

INSTRUCTION MANUAL

CLEAN REGULATOR

RC2000

- 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.

CKD Corporation

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 operation manual carefully for proper operation.

Observe the cautions on handling described in this manual, as well as the following instructions:

 **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 WARNING notices may result in injury or damage to equipment or facilities.

※1)ISO 4414 :Pneumatic fluid power · · · Recommendations for the application of equipment to transmission and control systems.

※2)JIS B 8370:General rule for pneumatic systems

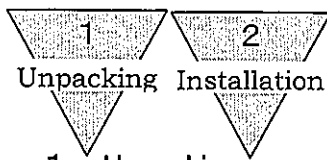
INDEX

RC2000

CLEAN REGULATOR

INSTRUCTION MANUAL No. SM-288475-A

1.Unpacking	3
2.Installation	
2.1 Installation environment	3
2.2 Installation	3
2.3 Piping	4
3.Proper operation	6
4.Maintenance	
4.1 Inspection	7
4.2 Disassembly and assembly	7
5.Troubleshooting	7
6.Internal structure	8
7.Product specifications and how to order	
7.1 Product specifications	9
7.2 How to order	9
7.3 Outside dimensions	10



1. Unpacking



CAUTION

1) To prevent foreign matter from entering the inside of the product, do not unpack the product immediately before starting the piping.

2) Unpack this product in a clean room.

This product has been packed in a clean room. It should be opened in a clean room just before piping

- 1) Make sure that the model number indicated on the product is matched with that you have ordered.
- 2) Check the exterior of the product for damage.
- 3) Before starting operation, thoroughly read this instruction manual, as well as that supplied with the product.

2. Installation

2. 1 Installation environment



CAUTION

Do not install the product in a place listed below.

Where:

- 1) Excessive vibration or impact exists.
- 2) The ambient temperature is beyond a range of 5°C – 60°C.
- 3) The air may be frozen.
- 4) The water drop or coolant is splashed onto the product.
- 5) The humidity is high and the temperature changes largely, causing dew condensation.
- 6) Sea breeze or seawater is splashed onto the product.
- 7) Corrosive gas, or fluid chemical exists.
- 8) The product is exposed to the direct sunlight.

- 1) Impacts, vibration or corrosive gases could result in product damage or external leaks.

2. 2 Installation



CAUTION

1) Do not move or swing the product with the pressure regulation knob kept held.

2) Installing regulator in panels

When the panel-mounting nut is loosened, the nut acts as a jack and allows the knob to be removed easily. Fix the nut to install in the panel.

Install the nut before installing the knob.

3) Allow a clearance for maintenance

- 1) The product is installed in any mounting direction.
- 2) The opposite side of the panel-mounting nut is 35mm. The screw is an M30 with 1.5 pitches.

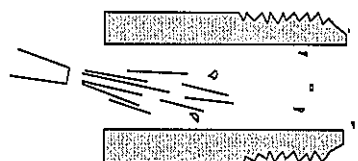
2.3 Piping



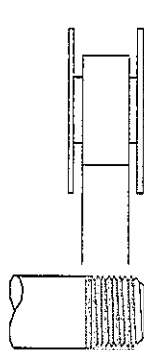
CAUTION

- 1) Flush the air piping to be used sufficiently before connecting the filter to it.
If dust or sealant enters the inside of the pipe during piping work, this may cause the product performance down.
- 2) Make sure that foreign matters do not enter when screwing the pipes or joints.
If dust or sealant enters the inside of the pipe during piping work, This may cause the product performance down.
- 3) Confirm the flow direction indicated with the arrow and correctly connect the product. Installation in the reverse direction will shorten the product life.

- 1) Flush air into the pipe to blow out foreign substances and chips before piping.

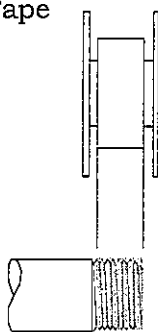


- 2) Apply seal tape or sealant two pitches thread off from pipe tip and carefully keep its residual from falling into pipes or equipment.

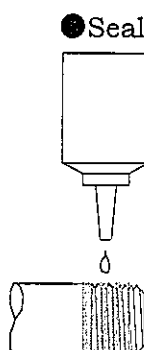


(Right)

● Seal Tape

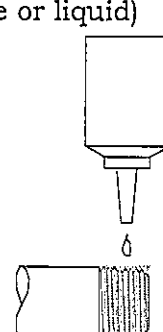


(False)



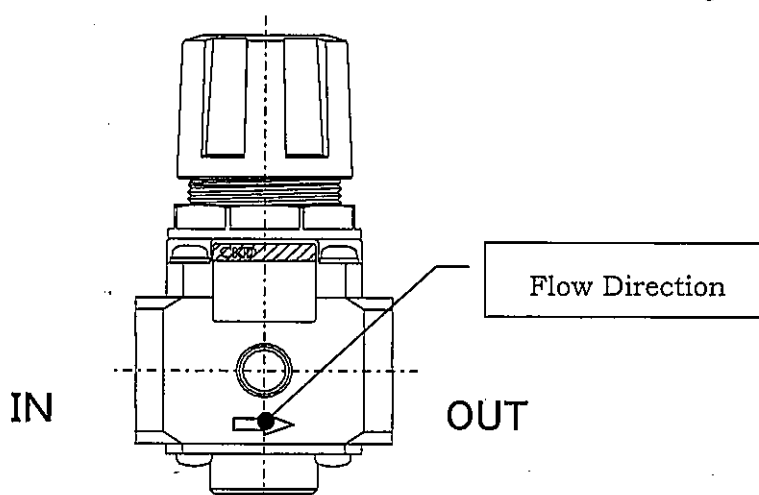
(Right)

● Sealant (paste or liquid)



(False)

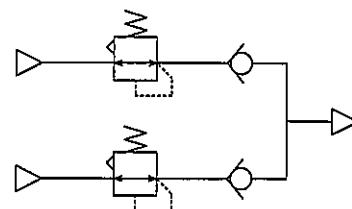
- 3) Before connecting the piping, always check the IN and OUT markings shown on the product.



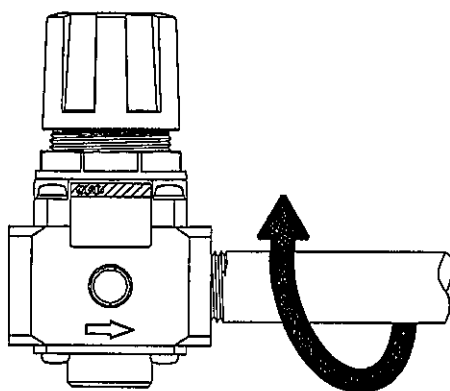


CAUTION

- 4) When connecting the piping, tighten it using a proper tightening torque.
- 5) Carefully connect the piping so that no bending moment caused by the piping load is applied to the main body and piping.
- 6) When connecting the products in parallel as shown below, do not close the secondary circuit. If the close circuit is required, always put a check valve on each secondary side.
- 7) Plug the pressure gauge connection port with a pressure gauge and pipe plug.

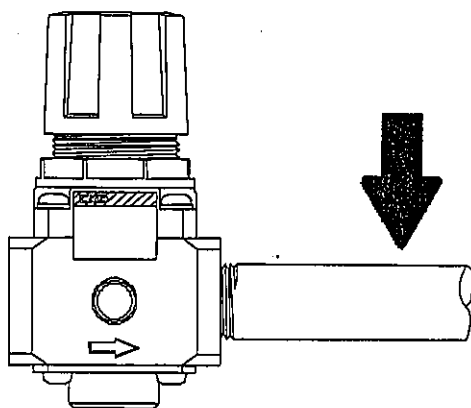


- 4) When connecting the piping, tighten it using a proper tightening torque.
• Avoid applying too much torque to the body or the piping.



Connection port size	tightening torque N·m
Rc1/8	3~5
Rc1/4	6~8
Rc3/8	13~15
Rc1/2	16~18

- 5) Carefully connect the piping so that no bending moment caused by the piping load is applied to the main body and piping.
• Avoid applying a piping load or torque to the body or piping.



	MAX. torque N·m
RC2000	50

3. Proper operation



WARNING

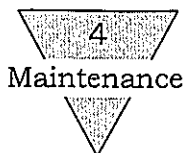
- 1) Always operate the product within its specifications.
- 2) If the output pressure exceeding the set pressure value of the regulator may cause the secondary unit to break or malfunction, always install an appropriate safety unit.



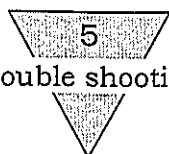
CAUTION

- 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) Set secondary side pressure of the regulator to 85% or less of the primary side, or else the pressure drop could increase.
- 3) Pull the pressure adjustment knob and release the lock before setting the regulator pressure. The regulator could be damaged if the pressure is set without releasing the lock.
- 4) Adjust the pressure in the pressure rise direction.
The pressure cannot be set correctly if it is adjusted in the downward direction.
When the pressure-adjusting knob is turned to the right, the secondary pressure will rise, and when turned to the left, the pressure will drop.
The pressure may not drop depending on how the non-relief type is used.
- 5) Pulsations may occur depending on the working conditions and piping conditions.
If pulsations occur, lower the primary pressure.
When using the standard type with a setting pressure of 0.4MPa or less, set a pressure difference between the primary pressure and the set pressure to within 0.5MPa.
When using for low-pressure applications, set the pressure difference between the primary pressure and set pressure to within 0.3MP.
Note that pulsations may occur even under these conditions depending on the piping conditions or circuit. Consult with CKD in this case.
- 6) If the secondary side is not using the non-relief type, the pressure cannot be reduced.
- 7) Lock the pressure adjustment knob after adjusting the pressure.
- 8) 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.

- 1) A pressure higher than the primary pressure cannot be set.
- 2) Pull the pressure adjustment knob to unlock it. Push the pressure adjustment knob in to lock it.
- 3) Manually operate the pressure adjustment knob. Use of tools, etc., may result in damage.
- 4) The set pressure may deviate slightly when the pressure adjustment knob is locked.
- 5) 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.



Maintenance



Trouble shooting

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.
- Check that no leak occurs in the piping.

4. 2 Disassembly and assembly



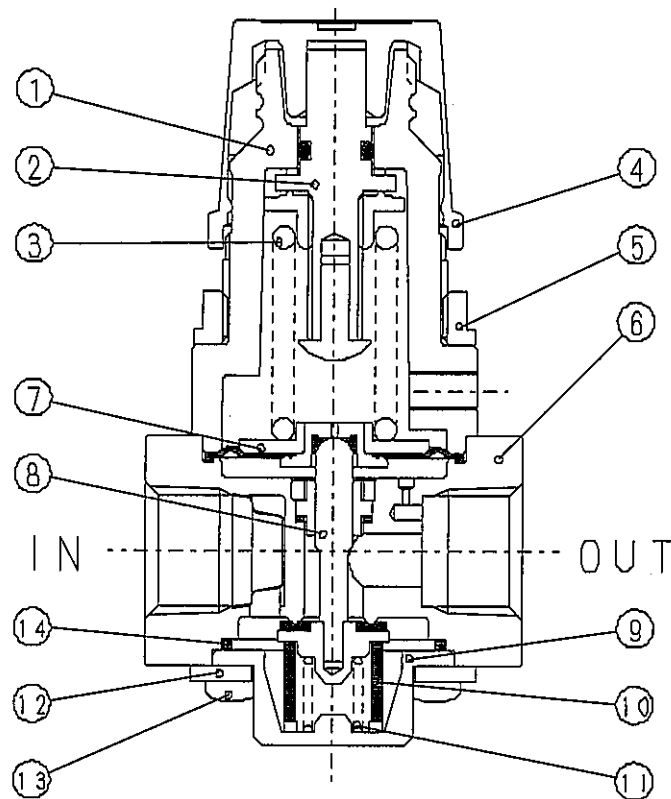
CAUTION

- 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 or modify the product.

5. Troubleshooting

Trouble symptom	Cause	Remedy
When the primary pressure is applied, air may leak from the exhaust treatment connection section on the cover.	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.
	Needle on the pressure gauge does not move.	Replace the pressure gauge with a new one.
The pressure does not drop.	Backpressure is applied to the regulator.	Check if the system has any problem.
	There is no relief with the non-relief type.	Switch to a relief type.
Leaks start 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



Part No.	Part name	Material
1	Cover	PA66
2	Pressure adjust screw assembly	S35C, S30C, SUS, FKM, POM
3	Spring	SWP
4	Knob	POM
5	Mounting nut	ZDC2, (Nickel coating)
6	Body	SUS316, FKM, PTFE
7	Diaphragm	SUS316, FKM, SUS303
8	Valve	SUS316, FKM
9	Bottom cup	SUS316
10	Bottom rubber	FKM
11	Spring	SUS316
12	Plate	SUS304
13	Screw	SWRM, (Nickel coating)
14	O-ring	FKM

7. Product specifications and how to order

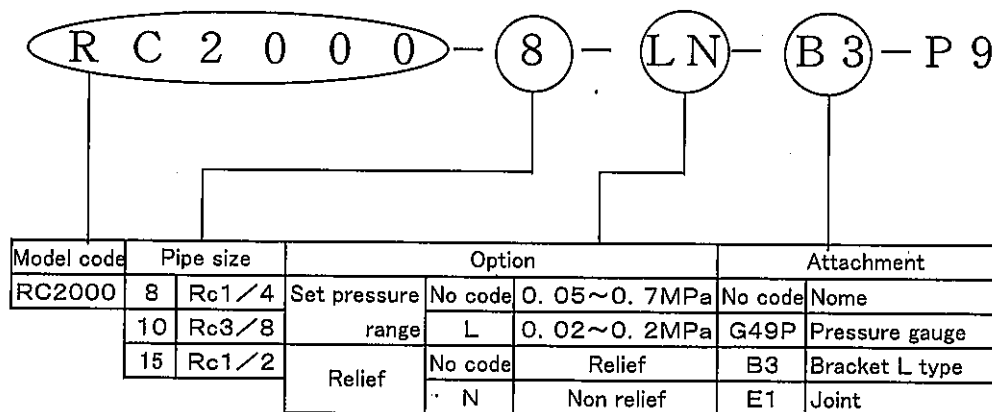
7. 1 Product specifications

Item		RC2000-8	RC2000-10	RC2000-15
Working media		Compressed air, N ₂		
Max. working pressure	MPa	1. 0 (In case of option L: 0.5MPa)		
Proof pressure	MPa	1. 5		
Working temperature range	°C	5~60		
Set pressure range	MPa	Set pressure range is no code: 0. 05~0. 7 Set pressure range is L : 0. 02~0. 2		
Pipe size (IN·OUT)		Rc1/4	Rc3/8	Rc1/2
Pressure gauge pipe size		Rc1/8		
Mass	kg	0. 47	0. 45	0. 59
Wetted areas materials	Metal	SUS316		
	Resin	PTFE		
	Rubber	FKM		
Assembling·Inspection·Packing		Worked in clean room		
Washing (Wetted areas)		Precision cleaning		

Note1: When using the standard type with a setting pressure of 0.4MPa or less, set a pressure difference between the primary pressure and the set pressure to within 0.5MPa.

When using for low-pressure applications, set the pressure difference between the primary pressure and set pressure to within 0.3MP.

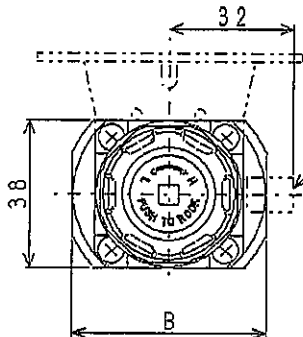
7. 2 How to order

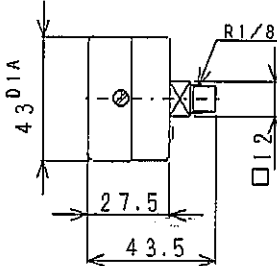
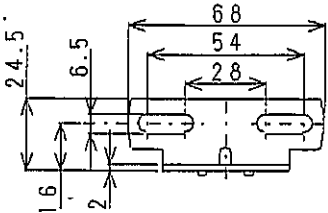
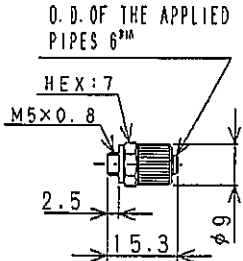


Model code of sole attachment

Model	Model code of sole attachment	
G49P	Set pressure range: No code	G49D-6-P10-P9
	Set Pressure range: L	G49D-6-P02-P9
B3	RC2000-B3	
E1	RC2000-E1	

RC2000



ATTACHMENT				
CODE	G49P (PRESSURE GAUGE)	B3 (BRACKET L TYPE)	E1 (JOINT)	NO CODE
DIMENSION DIAGRAM	SET PRESSURE RANGE IS NO CODE G49D-6-P1Q-P9 SET PRESSURE RANGE IS L G49D-6-P02-P9 	RC2000-B3 	RC2000-E1 	NONE
	MASS	90 g	40 g	5 g