CKD

RJAC Series
Robot Rotary

INSTRUCTION MANUAL

Read this Instruction Manual before using the product.
Read the safety notes carefully.
Keep this Instruction Manual in a safe and convenient place for future reference.

2026-04-17 SM-B17615-A

PREFACE

Thank you for purchasing CKD’s "RJAC Series" robot rotary.

This Instruction Manual contains basic matters related to the operation of this product in order to ensure optimal performance of the product. Please read this Instruction Manual thoroughly and use the product properly.
Keep this Instruction Manual in a safe place and be careful not to lose it.

Product specifications and appearances presented in this Instruction Manual are subject to change without notice.

The product is intended for users who have basic knowledge about materials, piping, electricity and mechanism. CKD shall not be responsible for accidents caused by persons who selected or used the product without knowledge or sufficient training with respect to pneumatic components.

Since there are a wide variety of customer applications, it is impossible for CKD to be aware of all of them. Depending on the application or usage, the product may not be able to exercise its full performed or an accident may occur due to fluid, piping, or other conditions. It is the responsibility of the customer to check the product specifications and decide how the product shall be used in accordance with the application and usage.

SAFETY INFORMATION

When designing and manufacturing any device incorporating the product, the manufacturer has an obligation to ensure that the device is safe. To that end, make sure that the safety of the machine mechanism of the device, the pneumatic control circuit, and the electric system that controls such mechanism is ensured.
To ensure the safety of device design and control, observe organization standards, relevant laws and regulations, which include the following:

- ISO 4414, JIS B 8370, JFPS 2008 (the latest edition of each standard)
- The High Pressure Gas Safety Act, the Industrial Safety and Health Act, other safety rules, organization standards, relevant laws and regulations

In ordered to use our products safely, it is important to select, use, handle, and maintain the products properly.
Observe the warnings and precautions described in this Instruction Manual to ensure device safety.
Although various safety measures have been adopted in the product, handling that is not described in this Instruction Manual may lead to an accident. Thoroughly read and understand this Instruction Manual before using the product.

To explicitly indicate the severity and likelihood of a potential harm or damage, precautions are classified into three categories: "DANGER", "WARNING", and "CAUTION".

DANGER	Indicates an imminent hazard. Improper handling will cause death or serious injury to people.
WARNING	Indicates a potential hazard. Improper handling may cause death or serious injury to people.
CAUTION	Indicates a potential hazard. Improper handling may cause injury to people or damage to property.

Some statements classified as "CAUTION" may still lead to serious results depending on the situation.
All statements that follow these labels are important and must be observed.

<Types of warning symbols>

	A general mark indicating a prohibited (not permitted) action.		A mark prohibiting people from touching objects or equipment.
	A mark prohibiting people from putting their fingers into openings.		A general mark warning people of dangers such as electric shock and burns.
	A mark warning people of dangers that occur when starting an automatic equipment.		A general mark indicating that a specific course of action must be taken.
	A mark indicating that an instruction manual must be read carefully.		A mark indicating that the earth terminal must be connected to the ground.

In addition, the following icons indicate general precautions, usage tips, technical information, and glossary are indicated by the following icons.

- Contains useful information such as general precautions, supplementary information, and reference information.

- Contains detailed information and tips on advanced usage.

- Contains technical information and terminology explanations that you should know when using the features.

Precautions on Product Use

DANGER

Do not use this product for the following purposes

- Medical devices related to the maintenance and management of human life and body
- Mechanisms and machinery intended for the movement or transport of people
- Critical safety components of machinery and equipment

WARNING

Do not modify the product or perform additional work on the product.

- Modification or additional work may not only pose a risk of fire or electric shock, but it may also cause the product to fail to satisfy the specifications described in this Instruction Manual.

Do not handle the product or install or remove pipes and devices until confirming safety.

- Inspect and service the machines and devices only after confirming that safety of the entire system related to the product is ensured. Also, turn off the energy source air supply and power to the relevant equipment and release compressed air from the system.
- Before starting or restarting a machine or device that incorporates pneumatic components, make sure that a safety measure (such as a pop-out prevention mechanism) is in place and system safety is secured.

The product must be handled by a qualified person who has extensive knowledge and experience.

- This product is designed and manufactured as a device or part for general industrial machinery and should be handled with care.

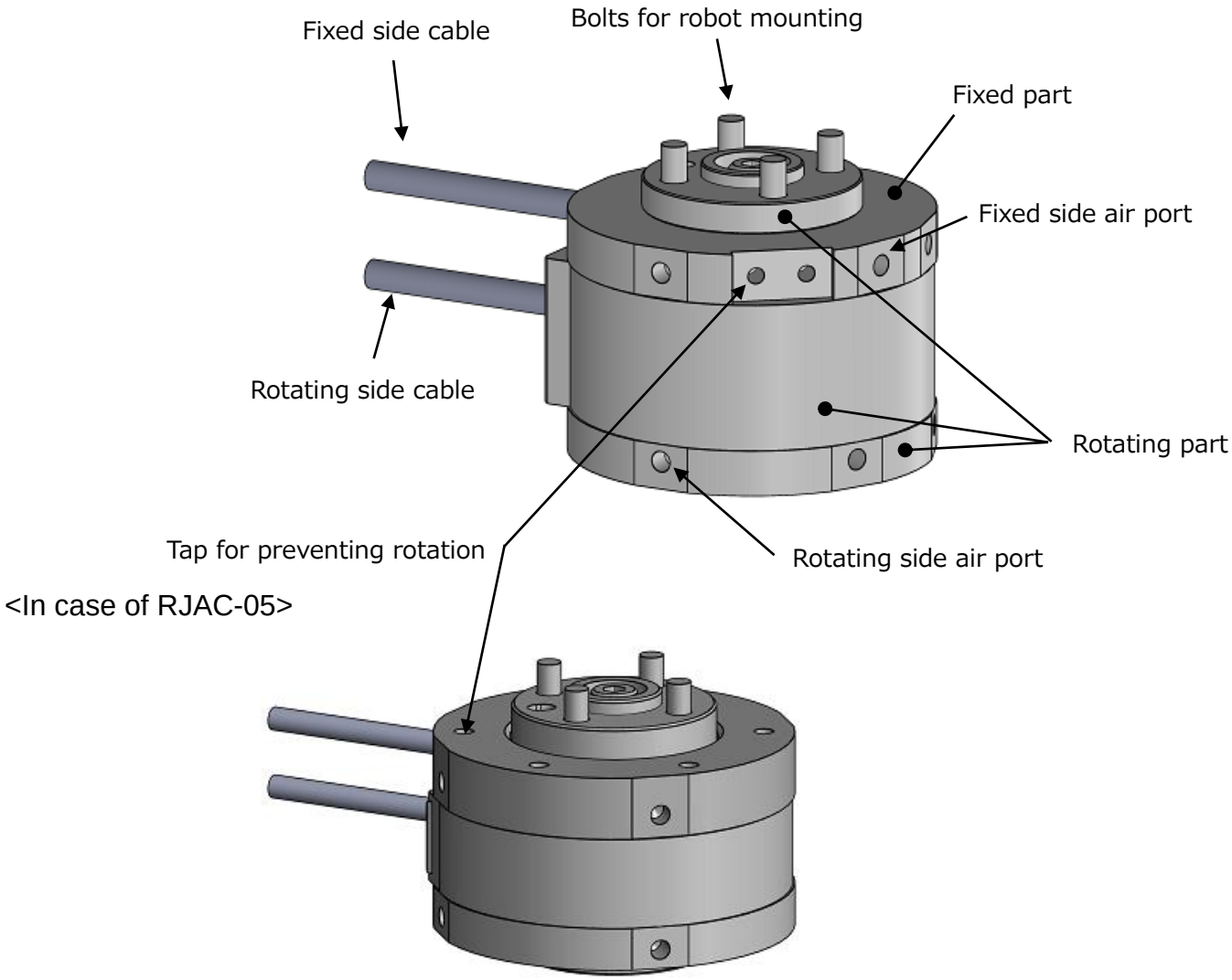
Use the product within the specifications.

- The product must not be used beyond its specifications.
- The product is intended for use as a device or part for general industrial machinery. It is not intended for use under the conditions or in environments listed below. Exception is made if the customer consults with CKD prior to use and understands the specifications of the product. However, even in that case, safety measures must be taken to avoid danger in case of a possible failure.
  - ◎ For use under the conditions or in environments other than those specified or outdoors.
  - ◎ In applications for nuclear power, railroad system, aviation, ship, vehicle, medical equipment, and equipment that directly touches beverage or food.
  - ◎ For special applications that require safety including amusement equipment, emergency shut-off circuit, press machine, brake circuit, and safety measures.
  - ◎ For applications where life or properties may be adversely affected and special safety measures are required.

CONTENTS

1. PRODUCT OVERVIEW

1.1. Series Variation



<In case of RJAC-05>

1.2. Model Number Indication

RJAC - 03

① Payload limit

Code	Direction
01	1kg
05	5kg
07	7kg
25	25kg

1.3. Specifications

Code			01	05	07	25
Payload limit		kg	1	5	7	25
Piping	**Working fluid**		Compressed air			
	Number of port		2	4		6
	Connection port size		M5			Rc1/8
	Operating Pressure Range		-100kPa to 0.7Mpa（Note3）（Note4）			
	Minimum cross-sectional area	mm^2	4 (Equivalent to φ2.3)	0 .58	4 (Equivalent to φ2.3)	11.3 (Equivalent to φ3.8)
Wiring	**Electrical signal**		3-core 2A per core	4 - core 2A per core	12- core 2A per core	12- core 2A per core
	Cable diameter	mm	φ 4 .5	φ4.8	φ5.7	
	Core wire diameter	mm	φ1.19		φ0.9	
Ambient Temperature		℃	5 to 60			
Allowable Rotation Speed（Note1）		min^{-1}	340	240	200	140
Allowable Torque		N·m	0.56	2.37	2.89	6.7
Moment Capacity (Note2)	**Bending**	N·m	2	12.9	15	28
	Twisting	N·m	4.4	9.5	22	32
Rotational Resistance		N·m	0.3	0.5	0.6	0.8
Weight（Excluding cable）		kg	0.2	0.4	0.4	0.9

Note1. Number of rotations per minute.
Note2. Maximum load is the limit at which physical damage does not occur when a static load is applied and does not guarantee the maintenance of accuracy. In particular, torque may develop play even within the maximum load limit.
shall be use the tool below its permissible torque. Furthermore, if there is a possibility of impact, use the tool with a sufficient safety margin.
Note3. Vacuum state cannot be retained
Note4. For precautions when using both positive and negative pressure, please refer to section 3.2, Piping Connections.

2. INSTALLATION

WARNING

Machining, casting, and welding factories, there is a risk of foreign substance such as cutting fluid, chips, and dust entering the equipment, so caution is necessary.
Prohibit in the following environments.

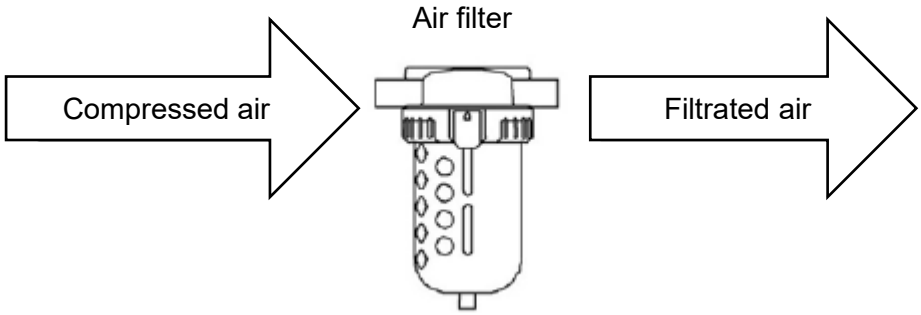
- When Cutting fluid is applied. (Because the sliding parts are worn down by the abrasive or abrasive powder in the liquid.)
- When organic solvents, chemicals, acids, alkalis, kerosene, etc. are present in the atmosphere.
- When water gets on it.

Do not disassemble or modify the product in any way not instructed in this instruction manual.
Could not only cause injury, accidents, malfunctions, or failures, but it could also result in the device not meeting the specifications outlined in this instruction manual.

2.1. Environment

Use in locations where the ambient temperature is between 5 and 60°C and the ambient humidity is 90% or less. However, ensure that there is no risk of freezing.

Use the compressed air, filtrated and dehumidified. carefully select a filter of an adequate filtration (rating 5μm or lower), flow rate and its mounting position (as closest to directional control valve as possible).



See to it that the air supply pressure to the cylinder is as shown in the specification.
Operate the cylinder within this pressure range.
Applying excessive pressure can lead to reduced durability, malfunctions, and damage.
Please use clean, dry air for the supply.

2.2. Unpacking

CAUTION

Do not remove the piping port protector and do not take the product out of the plastic bag until immediately prior to performing piping work.

- If the piping port protector is removed or the product is taken out of the plastic bag before ready to begin piping work, foreign substance may enter from the piping ports and cause a failure or malfunction.

- Take sufficient care to avoid dropping or subjecting the product to impacts during transportation and handling.

Check that the model number, ordered and the model number indicated on the product are the same.
Check the exterior of the product for any damage.

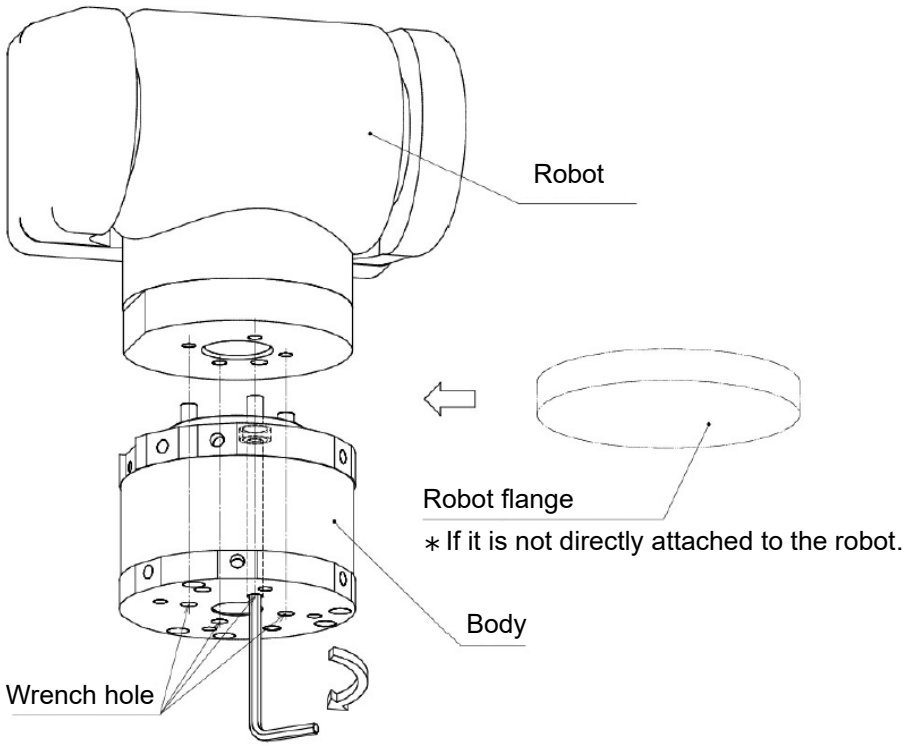
2.3. Mounting

CAUTION

Do not subject the unit to strong impacts or excessive force.
Do not apply twisting or bending forces when installing the unit.
• This may cause malfunction or damage.

2.3.1. Main Body Mounting

Do not use tapped holes that are shallower than the length of the mounting bolts.

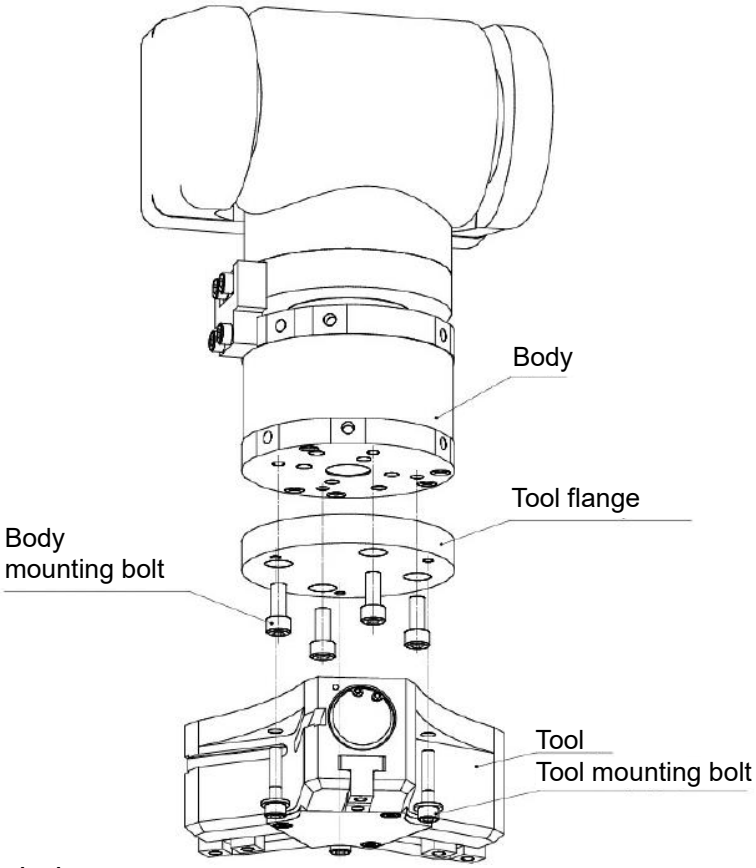


Fixed mounting bolt

Model No.	Mounting bolt	Bolt length (mm)	Tightening torque (N・m)
RJAC-01	M3×0.5	5.6	1.1
RJAC-05	M5×0.8	6.7	5.1
RJAC-07	M5×0.8	7.3	5.1
RJAC-25	M6×1.0	7.1	8.6

2.3.2. Tool Mounting

Do not use bolts that exceed the maximum threading depth.
When attaching tools to the main unit, be sure to secure the tools with a wrench, vise, or fixing jig to prevent any load on the main unit.



Rotating mounting bolt

Model No.	Mounting bolt	Tightening torque (N･m)	Maximum threading depth (mm)
RJAC-01	M3×0.5	1.1	6
RJAC-05	M5×0.8	5.1	10
RJAC-07	M5×0.8	5.1	8
RJAC-25	M6×1.0	8.6	12.5

2.3.3. Piping thread

Avoid interference with the rotating parts, the fixed joints shall be of the sizes listed in the table below or smaller.

Model No.	Mounting bolt	Tightening torque (N･m)	Maximum threading depth (mm)	Fixed pipe fittings Hexagonal opposite sides (mm)
RJAC-01	M5×0.8	0.2～0.25	5	8
RJAC-05	M5×0.8			
RJAC-07	M5×0.8			
RJAC-25	Rc1/8	3.0～5.0	–	10

2.4. Piping

WARNING

Insert the tubing securely until it touches the end of the fitting and ensure that it does not come loose before use.

CAUTION

Be careful not to use the wrong supply port or connect to the wrong piping destination.

- Wrong supply port or piping destination may lead to a malfunction or accident.

Prevent malfunction or damage to this product, observe the following.

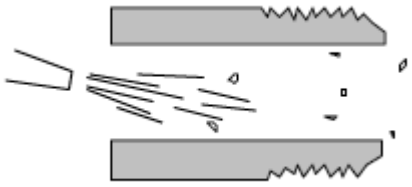
- Use a clean air source.
- Use tubing that is free from scratches or other damage to its exterior.

Do not apply high pressure suddenly when supplying fluid for the first time after connecting the pipes.

- If the pipes are not secured properly, it may lead to accidents such as pipe disconnection or compressed air leakage.

■ Pipe cleaning

Before piping, perform flushing with air to remove foreign substance such as dust, metal powder, rust, and seal tape.



■ Removal of foreign substance

Remove any dust, foreign substance, or other contaminants from the compressed air, as these can cause malfunctions or leaks.
Install an air filter with a filtration rating 5μm or less upstream of this product.

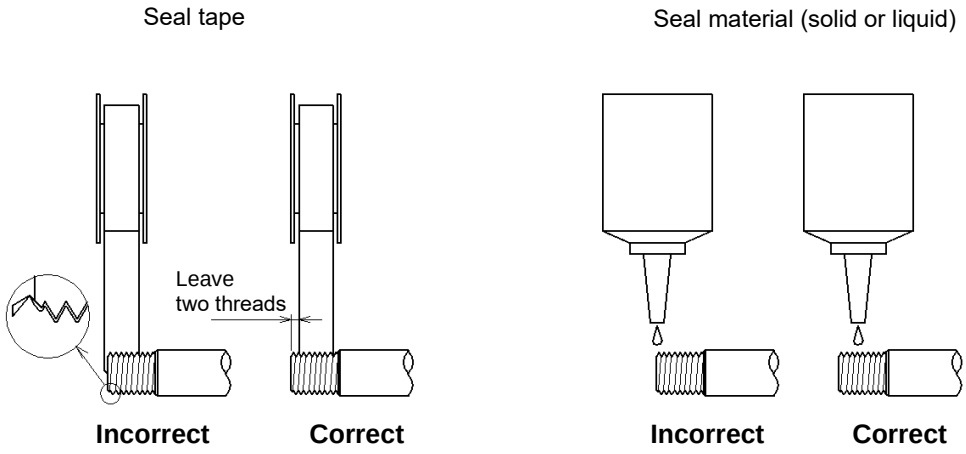
■ Lubrication

Do not refuel. Refueling will cause contamination or damage to the objects being blown.

■ Seal material

Apply a seal tape or seal material to the screw threads leaving one or two threads at the pipe end uncovered or uncoated.
If the pipe end is fully covered or coated, a shred of seal tape or residue of seal material may enter inside of the valve and cause a failure.

- When using a seal tape, wind it around the screw threads in the direction opposite from the screw threads and press it down with your fingers to attach it firmly.
- When using a liquid seal material, be careful not to apply it to resin parts.
  The resin parts can become to damaged and this may lead to a failure or malfunction. Also, do not use the seal material excessively or apply it to the internal threads.



3. USAGE

WARNING

Do not stand on the product or place objects on it.

- This may cause injuries from tipping over, the product falling, or other accidents, as well as malfunctions or runaway behavior due to damage or breakage of the product.

Do not apply a load exceeding the permissible value to the product.

- Use the product within the permissible torque limit. Also, when impact is applied, use with a sufficient safety margin.

CAUTION

Do not inflict dents, scratches, or other damage to the actuator's moving parts.

- This may cause malfunction.

Use within the operating temperature range.

- If the product temperature exceeds 60°C due to heat generation from continuous rotation, it may cause damage. Always check with the actual machine and adjust the rotation speed or interval settings as needed.

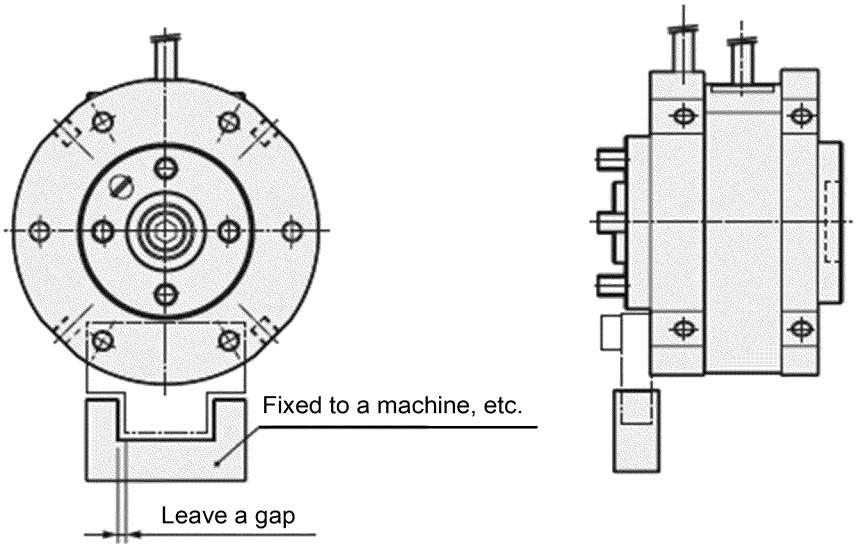
When operating, always secure the product and ensure there are no obstacles nearby.

- This may cause damage or injury.

Provide the fixed flange, rotating flange, anti-rotation bracket, and external control equipment yourself.

3.1. Anti-rotation mechanism

When attaching to a robot, please provide an anti-rotation mechanism.
Do not use bolts that exceed the maximum threading depth.
The connection between the main body and the anti-rotation mechanism must be a floating structure. If fixed, excessive load may be placed on the rotating shaft, potentially causing damage or air leaks.
Please note that the anti-rotation mechanism must be provided by the customer.
A design example is shown in the figure below; please design it appropriately according to your equipment specifications.



Anti-rotation mounting screw

Model No.	Mounting bolt	Tightening torque (N・m)	Maximum threading depth (mm)
RJAC-01	M3×0.5	0.2～0.4	6
RJAC-05	M5×0.8	1.0～1.2	10
RJAC-07	M4×0.7	0.5～0.7	8
RJAC-25	M5×0.8	2.4～3.0	7

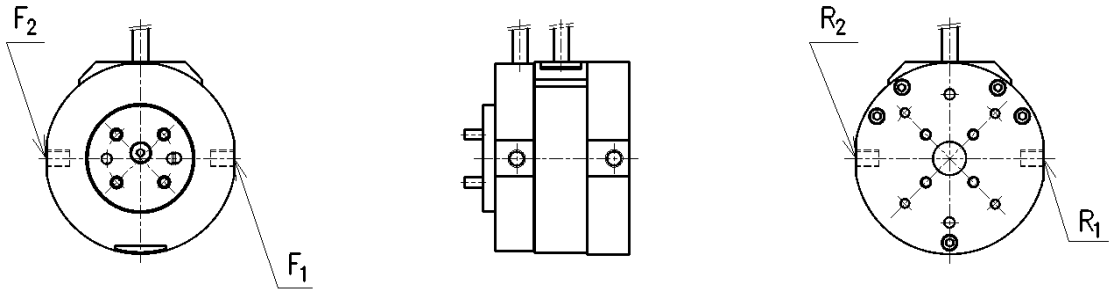
3.2. Pipe connecting

Each fixed-side port (F1, F2, ...) is connected to the corresponding rotating-side port (R1, R2, ...).
When using both positive and negative pressure, please note the following:

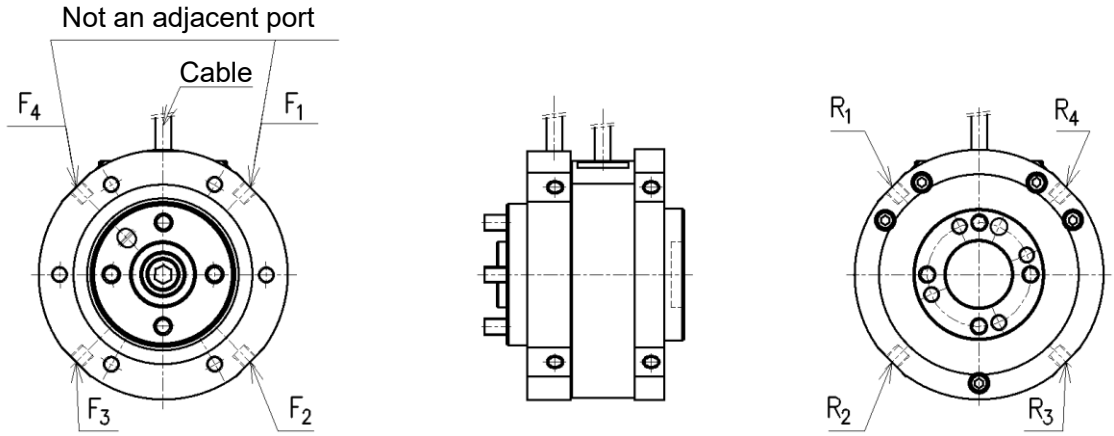
* RJAC-01: Positive and negative pressure cannot be used simultaneously.

* RJAC-05 and above: When using both, do not place positive and negative pressure ports adjacent to each other; use them with one port skipped. Placing them adjacent may cause air to flow from the positive pressure side to the negative pressure side, potentially leading to vacuum breakdown.
However, ports separated by a cable are not considered adjacent.

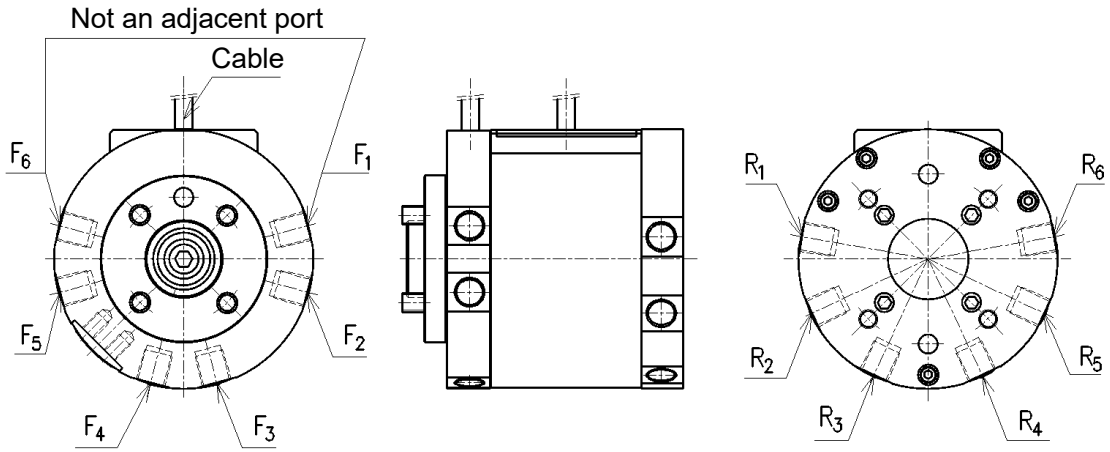
<RJAC-01>



<RJAC-05、07>



<RJAC-25>



3.3. Cable connecting

CAUTION

Turn off the power before wiring.
Ensure there are no water droplets around before wiring.
- This may cause product malfunction or failure. It may also cause electric shock.

Do not exceed the current limit.
- Applying a current exceeding the current limit may cause damage or burnout.
- Allow sufficient bending radius for the cable and do not bend it forcibly.

■ Cable core wires

The cable core wire identification chart is shown in the table below.
The same core wire and dot colors are connected on both the stationary side (robot side) and the rotating side (tool side).

Model No. : RJAC-01　　3-core (2A per core)

Core wire No.	Core wire color	Dot color
1	Orange	Red
2	Orange	Black
3	Gray	Red

Model No. : RJAC-05　　4-core (2A per core)

Core wire No.	Core wire color	Dot color
1	Orange	Red
2	Orange	Black
3	Gray	Red
4	Gray	Black

Model No. : RJAC-07 to 25　　12-core (2A per core)

Core wire No.	Core wire color	Core wire No.	core wire color
1	Black	**7**	Blue
2	White	**8**	Orange
3	Red	**9**	Gray
4	Green	**10**	Purple
5	Yellow	**11**	Sky blue
6	Brown	**12**	Pink

■ Cable bending radius

Minimum bending radius for the cable is as follows

Model No.	Cable bending radius (mm)
RJAC-01	27
RJAC-05	29
RJAC-07	35
RJAC-25	

4. MAINTENANCE AND INSPECTION

WARNING

Do not disassemble or modify the product in any way not instructed in this instruction manual.

- This may not only cause injury, accidents, malfunctions, or failures, but may also result in the device not meeting the specifications outlined in this instruction manual.

Make sure to shut down the air source and releasing any remaining pressure in the piping before performing maintenance.

- Failure to do so may result in injury.

4.1. Periodic Inspection

CAUTION

Periodic inspections (2-3 times/year) are performed to confirm that the system is functioning correctly.

4.1.1. Inspection items

Make sure to turn off the power source and shut down the air source before Inspection.

Items	Methods	Solutions
Check that the product mounting bolts, terminal block screws, and connectors are not loose.	Check for looseness	Tighten the bolts to the specified torque.
Check the cables for any damage or cracks.	Visual Confirmation	Please turn off the power immediately and contact your nearest sales office or agent.
Check if there are any foreign objects accumulated or stuck inside.	Visual Confirmation	Please clean it.
Check for any vibrations or unusual noises while the vehicle is stopped or in operation.	Confirmation by sound	Please contact your nearest sales office or agent.
Check if there are any water droplets inside.	Visual Confirmation	Clean the inside.
Check if the power supply voltage is normal.	Confirmation by tester	Investigate the power supply system and ensure that it is used within the specified power supply voltage range.
Check for any abnormal symptoms such as fever.	Confirmation by thermometer	Please turn off the power immediately and contact your nearest sales office or agent.
Check for any air leaks.	Confirmation by sound	If the issue cannot be resolved by port maintenance, please contact your nearest sales office or agent.

＊1　When cleaning, use a soft, static-free cloth and be careful to ensure no foreign substance remain.

4.2. Precautions on Product Disposal

CAUTION

When disposing of the product, comply with local laws and regulations pertaining to disposal and cleaning of wastes and have an industrial waste disposal company dispose of the product.

5. TROUBLESHOOTING

5.1. Problems, Causes, and Solutions

If the product does not operate as intended, check the table below for a possible solution.

- If the problem is not resolved even after conducting inspections and taking corrective actions, contact your nearest CKD sales office or distributor.

Problem	Cause	Solution
The signal from the higher-level device causes unintended behavior.	Input and output signals are unstable.	Since input from the higher-level system may be experiencing chattering, ensure sufficient time for input and output signals.
	Internal resistance of the product has increased.	Review environmental conditions and usage conditions and confirm the usage period.
	Main unit is damaged.	The product needs to be replaced. Please check the following items and contact us.
Product itself vibrates.	Fastening of the main body is loose.	Tighten the bolts.
	Payload capacity and permissible load have been exceeded.	Review the payload capacity, load moment, and load torque.
Machine (robot) is rotating slowly.	Fastening bolts to the main body are too long and are interfering.	Shorten the bolt
	There is no gap with the anti-rotation device.	Leave a gap.
	Foreign substance is stuck in the moving part of the product.	Perform cleaning. *Please be sure to turn off the power.
Connected device is not working.	Wiring is broken.	Check for pinched or broken wires, connectors, and terminals.
	Experiencing abnormal fever, etc.	Immediately turn off the power and stop using the device and contact your nearest sales office or agent.

6. WARRANTY PROVISIONS

6.1. Warranty Conditions

■ Warranty coverage

If the product specified herein fails for reasons attributable to CKD within the warranty period specified below, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge. However, following failures are excluded from this warranty:

- Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or this Instruction Manual.
- Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
- Failure not caused by the product.
- Failure caused by use not intended for the product.
- Failure caused by modifications/alterations or repairs not carried out by CKD.
- Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
- Failure caused by acts of nature and disasters beyond control of CKD.

The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.

■ Confirmation of product compatibility

It is the responsibility of the customer to confirm compatibility of the product with any system, machinery, or device used by the customer.

■ Others

The terms and conditions of this warranty stipulate basic matters.
When the terms and conditions of the warranty described in individual specification drawings or the Specifications are different from those of this warranty, the specification drawings or the Specifications shall have a higher priority.

6.2. Warranty Period

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