

Clean Regulator

Series *SRH*



Contamination controlled stainless steel regulator

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

Clean Regulator

Series SRH

Contamination controlled stainless steel regulator

Outstanding corrosion resistance

All metal parts in contact with fluid use stainless steel 316

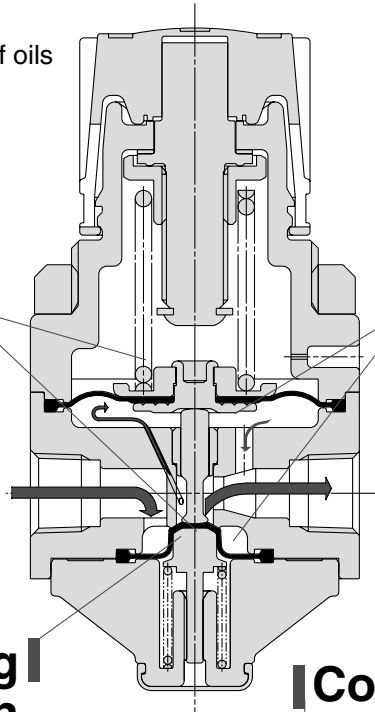
Oil free

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



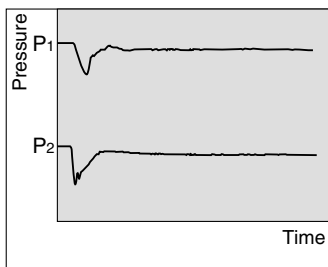
Designed to minimize residual fluid

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

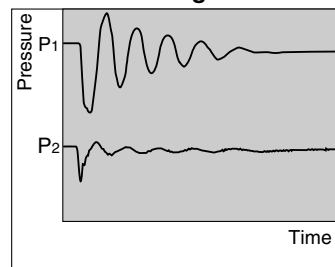
Pulsation suppressing design

Step response comparison

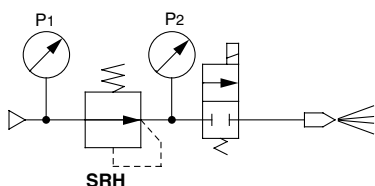
SRH



Conventional regulator



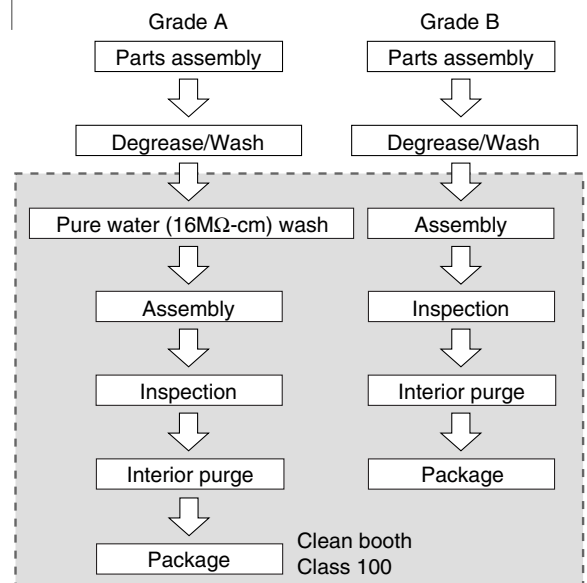
Circuit diagram



Consistent clean room production

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

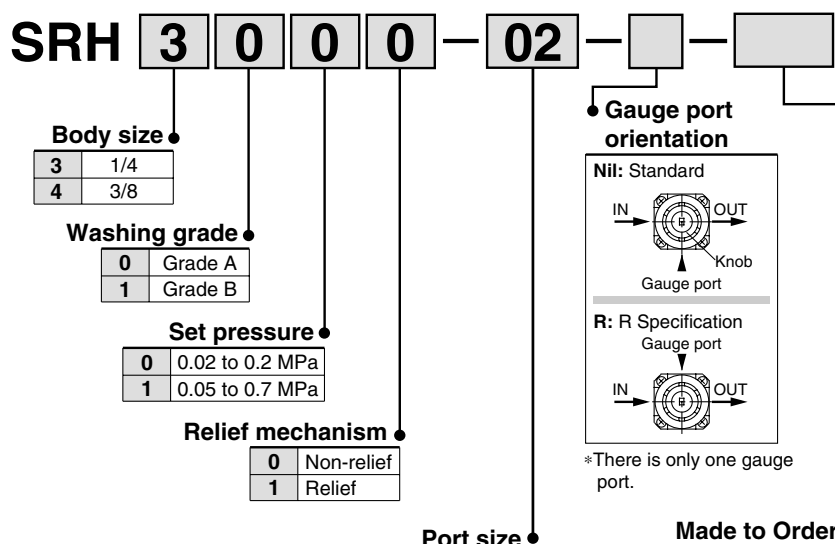
Manufacturing process



Clean Regulator

Series *SRH*

How to Order



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

Refer to pages 596 to 598 for details.

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

Note) The pressure gauge is optional. Refer to option specifications on page 594.

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, 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			
Mass		360 g	730 g	360 g	730 g

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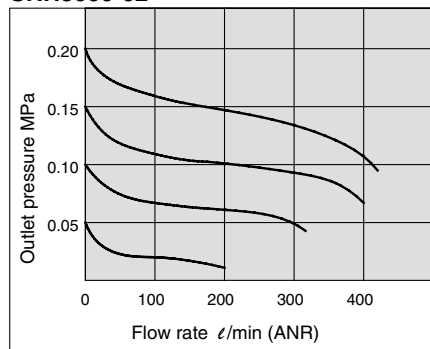
AP100

Flow Rate Characteristics (Representative Value)

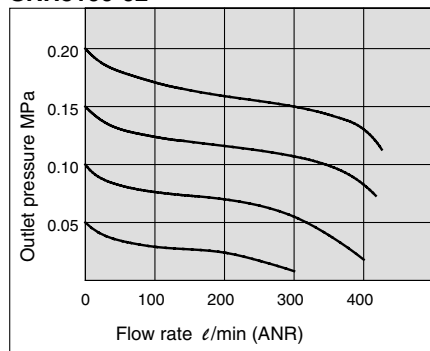
Fluid: Air

Conditions/ Inlet pressure: 0.5 MPa

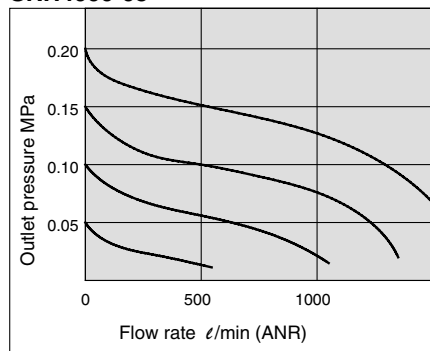
SRH3000-02



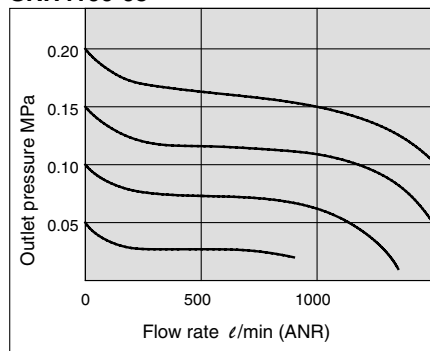
SRH3100-02



SRH4000-03

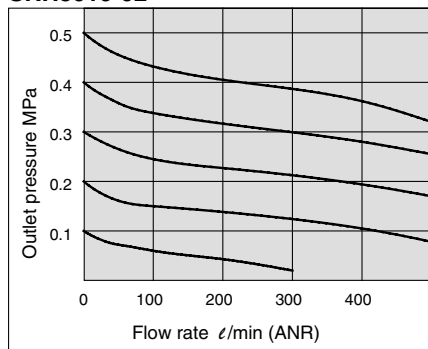


SRH4100-03

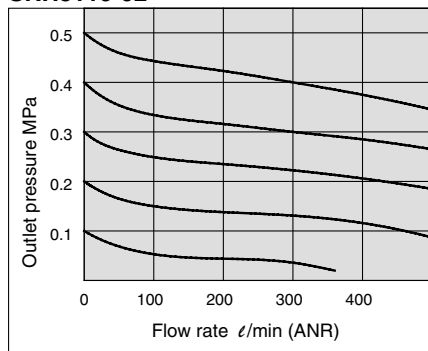


Conditions/ Inlet pressure: 0.7 MPa

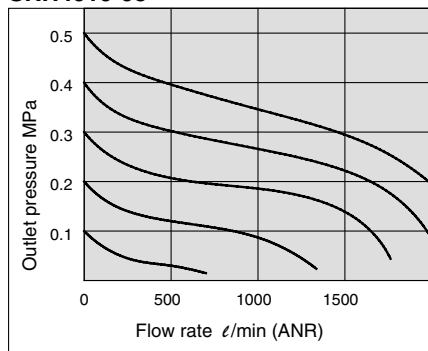
SRH3010-02



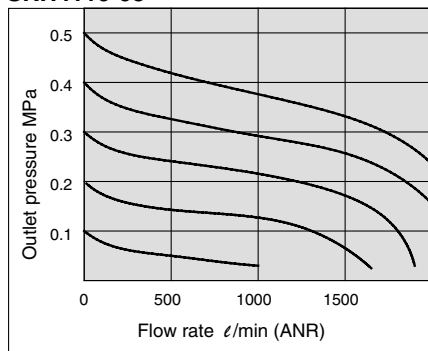
SRH3110-02



SRH4010-03



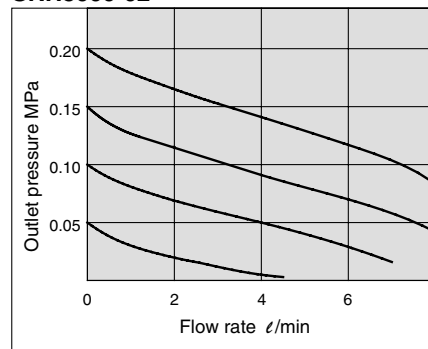
SRH4110-03



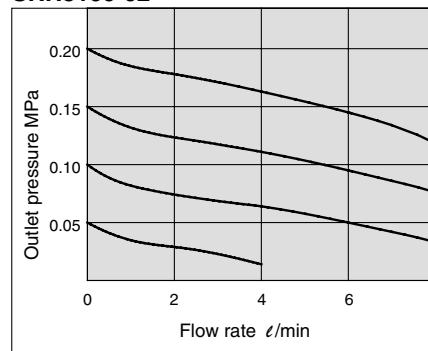
Fluid: Water

Conditions/ Inlet pressure: 0.5 MPa

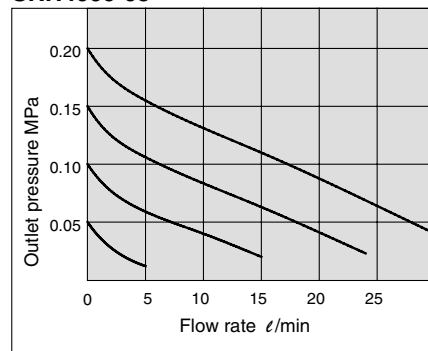
SRH3000-02



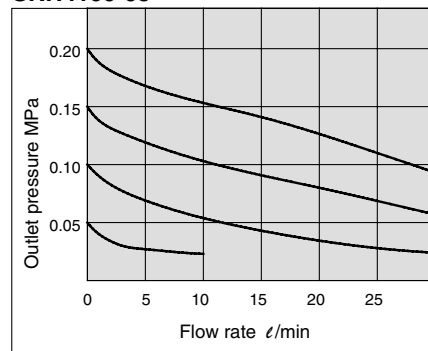
SRH3100-02



SRH4000-03



SRH4100-03



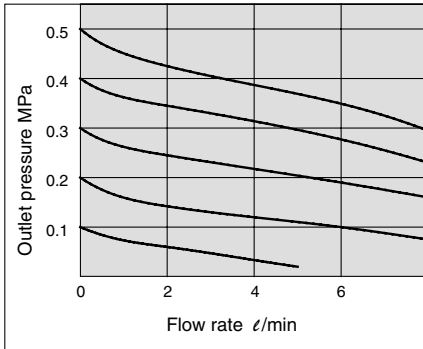
Pressure Characteristics (Representative Value)

Fluid: Water/Air

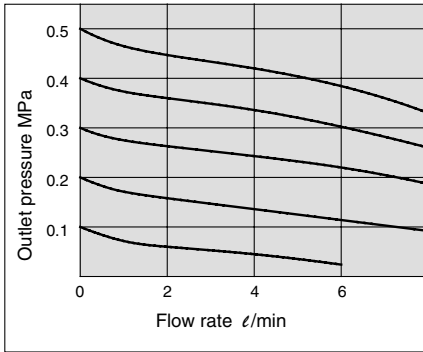
Conditions/ Inlet pressure: 0.7 MPa, Outlet pressure: 0.2 MPa, Flow rate 2 ℓ/min

Conditions/ Inlet pressure: 0.7 MPa

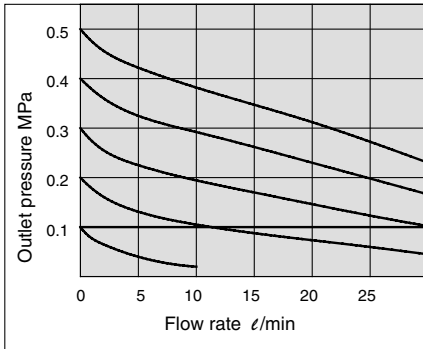
SRH3010-02



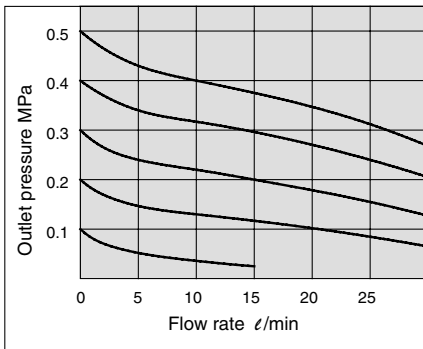
SRH3110-02



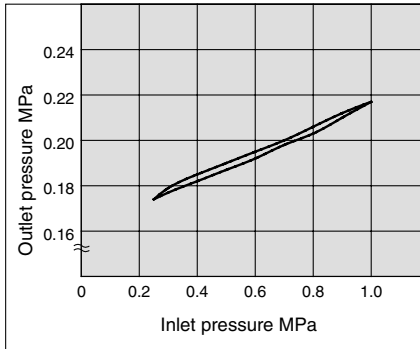
SRH4010-03



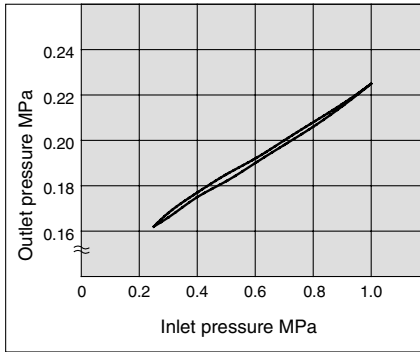
SRH4110-03



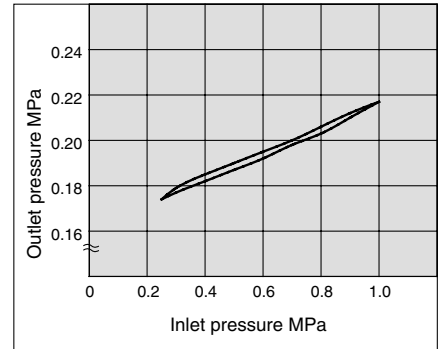
SRH3000



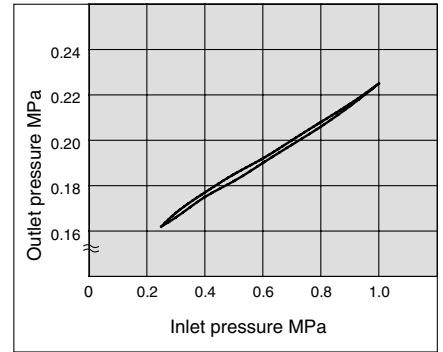
SRH4000



SRH3100



SRH4100



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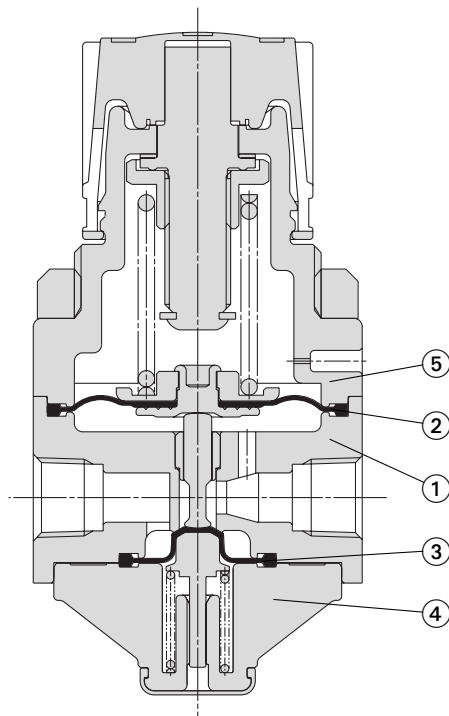
VEA

VY2

VBA
VBAT

AP100

Construction

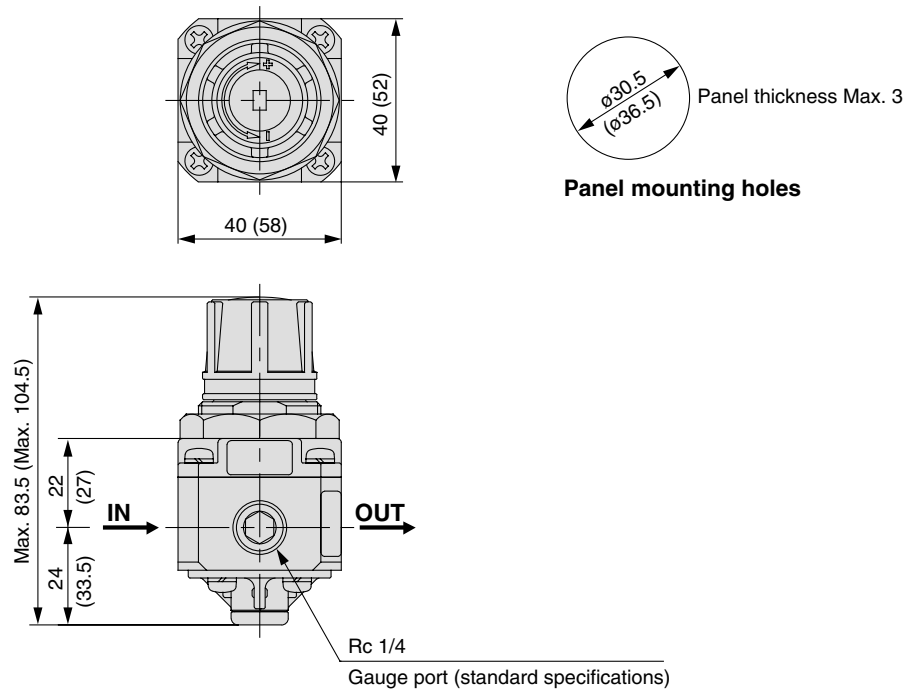


Component parts

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	

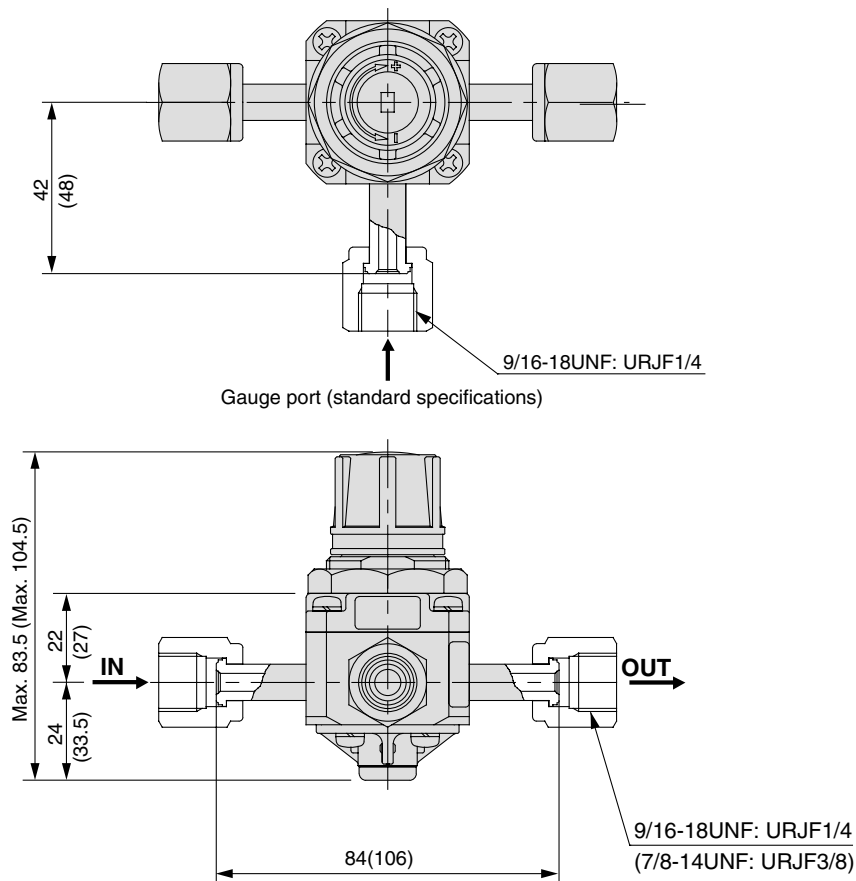
Dimensions

Rc thread type



Dimensions inside () are for SRH4000.

Metal gasket seal fitting type



Dimensions inside () are for SRH4000.

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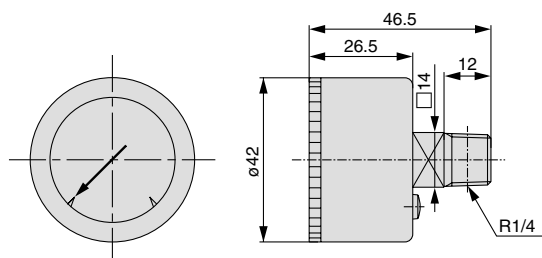
VBA
VBAT

AP100

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	
Mass		80 g	

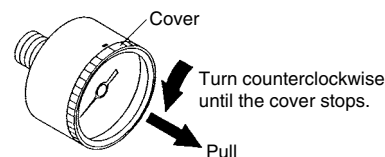
Models

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		

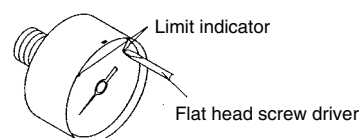
Note) Consult SMC for the supply of types with metal gasket seal.

Procedure for setting the limit gauge indicator

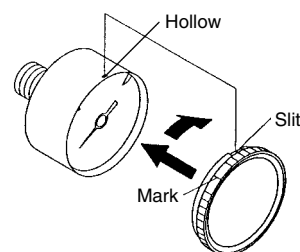
- 1) Before setting the limit indicator, turn the cover counterclockwise (approximately 6 to 7 mm) until it stops. Then, remove by pulling it towards you.



- 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 before handling. Refer to front matters 42 and 43 for Safety Precautions and pages 287 to 291 for Precautions on every series.

Selection

! Caution

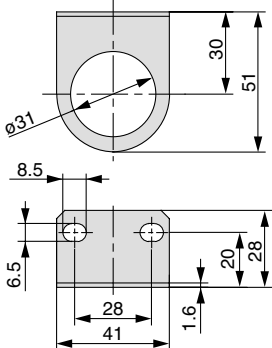
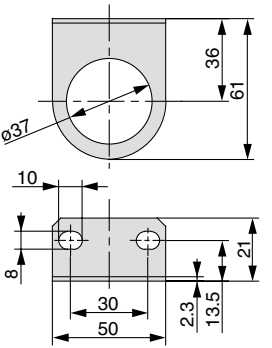
- 1) Avoid use in locations with strong pressure pulsation or vibration.
- 2) Contact SMC if the product is to be used in an application with a high frequency of operation.

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		

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AP100

Series SRH Made to Order Specifications 1

Contact SMC for detailed dimensions, specifications and delivery.



1 EPDM Seals 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		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			
Mass		360 g	730 g	360 g	730 g

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

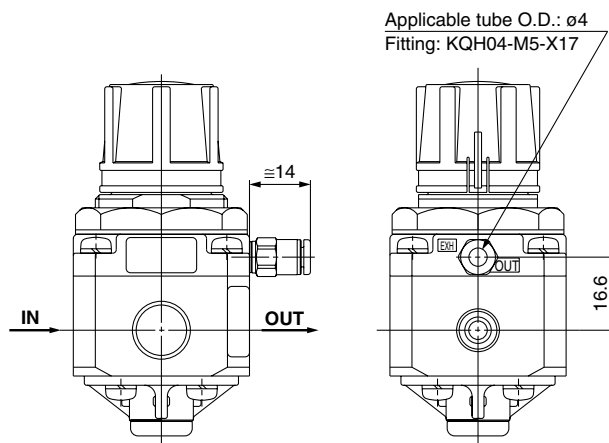
Nil	Standard
X211	With relief port fittings (Applicable tube O.D.: ø4)

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			
Mass		360 g	730 g	360 g	730 g

Dimensions

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



Series SRH Made to Order Specifications 2

Contact SMC for detailed dimensions, specifications and delivery.



3 Machined Relief Port M5 Thread 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

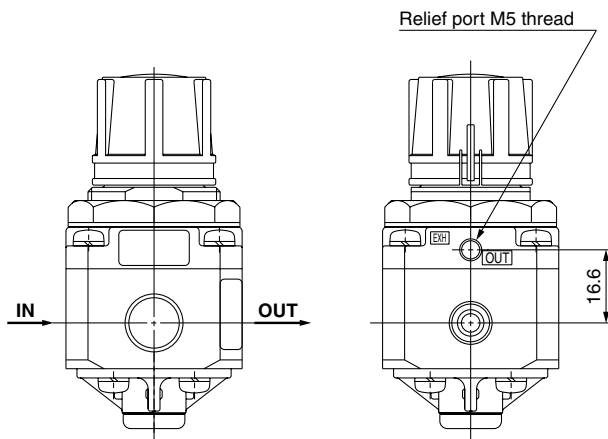
Nil	Standard
X216	Machined relief port M5 thread

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			
Mass		360 g	730 g	360 g	730 g

Dimensions

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



4 Handle Operation Product with Reduced Torque X233

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

* Oil is not used for the wetted parts.

SRH Standard model no. — X233

Handle 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			
Mass		360 g	730 g	360 g	730 g

5 Aluminum Body 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			
Mass		230 g	360 g	230 g	360 g

Series SRH Made to Order Specifications 3

Contact SMC for detailed dimensions, specifications and delivery.



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

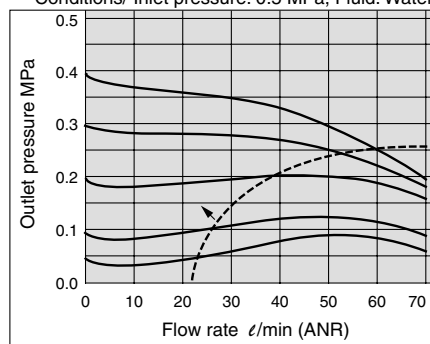
Model	XT13-394-06	XT13-394-10	INA-48-1-06	INA-48-1-10
Port size	Rc 3/4	Rc 1	Rc 3/4	Rc 1
Relief mechanism	Non-relief			
Fluid	Pure water		Air, N2	
Proof pressure	1.5 MPa			
Max. operating pressure	1.0 MPa			
Set pressure	0.05 to 0.5 MPa			
Ambient and fluid temperatures	5 to 60°C			
Fluid-contact material (metal)	Stainless steel 316			
Diaphragm material	EPDM		Fluororubber	
Mass	2100 g			

Flow Rate Characteristics

XT13-394-06, 10

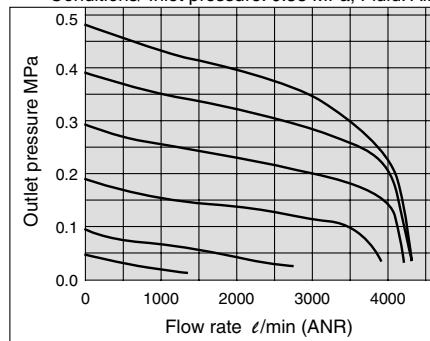
--- Max. operating flow rate
(It is recommended to be used within the max. operating flow rate (negative) range.)

Conditions/ Inlet pressure: 0.5 MPa, Fluid: Water

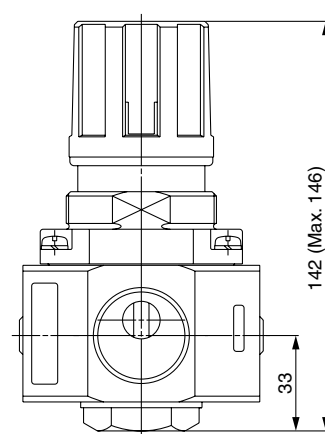
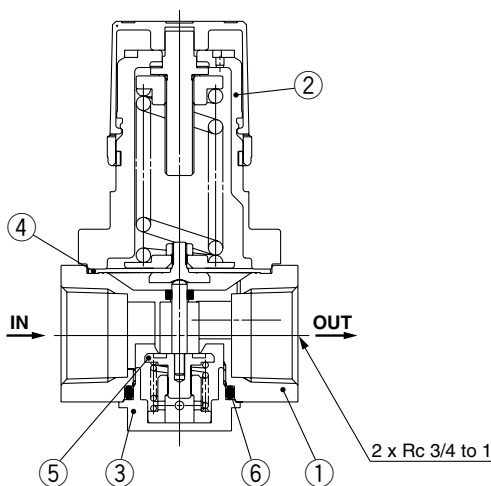
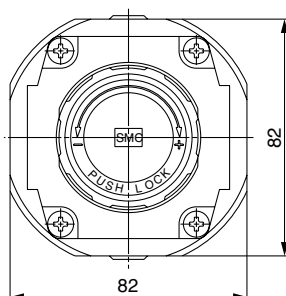


INA-48-1-06, 10

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	



Series **SRH**

Specific Product Precautions

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Precautions and pages 287 to 291 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.

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.

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