IAI
Quality and Innovation

RCA2 Actuator
Slim and Small Type
Battery-less Absolute Specification
First Step Guide First 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 change. 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

3. How to Read the Model Number

RCA2 – RP3NC - WA - 20 - 4 - 50 - A5 – P – B

<Series>
RCA2 : 24V AC Servomotor Mounted (Standard Environment)

<Type>
RP3NC : Tapped Hole Fixed Rod Type 28mm-wide nut rotation drive
GD3NC : Double-Guided Rod Type 28mm-wide nut rotation drive
TC3NC : Compact Table Type 32mm-wide nut rotation drive
TW3NC : Wide Table Type 50mm-wide nut rotation drive
RP4NC : Tapped Hole Fixed Rod Type 34mm-wide nut rotation drive
GD4NC : Double-Guided Rod Type 34mm-wide nut rotation drive
TC4NC : Compact Table Type 36mm-wide nut rotation drive
TW4NC : Wide Table Type 58mm-wide nut rotation drive

<Encoder type>
WA : Battery-less absolute

<Motor type>
10 : 10W (□3NC only)
20 : 20W
30 : 30W (□4NC only)

<Lead>
□3NC □4NC
1: 1mm 2: 2mm
2: 2mm 4: 4mm
4: 4mm 6: 6mm
10: 10mm (Available to select 30W motor only)

<Stroke>
50 : 50mm

<Applicable Controller>
A5 : ACON-CB/CGB/CYB/POB/PLB
A6 : RCON
RSEL

<Cable length>
N : None
P : 1m
S : 3m
M : 5m
X□□ : Length specification (Max. 20m)
R□□ : Robot cable (Max. 20m)

<Options>
B : Brake type
CJT : Cable eject direction changed (Top) *1
CJR : Cable eject direction changed (Right) *2
CJL : Cable eject direction changed (Left) *2
G1/G3/G4/G5 : Specified Grease Application Specifications
NM : Reversed-home Specification *2
SRC : Spiral Cover Equipped Type

*1 : It is selectable only for rod type
*2 : It is selectable only for table type

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.
  The package is not specially designed to withstand dropping or shock due to collision.
- Do not attempt to carry a heavy package with only one worker. Consider an appropriate method for transportation.
- Keep the unit in horizontal orientation when placing it on the ground or transporting.
- 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 unpacking
- Carry while holding the frame.
- Do not carry the unit by the cable.
- Do not damage or drop the package during transportation.
- Do not apply an excessive force to each part of the actuator.

Installation and storage/preservation environment

1. Installation Environment
In general, the installation environment should be one in which an operator can work without protective gear.

The actuator should be installed in a location other than those specified below.
- Where the actuator 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 the range of 10% RH to 85% RH
- Where the actuator receives direct sunlight
- Where the actuator is exposed to corrosive or combustible gases
- Where the ambient air contains a large amount of powder dust, salt or iron (at level exceeding what is normally expected in an assembly plant)
- Where the unit is subject to splashed water or oil (including oil mist or cutting fluid) or chemical solutions
- Where the actuator receives impact or vibration
- Where the altitude is more than 1,000m

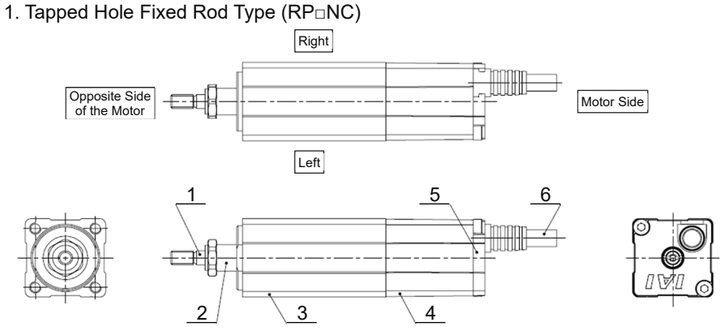
Provide sufficient work space for the following maintenance and inspection.
- Space to replenish grease
- Space to replace the spiral cover (option)

When using the product in any of the locations specified below, provide a sufficient shield.
- Where noise generates due to static electricity, etc
- Where the actuator is subject to a strong electric or magnetic field
- Where the actuator is subject to ultraviolet ray or radiation

2. Storage • Preservation Environment
- For the storage and preservation environment, see the installation environment.
  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

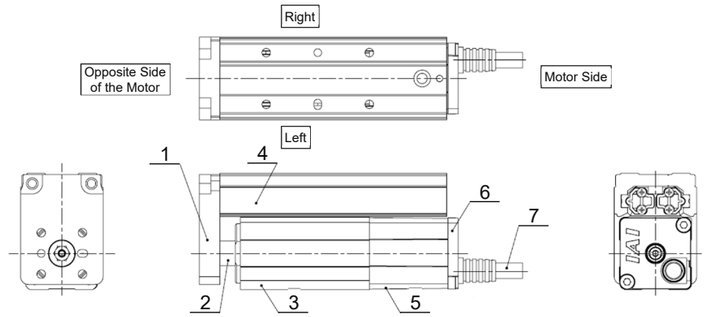
1. Tapped Hole Fixed Rod Type (RP□NC)



[Main Component Materials]

No.	Name	Material	Surface Treatment
1	Rod Tip Fitting	S45C	Electroless Nickel Plating
2	Stopper Collar	Stainless Steel	—
3	Main Frame	Aluminium Alloy	White Anodizing Treatment
4	Encoder Cover	Synthetic Resin	—
5	Rear Cover	Synthetic Resin	—
6	Cable	—	—

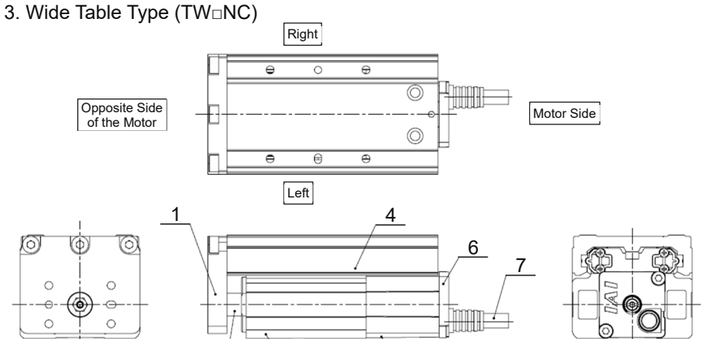
2. Compact Table Type (TC□NC)



[Main Component Materials]

No.	Name	Material	Surface Treatment
1	Front Plate	Aluminium Alloy	White Anodizing Treatment
2	Stopper Collar	Stainless Steel	—
3	Main Frame	Aluminium Alloy	White Anodizing Treatment
4	Table	Aluminium Alloy	White Anodizing Treatment
5	Encoder Cover	Synthetic Resin	—
6	Rear Cover	Synthetic Resin	—
7	Cable	—	—

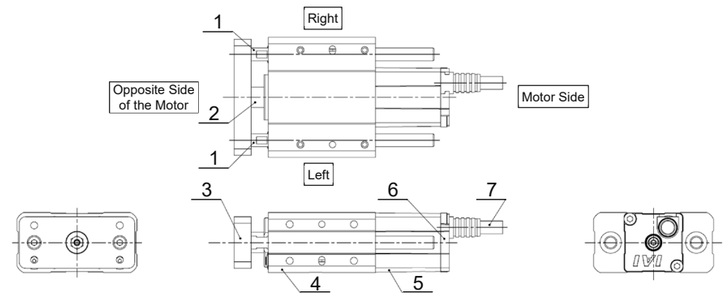
3. Wide Table Type (TW□NC)



[Main Component Materials]

No.	Name	Material	Surface Treatment
1	Front Plate	Aluminium Alloy	White Anodizing Treatment
2	Stopper Collar	Stainless Steel	—
3	Main Frame	Aluminium Alloy	White Anodizing Treatment
4	Table	Aluminium Alloy	White Anodizing Treatment
5	Encoder Cover	Synthetic Resin	—
6	Rear Cover	Synthetic Resin	—
7	Cable	—	—

4. Double-Guided Rod Type (GD□NC)



[Main Component Materials]

No.	Name	Material	Surface Treatment
1	Guide Shaft	SUJ2	Induction hardened and tempered, HRC 60 or higher
2	Stopper Collar	Stainless Steel	—
3	Front Plate	Aluminium Alloy	White Anodizing Treatment
4	Main Frame	Aluminium Alloy	White Anodizing Treatment
5	Encoder Cover	Synthetic Resin	—
6	Rear Cover	Synthetic Resin	—
7	Cable	—	—

Attachment

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

[Precautions for Attachments]

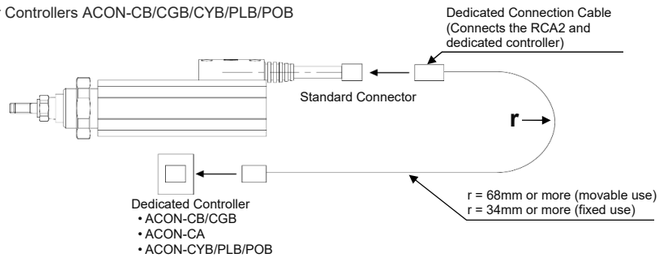
No.	Item	Precautions
1	Installation	• Use all mounting screw holes to secure the actuator.
2	Installation surface	• The surface where the actuator will be mounted should be a machined surface or that with an accuracy equivalent to it, and the flatness should be 0.05mm/m or below. • The platform to install the actuator should possess a structure that ensures enough stiffness, and should be free from vibration. • Also consider the necessary space for maintenance work such as actuator replacement and inspection.
3	Fixing bolt	• The bolts for fixing actuator on the installation surface are to be prepared by the customer. • Use hex socket head screws for the mounting male threads. • The use of high-strength bolts of ISO-10.9 or higher is recommended. • Make sure the internal thread and bolt effective engagement length is approximately equal to the nominal diameter or greater.
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.

As the connection cable for the controller and the actuator, use the IAI-dedicated connection cable.

[1] For Controllers ACON-CB/CGB/CYB/PLB/POB

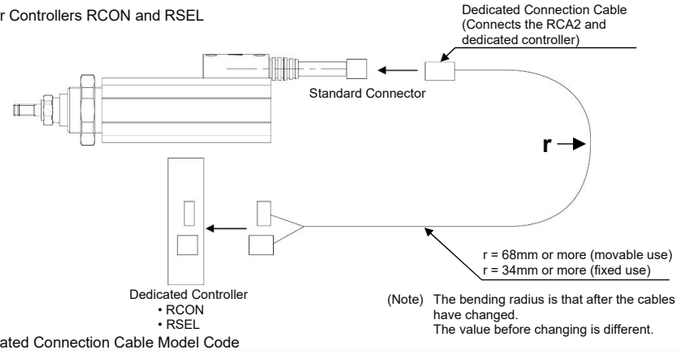


Dedicated Connection Cable Model Code

Cable	Model Code
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 Controllers RCON and RSEL



(Note) The bending radius is that after the cables have changed.
The value before changing is different.

Dedicated Connection Cable Model Code

Cable	Model Code
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

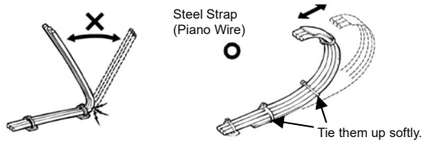
* □□□ represents the cable length. The longest corresponds to 20m. e.g.) 080 = 8m

[Prohibited Items in the Cable Processing]

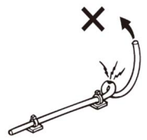
For wiring, please follow the warnings stated below. When constructing a system as the machinery equipment, pay attention to the wiring and connection of each cable so they are conducted properly. Not following them may cause not only a malfunction such as cable breakage or connection failure, or an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

- Hold the actuator cable so it would not move as applying force on the actuator cable out from the motor unit may cause malfunction.
- 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 re-joint 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 carriers.
- 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 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.

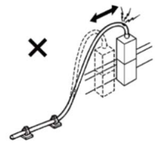
- Have a sufficient radius for bending, and avoid a bend concentrating on one point.



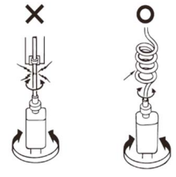
- Do not let the cable bend, kink or twist.



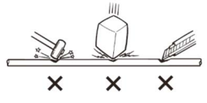
- Do not pull the cable with a strong force.



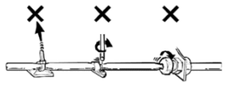
- Pay attention not to concentrate the twisting force to one point on a cable.

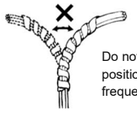


- Do not pinch, drop a heavy object onto or cut the cable.



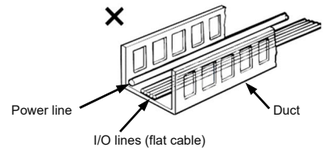
- When a cable is fastened to affix, make sure to have an appropriate force and do not tighten too much.





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

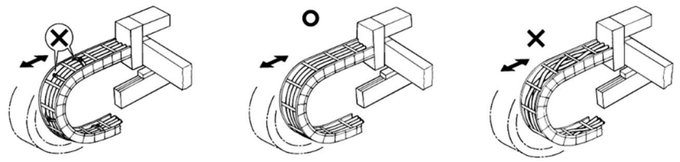
- PIO line, communication line, power and driving lines are to be put separately from each other and do not tie them together. Arrange so that such lines are independently routed in the duct.



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

- If there is an indication to the cable for the space factor in a 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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