EWELLIX

EWELLIX Linear Actuators

CAHB-3X

User Manual

We pioneer motion

SCHAEFFLER

Contents

1 About the manual

1.1 Information in this user manual

This manual provides important information on how to work with the device safely and efficiently.

The manual is part of the device, must always be kept in the device's direct proximity and should be available for personnel to read at any time. All personnel working with the device must read and understand this manual before starting any work. Strict compliance with all specified safety notes and instructions is a basic requirement for safety at work.

Moreover, the accident prevention guidelines and general safety regulations applicable at the place of use of the device must also be complied with.

1.2 Symbols

Safety precautions are identified by symbols and signal words as shown. The signal words indicate the severity of the hazard and the chance it could occur. Follow these safety precautions and act cautiously in order to avoid accidents, personal injury and damage to property.

The warning and hazard symbols are defined in accordance with ANSI Z535.6-2011.

1 Warning and hazard symbols

Signs and descriptions	
⚠ DANGER	In case of non-compliance, death or serious injury will occur.
⚠ WARNING	In case of non-compliance, death or serious injury may occur.
⚠ CAUTION	In case of non-compliance, minor or moderate injury may occur.
NOTICE	In case of non-compliance, damage or malfunctions in the product or the adjacent construction may occur.

1.3 Signs

The warning, prohibition, and mandatory signs are defined in accordance with DIN EN ISO 7010 or DIN 4844-2.

2 Warning, prohibition, and mandatory signs

Signs and descriptions	
	General warning
	Electrical voltage warning
	Hand injury warning
	General mandatory sign

1.4 Availability

A current version of this manual is available at:
https://www.schaeffler.de/std/2245

Ensure that this manual is always complete and legible and is available to all persons engaged in transporting, fitting, dismantling, commissioning, operating, or maintaining the product.

Keep the manual in a safe place for immediate reference.

1.5 Legal notices

The information in this manual reflects the status at the time of publication.

Unauthorized modifications to or improper use of the product are not permitted. Schaeffler accepts no liability in these cases.

1.6 Limitation of liability

All information and notes in this manual have been compiled in accordance with the applicable standards and regulations, the present status of technology and our many years of knowledge and experience.

The manufacturer is not liable for any damage resulting from:

- failure to observe this manual
- unintended use
- employment of untrained personnel
- unauthorized conversions
- technical changes
- tampering with or removal of screws on the linear actuator
- use of unapproved spare parts

Where the device has been customized, the actual product delivered may differ from the description provided in this manual. In such cases, please contact Schaeffler, to obtain further instructions or information on safety precautions for these devices.

We reserve the right to make technical modifications to the device to improve usability.

1.7 Warranty terms

The manufacturer’s warranty terms apply.

1.8 Customer service

Schaeffler Customer Service is available at any time to assist with technical information and inquiries. The responsible contact person can be reached by telephone, e-mail, or via the Internet, see manufacturer’s address on the back cover. Our employees are also always interested in receiving new information and practical experience. This information and experience helps us improve our products.

1.9 Images

The images in this manual may be schematic representations and may differ from the delivered device.

2 General safety regulations

This chapter provides an overview of important safety measures and information necessary for safe and trouble-free installation, operation and maintenance.

Disregarding this manual and safety precautions specified therein may result in considerable danger and possible serious injury or death.

2.1 Intended use

The actuator has been developed and manufactured exclusively for the purpose described in this manual.

Safety information

⚠ WARNING

Misuse

Any use of this device beyond its intended purpose may result in a potentially hazardous situation. Therefore:

- Strictly adhere to all safety information and instructions in this manual.
- Avoid the following ambient conditions: strong UV rays, corrosive or explosive air media, and other aggressive media.
- Do not manipulate, retool or modify components of the device.
- Always use the device within the technical application limits and operating limits.

⚠ WARNING

Incorrect installation, operation or maintenance

Any use of this device beyond its intended purpose may result in a potentially hazardous situation. Therefore:

- Only use qualified, instructed and trained personnel who have read, understood and will follow the instructions in this manual.

2.2 Modifications to the device

To avoid hazardous situations and to ensure optimal performance, do not make any changes or modifications to the device that have not been specifically authorized by Schaeffler.

2.3 Hazards

This chapter lists the residual risks.

Observe the safety instructions listed here and the warnings in the subsequent chapters of this manual to reduce health hazards and to avoid dangerous situations.

Danger to life from electric current

Touching live parts poses an immediate danger to life. Damage to insulation or individual components may pose a danger to life. Therefore, observe the following:

- If the insulation is damaged, immediately switch off the power supply and have the parts repaired.
- Only qualified electricians are permitted to work on electrical systems.
- Before performing any work on the electrical system, disconnect the machine from the power supply.
- Before maintenance, cleaning or repair work, disconnect the power supply and secure it against reconnection.
- Do not bypass or disable fuses. When replacing fuses, ensure the correct current rating is used.
- Keep moisture away from live parts to prevent short circuits.

Risk of injury due to moving components

Rotating or linearly moving components can cause severe injury. Therefore, observe the following:

- Do not work on moving components.
- Keep the entire body, hands, and arms away from moving components.

2.4 General information

Read the following safety instructions carefully. Ensure that all persons who connect, install, or use the actuators are in possession of the necessary information and have access to this user manual. Persons who do not have the necessary experience or knowledge for handling actuators must not use them. In addition, persons with limited physical or mental capabilities may only use the products under supervision or after receiving thorough instruction in the use of the devices from a person responsible for their safety. Furthermore, children must be supervised to ensure that they do not play with the product.

NOTICE

Failure to observe these instructions

Damage to or destruction of the actuator

- ▸ Observe all instructions in this manual.

Mounting and dismantling

Ensure that the following points are observed before starting mounting or dismantling work:

- The actuator is not in operation.
- The power supply is switched off and the power plug is disconnected.
- The actuator is free from loads that may occur during operation.

Before commissioning the actuator, check the following:

- The actuator is correctly mounted and aligned ➤19|6.
- Ensure that the mechanism to which the actuator is to be mounted is not blocked and can move freely over the entire working range of the actuator.
- Ensure that the fastening bolts can withstand wear and the nominal force of the actuator and are securely attached.
- Ensure that the dimensions of the application elements and fastening bolts are appropriate.
- Application elements mounted on the actuator fastenings must be aligned, and the fastening bolts must be aligned parallel to each other ➤19|6.

Power supply

- Connect the stranded power wires and the stranded potentiometer wires correctly ➤20|7.2.
- Ensure that applied voltage matches the voltage specified on the type plate or data sheet. The operating voltage limits for the standard version can be found in the Technical data.

During operation

- Listen for unusual sounds and watch out for uneven running. Switch off the actuator immediately if anything unusual is detected.
- Do not subject the actuator to lateral or radial forces. Only allow coaxial forces to act on the actuator.
- Only operate the actuator within the specified operating conditions ➤29|13.1.

When the device is not in operation

- To prevent inadvertent operation, switch off the device and disconnect the power plug.

⚠ WARNING

Failure to observe these instructions

Accidents resulting in serious injury or damage to the actuator

- Ensure that all persons who connect, fit, or use the actuators are in have the required information and access to this manual.

Miscellaneous

- Visibly damaged actuators must not be fitted or operated.
- If the actuator emits unusual noises or odors, disconnect it from the power supply immediately.
- Actuators may only be used in an environment that corresponds to their IP level.
- Cleaning agents must not be strongly alkaline or acidic and must have a pH value between 6 and 8.
- Do not exceed the load and duty cycle specified in the technical data.
- Only connect the actuator to a voltage within the permissible range.
- Do not operate the actuator outside of its technical data.
- Keep the entire body, hands, and arms away from moving components.
- A moving actuator can cause serious injury. Ensure that no persons are present within the actuator's stroke area during operation.
- Ensure that no objects or body parts come into contact with the actuator attachments.

- Do not touch conductive components. Before installation, ensure that the system power supply is switched off and the actuator is secured against being switched on.
- If the overload clutch slips continuously, this may result in overheating and damage to the actuator. If the overload clutch is triggered, disconnect the actuator from the power supply immediately.
- The overload clutch is not considered to be end position protection. Avoid continuous operation of the overload clutch at the actuator's end positions.
- During installation, ensure that the actuator is not blocked in its movement at any point in its stroke.
- Do not modify, rebuild, or alter any part of the actuator. Never loosen the screws on the actuator or attempt to open the actuator.
- During mounting and installation, disconnect the actuator from the power supply to prevent it from being started.
- Replace the actuator if any irregularities occur.
- The linear speed of actuators may vary. If 2 or more actuators are to be used to drive a function in parallel, a synchronization control unit must be considered.

See also

Technical data [▸ 29]

3 Scope of delivery

The scope of delivery comprises:

- Actuator
- Operating manual

3.1 Check for damage during transit

1. Check the product immediately upon delivery for any damage during transit.
2. Do not accept delivery, or only accept it with reservation, if transport damage is found.
3. Record the extent of damage on the transport documents or the carrier's delivery note.
4. Report any damage during transit promptly as a complaint to the carrier.

Report any damage as soon as it is discovered. Claims for damages can only be made within the applicable claim period stipulated by the transport company.

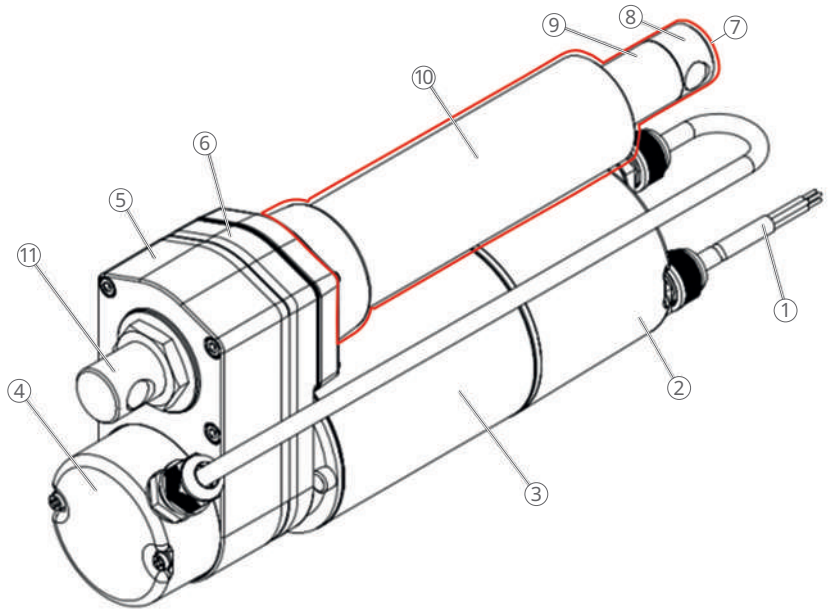
3.2 Check for defects

1. Check the product immediately upon delivery for any visible defects.
2. Check the product for completeness immediately upon delivery.
3. Report any defects promptly to the distributor of the product.
4. Do not put damaged products into operation.

4 Product description

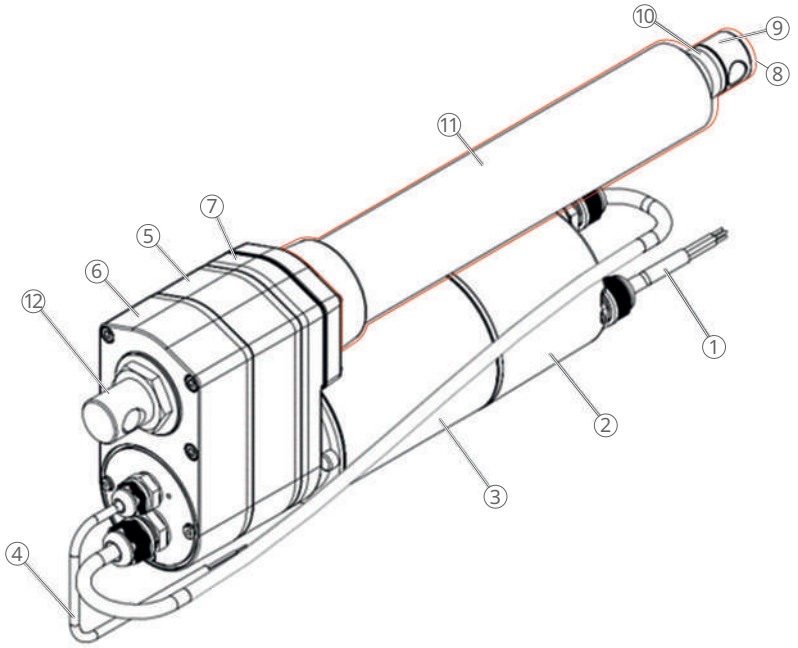
The actuator is intended exclusively for installation in a lifting device with dynamic centric compressive force or tensile load. The actuator has been developed and manufactured exclusively for the intended use specified. If the actuator is used in any manner other than that specified here, the manufacturer cannot be held liable for any resulting damage.

1 Components, CAHB-30/31 with limit switch option



1	Cable	2	Electromagnetic brake protection cover
3	AC motor, single-phase	4	Limit switch protection cover
5	Rear cover	6	Gearbox
7	Linear unit	8	Front attachment
9	Push tube	10	Guiding tube
11	Rear attachment		

2 Components, CAHB-30/31 with potentiometer and limit switch options



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1	Cable	2	Electromagnetic brake protection cover
3	AC motor, single-phase	4	Potentiometer output cable
5	Central housing for potentiometer	6	Rear cover
7	Gearbox	8	Linear unit
9	Front attachment	10	Push tube
11	Guiding tube	12	Rear attachment

4.1 Function

Operating principle

The linear actuator consists of an AC motor (starting capacity is included) that drives a linear unit via a gearbox. The linear unit converts the rotary motion of the motor and the gears in the gearbox into linear motion.

An actuator of the CAHB-30 series uses a lead screw. An actuator of the CAHB-31 series uses a highly efficient ball screw. The metal spur gear has a long service life, high efficiency, and high reliability.

The front attachment and the rear attachment transmit the actuator power to both sides of the application. A mechanical clutch and a motor thermal switch provide overload protection.

The stainless steel push tube, the paint coating, and the specially developed sealing system protect the actuator against water ingress and corrosion. All external components of the actuator, with the exception of the cable, cable gland, and seals, are made of metal parts, making the actuator robust for harsh environments.

An external electromagnetic limit switch (adjustable by the user after the product warranty has expired) and a potentiometer for position feedback are available as optional features. These options must be specified when placing the order.

4.2 Special features and options

Mechanical overload protection

The actuator contains an overload clutch as a mechanical overload protection device. This clutch is activated in the event of an overload of the linear unit. This activation prevents pushing or pulling beyond the maximum force specified in the data sheet and protects the motor and gear unit from damage.

⚠ CAUTION

Continuous operation of the overload clutch

Overheating and damage to the linear actuator

- Disconnect the actuator from the power supply as soon as the overload clutch is activated.

If the limit switches are configured, activation of the overload clutch will result in a loss of the limit switch position. If the overload clutch has been activated, the limit switch position must be recalibrated. Contact Schaeffler to have the limit switch position recalibrated.

Thermal protection

The thermal switch installed in the motor interrupts the motor power supply in the event of overheating. The thermal switch is automatically reset once the temperature falls below the threshold. Overloading or frequent operation of the actuator beyond the maximum duty cycle specified in the data sheet will cause the motor to overheat.

⚠ CAUTION

Actuator stops at high motor temperature

Damage caused by overheating

- Do not restart the actuator immediately; wait until the temperature has decreased.

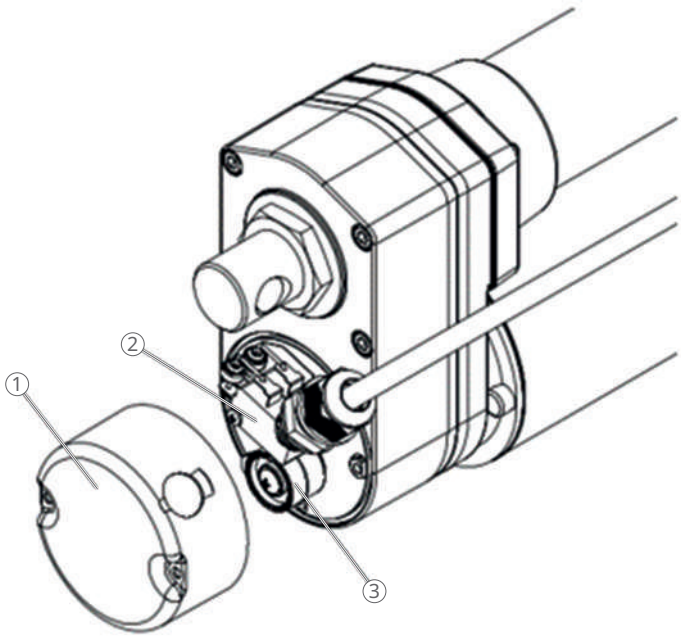
4.3 Special features

Unless otherwise specified, the listed options are available for the entire device series.

4.3.1 Limit switches

The limit switch in the linear unit stops the movement of the actuator at the end position. A cam is connected to the motor via gears. When the actuator reaches the end of the stroke, the cam actuates the limit switch, interrupting the power supply to the motor. The end position can be set at the factory to a value lower than the default value by adjusting the cam angle range. To request this, please contact Schaeffler before placing your order.

3 Limit switch



1	Protection cover	2	Limit switch
3	Cams		

During factory mounting, the protection cover and the retaining screws are furnished with a sealing compound. Opening the protection cover may damage these seals. If the screws are removed and the protection cover is removed or opened, the warranty will be void.

DANGER

Contact with live electrical components

Electric shock

- Ensure that the power supply is switched off before removing the protection cover. Alternating current is routed via the limit switch connection terminals.
- Secure the power supply against being switched on again.

4.3.2 Potentiometer

The potentiometer provides a signal indicating the position of the actuator. Additional information:

LA 1 | Lifting and Actuating Systems |
https://www.schaeffler.de/std/222A

5 Transport and storage

5.1 Transport

Safety instructions

NOTICE

Delayed reporting of damage

Rejection of claims for damages. Claims for damages can only be asserted within the carrier's complaint time limit.

- ▸ Report all damage immediately after detection.

On delivery, check immediately for completeness and transport damage. Return the device to the manufacturer if cracks have formed in the housing during transport.

To check that the delivery is complete, perform the following:

- Inspect the exterior of the device.

If the device has been damaged during transport, proceed as follows:

- Reject acceptance or only accept the product subject to reservations.
- Document the extent of the damage on the shipping documents or the delivery note provided by the shipping company.
- Submit a complaint.

Safety instructions

If you are intending to dispose of the packaging:

⚠ CAUTION

Improper disposal

Environmental damage

- ▸ Dispose of packaging material in an environmentally friendly manner
- ▸ Observe the local disposal regulations

The original packaging is intended to protect the parts from transport damage, corrosion and other damage until they are ready for installation. Therefore, do not destroy the packaging and only remove the device shortly prior to installation.

Keep the packaging in case of return shipment to the manufacturer. If the original packaging is no longer available, package the parts according to the expected transport conditions.

5.2 Storage

Observe the following during storage:

- Pack the device in its original packaging. Observe the ambient conditions ➤29|13.1.

5.3 Return shipment to the manufacturer

Proceed as follows for return transport:

- If required, remove the actuator ➤27|12.
- Pack the actuator in its original packaging.
- Send to the manufacturer. Contact Schaeffler for the delivery address

6 Mounting

Authorized personnel

Only qualified persons may carry out mounting and initial commissioning. Only qualified electricians are permitted to work on electrical systems.

Safety instructions

DANGER

Touching live electrical components

Electric shock

- Ensure that the power supply is switched off before starting the assembly

WARNING

Unexpected movements of the actuator

- Ensure that the actuator is locked out before starting the installation.

WARNING

Switching on the power supply without authorization

Electric shock during troubleshooting. Switching on the power supply is life-threatening for people in the danger zone.

- Switch off the power supply before starting work and secure it against being switched on again.

CAUTION

Incorrect installation of the optional devices

- If optional devices are installed or components have been retrofitted, they may only be installed in accordance with the circuit diagram in the respective manual.
- Electromagnetic compatibility during installation must be checked and the measures described in the respective manual must be taken.

6.1 Site

Observe the operating conditions, see Technical data. During installation, ensure that the device is not exposed to strong UV rays or corrosive or explosive air media.

6.2 Installation

The actuator is attached as follows: by means of the front attachment and the rear attachment.

Safety instructions

NOTICE

Non-concentric force

Damage to the actuator due to bending moments exceeding the actuator's load capacity.

- Align the actuator so that the applied force always acts concentrically on the shaft.

Observe the following during mounting:

- Ensure that lateral forces or torques are avoided during mounting.
- Screws must not be used.
- Select the fastening bolt material in accordance with the load exerted by the application.
- Select the fastening bolt diameter in accordance with the following document:

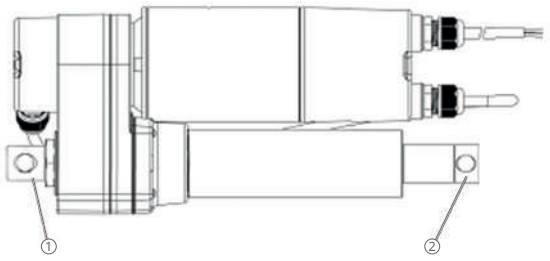
LA 1 | Lifting and Actuating Systems | https://www.schaeffler.de/std/222A

- The diameters of the holes in the attachment elements of the application and the diameters of the fastening bolts must be identical. The fits between holes and bolts must be designed in accordance with the general tolerance principle in order to achieve a backlash-free yet smooth fit.
- Never loosen or tamper with screws on the actuator.
- Do not connect the power cable until the actuator has been installed in the application.

If the actuator is supplied with power before installation, the actuator's push tube may rotate freely. If the push tube rotates freely, the stroke may be lost or the potentiometer may be damaged.

The actuator is secured as follows:

4 Fastening



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1	Rear attachment	2	Front attachment

5 Do not rotate the push tube

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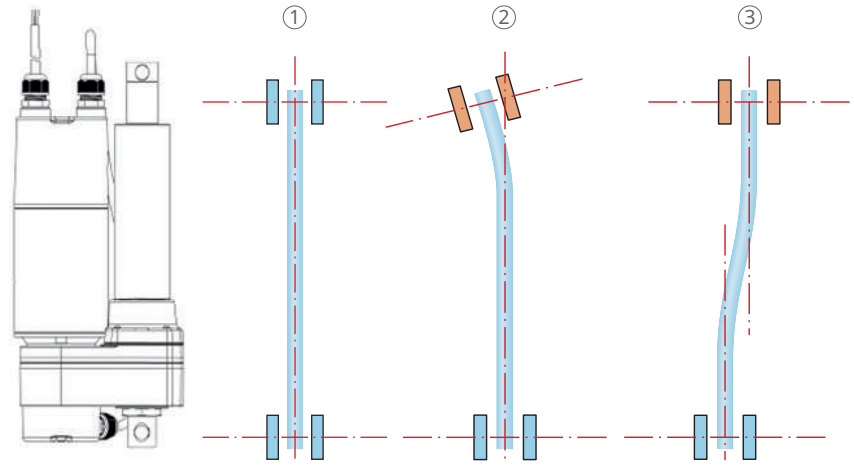
With the limit switch and potentiometer option, the actuator is mechanically configured at the factory to the ordered stroke. If the push tube is rotated too far relative to the actuator, the stroke setting will change and will no longer be correct. Excessive rotation may also result in malfunctions or damage to the potentiometer.

1. Connect the front attachment and the rear attachment to the attachment elements of the application. To align the hole with the axis of the elements, the push tube may be rotated.
   With limit switch and without potentiometer: by ±90°, but no further.
   With potentiometer: by ±45°, but no further.
2. Secure the fastening bolts against rotation and fasten them properly.
3. Align the actuator so that the applied force always acts concentrically on the shaft.

6 Alignment



1	Correct	2	Not parallel
3	Misaligned		

1. Ensure that the actuator is not blocked in its movement at any point in its stroke.
2. Ensure that the cable is not crushed, pinched, or pulled.
3. Connect the actuator to the power supply ➤20|7.2.
4. Ensure that neither the stranded power wires nor the stranded potentiometer wires are pinched during the application's motion sequences or during extension and retraction of the actuator.

7 Commissioning

7.1 Inspections prior to initial commissioning

Before initial commissioning, a qualified electrician must carry out the following checks, determine the measured values, and document both:

1. Visual inspection
2. Functional testing of operating functions and safety functions
3. Measured value for protective conductor resistance
4. Leakage current test
5. Measured values for insulation resistance

7.2 Connecting the power supply and potentiometer

Safety instructions

DANGER

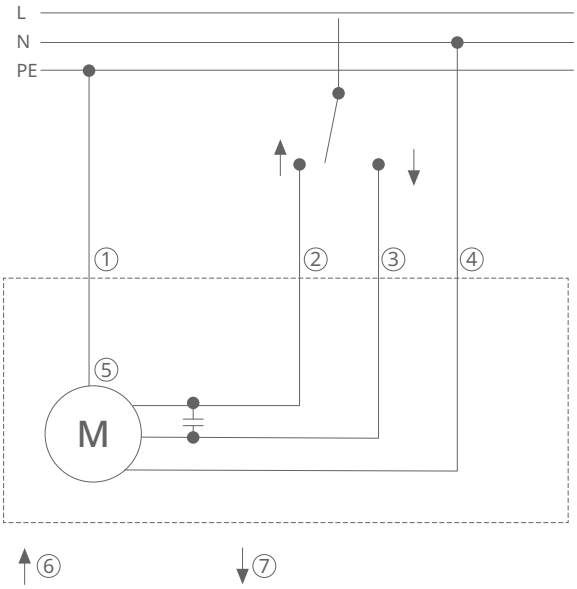
Improper installation

Electric shock

- Only qualified electricians are permitted to work on electrical systems.

Connecting diagrams

7 Wiring scheme AC 115/230 V, 50/60 Hz, no limit switch



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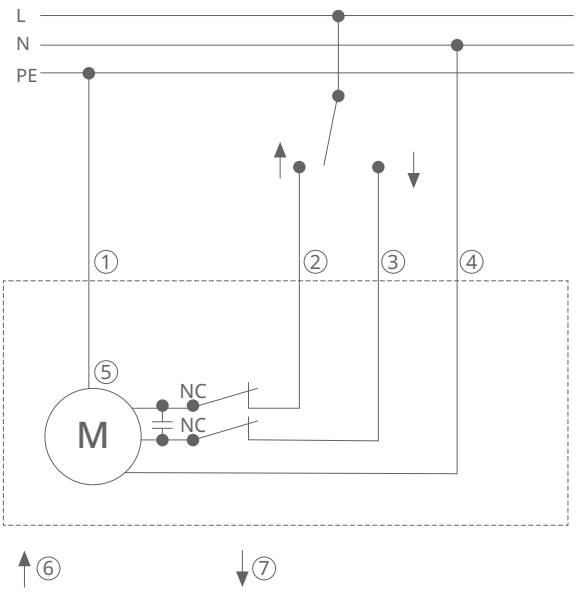
1	Green	2	Red
3	Black	4	White
5	Actuator	6	Extension
7	Retraction		

8 Wiring scheme AC 115/230 V, 50/60 Hz, end switch



1	Green	2	Red
3	Black	4	White
5	Actuator	6	Extension
7	Retraction	NC	normally closed

The green stranded wire must be connected to the PE wire to prevent electric shock.

When the actuator is fully extended, the switch on the red stranded wire opens. When the actuator is fully retracted, the switch on the black stranded wire opens.

3 Power supply

Stranded wire number	Diameter		Color	Function
	mm	AWG		
1	0.82	18	Red	Power (L): extend
2	0.82	18	Black	Power (L): retract
3	0.82	18	White	Power (N)
4	0.82	18	Green	PE

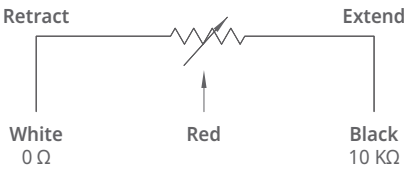
To connect the actuator to the power supply:

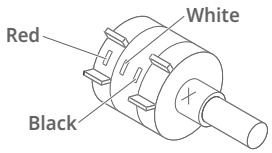
1. Note that the stranded power wires have a cross-section of 0.82 mm^2 (18 AWG). The stranded potentiometer wires are also red and black, but have a cross-section of 0.2 mm^2 (24 AWG).
2. Connect the stranded power wires to the power supply.

Wiring diagram for potentiometer

The potentiometer provides a signal indicating the position of the actuator. When connecting the actuator to the potentiometer, the colors of the stranded wires must be observed. The stranded wire colors are red, white, and black.

9 Potentiometer





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4 Potentiometer connection

Stranded wire number	Diameter		Color	Function
	mm	AWG		
1	0.2	24	Red	➤22|9
2	0.2	24	White	➤22|9
3	0.2	24	Black	➤22|9, recommended input voltage DC 5 V, rated power 2 W

8 Operation

Safety information

⚠ CAUTION

Moving actuator

Hand injuries due to crushing

- Ensure that there are no persons in the stroke area of the actuator during operation.
- Observe the information on the product label.
- Never manipulate the elements connected to the actuator while the actuator is in operation.

⚠ CAUTION

Contact with actuator attachments

Crushing wounds

- Ensure that neither objects nor body parts come into contact with the actuator attachments.

NOTICE

Static and dynamic overload

Damage to the device

- Observe the maximum permissible values, see *Technical Information*.
- Do not exceed the nominal value.
- Never manipulate the elements connected to the actuator during operation.

NOTICE

Ingress of fluids

Damage to the device if fluids penetrate during retraction or extension

- Keep fluids away.

NOTICE

Overheating

Device failure due to damage to the electronics

- Only use the integrated thermal switch of the control system.
- Never exceed the rated load, see *Technical Information*.
- Observe the max. operating time and break until the next operation sequence, see *Technical Information*.

8.1 Emergency switch off

In hazardous situations, all movements of the actuator must be stopped as quickly as possible and the power supply turned off.

In hazardous situations, proceed as follows:

- If necessary, activate the emergency shut-off immediately or interrupt the power supply.
- Evacuate persons from the danger zone.
- Initiate first aid measures.
- Inform the person responsible on site.
- Keep access routes for emergency vehicles clear.
- Depending on the severity of the emergency, notify the authorities if necessary.
- Have qualified personnel carry out the repair.

Safety information

⚠ WARNING

Malfunction of the device or non-functional safety equipment

- Ensure that all safety devices are installed and fully functional.
- Before restarting, check the actuator and the application that uses the actuator.
- Before restarting, make sure that all persons are outside the danger zone.

8.2 After use

- Disconnect the device from the power supply.

9 Troubleshooting

Safety instructions

DANGER

Touching live electrical components

Electric shock

- Ensure that the power supply is switched off before starting the troubleshooting.

WARNING

Unexpected movements of the actuator

- Ensure that the actuator is locked out before starting the troubleshooting.

WARNING

Switching on the power supply without authorization

Electric shock during troubleshooting. Switching on the power supply is life-threatening for people in the danger zone.

- Switch off the power supply before starting work and secure it against being switched on again.

Procedure in the event of malfunctions

If a malfunction occurs:

- If the malfunction poses an immediate danger to persons or assets: switch off the actuator or control unit immediately and secure it against restarting.
- Determine the cause of the malfunction.
- Inform the responsible persons on site about the malfunctions.

9.1 Startup after correcting a malfunction

The device is not designed to be repaired by the customer. In any case, please contact Schaeffler.

Once the malfunction has been corrected:

- Before restarting, carry out the steps described in the Assembly and Commissioning sections.

10 Decommissioning

- Disconnect the actuator from the control unit.

11 Maintenance

Safety instructions

DANGER

Improper maintenance

Electric shock due to contact with live electrical components

- Only qualified electricians are permitted to work on electrical systems.

WARNING

Switching on the power supply without authorization

Electric shock during troubleshooting. Switching on the power supply is life-threatening for people in the danger zone.

- Switch off the power supply before starting work and secure it against being switched on again.

11.1 Maintenance work

11.1.1 Cleaning

To be performed by the operator

If the device is dirty, clean it immediately to prevent residue from forming.

Safety information

NOTICE

Damage due to improper cleaning

Improper cleaning of the device may cause damage to the device.

- Do not use aggressive cleaning agents. Wash water, including chemical additives, must be pH-neutral.
- Only use cleaning agents specified by the manufacturer.
- Do not use steam cleaners or high-pressure cleaners.
- Other cleaning agents or cleaning devices may only be used with the manufacturer's approval.
- When retracting or extending, the actuator must not come into contact with liquids.

Observe the following points when cleaning:

- Disconnect the device from the power supply.
- Clean dirty parts. Use a damp cloth.

11.2 Measures following completed maintenance

After completing the maintenance work, perform the following steps before recommissioning the device:

1. Ensure that all tools, material and other devices used during maintenance have been removed from the work area.
2. Clean work area and remove any spilled fluids, process media, etc.
3. Ensure that all system safety measures are working properly.
4. Check functions against product specifications.
5. Document inspections in the maintenance log.

12 Dismounting

Personnel

Dismantling may only be carried out by qualified personnel.

Only qualified electricians are permitted to work on electrical systems.

Safety instructions

DANGER

Touching live electrical components

Electric shock

- Ensure that the power supply is switched off before starting the dismantling.

WARNING

Unexpected movements of the actuator

- Ensure that the actuator is locked out before starting the installation.

WARNING

Loosely stacked components or components or tools placed on the floor

Risk of tripping

- Ensure that the workstation is clean and tidy.
- Secure components in such a way that the components cannot fall down or tip over.

WARNING

Insufficient information

Improper dismantling

- Dismantle the components in accordance with the applicable local regulations.
- For any questions or concerns, please contact Schaeffler.

WARNING

Sharp-edged components such as pins and corners on the individual components or on required tools

Severe cuts

- Ensure that there is sufficient space for the disassembly
- Handle sharp-edged components with care.

Dismantling is carried out as follows:

- Disconnect the actuator from the power supply.
- Secure the application elements in such a way that no load can be exerted on the actuator attachments.
- Loosen and remove the fastening bolts.
- Disconnect the actuator from the application elements.
- Clean the actuator.
- Pack everything carefully for shipping to the manufacturer ➤16|5.1.

12.1 Disposal

Provided that no take-back agreement or disposal agreement has been put in place, the disassembled components should be recycled. How to dispose of the product:

- Dispose of metal parts and plastic components at an appropriate recycling center.
- Sort the remaining components separately according to the respective materials and dispose of them according to the applicable local regulations for occupational health and safety and the environment.

Safety information

⚠ CAUTION

Improper disposal

Environmental damage

- Electronic waste, electronic components, lubricants and other additives must only be disposed of by approved specialist companies.

The local municipal authorities or specialized waste management companies can provide information concerning environmentally appropriate disposal.

13 Technical data

Detailed information on dimensions, weights, performance data, connection values, etc.:

LA 1 | Lifting and Actuating Systems |
https://www.schaeffler.de/std/222A

PDB 111 | EWELLIX Linear Actuators | CAHB |
https://www.schaeffler.de/std/225E

13.1 Ambient conditions

Storage

The product may only be stored in its original packaging under the following ambient conditions:

- dry and dust-free environment, not outdoors
- protected from sunlight and UV radiation
- chemically non-aggressive environment
- no mechanical shocks
- temperature: −26 °C to +65 °C
- relative atmospheric humidity: max. 95 %, non-condensing

If the product is stored for an extended period, check the condition of the packaging every 6 months.

If additional storage instructions are indicated on the packaging that go beyond the requirements listed here, those instructions must also be observed.

Operation

The product may only be operated under the following ambient conditions:

- indoor use only
- temperature from −26 °C to +65 °C
- temperature for full performance from 0 °C to +40 °C
- relative atmospheric humidity max. 90 %, non-condensing

The following list describes the maximum duty cycle of the actuator. The duty cycle describes the maximum continuous operating time in relation to the break time required for the actuator to cool down. The duty cycle can be indicated as a number in %.

The duty cycle can be calculated as follows:

f_1 Determining the duty factor

$$D = \frac{N}{N+R} \cdot 100$$

D	%	Duty factor
N	s	Time running under load
N+R	s	Total cycle time
R	s	Rest time

Actuators with UL mark

The values apply to rated load and an ambient temperature of +20 °C.

- max. duration of continuous operation without break: 90 s
- break until next operation sequence: 810 s
- max. duty cycle at rated load: 10 %

Actuators without UL mark

The values apply to rated load and an ambient temperature of +20 °C.

- max. duration of continuous operation without break: 90 s
- break until next operation sequence: 270 s
- max. duty cycle at rated load: 25 %

⚠ CAUTION

Break too short before the next operation

Overheating and damage to the actuator

▸ Before operation, check whether a UL mark is present on the type plate.

13.2 Operating voltages and limits

The actuator is available in 2 supply voltage options:

- N for a nominal voltage of AC 115 V at 60 Hz
- P for a nominal voltage of AC 235 V at 50 Hz

Significant voltage fluctuations affect the performance of the motor and the electromagnetic brake. The normal operating voltage must remain within ±10 % of the nominal voltage.

13.3 Actuator mass

The approximate mass can be calculated using the following formulas:

- $W_{30} = 5.03 \cdot 0.0098 \cdot S$
- $W_{30P} = 5.48 \cdot 0.0098 \cdot S$
- $W_{31} = 5.53 \cdot 0.0098 \cdot S$
- $W_{31P} = 5.98 \cdot 0.0098 \cdot S$

5 Legend

Symbol	Unit	Description
W_{30}	kg	CAHB-30 without potentiometer, mass
W_{30P}	kg	CAHB-30 with potentiometer, mass
W_{31}	kg	CAHB-31 without potentiometer, mass
W_{31P}	kg	CAHB-31 with potentiometer, mass
S	mm	Stroke length

13.4 Declaration of incorporation

EWELLIX

CN99-Declaration-EHSQ-5420

Declaration of Incorporation (CAHB3X)

According to Annex IIB of Directive on machinery 2006/42/EC

The products listed below, are partly completed machineries intended to be assembled with other machine, unit or system. Their installation should not be approved until the user has ensured that the provisions of the EC/EU Directives applicable to the end product in question have been fulfilled.

Product
CAHB30-PxA-xxxxxx-xxxxxx-xxx 230V AC
CAHB31-PxN-xxxxxx-xxxxxx-xxx 230V AC

The products are designed and manufactured in conformity to the following directives:

2006/42/EC	Machinery, essential safety requirements
2014/35/EU	Low Voltage Directive

Used standards

Title	Reference- No.	Edition
Safety of machinery – Basic concepts, general principles for design Risk assessment and risk reduction	EN ISO 12100	2010
Household and similar electrical appliances - Safety - Part 1: General requirements	EN 60335-1	2012 +A11:2014
Safety of household and similar electrical appliances - Part 2-97: Particular requirements for drives for rolling shutters, awnings, blinds and similar equipment	EN 60335-2-97	2006 + A11:2008 + A2:2010 + A12: 2015

The technical documentation according annex VII part B is compiled and will transmitted to the national authorities on a reasoned request in electronic form.

Authorized person for the technical documentation: Amy Chen

Manufacturer:

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EHS and Quality Manager

Ford Cai
Product Development Manager

Author: Amy Chen
Approver: Ford Cai
Release Date: 31/Aug/2022
Revision: 0

14 Spare parts

⚠ WARNING

Unsuitable or faulty spare parts

Impairment of safety, damage, malfunctions or total failures

- Spare parts in or on the device may only be replaced by Schaeffler.

Customers are not allowed to repair the actuator. All warranty and service claims will be forfeited without prior notice if screws on the actuator have been tampered with. The actuator must be dismounted and sent to the manufacturer to replace any spare parts.

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