



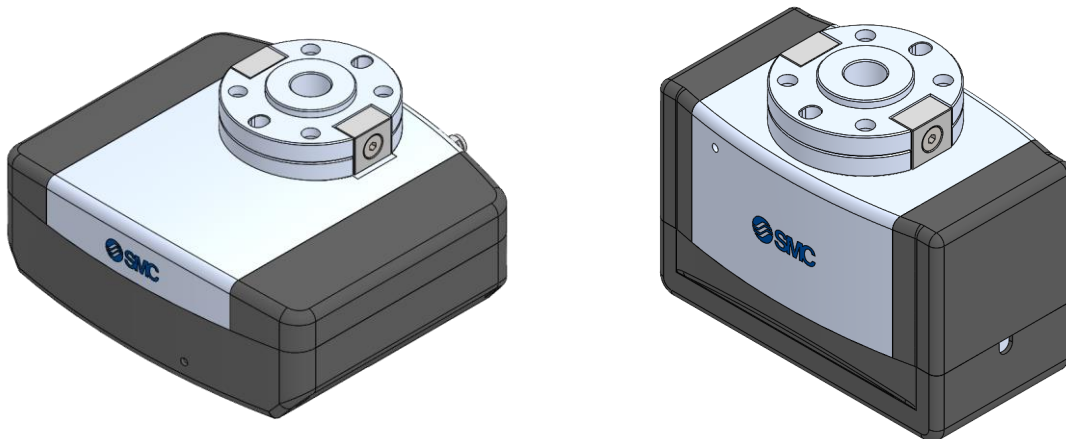
# Operation Manual

PRODUCT NAME

**Electric Gripper for Collaborative Robots**

MODEL / Series / Product Number

**LEHR Series**



**SMC Corporation**

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# Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\*), and other safety regulations.

\*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components  
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components  
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements  
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots  
etc.



**Danger**

**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



**Warning**

**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



**Caution**

**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



## Warning

**1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

**2. Only personnel with appropriate training should operate machinery and equipment.**

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

**3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

**4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.**

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.



# Safety Instructions



## Caution

**We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing business.  
Use in non-manufacturing business is not covered.**

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

## Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

### Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\*2)

Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.

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

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

**\*2) Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty

### Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

# 1. Precautions for product

## 1.1 Design

### Warning

- ① **Be sure to read the Operation Manual (this manual).**

Handling or usage/operation other than that specified in the Operation Manual may lead to breakage and product failure.  
Any damage attributed to the use beyond the specifications is not guaranteed.
- ② **There is a possibility of dangerous sudden action by the product if sliding parts of machinery are twisted due to external forces etc.**

In such cases, human injury may occur, such as by catching hands or feet in the machinery, or damage to the machinery itself may occur. Design the machinery should be designed to avoid such dangers.
- ③ **A protective cover is recommended to minimize the risk of personal injury.**

If a driven object and moving parts of the product are in close proximity, personal injury may occur. Design the system to avoid contact with the human body.
- ④ **Securely tighten all stationary parts and connected parts so that they will not become loose.**

**When the product operates with high frequency or is installed where there is a lot of vibration, ensure that all parts remain secure.**
- ⑤ **Consider a possible loss of power source.**

Take measures to prevent injury and equipment damage even in the case of a power source failure.
- ⑥ **Consider behavior of emergency stop of whole system.**

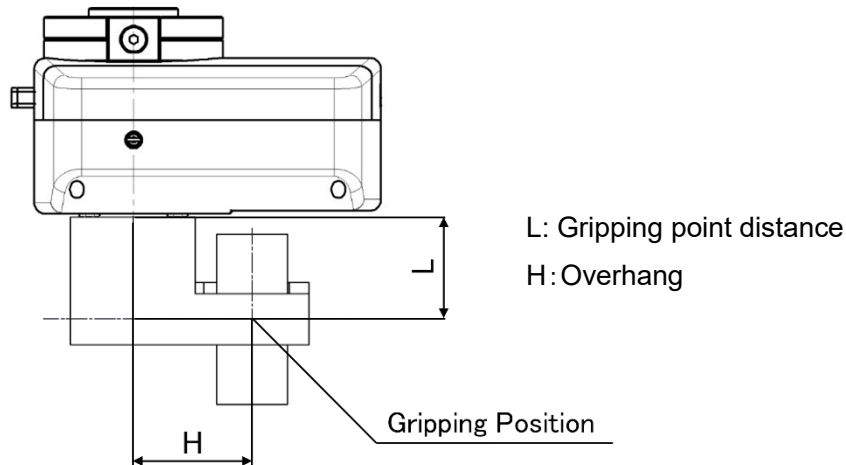
Design the system so that human injury and/or damage to machinery and equipment will not be caused, when it is stopped by a safety device for abnormal conditions such as a power outage or a manual emergency stop of whole system.
- ⑦ **Consider the action when operation is restarted after an emergency stop or abnormal stop of whole system.**

Design the system so that human injury or equipment damage will not occur upon restart of operation of whole system.
- ⑧ **Never disassemble or modify (including additional machining) the product.**

An injury to failure can result. It will cause the loss of the product performance.
- ⑨ **In order to prevent danger and damage due to the breakdown and the malfunction of this product, which may occur at a certain probability, a backup system should be established in advance by giving a multiple-layered structure or a fail-safe design to the equipment, etc.**
- ⑩ **Avoid designing a system that allows the driving part of an electric actuator to operate with a spring or other external force.**

⑪ **Keep the specified gripping point.**

If the specified gripping range is exceeded, excessive moment is applied to the sliding part of the finger, which may have an adverse affect on the life of the product.



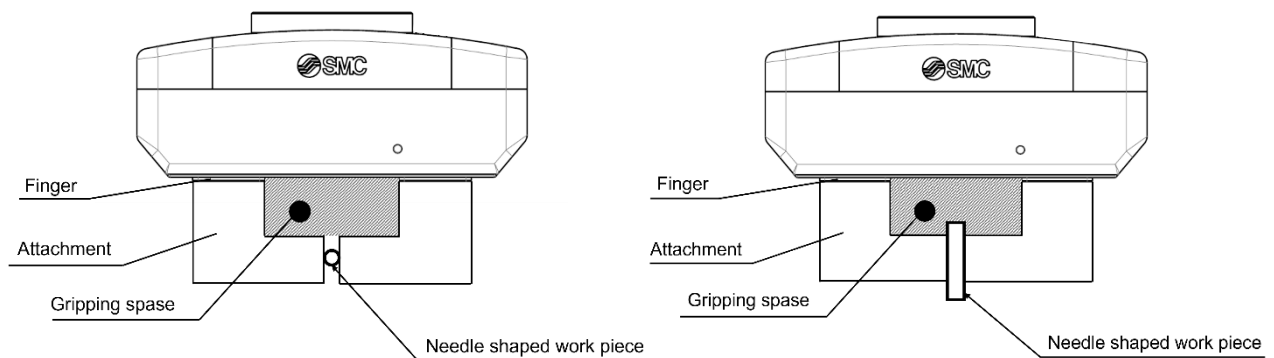
⑫ **Design the attachment to be lightweight and of minimum length.**

A long and heavy attachment will increase inertia force when the product is opened or closed, which causes play at the finger. Even if the gripping point of the attachment is within a specified range, design it to be short and lightweight as possible.

For a long or large work piece, select a model of a larger size or use two or more grippers together.

⑬ **Reserve a gripping space for attachment when a work piece is extremely thin.**

Without a gripping space, the product cannot perform stable gripping, and the displacement of a work piece or gripping failure can result.



⑭ **Use a gripping force with a margin with respect to the workpiece weight.**

The selection of inappropriate model can cause dropping of a work piece.

Gripping force should be from 5 to 10 times of the weight of the object to be conveyed.

The accuracy of the gripping force is  $\pm 20\%$  F.S.

⑮ **Do not use the product in such a way that excessive external force (including vibration) or impact force will be applied.**

It may lead to breakage or galling, which causes operation failure. Do not apply impact and vibration outside of the specifications.

⑩ **Select the model that allows for penning and closing width relative to a work piece.**

The selection of an inappropriate model will cause gripping at unexpected positions due to variable opening and closing width of the product and the diameter of a work piece the product can handle. It is necessary to make a larger stroke to overcome backlash created when the product will open after gripping.



**Caution**

① **Operate within the limits of the maximum usable stroke.**

The product will be damaged if it is used with a stroke which exceeds the maximum stroke. Refer to the specifications of the product.

② **When the product repeatedly cycles with partial strokes, operate it at a full stroke at least once a day or every 1000 strokes.**

Otherwise, lubrication can be lost.

③ **Do not use the product in applications where excessive external force or impact force is applied to it.**

The product can be damaged. The components, including the motor, are manufactured to precise tolerances. Even a slight deformation may cause a malfunction or seizure.

## 1.2 Mounting

### Warning

- ① **Install and operate the product only after reading the Operation Manual carefully and understanding its contents. Keep the manual in a safe place future reference.**
- ② **Observe the tightening torque for screws.**  
Tighten the screws to the recommended torque for mounting the product.
- ③ **Do not make any alterations to this product.**  
Alterations made to this product may lead to a loss of durability and damage to the product, which can lead to human injury and damage to other equipment and machinery.
- ④ **Do not use the product until you verify that the equipment can operate properly.**  
After mounting or repair, connect the power supply to the product and perform appropriate functional inspections to check it is mounted properly.
- ⑤ **When mounting the actuator or attaching to the work piece, do not apply strong impact or large moment.**  
If an external force over the allowable moment is applied, it may cause looseness in the guide unit, an increase in sliding resistance or other problems.
- ⑥ **Maintenance space**  
Allow sufficient space for maintenance and inspection.
- ⑦ **The electric actuator and its peripheral devices should be installed on a fire-proof material.**  
Direct installation on or near a flammable material may cause a fire.
- ⑧ **Do not install the product in a place subject to vibrations and impacts.**  
It will cause failure or malfunction.
- ⑨ **Consider the installation method so that the ambient temperature around the Electric Gripper for Collaborative Robot is 40°C or below.**
- ⑩ **Install the product on a flat surface.**  
If the mounting surface is distorted or uneven, an unacceptable force may be added to the housing, etc., causing problems.
- ⑪ **Select the model that allows for penning and closing width relative to a work piece.**  
The selection of an inappropriate model will cause gripping at unexpected positions due to variable opening and closing width of the product and the diameter of a work piece the product can handle. It is necessary to make a larger stroke to overcome backlash created when the product will open after gripping.
- ⑫ **Tighten the product and attachment mounting screws to the specified torque.**  
Tightening to a torque over the specified range can cause operation failure, and insufficient torque can cause displacing or dropping of the attachment.  
Refer to "3. Installation" for installation method.
- ⑬ **When fixing the attachment to the finger, avoid applying excessive torque to the finger.**  
Play or deteriorated accuracy can result.



⑭ **The mounting face has holes and slots for positioning. Make use of them if necessary.**

⑮ **When the work piece has to be removed after the power has been switched off, it can be removed by using the manual override or by removing the finger attachments.**

If the manual override is used to remove the workpiece allow sufficient space to access the manual override screw. Do not apply excessive torque to the manual override that could lead to damage and malfunction of the product.

⑯ **When gripping the work piece leave space in the finger movement direction to prevent the load from being concentrated on one finger and to allow for work piece mis-alignment.**

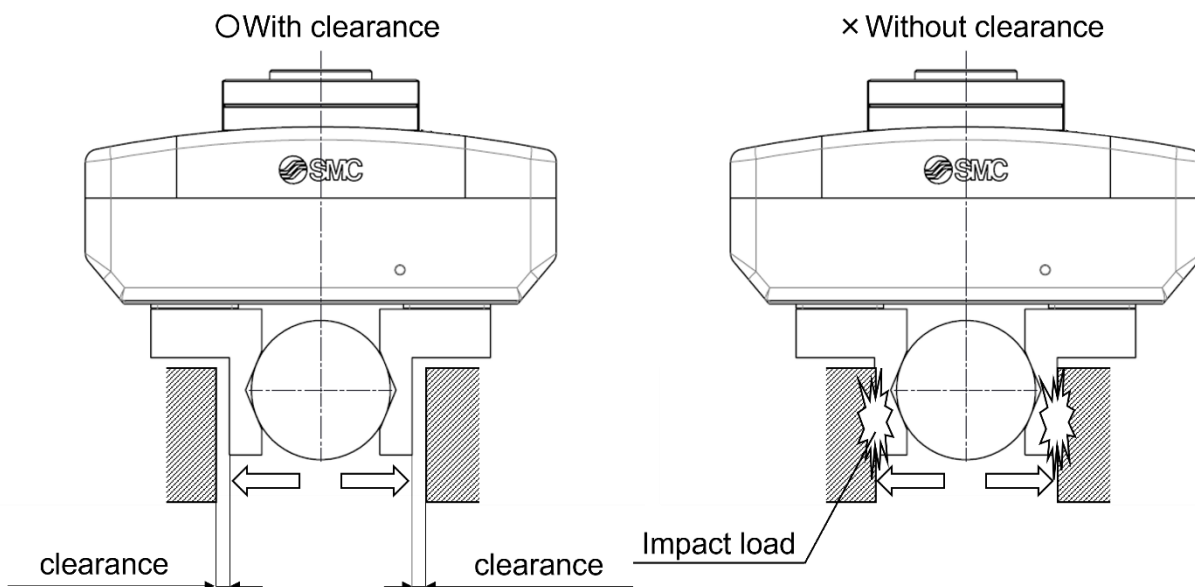
For the same reason when aligning the work piece using the gripper finger movement, minimize the frictional resistance created by the movement of the workpiece.

The finger can be displaced or play or breakage can occur.

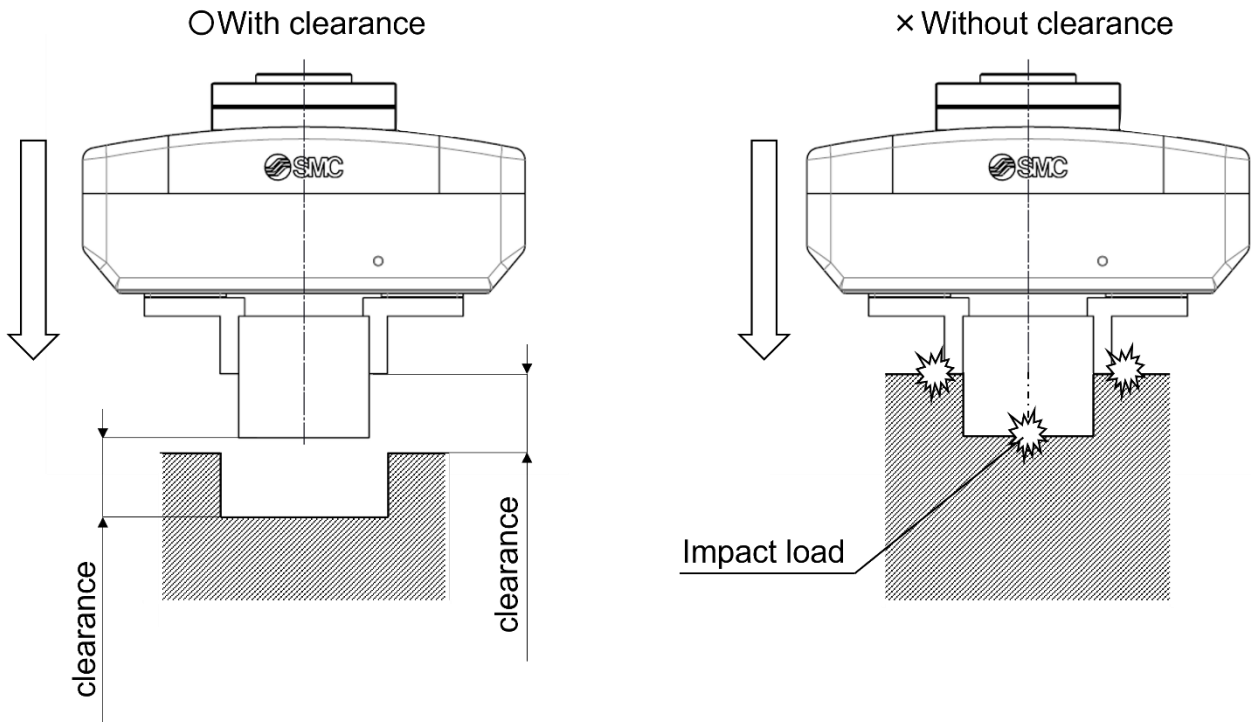
⑰ **Perform adjustment and confirmation to ensure there is no external force applied to the finger.**

If the finger is subject to repetitive lateral load or impact load, it can cause play or breakage and the lead screw can get stuck, which results in operation failure. Allow a clearance to prevent the work piece or the attachment from hitting gripper product at the end of the stroke.

#### 1. Stroke end when fingers are open.

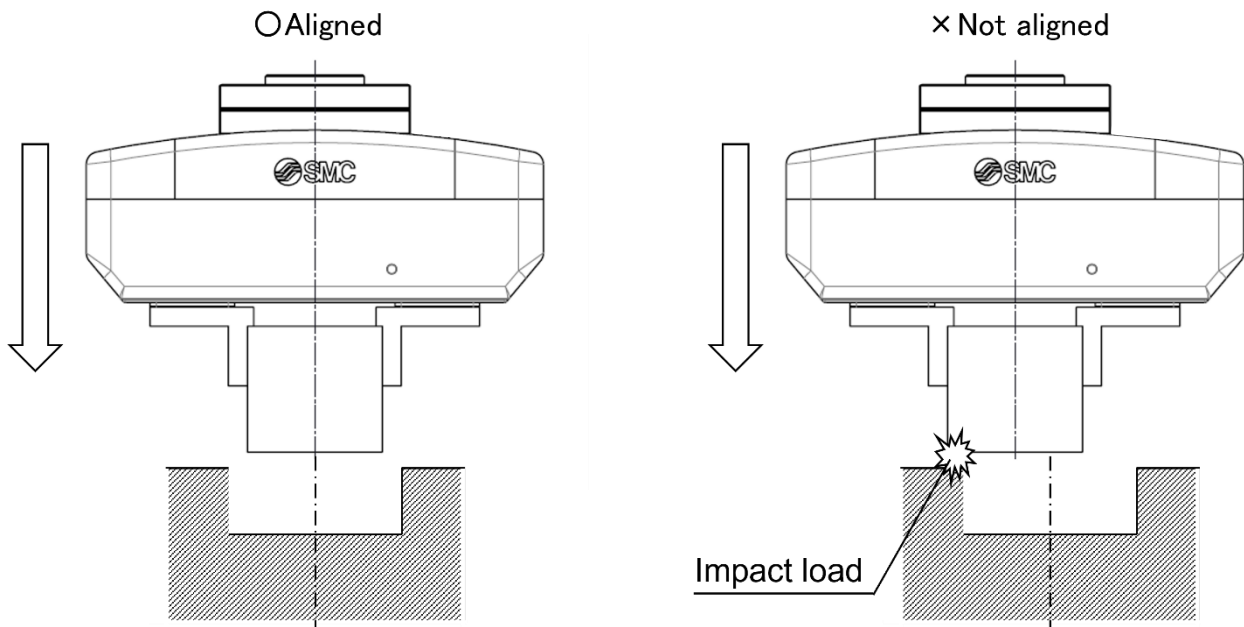


## 2. Stroke end when gripper is moving.



- ⑩ When mounting a work piece, align it with the product carefully to prevent excessive force to the finger.

In particular, during a trial run, operate the product manually or at a low speed and check that the safety is assured without impact.



### 【Unpackaging】

#### ⚠ Caution

- ① Check the received product is as ordered.

If the different product is installed from the one ordered, injury or damage can result.

## 1.3 Handling

### Warning

- ① **Do not touch the motor while in operation.**  
The surface temperature of the motor can increase to approx. 80°C due to operating conditions. Energizing alone may also cause this temperature increase. As it may cause burns, do not touch the motor when in operation.
- ② **If abnormal heating, smoking or fire, etc., occurs in the product, immediately shut off the power supply.**
- ③ **Immediately stop operation if abnormal operation noise or vibration occurs.**  
If abnormal operation noise or vibration occurs, the product may have been mounted incorrectly. Unless operation of the product is stopped for inspection, the product can be seriously damaged.
- ④ **Never touch the rotating part of the motor or moving part of the actuator while operation.**
- ⑤ **When installing, adjusting, inspecting or performing maintenance on the product, controller and related equipment, be sure to shut off the power supply to them. Then, lock it so that no one other than the person working can turn the power on, or implement measures such as a safety plug.**
- ⑥ **The inside of the electric actuator and its connector should not be touched.**  
It may cause an electric shock or damage to the controller.
- ⑦ **Do not perform the operation or setting of the product with wet hands.**  
Doing so may cause an electric shock.
- ⑧ **Products with damage or those missing any components should not be used.**  
An electric shock, fire, or injury may result.
- ⑨ **Be careful not to be caught or hit by the workpiece while the electric actuator is moving.**  
It may cause an injury.
- ⑩ **Do not connect the power supply or power on the product before confirming the area to which the workpiece moves is safe.**  
The movement of the workpiece may cause an accident.
- ⑪ **Before installation, wiring, and maintenance, the voltage should be checked with a tester 5 minutes after the power supply has been turned off.**  
Otherwise, an electric shock, fire, or injury may result.
- ⑫ **Do not use the product in an area where dust, powder dust, water, chemicals, or oil is in the air.**  
It will cause failure or malfunction.
- ⑬ **Do not use the product in an area where a magnetic field is generated.**  
It will cause failure or malfunction.
- ⑭ **Do not install the product in an environment containing flammable gas, explosive gas, or corrosive gas.**  
It could lead to fire, explosion and corrosion.

- ⑮ **Radiant heat from strong heat sources, such as a furnace, direct sunlight, etc., should not be applied to the product.**  
It will cause failure of the electric actuator or its peripheral devices.
- ⑯ **Do not use the product in an environment subject to a temperature cycle.**  
It will cause failure of the electric actuator or its peripheral devices.
- ⑰ **Do not use the product in a place where surges are generated.**  
When there are units that generate a large amount of surge around the product (e.g. solenoid type lifters, high-frequency induction furnaces, motors, etc.), this may cause deterioration or damage to the product's internal circuit. Avoid sources of surge generation and crossed lines.
- ⑱ **Do not install the product in an environment under the effect of vibrations and impacts.**  
It will cause failure or malfunction.

 **Caution**

- ① **Conduct the following inspection before operation.**
  - a) Confirm that the power supply line and each signal line is not damaged.
  - b) Play and looseness of the connector to each power line and signal line
  - c) Play and looseness of the mounting
  - d) Confirm that the electric actuator/cylinder/controller/driver is operating correctly.
  - e) Confirm the function of the emergency stop of the whole system.
- ② **If several persons are to be working conjointly, determine the procedure, signs, measures against abnormality, and restarting measures in advance. Then, have someone else, supervise the work.**
- ③ **The product may operate at a speed different from the set speed depending on the load and resistance.**  
When selecting a product, check the catalog for instructions regarding selection and specifications.
- ④ **Do not apply a load, impact, or resistance in addition to the transferred load during the return to origin.**  
If the product is made to return to origin by pushing force, a displacement of the origin position may occur.
- ⑤ **Do not remove the name plate.**
- ⑥ **Operation tests should be done at a low speed. Start operation by predefined speed after confirming there are no problems.**
- ⑦ **Do not apply forces of impact, collision, or resistance to the moving parts of an actuator in operation.**  
Doing so will cause a decrease in product life, damage to the product, etc.
- ⑧ **Supply power when the actuator is stationary.**  
The controller acquires the absolute position data from the absolute encoder when power is applied. Therefore, if the power is applied to the controller when the actuator is moving with an external force, the controller fails to acquire the absolute position data, which generates an alarm.
- ⑨ **The stroke and the open and close speed are for both fingers.**  
The stroke and the open and close speed of one finger will be halved from a setting.

- ⑩ **When gripping a workpiece, always use Grip command.**  
**Always use Grip command when the finger "attachments" come into contact with each other at the initial stroke position 0 mm.**  
**Also, do not hit the work piece to the finger and attachment in positioning command or in the range of positioning command.**  
Otherwise, the lead screw can get caught and cause operation failure.  
However, if the work piece cannot be gripped in Grip command (such as a plastically deformed work piece, rubber component, etc.), you can grip it in positioning command with consideration to the elastic force of the work piece. In this case, keep the driving speed for impact specified in item 12.
- ⑪ **When instructing external gripping by means of a Gripper, set the position with a stroke value that is shorter than the workpiece width by approximately 1 mm. When instructing internal gripping, set the position with a stroke value that is longer than the workpiece width by approximately 1 mm.**  
When performing gripping using the Grip command, if the gripping position is set to almost the same dimension as the workpiece width, a warning on gripping nothing may be issued at the time of gripping.
- ⑫ **Keep the following driving speed range for Grip command.**  
**LEHR: 5~30 mm/s**  
When performing gripping by means of the **Positioning**, if gripping is performed at a speed beyond the above speed range, the lead screw may be damaged, causing a malfunction.
- ⑬ **There is no backlash effect in Grip command.**  
When the positioning command, the gap is caused by backlash in the finger. Please set "Position" in consideration of backlash.
- ⑭ **The electric power saving mode**  
This is due to the self-lock mechanism in the lead screw, which makes the product keep the gripping force. To save the energy in this situation where the product is to be stand-by or continue to grip for extended periods of time, the product will be controlled to reduce current consumption
- ⑮ **To release the workpiece, send an operation instruction by means of the Positioning command.**  
If the workpiece is released by means of the Grip, it may not be possible to release the workpiece.
- ⑯ **If the finger/work piece has become galled due to operational setting error, etc. open and close the fingers using the manual override or by removing the finger attachments.**  
Do not apply excessive force to the manual override that could lead to damage and malfunction of the product.

⑰ **Self-lock mechanism**

The product keeps a gripping force due to the self-lock mechanism in the lead screw. Also, it will not operate in opposite direction even when external force is applied during gripping.

If there is the reduction of gripping force seen in the product after a work piece has been gripped and deformed over certain amount of time, contact SMC.

⑱ **Return to the origin**

As this product employs a battery-less absolute encoder, it is not necessary to perform a return to origin even when the power supply to the Electric Gripper for Collaborative Robot is turned off. This product went through return to origin at the closed end at the time of shipment.

## 1.4 Operating environment

### Warning

#### ① Avoid use in the following environments.

1. Locations where a large amount of dust and cutting chips are airborne.
  2. Locations where the ambient temperature is outside the range of the temperature specification (refer to specifications).
  3. Locations where the ambient humidity is outside the range of the humidity specification (refer to specifications).
  4. Locations where corrosive gas, flammable gas, sea water, water and steam are present.
  5. Locations where strong magnetic or electric fields are generated.
  6. Locations where direct vibration or impact is applied to the product.
  7. Areas that are dusty, or are exposed to splashes of water and oil drops.
  8. Areas exposed to direct sunlight (ultraviolet rays).
  9. Environment at an altitude of 1000 meters or higher.
- Heat dissipation and withstand voltage will decrease. Contact SMC for details.

#### ② Do not use in an environment where the product is directly exposed to liquid, such as cutting oils.

If cutting oils, coolant or oil mist contaminates the product, failure or increased sliding resistance can result.

#### ③ Install a protective cover when the product is used in an environment directly exposed to foreign matter such as dust, cutting chips and spatter.

Play or increased sliding resistance can result.

#### ④ Shade the sunlight in the place where the product is applied with direct sunshine.

#### ⑤ Shield the product if there is a heat source nearby.

When there is a heat source surrounding the product, the radiated heat from the heat source can increase the temperature of the product beyond the operating temperature range.

#### ⑥ Grease oil can be reduced due to the external environment and operating conditions. The lubrication performance may deteriorate and shorten the life of the product.

#### ⑦ Do not use in an environment where strong magnetic field is present.

A magnetic sensor is used in the encoder. Therefore, if the actuator motor is used in a strong magnetic field environment, malfunction or failure may occur.

### **【Storage】**

#### Warning

#### ① Do not store the product in a place in direct contact with rain or water drops or is exposed to harmful gas or liquid.

#### ② Store in an area that is shaded from direct sunlight and has a temperature and humidity within the specified range (-20°C to 60°C and 90%RH or less no condensation or freezing).

#### ③ Do not apply vibration and impact to the product during storage.

## 1.5 Precautions for wiring and cable

### Warning

- ① **Adjustment, installation, inspection, or wiring changes should be conducted after the power supply to this product has been turned off.**  
Electrical shock, malfunction, or damage can result.
- ② **Never disassemble the cable.**
- ③ **Never connect or disconnect the cable or connector with the power on.**

### Caution

- ① **Wire the connector securely.**  
Do not apply any voltage to the terminals other than those specified in the Operation Manual.
- ② **Wire the connector securely.**  
Check for correct connector wiring and polarity.
- ③ **Take care that actuator movement does not damage cables.**
- ④ **Avoid twisting, folding, rotating, or applying external force to the cable.**  
Electric shock, wire breakage, contact failure, or a loss of product control may occur.
- ⑤ **When checking the conductivity of the cable, be careful not to deform the connector's mating hole and terminals.**  
Inserting a non-compatible connector, tool, cylinder-shaped object, etc., into the connector's mating hole can cause the mating hole or terminals to become deformed, which may cause contact failure or disconnection.
- ⑥ **Refrain from plugging in and unplugging the connector frequently.**  
Doing so may result in contact failure or disconnection.



## 1.6 Maintenance

### Warning

- ① **Do not disassemble or repair the product.**  
Fire or electric shock can result. Contact SMC, in case of disassembly for the maintenance.
- ② **Before modifying or checking the wiring, the voltage should be checked with a tester 5 minutes after the power supply is turned off.**  
Electric shock can result.
- ③ **When the product is to be removed, check that it is not gripping a work piece.**  
There is a risk of dropping the work piece.

### Caution

- ① **Maintenance should be performed according to the procedure indicated in the Operation Manual.**  
Incorrect handling can cause an injury, damage or malfunction of equipment and machinery.
- ② **Removal of product**  
When equipment is serviced, first confirm that measures are in place to prevent dropping of work pieces and run-away of equipment, etc., and then cut the power supply to the system. When machinery is restarted, check that operation is normal with actuators in the proper positions.

### **【Lubrication】**

#### Caution

- ① **The product has been lubricated for life at manufacturer, and does not require lubrication in service.**

## 2. Outlines of Product

### 2.1 How to Order

LEHR 32 K 2 - 50 <sup>①</sup> - 011 <sup>②</sup> - <sup>③</sup> <sup>④</sup>

#### ① Actuator shape

<b>A</b>	Basic type
<b>B</b>	Longitudinal type

#### ② Compatible robot

Refer to the "Table 1 Compatible Robot List."
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#### ③ Robot connection cable

<b>Nil</b>	With connector cable
<b>N</b>	Without connection cable

#### ④ Actuator mounting

<b>E</b>	With manual type connection plate
<b>F</b>	Without manual type connection plate

Table 1 Compatible Robot List

Symbol	Robot manufacturer	Supported model
011	UNIVERSAL ROBOTS	UR3(e) UR5(e) UR10(e) UR16(e)

## 2.2 Specification Table

Actuator specifications	Open and close stroke/both sides [mm]	50
	Gripping force[N]*1	60~140
	Open and close speed/ Gripping speed [mm/s]*2	5~100 / 5~30
	Drive method	Slide screw + Belt
	Finger guide type	Sliding bearing
	Finger backlash/ one side [mm]*3	0.5 or less
	Positioning repeatability/one side [mm]	±0.1
	Lost motion/one side [mm]*4	0.5 or less
	Impact/Vibration resistance [m/s <sup>2</sup> ]*5	150 / 5
	Operating temperature range [°C]	5~40
	Operating humidity range [%RH]	90 or less (No condensation)
	Weight [kg]	1
Electric specifications	Connector type	M8, 8-pin (Plug)
	Motor type	Battery-less absolute (Step motor 24 VDC)
	Encoder	Battery-less absolute
	Power supply voltage [V]	24
	Power [W]*6	Max.Power 48

\*1 Gripping force accuracy should be ±20% (F.S.). Gripping with heavy attachment and fast pushing speed, may not reach the product specification. In this case, decrease the weight and lower the pushing speed.

\*2 Gripping speed should be set within the range during Grip operations. Otherwise, it may cause a malfunction. The open/close speed and pushing speed are for both fingers. The speed for one finger is half this value.

\*3 There will be no influence of backlash during gripping operations (Grip Command).  
Make the stroke longer for the amount of backlash when opening.

\*4 A reference value for correcting an error in reciprocal operation which occurs during positioning operations.

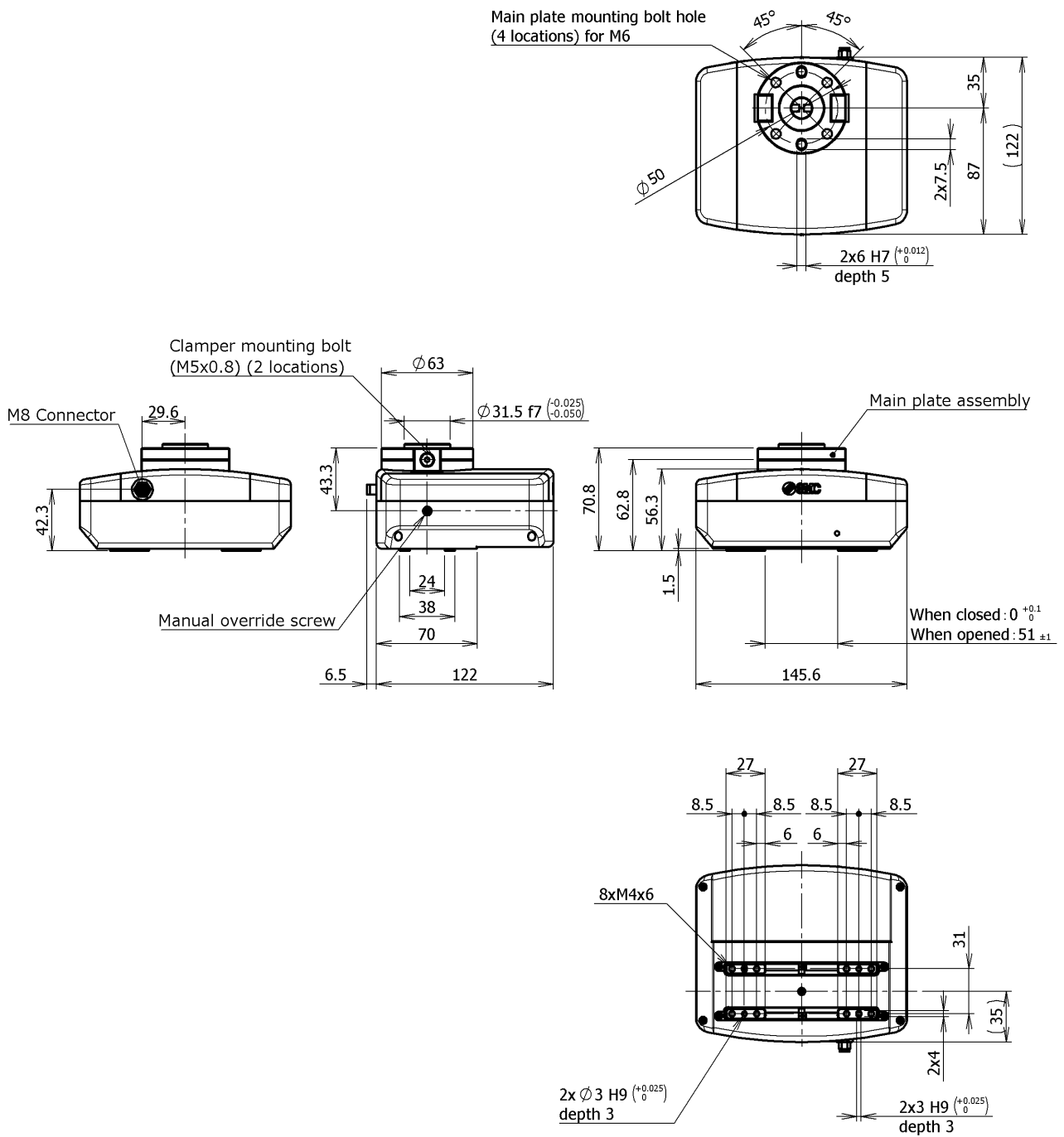
\*5 Impact resistance: No malfunction occurred when the gripper was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw.  
(The test was performed with the gripper in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw.  
(The test was performed with the gripper in the initial state.)

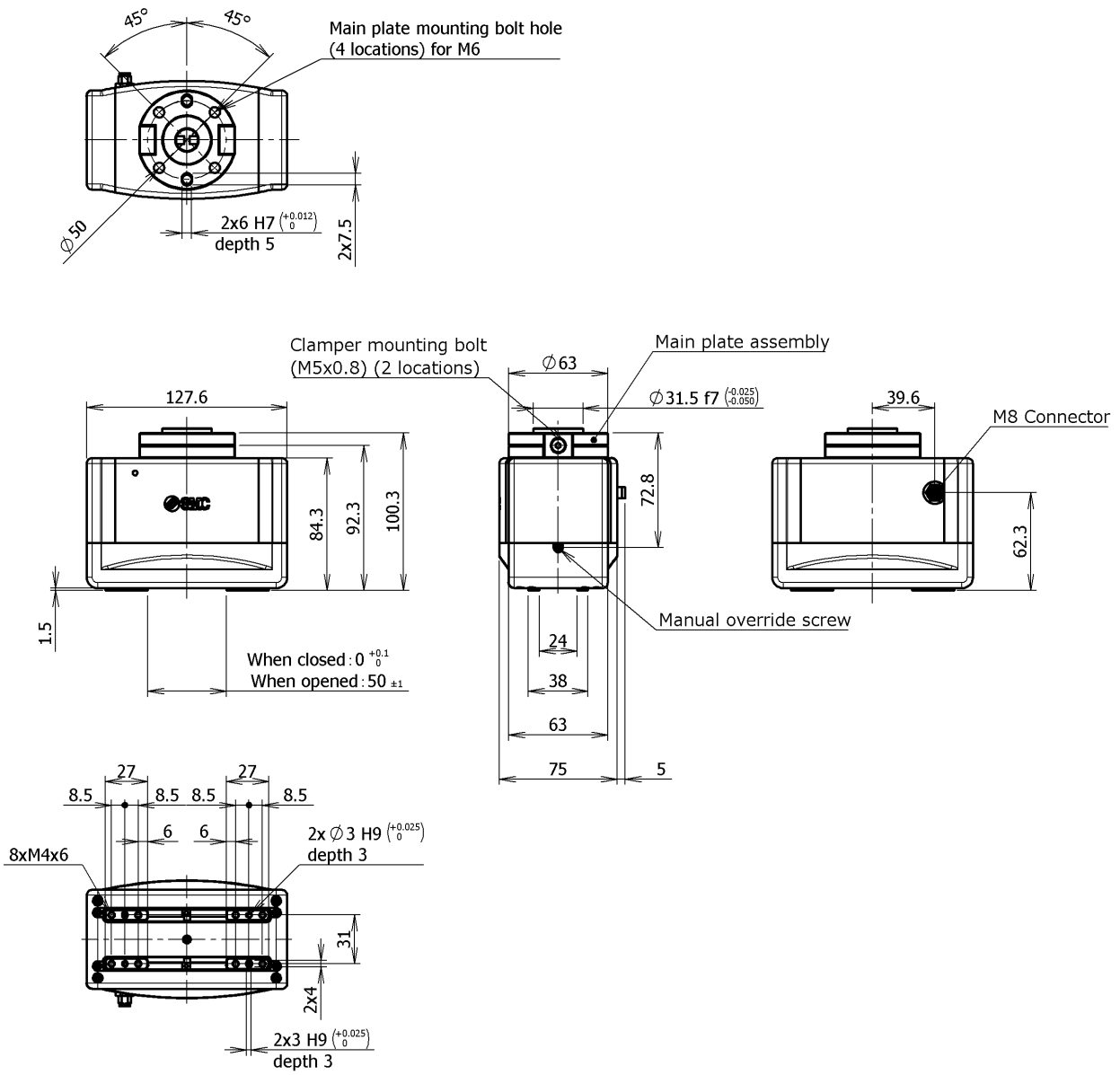
\*6 Indicates the max. power during operation.

## 2.3 Dimensions

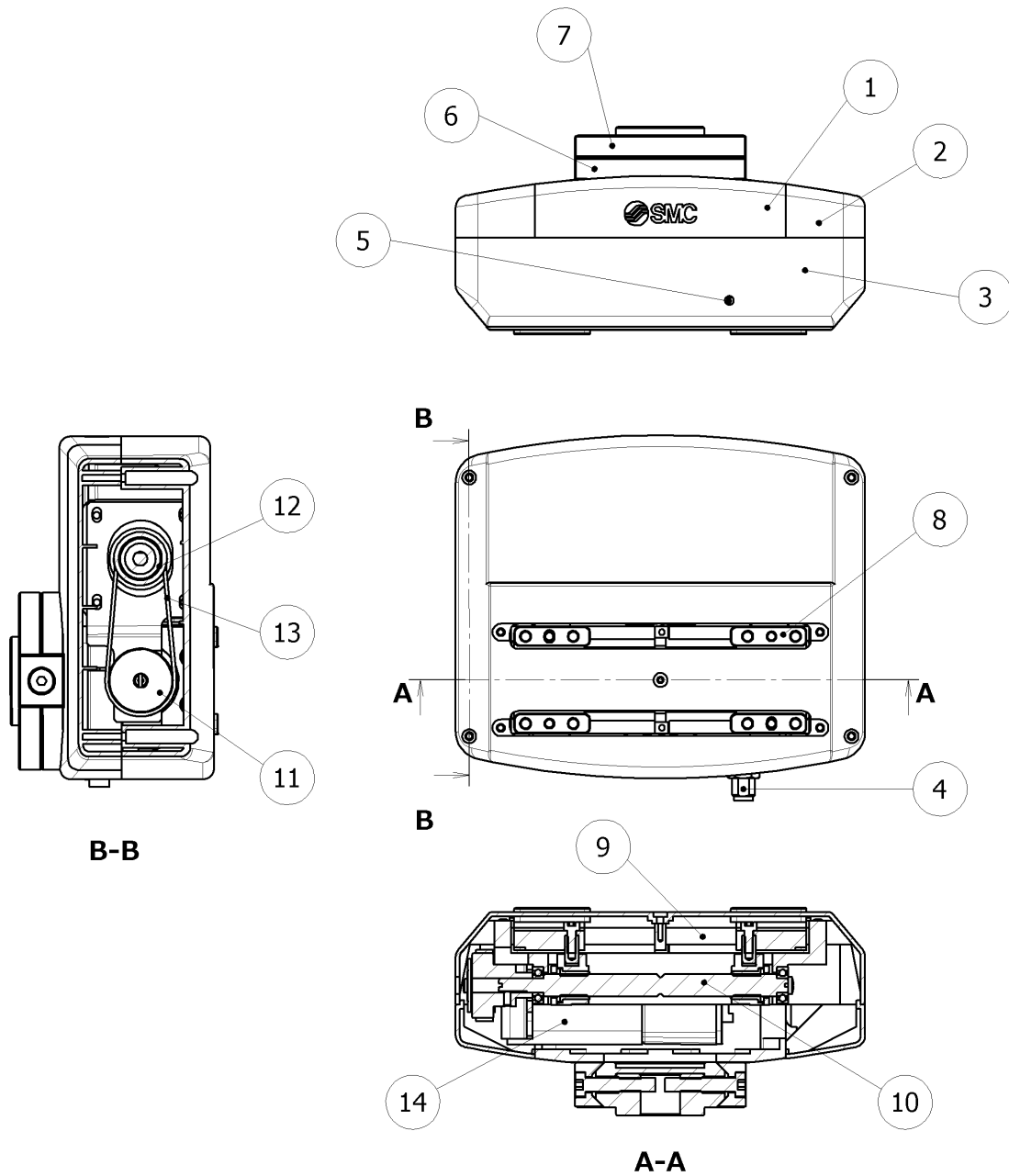
### Basic type/LEHR32K2-50A



# Longitudinal type/LEHR32K2-50B



## 2.4 Construction

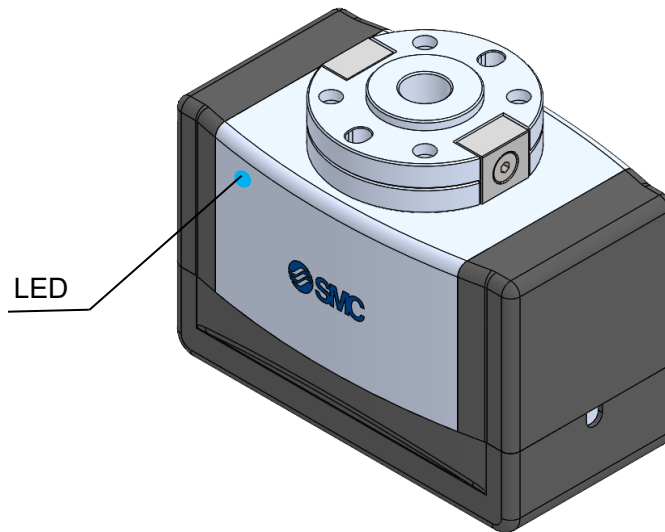


No.	Description	Material	Note
1	Top cover	Aluminum alloy	Coating
2	Side cover	Synthetic resin	Coating
3	Bottom cover	Synthetic resin	Coating
4	M8 Connector	—	
5	LED	—	
6	Tool plate	Aluminum alloy	Anodized
7	Main plate assembly	—	
8	Finger	Aluminum alloy	Anodized
9	Guide rod	Alloy steel	Hard chrome plating
10	Slide shaft assembly	—	
11	Screw shaft pulley	Aluminum alloy	
12	Motor pulley	Aluminum alloy	
13	Belt	—	
14	Motor	—	

## 2.5 LED lamp indicator

The status of the Electric Gripper for Collaborative Robot can be checked via the LED lamp.

The LED lamp indicates the gripper status as follows.



### Normal operation

Status	Pattern	Red	Magenta	Green	Cyan	Blue	White	Yellow
Servo OFF	ON							
Servo ON	ON							
Operation in progress	ON							
Gripping operation in progress	Flashing							
Gripping completed	Flashing							

### Alarm and Warning generation

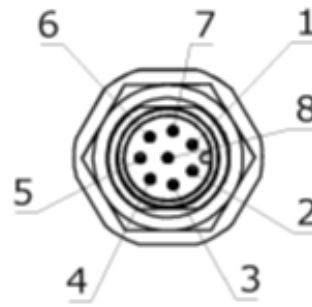
Status	Pattern	Red	Magenta	Green	Cyan	Blue	White	Yellow
Overload alarm	Alternate							
Over current alarm	Alternate							
Temperature abnormality alarm	Alternate							
Over voltage alarm	Alternate							
Low voltage alarm	Alternate							
Location deviation Overflow alarm	Flashing							
Gripping warning	Flashing							
Load warning	Alternate							
Temperature warning	Alternate							

Refer to “5. Alarm detection and Troubleshooting” for the detailed alarm/warning.

## 2.6 Connector pin layout

The pin layout of the M8 connector is shown below.

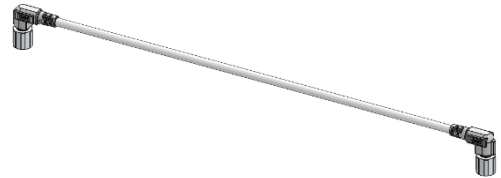
No.	Description
1	RS485+
2	RS485-
3	
4	
5	24V
6	0V
7	24V
8	0V



## 2.7 Replacement Parts

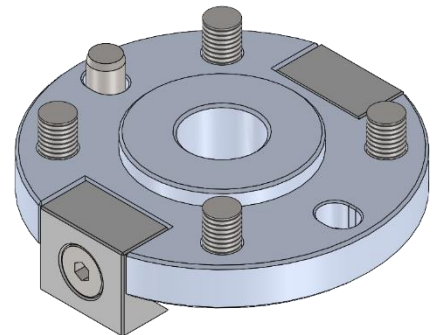
### Connector cable

Symbol	Robot manufacturer	Part No.
011	UNIVERSAL ROBOTS	RMH-A00-11-A



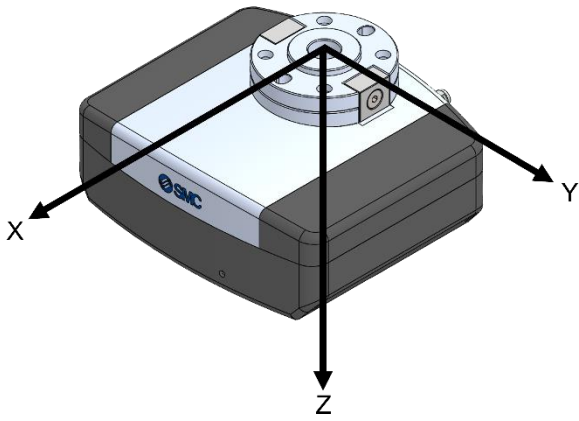
### Main Plate Assembly

Symbol	Robot manufacturer	Part No.
011	UNIVERSAL ROBOTS	RMTM2-4M1

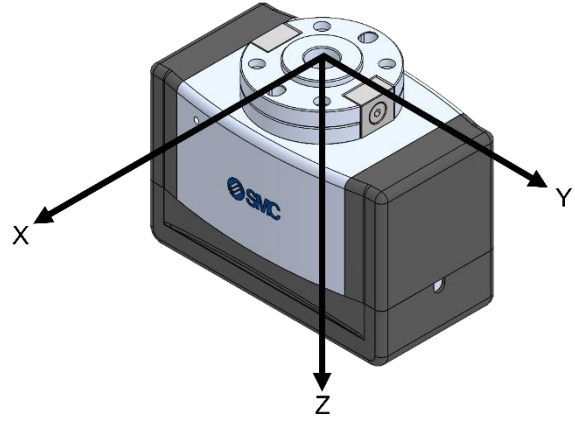




## 2.8 Position of the center of gravity



LEHR32K2-50A



LEHR32K2-50B

	Center of gravity [mm]		
	X	Y	Z
LEHR32K2-50A	21	-11	34
LEHR32K2-50B	0	6	36

## 3.Installation

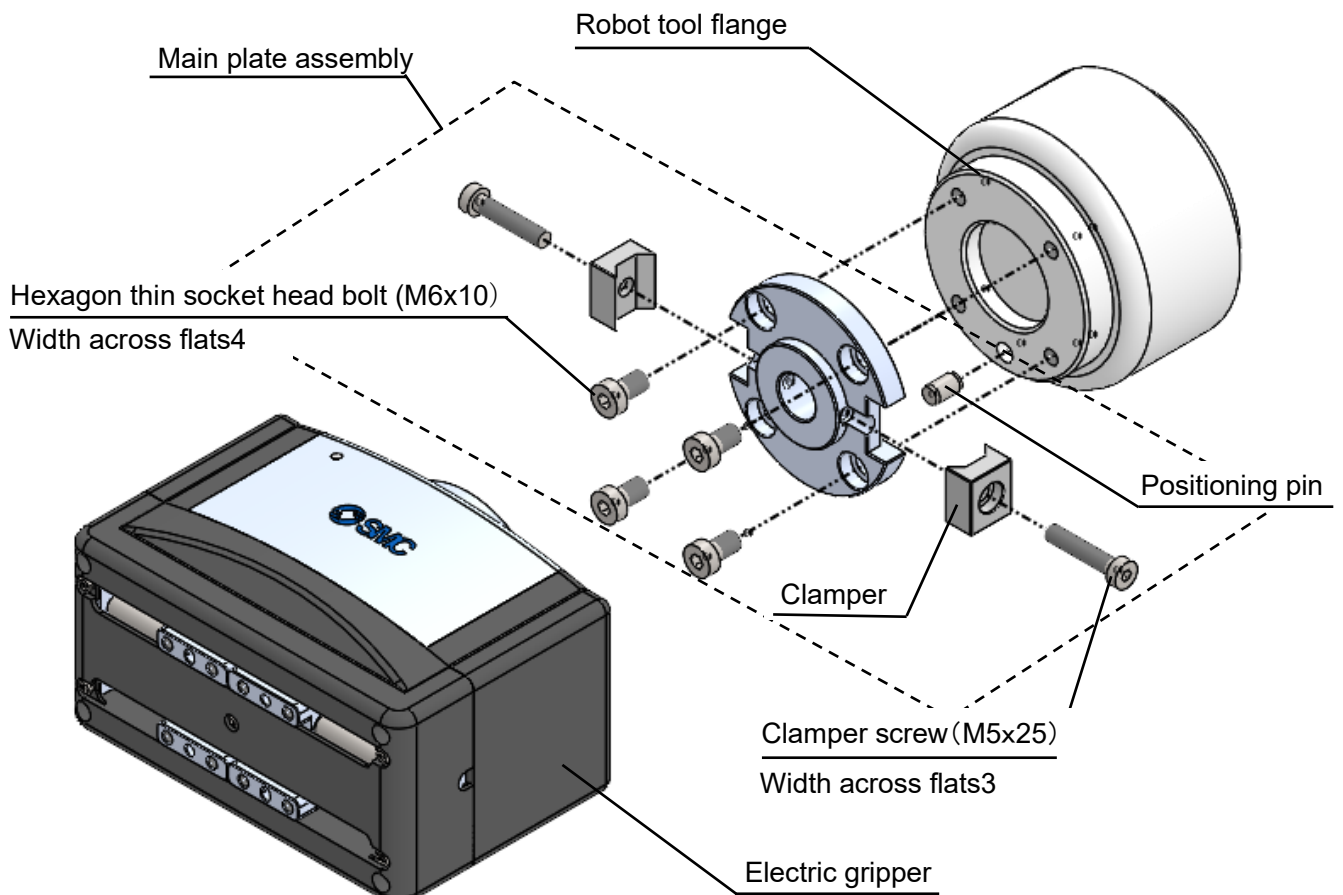
### Warning

1. Install and operate the product only after reading the Operation Manual carefully and understanding its contents. Also, keep the manual where it can be referred to as necessary.
2. When installing the products, allow access for maintenance.
3. Do not scratch or dent the air gripper by dropping or bumping it when mounting. Slight deformation can cause inaccuracies or a malfunction.
4. Tighten the screw within the specified torque range when mounting the attachment. Tightening with a torque above the limit can cause malfunction, while insufficient tightening can cause slippage and dropping.
5. When mounting the gripper, tighten the screws to the appropriate torque within the limiting range. Tightening with a torque above the range may cause malfunction, while insufficient tightening may cause slippage and dropping.

### Installation

#### ■ Mounting Product

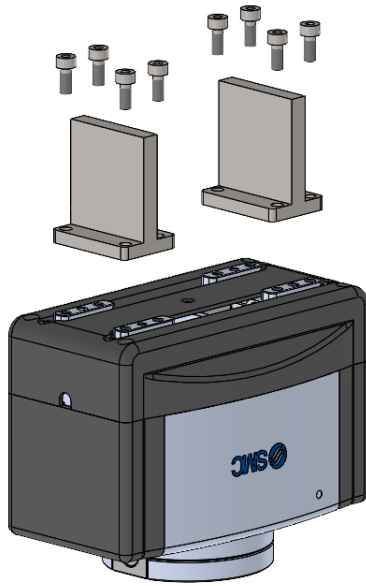
- 1) Insert a parallel positioning pin into the pin hole in the robot tool flange.
- 2) Insert the positioning pin by aligning it with the elongated hole in the main plate assembly, and mount the main plate assembly onto the robot tool flange with the short-head hexagon socket head cap screws supplied. (Tightening torque:  $5.2\pm 0.5$  N·m)
- 3) Confirm that the clamber screws on the main plate assembly are loosened, and align the clammers with the flange groove on the Electric Gripper for Collaborative Robot side.
- 4) Tighten the clamber screws to mount the Electric Gripper for Collaborative Robot. (Tightening torque:  $3.0\pm 0.3$  N·m)



■ How to mount attachment.

When attaching or detaching the finger attachment, install them within the tightening torque range shown in the table below.

Set the tightening torques to appropriate torque values based on the attachment.



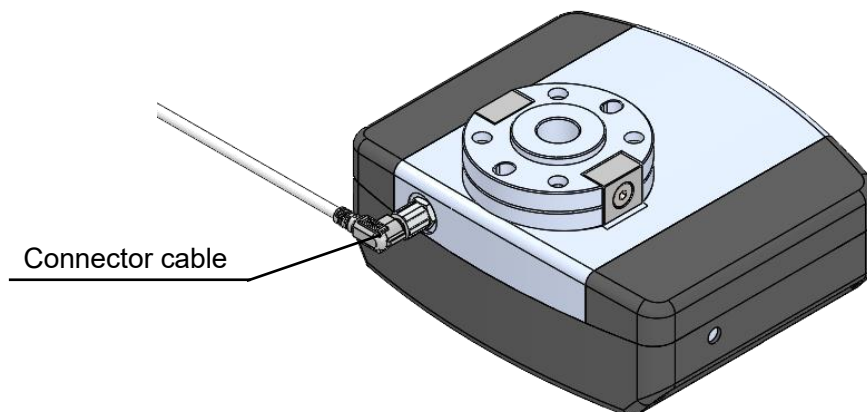
Screw	Max. tightening torque
M4x0.7	1.65 N·m

■ Wiring

Connect a cable between the electric gripper connector and the connector on the tool flange. For the connector pin layout, refer to “2.6 Connector pin layout” .

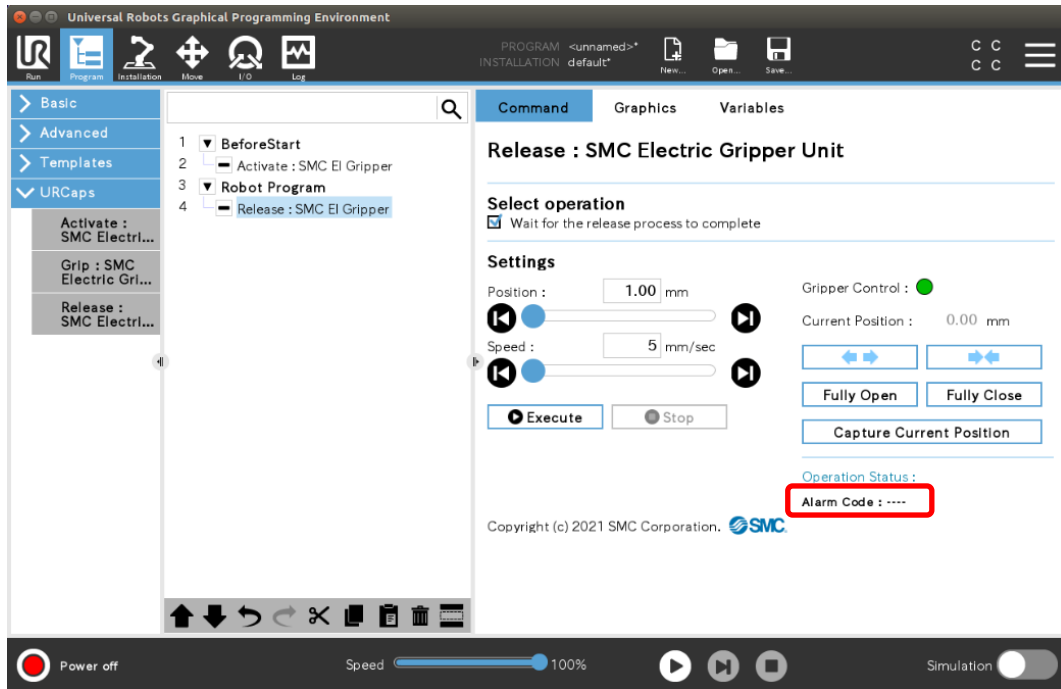
\* Do not energize the product while securing the connector.

\* Secure the connector so that it does not become loose.



## 4. Alarm detection

The detection of an alarm/warning is indicated by the LED lamp on the actuator and "Alarm Code" on the dedicated teaching pendant. For details of the alarms/warnings, refer to the table below.



Alarm Code	Status	Content	Countermeasures
OverLoad alarm	Overload alarm	This alarm is issued after a certain time has elapsed from the occurrence of a load warning.	Eliminated the cause of load warning
OverCurrent alarm	Over current alarm	This alarm is issued when a current exceeding the rated current flows.	Check whether there is any factor that prevents the operation of the Electric Gripper for Collaborative Robot or an external force is applied to the finger.
OverTemperature alarm	Temperature abnormality alarm	This alarm is issued when the internal temperature of the motor has exceeded 110°C.	Check whether the ambient temperature in the operating environment is exceeding 40°C.
OverVoltage alarm	Over voltage alarm	This alarm is issued when the input voltage exceeds 30 V.	Check the power supply voltage for the collaborative robot.
UnderVoltage alarm	Low voltage alarm	This alarm is issued when the input voltage falls below 18 V.	
OverFlow alarm	Location deviation Overflow Alarm	This alarm is issued when the location deviation inside the controller exceeds a certain value.	Check whether there is any factor that prevents the operation of the Electric Gripper for Collaborative Robot or an external force is applied to the finger.
Push Motion Alarm	Grip warning	This alarm is issued when gripping of the workpiece by the Grip command has failed and nothing has been gripped.	Check whether the Gripping Position of the Grip command is correct.
Workpiece lost Alarm		This alarm is issued when the workpiece was lost in the time period from the execution of the Grip command to the subsequent execution of the Positioning command.	Check the gripping force, gripping position, and workpiece weight, and check whether an external force is applied to the finger.
Overload Alarm	Load warning	This alarm is issued when the motor torque exceeds the specified value.	Check whether there is any factor that prevents the operation of the Electric Gripper for Collaborative Robot or an external force is applied to the finger.
Temperature Alarm	Temperature warning	This alarm is issued when the internal temperature of the motor has exceeded 80°C.	Check whether the ambient temperature in the operating environment is exceeding 40°C.

## 5. Definition of Terms

- ① **Grip command**  
Command from the collaborative robot to instruct the Electric Gripper for Collaborative Robot to perform gripping.
- ② **Positioning command**  
Command from the collaborative robot to instruct the Electric Gripper for Collaborative Robot to perform an opening/closing action.
- ③ **Activate command**  
Command to connect the communication between the collaborative robot and Electric Gripper for Collaborative Robot and turn the servo ON.
- ④ **Rubbing and biting**  
State in which the sliding resistance of the sliding shaft assembly has become high and the operation resistance of the finger is high.
- ⑤ **Self-lock mechanism**  
Mechanism that retains the finger position by utilizing the frictional resistance of the lead screw of the sliding shaft assembly.

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December 2023 : Frist edition

# SMC Corporation

4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021 JAPAN

Tel: + 81 3 5207 8249 Fax: +81 3 5298 5362

URL <https://www.smcworld.com>

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.

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