IAI
Quality and Innovation

EC
ELECYLINDER

ELECYLINDER®

Products designed for use in secondary battery production processes
Slider type

EC-S3□B/S3□AB/
S3□BR/S3□ABR
EC-S4□B/S4□AB/
S4□BR/S4□ABR
EC-S6□B/S6□AB/
S6□BR/S6□ABR
EC-S7□B/S7□AB/
S7□BR/S7□ABR
EC-S8□B/S8□AB/S8X□AB/
S8□BR/S8□ABR/S8X□ABR

Instruction Manual

First Edition ME3840-1A



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Refer to [ELECYLINDER Electricity Section Instruction Manual (ME3816)] provided separately regarding electricity/control such as the electrical specifications, wiring, connection, parameters and control system and troubleshooting.

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 downloaded 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/

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.

ELECYLINDER Instruction Manual Configuration

Product name	Instruction manual name	Control number
ELECYLINDER	Instruction Manual (this document)	ME3840
ELECYLINDER	Electricity Section Instruction Manual	ME3816
ELECYLINDER	3 Position Mode Specification Instruction Manual	ME3837
RCON System	Instruction Manual	ME0384
RSEL System	Instruction Manual	ME0392
REC System	Instruction Manual	ME0394
XSEL2	Instruction Manual	ME0478
PC Teaching Software	IA-OS First Step Guide * Refer to the guidance feature stored in IA-OS for how to operate	ME0391
PC Teaching Software for XSEL	A-101-X-MW/IA-101-X-USBMW Instruction Manual	ME0154
Touch Panel Teaching Pendant TB-02/02D	Applicable for Position controller Instruction Manual	ME0355
	Applicable for Program controller Instruction Manual	ME0356
Touch Panel Teaching Pendant TB-03 Wireless link	Applicable for ELECYLINDER Instruction Manual	ME0375
Touch Panel Teaching Pendant TB-03 Wired link	Applicable for Position controller Instruction Manual	ME0376
	Applicable for Program controller Instruction Manual	ME0377
Remote Digital Speed Controller/ Digital Speed Controller Teaching	Digital Speed Controller Instruction Manual	ME3818

[About Description of Model Names]

There may be a case that the applicable models are described in a type name in this manual.

- S3 Type represents all the Products designed for use in secondary battery production processes with the model code starting with EC-S3.
- S4 Type represents all the Products designed for use in secondary battery production processes with the model code starting with EC-S4.
- S6 Type represents all the Products designed for use in secondary battery production processes with the model code starting with EC-S6.
- S7 Type represents all the Products designed for use in secondary battery production processes with the model code starting with EC-S7.
- S8 Type represents all the Products designed for use in secondary battery production processes with the model code starting with EC-S8.

Example) S6 Type: EC-S6□B/S6□AB/S6□BR/S6□ABR
S8 Type: EC-S8□B/S8□AB/S8X□AB/S8□BR/S8□ABR/S8X□ABR

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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	● 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. Accordingly, do not use it in any of the following applications. 1) Medical equipment used to maintain, control or otherwise affect human life or physical health. 2) Mechanisms and machinery designed for the purpose of moving or transporting people (For vehicle, railway facility or air navigation facility) 3) Important safety parts of machinery (Safety device, etc.) ● Do not use the product outside the specifications. Failure to do so may considerably shorten the life of the product. ● Do not use it in any of the following environments. 1) Location where there is any inflammable gas, inflammable object or explosive 2) Place with potential exposure to radiation 3) Location with the ambient temperature or relative humidity exceeding the specification range 4) Location where radiant heat is added from direct sunlight or other large heat source 5) Location where condensation occurs due to abrupt temperature changes 6) Location where there is any corrosive gas (sulfuric acid or hydrochloric acid) 7) Location exposed to significant amount of dust, salt or iron powder 8) Location subject to direct vibration or impact ● 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.

No.	Operation Description	Description
2	Transportation	● When carrying a heavy object, do the work with two or more persons or utilize equipment such as crane. ● 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. ● 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. ● Transport it using an appropriate transportation measure. The actuators available for transportation with a crane have eyebolts attached or there are tapped holes to attach bolts. Follow the instructions in the instruction manual for each model. ● Do not step or sit on the package. ● Do not put any heavy thing that can deform the package, on it. ● When using a crane capable of 1t or more of weight, have an operator who has qualifications for crane operation and sling work. ● When using a crane or equivalent equipments, make sure not to hang a load that weighs more than the equipment’s capability limit. ● Use a hook that is suitable for the load. Consider the safety factor of the hook in such factors as shear strength. ● Do not get on the load that is hung on a crane. ● Do not leave a load hung up with a crane. ● Do not stand under the load that is hung up with a crane.
3	Storage and Preservation	● The storage and preservation environment conforms to the installation environment. However, especially give consideration to the prevention of condensation. ● Store the products with a consideration not to fall them over or drop due to an act of God such as earthquake.
4	Installation and Start	(1) Installation of Robot Main Body and Controller, etc. ● 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. ● Do not get on or put anything on the product. 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. ● When using the product in any of the places specified below, provide a sufficient shield. 1) Location where electric noise is generated 2) Location where high electrical or magnetic field is present 3) Location with the mains or power lines passing nearby 4) Location where the product may come in contact with water, oil or chemical droplets

No.	Operation Description	Description
4	Installation and Start	(2) Cable Wiring ● Use our company's genuine cables for connecting between the actuator and controller, and for the teaching tool. ● 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. Failure to do so may cause a fire, electric shock or malfunction due to leakage or continuity error. ● Perform the wiring for the product, after turning OFF the power to the unit, so that there is no wiring error. ● 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. ● 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. ● 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.
		(3) Grounding ● 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. ● 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. Perform wiring that satisfies the specifications (electrical equipment standards and criteria). For detail, follow the description in [an instruction manual of each controller or controller built-in actuator]. ● 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).

No.	Operation Description	Description
4	Installation and Start	(4) Safety Measures ● 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. ● 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. When the robot under operation is touched, it may result in death or serious injury. ● Make sure to install the emergency stop circuit so that the unit can be stopped immediately in an emergency during the unit operation. ● 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. ● 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. ● 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. ● Take the measure so that the work part is not dropped in power failure or emergency stop. ● Wear protection gloves, goggle or safety shoes, as necessary, to secure safety. ● 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. ● 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.
5	Teaching	● 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. ● 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. ● 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. ● 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. ● Place a sign “Under Operation” at the position easy to see. ● 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. * Safety protection Fence : In the case that there is no safety protection fence, the movable range should be indicated.

No.	Operation Description	Description
6	Trial Operation	● 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. ● After the teaching or programming operation, perform the check operation one step by one step and then shift to the automatic operation. ● 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. ● 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. ● 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.
7	Automatic Operation	● Check before starting the automatic operation or rebooting after operation stop that there is nobody in the safety protection fence. ● Before starting automatic operation, make sure that all peripheral equipment is in an automatic-operation-ready state and there is no alarm indication. ● Make sure to operate automatic operation start from outside of the safety protection fence. ● 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. ● 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.

No.	Operation Description	Description
8	Maintenance and Inspection	● 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. ● 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. ● When the work is to be performed inside the safety protection fence, basically turn OFF the power switch. ● 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. ● 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. ● Place a sign “Under Operation” at the position easy to see. ● For the grease for the guide or ball screw, use appropriate grease according to the instruction manual for each model. ● Do not perform the dielectric strength test. Failure to do so may result in a damage to the product. ● 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. ● 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. ● 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. Use in incomplete condition may cause damage to the product or an injury. * Safety protection Fence : In the case that there is no safety protection fence, the movable range should be indicated.
9	Modification and Dismantle	● Do not modify, disassemble, assemble or use of maintenance parts not specified based at your own discretion.
10	Disposal	● When the product becomes no longer usable or necessary, dispose of it properly as an industrial waste. ● When removing the actuator for disposal, pay attention to drop of components when detaching screws. ● Do not put the product in a fire when disposing of it. The product may burst or generate toxic gases.
11	Other	● 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. ● See Overseas Specifications Compliance Manual to check whether complies if necessary. ● For the handling of actuators and controllers, follow the dedicated instruction manual of each unit to ensure the safety. ● Using the devise in a way not indicated by IAI may lose the protection performance equipped to the device.

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 ELECYLINDER properly in accordance with this instruction manual.
   If the ELECYLINDER 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 (Static/dynamic)	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 other mechanical parts.

7. About Handling of Stainless Steel Sheet
   There is a stainless steel sheet put on the driving portion in the slider type. Do not happen to hit it with a tool or attempt to push strongly with hand. It may deform the sheet.

8. The diagram showing the relation between the pressing force and the current limit shows the reference of the lower limit of the pressing force at each current limit. Even if the current limit is the same, the pressing force may exceed the lower limit by up to around 40% due to difference of individual product.
   Especially when the current limit is 30% or below, the pressing force may exceed the lower limit by 40% or more.

9. The "Must be 100 or more" indicated in the External Dimensions is intended to enable wiring without excessive force applied to the cable.
   Must be 100 mm or more cable linearity.

International Standard Compliance

The ELECYLINDER complies with the following overseas standards.
Refer to the Overseas Standard Compliance Manual (ME0287) for more detailed information.

CE Marking			UL Standard
RoHS3 Directive	EMC Directive	RE Directive (Note 1)	
○	○	○	×

If it is necessary to announce EC Declaration of Conformity with this product built in your facility, as this product itself declares the conformity to EU Directives in some specific conditions as stated below, you would be able to utilize this declaration.

EU Directives Applicable for EC Declaration of Conformity
EMC Directive (2014/30/EU)·····To be checked in CE marking described in model nameplate.
RoHS3 Directive (2011/65/EU + (EU)2015/863)····· Same as above.
RE Directive (2014/53/EU) ····· To be checked in EC Declaration of Conformity.

EC Declaration of Conformity proving conformity to RE Directive may be modified without notice according to addition of conformed models, specification change and so on. Contact our sales site if necessary.

(Note 1) RE Directive applies to ELECYLINDERs with WL (wireless communication specification) or WL2 (Wireless axis operation specification) in model name options.
Certificates and self-declarations regarding the wireless function are handled under the model name below for the wireless circuit board.
MODEL : IABL3826, IABL3827



Precautions for Handling Wireless Operation

1. S6 type, S7 type

When the option for wireless communication support (model: WL, WL2) is selected, a wireless communication circuit board is built into the ELECYLINDER. Certificates and self-declarations regarding the wireless function are handled under the model name below for the wireless circuit board.

Model name: IABL3826

This product uses the 2.4 GHz radio band known as an ISM band. This frequency range is used by various devices such as microwave ovens and wireless LAN, so that communication may be disrupted by radio disturbance.
Use of this device is permitted within the following countries (regions) only. Use in other countries (regions) requires certification to be obtained based on the laws and regulations of the relevant country (region).

Wireless frequency	2,400 to 2,483.5MHz
Wireless output	+5dBm

【US】

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference and
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure limits. This transmitter must not be colocated or operating with any other antenna or transmitter.

【CANADA】

This device complies with Industry Canada licence-exempt RSS standards.

Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence

L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC RF Radiation Exposure Statement:

To comply with IC RF exposure requirements, this device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.
Pour se conformer aux exigences de conformité RF canadienne l'exposition, cet appareil et son antenne ne doivent pas étre co-localisés ou fonctionnant en conjonction avec une autre antenne ou transmetteur.

【日本】
本製品で使用している無線モジュールは、工事設計認証を受けていますので、以下の事項を行うと法律で罰せられることがあります。
・ 無線モジュールを分解/改造すること

[EU Member States]
- For details of the applicable standards, please refer to above mentioned international standards compliances.
- Import Corporation Name：IAI Industrieroboter GmbH

* The product can be used in any country which is a member of EU.

【中国／CHINA 】
- 许可编号　　: CMIT ID=2017DJ6836
- 申请公司名　: IAI 株式会社
- 机型名　　: IABL3826
- 制造国　　: 日本（Made in Japan）
- 进口企业名　: IAI（Shanghai）Co., Ltd.

【 한국／KOREA 】
- 식별 부호　: MSIP-CRM-IAI-IABL3826
- 제조사명　: 주식회사 IAI
- 모델명　　: IABL3826
- 제조국　　: 일본(Made in Japan)
- 수입업자명　: IA KOREA Corp.

해당 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다

[ประเทศไทย / Thailand]
- ผู้ผลิต　　: IAI CORPORATION.
- ชื่อโมเดล　: IABL3826
- ประเทศผู้ผลิต　: ญี่ปุ่น (Made in Japan)
- ผู้นำเข้า　　: IAI Robot (Thailand) Co., Ltd.

【México / Mexico】
- Número de Certificación　　:IFT:RCPIATB19-1956-A1
- Nombre de la Empresa Solicitante　:IAI Corporation
- Nombre del Modelo　　:IABL3826
- País de Fabricación　　:Japón (Hecho en Japón)
- Nombre de la Empresa Importadora　:IAI America, Inc.

2. S3 type, S4 type, S8 type

When the option for wireless communication support (model: WL, WL2) is selected, a wireless communication circuit board is built into the ELECYLINDER. Certificates and self-declarations regarding the wireless function are handled under the model name below for the wireless circuit board.

Model name: IABL3827

This product uses the 2.4 GHz radio band known as an ISM band. This frequency range is used by various devices such as microwave ovens and wireless LAN, so that communication may be disrupted by radio disturbance.
Use of this device is permitted within the following countries (regions) only. Use in other countries (regions) requires certification to be obtained based on the laws and regulations of the relevant country (region).

Wireless frequency	2,400 to 2,483.5MHz
Wireless output	+5dBm

【US】

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference and
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure limits. This transmitter must not be colocated or operating with any other antenna or transmitter.

【CANADA】

This device complies with Industry Canada licence-exempt RSS standards.

Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence

L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC RF Radiation Exposure Statement:

To comply with IC RF exposure requirements, this device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.
Pour se conformer aux exigences de conformité RF canadienne l'exposition, cet appareil et son antenne ne doivent pas étre co-localisés ou fonctionnant en conjonction avec une autre antenne ou transmetteur.

【日本】
本製品で使用している無線モジュールは、工事設計認証を受けていますので、以下の事項を行うと法律で罰せられることがあります。
・ 無線モジュールを分解/改造すること

[EU Member States]
- For details of the applicable standards, please refer to above mentioned international standards compliances.
- Import Corporation Name : IAI Industrieroboter GmbH

* The product can be used in any country which is a member of EU.

【中国／CHINA 】
- 许可编号 : CMIT ID=2018DJ0331
- 申请公司名 : IAI 株式会社
- 机型名 : IABL3827
- 制造国 : 日本（Made in Japan）
- 进口企业名 : IAI（Shanghai）Co., Ltd.

【 한국／KOREA 】
- 식별 부호 : R-CRM-IAI-IABL3827
- 제조사명 : 주식회사 IAI
- 모델명 : IABL3827
- 제조국 : 일본(Made in Japan)
- 수입업자명 : IA KOREA Corp.

해당 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다

【ประเทศไทย / Thailand 】
- **ผู้ผลิต** : IAI CORPORATION.
- **ชื่อโมเดล** : IABL3827
- **ประเทศผู้ผลิต** : ญี่ปุ่น (Made in Japan)
- **ผู้นำเข้า** : IAI Robot (Thailand) Co., Ltd.

【México / Mexico】
- Número de Certificación :IFT：RCPIATB19-1956
- Nombre de la Empresa Solicitante :IAI Corporation
- Nombre del Modelo :IABL3827
- País de Fabricación :Japón (Hecho en Japón)
- Nombre de la Empresa Importadora :IAI America, Inc.

Precautions for Axis Operation with Wireless Connection

Touch Panel Teaching Pendant TB-03 (V2.30 or later) and Remote Digital Speed Controller (TBD-1WL) can operate the option model code -WL2 ELECYLINDER with wireless connection. For operation with wireless connection, secure safety by following the precautions below before use.

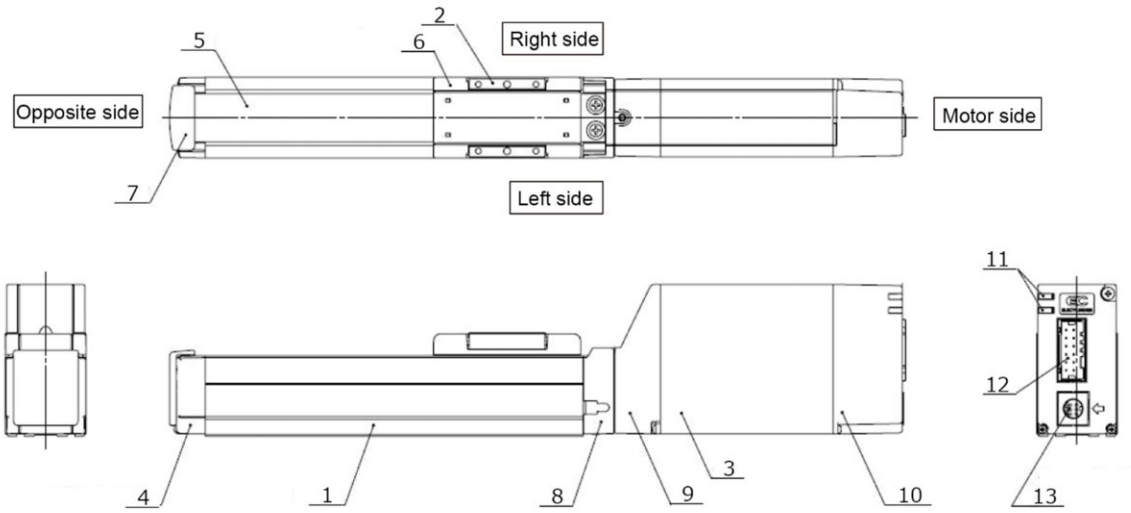
- The stop switch on Touch Panel Teaching Pendant TB-03 will not function during wireless connection. Prepare a device / circuit to stop the operation when emergency stop is required.
- For axis operation with wireless connection, operation testing (movement to forward and backward ends, jog operation, inching operation) is possible, but the control device is not designed for purposes of automatic operation. Construct a mechanical system based on the risks of the operating environment.
- Carry out risk assessment based on the standard/spec requirements of the machinery for installation. Dangerous operation, such as that requiring an automatic stop when control signals cannot be received (including disabled communication) is not acceptable.
- Stopping axis operation by wireless network cannot be used as a safety feature as defined in EN ISO 13849-1: 2015. It is also not compliant with Safety Category B or Categories 1 to 4 stated in EN ISO 13849-1: 2015.

Part Names

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

Motor Straight (EC-S□□B)

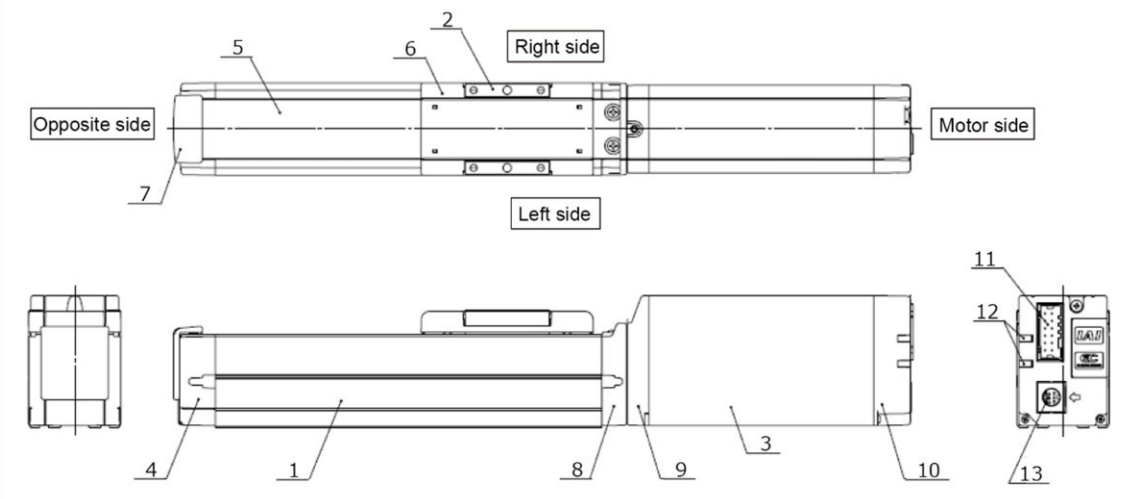
■EC-S3□B



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front cover	Plastic	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	Bracket cover	Plastic	—
10	End cover	Plastic	—
11	Status indicator LED	—	—
12	Power & I/O connector	—	—
13	Teaching port	—	—

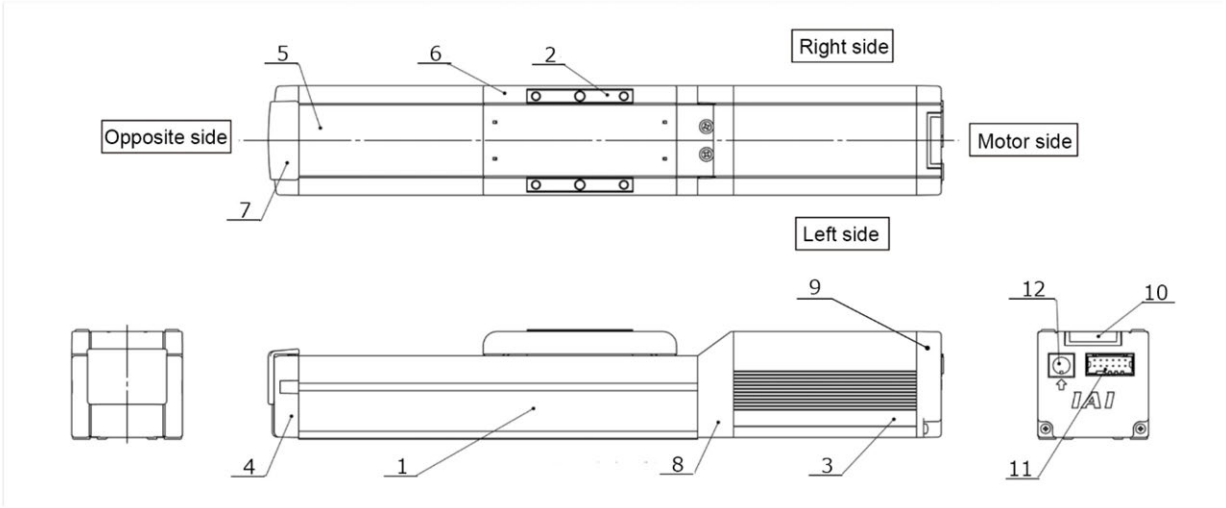
■EC-S4□B



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front cover	Plastic	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	Bracket cover	Plastic	—
10	End cover	Plastic	—
11	Power & I/O connector	—	—
12	Status indicator LED	—	—
13	Teaching port	—	—

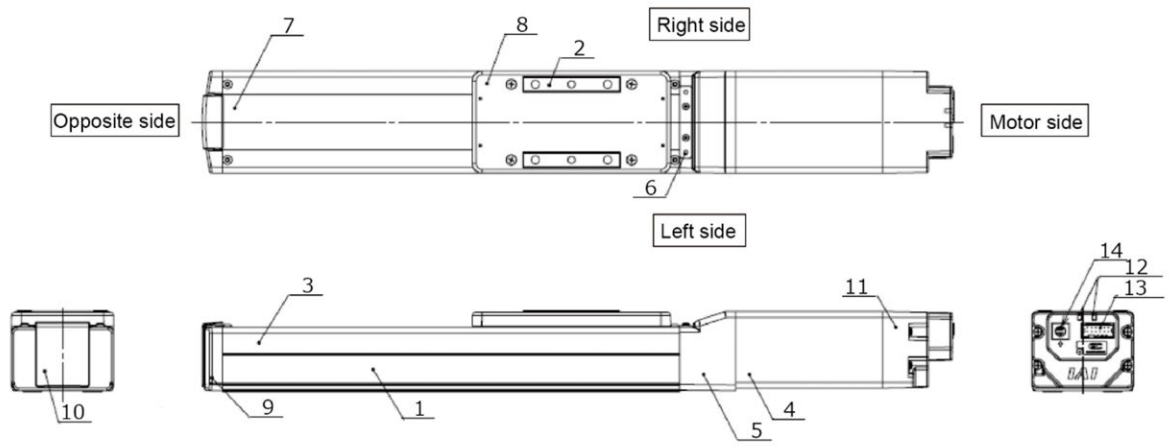
■EC-S6□B/S7□B



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front cover	Plastic	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	End cover	Plastic	—
10	Status indicator LED	—	—
11	Power & I/O connector	—	—
12	Teaching port	—	—

■EC-S8□B

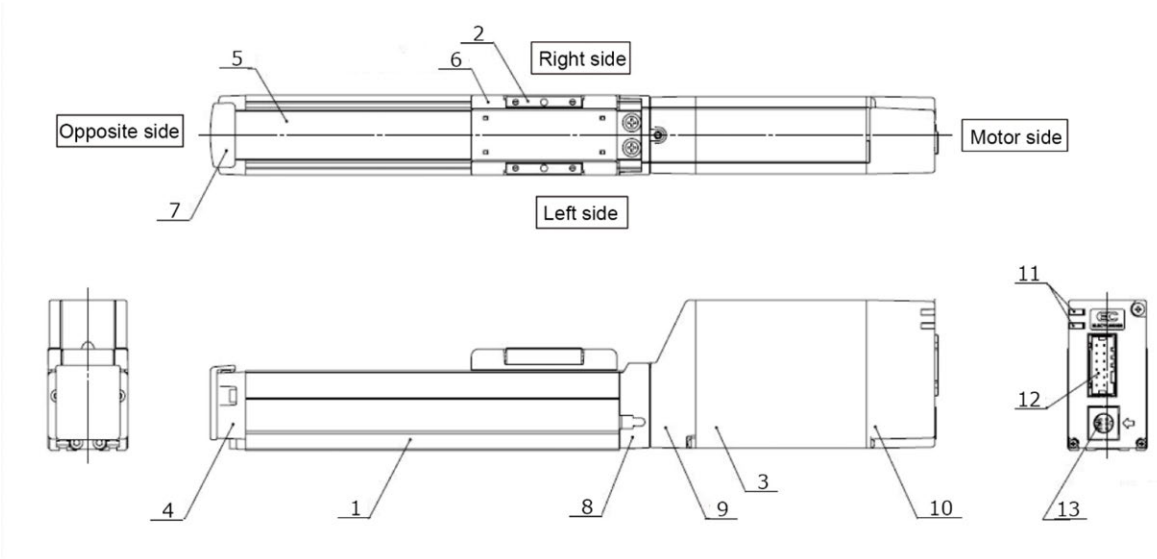


[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Side cover	Aluminum Alloy	Black Anodizing Treatment
4	Motor cover	Aluminum Alloy	Black Anodizing Treatment
5	Rear bracket	Aluminum die-casting	—
6	Sheet retainer	Aluminum Alloy	—
7	Stainless steel sheet	Stainless Steel	—
8	Slider cover	Plastic	—
9	Front cover	Plastic	—
10	Sheet clamp	Plastic	—
11	Controller cover	Plastic	—
12	Status indicator LED	—	—
13	Power & I/O connector	—	—
14	Teaching port	—	—

Long Stroke Applicable Motor Straight (EC-S□□AB)

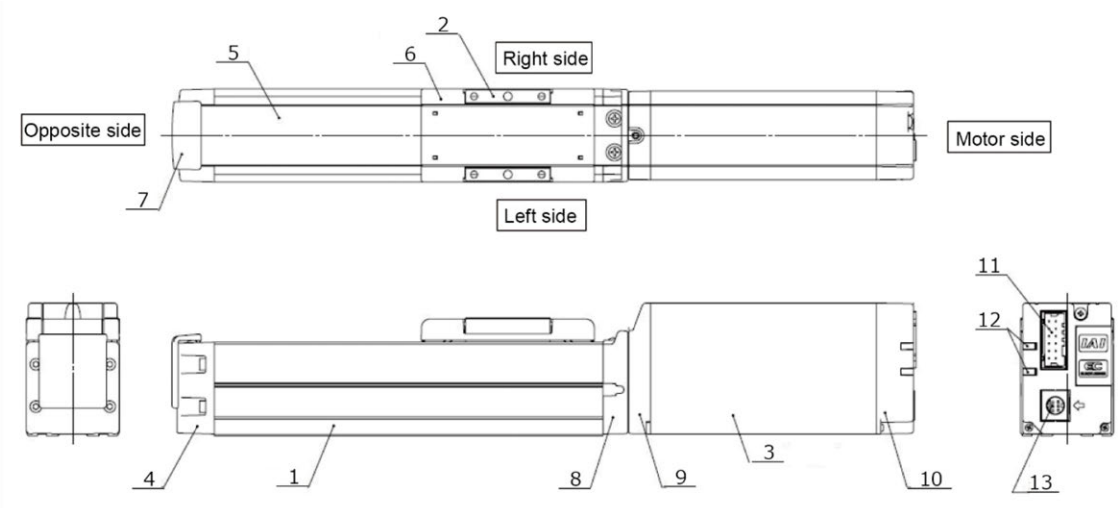
■EC-S3□AB



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front bracket	Aluminum die-casting	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	Bracket cover	Plastic	—
10	End cover	Plastic	—
11	Status indicator LED	—	—
12	Power & I/O connector	—	—
13	Teaching port	—	—

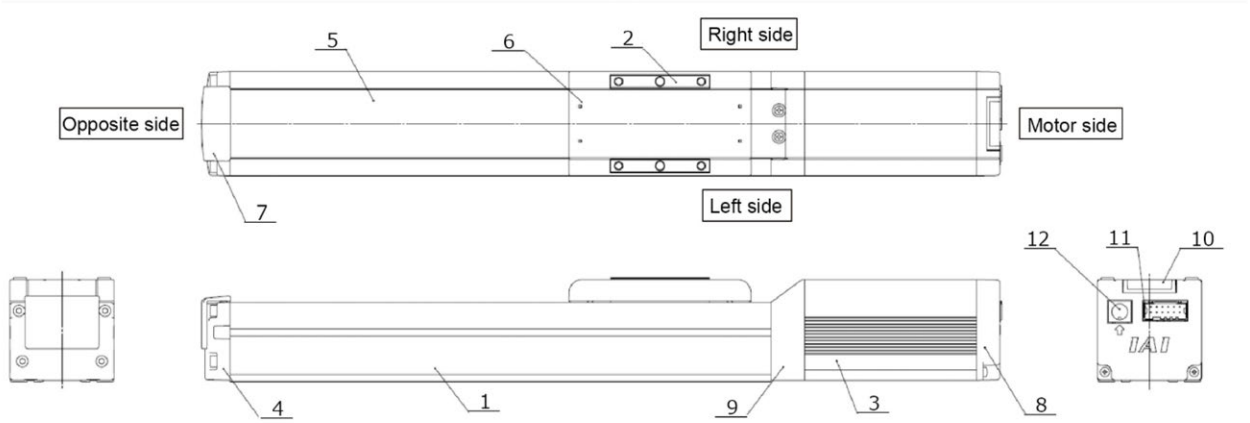
■EC-S4□AB



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front bracket	Aluminum die-casting	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	Bracket cover	Plastic	—
10	End cover	Plastic	—
11	Power & I/O connector	—	—
12	Status indicator LED	—	—
13	Teaching port	—	—

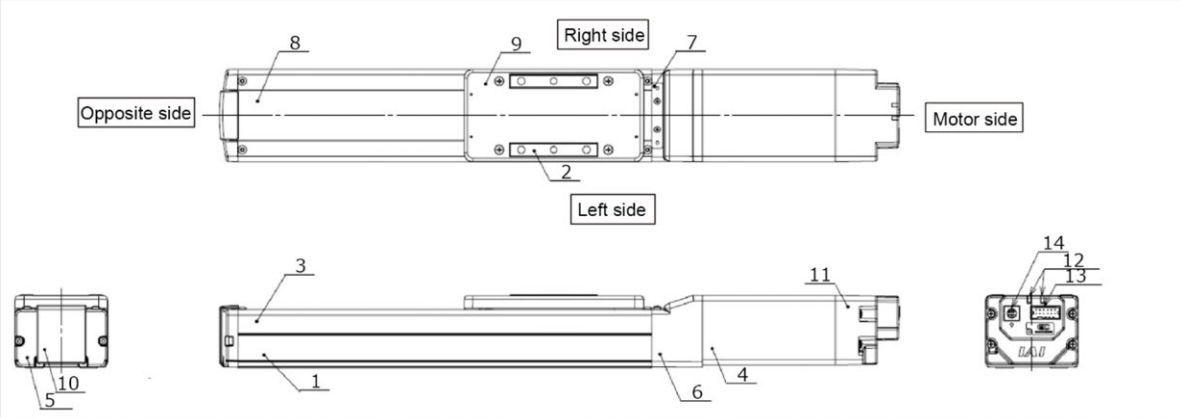
■EC-S6□AB/S7□AB



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front bracket	Aluminum die-casting	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	End cover	Plastic	—
9	Track housing cover	Plastic	—
10	LED Panel	—	—
11	Power & I/O connector	—	—
12	Teaching port	—	—

■EC-S8□AB

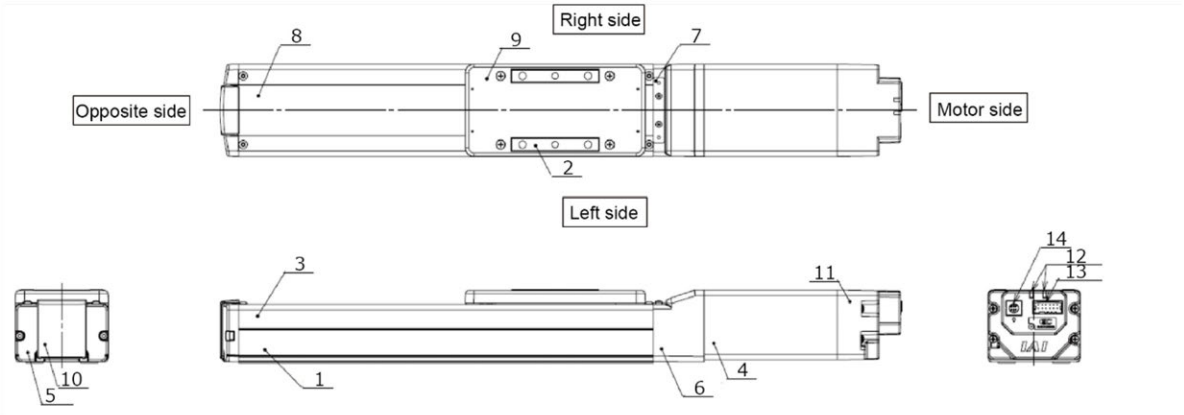


[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Side cover	Aluminum Alloy	Black Anodizing Treatment
4	Motor cover	Aluminum Alloy	Black Anodizing Treatment
5	Front bracket	Aluminum die-casting	—
6	Rear bracket	Aluminum die-casting	—
7	Sheet retainer	Aluminum Alloy	—
8	Stainless steel sheet	Stainless Steel	—
9	Slider cover	Plastic	—
10	Sheet clamp	Plastic	—
11	Controller cover	Plastic	—
12	Status indicator LED	—	—
13	Power & I/O connector	—	—
14	Teaching port	—	—

Long Stroke Applicable Equipped with Intermediate Support Motor Straight (EC-S8X□AB)

■EC-S8X□AB

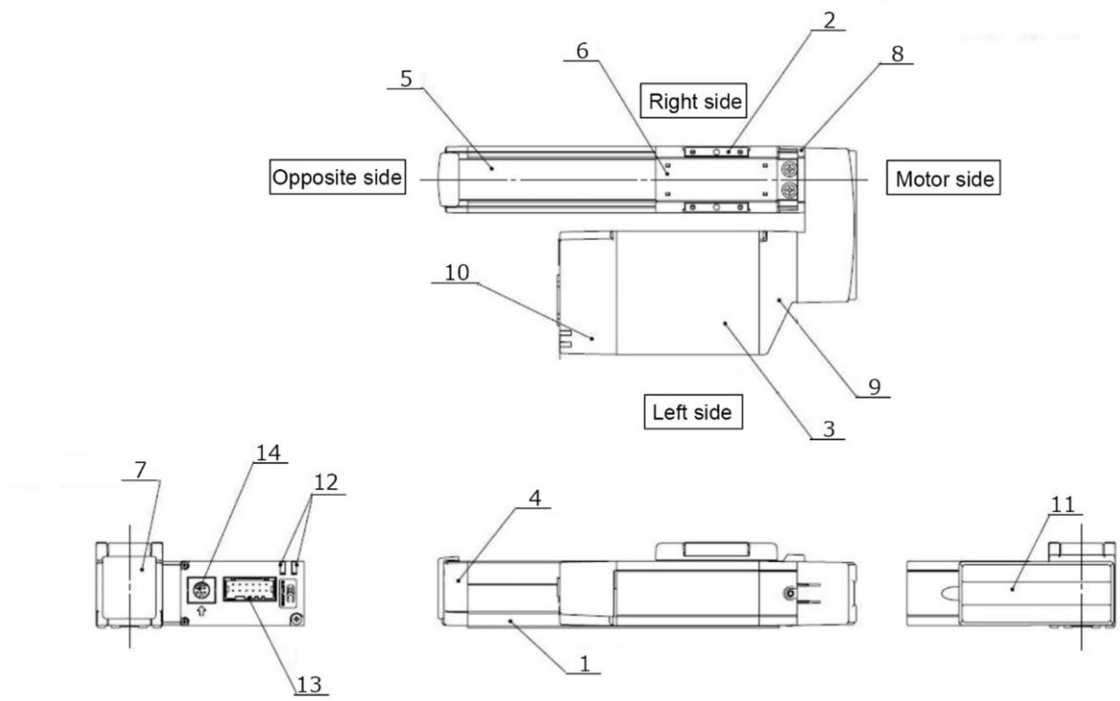


[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Side cover	Aluminum Alloy	Black Anodizing Treatment
4	Motor cover	Aluminum Alloy	Black Anodizing Treatment
5	Front bracket	Aluminum die-casting	—
6	Rear bracket	Aluminum die-casting	—
7	Sheet retainer	Aluminum Alloy	—
8	Stainless steel sheet	Stainless Steel	—
9	Slider cover	Plastic	—
10	Sheet clamp	Plastic	—
11	Controller cover	Plastic	—
12	Status indicator LED	—	—
13	Power & I/O connector	—	—
14	Teaching port	—	—

Motor Reversed (EC-S□□BR)

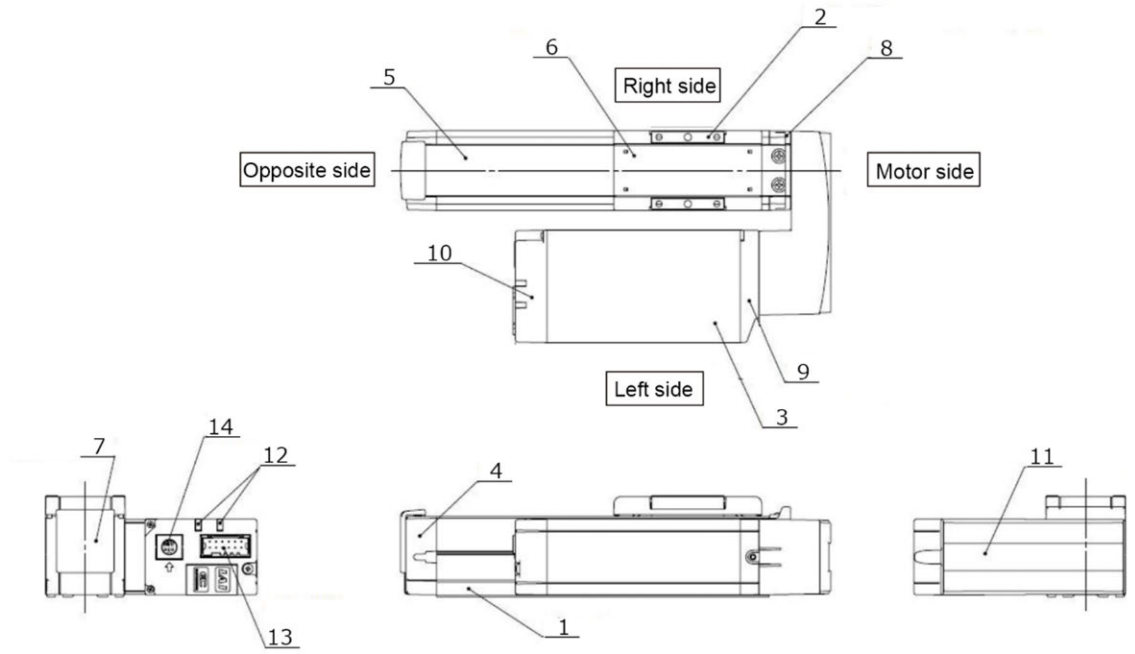
■EC-S3□BR



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front cover	Plastic	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	Bracket cover	Plastic	—
10	End cover	Plastic	—
11	Pulley cover	Plastic	—
12	Status indicator LED	—	—
13	Power & I/O connector	—	—
14	Teaching port	—	—

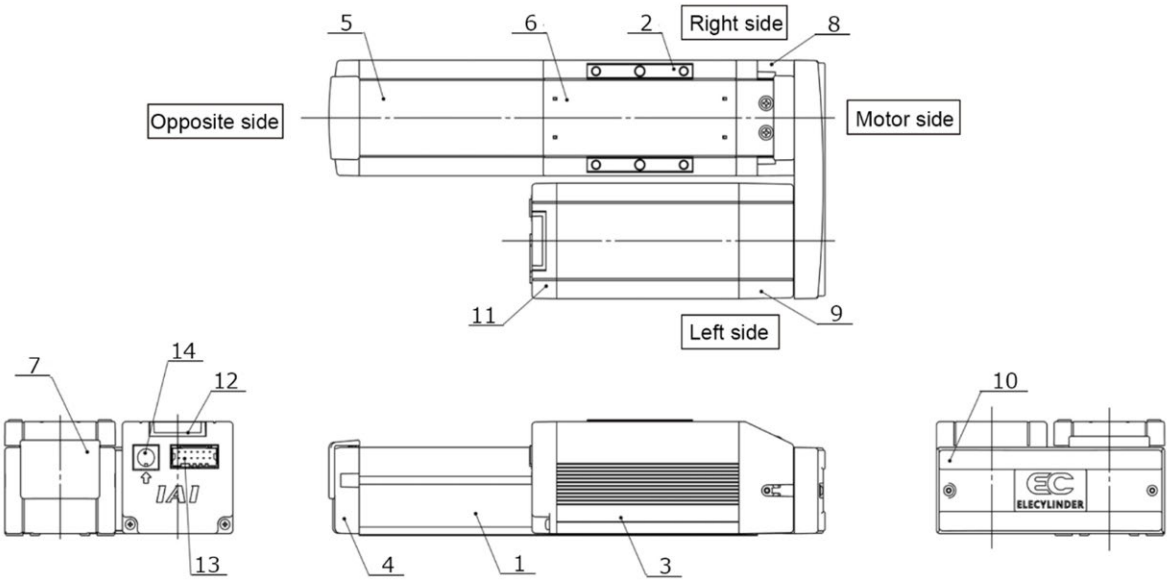
■EC-S4□BR



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front cover	Plastic	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	Bracket cover	Plastic	—
10	End cover	Plastic	—
11	Pulley cover	Plastic	—
12	Status indicator LED	—	—
13	Power & I/O connector	—	—
14	Teaching port	—	—

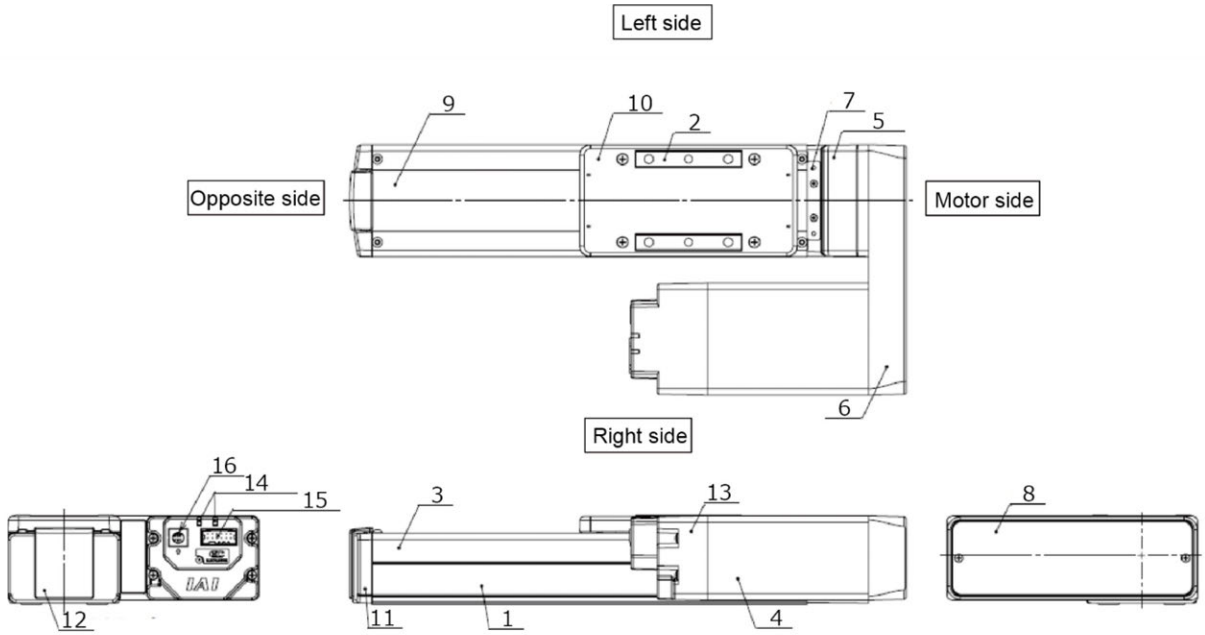
■EC-S6□BR/S7□BR



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front cover	Plastic	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	Motor bracket cover	Plastic	—
10	Pulley cover	Plastic	—
11	End cover	Plastic	—
12	Status indicator LED	—	—
13	Power & I/O connector	—	—
14	Teaching port	—	—

■EC-S8□BR

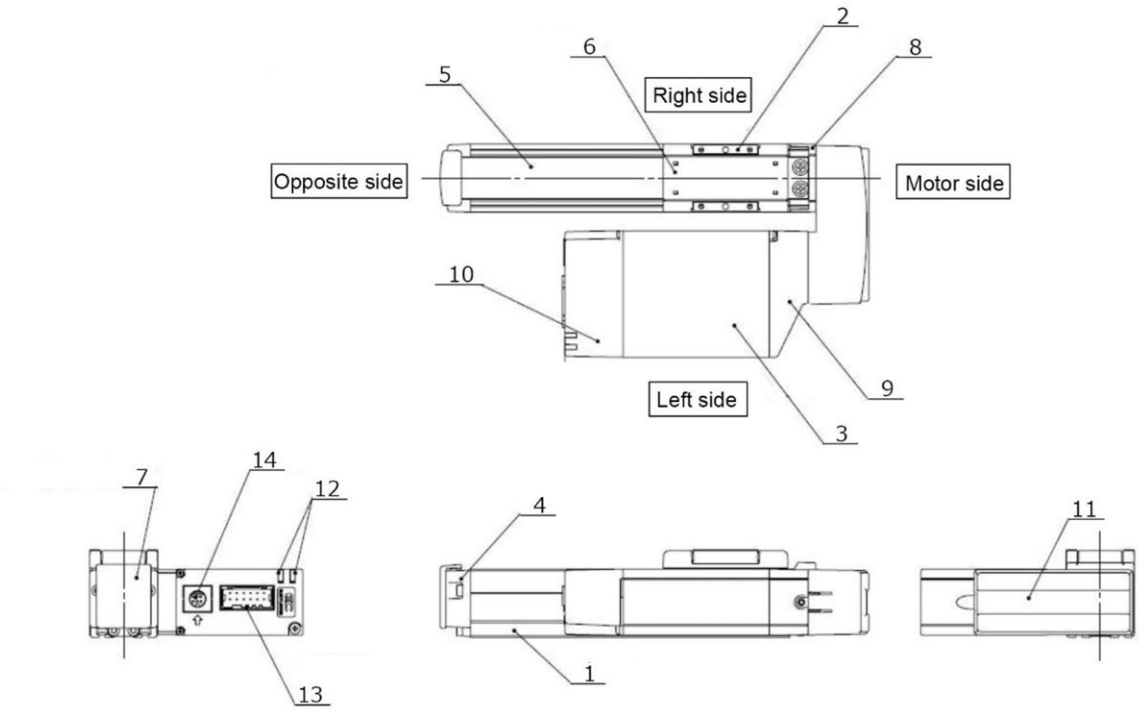


[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Side cover	Aluminum Alloy	Black Anodizing Treatment
4	Motor cover	Aluminum Alloy	Black Anodizing Treatment
5	Rear bracket	Aluminum die-casting	—
6	Reversing bracket	Aluminum die-casting	—
7	Sheet retainer	Aluminum Alloy	—
8	Pulley cover	Aluminum Alloy	—
9	Stainless steel sheet	Stainless Steel	—
10	Slider cover	Plastic	—
11	Front cover	Plastic	—
12	Sheet clamp	Plastic	—
13	Controller cover	Plastic	—
14	Status indicator LED	—	—
15	Power & I/O connector	—	—
16	Teaching port	—	—

Long Stroke Applicable Motor Reversed (EC-S□□ABR)

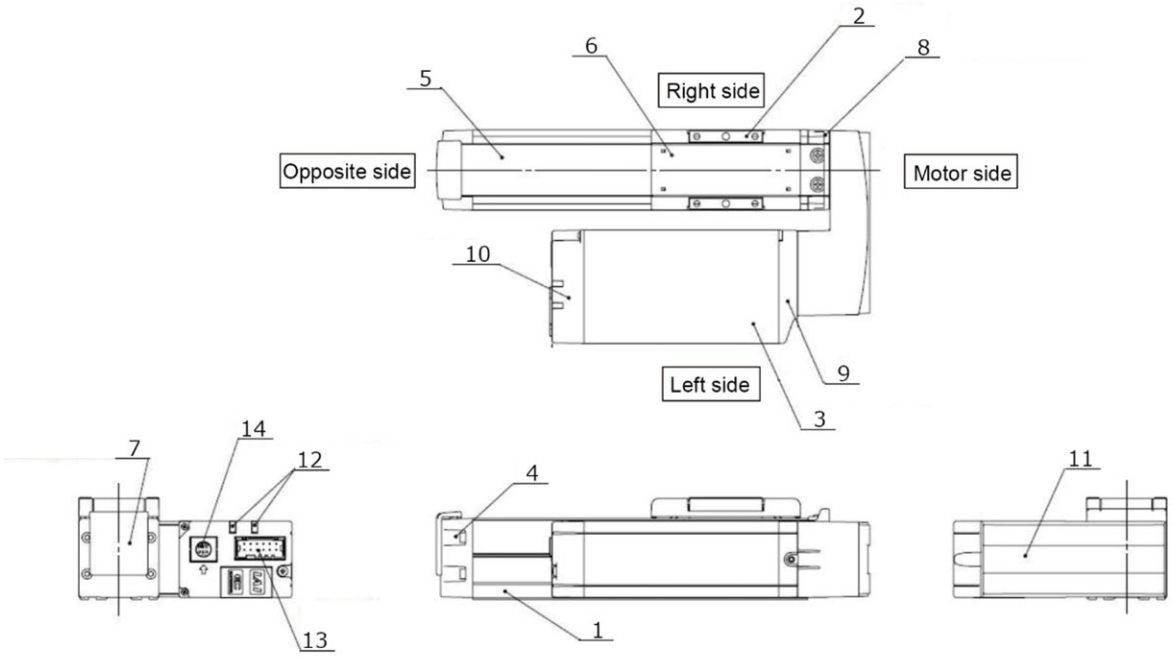
■EC-S3□ABR



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front bracket	Aluminum die-casting	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	Bracket cover	Plastic	—
10	End cover	Plastic	—
11	Pulley cover	Plastic	—
12	Status indicator LED	—	—
13	Power & I/O connector	—	—
14	Teaching port	—	—

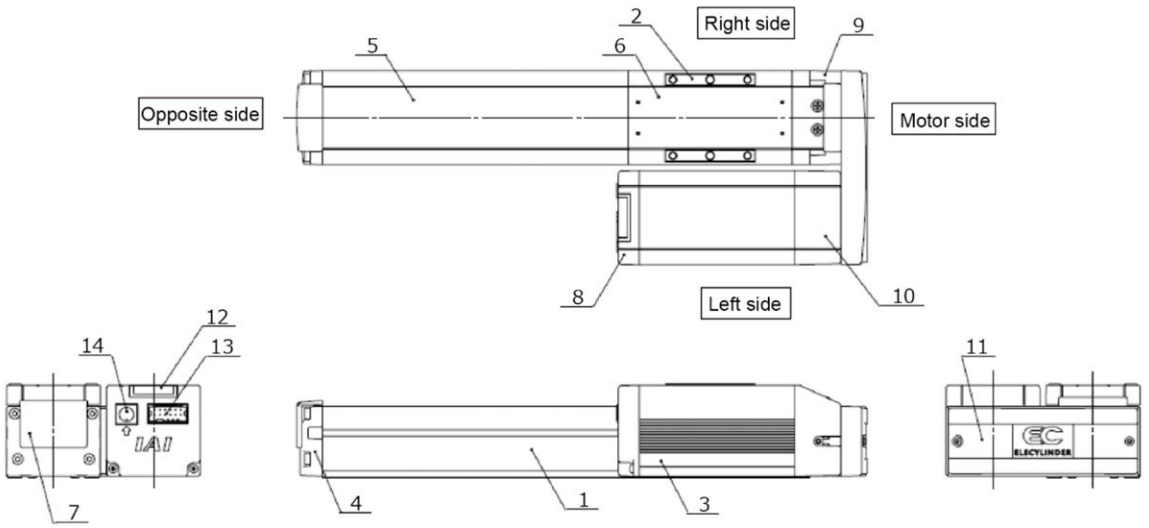
■EC-S4□ABR



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front bracket	Aluminum die-casting	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	Track housing cover	Plastic	—
9	Bracket cover	Plastic	—
10	End cover	Plastic	—
11	Pulley cover	Plastic	—
12	Status indicator LED	—	—
13	Power & I/O connector	—	—
14	Teaching port	—	—

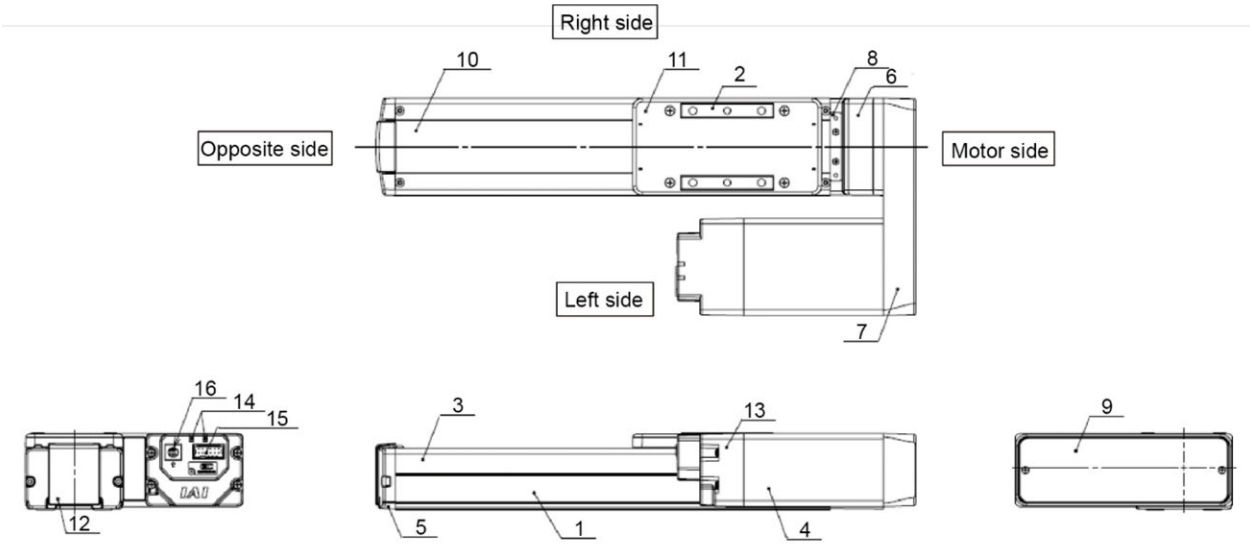
■EC-S6□ABR/S7□ABR



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Motor cover	Aluminum Alloy	Black Anodizing Treatment
4	Front bracket	Aluminum die-casting	—
5	Stainless steel sheet	Stainless Steel	—
6	Slider cover	Plastic	—
7	Sheet clamp	Plastic	—
8	End cover	Plastic	—
9	Track housing cover	Plastic	—
10	Motor bracket cover	Plastic	—
11	Pulley cover	Plastic	—
12	Status indicator LED	—	—
13	Power & I/O connector	—	—
14	Teaching port	—	—

■EC-S8□ABR

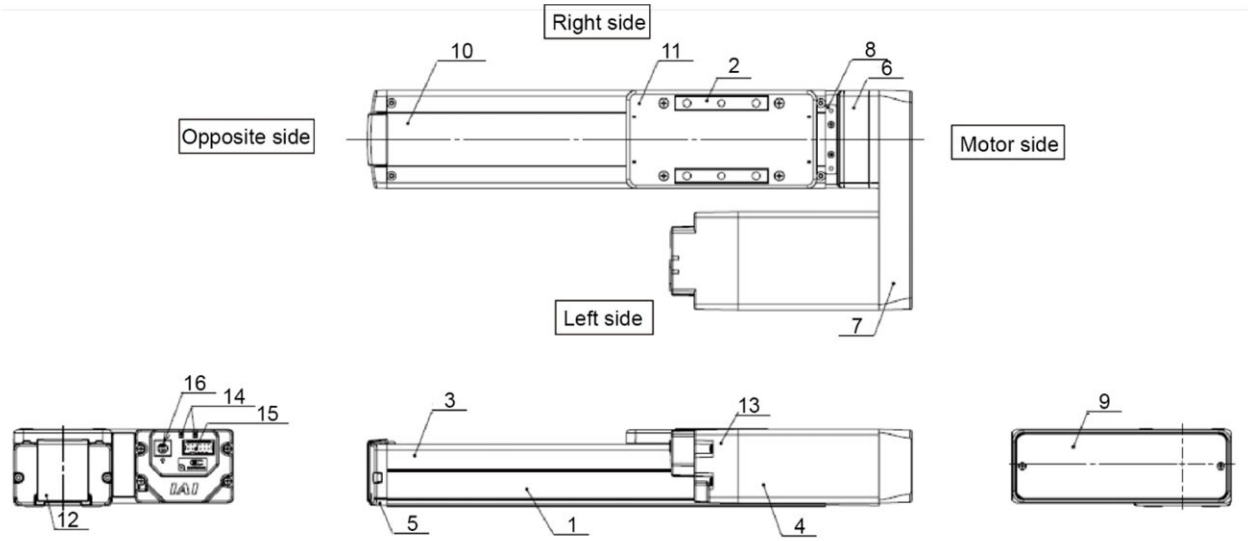


[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Side cover	Aluminum Alloy	Black Anodizing Treatment
4	Motor cover	Aluminum Alloy	Black Anodizing Treatment
5	Front bracket	Aluminum die-casting	—
6	Rear bracket	Aluminum die-casting	—
7	Reversing bracket	Aluminum die-casting	—
8	Sheet retainer	Aluminum Alloy	—
9	Pulley cover	Aluminum Alloy	—
10	Stainless steel sheet	Stainless Steel	—
11	Slider cover	Plastic	—
12	Sheet clamp	Plastic	—
13	Controller cover	Plastic	—
14	Status indicator LED	—	—
15	Power & I/O connector	—	—
16	Teaching port	—	—

Long Stroke Applicable Equipped with Intermediate Support Motor reversed (EC-S8X□ABR)

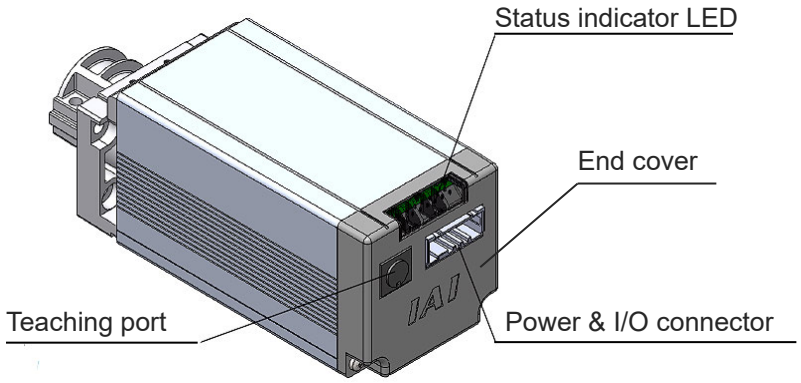
■EC-S8X□ABR



[Main Component Materials]

No.	Name	Materials	Surface Treatment
1	Base	Aluminum Alloy	Black Anodizing Treatment
2	Slider	Aluminum Alloy	White Anodizing Treatment
3	Side cover	Aluminum Alloy	Black Anodizing Treatment
4	Motor cover	Aluminum Alloy	Black Anodizing Treatment
5	Front bracket	Aluminum die-casting	—
6	Rear bracket	Aluminum die-casting	—
7	Reversing bracket	Aluminum die-casting	—
8	Sheet retainer	Aluminum Alloy	—
9	Pulley cover	Aluminum Alloy	—
10	Stainless steel sheet	Stainless Steel	—
11	Slider cover	Plastic	—
12	Sheet clamp	Plastic	—
13	Controller cover	Plastic	—
14	Status indicator LED	—	—
15	Power & I/O connector	—	—
16	Teaching port	—	—

Motor (built in controller)



[Teaching port]

This connector is for the connection of a teaching pendant or PC Teaching Software.
When connecting, remove the cap.

[Status indicator LED]

The LED on the right side as seen from the end cover side shows the servo ON/OFF status and alarm status, and the LED on the left side as seen from the end cover side displays the wireless status.
Refer to [3.6 Troubleshooting confirmations].

[Power & I/O connector]

This connector connects power and I/O wiring.

ELECYLINDER

Chapter 1

Specifications

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1.1 Checking the product

1.1.1 Components

The following table shows the product configuration for the standard specification.
See the packing list for the details of the enclosed components. In the unlikely case that any model number errors or missing parts come to light, contact your local IAI distributor.

Body

ELECYLINDER Quantity: 1

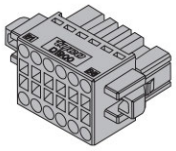


Accessories

Power & I/O Cable
Quantity: 1



Power & I/O Connector
Quantity: 1



Components included as selected in the model number

Protective Cap
Quantity: 1



Accessories

Safety Guide
Quantity: 1



Square Nut Holder Set - 1 set
EC-S3□B/S3□AB/S3□BR/S3□ABR: M3,
EC-S4□B/S4□AB/S4□BR/S4□ABR: M4,
EC-S6□B/S6□AB/S6□BR/S6□ABR: M4,
EC-S7□B/S7□AB/S7□BR/S7□ABR: M5

Quantity Stroke 500mm or less: 6pcs set
Stroke 550mm or more: 12pcs set

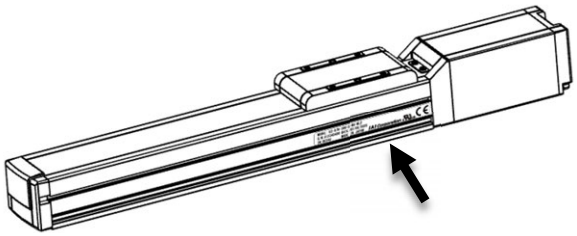


1.1.2 How to read the model nameplate

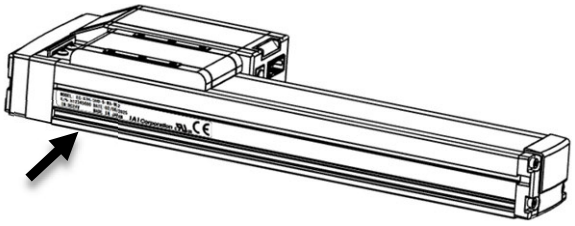


Nameplate position

Motor straight type



Motor reversed type



1.1.3 How to read the model number

It is a list of the model codes.

Available options should differ depending on types and conditions. Refer to the catalog for details.

Motor Straight (EC-S□□B)

EC – S6 M B – 200 – 2 – B

<Series>
EC : ELECYLINDER

<Type>
S3 : Width 35mm
S4 : Width 44mm
S6 : Width 63mm
S7 : Width 73mm
S8 : Width 85mm

<Lead>
S3
H : 6mm
M : 4mm
L : 2mm
S4
S : 16mm
H : 10mm
M : 5mm
L : 2.5mm
S6
S : 20mm
H : 12mm
M : 6mm
L : 3mm
S7
S : 24mm
H : 16mm
M : 8mm
L : 4mm
S8
S : 30mm
H : 20mm
M : 10mm
L : 5mm

<Specification>
B : Products designed for use in secondary battery production processes

<Stroke>
S3
50 : 50mm
to to
300 : 300mm
S4
50 : 50mm
to to
300 : 300mm
S6
50 : 50mm
to to
400 : 400mm
S7
50 : 50mm
to to
500 : 500mm
S8
50 : 50mm
to to
600 : 600mm
(Every 50mm)

<Option>
Blank : Incremental specification, NPN specification, no option
ACR : RCON-EC connection specification
B : With brake
FT : Foot bracket
MF : 3 position mode specification
MOB : Motor ejecting orientation changed (Bottom side)
MOL : Motor ejecting orientation changed (Left side)
MOR : Motor ejecting orientation changed (Right side)
MOT : Motor ejecting orientation changed (Top side)
NM : Home reverse specification
PN : PNP specification
SR : Slider part roller specification
SVL : Stainless Steel Suction Joint Left Mounted Specification
SVR : Stainless Steel Suction Joint Right Mounted Specification
TMD2 : 2-circuit power supply specification
WA : Battery-less absolute encoder specification
WL : Wireless communication specification
WL2 : Wireless axis operation specification

<Power & I/O cable length>
0 : W/o cable*
(S)1 : 1m
to to
(S)10 : 10m (Every 1m)
(S): Cable Equipped with 4-Way Connector
* With power & I/O connector

It is a list of the model codes.
Available options should differ depending on types and conditions. Refer to the catalog for details.

Motor Reversed (EC-S□□BR)

EC – S6 M B R – 200 – 2 – B

<Series>
EC : ELECYLINDER

<Type>
S3 : Width 35mm
S4 : Width 44mm
S6 : Width 63mm
S7 : Width 73mm
S8 : Width 85mm

<Lead>
S3
H : 6mm
M : 4mm
L : 2mm
S4
S : 16mm
H : 10mm
M : 5mm
L : 2.5mm
S6
S : 20mm
H : 12mm
M : 6mm
L : 3mm
S7
S : 24mm
H : 16mm
M : 8mm
L : 4mm
S8
S : 30mm
H : 20mm
M : 10mm
L : 5mm

<Specification>
B : Products designed for use in secondary battery production processes

<Specifications>
R : Reversed

<Stroke>
S3
50 : 50mm
to to
300 : 300mm
S4
50 : 50mm
to to
300 : 300mm
S6
50 : 50mm
to to
400 : 400mm
S7
50 : 50mm
to to
500 : 500mm
S8
50 : 50mm
to to
600 : 600mm
(Every 50mm)

<Option>
Blank : Incremental specification, NPN specification, no option
ACR : RCON-EC connection specification
B : With brake
FT : Foot bracket
MF : 3 position mode specification
ML : Motor left reversed direction
MR : Motor right reversed direction
NM : Home reverse specification
PN : PNP specification
SR : Slider part roller specification
SVL : Stainless Steel Suction Joint Left Mounted Specification
SVR : Stainless Steel Suction Joint Right Mounted Specification
TMD2 : 2-circuit power supply specification
WA : Battery-less absolute encoder specification
WL : Wireless communication specification
WL2 : Wireless axis operation specification

<Power & I/O cable length>
0 : W/o cable*
(S)1 : 1m
to to
(S)10 : 10m (Every 1m)
(S): Cable Equipped with 4-Way Connector
* With power & I/O connector

It is a list of the model codes.
Available options should differ depending on types and conditions. Refer to the catalog for details.

Long Stroke Applicable Motor Straight (EC-S□□AB)

EC – S6 M A B – 200 – 2 – B

<Series>
EC : ELECYLINDER

<Type>
S3 : Width 35mm
S4 : Width 44mm
S6 : Width 63mm
S7 : Width 73mm
S8 : Width 85mm

<Lead>
S3
H : 6mm
M : 4mm
L : 2mm
S4
S : 16mm
H : 10mm
M : 5mm
L : 2.5mm
S6
S : 20mm
H : 12mm
M : 6mm
L : 3mm
S7
S : 24mm
H : 16mm
M : 8mm
L : 4mm
S8
S : 30mm
H : 20mm
M : 10mm
L : 5mm

<Specifications>
A : Long stroke applicable

<Specification>
B Products designed for use in secondary battery production processes

<Stroke>
S3
200 : 200mm
to to
400 : 400mm
S4
250 : 250mm
to to
500 : 500mm
S6
250 : 250mm
to to
800 : 800mm (Every 50mm)
S7
350 : 350mm
to to
800 : 800mm
S8
350 : 350mm
to to
1100 : 1100mm

<Option>
Blank : Incremental specification, NPN specification, no option
ACR : RCON-EC connection specification
B : With brake
FT : Foot bracket
MF : 3 position mode specification
MOB : Motor ejecting orientation changed (Bottom side)
MOL : Motor ejecting orientation changed (Left side)
MOR : Motor ejecting orientation changed (Right side)
MOT : Motor ejecting orientation changed (Top side)
NM : Home reverse specification
PN : PNP specification
SR : Slider part roller specification
SVL : Stainless Steel Suction Joint Left Mounted Specification
SVR : Stainless Steel Suction Joint Right Mounted Specification
TMD2 : 2-circuit power supply specification
WA : Battery-less absolute encoder specification
WL : Wireless communication specification
WL2 : Wireless axis operation specification

<Power & I/O cable length>
0 : W/o cable*
(S)1 : 1m
to to
(S)10 : 10m (Every 1m)
(S): Cable Equipped with 4-Way Connector
* With power & I/O connector

It is a list of the model codes.
Available options should differ depending on types and conditions. Refer to the catalog for details.

Long Stroke Applicable Motor Reversed (EC-S□□ABR)

EC – S6 M A B R – 200 – 2 – B

<Series>
EC : ELECYLINDER

<Type>
S3 : Width 35mm
S4 : Width 44mm
S6 : Width 63mm
S7 : Width 73mm
S8 : Width 85mm

<Lead>
S3
H : 6mm
M : 4mm
L : 2mm
S4
S : 16mm
H : 10mm
M : 5mm
L : 2.5mm
S6
S : 20mm
H : 12mm
M : 6mm
L : 3mm
S7
S : 24mm
H : 16mm
M : 8mm
L : 4mm
S8
S : 30mm
H : 20mm
M : 10mm
L : 5mm

<Specifications>
A : Long stroke applicable

<Specification>
B : Products designed for use in secondary battery production processes

<Specifications>
R : Reversed

<Stroke>
S3
200 : 200mm
to to
400 : 400mm
S4
250 : 250mm
to to
500 : 500mm
S6
250 : 250mm
to to
800 : 800mm (Every 50mm)
S7
350 : 350mm
to to
800 : 800mm
S8
350 : 350mm
to to
1100 : 1100mm

<Power & I/O cable length>
0 : W/o cable*
(S)1 : 1m
to to
(S)10 : 10m (Every 1m)
(S): Cable Equipped with 4-Way Connector
* With power & I/O connector

<Option>
Blank : Incremental specification, NPN specification, no option
ACR : RCON-EC connection specification
B : With brake
FT : Foot bracket
MF : 3 position mode specification
ML : Motor left reversed direction
MR : Motor right reversed direction
NM : Home reverse specification
PN : PNP specification
SR : Slider part roller specification
SVL : Stainless Steel Suction Joint Left Mounted Specification
SVR : Stainless Steel Suction Joint Right Mounted Specification
TMD2 : 2-circuit power supply specification
WA : Battery-less absolute encoder specification
WL : Wireless communication specification
WL2 : Wireless axis operation specification

It is a list of the model codes.
Available options should differ depending on types and conditions. Refer to the catalog for details.

Long Stroke Applicable Equipped with Intermediate Support Motor Straight (EC-S8X□AB)

EC – S8X M A B – 200 – 2 – B

<Series>
EC : ELECYLINDER

<Type>
S8X : Width 85mm
Equipped with intermediate Support

<Lead>
S : 30mm
H : 20mm
M : 10mm
L : 5mm

<Specifications>
A : Long stroke applicable

<Specification>
B : Products designed for use in secondary battery production processes

<Stroke>
700 : 700mm
to to
1500 : 1500mm (Every 50mm)

<Option>
Blank : Incremental specification, NPN specification, no option
ACR : RCON-EC connection specification
B : With brake
MF : 3 position mode specification
NM : Home reverse specification
PN : PNP specification
SR : Slider part roller specification
SVL : Stainless Steel Suction Joint Left Mounted Specification
SVR : Stainless Steel Suction Joint Right Mounted Specification
TMD2 : 2-circuit power supply specification
WA : Battery-less absolute encoder specification
WL : Wireless communication specification
WL2 : Wireless axis operation specification

<Power & I/O cable length>
0 : W/o cable*
(S)1 : 1m
to to
(S)10 : 10m (Every 1m)
(S): Cable Equipped with 4-Way Connector
* With power & I/O connector

Long Stroke Applicable Equipped with Intermediate Support Motor reversed (EC-S8X□ABR)

EC – S8X M A B R – 200 – 2 – B

<Series>
EC : ELECYLINDER

<Type>
S8X : Width 85mm
Equipped with intermediate Support

<Lead>
S : 30mm
H : 20mm
M : 10mm
L : 5mm

<Specifications>
A : Long stroke applicable

<Specification>
B : Products designed for use in secondary battery production processes

<Specifications>
R : Reversed

<Stroke>
700 : 700mm
to to
1500 : 1500mm (Every 50mm)

<Option>
Blank : Incremental encoder specification, NPN specification, no option
ACR : RCON-EC connection specification
B : With brake
MF : 3 position mode specification
ML : Motor left reversed direction
MR : Motor right reversed direction
NM : Home reverse specification
PN : PNP specification
SR : Slider part roller type
SVL : Stainless Steel Suction Joint Left Mounted Specification
SVR : Stainless Steel Suction Joint Right Mounted Specification
TMD2 : 2-circuit power supply specification
WA : Battery-less absolute encoder specification
WL : Wireless communication specificatio
WL2 : Wireless axis operation specification

<Power & I/O cable length>
0 : W/o cable*
(S)1 : 1m
to to
(S)10 : 10m (Every 1m)
(S): Cable Equipped with 4-Way Connector
* With power & I/O connector

1.2 Mechanical specifications: EC-S3

1.2.1 EC-S3□B

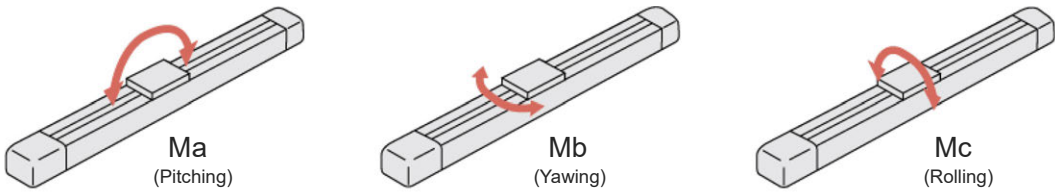
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ6mm, rolled C10
Positioning repeatability		±0.02mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 9.5N·m, Mb direction: 13.5N·m, Mc direction: 15.1N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 3.8N·m, Mb direction: 5.4N·m, Mc direction: 6.1N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 6: 1kgf Lead 4: 1.5kgf Lead 2: 2.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
		Pulse motor (□28) (Current Amperage: 2.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

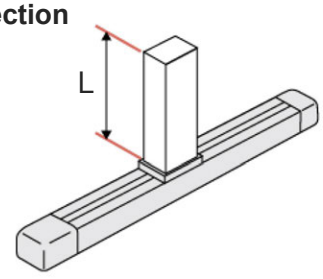
Moment direction



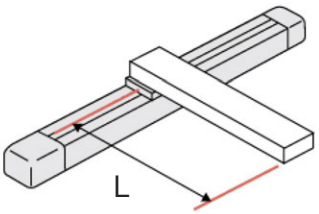
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

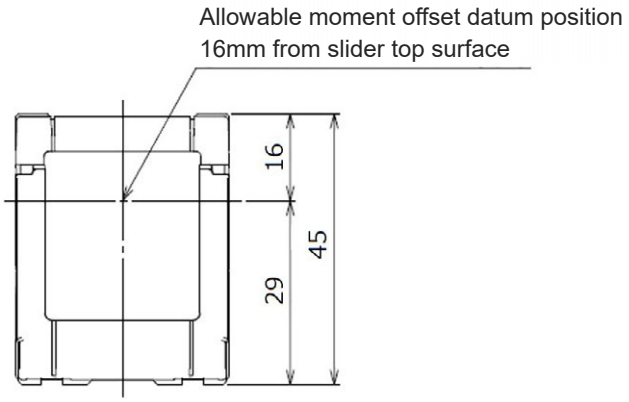


Mb/Mc direction



- Reference for Load Overhang Length (L = 100mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S3HB	6	2.5	1	45
EC-S3MB	4	4	1.5	68
EC-S3LB	2	6.5	2.5	136

[3] Stroke and Max. Speed

troke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 8mm/s for Lead 6, 5mm/s for Lead 4 and 3mm/s for Lead 2.

Max. Speed [mm/s]

Lead [mm]	50 to 150mm (Every 50mm)	200mm	250mm	300mm
6	255		210	150
4	170		140	100
2	85		70	50

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 6 is 0.5G in the horizontal direction and 0.3G in the vertical direction.
The maximum acceleration/deceleration for Lead 4 and 2 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 0.5G for Lead 6 and 0.3G for Lead 4 and 2 as 100%.
(Note) "—" represent operation not available.

Lead 6 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	2.5	2	1
120	2.5	2	1
210	2.5	2	1
255	1.5	1	1

Lead 4 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	4	—	1.5
80	4	—	1.5
140	4	—	1.5
170	2.5	—	1.5

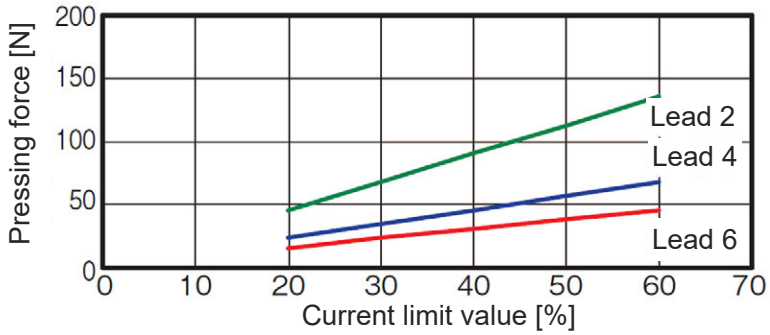
Lead 2 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	6.5	—	2.5
40	6.5	—	2.5
70	6.5	—	2.5
85	3.5	—	2.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 20 to 60% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.2.2 EC-S3□BR

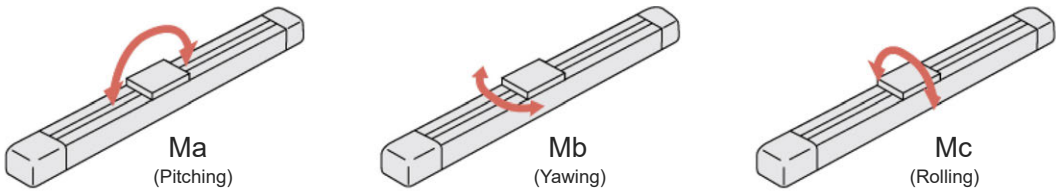
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ6mm, rolled C10
Positioning repeatability		±0.02mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 9.5N·m, Mb direction: 13.5N·m, Mc direction: 15.1N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 3.8N·m, Mb direction: 5.4N·m, Mc direction: 6.1N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 6: 1kgf Lead 4: 1.5kgf Lead 2: 2.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□28) (Current Amperage: 2.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

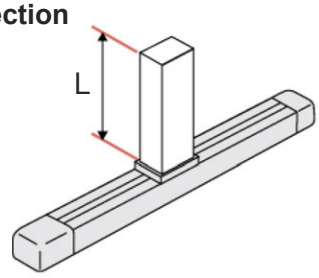
Moment direction



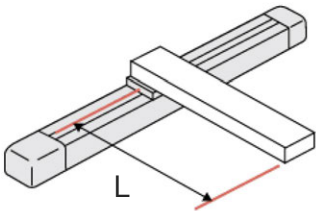
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

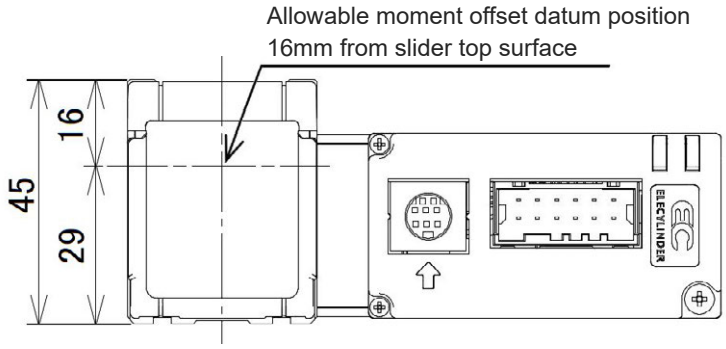


Mb/Mc direction



- Reference for Load Overhang Length (L = 100mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S3HBR	6	2.5	1	45
EC-S3MBR	4	4	1.5	68
EC-S3LBR	2	6.5	2.5	136

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 8mm/s for Lead 6, 5mm/s for Lead 4 and 3mm/s for Lead 2.

Max. Speed [mm/s]

Lead [mm]	50 to 150mm (Every 50mm)	200mm	250mm	300mm
6	255		210	150
4	170		140	100
2	85		70	50

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 6 is 0.5G in the horizontal direction and 0.3G in the vertical direction.
The maximum acceleration/deceleration for Lead 4 and 2 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 0.5G for Lead 6 and 0.3G for Lead 4 and 2 as 100%.
(Note) "—" represent operation not available.

Lead 6 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	2.5	2	1
120	2.5	2	1
210	2.5	2	1
255	1.5	1	1

Lead 4 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	4	—	1.5
80	4	—	1.5
140	4	—	1.5
170	2.5	—	1.5

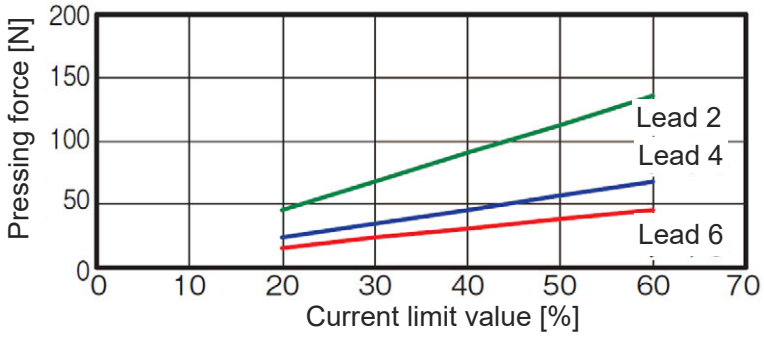
Lead 2 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	6.5	—	2.5
40	6.5	—	2.5
70	6.5	—	2.5
85	3.5	—	2.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 20 to 60% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.2.3 EC-S3□AB

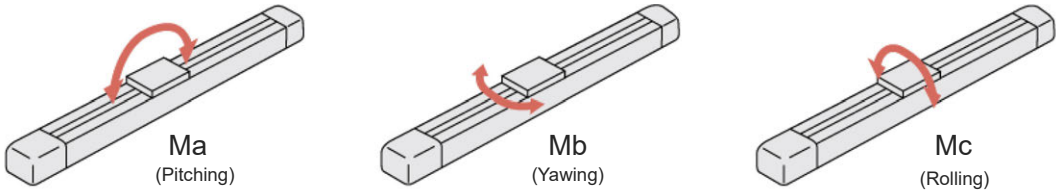
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ6 mm, rolled C10
Positioning repeatability		±0.02mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 9.5N·m, Mb direction: 13.5N·m, Mc direction: 15.1N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 3.8N·m, Mb direction: 5.4N·m, Mc direction: 6.1N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 6: 1kgf Lead 4: 1.5kgf Lead 2: 2.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□28) (Current Amperage: 2.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

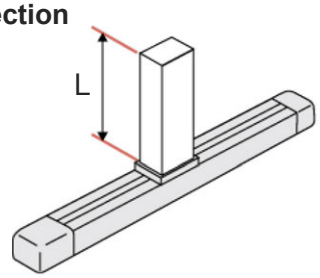
Moment direction



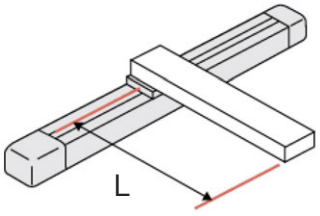
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

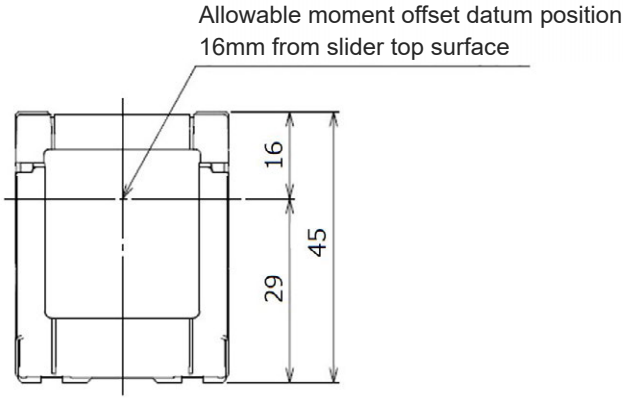


Mb/Mc direction



- Reference for Load Overhang Length (L = 100mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S3HAB	6	2.5	1	45
EC-S3MAB	4	4	1.5	68
EC-S3LAB	2	6.5	2.5	136

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 8mm/s for Lead 6, 5mm/s for Lead 4 and 3mm/s for Lead 2.

Max. Speed [mm/s]

Lead [mm]	200 to 400mm (Every 50mm)
6	255
4	170
2	85

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 6 is 0.5G in the horizontal direction and 0.3G in the vertical direction.
The maximum acceleration/deceleration for Lead 4 and 2 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 0.5G for Lead 6 and 0.3G for Lead 4 and 2 as 100%.
(Note)"—" represent operation not available.

Lead 6 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	2.5	2	1
120	2.5	2	1
210	2.5	2	1
255	1.5	1	1

Lead 4 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	4	—	1.5
80	4	—	1.5
140	4	—	1.5
170	2.5	—	1.5

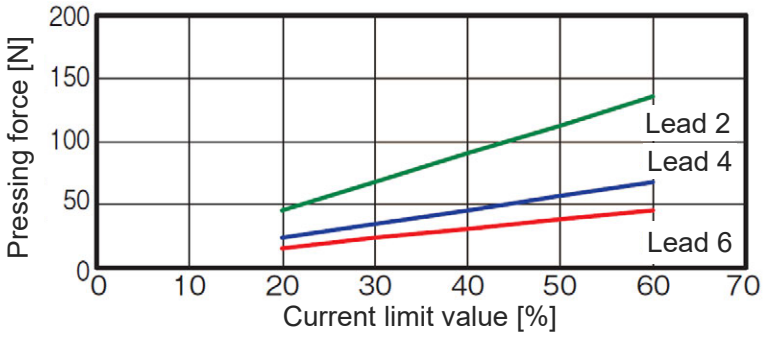
Lead 2 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	6.5	—	2.5
40	6.5	—	2.5
70	6.5	—	2.5
85	3.5	—	2.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 20 to 60% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.2.4 EC-S3□ABR

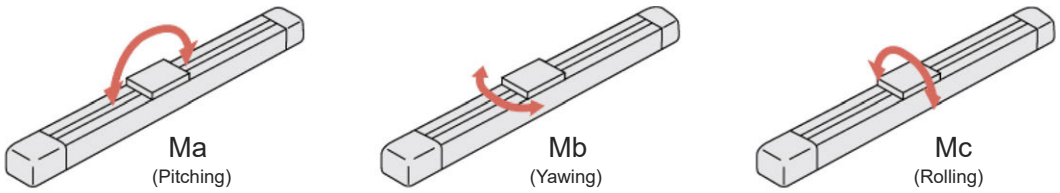
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ6 mm, rolled C10
Positioning repeatability		±0.02mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 9.5N·m, Mb direction: 13.5N·m, Mc direction: 15.1N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 3.8N·m, Mb direction: 5.4N·m, Mc direction: 6.1N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 6: 1kgf Lead 4: 1.5kgf Lead 2: 2.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□28) (Current Amperage: 2.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

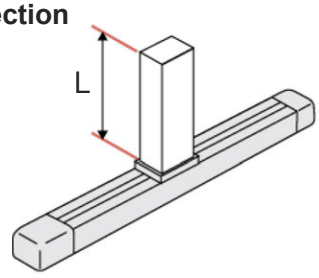
Moment direction



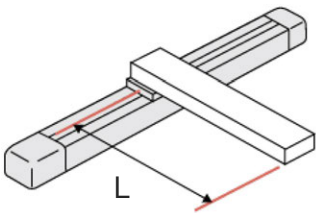
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

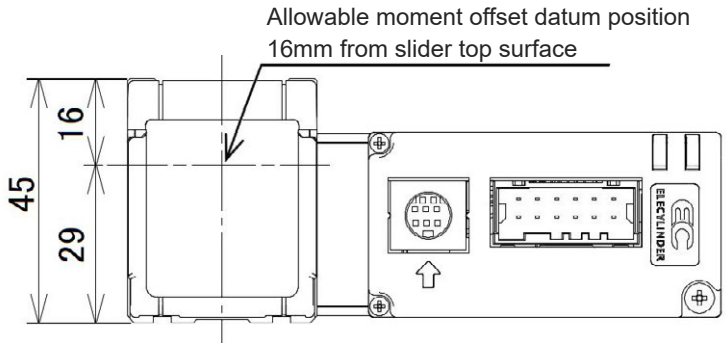


Mb/Mc direction



- Reference for Load Overhang Length (L = 100mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S3HABR	6	2.5	1	45
EC-S3MABR	4	4	1.5	68
EC-S3LABR	2	6.5	2.5	136

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 8mm/s for Lead 6, 5mm/s for Lead 4 and 3mm/s for Lead 2.

Max. Speed [mm/s]

Lead [mm]	200 to 400mm (Every 50mm)
6	255
4	170
2	85

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 6 is 0.5G in the horizontal direction and 0.3G in the vertical direction.
The maximum acceleration/deceleration for Lead 4 and 2 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 0.5G for Lead 6 and 0.3G for Lead 4 and 2 as 100%.
(Note) "—" represent operation not available.

Lead 6 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	2.5	2	1
120	2.5	2	1
210	2.5	2	1
255	1.5	1	1

Lead 4 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	4	—	1.5
80	4	—	1.5
140	4	—	1.5
170	2.5	—	1.5

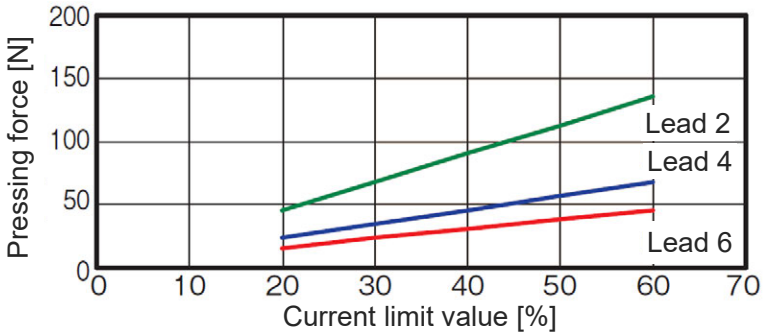
Lead 2 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.5	0.3
0	6.5	—	2.5
40	6.5	—	2.5
70	6.5	—	2.5
85	3.5	—	2.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 20 to 60% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.3 Mechanical specifications: EC-S4

1.3.1 EC-S4□B

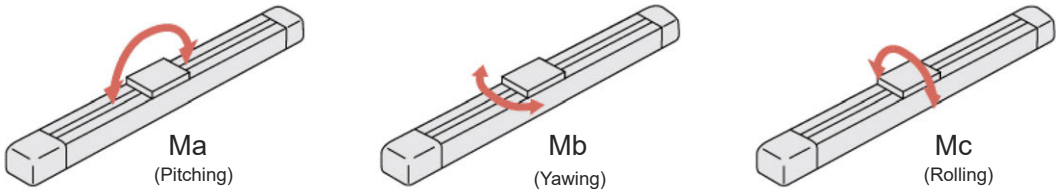
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ8mm, rolled C10
Positioning repeatability		±0.02mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 13.0N·m, Mb direction: 18.6N·m, Mc direction: 25.3N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 5.0N·m, Mb direction: 7.1N·m, Mc direction: 9.7N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 16: 1kgf Lead 10: 1.5kgf Lead 5: 3.5kgf Lead 2.5: 4.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□35) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams.
Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

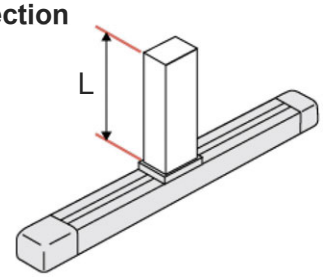
Moment direction



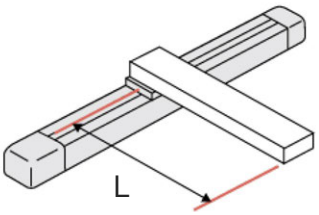
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

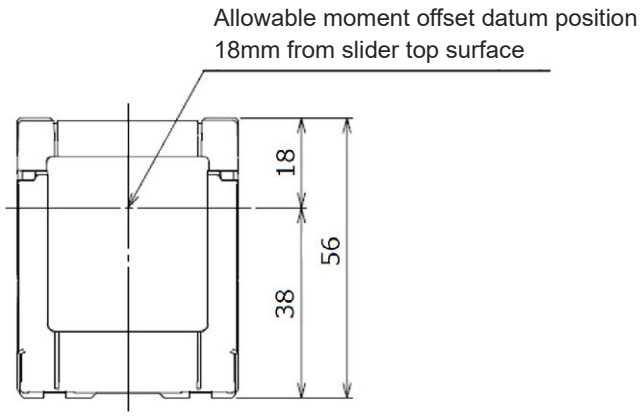


Mb/Mc direction



- Reference for Load Overhang Length (L = 150mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S4SB	16	5	1	41
EC-S4HB	10	8.5	1.5	66
EC-S4MB	5	10.5	3.5	132
EC-S4LB	2.5	12.5	4.5	263

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S4SB	16	3	0.5	41
EC-S4HB	10	7	1.5	66
EC-S4MB	5	8.5	3	132
EC-S4LB	2.5	10	4.5	263

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 40mm/s for Lead 16, 30mm/s for Lead 10, 7mm/s for Lead 5 and 4mm/s for Lead 2.5.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	50 to 200mm (Every 50mm)	250mm	300mm
16	800<700>	760<700>	540
10	525<435>	470<435>	320
5	260<215>	240<215>	160
2.5	135<105>	120<105>	85

< > represents vertical operation

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	50 to 200mm (Every 50mm)	250mm	300mm
16	700<560>		540
10	435		320
5	215		160
2.5	105		85

< > represents vertical operation

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 16 and 10 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 2.5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 16 and 10 and 0.5G for Lead 5 and 0.3G for Lead 2.5 as 100%.
(Note) "—" represent operation not available.

Lead 16 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	5	4	4	3.5	1	1
140	5	4	4	3.5	1	1
280	5	4	4	3.5	1	1
420	5	4	4	3.5	1	1
560	5	4	4	3.5	1	1
700	4	2	2	1.5	1	1
800	—	1.5	—	—	—	—

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	8.5	7.5	7	7	1.5	1.5
175	8.5	7.5	7	7	1.5	1.5
350	8.5	7.5	7	6.5	1.5	1.5
435	8.5	4.5	3.5	3	1.5	1.5
525	4	3	—	—	—	—

Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	10.5	10	—	—	3.5	3
85	10.5	10	—	—	3.5	3
130	10.5	10	—	—	3.5	3
215	10.5	6	—	—	3.5	3
260	5	5	—	—	—	—

Lead 2.5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	12.5	—	—	—	4.5	—
40	12.5	—	—	—	4.5	—
85	12.5	—	—	—	4.5	—
105	12.5	—	—	—	4.5	—
135	6.5	—	—	—	—	—

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration for Lead 16 and 10 is 0.7G in the horizontal direction and 0.3G in the vertical direction.

The maximum acceleration/deceleration for Lead 5 and 2.5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.

Input in percentage [%] is to be set with 1G for Lead 16 and 10 and 0.5G for Lead 5 and 0.3G for Lead 2.5 as 100%.

(Note) "—" represent operation not available.

Lead 16 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	3	2.5	0.5
140	3	2.5	0.5
280	3	2.5	0.5
420	3	2.5	0.5
560	3	2	0.5
700	2	1.5	—

Lead 10 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	7	5.5	1.5
175	7	5.5	1.5
350	6.5	4	1
435	5	3.5	1

Lead 5 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	8.5	—	3
85	8.5	—	3
130	8.5	—	2
215	7	—	2

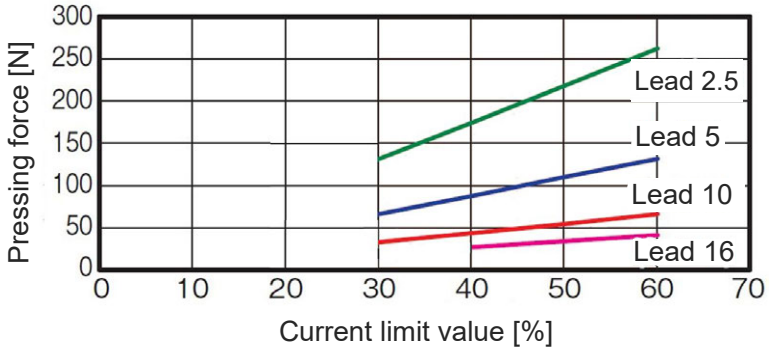
Lead 2.5 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	10	—	4.5
40	10	—	4.5
85	10	—	3.5
105	10	—	3.5

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 2.5 and 5, 30mm/s for Lead 10, and 40mm/s for Lead 16. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 60% range (40 to 60% for Lead 16).
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 2.5 and 5, 30mm/s or less for Lead 10 and 40mm/s or less for Lead 16, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 2.5 and 5, lower than 30mm/s for Lead 10 and lower than 40mm/s for Lead 16, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.3.2 EC-S4□BR

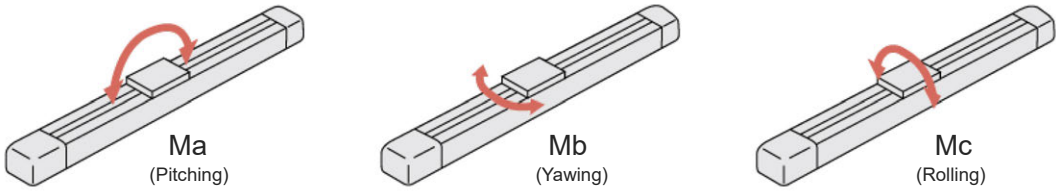
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ8mm, rolled C10
Positioning repeatability		±0.02mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 13.0N·m, Mb direction: 18.6N·m, Mc direction: 25.3N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 5.0N·m, Mb direction: 7.1N·m, Mc direction: 9.7N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 16: 1kgf Lead 10: 1.5kgf Lead 5: 3.5kgf Lead 2.5: 4.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□35) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

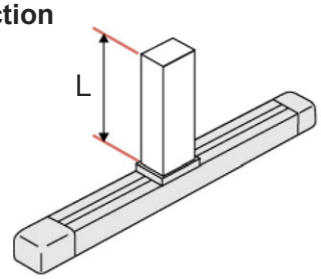
Moment direction



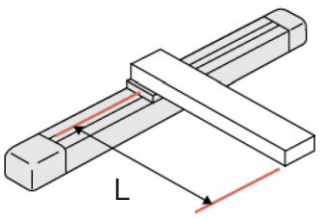
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

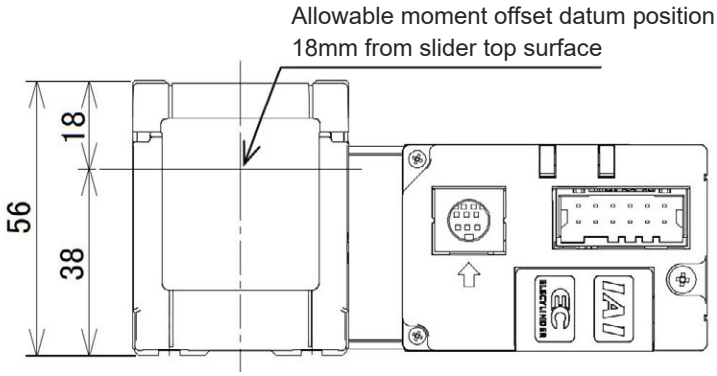


Mb/Mc direction



- Reference for Load Overhang Length (L = 150mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S4SBR	16	5	1	39
EC-S4HBR	10	8.5	1.5	62
EC-S4MBR	5	10.5	3.5	124
EC-S4LBR	2.5	12.5	4.5	263

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S4SBR	16	3	0.5	39
EC-S4HBR	10	7	1.5	62
EC-S4MBR	5	8.5	3	124
EC-S4LBR	2.5	10	4.5	263

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 40mm/s for Lead 16, 30mm/s for Lead 10, 7mm/s for Lead 5 and 4mm/s for Lead 2.5.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	50 to 200mm (Every 50mm)	250mm	300mm
16	800<700>	760<700>	540
10	525<435>	470<435>	320
5	260<215>	240<215>	160
2.5	135<105>	120<105>	85

< > represents vertical operation

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	50 to 200mm (Every 50mm)	250mm	300mm
16	700<560>		540
10	435		320
5	215		160
2.5	105		85

< > represents vertical operation

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 16 and 10 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 2.5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 16 and 10 and 0.5G for Lead 5 and 0.3G for Lead 2.5 as 100%.
(Note) "—" represent operation not available.

Lead 16 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	5	4	4	3.5	1	1
140	5	4	4	3.5	1	1
280	5	4	4	3.5	1	1
420	5	4	3.5	3	1	1
560	5	4	3	2	1	1
700	4	1.5	1.5	1	1	1
800	—	1	—	—	—	—

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	8.5	7.5	7	7	1.5	1.5
175	8.5	7.5	7	7	1.5	1.5
350	8.5	6.5	6.5	5	1.5	1.5
435	8.5	3.5	3	1.5	1.5	1.5
525	4	2	—	—	—	—

Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	10.5	10	—	—	3.5	3
85	10.5	10	—	—	3.5	3
130	10.5	10	—	—	3.5	3
215	10.5	6	—	—	3.5	3
260	5	5	—	—	—	—

Lead 2.5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	12.5	—	—	—	4.5	—
40	12.5	—	—	—	4.5	—
85	12.5	—	—	—	4.5	—
105	12.5	—	—	—	4.5	—
135	6.5	—	—	—	—	—

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration for Lead 16 and 10 is 0.7G in the horizontal direction and 0.3G in the vertical direction.

The maximum acceleration/deceleration for Lead 5 and 2.5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.

Input in percentage [%] is to be set with 1G for Lead 16 and 10 and 0.5G for Lead 5 and 0.3G for Lead 2.5 as 100%.

(Note) "—" represent operation not available.

Lead 16 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	3	2.5	0.5
140	3	2.5	0.5
280	3	2.5	0.5
420	3	2.5	0.5
560	3	2	0.5
700	2	1.5	—

Lead 10 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	7	5.5	1.5
175	7	5.5	1.5
350	6.5	4	1
435	5	3.5	1

Lead 5 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	8.5	—	3
85	8.5	—	3
130	8.5	—	2
215	7	—	2

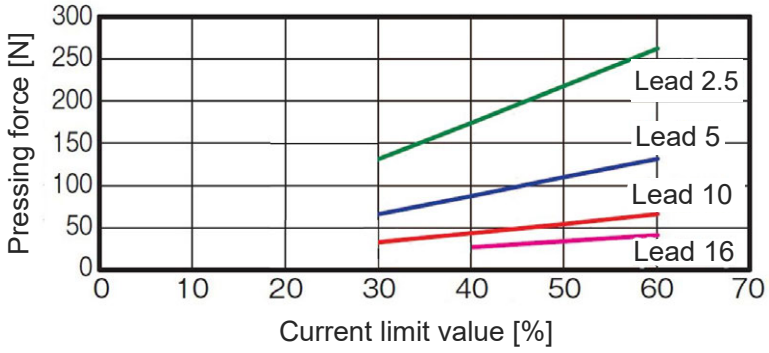
Lead 2.5 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	10	—	4.5
40	10	—	4.5
85	10	—	3.5
105	10	—	3.5

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 2.5 and 5, 30mm/s for Lead 10, and 40mm/s for Lead 16. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 60% range (40 to 60% for Lead 16).
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 2.5 and 5, 30mm/s or less for Lead 10 and 40mm/s or less for Lead 16, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 2.5 and 5, lower than 30mm/s for Lead 10 and lower than 40mm/s for Lead 16, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.3.3 EC-S4□AB

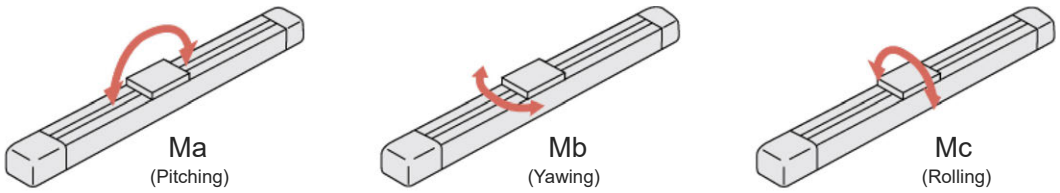
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ8mm, rolled C10
Positioning repeatability		±0.02mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 13.0N·m, Mb direction: 18.6N·m, Mc direction: 25.3N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 5.0N·m, Mb direction: 7.1N·m, Mc direction: 9.7N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 16: 1kgf Lead 10: 1.5kgf Lead 5: 3.5kgf Lead 2.5: 4.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□35) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

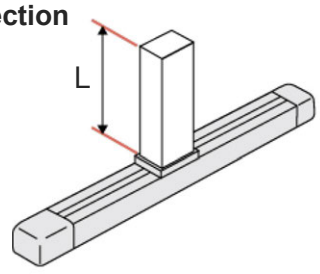
Moment direction



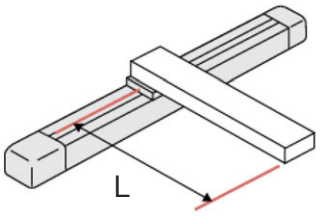
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

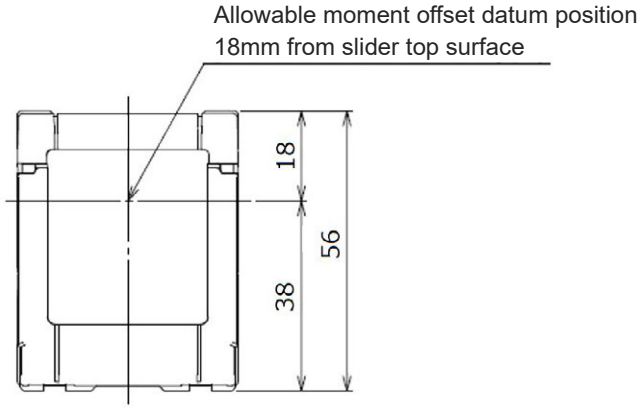


Mb/Mc direction



- Reference for Load Overhang Length (L = 150mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S4SAB	16	5	1	41
EC-S4HAB	10	8.5	1.5	66
EC-S4MAB	5	10.5	3.5	132
EC-S4LAB	2.5	12.5	4.5	263

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S4SAB	16	3	0.5	41
EC-S4HAB	10	7	1.5	66
EC-S4MAB	5	8.5	3	132
EC-S4LAB	2.5	10	4.5	263

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 40mm/s for Lead 16, 30mm/s for Lead 10, 7mm/s for Lead 5 and 4mm/s for Lead 2.5.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	250 to 500mm (Every 50mm)
16	800<700>
10	525<435>
5	260<215>
2.5	135<105>

< > represents vertical operation

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	250 to 500mm (Every 50mm)
16	700<560>
10	435
5	215
2.5	105

< > represents vertical operation

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 16 and 10 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 2.5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 16 and 10 and 0.5G for Lead 5 and 0.3G for Lead 2.5 as 100%.
(Note) "—" represent operation not available.

Lead 16 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	5	4	4	3.5	1	1
140	5	4	4	3.5	1	1
280	5	4	4	3.5	1	1
420	5	4	3.5	3	1	1
560	5	4	3	2	1	1
700	4	1.5	1.5	1	1	1
800	—	1	—	—	—	—

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	8.5	7.5	7	7	1.5	1.5
175	8.5	7.5	7	7	1.5	1.5
350	8.5	7	7	6.5	1.5	1.5
435	8.5	4.5	3	3	1.5	1.5
525	4	3	—	—	—	—

Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	10.5	10	—	—	3.5	3
85	10.5	10	—	—	3.5	3
130	10.5	10	—	—	3.5	3
215	10.5	6	—	—	3.5	3
260	5	5	—	—	—	—

Lead 2.5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	12.5	—	—	—	4.5	—
40	12.5	—	—	—	4.5	—
85	12.5	—	—	—	4.5	—
105	12.5	—	—	—	4.5	—
135	6.5	—	—	—	—	—

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration for Lead 16 and 10 is 0.7G in the horizontal direction and 0.3G in the vertical direction.

The maximum acceleration/deceleration for Lead 5 and 2.5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.

Input in percentage [%] is to be set with 1G for Lead 16 and 10 and 0.5G for Lead 5 and 0.3G for Lead 2.5 as 100%.

(Note) "—" represent operation not available.

Lead 16 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	3	2.5	0.5
140	3	2.5	0.5
280	3	2.5	0.5
420	3	2.5	0.5
560	3	2	0.5
700	2	1.5	—

Lead 10 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	7	5.5	1.5
175	7	5.5	1.5
350	6.5	4	1
435	5	3.5	1

Lead 5 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	8.5	—	3
85	8.5	—	3
130	8.5	—	2
215	7	—	2

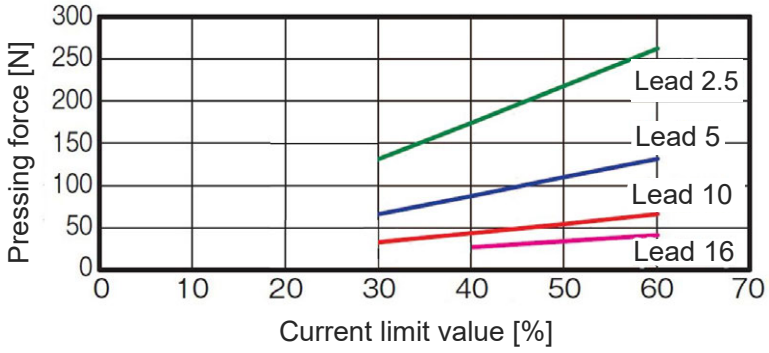
Lead 2.5 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	10	—	4.5
40	10	—	4.5
85	10	—	3.5
105	10	—	3.5

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 2.5 and 5, 30mm/s for Lead 10, and 40mm/s for Lead 16. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 60% range (40 to 60% for Lead 16).
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 2.5 and 5, 30mm/s or less for Lead 10 and 40mm/s or less for Lead 16, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 2.5 and 5, lower than 30mm/s for Lead 10 and lower than 40mm/s for Lead 16, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.3.4 EC-S4□ABR

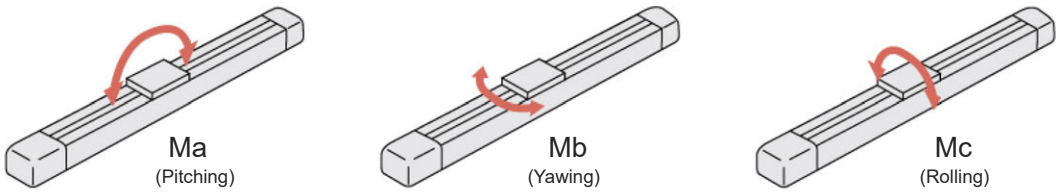
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ8mm, rolled C10
Positioning repeatability		±0.02mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 13.0N·m, Mb direction: 18.6N·m, Mc direction: 25.3N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 5.0N·m, Mb direction: 7.1N·m, Mc direction: 9.7N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 16: 1kgf Lead 10: 1.5kgf Lead 5: 3.5kgf Lead 2.5: 4.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□35) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

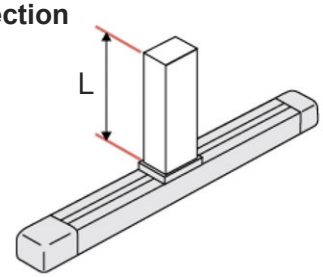
Moment direction



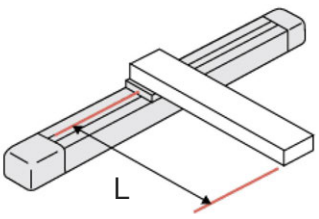
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

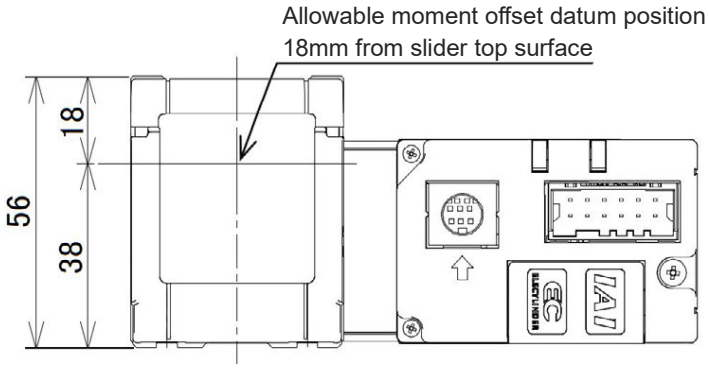


Mb/Mc direction



- Reference for Load Overhang Length (L = 150mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S4SABR	16	5	1	39
EC-S4HABR	10	8.5	1.5	62
EC-S4MABR	5	10.5	3.5	124
EC-S4LABR	2.5	12.5	4.5	263

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S4SABR	16	3	0.5	39
EC-S4HABR	10	7	1.5	62
EC-S4MABR	5	8.5	3	124
EC-S4LABR	2.5	10	4.5	263

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 40mm/s for Lead 16, 30mm/s for Lead 10, 7mm/s for Lead 5 and 4mm/s for Lead 2.5.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	250 to 500mm (Every 50mm)
16	800<700>
10	525<435>
5	260<215>
2.5	135<105>

< > represents vertical operation

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	250 to 500mm (Every 50mm)
16	700<560>
10	435
5	215
2.5	105

< > represents vertical operation

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 16 and 10 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 2.5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 16 and 10 and 0.5G for Lead 5 and 0.3G for Lead 2.5 as 100%.
(Note) "—" represent operation not available.

Lead 16 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	5	4	4	3.5	1	1
140	5	4	4	3.5	1	1
280	5	4	4	3.5	1	1
420	5	4	3.5	3	1	1
560	5	4	3	2	1	1
700	4	1.5	1.5	1	1	1
800	—	1	—	—	—	—

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	8.5	7.5	7	7	1.5	1.5
175	8.5	7.5	7	7	1.5	1.5
350	8.5	6.5	6.5	5	1.5	1.5
435	8.5	3.5	3	1.5	1.5	1.5
525	4	2.5	—	—	—	—

Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	10.5	10	—	—	3.5	3
85	10.5	10	—	—	3.5	3
130	10.5	10	—	—	3.5	3
215	10.5	6	—	—	3.5	3
260	5	5	—	—	—	—

Lead 2.5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	12.5	—	—	—	4.5	—
40	12.5	—	—	—	4.5	—
85	12.5	—	—	—	4.5	—
105	12.5	—	—	—	4.5	—
135	6.5	—	—	—	—	—

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration for Lead 16 and 10 is 0.7G in the horizontal direction and 0.3G in the vertical direction.

The maximum acceleration/deceleration for Lead 5 and 2.5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.

Input in percentage [%] is to be set with 1G for Lead 16 and 10 and 0.5G for Lead 5 and 0.3G for Lead 2.5 as 100%.

(Note) "—" represent operation not available.

Lead 16 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	3	2.5	0.5
140	3	2.5	0.5
280	3	2.5	0.5
420	3	2.5	0.5
560	3	2	0.5
700	2	1.5	—

Lead 10 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	7	5.5	1.5
175	7	5.5	1.5
350	6.5	4	1
435	5	2	0.5

Lead 5 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	8.5	—	3
85	8.5	—	3
130	8.5	—	2
215	7	—	2

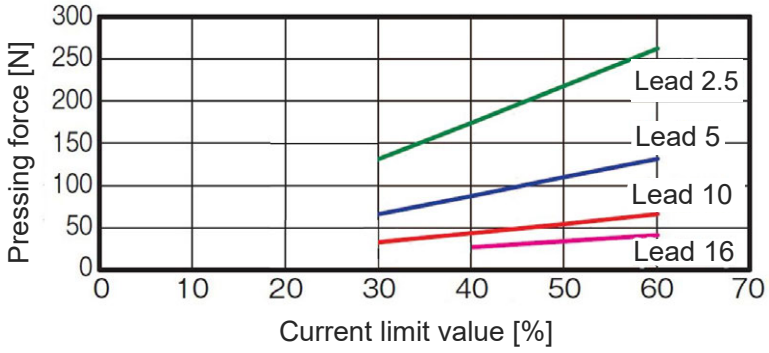
Lead 2.5 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	10	—	4.5
40	10	—	4.5
85	10	—	3.5
105	10	—	2

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 2.5 and 5, 30mm/s for Lead 10, and 40mm/s for Lead 16. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 60% range (40 to 60% for Lead 16).
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 2.5 and 5, 30mm/s or less for Lead 10 and 40mm/s or less for Lead 16, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 2.5 and 5, lower than 30mm/s for Lead 10 and lower than 40mm/s for Lead 16, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.4 Mechanical specifications: EC-S6

1.4.1 EC-S6□B

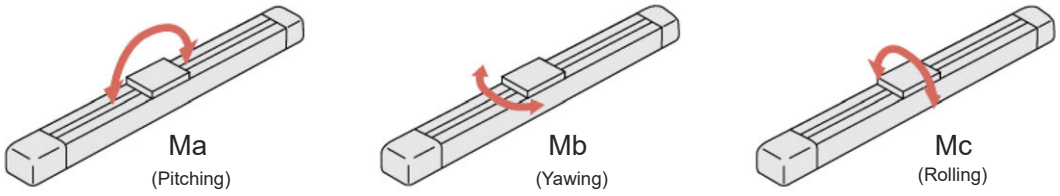
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ10mm, rolled C10
Positioning repeatability		Lead 3/6/12: ±0.02mm, Lead 20: ±0.03mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 48.5N·m, Mb direction: 69.3N·m, Mc direction: 97.1N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 11.6N·m, Mb direction: 16.6N·m, Mc direction: 23.3N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 20: 0.5kgf Lead 12: 1.5kgf Lead 6: 4kgf Lead 3: 8.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□42) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams.
Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

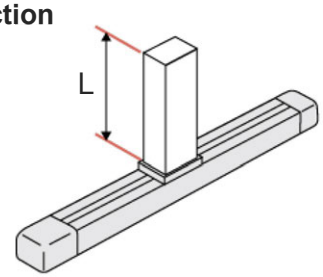
Moment direction



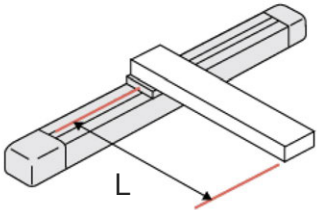
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

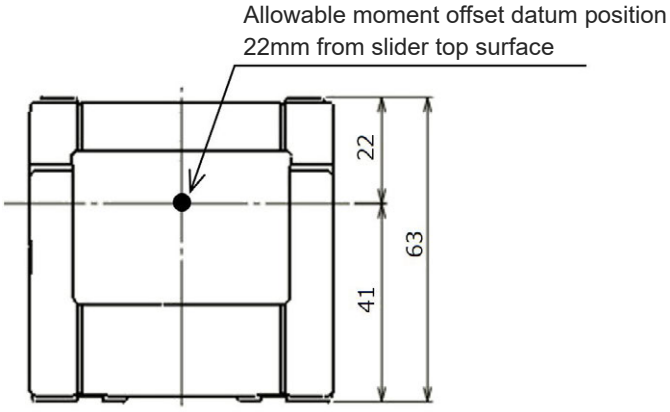


Mb/Mc direction



- Reference for Load Overhang Length (L = 220mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S6SB	20	10.5	0.5	67
EC-S6HB	12	18	1.5	112
EC-S6MB	6	22.5	4	224
EC-S6LB	3	28	8.5	449

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S6SB	20	5.5	0.5	67
EC-S6HB	12	10	1.5	112
EC-S6MB	6	14	3.5	224
EC-S6LB	3	17.5	7	449

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 25mm/s for Lead 20, 15mm/s for Lead 12, 8mm/s for Lead 6 and 4mm/s for Lead 3.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	50 to 300mm (Every 50mm)	350mm	400mm
20	800	727	566
12	440	392	305
6	220	199	155
3	110	100	78

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	50 to 300mm (Every 50mm)	350mm	400mm
20	800	727	566
12	440	392	305
6	220	199	155
3	110	100	78

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration is 1G in the horizontal direction and 0.5G in the vertical direction.
For percentage [%], input 1G is set as 100%.

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	10.5	7	5.5	5	0.5	0.5
160	10.5	7	5.5	5	0.5	0.5
320	8.5	7	5.5	4	0.5	0.5
480	8.5	6.5	5.5	4	0.5	0.5
640	8.5	5.5	4	3.5	0.5	0.5
800	7	4.5	3	2	0.5	0.5

Lead 12 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	18	12.5	11	10	1.5	1.5
80	18	12.5	11	10	1.5	1.5
200	18	12.5	11	10	1.5	1.5
320	18	12.5	10	8.5	1.5	1.5
440	18	12.5	8.5	7	1.5	1.5

Lead 6 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	22.5	18	17	14	4	4
40	22.5	18	17	14	4	4
100	22.5	18	17	14	4	4
160	22.5	18	17	14	4	4
220	22.5	18	17	14	4	4

Lead 3 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	28	24.5	24.5	24.5	8.5	8.5
50	28	24.5	24.5	24.5	8.5	8.5
80	28	24.5	24.5	21	8.5	8.5
110	28	24.5	24.5	21	8.5	8.5

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration is 0.7G in the horizontal direction and 0.3G in the vertical direction.

For percentage [%], input 1G is set as 100%.

Lead 20 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	5.5	3.5	0.5
160	5.5	3.5	0.5
320	5.5	3.5	0.5
480	5.5	2.5	0.5
640	4	2	0.5
800	3	1.5	0.5

Lead 12 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	10	7	1.5
80	10	7	1.5
200	10	7	1.5
320	10	7	1.5
440	7.5	5	1

Lead 6 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	14	10	3.5
40	14	10	3.5
100	14	10	3.5
160	14	10	3.5
220	11	10	3

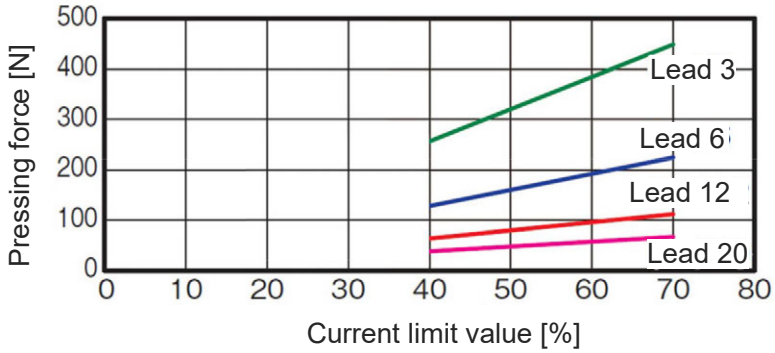
Lead 3 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	17.5	15.5	7
20	17.5	15.5	7
50	17.5	15.5	7
80	17.5	15.5	7
110	14	10	5.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 40 to 70% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.4.2 EC-S6□BR

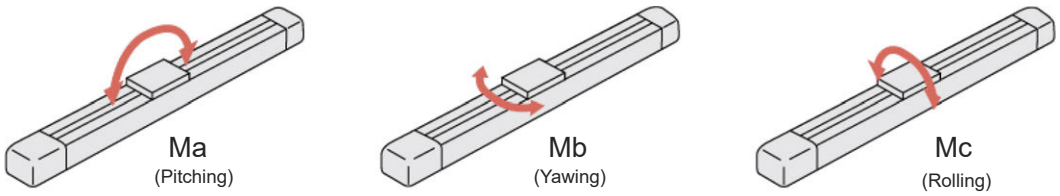
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ10mm, rolled C10
Positioning repeatability		Lead 3/6/12: ±0.02mm, Lead 20: ±0.03mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 48.5N·m, Mb direction: 69.3N·m, Mc direction: 97.1N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 11.6N·m, Mb direction: 16.6N·m, Mc direction: 23.3N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 20: 0.5kgf Lead 12: 1.5kgf Lead 6: 4kgf Lead 3: 8.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□42) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

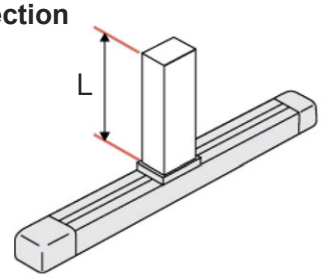
Moment direction



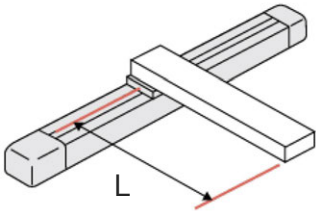
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

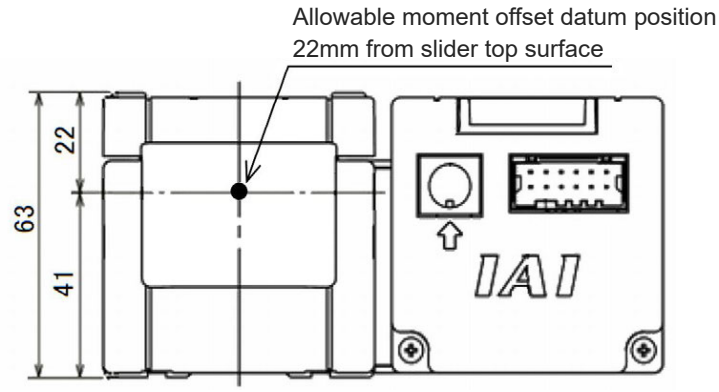


Mb/Mc direction



- Reference for Load Overhang Length (L = 220mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S6SBR	20	10.5	0.5	67
EC-S6HBR	12	18	1.5	112
EC-S6MBR	6	22.5	4	224
EC-S6LBR	3	28	8.5	449

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S6SBR	20	5.5	0.5	67
EC-S6HBR	12	10	1.5	112
EC-S6MBR	6	14	3.5	224
EC-S6LBR	3	17.5	7	449

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 25mm/s for Lead 20, 15mm/s for Lead 12, 8mm/s for Lead 6 and 4mm/s for Lead 3.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	50 to 300mm (Every 50mm)	350mm	400mm
20	800	727	566
12	440	392	305
6	220	199	155
3	110	100	78

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	50 to 300mm (Every 50mm)	350mm	400mm
20	800	727	566
12	440	392	305
6	220	199	155
3	110	100	78

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration is 1G in the horizontal direction and 0.5G in the vertical direction.
For percentage [%], input 1G is set as 100%.

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	10.5	7	5.5	5	0.5	0.5
160	10.5	7	5.5	5	0.5	0.5
320	8.5	7	5.5	4	0.5	0.5
480	8.5	6.5	5.5	4	0.5	0.5
640	8.5	4.5	4	3.5	0.5	0.5
800	6.5	3.5	3	2	0.5	0.5

Lead 12 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	18	12.5	11	10	1.5	1.5
80	18	12.5	11	10	1.5	1.5
200	18	12.5	11	10	1.5	1.5
320	18	12.5	10	8.5	1.5	1.5
440	18	12.5	8.5	6.5	1.5	1.5

Lead 6 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	22.5	18	17	14	4	4
40	22.5	18	17	14	4	4
100	22.5	18	17	14	4	4
160	22.5	18	17	14	4	4
220	22.5	18	17	14	4	4

Lead 3 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	28	24.5	24.5	24.5	8.5	8.5
50	28	24.5	24.5	24.5	8.5	8.5
80	28	24.5	24.5	21	8.5	8.5
110	28	24.5	24.5	21	8.5	8.5

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration is 0.7G in the horizontal direction and 0.3G in the vertical direction.

For percentage [%], input 1G is set as 100%.

(Note) "—" represent operation not available.

Lead 20 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	5.5	3.5	0.5
160	5.5	3.5	0.5
320	5.5	3.5	0.5
480	5.5	2	0.5
640	4	1.5	0.5
800	3	0.5	—

Lead 12 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	10	7	1.5
80	10	7	1.5
200	10	7	1.5
320	10	7	1.5
440	7.5	5	1

Lead 6 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	14	10	3.5
40	14	10	3.5
100	14	10	3.5
160	14	10	3.5
220	11	10	3

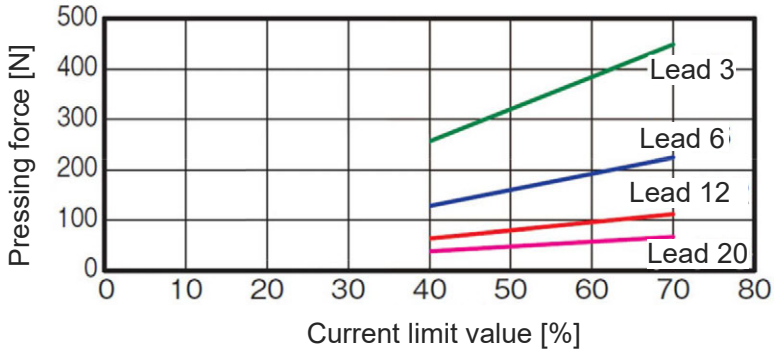
Lead 3 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	17.5	15.5	7
20	17.5	15.5	7
50	17.5	15.5	7
80	17.5	15.5	7
110	14	10	5.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 40 to 70% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.4.3 EC-S6□AB

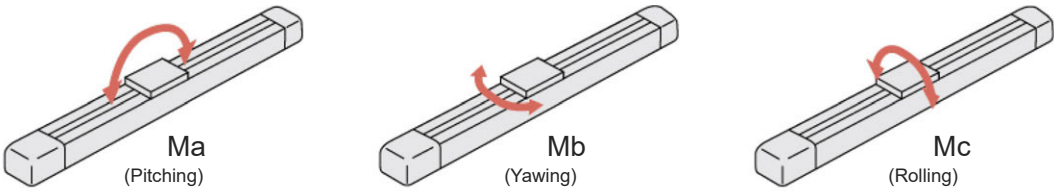
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ10mm, rolled C10
Positioning repeatability		Lead 3/6/12: ±0.02mm, Lead 20: ±0.03mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 48.5N·m, Mb direction: 69.3N·m, Mc direction: 97.1N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 11.6N·m, Mb direction: 16.6N·m, Mc direction: 23.3N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 20: 0.5kgf Lead 12: 1.5kgf Lead 6: 4kgf Lead 3: 8.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□42) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

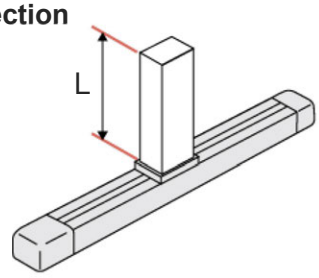
Moment direction



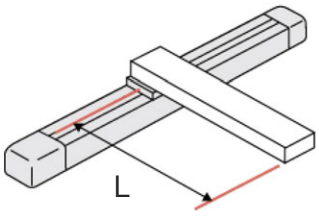
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

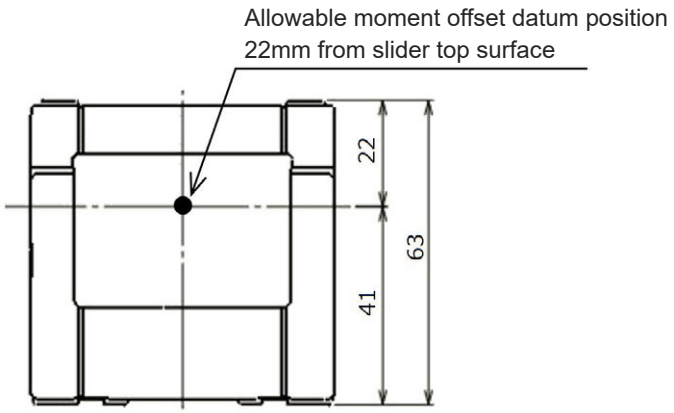


Mb/Mc direction



- Reference for Load Overhang Length (L = 220mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S6SAB	20	10.5	0.5	67
EC-S6HAB	12	18	1.5	112
EC-S6MAB	6	22.5	4	224
EC-S6LAB	3	28	8.5	449

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S6SAB	20	5.5	0.5	67
EC-S6HAB	12	10	1.5	112
EC-S6MAB	6	14	3.5	224
EC-S6LAB	3	17.5	7	449

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 25mm/s for Lead 20, 15mm/s for Lead 12, 8mm/s for Lead 6 and 4mm/s for Lead 3.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	250 to 650mm (Every 50mm)	700mm	750mm	800mm
20	800		700	620
12	440	430	380	330
6	220	210	180	160
3	110	105	90	80

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	250 to 650mm (Every 50mm)	700mm	750mm	800mm
20	800		700	620
12	440	430	380	330
6	220	210	180	160
3	110	105	90	80

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration is 1G in the horizontal direction and 0.5G in the vertical direction.
For percentage [%], input 1G is set as 100%.

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	10.5	7	5.5	5	0.5	0.5
160	10.5	7	5.5	5	0.5	0.5
320	8.5	7	5.5	4	0.5	0.5
480	8.5	6.5	5.5	4	0.5	0.5
640	8.5	5.5	4	3.5	0.5	0.5
800	7	4.5	3	2	0.5	0.5

Lead 12 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	18	12.5	11	10	1.5	1.5
80	18	12.5	11	10	1.5	1.5
200	18	12.5	11	10	1.5	1.5
320	18	12.5	10	8.5	1.5	1.5
440	18	12.5	8.5	7	1.5	1.5

Lead 6 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	22.5	18	17	14	4	4
40	22.5	18	17	14	4	4
100	22.5	18	17	14	4	4
160	22.5	18	17	14	4	4
220	22.5	18	17	14	4	4

Lead 3 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	28	24.5	24.5	24.5	8.5	8.5
50	28	24.5	24.5	24.5	8.5	8.5
80	28	24.5	24.5	21	8.5	8.5
110	28	24.5	24.5	21	8.5	8.5

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration is 0.7G in the horizontal direction and 0.3G in the vertical direction.

For percentage [%], input 1G is set as 100%.

Lead 20 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	5.5	3.5	0.5
160	5.5	3.5	0.5
320	5.5	3.5	0.5
480	5.5	2	0.5
640	4	1.5	0.5
800	3	0.5	0.5

Lead 12 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	10	7	1.5
80	10	7	1.5
200	10	7	1.5
320	10	7	1.5
440	7.5	5	1

Lead 6 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	14	10	3.5
40	14	10	3.5
100	14	10	3.5
160	14	10	3.5
220	11	10	3

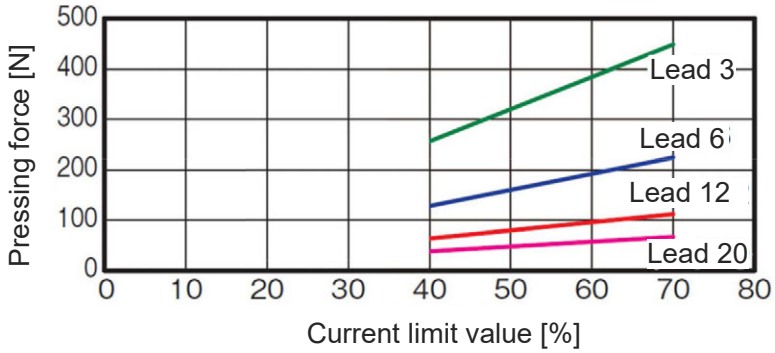
Lead 3 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	17.5	15.5	7
20	17.5	15.5	7
50	17.5	15.5	7
80	17.5	15.5	7
110	14	10	5.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 40 to 70% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.4.4 EC-S6□ABR

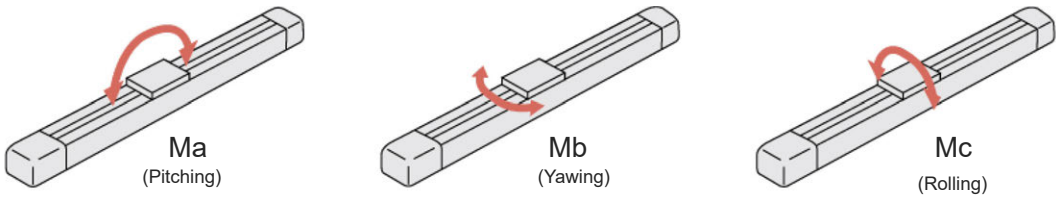
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ10mm, rolled C10
Positioning repeatability		Lead 3/6/12: ±0.02mm, Lead 20: ±0.03mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 48.5N·m, Mb direction: 69.3N·m, Mc direction: 97.1N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 11.6N·m, Mb direction: 16.6N·m, Mc direction: 23.3N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 20: 0.5kgf Lead 12: 1.5kgf Lead 6: 4kgf Lead 3: 8.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□42) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

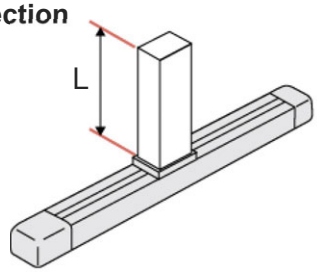
Moment direction



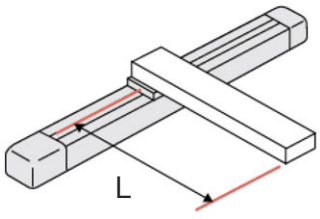
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

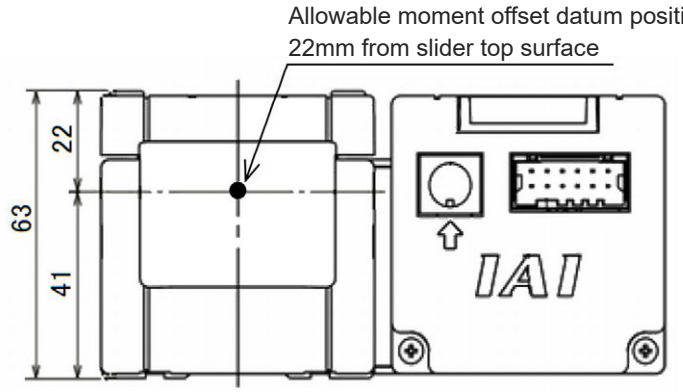


Mb/Mc direction



- Reference for Load Overhang Length (L = 220mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S6SABR	20	10.5	0.5	67
EC-S6HABR	12	18	1.5	112
EC-S6MABR	6	22.5	4	224
EC-S6LABR	3	28	8.5	449

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S6SABR	20	5.5	0.5	67
EC-S6HABR	12	10	1.5	112
EC-S6MABR	6	14	3.5	224
EC-S6LABR	3	17.5	7	449

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 25mm/s for Lead 20, 15mm/s for Lead 12, 8mm/s for Lead 6 and 4mm/s for Lead 3.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	250mm	300mm	350 to 650mm (Every 50mm)	700mm	750mm	800mm
20	—	—	800		700	620
12	—	440		430	380	330
6	220			210	180	160
3	110			105	90	80

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	250mm	300mm	350 to 650mm (Every 50mm)	700mm	750mm	800mm
20	—	—	800		700	620
12	—	440		430	380	330
6	220			210	180	160
3	110			105	90	80

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration is 1G in the horizontal direction and 0.5G in the vertical direction.
For percentage [%], input 1G is set as 100%.

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	10.5	7	5.5	5	0.5	0.5
160	10.5	7	5.5	5	0.5	0.5
320	8.5	7	5.5	4	0.5	0.5
480	8.5	6.5	5.5	4	0.5	0.5
640	8.5	4.5	4	3.5	0.5	0.5
800	6.5	3.5	3	2	0.5	0.5

Lead 12 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	18	12.5	11	10	1.5	1.5
80	18	12.5	11	10	1.5	1.5
200	18	12.5	11	10	1.5	1.5
320	18	12.5	10	8.5	1.5	1.5
440	18	12.5	8.5	6.5	1.5	1.5

Lead 6 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	22.5	18	17	14	4	4
40	22.5	18	17	14	4	4
100	22.5	18	17	14	4	4
160	22.5	18	17	14	4	4
220	22.5	18	17	14	4	4

Lead 3 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	28	24.5	24.5	24.5	8.5	8.5
50	28	24.5	24.5	24.5	8.5	8.5
80	28	24.5	24.5	21	8.5	8.5
110	28	24.5	24.5	21	8.5	8.5

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration is 0.7G in the horizontal direction and 0.3G in the vertical direction.

For percentage [%], input 1G is set as 100%.

(Note) "—" represent operation not available.

Lead 20 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	5.5	3.5	0.5
160	5.5	3.5	0.5
320	5.5	3.5	0.5
480	5.5	2	0.5
640	4	1.5	0.5
800	3	0.5	—

Lead 12 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	10	7	1.5
80	10	7	1.5
200	10	7	1.5
320	10	7	1.5
440	7.5	5	1

Lead 6 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	14	10	3.5
40	14	10	3.5
100	14	10	3.5
160	14	10	3.5
220	11	10	3

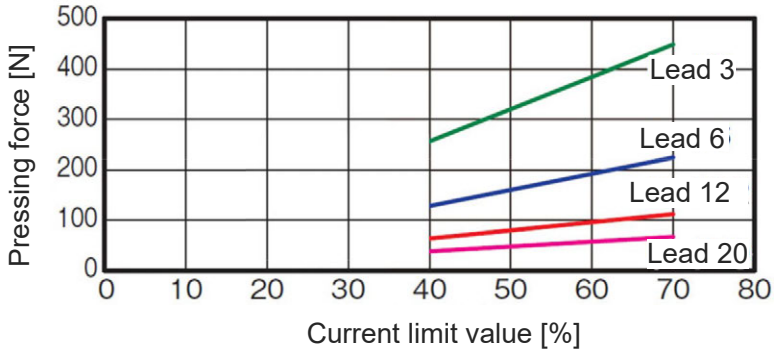
Lead 3 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	17.5	15.5	7
20	17.5	15.5	7
50	17.5	15.5	7
80	17.5	15.5	7
110	14	10	5.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 40 to 70% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.5 Mechanical specifications: EC-S7

1.5.1 EC-S7□B

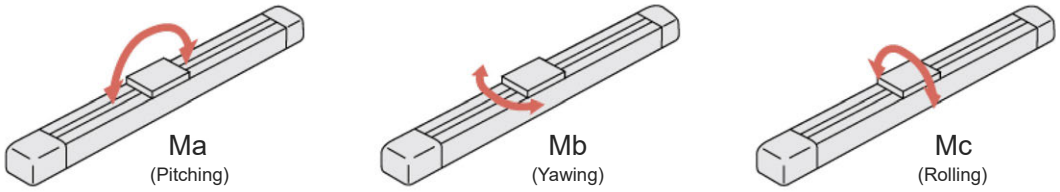
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ12mm, rolled C10
Positioning repeatability		Lead 4/8/16: ±0.02mm, Lead 24: ±0.03mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 79.7N·m, Mb direction: 114N·m, Mc direction: 157N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 17.7N·m, Mb direction: 25.3, Mc direction: 34.9N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 24: 2kgf Lead 16: 5.5kgf Lead 8: 11kgf Lead 4: 13.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□56) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams.
Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

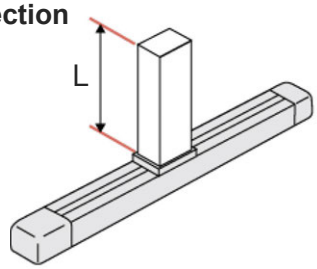
Moment direction



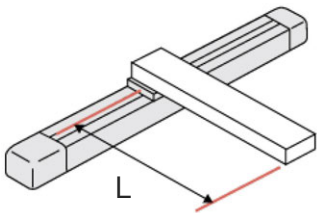
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

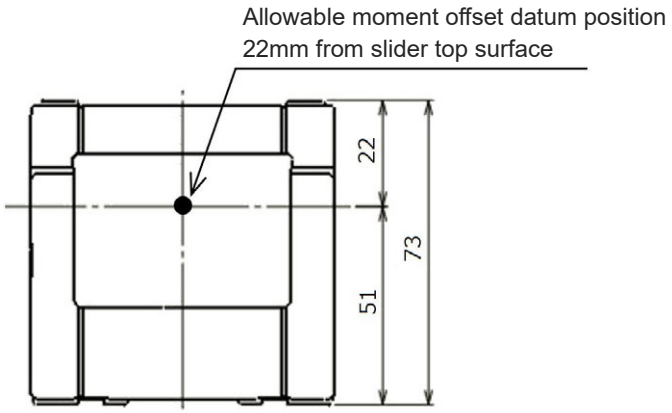


Mb/Mc direction



- Reference for Load Overhang Length (L = 280mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S7SB	24	26	2	139
EC-S7HB	16	32	5.5	209
EC-S7MB	8	35.5	11	418
EC-S7LB	4	35.5	13.5	836

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S7SB	24	12.5	1.5	139
EC-S7HB	16	24.5	3.5	209
EC-S7MB	8	28	7	418
EC-S7LB	4	28	10.5	836

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 30mm/s for Lead 24, 20mm/s for Lead 16, 10mm/s for Lead 8 and 5mm/s for Lead 4.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	50 to 300mm (Every 50mm)	350mm	400mm	450mm	500mm
24	860		774	619	506
16	700<560>	631<560>	492	395	323
8	350<280>	322<280>	251	200	164
4	175<140>	163<140>	126	101	83

< > represents vertical operation

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	50 to 300mm (Every 50mm)	350mm	400mm	450mm	500mm
24	800		774	619	506
16	560		492	395	323
8	280<210>		251<210>	200	164
4	105			101	83

< > represents vertical operation

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration is 1G in the horizontal direction and 0.5G in the vertical direction.
For percentage [%], input 1G is set as 100%.
(Note) "—" represent operation not available.

Lead 24 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	26	15.5	11	10	2	2
200	26	15.5	11	10	2	2
420	24	14	11	10	2	2
640	14	10.5	7	6.5	2	2
860	8.5	6.5	5	3	2	—

Lead 16 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	32	24.5	19.5	19	5.5	5.5
140	32	24.5	19.5	19	5.5	5.5
280	32	24.5	17.5	17	5.5	5.5
420	24	17.5	10.5	7	3.5	3
560	14	9.5	7	4	3	2
700	10.5	—	—	—	—	—

Lead 8 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	35.5	31.5	28	28	11	11
70	35.5	31.5	28	28	11	11
140	35.5	28	26.5	24.5	11	11
210	35.5	24.5	21	17	7	6.5
280	28	17.5	14	10.5	5.5	5
350	21	—	—	—	—	—

Lead 4 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	35.5	31.5	28	28	13.5	13.5
35	35.5	31.5	28	28	13.5	13.5
70	35.5	31.5	28	28	13.5	13.5
105	35.5	31.5	28	24.5	13.5	13.5
140	31.5	22	21	17.5	10	8.5
175	21	—	—	—	—	—

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration is 0.7G in the horizontal direction and 0.3G in the vertical direction.

For percentage [%], input 1G is set as 100%.

(Note) "—" represent operation not available.

Lead 24 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	12.5	7	1.5
200	12.5	7	1.5
420	12.5	7	1.5
640	7	1.5	0.5
800	3.5	0.5	0.5

Lead 16 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	24.5	14	3.5
140	24.5	14	3.5
280	17.5	8.5	2
420	10.5	4	1
560	5	0.5	0.5

Lead 8 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	28	17.5	7
70	28	17.5	7
140	28	17.5	5
210	17.5	10	3
280	7	—	—

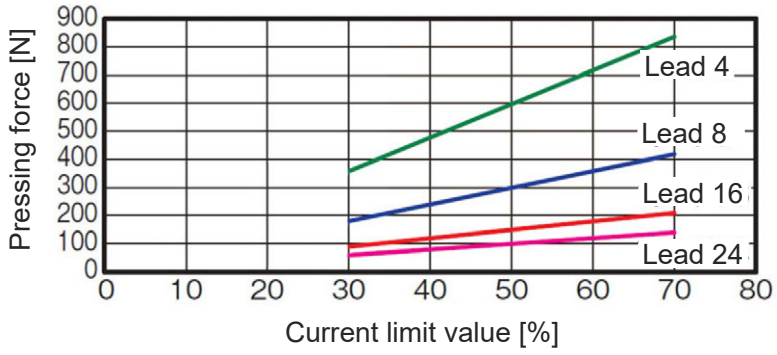
Lead 4 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	28	21	10.5
35	28	21	10.5
70	28	21	10.5
105	28	21	5.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 70% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.5.2 EC-S7□BR

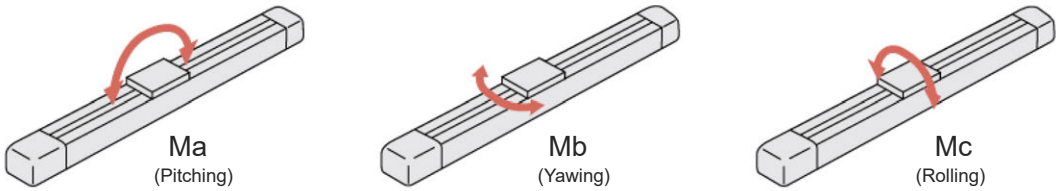
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ12mm, rolled C10
Positioning repeatability		Lead 4/8/16: ±0.02mm, Lead 24: ±0.03mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 79.7N·m, Mb direction: 114N·m, Mc direction: 157N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 17.7N·m, Mb direction: 25.3, Mc direction: 34.9N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 24: 2kgf Lead 16: 5.5kgf Lead 8: 11kgf Lead 4: 13.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s2
Motor type		Pulse motor (□56) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

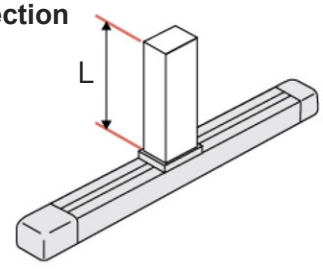
Moment direction



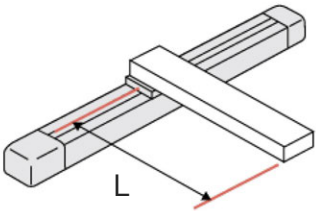
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

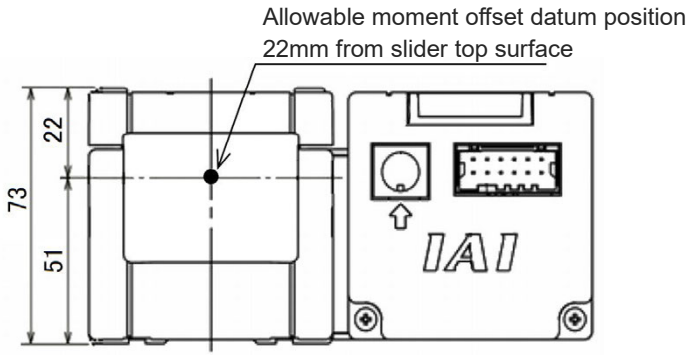


Mb/Mc direction



- Reference for Load Overhang Length (L = 280mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S7SBR	24	26	2	139
EC-S7HBR	16	32	5.5	209
EC-S7MBR	8	35.5	11	418
EC-S7LBR	4	35.5	13.5	836

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S7SBR	24	12.5	1.5	139
EC-S7HBR	16	24.5	3.5	209
EC-S7MBR	8	28	7	418
EC-S7LBR	4	28	10.5	836

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 30mm/s for Lead 24, 20mm/s for Lead 16, 10mm/s for Lead 8 and 5mm/s for Lead 4.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	50 to 300mm (Every 50mm)	350mm	400mm	450mm	500mm
24	860		774	619	506
16	700<560>	631<560>	492	395	323
8	320<280>		251	200	164
4	160<140>		126	101	83

< > represents vertical operation

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	50 to 300mm (Every 50mm)	350mm	400mm	450mm	500mm
24	800<640>		774<640>	619	506
16	560<500>		492	395	323
8	280<210>		251<210>	200	164
4	105			101	83

< > represents vertical operation

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration is 1G in the horizontal direction and 0.5G in the vertical direction.
For percentage [%], input 1G is set as 100%.
(Note) "—" represent operation not available.

Lead 24 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	26	15.5	11	10	2	2
200	26	15.5	11	10	2	2
420	24	14	11	10	2	2
640	12.5	9	6.5	5	2	2
860	6.5	3.5	3	2	1	—

Lead 16 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	32	24.5	19.5	19	5.5	5.5
140	32	24.5	19.5	19	5.5	5.5
280	32	24.5	17.5	17	5.5	5.5
420	24	17.5	10.5	7	3.5	3
560	14	9	5.5	4	2	1.5
700	7	—	—	—	—	—

Lead 8 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	35.5	31.5	28	28	11	11
70	35.5	31.5	28	28	11	11
140	35.5	28	26.5	24.5	11	11
210	35.5	24.5	21	17	7	6.5
280	25	12.5	10.5	10.5	5.5	5
320	14	—	—	—	—	—

Lead 4 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	35.5	31.5	28	28	13.5	13.5
35	35.5	31.5	28	28	13.5	13.5
70	35.5	31.5	28	28	13.5	13.5
105	35.5	31.5	28	24.5	13.5	13.5
140	31.5	22	21	17.5	8.5	8.5
160	21	—	—	—	—	—

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration is 0.7G in the horizontal direction and 0.3G in the vertical direction.

For percentage [%], input 1G is set as 100%.

(Note) "—" represent operation not available.

Lead 24 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	12.5	7	1.5
200	12.5	7	1.5
420	12.5	7	1.5
640	7	1.5	0.5
800	0.5	—	—

Lead 16 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	24.5	14	3.5
140	24.5	14	3.5
280	17.5	8.5	2
420	10.5	4	1
500	5	1	0.5
560	1.5	—	—

Lead 8 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	28	17.5	7
70	28	17.5	7
140	28	17.5	5
210	17.5	10	3
280	3.5	—	—

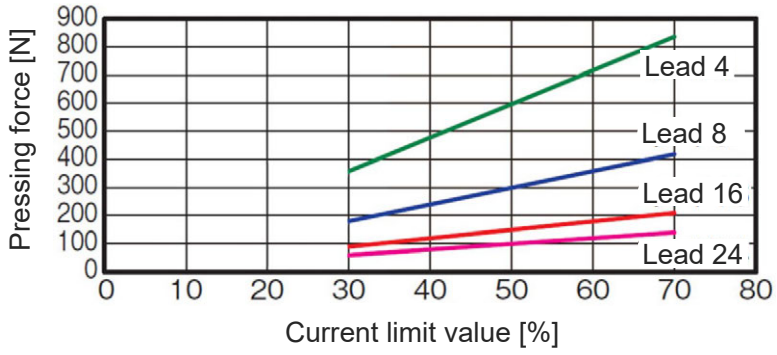
Lead 4 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	28	21	10.5
35	28	21	10.5
70	28	21	10.5
105	28	21	5.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 70% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.5.3 EC-S7□AB

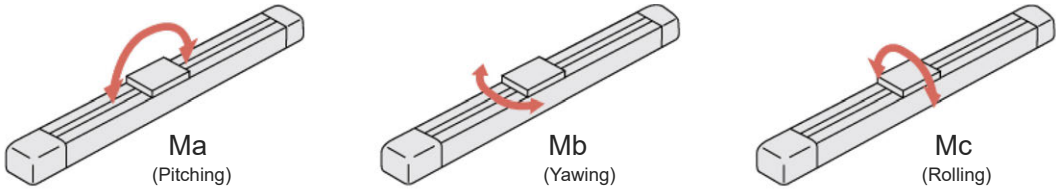
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ12mm, rolled C10
Positioning repeatability		Lead 4/8/16: ±0.02mm, Lead 24: ±0.03mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 79.7N·m, Mb direction: 114N·m, Mc direction: 157N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 17.7N·m, Mb direction: 25.3, Mc direction: 34.9N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 24: 2kgf Lead 16: 5.5kgf Lead 8: 11kgf Lead 4: 13.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□56) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

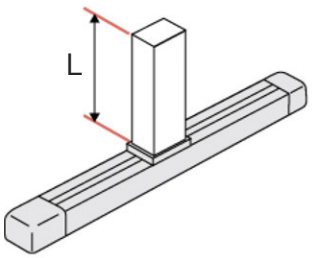
Moment direction



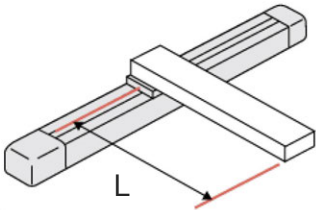
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

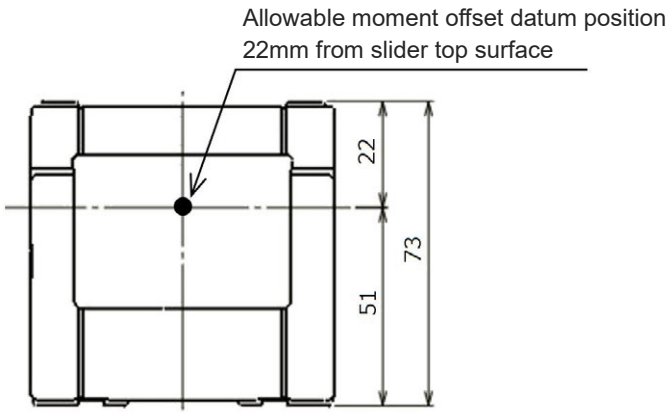


Mb/Mc direction



- Reference for Load Overhang Length (L = 280mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S7SAB	24	26	2	139
EC-S7HAB	16	32	5.5	209
EC-S7MAB	8	35.5	11	418
EC-S7LAB	4	35.5	13.5	836

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S7SAB	24	12.5	1.5	139
EC-S7HAB	16	24.5	3.5	209
EC-S7MAB	8	28	7	418
EC-S7LAB	4	28	10.5	836

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 30mm/s for Lead 24, 20mm/s for Lead 16, 10mm/s for Lead 8 and 5mm/s for Lead 4.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	350 to 600mm (Every 50mm)	650mm	700mm	750mm	800mm
24	860				
16	700<560>			620<560>	550
8	350<280>			305<280>	275
4	175<140>		170<140>	145<140>	125

< > represents vertical operation

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	350 to 600mm (Every 50mm)	650mm	700mm	750mm	800mm
24	800				
16	560				550
8	280<210>				275<210>
4	140<105>				125<105>

< > represents vertical operation

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration is 1G in the horizontal direction and 0.5G in the vertical direction.
For percentage [%], input 1G is set as 100%.
(Note) "—" represent operation not available.

Lead 24 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	26	15.5	11	10	2	2
200	26	15.5	11	10	2	2
420	24	14	11	10	2	2
640	14	10.5	7	6.5	2	2
860	8.5	6.5	5	3	2	—

Lead 16 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	32	24.5	19.5	19	5.5	5.5
140	32	24.5	19.5	19	5.5	5.5
280	32	24.5	17.5	17	5.5	5.5
420	24	17.5	10.5	7	3.5	3
560	14	9.5	7	4	3	2
700	10.5	—	—	—	—	—

Lead 8 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	35.5	31.5	28	28	11	11
70	35.5	31.5	28	28	11	11
140	35.5	28	26.5	24.5	11	11
210	35.5	24.5	21	17	7	6.5
280	28	17.5	14	10.5	5.5	5
350	21	—	—	—	—	—

Lead 4 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	35.5	31.5	28	28	13.5	13.5
35	35.5	31.5	28	28	13.5	13.5
70	35.5	31.5	28	28	13.5	13.5
105	35.5	31.5	28	24.5	13.5	13.5
140	31.5	22	21	17.5	10	8.5
175	21	—	—	—	—	—

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration is 0.7G in the horizontal direction and 0.3G in the vertical direction.

For percentage [%], input 1G is set as 100%.

(Note) "—" represent operation not available.

Lead 24 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	12.5	7	1.5
200	12.5	7	1.5
420	12.5	7	1.5
640	7	1.5	0.5
800	3.5	0.5	0.5

Lead 16 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	24.5	14	3.5
140	24.5	14	3.5
280	17.5	8.5	2
420	10.5	4	1
560	5	0.5	0.5

Lead 8 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	28	17.5	7
70	28	17.5	7
140	28	17.5	5
210	17.5	10	3
280	7	—	—

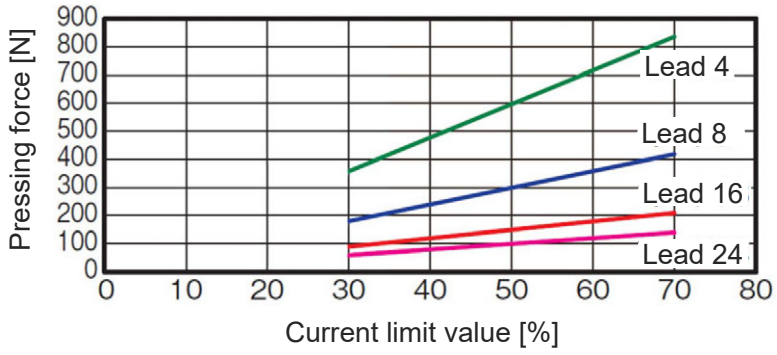
Lead 4 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	28	21	10.5
35	28	21	10.5
70	28	21	10.5
105	28	21	5.5
140	10.5	—	—

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 70% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.5.4 EC-S7□ABR

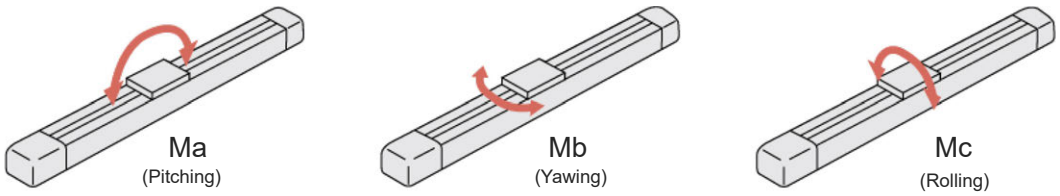
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ12mm, rolled C10
Positioning repeatability		Lead 4/8/16: ±0.02mm, Lead 24: ±0.03mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 79.7N·m, Mb direction: 114N·m, Mc direction: 157N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 17.7N·m, Mb direction: 25.3, Mc direction: 34.9N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 24: 2kgf Lead 16: 5.5kgf Lead 8: 11kgf Lead 4: 13.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□56) (Current Amperage: 4.2A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

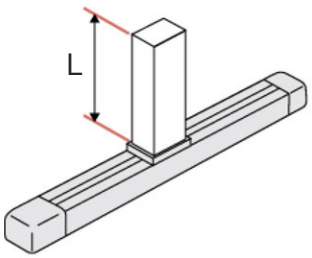
Moment direction



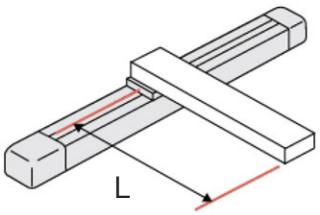
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

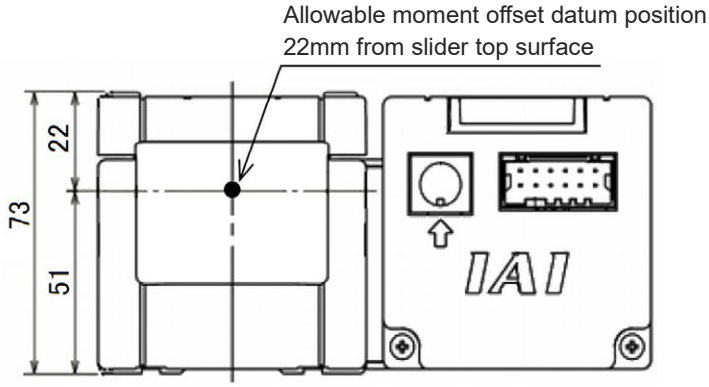


Mb/Mc direction



- Reference for Load Overhang Length (L = 280mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Energy-Saving Setting: Disabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S7SABR	24	26	2	139
EC-S7HABR	16	32	5.5	209
EC-S7MABR	8	35.5	11	418
EC-S7LABR	4	35.5	13.5	836

Energy-Saving Setting: Enabled

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S7SABR	24	12.5	1.5	139
EC-S7HABR	16	24.5	3.5	209
EC-S7MABR	8	28	7	418
EC-S7LABR	4	28	10.5	836

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 30mm/s for Lead 24, 20mm/s for Lead 16, 10mm/s for Lead 8 and 5mm/s for Lead 4.

Energy-Saving Setting: Disabled Max. Speed [mm/s]

Lead [mm]	350mm	400 to 650mm (Every 50mm)	700mm	750mm	800mm
24	—	860			
16	700<560>			620<560>	550
8	320<280>			305<280>	275
4	160<140>			145<140>	125

< > represents vertical operation

Energy-Saving Setting: Enabled Max. Speed [mm/s]

Lead [mm]	350mm	400 to 650mm (Every 50mm)	700mm	750mm	800mm
24	—	800<640>			
16	560<500>				550<500>
8	280<210>				275<210>
4	105				

< > represents vertical operation

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

Energy-Saving Setting: Disabled

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration is 1G in the horizontal direction and 0.5G in the vertical direction.
For percentage [%], input 1G is set as 100%.
(Note) "—" represent operation not available.

Lead 24 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	26	15.5	11	10	2	2
200	26	15.5	11	10	2	2
420	24	14	11	7.5	2	2
640	12.5	9	6.5	5	2	2
860	6.5	3.5	3	1.5	1	—

Lead 16 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	32	24.5	19.5	19	5.5	5.5
140	32	24.5	19.5	19	5.5	5.5
280	32	24.5	17.5	17	5.5	5.5
420	24	17.5	10.5	7	3.5	3
560	14	6.5	5.5	3.5	2	1.5
700	4	—	—	—	—	—

Lead 8 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	35.5	31.5	28	28	11	11
70	35.5	31.5	28	28	11	11
140	35.5	28	26.5	24.5	11	11
210	35.5	24.5	21	17	7	6.5
280	25	12.5	10.5	10.5	5	4
320	9	—	—	—	—	—

Lead 4 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	35.5	31.5	28	28	13.5	13.5
35	35.5	31.5	28	28	13.5	13.5
70	35.5	31.5	28	28	13.5	13.5
105	35.5	31.5	28	24.5	13.5	13.5
140	31.5	19	9	5.5	8.5	8.5
160	7	—	—	—	—	—

Energy-Saving Setting: Enabled

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

The maximum acceleration/deceleration is 0.7G in the horizontal direction and 0.3G in the vertical direction.

For percentage [%], input 1G is set as 100%.

(Note) "—" represent operation not available.

Lead 24 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	12.5	7	1.5
200	12.5	7	1.5
420	12.5	7	1.5
640	5	1.5	0.5
800	0.5	—	—

Lead 16 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	24.5	14	3.5
140	24.5	14	3.5
280	17.5	8.5	2
420	10.5	4	1
500	4	0.5	0.5
560	1.5	—	—

Lead 8 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	28	17.5	7
70	28	17.5	7
140	28	17.5	5
210	17.5	10	3
280	1.5	—	—

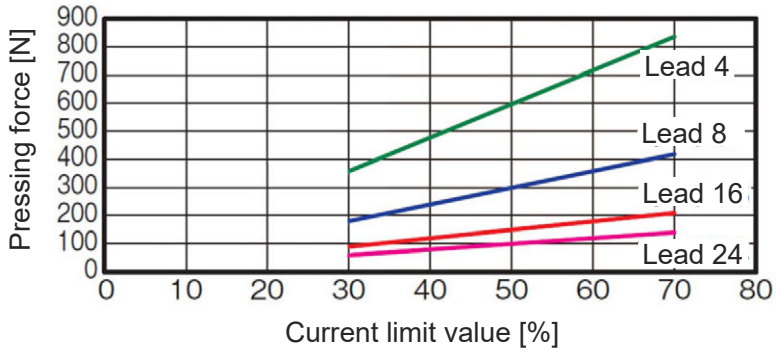
Lead 4 Payload [kg]

Orientation	Horizontal		Vertical
Speed [mm/s]	Acceleration [G]		
	0.3	0.7	0.3
0	28	21	10.5
35	28	21	10.5
70	28	21	10.5
105	28	17.5	5.5

[5] Correlation of pressing force and current limit value

Caution

- The relation of the current value and the pressing force is a guideline at speed of 20mm/s. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 70% range.
- When the approach speed up to the pressing start position is 20mm/s or less, pressing operation will take place at approach speed.
  When the pressing speed is less than 20mm/s, it may not satisfy the pressing force shown in the graph (reference). Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.6 Mechanical specifications: EC-S8

1.6.1 EC-S8□B

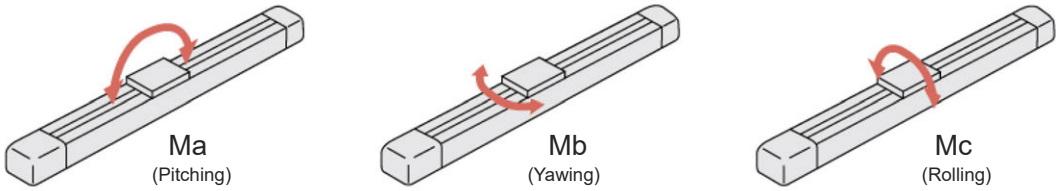
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ16mm, rolled C10
Positioning repeatability		Lead 5/10: ±0.02mm, Lead 20: ±0.03mm, Lead 30: ±0.04mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 173N·m, Mb direction: 173N·m, Mc direction: 271N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 61N·m, Mb direction: 61N·m, Mc direction: 116N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 30: 1.5kgf Lead 20: 3kgf Lead 10: 17.5kgf Lead 5: 38.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□56) (Current Amperage: 6A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams.
Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

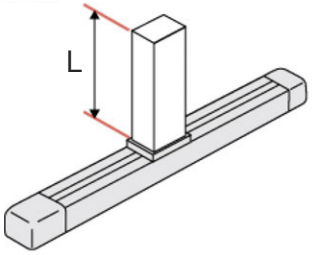
Moment direction



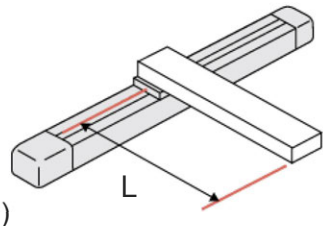
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

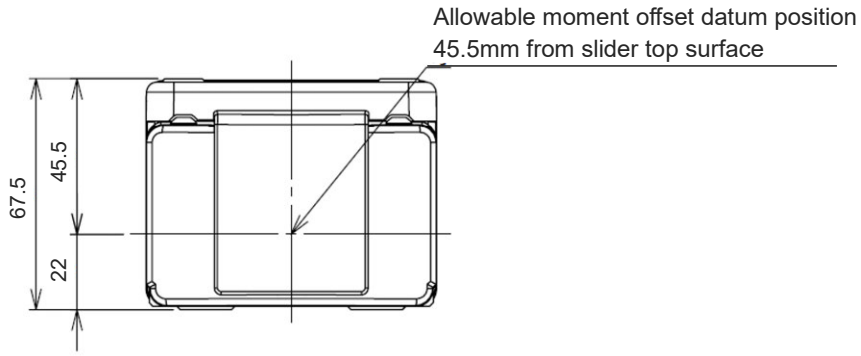


Mb/Mc direction



- Reference for Load Overhang Length (L = 400mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S8SB	30	16	1.5	78
EC-S8HB	20	24.5	3	103
EC-S8MB	10	49	17.5	235
EC-S8LB	5	56	38.5	470

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 38mm/s for Lead 30, 25mm/s for Lead 20, 13mm/s for Lead 10 and 7mm/s for Lead 5.

Max. Speed [mm/s]

Lead [mm]	50 to 400mm (Every 50mm)	450mm	500mm	550mm	600mm
30	650			645	550
20	400				370
10	300	280	225	185	180
5	135		110	90	90

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 30 and 20 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 10 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 30 and 20, 0.5G for Lead 10 and 0.3G for Lead 5 as 100%.
(Note) "—" represent operation not available.

Lead 30 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	16	11	9	8.5	1.5	1.5
200	16	11	9	8.5	1.5	1.5
400	14	11	9	7.5	0.5	0.5
650	12.5	9.5	6.5	5	0.5	0.5

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	24.5	21	17.5	17.5	3	3
200	24.5	21	17.5	17.5	3	3
300	24.5	21	17.5	16	3	3
400	24.5	19	12.5	12	0.5	0.5

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	49	49	—	—	17.5	17.5
100	49	49	—	—	17.5	17.5
200	45.5	35	—	—	14	14
300	42	19	—	—	6.5	6.5

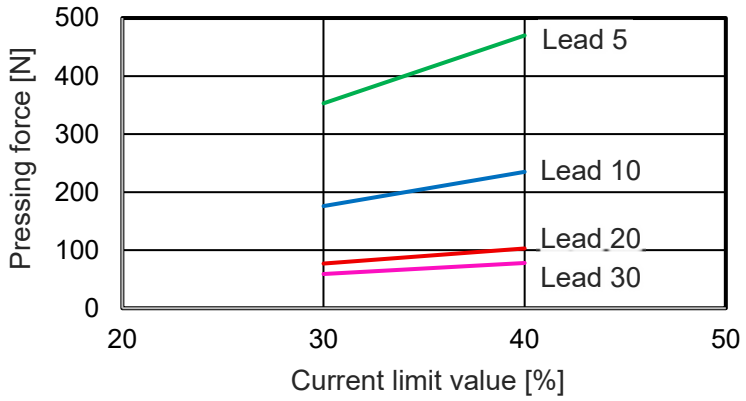
Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	56	—	—	—	38.5	—
50	56	—	—	—	38.5	—
75	56	—	—	—	21	—
135	56	—	—	—	12.5	—

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 5 and 10, 25mm/s for Lead 20, and 38mm/s for Lead 30. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 40% range.
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 5 and 10, 25mm/s or less for Lead 20 and 38mm/s or less for Lead 30, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 5 and 10, lower than 25mm/s for Lead 20 and lower than 38mm/s for Lead 30, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.6.2 EC-S8□BR

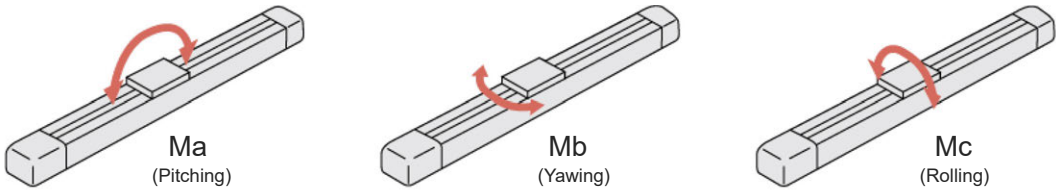
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ16mm, rolled C10
Positioning repeatability		Lead 5/10: ±0.02mm, Lead 20: ±0.03mm, Lead 30: ±0.04mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 173N·m, Mb direction: 173N·m, Mc direction: 271N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 61N·m, Mb direction: 61N·m, Mc direction: 116N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 30: 1.5kgf Lead 20: 3kgf Lead 10: 17.5kgf Lead 5: 38.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□56) (Current Amperage: 6A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

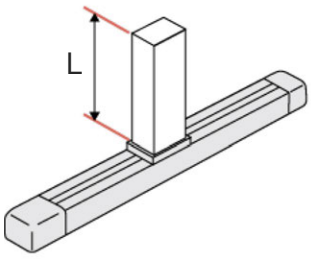
Moment direction



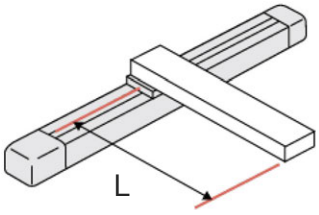
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

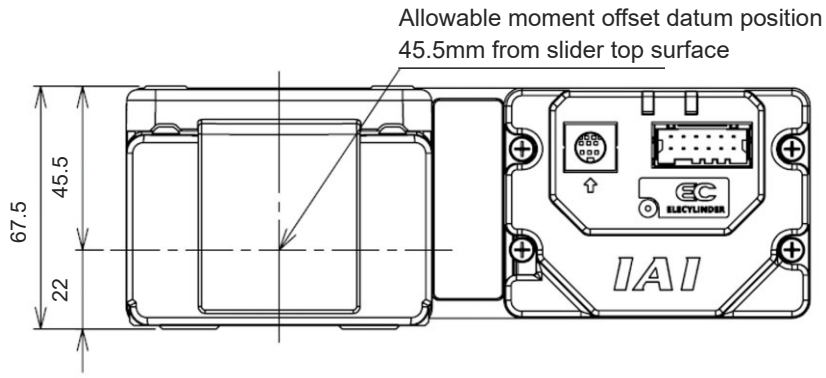


Mb/Mc direction



- Reference for Load Overhang Length (L = 400mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S8SBR	30	14	1.5	78
EC-S8HBR	20	24.5	3	103
EC-S8MBR	10	49	17.5	235
EC-S8LBR	5	56	38.5	470

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 38mm/s for Lead 30, 25mm/s for Lead 20, 13mm/s for Lead 10 and 7mm/s for Lead 5.

Max. Speed [mm/s]

Lead [mm]	50 to 400mm (Every 50mm)	450mm	500mm	550mm	600mm
30	650			645	550
20	400				370
10	300	280	225	185	180
5	135		110	90	90

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 30 and 20 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 10 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 30 and 20, 0.5G for Lead 10 and 0.3G for Lead 5 as 100%.
(Note) "—" represent operation not available.

Lead 30 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	14	11	9	8.5	1.5	1.5
200	14	11	9	8.5	1.5	1.5
400	14	9	8.5	7.5	0.5	0.5
650	10	6.5	5	5	0.5	0.5

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	24.5	17.5	17	17	3	3
200	24.5	17.5	17	17	3	3
300	24.5	17.5	17	11	3	3
400	24.5	14	10	7.5	0.5	0.5

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	49	49	—	—	17.5	17.5
100	49	49	—	—	17.5	17.5
200	42	35	—	—	10	10
300	31.5	19	—	—	5	5

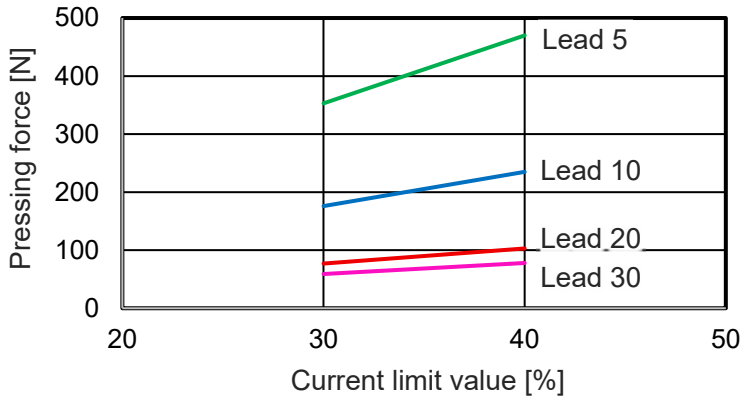
Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	56	—	—	—	38.5	—
50	56	—	—	—	38.5	—
75	56	—	—	—	21	—
135	56	—	—	—	12.5	—

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 5 and 10, 25mm/s for Lead 20, and 38mm/s for Lead 30. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 40% range.
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 5 and 10, 25mm/s or less for Lead 20 and 38mm/s or less for Lead 30, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 5 and 10, lower than 25mm/s for Lead 20 and lower than 38mm/s for Lead 30, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.6.3 EC-S8□AB

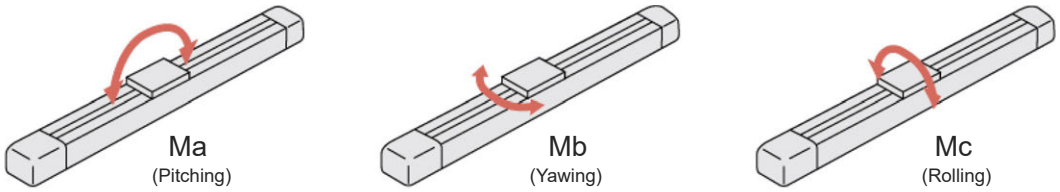
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ16mm, rolled C10
Positioning repeatability		Lead 5/10: ±0.02mm, Lead 20: ±0.03mm, Lead 30: ±0.04mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 173N·m, Mb direction: 173N·m, Mc direction: 271N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 61N·m, Mb direction: 61N·m, Mc direction: 116N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 30: 1.5kgf Lead 20: 3kgf Lead 10: 17.5kgf Lead 5: 38.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□56) (Current Amperage: 6A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

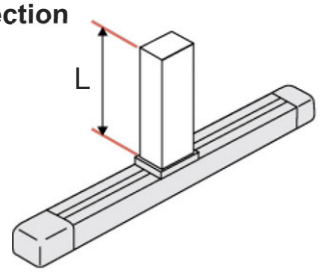
Moment direction



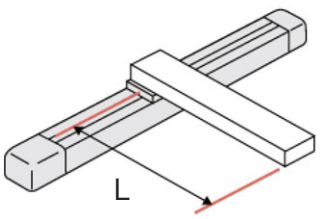
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

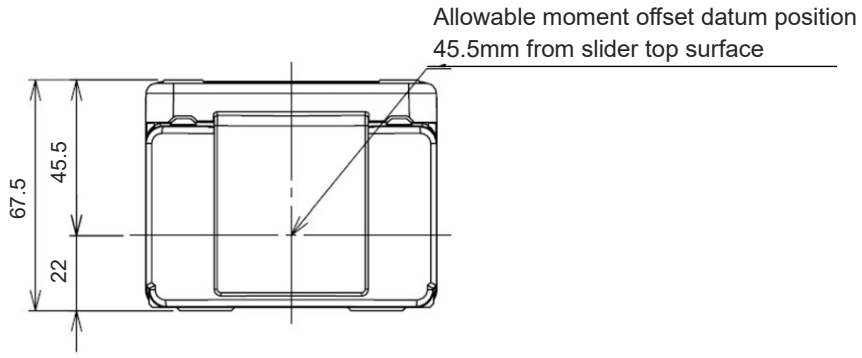


Mb/Mc direction



- Reference for Load Overhang Length (L = 400mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S8SAB	30	16	1.5	78
EC-S8HAB	20	21	3	103
EC-S8MAB	10	49	17.5	235
EC-S8LAB	5	56	38.5	470

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 38mm/s for Lead 30, 25mm/s for Lead 20, 13mm/s for Lead 10 and 7mm/s for Lead 5.

Max. Speed [mm/s]

Lead [mm]	350 to 900mm (Every 50mm)	950mm	1000mm	1050mm	1100mm
30	650				
20	400				
10	300	280	260	240	220
5	135		130	115	110

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 30 and 20 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 10 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 30 and 20, 0.5G for Lead 10 and 0.3G for Lead 5 as 100%.
(Note) "—" represent operation not available.

Lead 30 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	16	11	9	8.5	1.5	1.5
200	16	11	9	8.5	1.5	1.5
450	14	11	9	7.5	0.5	0.5
650	12.5	9.5	6.5	5	0.5	0.5

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	24.5	21	17.5	17.5	3	3
200	24.5	21	17.5	17.5	3	3
300	24.5	21	17.5	16	3	3
400	24.5	19	12.5	12	0.5	0.5

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	49	49	—	—	17.5	17.5
100	49	49	—	—	17.5	17.5
200	45.5	35	—	—	14	14
300	42	19	—	—	6.5	6.5

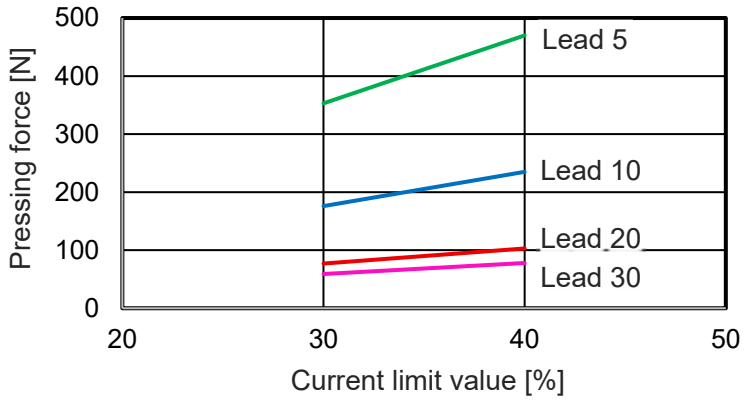
Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	56	—	—	—	38.5	—
50	56	—	—	—	38.5	—
75	56	—	—	—	21	—
135	56	—	—	—	12.5	—

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 5 and 10, 25mm/s for Lead 20, and 38mm/s for Lead 30. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 40% range.
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 5 and 10, 25mm/s or less for Lead 20 and 38mm/s or less for Lead 30, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 5 and 10, lower than 25mm/s for Lead 20 and lower than 38mm/s for Lead 30, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.6.4 EC-S8□ABR

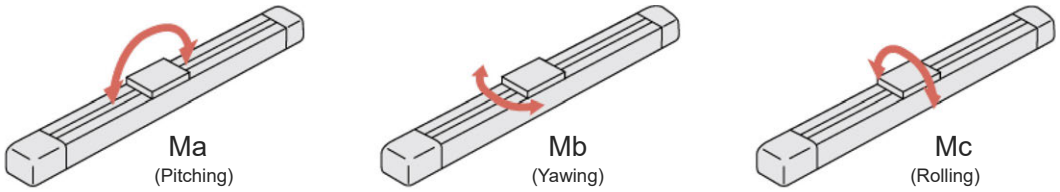
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ16mm, rolled C10
Positioning repeatability		Lead 5/10: ±0.02mm, Lead 20: ±0.03mm, Lead 30: ±0.04mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 173N·m, Mb direction: 173N·m, Mc direction: 271N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 61N·m, Mb direction: 61N·m, Mc direction: 116N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 30: 1.5kgf Lead 20: 3kgf Lead 10: 17.5kgf Lead 5: 38.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□56) (Current Amperage: 6A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

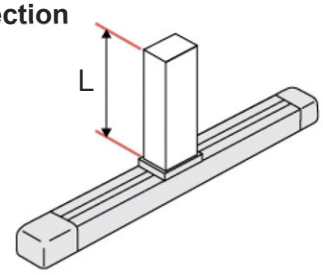
Moment direction



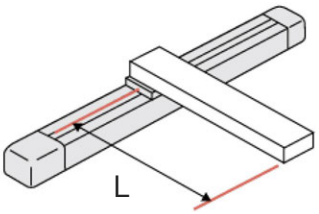
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

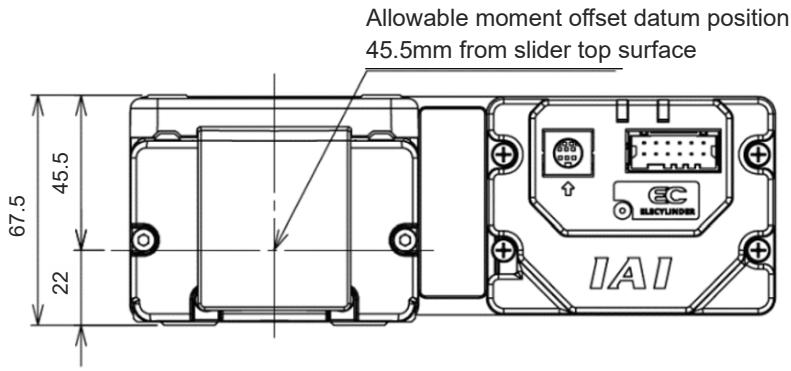


Mb/Mc direction



- Reference for Load Overhang Length (L = 400mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S8SABR	30	14	1.5	78
EC-S8HABR	20	24.5	3	108
EC-S8MABR	10	49	17.5	235
EC-S8LABR	5	56	38.5	470

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 38mm/s for Lead 30, 25mm/s for Lead 20, 13mm/s for Lead 10 and 7mm/s for Lead 5.

Max. Speed [mm/s]

Lead [mm]	350 to 900mm (Every 50mm)	950mm	1000mm	1050mm	1100mm
30	650				
20	400				
10	300	280	260	240	220
5	135		130	115	110

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 30 and 20 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 10 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 30 and 20, 0.5G for Lead 10 and 0.3G for Lead 5 as 100%.
(Note) "—" represent operation not available.

Lead 30 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	14	11	9	8.5	1.5	1.5
200	14	11	9	8.5	1.5	1.5
450	14	9	8.5	7.5	0.5	0.5
650	10	6.5	5	5	0.5	0.5

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	24.5	17.5	17.5	17.5	3	3
200	24.5	17.5	17.5	17.5	3	3
300	24.5	17.5	17	11	3	3
400	24.5	14	10	7.5	0.5	0.5

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	49	49	—	—	17.5	17.5
100	49	49	—	—	17.5	17.5
200	42	35	—	—	10	10
300	31.5	19	—	—	5	5

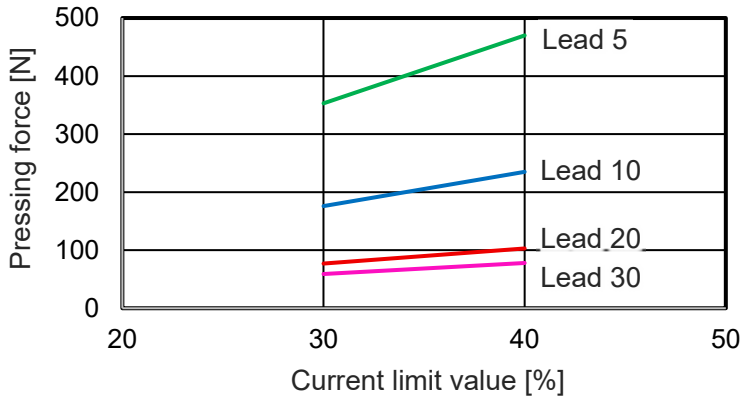
Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	56	—	—	—	38.5	—
50	56	—	—	—	38.5	—
75	56	—	—	—	21	—
135	56	—	—	—	12.5	—

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 5 and 10, 25mm/s for Lead 20, and 38mm/s for Lead 30. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 40% range.
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 5 and 10, 25mm/s or less for Lead 20 and 38mm/s or less for Lead 30, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 5 and 10, lower than 25mm/s for Lead 20 and lower than 38mm/s for Lead 30, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.6.5 EC-S8X□AB

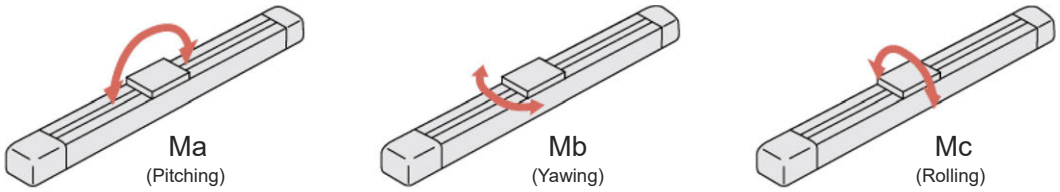
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ16mm, rolled C10
Positioning repeatability		Lead 5/10: ±0.02mm, Lead 20: ±0.03mm, Lead 30: ±0.04mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 173N·m, Mb direction: 173N·m, Mc direction: 271N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 61N·m, Mb direction: 61N·m, Mc direction: 116N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 30: 1.5kgf Lead 20: 3kgf Lead 10: 17.5kgf Lead 5: 38.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□56) (Current Amperage: 6A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

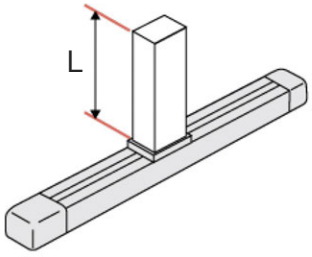
Moment direction



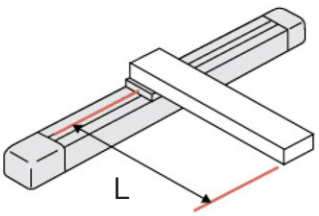
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

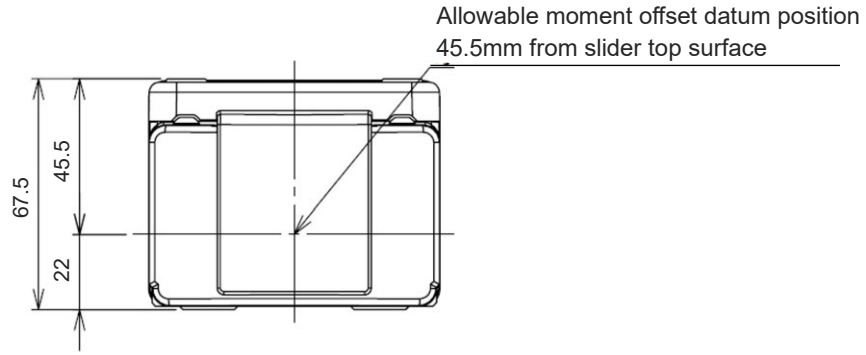


Mb/Mc direction



- Reference for Load Overhang Length (L = 400mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S8XSAB	30	12.5	1.5	78
EC-S8XHAB	20	24.5	3	103
EC-S8XMAB	10	49	17.5	235
EC-S8XLAB	5	56	38.5	470

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 38mm/s for Lead 30, 25mm/s for Lead 20, 13mm/s for Lead 10 and 7mm/s for Lead 5.

Max. Speed [mm/s]

Lead [mm]	700 to 1500 (Every 50mm)
30	650
20	400
10	300
5	135

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 30 and 20 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 10 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 30 and 20, 0.5G for Lead 10 and 0.3G for Lead 5 as 100%.
(Note) "—" represent operation not available.

Lead 30 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	12.5	9	8.5	8.5	1.5	1.5
200	12.5	9	8.5	8.5	1.5	1.5
400	12.5	9	8.5	8.5	1	0.5
650	12.5	8	6.5	5	0.5	0.5

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	24.5	21	17.5	17.5	3	3
200	24.5	21	17.5	17.5	3	3
300	24.5	21	17.5	16	3	3
400	24.5	19	12.5	12	0.5	0.5

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	49	49	—	—	17.5	17.5
100	49	49	—	—	17.5	17.5
200	45.5	35	—	—	14	14
300	42	19	—	—	6.5	6.5

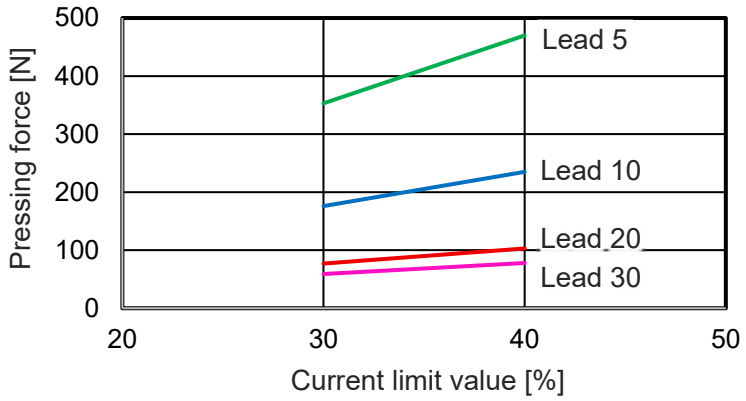
Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	56	—	—	—	38.5	—
50	56	—	—	—	38.5	—
75	56	—	—	—	21	—
135	56	—	—	—	12.5	—

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 5 and 10, 25mm/s for Lead 20, and 38mm/s for Lead 30. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 40% range.
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 5 and 10, 25mm/s or less for Lead 20 and 38mm/s or less for Lead 30, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 5 and 10, lower than 25mm/s for Lead 20 and lower than 38mm/s for Lead 30, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.



1.6.6 EC-S8X□ABR

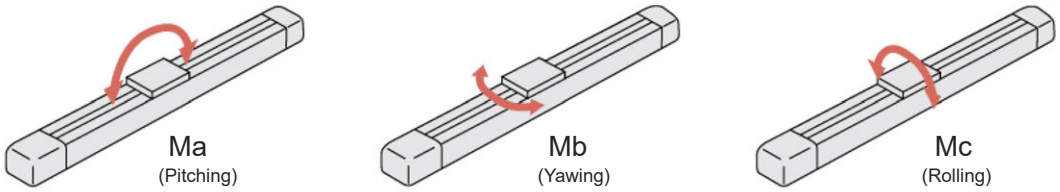
[1] Actuator Specifications

Item		Content
Drive system		Ball screw Φ16mm, rolled C10
Positioning repeatability		Lead 5/10: ±0.02mm, Lead 20: ±0.03mm, Lead 30: ±0.04mm
Lost motion		0.1mm or less
Linear guide		Linear Infinite Circulation System
Static allowable moment (Note 1)		Ma direction: 173N·m, Mb direction: 173N·m, Mc direction: 271N·m
Dynamic allowable moment (Note 1, 2)		Ma direction: 61N·m, Mb direction: 61N·m, Mc direction: 116N·m
Brake (option)	Specification	Non-excitation activating electromagnetic brake
	Holding force	Lead 30: 1.5kgf Lead 20: 3kgf Lead 10: 17.5kgf Lead 5: 38.5kgf
Ambient operating temperature/humidity		10 to 40°C, 85%RH or less (Non-condensing)
Degree of protection		IP20
Vibration and impact resistance		4.9m/s^2
Motor type		Pulse motor (□56) (Current Amperage: 6A max.)
Encoder type		Incremental / Battery-less absolute
Encoder pulse count		800pulse/rev

Note 1 Even if the load goes moment and the load overhang length are in the allowable ranges, abnormal vibration or noise may occur because of influence of the way of installing the main body or transported object or the stiffness of the overhang installation beams. Revise the conditions for operation in such cases.

Note 2 For reference rated life of 5,000km. The running life differs according to operation conditions and mounting status.

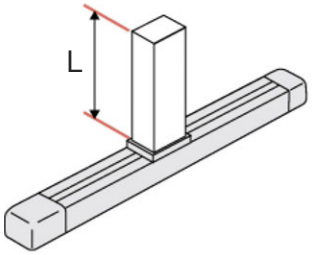
Moment direction



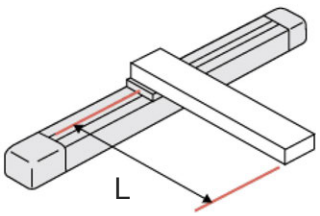
Load Overhang Length (L)

It is a reference for offset that enables an actuator to operate smoothly when a workpiece or bracket is offset from the actuator slider.

Ma direction

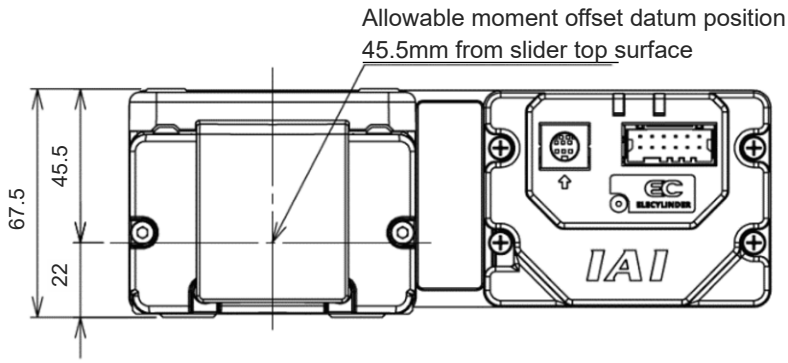


Mb/Mc direction



- Reference for Load Overhang Length (L = 400mm or less)

Allowable moment offset datum position



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 ELECYLINDER.
- Keep the mounted object center of gravity at or below 1/2 the overhang load length.

[2] Lead and Maximum payload

Model number	Lead [mm]	Maximum payload		Maximum pressing force [N]
		Horizontal [kg]	Vertical [kg]	
EC-S8XSABR	30	10	1.5	78
EC-S8XHABR	20	24.5	3	103
EC-S8XMABR	10	49	17.5	235
EC-S8XLABR	5	56	38.5	470

[3] Stroke and Max. Speed

Caution

- The maximum speed may not be achieved when the stroke or movement distance is short or when acceleration/deceleration is set low.
- Setting the lower less than speed the minimum speed may cause such concerns of generating abnormal noise or making the speed unstable.
- The lowest velocity should be 38mm/s for Lead 30, 25mm/s for Lead 20, 13mm/s for Lead 10 and 7mm/s for Lead 5.

Max. Speed [mm/s]

Lead [mm]	700 to 1500 (Every 50mm)
30	650
20	400
10	300
5	135

[4] Payload by Speed/Acceleration

Caution

- Do not attempt to configure settings for acceleration/deceleration above the allowable values.
  It may cause to generate vibration, malfunction or shorten the product life.

At low load capacity, the acceleration/deceleration can be increased.
The maximum acceleration/deceleration for Lead 30 and 20 is 1G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 10 is 0.5G in the horizontal direction and 0.5G in the vertical direction.
The maximum acceleration/deceleration for Lead 5 is 0.3G in the horizontal direction and 0.3G in the vertical direction.
Input in percentage [%] is to be set with 1G for Lead 30 and 20, 0.5G for Lead 10 and 0.3G for Lead 5 as 100%.
(Note) "—" represent operation not available.

Lead 30 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	10	9	8.5	8.5	1.5	1.5
200	10	9	8.5	8.5	1.5	1.5
400	10	9	8.5	7.5	1	0.5
650	10	6.5	5	5	0.5	0.5

Lead 20 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	24.5	17.5	17.5	17.5	3	3
200	24.5	17.5	17.5	17.5	3	3
300	24.5	17.5	17	11	3	3
400	24.5	14	10	7.5	0.5	0.5

Lead 10 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	49	49	—	—	17.5	17.5
100	49	49	—	—	17.5	17.5
200	42	35	—	—	10	10
300	31.5	19	—	—	5	5

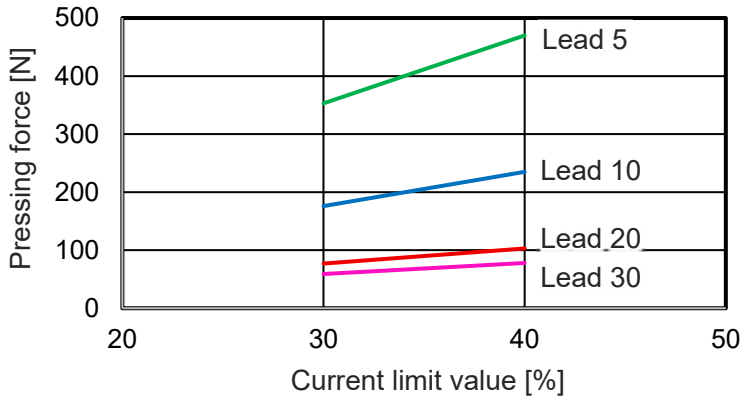
Lead 5 Payload [kg]

Orientation	Horizontal				Vertical	
Speed [mm/s]	Acceleration [G]					
	0.3	0.5	0.7	1	0.3	0.5
0	56	—	—	—	38.5	—
50	56	—	—	—	38.5	—
75	56	—	—	—	21	—
135	56	—	—	—	4	—

[5] Correlation of pressing force and current limit value

Caution

- The relation between the pressing force and current is a guideline for when pressing is performed in 20mm/s for Lead 5 and 10, 25mm/s for Lead 20, and 38mm/s for Lead 30. There is some variance in the actual pressing force. The variance increases when the current value is low.
- Set the current limit value in 30 to 40% range.
- When the approach speed up to the pressing start position is 20mm/s or less for Lead 5 and 10, 25mm/s or less for Lead 20 and 38mm/s or less for Lead 30, pressing operation will take place at approach speed.
  When the pressing speed is lower than 20mm/s for Lead 5 and 10, lower than 25mm/s for Lead 20 and lower than 38mm/s for Lead 30, the pressing force shown in the graph (reference) should not be able to gain. Confirm in advance that there is no problem in the pressing force.
- Calculate the recoil moment generated by the pressing force when performing pressing operation with the slider type.
  For the offset datum position, refer to [[1] Actuator Specifications].
  Configure the current limit value to ensure that the recoil moment does not exceed the (Ma/Mb) dynamic allowable moment.

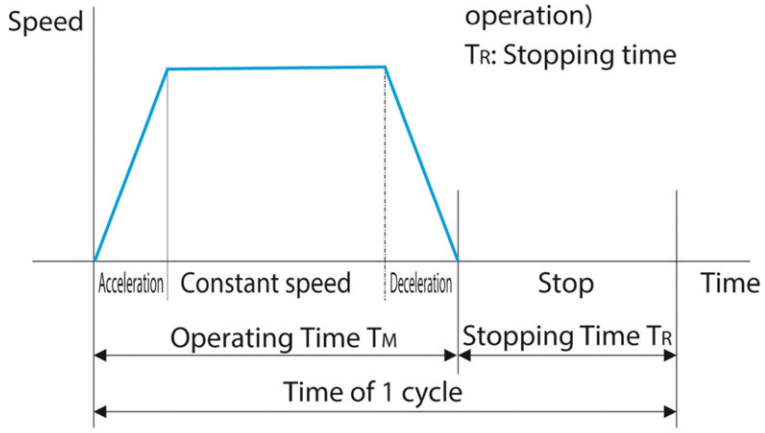


1.7 Duty ratio

The duty ratio is the operating rate, shown in percentage [%], of the actuator operating time within one cycle.

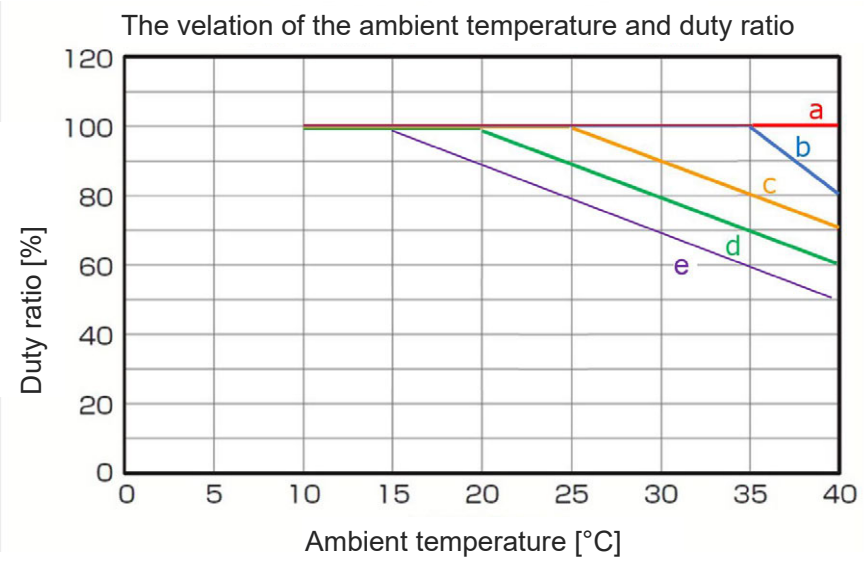
$$D = \frac{T_M}{T_M + T_R} \times 100\ [\%]$$

D: Duty ratio
T_M: Operating time (including push-motion operation)
T_R: Stopping time



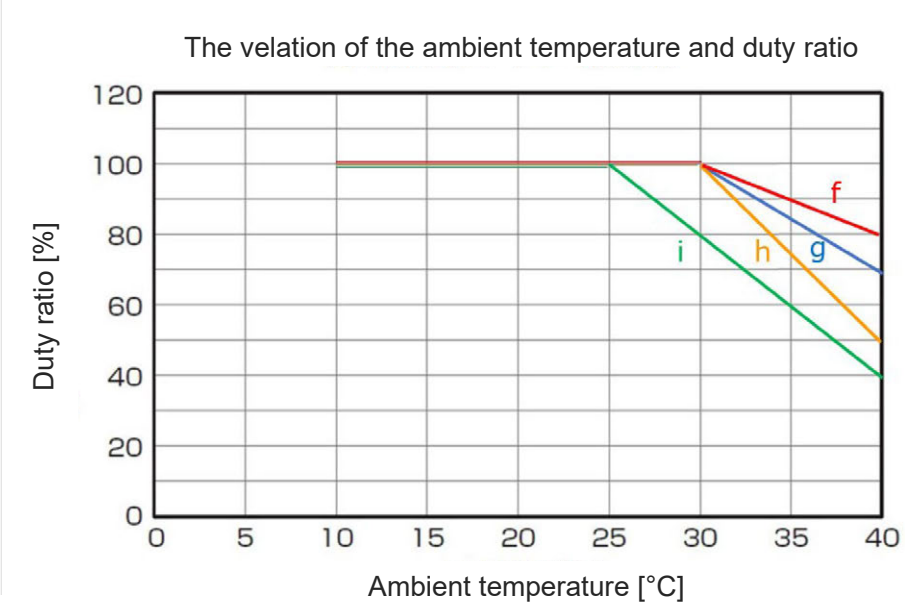
There is a limitation to the duty ratio depending on models as the graph in the next page shows. Use so that the duty ratio falls within the specified conditions based on ambient temperature.

Duty Ratio Limitation in S3/S4/S6/S7 Type



a		EC-S3□B/S3□BR/S3□AB/S3□ABR/S4□B/S4□AB
b		EC-S6□B/S7□B
c		EC-S6□AB
d		EC-S4□BR/S4□ABR/S6□BR/S7□BR/S7□AB
e		EC-S6□ABR/S7□ABR

Duty Ratio Limitation in S8 Type



f		EC-S8□B/S8□AB
g		EC-S8X□AB

h		EC-S8□BR/S8□ABR
i		EC-S8X□ABR

1.8 Options

1.8.1 RCON-EC connection specification (Model: ACR)

It is an option to be selected when connection is established in the field network via R-unit.

* By selecting this option, because the power supply gets 2 circuits and the input and output specification gets fixed at NPN, it cannot be used in parallel with TMD2 and PN options.

1.8.2 With brake (Model: B)

It is a feature to retain a slider from moving when the power or servo gets turned off.
This option is necessary when an actuator is installed in the vertical orientation.

1.8.3 Foot bracket (Model: FT)

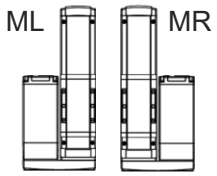
This bracket is used for fixing the actuator body from the top with bolts.
* Refer to [2.3.6 Body Mounting] for details.

1.8.4 3 position mode specification (Model: MF)

This is an option that enables 3-point positioning (intermediate stop).
For details, refer to the separate volume [an instruction manual of ELECYLINDER 3 position mode specification (ME3837)].

1.8.5 Motor reversed direction (Model: ML, MR)

The orientation to reverse a motor should be indicated in the motor reversed type.
Viewing from the rear side, reversing on the left is ML and reversing on the right is MR.

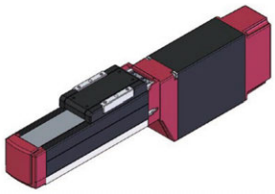


1.8.6 Motor ejecting orientation changed (Model: MOB, MOL, MOR, MOT)

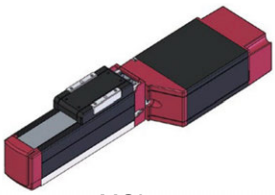
Applicable Models: EC-S3□B/S4□B/S3□AB/S4□AB

The orientation to install a motor can be selected from the four orientations, bottom / left / right / top.

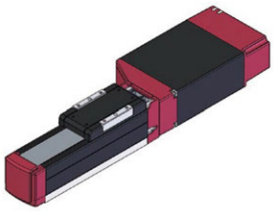
* Make sure to describe one on the symbols in the model code.



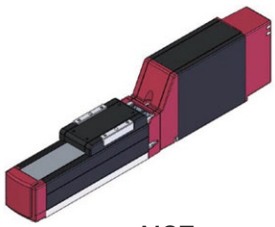
MOB
(Bottom side install)



MOL
(Left side install)



MOR
(Right side install)



MOT
(Top side install)

1.8.7 Home reverse specification (Model: NM)

Although the home position is set on the motor side in normal, when it is required to set on the other side due to the layout of the equipment and so on, the orientation of the home position can be set opposite in the option.

1.8.8 PNP specification (Model: PN)

I/O input/output specifications are NPN specification as standard.

Specifying this option changes the unit to PNP specification.

* It cannot be selected together with ACR Option.

1.8.9 Slider part roller type (Model: SR)

The slider structure of the standard slider type is to be changed to the roller structure same as that for the cleanroom type.

Setting it to the slider part roller type, and the appearance and dimensions of the slider cover should be the same as the cleanroom type.

1.8.10 2-circuit power supply specification (Model: TMD2)

It is an option equipped with the operation stop input of an actuator.

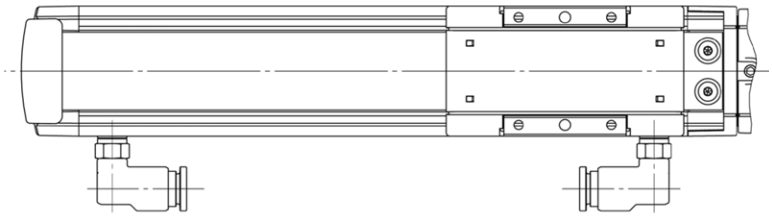
Select this option when it is required to cut off only the drive power source of an actuator.

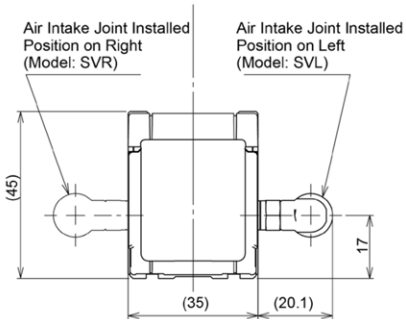
* It cannot be selected together with ACR Option.

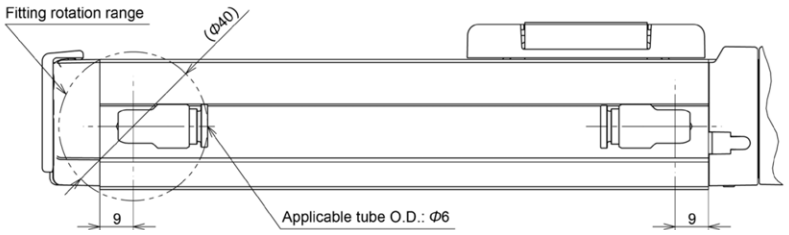
1.8.11 Stainless Steel Suction Joint Mounted Specification (Model: SVL, SVR)

Mount the stainless steel suction joint for air intake on the side of the base (EC-S8 side cover).
When viewed from the motor side, install the SVL on the left side of the main unit and the SVR on the right side.
For the motor reversed specification, the joint installation position can be selected only on the side opposite to the motor reversed direction.
-ML-SVR, -MR-SVL

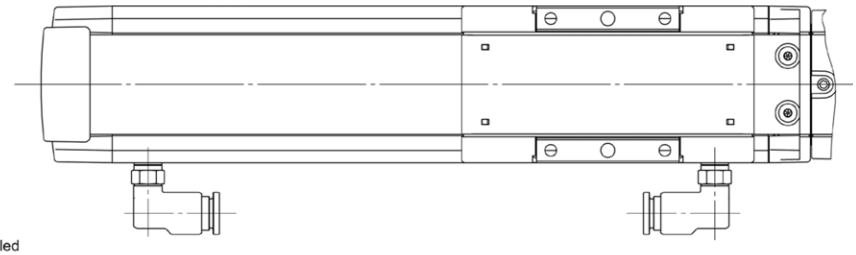
■ EC-S3□(A)B(R)

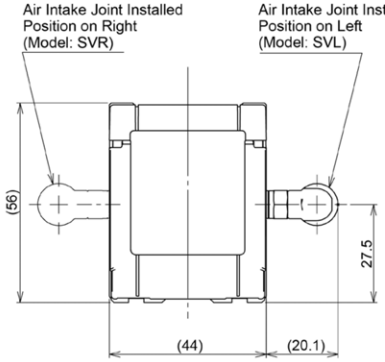


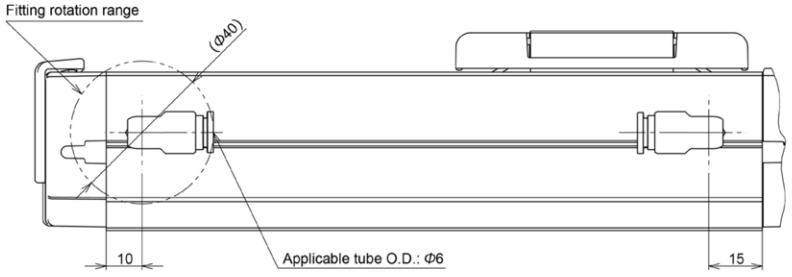




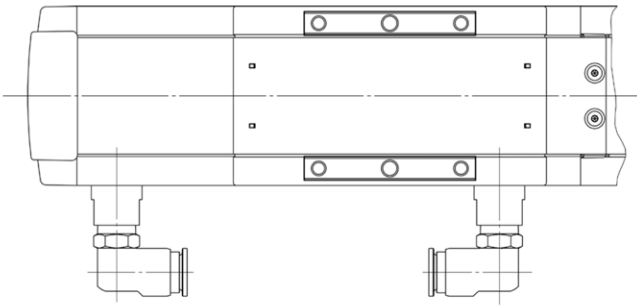
■ EC-S4□(A)B(R)

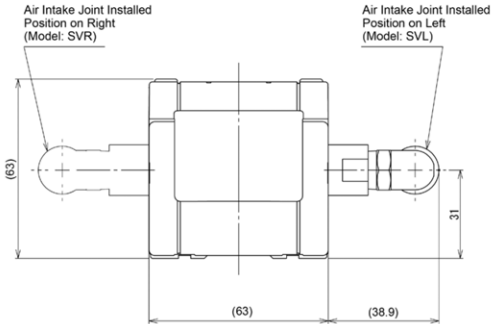


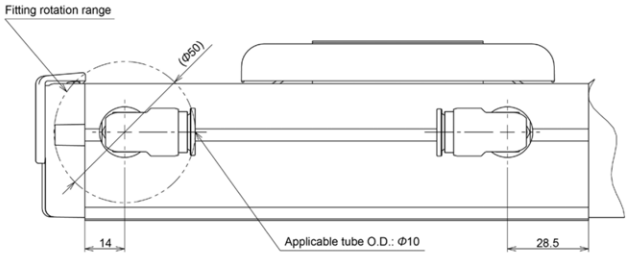




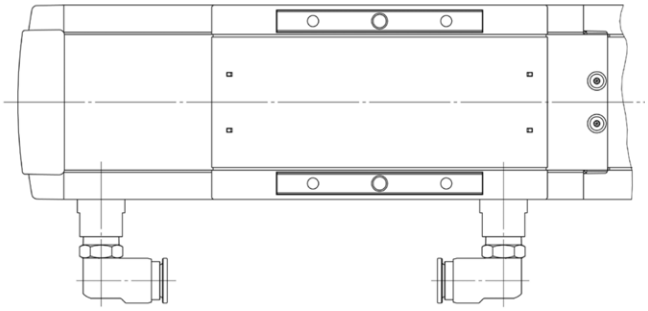
■ EC-S6□(A)B(R)

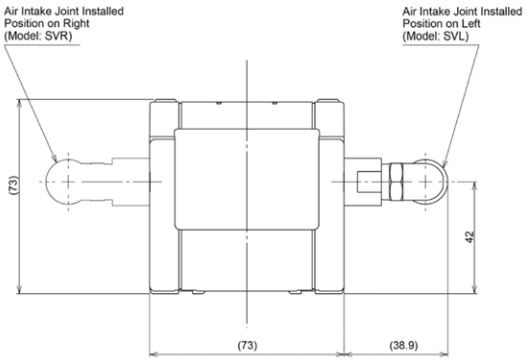


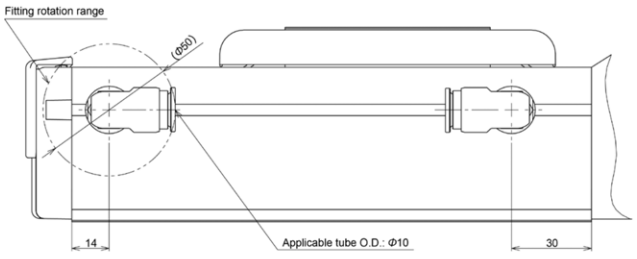




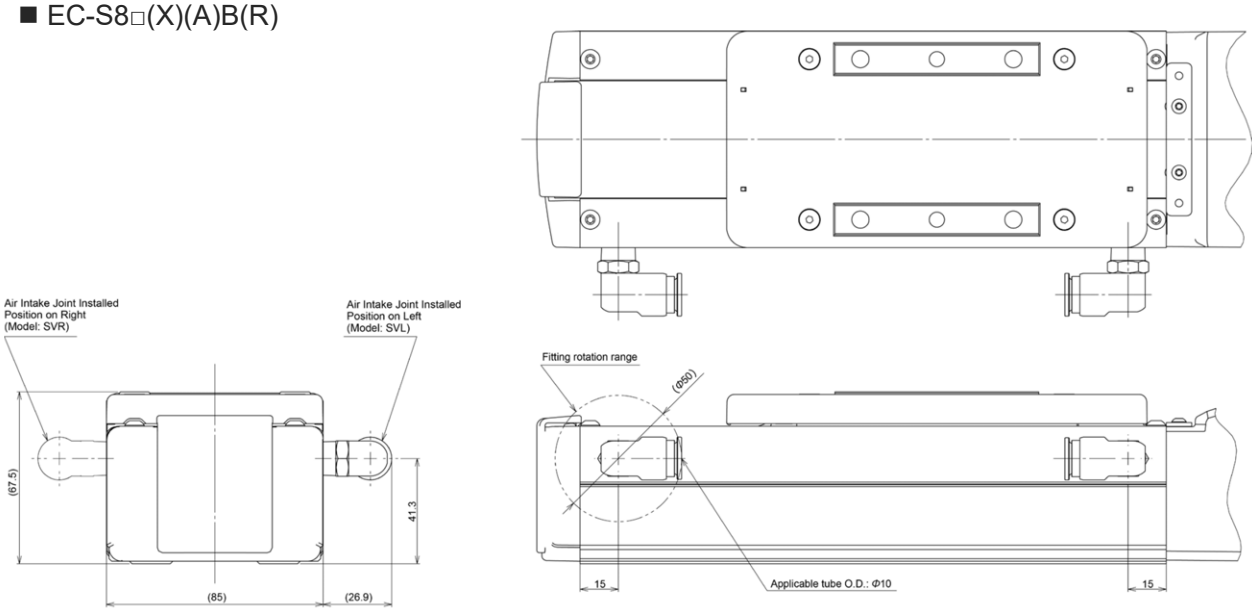
■ EC-S7□(A)B(R)







■ EC-S8□(X)(A)B(R)



1.8.12 Battery-less absolute encoder specification (Model: WA)

The standard specification is for incremental encoder.

By indicating this option, the battery-less absolute encoder should be equipped.

1.8.13 Wireless communication specification (Model: WL)

It is an option to get applicable to the wireless communication. Wireless communication with teaching tools applicable for wireless link gets available.

Adjustment of start point, end point and AVD is available in wireless network.

1.8.14 Wireless axis operation specification (Model: WL2)

By indicating WL2, trial run for axis movement (to forward end, backward end, JOG and inching) should be conducted as well as operation available in wireless communication in WL. However, it is not a feature to perform automatic operation. Be sure to refer to [Precautions for Axis Operation with Wireless Communication] in Intro-16.

(Note) Changes from WL to WL2 and from WL2 to WL cannot be performed by the customer. Please contact us.

ELECYLINDER

Chapter 2

Installation

2.1 Precautions for transportation ····· 2-1
2.2 Installation and storage/preservation environment ····· 2-4
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2.2.2 Storage/preservation environment ····· 2-5
2.3 Installation method ····· 2-6
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2.3.7 Mounting transported objects ····· 2-25
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2.1 Precautions for transportation

[Handling the package]

- Do not damage or drop the package.
  The package is not specially designed to withstand dropping or shock due to collision.
- Keep the unit in horizontal position for storage or transportation.
- Do not climb onto the package.
- Do not put anything that could deform the package on it.



[Handling after unpacking]

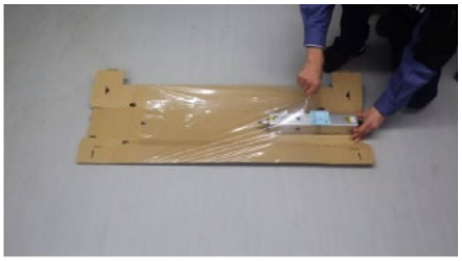
- Carry the slider type by its base part.
- Do not carry the unit by its motor cover, side cover, or stainless steel sheet
- Do not damage or drop the package during transportation.
- Do not apply excessive force to any part of the ELECYLINDER.
- The teaching port and power & I/O connector are connected to the built-in controller, so be especially careful not to apply external force.

  For the names of each part, refer to [Part Names] on page Intro-19 to 34.

Take out the optional part tray, and remove the actuator wrapped in film

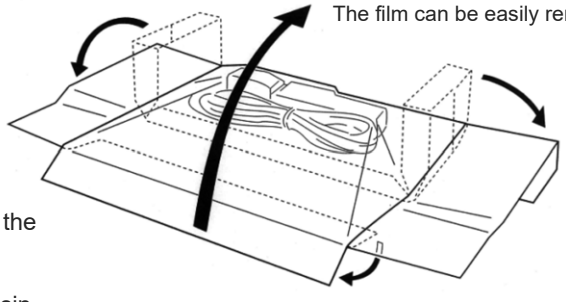


Unfold the cardboard and take out the actuator



Reference

These packaging materials can be recycled as cardboard.
The cardboard and urethane film are attached only with thermal bonding and use no adhesive. This means they can be recycled as cardboard when disposed of, reducing industrial waste cost burdens.



Unfold the cardboard as in the figure, and pull off the film. The film is also made of recyclable thermoplastic resin.

[Handling when assembled into machinery (system)]

- Secure sliders to prevent sudden movement during transport.
- If the ELECYLINDER body or any moving part is overhanging, fix it appropriately to avoid large wobbles due to external vibration.
  When transporting without fixing the tip, do not apply impact of 0.3G or more.
- When suspending machinery (system) with ropes, be careful not to catch the rope on the ELECYLINDER or cable.

2.2 Installation and storage/preservation environment

Usage is possible in environments of pollution degree 2 or equivalent.

Pollution degree 2:	Environment in which generally only nonconductive pollution occurs, but temporary conductive pollution may occur due to condensation (IEC 60664-1)

2.2.1 Installation environment

In general, it is an environment where an operator can work with no protection gear worn.
Avoid the following locations for installation.

- Where the unit receives radiant heat from strong heat sources such as heat treatment furnaces
- Where the ambient temperature exceeds the range of 10 to 40°C
- Where the temperature changes rapidly and condensation occurs
- Where the relative humidity exceeds 85% RH
- Where the unit receives direct sunlight
- Where the unit is exposed to corrosive or combustible gases
- Where the ambient air contains a large amount of dust, salt or iron (at levels exceeding those typical of an assembly plant)
- Where the unit is subject to splashed water or oil (including oil mist or cutting fluid) or chemical solutions
- Where the body receives impact or vibration
- Where the altitude is more than 1000m

Provide sufficient work space for the following maintenance and inspection.

- Space to insert the teaching tool connector
- Space to replenish grease
- Space for replacement work of components such as a motor or controller
  For details, refer to [Chapter 4 Maintenance and Inspection].

Make sure to make a shield very well in a use in the following circumstances.

- Where noise is generated due to static electricity, etc.
- Where the unit is subject to a strong electric or magnetic field
- Where the unit is subject to ultraviolet or radiation

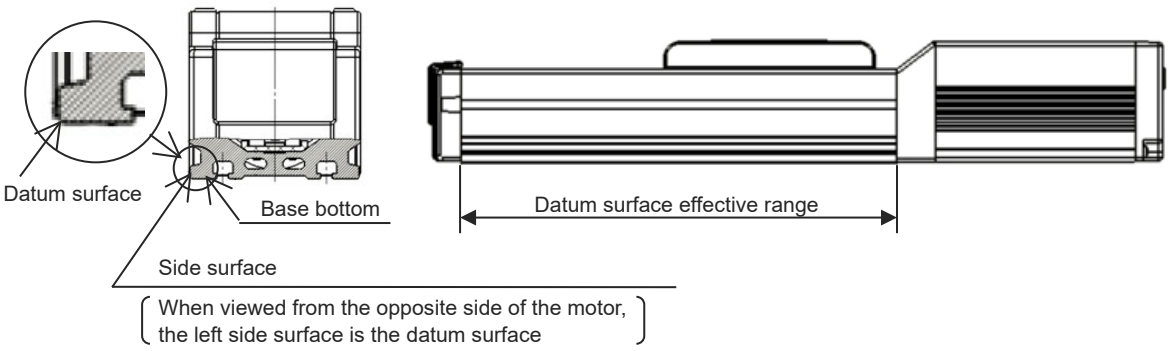
2.2.2 Storage/preservation environment

- For the storage and preservation environment, see the installation environment.
  However, give especial consideration to the prevention of condensation during long-term storage/preservation.
- Unless especially specified, desiccant is not included in the package at shipping.
  If the product is to be stored/preserved in an environment where condensation is anticipated, take condensation preventive measures.
- For short-term storage, it can be stored at 60°C or below.
  For storage of one month or more, make sure that the temperature does not exceed 50°C.
- The product should be placed horizontally for storage and preservation.
  If storing in the packaged condition, observe the conditions, if any, regarding storage orientation.
  Refer to Horizontal installation in [2.3.2 Mounting Orientation] for the horizontal condition.

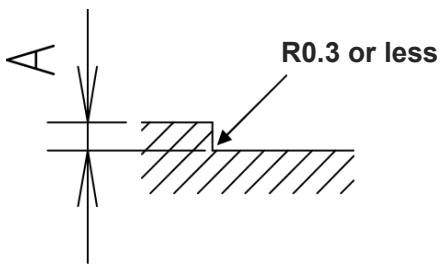
2.3 Installation method

2.3.1 Installation surface

- The surface that the main unit is to be installed should be a machined flat surface or a face with equivalent accuracy, and its flatness should satisfy 0.05mm/m or less.
- The mounting frame should have a structure rigid enough to prevent the generation of vibration.
- Also consider the necessary space for maintenance work such as ELECYLINDER replacement and inspection.
- The bottom surface and left side surface (viewed from motor opposite side) 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.

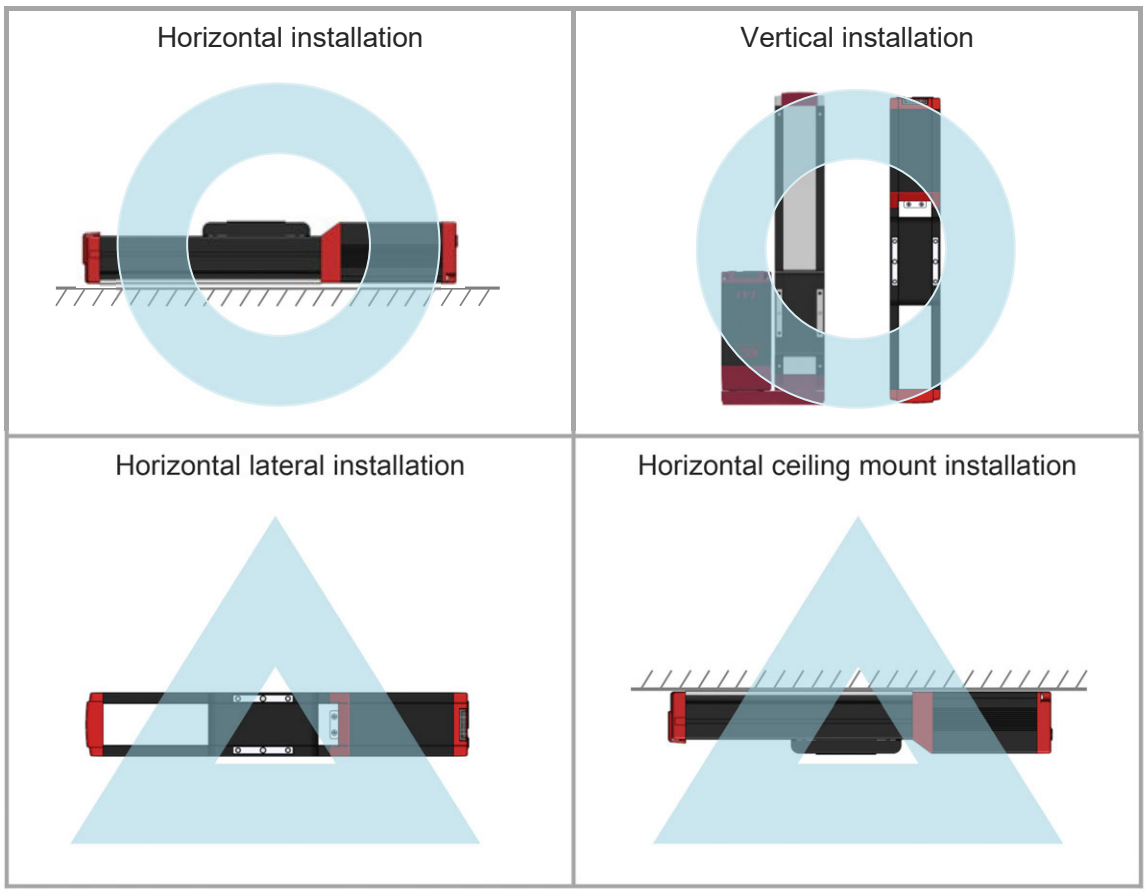


When mounting using the side datum surface, machine the installation surface according to the figure below.



A dimension
2 to 4mm

2.3.2 Mounting orientation



○: Available for Installation

△: Confirm in [2.3.3 Precautions regarding stainless steel sheet] for use.

Caution

- For installation in vertical orientation, it is recommended to have the motor installed on top.
- If the motor is installed on the top, cap the teaching port.
  Clogging with foreign matter may lead to a breakdown.

2.3.3 Precautions regarding stainless steel sheet

- During installation and transport, do not grasp or press on the stainless steel sheet.
  Otherwise, this may lead to stainless steel sheet damage.

- Although lateral or ceiling installation is possible, it may cause slackness or misalignment of the stainless steel sheet.
  Continued usage in this orientation may lead to damage to the stainless steel sheet.
  Adjust the stainless steel sheet if slackness or misalignment occurs.

- Keep adhesive, paint, and other viscous material off the stainless steel sheet.
  Such material adhering to the stainless steel sheet can lead to defective slider operation or sheet damage.
  Avoid installation in environments of this kind, or take safety measures to prevent adhesion.

2.3.4 Fixing bolt

- It is necessary that you prepare the screws to hold the base bottom or foot bracket to the installation surface by your own.
- Use a high-tensile bolt with its specification ISO-10.9 or higher.
- Make sure the internal thread and bolt effective engagement length is approximately 1.8 times the nominal diameter or more.
- When the tightening torque is not specified, tighten with the recommended values in the table below.

Fixing bolt	For iron non-fastening surface	For aluminum non-fastening surface
M4	3.6N·m	1.8N·m
M5	7.3N·m	3.4N·m
M6	12.3N·m	5.4N·m

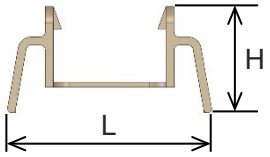
2.3.5 Square nuts

The square nuts regulated in JIS B1163 can be used for the T-shaped slots.
The square nut quantities enclosed at shipping and related information are as follows.

Type	Square nut quantity enclosed	Screw size	Required bolt length from base bottom	Minimum number of fixing bolts	Tightening torque
S3 Type	6pcs	M3	4 to 4.5mm	4pcs	0.83N•m
S4 Type	6pcs	M4	5 to 6mm	4pcs	1.8N•m
S6 Type	6pcs <12pcs>	M4	5 to 6mm	4pcs	1.8N•m
S7 Type	6pcs <12pcs>	M5	6.5 to 8mm	4pcs	3.4N•m

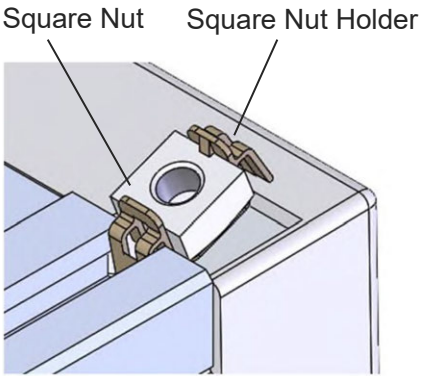
A number in < > shows a quantity for stroke 550mm or more

Square Nut Holder

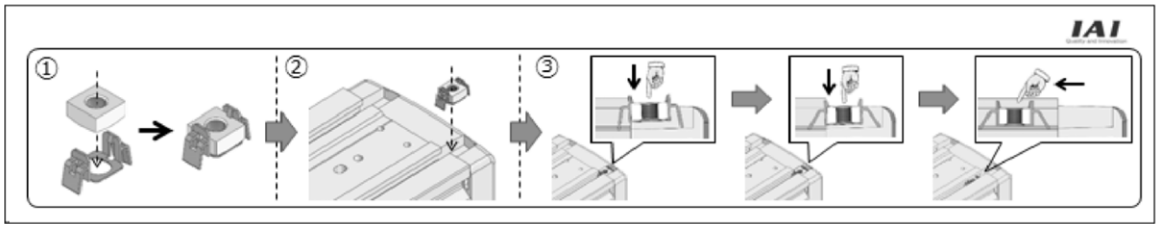


Dimension [mm]	For M3	For M4	For M5
L	12.9	12.7	13.7
W	5.5	6.8	8.0
H	4.8	6.6	8.6

Example of Insertion



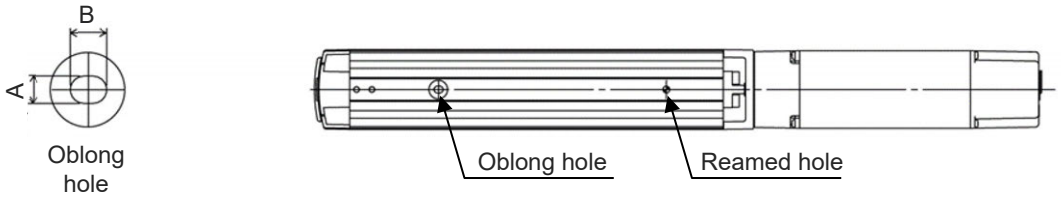
* Refer to the instruction manual enclosed with the product for how to mount it.



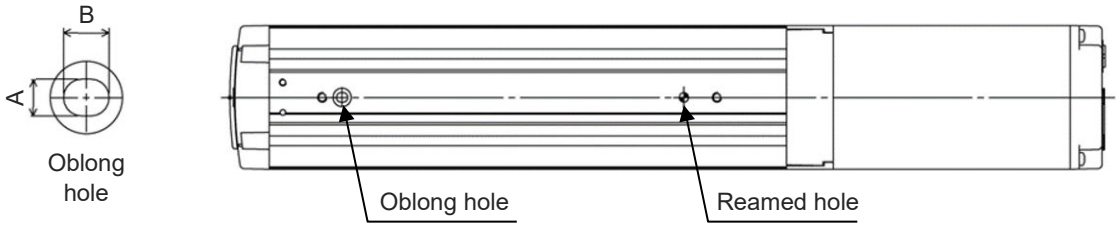
2.3.6 Body mounting

There are a reamed hole and an oblong hole for the positioning pins on the bottom of the actuator.
Use the reamed hole and oblong hole if mounting reproducibility after detachment is required.
When fine adjustment of angles, etc. is required, consider using only the reamed hole.
For details, refer to [Chapter 5 External Dimensions].

S3 Type, S4 Type



S6 Type, S7 Type, S8 Type

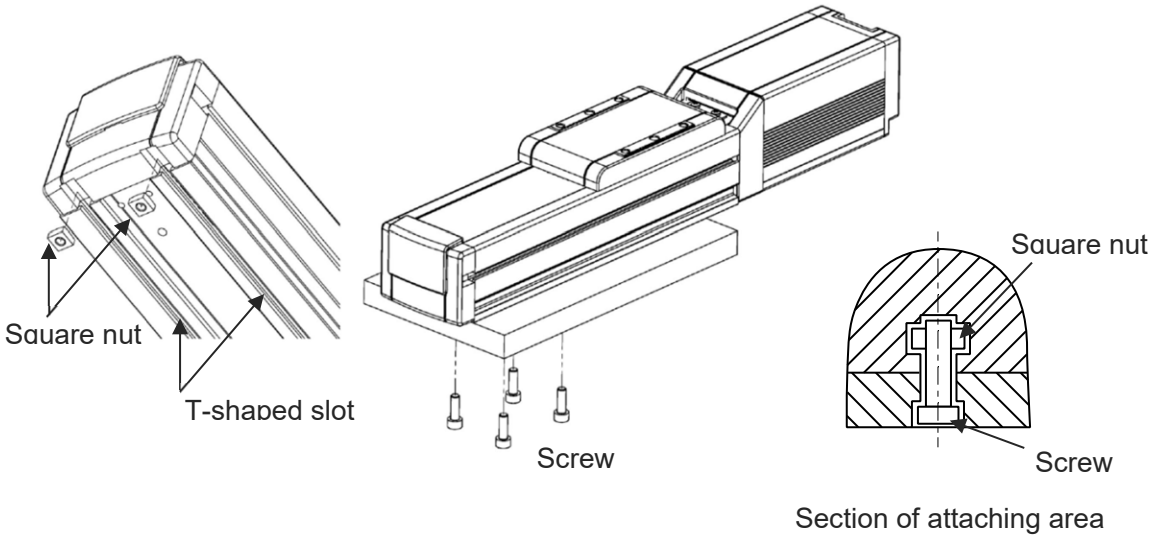


Type	Reamed hole	Oblong hole
S3 type, S4 type	Φ3H7 depth 4	A:3 $^{+0.010}_{0}$ B:4 depth 4
S6 type, S7 type	Φ4H7 depth 5	A:4 $^{+0.012}_{0}$ B:5 depth 5
S8 type	Φ6H7 depth 6.5	A:6 $^{+0.012}_{0}$ B:8 depth 6.5

* The depths of reamed hole and oblong hole are described as those from the base seating surface

[1] When using the T-shaped slot on the base bottom

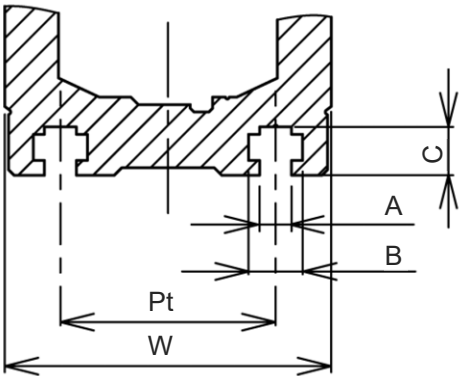
Insert square nuts to the T-slots and the unit can be affixed at the back with screws.
For details regarding the position and dimensions, refer to [Chapter 5 External Dimensions].



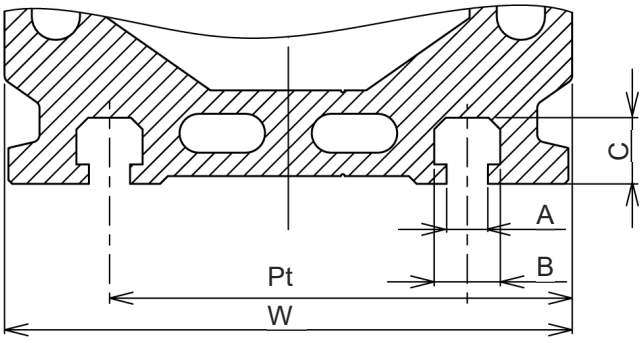
Section of attaching area

T-shaped slot dimensions

♦ S3 Type, S4 Type



♦S6 Type, S7 Type



Type	W [mm]	Pt [mm]	A [mm]	B [mm]	C [mm]
S3 Type	35	22	3.3	5.8	4.8
S4 Type	44	29	4.3	7.3	6.5
S6 Type	63	38	4.3	7.3	6.3
S7 Type	73	46	5.3	8.5	8.5

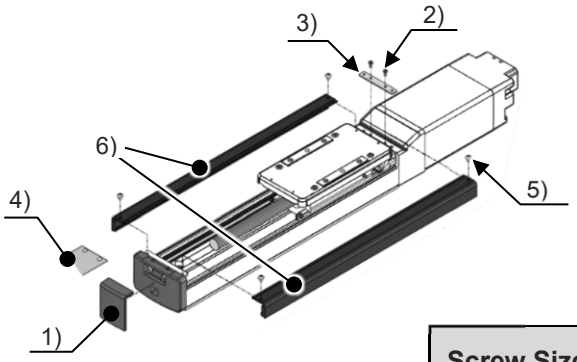
[2] When Using Through Holes on Top Face of Base

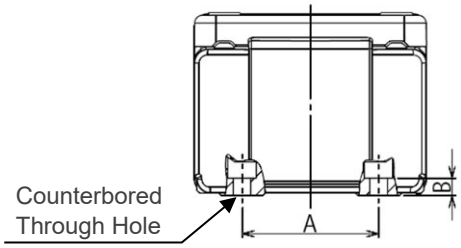
♦ S8 Type

Installation should be conducted after the side cover and the stainless steel sheet are taken off.
For positions and dimensions of the holes, refer to [Chapter 5 External Dimensions].

● Installation Process

1) Take off 1).
2) Remove 2) Screws (2pcs) and take off 3).
3) Pull out 4).
4) Remove 5) Bolts (4pcs) and take off 6).
5) Affix the main unit.
   Refer to [4.6.1 Stainless steel sheet replacement/adjustment] for how to attach a stainless steel sheet.
6) Assemble back in the back order.





Screw Size	Counterbored Through Hole	A [mm]	B [mm]
M6	Φ6.6 Through Φ11 Counterbore Dpt. 6	50	6.5

	Part Name (Standard, Model Code)	Qty	Remark
1)	Sheet Clamp	1	
2)	Hex Socket Button Head Bolt M3×6	2	Tightening Torque: 0.73N·m
3)	Sheet Retainer	1	
4)	Stainless Steel Sheet	1	
5)	Hex Socket Button Head Bolt M4×5	4	Tightening Torque: 1.9N·m
6)	Side Cover	2	

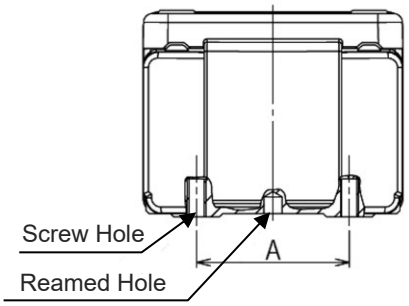
Caution

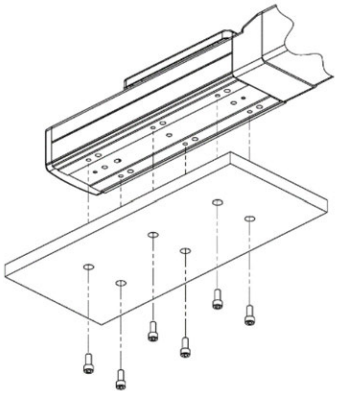
● For EC-S8B□/S8□BR with its stroke from 50 to 100mm, use the screw holes on the bottom of the base to fix the unit.

[3] When using the screw holes on the base bottom

♦ **S8 Type**

For positions and dimensions of the holes, refer to [Chapter 5 External Dimensions].





Screw Hole	A [mm]	Reamed Hole
M6 through screw-in depth 12	50	Φ6H7 reamed hole depth 6.5

[4] When using foot brackets

Mounting from the top is possible using foot brackets.

The foot bracket should be fixed with screws from the back to the screw holes.

For details regarding the position and dimensions, refer to [Chapter 5 External Dimensions].

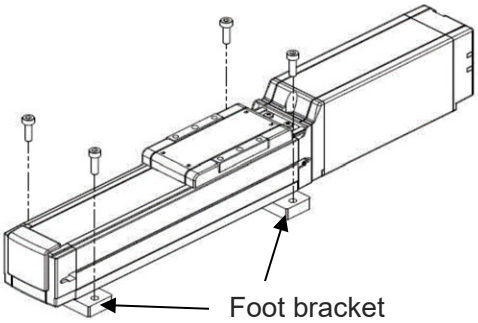
Notice

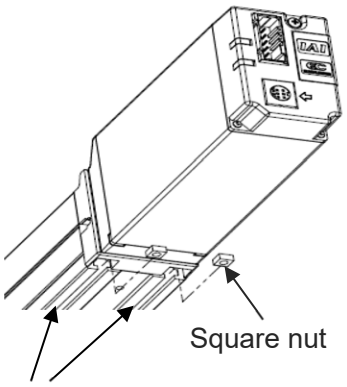
- The bolts for fixing foot brackets on the installation surface are to be prepared by the customer.
- Use a high-tensile bolt with its specification ISO-10.9 or higher.
- Make sure the internal thread and bolt effective engagement length is approximately 1.8 times the nominal diameter or more.

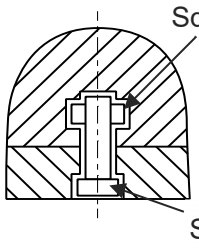
[Motor straight]

♦ **EC-S3□B/S3□AB/S4□B/S4□AB**

For details regarding the position and dimensions, refer to [Chapter 5 External Dimensions].

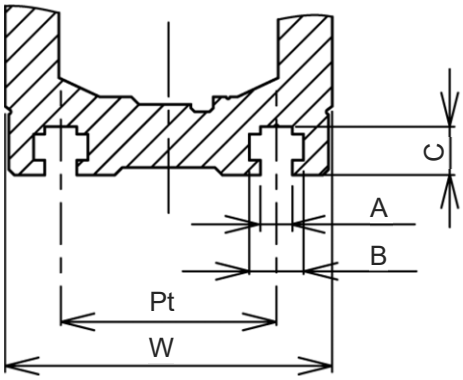






Section of attaching area

T-shaped slot dimensions

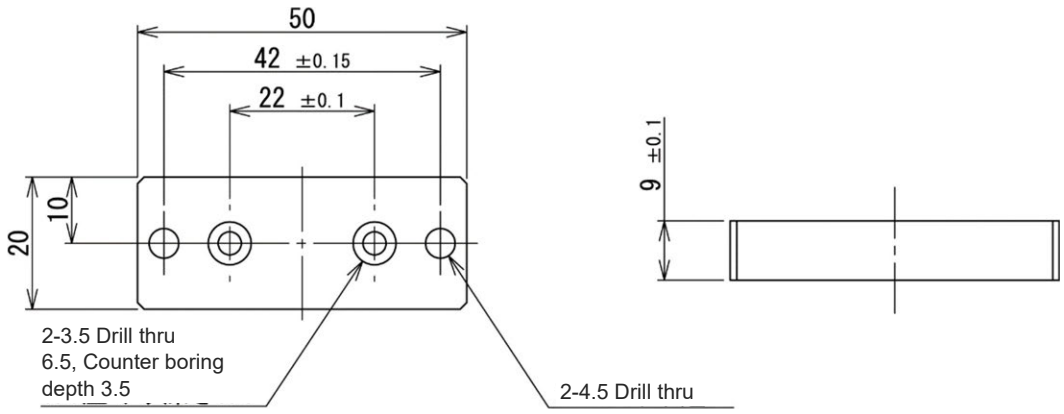


Type	W [mm]	Pt [mm]	A [mm]	B [mm]	C [mm]
S3□B S3□AB	35	22	3.3	5.8	4.8
S4□B S4□AB	44	29	4.3	7.3	6.5

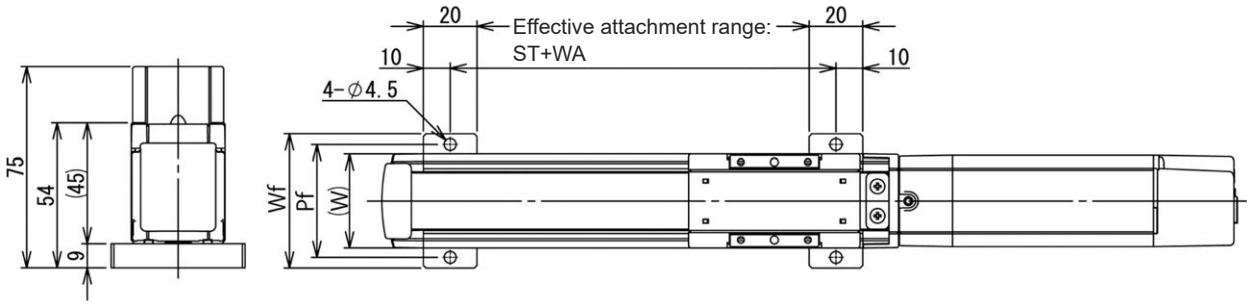
♦ Foot bracket dimensions

● EC-S3□B/S3□AB

Foot bracket dimensions (Part model number: EC-FT-SRR3, 2 pcs/set)



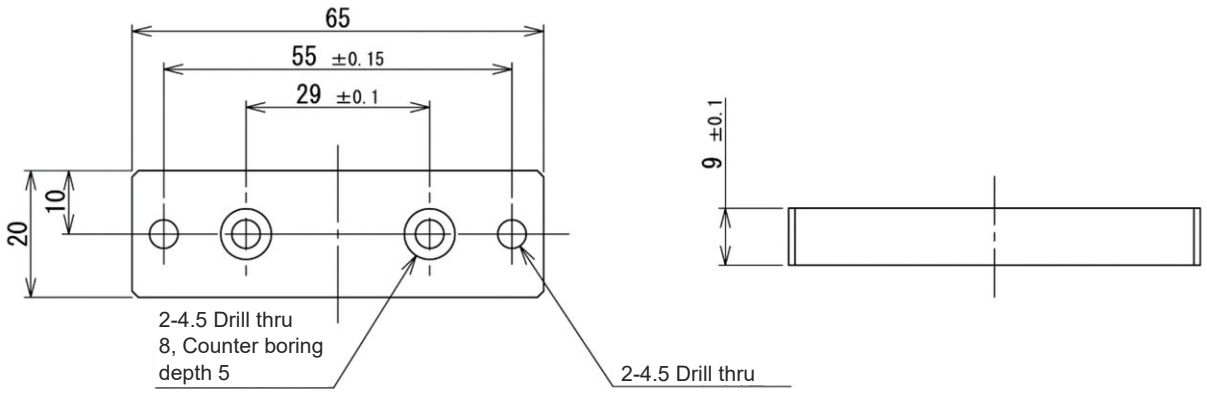
Foot bracket mounting dimensions



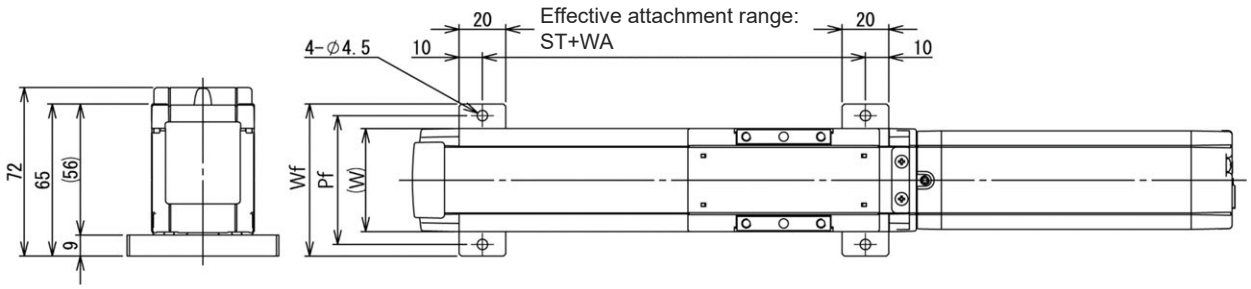
Type	Wf [mm]	Pf [mm]	W [mm]	WA [mm]	Screw size	Minimum number of fixing brackets	Tightening torque
S3□B S3□AB	50	42	35	44	M4	2 pcs	1.8N·m

● S4□B/S4□AB

Foot bracket (Part model number: EC-FT-SRR4, 2 pcs/set)



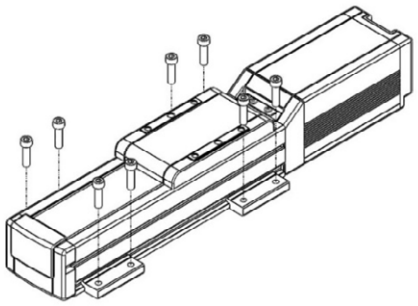
Foot bracket mounting dimensions



Type	Wf [mm]	Pf [mm]	W [mm]	WA [mm]	Screw size	Minimum number of fixing brackets	Tightening torque
S4□B S4□AB	65	55	44	64	M4	2 pcs	1.8N·m

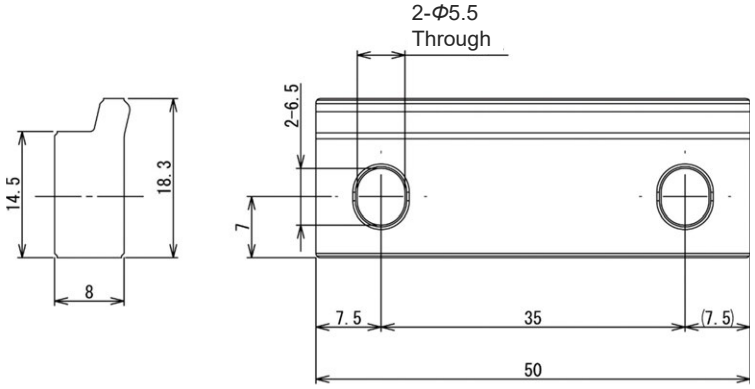
♦ EC-S6□B/S6□AB/S7□B/S7□AB

For details regarding the position and dimensions, refer to [Chapter 5 External Dimensions].

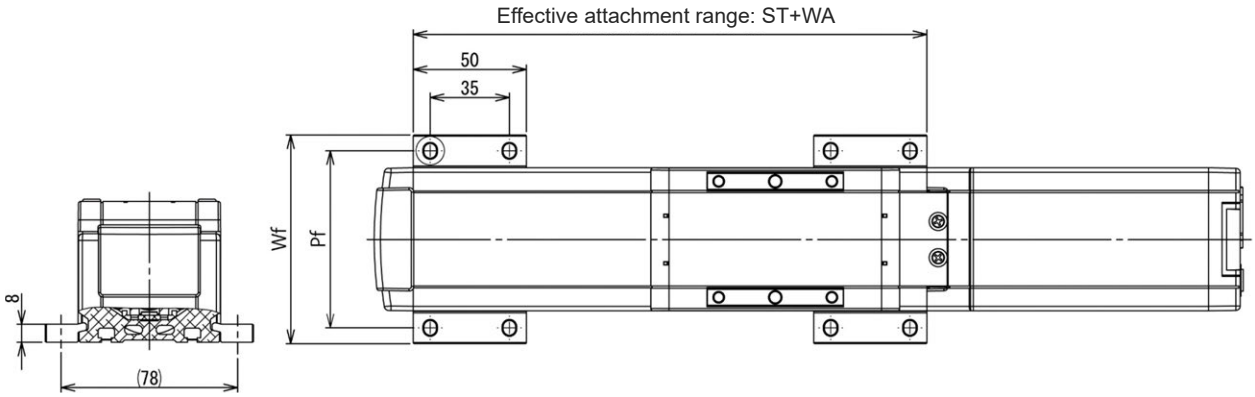


● EC-S6□B/S6□AB/S7□B/S7□AB

Foot bracket (Part model number: EC-FTSB, 4 pcs/set)



Foot bracket mounting dimensions



Type	Wf [mm]	Pf [mm]	WA [mm]	Screw size	Minimum number of fixing brackets	Tightening torque
S6□B S6□AB	92	78	127	M5	4 pcs	7.3N·m
S7□B S7□AB	102	88	145	M5	4 pcs	7.3N·m

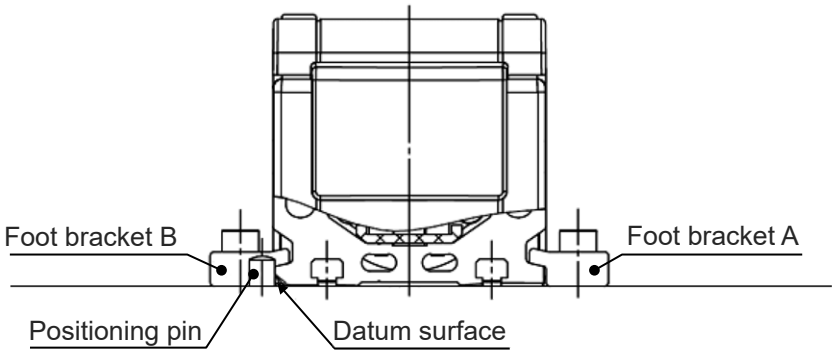
Mounting procedure

Before fixing, use a positioning pin or the like to position the bracket in the width direction.

● Procedure

1) Press against the base datum surface with a positioning pin, etc.
2) Maintaining the pressure, fix foot bracket A on the opposite side.
3) Fix foot bracket B.

* The foot brackets should be attached on the actuator main body symmetry to each other.



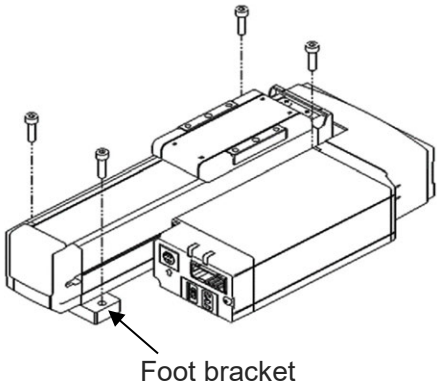
Caution

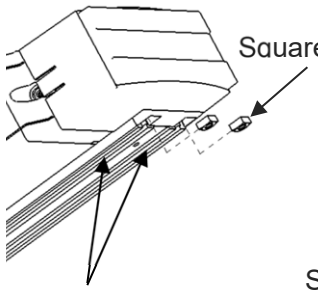
- Sufficient fastening force may not be obtainable when mounting with methods other than the procedure above.
- Foot brackets should be attached at the end edges as much as possible.
  If the pitch between the foot brackets is small, it may cause insufficient strength for installation.

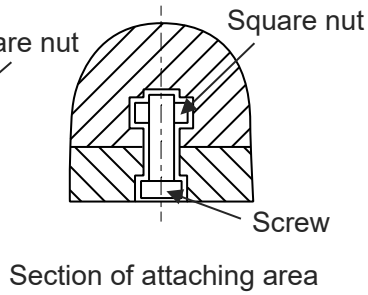
[Motor reversed]

♦ **EC-S3□BR/S4□BR/S3□ABR/S4□ABR**

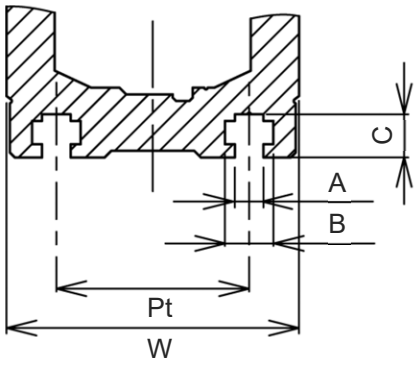
For details regarding the position and dimensions, refer to [Chapter 5 External Dimensions].







T-shaped slot dimensions

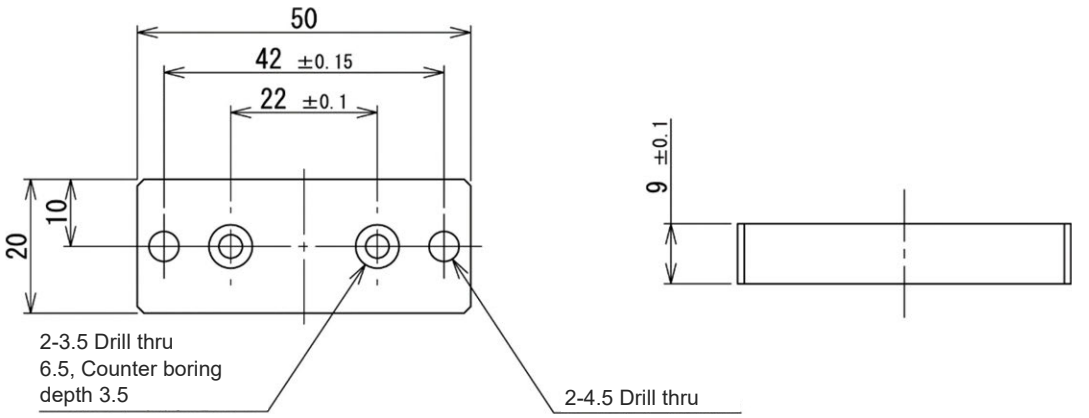


Type	W [mm]	Pt [mm]	A [mm]	B [mm]	C [mm]
S3□BR S3□ABR	35	22	3.3	5.8	4.8
S4□BR S4□ABR	44	29	4.3	7.3	6.5

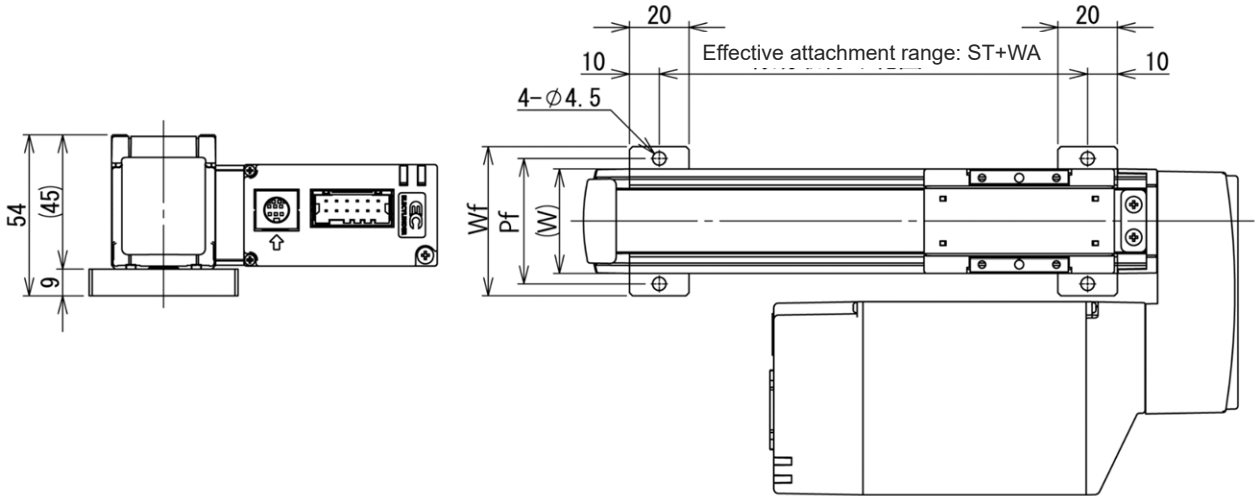
♦ Foot bracket dimensions

● EC-S3□BR/S3□ABR

Foot bracket (Part model number: EC-FT-SRR3, 2pcs/set)



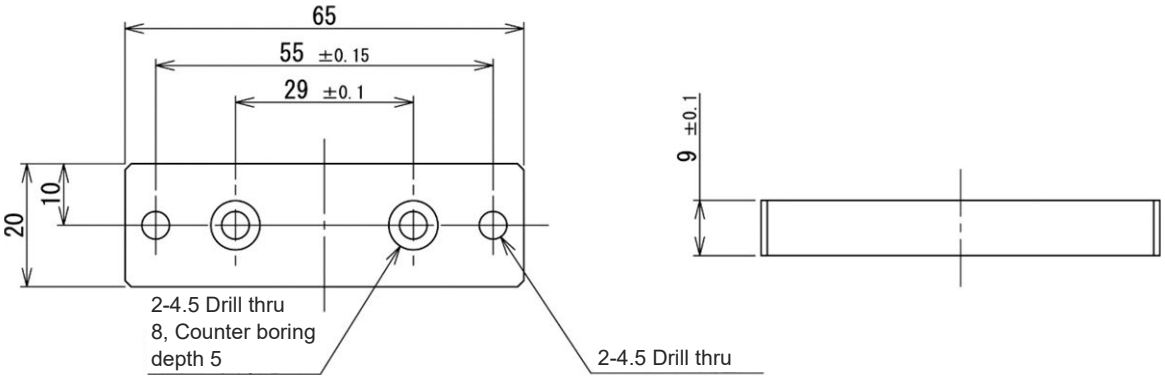
Foot bracket mounting dimensions



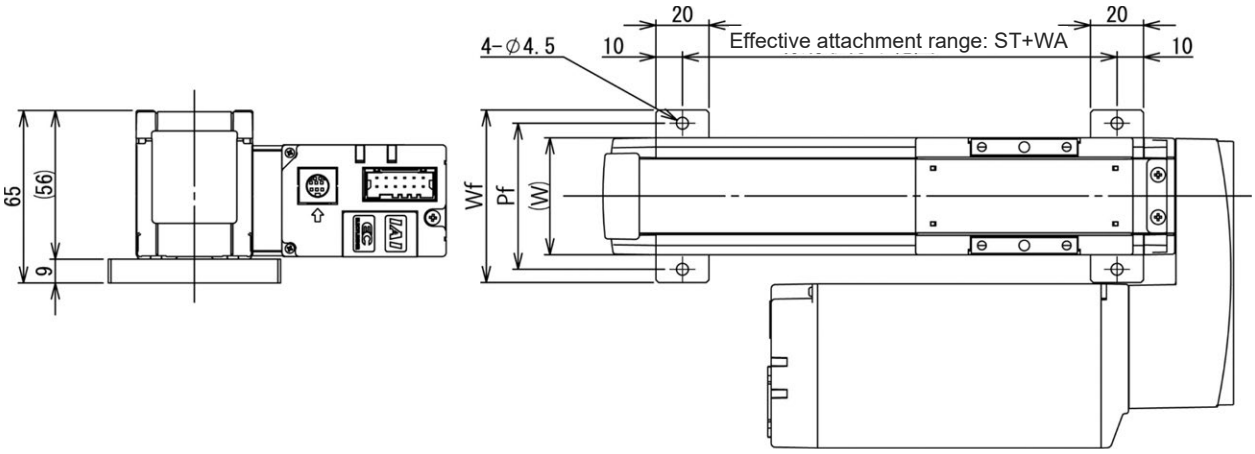
Type	Wf [mm]	Pf [mm]	W [mm]	WA [mm]	Screw size	Minimum number of fixing brackets	Tightening torque
S3□BR S3□ABR	50	42	35	44	M4	2 pcs	1.8N·m

● EC-S4□BR/S4□ABR

Foot bracket (Part model number: EC-FT-SRR4, 2 pcs/set)



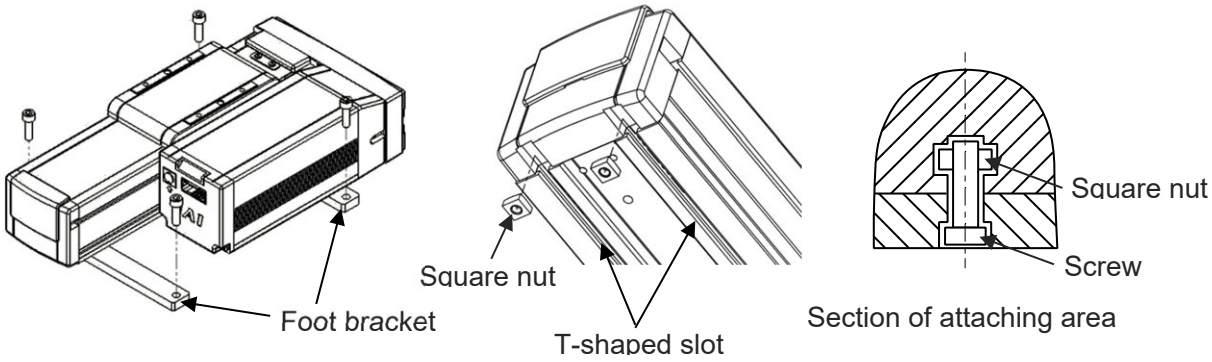
Foot bracket mounting dimensions



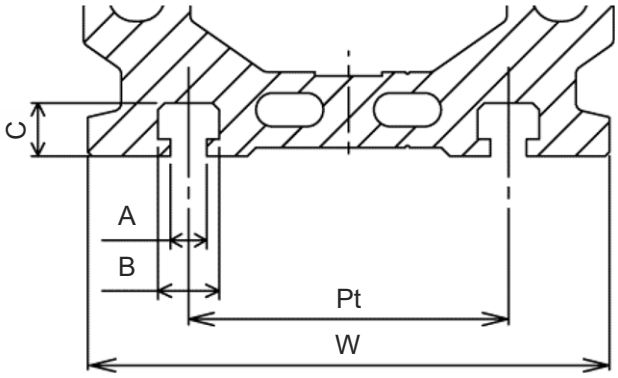
Type	Wf [mm]	Pf [mm]	W [mm]	WA [mm]	Screw size	Minimum number of fixing brackets	Tightening torque
S4□BR S4□ABR	65	55	44	64	M4	2 pcs	1.8N·m

● EC-S6□BR/S7□BR/S6□ABR/S7□ABR

For details regarding the position and dimensions, refer to [Chapter 5 External Dimensions].



T-shaped slot dimensions

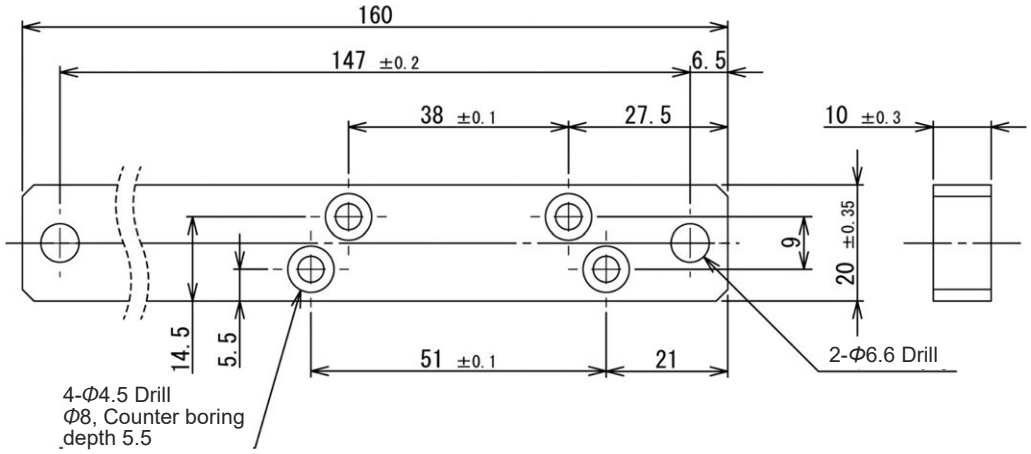


Type	W [mm]	Pt [mm]	A [mm]	B [mm]	C [mm]
S6□BR S6□ABR	63	38	4.3	7.3	6.3
S7□BR S7□ABR	73	46	5.3	8.5	8.5

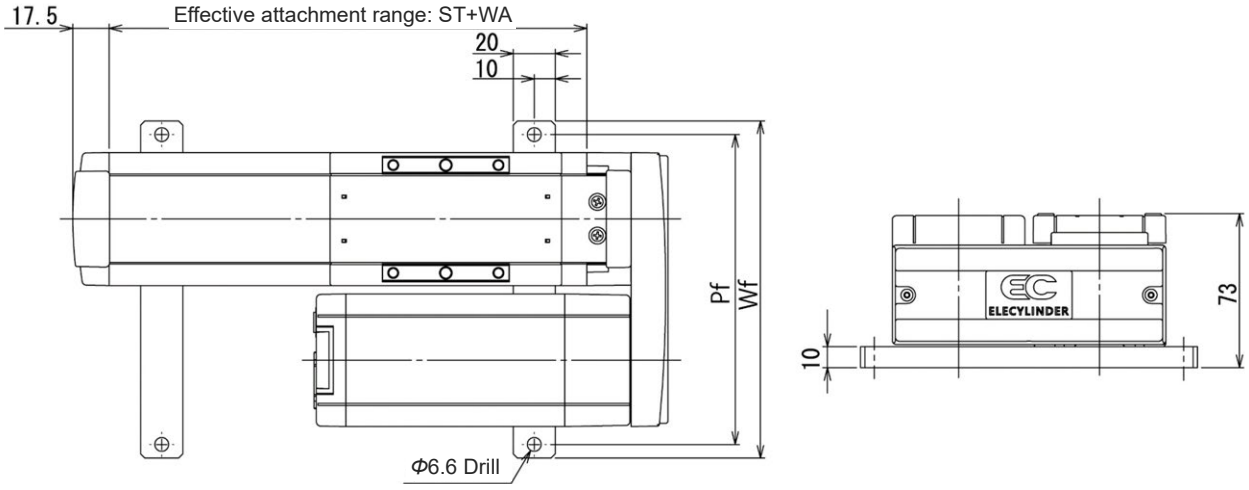
● EC-S6□BR/S6□ABR

Foot bracket dimensions (Part model number: EC-FT-SRR6R)

(Note) If the foot bracket is ordered as a single product, it should come with a foot bracket (1pc) and hex socket head bolt (2pcs) as a set.



Foot bracket mounting dimensions

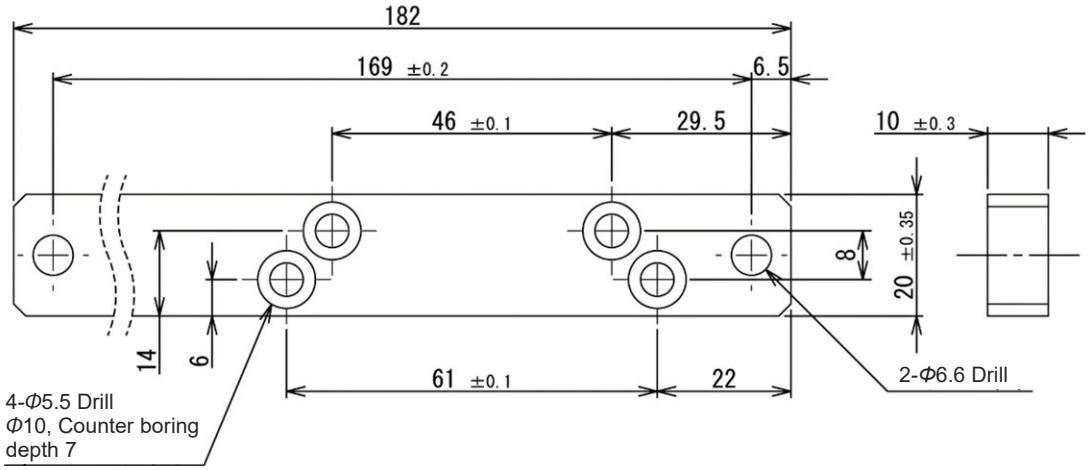


Type	Wf [mm]	Pf [mm]	WA [mm]	Screw size	Bracket Quantity		Tightening torque
					Stroke	Quantity	
S6□BR S6□ABR	160	147	127	M6	50 to 300	2	5.4N·m
					350 to 550	3	
					600 to 800	4	

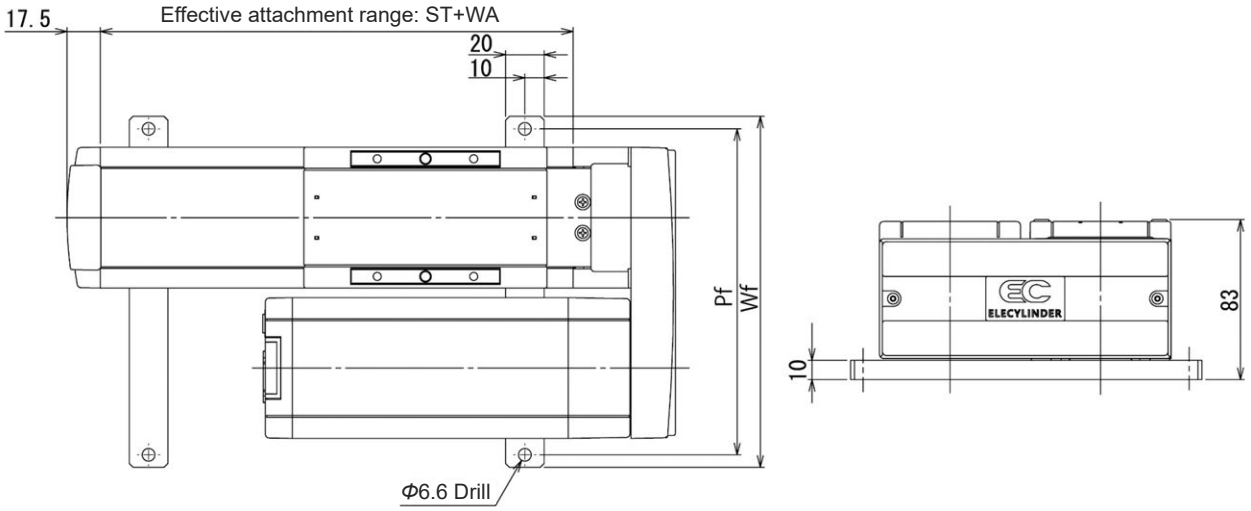
● EC-S7□BR/S7□ABR

Foot bracket dimensions (Part model number: EC-FT-SRR7R)

(Note) If the foot bracket is ordered as a single product, it should come with a foot bracket (1pc) and hex socket head bolt (2pcs) as a set.



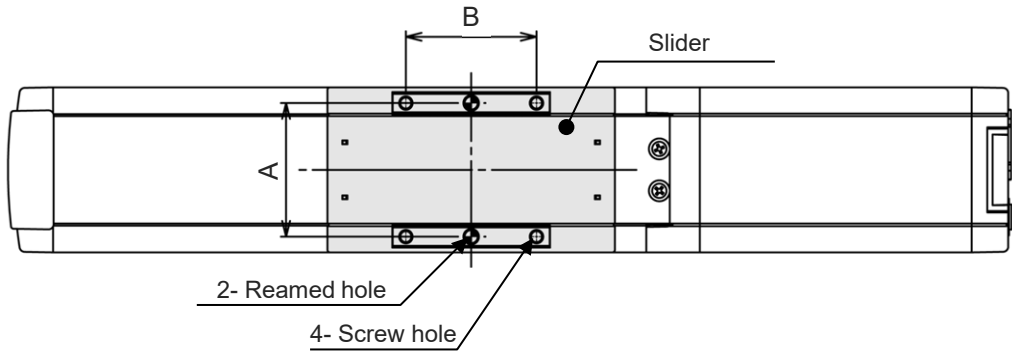
Foot bracket mounting dimensions



Type	Wf [mm]	Pf [mm]	WA [mm]	Screw size	Bracket Quantity		Tightening torque
					Stroke	Quantity	
S7□BR S7□ABR	182	169	145	M6	50 to 300	2	5.4N·m
					350 to 550	3	
					600 to 800	4	

2.3.7 Mounting transported objects

- Mount a transported object using the screw hole 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.



Type	A [mm]	B [mm]	Screw hole	Reamed hole
S3 type	29	25	M3 depth 6	Φ3H7 depth 5
S4 type	37	32	M4 depth 6	Φ4H7 depth 5
S6 type	51	50	M5 depth 10	Φ5H7 depth 5
S7 type	61	50	M5 depth 10	Φ5H7 depth 5
S8 type	63	60	M8 depth 12	Φ6H7 depth 10

* Reamed hole pitch tolerance ±0.02

Caution

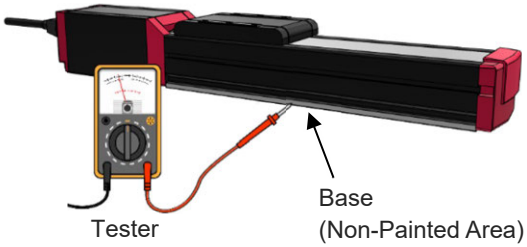
- Be careful with regard to the length of the mounting bolt and positioning pin.
- The use of screw-in depth greater than that of the screw or reamed mounting holes may damage the screw hole or reduce the mounting strength of the transported object, leading to decreased accuracy or unexpected accidents.

Notice

- The mounting bolts are to be prepared by the customer.
- Use a high-tensile bolt with its specification ISO-10.9 or higher.

2.4 Wiring for Frame Grounding

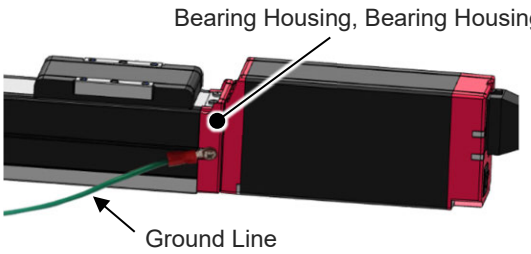
The air cylinder is equipped with the built-in controller circuit board.
The frame grounding line on the controller is connected to the main unit of the ELECYLINDER and should be grounded through the attachment surface of the ELECYLINDER.
Measure the conductivity on the fixing screw and the ground surface to make sure the grounding is established.
Conductivity can be checked at a point where there is no paint on the base bottom.



[When Grounding not Conducted at Attachment Surface]

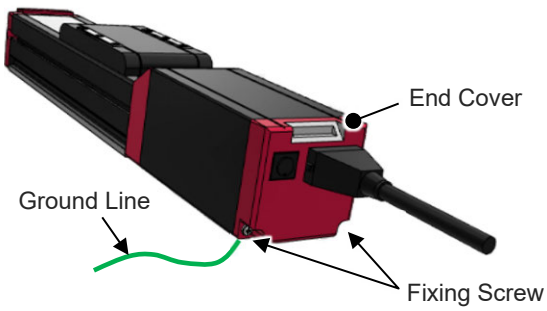
♦ S3 Type, S4 Type

Insert the M3 square nuts to the T-shaped slots equipped on sides of the bearing housing and the bearing housing cover and connect the ground line to perform grounding.
Check again for the conductivity.



♦ S6 Type, S7 Type

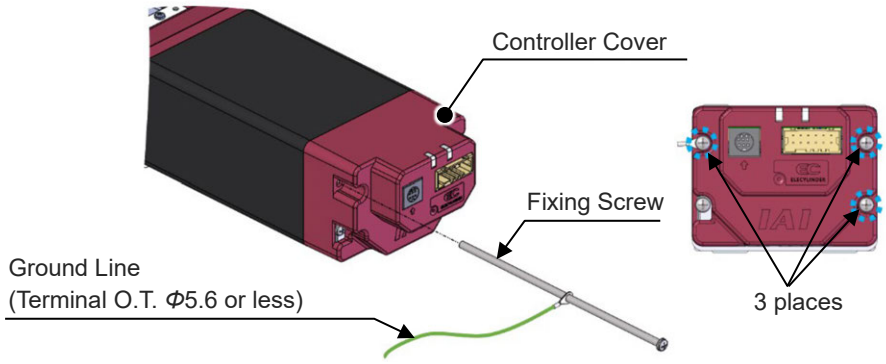
Connect the ground line to one of the screws on the end cover to perform grounding.
Check again for the conductivity.



Type	Fixing Screw	Part Name	Tightening Torque
S6 Type S7 Type	M3 × 10	Cross-recessed self-tapping screw	0.41N·m

♦ **S8 Type**

Connect the ground line to one of the screws (3 pcs) on the controller cover to perform grounding.
Check again for the conductivity.



Type		Fixing Screw	Part Name	Tightening Torque
Motor	Brake			
Straight	Yes	M4 × 210	Cross-recessed Pan Screw	0.41N·m
	No	M4 × 150		
Reversed	Yes	M4 × 230		
	No	M4 × 150		

ELECYLINDER

Chapter 3

Electrical and Controls

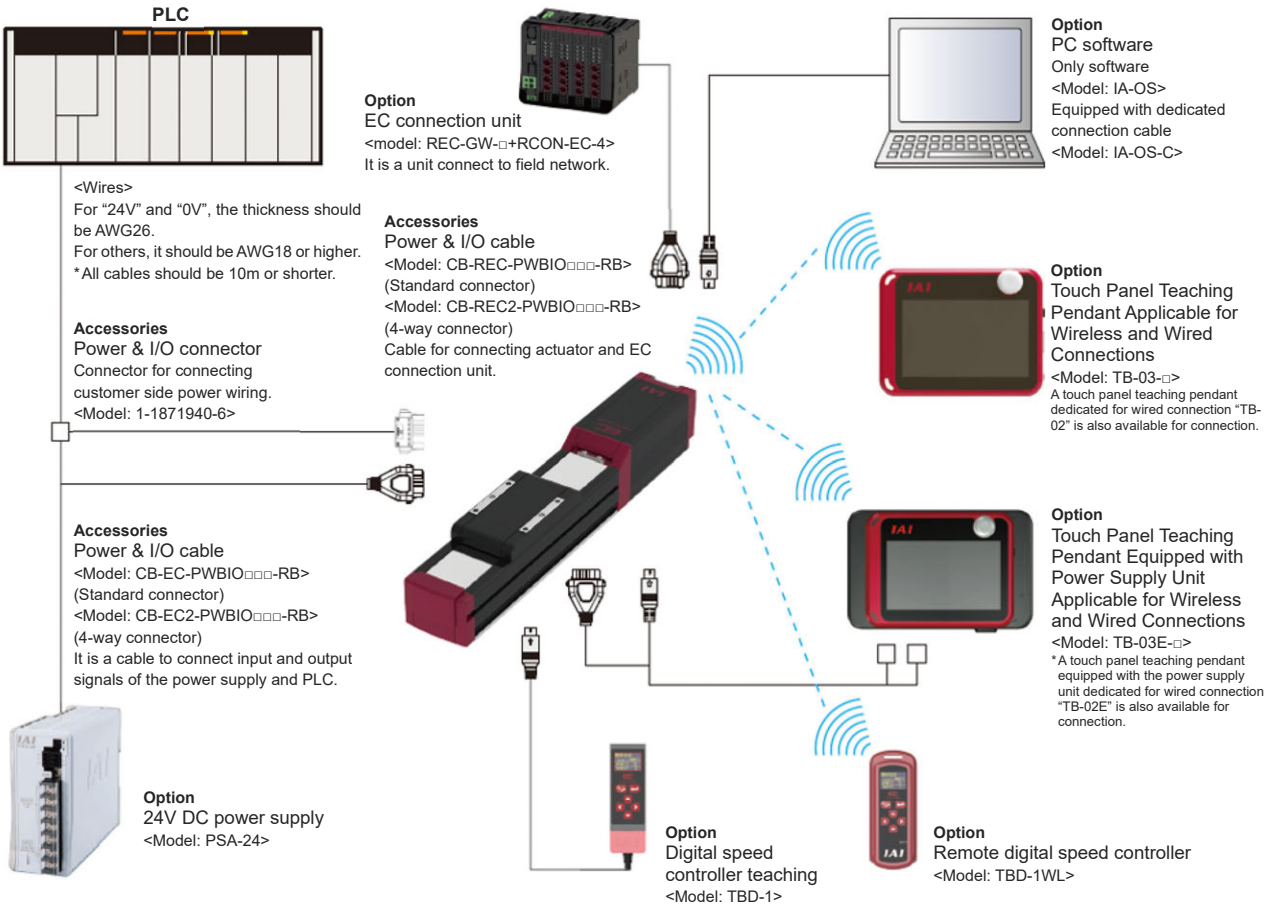
3.1 System configuration ····· 3-1
3.2 Cable and Connector ····· 3-2
3.2.1 Power & I/O Cable ····· 3-2
3.2.2 Power & I/O Connector ····· 3-3
3.2.3 RCON-EC connection specification / Power & I/O Cable ····· 3-4
3.2.4 Relay Extension Cable for RCON-EC Connection ····· 3-6
3.2.5 Power & I/O cable connection ····· 3-7
3.3 Basic operation ····· 3-8
3.4 Teaching tool ····· 3-9
3. 5 Preventive/Predictive Maintenance ····· 3-10
3.6 Troubleshooting confirmations ····· 3-11

3.1 System configuration

Reference

- For electric / control details such as electrical specification, wiring, connection, parameters and how to control, and also how to treat errors, refer to [ELECYLINDER Electric Section Instruction Manual (ME3816)] provided separately.

The following shows the system configuration.



Supply 24VDC to the ELECYLINDER and input a signal from a master device to the ELECYLINDER.
This enables the ELECYLINDER to operate.

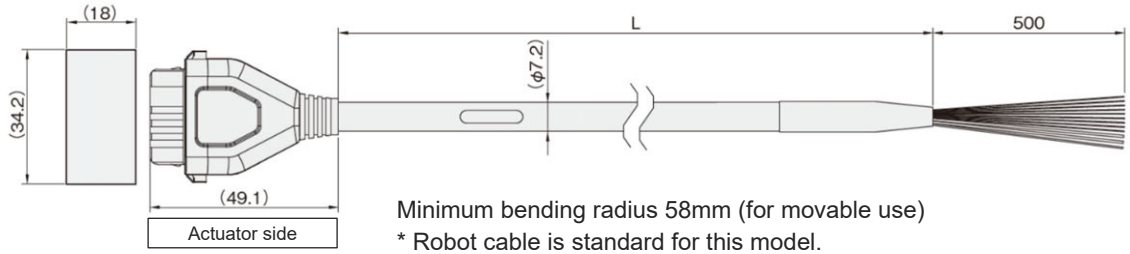
This manual introduces an example using a PLC connected as the master device.

3.2 Cable and Connector

3.2.1 Power & I/O Cable

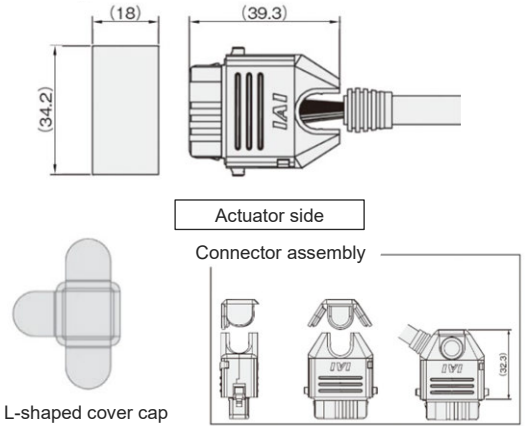
♦ Model CB-EC-PWBIO□□□-RB (Standard connector)
CB-EC2-PWBIO□□□-RB (4-way connector)

●Standard connector



Minimum bending radius 58mm (for movable use)
* Robot cable is standard for this model.

●4-way connector

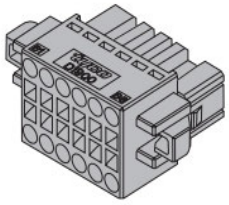


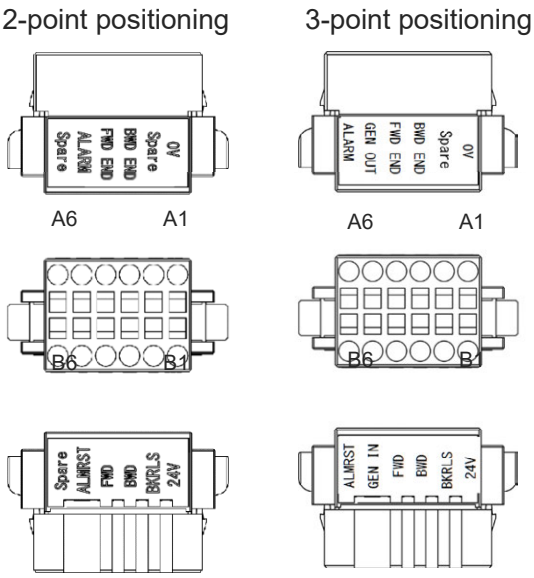
Color	Signal name		Pin No.
	2-point positioning	3-point positioning	
Black (AWG18)	0V	0V	A1
Red (AWG18)	24V	24V	B1
Light blue (AWG22)	(Reserve) (Note 1)	(Reserve) (Note 1)	A2
Orange (AWG26)	ST0	ST0	B3
Yellow (AWG26)	ST1	ST1	B4
Green (AWG26)	RES	(Reserve)	B5
Pink (AWG26)	(Reserve)	RES	B6
Blue (AWG26)	LS0/PE0	LS0/PE0	A3
Purple (AWG26)	LS1/PE1	LS1/PE1	A4
Gray (AWG26)	*ALM	LS2	A5
White (AWG26)	(Reserve)	*ALM	A6
Brown (AWG26)	BKRLS	BKRLS	B2

Note 1 24V (control) when 2-circuit power supply specification (TMD2) are selected.
(Note) Cable in light green and light gray not in us.
(Already cut inside shrink tube)

- The wiring on the opposite side of the connector has not been processed.
- The cable length (L) is available from 1m to 10m. Specify the length in increments of 1m.
- Sample model number: Cable length **3**m → CB-EC(2)-PWBIO**030**-RB

3.2.2 Power & I/O Connector





Name	Model	Quantity
Power & I/O connector	1-1871940-6 (Tyco Electronics)	1 pc

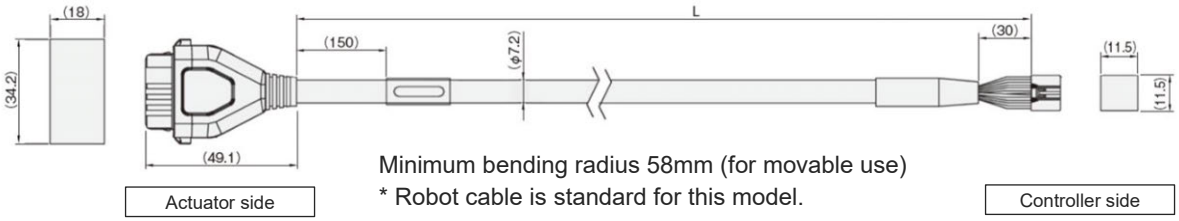
Pin No.	Signal name		Function
A1	0V		Ground
A2	Spare (CP: 2-circuit power supply specification)		Spare (24V for control power supply when power supply 2-system specification)
A3	BWD END		Backward completion (Pressing complete 0 when pressing operation)
A4	FWD END		Forward completion (Pressing complete 1 when pressing operation)
A5	2-point positioning	Alarm	Alarm output
	3-point positioning	General OUT	Intermediate position completion
A6	2-point positioning	Spare	Spare
	3-point positioning	Alarm	Alarm output
B1	24V (MP: 2-circuit power supply specification)		24V power supply (24V for motor power supply when power supply 2-system specification)
B2	BKRLS		Brake release input
B3	BWD (Note 1)		Backward command
B4	FWD (Note 1)		Forward command
B5	2-point positioning	ALMRST	Alarm release signal input
	3-point positioning	General IN	Spare
B6	2-point positioning	Spare	Spare
	3-point positioning	ALMRST	Alarm release signal input

Note 1: B4 should not be used and B3 should be the forward/backward command in the single solenoid system.

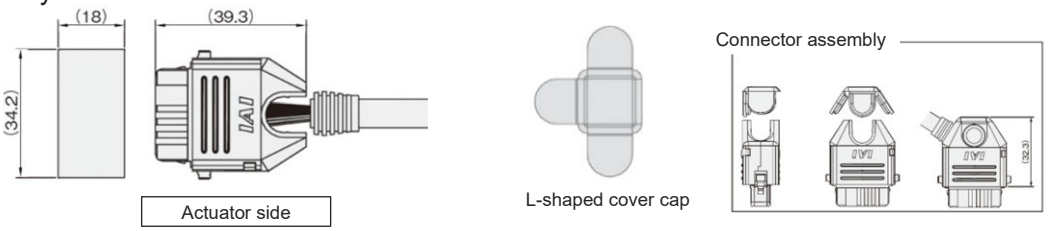
3.2.3 RCON-EC connection specification / Power & I/O Cable

♦ Model CB-REC-PWBIO□□□-RB (Standard connector)
CB-REC2-PWBIO□□□-RB (4-way connector)

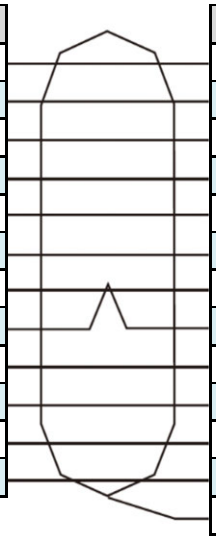
●Standard connector



●4-way connector



Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V (MP)	B1
Light blue (AWG22)	24V (CP)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Yellow green (AWG26)	SD+	B6
Light gray (AWG26)	SD-	A6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
Brown (AWG26)	BKRLS	B2



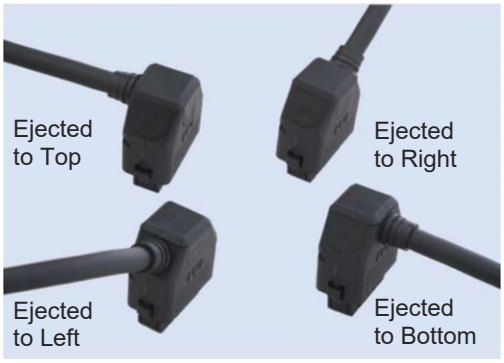
Pin No.	Signal name	Color
2	0V	Black (AWG18)
1	24V (MP)	Red (AWG18)
12	24V (CP)	Light blue (AWG22)
7	OUT0	Orange (AWG26)
8	OUT1	Yellow (AWG26)
9	OUT2	Green (AWG26)
6	SD+	Yellow green (AWG26)
10	SD-	Light gray (AWG26)
3	IN0	Blue (AWG26)
4	IN1	Purple (AWG26)
5	IN2	Gray (AWG26)
11	BKRLS	Brown (AWG26)
13	FG	Green (AWG26)

- The cable length (L) is available from 1m to 10m. Specify the length in increments of 1m.
- Sample model number: Cable length **3**m → CB-REC(2)-PWBIO**030**-RB

■ About 4-way Connector

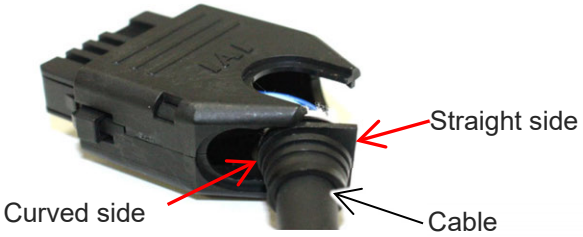
It is a cable capable to change the orientation of the connector in four ways.



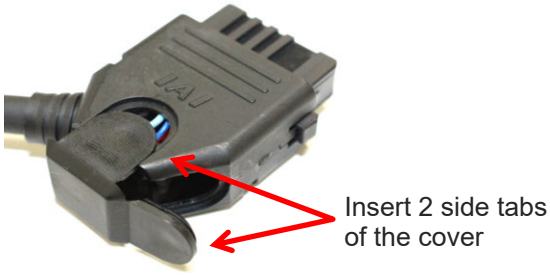


Follow the process bellow to build up the connector in the orientation of your demand.

1. Insert the cable by sliding it from the curved side of the cable-end to your desire direction.



2. Be sure to check that the cable is settled firmly and insert two tabs of the cover along the slits of socket.



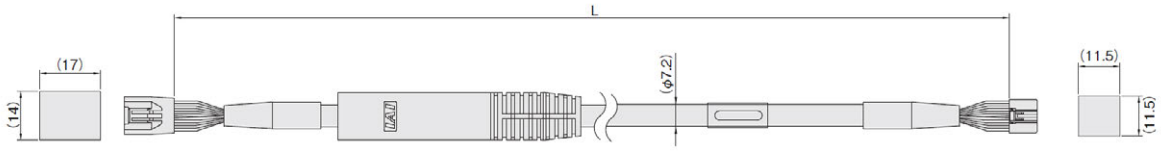
3. Then, push the last tab to the socket.



3.2.4 Relay Extension Cable for RCON-EC Connection

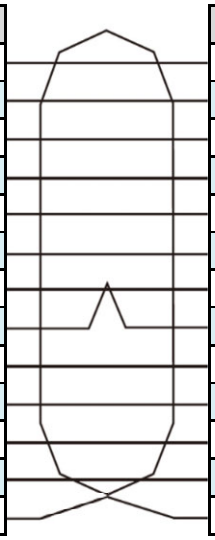
It is to be used when extending a power & I/O cable in the RCON-EC connection specification.

♦ Model CB-REC-PWBIO□□□-RB-JY



Minimum bending radius 58mm (for movable use)
* Robot cable is standard for this model.

Color	Signal name	Pin No.
Black (AWG18)	0V	2
Red (AWG18)	24V (MP)	1
Light blue (AWG22)	24V (CP)	12
Orange (AWG26)	OUT0	7
Yellow (AWG26)	OUT1	8
Green (AWG26)	OUT2	9
Light green (AWG26)	SD+	6
Light gray (AWG26)	SD-	10
Blue (AWG26)	IN0	3
Purple (AWG26)	IN1	4
Gray (AWG26)	IN2	5
Brown (AWG26)	BKRLS	11
Green (AWG26)	FG	13



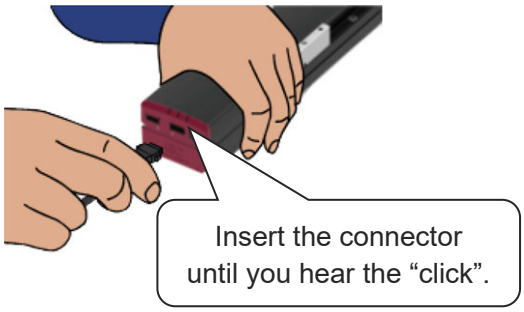
Pin No.	Signal name	Color
2	0V	Black (AWG18)
1	24V (MP)	Red (AWG18)
12	24V (CP)	Light blue (AWG22)
7	OUT0	Orange (AWG26)
8	OUT1	Yellow (AWG26)
9	OUT2	Green (AWG26)
6	SD+	Light green (AWG26)
10	SD-	Light gray (AWG26)
3	IN0	Blue (AWG26)
4	IN1	Purple (AWG26)
5	IN2	Gray (AWG26)
11	BKRLS	Brown (AWG26)
13	FG	Green (AWG26)

- The unit of 1m is the standard (1 to 9m). 0.5m is also in the standard.
  Any length halfway out of above should be the special specification.
- Sample model number: Cable length **3**m → CB-REC-PWBIO**030**-RB-JY

(Note) Select the length of cables to make the total of the power & I/O cable in the RCON-EC connection specification and the relay extension cable above at 10m or less.

3.2.5 Power & I/O cable connection

Connect the power & I/O cable.
Have the convex on the connector facing down, insert the connector till it makes a “click” noise.



Caution

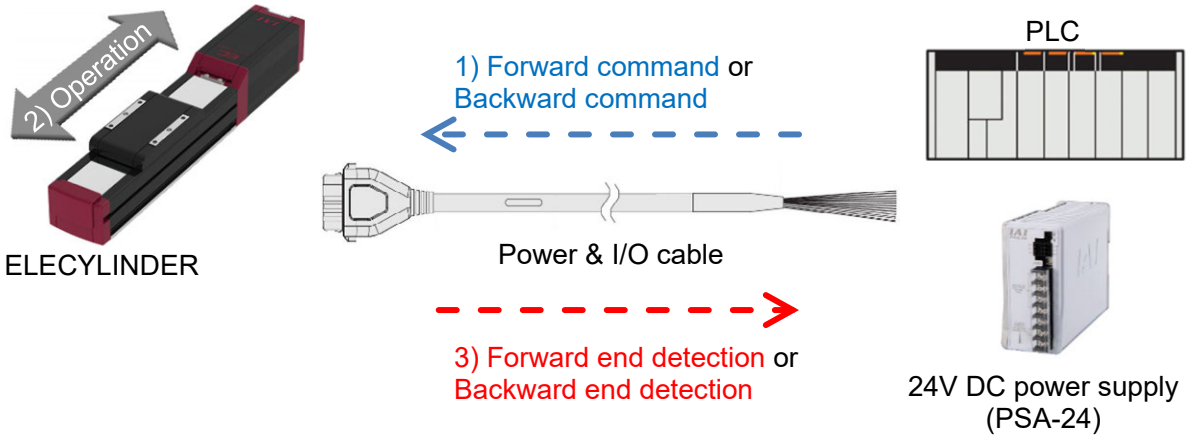
- The connector must be inserted in a given direction.
  Align the arrow marks on the connectors and insert until it clicks into place.
- Take appropriate care to prevent unused wiring in the loose wire end on the cable from shorting out other wires by protecting them with insulation tape.

3.3 Basic operation

An input signal from a master device to the ELECYLINDER triggers operation of the ELECYLINDER.
The ELECYLINDER status can also be determined when the master device receives signal output from the ELECYLINDER.

Control is just as simple as when using a solenoid valve (SOL valve) and air cylinder drive.
Shown below is an image when connecting ELECYLINDER with PLC as the host device.

- PLC/ELECYLINDER connection (movement between 2-points)
  1) Input a movement command signal from the PLC. (forward or backward)
  2) The ELECYLINDER operates.
  3) A position detection signal is output from the ELECYLINDER. (forward end or backward end)



Reference

- Refer to [ELECYLINDER Electric Section Instruction Manual (ME3816)] provided separately for the details how to control.

3.4 Teaching tool

The following teaching tools should be used for setup and operation of ELECYLINDER.

♦ **Digital Speed Controller / Digital Speed Controller Teaching / Remote digital speed controller**



Digital Speed Controller
Teaching (Wired)
TBD-1



Remote digital speed
controller (Wireless)
TBD-1WL

Refer to [Digital Speed Controller / Digital Speed Controller Teaching / Remote Speed Controller (ME3818)] for how to use them.

♦ **Touch Panel Teaching Pendant**



TB-03 (Wireless / wired)



TB-02 (Wired)

Refer to [ELECYLINDER Applicable Teaching Pendant TB-03 (Wireless: ME0375 / Wired: ME0376)] or [ELECYLINDER Applicable Teaching Pendant TB-02 (ME0355)] for how to use them.

♦ **IA-OS (PC Software)**



IA-OS

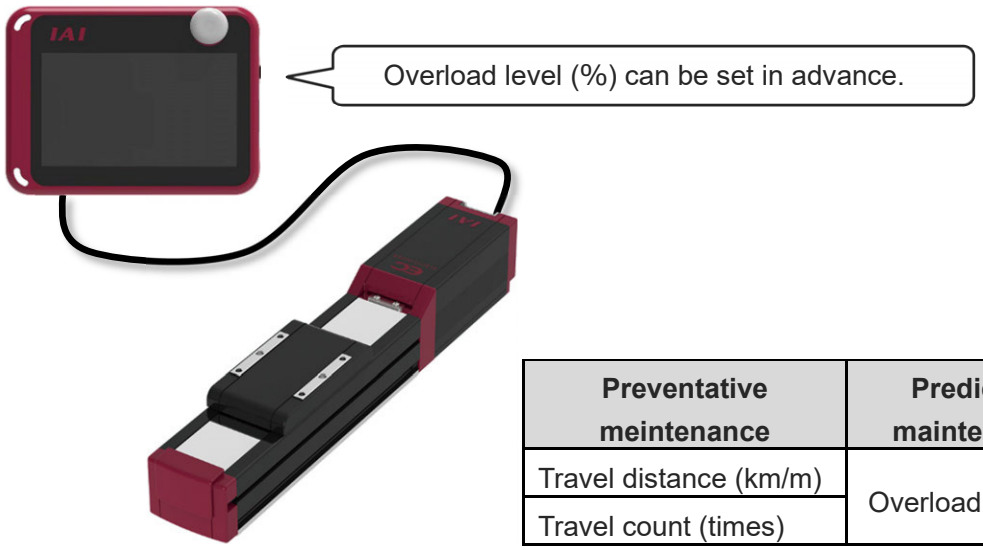
Install to PC



Refer to the [IA-OS First Step Guide (ME0391)] for how to install, and the help window in IA-OS for how to use.

3. 5 Preventive/Predictive Maintenance

The ELECYLINDER has a **predictive maintenance function** that notifies the user with an "overload warning" when the load exceeds normal status.
It also has a **preventive maintenance function** that prompts the user to perform maintenance if the travel count or the travel distance exceeds the set values.



Preventative meintenance	Predictive maintenance
Travel distance (km/m)	Overload warning
Travel count (times)	

If the criteria are set in advance, the LED built into the body will flash green/red to notify that the maintenance period is up.

Preventative maintenance
• Regular maintenance that is performed based on a reference period regardless of whether or not there are equipment breakdowns. • Prevents unexpected breakdowns. • Extends service life.

Predictive maintenance
• Maintenance that is performed when, based on regular equipment monitoring, an abnormality is predicted to occur. • Predicts unexpected breakdowns. • Prevents sudden line stoppages.

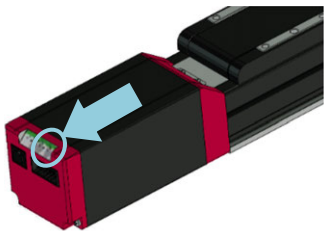
Reference

- For how to set up / use the preventive maintenance and predictive maintenance features, refer to [ELECYLINDER Electric Section Instruction Manual (ME3816)] provided separately.

3.6 Troubleshooting confirmations

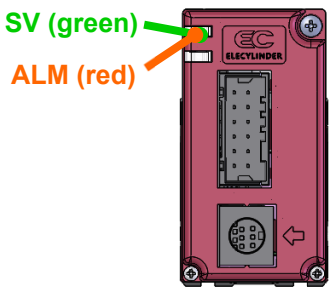
If a problem occurs, check the following points first in order to ensure quick recovery and prevent recurrence of the problem.

(1) Check status indicator LED (SV/ALM LED) of the ELECYLINDER body

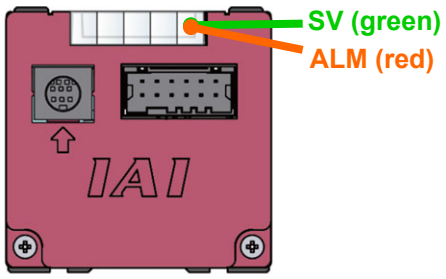


○: Light ON ×: Light OFF ★: Blinking

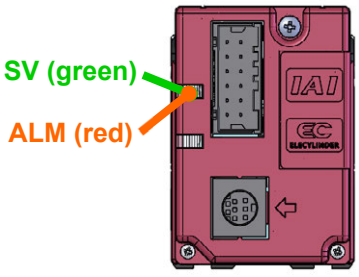
SV/ALM LED (Right side as seen from the motor side)		Operation status	* ALM signal output status
SV (green)	ALM (red)		
×	×	Power OFF, Servo OFF	OFF
		Servo OFF	ON
×	○	Alarm generated	OFF
		Stop switch ON (When using teaching tool)	ON
○	×	Power ON, Servo ON	ON
★ (Green 500ms ⇔ Red 500ms alternate blinking in 1 Hz cycle)		Maintenance warning generated (When the travel count or the travel distance has exceeded the set value, or when overload warning is generated)	ON
○ (both green & red ON)		Initializing when power comes ON	OFF



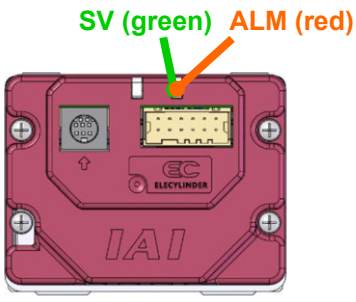
EC-S3 type



EC-S6/S7 type

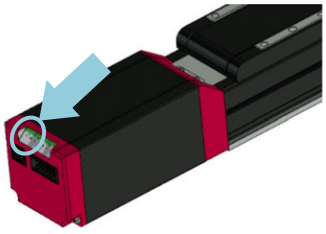


EC-S4 type



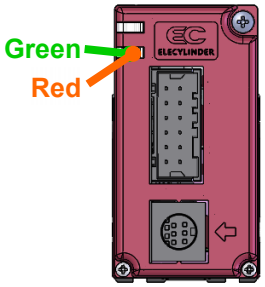
EC-S8 type

(2) Check status indicator LED (wireless status LED) of the ELECYLINDER body

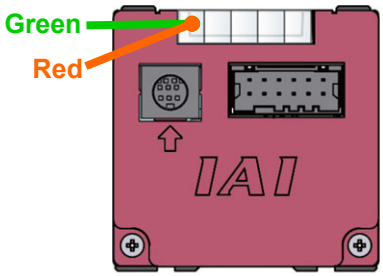


○: Light ON ×: Light OFF ★: Blinking

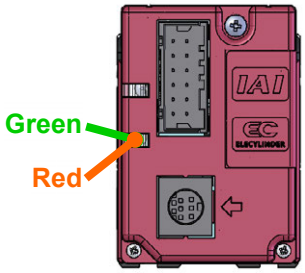
Wireless status LED (Left side as seen from the motor side)		Motor power status
Green	Red	
×	×	Wireless hardware initializing Wireless not connected (transmitting monitor data) Connecting from wired teaching pendant
×	★ (ON 200ms/ OFF 200ms alternate blinking)	Wireless hardware error
★ (ON 150ms/ OFF 150ms alternate blinking)	×	Connecting through wireless



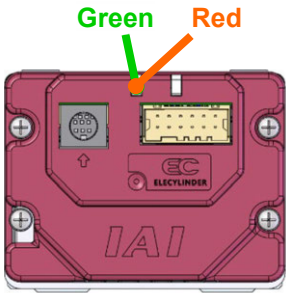
EC-S3 type



EC-S6/S7 type



EC-S4 type



EC-S8 type

(3) Check for abnormality in the master device (PLC, etc.)

(4) Check the voltage of the main power supply (24VDC)

Check for momentary power failure, voltage drop, power failure, etc.

(5) Confirm the generated alarm

Check the alarm information with the teaching tool.

(6) Check the connectors for disconnection or incomplete connection

(7) Check the cables for connection error, disconnection or snagging

Cut off the main power supply of the equipment (to avoid electric shock) and remove the cables around the measurement point (to avoid conductivity through the surrounding circuit) before checking the conductivity.

(8) Check the I/O signals

Use the master device and ELECYLINDER teaching tool to check for inconsistency or abnormality in the input/output signal status of the two units.

(9) Check the noise elimination measures (grounding, connection of noise suppressor, etc.)

(10) Check the events leading to the occurrence of the problem, as well as the operating conditions at the time of occurrence

(11) Analyze the cause

(12) Countermeasures

Caution

- When troubleshooting, exclude normally functioning parts from the targets to narrow down the causes.
- First, check (1) to (10) so that countermeasures can be taken swiftly.

Reference

- For how to diagnose troubles and details / how to treat with a generated alarm, refer to [ELECYLINDER Electric Section Instruction Manual (ME3816)] provided separately.
- For details / how to treat with a generated alarm, it can be checked also in the help window in IA-OS or touch panel teaching tool.

ELECYLINDER

Chapter 4

Maintenance and Inspection

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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.

Warning

- Do not climb on or put anything on the ELECYLINDER.
  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.
- Before releasing the brake, make sure to check there is nothing that will interfere with moving parts within the operation range.
- The slider may fall, possibly injuring the operator or people nearby and damaging the ELECYLINDER, workpiece or equipment.

Caution

- Check that the power to the ELECYLINDER 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.

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.
- It is recommended to improve the environment when the grease color changes in use in a bad environment.
- 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 ELECYLINDER to the exterior through gaps.
  Check visually for oil drips when supplying grease.
  Wipe it off in case of any dripping.
- An ELECYLINDER stored for 6 months or more may suffer from grease degradation.
  Supply grease before the start of use.
  Refer to [4.5 Grease supply].

4.2 Inspection

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.

4.2.1 Inspection items and schedule

*Stainless steel sheet life guideline: 5,000km

Inspection period	External inspection	Internal inspection	Grease supply	
			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	○	○		

Caution

- 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 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.

4.2.2 Grease supply timing (Guideline)

Maximum operating speed [mm/s]	Grease supply timing (Guideline)	
	Operation distance	Months
0 to 750 or less	1,250km	6 months
Over 750 to 1440	2,500km	

Caution

- An ELECYLINDER stored for 6 months or more may suffer from grease degradation. Supply grease before the start of use.
- The ball screw or guide may be damaged if the oil film runs out.
- It is recommended to improve the environment when the grease color changes in use in a bad environment.

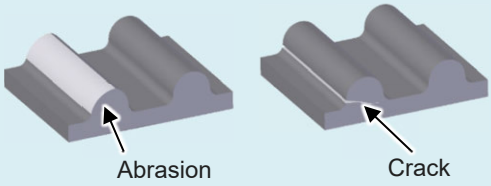
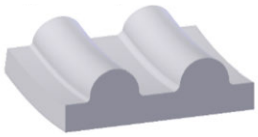
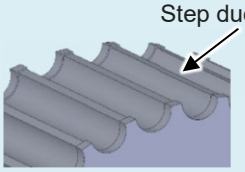
4.3 Visual inspection

Refer to [4.5 Grease supply] for detailed information about the greasing method.
Refer to [4.6 Component replacement] for detailed information about specific component replacement and adjustment methods.

4.3.1 External visual inspection

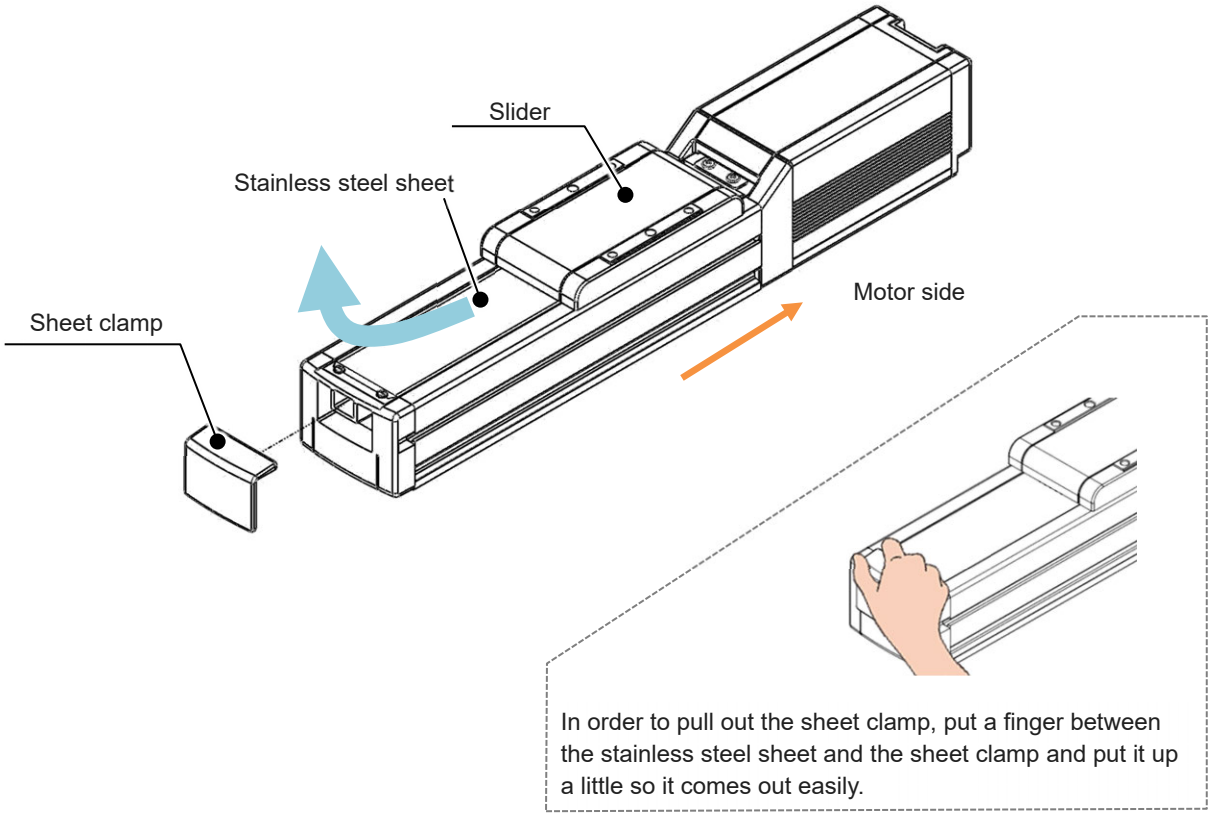
Inspection items	Maintenance work
Is abnormal noise or vibration generated?	Refer to [ELECYLINDER Electricity Section Instruction Manual (ME3816) Troubleshooting] for help.
Are ELECYLINDER mounting bolts loose?	Tighten them further. Refer to the tightening torque described in [Chapter 2 Installation].
Is the cable scratched?	Replace if the damage is severe.
Is the connector loose?	Re-insert correctly.
Is grease dripping out? (especially if vertically mounted)	Clean up any drips. Replenish the grease.
Is the stainless steel sheet scratched?	Replace the stainless steel sheet.
Is the stainless steel sheet misaligned or slack?	Adjust the alignment and hang.

4.3.2 Internal visual inspection

Inspection items	Maintenance work
Is play or dust generated?	The ball screw guide may be damaged. 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? (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.
Is there any remarkable abrasion, crack or chipping on the intermediate support cushion?	Replace the intermediate support cushion. Refer to [4.6.11 Replacement of Intermediate Support Cushion in 4.6 Component replacement] Applicable Models: S8X□A(R)
Is the belt significantly worn out on the teeth area? Is there any crack on the teeth area? Is there any chipped tooth?  	Replace the belt in case any of those stated on the left is found. Refer to [4.6.8 Timing belt replacement in 4.6 Component replacement]. Applicable Models: Motor reversed type
Is the belt hardened, softened or deformed (shrunk or expanded)? 	Replace the belt in case any of those stated on the left is found. Refer to [4.6.8 Timing belt replacement in 4.6 Component replacement]. Applicable Models: Motor reversed type
Is there any significant abrasion on pulley teeth?  	When abnormality stated on the left is found: Consult with IAI. Applicable Models: Motor reversed type
Is there any significant abrasion, crack or chipping on the slider roller (optional model code: SR)?	Have the slider roller replaced. Refer to [4.6.2 Slider roller (optional model code: SR) replacement in 4.6 Component replacement]. Applicable Models: Slider roller specification (option)

[1] How to have internal inspection on slider type

1. Move the slider towards the motor end.
2. Remove the sheet clamp.
3. Fold back the stainless steel sheet and inspect the interior.
4. Return the stainless steel sheet to normal and secure with sheet clamps.



Caution

- Pay attention on the stainless steel sheet so that it would be bent forcefully or get damaged.
- Pull the stainless steel sheet so the condition would not change from the initial installed condition.
  Any change in the condition of installation may cause the stainless steel sheet positioned extremely on one end or may impact the product life.
- They may be a risk of getting hurt on the edge of the stainless steel sheet. Use a glove or equivalent during work.

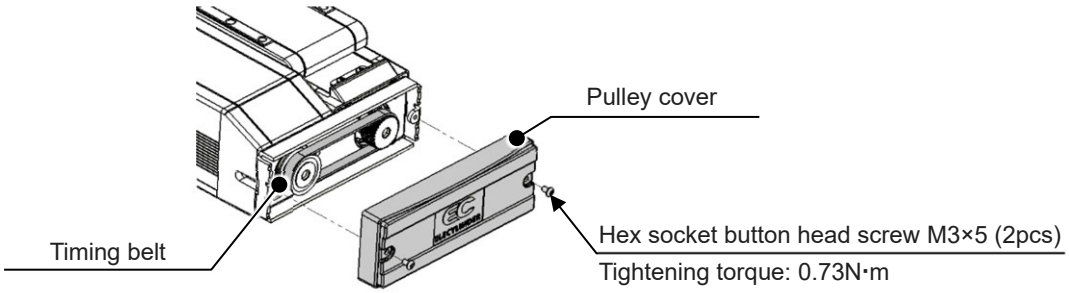
[2] How to have timing belt inspection on reversed type

1. Take off the pulley cover.
2. Inspect the timing belt.
3. Put the pulley cover back on.

[How to remove the pulley cover]

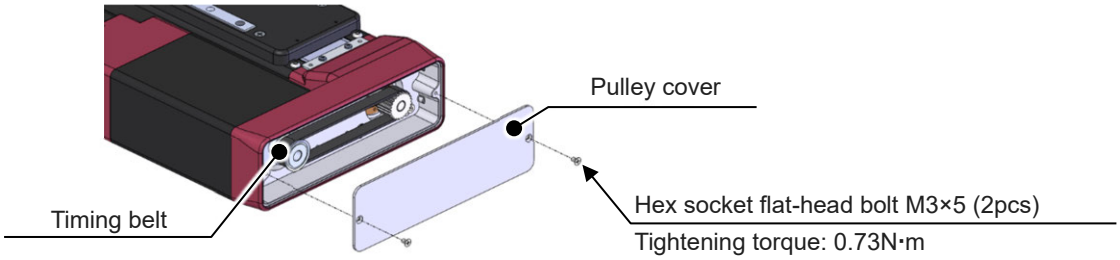
♦ **EC-S6□BR/S7□BR/S6□ABR/S7□ABR**

Take off the hex socket button head bolts (2pcs).



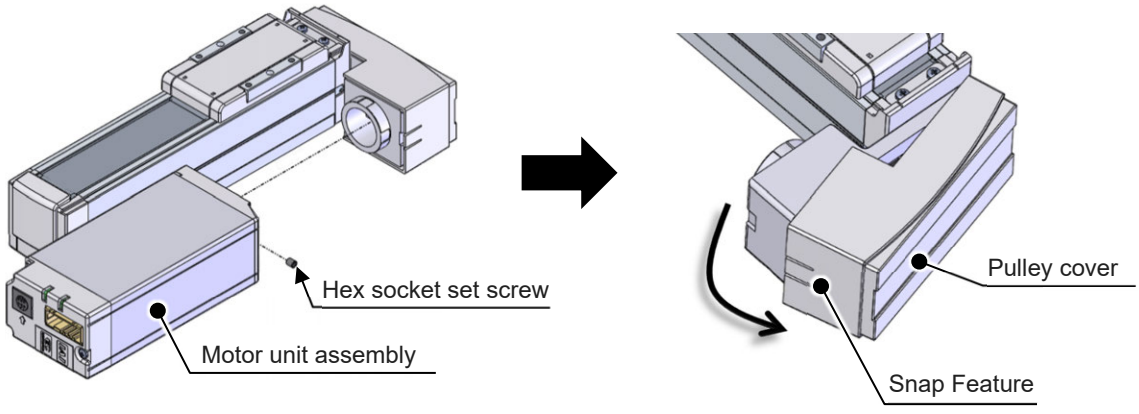
♦ **EC-S8□BR/S8□ABR/S8X□ABR**

Take off the hex socket flat-head bolts (2pcs).



♦ **EC-S3□BR/S4□BR/S3□ABR/S4□ABR**

Loosen the hex socket set screw and take off the motor unit assembly and while the snap feature opened lightly outward, slide the pulley cover to the direction shown in the figure to take it off.



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 gaps.
- Do not use petroleum-based solvents as they can harm resin 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 gaps.
- Do not use petroleum-based solvents, neutral detergent or alcohol.

4.5 Grease supply

4.5.1 Grease used

Type	Application location	Grease
All types	Ball screw	IAI Corporation IAGR-LDP01-400
	Guide	
	Coupling spacer	NOK Co., Ltd NOXLUB TL1013 (Lithium Based Grease)

Caution

- Do not attempt to apply any grease other the above.
  Mixing with other types of grease not only reduces the performance of the grease, it may even cause damage to the ELECYLINDER.
- Too much grease applied could cause overflow of grease, which may cause troubles and defects.
- If the grease enters your eye, immediately see a specialist physician for appropriate care.
- Wash your hands well with soap to rinse grease off after supplying grease.

4.5.2 Greasing method

Caution

- Do not apply grease during operation.
- When using a PC teaching for work, prepare the emergency stop button (emergency stop circuit) near you before starting the work.
- Do not apply too much grease. It may cause a failure.

[1] Preparation

- Protection Tool (e.g. Rubber Gloves)
- Grease Supply Tool

  Use tools suitable to the grease nipple diameter.

  Reference: Grease gun: CH-400 (Yamada)

  Nozzle: NZ3 (NSK)

- Grease

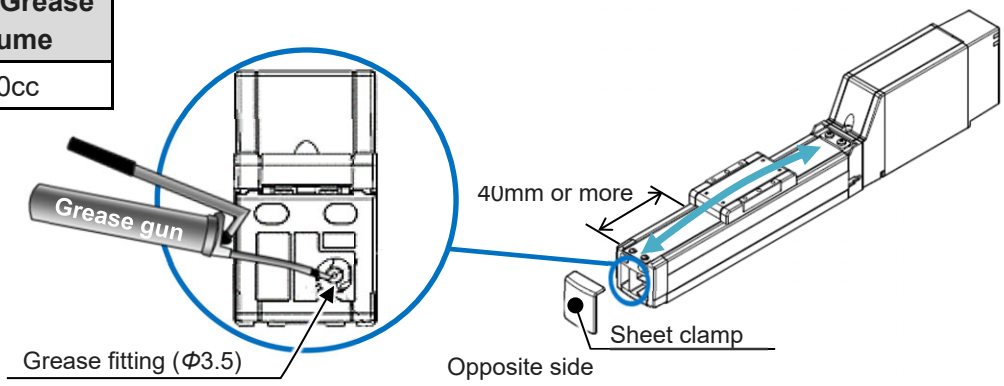
Type	Reference for Grease Supply Volume
S3 Type	0.5cc to 1.0cc
S4 Type	0.5cc to 1.0cc
S6 Type S7 Type	1.0cc to 2.0cc
S8 Type	3.5cc to 4.0cc

[2] Grease supply procedure

EC-S3□B/S3□BR

1. Remove the sheet clamp. (Refer to [page 4-7] for the removal method)
2. Move the slider to the side opposite the motor. (Place the slider 40mm or more away from the mechanical end.)
3. Lubricate using a grease gun through the grease fitting (Φ3.5).
4. Move the slider full-stroke to apply the grease thoroughly.

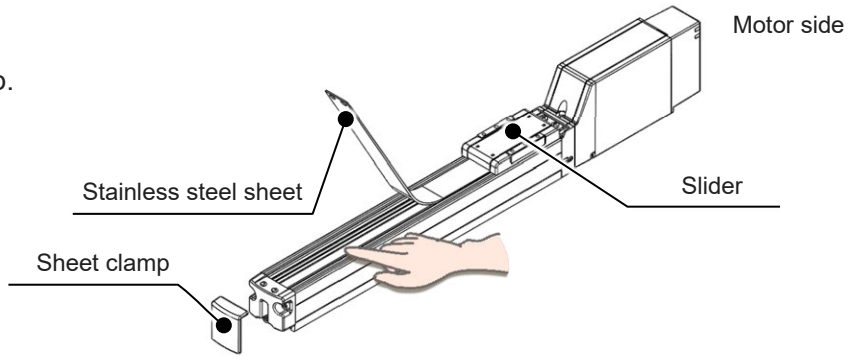
Reference for Grease Supply Volume
0.5cc to 1.0cc



EC-S3□AB/S3□ABR

1. Pull the slider towards the motor end.
2. Remove the sheet clamp.
3. Pull up the stainless steel sheet and apply grease on the guide and balls.
4. Set the stainless steel sheet back and move the slider in the full range of stroke to spread the grease in the area.
5. Secure with sheet clamp.

Reference for Grease Supply Volume
0.5cc to 1.0cc

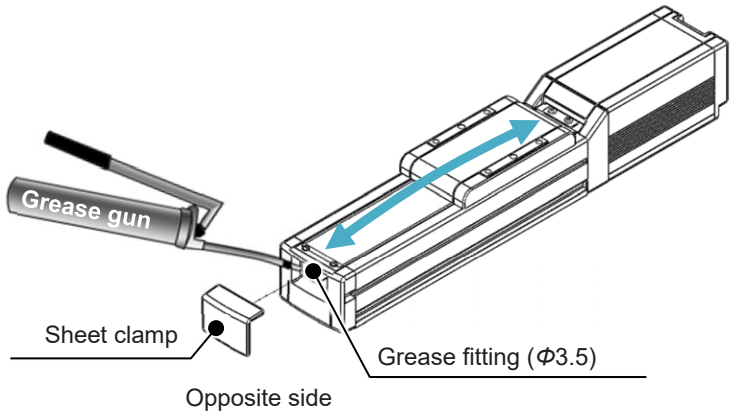


* To release the brake, refer to [ELECYLINDER Electricity Section Instruction Manual (ME3816)]

S4 type, S6 type, S7 type

1. Remove the sheet clamp. (Refer to [page 4-7] for the removal method)
2. Move the slider to the side opposite the motor.
3. Lubricate using a grease gun through the grease fitting (Φ3.5).
4. Move the slider full-stroke to apply the grease thoroughly.

Type	Reference for Grease Supply Volume
S4 type	0.5 to 1.0cc
S6 type S7 type	1.0 to 2.0cc



* To release the brake, refer to [ELECYLINDER Electricity Section Instruction Manual (ME3816)]

S8 type

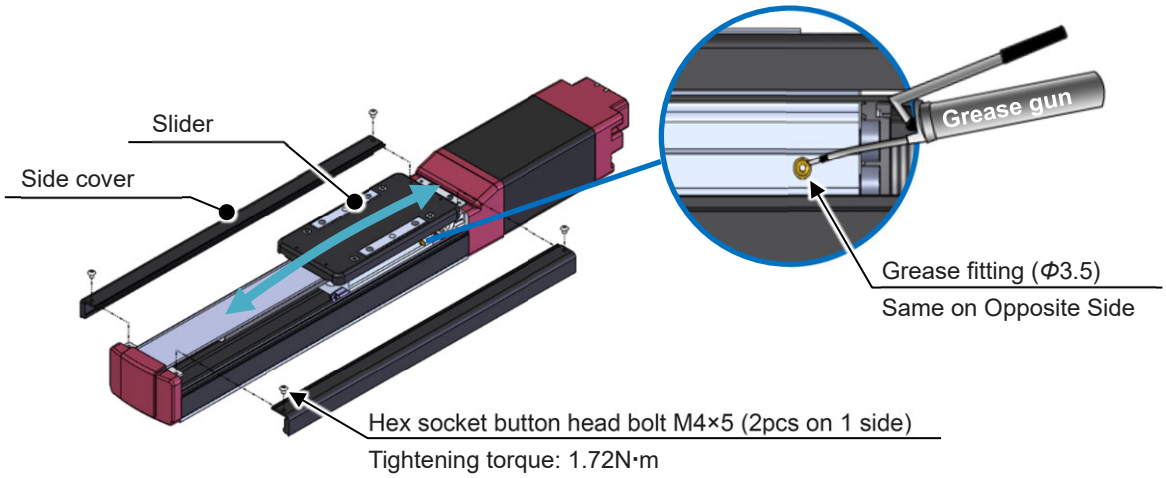
Grease can be supplied on both ends of the slider.

1. Remove the hex socket button head bolts (2pcs) on the side to supply grease and take off the side cover.

2. Supply grease at the grease nipple (Φ3.5) with a grease gun.
   * Grease can be supplied on ball screw and guides at the same time.

3. Move the slider full-stroke to apply the grease thoroughly.
   *To release the brake, refer to [ELECYLINDER Electricity Section Instruction Manual (ME3816)]

Reference for Grease Supply Volume
3.5cc to 4.0cc



4. 6 Component replacement

4.6.1 Stainless steel sheet replacement/adjustment

Caution

- Pay attention on the stainless steel sheet so it would not be bent forcefully or get damaged.
- Pay attention when you pull the stainless steel sheet so the condition would not change from the initial installed condition.
  Any change in the condition of installation may cause the stainless steel sheet positioned extremely on one end or may impact the product life.
- When installing the sheet clamp, do not apply excessive force to the stainless steel sheet.
- They may be a risk of getting hurt on the edge of the stainless steel sheet. Use a globe or equivalent during work.
- As a guideline, the stainless steel sheet should last for about 5,000km of motion. However, depending on the usage or environment, replace the stainless steel sheet appropriately.

♦ Preparation

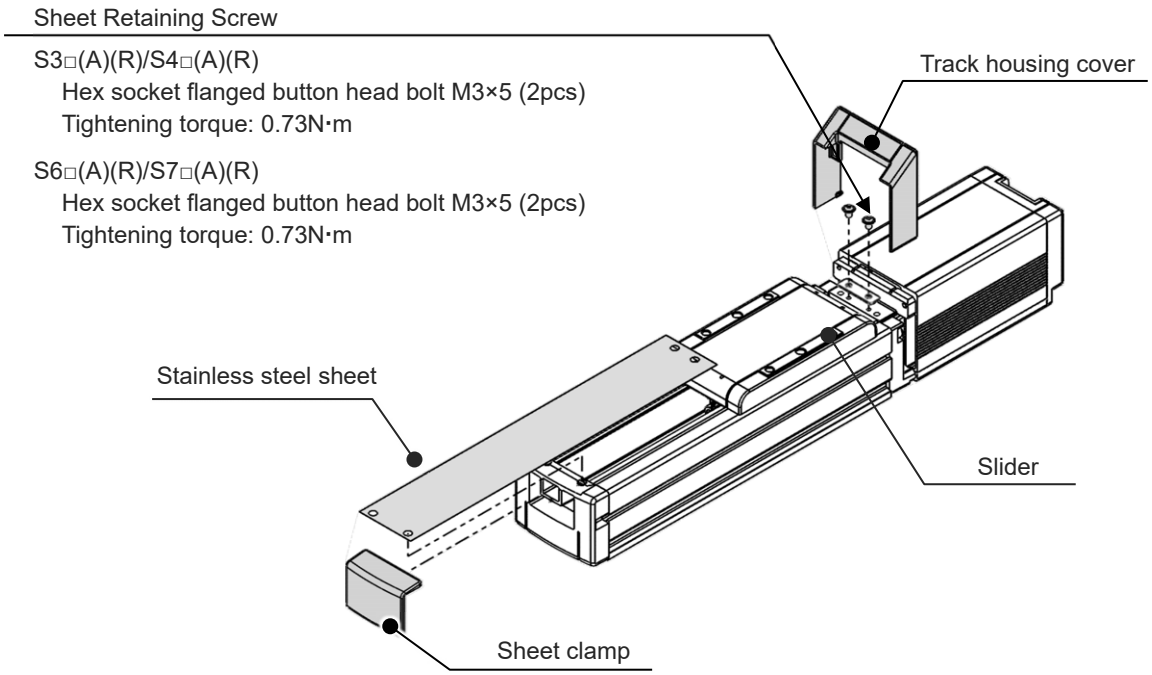
- Hex Wrench or Torque Wrench Parallel Faces
- Protection Equipment (e.g. Cotton Work Gloves)
- Stainless steel sheet for replacement

Type	Model number
S3 type	ST-EC-S3-*** (stroke)
S4 type	ST-EC-S4-*** (stroke)
S6 type	ST-EC-S6-*** (stroke)
S7 type	ST-EC-S7-*** (stroke)
S8□B/S8□BR/S8□AB/S8□ABR	ST-6A8-*** (stroke)
S8X□AB/S8X□ABR	ST-EC-S8X-*** (stroke)

♦ Replacement procedure

[1] S3 type, S4 type, S6 type, S7 type

1. Take off the sheet clamp and track housing cover
2. Remove the hex socket flanged button head bolts (2pcs).
3. Pull out the old stainless steel sheet.
4. Insert a stainless steel sheet for replacement along the guides inside the slider.
5. Put the hex socket flanged button head bolts (2pcs).
6. Secure with sheet clamp and track housing cover.



[2] EC-S8□B/S8□BR/S8□AB/S8□ABR

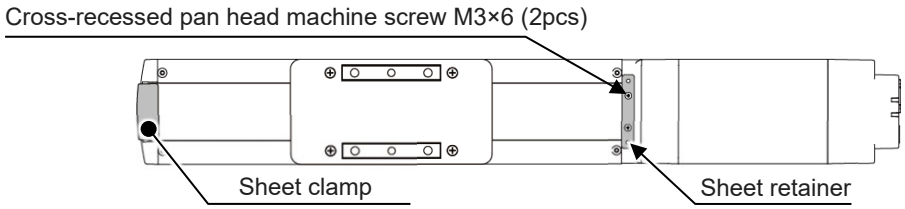
* In case Step 1 cannot be performed for a reason such as damage on the stainless steel sheet, perform process in Step 2.

● Step 1

* Prepare adhesive tape and a pair of scissors.

1. Remove the sheet clamp. (Refer to [page 4-7] for the removal method)

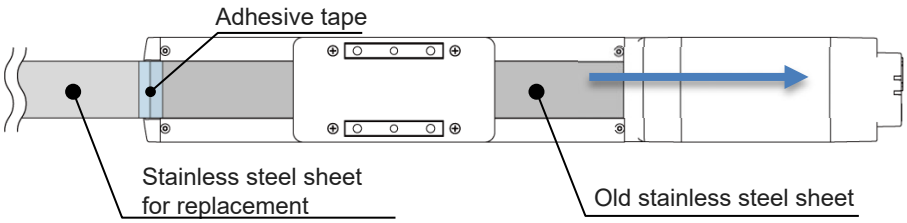
2. Remove the hex socket button head bolts (2pcs) and take off the sheet retainer.



3. Join the old stainless steel sheet and a stainless steel sheet for replacement with adhesive tape.

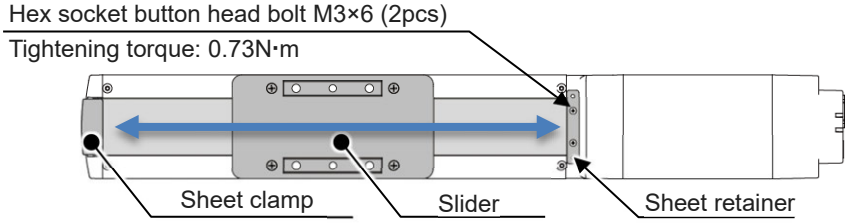
* Have the tape not to exceed the width of the stainless steel sheets.

4. Pull the old stainless steel sheet slowly to swap it to the stainless steel sheet for replacement, and then take off the old stainless steel sheet and the tape.



5. Put the sheet clamp on and attach the sheet retainer with the remove the hex socket button head bolts (2pcs).

Move the slider in its full stroke to make sure that there is no looseness on the stainless steel sheet.

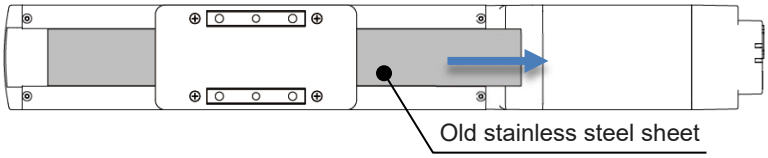


● Step 2

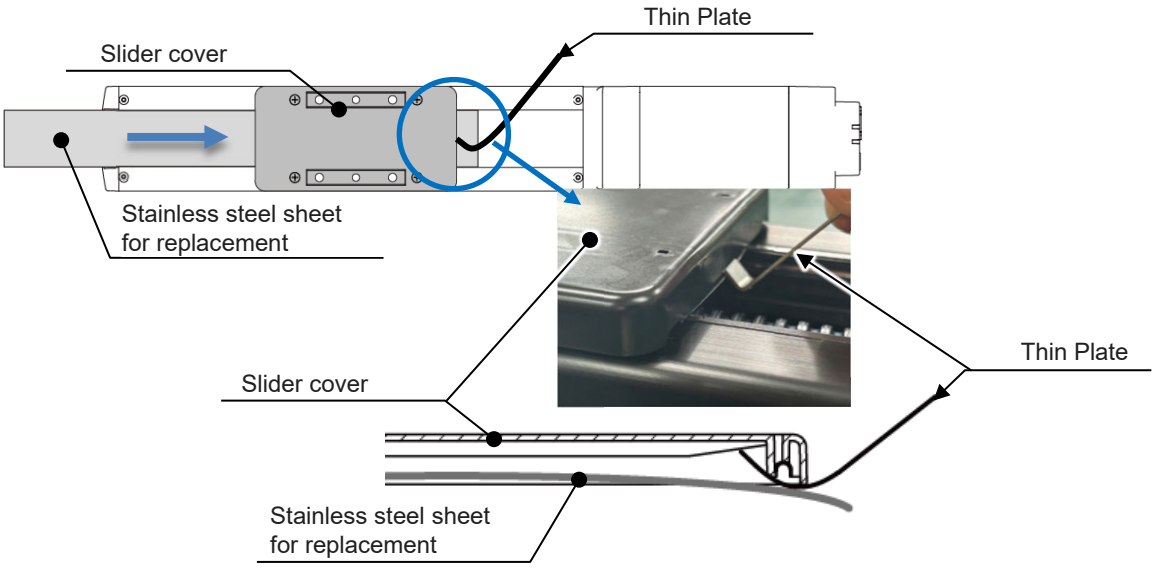
* Prepare a thin plate.

1. Remove the sheet clamp and sheet retainer. Refer to 1. and 2. in Step 1.

2. Pull out the old stainless steel sheet.



3. Insert a thin plate to the slider cover on the motor side.
   Insert a stainless steel sheet for replacement from the sheet clamp side and take it out from the motor side.
   * The thin plate should work as a guide to have the stainless steel sheet avoid stuck inside the slider cover.



4. Put the sheet clamp on and attach the sheet retainer. Refer to 5. in Step 1.
   Move the slider in its full stroke to make sure that there is no looseness on the stainless steel sheet.

4.6.2 Slider roller (optional model code: SR) replacement

♦ Preparation

- Protection Equipment (e.g. Cotton Work Gloves)
- Slider roller assembly for replacement

Type	Model number
S3 Type	EC-SR-S3
S4, S6, S7 Type	EC-SR-S467
S8 Type	EC-SR-WS1012



S3 Type, S4 Type
S6 Type, S7 Type



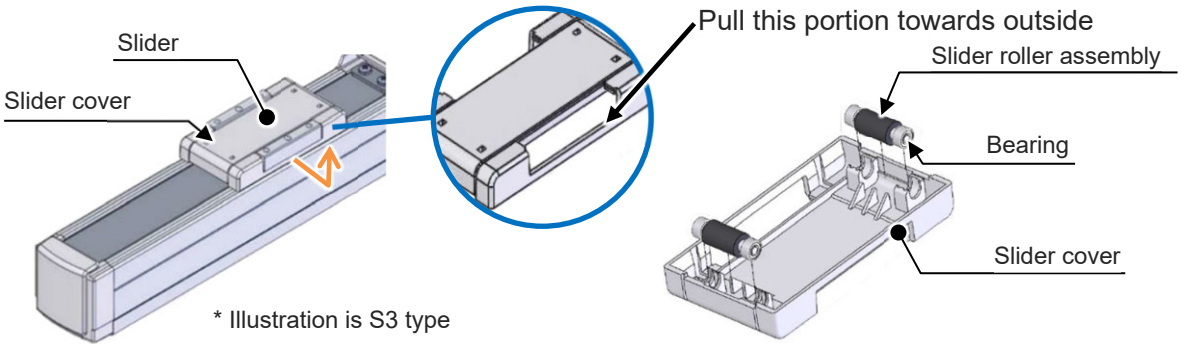
S8 Type

(Note) The slider roller assembly model codes are the codes for one piece each.
Place an order for quantity necessary for replacement. (2pcs)

♦ Replacement procedure

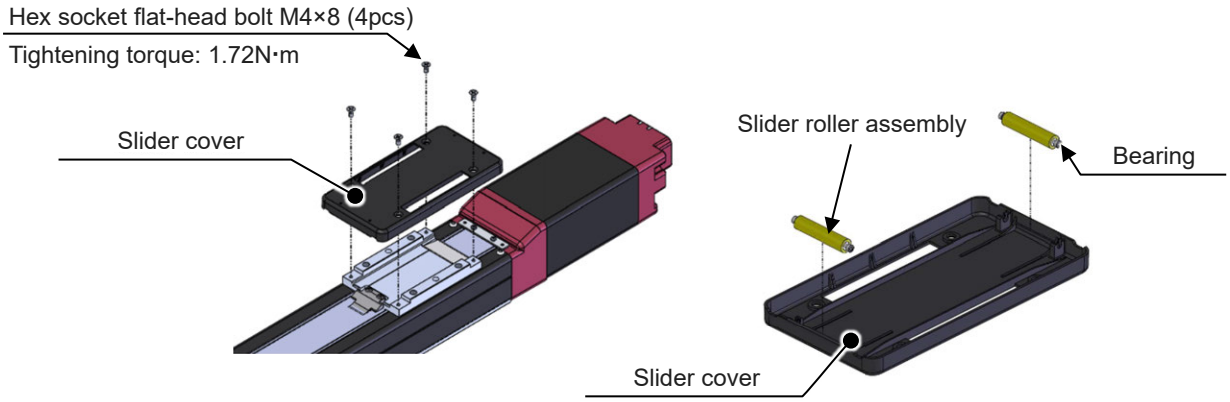
[1] S3 type, S4 type, S6 type, S7 type

1. Take the slider cover off while pulling it towards outside.
2. Pull Slider Roller Assembly at the center to take it off.
3. Push in the bearings on the sides of slider roller assembly for replacement with even force applied on them till it makes a “click” sound to set the assembly onto the slider cover.
4. Put the slider cover on the slider.



[2] S8 type

1. Remove the hex socket flat-head bolts (4pcs) and take off the slider cover.
2. Pull Slider Roller Assembly at the center to take it off.
3. Push in the bearings on the sides of slider roller assembly for replacement with even force applied on them till it makes a “click” sound to set the assembly onto the slider cover.
4. Put the slider cover with the cross-recessed flat-head screws (4pcs).

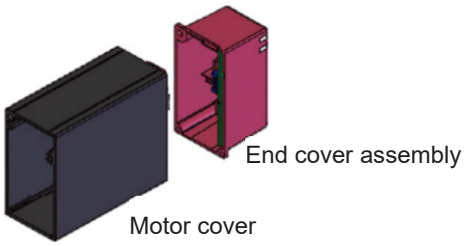


4.6.3 Controller (Controller Assembly) replacement

It is necessary to replace the controller assembly for S3 Type and S4 Type.

♦ **Preparation**

- Hex Wrench or Torque Wrench Parallel Faces: 3mm
- Phillips Screwdriver
- Protection Equipment (e.g. Cotton Work Gloves)
- Controller assembly for replacement



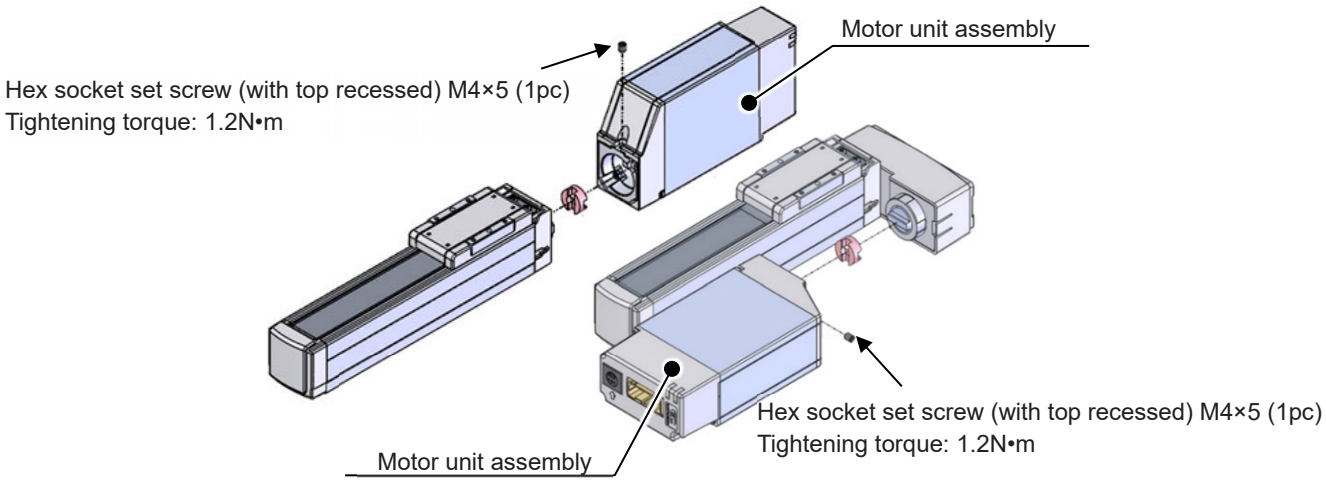
Type	Encoder	Brake	I/O	Standard Model Code Put (D) for the digital speed controller type	Option model			
					RCON-EC connection specification*	2-circuit power supply specification*	3 position mode specification*	Wireless axis operation specification
S3	Incremental	No	NPN	MWB-EC-SRR3	ACR (Only NPN)	TMD2	MF	WL2
			PNP	MWB-EC-SRR3-P				
		Yes	NPN	MWB-EC-SRR3-B				
			PNP	MWB-EC-SRR3-B-P				
	Battery-less absolute	No	NPN	MWB-EC-SRR3-WA				
			PNP	MWB-EC-SRR3-WA-P				
		Yes	NPN	MWB-EC-SRR3-WA-B				
			PNP	MWB-EC-SRR3-WA-B-P				
S4	Incremental	No	NPN	MWB-ECB-SRR4				
			PNP	MWB-ECB-SRR4-P				
		Yes	NPN	MWB-ECB-SRR4-B				
			PNP	MWB-ECB-SRR4-B-P				
	Battery-less absolute	No	NPN	MWB-ECB-SRR4-WA				
			PNP	MWB-ECB-SRR4-WA-P				
		Yes	NPN	MWB-ECB-SRR4-WA-B				
			PNP	MWB-ECB-SRR4-WA-B-P				

* It should be in common when wireless communication type (Model code: WL) is selected.
(Note) There is no wireless communication PC board enclosed.

♦ Replacement procedure

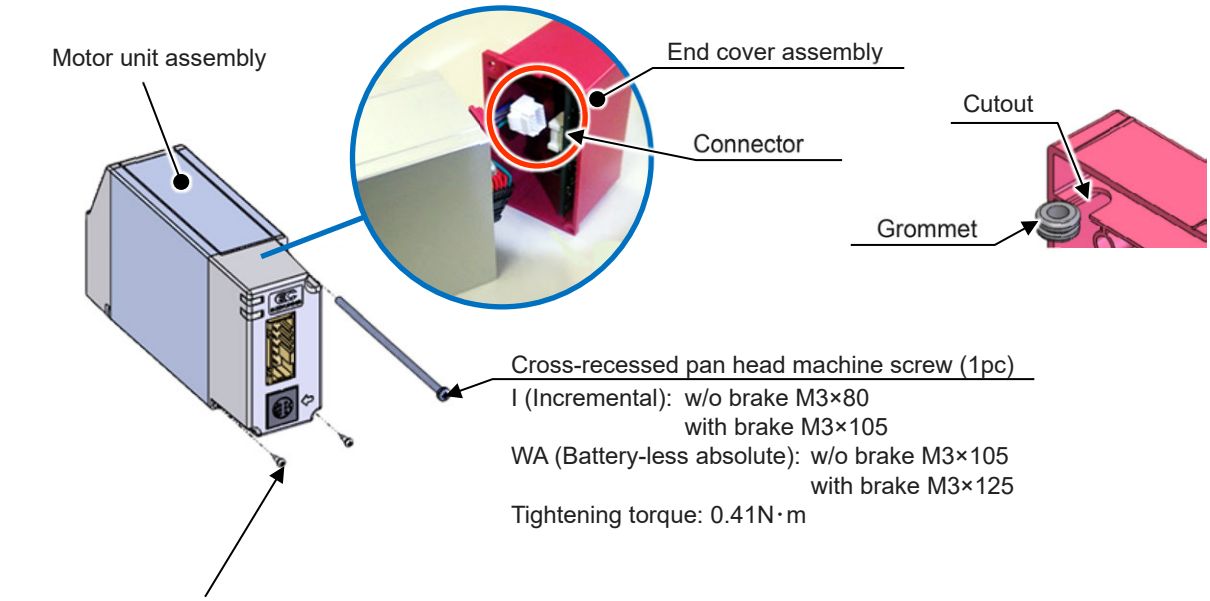
[1] S3 type

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.



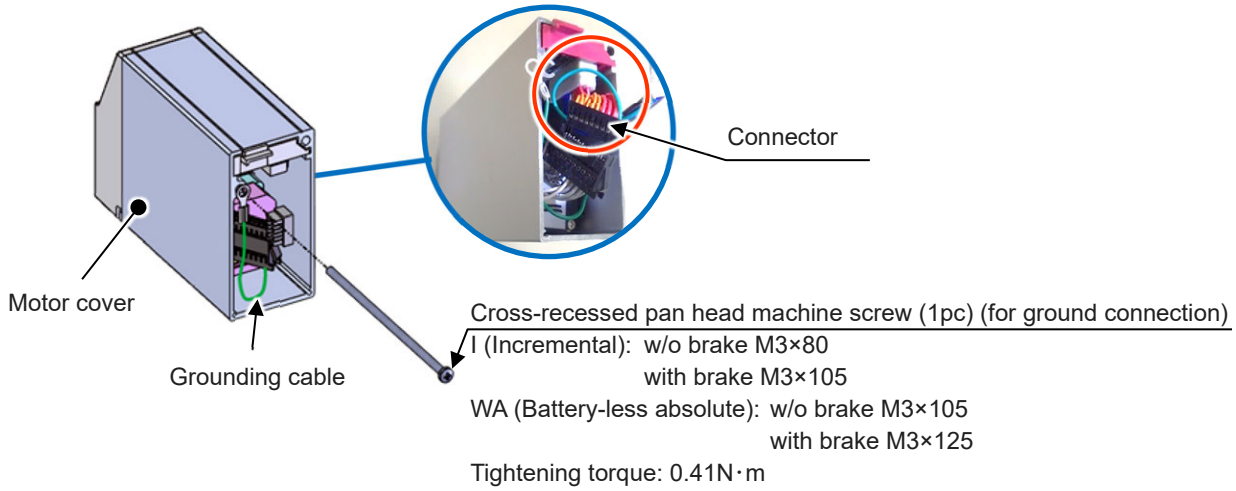
2. Take the cross-recessed pan head machine screw (1pc) and cross-recessed tapping screws (2pcs) off the motor unit assembly.

3. Take off the connectors on the wires from the controller circuit board in the end cover assembly.



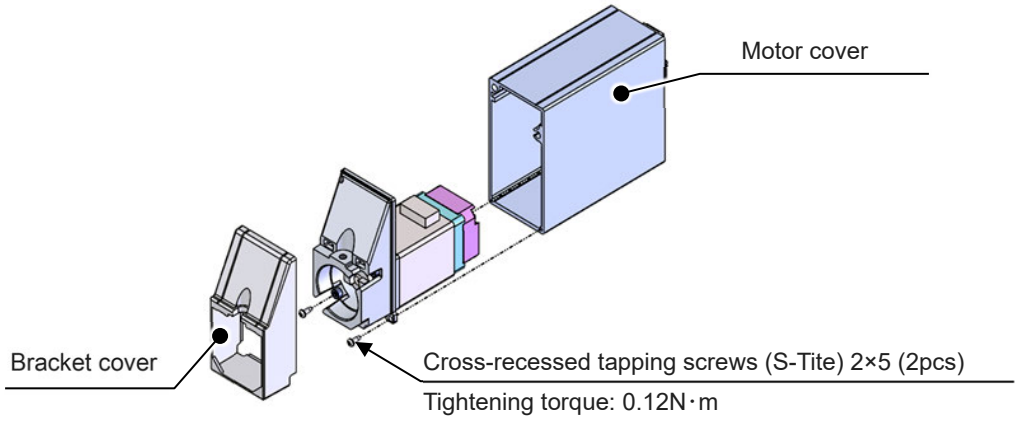
4. Take off the cross-recessed pan head machine screw (1pc) for earthing.

5. Take off the connector joining the motor/encoder to the controller circuit board in the motor cover.

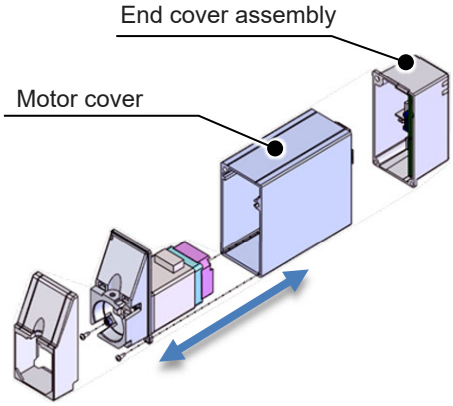


6. Take off the bracket cover and take off the cross-recessed tapping screws (2pcs).

7. Take off the motor cover.

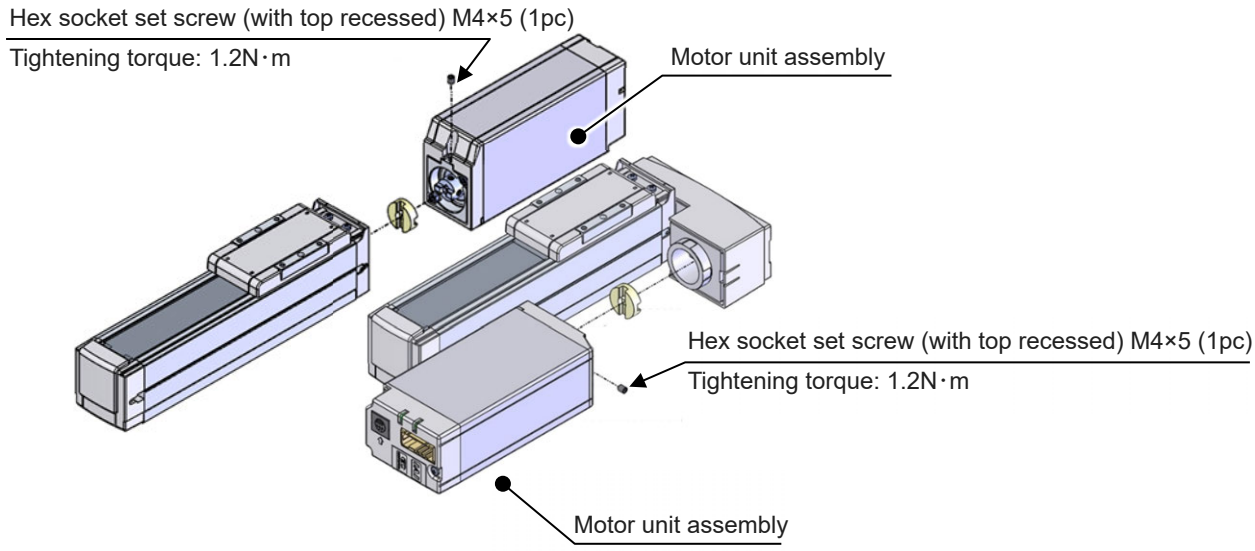


8. Replace the controller assembly (motor cover and end cover assembly) with the one for replacement and set all the components up in the back order.



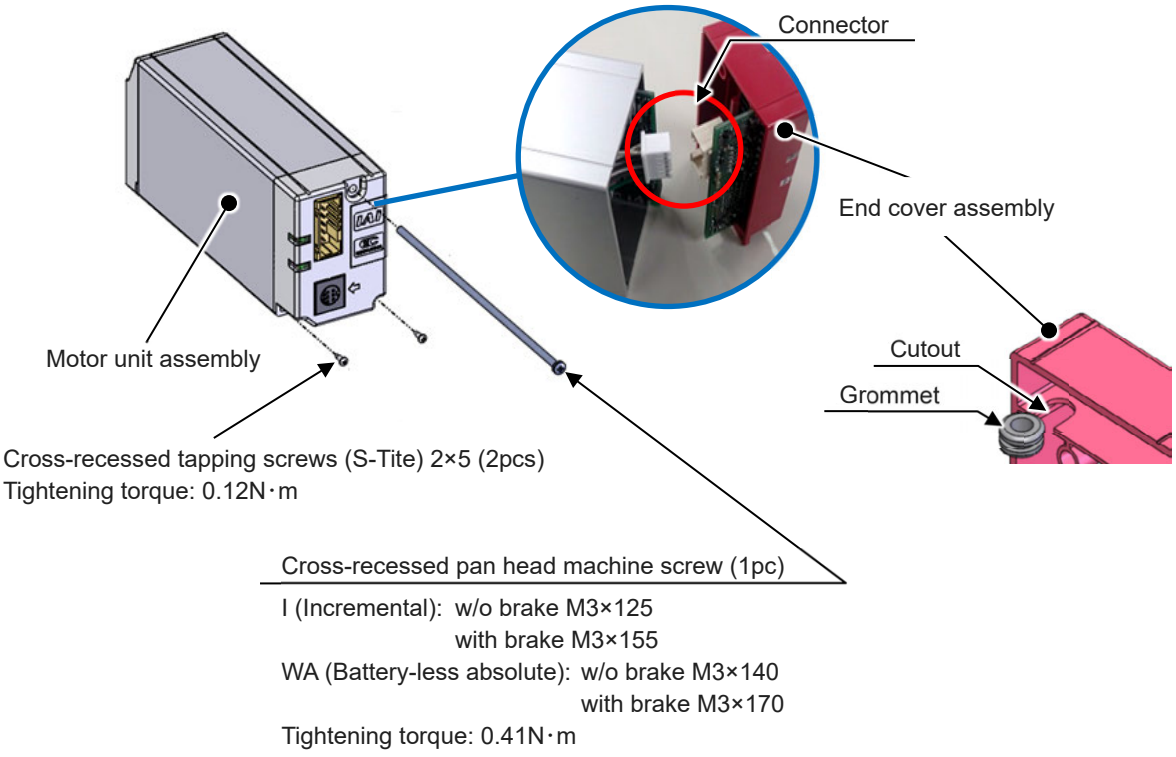
[2] S4 type

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.

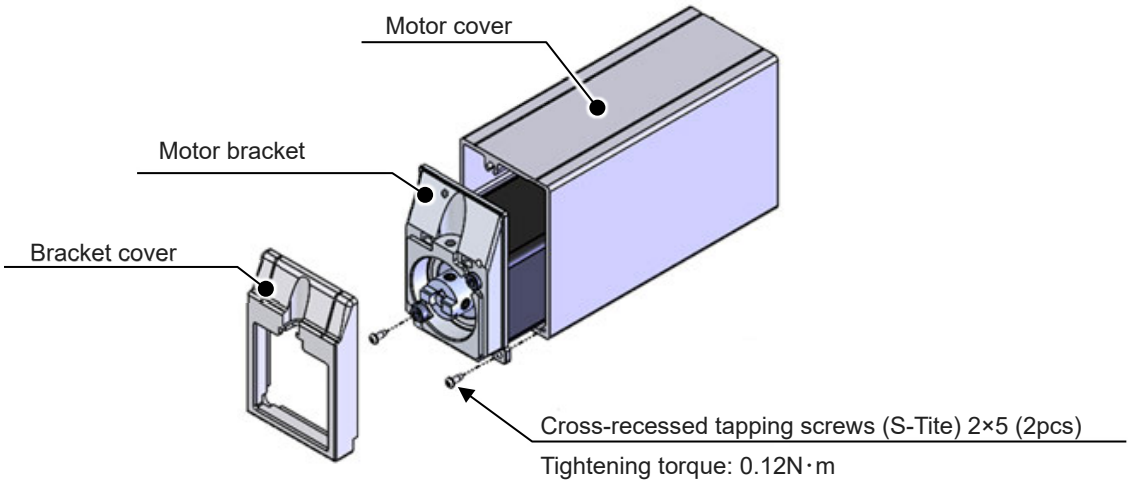


2. Take the cross-recessed pan head machine screw (1pc) and cross-recessed tapping screws (2pcs) off the motor unit assembly.

3. Take off the connectors on the wires from the controller circuit board in the end cover assembly.

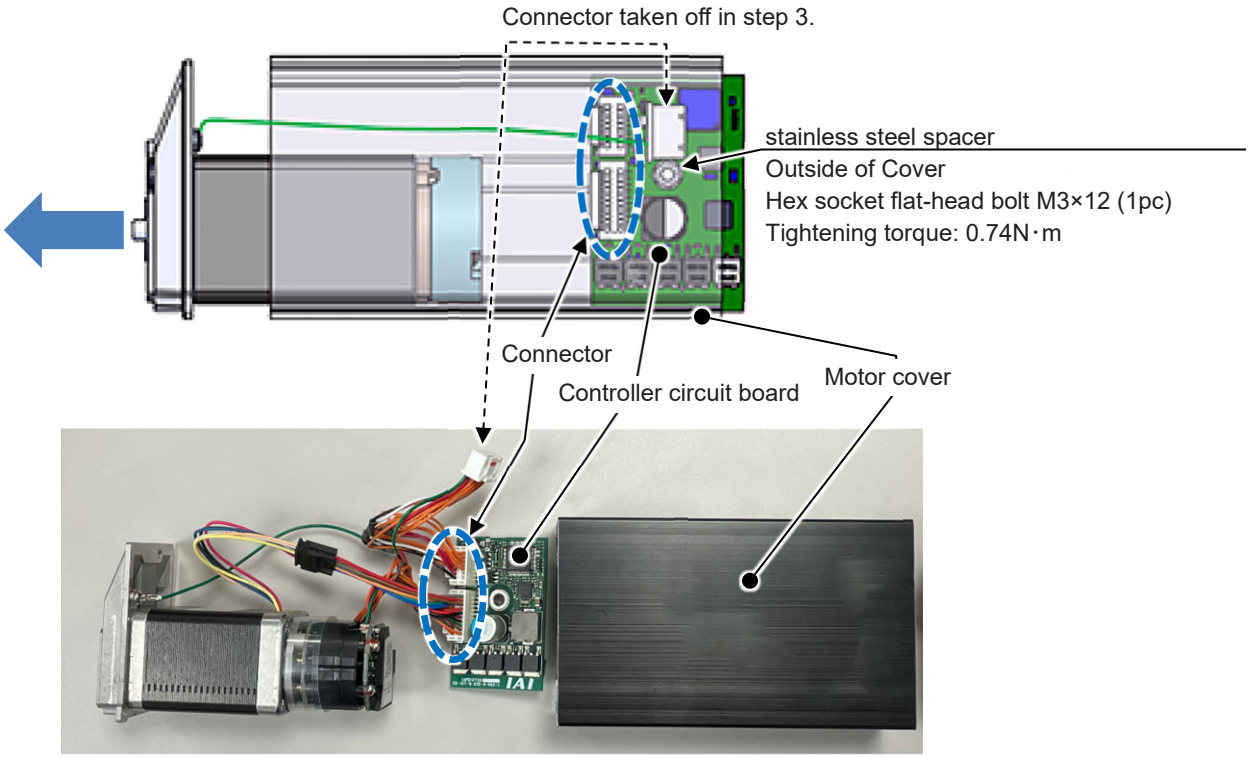


4. Take the bracket cover off and take off the cross-recessed tapping screws (2pcs).

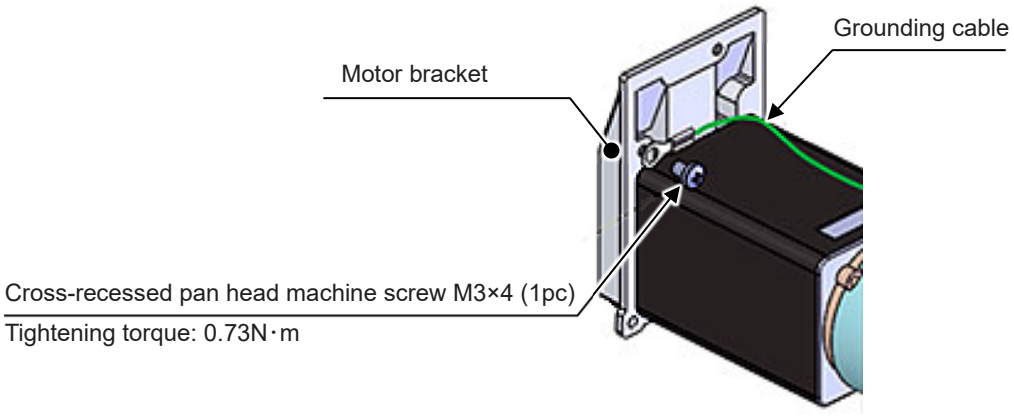


5. Take the controller circuit board off the motor cover.

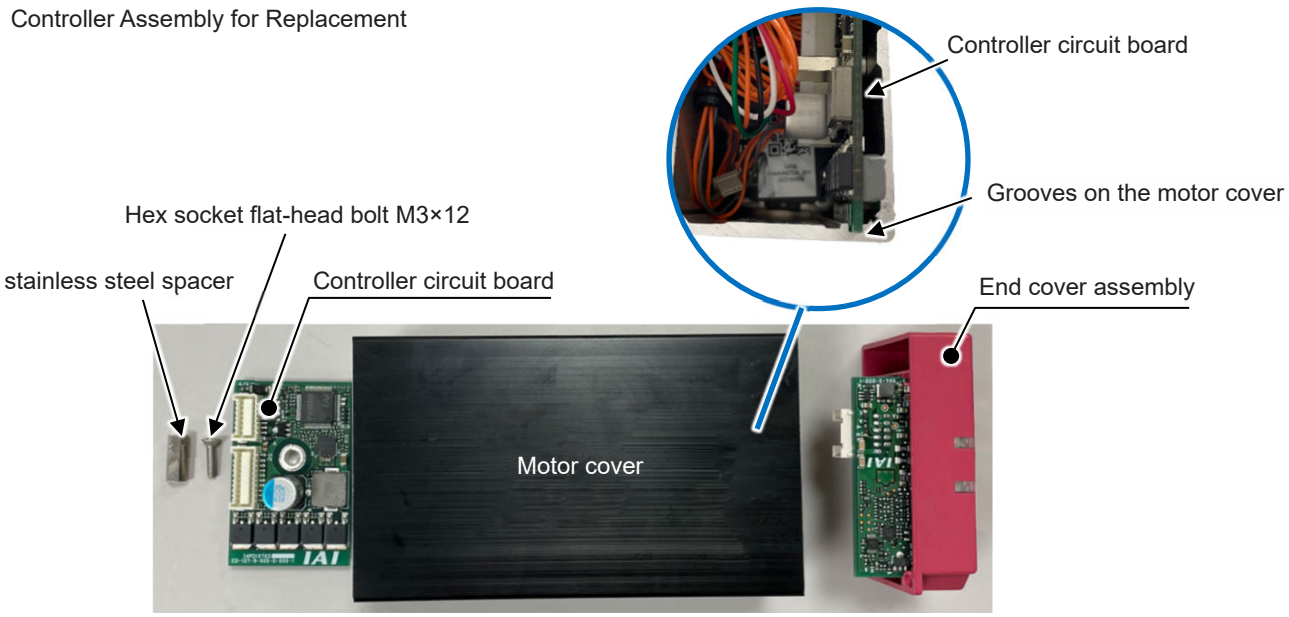
- Take off the hex socket flat-head bolt outside of the motor cover while holding the stainless steel spacer (hexagonal, double-end internal thread) inside the motor cover.
- Pull off the motor unit together with the controller circuit board from the motor cover.
- Unplug the connectors on the cables connecting the controller circuit board to the motor and encoder.



6. Take off the cross-recessed pan head machine screws for earthing (1pc), and take off the controller circuit board on the motor cover from the motor bracket.



7. Take off the controller circuit board from the replacement controller assembly.
Refer to [Step 3. and 5.]
Assemble the replacement controller circuit board in the order from Step 6. to 1.
* Put the controller circuit board to the grooves on the motor cover.
* Pay attention not to pinch cables.



4.6.4 Controller (Motor Cover Assembly) replacement

It is necessary to replace the motor cover assembly for S6 Type and S7 Type.

♦ **Preparation**

- Hex Wrench or Torque Wrench Parallel Faces: 2.5mm, 3mm, 4mm
- Phillips Screwdriver
- Protection Equipment (e.g. Cotton Work Gloves)
- Motor cover assembly for replacement



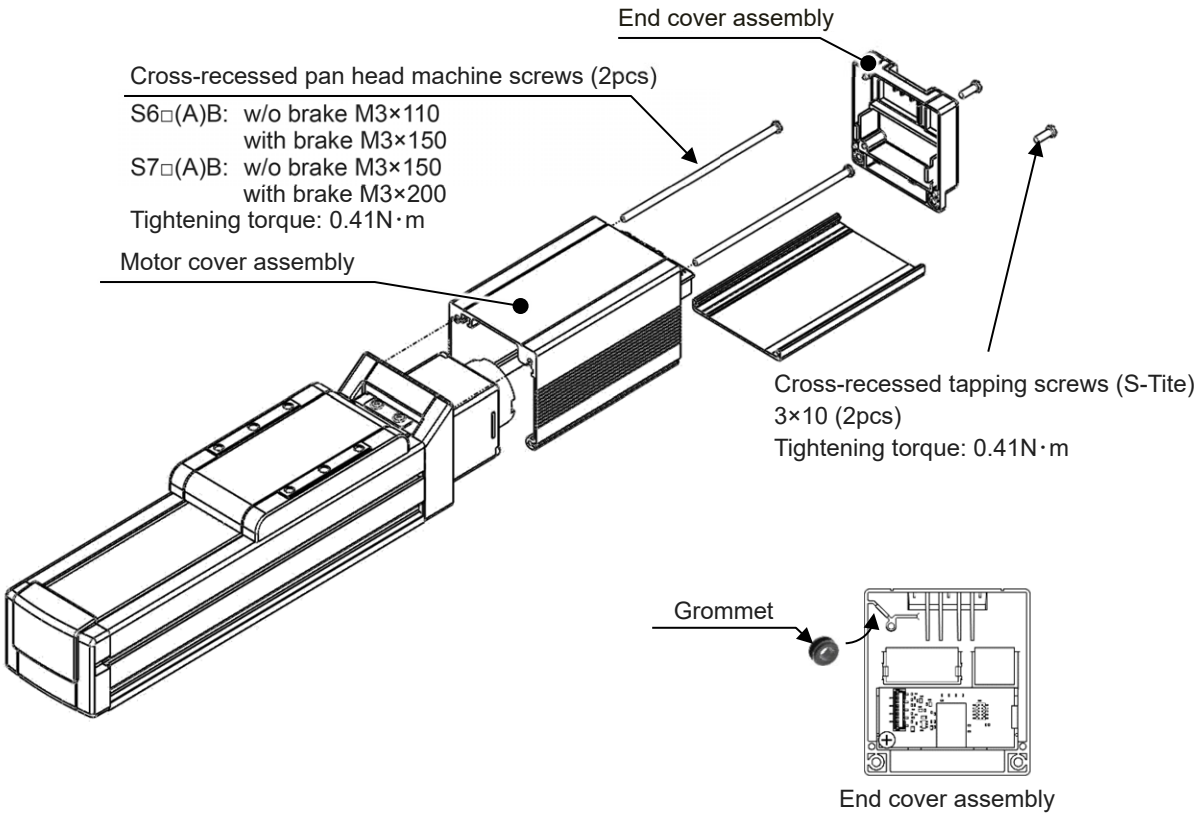
Type	Brake	I/O	Standard Model Code Put (D) for the digital speed controller type	Option model			
				RCON-EC connection specification*	2-circuit power supply specification*	3 position mode specification*	Wireless axis operation specification
S6	No	NPN	MWB-EC-SR6	ACR (Only NPN)	TMD2	MF	WL2
		PNP	MWB-EC-SR6-P				
	Yes	NPN	MWB-EC-SR6-B				
		PNP	MWB-EC-SR6-B-P				
S7	No	NPN	MWB-EC-SR7				
		PNP	MWB-EC-SR7-P				
	Yes	NPN	MWB-EC-SR7-B				
		PNP	MWB-EC-SR7-B-P				

* It should be in common when wireless communication type (Model code: WL) is selected.
(Note) There is no wireless communication PC board enclosed.

♦ Replacement procedure

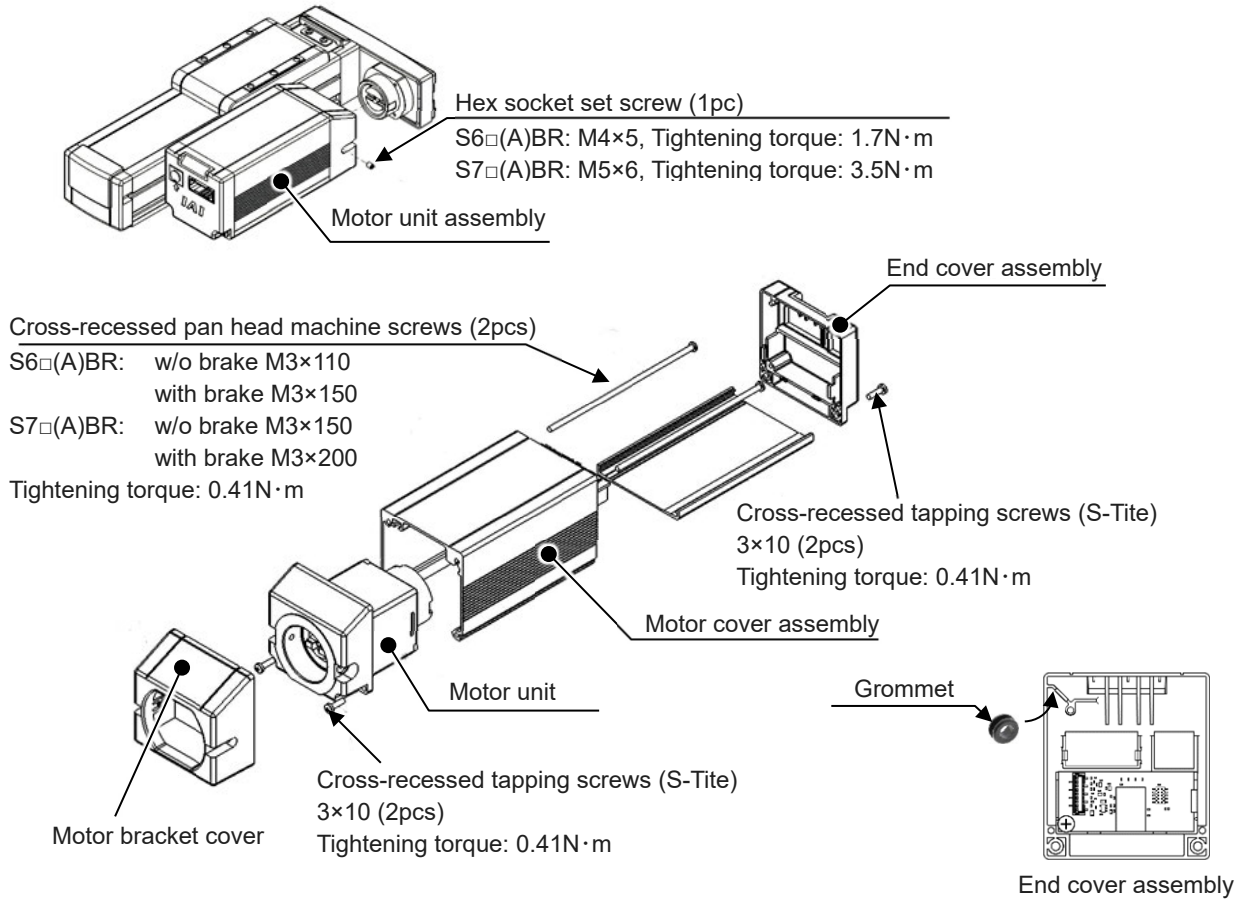
[1] Motor straight type EC-S6□B/S7□B/S6□AB/S7□AB

1. Remove the cross-recessed tapping screws (2pcs) and take off the end cover assembly.
2. Remove the cross-recessed pan head machine screws (2pcs), disconnect the cables and connectors and take off the motor cover assembly.
3. Mount the wiring/connectors to a replacement motor cover assembly and return it to the original state.
4. Mount the end cover assembly.
   * Regarding the connectors and cables, refer to [4.6.4 [3] Precautions for connectors/wiring].



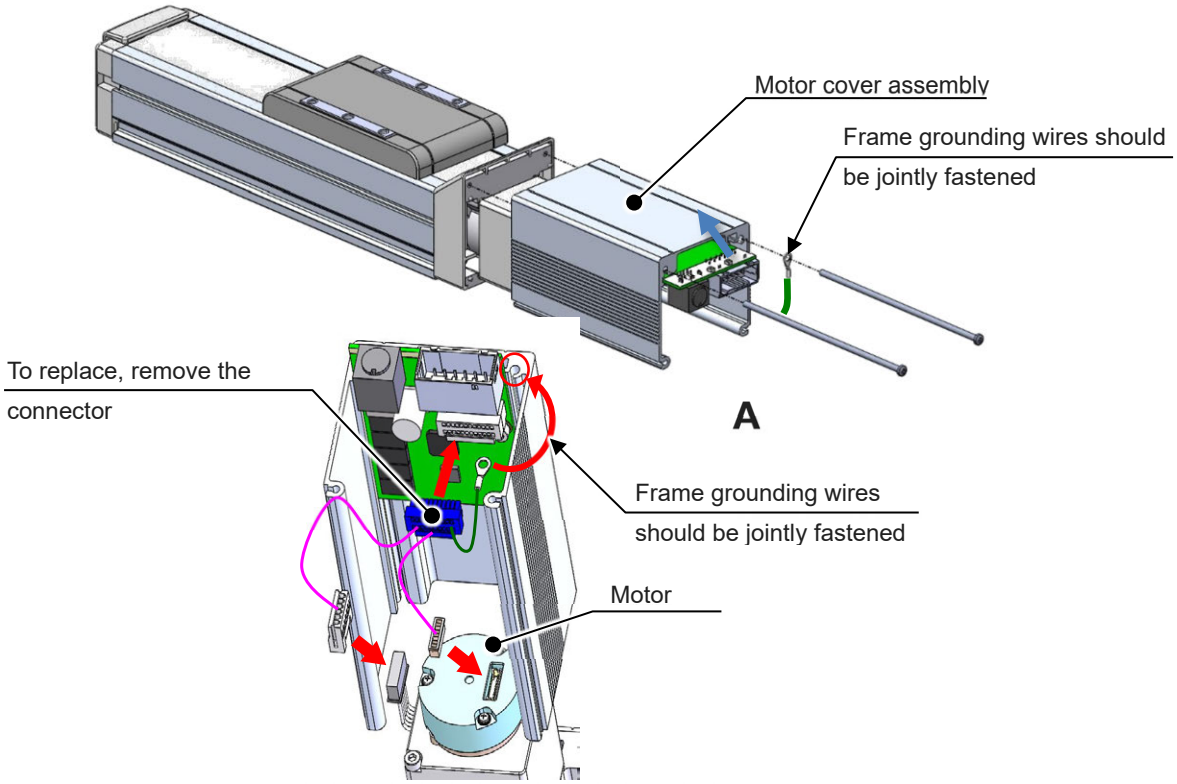
[2] Motor reversed type EC-S6□BR/S7□BR/S6□ABR/S7□ABR

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.
2. Take the motor bracket cover off.
3. Remove the cross-recessed tapping screws (2pcs) and take off the end cover assembly.
4. Remove the cross-recessed pan head machine screws (2pcs) and the cross-recessed tapping screws (2pcs) on the motor unit side, disconnect the cables and connectors and take off the motor cover assembly.
5. Mount the wiring/connectors to a replacement motor cover assembly and return it to the original state.
6. Mount the end cover assembly.
7. Put the motor bracket cover on.
8. Attach the motor unit assembly.
   * Regarding the connectors and cables, refer to [4.6.4 [3] Precautions for connectors/wiring].



[3] Precautions for connectors/wiring

♦ **Motor cover assembly**



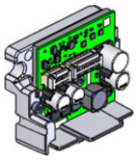
Motor cover assembly interior
(A arrow view)

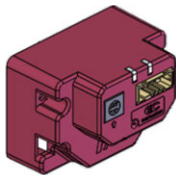
* Before pulling off the motor cover assembly, make sure to remove the connector
* Be careful not to snag the cables

4.6.5 Controller / Wireless Communication Circuit Board (Controller Cover Assembly) replacement

The controller cover assembly should be replaced for S8 Type.
In the replacement of the controller cover assembly, the controller circuit board and the wireless communication circuit board are to be replaced together.

[1] S8 type


Driver Board


Controller Cover

♦ **Preparation**

- Phillips Screwdriver
- Protection Equipment (e.g. Cotton Work Gloves)
- Controller cover assembly for replacement

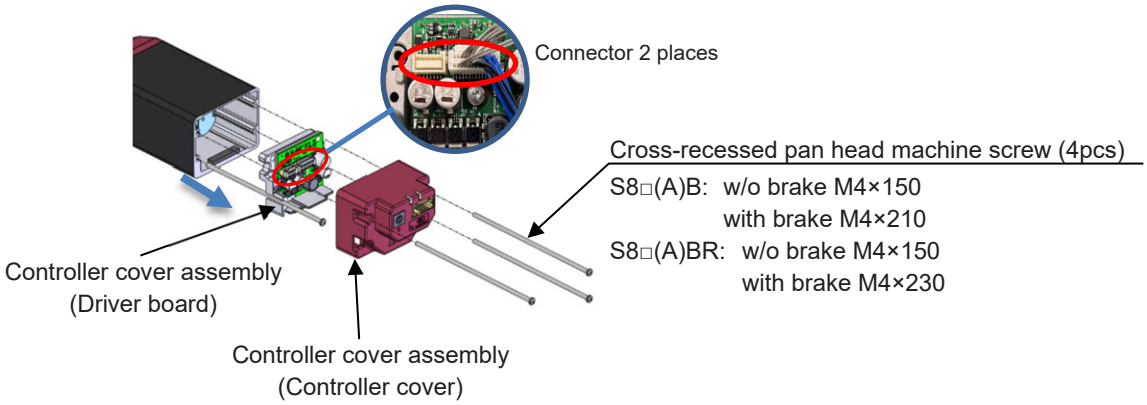
I/O	Standard Model Code	Option model			
		RCON-EC connection specification*	2-circuit power supply specification*	3 position mode specification	Applicable for Wireless
NPN	CCA-EC-S8	ACR (Only NPN)	TMD2	MF	WL (Wireless communication specification) WL2 (Wireless axis operation specification)
PNP	CCA-EC-S8-P				

* ACR and TMD2 cannot be selected at the same time.

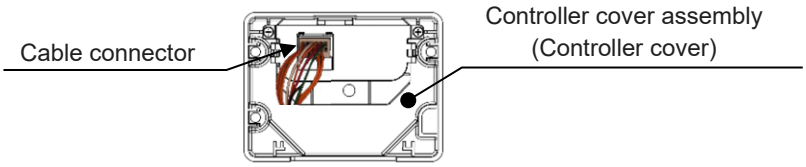
♦ **Replacement procedure**

1. Remover the cross-recessed pan head machine screws (4pcs).

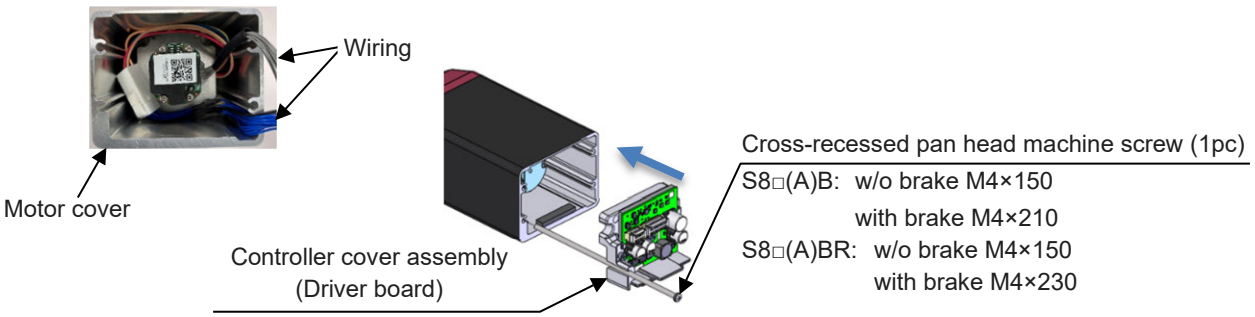
2. Take the cable connector off the controller cover assembly (driver board).



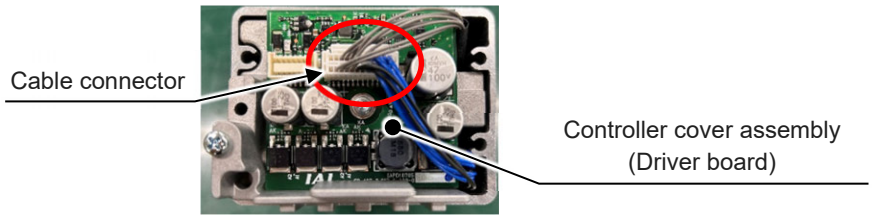
3. Take the cable connector off the controller cover assembly (controller cover) that was taken off.



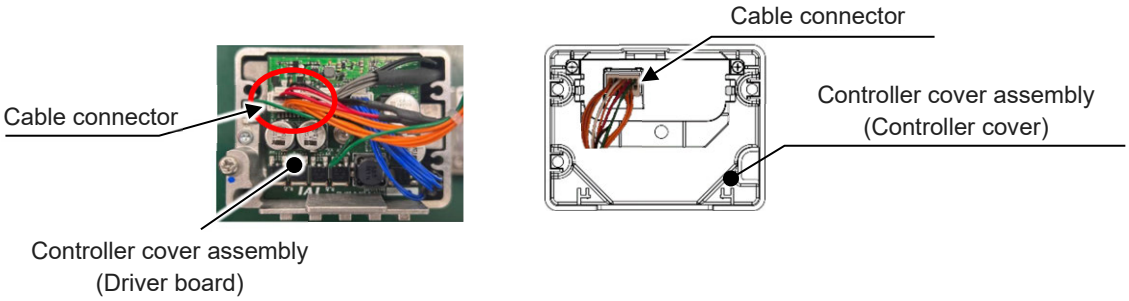
4. Have the cables taken off in Step 2. pulled out of the motor cover, and tighten a controller cover assembly for replacement (driver board) loosely with a cross-recessed pan head machine screw (1pc).



5. Join the cable connectors pulled out of the motor cover in Step 4. to the controller cover assembly (driver board).

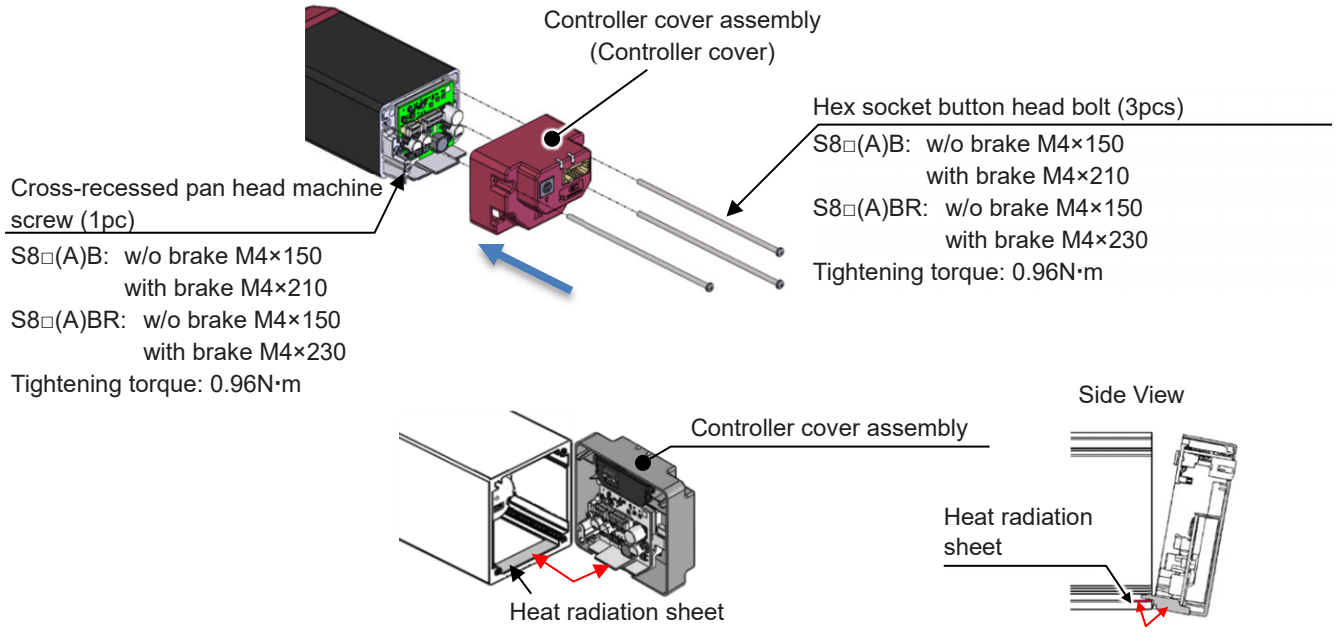


6. Join the cable connectors taken out in Step 3. to the controller assembly (driver board) and a controller assembly for replacement (controller cover).



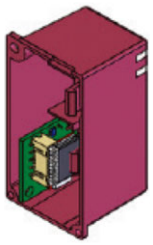
7. Tighten up the the cross-recessed pan head machine screw (1pc) that was temporarily tightened loosely in Step 4..

8. Put the controller cover assembly (controller cover) on along the heat radiation sheet and affix it with the hex socket button head bolts (3pcs).

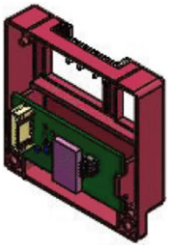


4.6.6 Wireless communication circuit board replacement S3 type, S4 type, S6 type, S7 type

For replacement of the wireless communication PC board the controller cover assembly is to be replaced.



S3/S4 type



S6/S7 type

♦ **Preparation**

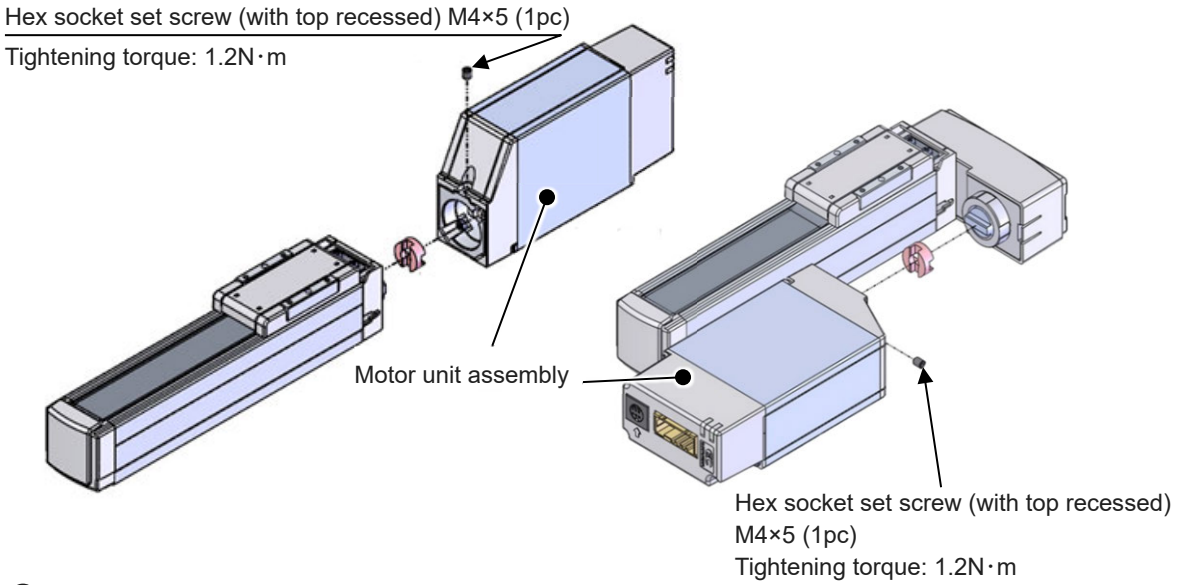
- Hex Wrench or Torque Wrench Parallel Faces: 3mm, 4mm
- Phillips Screwdriver
- Protection Equipment (e.g. Cotton Work Gloves)
- End cover assembly for replacement

Type	Model number Put (D) for the digital speed controller type
S3 type	EWB-EC-SRR3
S4 type	EWB-EC-SRR4
S6 type	EWB-EC-SR6
S7 type	EWB-EC-SR7

♦ Replacement procedure

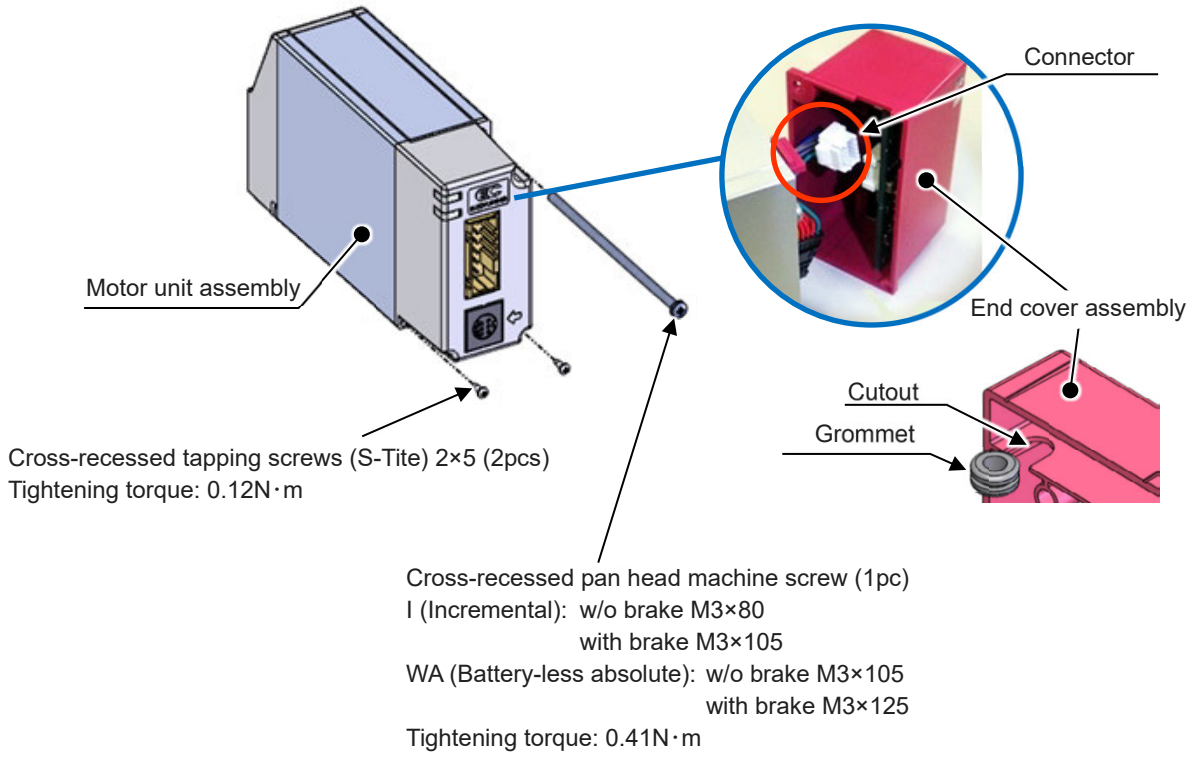
[1] S3 type

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.



2. Take the cross-recessed pan head machine screw (1pc) and cross-recessed tapping screws (2pcs) off the motor unit assembly.

3. Take off the connectors on the wires from the controller circuit board in the end cover assembly.



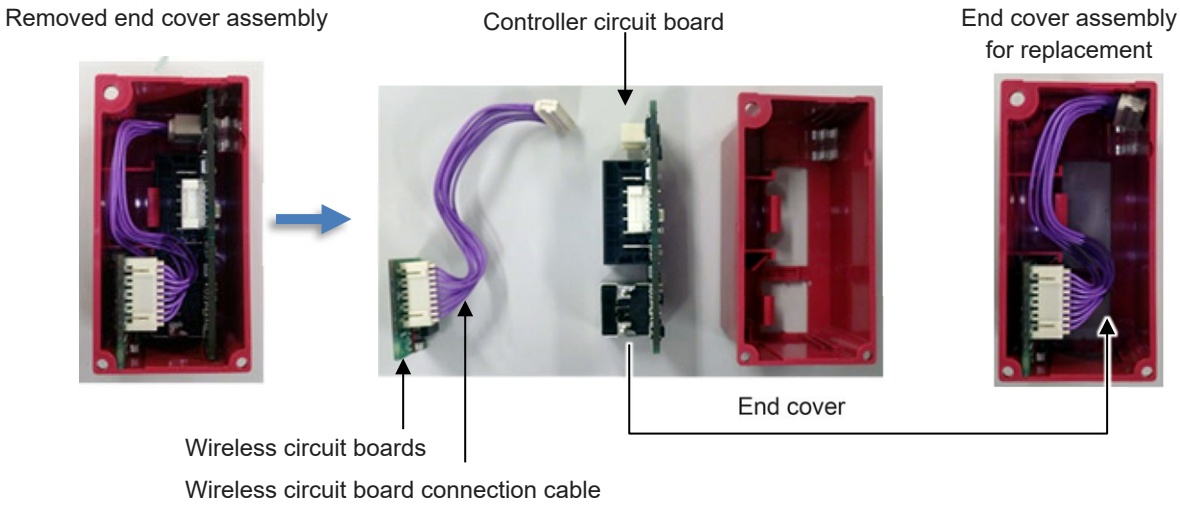
* There are a wireless circuit board and wireless circuit board connection cable mounted on the end cover assembly for replacement.
  Be aware that the controller circuit board is not mounted.

4. Take off the controller circuit board and wireless circuit board connection cable from the removed end cover assembly.

5. Take off the connector on the wireless circuit board connection cable from the removed controller circuit board.

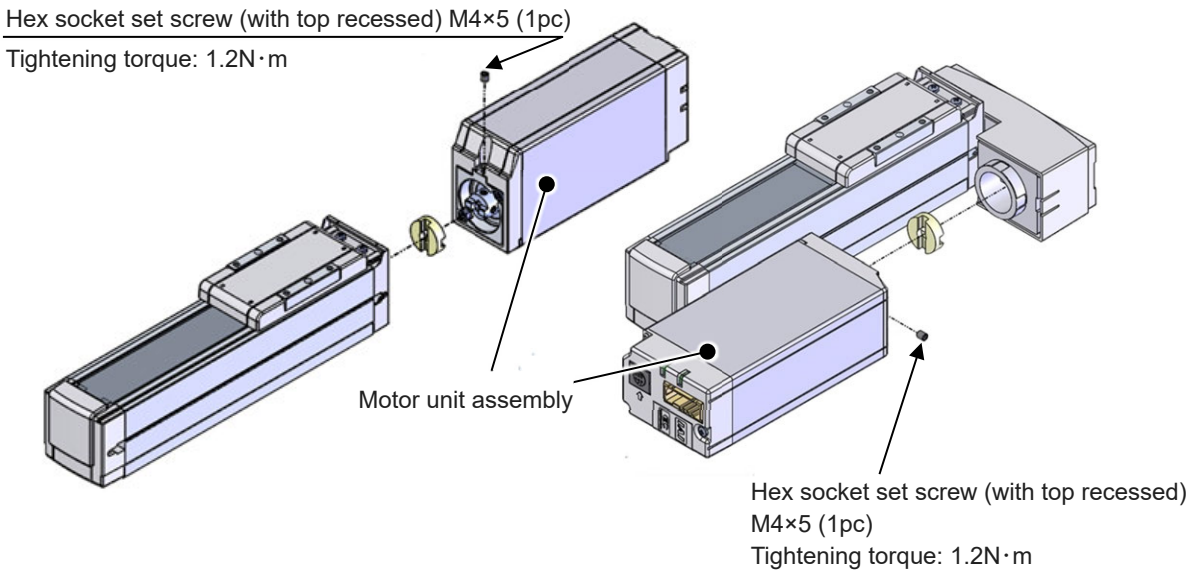
6. Plug in the cable for the wireless PC board connection on the end cover assembly for replacement to the controller PC board that was taken off and put them on the end cover for replacement.

7. Put the end cover assembly on the main body of ELECYLINDER in the procedure from Step 3. to Step 1..



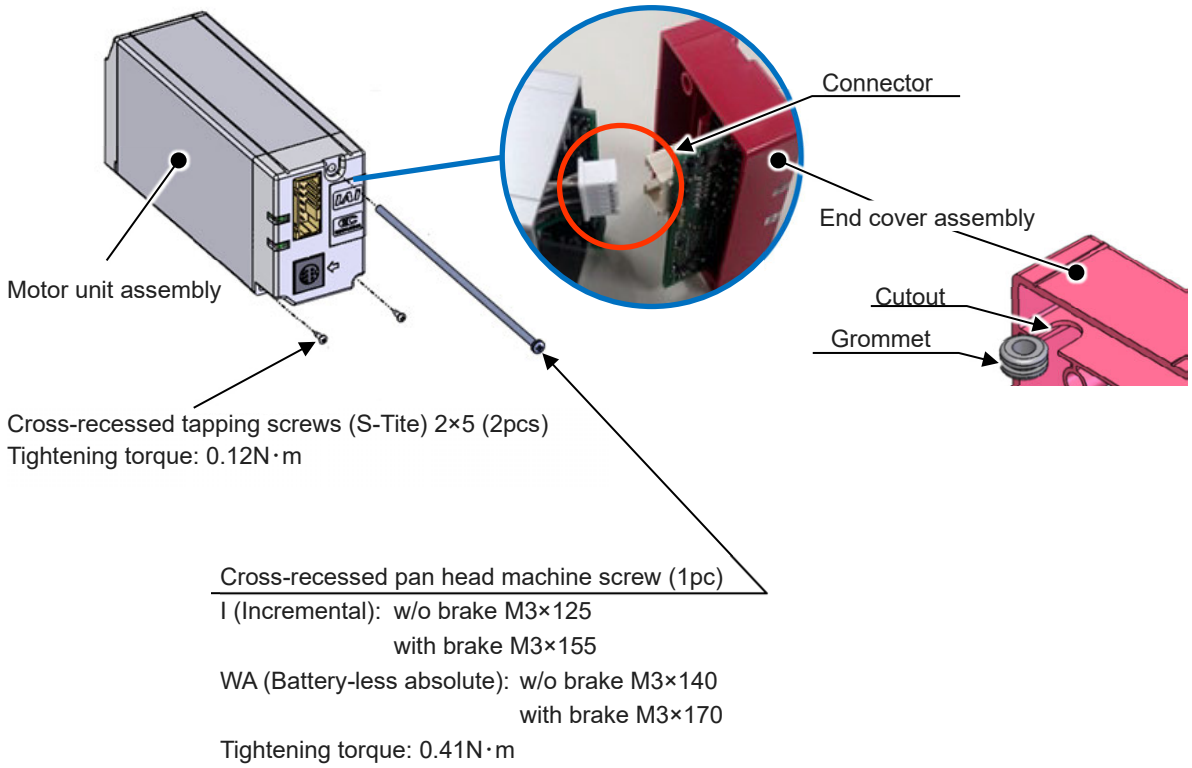
[2] S4 type

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.



2. Take the cross-recessed pan head machine screw (1pc) and cross-recessed tapping screws (2pcs) off the motor unit assembly.

3. Take off the connectors on the wires from the controller circuit board in the end cover assembly.

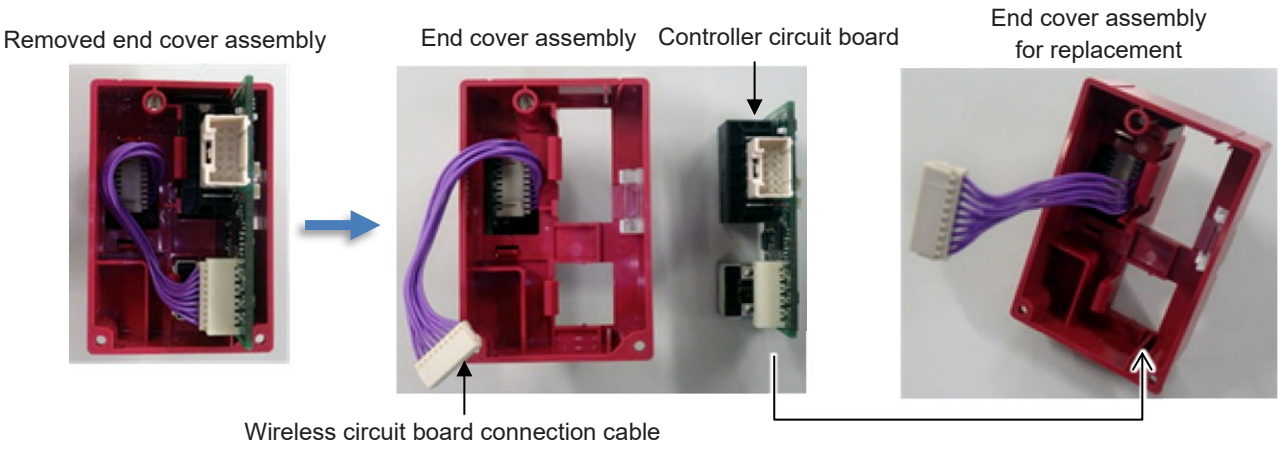


* There are a wireless circuit board and wireless circuit board connection cable mounted on the end cover assembly for replacement.
  Be aware that the controller circuit board is not mounted.

4. Take off the connector on the wireless circuit board connection cable from the controller circuit board on the removed end cover assembly and take off the controller circuit board.

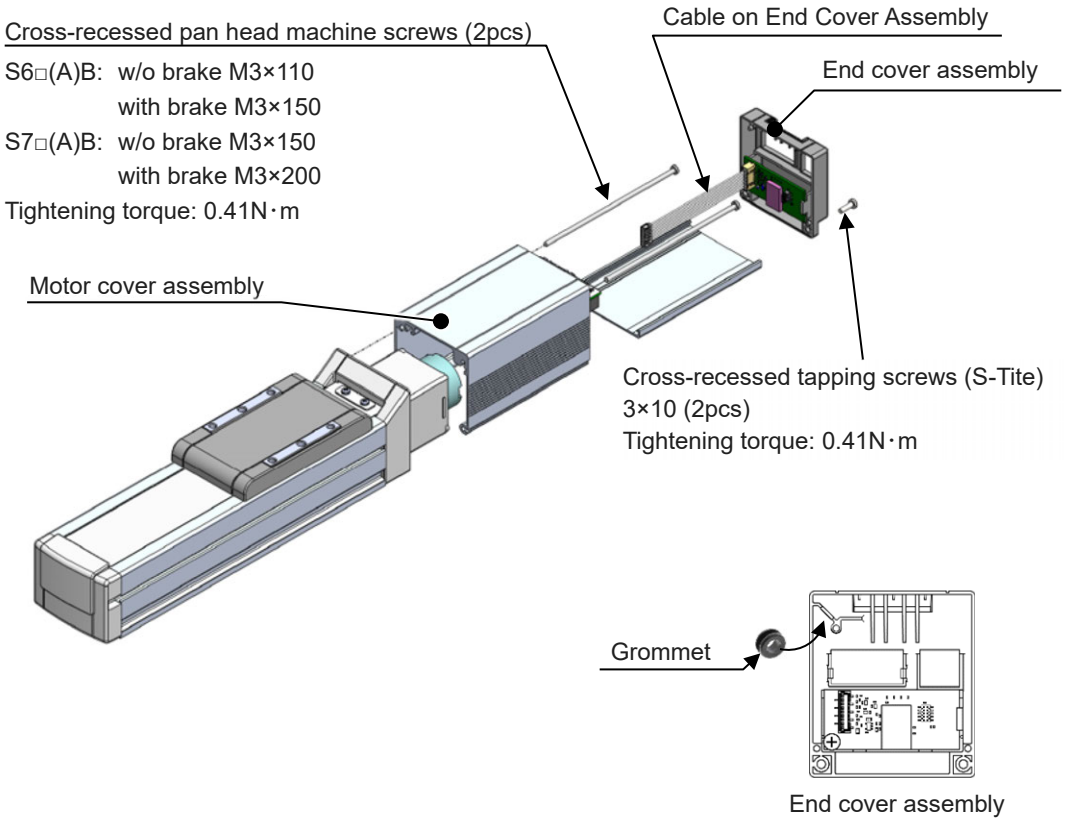
5. Mount the removed controller circuit board on the end cover assembly for replacement, and join the connector on the wireless circuit board connection cable to the controller circuit board.

6. Put the end cover assembly on the main body of ELECYLINDER in the procedure from Step 3. to Step 1..



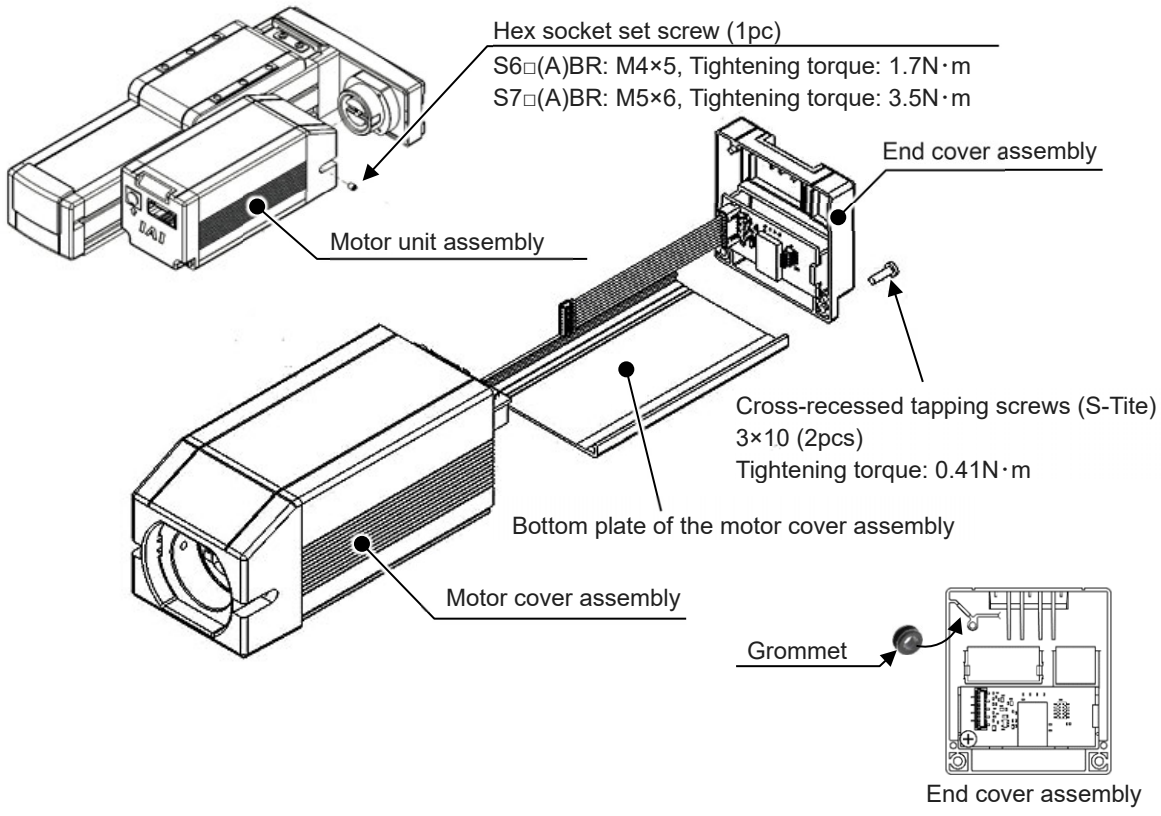
[3] Motor straight type EC-S6□B/S7□B/S6□AB/S7□AB

1. Remove the cross-recessed tapping screws (2pcs) and take off the old end cover assembly.
2. Remove the cross-recessed pan head machine screws (2pcs) and slide the motor cover assembly.
   * Do not unplug the cable connected on the motor cover assembly.
3. Remove the cable connector for the old end cover assembly from the controller circuit board inside the motor cover assembly.
4. Attach the cable connector for the replacement end cover assembly to the controller circuit board inside the motor cover assembly.
5. Mount the motor cover assembly.
6. Mount the replacement end cover assembly.
   * Regarding the connectors and cables, refer to [4.6.6 [5] Precautions for connectors/wiring].



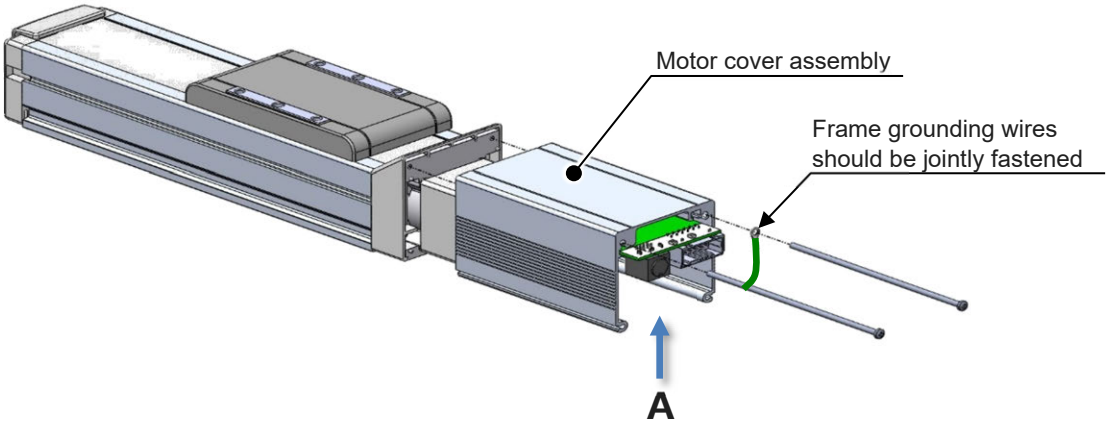
[4] Motor reversed type EC-S6□BR/S7□BR/S6□ABR/S7□ABR

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.
2. Remove the cross-recessed tapping screws (2pcs) and take off the end cover assembly.
3. Slide the bottom plate on the motor cover assembly to take it off.
4. Take off the connector on the connection cable for the wireless PC board from the controller circuit board.
5. Join the connection cable connector on a replacement end cover assembly.
6. Attach the bottom plate of the motor cover assembly.
7. Attach the replacement end cover assembly to the motor cover assembly.
8. Attach the motor unit assembly.
   * Regarding the connectors and cables, refer to [4.6.6 [5] Precautions for connectors/wiring].

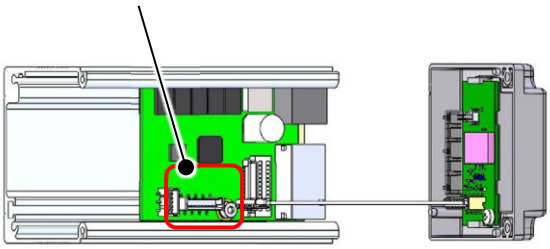


[5] Precautions for connectors/wiring

♦ **Motor cover assembly**



For replacement, remove the old end cover assembly connector
and mount the replacement end cover assembly connector



Motor cover assembly interior
(An arrow view)

End cover assembly interior
Wireless communication circuit board

4.6.7 Wireless communication circuit board replacement S8 Type

For S8 Type, replacing of the wireless communication circuit board itself only is not available. In the replacement of the controller cover assembly, the controller circuit board and the wireless communication circuit board are to be replaced together.

Refer to [4.6.5 Replacing Controller / Wireless Communication Circuit Board (Controller Cover Assembly)].

4.6.8 Timing belt replacement

♦ **Preparation**

- Hex Wrench or Torque Wrench Parallel Faces: 2.5mm, 3mm, 4mm
- Phillips Screwdriver
- Tension gauge
- Long string such as wire or cable tie
- Protection Equipment (e.g. Cotton Work Gloves)
- Timing belt for replacement

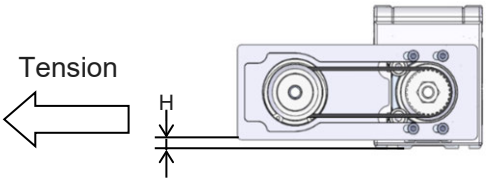
Type	Model number
S3□BR/S3□ABR	TB-RCP6-STRA4R
S4□BR/S4□ABR	TB-RCP5-SA4R
S6□BR/S6□ABR	TB-EC-SRR6R
S7□BR/S7□ABR	TB-EC-SRR7R
S8□BR/S8□ABR	TB-EC-S8R

♦ Replacement procedure

[1] EC-S3□BR/S4□BR/S3□ABR/S4□ABR

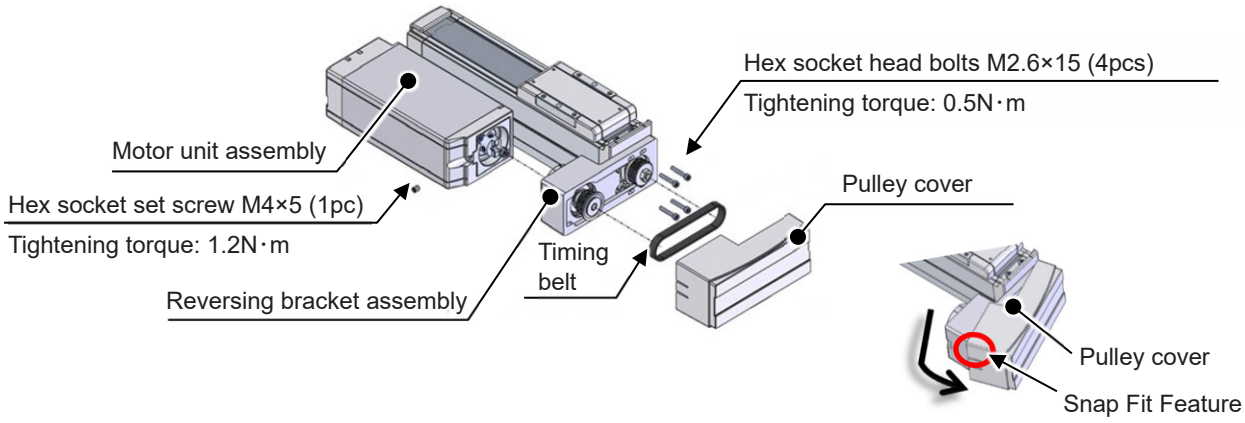
1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.
2. Take off the pulley cover.
   Open the snap fit feature slightly and slide it to the direction shown in the figure below.
3. Remove the hex socket head bolts (4pcs), slide the reverse bracket assembly and take the old timing belt off.
4. Put on a for replacement timing belt.
5. Adjust the timing belt tension.
   Hang such as a cable tie on the reversing bracket assembly.
   Set the distance between the seating surface and the bottom of the bracket from 3.0 to 3.5 mm and apply the specified load (tensile force) using a tension gauge.
6. With the specified load (tensile force) being applied, tighten up the hex socket head bolts (4pcs) to affix the reversing bracket assembly.
7. Attach the pulley cover.
8. Attach the motor unit assembly.

(S3□BR/S3□ABR: Load (Tensile force) 10 to 15N
S4□BR/(D)S4□ABR: Load (Tensile force) 20 to 25N



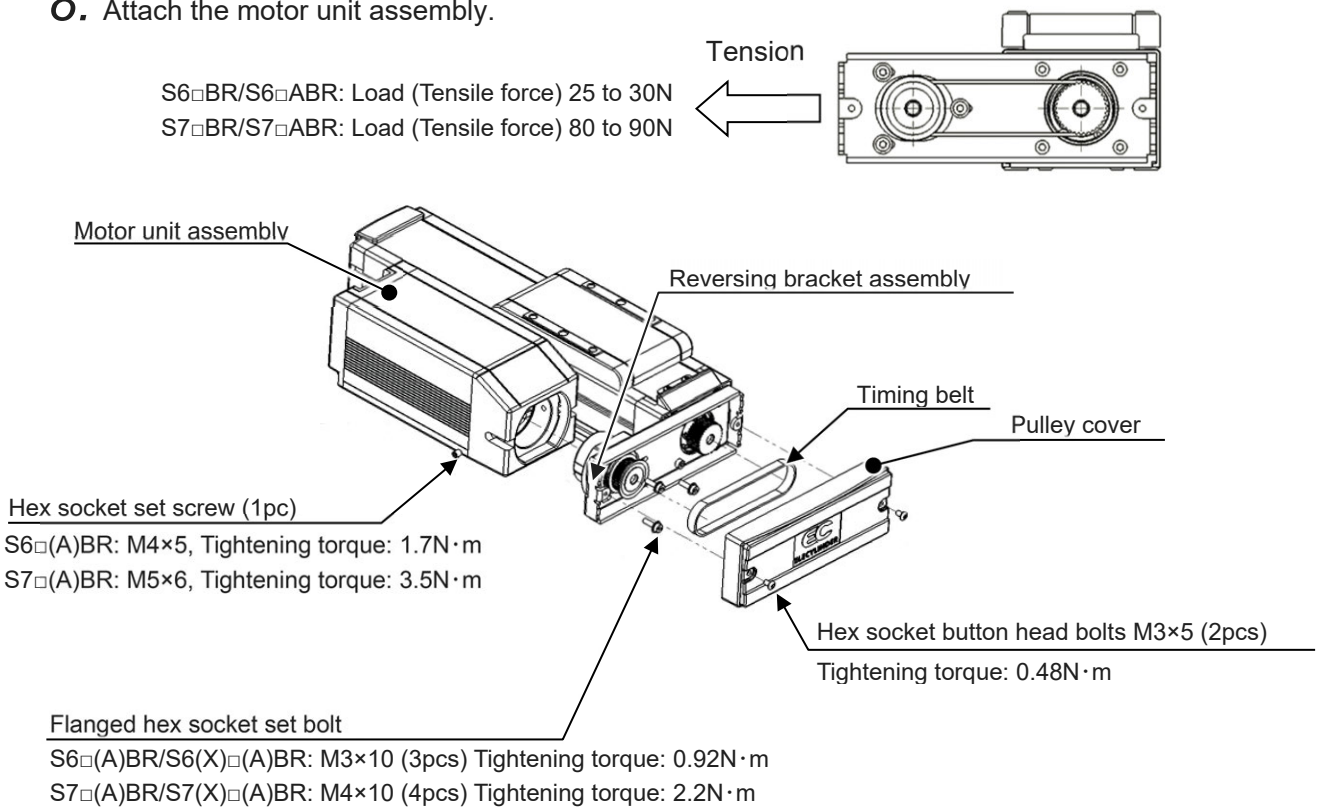
Bracket position dimensions (from seating surface)

Measurement point	H
Seating surface - Bracket surface	3.0 to 3.5mm



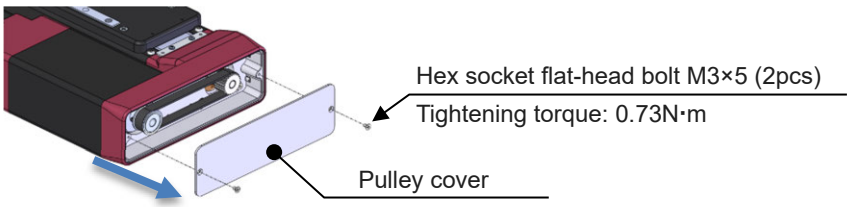
[2] EC-S6□BR/S7□BR/S6□ABR/S7□ABR

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.
2. Remove hex socket button head bolts (2pcs) to take off the pulley cover.
3. Loosen the flanged hex socket set bolts, slide the reverse bracket assembly and take the old timing belt off.
4. Put on a for replacement timing belt.
5. Adjust the timing belt tension.
   Hang such as a cable tie on the reversing bracket assembly and apply the specified load (tensile force) using a tension gauge.
6. With the specified load (tensile force) being applied, tighten up the flanged hex socket set bolt to affix the reversing bracket assembly.
7. Attach the pulley cover.
8. Attach the motor unit assembly.

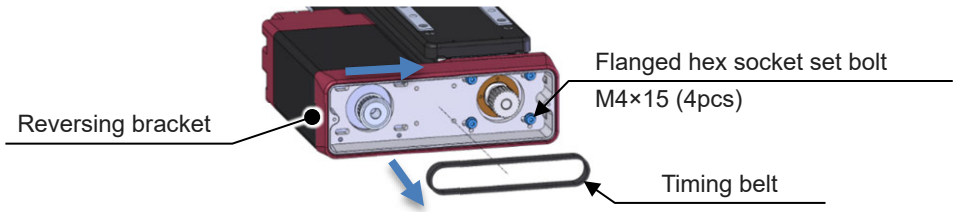


[3] EC-S8□BR/S8□ABR/S8X□ABR

1. Remove the hex socket flat-head bolts (2pcs) and take the pulley cover off.



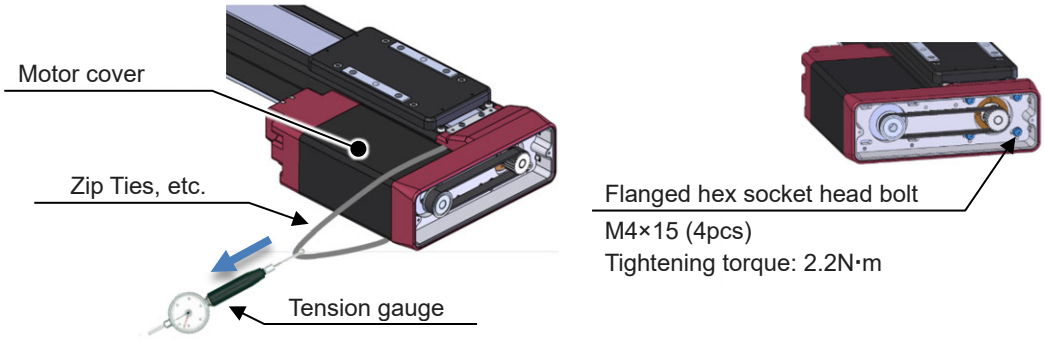
2. Loosen the flanged hex socket head bolts (4pcs), slide the reversing bracket to the actuator end, and take the timing belt off.



3. Put on a for replacement timing belt.

4. Hang a tool such as a zip ties on the motor cover, apply load from 80N to 90N with a tension gauge and pull it.

5. With the load being applied, tighten the flanged hex socket head bolts (4pcs) up.



6. Attach the pulley cover with the hex socket flat-head bolts (2pcs).

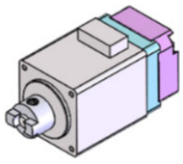
4.6.9 Motor unit replacement

♦ Preparation

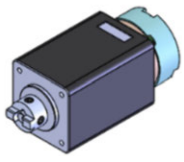
- Phillips Screwdriver
- Hex Wrench or Torque Wrench Parallel Faces: 2mm, 2.5mm, 3mm
- Protection Equipment (e.g. Cotton Work Gloves)
- Motor unit for replacement

Type	Encoder	Brake	Model number
S3 type	Incremental	No	EC-MUSRR3
		Yes	EC-MUSRR3-B
	Battery-less absolute	No	EC-MUSRR3-WA
		Yes	EC-MUSRR3-WA-B
S4 type	Incremental	No	EC-MUSRR4
		Yes	EC-MUSRR4-B
	Battery-less absolute	No	EC-MUSRR4-WA
		Yes	EC-MUSRR4-WA-B
S6 type	Incremental	No	EC-MUSR6
		Yes	EC-MUSR6-B
	Battery-less absolute	No	EC-MUSR6-WA
		Yes	EC-MUSR6-WA-B
S7 type	Incremental	No	EC-MUS7
		Yes	EC-MUS7-B
	Battery-less absolute	No	EC-MUS7-WA
		Yes	EC-MUS7-WA-B
S8□B/S8□AB/S8X□AB	Incremental	No	EC-MUS8
		Yes	EC-MUS8-B
	Battery-less absolute	No	EC-MUS8-WA
		Yes	EC-MUS8-WA-B
S8□BR/S8□ABR/S8X□ABR	Incremental	No	EC-MUS8R
		Yes	EC-MUS8-B
	Battery-less absolute	No	EC-MUS8R-WA
		Yes	EC-MUS8-WA-B

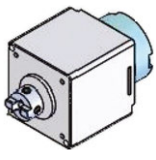
Motor unit * The figure shows the no brake equipped type.



S3□B(R)
S3□AB(R)



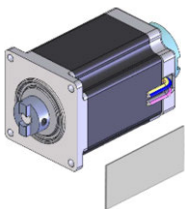
S4□B(R)
S4□AB(R)



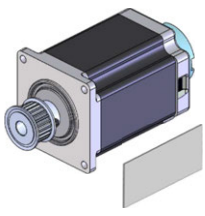
S6□B(R)
S6□AB(R)



S7□B(R)
S7□AB(R)



S8□B/S8□AB/S8X□AB
Enclosed with Heat
Radiation Sheet

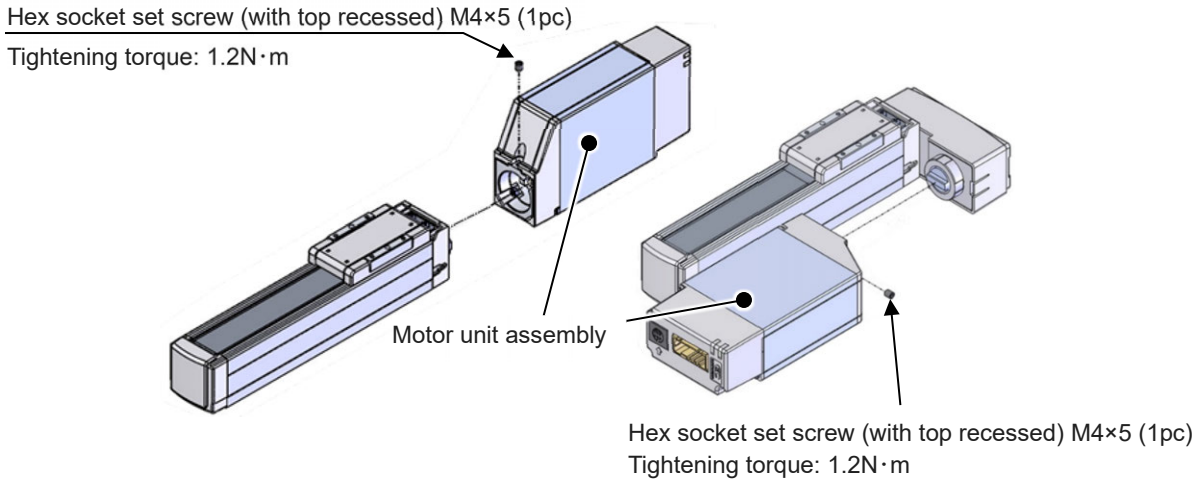


S8□BR/S8□ABR/S8X□ABR
Enclosed with Heat
Radiation Sheet

♦ Replacement procedure

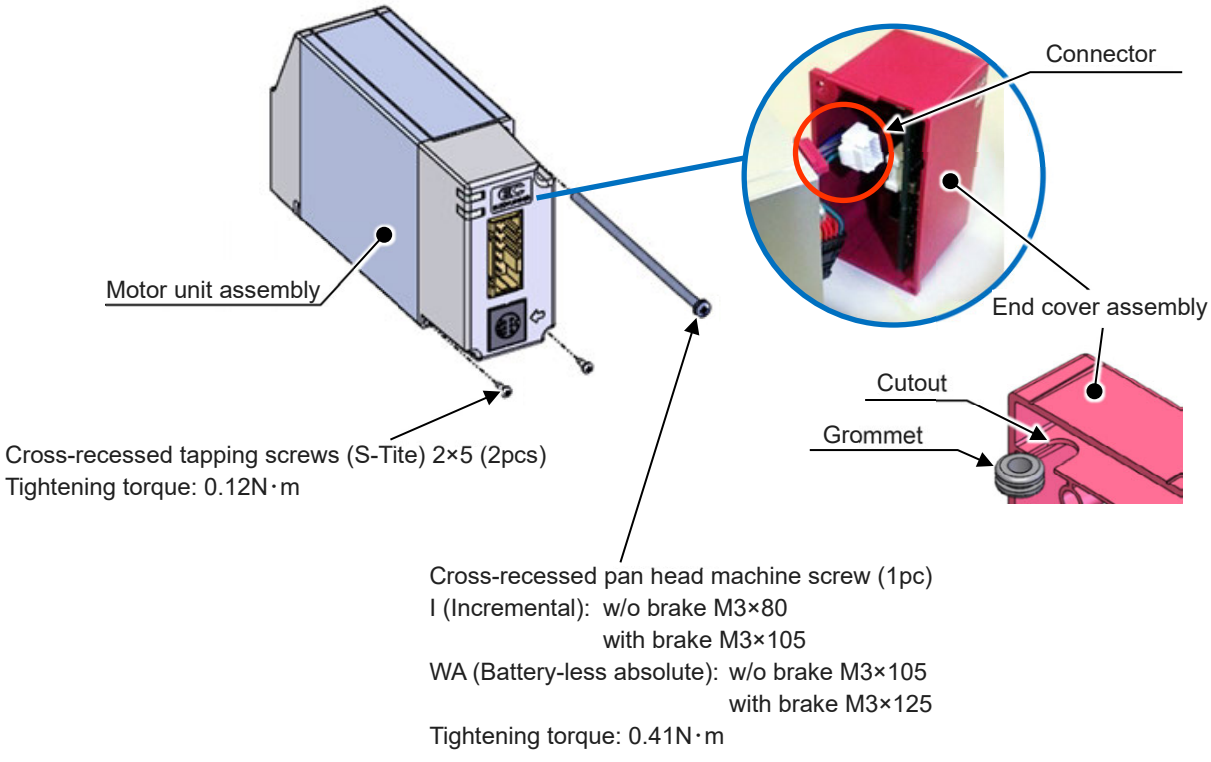
[1] S3 type

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.



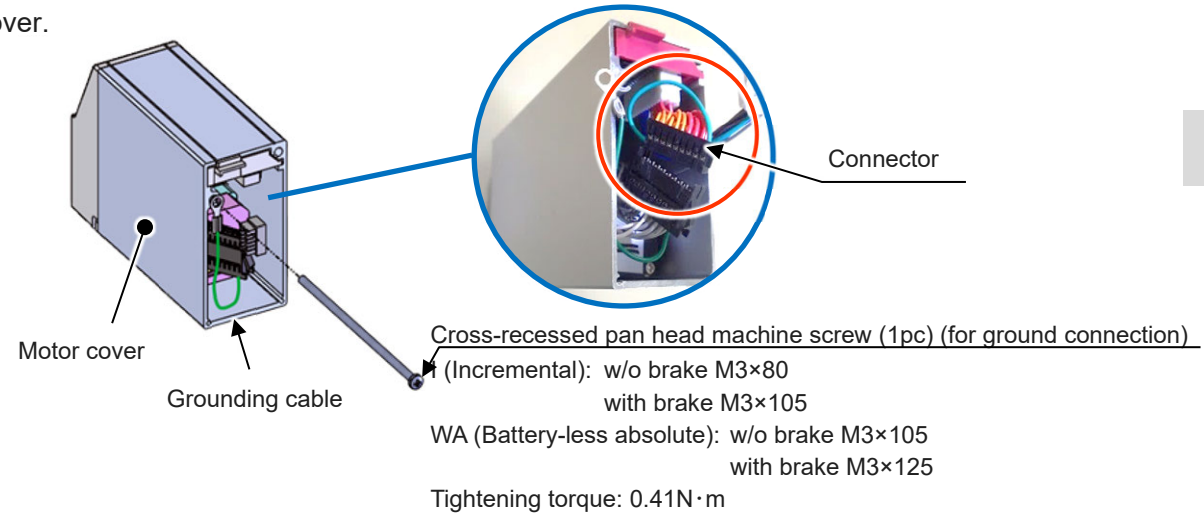
2. Take the cross-recessed pan head machine screw (1pc) and cross-recessed tapping screws (2pcs) off the motor unit assembly.

3. Take off the connectors on the wires from the controller circuit board in the end cover assembly.



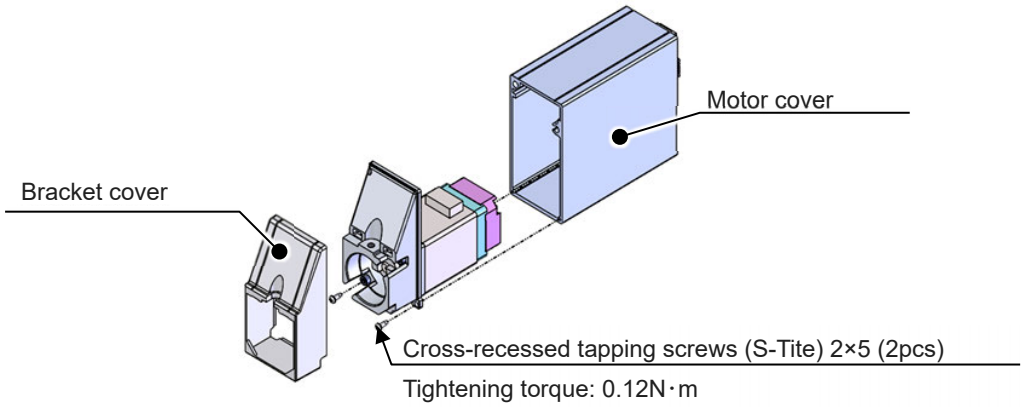
4. Take off the cross-recessed pan head machine screw (1pc) for earthing.

5. Take off the connector joining the motor/encoder to the controller circuit board in the motor cover.



6. Take the bracket cover off and take off the cross-recessed tapping screws (2pcs).

7. Take off the motor cover.

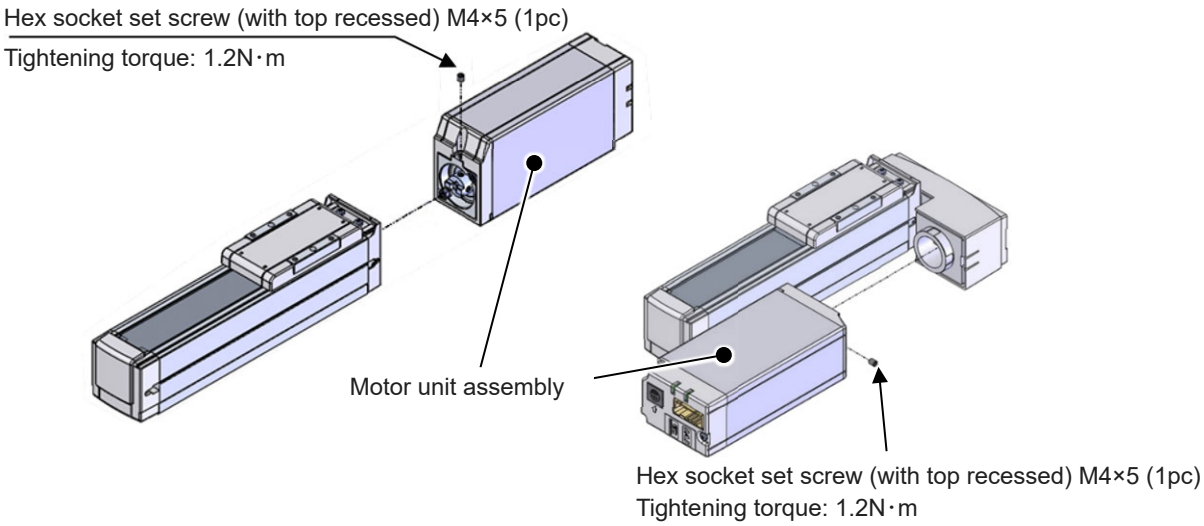


8. Take the hex socket head bolts (2pcs) and take the motor unit off the motor bracket.

9. Replace the motor unit with the one for replacement and set all the components up in the back order.

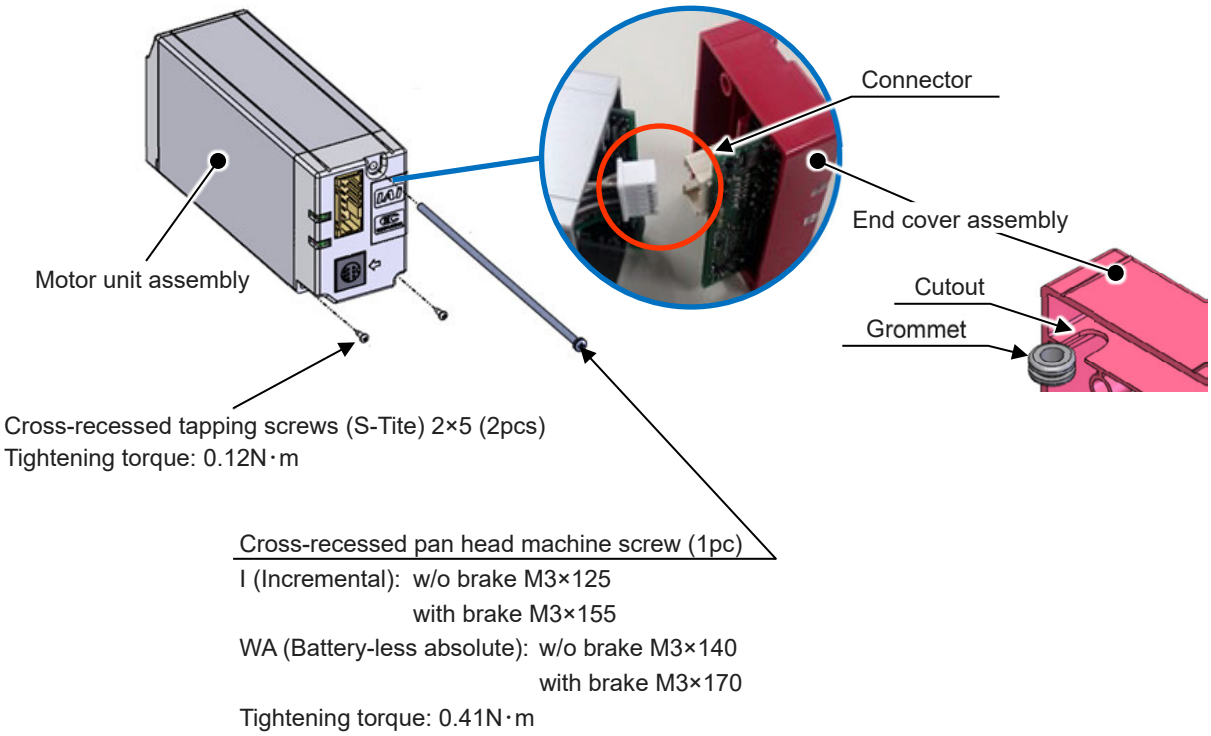
[2] S4 type

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.

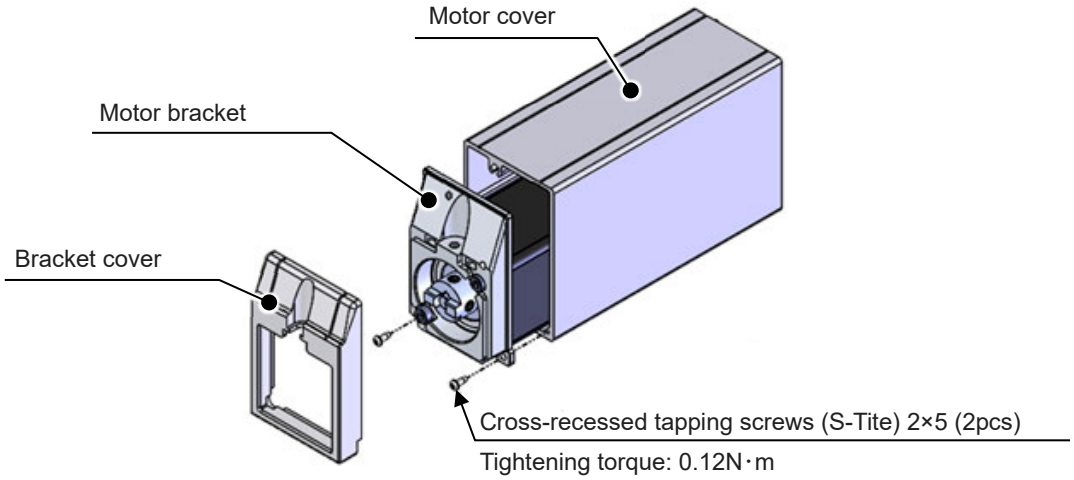


2. Take the cross-recessed pan head machine screw (1pc) and cross-recessed tapping screws (2pcs) off the motor unit assembly.

3. Take off the connectors on the wires from the controller circuit board in the end cover assembly.

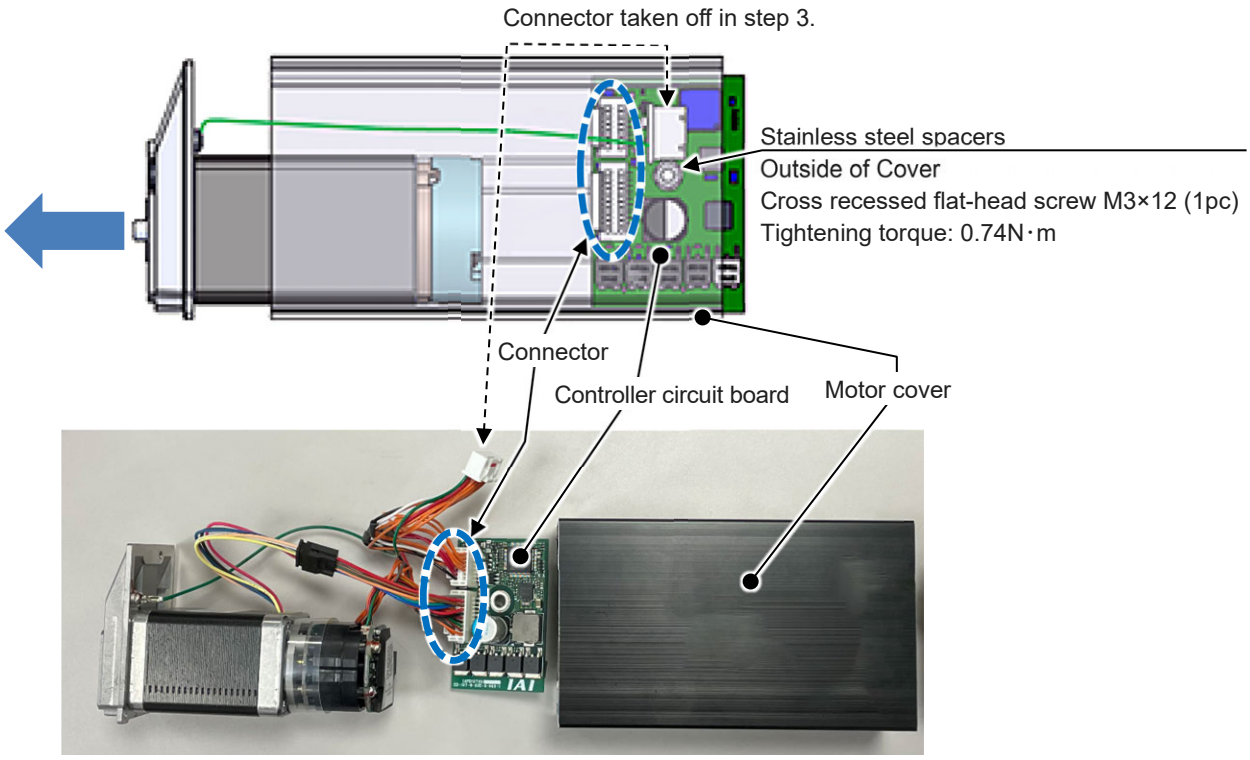


4. Take off the bracket cover and take off the cross-recessed tapping screws (2pcs).



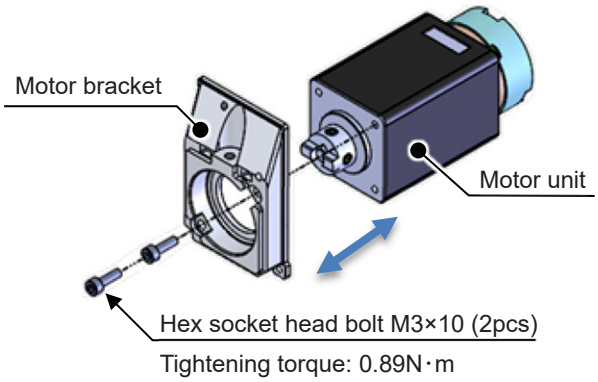
5. Take the controller circuit board off the motor cover.

- Take off the hex socket flat-head bolt (1pc) outside of the motor cover while holding the stainless steel spacer (hexagonal, double-end internal thread) inside the motor cover.
- Pull off the motor unit together with the controller circuit board from the motor cover.
- Unplug the connectors on the cables connecting the controller circuit board to the motor and encoder.



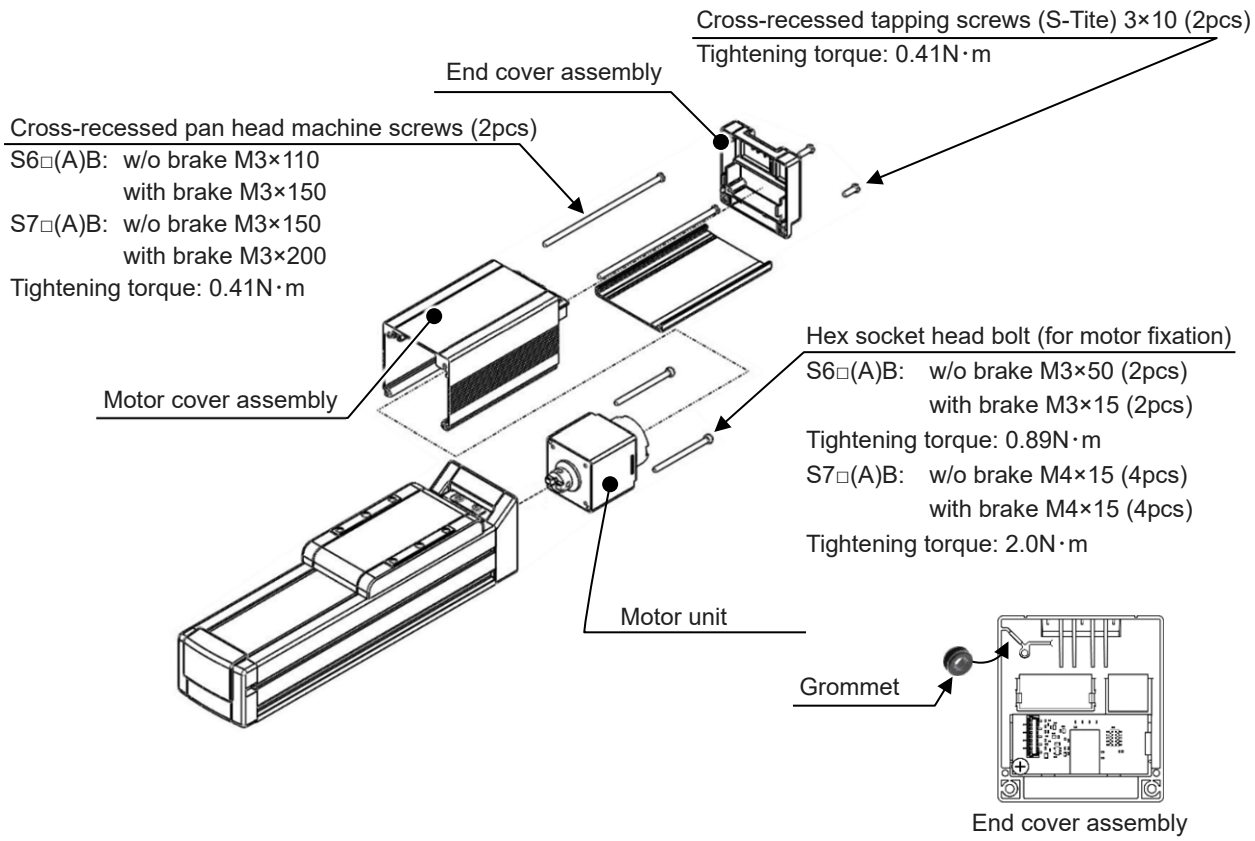
6. Take the hex socket head bolts (2pcs) and take the motor unit off the motor bracket.

7. Replace the motor unit with the one for replacement and set all the components up in the back order.



[3] EC-S6□B/S7□B/S6□AB/S7□AB

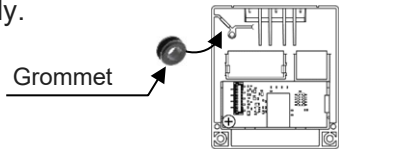
1. Remove the cross-recessed tapping screws (2pcs) and take off the end cover assembly.
2. Remove the cross-recessed pan head machine screws (2pcs), disconnect the cables and connectors and take off the motor cover assembly.
3. Remove the hex socket head bolts (2pcs) and take off the motor unit.
4. Put on a for replacement motor unit.
5. Return the wiring, connectors and motor cover assembly to their original state.
6. Attach the end cover assembly.
   * Regarding the connectors and cables, refer to [4.6.4 [5] Precautions for connectors/wiring].

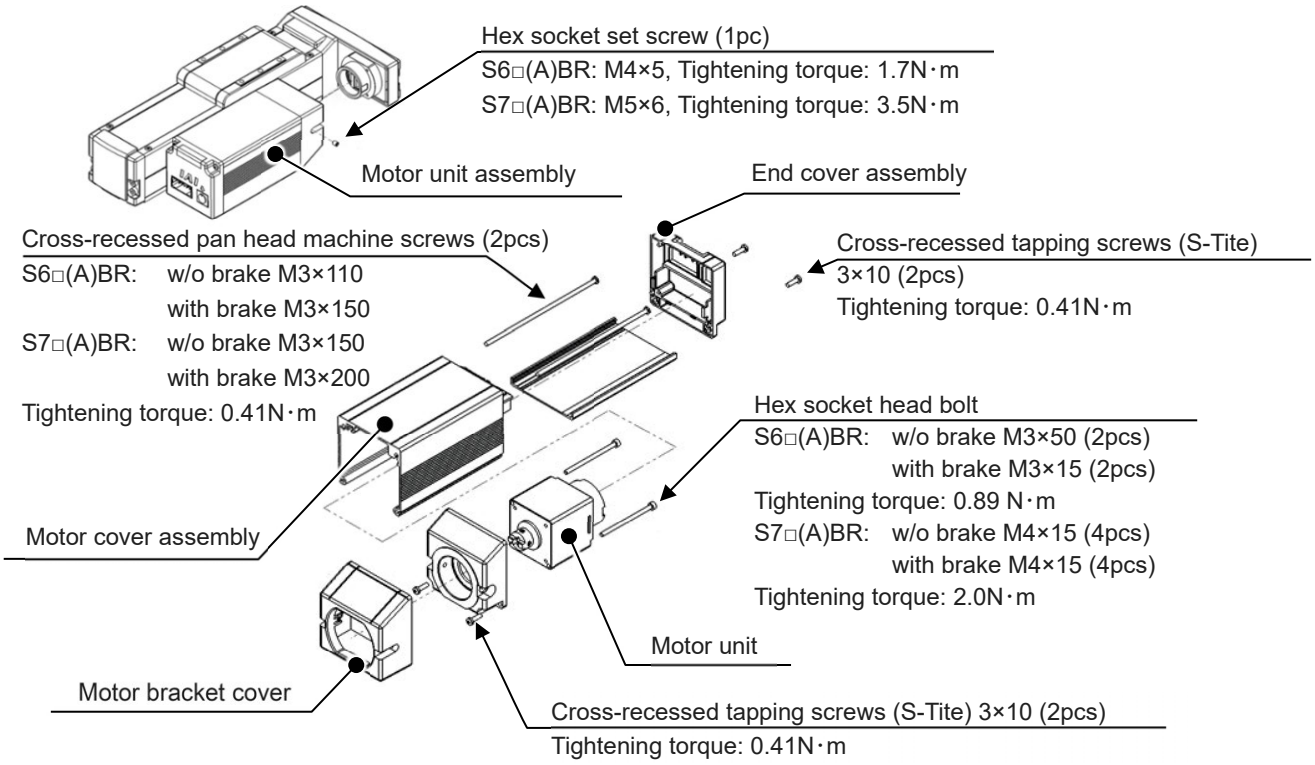


[4] EC-S6□BR/S7□BR, EC-S6□ABR/S7□ABR

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.
2. Take the motor bracket cover off.
3. Remove the cross-recessed tapping screws (2pcs) and take off the end cover assembly.
4. Remove the cross-recessed pan head machine screws (2pcs) and the cross-recessed tapping screws (2pcs) on the motor unit side, disconnect the cables and connectors and take off the motor cover assembly.
5. Remove the hex socket head bolt (2pcs) and take off the motor unit.
6. Put on a for replacement motor unit.
7. Put on the cables and connectors to the motor cover assembly.
8. Attach the end cover assembly.
9. Attach the motor bracket cover.
10. Attach the motor unit assembly.

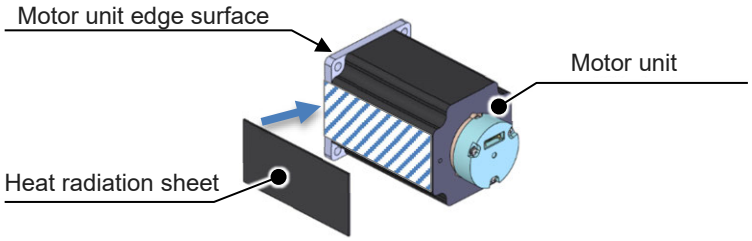
   * Regarding the connectors and cables, refer to [4.6.4 [5] Precautions for connectors/wiring].





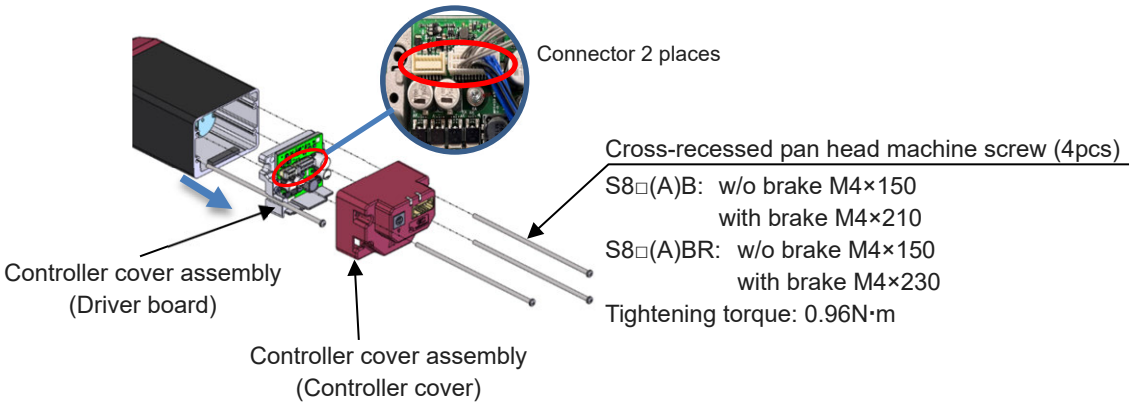
[5] EC-S8□B/S8□AB/S8X□AB Motor straight type,
EC-S8□BR/S8□ABR/S8X□ABR Motor Reversed Brake-Equipped Type

1. Align the enclosed heat radiation sheet to the edge surface of a replacement motor unit and apply it on the motor unit.

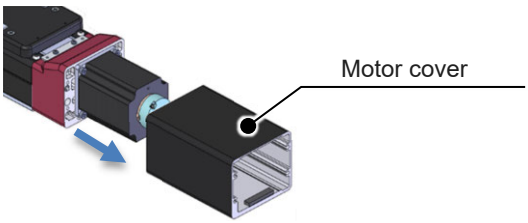


2. Remove the cross-recessed pan head machine screws (4pcs) and take off the controller cover assembly (controller cover).

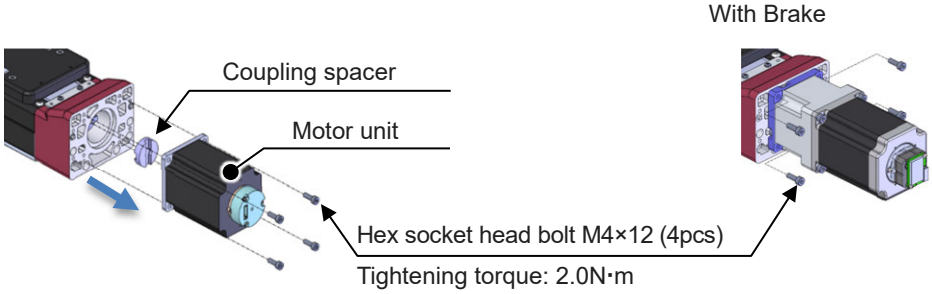
3. Take the cable connector off the controller cover assembly (driver board), and take the controller cover assembly (driver unit) off.



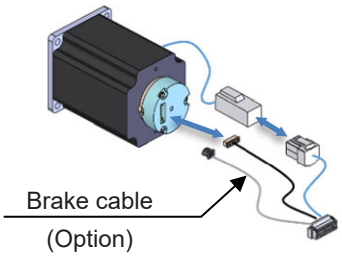
4. Take off the motor cover.



5. Remove the hex socket head bolts (4pcs) and take off the motor unit and coupling spacer.



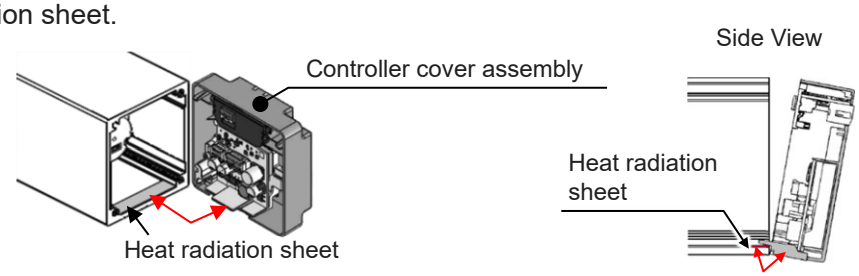
6. Take cables out of the motor unit that was taken off, and join them to a motor unit for replacement.



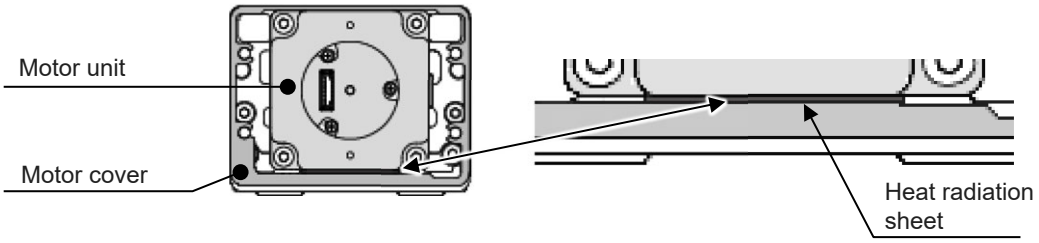
7. Assemble the for replacement motor unit with the cables applied in the order from Step 5. to 2..

Caution

- The controller cover assembly (controller cover) should be attached along the heat radiation sheet.



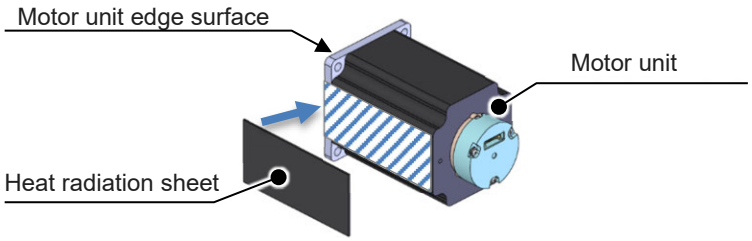
- Regardless of the specifications, the motor unit should be attached with the motor cable on the right from the view of the encoder side.
- Make sure that the heat radiation sheet attached on the motor cover touches the motor cover.



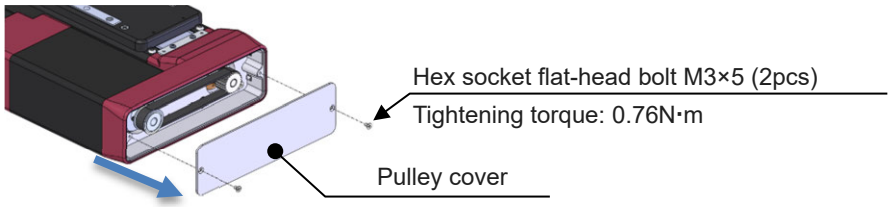
- The motor cover should be attached smoothly if force is applied on the bottom.

[6] EC-S8□BR/S8□ABR/S8X□ABR Motor Reversed Non Brake-Equipped Type

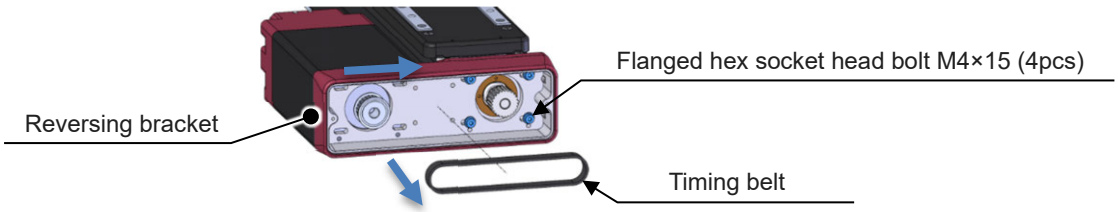
1. Align the enclosed heat radiation sheet to the edge surface of a replacement motor unit and apply it on the motor unit.



2. Remove the hex socket flat-head bolts (2pcs) and take the pulley cover off.

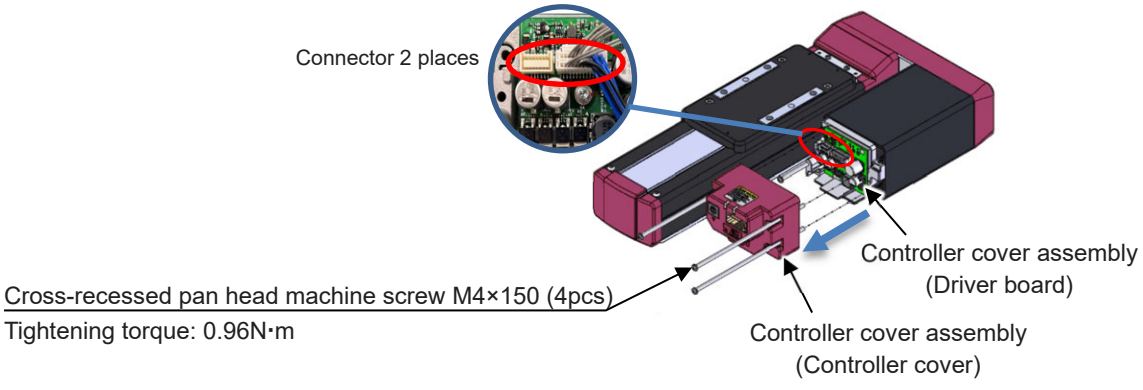


3. Loosen the flanged hex socket head bolts (4pcs), slide the reversing bracket to the actuator end, and take the timing belt off.

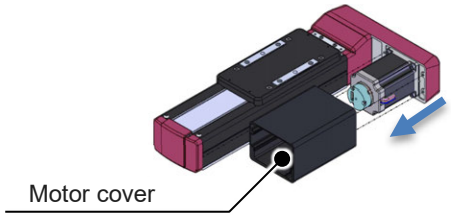


4. Remove the cross-recessed pan head machine screws (4pcs) and take off the controller cover assembly (controller cover).

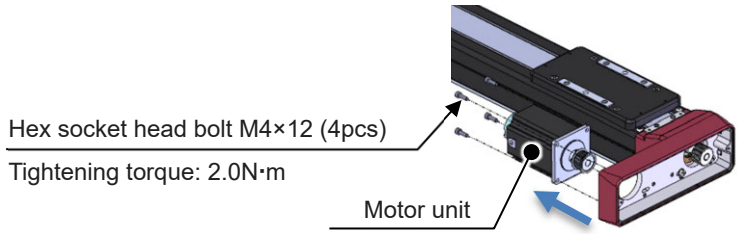
5. Take the cable connector off the controller cover assembly (driver board), and take the controller cover assembly (driver unit) off.



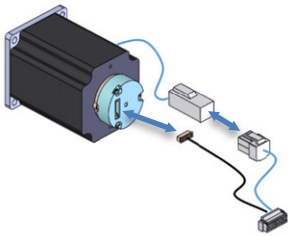
6. Take off the motor cover.



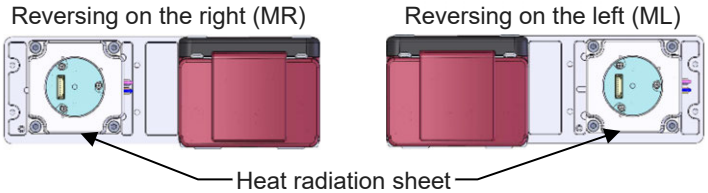
7. Remove the hex socket head bolts (4pcs) and take off the motor unit.



8. Take cables out of the motor unit that was taken off, and replace them to a replacement motor unit.

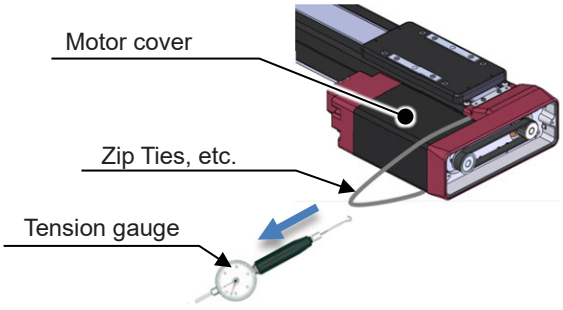


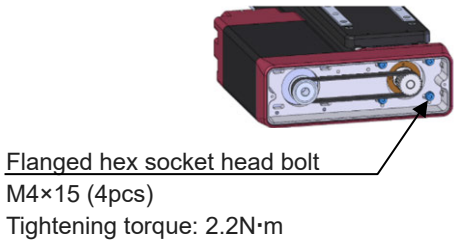
9. Assemble the motor unit and timing belt in the order from Step 7. to 3..
The heat radiation sheet should come to the bottom.



10. Hang a tool such as a zip ties on the motor cover, apply load from 80N to 90N with a tension gauge and pull it.

11. With the load being applied, tighten the flanged hex socket head bolts (4pcs) up.





12. Attach the pulley cover with the cross-recessed flat-head screws (2pcs).

4.6.10 Coupling spacer replacement

♦ Preparation

- Phillips Screwdriver
- Hex Wrench or Torque Wrench Parallel Faces: 2mm, 2.5mm, 3mm
- Protection Equipment (e.g. Cotton Work Gloves)
- Coupling spacer for replacement

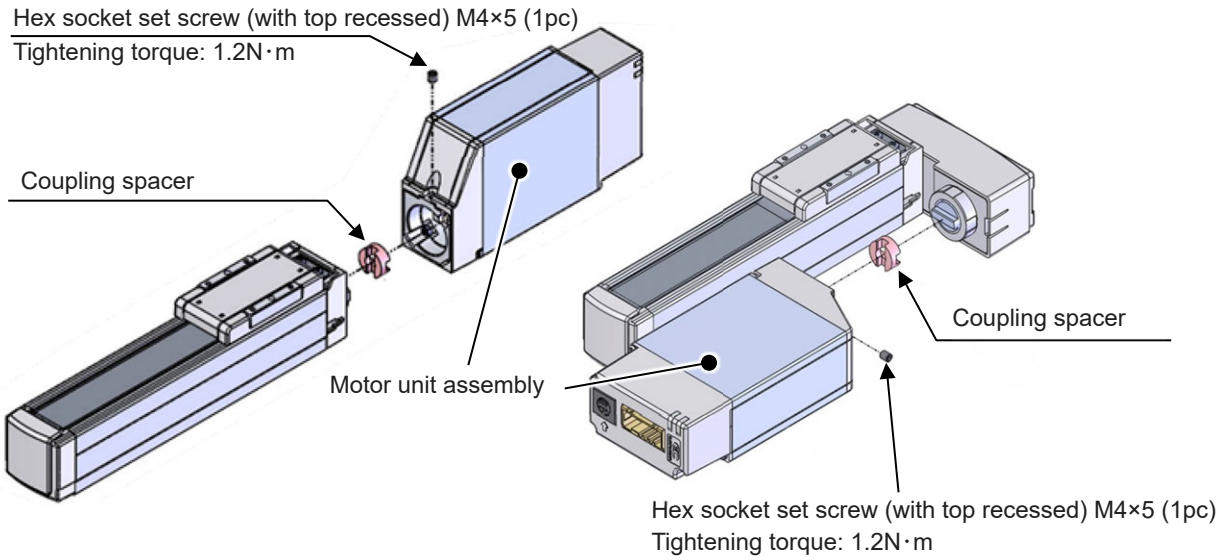


Type	Model number
S3 type	CPG-EC-SRR3
S4 type	CPG-EC-SRR4
S6 type	CPG-EC-SR6
S7 type	CPG-EC-SR7
S8□B/S8□AB/S8X□AB S8□BR/S8□ABR/S8X□ABR (only with brake-equipped)	CPG-RCP6-M

♦ Replacement procedure

[1] S3 type, S4 type

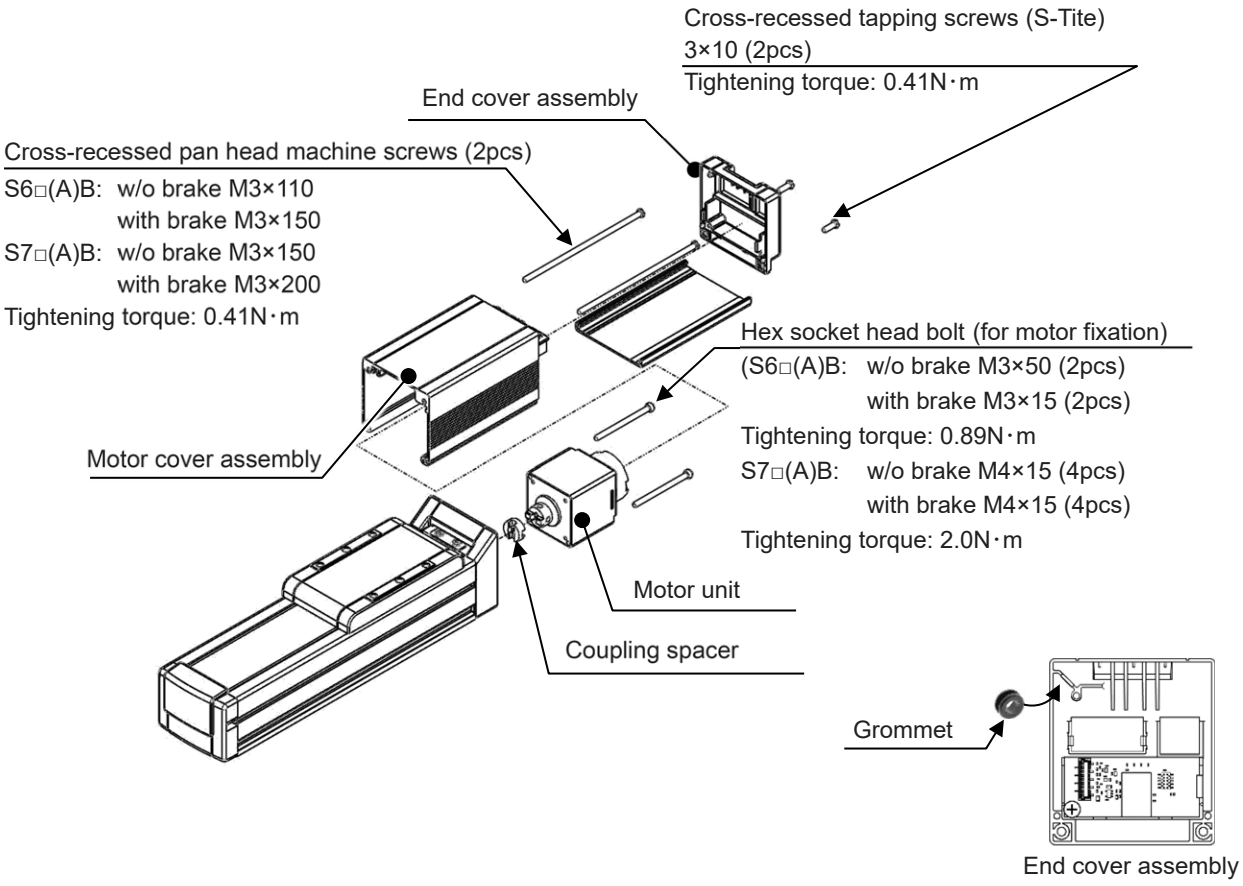
1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.
2. Take off the old coupling spacer.
3. Put on a for replacement coupling spacer.
4. Attach the motor unit assembly.



[2] EC-S6□B/S7□B/S6□AB/S7□AB

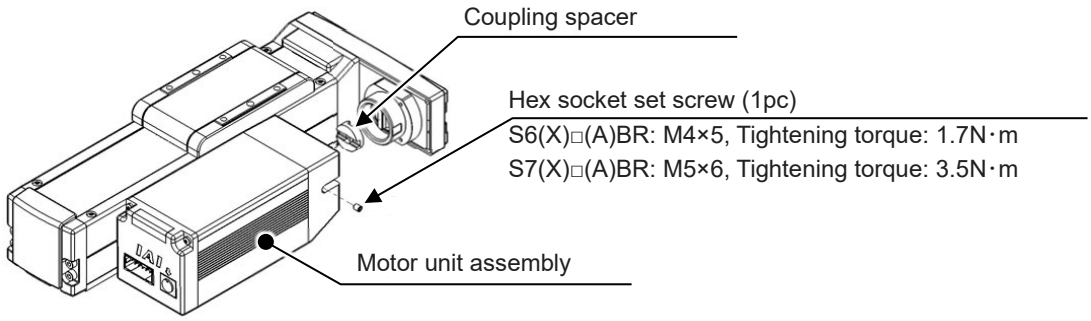
1. Remove the cross-recessed tapping screws (2pcs) and take off the end cover assembly.
2. Remove the cross-recessed pan head machine screws (2pcs), disconnect the cables and connectors and take off the motor cover assembly.
3. Remove the hex socket head bolts and take off the motor and the coupling spacer.
4. Attach a for replacement coupling spacer and put the motor back.
5. Return the wiring, connectors and motor cover assembly to their original state.
6. Attach the end cover assembly.

   * Regarding the connectors and cables, refer to [4.6.4 [5] Precautions for connectors/wiring].



[3] EC-S6□BR/S7□BR/S6□ABR/S7□ABR

1. Remove the hex socket set screw (1pc) and take off the motor unit assembly.
2. Take off the old coupling spacer.
3. Put on a for replacement coupling spacer.
4. Attach the motor unit assembly.

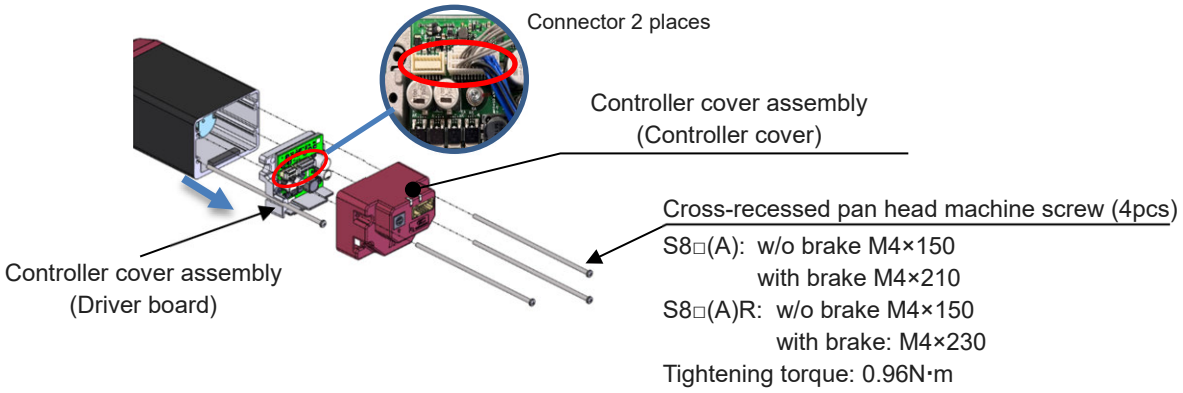


[4] S8 type

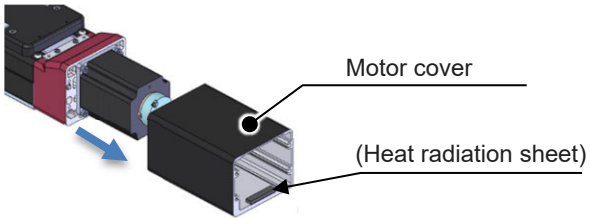
* Motor reversed is only with brake-equipped

1. Remove the cross-recessed pan head machine screws (4pcs) and take off the controller cover assembly (controller cover).

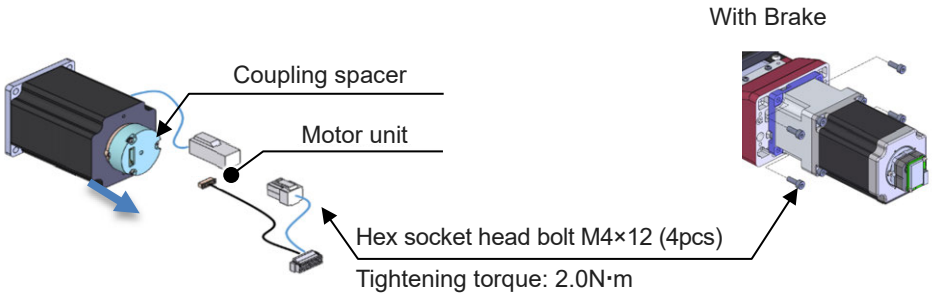
2. Take the cable connector off the controller cover assembly (driver board), and take off the controller cover assembly (driver unit).



3. Take off the motor cover.



4. Remove the hex socket head bolts (4pcs) and take off the motor unit and coupling spacer.



5. Apply a coupling spacer for replacement in the order from Step 4. to 1..

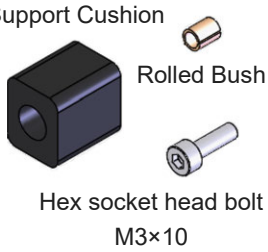
Caution

- Put the controller cover assembly on along the heat radiation sheet.
- Make sure that the heat radiation sheet attached on the motor cover touches the motor cover.
- The motor cover should be attached smoothly if force is applied on the bottom.

4.6.11 Replacement of Intermediate Support Cushion

♦ Preparation

- Hex Wrench or Torque Wrench Parallel Faces: 2.5mm, 3mm
- Protection Equipment (e.g. Cotton Work Gloves)
- Intermediate Support Cushion for replacement



Type	Model number
S8X□AB/S8X□ABR	IMSC-EC8-S6S7

* Intermediate support cushion should be 1 piece in 1 model code.
8 pieces are necessary for 1 axis.

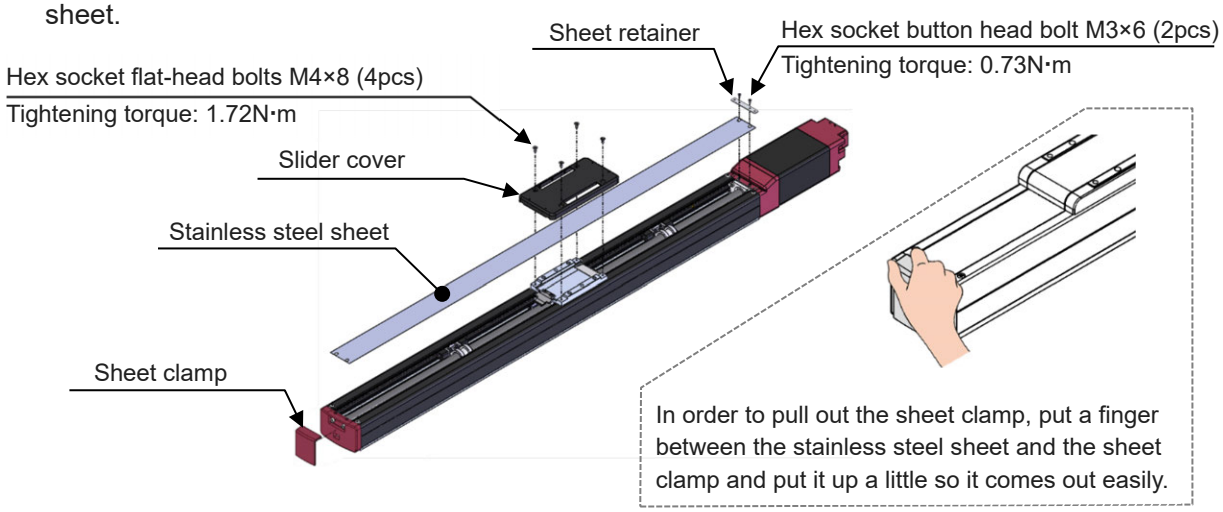
♦ Replacement procedure

1. Move the slider to a position near the stroke center.

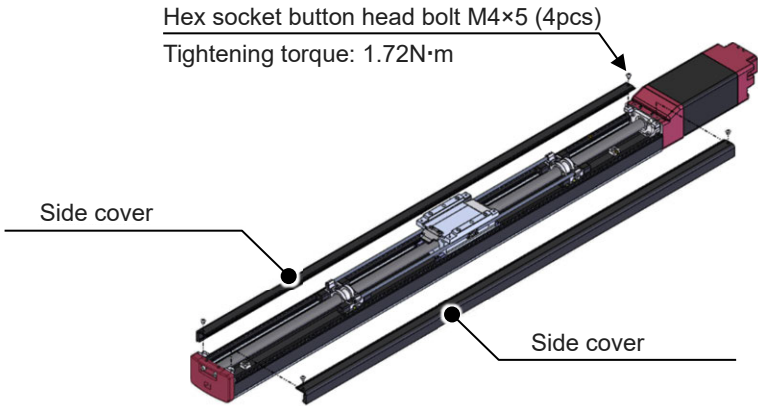
2. Take off the sheet clamp.

3. Remove the hex socket button head bolts (2pcs) and take off the stainless steel sheet retainer.

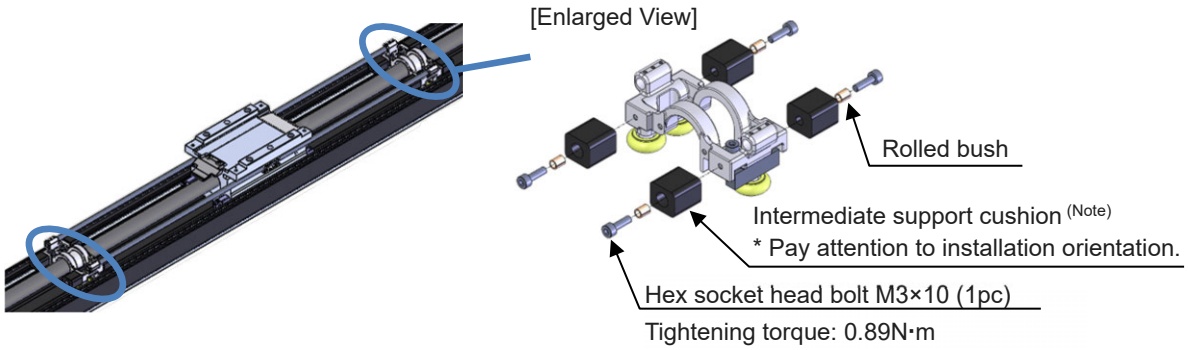
4. Remove the hex socket flat-head bolts (4pcs) and take off the slider cover and stainless steel sheet.



5. Remove the hex socket button head bolts (4pcs) and take off the side covers.

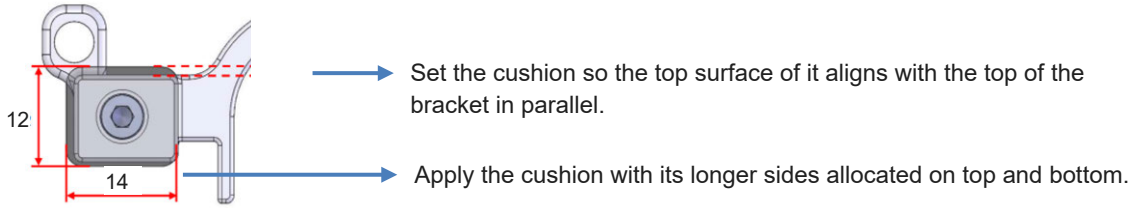


6. Take the hex socket head bolt (1pc) off the intermediate support cushion to replace, and take off the intermediate support cushion.



7. Insert a rolled bush to an intermediate support cushion for replacement and hold it with the hex socket head bolts.
Check the installation orientation of the intermediate support cushions (Note).

(Note) Installation orientation of intermediate support cushions

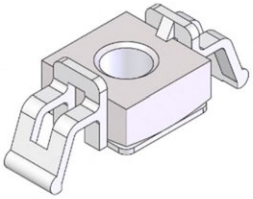


8. Assemble it in the order from Step 6. to 2..

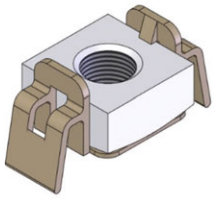
4.6.12 Model code for maintenance of square nut holder

Type	Single Unit Model Code	Set Model Code 6-piece Set / 12-piece Set
S3 type	SNHB-M3	SNHB6P-M3/SNH12P-M3
S4 type	SNHB-M4	SNHB6P-M4/SNH12P-M4
S6 type	SNHB-M4	SNHB6P-M4/SNH12P-M4
S7 type	SNHB-M5	SNHB6P-M5/SNH12P-M5

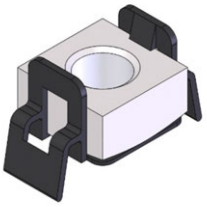
* Material of square nut holder: PA6 (Nylon 6)



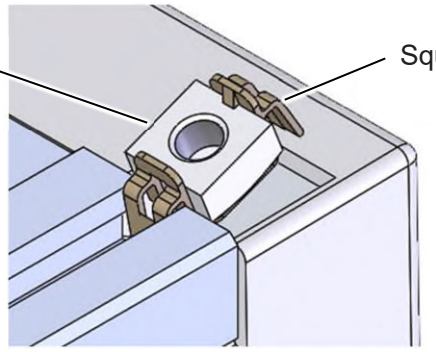
For M3 (White)



For M4 (Gray)

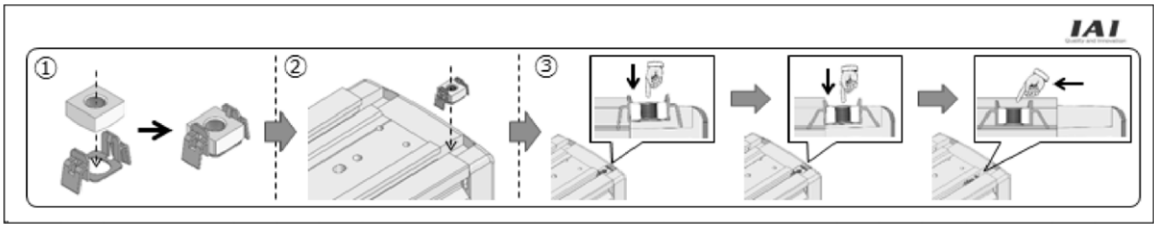


For M5 (Black)



Example of Insertion

* Refer to the instruction manual enclosed with the product for how to mount it.



ELECYLINDER

Chapter 5

External Dimensions

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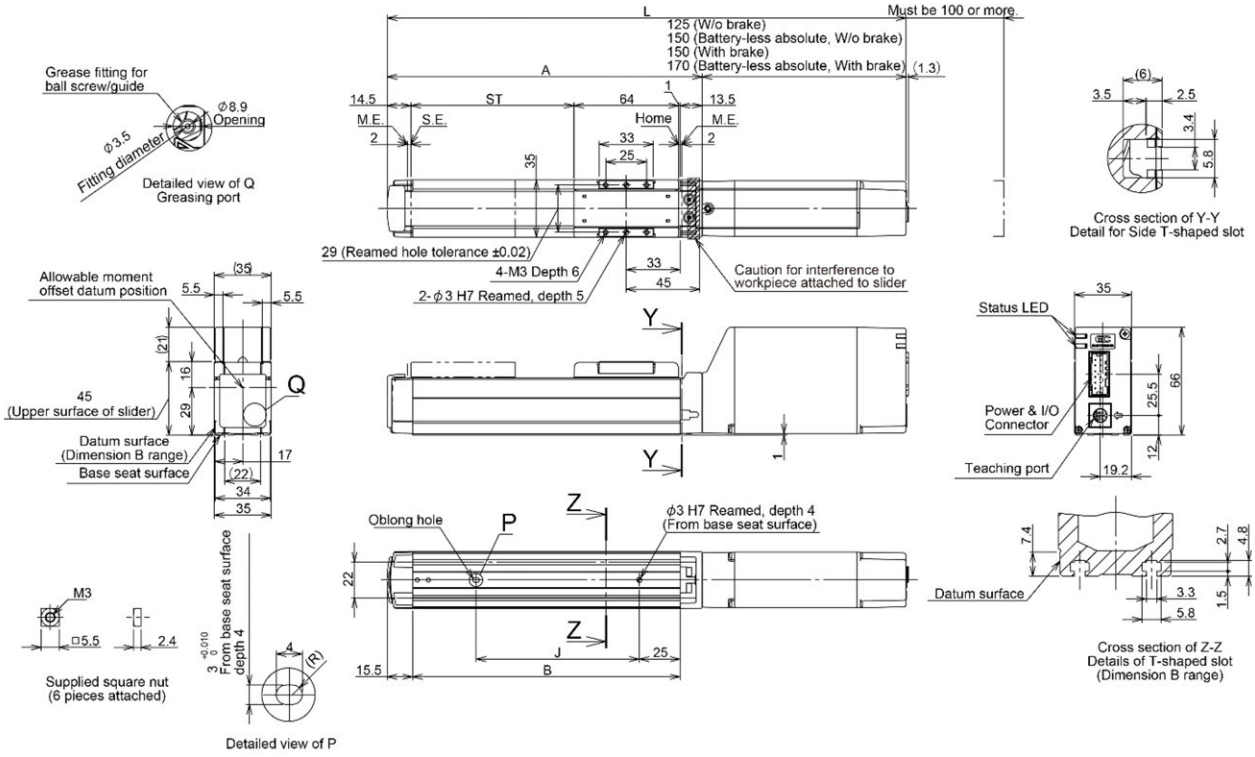
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5.1 Motor Straight (EC-S□□B)

5.1.1 EC-S3□B

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).
(Note) The figure below shows the case of the motor attached on the top (MOT).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

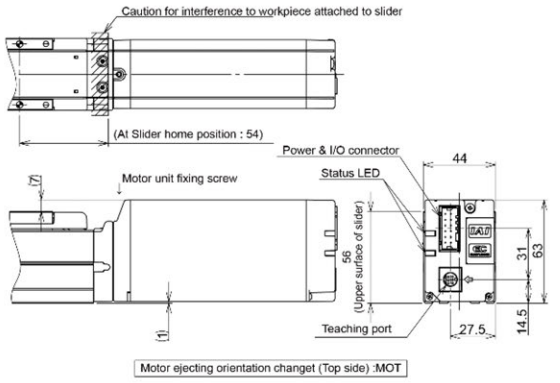
Unit [mm]

Stroke			50	100	150	200	250	300
L	Incremental	W/o Brake	268	318	368	418	468	518
		With Brake	293	343	393	443	493	543
	Battery-less absolute	W/o Brake	293	343	393	443	493	543
		With Brake	313	363	413	463	513	563
A			143	193	243	293	343	393
B			114	164	214	264	314	364
J			50	100	150	200	250	300

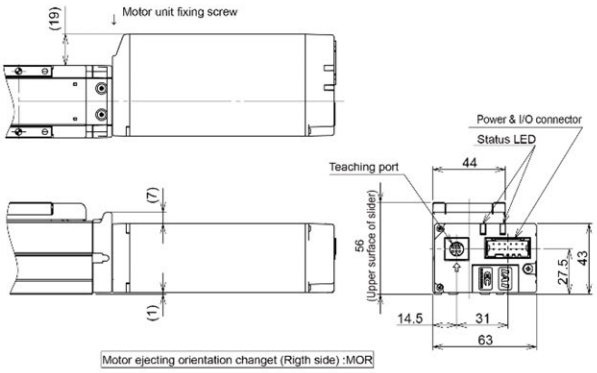
■ Mass by Stroke

Stroke		50	100	150	200	250	300
Mass [kg]	W/o Brake	0.7	0.8	0.9	1.0	1.1	1.2
	With Brake	0.8	0.9	1.0	1.1	1.2	1.3

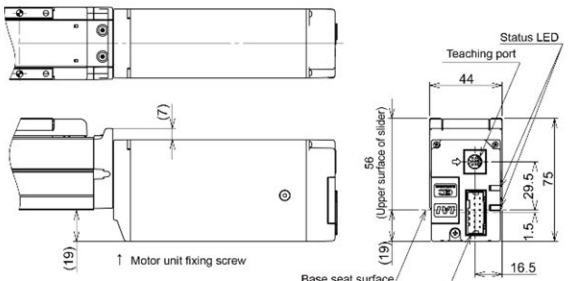
■ Motor ejecting orientation change (option)



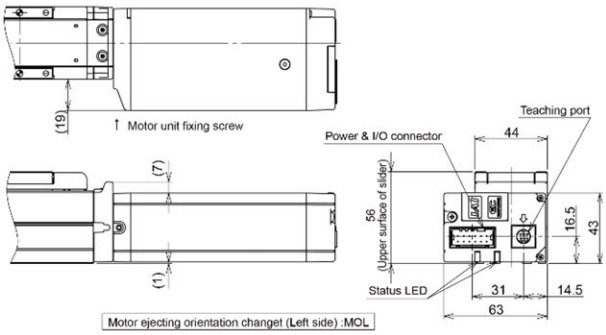
Motor ejecting orientation changet (Top side) :MOT



Motor ejecting orientation changet (Rigth side) :MOR



Motor ejecting orientation changet (Botton side) :MOB



Motor ejecting orientation changet (Left side) :MOL

5.1.2 EC-S4□B

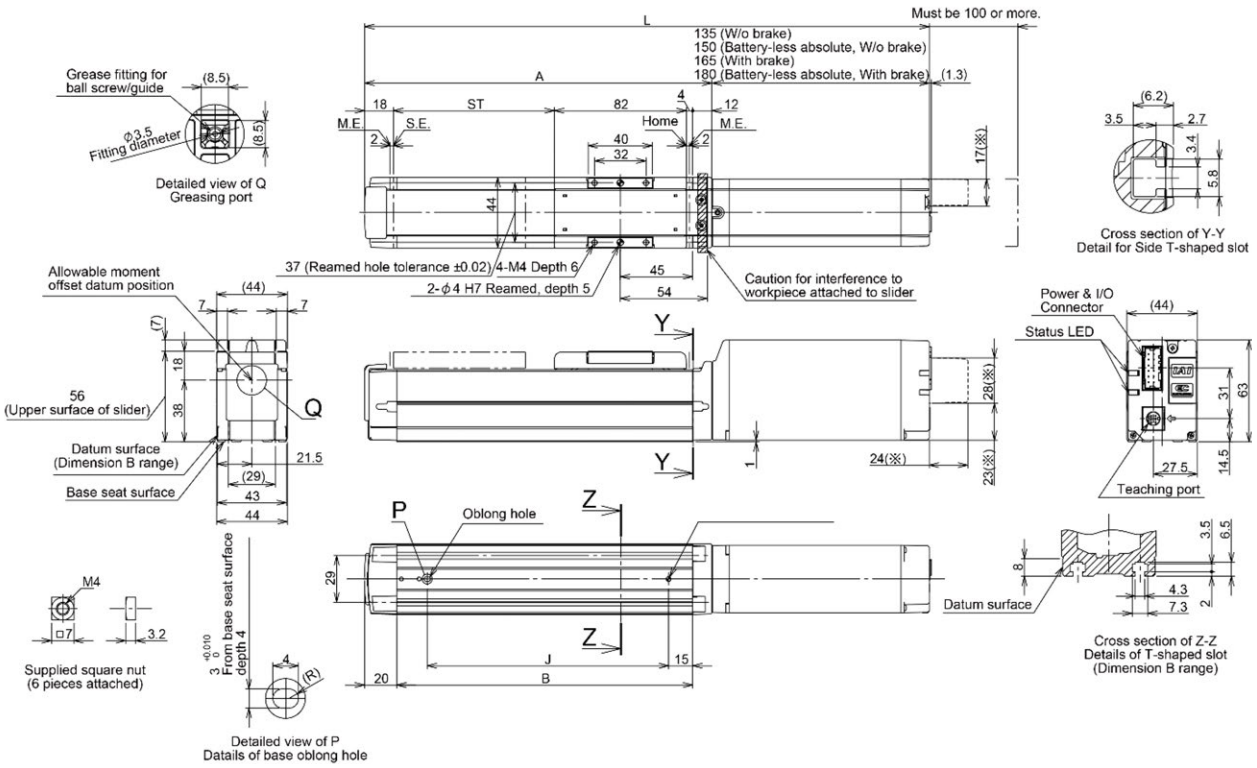
*1 The dimensions are those when the wireless communication type (option) or the wireless axis operation applicable type (option) is selected.

(Note) The slider should move to M.E. when the home-return operation gets performed. Pay attention to interference peripherals.

(Note) Square nuts should be enclosed with nut holders (6pcs).

(Note) The figure below shows the case of the motor attached on the top (MOT).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

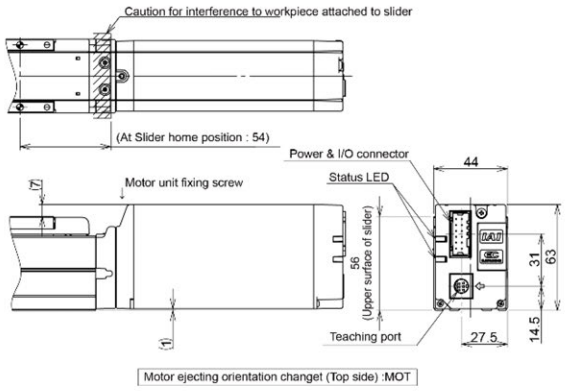
Unit [mm]

Stroke			50	100	150	200	250	300
L	Incremental	W/o Brake	301	351	401	451	501	551
		With Brake	331	381	431	481	531	581
	Battery-less absolute	W/o Brake	316	366	416	466	516	566
		With Brake	346	396	446	496	546	596
A			166	216	266	316	366	416
B			134	184	234	284	334	384
J			100	150	200	250	300	350

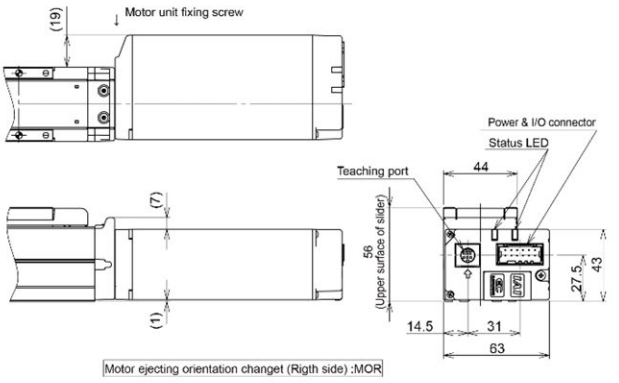
■ Mass by Stroke

Stroke		50	100	150	200	250	300
Mass [kg]	W/o Brake	1.2	1.3	1.5	1.6	1.8	1.9
	With Brake	1.3	1.5	1.6	1.8	1.9	2.1

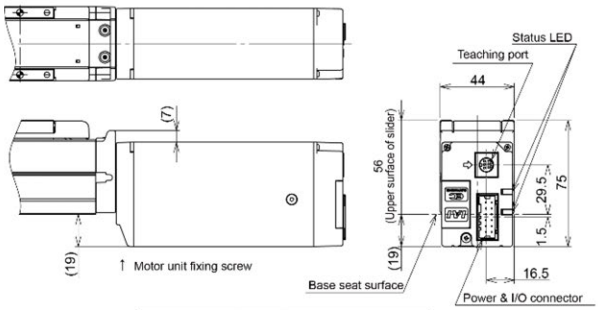
■ Motor ejecting orientation change (option)



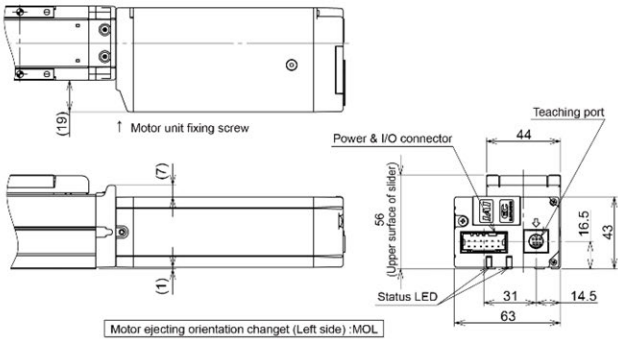
Motor ejecting orientation changet (Top side) :MOT



Motor ejecting orientation changet (Rigth side) :MOR



Motor ejecting orientation changet (Botton side) :MOB

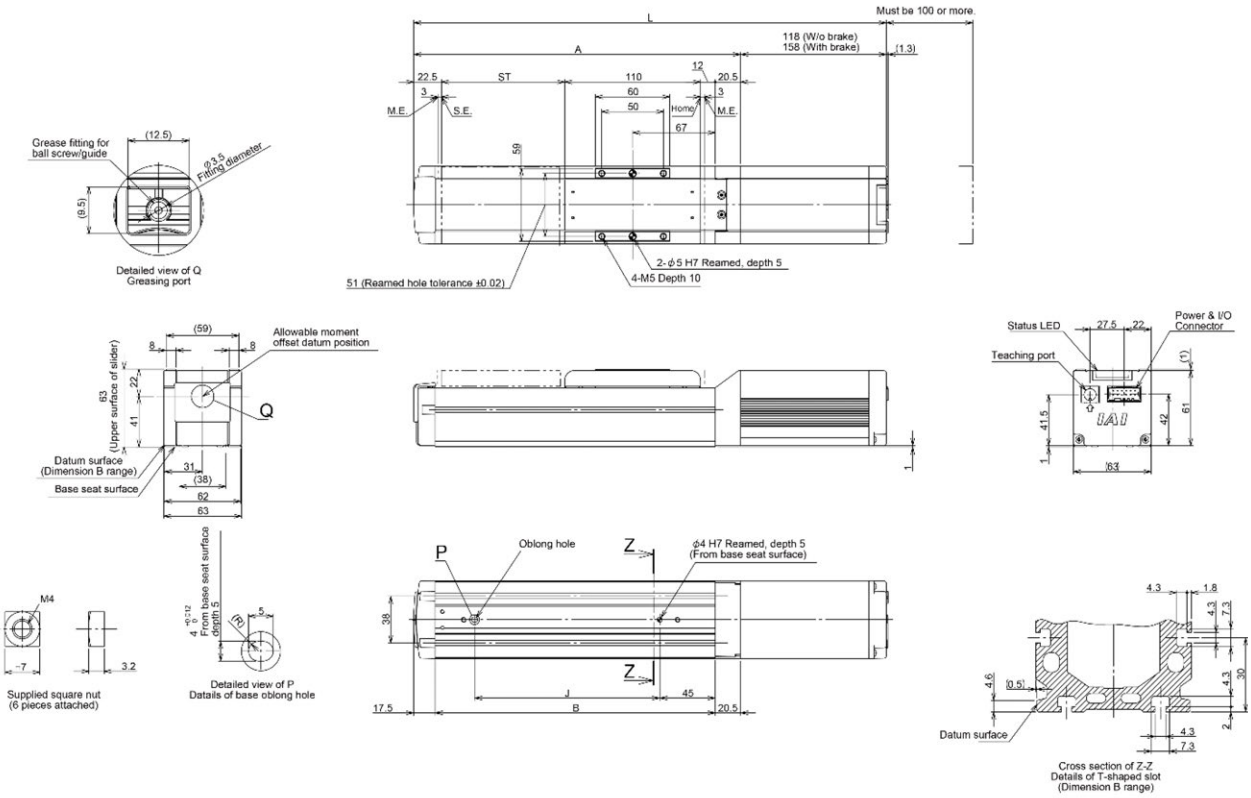


Motor ejecting orientation changet (Left side) :MOL

5.1.3 EC-S6□B

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke		50	100	150	200	250	300	350	400
L	W/o Brake	333	383	433	483	533	583	633	683
	With Brake	373	423	473	523	573	623	673	723
A		215	265	315	365	415	465	515	565
B		177	227	277	327	377	427	477	527
J		100	150	200	250	300	350	400	450

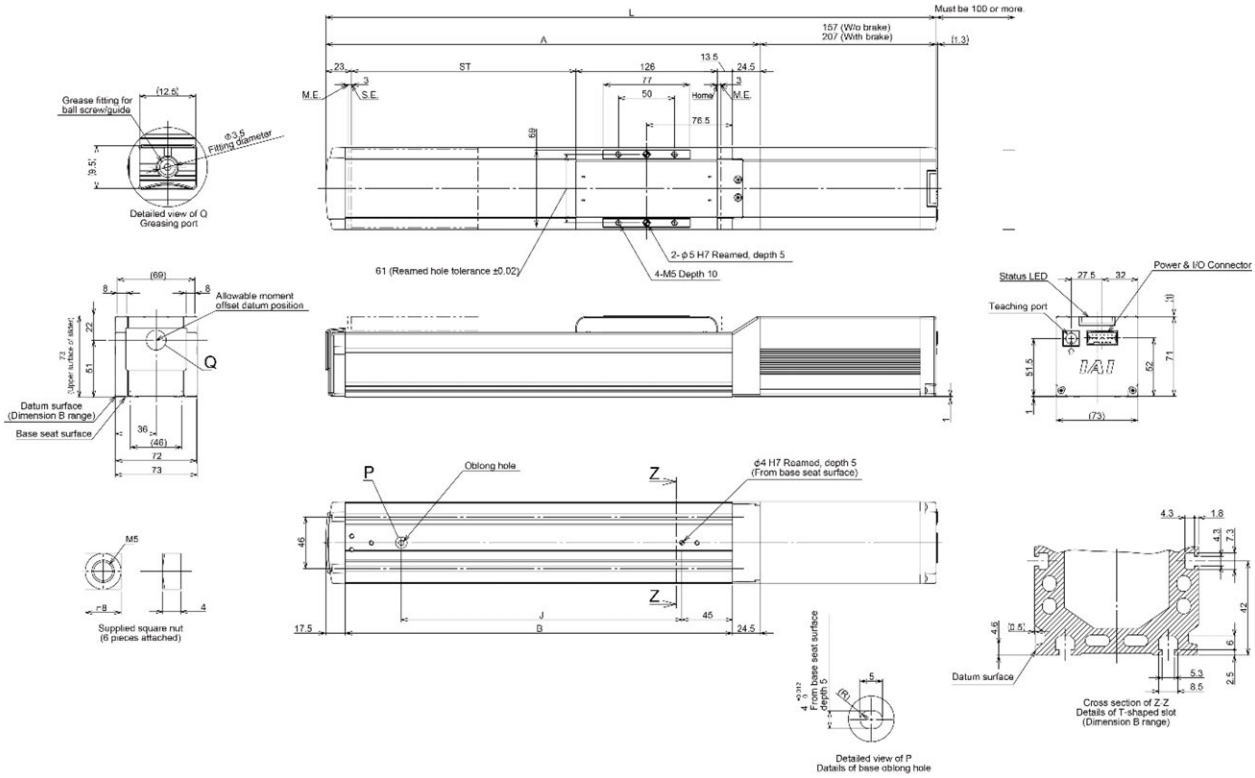
■ Mass by Stroke

Stroke		50	100	150	200	250	300	350	400
Mass [kg]	W/o Brake	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2
	With Brake	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4

5.1.4 EC-S7□B

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke		50	100	150	200	250	300	350	400	450	500
L	W/o Brake	394	444	494	544	594	644	694	744	794	844
	With Brake	444	494	544	594	644	694	744	794	844	894
A		237	287	337	387	437	487	537	587	637	687
B		195	245	295	345	395	445	495	545	595	645
J		100	150	200	250	300	350	400	450	500	550

■ Mass by Stroke

Stroke		50	100	150	200	250	300	350	400	450	500
Mass [kg]	W/o Brake	3.4	3.6	3.9	4.2	4.4	4.7	5.0	5.2	5.5	5.8
	With Brake	3.8	4.1	4.4	4.6	4.9	5.2	5.4	5.7	6.0	6.2

5.1.5 EC-S8□B

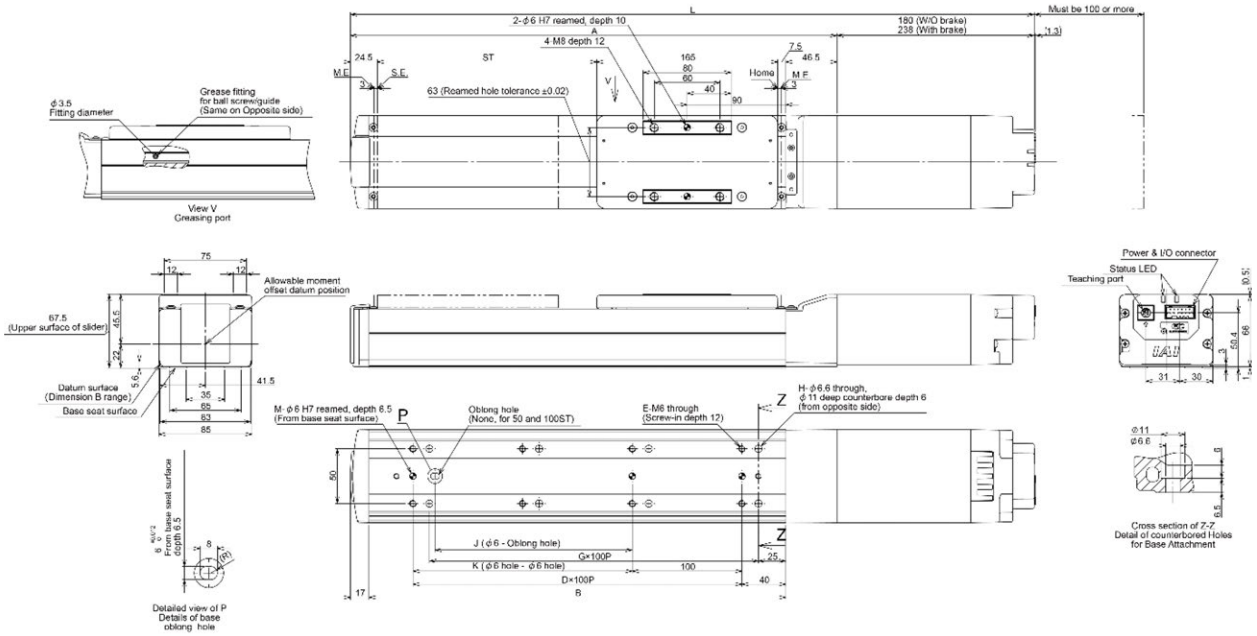
(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.

(Note) Pay attention to the attachment screw length. When using the attachment threads on the base bottom, screws may interfere with the internal components if their length is long, which could cause sliding error or damage to components.

(Note) In order to fix an actuator using the through holes on the base, it is necessary to take off the side cover and stainless steel sheet.

(Note) There are some through holes not available to use for strokes 50/100. Use the screw holes equipped on the bottom of the base to fix the main body.

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke		50	100	150	200	250	300	350	400	450	500	550	600
L	W/o Brake	473.5	523.5	573.5	623.5	673.5	723.5	773.5	823.5	873.5	923.5	973.5	1023.5
	With Brake	531.5	581.5	631.5	681.5	731.5	781.5	831.5	881.5	931.5	981.5	1031.5	1081.5
A		293.5	343.5	393.5	443.5	493.5	543.5	593.5	643.5	693.5	743.5	793.5	843.5
B		230	280	330	380	430	480	530	580	630	680	730	780
D		1	2	2	3	3	4	4	5	5	6	6	7
E		4	6	6	8	8	10	10	12	12	14	14	16
G		1	2	2	3	3	4	4	5	5	6	6	7
H		4	6	6	8	8	10	10	12	12	14	14	16
J		0	0	80	180	180	280	280	380	380	480	480	580
K		0	100	100	200	200	300	300	400	400	500	500	600
M		2	3	3	3	3	3	3	3	3	3	3	3

■ Mass by Stroke

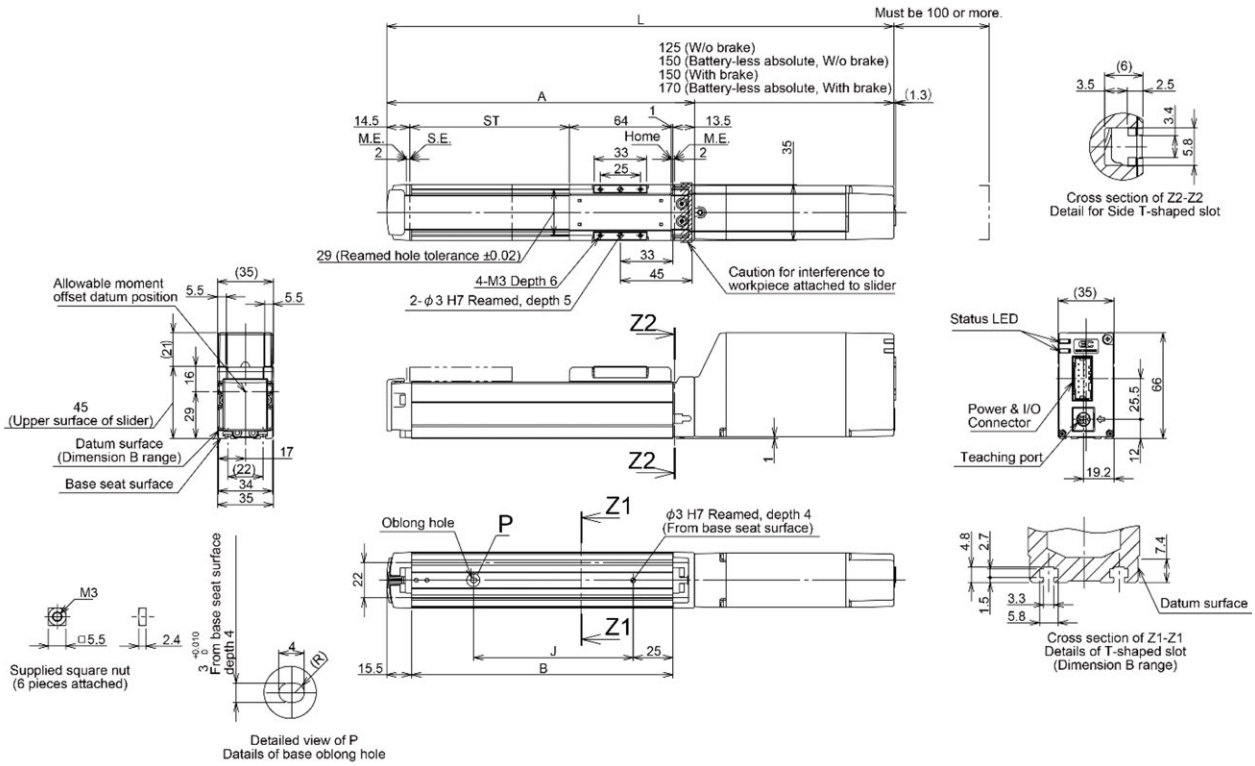
Stroke		50	100	150	200	250	300	350	400	450	500	550	600
Mass [kg]	W/o Brake	4.4	4.7	5.0	5.3	5.6	5.9	6.2	6.5	6.8	7.1	7.4	7.7
	With Brake	4.7	5.0	5.3	5.6	5.9	6.2	6.5	6.8	7.1	7.4	7.7	8.0

5.2 Long Stroke Applicable Motor Straight (EC-S□□AB)

5.2.1 EC-S3□AB

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).
(Note) The figure below shows the case of the motor attached on the top (MOT).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



* For dimensions of the motor ejecting orientation change (option), refer to [5.1 Slider type].

■ Dimensions by Stroke

Unit [mm]

Stroke			200	250	300	350	400
L	Incremental	W/o Brake	418	468	518	568	618
		With Brake	443	493	543	593	643
	Battery-less absolute	W/o Brake	443	493	543	593	643
		With Brake	463	513	563	613	663
A			293	343	393	443	493
B			264	314	364	414	464
J			200	250	300	350	400

■ Mass by Stroke

Stroke		200	250	300	350	400
Mass [kg]	W/o Brake	1.0	1.1	1.2	1.3	1.4
	With Brake	1.1	1.2	1.3	1.4	1.5

5.2.2 EC-S4□AB

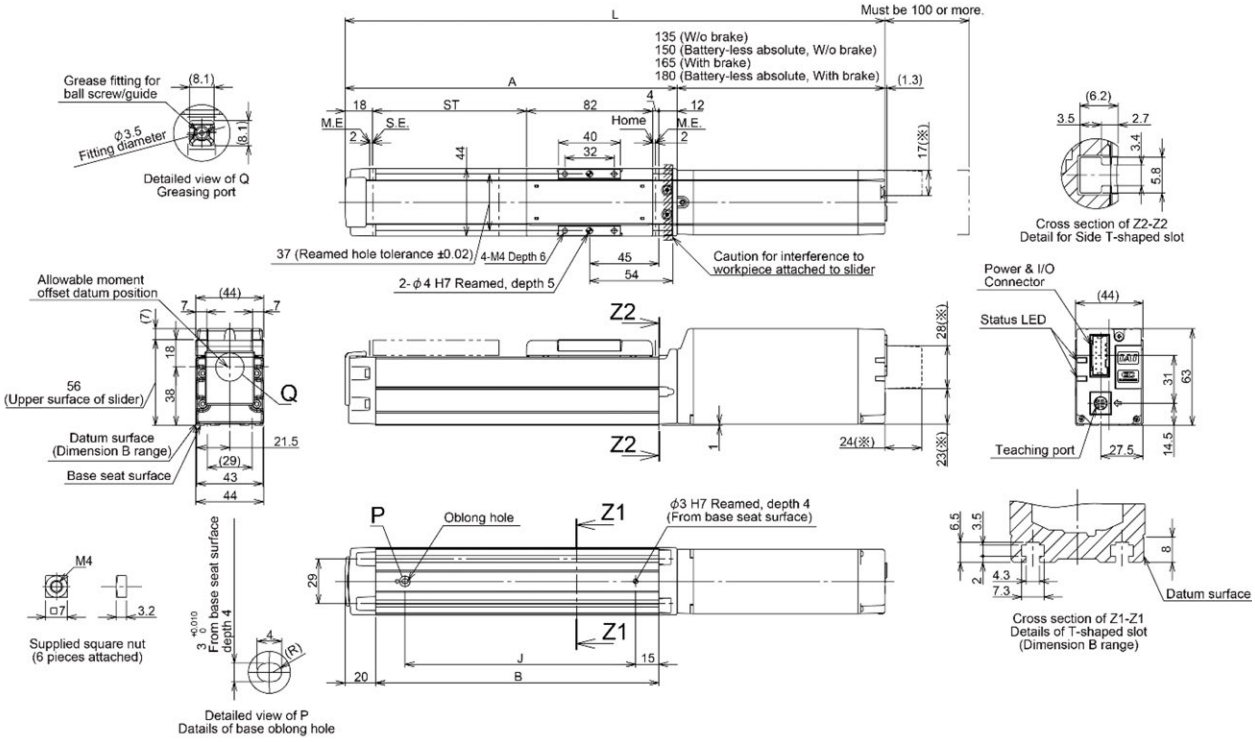
*1 The dimensions are those when the wireless communication type (option) or the wireless axis operation applicable type (option) is selected.

(Note) The slider should move to M.E. when the home-return operation gets performed. Pay attention to interference peripherals.

(Note) Square nuts should be enclosed with nut holders (6pcs).

(Note) The figure below shows the case of the motor attached on the top (MOT).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



* For dimensions of the motor ejecting orientation change (option), refer to [5.1 Slider type].

■ Dimensions by Stroke

Unit [mm]

Stroke			250	300	350	400	450	500
L	Incremental	W/o Brake	501	551	601	651	701	751
		With Brake	531	581	631	681	731	781
	Battery-less absolute	W/o Brake	516	566	616	666	716	766
		With Brake	546	596	646	696	746	796
A			366	416	466	516	566	616
B			334	384	434	484	534	584
J			300	350	400	450	500	550

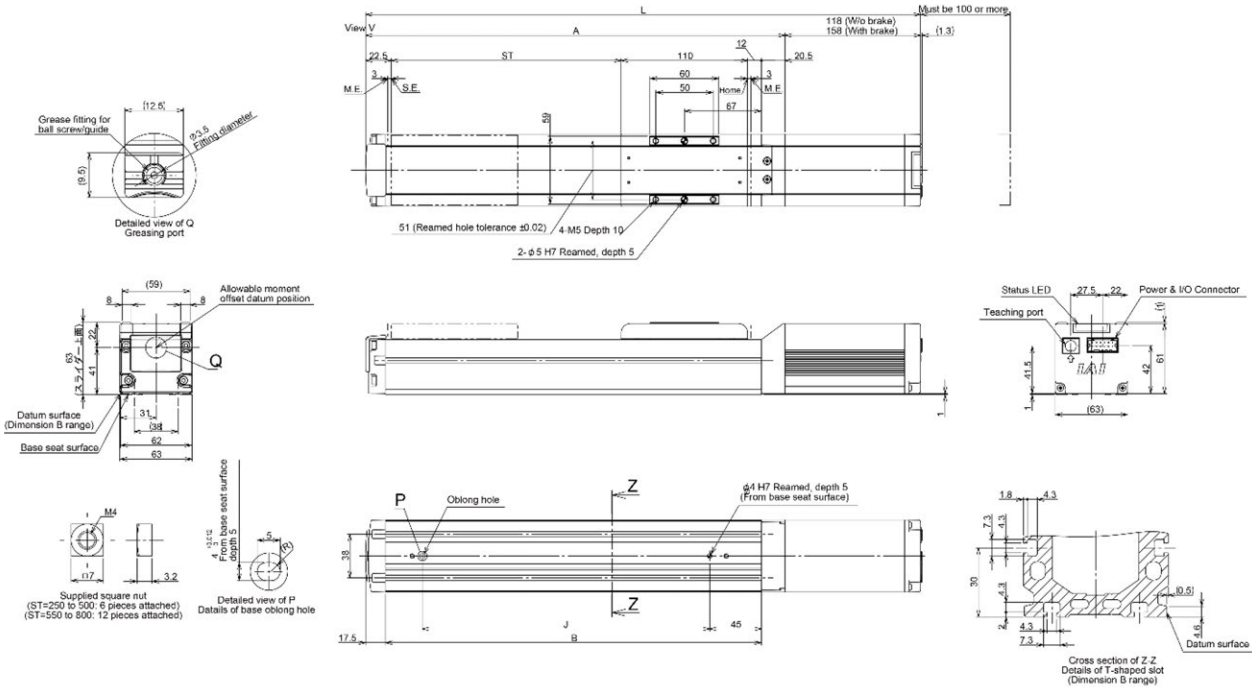
■ Mass by Stroke

Stroke		250	300	350	400	450	500
Mass [kg]	W/o Brake	1.8	1.9	2.1	2.2	2.4	2.5
	With Brake	2.0	2.1	2.2	2.4	2.5	2.7

5.2.3 EC-S6□AB

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (stroke = 250 to 500: 6pcs, 550 to 800: 12pcs).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke		250	300	350	400	450	500	550	600	650	700	750	800
L	W/o Brake	533	583	633	683	733	783	833	883	933	983	1033	1083
	With Brake	573	623	673	723	773	823	873	923	973	1023	1073	1123
A		415	465	515	565	615	665	715	765	815	865	915	965
B		377	427	477	527	577	627	677	727	777	827	877	927
J		300	350	400	450	500	550	600	650	700	750	800	850

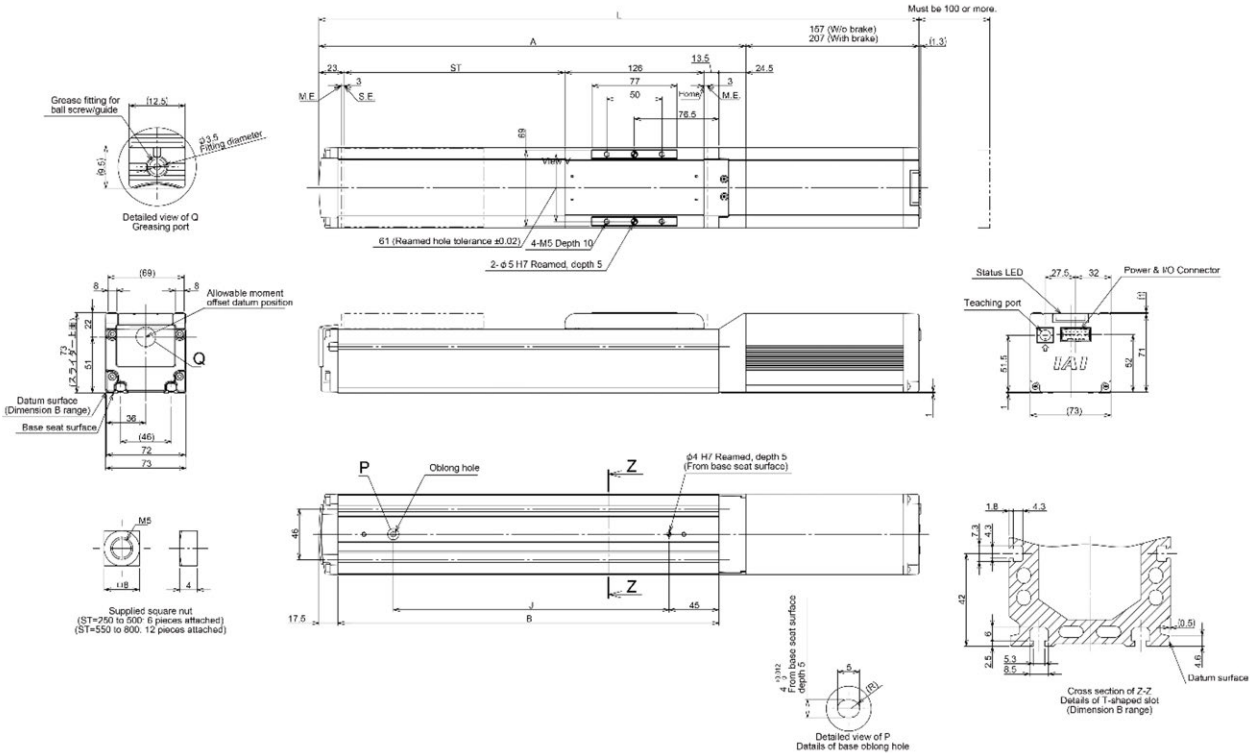
■ Mass by Stroke

Stroke		250	300	350	400	450	500	550	600	650	700	750	800
Mass [kg]	W/o Brake	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9
	With Brake	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1

5.2.4 EC-S7□AB

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (stroke = 350 to 500: 6pcs, 550 to 800: 12pcs).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke		350	400	450	500	550	600	650	700	750	800
L	W/o Brake	694	744	794	844	894	944	994	1044	1094	1144
	With Brake	744	794	844	894	944	994	1044	1094	1144	1194
A		537	587	637	687	737	787	837	887	937	987
B		495	545	595	645	695	745	795	845	895	945
J		400	450	500	550	600	650	700	750	800	850

■ Mass by Stroke

Stroke		350	400	450	500	550	600	650	700	750	800
Mass [kg]	W/o Brake	5.1	5.4	5.6	5.9	6.2	6.5	6.7	7.0	7.3	7.6
	With Brake	5.6	5.9	6.2	6.4	6.7	7.0	7.3	7.6	7.8	8.1

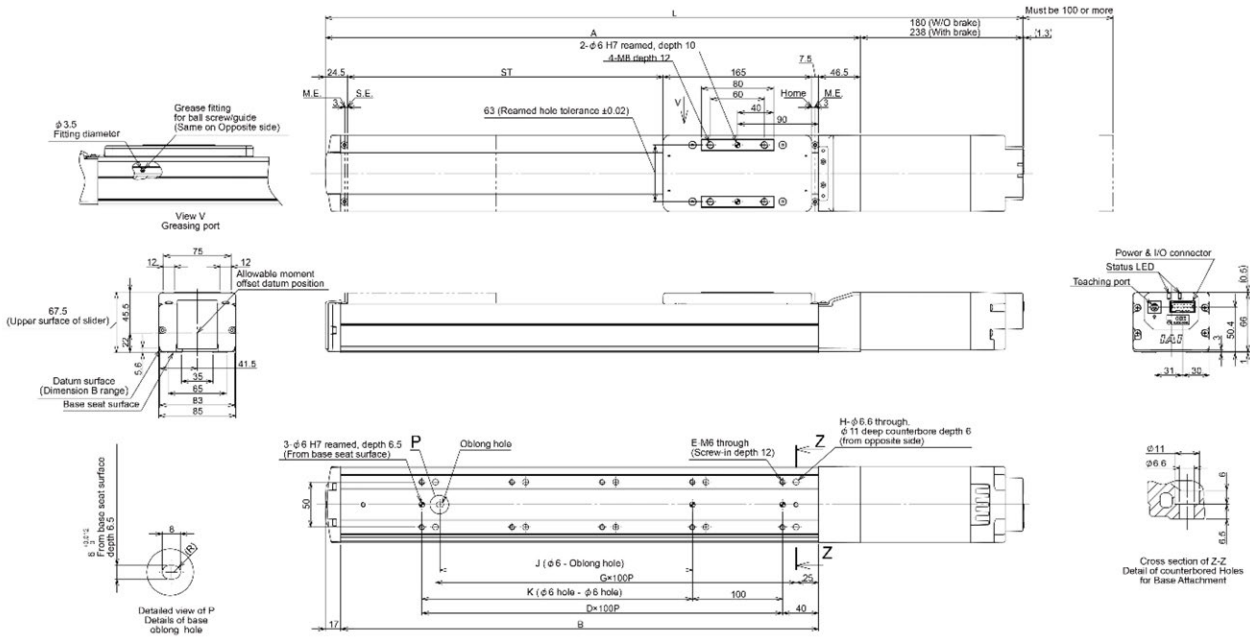
5.2.5 EC-S8□AB

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.

(Note) Pay attention to the attachment screw length. When using the attachment threads on the base bottom, screws may interfere with the internal components if their length is long, which could cause sliding error or damage to components.

(Note) In order to fix an actuator using the through holes on the base, it is necessary to take off the side cover and stainless steel sheet.

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
L	W/o Brake	773.5	823.5	873.5	923.5	973.5	1023.5	1073.5	1123.5	1173.5	1223.5	1273.5	1323.5	1373.5	1423.5	1473.5	1523.5
	With Brake	831.5	881.5	931.5	981.5	1031.5	1081.5	1131.5	1181.5	1231.5	1281.5	1331.5	1381.5	1431.5	1481.5	1531.5	1581.5
A		593.5	643.5	693.5	743.5	793.5	843.5	893.5	943.5	993.5	1043.5	1093.5	1143.5	1193.5	1243.5	1293.5	1343.5
B		530	580	630	680	730	780	830	880	930	980	1030	1080	1130	1180	1230	1280
D		4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12
E		10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26
G		4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12
H		10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26
J		280	380	380	480	480	580	580	680	680	780	780	880	880	980	980	1080
K		300	400	400	500	500	600	600	700	700	800	800	900	900	1000	1000	1100

■ Mass by Stroke

Stroke		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
Mass [kg]	W/o Brake	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.8	9.1	9.4	9.7	10.0	10.3	10.6	10.9
	With Brake	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.8	9.1	9.4	9.7	10.0	10.3	10.6	10.9	11.2

5.3 Long Stroke Applicable Equipped with Intermediate Support Motor Straight (EC-S8X□AB)

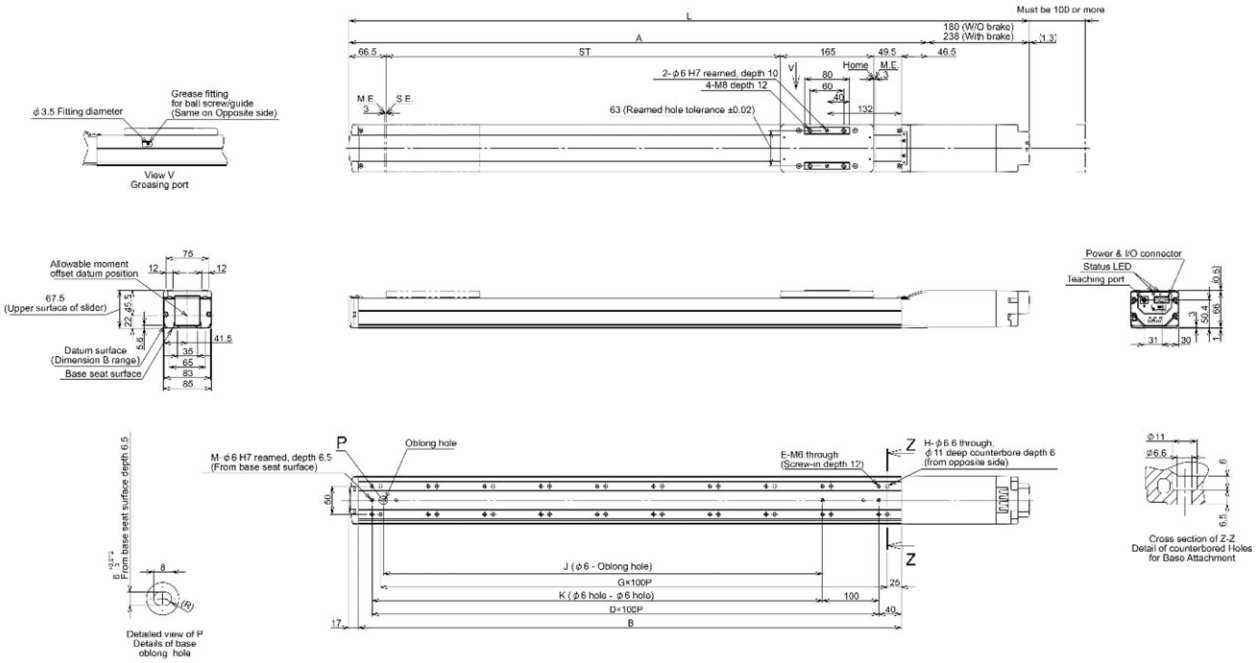
5.3.1 EC-S8X□AB

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.

(Note) Pay attention to the attachment screw length. When using the attachment threads on the base bottom, screws may interfere with the internal components if their length is long, which could cause sliding error or damage to components.

(Note) In order to fix an actuator using the through holes on the base, it is necessary to take off the side cover and stainless steel sheet.

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke		700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
L	W/o Brake	1207.5	1257.5	1307.5	1357.5	1407.5	1457.5	1507.5	1557.5	1607.5	1657.5	1707.5	1757.5	1807.5	1857.5	1907.5	1957.5	2007.5
	With Brake	1265.5	1315.5	1365.5	1415.5	1465.5	1515.5	1565.5	1615.5	1665.5	1715.5	1765.5	1815.5	1865.5	1915.5	1965.5	2015.5	2065.5
A		1027.5	1077.5	1127.5	1177.5	1227.5	1277.5	1327.5	1377.5	1427.5	1477.5	1527.5	1577.5	1627.5	1677.5	1727.5	1777.5	1827.5
B		964	1014	1064	1114	1164	1214	1264	1314	1364	1414	1464	1514	1564	1614	1664	1714	1764
D		9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17
E		20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36
G		9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17
H		20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36
J		780	780	880	880	980	980	1080	1080	1180	1180	1280	1280	1380	1380	1480	1480	1580
K		800	800	900	900	1000	1000	1100	1100	1200	1200	1300	1300	1400	1400	1500	1500	1600

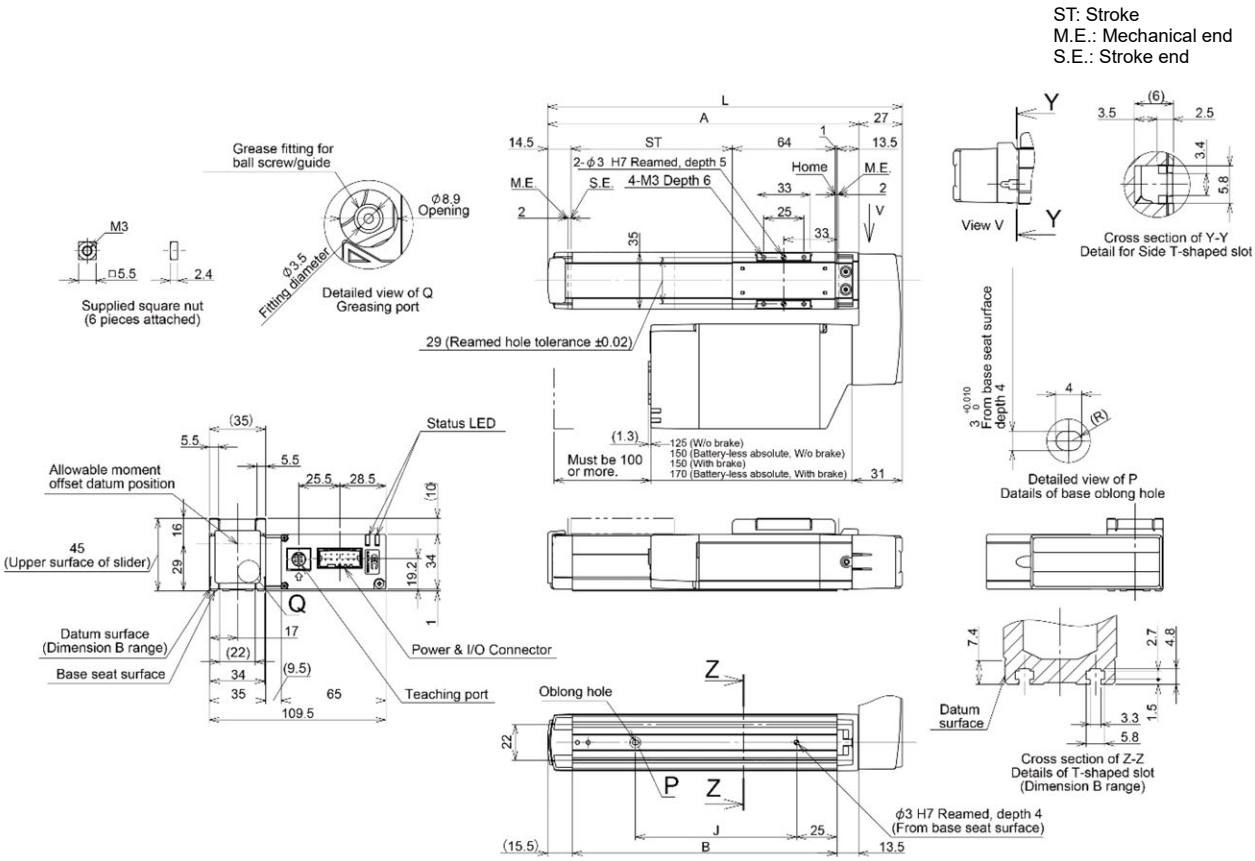
■ Mass by Stroke

Stroke		700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
Mass [kg]	W/o Brake	9.2	9.5	9.8	10.1	10.4	10.7	11.0	11.3	11.6	11.9	12.2	12.5	12.8	13.1	13.4	13.7	14.0
	With Brake	9.7	10.0	10.3	10.6	10.9	11.2	11.5	11.8	12.1	12.4	12.7	13.0	13.3	13.6	13.9	14.2	14.5

5.4 Motor Reversed (EC-S□□BR)

5.4.1 EC-S3□BR

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).
(Note) The figure below shows the motor left reversed type (ML).



Note There is no sheet retainer equipped on the units delivered in August 2024 and later.

■ Dimensions by Stroke

Unit [mm]

Stroke	50	100	150	200	250	300
L	170	220	270	320	370	420
A	143	193	243	293	343	393
B	114	164	214	264	314	364
J	50	100	150	200	250	300

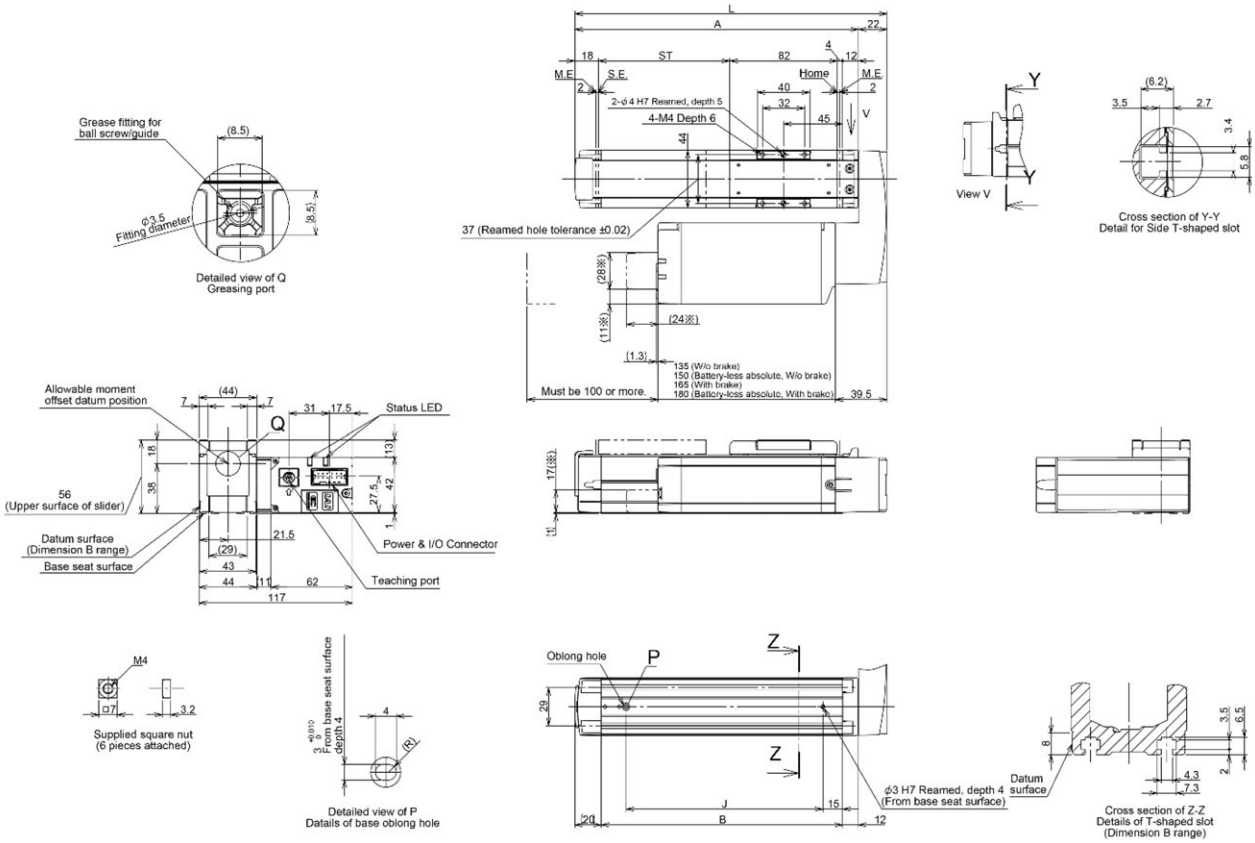
■ Mass by Stroke

Stroke		50	100	150	200	250	300
Mass [kg]	W/o Brake	0.8	0.9	1.0	1.1	1.2	1.3
	With Brake	0.9	1.0	1.1	1.2	1.3	1.4

5.4.2 EC-S4□BR

*1 The dimensions are those applied when WL/WL2 options are chosen.
(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).
(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	50	100	150	200	250	300
L	188	238	288	338	388	438
A	166	216	266	316	366	416
B	134	184	234	284	334	384
J	100	150	200	250	300	350

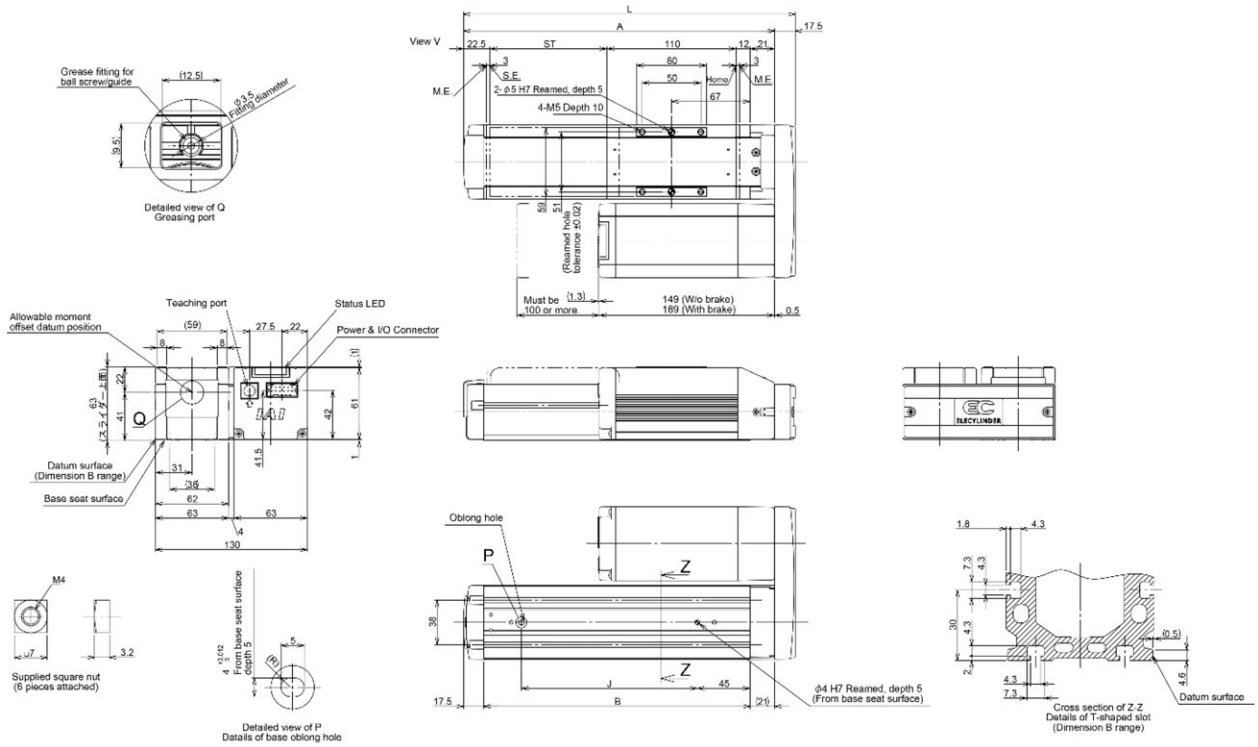
■ Mass by Stroke

Stroke		50	100	150	200	250	300
Mass [kg]	W/o Brake	1.3	1.4	1.6	1.7	1.9	2.0
	With Brake	1.4	1.6	1.7	1.9	2.0	2.2

5.4.3 EC-S6□BR

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).
(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	50	100	150	200	250	300	350	400
L	233	283	333	383	433	483	533	583
A	215.5	265.5	315.5	365.5	415.5	465.5	515.5	565.5
B	177	227	277	327	377	427	477	527
J	100	150	200	250	300	350	400	450

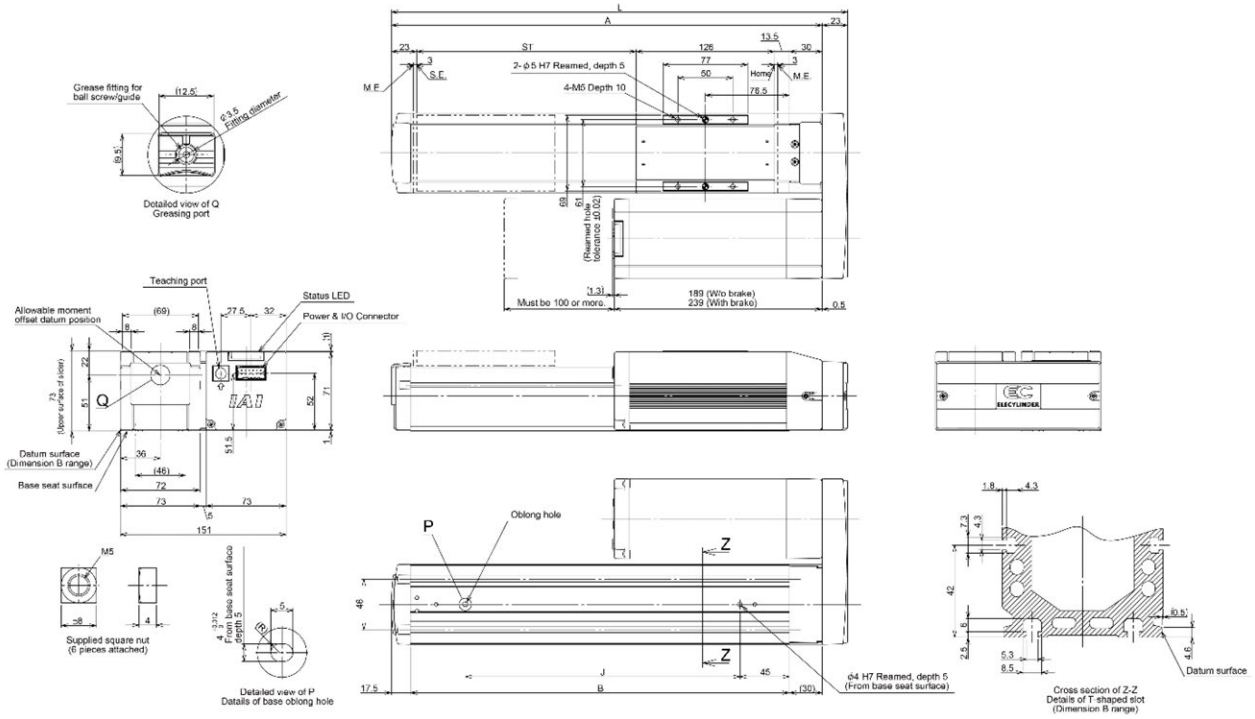
■ Mass by Stroke

Stroke		50	100	150	200	250	300	350	400
Mass [kg]	W/o Brake	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
	With Brake	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8

5.4.4 EC-S7□BR

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).
(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	50	100	150	200	250	300	350	400	450	500
L	265.5	315.5	365.5	415.5	465.5	515.5	565.5	615.5	665.5	715.5
A	242.5	292.5	342.5	392.5	442.5	492.5	542.5	592.5	642.5	692.5
B	195	245	295	345	395	445	495	545	595	645
J	100	150	200	250	300	350	400	450	500	550

■ Mass by Stroke

Stroke		50	100	150	200	250	300	350	400	450	500
Mass [kg]	W/o Brake	4.2	4.4	4.7	4.9	5.2	5.4	5.7	5.9	6.2	6.4
	With Brake	4.7	4.9	5.2	5.4	5.7	5.9	6.2	6.4	6.7	6.9

5.4.5 EC-S8□BR

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.

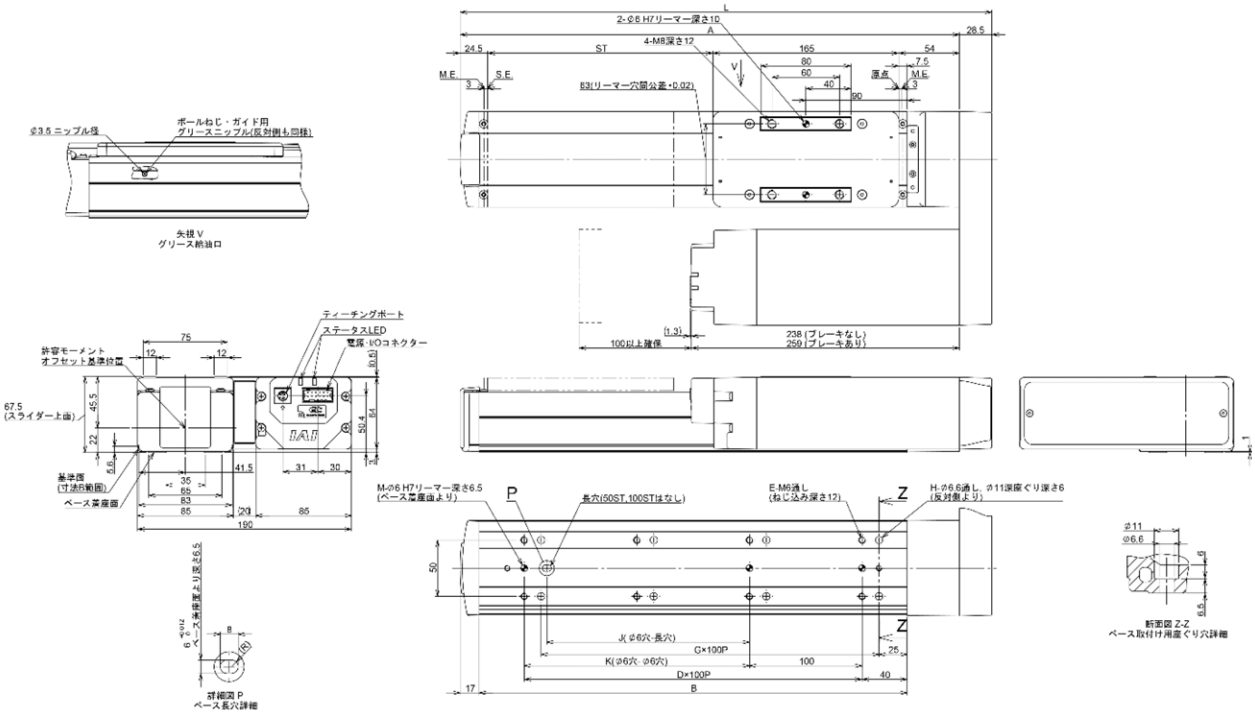
(Note) Pay attention to the attachment screw length. When using the attachment threads on the base bottom, screws may interfere with the internal components if their length is long, which could cause sliding error or damage to components.

(Note) In order to fix an actuator using the through holes on the base, it is necessary to take off the side cover and stainless steel sheet.

(Note) There are some through holes not available to use for strokes 50/100. Use the screw holes equipped on the bottom of the base to fix the main body.

(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	50	100	150	200	250	300	350	400	450	500	550	600
L	322	372	422	472	522	572	622	672	722	772	822	872
A	293.5	343.5	393.5	443.5	493.5	543.5	593.5	643.5	693.5	743.5	793.5	843.5
B	230	280	330	380	430	480	530	580	630	680	730	780
D	1	2	2	3	3	4	4	5	5	6	6	7
E	4	6	6	8	8	10	10	12	12	14	14	16
G	1	2	2	3	3	4	4	5	5	6	6	7
H	4	6	6	8	8	10	10	12	12	14	14	16
J	0	0	80	180	180	280	280	380	380	480	480	580
K	0	100	100	200	200	300	300	400	400	500	500	600
M	2	3	3	3	3	3	3	3	3	3	3	3

■ Mass by Stroke

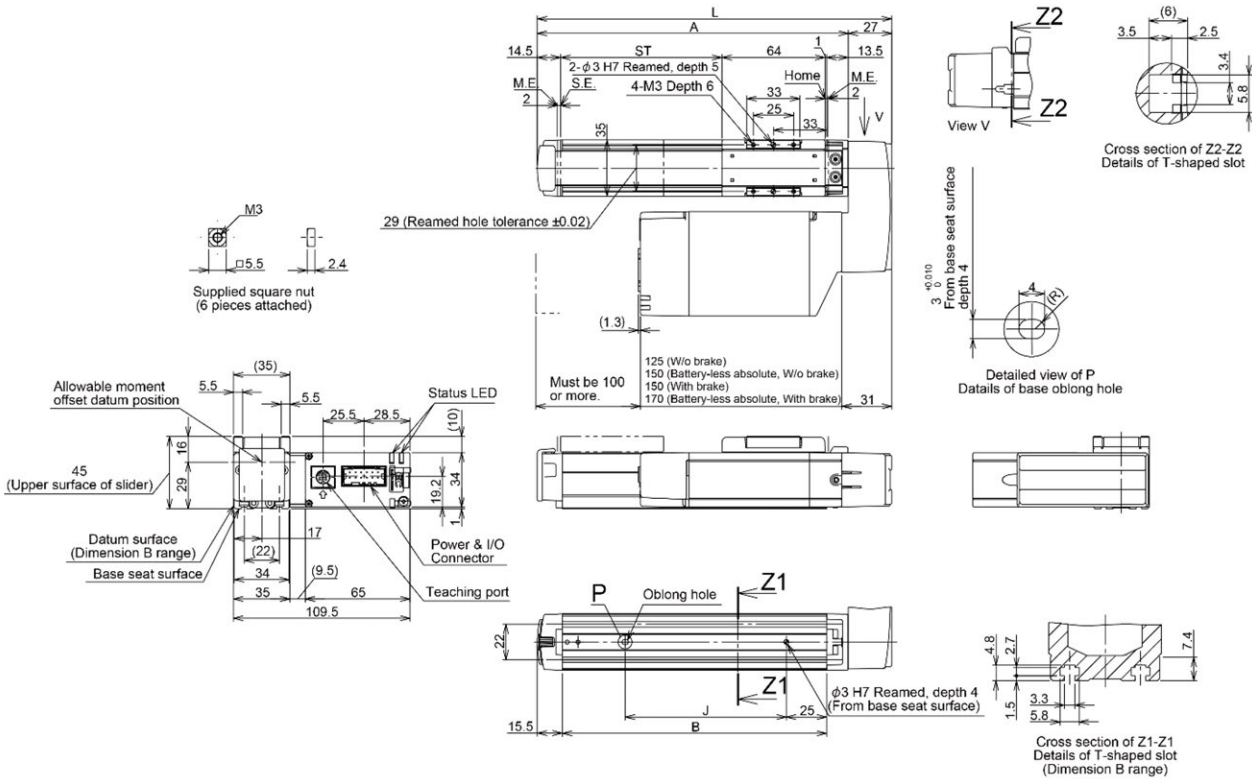
Stroke		50	100	150	200	250	300	350	400	450	500	550	600
Mass [kg]	W/o Brake	4.9	5.2	5.5	5.8	6.1	6.4	6.7	7.0	7.3	7.6	7.9	8.2
	With Brake	5.7	6.0	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0

5.5 Long Stroke Applicable Motor Reversed (EC-S□□ABR)

5.5.1 EC-S3□ABR

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).
(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	200	250	300	350	400
L	320	370	420	470	520
A	293	343	393	443	493
B	264	314	364	414	464
J	200	250	300	350	400

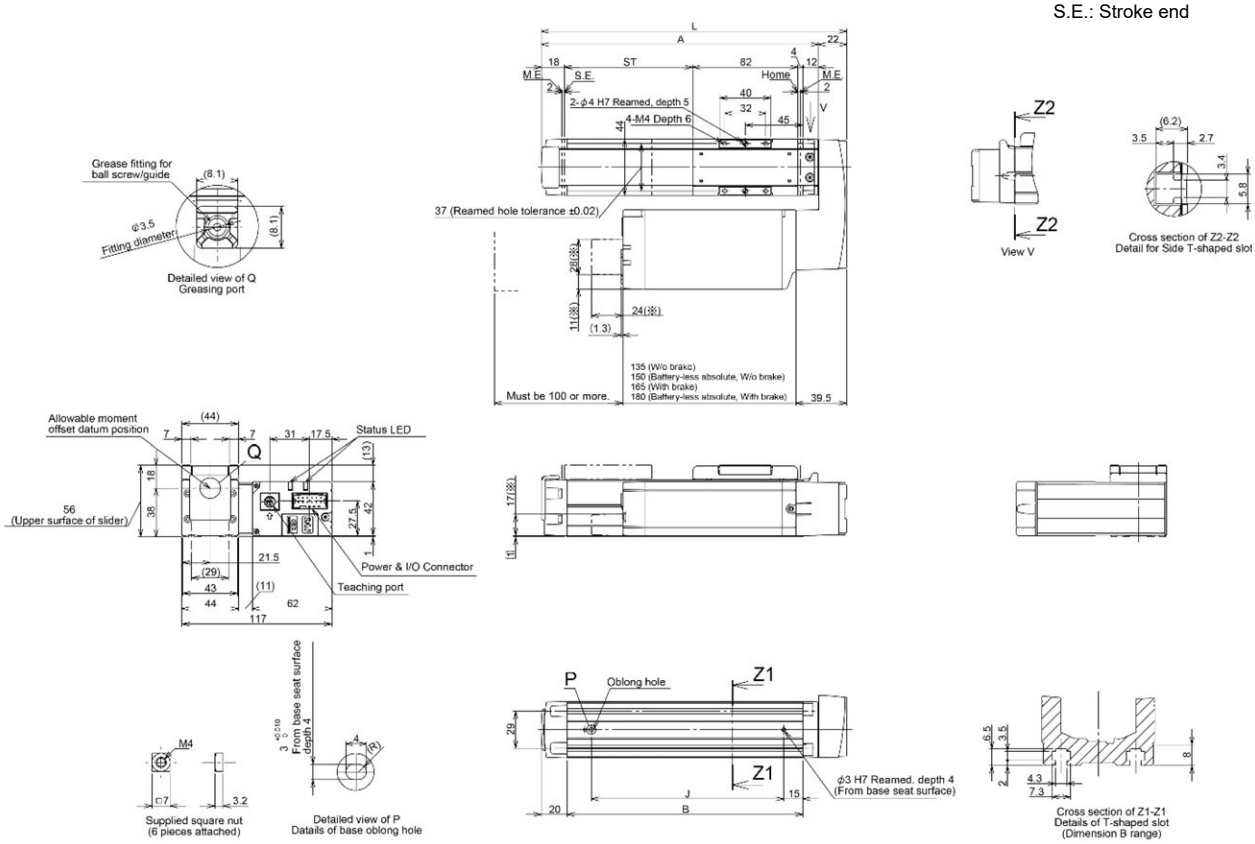
■ Mass by Stroke

Stroke		200	250	300	350	400
Mass [kg]	W/o Brake	1.1	1.2	1.3	1.4	1.5
	With Brake	1.2	1.3	1.4	1.5	1.6

5.5.2 EC-S4□ABR

*1 The dimensions are those applied when WL/WL2 options are chosen.
(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs).
(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	250	300	350	400	450	500
L	388	438	488	538	588	638
A	366	416	466	516	566	616
B	334	384	434	484	534	584
J	300	350	400	450	500	550

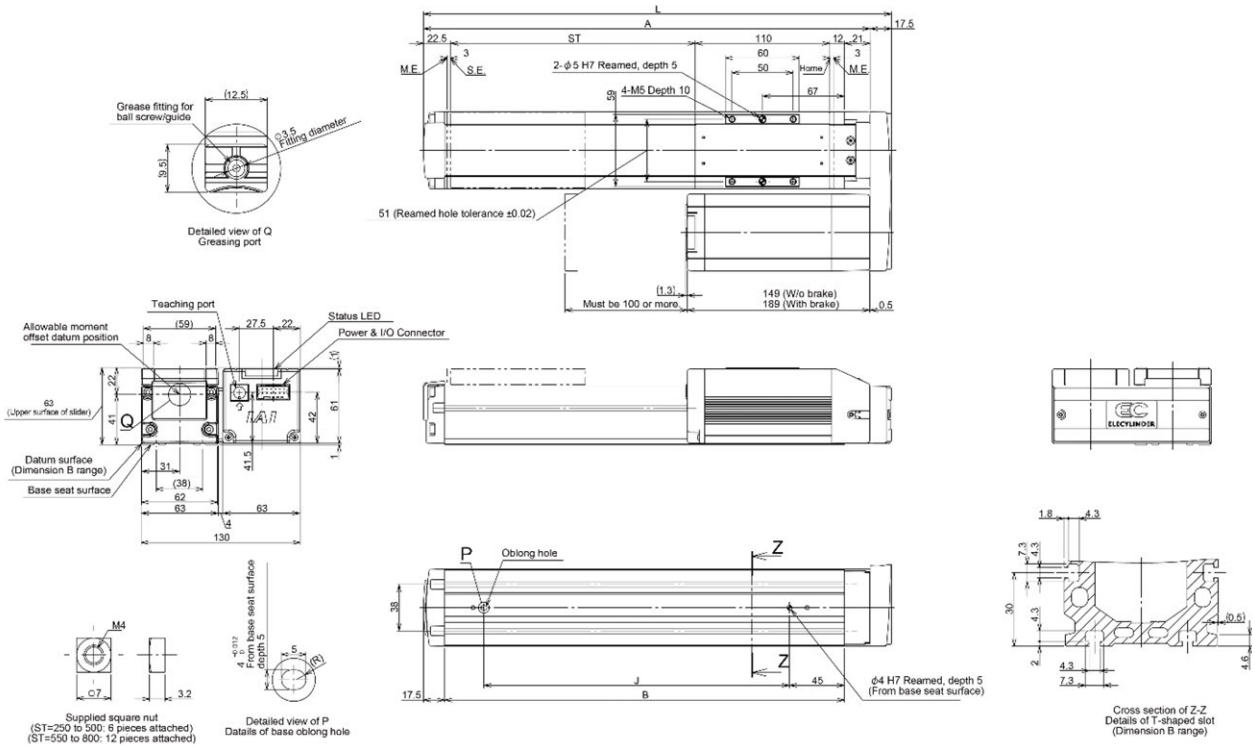
■ Mass by Stroke

Stroke		250	300	350	400	450	500
Mass [kg]	W/o Brake	1.9	2.1	2.2	2.4	2.5	2.7
	With Brake	2.1	2.3	2.4	2.6	2.7	2.9

5.5.3 EC-S6□ABR

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs). (stroke = 250 to 500: 6pcs, 550 to 800: 12pcs).
(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	250	300	350	400	450	500	550	600	650	700	750	800
L	433	483	533	583	633	683	733	783	833	883	933	983
A	415.5	465.5	515.5	565.5	615.5	665.5	715.5	765.5	815.5	865.5	915.5	965.5
B	377	427	477	527	577	627	677	727	777	827	877	927
J	300	350	400	450	500	550	600	650	700	750	800	850

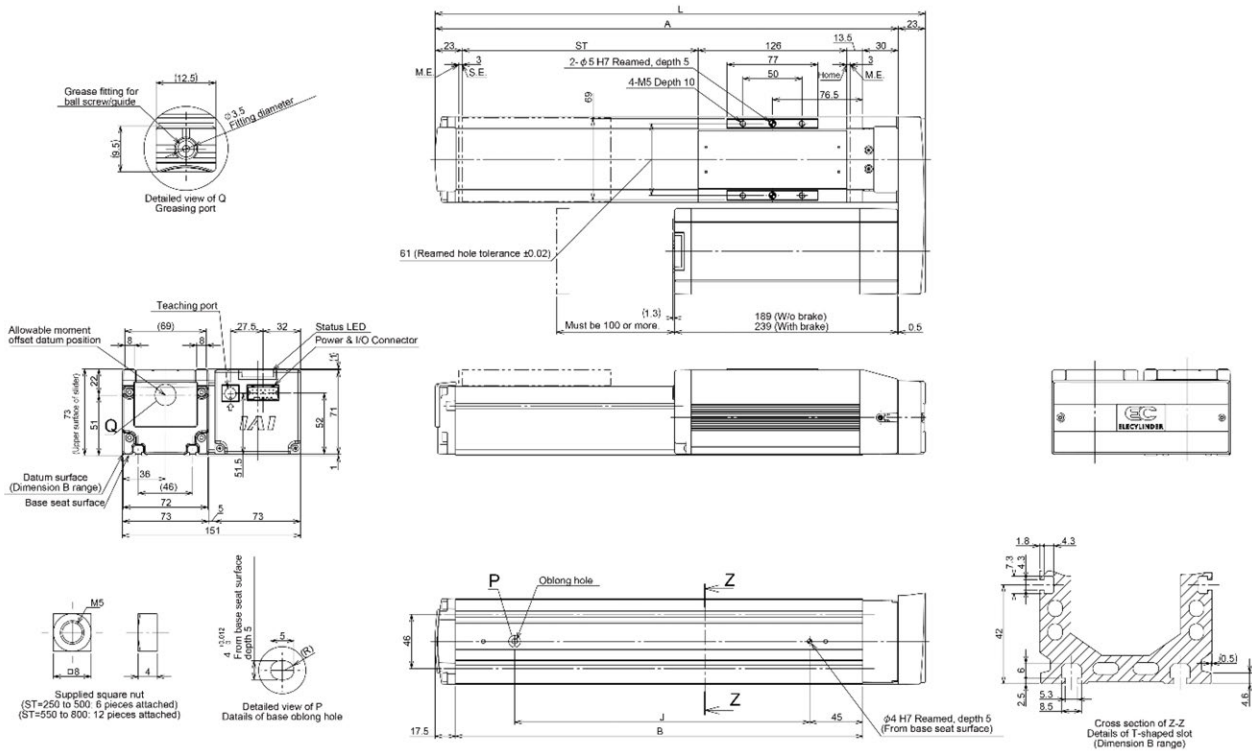
■ Mass by Stroke

Stroke		250	300	350	400	450	500	550	600	650	700	750	800
Mass [kg]	W/o Brake	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3
	With Brake	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5

5.5.4 EC-S7□ABR

(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.
(Note) Square nuts should be enclosed with nut holders (6pcs). (stroke = 350 to 500: 6pcs, 550 to 800: 12pcs).
(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	350	400	450	500	550	600	650	700	750	800
L	565.5	615.5	665.5	715.5	765.5	815.5	865.5	915.5	965.5	1015.5
A	542.5	592.5	642.5	692.5	742.5	792.5	842.5	892.5	942.5	992.5
B	495	545	595	645	695	745	795	845	895	945
J	400	450	500	550	600	650	700	750	800	850

■ Mass by Stroke

Stroke		350	400	450	500	550	600	650	700	750	800
Mass [kg]	W/o Brake	5.7	6.0	6.2	6.5	6.8	7.1	7.3	7.6	7.9	8.2
	With Brake	6.2	6.5	6.8	7.0	7.3	7.6	7.9	8.2	8.4	8.7

5.5.5 EC-S8□ABR

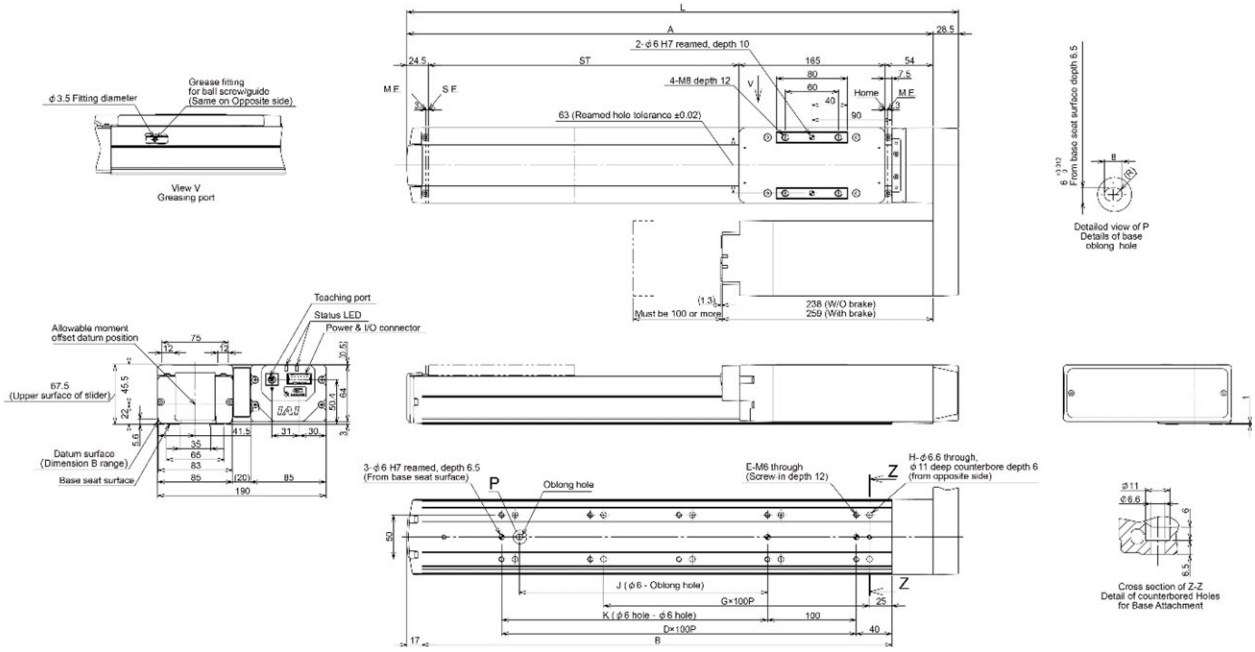
(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.

(Note) Pay attention to the attachment screw length. When using the attachment threads on the base bottom, screws may interfere with the internal components if their length is long, which could cause sliding error or damage to components.

(Note) In order to fix an actuator using the through holes on the base, it is necessary to take off the side cover and stainless steel sheet.

(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
L	622	672	722	772	822	872	922	972	1022	1072	1122	1172	1222	1272	1322	1372
A	593.5	643.5	693.5	743.5	793.5	843.5	893.5	943.5	993.5	1043.5	1093.5	1143.5	1193.5	1243.5	1293.5	1343.5
B	530	580	630	680	730	780	830	880	930	980	1030	1080	1130	1180	1230	1280
D	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12
E	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26
G	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12
H	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26
J	280	380	380	480	480	580	580	680	680	780	780	880	880	980	980	1080
K	300	400	400	500	500	600	600	700	700	800	800	900	900	1000	1000	1100

■ Mass by Stroke

Stroke		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
Mass [kg]	W/o Brake	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	9.9	10.2	10.5	10.8	11.1	11.4
	With Brake	7.7	8.0	8.3	8.6	8.9	9.2	9.5	9.8	10.1	10.4	10.7	11.0	11.3	11.6	11.9	12.2

5.6 Long Stroke Applicable Equipped with Intermediate Support Motor reversed (EC-S8X□ABR)

5.6.1 EC-S8X□ABR

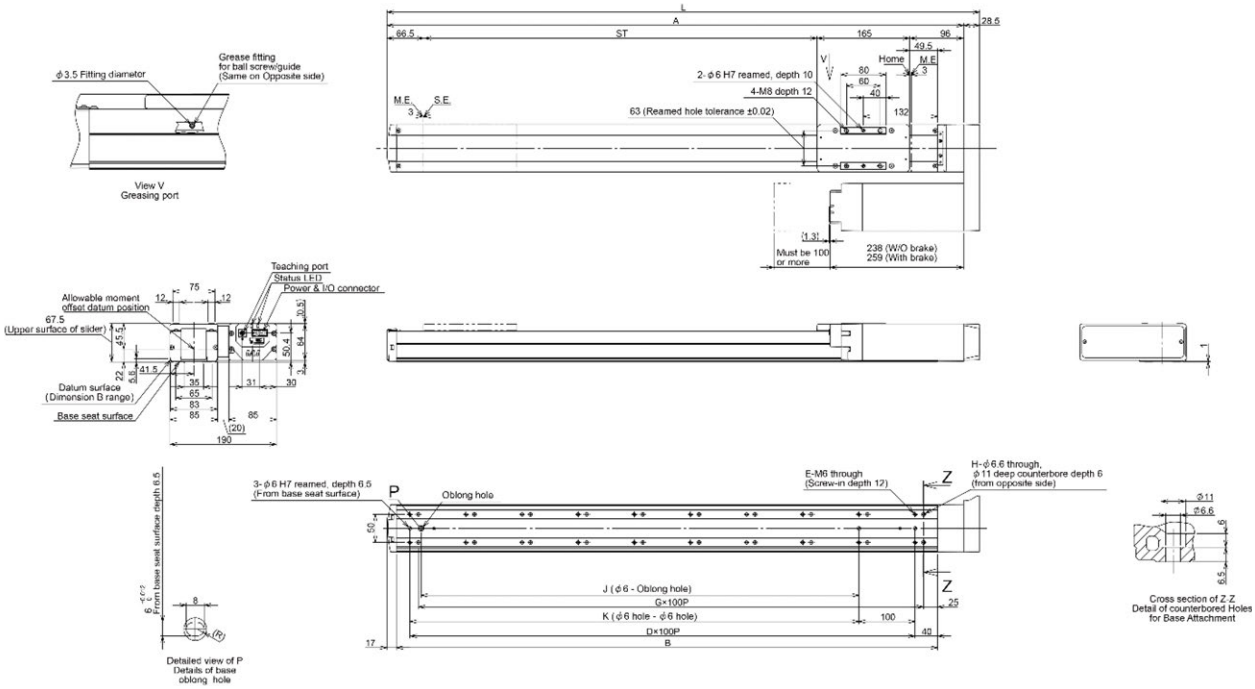
(Note) The slider should move to M.E. when the home-return operation gets performed.
Pay attention to interference peripherals.

(Note) Pay attention to the attachment screw length. When using the attachment threads on the base bottom, screws may interfere with the internal components if their length is long, which could cause sliding error or damage to components.

(Note) In order to fix an actuator using the through holes on the base, it is necessary to take off the side cover and stainless steel sheet.

(Note) The figure below shows the motor left reversed type (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Dimensions by Stroke

Unit [mm]

Stroke	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
L	1056	1106	1156	1206	1256	1306	1356	1406	1456	1506	1556	1606	1656	1706	1756	1806	1856
A	1027.5	1077.5	1127.5	1177.5	1227.5	1277.5	1327.5	1377.5	1427.5	1477.5	1527.5	1577.5	1627.5	1677.5	1727.5	1777.5	1827.5
B	964	1014	1064	1114	1164	1214	1264	1314	1364	1414	1464	1514	1564	1614	1664	1714	1764
D	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17
E	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36
G	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17
H	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36
J	780	780	880	880	980	980	1080	1080	1180	1180	1280	1280	1380	1380	1480	1480	1580
K	800	800	900	900	1000	1000	1100	1100	1200	1200	1300	1300	1400	1400	1500	1500	1600

■ Mass by Stroke

Stroke		700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
Mass [kg]	W/o Brake	9.6	9.9	10.2	10.5	10.8	11.1	11.4	11.7	12.0	12.3	12.6	12.9	13.2	13.5	13.8	14.1	14.4
	With Brake	10.5	10.8	11.1	11.4	11.7	12.0	12.3	12.6	12.9	13.2	13.5	13.8	14.1	14.4	14.7	15.0	15.3

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Chapter 6

Life

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6.1 Concept of life for slider type

The mechanical life of the slider type, high rigidity slider type and wide 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 Mechanical specifications], and calculate with the formula below.

$$L = \left(\frac{C_M}{M} \right)^3 \times 5{,}000\text{km}$$

L	: Operation life [km]
C_M	: Dynamic allowable moment [N·m]
M	: Moment acting [N·m]
5,000km	: Standard rated life of ELECYLINDER

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

$$L = \left(\frac{C_M}{M} \cdot \frac{f_{ws}}{f_w} \cdot \frac{1}{f_\alpha} \right)^3 \times 5{,}000\text{km}$$

L	: Operation life [km]	fws	: Standard load coefficient
C_M	: Dynamic allowable moment [N·m]	fw	: Load coefficient
M	: Moment acting [N·m]	fα	: Mounting coefficient
5,000km	: Standard rated life of ELECYLINDER		

For "Standard load coefficient fws", "Load coefficient fw" and "Mounting coefficient fα", refer to the contents below for configuration and selection.

[Standard load coefficient fws]

For ELECYLINDERs described in this manual, calculate with fws = 1.2.

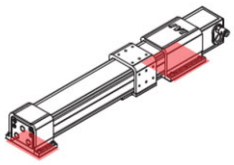
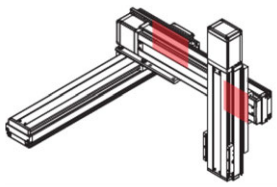
[Load coefficient fw]

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

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

[Mounting coefficient fα]

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

Mounting coefficient fα	1.0	1.2	1.5
Mounting status	**Fixed on entire surface**	**Fixed at both ends**	**Fixed locally**
			

- The actuator used in the explanatory figures above is not the ELECYLINDER. Replace with ELECYLINDER 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".
- Various mounting methods are available for the ELECYLINDER. "Fixing over the entire surface" is considered to be the case only when fixing with the T-shaped 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 5,000km, the standard rated life.

With no consideration of vibration and mounting conditions, the operation life is 40,000km 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 5,000km.

* The product life fluctuates drastically depending on the condition of use, environment and condition of maintenance.

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Chapter 7

Warranty

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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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