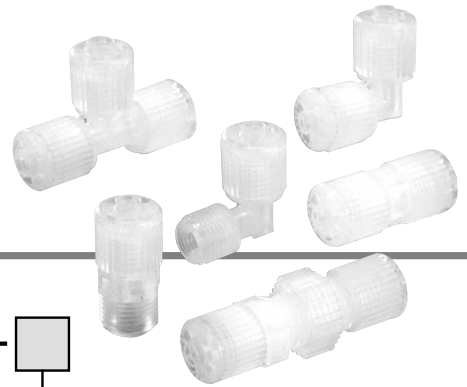


High Purity Fluoropolymer Fittings

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	3/8"
3	4	10 x 8	
3	5	8 x 6	3/8"
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"	3/8"
3	D	1/4" x 5/32"	
4	A	1/2" x 3/8"	3/8"
4	B	3/8" x 1/4"	
4	C	1/2" x 3/8"	1/2"
4	D	3/8" x 1/4"	
5	A	3/4" x 5/8"	1/2"
5	B	1/2" x 3/8"	
5	C	3/4" x 5/8"	3/4"
5	D	1/2" x 3/8"	
6	A	1" x 7/8"	3/4"
6	B	3/4" x 5/8"	
6	C	1" x 7/8"	1"
6	D	3/4" x 5/8"	



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

VC

VDW

VQ

VX2

VX

VX3

VXA

VN

LVC

LVA

L VH

LVD

L VQ

LQ

L VN

T/ TIL

PA

PAX

PB

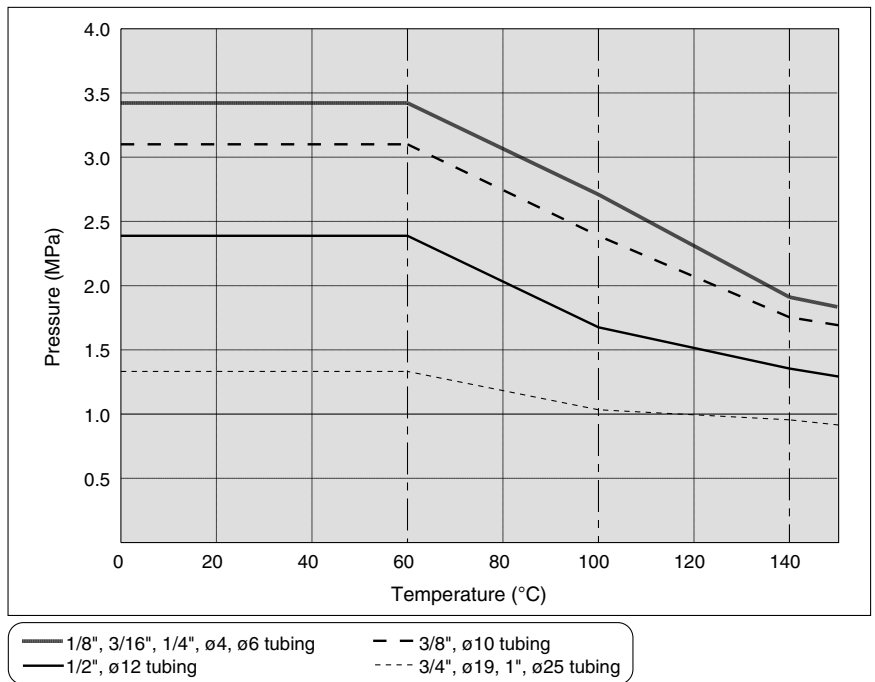
High Purity Fluoropolymer Fittings Series LQ1

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

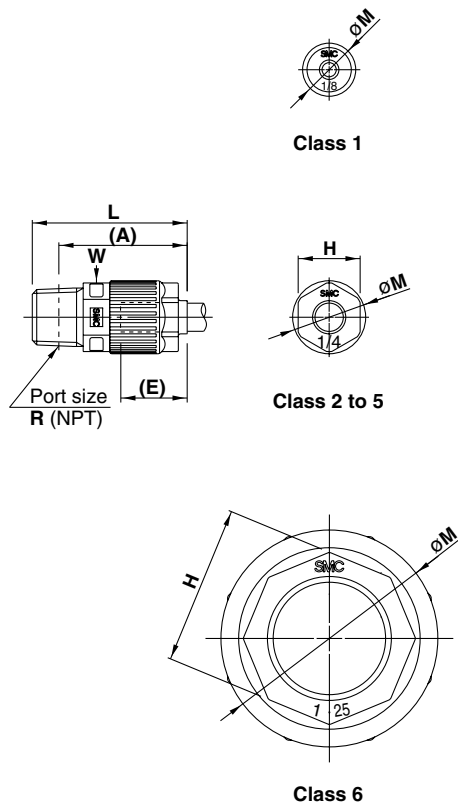


- VC□
- VDW
- VQ
- VX2
- VX□
- VX3
- VXA
- VN□
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ**
- LVN
- TI/
TIL
- PA
- PAX
- PB

Series LQ1

Dimensions

Male Connector: LQ1H-M



(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.

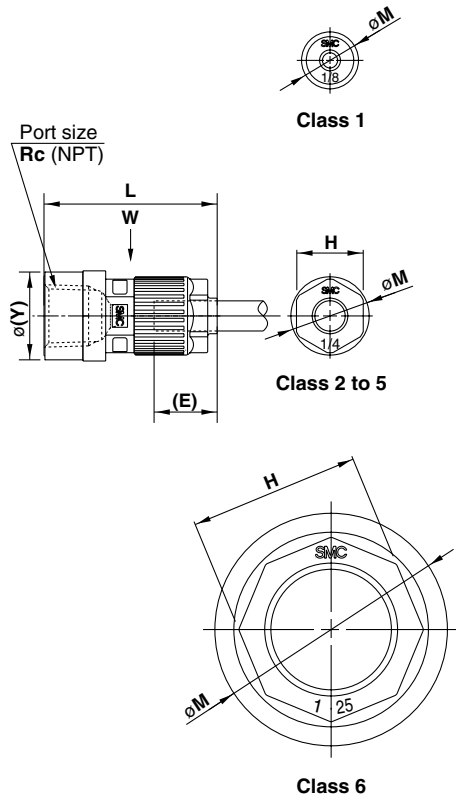
Metric sizes

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	29	26	62.5	39	32
LQ1H34-M□	ø10							
LQ1H35-M□	ø8	3/8"	36	24	21	52	28	23
LQ1H36-M□	ø6							
LQ1H41-M□	ø12	3/8"	46	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 Rc/NPT	A	E	H	L	M	W
LQ1H1A-M□	1/8"	1/8"	21	10	—	25	11.5	10
LQ1H2A-M□	1/4"							
LQ1H2B-M□	3/16"	1/8"	31.5	15	14	35	16.5	14
LQ1H2C-M□	1/8"							
LQ1H2D-M□	1/4"	1/4"	29	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"	3/8"	46	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"	1/2"	55	29	26	62.5	39	32
LQ1H5A-M□	3/4"							
LQ1H5B-M□	1/2"	3/4"	53.5	39.5	36	81	49	46
LQ1H5C-M□	3/4"							
LQ1H5D-M□	1/2"	3/4"	72	39.5	36	81	49	46
LQ1H6A-M□	1"							
LQ1H6B-M□	3/4"	1"	71	39.5	36	81	49	46
LQ1H6C-M□	1"							
LQ1H6D-M□	3/4"	1"	71	39.5	36	81	49	46
LQ1H6E-M□	3/4"							

Female Connector: LQ1H-F



(E) shows the reference 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	W	Y
LQ1H11-F□	ø4	1/8"	10	—	26.5	ø11.5	10	ø18.5
LQ1H12-F□	ø3							
LQ1H21-F□	ø6	1/8"	15	14	35	ø16.5	14	ø18.5
LQ1H22-F□	ø4							
LQ1H23-F□	ø6	1/4"	20	17	42.5	ø23	19	ø21.5
LQ1H24-F□	ø4							
LQ1H31-F□	ø10	1/4"	20	17	42.5	ø23	19	ø21.5
LQ1H32-F□	ø8							
LQ1H33-F□	ø6	3/8"	24	21	47.5	ø28	23	ø25
LQ1H34-F□	ø10							
LQ1H35-F□	ø8	3/8"	24	21	50	ø28	23	ø29.5
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"	29	26	60	ø39	32	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							

Inch sizes

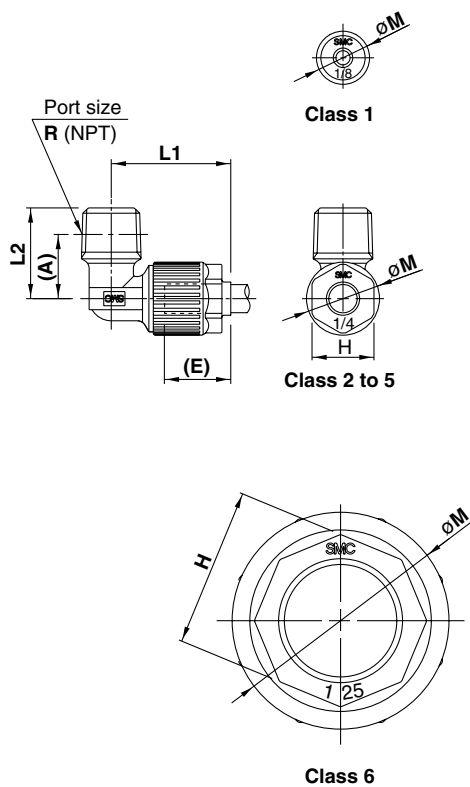
Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L	M	W	Y
LQ1H1A-F□	1/8"	1/8"	10	—	26.5	ø11.5	10	ø18.5
LQ1H2A-F□	1/4"							
LQ1H2B-F□	3/16"	1/8"	15	14	35	ø16.5	14	ø18.5
LQ1H2C-F□	1/8"							
LQ1H2D-F□	1/4"	1/4"	20	17	42.5	ø23	19	ø21.5
LQ1H2E-F□	3/16"							
LQ1H2F-F□	1/8"	3/8"	24	21	47.5	ø28	23	ø25
LQ1H3A-F□	3/8"							
LQ1H3B-F□	1/4"	3/8"	24	21	50	ø28	23	ø29.5
LQ1H3C-F□	3/8"							
LQ1H3D-F□	1/4"	1/2"	29	26	58.5	ø39	32	ø29.5
LQ1H4A-F□	1/2"							
LQ1H4B-F□	3/8"	3/4"	39.5	36	75	ø49	46	ø36
LQ1H4C-F□	1/2"							
LQ1H4D-F□	3/8"	1"	39.5	36	78.5	ø49	46	ø44.5
LQ1H5A-F□	3/4"							
LQ1H5B-F□	1/2"	3/4"	39.5	36	78.5	ø49	46	ø44.5
LQ1H5C-F□	3/4"							
LQ1H5D-F□	1/2"	1"	39.5	36	78.5	ø49	46	ø44.5
LQ1H6A-F□	1"							
LQ1H6B-F□	3/4"	1"	39.5	36	78.5	ø49	46	ø44.5
LQ1H6C-F□	1"							
LQ1H6D-F□	3/4"	1"	39.5	36	78.5	ø49	46	ø44.5
LQ1H6E-F□	3/4"							

- VC□
- VDW
- VQ
- VX2
- VX□
- VX3
- VXA
- VN□
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ**
- LVN
- TI/
TIL
- PA
- PAX
- PB

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.

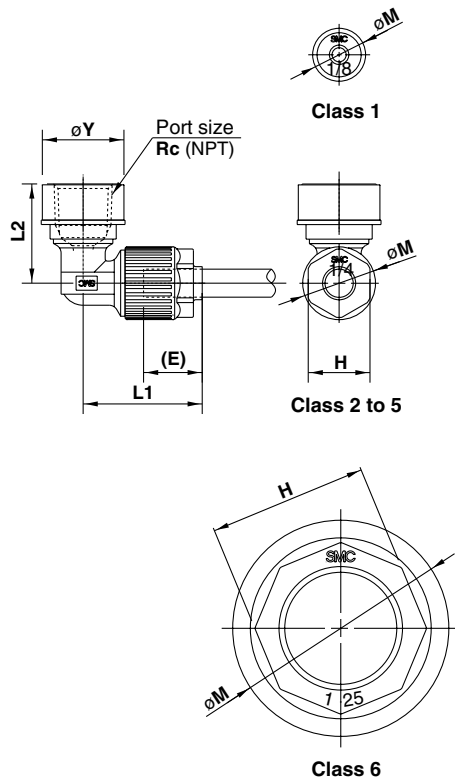
Metric sizes

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"	35	39.5	36	68.5	46	ø49
LQ1L42-M□	ø10							
LQ1L43-M□	ø12	1/2"	30.5	29	26	54	40	ø39
LQ1L44-M□	ø10							
LQ1L51-M□	ø19	1/2"	30.5	29	26	54	40	ø39
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"	1/4"	25	24	21	45	33	ø28
LQ1L3A-M□	3/8"							
LQ1L3B-M□	1/4"	3/8"	30.5	29	26	54	40	ø39
LQ1L3C-M□	3/8"							
LQ1L3D-M□	1/4"	1/2"	35	39.5	36	68.5	46	ø49
LQ1L4A-M□	1/2"							
LQ1L4B-M□	3/8"	3/8"	35	39.5	36	68.5	46	ø49
LQ1L4C-M□	1/2"							
LQ1L4D-M□	3/8"	1/2"	30.5	29	26	54	40	ø39
LQ1L5A-M□	3/4"							
LQ1L5B-M□	1/2"	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

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	ø25	ø25
LQ1L34-F□	ø10							
LQ1L35-F□	ø8	1/2"	24	21	45	29	ø28	ø25
LQ1L36-F□	ø6							
LQ1L41-F□	ø12	1/2"	29	26	54	37.5	ø39	ø29.5
LQ1L42-F□	ø10							
LQ1L43-F□	ø12	3/4"	29	26	54	39.5	ø39	ø36
LQ1L44-F□	ø10							
LQ1L51-F□	ø19	3/4"	39.5	36	68.5	44.5	ø49	ø36
LQ1L52-F□	ø12							
LQ1L53-F□	ø19	1"	39.5	36	68.5	48	ø49	ø44.5
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

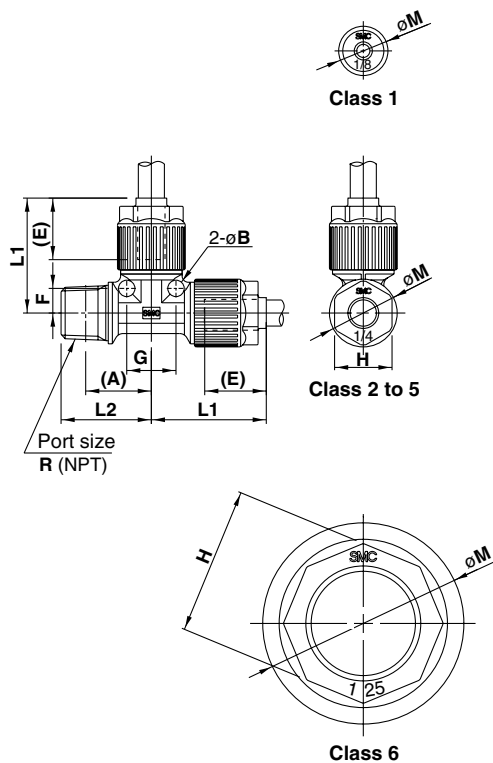
Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L1	L2	M	Y
LQ1L1A-F□	1/8"	1/8"	10	—	18	17	ø11.5	ø18.5
LQ1L2A-F□	1/4"							
LQ1L2B-F□	3/16"	1/8"	15	14	27	19.5	ø16.5	ø18.5
LQ1L2C-F□	1/8"							
LQ1L2D-F□	1/4"	1/4"	20	17	35	22.5	ø23	ø21.5
LQ1L2E-F□	3/16"							
LQ1L2F-F□	1/8"	3/8"	20	17	35	25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

- VC□
- VDW
- VQ
- VX2
- VX□
- VX3
- VXA
- VN□
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ**
- LVN
- TI/
TIL
- PA
- PAX
- PB

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.

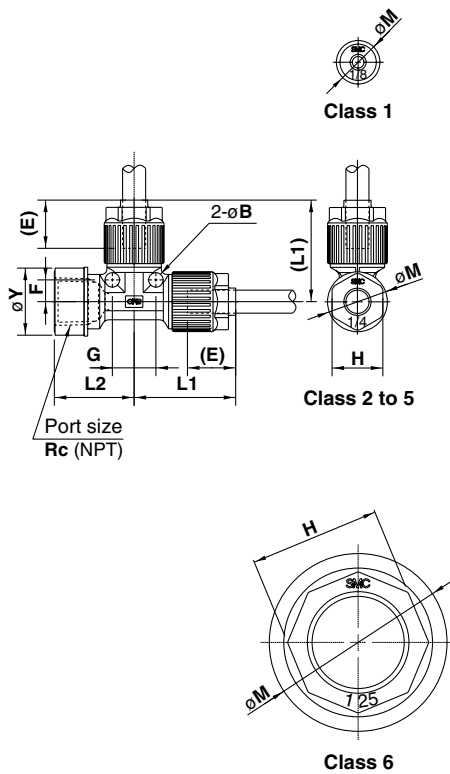
Metric sizes

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"	21								27
LQ1R36-M□	ø6										
LQ1R41-M□	ø12	3/8"	23								29
LQ1R42-M□	ø10										
LQ1R43-M□	ø12	1/2"	24.5	ø6	24	9	18	21	43		28
LQ1R44-M□	ø10										
LQ1R51-M□	ø19	1/2"	30.5								38
LQ1R52-M□	ø12										
LQ1R53-M□	ø19	3/4"	30	ø7	29	14	28	26	54		39
LQ1R54-M□	ø12										
LQ1R61-M□	ø25	3/4"	36								49
LQ1R62-M□	ø19										
LQ1R63-M□	ø25	1"	35	ø8	39.5	18	36	36	69.5	45	
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		23
LQ1R3A-M□	3/8"										
LQ1R3B-M□	1/4"	3/8"	21								27
LQ1R3C-M□	3/8"										
LQ1R3D-M□	1/4"	3/8"	23								29
LQ1R4A-M□	1/2"										
LQ1R4B-M□	3/8"	1/2"	24.5	ø6	24	9	18	21	43		28
LQ1R4C-M□	1/2"										
LQ1R4D-M□	3/8"	1/2"	30.5								38
LQ1R5A-M□	3/4"										
LQ1R5B-M□	1/2"	3/4"	30	ø7	29	14	28	26	54		39
LQ1R5C-M□	3/4"										
LQ1R5D-M□	1/2"	3/4"	36								49
LQ1R6A-M□	1"										
LQ1R6B-M□	3/4"	1"	35	ø8	39.5	18	36	36	69.5	45	
LQ1R6C-M□	1"										
LQ1R6D-M□	3/4"										

Female Run Tee: LQ1R-F



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

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										

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□	3/4"										
LQ1R5D-F□	1/2"	3/4"	ø7	29	14	28	26	54	37	ø39	ø36
LQ1R6A-F□	1"										
LQ1R6B-F□	3/4"	3/4"	ø8	39.5	18	36	36	69.5	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"										

VC□

VDW

VQ

VX2

VX□

VX3

VXA

VN□

LVC

LVA

LVH

LVD

LVQ

LQ

LVN

TI/
TIL

PA

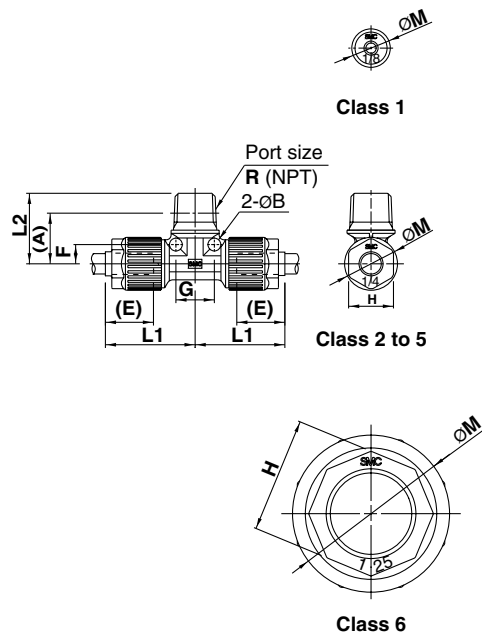
PAX

PB

Series LQ1

Dimensions

Male Branch Tee: LQ1B-M



Metric sizes

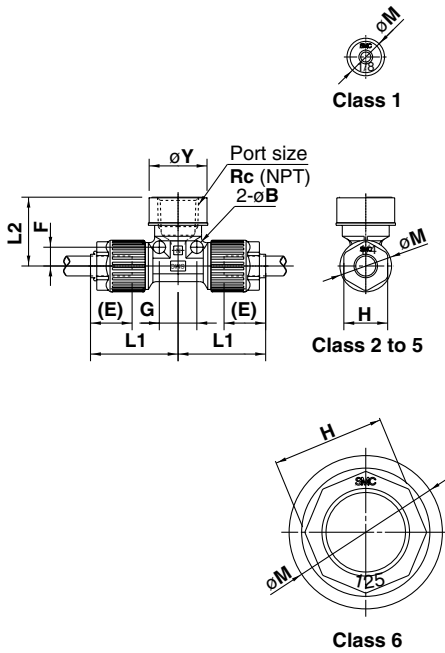
Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M
LQ1B11-M□	ø4	1/8"	12	ø2	10	4	8	—	18.5	15.5	11.5
LQ1B12-M□	ø3										
LQ1B21-M□	ø6	1/8"	16	ø4	15	6	12	14	28	19.5	16.5
LQ1B22-M□	ø4										
LQ1B23-M□	ø6	1/4"	16	ø4	15	6	12	14	28	22	16.5
LQ1B24-M□	ø4										
LQ1B31-M□	ø10	1/4"	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	39	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										

(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
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"	16	ø4	15	6	12	14	28	22	16.5
LQ1B2E-M□	3/16"										
LQ1B2F-M□	1/8"	1/4"	16	ø4	15	6	12	14	28	22	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	39	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"										

Female Branch Tee: LQ1B-F



Metric sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	Y
LQ1B11-F□	ø4	1/8"	ø2	10	4	8	-	18.5	16	ø11.5	ø18.5
LQ1B12-F□	ø3										
LQ1B21-F□	ø6	1/8"	ø4	15	6	12	14	28	19.5	ø16.5	ø18.5
LQ1B22-F□	ø4										
LQ1B23-F□	ø6	1/4"	ø4	15	6	12	14	28	22	ø16.5	ø21.5
LQ1B24-F□	ø4										
LQ1B31-F□	ø10	1/4"	ø5	20	9	18	17	36.5	23.7	ø23	ø21.5
LQ1B32-F□	ø8										
LQ1B33-F□	ø6	3/8"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1B34-F□	ø10										
LQ1B35-F□	ø8	3/8"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1B36-F□	ø6										
LQ1B41-F□	ø12	3/8"	ø6	24	9	18	21	43	25	ø28	ø25
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	1"	ø8	39.5	18	36	36	69.5	46	ø49	ø44.5
LQ1B64-F□	ø19										

- VC□
- VDW
- VQ
- VX2
- VX□
- VX3
- VXA
- VN□
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- TI/TIL
- PA
- PAX
- PB

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

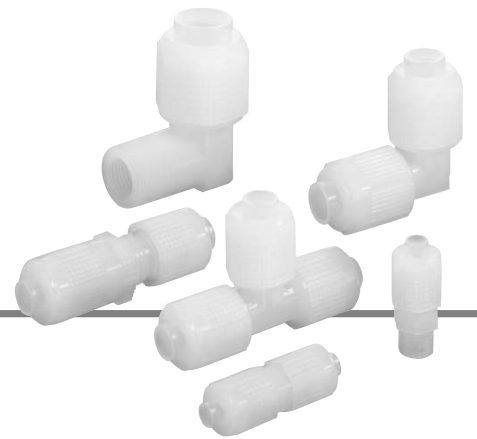
Inch sizes

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"	ø4	15	6	12	14	28	22	ø16.5	ø21.5
LQ1B3A-F□	3/8"										
LQ1B3B-F□	1/4"	1/4"	ø5	20	9	18	17	36.5	23.7	ø23	ø21.5
LQ1B3C-F□	3/8"										
LQ1B3D-F□	1/4"	3/8"	ø5	20	9	18	17	36.5	25.5	ø23	ø25
LQ1B4A-F□	1/2"										
LQ1B4B-F□	3/8"	3/8"	ø6	24	9	18	21	43	25	ø28	ø25
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

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	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"	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.

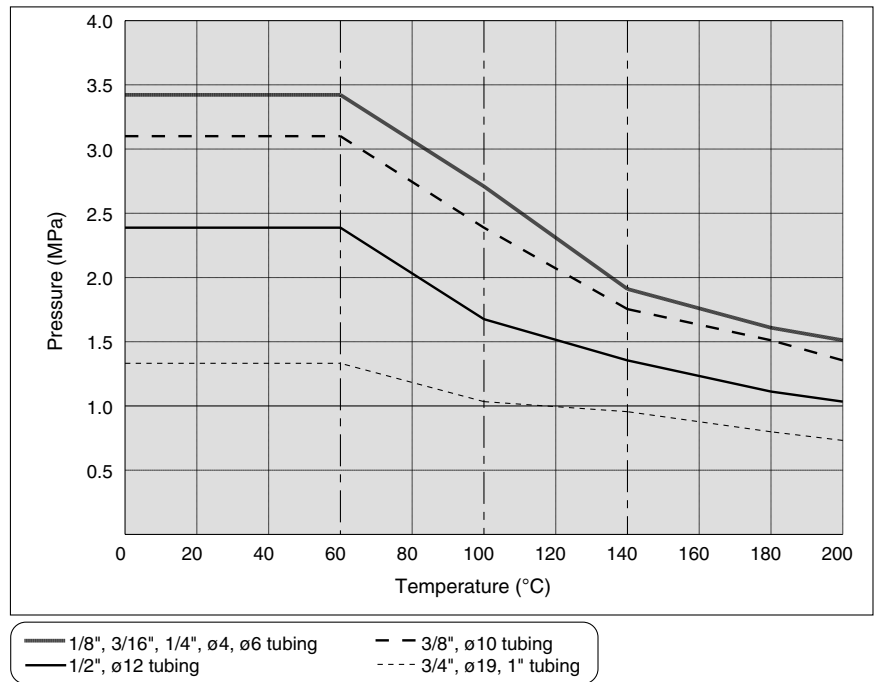
Series LQ2



Specifications

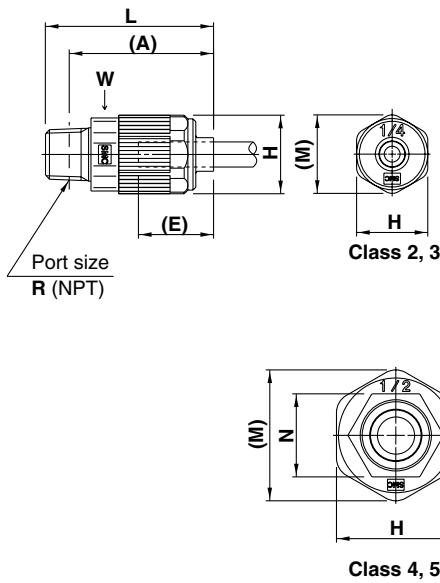
Feature	Model	LQ2□20	LQ2□30	LQ2□40	LQ2□50
Material		NEW PFA			
Maximum operating pressure (at 20°C)		1.0 MPa			
Proof pressure		Refer to the withstand pressure and heat resistance performance curves.			
Operating temperature		0 to 200°C			

Burst Pressure and Heat Resistance Performance



Dimensions

Male Connector: LQ2H-M



(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	N	W
LQ2H21-M□	ø6	1/8"	39	19	18	42.5	19.9	-	16
LQ2H22-M□	ø4								
LQ2H23-M□	ø6	1/4"	36.5	22	24	49	26.2	-	24
LQ2H24-M□	ø4								
LQ2H31-M□	ø10	1/4"	43	22	24	49	26.2	-	24
LQ2H32-M□	ø8								
LQ2H33-M□	ø6	3/8"	42.5	28	30	59	33.1	21	30
LQ2H34-M□	ø10								
LQ2H35-M□	ø8	1/2"	51	32	36	68	40	26	36
LQ2H36-M□	ø6								
LQ2H41-M□	ø12	1/2"	53	32	36	59	40	26	36
LQ2H42-M□	ø10								
LQ2H43-M□	ø12	3/4"	51	32	36	59	40	26	36
LQ2H44-M□	ø10								
LQ2H51-M□	ø19	1/2"	60.5	32	36	68	40	26	36
LQ2H52-M□	ø12								
LQ2H53-M□	ø19	3/4"	58.5	32	36	68	40	26	36
LQ2H54-M□	ø12								

Inch sizes

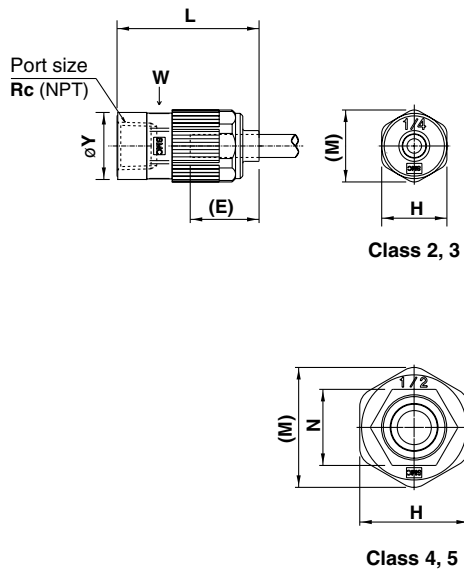
Model	Applicable tubing O.D.	Connection threads NPT	A	E	H	L	M	N	W
LQ2H2A-M□	1/4"	1/8"	39	19	18	42.5	19.9	-	16
LQ2H2B-M□	3/16"								
LQ2H2C-M□	1/8"	1/4"	36.5	22	24	49	26.2	-	24
LQ2H2D-M□	1/4"								
LQ2H2E-M□	3/16"	3/8"	42.5	28	30	59	33.1	21	30
LQ2H2F-M□	1/8"								
LQ2H3A-M□	3/8"	1/4"	43	22	24	49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

- VC□
- VDW
- VQ
- VX2
- VX□
- VX3
- VXA
- VN□
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ**
- LVN
- TI/TIL
- PA
- PAX
- PB

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.

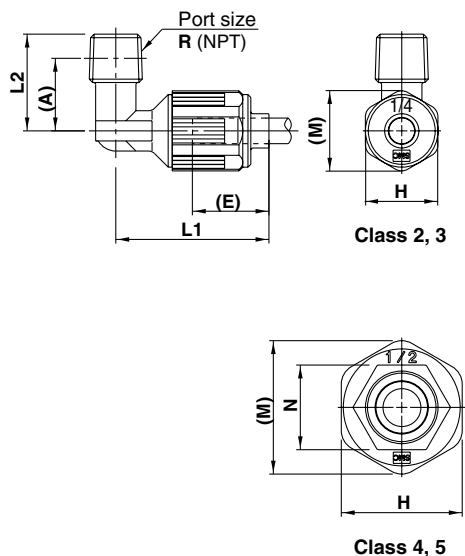
Metric sizes

Model	Applicable tubing O.D.	Connection threads Rc/NPT	E	H	L	M	N	W	Y
LQ2H21-F□	∅6	1/8"	19	18	39.2	19.9	-	16	18.5
LQ2H22-F□	∅4								21.5
LQ2H23-F□	∅6	1/4"	22	24	44.2	26.2	-	24	21.5
LQ2H24-F□	∅4				43.7				
LQ2H31-F□	∅10	1/4"	22	24	46	26.2	-	24	25
LQ2H32-F□	∅8				45.5				
LQ2H33-F□	∅6	3/8"	28	30	52	33.1	21	30	25
LQ2H34-F□	∅10				51				
LQ2H35-F□	∅8	3/8"	28	30	57	33.1	21	30	29.5
LQ2H36-F□	∅6				56				
LQ2H41-F□	∅12	3/8"	32	36	63.5	40	26	36	29.5
LQ2H42-F□	∅10				64.5				
LQ2H43-F□	∅12	1/2"	32	36	65	40	26	36	36
LQ2H44-F□	∅10				66				
LQ2H51-F□	∅19	1/2"	32	36	63.5	40	26	36	29.5
LQ2H52-F□	∅12				64.5				
LQ2H53-F□	∅19	3/4"	32	36	65	40	26	36	36
LQ2H54-F□	∅12				66				

Inch sizes

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

Male Elbow: LQ2L-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	N
LQ2L21-M□	ø6	1/8"	20.5	19	18	38	24	19.9	-
LQ2L22-M□	ø4								
LQ2L23-M□	ø6	1/4"	18	22	24	43	28	26.2	-
LQ2L24-M□	ø4								
LQ2L31-M□	ø10	1/4"	22	22	24	43	28	26.2	-
LQ2L32-M□	ø8								
LQ2L33-M□	ø6	3/8"	21.5	28	30	42.5	35	33.1	21
LQ2L34-M□	ø10								
LQ2L35-M□	ø8	1/2"	27	32	36	52	43	40	26
LQ2L36-M□	ø6								
LQ2L41-M□	ø12	3/8"	29	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	1/2"	35.5	32	36	59	43	40	26
LQ2L52-M□	ø12								
LQ2L53-M□	ø19	3/4"	33.5	32	36	59	43	40	26
LQ2L54-M□	ø12								

Inch sizes

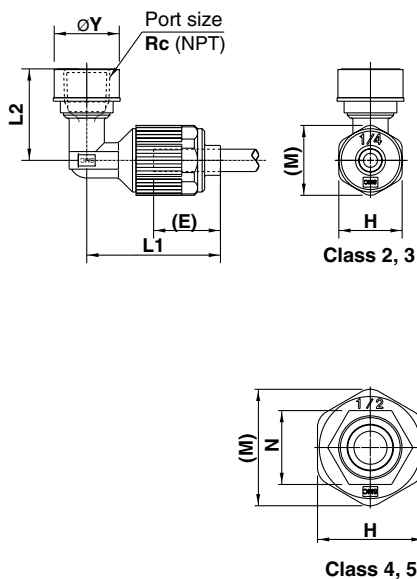
Model	Applicable tubing O.D.	Connection threads R/NPT	A	E	H	L1	L2	M	N
LQ2L2A-M□	1/4"	1/8"	20.5	19	18	38	24	19.9	-
LQ2L2B-M□	3/16"								
LQ2L2C-M□	1/8"	1/4"	18	22	24	43	28	26.2	-
LQ2L2D-M□	1/4"								
LQ2L2E-M□	3/16"	3/8"	21.5	28	30	42.5	35	33.1	21
LQ2L2F-M□	1/8"								
LQ2L3A-M□	3/8"	1/4"	22	22	24	43	28	26.2	-
LQ2L3B-M□	1/4"								
LQ2L3C-M□	3/8"	3/8"	21.5	28	30	42.5	35	33.1	21
LQ2L3D-M□	1/4"								
LQ2L4A-M□	1/2"	3/8"	29	28	30	52	43	40	26
LQ2L4B-M□	3/8"								
LQ2L4C-M□	1/2"	1/2"	27	32	36	51	43	40	26
LQ2L4D-M□	3/8"								
LQ2L5A-M□	3/4"	1/2"	35.5	32	36	59	43	40	26
LQ2L5B-M□	1/2"								
LQ2L5C-M□	3/4"	3/4"	33.5	32	36	59	43	40	26
LQ2L5D-M□	1/2"								

- VC□
- VDW
- VQ
- VX2
- VX□
- VX3
- VXA
- VN□
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- TI/TIL
- PA
- PAX
- PB

Series LQ2

Dimensions

Female Elbow: LQ2L-F



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

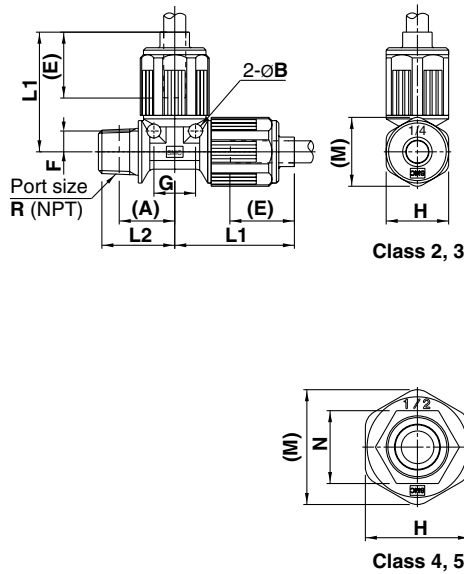
Metric sizes

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			
LQ2L23-F□	ø6	1/4"	22	24	43	28	26.2	—	ø21.5
LQ2L24-F□	ø4								
LQ2L31-F□	ø10	1/4"	22	24	43	28	26.2	—	ø21.5
LQ2L32-F□	ø8								
LQ2L33-F□	ø6	3/8"	22	24	43	28	26.2	—	ø25
LQ2L34-F□	ø10								
LQ2L35-F□	ø8	3/8"	28	30	52	50.5	33.1	21	ø25
LQ2L36-F□	ø6								
LQ2L41-F□	ø12	3/8"	28	30	52	54	33.1	21	ø29.5
LQ2L42-F□	ø10								
LQ2L43-F□	ø12	1/2"	28	30	52	54	33.1	21	ø29.5
LQ2L44-F□	ø10								
LQ2L51-F□	ø19	1/2"	32	36	59	43	40	26	ø29.5
LQ2L52-F□	ø12								
LQ2L53-F□	ø19	3/4"	32	36	59	43	40	26	ø36
LQ2L54-F□	ø12								

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			
LQ2L2C-F□	1/8"	1/4"	22	24	43	28	26.2	—	ø21.5
LQ2L2D-F□	1/4"								
LQ2L2E-F□	3/16"	1/4"	22	24	43	28	26.2	—	ø21.5
LQ2L2F-F□	1/8"								
LQ2L3A-F□	3/8"	1/4"	22	24	43	28	26.2	—	ø21.5
LQ2L3B-F□	1/4"								
LQ2L3C-F□	3/8"	3/8"	22	24	43	28	26.2	—	ø25
LQ2L3D-F□	1/4"								
LQ2L4A-F□	1/2"	3/8"	28	30	52	50.5	33.1	21	ø25
LQ2L4B-F□	3/8"								
LQ2L4C-F□	1/2"	1/2"	28	30	52	54	33.1	21	ø29.5
LQ2L4D-F□	3/8"								
LQ2L5A-F□	3/4"	1/2"	32	36	59	43	40	26	ø29.5
LQ2L5B-F□	1/2"								
LQ2L5C-F□	3/4"	3/4"	32	36	59	43	40	26	ø36
LQ2L5D-F□	1/2"								

Male Run Tee: LQ2R-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	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	ø5	22	9	18	24	43	29.5	26.2	-
LQ2R24-M	ø4											
LQ2R31-M	ø10	1/4"	23.5	ø5	22	9	18	24	43	29.5	26.2	-
LQ2R32-M	ø8											
LQ2R33-M	ø6	3/8"	23	ø6	28	11	22	30	52	36	33.1	21
LQ2R34-M	ø10											
LQ2R35-M	ø8	3/8"	23	ø6	28	11	22	30	51	36	33.1	21
LQ2R36-M	ø6											
LQ2R41-M	ø12	3/8"	30	ø6	28	11	22	30	52	36	33.1	21
LQ2R42-M	ø10											
LQ2R43-M	ø12	1/2"	28.5	ø7	32	14	28	36	59.5	42.5	40	26
LQ2R44-M	ø10											
LQ2R51-M	ø19	1/2"	35	ø7	32	14	28	36	58.5	42.5	40	26
LQ2R52-M	ø12											
LQ2R53-M	ø19	3/4"	33.5	ø7	32	14	28	36	59.5	42.5	40	26
LQ2R54-M	ø12											

Inch sizes

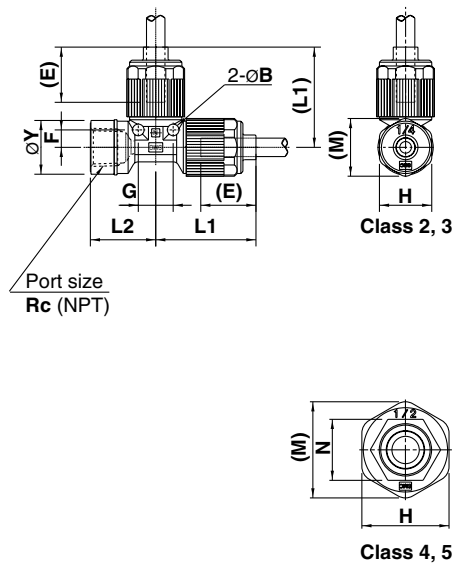
Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M	N
LQ2R2A-M	1/4"	1/8"	18.5	ø4	19	6	12	18	34.5	22	19.9	-
LQ2R2B-M	3/16"											
LQ2R2C-M	1/8"	1/4"	16.5	ø5	22	9	18	24	43	29.5	26.2	-
LQ2R2D-M	1/4"											
LQ2R2E-M	3/16"	3/8"	23	ø6	28	11	22	30	52	36	33.1	21
LQ2R2F-M	1/8"											
LQ2R3A-M	3/8"	1/4"	23.5	ø5	22	9	18	24	43	29.5	26.2	-
LQ2R3B-M	1/4"											
LQ2R3C-M	3/8"	3/8"	23	ø6	28	11	22	30	43	29.5	26.2	-
LQ2R3D-M	1/4"											
LQ2R4A-M	1/2"	3/8"	30	ø6	28	11	22	30	51	36	33.1	21
LQ2R4B-M	3/8"											
LQ2R4C-M	1/2"	1/2"	28.5	ø7	32	14	28	36	52	42.5	40	26
LQ2R4D-M	3/8"											
LQ2R5A-M	3/4"	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	26
LQ2R5B-M	1/2"											
LQ2R5C-M	3/4"	3/4"	33.5	ø7	32	14	28	36	59.5	42.5	40	26
LQ2R5D-M	1/2"											

- VC
- VDW
- VQ
- VX2
- VX
- VX3
- VXA
- VN
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- TI/TIL
- PA
- PAX
- PB

Series LQ2

Dimensions

Female Run Tee: LQ2R-F



Metric sizes

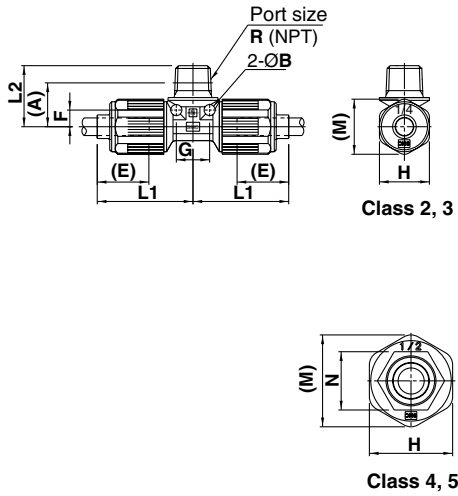
Model	Applicable tubing O.D.	Connection threads Rc/NPT	B	E	F	G	H	L1	L2	M	N	Y
LQ2R21-F□	ø6	1/8"	ø4	19	6	12	18	34.5	18.7	19.9	—	ø18.5
LQ2R22-F□	ø4								22.5			ø21.5
LQ2R23-F□	ø6	1/4"	ø4	19	6	12	18	34.5	23.5	19.9	—	ø21.5
LQ2R24-F□	ø4								26.2			ø25
LQ2R31-F□	ø10	1/4"	ø5	22	9	18	24	43	26	26.2	—	ø21.5
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"	ø6	28	11	22	30	52	27	33.1	21	ø25
LQ2R36-F□	ø6							51				
LQ2R41-F□	ø12	3/8"	ø6	28	11	22	30	52	32	33.1	21	ø29.5
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	23.5	19.9	—	ø21.5
LQ2R2D-F□	1/4"								26.2			
LQ2R2E-F□	3/16"	1/4"	ø4	19	6	12	18	34.5	26.2	19.9	—	ø25
LQ2R2F-F□	1/8"								26.2			
LQ2R3A-F□	3/8"	1/4"	ø5	22	9	18	24	43	26	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	ø5	22	9	18	24	29.5	26.2	-	-
LQ2B24-M□	ø4											
LQ2B31-M□	ø10	1/4"	23.5	ø5	22	9	18	24	43	29.5	26.2	-
LQ2B32-M□	ø8											
LQ2B33-M□	ø6	3/8"	23	ø6	28	11	22	30	52	36	33.1	21
LQ2B34-M□	ø10											
LQ2B35-M□	ø8	1/2"	28.5	ø7	32	14	28	36	52	42.5	40	26
LQ2B36-M□	ø6											
LQ2B41-M□	ø12	3/8"	30	ø6	28	11	22	30	51	36	33.1	21
LQ2B42-M□	ø10											
LQ2B43-M□	ø12	1/2"	28.5	ø7	32	14	28	36	52	42.5	40	26
LQ2B44-M□	ø10											
LQ2B51-M□	ø19	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	26
LQ2B52-M□	ø12											
LQ2B53-M□	ø19	3/4"	33.5	ø7	32	14	28	36	59.5	42.5	40	26
LQ2B54-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

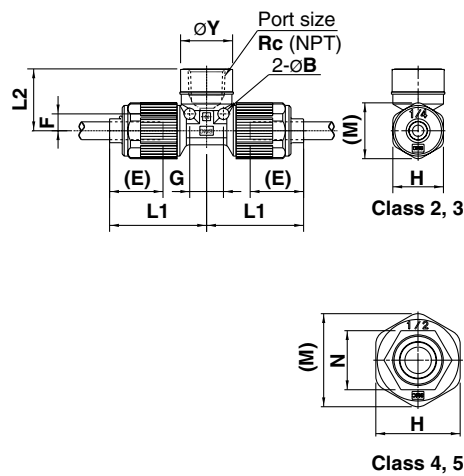
Model	Applicable tubing O.D.	Connection threads R/NPT	A	B	E	F	G	H	L1	L2	M	N
LQ2B2A-M□	1/4"	1/8"	18.5	ø4	19	6	12	18	34.5	22	19.9	-
LQ2B2B-M□	3/16"											
LQ2B2C-M□	1/8"	1/4"	16.5	ø5	22	9	18	24	29.5	26.2	-	-
LQ2B2D-M□	1/4"											
LQ2B2E-M□	3/16"	3/8"	23	ø5	22	9	18	24	43	29.5	26.2	-
LQ2B2F-M□	1/8"											
LQ2B3A-M□	3/8"	1/4"	23.5	ø5	22	9	18	24	43	29.5	26.2	-
LQ2B3B-M□	1/4"											
LQ2B3C-M□	3/8"	3/8"	23	ø5	22	9	18	24	43	29.5	26.2	-
LQ2B3D-M□	1/4"											
LQ2B4A-M□	1/2"	3/8"	30	ø6	28	11	22	30	52	36	33.1	21
LQ2B4B-M□	3/8"											
LQ2B4C-M□	1/2"	1/2"	28.5	ø7	32	14	28	36	52	42.5	40	26
LQ2B4D-M□	3/8"											
LQ2B5A-M□	3/4"	1/2"	35	ø7	32	14	28	36	59.5	42.5	40	26
LQ2B5B-M□	1/2"											
LQ2B5C-M□	3/4"	3/4"	33.5	ø7	32	14	28	36	59.5	42.5	40	26
LQ2B5D-M□	1/2"											

- VC□
- VDW
- VQ
- VX2
- VX□
- VX3
- VXA
- VN□
- LVC
- LVA
- LVH
- LVD
- LVQ
- LQ
- LVN
- TI/TIL
- PA
- PAX
- PB

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"	ø5	22	9	18	24	43	22.2	26.2	—	ø21.5
LQ2B24-F□	ø4											
LQ2B31-F□	ø10	1/4"	ø5	22	9	18	24	43	24	26.2	—	ø25
LQ2B32-F□	ø8											
LQ2B33-F□	ø6	3/8"	ø6	28	11	22	30	52	27	33.1	21	ø25
LQ2B34-F□	ø10											
LQ2B35-F□	ø8	3/8"	ø6	28	11	22	30	52	32	33.1	21	ø29.5
LQ2B36-F□	ø6											
LQ2B41-F□	ø12	3/8"	ø6	28	11	22	30	52	27	33.1	21	ø25
LQ2B42-F□	ø10											
LQ2B43-F□	ø12	1/2"	ø7	32	14	28	36	59.5	35.5	40	26	ø29.5
LQ2B44-F□	ø10											
LQ2B51-F□	ø19	1/2"	ø7	32	14	28	36	59.5	37	40	26	ø36
LQ2B52-F□	ø12											
LQ2B53-F□	ø19	3/4"	ø7	32	14	28	36	59.5	37	40	26	ø36
LQ2B54-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	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"	ø5	22	9	18	24	43	22.2	26.2	—	ø21.5
LQ2B2D-F□	1/4"											
LQ2B2E-F□	3/16"	3/8"	ø5	22	9	18	24	43	24	26.2	—	ø25
LQ2B2F-F□	1/8"											
LQ2B3A-F□	3/8"	1/4"	ø5	22	9	18	24	43	22.2	26.2	—	ø21.5
LQ2B3B-F□	1/4"											
LQ2B3C-F□	3/8"	3/8"	ø5	22	9	18	24	43	24	26.2	—	ø25
LQ2B3D-F□	1/4"											
LQ2B4A-F□	1/2"	3/8"	ø6	28	11	22	30	52	27	33.1	21	ø25
LQ2B4B-F□	3/8"											
LQ2B4C-F□	1/2"	1/2"	ø6	28	11	22	30	52	32	33.1	21	ø29.5
LQ2B4D-F□	3/8"											
LQ2B5A-F□	3/4"	1/2"	ø7	32	14	28	36	59.5	35.5	40	26	ø29.5
LQ2B5B-F□	1/2"											
LQ2B5C-F□	3/4"	3/4"	ø7	32	14	28	36	59.5	37	40	26	ø36
LQ2B5D-F□	1/2"											

Series LQ¹/₂

Options

Panel mounting nut

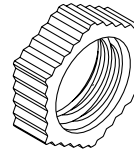
LQN P 2

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	LQ1	LQ1	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	LQ1	LQ1	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	LQ1	LQ1	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						○

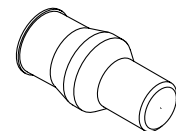
Symbol	Connection tubing size	Class					
		LQ1	LQ1, LQ2	LQ1	LQ1	LQ1	LQ1
		1	2	3	4	5	6

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

○ 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

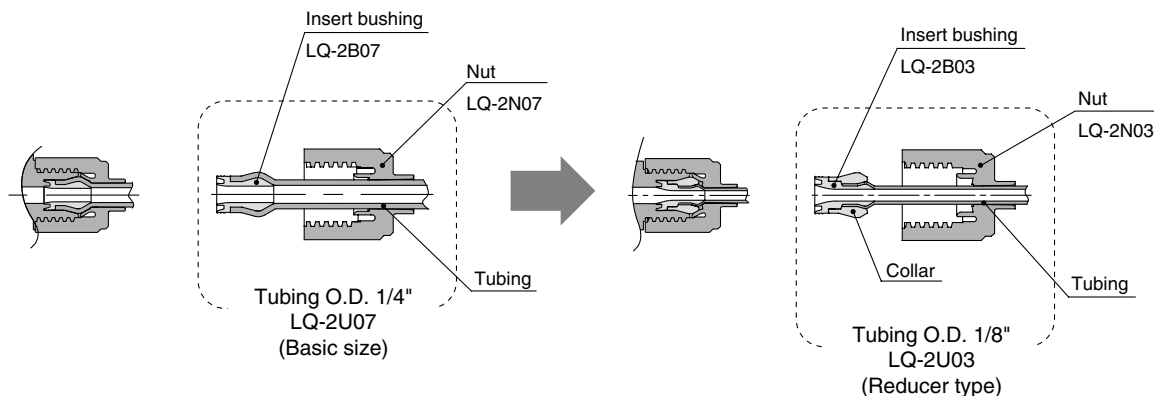
	Component parts		
	Nut	Insert	Collar (Insert assembly)
○ Basic size	Yes	Yes	No
● Reducer type	Yes	Yes	Yes

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.

VC

VDW

VQ

VX2

VX

VX3

VXA

VN

LVC

LVA

LVH

LVD

LVQ

LQ

LVN

TI/
TIL

PA

PAX

PB

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	—	

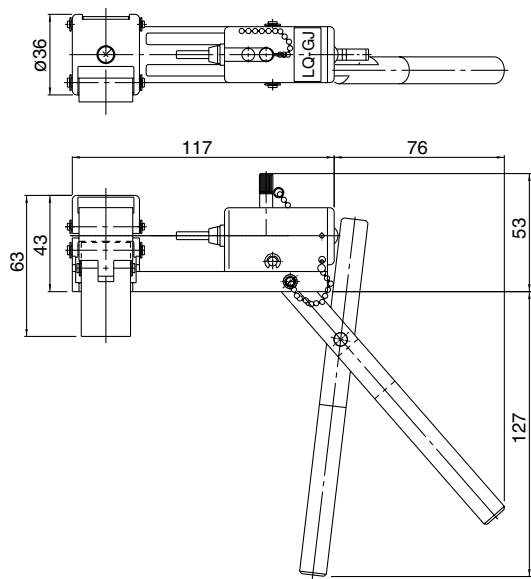
Replacement parts

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> ↓ Insert pin/Holder type <table border="1"> <tr><td>Nil</td><td>Metric sizes</td></tr> <tr><td>N</td><td>Inch sizes</td></tr> </table>	Nil	Resin	S	Stainless 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)								

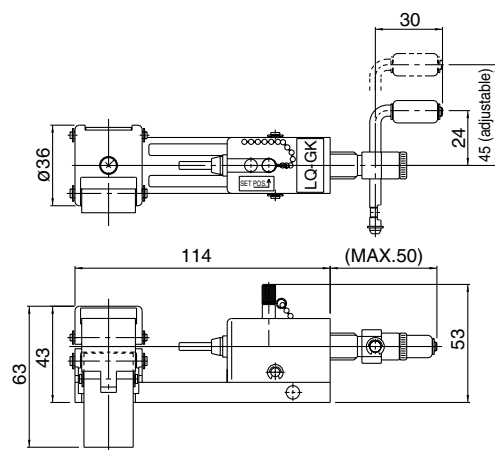
Note 1) Replacement part type J shows the parts for LQ-GJ and LQ-GK. Replacement part type L shows the parts for LQ-GL and LQ-GM.

Dimensions

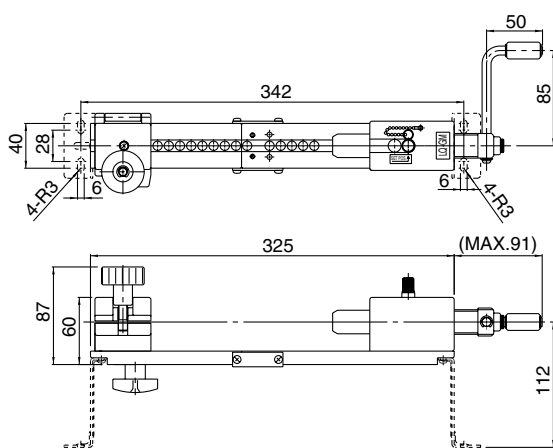
LQ-GJ



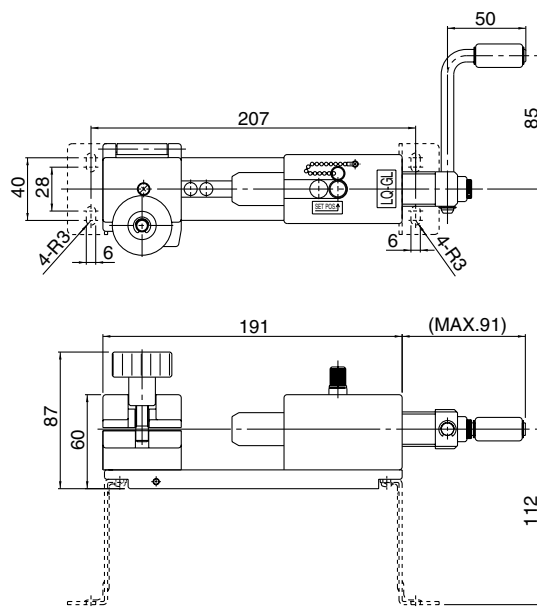
LQ-GK



LQ-GM



LQ-GL



VC

VDW

VQ

VX2

VX

VX3

VXA

VN

LVC

LVA

L VH

LVD

LVQ

LQ

LVN

TI/
TIL

PA

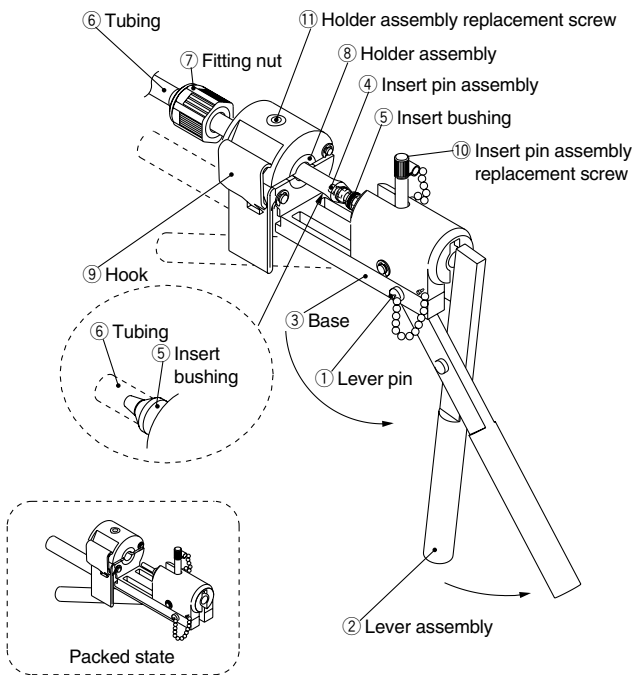
PAX

PB

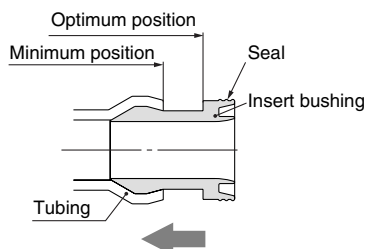
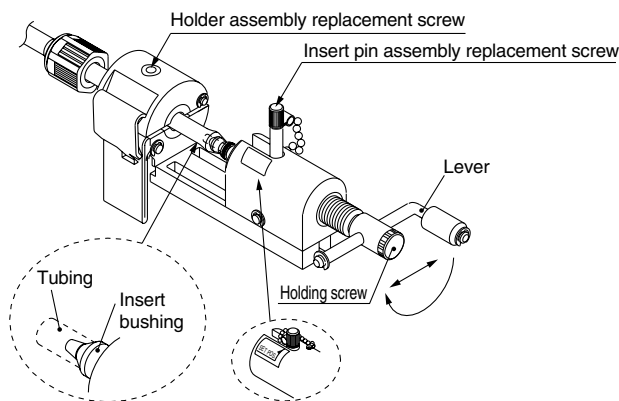
Fitting Assembly Procedure

Assemble fittings following the procedure shown below.

J type



K 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 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

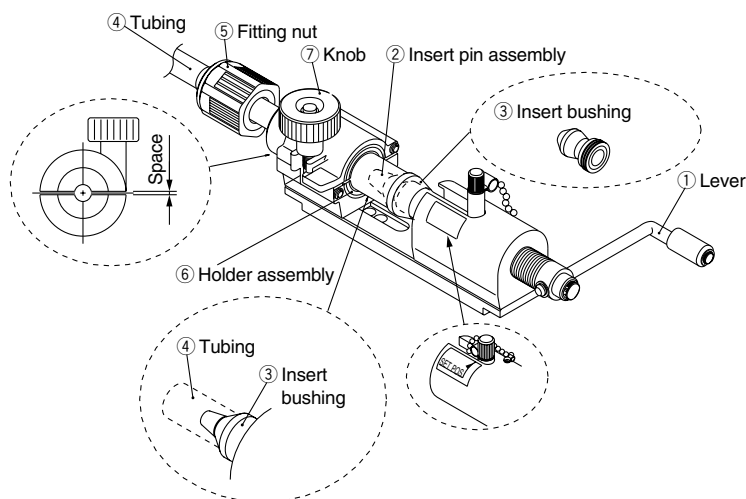
 Note 1) In case of body class 1, the nut should be tightened manually.

⚠ Precautions on installation

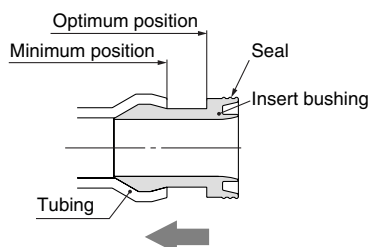
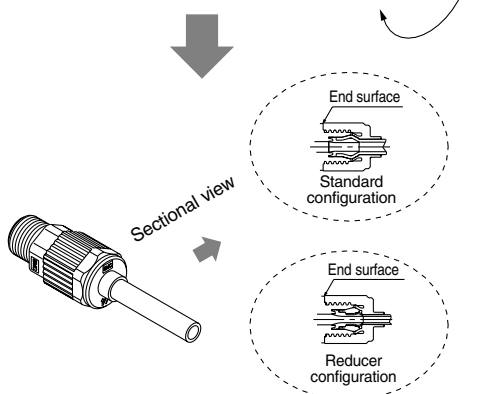
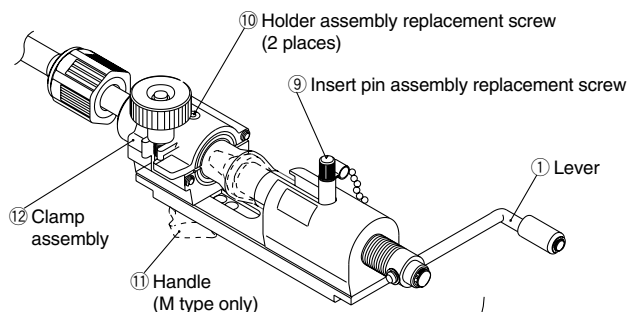
- Be careful not to scratch or dent the seal of the insert bushing. (Refer to the illustration on the left.)
- When the insert bushing inserted, its tubing end should be closer to seal side than the minimum position. (Refer to the illustration on the left.)

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.)

VC□

VDW

VQ

VX2

VX□

VX3

VXA

VN□

LVC

LVA

L VH

LVD

L VQ

LQ

L VN

T/ TIL

PA

PAX

PB