CKD Corporation

SM-
224947-A

INSTRUCTION MANUAL

REGULATOR

RB500

Please read this instruction manual carefully before using this product, particularly the section describing safety.

Retain this instruction manual with the product for further consultation whenever necessary.

For Safety Use

To use this product safely, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, read this instruction manual carefully for proper operation.

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RB500
REGULATOR
Manual No. SM-224947-A

NOTE : Letters & figures enclosed within Gothic style bracket (examples such as [C2-4PP07] · [V2-503-B] etc.) are editorial symbols being unrelated with contents of the book.

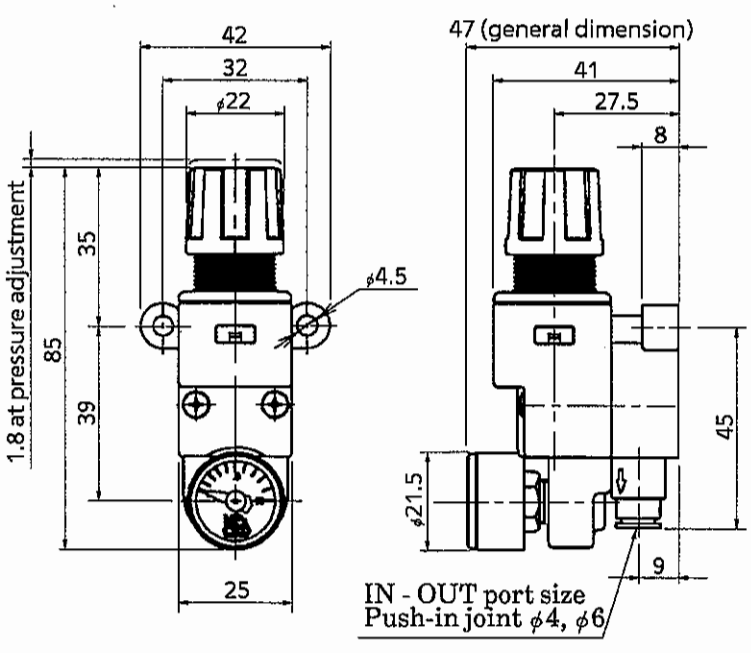
1. PRODUCT

1.1 Specifications

Model No. / Item	RB500-※※C4	RB500-※※C6
Media	Compressed air	
Maximum working pressure MPa {kgf/cm²}	1.0 {10.2}	
Withstanding pressure MPa {kgf/cm²}	1.5 {15.3}	
Working temperature range °C	5~60	
Set pressure range MPa {kgf/cm²}	0.05~0.7 {0.5~7.1} For low pressure: 0.05~0.35 {0.5~3.5}	
Relief pressure MPa {kgf/cm²}	Set pressure plus 0.07 {0.7}	
Port size	Push-in joint ϕ4	Push-in joint ϕ6
Product weight g	80	

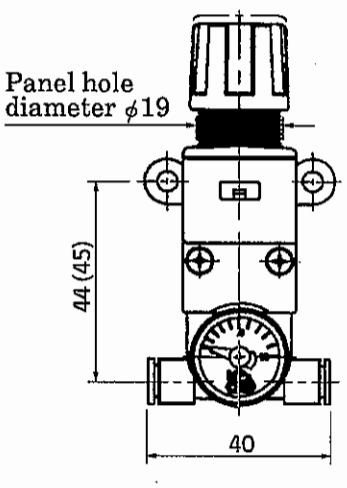
1.2 External Dimensions

● Straight piping type



● Elbow piping type

The dimensions shown in parentheses represent the dimensions of the -※※C6 model.



2. CAUTION

Do not use the regulator under the following conditions. If the regulator must be used for some unavoidable reason, protect it with a cover, case, etc.

1) A place where the ambient temperature is not between 5°Cand 60°C.
2) A place where the regulator will be exposed to waterdrops or cutting oil.
3) A place where dew forms because of high humidity and/or temperature changes.
4) A place subject to a corrosive gas, fluid or chemical atmosphere.
5) A place where the regulator will be exposed to a sea breeze or splashes of saltwater.
6) A place where the regulator will be exposed to direct sunlight.

3. INSTALLATION

3.1 Piping

1) Connect the piping so that air will flow in the direction of the arrow marked on the regulator piping block.
2) Install a 5μm air filter in the IN port of the regulator.
3) Install a pressure gauge in the gauge port. If a pressure gauge is not used, install a pipe plug instead.
4) Flush the pneumatic piping completely before connection.
5) Applicable tubes

The piping is designed to be connected with a push-in joint. Piping tubes of an improper outer diameter, wall thickness or hardness may become disconnected or cause leakage. Use our specified tube.

Tube	Outer diameter	Outer diameter tolerance	Inner diameter	Minimum bending radius
Soft nylon F-1500 series	ϕ4	±0.1	ϕ2.5	10
	ϕ6		ϕ4	20
Urethane U-9500 series	ϕ4	+0.1 −0.15	ϕ2	10
	ϕ6		ϕ4	20

6) Insert the piping tube in the push-in joint, and confirm that the tube is connected completely.

3.2 Installation

1) Fasten the regulator using M4 screws with a plain washer. Tighten the screws to 2N·m or less.
2) To use an optional panel mount "P", drill a ϕ19 diameter mounting hole.
   Remove the knob of the mount nut by turning it counterclockwise as shown in Figure 1, and insert the regulator in the panel.
   If the screw comes off when the knob is removed, insert the screw in the knob or cover as shown in Figure 2, and push the knob into the cover until a "click" is heard.
3) Install the regulator as close to the intended pneumatic unit as possible.
4) When disassembling the regulator, secure enough space for disassembly.

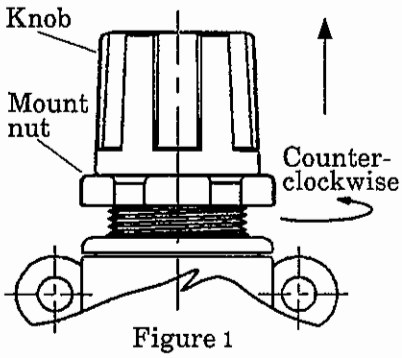


Figure 1

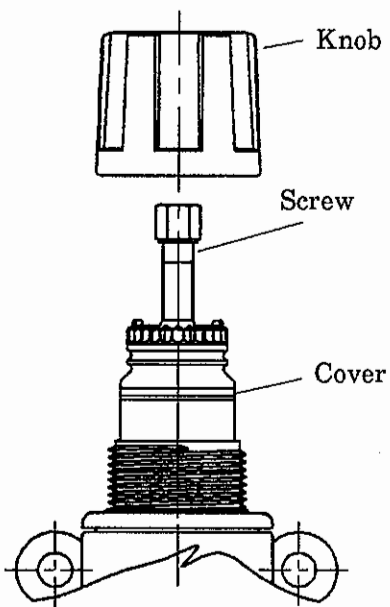
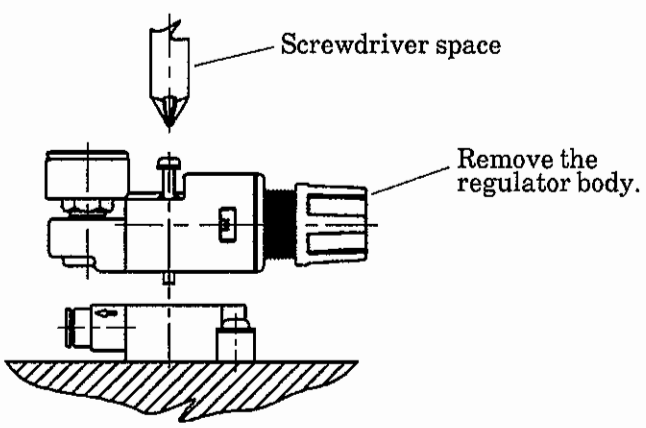


Figure 2



4. OPERATION

4.1 Pressure Setting

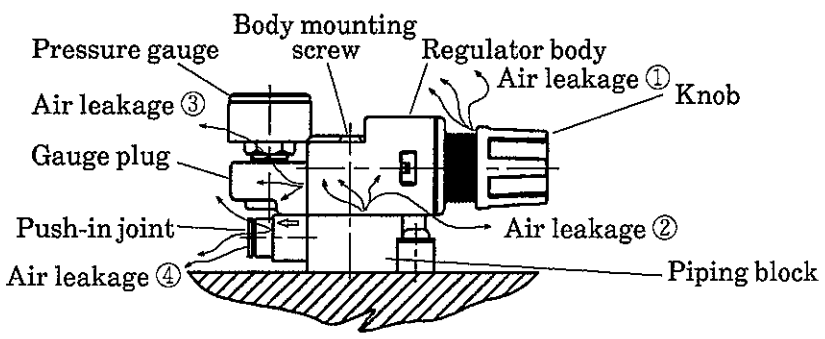
1) Before setting the pressure, pull up the knob to confirm that it is unlocked, and turn the knob.
2) Do not move or swing the product by holding the pressure adjustment knob.
3) The pressure increases by turning the pressure adjustment knob in the H direction, or decreases by turning the knob in the L direction. When setting the pressure, increase it from a low level to a high level.
4) By pushing the knob, it is locked and cannot turn.

Adjust the pressure within the set pressure range. However, it cannot be set at a value higher than the primary pressure.

5. MAINTENANCE

5.1 Troubleshooting

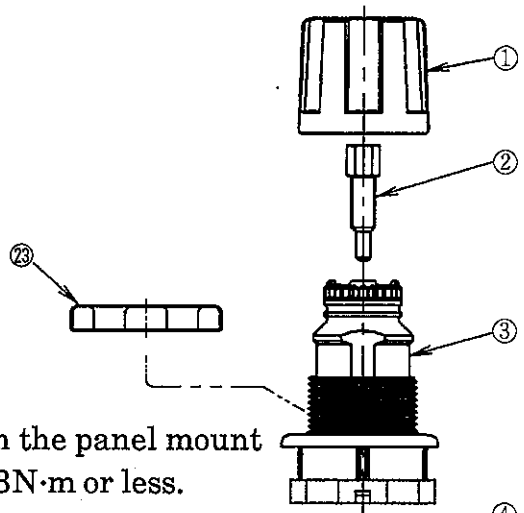
Problem	Main cause	Measure
• The pressure cannot be adjusted. • Air leaks from the bottom of the knob ①.	• There is a foreign substance on the rubber face of the valve element.	• Shut off the compressed air, disassemble the regulator, and remove the foreign substance.
	• The compressed air flows from the OUT port to the IN port.	• Shut off the compressed air, and connect the piping in the right direction.
	• The rubber face of the valve element is damaged.	• Shut off the compressed air, disassemble the regulator, and replace the damaged part with a new one.
	• The miniature Y-lip for the piston is damaged.	
	• An O-ring is damaged.	
• Air leaks from the clearance between the regulator body and the piping block ②.	• The body packing is shrunken or damaged.	
	• The body mounting screw is loose.	• Shut off the compressed air, and tighten the screw.
• The pressure does not increase. • Air leaks from the gauge plug ③.	• The primary pressure is insufficient.	• Check the primary pressure.
	• The primary piping is long, or its diameter is small.	• Reduce the primary piping length, or increase the piping diameter.
	• The indicator of the pressure gauge does not function at all.	• Replace the pressure gauge with a new one.
	• The gauge plug packing is shrunken or damaged.	• Replace the gauge plug packing.
• Air leaks from the push-in joint ④.	• The tube is not inserted completely.	• Confirm whether the tube is inserted completely.
	• The seal material of the push-in joint is expanded, shrunken or damaged.	• Replace the push-in joint with a new one.



5.2 Replacement of Parts

Before disassembling the regulator, shut off the primary pressure, and release any residual pressure to confirm that the regulator is depressurized completely. Disassemble the regulator according to the disassembling diagram.

5.3 Disassembling Diagram and Expendable Parts List

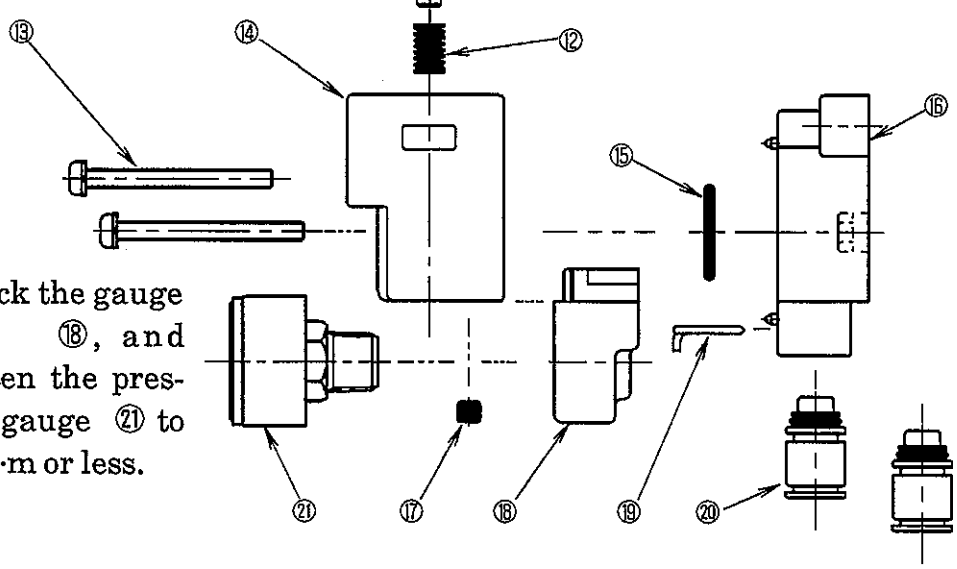


Tighten the panel mount nut ㉓ to 3N·m or less.

Before reassembly, apply silicone grease to the disassembled piston assembly ⑦ and its packing, O-rings ⑨ & ⑩ and packings ⑮ & ⑰.

Tighten the body fastening screw ⑬ to 0.8N·m or less.

Lock the gauge port ⑱, and tighten the pressure gauge ㉑ to 3.5N·m or less.



Expendable parts list

No	Part name	Commercial part standard No.
7	Pistonassembly	
9	O-ring	AS568-017
10	O-ring	AS568-012
11	Valve element	
15	Body packing	
17	Packing	
20	Push-in joint	

※ Parts No. 7~No.17 are sold in a set.

6. MODEL NO. CLASSIFICATION

ⓐ Connection				ⓑ Option		ⓒ Pressure gauge	
Direction IN/OUT		Port size		P	Panel mount	Standard product (no symbol)	ϕ21, 0~1.0MPa pressure gauge equipped
S	Straight	C4	ϕ4	L	For low pressure		
L	Elbow	C6	ϕ6	N	Non-relief	For low pressure (no symbol)	ϕ27, 0~0.4MPa pressure gauge equipped
				T	Without pressure gauge	G39	ϕ27, 0~1.0MPa pressure gauge equipped

※ A pressure gauge will be installed at delivery.