





EZHS Series Slider
EZHC Series Cylinder
EZHP Series Cylinder

INSTALLATION MANUAL

((



Notes to the User

- This product must be handled by qualified personnel with expert knowledge of electrical and mechanical engineering. Before using the product, please read *Chapter 2*, "Safety", carefully to ensure correct use.
- This product is designed and manufactured for use as an internal component for general industrial
 equipment. Do not use the product for any other purpose. Oriental Motor shall not be liable
 whatsoever for any damage arising from a failure to observe this warning.
- Should you require the inspection or repair of internal parts, please contact the Oriental Motor branch or sales office from which you purchased the product.
- The figures and tables provided in this document are intended to help you understand the content of the text. They should not be construed in any way as guaranteeing the resultant operation.
- Oriental Motor shall not be liable whatsoever for any patent-related problem arising in connection with the use of any information, circuit, equipment or device described in this document.
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Introduction Chapter 1

Please read this Chapter 1 "Introduction" section and familiarize yourself with the key aspects of the

This section covers the following:

- · Intended reader of the manual
- Purpose of the manual
- · Receipt, storage and disposal of the product
- Product support by Oriental Motor
- Rules of notation used in the manual

Intended Reader of the Manual

This manual is intended for qualified personnel with expert knowledge of electrical and mechanical engineering.

Those in charge of the design, installation, wiring, maintenance and troubleshooting of EZHS/EZHC/EZHP Series products should read this manual.

Purpose of the Manual

This manual explains the installation and maintenance procedures for EZHS/EZHC/EZHP Series sliders and cylinders.

Receipt, Storage and Disposal of the Product

The customer should inspect the exterior of the equipment before accepting the product.

Check the delivered product by verifying it against the specification on the order sheet. If the product is damaged, please contact the Oriental Motor branch or sales office from which you purchased the

Leave the product in the packing carton until immediately before installation. If the product is not to be used for an extended period of time, store it in a place that satisfies the following conditions:

- · A clean place not subject to excessive humidity or salt
- · A place away from direct sunlight
- An ambient temperature of 0 to +50°C (+32 to +122°F) (non-freezing)
- A relative humidity of 85% or below (non-condensing)
- · A place not exposed to corrosive gases
- A place not subject to continuous vibration

When disposing of the product, treat it as industrial waste.

Engage a certified waste-disposal service to carry out the disposal.

The product uses nickel-cadmium batteries. Dispose of the used batteries in accordance with local laws and regulations. If you have any questions regarding disposal of the product, please contact any Oriental Motor branch or sales office.

Product Support

Should you require any of the following services, please contact any Oriental Motor branch or sales

- Sales information and assistance for product selection
- Technical support regarding the product
- Warranty repair

Technical Assistance Regarding the Product

Should you require technical assistance from Oriental Motor, please call our Technical Support Line. So that we can promptly respond to your inquiry, please have the product model ready when you call.



Structure and Contents of This Manual

This manual serves as a user's guide for **EZHS/EZHC/EZHP** Series sliders and cylinders. Operating any **EZHS/EZHC/EZHP** Series slider or cylinder requires the controller supplied with the slider/cylinder, as well as the setup of an optional teaching pendant or data editing software and the programming of operating data. Please refer to the following manuals for the **EZHS/EZHC/EZHP** Series, and follow the instructions:

- EZHS/EZHC/EZHP Series Slider/Cylinder Installation Manual (this document)
- EZHS/EZHC/EZHP Series Controller User Manual
 This manual explains the installation, wiring, I/O, setting and troubleshooting of the controller.
 The CC-Link controller comes with "EZHS/EZHC/EZHP Series CC-Link Controller User Manual."
- EZHS/EZHC/EZHP Series Controller Data Setting Manual
 This manual explains the process of creating operation data, setting parameters and performing troubleshooting using the teaching pendant.

The CC-Link controller comes with "EZHS/EZHC/EZHP Series CC-Link Controller Data Setting Manual."

Teaching Pendant EZT1 User Manual
 This manual explains the key layout of the teaching pendant.

Contents of the Manual

This manual consists of chapters 1 through 7 and appendixes A and B. The table below gives a brief explanation of the content of each chapter and section. The rules of notation, as well as warnings and precautions specific to the sliders/cylinders, are also explained.

	Chapter	Description
Chapter 1	Introduction	This chapter describes the purpose and content of this manual.
Chapter 2	Safety	Read this chapter carefully in order to understand the safety precautions. The information provided in this chapter is designed to ensure safety at the customer's site and protect the slider/cylinder against damage.
Chapter 3	Unpacking, Inspection and Storage	This chapter lists the items included in the slider/cylinder package and explains the basic inspection procedure to be performed prior to installation or storage.
Chapter 4	Slider/Cylinder Overview	This chapter explains the basic functions of the slider/cylinder and requirements regarding their use.
Chapter 5	Installation	This chapter explains how to install the slider/cylinder in the machine and affix a load and sensors to the slider/cylinder.
Chapter 6	Maintenance	This chapter explains the minimum maintenance required for the slider/cylinder.
Chapter 7	Warranty	This chapter explains the warranty repair period and scope of repair for the slider/cylinder.
Appendix A	Specifications	This section explains the specifications of the different sliders and cylinders.
Appendix B	Optional Parts and Accessories	This section introduces the optional parts and accessories used with different sliders and cylinders.

UL/CSA Standards

The EZHS/EZHC/EZHP series adopt a motor and controller certified by the UL/CSA standards.

The motors and controllers are certified under the model names listed below.

The CE mark indicating their compliance with the Low Voltage/EMC Directives.

If you are applying for approval by a certification body and require a copy of the relevant certificate by Oriental Motor or a voluntary declaration of conformance to the EC Directives, please contact any Oriental Motor branch or sales office near you.

Unit Model	Certified Products		Applicable Standards	Certification body	File No.
EZHS3A-xx EZHS4A-xx EZHC4A-xx EZHP4A-xx	Motor (Built into power unit)	EZHM46AA EZHM46MA *2	UL1004, UL2111	UL	E64199
	Controller	EZMC13I-A EZMC13A-A	UL508C *1 CSA C22.2 No. 14	UL	E171462
EZHS6X-xx EZHC6X-xx EZHP6X-xx	Motor (Built into power unit)	EZHM66A EZHM66MA *2 EZHM66AC *2 EZHM66MC *2 *3	UL1004, UL2111 CSA C22.2 No.100 CSA C22.2 No.77	UL	E64199
	Controller	EZMC24I-A EZMC24A-A EZMC12I-C EZMC12A-C	UL508C *1 CSA C22.2 No. 14	UL	E171462

^{*1} For UL standard (UL508C), the product is recognized for the condition of Maximum Surrounding Air Temperature 40°C (104°F).

- The teaching pendant and CC-Link controller are not certified by the UL standards.
- For compliance with the EC directives, see "5.5 Compliance with the EC Directives" on p.39.

Rules of Notation

The following symbols are used throughout this manual to indicate safety warnings, precautions, important notes and tips:

	Handling the product without observing the instructions that accompany a "Warning" symbol may result in death or serious bodily injury.
<u> </u>	Handling the product without observing the instructions that accompany a "Caution" symbol may result in bodily injury or property damage.
Note	These notes appear throughout the manual and describe items that must be observed by the user in certain situations to ensure correct use of the product.

Notation

The description of text in this manual follows the notation rules specified below:

- A sentence starting with a filled circle provides information, not an operating procedure.
- A sentence starting with a number indicates an operating procedure or a step in a procedure.
- · Referenced titles are denoted in italics.
- Slider and cylinder models are sometimes abbreviated by using xx to represent letters and/or numbers, such as in "EZHS4A-xxM."

^{*2} With electromagnetic brake

^{*3 200} VAC input



Chapter 2 Safety

Read this manual before installing or wiring the slider/cylinder. By reading the manual you can better understand the installation methods and procedures and gain an understanding of how to operate the slider/cylinder both safely and effectively.

Always observe the items listed under 2.3 "General Safety Guidelines" on p.13. Warnings and precautions specific to the slider/cylinder are explained in connection with the relevant items throughout this manual.

2.1 Safety Precautions

The **EZHS/EZHC/EZHP** Series products are designed for use in an electrical system or machine as an internal component. During operation and immediately after the power supply is cut off, the parts continue to operate and remain hot, thus posing a risk of bodily injury or property damage. It is prohibited to start the slider/cylinder (i.e., to operate the device in accordance with the specified purpose) when the machine does not satisfy any relevant safety standards.

The factory safety manager or safety personnel in charge of the applicable machine must ensure that the machine is operated only by qualified personnel who are familiar with the operation of electronic equipment, and thereby prevent injury or damage to the equipment.

The term "qualified personnel" refers to persons who have received the necessary training or education and have pertinent experience; who are familiar with the relevant standards, regulations, accident-prevention rules and inspection conditions; who are authorized by the factory safety manager to engage in the necessary activities; and who have the ability to discern and prevent potential dangers.

2.2 Potential Dangers

Dangers that may arise in connection with the use of this product are as follows:

- Electric shock
- Electrical fire
- · Danger posed by the machine
- · Electromagnetic disturbance

These dangers must be controlled properly by providing safety design for the machine, adopting specific local regulations, and observing the standard safety guidelines and specific precautionary notes supplemental thereto. This product poses no danger associated with chemical products or radiation.

2.2.1 Electric Shock

To prevent electric shock, be sure to install the product in an enclosure to prevent contact with any hands.

If the product is likely to come in contact with any hands, be sure to provide a protective grounding. The moving parts (table, rod and stainless sheet) are not provided with protective grounding continuity, so do not touch them while the power is supplied.

The battery is connected to the primary circuit, so do not touch the battery while the power is on.

2.2.2 Electrical Fire

Electrical fire can be avoided by conforming to the general procedures implemented in industrial power-equipment works. It is essential that appropriate qualified personnel conduct the electrical work. Please note that a safe distance must be ensured from the machine in which the slider/cylinder is installed, so that only appropriate qualified personnel can access the slider/cylinder.



2.2.3 Danger Posed by the Machine

Provide safety barrier when operating the slider/cylinder at speeds exceeding the range of safety [250 mm/s (9.84 in/sec)].

In an application combining two or more axes, provide a safety barrier even when the operating speed is within the safe speed range.

Danger posed by the machine relates to unexpected movement of the slider table or cylinder rod in an uncontrolled situation. If the machine is subject to such an unexpected movement of parts, the slider/cylinder must be electrically disconnected from the controller using an appropriate preventive measure whenever the operating part of the machine is to be accessed by a person. Note that the mounting parts of the slider/cylinder must under all circumstances not be loose.

Provide a safety measure external to the controller so that the entire machine will operate safely when an abnormality occurs due to a failure in the slider/cylinder or controller, or due to any other external factor.

The controller cuts off the motor's output current and stops the slider/cylinder when its protective
function is actuated or upon the occurrence of a CPU error. If the slider/cylinder is equipped with
an electromagnetic brake, the electromagnetic brake is actuated in order to produce the
necessary holding brake force. Provide a measure on the machine side so that it will operate
safely if the slider/cylinder stops.

2.2.4 Electromagnetic Disturbance

Appropriate measures must be taken to suppress the EMI (Electromagnetic Interference) caused by the slider/cylinder, controller and teaching pendant in the nearby control systems equipment and to address the EMS (Electromagnetic Susceptibility) of the slider/cylinder, controller and teaching pendant. Failure to do so may result in a serious impairment of the machine's performance. Provide EMC (Electromagnetic Compatibility) measures when installing/wiring the product.

The safety precautions described above are by no means comprehensive. Please contact Oriental Motor concerning any question or problem you might have.

2.3 General Safety Guidelines

This section explains the general safety guidelines applicable to the **EZHS/EZHC/EZHP** Series. Safety information specific to the slider/cylinder is provided in connection with the relevant items throughout the manual.

To prevent bodily injury, please observe the following points.

- Be sure that personnel with expert knowledge of electrical and mechanical engineering perform the installation, connection, operation, maintenance and troubleshooting. Failure to do so may result in fire, electric shock or injury.
- Always turn off the power supply before connecting or disconnecting the product to/from the machine. Failure to do so may result in electric shock.
- If the controller's protective function has been actuated, remove the cause and then reconnect the power source. If the slider/cylinder operation is continued without removing the cause, the controller may malfunction and cause injury or equipment damage.
- Always turn off the power supply to the controller before performing maintenance or repair of the machine. Failure to do so may result in injury.
- Do not disassemble or modify the slider/cylinder. When maintaining the slider, do not disassemble parts other than those specified in this manual. Doing so may result in injury.
- When the product is used in a lifting application, choose a type equipped with an
 electromagnetic brake. Without an electromagnetic brake the slider/cylinder will lose its holding
 brake force when the power is cut off or upon actuation of the controller's protective function or
 emergency stop function. When this happens, the moving part may drop, causing injury or
 equipment damage.
- Do not use the electromagnetic brake to decelerate, nor use it as a safety brake. The electromagnetic brake is designed to hold the slider/cylinder position. Failure to observe this precaution may result in injury or equipment damage.
- If the product is of the absolute type, perform a return-to-home operation or absolute
 positioning operation immediately after recovery of the power supply. Failure to do so may
 result in injury or equipment damage.
- If an incremental positioning operation is performed immediately after recovery of the power supply, the following accidents may occur:
 - If the moving part of the slider/cylinder has shifted during the battery backup period due to an external force, the new position of the moving part will be recognized as the origin in the positioning operation and the stopping position will deviate accordingly.



♠ Caution

- Do not use the slider/cylinder and controller beyond their specified values. Doing so may result in injury or equipment damage.
- No one should come close to the slider/cylinder beyond the safety distance, except for qualified personnel. To do so may result in injury.
- When transporting the slider/cylinder, do so by holding the body of the slider/cylinder. Holding the slider/cylinder by the cables, table or rod may result in injury.
- Do not supply power to the machine when the slider/cylinder covers are not installed in their specified positions. Doing so may result in electric shock or injury.
- Do not touch the table or rod while the slider/cylinder is in operation. To do so may result in injury.
- Connect the slider/cylinder cables to the appropriate connectors on the controller. Failure to do so may result in equipment damage.
- Precautionary note on emergency stop When the emergency stop button on the teaching pendant is pressed or an EMG input to the controller is detected, the controller cuts off the motor's output current and stops the motor. If the slider/cylinder is equipped with an electromagnetic brake, the brake is actuated and the position is held. However, if there is no electromagnetic brake, the holding brake force is lost and it may take longer to stop. If the load installed on the table or rod is likely to contact other equipment during this period, provide a safety mechanism on the machine side. Failure to do so may result in injury or equipment damage.
- Precautionary note on static electricity
 Static electricity may cause the controller to malfunction or sustain damage. Do not touch the controller while the power is being supplied. When adjusting the controller's axis-number setting switch or DIP switches while the power supply is active, always use an insulated screwdriver.

Chapter 3 Unpacking, Inspection and Storage

This chapter explains the receiving procedures that must be carried out in order to ensure that the slider/cylinder will function as specified.

These procedures include the following:

- Unpacking the EZHS/EZHC/EZHP Series slider/cylinder
- Inspecting the slider/cylinder for damage sustained during shipment
- Checking the combination of slider/cylinder and controller
- · Storage guidelines for the slider/cylinder

3.1 Unpacking the Slider/Cylinder

Each **EZHS/EZHC/EZHP** Series product comes with a slider or cylinder and a controller packed in the same carton.

- Remove the EZHS/EZHC/EZHP Series slider/cylinder from the shipping carton and remove all
 packing materials from around the product. You may keep the packing materials and shipping
 carton for storage or shipment of the slider/cylinder at a later time.
- Check all items in the carton against the packing list. The nameplate on the product indicates the following information:
 - Product model
 - Serial number
 - · Manufacture date code

Packing list

EZHS Series

- Slider 1 unit
- Controller 1 unit
- Installation manual 1 copy (this document)
- User manual for controller 1 copy
- Data setting manual for controller 1 copy
- Controller mounting brackets 2 pcs.
- Screws for controller mounting brackets (M3) 4 pcs.
- Hexagonal socket-head screw (M5) 4 pcs. *1
- User I/O connector (36pins) 1 set *2
- Sensor I/O connector (20 pins) 1set *2
- Battery 1 pc. (absolute type only)
- Battery holder 1 pc. (absolute type only)

EZHC/EZHP Series

- Cylinder 1 unit
- Controller 1 unit
- Installation manual 1 copy (this document)
- User manual for controller 1 copy
- Data setting manual for controller 1 copy
- Controller mounting brackets 2 pcs.
- Screws for controller mounting brackets (M3) 4 pcs.
- Hexagonal nut 1 pc.
- User I/O connector (36pins) 1 set *2
- Sensor I/O connector (20 pins) 1set *2
- Battery 1 pc. (absolute type only)
- Battery holder 1 pc. (absolute type only)
- *1 EZHS4 and EZHS6 only
- *2 CC-Link models come with one I/O connector and one CC-Link connector.

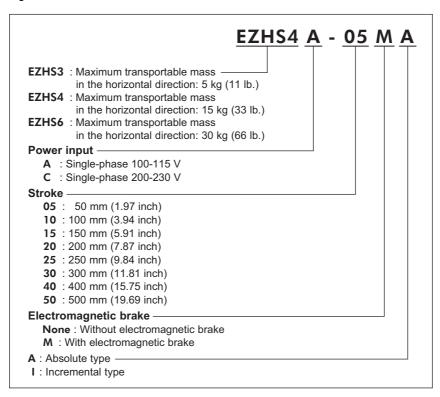


3.2 Explanation of Unit Model

The unit-model codes for the **EZHS/EZHC/EZHP** Series are shown in Figure 3-1 and Figure 3-2. However, a given combination of these numbers and letters does not always provide a valid unit model. Refer to *A.1 "Combination List"* on p.55.

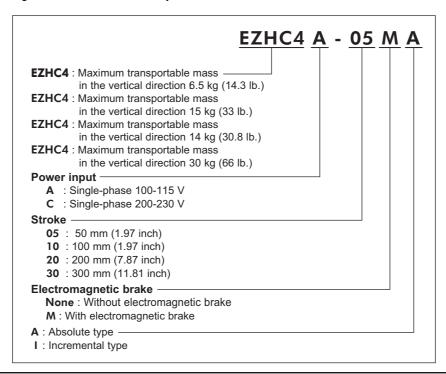
3.2.1 Slider

Figure 3-1 Unit Model of Slider



3.2.2 Cylinder

Figure 3-2 Unit Model of Cylinder



3.3 Inspection Procedure

It is recommended that you check the following points upon receipt of the product:

- Inspect the slider/cylinder for any physical damage sustained during shipment.
- Check the combination of the slider or cylinder and the controller.
- Check the slider/cylinder operation by conducting an operation test.

To check the combination, see *A.1* "Combination List" on p.55 and check the unit model and corresponding models of individual slider/cylinder and controller.

If the product is found to be damaged during the unpacking process, or if the combination is wrong or the slider/cylinder does not operate properly when tested, please contact the Oriental Motor branch or sales office from which you purchased the product.

Report problems to Oriental Motor as soon as possible after your receipt of the product.

3.4 Storing the Slider/Cylinder

Use the product packing materials to wrap the slider/cylinder and put it back into the shipping carton. Store the slider/cylinder in a place that satisfies the following conditions:

- · A clean place not subject to excessive humidity or salt
- · A place away from direct sunlight
- An ambient temperature of 0 to +50°C (+32 to +122°F) (non-freezing)
- A relative humidity of 85% or below (non-condensing)
- A place not exposed to corrosive gases
- A place not subject to continuous vibration

Note

The slider and cylinder are pieces of precision equipment. The table, rod and ball screw are particularly vulnerable to damage during storage and installation, so do not subject those parts to excessive force. Further, do not hold the slider/cylinder by the cables, table or rod when transporting it. The accuracy of the product may be reduced if the slider/cylinder is not handled with care. Applying sudden impact or unnecessary force to the slider/cylinder may also result in a damaged bearing or ball screw.



Chapter 4 Slider/Cylinder Overview

This chapter explains the basic slider/cylinder functions and operating requirements that must be understood and observed in order to ensure correct use of the slider/cylinder.

4.1 Slider

The **EZHS** Series slider is a ball-screw-drive type slider that uses a stepping motor with a built-in rotor-position sensor as its power unit. The resolution of the slider table is 0.01 mm (0.0004 inch), and the table moves 12 mm (0.47 inch) per revolution of the motor.

The rotor-position sensor constantly feeds back the table position to the controller. The controller monitors the rotor-position sensor signal and controls the motor so as to prevent any deviation in the table position. There are two controller types: the incremental type and absolute type. If your controller is of the incremental type, return the table to the home position after power is input.

The slider's limit stroke range is set by the controller's softlimits. The motor stops once the set softlimits are exceeded.

Sliders equipped with electromagnetic brakes are available to provide a holding brake function. The electromagnetic brake is released when the power is supplied to the controller, and is actuated (producing a holding brake force) when an EMG input is detected or a protective function is actuated.

Product used in the explanation: EZHS4A-xx



4.1.1 Slider Functions

The function of each slider part is illustrated in figures 4-1, 4-2 and 4-3 and Table 4-1.

Figure 4-1 Slider

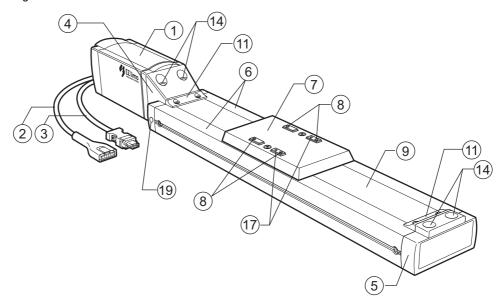


Figure 4-2 Slider (table cover and side covers removed)

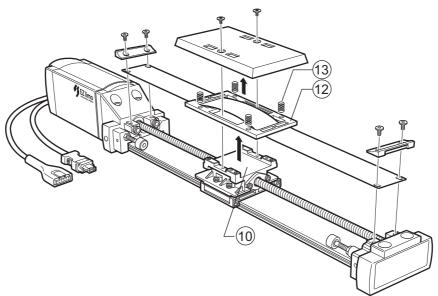
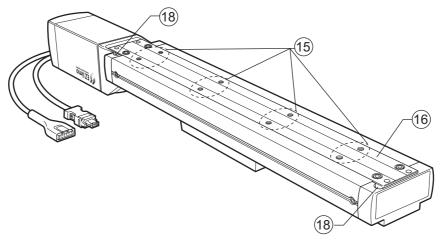


Figure 4-3 Slider Base Surface



 $\ast\,$ With the EZHS3, one mounting hole is provided at each center.

Table 4	-1 Slider Functions						
No.	Name	Function					
1	Power unit	Houses a stepping motor with a built-in rotor-position sensor or a stepping motor with a built-in rotor-position sensor and electromagnetic brake.					
2	Motor cable	A cabtyre cable of 7.7 mm (0.30 mm (9.84 inch) in length.	inch) in out	er diameter and 250			
3	Actuator communication cable	A cabtyre cable of 7.7 mm (0.30 mm (9.84 inch) in length.	inch) in out	er diameter and 250			
4	Bracket						
5	Flange						
6	Side cover	A sensor set (optional) can be in	stalled.				
7	Table cover	A protective cover for the table.					
8	Load mounting holes	Used to install a load onto the	Table 4-2	Thread Size			
		table.	Slider	Thread Size			
		The applicable thread sizes are shown in Table 4-2.	EZHS3 EZHS4	M4 P0.7 tap hole			
			EZHS6	M5 P0.8 tap hole			
9	Stainless sheet	A protective cover for the mechanical part of the slider. Re-tension the sheet if slack is observed after operation.					
10	Table	Has a resolution of 0.01 mm (0.0 (0.47 inch) per revolution of the r		nd moves 12 mm			
11)	Sheet retainer	Secures the stainless sheet.					
12	Sheet holder	Lifts and holds the stainless sheemovement.	et in order to	assist with table			
13	Coil spring	Supports the sheet holder and as	ssists with t	able movement.			
14)*	Mounting hole [4ר5.5 mm (Ø0.22 inch)]	Through-holes used to install the	slider from	the table side.			
15	Mounting hole	Tap holes used to install the	Table 4-3	Thread Size			
		slider from the base side.	Slider	Thread Size			
		The number of holes varies, depending on the stroke.	EZHS3	M4 P0.7 tap hole			
		The applicable thread sizes are shown in Table 4-3.	EZHS4 EZHS6	M5 P0.8 tap hole			
16	Base	The slider installation surface.					
11)	Positioning pinhole	These holes help maintain positi must be removed and then insta maintenance, etc.					
18	Mounting reference surface	These surfaces help maintain positional repeatability when the slider must be removed and then installed again for the purpose of maintenance, etc.					
19	protective ground terminal	This ground terminal is used to p Screw size: M4	revent elec	tric shock.			

^{*} EZHS4 and EZHS6 only



4.2 Cylinder

The **EZHC/EZHP** Series cylinder is a ball-screw-drive type cylinder that uses a stepping motor with a built-in rotor-position sensor as its power unit. The resolution of the cylinder rod is 0.01 mm (0.0004 inch), and the rod moves 12 mm (0.47 inch) with the **EZHC** Series and 6 mm (0.24 inch) with the **EZHP** Series per revolution of the motor.

The rotor-position sensor constantly feeds back the rod position to the controller. The controller monitors the rotor-position sensor signal and controls the motor so as to prevent any deviation in the rod position. There are two controller types: the incremental type and absolute type. If your controller is of the incremental type, return the rod to the home position after power is input.

The cylinder's limit stroke range is set by the controller's softlimits. The motor stops once the set softlimits are exceeded.

Cylinders equipped with electromagnetic brakes are available to provide a holding brake function. The electromagnetic brake is released when the power is supplied to the controller, and is actuated (producing a holding brake force) when an EMG input is detected or a protective function is actuated.

The cylinder can be used for a push-motion operation, in which the load is pushed with a fixed thrust force.

Product used in the explanation: EZHC4A-xx

4.2.1 Cylinder Functions

The function of each cylinder part is illustrated in figures 4-4 and 4-5 and Table 4-4.

Figure 4-4 Cylinder

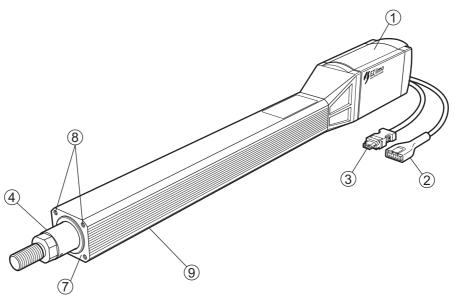


Figure 4-5 Detail View of Rod

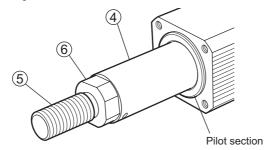


Table 4	-4 Cylinder Functions						
No.	Name	Function					
1	Power unit	Houses a stepping motor with a built-in rotor-position sensor or a stepping motor with a built-in rotor-position sensor and electromagnetic brake.					ensor or a
2	Motor cable	A cabtyre cable of (9.84 inch) in leng		n (0.30	inch) in outer di	ameter	and 250 mm
3	Actuator communication cable	A cabtyre cable of (9.84 inch) in leng		n (0.30	inch) in outer di	ameter	and 250 mm
4	Rod	The moving part of The rod has a res (0.47 inch) with the Series per revolute.	olution on the EZHC	of 0.01 Series	and 6 mm (0.24	,	
5	Male screw	Used to install a lo	oad onto	the	Table 4-5 Th	read Si	ze
		rod.	d oi=		Cylinder		Thread Size
		The applicable the shown in Table 4-		es are	EZHC4, EZHP4		M14
		3110WIT III TABIC 4-	J.		EZHC6, EZHP6 M		M18
6	Wrench point	When affixing the prevent turning to					s area to
7	Flange	The cylinder insta shown in Table 4- Table 4-6 Dimen	6 are pr	ovided	as guides for er		
						Haiak	ot [mans /in ab.]
		Cylinder EZHC4, EZHP4	35 ⁺⁰		er [mm (inch)] 1.378 ^{+0.0024} _{+0.0013})		nt [mm (inch)] 2 (0.08)
		EZHC4, EZHP4	40 +0	.069 (1.890 ^{+0.0013})		2 (0.08)
8	Mounting hole	Tapped holes used to install the cylinder from the rod side. Install an optional cylinder flange when installing the cylinder from the side opposite the rod. The applicable thread sizes are shown in Table 4-7. Table 4-7 Thread Size					de.
		Cylinder		Tł	nread size		
		EZHC4, EZHP4		M5 F	P0.8 tap hole		
		EZHC6, EZHP6		M6	P1 tap hole		
9	protective ground terminal	This ground termi Screw size: M4	nal is us	sed to p	prevent electric s	shock.	



4.3 Operating Requirements

4.3.1 Maximum Thrust Force

Operate the slider/cylinder so that the sum of the load thrust force and external force does not exceed the maximum thrust force. The slider/cylinder may be damaged if operated under a load exceeding the maximum thrust force, or when the table or rod remains locked for a prolonged period.

4.3.2 Allowable Overhang Length

Operate the slider within the allowable overhang length. The slider's service life may be reduced if the slider is operated continuously at an overhang exceeding the allowable value. Use a linear guide or similar mechanism to prevent loads other than those in the axial direction from being applied to the cylinder rod.

4.3.3 Maximum Acceleration

Start and stop the slider/cylinder at a rate of acceleration that is within the maximum limit. The slider/cylinder may be damaged if operated at a rate exceeding the maximum limit of acceleration.

4.3.4 Temperature Range and Maximum Load Weight

The load weight of the slider/cylinder decreases as the speed increases. Operate the slider/cylinder within a maximum load weight appropriate for a given speed range.

Chapter 5 Installation

This chapter explains how to install the slider/cylinder and install a load.

- To prevent injury, turn off the power supply to the controller before installing the product to the machine or wiring the product.
- To prevent injury or equipment damage, strictly observe the following items when carrying a vertical load using the slider/cylinder:
 - Always use a slider/cylinder with an electromagnetic brake. If the slider/cylinder is not
 equipped with an electromagnetic brake, the load will drop when the power is cut off, upon an
 emergency stop or when an alarm is generated.
 - Do not perform direct teaching. Doing so causes the load to drop due to a loss of holding force of the motor and electromagnetic brake.
 - Do not activate the controller's C.OFF input. To do so will cause the load to drop.

5.1 Required Installation Conditions

Install the slider/cylinder onto a flat metal surface satisfying the following conditions:

Vibration: Not subject to continuous vibration or excessive shock

Altitude: 1000 m (3280 ft.) or below

Temperature: 0 to +40°C (+32 to +104°F) (non-freezing)

Humidity: 85% or below (non-condensing)

Atmosphere: Indoor

Free from explosive or toxic gases (e.g., sulfuric gas) or liquids

Free from contact with water or oil

Away from direct sunlight

Not exposed to air with high salt content

Installation condition: Built-in component

Overvoltage category: II Pollution degree: 2

Protection against electric shock: Class I equipment

5.2 Installing the Slider

Install the slider onto a flat metal plate providing excellent vibration resistance.

Adjust the flatness of the metal plate to 0.06 mm (0.002 inch) or less [EZHS3: 0.035 mm (0.001 inch) or less] per 200 mm (7.87 inch). If the flatness is insufficient, the slider's mounting surface may become deformed, resulting in noise or a reduction in service life.

Slider mounting holes are provided in both the table surface and base surface.

If a large inertial moment is applied to the slider body or when the slider is wall-mounted or installed vertically or upside down, we recommend that you follow the procedure specified in 5.2.2 "Installing from the Base Surface" on p.27. Select an appropriate installation

Product used in the explanation: EZHS4A-xx

- To prevent fire, do not place flammable objects around the slider/cylinder.
- To prevent injury or equipment damage, secure the slider/cylinder using the specified installation method.



5.2.1 Installing from the Table Surface

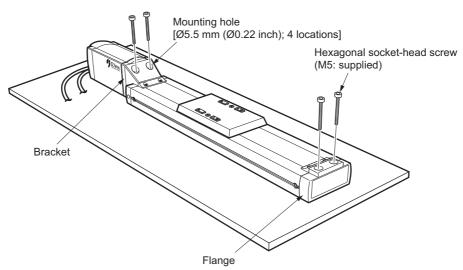
Affix the slider to the mounting plate using the supplied hexagonal socket-head screws (M5 \times 4 pcs.) and the mounting holes (through-holes) provided in the slider bracket and flange.

Figure 5-1 shows the slider installation method.

Figure 5-2 shows the slider's installation dimensions.

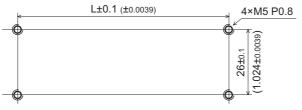
* EZHS3 cannot be installed from the table surface.

Figure 5-1 Installation Method



Slider	Thread size	Across-flats size of wrench	Tightening torque	Mounting plate thickness and material
EZHS4A-xxM EZHS4A-xx	ME DO O	4 mm	5 N·m	5 mm (0.20 inch) or thicker iron plate
EZHS6A(C)-xxM EZHS6A(C)-xx	M5 P0.8	(0.16 inch)	(710 oz-in)	10 mm (0.40 inch) or thicker aluminum plate

Figure 5-2 Installation Dimensions [Unit: mm (inch)]



Sli	der	L
EZHS4A-05M	EZHS4A-05	242 (9.528)
EZHS4A-10M	EZHS4A-10	292 (11.496)
EZHS4A-15M	EZHS4A-15	342 (13.465)
EZHS4A-20M	EZHS4A-20	392 (15.433)
EZHS4A-25M	EZHS4A-25	442 (17.402)
EZHS4A-30M	EZHS4A-30	492 (19.370)
EZHS4A-40M	EZHS4A-40	592 (23.307)
EZHS4A-50M	EZHS4A-50	692 (27.244)
EZHS6A(C)-10M	EZHS6A(C)-10	342 (13.465)
EZHS6A(C)-15M	EZHS6A(C)-15	392 (15.433)
EZHS6A(C)-20M	EZHS6A(C)-20	442 (17.402)
EZHS6A(C)-25M	EZHS6A(C)-25	492 (19.370)
EZHS6A(C)-30M	EZHS6A(C)-30	542 (21.339)
EZHS6A(C)-40M	EZHS6A(C)-40	642 (25.276)
EZHS6A(C)-50M	EZHS6A(C)-50	742 (29.213)

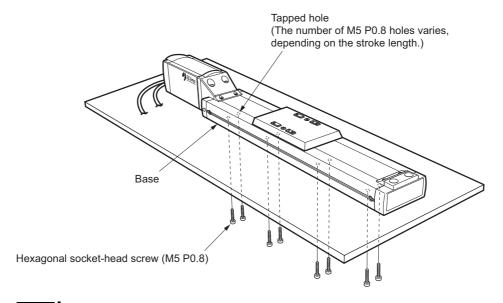
5.2.2 Installing from the Base Surface

Affix the slider to the mounting plate using hexagonal socket-head screws (not supplied) and the tapped holes provided in the slider base.

Figure 5-3 shows the slider installation method.

Figure 5-4 shows the slider's installation dimensions.

Figure 5-3 Installation Method



The length of engagement of the slider's mounting screw with the slider tapped hole must not exceed 6 mm (0.24 inch) [EZHS3: 5 mm (0.20 inch)]. Contact with the slider body may occur if the engagement length exceeds 6 mm (0.24 inch) [EZHS3: 5 mm (0.20 inch)], resulting in a malfunction or damage.

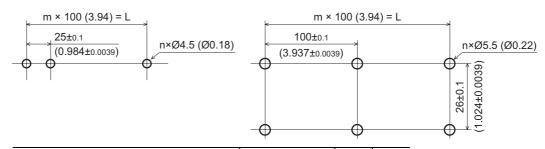
Slider	Tread size	Across-flats size of wrench	Tightening torque	Mounting plate thickness and material
EZHS3A-xxM EZHS3A-xx	M4 P0.7 Effective depth: 5 mm (0.20 inch)	3 mm (0.12 inch)	2.4 N·m (341 oz-in)	5 mm (0.20 inch) or
EZHS4A-xxM EZHS4A-xx	M5 P0.8	4 mm	5 N·m	thicker iron plate 10 mm (0.40 inch) or thicker aluminum plate
EZHS6A(C)-xxM EZHS6A(C)-xx	Effective depth: 6 mm (0.236 inch)	(0.16 inch)	(710 oz-in)	tricker auminum plate



Figure 5-4 Installation Dimensions [Unit: mm (inch) except for n and m]

• EZHS3

• EZHS4, EZHS6

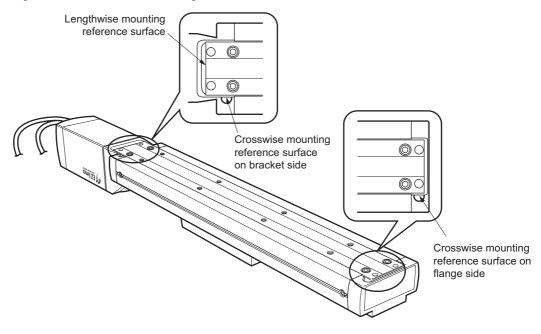


Sli	L	n	m	
EZHS3A-05M	EZHS3A-05	100 (3.94)	5	1
EZHS3A-10M	EZHS3A-10	150 (5.91)	7	1.5
EZHS3A-15M	EZHS3A-15	200 (7.88)	9	2
EZHS3A-20M	EZHS3A-20	250 (9.84)	11	2.5
EZHS3A-25M	EZHS3A-25	300 (11.82)	13	3
EZHS3A-30M	EZHS3A-30	350 (13.78)	15	3.5
EZHS3A-40M	EZHS3A-40	450 (17.72)	19	4.5
EZHS3A-50M	EZHS3A-50	550 (21.66)	23	5.5
EZHS4A-05M	EZHS4A-05	100 (3.94)	4	1
EZHS4A-10M	EZHS4A-10	200 (7.88)	6	2
EZHS4A-15M	EZHS4A-15	200 (7.88)	6	2
EZHS4A-20M	EZHS4A-20	300 (11.82)	8	3
EZHS4A-25M	EZHS4A-25	300 (11.82)	8	3
EZHS4A-30M	EZHS4A-30	400 (15.76)	10	4
EZHS4A-40M	EZHS4A-40	500 (19.70)	12	5
EZHS4A-50M	EZHS4A-50	600 (23.64)	14	6
EZHS6A(C)-10M	EZHS6A(C)-10	200 (7.88)	6	2
EZHS6A(C)-15M	EZHS6A(C)-15	300 (11.82)	8	3
EZHS6A(C)-20M	EZHS6A(C)-20	300 (11.82)	8	3
EZHS6A(C)-25M	EZHS6A(C)-25	400 (15.76)	10	4
EZHS6A(C)-30M	EZHS6A(C)-30	400 (15.76)	10	4
EZHS6A(C)-40M	EZHS6A(C)-40	500 (19.70)	12	5
EZHS6A(C)-50M	EZHS6A(C)-50	600 (23.64)	14	6

5.2.3 How to Use the Mounting Reference Surfaces

Use the "mounting reference surfaces" provided on the slider base to ensure positional repeatability when the slider must be removed and then installed again for purposes of maintenance, etc. Figure 5-5 shows the positions of the mounting reference surfaces.

Figure 5-5 Positions of Mounting Reference Surfaces



Crosswise Positioning

Press positioning pins into the mounting surface such that they will fit into the crosswise notches shown in figure 5-5 when the slider is placed over them. Then move the slider so that the reference edge is contacting the pins on both ends.

Lengthwise Positioning

Press positioning pins into the mounting surface such that they will fit into the length-wise notches shown in figure 5-5 when the slider is placed over them. Then move the slider so that the reference edge is contacting the pins on both ends.



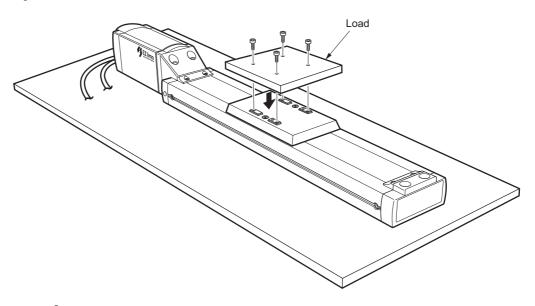
5.2.4 Affixing a Load to the Table

Install a load using the load mounting holes provided in the table (four locations) and screws (not supplied).

Figure 5-6 shows the load installation method.

Figure 5-7 shows the load's installation dimensions.

Figure 5-6 Installation Method

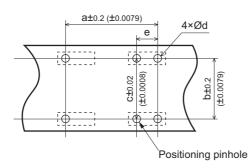


Note

The length of engagement of the load's mounting screw with the table load mounting hole must not exceed 8 mm (0.32 inch). Contact with the slider body may occur if the engagement length exceeds 8 mm (0.32 inch), causing the load mounting hole to be damaged.

Slider	Mounting screw	Tightening torque
EZHS3A-xxM EZHS3A-xx	M4 D0 7	
F7HS4A-xxM	M4 P0.7 Effective depth: 8 mm (0.315 inch)	2.4 N·m (340.8 oz-in)
EZHS4A-xx	Zinosavo dopani o mini (e.e. io men)	
EZHS6A(C)-xxM EZHS6A(C)-xx	M5 P0.8 Effective depth: 8 mm (0.315 inch)	5 N·m (710 oz-in)

Figure 5-7 Installation Dimensions [Unit: mm (inch)]



Slider	а	b, c	d	е
EZHS3A-xxM	24	27	4.5	5
EZHS3A-xx	(0.945)	(1.063)	(0.18)	(0.20)
EZHS4A-xxM	42	46	4.5	8
EZHS4A-xx	(1.654)	(1.811)	(0.18)	(0.31)
EZHS6A(C)-xxM	75	46	5.5	15
EZHS6A(C)-xx	(2.953)	(1.811)	(0.22)	(0.59)

Note

- Always fix the positioning pins to the load side. Driving the pin into the table will generate an impact or excessive moment, which may damage the ball screw.
- Use the positioning pin only when removing and reinstalling a given load to/from the same product. The positioning pinholes vary from one product to another.

5.2.5 Installing the Sensors

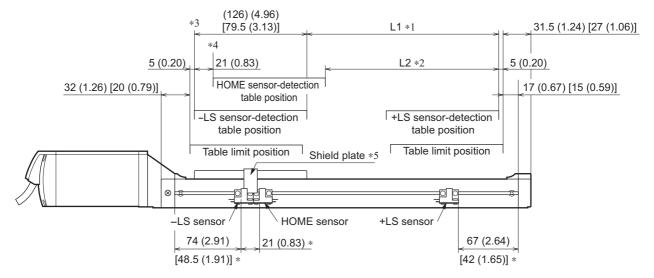
Install the sensors included in the $\mbox{\bf PAEZ-S}$ sensor set in the slots provided in the side cover.

The sensors can be installed on either the right or left side cover of the slider.

Figure 5-8 shows the recommended sensor installation positions.

Figure 5-8 Recommended Sensor Installation Positions [Unit: mm (inch)]

• EZHS3, EZHS4



- * Recommended sensor installation position EZHS3 values are indicated in [].
- *1 L1 indicates the effective stroke when two sensors are used.
- *2 L2 indicates the effective stroke when three sensors are used. The EZHS3A-05, EZHS3A-05M, EZHS4A-05 and EZHS4A-05M do not accommodate the use of three sensors.
- *3 Home position when two sensors are used
- *4 Home position when three sensors are used
- *5 Install the shield plate onto the work.

 [Use the two supplied mounting screws: M3 × 5 mm (0.20 inch)]

Slider	L1 *1	L2 *2
EZHS□A-05	45	_
EZHS□A-05M	(1.77)	
EZHS□A-10	95	74
EZHS□A-10M	(3.74)	(2.914)
EZHS□A-15	145	124
EZHS□A-15M	(5.71)	(4.88)
EZHS□A-20	195	174
EZHS□A-20M	(7.68)	(6.85)
EZHS□A-25	245	224
EZHS□A-25M	(9.65)	(8.82)
EZHS□A-30	295	274
EZHS□A-30M	(11.61)	(10.79)
EZHS□A-40	395	374
EZHS□A-40M	(15.55)	(14.72)
EZHS□A-50	495	474
EZHS□A-50M	(19.49)	(18.66)
The converse beauties	سمادا المسالة	:11

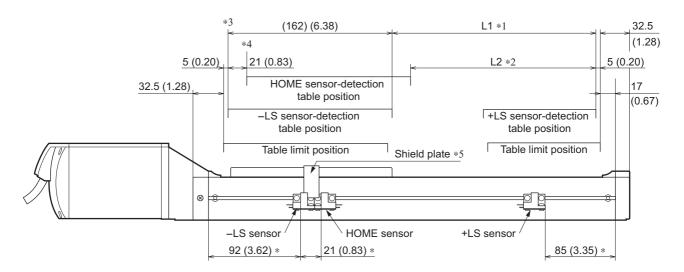
The square box in the slider will contain 3 or 4.

Note

Only two sensors can be installed on the EZHS3A-05, EZHS3A-05M, EZHS4A-05 and EZHS4A-05M. With these models, use the -LS sensor and +LS sensor.



• EZHS6



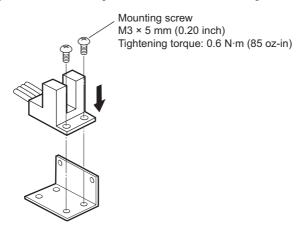
- * Recommended sensor installation position
- *1 L1 indicates the effective stroke when two sensors are used.
- *2 L2 indicates the effective stroke when three sensors are used. -
- *3 Home position when two sensors are used
- *4 Home position when three sensors are used
- *5 Install the shield plate onto the work. [Use the two supplied mounting screws: M3 × 5 mm (0.20 inch)]

Slider	L1 *1	L2 *2	
EZHS6A(C)-10	95	74	
EZHS6A(C)-10M	(3.74)	(2.914)	
EZHS6A(C)-15	145	124	
EZHS6A(C)-15M	(5.71)	(4.88)	
EZHS6A(C)-20	195	174	
EZHS6A(C)-20M	(7.68)	(6.85)	
EZHS6A(C)-25	245	224	
EZHS6A(C)-25M	(9.65)	(8.82)	
EZHS6A(C)-30	295	274	
EZHS6A(C)-30M	(11.61)	(10.79)	
EZHS6A(C)-40	395	374	
EZHS6A(C)-40M	(15.55)	(14.72)	
EZHS6A(C)-50	495	474	
EZHS6A(C)-50M	(19.49)	(18.66)	
•			

To prevent injury or equipment damage, do not use the sensor set as a safety part.

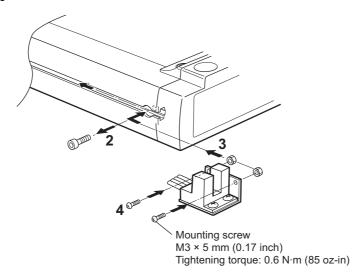
1. Install the sensor onto the sensor mounting bracket and affix it with screws.

Figure 5-9 Securing of Sensor to Sensor Mounting Bracket



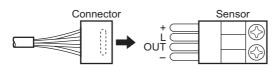
- 2. Remove the mounting screw from the side cover on the flange side.
- 3. Install nuts in the slots located in the side cover.
- **4.** Install screws [M3 × 5 mm (0.20 inch)] and nuts (M3) to the sensor mounting bracket. Move the sensor to the recommended installation position and tighten the screws to secure the sensor in position.

Figure 5-10 Installation of Sensor



- 5. Tighten the mounting screw, which was earlier removed, onto the side cover.
- Plug the cable with connector into the sensor.Hold the connector with the tab facing down and insert it into the sensor terminal.

Figure 5-11 Connection of Cable with Connector



Sensor terminal	Lead color of cable with connector
+	Brown
L	Pink
OUT	Black
_	Blue

Note

- Do not install or remove the cable with connector while the power is being supplied. Doing so may damage the sensor.
- When removing the cable with connector, do not pull it by the cables. Pull out the connector while pressing it firmly from the top and bottom.
- Install the shield plate onto the load.
 Figure 5-13 shows the machining dimensions of the shield plate for installation.

Figure 5-12 Installation of Shield Plate

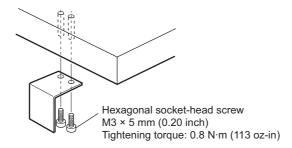
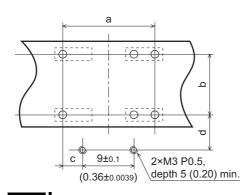




Figure 5-13 Machining Dimensions of Shield Plate for Installation [Unit: mm (inch)]



Slider	а	b	С	d
EZHS3A-xxM	24	27	7.5	13.8
EZHS3A-xx	(0.94)	(1.06)	(0.30)	(0.54)
EZHS4A-xxM	42	46	16.5	18
EZHS4A-xx	(1.65)	(1.81)	(0.65)	(0.71)
EZHS6A(C)-xxM	75	46	33	18
EZHS6A(C)-xx	(2.95)	(1.81)	(1.30)	(0.71)

Note

- Always install the shield plate onto the load. The shield plate cannot be installed onto the slider.
- There are three types of shield plates: the EZHS3 type EZHS4 type and EZHS6 type.
 The two plates vary slightly in size. Always use a shield plate appropriate for the slider.
 Using a shield plate of an unmatched size may disable the sensor detection or damage the sensor due to contact between the shield plate and sensor.

Figure 5-14 Sensor Setting Details

The **PAEZ-S** sensor set consists of the following parts:

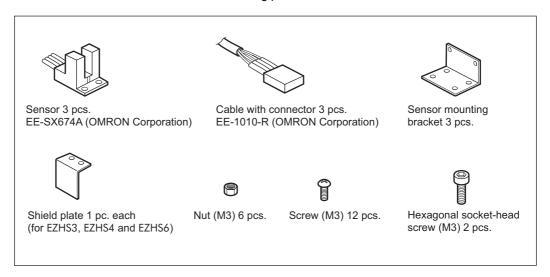
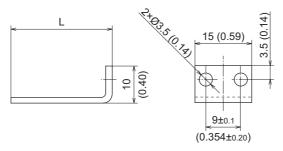


Figure 5-15 External View of Shield Plate [Unit: mm (inch)]



Slier	L	
EZHS3	29.5 (1.16)	
EZHS4	27 (1.06)	
EZHS6	33 (1.30)	

5.3 Installing the Cylinder

Install the cylinder onto a flat metal plate providing excellent vibration resistance.

♠ Warning

When performing a push-motion operation, confirm that the thrust force achieved with the set push current is sufficient to perform the push-motion operation properly without causing the load to drop.

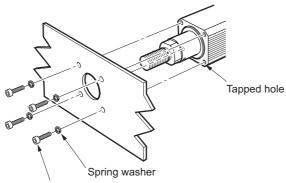
5.3.1 Installation Using Cylinder Mounting Holes

Use the mounting holes provided in the cylinder end face on the rod side to secure the cylinder to the mounting plate with four screws (not supplied).

Figure 5-16 shows the cylinder installation method.

Figure 5-17 shows the cylinder's installation dimensions.

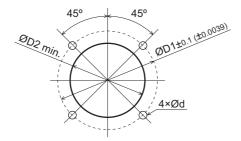
Figure 5-16 Installation Method



Hexagonal socket-head screw

Cylinder	Thread size	Effective depth	Across-flats size of wrench	Tightening torque	Mounting plate thickness and material
EZHC4A-xxM, EZHP4A-xxM	M5 P0.8	15 mm	4 mm	5 N·m	5 mm (0.20 inch) or thicker iron plate
EZHC4A-xx, EZHP4A-xx	IVIS FU.8	(0.60 inch)	(0.16 inch)	(710 oz-in)	10 mm (0.40 inch) or thicker aluminum plate
EZHC6A(C)-xxM, EZHP6A(C)-xxM	M6 D1	15 mm	5 mm	5 N·m	5 mm (0.20 inch) or thicker iron plate
EZHC6A(C)-xx, EZHP6A(C)-xx	M6 P1	(0.60 inch)	(0.20 inch)	(710 oz-in)	10 mm (0.40 inch) or thicker aluminum plate

Figure 5-17 Installation Dimensions [Unit: mm (inch)]



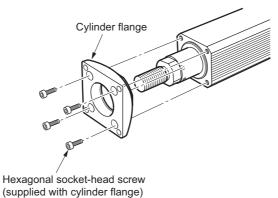
Cylinder	D1	D2	d
EZHC4A-xxM			
EZHP4A-xxM	43	36	5.5
EZHC4A-xx	(1.70)	(1.42)	(0.22)
EZHP4A-xx			
EZHC6A(C)-xxM			
EZHP6A(C)-xxM	57	49	6.5
EZHC6A(C)-xx	(2.24)	(1.93)	(0.26)
EZHP6A(C)-xx			



5.3.2 Installation Using Cylinder Flange (optional)

1. Use the four supplied screws to secure the cylinder flange to the cylinder end face on the rod side

Figure 5-18 Installation of Cylinder Flange



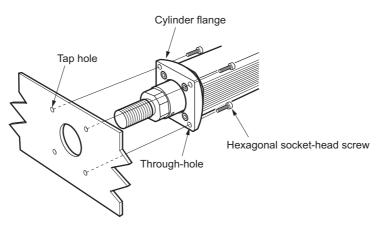
Cylinder	Cylinder flange	Thread size	Across-flats size of wrench	Tightening torque
EZHC4A-xxM, EZHP4A-xxM EZHC4A-xx, EZHP4A-xx	PAEZ4-F	M5 P0.8	4 mm (0.16 inch)	5 N·m (710 oz-in)
EZHC6A(C)-xxM, EZHP6A(C)-xxM EZHC6A(C)-xx, EZHP6A(C)-xx	PAEZ6-F	M6 P1	5 mm (0.20 inch)	5 N·m (710 oz-in)

2. Use the cylinder flange mounting holes and four screws (not supplied) to secure the cylinder to the mounting plate.

Figure 5-19 shows the cylinder installation method.

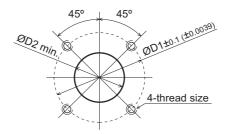
Figure 5-20 shows the cylinder's installation dimensions.

Figure 5-19 Installation Method



Cylinder	Thread size	Across-flats size of wrench	Tightening torque	Mounting plate thickness and material
EZHC4A-xxM, EZHP4A-xxM	M5 P0.8	4 mm	5 N·m	5 mm (0.20 inch) or thicker iron plate
EZHC4A-xx, EZHP4A-xx	IVIS FU.6	(0.16 inch)	(710 oz-in)	10 mm (0.40 inch) or thicker aluminum plate
EZHC6A(C)-xxM, EZHP6A(C)-xxM	M6 P1	5 mm	5 N·m	6 mm (0.24 inch) or thicker iron plate
EZHC6A(C)-xx, EZHP6A(C)-xx	IVIOPI	(0.20 inch)	(710 oz-in)	12 mm (0.47 inch) or thicker aluminum plate

Figure 5-20 Installation Dimensions [Unit: mm (inch)]



Cylinder	D1	D2	Thread size
EZHC4A-xxM, EZHP4A-xxM	63	30	M5 P0.8
EZHC4A-xx, EZHP4A-xx	(2.480)	(1.18)	WIS FU.6
EZHC6A(C)-xxM			
EZHP6A(C)-xxM	80	42	M6 P1
EZHC6A(C)-xx	(3.150)	(1.65)	IVIOFI
EZHP6A(C)-xx			

5.3.3 Securing a Load to the Rod

Use a linear guide or similar mechanism to prevent loads other than those in the axial direction from being applied to the cylinder rod.

Installing a Load

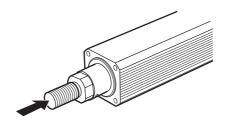
Install a load using the supplied nut and the male screw at the tip of the rod.

Figure 5-21 shows the load installation method.

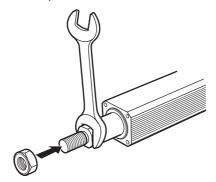
Note Avoid using the cylinder in such a way that the rod receives an overhang load or angular load moment. It may cause the cylinder to malfunction or shorten its service life.

Figure 5-21 Installation Method

1. Cause the rod to retract to the end.



2. Apply a wrench to the wrench point on the rod and secure the load with the nut. Use a wrench with a size of 32 mm (1.26 inch) (EZHC6, EZHP6) or 22 mm (0.87 inch) (EZHC4, EZHP4).



Always remove the load from the rod when shipping the equipment with the cylinder installed.



5.4 Wiring

Follow the instructions in "EZHS/EZHC/EZHP Series Controller User Manual" or "EZHS/EZHC/EZHP Series CC-Link Controller User Manual" regarding the slider/cylinder wiring methods.

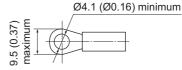
5.4.1 Wiring the Cables

Plug the connectors (plugs) at the ends of the motor cable and actuator communication cable of the slider/cylinder into the corresponding connectors (sockets) on the controller.

5.4.2 Connecting the Protective Ground Terminal

Use an insulated round crimp terminal for the main power supply terminals.

- Screw size: M4
- Tightening torque: 1.0 to 1.3 N·m (142 to 185 oz-in)
- Cable size capacity: AWG16 (1.25 mm²)



5.4.3 Cable Wiring Length

To extend the wiring length of the slider/cylinder, always use the optional cable set or flexible cable set.

Keep the overall extension length to 10 m (32.8 ft.) or less.

· Cable set

Motor/Actuator Communication Cables: Set of two cables

Model	Cable length [m (ft.)]
CC02EZ2	2 (6.6)
CC05EZ2	5 (16.4)
CC10EZ2	10 (32.8)

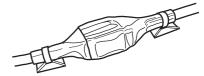
• Flexible cable set

Motor/Actuator Communication Cables: Set of two cables

Model	Cable length [m (ft.)]
CC02EZ2R	2 (6.6)
CC05EZ2R	5 (16.4)
CC10EZ2R	10 (32.8)



- Do not modify the motor/actuator communication cables in any way. Do not extend the
 motor/actuator communication cables by connecting two or more optional cables or
 allowing the overall extension length to exceed 10 m (32.8 ft.). Doing so may cause a
 malfunction.
- Do not allow the connectors (plugs) at the ends of the cable and connectors (sockets) on the controller side to receive any mechanical stress such as bending or tensile force.
- When extending the cable, cover the connector with a tube to protect it against dust, water and oil.
- When connecting an optional extension cable, plug in the connector until the lock lever is securely fixed. Slide coupler cover from motor wires over connector then slide coupler cover from extension cable side over motor side coupler cover. Secure the cover so that the connector and covers do not move.



5.4.4 Protecting the Motor

The controller provides motor protection functions that operate under the conditions specified below:

Overheat Protection

When actuated, the overheat protection function stops the motor.

Overload Protection

When actuated, the overload protection function stops the motor.

• When a load exceeding the maximum thrust force has been applied for five seconds or more in an operating mode other than the push-motion operation or return-to-home operation.

5.4.5 Emergency Stop

Emergency Stop Function

The emergency stop button of the teaching pendant uses a part that conforms to the EN standard. A connection example conforming to Category 0 (non-controlled stop) under EN60204-1 Stop Function is shown on p.58 of "EZHS/EZHC/EZHP Series Controller User Manual" or on p.4-20 of "EZHS/EZHC/EZHP Series CC-Link Controller User Manual".

Emergency Stop Circuit

Select the parts comprising the emergency stop circuit in accordance with the requirements of EN954-1.

5.5 Compliance with the EC Directives

The **EZHS/EZHC/EZHP** Series sliders/cylinders and controllers bear the CE mark indicating their compliance with the Low Voltage/EMC Directives.

The installation conditions needed to satisfy the EC directives are as follows:

- 1. Install a mains filter on the power-input side.
- 2. Use optional cables for slider/cylinder connection.
- 3. Install the slider/cylinder and controller in an industrial-grade enclosure so that only appropriate qualified personnel can access these parts.

Install and wire the product by paying attention to the following point:

• Protect the product within an enclosure during use.

Note

Teaching pendants conform to different EC directives, depending on their respective serial numbers:

- Serial number ending with **T**The teaching pendant conforms to the Low Voltage and EMC Directives.
- Serial number ending with J
 The teaching pendant conforms to the EMC Directive only.



5.5.1 Low Voltage Directive (73/23/EEC)

This product is designed for use within equipment, so always install it in an enclosure. The product must be enclosed to prevent contact by any hands. If the product is likely to come in contact with any hands, be sure to provide a protective grounding. Securely connect the controller's protective ground terminal to the grounding point.

		Slider/cylinder	Controller	Teaching pendant		
Protective range	е	IP20	IP10	IP40		
Operation environment	Maximum surround air temperature	0 to +40°C (+32 to +104°F) (non-freezing)				
	Humidity	85% or less (non-condensing	85% or less (non-condensing)			
	Altitude	Up to 1000 m (3280 ft.)				
	Surrounding atmosphere	No corrosive gas, dust, water	er or oil			
Storage environment	Maximum surround air temperature	0 to +50°C (+32 to +122°F) (non-freezing)	-25 to +70°C (-13 to +158°F) (non-freezing)	0 to +50°C (+32 to +122°F) (non-freezing)		
	Humidity	85% or less (non-condensing	g)			
	Altitude	Up to 1000 m (3280 ft.)				
	Surrounding atmosphere	No corrosive gas, dust, water	No corrosive gas, dust, water or oil			
Shipping environment	Maximum surround air temperature	-20 to +60°C (-4 to +140°F) (non-freezing)	-25 to +70°C (-13 to +158°F) (non-freezing)	-20 to +60°C (-4 to +140°F) (non-freezing)		
	Humidity	85% or less (non-condensing	g)	·		
	Altitude	Up to 3000 m (9842 ft.)				
	Surrounding atmosphere	No corrosive gas, dust, water or oil				
Applicable standards		EN60950, EN60034-1, EN60034-5, IEC60664-1	EN50178	EN60950, EN60204-1		
Installation conditions		Slider, cylinder and controller are to be used as a component within other equipment. Overvoltage category: II Pollution degree: 2 Class: I		Teaching pendant is to be used as a component within other equipment. Overvoltage category: II Pollution degree: 2 Class: II		

5.5.2 EMC Directives (89/336/EEC, 92/31/EEC)

Follow the instructions in "*EZHS/EZHC/EZHP* Series Controller User Manual" or "*EZHS/EZHC/EZHP* Series CC-Link Controller User Manual" regarding the installation/wiring methods.

The **EZHS/EZHC/EZHP** Series controllers, sliders/cylinders and teaching pendants have been confirmed to comply with the EMC directives by conducting EMC measurements in accordance with 5.13.6 "Example of EMC-Compliant Wiring" on p.72 of "EZHS/EZHC/EZHP Series Controller User Manual" or 4.13.2 "Example of EMC-Compliant Wiring" on p.4-34 of "EZHS/EZHC/EZHP Series CC-Link Controller User Manual".

The degree of EMC compliance with respect to a given machine depends on the configuration, wiring, installation condition and hazard level of other control systems equipment and electrical parts used with the controller and slider/cylinder. Therefore, it is the customer's responsibility to perform EMC measurements and confirm EMC compliance with respect to a given machine.

Applicable Standards

EMI	Emission Tests	EN50081-2
	Radiated Emission Test	EN55011
	Conducted Emission Test	EN55011
EMS	Immunity Tests	EN61000-6-2
	Radiation Field Immunity Test	IEC61000-4-3
	Electrostatic Discharge Immunity Test	IEC61000-4-2 *
	Fast Transient/Burst Immunity Test	IEC61000-4-4
	Conductive Noise Immunity Test	IEC61000-4-6
	Surge Immunity Test	IEC61000-4-5
	Voltage Dip Immunity Test	IEC61000-4-11
	Voltage Interruption Immunity Test	IEC61000-4-11

^{*} Pendant: Controller:

Malfunction or damage may occur due to static electricity. When touching the controller, cut off the power supply or provide an antistatic measure. Always use an insulated screwdriver when adjusting the controller's axis-number setting switch or DIP switches.

5.5.3 Machine Directive (98/37/EC)

Sliders/ cylinders, controllers and teaching pendants are designed and manufactured for use as an internal component for general industrial equipment, and therefore need not comply with the Machine Directive. Nonetheless, they are evaluated under the following standards:

Applicable Standards

EN292-1, EN292-2, EN954-1, EN418, EN60204-1

¹⁰ kV both in air and in the contact state



Chapter 6 Maintenance

This chapter explains the maintenance items that must be performed to ensure safe, efficient operation of the slider/cylinder.

Should you encounter any abnormality, immediately stop using the product and contact your nearest Customer Service Center.

6.1 Slider

Product used in the explanation: EZHS4A-xx

6.1.1 Inspection Items and Timing

- To prevent injury, turn off the power supply to the controller before inspecting the slider/cylinder.
- To prevent injury or equipment damage, remove the load from the table before checking the internal parts.

Perform maintenance after each applicable period specified in Table 6-1.

The schedule assumes that the slider is operated eight hours a day.

Reduce the maintenance intervals accordingly if the operation rate is high, such as when the slider is operated continuously day and night.

Table 6-1 Inspection Items and Timing

Maintenance intervals	External check	Internal check
When operated for the first time	0	
One month after initial operation	0	
Six months after initial operation	0	0 *
One year after initial operation	0	0 *
Every six months thereafter	0	0 *

^{*} Add grease if signs of degradation (change to brown color, loss of gloss) are observed during the internal inspection.

6.1.2 External Check

Check the items specified in Table 6-2.

Table 6-2 Inspection Items and Contents

Item	What to check	Action if problem is found
Slider	Are there any loose mounting screws?	Tighten the screws securely.
_	Is there any cracking or slack in the stainless sheet ?	Re-tension or replace the sheet.
Cables	Are there any scratches or areas under stress, or is the cable slack at the controller connection ?	Disconnect and reconnect the connector or replace the cable.
Operation	Is there any abnormal noise or vibration from the bearings, etc. ?	Check the installation of the load and operating speed again.

6.1.3 External Cleaning

- Clean the exterior surface of the slider whenever necessary.
- Wipe off any dirt and stains using a soft cloth.
- Do not apply compressed air to prevent dust from entering through gaps.
- Do not use petroleum solvents, since they will damage the coated surface.
- To remove stubborn stains, wipe the area using a soft cloth moistened with neutral detergent.

See 6.1.4 "Internal Check/Cleaning and Greasing" on p.44 for the greasing method.



6.1.4 Internal Check/Cleaning and Greasing

Remove the table cover, stainless sheet and side covers to check and clean the internal parts. Required tool: Hex wrench [across-flats size: 1.5 mm (0.06 inch), 2.5 mm (0.10 inch)]



Clean the outside first in order to prevent any dust adhering to the outside from entering when the component parts are removed. The entry of dust may result in abnormal noise or breakdown during operation.

- To prevent injury, turn off the power supply to the controller before inspecting the internal parts.
- To prevent injury or equipment damage, remove the load from the table before checking the internal parts.

1. Remove the Covers

Remove the covers in the following order:

1-1 Table cover

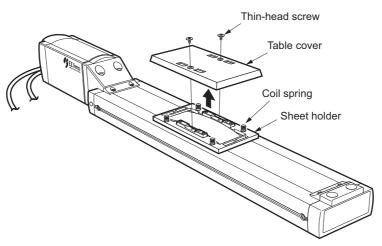
Pull out the thin-head screws from the tabletop and remove the table cover. The number of screws varies, depending on the product.

The sheet holder contains coil springs. Be careful not to lose any of the coil springs once they're removed.

Table 6-3 Number of Thin-Head Screws

Model	Number of screws	
EZHS3A-xxM, EZHS3A-xx	2 222	
EZHS4A-xxM, EZHS4A-xx	2 pcs.	
EZHS6A(C)-xxM, EZHS6A(C)-xx	4 pcs.	

Figure 6-1 Removal of Table Cover

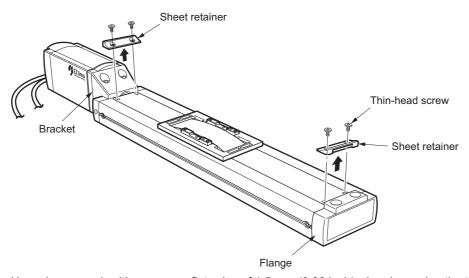


Use a hex wrench with an across-flats size of 1.5 mm (0.06 inch) when loosening the thin-head screws.

1-2 Sheet retainers (two pieces)

Pull out the thin-head screws (a total of four pieces) from the front and rear sheet retainers, and remove the sheet retainers.

Figure 6-2 Removal of Sheet Retainers

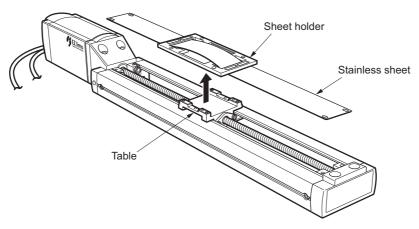


Use a hex wrench with an across-flats size of 1.5 mm (0.06 inch) when loosening the thin-head screws.

1-3 Sheet holder and stainless sheet

Lift the sheet holder and remove it together with the stainless sheet. Do not bend the stainless sheet.

Figure 6-3 Removal of Sheet Holder and Stainless Sheet

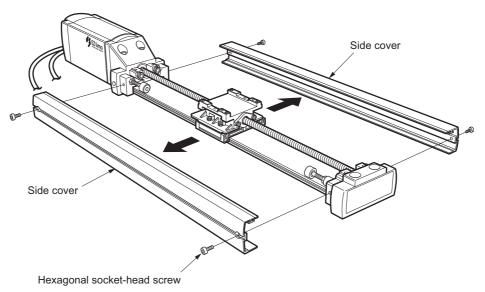




1-4 Side covers (two pieces)

Pull out the hexagonal socket-head screws from the right and left side covers, and remove the side covers.

Figure 6-4 Removal of Side Covers



Use a hex wrench with an across-flats size of 2.5 mm (0.10 inch) when loosening the hexagonal socket-head screws.

2. Visual Check of Condition Inside the Slider

Check the items specified in Table 6-4.

Table 6-4 Inspection Items and Contents

Item	What to check	Action if problem is found
Ball-screw shaft	Are there any deposits of foreign matter such as dust?	Remove the foreign matter.
	Has the grease lost its gloss or been consumed?	Clean the screw shaft with a soft cloth and apply grease to the nut running groove.
Guide rail	Are there any deposits of foreign matter such as dust?	Remove the foreign matter.
	Has the grease lost its gloss or been consumed?	Use a soft cloth to clean the ball rolling grooves on both sides of the guide rail, and apply grease to the ball rolling grooves.

Even if the grease has turned brown, lubrication condition is deemed appropriate if the running surface still appears glossy.

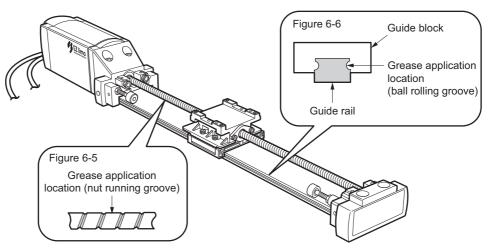
3. Greasing

If any of the following conditions applies, clean the inside using a soft cloth and add grease.

- The grease has lost its gloss.
- The amount of grease is not sufficient.

Figure 6-5 Greasing Location (ball screw) Ball screw: AFG grease (THK CO., LTD.)

Figure 6-6 Greasing Location (guide rail) Guide rail: AFF grease (THK CO., LTD.)



♠ Caution

Wear protective goggles when applying grease. Pay due attention to safety, and handle the grease carefully by following the instructions provided with that product. If grease gets into the eyes or comes in contact with the skin, immediately flush the area thoroughly with water.



4. Installing the Covers

When the internal check and cleaning is complete, install the side covers, stainless sheet and table cover by reversing the order in which they were removed.

4-1 Side covers (two pieces)

Install the side covers to the slider and secure them by tightening the hexagonal socket-head screws.

Use a hex wrench or torque wrench with an across-flats size of 2.5 mm (0.10 inch) when tightening the hexagonal socket-head screws.

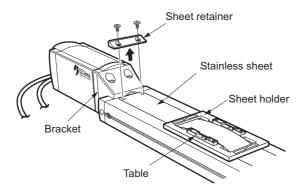
Tightening torque: 0.6 N·m (85 oz-in)

4-2 Stainless sheet and sheet holder

- Place the stainless sheet and sheet holder on the table.
 Bring the stainless sheet end face on the bracket side into contact with the bracket end face.
- 2. Install the sheet retainer on the bracket side and secure it by tightening the thin-head screws. Use a hex wrench or torque wrench with an across-flats size of 1.5 mm (0.06 inch) when tightening the thin-head screws.

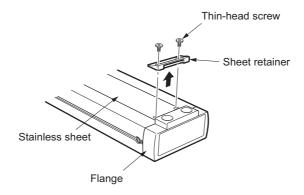
 Tightening torque: 0.6 N·m (85 oz-in)

Figure 6-7 Installation of Stainless Sheet (bracket side) and Securing of Sheet Retainer



- 3. Press the stainless sheet against the table and apply uniform tension to the sheet.
- **4.** Install the sheet retainer on the flange side and secure it by tightening the thin-head screws. Use a hex wrench or torque wrench with an across-flats size of 1.5 mm (0.06 inch) when tightening the thin-head screws. Tightening torque: 0.6 N·m (85 oz-in)

Figure 6-8 Pressing of Stainless Sheet and Securing of Sheet Retainer (flange side)



4-3 Table cover

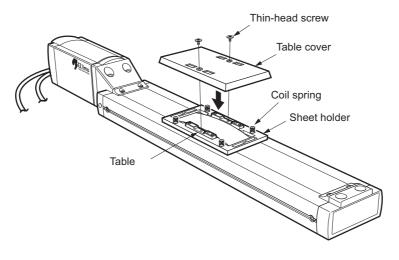
Confirm that the coil springs (four pieces) are installed within the sheet holder. Place the table cover on the table and secure it by tightening the thin-head screws.

Use a hex wrench or torque wrench with an across-flats size of 1.5 mm (0.06 inch) when tightening the

thin-head screws.

Tightening torque: 0.6 N·m (85 oz-in)

Figure 6-9 Securing of Table Cover



5. Checking the Tension of the Stainless Sheet

Once the slider and controller are connected, perform an operation check to confirm that the stainless sheet is straight and uniformly tensioned.

6.1.5 Re-Tensioning the Stainless Sheet

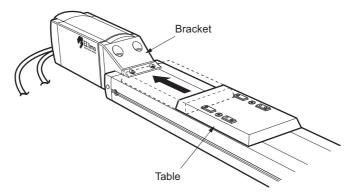
The stainless sheet has been tightly installed at the factory. However, if slack has been generated due to operation or as a result of maintenance, re-tension the sheet in the following order. Required tool: Hex wrench [across-flats size: 1.5 mm (0.06 inch)]

↑ Caution

To prevent injury, do not pull the stainless sheet with unnecessary force or grab it strongly, nor touch the sheet with bare hands.

1. Push the table gently with a hand, and move it toward the bracket side.

Figure 6-10 Movement of Table



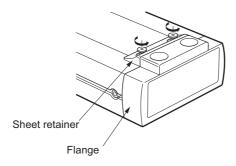
Note

- Disconnect the motor cable from the controller to prevent damage to the controller due to back EMF of the motor.
- If the slider is equipped with an electromagnetic brake, move the table toward the bracket side before commencing work.



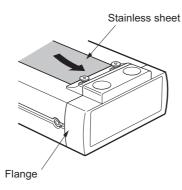
Loosen the screws of the sheet retainer on the flange side using a hex wrench with an across-flats size of 1.5 mm (0.06 inch).Do not remove the screws.

Figure 6-11 Release of Sheet Retainer



 $\bf 3.$ Pull the stainless sheet toward the flange side to remove the slack in the sheet.

Figure 6-12 Re-Tensioning of Stainless Sheet

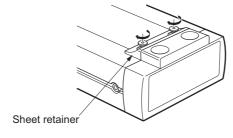


4. Tighten the thin-head screws to secure the sheet retainer.

Use a hex wrench or torque wrench with an across-flats size of 1.5 mm (0.06 inch) when tightening the thin-head screws.

Tightening torque: 0.6 N·m (85 oz-in)

Figure 6-13 Securing of Sheet Retainer



Check the tension of the stainless sheet.
 Once the slider and controller are connected, perform an operation check to confirm that the stainless sheet is straight and uniformly tensioned.

6.2 Cylinder

6.2.1 Inspection Items and Timing

Warning

To prevent injury, turn off the power supply to the controller before inspecting the cylinder.

Perform maintenance after each applicable period specified in Table 6-5.

The schedule assumes that the cylinder is operated eight hours a day.

Reduce the maintenance intervals accordingly if the operation rate is high, such as when the cylinder is operated continuously day and night.

Table 6-5 Inspection Items and Timing

Maintenance intervals	External check
When operated for the first time	0
One month after initial operation	0
Two to three months after initial operation	0 *
Every two to three months thereafter	0 *

^{*} Add grease if signs of degradation (change to brown color, loss of gloss) are observed during the inspection. See 6.2.4 "Greasing" on p.52 for the greasing method.

6.2.2 External Check

Check the items specified in Table 6-6.

Table 6-6 Inspection Items and Contents

Item	What to check	Action if problem is found
Cylinder	Are there any loose mounting screws?	Tighten the screws securely.
	Is there any looseness in the load mounting nut?	Tighten the nut securely.
	Is there any degradation in the greasing condition of the rod ?	Add grease.
Cables	Are there any scratches or areas under stress, or is the cable slack at the controller connection ?	Disconnect and reconnect the connector or replace the cable.
Operation	Is there any abnormal noise or vibration from the bearings, etc.?	Check the installation of the load and operating speed again.

6.2.3 External Cleaning

- Clean the exterior surface of the cylinder whenever necessary.
- Wipe off any dirt and stains using a soft cloth.
- Do not apply compressed air to prevent dust from entering through gaps.
- Do not use petroleum solvents, since they will damage the coated surface.
- To remove stubborn stains, wipe the area using a soft cloth moistened with neutral detergent.



6.2.4 Greasing

Add grease if signs of degradation (change to brown color, loss of gloss) are observed during the inspection.

Greasing Location

Rod: Multemp SRL (KYODO YUSHI CO., LTD.)

Apply grease to the rod in the following order:

- 1. Pull out the rod.
- 2. Wipe off dirty grease.
- 3. Apply grease to the rod using a soft cloth, etc.

Figure 6-14 Greasing Location



Note

To prevent noise or malfunctioning during operation, do not use a brush to apply grease.

Wear protective goggles when applying grease. Pay due attention to safety, and handle grease carefully by following the instructions provided with that product. If grease gets into the eyes or comes in contact with the skin, immediately flush the area thoroughly with water.

Chapter 7 Warranty

Any problem with the controller will be repaired free of charge if the following conditions are met.

7.1 Scope of Warranty

If a breakdown occurs during the warranty period due to a reason for which Oriental Motor is responsible, the affected product will be repaired free of charge.

The warranty is provided strictly in the form of repair of the main body of the product (in the case of a circuitry product, the main body of the product and software installed in the main body). Oriental Motor shall not be liable for any physical loss or opportunity loss on the part of the customer arising out of the breakdown of a delivered product.

This warranty does not cover breakdowns due to normal product wear and tear, nor does it cover the replacement of consumable parts.

7.2 Warranty Period

The warranty period shall be two years from the delivery of the product.

7.3 Exclusions

Breakdowns arising out of the following conditions are excluded from the scope of this warranty:

- 1. A breakdown caused by an inappropriate condition, environment, handling or use not confirmed in the catalog or specification sheet provided separately, etc.
- 2. A breakdown not caused by the delivered product.
- 3. A breakdown caused by a modification or repair not performed by Oriental Motor.
- 4. A breakdown caused by an improper use not commonly expected of a product of this type.
- 5. A breakdown caused by a problem not predictable at the time of shipment from Oriental Motor based on the scientific/technological standards available at the time.
- A breakdown caused by an act of God, natural disaster or any other reason beyond the control of Oriental Motor.

7.4 How to Receive Repair

Contact the Oriental Motor branch or sales office from which you purchased the product and arrange a return.

7.5 Repair Following Expiration of the Warranty Period

Once the warranty period has expired, Oriental Motor will perform repair for a fee only when the product function can be recovered/maintained through such a repair.



Appendix A Specifications

A.1 Combination List

A.1.1 EZHS Series Slider

Incremental Type

EZHS6C-50I

EZHS6C-50

Unit model * Slider model Controller model * Slider model Controller model * EZHS3A-051 EZHS3A-05 EZHS3A-10 EZHS3A-10 EZHS3A-10 EZHS3A-15 EZHS3A-15 EZHS3A-15 EZHS3A-15 EZHS3A-15 EZHS3A-20 EZHS3A-20 EZHS3A-20 EZHS3A-20 EZHS3A-20 EZHS3A-20 EZHS3A-30 EZHS3A-30 EZHS3A-30 EZHS3A-30 EZHS3A-30 EZHS3A-30 EZHS3A-30 EZHS3A-30 EZHS3A-50 EZHS3A-50 EZHS3A-15 EZHS3A-15 EZHS3A-15 EZHS3A-10 EZHS3A-30 EZ	Without Electroma	agnetic Brake		With Electromagnet	etic Brake	
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EZHS4A-40I EZHS4A-40 EZHS4A-50I EZHS4A-50 EZHS6A-10I EZHS6A-10 EZHS6A-15I EZHS6A-15 EZHS6A-20I EZHS6A-20 EZHS6A-25I EZHS6A-30 EZHS6A-30I EZHS6A-40 EZHS6A-40I EZHS6A-40 EZHS6A-50I EZHS6A-50 EZHS6A-50I EZHS6A-50 EZHS6C-10I EZHS6C-10 EZHS6C-15I EZHS6C-15 EZHS6C-25I EZHS6C-25 EZHS6C-25I EZHS6C-25 EZHS6C-30I EZHS6C-30 EZHS6C-30II EZHS6C-30 EZHS6C-30II EZHS6C-30 EZHS6C-30II EZHS6C-30 EZHS6C-30II EZHS6C-30 EZHS6C-30II EZHS6C-30 EZHS6C-30II EZHS6C	EZHS4A-25I	EZHS4A-25	EZMC131-A	EZHS4A-25MI	EZHS4A-25M	EZMC131-A
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EZHS6A-10I EZHS6A-10 EZHS6A-10MI EZHS6A-10M EZHS6A-10M EZHS6A-10M EZHS6A-10M EZHS6A-10M EZHS6A-10M EZHS6A-15M EZHS6A-15M EZHS6A-15M EZHS6A-15M EZHS6A-20M EZHS6A-20M EZHS6A-20M EZHS6A-20M EZHS6A-20M EZHS6A-20M EZHS6A-20M EZHS6A-25M EZHS6A-25M EZHS6A-25M EZHS6A-25M EZHS6A-30M EZHS6A-30M EZHS6A-30M EZHS6A-30M EZHS6A-30M EZHS6A-30M EZHS6A-30M EZHS6A-40M EZHS6A-40M EZHS6A-50M EZHS6A-50M EZHS6A-50M EZHS6A-50M EZHS6A-50M EZHS6C-10M EZHS6C-10M EZHS6C-10M EZHS6C-15M EZHS6C-15M EZHS6C-15M EZHS6C-20M EZHS6C-20M EZHS6C-20M EZHS6C-25M EZMC12I-C EZHS6C-25MI EZHS6C-30M EZHS6C-30M EZHS6C-30M EZHS6C-30M	EZHS4A-40I	EZHS4A-40		EZHS4A-40MI	EZHS4A-40M	
EZHS6A-15I EZHS6A-20 EZHS6A-20 EZHS6A-20MI EZHS6A-25MI EZHS6A-25MI EZHS6A-25MI EZHS6A-25MI EZHS6A-25MI EZHS6A-25MI EZHS6A-30MI EZHS6A-30MI EZHS6A-30MI EZHS6A-30MI EZHS6A-30MI EZHS6A-30MI EZHS6A-40MI EZHS6A-40MI EZHS6A-40MI EZHS6A-40MI EZHS6A-50MI EZHS6A-50MI EZHS6A-50MI EZHS6A-50MI EZHS6A-50MI EZHS6C-10MI EZHS6C-10MI EZHS6C-15MI EZHS6C-15MI EZHS6C-15MI EZHS6C-20MI EZHS6C-20MI EZHS6C-20MI EZHS6C-25MI EZHS6C-25MI EZMC12I-C EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI	EZHS4A-50I	EZHS4A-50		EZHS4A-50MI	EZHS4A-50M	
EZHS6A-20I EZHS6A-20 EZHS6A-20MI EZHS6A-20M EZHS6A-20M EZHS6A-20M EZHS6A-20M EZHS6A-20M EZHS6A-20M EZHS6A-25M EZHS6A-25M EZHS6A-25M EZHS6A-25M EZHS6A-25M EZHS6A-25M EZHS6A-30M EZHS6C-10M EZHS6C-10M EZHS6C-15M EZHS6C-15M EZHS6C-20M EZHS6C-20M EZHS6C-20M EZHS6C-25M EZMC12I-C EZHS6C-30MI EZHS6C-30M EZHS6C-	EZHS6A-10I	EZHS6A-10		EZHS6A-10MI	EZHS6A-10M	
EZHS6A-25I EZHS6A-25 EZMC24I-A EZHS6A-25MI EZHS6A-25M EZMC24I-A EZHS6A-30I EZHS6A-30 EZHS6A-30MI EZHS6A-30MI EZHS6A-30M EZHS6A-30M EZHS6A-30M EZHS6A-40MI EZHS6A-40MI EZHS6A-40MI EZHS6A-40MI EZHS6A-50MI EZHS6A-50MI EZHS6A-50MI EZHS6A-50MI EZHS6A-50MI EZHS6C-10MI EZHS6C-10MI EZHS6C-10MI EZHS6C-15MI EZHS6C-15MI EZHS6C-15MI EZHS6C-20MI EZHS6C-20MI EZHS6C-20MI EZHS6C-20MI EZHS6C-25MI EZMC12I-C EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI	EZHS6A-15I	EZHS6A-15		EZHS6A-15MI	EZHS6A-15M	
EZHS6A-30I EZHS6A-30 EZHS6A-30MI EZHS6A-30M EZHS6A-40I EZHS6A-40 EZHS6A-40MI EZHS6A-40M EZHS6A-50I EZHS6A-50 EZHS6A-50MI EZHS6A-50M EZHS6C-10I EZHS6C-10 EZHS6C-10MI EZHS6C-10M EZHS6C-15I EZHS6C-15 EZHS6C-15MI EZHS6C-15M EZHS6C-20I EZHS6C-20 EZHS6C-20MI EZHS6C-20M EZHS6C-20M EZHS6C-30I EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI	EZHS6A-20I	EZHS6A-20		EZHS6A-20MI	EZHS6A-20M	
EZHS6A-40I EZHS6A-40 EZHS6A-40MI EZHS6A-40M EZHS6A-50I EZHS6A-50 EZHS6A-50MI EZHS6A-50M EZHS6C-10I EZHS6C-10 EZHS6C-10MI EZHS6C-10M EZHS6C-15I EZHS6C-15 EZHS6C-15MI EZHS6C-15M EZHS6C-20I EZHS6C-20 EZHS6C-20MI EZHS6C-20M EZHS6C-25I EZHS6C-25 EZMC12I-C EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI	EZHS6A-25I	EZHS6A-25	EZMC24I-A	EZHS6A-25MI	EZHS6A-25M	EZMC24I-A
EZHS6A-50I EZHS6A-50 EZHS6A-50MI EZHS6A-50M EZHS6C-10I EZHS6C-10 EZHS6C-10MI EZHS6C-10M EZHS6C-15I EZHS6C-15 EZHS6C-15MI EZHS6C-15M EZHS6C-20I EZHS6C-20 EZHS6C-20MI EZHS6C-20M EZHS6C-20M EZHS6C-30I EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI	EZHS6A-30I	EZHS6A-30		EZHS6A-30MI	EZHS6A-30M	
EZHS6C-10I EZHS6C-10 EZHS6C-10MI EZHS6C-10M EZHS6C-15I EZHS6C-15 EZHS6C-15MI EZHS6C-15M EZHS6C-20I EZHS6C-20 EZHS6C-20MI EZHS6C-20M EZHS6C-25I EZHS6C-25 EZMC12I-C EZHS6C-25MI EZHS6C-25M EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI	EZHS6A-40I	EZHS6A-40		EZHS6A-40MI	EZHS6A-40M	
EZHS6C-15I EZHS6C-15 EZHS6C-15MI EZHS6C-15M EZHS6C-20I EZHS6C-20 EZHS6C-20MI EZHS6C-20M EZHS6C-25I EZHS6C-25 EZMC12I-C EZHS6C-25MI EZHS6C-25M EZHS6C-30M EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI	EZHS6A-50I	EZHS6A-50	•	EZHS6A-50MI	EZHS6A-50M	
EZHS6C-20I EZHS6C-20 EZHS6C-20MI EZHS6C-20M EZHS6C-25I EZHS6C-25 EZMC12I-C EZHS6C-25MI EZHS6C-25M EZHS6C-25M EZHS6C-30I EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI	EZHS6C-10I	EZHS6C-10	EZMC12I-C	EZHS6C-10MI	EZHS6C-10M	
EZHS6C-25I EZHS6C-25 EZMC12I-C EZHS6C-25MI EZHS6C-25M EZHS6C-25M EZMC12I-C EZHS6C-30I EZHS6C-30MI EZHS6C-30MI EZHS6C-30MI	EZHS6C-15I	EZHS6C-15		EZHS6C-15MI	EZHS6C-15M	
EZHS6C-30I EZHS6C-30MI EZHS6C-30M	EZHS6C-20I	EZHS6C-20		EZHS6C-20MI	EZHS6C-20M	
	EZHS6C-25I	EZHS6C-25		EZHS6C-25MI	EZHS6C-25M	EZMC12I-C
EZHS6C-40I EZHS6C-40MI EZHS6C-40M	EZHS6C-30I	EZHS6C-30		EZHS6C-30MI	EZHS6C-30M	
	EZHS6C-40I	EZHS6C-40		EZHS6C-40MI	EZHS6C-40M	

^{*} Each unit model supporting CC-Link has "-CC" appended at the end of the unit model name, while each controller model supporting CC-Link has "CC" appended at the end of the controller model name.

EZHS6C-50MI

EZHS6C-50M



Absolute Type

Without Electromage	gnetic Brake		With Electromagnetic Brake							
Unit model *	Slider model	Controller model *	Unit model *	Slider model	Controller model *					
EZHS3A-05A	EZHS3A-05		EZHS3A-05MA	EZHS3A-05M						
EZHS3A-10A	EZHS3A-10		EZHS3A-10MA	EZHS3A-10M						
EZHS3A-15A	EZHS3A-15		EZHS3A-15MA	EZHS3A-15M						
EZHS3A-20A	EZHS3A-20	F744C124 A	EZHS3A-20MA	EZHS3A-20M	EZMC13A-A					
EZHS3A-25A	EZHS3A-25	EZMC13A-A	EZHS3A-25MA	EZHS3A-25M	EZMC13A-A					
EZHS3A-30A	EZHS3A-30		EZHS3A-30MA	EZHS3A-30M						
EZHS3A-40A	EZHS3A-40		EZHS3A-40MA	EZHS3A-40M						
EZHS3A-50A	EZHS3A-50		EZHS3A-50MA	EZHS3A-50M	1					
EZHS4A-05A	EZHS4A-05		EZHS4A-05MA	EZHS4A-05M						
EZHS4A-10A	EZHS4A-10		EZHS4A-10MA	EZHS4A-10M						
EZHS4A-15A	EZHS4A-15		EZHS4A-15MA	EZHS4A-15M						
EZHS4A-20A	EZHS4A-20	EZMC13A-A	EZHS4A-20MA	EZHS4A-20M	EZMC13A-A					
EZHS4A-25A	EZHS4A-25	LZMCT3A-A	EZHS4A-25MA	EZHS4A-25M	LZMC13A-A					
EZHS4A-30A	EZHS4A-30		EZHS4A-30MA	EZHS4A-30M						
EZHS4A-40A	EZHS4A-40		EZHS4A-40MA	EZHS4A-40M						
EZHS4A-50A	EZHS4A-50		EZHS4A-50MA	EZHS4A-50M						
EZHS6A-10A	EZHS6A-10		EZHS6A-10MA	EZHS6A-10M						
EZHS6A-15A	EZHS6A-15		EZHS6A-15MA	EZHS6A-15M						
EZHS6A-20A	EZHS6A-20		EZHS6A-20MA	EZHS6A-20M						
EZHS6A-25A	EZHS6A-25	EZMC24A-A	EZHS6A-25MA	EZHS6A-25M	EZMC24A-A					
EZHS6A-30A	EZHS6A-30		EZHS6A-30MA	EZHS6A-30M						
EZHS6A-40A	EZHS6A-40		EZHS6A-40MA							
EZHS6A-50A	EZHS6A-50		EZHS6A-50MA	EZHS6A-50M						
EZHS6C-10A	EZHS6C-10		EZHS6C-10MA	EZHS6C-10M						
EZHS6C-15A	EZHS6C-15		EZHS6C-15MA	EZHS6C-15M						
EZHS6C-20A	EZHS6C-20		EZHS6C-20MA	EZHS6C-20M						
EZHS6C-25A	EZHS6C-25	EZMC12A-C	EZHS6C-25MA	EZHS6C-25M	EZMC12A-C					
EZHS6C-30A	EZHS6C-30		EZHS6C-30MA							
EZHS6C-40A	EZHS6C-40		EZHS6C-40MA	EZHS6C-40M						
EZHS6C-50A	EZHS6C-50		EZHS6C-50MA	EZHS6C-50M						

^{*} Each unit model supporting CC-Link has "-CC" appended at the end of the unit model name, while each controller model supporting CC-Link has "CC" appended at the end of the controller model name.

A.1.2 **EZHC** Series Cylinder

Incremental Type

• Without Electromagnetic Brake

• With Electromagnetic Brake

Unit model *	Cylinder model	Controller model *		
EZHC4A-05I	EZHC4A-05			
EZHC4A-10I	EZHC4A-10	EZMC13I-A		
EZHC4A-20I	EZHC4A-20	EZMC131-A		
EZHC4A-30I	EZHC4A-30			
EZHC6A-05I	EZHC6A-05			
EZHC6A-10I	EZHC6A-10	F7MC24I-A		
EZHC6A-20I	EZHC6A-20	EZ/MC241-A		
EZHC6A-30I	EZHC6A-30			
EZHC6C-05I	EZHC6C-05			
EZHC6C-10I	EZHC6C-10	F7MC12I-C		
EZHC6C-20I	EZHC6C-20			
EZHC6C-30I	EZHC6C-30			

That Electroniaghous Brance								
Unit model *	Cylinder model	Controller model *						
EZHC4A-05MI	EZHC4A-05M							
EZHC4A-10MI	EZHC4A-10M	EZMC13I-A						
EZHC4A-20MI	EZHC4A-20M	EZMC131-A						
EZHC4A-30MI	EZHC4A-30M							
EZHC6A-05MI	EZHC6A-05M							
EZHC6A-10MI	EZHC6A-10M	F7MC24I-A						
EZHC6A-20MI	EZHC6A-20M	EZMCZ4I-A						
EZHC6A-30MI	EZHC6A-30M							
EZHC6C-05MI	EZHC6C-05M							
EZHC6C-10MI	EZHC6C-10M	EZMC12I-C						
EZHC6C-20MI	EZHC6C-20M	LZ/VICTZI-C						
EZHC6C-30MI	EZHC6C-30M							
<u> </u>	f	1.9						

^{*} Each unit model supporting CC-Link has "-CC" appended at the end of the unit model name, while each controller model supporting CC-Link has "CC" appended at the end of the controller model name.

Absolute Type

EZHC6C-30A

• Without Electromagnetic Brake

Unit model *	Cylinder model	Controller model *			
EZHC4A-05A	EZHC4A-05				
EZHC4A-10A	EZHC4A-10	F744C104 A			
EZHC4A-20A	EZHC4A-20	EZMC13A-A			
EZHC4A-30A	EZHC4A-30				
EZHC6A-05A	EZHC6A-05				
EZHC6A-10A	EZHC6A-10	F7MC24A-A			
EZHC6A-20A	EZHC6A-20	LZMC24A-A			
EZHC6A-30A	EZHC6A-30				
EZHC6C-05A	EZHC6C-05				
EZHC6C-10A	EZHC6C-10	F7MC12A-C			
EZHC6C-20A	EZHC6C-20	EZINCTZA-C			

• With Electromagnetic Brake

Unit model *	Cylinder model	Controller model *
EZHC4A-05MA	EZHC4A-05M	
EZHC4A-10MA	EZHC4A-10M	EZMC13A-A
EZHC4A-20MA	EZHC4A-20M	EZMC13A-A
EZHC4A-30MA	EZHC4A-30M	
EZHC6A-05MA	EZHC6A-05M	
EZHC6A-10MA	EZHC6A-10M	F7MC24A-A
EZHC6A-20MA	EZHC6A-20M	LZMC24A-A
EZHC6A-30MA	EZHC6A-30M	
EZHC6C-05MA	EZHC6C-05M	
EZHC6C-10MA	EZHC6C-10M	F7MC12A-C
EZHC6C-20MA	EZHC6C-20M	LZ/NCTZA-C
EZHC6C-30MA	EZHC6C-30M	

^{*} Each unit model supporting CC-Link has "-CC" appended at the end of the unit model name, while each controller model supporting CC-Link has "CC" appended at the end of the controller model name.



A.1.3 **EZHP** Series Cylinder

Incremental Type

• Without Electromagnetic Brake

Controller Unit model * Cylinder model model * EZHP4A-05I EZHP4A-05 EZHP4A-10I EZHP4A-10 EZMC13I-A EZHP4A-20I EZHP4A-20 EZHP4A-30I EZHP4A-30 EZHP6A-05I EZHP6A-05 EZHP6A-10I EZHP6A-10 EZMC24I-A EZHP6A-20I EZHP6A-20 EZHP6A-30I EZHP6A-30 EZHP6C-05 EZHP6C-05I EZHP6C-10I EZHP6C-10 EZMC12I-C EZHP6C-20I EZHP6C-20 EZHP6C-30I EZHP6C-30

• With Electromagnetic Brake

Unit model *	Cylinder model	Controller model *
EZHP4A-05MI	EZHP4A-05M	
EZHP4A-10MI	EZHP4A-10M	EZMC13I-A
EZHP4A-20MI	EZHP4A-20M	EZMC131-A
EZHP4A-30MI	EZHP4A-30M	
EZHP6A-05MI	EZHP6A-05M	
EZHP6A-10MI	EZHP6A-10M	F7MC24I-A
EZHP6A-20MI	EZHP6A-20M	EZMCZ4I-A
EZHP6A-30MI	EZHP6A-30M	
EZHP6C-05MI	EZHP6C-05M	
EZHP6C-10MI	EZHP6C-10M	F7MC12I-C
EZHP6C-20MI	EZHP6C-20M	LZ/VICTZI-C
EZHP6C-30MI	EZHP6C-30M	

^{*} Each unit model supporting CC-Link has "-CC" appended at the end of the unit model name, while each controller model supporting CC-Link has "CC" appended at the end of the controller model name.

Absolute Type

• Without Electromagnetic Brake

Unit model *	Cylinder model	Controller model *			
EZHP4A-05A	EZHP4A-05				
EZHP4A-10A	EZHP4A-10	F7MC13A-A			
EZHP4A-20A	EZHP4A-20	EZMC13A-A			
EZHP4A-30A	EZHP4A-30				
EZHP6A-05A	EZHP6A-05				
EZHP6A-10A	EZHP6A-10	EZMC24A-A			
EZHP6A-20A	EZHP6A-20	LZMCZ4A-A			
EZHP6A-30A	EZHP6A-30				
EZHP6C-05A	EZHP6C-05				
EZHP6C-10A	EZHP6C-10	F7MC12A-C			
EZHP6C-20A	EZHP6C-20	LZ/MCTZA-C			
EZHP6C-30A	EZHP6C-30				

• With Electromagnetic Brake

Unit model *	Cylinder model	Controller model *
EZHP4A-05MA	EZHP4A-05M	
EZHP4A-10MA	EZHP4A-10M	F7MC13A-A
EZHP4A-20MA	EZHP4A-20M	EZMC13A-A
EZHP4A-30MA	EZHP4A-30M	
EZHP6A-05MA	EZHP6A-05M	
EZHP6A-10MA	EZHP6A-10M	F7MC24A-A
EZHP6A-20MA	EZHP6A-20M	LZMC24A-A
EZHP6A-30MA	EZHP6A-30M	
EZHP6C-05MA	EZHP6C-05M	
EZHP6C-10MA	EZHP6C-10M	F7MC12A-C
EZHP6C-20MA	EZHP6C-20M	LZINCTZA-C
EZHP6C-30MA	EZHP6C-30M	

^{*} Each unit model supporting CC-Link has "-CC" appended at the end of the unit model name, while each controller model supporting CC-Link has "CC" appended at the end of the controller model name.

A.2 Slider Specifications

A.2.1 Performance Specifications

The following specifications are common to all models, regardless of the stroke:

• EZHS3

Slider		W	ith electrom	agnetic bra	ke	Without electromagnetic brake					
Motor type		Stepping r sensor	notor with b	ouilt-in rotor	-position	Stepping motor with built-in rotor-position sensor					
Drive method			Ball s	screw			Balls	screw			
Maximum speed	[mm/s (in/sec)]		800 (3	31.50)			800 (3	31.50)			
Maximum transportable	Horizontal direction		5 (11)			5 (11)			
mass [kg (lb.)]	Vertical direction		2.5 ((5.5)				_			
Maximum acceleration	Horizontal direction		2.5 ((8.2)			2.5	(8.2)			
$[m/s^2 (ft/sec^2)]$	Vertical direction		2.5 ((8.2)			-	_			
Maximum thrust	force [N (lb.)]		30 (6	6.75)		30 (6.75)					
Maximum	Power ON		30 (6	6.75)		30 (6.75)					
holding brake	Power OFF		()		0					
force [N (lb.)]	Electromagnetic brake		30 (6	6.75)		-					
Repetitive position [mm (inch)]	Repetitive positioning accuracy [mm (inch)]			±0.02 (±0.0008)							
Resolution [mm	(inch)]	0.01 (0.0004)									
Lead [mm (inch)]	12 (0.472)									
Stroke [mm (inch	50 (1.97), 100 (3.94), 150 (5.91), 200 (7.87), 250 (9.84), 300 (11.81), 400 (15.75), 500 (19.69)										
Slider weight [kg (lb.)] Numbers in [] are values for the electromagnetic brake type.		50	100	150	200	250	300	400	500		
		(1.97)	(3.94)	(5.91)	(7.87)	(9.84)	(11.81)	(15.75)	(19.69)		
		1.6 (3.52) [1.8 (3.96)]	1.7 (3.74) [1.9 (4.18)]	1.8 (3.96) [2.0 (4.4)]	1.9 (4.18) [2.1 (4.62)]	2.0 (4.4) [2.2 (4.84)]	2.1 (4.62) [2.3 (5.06)]	2.3 (5.06) [2.5 (5.5)]	2.5 (5.5) [2.7 (5.94)]		
Ambient tempera	ature [°C (°F)]	` /4	` /4					. /3	. /4		
Noise level (refe [dB (A)]	0 to +40 (+32 to +104), non-freezing 64										

^{*} Noise level is indicated by a value measured in A range at 1 m (3.3 ft.) from the power unit during a reciprocating operation at the maximum speed and stroke.



• EZHS4

Slider	With electromagnetic brake						Without electromagnetic brake						
Motor type		Stepping motor with built-in rotor-position sensor						Stepping motor with built-in rotor-position sensor					
Drive method				Ball s	crew					Balls	screw		
Maximum speed	[mm/s (in/sec)]	400 (15.7	5)	600 (2	23.62)	80	00 (31.50)	400 (15.7	5)	600 (2	23.62)	800 (3	1.50)
Maximum transportable	Horizontal direction	15 (33)		15 ((33)		15 (33)	15 (33)		15	(33)	15 (33)
mass [kg (lb.)]	Vertical direction	7 (15.4))	4.5 ((9.9)	;	3.5 (7.7)	-		-	-	_	
Maximum acceleration	Horizontal direction			2.5 ((8.2)					2.5	(8.2)		
[m/s² (ft/sec²)]	Vertical direction			2.5 ((8.2)					-	-		
Maximum thrust	force [N (lb.)]	70 (15.75)		55 2.38)	43 (9.68	3)	70 (15.75)	55 (12.38)		43 9.68)			
Maximum	Power ON	70 (15.75)						70 (15.75)					
holding brake	Power OFF	0						0					
force [N (lb.)]	Electromagnetic brake	70 (15.75)						-					
Repetitive position [mm (inch)]	oning accuracy	±0.02 (±0.0008)											
Resolution [mm	(inch)]	0.01 (0.0004)											
Lead [mm (inch)]]	12 (0.472)											
Stroke [mm (inch	50 (1.97), 100 (3.94), 150 (5.91), 200 (7.87), 250 (9.84), 300 (11.81), 400 (15.75), 500 (19.69)												
Slider weight [kg		50	1	100	150		200	250	;	300	400	į	500
Numbers in [] ar		(1.97)	(3	3.94)	(5.91)	(7.87)	(9.84)	(1	1.81)	(15.75) (1	9.69)
electromagnetic brake type.		2.4 (5.28)	(5	2.6 5.72)	2.8 (6.16	5)	3.0 (6.6)	3.2 (7.04)	(7	3.4 7.48)	3.8 (8.36)	(9	4.2 9.24)
		[2.6 (5.72)]		2.8 .16)]	[3.0 (6.6)		[3.2 (7.04)]	[3.4 (7.48)]		[3.6 '.92)]	[4.0 (8.8)]	_	[4.4 (.68)]
Ambient tempera	0 to +40 (+32 to +104), non-freezing												
Noise level (refe [dB (A)]	61												

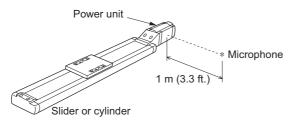
^{*} Noise level is indicated by a value measured in A range at 1 m (3.3 ft.) from the power unit during a reciprocating operation at the maximum speed and stroke.

• EZHS6

Motor type	Slider	With electromagnetic brake						Without electromagnetic brake					
Maximum speed [mm/s (in/sec)] 400 (15.75) 600 (23.62) 800 (31.50) 400 (15.75) 600 (23.62) 800 (31.50) Maximum transportable mass [kg (lb.)] Horizontal direction 30 (66) 30 (66) 20 (44) 30 (66) 30 (66) 20 (44) Maximum acceleration [m/s² (ft/sec²)] Horizontal direction 15 (33) 7.5 (16.5) 3.5 (7.7) - - - Maximum thrust force [N (lb.)] 184 92 50 184 92 50 Maximum holding brake force [N (lb.)] Power ON 184 (41.4) 184 (41.4) 184 (41.4) 184 (41.4) Repetitive positioning accuracy [mm (inch)] 184 (41.4) 0.01 (0.0004) - Resolution [mm (inch)] 12 (0.472) 50 (9.84), 300 (11.81), 400 (15.75), 500 (19.69) Stroke [mm (inch)] 100 (3.94), 150 (5.91), 200 (7.87), 250 (9.84), 300 (11.81), 400 (15.75), 500 (19.69) Slider weight [kg (lb.)] 100 (3.94), 150 (5.91), 200 (7.87), 250 (9.84), 300 (11.81), 400 (15.75), 500 (19.69) Numbers in [] are values for the electromagnetic brake type. 4.1 4.4 4.6 4.8 5.1 5.6 6.0	Motor type		Stepping motor with built-in rotor-position						Stepping motor with built-in rotor-position				
Maximum transportable mass [kg (lb.)] Horizontal direction Jonath 15 (33) Jonath 15 (34) Jonath 15 (35) Jonath 15	Drive method			Balls	crew					Ва	all screw		
transportable mass [kg (lb.)] direction 30 (66) 30 (66) 20 (44) 30 (66) 30 (66) 20 (44) Maximum acceleration [m/s² (ft/sec²)] Horizontal direction 2.5 (8.2) 2.5 (9.2) 2.5 (9.2) <td>Maximum speed</td> <td>[mm/s (in/sec)]</td> <td>400 (15.75</td> <td>600 (2</td> <td>23.62)</td> <td>800 (3</td> <td>1.50)</td> <td>400 (</td> <td>15.75)</td> <td>600</td> <td>0 (23.62)</td> <td>80</td> <td>00 (31.50)</td>	Maximum speed	[mm/s (in/sec)]	400 (15.75	600 (2	23.62)	800 (3	1.50)	400 (15.75)	600	0 (23.62)	80	00 (31.50)
Maximum acceleration Maximum acceleration Maximum acceleration Maximum acceleration Maximum acceleration Maximum throught office (ff/sec²) Vertical direction Ver	transportable		30 (66)	30	(66)	20 (4	14)	30	(66)	3	30 (66)		20 (44)
Acceleration Maximum thrust Force [N (lb.)] 184 92 50 184 92 184 41.4) (20.7) (11.25) (41.4) (41	mass [kg (lb.)]		15 (33)	7.5 (16.5)	3.5 (7	7.7)		-		-		-
Maximum thrust force [N (lb.)]	acceleration			2.5	(8.2)					2	.5 (8.2)		
Maximum Power ON 184 (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4) (20.7) (11.25) (41.4)	[m/s² (ft/sec²)]			2.5	(8.2)						-		
Power OFF 0	Maximum thrust	_					-						
force [N (lb.)]	Maximum	Power ON	184 (41.4)						184 (41.4)				
Repetitive positioning accuracy [mm (inch)]		Power OFF	0						0				
Resolution [mm (inch)]	force [N (lb.)]		184 (41.4)					-					
Lead [mm (inch)] 12 (0.472) Stroke [mm (inch)] 100 (3.94), 150 (5.91), 200 (7.87), 250 (9.84), 300 (11.81), 400 (15.75), 500 (19.69) Slider weight [kg (lb.)] Numbers in [] are values for the electromagnetic brake type. 4.1 4.4 4.6 4.8 5.1 5.6 6.0 (9.02) (9.68) (10.12) (10.56) (11.22) (12.32) (13.2) [4.5 [4.8 [5.0 [5.2 [5.5 [6.0 [6.4 (9.9)] (10.56)] (11.0)] (11.44)] (12.1)] (13.2)] (14.08)]		oning accuracy	±0.02 (±0.0008)										
Stroke [mm (inch)] 100 (3.94), 150 (5.91), 200 (7.87), 250 (9.84), 300 (11.81), 400 (15.75), 500 (19.69) Slider weight [kg (lb.)] 100 (3.94) 150 (5.91) 200 (7.87) 250 (9.84) 300 (11.81), 400 (15.75), 500 (19.69) 500 (19.69) Numbers in [] are values for the electromagnetic brake type. 4.1 4.4 4.6 4.8 5.1 5.6 6.0 (9.02) (9.68) (10.12) (10.56) (11.22) (12.32) (13.2) [4.5 [4.8 [5.0 [5.2 [5.5 [6.0 [6.4 (9.9)] (10.56)] (11.0)] (11.44)] (12.1)] (13.2)] (14.08)]	Resolution [mm ((inch)]	0.01 (0.0004)										
Slider weight [kg (lb.)] 100 (3.94) 150 (5.91) 200 (7.87) 250 (9.84) 300 (11.81) 400 (15.75) 500 (19.69) Numbers in [] are values for the electromagnetic brake type. 4.1 4.4 4.6 4.8 5.1 5.6 6.0 (9.02) (9.68) (10.12) (10.56) (11.22) (12.32) (13.2) [4.5 [4.8 [5.0 [5.2 [5.5 [6.0 [6.4 (9.9)] (10.56)] (11.0)] (11.44)] (12.1)] (13.2)] (14.08)]	Lead [mm (inch)]		12 (0.472)										
Numbers in [] are values for the electromagnetic brake type. 100 (3.94) 150 (5.91) 200 (7.87) 250 (9.84) (11.81) (15.75) (19.69)	Stroke [mm (inch	1)]	100 (3.94),	100 (3.94), 150 (5.91), 200 (7.87), 250 (9.84), 3						400	(15.75), 50	0 (1	19.69)
(9.02) (9.68) (10.12) (10.56) (11.22) (12.32) (13.2) [4.5] [4.8] [5.0] [5.2] [5.5] [6.0] [6.4] (9.9)] (10.56)] (11.0)] (11.44)] (12.1)] (13.2)] (14.08)]	Numbers in [] are values for the		100 (3.94)	150 (5.9	1) 20	0 (7.87)	250 ((9.84)					
[4.5			4.1	4.4		4.6	4	.8	5.1		5.6		6.0
(9.9)] (10.56)] (11.0)] (11.44)] (12.1)] (13.2)] (14.08)]			` ,	, ,	(,	,	,			, ,		
			-	-	,	-	-				-		
Ambient temperature $\Gamma \cup \Gamma = \Gamma \cup \Gamma = \Gamma \cup \Gamma \cup \Gamma \cup \Gamma \cup \Gamma \cup \Gamma \cup $	A male to make to make												
			0 to +40 (+32 to +104), non-freezing										
Noise level (reference value) * [dB (A)] * Noise level is indicated by a value measured in A range at 1 m (3.3 ft.) from the power unit during a	Noise level (reference value) * [dB (A)]		69										

st Noise level is indicated by a value measured in A range at 1 m (3.3 ft.) from the power unit during a reciprocating operation at the maximum speed and stroke.

Figure A-1 Noise Measurement Method





A.2.2 General Specifications

Insulation Resistance

An insulation resistance of 100 M Ω or more has been confirmed via a 500-VDC megger at the following locations:

- · Between motor case and motor/sensor winding
- Between motor case and electromagnetic brake winding (electromagnetic brake type only)

Dielectric Strength

No abnormality was found after the applicable voltage was applied for one minute at the following locations:

- Between motor case and motor/sensor winding AC1.5 kV (AC1.0 kV) 50/60 Hz
- Between motor case and electromagnetic brake winding (electromagnetic brake type only) AC1.0
 kV 50 Hz

Numbers in parentheses are values for EZHS3/EZHS4.

A.2.3 Speed and Load Weight

The relationships between slider speed and load weight limit are shown in the diagrams below:

Figure A-2 Correlation Diagram of Speed and Load Weight (horizontal direction)

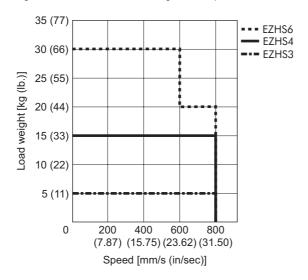
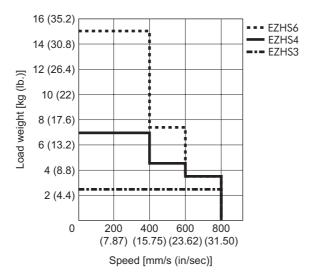


Figure A-3 Correlation Diagram of Speed and Load Weight (vertical direction)



A.2.4 Allowable Overhang Length

The allowable overhang lengths from the center of the load's mounting surface to the center of gravity of the object being carried are shown in the tables below:

Figure A-4 Horizontal Installation

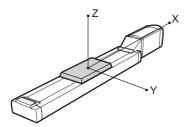


Table A-1 Allowable Overhang Length (EZHS3) [Unit: mm (inch)]

(()]	
Carried weight	Х	Y	Z
1 kg	203	300	300
(2.2 lb.)	(7.99)	(11.81)	(11.81)
2.5 kg	73	123	288
(5.5 lb.)	(2.87)	(4.84)	(11.34)
5 kg	30	50	118
(11 lb.)	(1.18)	(1.97)	(4.65)

Table A-2 Allowable Overhang Length (EZHS4) [Unit: mm (inch)]

		\ /3	
Carried weight	X	Y	Z
5 kg	158	108	300
(11 lb.)	(6.22)	(4.25)	(11.81)
10 kg	73	54	286
(22 lb.)	(2.87)	(2.13)	(11.26)
15 kg	45	36	175
(33 lb.)	(1.77)	(1.42)	(6.89)

Table A-3 Allowable Overhang Length (EZHS6) [Unit: mm (inch)]

Carried weight	X	Y	Z	
10 kg	500	392	500	
(22 lb.)	(19.69)	(15.43)	(19.69)	
20 kg	386	196	500	
(44 lb.)	(15.20)	(7.72)	(19.69)	
30 kg	257	131	500	
(66 lb.)	(10.12)	(5.16)	(19.69)	

Figure A-5 Installation by Wall Mounting

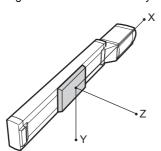


Table A-4 Allowable Overhang Length (EZHS3) [Unit: mm (inch)]

	(LZ1100) [OTHL: ITHIT (ITIOTI)]				
	Carried weight	X	Y	Z	
	1 kg	155	300	298	
	(2.2 lb.)	(6.10)	(11.81)	(11.73)	
,	2.5 kg	62	243	93	
	(5.5 lb.)	(2.44)	(9.57)	(3.66)	
	5 kg	19	75	25	
	(11 lb.)	(0.75)	(2.95)	(0.98)	

Table A-5 Allowable Overhang Length (EZHS4) [Unit: mm (inch)]

	Carried weight	X	Y	Z	
	5 kg	28	108	300	
	(11 lb.)	(1.10)	(4.25)	(11.81)	
_	10 kg	14	54	132	
	(22 lb.)	(0.55)	(2.13)	(5.20)	
	15 kg	9	36	76	
	(33 lb.)	(0.35)	(1.42)	(2.99)	

Table A-6 Allowable Overhang Length (EZHS6) [Unit: mm (inch)]

(==::::::)]				
Carried weight	X	Y	Z	
10 kg	100	392	414	
(22 lb.)	(3.94)	(15.43)	(16.30)	
20 kg	50	196	207	
(44 lb.)	(1.97)	(7.72)	(8.15)	
30 kg	33	131	138	
(66 lb.)	(1.30)	(5.16)	(5.43)	



Figure A-6 Vertical Installation

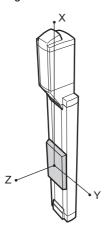


Table A-7 Allowable Overhang Length (EZHS3) [Unit: mm (inch)]

	(LZ1100) [OTHE HINT	(111011)]	
	Carried weight	X	Y	Z
	1 kg	135	124	135
	(2.2 lb.)	(5.31)	(4.88)	(5.31)
٠	2.5 kg	58	58	48
	(5.5 lb.)	(2.28)	(2.28)	(1.89)
	5 kg	37	37	31
	(11 lb.)	(1.46)	(1.46)	(1.22)

Table A-8 Allowable Overhang Length (EZHS4) [Unit: mm (inch)]

(LZ1104)	Offic. Ithiri	(111011)]	
Carried X weight		Y	Z
3.5 kg	166	31	166
(7.7 lb.)	(6.54)	(1.22)	(6.54)
4.5 kg	123	24	123
(9.9 lb.)	(4.84)	(0.95)	(4.84)
7 kg	69	16	69
(15.4 lb.)	(2.72)	(0.63)	(2.72)

Table A-9 Allowable Overhang Length (EZHS6) [Unit: mm (inch)]

(EZHSO) [Unit. mm (inch)]				
Carried weight	X	Y	Z	
3.5 kg	500	228	500	
(7.7 lb.)	(19.69)	(8.98)	(19.69)	
7.5 kg	500	106	500	
(16.5 lb.)	(19.69)	(4.17)	(19.69)	
15 kg	410	53	410	
(33 lb.)	(16.14)	(2.09)	(16.14)	

Note

The value in these tables are based on uniaxial loading. Multiaxial overhang conditions must be calculated using the following formula:

 $\Delta x/x + \Delta y/y + \Delta z/z \leq 1$

Where Δx , Δy and Δz are the distances from the center of gravity of the load to the center of the table along their respective axis. The denominator values x, y and z are the values from the overhang table. If the equation yields a value less than or equal to 1, then the loading is acceptable under all velocity and acceleration conditions.

A.3 Cylinder Specifications

A.3.1 Performance Specifications

The following specifications are common to all models, regardless of the stroke:

• EZHC4

Cylinder		With electron	nagnetic brake	Without electro	magnetic brake	
Motor type		Stepping motor with built-in rotor-position sensor		Stepping motor with built-in rotor-positi sensor		
Drive method		Ball	screw	ew Ball screw		
Maximum speed	I [mm/s (in/sec)]	400 (15.75)	400 (15.75) 600 (23.62)		600 (23.62)	
Maximum transportable	Horizontal direction	-	-	-	ı	
mass [kg (lb.)]	Vertical direction	6.5 (14.3)	4.5 (9.9)	-	-	
Maximum acceleration	Horizontal direction		_	-	-	
[m/s² (ft/sec²)]	Vertical direction	2.5	(8.2)	-		
Maximum thrust	force [N (lb.)]	65 (14.63)	55 (12.38)	65 (14.63)	55 (12.38)	
Push force [N (lb	0.)]	65 (14.63) [6 mm/s (0.24 in/sec) or less]		65 (14.63) [6 mm/s (0.24 in/sec) or less]		
Maximum	Power ON	65 (14.63)		65 (14.63)		
holding brake	Power OFF		0		0	
force [N (lb.)]	Electromagnetic brake	65 (14.63)		-		
Repetitive position [mm (inch)]	oning accuracy	±0.02 (±0.0008)				
Resolution [mm	(inch)]		0.01 (0	0.0004)		
Lead [mm (inch)]		12 (0	0.472)		
Stroke [mm (incl	٦)]		50 (1.97), 100 (3.94),	200 (7.87), 300 (11.81)		
Cylinder weight		50 (1.97)	100 (3.94)	200 (7.87)	300 (11.81)	
Numbers in [] are values for the electromagnetic brake type.		1.7 (3.74) [1.9 (4.18)]	2.0 (4.4) [2.2 (4.84)]	2.5 (5.5) [2.7 (5.94)]	3.0 (6.6) [3.2 (7.04)]	
Ambient temperature [°C (°F)]		0 to +40 (+32 to +104), non-freezing				
Noise level (refe [dB (A)]	rence value) *		5	58		

^{*} Noise level is indicated by a value measured in A range at 1 m (3.3 ft.) from the power unit during a reciprocating operation at the maximum speed and stroke.



• EZHP4

Cylinder		With electron	nagnetic brake	Without electromagnetic brake		
Motor type		Stepping motor with sensor				
Drive method		Ball	screw	Balls	screw	
Maximum speed	[mm/s (in/sec)]	200 (7.87)	300 (11.81)	200 (7.87)	300 (11.81)	
Maximum transportable	Horizontal direction	_	-	-	-	
mass [kg (lb.)]	Vertical direction	14 (30.8)	9 (19.8)	-	-	
Maximum acceleration	Horizontal direction		-	-	-	
[m/s ² (ft/sec ²)]	Vertical direction	2.5	(8.2)	-		
Maximum thrust	force [N (lb.)]	140 (31.5)	110 (24.75)	140 (31.5)	110 (24.75)	
Push force [N (lb	0.)]	140 (31.5) [6 mm/s (0.24 in/sec) or less]			31.5) in/sec) or less]	
Maximum	Power ON	140 (31.5)		140 (31.5)		
holding brake	Power OFF		0		0	
force [N (lb.)]	Electromagnetic brake	140 (31.5)		-		
Repetitive position [mm (inch)]	oning accuracy		±0.02 (:	±0.0008)		
Resolution [mm	(inch)]		0.01 (0.0004)		
Lead [mm (inch)]		6 (0	(0.236)		
Stroke [mm (inch	n)]		50 (1.97), 100 (3.94),	200 (7.87), 300 (11.81)		
Cylinder weight		50 (1.97)	100 (3.94)	200 (7.87)	300 (11.81)	
Numbers in [] are electromagnetic		1.7 (3.74) [1.9 (4.18)]	2.0 (4.4) [2.2 (4.84)]	2.5 (5.5) [2.7 (5.94)]	3.0 (6.6) [3.2 (7.04)]	
Ambient temperature [°C (°F)]		0 to +40 (+32 to +104), non-freezing				
Noise level (refe [dB (A)]	rence value) *	60				

^{*} Noise level is indicated by a value measured in A range at 1 m (3.3 ft.) from the power unit during a reciprocating operation at the maximum speed and stroke.

• EZHC6

Cylinder		With electrom	agnetic brake	Without electromagnetic brake	
Motor type		Stepping motor with to sensor	ouilt-in rotor-position	Stepping motor with built-in rotor-position sensor	
Drive method		Ball s	screw	Balls	screw
Maximum speed	[mm/s (in/sec)]	400 (15.75)	400 (15.75) 600 (23.62)		600 (23.62)
Maximum transportable	Horizontal direction	-	-	-	_
mass [kg (lb.)]	Vertical direction	15 (33)	6 (13.2)	-	_
Maximum acceleration	Horizontal direction	-	-		_
[m/s ² (ft/sec ²)]	Vertical direction	2.5	(8.2)	-	
Maximum thrust	force [N (lb.)]	200 (45)	73 (16.43)	200 (45)	73 (16.43)
Push force [N (lb	0.)]	200 (45) [6 mm/s (0.24 in/sec) or less]		200 (45) [6 mm/s (0.24 in/sec) or less]	
Maximum	Power ON	200 (45)		200 (45)	
holding brake	Power OFF	0		0	
force [N (lb.)]	Electromagnetic brake	200 (45)		-	
Repetitive position [mm (inch)]	oning accuracy	±0.02 (±0.0008)			
Resolution [mm	(inch)]		0.01 (0	0.0004)	
Lead [mm (inch)]		12 (0	0.472)	
Stroke [mm (inch	۱)]		50 (1.97), 100 (3.94),	200 (7.87), 300 (11.81)	
Cylinder weight	[kg (lb.)]	50 (1.97)	100 (3.94)	200 (7.87)	300 (11.81)
Numbers in [] are values for the electromagnetic brake type.		3.3 (7.26) [3.7 (8.14)]	3.7 (8.14) [4.1 (9.02)]	4.6 (10.12) [5.0 (11.0)]	5.6 (12.32) [6.0 (13.2)]
Ambient tempera	ature [°C (°F)]		0 to +40 (+32 to +	104), non-freezing	
Noise level (refe [dB (A)]	oise level (reference value) *			52	and the shareholder

^{*} Noise level is indicated by a value measured in A range at 1 m (3.3 ft.) from the power unit during a reciprocating operation at the maximum speed and stroke.

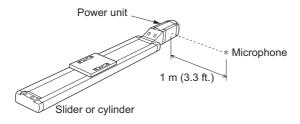


• EZHP6

Cylinder		With electron	nagnetic brake	Without electromagnetic brake		
Motor type		Stepping motor with built-in rotor-position sensor		Stepping motor with built-in rotor-position sensor		
Drive method		Balls	screw	Ball s	screw	
Maximum speed	[mm/s (in/sec)]	200 (7.87)	200 (7.87) 300 (11.81)		300 (11.81)	
Maximum transportable	Horizontal direction	-	-	-	-	
mass [kg (lb.)]	Vertical direction	30 (66)	12 (26.4)	-	-	
Maximum acceleration	Horizontal direction		_	-	-	
[m/s² (ft/sec²)]	Vertical direction	2.5	(8.2)	-		
Maximum thrust	force [N (lb.)]	400 (90)	147 (33.08)	400 (90)	147 (33.08)	
Push force [N (It	D.)]	400 (90) [6 mm/s (0.24 in/sec) or less]		400 [6 mm/s (0.24	` '	
Maximum	Power ON	400 (90)		400 (90)		
holding brake	Power OFF	0		0		
force [N (lb.)]	Electromagnetic brake	400 (90)		-		
Repetitive position [mm (inch)]	oning accuracy		±0.02 (:	±0.0008)		
Resolution [mm	(inch)]		0.01 (0.0004)		
Lead [mm (inch)]		6 (0	.236)		
Stroke [mm (incl	٦)]		50 (1.97), 100 (3.94),	200 (7.87), 300 (11.81)		
Cylinder weight		50 (1.97)	100 (3.94)	200 (7.87)	300 (11.81)	
Numbers in [] a electromagnetic		3.3 (7.26) [3.7 (8.14)]	3.7 (8.14) [4.1 (9.02)]	4.6 (10.12) [5.0 (11.0)]	5.6 (12.32) [6.0 (13.2)]	
Ambient tempera	ature [°C (°F)]	0 to +40 (+32 to +104), non-freezing				
Noise level (refe [dB (A)]	rence value) *	70				

^{*} Noise level is indicated by a value measured in A range at 1 m (3.3 ft.) from the power unit during a reciprocating operation at the maximum speed and stroke.

Figure A-7 Noise Measurement Method



A.3.2 General Specifications

Insulation Resistance

An insulation resistance of 100 M or more has been confirmed via a 500-VDC megger at the following locations:

- · Between motor case and motor/sensor winding
- Between motor case and electromagnetic brake winding (electromagnetic brake type only)

Dielectric Strength

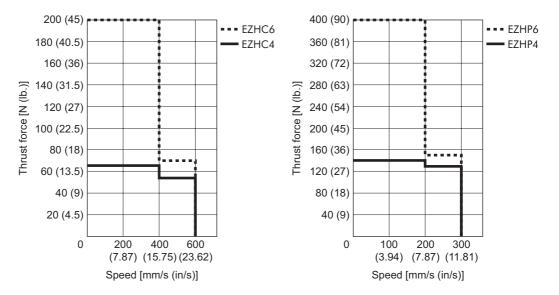
No abnormality was found after the applicable voltage was applied for one minute at the following locations:

- Between motor case and motor/sensor winding AC1.5 kV (AC1.0 kV) 50 Hz
- Between motor case and electromagnetic brake winding (electromagnetic brake type only) AC1.0
 kV 50 Hz
- * Numbers in parentheses are values for EZHC4/EZHP4.

A.3.3 Speed and Thrust Force

The relationship between cylinder speed and thrust force limit is shown in the diagram below:

Figure A-8 Correlation Diagram of Speed and Thrust Force (horizontal/vertical directions)





A.3.4 Push Current and Push Force

The relationships between push current during horizontal operation and push force at cylinder standstill are shown in the diagrams below:

- The accuracy of push force at standstill is not guaranteed.
- If the push force is smaller than the slide resistance of the load, a malfunction may occur when the rod is pushed against it.
- When the cylinder is used in a lift, an external force calculated by multiplying the weight of the
 carried object by the rate of gravitational acceleration is applied. Therefore, the cylinder push force
 must be set so as to accommodate this external force. Measure the push force using an actual
 load, and set an appropriate push current.

Figure A-9 Push Force at Standstill (EZHC4, EZHP4)

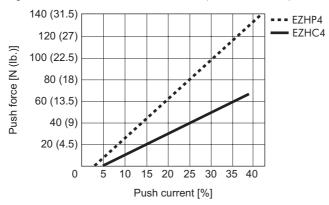
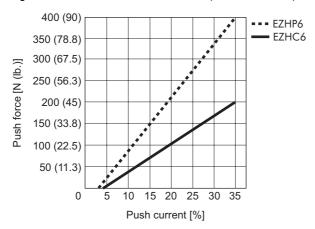


Figure A-10 Push Force at Standstill (EZHC6, EZHP6)



Optional Parts and Appendix B **Accessories**

B.1 Cable Set

These cables are used to extend the wiring length between the slider/cylinder and controller. Flexible cables offering excellent elasticity are also available.

A motor cable and an actuator communication cable are provided as a set. Each cable can be purchased individually.

Cable Set

Motor cable/actuator communication cable: Set of two cables

Model	Cable length [m (ft.)]
CC02EZ2	2 (6.6)
CC05EZ2	5 (16.4)
CC10EZ2	10 (32.8)

		lotor	

Model	Cable length [m (ft.)]
CC02EZ2-M	2 (6.6)
CC05EZ2-M	5 (16.4)
CC10EZ2-M	10 (32.8)

Individual Actuator Communication Cable

Model	Cable length [m (ft.)]
CC02EZ1-T	2 (6.6)
CC05EZ1-T	5 (16.4)
CC10EZ1-T	10 (32.8)

• Flexible Cable Set

Motor cable/actuator communication cable: Set of two cables

Cable length [m (ft.)]
2 (6.6)
5 (16.4)
10 (32.8)

Individual Motor Cable

Model	Cable length [m (ft.)]
CC02EZ2R-M	2 (6.6)
CC05EZ2R-M	5 (16.4)
CC10EZ2R-M	10 (32.8)

Individual Actuator Communication Cable

Model	Cable length [m (ft.)]
CC02EZ1R-T	2 (6.6)
CC05EZ1R-T	5 (16.4)
CC10EZ1R-T	10 (32.8)



B.2 Stainless Sheet

This sheet serves as a protective cover for the mechanical part of the slider.

EZHS3A-xx/EZHS3A-xxM Type

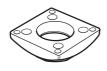
EZNOSA-XX/EZNOSA-XX/M Type		
Model	Stroke [mm (inch)]	
PAEZ3-05W	50 (1.97)	
PAEZ3-10W	100 (3.94)	
PAEZ3-15W	150 (5.91)	
PAEZ3-20W	200 (7.87)	
PAEZ3-25W	250 (9.84)	
PAEZ3-30W	300 (11.81)	
PAEZ3-40W	400 (15.75)	
PAEZ3-50W	500 (19.69)	

	/==::0		_
F/HS4A	-xx/EZHS4	IA-xxM	Lyne

	31
Model	Stroke [mm (inch)]
PAEZ4-05W	50 (1.97)
PAEZ4-10W	100 (3.94)
PAEZ4-15W	150 (5.91)
PAEZ4-20W	200 (7.87)
PAEZ4-25W	250 (9.84)
PAEZ4-30W	300 (11.81)
PAEZ4-40W	400 (15.75)
PAEZ4-50W	500 (19.69)

EZHS6A(C)-xx/EZHS6A(C)-xxM Type Model Stroke [mm (inch)] PAEZ6-10W 100 (3.94) PAEZ6-15W 150 (5.91) PAEZ6-20W 200 (7.87) PAEZ6-25W 250 (9.84) 300 (11.81) PAEZ6-30W PAEZ6-40W 400 (15.75) PAEZ6-50W 500 (19.69)

B.3 Cylinder Flange



Each flange comes with hexagonal socket-head screws (four pieces).

EZHC4A-xx/EZHC4A-xxM Type EZHP4A-xx/EZHP4A-xxM Type

Model

PAEZ4-F

EZHC6A(C)-xx/EZHC6A(C)-xxM Type EZHP6A(C)-xx/EZHP6A(C)-xxM Type

Model
PAEZ6-F

B.4 Sensor Set

These sensors are used to detect the position of the slider table.

They can be used when the controller is operated in the controller mode or driver mode.

Set of three sensors

Model
PAEZ-S

• Please contact your nearest ORIENTAL MOTOR office for further information.

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