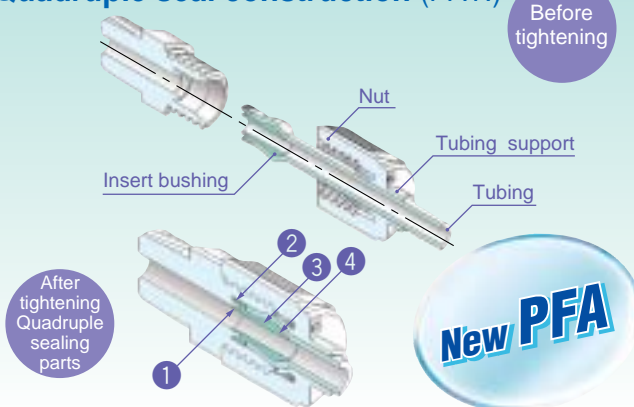


High Purity Fluoropolymer Fittings/Needle Valve/Tubing



HYPER FITTING® *Series LQ₂*

- Quadruple seal construction (PAT.)



Needle Valve *Series LVN*

- Fluid adjustment range 0 to 12 μ /min
- Integral fitting construction
HYPER FITTING®,
Series LQ2 is used.
- Triple seal construction



Tubing *Series TL/TIL*

- \varnothing 1/8" x \varnothing 1/16" additionally released.
- Size variations
Metric sizes: \varnothing 4 to \varnothing 19 (6 sizes)
Inch sizes: \varnothing 1/8" to \varnothing 1/2" (8 sizes)



Quadruple sealing construction

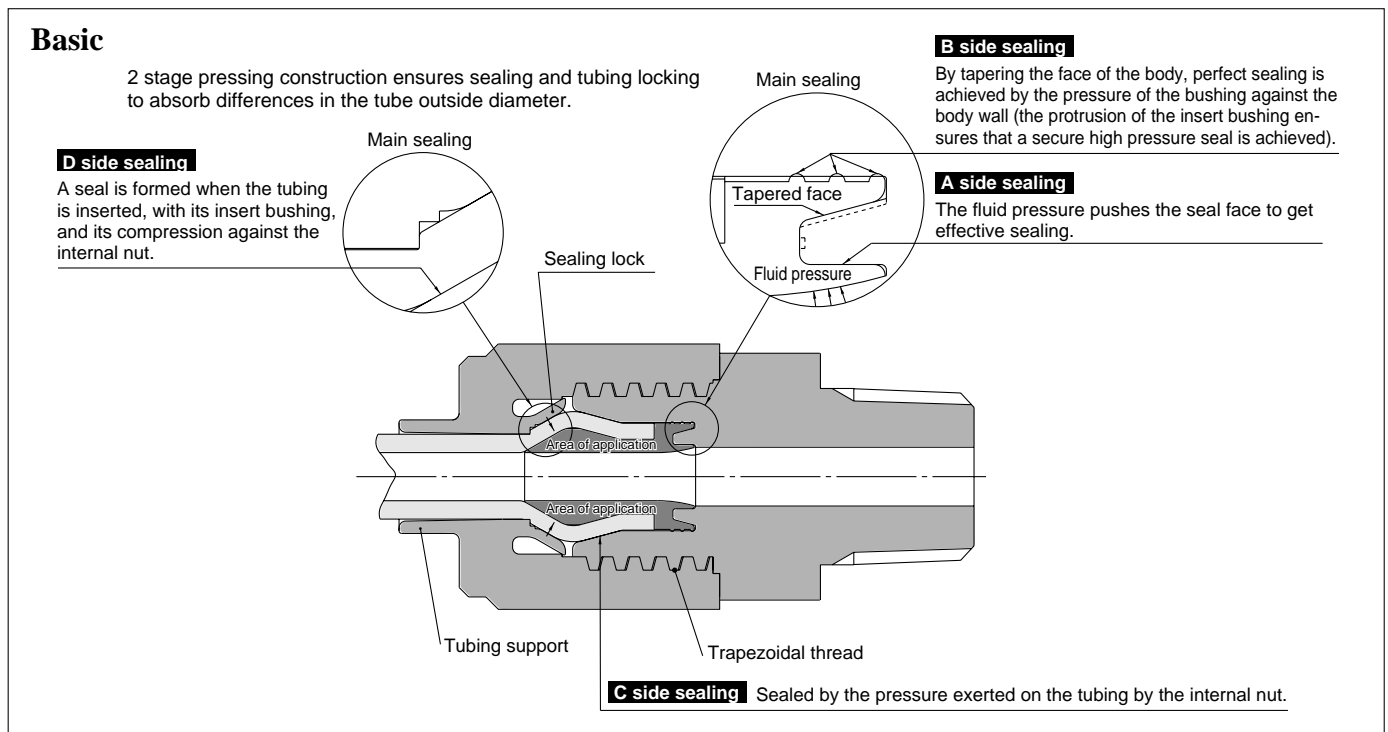
The quadruple sealing construction (PAT.) based on SMC's original idea results in highly reliable sealing characteristics with outstanding leakage prevention effect.

Flow-through characteristics

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

Locking

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



Strong resistance to tube bending and deformation.

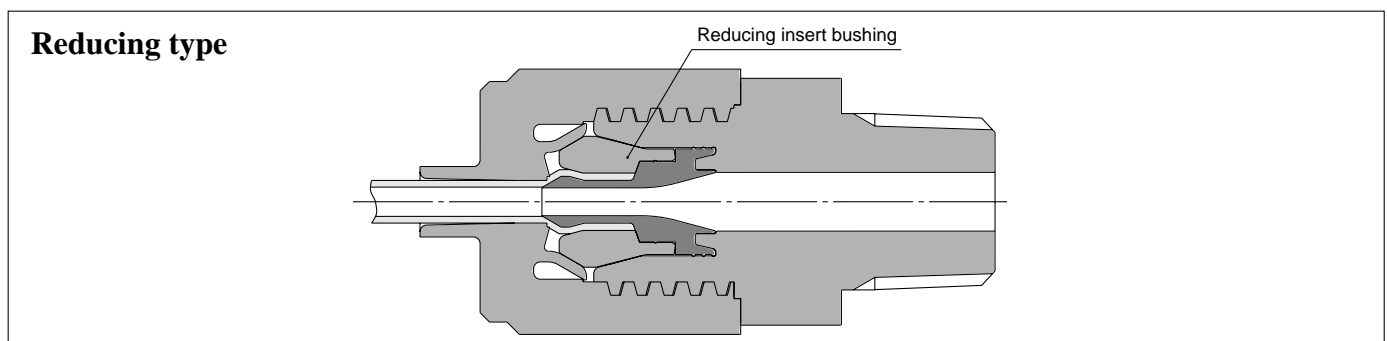
Able to withstand lateral loads with the tubing support.

Easy tightening of nuts.

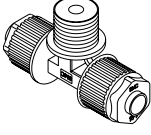
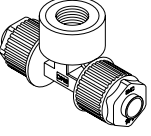
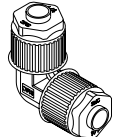
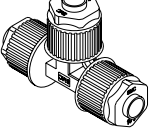
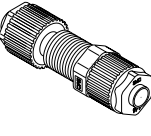
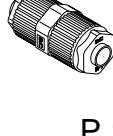
- No positioning guide is required, simply tighten up the tubing to the end of the fitting body.
- The trapezoidal thread prevents oblique nut insertion.

Tubing sizes are interchangeable.

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



Series LQ₂¹, LVN, TL/TIL

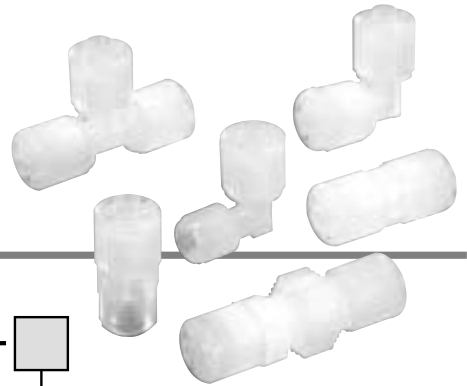
Series	Appearance	Class	Port size							Tubing O.D.														
										Metric size							Inch size							
			None	1/8"	1/4"	3/8"	1/2"	3/4"	1"	ø3	ø4	ø6	ø8	ø10	ø12	ø19	ø25	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"
Branch tee LQ1B	Male  P.10	1	-	○	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-	
		2	-	○	○	-	-	-	-	-	●	○	-	-	-	-	-	●	●	○	-	-	-	-
		3	-	-	○	○	-	-	-	-	-	●	●	○	-	-	-	-	-	●	○	-	-	-
		4	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-
		5	-	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
		6	-	-	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
	Female  P.11	1	-	○	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-	
		2	-	○	○	-	-	-	-	-	●	○	-	-	-	-	-	●	●	○	-	-	-	-
		3	-	-	○	○	-	-	-	-	-	●	●	○	-	-	-	-	-	●	○	-	-	-
		4	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-
		5	-	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
		6	-	-	-	-	-	○	○	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
Union elbow LQ1E	 P.12	1	○	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-	-	
		2	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	●	○	-	-	-	-
		3	○	-	-	-	-	-	-	-	-	●	●	○	-	-	-	-	-	●	○	-	-	-
		4	○	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-
		5	○	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
		6	○	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
Union tee LQ1T	 P.13	1	○	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-	-	
		2	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	●	○	-	-	-	-
		3	○	-	-	-	-	-	-	-	-	●	●	○	-	-	-	-	-	●	○	-	-	-
		4	○	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-
		5	○	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
		6	○	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
Panel mount union LQ1P	 P.14	1	○	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-	-	
		2	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	●	○	-	-	-	-
		3	○	-	-	-	-	-	-	-	-	●	●	○	-	-	-	-	-	●	○	-	-	-
		4	○	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-
		5	○	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
		6	○	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
Union LQ1U	 P.15	1	○	-	-	-	-	-	○	○	-	-	-	-	-	-	○	-	-	-	-	-	-	
		2	○	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	●	○	-	-	-	-
		3	○	-	-	-	-	-	-	-	-	●	●	○	-	-	-	-	-	●	○	-	-	-
		4	○	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-
		5	○	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-
		6	○	-	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○
Union flange LQ1F	P.15	4	○	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-	
		5	○	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-	-
		6	○	-	-	-	-	-	-	-	-	-	-	-	●	○	-	-	-	-	-	●	○	-

Note) ○ Basic size ● With reducer

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

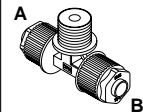
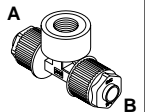
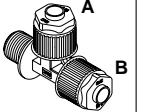
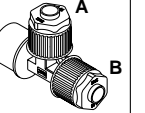
Piping type

Symbol	Type
M	Male
F	Female

Packaging

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

For different diameter (on B side)

Symbol	Application
Nil	Same tubing size
Refer to the applicable tubing table.	Different diameter tubing can be selected within the same body class.
LQ1B	
Branch tee male	Branch tee female
	
LQ1R	
Run tee male	Run tee female
	



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

Size combination

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



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

How to Order

Tubing connection

LQ1 E 11

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



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

Size combination

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

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

Symbol	Application
Nil	Same tubing size
Refer to the applicable tubing table.	Different diameter tubing can be selected within the same body class.
Union elbow LQ1E 	Union tee LQ1T
Panel mount union LQ1P 	Union LQ1U



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

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

Note 3) For Union flange, nut sizes 4 and 5 are as shown below.

LQ1F4□: LQ-4N□□

LQ1F5□: LQ-5N□□

Different diameter tubing order example

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

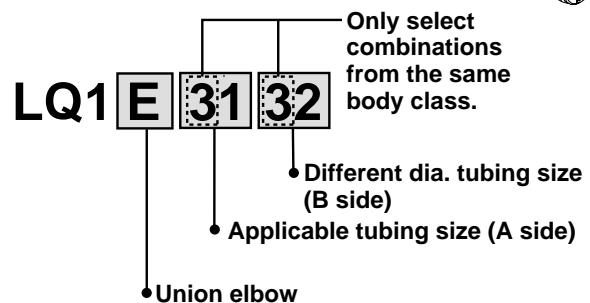
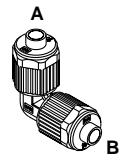
(Example) Union elbow

Body class 3

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

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

Order as shown below.

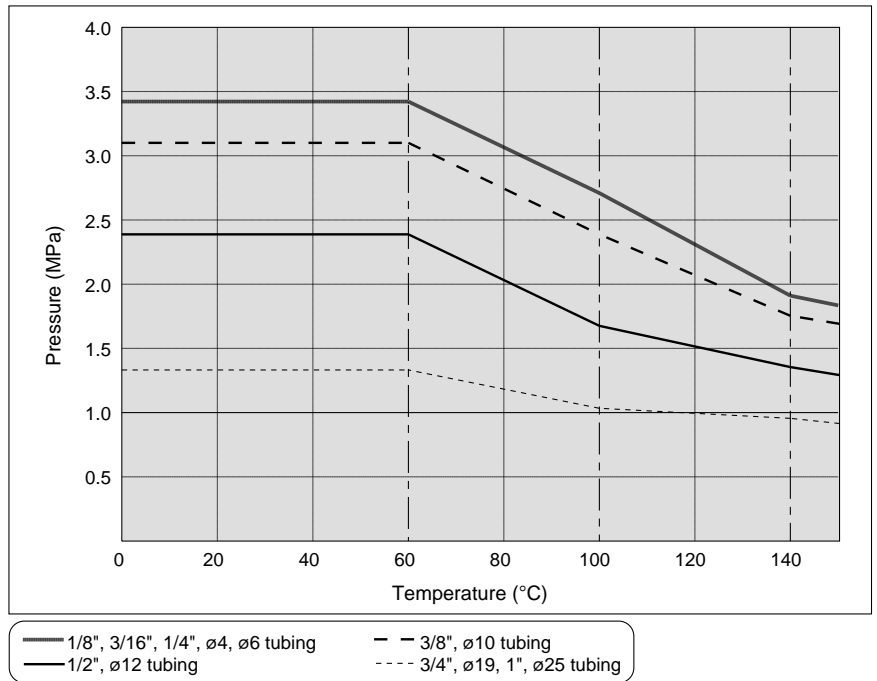




Specifications

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

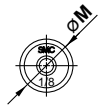
Burst Pressure and Heat Resistance Performance



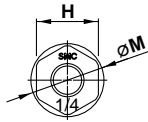
Series LQ1

Dimensions

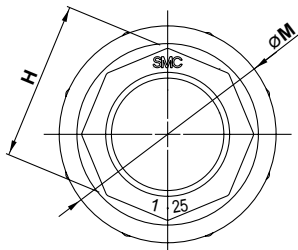
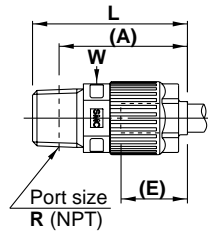
Male Connector: LQ1H-M



Class 1



Class 2 to 5



Class 6

(A) shows the reference dimension after connection.
 (E) shows the approximate dimension of the inserted tubing from the end of the nut.
 "W" is width across flats dimension.

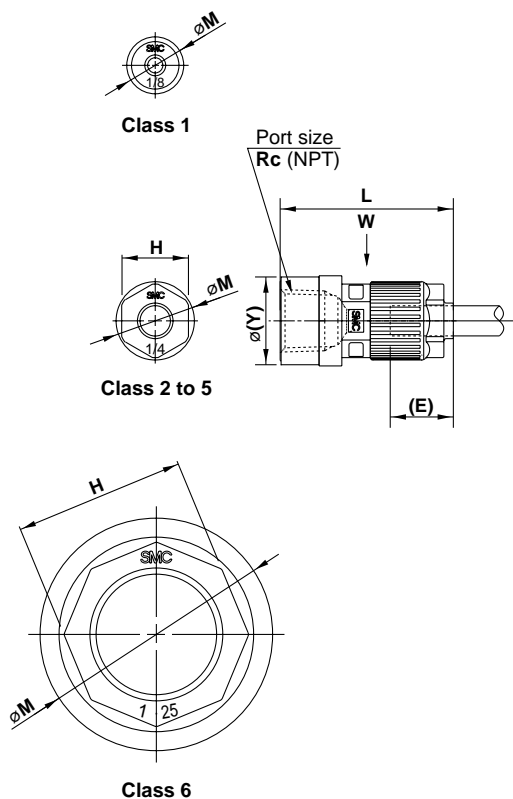
Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L	M	W
LQ1H11-M□	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	20	17	42.5	23	19
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	24	21	52	28	23
LQ1H34-M□	ø10							
LQ1H35-M□	ø8	3/8"	46	29	26	62.5	39	32
LQ1H36-M□	ø6							
LQ1H41-M□	ø12	3/8"	44	24	21	52	28	23
LQ1H42-M□	ø10							
LQ1H43-M□	ø12	1/2"	44	29	26	62.5	39	32
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	39.5	36	81	49	46
LQ1H54-M□	ø12							
LQ1H61-M□	ø25	3/4"	72	39.5	36	81	49	46
LQ1H62-M□	ø19							
LQ1H63-M□	ø25	1"	71	39.5	36	81	49	46
LQ1H64-M□	ø19							

Inch sizes

Model	Applicable tubing O.D.	Connection threads 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	20	17	42.5	23	19
LQ1H2E-M□	3/16"							
LQ1H2F-M□	1/8"	1/4"	36.5	29	26	62.5	39	32
LQ1H3A-M□	3/8"							
LQ1H3B-M□	1/4"	3/8"	36	39.5	36	81	49	46
LQ1H3C-M□	3/8"							
LQ1H3D-M□	1/4"	1/2"	44	24	21	52	28	23
LQ1H4A-M□	1/2"							
LQ1H4B-M□	3/8"	1/2"	44	29	26	62.5	39	32
LQ1H4C-M□	1/2"							
LQ1H4D-M□	3/8"	3/4"	53.5	39.5	36	81	49	46
LQ1H5A-M□	3/4"							
LQ1H5B-M□	1/2"	1/2"	55	29	26	62.5	39	32
LQ1H5C-M□	3/4"							
LQ1H5D-M□	1/2"	3/4"	53.5	39.5	36	81	49	46
LQ1H6A-M□	1"							
LQ1H6B-M□	3/4"	1"	71	39.5	36	81	49	46
LQ1H6C-M□	1"							
LQ1H6D-M□	3/4"	1"	71	39.5	36	81	49	46

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"	24	21	50	ø28	23	ø29.5
LQ1H32-F□	ø8							
LQ1H33-F□	ø6	3/8"	29	26	60	ø39	32	ø36
LQ1H34-F□	ø10							
LQ1H35-F□	ø8	3/8"	39.5	36	75	ø49	46	ø36
LQ1H36-F□	ø6							
LQ1H41-F□	ø12	3/8"	24	21	47.5	ø28	23	ø25
LQ1H42-F□	ø10							
LQ1H43-F□	ø12	1/2"	29	26	58.5	ø39	32	ø29.5
LQ1H44-F□	ø10							
LQ1H51-F□	ø19	1/2"	39.5	36	75	ø49	46	ø36
LQ1H52-F□	ø12							
LQ1H53-F□	ø19	3/4"	39.5	36	75	ø49	46	ø36
LQ1H54-F□	ø12							
LQ1H61-F□	ø25	3/4"	39.5	36	78.5	ø49	46	ø44.5
LQ1H62-F□	ø19							
LQ1H63-F□	ø25	1"	39.5	36	78.5	ø49	46	ø44.5
LQ1H64-F□	ø19							

(E) shows the reference of the inserted tubing from the end of the nut.
 "W" is width across flats dimension.

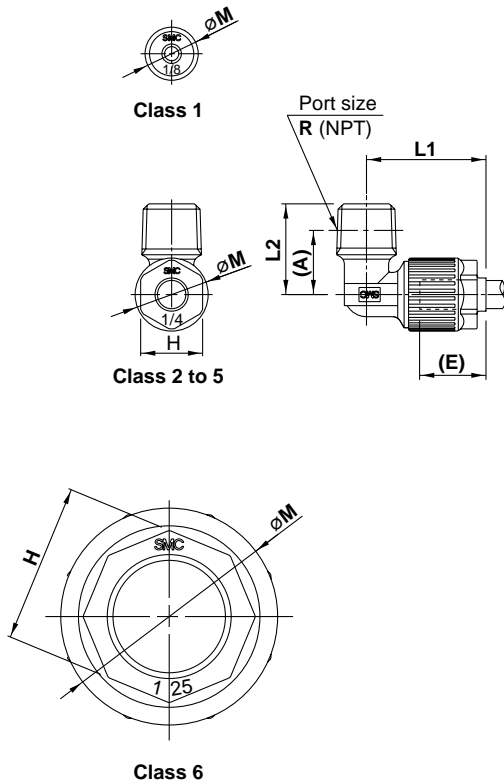
Inch sizes

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"	1/4"	24	21	50	ø28	23	ø29.5
LQ1H3A-F□	3/8"							
LQ1H3B-F□	1/4"	3/8"	29	26	60	ø39	32	ø36
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"	39.5	36	78.5	ø49	46	ø44.5
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	75	ø49	46	ø36
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□	1"							

Series LQ1

Dimensions

Male Elbow: LQ1L-M



(A) shows the reference dimension after connection.
 (E) shows the approximate dimension of the inserted tubing from the end of the nut.

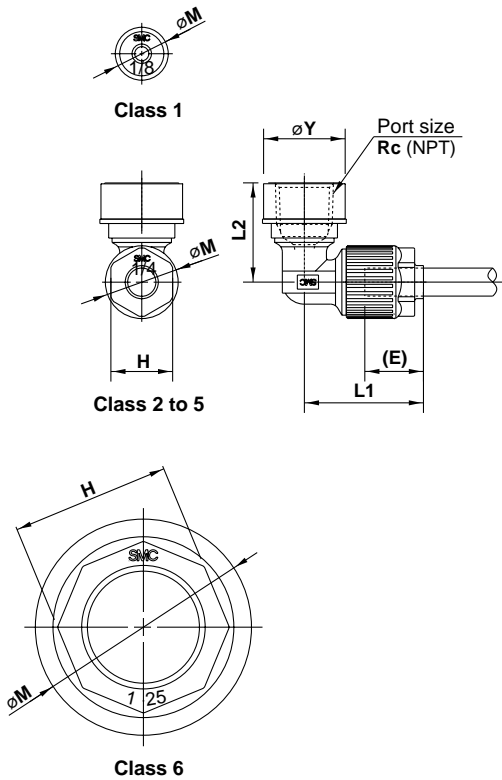
Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L1	L2	M
LQ1L11-M□	Ø4	1/8"	11.5	10	—	18	15	Ø11.5
LQ1L12-M□	Ø3							
LQ1L21-M□	Ø6	1/8"	14.5	15	14	27	20.5	Ø16.5
LQ1L22-M□	Ø4							
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"	25	24	21	45	33	Ø28
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	15	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"	35	39.5	36	68.5	46	Ø49
LQ1L5A-M□	3/4"							
LQ1L5B-M□	1/2"	3/4"	35	39.5	36	68.5	46	Ø49
LQ1L5C-M□	3/4"							
LQ1L5D-M□	1/2"	1"	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
LQ1L6D-M□	3/4"							

Female Elbow: LQ1L-F



(E) shows the reference dimension of the inserted tubing from the end of the nut.

Metric sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	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	39.5	ø39	ø36
LQ1L36-F□	ø6							
LQ1L41-F□	ø12	3/8"	24	21	45	29	ø28	ø25
LQ1L42-F□	ø10							
LQ1L43-F□	ø12	1/2"	29	26	54	37.5	ø39	ø29.5
LQ1L44-F□	ø10							
LQ1L51-F□	ø19	1/2"	29	26	54	37.5	ø39	ø29.5
LQ1L52-F□	ø12							
LQ1L53-F□	ø19	3/4"	39.5	36	68.5	44.5	ø49	ø36
LQ1L54-F□	ø12							
LQ1L61-F□	ø25	3/4"	39.5	36	68.5	44.5	ø49	ø36
LQ1L62-F□	ø19							
LQ1L63-F□	ø25	1"	39.5	36	68.5	48	ø49	ø44.5
LQ1L64-F□	ø19							

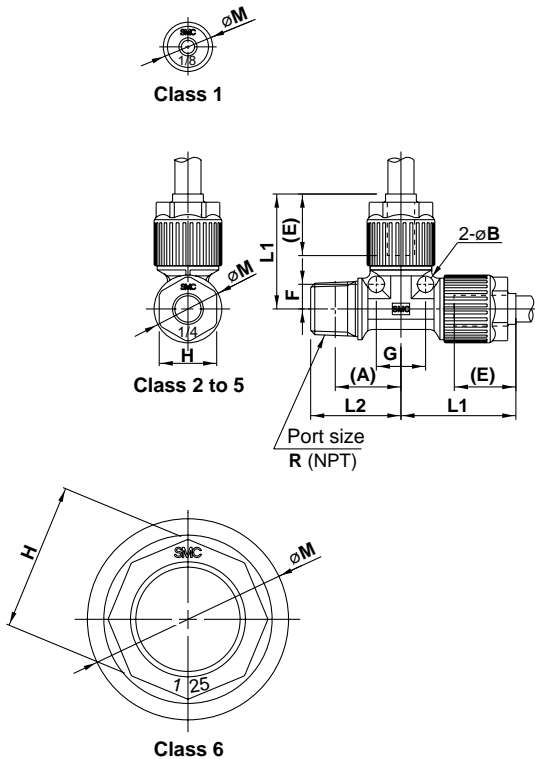
Inch sizes

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"	1/4"	29	26	54	37.5	ø39	ø29.5
LQ1L3C-F□	3/8"							
LQ1L3D-F□	1/4"	3/8"	39.5	36	68.5	44.5	ø49	ø36
LQ1L4A-F□	1/2"							
LQ1L4B-F□	3/8"	3/8"	24	21	45	29	ø28	ø25
LQ1L4C-F□	1/2"							
LQ1L4D-F□	3/8"	1/2"	29	26	54	32.5	ø39	ø29.5
LQ1L5A-F□	3/4"							
LQ1L5B-F□	1/2"	1/2"	39.5	36	68.5	44.5	ø49	ø36
LQ1L5C-F□	3/4"							
LQ1L5D-F□	1/2"	3/4"	39.5	36	68.5	48	ø49	ø44.5
LQ1L6A-F□	1"							
LQ1L6B-F□	3/4"	3/4"	39.5	36	68.5	44.5	ø49	ø36
LQ1L6C-F□	1"							
LQ1L6D-F□	3/4"	1"	39.5	36	68.5	48	ø49	ø44.5
LQ1L6E-F□	1"							

Series LQ1

Dimensions

Male Run Tee: LQ1R-M



(A) shows the reference dimension after connection.
 (E) shows the approximate dimension of the inserted tubing from the end of the nut.

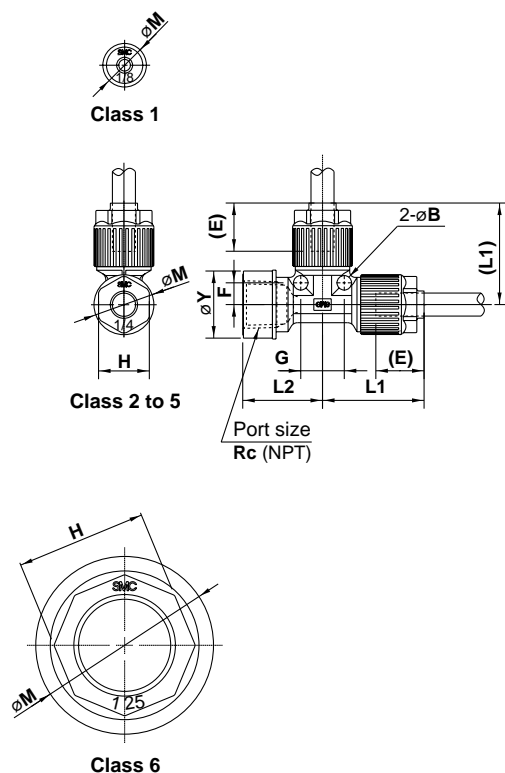
Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M
LQ1R11-M□	ø4	1/8"	12	ø2	10	4	8	—	18.5	15.5	11.5
LQ1R12-M□	ø3										
LQ1R21-M□	ø6	1/8"	16	ø4	15	6	12	14	28	19.5	16.5
LQ1R22-M□	ø4										
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"	23							27	
LQ1R36-M□	ø6										
LQ1R41-M□	ø12	3/8"	23	ø6	24	9	18	21	43	29	28
LQ1R42-M□	ø10										
LQ1R43-M□	ø12	1/2"	24.5							32	
LQ1R44-M□	ø10										
LQ1R51-M□	ø19	1/2"	30.5	ø7	29	14	28	26	54	38	39
LQ1R52-M□	ø12										
LQ1R53-M□	ø19	3/4"	30							39	
LQ1R54-M□	ø12										
LQ1R61-M□	ø25	3/4"	36	ø8	39.5	18	36	36	69.5	45	49
LQ1R62-M□	ø19										
LQ1R63-M□	ø25	1"	35								
LQ1R64-M□	ø19										

Inch sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M
LQ1R1A-M□	1/8"	1/8"	12	ø2	10	4	8	—	18.5	15.5	11.5
LQ1R2A-M□	1/4"										
LQ1R2B-M□	3/16"	1/8"	16	ø4	15	6	12	14	28	19.5	16.5
LQ1R2C-M□	1/8"										
LQ1R2D-M□	1/4"	1/4"								22	
LQ1R2E-M□	3/16"										
LQ1R2F-M□	1/8"	1/4"	19	ø5	20	9	18	17	36.5	25	23
LQ1R3A-M□	3/8"										
LQ1R3B-M□	1/4"	3/8"	21							27	
LQ1R3C-M□	3/8"										
LQ1R3D-M□	1/4"	3/8"	23	ø6	24	9	18	21	43	29	28
LQ1R4A-M□	1/2"										
LQ1R4B-M□	3/8"	1/2"	24.5							32	
LQ1R4C-M□	1/2"										
LQ1R4D-M□	3/8"	1/2"	30.5	ø7	29	14	28	26	54	38	39
LQ1R5A-M□	3/4"										
LQ1R5B-M□	1/2"	3/4"	30							39	
LQ1R5C-M□	3/4"										
LQ1R5D-M□	1/2"	3/4"	36	ø8	39.5	18	36	36	69.5	45	49
LQ1R6A-M□	1"										
LQ1R6B-M□	3/4"	1"	35								
LQ1R6C-M□	1"										
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"	Ø5	20	9	18	17	36.5	24	Ø23	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	9	18	21	43	25	Ø28	Ø25
LQ1R42-F□	Ø10										
LQ1R43-F□	Ø12	1/2"	Ø6	24	9	18	21	43	31.5	Ø28	Ø29.5
LQ1R44-F□	Ø10										
LQ1R51-F□	Ø19	1/2"	Ø7	29	14	28	26	54	35.5	Ø39	Ø29.5
LQ1R52-F□	Ø12										
LQ1R53-F□	Ø19	3/4"	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	42.5	Ø49	Ø36
LQ1R62-F□	Ø19										
LQ1R63-F□	Ø25	1"	Ø8	39.5	18	36	36	69.5	46	Ø49	Ø44.5
LQ1R64-F□	Ø19										

(E) shows the approximate dimension of the inserted tubing from the end of the nut.

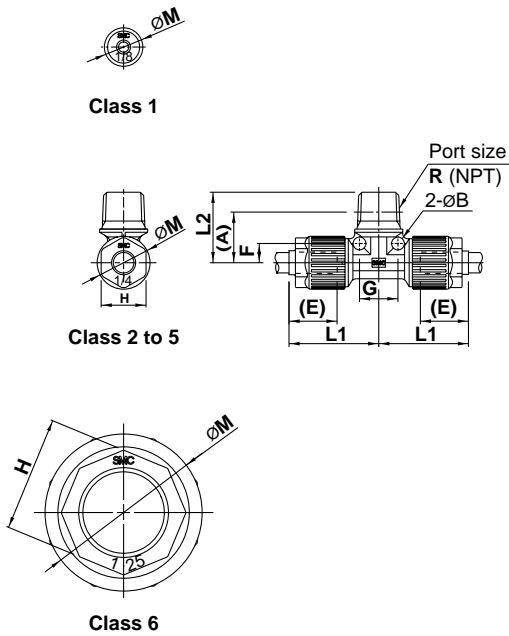
Inch sizes

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	24	Ø23	Ø21.5
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	9	18	21	43	25	Ø28	Ø25
LQ1R4C-F□	1/2"										
LQ1R4D-F□	3/8"	1/2"	Ø6	24	9	18	21	43	31.5	Ø28	Ø29.5
LQ1R5A-F□	3/4"										
LQ1R5B-F□	1/2"	1/2"	Ø7	29	14	28	26	54	35.5	Ø39	Ø29.5
LQ1R5C-F□	1/2"										
LQ1R5D-F□	3/4"	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	42.5	Ø49	Ø36
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

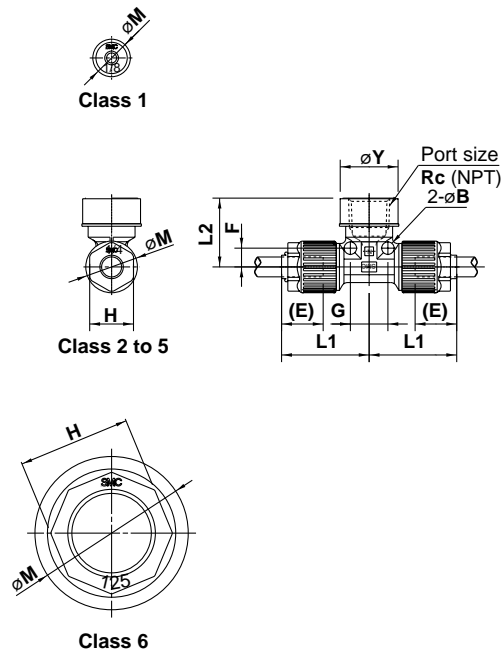
Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M
LQ1B11-M□	ø4	1/8"	12	ø2	10	4	8	—	18.5	15.5	11.5
LQ1B12-M□	ø3										
LQ1B21-M□	ø6	1/8"	16	ø4	15	6	12	14	28	19.5	16.5
LQ1B22-M□	ø4										
LQ1B23-M□	ø6	1/4"	19	ø5	20	9	18	17	36.5	25	23
LQ1B24-M□	ø4										
LQ1B31-M□	ø10	1/4"	19	ø5	20	9	18	17	36.5	25	23
LQ1B32-M□	ø8										
LQ1B33-M□	ø6	3/8"	21	ø5	20	9	18	17	36.5	27	23
LQ1B34-M□	ø10										
LQ1B35-M□	ø8	3/8"	21	ø5	20	9	18	17	36.5	27	23
LQ1B36-M□	ø6										
LQ1B41-M□	ø12	3/8"	23	ø6	24	9	18	21	43	29	28
LQ1B42-M□	ø10										
LQ1B43-M□	ø12	1/2"	24.5	ø6	24	9	18	21	43	32	28
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	ø7	29	14	28	26	54	38	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	ø8	39.5	18	36	36	69.5	45	49
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"	19	ø4	15	6	12	14	28	19.5	16.5
LQ1B2E-M□	3/16"										
LQ1B2F-M□	1/8"	1/4"	16	ø4	15	6	12	14	28	19.5	16.5
LQ1B3A-M□	3/8"										
LQ1B3B-M□	1/4"	1/4"	19	ø5	20	9	18	17	36.5	25	23
LQ1B3C-M□	3/8"										
LQ1B3D-M□	1/4"	3/8"	21	ø5	20	9	18	17	36.5	27	23
LQ1B4A-M□	1/2"										
LQ1B4B-M□	3/8"	3/8"	23	ø6	24	9	18	21	43	29	28
LQ1B4C-M□	1/2"										
LQ1B4D-M□	3/8"	1/2"	24.5	ø6	24	9	18	21	43	32	28
LQ1B5A-M□	3/4"										
LQ1B5B-M□	1/2"	1/2"	30.5	ø7	29	14	28	26	54	38	39
LQ1B5C-M□	3/4"										
LQ1B5D-M□	1/2"	3/4"	30	ø7	29	14	28	26	54	38	39
LQ1B6A-M□	1"										
LQ1B6B-M□	3/4"	3/4"	36	ø8	39.5	18	36	36	69.5	45	49
LQ1B6C-M□	1"										
LQ1B6D-M□	3/4"	1"	35	ø8	39.5	18	36	36	69.5	45	49
LQ1B6E-M□	1"										

(A) shows the reference dimension after connection.
 (E) shows the approximate dimension of the inserted tubing from the end of the nut.

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										
LQ1B34-F□	Ø10	3/8"	Ø5	20	9	18	17	36.5	25.5	Ø23	Ø25
LQ1B35-F□	Ø8										
LQ1B36-F□	Ø6	3/8"	Ø6	24	9	18	21	43	25	Ø28	Ø25
LQ1B41-F□	Ø12										
LQ1B42-F□	Ø10										
LQ1B43-F□	Ø12	1/2"	Ø6	24	9	18	21	43	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										
LQ1B64-F□	Ø19	1"	Ø8	39.5	18	36	36	69.5	46	Ø49	Ø44.5

(E) shows the approximate dimension of the inserted tubing from the end of the nut.

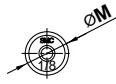
Inch sizes

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"	Ø5	20	9	18	17	36.5	23.7	Ø23	Ø21.5
LQ1B3A-F□	3/8"										
LQ1B3B-F□	1/4"										
LQ1B3C-F□	3/8"	3/8"	Ø5	20	9	18	17	36.5	25.5	Ø23	Ø25
LQ1B3D-F□	1/4"										
LQ1B4A-F□	1/2"	3/8"	Ø6	24	9	18	21	43	25	Ø28	Ø25
LQ1B4B-F□	3/8"										
LQ1B4C-F□	1/2"										
LQ1B4D-F□	3/8"	1/2"	Ø6	24	9	18	21	43	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

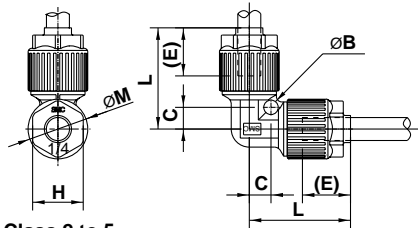
Series LQ1

Dimensions

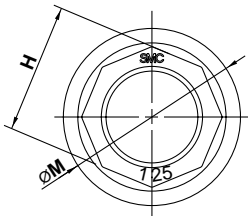
Union Elbow: LQ1E



Class 1



Class 2 to 5



Class 6

(E) shows the approximate dimension of the inserted tubing from the end of the nut.

Metric sizes

Model	Applicable tubing O.D.	B	C	E	H	L	M
LQ1E11□□	Ø4	Ø2	4	10	—	18.5	Ø11.5
LQ1E12□□	Ø3						
LQ1E21□□	Ø6	Ø4	6	15	14	28	Ø16.5
LQ1E22□□	Ø4						
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						

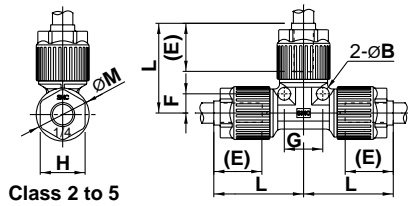
Inch sizes

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"	Ø6	9	24	21	43	Ø28
LQ1E4B□□	3/8"						
LQ1E5A□□	3/4"	Ø7	14	29	26	54	Ø39
LQ1E5B□□	1/2"						
LQ1E6A□□	1"	Ø8	18	39.5	36	69.5	Ø49
LQ1E6B□□	3/4"						

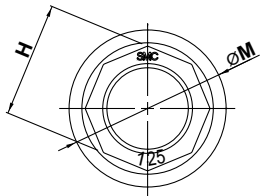
Union Tee: LQ1T



Class 1



Class 2 to 5



Class 6

(E) shows the approximate dimension of the inserted tubing from the end of the nut.

Metric sizes

Model	Applicable tubing O.D.	B	E	F	G	H	L	M
LQ1T11□□	ø4	ø2	10	4	8	—	18.5	11.5
LQ1T12□□	ø3							
LQ1T21□□	ø6	ø4	15	6	12	14	28	16.5
LQ1T22□□	ø4							
LQ1T31□□	ø10	ø5	20	9	18	17	36.5	23
LQ1T32□□	ø8							
LQ1T33□□	ø6							
LQ1T41□□	ø12	ø6	24	9	18	21	43	28
LQ1T42□□	ø10							
LQ1T51□□	ø19	ø7	29	14	28	26	54	39
LQ1T52□□	ø12							
LQ1T61□□	ø25	ø8	39.5	18	36	36	69.5	49
LQ1T62□□	ø19							

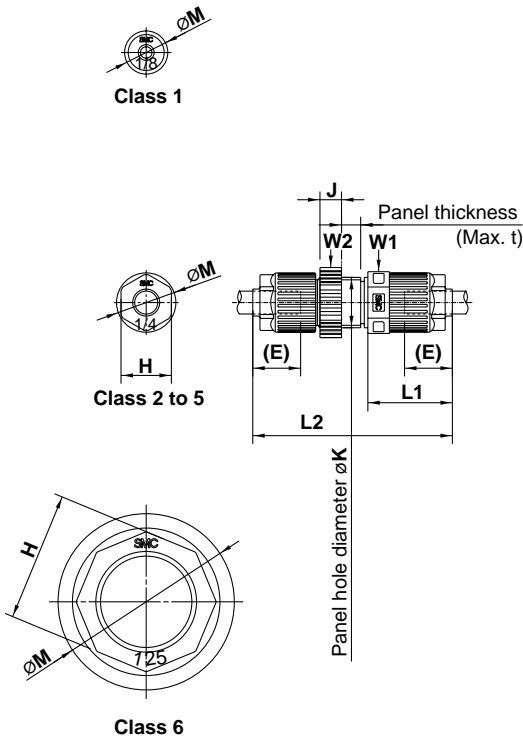
Inch sizes

Model	Applicable tubing O.D.	B	E	F	G	H	L	M
LQ1T1A□□	1/8"	ø2	10	4	8	—	18.5	11.5
LQ1T2A□□	1/4"							
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	24	9	18	21	43	28
LQ1T4B□□	3/8"							
LQ1T5A□□	3/4"	ø7	29	14	28	26	54	39
LQ1T5B□□	1/2"							
LQ1T6A□□	1"	ø8	39.5	18	36	36	69.5	49
LQ1T6B□□	3/4"							

Series LQ1

Dimensions

Panel Mount Union: LQ1P



(E) shows the approximate dimension of the inserted tubing from the end of the nut.
 "W" is width across flats dimension.

Metric sizes

Model	Applicable tubing O.D.	E	H	J	K	L1	L2	M	t	W1	W2
LQ1P11□□	ø4	10	—	6	10.5	17	44	ø11.5	8	11	13
LQ1P12□□	ø3										
LQ1P21□□	ø6	15	14	6	14.5	23.5	55.5	ø16.5	8	15	17
LQ1P22□□	ø4										
LQ1P31□□	ø10										
LQ1P32□□	ø8	20	17	7	20.5	30	69	ø23	8	21	24
LQ1P33□□	ø6										
LQ1P41□□	ø12	24	21	7	24.5	35	78.5	ø28	8	26	28
LQ1P42□□	ø10										
LQ1P51□□	ø19	29	26	9	36.5	43.5	100	ø39	9	39	43
LQ1P52□□	ø12										
LQ1P61□□	ø25	39.5	36	10	48.5	58.5	133	ø49	10	51	55
LQ1P62□□	ø19										

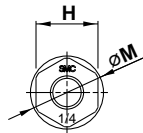
Inch sizes

Model	Applicable tubing O.D.	E	H	J	K	L1	L2	M	t	W1	W2
LQ1P1A□□	1/8"	10	—	6	10.5	17	44	ø11.5	8	11	13
LQ1P2A□□	1/4"										
LQ1P2B□□	3/16"	15	14	6	14.5	23.5	55.5	ø16.5	8	15	17
LQ1P2C□□	1/8"										
LQ1P3A□□	3/8"	20	17	7	20.5	30	69	ø23	8	21	24
LQ1P3B□□	1/4"										
LQ1P4A□□	1/2"	24	21	7	24.5	35	78.5	ø28	8	26	28
LQ1P4B□□	3/8"										
LQ1P5A□□	3/4"	29	26	9	36.5	43.5	100	ø39	9	39	43
LQ1P5B□□	1/2"										
LQ1P6A□□	1"	39.5	36	10	48.5	58.5	133	ø49	10	51	55
LQ1P6B□□	3/4"										

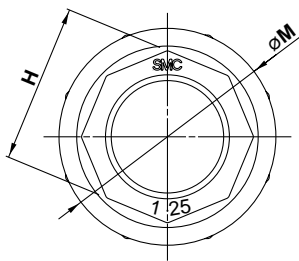
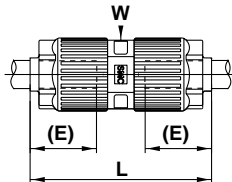
Union: LQ1U



Class 1



Class 2 to 5



Class 6

(E) shows the approximate dimension of the inserted tubing from the end of the nut.
“W” is width across flats dimension.

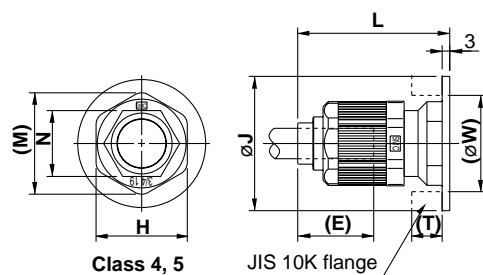
Metric sizes

Model	Applicable tubing O.D.	E	H	L	M	W
LQ1U11□□	ø4	10	—	29	11.5	10
LQ1U12□□	ø3					
LQ1U21□□	ø6	15	14	41	16.5	14
LQ1U22□□	ø4					
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					

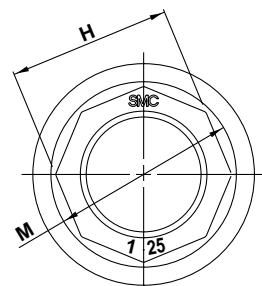
Inch sizes

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"					
LQ1U3C□□	1/4"					
LQ1U4A□□	1/2"	24	21	63	28	21
LQ1U4B□□	3/8"					
LQ1U5A□□	3/4"	29	26	77	39	26
LQ1U5B□□	1/2"					
LQ1U6A□□	1"	39.5	36	102	49	36
LQ1U6B□□	3/4"					

Union Flange: LQ1F



Class 4, 5



Class 6

(E) shows the approximate dimension of the inserted tubing from the end of the nut.
(W) is the bore size of the JIS flange required for mounting. This flange is sold separately.
When ordering nuts as spare parts, size 4 and 5 are as shown below.

LQ1F4□: LQ-4N□□
LQ1F5□: LQ-5N□□

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				81.5				

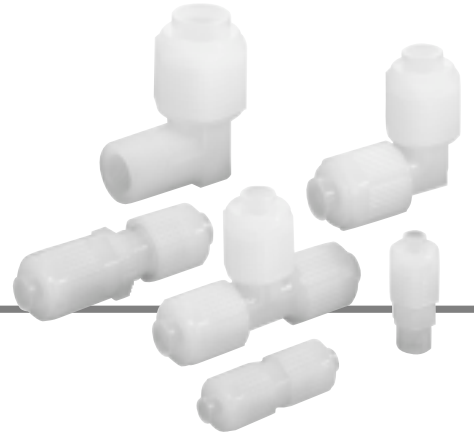
Inch sizes

Model	Applicable tubing O.D.	E	H	J	L	N	M	W	(T)
LQ1F4A	1/2"	28	30	ø53	60	21	33.1	ø34	12
LQ1F4B	3/8"				58				
LQ1F5A	3/4"	32	36	ø58	65.2	26	40	ø41	14
LQ1F5B	1/2"				63.2				
LQ1F6A	1"	39.5	36	ø69	81.5	—	49	ø51	14
LQ1F6B	3/4"				81.5				

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

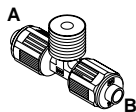
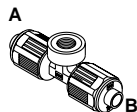
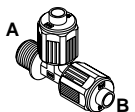
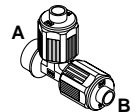
Thread type

Symbol	Type
Nil	R, Rc
N	NPT

Piping type

Symbol	Type
M	Male
F	Female

For different diameter (on B side)

Symbol	Application
Nil	Same tubing size
Refer to the applicable tubing table.	Different diameter tubing can be selected within the same body class.
LQ2B	
Branch tee male	Branch tee female
	
LQ2R	
Run tee male	Run tee female
	

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)	Tubing O.D.
2	1	6 x 4	1/8"
2	2	4 x 3	
2	3	6 x 4	
2	4	4 x 3	1/4"
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	

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

Note) For each body class, 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)
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

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

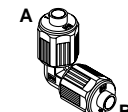
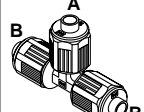
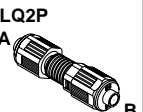
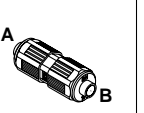
Note) For each body class, the second and later numbers or symbols indicate reducing.

Size combination

Class	No.	Applicable tubing size (mm)
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

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

Note) For each body class, the second and later numbers or symbols indicate reducing.

Symbol	Application
Nil	Same tubing size
Refer to the applicable tubing table.	Different diameter tubing can be selected within the same body class.
Union elbow LQ2E 	Union tee LQ2T 
Panel mount union LQ2P 	Union LQ2U 

Different diameter tubing order example

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

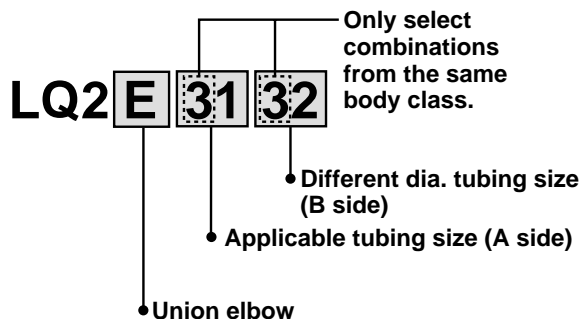
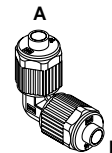
(Example) Union elbow

Body class 3

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

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

Order as shown below.



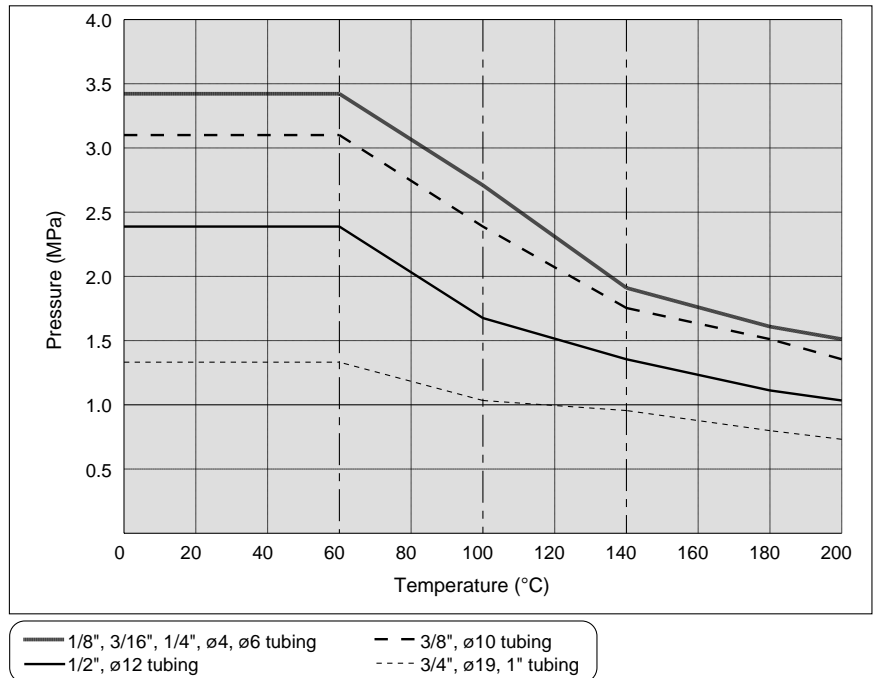
Series LQ2



Specifications

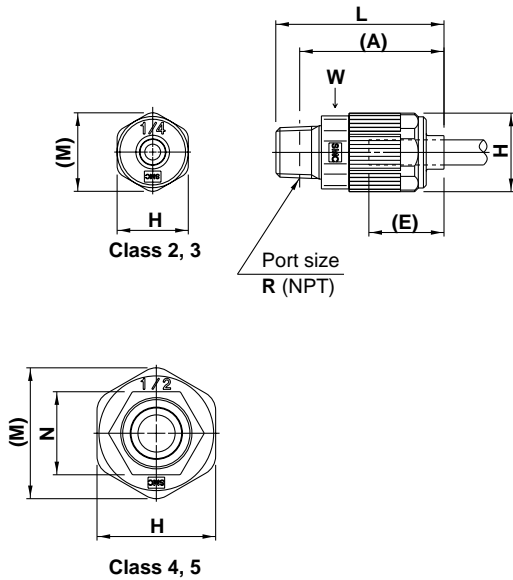
Feature	Model	LQ2□20	LQ2□30	LQ2□40	LQ2□50
Material		NEW PFA			
Maximum operating pressure (at 20°C)		1.0 MPa			
Proof pressure		Refer to the withstand pressure and heat resistance performance curves.			
Operating temperature		0 to 200°C			

Burst Pressure and Heat Resistance Performance



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"	42.5	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								

(A) shows the reference dimension after connection.
 (E) shows the approximate dimension of the inserted tubing from the end of the nut.
 "W" is width across flats dimension.

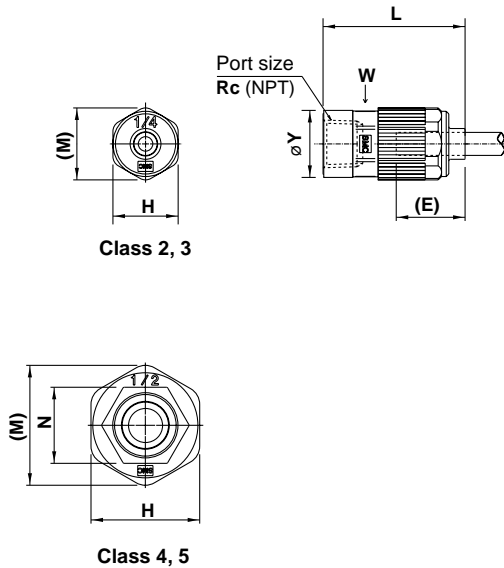
Inch sizes

Model	Applicable tubing O.D.	Connection threads R/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"								

Series LQ2

Dimensions

Female Connector: LQ2H-F



(E) shows the approximate dimension of the inserted tubing from the end of the nut.
 "W" is width across flats dimension.

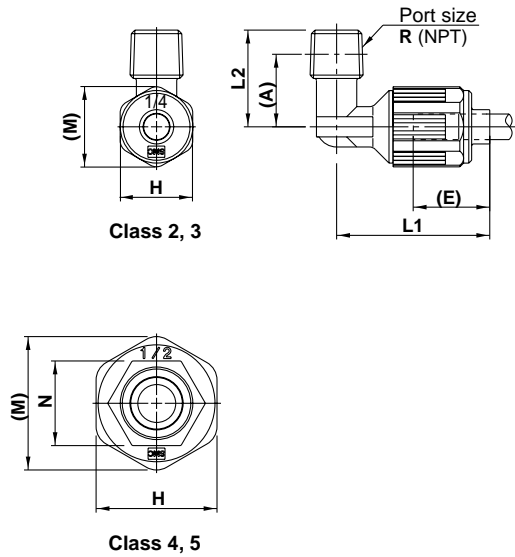
Metric sizes

Model	Applicable tubing O.D.	Connection threads 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								25
LQ2H31-F□	ø10	1/4"	28	30	52	33.1	21	30	25
LQ2H32-F□	ø8								29.5
LQ2H33-F□	ø6	3/8"	32	36	46	40	26	36	25
LQ2H34-F□	ø10								29.5
LQ2H35-F□	ø8	1/2"	32	36	63.5	40	26	36	29.5
LQ2H36-F□	ø6								36
LQ2H41-F□	ø12	1/2"	32	36	64.5	40	26	36	29.5
LQ2H42-F□	ø10								36
LQ2H43-F□	ø12	3/4"	32	36	65	40	26	36	29.5
LQ2H44-F□	ø10								36
LQ2H51-F□	ø19	1/2"	32	36	66	40	26	36	29.5
LQ2H52-F□	ø12								36
LQ2H53-F□	ø19	3/4"	32	36	66	40	26	36	29.5
LQ2H54-F□	ø12								36

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"								25
LQ2H2E-F□	3/16"	3/8"	28	30	52	33.1	21	30	25
LQ2H2F-F□	1/8"								29.5
LQ2H3A-F□	3/8"	1/4"	32	36	46	40	26	36	29.5
LQ2H3B-F□	1/4"								36
LQ2H3C-F□	3/8"	1/2"	32	36	63.5	40	26	36	29.5
LQ2H3D-F□	1/4"								36
LQ2H4A-F□	1/2"	3/8"	32	36	64.5	40	26	36	29.5
LQ2H4B-F□	3/8"								36
LQ2H4C-F□	1/2"	3/4"	32	36	65	40	26	36	29.5
LQ2H4D-F□	3/8"								36
LQ2H5A-F□	3/4"	1/2"	32	36	66	40	26	36	29.5
LQ2H5B-F□	1/2"								36
LQ2H5C-F□	3/4"	3/4"	32	36	66	40	26	36	29.5
LQ2H5D-F□	1/2"								36

Male Elbow: LQ2L-M



Metric sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L1	L2	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	42.5	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	3/8"	29	28	30	52	35	33.1	21
LQ2L36-M□	ø6								
LQ2L41-M□	ø12	1/2"	27	28	30	51	35	33.1	21
LQ2L42-M□	ø10								
LQ2L43-M□	ø12	1/2"	27	32	36	52	43	40	26
LQ2L44-M□	ø10								
LQ2L51-M□	ø19	3/4"	33.5	32	36	59	43	40	26
LQ2L52-M□	ø12								
LQ2L53-M□	ø19	3/4"	33.5	32	36	58	43	40	26
LQ2L54-M□	ø12								

(A) shows the reference dimension after connection.
 (E) shows the approximate dimension of the inserted tubing from the end of the nut.

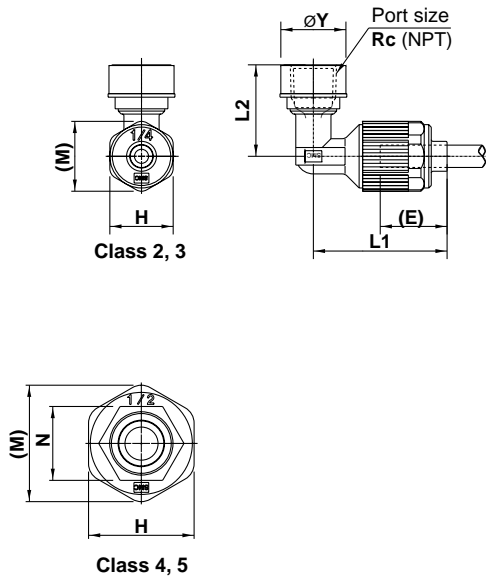
Inch sizes

Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L1	L2	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"	1/4"	18	22	24	42.5	28	26.2	-
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	58	43	40	26
LQ2L5D-M□	1/2"								

Series LQ2

Dimensions

Female Elbow: LQ2L-F



Metric sizes

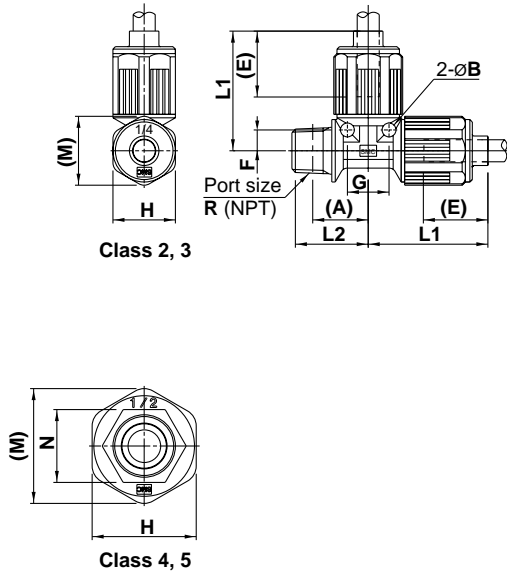
Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L ₁	L ₂	M	N	Y				
LQ2L21-F□	ø6	1/8"	19	18	38	24	19.9	—	ø18.5				
LQ2L22-F□	ø4					26				ø21.5			
LQ2L23-F□	ø6	1/4"				22			24		28	26.2	—
LQ2L24-F□	ø4									43			
LQ2L31-F□	ø10	3/8"	28	30	50.5		33.1	21		ø25			
LQ2L32-F□	ø8												
LQ2L33-F□	ø6	1/2"				32			36	43	40	26	ø29.5
LQ2L34-F□	ø10												
LQ2L35-F□	ø8	3/4"	32	36	59		40	26					ø29.5
LQ2L36-F□	ø6												
LQ2L41-F□	ø12	3/8"				28			30	51	33.1	21	ø25
LQ2L42-F□	ø10												
LQ2L43-F□	ø12	1/2"	32	36	59		40	26					ø29.5
LQ2L44-F□	ø10												
LQ2L51-F□	ø19	1/2"				32			36	58	40	26	ø29.5
LQ2L52-F□	ø12												
LQ2L53-F□	ø19	3/4"	32	36	59		40	26					ø29.5
LQ2L54-F□	ø12												

(E) shows the approximate dimension of the inserted tubing from the end of the nut.

Inch sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L ₁	L ₂	M	N	Y				
LQ2L2A-F□	1/4"	1/8"	19	18	38	24	19.9	—	ø18.5				
LQ2L2B-F□	3/16"					26				ø21.5			
LQ2L2C-F□	1/8"	1/4"				22			24		28	26.2	—
LQ2L2D-F□	1/4"									43			
LQ2L2E-F□	3/16"	3/8"	28	30	50.5		33.1	21		ø25			
LQ2L2F-F□	1/8"												
LQ2L3A-F□	3/8"	1/4"				32			36	59	40	26	ø29.5
LQ2L3B-F□	1/4"												
LQ2L3C-F□	3/8"	3/8"	32	36	59		40	26					ø29.5
LQ2L3D-F□	1/4"												
LQ2L4A-F□	1/2"	3/8"				28			30	51	33.1	21	ø25
LQ2L4B-F□	3/8"												
LQ2L4C-F□	1/2"	1/2"	32	36	51		40	26					ø29.5
LQ2L4D-F□	3/8"												
LQ2L5A-F□	3/4"	1/2"				32			36	58	40	26	ø29.5
LQ2L5B-F□	1/2"												
LQ2L5C-F□	3/4"	3/4"	32	36	58		40	26					ø29.5
LQ2L5D-F□	1/2"												

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								42.5			
LQ2R33-M□	ø6	3/8"	23	ø5	22	9	18	24	43	29.5	26.2	—
LQ2R34-M□	ø10								42.5			
LQ2R35-M□	ø8	3/8"	23	ø5	22	9	18	24	42.5	29.5	26.2	—
LQ2R36-M□	ø6								42.5			
LQ2R41-M□	ø12	3/8"	30	ø6	28	11	22	30	52	36	33.1	21
LQ2R42-M□	ø10								51			
LQ2R43-M□	ø12	1/2"	28.5	ø6	28	11	22	30	52	36	33.1	21
LQ2R44-M□	ø10								51			
LQ2R51-M□	ø19	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	26
LQ2R52-M□	ø12								58.5			
LQ2R53-M□	ø19	3/4"	33.5	ø7	32	14	28	36	59.5	42.5	40	26
LQ2R54-M□	ø12								58.5			

(A) shows the reference dimension after connection.
 (E) shows the approximate dimension of the inserted tubing from the end of the nut.

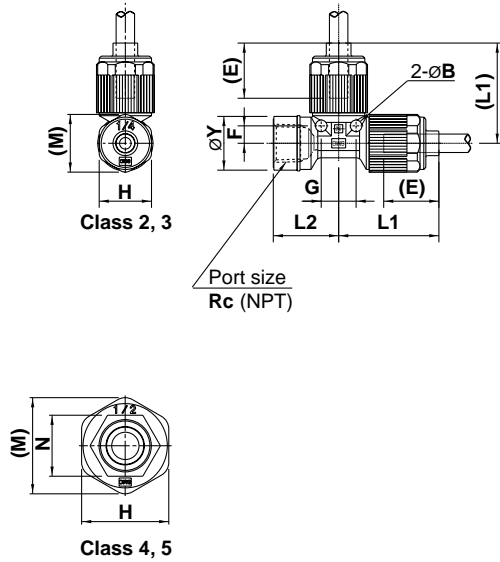
Inch sizes

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"								42.5			
LQ2R3C-M□	3/8"	3/8"	23	ø5	22	9	18	24	43	29.5	26.2	—
LQ2R3D-M□	1/4"								42.5			
LQ2R4A-M□	1/2"	3/8"	30	ø6	28	11	22	30	52	36	33.1	21
LQ2R4B-M□	3/8"								51			
LQ2R4C-M□	1/2"	1/2"	28.5	ø6	28	11	22	30	52	36	33.1	21
LQ2R4D-M□	3/8"								51			
LQ2R5A-M□	3/4"	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	26
LQ2R5B-M□	1/2"								58.5			
LQ2R5C-M□	3/4"	3/4"	33.5	ø7	32	14	28	36	59.5	42.5	40	26
LQ2R5D-M□	1/2"								58.5			

Series LQ2

Dimensions

Female Run Tee: LQ2R-F



Metric sizes

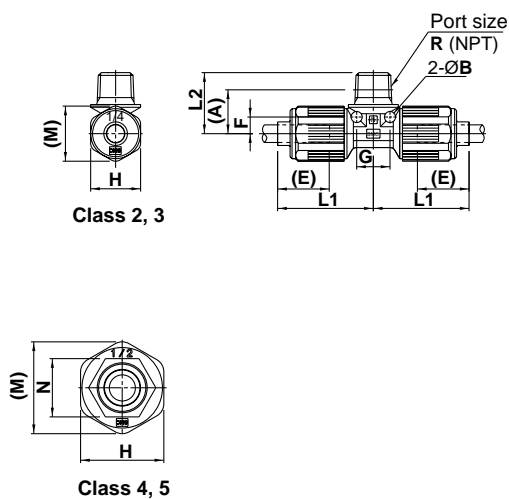
Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	N	Y
LQ2R21-F□	ø6	1/8"	ø4	19	6	12	18	34.5	18.7	19.9	—	ø18.5
LQ2R22-F□	ø4								22.5			
LQ2R23-F□	ø6	1/4"	ø4	19	6	12	18	34.5	22.5	19.9	—	ø21.5
LQ2R24-F□	ø4								22.5			
LQ2R31-F□	ø10	1/4"	ø5	22	9	18	24	43	23.5	26.2	—	ø21.5
LQ2R32-F□	ø8							42.5				
LQ2R33-F□	ø6	3/8"	ø5	22	9	18	24	43	26	26.2	—	ø25
LQ2R34-F□	ø10							42.5				
LQ2R35-F□	ø8	3/8"	ø5	22	9	18	24	43	26	26.2	—	ø25
LQ2R36-F□	ø6							42.5				
LQ2R41-F□	ø12	3/8"	ø6	28	11	22	30	52	27	33.1	21	ø25
LQ2R42-F□	ø10							51				
LQ2R43-F□	ø12	1/2"	ø6	28	11	22	30	52	32	33.1	21	ø29.5
LQ2R44-F□	ø10							51				
LQ2R51-F□	ø19	1/2"	ø7	32	14	28	36	59.5	35.5	40	26	ø29.5
LQ2R52-F□	ø12							58.5				
LQ2R53-F□	ø19	3/4"	ø7	32	14	28	36	59.5	37	40	26	ø36
LQ2R54-F□	ø12							58.5				

(E) shows the approximate dimension of the inserted tubing from the end of the nut.

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	34.5	18.7	19.9	—	ø18.5
LQ2R2B-F□	3/16"								22.5			
LQ2R2C-F□	1/8"	1/4"	ø4	19	6	12	18	34.5	22.5	19.9	—	ø21.5
LQ2R2D-F□	1/4"								22.5			
LQ2R2E-F□	3/16"	1/4"	ø4	19	6	12	18	34.5	22.5	19.9	—	ø21.5
LQ2R2F-F□	1/8"								22.5			
LQ2R3A-F□	3/8"	1/4"	ø5	22	9	18	24	43	23.5	26.2	—	ø21.5
LQ2R3B-F□	1/4"							42.5				
LQ2R3C-F□	3/8"	3/8"	ø5	22	9	18	24	43	26	26.2	—	ø25
LQ2R3D-F□	1/4"							42.5				
LQ2R4A-F□	1/2"	3/8"	ø6	28	11	22	30	52	27	33.1	21	ø25
LQ2R4B-F□	3/8"							51				
LQ2R4C-F□	1/2"	1/2"	ø6	28	11	22	30	51	32	33.1	21	ø29.5
LQ2R4D-F□	3/8"							51				
LQ2R5A-F□	3/4"	1/2"	ø7	32	14	28	36	59.5	35.5	40	26	ø29.5
LQ2R5B-F□	1/2"							58.5				
LQ2R5C-F□	3/4"	3/4"	ø7	32	14	28	36	59.5	37	40	26	ø36
LQ2R5D-F□	1/2"							58.5				

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	ø4	19	6	12	18	34.5	22	19.9	—
LQ2B24-M□	ø4											
LQ2B31-M□	ø10	1/4"	23.5	ø5	22	9	18	24	43	29.5	26.2	—
LQ2B32-M□	ø8								42.5			
LQ2B33-M□	ø6								43			
LQ2B34-M□	ø10	3/8"	23	ø5	22	9	18	24	43	29.5	26.2	—
LQ2B35-M□	ø8								42.5			
LQ2B36-M□	ø6	3/8"	30	ø6	28	11	22	30	52	36	33.1	21
LQ2B41-M□	ø12								51			
LQ2B42-M□	ø10								52			
LQ2B43-M□	ø12								51			
LQ2B44-M□	ø10	1/2"	28.5	ø6	28	11	22	30	52	36	33.1	21
LQ2B45-M□	ø12								51			
LQ2B51-M□	ø19	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	26
LQ2B52-M□	ø12								58.5			
LQ2B53-M□	ø19								59.5			
LQ2B54-M□	ø12	3/4"	33.5	ø7	32	14	28	36	58.5	42.5	40	26
LQ2B55-M□	ø12	33.5	58.5									

Inch sizes

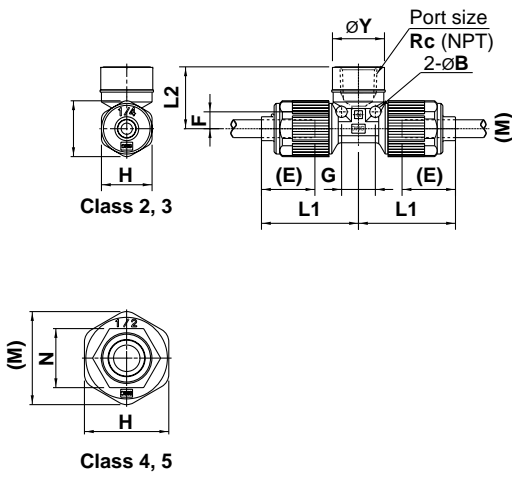
Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M	N								
LQ2B2A-M□	1/4"	1/8"	18.5	ø4	19	6	12	18	34.5	22	19.9	—								
LQ2B2B-M□	3/16"																			
LQ2B2C-M□	1/8"	1/4"	16.5	ø4	19	6	12	18	34.5	22	19.9	—								
LQ2B2D-M□	1/4"																			
LQ2B2E-M□	3/16"	1/4"	16.5	ø4	19	6	12	18	34.5	22	19.9	—								
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"								42.5											
LQ2B3C-M□	3/8"								43											
LQ2B3D-M□	1/4"	3/8"	23	ø5	22	9	18	24	42.5	29.5	26.2	—								
LQ2B4A-M□	1/2"	3/8"	30						ø6				28	11	22	30	52	36	33.1	21
LQ2B4B-M□	3/8"																51			
LQ2B4C-M□	1/2"	1/2"	28.5	ø6	28	11	22	30	52	36	33.1	21								
LQ2B4D-M□	3/8"								51											
LQ2B5A-M□	3/4"	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	26								
LQ2B5B-M□	1/2"								58.5											
LQ2B5C-M□	3/4"								59.5											
LQ2B5D-M□	1/2"	3/4"	33.5	ø7	32	14	28	36	58.5	42.5	40	26								
LQ2B5E-M□	1/2"	33.5	58.5																	

(A) shows the reference dimension after connection.
 (E) shows the approximate dimension of the inserted tubing from the end of the nut.

Series LQ2

Dimensions

Female Branch Tee: LQ2B-F



Metric sizes

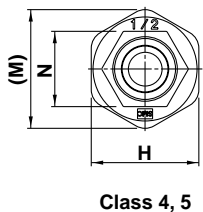
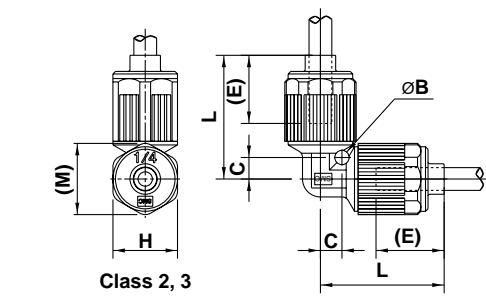
Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	N	Y
LQ2B21-F□	ø6	1/8"	ø4	19	6	12	18	34.5	18.7	19.9	—	ø18.5
LQ2B22-F□	ø4								22			ø21.5
LQ2B23-F□	ø6	1/4"	ø4	19	6	12	18	34.5	22	19.9	—	ø21.5
LQ2B24-F□	ø4								22			ø21.5
LQ2B31-F□	ø10	1/4"	ø5	22	9	18	24	43	22.2	26.2	—	ø21.5
LQ2B32-F□	ø8							47.5				
LQ2B33-F□	ø6							43				
LQ2B34-F□	ø10	3/8"	ø5	22	9	18	24	43	24	26.2	—	ø25
LQ2B35-F□	ø8							42.5				
LQ2B36-F□	ø6	3/8"	ø5	22	9	18	24	42.5	24	26.2	—	ø25
LQ2B41-F□	ø12							52				
LQ2B42-F□	ø10							51				
LQ2B43-F□	ø12	1/2"	ø6	28	11	22	30	52	32	33.1	21	ø29.5
LQ2B44-F□	ø10							51				
LQ2B51-F□	ø19	1/2"	ø6	28	11	22	30	59.5	35.5	40	26	ø29.5
LQ2B52-F□	ø12							58.5				
LQ2B53-F□	ø19	3/4"	ø7	32	14	28	36	59.5	37	40	26	ø36
LQ2B54-F□	ø12							58.5				

(E) shows the approximate dimension of the inserted tubing from the end of the nut.

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	34.5	18.7	19.9	—	ø18.5
LQ2B2B-F□	3/16"								22			
LQ2B2C-F□	1/8"	1/4"	ø4	19	6	12	18	34.5	22	19.9	—	ø21.5
LQ2B2D-F□	1/4"								22			
LQ2B2E-F□	3/16"	1/4"	ø4	19	6	12	18	34.5	22	19.9	—	ø21.5
LQ2B2F-F□	1/8"								22			
LQ2B3A-F□	3/8"	1/4"	ø5	22	9	18	24	43	22.2	26.2	—	ø21.5
LQ2B3B-F□	1/4"							42.5				
LQ2B3C-F□	3/8"							43				
LQ2B3D-F□	1/4"	3/8"	ø5	22	9	18	24	42.5	24	26.2	—	ø25
LQ2B4A-F□	1/2"							52				
LQ2B4B-F□	3/8"	3/8"	ø6	28	11	22	30	51	27	33.1	21	ø25
LQ2B4C-F□	1/2"							52				
LQ2B4D-F□	3/8"	1/2"	ø6	28	11	22	30	51	32	33.1	21	ø29.5
LQ2B5A-F□	3/4"							59.5				
LQ2B5B-F□	1/2"	1/2"	ø7	32	14	28	36	58.5	35.5	40	26	ø29.5
LQ2B5C-F□	3/4"							59.5				
LQ2B5D-F□	1/2"	3/4"	ø7	32	14	28	36	58.5	37	40	26	ø36
LQ2B5D-F□	1/2"							58.5				

Union Elbow: LQ2E



(E) shows the approximate dimension of the inserted tubing from the end of the nut.

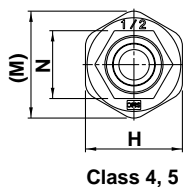
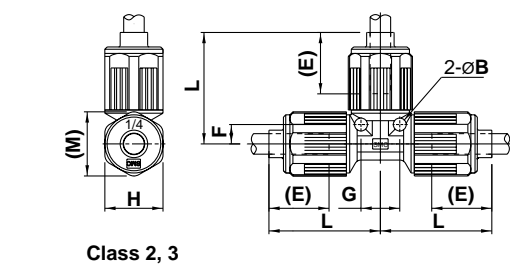
Metric sizes

Model	Applicable tubing O.D.	B	C	E	H	L	M	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					42.5		
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



(E) shows the approximate dimension of the inserted tubing from the end of the nut.

Metric sizes

Model	Applicable tubing O.D.	B	E	F	G	H	L	M	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						42.5		
LQ2T33□□	ø6						42.5		
LQ2T41□□	ø12	ø6	28	11	22	30	52	33.1	21
LQ2T42□□	ø10						51		
LQ2T51□□	ø19	ø7	32	14	28	36	59.5	40	26
LQ2T52□□	ø12						58.5		

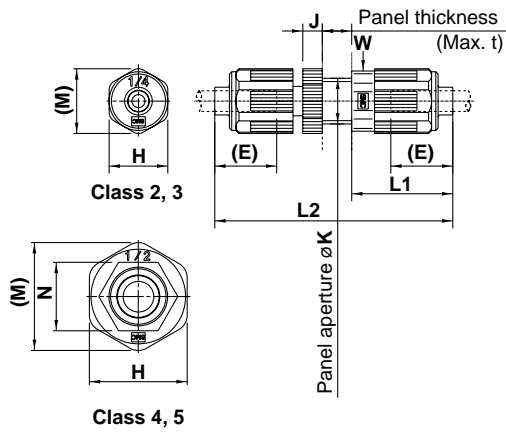
Inch sizes

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	26
LQ2T5B□□	1/2"						58.5		

Series LQ2

Dimensions

Panel Mount Union: LQ2P



(E) shows the approximate dimension of the inserted tubing from the end of the nut.
"W" is width across flats dimension.

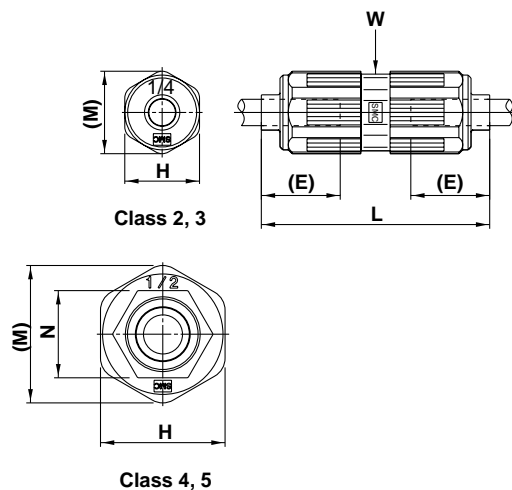
Metric sizes

Model	Applicable tubing O.D.	E	H	J	K	L1	L2	M	N	t	W
LQ2P21□□	ø6	19	18	6	ø14.5	31	73	19.9	-	7	16
LQ2P22□□	ø4										
LQ2P31□□	ø10										
LQ2P32□□	ø8	22	24	6	ø20.5	36	83	26.2	-	7	24
LQ2P33□□	ø6										
LQ2P41□□	ø12	28	30	9	ø24.5	42	95	33.1	21	7	30
LQ2P42□□	ø10										
LQ2P51□□	ø19										
LQ2P52□□	ø12	32	36	9	ø30.5	49	110	40	26	10	36
LQ2P52□□	ø12										

Inch sizes

Model	Applicable tubing O.D.	E	H	J	K	L1	L2	M	N	t	W
LQ2P2A□□	1/4"	19	18	6	ø14.5	31	73	19.9	-	7	16
LQ2P2B□□	3/16"										
LQ2P2C□□	1/8"										
LQ2P3A□□	3/8"	22	24	6	ø20.5	36	83	26.2	-	7	24
LQ2P3B□□	1/4"										
LQ2P4A□□	1/2"	28	30	9	ø24.5	42	95	33.1	21	7	30
LQ2P4B□□	3/8"										
LQ2P5A□□	3/4"										
LQ2P5B□□	1/2"	32	36	9	ø30.5	49	108	40	26	10	36
LQ2P5B□□	1/2"										

Union: LQ2U



(E) shows the approximate dimension of the inserted tubing from the end of the nut.
"W" is width across flats dimension.

Metric sizes

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

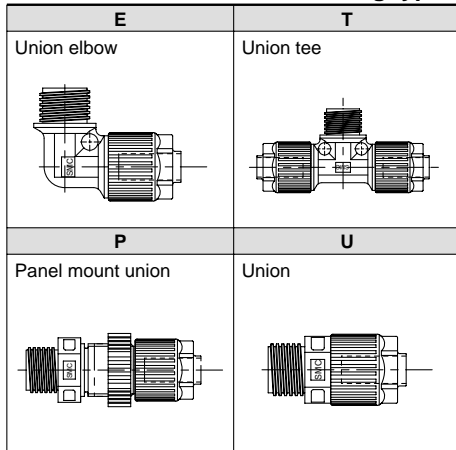
Inch sizes

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"						
LQ2U4A□□	1/2"	28	30	77	33.1	21	30
LQ2U4B□□	3/8"						
LQ2U5A□□	3/4"						
LQ2U5B□□	1/2"	32	36	86	40	26	36
LQ2U5B□□	1/2"						

How to Order Space Saving Fittings

LQ1 E 21 - S

Fitting type



• One nut (including insert bushing) of the nuts is not attached.
Please refer to below piping example.

• 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

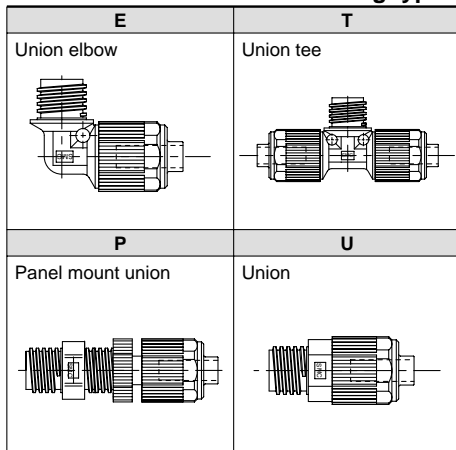
Class	No.	Applicable tubing size (mm)
1	A	1/8" x 0.086"
—	—	—
2	A	1/4" x 5/32"
2	B	3/16" x 1/8"
2	C	1/8" x 0.086"
3	A	3/8" x 1/4"
3	B	1/4" x 5/32"
4	A	1/2" x 3/8"
4	B	3/8" x 1/4"
5	A	3/4" x 5/8"
5	B	1/2" x 3/8"
6	A	1" x 7/8"
6	B	3/4" x 5/8"



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

LQ2 E 21 - S

Fitting type



• One nut (including insert bushing) of the nuts is not attached.
Please refer to below piping example.

⑤ Applicable tubing size

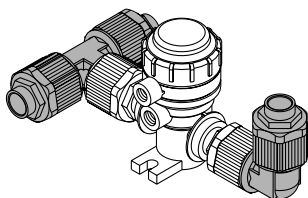
Class	No.	Applicable tubing size (mm)
2	1	6 x 4
2	2	4 x 3
3	1	10 x 8
3	2	8 x 6
3	3	6 x 4
4	1	12 x 10
4	2	10 x 8
5	1	19 x 16
5	2	12 x 10

Class	No.	Applicable tubing size (mm)
2	A	1/4" x 5/32"
2	B	3/16" x 1/8"
2	C	1/8" x 0.086"
3	A	3/8" x 1/4"
3	B	1/4" x 5/32"
4	A	1/2" x 3/8"
4	B	3/8" x 1/4"
5	A	3/4" x 5/8"
5	B	1/2" x 3/8"



Note) For each body class, the second and later numbers or symbols indicate reducing.

Piping Example



Options

Panel mounting nut

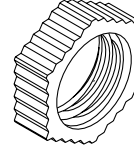
LQN P 2 — 

Applicable fitting

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

• Packaging

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



Used to secure a panel with a panel mount union.

Nut insert bushing

LQ  — 2 U 03 — 

* The U type is recommended when changing tubing sizes.

Applicable fitting

Symbol	Application
Nil	For LQ2
1	For LQ1

• Class

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

• Type of parts

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

• Packaging

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

• Applicable tubing size

Symbol	Connection tubing size	Class					
		LQ1	LQ1, LQ2	LQ1			
		1	2	3	4	5	6

Metric sizes

03	ø3 x ø2	○	○				
04	ø4 x ø3	○	○				
06	ø6 x ø4		○	○			
08	ø8 x ø6			○			
10	ø10 x ø8			○	○		
12	ø12 x ø10				○	○	
19	ø19 x ø16					○	○
25	ø25 x ø22.5						○

Symbol	Connection tubing size	Class					
		LQ1	LQ1, LQ2	LQ1			
		1	2	3	4	5	6

Inch sizes

03	1/8" x 0.086"	○	○				
05	3/16" x 1/8"		○				
07	1/4" x 5/32"		○	○			
11	3/8" x 1/4"			○	○		
13	1/2" x 3/8"				○	○	
19	3/4" x 5/8"					○	○
25	1" x 7/8"						○



Note) In case of 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 fitting

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

• Applicable tubing size

Symbol	Connection tubing size	Class					
		LQ1	LQ1, LQ2	LQ1			
		1	2	3	4	5	6

Metric sizes

03	ø3 x ø2	○	●				
04	ø4 x ø3	○	●				
06	ø6 x ø4		○	●			
08	ø8 x ø6			●			
10	ø10 x ø8			○	●		
12	ø12 x ø10				○	●	
19	ø19 x ø16					○	●
25	ø25 x ø22.5						○

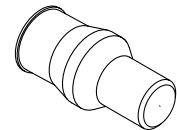
○ Basic size ● With reducer

Symbol	Connection tubing size	Class					
		LQ1	LQ1, LQ2	LQ1			
		1	2	3	4	5	6

Inch sizes

03	1/8" x 0.086"	○	●				
05	3/16" x 1/8"		●				
07	1/4" x 5/32"	○	●				
11	3/8" x 1/4"		○	●			
13	1/2" x 3/8"			○	●		
19	3/4" x 5/8"				○	●	
25	1" x 7/8"						○

○ Basic size ● With reducer



Used to block fittings which are not being used.

Series LQ₂ 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 O.D.														
	Metric sizes								Inch sizes						
	ø3	ø4	ø6	ø8	ø10	ø12	ø19	ø25	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"
1	○	○	—	—	—	—	—	—	○	—	—	—	—	—	—
2	●	●	○	—	—	—	—	—	●	●	○	—	—	—	—
3	—	—	●	●	○	—	—	—	—	—	●	○	—	—	—
4	—	—	—	—	●	○	—	—	—	—	—	●	○	—	—
5	—	—	—	—	—	●	○	—	—	—	—	—	●	○	—
6	—	—	—	—	—	—	●	○	—	—	—	—	—	●	○


Parts composition

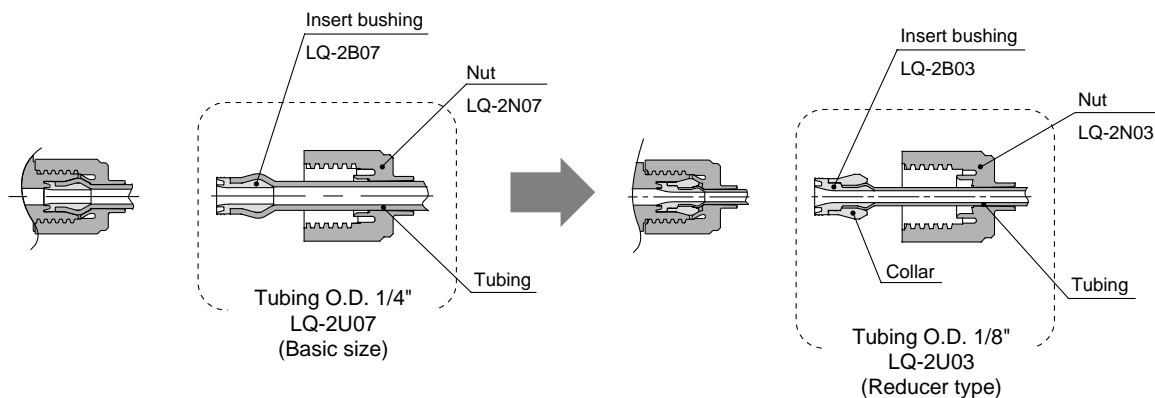
	Component parts		
	Nut	Insert	Collar (Insert assembly)
○ Basic size	Yes	Yes	No
● Reducer type	Yes	Yes	Yes

Changing the tubing size

Example) Changing the tubing from an O.D. 1/4" to O.D. 1/8" in LQ2 body class 2.

Prepare 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.



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. (with parts case)

Option (L/M type only)

Symbol	Option
Nil	None
B	With brackets

Type

Symbol	Body class	J type	K type
J · K	1, 2		
L · M	1, 2, 3, 4, 5, 6		

Option

Description	Part no.
Bracket assembly	LQ-GBL

Table 1 Tubing size symbols

Type	Body class	Tubing O.D.															
		Metric sizes								Tubing outside diameter							
		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		

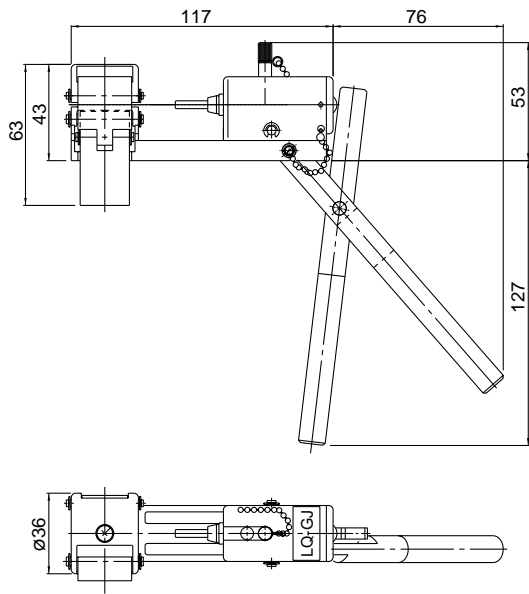
Replacement parts

Description	Part No.								
Insert pin holder assembly (with the parts case)	LQ-GP J [] - [] ↓ Type ↓ Insert pin material (J/K type only) <table border="1"> <tr><td>Nil</td><td>Resin</td></tr> <tr><td>S</td><td>Stainless steel</td></tr> </table> <table border="1"> <tr><td>Nil</td><td>Metric sizes</td></tr> <tr><td>N</td><td>Inch sizes</td></tr> </table> ↓ Insert pin/Holder type	Nil	Resin	S	Stainless steel	Nil	Metric sizes	N	Inch sizes
Nil	Resin								
S	Stainless steel								
Nil	Metric sizes								
N	Inch sizes								
Insert pin (single)	LQ-GP 2 J [] - 07 ↓ Body class (Refer to Table 1) ↓ Type ↓ Insert pin material (J/K type only) <table border="1"> <tr><td>Nil</td><td>Resin</td></tr> <tr><td>S</td><td>Stainless steel</td></tr> </table> ↓ Tubing size symbol (Refer to Table 1)	Nil	Resin	S	Stainless steel				
Nil	Resin								
S	Stainless steel								
Holder (single)	LQ-GH J - 07 ↓ Type ↓ Tubing size symbol (Refer to Table 1)								

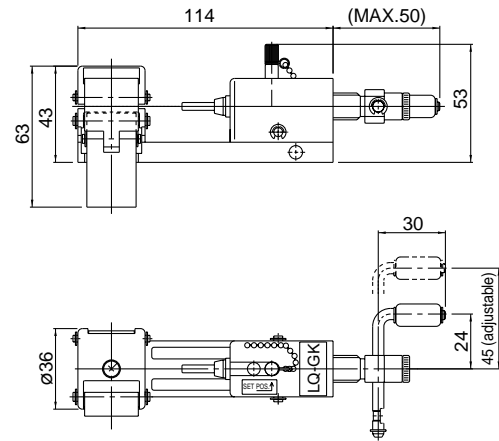
Note 1) Replacement part type J shows the parts for LQ-GJ and LQ-GK. Replacement part type L shows the parts for LQ-GL and LQ-GM.

Dimensions

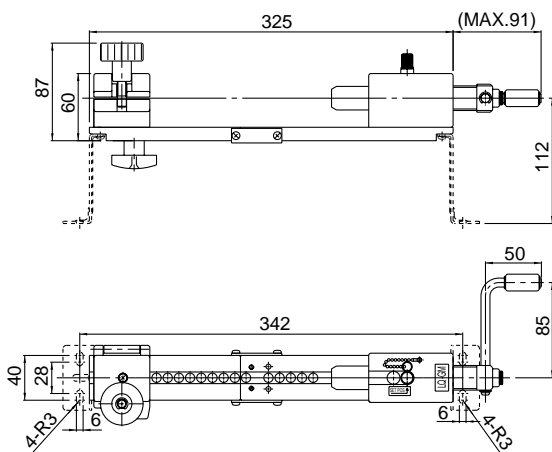
LQ-GJ



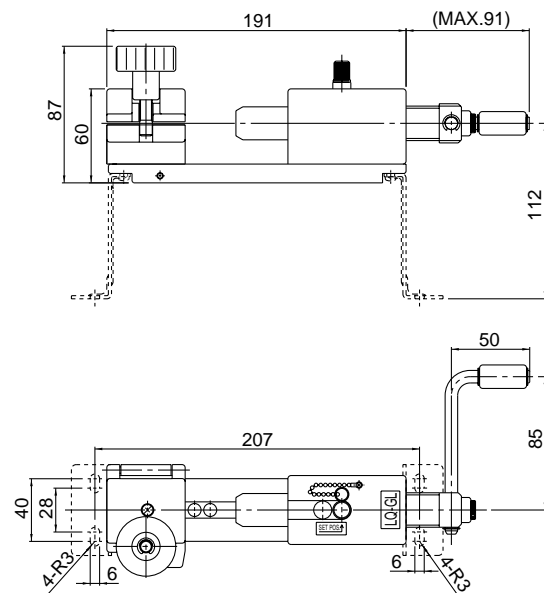
LQ-GK



LQ-GM



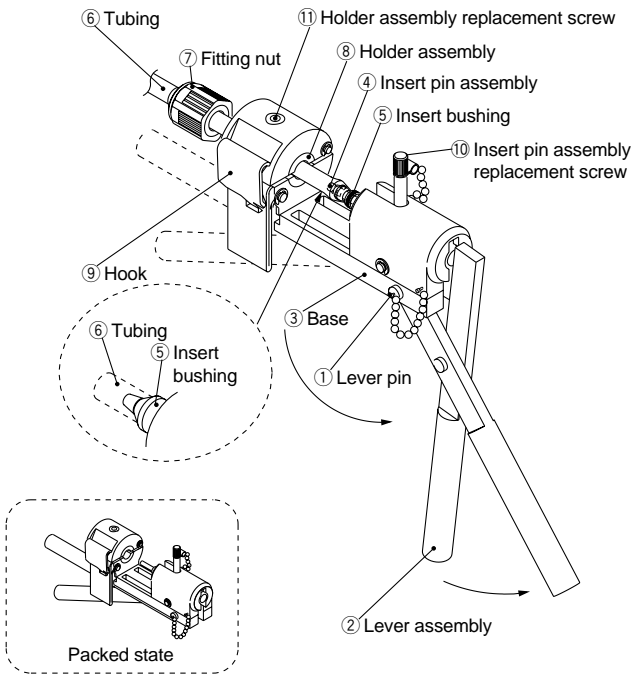
LQ-GL



Fitting Assembly Procedure

Assemble fittings following the procedure shown below.

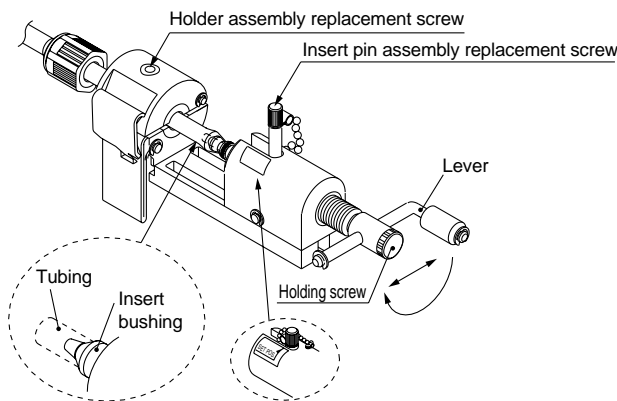
J type



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.

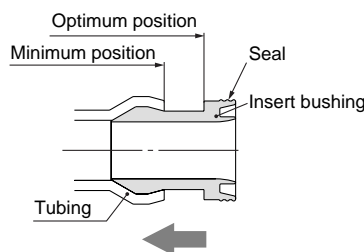
Nut tightening torque for piping

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

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

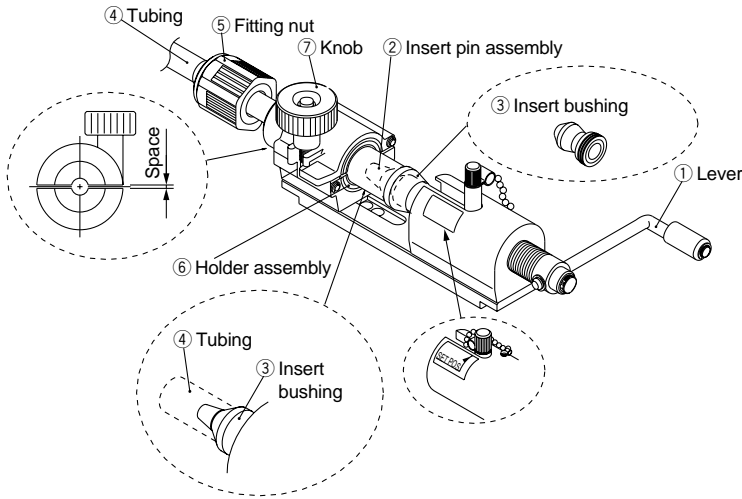
⚠ Precautions on installation

- Be careful not to scratch or dent the seal of the insert bushing. (Refer to the illustration on the left.)
- When the insert bushing inserted, its tubing end should be closer to seal side than the minimum position. (Refer to the illustration on the left.)

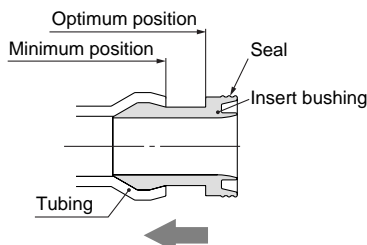
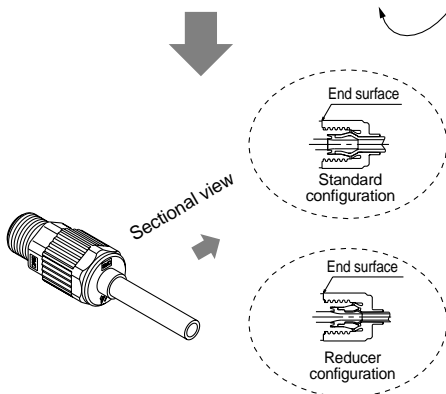
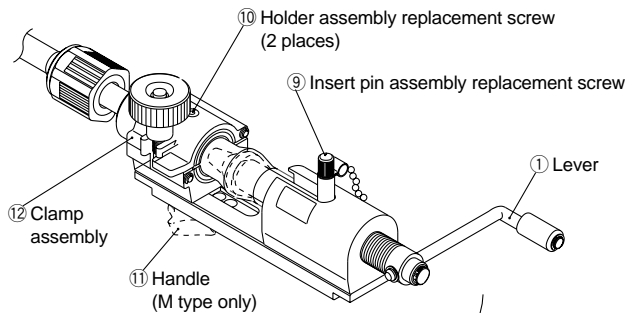


Assemble fittings following the procedure shown below.

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. As a guide when tightening the tubing ④ with the knob ⑦, maintain a uniform gap 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 to 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 class 1, the nut should be tightened manually.

⚠ Precautions on installation

- Be careful not to scratch or dent the seal of the insert bushing. (Refer to the illustration on the left.)
- When the insert bushing inserted, its tubing end should be closer to seal side than the minimum position. (Refer to the illustration on the left.)

High Purity Fluoropolymer Needle Valve

Series *LVN*

How to Order

LVN **2** 0 – S **07**

Body class

Symbol	Body class	Orifice dia.
2	2	ø4.4
3	3	ø8
4	4	ø10

A port (IN)

Applicable tubing size

Symbol	Connecting tubing O.D.	Body class		
		2	3	4
Metric sizes				
04	ø4	●		
06	ø6	○	●	
08	ø8		●	
10	ø10		○	●
12	ø12			○
Inch sizes				
03	1/8	●		
05	3/16	●		
07	1/4	○	●	
11	3/8		○	●
13	1/2			○

○ Basic size ● With reducer

Note) Applicable fitting: LQ2

Port B (OUT) different dia. size

Symbol	Application
Nil	Port A & B same size
	Different diameter tubing can be selected within the same body class.

Different diameter tubing order example

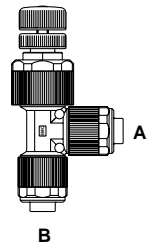
Different diameter tubing (with plug-in reducer) can be selected within the same body class.

(Example) Body class 3

A side: ø10 x ø8

B side: ø8 x ø6

Order as shown below.



LVN30 – S **10** **08**

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



Standard Specifications

Model		LVN20	LVN30	LVN40
Tubing O.D.	Metric size	4, 6	6, 8, 10	10, 12
	Inch size	1/8, 1/16, 1/4	1/4, 3/8	3/8, 1/2
Orifice diameter		ø4.4	ø8	ø10
Flow characteristics	Av x 10 ⁻⁶ m ²	12	33.6	52.8
	Cv	0.5	1.4	2.2
Withstand pressure (MPa)		1		
Operating pressure (MPa)		0 to 0.5		
Fluid temperature (°C)		5 to 90		
Ambient temperature (°C)		0 to 60		
Weight (kg)		0.055	0.115	0.185

Different Diameter Tubing Applicable with Reducer

Different diameter tubing can be selected (within a body class) by using a nut and insert bushing (reducer). Applicable fitting: LQ2

Body class	Tubing O.D.									
	Metric sizes					Inch sizes				
	4	6	8	10	12	1/8	3/16	1/4	3/8	1/2
2	●	○				●	●	○		
3		●	●	○				●	○	
4				●	○				●	○

Note) Refer to page 31 for information on changing tubing sizes. ○ Basic size ● With reducer

⚠ Specific Product Precautions

Be sure to read before handling. Refer to pages 42 through 44 for safety instructions and high purity chemical valve precautions.

Piping

⚠ Caution

1. Connect tubing with special tools.

Refer to pages 31 through 33 regarding tubing connection and special tools.

2. Tighten the nut to the end surface of the body. As a guide, refer to the proper tightening torques shown below.

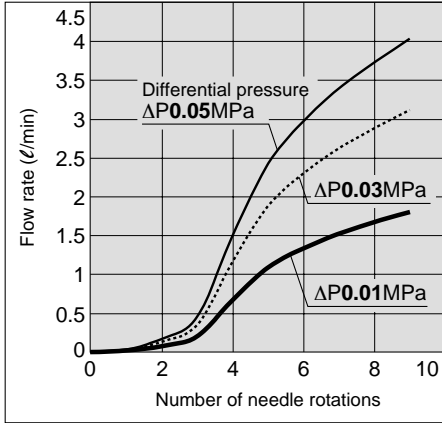
Tightening torque for piping

Body class	Torque (N·m)
2	1.5 to 2.0
3	3.0 to 3.5
4	7.5 to 9

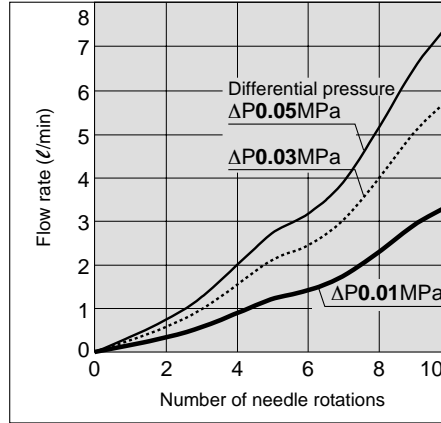
Series LVN

Flow Characteristics (Fluid: Water)

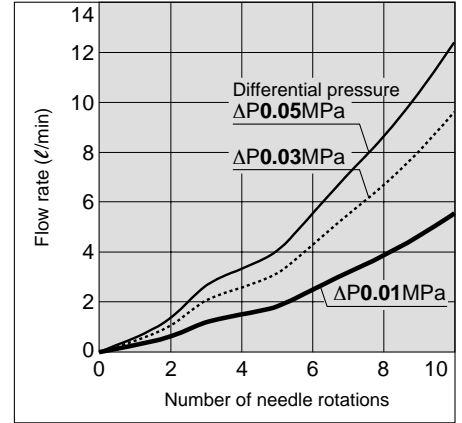
LVN20



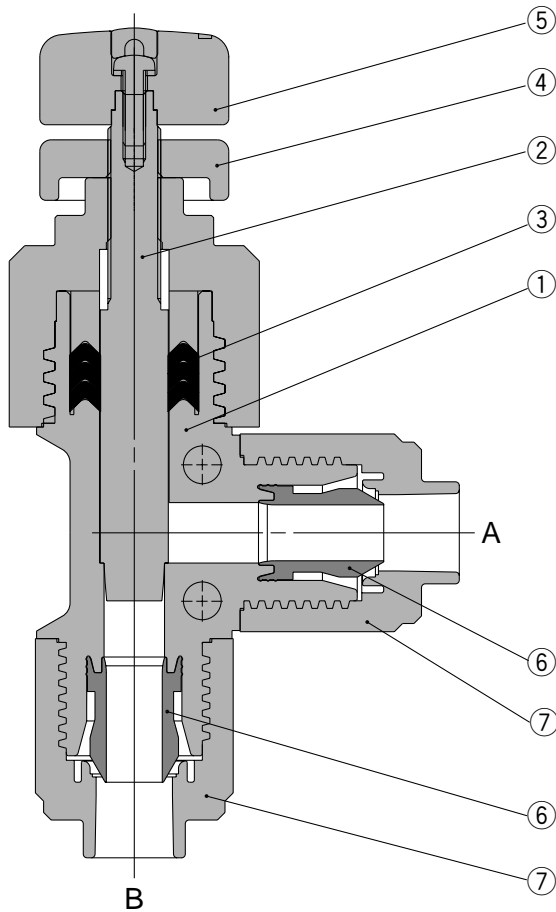
LVN30



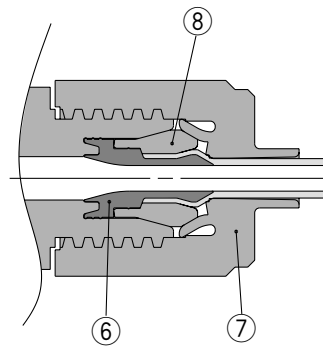
LVN40



Construction



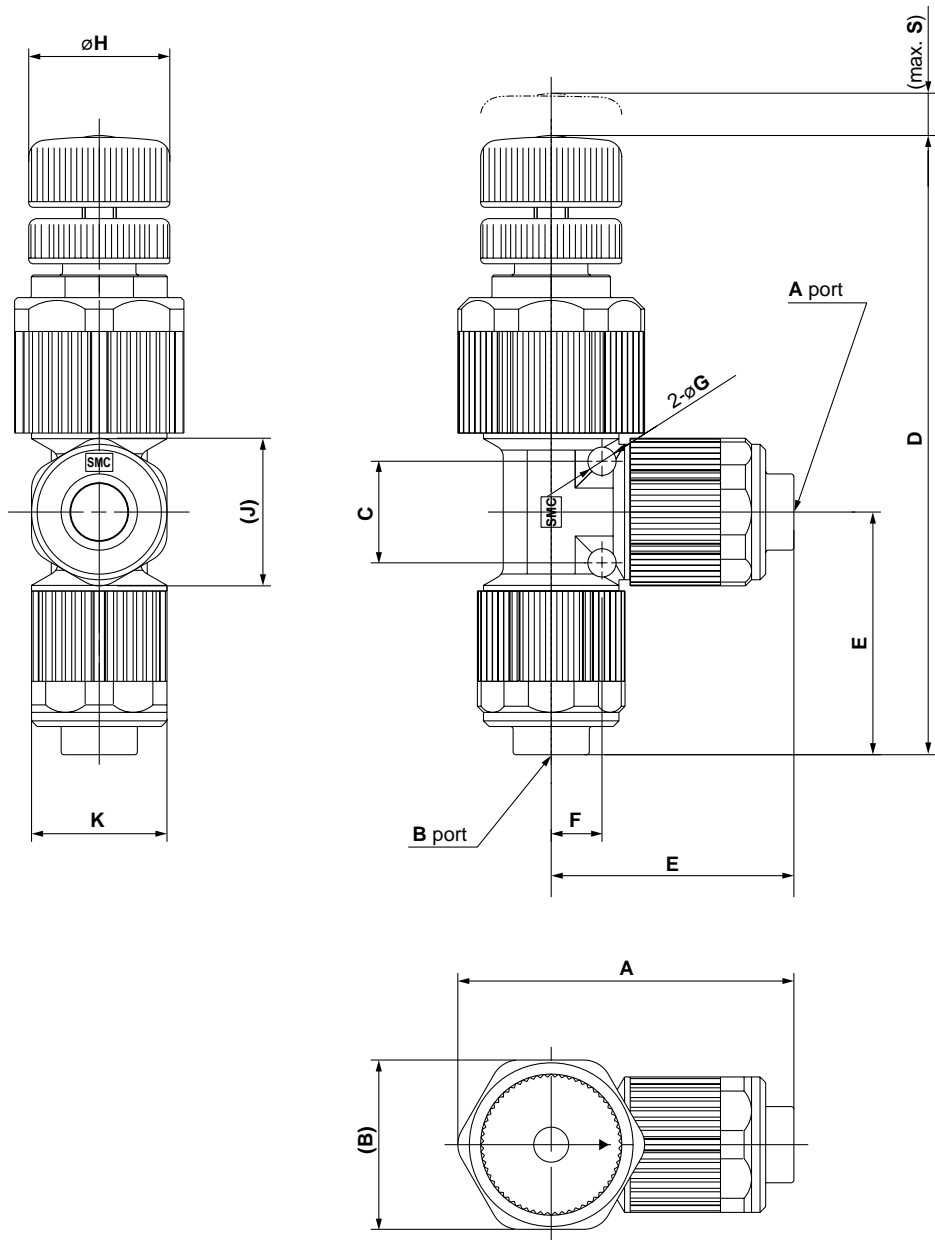
With reducer



Part lists

No.	Description	Material
1	Body	PFA
2	Needle	PCTFE
3	V seal	PTFE
4	Lock nut	PVDF
5	Adjustment handle	PVDF
6	Insert bushing	PFA
7	Nut	PFA
8	Collar	PFA

Dimensions



Model	A	B	C	D	E	F	G	H	J	K	S
LVN20	48	24	12	88	34.5	6	4	14	20	18	2.4
LVN30	60	30	18	110	43	9	5	25	26	24	7.5
LVN40	72	36	22	124	52	11	6	25	33	30	8

High Purity Fluoropolymer Tubing

Series TL/TIL

Material: Super PFA

Series and Specifications

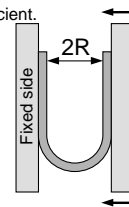
		Metric sizes (Series TL)						Inch sizes (Series TIL)							
Tubing model		TL0403	TL0604	TL0806	TL1008	TL1210	TL1916	TIL01	TILB01	TIL05	TIL07	TIL11	TIL13	TIL19	TIL25
Nominal diameter		—	—	—	—	—	—	1/8"	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"
Tubing size		ø4 x ø3	ø6 x ø4	ø8 x ø6	ø10 x ø8	ø12 x ø10	ø19 x ø16	1/8" x 0.086"	1/8" x 1/16"	3/16" x 1/8"	1/4" x 5/32"	3/8" x 1/4"	1/2" x 3/8"	3/4" x 5/8"	1" x 7/8"
O.D. (mm)	Basic diameter	4	6	8	10	12	19	3.18	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				1.5	0.5	0.8	0.8	1.2	1.6			
	Tolerance	±0.05	±0.1				±0.15	±0.05	±0.08	±0.08	±0.12	±0.15			
Bundle	10 m	—	—	—	●	●	●	—	—	—	—	●	●	—	—
	20 m	●	●	●	●	●	●	●	—	●	●	●	●	●	●
	50 m	●	●	●	●	●	●	●	—	●	●	●	●	●	●
	100 m	●	●	●	●	●	●	●	—	●	●	●	●	●	—
	50 Ft. (16 m)	—	—	—	—	—	—	●	●	●	●	●	●	●	●
	100 Ft. (33 m)	—	—	—	—	—	—	●	●	●	●	●	●	●	●
Straight pipe	2 m	●	●	●	●	●	●	—	●	●	●	●	●	●	●
Color		Translucent (colour of material)													
Applicable fluid		Please refer to the applicable fluid in page 41.													
Max. operating pressure (at 20°C)	Note 1)	1 MPa			0.9MPa	0.7 MPa	0.6 MPa	1 MPa					0.7 MPa	0.5 MPa	
Burst pressure (at 20°C)		4.9 MPa	6.9 MPa	4.7 MPa	3.6MPa	2.9 MPa	2.6 MPa	6.4 MPa	9.9 MPa	6.7 MPa	7.9 MPa	6.7 MPa	4.6 MPa	2.8 MPa	2.0 MPa
Min. bending radius (mm)	Note 2)	20		40	65	110	160	12	6	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: When the value (calculated using the formula below) exceeds 1 MPa, the Max. operating pressure is 1 MPa.
(Max. operating pressure) = 1/4 x (burst pressure drop coefficient) x (burst pressure at 20°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 tubing.

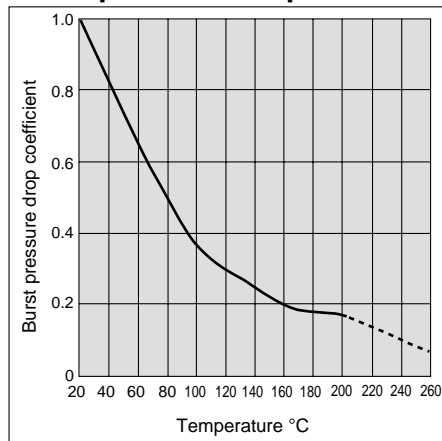
Note 2) The minimum bending radius is measured using the method shown in the figure at the right.

Note 3) It is connectable with LQ Series (3/4" size). As for other commercial items, there are some cases it is not able to connect due to tolerance of dimensions.



At a temperature of 20°C bend the tubing into a U shape. Then with one side fixed, gradually close the other side and measure 2R at the point where the tubing folds or flattens, etc.

Burst pressure drop curve



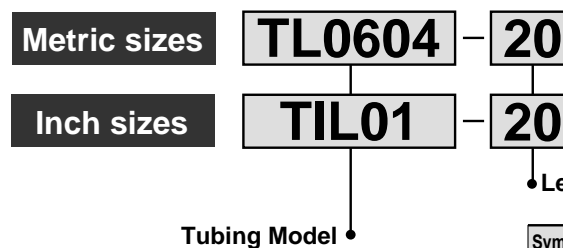
Note 4)

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 deionized water and immersed in 15 ml of 25% methyl alcohol extract at room temperature for 24 hours. Then the extract is diluted with deionized water to be subjected to a quantitative analysis of fluorine ions.

How to Order



Length Applicable to both metric and inch size

Symbol	Type	Length
10	Roll	10 m
20		20 m
50		50 m
100		100 m
2S	Straight	2 m

Length Applicable to inch size only

Symbol	Type	Length
16	Roll	50 Ft. (16 m)
33		100 Ft. (33 m)

Note 4)

Eluting metal ion amount (ng/cm²)

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

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

Note 4) Figures shown in tables are representative values, not guaranteed values.



Applicable Fluids

Material and fluid compatibility check list for high purity fluoropolymer fittings

Chemical		Compatibility
Acetic acid	100%	<input type="radio"/>
Acetone	100%	<input type="radio"/> Note 1)
Ammonium fluoride	40%	<input type="radio"/>
Ammonium hydroxide	30%	<input type="radio"/>
Butyl acetate	100%	<input type="radio"/>
Methylene chloride	100%	<input type="radio"/>
Hydrochloric acid	38%	<input type="radio"/>
Hydrofluoric acid	50%	<input type="radio"/>
Hydrogen peroxide	60%	<input type="radio"/>
Methanol	100%	<input type="radio"/>
Methyl ethyl Ketone	—	<input type="radio"/>
Nitric acid	70%	<input type="radio"/>
Phosphoric acid	86%	<input type="radio"/>
Caustic potash	85%	<input type="radio"/>
Sulfuric acid	100%	<input type="radio"/>
Toluene	—	<input type="radio"/> Note 1)
Xylene	—	<input type="radio"/>
Sodium hydroxide	100%	<input type="radio"/>
1.1.1-Trichloroethane	100%	<input type="radio"/>
Rhosphorus pentachloride	—	<input type="radio"/>
Isobutyl alcohol	—	<input type="radio"/> Note 1)
Isopropyl alcohol	—	<input type="radio"/> Note 1)
Ozone	—	<input type="radio"/>
Ethyl acetate	—	<input type="radio"/> Note 1)
Deionized water	—	<input type="radio"/>
Nitrogen	—	<input type="radio"/>
Ultrapure water	—	<input type="radio"/>
Tmah	—	<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.




Table symbol can be used.

- Compatibility is indicated for fluid temperatures of 200°C or less.
- The material and fluid compatibility check list provides reference values as a guide only, therefore we do not guarantee the application to our product.
- The data above is based on the information presented by the material manufacturers.
- SMC is not responsible for its accuracy and any damage happened because of this data.



Series LQ₂¹, LVN, 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 --General rules relating to 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), labour health and safety laws and other safety regulations.



Series LQ₂¹, LVN, TL/TIL High Purity Fluoropolymer Fittings/ Needle Valve/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 catalogue.

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 catalogue.

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 31 through 33 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 (N·m)	
	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	—

3. Use sealant tape for the piping of taper thread parts such as LQ□H and LQ□L.

Tape the ridges tightly with the sealant tape, starting one ridge width left from thread end side. 3 to 4 sealant tapes are required.

Taper thread mounting torque

Bore size	Torque (N·m)
1/8	0.6 to 0.9
1/4	0.8 to 1.2
3/8	1.0 to 1.6
1/2	1.5 to 2.0
3/4	2.0 to 2.7
1	2.5 to 3.6



Series LQ₂¹, LVN, TL/TIL High Purity Fluoropolymer Fittings/ Needle Valve/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 deionized water or air, etc., before beginning work activities.
3. Tightening of taper threads for piping
Because the taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections, and if leakage is detected correct the problem by additional tightening. If additional tightening becomes ineffective, replace the fitting with a new product.
4. Check the following during regular maintenance, and replace components as necessary.
 - a) Scratches, gouges, abrasion, corrosion
 - b) Twisting, flattening or distortion of tubing
 - c) Hardening, deterioration or softening of tubing
5. Do not repair or patch the replaced tubing or fittings for reuse.

Operating Precautions

⚠ Warning

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

⚠ Caution

1. After a long period of non-use, perform inspections before beginning operation.
2. Use sufficient care in the handling of series LQ clean packaging types when their packaging is opened.
3. For LVN Series, be careful not to apply any excessive force to the stroke end, which fully opens and closes, to avoid accidental damage or changes in flow characteristics.

Installation of Tubing

⚠ Caution

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

Use of Tubing

⚠ Caution

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

Applicable tubing sizes

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



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