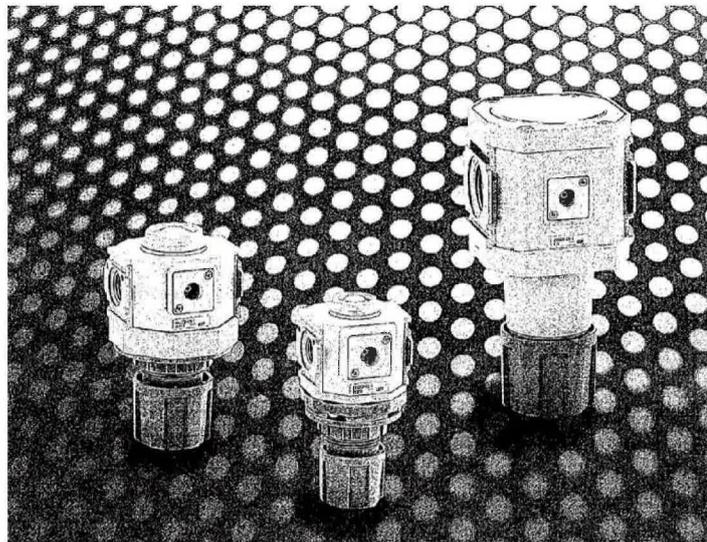


INSTRUCTION MANUAL

OIL PROHIBITED REGULATOR RN3000 RN4000 RN8000



- Read this Instruction Manual before using the product.
- In particular, read the safety notes carefully.
- Retain this instruction manual with the product for further consultation whenever necessary.

For safety use

When designing and manufacturing equipment using our products, you are obligated to confirm that the safety of the system operated by the mechanical mechanism of the equipment, the pneumatic control circuit or the water control circuit, and the electrical control that controls these circuits can be ensured, and to manufacture safe equipment.

To use our products safely, it is important to select, use, and handle the products, as well as to maintain and manage them properly.

To ensure the safety of the equipment, be sure to observe all warnings and precautions.

We ask that you confirm that safety can be ensured in your equipment and that you manufacture safe equipment.



- 1. This product is designed and manufactured as equipment or part for general industrial machinery. Therefore, handling should be performed by persons with sufficient knowledge and experience.**
- 2. Be sure to use the product within the product specifications.**

It cannot be used outside of product-specific specifications. Never modify or perform any additional work on the product.

This product is intended for use in general industrial equipment or part. Therefore, it is not applicable when used outdoors or in the following conditions or environments.
(However, if you consult with us before adopting the product and agree with our product specifications, it is applicable, but please take safety measures to avoid danger in the unlikely event of malfunction.)

 - [1] Use in equipment in direct contact with or in applications for atomic energy, railways, aviation, ships, vehicles, medical machinery, beverages or food, etc. and use in applications requiring safety such as recreational equipment, emergency shutdown circuits, press machines, brake circuits, and safety measures.
 - [2] Use in applications that are expected to have a significant impact on people and property and require special safety.
- 3. Be sure to observe all organization safety standards, laws and regulations, etc. related to equipment design, management, etc.**

ISO4414, JIS B 8370: General Rules for Pneumatic Systems)
JFPS2008 (Guidelines for the Selection and Use of Pneumatic Cylinders)
High Pressure Gas Safety Act, Industrial Safety and Health Act and other safety regulations, organization standards, laws and regulations, etc.
- 4. Do not handle this product or remove any piping or equipment until you are sure of its safety.**
 - [1] Before inspecting or maintaining machines or equipment, be sure to confirm that all systems involving this product are safe.
 - [2] Even when the operation is stopped, there may be hot or charged parts present, so please be careful.
 - [3] When inspecting and maintaining equipment, shut off the supply air and supply water as energy sources and the power to the relevant equipment, exhaust any compressed air in the system, and take care to avoid water leaks and electrical leaks.
 - [4] When starting up or restarting a machine or equipment that uses pneumatic equipment, confirm that the safety of the system, including measures to prevent ejection, is ensured.
- 5. To prevent accidents, be sure to observe the warnings and precautions on the following pages.**

■ **The precautions shown here are classified into three safety precaution levels: "Danger," "Warning," and "Caution."**



DANGER

:Failure to pay attention to DANGER notices may cause a situation that results in a fatality or serious injury and that requires urgent addressing.



WARNING

:Failure to pay attention to WARNING notices may result in a fatality or serious injury.



CAUTION

:Failure to pay attention to CAUTION notices may result in injury or damage to equipment or facilities.

Precautions classified as "CAUTION" may still lead to serious results depending on the situation.

All of the above are important information and must be followed.

Warranty notice

- **Warranty Period**

This product is warranted for one (1) year from the date of delivery to the location specified by the customer.

- **Warranty coverage**

If the product specified herein fails for reasons attributable to CKD within the above warranty period, CKD will promptly provide a replacement for the faulty product or a part thereof free of charge or repair the faulty product at one of CKD's facilities free of charge.

However, following failures are excluded from this warranty:

- [1] When handling or use under conditions or environments other than those described in the catalog or specifications
- [2] Failure not caused by the product.
- [3] When the product is used in a manner other than its intended use.
- [4] Failure caused by modifications/alterations or repairs not carried out by CKD.
- [5] Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
- [6] Failure caused by a natural disaster or other disaster that is not our responsibility.

Please note that the warranty here applies to the delivered product alone and excludes any damages caused by defects in the delivered product.

- **Confirmation of product compatibility**

It is the customer's responsibility to verify adaptability of our products with the system, machines, and equipment used by the customer.

CONTENTS

OIL PROHIBITED REGULATOR

RN Series

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1. Unpacking



CAUTION To prevent foreign matter from entering the inside of the product, do not unpack the product immediately before installing the piping.

- Make sure that the model code indicated on the product matches the product that you have ordered.
- Check the exterior of the product for damage.

2. Installation

2.1 Installation environment



- CAUTION**
- 1) Install the product avoiding direct sunlight.
 - 2) Avoid installing where vibration or impact is present.
 - 3) Large drainage
Install the air dryer and drain separator before the air filter. If there is a large drainage from the compressor, hot and highly humid air could shorten the equipment life or result in corrosion.
 - 4) Water-lubricated compressor circuit.
Make sure that chlorine-based substances, etc., do not enter compressed air.

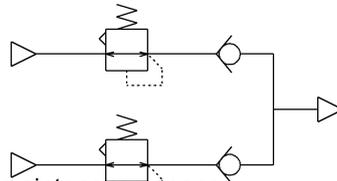
Avoid use in the following environments;

- Where the ambient temperature is beyond a range of 5°C - 60°C.
- The air may freeze.
- The water drop or cutting oil is splashed onto the product
- Humidity is high and temperature changes largely, causing dew condensation.
- Where sea breeze or seawater is splashed onto the product.
- Where corrosive gas, fluid or chemical exists.

2.2 Installation

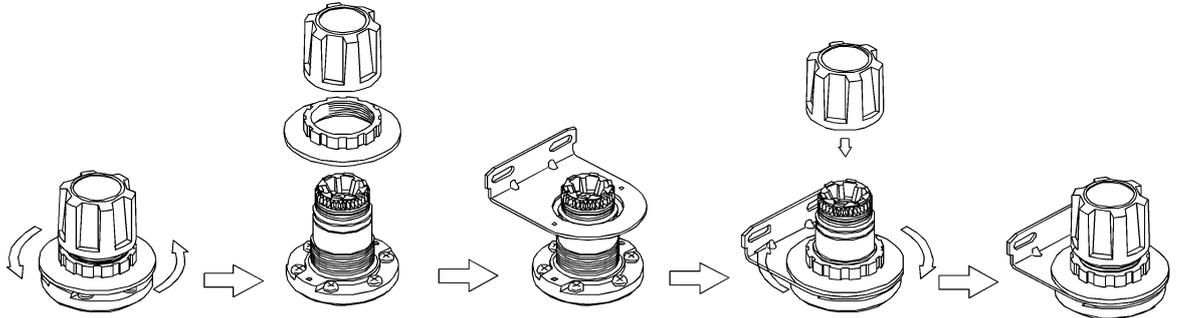


- CAUTION**
- 1) Do not move or swing the product by holding the pressure regulator knob of the regulator part.
 - 2) When connecting the products in parallel as shown below, do not make the secondary side a closed circuit. If the closed circuit is required, always put a check valve on each secondary side.

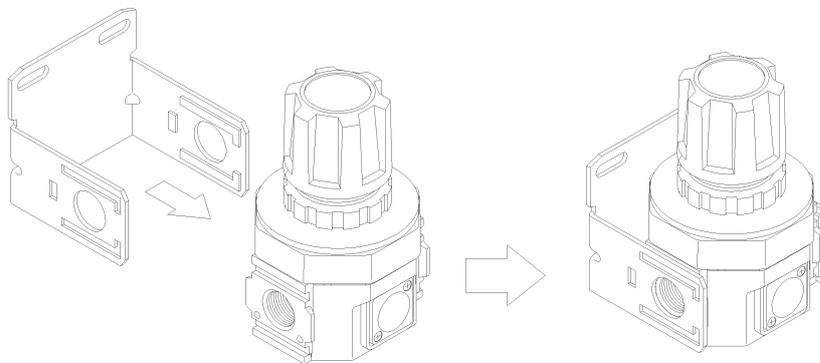


- 3) Securing maintenance space
Ensure enough space for maintenance and inspection.
- 4) Pressure gauge
Repeated and sudden increases and decreases in pressure and pressure pulsation must be avoided because it could adversely affect pressure gauge life. Either ease pressure fluctuation in the circuit or consult with CKD so that a pressure gauge with cushioning screw is prepared.

- The main body is installed in any mounting direction.
 - When using the L-type bracket (optionally attached), refer to the figure below.
{8000 series are excluded}
- Do the same for panel mounting.

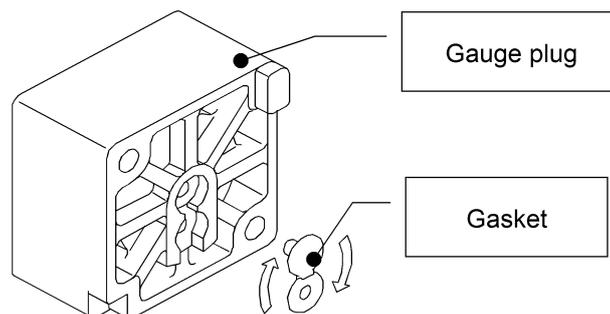


- For installation using C-type bracket (optionally attached), piping must be done after the product bracket is mounted. Refer to the figure below for the bracket mounting. Align the convex part of the C-type bracket with the concave part of the product and press it in.



■ Installation of R1/4 pressure gauge

When installing a pressure gauge with a safety mark or a general screw-in pressure gauge on the gauge plug, tighten it with 10 to 15 N·m or less. When changing the pressure gauge mounting port, remove the gauge plug and install the gasket on the back side in reverse. Tighten the gauge plug mounting screws lightly (0.6 N·m or less).



2.3 Piping

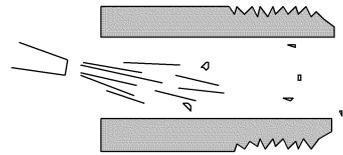


CAUTION

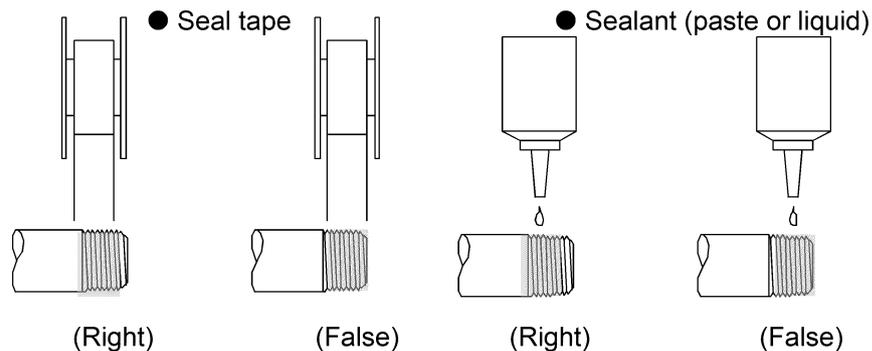
- 1) Flush and clean the piping to be used.
If dust or foreign matter remains in the piping, it may cause the product to malfunction.
- 2) Confirm the flow direction indicated with the arrow and correctly connect the product.
If installed in the opposite direction, it will not function properly.
- 3) Make sure that foreign matters do not enter when screwing the pipes or joints.
When screwing in piping and joints, be careful not to let chips from the piping threads or sealing material get mixed in. If dust or foreign matter remains in the piping, it may cause the product performance down.
- 4) Pipe screw-in torque
Make sure that excessive torque is not applied on the body and piping when piping.

Model name	Max. torque N·m
RN3000	30
RN4000	30
RN8000	70

- When piping, flush air into the pipe to blow out foreign matters just before piping.



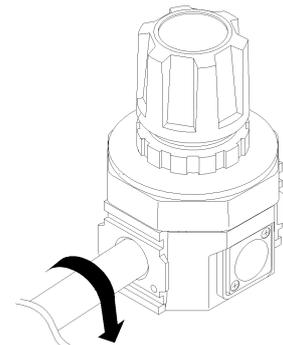
- Use sealing tape or sealant on the piping, avoiding the first two threads from the end of the thread. Be careful not to let any sealant debris or sealant residue get inside the pipe or equipment.



- When connecting the piping, tighten it using a proper tightening torque. The purpose is to prevent air leakage and damage to the threads. To avoid damaging the threads, tighten the threads by hand at first, and then use the tool.

[Recommended value]

Connecting screw	Tightening torque (N·m)
Rc1/8	3 to 5
Rc1/4	6 to 8
Rc3/8	13 to 15
Rc1/2	16 to 18
Rc3/4	19 to 40
Rc1	41 to 70

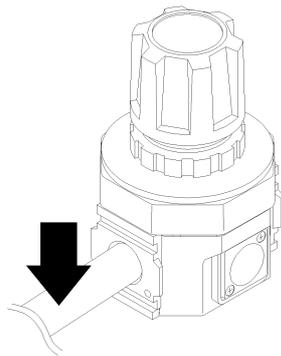


3. Proper operation



WARNING

- 1) Always operate the product within its specifications
- 2) This product is for industrial use. Do not use it for medical-related or life-saving equipment or circuits.
- 3) If the output pressure exceeding the set pressure value of the regulator may cause the secondary unit to break or malfunction, be sure to install appropriate safety equipment.
- 4) There are cases when the regulator cannot be used for a secondary side sealed circuit or a balanced circuit. Consult CKD for these types of applications.
- 5) Piping load torque
Make sure that piping load or torque is not applied on the body or piping section.



Model name	Max. torque N·m
RN3000	50
RN4000	50
RN8000	100

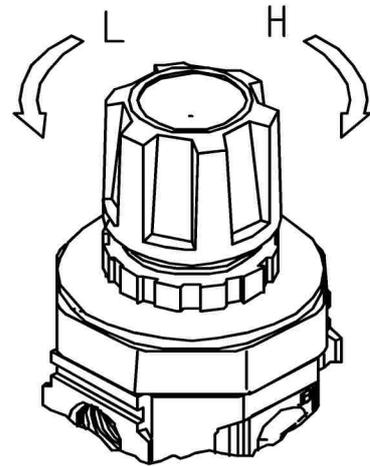


CAUTION

- (1) Check the working circuit and working fluid.
Malfunctions could occur if fluids containing solids, or fluids not within the specifications are passed. Connect a filter to the primary side of the product to prevent solid matters from entering.
- (2) Pulsations may occur depending on the working conditions and piping conditions.
If pulsations occur, lower the primary pressure.
- (3) Please consult with us if you have any material restrictions (no copper, no silicon, no halogen (fluorine, chlorine, bromine))
Bromine-based cleaning solutions may be used to clean parts.
- (4) When the primary pressure is released, the secondary pressure will flow to the primary side.
If faults occur in other devices when the fluids on the secondary side flow to the primary side, provide a circuit to maintain the pressure.
- (5) Set secondary side pressure of the regulator to 85% or less of the primary side, or else the pressure drop could become large.
- (6) Pressure characteristics, flow characteristics, and relief starting pressure are worse than those of standard regulators (R3000 series, etc.).
Depending on the use, such as when backpressure rises, the set pressure may increase by approximately 0.2 MPa. It is recommended to use a pressure gauge that can be used up to the set pressure + 0.2 MPa.
- (7) When used in applications where primary pressure is 0.7 MPa or more, keep the difference between primary pressure and set pressure within 0.4 MPa.
If the pressure difference between the primary and secondary sides is large and the secondary piping is large, pulsation could occur. In such cases, lower primary side pressure or restrict the secondary line. If the pulsation continues, please contact CKD.

■ Secondary side pressure adjustment

Pull the pressure adjustment knob one step to unlock it. Turning the pressure adjustment knob in the H direction on the top face of the knob raises the secondary side pressure and turning it in the L direction lowers the secondary side pressure. After adjusting the secondary side pressure, push the pressure adjustment knob one step further to lock the knob and prevent it from turning.



Release the lock before adjusting the pressure.

Forcing the pressure adjustment knob to operate while locked may result in damage.

Adjust the pressure in the pressure upward direction.

The pressure cannot be set correctly if adjusted in the downward direction.

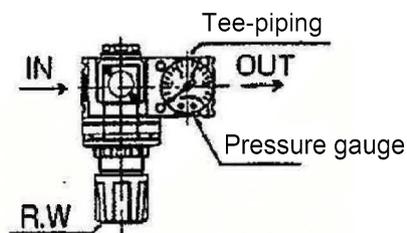
With the non-relief type, pressure cannot be reduced if there is no consumption on the secondary side.

Lock the pressure adjustment knob after adjusting the pressure.

- 1) A pressure higher than the primary pressure cannot be set.
- 2) Manually operate the pressure adjustment knob. Use of tools, etc., may result in damage.
- 3) The set pressure may deviate slightly when the pressure adjustment knob is locked.
- 4) When the primary pressure is released, the secondary pressure will flow to the primary side. However, if a backpressure is applied, it may not flow to the primary side.

■ If lower dust generation and higher cleanliness than the oil-prohibited regulator are required, we recommend the clean regulator RC2000 series.

■ When using this product for air blow of a large flow rate, etc., install a pressure gauge as shown below so that the secondary pressure can be measured accurately



4. Maintenance

4.1 Inspection

1) Daily inspection

Before operating the product, it is recommended to inspect the set pressure using a pressure gauge.

2) Periodic Inspection

- To operate the product in its optimal operating state, carry out the periodic inspection normally once every six months.
- Inspect the set pressure using a pressure gauge.
- It is recommended that the piping be inspected for leaks.

4.2 Disassembly and assembly

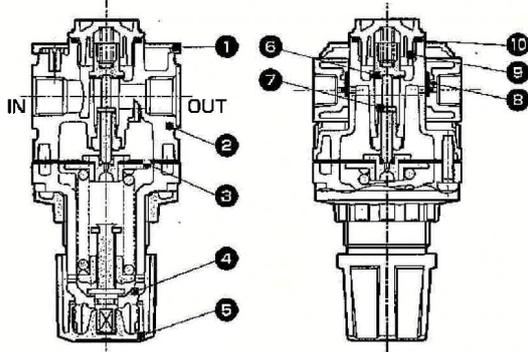
 CAUTION	<ol style="list-style-type: none"> 1) Before starting the maintenance work, turn OFF the power, shut down the supply pressure, and make sure that no residual pressure remains. 2) Do not disassemble the product. The specifications may not be satisfied when reassembled. If disassembly is required, please contact us or our distributor.
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5. Troubleshooting

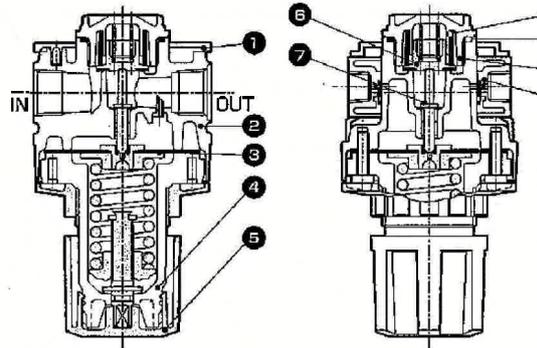
Problem	Cause	Remedy
When primary pressure is applied, there is air leakage from the gap between the cover and the knob.	IN and OUT ports are connected reversibly.	Correct the mounting direction.
Pressure does not increase.	Primary pressure is insufficient.	Check the primary pressure.
	Primary piping is too long or throttled.	Make the primary piping shorter or the piping size larger.
	The needle on the pressure gauge does not move.	The pressure gauge may be malfunctioning. Replace the pressure gauge with a new one.
The pressure does not drop.	Backpressure is applied to the regulator.	Consider whether there is a systemic problem.
	Non-relief type, so it does not relieve.	Change to a relief-type product.
Leaks occur from the cover. The set pressure rises abnormally.	Dust is sticking to the valve. Diaphragm is broken.	Replace the product.
Secondary pressure pulsates.	Pulsation may occur depending on the piping conditions and usage methods.	Lower the primary pressure or restrict the piping.

6. Internal structure

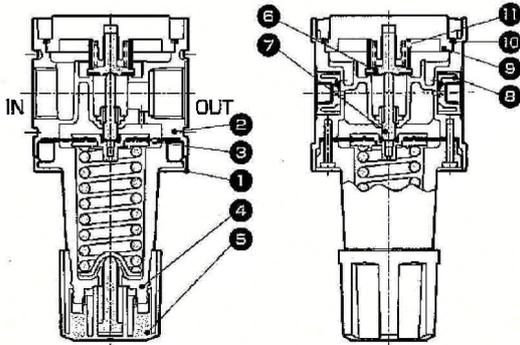
● RN3000



● RN4000



● RN8000



Part No.	Part name	Material		
		RN3000	RN4000	RN8000
1	Plate cover	ABS resin		
2	Body	Aluminum alloy die-casting		
3	Diaphragm	Zinc alloy die casting, nitrile rubber		
4	Cover	PBT resin		Aluminum alloy die-casting
5	Knob	Polyacetal resin		
6	Valve	Aluminum alloy, hydrogenated nitrile		Stainless steel, hydrogenated
7	Stem	Aluminum alloy		Stainless steel
8	Gauge plug	Polyamide resin, nitrile rubber, steel		
9	Bottom cap	Polyacetal resin		Aluminum alloy
10	Bottom O-ring	Fluorine rubber		
11	Bottom rubber	-	Hydrogenated nitrile rubber	

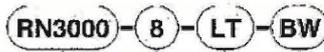
7. Product specifications and model number coding

7.1 Product specifications

Item	RN3000	RN4000	RN8000
Working fluid	Compressed air		
Max. working pressure MPa	0.8 (In case of option L: 0.5 MPa)		
Guaranteed withstanding pressure MPa	1.5		
Ambient and fluid temperature °C	5 to 60		
Set pressure range MPa	Standard: 0.05 - 0.7 Low pressure: 0.05 - 0.3		
Port size Rc	1/4, 3/8	1/4, 3/8, 1/2	3/4, 1
Product mass kg	0.5	0.7	1.9
Standard specification	Fluid passage section: Oil-prohibited treatment Nut for panel mounting		Fluid passage section Oil-prohibited treatment

7.2 Model number coding

Model number coding



a Model No.

b Port size

c Option
Note 2
Note 3
Note 4

d Attachment
(Attached)

a Model No.		
RN3000	RN4000	RN6000

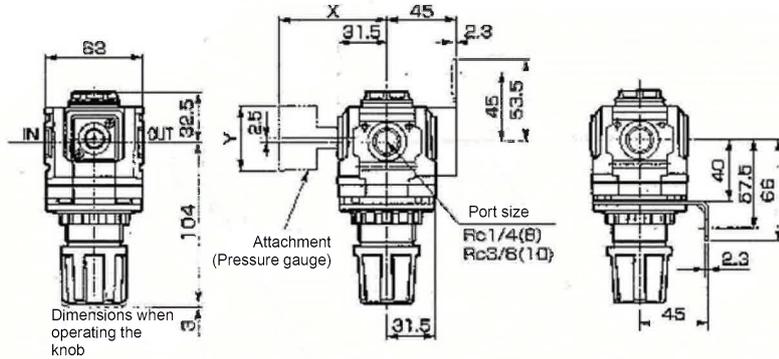
Code	Description	RN3000	RN4000	RN6000	
b Port size					
8	Rc1/4	●	●		
10	Rc3/8	●	●		
15	Rc1/2		●		
20	Rc3/4			●	
25	Rc1			●	
c Option					
Pressure	No symbol	0.05~0.7MPa	●	●	●
Range	L	0.05~0.3MPa	●	●	●
	No symbol	With relief mechanism	●	●	●
Relief	N	Non-relief type	●	●	●
	T	Without pressure gauge (assembled with gauge port sealed)	●	●	●
Pressure gauge	T8	Option for attaching a round pressure gauge (assembled with pressure gauge attachment port open)	●	●	●
	No symbol	Standard flow (left → right)	●	●	●
Flow direction	X1	Reverse flow (right → left)	●	●	●
	d Attachment (attached)				
No symbol	Not attached	●	●	●	
BW	C-type bracket	●	●	●	
B3W Note 5	L-type bracket	●	●		
GX59	Pressure gauge: G59D-8-P10-P70 Note 1	●	●	●	
GY59	Pressure gauge: G59D-8-P10-P94	●	●	●	

⚠ Notes on model number selection

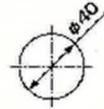
- Note 1: Options and attachments made of brass. The rest are options and attachments that do not contain brass.
- Note 2: When selecting options across multiple items, please list them in order from the top.
- Note 3: When "L" is selected for the pressure range option, it will become a pressure gauge for low pressure (0 to 0.4 MPa).
- Note 4: In case of "T" and "T8," a gauge plug is assembled. Gauge port is Rc1/4.
- Note 5: For installation of the L-shaped bracket, refer to "⚠ Caution in Mounting, Installation, and Adjustment" (page 3 of this document).

7.3 Outside dimensions

● RN3000



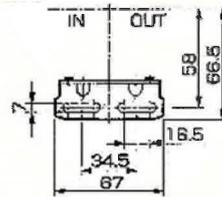
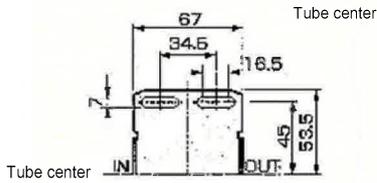
Panel cut dimension



Panel thickness:
MAX 7 mm

- Attachment (C-type bracket)
C-type bracket (-BW)
Part No.: B320-W

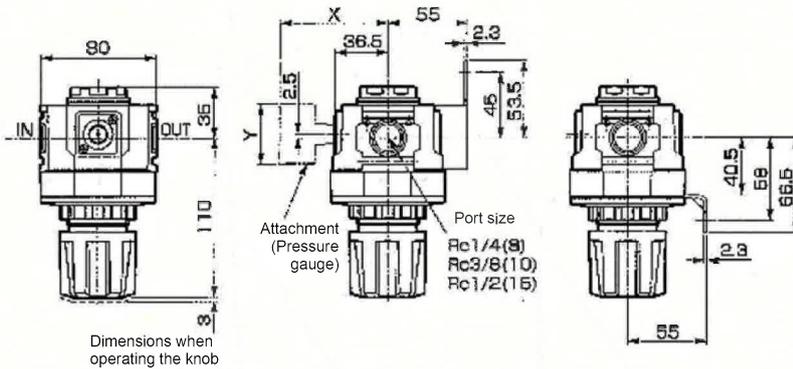
L-type bracket (-B3W)
Part No.: B330-W



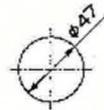
Pressure gauge attached option
dimensions table

	X	Y
GX59	76.5	φ52
GY69	79	φ52

● RN4000



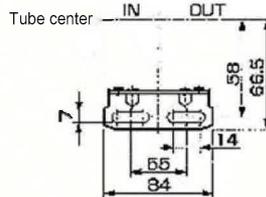
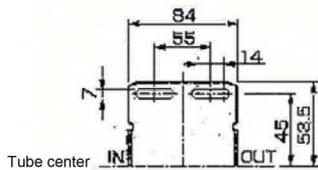
Panel cut
dimension



Panel thickness:
MAX 7 mm

- Attachment
C-type bracket (-BW)
Part No.: B420-W

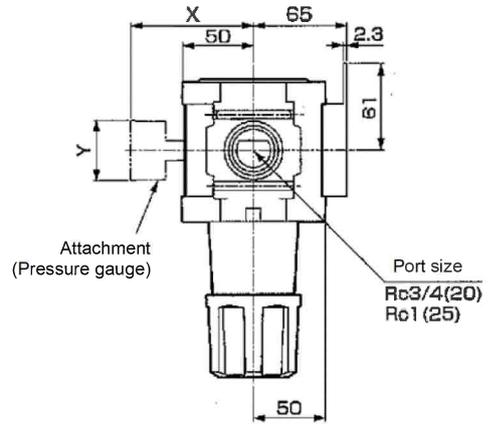
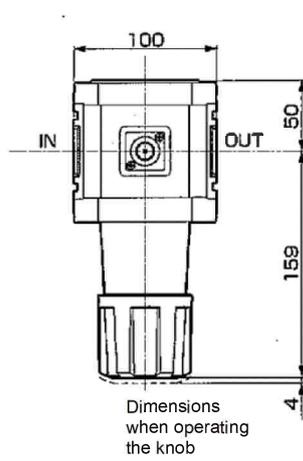
L-type bracket (-B3W)
Part No.: B430-W



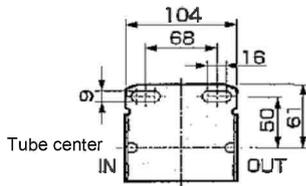
Pressure gauge attached option
dimensions table

Attached pressure gauge	X	Y
GX59	81.5	φ52
GY59	84	φ52

● RN8000



● Attachment
C-type bracket (-BW)
Part No.: B820-W



Pressure gauge attached option dimensions table

Attached pressure gauge	X	Y
GX59	91.5	φ52
GY59	94	φ52