

Clean Regulator



Contamination controlled stainless steel regulator

SRH Series



CAT.EUS120-3Bc-UK

Clean Regulator

SRH Series

Contamination controlled stainless steel regulator

Outstanding corrosion resistance

All metal parts in contact with fluid use stainless steel 316

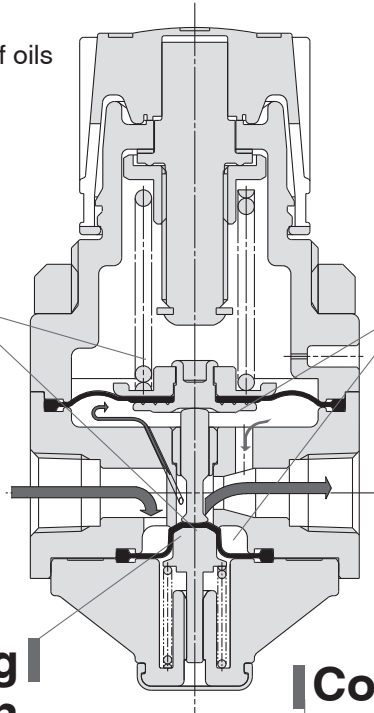
Oil free

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

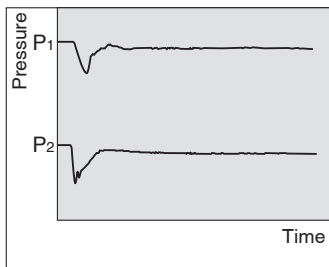
Pulsation suppressing design

Consistent clean room production

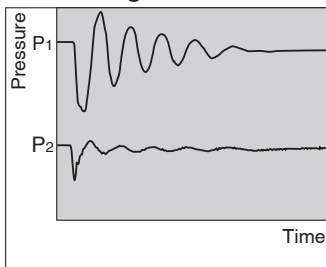
Washed, assembled and inspected in a Class 100 environment, and sealed in double bags

Step response comparison

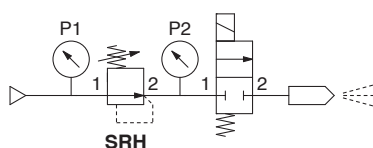
SRH



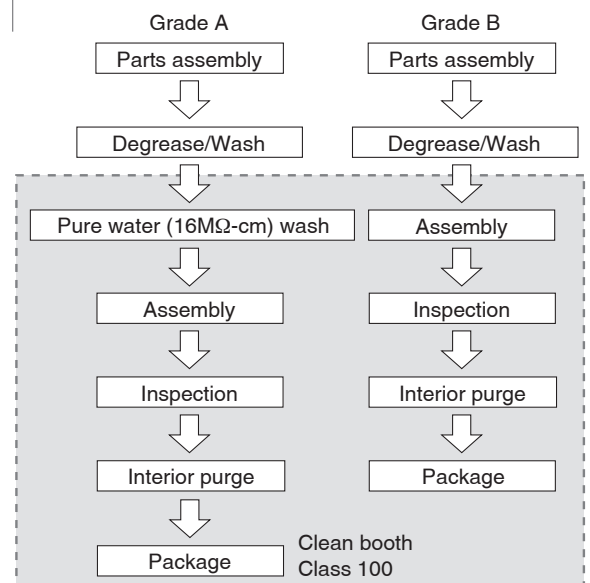
Current regulator



Circuit diagram



Manufacturing process



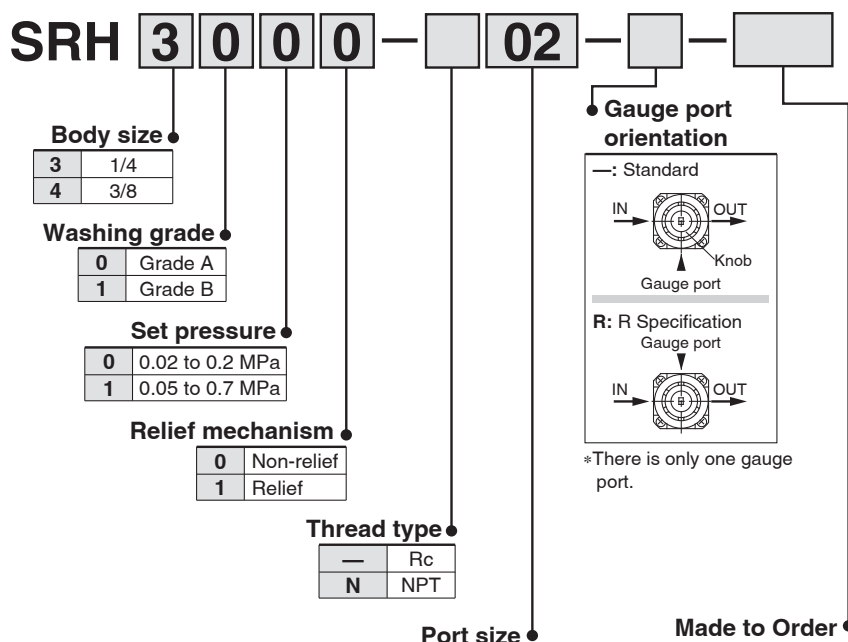
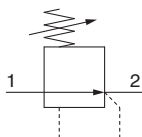
Clean Regulator *SRH Series*

RoHS

How to Order



Symbol



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

Refer to pages 10 to 12 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
X328	Pressure gauge included

Note) Refer to page 8 for pressure gauge details.

Note that SMC does not produce pressure gauges for port sizes A2 and A3.

Specifications

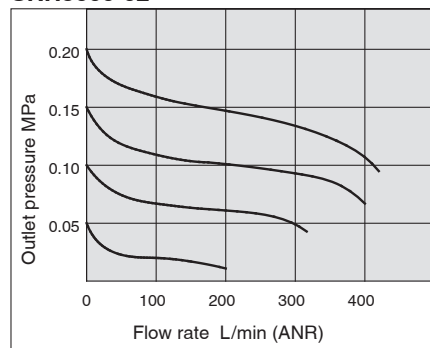
Model		SRH3□□0	SRH4□□0	SRH3□□1	SRH4□□1
Relief mechanism		Non-relief		Relief	
Port size		1/8, 1/4 URJF 1/4	1/4, 3/8, 1/2 URJF 3/8	1/8, 1/4	1/4, 3/8, 1/2
Fluid	Grade A	Clean air, N2, Ar, CO2, Pure water		Clean air, N2	
	Grade B	Air, N2, Ar, CO2, Water		Air, N2	
Proof pressure		1.5 MPa			
Max. operating 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)

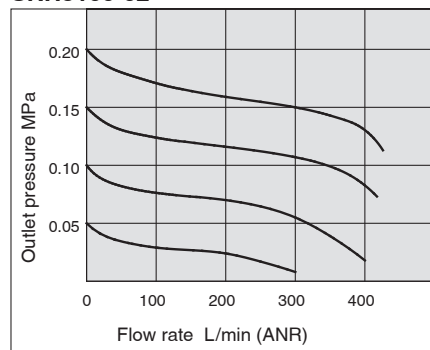
Fluid: Air

Conditions/ Inlet pressure: 0.5 MPa

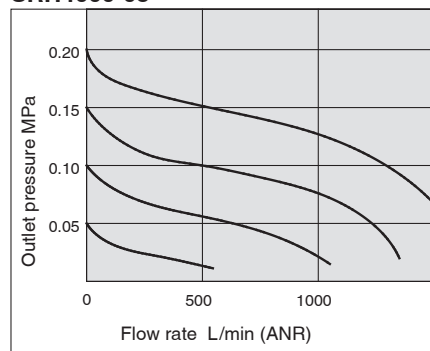
SRH3000-02



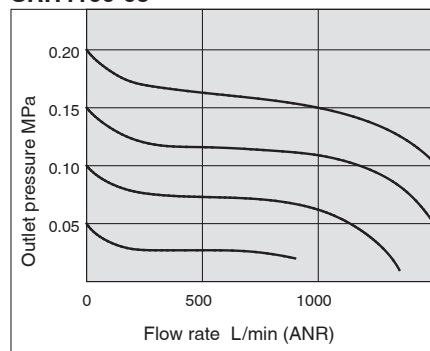
SRH3100-02



SRH4000-03

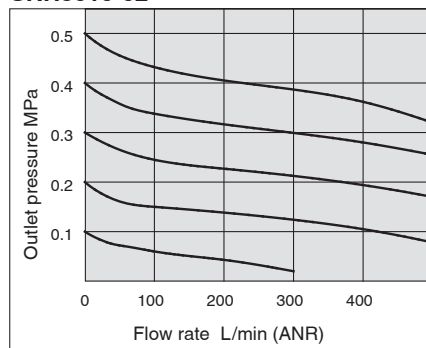


SRH4100-03

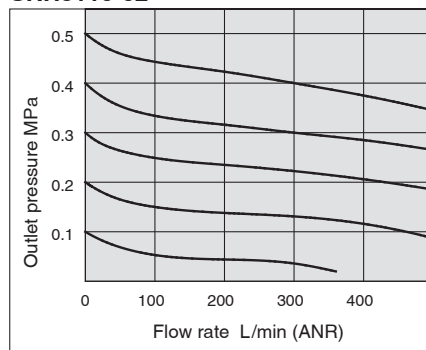


Conditions/ Inlet pressure: 0.7 MPa

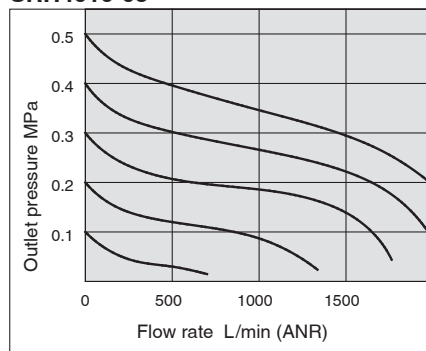
SRH3010-02



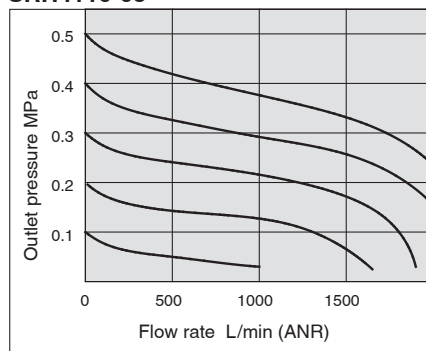
SRH3110-02



SRH4010-03



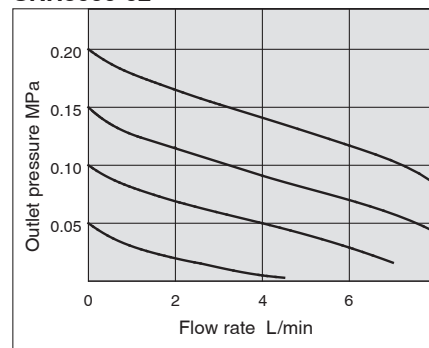
SRH4110-03



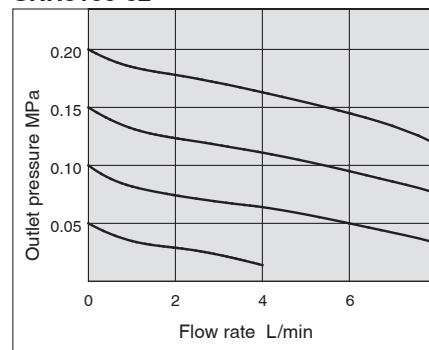
Fluid: Water

Conditions/ Inlet pressure: 0.5 MPa

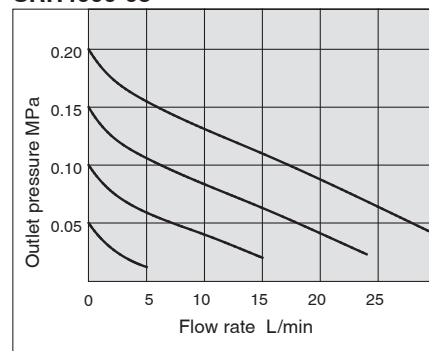
SRH3000-02



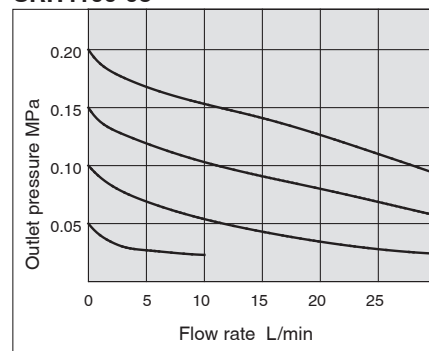
SRH3100-02



SRH4000-03



SRH4100-03

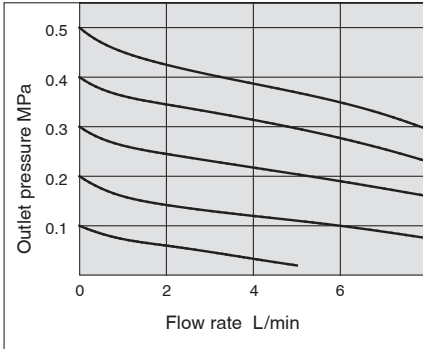


Pressure Characteristics (Representative Value)

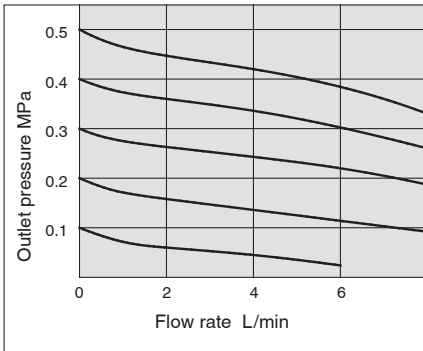
Fluid: Water/Air

Conditions/ Inlet pressure: 0.7 MPa

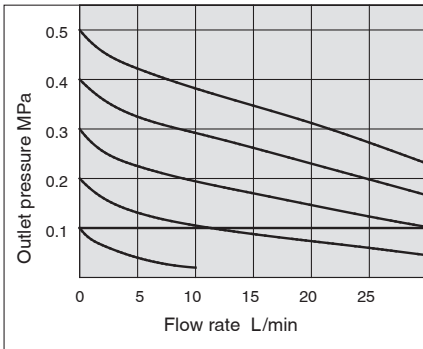
SRH3010-02



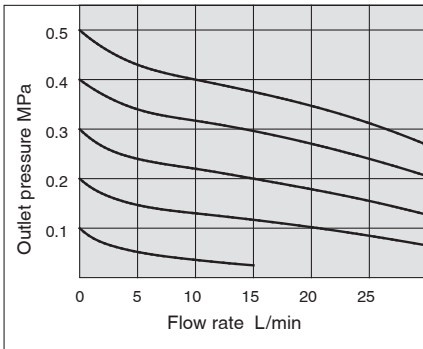
SRH3110-02



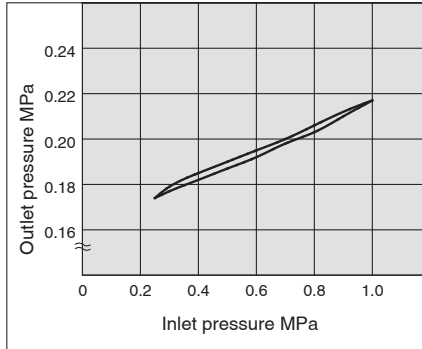
SRH4010-03



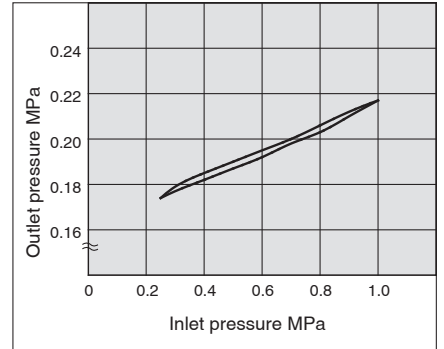
SRH4110-03



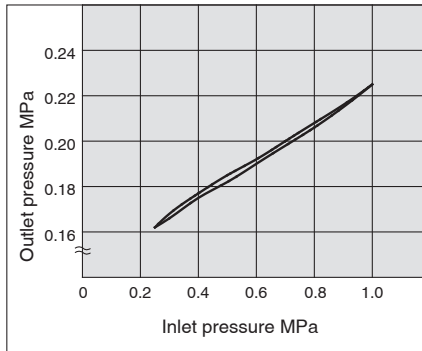
SRH3000



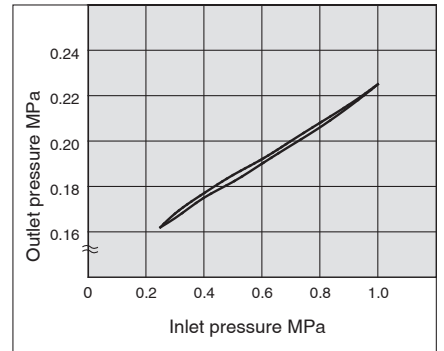
SRH3100



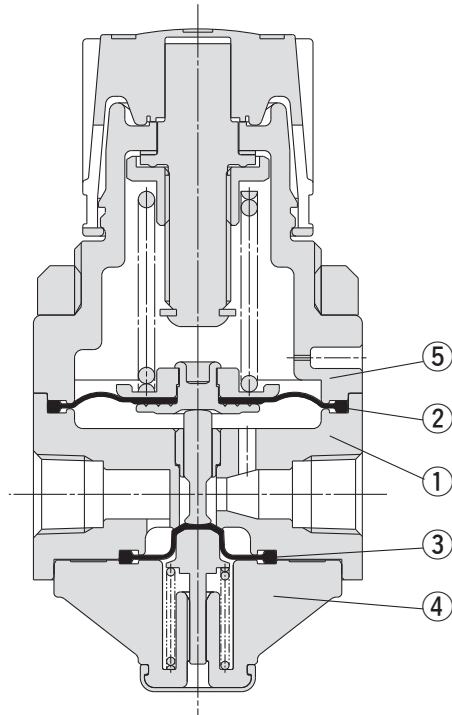
SRH4000



SRH4100



Construction

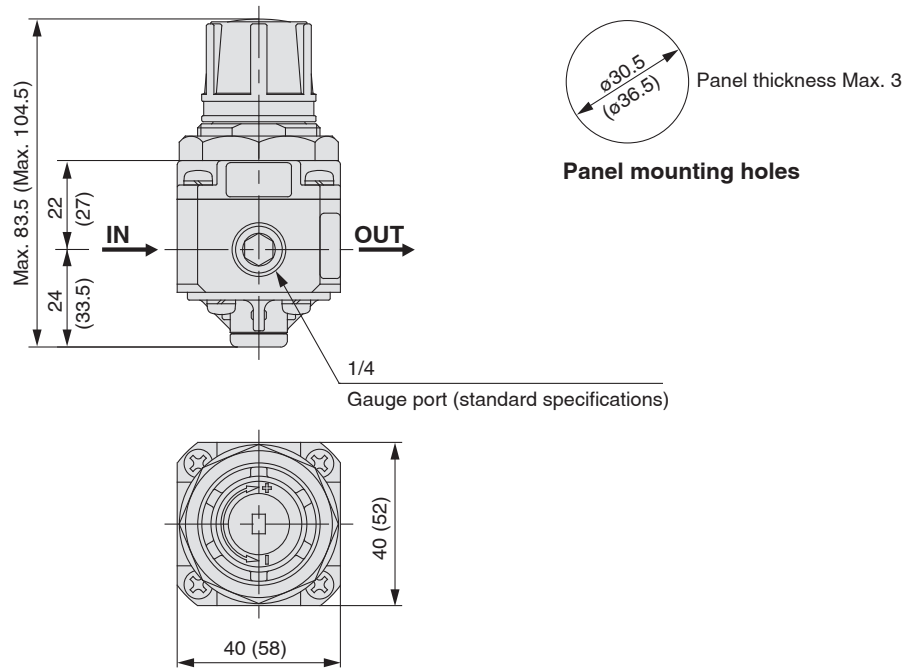


Component parts

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	

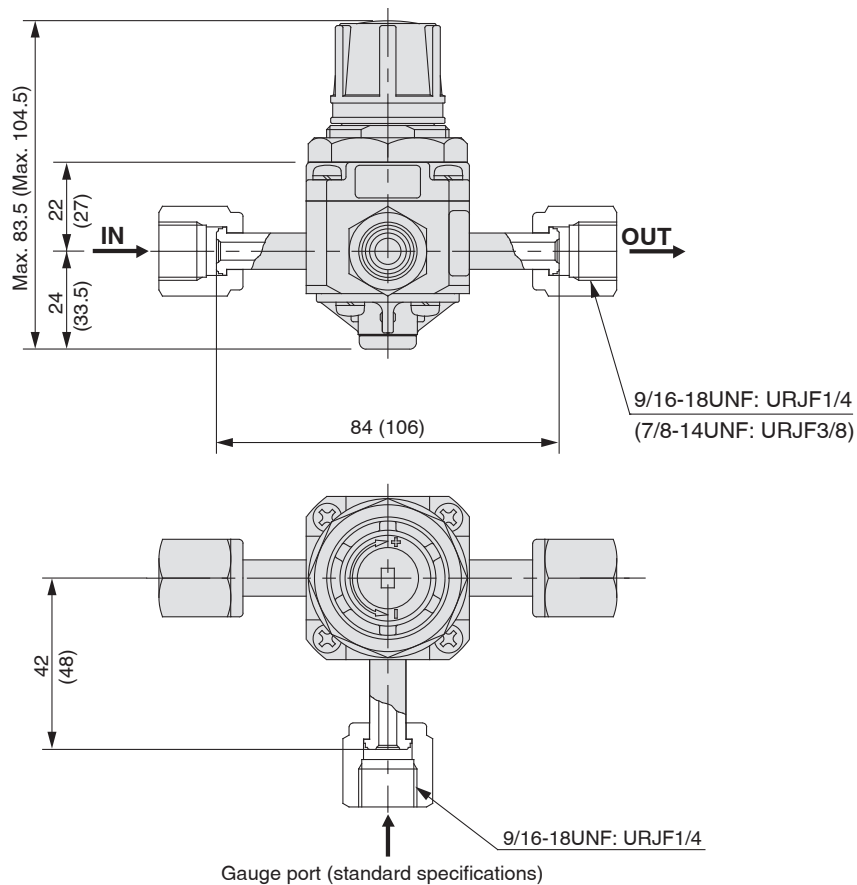
Dimensions

Rc thread type



Dimensions inside () are for SRH4000.

Metal gasket seal fitting type

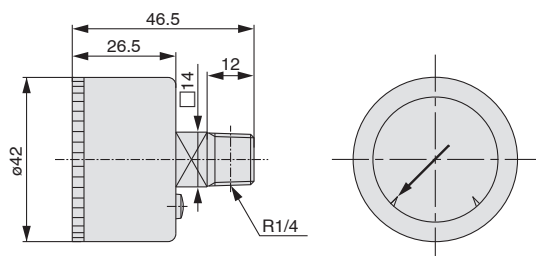


Dimensions inside () are for SRH4000.

Options

Pressure Gauge

Dimensions



Specifications

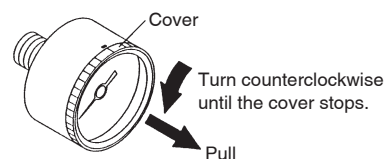
Item	Model	G46-□-02-SRA	G46-□-02-SRB
Port size		R 1/4	
Operating temperature range		0 to 60°C (No freezing)	
Accuracy		± 3%F.S.	
Scale range		270°	
Parts washing (fluid-contact parts)		Precision wash	General degrease
Assembly and adjustment environment		Clean room	General production line
Oil free / Water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

Models

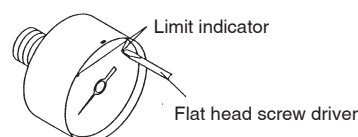
Model	Pressure range	Indicator units
	MPa	
G46-2-02-SRA	0 to 0.2	MPa
G46-2-02-SRB		
G46-4-02-SRA	0 to 0.4	
G46-4-02-SRB		
G46-7-02-SRA	0 to 0.7	
G46-7-02-SRB		
G46-10-02-SRA	0 to 1.0	
G46-10-02-SRB		

Procedure for setting the limit gauge indicator

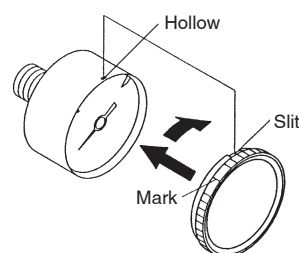
- 1) Before setting the limit indicator, turn the cover counterclockwise (approximately 6 to 7 mm) until it stops. Then, remove by pulling it towards you.



- 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 cover for safety instructions.

Selection

⚠ Caution

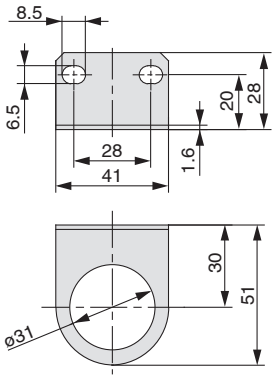
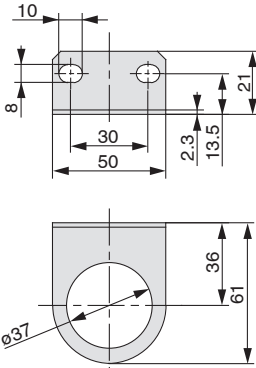
- 1) Avoid use in locations with strong pressure pulsation or vibration.
- 2) Contact SMC if the product is to be used in an application with a high frequency of operation.

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.



1 EPDM Seals Symbol **X210**

Regulator with seals made of a different material.

SRH Standard model no. — **X210**

● EPDM seals

Specifications

Model		SRH3□□0-X210	SRH4□□0-X210	SRH3□□1-X210	SRH4□□1-X210
Relief mechanism		Non-relief		Relief	
Port size		1/8, 1/4 URJF 1/4	1/4, 3/8, 1/2 URJF 3/8	1/8, 1/4	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

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

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

SRH Standard model no. — **X211**

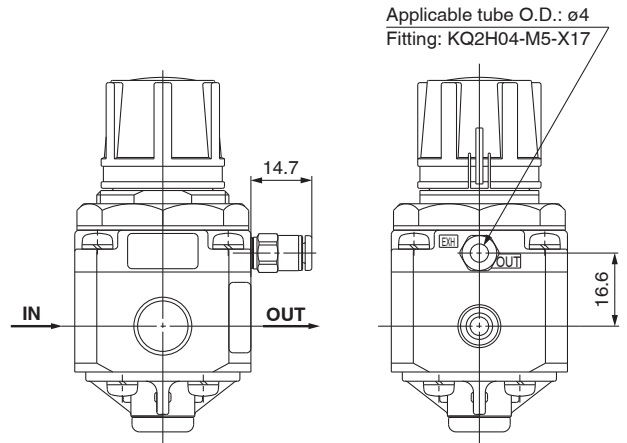
Made to Order

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

The specifications are the same as those of the standard model. Refer to page 3 for details.

Dimensions

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



SRH Series Made to Order Specifications 2

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



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**

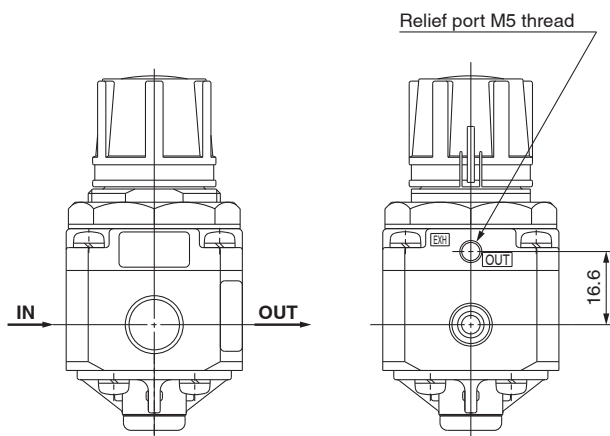
● Made to Order

—	Standard
X216	Machined relief port M5 thread

The specifications are the same as those of the standard model. Refer to page 3 for details.

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

The specifications are the same as those of the standard model. Refer to page 3 for details.

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		1/8, 1/4	1/4, 3/8, 1/2	1/8, 1/4	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

6 Pressure gauge included **Symbol X328 (A, B, C, D)**

Specification that includes a pressure gauge

SRH Standard model no. — **X328** **A**

Pressure gauge included ●

Pressure gauge max. display pressure*1 ●

A	0.2 MPa
B	0.4 MPa
C	0.7 MPa
D	1.0 MPa

*1 Set the regulator pressure to the max. display pressure of the pressure gauge or lower.

About the included pressure gauge

Clean regulator washing grade	Pressure gauge model
Grade A	G46-□-02-SRA
Grade B	G46-□-02-SRB

The specifications are the same as those of the standard model. Refer to page 3 for details.

SRH Series Made to Order Specifications 3

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



7 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, N2					
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							

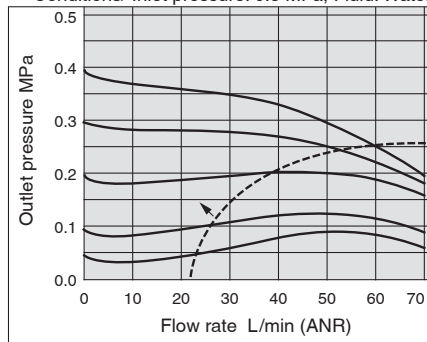
Note) The pressure gauge is optional. For details, refer to the Options on page 8.

Flow Rate Characteristics

XT13-394-06, 10

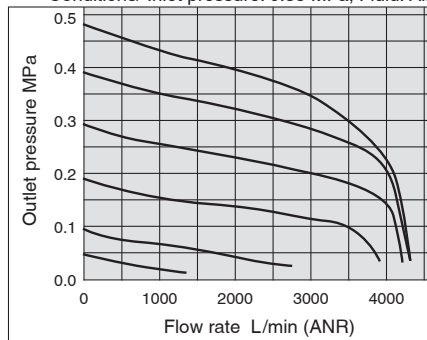
----- Max. operating flow rate
(It is recommended to be used within the max. operating flow rate (negative) range.)

Conditions/ Inlet pressure: 0.5 MPa, Fluid: Water

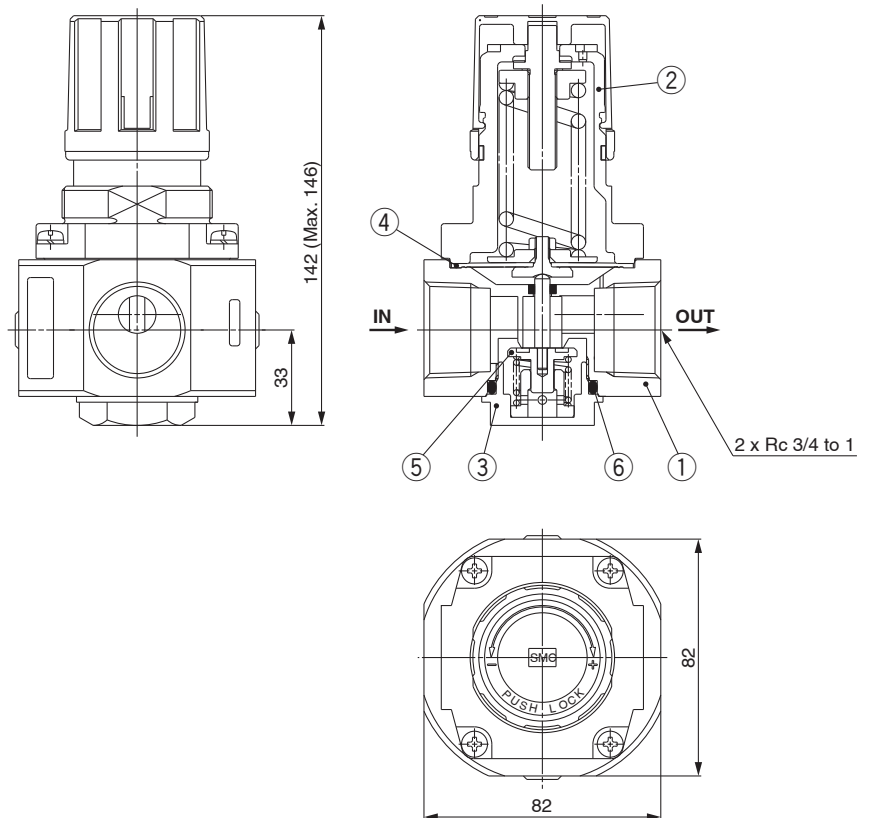


INA-48-1-06, 10

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	



SRH Series

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 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.

2. When operating at an inlet pressure lower than the inlet pressure used in the flow rate characteristics graph, the pressure drop on the outlet side may be greater. Therefore, be sure to conduct testing using the actual equipment.

For pressure control equipment selection, refer to the "Product Selection Guide."

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.

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) ¹⁾, and other safety regulations.

-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- 1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. ²⁾ Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.
- 2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

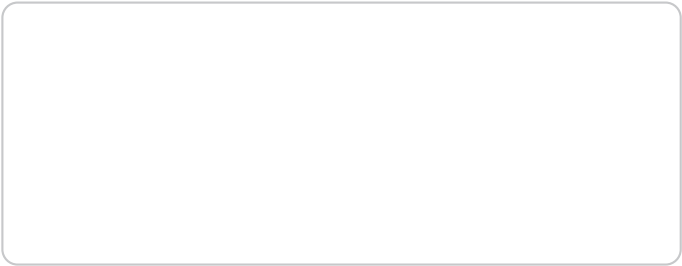
Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.
Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.



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