IAI
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RCS3 Actuator
Loadcell-equipped Rod Type
First Step Guide Third 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

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 (Except with Option)

No.	Part Name	Model	Quantity	Remarks
1	Actuator Main Body	Refer to "How to read the model No."	1	
Accessories				
2	Motor • Encoder Cable (Note 1)		1	
3	Safety Guide	M0194	1	

Note 1 The motor/encoder cables refer to wiring for the applicable cables.

2. How to read the model plate

Model → **MODEL RCS3-RA6R-I-50-1.5-115-T2-P-LCT**
Serial number → **SERIAL No. A00090266 MADE IN JAPAN**

3. How to read the model No.

RCS3-RA6R-I-50-1.5-115-T2-P-LCT-B-**

Series

<Type>
Motor Reversing Type
RA4R, RA6R
RA7R, RA8R
RA10R, RA15R
RA20R

<Encoder Type>
I : Incremental
A : Absolute

<Motor Type>
30 : 30W 50 : 50W
100 : 100W 200 : 200W
300 : 300W 3300 : 3300W
3000 : 3000W

<Lead>
RA4R : 2.5 RA6R : 1.5
RA7R : 2 RA8R : 2.5
RA10R : 2.5
RA15R (equipped with loadcell): 3.6
RA20R (equipped with loadcell): 4.0
RA15R
(conveyor type (with no loadcell equipped)): 7.2
RA20R
(conveyor type (with no loadcell equipped)): 10

<Stroke>
[Refer to 1.2 Specifications in Instruction Manual]

Identification for IAI use only (Note 1)

<Option>
B : Brake FL:Flange Bracket
FT : Foot Bracket
ML : Motor Left Reversed (Standard)
MR : Motor Right Reversed
MT : Motor Top Reversed (RA15R, RA20R)
CJT : Cable Eject Direction Changed (Top)
CJO : Cable Eject Direction Changed (Outside)
CJB : Cable Eject Direction Changed (Bottom)
CJR : Cable exit direction changed (Right) (RA15R, RA20R)
CJL : Cable exit direction changed (Left) (RA15R, RA20R)
CE : Applicable CE (RA4R)

With Loadcell (with Cable carrier for Wiring)
When no indication of LCT in RA15R or RA20R
(conveyor type (with no loadcell equipped))

<Cable Length>
N : No Cable P : 1m
S : 3m M : 5m
X□□ : Specified Length
R□□ : Robot Cable

<Controller>
T2 : SCON-CB/CGB
T3 : With loadcell
RA15R
SCON-CGB-3300□F
RA20R
SCON-CGB-3000□F
Conveyor Type (with no loadcell equipped)
RA15R
SCON-CGB-3300□
RA20R
SCON-CGB-3000□

Note 1 Identification for IAI use only : It may be displayed for IAI use. It is not a code to show the model type.

Caution in Handling

1. Handling of the Packed Product
Especially in the transportation and handling do not damage or drop as much as possible.
- An operator should never attempt to carry a heavy package on their own.
- If the shipping box is to be left standing, it should be in a horizontal position.
- 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 in Unpacked Condition
[RA4R, RA6R, RA7R, RA8R, RA10R]
Do not carry an actuator by motor unit and a track cover area and the cable or attempt to move it by pulling the cable.
- Hold the body base when transporting the actuator out the package.
- Do not hit or drop the product while carrying. Especially, pay attention to the side cover.
- Do not give any excessive force to any of the sections in the actuator.
- When transporting an actuator, check the weight and the center of gravity of the actuator in instruction manual before lifting up on a crane. Pay attention to the center point of gravity as it differs for each model.

Installation and Storage • Preservation Environment

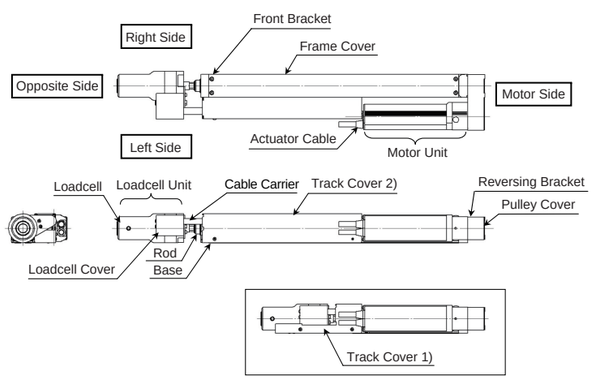
1. Installation Environment
Do not use this product in the following environment.
In general, the installation environment should be one in which an operator can work without protective gear.
Also make sure to keep enough work space necessary for maintenance.
- Location exposed to radiant heat from a 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
- 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 water, and oil (includes oil mist and cutting fluid) or chemical is splashed
- Location where the product main body receives vibration or hit impact
- Location where the altitude of 2,000m or more

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

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.

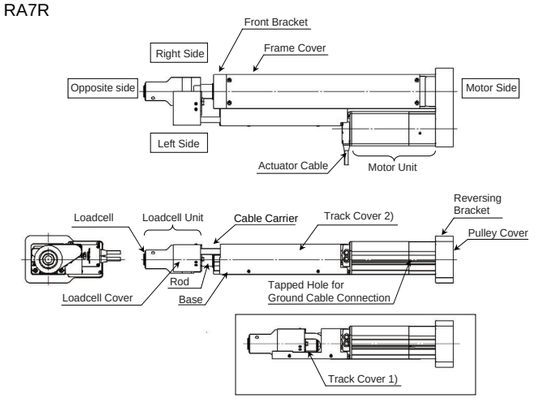
Names of the Parts

1. RA4R



Model	Stroke [mm]	
	Track Cover 1)	Track Cover 2)
RA4R	115 to 265	315 to 415

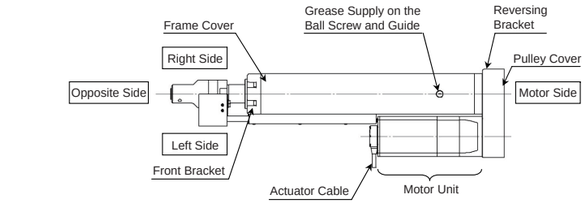
2. RA6R, RA7R



(Note) The profile of the track cover differs depending on the stroke.

Type	Stroke [mm]	
	Track Cover 1)	Track Cover 2)
RA6R	115 to 265	315 to 415
RA7R	120 to 270	320 to 520

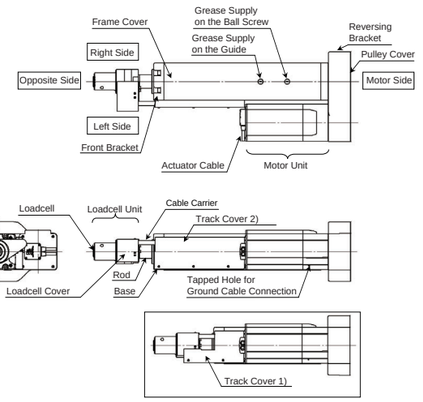
3. RA8R



(Note) The profile of the track cover differs depending on the stroke.

Type	Stroke [mm]	
	Track Cover 1)	Track Cover 2)
RA8R	100 to 250	300 to 500

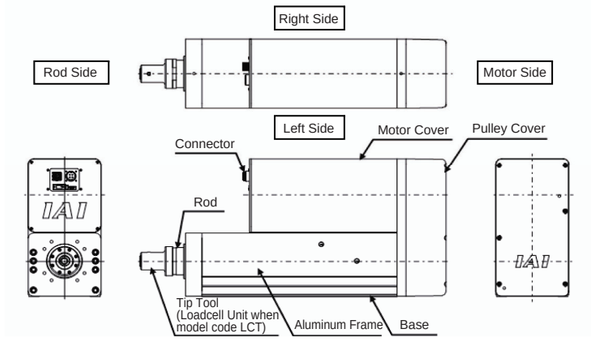
4. RA10R



(Note) The profile of the track cover differs depending on the stroke.

Type	Stroke [mm]	
	Track Cover 1)	Track Cover 2)
RA10R	100 to 200	250 to 500

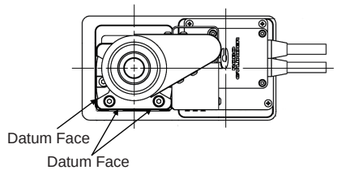
5. RA15R, RA20R



Attachment

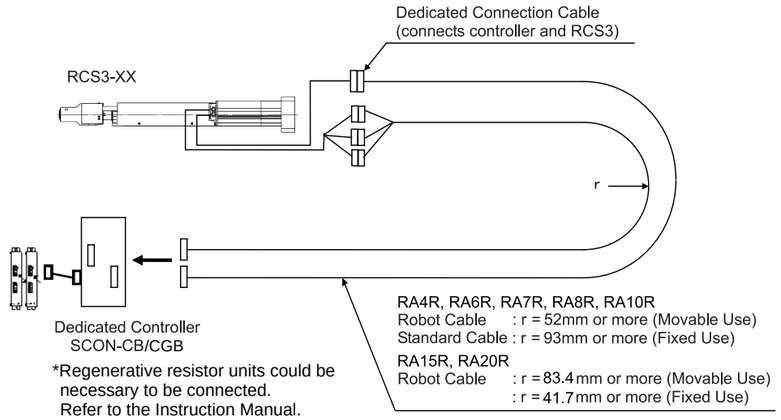
Refer to the Instruction Manual for the attachments of the actuator and loads.

[Precautions for Attachments]

No.	Item	Precautions
1	Installation	• Avoid using an actuator equipped with no brake when installing in vertical orientation
2	Attachment surface	• The base has to have a structure with sufficient rigidity to prevent oscillation. • Other than RA15R, RA20R the side and bottom surfaces of the base on the actuator work as the datum surfaces for the side of the rod. In case operation accuracy is required, utilize these surfaces for installation.  • 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. • Secure the space where maintenance work can be performed.
3	Bolts to be used	• For the bolts to be used, a high-tensile bolt complying with ISO-10.9 or more is recommended. • If using the tapped holes, use screws with the thread length dimension being less than the effective depth of the holes. • In case the tapped hole is a through hole, be careful so the screw tip does not exceed the surface of the tapped hole. • For the actuator mounting, use a bolt with the dimension of its effective mating length to the tapped hole size as stated below. When tapped hole is on female → thread length same as nominal diameter. When tapped hole is on aluminum → thread length 1.8 times longer than nominal diameter However, when installing with using tap holes on actuator, set the RCS3-RA8R is 12mm or less, and RCS3-RA10R is 15mm or less. When installing with using front bracket, set the RCS3-RA15R, RA20R is 18mm or less.
4	Attachment of tool for tip of the loadcell (prepared by user)	• Make the weight of the tool lower than the transportable weight of the actuator. • When attaching a tool, pay attention not to apply impact load or unbalanced load to the loadcell or peripheral components. It may cause malfunction of the loadcell. • Inside of the loadcell cannot receive force. Make sure not to have a tool hit on the bottom inside the loadcell. It may cause malfunction of the loadcell. • When attaching a tool in horizontal orientation, avoid moment load from being applied to the loadcell.

Wiring

For the controller, only the dedicated controller manufactured by our company can be used.
Use the dedicated cable enclosed in the package when connecting the actuator and the controller.



*Regenerative resistor units could be necessary to be connected. Refer to the Instruction Manual.

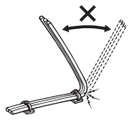
Dedicated cable
RA4R, RA6R, RA7R, RA8R, RA10R
- Motor cable : CB-RCC-MA□□□
- Motor cable robot type : CB-RCC-MA□□□-RB
- Encoder cable : CB-RCS2-PLDA□□□
- Encoder cable robot type : CB-RCS2-PLDA□□□-RB

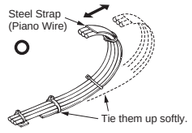
RA15R, RA20R
- Motor cable : CB-RCS3-MA□□□
- Motor cable robot type : CB-RCS3-PLA□□□

(Note) □□□ indicates the cable length. Up to 30m can be specified.
Example) 080=8m

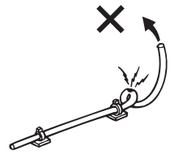
[Prohibited Items in the Cable Processing]

- 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 let the cable bend, kink or twist.

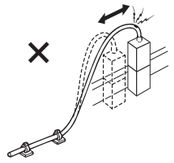




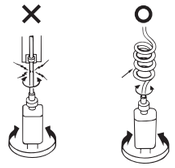
- Do not let the cable flex at a single point.



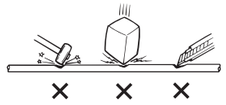
- Do not pull the cable with a strong force.



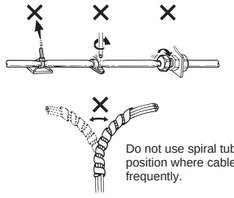
- Do not let the cable receive a turning force at a single point.



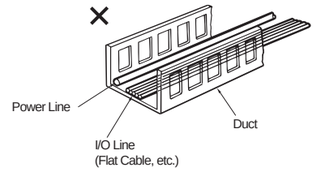
- Do not pinch, drop a heavy object onto or cut the cable.



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

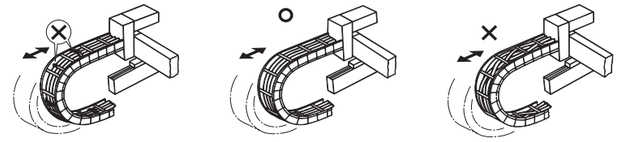


- Separate the I/O line, communication line and power line from each other.
  Do not store in the same duct.



Follow the instructions below when using a cable carrier.

- If there is an indication to the cable for the space factor in a cable carrier, refer to the wiring instruction given by the supplier when storing the cable in the cable carrier.
- Avoid the cables to get twined or twisted in the cable carrier, 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.



⚠ 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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