

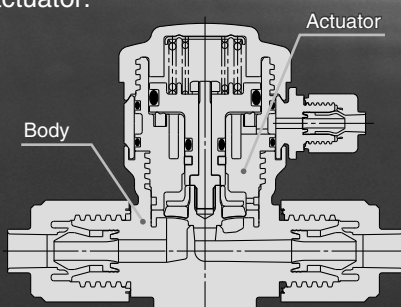
# High Purity Chemical Liquid Valve Non-Metallic Exterior

## LVQ Series

Clean Wet Series

### Screwless construction

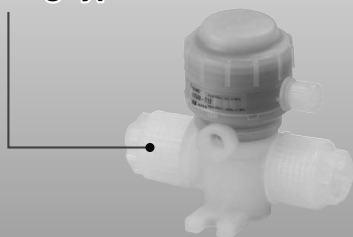
Non-metallic construction without using metal screws to fasten the body of the actuator.



Body: New PFA  
Diaphragm: PTFE  
Actuator: PVDF

### Additional Variations for the LVQ Series!

- Insert bushing,  
LQ1 integrated fitting type  
Hyper fitting  
**LVQ-V Series**



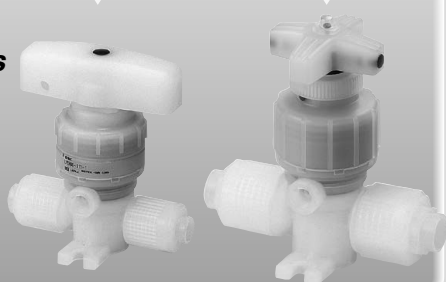
- Flare,  
LQ3 integrated fitting type  
Hyper fitting  
**LVQ-Z Series**



- Manually  
operated  
**LVQH Series**

90° turn type

Multi-turn type



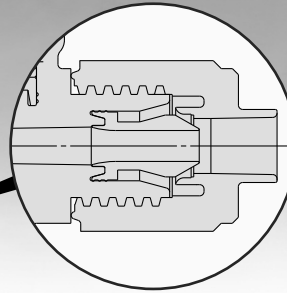
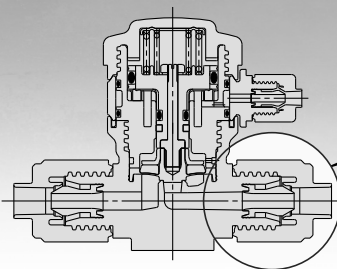
- Tube extension type  
**LVQ-T Series**



- High purity chemical liquid valves, High back pressure (0.5 MPa) tolerant Added the LVQ□□H series.
- Additional options  
High temperature (Max. 170°C), Buffer material FFKM, Ammonium hydroxide compatible, High flow type

## ● Insert bushing/Flare, integrated fitting types are available.

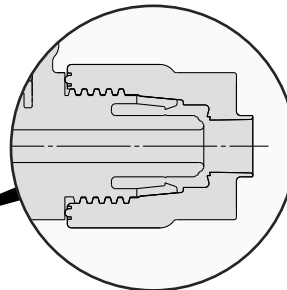
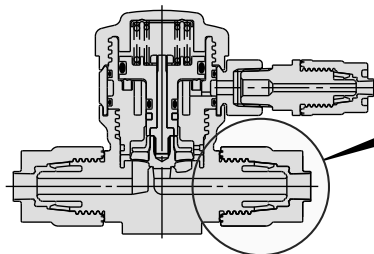
### Insert bushing, Integrated fitting type *LVQ-V/LVQ-S Series*



Hyper fitting  
**LQ1 Series**  
(LVQ-V Series)  
**LQ2 Series**  
(LVQ-S Series)

- Insert bushing type
- Quadruple seal construction

### Flare, Integrated fitting type *LVQ-Z Series*



Hyper fitting  
Flare type  
**LQ3 Series**

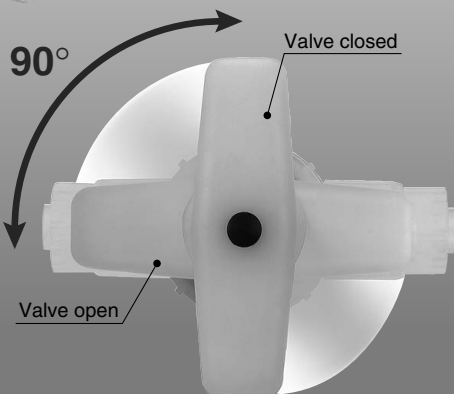
- Grip seal construction with Flare type
- Triple seal construction

## ● Added manual type. Two types of handle operation methods can be selected.

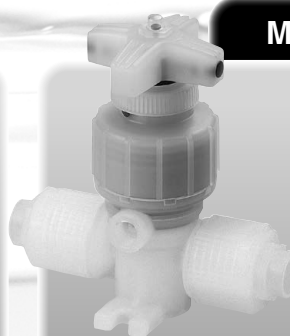
### 90° turn type



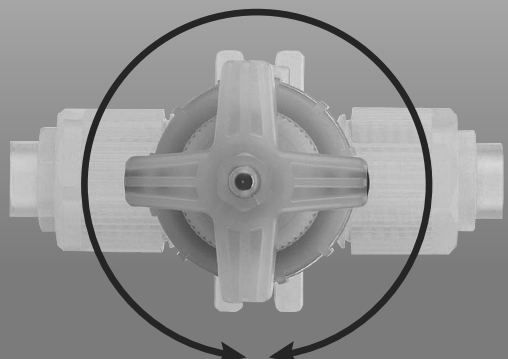
- Enables quick valve open/close switching operation.

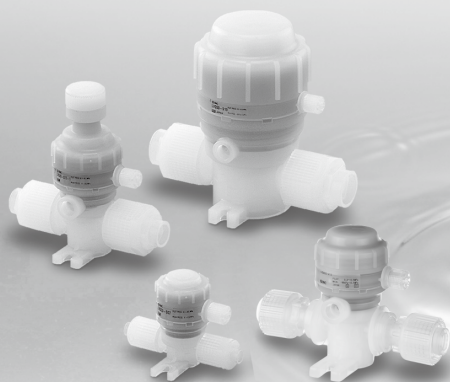


### Multi-turn type



- The handle will spin loosely at the fully-open and fully-closed positions of the valve. This prevents overtightening.
- An indicator enables easy visual check of the open/closed state of the valve.
- The valve opening position can be freely set using a lock nut.





### Diaphragm (PTFE)

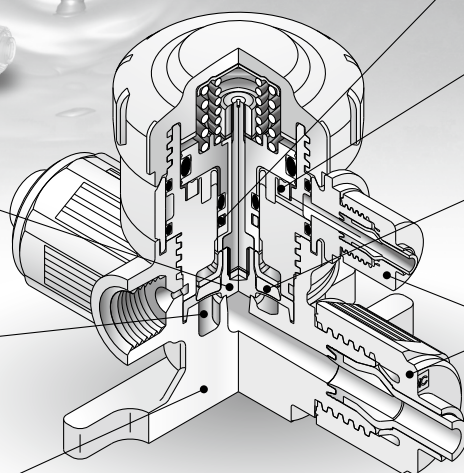
Special diaphragm construction ensures gentle opening and closing that prevents the formation of micro-bubbles.

### Minimal residual liquid

Residual liquid is minimized by the tapered shape and integrated fitting construction, allowing liquid to flow smoothly, achieving improved flow-through characteristics.

### Body (New PFA)

Compatible with chemicals such as acids, bases and super pure water.



### Guide ring

Eliminates lateral motion of the poppet which reduces internal leakage.

### Piston damper

Absorbs piston momentum to minimize impact-induced particle generation.

### Buffer

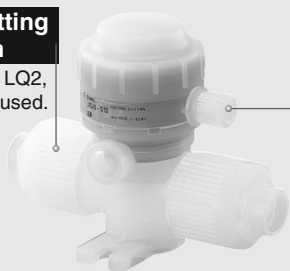
Protects diaphragm from deformation and damage due to back pressure.

### Integrated fitting construction

Offers quadruple seal construction. Nut lock mechanism—no additional tightening required. High flexural strength. Different tubing sizes can be selected.

### Integrated fitting construction

Hyper fitting/LQ1, LQ2, LQ3 series is used.

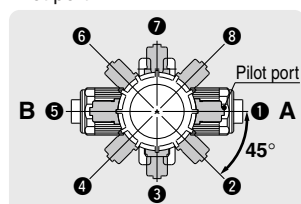


### Integrated fitting construction

Hyper fitting/LQ1, LQ3 series is used. Can select female thread.

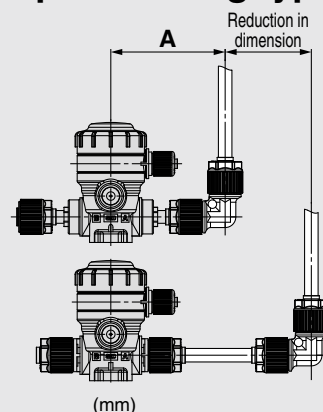
### Piping from 8 directions are possible.

Pilot port



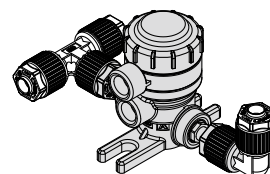
\* Specify the piping direction by part number when ordering the product. Do not change the pilot port direction. (Refer to Precautions on page 150.)

### Space saving type

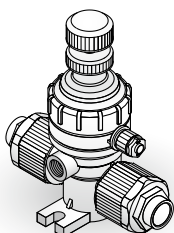


Model	A	Reduction in dimension (mm)
LVQ20	56.5	40.5 or more
LVQ30	70	49.5 or more
LVQ40	80	61.5 or more
LVQ50	104.5	64.5 or more
LVQ60	114.5	73.5 or more

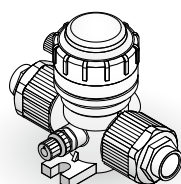
### Piping example



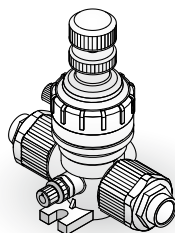
## Options



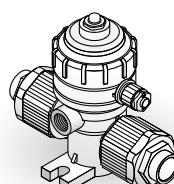
With flow rate adjustment



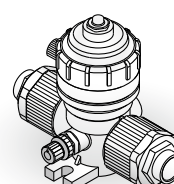
With by-pass



With flow rate adjustment & by-pass



With indicator


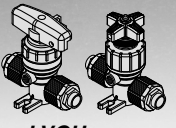


With indicator & by-pass




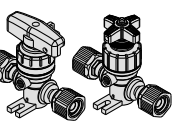
# Variations

## Insert Bushing, Integrated Fitting Type LVQ/LVQH Series


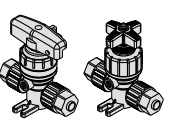
 LVQ Series  LVQH Series	Orifice diameter	Flow rate characteristics Kv (Cv)	Series	Applicable tubing O.D.											
				Metric size							Inch size				
				3	4	6	8	10	12	19	25	1/8	3/16	1/4	3/8
	ø4	0.3 (0.35)	LVQ(H)20	●	●	○						●	●	○	
	ø8	1.1 (1.3)	LVQ(H)30			●	●	○						●	○
	ø10	1.6 (1.9)	LVQ(H)40					●	○						●
	ø16	4.2 (5)	LVQ(H)50					●	○						●
	ø22	6.8 (8)	LVQ(H)60						●	○					●

● With reducer ○ Basic size


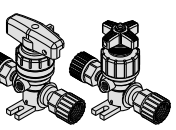
## Insert Bushing, Integrated Fitting Type Space Saving/Space Saving Connection LVQS/LVQHS Series

 LVQS Series  LVQHS Series	Orifice diameter	Flow rate characteristics Kv (Cv)	Series	Fitting size					
				2	3	4	5	6	
	ø4	0.3 (0.35)	LVQ(H)S20	●					
	ø8	1.1 (1.3)	LVQ(H)S30		●				
	ø10	1.6 (1.9)	LVQ(H)S40			●			
	ø16	4.2 (5)	LVQ(H)S50				●		
	ø22	6.8 (8)	LVQ(H)S60					●	


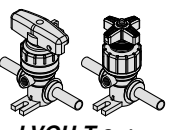
## Flare, Integrated Fitting Type LVQ-Z/LVQH-Z Series

 LVQ-Z Series  LVQH-Z Series	Orifice diameter	Flow rate characteristics Kv (Cv)	Series	Applicable tubing O.D.											
				Metric size							Inch size				
				3	4	6	8	10	12	19	25	1/8	3/16	1/4	3/8
	ø4	0.3 (0.35)	LVQ20(H)-Z	●	●	●						●		●	
	ø8	1.1 (1.3)	LVQ30(H)-Z				●							●	
	ø10	1.6 (1.9)	LVQ40(H)-Z					●	●						●
	ø16	4.2 (5)	LVQ50(H)-Z						●	●					●
	ø22	6.8 (8)	LVQ60(H)-Z							●	●				●

## Flare, Integrated Fitting Type Space Saving/Space Saving Connection LVQS-Z/LVQHS-Z Series

 LVQS-Z Series  LVQHS-Z Series	Orifice diameter	Flow rate characteristics Kv (Cv)	Series	Fitting size					
				2	3	4	5	6	
	ø4	0.3 (0.35)	LVQ20(H)S-Z	●					
	ø8	1.1 (1.3)	LVQ30(H)S-Z		●				
	ø10	1.6 (1.9)	LVQ40(H)S-Z			●			
	ø16	4.2 (5)	LVQ50(H)S-Z				●		
	ø22	6.8 (8)	LVQ60(H)S-Z					●	

## Tube Extension Type LVQ-T/LVQH-T Series

 LVQ-T Series  LVQH-T Series	Orifice diameter	Flow rate characteristics Kv (Cv)	Series	Tubing size									
				Metric size					Inch size				
				6	10	12	19	25	1/4	3/8	1/2	3/4	1
	ø4	0.3 (0.35)	LVQ20(H)-T	●					●				
	ø8	1.1 (1.3)	LVQ30(H)-T		●					●			
	ø10	1.6 (1.9)	LVQ40(H)-T			●					●		
	ø16	4.2 (5)	LVQ50(H)-T				●					●	
	ø22	6.8 (8)	LVQ60(H)-T					●					●



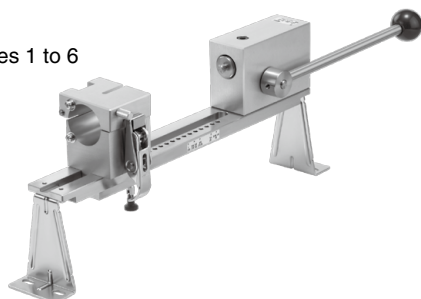
# Guide to Pamphlet on Fluoropolymer Fitting Installation Methods

\* The pamphlets can be downloaded from the SMC home page. <https://www.smcworld.com>

## LQ1/2 Series Installation Method

### R type

For fitting sizes 1 to 6



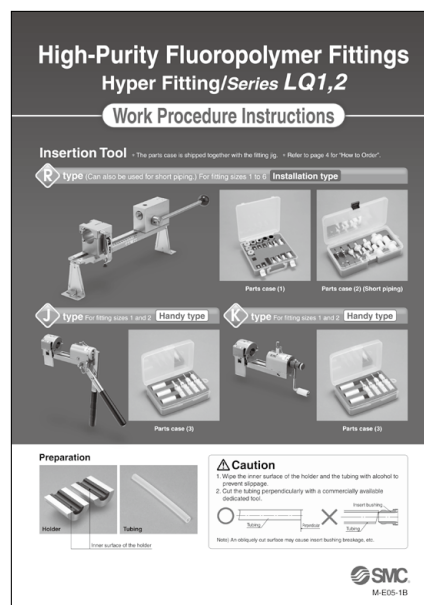
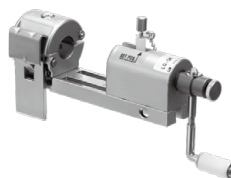
### J type

For fitting sizes 1 and 2



### K type

For fitting sizes 1 and 2



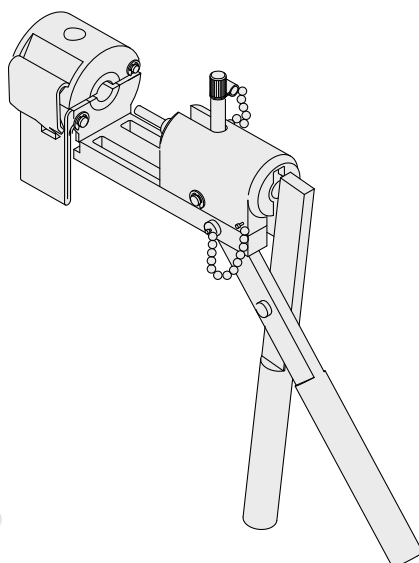
M-E05-1

## LQ3 Series Installation Method

For fitting sizes 2 to 6



For fitting size 1



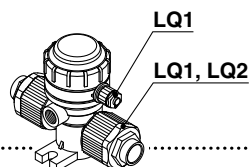
M-E06-4

# INDEX

## Insert Bushing, Integrated Fitting Type

**Air Operated  
Insert Bushing, Integrated Fitting Type  
Hyper Fitting**

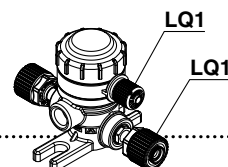
● **LVQ Series**



P.69

**Air Operated  
Insert Bushing, Integrated Fitting Type  
Space Saving/Space Saving Connection**

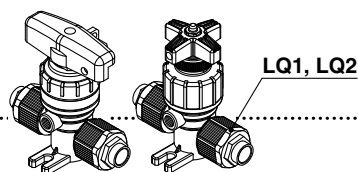
● **LVQS Series**



P.79

**Manually Operated  
Insert Bushing, Integrated Fitting Type  
Hyper Fitting**

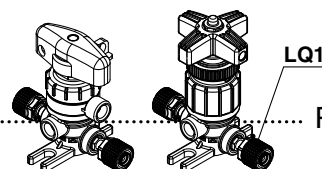
● **LVQH Series**



P.90

**Manually Operated  
Insert Bushing, Integrated Fitting Type  
Space Saving/Space Saving Connection**

● **LVQHS Series**



P.94

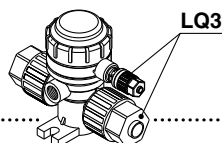
**Fittings and Special Tools**

P.99

## Flare, Integrated Fitting Type

**Air Operated  
Flare, Integrated Fitting Type  
Hyper Fitting**

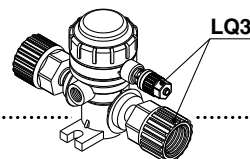
● **LVQ-Z Series**



P.101

**Air Operated  
Flare, Integrated Fitting Type  
Space Saving/Space Saving Connection**

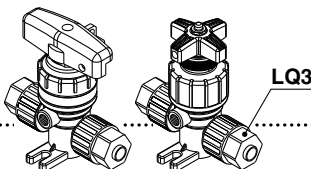
● **LVQS-Z Series**



P.111

**Manually Operated  
Flare, Integrated Fitting Type  
Hyper Fitting**

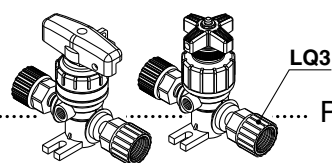
● **LVQH-Z Series**



P.121

**Manually Operated  
Flare, Integrated Fitting Type  
Space Saving/Space Saving Connection**

● **LVQHS-Z Series**

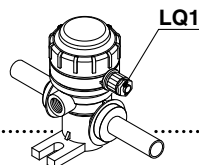


P.125

# INDEX

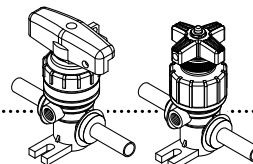
## Tube Extension Type

Air Operated  
Tube Extension Type  
● **LVQ-T Series**



P.131

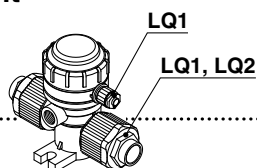
Manually Operated  
Tube Extension Type  
● **LVQH-T Series**



P.139

## Insert Bushing, Integrated Fitting Type

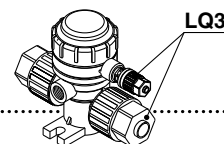
Air Operated, 0.5 MPa Back Pressure Tolerant  
Insert Bushing, Integrated Fitting Type  
Hyper Fitting  
● **LVQ□□H Series**



P.143

## Flare, Integrated Fitting Type

Air Operated, 0.5 MPa Back Pressure Tolerant  
Flare, Integrated Fitting Type  
Hyper Fitting  
● **LVQ□□H-Z Series**



P.145

**Applicable Fluids**

P.148

**Precautions**

P.149, 150



# Air Operated Insert Bushing, Integrated Fitting Type Hyper Fitting *LVQ Series*

RoHS

The LQ2 fitting for the insert bushing, integrated fitting type LVQ/LVQH series high-purity chemical liquid valve is to be discontinued as of September 2025. Select the LQ1 fitting instead.

## How to Order

LVQ **2** **0** - **S** **07**       -   -  

1
2
3
4
5
6
7
8
9

### 1 Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

### 2 Valve type

<b>0</b>	N.C.
<b>1</b>	N.O.
<b>2</b>	Double acting

Note) For valve type combinations, refer to variations on the next page.

### 3 Fitting type

Symbol	Fitting type	Body class
<b>V</b>	LQ1	2, 3, 4, 5, 6
<b>S</b>	LQ2	2, 3, 4, 5

Note) Insert bushing is used in common.

### 4 Applicable tubing size Note)

Symbol	Connection tubing size	Body class					
		2	3	4	5	6	
<b>Metric size</b>							
<b>03</b>	3 x 2	●					
<b>04</b>	4 x 3	●					
<b>06</b>	6 x 4	○	●				
<b>08</b>	8 x 6		●				
<b>10</b>	10 x 8		○	●			
<b>12</b>	12 x 10			○	●		
<b>19</b>	19 x 16				○	●	
<b>25</b>	25 x 22					○	
<b>Inch size</b>							
<b>03</b>	1/8" x 0.086"	●					
<b>05</b>	3/16" x 1/8"	●					
<b>07</b>	1/4" x 5/32"	○	●				
<b>11</b>	3/8" x 1/4"		○	●			
<b>13</b>	1/2" x 3/8"			○	●		
<b>19</b>	3/4" x 5/8"				○	●	
<b>25</b>	1" x 7/8"					○	

○ Basic size    ● With reducer

Note) Refer to page 150 for details of the applicable tubing sizes.

### 5 Port B (OUT) different dia. size

Symbol	Application
<b>Nil</b>	Ports A & B same size
Refer to the applicable tubing size table to the left.	Different diameter tubings can be selected within the same body class.

### 6 Pilot port type

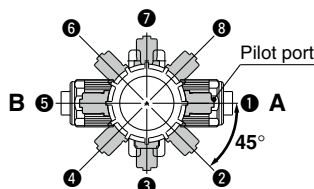
Symbol	Fitting type	Connection tubing size
<b>Nil</b>	LQ1 integrated fitting	1/8" x 0.086" (3 x 2) <small>Note)</small>
<b>M</b>	LQ1 integrated fitting	4 x 3 <small>Note)</small>
<b>R</b>	Threaded	Rc1/8
<b>N</b>	Threaded	NPT1/8

Note) Refer to page 150 for details of the applicable tubing sizes.

### 7 Pilot port direction

Symbol	Direction
<b>Nil</b>	①
<b>P2</b>	②
<b>P3</b>	③
<b>P4</b>	④
<b>P5</b>	⑤
<b>P6</b>	⑥
<b>P7</b>	⑦
<b>P8</b>	⑧

#### Pilot port piping direction



\* Specify the piping direction by part number when ordering the product. Do not change the pilot port direction. (Refer to Precautions on page 150.)

### 8 Option 1

Nil	None
1	With flow rate adjustment
2	With by-pass
3	With flow rate adjustment & by-pass
4	With indicator
5	High back pressure (0.42 MPa)
6	High back pressure with flow rate adjustment
7	High back pressure with by-pass
8	High back pressure with flow rate adjustment & by-pass
9	High back pressure with indicator
24	With indicator & by-pass

Note) Refer to variations in the table below for valve type and option 1 combinations. Options in the same table can not be combined each other.

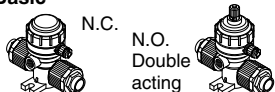
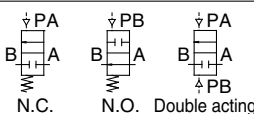
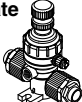
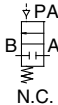

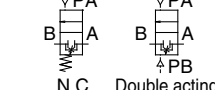
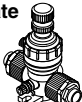
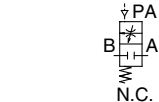


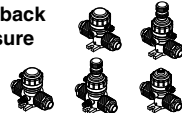
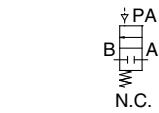




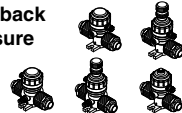
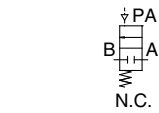


### 9 Option 2

Symbol	Applicable option												Buffer material	Note
	Nil	1	2	3	4	5	6	7	8	9	24			
Nil	○	○	○	○	○	○	○	○	○	○	○	FKM	—	
J	○	○	—	—	—	—	—	—	—	—	—	FKM	For high temperature	
K	○	○	○	○	○	○	○	○	○	○	○	FFKM	—	
N	○	○	○	○	○	○	○	○	○	○	○	EPDM	For ammonium hydroxide	
P	○	—	—	—	○	○	—	—	—	—	—	FKM	High flow type LVQ6□ only	

Note 1) Options 2 in the same table cannot be combined each other.

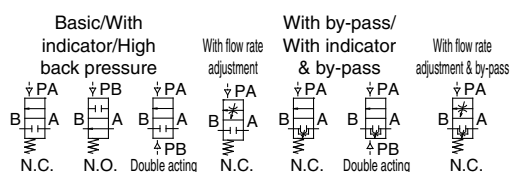
Note 2) Only option 1 (with flow rate adjustment) is available for use in high-temperature environments. However, it cannot be used in combination with any of the high back pressure specifications.

### Variations

			Model		LVQ20	LVQ30	LVQ40	LVQ50	LVQ60	
			Orifice diameter	Tubing O.D.	ø4	ø8	ø10	ø16	ø22	
					Metric	6	10	12	19	25
						Inch	1/4	3/8	1/2	3/4
Type	Symbol	Valve type								
<b>Basic</b>  N.C.  N.O. Double acting 	 PA B A N.C.  PB B A N.O.  PA B A Double acting PB N.C.	N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
		N.O.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
		Double acting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
<b>With flow rate adjustment</b> 	 PA B A N.C.	N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
<b>With by-pass</b> Double acting  N.C. 	 PA B A N.C.  PB B A Double acting	N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
		Double acting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
<b>With flow rate adjustment &amp; by-pass</b> 	 PA B A N.C.	N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
<b>With indicator</b> 	 PA B A N.C.	N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
<b>High back pressure</b> 	 PA B A N.C.	N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
<b>With indicator &amp; by-pass</b> 	 PA B A N.C.	N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			



## Symbol



## Specific Product Precautions

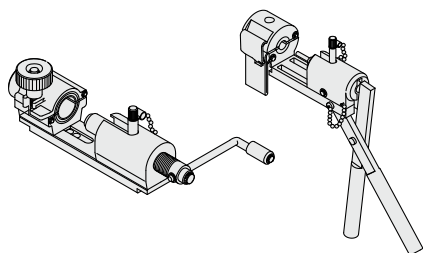
Be sure to read this before handling the products. Refer to page 501 for Safety Instructions and pages 149 and 150 for Air Operated Chemical Liquid Valve Precautions.

## Piping

## Caution

### 1. Connect tubing by special tools.

For information on tubing connection and special tools, please see the pamphlet "High Purity Fluoropolymer Fittings Hyper Fitting LQ1/2 Series Work Procedure Instructions" (M-E05-1). (The pamphlet can be downloaded from the SMC home page.)



### 2. Tighten the nut until it touches the end surface of the body, and then tighten it an additional 1/8 turn. If the nut won't turn any further, then it means a sufficient tightening has occurred. Refer to the proper tightening torques shown below.

#### 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	—

## Standard Specifications

Model		LVQ20	LVQ30	LVQ40	LVQ50	LVQ60
Tubing O.D. <sup>(Note 1)</sup>	Metric	6	10	12	19	25
	Inch	1/4	3/8	1/2	3/4	1
Fitting type	IN/OUT port	LQ1 or LQ2				LQ1
	Pilot port	LQ1				
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8 (8.1) <sup>(Note 2)</sup>
	Cv	0.35	1.3	1.9	5	8 (9.5) <sup>(Note 2)</sup>
Withstand pressure (MPa)		1				
Operating pressure <A→B flow>	Standard	−98 kPa to 0.5 MPa <sup>(Note 3)</sup>			−98 kPa to 0.4 MPa <sup>(Note 3)</sup>	
	High temperature	−98 kPa to 0.3 MPa <sup>(Note 3)</sup>				
Back pressure (MPa)	Standard	0.3 or less			0.2 or less	
	High back pressure	0.42 or less				
	High temperature	0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Pilot air pressure (MPa)		0.3 to 0.5 (High back pressure: 0.45 to 0.55)				
Pilot port size		1/8" (ø3), ø4, Rc 1/8, NPT 1/8				
Fluid temperature (°C)	Standard	0 to 100				
	High temperature	0 to 170				
Ambient temperature (°C)		0 to 60				
Weight (kg)		0.08	0.17	0.22	0.70	0.81

Note 1) Refer to page 150 for details of the applicable tubing sizes.

Note 2) ( ): High flow type

Note 3) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## Applicable Different Diameter Tubings with Reducer

Different diameter tubings can be selected (within the same body class) by using a nut and an insert bushing (reducer).

● With reducer

Body class	Connection tubing O.D.													
	Metric size							Inch size						
	3	4	6	8	10	12	19	25	1/8	3/16	1/4	3/8	1/2	3/4
2	●	●	○	—	—	—	—	—	●	●	○	—	—	—
3	—	—	●	●	○	—	—	—	—	●	○	—	—	—
4	—	—	—	—	●	○	—	—	—	—	●	○	—	—
5	—	—	—	—	—	●	○	—	—	—	—	●	○	—
6	—	—	—	—	—	—	●	○	—	—	—	—	●	○

Note) Refer to page 99 for information on changing tubing sizes.



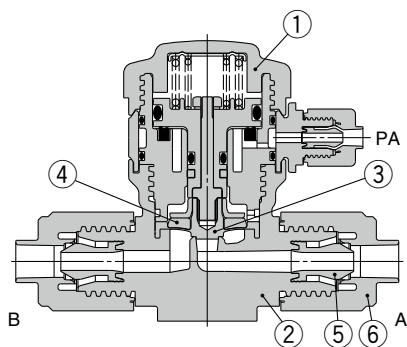


# LVQ Series

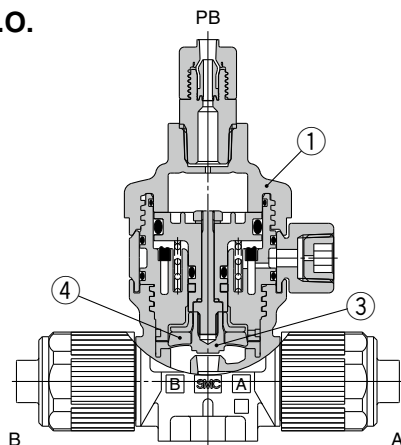
## Construction

### Basic

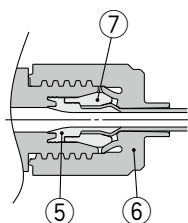
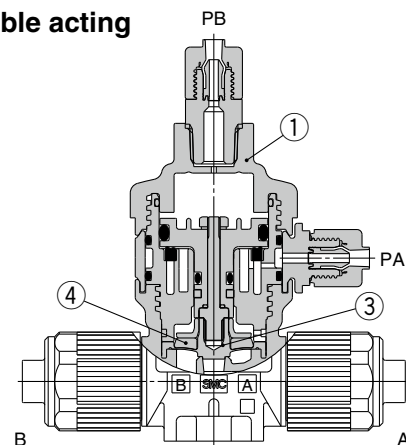
#### N.C.



#### N.O.

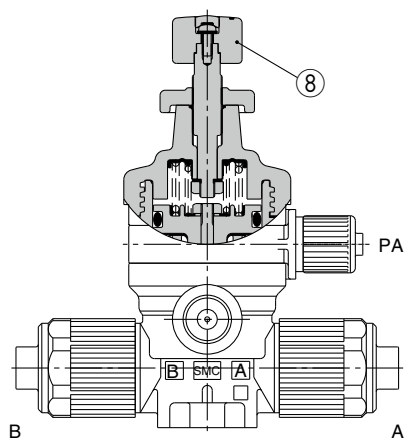


#### Double acting

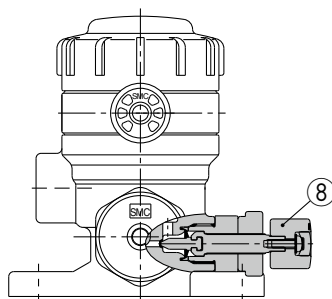


With reducer

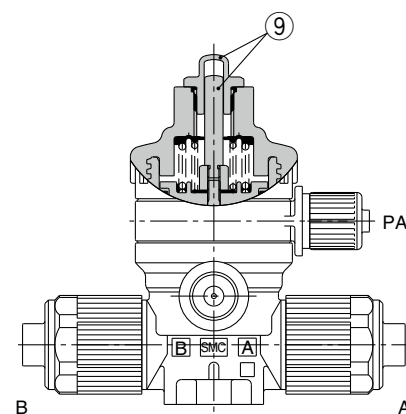
#### With flow rate adjustment



#### With by-pass



#### With indicator

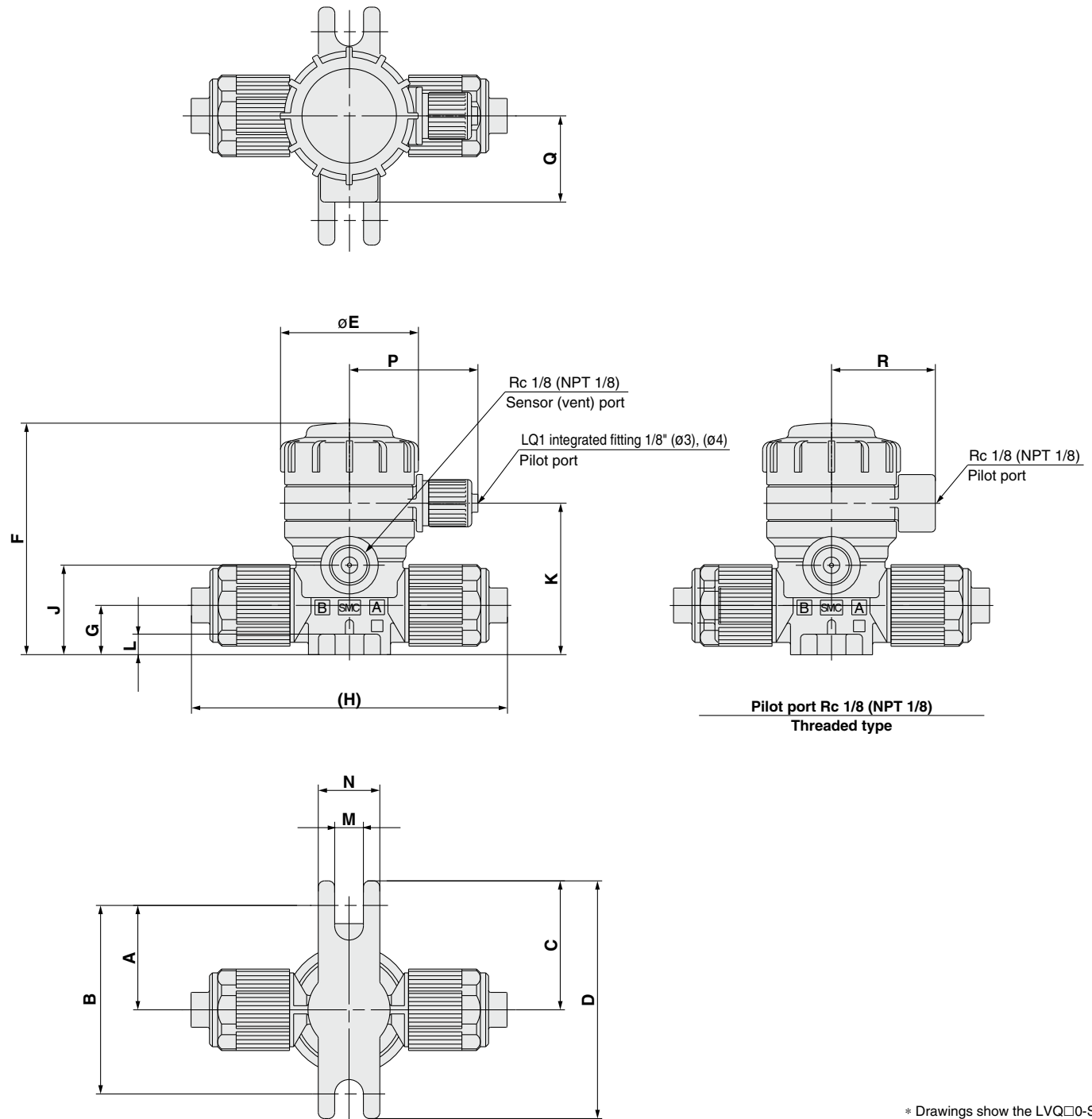


### Component Parts

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE
4	Buffer	FKM
		EPDM
		FFKM
5	Insert bushing	PFA
6	Nut	PFA
7	Collar	PFA
8	Flow rate adjuster	PVDF
9	Indicator/Cover	PP

## Dimensions

Basic, High back pressure  
N.C. valve



\* Drawings show the LVQ□0-S.

LVQ□0- $\square$  Dimensions (N.C. Valve)

(mm)

Model	A	B	C	D	E	F	G	H		J	K	L	M	N	P	Q	R
								V□	S□								
LVQ20- $\square$	25.5	46	31.5	58	33.6	56.5	12	70	77	21.8	37	5	7	15	31.3	21	25.3
LVQ30- $\square$	28.5	57	34.5	69	45.4	77	16.5	83	95	32	50	6	7	20	37.2	25	31.2
LVQ40- $\square$	28.5	57	34.5	69	45.4	82.5	22	95	109	37.5	55.5	6	7	20	37.2	25	31.2
LVQ50- $\square$	42	84	48	96	75	127	25	130	141	50.2	78.2	10	7	20	50.8	38.5	45
LVQ60-V $\square$ *	42	84	48	96	75	136.8	32	150	—	60	88	10	7	20	50.8	38.5	45

\* The LVQ60 is available only with "V".



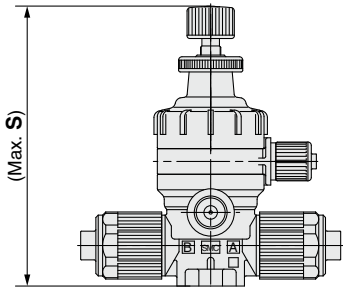
# LVQ Series

## Dimensions

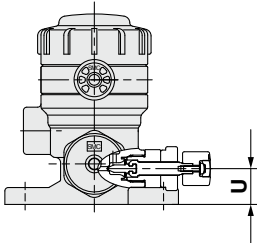
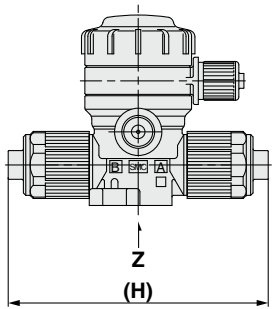
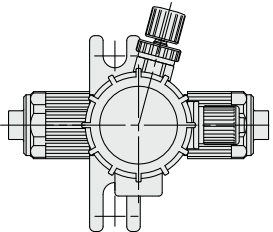
With flow rate adjustment, High back pressure with flow rate adjustment  
N.C. valve

Dimensions (mm)	
Model	S
LVQ20- <sup>V</sup> □-1	83
LVQ30- <sup>V</sup> □-1	113.5
LVQ40- <sup>V</sup> □-1	119
LVQ50- <sup>V</sup> □-1	171.5
LVQ60-V□-1*	182.5

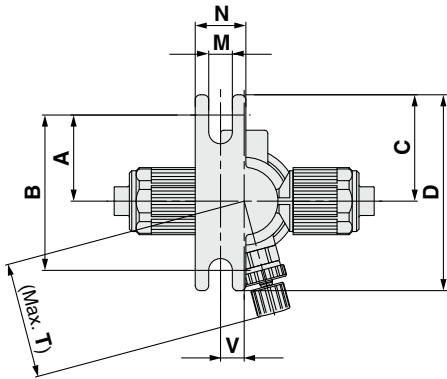
\* The LVQ60 is available only with "V".



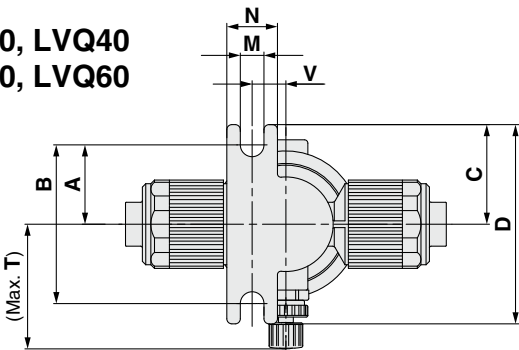
With by-pass, High back pressure with by-pass  
N.C. valve



LVQ20



LVQ30, LVQ40  
LVQ50, LVQ60



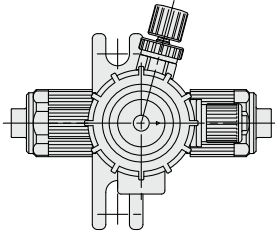
View Z

\* Drawings show the LVQ□0-S.

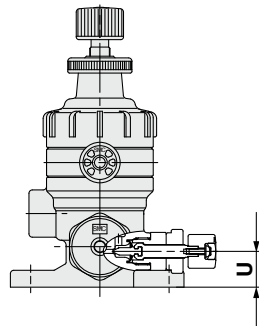
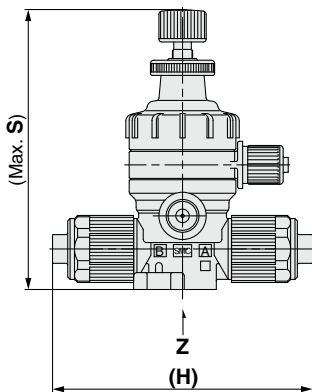
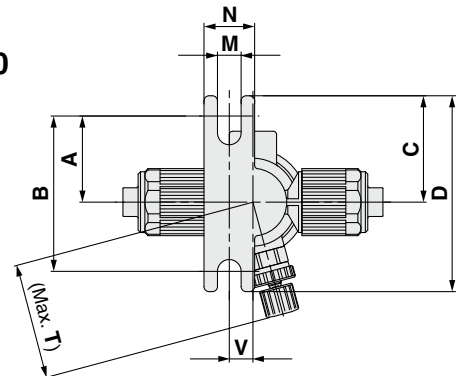
Dimensions (mm)										
Model	A	B	C	D	M	N	T	U	V	H
										V□ S□
LVQ20- <sup>V</sup> □-2	25.5	46	31.5	58	7	15	34.3	10.6	7	64 77
LVQ30- <sup>V</sup> □-2	25.5	51	31.5	63	7	15	36.9	16.5	10	83 95
LVQ40- <sup>V</sup> □-2	25.5	51	31.5	63	7	15	37.9	22	10	95 109
LVQ50- <sup>V</sup> □-2	38	76	44	88	7	20	64	25	17	130 141
LVQ60-V□-2*	38	76	44	88	7	20	66	32	17	150 —

\* The LVQ60 is available only with "V".

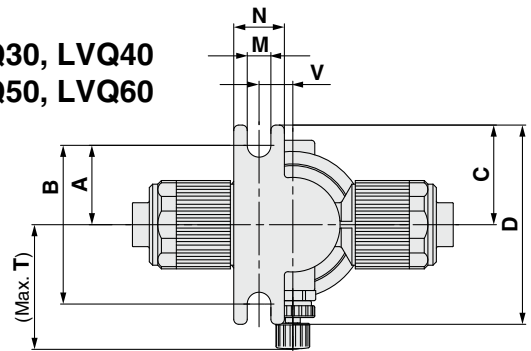
With flow rate adjustment & by-pass,  
High back pressure with flow rate adjustment & by-pass  
N.C. valve



LVQ20



LVQ30, LVQ40  
LVQ50, LVQ60



View Z

\* Drawings show the LVQ□0-S.

#### Dimensions

(mm)

Model	A	B	C	D	M	N	S	T	U	V	H	
											V□	S□
LVQ20-V□-3	25.5	46	31.5	58	7	15	83	34.3	10.6	7	64	77
LVQ30-V□-3	25.5	51	31.5	63	7	15	113.5	36.9	16.5	10	83	95
LVQ40-V□-3	25.5	51	31.5	63	7	15	119	37.9	22	10	95	109
LVQ50-V□-3	38	76	44	88	7	20	171.5	64	25	17	130	141
LVQ60-V□-3*	38	76	44	88	7	20	182.5	66	32	17	150	—

\* The LVQ60 is available only with "V".

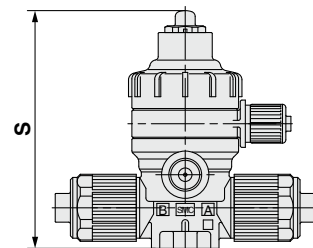
With indicator, High back pressure with indicator  
N.C. valve

#### Dimensions

(mm)

Model	S
LVQ20-V□-4	70.5
LVQ30-V□-4	88.5
LVQ40-V□-4	94
LVQ50-V□-4	134.5
LVQ60-V□-4*	144

\* The LVQ60 is available only with "V".

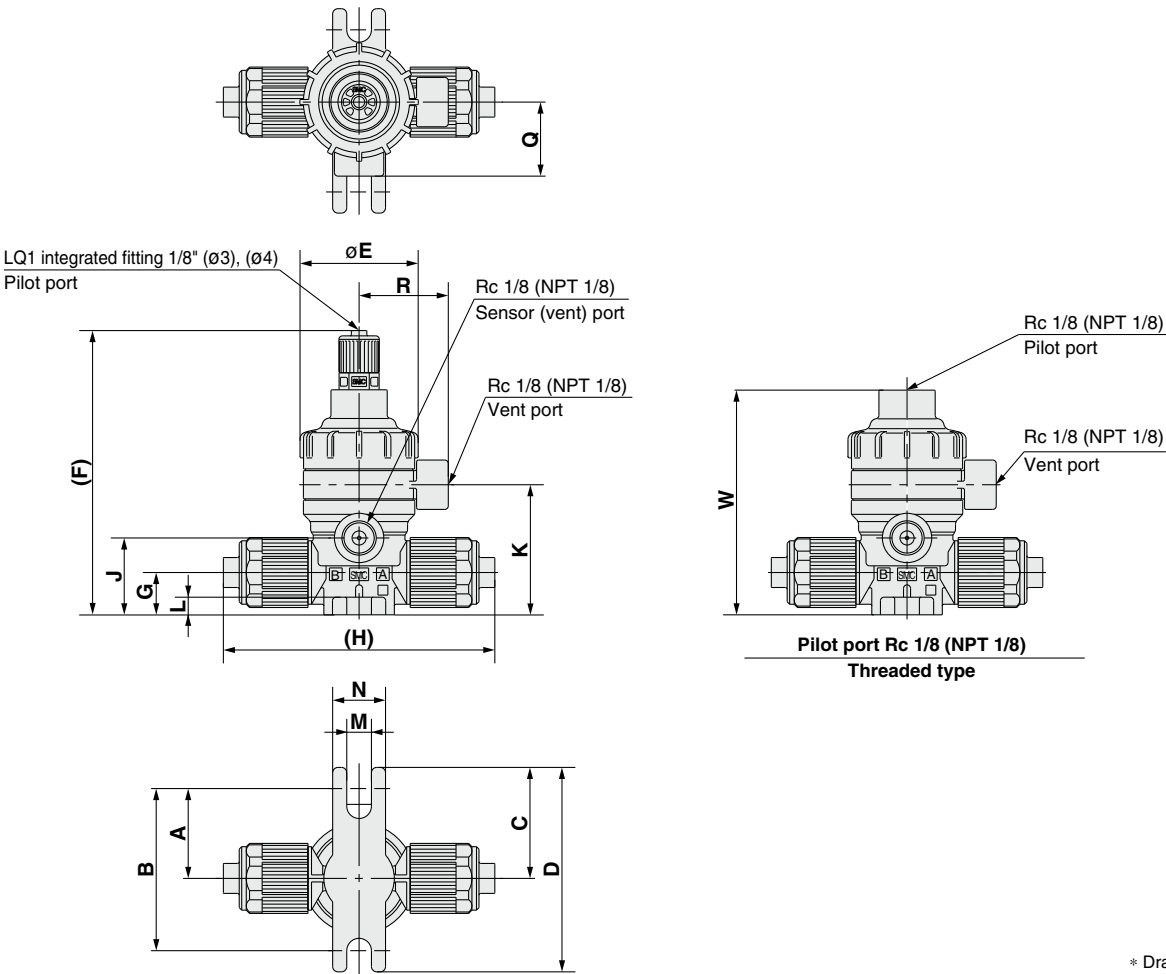


\* Drawings show the LVQ□0-S.

# LVQ Series

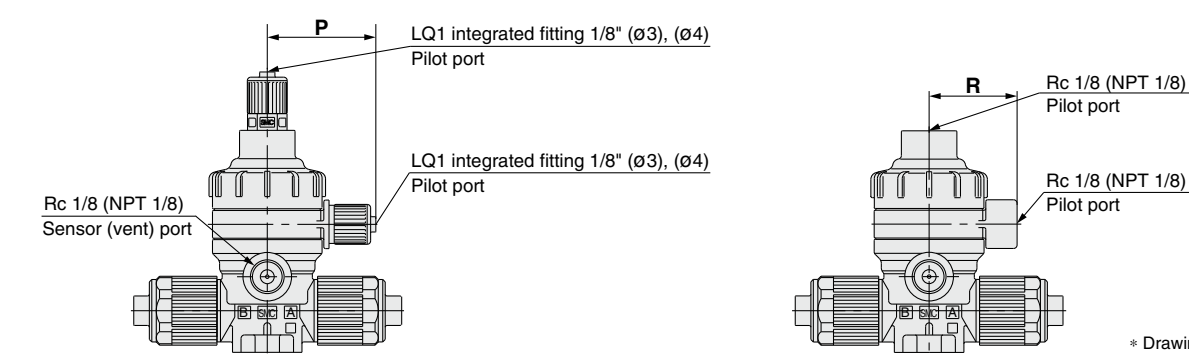
## Dimensions

### Basic N.O. valve



\* Drawings show the LVQ□0-S.

### Double acting valve

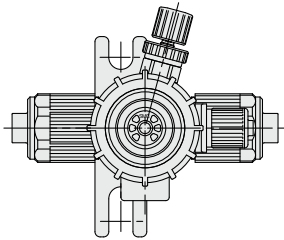


\* Drawings show the LVQ□0-S.

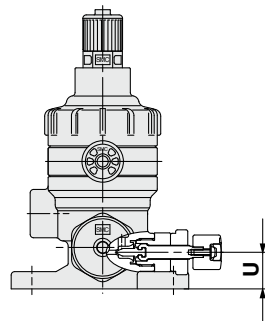
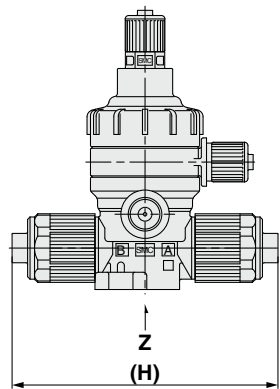
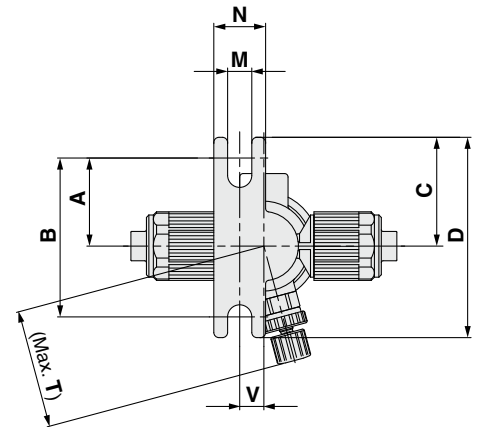
LVQ□ <sup>1-V</sup> <sub>2-□</sub> Dimensions (N.O. Valve, Double Acting Valve)																		(mm)
Model	A	B	C	D	E	F	G	H		J	K	L	M	N	P	Q	R	W
								V□	S□									
LVQ2 <sup>1-V</sup> <sub>2-□</sub>	25.5	46	31.5	58	33.6	81	12	70	77	21.8	37	5	7	15	31.3	21	25.3	64
LVQ3 <sup>1-V</sup> <sub>2-□</sub>	28.5	57	34.5	69	45.4	99	16.5	83	95	32	50	6	7	20	37.2	25	31.2	82
LVQ4 <sup>1-V</sup> <sub>2-□</sub>	28.5	57	34.5	69	45.4	104.5	22	95	109	37.5	55.5	6	7	20	37.2	25	31.2	87.5
LVQ5 <sup>1-V</sup> <sub>2-□</sub>	42	84	48	96	75	145	25	130	141	50.2	78.2	10	7	20	50.8	38.5	45	128
LVQ6 <sup>1-V</sup> <sub>2-□</sub> *	42	84	48	96	75	154.5	32	150	—	60	88	10	7	20	50.8	38.5	45	137.5

\* The LVQ60 is available only with "V".

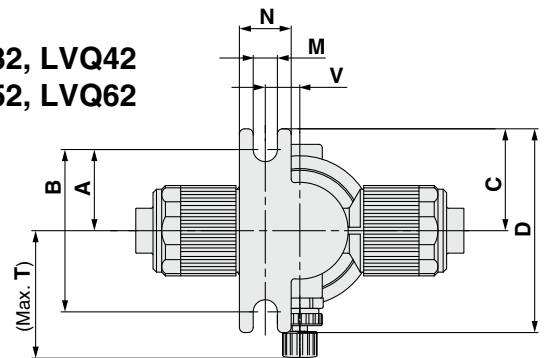
**With by-pass  
Double acting valve**



**LVQ22**



**LVQ32, LVQ42  
LVQ52, LVQ62**



View Z

\* Drawings show the LVQ□0-S.

**Dimensions (Double Acting Valve)**

(mm)

Model	A	B	C	D	M	N	T	U	V	H	
										V□	S□
LVQ22-V□-2	25.5	46	31.5	58	7	15	34.3	10.6	7	64	77
LVQ32-V□-2	25.5	51	31.5	63	7	15	36.9	16.5	10	83	95
LVQ42-V□-2	25.5	51	31.5	63	7	15	37.9	22	10	95	109
LVQ52-V□-2	38	76	44	88	7	20	64	25	17	130	141
LVQ62-V□-2*	38	76	44	88	7	20	66	32	17	150	—

\* The LVQ60 is available only with "V".

# Air Operated Insert Bushing, Integrated Fitting Type Space Saving/Space Saving Connection **LVQS Series**

RoHS

## How to Order

LVQ **2** **0** **S** - **V** **07** **□** **□** - **□** - **□**

1 2 3 4 5 6 7 8 9

### 1 Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

### 2 Valve type

<b>0</b>	N.C.
<b>1</b>	N.O.
<b>2</b>	Double acting

Note) For valve type combinations, refer to variations on the next page.

### 3 Body type

<b>S</b>	Space saving connection
----------	-------------------------

### 4 Fitting type

Symbol	Fitting type	Body class
<b>V</b>	LQ1	2, 3, 4, 5, 6

### 5 Applicable fitting size

Symbol	Fitting size	Body class				
		2	3	4	5	6
<b>07</b>	2	○				
<b>11</b>	3		○			
<b>13</b>	4			○		
<b>19</b>	5				○	
<b>25</b>	6					○

Note) Refer to page 81 for How to Order fitting parts. Select a tube with the same size as the valve side fitting.

### 6 Pilot port type

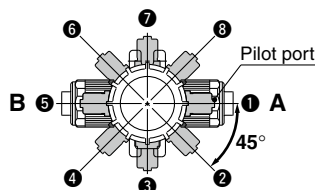
<b>Nil</b>	LQ1 integrated fitting	Connection tubing size 1/8" x 0.086" (3 x 2) <small>Note)</small>
<b>M</b>	LQ1 integrated fitting	Connection tubing size 4 x 3 <small>Note)</small>
<b>R</b>	Threaded	Rc1/8
<b>N</b>	Threaded	NPT1/8

Note) Refer to page 150 for details of the applicable tubing sizes.

### 7 Pilot port direction

Symbol	Direction
<b>Nil</b>	①
<b>P2</b>	②
<b>P3</b>	③
<b>P4</b>	④
<b>P5</b>	⑤
<b>P6</b>	⑥
<b>P7</b>	⑦
<b>P8</b>	⑧

#### Pilot port piping direction



\* Specify the piping direction by part number when ordering the product. Do not change the pilot port direction. (Refer to Precautions on page 150.)

### 8 Option 1

Nil	None
1	With flow rate adjustment
2	With by-pass
3	With flow rate adjustment & by-pass
4	With indicator
5	High back pressure (0.42 MPa)
6	High back pressure with flow rate adjustment
7	High back pressure with by-pass
8	High back pressure with flow rate adjustment & by-pass
9	High back pressure with indicator
24	With indicator & by-pass

Note) Refer to variations in the table below for valve type and option 1 combinations. Options in the same table can not be combined each other.

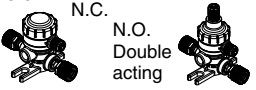
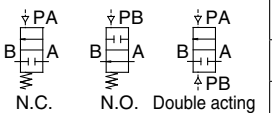

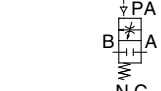

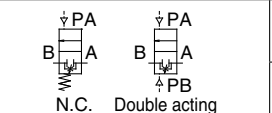



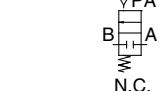
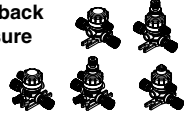
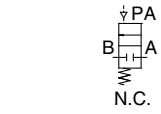


### 9 Option 2

Symbol	Applicable option												Buffer material	Note
	Nil	1	2	3	4	5	6	7	8	9	24			
Nil	○	○	○	○	○	○	○	○	○	○	○	FKM	—	
J	○	○	—	—	—	—	—	—	—	—	—	FKM	For high temperature	
K	○	○	○	○	○	○	○	○	○	○	○	FFKM	—	
N	○	○	○	○	○	○	○	○	○	○	○	EPDM	For ammonium hydroxide	
P	○	—	—	—	○	○	—	—	—	—	—	FKM	High flow type LVQ6□ only	

Note 1) Options 2 in the same table cannot be combined each other.

Note 2) Only option 1 (with flow rate adjustment) is available for use in high-temperature environments. However, it cannot be used in combination with any of the high back pressure specifications.

### Variations





				Model	LVQ20	LVQ30	LVQ40	LVQ50	LVQ60
				Orifice diameter	ø4	ø8	ø10	ø16	ø22
				Applicable fitting size	2	3	4	5	6
Type	Symbol			Valve type					
<b>Basic</b> 				N.C.	○	○	○	○	○
				N.O.	○	○	○	○	○
				Double acting	○	○	○	○	○
<b>With flow rate adjustment</b> 				N.C.	○	○	○	○	○
<b>With by-pass</b> 				N.C.	○	○	○	○	○
				Double acting	○	○	○	○	○
<b>With flow rate adjustment &amp; by-pass</b> 				N.C.	○	○	○	○	○
<b>With indicator</b> 				N.C.	○	○	○	○	○
<b>High back pressure</b> 				N.C.	○	○	○	○	○
<b>With indicator &amp; by-pass</b> 				N.C.	○	○	○	○	○



## How to Order Space Saving Fittings

**LQ1 E 61 – SN –**

**Fitting type**

<p><b>E</b></p> <p>Union elbow</p> 	<p><b>T</b></p> <p>Union tee</p> 
<p><b>P</b></p> <p>Panel mount union</p> 	<p><b>U</b></p> <p>Union</p> 

- **Packaging**

Symbol	Packaging
<b>Nil</b>	Clean packaging equivalent to Class M3.5
<b>1</b>	Standard packaging equivalent to Class M5.5

- One (including insert bushing) of the nuts is not attached.

• **Applicable tubing size**<sup>Note 1) Note 2)</sup>

Size	No.	Applicable tubing size (mm)	Reducing
<b>2</b>	<b>1</b>	6 x 4	○
<b>2</b>	<b>2</b>	4 x 3	●
<b>3</b>	<b>1</b>	10 x 8	○
<b>3</b>	<b>2</b>	8 x 6	●
<b>3</b>	<b>3</b>	6 x 4	●
<b>4</b>	<b>1</b>	12 x 10	○
<b>4</b>	<b>2</b>	10 x 8	●
<b>5</b>	<b>1</b>	19 x 16	○
<b>5</b>	<b>2</b>	12 x 10	●
<b>6</b>	<b>1</b>	25 x 22	○
<b>6</b>	<b>2</b>	19 x 16	●

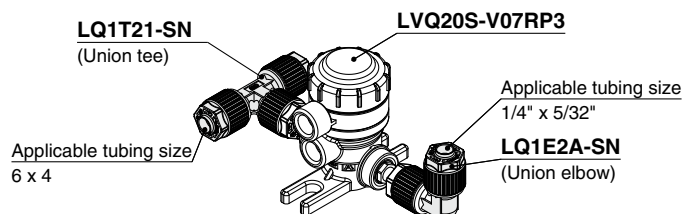
Size	Symbol	Applicable tubing size (inch)	Reducing
<b>2</b>	<b>A</b>	1/4" x 5/32"	○
<b>2</b>	<b>B</b>	3/16" x 1/8"	●
<b>2</b>	<b>C</b>	1/8" x 0.086"	●
<b>3</b>	<b>A</b>	3/8" x 1/4"	○
<b>3</b>	<b>B</b>	1/4" x 5/32"	●
<b>4</b>	<b>A</b>	1/2" x 3/8"	○
<b>4</b>	<b>B</b>	3/8" x 1/4"	●
<b>5</b>	<b>A</b>	3/4" x 5/8"	○
<b>5</b>	<b>B</b>	1/2" x 3/8"	●
<b>6</b>	<b>A</b>	1" x 7/8"	○
<b>6</b>	<b>B</b>	3/4" x 5/8"	●

○ Basic size      ● With reducer

Note 1) Select the same size as the fitting on the valve.

Note 2) Refer to page 150 for details of the applicable tubing sizes.

## Piping Example



## Ordering Example

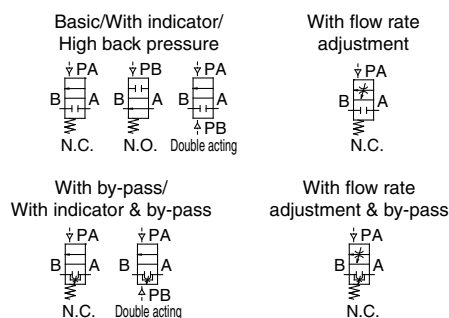
<b>LVQ20S-V07RP3</b>	1
<b>LQ1T21-SN</b> (Union tee)	1
<b>LQ1E2A-SN</b> (Union elbow)	1

Note) For shipment, the valve and fittings are individually packaged and dispatched together in 1 box.





## Symbol



## Standard Specifications

Model		LVQ20S	LVQ30S	LVQ40S	LVQ50S	LVQ60S
Connection fitting size		2	3	4	5	6
Fitting type	IN/OUT port	LQ1				
	Pilot port	LQ1				
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8 (8.1) <sup>Note 1)</sup>
	Cv	0.35	1.3	1.9	5	8 (9.5) <sup>Note 1)</sup>
Withstand pressure (MPa)		1				
Operating pressure <A→B flow>	Standard	−98 kPa to 0.5 MPa <sup>Note 3)</sup>			−98 kPa to 0.4 MPa <sup>Note 3)</sup>	
	High temperature	−98 kPa to 0.3 MPa <sup>Note 3)</sup>				
Back pressure (MPa)	Standard	0.3 or less			0.2 or less	
	High back pressure	0.42 or less				
	High temperature	0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Pilot air pressure (MPa)		0.3 to 0.5 (High back pressure: 0.45 to 0.55)				
Pilot port size <sup>Note 2)</sup>		1/8" (ø3), ø4, Rc 1/8, NPT 1/8				
Fluid temperature (°C)	Standard	0 to 100				
	High temperature	0 to 170				
Ambient temperature (°C)		0 to 60				
Weight (kg)		0.085	0.175	0.223	0.725	0.835

Note 1) ( ): High flow type

Note 2) Refer to page 150 for details of the applicable tubing sizes.

Note 3) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## ⚠ Specific Product Precautions

Be sure to read this before handling the products. Refer to page 501 for Safety Instructions and pages 149 and 150 for Air Operated Chemical Liquid Valve Precautions.

### Piping

## ⚠ Caution

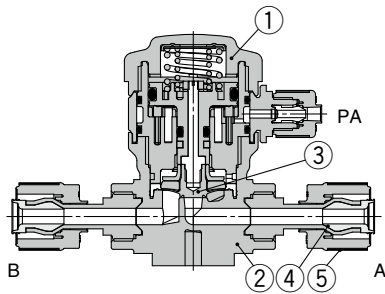
1. Take extra care with the insert bushing when connecting the fittings.
2. Tighten the nut until it touches the end surface of the body, and then tighten it an additional 1/8 turn. If the nut won't turn any further, then it means a sufficient tightening has occurred. Refer to the proper tightening torques shown below.

#### Tightening Torque for Piping

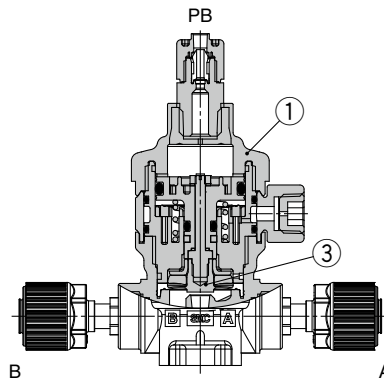
Body class	Torque (N·m)
	LQ1
2	0.3 to 0.4
3	0.8 to 1.0
4	1.0 to 1.2
5	2.5 to 3.0
6	5.5 to 6.0

## Construction

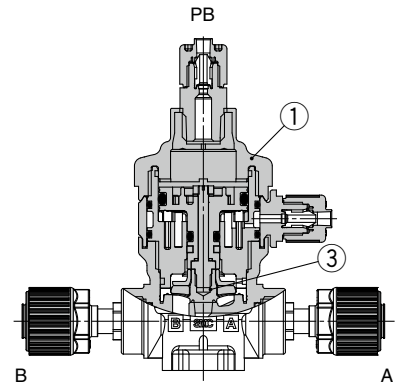
**Basic  
N.C.**



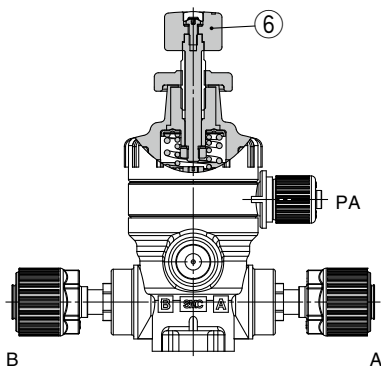
**Basic  
N.O.**



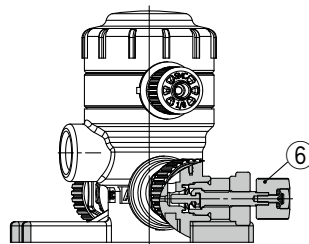
**Basic  
Double acting**



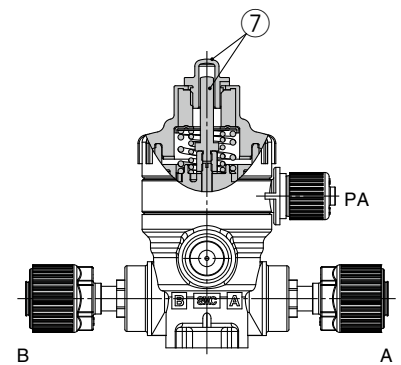
**With flow rate adjustment**



**With by-pass**



**With indicator**



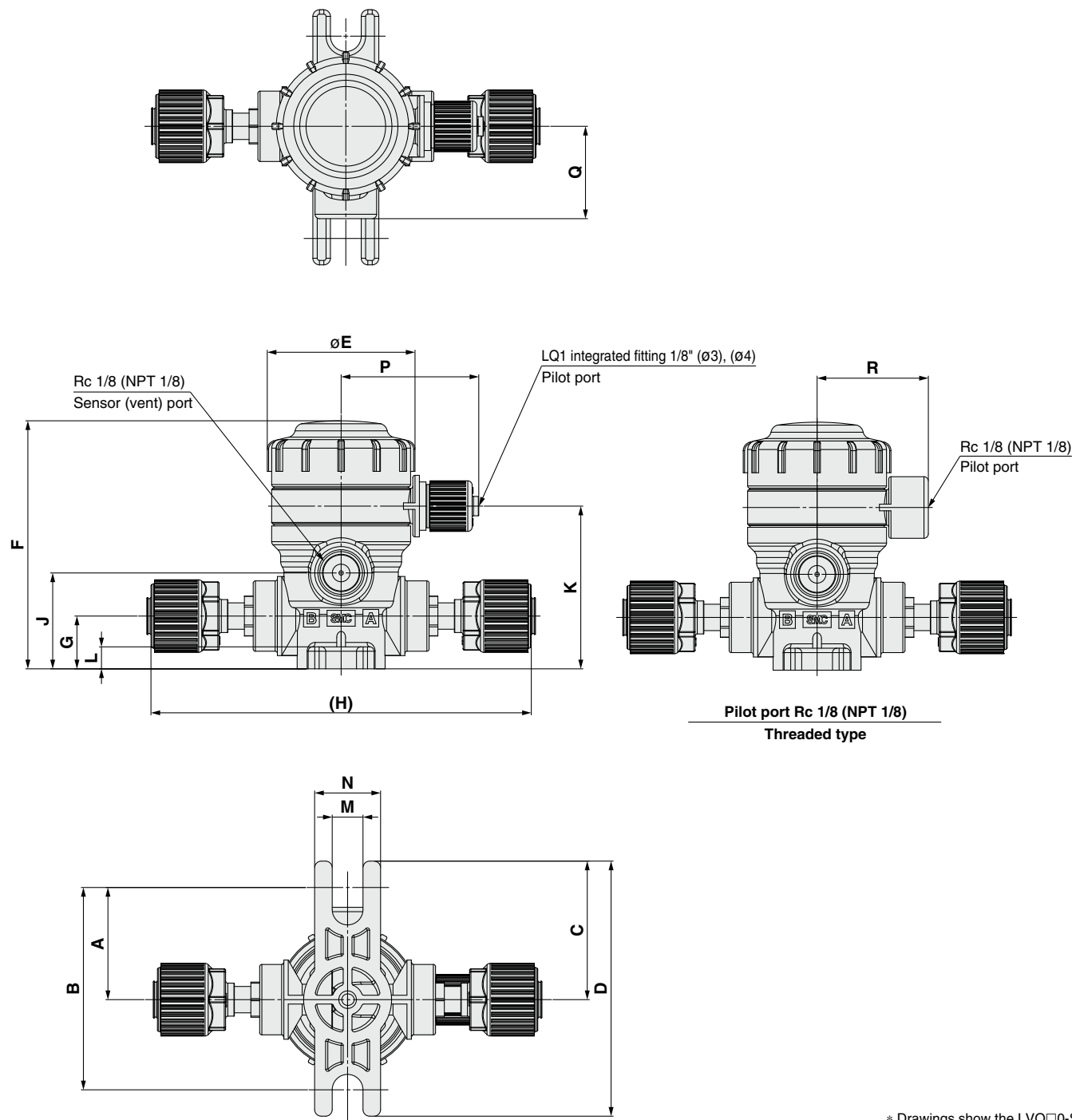
### Component Parts

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE
4	Insert bushing	PFA
5	Nut	PFA
6	Flow rate adjuster	PVDF
7	Indicator/Cover	PP

# LVQS Series

## Dimensions

Basic, High back pressure  
N.C. valve



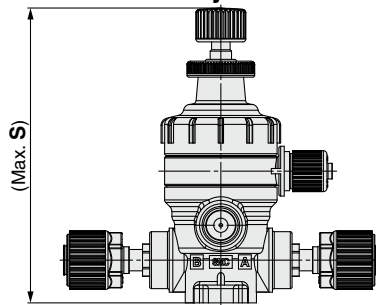
\* Drawings show the LVQ□0-S.

LVQ□0S-V□ Dimensions (N.C. Valve)

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
LVQ20S-V07	25.5	46	31.5	58	33.6	56.5	12	89	21.8	37	5	7	15	31.3	21	25.3
LVQ30S-V11	28.5	57	34.5	69	45.4	77	16.5	106	32	50	6	7	20	37.2	25	31.2
LVQ40S-V13	28.5	57	34.5	69	45.4	82.5	22	120	37.5	55.5	6	7	20	37.2	25	31.2
LVQ50S-V19	42	84	48	96	75	127	25	164	50.2	78.2	10	7	20	50.8	38.5	45
LVQ60S-V25	42	84	48	96	75	136.8	32	177	60	88	10	7	20	50.8	38.5	45

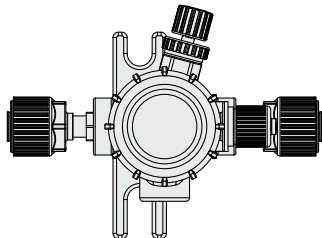
**With flow rate adjustment, High back pressure with flow rate adjustment  
N.C. valve**

Dimensions (mm)	
Model	S
LVQ20S-V07-1	83
LVQ30S-V11-1	113.5
LVQ40S-V13-1	119
LVQ50S-V19-1	171.5
LVQ60S-V25-1	182.5

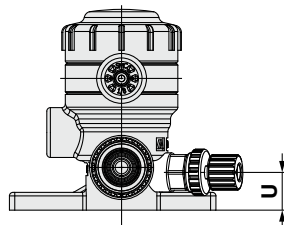
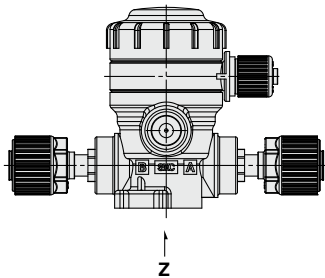
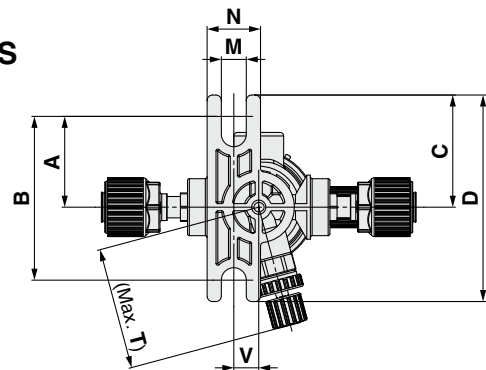


\* Drawing shows the LVQ□0-S.

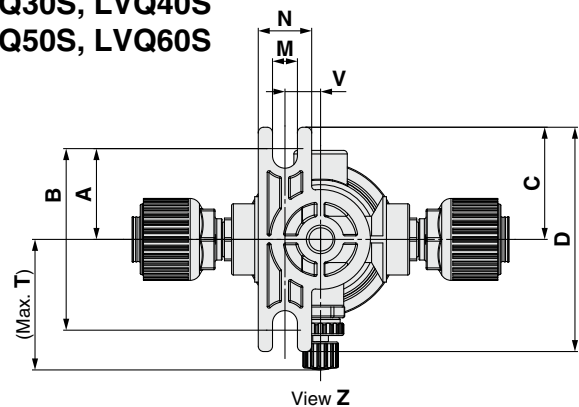
**With by-pass, High back pressure with by-pass  
N.C. valve**



**LVQ20S**



**LVQ30S, LVQ40S  
LVQ50S, LVQ60S**



Dimensions (mm)									
Model	A	B	C	D	M	N	T	U	V
LVQ20S-V07-2	25.5	46	31.5	58	7	15	34.3	10.6	7
LVQ30S-V11-2	25.5	51	31.5	63	7	15	36.9	16.5	10
LVQ40S-V13-2	25.5	51	31.5	63	7	15	37.9	22	10
LVQ50S-V19-2	38	76	44	88	7	20	64	25	17
LVQ60S-V25-2	38	76	44	88	7	20	66	32	17

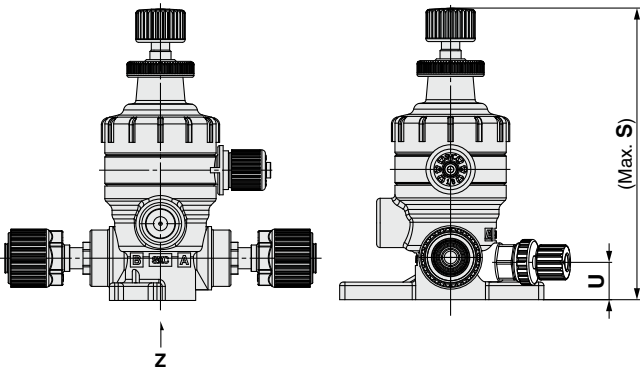
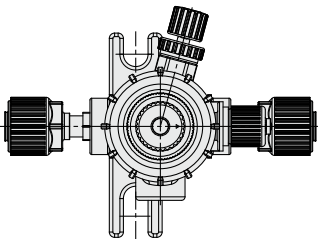
\* Drawings show the LVQ□0-S.



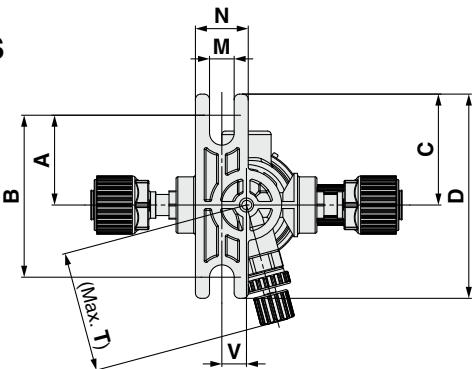
# LVQS Series

## Dimensions

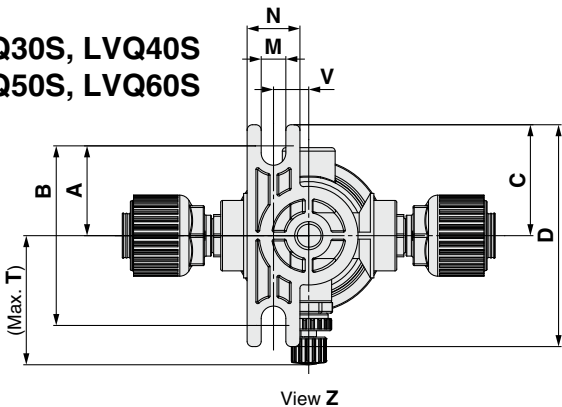
With flow rate adjustment & by-pass,  
High back pressure with flow rate adjustment & by-pass  
N.C. valve



LVQ20S



LVQ30S, LVQ40S  
LVQ50S, LVQ60S

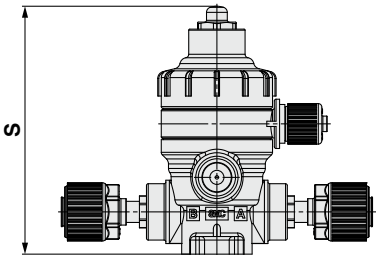


Dimensions										(mm)
Model	A	B	C	D	M	N	S	T	U	V
LVQ20S-V07-3	25.5	46	31.5	58	7	15	83	34.3	10.6	7
LVQ30S-V11-3	25.5	51	31.5	63	7	15	113.5	36.9	16.5	10
LVQ40S-V13-3	25.5	51	31.5	63	7	15	119	37.9	22	10
LVQ50S-V19-3	38	76	44	88	7	20	171.5	64	25	17
LVQ60S-V25-3	38	76	44	88	7	20	182.5	66	32	17

\* Drawings show the LVQ□0-S.

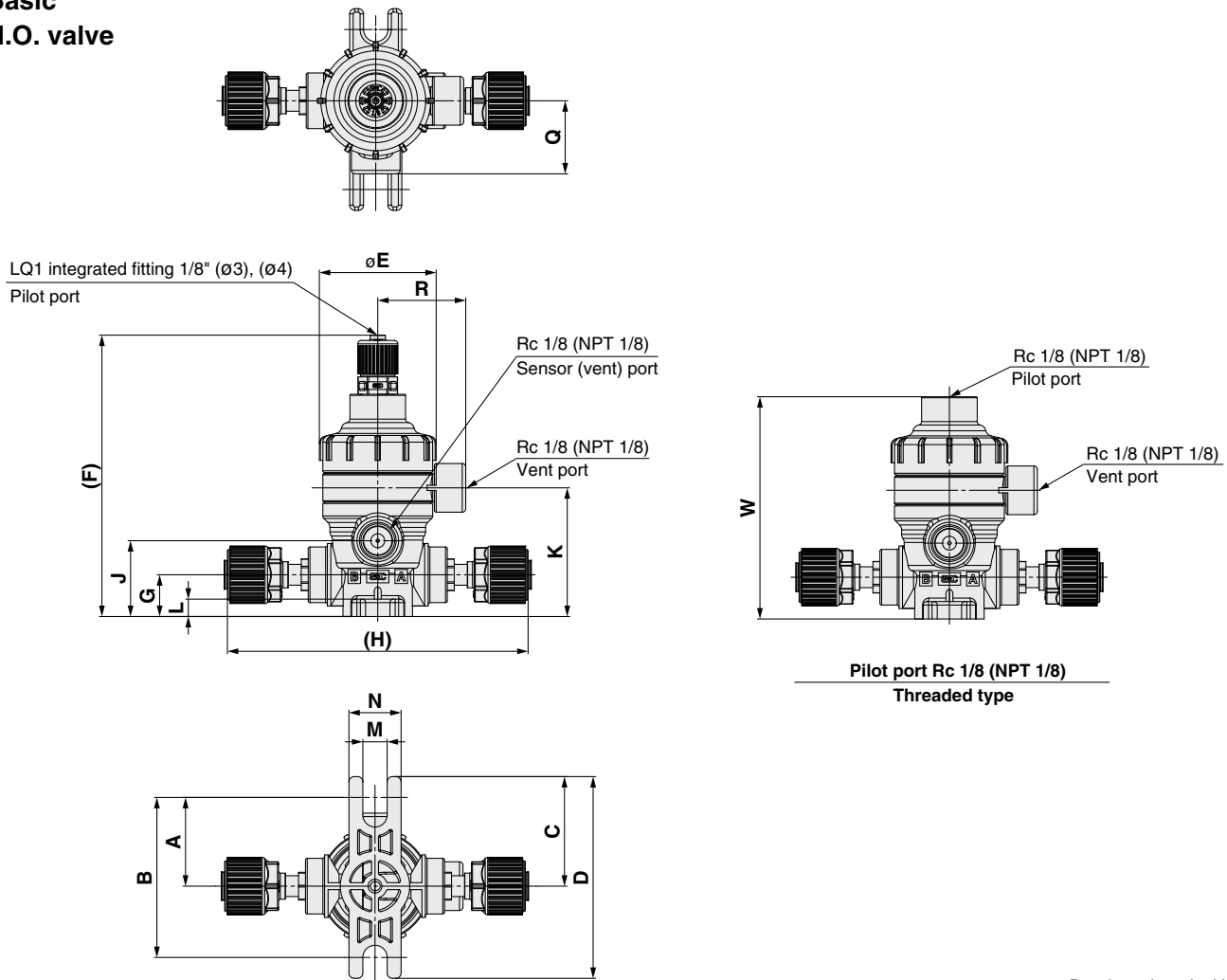
With indicator, High back pressure with indicator  
N.C. valve

Dimensions		(mm)
Model	S	
LVQ20S-V07-4	70.5	
LVQ30S-V11-4	88.5	
LVQ40S-V13-4	94	
LVQ50S-V19-4	134.5	
LVQ60S-V25-4	144	



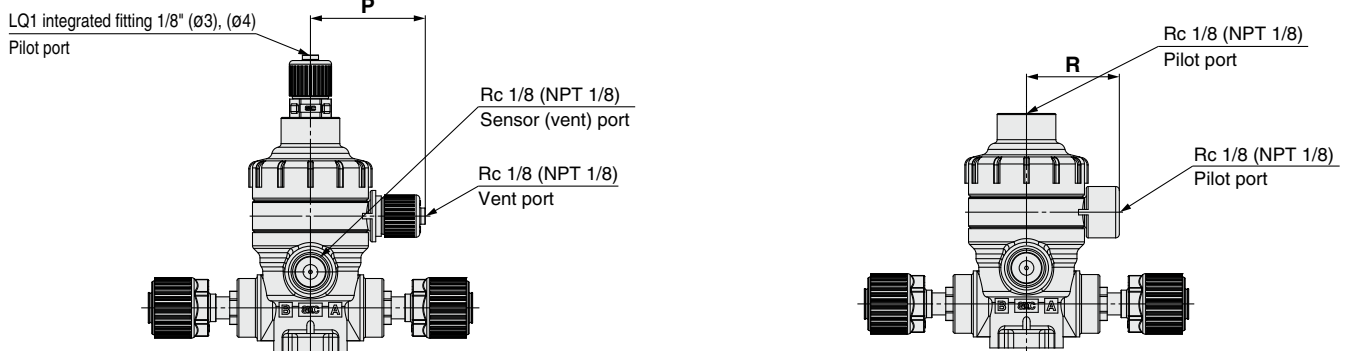
\* Drawing shows the LVQ□0-S.

## Basic N.O. valve



\* Drawings show the LVQ□0-S.

## Double acting valve



\* Drawings show the LVQ□0-S.

## LVQ□<sub>2</sub>S-V□ Dimensions (N.O. Valve, Double Acting Valve)

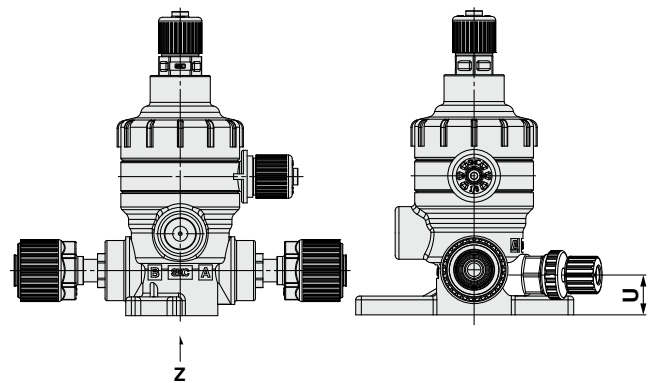
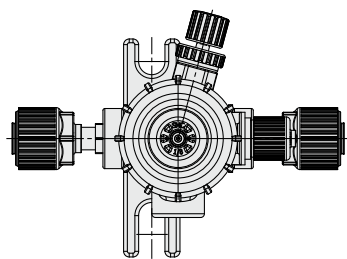
(mm)

Model	A	B	C	D	E	F	G	H		J	K	L	M	N	P	Q	R	W
								V□	S□									
LVQ2 <sub>2</sub> S-V07	25.5	46	31.5	58	33.6	81	12	89	92	21.8	37	5	7	15	31.3	21	25.3	64
LVQ3 <sub>2</sub> S-V11	28.5	57	34.5	69	45.4	99	16.5	106	112	32	50	6	7	20	37.2	25	31.2	82
LVQ4 <sub>2</sub> S-V13	28.5	57	34.5	69	45.4	104.5	22	120	126	37.5	55.5	6	7	20	37.2	25	31.2	87.5
LVQ5 <sub>2</sub> S-V19	42	84	48	96	75	145	25	164	168	50.2	78.2	10	7	20	50.8	38.5	45	128
LVQ6 <sub>2</sub> S-V25	42	84	48	96	75	154.5	32	177	—	60	88	10	7	20	50.8	38.5	45	137.5

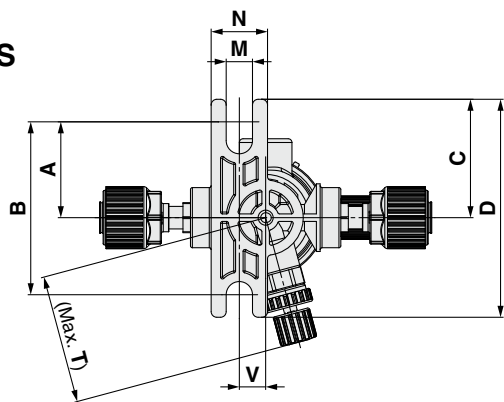
# LVQS Series

## Dimensions

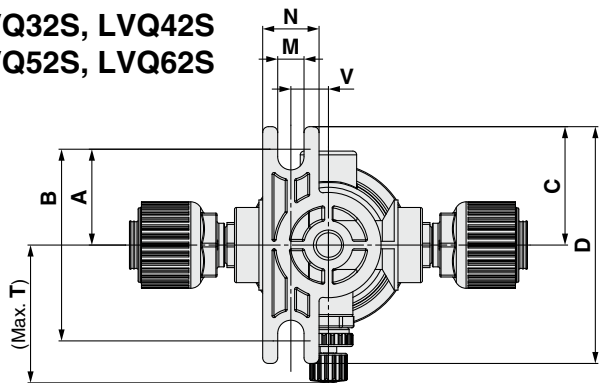
With by-pass  
Double acting valve



LVQ22S



LVQ32S, LVQ42S  
LVQ52S, LVQ62S



View Z

Dimensions (Double Acting Valve)										(mm)
Model	A	B	C	D	M	N	T	U	V	
LVQ22S-V07-2	25.5	46	31.5	58	7	15	34.3	10.6	7	
LVQ32S-V11-2	25.5	51	31.5	63	7	15	36.9	16.5	10	
LVQ42S-V13-2	25.5	51	31.5	63	7	15	37.9	22	10	
LVQ52S-V19-2	38	76	44	88	7	20	64	25	17	
LVQ62S-V25-2	38	76	44	88	7	20	66	32	17	

# Manually Operated Insert Bushing, Integrated Fitting Type Hyper Fitting **LVQH Series**

RoHS

The LQ2 fitting for the insert bushing, integrated fitting type LVQ/LVQH series high-purity chemical liquid valve is to be discontinued as of September 2025. Select the LQ1 fitting instead.

## How to Order

LVQH 2 0 - S 07 - - - 1 -

### Body class

Symbol	Body class	Orifice dia.
2	2	ø4
3	3	ø8
4	4	ø10
5	5	ø16
6	6	ø22

### Fitting type

Symbol	Fitting type	Body class
V	LQ1	2, 3, 4, 5, 6
S	LQ2	2, 3, 4, 5

### Option

Symbol	Buffer material	Note
Nil	FKM	—
K	FFKM	—
N	EPDM	For ammonium hydroxide

Note) Options cannot be combined each other.

### Handle operation

1	90° turn type
4	Multi-turn type (With indicator)

### Vent port type

Nil	Threaded	NPT 1/8
R	Threaded	Rc 1/8

### Port B (OUT) different dia. size

Symbol	Application
Nil	Ports A & B same size
Refer to the applicable tubing table to the left.	Different diameter tubings can be selected within the same body class.

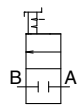
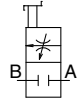
### Applicable tubing size<sup>Note)</sup>

Symbol	Connection tubing size	Body class				
		2	3	4	5	6
<b>Metric size</b>						
03	3 x 2	●				
04	4 x 3	●				
06	6 x 4	○	●			
08	8 x 6		●			
10	10 x 8		○	●		
12	12 x 10			○	●	
19	19 x 16				○	●
25	25 x 22					○
<b>Inch size</b>						
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

Note) Refer to page 150 for details of the applicable tubing sizes.

## Variations

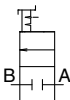
Type	Symbol	Model	LVQH20	LVQH30	LVQH40	LVQH50	LVQH60
		Orifice diameter	ø4	ø8	ø10	ø16	ø22
		Tubing O.D.					
		Metric	6	10	12	19	25
		Inch	1/4	3/8	1/2	3/4	1
90° turn type			○	○	○	○	○
Multi-turn type			○	○	○	○	○

## Standard Specifications

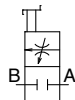


### Symbol

90° turn type



Multi-turn type



Model		LVQH20	LVQH30	LVQH40	LVQH50	LVQH60
Tubing O.D. <small>Note 1)</small>	Metric	6	10	12	19	25
	Inch	1/4	3/8	1/2	3/4	1
Fitting type		LQ1 or LQ2				LQ1
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8
	Cv	0.35	1.3	1.9	5	8
Withstand pressure (MPa)		1				
Fluid pressure <A→B>		−98 kPa to 0.5 MPa <small>Note 2)</small>			−98 kPa to 0.4 MPa <small>Note 2)</small>	
Back pressure (MPa)		0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Fluid temperature (°C)		0 to 100				
Ambient temperature (°C)		0 to 60				
Weight (kg)	LVQH□0-1	0.12	0.27	0.31	1.10	1.16
	LVQH□0-4	0.11	0.20	0.22	0.67	0.87

Note 1) Refer to page 150 for details of the applicable tubing sizes.

Note 2) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## ⚠ Specific Product Precautions

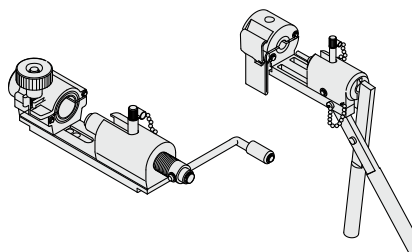
Be sure to read this before handling the products. Refer to page 501 for Safety Instructions and pages 149 and 150 for Air Operated Chemical Liquid Valve Precautions.

### Piping

## ⚠ Caution

### 1. Connect tubing by special tools.

For information on tubing connection and special tools, please see the pamphlet "High Purity Fluoropolymer Fittings Hyper Fitting LQ1/2 Series Work Procedure Instructions" (M-E05-1). (The pamphlet can be downloaded from the SMC home page.)



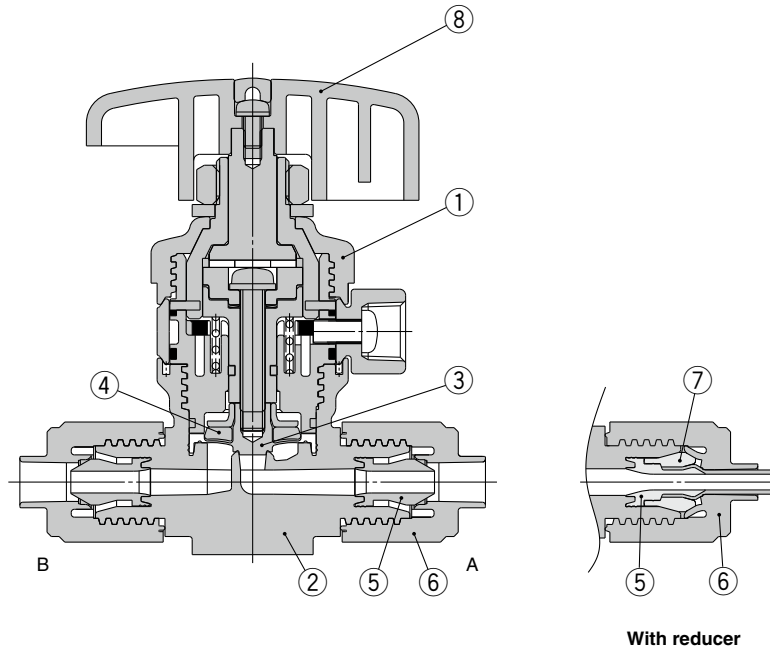
### 2. Tighten the nut until it touches the end surface of the body, and then tighten it an additional 1/8 turn. If the nut won't turn any further, then it means a sufficient tightening has occurred. Refer to the proper tightening torques shown below.

#### Tightening Torque for Piping

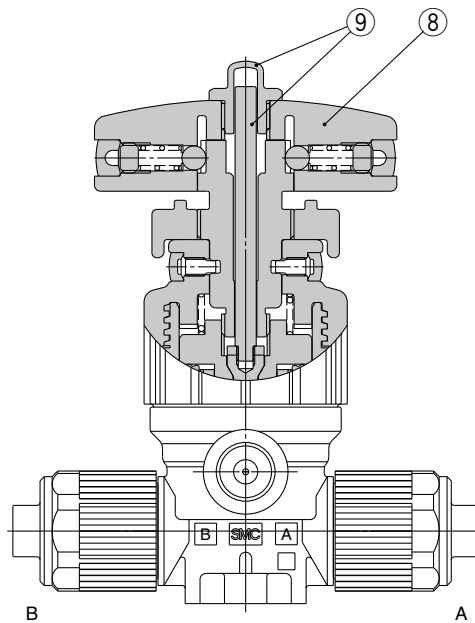
Body class	Torque (N·m)	
	LQ1	LQ2
2	0.3 to 0.4	1.5 to 2.0
3	0.8 to 1.0	3.0 to 3.5
4	1.0 to 1.2	7.5 to 9.0
5	2.5 to 3.0	11.0 to 13.0
6	5.5 to 6.0	—

## Construction

### 90° turn type



### Multi-turn type (With indicator)



### Component Parts

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE
4	Buffer	FKM
		EPDM
		FFKM
5	Insert bushing	PFA
6	Nut	PFA
7	Collar	PFA
8	Handle	PVDF
9	Indicator/Cover	PP



# LVQH Series

## Dimensions

### 90° turn type

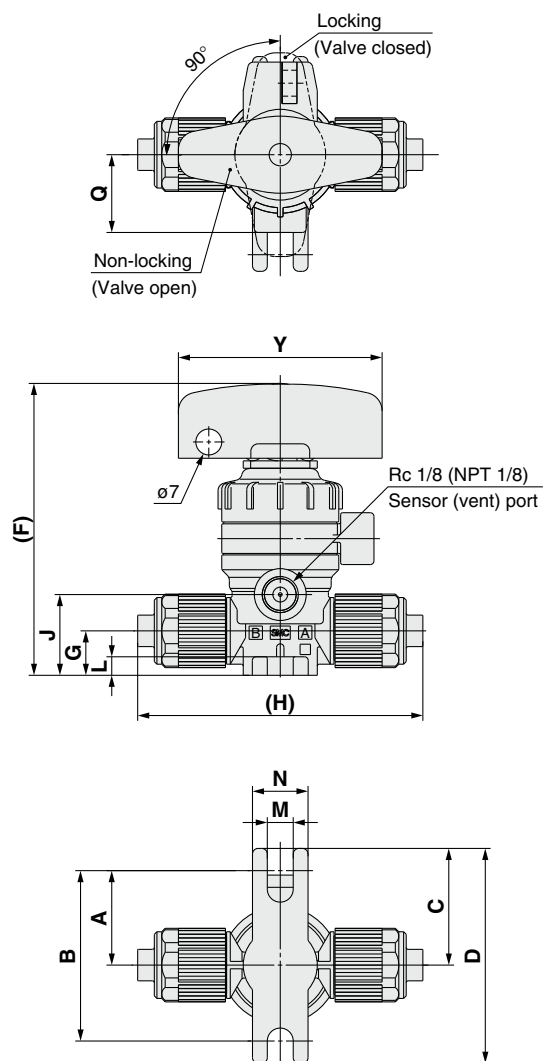
Dimensions (mm)

Model	A	B	C	D	F	G	H	
							V□	S□
LVQH20- $\frac{V}{S}$ □-1	25.5	46	31.5	58	79	12	70	77
LVQH30- $\frac{V}{S}$ □-1	28.5	57	34.5	69	103	16.5	83	95
LVQH40- $\frac{V}{S}$ □-1	28.5	57	34.5	69	108	22	95	109
LVQH50- $\frac{V}{S}$ □-1	42	84	48	96	165	25	130	141
LVQH60-V□-1*	42	84	48	96	175	32	150	—

Model	J	K	L	M	N	Q	Y
LVQH20- $\frac{V}{S}$ □-1	21.8	37	5	7	15	21	55
LVQH30- $\frac{V}{S}$ □-1	32	50	6	7	20	25	80
LVQH40- $\frac{V}{S}$ □-1	37.5	55.5	6	7	20	25	80
LVQH50- $\frac{V}{S}$ □-1	50.2	78.2	10	7	20	38.5	110
LVQH60-V□-1*	60	88	10	7	20	38.5	110

\* The LVQ60 is available only with "V".

\* Drawings show the LVQ□0-S.



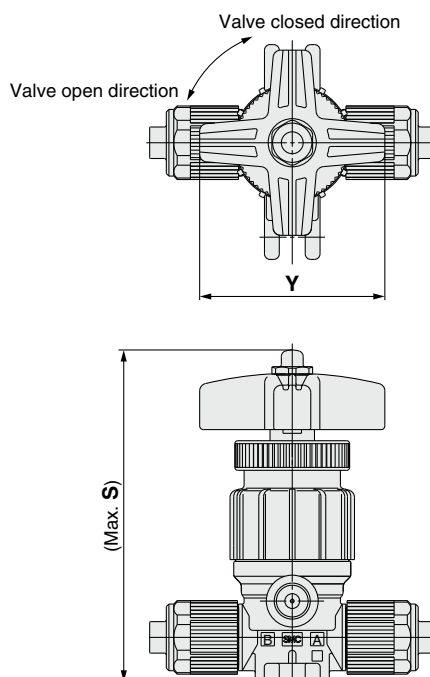
### Multi-turn type (With indicator)

Dimensions (mm)

Model	S	Y
LVQH20- $\frac{V}{S}$ □-4	93.6	50
LVQH30- $\frac{V}{S}$ □-4	111.2	50
LVQH40- $\frac{V}{S}$ □-4	116.7	50
LVQH50- $\frac{V}{S}$ □-4	170.7	71
LVQH60-V□-4*	180.2	71

\* The LVQ60 is available only with "V".

\* Drawings show the LVQ□0-S.



# Manually Operated Insert Bushing, Integrated Fitting Type Space Saving/Space Saving Connection **LVQHS Series**

RoHS

## How to Order

LVQH **2** **0** **S** - **V** **07** **□** - **1** - **□**

### Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

### Body type

<b>S</b>	Space saving connection
----------	-------------------------

### Fitting type

Symbol	Fitting type	Body class
<b>V</b>	LQ1	2, 3, 4, 5, 6

### Option

Symbol	Buffer material	Note
<b>Nil</b>	FKM	—
<b>K</b>	FFKM	—
<b>N</b>	EPDM	For ammonium hydroxide

Note) Options cannot be combined each other.

### Handle operation

<b>1</b>	90° turn type
<b>4</b>	Multi-turn type (With indicator)

### Vent port type

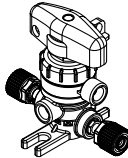
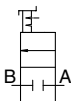
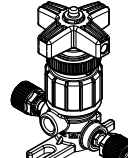
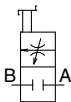
Symbol	Threading	Port size
<b>Nil</b>	Threading	NPT 1/8
<b>R</b>	Threading	Rc1/8

### Applicable fitting size

Symbol	Fitting size	Body class				
		2	3	4	5	6
<b>07</b>	2	○				
<b>11</b>	3		○			
<b>13</b>	4			○		
<b>19</b>	5				○	
<b>25</b>	6					○

Note) Refer to page 95 for How to Order applicable fittings.  
Select the same size as the fitting on the valve.





## Variations

Type	Model	Orifice diameter				
		Connection fitting size				
		Symbol				
		LVQH20S	LVQH30S	LVQH40S	LVQH50S	LVQH60S
		ø4	ø8	ø10	ø16	ø22
		2	3	4	5	6
<b>90° turn type</b> 		○	○	○	○	○
<b>Multi-turn type</b> 		○	○	○	○	○

## How to Order Space Saving Fittings

**LQ1 E 61 – SN –**

**Fitting type** ●

<p><b>E</b></p> <p>Union elbow</p> 	<p><b>T</b></p> <p>Union tee</p> 
<p><b>P</b></p> <p>Panel mount union</p> 	<p><b>U</b></p> <p>Union</p> 

- **Packaging**

Symbol	Packaging
<b>Nil</b>	Clean packaging equivalent to Class M3.5
<b>1</b>	Standard packaging equivalent to Class M5.5

- One (including insert bushing) of the nuts is not attached.

- **Applicable tubing size**

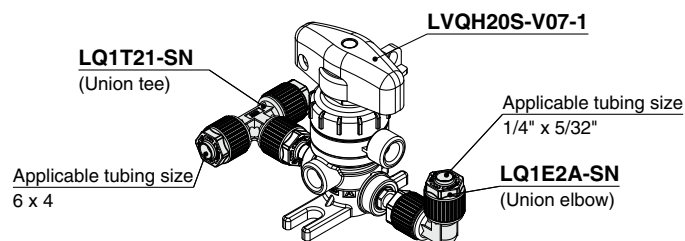
Size	No.	Applicable tubing size (mm)	Reducing
<b>2</b>	<b>1</b>	6 x 4	○
<b>2</b>	<b>2</b>	4 x 3	●
<b>3</b>	<b>1</b>	10 x 8	○
<b>3</b>	<b>2</b>	8 x 6	●
<b>3</b>	<b>3</b>	6 x 4	●
<b>4</b>	<b>1</b>	12 x 10	○
<b>4</b>	<b>2</b>	10 x 8	●
<b>5</b>	<b>1</b>	19 x 16	○
<b>5</b>	<b>2</b>	12 x 10	●
<b>6</b>	<b>1</b>	25 x 22	○
<b>6</b>	<b>2</b>	19 x 16	●

Size	Symbol	Applicable tubing size (mm)	Reducing
<b>2</b>	<b>A</b>	1/4" x 5/32"	○
<b>2</b>	<b>B</b>	3/16" x 1/8"	●
<b>2</b>	<b>C</b>	1/8" x 0.086"	●
<b>3</b>	<b>A</b>	3/8" x 1/4"	○
<b>3</b>	<b>B</b>	1/4" x 5/32"	●
<b>4</b>	<b>A</b>	1/2" x 3/8"	○
<b>4</b>	<b>B</b>	3/8" x 1/4"	●
<b>5</b>	<b>A</b>	3/4" x 5/8"	○
<b>5</b>	<b>B</b>	1/2" x 3/8"	●
<b>6</b>	<b>A</b>	1" x 7/8"	○
<b>6</b>	<b>B</b>	3/4" x 5/8"	●

○ Basic size    ● With reducer

Note 1) Select the same size as the fitting on the valve.

## Piping Example

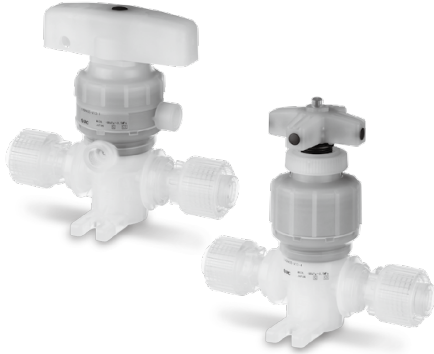


## Ordering Example

<b>LVQH20S-V07-1</b>	1
<b>LQ1T21-SN</b> (Union tee)	1
<b>LQ1E2A-SN</b> (Union elbow)	1

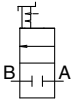
Note) For shipment, the valve and fittings are individually packaged and dispatched together in 1 box.

## Standard Specifications

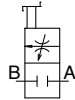


### Symbol

90° turn type



Multi-turn type



Model		LVQH20S	LVQH30S	LVQH40S	LVQH50S	LVQH60S
Connection fitting size		2	3	4	5	6
Fitting type		LQ1				
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8
	Cv	0.35	1.3	1.9	5	8
Withstand pressure (MPa)		1				
Fluid pressure <A→B>		-98 kPa to 0.5 MPa <sup>Note)</sup>			-98 kPa to 0.4 MPa <sup>Note)</sup>	
Back pressure (MPa)		0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Fluid temperature (°C)		0 to 100				
Ambient temperature (°C)		0 to 60				
Weight (kg)	LVQH□0S-1	0.14	0.30	0.33	1.14	1.18
	LVQH□0S-4	0.13	0.23	0.24	0.71	0.89

Note) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## ⚠ Specific Product Precautions

Be sure to read this before handling the products. Refer to page 501 for Safety Instructions and pages 149 and 150 for Air Operated Chemical Liquid Valve Precautions.

### Piping

## ⚠ Caution

1. Take extra care with the insert bushing when connecting the fittings.
2. Tighten the nut until it touches the end surface of the body, and then tighten it an additional 1/8 turn. If the nut won't turn any further, then it means a sufficient tightening has occurred. Refer to the proper tightening torques shown below.

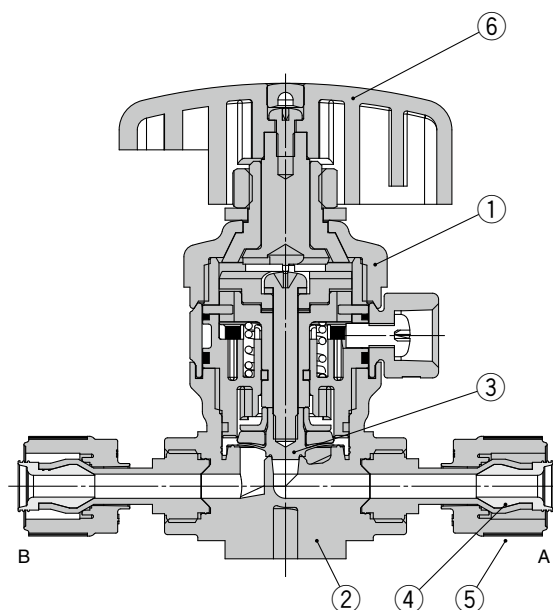
#### Tightening Torque for Piping

Body class	Torque (N·m)
	LQ1
2	0.3 to 0.4
3	0.8 to 1.0
4	1.0 to 1.2
5	2.5 to 3.0
6	5.5 to 6.0

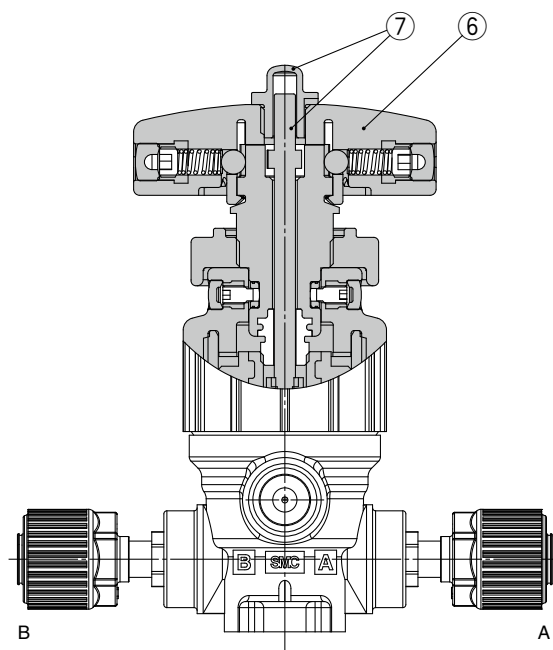
# LVQHS Series

## Construction

### 90° turn type



### Multi-turn type (With indicator)



## Component Parts

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE
4	Insert bushing	PFA
5	Nut	PFA
6	Handle	PVDF
7	Indicator/Cover	PP

## Dimensions

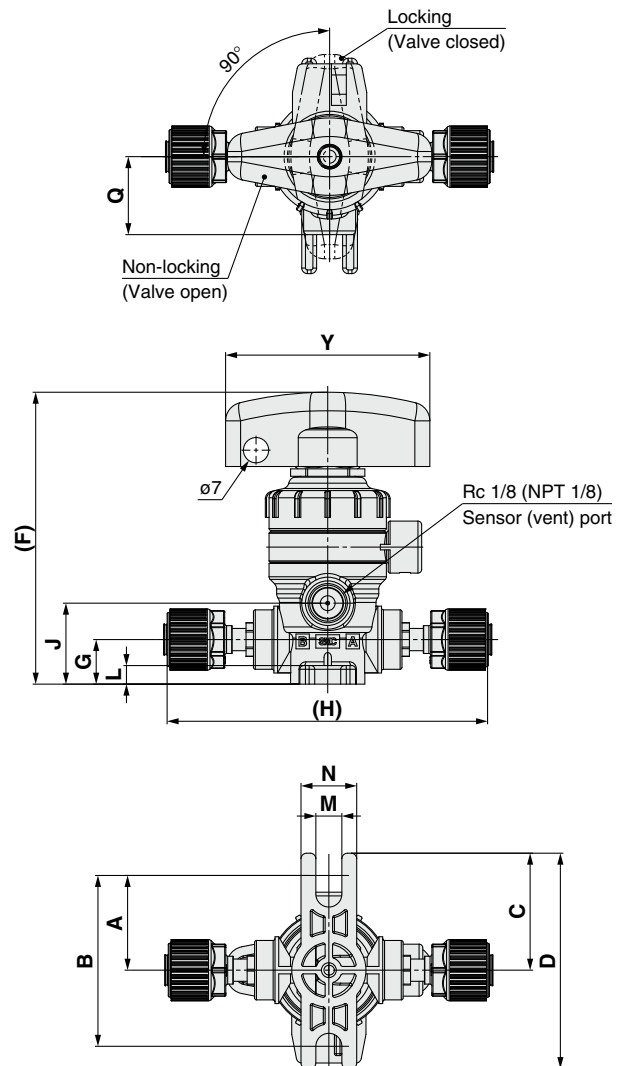
### 90° turn type

#### Dimensions

Model	A	B	C	D	F	G	H
LVQH20S-V□-1	25.5	46	31.5	58	79	12	89
LVQH30S-V□-1	28.5	57	34.5	69	103	16.5	106
LVQH40S-V□-1	28.5	57	34.5	69	108	22	120
LVQH50S-V□-1	42	84	48	96	165	25	164
LVQH60S-V□-1	42	84	48	96	175	32	177

Model	J	L	M	N	Q	Y
LVQH20S-V□-1	21.8	5	7	15	21	55
LVQH30S-V□-1	32	6	7	20	25	80
LVQH40S-V□-1	37.5	6	7	20	25	80
LVQH50S-V□-1	50.2	10	7	20	38.5	110
LVQH60S-V□-1	60	10	7	20	38.5	110

\* Drawings show the LVQ□0-S.

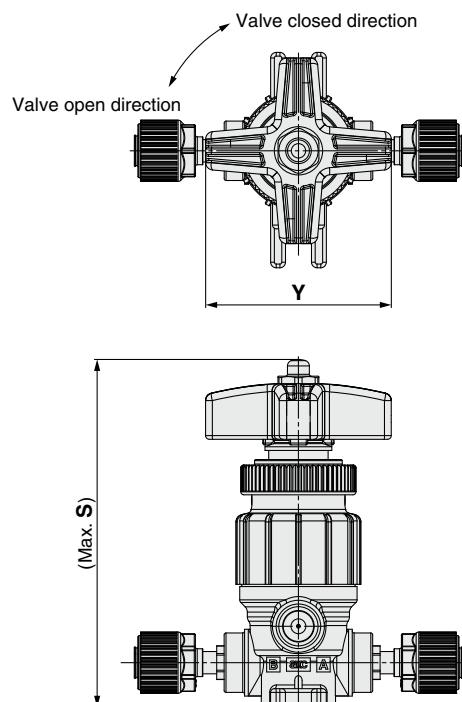


### Multi-turn type (With indicator)

#### Dimensions

Model	S	Y
LVQH20S-V□-4	93.6	50
LVQH30S-V□-4	111.2	50
LVQH40S-V□-4	116.7	50
LVQH50S-V□-4	170.7	71
LVQH60S-V□-4	180.2	71

\* Drawings show the LVQ□0-S.





# LVQ Series

## Fittings and Special Tools

### Fittings

#### How to Change Tubing Sizes

The tubing size can be changed within the same body class (body size) by replacing the nut and insert bushing.

Body class	Connection tubing O.D.													
	Metric size							Inch size						
	4	6	8	10	12	19	25	1/8	3/16	1/4	3/8	1/2	3/4	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

#### ⚠ Caution

##### 1. Connect tubing by special tools.

For information on tubing connection and special tools, please see the pamphlet "High Purity Fluoropolymer Fittings Hyper Fitting LQ1/2 Series Work Procedure Instructions" (M-E05-1). (The pamphlet can be downloaded from the SMC home page.)

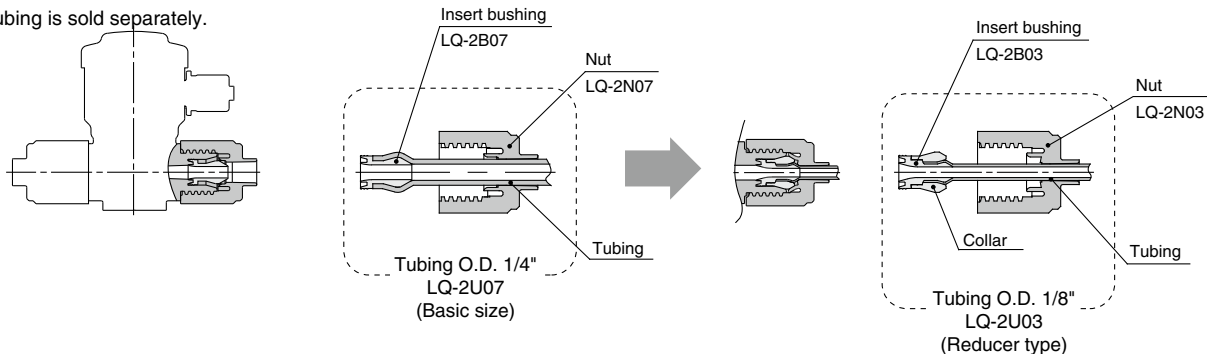
#### Changing the tubing size

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

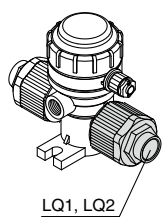
Prepare an insert bushing and nut for 1/8" O.D. tubing (LQ-2U03) and change the tubing size.

(Refer to How to Order Fitting Parts.)

Note) Tubing is sold separately.



#### How to Order Fitting Parts



**LQ** 2 U 03

\* U type is recommended when changing tubing sizes.

##### Fitting type

Symbol	Applicable fitting
Nil	LQ2
1	LQ1

##### Body class (fittings)

Symbol	Body class (fittings)	Applicable fitting
2	2	LQ1 LQ2
3	3	
4	4	
5	5	
6	6	LQ1

##### Parts type

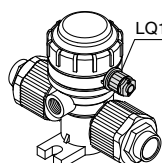
Symbol	Parts type
U	Nut & Insert bushing
B	Insert bushing
N	Nut

##### Tubing size<sup>Note)</sup>

Symbol	Tubing size	Body class (fittings)	Applicable fitting
03	1/8" x 0.086"(3 x 2)	2	LQ1 LQ2
04	4 x 3		
05	3/16" x 1/8"		
06	6 x 4		
07	1/4" x 5/32"		
06	6 x 4	3	
08	8 x 6		
10	10 x 8		
07	1/4" x 5/32"		
11	3/8" x 1/4"		

Symbol	Tubing size	Body class (fittings)	Applicable fitting
<b>10</b>	10 x 8	4	LQ1 LQ2
<b>12</b>	12 x 10		
<b>11</b>	3/8" x 1/4"		
<b>13</b>	1/2" x 3/8"		
<b>12</b>	12 x 10	5	
<b>13</b>	1/2" x 3/8"		
<b>19</b>	3/4" x 5/8", 19 x 16		
<b>19</b>	3/4" x 5/8", 19 x 16		
<b>25</b>	1" x 7/8", 25 x 22	6	LQ1

For pilot port



**LQ1** 1 U 03

##### Body class (fittings)

Symbol	Body class (fittings)	Applicable fitting
1	1	LQ1

##### Parts type

Symbol	Parts type
U	Nut & Insert bushing
B	Insert bushing
N	Nut

##### Tubing size<sup>Note 1) Note 2)</sup>

Symbol	Tubing size	Body class (fittings)
03	1/8" x 0.086" (3 x 2)	1
04	4 x 3	

Note 1) Cannot change to tubing with different diameter.

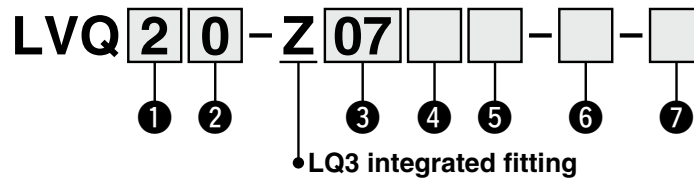
Note 2) Refer to page 150 for details of the applicable tubing sizes.



# Air Operated Flare, Integrated Fitting Type Hyper Fitting **LVQ-Z Series**

RoHS

## How to Order



### ① Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

### ② Valve type

<b>0</b>	N.C.
<b>1</b>	N.O.
<b>2</b>	Double acting

Note) For valve type combinations, refer to variations on the next page.

### ③ Applicable tubing size <sup>Note)</sup>

Symbol	Connection tubing size	Body class				
		2	3	4	5	6
Metric size						
03	3 x 2	○				
04	4 x 3	○				
06	6 x 4	○				
08	8 x 6		○			
10	10 x 8		○			
12	12 x 10			○		
19	19 x 16				○	
25	25 x 22					○
Inch size						
03	1/8" x 0.086"	○				
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) Refer to page 150 for details of the applicable tubing sizes.

### ④ Pilot port type

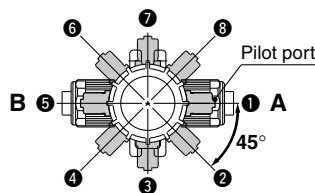
<b>Nil</b>	With LQ3 fitting	Connection tubing size 1/8" x 0.086" (3 x 2) <sup>Note)</sup>
<b>M</b>	With LQ3 fitting	Connection tubing size 4 x 3 <sup>Note)</sup>
<b>R</b>	Threaded	Rc1/8
<b>N</b>	Threaded	NPT1/8

Note) Refer to page 150 for details of the applicable tubing sizes.

### ⑤ Pilot port direction

Symbol	Direction
<b>Nil</b>	①
<b>P2</b>	②
<b>P3</b>	③
<b>P4</b>	④
<b>P5</b>	⑤
<b>P6</b>	⑥
<b>P7</b>	⑦
<b>P8</b>	⑧

#### Pilot port piping direction



\* Specify the piping direction by part number when ordering the product. Do not change the pilot port direction. (Refer to Precautions on page 150.)

## 6 Option 1

Nil	None
1	With flow rate adjustment
2	With by-pass
3	With flow rate adjustment & by-pass
4	With indicator
5	High back pressure (0.42 MPa)
6	High back pressure with flow rate adjustment
7	High back pressure with by-pass
8	High back pressure with flow rate adjustment & by-pass
9	High back pressure with indicator
24	With indicator & by-pass

Note) Refer to variations in the table below for valve type and option 1 combinations. Options in the same table can not be combined each other.








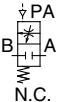



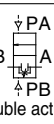

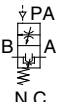

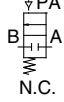
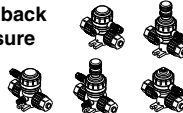


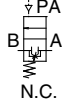
## 7 Option 2

Symbol	Applicable option												Buffer material	Note
	Nil	1	2	3	4	5	6	7	8	9	24			
Nil	○	○	○	○	○	○	○	○	○	○	○	FKM	—	
J	○	○	—	—	—	—	—	—	—	—	—	FKM	For high temperature	
K	○	○	○	○	○	○	○	○	○	○	○	FFKM	—	
N	○	○	○	○	○	○	○	○	○	○	○	EPDM	For ammonium hydroxide	
P	○	—	—	—	○	○	—	—	—	—	—	FKM	High flow type LVQ6□ only	

Note 1) Options 2 in the same table cannot be combined each other.

Note 2) Only option 1 (with flow rate adjustment) is available for use in high-temperature environments. However, it cannot be used in combination with any of the high back pressure specifications.

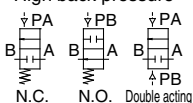
## Variations

			Model	LVQ20	LVQ30	LVQ40	LVQ50	LVQ60	
			Orifice diameter	ø4	ø8	ø10	ø16	ø22	
			Tubing O.D.	Metric	6	10	12	19	25
Type	Symbol	Valve type	Inch	1/4	3/8	1/2	3/4	1	
<b>Basic</b>  N.C.  N.O.  Double acting	 PA B A N.C.  PB B A N.O.  PA B A Double acting PB	N.C.	○	○	○	○	○		
		N.O.	○	○	○	○	○		
		Double acting	○	○	○	○	○		
<b>With flow rate adjustment</b> 	 PA B A N.C.	N.C.	○	○	○	○	○		
<b>With by-pass</b>  N.C.  Double acting	 PA B A N.C.  PA B A Double acting PB	N.C.	○	○	○	○	○		
		Double acting	○	○	○	○	○		
<b>With flow rate adjustment &amp; by-pass</b> 	 PA B A N.C.	N.C.	○	○	○	○	○		
<b>With indicator</b> 	 PA B A N.C.	N.C.	○	○	○	○	○		
<b>High back pressure</b> 	 PA B A N.C.	N.C.	○	○	○	○	○		
<b>With indicator &amp; by-pass</b> 	 PA B A N.C.	N.C.	○	○	○	○	○		

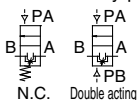


## Symbol

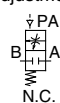
Basic/With indicator/  
High back pressure



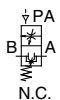
With by-pass/  
With indicator & by-pass



With flow rate  
adjustment



With flow rate  
adjustment & by-pass



## Standard Specifications

Model		LVQ20	LVQ30	LVQ40	LVQ50	LVQ60
Tubing O.D. <sup>(Note 1)</sup>	Metric	6	10	12	19	25
	Inch	1/4	3/8	1/2	3/4	1
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8 (8.1) <sup>(Note 2)</sup>
	Cv	0.35	1.3	1.9	5	8 (9.5) <sup>(Note 2)</sup>
Withstand pressure (MPa)		1				
Operating pressure <A→B flow>	Standard	-98 kPa to 0.5 MPa <sup>(Note 3)</sup>			-98 kPa to 0.4 MPa <sup>(Note 3)</sup>	
	High temperature	-98 kPa to 0.3 MPa <sup>(Note 3)</sup>				
Back pressure (MPa)	Standard	0.3 or less			0.2 or less	
	High back pressure	0.42 or less				
	High temperature	0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Pilot air pressure (MPa)		0.3 to 0.5 (High back pressure: 0.45 to 0.55)				
Pilot port size		1/8" (ø3), Rc 1/8, NPT 1/8				
Fluid temperature (°C)	Standard	0 to 100				
	High temperature	0 to 170				
Ambient temperature (°C)		0 to 60				
Weight (kg)		0.08	0.18	0.22	0.72	0.87

Note 1) Refer to page 150 for details of the applicable tubing sizes.

Note 2) ( ): High flow type

Note 3) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## ⚠ Specific Product Precautions

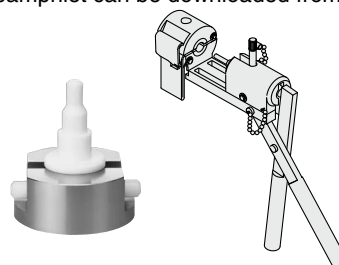
Be sure to read this before handling the products. Refer to page 501 for Safety Instructions and pages 149 and 150 for Air Operated Chemical Liquid Valve Precautions.

### Piping

## ⚠ Caution

### 1. Connect tubing by special tools.

For information on tubing fittings and special tools, please see the pamphlet "High Purity Fluoropolymer Fittings Hyper Fitting/Flare Type LQ3 Series Fitting Procedure" (M-E06-4). (The pamphlet can be downloaded from the SMC home page.)



### 2. Tighten the nut until it touches the end surface of the body, and then tighten it an additional 1/8 turn. If the nut won't turn any further, then it means a sufficient tightening has occurred. Refer to the proper tightening torques shown below.

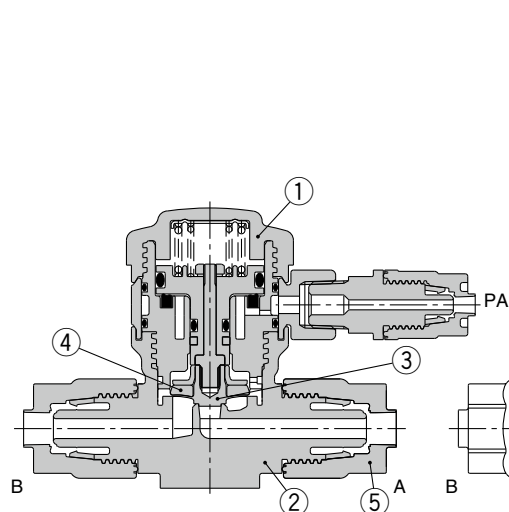
#### Tightening Torque for Piping

Body class	Torque (N·m)
2	1.6 to 1.8
3	3.2 to 3.5
4	5.0 to 5.3
5	10.0 to 10.5
6	22.5 to 23.0

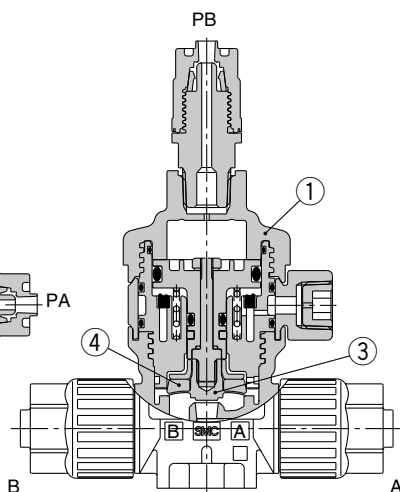
## Construction

### Basic

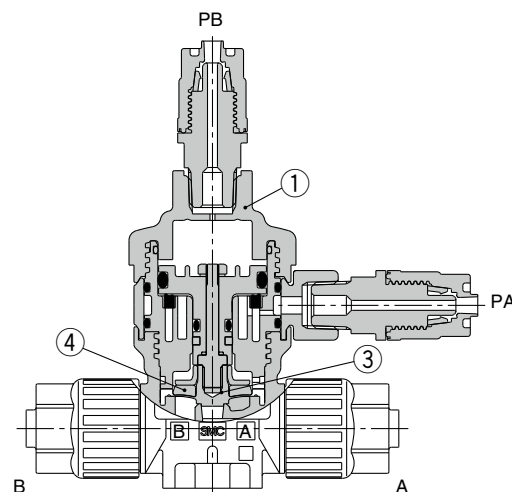
#### N.C.



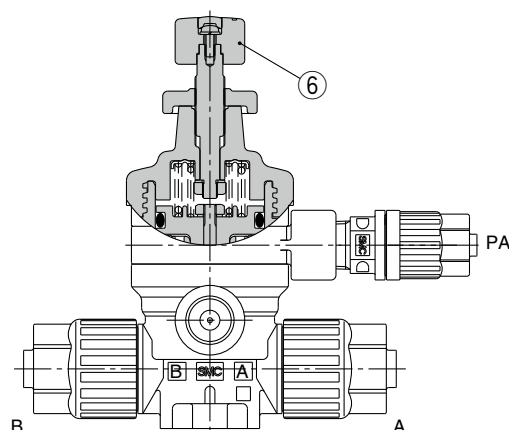
#### N.O.



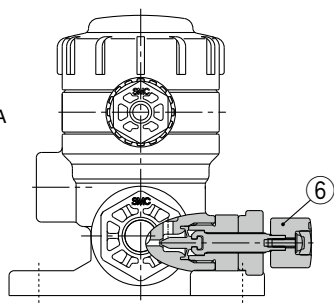
#### Double acting



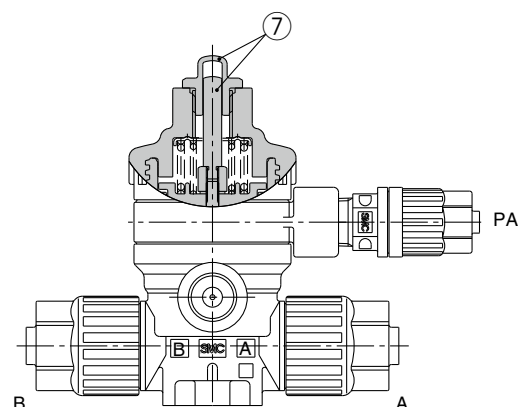
### With flow rate adjustment



### With by-pass



### With indicator



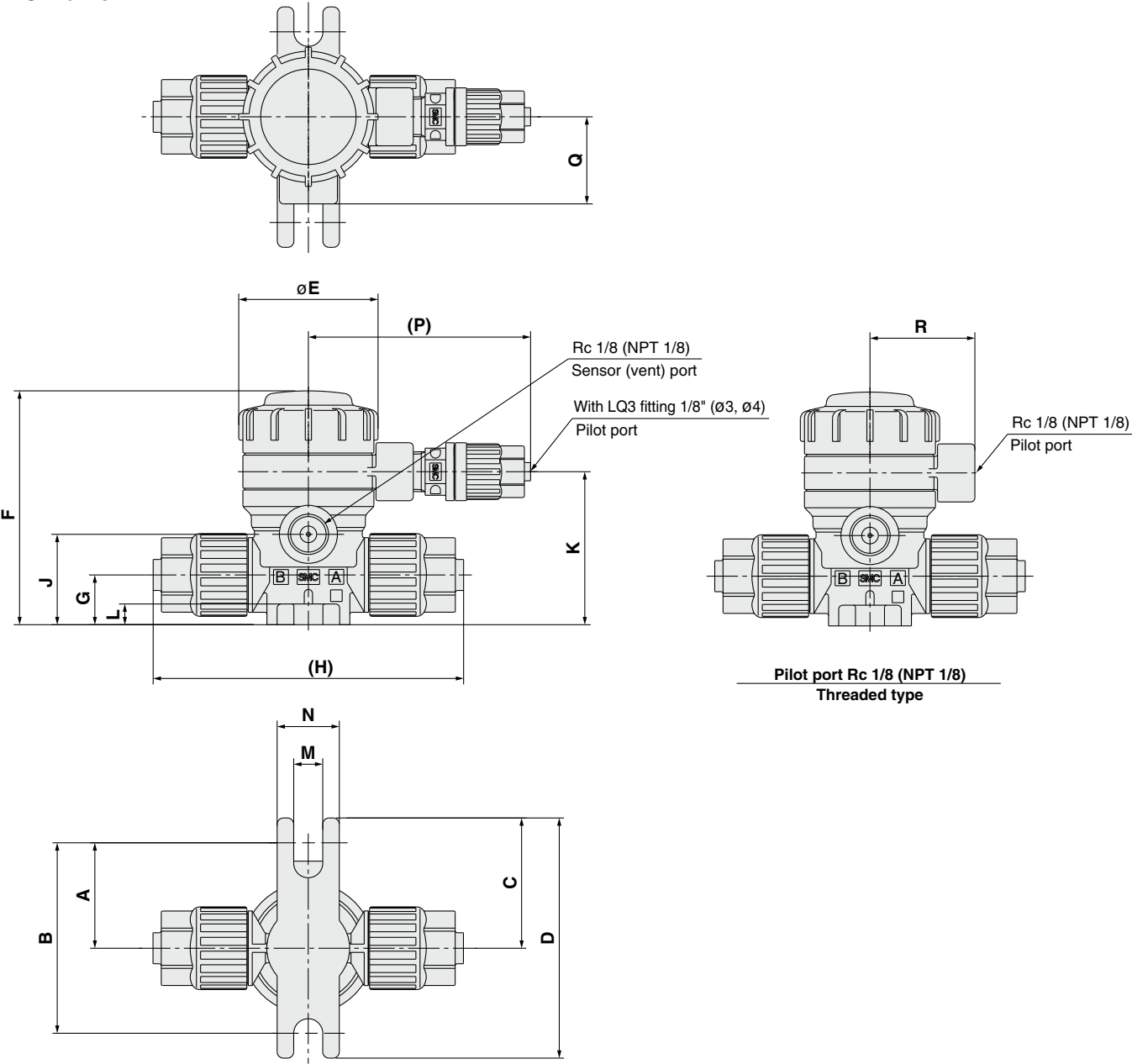
### Component Parts

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE
4	Buffer	FKM EPDM FFKM
5	Nut	PFA
6	Flow rate adjuster	PVDF
7	Indicator/Cover	PP

# LVQ-Z Series

## Dimensions

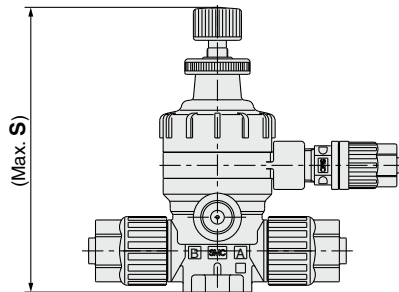
Basic, High back pressure  
N.C. valve



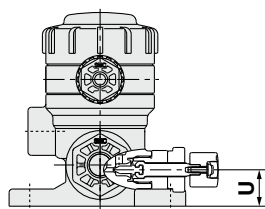
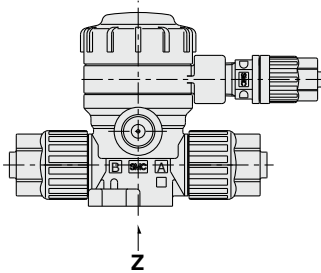
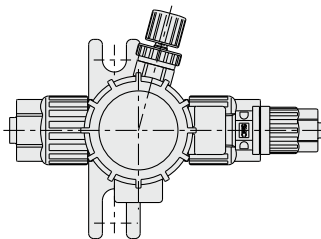
LVQ□0-Z□□ Dimensions (N.C. Valve)																	(mm)
Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	
LVQ20-Z□□	25.5	46	31.5	58	33.6	56.5	12	75	21.8	37	5	7	15	53.5	21	25.3	
LVQ30-Z□□	28.5	57	34.5	69	45.4	77	16.5	103	32	50	6	7	20	59.5	25	31.2	
LVQ40-Z□□	28.5	57	34.5	69	45.4	82.5	22	114	37.5	55.5	6	7	20	59.5	25	31.2	
LVQ50-Z□□	42	84	48	96	75	127	25	150	50.2	78.2	10	7	20	73	38.5	45	
LVQ60-Z□□	42	84	48	96	75	136.8	32	167	60	88	10	7	20	73	38.5	45	

**With flow rate adjustment  
N.C. valve**

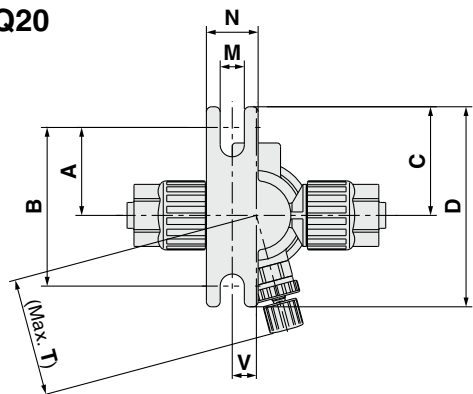
Dimensions (mm)	
Model	S
LVQ20-Z□□-1	83
LVQ30-Z□□-1	113.5
LVQ40-Z□□-1	119
LVQ50-Z□□-1	171.5
LVQ60-Z□□-1	182.5



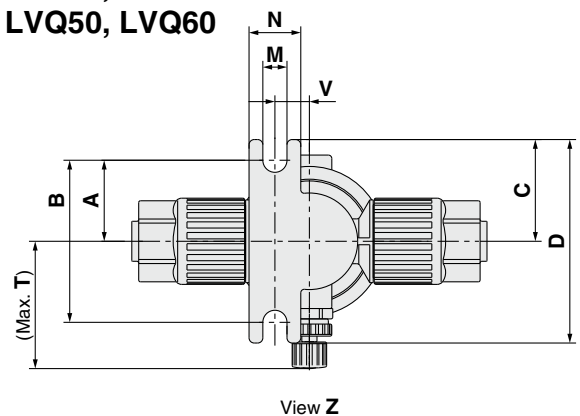
**With by-pass  
N.C. valve**



**LVQ20**



**LVQ30, LVQ40  
LVQ50, LVQ60**



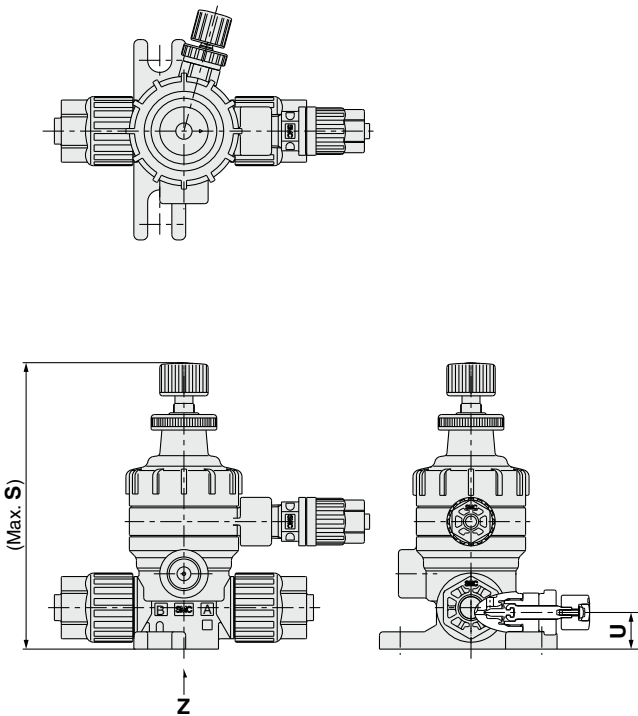
Dimensions (mm)									
Model	A	B	C	D	M	N	T	U	V
LVQ20-Z□□-2	25.5	46	31.5	58	7	15	34.3	10.6	7
LVQ30-Z□□-2	25.5	51	31.5	63	7	15	36.9	16.5	10
LVQ40-Z□□-2	25.5	51	31.5	63	7	15	37.9	22	10
LVQ50-Z□□-2	38	76	44	88	7	20	64	25	17
LVQ60-Z□□-2	38	76	44	88	7	20	66	32	17



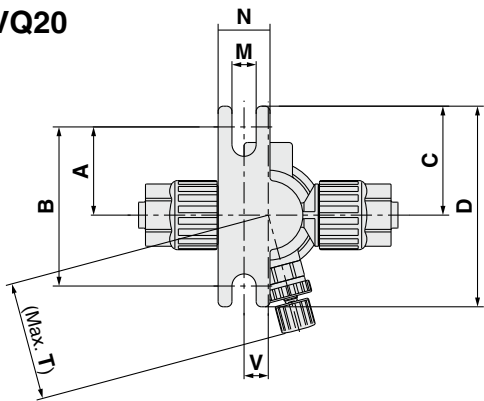
# LVQ-Z Series

## Dimensions

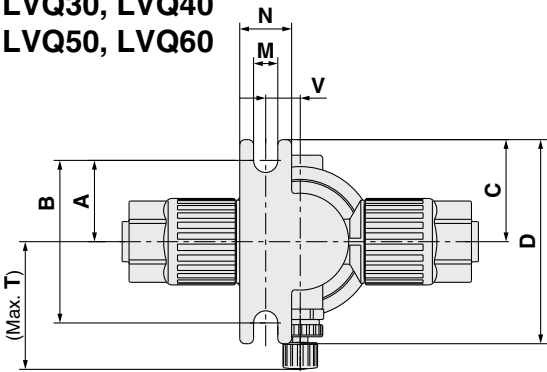
With flow rate adjustment & by-pass  
N.C. valve



LVQ20



LVQ30, LVQ40  
LVQ50, LVQ60

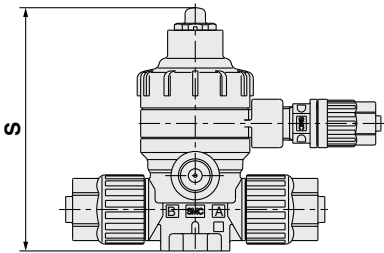


View Z

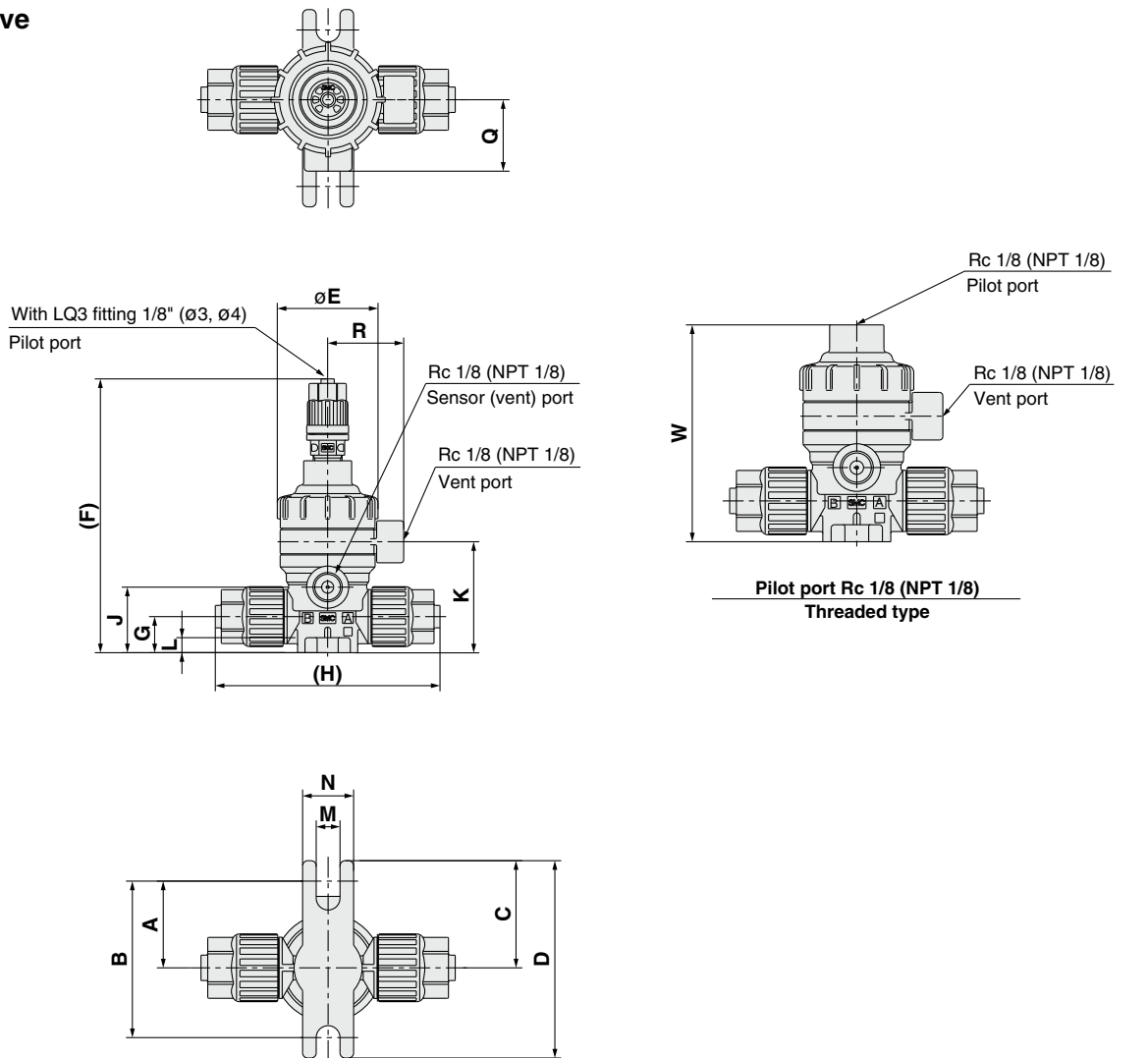
Dimensions										(mm)
Model	A	B	C	D	M	N	S	T	U	V
LVQ20-Z□□-3	25.5	46	31.5	58	7	15	83	34.3	10.6	7
LVQ30-Z□□-3	25.5	51	31.5	63	7	15	113.5	36.9	16.5	10
LVQ40-Z□□-3	25.5	51	31.5	63	7	15	119	37.9	22	10
LVQ50-Z□□-3	38	76	44	88	7	20	171.5	64	25	17
LVQ60-Z□□-3	38	76	44	88	7	20	182.5	66	32	17

With indicator  
N.C. valve

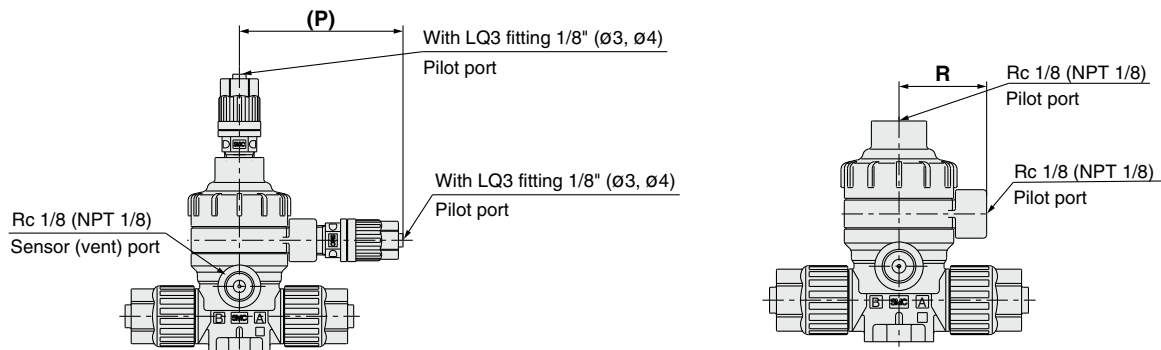
Dimensions		(mm)
Model	S	
LVQ20-Z□□-4	70.5	
LVQ30-Z□□-4	88.5	
LVQ40-Z□□-4	94	
LVQ50-Z□□-4	134.5	
LVQ60-Z□□-4	144	



## Basic N.O. valve



### Double acting valve



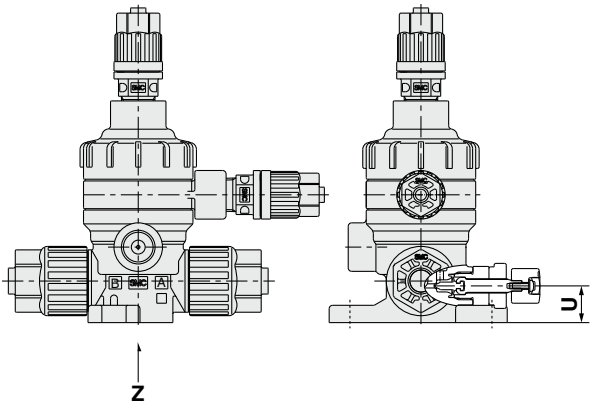
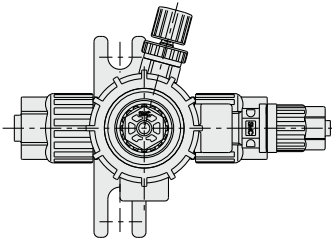
**LVQ<sub>2</sub><sup>1</sup>-Z□□ Dimensions (N.O. Valve, Double Acting Valve)**

LVQ□ <sub>2</sub> -Z□□ Dimensions (N.O. Valve, Double Acting Valve) (mm)																	
Model	A	B	B	D	E	F	G	H	J	K	L	M	N	P	Q	R	W
LVQ2:Z□□	25.5	46	31.5	58	33.6	89.5	12	75	21.8	37	5	7	15	53.5	21	25.3	64
LVQ3:Z□□	28.5	57	34.5	69	45.4	107.5	16.5	103	32	50	6	7	20	59.5	25	31.2	82
LVQ4:Z□□	28.5	57	34.5	69	45.4	113	22	114	37.5	55.5	6	7	20	59.5	25	31.2	87.5
LVQ5:Z□□	42	84	48	96	75	153.2	25	150	50.2	78.2	10	7	20	73	38.5	45	128
LVQ6:Z□□	42	84	48	96	75	163	32	167	60	88	10	7	20	73	38.5	45	137.5

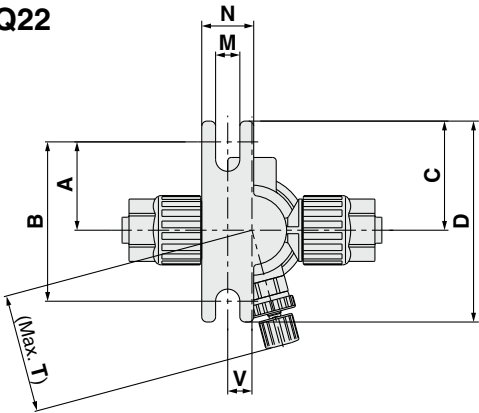
# LVQ-Z Series

## Dimensions

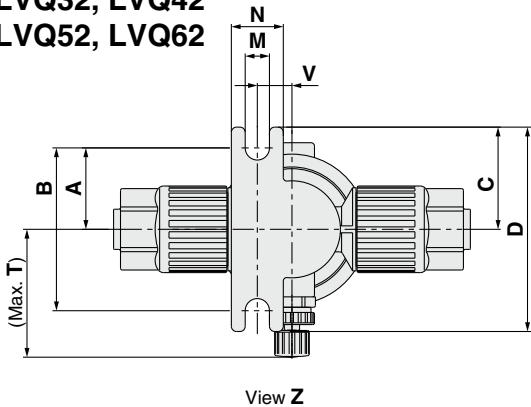
With by-pass  
Double acting valve



LVQ22



LVQ32, LVQ42  
LVQ52, LVQ62



Dimensions (Double Acting Valve)									(mm)
Model	A	B	C	D	M	N	T	U	V
LVQ22-Z□□-2	25.5	46	31.5	58	7	15	34.3	10.6	7
LVQ32-Z□□-2	25.5	51	31.5	63	7	15	36.9	16.5	10
LVQ42-Z□□-2	25.5	51	31.5	63	7	15	37.9	22	10
LVQ52-Z□□-2	38	76	44	88	7	20	64	25	17
LVQ62-Z□□-2	38	76	44	88	7	20	66	32	17



# Air Operated Flare, Integrated Fitting Type Space Saving/Space Saving Connection **LVQS-Z Series**

RoHS

## How to Order

LVQ **2** **0** **S** - **Z** **07**   -  -

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

• LQ3 integrated fitting

### ① Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

### ② Valve type

<b>0</b>	N.C.
<b>1</b>	N.O.
<b>2</b>	Double acting

Note) For valve type combinations, refer to variations on the next page.

### ③ Body type

<b>S</b>	Space saving connection
----------	-------------------------

### ④ Applicable fitting size

Symbol	Fitting size	Body class				
		2	3	4	5	6
<b>07</b>	2	○				
<b>11</b>	3		○			
<b>13</b>	4			○		
<b>19</b>	5				○	
<b>25</b>	6					○

Note) Refer to page 113 for How to Order fitting parts. Select a tube with the same size as the valve side fitting.

### ⑤ Pilot port type

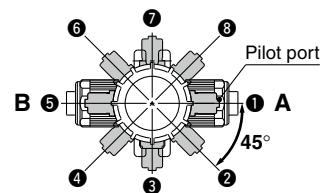
<b>Nil</b>	With LQ3 fitting	Connection tubing size 1/8" x 0.086" (3 x 2) <sup>Note)</sup>
<b>M</b>	With LQ3 fitting	Connection tubing size 4 x 3 <sup>Note)</sup>
<b>R</b>	Threaded	Rc1/8
<b>N</b>	Threaded	NPT1/8

Note) Refer to page 150 for details of the applicable tubing sizes.

### ⑥ Pilot port direction

Symbol	Direction
<b>Nil</b>	①
<b>P2</b>	②
<b>P3</b>	③
<b>P4</b>	④
<b>P5</b>	⑤
<b>P6</b>	⑥
<b>P7</b>	⑦
<b>P8</b>	⑧

### Pilot port piping direction



\* Specify the piping direction by part number when ordering the product. Do not change the pilot port direction. (Refer to Precautions on page 150.)

## 7 Option 1

Nil	None
1	With flow rate adjustment
2	With by-pass
3	With flow rate adjustment & by-pass
4	With indicator
5	High back pressure (0.42 MPa)
6	High back pressure with flow rate adjustment
7	High back pressure with by-pass
8	High back pressure with flow rate adjustment & by-pass
9	High back pressure with indicator
24	With indicator & by-pass

Note) Refer to variations in the table below for valve type and option 1 combinations. Options in the same table can not be combined each other.

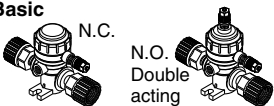
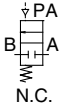
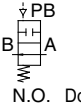
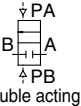

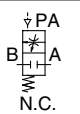
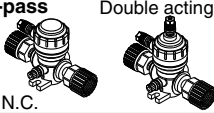
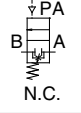
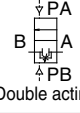

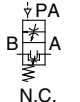

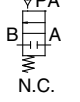

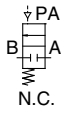
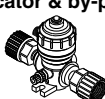

## 8 Option 2

Symbol	Applicable option												Buffer material	Note
	Nil	1	2	3	4	5	6	7	8	9	24			
Nil	○	○	○	○	○	○	○	○	○	○	○	FKM	—	
J	○	○	—	—	—	—	—	—	—	—	—	FKM	For high temperature	
K	○	○	○	○	○	○	○	○	○	○	○	FFKM	—	
N	○	○	○	○	○	○	○	○	○	○	○	EPDM	For ammonium hydroxide	
P	○	—	—	—	○	○	—	—	—	—	—	FKM	High flow type LVQ6□ only	

Note 1) Options 2 in the same table cannot be combined each other.

Note 2) Only option 1 (with flow rate adjustment) is available for use in high-temperature environments. However, it cannot be used in combination with any of the high back pressure specifications.

## Variations

			Model	LVQ20S	LVQ30S	LVQ40S	LVQ50S	LVQ60S
			Orifice diameter	ø4	ø8	ø10	ø16	ø22
			Connection fitting size	2	3	4	5	6
Type	Symbol	Valve type						
<b>Basic</b> 	  	N.C. N.O. Double acting	N.C.	○	○	○	○	○
			N.O.	○	○	○	○	○
			Double acting	○	○	○	○	○
<b>With flow rate adjustment</b> 		N.C.	N.C.	○	○	○	○	○
<b>With by-pass</b> 	 	N.C. Double acting	N.C.	○	○	○	○	○
			Double acting	○	○	○	○	○
<b>With flow rate adjustment &amp; by-pass</b> 		N.C.	N.C.	○	○	○	○	○
<b>With indicator</b> 		N.C.	N.C.	○	○	○	○	○
<b>High back pressure</b> 		N.C.	N.C.	○	○	○	○	○
<b>With indicator &amp; by-pass</b> 		N.C.	N.C.	○	○	○	○	○

## How to Order Space Saving Fittings

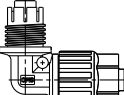
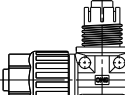
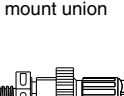

**LQ3 E 6A – SN –**

- **Packaging**

Symbol	Packaging
<b>Nil</b>	Clean packaging equivalent to Class M3.5
<b>1</b>	Standard packaging equivalent to Class M5.5

- One of the nuts is not attached.

**Fitting type** ●

<b>E</b>	<b>T</b>
<p data-bbox="162 613 221 627">Union elbow</p> 	<p data-bbox="346 613 406 627">Union tee</p> 
<b>P</b>	<b>U</b>
<p data-bbox="162 792 268 806">Panel mount union</p> 	<p data-bbox="346 792 387 806">Union</p> 

• **Applicable tubing size**<sup>Note 1) Note 2)</sup>

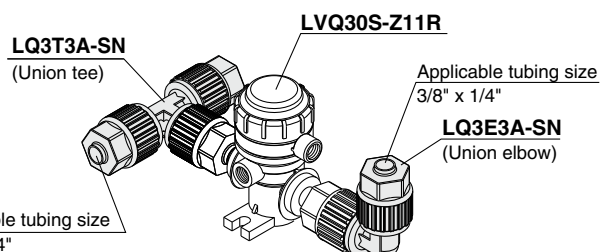
Size	Symbol	Applicable tubing size (mm)
<b>2</b>	<b>1</b>	6 x 4
<b>3</b>	<b>1</b>	10 x 8
<b>3</b>	<b>2</b>	8 x 6
<b>4</b>	<b>1</b>	12 x 10
<b>5</b>	<b>1</b>	19 x 16
<b>6</b>	<b>1</b>	25 x 22

Size	Symbol	Applicable tubing size (inch)
<b>2</b>	<b>A</b>	1/4" x 5/32"
<b>3</b>	<b>A</b>	3/8" x 1/4"
<b>4</b>	<b>A</b>	1/2" x 3/8"
<b>5</b>	<b>A</b>	3/4" x 5/8"
<b>6</b>	<b>A</b>	1" x 7/8"

Note 1) Select the same size as the fitting on the valve.

Note 2) Refer to page 150 for details of the applicable tubing sizes.

## Piping Example



## Ordering Example

**LVQ30S-Z11R** 1

**LQ3T3A-SN** (Union tee) 1

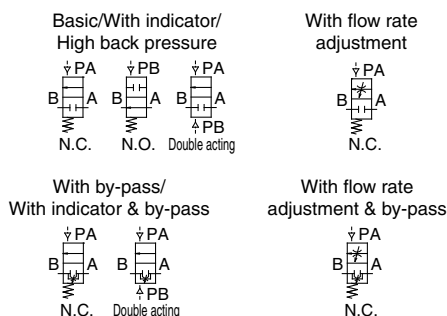
**LQ3E3A-SN** (Union elbow) 1

Note) For shipment, the valve and fittings are individually packaged and dispatched together in 1 box.

## Standard Specifications



### Symbol



Model		LVQ20S	LVQ30S	LVQ40S	LVQ50S	LVQ60S
Connection fitting size		2	3	4	5	6
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8 (8.1) <sup>Note 1)</sup>
	Cv	0.35	1.3	1.9	5	8 (9.5) <sup>Note 1)</sup>
Withstand pressure (MPa)		1				
Operating pressure <A→B flow>	Standard	−98 kPa to 0.5 MPa <sup>Note 3)</sup>			−98 kPa to 0.4 MPa <sup>Note 3)</sup>	
	High temperature	−98 kPa to 0.3 MPa <sup>Note 3)</sup>				
Back pressure (MPa)	Standard	0.3 or less			0.2 or less	
	High back pressure	0.42 or less				
	High temperature	0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Pilot air pressure (MPa)		0.3 to 0.5 (High back pressure: 0.45 to 0.55)				
Pilot port size <sup>Note 2)</sup>		1/8" (ø3), ø4, Rc 1/8, NPT 1/8				
Fluid temperature (°C)	Standard	0 to 100				
	High temperature	0 to 170				
Ambient temperature (°C)		0 to 60				
Weight (kg)		0.085	0.175	0.223	0.725	0.835

Note 1) ( ): High flow type

Note 2) Refer to page 150 for details of the applicable tubing sizes.

Note 3) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## ⚠ Specific Product Precautions

Be sure to read this before handling the products. Refer to page 501 for Safety Instructions and pages 149 and 150 for Air Operated Chemical Liquid Valve Precautions.

### Piping

## ⚠ Caution

1. Tighten the nut until it touches the end surface of the body, and then tighten it an additional 1/8 turn. If the nut won't turn any further, then it means a sufficient tightening has occurred. Refer to the proper tightening torques shown below.

#### Tightening Torque for Piping

Body class	Torque (N·m)
2	1.6 to 1.8
3	3.2 to 3.5
4	5.0 to 5.3
5	10.0 to 10.5
6	22.5 to 23.0



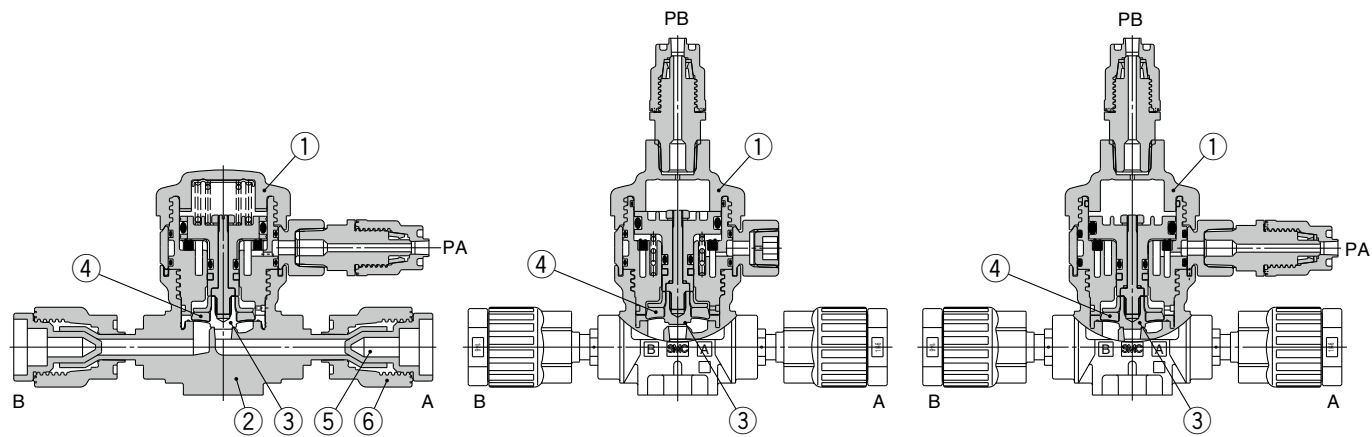
# LVQS-Z Series

## Construction

Basic  
N.C.

N.O.

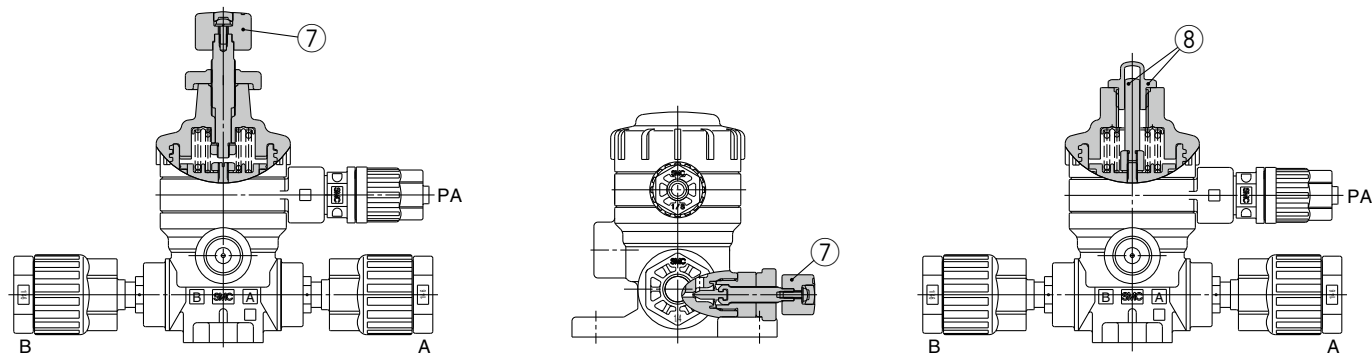
Double acting



With flow rate adjustment

With by-pass

With indicator

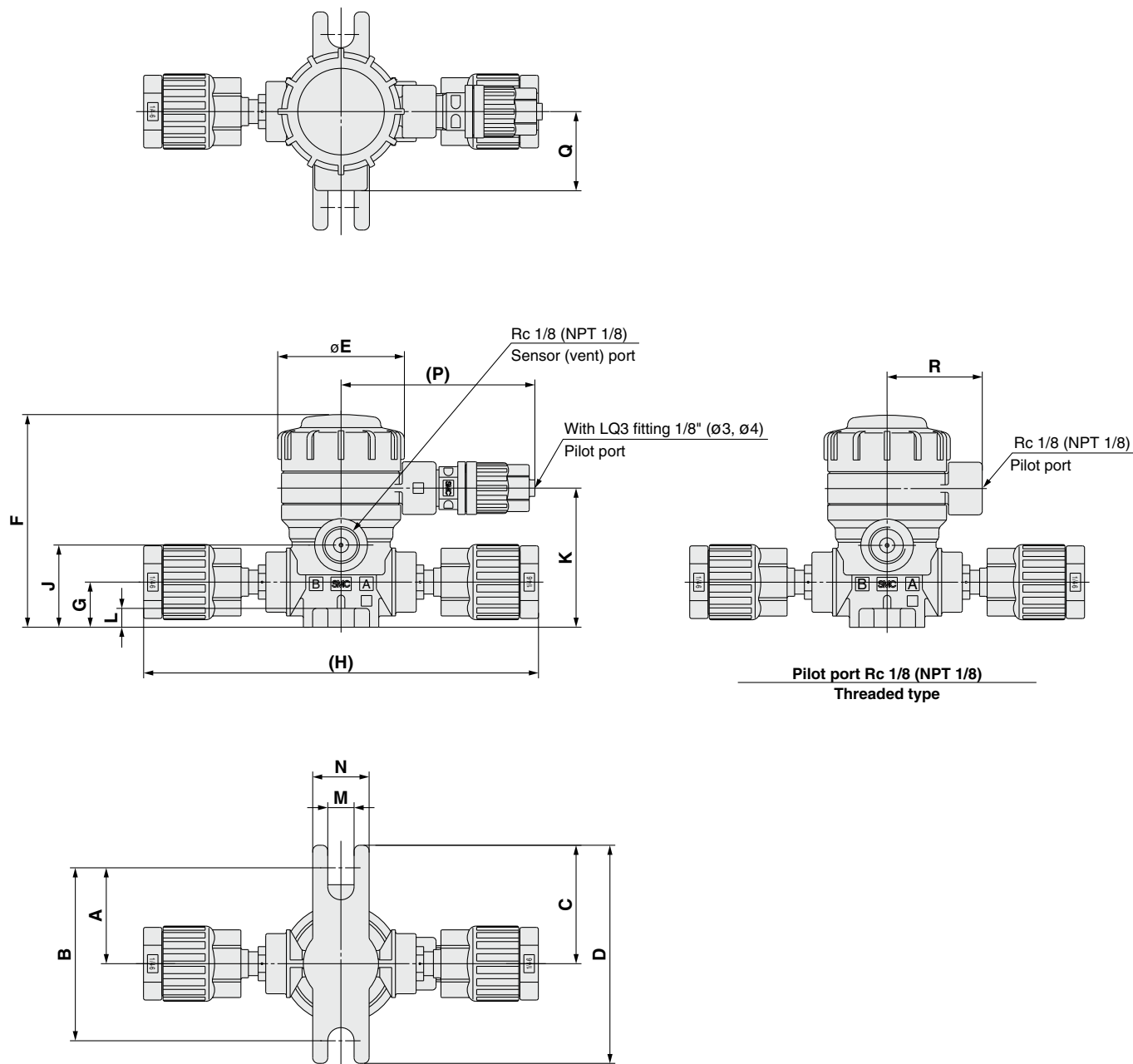


### Component Parts

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE
4	Buffer	FKM
		EPDM
		FFKM
5	Plug	PP
6	Nut	PFA
7	Flow rate adjuster	PVDF
8	Indicator/Cover	PP

## Dimensions

Basic, High back pressure  
N.C. valve



LVQ□0S-Z□ Dimensions (N.C. Valve)

(mm)

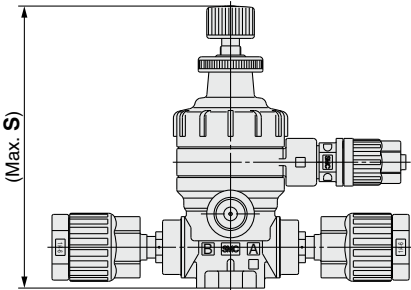
Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
LVQ20S-Z□	25.5	46	31.5	58	33.6	56.5	12	105	21.8	37	5	7	15	53.5	21	25.3
LVQ30S-Z□	28.5	57	34.5	69	45.4	77	16.5	137	32	50	6	7	20	59.5	25	31.2
LVQ40S-Z□	28.5	57	34.5	69	45.4	82.5	22	151	37.5	55.5	6	7	20	59.5	25	31.2
LVQ50S-Z□	42	84	48	96	75	127	25	202	50.2	78.2	10	7	20	73	38.5	45
LVQ60S-Z□	42	84	48	96	75	136.8	32	236	60	88	10	7	20	73	38.5	45

# LVQS-Z Series

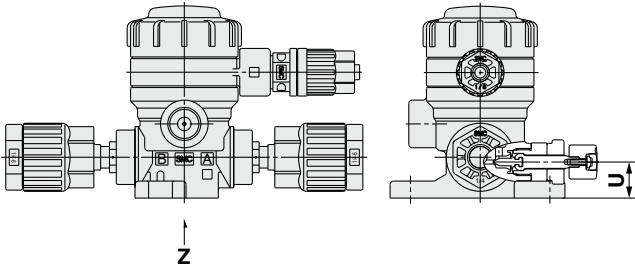
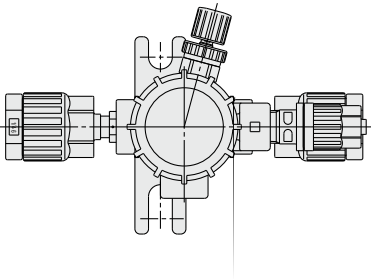
## Dimensions

With flow rate adjustment, High back pressure with flow rate adjustment  
N.C. valve

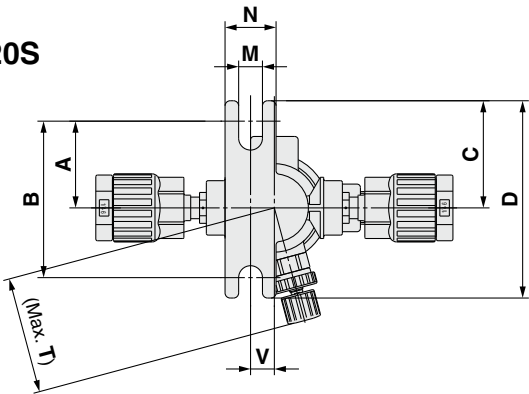
Dimensions (mm)	
Model	S
LVQ20S-Z□-1	83
LVQ30S-Z□-1	113.5
LVQ40S-Z□-1	119
LVQ50S-Z□-1	171.5
LVQ60S-Z□-1	182.5



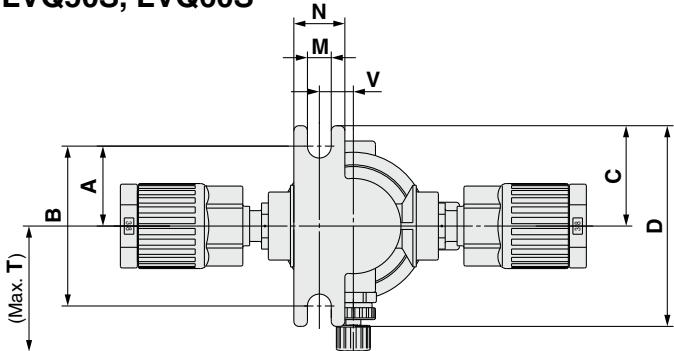
With by-pass, High back pressure with by-pass  
N.C. valve



LVQ20S



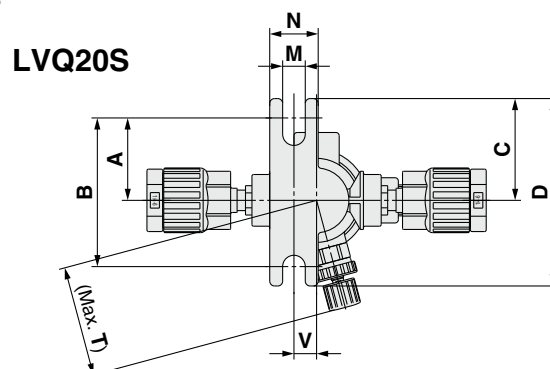
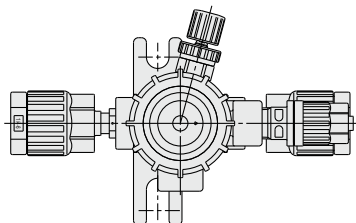
LVQ30S, LVQ40S  
LVQ50S, LVQ60S



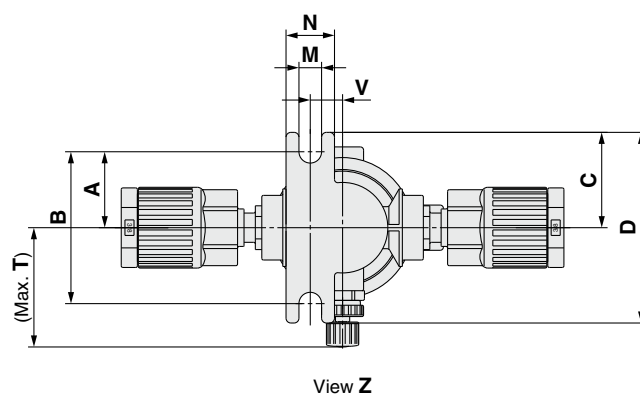
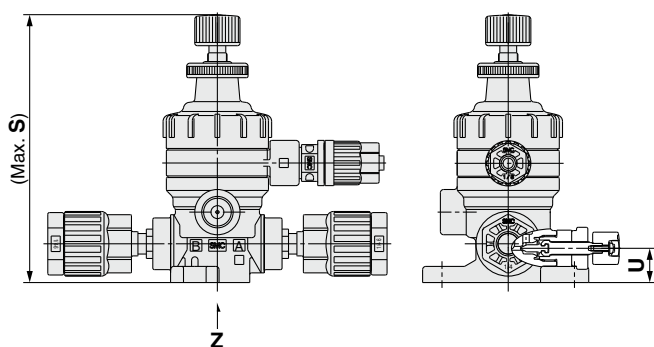
View Z

Dimensions (mm)									
Model	A	B	C	D	M	N	T	U	V
LVQ20S-Z□-2	25.5	46	31.5	58	7	15	34.3	10.6	7
LVQ30S-Z□-2	25.5	51	31.5	63	7	15	36.9	16.5	10
LVQ40S-Z□-2	25.5	51	31.5	63	7	15	37.9	22	10
LVQ50S-Z□-2	38	76	44	88	7	20	64	25	17
LVQ60S-Z□-2	38	76	44	88	7	20	66	32	17

With flow rate adjustment & by-pass,  
High back pressure with flow rate adjustment & by-pass  
N.C. valve



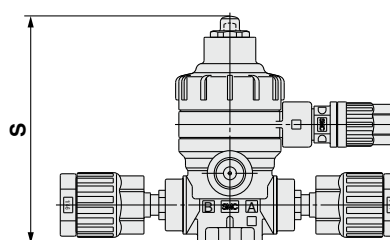
LVQ30S, LVQ40S  
LVQ50S, LVQ60S



Dimensions (mm)										
Model	A	B	C	D	M	N	S	T	U	V
LVQ20S-Z□-3	25.5	46	31.5	58	7	15	83	34.3	10.6	7
LVQ30S-Z□-3	25.5	51	31.5	63	7	15	113.5	36.9	16.5	10
LVQ40S-Z□-3	25.5	51	31.5	63	7	15	119	37.9	22	10
LVQ50S-Z□-3	38	76	44	88	7	20	171.5	64	25	17
LVQ60S-Z□-3	38	76	44	88	7	20	182.5	66	32	17

With indicator, High back pressure with indicator  
N.C. valve

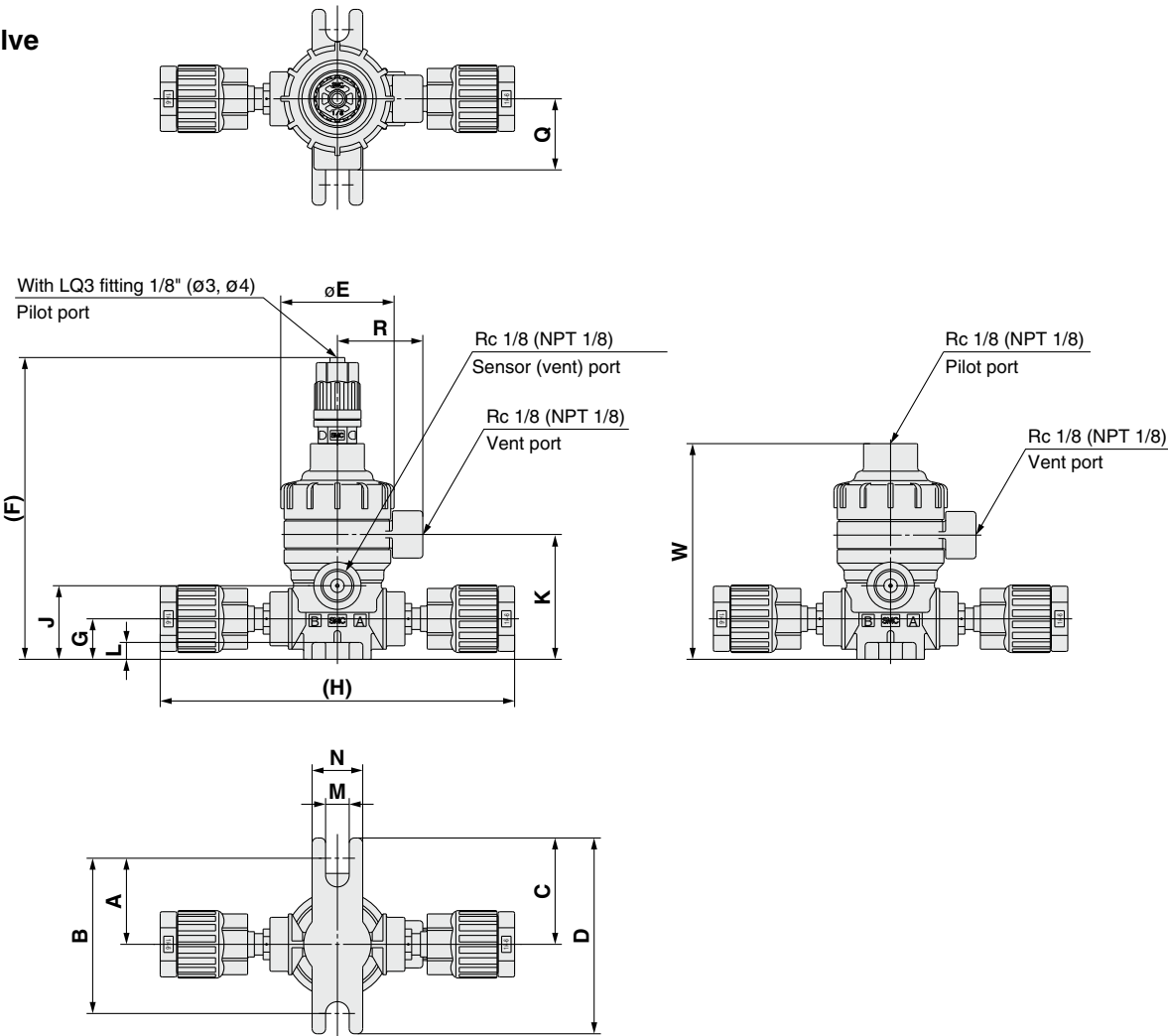
Dimensions (mm)	
Model	S
LVQ20S-Z□-4	70.5
LVQ30S-Z□-4	88.5
LVQ40S-Z□-4	94
LVQ50S-Z□-4	134.5
LVQ60S-Z□-4	144



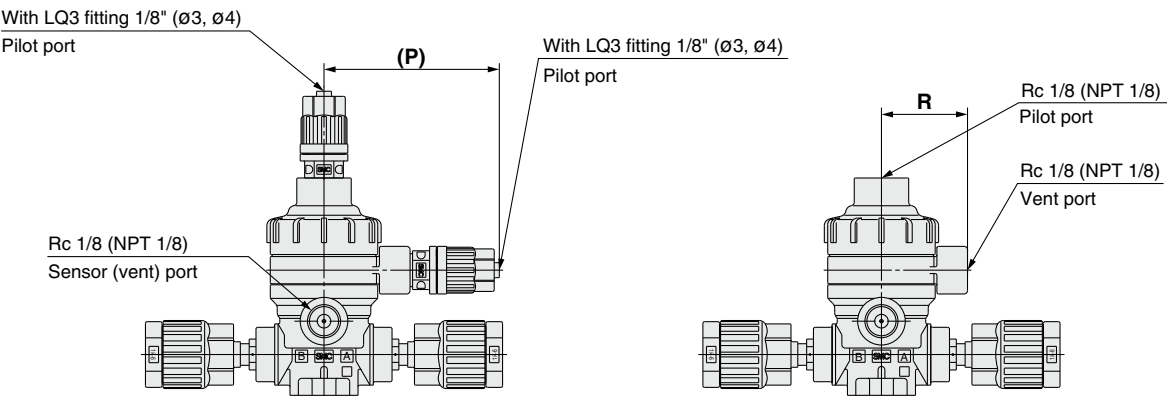
# LVQS-Z Series

## Dimensions

Basic  
N.O. valve



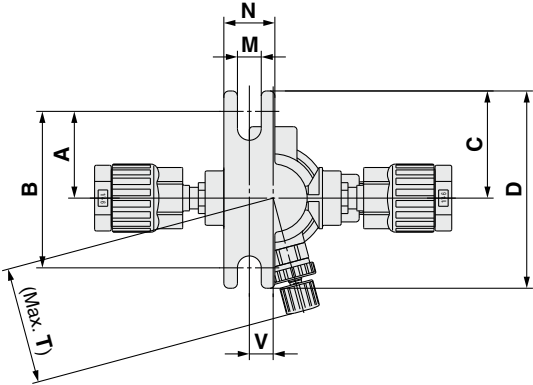
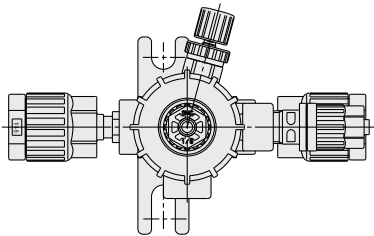
## Double acting valve



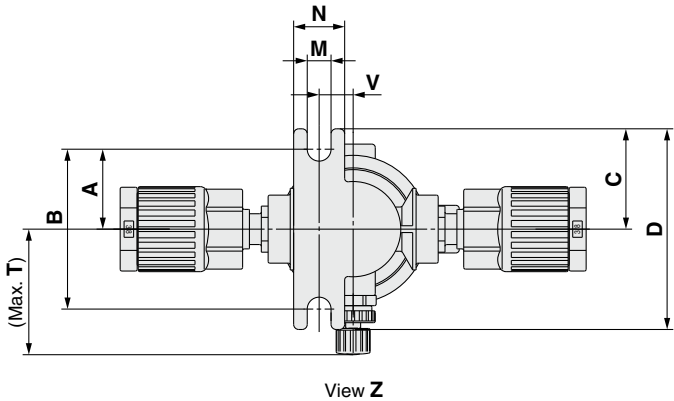
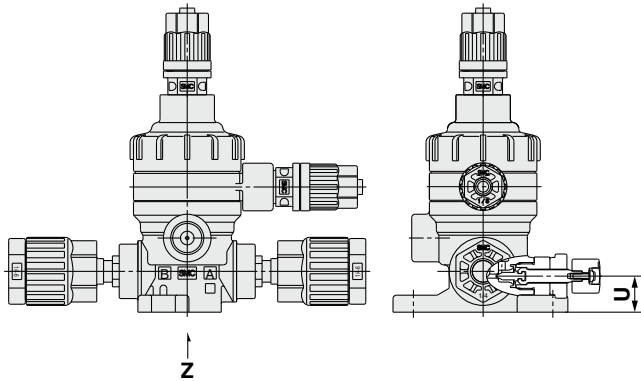
LVQ□ <sub>2</sub> S-Z□	Dimensions (N.O. Valve, Double Acting Valve)																(mm)
Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	W
LVQ2 <sub>2</sub> S-Z□	25.5	46	31.5	58	33.6	89.5	12	105	21.8	37	5	7	15	53.5	21	25.3	64
LVQ3 <sub>2</sub> S-Z□	28.5	57	34.5	69	45.4	107.5	16.5	137	32	50	6	7	20	59.5	25	31.2	82
LVQ4 <sub>2</sub> S-Z□	28.5	57	34.5	69	45.4	113	22	151	37.5	55.5	6	7	20	59.5	25	31.2	87.5
LVQ5 <sub>2</sub> S-Z□	42	84	48	96	75	153.2	25	202	50.2	78.2	10	7	20	73	38.5	45	128
LVQ6 <sub>2</sub> S-Z□	42	84	48	96	75	163	32	236	60	88	10	7	20	73	38.5	45	137.5

With by-pass  
Double acting valve

LVQ22S



LVQ32S, LVQ42S  
LVQ52S, LVQ62S



Dimensions (Double Acting Valve) (mm)									
Model	A	B	C	D	M	N	T	U	V
LVQ22-S-Z□-2	25.5	46	31.5	58	7	15	34.3	10.6	7
LVQ32-S-Z□-2	25.5	51	31.5	63	7	15	36.9	16.5	10
LVQ42-S-Z□-2	25.5	51	31.5	63	7	15	37.9	22	10
LVQ52-S-Z□-2	38	76	44	88	7	20	64	25	17
LVQ62-S-Z□-2	38	76	44	88	7	20	66	32	17

# Manually Operated Flare, Integrated Fitting Type Hyper Fitting **LVQH-Z Series**

RoHS

## How to Order

LVQH **2** 0 - Z **07** **1** - **1** - **1**

### Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

### LQ3 integrated fitting

### Applicable tubing size

Symbol	Connection tubing O.D.	Body class				
		2	3	4	5	6
<b>Metric size</b>						
<b>03</b>	ø3	○				
<b>04</b>	ø4	○				
<b>06</b>	ø6	○				
<b>08</b>	ø8		○			
<b>10</b>	ø10		○			
<b>12</b>	ø12			○		
<b>19</b>	ø19				○	
<b>25</b>	ø25					○
<b>Inch size</b>						
<b>03</b>	1/8	○				
<b>07</b>	1/4	○				
<b>11</b>	3/8		○			
<b>13</b>	1/2			○		
<b>19</b>	3/4				○	
<b>25</b>	1					○

### Option

Symbol	Buffer material	Note
<b>Nil</b>	FKM	—
<b>K</b>	FFKM	—
<b>N</b>	EPDM	For ammonium hydroxide

Note) Options cannot be combined each other.

### Handle operation

<b>1</b>	90° turn type
<b>4</b>	Multi-turn type (With indicator)

### Vent port type

<b>Nil</b>	Threaded	NPT 1/8
<b>R</b>	Threaded	Rc1/8

## Variations

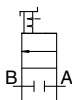
		Model				
Type	Symbol	Orifice diameter		LVQH20	LVQH30	LVQH40
		Tubing O.D.		LVQH50	LVQH60	
		Metric	Inch	ø4	ø8	ø10
				ø16	ø22	
				6	10	12
				1/4	3/8	1/2
				3/4	1	
90° turn type				○	○	○
				○	○	○
Multi-turn type				○	○	○
				○	○	○

## Standard Specifications

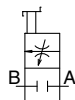


### Symbol

90° turn type



Multi-turn type



Model		LVQH20	LVQH30	LVQH40	LVQH50	LVQH60
Tubing O.D.	Metric	6	10	12	19	25
	Inch	1/4	3/8	1/2	3/4	1
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8
	Cv	0.35	1.3	1.9	5	8
Withstand pressure (MPa)		1				
Fluid pressure <A→B>		-98 kPa to 0.5 MPa <sup>Note)</sup>			-98 kPa to 0.4 MPa <sup>Note)</sup>	
Back pressure (MPa)		0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Fluid temperature (°C)		0 to 100				
Ambient temperature (°C)		0 to 60				
Weight (kg)	LVQH□0-1	0.12	0.27	0.32	1.14	1.20
	LVQH□0-4	0.11	0.25	0.23	0.72	0.82

Note) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## ⚠ Specific Product Precautions

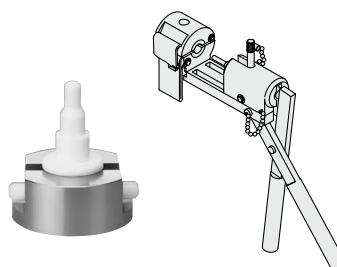
Be sure to read this before handling the products. Refer to page 501 for Safety Instructions and pages 149 and 150 for Air Operated Chemical Liquid Valve Precautions.

### Piping

## ⚠ Caution

### 1. Connect tubing by special tools.

For information on tubing fittings and special tools, please see the pamphlet "High Purity Fluoropolymer Fittings Hyper Fitting Flare Type LQ3 Series Fitting Procedure" (M-E06-4). (The pamphlet can be downloaded from the SMC home page.)



2. Tighten the nut until it touches the end surface of the body, and then tighten it an additional 1/8 turn. If the nut won't turn any further, then it means a sufficient tightening has occurred. Refer to the proper tightening torques shown below.

### Tightening Torque for Piping

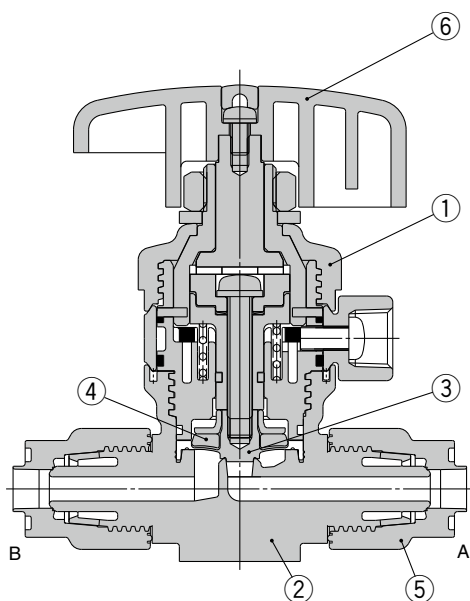
Body class	Torque (N·m)
2	1.6 to 1.8
3	3.2 to 3.5
4	5.0 to 5.3
5	10.0 to 10.5
6	22.5 to 23.0



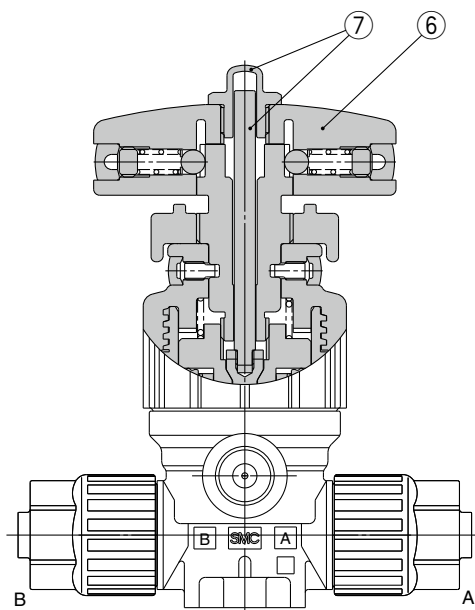
# LVQH-Z Series

## Construction

### 90° turn type



### Multi-turn type (With indicator)

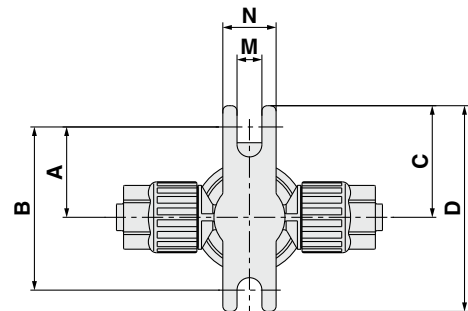
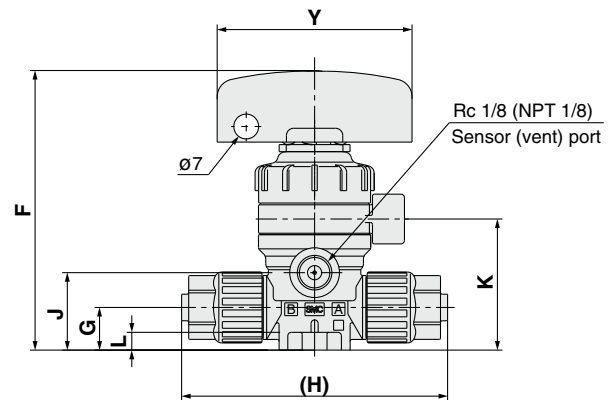
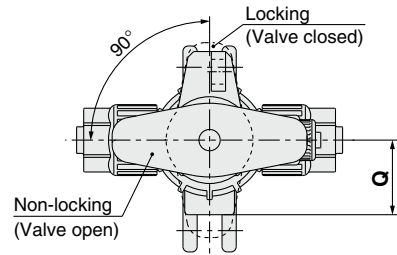


## Component Parts

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE
4	Buffer	FKM
		EPDM
		FFKM
5	Nut	PFA
6	Handle	PVDF
7	Indicator/Cover	PP

## Dimensions

### 90° turn type

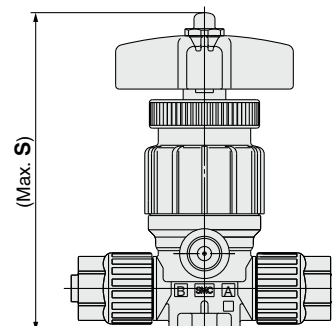
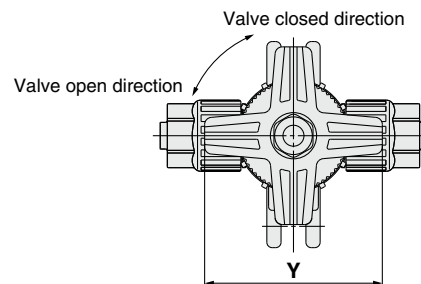


Dimensions (mm)

Model	A	B	C	D	F	G	H
LVQH20-Z□□-1	25.5	46	31.5	58	79	12	75
LVQH30-Z□□-1	28.5	57	34.5	69	103	16.5	103
LVQH40-Z□□-1	28.5	57	34.5	69	108	22	114
LVQH50-Z□□-1	42	84	48	96	165	25	150
LVQH60-Z□□-1	42	84	48	96	175	32	167

Model	J	K	L	M	N	Q	Y
LVQH20-Z□□-1	21.8	37	5	7	15	21	55
LVQH30-Z□□-1	32	50	6	7	20	25	80
LVQH40-Z□□-1	37.5	55.5	6	7	20	25	80
LVQH50-Z□□-1	50.2	78.2	10	7	20	38.5	110
LVQH60-Z□□-1	60	88	10	7	20	38.5	110

### Multi-turn type (With indicator)



Dimensions (mm)

Model	S	Y
LVQH20-Z□-4	93.6	50
LVQH30-Z□-4	111.2	50
LVQH40-Z□-4	116.7	50
LVQH50-Z□-4	170.7	71
LVQH60-Z□-4	180.2	71

# Manually Operated Flare, Integrated Fitting Type Space Saving/Space Saving Connection **LVQHS-Z Series** RoHS

## How to Order

**LVQH 2 0 S - Z 07 [ ] - 1 - [ ]**

• **Body class**

Symbol	Body class	Orifice dia.
2	2	ø4
3	3	ø8
4	4	ø10
5	5	ø16
6	6	ø22

• **Option**

Symbol	Buffer material	Note
Nil	FKM	—
K	FFKM	—
N	EPDM	For ammonium hydroxide

Note) Options cannot be combined each other.

• **Body type**

S	Space saving connection
---	-------------------------

• **Handle operation**

1	90° turn type
4	Multi-turn type (With indicator)

• **LVQ3 integrated fitting**

• **Vent port type**

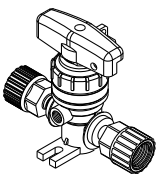
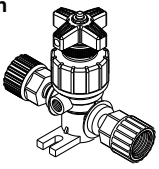
Nil	Threaded	NPT 1/8
R	Threaded	Rc 1/8

• **Applicable fitting size**

Symbol	Fitting size	Body class					
		2	3	4	5	6	
<b>Inch size</b>							
07	2	○					
11	3		○				
13	4			○			
19	5				○		
25	6					○	

Note) Refer to page 126 for How to Order applicable fittings.  
Select the same size as fitting on the valve.

## Variations

Type	Model	LVQ20S	LVQ30S	LVQ40S	LVQ50S	LVQ60S
	Orifice diameter	ø4	ø8	ø10	ø16	ø22
	Connection fitting size	2	3	4	5	6
90° turn type		○	○	○	○	○
Multi-turn type		○	○	○	○	○

## How to Order Space Saving Fittings

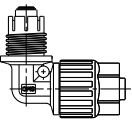
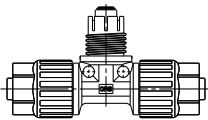
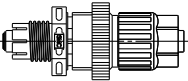
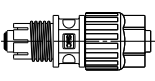
**LQ3 E 6A – SN –**

• **Packaging**

Symbol	Packaging
<b>Nil</b>	Clean packaging equivalent to Class M3.5
<b>1</b>	Standard packaging equivalent to Class M5.5

• **One of the nuts is not attached.**

• **Fitting type**

<b>E</b>	<b>T</b>
Union elbow 	Union tee 
<b>P</b>	<b>U</b>
Panel mount union 	Union 

• **Applicable tubing size** Note 1) Note 2)

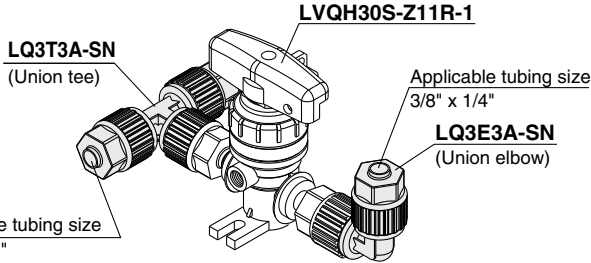
Size	Symbol	Applicable tubing size (mm)
<b>2</b>	<b>1</b>	6 x 4
<b>3</b>	<b>1</b>	10 x 8
<b>3</b>	<b>2</b>	8 x 6
<b>4</b>	<b>1</b>	12 x 10
<b>5</b>	<b>1</b>	19 x 16
<b>6</b>	<b>1</b>	25 x 22

Size	Symbol	Applicable tubing size (inch)
<b>2</b>	<b>A</b>	1/4" x 5/32"
<b>3</b>	<b>A</b>	3/8" x 1/4"
<b>4</b>	<b>A</b>	1/2" x 3/8"
<b>5</b>	<b>A</b>	3/4" x 5/8"
<b>6</b>	<b>A</b>	1" x 7/8"

Note 1) Select the same size as the fitting on the valve.

Note 2) Refer to page 150 for details of the applicable tubing sizes.

## Piping Example



**LQ3T3A-SN**  
(Union tee)

**LVQH30S-Z11R-1**

**LQ3E3A-SN**  
(Union elbow)

Applicable tubing size  
3/8" x 1/4"

Applicable tubing size  
3/8" x 1/4"

### Ordering Example

<b>LVQH30S-Z11R-1</b>	1
<b>LQ3T3A-SN</b> (Union tee)	1
<b>LQ3E3A-SN</b> (Union elbow)	1

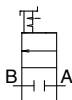
Note) For shipment, the valve and fittings are individually packaged and dispatched together in 1 box.

# LVQHS-Z Series

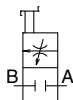


## Symbol

90° turn type



Multi-turn type



## Standard Specifications

Model		LVQH20S	LVQH30S	LVQH40S	LVQH50S	LVQH60S
Connection fitting size		2	3	4	5	6
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8
	Cv	0.35	1.3	1.9	5	8
Withstand pressure (MPa)		1				
Fluid pressure <A→B>		-98 kPa to 0.5 MPa <sup>Note)</sup>			-98 kPa to 0.4 MPa <sup>Note)</sup>	
Back pressure (MPa)		0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Fluid temperature (°C)		0 to 100				
Ambient temperature (°C)		0 to 60				
Weight (kg)	LVQH□0S-1	0.14	0.28	0.34	1.14	1.15
	LVQH□0S-4	0.13	0.21	0.25	0.72	0.86

Note) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## ⚠ Specific Product Precautions

Be sure to read this before handling the products. Refer to page 501 for Safety Instructions and pages 149 and 150 for Air Operated Chemical Liquid Valve Precautions.

### Piping

## ⚠ Caution

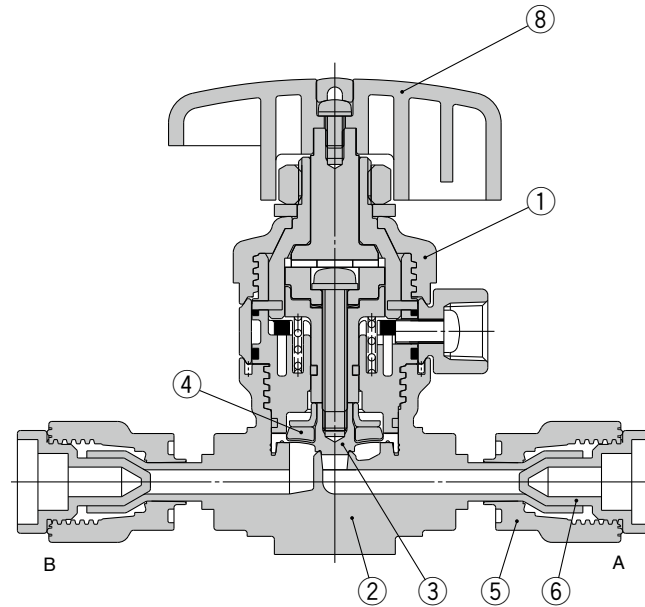
1. Tighten the nut until it touches the end surface of the body, and then tighten it an additional 1/8 turn. If the nut won't turn any further, then it means a sufficient tightening has occurred. Refer to the proper tightening torques shown below.

### Tightening Torque for Piping

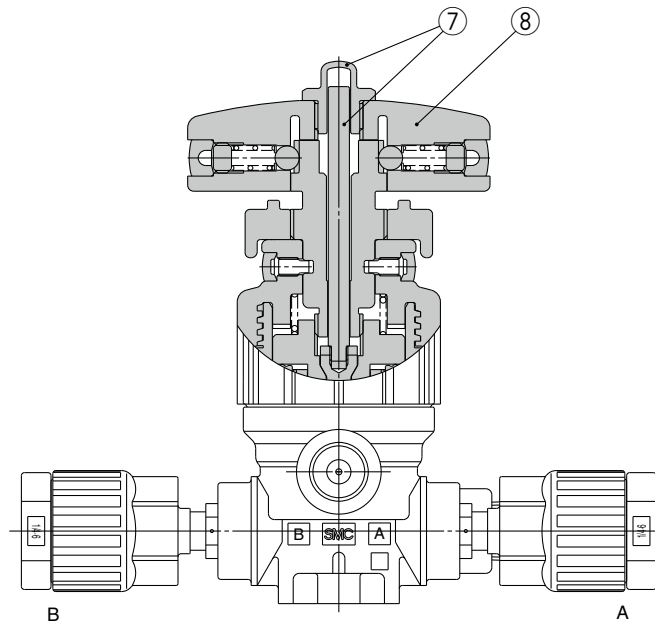
Body class	Torque (N·m)
2	1.6 to 1.8
3	3.2 to 3.5
4	5.0 to 5.3
5	10.0 to 10.5
6	22.5 to 23.0

## Construction

### 90° turn type



### Multi-turn type (With indicator)



### Component Parts

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE
4	Buffer	FKM
		EPDM
		FFKM
5	Nut	PFA
6	Plug	PP
7	Indicator/Cover	PP
8	Handle	PVDF

# LVQHS-Z Series

## Dimensions

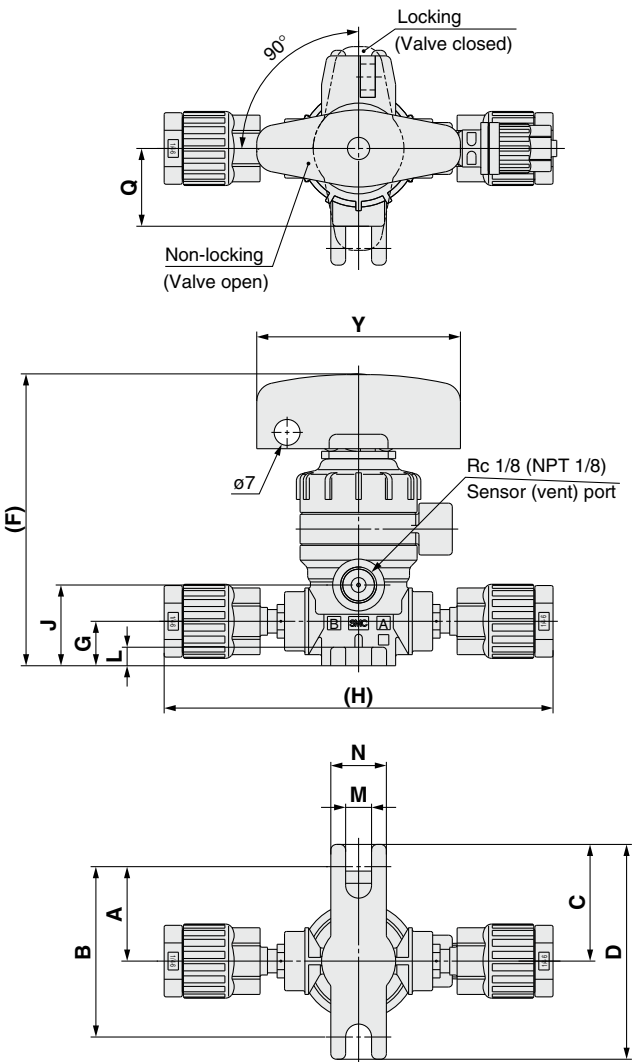
90° turn type

Dimensions

(mm)

Model	A	B	C	D	F	G	H
LVQH20S-Z□-1	25.5	46	31.5	58	79	12	105
LVQH30S-Z□-1	28.5	57	34.5	69	103	16.5	137
LVQH40S-Z□-1	28.5	57	34.5	69	108	22	151
LVQH50S-Z□-1	42	84	48	96	165	25	202
LVQH60S-Z□-1	42	84	48	96	175	32	236

Model	J	K	L	M	N	Q	Y
LVQH20S-Z□-1	21.8	37	5	7	15	21	55
LVQH30S-Z□-1	32	50	6	7	20	25	80
LVQH40S-Z□-1	37.5	55.5	6	7	20	25	80
LVQH50S-Z□-1	50.2	78.2	10	7	20	38.5	110
LVQH60S-Z□-1	60	88	10	7	20	38.5	110

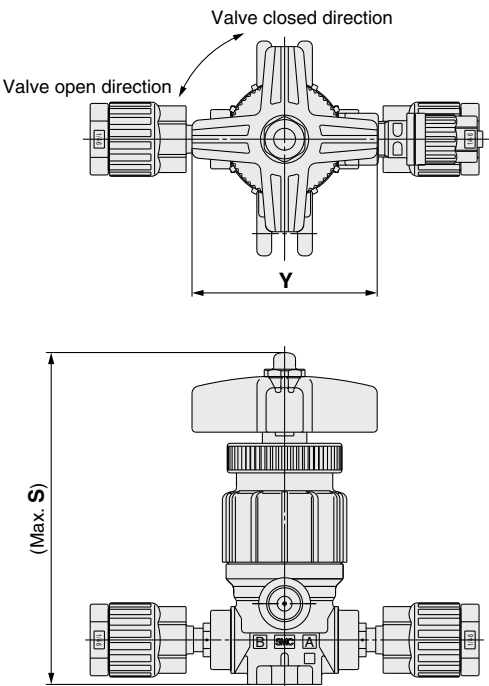


## Multi-turn type (With indicator)

Dimensions

(mm)

Model	S	Y
LVQH20S-Z□-4	93.6	50
LVQH30S-Z□-4	111.2	50
LVQH40S-Z□-4	116.7	50
LVQH50S-Z□-4	170.7	71
LVQH60S-Z□-4	180.2	71



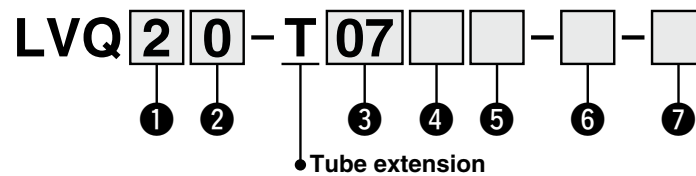




# Air Operated Tube Extension Type *LVQ-T Series*

RoHS

## How to Order



### 1 Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

### 2 Valve type

<b>0</b>	N.C.
<b>1</b>	N.O.
<b>2</b>	Double acting

Note) For valve type combinations, refer to variations on the next page.

### 3 Applicable tubing size

Symbol	Connection tubing O.D.	Body class				
		2	3	4	5	6
Metric size						
06	ø6	○				
10	ø10		○			
12	ø12			○		
19	ø19				○	
25	ø25					○
Inch size						
07	1/4	○				
11	3/8		○			
13	1/2			○		
19	3/4				○	
25	1					○

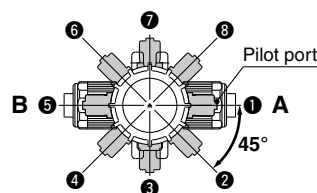
### 4 Pilot port type

<b>Nil</b>	With LQ1 fitting	Connection tubing O.D. 1/8" (ø3)
<b>M</b>	With LQ1 fitting	Connection tubing O.D. ø4
<b>R</b>	Threaded	Rc1/8
<b>N</b>	Threaded	NPT1/8

### 5 Pilot port direction

Symbol	Direction
<b>Nil</b>	<b>1</b>
<b>P2</b>	<b>2</b>
<b>P3</b>	<b>3</b>
<b>P4</b>	<b>4</b>
<b>P5</b>	<b>5</b>
<b>P6</b>	<b>6</b>
<b>P7</b>	<b>7</b>
<b>P8</b>	<b>8</b>

#### Pilot port piping direction



\* Specify the piping direction by part number when ordering the product. Do not change the pilot port direction. (Refer to Precautions on page 150.)

## 6 Option 1

Nil	None
1	With flow rate adjustment
2	With by-pass
3	With flow rate adjustment & by-pass
4	With indicator
5	High back pressure (0.42 MPa)
6	High back pressure with flow rate adjustment
7	High back pressure with by-pass
8	High back pressure with flow rate adjustment & by-pass
9	High back pressure with indicator

Note) Refer to variations in the table below for valve type and option 1 combinations. Options in the same table can not be combined each other.

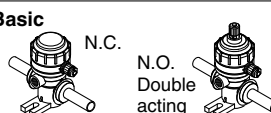
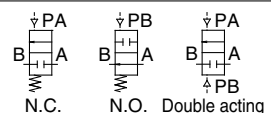



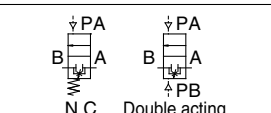




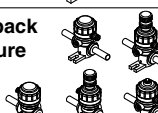

## 7 Option 2

Symbol	Applicable option										Buffer material	Note
	Nil	1	2	3	4	5	6	7	8	9		
Nil	○	○	○	○	○	○	○	○	○	○	FKM	—
J	○	○	—	—	—	—	—	—	—	—	FKM	For high temperature
K	○	○	○	○	○	○	○	○	○	○	FFKM	—
N	○	○	○	○	○	○	○	○	○	○	EPDM	For ammonium hydroxide
P	○	—	—	—	○	○	—	—	—	—	FKM	High flow type LVQ6□ only

Note 1) Options 2 in the same table cannot be combined each other.

Note 2) Only option 1 (with flow rate adjustment) is available for use in high-temperature environments. However, it cannot be used in combination with any of the high back pressure specifications.

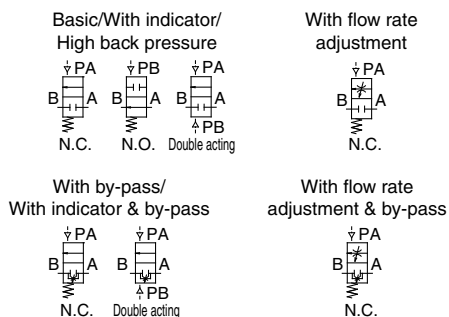
## Variations

			Model		LVQ20	LVQ30	LVQ40	LVQ50	LVQ60
			Orifice diameter		ø4	ø8	ø10	ø16	ø22
			Tubing O.D.	Metric	6	10	12	19	25
				Inch	1/4	3/8	1/2	3/4	1
Type	Symbol	Valve type							
<b>Basic</b> 		N.C.	○	○	○	○	○		
		N.O.	○	○	○	○	○		
		Double acting	○	○	○	○	○		
<b>With flow rate adjustment</b> 		N.C.	○	○	○	○	○		
<b>With by-pass</b> 		N.C.	○	○	○	○	○		
		Double acting	○	○	○	○	○		
<b>With flow rate adjustment &amp; by-pass</b> 		N.C.	○	○	○	○	○		
<b>With indicator</b> 		N.C.	○	○	○	○	○		
<b>High back pressure</b> 		N.C.	○	○	○	○	○		

# LVQ-T Series

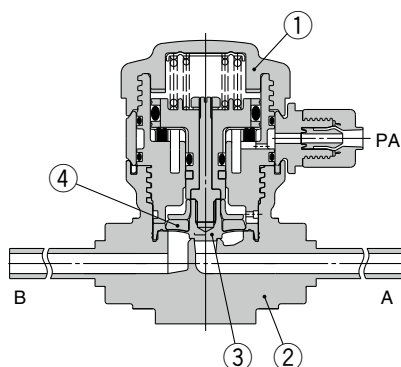


## Symbol

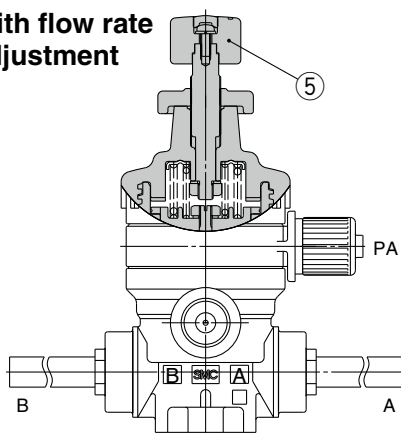


## Construction

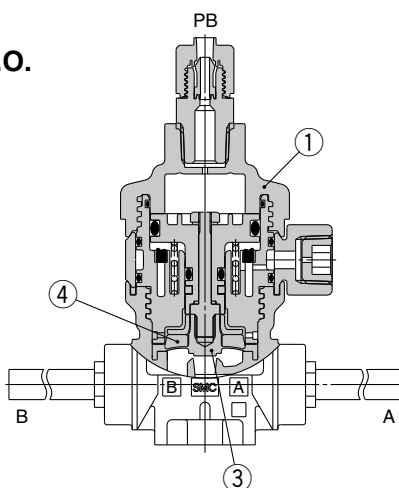
### Basic N.C.



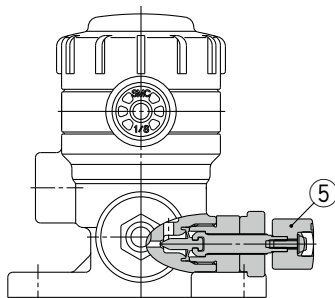
### With flow rate adjustment



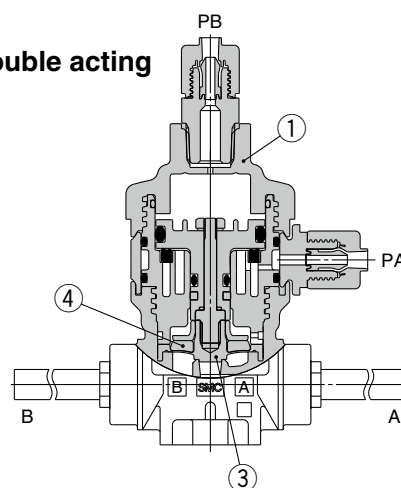
### N.O.



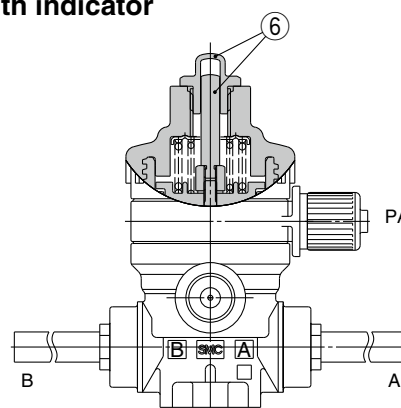
### With by-pass



### Double acting



### With indicator



## Component Parts

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE

No.	Description	Material
4	Buffer	FKM
		EPDM
		FFKM
5	Flow rate adjuster	PVDF
6	Indicator/Cover	PP

## Standard Specifications

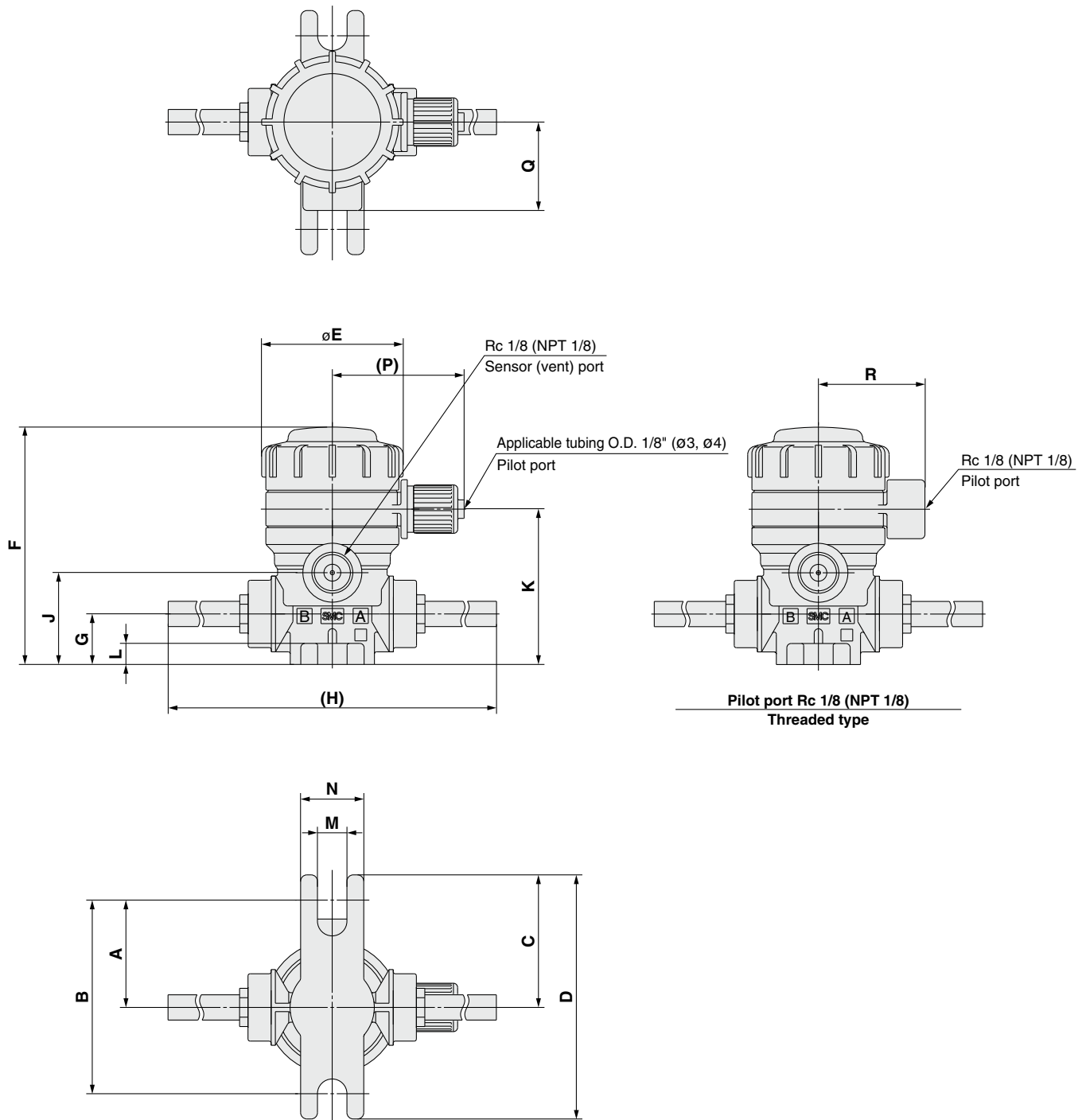
Model		LVQ20	LVQ30	LVQ40	LVQ50	LVQ60
Tubing O.D.	Metric	6	10	12	19	25
	Inch	1/4	3/8	1/2	3/4	1
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8 (8.1) <sup>Note 1)</sup>
	Cv	0.35	1.3	1.9	5	8 (9.5) <sup>Note 1)</sup>
Withstand pressure (MPa)		1				
Operating pressure <A→B flow>	Standard	−98 kPa to 0.5 MPa <sup>Note 2)</sup>			−98 kPa to 0.4 MPa <sup>Note 2)</sup>	
	High temperature	−98 kPa to 0.3 MPa <sup>Note 2)</sup>				
Back pressure (MPa)	Standard	0.3 or less			0.2 or less	
	High back pressure	0.42 or less				
	High temperature	0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Pilot air pressure (MPa)		0.3 to 0.5 (High back pressure: 0.45 to 0.55)				
Pilot port size		1/8" (ø3), ø4, Rc 1/8, NPT 1/8				
Fluid temperature (°C)	Standard	0 to 100				
	High temperature	0 to 170				
Ambient temperature (°C)		0 to 60				
Weight (kg)		0.08	0.15	0.16	0.60	0.70

Note 1) ( ): High flow type

Note 2) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## Dimensions

Basic, High back pressure  
N.C. valve



LVQ□0-T□ Dimensions (N.C. Valve)

(mm)

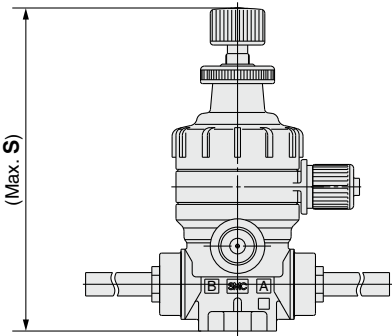
Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
LVQ20-T□	25.5	46	31.5	58	33.6	56.5	12	111.5	21.8	37	5	7	15	31.3	21	25.3
LVQ30-T□	28.5	57	34.5	69	45.4	77	16.5	136	32	50	6	7	20	37.2	25	31.2
LVQ40-T□	28.5	57	34.5	69	45.4	82.5	22	137	37.5	55.5	6	7	20	37.2	25	31.2
LVQ50-T□	42	84	48	96	75	127	25	180	50.2	78.2	10	7	20	50.8	38.5	45
LVQ60-T□	42	84	48	96	75	137	32	189	60	88	10	7	20	50.8	38.5	45

# LVQ-T Series

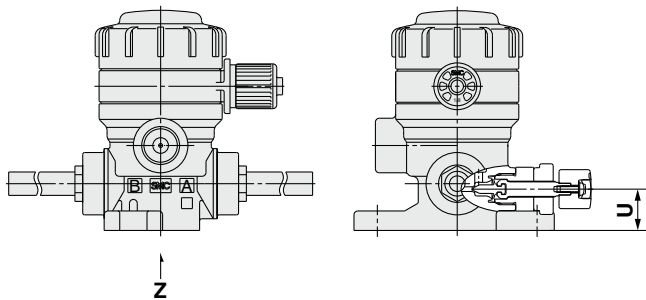
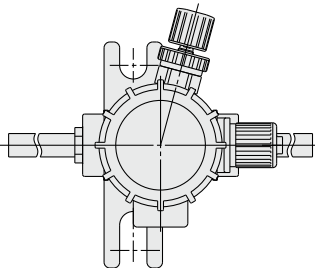
## Dimensions

With flow rate adjustment, High back pressure with flow rate adjustment  
N.C. valve

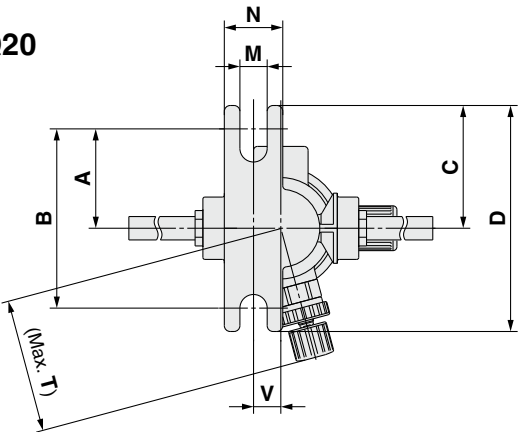
Dimensions (mm)	
Model	S
LVQ20-T□-1	83
LVQ30-T□-1	113.5
LVQ40-T□-1	119
LVQ50-T□-1	171.5
LVQ60-T□-1	182.5



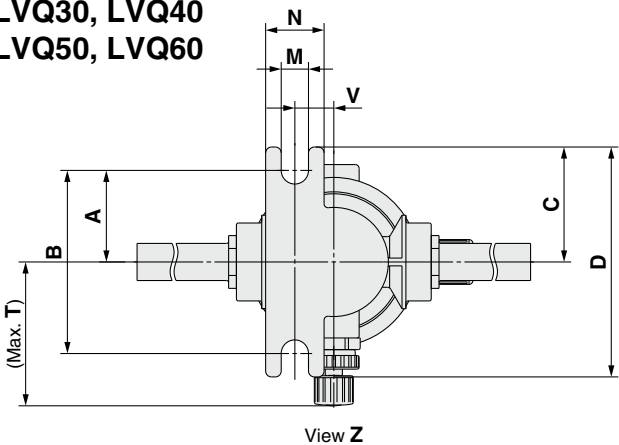
With by-pass, High back pressure with by-pass  
N.C. valve



LVQ20

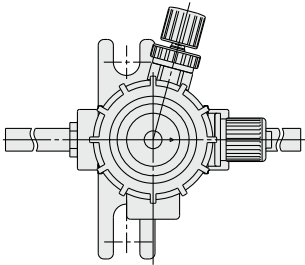


LVQ30, LVQ40  
LVQ50, LVQ60

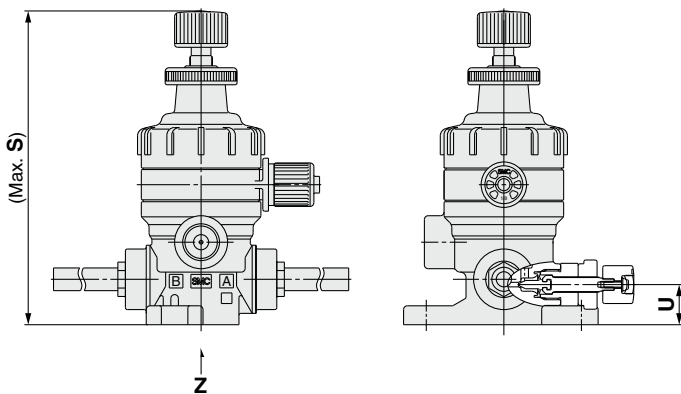
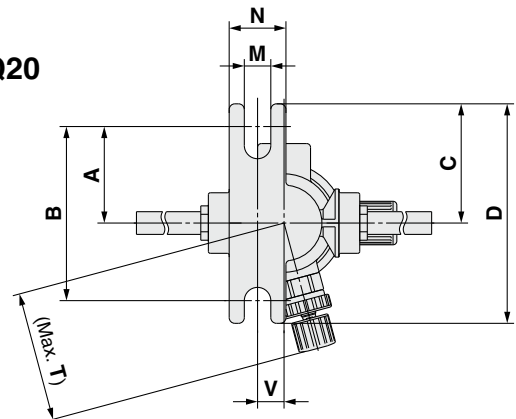


Dimensions (mm)									
Model	A	B	C	D	M	N	T	U	V
LVQ20-T□-2	25.5	46	31.5	58	7	15	34.3	10.6	7
LVQ30-T□-2	25.5	51	31.5	63	7	15	36.9	16.5	10
LVQ40-T□-2	25.5	51	31.5	63	7	15	37.9	22	10
LVQ50-T□-2	38	76	44	88	7	20	64	25	17
LVQ60-T□-2	38	76	44	88	7	20	66	32	17

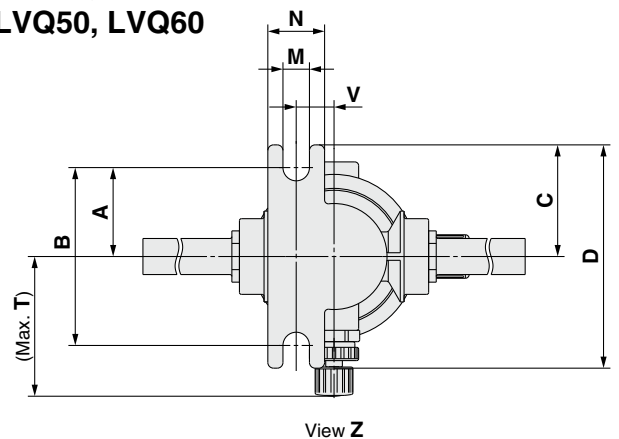
With flow rate adjustment & by-pass,  
High back pressure with flow rate adjustment & by-pass  
N.C. valve



LVQ20



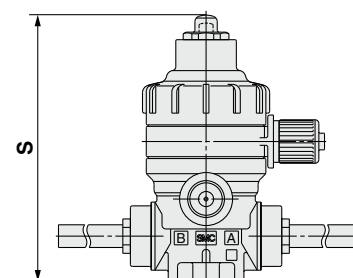
LVQ30, LVQ40  
LVQ50, LVQ60



Dimensions (mm)										
Model	A	B	C	D	M	N	S	T	U	V
LVQ20-T□-3	25.5	46	31.5	58	7	15	83	34.3	10.6	7
LVQ30-T□-3	25.5	51	31.5	63	7	15	113.5	36.9	16.5	10
LVQ40-T□-3	25.5	51	31.5	63	7	15	119	37.9	22	10
LVQ50-T□-3	38	76	44	88	7	20	171.5	64	25	17
LVQ60-T□-3	38	76	44	88	7	20	182.5	66	32	17

With indicator, High back pressure with indicator  
N.C. valve

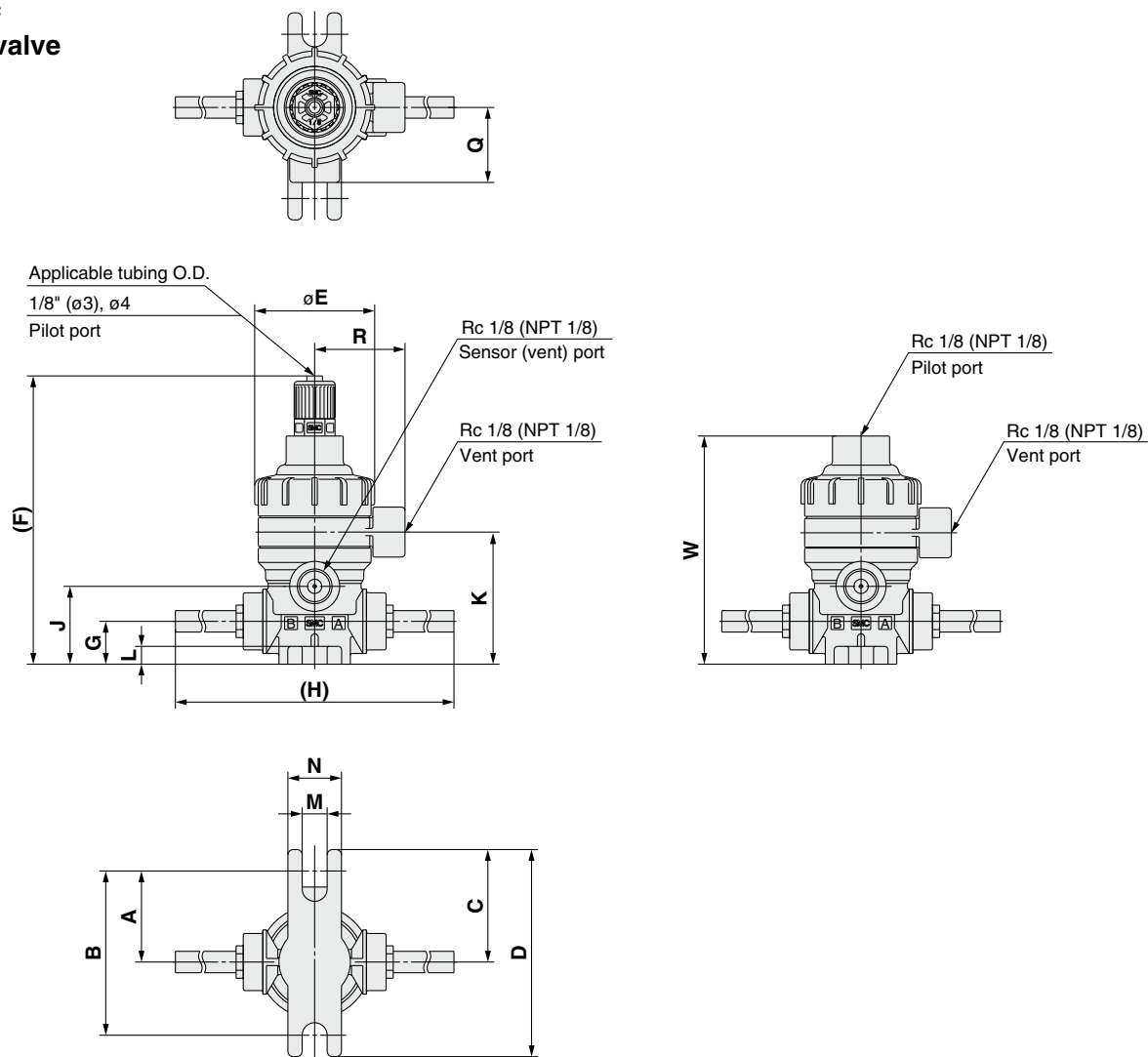
Dimensions (mm)	
Model	S
LVQ20-T□-4	70.5
LVQ30-T□-4	88.5
LVQ40-T□-4	94
LVQ50-T□-4	134.5
LVQ60-T□-4	144



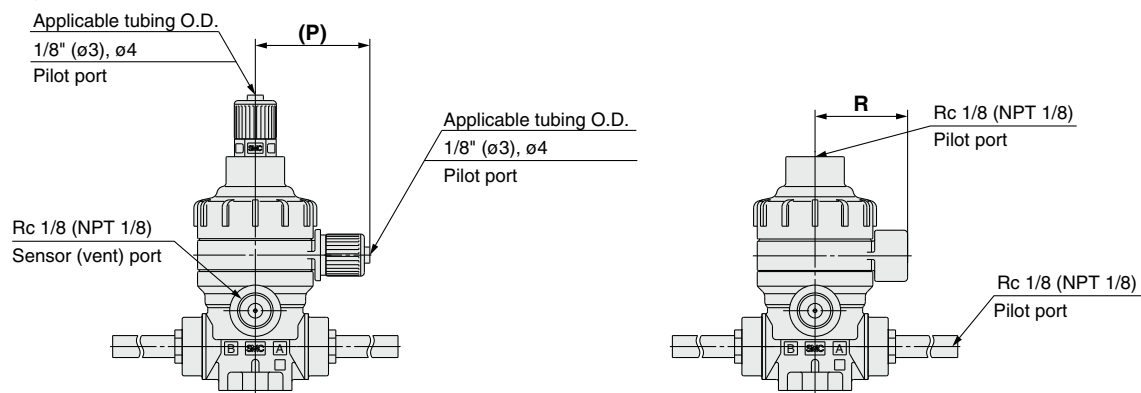
# LVQ-T Series

## Dimensions

### Basic N.O. valve

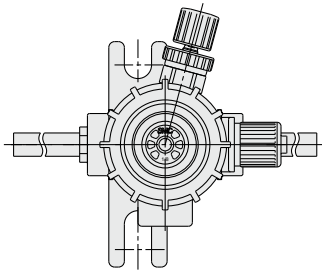


### Double acting valve

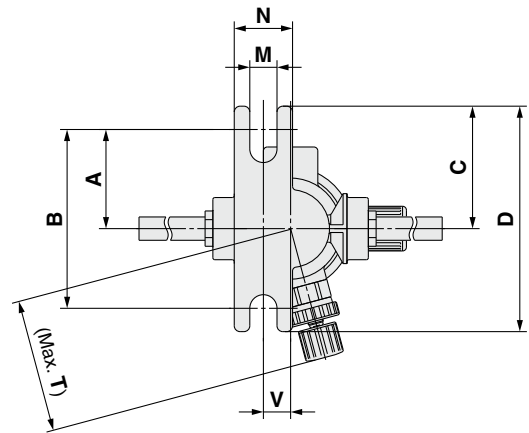


LVQ□ <sub>2</sub> -T□	Dimensions (N.O. Valve, Double Acting Valve)																(mm)
Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	W
LVQ2 <sub>2</sub> -T□	25.5	46	31.5	58	33.6	81	12	111.5	21.8	37	5	7	15	31.3	21	25.3	64
LVQ3 <sub>2</sub> -T□	28.5	57	34.5	69	45.4	99	16.5	136	32	50	6	7	20	37.2	25	31.2	82
LVQ4 <sub>2</sub> -T□	28.5	57	34.5	69	45.4	104	22	137	37.5	55.5	6	7	20	37.2	25	31.2	87.5
LVQ5 <sub>2</sub> -T□	42	84	48	96	75	144.5	25	180	50.2	78.2	10	7	20	50.8	38.5	45	128
LVQ6 <sub>2</sub> -T□	42	84	48	96	75	154.5	32	189	60	88	10	7	20	50.8	38.5	45	137.5

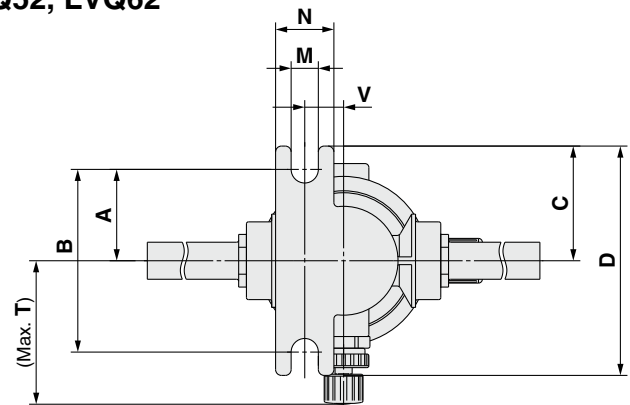
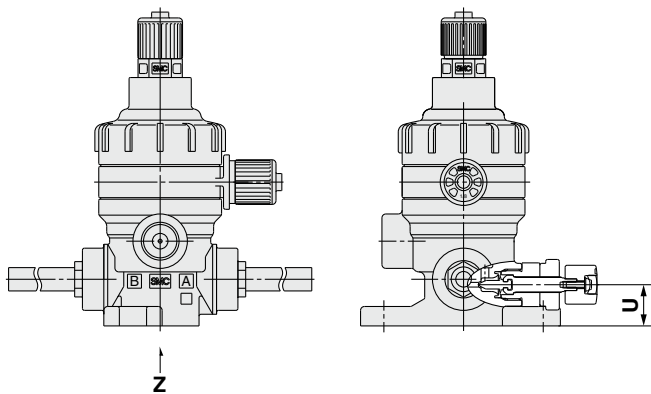
**With by-pass  
Double acting valve**



**LVQ22**



**LVQ32, LVQ42  
LVQ52, LVQ62**



View Z

**Dimensions** (mm)

Model	A	B	C	D	M	N	T	U	V
LVQ22-T□-2	25.5	46	31.5	58	7	15	34.3	10.6	7
LVQ32-T□-2	25.5	51	31.5	63	7	15	36.9	16.5	10
LVQ42-T□-2	25.5	51	31.5	63	7	15	37.9	22	10
LVQ52-T□-2	38	76	44	88	7	20	64	25	17
LVQ62-T□-2	38	76	44	88	7	20	64	32	17



# Manually Operated Tube Extension Type

# LVQH-T Series

RoHS

## How to Order

LVQH **2** 0 - T **07** **1** - **1** - **1**

### Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

### Option

Symbol	Buffer material	Note
<b>Nil</b>	FKM	—
<b>K</b>	FFKM	—
<b>N</b>	EPDM	For ammonium hydroxide

Note) Options cannot be combined each other.

### Tube extension

### Applicable tubing size

Symbol	Connection tubing O.D.	Body class				
		2	3	4	5	6
Metric size						
06	ø6	○				
10	ø10		○			
12	ø12			○		
19	ø19				○	
25	ø25					○
Inch size						
07	1/4	○				
11	3/8		○			
13	1/2			○		
19	3/4				○	
25	1					○


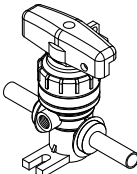






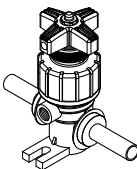





### Handle operation

<b>1</b>	90° turn type
<b>4</b>	Multi-turn type (With indicator)

### Vent port type

<b>Nil</b>	Threaded	NPT 1/8
<b>R</b>	Threaded	Rc 1/8

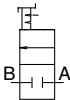
## Variations

		Model						
		LVQH20-T	LVQH30-T	LVQH40-T	LVQH50-T	LVQH60-T		
							Orifice diameter	
							Tubing O.D.	
Type	Symbol	Metric	ø4	ø8	ø10	ø16	ø22	
		Inch	6	10	12	19	25	
			1/4	3/8	1/2	3/4	1	
90° turn type								
Multi-turn type								

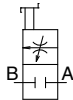


**Symbol**

90° turn type



Multi-turn type



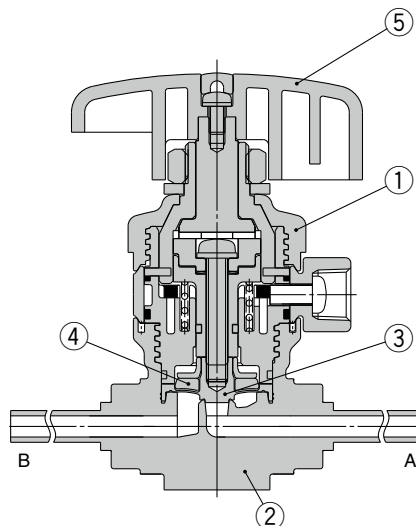
**Standard Specifications**

Model		LVQH20	LVQH30	LVQH40	LVQH50	LVQH60
Tubing O.D.	Metric	6	10	12	19	25
	Inch	1/4	3/8	1/2	3/4	1
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8
	Cv	0.35	1.3	1.9	5	8
Withstand pressure (MPa)		1				
Fluid pressure <A→B>		-98 kPa to 0.5 MPa <sup>Note)</sup>			-98 kPa to 0.4 MPa <sup>Note)</sup>	
Back pressure (MPa)		0.3 or less			0.2 or less	
Valve leakage (cm³/min)		0 (With water pressure)				
Fluid temperature (°C)		0 to 100				
Ambient temperature (°C)		0 to 60				
Weight (kg)	LVQH□0-1	0.12	0.25	0.28	1.04	1.05
	LVQH□0-4	0.11	0.18	0.19	0.62	0.73

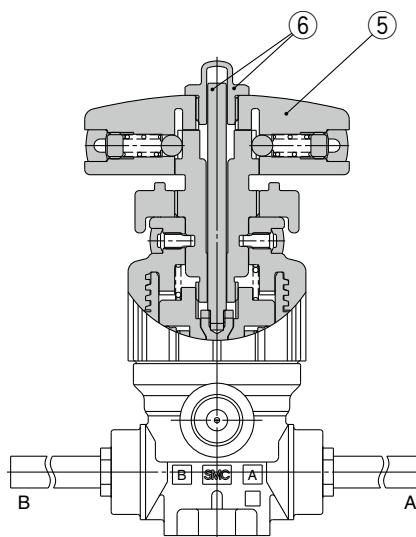
Note) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

**Construction**

**90° turn type**



**Multi-turn type (With indicator)**



**Component Parts**

No.	Description	Material
1	Actuator	PVDF
2	Body	PFA
3	Diaphragm	PTFE
4	Buffer	FKM
		EPDM
		FFKM

No.	Description	Material
5	Handle	PVDF
6	Indicator/Cover	PP

# LVQH-T Series

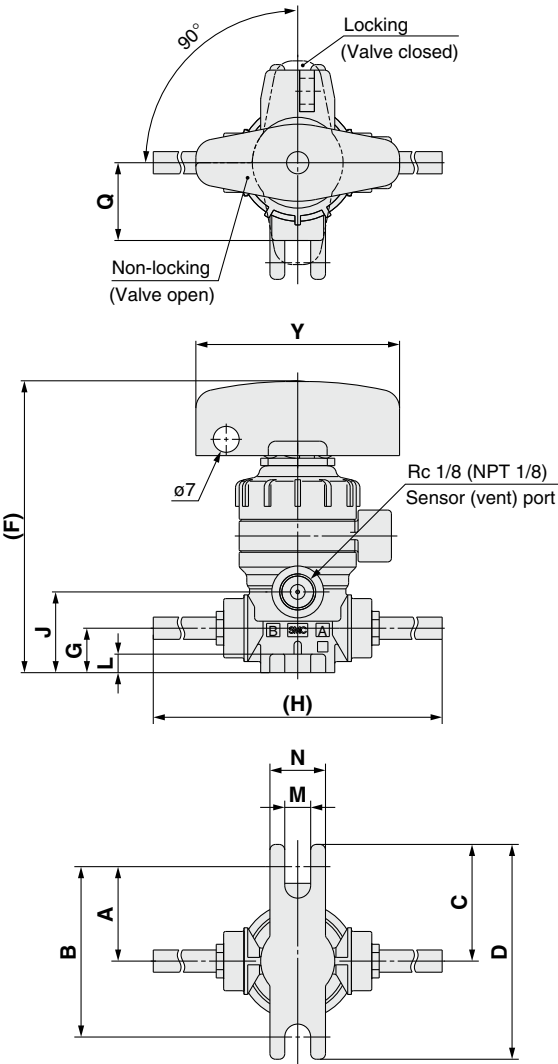
## Dimensions

90° turn type

Dimensions (mm)

Model	A	B	C	D	F	G	H
LVQH20-T□-1	25.5	46	31.5	58	79	12	111.5
LVQH30-T□-1	28.5	57	34.5	69	103	16.5	136
LVQH40-T□-1	28.5	57	34.5	69	108	22	137
LVQH50-T□-1	42	84	48	96	165	25	180
LVQH60-T□-1	42	84	48	96	175	32	189

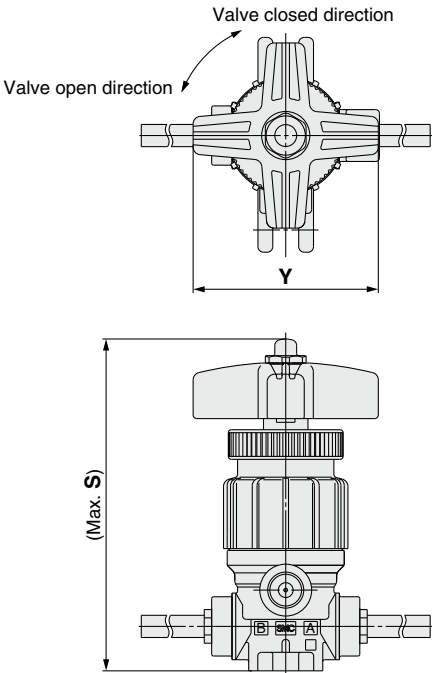
Model	J	K	L	M	N	Q	Y
LVQH20-T□-1	21.8	37	5	7	15	21	55
LVQH30-T□-1	32	50	6	7	20	25	80
LVQH40-T□-1	37.5	55.5	6	7	20	25	80
LVQH50-T□-1	50.2	78.2	10	7	20	38.5	110
LVQH60-T□-1	60	88	10	7	20	38.5	110



Multi-turn type (With indicator)

Dimensions (mm)

Model	S	Y
LVQH20-T□-4	93.6	50
LVQH30-T□-4	111.2	50
LVQH40-T□-4	116.7	50
LVQH50-T□-4	170.7	71
LVQH60-T□-4	180.2	71





# Air Operated, 0.5 MPa Back Pressure Tolerant Insert Bushing, Integrated Fitting Type Hyper Fitting

## LVQ□□H Series

The LQ2 fitting for the insert bushing, integrated fitting type LVQ/LVQH series high-purity chemical liquid valve is to be discontinued as of September 2025. Select the LQ1 fitting instead.

RoHS

### How to Order

LVQ **2** **0** H- **S** **07** □ □ □ - □ - □

1 2 3 4 5 6 7 8 9

#### 1 Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

#### 2 Valve type

<b>0</b>	N.C.
<b>1</b>	N.O.
<b>2</b>	Double acting

Note) For valve type combinations, refer to variations on the next page.

#### 3 Fitting type

Symbol	Fitting type	Body class
<b>V</b>	LQ1	2, 3, 4, 5, 6
<b>S</b>	LQ2	2, 3, 4, 5

Note) Insert bushing is used in common.

#### 4 Applicable tubing size <sup>Note)</sup>

Symbol	Connection tubing size	Body class				
		2	3	4	5	6
<b>Metric size</b>						
<b>03</b>	3 x 2	●				
<b>04</b>	4 x 3	●				
<b>06</b>	6 x 4	○	●			
<b>08</b>	8 x 6		●			
<b>10</b>	10 x 8		○	●		
<b>12</b>	12 x 10			○	●	
<b>19</b>	19 x 16				○	●
<b>25</b>	25 x 22					○
<b>Inch size</b>						
<b>03</b>	1/8" x 0.086"	●				
<b>05</b>	3/16" x 1/8"	●				
<b>07</b>	1/4" x 5/32"	○	●			
<b>11</b>	3/8" x 1/4"		○	●		
<b>13</b>	1/2" x 3/8"			○	●	
<b>19</b>	3/4" x 5/8"				○	●
<b>25</b>	1" x 7/8"					○

○ Basic size ● With reducer

Note) Refer to page 150 for details of the applicable tubing sizes.

#### 5 Port B (OUT) different dia. size

Symbol	Application
<b>Nil</b>	Ports A & B same size
Refer to the applicable tubing size table to the left.	Different diameter tubings can be selected within the same body class.

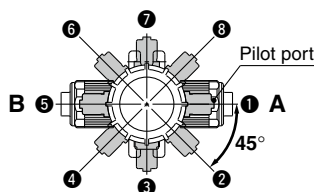
#### 6 Pilot port type

Symbol	Pilot port type	Connection tubing O.D.
<b>Nil</b>	LQ1 integrated fitting	1/8" (ø3)
<b>M</b>	LQ1 integrated fitting	ø4
<b>R</b>	Threaded	Rc1/8
<b>N</b>	Threaded	NPT1/8

#### 7 Pilot port direction

Symbol	Direction
<b>Nil</b>	1
<b>P2</b>	2
<b>P3</b>	3
<b>P4</b>	4
<b>P5</b>	5
<b>P6</b>	6
<b>P7</b>	7
<b>P8</b>	8

#### Pilot port piping direction



\* Specify the piping direction by part number when ordering the product. Do not change the pilot port direction. (Refer to Precautions on page 150.)

### 8 Option 1

Nil	None
1	With flow rate adjustment
2	With by-pass
3	With flow rate adjustment & by-pass
4	With indicator
24	With indicator & by-pass

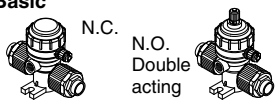
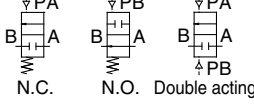


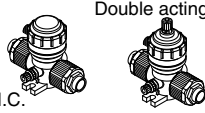
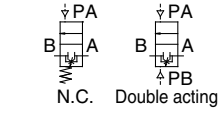

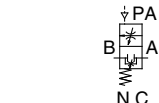

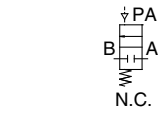


Note) Refer to variations in the table below for valve type and option 1 combinations. Options in the same table cannot be combined each other.

### 9 Option 2

Symbol	Applicable option						Buffer material	Note
	Nil	1	2	3	4	24		
Nil	○	○	○	○	○	○	FKM	—
K	○	○	○	○	○	○	FFKM	—
N	○	○	○	○	○	○	EPDM	For ammonium hydroxide
P	○	—	—	—	○	—	FKM	High flow type LVQ6□ only

Note) Options 2 in the same table cannot be combined each other.

## Variations

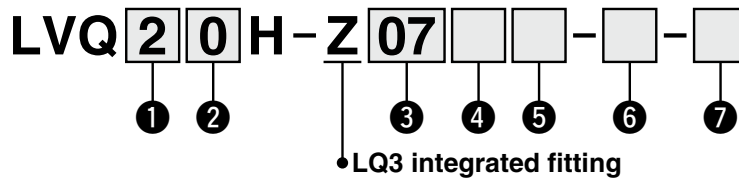
			Model	LVQ20H	LVQ30H	LVQ40H	LVQ50H	LVQ60H	
			Orifice diameter	ø4	ø8	ø10	ø16	ø22	
			Tubing O.D.	Metric	6	10	12	19	25
				Inch	1/4	3/8	1/2	3/4	1
Type	Symbol	Valve type							
<b>Basic</b> 		N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
		N.O.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
		Double acting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
<b>With flow rate adjustment</b> 		N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
<b>With by-pass</b> 		N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
		Double acting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
<b>With flow rate adjustment &amp; by-pass</b> 		N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
<b>With indicator</b> 		N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
<b>With indicator &amp; by-pass</b> 		N.C.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		

# Air Operated, 0.5 MPa Back Pressure Tolerant Flare, Integrated Fitting Type Hyper Fitting

## LVQ□□H-Z Series

RoHS

### How to Order



#### 1 Body class

Symbol	Body class	Orifice dia.
<b>2</b>	2	ø4
<b>3</b>	3	ø8
<b>4</b>	4	ø10
<b>5</b>	5	ø16
<b>6</b>	6	ø22

#### 2 Valve type

<b>0</b>	N.C.
<b>1</b>	N.O.
<b>2</b>	Double acting

Note) For valve type combinations, refer to variations on the next page.

#### 3 Applicable tubing size <sup>Note)</sup>

Symbol	Connection tubing size	Body class					
		2	3	4	5	6	
Metric size							
03	3 x 2	○					
04	4 x 3	○					
06	6 x 4	○					
08	8 x 6		○				
10	10 x 8		○				
12	12 x 10			○			
19	19 x 16				○		
25	25 x 22					○	
Inch size							
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) Refer to page 150 for details of the applicable tubing sizes.

#### 4 Pilot port type

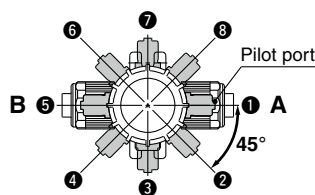
<b>Nil</b>	With LQ3 fitting	Connection tubing size 1/8" x 0.086" (3 x 2) <sup>Note)</sup>
<b>M</b>	With LQ3 fitting	Connection tubing size 4 x 3 <sup>Note)</sup>
<b>R</b>	Threaded	Rc1/8
<b>N</b>	Threaded	NPT1/8

Note) Refer to page 150 for details of the applicable tubing sizes.

#### 5 Pilot port direction

Symbol	Direction
<b>Nil</b>	<b>1</b>
<b>P2</b>	<b>2</b>
<b>P3</b>	<b>3</b>
<b>P4</b>	<b>4</b>
<b>P5</b>	<b>5</b>
<b>P6</b>	<b>6</b>
<b>P7</b>	<b>7</b>
<b>P8</b>	<b>8</b>

#### Pilot port piping direction



\* Specify the piping direction by part number when ordering the product. Do not change the pilot port direction. (Refer to Precautions on page 150.)

## 6 Option 1

Nil	None
1	With flow rate adjustment
2	With by-pass
3	With flow rate adjustment & by-pass
4	With indicator
24	With indicator & by-pass



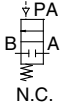
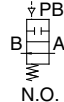
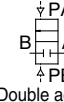
















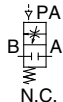







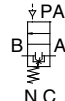












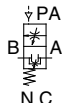






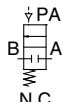






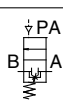





Note) Refer to variations in the table below for valve type and option 1 combinations. Options in the same table cannot be combined each other.

## 7 Option 2

Symbol	Applicable option						Buffer material	Note
	Nil	1	2	3	4	24		
Nil	○	○	○	○	○	○	FKM	—
K	○	○	○	○	○	○	FFKM	—
N	○	○	○	○	○	○	EPDM	For ammonium hydroxide
P	○	—	—	—	○	—	FKM	High flow type LVQ6□ only

Note) Options 2 in the same table cannot be combined each other.

## Variations

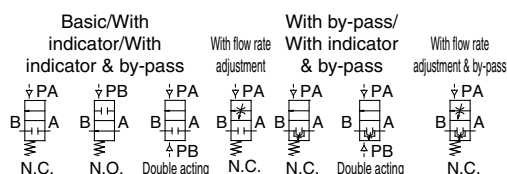
			Model	LVQ20H	LVQ30H	LVQ40H	LVQ50H	LVQ60H	
			Orifice diameter	ø4	ø8	ø10	ø16	ø22	
			Tubing O.D.	Metric	6	10	12	19	25
				Inch	1/4	3/8	1/2	3/4	1
Type	Symbol	Valve type							
<b>Basic</b>  N.C.  N.O. Double acting	 PA B A N.C.  PB B A N.O.  PA B A Double acting	N.C.							
		N.O.							
		Double acting							
<b>With flow rate adjustment</b> 	 PA B A N.C.	N.C.							
<b>With by-pass</b>  N.C.  Double acting	 PA B A N.C.  PA B A Double acting	N.C.							
		Double acting							
<b>With flow rate adjustment &amp; by-pass</b> 	 PA B A N.C.	N.C.							
<b>With indicator</b> 	 PA B A N.C.	N.C.							
<b>With indicator &amp; by-pass</b> 	 PA B A N.C.	N.C.							



# LVQ□□H Series



## Symbol



## Specific Product Precautions

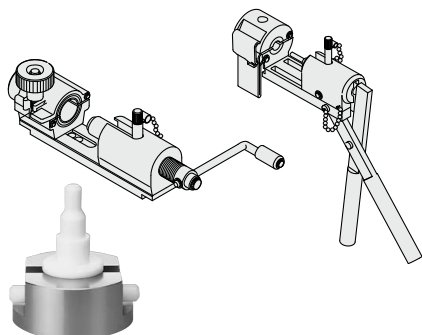
Be sure to read this before handling the products. Refer to page 501 for Safety Instructions and pages 149 and 150 for Air Operated Chemical Liquid Valve Precautions.

## Piping

## Caution

### 1. Connect tubing by special tools.

For information on tubing connection and special tools, please see the pamphlet "High Purity Fluoropolymer Fittings Hyper Fitting LQ1/2 Series Work Procedure Instructions" (M-E05-1) and "High Purity Fluoropolymer Fittings Hyper Fitting/Flare Type LQ3 Series Fitting Procedure" (M-E06-4). (The pamphlet can be downloaded from the SMC home page.)



2. Tighten the nut until it touches the end surface of the body, and then tighten it an additional 1/8 turn. If the nut won't turn any further, then it means a sufficient tightening has occurred. Refer to the proper tightening torques shown below.

### Tightening Torque for Piping

Body class	Torque (N·m)		
	LQ1	LQ2	LQ3
2	0.3 to 0.4	1.5 to 2.0	1.6 to 1.8
3	0.8 to 1.0	3.0 to 3.5	3.2 to 3.5
4	1.0 to 1.2	7.5 to 9.0	5.0 to 5.3
5	2.5 to 3.0	11.0 to 13.0	10.0 to 10.5
6	5.5 to 6.0	—	22.5 to 23.0

## Specifications

Model		LVQ20H	LVQ30H	LVQ40H	LVQ50H	LVQ60H
Tubing O.D. <sup>Note 1)</sup>	Metric	6	10	12	19	25
	Inch	1/4	3/8	1/2	3/4	1
Orifice diameter		ø4	ø8	ø10	ø16	ø22
Flow rate characteristics	Kv	0.3	1.1	1.6	4.2	6.8 (8.1) <sup>Note 1)</sup>
	Cv	0.35	1.3	1.9	5	8 (9.5) <sup>Note 1)</sup>
Withstand pressure (MPa)		1				
Operating pressure <A→B flow>		-98 kPa to 0.5 MPa <sup>Note 3)</sup>				
Back pressure (MPa)		0.5 or less				
Valve leakage (cm <sup>3</sup> /min)		0 (With water pressure)				
Pilot air pressure (MPa)		0.5 to 0.8				
Pilot port size <sup>Note 2)</sup>		1/8" (ø3), ø4, Rc 1/8, NPT 1/8				
Fluid temperature (°C)		0 to 100				
Ambient temperature (°C)		0 to 60				
Weight (kg)		0.08	0.17	0.22	0.70	0.81

Note 1) ( ): High flow type

Note 2) Refer to page 150 for details of the applicable tubing sizes.

Note 3) This product cannot be used for vacuum retention. Also, connecting the vacuum to the B port may reduce the life of the product.

## Dimensions

Dimensions are the same as those of the standard specifications.

## Applicable Different Diameter Tubings with Reducer (LVQ□□H-<sup>V</sup>)

Different diameter tubings can be selected (within the same body class) by using a nut and an insert bushing (reducer). ● With reducer

Body class	Connection tubing O.D.													
	Metric size							Inch size						
	4	6	8	10	12	19	25	1/8	3/16	1/4	3/8	1/2	3/4	1
2	●	○	—	—	—	—	—	●	●	○	—	—	—	—
3	—	●	●	○	—	—	—	—	—	●	○	—	—	—
4	—	—	—	●	○	—	—	—	—	—	●	○	—	—
5	—	—	—	—	●	○	—	—	—	—	—	●	○	—
6	—	—	—	—	—	●	○	—	—	—	—	—	●	○

Note) Refer to page 99 for information on changing tubing sizes.



## LVQ Series

# Applicable Fluids

### Material and Fluid Compatibility Check List for Air Operated Chemical Valves

Chemical	Compatibility
Acetone	○ Note 1, 2)
Ammonium hydroxide	○ Note 2)
Isobutyl alcohol	○ Note 1, 2)
Isopropyl alcohol	○ Note 1, 2)
Hydrochloric acid	○
Ozone (dry)	○
Hydrogen peroxide Concentration 5% or less, 50°C or less	○
Ethyl acetate	○ Note 1, 2)
Butyl acetate	○ Note 1, 2)
Nitric acid (except fuming nitric acid) Concentration 10% or less	○ Note 2)
Deionized water (pure water)	○
Sodium hydroxide (caustic soda) Concentration 50% or less	○
Nitrogen gas	○
Super pure water	○
Toluene	○ Note 1, 2)
Hydrofluoric acid	○ Note 2)
Sulfuric acid (except fuming sulfuric acid)	○ Note 2)
Phosphoric acid Concentration 80% or less	○

Table symbols ○ : Can be used  
○ : Can be used in certain conditions  
× : Cannot be used

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.

Note 2) Use caution as permeation may occur. The permeated fluid may effect the parts of other materials.

- Compatibility is indicated for fluid temperatures of 100°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.
- Use a fluid with a viscosity of 300 cp or less. Failure to do so may cause valve closing failure.



## LVQ Series

# Air Operated Chemical Liquid Valve/Precautions 1

Be sure to read this before handling the products.

### Design / Selection

#### Warning

##### 1. Confirm the specifications.

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

##### 2. Fluids

Operate after confirming the compatibility of the product's component materials with fluids, using the check list on page 148. Contact SMC regarding fluids other than those in the check list. 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 specified in this catalog.

##### 5. Ambient environment

Install the product in an environment where there is no effect from radiant heat caused by heat sources, etc., and use within the ambient operating temperature range. After confirming the compatibility of the product's component materials with the ambient environment, operate so that fluid does not adhere to the product's exterior surfaces.

##### 6. Liquid seals

When circulating fluid

Provide a relief valve in the system so that fluid does not get into the liquid seal circuit.

##### 7. Countermeasures for static electricity

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

### Mounting

#### Warning

##### 1. If air leakage increases or equipment does not operate properly, stop operation.

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

##### 2. Operation 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. Preparation before piping

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

Install piping so that it does not apply pulling, pressing, bending or other forces on the valve body.

##### 2. Use the tightening torques shown below for the threaded pilot port.

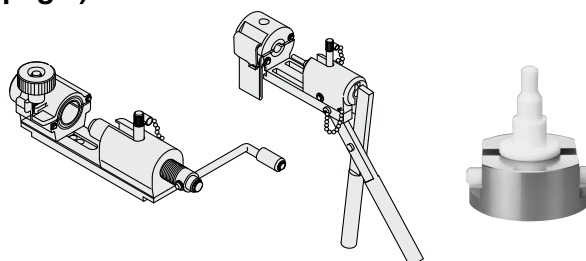
###### Tightening Torque for Pilot Port

Pilot port	Torque (N·m)
Rc, NPT 1/8	0.8 to 1.0

##### 3. Metal fittings

In the case of threaded pilot port, do not pipe the metal fittings which can cause damage to the thread part.

##### 4. For information on tubing connection and special tools, please see the pamphlet "High Purity Fluoropolymer Fittings Hyper Fitting LQ1/2 Series Work Procedure Instructions" (M-E05-1) or "High Purity Fluoropolymer Fittings Hyper Fitting/Flare Type LQ3 Series Fitting Procedure" (M-E06-4). (The pamphlets can be downloaded from the SMC home page.)



### Operating Air Supply

#### Warning

##### 1. Use clean air.

Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt, or corrosive gases, etc., as this may cause damage or malfunction.



## LVQ Series

# Air Operated Chemical Liquid Valve/Precautions 2

Be sure to read this before handling the products.

### Use of Tubing

#### ⚠ Caution

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

#### Applicable tubing sizes

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

### Operating Environment

#### ⚠ Warning

1. Do not use in a location having an explosive atmosphere.
2. Do not use in locations where vibration or impact occurs.
3. Do not use in locations where radiated heat will be received from nearby heat sources.
4. Do not use in environments which exceed the ambient temperature specifications of the product.

### Maintenance

#### ⚠ Warning

1. Maintenance should be performed in accordance with the procedures in the operation manual.  
Incorrect handling can cause damage or malfunction of machinery and equipment, etc.
2. Before removing equipment or compressed air supply/exhaust devices, shut off the air and power supplies, and exhaust compressed air from the system.  
Further, when restarting equipment after re-mounting or replacement, first confirm safety and then check the equipment for normal operation.
3. Perform work after removing residual chemicals and carefully replacing them with pure water or air, etc.
4. Do not disassemble the product. Products which have been disassembled cannot be guaranteed.  
If disassembly is necessary, contact SMC.
5. In order to obtain optimum performance from valves, perform periodic inspections to confirm that there are no leaks from valves or fittings, etc.

### Maintenance

#### ⚠ Caution

1. Removal of drainage  
Flush drainage from filters regularly.

### Precautions

#### ⚠ Warning

1. Operate within the ranges of the maximum operating pressure and back pressure.
2. Do not change the pilot port direction. Products which have been disassembled cannot be guaranteed.

#### ⚠ Caution

1. Please note that when the product is shipped from the factory, gases such as N<sub>2</sub> and air may leak from the valve at a rate of 1 cm<sup>3</sup>/min (when pressurized).
2. When operated at a very low flow rate, the product with flow rate adjustment may vibrate, etc. depending on the operating conditions. Therefore, operate only after careful examination of the flow rate, pressure and piping conditions.
3. Water hammering may occur depending on the fluid pressure conditions. In most cases, improvement is possible by adjusting the pilot pressure with a speed controller, etc., but the flow rate, pressure and piping conditions should be reviewed.
4. To adjust the flow rate with flow rate adjustment and/or by-pass, open gradually starting from the fully closed condition.  
Opening is accomplished by turning the adjustment knob counterclockwise.  
Additionally, do not apply any unreasonable force to the adjustment handle when nearing a fully opened or closed condition. This may result in deformation of the orifice sheet surface or damage to the threaded part of the adjustment handle.  
The handle is in the fully closed condition when the product is shipped from the factory.  
In addition, do not apply excessive force to the adjustment knob even when the lock nut is in a tightened state. Operate the adjustment knob when the lock nut is in a loosened state.
5. After long periods of nonuse, perform a test run before beginning regular operation.
6. Since the product is packaged in a clean room, use sufficient care in handling when opened.



## **LVQ Series**

# **Air Operated Chemical Liquid Valve/Precautions 3**

Be sure to read this before handling the products.

### **Return of Product**

#### **Warning**

If the product to be returned is contaminated or is possibly contaminated with substances that are harmful to humans, for safety reasons, please contact SMC beforehand and then employ a specialist cleaning company to decontaminate the product. After the decontamination prescribed above has been carried out, submit a Product Return Request Sheet or the Detoxification/Decontamination Certificate to SMC and await SMC's approval and further instructions before attempting to return the item. Please refer to the International Chemical Safety Cards (ICSC) for a list of harmful substances.