Clean Regulator

SRH Series

Contamination controlled stainless steel regulator

Clean Regulator

SRH Series

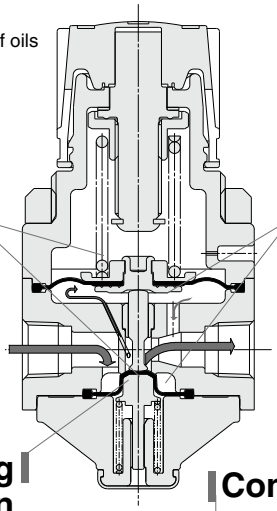
Contamination controlled stainless steel regulator

Outstanding corrosion resistance

All metal parts in contact with fluid use stainless steel 316

Oil free

Parts assembled without any use of oils



2 types of diaphragm material available

Depending upon the application, PTFE (Grade A) or fluororubber (Grade B) can be selected for the diaphragm material

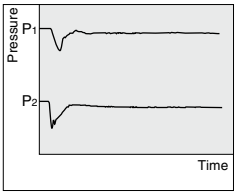
Designed to minimize residual fluid

- Design includes an intake/exhaust port in the diaphragm compartment which facilitates flow
- Valve springs are partitioned by the diaphragm

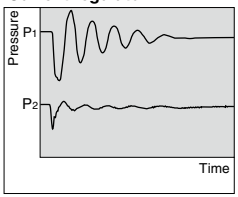
Pulsation suppressing design

Step response comparison

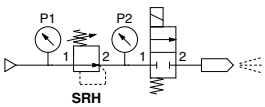
SRH



Current regulator



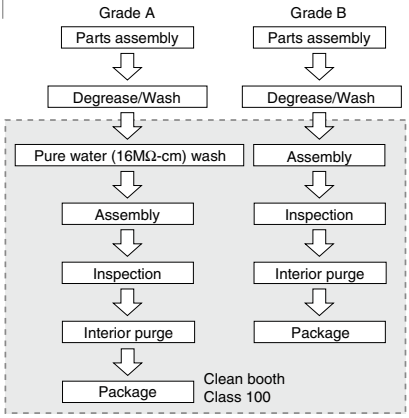
Circuit diagram



Consistent clean room production

Washed, assembled and inspected in a Class 100 environment, and sealed in double bags

Manufacturing process



Clean Regulator
SRH Series

How to Order

SRH **3** **0** **0** **0** – **02** – □ – □

Body size

3	1/4
4	3/8

Washing grade

0	Grade A
1	Grade B

Set pressure

0	0.02 to 0.2 MPa
1	0.05 to 0.7 MPa

Relief mechanism

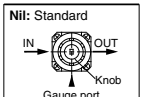
0	Non-relief
1	Relief

Port size

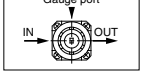
Symbol	Piping port size	SRH3000	SRH4000
01	Rc 1/8	●	—
02	Rc 1/4	●	●
03	Rc 3/8	—	●
04	Rc 1/2	—	●
A2	With metal gasket seal fitting	URJF 1/4	—
A3	With metal gasket seal fitting	—	URJF 3/8

Gauge port orientation

Nil: Standard



R: R Specification



*There is only one gauge port.

Made to Order

Refer to pages 864 to 866 for details.

X210	EPDM seals
X211	With relief port fittings (Applicable tube O.D.: ø4)
X216	Machined relief port M5 thread
X233	Knob operation product with reduced torque
X234	Aluminum body

Note) The pressure gauge is optional. Refer to option specifications on page 862.
Note that the products used for the port size A2 or A3 are not available at SMC.

Specifications

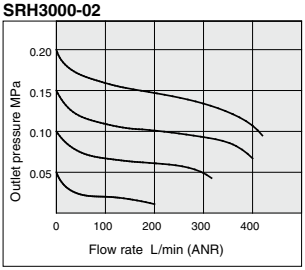
Model		SRH3□□0	SRH4□□0	SRH3□□1	SRH4□□1
Relief mechanism		Non-relief		Relief	
Port size		Rc 1/8, 1/4 URJF 1/4	Rc 1/4, 3/8, 1/2 URJF 3/8	Rc 1/8, 1/4	Rc 1/4, 3/8, 1/2
Fluid	**Grade A**	Clean air, N_2, Ar, CO_2, Pure water		Clean air, N_2	
	Grade B	Air, N_2, Ar, CO_2, Water		Air, N_2	
Proof pressure		1.5 MPa			
Max. operating pressure		1 MPa			
Set pressure	**Low pressure type**	0.02 to 0.2 MPa			
	High pressure type	0.05 to 0.7 MPa			
Ambient and fluid temperatures		0 to 60°C (No freezing)			
Fluid-contact material (metal)		Stainless steel 316 (Body is stainless steel 316L)			
Diaphragm material	**Grade A**	PTFE			
	Grade B	Fluororubber			
Weight		360 g	730 g	360 g	730 g

Flow Rate Characteristics (Representative Value)

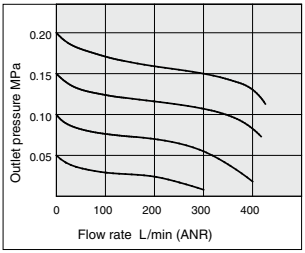
Fluid: Air

Conditions/ Inlet pressure: 0.5 MPa

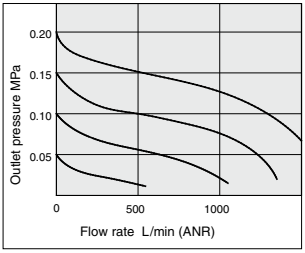
SRH3000-02



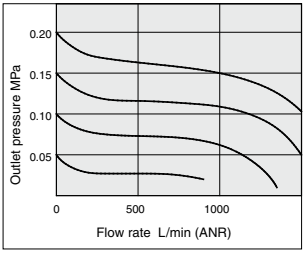
SRH3100-02



SRH4000-03

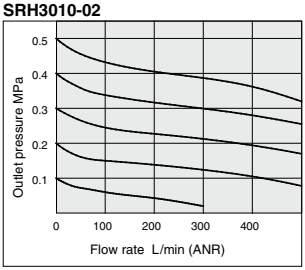


SRH4100-03

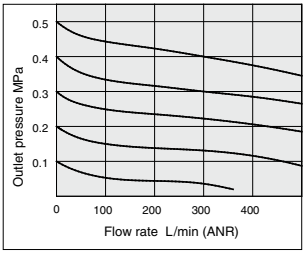


Conditions/ Inlet pressure: 0.7 MPa

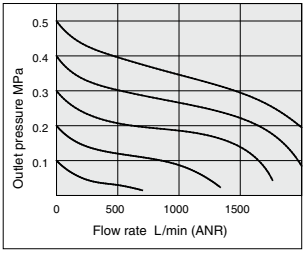
SRH3010-02



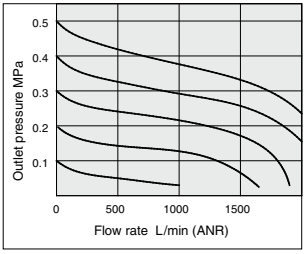
SRH3110-02



SRH4010-03



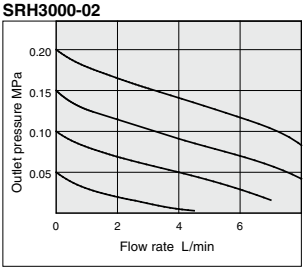
SRH4110-03



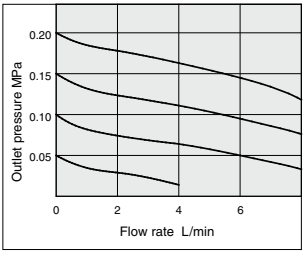
Fluid: Water

Conditions/ Inlet pressure: 0.5 MPa

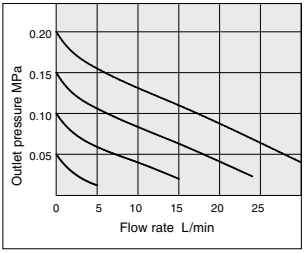
SRH3000-02



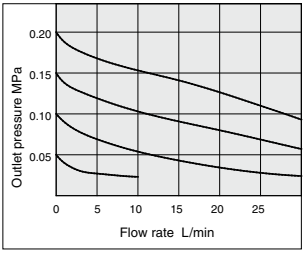
SRH3100-02



SRH4000-03



SRH4100-03

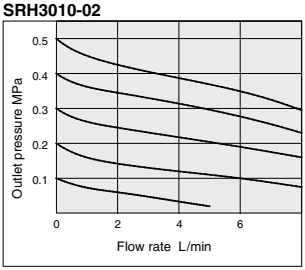


Pressure Characteristics (Representative Value)

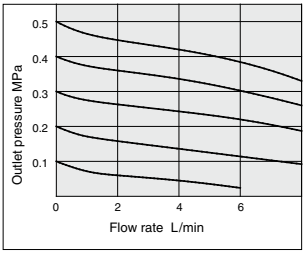
Fluid: Water/Air

Conditions/ Inlet pressure: 0.7 MPa

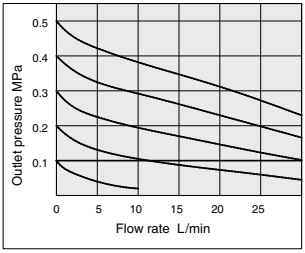
SRH3010-02



SRH3110-02



SRH4010-03



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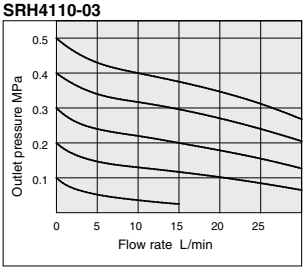
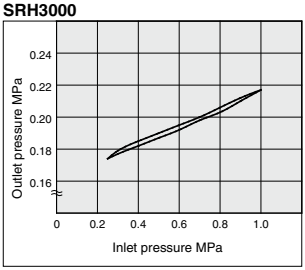
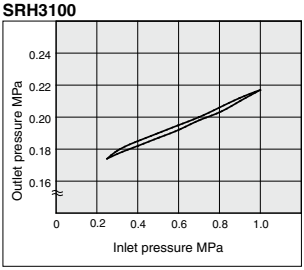


Conditions/ Inlet pressure: 0.7 MPa, Outlet pressure: 0.2 MPa, Flow rate 2 L/min

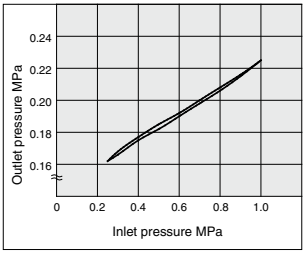
SRH3000



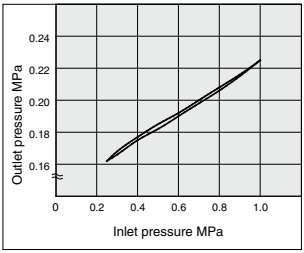
SRH3100



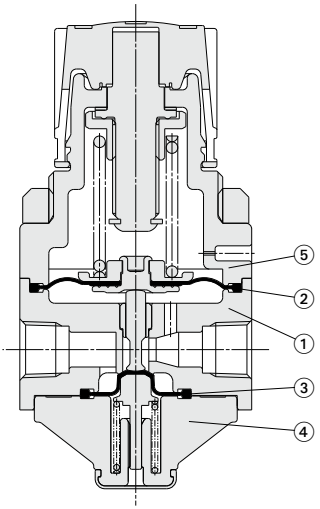
SRH4000



SRH4100



Construction

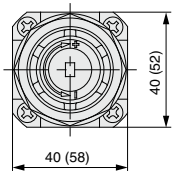


Component parts

No.	Description	Material	
		Grade A	Grade B
1	**Body**	Stainless steel 316L	
2	**Diaphragm**	PTFE	Fluororubber
3	**Diaphragm**	PTFE	Fluororubber
4	**Valve guide**	PPS	
5	**Bonnet**	PPS	

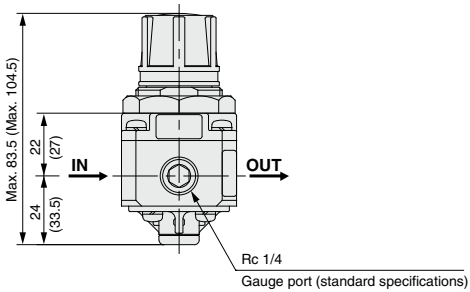
Dimensions

Rc thread type



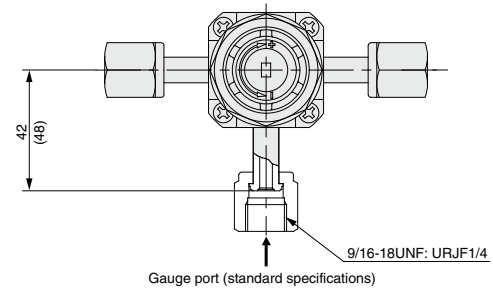
Panel thickness Max. 3

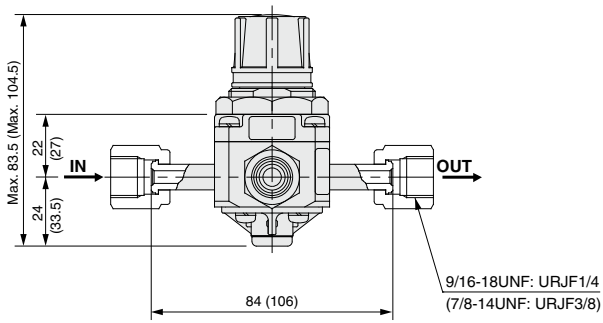
Panel mounting holes



Dimensions inside ( ) are for SRH4000.

Metal gasket seal fitting type



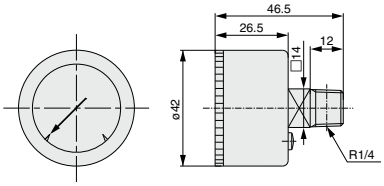


Dimensions inside ( ) are for SRH4000.

Options

Pressure Gauge

Dimensions



Specifications

Item \ Model		G46-□-02-SRA	G46-□-02-SRB
Port size		R 1/4	
Operating temperature range		0 to 60°C (No freezing)	
Accuracy		± 3%F.S.	
Scale range		270°	
Parts washing (fluid-contact parts)		Precision wash	General degrease
Assembly and adjustment environment		Clean room	General production line
Oil free / Water free		Non-lube / Non-wet	
Materials	Fluid-contact parts	Stainless steel 316	
	Case	Stainless steel 304 (Black melamine coating)	
	Clear cover	Polycarbonateca (Hard coated) Part No. G46-00-00-2	
	Internal parts	Brass	
Weight		80 g	

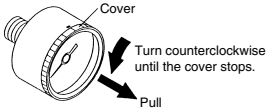
Models

Model	Pressure range MPa	Indicator units
G46-2-02-SRA	0 to 0.2	MPa
G46-2-02-SRB		
G46-4-02-SRA	0 to 0.4	
G46-4-02-SRB		
G46-7-02-SRA	0 to 0.7	
G46-7-02-SRB		
G46-10-02-SRA	0 to 1.0	
G46-10-02-SRB		

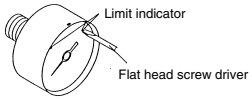
Note) Consult SMC for the supply of types with metal gasket seal.

Procedure for setting the limit gauge indicator

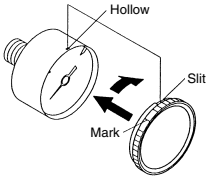
1) Before setting the limit indicator, turn the cover counterclockwise (approximately 6 to 7 mm) until it stops. Then, remove by pulling it towards you.



2) Use a flat head screwdriver (with a 2.9 mm blade width) to set the limit indicator.
Be careful not to bend other needle or damage the dial plate.



3) After completing the setting, replace the cover.
Fit the cover by aligning the cutout in the cover to the groove on the top of the black case. Turn the cover clockwise (approximately 6 to 7 mm) and make sure that the matching mark on the cover is aligned with the groove on the top of the case.



⚠ Specific Product Precautions

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 387 to 391 for Precautions on every series.

Selection

⚠ Caution

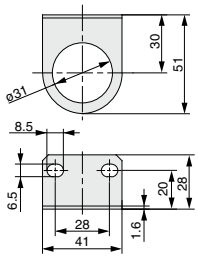
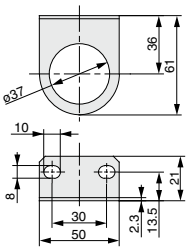
1) Avoid use in locations with strong pressure pulsation or vibration.
2) Contact SMC if the product is to be used in an application with a high frequency of operation.

Mounting

⚠ Caution

1) Do not subject the gauge to shocks, such as dropping during transportation and mounting, as this can cause loss of indication accuracy.
2) Do not use this gauge in a location with high temperature and humidity, as this may cause faulty operation.
3) When mounting the pressure gauge, be certain to use a wrench on the square wrench flats to screw it into place. If the wrench is applied on any other part, air leakage or other damage may occur.

Brackets

	For SRH3000	For SRH4000
Model	B21-1-T1	1350112-T1
Material	Rolled sheet steel (Electroless nickel plated)	
Dimensions		

SRH Series
Made to Order Specifications 1

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

Made to Order

Symbol

1 EPDM Seals — X210

Regulator with seals made of a different material.

SRH [Standard model no.] — **X210**

X210: EPDM seals

Specifications

Model		SRH3□□0-X210	SRH4□□0-X210	SRH3□□1-X210	SRH4□□1-X210
Relief mechanism		Non-relief		Relief	
Port size		Rc 1/8, 1/4 URJF 1/4	Rc 1/4, 3/8, 1/2 URJF 3/8	Rc 1/8, 1/4	Rc 1/4, 3/8, 1/2
Fluid	Grade A	Clean air, N_2, Ar, CO_2, Pure water		Clean air, N_2	
	Grade B	Air, N_2, Ar, CO_2, Water		Air, N_2	
Proof pressure		1.5 MPa			
Max. operating pressure		1.0 MPa			
Set pressure	Low pressure type	0.02 to 0.2 MPa			
	High pressure type	0.05 to 0.7 MPa			
Ambient and fluid temperatures		0 to 60°C (No freezing)			
Fluid-contact material (metal)		Stainless steel 316 (Body is stainless steel 316L)			
Diaphragm material	Grade A	PTFE			
	Grade B	EPDM			
Weight		360 g	730 g	360 g	730 g

Symbol

2 With Relief Port Fittings (Applicable tube O.D.: ø4) — X211

Regulator with a fitting in order to connect it to the relief port.

SRH [Standard model no.] — **X211**

Made to Order

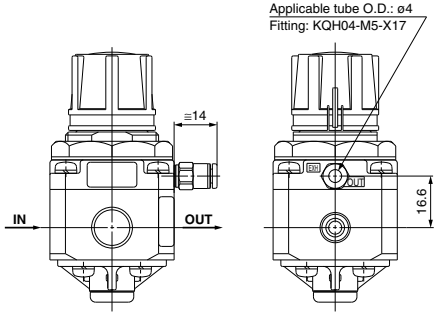
Nil	Standard
X211	With relief port fittings (Applicable tube O.D.: ø4)

Specifications

Model		SRH3□□0-X211	SRH4□□0-X211	SRH3□□1-X211	SRH4□□1-X211
Relief mechanism		Non-relief		Relief	
Port size		Rc 1/8, 1/4 URJF 1/4	Rc 1/4, 3/8, 1/2 URJF 3/8	Rc 1/8, 1/4	Rc 1/4, 3/8, 1/2
Fluid	Grade A	Clean air, N_2, Ar, CO_2, Pure water		Clean air, N_2	
	Grade B	Air, N_2, Ar, CO_2, Water		Air, N_2	
Proof pressure		1.5 MPa			
Max. operating pressure		1.0 MPa			
Set pressure	Low pressure type	0.02 to 0.2 MPa			
	High pressure type	0.05 to 0.7 MPa			
Ambient and fluid temperatures		0 to 60°C (No freezing)			
Fluid-contact material (metal)		Stainless steel 316 (Body is stainless steel 316L)			
Diaphragm material	Grade A	PTFE			
	Grade B	Fluororubber			
Weight		360 g	730 g	360 g	730 g

Dimensions

Dimensions other than below are the same as the standard type.



SMC

SRH Series
Made to Order Specifications 2

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

Made to Order

3 Machined Relief Port M5 Thread — Symbol X216

Regulator with an M5 thread machined on the relief port in order to connect it to the relief port.

SRH [Standard model no.] — **X216**

● **Made to Order**

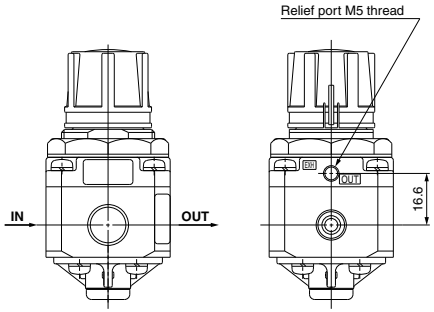
Nil	Standard
X216	Machined relief port M5 thread

Specifications

Model		SRH3□□0-X216	SRH4□□0-X216	SRH3□□1-X216	SRH4□□1-X216
Relief mechanism		Non-relief		Relief	
Port size		Rc 1/8, 1/4 URJF 1/4	Rc 1/4, 3/8, 1/2 URJF 3/8	Rc 1/8, 1/4	Rc 1/4, 3/8, 1/2
Fluid	**Grade A**	Clean air, N_2, Ar, CO_2, Pure water		Clean air, N_2	
	Grade B	Air, N_2, Ar, CO_2, Water		Air, N_2	
Proof pressure		1.5 MPa			
Max. operating pressure		1.0 MPa			
Set pressure	Low pressure type	0.02 to 0.2 MPa			
	High pressure type	0.05 to 0.7 MPa			
Ambient and fluid temperatures		0 to 60°C (No freezing)			
Fluid-contact material (metal)		Stainless steel 316 (Body is stainless steel 316L)			
Diaphragm material	**Grade A**	PTFE			
	Grade B	Fluororubber			
Weight		360 g	730 g	360 g	730 g

Dimensions

Dimensions other than below are the same as the standard type.



4 Knob Operation Product with Reduced Torque — Symbol X233

Fluoro grease is applied to an adjusting screw in order to make the knob operation easy.

∗ Oil is not used for the wetted parts.

SRH [Standard model no.] — **X233**

Knob Operation Product with Reduced Torque

Specifications

Model		SRH3□□0-X233	SRH4□□0-X233	SRH3□□1-X233	SRH4□□1-X233
Relief mechanism		Non-relief		Relief	
Port size		Rc 1/8, 1/4 URJF 1/4	Rc 1/4, 3/8, 1/2 URJF 3/8	Rc 1/8, 1/4	Rc 1/4, 3/8, 1/2
Fluid	**Grade A**	Clean air, N_2, Ar, CO_2, Pure water		Clean air, N_2	
	Grade B	Air, N_2, Ar, CO_2, Water		Air, N_2	
Proof pressure		1.5 MPa			
Max. operating pressure		1.0 MPa			
Set pressure	Low pressure type	0.02 to 0.2 MPa			
	High pressure type	0.05 to 0.7 MPa			
Ambient and fluid temperatures		0 to 60°C (No freezing)			
Fluid-contact material (metal)		Stainless steel 316 (Body is stainless steel 316L)			
Diaphragm material	**Grade A**	PTFE			
	Grade B	Fluororubber			
Weight		360 g	730 g	360 g	730 g

5 Aluminum Body — Symbol X234

The body material has been changed to aluminum.

SRH [Standard model no.] — **X234**

● **Aluminum Body**

Specifications

Model		SRH3□□0-X234	SRH4□□0-X234	SRH3□□1-X234	SRH4□□1-X234
Relief mechanism		Non-relief		Relief	
Port size		Rc 1/8, 1/4	Rc 1/4, 3/8, 1/2	Rc 1/8, 1/4	Rc 1/4, 3/8, 1/2
Fluid	**Grade B**	Air, N_2, Ar, CO_2		Air, N_2	
Proof pressure		1.5 MPa			
Max. operating pressure		1.0 MPa			
Set pressure	Low pressure type	0.02 to 0.2 MPa			
	High pressure type	0.05 to 0.7 MPa			
Ambient and fluid temperatures		0 to 60°C (No freezing)			
Fluid-contact material (metal)		A2017 (Surface treatment: Anodized)			
Diaphragm material	**Grade B**	Fluororubber			
Weight		230 g	360 g	230 g	360 g

SRH Series
Made to Order Specifications 3

Made to Order

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

6 Regulator (Stainless Steel 316) with Port Sizes Rc 3/4, Rc 1

- Regulator made of stainless steel 316 with port sizes Rc 3/4 and Rc 1.
- EPDM or FPM is used for valves (seals), O-rings and diaphragms.
- Oil-free

  Oil is not used for any of the parts and all wetted parts are degreased.

  Note) Products must be assembled under normal conditions.

Specifications

Model	XT13-394-06	XT13-394-10	INA-48-1-06	INA-48-1-10	INA-48-58-06-H	INA-48-58-10-H	INA-48-16-06	INA-48-16-10
Port size	Rc3/4	Rc1	Rc3/4	Rc1	Rc3/4	Rc1	Rc3/4	Rc1
Relief mechanism	Non-relief				Relief		Non-relief	
Fluid	Deionized water (Pure water)		Air, N_2					
Proof pressure	1.5 MPa						1.9 MPa	
Max. operating pressure	1.0 MPa						1.3 MPa	
Set pressure	0.05 to 0.5 MPa						0.1 to 1.0 MPa	
Ambient and fluid temperatures	5 to 60°C							
Fluid-contact material (metal)	Stainless steel 316							
Diaphragm material	EPDM		Fluororubber					
Weight	2100 g							

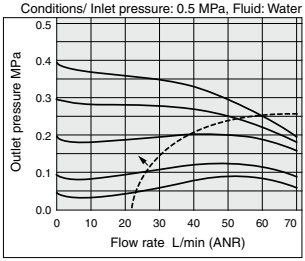
Note) The pressure gauge is optional. For details, refer to the Options on page 862.

Flow Rate Characteristics

XT13-394-06, 10

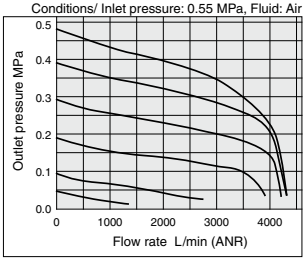
Max. operating flow rate
(It is recommended to be used within the max. operating flow rate (negative) range.)

Conditions/ Inlet pressure: 0.5 MPa, Fluid: Water

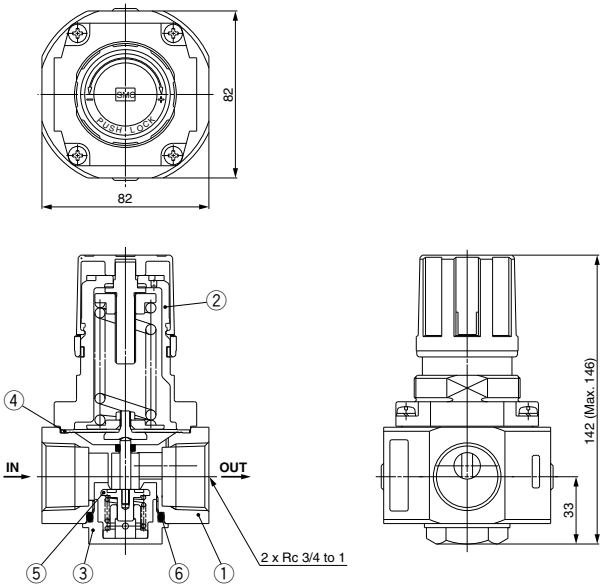


INA-48-1-06, 10

Conditions/ Inlet pressure: 0.55 MPa, Fluid: Air



Construction



Component parts

No.	Description	Material	
		XT13-394-06, 10	INA-48-1-06, 10
1	**Body**	Stainless steel 316	
2	**Bonnet**	ADC12	
3	**Valve guide**	Stainless steel 316	
4	**Diaphragm Assembly**	EPDM Stainless steel 316 (Wetted part metal)	Fluororubber Stainless steel 316 (Wetted part metal)
5	**Valve**	EPDM (Seals) Stainless steel 316 (Wetted part metal)	FPM (Seals) Stainless steel 316 (Wetted part metal)
6	**O-ring**	EPDM	Fluororubber

SRH Series
Specific Product Precautions

Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 387 to 391 for Precautions on every series.

Design and Selection

⚠ Warning

1. Confirm the fluid.

Because the fluid to be used differs depending on the product, be certain to confirm the specifications. If an incompatible fluid is used, special characteristics will change and this may cause improper operation.

2. Residual pressure relief is not possible without inlet pressure.

In the SRH series, if the inlet pressure is cut off while pressure still remains on the outlet side, it is not possible to eliminate the outlet pressure (residual pressure relief). If it will be necessary to eliminate pressure from the outlet side, a circuit should be provided for residual pressure relief.

⚠ Caution

1. Oscillation (beat) may occur with some operating conditions even if the operation is within specification. Contact SMC for that case.

Mounting

⚠ Caution

1. Open the sealed package inside a clean room.

These products are packaged in sealed double packaging in a clean room. It is recommended that the inside packaging be opened in a clean room or other clean environment.

2. 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.

3. Be certain that sealing material does not get inside the piping.

When screwing in pipes and joints etc., take care that cutting dust from the pipe threads, sealing material, and the like do not get inside the piping. If debris or scale etc. remain inside the piping, this may cause faulty operation or failure. Also, when thread tape is used, leave 1.5 to 2 threads exposed at the end of the pipe.

4. Confirm the mounted orientation of the product.

The side marked IN is the fluid inlet port, and the side marked OUT is the fluid exhaust port. If mounted backwards, the device will not operate properly.

Pressure Adjustment

⚠ Warning

1. Do not use tools when operating the pressure regulator knob.

If tools etc. are used to operate the pressure regulator knob, damage may occur. Operate this knob only by hand.

⚠ Caution

1. Perform pressure adjustments only after releasing the lock.

When the pressure regulator knob will not turn, it is locked. Release the lock by pulling the pressure regulator knob out. If the knob is turned by force damage will occur.

Lock again after adjusting the pressure by pressing the knob back down.

2. Adjust pressure in an upward direction.

A correct pressure setting cannot be achieved by adjusting the pressure downward. The outlet pressure is increased by turning the pressure regulator knob to the right, and decreased by turning the knob to the left.

3. In the case of the non-relief type, the pressure cannot be reduced by turning the pressure regulator knob to the left.

In the case of the non-relief type regulator, the outlet pressure will not decrease even if the knob is turned to the left, when there is no outlet fluid consumption. The knob will be damaged if it is turned by force.

In case the pressure setting is too high, reduce the pressure on the outlet side to less than the desired setting pressure by consuming fluid on the outlet side, and then reset to the desired pressure.

4. Confirm the inlet pressure.

Set the outlet pressure to no more than 85% of the inlet pressure. If the inlet pressure is too low, a correct setting pressure cannot be attained.

5. Do not use fluid containing solid matter.

This will cause faulty operation.