SMC

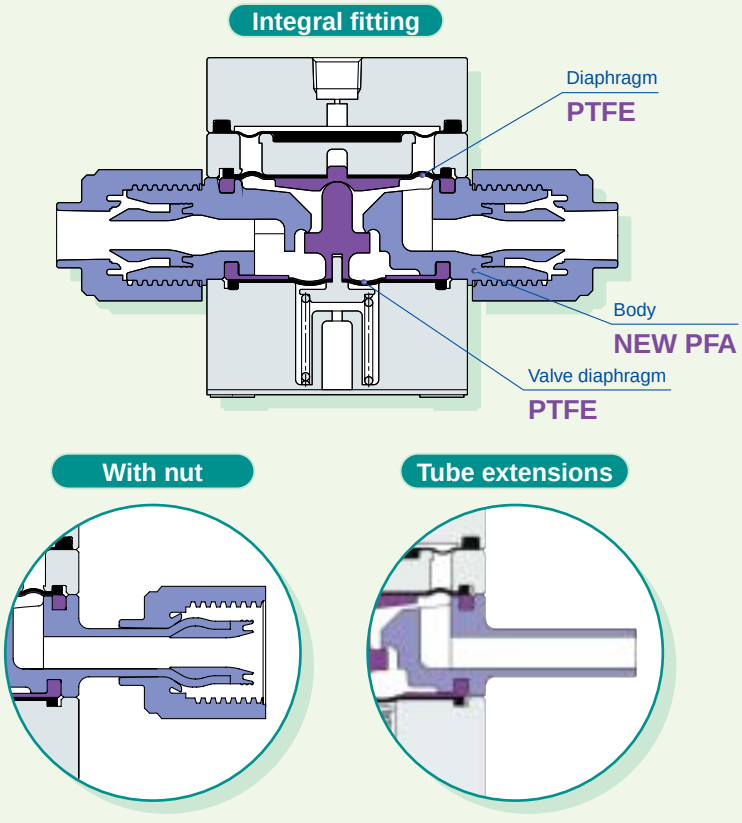
Clean Wet Series

# Clean Regulator/Fluoro Resin Type


## Washing/Assembly Procedure

**Washing parts: Body, Valve diaphragm and Diaphragm**


## Construction



# Clean Regulator/Fluoro Resin Type
# *Series SRF*

## How to Order

### Integral fitting

**SRF 1 0 – S 07 □**

**Body size**

| |
|---|
| 1 |
| 3 |
| 5 |

**Integral fitting (LQ2)**

**Pilot port thread type**

| | |
|---|---|
| — | Rc1/8 |
| N | NPT1/8 |

**Applicable tubing size (O.D. x I.D.)**

**Metric size**

| Symbol | Applicable tubing size | Applicable fitting | | |
|---|---|---|---|---|
| | | SRF10 | SRF30 | SRF50 |
| 04 | 4 x 3 | ● | | |
| 06 | 6 x 4 | ○ | ● | |
| 08 | 8 x 6 | | ● | |
| 10 | 10 x 8 | | ○ | |
| 12 | 12 x 10 | | | ● |
| 19 | 19 x 16 | | | ○ |

○: Basic size ●: With reducer

**Inch size**

| Symbol | Applicable tubing size | Applicable model | | |
|---|---|---|---|---|
| | | SRF10 | SRF30 | SRF50 |
| 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" | | | ○ |

○: Basic size ●: With reducer

Note) Tubing size is interchangeable by replacing the reducer insert bushing nut.

### With nut

**SRF 1 0 S – 1 S 07 11 □**

**Body size**

| |
|---|
| 1 |
| 3 |
| 5 |

**Fitting type**

| Symbol | Applicable fitting |
|---|---|
| 1 | LQ1 |
| 2 | LQ2 |

**Pilot port thread type**

| | |
|---|---|
| — | Rc1/8 |
| N | NPT1/8 |

**Fitting size (IN side)**

| Symbol | Fitting size Note 2) | Fitting type | Applicable model | | |
|---|---|---|---|---|---|
| | | | SRF10 | SRF30 | SRF50 |
| 07 | 2 | LQ1,2 | ○ | | |
| 11 | 3 | | ● | ○ | |
| 13 | 4 | | | ● | |
| 19 | 5 | | | | ○ |
| 25 Note 1) | 6 | LQ1 | | | ● |

○: Basic size ●: With plug-in reducer

**Fitting size (OUT side)**

| Symbol | Applicable fitting size Note 2) | Fitting type | Applicable model | | |
|---|---|---|---|---|---|
| | | | SRF10 | SRF30 | SRF50 |
| — | Same as IN side | – | – | – | – |
| 07 | 2 | LQ1,2 | ○ | | |
| 11 | 3 | | ● | ○ | |
| 13 | 4 | | | ● | |
| 19 | 5 | | | | ○ |
| 25 Note 1) | 6 | LQ1 | | | ● |

○: Basic size ●: With reducer

Note 1) Fitting type: LQ1 only

Note 2) Refer to How to Order (**LQ□□-S**) on page 2 for applicable fittings without nut (LQ type).
Select fittings of the same type and size as the one fitted to the regulator side.

### Tube extensions

**SRF 1 0 – T 07 □**

**Body size**

| |
|---|
| 1 |
| 3 |
| 5 |

**Pilot port thread type**

| | |
|---|---|
| — | Rc1/8 |
| N | NPT1/8 |

**Tubing size (O.D.)**

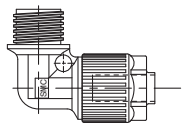
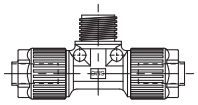
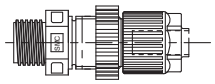
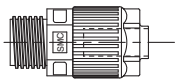
| Symbol | Tubing size | Applicable model |
|---|---|---|
| 07 | 1/4" | SRF10 |
| 11 | 3/8" | SRF30 |
| 19 | 3/4" | SRF50 |

# How to Order Fitting for Model with Nut

How to order fitting for model such as Clean Regulator/Series **SRF□0S**, when one nut (including insert bushing) of the nuts is not attached.

## LQ1 E 21 – SN

**Fitting type**

| E | T |
|---|---|
| Union elbow | Union tee |
|  |  |
| **P** | **U** |
| Panel mount union | Union |
|  |  |

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

**Applicable tubing size**

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

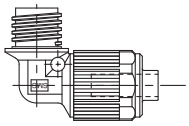
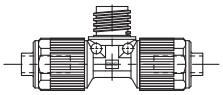
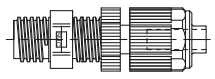
| Class | No. | Applicable tubing size (inches) | Reducing |
|---|---|---|---|
| 2 | A | 1/4" x 5/32" | ○ |
| 2 | B | 3/16" x 1/8" | ● |
| 2 | C | 1/8" x 0.086" | ● |
| 3 | A | 3/8" x 1/4" | ○ |
| 3 | B | 1/4" x 5/32" | ● |
| 4 | A | 1/2" x 3/8" | ○ |
| 4 | B | 3/8" x 1/4" | ● |
| 5 | A | 3/4" x 5/8" | ○ |
| 5 | B | 1/2" x 3/8" | ● |
| 6 | A | 1" x 7/8" | ○ |
| 6 | B | 3/4" x 5/8" | ● |

○: Basic size ●: With reducer

Note 1) Select fittings of the same size as the one fitted to the regulator side.

## LQ2 E 21 – SN

**Fitting type**

| E | T |
|---|---|
| Union elbow | Union tee |
|  |  |
| **P** | **U** |
| Panel mount union | Union |
|  |  |

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

**Applicable tubing size**

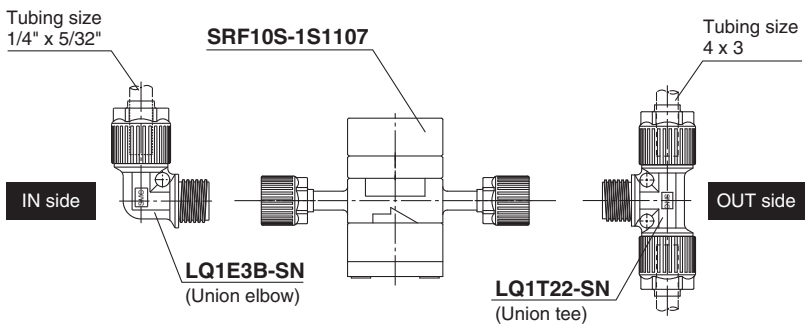
| Class | No. | Applicable tubing size (mm) | Reducing |
|---|---|---|---|
| 2 | 1 | 6 x 4 | ○ |
| 2 | 2 | 4 x 3 | ● |
| 3 | 1 | 10 x 8 | ○ |
| 3 | 2 | 8 x 6 | ● |
| 3 | 3 | 6 x 4 | ● |
| 4 | 1 | 12 x 10 | ○ |
| 4 | 2 | 10 x 8 | ● |
| 5 | 1 | 19 x 16 | ○ |
| 5 | 2 | 12 x 10 | ● |

| Class | No. | Applicable tubing size (inches) | Reducing |
|---|---|---|---|
| 2 | A | 1/4" x 5/32" | ○ |
| 2 | B | 3/16" x 1/8" | ● |
| 2 | C | 1/8" x 0.086" | ● |
| 3 | A | 3/8" x 1/4" | ○ |
| 3 | B | 1/4" x 5/32" | ● |
| 4 | A | 1/2" x 3/8" | ○ |
| 4 | B | 3/8" x 1/4" | ● |
| 5 | A | 3/4" x 5/8" | ○ |
| 5 | B | 1/2" x 3/8" | ● |

○: Basic size ●: With reducer

Note 1) Select fittings of the same size as the one fitted to the regulator side.

### Ordering example



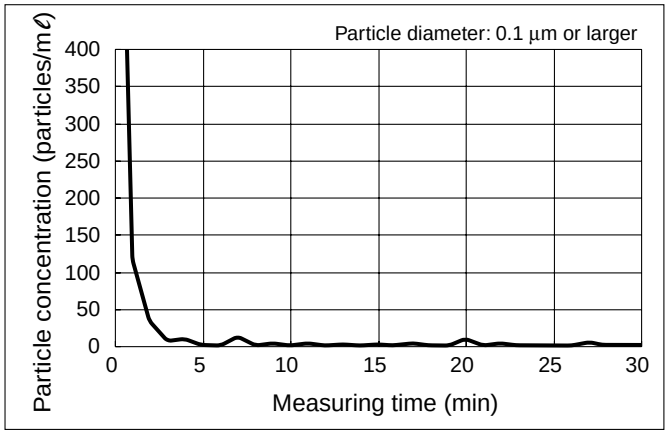

**SRF10S-1S1107** 1
**LQ1E3B-SN** (Union elbow) 1
**LQ1T22-SN** (Union tee) 1

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

## Specifications

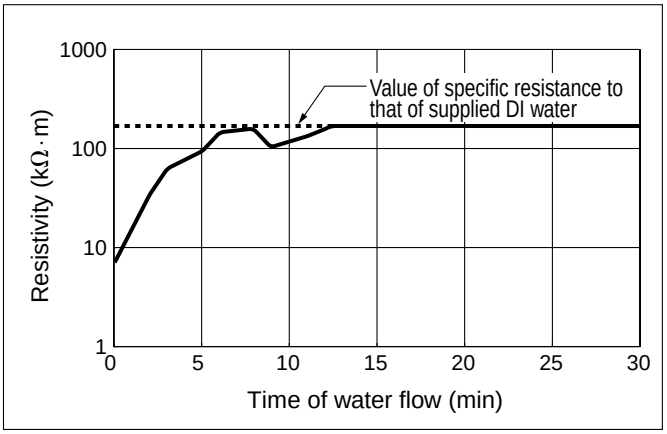
| Model | | SRF10 | SRF30 | SRF50 |
|---|---|---|---|---|
| **Proof pressure** | | 1.0 MPa | | |
| **Maximum operating pressure** | | 0.5 MPa | | |
| **Set pressure range** | | 0.02 to 0.4 MPa | | |
| **Maximum operating pressure (pilot pressure)** | | 0.5 MPa | | |
| **Fluid** | | Pure water, $N_2$ | | |
| **Ambient and fluid temperature** | | 5 to 60°C | | |
| **Valve leakage** | | 10 $cm^3$/min or less (fluid: water) | | |
| **Weight (kg)** | **Tubing** | 0.08 | 0.24 | 1.2 |
| | **Integral fittings** | 0.10 | 0.28 | 1.3 |
| | **With nut** | | | |

## Particulate Generation Characteristics




○Test method and conditions
Particle counters were installed before and after the test sample.
The amount of particle generated from the sample is determined by the difference in output values from each counter.
Flow rate of supplied DI water: 100 mℓ/min
Model: SRF30

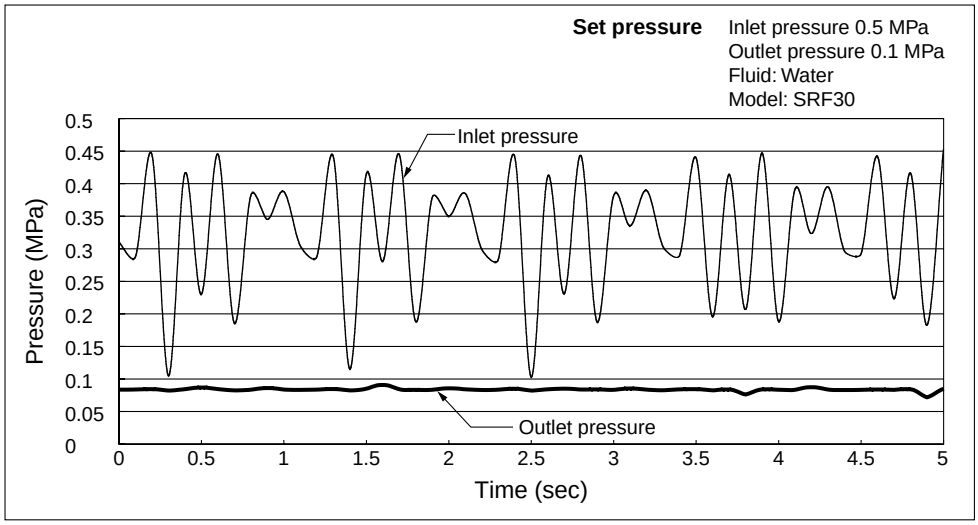
## Flow-through Characteristics



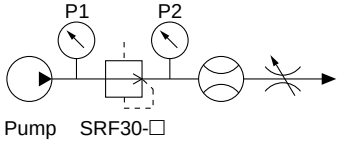

○Test method and conditions
The liquid contact portions were filled with sulphuric acid and left untouched for half an hour.
After the sulphuric acid was drained, the wetted parts are filled with DI water. The specific resistance of the liquid discharged from the outlet side of the sample was measured and recorded.
Model: SRF30

∗Data provided in this section is just one example of the actually measured values. Application examples illustrated in this flyer do not guarantee the result of applicable use of this product.

## Pressure Fluctuation (Reference value)



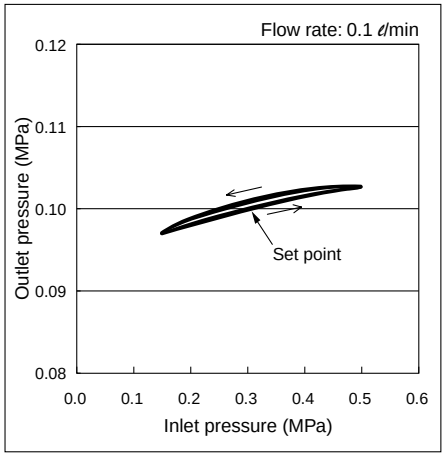

○ Test circuit/Conditions



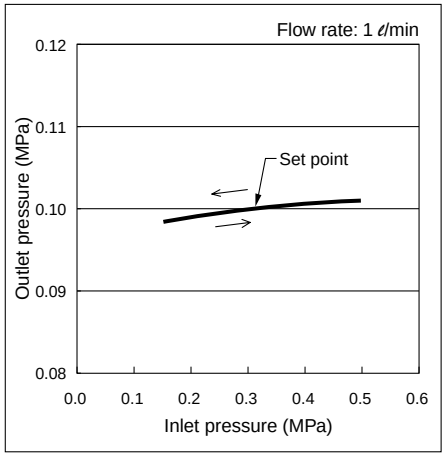
## Pressure Characteristics

**Set pressure** Inlet pressure 0.3 MPa
Outlet pressure 0.1 MPa Fluid: Water

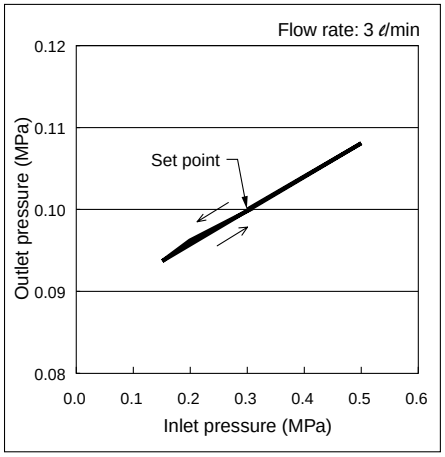
### SRF10




### SRF30



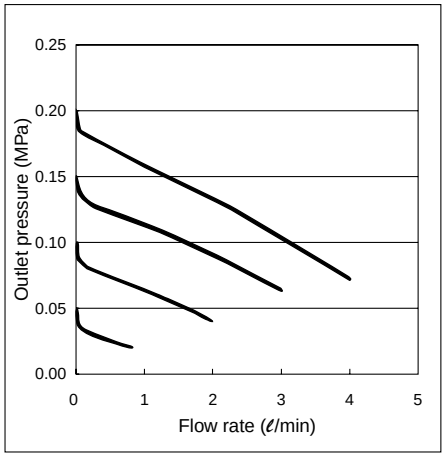

### SRF50



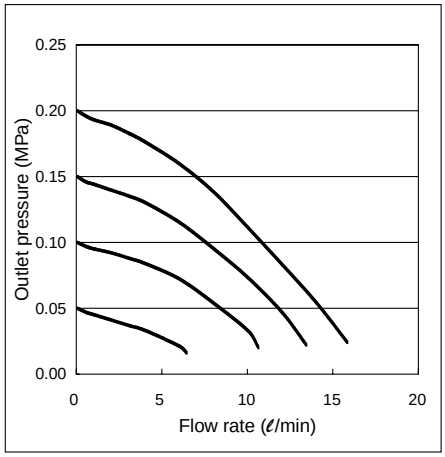

## Flow Characteristics

Inlet pressure: 0.3 MPa Fluid: Water

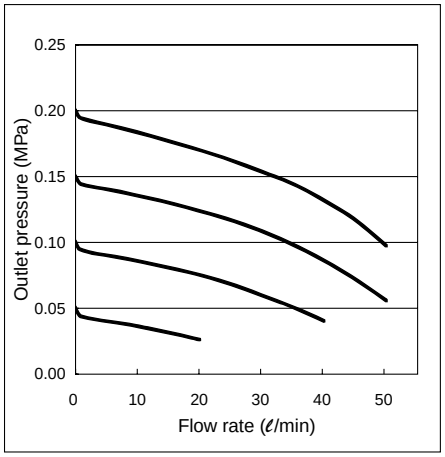
### SRF10




### SRF30



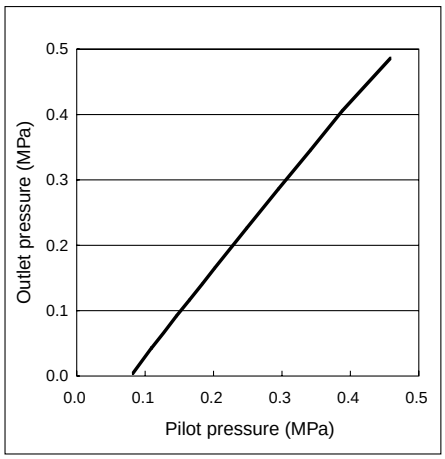

### SRF50



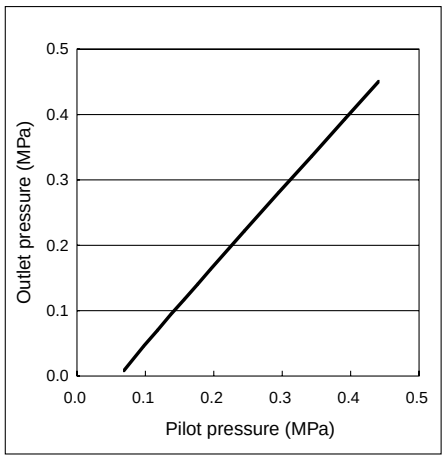

## Input/Output Characteristics

Inlet pressure: 0.5 MPa Flow rate: 0 ℓ/min (ANR) Fluid: Air

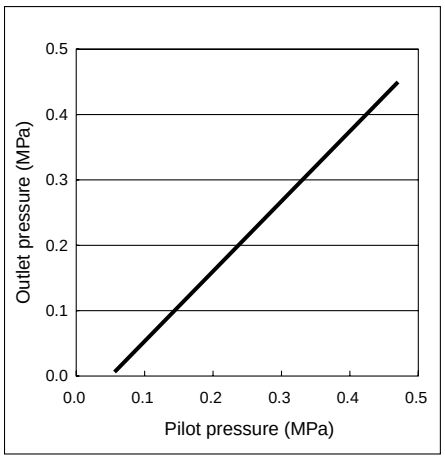
### SRF10




### SRF30

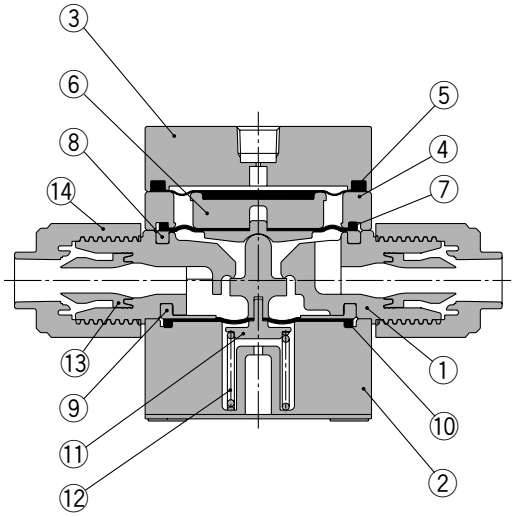


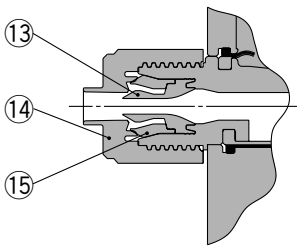

### SRF50



## Construction/SRF10, 30

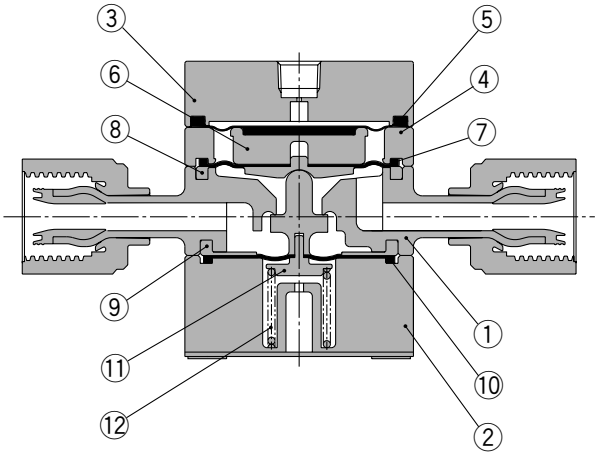
### Integral fitting



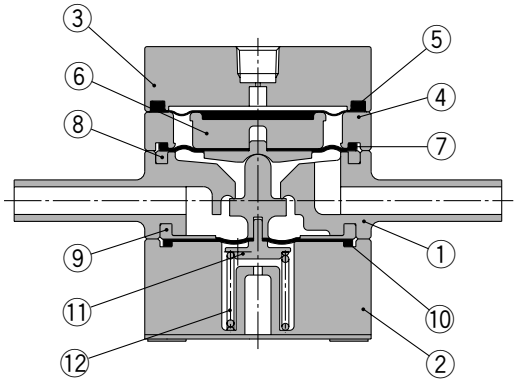




With reducer

### With nut




### Tube extensions




### Parts list

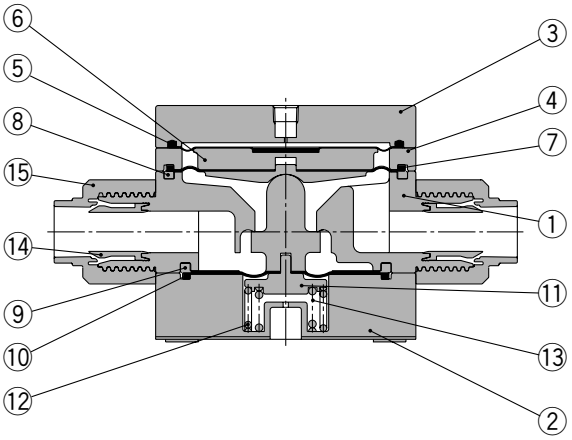
| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Body** | New PFA | |
| 2 | **Valve guide** | PVDF | |
| 3 | **Bonnet** | PPS | |
| 4 | **Spacer** | PVDF | |
| 5 | **Pilot diaphragm** | FKM | |
| 6 | **Diaphragm support** | PP | |
| 7 | **Withstand pressure diaphragm B** | FKM | |
| 8 | **Diaphragm** | PTFE | |
| 9 | **Valve diaphragm** | PTFE | |
| 10 | **Withstand pressure diaphragm A** | FKM | |
| 11 | **Spring holder** | Stainless steel 304 | Fluoro resin coating |
| 12 | **Valve spring** | Stainless steel 304 | Fluoro resin coating |

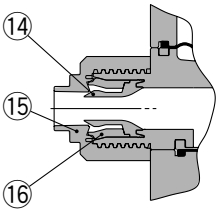
| No. | Description | Material | Note |
|---|---|---|---|
| 13 | **Insert bushing** | New PFA | |
| 14 | **Nut** | New PFA | |
| 15 | **Collar** | New PFA | |

## Construction/SRF50

### SRF50

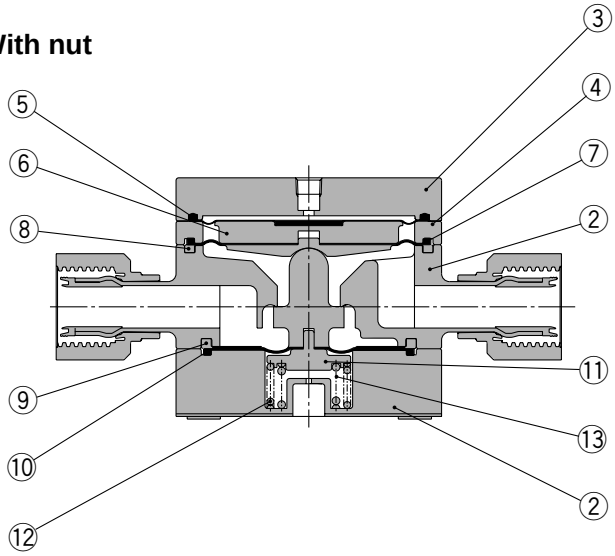
**Integral fitting**



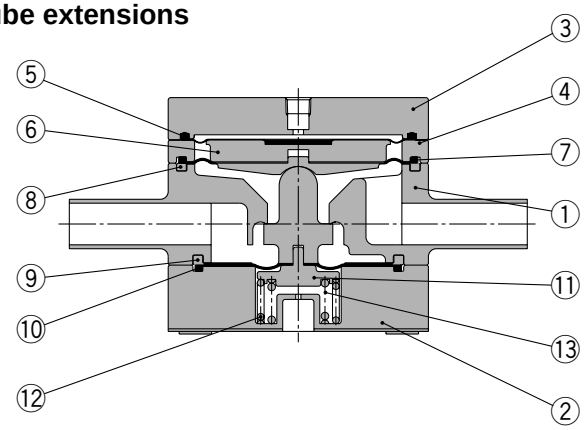




With reducer

**With nut**




**Tube extensions**



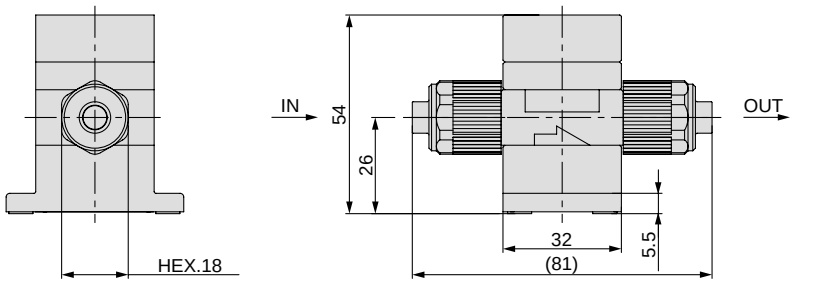

**Parts list**

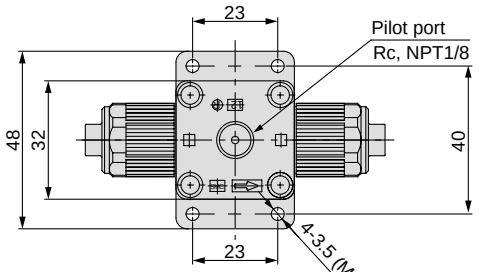
| No. | Description | Material | Note |
|---|---|---|---|
| 1 | **Body** | New PFA | |
| 2 | **Valve guide** | PVDF | |
| 3 | **Bonnet** | PPS | |
| 4 | **Spacer** | PVDF | |
| 5 | **Pilot diaphragm** | FKM | |
| 6 | **Diaphragm support** | PP | |
| 7 | **Withstand pressure diaphragm B** | FKM | |
| 8 | **Diaphragm** | PTFE | |
| 9 | **Valve diaphragm** | PTFE | |
| 10 | **Withstand pressure diaphragm A** | FKM | |
| 11 | **Spring holder** | Stainless steel 304 | Fluoro resin coating |
| 12 | **Valve spring 1** | Stainless steel 304 | Fluoro resin coating |
| 13 | **Valve spring 2** | Stainless steel 304 | Fluoro resin coating |

| No. | Description | Material | Note |
|---|---|---|---|
| 14 | **Insert bushing** | New PFA | |
| 15 | **Nut** | New PFA | |
| 16 | **Collar** | New PFA | |

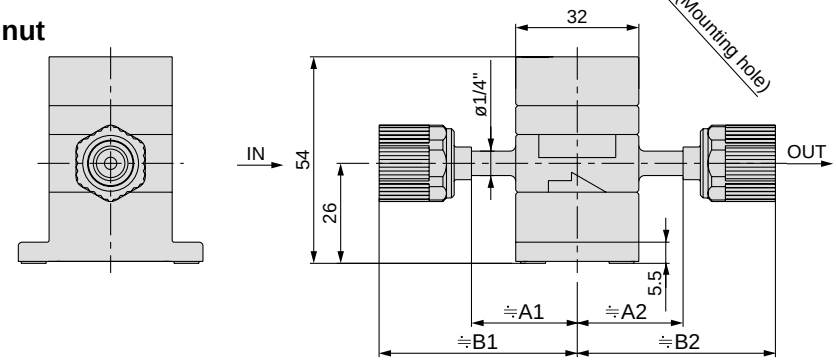
## Dimensions/SRF10

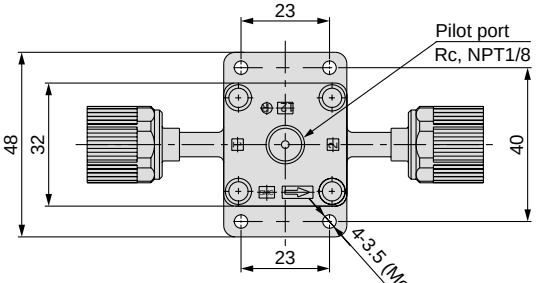
### Integral fitting



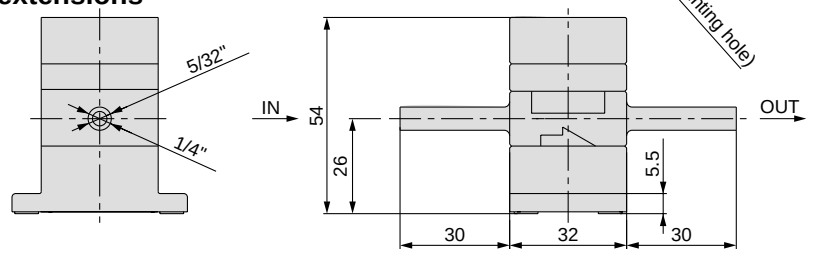



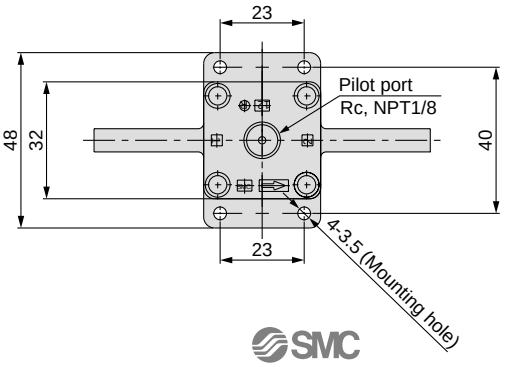

### With nut




### Tube extensions



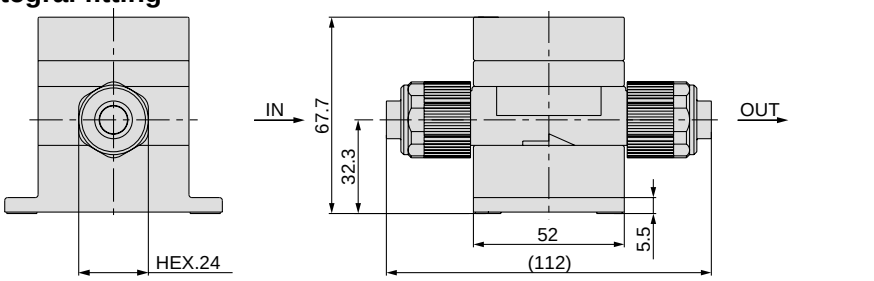



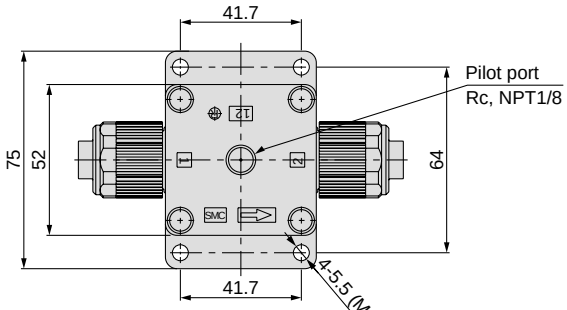

**SRF10**

| Model | A1 | A2 | B1 | B2 |
|---|---|---|---|---|
| **SRF10S-1S07** | 31 | 31 | 48 | 48 |
| **SRF10S-1S0711** | | 28 | | 51 |
| **SRF10S-1S11** | 28 | 28 | 51 | 51 |
| **SRF10S-1S1107** | | 31 | | 48 |
| **SRF10S-2S07** | 28 | 28 | 52 | 52 |
| **SRF10S-2S0711** | | 27 | | 55 |
| **SRF10S-2S11** | 27 | 27 | 55 | 55 |
| **SRF10S-2S1107** | | 28 | | 52 |

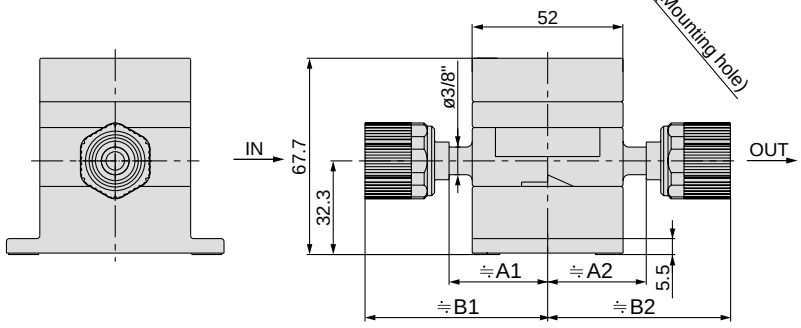
## Dimensions/SRF30

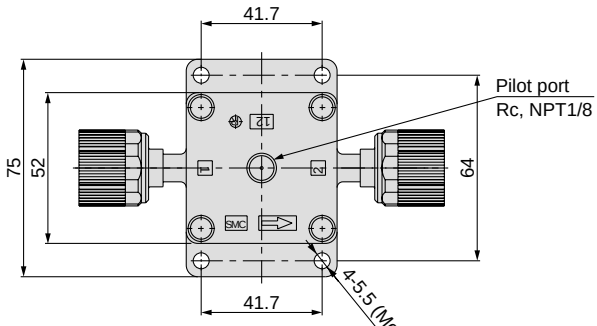
### Integral fitting



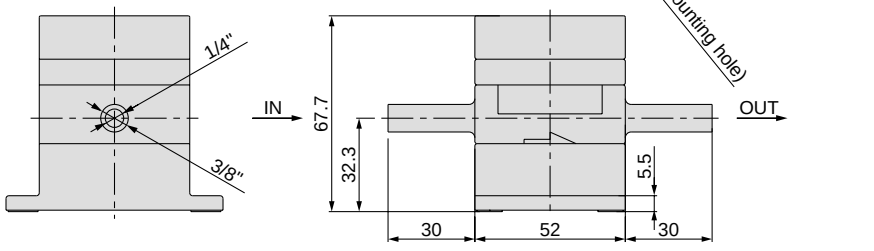



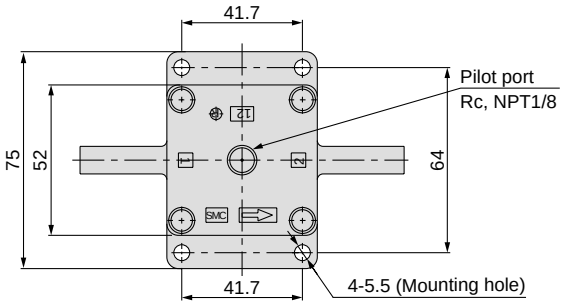

### With nut




### Tube extensions



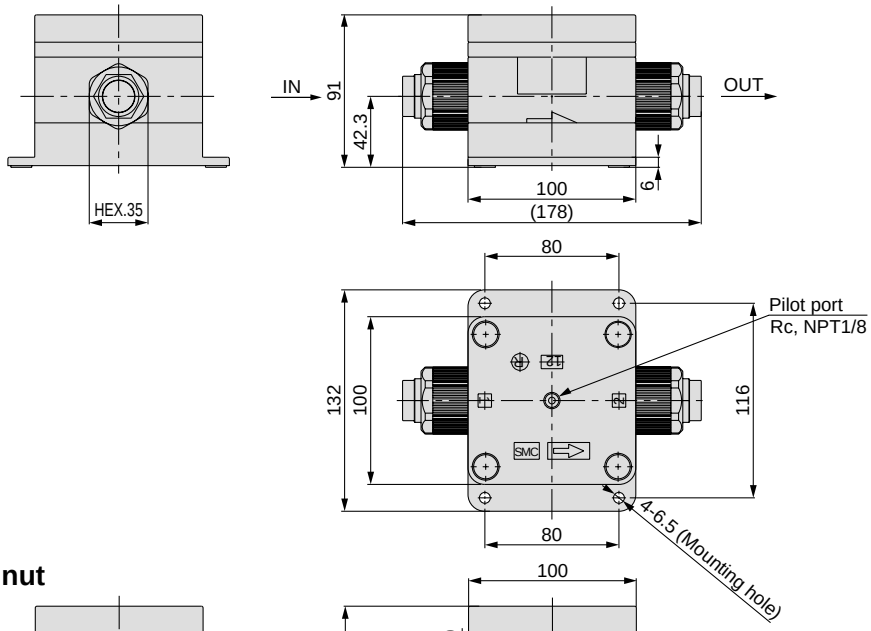




**SRF30**

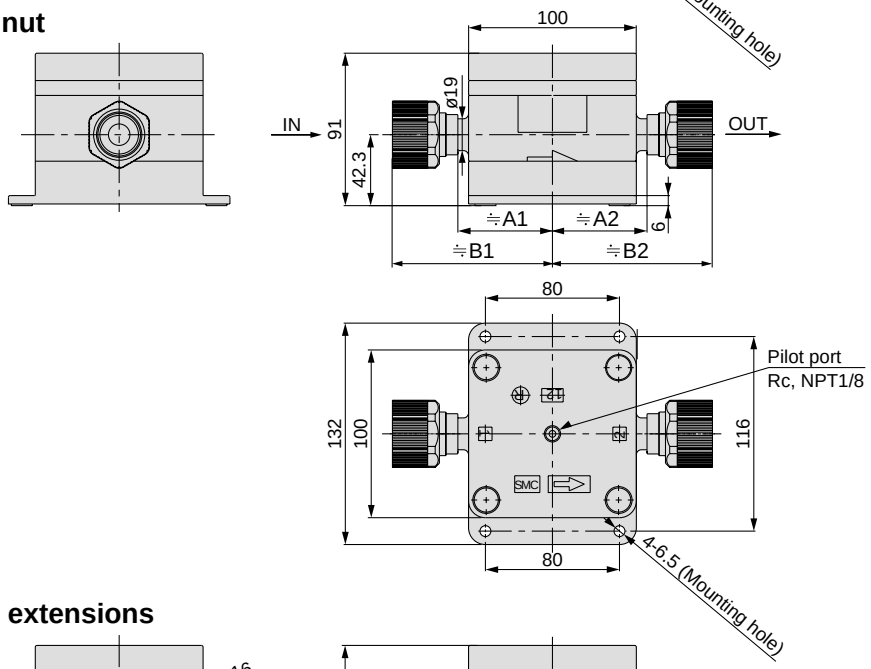
| Model | A1 | A2 | B1 | B2 |
|---|---|---|---|---|
| **SRF30S-1S11** | 35 | 35 | 58 | 58 |
| **SRF30S-1S1113** | | 34 | | 62 |
| **SRF30S-1S13** | 34 | 34 | 62 | 62 |
| **SRF30S-1S1311** | | 35 | | 58 |
| **SRF30S-2S11** | 34 | 34 | 63 | 63 |
| **SRF30S-2S1113** | | 32 | | 65 |
| **SRF30S-2S13** | 32 | 32 | 65 | 65 |
| **SRF30S-2S1311** | | 34 | | 63 |

## Dimensions/SRF50

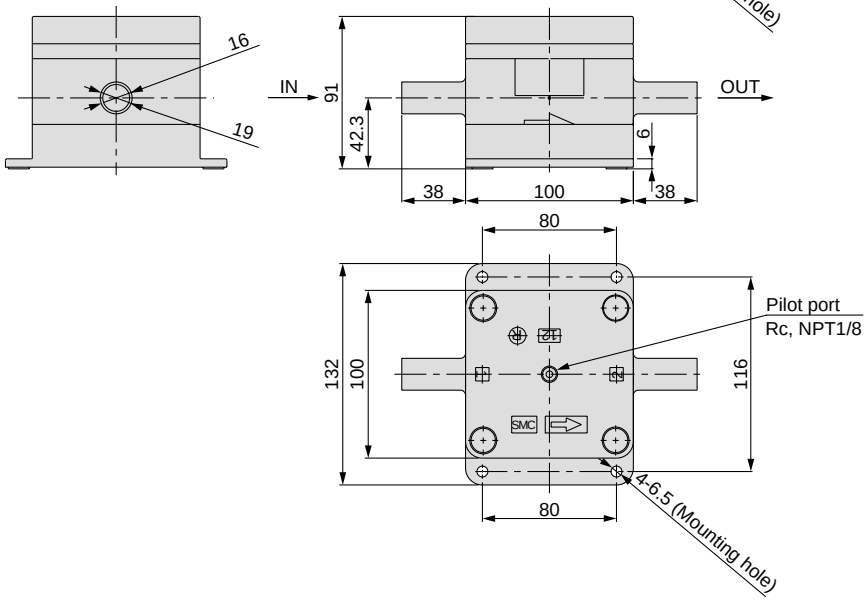
### Integral fitting




### With nut




### Tube extensions




**SRF50**

| Model | A1 | A2 | B1 | B2 |
|---|---|---|---|---|
| **SRF50S-1S19** | 58 | 58 | 91 | 91 |
| **SRF50S-1S1925** | | 55 | | 98 |
| **SRF50S-1S25** | 55 | 55 | 98 | 98 |
| **SRF50S-1S2519** | | 58 | | 91 |
| **SRF50S-2S19** | 56 | 56 | 95 | 95 |

# Fitting and Special Tools

## Fittings

### Changing tubing sizes

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

| Body class | Tubing O.D. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Metric sizes | | | | | | Inch sizes | | | | | |
| | 4 | 6 | 8 | 10 | 12 | 19 | 1/8" | 3/16" | 1/4" | 3/8" | 1/2" | 3/4" |
| **2** | ● | ○ | — | — | — | — | ● | ● | ○ | — | — | — |
| **3** | — | ● | ● | ○ | — | — | — | — | ● | ○ | — | — |
| **5** | — | — | — | — | ● | ○ | — | — | — | — | ● | ○ |

**Parts composition**

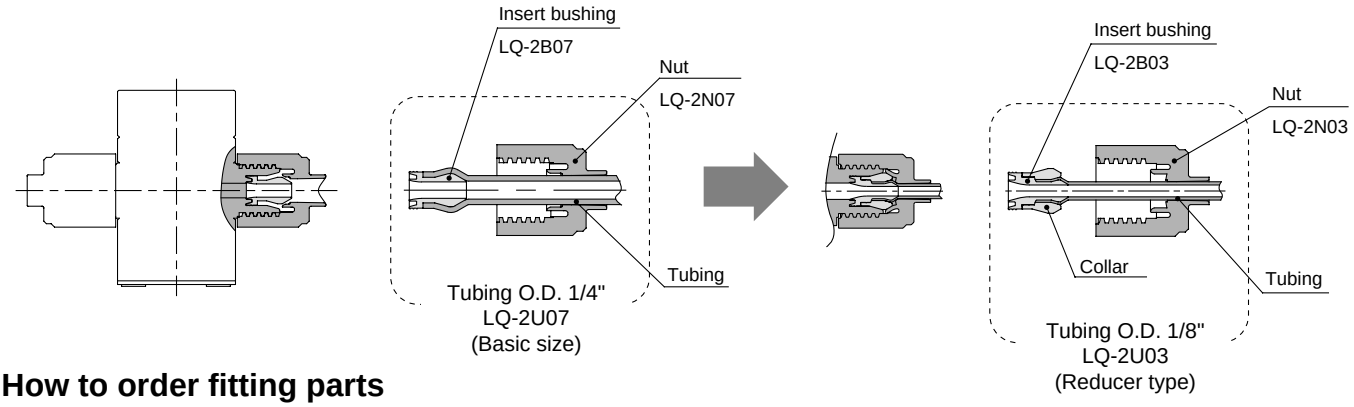
| | Component parts | | |
|---|---|---|---|
| | Nut | Insert | Collar (insert assembly) |
| ○ Basic size | Yes | Yes | No |
| ● Reducer type | Yes | Yes | Yes |

#### Changing the tubing size

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

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

Note) Tubing is sold separately.




### How to order fitting parts

**LQ − 2 U 03**

∗ Type U is recommended when changing the tubing size.

**Body class**

| Symbol | Body class | Applicable model | | |
|---|---|---|---|---|
| | | SRF10 | SRF30 | SRF50 |
| **2** | 2 | ● | | |
| **3** | 3 | | ● | |
| **5** | 5 | | | ● |

**Type of parts**

| Symbol | Parts |
|---|---|
| **U** | Nut & Insert bushing |
| **B** | Insert bushing |
| **N** | Nut |

**Tubing size**

| Symbol | Tubing O.D. | Body class | Applicable model | | |
|---|---|---|---|---|---|
| | | | SRF10 | SRF30 | SRF50 |
| **03** | 1/8" | 2 | ● | | |
| **04** | ø4 | | | | |
| **05** | 3/16" | | | | |
| **06** | ø6 | | | | |
| **07** | 1/4" | | | | |
| **06** | ø6 | 3 | | ● | |
| **08** | ø8 | | | | |
| **10** | ø10 | | | | |
| **07** | 1/4" | | | | |
| **11** | 3/8" | | | | |
| **12** | ø12 | 5 | | | ● |
| **13** | 1/2" | | | | |
| **19** | 3/4", ø19 | | | | |

## Special Tools

### How to order fitting jig

**LQ − G J □ − □ − □**

**Insert pin material**

| | |
|---|---|
| **Nil** | Resin |
| **S** | Stainless steel (J/K type ony) |

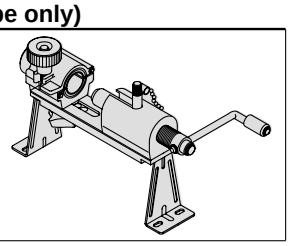
**Insert pin/Holder type**

| | |
|---|---|
| **Nil** | Metric size |
| **N** | Inch size |

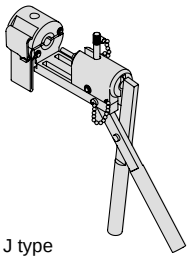
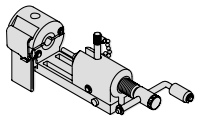
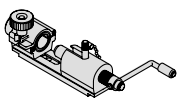
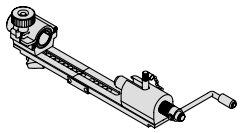
Note 1) Compatible pins and holders are included with all sizes. (in parts case)

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

| Symbol | Option |
|---|---|
| **Nil** | None |
| **B** | With brackets |



**Type**

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

**Option**

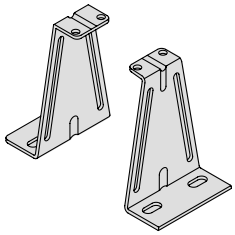
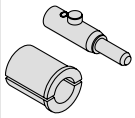
| Description | | Part no. |
|---|---|---|
| Bracket assembly |  | LQ-GBL |

**Table 1 Tubing size symbols**

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

**Replacement parts**

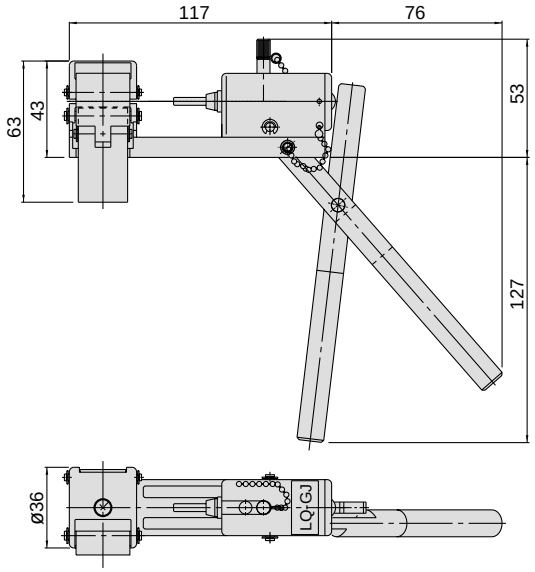
| Description | | Part No. |
|---|---|---|
| Insert pin holder assembly (with the parts case) |  | **LQ-GP J □ - □**<br>Type<br>Insert pin/ Holder type<br>Insert pin material (J/K type only)<br>**Nil** Metric sizes<br>**S** Inch sizes<br>**Nil** Resin<br>**S** Stainless steel |
| Insert pin (single) |  | **LQ-GP 2 J □ - 07**<br>Body class (Refer to Table 1)<br>Type<br>Tubing size symbol (Refer to Table 1)<br>Insert pin material (J/K type only)<br>**Nil** Resin<br>**S** Stainless steel |
| Holder (single) |  | **LQ-GH J - 07**<br>Tubing size symbol (Refer to Table 1)<br>Type |

Note1) Replacement part type J shows the parts for LQ-GJ and LQ-GK.
Replacement part type L shows the parts for LQ-GL and LQ-GM.

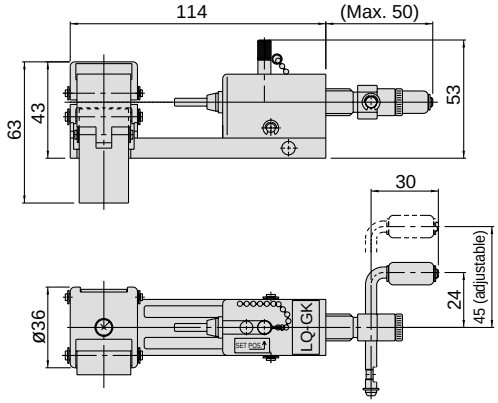
## Special Tools

### Dimensions

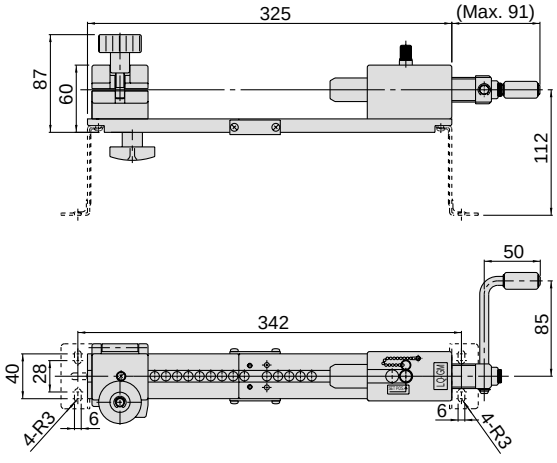
#### LQ-GJ



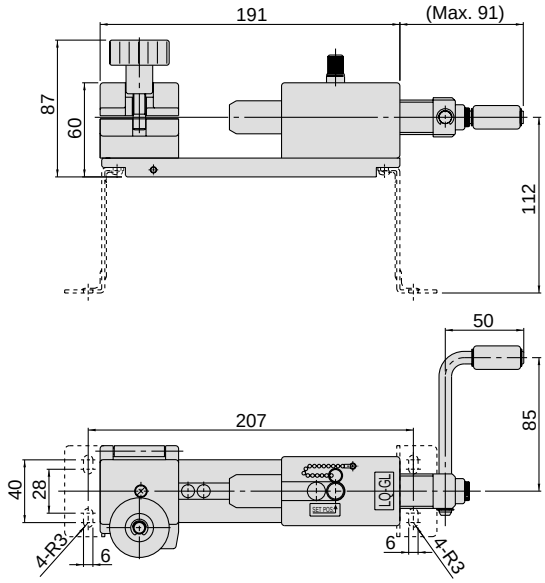

#### LQ-GK




#### LQ-GM



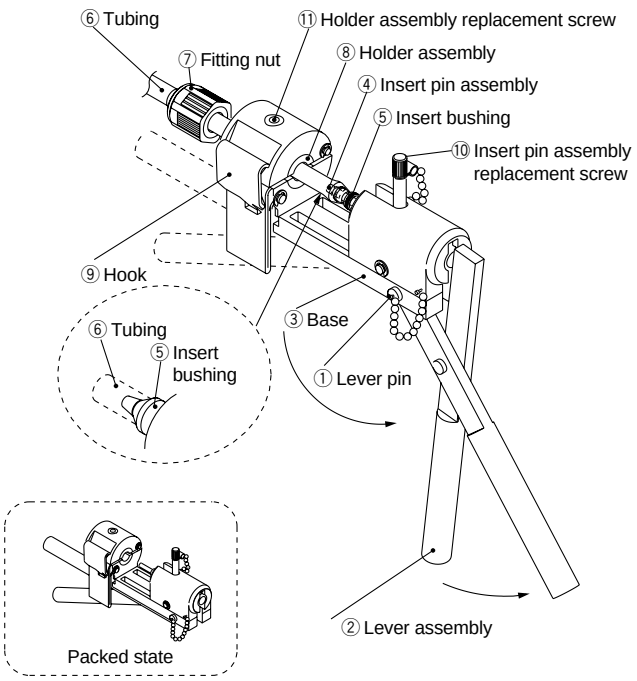

#### LQ-GL



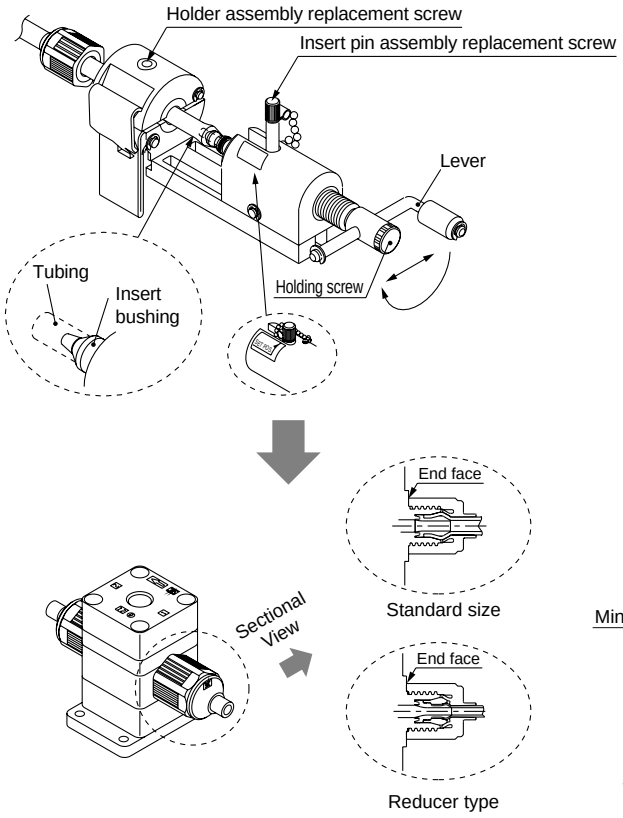
## Fitting Assembly Procedure

Assemble fittings following the procedure shown below.

### J type




### K type




### J type fitting assembly procedure

1. Pull out the **lever pin** ①. Rotate the **lever assembly** ② to align the holes on the **lever assembly** ② and the **base** ③. Insert the **lever pin** ① into the holes to fix the **lever assembly** ②.
2. Place the **insert bushing** ⑤ on the **insert pin assembly** ④.
3. Cut the end of the **tubing** ⑥ at a right angle and pass it through the **fitting nut** ⑦. After placing the **tubing** ⑥ in the **holder assembly** ⑧, push it onto the **insert bushing** ⑤ until it stops and clamp it with the **hook** ⑨.

   **⚠Caution**
   - **When the tubing ⑥ is curved, straighten it out before using it.**
   - **The tubing ⑥ may slip if there is oil or dust, etc., on the holder assembly ⑧. Remove the contamination using alcohol or another suitable cleaner.**
4. Press the **insert bushing** ⑤ into the **tubing** ⑥ by turning the **lever assembly** ②.
5. To replace the **insert pin assembly** ④ and **holder assembly** ⑧, use the **insert pin assembly replacement screw** ⑩ and the **holder assembly replacement screws** ⑪, respectively.

### K type fitting assembly procedure

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

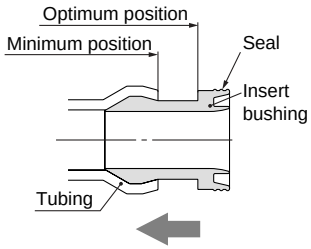
1 → 5 Refer to J type assembly procedure.

6. Tighten the **fitting nut** ⑦ until it reaches the prescribed position on the body (end face). As a guide, refer to the proper tightening torques shown below.

**Nut tightening torque for piping**

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

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

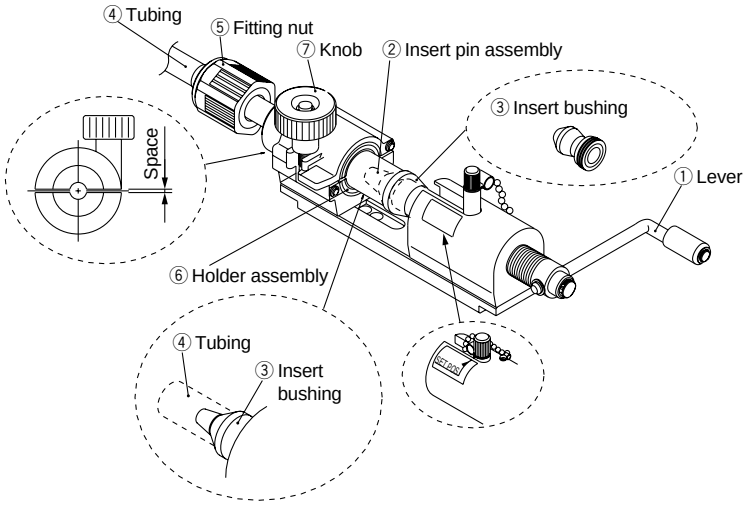



**⚠Precautions on installation**
- **Be careful not to scratch or dent the seal of the insert bushing. (Refer to the illustration on the left.)**
- **When the insert bushing inserted, its tubing end should be closer to seal side than the minimum position. (Refer to the illustration on the left.)**

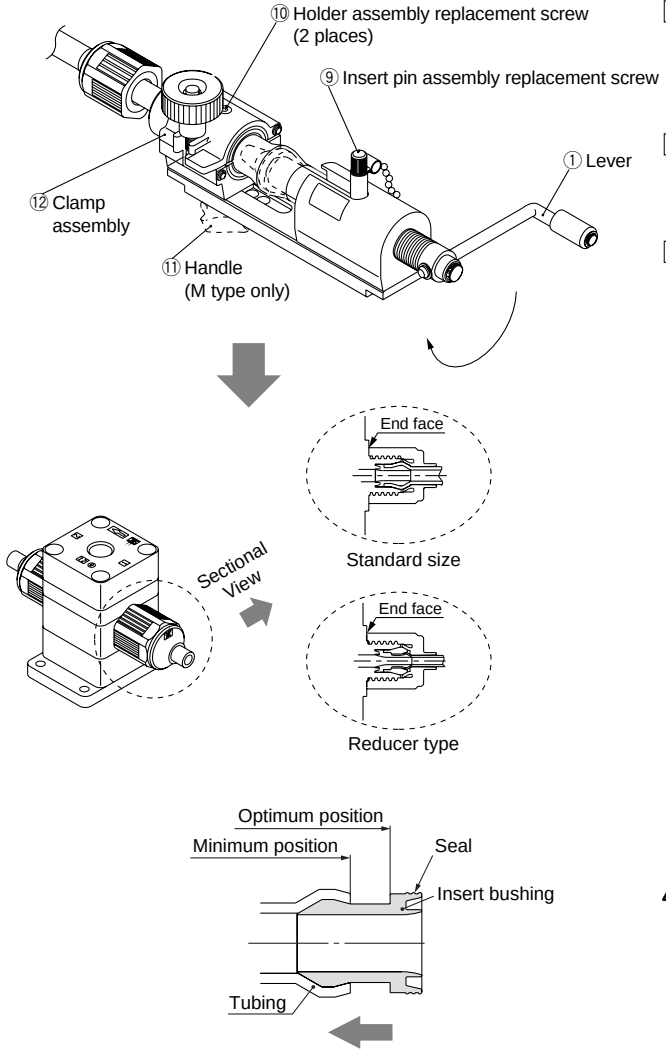
## Fitting Assembly Procedure

Assemble fittings following the procedure shown below.

### L type




### M type







### L/M type fitting assembly procedure

1. Turn the **lever** ① and move to SET POS.
2. Place the **insert bushing** ③ on the **insert pin assembly** ②.
3. Cut the end of the **tubing** ④ at a right angle and pass it through the **fitting nut** ⑤. After placing the **tubing** ④ in the **holder assembly** ⑥, push it onto the **insert bushing** ③ until it stops and clamp it with the **knob** ⑦. When tightening the **tubing** ④ with the **knob** ⑦, maintain uniform clearance on both sides of the holder.

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

**Nut tightening torque for piping**

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

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

### ⚠Precautions on installation

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

# Applicable Fluids

## The wetted part material and fluid compatibility check list

| Fluid | Compatibility | |
|---|---|---|
| | PFA (Body) | PTFE (Diaphragm) |
| **Acetone** | ○ Note 1) | |
| **Ammonium hydroxide** | ○ | |
| **Isobutyl alcohol** | ○ Note 1) | |
| **Isopropyl alcohol** | ○ Note 1) | |
| **Hydrochloric acid** | ○ | |
| **Hydrogen peroxide** | ○ | |
| **Ethyl acetate** | ○ Note 1) | |
| **Butyl acetate** | ○ Note 1) | |
| **Nitric acid** | ○ | |
| **DI water** | ◎ | |
| **Sodium hydroxide** | ○ | |
| **Nitrogen gas** | ◎ | |
| **Toluene** | ○ Note 1) | |
| **Hydrofluoric acid** | ○ | |
| **Sulfuric acid** | ○ | |
| **Phosphoric acid** | ○ | |

Table symbols
◎ : The fluid is compatible with the material, and can be used with the products.
○ : In some cases even when the fluid is compatible with the material, it may still permeate from the components and effect other materials.

Note 1) Since static electricity may be generated, implement suitable countermeasures.

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

# *Series SRF*
# Safety Instructions

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

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

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

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

Note 1) ISO 4414: Pneumatic fluid power --General rules relating to systems.
Note 2) JIS B 8370 : Pneumatic system axiom.

## ⚠ Warning

1. **The compatibility of equipment is the responsibility of the person who designs the system or decides its specifications.**
   Since the products specified here are used in various operating conditions, their compatibility for the specific system must be based on specifications or after analysis and/or tests to meet your specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified. Referring to the latest catalogue information with a view to giving due consideration to any possibility of equipment failure when configuring a system.
2. **Only trained personnel should operate machinery and equipment.**
   Assembly, handling or maintenance of machinery and equipment should be performed by trained and experienced operators.
3. **Do not service machinery/equipment or attempt to remove components until safety is confirmed.**
4. **To promote safe operation, be sure to observe company standards and legal regulations, etc.**
   Refer to ISO4414, JIS B 8370 (pneumatic system axiom), labor health and safety laws and other safety regulations.

# Series SRF
# Clean Regulator/Fluoro Resin Type/Precautions 1

**Be sure to read before handling.**

## Design and Selection

### ⚠Warning

**1. Confirm the specifications.**

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

**2. Fluids**

Operate after confirming the compatibility of the product's component materials with fluids, using the check list on page 15. Contact SMC regarding fluids other than those in the check list.

**3. Residual pressure relief is not possible when the inlet pressure is released.**

In the case of series SRF, when the inlet pressure is released with the condition that the pressure at outlet side is maintained, the residual pressure cannot be released. If it will be necessary to eliminate pressure from the outlet side, a circuit should be provided for residual pressure relief.

### ⚠Caution

**1. Pressure increase in the closed circuit.**

Series SRF allows 10 $cm^3$/nm of valve leakage from inlet side to outlet side. The outlet pressure may increase when used in a closed circuit. When closing the outlet side, use a bypass circuit as an opening circuit.

**2. Depends on operating conditions, oscillation (buzz) may occur even when used within the specification range detailed in this catalogue. Consult SMC for details.**

## Mounting

### ⚠Caution

**1. Open the sealed package inside a clean room.**

This product is packed in sealed double packaging in a clean room. It is recommended that the inside packaging is opened in a clean room or in other clean environments.

**2. Ensure space for maintenance**

Ensure the necessary space for maintenance activities.

**3. Flush out the piping.**

Connect these products to piping only after it has been flushed and cleaned properly. If debris or scale etc. remains in the piping, this can cause faulty operation or failure.

**4. Confirm the mounted orientation of the product.**

If mounted backwards, the device will not operate properly.

**5. When piping fittings to the pilot port, use fittings with resin thread.**

Fittings with metal thread may damage the pilot port.

## Operating Air Supply

### ⚠Warning

**1. Use clean air.**

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

### ⚠Caution

**1. When adjusting the pilot pressure, the SMC precision regulator Series IR/ARP, is recommended.**

# Clean Regulator/Fluoro Resin Type/Precautions 2

**Be sure to read before handling.**

## Pressure Adjustment

### ⚠Warning

**1. Check the inlet, outlet, and pilot pressure indicators while undertaking pressure and flow settings.**

Pressures over the regulated range may cause damage to the internal parts.

### ⚠Caution

**1. Without consumption of the outlet side flow, the outlet pressure will not decrease along with the pilot pressure decrease.**

As this product is not fitted with a relief mechanism, without consumption of the outlet side flow, the outlet pressure will not decrease along with the pilot pressure decrease.

**2. Confirm the inlet pressure.**

Set the outlet pressure to no more than 80% of the supply pressure.

**3. When the inlet pressure is fluctuating, take caution to the setting value of the outlet pressure.**

When the setting value of the outlet pressure is over the inlet pressure, the outlet pressure cannot be stabilized.

**4. When adjusting the flow, set a throttle on the outlet side of the product.**

Without a throttle, the stable adjustment of the flow cannot be achieved.

**5. Do not use fluid containing solid matter.**

This will cause faulty operation.

## Maintenance

### ⚠Warning

**1. Before removing equipment or compressed air supply/exhaust devices, shut off the air and power supplies, and exhaust compressed air from inside the system. Further, when restarting equipment after remounting or replacement, first confirm safety and then check the equipment for normal operation.**

**2. After using chemicals or solvent, remove any residual chemicals using de-ionized water and air before the next operation.**

**3. Do not disassemble the product. Products which have been disassembled cannot be guaranteed.**

If disassembly is necessary, consult SMC.

## EUROPEAN SUBSIDIARIES:


**Austria**
SMC Pneumatik GmbH (Austria).
Girakstrasse 8, A-2100 Korneuburg
Phone: +43 2262-62280, Fax: +43 2262-62285
E-mail: office@smc.at
http://www.smc.at

**Belgium**
SMC Pneumatics N.V./S.A.
Nijverheidsstraat 20, B-2160 Wommelgem
Phone: +32 (0)3-355-1464, Fax: +32 (0)3-355-1466
E-mail: post@smcpneumatics.be
http://www.smcpneumatics.be

**Bulgaria**
SMC Industrial Automation Bulgaria EOOD
16 kliment Ohridski Blvd., fl.13 BG-1756 Sofia
Phone:+359 2 9744492, Fax:+359 2 9744519
E-mail: office@smc.bg
http://www.smc.bg

**Croatia**
SMC Industrijska automatika d.o.o.
Crnomerec 12, 10000 ZAGREB
Phone: +385 1 377 66 74, Fax: +385 1 377 66 74
E-mail: office@smc.hr
http://www.smceu.com

**Czech Republic**
SMC Industrial Automation CZ s.r.o.
Hudcova 78a, CZ-61200 Brno
Phone: +420 5 414 24611, Fax: +420 5 412 18034
E-mail: office@smc.cz
http://www.smc.cz

**Denmark**
SMC Pneumatik A/S
Knudsminde 4B, DK-8300 Odder
Phone: +45 70252900, Fax: +45 70252901
E-mail: smc@smc-pneumatik.dk
http://www.smcdk.com

**Estonia**
SMC Pneumatics Estonia OÜ
Laki 12-101, 106 21 Tallinn
Phone: +372 (0)6 593540, Fax: +372 (0)6 593541
E-mail: smc@smcpneumatics.ee
http://www.smcpneumatics.ee

**Finland**
SMC Pneumatics Finland OY
PL72, Tiistinniityntie 4, SF-02031 ESPOO
Phone: +358 207 513513, Fax: +358 207 513595
E-mail: smcfi@smc.fi
http://www.smc.fi

**France**
SMC Pneumatique, S.A.
1, Boulevard de Strasbourg, Parc Gustave Eiffel
Bussy Saint Georges F-77607 Marne La Vallee Cedex 3
Phone: +33 (0)1-6476 1000, Fax: +33 (0)1-6476 1010
E-mail: contact@smc-france.fr
http://www.smc-france.fr

**Germany**
SMC Pneumatik GmbH
Boschring 13-15, D-63329 Egelsbach
Phone: +49 (0)6103-4020, Fax: +49 (0)6103-402139
E-mail: info@smc-pneumatik.de
http://www.smc-pneumatik.de

**Greece**
S. Parianopoulus S.A.
7, Konstantinoupoleos Street, GR-11855 Athens
Phone: +30 (0)1-3426076, Fax: +30 (0)1-3455578
E-mail: parianos@hol.gr
http://www.smceu.com

**Hungary**
SMC Hungary Ipari Automatizálási Kft.
Budafoki ut 107-113, H-1117 Budapest
Phone: +36 1 371 1343, Fax: +36 1 371 1344
E-mail: office@smc-automation.hu
http://www.smc-automation.hu

**Ireland**
SMC Pneumatics (Ireland) Ltd.
2002 Citywest Business Campus, Naas Road, Saggart, Co. Dublin
Phone: +353 (0)1-403 9000, Fax: +353 (0)1-464-0500
E-mail: sales@smcpneumatics.ie
http://www.smcpneumatics.ie

**Italy**
SMC Italia S.p.A
Via Garibaldi 62, I-20061Carugate, (Milano)
Phone: +39 (0)2-92711, Fax: +39 (0)2-9271365
E-mail: mailbox@smcitalia.it
http://www.smcitalia.it

**Latvia**
SMC Pneumatics Latvia SIA
Smerla 1-705, Riga LV-1006, Latvia
Phone: +371 (0)777-94-74, Fax: +371 (0)777-94-75
E-mail: info@smclv.lv
http://www.smclv.lv

**Lithuania**
UAB Ottensten Lietuva
Savanoriu pr. 180, LT-2600 Vilnius, Lithuania
Phone/Fax: +370-2651602

**Netherlands**
SMC Pneumatics BV
De Ruyterkade 120, NL-1011 AB Amsterdam
Phone: +31 (0)20-5318888, Fax: +31 (0)20-5318880
E-mail: info@smcpneumatics.nl
http://www.smcpneumatics.nl

**Norway**
SMC Pneumatics Norway A/S
Vollsveien 13 C, Granfos Næringspark N-1366 Lysaker
Tel: +47 67 12 90 20, Fax: +47 67 12 90 21
E-mail: post@smc-norge.no
http://www.smc-norge.no

**Poland**
SMC Industrial Automation Polska Sp.z.o.o.
ul. Konstruktorska 11A, PL-02-673 Warszawa,
Phone: +48 22 548 5085, Fax: +48 22 548 5087
E-mail: office@smc.pl
http://www.smc.pl

**Portugal**
SMC Sucursal Portugal, S.A.
Rua de Engº Ferreira Dias 452, 4100-246 Porto
Phone: +351 22-610-89-22, Fax: +351 22-610-89-36
E-mail: postpt@smc.smces.es
http://www.smces.es

**Romania**
SMC Romania srl
Str Frunzei 29, Sector 2, Bucharest
Phone: +40 213205111, Fax: +40 213261489
E-mail: smcromania@smcromania.ro
http://www.smcromania.ro

**Russia**
SMC Pneumatik LLC.
36/40 Sredny pr. St. Petersburg 199004
Phone.:+812 118 5445, Fax:+812 118 5449
E-mail: smcfa@peterlink.ru
http://www.smc-pneumatik.ru

**Slovakia**
SMC Priemyselná Automatizáciá, s.r.o.
Námestie Martina Benku 10, SK-81107 Bratislava
Phone: +421 2 444 56725, Fax: +421 2 444 56028
E-mail: office@smc.sk
http://www.smc.sk

**Slovenia**
SMC industrijska Avtomatika d.o.o.
Grajski trg 15, SLO-8360 Zuzemberk
Phone: +386 738 85240 Fax: +386 738 85249
E-mail: office@smc-ind-avtom.si
http://www.smc-ind-avtom.si

**Spain**
SMC España, S.A.
Zuazobidea 14, 01015 Vitoria
Phone: +34 945-184 100, Fax: +34 945-184 124
E-mail: post@smc.smces.es
http://www.smces.es

**Sweden**
SMC Pneumatics Sweden AB
Ekhagsvägen 29-31, S-141 71 Huddinge
Phone: +46 (0)8-603 12 00, Fax: +46 (0)8-603 12 90
E-mail: post@smcpneumatics.se
http://www.smc.nu

**Switzerland**
SMC Pneumatik AG
Dorfstrasse 7, CH-8484 Weisslingen
Phone: +41 (0)52-396-3131, Fax: +41 (0)52-396-3191
E-mail: info@smc.ch
http://www.smc.ch

**Turkey**
Entek Pnömatik San. ve Tic Ltd. Sti.
Perpa Tic. Merkezi Kat: 11 No: 1625, TR-80270 Okmeydani Istanbul
Phone: +90 (0)212-221-1512, Fax: +90 (0)212-221-1519
E-mail: smc-entek@entek.com.tr
http://www.entek.com.tr

**UK**
SMC Pneumatics (UK) Ltd
Vincent Avenue, Crownhill, Milton Keynes, MK8 0AN
Phone: +44 (0)800 1382930 Fax: +44 (0)1908-555064
E-mail: sales@smcpneumatics.co.uk
http://www.smcpneumatics.co.uk


## OTHER SUBSIDIARIES WORLDWIDE:

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**SMC CORPORATION** 1-16-4 Shimbashi, Minato-ku, Tokio 105 JAPAN; Phone:03-3502-2740 Fax:03-3508-2480



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