



## Instruction Manual

### Electric Stopper Cylinder

#### Series LEBH\* / LEBQ\*



The intended use of this Electrical Stopper cylinder is as a stopper for conveyor lines in response to an electrical input signal.

### 1 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<sup>\*)</sup>, and other safety regulations.

- <sup>\*)</sup> ISO 4414: Pneumatic fluid power - General rules relating to systems.  
ISO 4413: Hydraulic fluid power - General rules relating to systems.  
IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)  
ISO 10218-1: Manipulating industrial robots -Safety. etc.
- Refer to the product catalogue, Drawing and Handling Precautions for SMC Products for additional information.
  - Keep this manual in a safe place for future reference.

	<b>Caution</b>	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
	<b>Warning</b>	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	<b>Danger</b>	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

### Warning

- Always ensure compliance with relevant safety laws and standards.
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- This product is class A equipment that is intended for use in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.
- Do not disassemble, modify (including change of printed circuit board) or repair the product. An injury or product failure may result.
- Do not operate the product beyond the specification range. Fire, malfunction or equipment damage may result. Use the product only after confirming the specifications.
- When using the product as part of an interlocking system: Provide a double interlocking system, for example a mechanical system. Check the product regularly to ensure correct operation.
- Follow the instructions provided when handling the product. Failing to do so may result in product damage.
- Do not drop, hit or apply excessive shock to the product.
- Prevent any foreign matter from entering the product.
- If abnormal heating, smoking or fire occurs in the product, immediately turn off the power supply.
- Immediately stop operation if abnormal noise or vibration occurs.
- Never touch the rotating part of the motor or moving part of the actuator while in operation.
- Special products (-X#, -D#) might have specifications different from those shown in the specifications section. Contact SMC for drawings.

## 2 Specifications

### 2.1 LEBH series specifications

Model		LEBH50	LEBH63	LEBH80	
Actuator	Stroke (mm)	30		40	
	Mounting orientation <sup>*1)</sup>	Vertical (rod extended upward)			
	Response Time (s)	Retraction time (ON)	1 or less (no lateral load)		1.5 or less (no lat. load)
		Extraction time (OFF)	1 or less		1.5 or less
	Actuation <sup>*2)</sup>	Single acting / Spring extend			
	Rod end style	Lever type with built-in shock absorber			
	Drive method	Ball screw + Belt			
	Operating frequency	Less than 3 c.p.m			
	Operating temperature	5 to 40 °C			
	Operating humidity	90% RH or less (no condensation)			
Weight (no options)	3.8 kg	5.5 kg	9.3 kg		
Electrical	Motor size	Ø38		Ø55	
	Type of motor	DC motor			
	Power supply voltage (V) <sup>*3)</sup>	24 VDC ±10%			
	Power consumption (W)	48 W			
	Standby power (when retracted) <sup>*3)</sup>	4.8 W			

<sup>\*1)</sup> The product must be operated in the vertical orientation.

<sup>\*2)</sup> The actuator holds the rod extended to the upper end when it is not energized.

<sup>\*3)</sup> The actuator holds the rod retracted to the bottom end only with magnetic force of the solenoid while energized.

\* D-M9 series auto switch is applicable, refer to the catalogue on the SMC website (URL: <https://www.smcworld.com>) for details.

\* At power on, an inrush current of approx. 40 A may be generated depending on the operating condition. Any equipment (relay etc.) used at power on must be selected with consideration to the inrush current.

### 2.2 LEBQ series specifications

Model		LEBQ40	
Actuator	Stroke (mm)	20	
	Mounting orientation <sup>*1)</sup>	Vertical (rod extended upward)	
	Response Time (s)	Retraction time (ON)	1 or less (no lateral load)
		Extraction time (OFF)	1 or less
	Actuation <sup>*2)</sup>	Single acting / Spring extend	
	Rod end style	Lever type with built-in shock absorber	
	Drive method	Ball screw + Belt	
	Operating frequency	Less than 3 c.p.m	
	Operating temperature	5 to 40 °C	
	Operating humidity	90% RH or less (no condensation)	
Weight (no options)	2.6 kg		
Electrical	Motor size	Ø38	
	Type of motor	DC motor	
	Power supply voltage (V) <sup>*3)</sup>	24 VDC ±10%	
	Power consumption	48 W	
	Standby power (when retracted) <sup>*3)</sup>	4.8 W	

<sup>\*1)</sup> The product must be operated in the vertical orientation.

<sup>\*2)</sup> The actuator holds the rod extended to the upper end when it is not energized.

<sup>\*3)</sup> The actuator holds the rod retracted to the bottom end only with magnetic force of the solenoid while energized.

\* D-M9 series auto switch is applicable, refer to the catalogue on the SMC website (URL: <https://www.smcworld.com>) for details.

\* At power on, an inrush current of approx. 40 A may be generated depending on the operating condition. Any equipment (relay etc.) used at power on must be selected with consideration to the inrush current.

## 3 Installation

### 3.1 Installation

#### Warning

- Do not install the product unless the safety instructions have been read and understood.
- Do not use the product in excess of its allowable specification.
- When installing, inspecting or performing maintenance on the product, be sure to turn off the power supplies. Then, lock it so it cannot be tampered with while work is happening.
- Do not use the product until it has been verified that the equipment operates correctly. After mounting or repair, connect the power supply to the product and perform appropriate functional inspections to check it is mounted correctly.
- Do not make any alterations to the product. Alterations made to this product may lead to a loss of durability and damage to the product, which can lead to injury and damage to other equipment and machinery.
- When attaching the product body or work piece, do not apply strong impact or large moment forces. If an external force above the allowable moment is applied, it may cause looseness in the guide unit, an increase in sliding resistance or other problems.

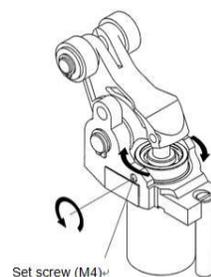
### 3.2 Operation

#### Warning

- Use the product within the specified operating range.** If the specified operating range is exceeded it will cause excessive impact or vibration to the actuator, leading to possible damage.
- If the operating conditions involve load fluctuations, or changes in the frictional resistance, ensure that safety measures are in place to prevent injury to the operator or damage to the equipment. It may not be possible to stop the transferred workpieces as the actuator does not perform a rising operation. This could result in a hazardous condition to the surrounding environment, including people, machinery and other equipment.

#### Caution

- Do not allow workpieces to collide while the lever is extended.** If workpieces collide while the lever is extended, all of the energy will be applied to the cylinder body (after kinetic energy has been absorbed by the shock absorber).
- When a load directly connected to the cylinder is stopped at an intermediate position.** In cases where the stopper cylinder is used to stop workpieces on a conveyor belt, apply the operating range in the model selection table. When using the stopper cylinder to stop loads directly connected to a cylinder or some other equipment, a lateral load is applied as the cylinder thrust. Please consult SMC in such cases.
- Take care when operating the cylinder.** The lever holder moves up and down while the cylinder is in operation. Take care not to get your hand or fingers caught between the rod cover and lever holder.
- Shock absorber resistance adjustment.** To stop a transferred object gently, loosen the set screw (M4) on the stopper and turn the shock absorber dial according to the energy value of the transferred object to select the optimum absorption position (resistance value). After adjustment, tighten the set screw firmly to secure the shock absorber dial.
- Set screw (M4) tightening torque: 1.5 N·m.



## 3 Installation (continued)

- When adjusting the shock absorber resistance value, first try the maximum value and then proceed to reduce the value. Confirm that the adjustment position is appropriate to avoid impact and bounce when the transferred object hits the shock absorber. When shipped, the shock absorber is adjusted to the maximum resistance value.
- The actuator has a short brake function to protect the internal components.** Due to the short brake function, the rotation of the motor will be limited should the number of rotations exceed the specified number. The operation brake will be applied when the operation speed is too fast.
- For cylinders with locking mechanism, do not apply external force from the opposite side when the lever is locked.** Lower the cylinder before adjusting the conveyor or moving the work piece.
- For cylinders with locking mechanism, do not allow the work and roller to collide when the lever is locked.** If the work collides with the roller in the locked state, it may cause lever malfunction. (the lever is released when the cylinder is fully retracted).

### 3.3 Environment

#### Warning

- Do not use in an environment where flammable, explosive or corrosive gases, chemicals, salt water or steam are present.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.
- Prevent foreign particles from entering the product.
- Do not expose the product to vibration or impact.
- Use the product within the specified ambient temperature range.
- Do not expose the product to any heat radiation.

### 3.4 Mounting

#### Warning

- Do not drop or hit the actuator to avoid scratching or denting the mounting surfaces. Scratches and gouges may cause malfunction.
- Do not apply rotational torque to the cylinder piston rod. Align the cylinder so that it is parallel to the face of the work in order to prevent rotational torque acting on the cylinder piston rod.
- Do not scratch or gouge the sliding part of the piston rod or guide rod. Scratches and gouges may cause malfunction.
- When mounting the electric stopper cylinder, form a relief area for the motor and tighten the screws to the specified torque range. Tightening the screws with a torque higher than the maximum value may cause malfunction. In addition, tightening the screws with a lower torque may cause the displacement of the mounting position.
- Observe the required tightening torque for screws. Unless stated otherwise, tighten the screws to the recommended torque for mounting the product.

#### 3.4.1 Mounting dimensions

Model	Screw size	Max. torque [N.m]
LEBH50	M8	12.5
LEBH63	M10	24.5
LEBH80	M12	42.0

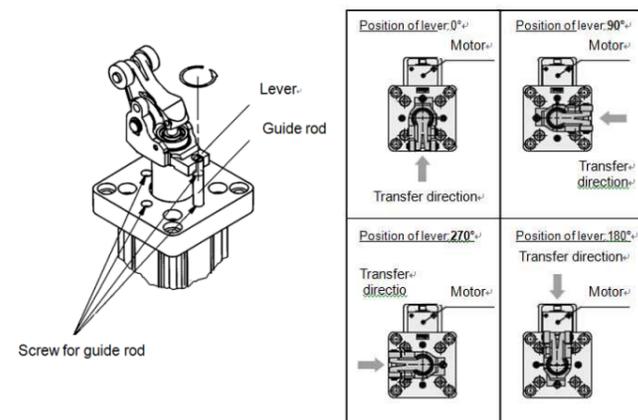
### 3 Installation (continued)

#### How to change the relationship between the transfer direction and piping position (for LEBH series only).

The relationship between the transfer direction and piping position can be changed in increments of 90 degrees.

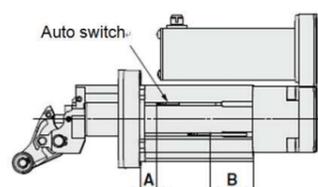
Apply a flat blade screwdriver to the notch in the guide rod end to remove the guide rod. Release the lever to allow rotation in increments of 90 degrees. When mounting the guide rod, apply thread locking fluid to the guide rod screw before tightening.

- Guide rod tightening torque : 5.2 N.m

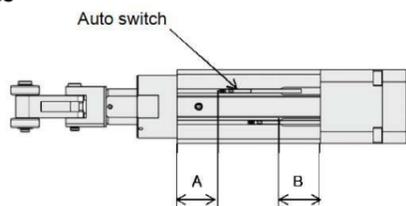


#### 3.5 Auto switch Mounting position

##### LEBH series



##### LEBQ series

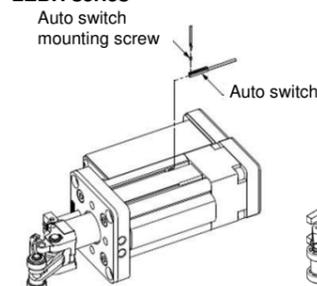


Model	Auto switch model			
	D-M9* / D-M9*W		D-M9*V / D-M9*WV	
	A	B	A	B
LEBH50	16.1	40.9	16.1	42.9
LEBH63	15.6	45.4	15.6	47.4
LEBH80	27.1	51.2	27.1	53.2
LEBQ40	29.6	28.4	29.6	30.4

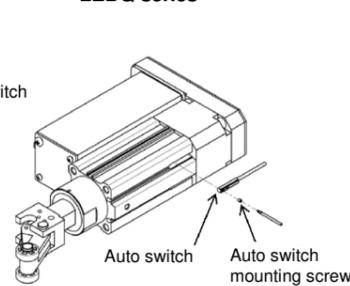
Note) Adjust the auto switch after confirming the operating conditions.

#### 3.5.1 Auto switch Mounting

##### LEBH series



##### LEBQ series



Auto switch mounting screw tightening torque: 0.05 to 0.15 N·m.

### 3 Installation (continued)

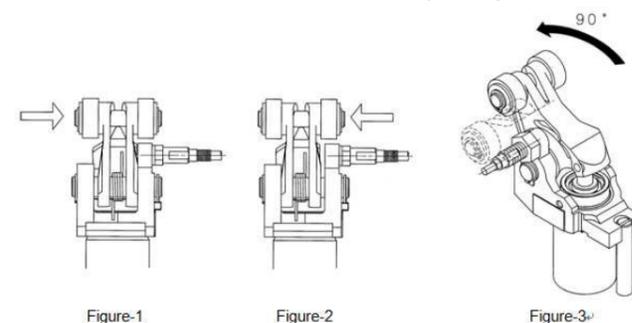
#### 3.5.2 Auto switch Operating range

Auto switch model	Operating Range (mm)			
	LEBH50	LEBH63	LEBH80	LEBQ40
D-M9* D-M9*W D-M9*V D-M9*WV	6	6.5	7	5.5

#### 3.6 Proximity switch mounting (LEBH only)

##### Proximity switch specifications: Omron Part No. E2E-X2D1-N.

- Check that the proximity switch indicator LED turns ON green when the lever is pushed towards the proximity switch side (Figure-1).
- Check that the proximity switch indicator LED turns ON green when the lever is pushed towards the opposite side from the proximity switch (Figure-2).
- Rotate the lever through 90° to confirm that the proximity switch indicator LED (red, green) does not turn ON (Figure-3).
- Fix the cylinder using the screws provided after confirming that there is no interference between the lever and the proximity switch.



Refer to the operation manual on the SMC website (URL: <https://www.smcworld.com>) for proximity switch specifications.

#### 3.7 Lubrication

##### Caution

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- Prevent the seizure of rotating parts (pins, etc.) by applying grease.
- For cylinders with locking mechanism, do not remove the grease applied to the lock pin.
- If the cylinders are operated without grease, the lock / unlock may malfunction due to excessive wear of the lock pin.
- Periodically check the lock pin is adequately greased and apply grease as necessary. Recommended grease is SMC No. GR-S-010 (10 g).
- Refer to the catalogue or operation manual on the SMC website (URL: <https://www.smcworld.com>) for further details.

### 4 Wiring

#### 4.1 Wiring

##### Warning

- Adjustment, mounting or wiring changes should not be carried out before disconnecting the power supply to the product.
- Electric shock, malfunction and damage can result.
- Connect wires and cables correctly and do not connect while the power is turned ON.

##### Caution

- Do not route wires and cables together with power or high voltage cables.
- The product may malfunction due to interference of noise and surge voltage from power and high voltage cables on the signal line. Route the wires of the product separately from power or high voltage cables.
- Wire the connector correctly and securely. Check the connector for polarity and do not apply any voltage to the terminals other than those specified.

### 4 Wiring (continued)

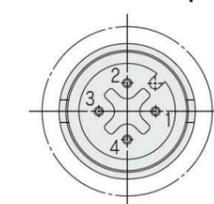
- Take appropriate measures against noise.
- Noise induced on a signal line may cause malfunction. As a countermeasure, separate high voltage and low voltage cables, and shorten wiring lengths.
- Take sufficient shielding measures when the product is to be used where noise due to static electricity is generated, electro-magnetic field strength is high, radioactivity is present and power lines are located.
- Do not use the product in a place where electrical surges are generated. Use suitable surge protection when a surge generating load such as a solenoid valve is to be directly connected.
- Do not bend, apply tensile force, or apply force by placing heavy loads on the cables.
- Take care that actuator movement does not catch the cables.
- Operate the actuator with cables secured. Avoid bending cables at sharp angles where they enter the product.
- Avoid twisting, folding, rotating or applying external force to the cable.

##### Caution

- A 24V power supply compliant with EN61000-4-5 must be used. If electrical surges enter into the product, the internal circuit will be damaged.

#### 4.2 Power supply connector

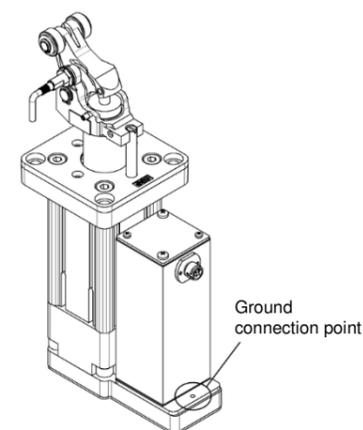
Connector: M12 4-pin plug (A code)



Pin No.	Signal	Description
1	-	Not used
2	-	
3	0 VDC	Operation Power supply
4	24 VDC	

#### 4.3 Ground connection

- Provide grounding to ensure correct operation and to improve noise resistance of the product.
- The Actuator must be connected to ground to shield the actuator from electrical noise.
- Avoid shared grounding points with other devices.
- The product should be connected to ground using a wire of cross-sectional area of 2 mm<sup>2</sup> minimum.
- The grounding point should be as near as possible to the actuator to keep the wire length short.



### 5 How to Order

Refer to the operation manual or catalogue on the SMC website (URL: <https://www.smcworld.com>) for the How to Order information.

### 6 Outline Dimensions (mm)

Refer to the drawings / operation manual on the SMC website (URL: <https://www.smcworld.com>) for outline dimensions.

### 7 Maintenance

#### 7.1 General Maintenance

##### Caution

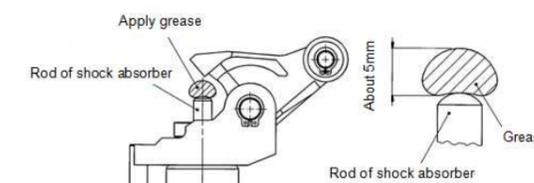
- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly electricity and compressed air can be dangerous.
- Maintenance of electromechanical and pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the power has been discharged and the air is released to atmosphere.
- The voltage should be checked with a tester 5 minutes after the power supply is turned off.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical or pneumatic connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification or disassemble the product.
- Incorrect handling can cause an injury, damage or malfunction of the equipment and machinery, so ensure that the procedure for the task is followed.
- Always allow sufficient space around the product to complete any maintenance and inspection.
- When installing, adjusting, inspecting or performing maintenance on the product, controller and related equipment, be sure to shut OFF the power supply and lock it so that no other person can turn the power ON, or implement measures such as a safety plug.

#### Stopping Condition

The stopping condition of the transferred object may vary due to changes in ambient temperature or changes in the shock absorber resistance over time. Check the stopping condition periodically and adjust the shock absorber resistance as necessary.

#### Shock absorber replacement

Loosen the shock absorber set screw (M4) on the stopper, incline the lever by 90° and pull out the shock absorber. After replacing the shock absorber, tighten the set screw firmly and apply grease to the shock absorber rod end surface.



### 8 Limitations of Use

#### 8.1 Limited warranty and Disclaimer/Compliance Requirements

- Refer to Handling Precautions for SMC Products.

### 9 Product disposal

This product should not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

### 10 Contacts

Refer to [www.smcworld.com](http://www.smcworld.com) or [www.smc.eu](http://www.smc.eu) for your local distributor / importer.

## SMC Corporation

URL : <http://www.smcworld.com> (Global) <http://www.smc.eu> (Europe)  
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