

# ROBO Cylinder RCP4W Actuator Rod Dust-proof/Splash-proof Type First Step Guide Third Edition

Thank you for purchasing our product.  
Make sure to read the Safety Guide and detailed Instruction Manual (DVD) included with the product in addition to this First Step Guide to ensure correct use.  
This Instruction Manual is original.

**Warning:** Operation of this equipment requires detailed installation and operation instructions which are provided on the DVD Manual included in the box this device was packaged in. It should be retained with this device at all times.  
A hardcopy of the DVD Manual can be requested by contacting your nearest IAI Sales Office listed at the back cover of the Instruction Manual or on the First Step Guide.

- 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

The standard configuration of this product is comprised of the following parts. If you find any fault or missing parts, contact your local IAI distributor.

### 1. Parts

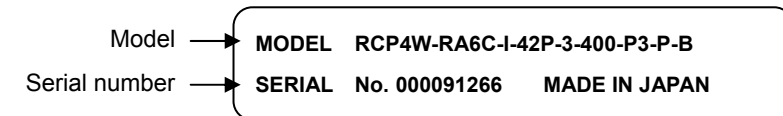
No.	Part Name	Model	Quantity	Remarks
1	Actuator	Refer to "How to read the model plate", "How to read the model No."	1	
Accessories				
2	Motor • Encoder Cable (Note 1)		1	
3	Nut		1	Refer to the list below
4	First Step Guide		1	
5	Instruction Manual (DVD)		1	
6	Safety Guide		1	

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

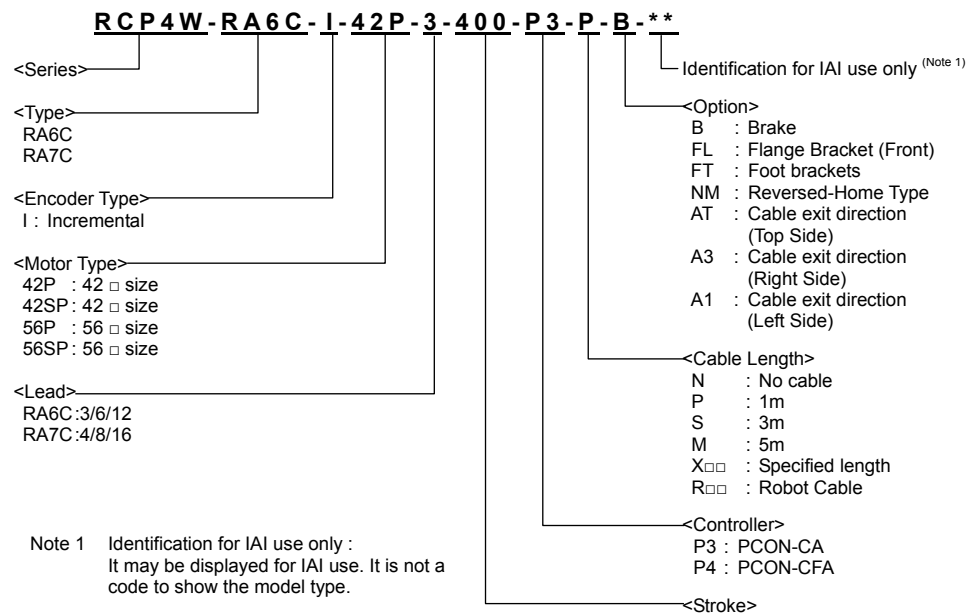
### [List of the Nuts]

Model No.	Nut (M10×1.25)	Nut (M14×1.5)	Square Nut (7×7 M4)	Square Nut (8×8 M5)
RA6C	1		4	
RA7C		1		4

### 2. How to read the model plate



### 3. How to read the model No.



(Note) The motor types 42SP and 56SP are equipped with a brake in standard. There is no option without brake.

## Caution in Handling

### 1. Handling of Robot

Pay attention to the followings when carrying an actuator by itself.

#### (1) Handling of the Packed Product

- 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.
- An operator should never attempt to carry a heavy package on their own. Also, use an appropriate way for transportation.
- If the shipping box is to be left standing, it should be in a horizontal position. Follow the instruction if there is any for the packaging condition.
- Do not step or sit on the package.
- Do not put any load that may cause a deformation or breakage of the package.

#### (2) Handling after Unpackaged

- Do not carry the actuator by holding the cable, or do not move it by pulling the cable.
- Hold the frame section when transporting the actuator.
- Do not hit or drop the product while carrying.
- Do not give any excessive force to any of the sections in the actuator.

### 2. Handling in Assembled Condition

This is the case that this product is delivered with other actuators being combined. Multi-axes type will be delivered in a package with an outer case fixed to a wooden base. Rods are fixed so they would not accidentally move while in transportation. The end of the actuator is also fixed to avoid it swinging by external vibration.

#### (1) Handling of the Packed Product

- 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.
- An operator should never attempt to carry a heavy package on their own. Also, use an appropriate way for transportation.
- When suspending the package using ropes, pass the ropes from underneath the reinforcement frames at the bottom of the base. When lifting with a forklift, also place the forks underneath the base.
- Do not apply an impact on the package or let it bounce when putting it down.
- Do not step or sit on the package.
- Do not put any load that may cause a deformation or breakage of the package.

#### (2) Handling after Unpackaged

- Secure the rods to prevent sudden movement during transport.
- Appropriately fix the tip of the actuators if it is overhanging so it would not widely shake with external vibration. If the actuator assembly is transported without the ends being secured, do not apply an impact of 0.3G or more.
- In the case that the actuator needs to be carried up with ropes or another method, be sure to use an appropriate cushioning to avoid the robot being deformed or put on an excessive pressure. And also, be sure to keep the robot in a stable and horizontal posture. Make a tool to utilize the attachment holes and tapped holes on the actuator and attach it if necessary.
- Do not attempt to apply load to the actuator or connector box. Also, avoid the cables being pinched or caused an excessive deformation.

### 3. Handling of Peripherals and Attached Condition

Followings are the cautions for when transporting the actuators installed in the machinery equipment (system) in the whole system.

- Affix the rods so they would not move while transporting.
- If any end of the actuator is overhanging, secure it properly to avoid significant movement due to external vibration. If the actuator assembly is transported without the ends being secured, do not apply an impact of 0.3G or more.
- Do not attempt to apply load to actuators or connector box when hanging the machinery equipment (system) with tools such as a rope. Also, avoid the cables being pinched or caused an excessive deformation.

## Installation and Storage • Preservation Environment

This product is capable for use in the environment of pollution degree 3<sup>1</sup> or equivalent.

\*1 Conductivity may get polluted. Or dry non-conductivity that turns to conductivity in condensation may get polluted. (IEC-60664-1)

### 1. Installation Environment

Do not use this product in the following environment.

Also make sure to keep enough work space necessary for maintenance.

- Location exposed to radiant heat from a huge heat source such as the heat treatment
- Location where the surrounding air temperature exceeds the range of 0 to 40 °C
- Location where condensation occurs due to abrupt temperature changes
- Location where relative humidity exceeds 85%RH
- The product gains the water-proof performance of IP67 protection structure.
- Location exposed to direct sunlight
- Location exposed to corrosive gases or combustible gases
- Location exposed to significant amount of dust, salt or iron powder (Outside of ordinary assembly plant)
- Location where the product main body receives vibration or hit impact

When using the product in any of the locations specified below, provide a sufficient shield.

- Place subject to electrostatic noise
- Location where exposed to the influence of strong electric or magnetic field
- Location where exposed to the influence of ultraviolet or radiant rays

Contact us when thinking the installation in an area that the product may get splash of oil (including oil mist and cutting fluid) or chemicals or cleaning fluid.

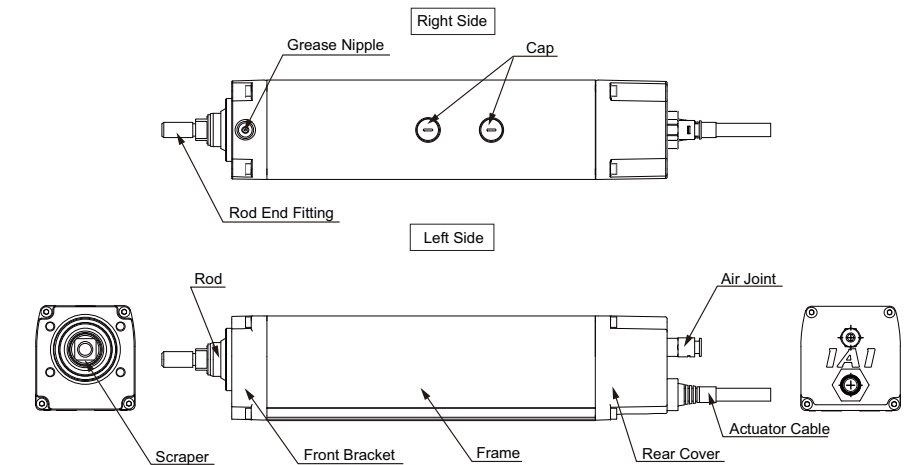
### 2. Storage • Preservation Environment

- The storage and preservation environment should comply with the same standards as those for the installation environment. In particular, when the machine is to be stored for a long time, pay close attention to environmental conditions so that no dew condensation forms.
- Unless specially specified, moisture absorbency protection is not included in the package when the machine is delivered. In the case that the machine is to be stored and preserved in an environment where dew condensation is anticipated, take the condensation preventive measures from outside of the entire package, or directly after opening the package.

- For storage and preservation temperature, the machine withstands temperatures up to 60 °C for a short time, but in the case of the storage and preservation period of 1 month or more, control the temperature to 50 °C or less.
- Storage and preservation should be performed in the horizontal condition. In the case it is stored in the packaged condition, follow the posture instruction if any displayed on the package.

## Names of the Parts

### 1. Standard Type



Please refer to the Catalog or the Instruction Manual (DVD) for the dimensions and profile.

## Attachment

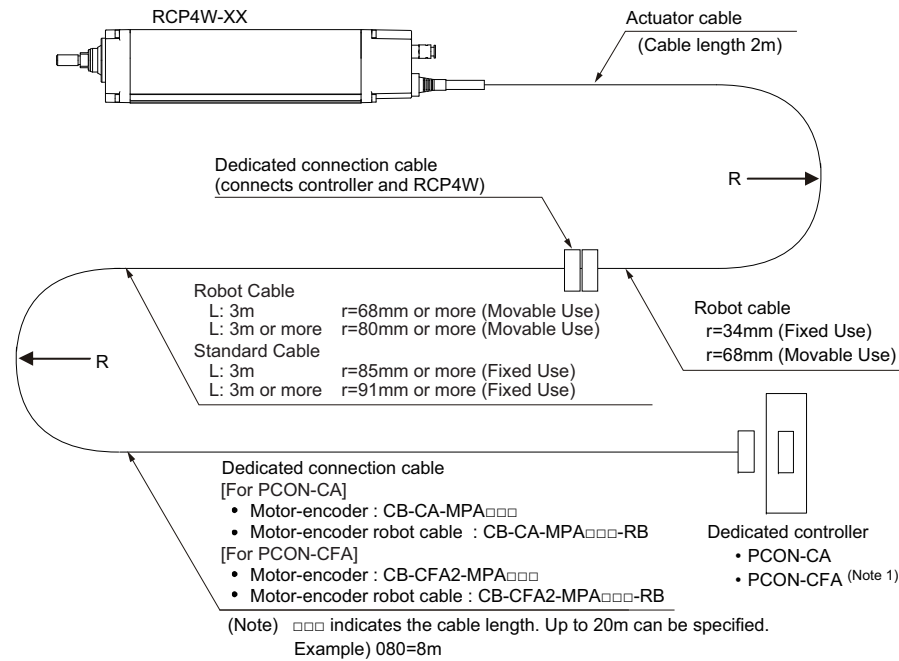
Refer to the Instruction Manual (DVD) for the attachments of the actuator and loads.

### [Precautions for Attachments]

No.	Item	Precautions
1	Installation	<ul style="list-style-type: none"> <li>Avoid using an actuator with no brake in the vertical orientation.</li> </ul>
2	Attachment Surface	<ul style="list-style-type: none"> <li>The base has to have a structure with sufficient rigidity to prevent oscillation.</li> <li>The side and bottom surfaces of the base on the actuator work as the datum surfaces for the side of the rod. Use these surfaces as the datum surfaces for mounting.</li> </ul> <ul style="list-style-type: none"> <li>The actuator mounting surface and other surfaces that are used as a datum should be flat enough with an accuracy of machining or equivalent treatment, and the flatness of the mounting surface needs to be 0.05mm/m or less.</li> <li>Secure the space where maintenance work can be performed.</li> </ul>
3	Bolts to be used	<ul style="list-style-type: none"> <li>Use hexagonal socket head bolts (stainless steel) for the male screw.</li> <li>If using the tapped holes, use screws with the thread length dimension being less than the effective depth of the holes.</li> </ul>
4	Tightening Torque	<ul style="list-style-type: none"> <li>Please follow the specification values stated in the Instruction Manual (DVD) for the tightening torque. Failure to do so may cause an operation problem.</li> </ul>
5	Allowable Load and Allowable Torque	<ul style="list-style-type: none"> <li>Follow the values specified in Instruction Manual (DVD) for the weight and the torque of the load attached on the tip of the rod. Failure to do so may cause abnormal vibration or noise, and also may remarkably shorten the product life.</li> </ul>

# Wiring

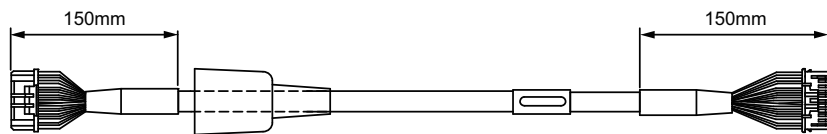
For the controller, only the dedicated controller manufactured by our company can be used. Using other controllers may cause a problem such as burning the product, ignition or generating heat. Use the dedicated cable enclosed in the package when connecting the actuator and the controller.



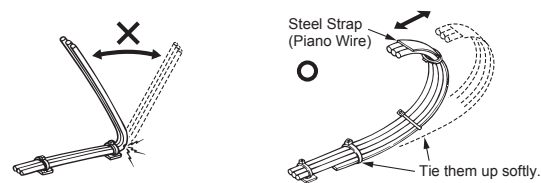
⚠ **Note:** The dedicated connection cable and cable joint connectors are not treated against water drops. Do not attempt to apply water on them.

## [Prohibited Items in the Cable Processing]

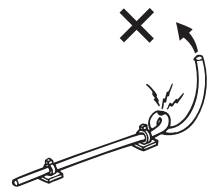
- Do not pull or bend forcibly the cable so as not to give any extra load or tension to the cable.
- Do not process the cable to extend or shortening by means of cutting out, combination or connecting with another cable.
- Do not bend the cable in the area from the connector end inward to 150mm on both ends.  
 Standard cable : CB-CA-MPA□□□□, CB-CFA2-MPA□□□□  
 Robot cable : CB-CA-MPA□□□□-RB, CB-CFA2-MPA□□□□-RB



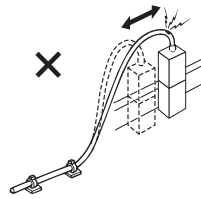
- Do not let the cable flex at a single point.



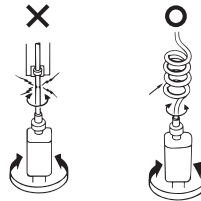
- Do not let the cable bend, kink or twist.



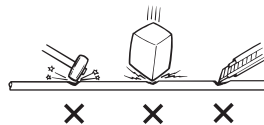
- Do not pull the cable with a strong force.



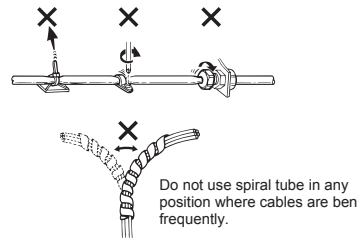
- Do not let the cable receive a turning force at a single point.



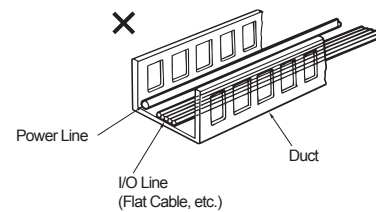
- Do not pinch, drop a heavy object onto or cut the cable.



- When fixing the cable, provide a moderate slack and do not tension it too tight.

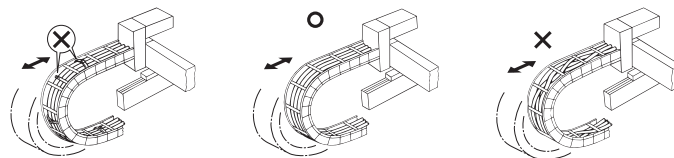


- Separate the I/O line, communication line and power line from each other. Do not store in the same duct.



Follow the instructions below when using a cable track.

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



⚠ **Note:**

- When the cable is connected or disconnected, make sure to turn off the power to the controller. When the cable is connected or disconnected with the controller power turned ON, it might cause a malfunction of the actuator and result in a serious injury or damage to the machinery.
- When the connector connection is not correct, it would be dangerous because of a malfunction of the actuator. Make sure to confirm that the connector is connected correctly.



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