INSTRUCTION MANUAL

ECO ELECTRIC STOPPER

EST32
EST50
EST80

RoHS

Hirata
The Global Production Engineering Company

CAUTION

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Instruction Manual [ORIGINAL]

EST32/ EST50/ EST80

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When contacting us, please provide the model and serial number identified on the nameplate.

Preface

Thank you for choosing Eco Electric Stop.

This instruction manual describes safety precautions in handling Eco Electric Stop. Inappropriate use or treatment may lead to not only reduction in the functionality but also accidental failure or shortening of product lifetime. Be sure to read the instruction manual carefully for thorough understanding of Eco Electric Stop before use. The instruction manual is recommended to be kept within reach of a user.

Transfer of Eco Electric Stop to a third party should be accompanied by this instruction manual.

The following symbols are provided to prevent potential impacts on health and properties. The symbols and their definitions are as follows.

Symbol	Definition
DANGER	Indicates an imminent hazard which could result in death or serious injury.
WARNING	Indicates a hazard which could result in death or serious injury.
CAUTION	Indicates a hazard which could result in injury or damage of properties.

NOTE	Indicates supplementary information, key procedures, key tips, and operational information.

Critical Safety Precautions

WARNING The compatibility of Eco Electric Stop (“Product”) to particular equipment must be determined by the equipment designer or the person responsible for deciding the specifications of the equipment.

- When configuring the system, ensure to review all specifications of Product by referring to its latest catalog information, with sufficient consideration to any possible machine failure.

WARNING Product must be handled by those with adequate machine knowledge and skills.

- Assembly and/or maintenance of Product must be performed by those with adequate machine knowledge and skills.

WARNING Confirm the safety first before servicing and/or removing Product.

- When inspecting/servicing/removing Product, confirm all due safety measures (such as power cutoff and fall prevention) have been taken.
- Restarting the product may cause unexpected machine movement and/or malfunction. Take necessary safety measures.
- When installing/inspecting/servicing/removing Product, pay attention not to damage Product, cable connectors, and peripheral components.

WARNING This equipment is intended for use in an industrial environment.

Chapter 1 Overview

The Eco Electric Stop is designed to stop a workpiece on the conveyor. The stopper moves up and down by turning ON and OFF the 24VDC power and stops the workpiece at the Eco Electric Stop.

1.1 Model

EST32 - 1 C M

<BODY SIZE>
EST32
EST50
EST80

<MECHANICAL STOP>
(OPTIONAL)
NO CHARACTER: NOT MOUNTED
M: MOUNTED
*FOR DETAILS, REFER TO PAGE 3-2.

<UPPER LIMIT SENSOR>
(OPTIONAL)
NO CHARACTER: NOT MOUNTED
1 : MANUFACTURED BY OMRON
TYPE: E2E-X2D1-M1J0.3M
2 : MANUFACTURED BY EFECTOR
TYPE: IE5351
3 : MANUFACTURED BY OMRON
TYPE: E2E-X2D1-M1GJ0.3M *IEC-compliant pin array product.

<PROTECTIVE COVER FOR SENSOR>
(OPTIONAL)
NO CHARACTER: NOT MOUNTED
C: MOUNTED

NOTE
- The mechanical stop can be mounted only when ordered.
- The model number may vary depending on sales agents.
- For details of the model number, refer to Appendix B Model Comparison Table.

1.2 Configuration

The configuration of Eco Electric Stop is shown in Figure 1.1.

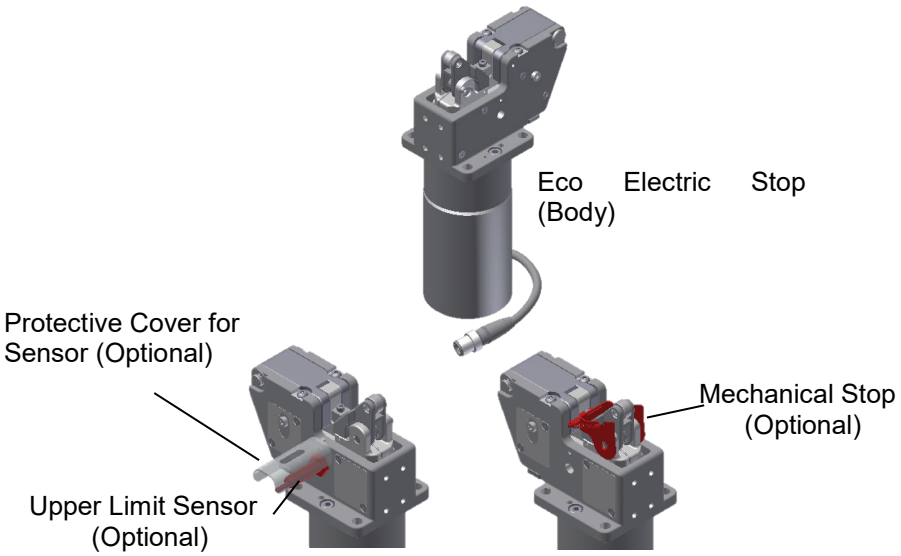


Fig. 1.1 Eco Electric Stop Configuration (The figure shows EST32.)

1.3 Specs

Table 1.1 Specification list

Model	EST32	EST50	EST80
Actuating force	Descending: Solenoid electromagnetic power, Ascending : Spring force		
Voltage Rating	24VDC ± 10%*		
Power Consumption	7 W	22 W	
Standby Power	0 W		
Time required for descending	0.2 sec		
Product Weight	2.9 kg	8.5 kg	8.7 kg
Allowable Transfer Weight	70 kg	280 kg	530 kg
Allowable Transfer Thrust	7.0 kgf	26.5 kgf	
Controller	Not required		
Connector Spec	M12 Connector (plug) with four pins (No. 1: N/A, No. 2: N/A, No. 3: 0 V, and No. 4: 24 V)		
Mounting Orientation	Vertical orientation with right side up. (The figure shows EST32.)  		
Component Lifetime	Shock absorber (perishable part): 1 million movements (typical)		
Operating Temperature Range	0 °C to 40 °C (no freezing)		
Operating Humidity Range	Max. 85% (no condensation)		
Noise level	70 dB or less		

* When Eco Electric Stop connected with the electrical circuit is to comply with EC Directives, use the PELV (Protected Extra Low Voltage) electrical circuit. (Refer to IEC60204-1 and IEC60364-4-41.)

● **Allowable Transfer Thrust**

Eco Electric Stop can be used with the allowable transfer thrusts in Table 1.2 or lower.

The transfer thrust of a workpiece transferred on the conveyor is calculated using the following formula.

Conveyance thrust F [kgf] $= \mu \times m$

(μ : Friction coefficient between the conveyor and workpiece, m : Transfer Weight)

Table 1.2 Allowable Transfer Thrust

Model	Allowable Transfer Thrust
EST32	7.0 kgf
EST50 and 80	26.5 kgf

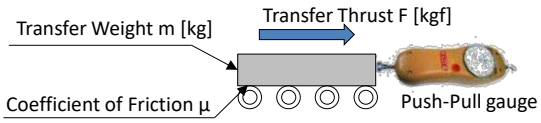


Figure 1.2 Method to measure transfer thrust and coefficient of friction

DANGER

When selecting a model, ensure that the transfer thrust is below the allowable value of the model of your choice.

●**Operating Range (Reference: μ = 0.05)**

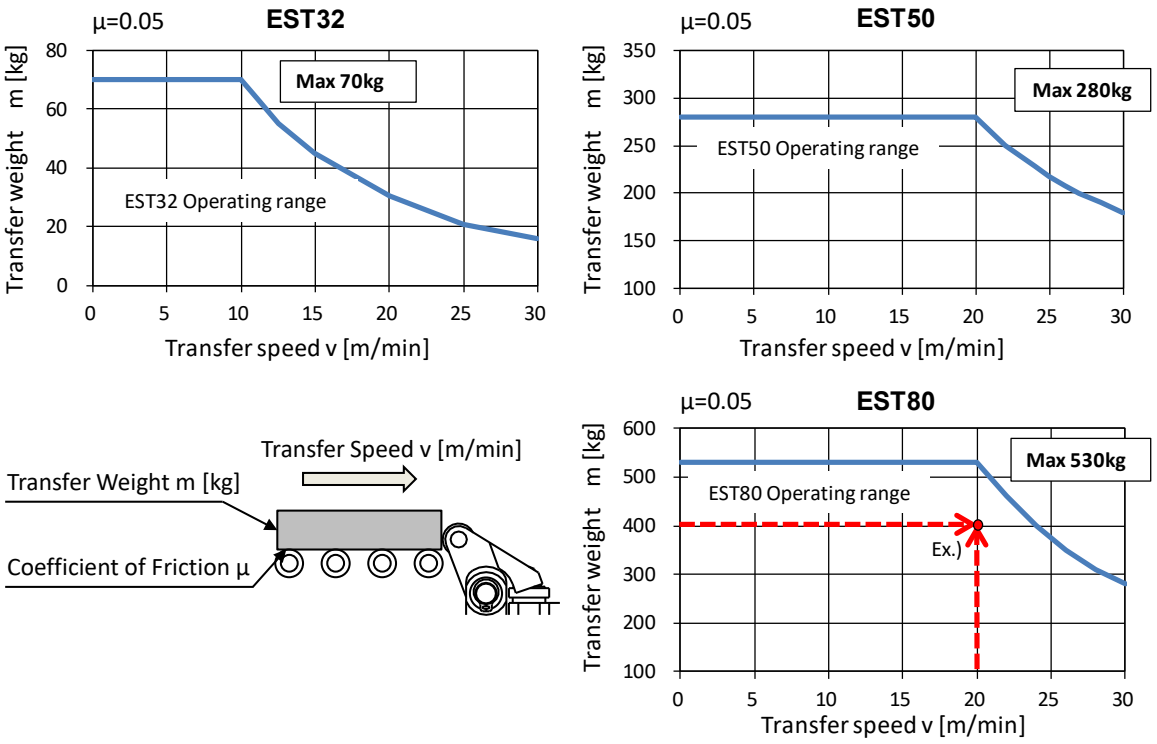


Figure 1.3 Operating Range

CAUTION

- To stop a workpiece transferred on the conveyor, be sure to use Eco Electric Stop within the operating range in Fig 1.3. After the workpiece is stopped, keep the load applied to Eco Electric Stop to less than the allowable transfer thrust (see Table 1.2 Allowable Transfer Thrust).

1.4 Dimensional Outline Drawing

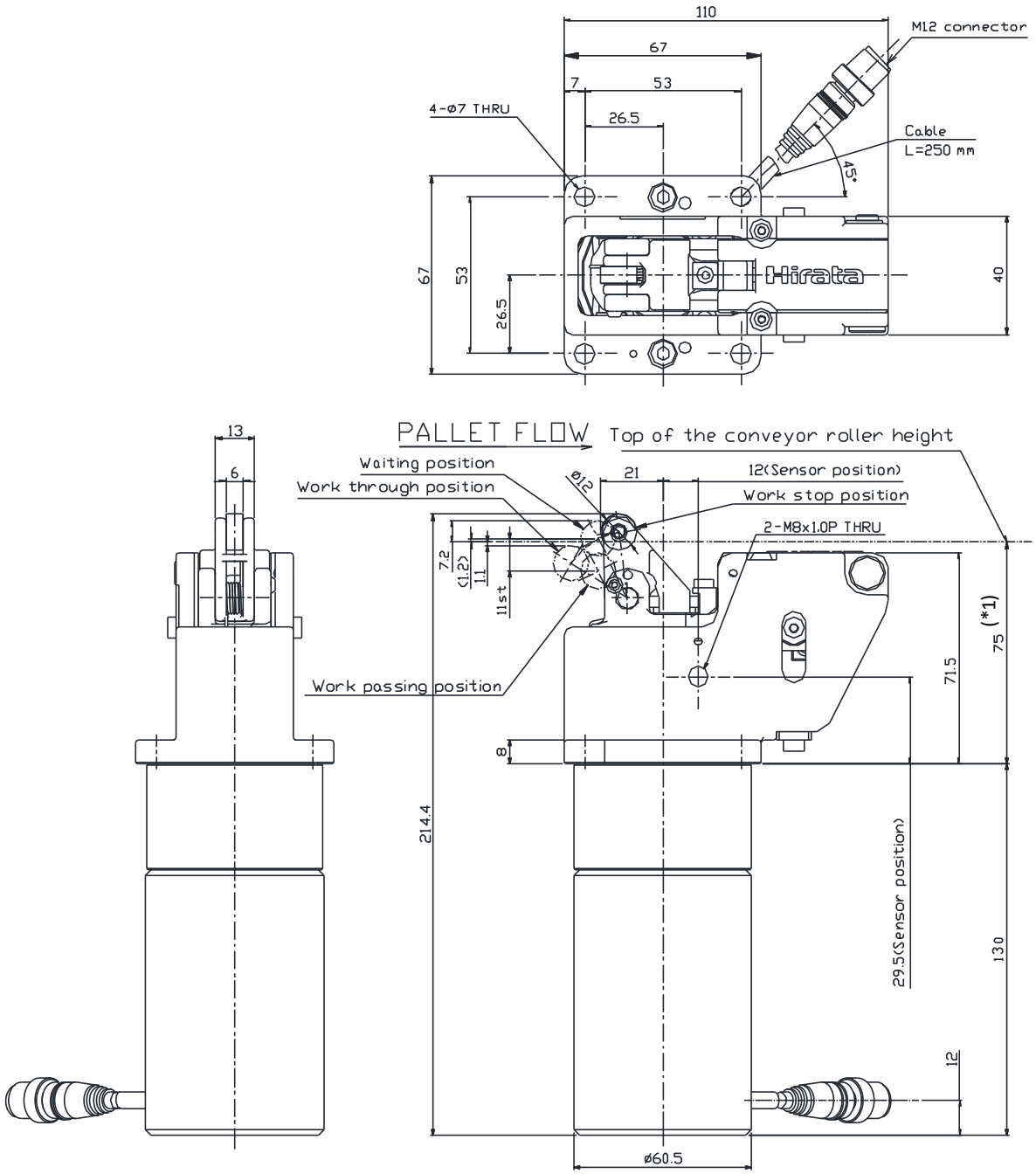
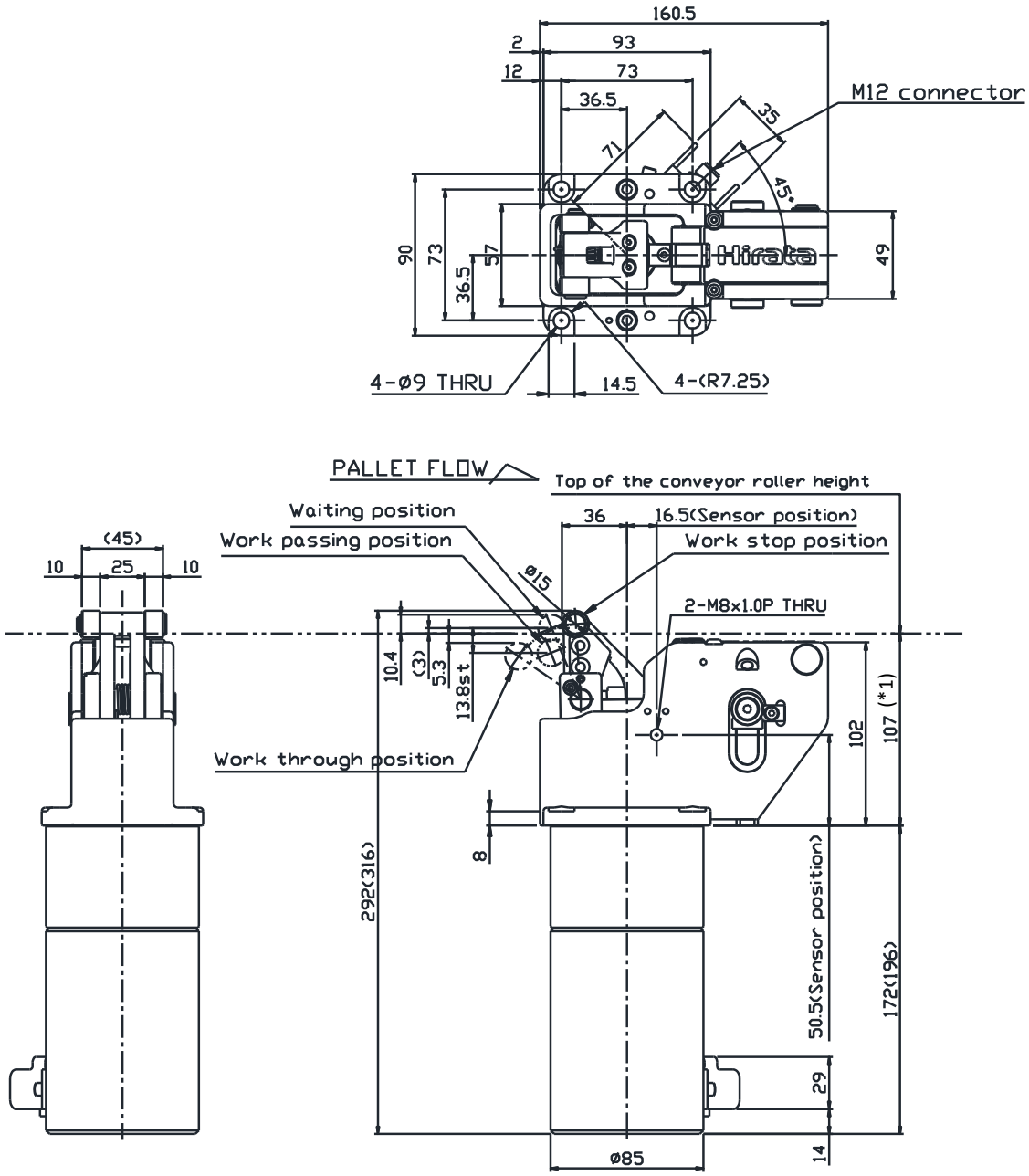


Fig. 1.4 Dimensional Outline Drawing (EST32)

(*1) Refer to the caution for Eco Electric Stop conveyance level (Page 1-5).



EST50

Figures in parentheses are EST80 dimensions.

Fig. 1.5 Dimensional Outline Drawing (EST50 and 80)

CAUTION

(*1) When a workpiece or pallet has a recess or protrusion which comes in contact with the stop lever, adjust the Eco Electric Stop conveyance level to the lower most surface of the part or the pallet (EST32 and 80). After the installation, confirm that the workpiece or pallet is transferred properly to avoid potential accident.

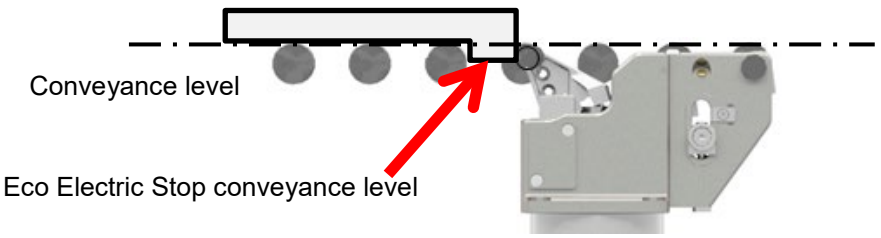


Fig. 1.6 Caution for Eco Electric Stop Conveyance Level

1.5 Labels

Be sure to fully understand the purpose of the labels in Table 1.3 and follow the label instructions as required.

Table 1.3 Label List

1	MODEL EST80 SER.NO xxxxxx SOURCE DC24V 22W ECO ELECTRIC STOPPER – EST80 Input: 24 Vdc 22W, Class2 Max Load 530 kg [20.0 m/min] E481677 Hirata Corporation japan 4-5 Iwano Ueki Kita Kumamoto JP 20XX.XX	<Body nameplate> Basic information on Eco Electric Stop is indicated.
2	STOPPER SOLENOID MODEL THDC85SD SER.NO 000000 DATE 20XX / XX Hirata	<Solenoid nameplate> Basic information on the solenoid is indicated.

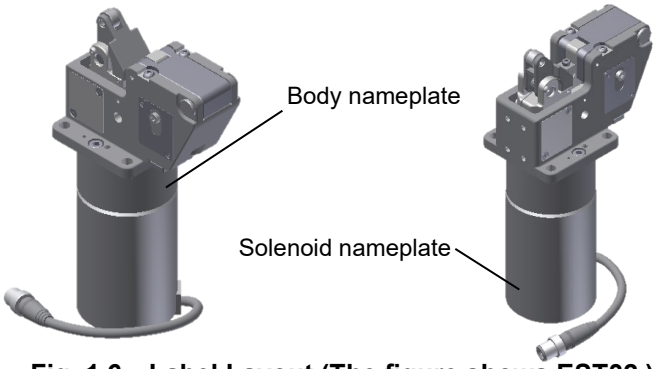


Fig. 1.6 Label Layout (The figure shows EST32.)

CAUTION

- Please contact the retailer if these labels are lost.

1.6 Compliance to Legislations and Regulations

Eco Electric Stop complies with the following international/regional regulations and standards.

Legislations and Regulations	
EC Directives*1 (CE Marking)	Machinery Directive
	EMC Directive
	RoHS Directive
UL/CSA Standards*2	Recognized E481677

Table 1.4 List of Legislative/Regulative Conformance

*1. Hirata has signed the EC Directives. When your final product equipped with Eco Electric Stop is shipped to or used within European Union, make sure the conformity of your product to the EC Directives yourself.

*2. Eco Electric Stop complies with UL and CSA Standards on the assumption that Class 2 power supply is used. When conforming your final product equipped with Eco Electric Stop to the UL and CSA standards, use Class 2 power supply.

Chapter 2 Introduction

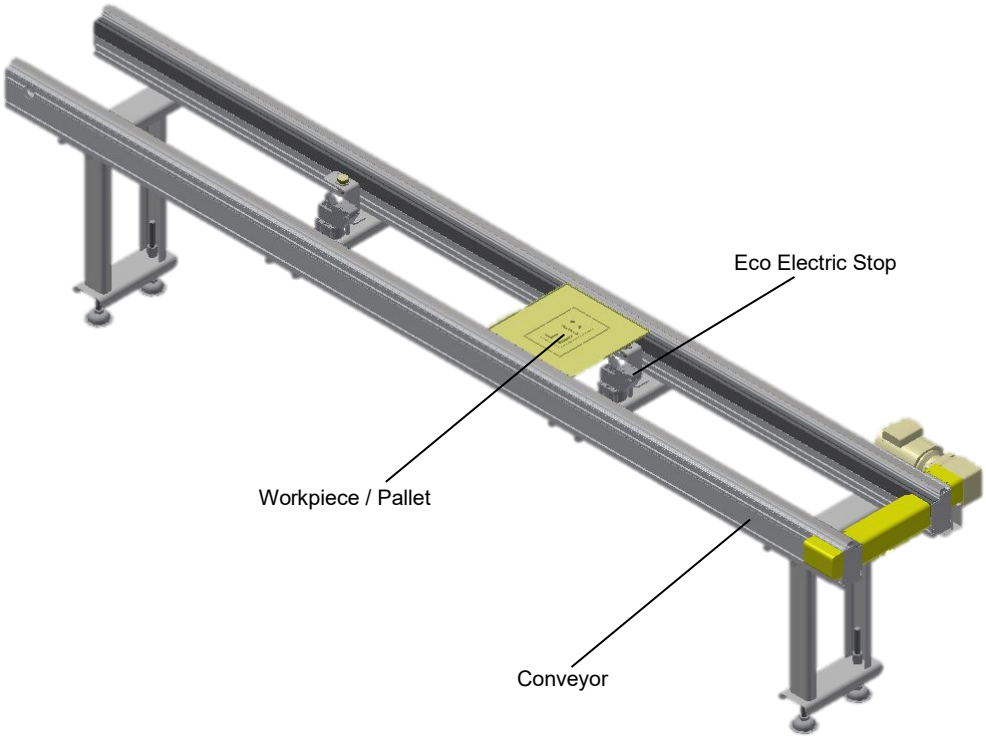


Fig. 2.1 Typical Eco Electric Stop Layout

2.1 Safety Precautions

CAUTION

To ensure the product safety, follow the instructions below.

- Never modify Eco Electric Stop.
- Never forcibly operate Eco Electric Stop or overload beyond the allowable transfer weight.

2.2 Packing and Transportation

CAUTION During transportation of Eco Electric Stop in a packed state, follow the instructions below and handle with care to prevent collision and fall.

- Do not step on the packing box.
- Do not put an object with heavy/concentrated weight on the packing box: it may deform the packaging.

Fig 2.2 Packaging (External Appearance)

Fig. 2.3 Unpacking

●Transfer and Storing Environment

- For transferring and storing, follow the instructions in 2.4 Precaution in Installation, Required Installation Environment. For long-term storage, take anti-condensation measures.
- Store Eco Electric Stop in an upward orientation. When storing Eco Electric Stop in a packed state, follow the orientation mark “This Way Up” on the packing box.

2.3 Precautions Before Use

CAUTION

- Before powering ON, make sure that all the cables are correctly connected.
- Be sure to follow the instruction manual strictly to prevent incorrect operation. Never treat Eco Electric Stop in a way other than described in the instruction manual.
- Before activating, make sure that no person or object (such as fixtures and tools) comes in contact with the drive of Eco Electric Stop.

2.4 Precautions in Installation

DANGER

- To ensure the correct installation, follow the instructions in Required Installation Environment and Installation of the Main Eco Electric Stop. Incorrect installation may result in a machine failure, malfunction, or injury.

●Required Installation Environment

- Ambient Temperature: 0 to 40 °C / Humidity: 0 to 85%, with no condensation
- No dust or oil smoke
- Avoid splash of water, cutting fluid, or dusts.
- No inflammable or corrosive gas
- Avoid excessive vibration.
- No electrical noise input
- Easy access for inspection and disassembly

●Installation of the Eco Electric Stop Body

Follow the installation instructions below.

- Install Eco Electric Stop on a flat base.
- Use the following size of (4) hexagon socket head cap screws or (4) hexagon head bolts depending on the model.
  (EST32)
  M6 (tensile strength of 10.9 and tightening torque of 13.61 N·m) × 20L or longer
  (EST50 and 80)
  M8 (tensile strength of 10.9 and tightening torque of 33.05 N·m) × 25L or longer
- Locate the contact face between Eco Electric Stop and a workpiece parallel to the roller shaft of the lever. Tilted workpiece, if collides against the roller shaft, may result in breaking Eco Electric Stop.
- Mount Eco Electric Stop or a positioning device at a position where a workpiece is located at approx. 1 mm in front of the Position to Stop Workpiece as shown in Fig.2.4. Lateral load after the workpiece is stopped as shown in Fig. 2.5 may cause breakage of Eco Electric Stop.

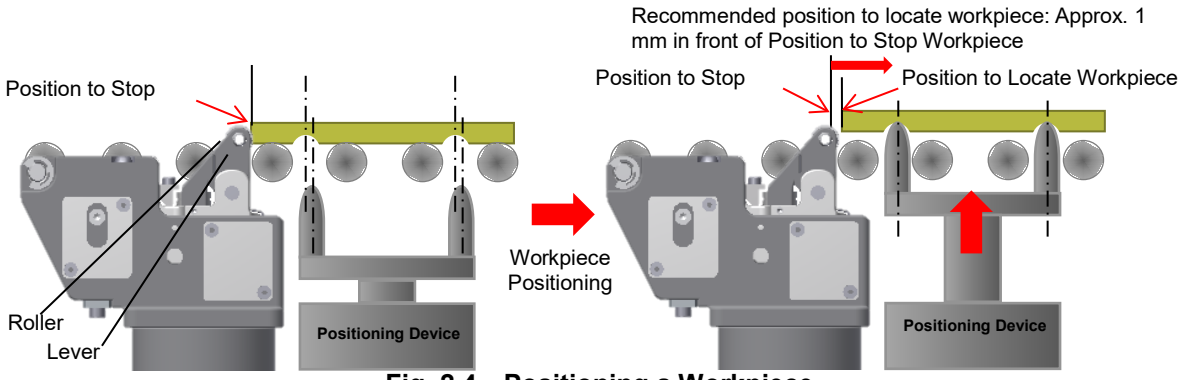


Fig. 2.4 Positioning a Workpiece

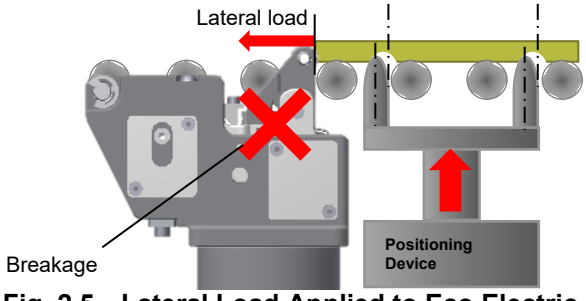


Fig. 2.5 Lateral Load Applied to Eco Electric Stop

2.5 Installation Procedure

2.5.1 Installation of Eco Electric Stop Body

- During unpacking and installation, pay due attention not to drop Eco Electric Stop. Be sure to wear safety PPE (safety shoes, gloves, and cap).

CAUTION When installing/inspecting/servicing/removing Product, pay attention not to damage Product, cable connectors, or peripheral components.

- Install Eco Electric Stop to the flat mounting base.
- Use the following size of (4) hexagon socket head cap screws or (4) hexagon head bolts depending on the model.
  (EST32)
  M6 (tensile strength of 10.9 and tightening torque of 13.61 N·m) × 20L or longer
  (EST50 and 80)
  M8 (tensile strength of 10.9 and tightening torque of 33.05 N·m) ×25L or longer

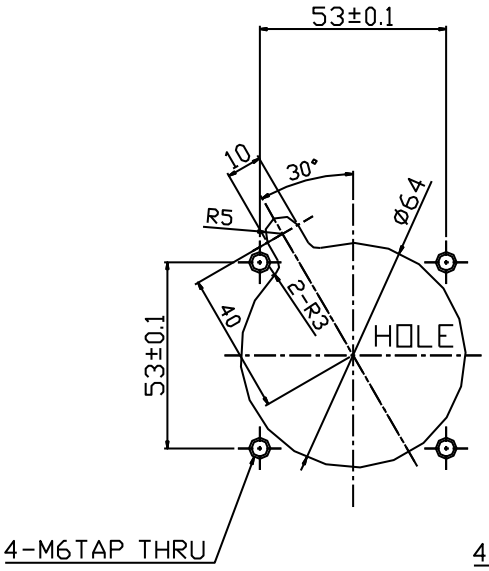


Fig. 2.6 Mounting Hole Dimensions (EST32)

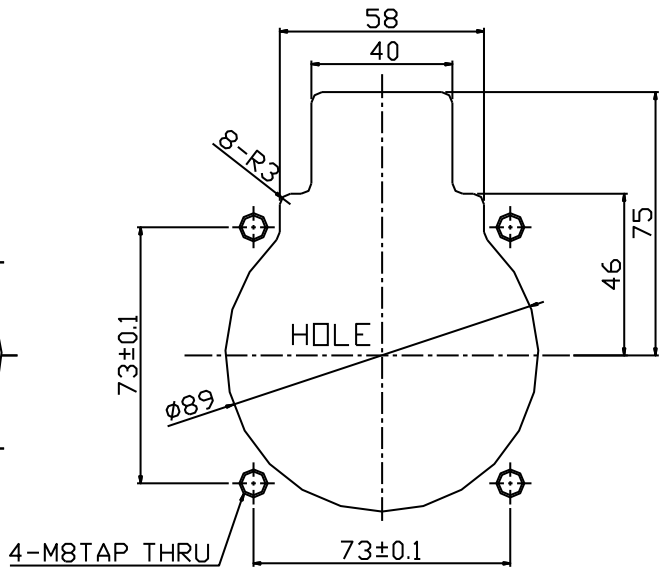


Fig. 2.7 Mounting Hole Dimensions (EST50 and 80)

NOTE Referring to the Dimensions in Figs. 2.6 and 2.7, prepare mounting holes on the mounting base.

2.5.2 Adjustment of Shock Absorber Reaction

DANGER

- For softer stop of a transferred workpiece, adjust the reaction of the shock absorber as applicable. Incorrect adjustment can trigger accidents such as fall of a workpiece, which may cause injury and/or machine damage.

● Adjustment of the Shock Absorber Reaction (EST32)

1. Loosen (2) M4 set screws that secure the shock absorber and tilt the lever 90°. Rotate the body of the shock absorber to adjust the shock absorber tip height to the optimal absorption position.
2. Be sure to firmly tighten the set screws to secure the shock absorber.

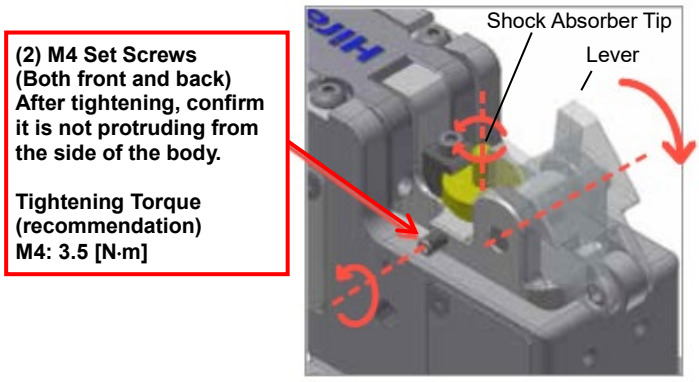


Fig. 2.8 Shock Absorber Adjustment (EST32)

● Adjustment of the Shock Absorber Reaction (EST50 and 80)

1. Loosen the block-securing M4 bolt that secures the shock absorber and tilt the lever 90°. Rotate the dial of the shock absorber in Fig. 2.10 to adjust it to the optimal absorption position. (Default dial setting: MID)
2. Be sure to firmly tighten the block-securing bolt and fix the dial of the shock absorber.

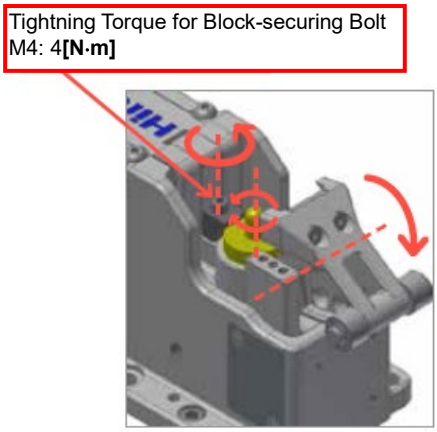


Fig. 2.10 Shock Absorber Adjustment (EST50 and 80)

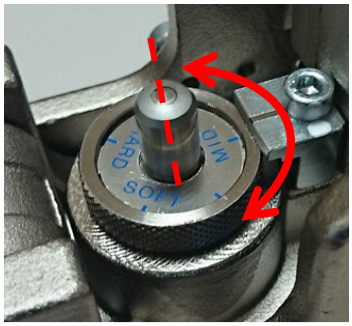


Fig. 2.9 Dial for Adjusting Shock Absorber Reaction (EST50 and 80)

CAUTION

- Confirm that the set screw is not protruding from the side of Eco Electric Stop. (EST32 only)
- Pay attention not to pinch finger(s) between the shock absorber and the lever during the shock absorber reaction adjustment.
- Before starting work, be sure to disable the Eco Electric Stop.

2.6 Electric Connection

The power is supplied to the M12 connector on the Eco Electric Stop Body. Ensure to provide cables that meet the power specification of the Stop and connect properly.

●Power supply M12 Connector Layout

Fig. 2.11 M12 Connector Layout (EST32)

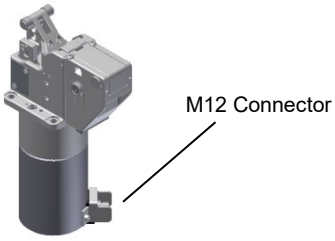


Fig. 2.12 M12 Connector Layout (EST50 and 80)

⚠ 注意

- For EST50 and 80, the connectors are directly connected to the Eco Electric Stop (Fig. 2.12). Pay attention not to apply excessive force to them.

●Power Supply (typical)

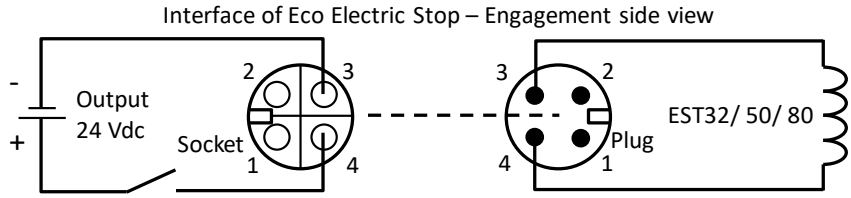


Fig. 2.13 Power Supply (typical)

●M12 Connector Pin Assignment

Table 2.1 M12 Connector Pinout (on Eco Electric Stop)

Pin #	Name	Function
1	–	NC
2	–	
3	0 V	Power Source
4	24 VDC	

●Power Supply Method

Table 2.2 Power Supply Selection

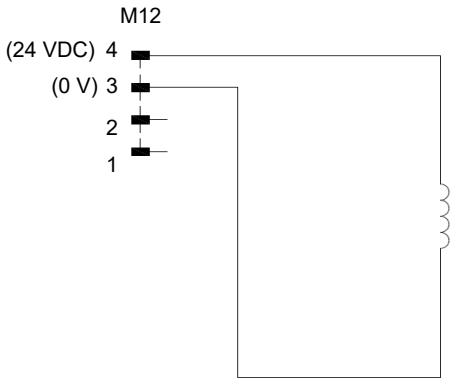
Power Supply System	EST32, EST50, EST80	Recommended item
Transistor output (PLC output card, I/O system)	Maximum voltage: 26V or more Maximum Current: 2A or more *1	Power supplies with - Varistor type, or - Surge suppressor circuit of Diode and Zener diode type.
Non-contact Relay (Solid state relay, MOS FET relay)	Maximum Voltage: 40V or more Maximum Current: 3A or more *1	- G3HD-X03S(OMRON) - G3FD-X03SN(OMRON) or equivalent product
Contact Relay (Mechanical relay)	Unavailable *2	-

*1. Be sure to select the capacity at least twice the size of the rated ampere to address the surge generated by the internal solenoids.

*2. Cannot be used potential contact melting caused by the surge from the internal solenoids.

*3. Refer to “List of recommended electrical contacts” provided at the end of the booklet.(ANNEX1)

● Internal Circuit Diagram of Eco Electric Stop



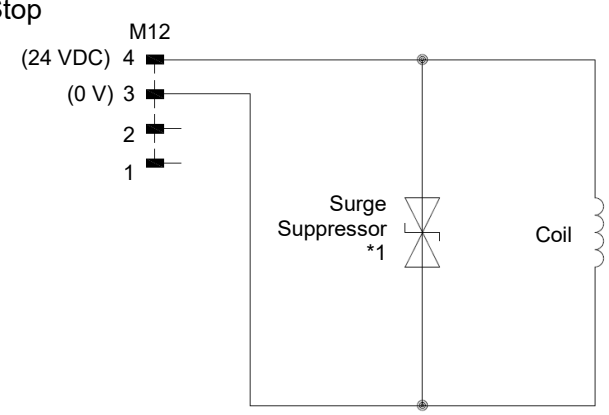


Fig. 2.14 Internal Circuit Diagram (EST32) **Fig. 2.15 Internal Circuit Diagram (EST50 and 80)**

*1 The surge suppressor is incorporated to protect the non-contact relay from a surge voltages. The surge voltage is up to 35V.

CAUTION

- Avoid kink, twist, and fold of the connector cable. An exposed connector or cable can cause electric shock.
- Be sure to connect with correct polarity (positive/negative). Connection with incorrect polarity may damage the product.
- Supply appropriate power in accordance with the power specification of Eco Electric Stop. Insufficient power supply may interrupt proper operation.
- When Eco Electric Stop connected to the electrical circuit is to comply with the EC Directives, use the PELV (Protected Extra Low Voltage) electrical circuit. (Refer to IEC60204-1 and IEC60364-4-41.)
- When your product equipped with Eco Electric Stop is to comply with UL/CSA Standards, use Class 2 power supply.

<Reference>

PELV circuits shall satisfy all of the following conditions:

1) The source for PELV shall be one of the following:
   a. a safety isolating transformer in accordance with IEC 61558-1 and IEC 61558-2-6;
   b. a source of current providing a degree of safety equivalent to that of the safety isolating transformer;
   c. an electrochemical source (for example a battery) or another source independent of a higher voltage circuit (for example a diesel-driven generator);
   d. an electronic power supply conforming to appropriate standards specifying measures to be taken to ensure that, even in the case of an internal fault, the voltage at the outgoing terminals cannot exceed the values specified in safety standards.
2) one side of the circuit or one point of the source of the supply of that circuit shall be connected to the protective bonding circuit;
3) live parts of PELV circuits shall be electrically separated from other live circuits;
4) conductors of each PELV circuit shall be physically separated from those of any other circuit;
5) plugs and socket-outlets for a PELV circuit shall conform to the following:
   i. plugs shall not be able to enter socket-outlets of other voltage systems;
   ii. socket-outlets shall not admit plugs of other voltage systems.

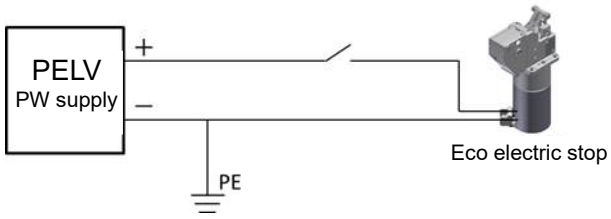


Fig. 2.16 Typical Example of PELV Circuit

2.7 Upper Limit Sensor (optional) Installation Procedure

●Upper Limit Sensor Installation Procedure

- As shown in Fig. 2.17, confirm that the indicator light of the upper limit sensor turns ON when the lever is pressed against the sensor and pressed away from the sensor as well.
- After ensuring no interventions between the lever and the sensor, secure the sensor with its accompanying nut.
- The upper limit sensor can be installed in both the right and left side of Eco Electric Stop. Select which sides to install in accordance with the operating condition.
- For EST 80, when changing the position of the upper limit sensor to the other side, change the position of the shock absorber retainer bracket as well. The shock absorber retainer bracket needs to be installed at the opposite side of the upper limit sensor (Fig.2.18).

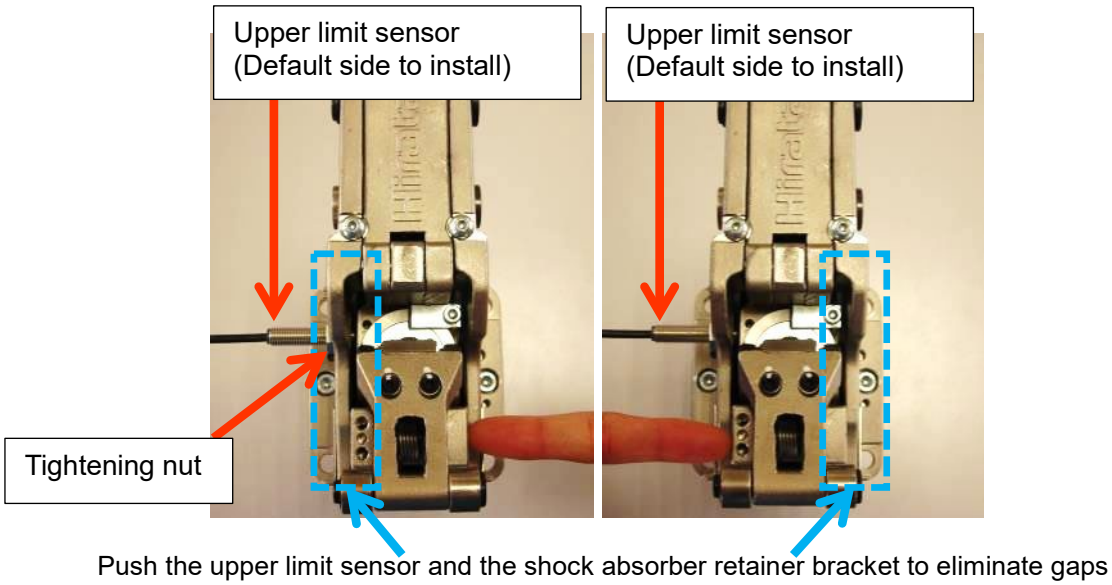


Fig. 2.17 Upper limit installation method (EST32, EST50 and EST80)

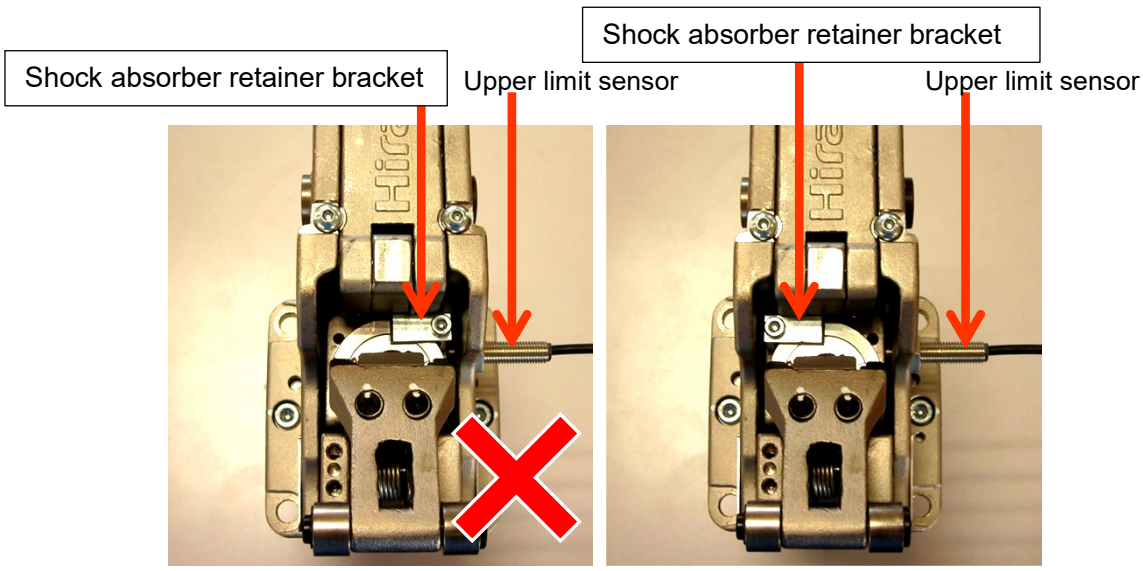


Fig. 2.18 Upper limit sensor installation (EST80 only)

Table 2.3 Upper Limit Sensor Tightening Torque

Manufacturer name	Model	Reference Tightening Torque
OMRON	E2E-X2D1-M1J 0.3M E2E-X2D1-M1GJ 0.3M	9 N*m or less
EFECTOR	IE5351	2.5 N*m or less

CAUTION

- Before starting work, be sure to turn OFF the power supply and disable Eco Electric Stop.

NOTE

- For specifications regarding electric connection of the sensor and the connector pinout, refer to the applicable instruction manual of each product.

Chapter 3 **Operation**

3.1 Operation Procedure

CAUTION In addition to the allowable transfer weight, Eco Electric Stop requires consideration of the conveyor speed.
A load beyond the allowable transfer weight may decrease the operational precision or damage components.

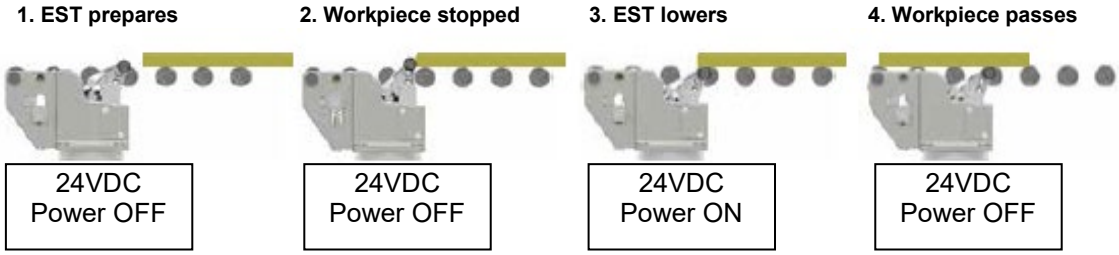


Fig. 3.1 Flow of Operation

CAUTION

- The lever moves up/down while the stop is in operation: pay sufficient attention not to let your finger(s) caught.
- Do not leave Eco Electric Stop lowered and energized. Uninterrupted energization will generate heat, which may result in burn injury.
- Do not collide the workpiece against the upright lever.
  If the subsequent incoming workpiece collides against the upright lever (after the shock absorber absorbs the impact force), all the collision energy will be applied to the Eco Electric Stop body, which may result in damaging the Eco Electric Stop.

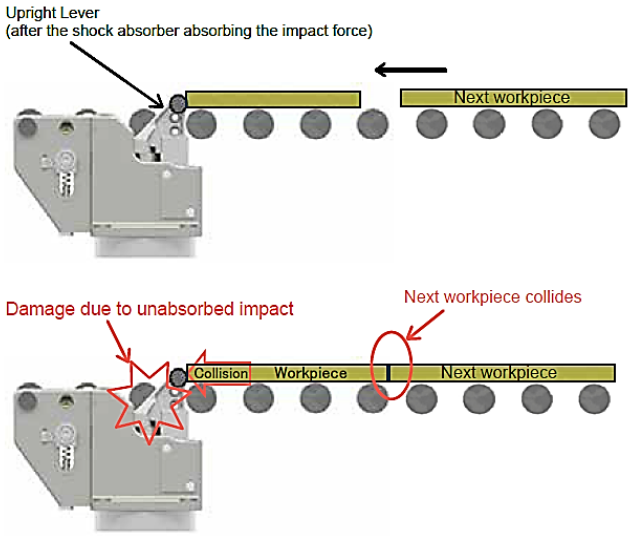


Fig. 3.2 Collision of Workpiece with the Upright Lever

3.2 Mechanical Stop (optional)

● Mechanical Stop Mechanism

Mechanical Stop is designed to hold the workpiece in place of the lever when the lever is retracted by the reaction of the shock absorber against the workpiece lifted for positioning.

● **Basic Flow of Operation**

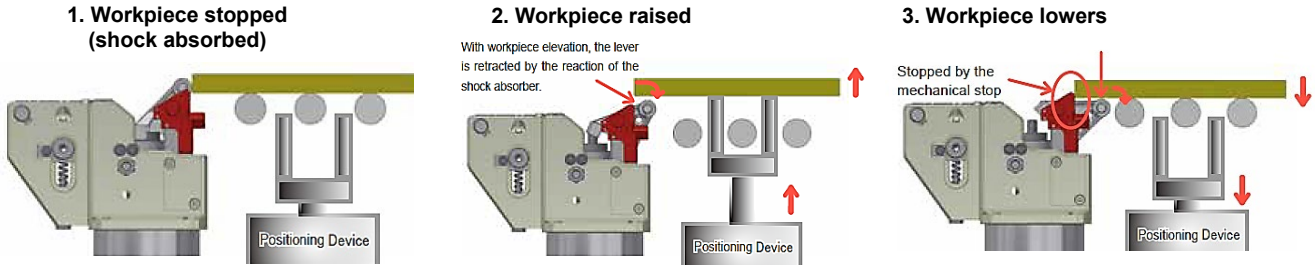


Fig. 3.3 Workpiece Stopped with the Mechanical Stop

● **Workpiece Backward Flow**

The workpiece can safely flow backward because the lever falls down.

The mechanical stop will not be damaged even if the workpiece flows backward.

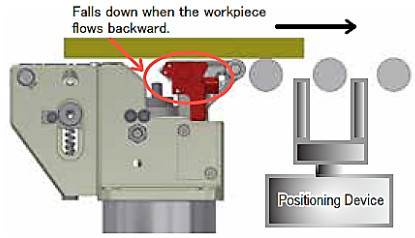


Fig. 3.4 Workpiece Backward Flow with Mechanical Stop

CAUTION When equipped with the Mechanical Stop, do not lift the stop lever while the workpiece passes above the Eco Electric Stop. Depending on the shape of the workpiece, the workpiece may be caught by the Mechanical Stop, which may lead to damage of the workpiece or Eco Electric Stop.

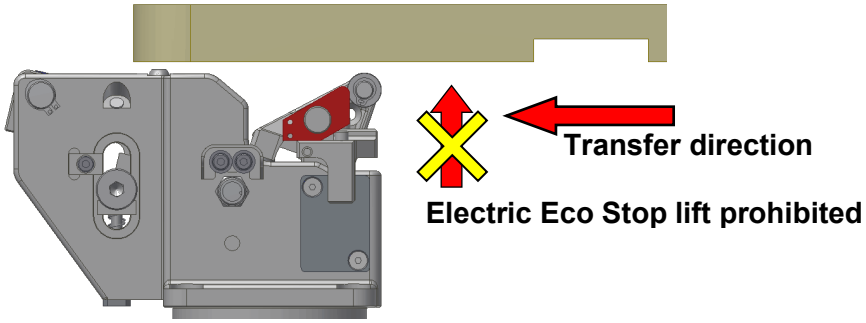


Fig. 3.5 Typical state of Eco Electric Stop with the Mechanical Stop when the workpiece passes above it

●**External Appearance**

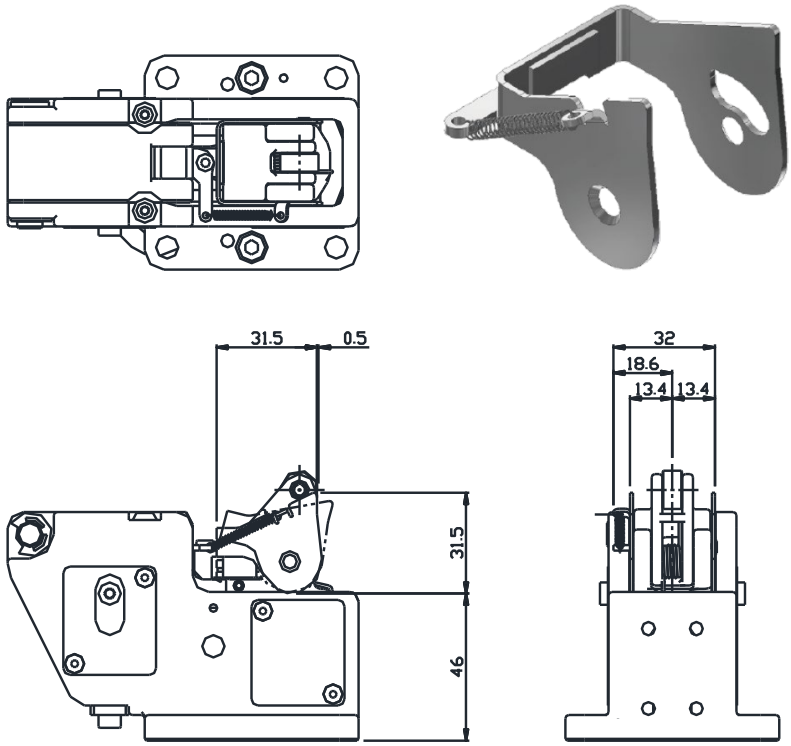


Fig. 3.6 Mechanical Stop (EST32)

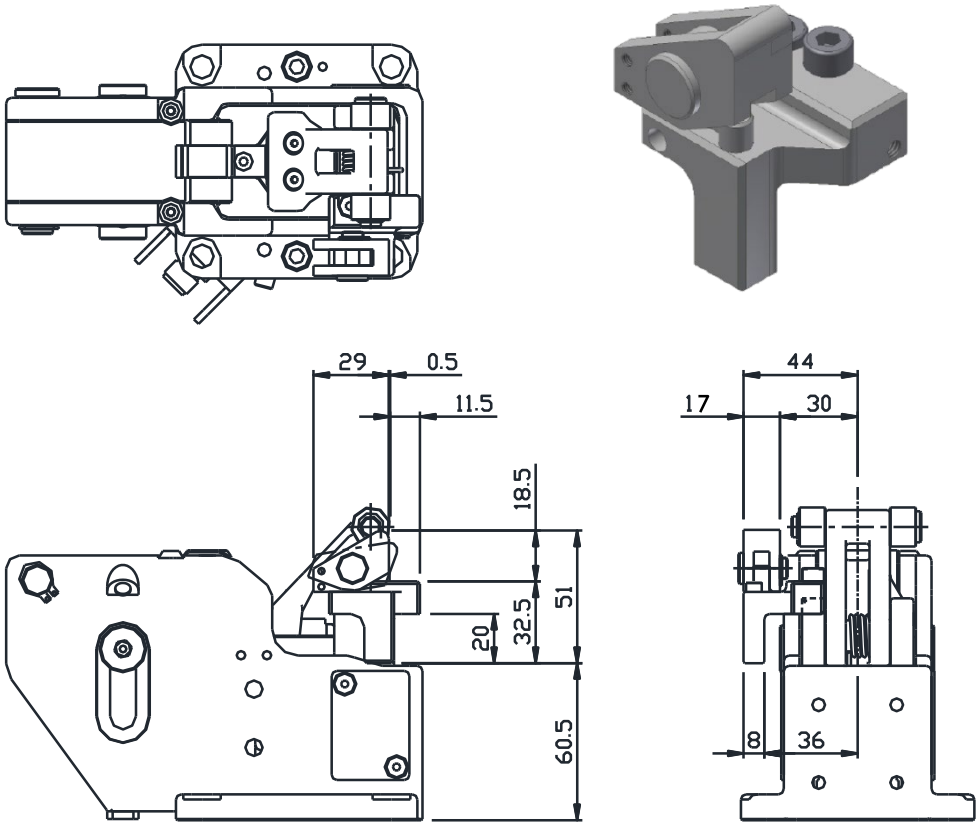


Fig. 3.7 Mechanical Stop (EST50 and 80)

3.3 Workpiece “Pass Through” Function

The stop function can be disabled to allow workpiece to “pass through” by the following two methods.

CAUTION

- After the stop function is disabled, be sure to restore the original state to activate the stop function again. While “Pass Through” function is enabled, ensure the safety of the surroundings.
- Before starting work, be sure to turn OFF the power supply and disable the Eco Electric Stop.

(1) Method to Manually Lower the Stop

The stop can be lowered without application of 24 VDC.

1. Lower the lock shaft.
2. With the lock shaft lowered, push down the stop body.
3. With the stop pushed down, tighten an M3 bolt (EST32) or an M4 bolt (EST50 and 80) to the specified positions.

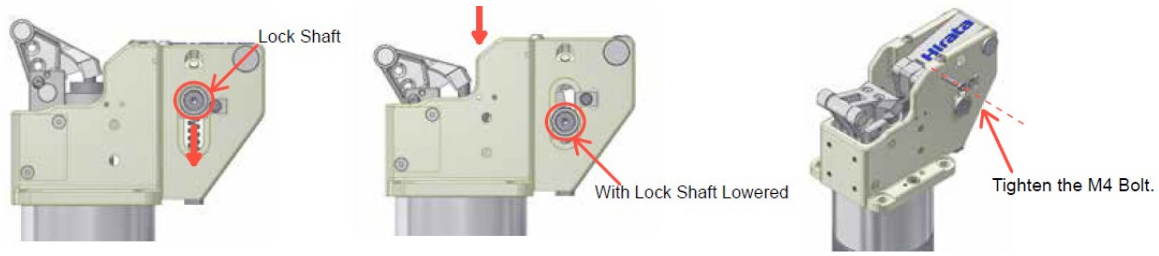


Fig. 3.8 Method to Manually Lower the Stop

(2) Method to Secure the Lever

Eco Electric Stop can be secured with the lever tilted.

1. Tilt the lever as shown in Fig. 3.9.
2. Align the hole on the lever support with the hole inside the lever and secure them with (1) M3 bolt (EST32) or (1) M4 bolt (EST50 and 80).

CAUTION

- While the lever is tilted, the Upper Limit Sensor (optional) cannot detect the stop correctly. Ensure the safety of the surroundings.

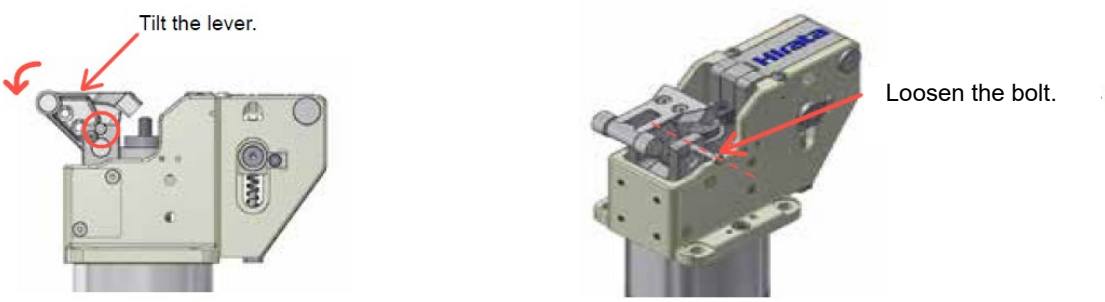


Fig. 3.9 Method to Secure the Lever

NOTE Prepare a bolt to be used for disabling the stop function.

Chapter 4 Maintenance and Inspection

WARNING

- Perform maintenance and inspection in accordance with the instruction manual while ensuring the safety of the surroundings.

4.1 Precautions in Maintenance and Inspection

CAUTION

- During adjustment of shock absorber reaction or the replacement of the shock absorber, pay attention not to pinch finger(s) between the shock absorber and the lever.
- Check that cables have no kink, twist, or fold. An exposed connector or cable can cause electric shock.
- Before the maintenance and inspection, be sure to shut down the main power supply.
- During inspection, post a clearly visible sign indicating “Under Inspection”.
- Pay attention not to contaminate Eco Electric Stop during replacement and reassembly of components.
- Be sure to use Hirata-specified replacement components: otherwise Eco Electric Stop may be damaged.
- Confirm the safety of the surroundings when re-supplying the power after the maintenance and inspection. Errors such as incorrect cable connection may result in unexpected move of Eco Electric Stop.

4.2 Daily Inspection

CAUTION

Be sure to check for any unusual noise, vibration, or heat generated before, during, and after use. Perform the following external visual inspection and cleaning.

- External visual inspection
  - Body: Check for any looseness of fasteners such as mounting bolts.
  - Cables: Check for any damage. Confirm the connector connections.
  - General: Check for misalignment or variation of the workpiece stop position.
- Cleaning
  - Clean the external surface as required.
  - Wipe clean with a soft cloth.
  - Do not use petroleum-based solvent because resin and paint surfaces will be damaged.
  - If Eco Electric Stop is substantially stained, wipe clean gently with a soft cloth soaked with neutral detergent or alcohol.

WARNING

- Shock absorber reaction will change with age. If the workpiece stop position is found misaligned or variable, adjust the shock absorber reaction. Incorrect adjustment can trigger accidents such as fall of a workpiece, which may cause injury and/or machine damage.

4.3 Periodic Inspection

CAUTION To keep the optimal performance of Eco Electric Stop, perform maintenance and inspection in accordance with the following requirement. Before starting work, be sure to turn OFF the power supply and disable the Eco Electric Stop.

Table 4.1 Maintenance and Inspection Item

Section to be inspected	Item	Cycle	Remark
Mounting sections	Tightening torque	6 months	M6 = 13.61 N·m (EST32) M8 = 33.05 N·m (EST50 and 80)

4.4 Replacement of Shock Absorber

●Replacement of Shock Absorber (EST32)

1. Loosen (2) M4 set screws securing the shock absorber and remove the M3 block-securing bolt and the block. Tilt the lever 90° and pull out the shock absorber while rotating it with fingers.
2. Insert a new shock absorber. Adjust the shock absorber reaction and secure the shock absorber with the set screws. Be sure to secure the block with the block-securing bolt.
3. Lubricate the tip of the shock absorber.
   (Recommended lubricant: Shell Alvania Grease S2)

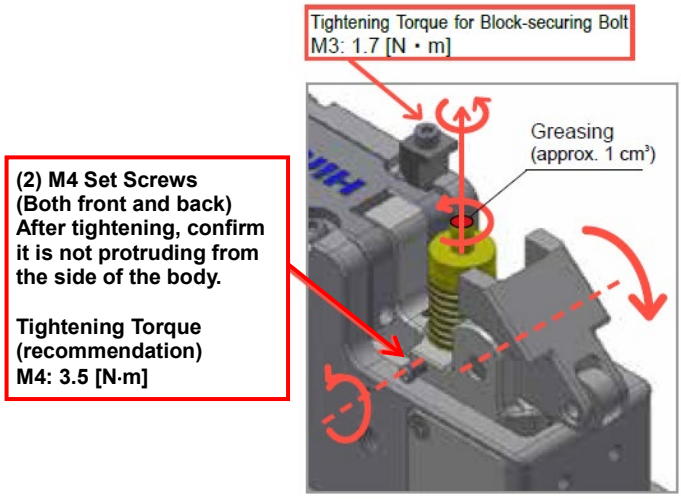


Fig. 4.1 Replacement of Shock Absorber (EST32)

●Replacement of shock absorber (EST50 and 80)

1. Remove the M4 block-securing bolt and block. Tilt the lever 90° and pull out the shock absorber.
2. Insert a new shock absorber as shown in Fig. 4.3. After replacement, adjust the shock absorber reaction and be sure to securely tighten the set screw and the block-securing bolt.
3. Lubricate the tip of the shock absorber.
   (Recommended lubricant: Shell Alvania Grease S2)

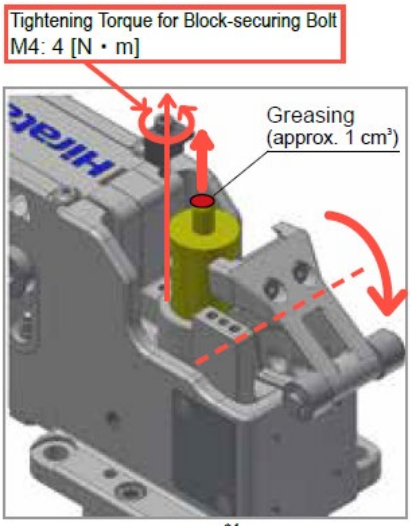


Fig. 4.2 Replacement of Shock Absorber (EST50 and 80)

Fig. 4.3 Shock Absorber Insertion Point (EST50 and 80)

WARNING

- For the handling of grease, refer to SDS.

CAUTION

- Confirm that the set screw is not protruding from the side of the stop (EST32 only).
- Do not turn Eco Electric Stop upside down with the set screw and block-securing bolt removed. Otherwise, the shock absorber may drop.

4.5 Spare Parts List

Table 4.2 Shock Absorber Model

Model	Manufacturer	Compatible Eco Electric Stop
HMSAB32	Hirata	EST32
HMSAB50	Hirata	EST50
HMSAB80	Hirata	EST80

Chapter 5 **Warranty**

5.1 Warranty

● Warranty Period

The warranty of Eco Electric Stop (“Product”) lasts for 1 year after Product is accepted.

Product may have specified durability or replacement parts.

● Limitation of Warranty

For any failure or damage reported within the above warranty period and attributable to HIRATA, a replacement product or necessary parts will be provided.

This warranty applies only to Product independently, and not to any other damage incurred due to the failure of Product.

5.2 Limitation of Liability

● Exemption of Warranty

Servicing for any of the following issues will be charged even before the expiration of the warranty period.

・Damage or failure resulting from misuse or unauthorized repair or modification.

・Damage resulting from inadvertent use or lack of proper training.

・Failure or damage resulting from fall or any mishandling during transfer after purchase.

・Failure attributable to insufficient implementation of the maintenance/inspections described in the operation manual.

・Aging irrelevant to functionality

・Discoloring of paint or plating

・Consumption of perishable items

・Malfunction or damage caused by natural disaster, fire, or any other external factors.

HIRATA shall not be held responsible for any accident causing injury, death or breakdown resulting from failure to observe the precautions listed as "WARNING", "CAUTION", or "NOTE" in the operation manual.

Annex

Annex 1 List of Recommended Electric contacts

The following products have been confirmed to be compatible with this product.

Power Supply Method	Manufacturer	Interface	Model
Transistor Output (PLC output card, IO system, etc)	Turck	Ethernet/IP 8DI/8DO	TBEN-LG-8DIP-8DOP
		Ethernet/IP Configurable 16DIO	TBEN-L1-16DXP
		Profinet 8DI/8DO	TBEN-LG-8DIP-8DOP
		Profinet Configurable 16DIO	TBEN-L1-16DXP
	Siemens	ET200pro 4DO	6ES7142-4BD00-0AA0
		ET200eco 8DI/8DO	6ES7143-3BH00-0XA0
	Balluff	Ethernet/IP Configurable 16DIO	BNI EIP-302-105-Z015
		Profinet Configurable 16DIO	BNI PNT-302-105-Z015
	Mitsubishi Electric	CC-Link IE 16DO	NZ2GF-12A2-16TE
Non-contact relay (Solid state relay, MOS FET relay)	OMRON	DC5～24V(INPUT) 1 contact	G3HD-X03SN DC5-24
		DC5～24V(INPUT) 1 contact	G3FD-X03SN DC5-24

(as of December, 2019)

NOTE

- Please refer to the product manuals issued by each company for individual specifications and precautions for each product.
- Products other than those listed on this list can be used. However, refer to the specifications in “2.6 Electric Connection” in this document when selecting.
- Please note that this list is subject to change without prior notice.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