analysis on Al, Fe, Ni, Na and Ca by the stripping method.




# Series LQ<sub>2</sub><sup>1</sup>, TL/TIL Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of "**Caution**", "**Warning**" or "**Danger**". To ensure safety, be sure to observe ISO 4414 Note 1), JIS B 8370 Note 2) and other safety practices.

 **Caution** : Operator error could result in injury or equipment damage.

 **Warning** : Operator error could result in serious injury or loss of life.

 **Danger** : In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414: Pneumatic fluid power --Recommendations for the application of equipment to transmission and control systems.

Note 2) JIS B 8370 : Pneumatic system axiom.

## **Warning**

### **1. The compatibility of equipment is the responsibility of the person who designs the system or decides its specifications.**

Since the products specified here are used in various operating conditions, their compatibility for the specific system must be based on specifications or after analysis and/or tests to meet your specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified. Referring to the latest catalogue information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

### **2. Only trained personnel should operate machinery and equipment.**

Assembly, handling or repair of machinery and equipment should be performed by trained and experienced operators.

### **3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.**

### **4. To promote safe operation, be sure to observe company standards and legal regulations, etc.**

Refer to ISO4414, JIS B 8370 (pneumatic system axiom), labor health and safety laws and other safety regulations.



# Series LQ<sub>2</sub><sup>1</sup>, TL/TIL

## High Purity Fluoropolymer Fittings & Tubing Precautions 1

Be sure to read before handling.

### Design and Selection

#### Warning

##### 1. Confirm the specifications.

Give careful consideration to operating conditions such as the application, fluid and environment, and use within the operating ranges specified in this catalog.

##### 2. Fluid

Operate within the indicated fluid temperature range.

##### 3. Maintenance space

Ensure the necessary space for maintenance and inspections.

##### 4. Fluid pressure range

Keep the supplied fluid pressure within the operating pressure range shown in the catalog.

##### 5. Countermeasures for static electricity

Since static electricity may be generated depending on the fluid being used, implement suitable countermeasures.

### Mounting

#### Warning

##### 1. After mounting, perform suitable function and leak tests to confirm that the mounting is correct.

##### 2. Instruction manual

Mount and operate the product after reading the manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.

### Piping

#### Caution

##### 1. Connect tubing with special tools.

Refer to pages 33 through 36 regarding tubing connection and special tools.

##### 2. Tighten the nut until it touches the end surface of the body, and then tighten it an addition 1/8 turn. As a guide, refer to the proper tightening torques shown below.

##### Nut tightening torque for piping

Body class	Torque (Nm)	
	LQ1	LQ2
2	0.3 to 0.4	1.5 to 2.0
3	0.8 to 1.0	3.0 to 3.5
4	1.0 to 1.2	7.5 to 9.0
5	2.5 to 3.0	11.0 to 13.0
6	5.5 to 6.0	—



# Series LQ<sub>2</sub><sup>1</sup>, TL/TIL

## High Purity Fluoropolymer Fittings & Tubing Precautions 2

Be sure to read before handling.

### Operating Environment

#### ⚠ Warning

1. Do not use in locations having an explosive atmosphere.
2. Do not operate in locations where vibration or impact occurs.
3. In locations near heat sources, block off radiated heat.

### Maintenance

#### ⚠ Warning

1. Perform maintenance in accordance with the procedures in the instruction manual.  
Improper handling can cause damage.
2. When removing or reinstalling fittings, remove any remaining chemicals and carefully replace them with pure water or air, etc., before beginning work activities.
3. Tightening of taper threads for piping  
Because the taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections, and if leakage is detected correct the problem by additional tightening. If additional tightening becomes ineffective, replace the fitting with a new product.
4. Check the following during regular maintenance, and replace components as necessary.
  - a) Scratches, gouges, abrasion, corrosion
  - b) Twisting, flattening or distortion of tubing
  - c) Hardening, deterioration or softening of tubing
5. Do not repair or patch the replaced tubing or fittings for reuse.

### Operating Precautions

#### ⚠ Warning

1. Operate within the range of the maximum operating pressure.

#### ⚠ Caution

1. After a long period of non-use, perform inspections before beginning operation.
2. Use sufficient care in the handling of series LQ clean packaging types when their packaging is opened.

### Installation of Tubing

#### ⚠ Caution

1. Cut the end of the tubing at a right angle and pass it through the fitting nut. After placing the tube in the holder, push it onto the insert bushing until it stops and clamp it with the knob.  
As a guide when tightening the tube with the knob, maintain a uniform gap (approx. 2mm) on both sides of the holder.
  - When the tubing is curved, straighten it out before using it.
  - The tubing may slip if there is oil or dust, etc., on the holder. Remove the contamination using alcohol or another suitable cleaner.

### Use of Tubing

#### ⚠ Caution

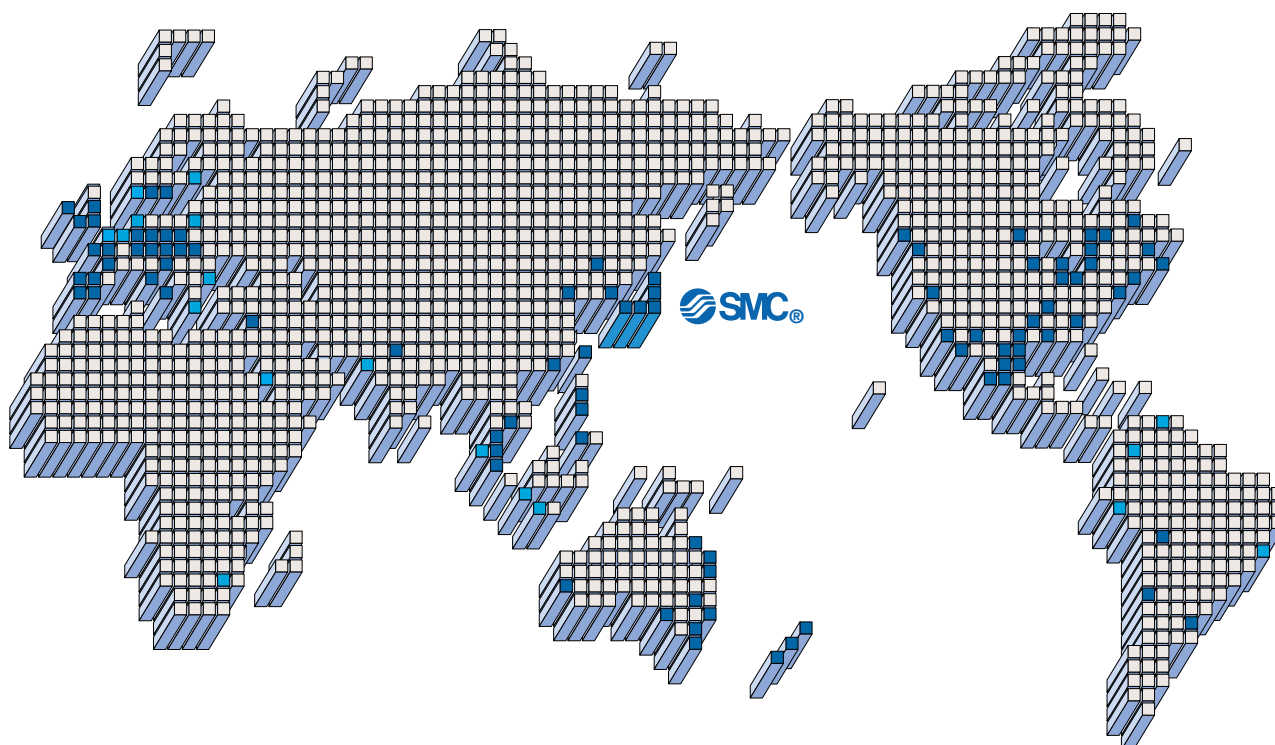
1. Refer to the applicable tubing sizes shown below for tubing to be used.

#### Applicable tubing sizes

	Connection tubing size	O.D. (mm)		Internal thickness (mm)	
		Standard size	Tolerance	Standard size	Tolerance
Metric sizes	ø3 x ø2	3.0	+0.2 -0.1	0.5	±0.06
	ø4 x ø3	4.0			
	ø6 x ø4	6.0		1.0	±0.1
	ø8 x ø6	8.0			
	ø10 x ø8	10.0	+0.3 -0.1	1.5	±0.15
	ø12 x ø10	12.0			
	ø19 x ø16	19.0			
	ø25 x ø22	25.0			
Inch sizes	1/8" x 0.086"	3.18	+0.2 -0.1	0.5	±0.1
	3/16" x 0.127"	4.75		0.8	
	1/4" x 5/32"	6.35		1.2	±0.12
	3/8" x 1/4"	9.53	+0.3 -0.1	1.6	±0.15
	1/2" x 3/8"	12.7			
	3/4" x 5/8"	19.0			
	1" x 7/8"	25.4			



## SMC'S GLOBAL MANUFACTURING, DISTRIBUTION AND SERVICE NETWORK



### EUROPE

#### AUSTRIA

SMC Pneumatik GmbH

#### CZECH

SMC Industrial Automation CZ s.r.o.

#### DENMARK

SMC Pneumatik A/S

#### FINLAND

SMC Pneumatiikka Oy

#### FRANCE

SMC Pneumatique SA

#### GERMANY

SMC Pneumatik GmbH

#### HUNGARY

SMC Ipari Automatizálási Kft.

#### IRELAND

SMC Pneumatics (Ireland) Ltd.

#### ITALY

SMC Italia S.p.A.

#### LATVIA

SMC Pneumatics Latvia SIA

#### NETHERLANDS

SMC Pneumatics BV.

#### NORWAY

SMC Pneumatics Norway A/S

#### POLAND

SMC Industrial Automation Polska Sp.z.o.o.

#### ROMANIA

SMC Romania s.r.l.

#### RUSSIA

SMC Pneumatik LLC.

#### SLOVAKIA

SMC Priemyselna Automatizacia, s.r.o.

#### SLOVENIA

SMC Industrijska Avtomatika d.o.o.

#### SPAIN/PORTUGAL

SMC España, S.A.

### EUROPE

#### SWEDEN

SMC Pneumatics Sweden AB

#### SWITZERLAND

SMC Pneumatik AG.

#### UK

SMC Pneumatics (U.K.) Ltd.

### ASIA

#### CHINA

SMC (China) Co., Ltd.

#### HONG KONG

SMC Pneumatics (Hong kong) Ltd.

#### INDIA

SMC Pneumatics (India) Pvt. Ltd.

#### MALAYSIA

SMC Pneumatics (S.E.A.) Sdn. Bhd.

#### PHILIPPINES

SMC Pneumatics (Philippines), Inc.

#### SINGAPORE

SMC Pneumatics (S.E.A.) Pte. Ltd.

#### SOUTH KOREA

SMC Pneumatics Korea Co., Ltd.

#### TAIWAN

SMC Pneumatics (Taiwan) Co., Ltd.

#### THAILAND

SMC Thailand Ltd.

### NORTH AMERICA

#### CANADA

SMC Pneumatics (Canada) Ltd.

#### MEXICO

SMC Corporation (Mexico) S.A. de C.V.

#### USA

SMC Corporation of America

### SOUTH AMERICA

#### ARGENTINA

SMC Argentina S.A.

#### BOLIVIA

SMC Pneumatics Bolivia S.R.L.

#### BRAZIL

SMC Pneumaticos Do Brazil Ltda.

#### CHILE

SMC Pneumatics (Chile) S.A.

#### VENEZUELA

SMC Neumatica Venezuela S.A.

### OCEANIA

#### AUSTRALIA

SMC Pneumatics (Australia) Pty. Ltd.

#### NEW ZEALAND

SMC Pneumatics (N.Z.) Ltd.

## SMC Corporation

1-16-4 Shimbashi, Minato-ku, Tokyo 105-8659 JAPAN  
Tel: 03-3502-2740 Fax: 03-3508-2480