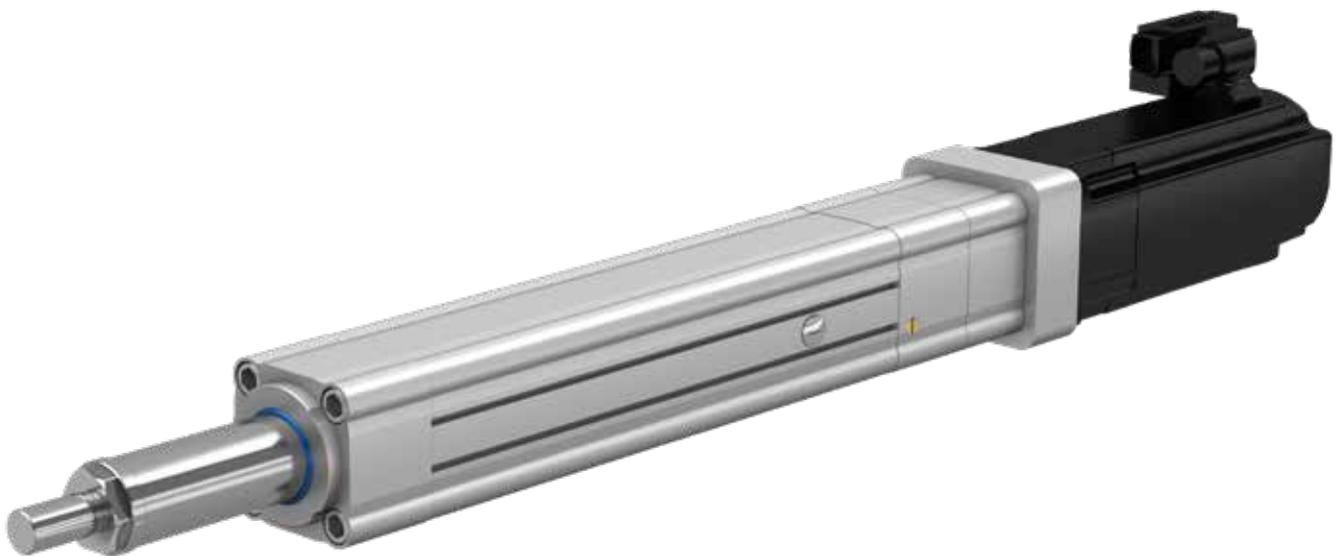
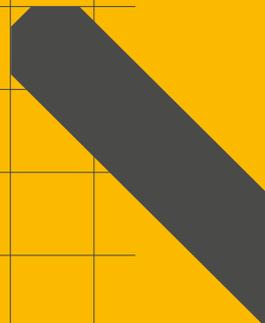
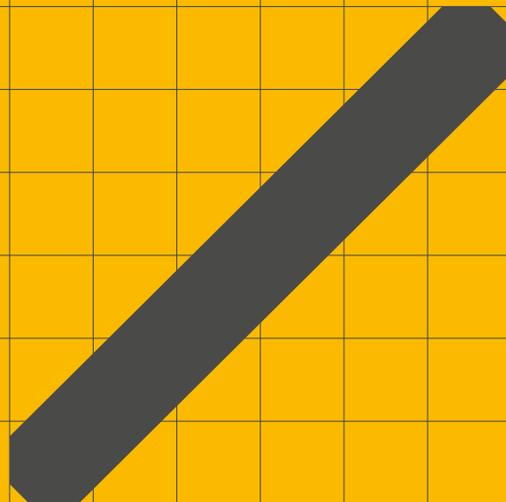
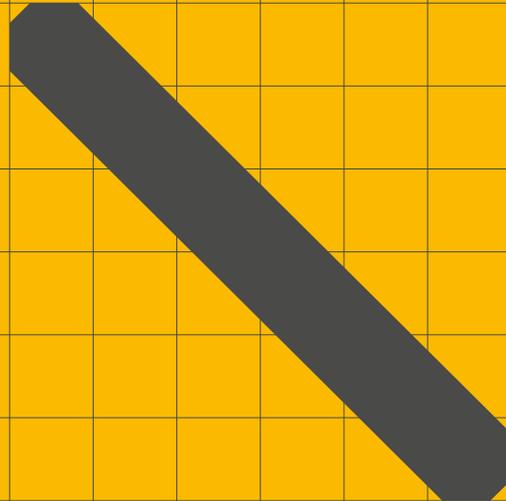


INSTALLATION, OPERATION AND MAINTENANCE MANUAL

CASM-100





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⚠ WARNING

Read this manual before installing, operating or maintaining this actuator. Failure to follow safety precautions and instructions could cause actuator failure and result in serious injury, death or property damage.

1.0 General information

1.1 Information about this manual

This manual provides important information on how to work with the actuator (also called device or drive) 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.

For a better representation of the circumstance of use, the illustrations used are not necessarily to scale and may vary from the actual design of the device.

1.2 Explanation of symbols and signal words

Safety precautions

Safety precautions are identified by symbols and signal words as shown to the right. 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.

DANGER

Indicates a dangerous situation, which will lead to death or serious personal injury, if the precautionary measures are ignored.

WARNING

Indicates a dangerous situation, which can lead to minor or moderate injury or property damage, if the precautionary measures are ignored.

CAUTION

Indicates a dangerous situation, which can lead to minor or moderate injury, if the precautionary measures are ignored.



NOTE

Emphasizes useful hints and recommendations as well as information for efficient and trouble-free operation.

1.3 Limitation of liability

All information and notes in this manual were compiled under due consideration of valid standards and regulations, the present status of technology and our years of knowledge and experience.

The manufacturer will not be liable for damage resulting from:

- disregarding this manual
- unintended use
- employment of untrained personnel
- unauthorized conversions
- technical modifications
- manipulation or removal of the screws on the actuator
- use of unapproved spare parts

In case the actuator is customised, the actual product delivered may be different from what is described in the manual. In this case, ask Ewellix for any additional instructions or safety precautions relevant to these actuators.

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

1.4 Copyright

This manual is protected by copyright law and exclusively to be used for internal purpose of Ewellix customers.

Passing this manual on to third parties, duplication of any kind – even in the form of excerpts – as well as the external use and/or disclosure of the contents without the written consent of the manufacturer is not permitted.

Ewellix reserves the right to seek compensation for violations of these restrictions.

1.5 Spare parts

The CASM-100 linear actuator is not meant to be repaired by customer personnel. All warranty and service claims become void without notice if any screws on the linear actuator have been loosened or removed (↳ **9 Malfunctions, page 24**).

WARNING

Safety hazard caused by use of non-genuine spare parts
Wrong or faulty spare parts can adversely affect safety and cause serious injury, damage, malfunction or total failure.

Therefore:

- Spare parts in/on the device may only be replaced by the manufacturer.

The device must be dismantled and sent to the manufacturer for repair and replacement of spare parts. The address where to send the device back for repair is listed on the back cover of this document.

1.6 Warranty terms

The applicable and effective warranty terms are those contained in the manufacturer's terms and conditions of sale.

1.7 Customer service

Ewellix Customer Service is always available to provide technical information and answer questions.

See the contact information for Ewellix Customer Service on the back cover.

2.0 Safety

This chapter provides an overview of all important safety precautions for protection of personnel as well as safe and trouble-free operation.

Disregarding this manual and the safety precautions specified therein may result in increased risk of serious injury or death.

2.1 Intended use

The device has been designed and built exclusively for its intended purpose as described in these instructions.

The device is only to be used as a dynamic centric compression or tensile-loaded lift. It will be implemented in industrial and construction technology applications.

⚠ WARNING

Risk from misuse!

Any utilization of this actuator beyond its intended purpose may lead to potentially hazardous situations.

Therefore:

- Strictly adhere to all safety precautions and instructions in this manual.
- Do not allow this actuator to be subjected to weather conditions, strong UV rays, corrosive or explosive air media as well as other aggressive media.
- Do not modify, retool or change the structural design or individual components of the actuator.
- Never use the actuator outside of the technical application and operational limits.

2.2 Responsibility of the owner and processor

The device is designed for personal use and is also used in commercial applications by owner or processors.

The processor is the contracting partner of the reseller or the manufacturer. The processor installs the device in a complete system (application).

Any injury, damage or loss caused by violation of these instructions will be the responsibility of the customer.

In addition to following the safety instructions in this manual, the owner or processor must do the following concerning the safety and accident prevention guidelines and environmental protection regulations applicable to the site of the system's installation:

- Inform themselves of applicable industrial safety regulations and use risk assessment to determine additional hazards that arise due to the specific working conditions

prevailing at the site where the device is installed. The risk assessment must be implemented in the form of work instructions for device operation.

- Must confirm that the work instructions created for the system including the device satisfy current legal requirements and modify the instructions if they don't.
- Clearly regulate and specify the responsibilities for installation, operation, maintenance, and cleaning the system.
- Ensure that all employees who deal with the device have read and understood this manual.
- Provide personnel with the required protective equipment.
- Must train personnel at regular intervals and inform personnel of the hazards .

In addition, owner must ensure that the device is in adequate working condition. They must do the following:

- Ensure that the maintenance intervals described in these instructions are complied with.
- Have all safety devices inspected regularly for function and completeness.

2.3 Personnel requirements

WARNING

Improper installation, operation and maintenance can result in serious injury, death or property damage.

Use only qualified, trained personnel (as described below) who have read, understand and follow these instructions.

2.3.1 Qualifications

The following qualifications are specified for different areas of activity listed in the manual.

- **A trained person (Operator)**
has been instructed by the customer in an orientation session on the assigned tasks and possible dangers in case of improper behaviour.
- **Qualified personnel**
based on their professional training, know-how and experience as well as knowledge of the applicable standards and regulations are able to perform assigned work activities and to detect and avoid possible dangers on their own.

Only persons who are expected to perform their tasks reliably are permitted as personnel. Persons whose reaction capability is impaired, e.g. through drugs, alcohol or medication, are not permitted.

2.4 Safety equipment

WARNING

Danger due to malfunctioning safety equipment

For safe operation, be sure all features are in good working order.

Therefore:

- Always check functionality of safety equipment according to the maintenance plan.
- Never disengage safety equipment.
- Safety equipment may never be bypassed or modified.

Integration of an emergency-stop system required (for certain applications).

The device is only intended for installation into an application or system. It does not have its own operating control elements and does not have its own emergency-stop-function.

Install the device so that it is part of an emergency shut-off system and can be stopped if necessary.

The emergency shut-off system has to be connected in such a way that a disruption of the power supply or the reactivation of the power supply after a power disruption cannot cause a hazardous situation for persons and objects.

The emergency shut-off system must always be easily accessible.

NOTE

The processor must decide which applications require the installation of an emergency shut-off system.

2.5 Modifications to the device

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

2.5.1 Warning labels



The symbol to the left can be found on the actuator near the hot surface danger.

Hot surfaces on actuator can cause burns and should not be touched. Protection must be provided against accidental contact if necessary.

WARNING

Danger because of illegible symbols

Over the course of time stickers and decals may become dirty or illegible for some other reason.

Therefore:

- Keep any safety, warning and operation related decals in legible condition at all times.
- Replace damaged decals or stickers immediately.

3.0 Technical data

NOTE

The technical data (dimensions, weight, output, connection values, etc.) can be found in the drawings and data sheets at the end of this manual (L→ 11 Appendix, page 27).

3.1 Operating conditions

Environment Information	Value	Unit
Temperature range	-40 to +50	°C
Relative atmospheric humidity, maximum (no build up of condensation)	95	%

WARNING
The surface temperature of the actuator should not exceed 60°C. Exceeding this temperature will decrease the life rating of the actuator as described in the performance diagram.

WARNING
The actuator is not intended to be applied with side loads. Side loads must be avoided by proper guiding and mounting. If side loads occur, this might result in decreased lifetime or structural damage of the actuator.

3.2 Product labels

3.2.1 Linear unit label



The product label provides the following information:

1. Type designation
Line 1: Linear unit
Line 2: Gearbox
Line 3: Motor kit
2. Serial number
3. Manufacturing date (month/year)
4. QR-code (with type designation)

3.2.2 Gearbox label



The gearbox product label can always be found on the product, also if the gearbox was ordered separately. The product label provides the following information:

1. Type designation
2. Article number
3. Ratio
4. Serial number
5. Internal use code
6. Manufacturing date
7. Bar code

4.0 Structure and function

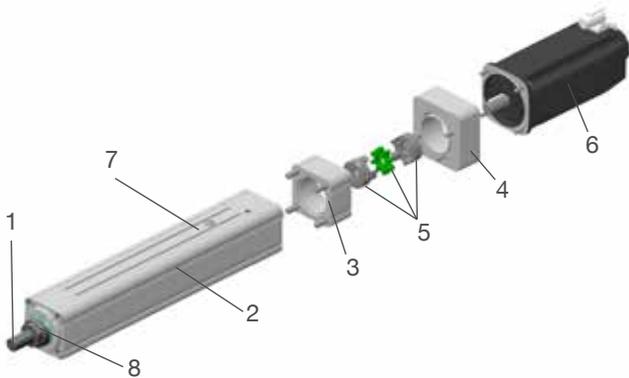
4.1 Brief description

The CASM-100 (see image below) is a mechanical drive designed to work in factory automation. The drive is used exclusively for dynamic center compression or traction movement.

The linear unit (7) is powered thru a coupling (5) by a motor (6). The motor (6), in direct drive, set in motion either a ball or a roller screw system. Via the screw mount, the system transforms the rotation of the motor (6) into a linear motion of the actuator.

The push tube (8) and the other accessories transmit the actuator power in the application.

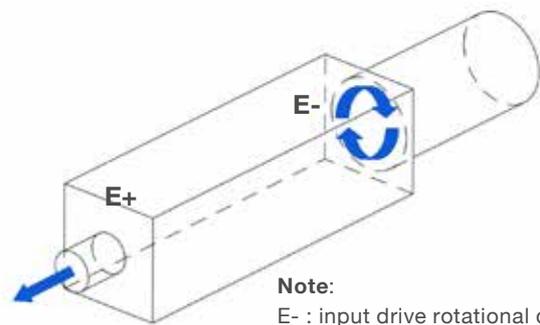
4.1.1 CASM-100 actuator overview



CASM-100

1. Thread for front attachment
2. Protection tube
3. Inline gearbox (option)
4. Motor adapter (option)
5. Coupling (option)
6. Siemens motor 1FK7 (option)
7. Linear unit
8. Push tube

4.2 Direction of motor during extension of the cylinder

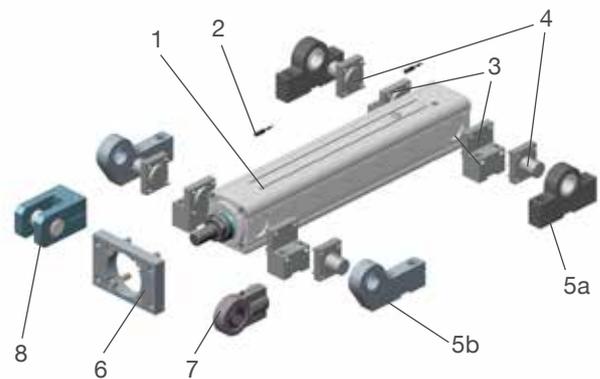


Note:

- E- : input drive rotational direction
- E+ : push rod linear direction

4.3 Overview

4.3.1 CASM-100 accessories overview



CASM-100 accessories

1. Linear unit
2. Proximity sensor
3. Foot mount
4. Pivot pin (pair)
- 5a. Trunnion bracket centric (pair)
- 5b. Trunnion bracket eccentric (pair)
6. Front flange
7. Rod end
8. Rod clevis

4.4 Sensor mounting

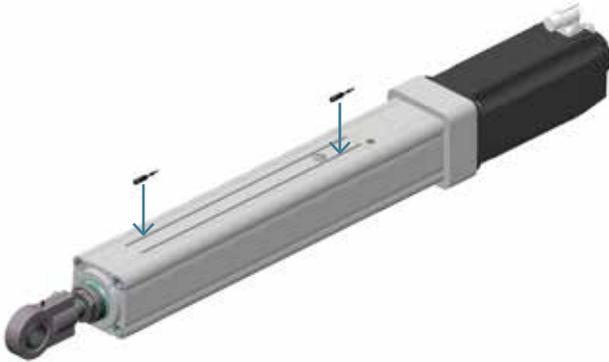
- Sensor can be inserted in two slots on the CASM-100 electro cylinder (see image below).
- Install the sensors: the sensors can be inserted into the slots from above. The cable ends should lead into the drive direction. Push the sensors to their approximate positions in the slots of the cylinder body. Tighten the fixing screws on the limit switches slightly and lead the cable along the profile slots.

NOTE

Instructions to install the sensor can be found on the supplier's website.

Supplier : Balluff (www.balluff.com)

Sensor Type : BMF 235K



5.0 Delivery, packaging and storage

5.1 Safety information for transport

NOTICE

Damage due to improper transporting

Significant material damage can occur in conjunction with improper transport.

Therefore:

- Proceed carefully during the unloading and delivery of the packaged items to its final destination and comply with the information shown on the packaging.
- Only remove the actuator from its packaging right before installation.
- Note storage requirements if actuator needs to be returned to the manufacturer (↳ **5.5 Storage, page 12**).

5.2 Delivery inspection

The CASM-100 linear actuator is delivered as one packaged unit in a box or on pallets.

Check the delivery for completeness and damage immediately upon receipt.

Check completeness of delivery:

- Unpack drive.
- Check that the options are mounted or packed.
- Check the drive for damage, scratches, dents.

Proceed as follows in conjunction with visible exterior transport damage:

- Do not accept delivery or do so only with reservations.
- Record scope of damage on the transport documents or on the bill of delivery of the shipping company.
- Initiate complaint.



NOTE

Report any damage as soon as it has been recognized. Damage claims can only be asserted within the transporter's applicable complaint period.

5.3 Returning actuator to the manufacturer

Proceed as follows for the return transport:

1. Dismantle the device if necessary (↳ **10 Dismantling, page 26**).
2. Pack device in its original packaging. Follow storage conditions (↳ **5.5 Storage, page 12**).
3. Send to manufacturer.

5.4 Packaging

For packaging

The individual packaged pieces have been packaged appropriately according to the expected transport conditions.

Only environmentally- friendly materials were used for the packaging.

The packaging is supposed to protect the individual components from damage caused by the transport, corrosion and other damage until they are ready for installation. Therefore, do not destroy the packaging and only remove it shortly prior to the installation. Keep packaging for possible return shipment to the manufacturer (↳ **5.3 Returning actuator to the manufacturer**).

If you want to dispose of the packaging, please note and adhere to the following:



NOTE

Environmental damage due to incorrect disposal

Packaging material consists of valuable raw materials and in many cases they can be sensibly recycled and reused.

Therefore:

- Dispose of packaging material in an environmentally correct way.
- Comply with locally applicable disposal regulations.

5.5 Storage

Pack the actuator in its original packaging for storage.

- Do not store outside.
- Storage should be dry and dust-free.
- Keep away from any aggressive media.
- Protect from UV radiation.
- Avoid mechanical vibrations.
- Storage temperature: -40 to 50 °C.
- Relative atmospheric humidity: max. 95% (no build up of condensation).
- To store longer than three months, check the general condition of all parts of the packaging on a monthly basis. If necessary, refresh or renew the conservation.



NOTE

It is possible that there are notices on the packaging concerning storage which go beyond the requirements listed here. If so, follow those notices

5.6 Handling

Handle the actuator in a safe manner to avoid injuries or damage to material and environment. For long actuators, use appropriate tools for lifting and moving the actuator such as safety strings and cranes due to the increased weight.



NOTE

If ordered with a motor adapter, the actuator is equipped with a M12 thread for handling. It is recommended to use an eye bolt and clevis to attach the lifting equipment by a safety string.

6.0 Installation and initial operation

Authorized personnel

The installation and initial operation may only be conducted by qualified personnel.

⚠ WARNING

Risk of injury and material damage due to incorrect installation of the accessories

Therefore:

- Optional devices may only be installed in accordance with their respective instructions.

6.1 Installation location

Install in a location where the actuator is not exposed to strong UV radiation or corrosive or explosive air media.

6.2 Inspections prior to initial operation

Performed by professional electrician.

Prior to the initial operation, a professional electrician must perform and document the following tests and readings:

- Check visual condition
- Function check of operating features and safety features



NOTE

See additional information concerning inspections and readings (↳ [8 Maintenance, page 21](#)).

6.3 Installation

Installation is to be performed by trained personnel.

⚠ WARNING

Risk of injury and material damage due to loosening or removal of the screws on the device

Removal or loosening of the screws on the linear unit may lead to injuries and material damage during the operation.

Therefore:

- Never loosen or remove screws on the linear unit.

The CASM-100 Linear actuator (see image below) is attached to two elements via the push tube and the mounting accessories.

1. Assemble the motor onto the linear unit if the product is not premounted (↳ [7.5 Installation instruction CASM-100, page 16](#)).
2. Screw the rod clevis or rod end (2) on the push tube and tighten up the two screws.



3. Bolt the mounting accessories to the actuator if not pre-mounted (↳ [4.3.1 CASM-100 accessories overview, page 9](#)).
4. Secure elements of the application in which the linear actuator will be installed.
5. Connect the rod end (2) and the mounting accessories (1) and the elements of the application with the fastening bolts (see image below).



⚠ WARNING**Risk of injury and material damage due to insufficient fastening!**

Only use fastening bolts and secure them adequately. Do not use screws to install. Never loosen or remove screws on the actuator.

6. During installation, ensure that the applied force is always directed on the center of the actuator.

⚠ WARNING**Risk of injury and material damage due to incorrect installation!**

During installation, do not subject the actuator to side-impact or to turning forces.

7. Ensure that the linear actuator is not impacted in its movement over the entire stroke area . Consider collision tests of the application.
8. Ensure that the installation requirements of the options have been met.
9. Affix prohibition and warning labels for the application onto the linear actuator, if necessary (↳ **2.5.1 Warning labels, page 7**).
10. Start set-up for reference travel with limited load and speed: CASM-100: 1×10^{-3} J maximum

NOTICE

Do not reach the mechanical limit of the drive during operation. Doing so will result in irreversible damage to the drive.

7.0 Operation

7.1 Safety

DANGER

Risk of crushing

While moving onto solid objects, the force of the device may cause injuries.

Therefore:

- Ensure that there are no persons in the stroke area of the device while in operation.
- Take note of maximum permissible operating parameters for the device (↳ **11 Appendix, page 27**).
- Do not touch elements connected to the device while the device is in operation.

DANGER

If a part of the actuator fails (screw fracture, loss of input torque), the working mass will drop.

Therefore:

- Additional safety features must be in place to protect the workplace.
- When there is no input torque, the push tube can be moved manually or by gravity. A motor with fail safe brake is highly recommended, particularly for vertical application.
- Check the drive regularly for signs of excessive wear (↳ 8.2 Maintenance work, page 22).

CAUTION

Material damage due to static and dynamic overload of the device

Static and dynamic overload can lead to damage and failure of the device.

Therefore:

- Adhere to maximum permissible operating parameters for the device (↳ **11 Appendix, page 27**).
- Never exceed nominal load.

WARNING

Burn hazard. Do not touch running actuator which gets hot.

NOTICE

Actuator may be damaged if liquids penetrate the actuator during extension and retraction. Keep liquids away.

NOTICE

Material damage through overheating

An overheating of the device can cause damage.

Therefore:

- Only use control integrated thermal switch.

NOTICE

Actuator may be damaged if chemical substances penetrate the actuator or get in touch with the actuator's surface. Keep chemical substances away.

7.2 Turn on



NOTE

The device does not feature its own operating control elements. The operation takes place via a separate operating element (see separate operating manual).

7.3 Turn off



NOTE

The device does not feature its own operating control elements. The operation takes place via a separate operating element (see separate operating manual).

7.4 Action before use

Ensure that there are no persons or objects in the stroke area of the device.

NOTICE

Contamination of the devices can cause serious damage

Therefore:

- Clean dirty parts immediately after they become dirty (↳ **8.2.1 Cleaning, page 22**).

7.5 Installation instruction CASM-100

7.5.1 Motor adapter

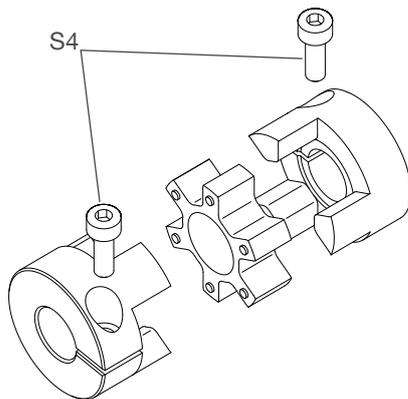
The motor adapter is to install a motor with an axially designed shaft (↳ **7.5.2 Recommended motors**) to a CASM-100 linear unit.

7.5.2 Recommended motors

The Siemens motors provided by SKF come with a differential resolver or multi-turn encoder, a shaft-end with keyway (1FK7044 without) and a holding brake. In addition, they are equipped with a Drive-CLiQ interface. A rotating plug adapter simplifies the connection and cable routing in all installation positions.

Motor types		1FK7044-4CH71-1U	1FK7064-4CF71-1RB0	1FK7086-4CF71-1RB0	1FK7105-2AF71-1RB0)
Designation	Unit				
Rated power (100K)	kW	1,4	2,5	3,75	8,2
Rated speed	min ⁻¹	4 500	3 000	3 000	3 000
Rated current	A	3,9	7,6	5,7	18
Rated torque (100K)	Nm	3	8	6,5	26
Static torque (100K)	Nm	4,5	12	28	48
Peak torque	Nm	13	32	105	150
Inertia with brake	10 ⁻⁴ kgm ²	1,62	8,5	25,5	162
Weight with brake	kg	8	16,8	26	43,5

7.5.3 Coupling installation



- Push the first coupling hub with spline onto the screw shaft of the linear unit as far as possible.
- Push the coupling hub on the motor shaft and align the coupling bore with the end of the motor shaft.

NOTE

Tighten the screws (**S4**) to the torques specified in **table 1 and 2**

NOTE

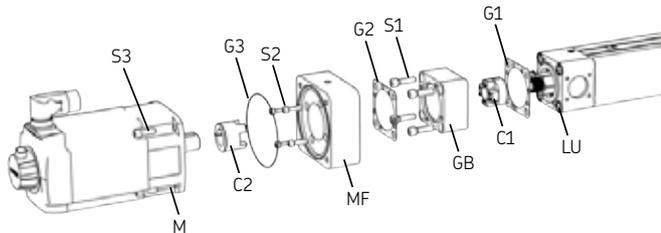
The relevant seal must always be fitted between all components to ensure the requisite degree of IP protection.

 NOTE

For the following steps, check the required screw size and the tightening torques using the values indicated in **table 1 and 2**.

7.5.4 Synchronous Servo Motors

Inline mounting



- Attach the coupling (**C1**) on the linear unit (**LU**) using screw (**S4**).
- Fit the inline gearbox (**GB**) on the linear unit (**LU**) by inserting the gasket (**G1**) between the two components and tightening the housing using four screws (**S1**).
- First put the gasket (**G2**) on the inline gearbox (**GB**) then attach the motor flange (**MF**) to the inline gearbox (**GB**) and tighten the screws (**S2**).
- Attach the coupling (**C2**) to the motor (**M**) using screw (**S4**).
- Put the sealing (**G3**) into the groove in the motor flange (**MF**) and tighten the screws (**S3**) to secure the motor (**M**) to the motor flange (**MF**).

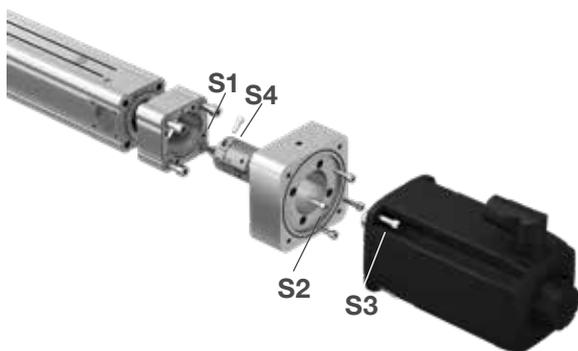
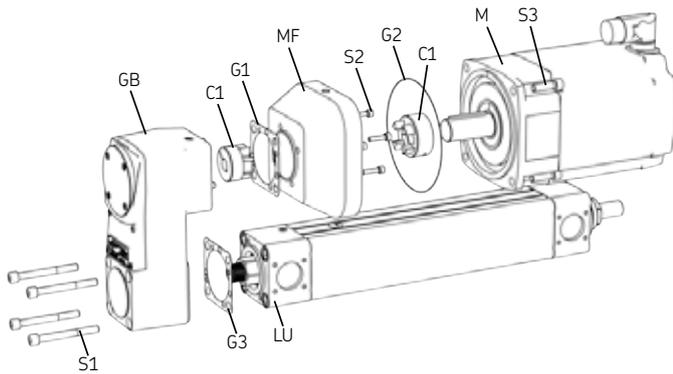


Table 1

Screw size/tightening torques (parallel)

Siemens Motor type	S1 (Gearbox)		S2 (Motor adapter)		S4 (Coupling)		S3 (Motor)	
	Screw	Torque M_A	Screw	Torque M_A	Screw	Torque M_A	Screw	Torque M_A
1FK704X	M12x40	75 Nm	M8x30	20 Nm	M6x20	10 Nm	M6x30	10 Nm
1FK706X	M12x40	75 Nm	M8x30	20 Nm	M6x20	10 Nm	M8x30	20 Nm
1FK708X	M12x40	75 Nm	M8x30	20 Nm	M6x20	10 Nm	M10x30	40 Nm
1FK710X	M12x40	75 Nm	M8x30	20 Nm	M6x20	10 Nm	M12x40	75 Nm

Parallel mounting



- Fit the linear unit (**LU**) onto the gearbox (**GB**) by inserting the gasket (**G3**) between the two components and tighten the screws (**S1**).
- Attach the coupling (**C1**) to the motor (**M**) using screw (**S4**).
- Fit the motor flange (**MF**) onto the gearbox (**GB**) by inserting the gasket (**G1**) between the two components and tighten the screws (**S2**).
- Put the sealing (**G2**) into the recess in the motor flange (**MF**) and tighten the flange with four screws (**S3**).

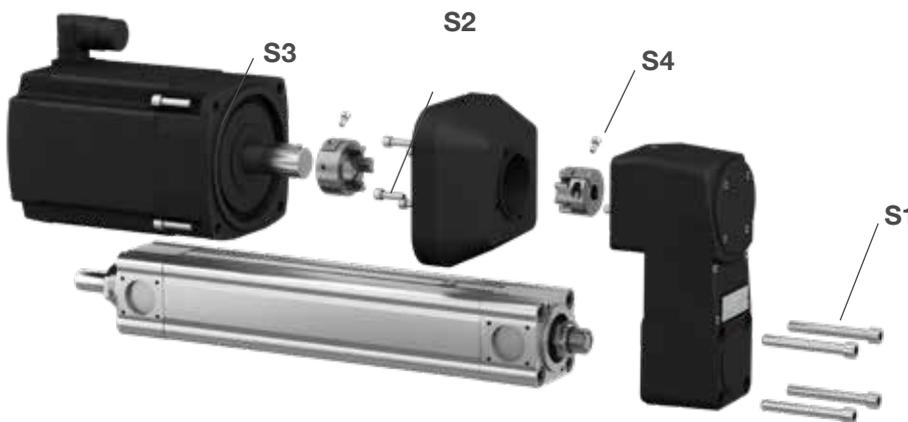
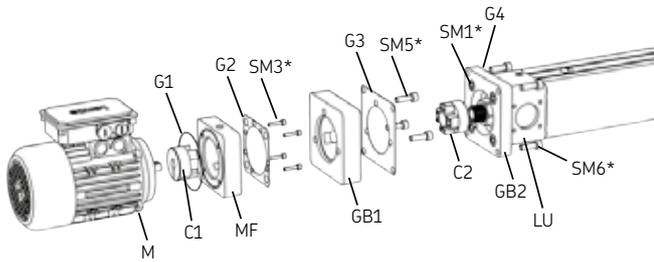


Table 2

Screw size/tightening torques (parallel)								
Siemens Motor type	S1 (Gearbox)		S2 (Motor adapter)		S4 (Coupling)		S3 (Motor)	
	Screw	Torque M _A	Screw	Torque M _A	Screw	Torque M _A	Screw	Torque M _A
1FK704X	M12x110 – M12x140	40 Nm - 75 Nm	M8x30	20 Nm	M6x20	10 Nm	M6x30	10 Nm
1FK706X	M12x110 – M12x140	40 Nm - 75 Nm	M8x30	20 Nm	M6x20	10 Nm	M8x30	20 Nm
1FK708X	M12x110 – M12x140	40 Nm - 75 Nm	M8x30	20 Nm	M6x20	10 Nm	M10x30	40 Nm
1FK710X	M12x110 – M12x140	40 Nm - 75 Nm	M8x30	20 Nm	M6x20	10 Nm	M12x40	75 Nm

7.5.5 Asynchronous Motors

Inline mounting



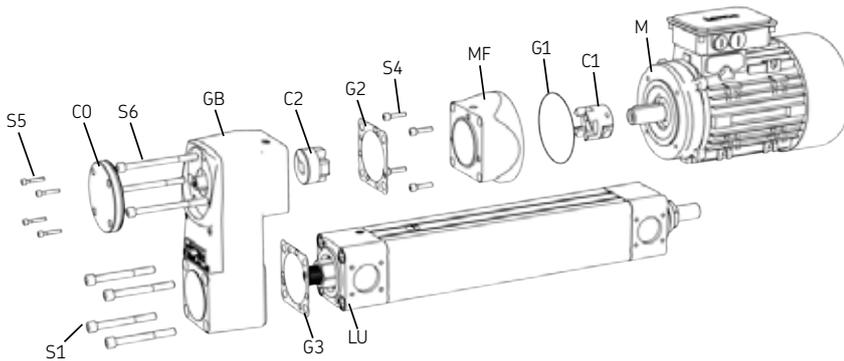
*These screws depend on the motor type they do not correspond to the same indices as in table 1

- Attach the coupling (**C1**) to the motor (**M**) using screw (**S4**).
- Put the sealing (**G1**) into the groove in the motor flange (**MF**) and tighten the flange with four screws (**SM3**).
- Fit the inline gearbox (**GB1**) onto the motor flange (**MF**) by inserting the gasket (**G2**) between the two components and tighten the screws (**SM5**).
- Attach the coupling (**C2**) to the linear unit (**LU**) using screw (**S4**).
- Fit the inline gearbox (**GB2**) onto the linear unit (**LU**) by inserting the gasket (**G4**) between the two components and tighten the screws (**S1**).
- Screw the linear unit (**LU**) and the inline gearbox (**GB2**) with the inline gearbox (**GB1**) and the gasket (**G3**) together with the four screws (**SM6**).

Table 3

Screw size / tightening torques (inline)								
Interface Type	S1		SM3		S5		S6	
	Screw	Torque	Screw	Torque	Screw	Torque	Screw	Torque
AC71 / B14	M12x40	75 Nm	M6	10 Nm	M10x30	40 Nm	M10x30	40 Nm
AC80 / B14	M12x40	75 Nm	M6	10 Nm	M10x30	40 Nm	M10x30	40 Nm
AC90 / B14	M12x40	75 Nm	M8	20 Nm	M10x30	40 Nm	M10x30	40 Nm
AC100 / B14	M12x40	75 Nm	M8	20 Nm	M10x30	40 Nm	M10x30	40 Nm

Parallel mounting



- Attach the coupling (**C1**) to the motor (**M**) using screw (**S4**).
- Put the sealing (**G1**) into the groove in the motor flange (**MF**) and tighten the flange with four screws (**S4**).
- Fit the linear unit (**LU**) onto the gearbox (**GB**) by inserting the gasket (**G3**) between the two components and tighten the screws (**S1**).
- Fit the motor flange (**MF**) with motor (**M**) onto the gearbox (**GB**) by inserting the gasket (**G2**) between the two components and tighten the screws (**S6**).
- Fit the cover (**CO**) onto the gearbox (**MF**) and tighten the screws (**S5**).

Table 4

Interface Type	S1		SM3		S5		S6	
	Screw	Torque	Screw	Torque	Screw	Torque	Screw	Torque
AC71 / B14	M12x110 - M12x140	40 Nm 75 Nm	M6	10 Nm	M6x25	6 Nm	M10x130	20 Nm
AC80 / B14	M12x110 - M12x140	40 Nm 75 Nm	M6	10 Nm	M6x25	6 Nm	M10x130	20 Nm
AC90 / B14	M12x110 - M12x140	40 Nm 75 Nm	M8	20 Nm	M6x25	6 Nm	M10x130	20 Nm
AC100 / B14	M12x110 - M12x140	40 Nm 75 Nm	M8	20 Nm	M6x25	6 Nm	M10x130	20 Nm

Manual override

The parallel gearbox features a manual override as built-in functionality. The gearbox can be manually operated through a hexagonal key located on the gearbox motor axis. As standard, the access to this key is covered by a plate. On request, it's possible to have a round opening for direct access. The override can be used as safety feature in case of power failures or as manual adjustment for an easier actuator installation in the application.

NOTICE

For operating with gearbox's override the electromechanical motor brake has to be released!



On request

8.0 Maintenance

Personnel

- Daily maintenance work described herein can be performed by the operator.
- Some maintenance tasks should only be performed by specially trained, qualified personnel employed by the product owner, or exclusively by personnel of the manufacturer; specific reference will be made in each case in the description of the respective maintenance task.
- Only professional electricians.

8.1 Maintenance plan

Maintenance tasks that are required for optimal and trouble-free operation are described in the sections below.

If increased wear is detected during regular inspections, shorten the required maintenance intervals according to the actual indications of wear.

CASM-100 linear actuator maintenance plan

Interval	Maintenance work	To be carried out by
Daily	Check actuator for visible damage (↳ 8.2.3 Check of visual condition, page 22). Clean off dust and dirt if necessary (↳ 8.2.1 Cleaning, page 22).	Operator
Monthly	Check tight fit of the rod and options, correct if necessary. Check connection for tight fit. Check relubrication interval (↳ 8.2.4 Relubrication interval, page 22).	Qualified personnel
Annually	Check labels and warning notices for legibility and replace if necessary. Check sealings for damage (↳ 8.2.2 Check sealing function, page 22). Check relubrication interval (↳ 8.2.4 Relubrication interval, page 22).	Qualified personnel
Semi-annually	Check options for visible damage Check relubrication interval (↳ 8.2.4 Relubrication interval, page 22).	Qualified personnel

NOTICE

If the linear actuator is used outside of the environmental conditions specified earlier in this manual, check such components once a month for any changes such as oxidation or sedimentation.

8.2 Maintenance work

8.2.1 Cleaning

To be performed by operator.

NOTICE

Damage due to incorrect cleaning

Therefore:

- Do not use any aggressive cleaning agents. Water used for cleaning, including chemical additives, must be pH-neutral.
- Liquids must not touch the actuator during retraction or extension.
- Only use the auxiliary materials.
- No steam jets or pressure washers may be used for cleaning.
- Other cleaning agents or cleaning devices may only be utilized with the manufacturer's approval.

Clean line actuator:

Clean dirty parts with a damp cloth.

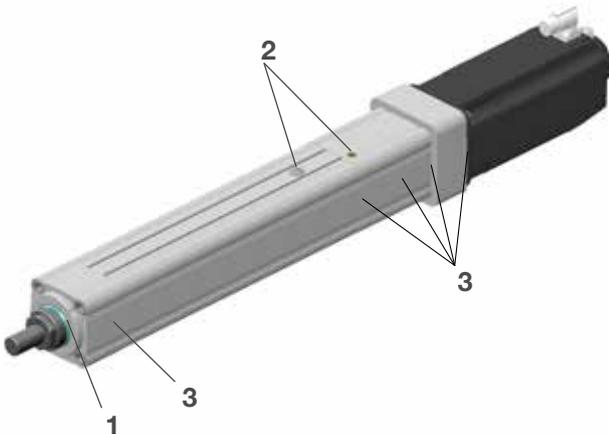
8.2.2 Check sealing function

To be performed by qualified personnel.

Device must be stopped and secured.

1. Check seal for damage (1)
2. Check filter and plug for damage (2)
3. Check gaskets for damage (3)

Check for potential leakage in the actuator. If there is no damage, you can restart the application.



NOTICE

Material damage due to damaged or incorrect sealing

Damaged or incorrect seals cannot guarantee protection pursuant to IP54S or higher.

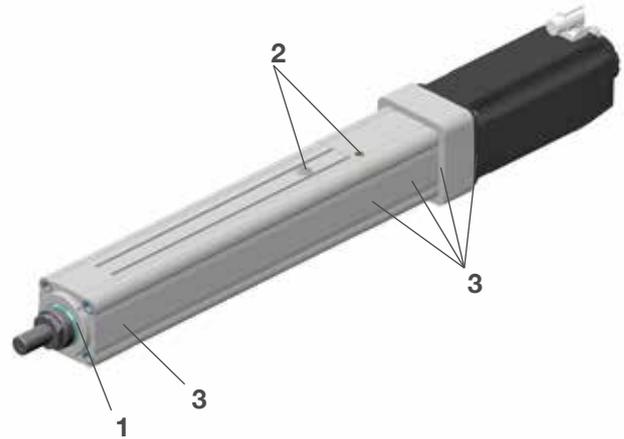
Therefore:

- Ask the manufacturer to replace the damaged seals immediately.

8.2.3 Check of visual condition

To be performed by qualified personnel.

1. Separate the device from the energy supply.
2. Check the following structural components for visual external damage:
 - Check housings for cracks and gaps (1)
 - Check profile for cracks, gaps and broken pieces (2)
 - Check push tube for scratches and indentations (3)



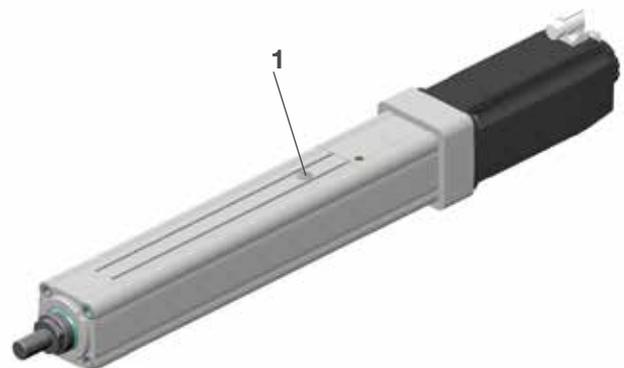
Notify processor or actuator manufacturer in case of damage. If there is no damage and the processor/manufacturer has not communicated any concerns, reconnect the device to the power supply.

8.2.4 Relubrication interval

To be performed by qualified personnel.

The relubrication device is optional. Check if the CASM-100 is equipped with a relubrication plug on the protection tube (1).

1. Run the the actuator to the relubrication position (↳ table 3)
2. Stop and secure the actuator/application
3. Open the plug (1)
4. Relubricate the CASM-100 with the specified type and amount of lubricant (see table below). Compatibility cannot be granted if other greases are used.
5. Close the relubrication bore before you restart the system!



⚠ WARNING**Risk of injury and material damage!**

Only open the relubrication bore when the actuator is stopped and powered off.

Table 3

CASM-100 linear actuator relubrication interval					
Type	Relubrication position		Relubrication interval	Amount of lubricant	Screw type
CASM-100-BA-...	Nominal stroke:	50 mm	Every 10 Mrev or 100 km	8 cm ³	BS 32x10
	From mechanical end stop:	53 mm			
CASM-100-BB-...	Nominal stroke:	50 mm	Every 5 Mrev or 50 km	17 cm ³	BS 40x10
	From mechanical end stop:	53 mm			
CASM-100-BC-...	Nominal stroke:	13 mm	Every 5 Mrev or 100 km	7 cm ³	BS 40x20
	From mechanical end stop:	16 mm			
CASM-100-RA-...	Nominal stroke:	0 mm	Every 20 Mrev or 200 km*	14 cm ³	RS 30x10
	From mechanical end stop:	3 mm			

* First relubrication after 100 000 revolutions

**NOTE**

Type BA, BB and BC: Use only the following grease to relubricate the linear unit: BERUTOX FH 28 EPK / II
 Manufacturer: Bechem (www.bechem.de)

Type RA: Use only the following grease to relubricate the linear unit: STABUTHERM GH 461.
 Manufacturer: Klueber (www.klueber.com)

8.3 Measures after maintenance completed

Upon completion of the maintenance work, the following steps have to be performed prior to restarting the device:

1. Check all screw connections for a tight fit.
2. Ensure that all used tools, materials and other equipment have been removed from the work area.
3. Clean work area and remove potential spills such as liquids and processing material.
4. Ensure that all safety measures of the system work without a problem.
5. Check functions.
6. Document completion of the inspections in the service log.

8.4 Maintenance checks

During each service interval, the following measurement/check needs to be done:

- BS/RS: excessive wear of the ball screw could lead to a noise increase and a potential blockage of the drive.

9.0 Malfunctions

The following chapter describes potential causes for disruptions and the work that is necessary to restore operation.

In the event of more frequent malfunctions, shorten the maintenance intervals.

Contact the manufacturer concerning malfunctions which are not solved by the repair suggestions in the table below; see service address on the back cover.

Personnel

- Unless indicated otherwise, the work described herein to solve malfunctions may be performed by the operator.
- Some work may only be carried out by qualified personnel, which is specifically indicated in the description of the individual malfunction.
- Work on the electric system may only be performed by professional electricians.



Incorrect repair of malfunction

⚠ DANGER

Risk of injury and material damage due to incorrect repair of malfunction

The CASM-100 linear actuator is not designed to be repaired by the customer in most situations. Incorrect repair of a malfunction may lead to personal injury or material damage. Therefore:

- Never loosen the screws on the linear actuator or try to open the linear actuator.
- In the event of a malfunction that cannot be fixed by adhering to the suggestions in the table below, dismantle the device and send it to the manufacturer for repair (↳ **5 Delivery, packaging and storage, page 11**).

Actions during malfunctions

1. In the event of a malfunction that may present an immediate danger to persons or assets, turn off the actuator.
2. Determine cause of malfunction.
3. Depending on the type of a malfunction, have it repaired by qualified personnel.
4. Inform responsible party on-site concerning malfunction.



NOTE

The following malfunction table provides information as to who is authorized to perform the repair and how it is to be performed.

9.1 Malfunction table

Malfunction	Possible cause	Repair malfunction	To be repaired by
Linear actuator doesn't move	Obstacle in the stroke area of the linear actuator.	Remove all obstacles in the stroke area.	Operator.
	Incorrect load.	Measure static and dynamic load and compare with information concerning the product label. If the load capacity is exceeded, check the nominal load and install stronger actuator if necessary.	Qualified personnel.
	Lifespan of the device is exceeded.	See performance diagram in the CASM-100 brochure.	Qualified personnel.
	Linear actuator cannot be set in motion by any of the above listed measures.	Exchange device.	Qualified personnel.
Linear actuator cannot be lifted	Obstacle in the stroke area of the linear actuator.	Remove all obstacles in the stroke area.	Operator.
	Incorrect load.	Remove all loads that are on the elements.	Operator.
	Defective screw nut.	Exchange device.	Qualified personnel.
Significant reduced speed	Obstacle in the stroke area of the linear actuator.	Remove all obstacles in the stroke area.	Operator.
	Incorrect load.	Remove all loads that are on the elements.	Operator.
	Defective motor, gear or screw nut.	Exchange device.	Qualified personnel.
Significant increase of noises during operation	Obstacle in the stroke area of the linear actuator.	Remove all obstacles in the stroke area.	Operator.
	Incorrect load.	Remove all loads that are on the elements.	Operator.
	Defective motor, gear or ball screw nut.	Exchange device.	Qualified personnel.

9.2 Start of operation after fixing malfunction

After the malfunction has been fixed, perform the steps from the chapter Installation prior to restart.

10.0 Dismantling

Personnel

- The dismantling may only be carried out by specifically qualified personnel.
- Work on the electric system may only be performed by professional electricians.

⚠ WARNING

Risk of injury due to incorrect dismantling!

Stored residual power, sharp-edged components, pins and corners on the individual components or at the required tools can cause serious injuries.

Therefore:

- Ensure there is ample space for dismantling prior to starting with the work.
- Use caution when working with open, sharp-edged structural components.
- Ensure order and cleanliness at the dismantling site! Loosely stacked structural components or structural components and tools on the floor may present a source for accidents.
- Dismantle structural components professionally pursuant to applicable local regulations.
- Secure structural components in a way so they would not be able to fall or tip over.
- Contact the manufacturer if you have any questions or concerns.

10.1 Dismantling of CASM-100

1. Secure elements of the application in such a fashion that no loads can impact the fork and the hinge head.
2. Loosen and remove fastening bolts from trunnion or flange and rods.
3. Separate linear actuator from application elements.
4. Clean device.
5. Carefully package for shipment to the manufacturer.
6. For disposal, disassemble device according to applicable local occupational health and environmental regulations.

10.2 Disposal

To the extent that no take-back or disposal agreement has been put in place, disassembled components should be recycled.

- Dispose of metals and plastic components at an appropriate recycling centre.
- Sort remaining components based on the respective material and dispose of according to applicable local occupational health and environmental regulations.

NOTICE

Damage can be caused to the environment due to incorrect disposal!

Electronic waste, electronic components, lubricants and other additives are subject to special waste treatment regulations and may only be disposed of by approved specialized companies!

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

11.0 Appendix

A complete description of the actuator's performance can be found in the following document:

Technical data

PUB NUM IL-07016-EN-October 2019 Electric cylinder
CASM-100

For further technical information please contact Ewellix.

For quick reference, the most relevant performance parameters are shown in the following section.

11.1 Ingress Protection

The following position in the type key defines the rated ingress protection:

CASM-100-##-####-#####-X####-...

X	Ingress protection	Lifetime reduction
B	IP54S	
C	IP65 if sinter filter is protected	Reduced to 100km
D	IP65	Reduced to 100km

For Option D, a hose needs to be connected to the delivered hose adapter valve. The hose needs to be connected to clean air in order to let the actuator breathe during extraction and detraction movements.

11.2 Load

Load

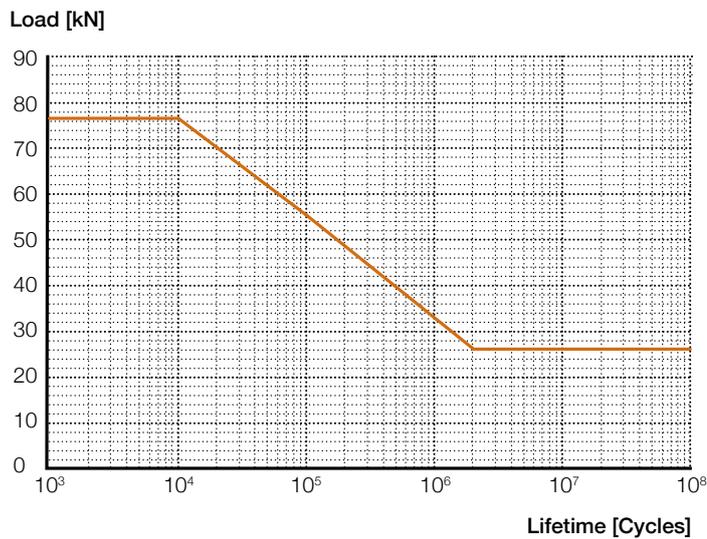
CASM-100-XX-####-##Y##Z#-...

XX	Max. dynamic axial force	Max. dynamic axial force L10	Max. static axial force
BA	23kN	22kN	52kN
BB	48kN	47kN	60kN
BC	60kN	60kN	60kN
RA	85kN	50kN	82kN

Unless the following limits are more restricting:

Y	Z	Load
C	Any	See fig. "Pivot Mount Lifetime Chart"
Any	C	See fig. "Pivot Mount Lifetime Chart"
D or E	Not D, not E	50kN
Not D, not E	D or E	50kN

Pivot Mount Lifetime Chart



11.3 Linear Speed

CASM-100-XX-####-#####-Z#####-...

XX	Z	Max. linear speed
BA	B	260 mm/s
BB	B	210 mm/s
BC	B	750 mm/s
RA	B	890 mm/s
Any	C or D	100 mm/s

11.4 Gearbox Output Torque

If a gearbox is selected, the following maximum output torques must be respected:

CASM-100-##-####-#####-#####-GX-YY#-##-...

X	Y	Max. Output Torque
I	Any	150 Nm
S	CA	65 Nm
S	CB, CC, CD	100 Nm



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