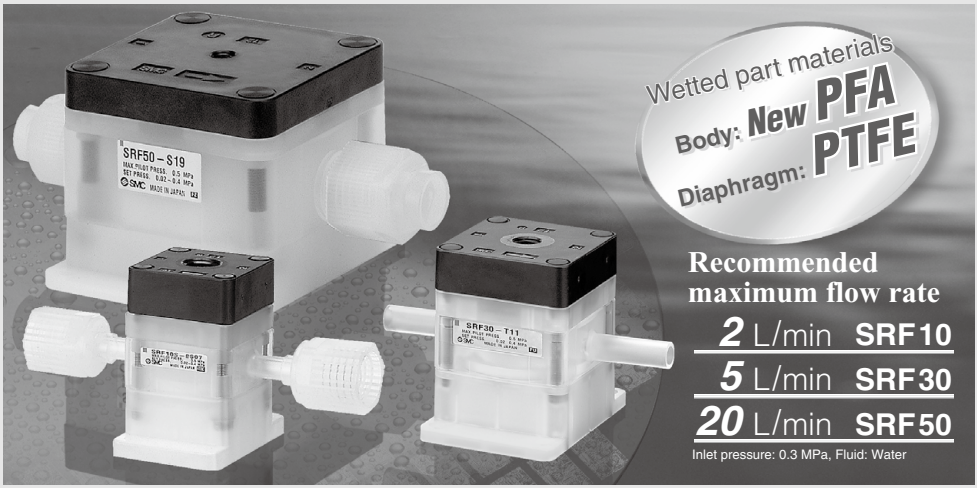
Clean Regulator/Fluororesin Type

SRF Series

RoHS

Clean Wet Series



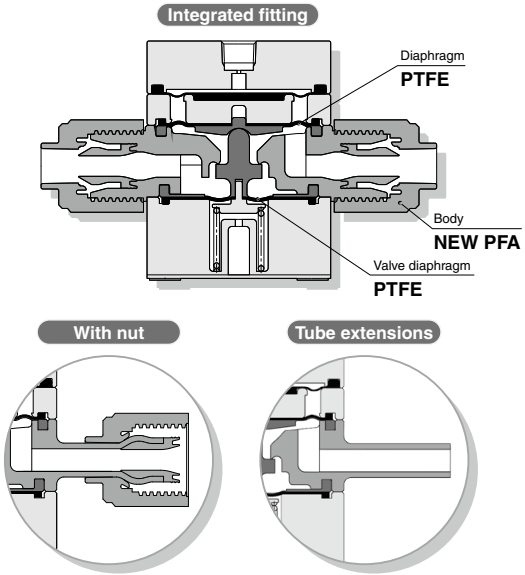
Washing/Assembly Procedure

Washing parts: Body, Valve diaphragm and Diaphragm

Parts
↓
Degreasing washing
↓
DI water washing
↓
Alcohol washing
↓
Assembly
↓
Inspection
↓
Clean pack
↓
Package

Working atmosphere Class 100
Working atmosphere Class 10000

Construction



Clean Regulator/Fluororesin Type
SRF Series

RoHS

How to Order

Integrated fittings

SRF 1 0 – S 07 ☐ – ☐

Body size

1
3
5

Integrated fittings (LQ2)

Made to Order
(Refer to page 1161 for details.)

Nil	Standard
X401	Rotating the mounting hole 90°

Pilot port thread type

Nil	Rc 1/8
N	NPT 1/8

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.
For details, refer to the **Web Catalog**.

With nut

SRF 1 0 S – 1 S 07 11 ☐ – ☐

Body size

1
3
5

Fitting type

Symbol	Applicable fittings
1	LQ1

Pilot port thread type

Nil	Rc 1/8
N	NPT 1/8

Made to Order
(Refer to page 1161 for details.)

Nil	Standard
X401	Rotating the mounting hole 90°

Fitting size (IN side)

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

○: Basic size ●: With plug-in reducer

Fitting size (OUT side)

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

○: Basic size ●: With reducer

Note) Refer to How to Order (**LQ□□-S**) on page 1153 for applicable fittings without nut (LQ type).
Select fittings of the same size as the one fitted to the regulator side.

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

Made to Order
(Refer to page 1161 or details.)

Nil	Standard
X401	Rotating the mounting hole 90°

Pilot port thread type

Nil	Rc 1/8
N	NPT 1/8

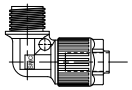
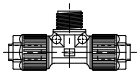
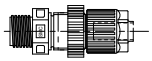
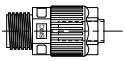
How to Order Fittings for Model with Nut

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

LQ1 E 21 – SN

Fitting type

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

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

Applicable tubing size

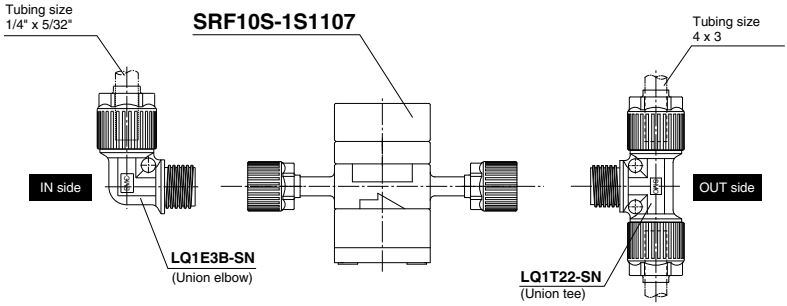
Class	No.	Applicable tubing size (mm)	Reducing
2	1	6 x 4	○
2	2	4 x 3	●
3	1	10 x 8	○
3	2	8 x 6	●
3	3	6 x 4	●
4	1	12 x 10	○
4	2	10 x 8	●
5	1	19 x 16	○
5	2	12 x 10	●
6	1	25 x 22	○
6	2	19 x 16	●

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 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.

Ordering example



SRF10S-1S1107 — 1

LQ1E3B-SN (Union elbow) — 1

LQ1T22-SN (Union tee) — 1

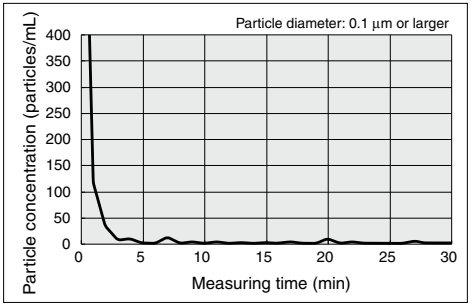
Note) For shipment, the regulator and fittings are individually packaged and dispatched together in 1 box.

Symbol

Specifications

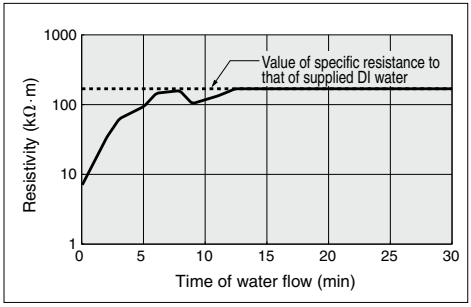
Model		SRF10	SRF30	SRF50
Proof pressure		1.0 MPa		
Maximum operating pressure		0.5 MPa		
Set pressure range		0.02 to 0.4 MPa		
Maximum operating pressure (pilot pressure)		0.5 MPa		
Fluid		Deionized water (Pure water), N_2		
Ambient and fluid temperature		5 to 60°C		
Valve leakage		10 cm^3/min or less (fluid: water)		
Weight (kg)	Tubing	0.08	0.24	1.2
	Integrated 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

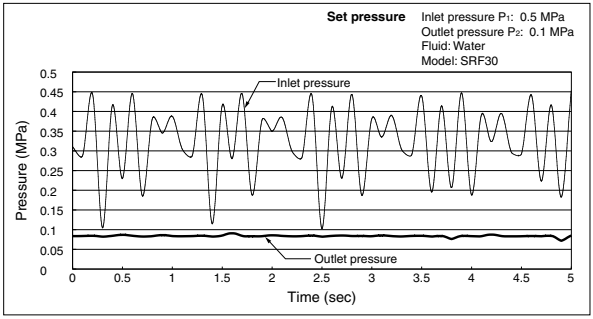
Flow-through Characteristics



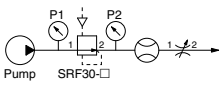
○ Test method and conditions
The liquid contact portions were filled with sulphuric acid and left untouched for half an hour. After the sulphuric acid was drained, the wetted parts are filled with DI water. The specific resistance of the liquid discharged from the outlet side of the sample was measured 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 this before handling the products. Refer to page 9 for safety instructions and pages 13 to 17 for specific product precautions.

Piping

⚠ Caution

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

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.

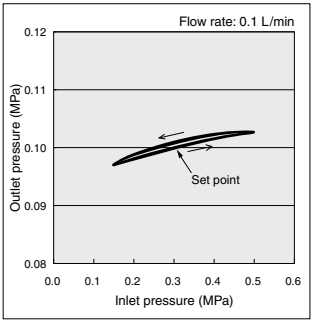
Tightening Torque when Piping

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	—

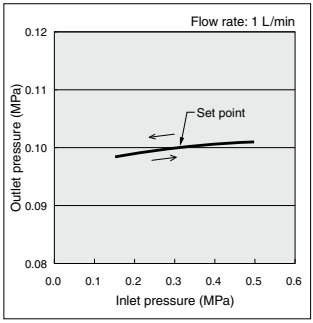
Pressure Characteristics (Representative Value)

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

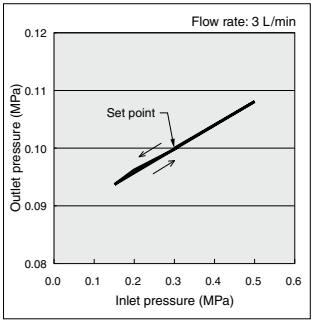
SRF10



SRF30



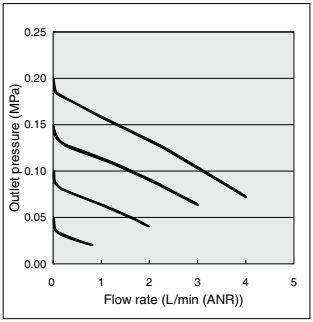
SRF50



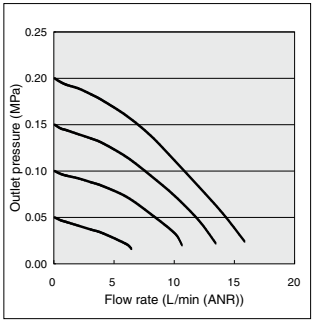
Flow Rate Characteristics (Representative Value)

Inlet pressure: 0.3 MPa Fluid: Water

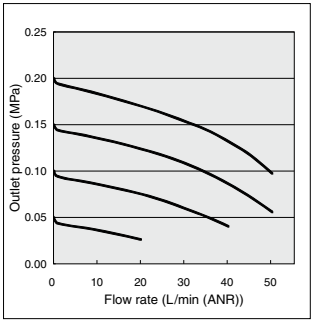
SRF10



SRF30



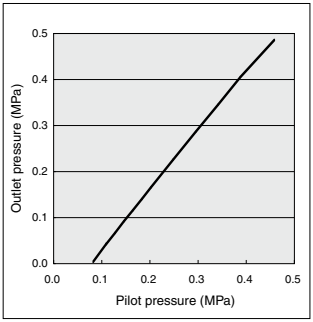
SRF50



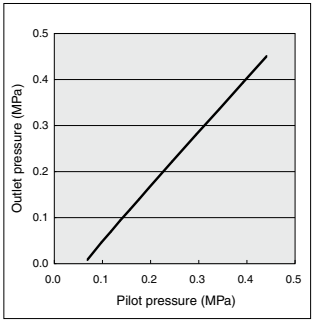
Input/Output Characteristics (Representative Value)

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

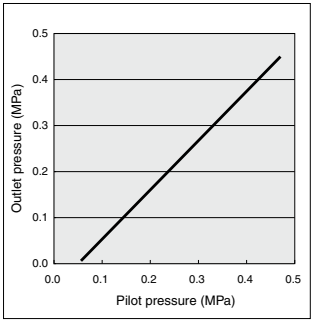
SRF10



SRF30

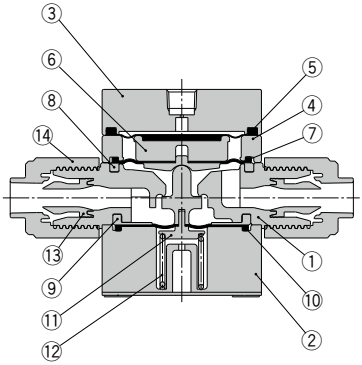


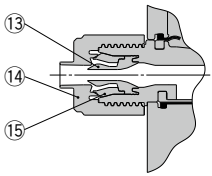
SRF50



Construction/SRF10, 30

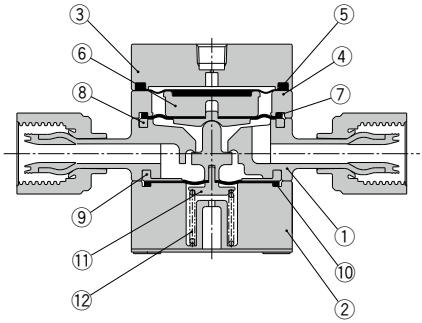
Integrated fittings



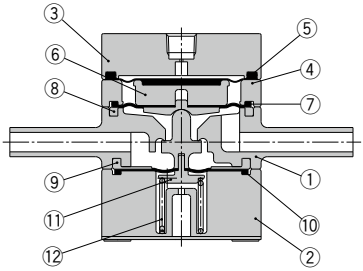


With reducer

With nut



Tube extensions



Component parts

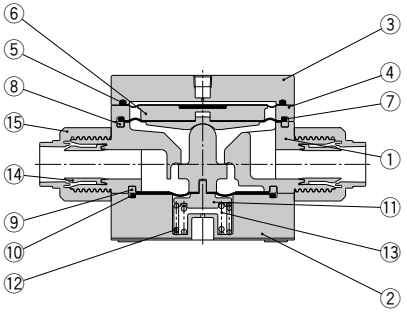
No.	Description	Material	Note
1	**Body**	New PFA	
2	**Valve guide**	PVDF	
3	**Bonnet**	PPS	
4	**Spacer**	PVDF	
5	**Pilot diaphragm**	Fluororubber	
6	**Diaphragm support**	PP	
7	**Withstand pressure diaphragm B**	Fluororubber	
8	**Diaphragm**	PTFE	
9	**Valve diaphragm**	PTFE	
10	**Withstand pressure diaphragm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

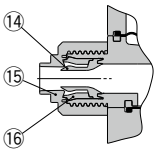
No.	Description	Material	Note
13	**Insert bushing**	New PFA	
14	**Nut**	New PFA	
15	**Collar**	New PFA	

Construction/SRF50

SRF50

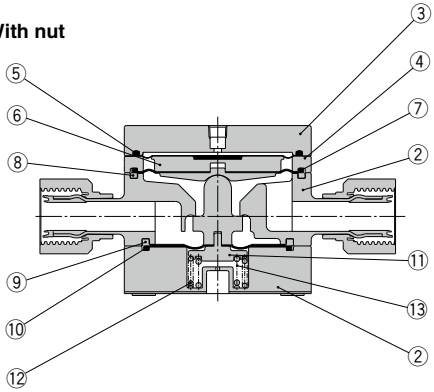
Integrated fittings



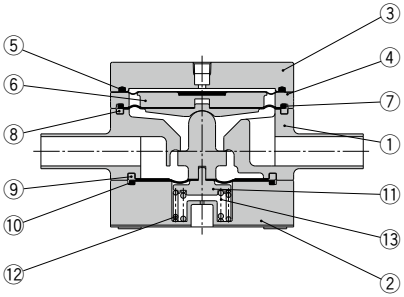


With reducer

With nut



Tube extensions



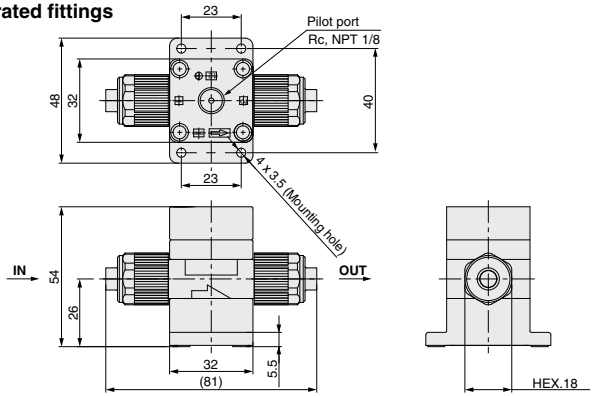
Component parts

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

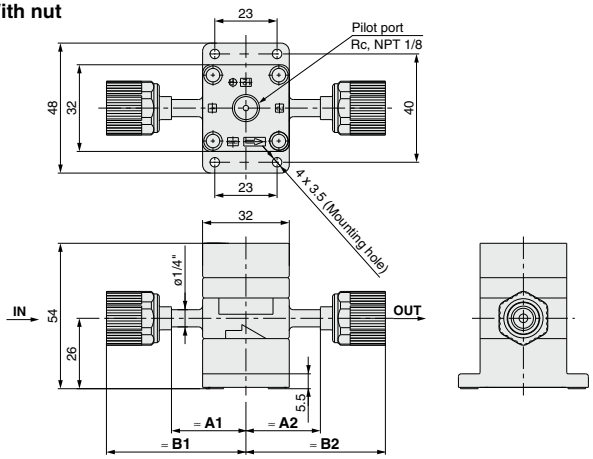
No.	Description	Material	Note
14	**Insert bushing**	New PFA	
15	**Nut**	New PFA	
16	**Collar**	New PFA	

Dimensions/SRF10

Integrated fittings



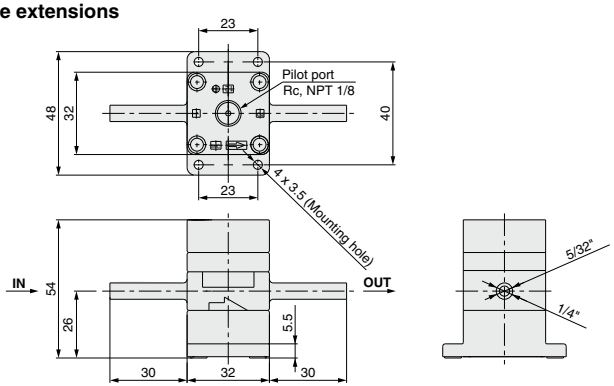
With nut



SRF10

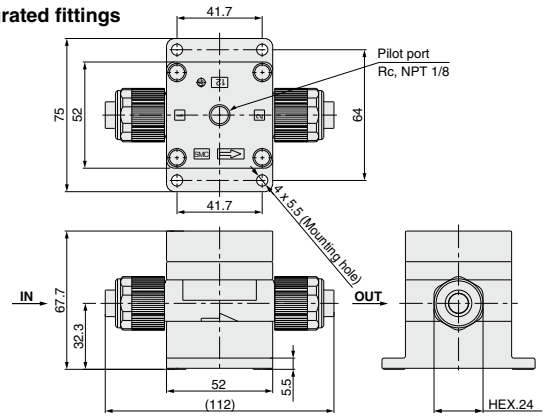
Model	A1	A2	B1	B2
SRF10S-1S07	31	31	48	48
SRF10S-1S0711		28		51
SRF10S-1S11	28	28	51	51
SRF10S-1S1107		31		48

Tube extensions

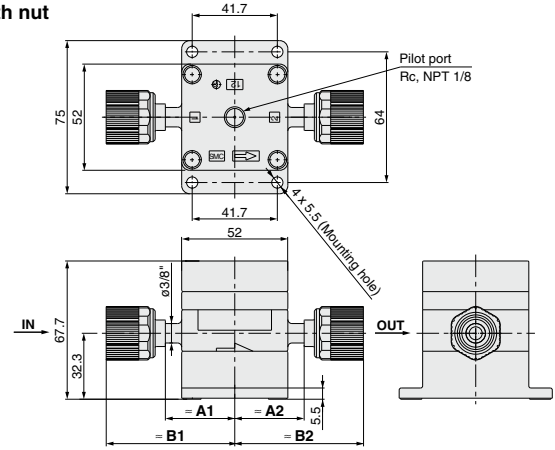


Dimensions/SRF30

Integrated fittings



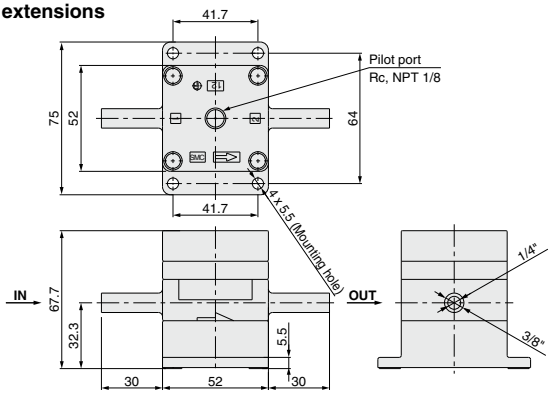
With nut



SRF30

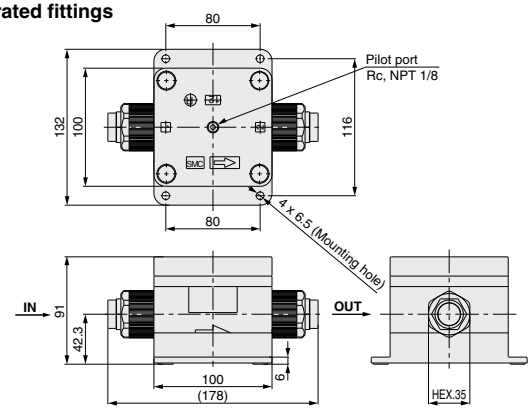
Model	A1	A2	B1	B2
SRF30S-1S11	35	35	58	58
SRF30S-1S1113		34		62
SRF30S-1S13	34	34	62	62
SRF30S-1S1311		35		58

Tube extensions

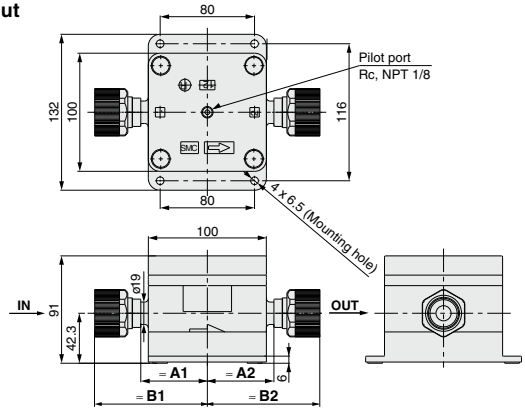


Dimensions/SRF50

Integrated fittings



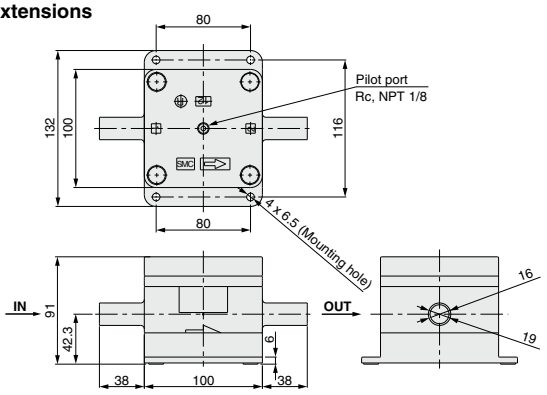
With nut



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

Tube extensions



SRF Series
Made to Order Specifications:

Please contact SMC for detailed dimensions, specifications and lead times.

Made to Order

Symbol

1 Rotating the Mounting Hole 90° — X401

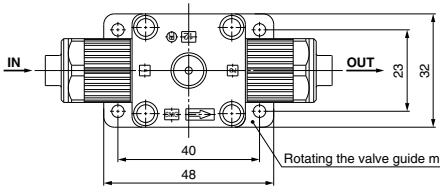
This is a product with a 90° rotated vale guide mounting hole.

Standard model no. — **X401**

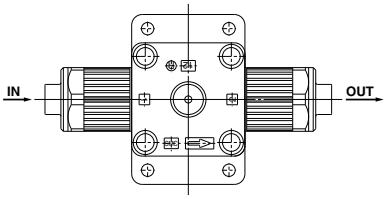
● **Rotating the mounting hole 90°**

Dimensions

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



Rotating the mounting hole 90°



Standard type

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

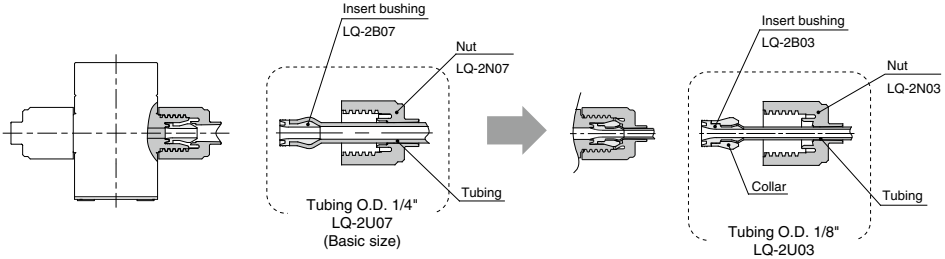
Refer to the pamphlet: High-Purity Fluoropolymer Fittings Hyper Fittings/LQ1,2 Series Work Procedure Instructions (M-E05-1) for tube connection and special tools.

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 − 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				

Note) For details about fitting parts, refer to the **Web Catalog**.

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 (Except fuming nitric acid)	○	
Deionized water (DI water)	◎	
Sodium hydroxide	○	
Nitrogen gas	◎	
Toluene	○ Note 1)	
Hydrofluoric acid	○	
Sulfuric acid (Except fuming 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.

SRF Series
Specific Product Precautions 1

Be sure to read this before handling the products.
Refer to page 9 for safety instructions.

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 1163. 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 SRF series, 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.

SRF series 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 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 IR/ARP series, is recommended.

SRF Series
Specific Product Precautions 2

Be sure to read this before handling the products.
Refer to page 9 for safety instructions.

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.

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.

If you have any further questions, please don't hesitate to contact your SMC sales representative.