

Belt-Driven Actuator IFA

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 download 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

No.	Part Name	Model	Quantity	Remarks
1	Actuator Main Body	Refer to "2. How to read the model nameplate", "3. How to read the model number"	1	
Accessories				
2	Motor Cable	Refer to "Wiring"	1	
3	Encoder Cable	Refer to "Wiring"	1	
4	Washer Dedicated for High-Tensile Bolt		May differ depending on stroke	For IFA-MA only
5	Safety Guide	M0194	1	

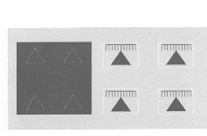
(2) Motor Cable



(3) Encoder Cable



(4) Home Marking Sticker

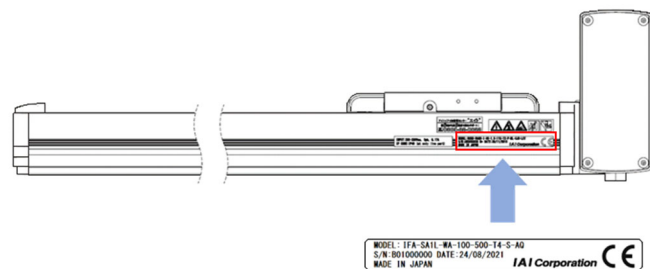


(5) Washer Dedicated for High-Tensile Bolt



2. How to read the model nameplate

Model Code → **MODEL : IFA-SA1L-WA-100-500-T4-S-AQ**
 Serial Number → **S/N: B01000000 DATE: 24/08/2021**
MADE IN JAPAN **IAI Corporation** **CE**



3. How to read the model number

IFA-MA1L-WA-200-550-T2-S-LL-**-**	
<Series>	Identification for IAI use only (Note 1)
<Type>	
SA1L: Unit Width 105mm Motor on Top	
SA2L: Unit Width 105mm Motor in Horizontal Orientation	
SA3L: Unit Width 105mm Motor on Bottom	
SA1R: Unit Width 105mm Motor on Top Mirrored	
SA2R: Unit Width 105mm Motor in Horizontal Orientation Mirrored	
SA3R: Unit Width 105mm Motor on Bottom Mirrored	
MA1L: Unit Width 134mm Motor on Top	
MA2L: Unit Width 134mm Motor in Horizontal Orientation	
MA3L: Unit Width 134mm Motor on Bottom	
MA1R: Unit Width 134mm Motor on Top Mirrored	
MA2R: Unit Width 134mm Motor in Horizontal Orientation Mirrored	
MA3R: Unit Width 134mm Motor on Bottom Mirrored	
<Encoder Type>	
WA: Battery-less Absolute	
<Motor Type>	
100: 100W (SA□□type)	
200: 200W (MA□□type)	
400: 400W (MA□□type)	
<Stroke>	
SA□□type: 200mm to 2600mm	
MA□□type: 200mm to 3200mm	
<Option>	
A6: Cable Ejection on Opposite Side	
AQ: AQ Seal (Equipped in Standard) (Note 2)	
EU: Metal Connector Type	
CSM: Ceiling Mount / Horizontally Oriented Wall Mount Type	
EB: Hanging Bracket (for MA□□Type only) (Note 3)	
L: Home Limit Switch	
LL: Home Limit Switch on Opposite Side	
NM: Home Reverse Type	
W: Double Slider Type	
<Cable Length>	
N: None	
S: 3m	
M: 5m	
X□□: Length specification (Max. 30m)	
<Applicable Controller>	
T2: SCON-CB/CGB	
SCON-CAL/CGAL (Note 4)	
SCON-LC/LCG	
MSCON-C (Note 4)	
SSEL-CS	
XSEL-P/Q	
XSEL-R/S	
XSEL-RA/SA	
T4: RCON	
RSEL	

Note 1 Identification for IAI use only / This may be marked for the purpose of IAI. It is not an ID to describe the model code.

Note 2 Do not fail to select it as it is the equipment in standard.

Note 3 Options of the home limit switch (L) and the home limit switch on opposite side (LL) cannot be used together at the same time.

Note 4 The 400W type of IFA-MA is not capable of operation on SCON-CAL/CGAL or MSCON-C.

Refer to the catalog or Instruction Manual for specification details.

Precautions in Handling

1. Handling of the Packed Product

Unless otherwise specified, delivery should be made with each unit packaged separately.

Pay attention not to hit or drop them.

- The package is not specially designed to withstand dropping or shock due to collision.
- Do not have a single operator to carry a heavy package. Use an appropriate method for transportation.
- Keep the unit in horizontal position for storage or transportation.
- Do not step on the package.
- Do not put anything that could deform the package on it.

2. Handling of the Unpacked Product

- An actuator should not be carried by holding at a cable or moved by pulling a cable.
- Hold the base part when carrying the main body of an actuator. Do not attempt to grab only the front cover, pulley bracket, motor bracket or motor cover during transportation.
- Pay attention not to hit it during transportation.
- Do not attempt to apply excessive force on any part on an actuator. Pay attention not to apply force especially on the stainless steel sheet.

3. Transportation using hanging brackets (for Hanging bracket option)

When handling an actuator out of packaging, attach hanging brackets to have a crane lift the actuator up hanging at four points with four ropes. At that moment, follow the caution notes below to perform transportation. Also, the hanging brackets should be taken off after transportation is finished.

- Pay attention to the actuator balance during transportation, and carry it calmly without apply vibration or impact.
- In case the carried actuator has dropped, becoming crushed under it could cause serious injury. Do not attempt to go under the hanged load.
- Use a hoist and ropes capable enough with margin to carry the actuator weight.
 * Hoist: A small device used for lifting or lowering a load or transporting a load by means of a lift-wheel
- Keep the hanging angle at 60deg or less when lifting.
- Make sure that an operator who has appropriate certificates operate the transportation when equipment or method that requires specific qualifications is necessary.
- Affix cables so they would not get pinched.

4. Handling when assembled into machinery (system)

When transporting an actuator installed in a machinery equipment (system) in the whole equipment, pay attention to the following things.

- Secure sliders to prevent sudden movement during transport.
- When the tip of an actuator is overhanged, affix it appropriately so the tip would not swing larger than external vibration.
- When the equipment is to be transported without affixing the tip, have it not to apply impact of 0.3G or more.
- When hanging up a machinery equipment (system), pay attention not to apply load to an actuator or connector box. Also, be cautious about cables so they would not be forcefully deformed.

Installation Environment, Storage Environment

1. Installation environment

Avoid the following locations for installation.

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

- 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 maintenance and inspection work as stated below.

- Space to replenish grease
- Space to replace the motor or timing belt

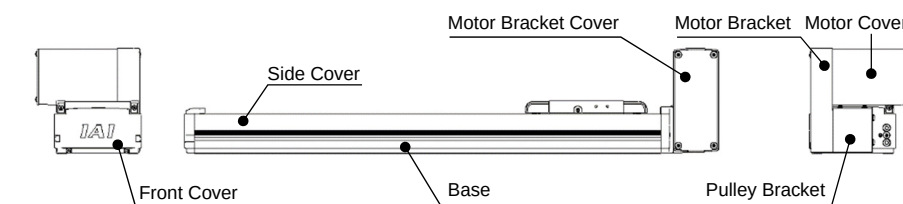
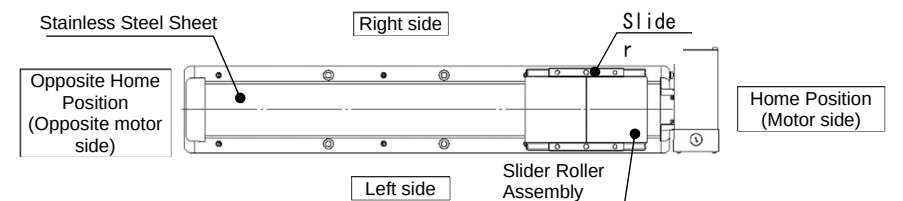
If the unit is used in any of the following locations, provide sufficient shielding measures

- 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

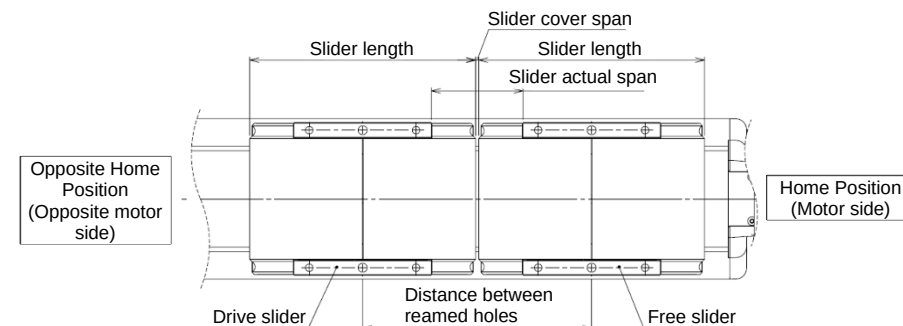
2. Storage/preservation environment

- 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



[Double Slider Option]



Refer to the catalog or Instruction Manual for dimensions and appearance.

Attachment

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

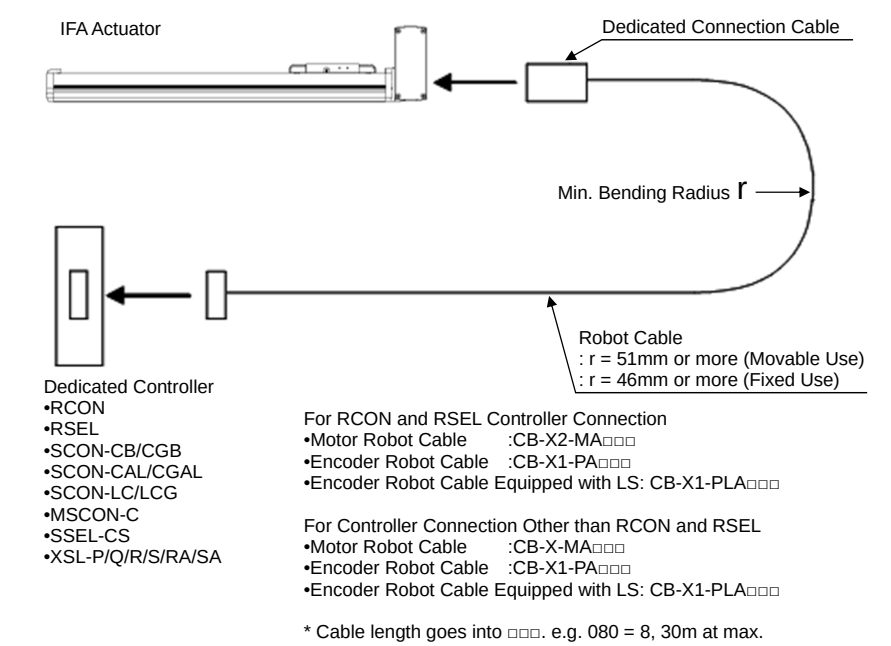
[Precautions for Attachments]

No.	Item	Precautions
1	Installation	- It is not available for vertical installation. - Select CSM Option for ceiling mount and horizontally oriented wall mount. - Although, an actuator in the ceiling mount / horizontal wall mount type are available to use in the standard horizontal orientation, an actuator not in the ceiling mount / horizontal wall mount type is not available for installation in the ceiling mount / horizontal wall mount.
2	Attachment Surface	- The body mounting surface should be a machined surface or a plane with similar accuracy, with flatness within 0.05 mm/m. - The mounting frame should have a structure rigid enough to prevent the generation of vibration. - Also consider the necessary space for maintenance work such as actuator replacement and inspection. - The bottom surface and the right surface when viewed from the motor end on the main unit are the datum surfaces for the drive accuracy of a slider. Utilize these surfaces for installation when drive accuracy is required. The flatness required for the datum surface on the sub datum surface on the left side when viewed from the motor end should be 0.1mm or less. - The base should basically be affixed on the whole area of it using all of the through holes. Affixing it partially only with some of the through holes may cause warpage of the base and increase the slide resistance. It may also cause an error.
3	Bolt to be used	- Use hex socket head cap screws for male screws to attach the base. - It is recommended to use high-tensile screws with ISO-10.9 or more. - Secure the following values for the effective length of thread engagement of a screw and a female thread. When Female Thread is Steel → Same length as nominal diameter When Female Thread is Aluminum → 1.5 times of nominal diameter - In order to protect the base, use a washer dedicated for high-tensile screw (accessory) when a screw is M8 or more. (otherwise the seat face may buckle.) Also, do not use a general spring washer.
4	Tightening Torque	Please follow the specification values stated in the Instruction Manual for the tightening torque. Failure to do so may cause an operation problem.
5	Load moment Overhang load length	Follow the specification values stated in [1.2 Specifications] in the Instruction Manual for the load moment and the overhang length. Failure to do so may cause abnormal vibration or noise, and also may remarkably shorten the product life.
6	Stainless steel sheet	- During installation and transport, do not grasp or press on the stainless steel sheet. It may cause malfunction. - There is a concern that looseness or misalignment on the stainless steel sheet may occur. Especially the ceiling mount / horizontal wall mount causes high possibility of the stainless steel sheet getting looseness and misalignment. Continued usage in this orientation may lead to damage. - Adjust the stainless steel sheet if slackness or misalignment occurs. - Keep adhesive, paint, and other viscous material off the stainless steel sheet. Such material adhering to the stainless steel sheet can lead to defective slider operation or sheet damage. Avoid installation in environments of this kind, or take safety measures to prevent adhesion.

Wiring

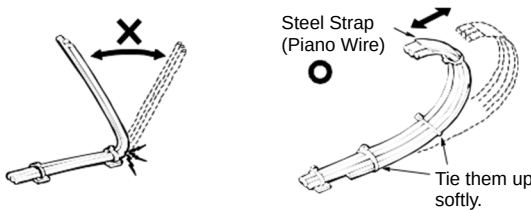
For the controller, only the dedicated controller manufactured by our company can be used.

For the connection between the actuator and controller, use the attached dedicated connection cable.

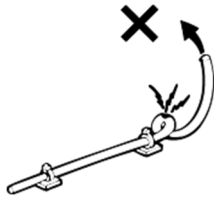


[Prohibited Items in the Cable Processing]

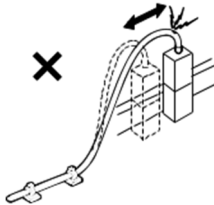
- Do not pull or bend forcibly the cable so as not to give any extra load or tension to the cable.
- Do not process the cable for extension or shortening by means of cutting out, combination or connecting with another cable.
- Have a sufficient radius for bending, and avoid a bend concentrating on one point.



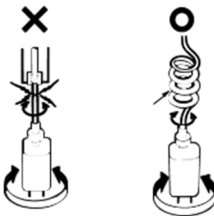
- Do not let the cable bend, kink or twist.



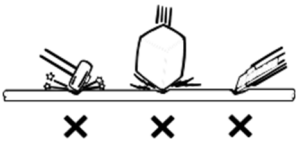
- Do not attempt to pull a cable with excessive force.



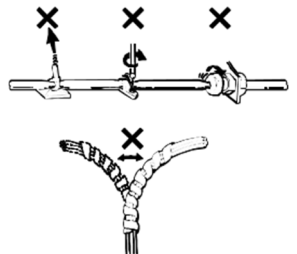
- Do not let the cable receive a turning force at a single point.



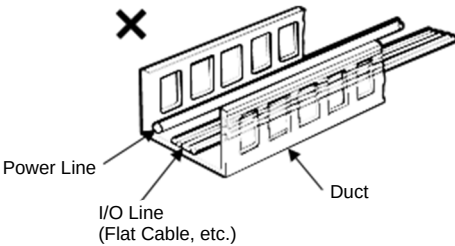
- Pay attention not to pinch, dent or scratch a cable.



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

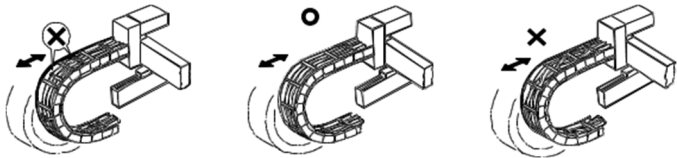


- Separate the I/O line, communication line and power line from each other. Arrange so that such lines are independently routed in the duct.



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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