

# Nut Rotation Type Actuator

NSA-MXMS/MXMM  
NSA-LXMS/LXMM  
NSA-LXMXS/LXMXM  
NSA-WXMS/WXMM  
NSA-WXMXS/WXMXM

Instruction Manual    Second Edition    ME3795-2G



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**IAI Corporation**



## Please Read Before Use

Thank you for purchasing our product.

This instruction manual explains the handling methods, structure and maintenance of this product, providing the information you need in order to use the product safely.

Before using the product, be sure to read this manual and fully understand the contents explained herein to ensure safe use of the product.

Please download the user's manual from our website.

You can download it free of charge. User registration is required for the first time downloading.

URL : [www.iai-robot.co.jp/data\\_dl/CAD\\_MANUAL/](http://www.iai-robot.co.jp/data_dl/CAD_MANUAL/)

When using the product, print out of the necessary portions of the relevant manual, or please display it on your computer, tablet terminal, etc. so that you can check it immediately.

After reading the instruction manual, keep it in a convenient place so that whoever is handling the product can refer to it quickly when necessary.

### [Important]

- This instruction manual is an original document dedicated for this product.
- This product cannot be used in ways not shown in this instruction manual. IAI shall not be liable for any result whatsoever arising from the use of the product in any other way than what is noted in the manual.
- The information contained in this instruction manual is subject to change without notice for the purpose of product improvement.
- If any issues arise regarding the information contained in this instruction manual, contact our customer center or the nearest sales office.
- Use or reproduction of this instruction manual in full or in part without permission is prohibited.
- The company names, names of products and trademarks of each company shown in the text are registered trademarks.

## NSA Nut Rotation Type Instruction Manual Configuration

| Product name                     | Instruction manual name                                                    | Control number |
|----------------------------------|----------------------------------------------------------------------------|----------------|
| NSA Nut Rotation Type            | Instruction Manual<br>(this document)                                      | ME3795         |
| SCON-CB/CGB/LC/LCG Controller    | SCON-CB/CGB/LC/LCG Controller<br>Instruction Manual                        | ME0340         |
| SCON-CAL/CGAL Controller         | SCON-CAL/CGAL Controller<br>Instruction Manual                             | ME0243         |
| MSCON-C Controller               | MSCON-C Controller<br>Instruction Manual                                   | ME0306         |
| RCON System                      | RCON System Instruction Manual                                             | ME0384         |
| SSEL-CS Controller               | SSEL-CS Controller<br>Instruction Manual                                   | ME0157         |
| XSEL-P/Q Controller              | XSEL-P/Q Controller<br>Instruction Manual                                  | ME0148         |
| XSEL-RA/SA Controller            | XSEL-RA/SA Controller<br>Instruction Manual                                | ME0359         |
| RSEL System                      | RSEL System Instruction Manual                                             | ME0392         |
| PC Compatible Software for RC/EC | RCM-101-MW/RCM-101-USB<br>Instruction Manual                               | ME0155         |
| PC Compatible Software for XSEL  | IA-101-X-MW/IA-101-X-USB<br>Instruction Manual                             | ME0154         |
| Touch Panel Teaching Pendant     | TB-01/01D/01DR<br>Applicable for Position Controller<br>Instruction Manual | ME0324         |
| Touch Panel Teaching Pendant     | TB-02/02D<br>Applicable for Position Controller<br>Instruction Manual      | ME0355         |
| Touch Panel Teaching Pendant     | TB-03<br>Applicable for Position Controller                                | ME0376         |
| Touch Panel Teaching Pendant     | TB-01/01D/01DR<br>Applicable for Program Controller<br>Instruction Manual  | ME0325         |
| Touch Panel Teaching Pendant     | TB-02/02D<br>Applicable for Program Controller<br>Instruction Manual       | ME0356         |
| Touch Panel Teaching Pendant     | TB-03<br>Applicable for Program Controller                                 | ME0377         |

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## Safety Guide

“Safety Guide” has been written to use the machine safely and so prevent personal injury or property damage beforehand. Make sure to read it before the operation of this product.

### Safety Precautions for Our Products

The common safety precautions for the use of any of our robots in each operation.

| No. | Operation Description | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Model Selection       | <ul style="list-style-type: none"> <li>• This product has not been planned and designed for the application where high level of safety is required, so the guarantee of the protection of human life is impossible.<br/>Accordingly, do not use it in any of the following applications.               <ol style="list-style-type: none"> <li>1) Medical equipment used to maintain, control or otherwise affect human life or physical health.</li> <li>2) Mechanisms and machinery designed for the purpose of moving or transporting people (For vehicle, railway facility or air navigation facility)</li> <li>3) Important safety parts of machinery (Safety device, etc.)</li> </ol> </li> <li>• Do not use the product outside the specifications.<br/>Failure to do so may considerably shorten the life of the product.</li> <li>• Do not use it in any of the following environments.               <ol style="list-style-type: none"> <li>1) Location where there is any inflammable gas, inflammable object or explosive</li> <li>2) Place with potential exposure to radiation</li> <li>3) Location with the ambient temperature or relative humidity exceeding the specification range</li> <li>4) Location where radiant heat is added from direct sunlight or other large heat source</li> <li>5) Location where condensation occurs due to abrupt temperature changes</li> <li>6) Location where there is any corrosive gas (sulfuric acid or hydrochloric acid)</li> <li>7) Location exposed to significant amount of dust, salt or iron powder</li> <li>8) Location subject to direct vibration or impact</li> </ol> </li> <li>• For an actuator used in vertical orientation, select a model which is equipped with a brake. If selecting a model with no brake, the moving part may drop when the power is turned OFF and may cause an accident such as an injury or damage on the work piece.</li> </ul> |

| No. | Operation Description    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2   | Transportation           | <ul style="list-style-type: none"> <li>• When carrying a heavy object, do the work with two or more persons or utilize equipment such as crane.</li> <li>• When the work is carried out with 2 or more persons, make it clear who is to be the “leader” and who to be the “follower(s)” and communicate well with each other to ensure the safety of the workers.</li> <li>• When in transportation, consider well about the positions to hold, weight and weight balance and pay special attention to the carried object so it would not get hit or dropped.</li> <li>• Transport it using an appropriate transportation measure.<br/>The actuators available for transportation with a crane have eyebolts attached or there are screw holes to attach bolts. Follow the instructions in the instruction manual for each model.</li> <li>• Do not step or sit on the package.</li> <li>• Do not put any heavy thing that can deform the package, on it.</li> <li>• When using a crane capable of 1t or more of weight, have an operator who has qualifications for crane operation and sling work.</li> <li>• When using a crane or equivalent equipments, make sure not to hang a load that weighs more than the equipment’s capability limit.</li> <li>• Use a hook that is suitable for the load. Consider the safety factor of the hook in such factors as shear strength.</li> <li>• Do not get on the load that is hung on a crane.</li> <li>• Do not leave a load hung up with a crane.</li> <li>• Do not stand under the load that is hung up with a crane.</li> </ul> |
| 3   | Storage and Preservation | <ul style="list-style-type: none"> <li>• The storage and preservation environment conforms to the installation environment. However, especially give consideration to the prevention of condensation.</li> <li>• Store the products with a consideration not to fall them over or drop due to an act of God such as earthquake.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4   | Installation and Start   | <p>(1) Installation of Robot Main Body and Controller, etc.</p> <ul style="list-style-type: none"> <li>• Make sure to securely hold and fix the product (including the work part). A fall, drop or abnormal motion of the product may cause a damage or injury. Also, be equipped for a fall-over or drop due to an act of God such as earthquake.</li> <li>• Do not get on or put anything on the product.<br/>Failure to do so may cause an accidental fall, injury or damage to the product due to a drop of anything, malfunction of the product, performance degradation, or shortening of its life.</li> <li>• When using the product in any of the places specified below, provide a sufficient shield.               <ol style="list-style-type: none"> <li>1) Location where electric noise is generated</li> <li>2) Location where high electrical or magnetic field is present</li> <li>3) Location with the mains or power lines passing nearby</li> <li>4) Location where the product may come in contact with water, oil or chemical droplets</li> </ol> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

| No. | Operation Description  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4   | Installation and Start | <p>(2) Cable Wiring</p> <ul style="list-style-type: none"> <li>• Use our company's genuine cables for connecting between the actuator and controller, and for the teaching tool.</li> <li>• Do not scratch on the cable. Do not bend it forcibly. Do not pull it. Do not coil it around. Do not insert it. Do not put any heavy thing on it.<br/>Failure to do so may cause a fire, electric shock or malfunction due to leakage or continuity error.</li> <li>• Perform the wiring for the product, after turning OFF the power to the unit, so that there is no wiring error.</li> <li>• When the direct current power (+24V) is connected, take the great care of the directions of positive and negative poles. If the connection direction is not correct, it might cause a fire, product breakdown or malfunction.</li> <li>• Connect the cable connector securely so that there is no disconnection or looseness. Failure to do so may cause a fire, electric shock or malfunction of the product.</li> <li>• Never cut and/or reconnect the cables supplied with the product for the purpose of extending or shortening the cable length. Failure to do so may cause the product to malfunction or cause fire.</li> </ul> <p>(3) Grounding</p> <ul style="list-style-type: none"> <li>• The grounding operation should be performed to prevent an electric shock or electrostatic charge, enhance the noise-resistance ability and control the unnecessary electromagnetic radiation.</li> <li>• For the ground terminal (PE) on the AC power cable of the controller and the grounding plate in the control panel, make sure for grounding work. For security grounding, it is necessary to select an appropriate wire thickness suitable for the load.<br/>Perform wiring that satisfies the specifications (electrical equipment standards and criteria).<br/>For detail, follow the description in [an instruction manual of each controller or controller built-in actuator].</li> <li>• Conduct functional grounding on the FG terminal for a controller supplying 24V DC or a controller built-in type actuator. In order to minimize influence to mechanical operation given by electromagnetic interference (noise) to an electrical device or insulation failure, conduct grounding on a terminal or a conductor that is electrically stable. The reference impedance should be Type D (Former Class 3, ground resistance 100Ω or less).</li> </ul> |

| No. | Operation Description  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4   | Installation and Start | <p>(4) Safety Measures</p> <ul style="list-style-type: none"> <li>• When the work is carried out with 2 or more persons, make it clear who is to be the “leader” and who to be the “follower(s)” and communicate well with each other to ensure the safety of the workers.</li> <li>• When the product is under operation or in the ready mode, take the safety measures (such as the installation of safety and protection fence) so that nobody can enter the area within the robot’s movable range.<br/>When the robot under operation is touched, it may result in death or serious injury.</li> <li>• Make sure to install the emergency stop circuit so that the unit can be stopped immediately in an emergency during the unit operation.</li> <li>• Take the safety measure not to start up the unit only with the power turning ON. Failure to do so may start up the machine suddenly and cause an injury or damage to the product.</li> <li>• Take the safety measure not to start up the machine only with the emergency stop cancellation or recovery after the power failure. Failure to do so may result in an electric shock or injury due to unexpected power input.</li> <li>• When the installation or adjustment operation is to be performed, give clear warnings such as “Under Operation; Do not turn ON the power!” etc. Sudden power input may cause an electric shock or injury.</li> <li>• Take the measure so that the work part is not dropped in power failure or emergency stop.</li> <li>• Wear protection gloves, goggle or safety shoes, as necessary, to secure safety.</li> <li>• Do not insert a finger or object in the openings in the product. Failure to do so may cause an injury, electric shock, damage to the product or fire.</li> <li>• When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity.</li> </ul> |
| 5   | Teaching               | <ul style="list-style-type: none"> <li>• When the work is carried out with 2 or more persons, make it clear who is to be the “leader” and who to be the “follower(s)” and communicate well with each other to ensure the safety of the workers.</li> <li>• Perform the teaching operation from outside the safety protection fence, if possible. In the case that the operation is to be performed unavoidably inside the safety protection fence, prepare the “Stipulations for the Operation” and make sure that all the workers acknowledge and understand them well.</li> <li>• When the operation is to be performed inside the safety protection fence, the worker should have an emergency stop switch at hand with him so that the unit can be stopped any time in an emergency.</li> <li>• When the operation is to be performed inside the safety protection fence, in addition to the workers, arrange a watchman so that the machine can be stopped any time in an emergency. Also, keep watch on the operation so that any third person can not operate the switches carelessly.</li> <li>• Place a sign “Under Operation” at the position easy to see.</li> <li>• When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity.</li> </ul> <p>* Safety protection Fence : In the case that there is no safety protection fence, the movable range should be indicated.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| No. | Operation Description | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6   | Trial Operation       | <ul style="list-style-type: none"><li>• When the work is carried out with 2 or more persons, make it clear who is to be the “leader” and who to be the “follower(s)” and communicate well with each other to ensure the safety of the workers.</li><li>• After the teaching or programming operation, perform the check operation one step by one step and then shift to the automatic operation.</li><li>• When the check operation is to be performed inside the safety protection fence, perform the check operation using the previously specified work procedure like the teaching operation.</li><li>• Make sure to perform the programmed operation check at the safety speed. Failure to do so may result in an accident due to unexpected motion caused by a program error, etc.</li><li>• Do not touch the terminal block or any of the various setting switches in the power ON mode. Failure to do so may result in an electric shock or malfunction.</li></ul> |
| 7   | Automatic Operation   | <ul style="list-style-type: none"><li>• Check before starting the automatic operation or rebooting after operation stop that there is nobody in the safety protection fence.</li><li>• Before starting automatic operation, make sure that all peripheral equipment is in an automatic-operation-ready state and there is no alarm indication.</li><li>• Make sure to operate automatic operation start from outside of the safety protection fence.</li><li>• In the case that there is any abnormal heating, smoke, offensive smell, or abnormal noise in the product, immediately stop the machine and turn OFF the power switch. Failure to do so may result in a fire or damage to the product.</li><li>• When a power failure occurs, turn OFF the power switch. Failure to do so may cause an injury or damage to the product, due to a sudden motion of the product in the recovery operation from the power failure.</li></ul>                                     |

| No. | Operation Description      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8   | Maintenance and Inspection | <ul style="list-style-type: none"> <li>• When the work is carried out with 2 or more persons, make it clear who is to be the “leader” and who to be the “follower(s)” and communicate well with each other to ensure the safety of the workers.</li> <li>• Perform the work out of the safety protection fence, if possible. In the case that the operation is to be performed unavoidably inside the safety protection fence, prepare the “Stipulations for the Operation” and make sure that all the workers acknowledge and understand them well.</li> <li>• When the work is to be performed inside the safety protection fence, basically turn OFF the power switch.</li> <li>• When the operation is to be performed inside the safety protection fence, the worker should have an emergency stop switch at hand with him so that the unit can be stopped any time in an emergency.</li> <li>• When the operation is to be performed inside the safety protection fence, in addition to the workers, arrange a watchman so that the machine can be stopped any time in an emergency. Also, keep watch on the operation so that any third person can not operate the switches carelessly.</li> <li>• Place a sign “Under Operation” at the position easy to see.</li> <li>• For the grease for the guide or ball screw, use appropriate grease according to the instruction manual for each model.</li> <li>• Do not perform the dielectric strength test. Failure to do so may result in a damage to the product.</li> <li>• When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity.</li> <li>• The slider or rod may get misaligned OFF the stop position if the servo is turned OFF. Be careful not to get injured or damaged due to an unnecessary operation.</li> <li>• Pay attention not to lose the removed cover or screws, and make sure to put the product back to the original condition after maintenance and inspection works.</li> </ul> <p>Use in incomplete condition may cause damage to the product or an injury.</p> <p>* Safety protection Fence : In the case that there is no safety protection fence, the movable range should be indicated.</p> |
| 9   | Modification and Dismantle | <ul style="list-style-type: none"> <li>• Do not modify, disassemble, assemble or use of maintenance parts not specified based at your own discretion.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 10  | Disposal                   | <ul style="list-style-type: none"> <li>• When the product becomes no longer usable or necessary, dispose of it properly as an industrial waste.</li> <li>• When removing the actuator for disposal, pay attention to drop of components when detaching screws.</li> <li>• Do not put the product in a fire when disposing of it.</li> </ul> <p>The product may burst or generate toxic gases.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 11  | Other                      | <ul style="list-style-type: none"> <li>• Do not come close to the product or the harnesses if you are a person who requires a support of medical devices such as a pacemaker. Doing so may affect the performance of your medical device.</li> <li>• See Overseas Specifications Compliance Manual to check whether complies if necessary.</li> <li>• For the handling of actuators and controllers, follow the dedicated instruction manual of each unit to ensure the safety.</li> <li>• Using the devise in a way not indicated by IAI may lose the protection performance equipped to the device.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## Alert Indication

The safety precautions are divided into “Danger”, “Warning”, “Caution” and “Notice” according to the warning level, as follows, and described in the instruction manual for each model.

| Level   | Degree of Danger and Damage                                                                                                                     | Symbol                                                                                      |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Danger  | This indicates an imminently hazardous situation which, if the product is not handled correctly, will result in death or serious injury.        |  Danger  |
| Warning | This indicates a potentially hazardous situation which, if the product is not handled correctly, could result in death or serious injury.       |  Warning |
| Caution | This indicates a potentially hazardous situation which, if the product is not handled correctly, may result in minor injury or property damage. |  Caution |
| Notice  | This indicates lower possibility for the injury, but should be kept to use this product properly.                                               |  Notice  |

## Precautions for Handling

1. The Safety Guide attached with the product is intended to permit safe use of the product and thus to prevent risks and property damage. Be sure to read it before handling the product.

2. Do not attempt any handling or operation that is not indicated in this instruction manual.

3. Make sure to secure the actuator properly in accordance with this instruction manual.

If the actuator is not securely fixed, this may lead to abnormal noise, vibration, breakdown or shortened product life.

4. Make sure to observe the usage conditions and environment of the product.

Operation outside the warranty could cause decreased performance or product breakdown.

Use within the allowable range for each item.

| Item                                | Cautions for use               | Problems or breakdowns which may occur if the allowable range is exceeded                                                                    |
|-------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Speed and acceleration/deceleration | Use within the allowable range | May lead to abnormal noise, vibration, breakdown, or shortened product life.                                                                 |
| Allowable load moment               | Use within the allowable range | May lead to abnormal noise, vibration, breakdown, or shortened product life. In extreme cases, flaking may occur on the guide or ball screw. |
| Overhang load length                |                                | Mounting a load with an overhang length greater than the allowable values may lead to vibration or abnormal noise.                           |

5. If return operations are continued over a short distance, they may rapidly degrade the film of grease.

Continuous return operation within a distance less than 30mm may cause the grease film to degrade rapidly.

As a guideline, in every 5,000 to 10,000 cycles, have approximately 5 cycles of return operation over a 50mm distance or more to regenerate the oil film. Continued use of the actuator in that state may lead to breakdown.

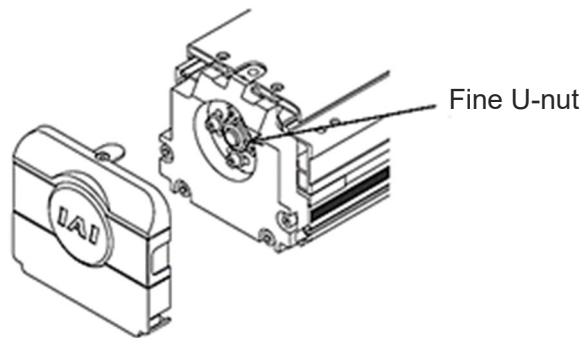
In extreme cases, flaking may occur on the guide or ball screw.

6. Do not attempt to have sliders collide with an obstacle at high speed.

This may damage the coupling or other mechanical parts.

7. Do not attempt to tighten up the fine U-nut.

The base could get warped if the fine U-nut is tightened up.



8. In some conditions of environment of use, postures of installation and conditions of operation, the base oil separated from the grease may come out of ROBO Cylinder.

It is recommended to have a protection in case the peripheral devices could get influence of the base oil.

## International Standard Compliance

This actuator is complied with the following international standards.

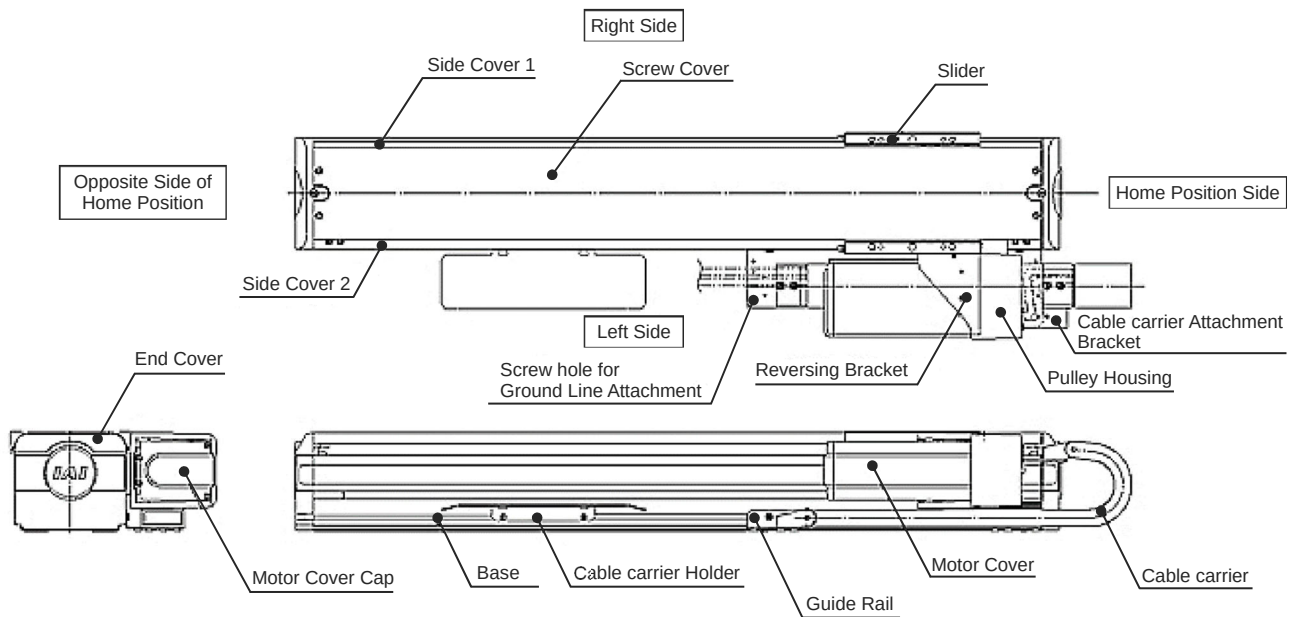
Refer to the Overseas Standard Compliance Manual (ME0287) for more detailed information.

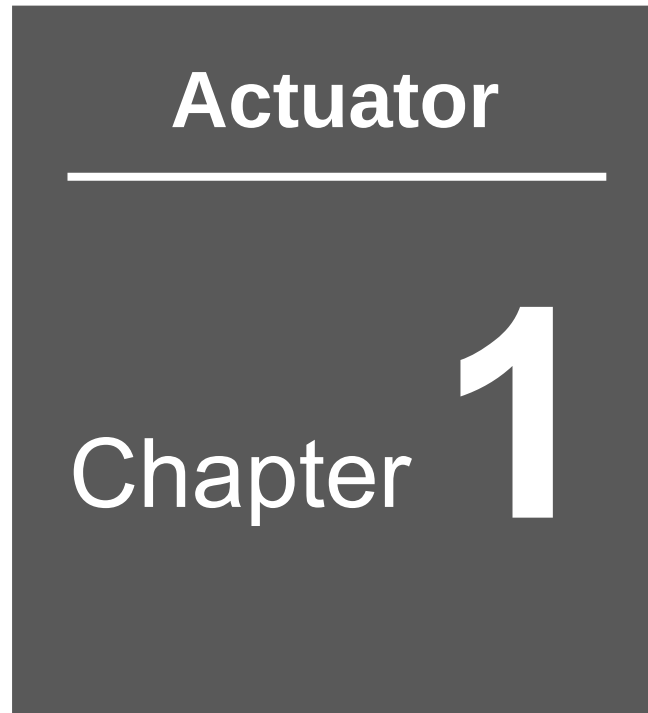
| CE Marking | RoHS3 Directive |
|------------|-----------------|
| ○          | ○               |

○ : Complied in standard

## Names of the Parts

In this manual, the actuator left/right sides and motor/opposite sides are shown as in the figure below.





# Specifications

|       |                                                                                   |      |
|-------|-----------------------------------------------------------------------------------|------|
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## 1.1 Checking the product

### 1.1.1 Parts

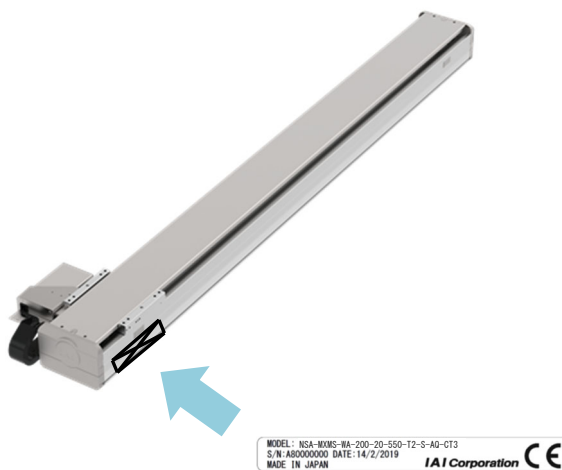
The following table shows the product configuration for the standard specification.  
See the component list for the details of the enclosed components. If you find any fault or missing parts, contact your local IAI distributor.

| Body                                                                                                                                                                                                              | Accessories                                                                                                                                                                            |                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Actuator Quantity 1</u><br>                                                                                                   | <u>Motor Cable</u><br><u>Single Slider: Quantity = 1</u><br><u>Multiple Slider: Quantity = 2</u><br> | <u>Encoder Cable</u><br><u>Single Slider: Quantity = 1</u><br><u>Multiple Slider: Quantity = 2</u><br> |
| Accessories                                                                                                                                                                                                       |                                                                                                                                                                                        |                                                                                                                                                                                           |
| <u>High-Tensile Bolt Dedicated Washer</u><br><u>Quantity 1 set</u><br>* Number of washers differs depending on the stroke.<br> | <u>Safety Guide Quantity 1</u><br>                                                                |                                                                                                                                                                                           |

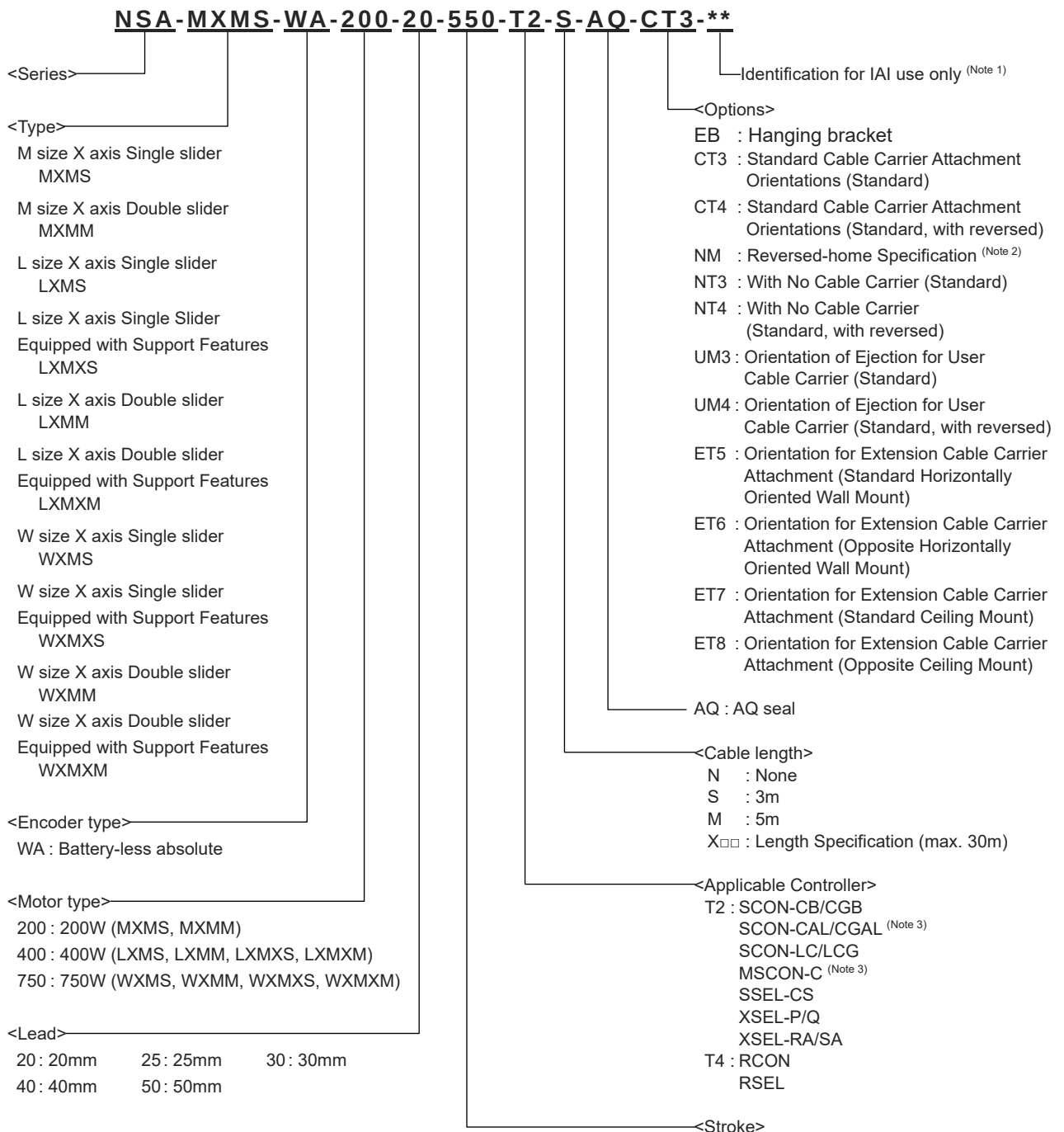
### 1.1.2 How to read the model nameplate

|                |                                            |                                                                                                     |
|----------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Model→         | MODEL : NSA-MXMS-WA-200-20-550-T2-S-AQ-CT3 | IAI Corporation  |
| Serial number→ | S/N : A80000000 DATE : 14/2/2019           |                                                                                                     |
|                | MADE IN JAPAN                              |                                                                                                     |

[Nameplate Position]



### 1.1.3 How to read the model number



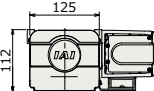
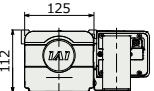
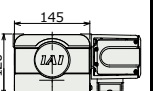
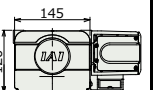
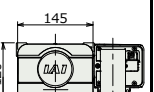
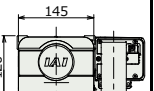
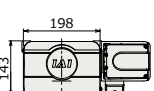
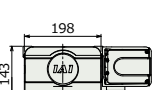
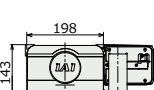
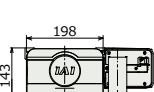
Note 1 Identification for IAI use only :

It may be displayed for IAI use. It is not a code to show the model type.

Note 2 It is an option for Single Sliders MXMS, LXMS and WXMS.

Note 3 L size and W size cannot perform operation with SCON-CAL/CGAL and MSCON-C.

## 1.1.4 Product list

| Type |       | Appearance                                                                          | Body Width                                                                          | Motor Wattage (W) | Lead (mm) | Positioning Repeatability (mm) | Stroke (mm)               | Max. Speed (mm/s) | Max. Payload (kg) |
|------|-------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------|-----------|--------------------------------|---------------------------|-------------------|-------------------|
| NSA  | MXMS  |    |    | 200               | 30        | ±0.01                          | 500 to 1800 (50mm pitch)  | 1800              | 20                |
|      |       |                                                                                     |                                                                                     |                   | 20        |                                |                           | 1200              | 35                |
|      | MXMM  |    |    |                   | 30        |                                | 300 to 1500 (50mm pitch)  | 1800              | 20                |
|      |       |                                                                                     |                                                                                     |                   | 20        |                                |                           | 1200              | 35                |
|      | LXMS  |    |    | 400               | 40        | ±0.01                          | 600 to 2250 (50mm pitch)  | 2400              | 40                |
|      |       |                                                                                     |                                                                                     |                   | 20        |                                |                           | 1300              | 80                |
|      | LXMXS |   |    |                   | 40        |                                | 2300 to 3000 (50mm pitch) | 2400              | 40                |
|      |       |                                                                                     |                                                                                     |                   | 20        |                                |                           | 1300              | 80                |
|      | LXMM  |  |  |                   | 40        |                                | 300 to 2250 (50mm pitch)  | 2400              | 40                |
|      |       |                                                                                     |                                                                                     |                   | 20        |                                |                           | 1300              | 80                |
|      | LXMXM |  |  |                   | 40        |                                | 2300 to 2700 (50mm pitch) | 2400              | 40                |
|      |       |                                                                                     |                                                                                     |                   | 20        |                                |                           | 1300              | 80                |
|      | WXMS  |  |  | 750               | 50        | ±0.01                          | 650 to 2300 (50mm pitch)  | 2500              | 60                |
|      |       |                                                                                     |                                                                                     |                   | 25        |                                |                           | 1300              | 120               |
|      | WXMXS |  |  |                   | 50        |                                | 2350 to 3000 (50mm pitch) | 2500              | 60                |
|      |       |                                                                                     |                                                                                     |                   | 25        |                                |                           | 1300              | 120               |
|      | WXMM  |  |  |                   | 50        |                                | 300 to 2300 (50mm pitch)  | 2500              | 60                |
|      |       |                                                                                     |                                                                                     |                   | 25        |                                |                           | 1300              | 120               |
|      | WXMXM |  |  |                   | 50        |                                | 2350 to 2650 (50mm pitch) | 2500              | 60                |
|      |       |                                                                                     |                                                                                     |                   | 25        |                                |                           | 1300              | 120               |

## 1.2 Specifications

### 1.2.1 Specifications

#### [1] NSA-MXMS

##### [Lead and Payload]

| Lead<br>(mm) | Max. Payload    | Rated Thrust (N) |
|--------------|-----------------|------------------|
|              | Horizontal (kg) |                  |
| 30           | 20              | 113.9            |
| 20           | 35              | 170.9            |

##### [Stroke and Max. Speed]

Unit: mm/s

| Lead<br>(mm) | Stroke 550 to 1800mm<br>(Every 50mm) |
|--------------|--------------------------------------|
| 30           | 1800                                 |
| 20           | 1200                                 |



#### Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.

Minimum speed [mm/s] = ball screw lead [mm/r] ÷ 131072 [p/r] × 1000 [1/s]  
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

**[Payload by Acceleration/Deceleration]**

At low load capacity, the acceleration/deceleration can be increased.

| Lead 30                       |     |     |     | Lead 20                       |     |     |     |
|-------------------------------|-----|-----|-----|-------------------------------|-----|-----|-----|
| Acceleration/Deceleration (G) |     |     |     | Acceleration/Deceleration (G) |     |     |     |
| 0.3                           | 0.4 | 0.5 | 0.6 | 0.3                           | 0.4 | 0.5 | 0.6 |
| 20                            | 10  | 5   | —   | 35                            | 25  | 15  | 5   |
| (Unit: kg)                    |     |     |     | (Unit: kg)                    |     |     |     |

**Caution**

- Do not attempt to configure settings for acceleration/deceleration above the specifications.

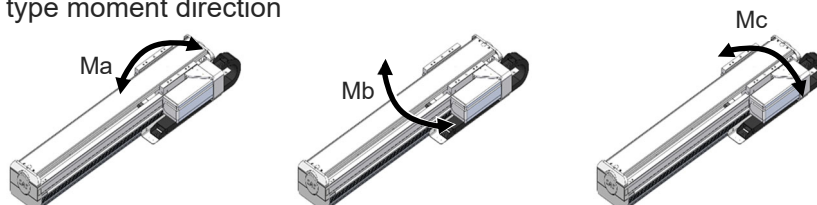
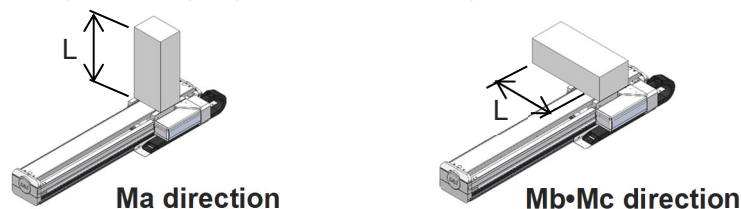
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

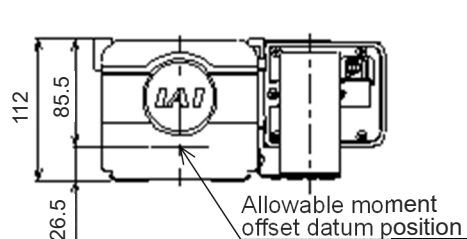
| Item                                   | Content                                                              |
|----------------------------------------|----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 16\text{mm}$ , Rolled C5 or equivalent              |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                  |
| Lost Motion                            | 0.02mm or less                                                       |
| Base                                   | Material: Aluminum, White Anodized                                   |
| Allowable static moment                | Ma direction: 560 N·m, Mb direction: 800 N·m, Mc direction: 1030 N·m |
| Allowable dynamic moment (*1)          | Ma direction: 123 N·m, Mb direction: 176 N·m, Mc direction: 227 N·m  |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                     |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                            |

• Overhang load length guideline: 750mm or less

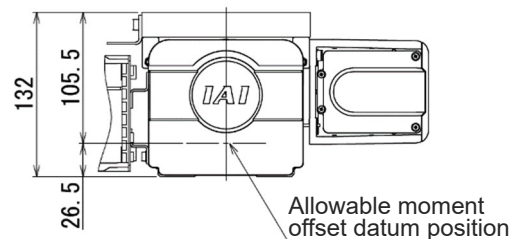
(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length (L = 750mm or less)**

\* For calculation of Ma and Mc moments, take the position pointed with an arrow as the datum.



Horizontal installation

Horizontally oriented wall mount  
or Ceiling mount**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

**[2] NSA-MXMM****[Lead and Payload]**

| Lead (mm) | Max. Payload    | Rated Thrust (N) |
|-----------|-----------------|------------------|
|           | Horizontal (kg) |                  |
| 30        | 20              | 113.9            |
| 20        | 35              | 170.9            |

**[Stroke and Max. Speed]**

Unit: mm/s

| Lead (mm) | Stroke 300 to 1500mm (Every 50mm) |
|-----------|-----------------------------------|
| 30        | 1800                              |
| 20        | 1200                              |

**Caution**

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.  

$$\text{Minimum speed [mm/s]} = \text{ball screw lead [mm/r]} \div 131072 \text{ [p/r]} \times 1000 \text{ [1/s]}$$
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

[Payload by Acceleration/Deceleration]

At low load capacity, the acceleration/deceleration can be increased.

| Lead 30                       |     |     |     | Lead 20                       |     |     |     |
|-------------------------------|-----|-----|-----|-------------------------------|-----|-----|-----|
| Acceleration/Deceleration (G) |     |     |     | Acceleration/Deceleration (G) |     |     |     |
| 0.3                           | 0.4 | 0.5 | 0.6 | 0.3                           | 0.4 | 0.5 | 0.6 |
| 20                            | 10  | 5   | —   | 35                            | 25  | 15  | 5   |
| (Unit: kg)                    |     |     |     | (Unit: kg)                    |     |     |     |



Caution

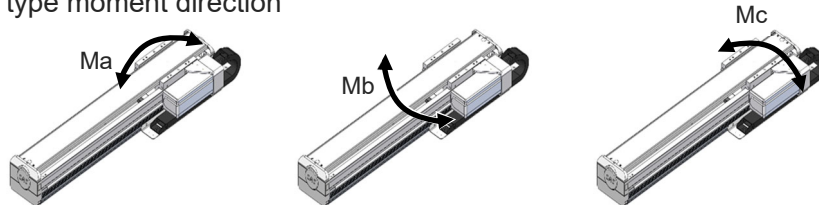
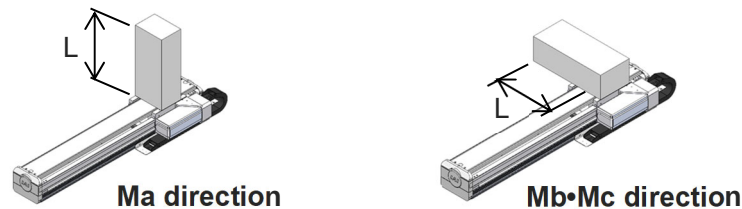
- Do not attempt to configure settings for acceleration/deceleration above the specifications.  
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

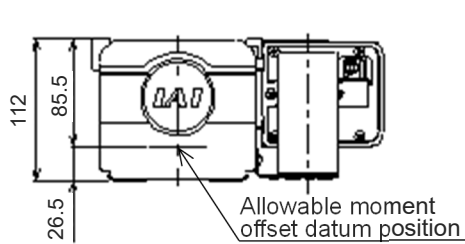
| Item                                   | Content                                                              |
|----------------------------------------|----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 16\text{mm}$ , Rolled C5 or equivalent              |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                  |
| Lost Motion                            | 0.02mm or less                                                       |
| Base                                   | Material: Aluminum, White Anodized                                   |
| Allowable static moment                | Ma direction: 560 N•m, Mb direction: 800 N•m, Mc direction: 1030 N•m |
| Allowable dynamic moment (*1)          | Ma direction: 123 N•m, Mb direction: 176 N•m, Mc direction: 227 N•m  |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                     |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                            |

• Overhang load length guideline: 750mm or less

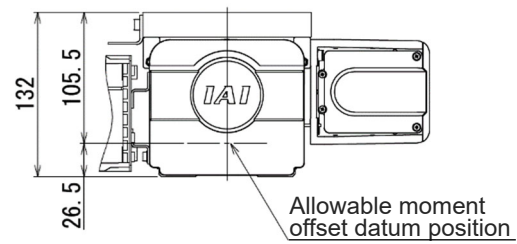
(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length (L = 750mm or less)**

\* For calculation of Ma and Mc moments, take the position pointed with an arrow as the datum.



Horizontal installation

Horizontally oriented wall mount  
or Ceiling mount**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

**[3] NSA-LXMS****[Lead and Payload]**

| Lead<br>(mm) | Max. Payload    | Rated Thrust (N) |
|--------------|-----------------|------------------|
|              | Horizontal (kg) |                  |
| 40           | 40              | 169.6            |
| 20           | 80              | 339.1            |

**[Stroke and Max. Speed]**

Unit: mm/s

| Lead<br>(mm) | Stroke 600 to 2250mm<br>(Every 50mm) |
|--------------|--------------------------------------|
| 40           | 2400                                 |
| 20           | 1300                                 |

**Caution**

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.  

$$\text{Minimum speed [mm/s]} = \text{ball screw lead [mm/r]} \div 131072 \text{ [p/r]} \times 1000 \text{ [1/s]}$$
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

**[Payload by Acceleration/Deceleration]**

At low load capacity, the acceleration/deceleration can be increased.

| Lead 40                       |     |     |     |     |     |     | Lead 20                       |     |     |     |     |     |     |
|-------------------------------|-----|-----|-----|-----|-----|-----|-------------------------------|-----|-----|-----|-----|-----|-----|
| Acceleration/Deceleration (G) |     |     |     |     |     |     | Acceleration/Deceleration (G) |     |     |     |     |     |     |
| 0.3                           | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 0.3                           | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
| 40                            | 30  | 20  | 15  | 10  | 7   | —   | 80                            | 60  | 40  | 30  | 20  | 15  | 7   |

(Unit: kg)

(Unit: kg)

**Caution**

- Do not attempt to configure settings for acceleration/deceleration above the specifications.

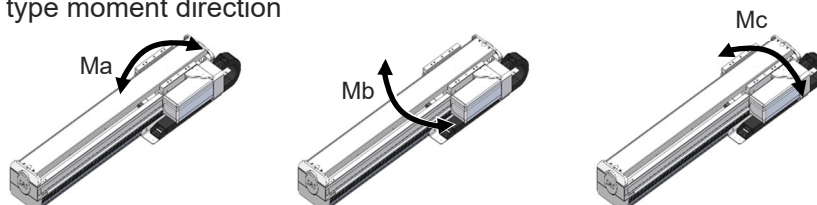
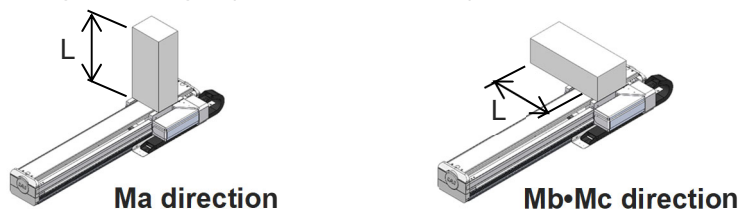
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

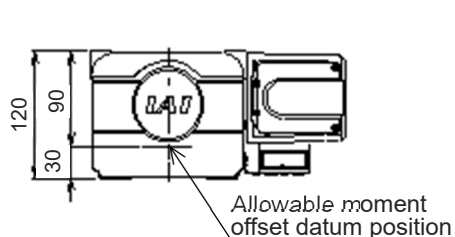
| Item                                   | Content                                                               |
|----------------------------------------|-----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 20\text{mm}$ , Rolled C5 or equivalent               |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                   |
| Lost Motion                            | 0.02mm or less                                                        |
| Base                                   | Material: Aluminum, White Anodized                                    |
| Allowable static moment                | Ma direction: 774 N•m, Mb direction: 1106 N•m, Mc direction: 1566 N•m |
| Allowable dynamic moment (*1)          | Ma direction: 162 N•m, Mb direction: 231 N•m, Mc direction: 327 N•m   |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                      |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                             |

• Overhang load length guideline: 900mm or less

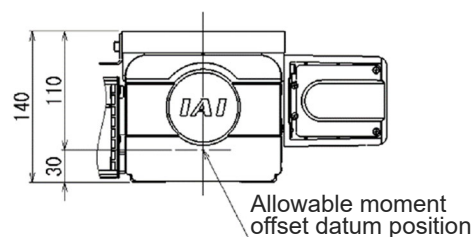
(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length (L = 900mm or less)**

\* For calculation of Ma and Mc moments, take the position pointed with an arrow as the datum.



Horizontal installation

Horizontally oriented wall mount  
or Ceiling mount**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

**[4] NSA-LXMM****[Lead and Payload]**

| Lead (mm) | Max. Payload    | Rated Thrust (N) |
|-----------|-----------------|------------------|
|           | Horizontal (kg) |                  |
| 40        | 40              | 169.6            |
| 20        | 80              | 339.1            |

**[Stroke and Max. Speed]**

Unit: mm/s

| Lead (mm) | Stroke 300 to 2250mm (Every 50mm) |
|-----------|-----------------------------------|
| 40        | 2400                              |
| 20        | 1300                              |

**Caution**

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.  

$$\text{Minimum speed [mm/s]} = \text{ball screw lead [mm/r]} \div 131072 \text{ [p/r]} \times 1000 \text{ [1/s]}$$
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

**[Payload by Acceleration/Deceleration]**

At low load capacity, the acceleration/deceleration can be increased.

| Lead 40                       |     |     |     |     |     |     | Lead 20                       |     |     |     |     |     |     |
|-------------------------------|-----|-----|-----|-----|-----|-----|-------------------------------|-----|-----|-----|-----|-----|-----|
| Acceleration/Deceleration (G) |     |     |     |     |     |     | Acceleration/Deceleration (G) |     |     |     |     |     |     |
| 0.3                           | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 0.3                           | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
| 40                            | 30  | 20  | 15  | 10  | 7   | —   | 80                            | 60  | 40  | 30  | 20  | 15  | 7   |

(Unit: kg)

(Unit: kg)

**Caution**

- Do not attempt to configure settings for acceleration/deceleration above the specifications.

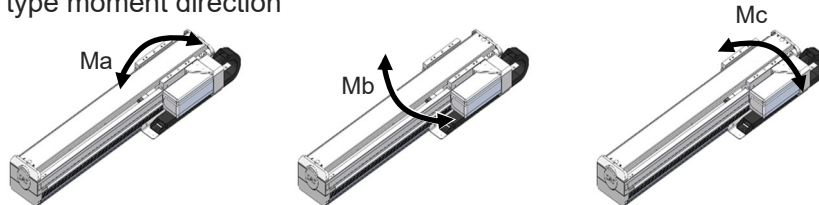
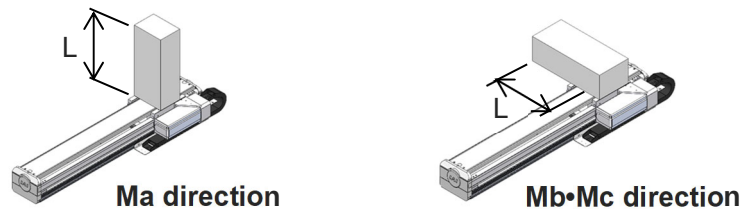
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

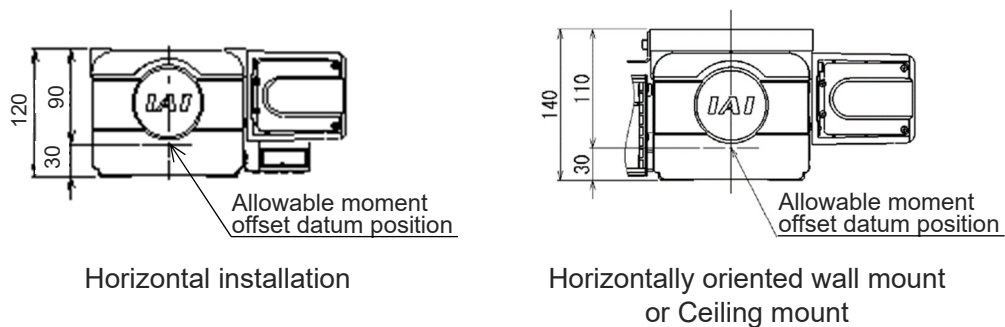
| Item                                   | Content                                                               |
|----------------------------------------|-----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 20\text{mm}$ , Rolled C5 or equivalent               |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                   |
| Lost Motion                            | 0.02mm or less                                                        |
| Base                                   | Material: Aluminum, White Anodized                                    |
| Allowable static moment                | Ma direction: 774 N•m, Mb direction: 1106 N•m, Mc direction: 1566 N•m |
| Allowable dynamic moment (*1)          | Ma direction: 162 N•m, Mb direction: 231 N•m, Mc direction: 327 N•m   |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                      |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                             |

• Overhang load length guideline: 900mm or less

(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length ( $L = 900\text{mm}$  or less)**

\* For calculation of  $M_a$  and  $M_c$  moments, take the position pointed with an arrow as the datum.

**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

**[5] NSA-LXMXS****[Lead and Payload]**

| Lead<br>(mm) | Max. Payload    | Rated Thrust (N) |
|--------------|-----------------|------------------|
|              | Horizontal (kg) |                  |
| 40           | 40              | 169.6            |
| 20           | 80              | 339.1            |

**[Stroke and Max. Speed]**

Unit: mm/s

| Lead<br>(mm) | Stroke 2300 to 3000mm<br>(Every 50mm) |
|--------------|---------------------------------------|
| 40           | 2400                                  |
| 20           | 1300                                  |

**Caution**

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.  

$$\text{Minimum speed [mm/s]} = \text{ball screw lead [mm/r]} \div 131072 \text{ [p/r]} \times 1000 \text{ [1/s]}$$
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

**[Payload by Acceleration/Deceleration]**

At low load capacity, the acceleration/deceleration can be increased.

| Lead 40                       |     |     |     |     |     |     | Lead 20                       |     |     |     |     |     |     |
|-------------------------------|-----|-----|-----|-----|-----|-----|-------------------------------|-----|-----|-----|-----|-----|-----|
| Acceleration/Deceleration (G) |     |     |     |     |     |     | Acceleration/Deceleration (G) |     |     |     |     |     |     |
| 0.3                           | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 0.3                           | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
| 40                            | 30  | 20  | 15  | 10  | 7   | —   | 80                            | 60  | 40  | 30  | 20  | 15  | 7   |
| (Unit: kg)                    |     |     |     |     |     |     | (Unit: kg)                    |     |     |     |     |     |     |

**Caution**

- Do not attempt to configure settings for acceleration/deceleration above the specifications.

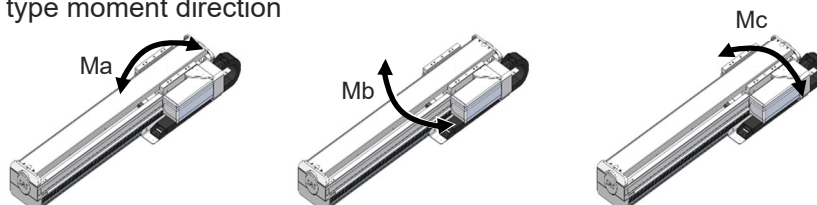
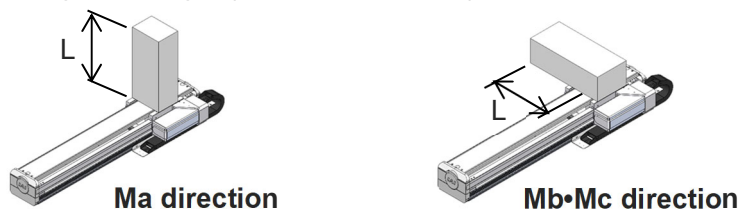
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

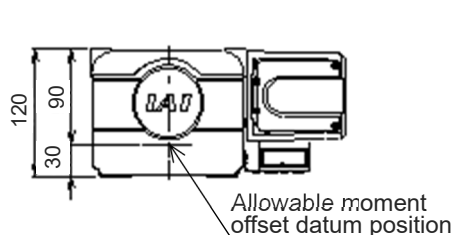
| Item                                   | Content                                                               |
|----------------------------------------|-----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 20\text{mm}$ , Rolled C5 or equivalent               |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                   |
| Lost Motion                            | 0.02mm or less                                                        |
| Base                                   | Material: Aluminum, White Anodized                                    |
| Allowable static moment                | Ma direction: 774 N·m, Mb direction: 1106 N·m, Mc direction: 1566 N·m |
| Allowable dynamic moment (*1)          | Ma direction: 162 N·m, Mb direction: 231 N·m, Mc direction: 327 N·m   |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                      |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                             |

• Overhang load length guideline: 900mm or less

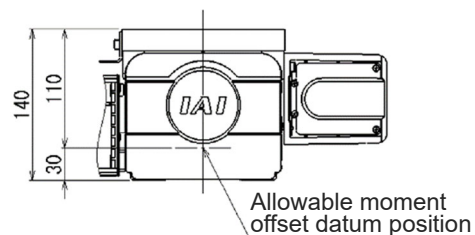
(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length (L = 900mm or less)**

\* For calculation of Ma and Mc moments, take the position pointed with an arrow as the datum.



Horizontal installation

Horizontally oriented wall mount  
or Ceiling mount**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

**[6] NSA-LXMXM****[Lead and Payload]**

| Lead (mm) | Max. Payload    | Rated Thrust (N) |
|-----------|-----------------|------------------|
|           | Horizontal (kg) |                  |
| 40        | 40              | 169.6            |
| 20        | 80              | 339.1            |

**[Stroke and Max. Speed]**

Unit: mm/s

| Lead (mm) | Stroke 2300 to 2700mm (Every 50mm) |
|-----------|------------------------------------|
| 40        | 2400                               |
| 20        | 1300                               |

**Caution**

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.  

$$\text{Minimum speed [mm/s]} = \text{ball screw lead [mm/r]} \div 131072 \text{ [p/r]} \times 1000 \text{ [1/s]}$$
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

**[Payload by Acceleration/Deceleration]**

At low load capacity, the acceleration/deceleration can be increased.

| Lead 40                       |     |     |     |     |     |     | Lead 20                       |     |     |     |     |     |     |
|-------------------------------|-----|-----|-----|-----|-----|-----|-------------------------------|-----|-----|-----|-----|-----|-----|
| Acceleration/Deceleration (G) |     |     |     |     |     |     | Acceleration/Deceleration (G) |     |     |     |     |     |     |
| 0.3                           | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 0.3                           | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
| 40                            | 30  | 20  | 15  | 10  | 7   | —   | 80                            | 60  | 40  | 30  | 20  | 15  | 7   |

(Unit: kg)

(Unit: kg)

**Caution**

- Do not attempt to configure settings for acceleration/deceleration above the specifications.

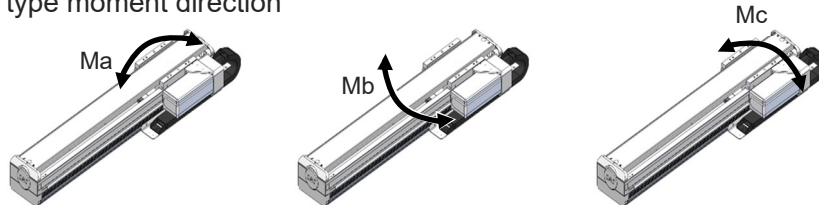
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

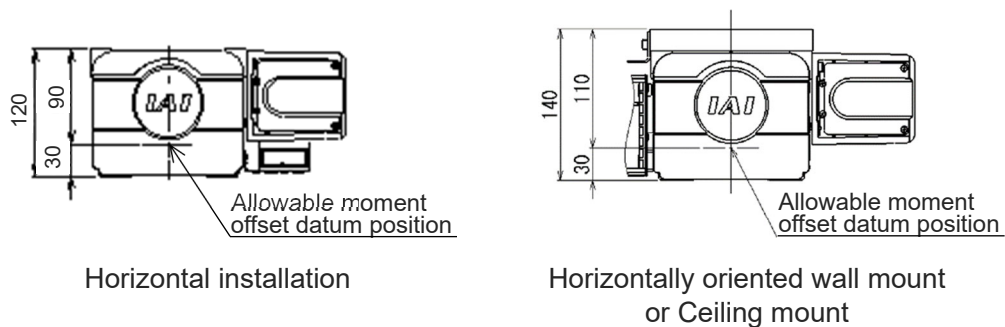
| Item                                   | Content                                                               |
|----------------------------------------|-----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 20\text{mm}$ , Rolled C5 or equivalent               |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                   |
| Lost Motion                            | 0.02mm or less                                                        |
| Base                                   | Material: Aluminum, White Anodized                                    |
| Allowable static moment                | Ma direction: 774 N•m, Mb direction: 1106 N•m, Mc direction: 1566 N•m |
| Allowable dynamic moment (*1)          | Ma direction: 162 N•m, Mb direction: 231 N•m, Mc direction: 327 N•m   |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                      |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                             |

• Overhang load length guideline: 900mm or less

(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length (L = 900mm or less)**

\* For calculation of Ma and Mc moments, take the position pointed with an arrow as the datum.

**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

## [7] NSA-WXMS

## [Lead and Payload]

| Lead<br>(mm) | Max. Payload    | Rated Thrust (N) |
|--------------|-----------------|------------------|
|              | Horizontal (kg) |                  |
| 50           | 60              | 225.3            |
| 25           | 120             | 510.6            |

## [Stroke and Max. Speed]

Unit: mm/s

| Lead<br>(mm) | Stroke 650 to 2300mm<br>(Every 50mm) |
|--------------|--------------------------------------|
| 50           | 2500                                 |
| 25           | 1300                                 |

**Caution**

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.  

$$\text{Minimum speed [mm/s]} = \text{ball screw lead [mm/r]} \div 131072 \text{ [p/r]} \times 1000 \text{ [1/s]}$$
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

**[Payload by Acceleration/Deceleration]**

At low load capacity, the acceleration/deceleration can be increased.

Lead 50

| Acceleration/Deceleration<br>(G) |     |     |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| 0.3                              | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| 60                               | 45  | 35  | 29  | 22  | 17  | 12  | —   |

(Unit: kg)

Lead 25

| Acceleration/Deceleration<br>(G) |     |     |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| 0.3                              | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| 120                              | 90  | 70  | 52  | 40  | 29  | 20  | 11  |

(Unit: kg)

**Caution**

- Do not attempt to configure settings for acceleration/deceleration above the specifications.

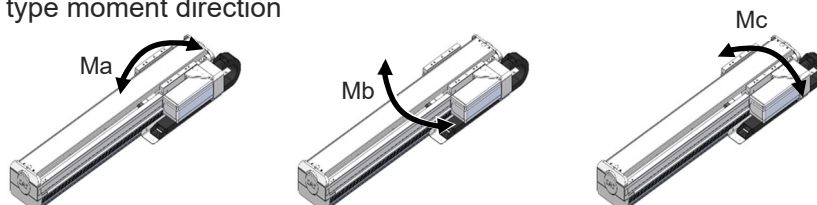
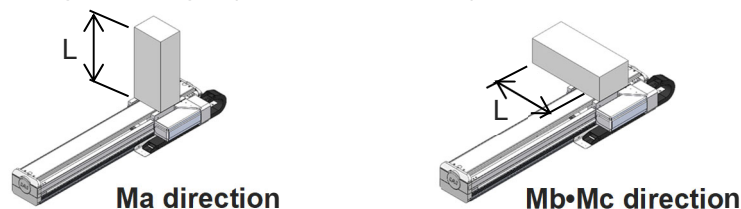
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

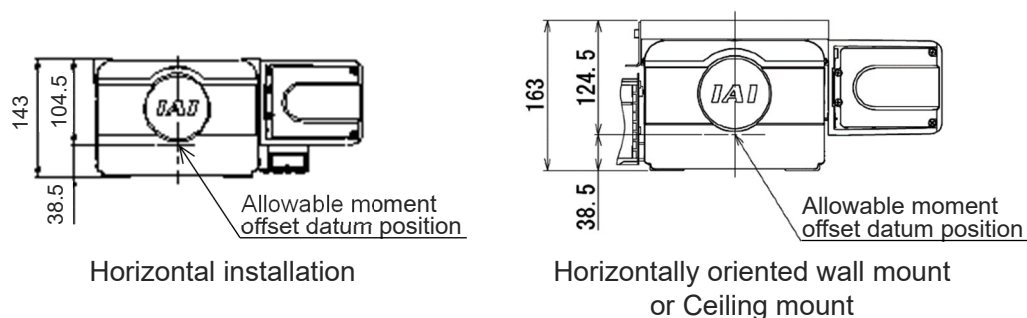
| Item                                   | Content                                                               |
|----------------------------------------|-----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 25\text{mm}$ , Rolled C5 or equivalent               |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                   |
| Lost Motion                            | 0.02mm or less                                                        |
| Base                                   | Material: Aluminum, White Anodized                                    |
| Allowable static moment                | Ma direction: 774 N•m, Mb direction: 1106 N•m, Mc direction: 2175 N•m |
| Allowable dynamic moment (*1)          | Ma direction: 162 N•m, Mb direction: 231 N•m, Mc direction: 455 N•m   |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                      |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                             |

• Overhang load length guideline: 900mm or less

(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length (L = 900mm or less)**

\* For calculation of  $M_a$  and  $M_c$  moments, take the position pointed with an arrow as the datum.

**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

**[8] NSA-WXMM****[Lead and Payload]**

| Lead<br>(mm) | Max. Payload    | Rated Thrust (N) |
|--------------|-----------------|------------------|
|              | Horizontal (kg) |                  |
| 50           | 60              | 255.3            |
| 25           | 120             | 510.6            |

**[Stroke and Max. Speed]**

Unit: mm/s

| Lead<br>(mm) | Stroke 300 to 2300mm<br>(Every 50mm) |
|--------------|--------------------------------------|
| 50           | 2500                                 |
| 25           | 1300                                 |

**Caution**

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.  

$$\text{Minimum speed [mm/s]} = \text{ball screw lead [mm/r]} \div 131072 \text{ [p/r]} \times 1000 \text{ [1/s]}$$
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

**[Payload by Acceleration/Deceleration]**

At low load capacity, the acceleration/deceleration can be increased.

Lead 50

| Acceleration/Deceleration<br>(G) |     |     |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| 0.3                              | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| 60                               | 45  | 35  | 29  | 22  | 17  | 12  | —   |

(Unit: kg)

Lead 25

| Acceleration/Deceleration<br>(G) |     |     |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| 0.3                              | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| 120                              | 90  | 70  | 52  | 40  | 29  | 20  | 11  |

(Unit: kg)

**Caution**

- Do not attempt to configure settings for acceleration/deceleration above the specifications.

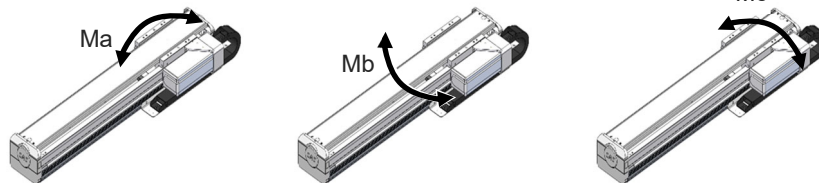
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

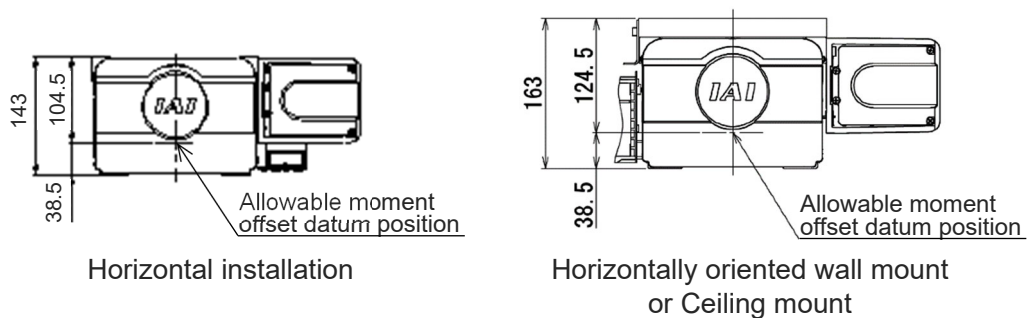
| Item                                   | Content                                                               |
|----------------------------------------|-----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 25\text{mm}$ , Rolled C5 or equivalent               |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                   |
| Lost Motion                            | 0.02mm or less                                                        |
| Base                                   | Material: Aluminum, White Anodized                                    |
| Allowable static moment                | Ma direction: 774 N•m, Mb direction: 1106 N•m, Mc direction: 2175 N•m |
| Allowable dynamic moment (*1)          | Ma direction: 162 N•m, Mb direction: 231 N•m, Mc direction: 455 N•m   |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                      |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                             |

• Overhang load length guideline: 900mm or less

(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length ( $L = 900\text{mm}$  or less)**

\* For calculation of  $M_a$  and  $M_c$  moments, take the position pointed with an arrow as the datum.

**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

**[9] NSA-WXMXS****[Lead and Payload]**

| Lead<br>(mm) | Max. Payload    | Rated Thrust (N) |
|--------------|-----------------|------------------|
|              | Horizontal (kg) |                  |
| 50           | 60              | 255.3            |
| 25           | 120             | 510.6            |

**[Stroke and Max. Speed]**

Unit: mm/s

| Lead<br>(mm) | Stroke 2350 to 3000mm<br>(Every 50mm) |
|--------------|---------------------------------------|
| 50           | 2500                                  |
| 25           | 1300                                  |

**Caution**

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.  

$$\text{Minimum speed [mm/s]} = \text{ball screw lead [mm/r]} \div 131072 \text{ [p/r]} \times 1000 \text{ [1/s]}$$
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

**[Payload by Acceleration/Deceleration]**

At low load capacity, the acceleration/deceleration can be increased.

Lead 50

| Acceleration/Deceleration<br>(G) |     |     |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| 0.3                              | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| 60                               | 45  | 35  | 29  | 22  | 17  | 12  | —   |

(Unit: kg)

Lead 25

| Acceleration/Deceleration<br>(G) |     |     |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| 0.3                              | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| 120                              | 90  | 70  | 52  | 40  | 29  | 20  | 11  |

(Unit: kg)

**Caution**

- Do not attempt to configure settings for acceleration/deceleration above the specifications.

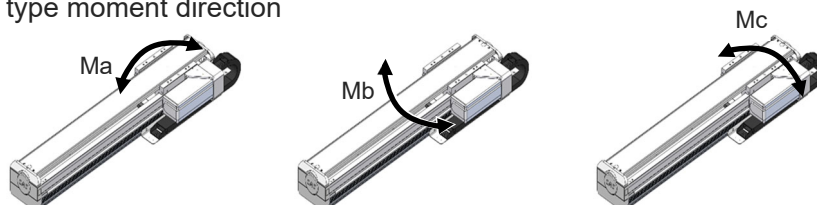
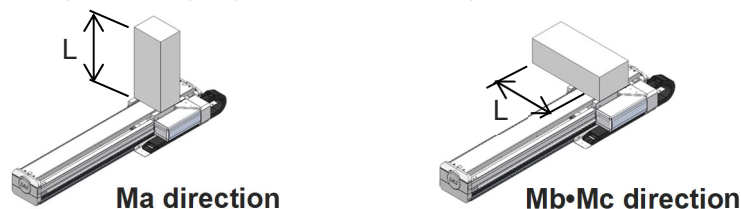
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

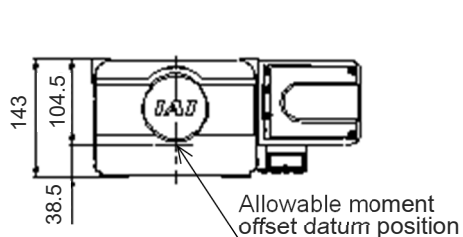
| Item                                   | Content                                                               |
|----------------------------------------|-----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 25\text{mm}$ , Rolled C5 or equivalent               |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                   |
| Lost Motion                            | 0.02mm or less                                                        |
| Base                                   | Material: Aluminum, White Anodized                                    |
| Allowable static moment                | Ma direction: 774 N•m, Mb direction: 1106 N•m, Mc direction: 2175 N•m |
| Allowable dynamic moment (*1)          | Ma direction: 162 N•m, Mb direction: 231 N•m, Mc direction: 455 N•m   |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                      |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                             |

• Overhang load length guideline: 900mm or less

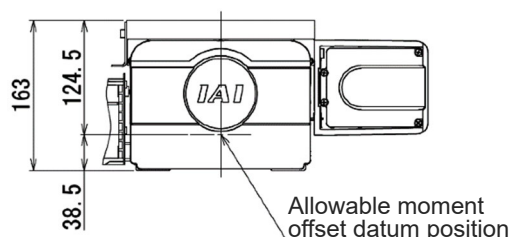
(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length (L = 900mm or less)**

\* For calculation of  $M_a$  and  $M_c$  moments, take the position pointed with an arrow as the datum.



Horizontal installation

Horizontally oriented wall mount  
or Ceiling mount**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

**[10] NSA-WXMXM****[Lead and Payload]**

| Lead (mm) | Max. Payload    | Rated Thrust (N) |
|-----------|-----------------|------------------|
|           | Horizontal (kg) |                  |
| 50        | 60              | 255.3            |
| 25        | 120             | 510.6            |

**[Stroke and Max. Speed]**

Unit: mm/s

| Lead (mm) | Stroke 2350 to 2650mm (Every 50mm) |
|-----------|------------------------------------|
| 50        | 2500                               |
| 25        | 1300                               |

**Caution**

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting at or below the minimum speed may lead to abnormal noise or unstable speeds. Do not attempt to set below the minimum speed.
- The minimum speed can be calculated with the equation below.  

$$\text{Minimum speed [mm/s]} = \text{ball screw lead [mm/r]} \div 131072 \text{ [p/r]} \times 1000 \text{ [1/s]}$$
 (mm/r: movement per 1 motor revolution, p/r: pulse per 1 motor revolution)

[Payload by Acceleration/Deceleration]

At low load capacity, the acceleration/deceleration can be increased.

Lead 50

| Acceleration/Deceleration<br>(G) |     |     |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| 0.3                              | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| 60                               | 45  | 35  | 29  | 22  | 17  | 12  | —   |

(Unit: kg)

Lead 25

| Acceleration/Deceleration<br>(G) |     |     |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| 0.3                              | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| 120                              | 90  | 70  | 52  | 40  | 29  | 20  | 11  |

(Unit: kg)



**Caution**

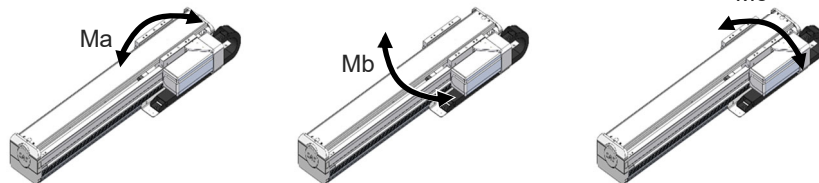
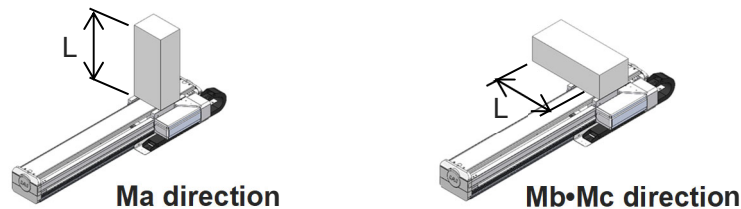
- Do not attempt to configure settings for acceleration/deceleration above the specifications.  
This may lead to vibration, breakdown, or shortened product life.

**[Actuator Specifications]**

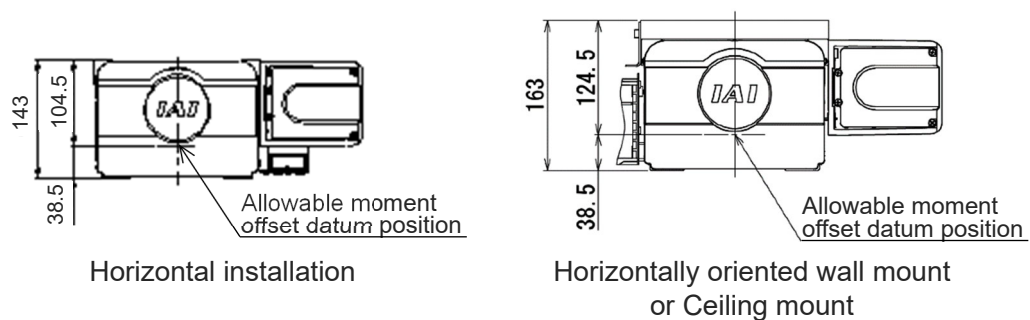
| Item                                   | Content                                                               |
|----------------------------------------|-----------------------------------------------------------------------|
| Drive System                           | Ball Screw $\phi 25\text{mm}$ , Rolled C5 or equivalent               |
| Positioning Repeatability              | $\pm 0.01\text{mm}$                                                   |
| Lost Motion                            | 0.02mm or less                                                        |
| Base                                   | Material: Aluminum, White Anodized                                    |
| Allowable static moment                | Ma direction: 774 N•m, Mb direction: 1106 N•m, Mc direction: 2175 N•m |
| Allowable dynamic moment (*1)          | Ma direction: 162 N•m, Mb direction: 231 N•m, Mc direction: 455 N•m   |
| No. of Encoder Pulses                  | 131072 pulse/rev                                                      |
| Ambient operating temperature/humidity | 0 to 40°C, 85%RH or less (Non-condensing)                             |

• Overhang load length guideline: 900mm or less

(\*1) For reference rated life of 10000km. The running life differs according to operation conditions and mounting status.

**Slider type moment direction****Slider type overhang load length ( $L = 900\text{mm}$  or less)**

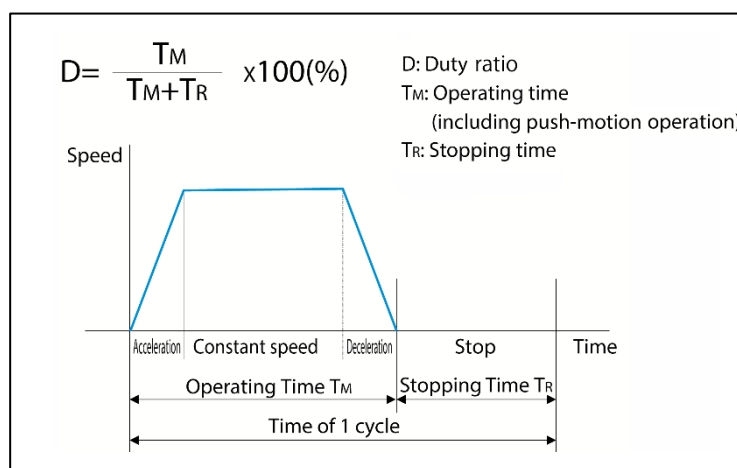
\* For calculation of  $M_a$  and  $M_c$  moments, take the position pointed with an arrow as the datum.

**Caution**

- If the actuator is used with excessive allowable moment and overhang load, it may not only lead to abnormal noise and vibration but also significantly reduce the life of the actuator.

### 1.2.2 Duty ratio

The duty ratio is the operating rate, shown in percent (%), of the actuator operating time within one cycle.



As the reference for duty ratio available to use may differ depending on the operation conditions (payload, acceleration / deceleration, etc.), it is necessary to figure out the load factor LF using the calculation formulae below and find it out from the table.

#### 1) Figure out the load factor LF using the calculation formulae below.

Maximum payload at the acceleration 0.3G is described in 1.2 Specifications.

|                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>[When indicated acceleration / deceleration is at acceleration / deceleration 0.3G or below]</p> <p>Load Factor: <math>LF = \frac{M \times \alpha}{M_r \times 0.3} [\%]</math></p> <p>Max. Payload at Acceleration 0.3G : M<sub>r</sub> [kg]</p> <p>Payload during Operation : M [kg]</p> <p>Acceleration during Operation : α [G]</p> | <p>[When indicated acceleration / deceleration is at acceleration / deceleration 0.3G or above]</p> <p>Load Factor: <math>LF = \frac{M \times \alpha}{M_d \times \alpha} = \frac{M}{M_d} [\%]</math></p> <p>Payload at Indicated Acceleration : M<sub>d</sub> [kg]</p> <p>Payload during Operation : M [kg]</p> <p>Acceleration during Operation : α [G]</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 2) Calculate the reference of duty ratio from the table below for those except for M size lead 30.

For M size lead 30, have the operation with the duty ratio at 50% regardless of the ratio of load.

| Load Factor: LF | 100% | 90% | 80% | 70% | 60% | 50% or less |
|-----------------|------|-----|-----|-----|-----|-------------|
| Duty Ratio      | 50%  | 56% | 63% | 70% | 78% | 100%        |

\* The figures are under a condition of use regardless of the acceleration/deceleration time ratio.

## 1.3 Option

### 1.3.1 AQ seal (Model: AQ)

The AQ seal is a lubrication unit that uses a lubricating member made of resin-solidified lubricating oil.

The AQ seal is a porous member containing a lot of lubricating oil, so lubricating oil oozes out to the surface by means of capillary phenomenon.

When the AQ seal is pressed against the guide and ball screw surface (steel-ball rolling surface), lubricating oil is supplied and this, combined with use of grease, keeps the actuator maintenance-free for a long time.

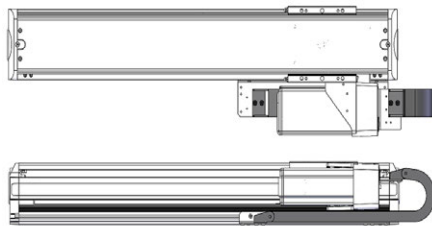
### 1.3.2 Reversed-home specification (Model: NM)

Normally, the home position is at the point shown as “Home Position” in the appearance drawing, however, it is available to make it opposite (“S.E” in appearance drawing) due to the layout of the equipment and so on.

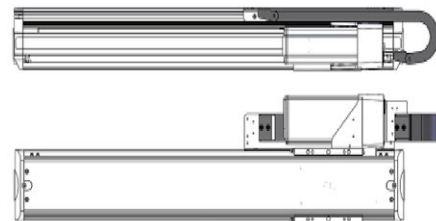
(As the home position is adjusted before the product is shipped out, thus it is necessary to have an adjustment in case it is required to change the homing method after it is delivered.)

### 1.3.3 Standard cable carrier attachment orientations (Model: CT3, CT4)

There are two types to choose from for the way to attach a cable carrier.



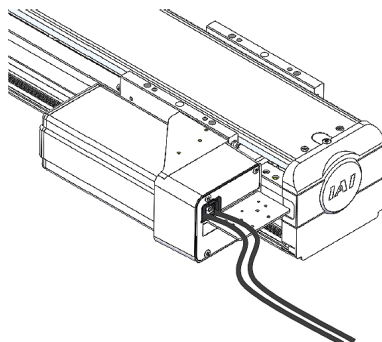
Attachment orientations 3  
(Standard)  
Standard Cable Carrier: CT3



Attachment orientations 4  
(Standard, with reversed)  
Standard Cable Carrier: CT4

### 1.3.4 With no cable carrier (Model: NT3, NT4)

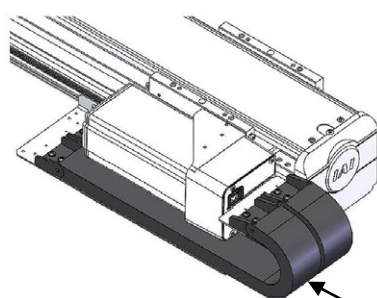
It shows the case when there is no cable carrier. For the orientation of the ejection, NT3 should be the orientation (standard) and NT4 should be the orientation (standard, with reversed).



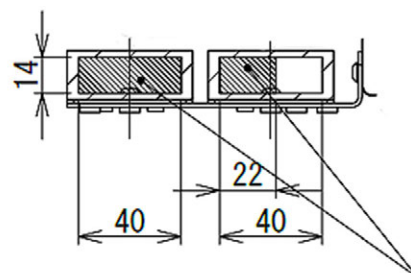
### 1.3.5 Orientation of ejection for user cable carrier (Model: UM3, UM4)

If the capacity of the standard cables is not enough, it is available to increase the number of cable carriers.

For the orientation of the ejection, NT3 should be the orientation (standard) and NT4 should be the orientation (standard, with reversed).



Extended cable carrier



Space available for user

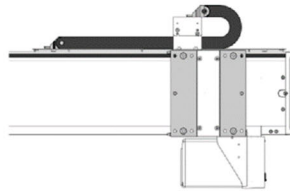
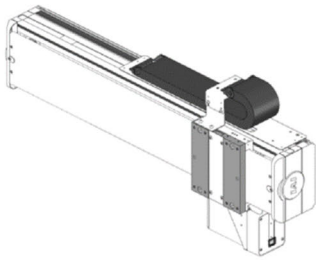
### 1.3.6 Orientation for extension cable carrier attachment (Model: ET5, ET6, ET7, ET8)

Select the orientation to attach the cable carrier in the horizontally oriented wall mount or ceiling mount.

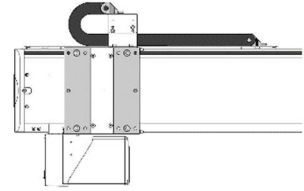
For the horizontally oriented wall mount, ET5 represents the direction (Standard) and ET6 represents the direction (Opposite).

For the ceiling mount, ET7 represents the direction (Standard) and ET8 represents the direction (Opposite).

#### Horizontally oriented wall mount

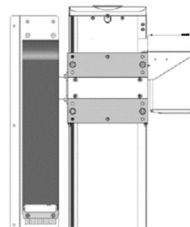
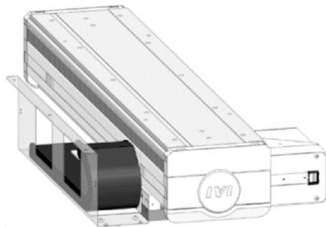


Attachment orientations 5  
(Standard)  
Model: ET5

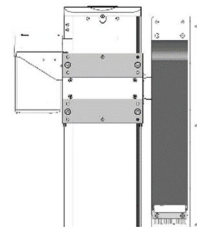


Attachment orientations 6  
(Mounted opposite)  
Model: ET6

#### Ceiling mount



Attachment orientations 7  
(Standard)  
Model: ET7



Attachment orientations 8  
(Mounted opposite)  
Model: ET8

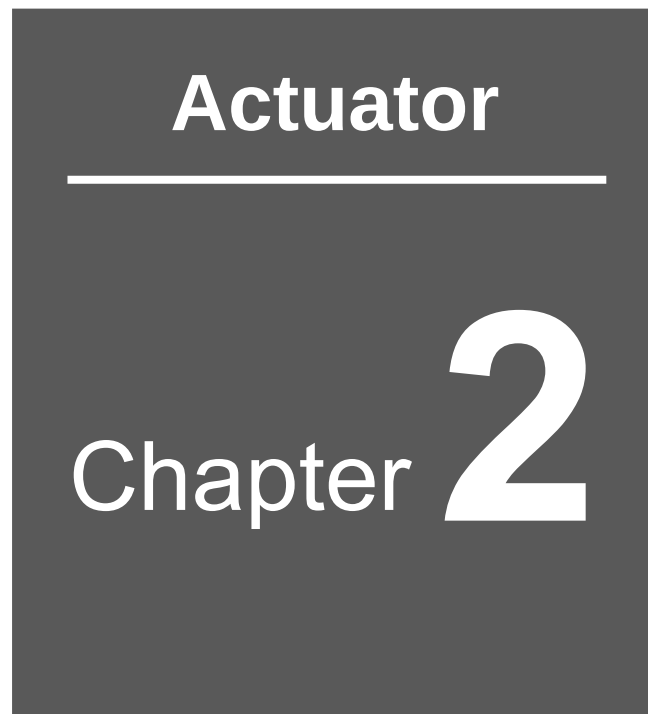
### 1.3.7 Hanging Bracket (Model: EB)

It is an option to enable to attach eye bolts at four places on an actuator and lift the actuator up for transportation.

There are eye bolts, attachment brackets, hex socket head cap screws and hex nuts enclosed.

Refer to 2.1.1 Handling of the actuator [Transportation Using Hanging Bracket].





# Installation

|       |                                                   |      |
|-------|---------------------------------------------------|------|
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| 2.1.2 | Handling of combined axes                         | 2-6  |
| 2.2   | Installation and storage/preservation environment | 2-8  |
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| 2.2.2 | Storage/preservation environment                  | 2-9  |
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| 2.3.5 | Installation of Connector Box and T-shape Slot    | 2-18 |
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## 2.1 Precautions for transportation

### 2.1.1 Handling of the actuator

#### [Handling the package]

Each axis should be packaged separately unless otherwise specified.

- 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.
- Transport a heavy package with at least more than two operators. Consider an appropriate method for transportation.
- Keep the unit in a horizontal orientation when placing it on the ground or transporting. 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.

#### [Handling after unpacking]

- Do not carry the actuator by its motor unit or its cable or attempt to move it by pulling the cable.
- Hold the base part of the body when transporting the actuator main body.  
Do not attempt to carry the unit by holding either the screw cover, motor cover, pulley housing, reversing bracket, guide rails or end cover only.
- Do not hit or drop the actuator during transportation.  
Especially, pay higher attention to the motor cover, pulley housing, cable carrier and guide rails.
- Do not attempt to force any part of the actuator.

For the names of each part, refer to "Names of the Parts" on page Intro-11.

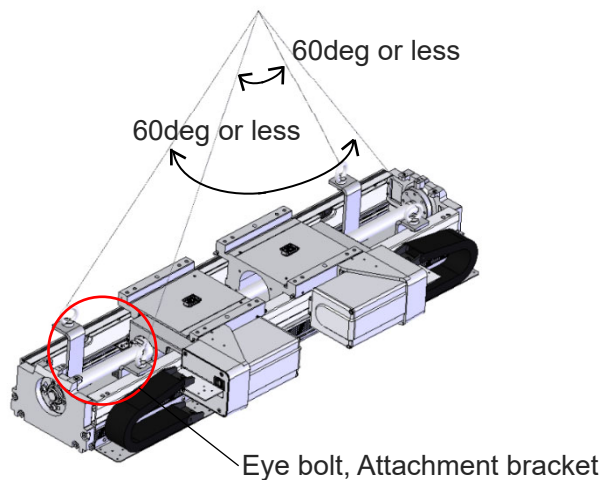
**[Transportation Using Hanging Bracket (Option model : EB)]**

Subject Models : NSA-LXMS/LXMM/LXMXS/LXMXM/WXMS/WXMM/WXMXS/WXMXM

When handling an actuator after taking it out of the package, attach the enclosed hanging brackets on the body and lift it up on a crane using four points of brackets with four ropes. Follow the caution note below to carry the actuator.

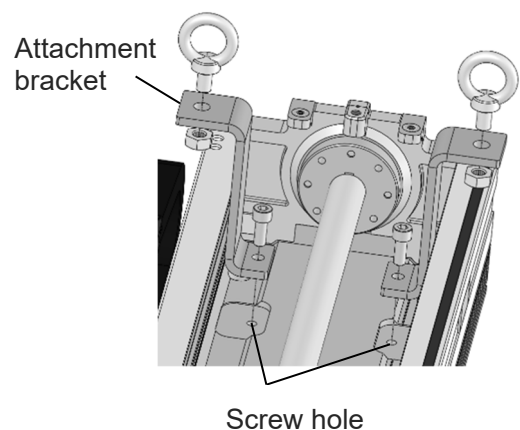
Take off the hanging brackets after transportation is complete.

- 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.



[Enclosure]

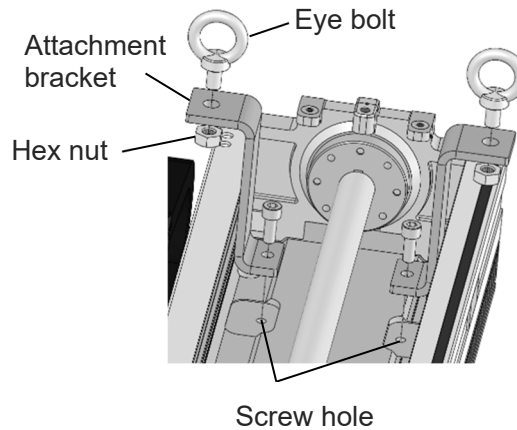
| Components                      | Quantity |
|---------------------------------|----------|
| Attachment bracket              | 4        |
| Eye bolt M10                    | 4        |
| Hex Nut M10                     | 4        |
| Hex Socket Head Cap Screw M8×20 | 4        |



### ■How to Attach Hanging Bracket

Attach the hanging brackets at four places following the procedures below.

1. Take off the end cover and the screw cover.  
For how to take the screw cover off, refer to How to Inspect Inside in [4.3 Visual Inspection Items Internal Visual Inspection]
2. Move the slider to the center.
3. Fix the attachment bracket with a screw at the screw hole on the base.  
Screw to be Used : Hex Socket Head Cap Screw M8×20...Each 1 pieces  
Recommended Tightening Torque : 23 N·m (2.35Kgf·m)  
Refer to [Dimensions with Hanging Brackets Attached] described in the following for the position of the screw holes

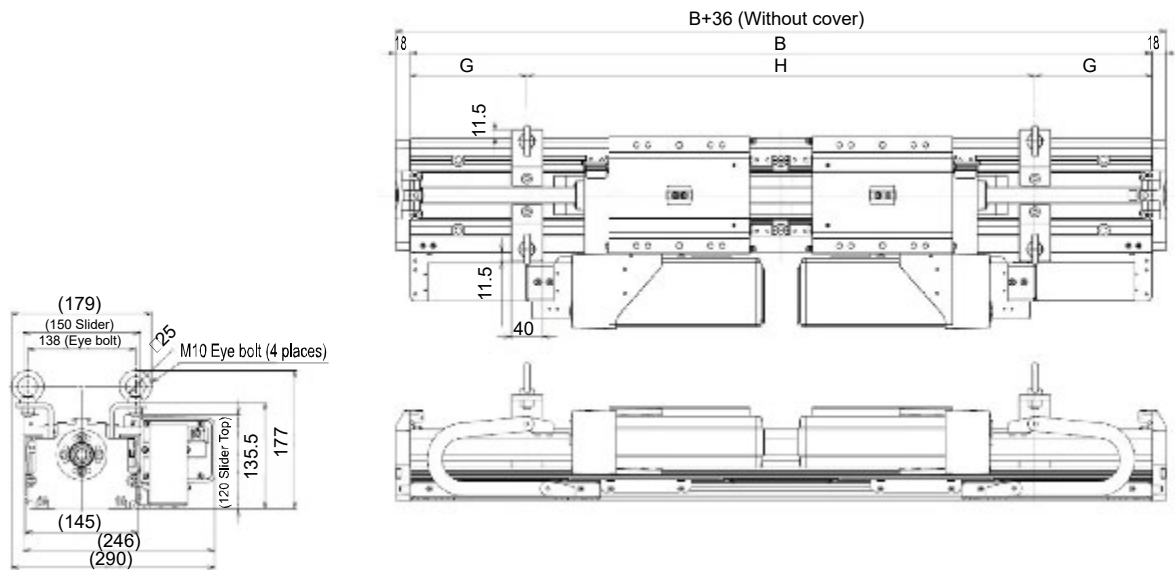


4. Affix the eye bolt using the hex nut on the attachment bracket.  
Tighten up the eye bolt so the seat surface of it sits on the attachment bracket tightly.  
Adjust the orientation of the eye bolt as required.

## 2.1 Precautions for transportation

### ■ Dimensions with Hanging Brackets Attached

#### ◆ NSA-LXMS/LXMM/LXMXS/LXMXM



#### ● NSA-LXMS/LXMM

ST : Stroke

| ST | LXMS | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 | 1150 | 1200 | 1250 | 1300 |
|----|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|
|    | LXMM | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700  | 750  | 800  | 850  | 900  | 950  | 1000 |
| G  |      | 125 | 150 | 175 | 200 | 220 | 230 | 230 | 230 | 295  | 295  | 295  | 300  | 310  | 320  | 330  |
| H  |      | 650 | 650 | 650 | 650 | 660 | 690 | 740 | 790 | 710  | 760  | 810  | 850  | 880  | 910  | 940  |

| ST | LXMS | 1350 | 1400 | 1450 | 1500 | 1550 | 1600 | 1650 | 1700 | 1750 | 1800 | 1850 | 1900 | 1950 | 2000 | 2050 |
|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|    | LXMM | 1050 | 1100 | 1150 | 1200 | 1250 | 1300 | 1350 | 1400 | 1450 | 1500 | 1550 | 1600 | 1650 | 1700 | 1750 |
| G  |      | 350  | 360  | 370  | 380  | 390  | 400  | 410  | 420  | 430  | 425  | 425  | 425  | 495  | 495  | 500  |
| H  |      | 950  | 980  | 1010 | 1040 | 1070 | 1100 | 1130 | 1160 | 1190 | 1250 | 1300 | 1350 | 1260 | 1310 | 1350 |

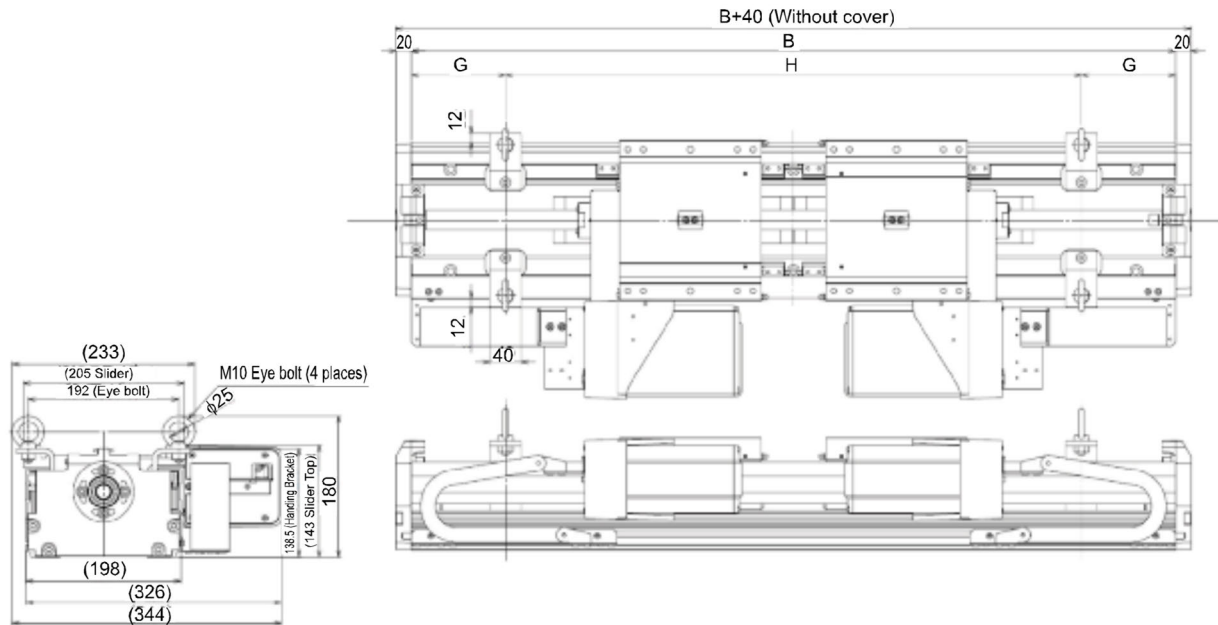
| ST | LXMS | 2100 | 2150 | 2200 | 2250 | -    | -    | -    | -    | -    | -    |
|----|------|------|------|------|------|------|------|------|------|------|------|
|    | LXMM | 1800 | 1850 | 1900 | 1950 | 2000 | 2050 | 2100 | 2150 | 2200 | 2250 |
| G  |      | 510  | 520  | 530  | 540  | 580  | 590  | 580  | 590  | 600  | 610  |
| H  |      | 1380 | 1410 | 1440 | 1470 | 1440 | 1470 | 1540 | 1570 | 1600 | 1630 |

#### ● NSA-LXMXS/LXMXM

ST : Stroke

| ST | LXMXS | 2300 | 2350 | 2400 | 2450 | 2500 | 2550 | 2600 | 2650 | 2700 | 2750 | 2800 | 2850 | 2900 | 2950 | 3000 |
|----|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|    | LXMXM | -    | -    | -    | -    | -    | -    | 2300 | 2350 | 2400 | 2450 | 2500 | 2550 | 2600 | 2650 | 2700 |
| G  |       | 580  | 590  | 600  | 610  | 620  | 630  | 630  | 630  | 630  | 695  | 695  | 700  | 710  | 720  | 730  |
| H  |       | 1540 | 1570 | 1600 | 1630 | 1660 | 1690 | 1740 | 1790 | 1840 | 1760 | 1810 | 1850 | 1880 | 1910 | 1940 |

## ◆NSA-WXMS/WXMM/WXMXS/WXMXM



## ● NSA-WXMS/WXMM

ST : Stroke

| ST | WXMS | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 | 1150 | 1200 | 1250 | 1300 | 1350 |
|----|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|
|    | WXMM | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650  | 700  | 750  | 800  | 850  | 900  | 950  | 1000 |
| G  |      | 115 | 135 | 155 | 175 | 195 | 195 | 195 | 210  | 210  | 290  | 310  | 320  | 330  | 340  | 350  |
| H  |      | 745 | 755 | 765 | 775 | 785 | 835 | 885 | 905  | 955  | 845  | 855  | 885  | 915  | 945  | 975  |

| ST | WXMS | 1400 | 1450 | 1500 | 1550 | 1600 | 1650 | 1700 | 1750 | 1800 | 1850 | 1900 | 1950 | 2000 | 2050 | 2100 |
|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|    | WXMM | 1050 | 1100 | 1150 | 1200 | 1250 | 1300 | 1350 | 1400 | 1450 | 1500 | 1550 | 1600 | 1650 | 1700 | 1750 |
| G  |      | 360  | 370  | 380  | 390  | 410  | 410  | 410  | 410  | 490  | 490  | 490  | 490  | 490  | 500  | 520  |
| H  |      | 1005 | 1035 | 1065 | 1095 | 1105 | 1155 | 1205 | 1255 | 1145 | 1195 | 1245 | 1295 | 1345 | 1375 | 1385 |

| ST | WXMS | 2150 | 2200 | 2250 | 2300 | -    | -    | -    | -    | -    | -    | -    |
|----|------|------|------|------|------|------|------|------|------|------|------|------|
|    | WXMM | 1800 | 1850 | 1900 | 1950 | 2000 | 2050 | 2100 | 2150 | 2200 | 2250 | 2300 |
| G  |      | 530  | 540  | 550  | 560  | 570  | 580  | 590  | 600  | 610  | 610  | 610  |
| H  |      | 1415 | 1445 | 1475 | 1505 | 1535 | 1565 | 1595 | 1625 | 1655 | 1705 | 1755 |

## ● NSA-WXMXS/WXMXM

ST : Stroke

| ST | WXMXS | 2350 | 2400 | 2450 | 2500 | 2550 | 2600 | 2650 | 2700 | 2750 | 2800 | 2850 | 2900 | 2950 | 3000 |
|----|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|    | WXMXM | -    | -    | -    | -    | -    | -    | -    | 2350 | 2400 | 2450 | 2500 | 2550 | 2600 | 2650 |
| G  |       | 590  | 600  | 610  | 610  | 610  | 610  | 690  | 690  | 690  | 690  | 700  | 710  | 720  | 740  |
| H  |       | 1595 | 1625 | 1655 | 1705 | 1755 | 1805 | 1695 | 1745 | 1795 | 1845 | 1875 | 1905 | 1935 | 1945 |

### 2.1.2 Handling of combined axes

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#### [Handling the package]

The combined axes are delivered in a package that the frame is nailed on the lumber base. The sliders are fixed so they would not accidentally move. The actuators are also fixed so the end of it would not shake due to the external vibration.

- Do not hit or drop the package. No special treatment is conducted on this package to endure a drop or impact on it.
- Do not attempt to carry a heavy package with only one worker. Also, have an appropriate method for transportation.
- When hanging up with ropes, support on the reinforcement frame on the bottom of the lumber base. When bringing up the package with a forklift, also support on the bottom of the lumber base.
- Handle with care when putting the package down to avoid impact or bounce.
- Do not step on the package.
- Do not put anything on the package that could deform or damage it.

#### [Handling after unpacking]

- Affix the slider so it would not move unexpectedly during transportation.
- If the end of an actuator is overhanging, have an appropriate way to fix it to avoid shake due to the external vibration.
- In the transportation without the end being fixed, do not apply any impact with 0.3G or more.
- When hanging up with ropes, have appropriate cushioning to avoid any deformation of the actuator body. Also keep it in stable horizontal orientation. If necessary, utilize the screw holes for attachment equipped on the bottom of the base so you can hook up a tool that you build to hang up the unit.
- Do not attempt to apply load on the actuators or the connector box. Also pay attention not to pinch cables and bend or deform them forcefully.
- As the cable carrier and cables are not fixed for the ceiling mount type, fix them temporarily in case of transportation.

**[Handling when assembled into machinery (system)]**

Pay attention to the followings when an actuator is assembled in a machinery equipment (system) and transported together in the whole equipment.

- Affix the slider so it would not move unexpectedly during transportation.
- If the end of an actuator is overhanging, have an appropriate way to fix it to avoid shake due to the external vibration.
- In the transportation without the end being fixed, do not apply any impact with 0.3G or more.
- When hanging up the machinery equipment (system) with ropes, do not attempt to apply load on the actuators or the connector box. Also pay attention not to pinch cables and bend or deform them forcefully.
- Do not hit or drop the package.

The package is not applied with any special treatment that enables it to resist an impact caused by a drop or crash.

- Keep the unit in horizontal orientation for stationary positioning or transportation.
- Do not step on the package.
- Do not put anything on the package that could deform or damage it.

## 2.2 Installation and storage/preservation environment

Usage is possible in environments of pollution degree 3 or equivalent.

Pollution degree 3: Conductive pollution or dry nonconductive pollution, which could become conductive due to expected condensation (IEC60664-1)

### 2.2.1 Installation environment

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 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 actuator is subject to splashed water, oil (including oil mist or cutting fluid) or chemical solutions
- Where the actuator receives impact or vibration
- Where the altitude is more than 2,000m

Provide sufficient work space for the following maintenance and inspection:

- Space to replenish grease
- Space to replace components such as the motor

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

- 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

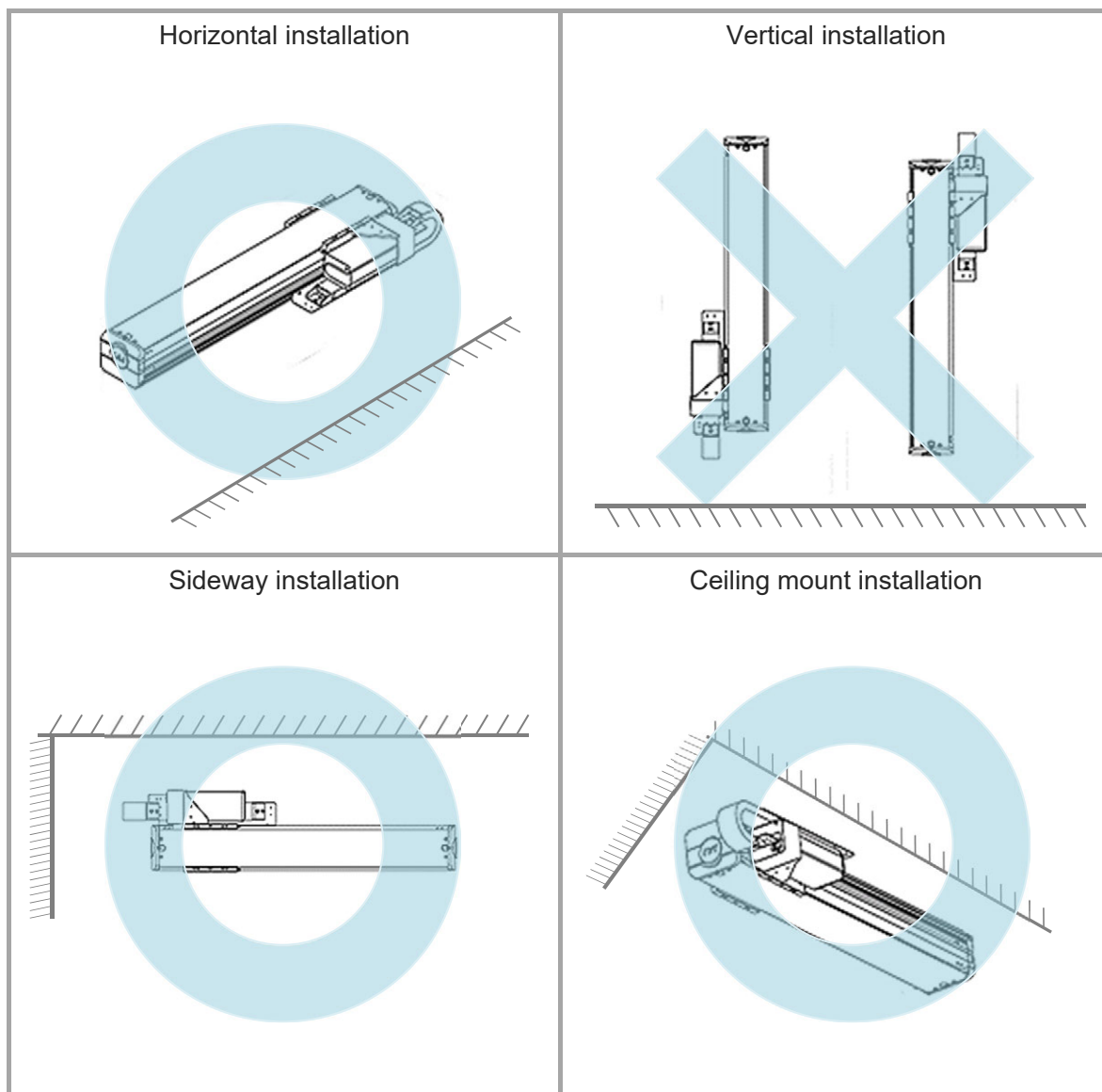
### 2.2.2 Storage/preservation environment

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- 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.

## 2.3 How to install

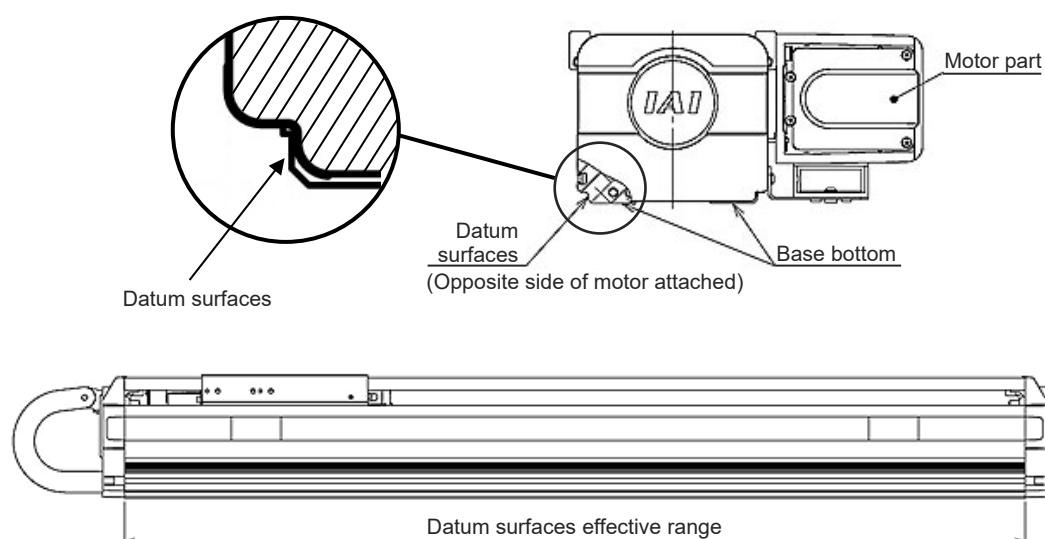
### 2.3.1 Installation orientation



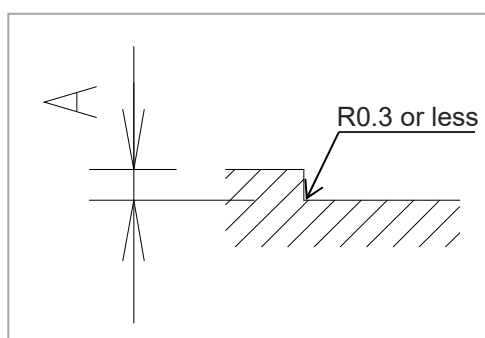
O: Available for Installation X: Unavailable for Installation

### 2.3.2 Installation surface

- The body mounting surface should be a machined surface or a plane with similar accuracy, with flatness within 0.05mm/m.
- The mounting frame should have a structure rigid enough to prevent the generation of vibration, etc.
- Also consider enough space necessary for maintenance work such as actuator replacement and inspection.
- The bottom surface and both side surfaces of the body base serve as the datum surfaces for slider running accuracy.  
Use these surfaces as the datum surfaces for mounting when running accuracy is required.
- It is basically required to use all the through holes to fix the whole area of the base.



When mounting using the side datum surface, machine the installation surface according to the figure below.



A dimension

3 to 5mm

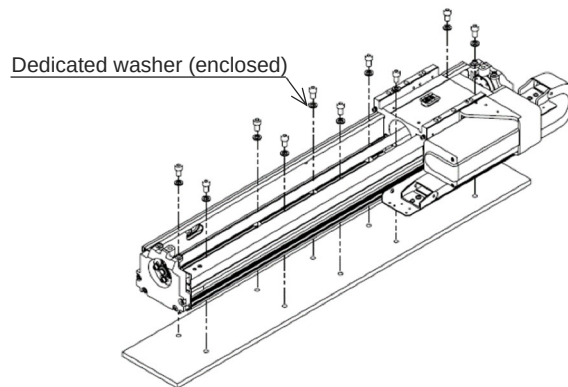
### 2.3.3 Installation of the main unit

As there are through holes equipped on the base in order to affix from the top, put screws from the top.

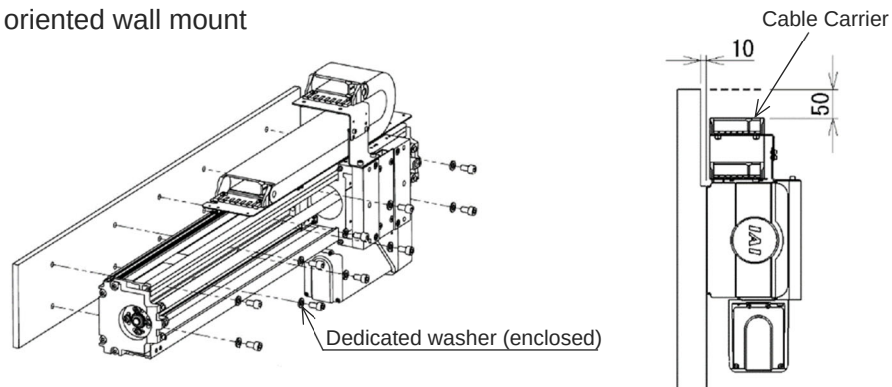
Take off the end cover and screw cover to install the unit.

Refer to [Chapter 5 External Dimensions] for the positions of the through holes

#### Horizontal installation

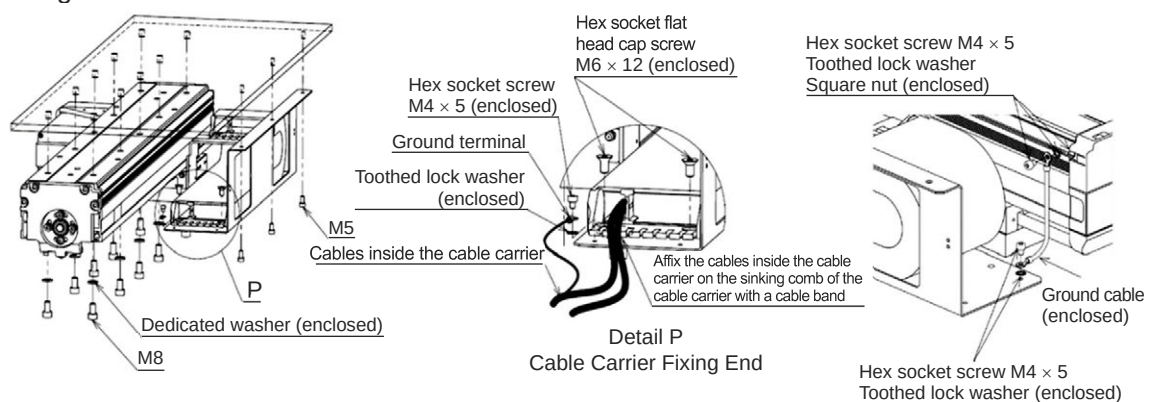


#### Horizontally oriented wall mount



\* Ensure enough space around the moving part of a cable carrier in order to avoid interference.

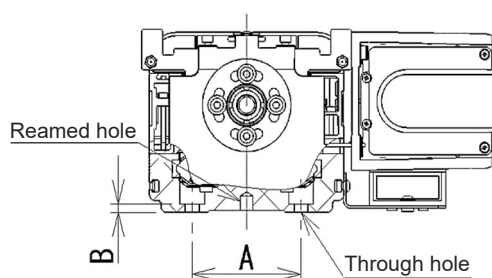
#### Ceiling mount



\* It is necessary to have the guide rails attached and the cable carrier fixing ends fixed for the ceiling mount type.

Use M6 flat head cap screws (enclosed) for attachment of cable carrier fixing ends.

Attach the ground cable and affix the cables inside the cable carrier.



| Model name                   | A [mm] | B [mm] | Through hole [mm]                               | Reamed hole   |
|------------------------------|--------|--------|-------------------------------------------------|---------------|
| MXMS, MXMM                   | 70     | 5      | φ9 drilled hole,<br>φ16 counter boring depth 10 | φ8H7 depth 10 |
| LXMS, LXMM,<br>LXMXS, LXMXM  | 90     | 8.5    | φ9 drilled hole,<br>φ16 counter boring depth 10 | φ8H7 depth 10 |
| WXMS, WXMM,<br>WXMXS, WXM XM | 130    | 13     | φ9 drilled hole,<br>φ16 counter boring depth 10 | φ8H7 depth 10 |

Use the hex screws described in the table below for the fixation of the main body.  
Use the enclosed dedicated washers for attachment.

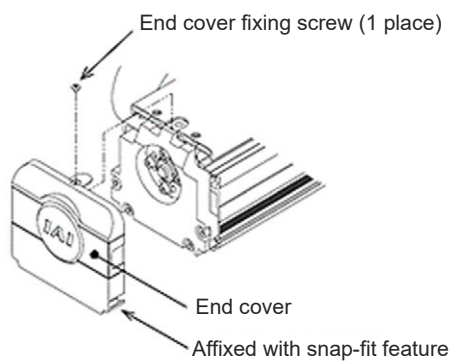
| Model name                   | Mounting bolt | Tightening torque      |
|------------------------------|---------------|------------------------|
| MXMS, MXMM                   | M8            | 11.5N•m<br>(1.17kgf•m) |
| LXMS, LXMM,<br>LXMXS, LXMXM  | M8            | 11.5N•m<br>(1.17kgf•m) |
| WXMS, WXMM,<br>WXMXS, WXM XM | M8            | 11.5N•m<br>(1.17kgf•m) |

Use the screws described in the table below for the fixation for wiring.

| Part                                                                                     | Type of screws         | Tightening torque     |
|------------------------------------------------------------------------------------------|------------------------|-----------------------|
| Cable carrier<br>(Horizontal installation)<br>CT3/CT4/UM3/UM4                            | M4 Button bolt         | 1.2N•m<br>(0.12kgf•m) |
| Cable carrier<br>(horizontally oriented wall mount/<br>Ceiling mount)<br>ET5/ET6/ET7/ET8 | M6 Flat head cap screw | 3.3N•m<br>(0.34kgf•m) |
| Guide rail (Ceiling mount)                                                               | M5 Hex socket screw    | 7.3N•m<br>(0.74kgf•m) |
| Ground cable                                                                             | M3 Hex socket screw    | 1.5N•m<br>(0.15kgf•m) |

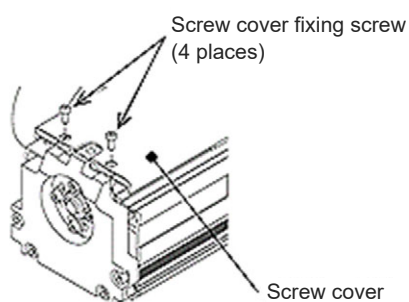
## Taking off end cover and screw cover

- Remove a screw affixing the end cover on one side to take off the end cover.



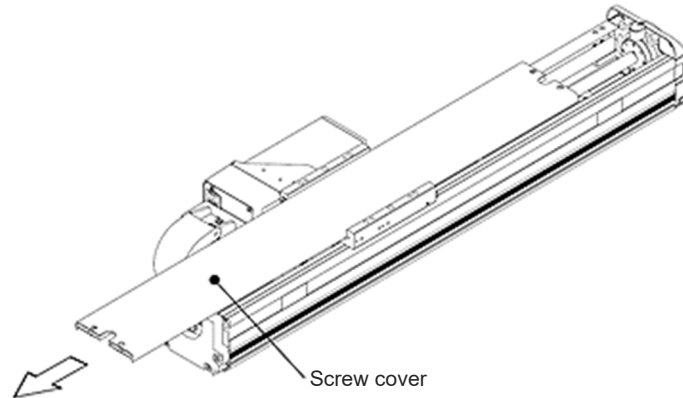
| Type of screw                         | Tightening torque [N•m] |
|---------------------------------------|-------------------------|
| Hex socket thin head TP screw: M3 × 5 | 0.7                     |

- Remove the screws affixing the screw cover.



| Type of screw             | Tightening torque [N•m] |
|---------------------------|-------------------------|
| Hex socket screw: M4 × 10 | 1.76                    |

- Pull out the screw cover in the direction of slider movement.
  - \* As there is a screw cover support inserted to the screw cover, the screw cover cannot be taken off to upwards.



- Once the installation work using the through holes is finished, put the screw cover and end cover back on.

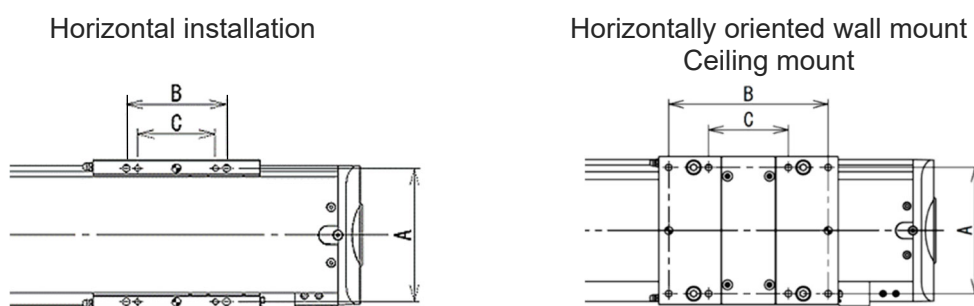


### Notice

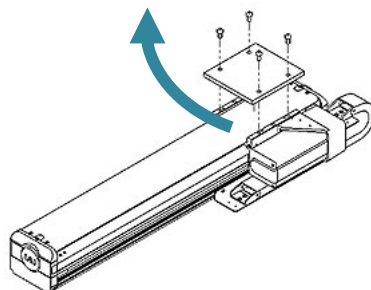
- The use of high-strength bolts of ISO-10.9 or higher is recommended.
- Make sure the internal thread and bolt effective engagement length is approximately 1.5 times the nominal diameter or more.
- In order to protect the base, it is suggested that the dedicated washers for high-tensile bolt (enclosed) are used. (There is a concern of buckling at the screw seats.) Also, do not attempt to apply general spring lock washer.

### 2.3.4 Mounting transported objects

- Use the screw holes on the top surface of the slider to fix transported objects.
- If the slider is affixed to move the actuator body, also use the slider's screw holes for installation. (When installing a heavy object, also use pins.)
- There are 2 reamed holes on the top surface of the slider.  
Use these reamed holes if repeated attaching and detaching is required.
- If fine-tuning of perpendicularity, etc. is required, use one of the reamed holes for this adjustment.
- Refer to the figure below for the screw-in depth and reamed hole depth.



Pitch tolerance from the reamed hole  $\pm 0.02$



| Model name                                         | A   | B   | C   | Reamed hole R       | Screw hole M | Screw hole Qty. |
|----------------------------------------------------|-----|-----|-----|---------------------|--------------|-----------------|
| MXMS, MXMM                                         | 120 | —   | 70  | $\phi 8H7$ depth 10 | M6 depth 20  | 4               |
|                                                    |     | 90  | —   |                     | M8 depth 25  | 4               |
| MXMS, MXMM<br>(ET5/ET6/ET7/ET8)                    | 120 | 110 | —   | $\phi 8H7$ depth 10 | M8 depth 20  | 4               |
| LXMS, LXMM,<br>LXMXS, LXMXM                        | 129 | 110 | 80  | $\phi 8H7$ depth 10 | M8 depth 25  | 8               |
| LXMS, LXMM,<br>LXMXS, LXMXM<br>(ET5/ET6/ET7/ET8)   | 120 | 160 | 80  | $\phi 8H7$ depth 10 | M8 depth 20  | 8               |
| WXMS, WXMM,<br>WXMXS, WXM XM                       | 180 | 160 | 120 | $\phi 8H7$ depth 10 | M8 depth 25  | 8               |
| WXMS, WXMM,<br>WXM XS, WXM XM<br>(ET5/ET6/ET7/ET8) | 180 | 160 | 80  | $\phi 8H7$ depth 10 | M8 depth 20  | 8               |

| Model name                                       | Screw hole<br>M | Bolt nominal<br>diameter | Tightening torque                                                  |                                                                          |
|--------------------------------------------------|-----------------|--------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------|
|                                                  |                 |                          | In the case that steel<br>is used for the bolt<br>seating surface: | In the case that<br>aluminum is used for<br>the bolt seating<br>surface: |
| MXMS, MXMM                                       | M6 depth 20     | M6                       | 12.3N•m (1.26kgf•m)                                                | 5.4N•m (0.55kgf•m)                                                       |
|                                                  | M8 depth 25     | M8                       | 30.0N•m (3.06kgf•m)                                                | 11.5N•m (1.17kgf•m)                                                      |
| MXMS, MXMM<br>(ET5/ET6/ET7/ET8)                  | M8 depth 20     | M8                       | 30.0N•m (3.06kgf•m)                                                | 11.5N•m (1.17kgf•m)                                                      |
| LXMS, LXMM,<br>LXMXS, LXMXM                      | M8 depth 25     | M8                       | 30.0N•m (3.06kgf•m)                                                | 11.5N•m (1.17kgf•m)                                                      |
| LXMS, LXMM,<br>LXMXS, LXMXM<br>(ET5/ET6/ET7/ET8) | M8 depth 20     | M8                       | 30.0N•m (3.06kgf•m)                                                | 11.5N•m (1.17kgf•m)                                                      |
| WXMS, WXMM,<br>WXMXS, WXMXM                      | M8 depth 25     | M8                       | 30.0N•m (3.06kgf•m)                                                | 11.5N•m (1.17kgf•m)                                                      |
| WXMS, WXMM,<br>WXMXS, WXMXM<br>(ET5/ET6/ET7/ET8) | M8 depth 20     | M8                       | 30.0N•m (3.06kgf•m)                                                | 11.5N•m (1.17kgf•m)                                                      |



### Caution

- Be careful with regard to the length of the mounting bolt and positioning pin.
- The effective engagement length between the bolt and female screw shall be at least the value specified below:
  - When the female screw is made of steel → Same as the nominal diameter
  - When the female screw is made of aluminum → 1.5 times of nominal diameter

The use of screw-in depth greater than that of the screw hole or reamed mounting holes may damage the screw hole or reduce the mounting strength of the transported object, leading to decreased accuracy or unexpected accidents.



### Notice

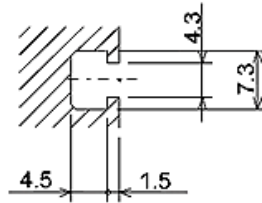
- The mounting bolts are to be prepared by the customer.
- The use of high-strength bolts of ISO-10.9 or higher is recommended.

### 2.3.5 Installation of Connector Box and T-shape Slot

There is a T-shape slot for M4 equipped on the side of the base for all types so a connector box or guide rail necessary for combination can be installed.

If the combined specification requires a wiring kit, use this T-shaped slot to install the kit.

The T-shape slot can also be used to install sensors or secure wires or for various other purposes as deemed necessary.



#### Notice

- Although square nuts are recommended, general hexagonal nuts can also be used with the T-shape slot.

When installing a bolt in the T-shape slot, pay attention to the bolt length to make sure the tip of the bolt will not contact the bottom of the T-shape slot.

### 2.3.6 Grounding connection

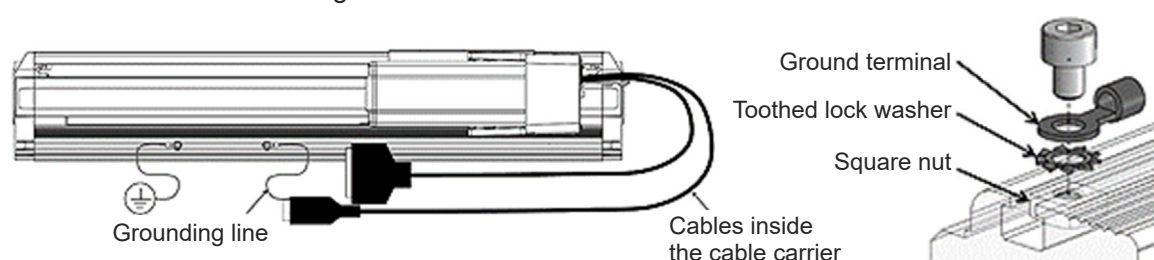
In order to prevent electric shock, connect the grounding line to the screw hole dedicated for grounding line attachment on the actuator main body.

#### [About Cable Carrier Unequipped Option]

There is a grounding line coming out of the cables inside the cable carrier for the cable carrier unequipped option.

Conduct grounding on the grounding line terminal after wiring of the cable inside the cable carrier is finished.

#### <<Recommended Grounding Connection>>



1. Attach the ground terminal in the cables inside the cable carrier to the T-shape slot on the side of the base. (Position to attach is not specified)  
When attaching the terminal, make sure to use the enclosed toothed lock washer and put them through the screw in the order of “ground terminal”, “toothed lock washer” and then “square nut”.
2. Conduct grounding using the T-shape slot on the side of the base.  
(Position to attach is not specified)  
When conducting, make sure to use a toothed lock washer in the order same as described in 1 to connect the grounding line.



# Actuator

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## Chapter 3

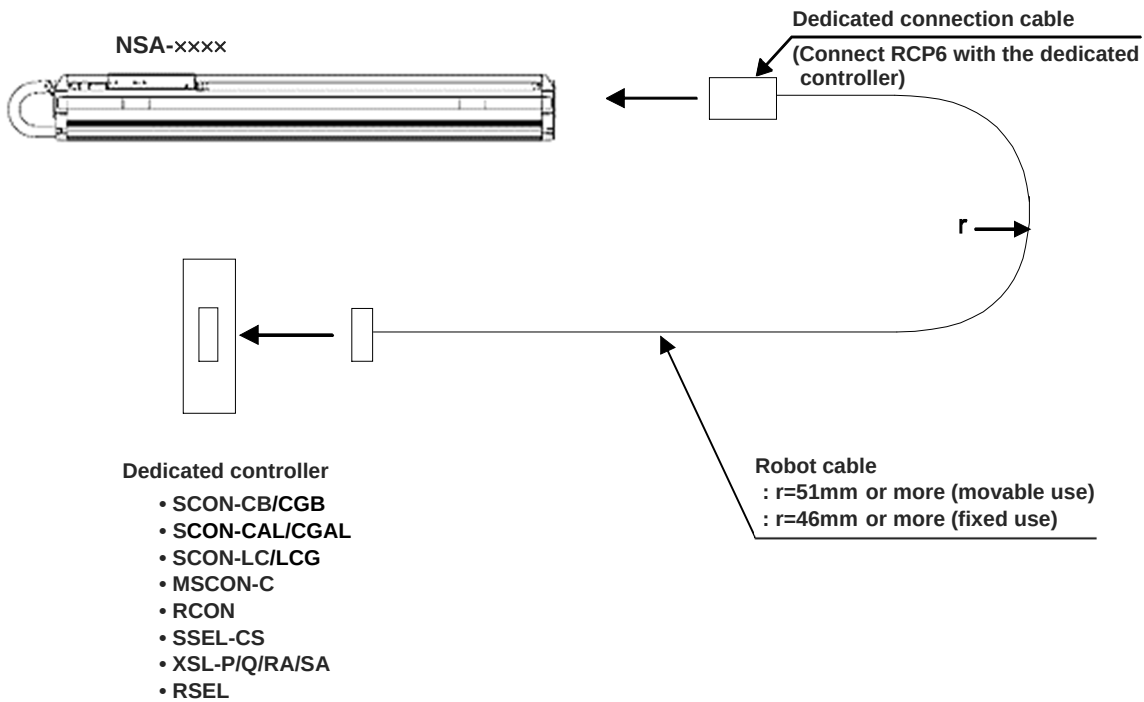
# Connecting with the Controller

|       |                                      |     |
|-------|--------------------------------------|-----|
| 3.1   | Connecting with the controller ..... | 3-1 |
| 3.2   | Motor cable / Encoder cable.....     | 3-2 |
| 3.2.1 | Motor robot cable .....              | 3-2 |
| 3.2.2 | Encoder robot cable .....            | 3-4 |
| 3.3   | Caution in Wiring Process .....      | 3-5 |



## 3.1 Connecting with the controller

As the connection cable for the controller and the actuator, use the IAI-dedicated connection cable. Please consult with IAI if you require a different kind of cable than the one supplied.



**Dedicated cable**  
Other than RCON and RSEL

- Motor Robot Cables: CB-X-MA□□□
- Encoder Robot Cables: CB-X1-PA□□□ (Cable length 30m or less)

**RCON and RSEL**

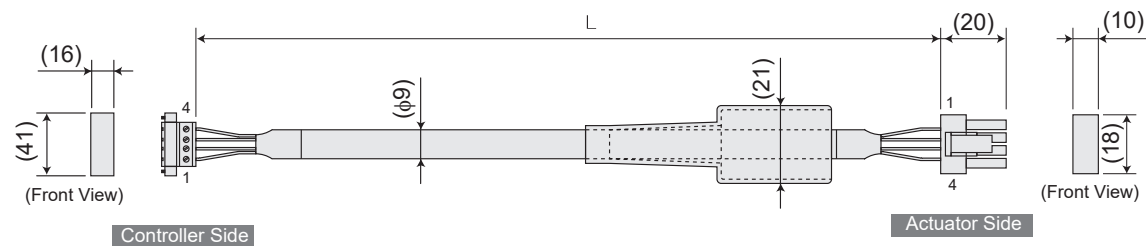
- Motor Robot Cables: CB-X2-MA□□□
- Encoder Robot Cables: CB-X1-PA□□□ (Cable length 30m or less)

\* □□□ represents the cable length. The longest corresponds to 30m.  
e.g.) 080 = 8m

## 3.2 Motor cable / Encoder cable

### 3.2.1 Motor robot cable

Model code: **CB-X-MA**□□□



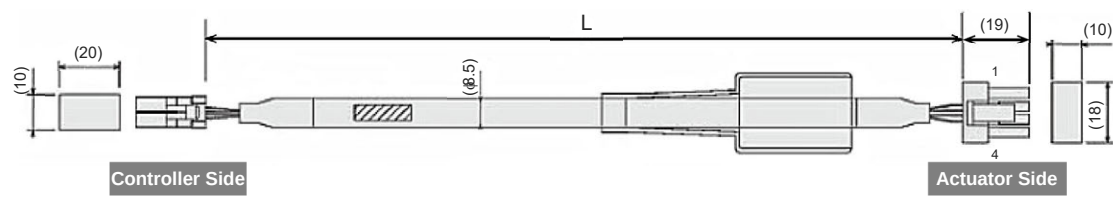
Minimum bending radius  $r = 51\text{mm}$  or more (for movable use)  
\*Robot cable is standard for this model.

| Wire Size | Color | Signal | No. | No. | Signal | Color | Wire Size           |
|-----------|-------|--------|-----|-----|--------|-------|---------------------|
| 0.75sq    | Green | PE     | 1   | 1   | U      | Red   | 0.75sq<br>(Crimped) |
|           | Red   | U      | 2   | 2   | V      | White |                     |
|           | White | V      | 3   | 3   | W      | Black |                     |
|           | Black | W      | 4   | 4   | PE     | Green |                     |

- The cable length should be 1m at minimum and 30m at maximum.  
Order can be made in unit of 1m long.
- An example for model codes is as shown below.

Cable length 1m → CB-X-MA010(-RB)  
Cable length 3m → CB-X-MA030(-RB)  
Cable length 10m → CB-X-MA100(-RB)

Model code: **CB-X2-MA**□□□



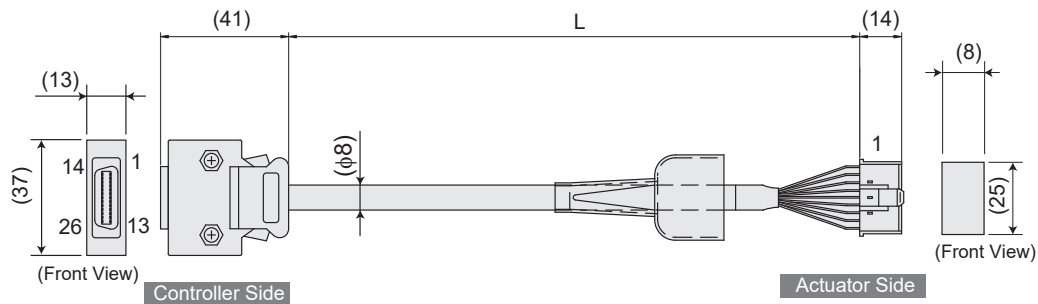
Minimum bending radius  $r = 51\text{mm}$  or more (for movable use)  
\* Only robot cables accepted for use in cable carrier

| Controller Side     |       |        |     | Actuator Side |        |       |                     |
|---------------------|-------|--------|-----|---------------|--------|-------|---------------------|
| Wire Size           | Color | Signal | No. | No.           | Signal | Color | Wire Size           |
| 0.75sq<br>(Crimped) | Red   | U      | B1  | 1             | U      | Red   | 0.75sq<br>(Crimped) |
|                     | White | V      | B2  | 2             | V      | White |                     |
|                     | Black | W      | A1  | 3             | W      | Black |                     |
|                     | Green | PE     | A2  | 4             | PE     | Green |                     |

- The cable length should be 1m at minimum and 30m at maximum.  
Order can be made in unit of 1m long.
- An example for model codes is as shown below.  
Cable length 1m → CB-X2-MA010(-RB)  
Cable length 3m → CB-X2-MA030(-RB)  
Cable length 10m → CB-X2-MA100(-RB)

3.2.2 Encoder robot cable

Model code: **CB-X1-PA**□□□



Minimum bending radius  $r = 44\text{mm}$  or more (for movable use)  
\*Robot cable is standard for this model.

| Controller Side               |        |        |                    |                                    |  |  |  |
|-------------------------------|--------|--------|--------------------|------------------------------------|--|--|--|
| Wire Size                     | Color  | Signal | No.                |                                    |  |  |  |
| AWG26<br>(Soldered)           | —      | —      | 10                 |                                    |  |  |  |
|                               | —      | —      | 11                 |                                    |  |  |  |
|                               | —      | E24V   | 12                 |                                    |  |  |  |
|                               | —      | OV     | 13                 |                                    |  |  |  |
|                               | —      | LS     | 26                 |                                    |  |  |  |
|                               | —      | CREEP  | 25                 |                                    |  |  |  |
|                               | —      | OT     | 24                 |                                    |  |  |  |
|                               | —      | RSV    | 23                 |                                    |  |  |  |
|                               | —      | —      | 9                  |                                    |  |  |  |
|                               | —      | —      | 18                 |                                    |  |  |  |
|                               | —      | —      | 19                 |                                    |  |  |  |
|                               | —      | A+     | 1                  |                                    |  |  |  |
|                               | —      | A-     | 2                  |                                    |  |  |  |
|                               | —      | B+     | 3                  |                                    |  |  |  |
|                               | —      | B-     | 4                  |                                    |  |  |  |
|                               | —      | Z+     | 5                  |                                    |  |  |  |
|                               | —      | Z-     | 6                  |                                    |  |  |  |
|                               | Orange | SRD+   | 7                  |                                    |  |  |  |
|                               | Green  | SRD-   | 8                  |                                    |  |  |  |
|                               | Purple | BAT+   | 14                 |                                    |  |  |  |
|                               | Gray   | BAT-   | 15                 |                                    |  |  |  |
|                               | Red    | VCC    | 16                 |                                    |  |  |  |
|                               | Black  | GND    | 17                 |                                    |  |  |  |
|                               | Blue   | BKR-   | 20                 |                                    |  |  |  |
|                               | Yellow | BKR+   | 21                 |                                    |  |  |  |
|                               | —      | —      | 22                 |                                    |  |  |  |
| Clamp the shield to the hood. |        |        |                    |                                    |  |  |  |
|                               |        |        |                    | Ground wire or braided shield wire |  |  |  |
|                               |        |        |                    | Actuator Side                      |  |  |  |
| No.                           | Signal | Color  | Wire Size          |                                    |  |  |  |
| 1                             | BAT+   | Purple | AWG26<br>(Crimped) |                                    |  |  |  |
| 2                             | BAT-   | Gray   |                    |                                    |  |  |  |
| 3                             | SD     | Orange |                    |                                    |  |  |  |
| 4                             | SD     | Green  |                    |                                    |  |  |  |
| 5                             | VCC    | Red    |                    |                                    |  |  |  |
| 6                             | GND    | Black  |                    |                                    |  |  |  |
| 7                             | FG     | Drain  |                    |                                    |  |  |  |
| 8                             | BK-    | Blue   |                    |                                    |  |  |  |
| 9                             | BK+    | Yellow |                    |                                    |  |  |  |

- The cable length should be 1m at minimum and 30m at maximum.  
Order can be made in unit of 1m long.
- An example for model codes is as shown below.

Cable length 1m    .    CB-X1-PA010  
Cable length 3m    →    CB-X1-PA030  
Cable length 10m    →    CB-X1-PA100

### 3.3 Caution in Wiring Process



#### Caution

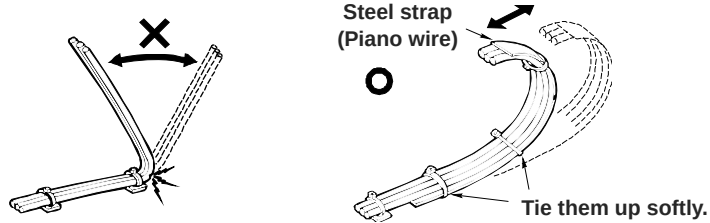
For wiring, please follow the warnings stated below. When constructing a system as the machinery equipment, pay attention to the wiring and connection of each cable so they are conducted properly. Not following them may cause not only a malfunction such as cable breakage or connection failure, or an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

- 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 carrier.
- 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.

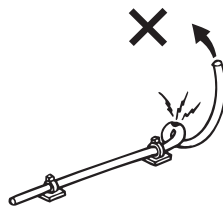


#### Caution

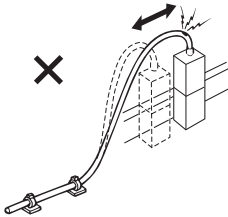
- Have a sufficient radius for bending, and avoid a bend concentrating on one point.



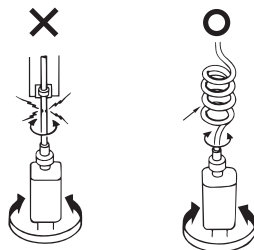
- Do not let the cable bend, kink or twist.



- Do not pull the cable with a strong force.



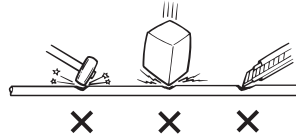
- Pay attention not to concentrate the twisting force to one point on a cable.



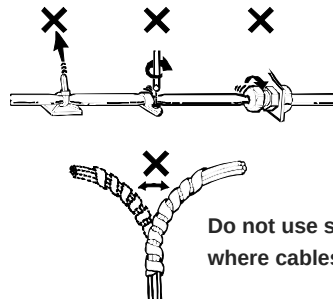


### Caution

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

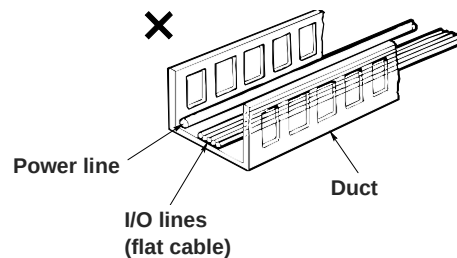


- When a cable is fastened to affix, make sure to have an appropriate force and do not tighten too much.



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.

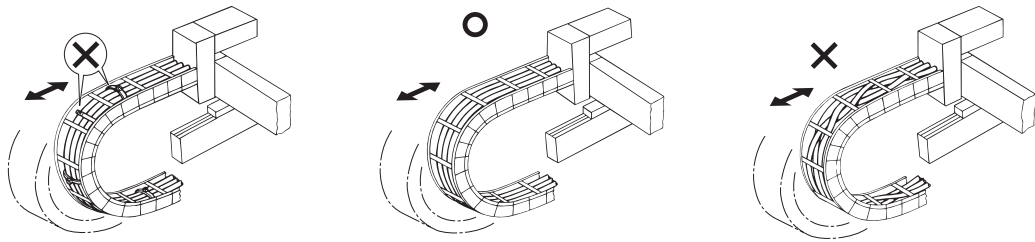




#### Caution

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.



# Actuator

---

## Chapter 4

# Maintenance and Inspection

|       |                                                 |      |
|-------|-------------------------------------------------|------|
| 4.1   | Precautions for maintenance and inspection work | 4-1  |
| 4.2   | Inspection items and schedule                   | 4-3  |
| 4.2.1 | Slider type                                     | 4-3  |
| 4.2.2 | Grease supply timing (Guideline)                | 4-3  |
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## 4.1 Precautions for maintenance and inspection work

Make sure to read the following precautions before conducting any maintenance or inspection work.



### Caution

- Do not climb on or put anything on the actuator.  
Otherwise, this may lead to accidental falling, injury or damage to the product due to falling objects, product loss of function or performance degradation, or shortening of product life.
- The slider may fall, possibly injuring the operator or people nearby and damaging the actuator, workpiece or equipment.
- Check that the power to the actuator is OFF before conducting any maintenance or inspections.  
Be careful not to lose the cover or any removed screws.
- Be sure to return the product to the original condition after maintenance and inspection work. Mounting in an incomplete state may cause injuries or damage to the product.
- Do not modify, disassemble/assemble, or use maintenance parts not specified on your own discretion under any circumstances.
- The grease film may run out if the actuator performs return operation continuously over a distance of 30mm or less. As a guideline, every 5,000 to 10,000 cycles, have approximately 5 cycles of return operation over a 50mm distance or more to regenerate the oil film.  
The ball screw or guide may be damaged if the oil film runs out.



### Notice

- First, be sure to wipe off the old grease, and then supply new grease.
- The degradation speed of grease may differ depending on the operating environment (temperature, humidity and ambient atmosphere).

It is recommended to shorten the grease supply period if the actuator is used under poor environmental conditions such as high temperatures, high humidity or dusty atmospheres.

- Also, it is recommended to improve the environmental conditions in case the grease changes color notably due to poor operating conditions.
- Base oil may separate from the grease due to the mounting orientation or operating conditions.

Base oil may also leak from the inside of the actuator to the exterior through gaps.

Check visually for oil drips when supplying grease.

- An actuator stored for 6 months or more may suffer from grease degradation.  
Supply grease before the start of use.  
For details, refer to "4.5 Greasing method".

## 4.2 Inspection items and schedule

Follow the maintenance inspection schedule below.

It is assumed that the equipment is operating 8 hours per day.

If the equipment is running continuously night and day or otherwise running at a high operating rate, inspect more often as needed.



### 4.2.1 Slider type

| Inspection period                 | External inspection | Internal inspection | Greasing ball screw guide                  |
|-----------------------------------|---------------------|---------------------|--------------------------------------------|
| Start of work inspection          | ○                   | —                   | —                                          |
| 1 month inspection                | ○                   | —                   | —                                          |
| 3 months inspection               | —                   | —                   | ○                                          |
| 3 months after starting operation | —                   | —                   | Grease supply timing (Guideline) dependent |
| 6 months inspection               | ○                   | ○                   |                                            |
| Every 6 months thereafter         | ○                   | ○                   |                                            |

### 4.2.2 Grease supply timing (Guideline)

| Maximum operating speed [mm/s] | Grease supply timing (Guideline) |          |
|--------------------------------|----------------------------------|----------|
|                                | Operation distance               | Months   |
| 0 to 750 or less               | 625 km                           | 6 months |
| Above 750 to 1500 or less      | 1,250 km                         |          |
| Above 1500 to 2500             | 2,500 km                         |          |

## 4.3 Visual inspection items

Refer to "4.6 How to replace components" for detailed information about specific component replacement and adjustment methods.

### 4.3.1 External visual inspection

| Inspection items                             | Maintenance work                                                                                                                                                |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Is abnormal noise or vibration generated?    | Take an action by referring to "Troubleshooting in Controller Instruction Manual".                                                                              |
| Are actuator mounting bolts loose?           | Tighten them further.                                                                                                                                           |
| Is the cable scratched?                      | Replace if the damage is severe.                                                                                                                                |
| Is the connector loose?                      | Re-insert correctly.                                                                                                                                            |
| Is there an interference on a cable carrier? | If there is an interference to a cable carrier due to its looseness, adjust the receiving position of the cable carrier so it will not interfere with anything. |
| Is grease dripping out?                      | Clean up any drips.<br>Replenish the grease.                                                                                                                    |

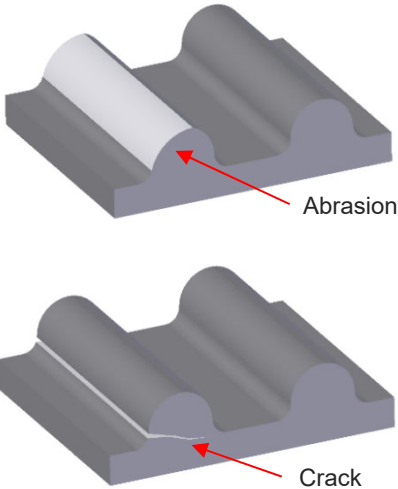
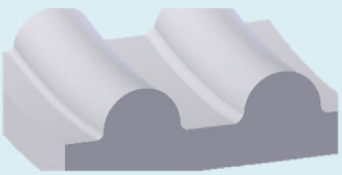
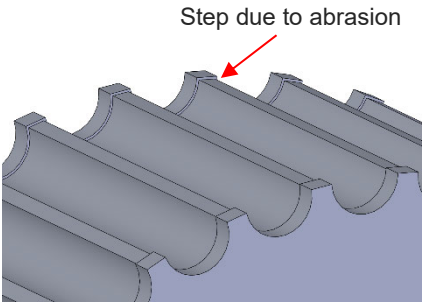
Refer to "4.6 How to replace components" for detailed information about specific component replacement and adjustment methods.

### 4.3.2 Internal visual inspection

| Inspection items                                                                                                                                  | Maintenance work                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Backlash/play or wear debris found?                                                                                                               | The ball screw guide may be damaged.<br>Contact IAI.                       |
| Has foreign matter penetrated inside?                                                                                                             | Remove the foreign matter, clean, and inspect the interior for any damage. |
| Is the ball screw or guide grease not lubricating well?<br>(Even if the grease is brown, lubrication is adequate if the running surface is shiny) | Wipe away the old grease, then replenish with new grease.                  |
| Is dust or foreign matter adhered to the ball screw or guide?                                                                                     | Replenish with new grease after cleaning.                                  |
| Check the condition of the belt referring to the inspection points described in the following page.                                               | —                                                                          |

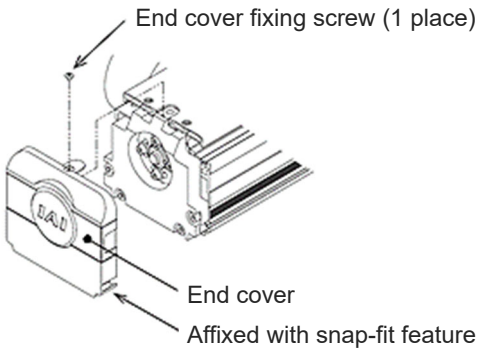
The period of replacement for the belt cannot be simply determined as the durability of the belt can be affected by the duration of operation significantly.

As the belt gets deteriorated in duration of use such as abrasion, it is required that you have inspection on the points stated below.

| Inspection items                                                                                                                                                                                                          | Maintenance work                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Is the belt significantly worn out on the teeth area?<br/>Is there any crack on the teeth area?<br/>Is there any chipped tooth?</p>  | <p>Replace the belt in case any of those stated on the left is found.<br/>Refer to [Belt replacement/adjustment in 4.6 How to replace components].</p> |
| <p>Is the belt hardened, softened or deformed (shrunk or expanded)?</p>                                                                | <p>Replace the belt in case any of those stated on the left is found.<br/>Refer to [Belt replacement/adjustment in 4.6 How to replace components].</p> |
| <p>Is there any significant abrasion on pulley teeth?</p>                                                                              | <p>Replace the belt in case any of those stated on the left is found.<br/>Refer to [Belt replacement/adjustment in 4.6 How to replace components].</p> |

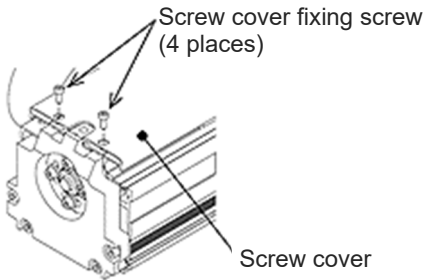
Internal inspection method

1. Remove a screw affixing the end cover on one side to take off the end cover.

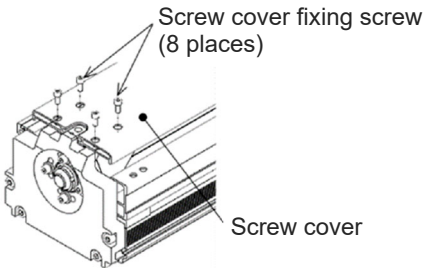


| Type of screws         |                                        | Tightening torque [N•m] |
|------------------------|----------------------------------------|-------------------------|
| End cover fixing screw | Thin-head TP type (Hex socket): M3 × 5 | 0.7                     |

2. Remove the screws affixing the screw cover.



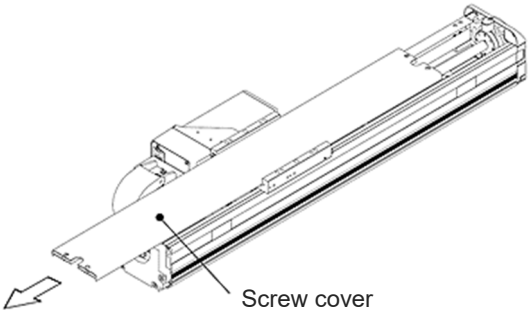
MXMS, MXMM, LXMS, LXMM,  
WXMS, WXMM



LXMXS, LXMXM,  
WXMXS, WXMXM

| Type of screws           |                           | Tightening torque [N•m] |
|--------------------------|---------------------------|-------------------------|
| Screw cover fixing screw | Hex socket screw: M4 × 10 | 1.7                     |

3. Pull out the screw cover in the direction of slider movement.



4. Check inside.

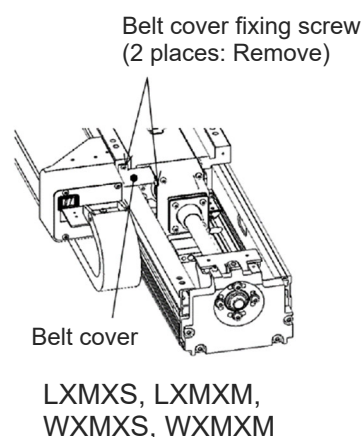
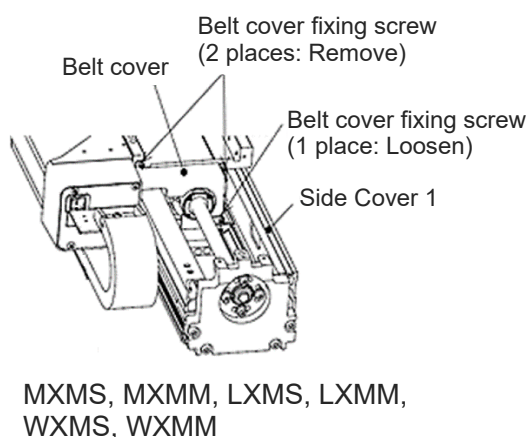
Proceed to next page to continue the belt inspection.

## 4.3 Visual inspection items

**Belt inspection method**

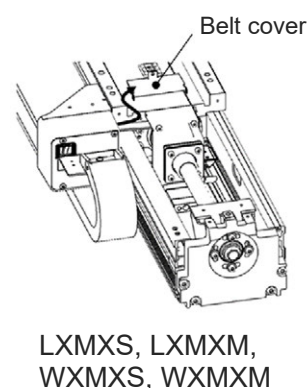
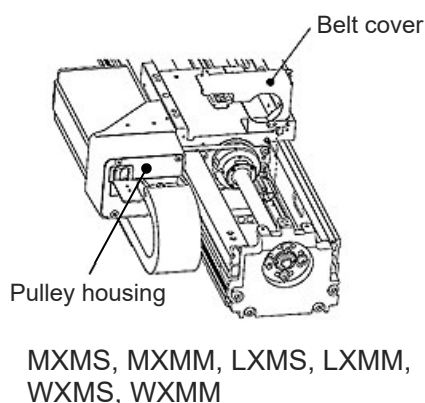
Continued from the inside inspection, conduct the belt inspection with the screw cover kept pulled out.

1. Take the belt cover off in order to check the timing belt.  
Remove the screws affixing the belt cover at two places on the top and loosen the screw at one place on the bottom.  
Take Side Cover 1 off if necessary.



| Type of screws          |                          | Tightening torque [N·m] |
|-------------------------|--------------------------|-------------------------|
| Belt cover fixing screw | Hex socket screw: M3 × 5 | 1.5                     |

2. Take the belt cover off.  
For M/L size, pull the belt cover towards the pulley housing and then bring it towards yourself and it comes off easily.  
For W size, pull the belt cover towards the top and then bring it towards yourself and it comes off easily.



3. Have an inspection on the belt.
4. After inspection inside and on the belts is finished, put all the parts back on in the back order.

Model Codes for Replacement Belts

| Model                       | Maintenance parts model code | Belt to use    | Manufacturer name |
|-----------------------------|------------------------------|----------------|-------------------|
| MXMS, MXMM                  | TB-NSA-M                     | 385-EV5G-9RF   | Gates Unitta Asia |
| LXMS, LXMM,<br>LXMXS, LXMXM | TB-NSA-L                     | 400-EV5GT-15RF | Gates Unitta Asia |
| WXMS, WXMM,<br>WXMXS, WXMXM | TB-NSA-W                     | 520-EV5GT-20RF | Gates Unitta Asia |

## 4.4 Cleaning

### 4.4.1 External cleaning

- Clean exterior surfaces as necessary.
- Use a soft cloth to wipe away dirt and buildup.
- Do not blow too hard with compressed air as it may cause dust to get in through the gaps.
- Do not use oil-based solvents as they can harm lacquered and painted surfaces.
- To remove severe buildup, wipe gently with a soft cloth soaked in a neutral detergent or alcohol.

### 4.4.2 Internal cleaning

- Use a soft cloth to wipe away dirt and buildup.
- Do not blow too hard with compressed air as it may cause dust to get in through the gaps.
- Do not use oil-based solvents, neutral detergent or alcohol.

## 4.5 Greasing method

**[1] Grease used:** Use a grease equivalent to lithium related greases.

| Application location | During maintenance (recommended product) | Default (reference)                      |
|----------------------|------------------------------------------|------------------------------------------|
| Ball screw           | Kyodo Yushi/ Multemp LRL No.3            | Kyodo Yushi/ Multemp LRL No.3            |
| Guide                | Idemitsu Kosan/<br>Daphne Grease MP No.2 | Idemitsu Kosan/<br>Daphne Grease MP No.2 |



### Caution

- Never use fluorine-based grease and urea-based grease.  
Mixing with lithium-based grease not only reduces the performance of the grease, it may even cause damage to the actuator.

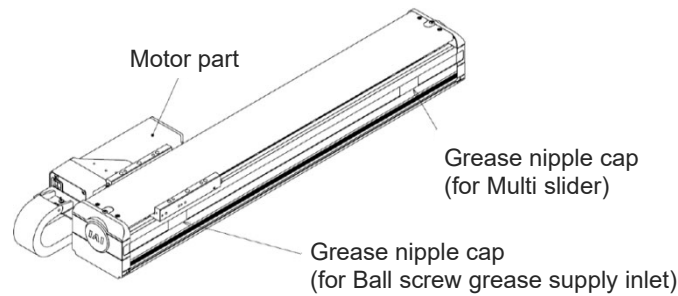
## [2] Greasing method

### How to Add Grease to the Ball Screw

Grease supply to the ball screw should be conducted from the opposite to the motor attached side regardless of the orientation of installation.

Secure enough room to perform grease supply.

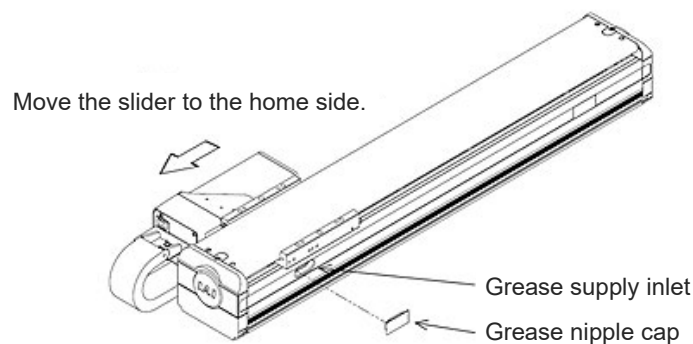
- \* For the cable carrier attachment orientation opposite and Slider 2 in the multiple slider type, although the instruction is in mirror, the procedures should be followed the same.



- \* The way to take off the cap on the grease nipples may differ depending on the installation orientation.

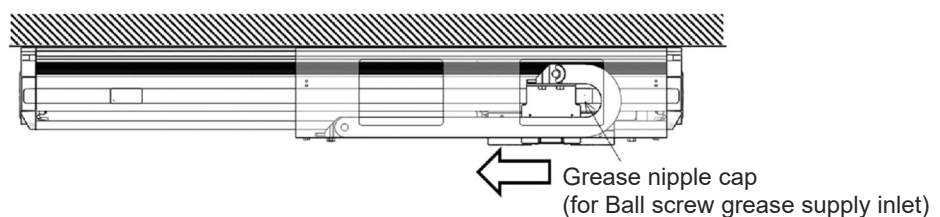
#### [Horizontal installation]

1. Move the slider to the home side (opposite the home side for home position reversed type) and take off the grease nipple cap.



#### [Horizontally oriented wall mount]

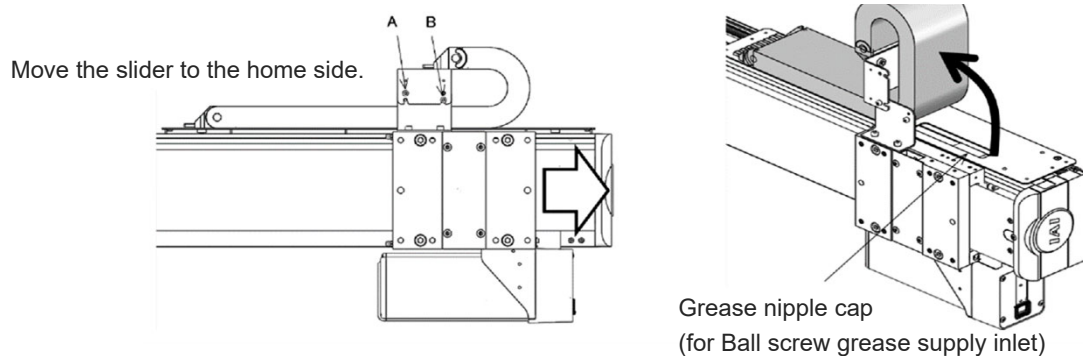
1. As the grease nipple cap is located at the far end in a cable carrier, slide the slider to the stroke end until the grease nipple gets accessible when it is to be taken off. Then, set the slider back to the home end (opposite the home side for home position reversed type).



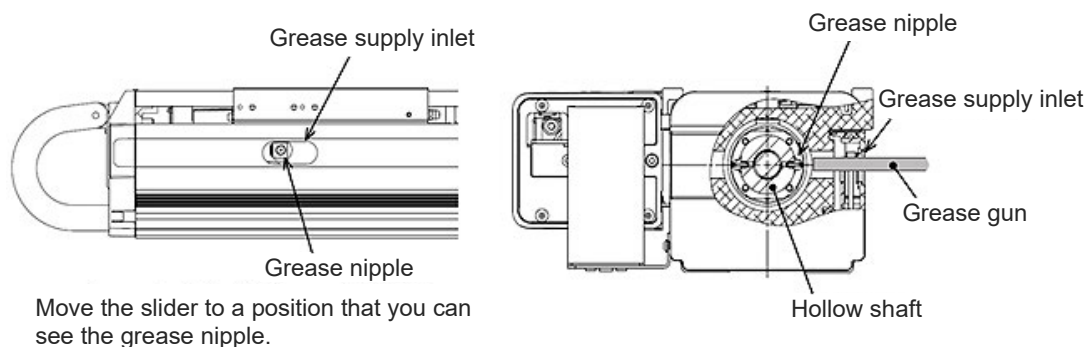
[Ceiling mount]

1. Move the slider to the home end (opposite the home side for home position reversed type) and loosen Screw A and B (hex socket head cap screw M4). With Screw A used as a pivot, turn the bracket by 90deg, tighten up Screw A back with the bracket kept turned to hold the bracket.

By doing so, the grease cap located at the far end in the cable carrier gets accessible and be able to be taken off.



2. Move the slider to a position that you can see the grease nipple in the grease supply inlet. As the grease nipple is equipped on a rotating body (hollow shaft), it is necessary to move the slider to a position that you can see the grease nipple.



3. Fix the slider when supplying grease using a grease gun so the rotating body would not turn.

| Model                       | Grease supply volume (Guideline) |
|-----------------------------|----------------------------------|
| MXMS, MXMM                  | 2.5cc to 3.0cc                   |
| LXMS, LXMM,<br>LXMXS, LXMXM | 3.0cc to 3.5cc                   |
| WXMS, WXMM,<br>WXXMS, WXXM  | 3.5cc to 4.0cc                   |

| Nipple inlet diameter [mm] |
|----------------------------|
| φ6.0                       |

Recommended Grease Gun and Nozzle

| Grease gun                                                                 | Nozzle | Supplier of nozzle |
|----------------------------------------------------------------------------|--------|--------------------|
| Grease gun of mounting screw R1/8<br>(Example) GC-57K (Yamada Corporation) | H type | THK                |

4. After supplying grease, set everything back to how it was in the back order, and put on the grease nipple cap.

\* After supplying grease on the guides, move the slider in the stroke range so the grease gets spread out evenly in the range.



### Caution

- Supplying too much grease may increase sliding resistance and load to the motor, resulting in a drop of performance.  
Also, excess grease on the ball screw may be splashed around in the ambience.
- In case the grease got into your eye, wash it with clean water for 15 minutes and immediately go see the doctor to get appropriate care.
- After finishing the grease supply work, wash your hands carefully with water and soap to rinse the grease OFF.

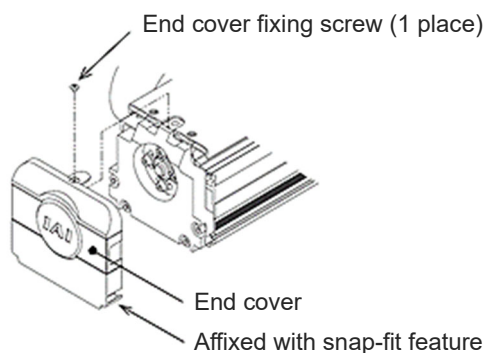
## How to Supply Grease on Guides

Grease supply to the guides should be conducted at the grease nipples equipped on the ends of the slider.

Each end of right and left is equipped with one grease nipple, and they are for grease supply to the guides on both right and left.

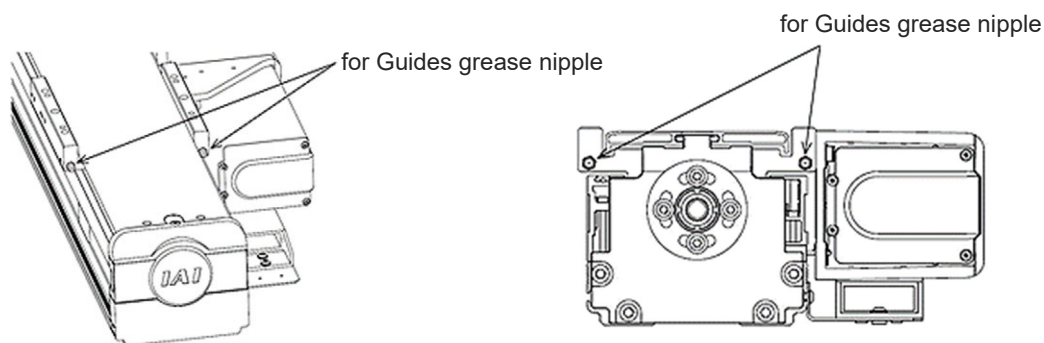
Supply grease on the grease nipples on both right and left.

1. Remove the end cover fixing screw on the side with a grease nipple to take off the end cover.



| Type of screws         |                                        | Tightening torque [N·m] |
|------------------------|----------------------------------------|-------------------------|
| End cover fixing screw | Thin-head TP type (Hex socket): M3 × 5 | 0.7                     |

2. Supply grease at the grease nipples on right and left using a grease gun.



| Model                       | Grease supply volume at each end (Guideline) |
|-----------------------------|----------------------------------------------|
| MXMS, MXMM                  | 2cc to 2.5cc                                 |
| LXMS, LXMM,<br>LXMXS, LXMXM | 2.5cc to 3.0cc                               |
| WXMS, WXMM,<br>WXXMS, WXXM  | 2.5cc to 3.0cc                               |

| Nipple inlet diameter [mm] |
|----------------------------|
| φ6.6                       |

Recommended Grease Gun and Nozzle

| Grease gun                                                                 | Nozzle | Supplier of nozzle |
|----------------------------------------------------------------------------|--------|--------------------|
| Grease gun of mounting screw R1/8<br>(Example) GC-57K (Yamada Corporation) | H type | THK                |

3. Move the slider back and forth in the stroke range after supplying grease so it spreads out evenly in the area.
4. After grease supply is finished, put the end cover back on.

**Caution**

- Supplying too much grease may increase sliding resistance and load to the motor, resulting in a drop of performance.  
Also, excess grease on the ball screw may be splashed around in the ambience.
- In case the grease got into your eye, wash it with clean water for 15 minutes and immediately go see the doctor to get appropriate care.
- After finishing the grease supply work, wash your hands carefully with water and soap to rinse the grease OFF.

## 4.6 How to replace components

### 4.6.1 Belt replacement/adjustment

- \* It is not allowed for a user to replace the belt for LXMXS, LXMXM, WXMXS and WXMXM. Contact us when an abnormality is found on the belt.

#### [How to Replace Belt: Other than LXMXS, LXMXM, WXMXS and WXMXM]

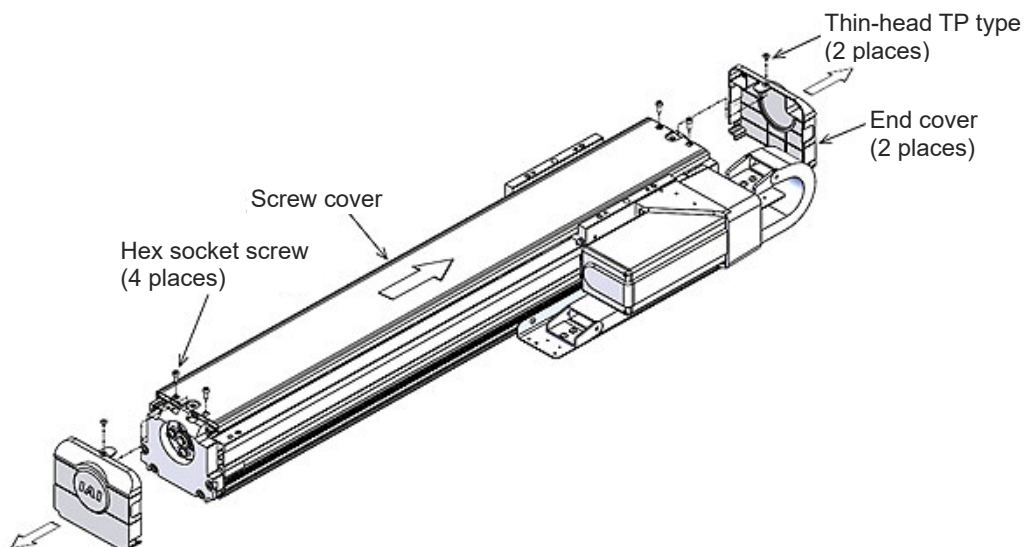
- \* For those with the cable carrier ejection in different directions and Slider 2 in the multiple slider type, the profile should be in the opposite way to the figures for explanation, however, the work should be carried out in the same order.

For the multiple slider type, do not take off the end brackets and screw supports on the both ends at the same time. Have the replacement work done one end then the other.

Model Codes for Replacement Belts

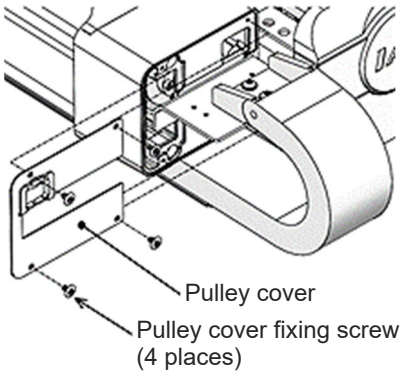
| Model      | Maintenance parts model code | Belt to use    | Manufacturer name |
|------------|------------------------------|----------------|-------------------|
| MXMS, MXMM | TB-NSA-M                     | 385-EV5G-9RF   | Gates Unitta Asia |
| LXMS, LXMM | TB-NSA-L                     | 400-EV5GT-15RF | Gates Unitta Asia |
| WXMS, WXMM | TB-NSA-W                     | 520-EV5GT-20RF | Gates Unitta Asia |

1. Take off the end covers and screw covers on the both ends.

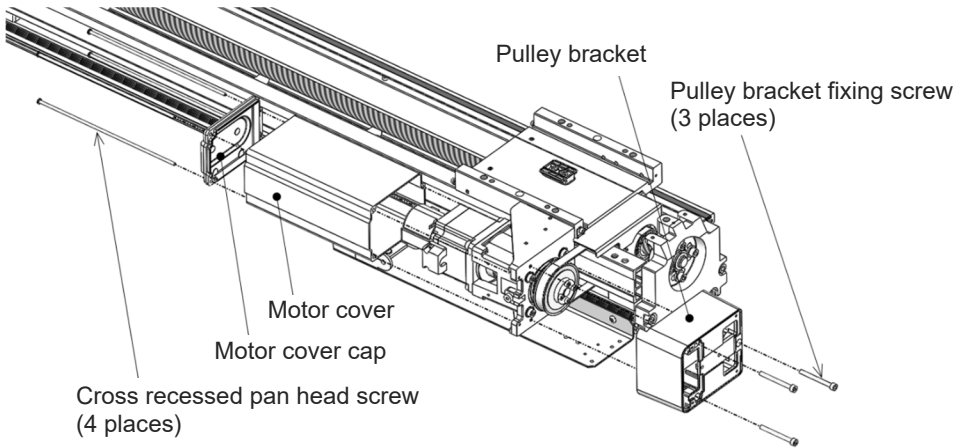


| Type of screws           |                                        |
|--------------------------|----------------------------------------|
| End cover fixing screw   | Thin-head TP type (Hex socket): M3 × 5 |
| Screw cover fixing screw | Hex socket screw: M4 × 10              |

2. Take off the pulley cover, motor cover, motor cover cap and pulley bracket.



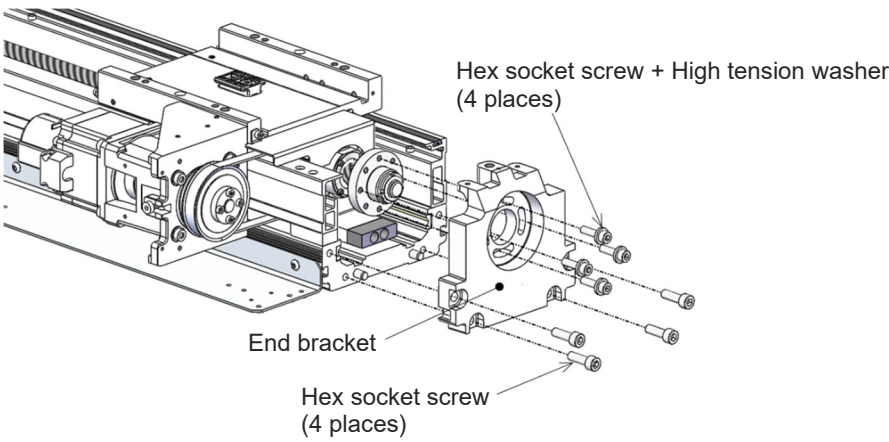
| Type of screws            |                                        |
|---------------------------|----------------------------------------|
| Pulley cover fixing screw | Thin-head TP type (Hex socket): M3 × 5 |



| Type of screws              |                           |
|-----------------------------|---------------------------|
| Pulley bracket fixing screw | Hex socket screw: M4 × 40 |

| Model      | Type of screws               |                                         |
|------------|------------------------------|-----------------------------------------|
| MXMS, MXMM | Motor cover cap fixing screw | Cross recessed pan head screw: M3 × 170 |
| LXMS, LXMM | Motor cover cap fixing screw | Cross recessed pan head screw: M3 × 195 |
| WXMS, WXMM | Motor cover cap fixing screw | Cross recessed pan head screw: M4 × 155 |

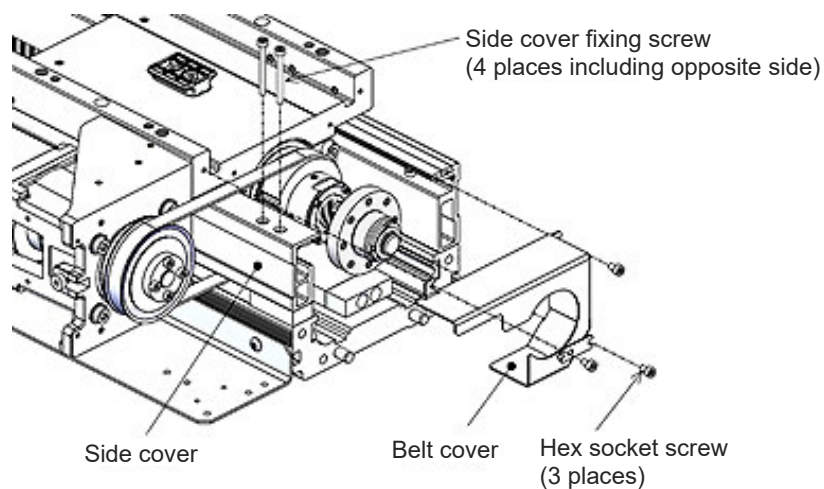
3. Take off the end bracket.



| Model      | Type of screws           |                           |
|------------|--------------------------|---------------------------|
| MXMS, MXMM | End bracket fixing screw | Hex socket screw: M6 × 20 |
| LXMS, LXMM | End bracket fixing screw | Hex socket screw: M6 × 25 |
| WXMS, WXMM | End bracket fixing screw | Hex socket screw: M8 × 30 |

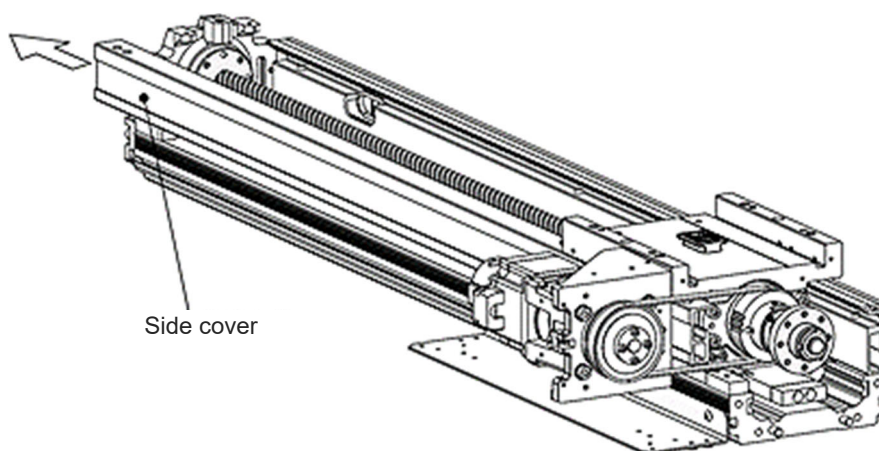
| Model      | Types of screws and High tension washer                           |                                                         |
|------------|-------------------------------------------------------------------|---------------------------------------------------------|
| MXMS, MXMM | End bracket fixing screw,<br>For joint to ball screw assembly end | Hex socket screw: M5 × 20                               |
|            |                                                                   | High tension washer: $\phi 5.5 \times \phi 12 \times 2$ |
| LXMS, LXMM | End bracket fixing screw,<br>For joint to ball screw assembly end | Hex socket screw: M5 × 25                               |
|            |                                                                   | High tension washer: $\phi 5.5 \times \phi 12 \times 2$ |
| WXMS, WXMM | End bracket fixing screw,<br>For joint to ball screw assembly end | Hex socket screw: M6 × 25                               |
|            |                                                                   | High tension washer: $\phi 7 \times \phi 14 \times 2.3$ |

4. Take off the belt cover and side cover fixing screws.  
Then, slide the side cover for approximately 100mm to the opposite side.

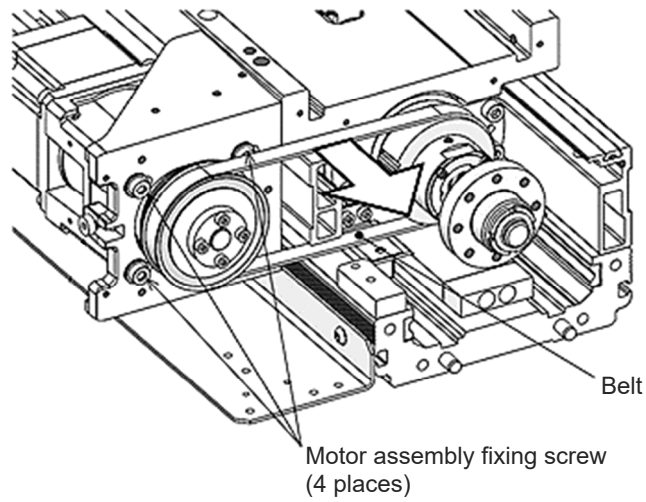


| Model      | Type of screws          |                           |
|------------|-------------------------|---------------------------|
| MXMS, MXMM | Side cover fixing screw | Hex socket screw: M3 × 30 |
| LXMS, LXMM | Side cover fixing screw | Hex socket screw: M3 × 30 |
| WXMS, WXMM | Side cover fixing screw | Hex socket screw: M4 × 45 |

| Model      | Type of screws          |                          |
|------------|-------------------------|--------------------------|
| MXMS, MXMM | Belt cover fixing screw | Hex socket screw: M3 × 5 |
| LXMS, LXMM | Belt cover fixing screw | Hex socket screw: M3 × 5 |
| WXMS, WXMM | Belt cover fixing screw | Hex socket screw: M3 × 5 |

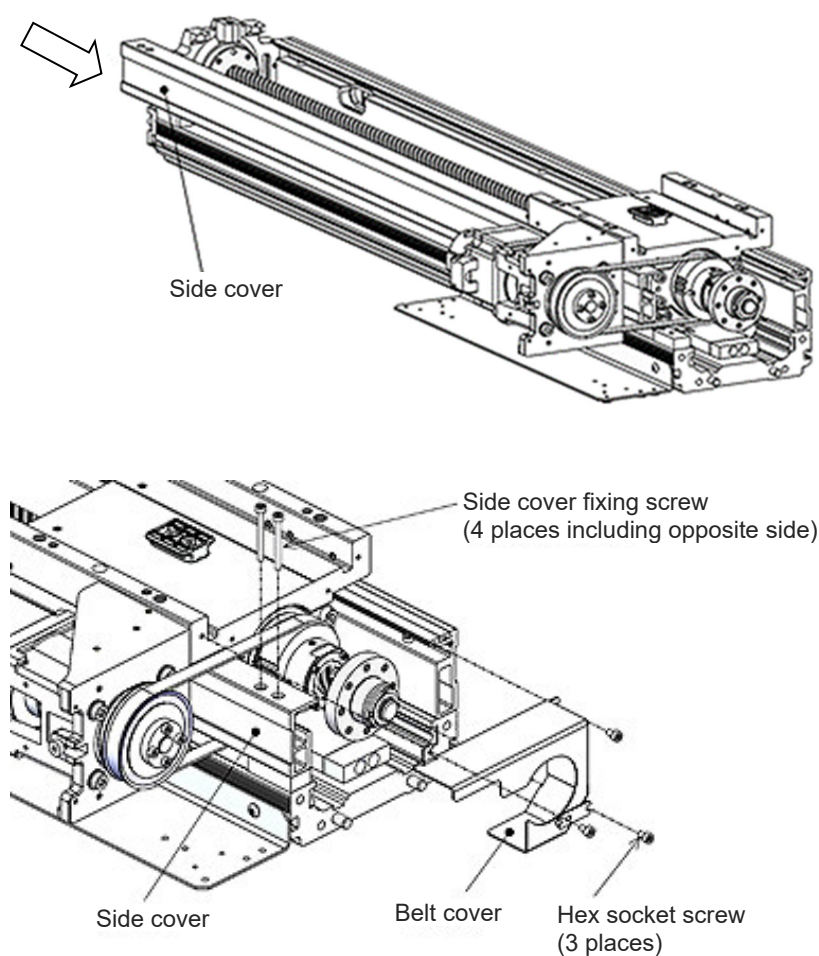


5. Loosen the motor assembly fixing screws (4 places).  
Loosen the tension of the belt and take it off, and then apply a belt for replacement.



| Model      | Type of screws              |                                   |
|------------|-----------------------------|-----------------------------------|
| MXMS, MXMM | Motor assembly fixing screw | Flanged hex socket screw: M5 × 15 |
| LXMS, LXMM | Motor assembly fixing screw | Flanged hex socket screw: M5 × 15 |
| WXMS, WXMM | Motor assembly fixing screw | Hex socket screw: M6 × 15         |

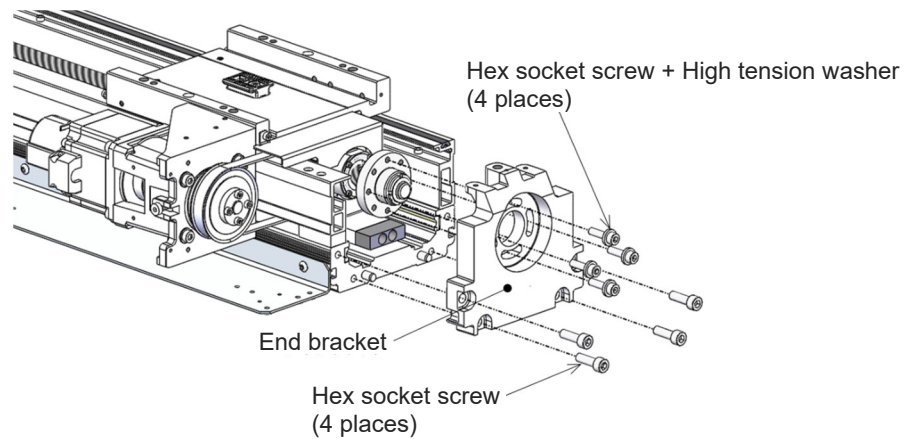
6. Put the side cover back on and affix it with the side cover fixing screws.  
Put on the belt cover.



| Model      | Type of screws          |                           | Tightening torque<br>[N·m] |
|------------|-------------------------|---------------------------|----------------------------|
| MXMS, MXMM | Side cover fixing screw | Hex socket screw: M3 × 30 | 0.8                        |
| LXMS, LXMM | Side cover fixing screw | Hex socket screw: M3 × 30 | 0.8                        |
| WXMS, WXMM | Side cover fixing screw | Hex socket screw: M4 × 45 | 1.8                        |

| Model      | Type of screws          |                          | Tightening torque<br>[N·m] |
|------------|-------------------------|--------------------------|----------------------------|
| MXMS, MXMM | Belt cover fixing screw | Hex socket screw: M3 × 5 | 1.5                        |
| LXMS, LXMM | Belt cover fixing screw | Hex socket screw: M3 × 5 | 1.5                        |
| WXMS, WXMM | Belt cover fixing screw | Hex socket screw: M3 × 5 | 1.5                        |

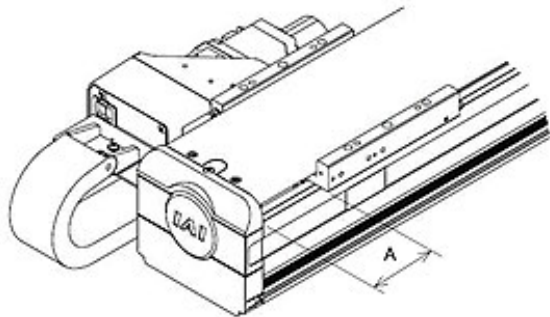
## 7. Put on the end bracket.



| Model      | Type of screws           |                           | Tightening torque [N·m] |
|------------|--------------------------|---------------------------|-------------------------|
| MXMS, MXMM | End bracket fixing screw | Hex socket screw: M6 × 20 | 5.4                     |
| LXMS, LXMM | End bracket fixing screw | Hex socket screw: M6 × 25 | 5.4                     |
| WXMS, WXMM | End bracket fixing screw | Hex socket screw: M8 × 30 | 11.5                    |

| Model      | Types of screws and High tension washer                           |                                                         | Tightening torque [N·m] |
|------------|-------------------------------------------------------------------|---------------------------------------------------------|-------------------------|
| MXMS, MXMM | End bracket fixing screw,<br>For joint to ball screw assembly end | Hex socket screw: M5 × 20                               | 7.3                     |
|            |                                                                   | High tension washer: $\phi 5.5 \times \phi 12 \times 2$ |                         |
| LXMS, LXMM | End bracket fixing screw,<br>For joint to ball screw assembly end | Hex socket screw: M5 × 25                               | 7.3                     |
|            |                                                                   | High tension washer: $\phi 5.5 \times \phi 12 \times 2$ |                         |
| WXMS, WXMM | End bracket fixing screw,<br>For joint to ball screw assembly end | Hex socket screw: M6 × 25                               | 12.3                    |
|            |                                                                   | High tension washer: $\phi 7 \times \phi 14 \times 2.3$ |                         |

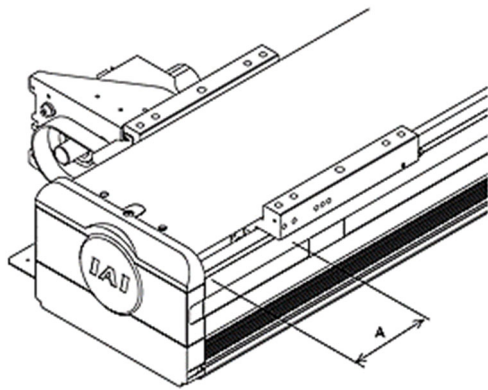
8. Move the slider to the specified position (position at Dimension A in the table) and keep it at this position.
- ⊙ MXMS, MXMM, LXMS, LXMM



Dimension A specifies the dimension from the end surface of the base to the end surface of the slider.

|        | MXMS                |                        | MXMM | LXMS                |                        | LXMM |
|--------|---------------------|------------------------|------|---------------------|------------------------|------|
|        | Home position basis | Opposite home position |      | Home position basis | Opposite home position |      |
| A [mm] | 69                  | 44                     | 69   | 74                  | 44                     | 74   |

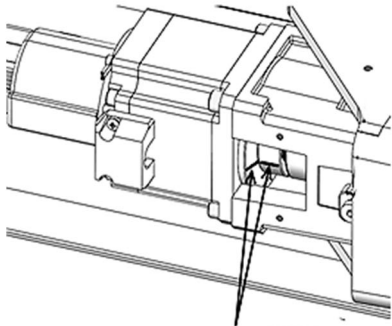
- ⊙ WXMS, WXMM



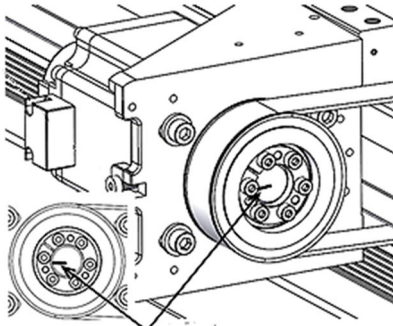
Dimension A specifies the dimension from the end surface of the base to the end surface of the slider.

|        | WXMS                |                        | WXMM |
|--------|---------------------|------------------------|------|
|        | Home position basis | Opposite home position |      |
| A [mm] | 92                  | 47                     | 92   |

9. Move the marking on the coupling or the tip of the motor shaft to the position shown in the figures below.

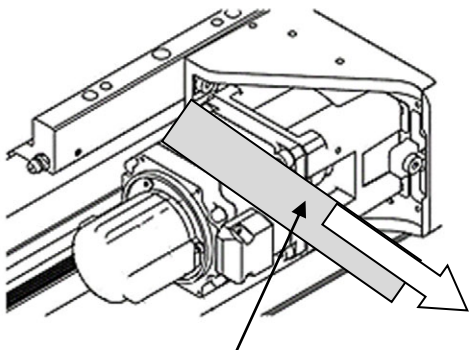


Matching marks aligned

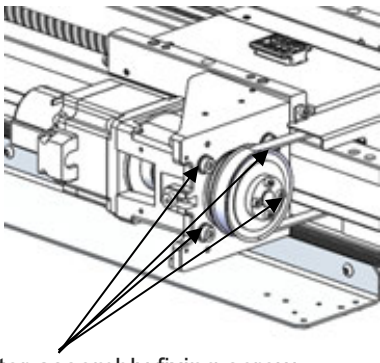


Mark orienting outside

10. Adjust the belt tension.  
Hang a cable band (thin string) on the motor unit and pull it using a tension gauge to apply the specified tensile strength.  
Once the tensile strength gets to the specified, keep it while tightening the motor assembly fixing screws and affixing the motor unit.



Cable band (Thin string)

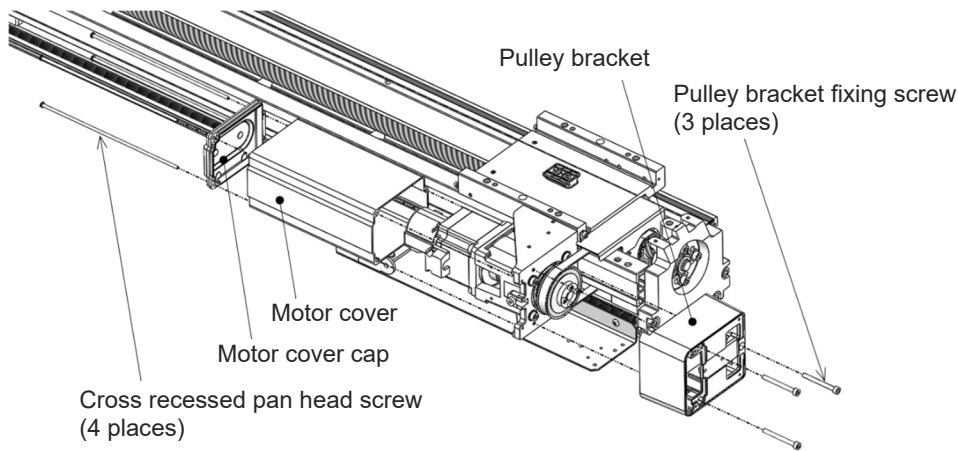


Motor assembly fixing screw

|                   | MXMS, MXMM | LXMS, LXMM | WXMS, WXMM |
|-------------------|------------|------------|------------|
| Tension force [N] | 120 to 130 | 200 to 220 | 300 to 320 |

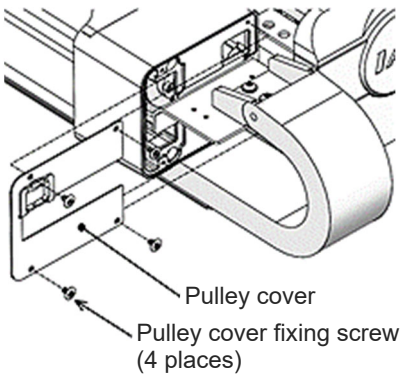
| Model      | Type of screws              |                                                                                      | Tightening torque [N·m] |
|------------|-----------------------------|--------------------------------------------------------------------------------------|-------------------------|
| MXMS, MXMM | Motor assembly fixing screw | Flanged hex socket screw: M5 × 15                                                    | 7.3                     |
| LXMS, LXMM | Motor assembly fixing screw | Flanged hex socket screw: M5 × 15                                                    | 7.3                     |
| WXMS, WXMM | Motor assembly fixing screw | Hex socket screw: M6 × 15<br>High tension washer: $\phi 7 \times \phi 14 \times 2.3$ | 12.3                    |

11. Put on the motor cover, motor cover cap, pulley bracket and pulley cover.



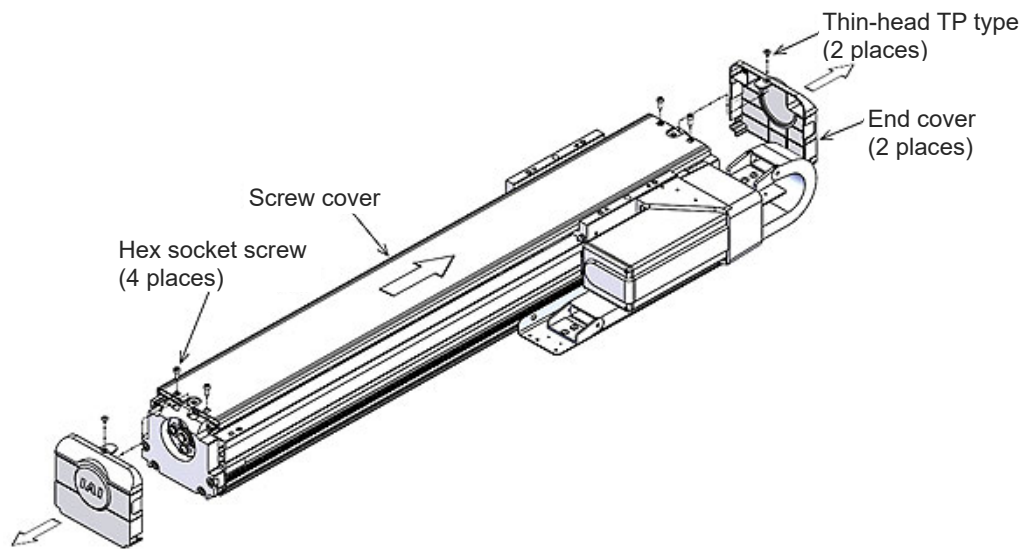
| Type of screws              |                           | Tightening torque [N•m] |
|-----------------------------|---------------------------|-------------------------|
| Pulley bracket fixing screw | Hex socket screw: M4 × 40 | 1.8                     |

| Model      | Type of screws               |                                         | Tightening torque [N•m] |
|------------|------------------------------|-----------------------------------------|-------------------------|
| MXMS, MXMM | Motor cover cap fixing screw | Cross recessed pan head screw: M3 × 170 | 0.4                     |
| LXMS, LXMM | Motor cover cap fixing screw | Cross recessed pan head screw: M3 × 195 | 0.4                     |
| WXMS, WXMM | Motor cover cap fixing screw | Cross recessed pan head screw: M4 × 155 | 1.0                     |



| Type of screws            |                                        | Tightening torque [N•m] |
|---------------------------|----------------------------------------|-------------------------|
| Pulley cover fixing screw | Thin-head TP type (Hex socket): M3 × 5 | 0.7                     |

12. Put the end covers and screw covers on the both ends.



| Type of screws           |                                        | Tightening torque [N•m] |
|--------------------------|----------------------------------------|-------------------------|
| End cover fixing screw   | Thin-head TP type (Hex socket): M3 × 5 | 0.7                     |
| Screw cover fixing screw | Hex socket screw: M4 × 10              | 1.7                     |

4.6.2 Motor replacement

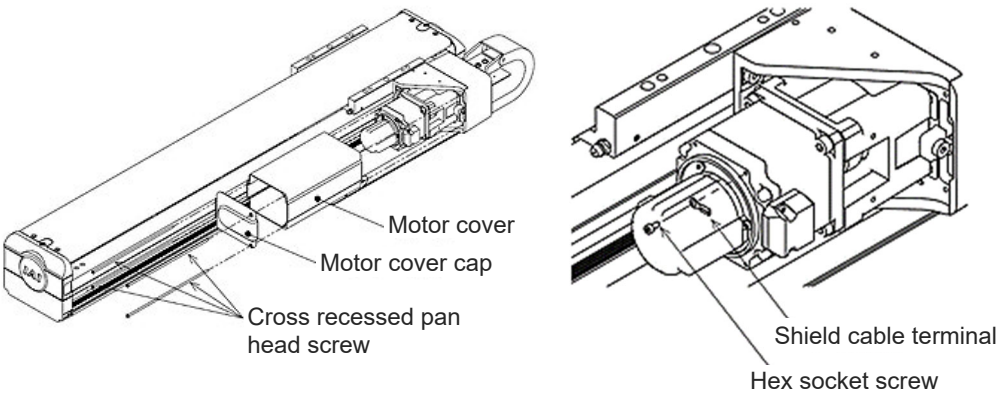
(1) MXMS, MXMM, LXMS, LXMM, LXXMS, LXXMM

\* For those with the cable carrier ejection in different directions and Slider 2 in the multiple slider type, the profile should be in the opposite way to the figures for explanation, however, the work should be carried out in the same order.

Model Codes for Replacement Motor Units

| Model                       | Model code for motor units |
|-----------------------------|----------------------------|
| MXMS, MXMM                  | NSA-MUM-CO                 |
| LXMS, LXMM,<br>LXXMS, LXXMM | NSA-MUL-CO                 |

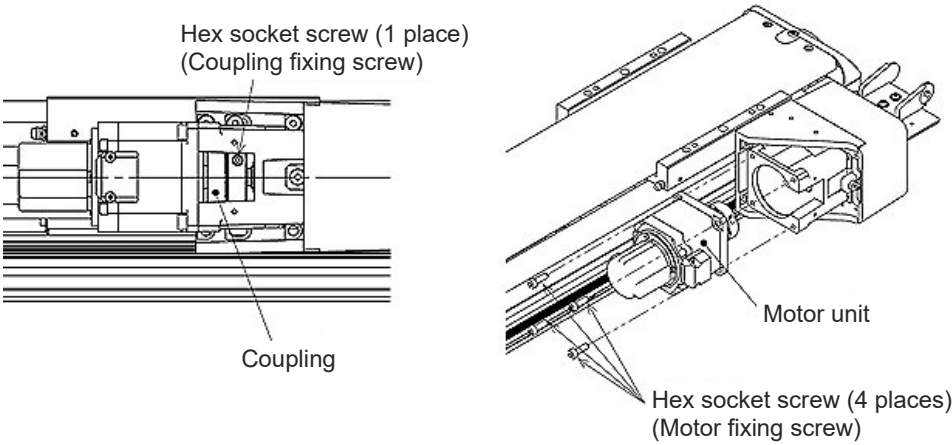
1. Take off the motor cover and motor cap.  
Take off the cable connector joint inside the motor cover.  
Take off the shield cable terminal.



| Model                       | Type of screws               |                                         |
|-----------------------------|------------------------------|-----------------------------------------|
| MXMS, MXMM                  | Motor cover cap fixing screw | Cross recessed pan head screw: M3 × 170 |
| LXMS, LXMM,<br>LXXMS, LXXMM | Motor cover cap fixing screw | Cross recessed pan head screw: M3 × 195 |

| Model                       | Type of screws                     |                            |
|-----------------------------|------------------------------------|----------------------------|
| MXMS, MXMM                  | Shield cable terminal fixing screw | Hex socket screw: M2.5 × 5 |
| LXMS, LXMM,<br>LXXMS, LXXMM | Shield cable terminal fixing screw | Hex socket screw: M2.5 × 5 |

2. Loosen the coupling fixing screw and motor fixing screws to take off the motor.



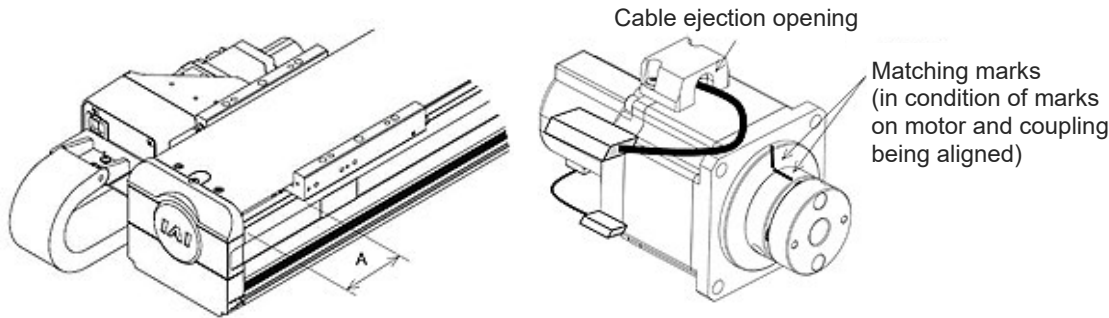
| Model                    | Type of screws        |                      |
|--------------------------|-----------------------|----------------------|
| MXMS, MXMM               | Coupling fixing screw | Hex socket screw: M3 |
| LXMS, LXMM, LXMXS, LXMXM | Coupling fixing screw | Hex socket screw: M3 |

| Model                    | Type of screws     |                           |
|--------------------------|--------------------|---------------------------|
| MXMS, MXMM               | Motor fixing screw | Hex socket screw: M5 × 15 |
| LXMS, LXMM, LXMXS, LXMXM | Motor fixing screw | Hex socket screw: M5 × 15 |

3. Move the slider to the specified position (position at Dimension A in the table) and keep it at this position.

With the slider at that position, attach the motor for replacement, which is with the matching marks aligned, in the orientation that the cable ejection goes outside.

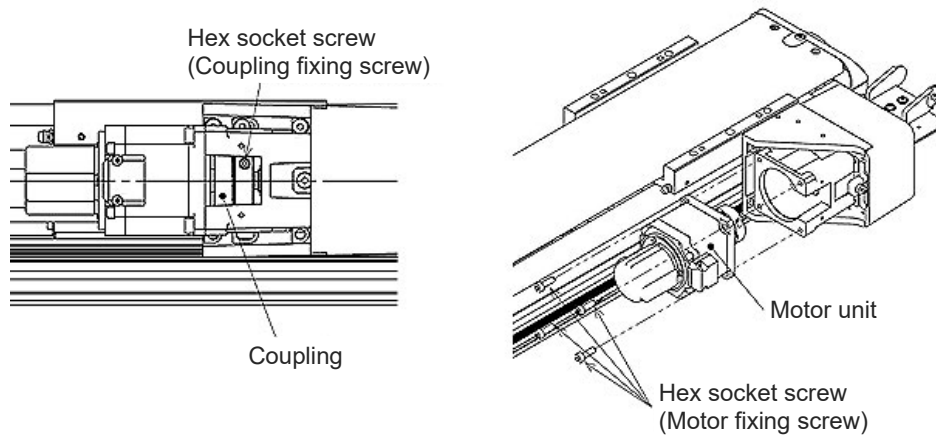
Align the matching marks if they are not.



Dimension A specifies the dimension from the end surface of the base to the end surface of the slider.

|       | MXMS                |                        | MXMM |                     |                        |       |
|-------|---------------------|------------------------|------|---------------------|------------------------|-------|
|       | Home position basis | Opposite home position |      |                     |                        |       |
| A[mm] | 69                  | 44                     | 69   |                     |                        |       |
|       | LXMS                |                        | LXMM | LXMXS               |                        | LXMXM |
|       | Home position basis | Opposite home position |      | Home position basis | Opposite home position |       |
| A[mm] | 74                  | 44                     | 74   | 125                 | 75                     | 125   |

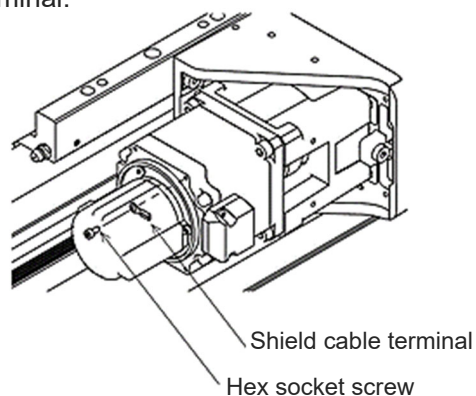
4. Tighten then reverse the motor fixing screws, and tighten up the coupling fixing screw. After tightening up the coupling fixing screw, loosen the motor fixing screws once and then fully tighten them up.



| Model                    | Type of screws        |                      | Tightening torque [N·m] |
|--------------------------|-----------------------|----------------------|-------------------------|
| MXMS, MXMM               | Coupling fixing screw | Hex socket screw: M3 | 1.5                     |
| LXMS, LXMM, LXMXS, LXMXM | Coupling fixing screw | Hex socket screw: M3 | 1.5                     |

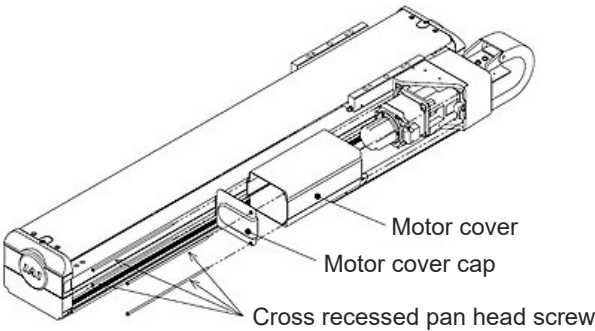
| Model                    | Type of screws     |                           | Tightening torque [N·m] |
|--------------------------|--------------------|---------------------------|-------------------------|
| MXMS, MXMM               | Motor fixing screw | Hex socket screw: M5 × 15 | 3.4                     |
| LXMS, LXMM, LXMXS, LXMXM | Motor fixing screw | Hex socket screw: M5 × 15 | 3.4                     |

5. Join the cable connectors inside the motor cover. Put on the shield cable terminal.



| Model                    | Type of screws                     |                            | Tightening torque [N·m] |
|--------------------------|------------------------------------|----------------------------|-------------------------|
| MXMS, MXMM               | Shield cable terminal fixing screw | Hex socket screw: M2.5 × 5 | 0.4                     |
| LXMS, LXMM, LXMXS, LXMXM | Shield cable terminal fixing screw | Hex socket screw: M2.5 × 5 | 0.4                     |

6. Put on the motor cover and motor cover cap.



| Model                       | Type of screws               |                                            | Tightening torque [N•m] |
|-----------------------------|------------------------------|--------------------------------------------|-------------------------|
| MXMS, MXMM                  | Motor cover cap fixing screw | Cross recessed pan head screw:<br>M3 × 170 | 0.4                     |
| LXMS, LXMM,<br>LXMXS, LXMXM | Motor cover cap fixing screw | Cross recessed pan head screw:<br>M3 × 195 | 0.4                     |

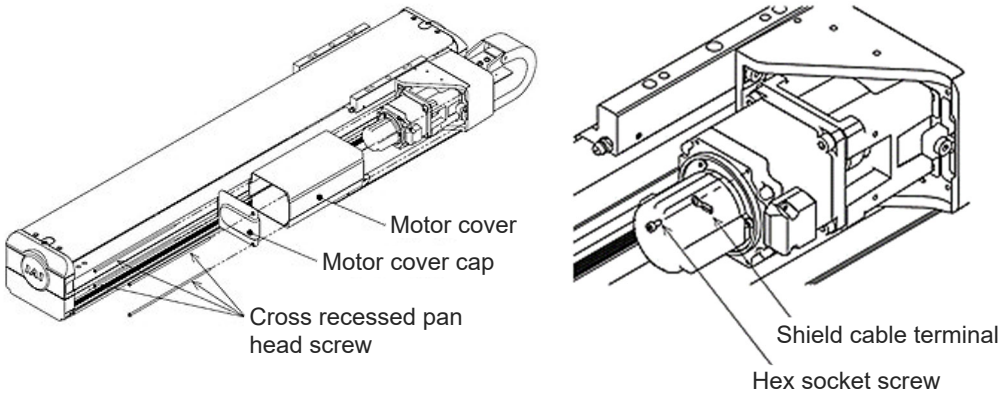
(2) WXMS, WXMM, WXXMS, WXXMXM

\* For those with the cable carrier ejection in different directions and Slider 2 in the multiple slider type, the profile should be in the opposite way to the figures for explanation, however, the work should be carried out in the same order.

Model Codes for Replacement Motor Unit

| Model                     | Model code for motor unit |
|---------------------------|---------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | NSA-MUW                   |

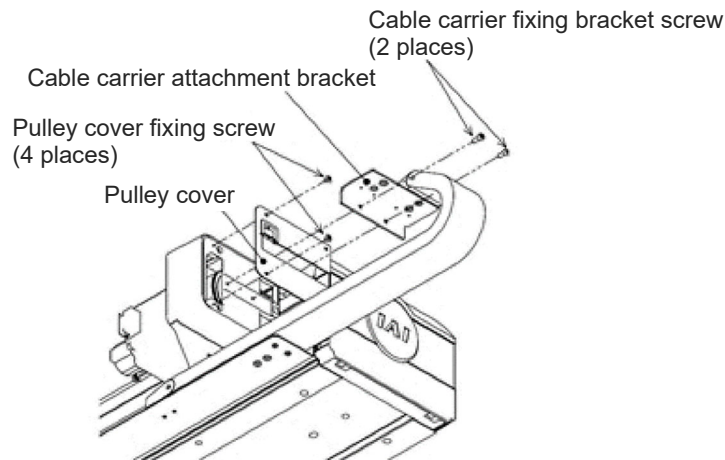
1. Take off the motor cover and motor cap.  
Take off the cable connector joint inside the motor cover.  
Take off the shield cable terminal.



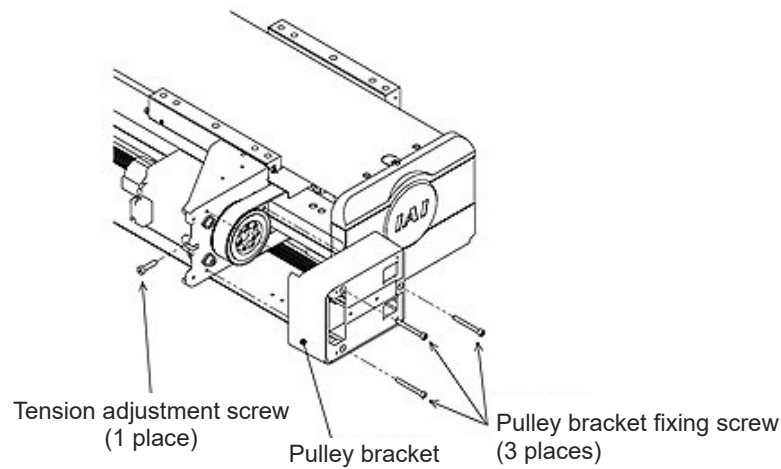
| Model                     | Type of screws               |                                         |
|---------------------------|------------------------------|-----------------------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Motor cover cap fixing screw | Cross recessed pan head screw: M4 × 155 |

| Model                     | Type of screws                     |                          |
|---------------------------|------------------------------------|--------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Shield cable terminal fixing screw | Hex socket screw: M3 × 5 |

2. Take off the pulley cover and pulley bracket.



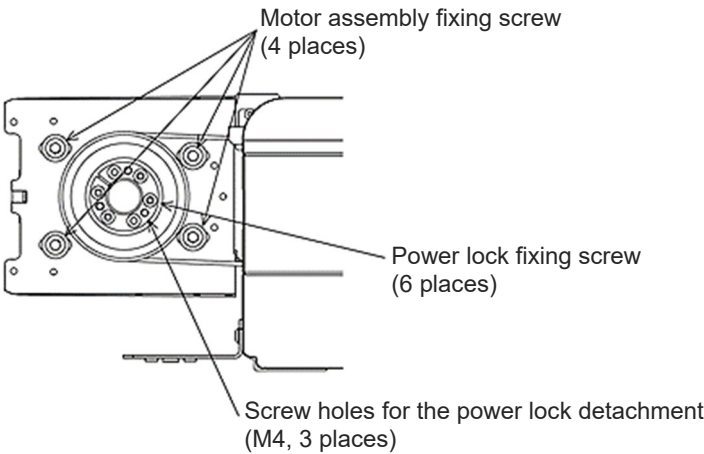
| Model                     | Type of screws                     |                                       |
|---------------------------|------------------------------------|---------------------------------------|
|                           |                                    |                                       |
| WXMS, WXMM, WXXMS, WXXMXM | Pulley cover fixing screw          | Thin-head TP type (Hex socket): M3 ×5 |
|                           | Cable carrier fixing bracket screw | Hex socket screw: M4 × 10             |



| Model                     | Type of screws              |                           |
|---------------------------|-----------------------------|---------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Pulley bracket fixing screw | Hex socket screw: M4 × 40 |

3. Loosen the motor assembly fixing screws to release the belt tension.  
Loosen the power lock fixing screw.

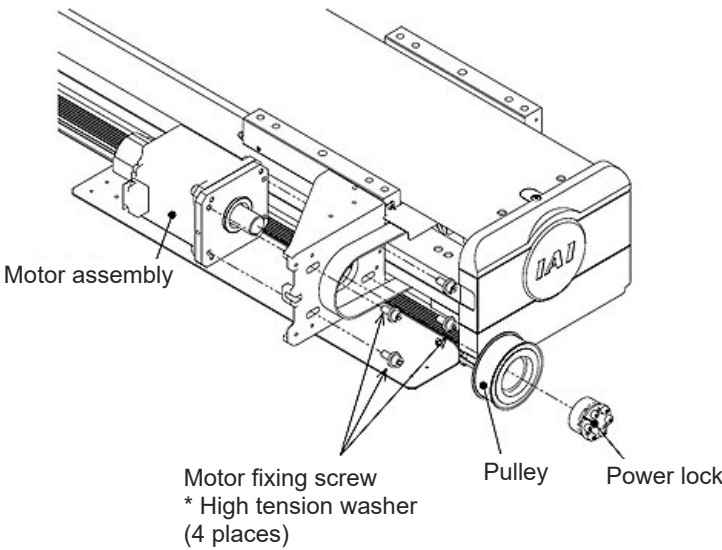
\* When taking off the power lock, put the fixing screws in screw holes for the power lock detachment and tighten the screws up. Tighten up evenly at the three screw holes when taking off the power lock.



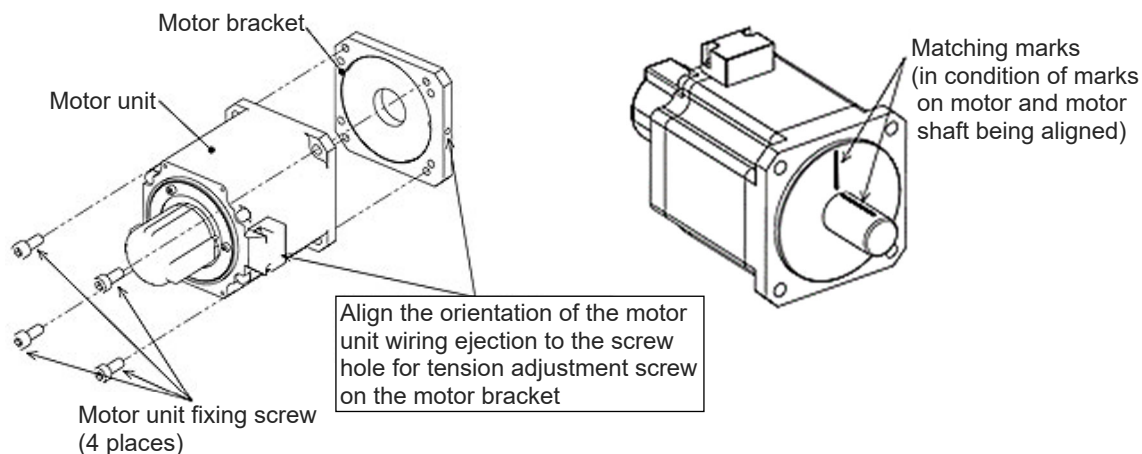
| Model                     | Type of screws                                                                         |                                  |
|---------------------------|----------------------------------------------------------------------------------------|----------------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Motor assembly fixing screw<br>High tension washer: $\phi 7 \times \phi 14 \times 2.3$ | Hex socket screw: M6 $\times$ 15 |

| Model                     | Type of screws          |                      |
|---------------------------|-------------------------|----------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Power lock fixing screw | Hex socket screw: M4 |

4. Take off the pulley and power lock, also the motor assembly.

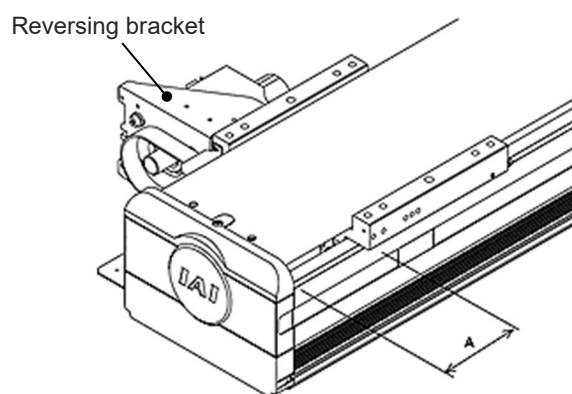


5. Take off the motor bracket and set the motor for replacement on the motor bracket. Confirm that the motor for replacement has the matching marks aligned with each other before attaching it on the motor bracket. Align the matching marks if they are not.



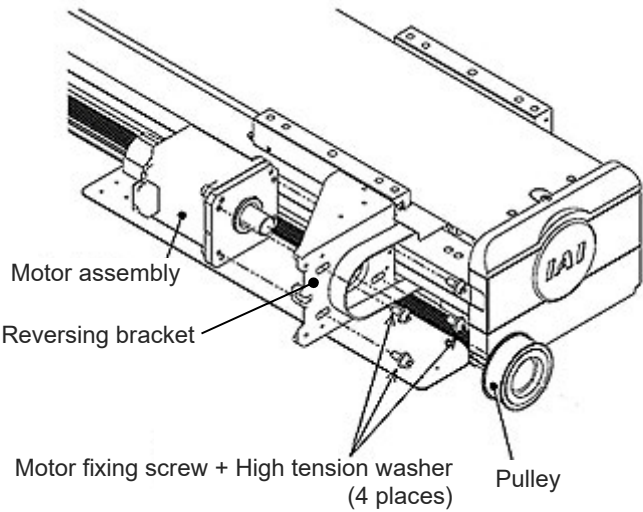
| Model                    | Type of screws          |                           | Tightening torque [N·m] |
|--------------------------|-------------------------|---------------------------|-------------------------|
| WXMS, WXMM, WXXMS, WXXXM | Motor unit fixing screw | Hex socket screw: M6 × 15 | 5.4                     |

6. Move the slider to the specified position (position at Dimension A in the table) and attach the motor assembly to the reversing bracket and affix it temporarily with screws half tightened. Attach it with the wiring ejection on the motor assembly facing outside.



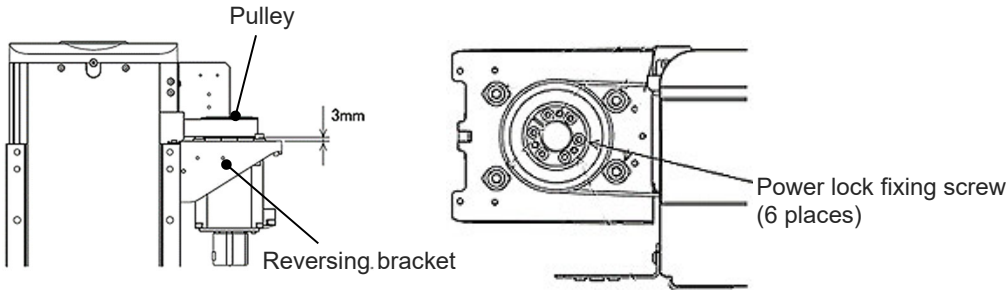
Dimension A specifies the dimension from the end surface of the base to the end surface of the slider.

|        | WXMS                |                        | WXMM | WXXMS               |                        | WXXXM |
|--------|---------------------|------------------------|------|---------------------|------------------------|-------|
|        | Home position basis | Opposite home position |      | Home position basis | Opposite home position |       |
| A [mm] | 92                  | 47                     | 92   | 155                 | 75                     | 155   |



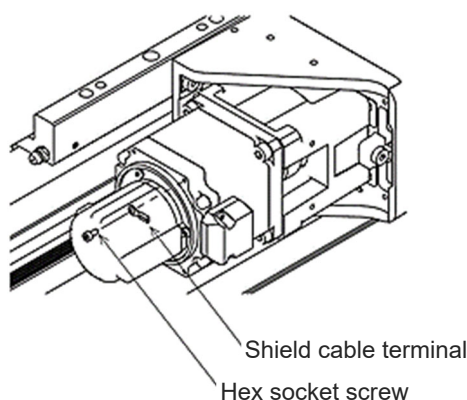
| Model                     | Type of screws                                                                         |                                  |
|---------------------------|----------------------------------------------------------------------------------------|----------------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Motor assembly fixing screw<br>High tension washer: $\phi 7 \times \phi 14 \times 2.3$ | Hex socket screw: M6 $\times$ 15 |

7. Attach the pulley and power lock.
- Affix the pulley at the position with 3mm gap to the reversing bracket.
- Tighten up the power lock fixing screws evenly at six points.



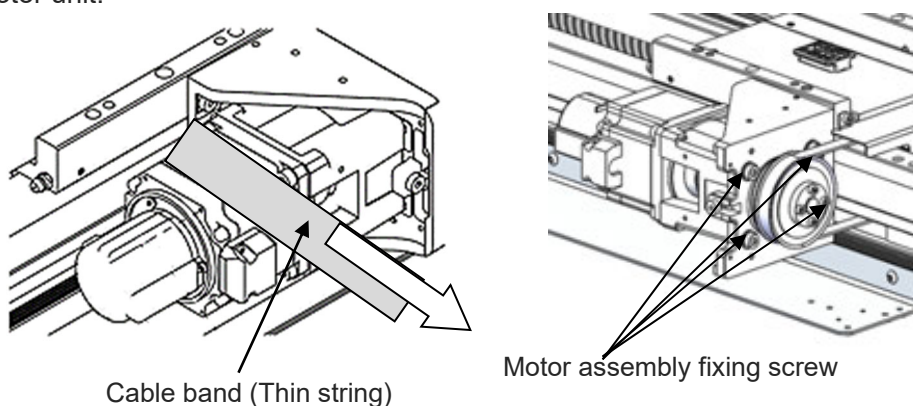
| Model                     | Type of screws          |                      | Tightening torque [N·m] |
|---------------------------|-------------------------|----------------------|-------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Power lock fixing screw | Hex socket screw: M4 | 4.8                     |

8. Join the cable connectors inside the motor cover.  
Put on the shield cable terminal.



| Model                     | Type of screws                     |                          | Tightening torque [N·m] |
|---------------------------|------------------------------------|--------------------------|-------------------------|
| WXMS, WXMM, WXMXS, WXM XM | Shield cable terminal fixing screw | Hex socket screw: M3 × 5 | 0.8                     |

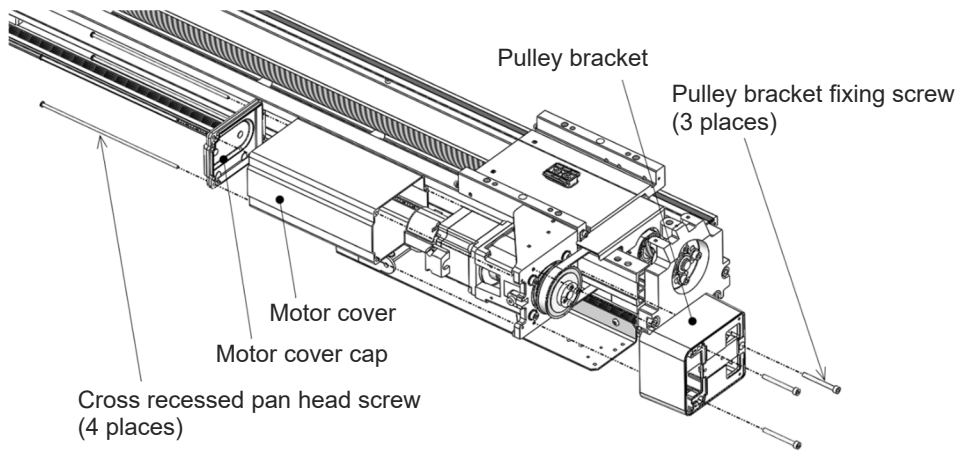
9. Adjust the belt tension.  
Hang a cable band (thin string) on the motor unit and pull it using a tension gauge to apply the specified tensile strength.  
Once the tensile strength gets to the specified, tighten the motor assembly fixing screws and affix the motor unit.



|                           | Tension force [N] |
|---------------------------|-------------------|
| WXMS, WXMM, WXMXS, WXM XM | 300 to 320        |

| Model                     | Type of screws              |                                                                                      | Tightening torque [N·m] |
|---------------------------|-----------------------------|--------------------------------------------------------------------------------------|-------------------------|
| WXMS, WXMM, WXMXS, WXM XM | Motor assembly fixing screw | Hex socket screw: M6 × 15<br>High tension washer: $\phi 7 \times \phi 14 \times 2.3$ | 12.3                    |

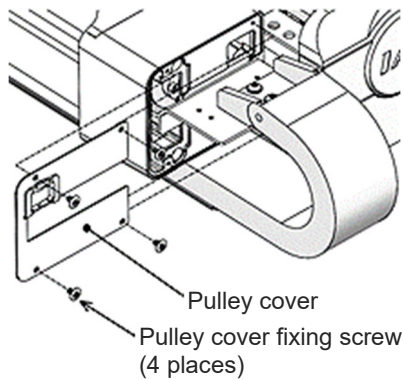
10. Put on the motor cover, motor cover cap and pulley bracket.



| Model                     | Type of screws              |                           | Tightening torque [N·m] |
|---------------------------|-----------------------------|---------------------------|-------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Pulley bracket fixing screw | Hex socket screw: M4 × 40 | 1.8                     |

| Model                     | Type of screws               |                                         | Tightening torque [N·m] |
|---------------------------|------------------------------|-----------------------------------------|-------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Motor cover cap fixing screw | Cross recessed pan head screw: M4 × 155 | 1.0                     |

11. Put on the pulley cover.



| Model                     | Type of screws            |                                        | Tightening torque [N·m] |
|---------------------------|---------------------------|----------------------------------------|-------------------------|
| WXMS, WXMM, WXXMS, WXXMXM | Pulley cover fixing screw | Thin-head TP type (Hex socket): M3 × 5 | 0.7                     |

### 4.6.3 Cables inside the cable carrier replacement

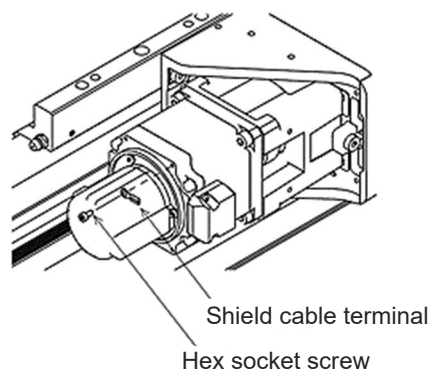
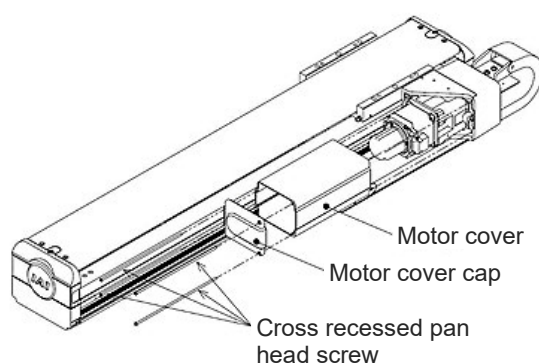
- \* For those with the cable carrier ejection in different directions and Slider 2 in the multiple slider type, the profile should be in the opposite way to the figures for explanation, however, the work should be carried out in the same order.

Model Code for Cables inside Cable Carrier for Replacement

| Model                    | Model code for cables inside cable carrier | Remarks                                                                     |
|--------------------------|--------------------------------------------|-----------------------------------------------------------------------------|
| MXMS, MXMM               | CB-NSAM-AST Stroke                         | For Standard Cable Carrier (CT3, CT4) and Cable Carrier for User (UM3, UM4) |
|                          | CB-NSAM-AST Stroke -NT                     | With No Cable Carrier (NT3, NT4)                                            |
|                          | CB-NSAM-AST Stroke -ET                     | For Extension Cable Carrier (ET5, ET6, ET7, ET8)                            |
| LXMS, LXMM, LMXS, LMXM   | CB-NSAL-AST Stroke                         | For Standard Cable Carrier (CT3, CT4) and Cable Carrier for User (UM3, UM4) |
|                          | CB-NSAL-AST Stroke -NT                     | With No Cable Carrier (NT3, NT4)                                            |
|                          | CB-NSAL-AST Stroke -ET                     | For Extension Cable Carrier (ET5, ET6, ET7, ET8)                            |
| WXMS, WXMM, WXMMS, WXMMS | CB-NSAW-AST Stroke                         | For Standard Cable Carrier (CT3, CT4) and Cable Carrier for User (UM3, UM4) |
|                          | CB-NSAW-AST Stroke -NT                     | With No Cable Carrier (NT3, NT4)                                            |
|                          | CB-NSAW-AST Stroke -ET                     | For Extension Cable Carrier (ET5, ET6, ET7, ET8)                            |

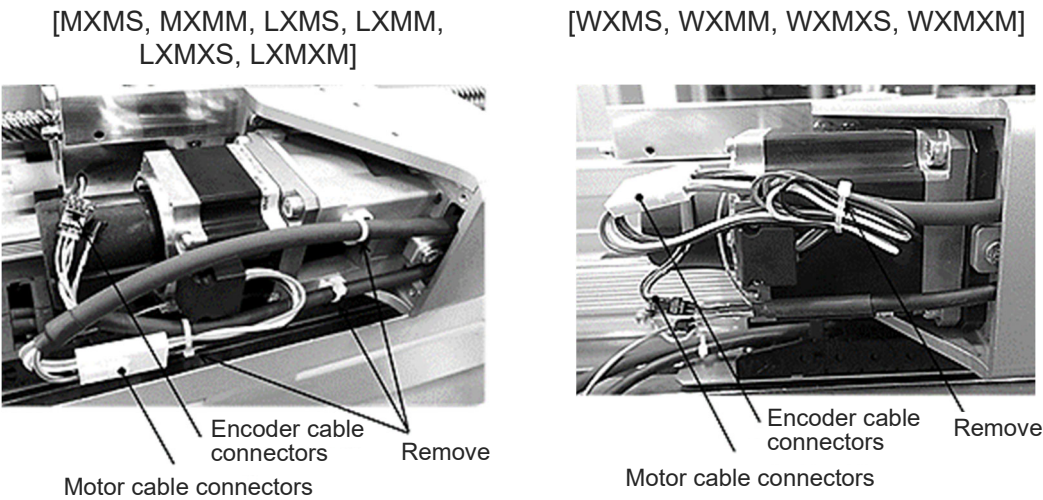
Cable O.D.: Motor Cable  $\Phi 7.6$  , Encoder Cable  $\Phi 6.3$

1. Take off the motor cover and motor cap.  
Take off the cable connector joint inside the motor cover.  
Take off the shield cable terminal.

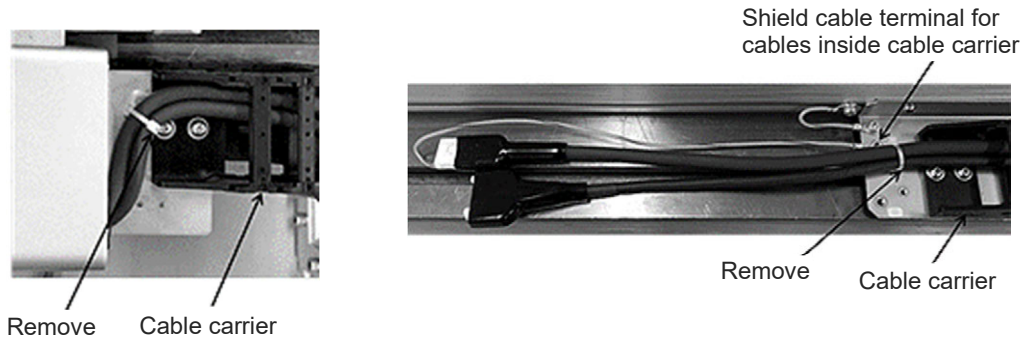


| Model                    | Motor cover cap fixing screw         | Shield cable terminal fixing screw |
|--------------------------|--------------------------------------|------------------------------------|
| MXMS, MXMM               | Cross recessed pan head screw M3×170 | Hex socket screw M2.5×5            |
| LXMS, LXMM, LMXS, LMXM   | Cross recessed pan head screw M3×195 | Hex socket screw M2.5×5            |
| WXMS, WXMM, WXMMS, WXMMS | Cross recessed pan head screw M4×155 | Hex socket screw M3×5              |

2. Remove the cable bands holding the cables inside the cable carrier and disjoin the connectors at two places.

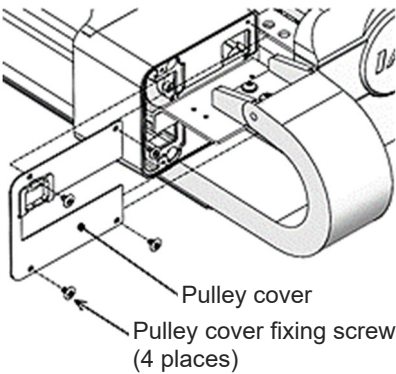


3. Remove the cable bands holding the cables inside the cable carrier and take off the shield cable terminal for cables inside the cable carrier.



| Type of screws                     |                                                 |
|------------------------------------|-------------------------------------------------|
| Shield cable terminal fixing screw | Hex socket screw: M4 × 5<br>Toothed lock washer |

4. Take off the pulley cover.

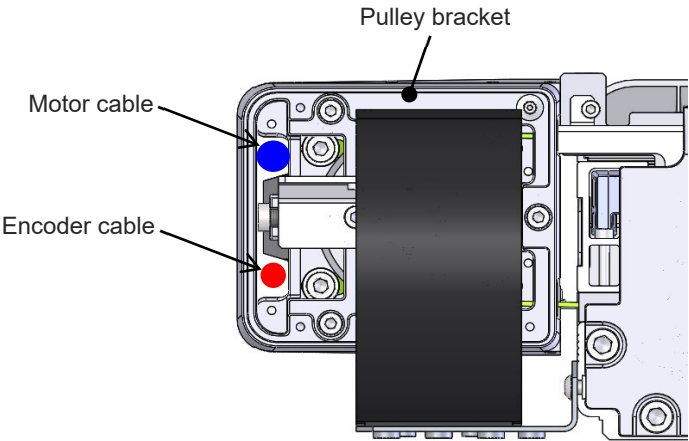


| Type of screws            |                                        |
|---------------------------|----------------------------------------|
| Pulley cover fixing screw | Thin-head TP type (Hex socket): M3 × 5 |

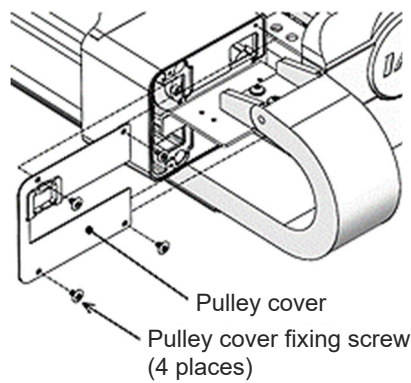
5. Take off the cables inside the cable carrier and put on new cables inside the cable carrier.

- \* Pay attention to the cables so they would not cross to each other inside the cable carrier.
- \* The motor cable in the cables in the cable carrier should go through above the pulley bracket.

The encoder cable in the cables in the cable carrier should go through below the pulley bracket.

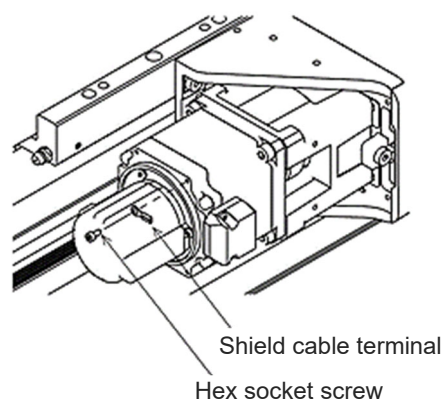


6. Put on the pulley cover.



| Type of screws            |                                       | Tightening torque [N•m] |
|---------------------------|---------------------------------------|-------------------------|
| Pulley cover fixing screw | Thin-head TP type (Hex socket): M3 ×5 | 0.7                     |

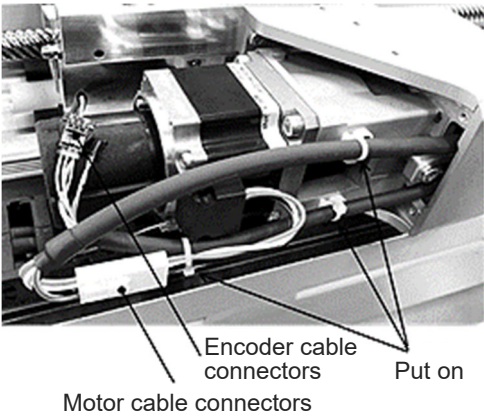
7. Attach the shield terminal.



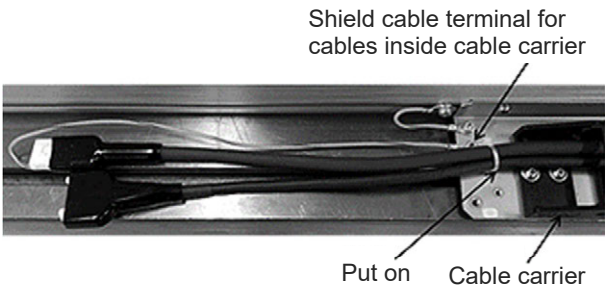
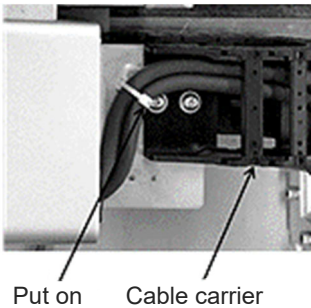
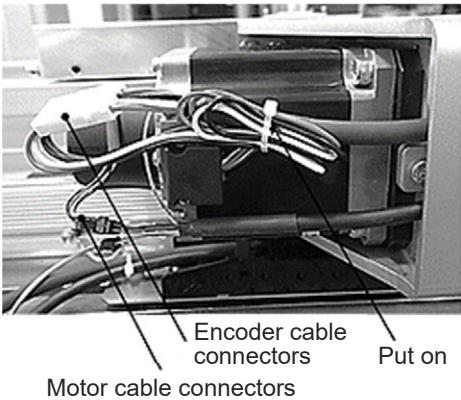
| Model                       | Type of screws                     |                            | Tightening torque [N•m] |
|-----------------------------|------------------------------------|----------------------------|-------------------------|
| MXMS, MXMM                  | Shield cable terminal fixing screw | Hex socket screw: M2.5 × 5 | 0.4                     |
| LXMS, LXMM,<br>LXXMS, LXXMM | Shield cable terminal fixing screw | Hex socket screw: M2.5 × 5 | 0.4                     |
| WXMS, WXMM,<br>WXXMS, WXXMM | Shield cable terminal fixing screw | Hex socket screw: M3 × 5   | 0.8                     |

8. Join the cable connectors for the encoder cables and motor cables inside the motor cover. Affix the cables with cable bands at the points where the cable bands were removed. Attach the shield terminal for the cables inside the cable carrier in the order of “toothed lock washer”, “shield cable terminal” and then “screw”.

【MXMS, MXMM, LXMS, LXMM】

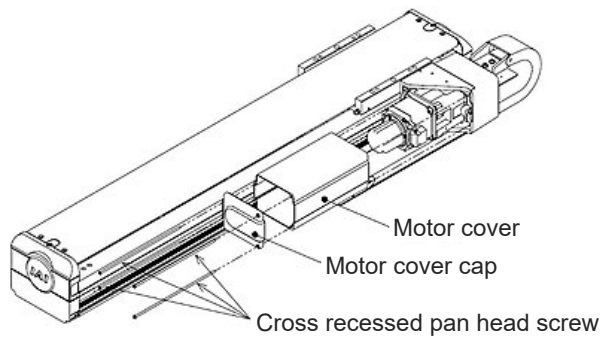


【WXMS, WXMM】



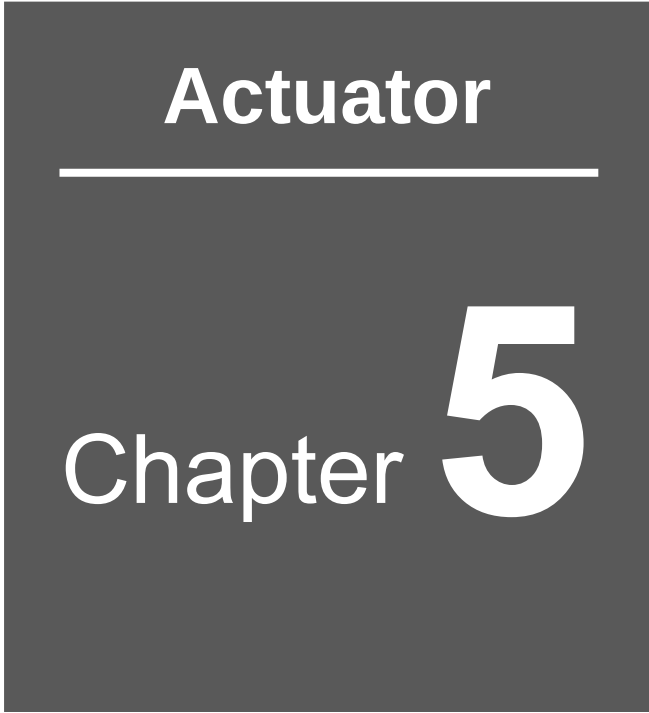
| Type of screws                     |                                                 | Tightening torque [N·m] |
|------------------------------------|-------------------------------------------------|-------------------------|
| Shield cable terminal fixing screw | Hex socket screw: M4 × 5<br>Toothed lock washer | 1.76                    |

9. Put on the motor cover and motor cover cap.



| Model                       | Type of screws               |                                            | Tightening torque [N•m] |
|-----------------------------|------------------------------|--------------------------------------------|-------------------------|
| MXMS, MXMM                  | Motor cover cap fixing screw | Cross recessed pan head screw:<br>M3 × 170 | 0.4                     |
| LXMS, LXMM,<br>LXMXS, LXMXM | Motor cover cap fixing screw | Cross recessed pan head screw:<br>M3 × 195 | 0.4                     |
| WXMS, WXMM,<br>WXMXS, WXMXM | Motor cover cap fixing screw | Cross recessed pan head screw:<br>M4 × 155 | 1.0                     |





# External Dimensions

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## 5.1 External dimensions

### 5.1.1 NSA-MXMS: Horizontal installation

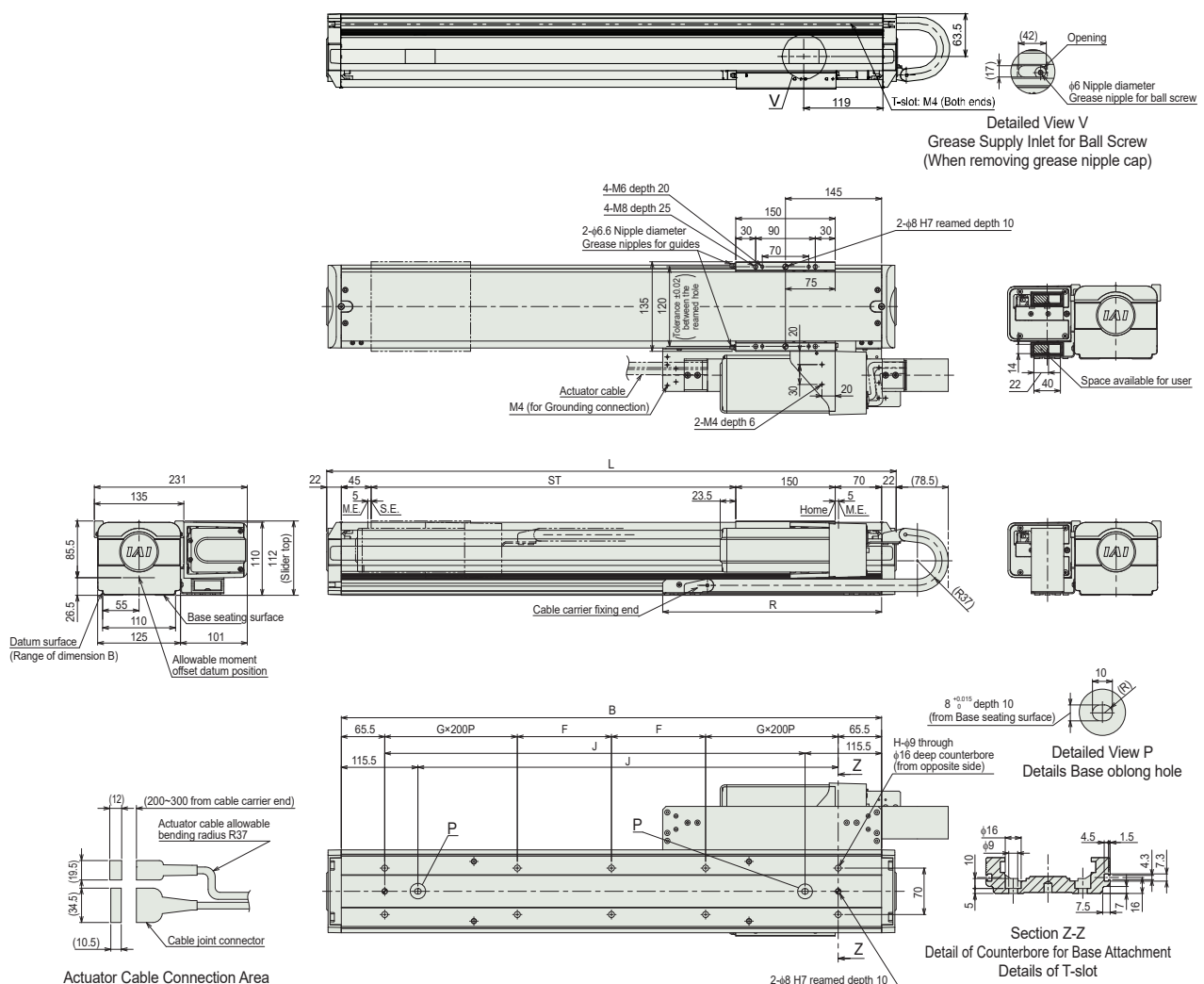
[Standard Cable Carrier (Standard/CT3)]

\* Make sure to ensure space as the cable carrier may get brought up.

(Note) To the cable joint connector, the motor cable and the encoder cable are to be connected.

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

M.E.: Mechanical End, S.E.: Stroke End



## 5. External dimensions

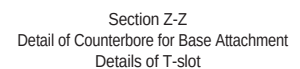
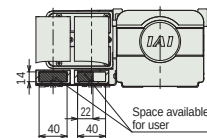
(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

Cable carrier bracket  
(Height: 80.5mm)

5-M3  
4-M4

13  
23  
23  
19  
10  
7.5  
24.5  
23  
15  
51.5  
ST/2+650

No Cable Carrier Option (NT3)



## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R   | Mass [kg]              |                    |                  |
|--------|------|------|-----|---|----|------|-----|------------------------|--------------------|------------------|
|        |      |      |     |   |    |      |     | Standard Cable carrier | User Cable Carrier | No Cable Carrier |
| 550    | 859  | 815  | 142 | 1 | 10 | 634  | 330 | 17.0                   | 17.3               | 16.5             |
| 600    | 909  | 865  | 167 | 1 | 10 | 684  | 366 | 17.6                   | 17.9               | 17.1             |
| 650    | 959  | 915  | 192 | 1 | 10 | 734  | 384 | 18.2                   | 18.6               | 17.7             |
| 700    | 1009 | 965  | 217 | 1 | 10 | 784  | 402 | 18.8                   | 19.2               | 18.2             |
| 750    | 1059 | 1015 | 242 | 1 | 10 | 834  | 438 | 19.4                   | 19.8               | 18.8             |
| 800    | 1109 | 1065 | 267 | 1 | 10 | 884  | 456 | 20.0                   | 20.4               | 19.4             |
| 850    | 1159 | 1115 | 292 | 1 | 10 | 934  | 492 | 20.6                   | 21.1               | 20.0             |
| 900    | 1209 | 1165 | 317 | 1 | 10 | 984  | 510 | 21.2                   | 21.7               | 20.5             |
| 950    | 1259 | 1215 | 142 | 2 | 14 | 1034 | 528 | 21.8                   | 22.3               | 21.1             |
| 1000   | 1309 | 1265 | 167 | 2 | 14 | 1084 | 564 | 22.4                   | 22.9               | 21.6             |
| 1050   | 1359 | 1315 | 192 | 2 | 14 | 1134 | 582 | 23.0                   | 23.5               | 22.2             |
| 1100   | 1409 | 1365 | 217 | 2 | 14 | 1184 | 618 | 23.6                   | 24.2               | 22.8             |
| 1150   | 1459 | 1415 | 242 | 2 | 14 | 1234 | 636 | 24.2                   | 24.8               | 23.3             |
| 1200   | 1509 | 1465 | 267 | 2 | 14 | 1284 | 654 | 24.8                   | 25.4               | 23.9             |
| 1250   | 1559 | 1515 | 292 | 2 | 14 | 1334 | 690 | 25.4                   | 26.0               | 24.5             |
| 1300   | 1609 | 1565 | 317 | 2 | 14 | 1384 | 708 | 26.0                   | 26.6               | 25.0             |
| 1350   | 1659 | 1615 | 142 | 3 | 18 | 1434 | 744 | 26.6                   | 27.2               | 25.6             |
| 1400   | 1709 | 1665 | 167 | 3 | 18 | 1484 | 762 | 27.1                   | 27.9               | 26.1             |
| 1450   | 1759 | 1715 | 192 | 3 | 18 | 1534 | 780 | 27.7                   | 28.5               | 26.7             |
| 1500   | 1809 | 1765 | 217 | 3 | 18 | 1584 | 816 | 28.4                   | 29.1               | 27.3             |
| 1550   | 1859 | 1815 | 242 | 3 | 18 | 1634 | 834 | 28.6                   | 29.4               | 27.3             |
| 1600   | 1909 | 1865 | 267 | 3 | 18 | 1684 | 852 | 29.2                   | 30.0               | 27.9             |
| 1650   | 1959 | 1915 | 292 | 3 | 18 | 1734 | 888 | 29.8                   | 30.7               | 28.5             |
| 1700   | 2009 | 1965 | 317 | 3 | 18 | 1784 | 906 | 30.4                   | 31.3               | 29.0             |
| 1750   | 2059 | 2015 | 142 | 4 | 22 | 1834 | 642 | 31.0                   | 31.9               | 29.6             |
| 1800   | 2109 | 2065 | 167 | 4 | 22 | 1884 | 960 | 31.6                   | 32.5               | 30.1             |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

### 5.1.2 NSA-MXMS: Horizontally oriented wall mount

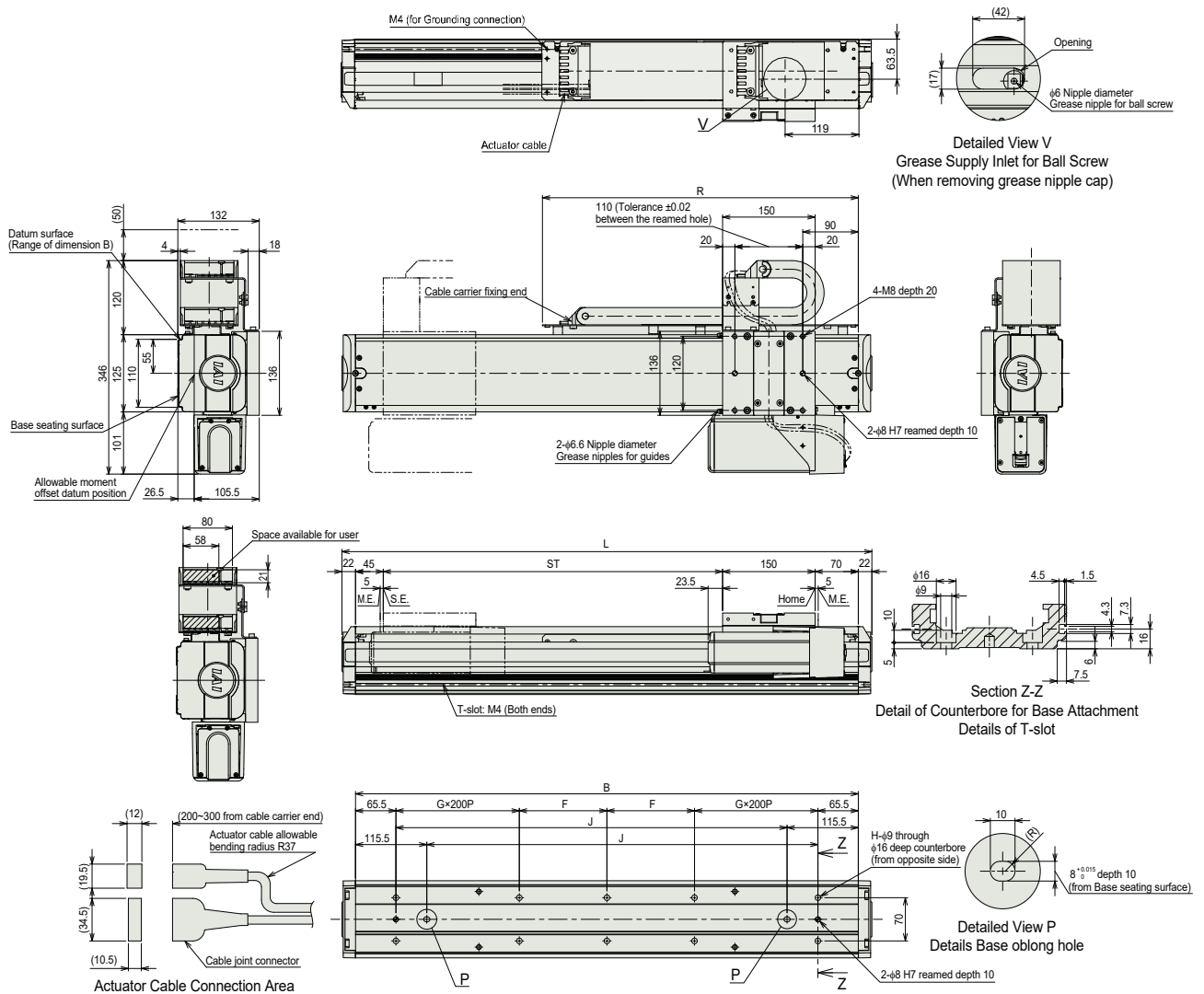
[Extension Cable Carrier (Standard/ET5)]

\* Make sure to ensure space as the cable carrier may get brought up.

(Note) To the cable joint connector, the motor cable and the encoder cable are to be connected.

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

M.E.: Mechanical End, S.E.: Stroke End



## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | Mass [kg] |
|--------|------|------|-----|---|----|------|------|-----------|
| 550    | 859  | 815  | 142 | 1 | 10 | 634  | 512  | 18.0      |
| 600    | 909  | 865  | 167 | 1 | 10 | 684  | 537  | 19.3      |
| 650    | 959  | 915  | 192 | 1 | 10 | 734  | 561  | 19.9      |
| 700    | 1009 | 965  | 217 | 1 | 10 | 784  | 587  | 20.6      |
| 750    | 1059 | 1015 | 242 | 1 | 10 | 834  | 612  | 21.1      |
| 800    | 1109 | 1065 | 267 | 1 | 10 | 884  | 637  | 21.7      |
| 850    | 1159 | 1115 | 292 | 1 | 10 | 934  | 661  | 22.3      |
| 900    | 1209 | 1165 | 317 | 1 | 10 | 984  | 686  | 23.0      |
| 950    | 1259 | 1215 | 142 | 2 | 14 | 1034 | 713  | 23.6      |
| 1000   | 1309 | 1265 | 167 | 2 | 14 | 1084 | 737  | 24.3      |
| 1050   | 1359 | 1315 | 192 | 2 | 14 | 1134 | 761  | 24.9      |
| 1100   | 1409 | 1365 | 217 | 2 | 14 | 1184 | 788  | 25.5      |
| 1150   | 1459 | 1415 | 242 | 2 | 14 | 1234 | 812  | 26.2      |
| 1200   | 1509 | 1465 | 267 | 2 | 14 | 1284 | 836  | 26.7      |
| 1250   | 1559 | 1515 | 292 | 2 | 14 | 1334 | 860  | 27.3      |
| 1300   | 1609 | 1565 | 317 | 2 | 14 | 1384 | 887  | 28.0      |
| 1350   | 1659 | 1615 | 142 | 3 | 18 | 1434 | 911  | 28.6      |
| 1400   | 1709 | 1665 | 167 | 3 | 18 | 1484 | 938  | 29.2      |
| 1450   | 1759 | 1715 | 192 | 3 | 18 | 1534 | 962  | 29.9      |
| 1500   | 1809 | 1765 | 217 | 3 | 18 | 1584 | 986  | 30.5      |
| 1550   | 1859 | 1815 | 242 | 3 | 18 | 1634 | 1013 | 31.2      |
| 1600   | 1909 | 1865 | 267 | 3 | 18 | 1684 | 1037 | 31.8      |
| 1650   | 1959 | 1915 | 292 | 3 | 18 | 1734 | 1061 | 32.4      |
| 1700   | 2009 | 1965 | 317 | 3 | 18 | 1784 | 1086 | 33.0      |
| 1750   | 2059 | 2015 | 142 | 4 | 22 | 1834 | 1112 | 33.6      |
| 1800   | 2109 | 2065 | 167 | 4 | 22 | 1884 | 1136 | 34.2      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

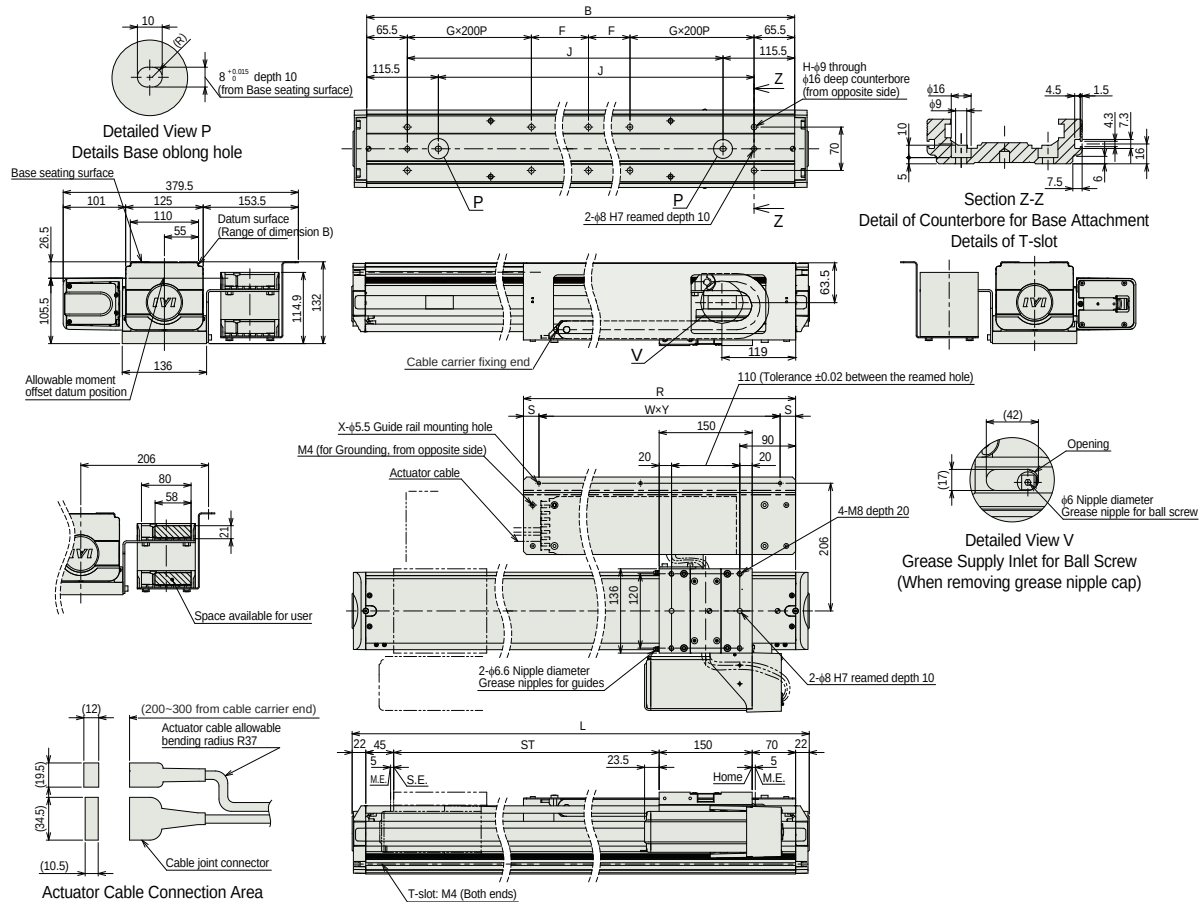
### 5.1.3 NSA-MXMS: Ceiling mount

[Extension Cable Carrier (Standard/ET7)]

(Note) To the cable joint connector, the motor cable and the encoder cable are to be connected.

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

M.E.: Mechanical End, S.E.: Stroke End



## ■ Dimensions and Mass by Stroke

Unit: mm

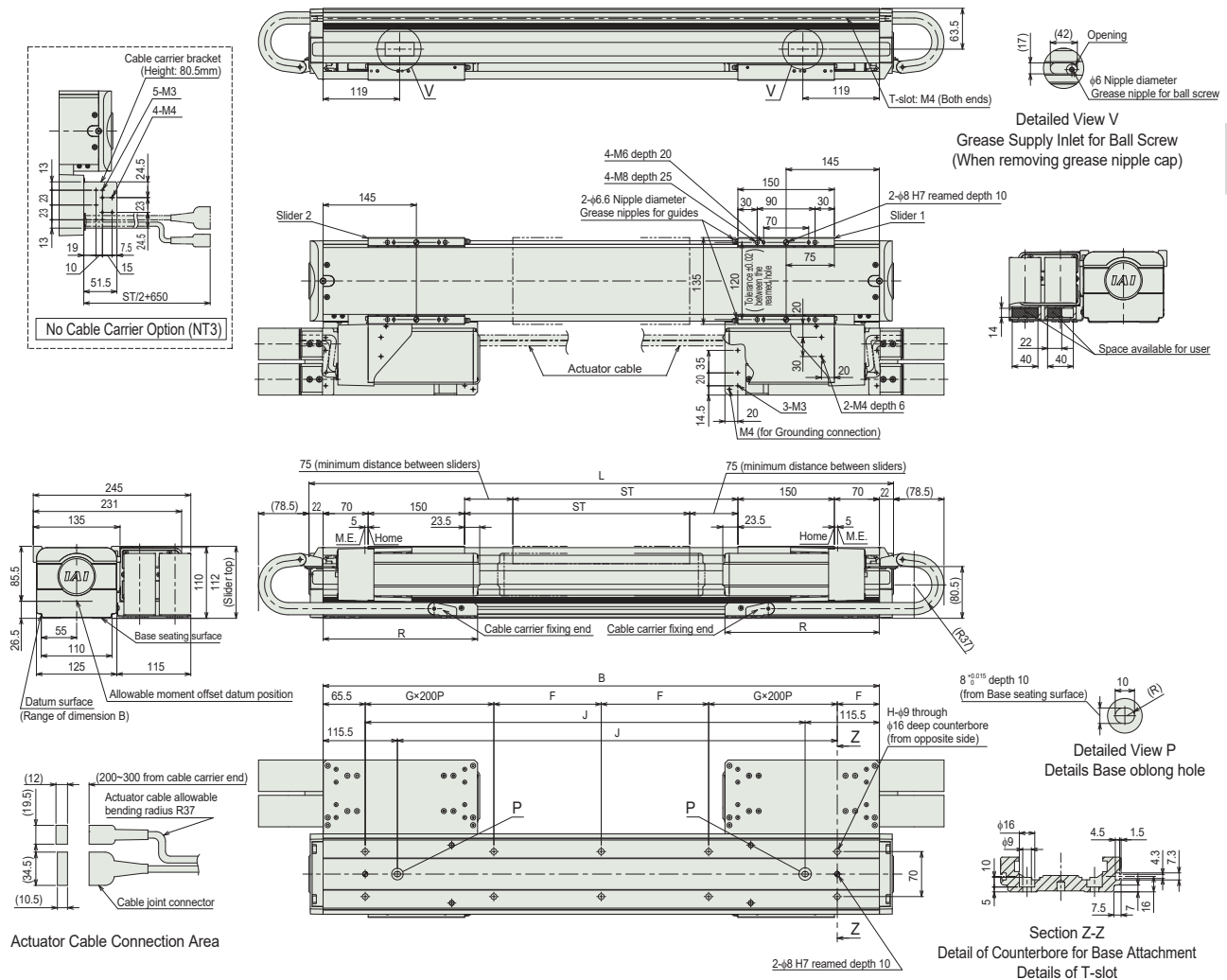
| Stroke | L    | B    | F   | G | H  | J    | R    | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-----|---|----|------|------|------|---|---|-----|-----------|
| 550    | 859  | 815  | 142 | 1 | 10 | 634  | 500  | 25   | 2 | 3 | 225 | 18.6      |
| 600    | 909  | 865  | 167 | 1 | 10 | 684  | 525  | 22.5 | 2 | 3 | 240 | 19.3      |
| 650    | 959  | 915  | 192 | 1 | 10 | 734  | 549  | 24.5 | 2 | 3 | 250 | 19.9      |
| 700    | 1009 | 965  | 217 | 1 | 10 | 784  | 575  | 22.5 | 2 | 3 | 265 | 20.6      |
| 750    | 1059 | 1015 | 242 | 1 | 10 | 834  | 600  | 25   | 2 | 3 | 275 | 21.1      |
| 800    | 1109 | 1065 | 267 | 1 | 10 | 884  | 625  | 22.5 | 2 | 3 | 290 | 21.7      |
| 850    | 1159 | 1115 | 292 | 1 | 10 | 934  | 649  | 24.5 | 2 | 3 | 300 | 22.3      |
| 900    | 1209 | 1165 | 317 | 1 | 10 | 984  | 675  | 22.5 | 2 | 3 | 315 | 23.0      |
| 950    | 1259 | 1215 | 142 | 2 | 14 | 1034 | 701  | 28   | 3 | 4 | 215 | 23.6      |
| 1000   | 1309 | 1265 | 167 | 2 | 14 | 1084 | 725  | 25   | 3 | 4 | 225 | 24.3      |
| 1050   | 1359 | 1315 | 192 | 2 | 14 | 1134 | 749  | 22   | 3 | 4 | 235 | 24.9      |
| 1100   | 1409 | 1365 | 217 | 2 | 14 | 1184 | 776  | 28   | 3 | 4 | 240 | 25.5      |
| 1150   | 1459 | 1415 | 242 | 2 | 14 | 1234 | 800  | 25   | 3 | 4 | 250 | 26.2      |
| 1200   | 1509 | 1465 | 267 | 2 | 14 | 1284 | 824  | 22   | 3 | 4 | 260 | 26.7      |
| 1250   | 1559 | 1515 | 292 | 2 | 14 | 1334 | 848  | 26.5 | 3 | 4 | 265 | 27.3      |
| 1300   | 1609 | 1565 | 317 | 2 | 14 | 1384 | 875  | 25   | 3 | 4 | 275 | 28.0      |
| 1350   | 1659 | 1615 | 142 | 3 | 18 | 1434 | 899  | 22   | 3 | 4 | 285 | 28.6      |
| 1400   | 1709 | 1665 | 167 | 3 | 18 | 1484 | 926  | 28   | 3 | 4 | 290 | 29.2      |
| 1450   | 1759 | 1715 | 192 | 3 | 18 | 1534 | 950  | 25   | 3 | 4 | 300 | 29.9      |
| 1500   | 1809 | 1765 | 217 | 3 | 18 | 1584 | 974  | 22   | 3 | 4 | 310 | 30.5      |
| 1550   | 1859 | 1815 | 242 | 3 | 18 | 1634 | 1001 | 25.5 | 5 | 6 | 190 | 31.2      |
| 1600   | 1909 | 1865 | 267 | 3 | 18 | 1684 | 1025 | 25   | 5 | 6 | 195 | 31.8      |
| 1650   | 1959 | 1915 | 292 | 3 | 18 | 1734 | 1049 | 24.5 | 5 | 6 | 200 | 32.4      |
| 1700   | 2009 | 1965 | 317 | 3 | 18 | 1784 | 1074 | 24.5 | 5 | 6 | 205 | 33.0      |
| 1750   | 2059 | 2015 | 142 | 4 | 22 | 1834 | 1100 | 25   | 5 | 6 | 210 | 33.6      |
| 1800   | 2109 | 2065 | 167 | 4 | 22 | 1884 | 1124 | 24.5 | 5 | 6 | 215 | 34.2      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

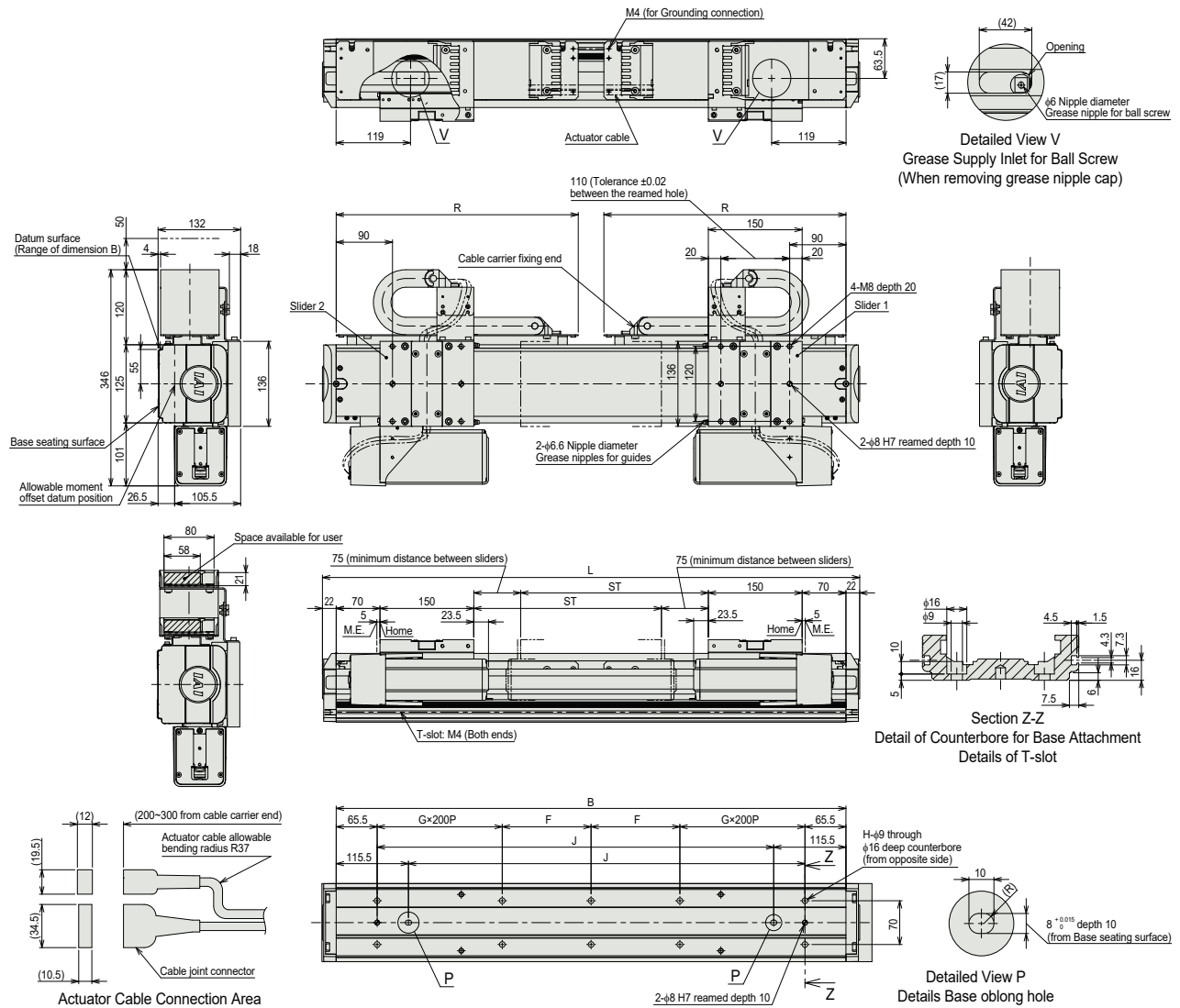
### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R   | Mass [kg]              |                    |                  |
|--------|------|------|-----|---|----|------|-----|------------------------|--------------------|------------------|
|        |      |      |     |   |    |      |     | Standard Cable Carrier | User Cable Carrier | No Cable Carrier |
| 300    | 859  | 815  | 142 | 1 | 10 | 634  | 222 | 23.1                   | 23.8               | 22.7             |
| 350    | 909  | 865  | 167 | 1 | 10 | 684  | 240 | 23.7                   | 24.4               | 23.3             |
| 400    | 959  | 915  | 192 | 1 | 10 | 734  | 258 | 24.3                   | 25.0               | 23.8             |
| 450    | 1009 | 965  | 217 | 1 | 10 | 784  | 294 | 25.0                   | 25.8               | 24.4             |
| 500    | 1059 | 1015 | 242 | 1 | 10 | 834  | 312 | 25.6                   | 26.4               | 25.0             |
| 550    | 1109 | 1065 | 267 | 1 | 10 | 884  | 330 | 26.2                   | 27.1               | 25.5             |
| 600    | 1159 | 1115 | 292 | 1 | 10 | 934  | 366 | 26.8                   | 27.8               | 26.1             |
| 650    | 1209 | 1165 | 317 | 1 | 10 | 984  | 384 | 27.4                   | 28.4               | 26.7             |
| 700    | 1259 | 1215 | 142 | 2 | 14 | 1034 | 402 | 28.0                   | 29.1               | 27.2             |
| 750    | 1309 | 1265 | 167 | 2 | 14 | 1084 | 438 | 28.7                   | 29.8               | 27.8             |
| 800    | 1359 | 1315 | 192 | 2 | 14 | 1134 | 456 | 29.3                   | 30.4               | 28.4             |
| 850    | 1409 | 1365 | 217 | 2 | 14 | 1184 | 492 | 29.9                   | 31.2               | 29.0             |
| 900    | 1459 | 1415 | 242 | 2 | 14 | 1234 | 510 | 30.5                   | 31.8               | 29.5             |
| 950    | 1509 | 1465 | 267 | 2 | 14 | 1284 | 528 | 31.1                   | 32.5               | 30.1             |
| 1000   | 1559 | 1515 | 292 | 2 | 14 | 1334 | 564 | 31.8                   | 33.2               | 30.6             |
| 1050   | 1609 | 1565 | 317 | 2 | 14 | 1384 | 582 | 32.4                   | 33.9               | 31.2             |
| 1100   | 1659 | 1615 | 142 | 3 | 18 | 1434 | 618 | 33.0                   | 34.6               | 31.8             |
| 1150   | 1709 | 1665 | 167 | 3 | 18 | 1484 | 636 | 33.6                   | 35.2               | 32.3             |
| 1200   | 1759 | 1715 | 192 | 3 | 18 | 1534 | 654 | 34.2                   | 35.9               | 32.9             |
| 1250   | 1809 | 1765 | 217 | 3 | 18 | 1584 | 690 | 34.9                   | 36.6               | 33.5             |
| 1300   | 1859 | 1815 | 242 | 3 | 18 | 1634 | 708 | 35.5                   | 37.2               | 34.1             |
| 1350   | 1909 | 1865 | 267 | 3 | 18 | 1684 | 744 | 36.2                   | 38.0               | 34.6             |
| 1400   | 1959 | 1915 | 292 | 3 | 18 | 1734 | 762 | 36.8                   | 38.6               | 35.2             |
| 1450   | 2009 | 1965 | 317 | 3 | 18 | 1784 | 780 | 37.4                   | 39.2               | 35.8             |
| 1500   | 2059 | 2015 | 142 | 4 | 22 | 1834 | 816 | 38.0                   | 40.0               | 36.3             |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

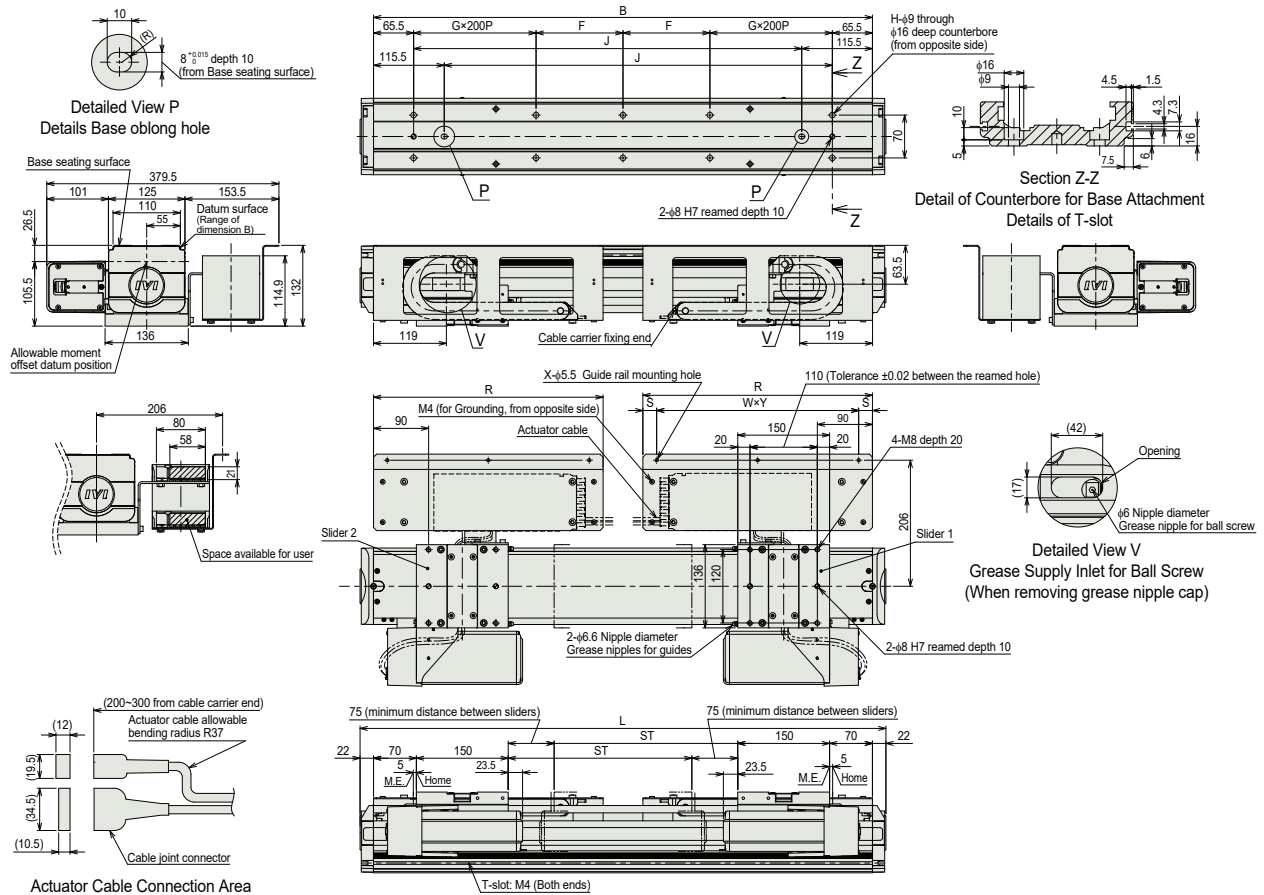
### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R   | Mass [kg] |
|--------|------|------|-----|---|----|------|-----|-----------|
| 300    | 859  | 815  | 142 | 1 | 10 | 634  | 387 | 25.0      |
| 350    | 909  | 865  | 167 | 1 | 10 | 684  | 412 | 25.6      |
| 400    | 959  | 915  | 192 | 1 | 10 | 734  | 437 | 26.2      |
| 450    | 1009 | 965  | 217 | 1 | 10 | 784  | 461 | 26.9      |
| 500    | 1059 | 1015 | 242 | 1 | 10 | 834  | 487 | 27.5      |
| 550    | 1109 | 1065 | 267 | 1 | 10 | 884  | 512 | 28.2      |
| 600    | 1159 | 1115 | 292 | 1 | 10 | 934  | 537 | 28.8      |
| 650    | 1209 | 1165 | 317 | 1 | 10 | 984  | 561 | 29.4      |
| 700    | 1259 | 1215 | 142 | 2 | 14 | 1034 | 587 | 30.0      |
| 750    | 1309 | 1265 | 167 | 2 | 14 | 1084 | 612 | 30.7      |
| 800    | 1359 | 1315 | 192 | 2 | 14 | 1134 | 637 | 31.3      |
| 850    | 1409 | 1365 | 217 | 2 | 14 | 1184 | 661 | 31.9      |
| 900    | 1459 | 1415 | 242 | 2 | 14 | 1234 | 686 | 32.6      |
| 950    | 1509 | 1465 | 267 | 2 | 14 | 1284 | 713 | 33.2      |
| 1000   | 1559 | 1515 | 292 | 2 | 14 | 1334 | 737 | 33.8      |
| 1050   | 1609 | 1565 | 317 | 2 | 14 | 1384 | 761 | 34.4      |
| 1100   | 1659 | 1615 | 142 | 3 | 18 | 1434 | 788 | 35.1      |
| 1150   | 1709 | 1665 | 167 | 3 | 18 | 1484 | 812 | 35.7      |
| 1200   | 1759 | 1715 | 192 | 3 | 18 | 1534 | 836 | 36.3      |
| 1250   | 1809 | 1765 | 217 | 3 | 18 | 1584 | 860 | 36.9      |
| 1300   | 1859 | 1815 | 242 | 3 | 18 | 1634 | 887 | 37.6      |
| 1350   | 1909 | 1865 | 267 | 3 | 18 | 1684 | 911 | 38.2      |
| 1400   | 1959 | 1915 | 292 | 3 | 18 | 1734 | 938 | 38.8      |
| 1450   | 2009 | 1965 | 317 | 3 | 18 | 1784 | 962 | 39.4      |
| 1500   | 2059 | 2015 | 142 | 4 | 22 | 1834 | 986 | 40.1      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



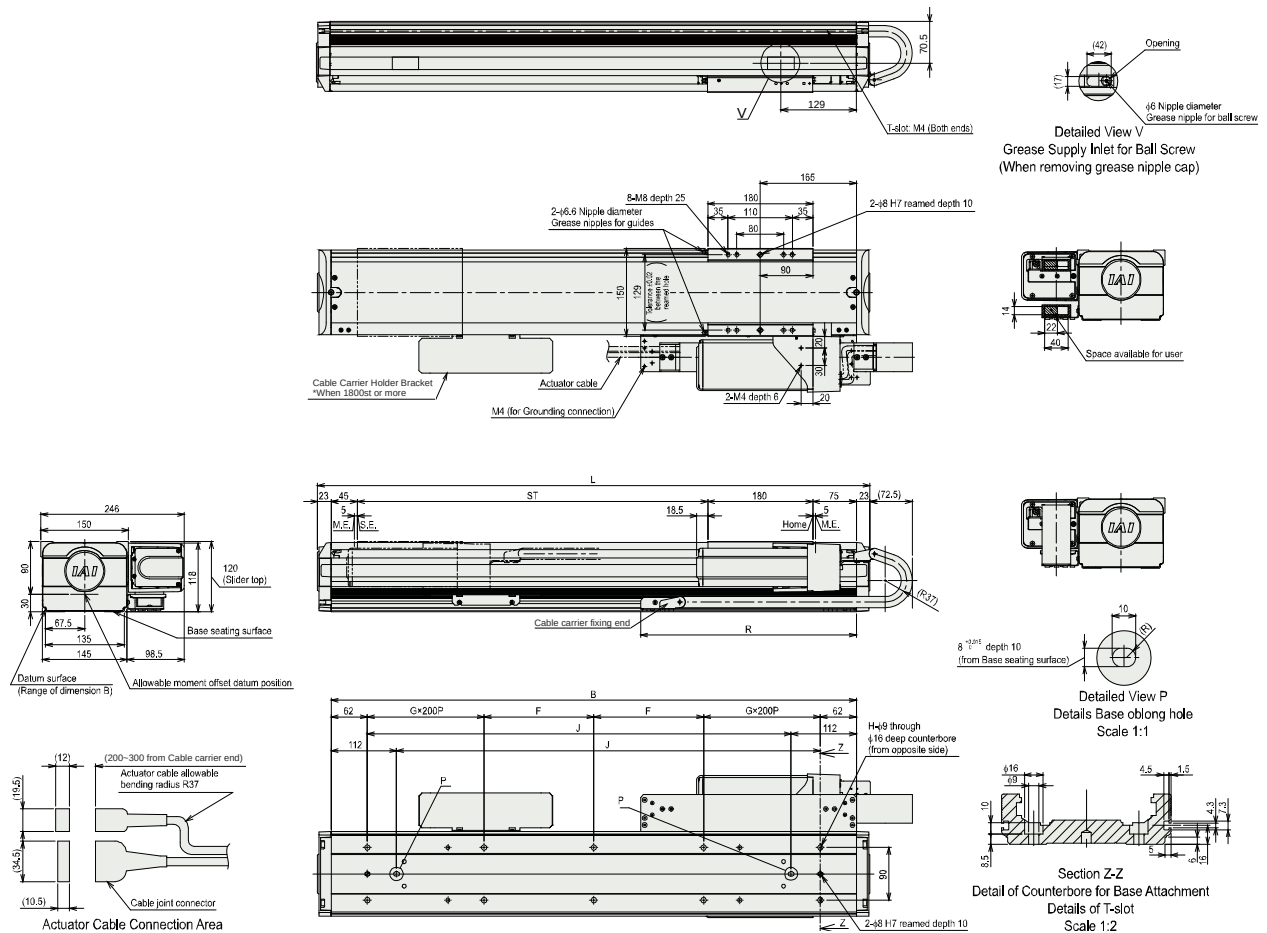
## 5.1 External dimensions

### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R   | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-----|---|----|------|-----|------|---|---|-----|-----------|
| 300    | 859  | 815  | 142 | 1 | 10 | 634  | 375 | 22.5 | 2 | 3 | 165 | 25.9      |
| 350    | 909  | 865  | 167 | 1 | 10 | 684  | 400 | 25   | 2 | 3 | 175 | 26.7      |
| 400    | 959  | 915  | 192 | 1 | 10 | 734  | 425 | 22.5 | 2 | 3 | 190 | 27.4      |
| 450    | 1009 | 965  | 217 | 1 | 10 | 784  | 449 | 24.5 | 2 | 3 | 200 | 28.1      |
| 500    | 1059 | 1015 | 242 | 1 | 10 | 834  | 475 | 22.5 | 2 | 3 | 215 | 28.8      |
| 550    | 1109 | 1065 | 267 | 1 | 10 | 884  | 500 | 25   | 2 | 3 | 225 | 29.5      |
| 600    | 1159 | 1115 | 292 | 1 | 10 | 934  | 525 | 22.5 | 2 | 3 | 240 | 30.2      |
| 650    | 1209 | 1165 | 317 | 1 | 10 | 984  | 549 | 24.5 | 2 | 3 | 250 | 30.9      |
| 700    | 1259 | 1215 | 142 | 2 | 14 | 1034 | 575 | 22.5 | 2 | 3 | 265 | 31.7      |
| 750    | 1309 | 1265 | 167 | 2 | 14 | 1084 | 600 | 25   | 2 | 3 | 275 | 32.1      |
| 800    | 1359 | 1315 | 192 | 2 | 14 | 1134 | 625 | 22.5 | 2 | 3 | 290 | 32.8      |
| 850    | 1409 | 1365 | 217 | 2 | 14 | 1184 | 649 | 24.5 | 2 | 3 | 300 | 33.5      |
| 900    | 1459 | 1415 | 242 | 2 | 14 | 1234 | 675 | 22.5 | 2 | 3 | 315 | 34.3      |
| 950    | 1509 | 1465 | 267 | 2 | 14 | 1284 | 701 | 28   | 3 | 4 | 215 | 35.0      |
| 1000   | 1559 | 1515 | 292 | 2 | 14 | 1334 | 725 | 25   | 3 | 4 | 225 | 35.7      |
| 1050   | 1609 | 1565 | 317 | 2 | 14 | 1384 | 749 | 22   | 3 | 4 | 235 | 36.4      |
| 1100   | 1659 | 1615 | 142 | 3 | 18 | 1434 | 776 | 28   | 3 | 4 | 240 | 37.1      |
| 1150   | 1709 | 1665 | 167 | 3 | 18 | 1484 | 800 | 25   | 3 | 4 | 250 | 37.8      |
| 1200   | 1759 | 1715 | 192 | 3 | 18 | 1534 | 824 | 22   | 3 | 4 | 260 | 38.3      |
| 1250   | 1809 | 1765 | 217 | 3 | 18 | 1584 | 848 | 26.5 | 3 | 4 | 265 | 39.0      |
| 1300   | 1859 | 1815 | 242 | 3 | 18 | 1634 | 875 | 25   | 3 | 4 | 275 | 39.7      |
| 1350   | 1909 | 1865 | 267 | 3 | 18 | 1684 | 899 | 22   | 3 | 4 | 285 | 40.4      |
| 1400   | 1959 | 1915 | 292 | 3 | 18 | 1734 | 926 | 28   | 3 | 4 | 290 | 41.1      |
| 1450   | 2009 | 1965 | 317 | 3 | 18 | 1784 | 950 | 25   | 3 | 4 | 300 | 41.9      |
| 1500   | 2059 | 2015 | 142 | 4 | 22 | 1834 | 974 | 22   | 3 | 4 | 310 | 42.6      |

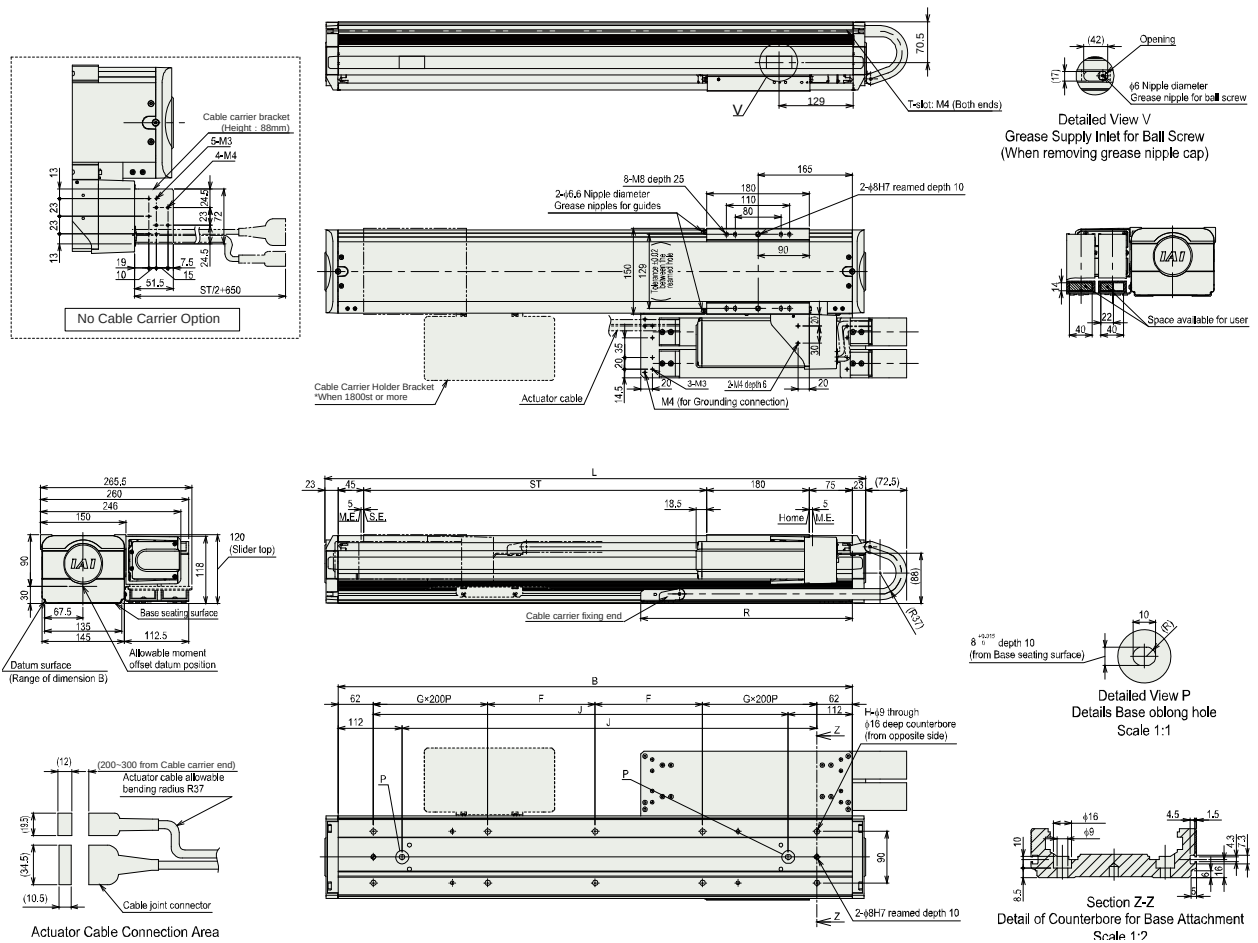
(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.



## 5. External dimensions

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

M.E.: Mechanical End, S.E.: Stroke End



## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | Mass [kg]              |                    |                  |
|--------|------|------|-----|---|----|------|------|------------------------|--------------------|------------------|
|        |      |      |     |   |    |      |      | Standard Cable Carrier | User Cable Carrier | No Cable Carrier |
| 600    | 946  | 900  | 188 | 1 | 10 | 726  | 370  | 23.3                   | 23.7               | 22.8             |
| 650    | 996  | 950  | 213 | 1 | 10 | 776  | 388  | 24.1                   | 24.4               | 23.6             |
| 700    | 1046 | 1000 | 238 | 1 | 10 | 826  | 406  | 24.8                   | 25.2               | 24.3             |
| 750    | 1096 | 1050 | 263 | 1 | 10 | 876  | 442  | 25.6                   | 26.0               | 25.0             |
| 800    | 1146 | 1100 | 288 | 1 | 10 | 926  | 460  | 26.3                   | 26.8               | 25.8             |
| 850    | 1196 | 1150 | 313 | 1 | 10 | 976  | 496  | 27.1                   | 27.6               | 26.5             |
| 900    | 1246 | 1200 | 138 | 2 | 14 | 1026 | 514  | 27.9                   | 28.3               | 27.2             |
| 950    | 1296 | 1250 | 163 | 2 | 14 | 1076 | 532  | 28.6                   | 29.1               | 27.9             |
| 1000   | 1346 | 1300 | 188 | 2 | 14 | 1126 | 568  | 29.4                   | 29.9               | 28.7             |
| 1050   | 1396 | 1350 | 213 | 2 | 14 | 1176 | 586  | 30.2                   | 30.7               | 29.4             |
| 1100   | 1446 | 1400 | 238 | 2 | 14 | 1226 | 622  | 30.9                   | 31.5               | 30.1             |
| 1150   | 1496 | 1450 | 263 | 2 | 14 | 1276 | 640  | 31.7                   | 32.3               | 30.9             |
| 1200   | 1546 | 1500 | 288 | 2 | 14 | 1326 | 658  | 32.4                   | 33.0               | 31.6             |
| 1250   | 1596 | 1550 | 313 | 2 | 14 | 1376 | 694  | 33.2                   | 33.8               | 32.3             |
| 1300   | 1646 | 1600 | 138 | 3 | 18 | 1426 | 712  | 33.9                   | 34.6               | 33.0             |
| 1350   | 1696 | 1650 | 163 | 3 | 18 | 1476 | 730  | 34.7                   | 35.4               | 33.8             |
| 1400   | 1746 | 1700 | 188 | 3 | 18 | 1526 | 766  | 35.5                   | 36.2               | 34.5             |
| 1450   | 1796 | 1750 | 213 | 3 | 18 | 1576 | 784  | 36.2                   | 36.9               | 35.2             |
| 1500   | 1846 | 1800 | 238 | 3 | 18 | 1626 | 820  | 37.0                   | 37.8               | 36.0             |
| 1550   | 1896 | 1850 | 263 | 3 | 18 | 1676 | 838  | 37.8                   | 38.5               | 36.7             |
| 1600   | 1946 | 1900 | 288 | 3 | 18 | 1726 | 856  | 38.5                   | 39.3               | 37.4             |
| 1650   | 1996 | 1950 | 313 | 3 | 18 | 1776 | 892  | 39.3                   | 40.1               | 38.1             |
| 1700   | 2046 | 2000 | 138 | 4 | 22 | 1826 | 910  | 40.0                   | 40.9               | 38.9             |
| 1750   | 2096 | 2050 | 163 | 4 | 22 | 1876 | 946  | 40.8                   | 41.7               | 39.6             |
| 1800   | 2146 | 2100 | 188 | 4 | 22 | 1926 | 964  | 41.6                   | 42.4               | 40.3             |
| 1850   | 2196 | 2150 | 213 | 4 | 22 | 1976 | 982  | 42.3                   | 43.2               | 41.1             |
| 1900   | 2246 | 2200 | 238 | 4 | 22 | 2026 | 1018 | 43.1                   | 44.1               | 41.8             |
| 1950   | 2296 | 2250 | 263 | 4 | 22 | 2076 | 1036 | 43.9                   | 44.8               | 42.5             |
| 2000   | 2346 | 2300 | 288 | 4 | 22 | 2126 | 1072 | 44.7                   | 45.6               | 43.3             |
| 2050   | 2396 | 2350 | 313 | 4 | 22 | 2176 | 1090 | 45.4                   | 46.4               | 44.0             |
| 2100   | 2446 | 2400 | 138 | 5 | 26 | 2226 | 1108 | 46.1                   | 47.2               | 44.7             |
| 2150   | 2496 | 2450 | 163 | 5 | 26 | 2276 | 1144 | 46.9                   | 48.0               | 45.4             |
| 2200   | 2546 | 2500 | 188 | 5 | 26 | 2326 | 1162 | 47.7                   | 48.7               | 46.2             |
| 2250   | 2596 | 2550 | 213 | 5 | 26 | 2376 | 1180 | 48.4                   | 49.5               | 46.9             |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

## ME3795-2G

## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | Mass [kg] |
|--------|------|------|-----|---|----|------|------|-----------|
| 600    | 946  | 900  | 188 | 1 | 10 | 726  | 546  | 24.9      |
| 650    | 996  | 950  | 213 | 1 | 10 | 776  | 572  | 25.6      |
| 700    | 1046 | 1000 | 238 | 1 | 10 | 826  | 597  | 26.4      |
| 750    | 1096 | 1050 | 263 | 1 | 10 | 876  | 621  | 27.2      |
| 800    | 1146 | 1100 | 288 | 1 | 10 | 926  | 646  | 27.9      |
| 850    | 1196 | 1150 | 313 | 1 | 10 | 976  | 672  | 28.7      |
| 900    | 1246 | 1200 | 138 | 2 | 14 | 1026 | 698  | 29.5      |
| 950    | 1296 | 1250 | 163 | 2 | 14 | 1076 | 722  | 30.3      |
| 1000   | 1346 | 1300 | 188 | 2 | 14 | 1126 | 746  | 31.0      |
| 1050   | 1396 | 1350 | 213 | 2 | 14 | 1176 | 773  | 31.8      |
| 1100   | 1446 | 1400 | 238 | 2 | 14 | 1226 | 797  | 32.5      |
| 1150   | 1496 | 1450 | 263 | 2 | 14 | 1276 | 821  | 33.3      |
| 1200   | 1546 | 1500 | 288 | 2 | 14 | 1326 | 845  | 34.1      |
| 1250   | 1596 | 1550 | 313 | 2 | 14 | 1376 | 872  | 34.8      |
| 1300   | 1646 | 1600 | 138 | 3 | 18 | 1426 | 896  | 35.6      |
| 1350   | 1696 | 1650 | 163 | 3 | 18 | 1476 | 923  | 36.3      |
| 1400   | 1746 | 1700 | 188 | 3 | 18 | 1526 | 947  | 37.1      |
| 1450   | 1796 | 1750 | 213 | 3 | 18 | 1576 | 971  | 37.8      |
| 1500   | 1846 | 1800 | 238 | 3 | 18 | 1626 | 998  | 38.6      |
| 1550   | 1896 | 1850 | 263 | 3 | 18 | 1676 | 1022 | 39.4      |
| 1600   | 1946 | 1900 | 288 | 3 | 18 | 1726 | 1046 | 40.2      |
| 1650   | 1996 | 1950 | 313 | 3 | 18 | 1776 | 1072 | 41.0      |
| 1700   | 2046 | 2000 | 138 | 4 | 22 | 1826 | 1098 | 41.7      |
| 1750   | 2096 | 2050 | 163 | 4 | 22 | 1876 | 1122 | 42.5      |
| 1800   | 2146 | 2100 | 188 | 4 | 22 | 1926 | 1146 | 43.2      |
| 1850   | 2196 | 2150 | 213 | 4 | 22 | 1976 | 1172 | 44.0      |
| 1900   | 2246 | 2200 | 238 | 4 | 22 | 2026 | 1196 | 44.7      |
| 1950   | 2296 | 2250 | 263 | 4 | 22 | 2076 | 1222 | 45.5      |
| 2000   | 2346 | 2300 | 288 | 4 | 22 | 2126 | 1246 | 46.3      |
| 2050   | 2396 | 2350 | 313 | 4 | 22 | 2176 | 1272 | 47.0      |
| 2100   | 2446 | 2400 | 138 | 5 | 26 | 2226 | 1296 | 47.8      |
| 2150   | 2496 | 2450 | 163 | 5 | 26 | 2276 | 1322 | 48.6      |
| 2200   | 2546 | 2500 | 188 | 5 | 26 | 2326 | 1346 | 49.4      |
| 2250   | 2596 | 2550 | 213 | 5 | 26 | 2376 | 1372 | 50.1      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

## 5.1 External dimensions

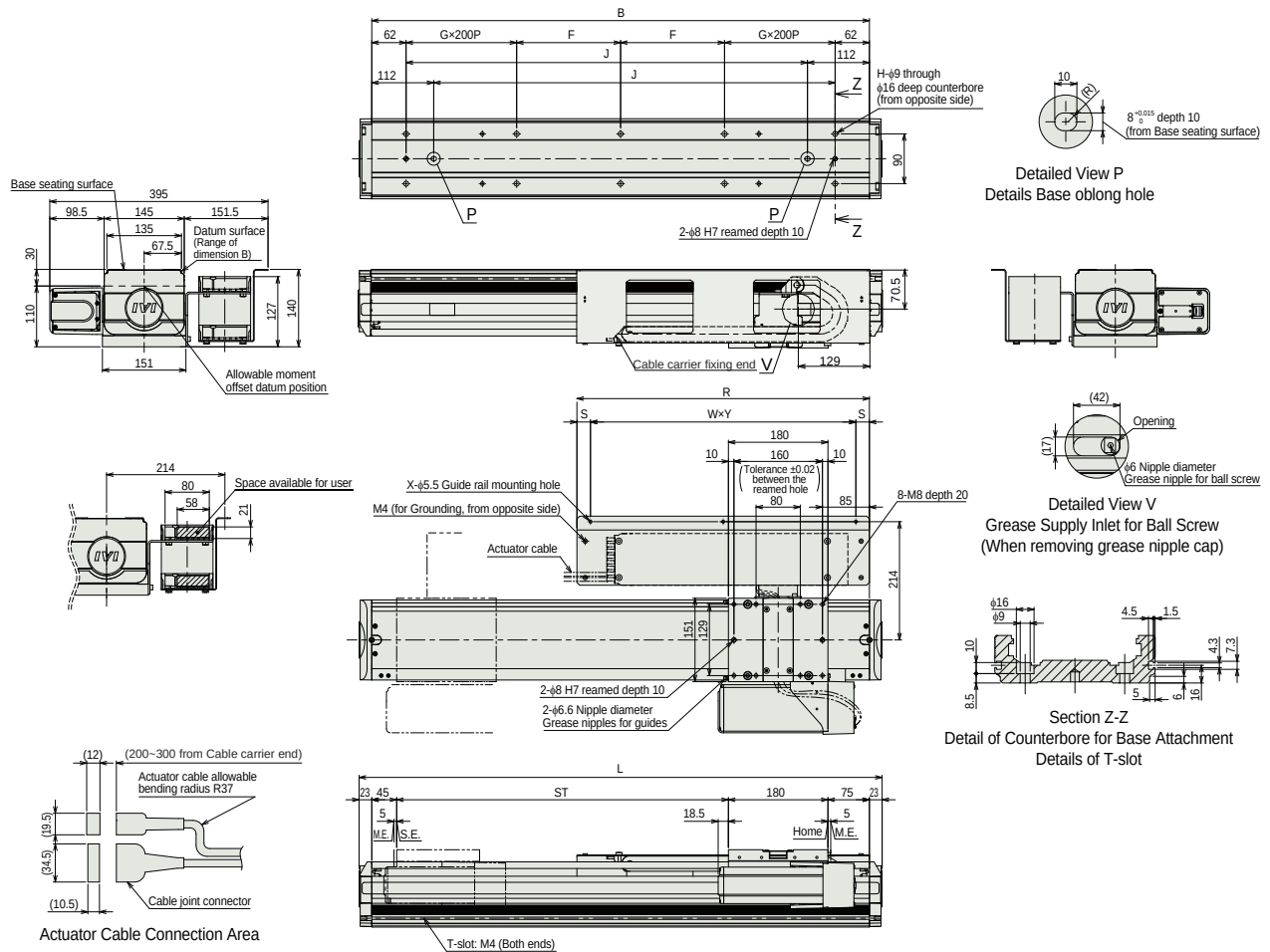
### 5.1.9 NSA-LXMS: Ceiling mount

[Extension Cable Carrier (Standard/ET7)]

(Note) To the cable joint connector, the motor cable and the encoder cable are to be connected.

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

M.E.: Mechanical End, S.E.: Stroke End



## ■ Dimensions and Mass by Stroke

Unit: mm

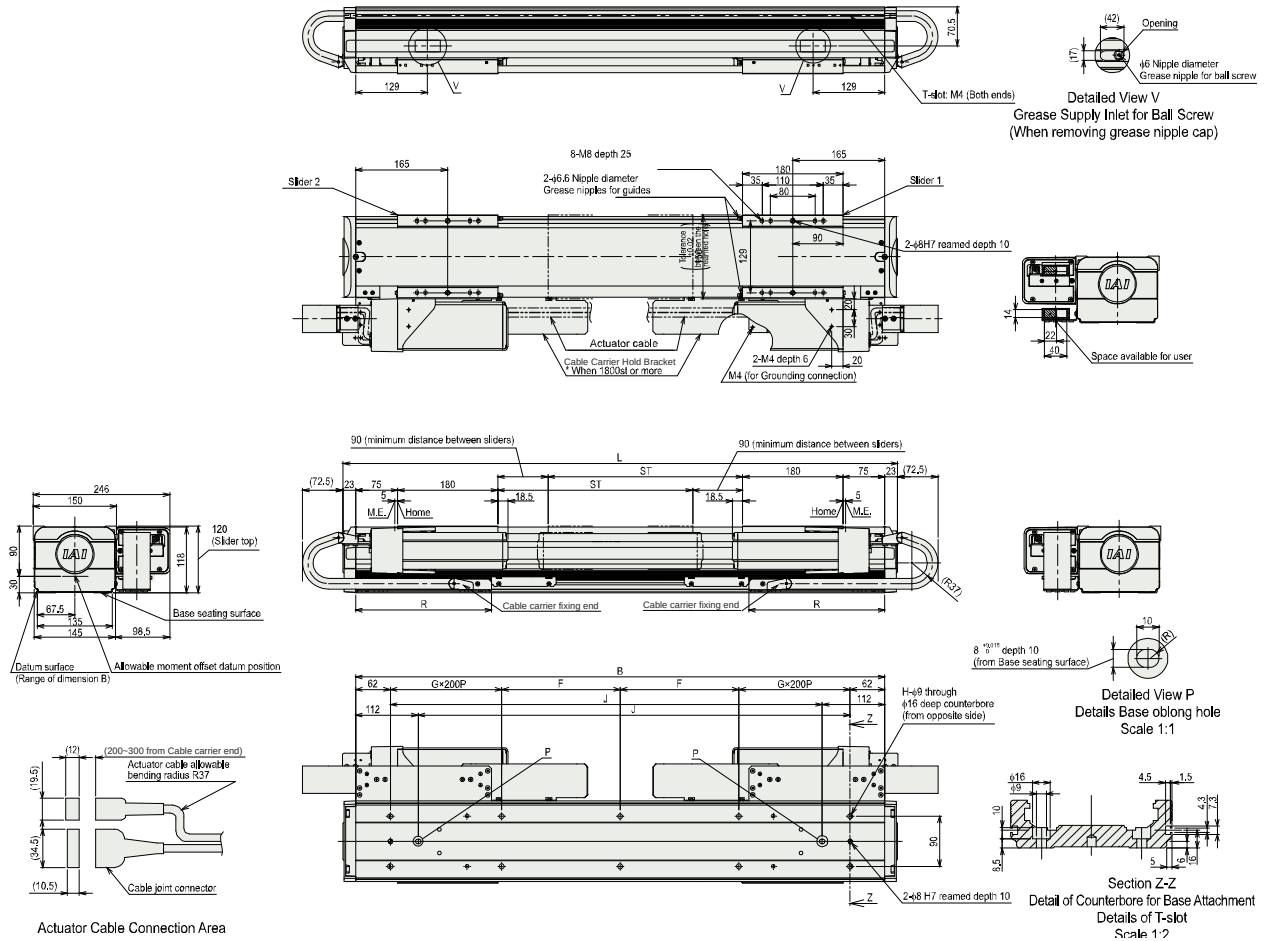
| Stroke | L    | B    | F   | G | H  | J    | R    | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-----|---|----|------|------|------|---|---|-----|-----------|
| 600    | 946  | 900  | 188 | 1 | 10 | 726  | 529  | 24.5 | 2 | 3 | 240 | 25.5      |
| 650    | 996  | 950  | 213 | 1 | 10 | 776  | 555  | 22.5 | 2 | 3 | 255 | 26.3      |
| 700    | 1046 | 1000 | 238 | 1 | 10 | 826  | 580  | 25   | 2 | 3 | 265 | 27.1      |
| 750    | 1096 | 1050 | 263 | 1 | 10 | 876  | 604  | 27   | 2 | 3 | 275 | 27.9      |
| 800    | 1146 | 1100 | 288 | 1 | 10 | 926  | 629  | 24.5 | 2 | 3 | 290 | 28.7      |
| 850    | 1196 | 1150 | 313 | 1 | 10 | 976  | 655  | 22.5 | 2 | 3 | 305 | 29.5      |
| 900    | 1246 | 1200 | 138 | 2 | 14 | 1026 | 680  | 25   | 2 | 3 | 315 | 30.2      |
| 950    | 1296 | 1250 | 163 | 2 | 14 | 1076 | 704  | 22   | 3 | 4 | 220 | 31.0      |
| 1000   | 1346 | 1300 | 188 | 2 | 14 | 1126 | 728  | 26.5 | 3 | 4 | 225 | 31.8      |
| 1050   | 1396 | 1350 | 213 | 2 | 14 | 1176 | 755  | 25   | 3 | 4 | 235 | 32.6      |
| 1100   | 1446 | 1400 | 238 | 2 | 14 | 1226 | 779  | 22   | 3 | 4 | 245 | 33.4      |
| 1150   | 1496 | 1450 | 263 | 2 | 14 | 1276 | 806  | 28   | 3 | 4 | 250 | 34.2      |
| 1200   | 1546 | 1500 | 288 | 2 | 14 | 1326 | 830  | 25   | 3 | 4 | 260 | 35.0      |
| 1250   | 1596 | 1550 | 313 | 2 | 14 | 1376 | 854  | 22   | 3 | 4 | 270 | 35.8      |
| 1300   | 1646 | 1600 | 138 | 3 | 18 | 1426 | 881  | 28   | 3 | 4 | 275 | 36.6      |
| 1350   | 1696 | 1650 | 163 | 3 | 18 | 1476 | 906  | 23   | 4 | 5 | 215 | 37.3      |
| 1400   | 1746 | 1700 | 188 | 3 | 18 | 1526 | 930  | 25   | 4 | 5 | 220 | 38.1      |
| 1450   | 1796 | 1750 | 213 | 3 | 18 | 1576 | 954  | 27   | 4 | 5 | 225 | 38.9      |
| 1500   | 1846 | 1800 | 238 | 3 | 18 | 1626 | 981  | 28   | 5 | 6 | 185 | 39.7      |
| 1550   | 1896 | 1850 | 263 | 3 | 18 | 1676 | 1005 | 27.5 | 5 | 6 | 190 | 40.5      |
| 1600   | 1946 | 1900 | 288 | 3 | 18 | 1726 | 1029 | 27   | 5 | 6 | 195 | 41.3      |
| 1650   | 1996 | 1950 | 313 | 3 | 18 | 1776 | 1056 | 28   | 5 | 6 | 200 | 42.2      |
| 1700   | 2046 | 2000 | 138 | 4 | 22 | 1826 | 1080 | 27.5 | 5 | 6 | 205 | 42.9      |
| 1750   | 2096 | 2050 | 163 | 4 | 22 | 1876 | 1104 | 27   | 5 | 6 | 210 | 43.7      |
| 1800   | 2146 | 2100 | 188 | 4 | 22 | 1926 | 1128 | 26.5 | 5 | 6 | 215 | 44.5      |
| 1850   | 2196 | 2150 | 213 | 4 | 22 | 1976 | 1154 | 27   | 5 | 6 | 220 | 45.2      |
| 1900   | 2246 | 2200 | 238 | 4 | 22 | 2026 | 1180 | 27.5 | 5 | 6 | 225 | 46.0      |
| 1950   | 2296 | 2250 | 263 | 4 | 22 | 2076 | 1204 | 27   | 5 | 6 | 230 | 46.8      |
| 2000   | 2346 | 2300 | 288 | 4 | 22 | 2126 | 1228 | 26.5 | 5 | 6 | 235 | 47.6      |
| 2050   | 2396 | 2350 | 313 | 4 | 22 | 2176 | 1254 | 27   | 5 | 6 | 240 | 48.5      |
| 2100   | 2446 | 2400 | 138 | 5 | 26 | 2226 | 1280 | 27.5 | 5 | 6 | 245 | 49.2      |
| 2150   | 2496 | 2450 | 163 | 5 | 26 | 2276 | 1304 | 27   | 5 | 6 | 250 | 50.0      |
| 2200   | 2546 | 2500 | 188 | 5 | 26 | 2326 | 1328 | 26.5 | 5 | 6 | 255 | 50.9      |
| 2250   | 2596 | 2550 | 213 | 5 | 26 | 2376 | 1354 | 27   | 5 | 6 | 260 | 51.7      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

## 5. External dimensions

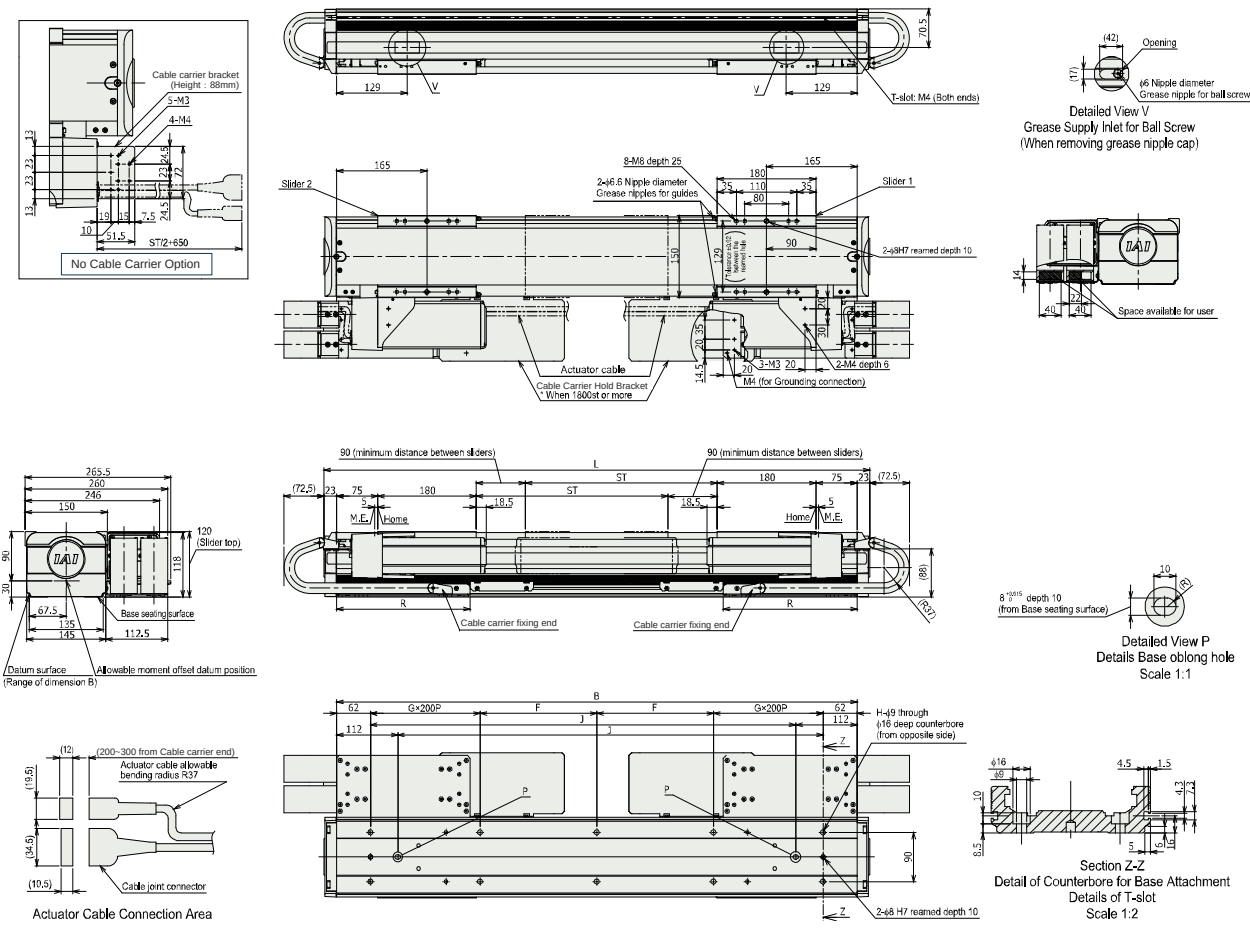
[Standard Cable Carrier (Standard/CT3)]

M.E.: Mechanical End, S.E.: Stroke End



[User Cable Carrier (Standard/UM3), No Cable Carrier]

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

### ■ Dimensions and Mass by Stroke

Unit: mm

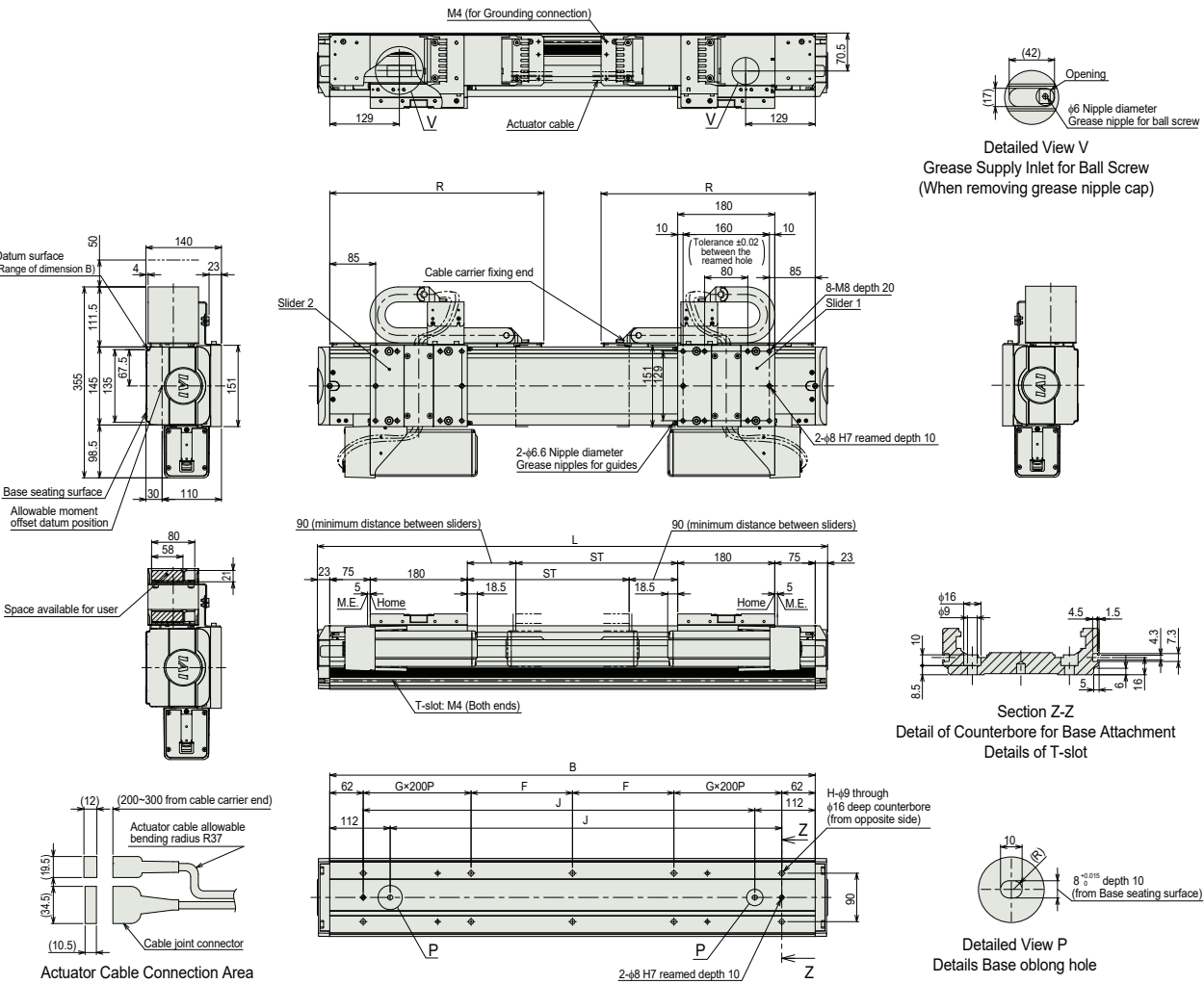
| Stroke | L    | B    | F   | G | H  | J    | R    | Mass [kg]              |                    |                  |
|--------|------|------|-----|---|----|------|------|------------------------|--------------------|------------------|
|        |      |      |     |   |    |      |      | Standard Cable Carrier | User Cable Carrier | No Cable Carrier |
| 300    | 946  | 900  | 188 | 1 | 10 | 726  | 208  | 31.3                   | 31.9               | 30.9             |
| 350    | 996  | 950  | 213 | 1 | 10 | 776  | 244  | 32.1                   | 32.8               | 31.6             |
| 400    | 1046 | 1000 | 238 | 1 | 10 | 826  | 262  | 32.8                   | 33.6               | 32.4             |
| 450    | 1096 | 1050 | 263 | 1 | 10 | 876  | 280  | 33.6                   | 34.4               | 33.1             |
| 500    | 1146 | 1100 | 288 | 1 | 10 | 926  | 316  | 34.4                   | 35.3               | 33.9             |
| 550    | 1196 | 1150 | 313 | 1 | 10 | 976  | 334  | 35.2                   | 36.1               | 34.6             |
| 600    | 1246 | 1200 | 138 | 2 | 14 | 1026 | 370  | 36.0                   | 37.0               | 35.3             |
| 650    | 1296 | 1250 | 163 | 2 | 14 | 1076 | 388  | 36.8                   | 37.8               | 36.0             |
| 700    | 1346 | 1300 | 188 | 2 | 14 | 1126 | 406  | 37.5                   | 38.6               | 36.8             |
| 750    | 1396 | 1350 | 213 | 2 | 14 | 1176 | 442  | 38.3                   | 39.5               | 37.5             |
| 800    | 1446 | 1400 | 238 | 2 | 14 | 1226 | 460  | 39.1                   | 40.3               | 38.2             |
| 850    | 1496 | 1450 | 263 | 2 | 14 | 1276 | 496  | 39.9                   | 41.2               | 39.0             |
| 900    | 1546 | 1500 | 288 | 2 | 14 | 1326 | 514  | 40.7                   | 42.0               | 39.7             |
| 950    | 1596 | 1550 | 313 | 2 | 14 | 1376 | 532  | 41.4                   | 42.8               | 40.4             |
| 1000   | 1646 | 1600 | 138 | 3 | 18 | 1426 | 568  | 42.3                   | 43.7               | 41.2             |
| 1050   | 1696 | 1650 | 163 | 3 | 18 | 1476 | 586  | 43.0                   | 44.5               | 41.9             |
| 1100   | 1746 | 1700 | 188 | 3 | 18 | 1526 | 622  | 43.8                   | 45.4               | 42.6             |
| 1150   | 1796 | 1750 | 213 | 3 | 18 | 1576 | 640  | 44.6                   | 46.2               | 43.4             |
| 1200   | 1846 | 1800 | 238 | 3 | 18 | 1626 | 658  | 45.4                   | 47.0               | 44.1             |
| 1250   | 1896 | 1850 | 263 | 3 | 18 | 1676 | 694  | 46.2                   | 47.9               | 44.9             |
| 1300   | 1946 | 1900 | 288 | 3 | 18 | 1726 | 712  | 47.0                   | 48.7               | 45.6             |
| 1350   | 1996 | 1950 | 313 | 3 | 18 | 1776 | 730  | 47.7                   | 49.5               | 46.3             |
| 1400   | 2046 | 2000 | 138 | 4 | 22 | 1826 | 766  | 48.5                   | 50.4               | 47.0             |
| 1450   | 2096 | 2050 | 163 | 4 | 22 | 1876 | 784  | 49.3                   | 51.2               | 47.8             |
| 1500   | 2146 | 2100 | 188 | 4 | 22 | 1926 | 820  | 50.1                   | 52.1               | 48.5             |
| 1550   | 2196 | 2150 | 213 | 4 | 22 | 1976 | 838  | 50.9                   | 52.9               | 49.2             |
| 1600   | 2246 | 2200 | 238 | 4 | 22 | 2026 | 856  | 51.7                   | 53.7               | 50.0             |
| 1650   | 2296 | 2250 | 263 | 4 | 22 | 2076 | 892  | 52.5                   | 54.6               | 50.7             |
| 1700   | 2346 | 2300 | 288 | 4 | 22 | 2126 | 910  | 53.3                   | 55.4               | 51.5             |
| 1750   | 2396 | 2350 | 313 | 4 | 22 | 2176 | 946  | 54.0                   | 56.3               | 52.2             |
| 1800   | 2446 | 2400 | 138 | 5 | 26 | 2226 | 964  | 54.8                   | 57.1               | 52.9             |
| 1850   | 2496 | 2450 | 163 | 5 | 26 | 2276 | 982  | 55.6                   | 57.9               | 53.6             |
| 1900   | 2546 | 2500 | 188 | 5 | 26 | 2326 | 1018 | 56.4                   | 58.9               | 54.4             |
| 1950   | 2596 | 2550 | 213 | 5 | 26 | 2376 | 1036 | 57.2                   | 59.7               | 55.1             |
| 2000   | 2646 | 2600 | 238 | 5 | 26 | 2426 | 1072 | 58.0                   | 60.6               | 55.8             |
| 2050   | 2696 | 2650 | 263 | 5 | 26 | 2476 | 1090 | 58.8                   | 61.4               | 56.6             |
| 2100   | 2746 | 2700 | 288 | 5 | 26 | 2526 | 1108 | 59.6                   | 62.2               | 57.3             |
| 2150   | 2796 | 2750 | 313 | 5 | 26 | 2576 | 1144 | 60.3                   | 63.0               | 58.0             |
| 2200   | 2846 | 2800 | 138 | 6 | 30 | 2626 | 1162 | 61.1                   | 63.9               | 58.8             |
| 2250   | 2896 | 2850 | 163 | 6 | 30 | 2676 | 1180 | 61.9                   | 64.7               | 59.5             |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

5.1.11 NSA-LXMM: Horizontally oriented wall mount

[Extension Cable Carrier (Standard/ET5)]

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | Mass [kg] |
|--------|------|------|-----|---|----|------|------|-----------|
| 300    | 946  | 900  | 188 | 1 | 10 | 726  | 397  | 34.4      |
| 350    | 996  | 950  | 213 | 1 | 10 | 776  | 421  | 35.1      |
| 400    | 1046 | 1000 | 238 | 1 | 10 | 826  | 446  | 35.9      |
| 450    | 1096 | 1050 | 263 | 1 | 10 | 876  | 472  | 36.7      |
| 500    | 1146 | 1100 | 288 | 1 | 10 | 926  | 497  | 37.5      |
| 550    | 1196 | 1150 | 313 | 1 | 10 | 976  | 521  | 38.3      |
| 600    | 1246 | 1200 | 138 | 2 | 14 | 1026 | 546  | 39.1      |
| 650    | 1296 | 1250 | 163 | 2 | 14 | 1076 | 572  | 39.9      |
| 700    | 1346 | 1300 | 188 | 2 | 14 | 1126 | 597  | 40.7      |
| 750    | 1396 | 1350 | 213 | 2 | 14 | 1176 | 621  | 41.5      |
| 800    | 1446 | 1400 | 238 | 2 | 14 | 1226 | 646  | 42.2      |
| 850    | 1496 | 1450 | 263 | 2 | 14 | 1276 | 672  | 43.0      |
| 900    | 1546 | 1500 | 288 | 2 | 14 | 1326 | 698  | 44.0      |
| 950    | 1596 | 1550 | 313 | 2 | 14 | 1376 | 722  | 44.8      |
| 1000   | 1646 | 1600 | 138 | 3 | 18 | 1426 | 746  | 45.5      |
| 1050   | 1696 | 1650 | 163 | 3 | 18 | 1476 | 773  | 46.3      |
| 1100   | 1746 | 1700 | 188 | 3 | 18 | 1526 | 797  | 47.1      |
| 1150   | 1796 | 1750 | 213 | 3 | 18 | 1576 | 821  | 47.9      |
| 1200   | 1846 | 1800 | 238 | 3 | 18 | 1626 | 845  | 48.7      |
| 1250   | 1896 | 1850 | 263 | 3 | 18 | 1676 | 872  | 49.5      |
| 1300   | 1946 | 1900 | 288 | 3 | 18 | 1726 | 896  | 50.3      |
| 1350   | 1996 | 1950 | 313 | 3 | 18 | 1776 | 923  | 51.1      |
| 1400   | 2046 | 2000 | 138 | 4 | 22 | 1826 | 947  | 51.8      |
| 1450   | 2096 | 2050 | 163 | 4 | 22 | 1876 | 971  | 52.6      |
| 1500   | 2146 | 2100 | 188 | 4 | 22 | 1926 | 998  | 53.4      |
| 1550   | 2196 | 2150 | 213 | 4 | 22 | 1976 | 1022 | 54.4      |
| 1600   | 2246 | 2200 | 238 | 4 | 22 | 2026 | 1046 | 55.2      |
| 1650   | 2296 | 2250 | 263 | 4 | 22 | 2076 | 1072 | 56.0      |
| 1700   | 2346 | 2300 | 288 | 4 | 22 | 2126 | 1098 | 56.8      |
| 1750   | 2396 | 2350 | 313 | 4 | 22 | 2176 | 1122 | 57.6      |
| 1800   | 2446 | 2400 | 138 | 5 | 26 | 2226 | 1146 | 58.3      |
| 1850   | 2496 | 2450 | 163 | 5 | 26 | 2276 | 1172 | 59.1      |
| 1900   | 2546 | 2500 | 188 | 5 | 26 | 2326 | 1196 | 59.9      |
| 1950   | 2596 | 2550 | 213 | 5 | 26 | 2376 | 1222 | 60.7      |
| 2000   | 2646 | 2600 | 238 | 5 | 26 | 2426 | 1246 | 61.5      |
| 2050   | 2696 | 2650 | 263 | 5 | 26 | 2476 | 1272 | 62.3      |
| 2100   | 2746 | 2700 | 288 | 5 | 26 | 2526 | 1296 | 63.1      |
| 2150   | 2796 | 2750 | 313 | 5 | 26 | 2576 | 1322 | 64.1      |
| 2200   | 2846 | 2800 | 138 | 6 | 30 | 2626 | 1346 | 64.9      |
| 2250   | 2896 | 2850 | 163 | 6 | 30 | 2676 | 1372 | 65.7      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

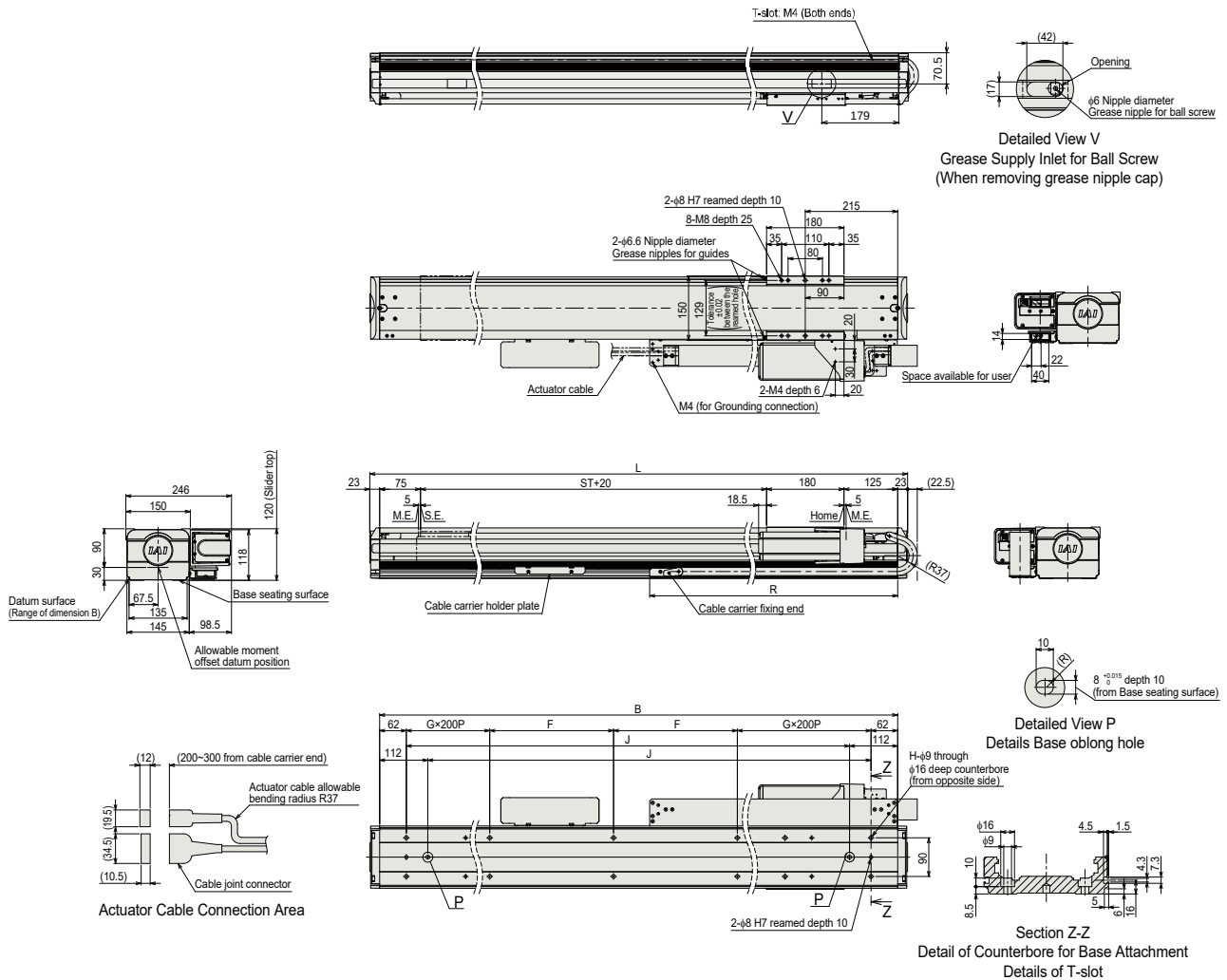
■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-----|---|----|------|------|------|---|---|-----|-----------|
| 300    | 946  | 900  | 188 | 1 | 10 | 726  | 380  | 25   | 2 | 3 | 165 | 35.1      |
| 350    | 996  | 950  | 213 | 1 | 10 | 776  | 404  | 27   | 2 | 3 | 175 | 36.0      |
| 400    | 1046 | 1000 | 238 | 1 | 10 | 826  | 429  | 24.5 | 2 | 3 | 190 | 36.8      |
| 450    | 1096 | 1050 | 263 | 1 | 10 | 876  | 455  | 22.5 | 2 | 3 | 205 | 37.7      |
| 500    | 1146 | 1100 | 288 | 1 | 10 | 926  | 480  | 25   | 2 | 3 | 215 | 38.6      |
| 550    | 1196 | 1150 | 313 | 1 | 10 | 976  | 504  | 27   | 2 | 3 | 225 | 39.5      |
| 600    | 1246 | 1200 | 138 | 2 | 14 | 1026 | 529  | 24.5 | 2 | 3 | 240 | 40.3      |
| 650    | 1296 | 1250 | 163 | 2 | 14 | 1076 | 555  | 22.5 | 2 | 3 | 255 | 41.2      |
| 700    | 1346 | 1300 | 188 | 2 | 14 | 1126 | 580  | 25   | 2 | 3 | 265 | 42.1      |
| 750    | 1396 | 1350 | 213 | 2 | 14 | 1176 | 604  | 27   | 2 | 3 | 275 | 43.0      |
| 800    | 1446 | 1400 | 238 | 2 | 14 | 1226 | 629  | 24.5 | 2 | 3 | 290 | 43.9      |
| 850    | 1496 | 1450 | 263 | 2 | 14 | 1276 | 655  | 22.5 | 2 | 3 | 305 | 44.8      |
| 900    | 1546 | 1500 | 288 | 2 | 14 | 1326 | 680  | 25   | 2 | 3 | 315 | 45.4      |
| 950    | 1596 | 1550 | 313 | 2 | 14 | 1376 | 704  | 22   | 3 | 4 | 220 | 46.3      |
| 1000   | 1646 | 1600 | 138 | 3 | 18 | 1426 | 728  | 26.5 | 3 | 4 | 225 | 47.1      |
| 1050   | 1696 | 1650 | 163 | 3 | 18 | 1476 | 755  | 25   | 3 | 4 | 235 | 48.0      |
| 1100   | 1746 | 1700 | 188 | 3 | 18 | 1526 | 779  | 22   | 3 | 4 | 245 | 48.9      |
| 1150   | 1796 | 1750 | 213 | 3 | 18 | 1576 | 806  | 28   | 3 | 4 | 250 | 49.8      |
| 1200   | 1846 | 1800 | 238 | 3 | 18 | 1626 | 830  | 25   | 3 | 4 | 260 | 50.7      |
| 1250   | 1896 | 1850 | 263 | 3 | 18 | 1676 | 854  | 22   | 3 | 4 | 270 | 51.6      |
| 1300   | 1946 | 1900 | 288 | 3 | 18 | 1726 | 881  | 28   | 3 | 4 | 275 | 52.5      |
| 1350   | 1996 | 1950 | 313 | 3 | 18 | 1776 | 906  | 23   | 4 | 5 | 215 | 53.1      |
| 1400   | 2046 | 2000 | 138 | 4 | 22 | 1826 | 930  | 25   | 4 | 5 | 220 | 53.9      |
| 1450   | 2096 | 2050 | 163 | 4 | 22 | 1876 | 954  | 27   | 4 | 5 | 225 | 54.8      |
| 1500   | 2146 | 2100 | 188 | 4 | 22 | 1926 | 981  | 28   | 5 | 6 | 185 | 55.7      |
| 1550   | 2196 | 2150 | 213 | 4 | 22 | 1976 | 1005 | 27.5 | 5 | 6 | 190 | 56.6      |
| 1600   | 2246 | 2200 | 238 | 4 | 22 | 2026 | 1029 | 27   | 5 | 6 | 195 | 57.5      |
| 1650   | 2296 | 2250 | 263 | 4 | 22 | 2076 | 1056 | 28   | 5 | 6 | 200 | 58.4      |
| 1700   | 2346 | 2300 | 288 | 4 | 22 | 2126 | 1080 | 27.5 | 5 | 6 | 205 | 59.3      |
| 1750   | 2396 | 2350 | 313 | 4 | 22 | 2176 | 1104 | 27   | 5 | 6 | 210 | 60.1      |
| 1800   | 2446 | 2400 | 138 | 5 | 26 | 2226 | 1128 | 26.5 | 5 | 6 | 215 | 61.0      |
| 1850   | 2496 | 2450 | 163 | 5 | 26 | 2276 | 1154 | 27   | 5 | 6 | 220 | 61.6      |
| 1900   | 2546 | 2500 | 188 | 5 | 26 | 2326 | 1180 | 27.5 | 5 | 6 | 225 | 62.5      |
| 1950   | 2596 | 2550 | 213 | 5 | 26 | 2376 | 1204 | 27   | 5 | 6 | 230 | 63.4      |
| 2000   | 2646 | 2600 | 238 | 5 | 26 | 2426 | 1228 | 26.5 | 5 | 6 | 235 | 64.3      |
| 2050   | 2696 | 2650 | 263 | 5 | 26 | 2476 | 1254 | 27   | 5 | 6 | 240 | 65.1      |
| 2100   | 2746 | 2700 | 288 | 5 | 26 | 2526 | 1280 | 27.5 | 5 | 6 | 245 | 66.1      |
| 2150   | 2796 | 2750 | 313 | 5 | 26 | 2576 | 1304 | 27   | 5 | 6 | 250 | 67.0      |
| 2200   | 2846 | 2800 | 138 | 6 | 30 | 2626 | 1328 | 26.5 | 5 | 6 | 255 | 67.9      |
| 2250   | 2896 | 2850 | 163 | 6 | 30 | 2676 | 1354 | 27   | 5 | 6 | 260 | 68.8      |

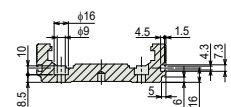
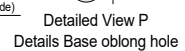
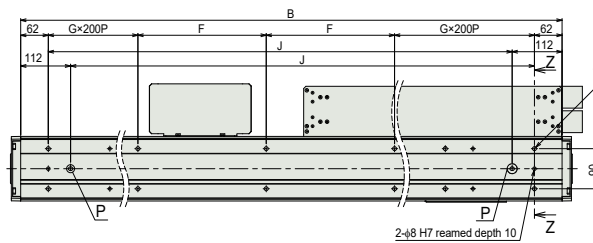
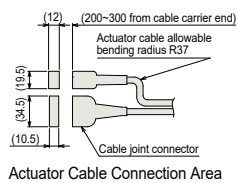
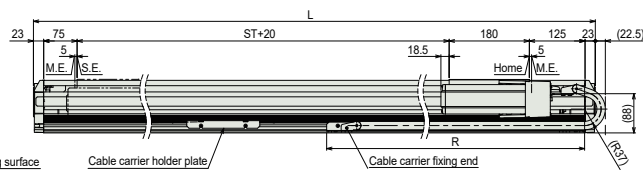
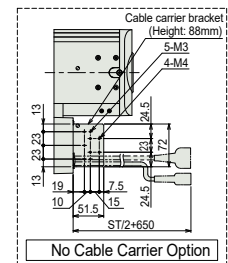
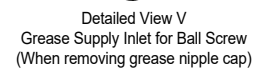
(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



## 5. External dimensions

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.



ME3795-2G

## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | Mass [kg]              |                    |                  |
|--------|------|------|-----|---|----|------|------|------------------------|--------------------|------------------|
|        |      |      |     |   |    |      |      | Standard Cable Carrier | User Cable Carrier | No Cable Carrier |
| 2300   | 2746 | 2700 | 288 | 5 | 26 | 2526 | 1265 | 51.6                   | 52.9               | 49.5             |
| 2350   | 2796 | 2750 | 313 | 5 | 26 | 2576 | 1283 | 52.4                   | 53.8               | 50.3             |
| 2400   | 2846 | 2800 | 138 | 6 | 30 | 2626 | 1319 | 53.2                   | 54.6               | 51.0             |
| 2450   | 2896 | 2850 | 163 | 6 | 30 | 2676 | 1337 | 54.0                   | 55.3               | 51.8             |
| 2500   | 2946 | 2900 | 188 | 6 | 30 | 2726 | 1355 | 54.7                   | 56.1               | 52.5             |
| 2550   | 2996 | 2950 | 213 | 6 | 30 | 2776 | 1391 | 55.5                   | 56.9               | 53.2             |
| 2600   | 3046 | 3000 | 238 | 6 | 30 | 2826 | 1409 | 56.1                   | 57.6               | 53.9             |
| 2650   | 3096 | 3050 | 263 | 6 | 30 | 2876 | 1445 | 57.0                   | 58.5               | 54.7             |
| 2700   | 3146 | 3100 | 288 | 6 | 30 | 2926 | 1463 | 57.8                   | 59.3               | 55.4             |
| 2750   | 3196 | 3150 | 313 | 6 | 30 | 2976 | 1481 | 58.5                   | 60.1               | 56.2             |
| 2800   | 3246 | 3200 | 138 | 7 | 34 | 3026 | 1517 | 59.3                   | 60.8               | 56.9             |
| 2850   | 3296 | 3250 | 163 | 7 | 34 | 3076 | 1535 | 60.1                   | 61.6               | 57.6             |
| 2900   | 3346 | 3300 | 188 | 7 | 34 | 3126 | 1571 | 60.8                   | 62.4               | 58.3             |
| 2950   | 3396 | 3350 | 213 | 7 | 34 | 3176 | 1589 | 61.6                   | 63.2               | 59.1             |
| 3000   | 3446 | 3400 | 238 | 7 | 34 | 3226 | 1607 | 62.3                   | 64.0               | 59.8             |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

### Actuator Cable Connection Area

## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | Mass [kg] |
|--------|------|------|-----|---|----|------|------|-----------|
| 2300   | 2746 | 2700 | 288 | 5 | 26 | 2526 | 1447 | 53.4      |
| 2350   | 2796 | 2750 | 313 | 5 | 26 | 2576 | 1472 | 54.2      |
| 2400   | 2846 | 2800 | 138 | 6 | 30 | 2626 | 1496 | 55.0      |
| 2450   | 2896 | 2850 | 163 | 6 | 30 | 2676 | 1522 | 55.7      |
| 2500   | 2946 | 2900 | 188 | 6 | 30 | 2726 | 1547 | 56.5      |
| 2550   | 2996 | 2950 | 213 | 6 | 30 | 2776 | 1572 | 57.2      |
| 2600   | 3046 | 3000 | 238 | 6 | 30 | 2826 | 1596 | 57.9      |
| 2650   | 3096 | 3050 | 263 | 6 | 30 | 2876 | 1622 | 58.8      |
| 2700   | 3146 | 3100 | 288 | 6 | 30 | 2926 | 1646 | 59.6      |
| 2750   | 3196 | 3150 | 313 | 6 | 30 | 2976 | 1673 | 60.4      |
| 2800   | 3246 | 3200 | 138 | 7 | 34 | 3026 | 1697 | 61.1      |
| 2850   | 3296 | 3250 | 163 | 7 | 34 | 3076 | 1721 | 61.9      |
| 2900   | 3346 | 3300 | 188 | 7 | 34 | 3126 | 1748 | 62.6      |
| 2950   | 3396 | 3350 | 213 | 7 | 34 | 3176 | 1772 | 63.4      |
| 3000   | 3446 | 3400 | 238 | 7 | 34 | 3226 | 1796 | 64.2      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

## 5.1 External dimensions

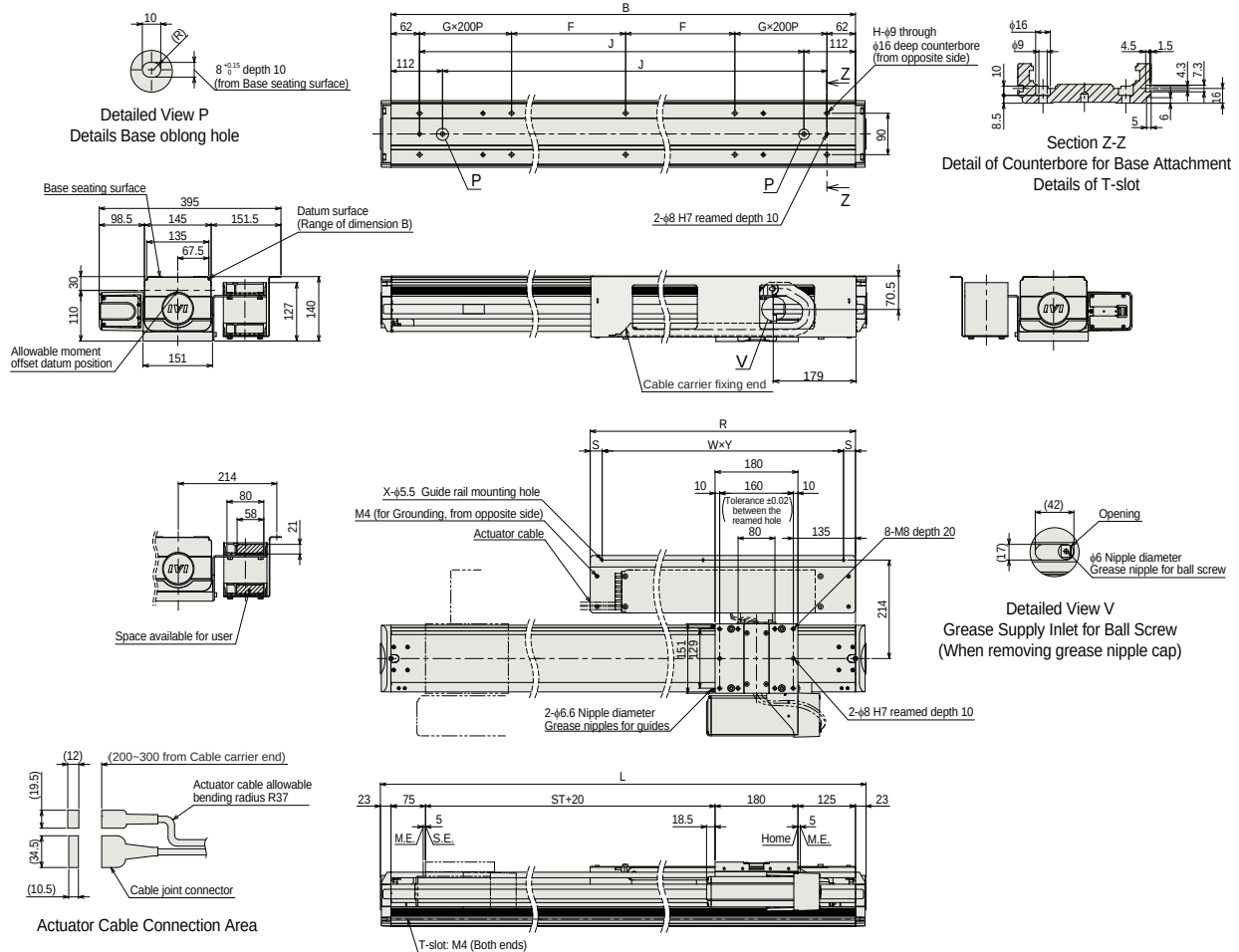
### 5.1.15 NSA-LXMXS: Ceiling mount

[Extension Cable Carrier (Standard/ET7)]

(Note) To the cable joint connector, the motor cable and the encoder cable are to be connected.

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

M.E.: Mechanical End, S.E.: Stroke End



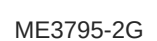
## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-----|---|----|------|------|------|---|---|-----|-----------|
| 2300   | 2746 | 2700 | 288 | 5 | 26 | 2526 | 1428 | 26.5 | 5 | 6 | 275 | 54.9      |
| 2350   | 2796 | 2750 | 313 | 5 | 26 | 2576 | 1453 | 26.5 | 5 | 6 | 280 | 55.8      |
| 2400   | 2846 | 2800 | 138 | 6 | 30 | 2626 | 1477 | 26   | 5 | 6 | 285 | 56.6      |
| 2450   | 2896 | 2850 | 163 | 6 | 30 | 2676 | 1503 | 26.5 | 5 | 6 | 290 | 57.4      |
| 2500   | 2946 | 2900 | 188 | 6 | 30 | 2726 | 1528 | 26.5 | 5 | 6 | 295 | 58.2      |
| 2550   | 2996 | 2950 | 213 | 6 | 30 | 2776 | 1553 | 26.5 | 5 | 6 | 300 | 59.0      |
| 2600   | 3046 | 3000 | 238 | 6 | 30 | 2826 | 1577 | 26   | 5 | 6 | 305 | 59.7      |
| 2650   | 3096 | 3050 | 263 | 6 | 30 | 2876 | 1603 | 26.5 | 5 | 6 | 310 | 60.6      |
| 2700   | 3146 | 3100 | 288 | 6 | 30 | 2926 | 1628 | 26.5 | 5 | 6 | 315 | 61.3      |
| 2750   | 3196 | 3150 | 313 | 6 | 30 | 2976 | 1652 | 31   | 6 | 7 | 265 | 62.1      |
| 2800   | 3246 | 3200 | 138 | 7 | 34 | 3026 | 1676 | 28   | 6 | 7 | 270 | 62.9      |
| 2850   | 3296 | 3250 | 163 | 7 | 34 | 3076 | 1703 | 26.5 | 6 | 7 | 275 | 63.7      |
| 2900   | 3346 | 3300 | 188 | 7 | 34 | 3126 | 1727 | 23.5 | 6 | 7 | 280 | 64.5      |
| 2950   | 3396 | 3350 | 213 | 7 | 34 | 3176 | 1754 | 22   | 6 | 7 | 285 | 65.3      |
| 3000   | 3446 | 3400 | 238 | 7 | 34 | 3226 | 1778 | 19   | 6 | 7 | 290 | 66.2      |

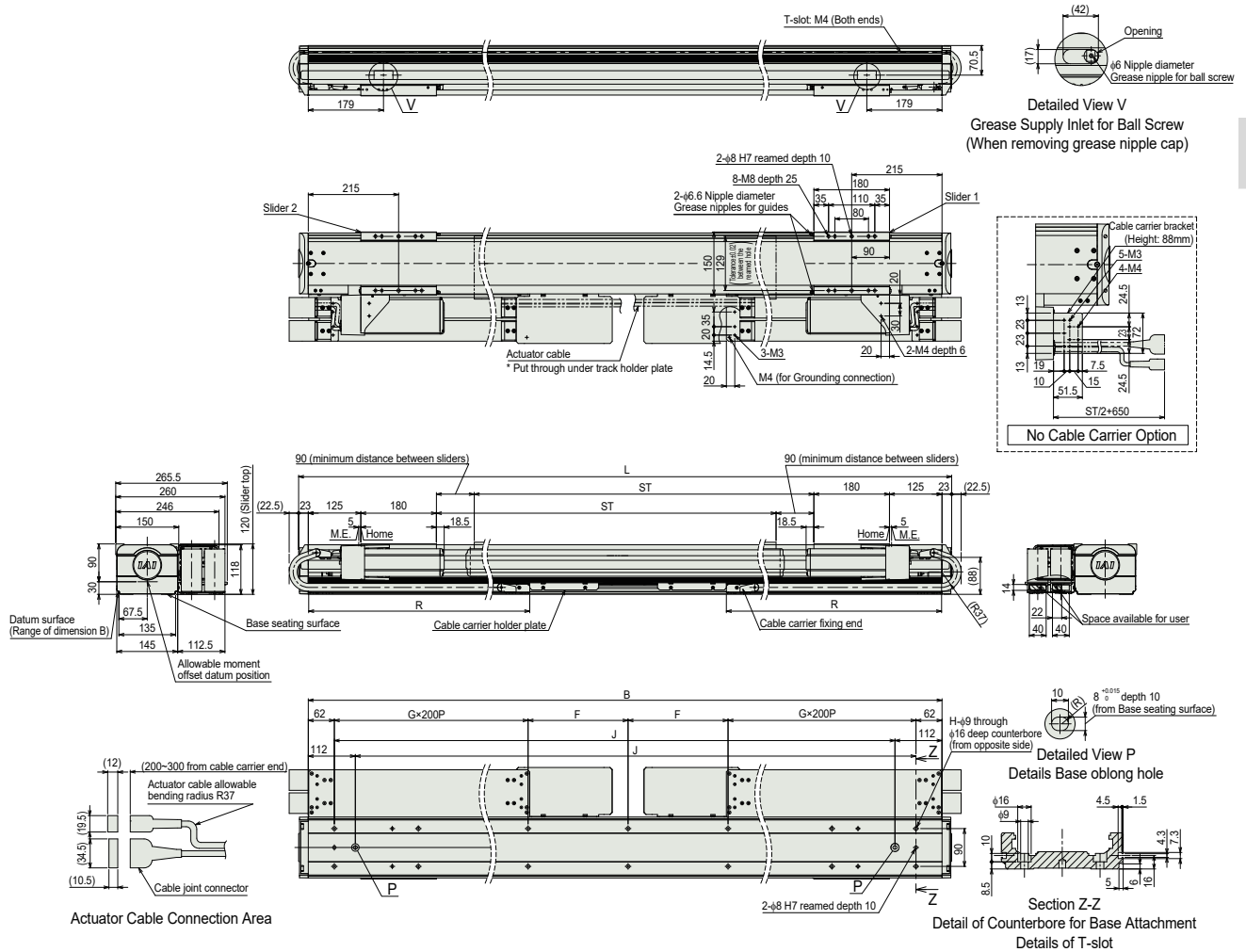
(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



[User Cable Carrier (Standard/UM3), No Cable Carrier]

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

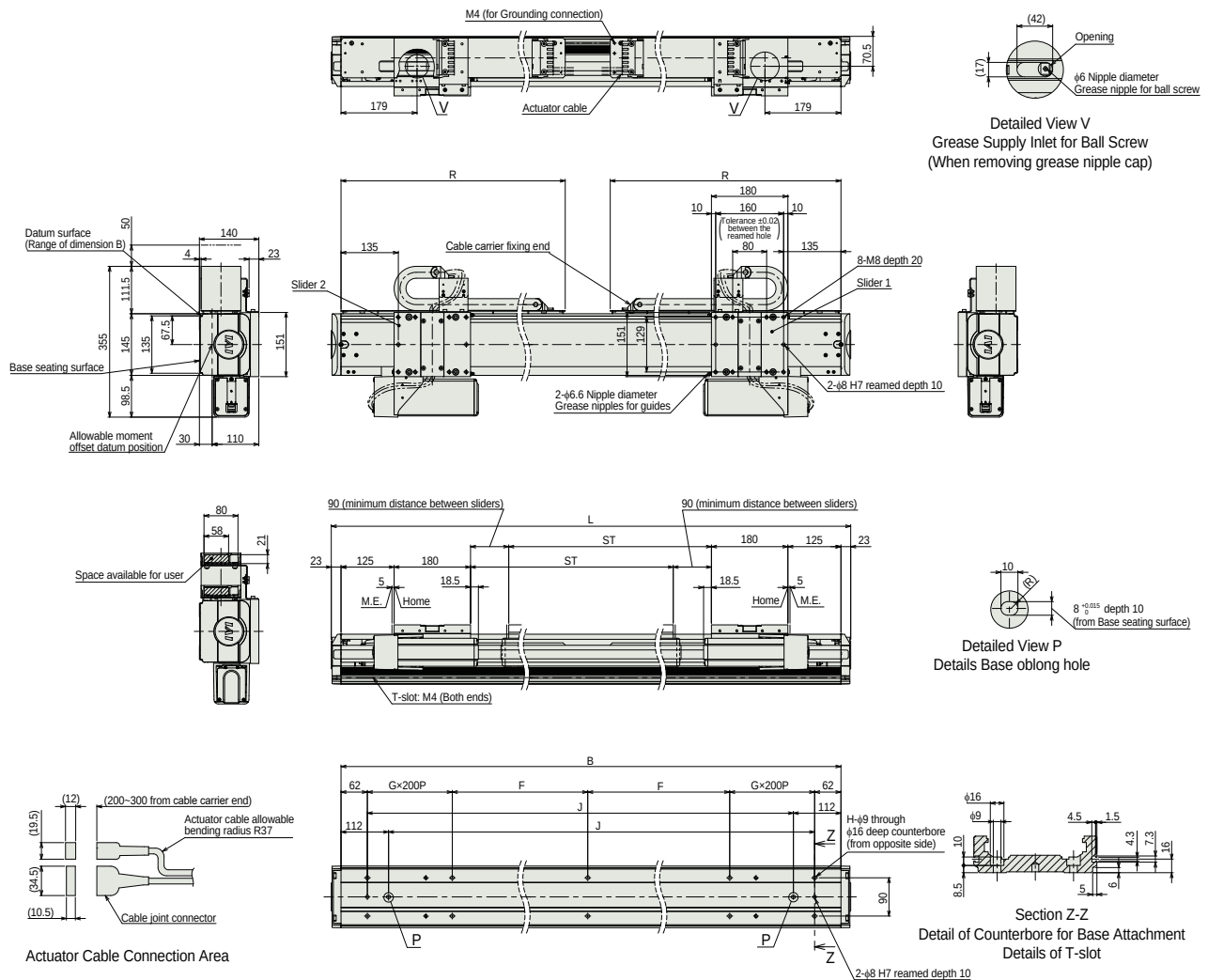
### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | Mass [kg]              |                    |                  |
|--------|------|------|-----|---|----|------|------|------------------------|--------------------|------------------|
|        |      |      |     |   |    |      |      | Standard Cable Carrier | User Cable Carrier | No Cable Carrier |
| 2300   | 3046 | 3000 | 238 | 6 | 30 | 2826 | 1265 | 66.1                   | 68.8               | 61.9             |
| 2350   | 3096 | 3050 | 263 | 6 | 30 | 2876 | 1283 | 66.9                   | 69.6               | 62.7             |
| 2400   | 3146 | 3100 | 288 | 6 | 30 | 2926 | 1319 | 67.7                   | 70.5               | 63.4             |
| 2450   | 3196 | 3150 | 313 | 6 | 30 | 2976 | 1337 | 68.5                   | 71.3               | 64.1             |
| 2500   | 3246 | 3200 | 138 | 7 | 34 | 3026 | 1355 | 69.2                   | 72.0               | 64.8             |
| 2550   | 3296 | 3250 | 163 | 7 | 34 | 3076 | 1391 | 70.1                   | 73.0               | 65.6             |
| 2600   | 3346 | 3300 | 188 | 7 | 34 | 3126 | 1409 | 70.9                   | 73.8               | 66.3             |
| 2650   | 3396 | 3350 | 213 | 7 | 34 | 3176 | 1445 | 71.8                   | 74.7               | 67.1             |
| 2700   | 3446 | 3400 | 238 | 7 | 34 | 3226 | 1463 | 72.5                   | 75.5               | 67.8             |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

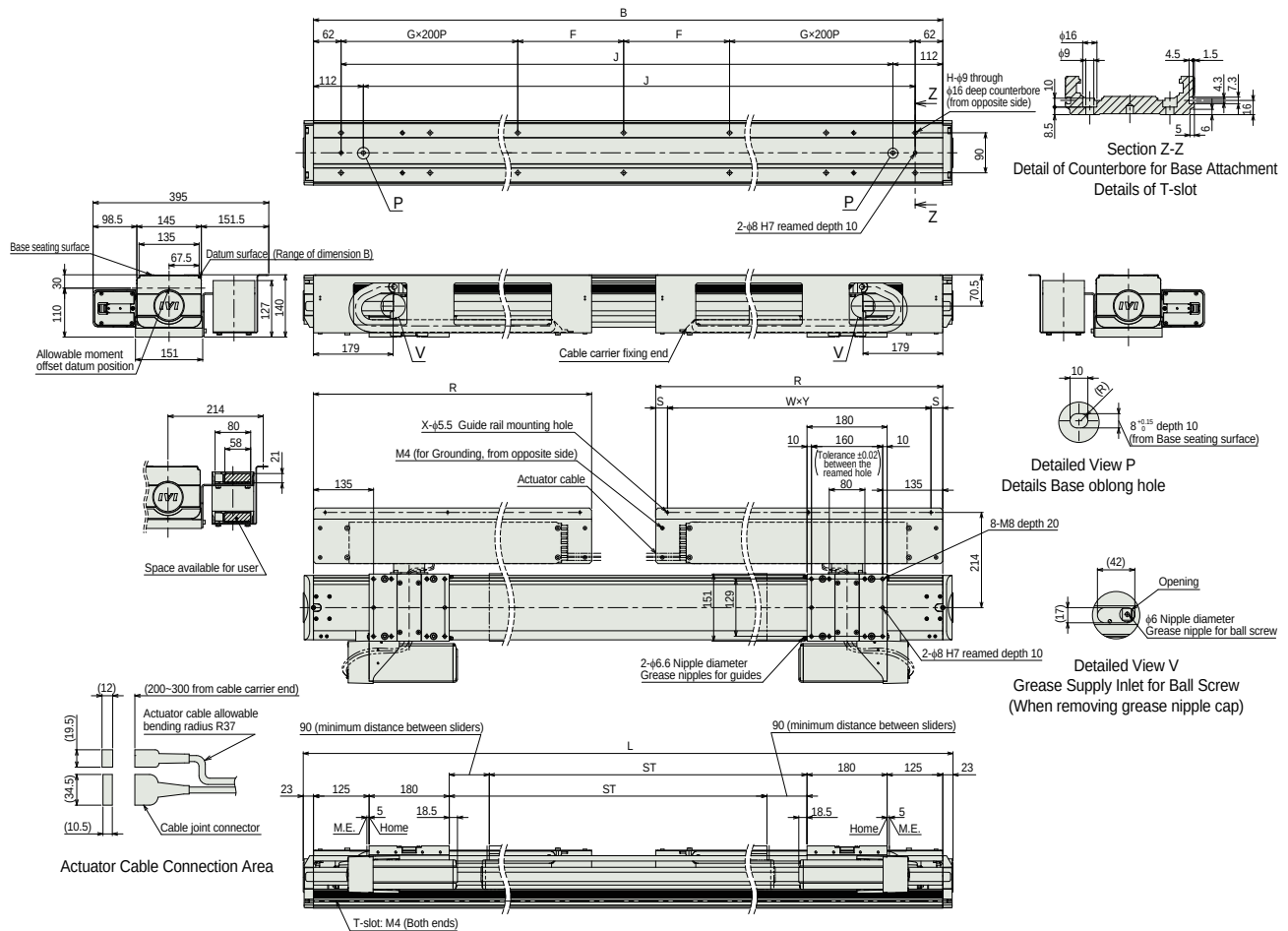
### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | Mass [kg] |
|--------|------|------|-----|---|----|------|------|-----------|
| 2300   | 3046 | 3000 | 238 | 6 | 30 | 2826 | 1447 | 69.3      |
| 2350   | 3096 | 3050 | 263 | 6 | 30 | 2876 | 1472 | 70.1      |
| 2400   | 3146 | 3100 | 288 | 6 | 30 | 2926 | 1496 | 70.9      |
| 2450   | 3196 | 3150 | 313 | 6 | 30 | 2976 | 1522 | 71.7      |
| 2500   | 3246 | 3200 | 138 | 7 | 34 | 3026 | 1547 | 72.4      |
| 2550   | 3296 | 3250 | 163 | 7 | 34 | 3076 | 1572 | 73.3      |
| 2600   | 3346 | 3300 | 188 | 7 | 34 | 3126 | 1596 | 74.1      |
| 2650   | 3396 | 3350 | 213 | 7 | 34 | 3176 | 1622 | 74.9      |
| 2700   | 3446 | 3400 | 238 | 7 | 34 | 3226 | 1646 | 75.8      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F   | G | H  | J    | R    | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-----|---|----|------|------|------|---|---|-----|-----------|
| 2300   | 3046 | 3000 | 238 | 6 | 30 | 2826 | 1428 | 26.5 | 5 | 6 | 275 | 72.4      |
| 2350   | 3096 | 3050 | 263 | 6 | 30 | 2876 | 1453 | 26.5 | 5 | 6 | 280 | 73.3      |
| 2400   | 3146 | 3100 | 288 | 6 | 30 | 2926 | 1477 | 26   | 5 | 6 | 285 | 74.2      |
| 2450   | 3196 | 3150 | 313 | 6 | 30 | 2976 | 1503 | 26.5 | 5 | 6 | 290 | 75.1      |
| 2500   | 3246 | 3200 | 138 | 7 | 34 | 3026 | 1528 | 26.5 | 5 | 6 | 295 | 75.9      |
| 2550   | 3296 | 3250 | 163 | 7 | 34 | 3076 | 1553 | 26.5 | 5 | 6 | 300 | 76.9      |
| 2600   | 3346 | 3300 | 188 | 7 | 34 | 3126 | 1577 | 26   | 5 | 6 | 305 | 77.7      |
| 2650   | 3396 | 3350 | 213 | 7 | 34 | 3176 | 1603 | 26.5 | 5 | 6 | 310 | 78.6      |
| 2700   | 3446 | 3400 | 238 | 7 | 34 | 3226 | 1628 | 26.5 | 5 | 6 | 315 | 79.2      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

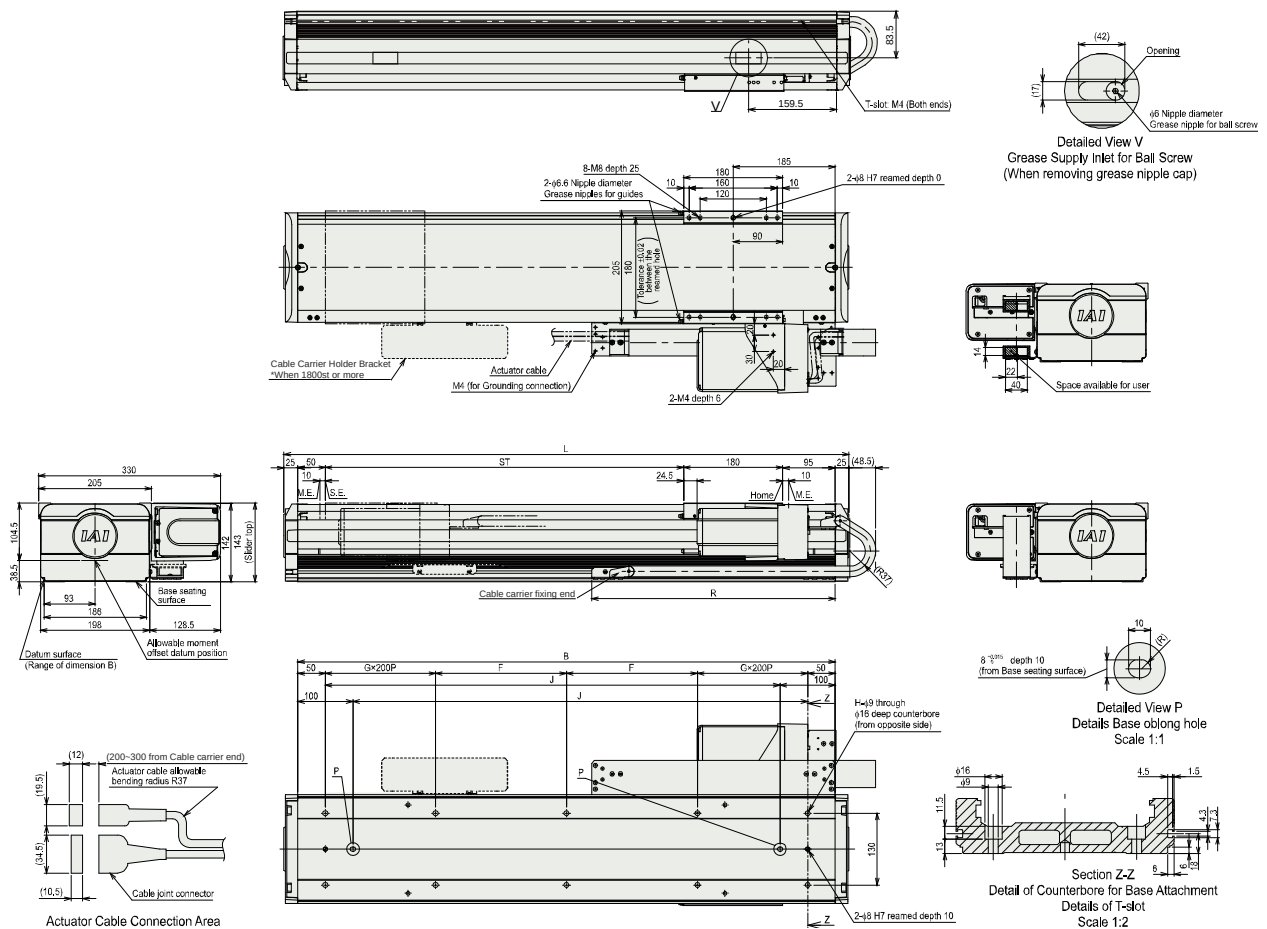
### 5.1.19 NSA-WXMS: Horizontal installation

[Standard Cable Carrier (Standard/CT3)]

(Note) To the cable joint connector, the motor cable and the encoder cable are to be connected.

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

M.E.: Mechanical End, S.E.: Stroke End

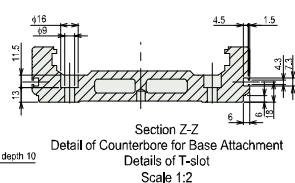
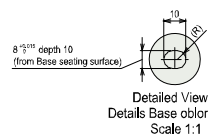
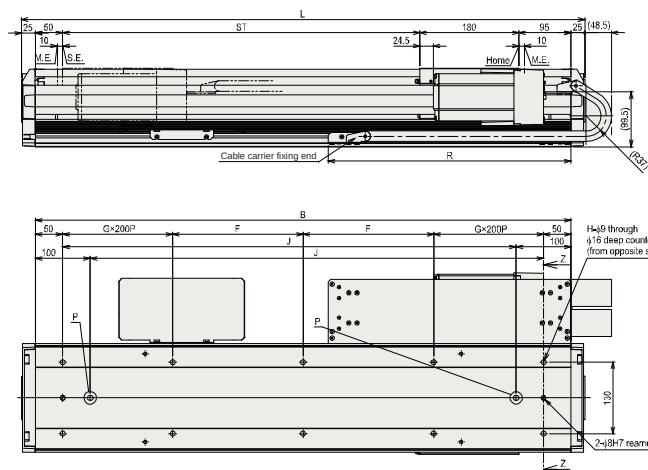
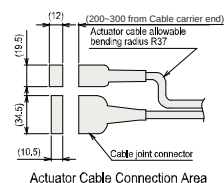
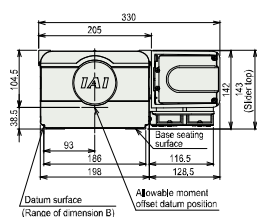
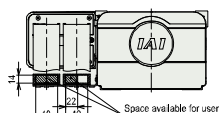
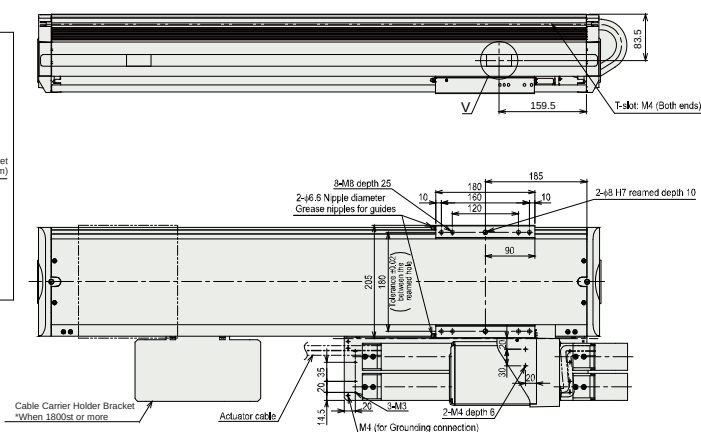
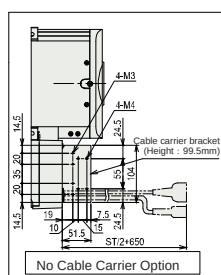


## 5. External dimensions

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

Detailed View V

Grease Supply Inlet for Ball Screw  
(When removing grease nipple cap)



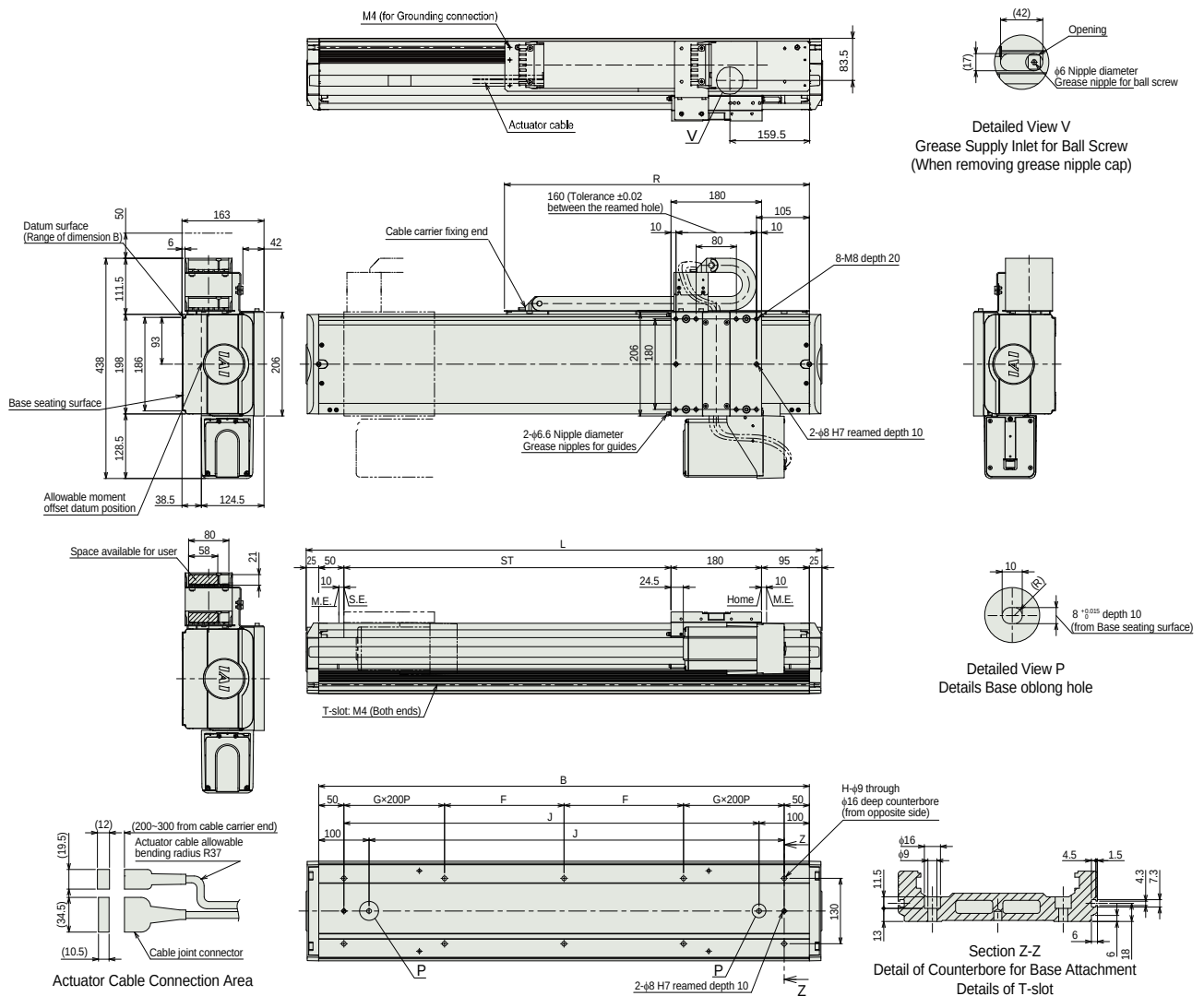
## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F     | G | H  | J    | R    | Mass [kg]              |                    |                  |
|--------|------|------|-------|---|----|------|------|------------------------|--------------------|------------------|
|        |      |      |       |   |    |      |      | Standard Cable Carrier | User Cable Carrier | No Cable Carrier |
| 650    | 1025 | 975  | 237.5 | 1 | 10 | 825  | 442  | 37.6                   | 38.1               | 36.9             |
| 700    | 1075 | 1025 | 262.5 | 1 | 10 | 875  | 460  | 38.8                   | 39.3               | 38.0             |
| 750    | 1125 | 1075 | 287.5 | 1 | 10 | 925  | 478  | 39.9                   | 40.4               | 39.1             |
| 800    | 1175 | 1125 | 312.5 | 1 | 10 | 975  | 514  | 41.1                   | 41.6               | 40.2             |
| 850    | 1225 | 1175 | 137.5 | 2 | 14 | 1025 | 532  | 42.1                   | 42.7               | 41.3             |
| 900    | 1275 | 1225 | 162.5 | 2 | 14 | 1075 | 568  | 43.3                   | 43.9               | 42.4             |
| 950    | 1325 | 1275 | 187.5 | 2 | 14 | 1125 | 586  | 44.4                   | 45.0               | 43.5             |
| 1000   | 1375 | 1325 | 212.5 | 2 | 14 | 1175 | 604  | 45.6                   | 46.2               | 44.6             |
| 1050   | 1425 | 1375 | 237.5 | 2 | 14 | 1225 | 640  | 46.7                   | 47.4               | 45.7             |
| 1100   | 1475 | 1425 | 262.5 | 2 | 14 | 1275 | 658  | 47.8                   | 48.5               | 46.8             |
| 1150   | 1525 | 1475 | 287.5 | 2 | 14 | 1325 | 694  | 49.0                   | 49.7               | 47.9             |
| 1200   | 1575 | 1525 | 312.5 | 2 | 14 | 1375 | 712  | 50.1                   | 50.8               | 49.0             |
| 1250   | 1625 | 1575 | 137.5 | 3 | 18 | 1425 | 730  | 51.2                   | 52.0               | 50.1             |
| 1300   | 1675 | 1625 | 162.5 | 3 | 18 | 1475 | 766  | 52.4                   | 53.1               | 51.2             |
| 1350   | 1725 | 1675 | 187.5 | 3 | 18 | 1525 | 784  | 53.5                   | 54.3               | 52.3             |
| 1400   | 1775 | 1725 | 212.5 | 3 | 18 | 1575 | 802  | 54.6                   | 55.4               | 53.4             |
| 1450   | 1825 | 1775 | 237.5 | 3 | 18 | 1625 | 838  | 55.8                   | 56.6               | 54.5             |
| 1500   | 1875 | 1825 | 262.5 | 3 | 18 | 1675 | 856  | 56.9                   | 57.8               | 55.6             |
| 1550   | 1925 | 1875 | 287.5 | 3 | 18 | 1725 | 892  | 58.0                   | 58.9               | 56.7             |
| 1600   | 1975 | 1925 | 312.5 | 3 | 18 | 1775 | 910  | 59.2                   | 60.1               | 57.8             |
| 1650   | 2025 | 1975 | 137.5 | 4 | 22 | 1825 | 928  | 60.3                   | 61.2               | 58.9             |
| 1700   | 2075 | 2025 | 162.5 | 4 | 22 | 1875 | 964  | 61.4                   | 62.4               | 60.0             |
| 1750   | 2125 | 2075 | 187.5 | 4 | 22 | 1925 | 982  | 62.5                   | 63.5               | 61.1             |
| 1800   | 2175 | 2125 | 212.5 | 4 | 22 | 1975 | 1018 | 63.7                   | 64.7               | 62.2             |
| 1850   | 2225 | 2175 | 237.5 | 4 | 22 | 2025 | 1036 | 64.8                   | 65.9               | 63.3             |
| 1900   | 2275 | 2225 | 262.5 | 4 | 22 | 2075 | 1054 | 66.0                   | 67.0               | 64.4             |
| 1950   | 2325 | 2275 | 287.5 | 4 | 22 | 2125 | 1090 | 67.1                   | 68.2               | 65.5             |
| 2000   | 2375 | 2325 | 312.5 | 4 | 22 | 2175 | 1108 | 68.2                   | 69.3               | 66.6             |
| 2050   | 2425 | 2375 | 137.5 | 5 | 26 | 2225 | 1144 | 69.4                   | 70.5               | 67.7             |
| 2100   | 2475 | 2425 | 162.5 | 5 | 26 | 2275 | 1162 | 70.5                   | 71.6               | 68.8             |
| 2150   | 2525 | 2475 | 187.5 | 5 | 26 | 2325 | 1180 | 71.6                   | 72.8               | 69.9             |
| 2200   | 2575 | 2525 | 212.5 | 5 | 26 | 2375 | 1216 | 72.8                   | 74.0               | 71.0             |
| 2250   | 2625 | 2575 | 237.5 | 5 | 26 | 2425 | 1234 | 73.9                   | 75.1               | 72.1             |
| 2300   | 2675 | 2625 | 262.5 | 5 | 26 | 2475 | 1252 | 75.0                   | 76.3               | 73.2             |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F     | G | H  | J    | R    | Mass [kg] |
|--------|------|------|-------|---|----|------|------|-----------|
| 650    | 1025 | 975  | 237.5 | 1 | 10 | 825  | 606  | 38.9      |
| 700    | 1075 | 1025 | 262.5 | 1 | 10 | 875  | 632  | 40.0      |
| 750    | 1125 | 1075 | 287.5 | 1 | 10 | 925  | 657  | 41.1      |
| 800    | 1175 | 1125 | 312.5 | 1 | 10 | 975  | 682  | 42.2      |
| 850    | 1225 | 1175 | 137.5 | 2 | 14 | 1025 | 707  | 43.3      |
| 900    | 1275 | 1225 | 162.5 | 2 | 14 | 1075 | 731  | 44.4      |
| 950    | 1325 | 1275 | 187.5 | 2 | 14 | 1125 | 758  | 45.5      |
| 1000   | 1375 | 1325 | 212.5 | 2 | 14 | 1175 | 782  | 46.6      |
| 1050   | 1425 | 1375 | 237.5 | 2 | 14 | 1225 | 806  | 47.7      |
| 1100   | 1475 | 1425 | 262.5 | 2 | 14 | 1275 | 833  | 48.8      |
| 1150   | 1525 | 1475 | 287.5 | 2 | 14 | 1325 | 857  | 49.9      |
| 1200   | 1575 | 1525 | 312.5 | 2 | 14 | 1375 | 881  | 51.0      |
| 1250   | 1625 | 1575 | 137.5 | 3 | 18 | 1425 | 905  | 52.0      |
| 1300   | 1675 | 1625 | 162.5 | 3 | 18 | 1475 | 932  | 53.1      |
| 1350   | 1725 | 1675 | 187.5 | 3 | 18 | 1525 | 956  | 54.2      |
| 1400   | 1775 | 1725 | 212.5 | 3 | 18 | 1575 | 983  | 55.4      |
| 1450   | 1825 | 1775 | 237.5 | 3 | 18 | 1625 | 1006 | 56.5      |
| 1500   | 1875 | 1825 | 262.5 | 3 | 18 | 1675 | 1032 | 57.6      |
| 1550   | 1925 | 1875 | 287.5 | 3 | 18 | 1725 | 1056 | 58.7      |
| 1600   | 1975 | 1925 | 312.5 | 3 | 18 | 1775 | 1082 | 59.8      |
| 1650   | 2025 | 1975 | 137.5 | 4 | 22 | 1825 | 1106 | 60.8      |
| 1700   | 2075 | 2025 | 162.5 | 4 | 22 | 1875 | 1132 | 61.9      |
| 1750   | 2125 | 2075 | 187.5 | 4 | 22 | 1925 | 1156 | 63.0      |
| 1800   | 2175 | 2125 | 212.5 | 4 | 22 | 1975 | 1182 | 64.1      |
| 1850   | 2225 | 2175 | 237.5 | 4 | 22 | 2025 | 1206 | 65.2      |
| 1900   | 2275 | 2225 | 262.5 | 4 | 22 | 2075 | 1230 | 66.3      |
| 1950   | 2325 | 2275 | 287.5 | 4 | 22 | 2125 | 1256 | 67.5      |
| 2000   | 2375 | 2325 | 312.5 | 4 | 22 | 2175 | 1282 | 68.6      |
| 2050   | 2425 | 2375 | 137.5 | 5 | 26 | 2225 | 1306 | 69.6      |
| 2100   | 2475 | 2425 | 162.5 | 5 | 26 | 2275 | 1331 | 70.7      |
| 2150   | 2525 | 2475 | 187.5 | 5 | 26 | 2325 | 1357 | 71.8      |
| 2200   | 2575 | 2525 | 212.5 | 5 | 26 | 2375 | 1382 | 72.9      |
| 2250   | 2625 | 2575 | 237.5 | 5 | 26 | 2425 | 1406 | 74.0      |
| 2300   | 2675 | 2625 | 262.5 | 5 | 26 | 2475 | 1431 | 75.1      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

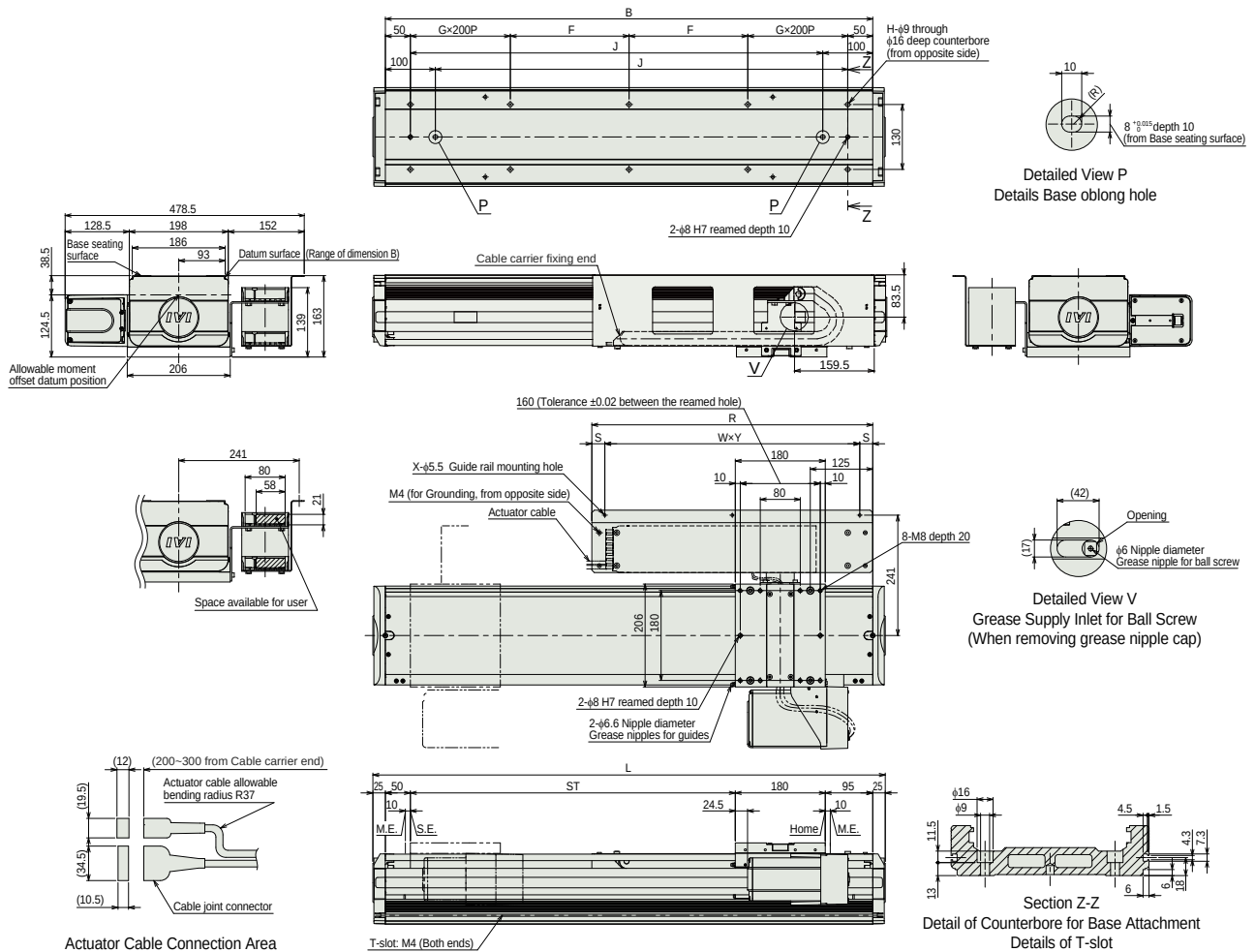
### 5.1.21 NSA-WXMS: Ceiling mount

[Extension Cable Carrier (Standard/ET7)]

(Note) To the cable joint connector, the motor cable and the encoder cable are to be connected.

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

M.E.: Mechanical End, S.E.: Stroke End



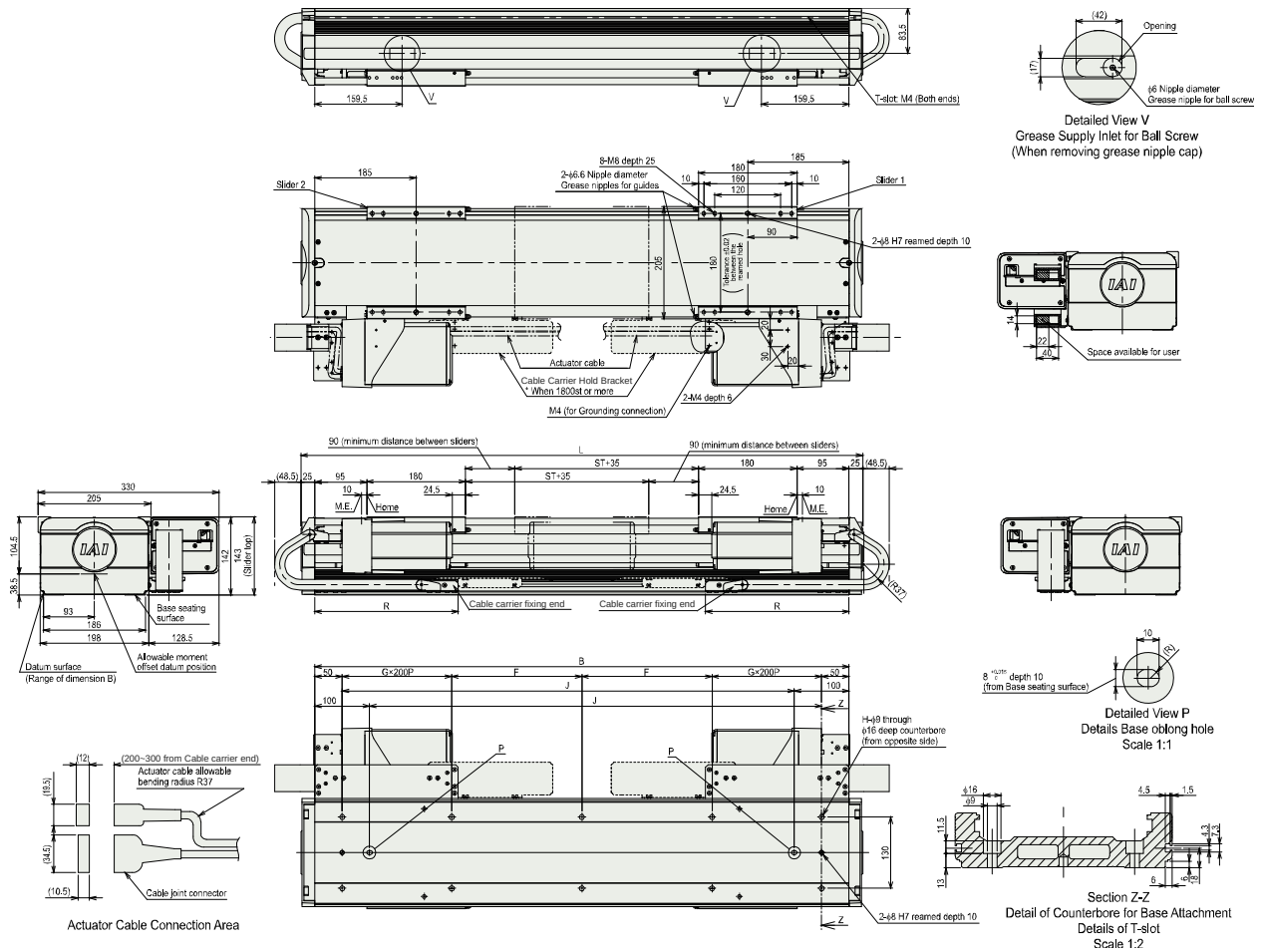
## ■ Dimensions and Mass by Stroke

Unit: mm

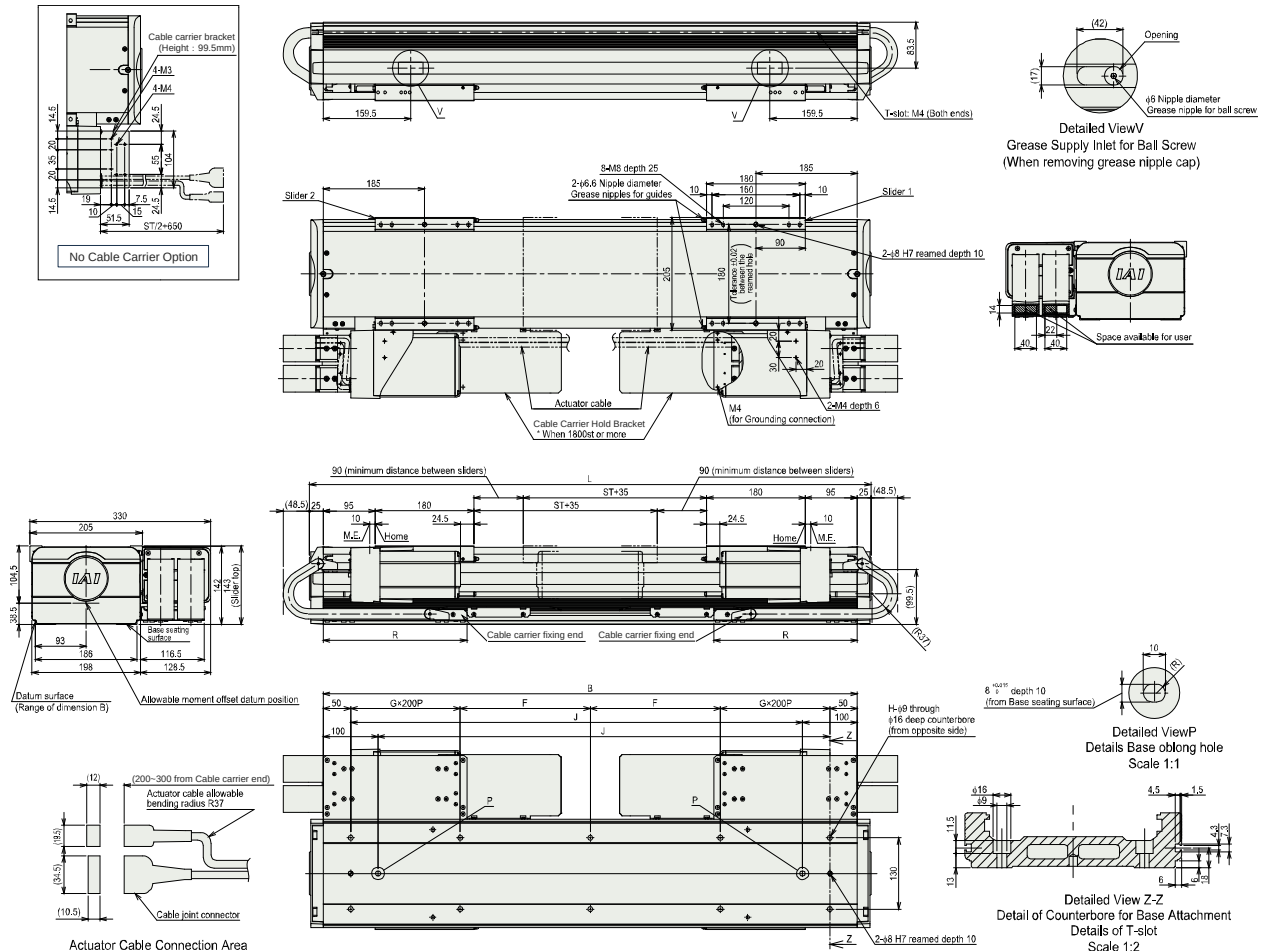
| Stroke | L    | B    | F     | G | H  | J    | R    | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-------|---|----|------|------|------|---|---|-----|-----------|
| 650    | 1025 | 975  | 237.5 | 1 | 10 | 825  | 562  | 26   | 2 | 3 | 255 | 38.9      |
| 700    | 1075 | 1025 | 262.5 | 1 | 10 | 875  | 588  | 24   | 2 | 3 | 270 | 40.0      |
| 750    | 1125 | 1075 | 287.5 | 1 | 10 | 925  | 613  | 21.5 | 2 | 3 | 285 | 41.1      |
| 800    | 1175 | 1125 | 312.5 | 1 | 10 | 975  | 638  | 24   | 2 | 3 | 295 | 42.2      |
| 850    | 1225 | 1175 | 137.5 | 2 | 14 | 1025 | 662  | 26   | 2 | 3 | 305 | 43.3      |
| 900    | 1275 | 1225 | 162.5 | 2 | 14 | 1075 | 687  | 21   | 3 | 4 | 215 | 44.4      |
| 950    | 1325 | 1275 | 187.5 | 2 | 14 | 1125 | 714  | 27   | 3 | 4 | 220 | 45.5      |
| 1000   | 1375 | 1325 | 212.5 | 2 | 14 | 1175 | 738  | 24   | 3 | 4 | 230 | 46.6      |
| 1050   | 1425 | 1375 | 237.5 | 2 | 14 | 1225 | 762  | 21   | 3 | 4 | 240 | 47.7      |
| 1100   | 1475 | 1425 | 262.5 | 2 | 14 | 1275 | 789  | 27   | 3 | 4 | 245 | 48.8      |
| 1150   | 1525 | 1475 | 287.5 | 2 | 14 | 1325 | 813  | 24   | 3 | 4 | 255 | 49.9      |
| 1200   | 1575 | 1525 | 312.5 | 2 | 14 | 1375 | 837  | 21   | 3 | 4 | 265 | 51.0      |
| 1250   | 1625 | 1575 | 137.5 | 3 | 18 | 1425 | 861  | 25.5 | 3 | 4 | 270 | 52.1      |
| 1300   | 1675 | 1625 | 162.5 | 3 | 18 | 1475 | 888  | 24   | 3 | 4 | 280 | 53.2      |
| 1350   | 1725 | 1675 | 187.5 | 3 | 18 | 1525 | 912  | 21   | 3 | 4 | 290 | 54.3      |
| 1400   | 1775 | 1725 | 212.5 | 3 | 18 | 1575 | 939  | 27   | 3 | 4 | 295 | 55.4      |
| 1450   | 1825 | 1775 | 237.5 | 3 | 18 | 1625 | 963  | 24   | 3 | 4 | 305 | 56.5      |
| 1500   | 1875 | 1825 | 262.5 | 3 | 18 | 1675 | 987  | 21   | 3 | 4 | 315 | 57.6      |
| 1550   | 1925 | 1875 | 287.5 | 3 | 18 | 1725 | 1014 | 27   | 4 | 5 | 240 | 58.7      |
| 1600   | 1975 | 1925 | 312.5 | 3 | 18 | 1775 | 1038 | 19   | 4 | 5 | 250 | 59.8      |
| 1650   | 2025 | 1975 | 137.5 | 4 | 22 | 1825 | 1062 | 21   | 4 | 5 | 255 | 60.9      |
| 1700   | 2075 | 2025 | 162.5 | 4 | 22 | 1875 | 1089 | 19.5 | 5 | 6 | 210 | 62.0      |
| 1750   | 2125 | 2075 | 187.5 | 4 | 22 | 1925 | 1113 | 19   | 5 | 6 | 215 | 63.1      |
| 1800   | 2175 | 2125 | 212.5 | 4 | 22 | 1975 | 1137 | 18.5 | 5 | 6 | 220 | 64.2      |
| 1850   | 2225 | 2175 | 237.5 | 4 | 22 | 2025 | 1161 | 18   | 5 | 6 | 225 | 65.3      |
| 1900   | 2275 | 2225 | 262.5 | 4 | 22 | 2075 | 1188 | 19   | 5 | 6 | 230 | 66.4      |
| 1950   | 2325 | 2275 | 287.5 | 4 | 22 | 2125 | 1212 | 18.5 | 5 | 6 | 235 | 67.5      |
| 2000   | 2375 | 2325 | 312.5 | 4 | 22 | 2175 | 1238 | 19   | 5 | 6 | 240 | 68.6      |
| 2050   | 2425 | 2375 | 137.5 | 5 | 26 | 2225 | 1262 | 18.5 | 5 | 6 | 245 | 69.6      |
| 2100   | 2475 | 2425 | 162.5 | 5 | 26 | 2275 | 1286 | 18   | 5 | 6 | 250 | 70.7      |
| 2150   | 2525 | 2475 | 187.5 | 5 | 26 | 2325 | 1312 | 18.5 | 5 | 6 | 255 | 71.8      |
| 2200   | 2575 | 2525 | 212.5 | 5 | 26 | 2375 | 1338 | 19   | 5 | 6 | 260 | 73.0      |
| 2250   | 2625 | 2575 | 237.5 | 5 | 26 | 2425 | 1362 | 18.5 | 5 | 6 | 265 | 74.1      |
| 2300   | 2675 | 2625 | 262.5 | 5 | 26 | 2475 | 1386 | 18   | 5 | 6 | 270 | 75.2      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

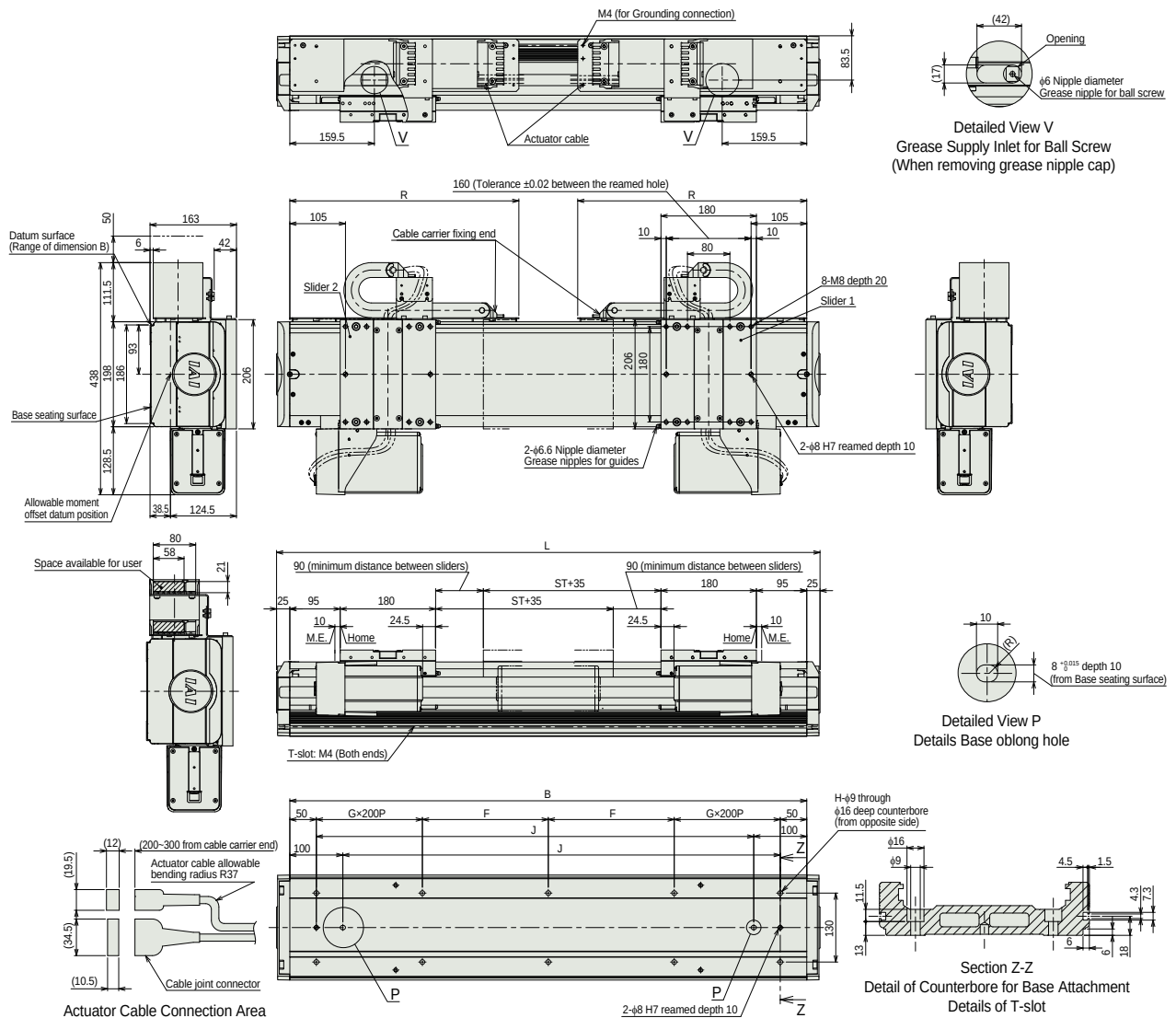
### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F     | G | H  | J    | R    | Mass [kg]              |                    |                  |
|--------|------|------|-------|---|----|------|------|------------------------|--------------------|------------------|
|        |      |      |       |   |    |      |      | Standard Cable Carrier | User Cable Carrier | No Cable Carrier |
| 300    | 1025 | 975  | 237.5 | 1 | 10 | 825  | 262  | 50.0                   | 50.8               | 49.3             |
| 350    | 1075 | 1025 | 262.5 | 1 | 10 | 875  | 280  | 51.2                   | 52.0               | 50.4             |
| 400    | 1125 | 1075 | 287.5 | 1 | 10 | 925  | 316  | 52.4                   | 53.3               | 51.5             |
| 450    | 1175 | 1125 | 312.5 | 1 | 10 | 975  | 334  | 53.5                   | 54.5               | 52.6             |
| 500    | 1225 | 1175 | 137.5 | 2 | 14 | 1025 | 352  | 54.6                   | 55.6               | 53.7             |
| 550    | 1275 | 1225 | 162.5 | 2 | 14 | 1075 | 388  | 55.8                   | 56.9               | 54.8             |
| 600    | 1325 | 1275 | 187.5 | 2 | 14 | 1125 | 406  | 56.9                   | 58.1               | 55.9             |
| 650    | 1375 | 1325 | 212.5 | 2 | 14 | 1175 | 442  | 58.1                   | 59.4               | 57.0             |
| 700    | 1425 | 1375 | 237.5 | 2 | 14 | 1225 | 460  | 59.3                   | 60.5               | 58.1             |
| 750    | 1475 | 1425 | 262.5 | 2 | 14 | 1275 | 478  | 60.4                   | 61.7               | 59.2             |
| 800    | 1525 | 1475 | 287.5 | 2 | 14 | 1325 | 514  | 61.6                   | 63.0               | 60.3             |
| 850    | 1575 | 1525 | 312.5 | 2 | 14 | 1375 | 532  | 62.7                   | 64.2               | 61.4             |
| 900    | 1625 | 1575 | 137.5 | 3 | 18 | 1425 | 568  | 63.9                   | 65.4               | 62.5             |
| 950    | 1675 | 1625 | 162.5 | 3 | 18 | 1475 | 586  | 65.0                   | 66.6               | 63.6             |
| 1000   | 1725 | 1675 | 187.5 | 3 | 18 | 1525 | 604  | 66.2                   | 67.8               | 64.7             |
| 1050   | 1775 | 1725 | 212.5 | 3 | 18 | 1575 | 640  | 67.4                   | 69.1               | 65.8             |
| 1100   | 1825 | 1775 | 237.5 | 3 | 18 | 1625 | 658  | 68.5                   | 70.2               | 66.9             |
| 1150   | 1875 | 1825 | 262.5 | 3 | 18 | 1675 | 694  | 69.7                   | 71.5               | 68.0             |
| 1200   | 1925 | 1875 | 287.5 | 3 | 18 | 1725 | 712  | 70.9                   | 72.7               | 69.1             |
| 1250   | 1975 | 1925 | 312.5 | 3 | 18 | 1775 | 730  | 72.0                   | 73.9               | 70.2             |
| 1300   | 2025 | 1975 | 137.5 | 4 | 22 | 1825 | 766  | 73.1                   | 75.1               | 71.3             |
| 1350   | 2075 | 2025 | 162.5 | 4 | 22 | 1875 | 784  | 74.3                   | 76.3               | 72.4             |
| 1400   | 2125 | 2075 | 187.5 | 4 | 22 | 1925 | 802  | 75.4                   | 77.5               | 73.5             |
| 1450   | 2175 | 2125 | 212.5 | 4 | 22 | 1975 | 838  | 76.6                   | 78.8               | 74.6             |
| 1500   | 2225 | 2175 | 237.5 | 4 | 22 | 2025 | 856  | 77.8                   | 80.0               | 75.7             |
| 1550   | 2275 | 2225 | 262.5 | 4 | 22 | 2075 | 892  | 78.9                   | 81.2               | 76.8             |
| 1600   | 2325 | 2275 | 287.5 | 4 | 22 | 2125 | 910  | 80.1                   | 82.4               | 77.9             |
| 1650   | 2375 | 2325 | 312.5 | 4 | 22 | 2175 | 928  | 81.2                   | 83.6               | 79.0             |
| 1700   | 2425 | 2375 | 137.5 | 5 | 26 | 2225 | 964  | 82.4                   | 84.8               | 80.1             |
| 1750   | 2475 | 2425 | 162.5 | 5 | 26 | 2275 | 982  | 83.5                   | 86.0               | 81.2             |
| 1800   | 2525 | 2475 | 187.5 | 5 | 26 | 2325 | 1018 | 84.7                   | 87.3               | 82.3             |
| 1850   | 2575 | 2525 | 212.5 | 5 | 26 | 2375 | 1036 | 85.9                   | 88.5               | 83.4             |
| 1900   | 2625 | 2575 | 237.5 | 5 | 26 | 2425 | 1054 | 87.0                   | 89.7               | 84.5             |
| 1950   | 2675 | 2625 | 262.5 | 5 | 26 | 2475 | 1090 | 88.2                   | 90.9               | 85.6             |
| 2000   | 2725 | 2675 | 287.5 | 5 | 26 | 2525 | 1108 | 89.4                   | 92.1               | 86.7             |
| 2050   | 2775 | 2725 | 312.5 | 5 | 26 | 2575 | 1144 | 90.5                   | 93.4               | 87.8             |
| 2100   | 2825 | 2775 | 137.5 | 6 | 30 | 2625 | 1162 | 91.6                   | 94.5               | 88.9             |
| 2150   | 2875 | 2825 | 162.5 | 6 | 30 | 2675 | 1180 | 92.8                   | 95.7               | 90.0             |
| 2200   | 2925 | 2875 | 187.5 | 6 | 30 | 2725 | 1216 | 94.0                   | 97.0               | 91.1             |
| 2250   | 2975 | 2925 | 212.5 | 6 | 30 | 2775 | 1234 | 95.1                   | 98.2               | 92.2             |
| 2300   | 3025 | 2975 | 237.5 | 6 | 30 | 2825 | 1252 | 96.3                   | 99.4               | 93.3             |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F     | G | H  | J    | R    | Mass [kg] |
|--------|------|------|-------|---|----|------|------|-----------|
| 300    | 1025 | 975  | 237.5 | 1 | 10 | 825  | 432  | 54.9      |
| 350    | 1075 | 1025 | 262.5 | 1 | 10 | 875  | 457  | 56.0      |
| 400    | 1125 | 1075 | 287.5 | 1 | 10 | 925  | 482  | 57.1      |
| 450    | 1175 | 1125 | 312.5 | 1 | 10 | 975  | 506  | 58.2      |
| 500    | 1225 | 1175 | 137.5 | 2 | 14 | 1025 | 532  | 59.3      |
| 550    | 1275 | 1225 | 162.5 | 2 | 14 | 1075 | 557  | 60.4      |
| 600    | 1325 | 1275 | 187.5 | 2 | 14 | 1125 | 582  | 61.5      |
| 650    | 1375 | 1325 | 212.5 | 2 | 14 | 1175 | 606  | 62.6      |
| 700    | 1425 | 1375 | 237.5 | 2 | 14 | 1225 | 632  | 63.7      |
| 750    | 1475 | 1425 | 262.5 | 2 | 14 | 1275 | 657  | 64.8      |
| 800    | 1525 | 1475 | 287.5 | 2 | 14 | 1325 | 682  | 65.9      |
| 850    | 1575 | 1525 | 312.5 | 2 | 14 | 1375 | 707  | 67.0      |
| 900    | 1625 | 1575 | 137.5 | 3 | 18 | 1425 | 731  | 68.1      |
| 950    | 1675 | 1625 | 162.5 | 3 | 18 | 1475 | 758  | 69.2      |
| 1000   | 1725 | 1675 | 187.5 | 3 | 18 | 1525 | 782  | 70.3      |
| 1050   | 1775 | 1725 | 212.5 | 3 | 18 | 1575 | 806  | 71.4      |
| 1100   | 1825 | 1775 | 237.5 | 3 | 18 | 1625 | 833  | 72.5      |
| 1150   | 1875 | 1825 | 262.5 | 3 | 18 | 1675 | 857  | 73.6      |
| 1200   | 1925 | 1875 | 287.5 | 3 | 18 | 1725 | 881  | 74.7      |
| 1250   | 1975 | 1925 | 312.5 | 3 | 18 | 1775 | 905  | 75.8      |
| 1300   | 2025 | 1975 | 137.5 | 4 | 22 | 1825 | 932  | 76.9      |
| 1350   | 2075 | 2025 | 162.5 | 4 | 22 | 1875 | 956  | 78.0      |
| 1400   | 2125 | 2075 | 187.5 | 4 | 22 | 1925 | 983  | 79.1      |
| 1450   | 2175 | 2125 | 212.5 | 4 | 22 | 1975 | 1006 | 80.2      |
| 1500   | 2225 | 2175 | 237.5 | 4 | 22 | 2025 | 1032 | 81.3      |
| 1550   | 2275 | 2225 | 262.5 | 4 | 22 | 2075 | 1056 | 82.4      |
| 1600   | 2325 | 2275 | 287.5 | 4 | 22 | 2125 | 1082 | 83.5      |
| 1650   | 2375 | 2325 | 312.5 | 4 | 22 | 2175 | 1106 | 84.6      |
| 1700   | 2425 | 2375 | 137.5 | 5 | 26 | 2225 | 1132 | 85.6      |
| 1750   | 2475 | 2425 | 162.5 | 5 | 26 | 2275 | 1156 | 86.8      |
| 1800   | 2525 | 2475 | 187.5 | 5 | 26 | 2325 | 1182 | 87.9      |
| 1850   | 2575 | 2525 | 212.5 | 5 | 26 | 2375 | 1206 | 89.0      |
| 1900   | 2625 | 2575 | 237.5 | 5 | 26 | 2425 | 1230 | 90.1      |
| 1950   | 2675 | 2625 | 262.5 | 5 | 26 | 2475 | 1256 | 91.2      |
| 2000   | 2725 | 2675 | 287.5 | 5 | 26 | 2525 | 1282 | 92.3      |
| 2050   | 2775 | 2725 | 312.5 | 5 | 26 | 2575 | 1306 | 93.4      |
| 2100   | 2825 | 2775 | 137.5 | 6 | 30 | 2625 | 1331 | 94.5      |
| 2150   | 2875 | 2825 | 162.5 | 6 | 30 | 2675 | 1357 | 95.6      |
| 2200   | 2925 | 2875 | 187.5 | 6 | 30 | 2725 | 1382 | 96.7      |
| 2250   | 2975 | 2925 | 212.5 | 6 | 30 | 2775 | 1406 | 97.8      |
| 2300   | 3025 | 2975 | 237.5 | 6 | 30 | 2825 | 1431 | 98.9      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.



## 5.1 External dimensions

■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F     | G | H  | J    | R    | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-------|---|----|------|------|------|---|---|-----|-----------|
| 300    | 1025 | 975  | 237.5 | 1 | 10 | 825  | 388  | 24   | 2 | 3 | 170 | 55.7      |
| 350    | 1075 | 1025 | 262.5 | 1 | 10 | 875  | 413  | 21.5 | 2 | 3 | 185 | 56.8      |
| 400    | 1125 | 1075 | 287.5 | 1 | 10 | 925  | 438  | 24   | 2 | 3 | 195 | 57.9      |
| 450    | 1175 | 1125 | 312.5 | 1 | 10 | 975  | 462  | 26   | 2 | 3 | 205 | 59.0      |
| 500    | 1225 | 1175 | 137.5 | 2 | 14 | 1025 | 488  | 24   | 2 | 3 | 220 | 60.0      |
| 550    | 1275 | 1225 | 162.5 | 2 | 14 | 1075 | 513  | 21.5 | 2 | 3 | 235 | 61.1      |
| 600    | 1325 | 1275 | 187.5 | 2 | 14 | 1125 | 538  | 24   | 2 | 3 | 245 | 62.3      |
| 650    | 1375 | 1325 | 212.5 | 2 | 14 | 1175 | 562  | 26   | 2 | 3 | 255 | 63.4      |
| 700    | 1425 | 1375 | 237.5 | 2 | 14 | 1225 | 588  | 24   | 2 | 3 | 270 | 64.5      |
| 750    | 1475 | 1425 | 262.5 | 2 | 14 | 1275 | 613  | 21.5 | 2 | 3 | 285 | 65.6      |
| 800    | 1525 | 1475 | 287.5 | 2 | 14 | 1325 | 638  | 24   | 2 | 3 | 295 | 66.7      |
| 850    | 1575 | 1525 | 312.5 | 2 | 14 | 1375 | 662  | 26   | 2 | 3 | 305 | 67.8      |
| 900    | 1625 | 1575 | 137.5 | 3 | 18 | 1425 | 687  | 21   | 3 | 4 | 215 | 68.8      |
| 950    | 1675 | 1625 | 162.5 | 3 | 18 | 1475 | 714  | 27   | 3 | 4 | 220 | 69.9      |
| 1000   | 1725 | 1675 | 187.5 | 3 | 18 | 1525 | 738  | 24   | 3 | 4 | 230 | 71.0      |
| 1050   | 1775 | 1725 | 212.5 | 3 | 18 | 1575 | 762  | 21   | 3 | 4 | 240 | 72.1      |
| 1100   | 1825 | 1775 | 237.5 | 3 | 18 | 1625 | 789  | 27   | 3 | 4 | 245 | 73.3      |
| 1150   | 1875 | 1825 | 262.5 | 3 | 18 | 1675 | 813  | 24   | 3 | 4 | 255 | 74.4      |
| 1200   | 1925 | 1875 | 287.5 | 3 | 18 | 1725 | 837  | 21   | 3 | 4 | 265 | 75.5      |
| 1250   | 1975 | 1925 | 312.5 | 3 | 18 | 1775 | 861  | 25.5 | 3 | 4 | 270 | 76.6      |
| 1300   | 2025 | 1975 | 137.5 | 4 | 22 | 1825 | 888  | 24   | 3 | 4 | 280 | 77.6      |
| 1350   | 2075 | 2025 | 162.5 | 4 | 22 | 1875 | 912  | 21   | 3 | 4 | 290 | 78.7      |
| 1400   | 2125 | 2075 | 187.5 | 4 | 22 | 1925 | 939  | 27   | 3 | 4 | 295 | 79.8      |
| 1450   | 2175 | 2125 | 212.5 | 4 | 22 | 1975 | 963  | 24   | 3 | 4 | 305 | 80.9      |
| 1500   | 2225 | 2175 | 237.5 | 4 | 22 | 2025 | 987  | 21   | 3 | 4 | 315 | 82.0      |
| 1550   | 2275 | 2225 | 262.5 | 4 | 22 | 2075 | 1014 | 27   | 4 | 5 | 240 | 83.1      |
| 1600   | 2325 | 2275 | 287.5 | 4 | 22 | 2125 | 1038 | 19   | 4 | 5 | 250 | 84.2      |
| 1650   | 2375 | 2325 | 312.5 | 4 | 22 | 2175 | 1062 | 21   | 4 | 5 | 255 | 85.4      |
| 1700   | 2425 | 2375 | 137.5 | 5 | 26 | 2225 | 1089 | 19.5 | 5 | 6 | 210 | 86.4      |
| 1750   | 2475 | 2425 | 162.5 | 5 | 26 | 2275 | 1113 | 19   | 5 | 6 | 215 | 87.5      |
| 1800   | 2525 | 2475 | 187.5 | 5 | 26 | 2325 | 1137 | 18.5 | 5 | 6 | 220 | 88.6      |
| 1850   | 2575 | 2525 | 212.5 | 5 | 26 | 2375 | 1161 | 18   | 5 | 6 | 225 | 89.7      |
| 1900   | 2625 | 2575 | 237.5 | 5 | 26 | 2425 | 1188 | 19   | 5 | 6 | 230 | 90.8      |
| 1950   | 2675 | 2625 | 262.5 | 5 | 26 | 2475 | 1212 | 18.5 | 5 | 6 | 235 | 91.9      |
| 2000   | 2725 | 2675 | 287.5 | 5 | 26 | 2525 | 1238 | 19   | 5 | 6 | 240 | 93.0      |
| 2050   | 2775 | 2725 | 312.5 | 5 | 26 | 2575 | 1262 | 18.5 | 5 | 6 | 245 | 94.1      |
| 2100   | 2825 | 2775 | 137.5 | 6 | 30 | 2625 | 1286 | 18   | 5 | 6 | 250 | 95.2      |
| 2150   | 2875 | 2825 | 162.5 | 6 | 30 | 2675 | 1312 | 18.5 | 5 | 6 | 255 | 96.3      |
| 2200   | 2925 | 2875 | 187.5 | 6 | 30 | 2725 | 1338 | 19   | 5 | 6 | 260 | 97.5      |
| 2250   | 2975 | 2925 | 212.5 | 6 | 30 | 2775 | 1362 | 18.5 | 5 | 6 | 265 | 98.6      |
| 2300   | 3025 | 2975 | 237.5 | 6 | 30 | 2825 | 1386 | 18   | 5 | 6 | 270 | 99.7      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

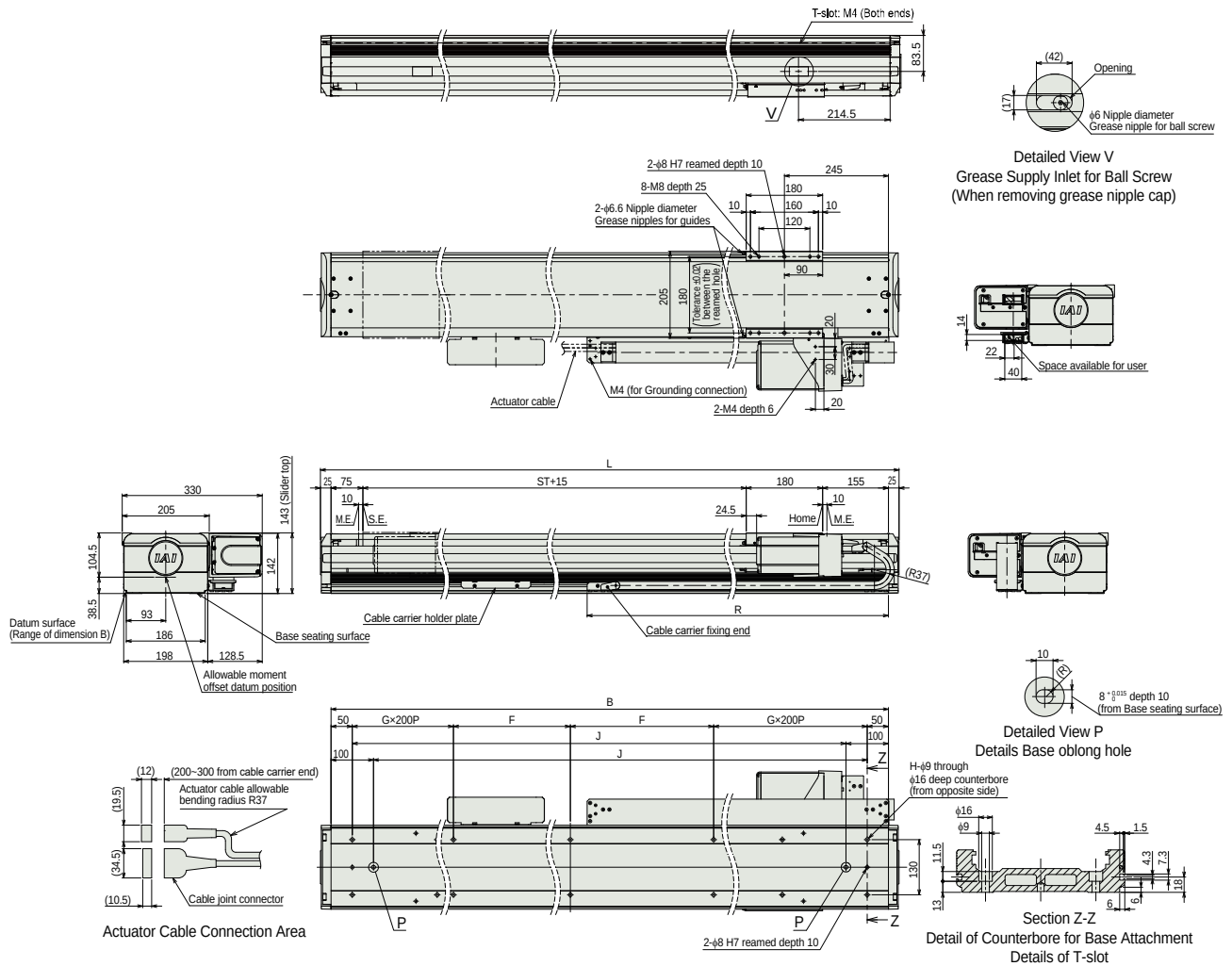
### 5.1.25 NSA-WXMXS: Horizontal installation

[Standard Cable Carrier (Standard/CT3)]

(Note) To the cable joint connector, the motor cable and the encoder cable are to be connected.

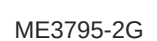
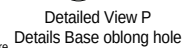
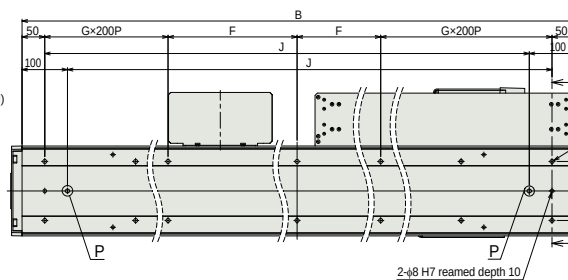
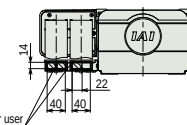
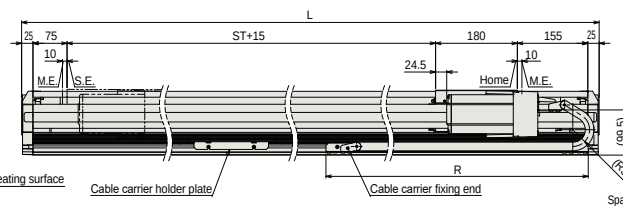
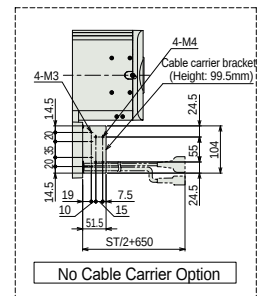
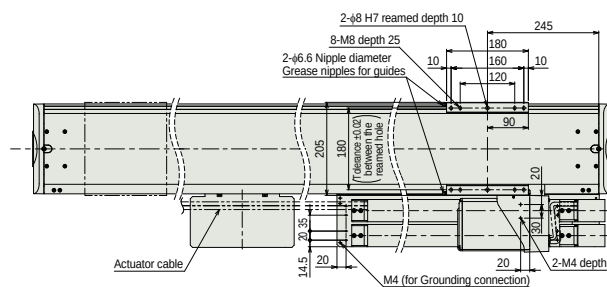
(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.

M.E.: Mechanical End, S.E.: Stroke End



## 5. External dimensions

(Note) As the slider moves to M. E. when the home-return operation is performed, pay attention to interference to peripherals.



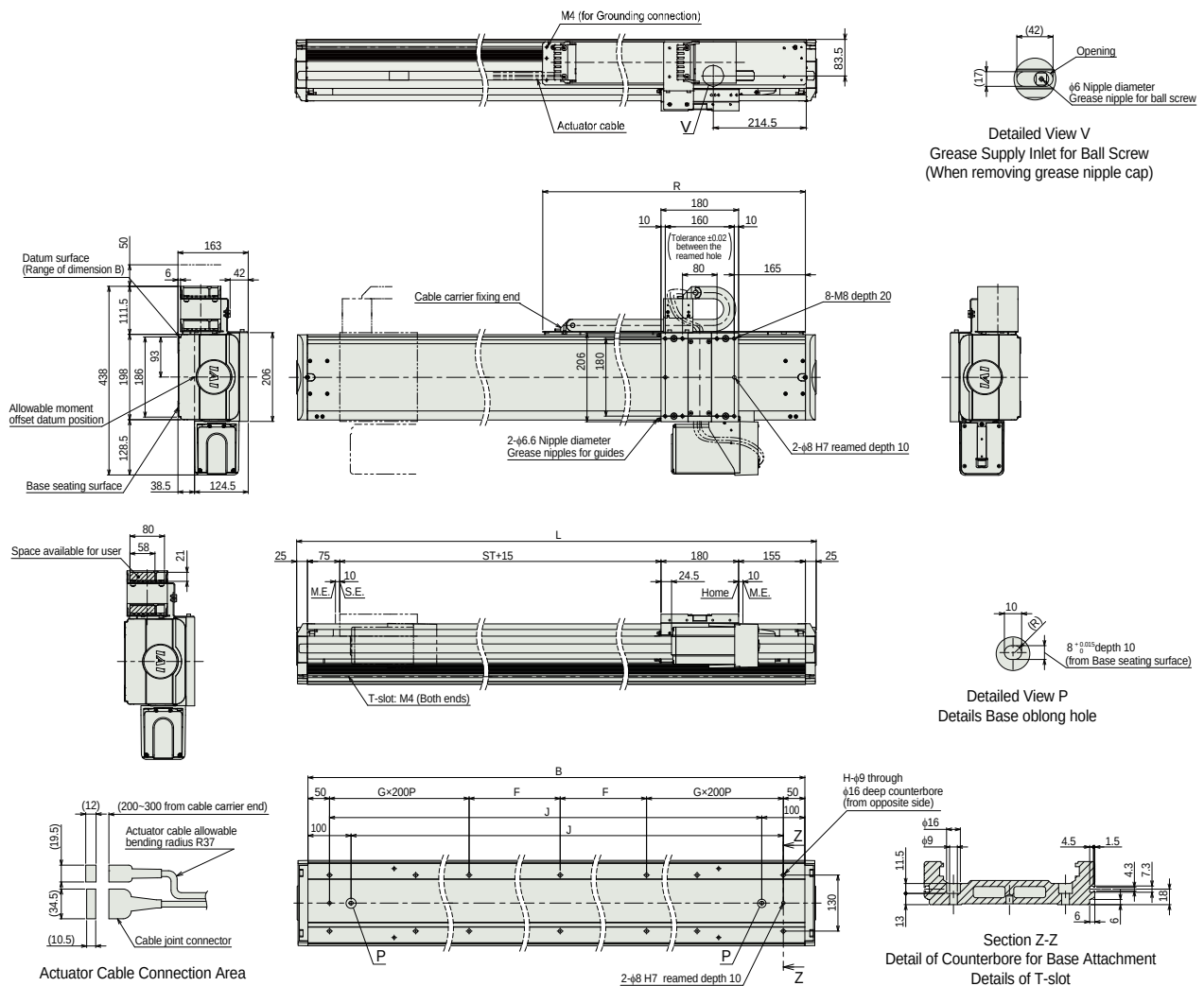
## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F     | G | H  | J    | R    | Mass [kg]              |                    |                  |
|--------|------|------|-------|---|----|------|------|------------------------|--------------------|------------------|
|        |      |      |       |   |    |      |      | Standard Cable Carrier | User Cable Carrier | No Cable Carrier |
| 2350   | 2825 | 2775 | 137.5 | 6 | 30 | 2625 | 1349 | 79.9                   | 81.4               | 77.8             |
| 2400   | 2875 | 2825 | 162.5 | 6 | 30 | 2675 | 1367 | 81.1                   | 82.6               | 78.9             |
| 2450   | 2925 | 2875 | 187.5 | 6 | 30 | 2725 | 1403 | 82.2                   | 83.7               | 80.0             |
| 2500   | 2975 | 2925 | 212.5 | 6 | 30 | 2775 | 1421 | 83.4                   | 84.9               | 81.1             |
| 2550   | 3025 | 2975 | 237.5 | 6 | 30 | 2825 | 1439 | 84.5                   | 86.0               | 82.2             |
| 2600   | 3075 | 3025 | 262.5 | 6 | 30 | 2875 | 1475 | 85.6                   | 87.2               | 83.3             |
| 2650   | 3125 | 3075 | 287.5 | 6 | 30 | 2925 | 1493 | 86.8                   | 88.4               | 84.4             |
| 2700   | 3175 | 3125 | 312.5 | 6 | 30 | 2975 | 1529 | 87.9                   | 89.5               | 85.5             |
| 2750   | 3225 | 3175 | 137.5 | 7 | 34 | 3025 | 1547 | 89.0                   | 90.7               | 86.6             |
| 2800   | 3275 | 3225 | 162.5 | 7 | 34 | 3075 | 1565 | 90.1                   | 91.8               | 87.7             |
| 2850   | 3325 | 3275 | 187.5 | 7 | 34 | 3125 | 1601 | 91.3                   | 93.0               | 88.8             |
| 2900   | 3375 | 3325 | 212.5 | 7 | 34 | 3175 | 1619 | 92.4                   | 94.1               | 89.9             |
| 2950   | 3425 | 3375 | 237.5 | 7 | 34 | 3225 | 1655 | 93.6                   | 95.3               | 91.0             |
| 3000   | 3475 | 3425 | 262.5 | 7 | 34 | 3275 | 1673 | 94.7                   | 96.5               | 92.1             |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



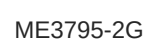
## ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F     | G | H  | J    | R    | Mass [kg] |
|--------|------|------|-------|---|----|------|------|-----------|
| 2350   | 2825 | 2775 | 137.5 | 6 | 30 | 2625 | 1517 | 82.3      |
| 2400   | 2875 | 2825 | 162.5 | 6 | 30 | 2675 | 1542 | 83.4      |
| 2450   | 2925 | 2875 | 187.5 | 6 | 30 | 2725 | 1566 | 84.6      |
| 2500   | 2975 | 2925 | 212.5 | 6 | 30 | 2775 | 1591 | 85.7      |
| 2550   | 3025 | 2975 | 237.5 | 6 | 30 | 2825 | 1617 | 86.8      |
| 2600   | 3075 | 3025 | 262.5 | 6 | 30 | 2875 | 1643 | 88.0      |
| 2650   | 3125 | 3075 | 287.5 | 6 | 30 | 2925 | 1667 | 89.2      |
| 2700   | 3175 | 3125 | 312.5 | 6 | 30 | 2975 | 1691 | 90.3      |
| 2750   | 3225 | 3175 | 137.5 | 7 | 34 | 3025 | 1718 | 91.4      |
| 2800   | 3275 | 3225 | 162.5 | 7 | 34 | 3075 | 1742 | 92.6      |
| 2850   | 3325 | 3275 | 187.5 | 7 | 34 | 3125 | 1766 | 93.7      |
| 2900   | 3375 | 3325 | 212.5 | 7 | 34 | 3175 | 1790 | 94.8      |
| 2950   | 3425 | 3375 | 237.5 | 7 | 34 | 3225 | 1817 | 96.0      |
| 3000   | 3475 | 3425 | 262.5 | 7 | 34 | 3275 | 1841 | 97.1      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



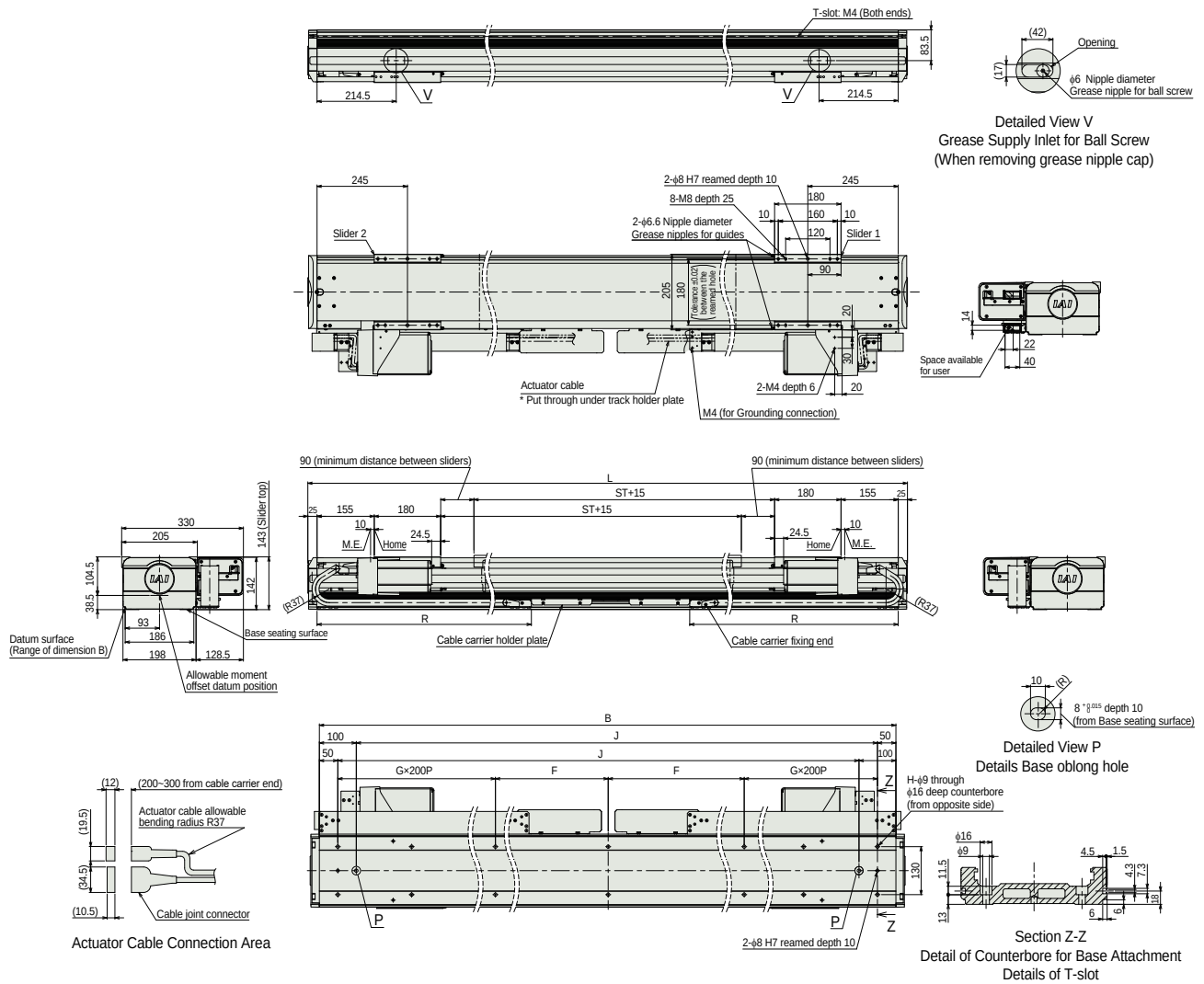
## ■ Dimensions and Mass by Stroke

Unit: mm

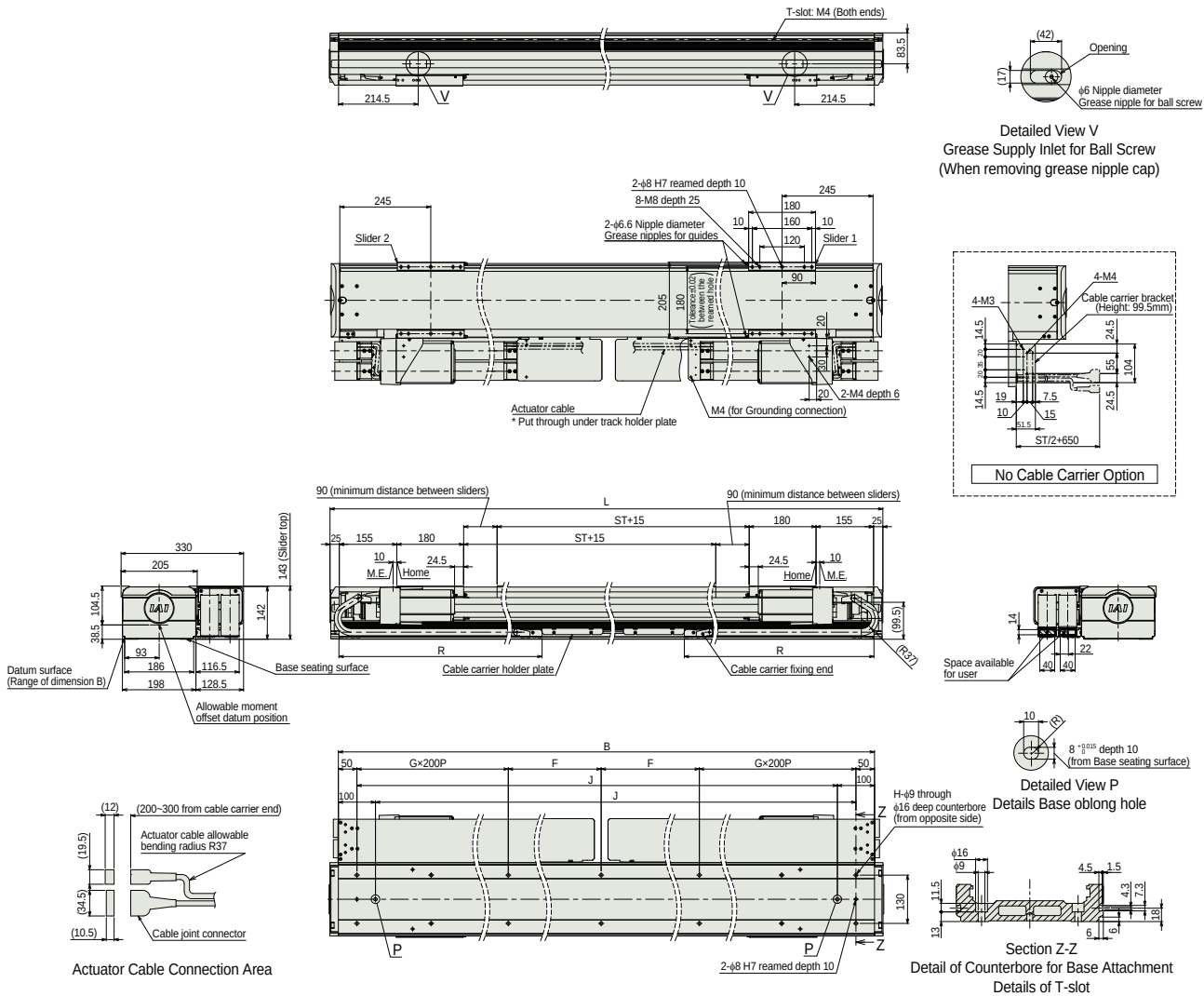
| Stroke | L    | B    | F     | G | H  | J    | R    | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-------|---|----|------|------|------|---|---|-----|-----------|
| 2350   | 2825 | 2775 | 137.5 | 6 | 30 | 2625 | 1473 | 24   | 5 | 6 | 285 | 83.6      |
| 2400   | 2875 | 2825 | 162.5 | 6 | 30 | 2675 | 1498 | 24   | 5 | 6 | 290 | 84.8      |
| 2450   | 2925 | 2875 | 187.5 | 6 | 30 | 2725 | 1522 | 23.5 | 5 | 6 | 295 | 85.9      |
| 2500   | 2975 | 2925 | 212.5 | 6 | 30 | 2775 | 1547 | 23.5 | 5 | 6 | 300 | 87.1      |
| 2550   | 3025 | 2975 | 237.5 | 6 | 30 | 2825 | 1573 | 24   | 5 | 6 | 305 | 88.3      |
| 2600   | 3075 | 3025 | 262.5 | 6 | 30 | 2875 | 1598 | 24   | 5 | 6 | 310 | 89.5      |
| 2650   | 3125 | 3075 | 287.5 | 6 | 30 | 2925 | 1622 | 23.5 | 5 | 6 | 315 | 90.7      |
| 2700   | 3175 | 3125 | 312.5 | 6 | 30 | 2975 | 1647 | 28.5 | 6 | 7 | 265 | 91.9      |
| 2750   | 3225 | 3175 | 137.5 | 7 | 34 | 3025 | 1673 | 26.5 | 6 | 7 | 270 | 93.0      |
| 2800   | 3275 | 3225 | 162.5 | 7 | 34 | 3075 | 1698 | 24   | 6 | 7 | 275 | 94.1      |
| 2850   | 3325 | 3275 | 187.5 | 7 | 34 | 3125 | 1722 | 21   | 6 | 7 | 280 | 95.2      |
| 2900   | 3375 | 3325 | 212.5 | 7 | 34 | 3175 | 1746 | 18   | 6 | 7 | 285 | 96.4      |
| 2950   | 3425 | 3375 | 237.5 | 7 | 34 | 3225 | 1773 | 16.5 | 6 | 7 | 290 | 97.6      |
| 3000   | 3475 | 3425 | 262.5 | 7 | 34 | 3275 | 1797 | 28.5 | 6 | 7 | 290 | 98.8      |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

### ■ Dimensions and Mass by Stroke

Unit: mm

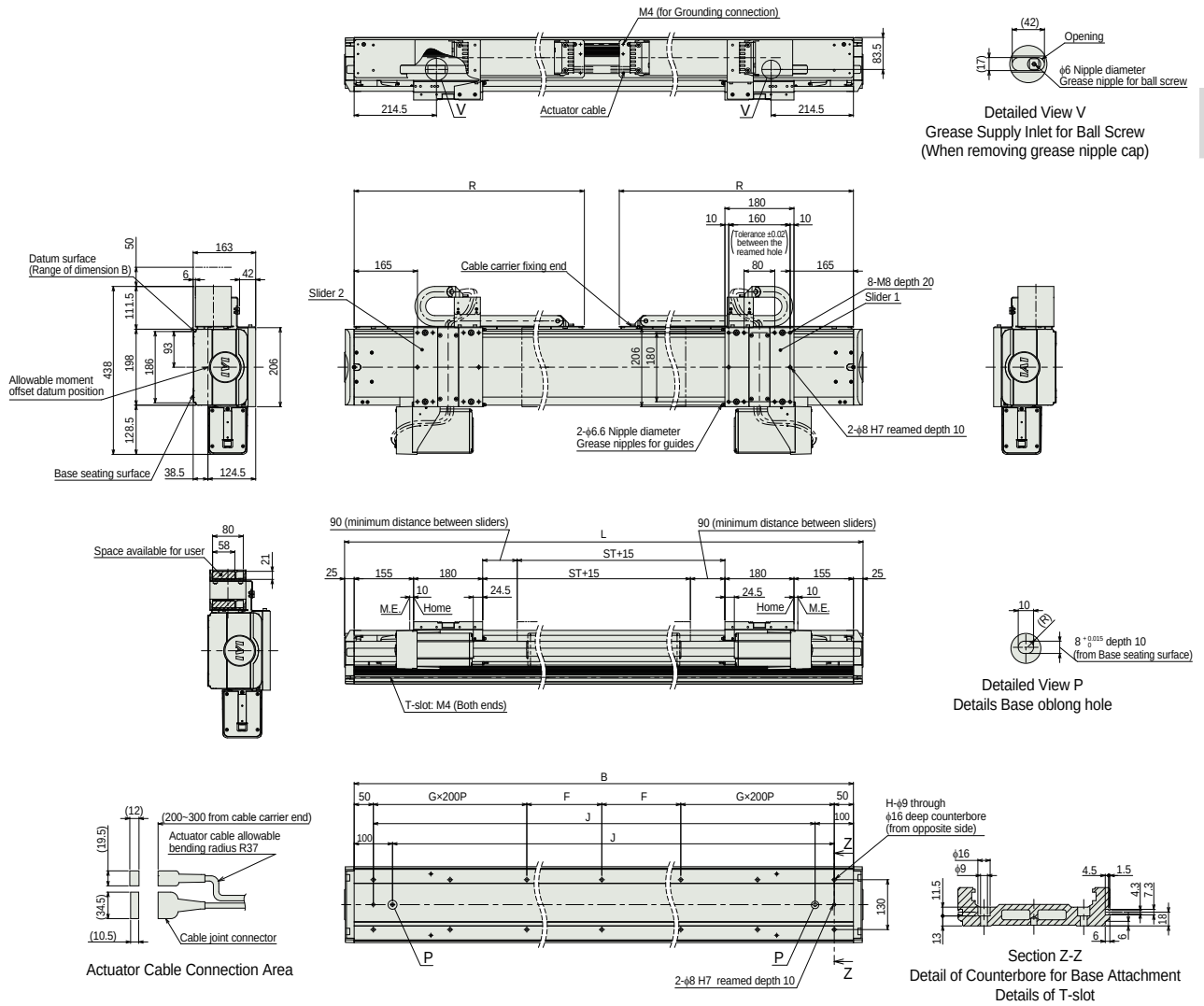
| Stroke | L    | B    | F     | G | H  | J    | R    | Mass [kg]              |                    |                  |
|--------|------|------|-------|---|----|------|------|------------------------|--------------------|------------------|
|        |      |      |       |   |    |      |      | Standard Cable Carrier | User Cable Carrier | No Cable Carrier |
| 2350   | 3175 | 3125 | 312.5 | 6 | 30 | 2975 | 1349 | 102.9                  | 105.7              | 98.7             |
| 2400   | 3225 | 3175 | 137.5 | 7 | 34 | 3025 | 1367 | 104.1                  | 106.9              | 99.8             |
| 2450   | 3275 | 3225 | 162.5 | 7 | 34 | 3075 | 1403 | 105.3                  | 108.1              | 100.9            |
| 2500   | 3325 | 3275 | 187.5 | 7 | 34 | 3125 | 1421 | 106.5                  | 109.3              | 102.0            |
| 2550   | 3375 | 3325 | 212.5 | 7 | 34 | 3175 | 1439 | 107.6                  | 110.5              | 103.1            |
| 2600   | 3425 | 3375 | 237.5 | 7 | 34 | 3225 | 1475 | 108.8                  | 111.8              | 104.2            |
| 2650   | 3475 | 3425 | 262.5 | 7 | 34 | 3275 | 1493 | 109.9                  | 112.9              | 105.3            |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

### 5.1.29 NSA-WXMXM: Horizontally oriented wall mount

[Extension Cable Carrier (Standard/ET5)]

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

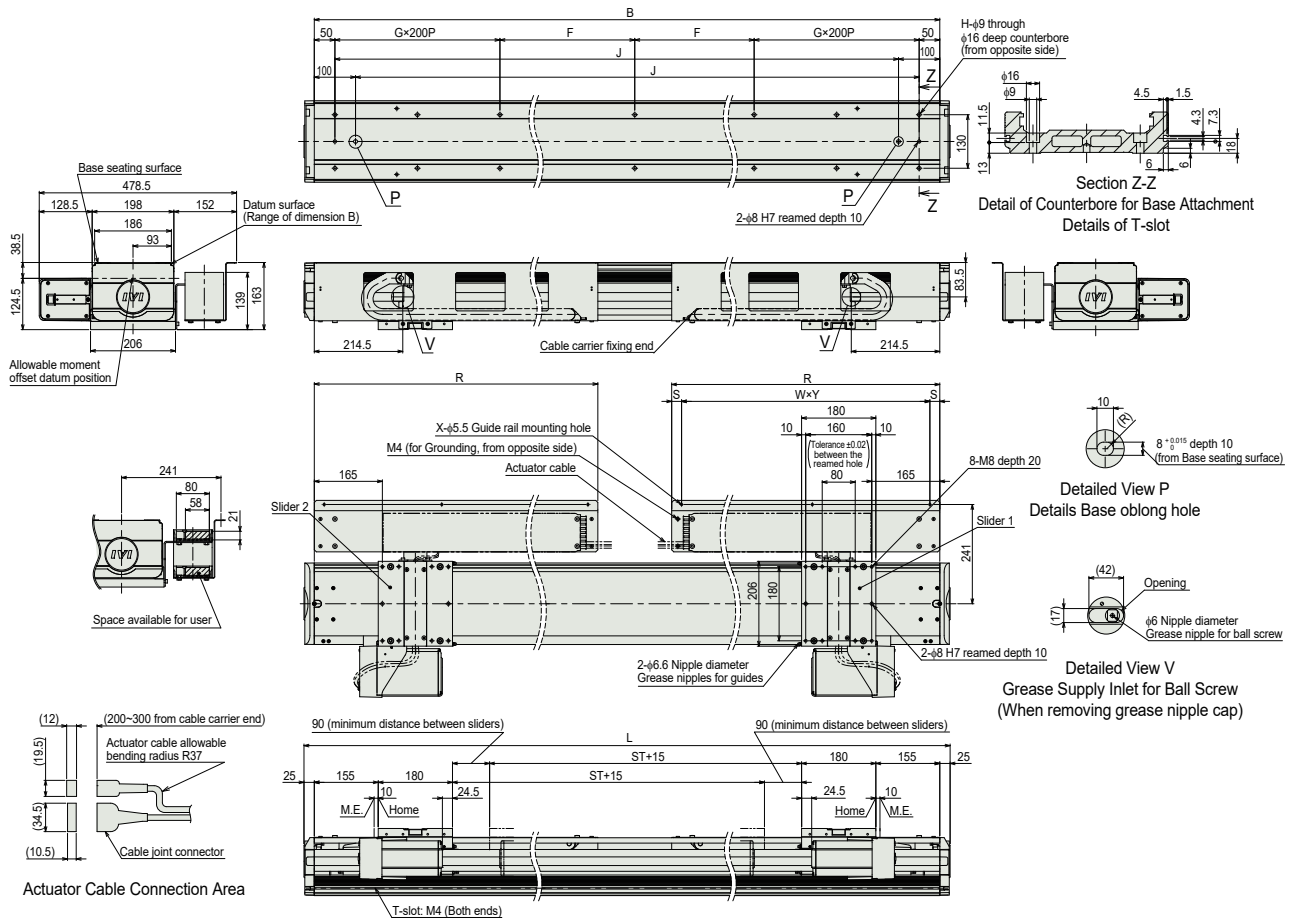
### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F     | G | H  | J    | R    | Mass [kg] |
|--------|------|------|-------|---|----|------|------|-----------|
| 2350   | 3175 | 3125 | 312.5 | 6 | 30 | 2975 | 1517 | 106.9     |
| 2400   | 3225 | 3175 | 137.5 | 7 | 34 | 3025 | 1542 | 108.1     |
| 2450   | 3275 | 3225 | 162.5 | 7 | 34 | 3075 | 1566 | 109.2     |
| 2500   | 3325 | 3275 | 187.5 | 7 | 34 | 3125 | 1591 | 110.4     |
| 2550   | 3375 | 3325 | 212.5 | 7 | 34 | 3175 | 1617 | 111.6     |
| 2600   | 3425 | 3375 | 237.5 | 7 | 34 | 3225 | 1643 | 112.9     |
| 2650   | 3475 | 3425 | 262.5 | 7 | 34 | 3275 | 1667 | 114.0     |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

M.E.: Mechanical End, S.E.: Stroke End



## 5.1 External dimensions

### ■ Dimensions and Mass by Stroke

Unit: mm

| Stroke | L    | B    | F     | G | H  | J    | R    | S    | W | X | Y   | Mass [kg] |
|--------|------|------|-------|---|----|------|------|------|---|---|-----|-----------|
| 2350   | 3175 | 3125 | 312.5 | 6 | 30 | 2975 | 1473 | 24   | 5 | 6 | 285 | 110.2     |
| 2400   | 3225 | 3175 | 137.5 | 7 | 34 | 3025 | 1498 | 24   | 5 | 6 | 290 | 111.5     |
| 2450   | 3275 | 3225 | 162.5 | 7 | 34 | 3075 | 1522 | 23.5 | 5 | 6 | 295 | 112.8     |
| 2500   | 3325 | 3275 | 187.5 | 7 | 34 | 3125 | 1547 | 23.5 | 5 | 6 | 300 | 114.0     |
| 2550   | 3375 | 3325 | 212.5 | 7 | 34 | 3175 | 1573 | 24   | 5 | 6 | 305 | 115.3     |
| 2600   | 3425 | 3375 | 237.5 | 7 | 34 | 3225 | 1598 | 24   | 5 | 6 | 310 | 116.6     |
| 2650   | 3475 | 3425 | 262.5 | 7 | 34 | 3275 | 1622 | 23.5 | 5 | 6 | 315 | 117.8     |

(Note) There may be a case the cable carrier swells up and gets slightly bigger than the dimensions stated.

# Actuator

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## Chapter 6

# Life

|       |                                                  |     |
|-------|--------------------------------------------------|-----|
| 6.1   | Concept of life for slider type .....            | 6-1 |
| 6.1.1 | How to calculate operation life.....             | 6-1 |
| 6.1.2 | Relation between operation life and moment ..... | 6-3 |



## 6.1 Concept of life for slider type

The mechanical life of the slider type is represented by that of the linear guide receiving the greatest moment load.

The operation life of the linear guide is to be determined by the total driving distance reachable without flaking (peeling on rail surface) in 90% of a group of products operated under the same conditions.

Operation life can be calculated with the method shown below.

### 6.1.1 How to calculate operation life

For the operation life of the linear guide, use the dynamic allowable moment stated in "1.2 specifications", and calculate with the formula below.

$$L = \left( \frac{C_M}{M} \right)^3 \times 10,000\text{km}$$

L : Operation life (km)  
 $C_M$ : Dynamic allowable moment (N•m)  
 M : Moment acting (N•m)  
 10,000km : Standard rated life of NSA

In addition, calculate with the formula below if the life may be shortened due to vibration or mounting status.

$$L = \left( \frac{C_M}{M} \cdot \frac{f_{ws}}{f_w} \cdot \frac{1}{f_\alpha} \right)^3 \times 10,000\text{km}$$

L : Operation life (km)  
 $C_M$ : Dynamic allowable moment (N•m)  
 M : Moment acting (N•m)  
 10,000km : Standard rated life of NSA  
 $f_{ws}$  : Standard load coefficient  
 $f_w$  : Load coefficient  
 $f_\alpha$  : Mounting coefficient

For "Standard load coefficient  $f_{ws}$ ", "Load coefficient  $f_w$ " and "Mounting coefficient  $f_a$ ", refer to the contents below for configuration and selection.

#### [Standard load coefficient $f_{ws}$ ]

For NSA described in this manual, calculate with  $f_{ws} = 1.2$ .

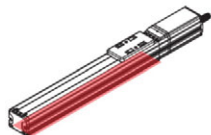
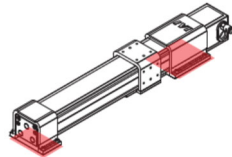
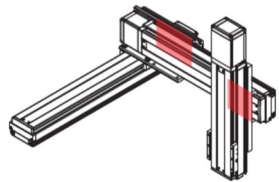
#### [Load coefficient $f_w$ ]

This coefficient allows consideration of the effects on life due to operating conditions.

| Load coefficient $f_w$ | Operating conditions                 | Guideline for acceleration/deceleration |
|------------------------|--------------------------------------|-----------------------------------------|
| 1.0 to 1.5             | Low vibration/impact, slow operation | 1.0G or less                            |

#### [Mounting coefficient $f_a$ ]

This coefficient allows consideration of the effects on life due to NSA mounting status.

| Mounting coefficient $f_a$ | 1.0                                                                                 | 1.2                                                                                  | 1.5                                                                                   |
|----------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                            | Fixed on entire surface                                                             | Fixed at both ends                                                                   | Fixed locally                                                                         |
| Mounting status            |  |  |  |

- The actuator used in the explanatory figures above is not the NSA. Replace with NSA and select the mounting coefficient.
- Even when seated over the total length of the product, select 1.2 or 1.5 for the mounting coefficient depending on the position of screw fixing and not "fixing over the entire surface".
- "Fixing over the entire surface" is considered to be the case only when fixing with the T-slot and square nut provided on the mounting surface.

### 6.1.2 Relation between operation life and moment

---

The operation life depends on the moment acting on the slider.

With a light load, it may be longer than 10,000km, the standard rated life.

With no consideration of vibration and mounting conditions, the operation life is 80,000km according to the calculation with the formula on the previous page, assuming that 0.5  $C_M$  (half of dynamic allowable moment) of moment is applied.

We see that it can be 8 times longer than the standard rated life, which is 10,000km.



**Actuator**

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**Chapter 7**

**Warranty**

7.1 Warranty period..... 7-1

7.2 Scope of the warranty..... 7-1

7.3 Honoring the warranty ..... 7-1

7.4 Limited liability ..... 7-2

7.5 Conformance with applicable standards/  
regulations, etc., and application conditions ..... 7-2

7.6 Other items excluded from warranty..... 7-2



## 7.1 Warranty period

Whichever of the following periods is shorter:

- 18 months after shipment from IAI
- 12 months after delivery to a specified location
- 2,500 operational hours

## 7.2 Scope of the warranty

Our products are covered by warranty when all of the following conditions are met.

Faulty products covered by warranty will be replaced or repaired free of charge:

- (1) The breakdown or malfunction in question pertains to our product as delivered by IAI or our authorized dealer.
- (2) The breakdown or malfunction in question occurred during the warranty period.
- (3) The breakdown or malfunction in question occurred while the product was in use for an appropriate purpose under the operating conditions and operating environment specified in the instruction manual and catalog.
- (4) The breakdown or malfunction in question was caused by a specification defect, malfunction, or poor product quality.

Note that breakdowns due to any of the following reasons are excluded from the scope of warranty:

- Anything other than our product
- Modification or repair performed by a party other than IAI (unless approved by IAI)
- Anything that could not be easily predicted with the level of science and technology available at the time of shipment from IAI
- Natural disaster, unnatural disaster, incident or accident for which we are not liable
- Natural fading of paint or other symptoms of aging
- Wear, depletion or other expected results of use
- Operation noise, vibration or other subjective sensations not affecting function or maintenance

Note that the warranty only covers our product as delivered and that any secondary loss arising from a breakdown of our product is excluded from the scope of warranty.

## 7.3 Honoring the warranty

As a rule, the product must be consigned to IAI for repair under warranty.

### 7.4 Limited liability

- (1) We assume no liability for any special damage, consequential loss or passive loss such as a loss of expected profit arising from or in connection with our product.
- (2) We assume no liability for any program or control method created by the customer to operate our product or for the results of any such program or control method.

### 7.5 Conformance with applicable standards/ regulations, etc., and application conditions

- (1) If our product is combined with another product or any system, equipment, etc., used by the customer, the customer must first check the applicable standards, regulations and/or rules. The customer is also responsible for confirming that such combination with our product conforms to the applicable standards, etc.  
In such a case we assume no liability for the conformance of our product with the applicable standards, etc.
- (2) Our product is for general industrial use. It is not intended or designed for the applications specified below, which require a high level of safety. Accordingly, as a rule our product cannot be used in these applications.

Contact IAI if you must use our product for any of these applications:

- Medical equipment used to maintain, control or otherwise affect human life or physical health
  - Mechanisms and machinery designed for the purpose of moving or transporting people (vehicles, railway facilities, aviation facilities etc.)
  - Machinery components essential for safety (safety devices etc.)
  - Equipment used to handle cultural assets, art or other irreplaceable items
- (3) Contact IAI in advance if our product is to be used in any condition or environment that differs from that specified in the catalog or instruction manual.

### 7.6 Other items excluded from warranty

The price of the product delivered to you does not include expenses associated with programming, the dispatch of engineers, etc. Accordingly, a separate fee will be charged in the following cases even during the warranty period:

- Guidance for mounting/adjustment and witnessing of test operation
- Maintenance and inspection
- Technical guidance and education on operating/wiring methods, etc.
- Technical guidance and education on programming and other items related to programs

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## Revision history

| Revision date | Revised content                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2019.03       | First Edition                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2019.04       | 1B Edition <ul style="list-style-type: none"> <li>• 1-5, 1-8, 1-11, 1-14, 1-17, 1-20 Rated thrust added</li> <li>• 5-7, 5-10, 5-13, 5-14, 5-16, 5-17 Dimension changed for motor width</li> </ul>                                                                                                                                                                                                                                                                                |
| 2020.04       | 1C Edition <ul style="list-style-type: none"> <li>• 3-2 Caution note deleted for fixing actuator cable coming out from motor unit</li> <li>• 4-6 Change made to belt figure</li> <li>• 4-11 Grease changed from Daphne Eponex Grease No. 2 to Daphne Grease MP No. 2</li> </ul>                                                                                                                                                                                                  |
| 2020.06       | Second Edition <ul style="list-style-type: none"> <li>• LXXMS, LXXMX, WXXMS and WXXMX added</li> <li>• Features for horizontally oriented wall mount and ceiling mount added to all the models</li> <li>• Max. Stroke of MXMS changed to 1800mm</li> </ul>                                                                                                                                                                                                                       |
| 2020.08       | 2B Edition <ul style="list-style-type: none"> <li>• Intro-10 Complied with overseas standards correction made</li> </ul>                                                                                                                                                                                                                                                                                                                                                         |
| 2020.09       | 2C Edition <ul style="list-style-type: none"> <li>• 5-15, 5-16, 5-22, 5-23, 5-43, 5-44, 5-50, 5-51</li> <li>Change made to external dimensions. (Cable carrier holder bracket added.)</li> </ul>                                                                                                                                                                                                                                                                                 |
| 2020.10       | 2D Edition <ul style="list-style-type: none"> <li>• Hanging bracket option added</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                      |
| 2023.02       | 2E Edition <ul style="list-style-type: none"> <li>• 1.4 Accessary moved to 3.2 Motor Cable / Encoder Cable</li> <li>• 3.2 to 4 Cable, change made to maximum length</li> <li>• 4.5 [2], Chapter 5 Change made accordingly to abolition of grease supply on opposite home position of single slider</li> <li>• 4.6.3 Revise made to table of model codes for cables inside cable carrier for replacement</li> <li>• Change made to overall layout and terms integrated</li> </ul> |
| 2026.02       | 2F Edition <ul style="list-style-type: none"> <li>• Changes due to discontinuation of including the First Step Guide</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |
| 2026.07       | 2G Edition <ul style="list-style-type: none"> <li>• Changes due to discontinuation of including the In-house Made Seals</li> <li>• Terms integrated (cable carrier)</li> </ul>                                                                                                                                                                                                                                                                                                   |







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