

RCP6 Actuator

Small 3-finger Gripper Type

First Step Guide Second Edition

Thank you for purchasing our product.

Make sure to read the Safety Guide and detailed Instruction Manual as well as this First Step Guide to ensure correct use.

This Instruction Manual is original.



Warning: Read the instruction manual carefully and follow the instruction manual when handling this equipment. Please downloaded the user's manual from our website. You can download it free of charge. User registration is required for first time users.

URL: www.iai-robot.co.jp/data_dl/CAD_MANUAL/

Keep a printout of the introduction manual near the equipment in which this product is installed so that it can be checked at all times, or display it on your computer, tablet terminal, etc. so that you can check it immediately.

If you need a bound copy of the instruction manual, order it from the nearest sales office listed in the First Step Guide or at the end of the instruction manual. It will be provided for a fee.

- Using or copying all or part of this Instruction Manual without permission is prohibited.

- The company names, names of products and trademarks of each company shown in the sentences are registered trademarks.

Product Check

This product is comprised of the following parts if it is of standard configuration.

If you find any fault in the contained model or any missing parts, contact us or our distributor.

1. Parts (The option is excluded.)

No.	Part Name	Model	Quantity	Remarks
1	Actuator Main Body	Refer to "How to Read the Model Nameplate" and "How to Read the Model Number."	1	
Accessories				
2	Motor • encoder cables ^(Note 1)		1	
3	Safety Guide	M0194	1	

Note 1 Please refer to the wiring layout for the enclosed motor cable and encoder cable.

2. How to Read the Model Nameplate

Model → **MODEL RCP6-GRTR9-WA-35P-7.5-30-P3-P-B**
Serial number → **SERIAL No.A12345600 MADE IN JAPAN**

3. How to Read the Model Number

3.1 Small 3-finger Gripper

RCP6 – GRTR9 - WA - 35P - 7.5 - 30 - P3 - M - NM	
<Series> RCP6: Stepping Motor Equipped	<Option> AC1 : Actuator cable length 1m AC2 : Actuator cable length 2m AC3 : Actuator cable length 3m B : With Brake ^{*1} CJL : Change in cable ejection orientation (Left side) CJR : Change in cable ejection orientation (Right side) CJT : Change in cable ejection orientation (Top side) G1/G5 : Indicated grease application specifications NM : Home reverse specification SLC : Equipped with slit cover Y : Mounting hole added ^{*1} ^{*1} Only GRTR9 can be selected.
<Type> GRTR6: Ø50 to 70mm GRTR9: Ø90mm	<Cable Length> N : None P : 1m S : 3m M : 5m X□□: Length specification (Max. 20m) R□□: Robot cable (Max. 20m)
<Encoder> WA: Battery-less absolute	
<Motor type> GRTR6 28P: □28 Stepping Motor GRTR9 35P: □35 Stepping Motor	
<Gear Ratio> GRTR6 5.1: Equivalent to Lead 5.1mm GRTR9 7.5: Equivalent to Lead 7.5mm	
<Stroke> GRTR6 10: 10mm 20: 20mm GRTR9 30: 30mm	
<Applicable Controller> P3: PCON, MCON, MSEL P5: RCON, RSEL	

Refer to the [catalog or Instruction Manual] for specification details.

Precautions in Handling

1. Handling the Packed Unit

- Do not damage or drop. The package is not applied with any special treatment that enables it to resist an impact caused by a drop or crash.
- Do not have a single operator to carry a heavy package. Use an appropriate method for transportation.
- Keep the unit in a horizontal orientation when placing it on the ground or transporting. Follow the instruction if there is any for the packaging condition.
- Do not climb onto the package.
- Do not put anything that could deform the package on it.

2. Handling after unpacking

- Do not carry the actuator by its cable or attempt to move it by pulling the cable.
- Hold the frame or motor cover section of the body when transporting the actuator main body.
- Do not damage or drop the actuator during transportation.
- Do not attempt to force any part of the actuator. Do not apply excess force especially on the fingers and finger guide.

Installation and storage/preservation environment

Usage is possible in environments of pollution degree 2 or equivalent.

1. Installation Environment

In general, it is an environment where an operator can work with no protection gear worn.

Avoid the following locations for installation.

- Where the unit receives radiant heat from strong heat sources such as heat treatment furnaces
- Where the ambient temperature exceeds the range of 0 to 40°C
- Where the temperature changes rapidly and condensation occurs
- Where the relative humidity exceeds 85% RH
- Where the unit receives direct sunlight
- Where the unit is exposed to corrosive or combustible gases
- Where the ambient air contains a large amount of dust, salt or iron (at levels exceeding those typical of an assembly plant)
- Where the unit is subject to splashed water or oil (including oil mist or cutting fluid) or chemical solutions
- Where the body receives impact or vibration
- Where the altitude is more than 2,000m

Provide sufficient work space for the following maintenance and inspection:

- Space to replenish grease

If the unit is used in any of the following locations, provide sufficient shielding measures.

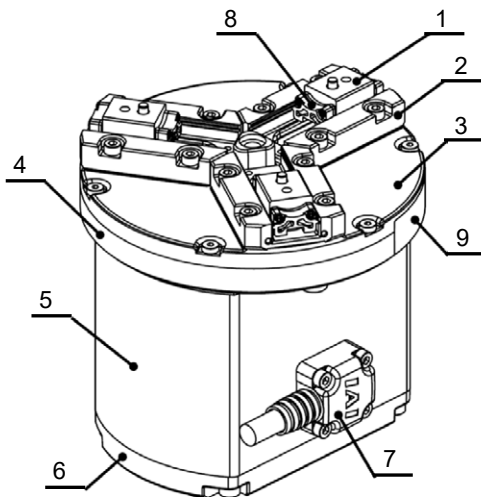
- Where noise is generated due to static electricity, etc.
- Where the unit is subject to a strong electric or magnetic field
- Where the unit is subject to ultraviolet or radiation

2. Storage/preservation environment

- For the storage and preservation environment, see the installation environment. However, give especial consideration to the prevention of condensation during long-term storage/preservation.
- Unless especially specified, desiccant is not included in the package at shipping. If the product is to be stored/preserved in an environment where condensation is anticipated, take condensation preventive measures.
- For short-term storage, it can be stored at 60°C or below. For storage of one month or more, make sure that the temperature does not exceed 50°C.
- The product should be placed horizontally for storage and preservation. If storing in the packaged condition, observe the conditions, if any, regarding storage orientation.

Part Names

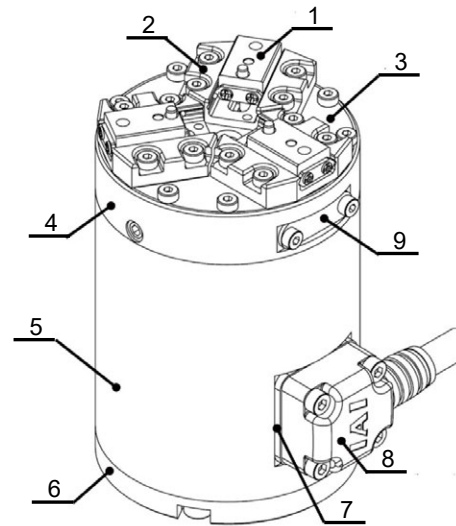
1. Small 3-finger Gripper Type GRTR9



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Finger	Alloy Steel	Electroless Nickel Plated
2	Guide base	Alloy Steel	Electroless Nickel Plated
3	Base flange	Aluminum Alloy	Coating
4	Motor bracket	Aluminum Alloy	Coating
5	Frame	Aluminum Alloy	White Anodizing Treatment
6	End cover	Aluminum Alloy	Coating
7	Wiring Cover	Synthetic Resin	-
8	Return	Synthetic Resin	-
9	Manual Open/Close Scroll Cap	Rubber	-

2. Small 3-finger Gripper Type GRTR6



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Finger	Alloy Steel	Electroless Nickel Plated
2	Guide base	Alloy Steel	Electroless Nickel Plated
3	Base flange	Aluminum Alloy	Trivalent Bright Chromate
4	Motor bracket	Aluminum Alloy	White Anodizing Treatment
5	Frame	Aluminum Alloy	White Anodizing Treatment
6	End cover	Aluminum Alloy	-
7	Spacer	Aluminum Alloy	-
8	Cable box	Resin	-
9	Lid for Manual Opening/Closing	Stainless Steel	-

Attachment

Refer to the Instruction Manual for the attachments of the actuator and loads.

[Precautions for Attachments]

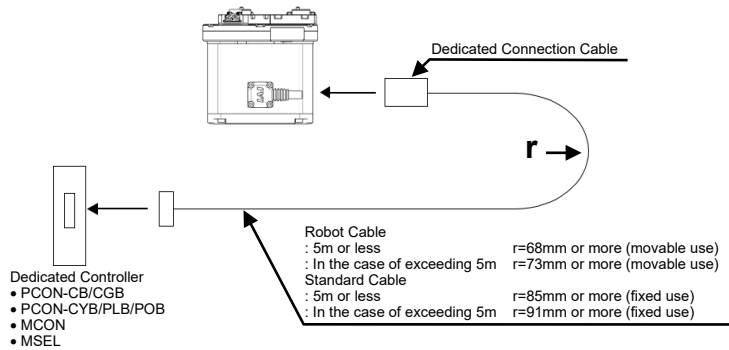
No.	Item	Precautions
1	Installation	● Use all mounting screw holes to secure the actuator. ● Reamed holes and oblong holes for positioning pins are provided on the bottom surface of the actuator. If repeatability is required when reinstalling the actuator after removal, use the reamed holes and slotted holes.
2	Installation surface	● The surface on which the actuator is installed must be a machined surface or a flat surface with equivalent accuracy. ● Vibration transmitted to the actuator must not exceed 0.5 G (4903 mm/s²). ● Install the actuator on a material with high thermal conductivity rather than on a material with low thermal conductivity such as resin. ● Consider sufficient space for maintenance work such as actuator replacement and inspection.
3	Fixing bolt	● The bolts used to secure the actuator to the installation surface must be provided by the customer. ● High-strength bolts of ISO 10.9 or higher are recommended. ● Pay attention to the length of the mounting bolts and positioning pins. ● If the bolts are screwed in deeper than the depth of the threaded holes or reamed holes, it may cause damage to the threaded holes or insufficient actuator mounting strength, resulting in reduced accuracy or unexpected accidents.
4	Tightening Torque	● Please follow the specification values stated in the Instruction Manual for the tightening torque. Failure to do so may cause malfunction due to deformation of the actuator.
5	Allowable Moment	● Follow the specified allowable moment values given in the Instruction Manual. Applying a load that exceeds the allowable moment may shorten the product life of the actuator.

Wiring

For the controller, only the dedicated controller manufactured by our company can be used. Using an undedicated controller may cause an accident such as burnout, combustion or heat generation.

Use the dedicated cable enclosed in the package when connecting the actuator and the controller.

[1] For Controller PCON, MCON, MSEL

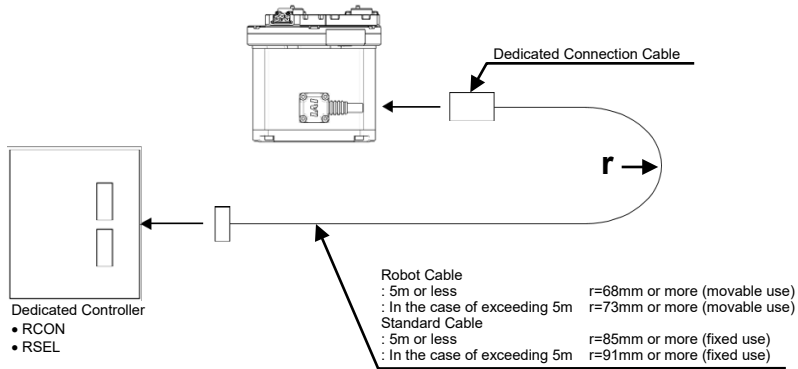


Dedicated Connection Cable Model Code

Cable	Model
Motor Encoder Integrated Cable	CB-CAN-MPA□□□
Motor Encoder Integrated Robot Cable	CB-CAN-MPA□□□-RB
Motor Encoder Integrated Cable 4-way Connector Type	CB-CAN2-MPA□□□
Motor Encoder Integrated Robot Cable 4-way Connector Type	CB-CAN2-MPA□□□-RB

* □□□ represents the cable length. The longest corresponds to 20m. e.g.) 080 =8m

[2] For Controller PCON, RSEL



Dedicated Connection Cable Model Code

Cable	Model
Motor Encoder Integrated Cable	CB-ADPC-MPA□□□
Motor Encoder Integrated Robot Cable	CB-ADPC-MPA□□□-RB
Motor Encoder Integrated Cable 4-way Connector Type	CB-ADPC2-MPA□□□
Motor Encoder Integrated Robot Cable 4-way Connector Type	CB-ADPC2-MPA□□□-RB

* □□□ represents the cable length. The longest corresponds to 20m. e.g.) 080 =8m

[Prohibited Items in the Cable Processing]

For wiring, please follow the warnings stated below. When constructing a system as the machinery equipment, pay attention to the wiring and connection of each cable so they are conducted properly. Not following them may cause not only a malfunction such as cable breakage or connection failure, or an operation error, but also electric shock or electric leakage, or may even cause a fire.

- Applying force to the actuator cable extending from the motor unit may cause malfunction. Secure the actuator cable so that it does not move.
- Make sure to turn the power off in the process of power line or cable connection or disconnection.
- Do not attempt to cut a dedicated cable with connectors on both ends to extend, shorten or rejoin it.
- Hold the dedicated cable to avoid mechanical force being applied to the terminals and connectors.
- Use a cable pipe or duct to have an appropriate protection when there is a possibility of mechanical damage on a dedicated cable.
- In case a dedicated cable is to be used at a moving part, make sure to lay out the cable without applying any force to pull the connector or extreme bend on the cable. Do not attempt to use the cable with a bending radius below the allowable value.
- Make certain that the connectors are plugged properly. Insufficient connection may cause an operation error, thus it is extremely risky.
- Do not lay out the cables to where the machine runs over them.
- Pay attention to the cable layout so it would not hit peripherals during an operation. In case it does, have an appropriate protection such as a cable carrier.

- When a cable is used hanging on the ceiling, prevent an environment that the cable swings with acceleration or wind velocity.
- Make sure there is not too much friction inside the cable storage equipment.
- Do not apply radiated heat to power line or cables.
- Do not bend the cable in the area from the connector tip inward to 150mm on both ends.

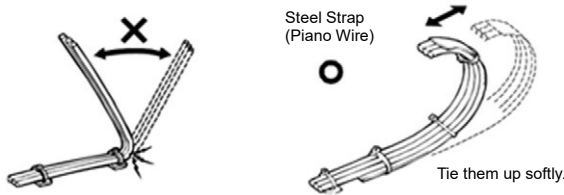
Standard Cables CB-CAN-MPA□□□, CB-ADPC-MPA□□□
Robot Cables CB-CAN-MPA□□□-RB, CB-ADPC-MPA□□□-RB



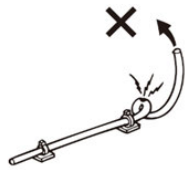
- Do not attempt to use the motor / encoder cable in a condition that the cable is bundled up in several layers such as coil winding. There are motor driving power line and encoder signal line in the motor / encoder cable. Therefore, if the motor / encoder cable is bundled up, the noise generated from the motor driving power line could give an influence to the encoder and may cause an error.



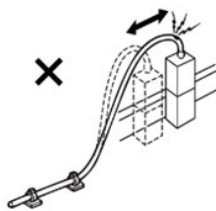
- Have a sufficient radius for bending, and avoid a bend concentrating on one point.



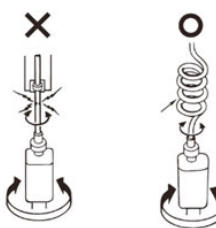
- Do not let the cable bend, kink or twist.



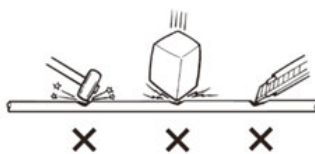
- Do not pull the cable with a strong force.



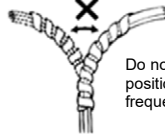
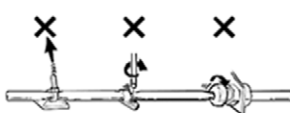
- Pay attention not to concentrate the twisting force to one point on a cable.



- Do not pinch, drop a heavy object onto or cut the cable.

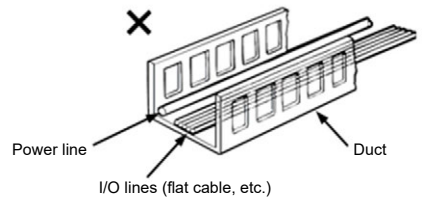


- When a cable is fastened to affix, make sure to have an appropriate force and do not tighten too much.



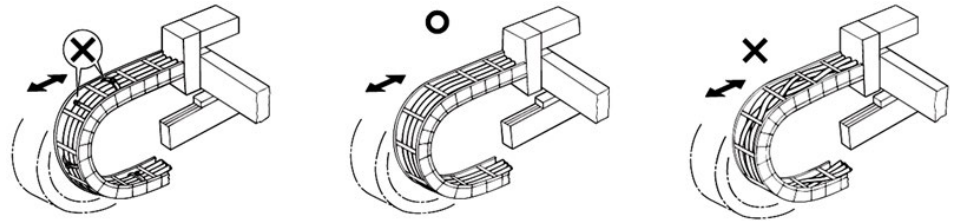
Do not use spiral tube in any position where cables are bent frequently.

- PIO line, communication line, power and driving lines are to be put separately from each other and do not tie them together. Arrange so that such lines are independently routed in the duct.



[Follow the instructions below when using the cable carriers.]

- If there is an indication to the cable for the space factor in the cable carriers, refer to the wiring instruction given by the supplier when storing the cable in the cable carriers.
- Avoid the cables to get twined or twisted in the cable carriers, and also to have the cables move freely and do not tie them up. (Avoid tension being applied when the cables are bent.) Do not pile up cables. It may cause faster abrasion of the sheaths or cable breakage.



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