

# Clean Regulator/Fluororesin Type

## Series SRF

Clean Wet Series



Wetted part materials  
**Body: New PFA**  
**Diaphragm: PTFE**

Recommended maximum flow rate

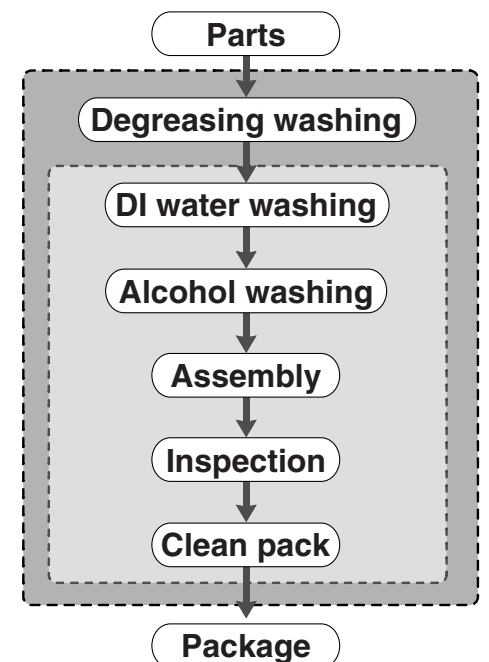
2 l/min	SRF10
5 l/min	SRF30
20 l/min	SRF50

Inlet pressure: 0.3 MPa, Fluid: Water

- ARJ
- AR425 to 935
- AMR
- ARM
- ARP
- IR
- IRV
- VEX1□
- SRH
- SRP
- SRF**
- ARX20
- VCHR
- ITV
- IC
- PVQ
- VEF VEP
- VER
- VEA
- VY2
- VBA VBAT
- AP100

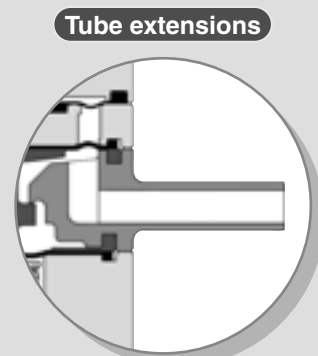
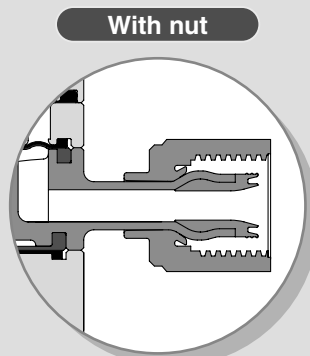
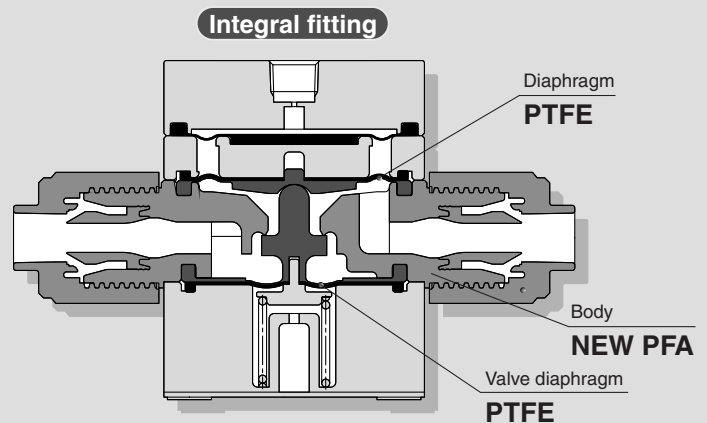
### Washing/Assembly Procedure

Washing parts: Body, Valve diaphragm and Diaphragm



Working atmosphere Class 100  
 Working atmosphere Class 10000

### Construction



# Clean Regulator/Fluororesin Type Series SRF

RoHS

## How to Order

### Integral fittings



SRF 1 0 - S 07 [ ] - [ ]

Body size  
1  
3  
5

Integral fittings (LQ2)

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

Metric size

Symbol	Applicable tubing size	Applicable model		
		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.

Made to Order  
(Refer to page 619 for details.)

Nil	Standard
X401	Rotating the mounting hole 90°

Pilot port thread type

Nil	Rc 1/8
N	NPT 1/8

### With nut



SRF 1 0 S - 1 S 07 11 [ ] - [ ]

Body size  
1  
3  
5

Fitting type

Symbol	Applicable fittings
1	LQ1
2	LQ2

Fitting size (IN side)

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

○: Basic size ●: With plug-in reducer

Fitting size (OUT side)

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

○: Basic size ●: With reducer

Note 1) Fitting type: LQ1 only

Note 2) Refer to How to Order (LQ□□-S) on page 611 for applicable fittings without nut (LQ type).  
Select fittings of the same type and size as the one fitted to the regulator side.

Made to Order  
(Refer to page 619 for details.)

Nil	Standard
X401	Rotating the mounting hole 90°

Nil	Rc 1/8
N	NPT 1/8

### Tube extensions



SRF 1 0 - T 07 [ ] - [ ]

Body size  
1  
3  
5

Tubing size (O.D.)

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

Pilot port thread type

Nil	Rc 1/8
N	NPT 1/8

Made to Order  
(Refer to page 619 for details.)

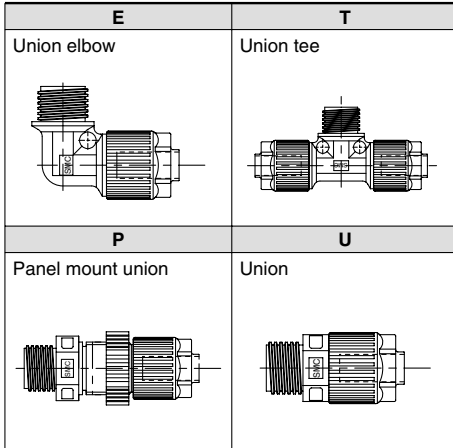
Nil	Standard
X401	Rotating the mounting hole 90°

## How to Order Fittings for Model with Nut

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

**LQ1 E 21 - S**

Fitting type



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 (inch)	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 3/32"	●
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"	●

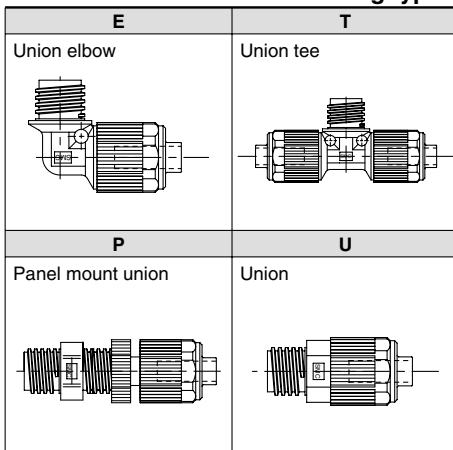
○: Basic size ●: With reducer



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

**LQ2 E 21 - S**

Fitting type



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	●

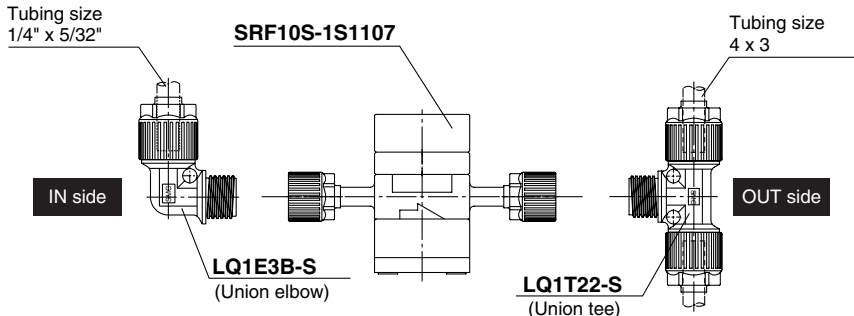
Class	No.	Applicable tubing size (inch)	Reducing
2	A	1/4" x 5/32"	○
2	B	3/16" x 1/8"	●
2	C	1/8" x 0.086"	●
3	A	3/8" x 1/4"	○
3	B	1/4" x 5/32"	●
4	A	1/2" x 3/8"	○
4	B	3/8" x 1/4"	●
5	A	3/4" x 5/8"	○
5	B	1/2" x 3/8"	●

○: Basic size ●: With reducer



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

### Ordering example



<b>SRF10S-1S1107</b>	1
<b>LQ1E3B-S</b> (Union elbow)	1
<b>LQ1T22-S</b> (Union tee)	1

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

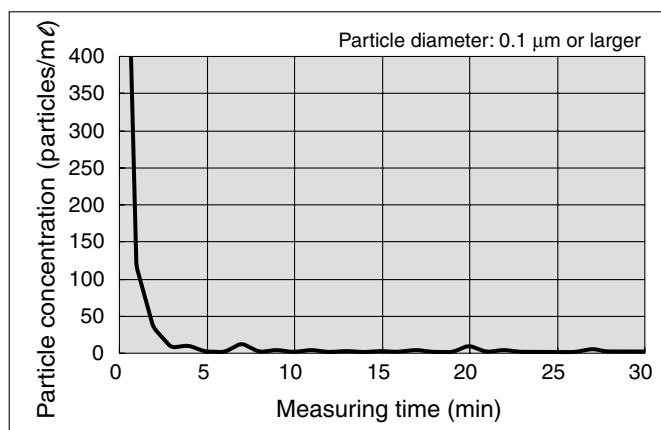
# Series SRF



## Specifications

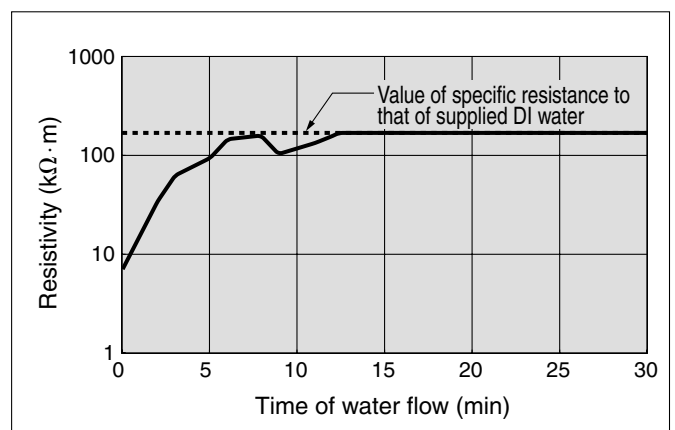
Model		SRF10	SRF30	SRF50
Proof pressure		1.0 MPa		
Maximum operating pressure		0.5 MPa		
Set pressure range		0.02 to 0.4 MPa		
Maximum operating pressure (pilot pressure)		0.5 MPa		
Fluid		Pure water, N <sub>2</sub>		
Ambient and fluid temperature		5 to 60°C		
Valve leakage		10 cm <sup>3</sup> /min or less (fluid: water)		
Mass (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

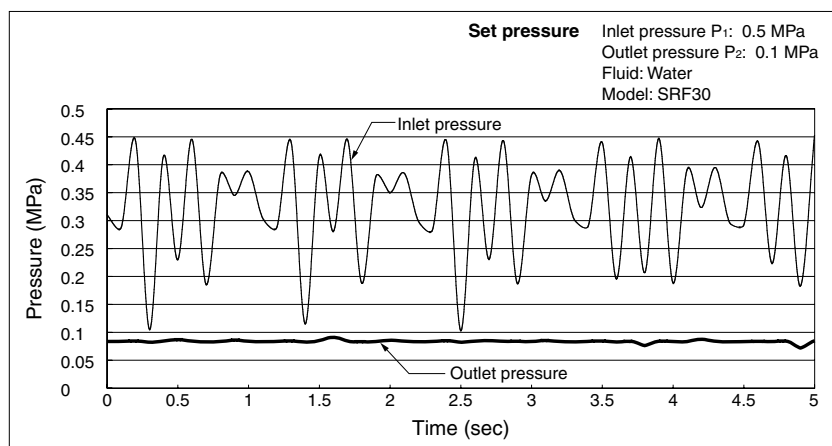
## Flow-through Characteristics



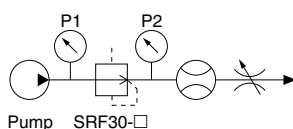
○ Test method and conditions  
 The liquid contact portions were filled with sulphuric acid and left untouched for half an hour. After the sulphuric acid was drained, the wetted parts are filled with DI water. The specific resistance of the liquid discharged from the outlet side of the sample was measured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



## ⚠ Specific Product Precautions

Be sure to read before handling. Refer to front matters 42 and 43 for Safety Precautions and pages 622 and 623 for Specific Product Precautions.

### Piping

## ⚠ Caution

- Connecting tubes with special tools.**  
Refer to the pamphlet: High-Purity Fluoropolymer Fittings HYPER FITTINGS®/Series LQ1,2 Work Procedure Instructions (M-E05-1) for tube connection and special tools.
- Tighten the nut until the body end.**  
Refer to the proper tightening torque below as a guideline.

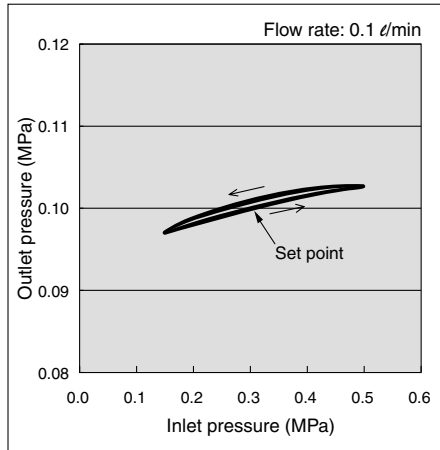
### Tightening Torque when Piping

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	—

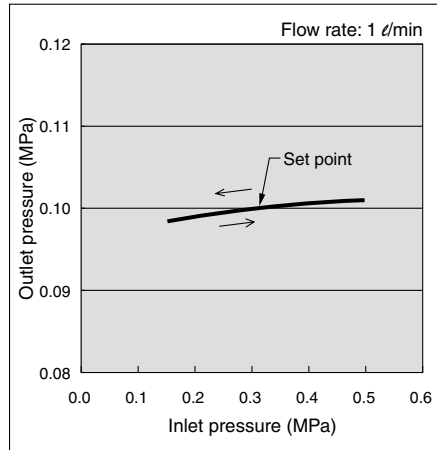
## Pressure Characteristics (Representative Value)

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

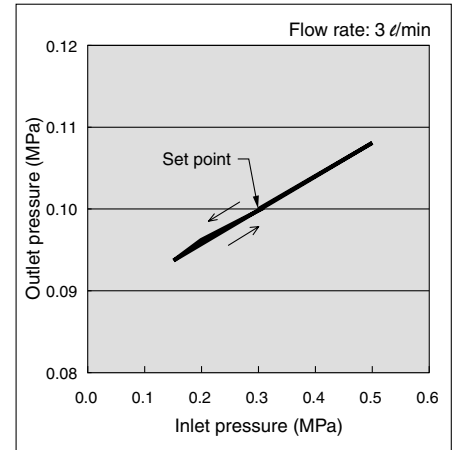
**SRF10**



**SRF30**



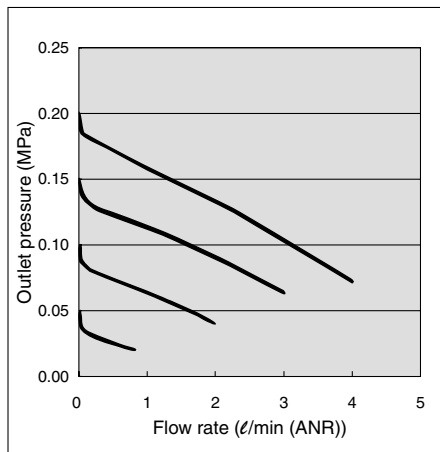
**SRF50**



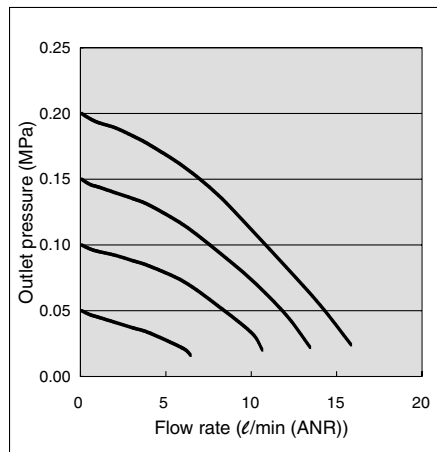
## Flow Characteristics (Representative Value)

Inlet pressure: 0.3 MPa Fluid: Water

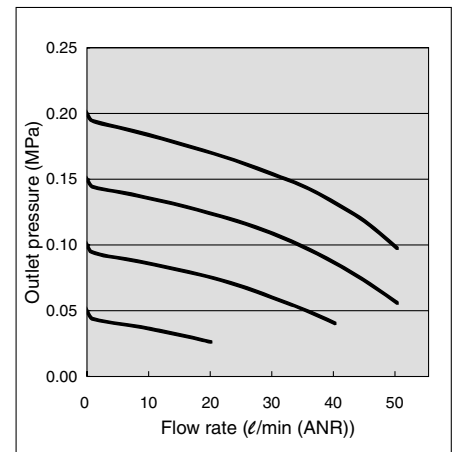
**SRF10**



**SRF30**



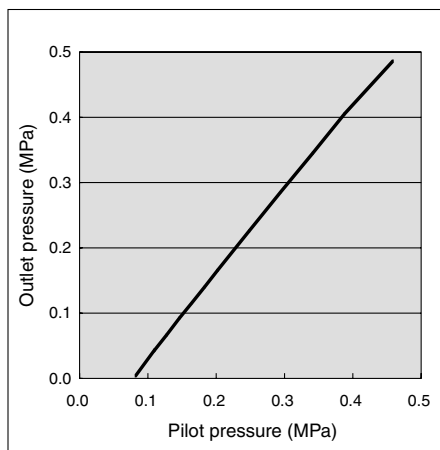
**SRF50**



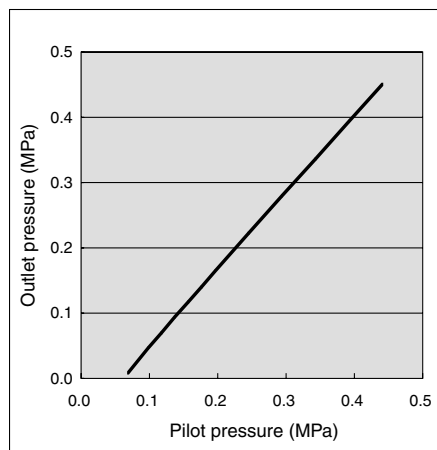
## Input/Output Characteristics (Representative Value)

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

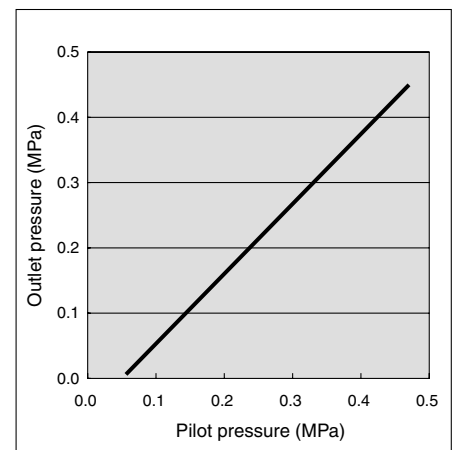
**SRF10**



**SRF30**



**SRF50**



ARJ

AR425 to 935

AMR

ARM

ARP

IR

IRV

VEX1□

SRH

SRP

**SRF**

ARX20

VCHR

ITV

IC

PVQ

VEF  
VEP

VER

VEA

VY2

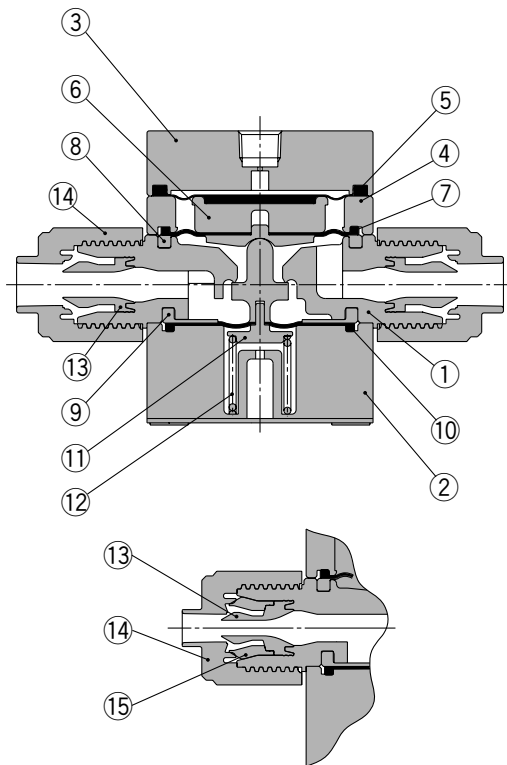
VBA  
VBAT

AP100

# Series SRF

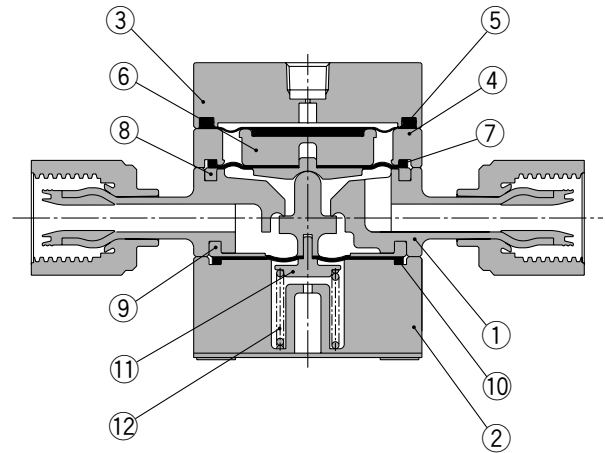
## Construction/SRF10, 30

### Integral fittings

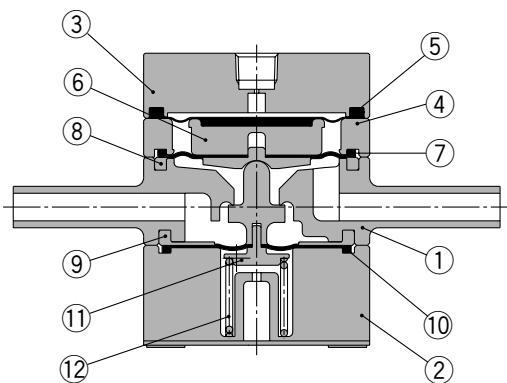


With reducer

### With nut



### Tube extensions



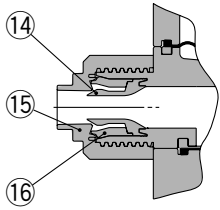
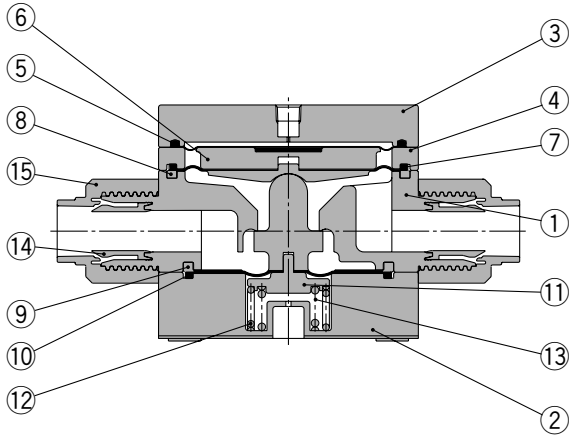
### Component parts

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

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

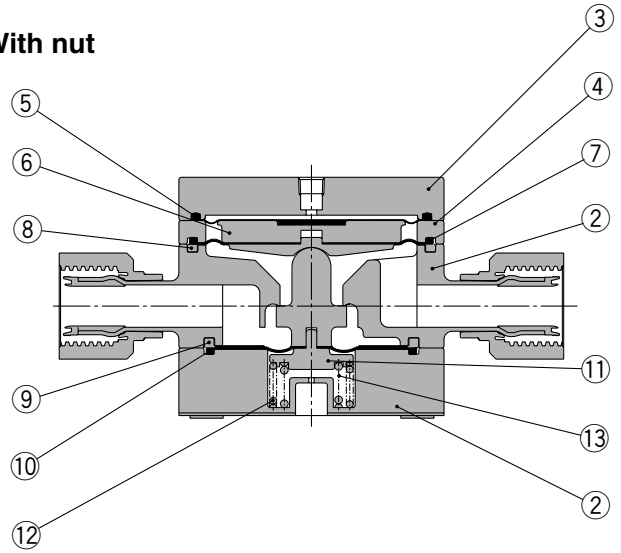
**Construction/SRF50**

**SRF50**  
Integral fittings

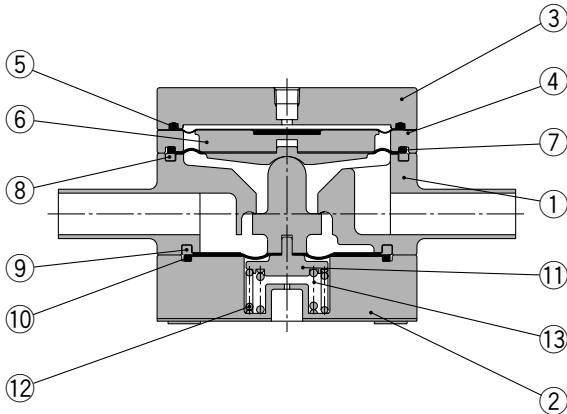


With reducer

With nut



**Tube extensions**



**Component parts**

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

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

ARJ

AR425 to 935

AMR

ARM

ARP

IR

IRV

VEX1□

SRH

SRP

**SRF**

ARX20

VCHR

ITV

IC

PVQ

VEF  
VEP

VER

VEA

VY2

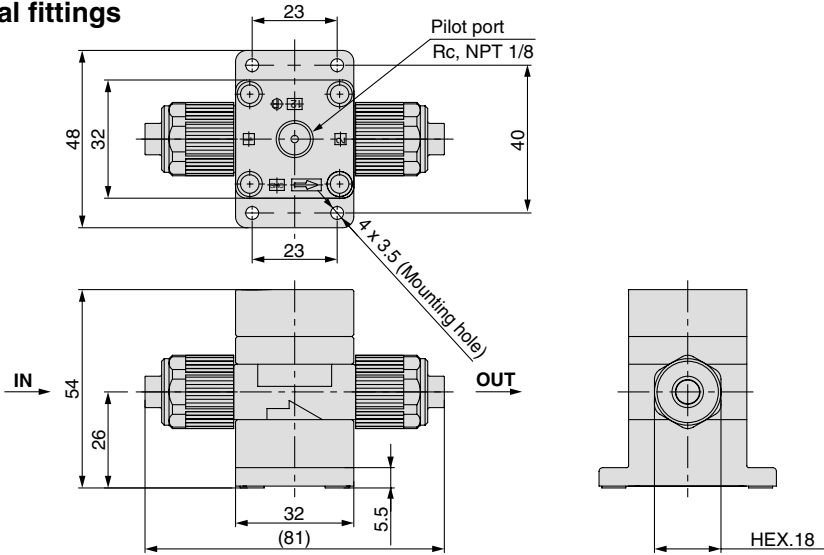
VBA  
VBAT

AP100

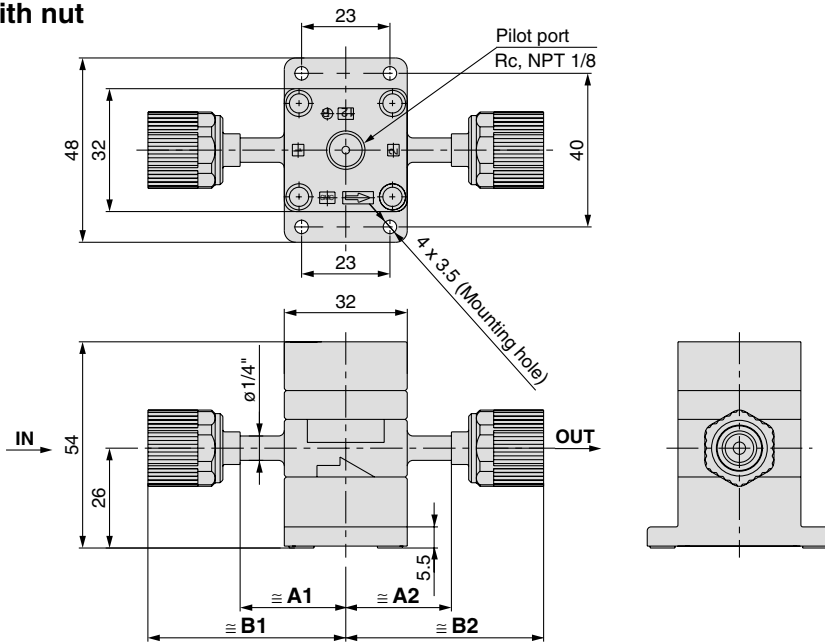
# Series SRF

## Dimensions/SRF10

### Integral fittings



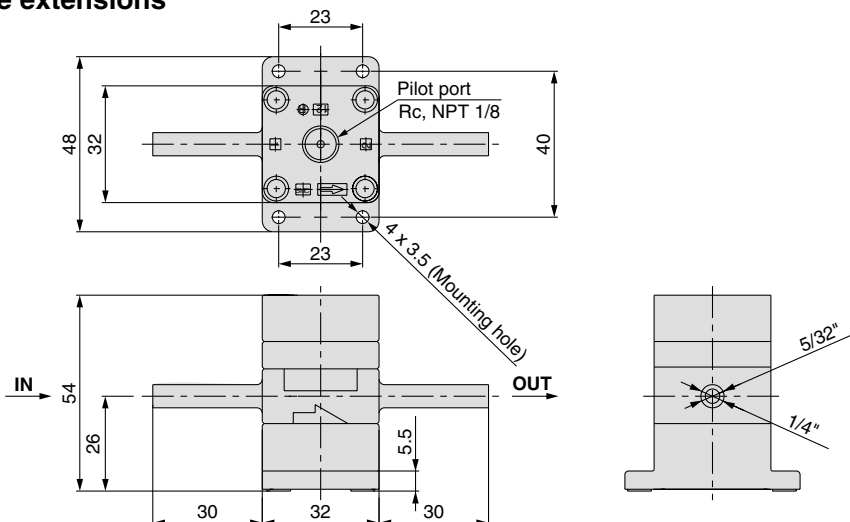
### With nut



### SRF10

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

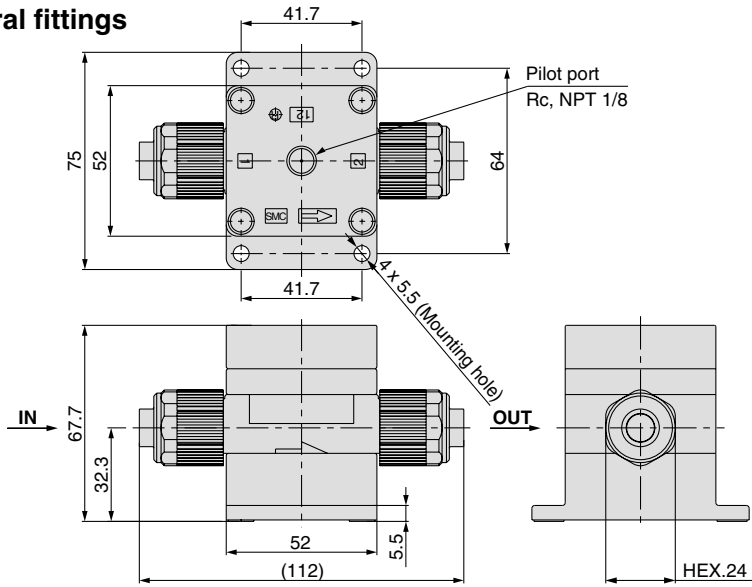
### Tube extensions



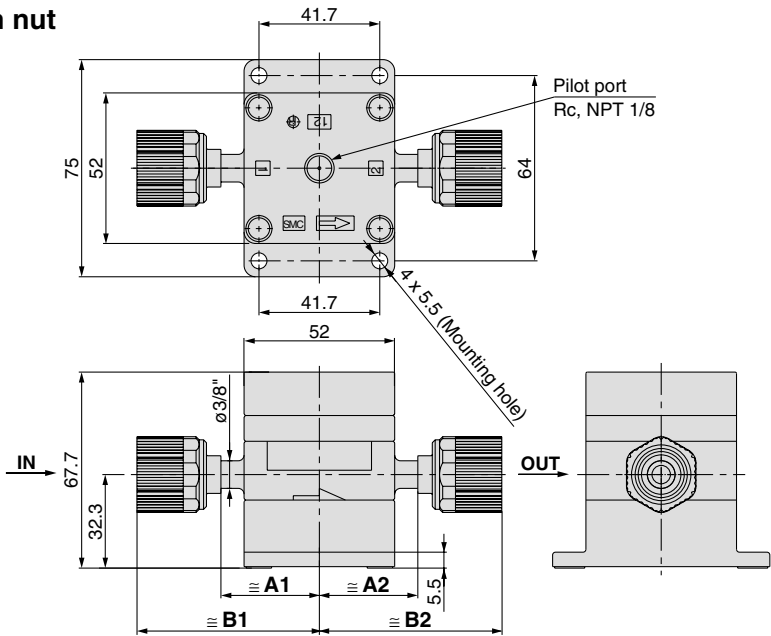


**Dimensions/SRF30**

**Integral fittings**



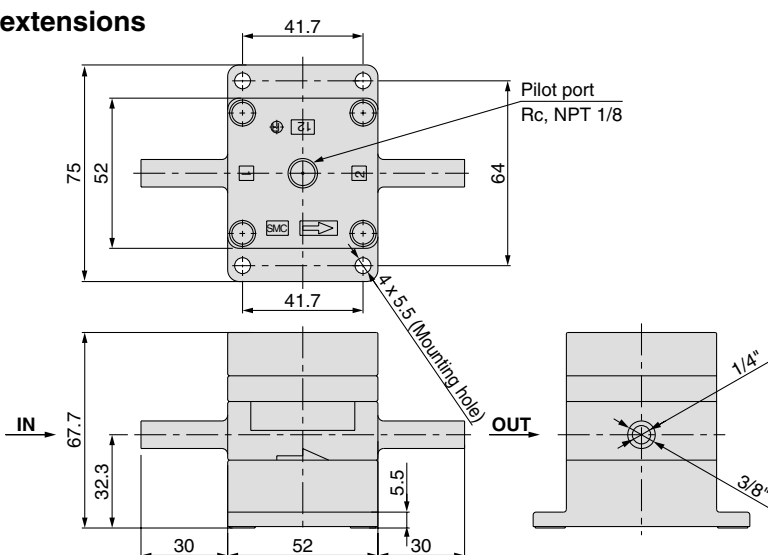
**With nut**



**SRF30**

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

**Tube extensions**

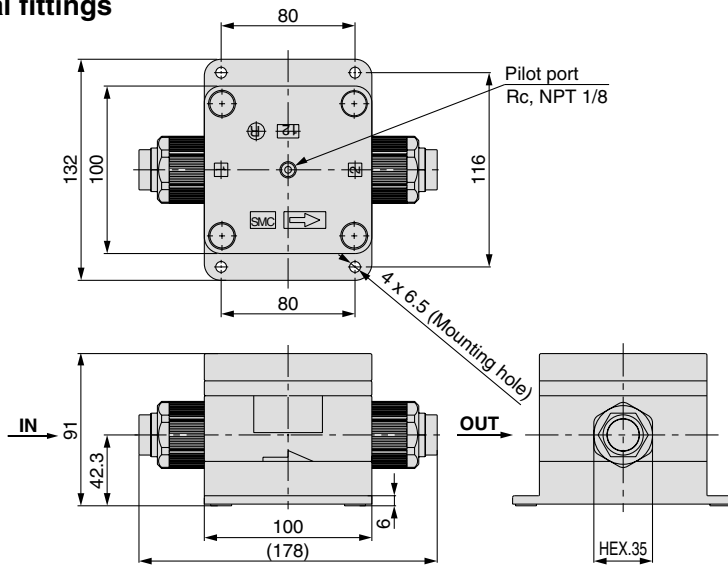


- ARJ
- AR425 to 935
- AMR
- ARM
- ARP
- IR
- IRV
- VEX1□
- SRH
- SRP
- SRF**
- ARX20
- VCHR
- ITV
- IC
- PVQ
- VEF
- VEP
- VER
- VEA
- VY2
- VBA
- VBAT
- AP100

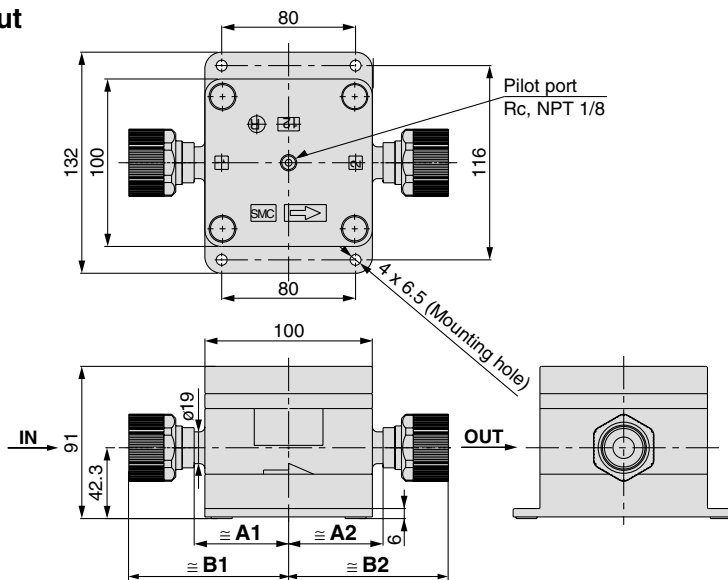
# Series SRF

## Dimensions/SRF50

### Integral fittings



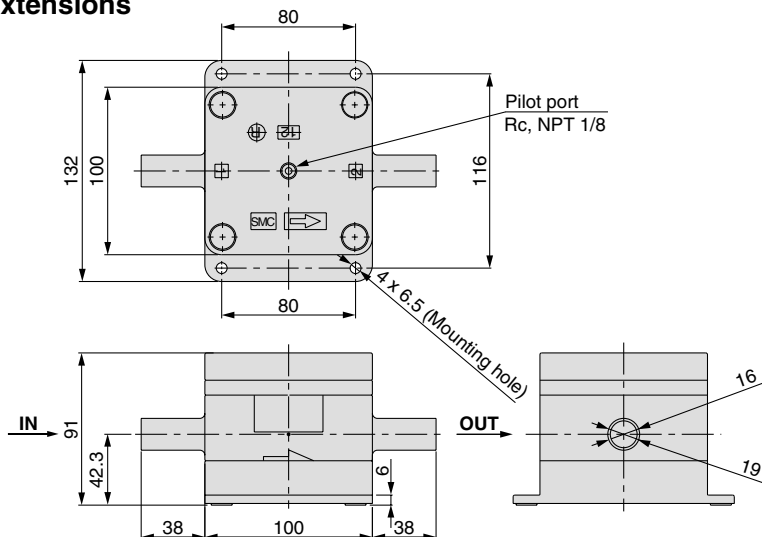
### With nut



### SRF50

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

### Tube extensions



# Series SRF Made to Order Specifications:

Contact SMC for detailed dimensions, specifications and delivery.



## Rotating the Mounting Hole 90°

**X401**

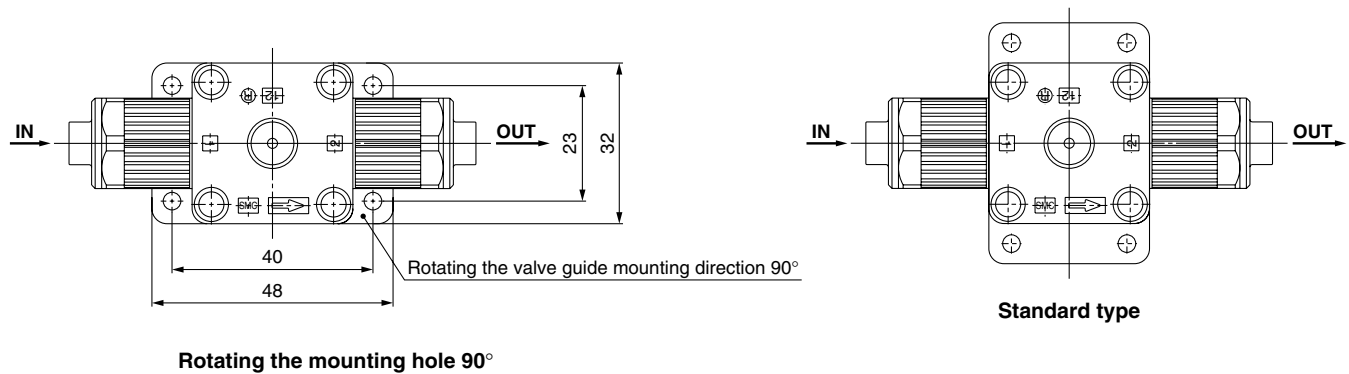
This is a product with a 90° rotated valve guide mounting hole.

Standard model no. — **X401**

• Rotating the mounting hole 90°

## Dimensions

Other dimensions are the same as the standard type. (Example SRF10)



ARJ

AR425  
to 935

AMR

ARM

ARP

IR

IRV

VEX1□

SRH

SRP

**SRF**

ARX20

VCHR

ITV

IC

PVQ

VEF  
VEP

VER

VEA

VY2

VBA  
VBAT

AP100

# Series SRF Fittings 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

### ⚠ Caution

#### 1. Connecting tubes with special tools

Refer to the pamphlet: High-Purity Fluoropolymer Fittings HYPER FITTINGS®/Series LQ1,2 Work Procedure Instructions (M-E05-1) for tube connection and special tools.

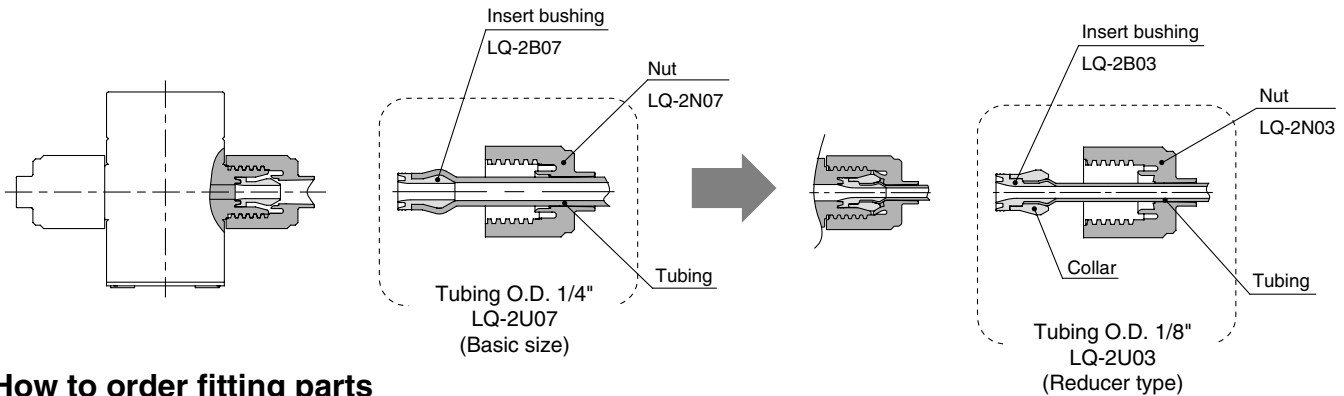
### Changing the tubing size

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-2U03**

\* Type U is recommended when changing the tubing size.

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

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

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"	5			
12	ø12				
13	1/2"				●
19	3/4", ø19				



# Applicable Fluids

## The wetted part material and fluid compatibility check list

Fluid	Compatibility	
	PFA (Body)	PTFE (Diaphragm)
Acetone	<input type="radio"/> Note 1)	
Ammonium hydroxide	<input type="radio"/>	
Isobutyl alcohol	<input type="radio"/> Note 1)	
Isopropyl alcohol	<input type="radio"/> Note 1)	
Hydrochloric acid	<input type="radio"/>	
Hydrogen peroxide	<input type="radio"/>	
Ethyl acetate	<input type="radio"/> Note 1)	
Butyl acetate	<input type="radio"/> Note 1)	
Nitric acid (Except fuming nitric acid)	<input type="radio"/>	
DI water	<input checked="" type="radio"/>	
Sodium hydroxide	<input type="radio"/>	
Nitrogen gas	<input checked="" type="radio"/>	
Toluene	<input type="radio"/> Note 1)	
Hydrofluoric acid	<input type="radio"/>	
Sulfuric acid (Except fuming sulfuric acid)	<input type="radio"/>	
Phosphoric acid	<input type="radio"/>	

**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.

ARJ

AR425  
to 935

AMR

ARM

ARP

IR

IRV

VEX1□

SRH

SRP

SRF

ARX20

VCHR

ITV

IC

PVQ

VEF  
VEP

VER

VEA

VY2

VBA  
VBAT

AP100



# Series SRF Specific Product Precautions 1

Be sure to read before handling.  
Refer to front matters 42 and 43 for Safety Precautions.

## Design and Selection

### Warning

#### 1. Confirm the specifications.

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

#### 2. Fluids

Operate after confirming the compatibility of the product's component materials with fluids, using the check list on page 621. 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<sup>3</sup>/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 catalog. 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.



# Series SRF Specific Product Precautions 2

Be sure to read before handling.  
Refer to front matters 42 and 43 for Safety Precautions.

## 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.

ARJ

AR425  
to 935

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