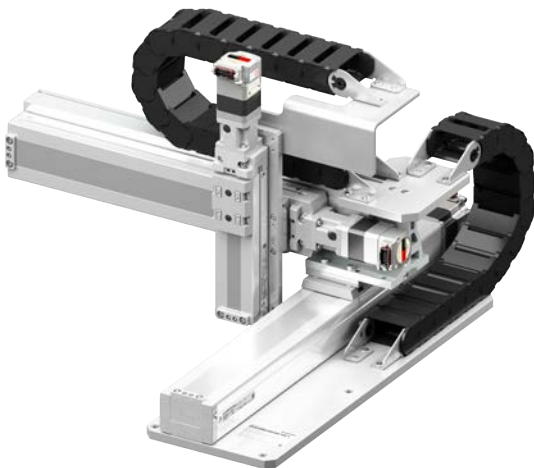


Small Robots OVR 3-Axis Cartesian OVR3AL030030Z10K-C OVR3AR030030Z10K-C Operating Manual

WM-0005E



Thank you for purchasing an Oriental Motor product. This manual describes product handling procedures and safety precautions. Please read the manual thoroughly to ensure safe operation.

- Only qualified personnel of electrical and mechanical engineering should work with the product.
- The product described in this manual is designed and manufactured to be incorporated into general industrial equipment. Do not use it for any other purpose. Oriental Motor Co., Ltd. is not responsible for any compensation for damage caused through failure to observe this warning.
- Use the product correctly after thoroughly reading the "[Safety precautions](#)" on page 3.
- In addition, be sure to observe the contents described in warning, caution, and note in this manual.

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Safety precautions

The precautions described below are intended to ensure the safe and proper use of the product and to prevent the user and other personnel from exposure to the risk of injury. Use the product only after carefully reading and fully understanding these instructions.

In regard to a robot, it is prohibited to start operating the robot (i.e., to operate the device in accordance with the specified purpose) when the machine in which the robot is incorporated does not meet the relevant safety standards. The factory safety manager or safety personnel in charge of the applicable machine must ensure that the machine is operated only by qualified personnel who has expert knowledge on safety, and thereby prevent injury or damage to the machine.

The term “qualified personnel” refers to persons who have received the necessary training or education and have pertinent experience; who are familiar with the relevant standards and regulations; who are authorized by the factory safety manager to engage in the necessary activities; and who have the ability to discern and prevent potential dangers.

WARNING

Handling the product without observing the instructions that accompany a “WARNING” symbol may result in serious injury or death.

CAUTION

Handling the product without observing the instructions that accompany a “CAUTION” symbol may result in injury or property damage.

Note

The items under this heading contain important handling instructions that the user should observe to ensure safe use of the product.

Tip

The items under this heading contain related information and contents to gain a further understanding of the text in this manual.

WARNING

General

- Never use the product for equipment in connection with the maintenance or management of human life or health.
- Do not use the product in explosive or corrosive environments, in the presence of flammable gases, in areas subjected to splashing water, or near combustible materials. Doing so may result in fire or injury.

- Assign qualified personnel having expert knowledge on electrical and mechanical engineering as well as safety to the task of installing, wiring, operating/controlling, inspecting and troubleshooting the product. Handling by unqualified personnel may result in fire, injury, or damage to equipment.
- Conduct a risk assessment in a state where all parts and components including the product have been installed in the equipment. Failure to do so may result in injury or damage to equipment.
- Provide an interlocking guard at a position that meets the safety distance specified in EN ISO 13857 so that an operator or other personnel does not enter the movable range of the product while the equipment is operating. Failure to do so may result in injury.
- When teaching, adjusting, or inspecting the product inside the cage with interlock, take appropriate safety measures according to the results of the risk assessment of the entire equipment. Failure to do so may result in injury.
- Provide appropriate safety measures so that the entire equipment will operate safely in the event of a system failure or malfunction. Failure to do so may result in injury.
- Provide an emergency stop function for the equipment. Failure to do so may result in injury.
- The function and performance of the safety-related control system are appropriately determined according to the results of the risk assessment of the entire equipment. This may result in injury.
- Do not allow your hands to be caught in moving parts of the product. Doing so may result in injury or damage to equipment.
- Use the product in a condition where the entire equipment complies with relevant international standards such as EN ISO 12100, EN ISO 10218-1, EN ISO 10218-2, national standards, and legal regulations such as occupational health and safety required in each country. Failure to do so may result in injury or damage to equipment.
- Do not disassemble any components other than those specified for the motor replacement work. Also, do not modify the product. Doing so may result in injury or damage to equipment.
- Do not install, connect, or inspect/troubleshoot the product while the power is on. When working with the power on state, provide work rules in accordance with the Ordinance on Industrial Safety and Health and take appropriate safety measures. Failure to do so may result in fire, injury, or damage to equipment.

Installation and wiring

- When transporting or installing the product, wear a helmet, safety shoes, gloves, or other protective equipment to hold the specified places. Failure to do so may result in injury.
- Be sure to secure the product itself according to the instructions. Failure to do so may result in injury or damage to equipment.
- Be sure to wire and connect according to the instructions. Failure to do so may result in fire or damage to equipment.
- Do not pull the cable and connector, apply excessive force to them, or step on them. Also, do not excessively bend the cable. Doing so may result in injury or damage to equipment.
- Depending on the operating environment, the cable between the product and the controller may be damaged or deteriorated. Therefore, protect the cable with a protective tube or cover as necessary. Failure to do so may result in injury or damage to equipment.

- Make sure that two or more people work together to perform the necessary tasks when installing the product. Also, when working with two or more people, clarify the relationship and roles of the primary worker and assistant worker, while communicating with each other to ensure safety. Failure to do so may result in injury.
- Install an external fuse, if necessary, to prevent ignition due to a large amount of current flowing from the power supply side.

Operation

- Take appropriate safety measures when placing the motor in a non-excitation state. Failure to do so may result in injury or damage to equipment.
- Check the condition of the surrounding area to ensure safety. This may cause injury or damage to equipment.
- When turning on the driver power, make sure there is no signal input from the host controller. The product may start operating unintentionally, causing injury or damage to equipment.
- Turn off the power supply of the driver in the event of a power failure. Otherwise, the product may start suddenly when the power is restored, causing injury or damage to equipment.
- If any abnormality is observed, immediately stop operation and turn off the power to the motor that drives the product. Failure to do so may result in injury or damage to equipment.
- Do not turn off the power or input a signal to place the motor in a non-excitation state during operation. The robot may move unexpectedly, causing injury or damage to equipment.
- When operating the product after the driver power supply is turned on or the power to the motor is turned off, adjust the position at low speed to ensure safety. Failure to do so may result in injury or damage to equipment.

Maintenance and inspection

- Perform the pre-work (daily) inspection and periodic inspection according to the instructions in this manual, and check that there are no abnormalities in the product and related equipment before working. Failure to do so may result in injury or damage to equipment.

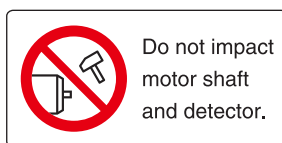
CAUTION

- Do not use the product beyond its specifications. Doing so may result in injury or damage to equipment.
- Keep the area around the product free of combustible materials. Failure to do so may result in fire or a skin burn(s).
- Do not leave anything around the product that would obstruct ventilation. Doing so may result in damage to equipment.
- When conducting the insulation resistance measurement or the dielectric strength test, be sure to separate the connection between the product and the driver. Failure to do so may result in damage to equipment.

- Take measures against static electricity when handling. Static electricity may cause the encoder (ABZO sensor) of the motor that drives the product or the driver to malfunction or be damaged. This may result in injury or damage to equipment.
- Stop operation if abnormal noise or vibration occurs during operation. Failure to do so may result in injury or damage to equipment.
- When installing and wiring, take measures against EMC. Without effective measures to suppress Electromagnetic Interference (EMI) caused by the product or driver to the surrounding control system equipment and Electromagnetic Susceptibility (EMS) generated by the product or driver, the function of your equipment may be seriously affected. Verify EMC compliance with the completed equipment. This may result in injury or damage to equipment.
- Since the motor surface temperature may exceed 70 °C (158 °F) even under normal operating conditions, if the operator is allowed to approach the motor, affix a warning label shown in the figure on a conspicuous place. The surface is hot, and this may cause a skin burn(s).



- Use a driver and cable that are connected to the product only in the specified combination. Failure to do so may result in fire, injury, or damage to equipment.
- Keep the encoder (ABZO sensor) of the motor away from a strong magnetic field. This may damage to the encoder (ABZO sensor) or cause the product to malfunction. Injury or damage to equipment may result.
- To protect the encoder (ABZO sensor), use the motor in a condition where the motor surface temperature does not exceed 80 °C (176 °F). Failure to do so may result in damage to equipment.
- Make sure not to apply a strong shock to the encoder (ABZO sensor) of the motor. This may damage to the encoder (ABZO sensor) and cause the product to malfunction, resulting in damage to the equipment. The label shown in the figure is affixed on the motor.



- Be careful not to make any mistakes in the combinations when connecting a product and a driver. Wiring in the wrong combination may cause unexpected movement. This may result in injury or damage to equipment.
- The status of the actuating controls shall be clearly indicated, e.g. power on, fault detected, automatic operation. If an indicator light is used, it shall be suitable for its installed location and its color shall meet the requirement of IEC 60204-1.

Preparation

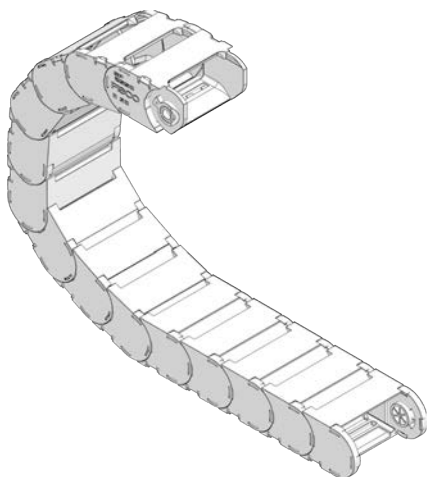
Checking the product

Verify that the items listed below are included. Report any missing or damaged items to the Oriental Motor sales office from which you purchased the product.

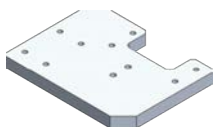
- Robot...1 unit
- Cable holders... 2 pieces (for Y-axis: number of links 15, for Z-axis: number of links 17)
- Cable holder mounting plate for YZ-axis... 1 piece
- Cable holder mounting plate for Z-axis.... 1 piece
- Moving-end mounting brackets.... 2 sets
- Fixed-end mounting bracket for Y-axis... 1 set
- Fixed-end mounting bracket for Z-axis... 1 set
- Square nuts (M5)... 2 pieces
- Hexagon socket head cap screws (M4×12 mm)... 4 pieces
- Low-profile hexagon socket head cap screws (M5×20 mm)... 2 pieces
- Low-profile hexagon socket head cap screws (M6×10 mm)... 16 pieces
- Unpacking procedure...1 copy

Cable holders

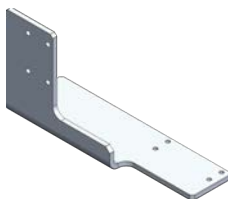
For Y-axis: number of links 15
For Z-axis: number of links 17



Cable holder mounting plate
for YZ-axis



Cable holder mounting plate
for Z-axis



Moving-end mounting brackets



Fixed-end mounting brackets
for Y-axis



Fixed-end mounting brackets
for Z-axis



How to identify the product model

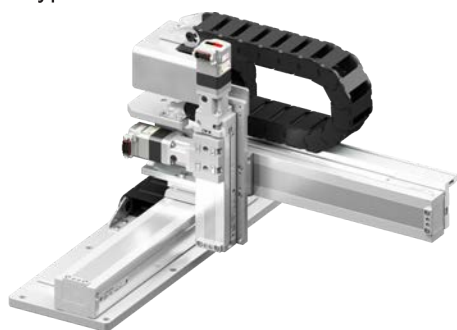
Verify the model name of the purchased product against the model shown on the nameplate of the product.

OVR 3 A L 030 030 Z 10 K - C
 1 2 3 4 5 6 7 8 9

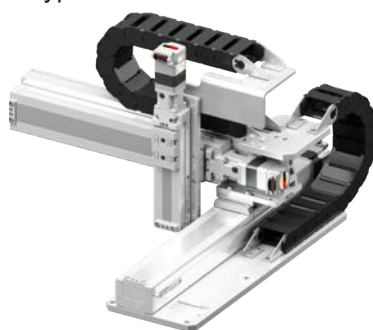
1	Number of axes	3: 3 axes
2	Combination type	A: XYZ
3	Combination direction *	L: L type R: R type
4	X-axis stroke	030: 300 mm
5	Y-axis stroke	030: 300 mm
6	Z-axis	Z: EZS Series
7	Z-axis stroke	10: 100 mm
8	Power supply specification	K: DC power supply specification
9	Robot type	C: Cartesian

* Products that can be combined are listed below.

L type



R type



Driver and controller that can be combined

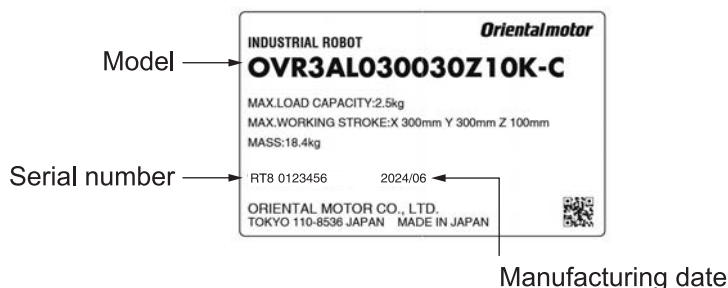
Product	Series	Type	Model
Driver	AZ Series	Built-in controller type	AZD-KD
		mini Driver RS-485 communication type	AZD-KR2D
Controller	MRCU Series	—	MRCU3AK MRCU4AK MRCU5AK MRCU6AK MRCU7AK MRCU8AK

Information about nameplate

The figure shows an example.

Tip

The position describing the information may vary depending on the product.



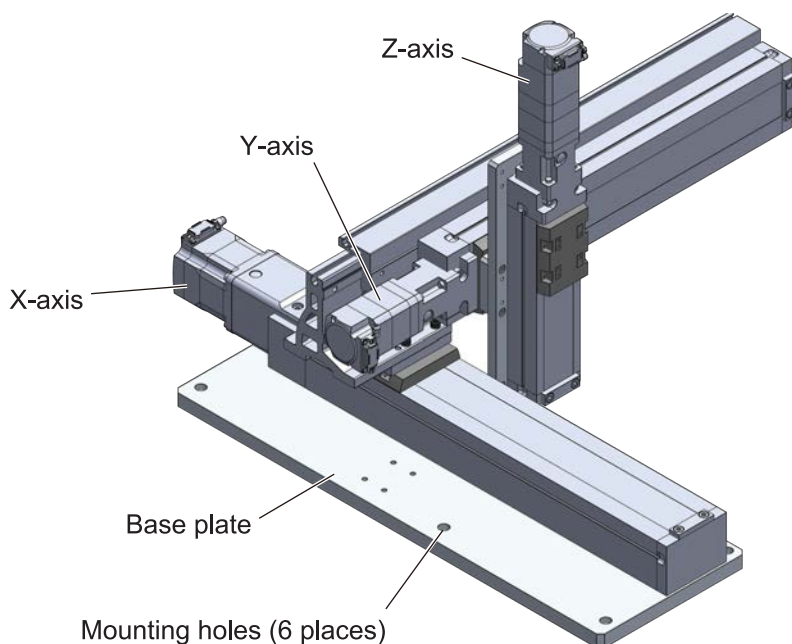
Names of parts

The robot consists of three axes: X-axis (M1), Y-axis (M2), and Z-axis (M3).

All motors are of the AZ Series equipped with a battery-free absolute encoder (ABZO sensor).

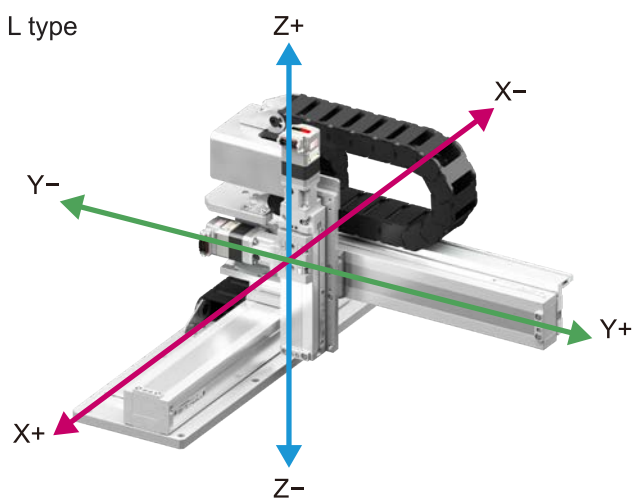
There is no mechanism to hold the X-axis (M1) and the Y-axis (M2). If the power supply to the product is shut off due to an emergency stop, the axes can be moved manually.

The motor that drives Z-axis (M3) is equipped with a power-off activated type electromagnetic brake. If the power supply to the product is shut off due to an emergency stop, the positions of the axes will be held.

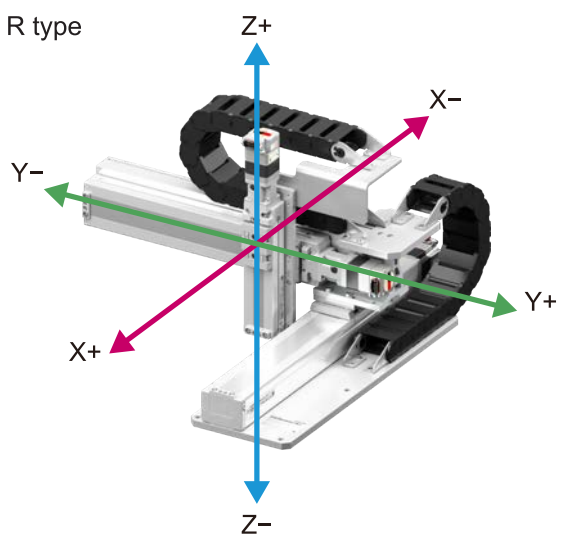


Axis	Drive name	Equipped motor model
X axis	M1	AZM66AKH
Y axis	M2	AZM46AKH
Z axis	M3	AZM46MKH

L type



R type



Installation

Installation location

The product described in this manual is designed and manufactured to be incorporated into general industrial equipment. Install it in a well-ventilated location that provides easy access for inspection.

The location must also satisfy the following conditions:

- Inside an enclosure installed indoors (provide ventilation holes)
- Operating ambient temperature: 0 to +40 °C [+32 to +104 °F] (non-freezing)
- Operating ambient humidity: 85 % or less (non-condensing)
- Area free of explosive atmosphere, toxic gas (such as sulfuric gas), or liquid
- Area not exposed to direct sun
- Area free of excessive amount of dust, iron particles, or the like
- Area not subject to splashing water (rain, water droplets), oil (oil droplets), or other liquids
- Area free of excessive salt
- Area not subject to continuous vibration or excessive shocks
- Area free of excessive electromagnetic noise (from welders, power equipment, etc.)
- Area free of radioactive materials, magnetic fields, or vacuum
- Up to 1,000 m (3,300 ft.) above sea level

How to unpack

1. Place the package on a horizontal, flat surface to unpack.
2. Take out the accessories, then the cardboard sheets in order.



3. Hold the base plate of the X-axis and the bracket of the Y-axis with both hands, and take out the product.

When removing, be sure to use both hands to hold the specified positions. Improper holding, such as holding the product with one hand or in a position other than that specified, may cause the axis to move in an unexpected direction, resulting in a fall or injury.



4. Place the product in the installation place while supporting the end part of the Y-axis with spacers or similar items and remove the packing materials.

Note

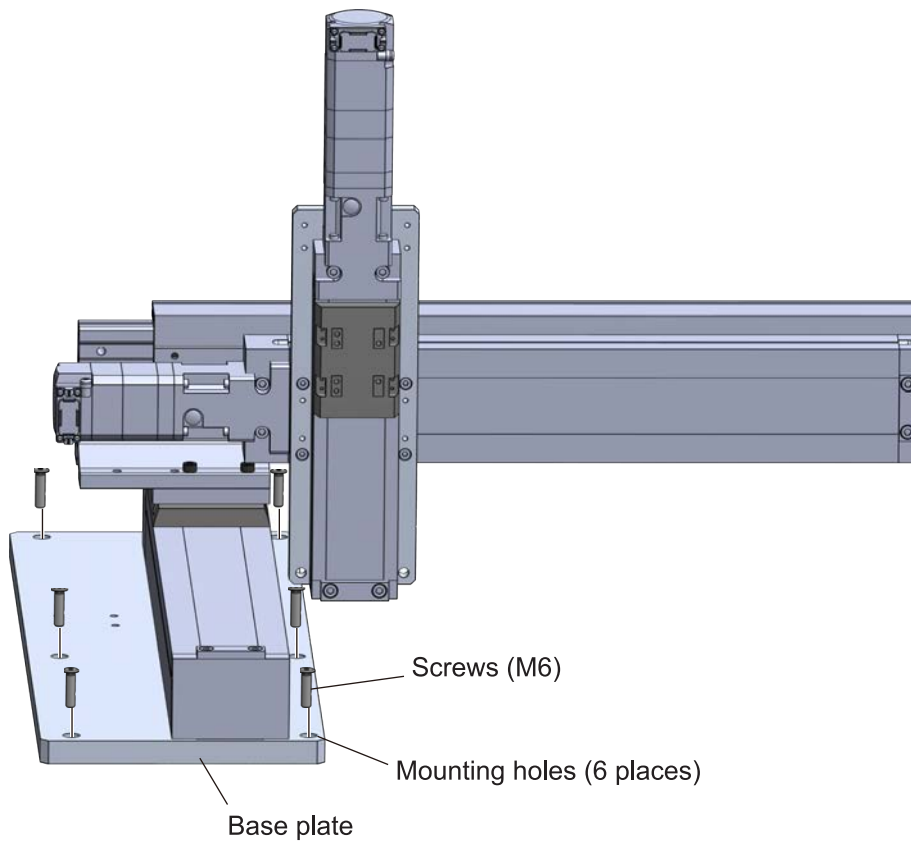
Be sure to support the end part of the Y-axis with spacers or similar items. Failure to do so may cause the product to topple.

Installation method

Note

- Ensure that there is sufficient work space at the installation site so that teaching and maintenance/inspection can be performed safely.
- Do not loosen or remove any screws on the product. This may result in reduced positioning accuracy or damage to the product.
- Work in a stable condition so that the product does not tilt.
- Install the product on a metal surface of sufficient strength to prevent vibration or twisting of an enclosure in which the product is installed.

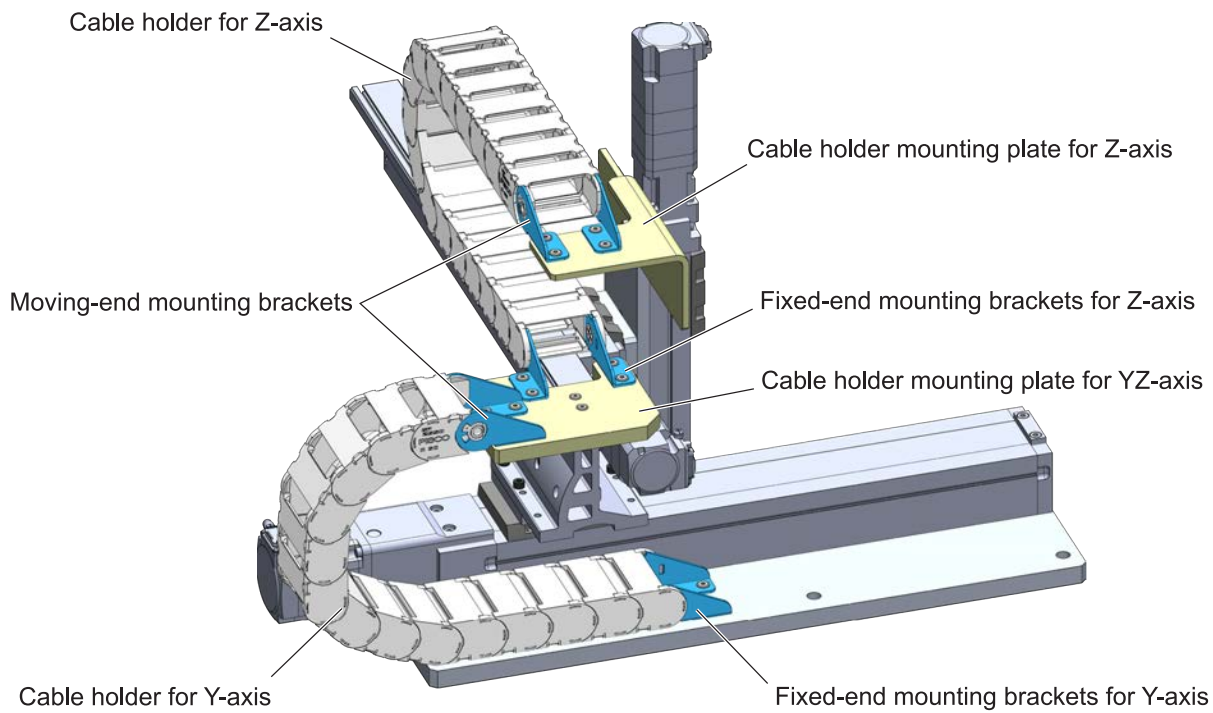
Use the mounting holes of the base plate to secure the product to the mounting plate. The values of the tightening torque are recommended. Tighten the screws to an appropriate torque according to the design conditions of the mounting plate.



Specifications for mounting holes

Hole diameter	$\phi 6.6$ mm Counterbore $\phi 11$ mm, depth 6.5 mm
Nominal size	M6
Tightening torque	5 N·m (710 oz-in)

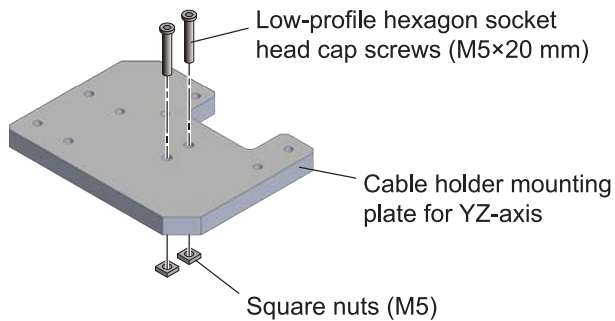
Installing the cable holder



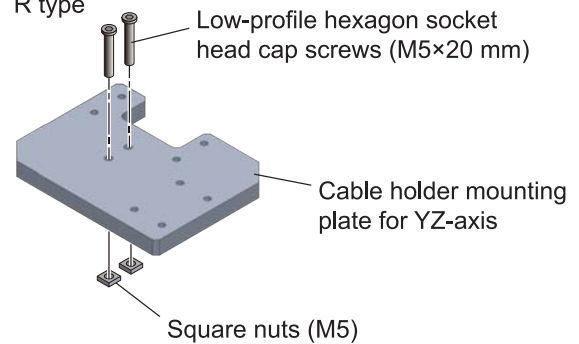
Installation procedure

1. Temporarily secure the low-profile hexagon socket head cap screws and the square nuts to the cable holder mounting plate for YZ-axis.

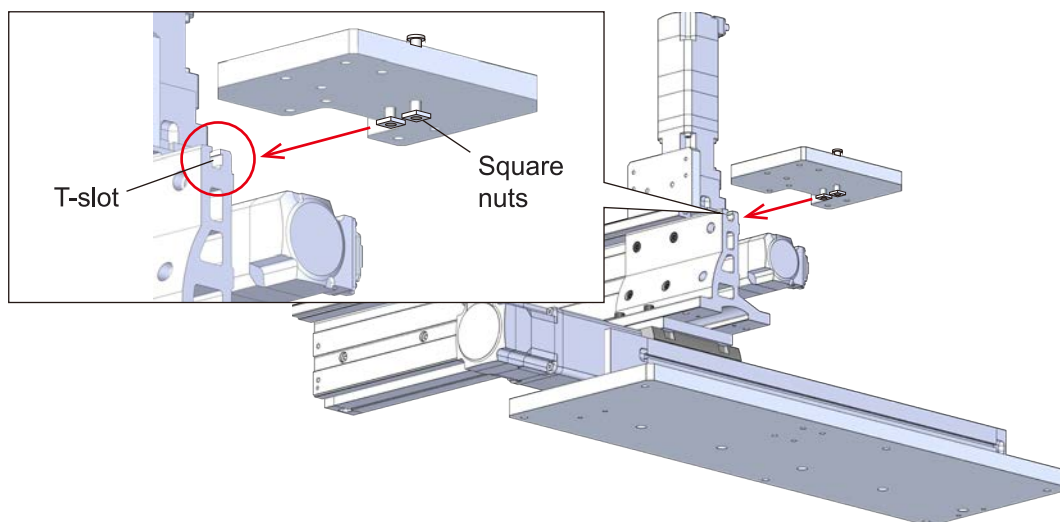
L type



R type



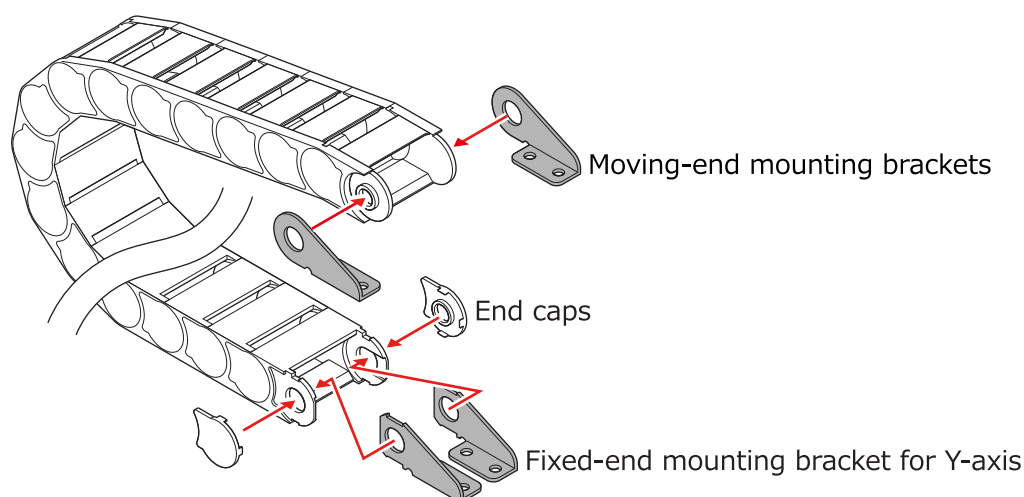
2. Insert the temporarily secured square nuts to the cable holder mounting plate for YZ-axis into the T-slot of the Y-axis and tighten the low-profile hexagon socket head cap screws.
Tightening torque: 2.4 N·m (340 oz-in)



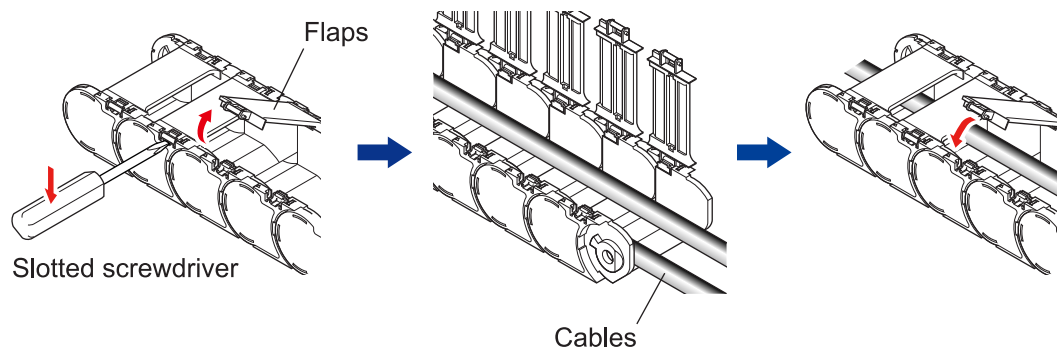
3. Attach the fixed-end mounting brackets and the mounting-end mounting brackets to the cable holder.

The number of links of the cable holder and the mounting direction of the fixed-end mounting brackets are different between the Y-axis and Z-axis.

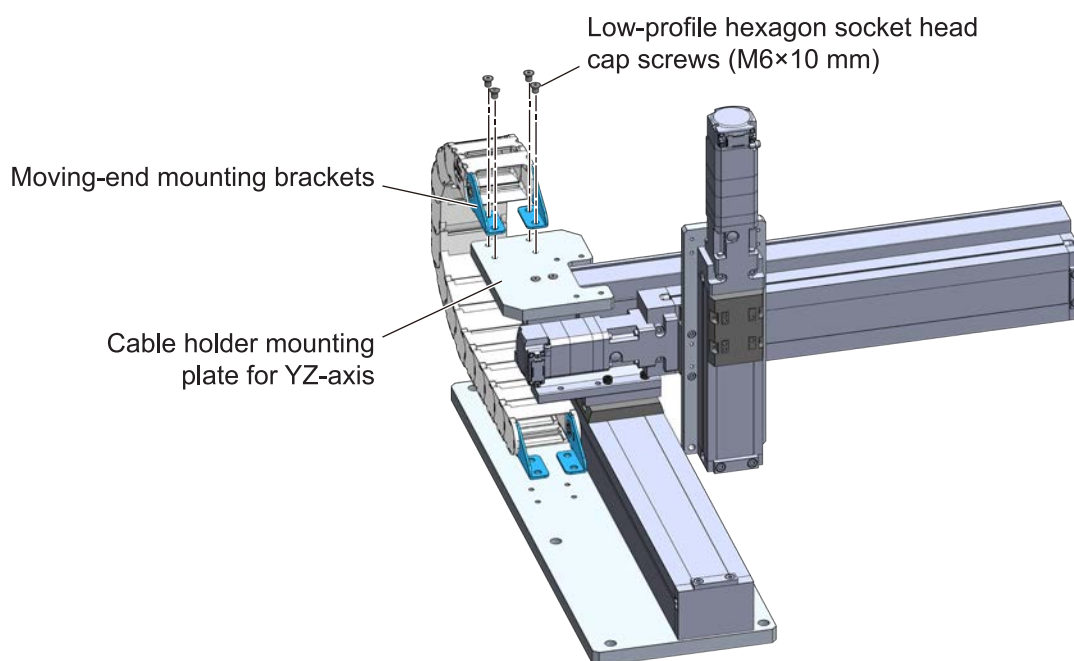
When installing the fixed-end mounting brackets, remove the end caps from the cable holder. After installing the fixed-end mounting brackets, attach the end caps.



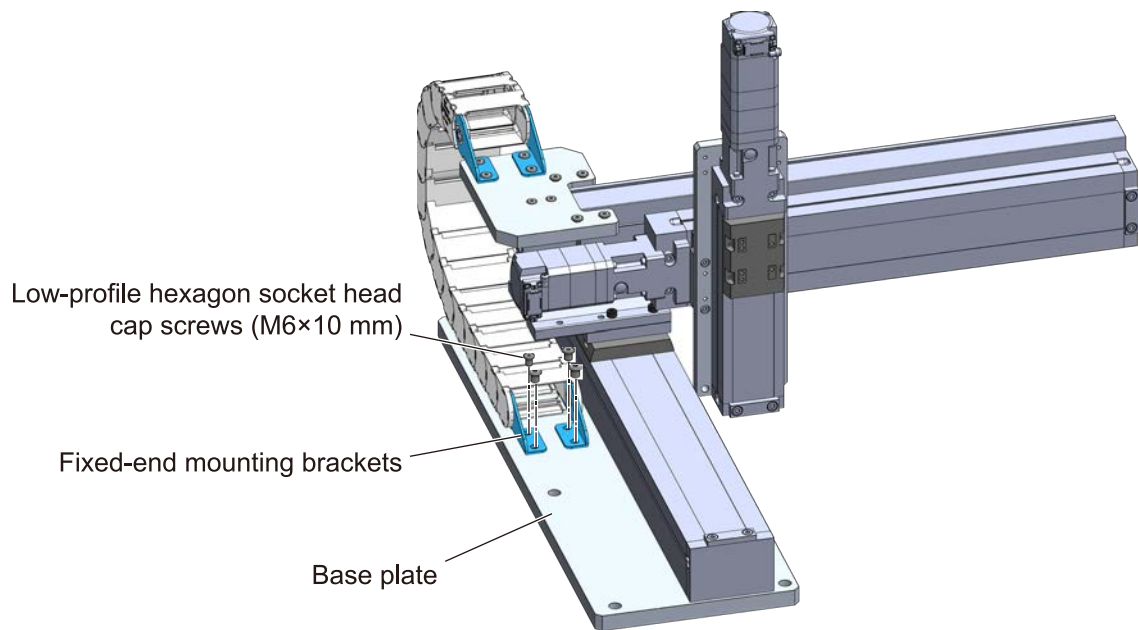
4. Use a 3 mm slotted screwdriver to open the cable holder flaps and pass the flexible connection cables through the cable holder.



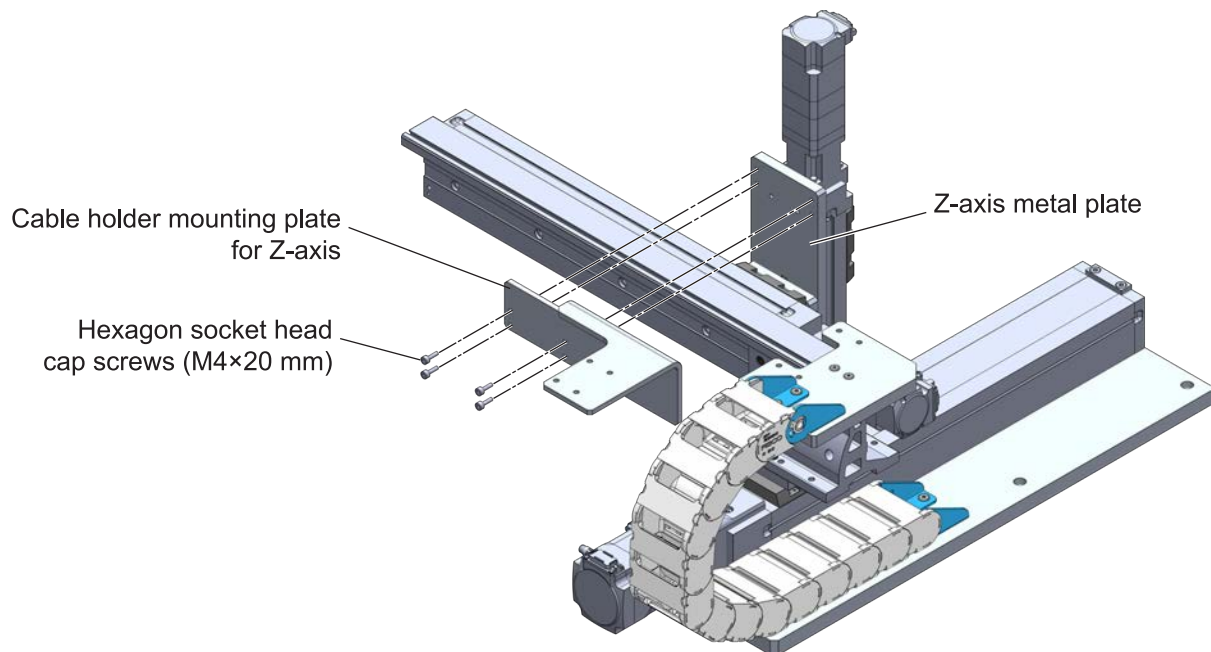
5. Secure the moving-end mounting brackets of the cable holder using the low-profile hexagon socket head cap screws to the cable holder mounting plate for YZ-axis.
Tightening torque: 2.4 N·m (340 oz-in)



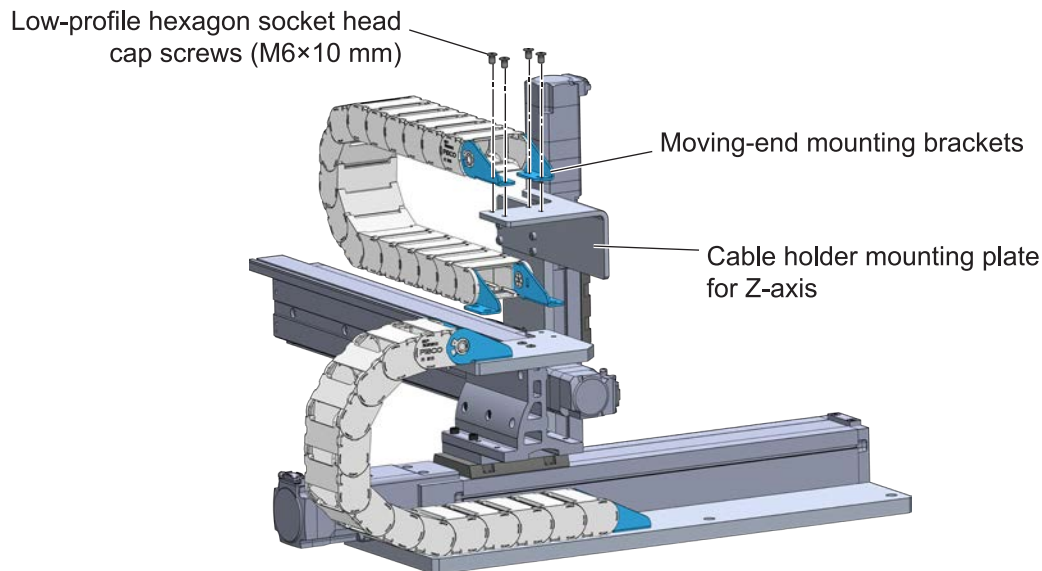
6. Secure the fixed-end mounting brackets of the cable holder using the low-profile hexagon socket head cap screws to the base plate.
Tightening torque: 2.4 N·m (340 oz-in)



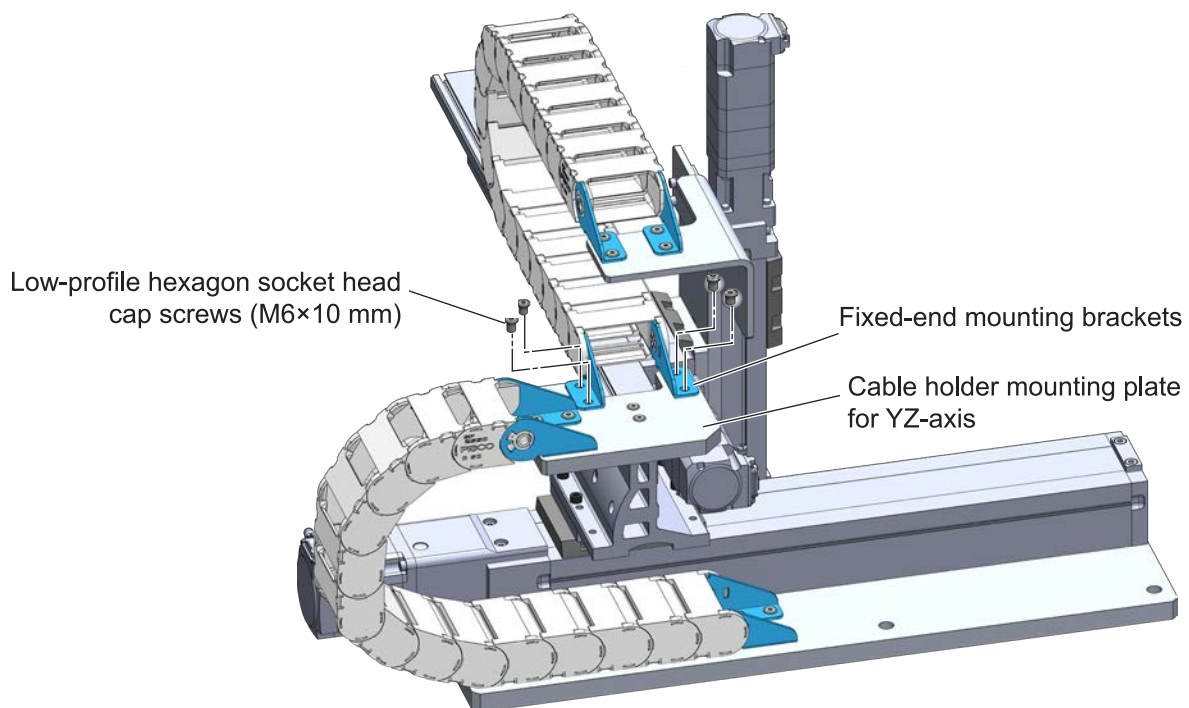
7. Secure the cable holder mounting plate for Z-axis using the hexagon socket head cap screws to the metal plate on the Z-axis.
Tightening torque: 2.4 N·m (340 oz-in)



8. Prepare the cable holder for Z-axis by referring to the procedure of the cable holder for Y-axis.
9. Secure the moving-end mounting brackets of the cable holder using the low-profile hexagon socket head cap screws to the cable holder mounting plate for Z-axis.
Tightening torque: 2.4 N·m (340 oz-in)



10. Install the fixed-end mounting brackets of the cable holder using the low-profile hexagon socket head cap screws to the cable holder mounting plate for YZ-axis.
Tightening torque: 2.4 N·m (340 oz-in)



Changing the direction of the motor connector

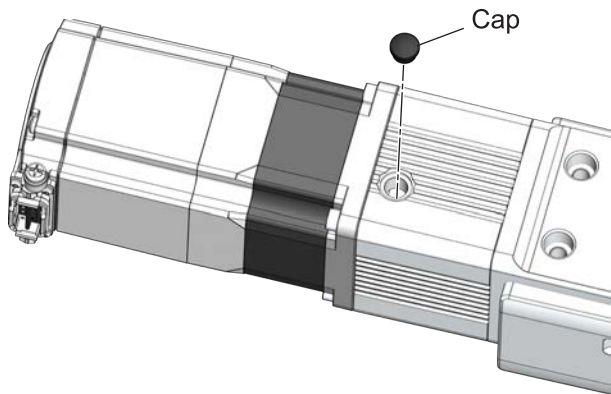
The motor connector directions on the X-axis (M1) and Z-axis (M3) can be changed depending on the installation space of the equipment.

The motor connector direction on the Y-axis (M2) must not be changed, as it interferes with surrounding components.

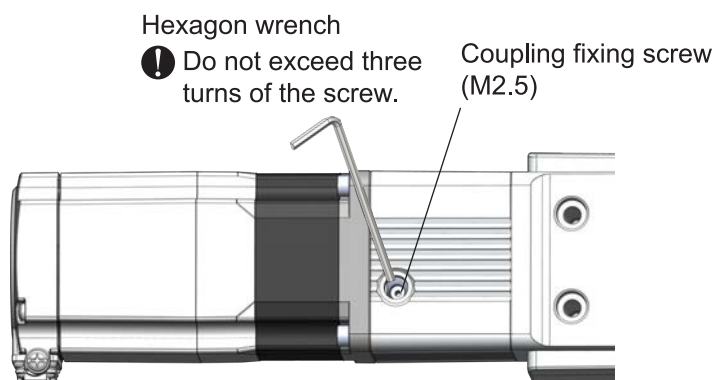
CAUTION

- When changing the motor connector direction, remove the load and the motor cable, move the Z-axis table to its lowest position before performing this procedure. This may cause the moving part to fall, resulting in injury or damage to equipment. If the motor fixing screws are removed while the Z-axis table is in the upper position, the motor may rotate rapidly, and there is a risk of fingers being caught.
- After installing the motor on the axis, perform the setup again for the axis. If the product is operated without performing the setup, moving parts may move in unexpected directions or operate at unexpected speeds, causing injury or damage to equipment.
 - The moving part may collide with the mechanical stopper.
 - A load may collide with other equipment.
- Be sure to tighten the coupling fixing screw with the specified tightening torque. If the coupling fixing screw is not secured with the specified tightening torque, it may slip, causing the moving part to rotate in unexpected directions or at unexpected speeds, resulting in injury or damage to equipment.
 - Z-axis: The load may fall.
 - X-axis: The moving part may collide with the mechanical stopper. Also, the load may collide with other equipment.
- Do not loosen or remove any screws other than those specified in the procedure. This may result in reduced positioning accuracy or damage to the product.

1. Remove the cap.



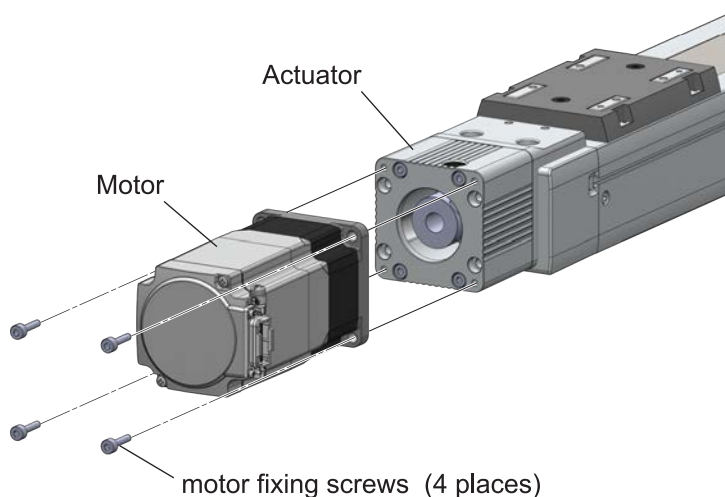
2. Loosen the coupling fixing screw carefully so that the hexagon wrench does not turn three or more.



Tip

- When loosening the coupling fixing screw, do not insert the tool diagonally.
- Do not use a hexagon wrench with a ball point tip.
- To prevent the coupling fixing screw from falling off, do not exceed three turns of the screw.

3. Remove the motor fixing screws and detach the motor from the actuator.



Note

Be sure to remove the motor when changing the motor connector direction. If the motor is operated to change direction while the mounting surface of the motor and actuator are in contact, the motor may stop during operation. It will not be possible to remove the motor.

4. Change the direction of the motor connector, and install the motor on the actuator.
When the motor was removed from the actuator, follow the reverse procedure of installation. The table below shows the tightening torque for the coupling fixing screw and the motor fixing screw.

Axis	Coupling fixing screw		Motor fixing screw	
	Nominal size	Tightening torque	Nominal size	Tightening torque
X-axis	M2.5	1 N·m (142 oz-in)	M4	2.4 N·m (340 oz-in)
Z-axis	M1.6	0.25 N·m (35 oz-in)	M3	1 N·m (142 oz-in)

Tip

Use a tool that can manage the torque when tightening the coupling fixing screw.

- After installing the motor on the actuator, perform the setup again.

Installing a load

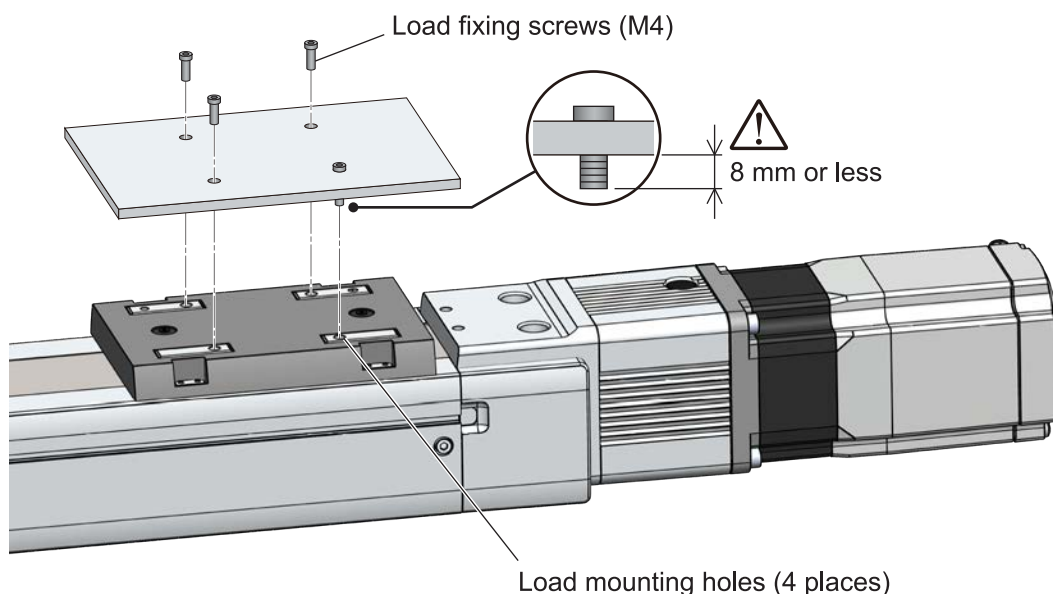
Install a load using the screws on the load mounting holes of the Z-axis.

The values of the tightening torque are recommended. Tighten the screws to an appropriate torque according to the design conditions.

WARNING

The length of the load fixing screws inserted into the table must be 8 mm or less. The screws exceeding 8 mm in length may cause damage to the table, resulting in injury or damage to Equipment.

Tightening torque: 2.4 N·m (340 oz-in)

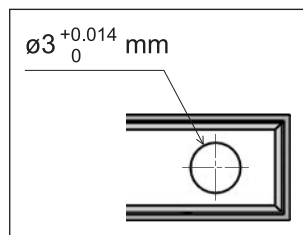


Load positioning pin holes on the table

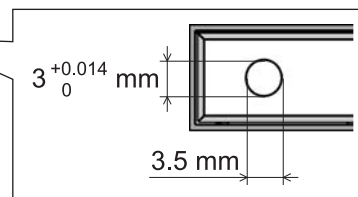
There is one round hole and one elongated hole for load positioning pin holes on the table.

If position repeatability is required when installing the load, use the load positioning pin holes.

Round hole (depth 4 mm)



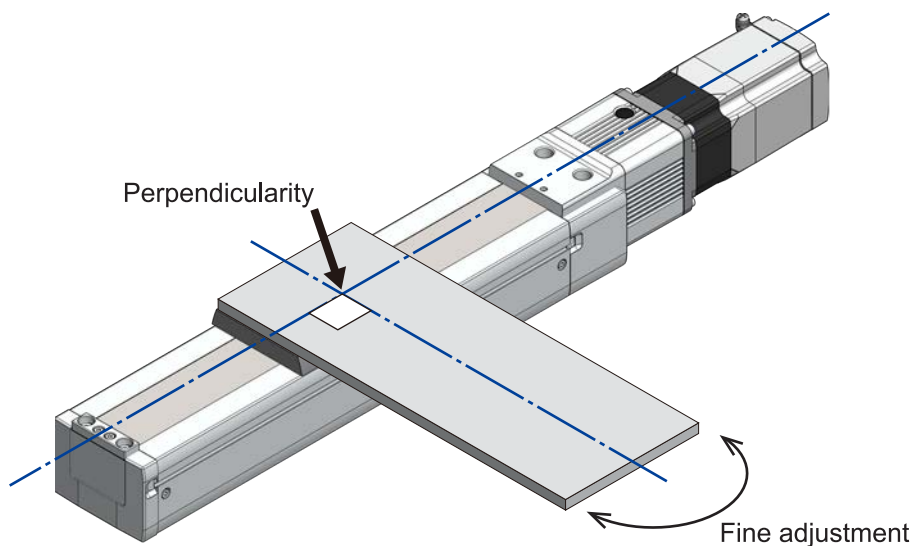
Elongated hole (depth 4 mm)



Note

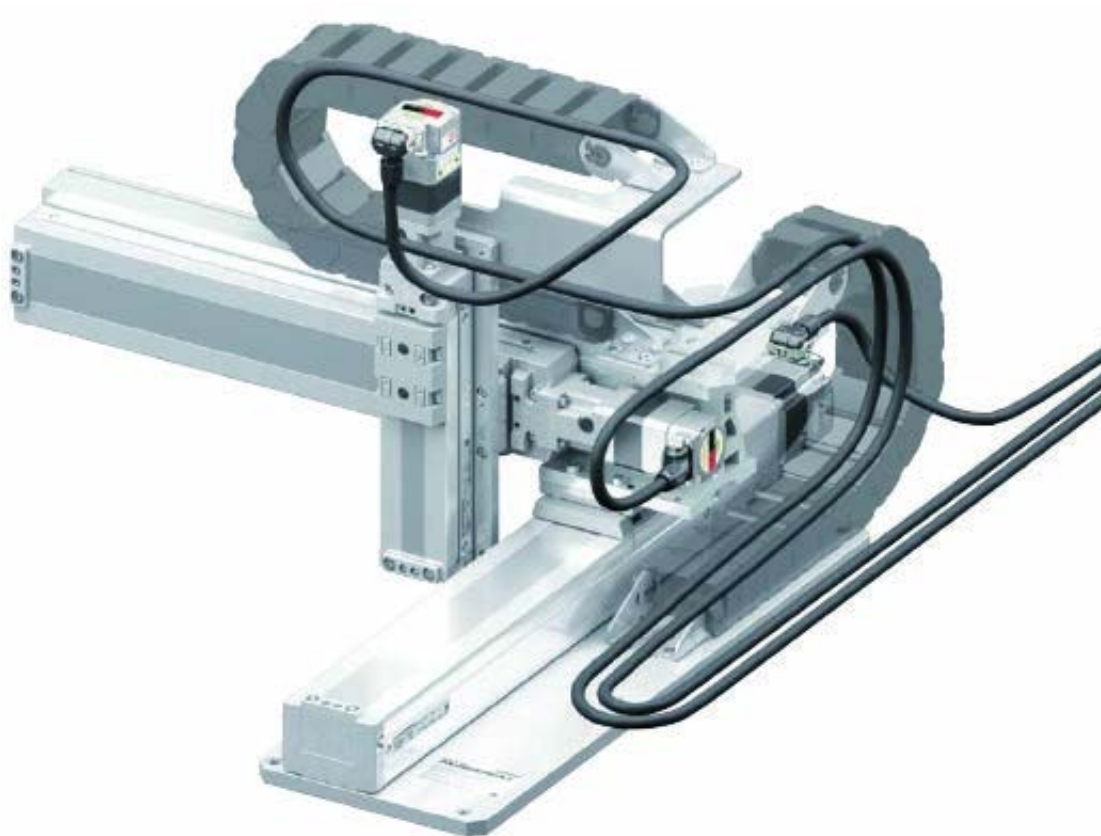
Do not drive the positioning pins into the table. Driving the positioning pins into the table may result in damage to the product due to impact or excessive moment.

When installing a load that requires perpendicularity to the table travel direction, use the round load positioning pin hole to adjust the load alignment.

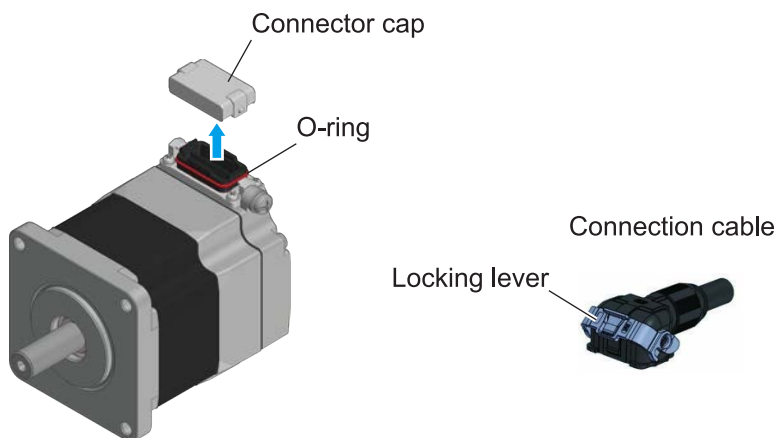


Wiring example

- Secure the cables near the connectors to prevent stress at each connection point of the connectors and cables.
- Wire the cables with sufficient slack to prevent stress.
- Maintain 10 m (32.8 ft.) or less for the total wiring distance of the cable.



Connecting the cable



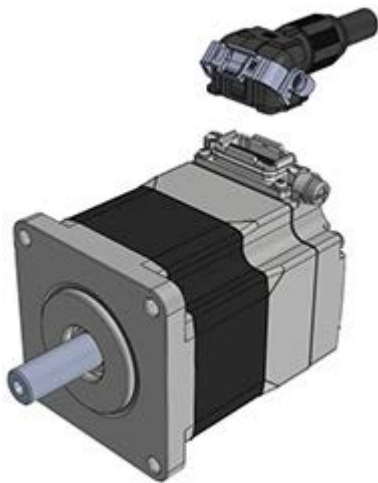
1. Remove the connector cap.

Note

Do not damage the O-ring of the connector when removing the connector cap.

2. Check the position of the connector terminals and connect the connector of the connection cable.

The figure shows an example where the cable outlet direction is opposite to the output shaft direction.



Note

If the locking lever is in a state of being turned up to the 90-degree position or down to the 0-degree position, parts around the locking lever and the connector are in contact with each other, and the connectors cannot be connected.

Locking lever is in 90-degree position



Locking lever is in 0-degree position



3. Turn the locking lever down to the 0-degree position to fix the connector.

Handling of locking lever

- Do not apply excessive force to the locking lever. If the locking lever is damaged, the connector may not be fixed securely.
- After connecting the connector, turn the locking lever down securely to the 0-degree position to fix the connector.

WARNING

Be sure to turn down the locking lever. If the connector is not fixed, the cable may come off, resulting in fire, electric shock, or damage to equipment.

Removing the cable

Turn up the locking lever and pull out the connector.

Tip

Turning up the locking lever to the 90-degree position simultaneously disconnects the connector.

Setup

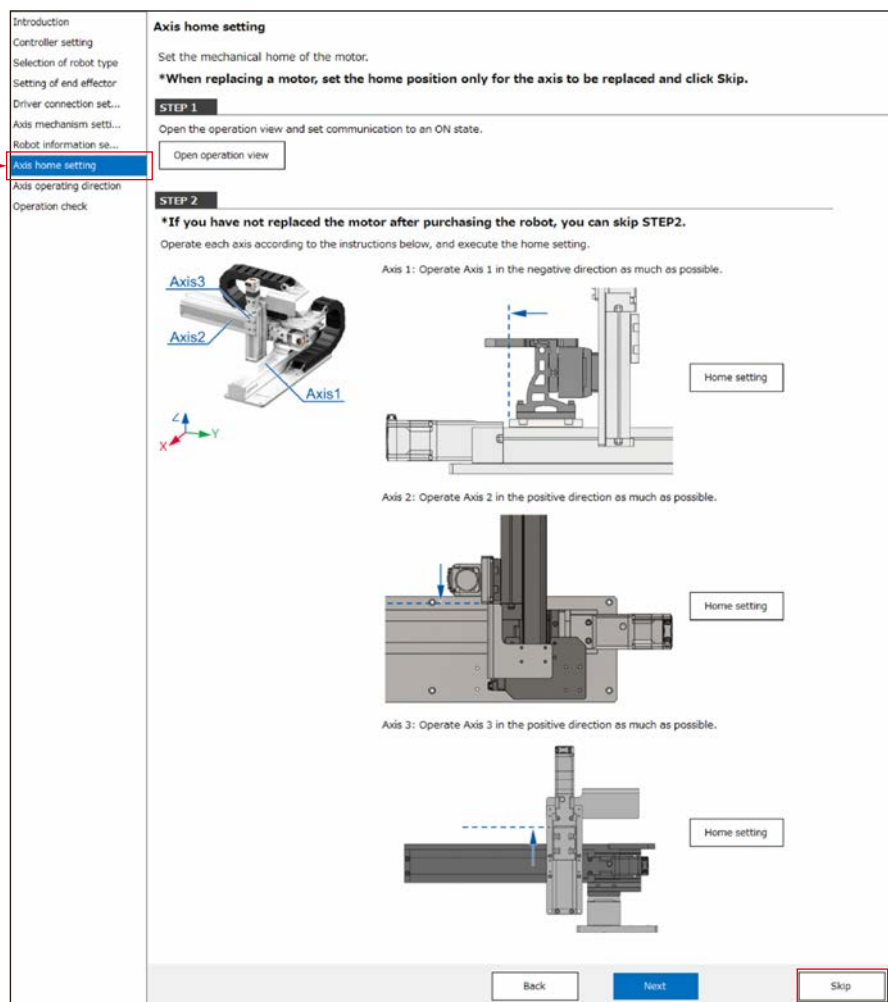
WARNING

Always check that the axis movement shown on the screen of the MRC Studio software matches the actual axis movement during setup. If the actual axis movement does not match what is shown on the MRC Studio screen, the product may operate unintentionally, causing injury or damage to equipment.

About setup

The origin of each axis for the product is set at the time of factory shipment. Therefore, “Axis home setting” is not required for the first-time setup. Click “Skip” and check the next setting item.

Skip to the next item. →



Setup method

Set the information of the robot with the MRC Studio programing software.

1. Start the MRC Studio software.
2. Click [Communication port], select a connected controller.
3. Click [Setup] on the start screen.
4. Set the robot type and the mechanism information according to the instructions on the screen.

Maintenance

Assign qualified personnel with sufficient knowledge and experience to perform daily and periodic inspections in accordance with the “Safety precautions” section.

Be sure to perform these inspections in order to prevent malfunctions in advance and to ensure safety, and check that there are no abnormalities in the product and related equipment before operation. If any abnormality is found, discontinue use immediately and take necessary action, such as repair.

Inspection

Time for inspection

Perform maintenance for each time period shown in the table when operating eight hours per day. Shorten the maintenance cycle depending on the situation when the product is operated continuously day and night or when the operating rate is high.

Time for maintenance	Inspection	Cleaning
When started	✓	–
Six months after starting operation	✓	–
Every six months thereafter	✓	–
As needed	–	✓

Inspection items

External inspection

- Check to see if the position securing the product is loose.
- Check to see if the cable is damaged, scraped or stressed.
- Check to see if the connection between the motor and driver is loose.
- Before and after the power is turned on, check to see if there is any abnormal noise or vibration coming from the bearing or gears.
- Check to see if the operating point has shifted during return-to-home operation and normal operation (original program operation).
- Check to see if any of the screws securing the load are loose.
- Check to see if there are any cracks or sagging in the stainless steel sheet.

Internal inspection

Visually inspect the internal condition of the actuator. Even if the color of the grease is discolored, the lubrication is considered good if the running surface appears still glossy. Refer [here](#) for details on applying grease.

- Check to see if there is any dust or debris on the ball screw and the guide rail.
- Check to see if the amount of the grease is low or the gloss of the grease is lost on the ball screw and the guide rail.

Cleaning

- Wipe off dirt with a soft cloth. If it is very dirty, wipe with a soft cloth with neutral detergent.
- Do not blow with compressed air. Dust may enter through the gap.
- Do not use petroleum-based solvents as they may damage the painted surface.

Applying grease

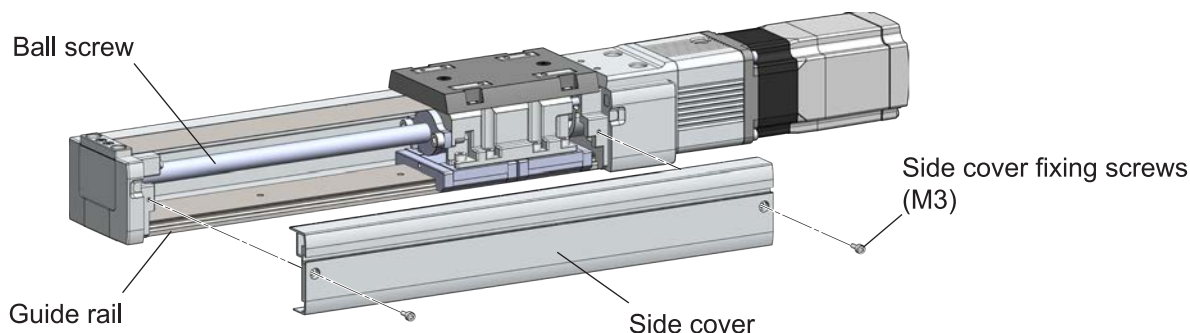
Remove the side cover and apply grease referring to the table below.

Greasing interval	Greasing point	Grease type	Reference grease amount
• Every six months • Every 100 km (62 mi.) • If it is very dirty	Ball screw, Guide rail	AFF grease (THK CO., LTD.)	Apply grease until the running surface is well covered. Wipe off excess grease.

CAUTION

- Wear safety glasses when applying grease. When handling grease, follow the instructions of the grease manufacturer and exercise caution. If grease gets into eyes or comes in contact with the skin, immediately flush the area thoroughly with water.
- When applying grease, do not touch the end surface of the stainless steel sheet with bare hands. Doing so may result in injury.

1. Remove the fixing screws from the side cover and remove the side cover.
2. Apply grease to both the ball screw and the guide rail.



3. Tighten the side cover fixing screws.
Tightening torque: 1 N·m (142 oz-in)

Motor replacement

Refer [here](#) for details on replacing the motor. The motors on all axes can be replaced.
When replacing the Y-axis motor, refer to the procedure for the Z-axis.

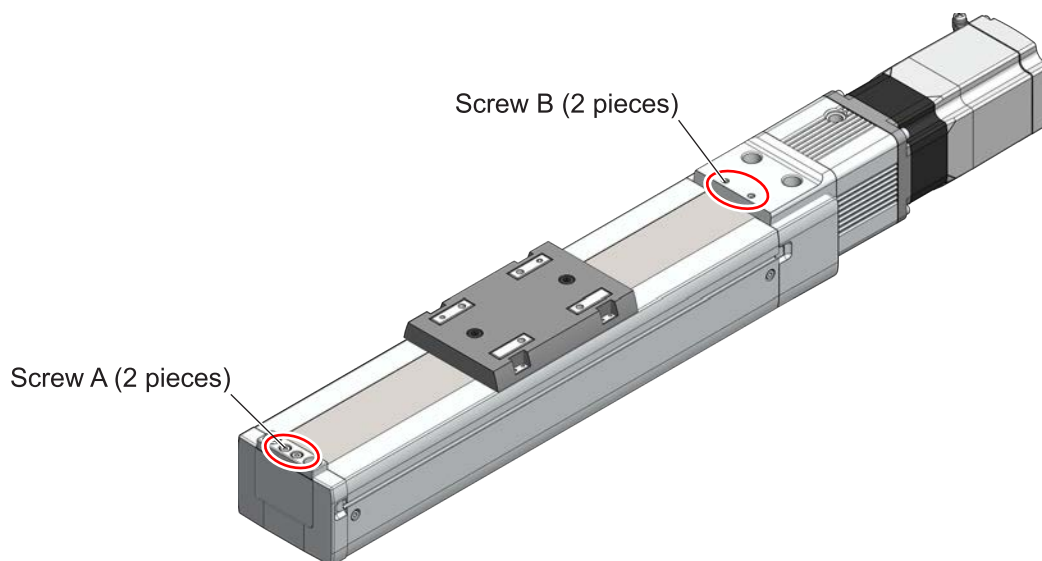
Stainless steel sheet readjustment

If the stainless steel sheet sags, readjust it according to the procedure below. For stainless steel sheet maintenance, contact your nearest Oriental Motor sales office.

WARNING

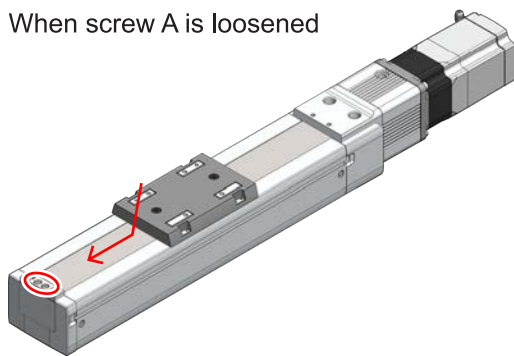
Do not touch the end surface of the stainless steel sheet with bare hands. Doing so may result in injury.

1. Loosen the screw A or B.
Screw A: M3 Hexagon socket head cap screws (2 pieces)
Screw B: M5 Hexagon socket head cap set screws (2 pieces)

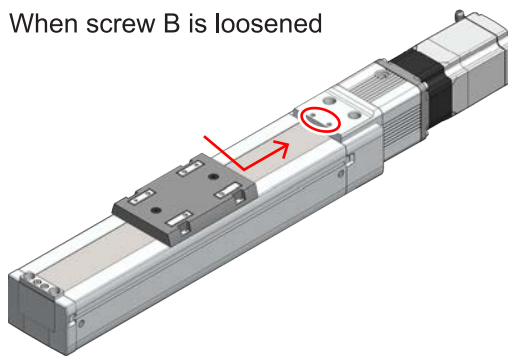


2. Press down from the top with hands and pull in the direction of the arrow as if smoothing out the wrinkles on the stainless sheet.

When screw A is loosened



When screw B is loosened



3. Tighten the screws.
Tightening torque: 1 N·m (142 oz-in)
4. Manually move the table and ensure that the stainless steel sheet is not sagging.

Warranty

Check on the Oriental Motor Website for the product warranty.

Disposal

Dispose the product correctly in accordance with laws and regulations, or instructions of local governments.

When removing the motor or actuator for disposal, remove the screws carefully to prevent injury from falling parts.

Specifications

Product specifications

Check on the Oriental Motor Website for the product specifications.

General specifications

Degree of protection

IP20 (Excluding the connector part)

Operating environment

Ambient temperature: 0 to +40 °C [+32 to +104 °F] (non-freezing)

Humidity: 85 % or less (non-condensing)

Altitude: Up to 1,000 m (3,300 ft.) above sea level

Atmosphere: No corrosive gas or dust. No exposure to water or oil.

Storage environment

Ambient temperature: 0 to +50 °C [+32 to +122 °F] (non-freezing)

Humidity: 85 % or less (non-condensing)

Altitude: Up to 3,000 m (10,000 ft.) above sea level

Atmosphere: No corrosive gas or dust. No exposure to water or oil.

Shipping environment

Ambient temperature: –20 to +60 °C [–4 to +140 °F] (non-freezing)

Humidity: 85 % or less (non-condensing)

Altitude: Up to 3,000 m (10,000 ft.) above sea level

Atmosphere: No corrosive gas or dust. No exposure to water or oil.

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