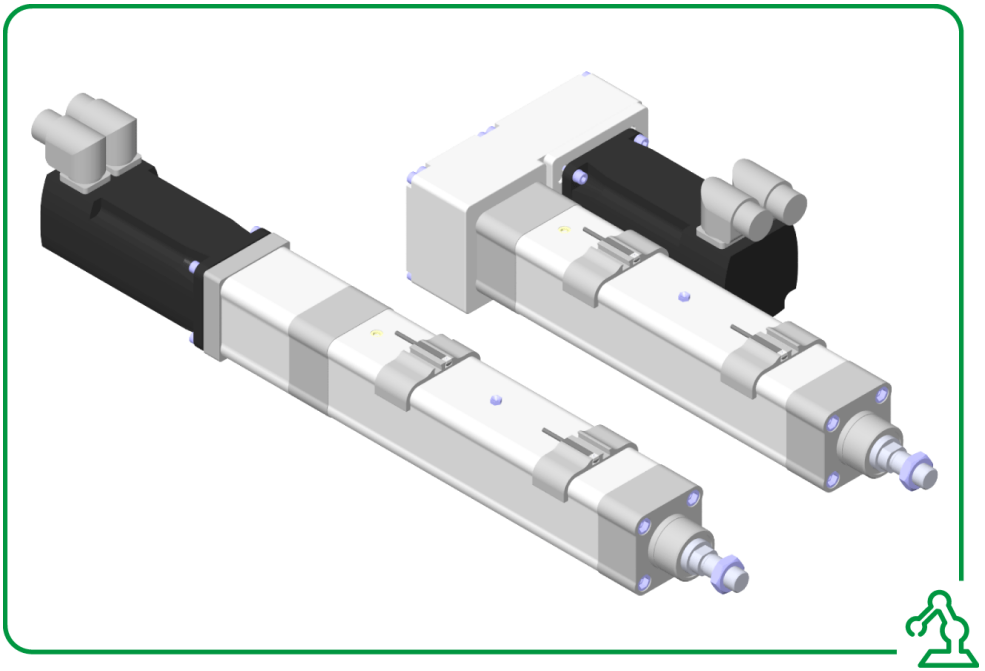
Lexium EAC1-Series

Electric Actuators with Cylindrical Piston Rod and Ball Screw Hardware Guide

Original instructions

09/2019



EIO0000003411.01

www.schneider-electric.com

Schneider Electric

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

You agree not to reproduce, other than for your own personal, noncommercial use, all or part of this document on any medium whatsoever without permission of Schneider Electric, given in writing. You also agree not to establish any hypertext links to this document or its content. Schneider Electric does not grant any right or license for the personal and noncommercial use of the document or its content, except for a non-exclusive license to consult it on an "as is" basis, at your own risk. All other rights are reserved.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Table of Contents

Safety Information

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book

At a Glance

Document Scope

This manual is to help you use the capabilities of the actuator safely and properly.

Follow the instructions within this manual to help:

- Reduce risks
- Reduce repair costs and downtime of the actuator
- Increase the service life of the actuator
- Increase the reliability of the actuator

Validity Note

This document has been updated for the release of EcoStruxure™ Machine Expert V1.2.

This manual is valid for the Lexium EAC1-Series.

Product Related Information

The equipment described herein must be used in accordance with the application-specific risk analysis that you are to perform along with verification of all applicable standards. Pay attention in conforming to any safety information, different electrical requirements, and normative standards that would apply to your application of the information contained in the present manual and the manuals for associated equipment.

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers, or installing or removing any accessories, hardware, cables, or wires.
- Place a "Do Not Turn On" or equivalent hazard label on all power switches and lock them in the non-energized position.
- Wait 15 minutes to allow the residual energy of the DC bus capacitors to discharge.
- Measure the voltage on the DC bus with a properly rated voltage sensing device and verify that the voltage is less than 42.4 Vdc.
- Do not assume that the DC bus is voltage-free when the DC bus LED is off.
- Block the piston rod to prevent rotation of the drive system prior to performing any type of work on the drive system.
- Do not create a short-circuit across the DC bus terminals or the DC bus capacitors.
- Replace and secure all covers, accessories, hardware, cables, and wires and confirm that a proper ground connection exists before applying power to the unit.
- Use only the specified voltage when operating the actuator and any associated equipment.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Perform a hazard and risk analysis to determine the appropriate safety integrity level, and any other safety requirements, for your specific application based on all the applicable standards.
- Ensure that the hazard and risk analysis is conducted and respected according to EN/ISO 12100 during the design of your machine.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines.[1]
- Each implementation of this equipment must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

(1) for additional information, refer to NEMA ICS 1.1 (latest edition), “Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control” and to NEMA ICS 7.1 (latest edition), “Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable Speed Drive Systems” or their equivalent governing your particular location.

Related Documents

Title of Documentation	Source
Unimotion PNCE Electric Cylinder	*unimotion.eu*
Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder	

Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in this manual, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives and general automation, this may include, but is not limited to, terms such as *safety*, *safety function*, *safe state*, *fault*, *fault reset*, *malfunction*, *failure*, *error*, *error message*, *dangerous*, etc.

Among others, these standards include:

Standard	Description
IEC 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2015	Safety of machinery: Safety related parts of control systems. General principles for design.

Standard	Description
EN 61496-1:2013	Safety of machinery: Electro-sensitive protective equipment. Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2015	Safety of machinery - Emergency stop - Principles for design
IEC 62061:2015	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2016	Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions.
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive

In addition, terms used in the present document may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term *zone of operation* may be used in conjunction with the description of specific hazards, and is defined as it is for a *hazard zone* or *danger zone* in the *Machinery Directive* (*2006/42/EC*) and *ISO 12100:2010*.

NOTE: The aforementioned standards may or may not apply to the specific products cited in the present documentation. For more information concerning the individual standards applicable to the products described herein, see the characteristics tables for those product references.

Figures

Unless otherwise stated, the different sizes of the Lexium EAC1-Series are represented in the figures by the Lexium EAC12 actuator.

Dual Dimensions

Dimensions are indicated in metric system and U.S. customary units system. The U.S. dimensions are given in parentheses, for example 8.4 mm (0.33 in).

NOTE: The given values in parentheses are rounded and for reference only.

Chapter 1
Specific Safety Information

What Is in This Chapter?

This chapter contains the following topics:

Proper Use

Overview

This section contains information regarding the operation of the Lexium EAC1-Series. Qualified personnel *(see page 19)* working with the actuator must read and observe this information. The actuator was built in compliance with the recognized technical safety regulations.

Installation

The actuator is intended to be integrated into a machine or assembled with other components to build up a machine or system.

Provide for Protective Measures

Before installing the actuator, provide appropriate protective devices in compliance with local and national standards. Do not commission components without appropriate protective devices. After installation, commissioning, or repair, test the protective devices used.

Perform a risk evaluation concerning the specific use before operating the actuator and take appropriate security measures.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Ensure that a risk assessment is conducted and respected according to EN/ISO 12100 during the design of your machine.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

If circumstances occur that affect the safety or cause changes to the operating behavior of the actuator, then immediately shut down the actuator and contact your local Schneider Electric service representative.

Use Original Equipment Only

Use only the accessories and mounting parts specified in the documentation and only third-party devices or components that have been expressly approved by Schneider Electric. Only modify the actuator in the manner intended and described in this documentation, and other documentation concerning any other associated equipment.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Only use software and hardware components approved by Schneider Electric for use with the actuator.
- Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Misuse

The actuator is not suitable for the manipulation of living organisms or explosive materials, nor is it suitable for impact movement.

Incompatible Environments

The components must not be used in the following environments:

- Hazardous (explosive) atmospheres
- Floating systems
- Life support systems
- Domestic appliances
- Underground
- Highly saline environments
- Environments with increased radioactive radiation
- High-hygienic areas
- Oily surroundings
- Vacuum

The actuator has been designed to operate outside of any hazardous location. Only install the actuator in zones known to be free of a hazardous atmosphere.

⚠ DANGER

POTENTIAL FOR EXPLOSION

Install and use this equipment in non-hazardous locations only.

Failure to follow these instructions will result in death or serious injury.

Installation and Operating Conditions

Only use the components in accordance with the installation and operating conditions described in this documentation. The operating conditions at the installation location must be inspected and maintained in accordance with the required technical data (performance data and ambient conditions). Commissioning is prohibited until the usable machine or system in which the actuator is installed is in accordance to the applicable local regulations and standards.

Service Life

For an application-specific calculation of the service life of the actuator, refer to the catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

Compatibility with Foreign Substances

It is impossible to follow up on all further developments of all substances such as lubricants, cleaning agents, or solvents. Therefore, you must perform a compatibility test before using new substances.

Qualification of Personnel

Target Audience for This Manual

This documentation is intended for users having the following knowledge:

- Advanced knowledge in mechanical engineering
- Advanced knowledge in electrical engineering
- Qualified person
- System engineer
- Knowledge of the actuator control system, its installation and operation, as well as the construction of the machine/application in which it is intended

Qualified Person

Electrical and mechanical equipment must be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material. A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and the installation, and has received safety training to recognize and avoid the hazards involved.

The qualified personnel must be able to detect possible hazards that may arise from parametrization, changing parameter values and generally from mechanical, electrical, or electronic equipment. The qualified personnel must be familiar with the standards, provisions, and regulations for the prevention of industrial accidents, which they must observe when working on the drive system.

Residual Risks

Overview

Risks arising from the actuator have been reduced. However a residual risk remains since the actuator is moved and operated with electrical voltage and electrical currents.

If activities involve residual risks, a safety message is made at the appropriate points. This includes potential hazards that may arise, their possible consequences, and describes preventive measures to avoid the hazards.

Electrical Parts

To animate the actuator described herein, you must connect the actuator to a drive and a motor. As a system, residual risks exist and you must account for them in your risk analysis of your application. For more information, consult your drive and motor documentation.

⚠ ⚠ DANGER

ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires except under the specific conditions specified in the appropriate hardware guide for this equipment.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Operate electrical components only with a connected protective ground (earth) cable.
- Verify the secure connection of the protective ground (earth) cable to all electrical devices to ensure that connection complies with the connection diagram.
- Do not touch the electrical connection points of the components when the module is energized.
- Provide protection against indirect contact (EN 50178).
- Insulate any unused conductors on both ends of the motor cable.

Failure to follow these instructions will result in death or serious injury.

Emergency Stop

The actuator is not supplied with external brakes nor an emergency stop switch to engage any external brakes. However, the motor can be supplied with an internal holding brake (as an option depending on the motor reference).

For more information about the motor, record the motor reference on the type plate and refer to the corresponding motor manual.

⚠ WARNING

ENTRAPMENT BY ACTUATOR

- Provide means for ensuring that the motors can be put into a voltage-free state with any internal holding brake or external service brake released.
- Make available those means to allow one person to manually move the actuator within reach of the zone of operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The opening of the motor holding brake may cause the actuator to sag.

Mounted in vertical or tilted position, the actuator can move unexpectedly.

⚠ WARNING

MOVING PARTS OF THE EQUIPMENT

Ensure that releasing the brake poses no subsequent risks in the zone of operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: Provide separation devices for all infeed energies. It must be possible to secure the separation devices in de-energized position, for example, by locking.

Assembly and Handling

⚠ WARNING

CRUSHING, SHEARING, CUTTING AND HITTING DURING HANDLING

- Observe the general construction and safety regulations for handling and assembly.
- Use appropriate mounting and transport equipment and use appropriate tools.
- Prevent clamping and crushing by taking appropriate precautions.
- Cover edges and angles to protect against cutting damage.
- Wear suitable protective clothing (for example, protective goggles, protective boots, protective gloves).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Actuator Motion

Parts of the actuator can move at high speeds. In such cases, the payload weight, additionally installed tools, and shifts in the center of gravity of the moving parts contribute to the total energy of the forces generated.

Motion sequences can occur when operating with the actuator, which allow operational staff to make misjudgments. For safety considerations (according to EN ISO 13849-1), consider the controller and the brake as non-safety-related elements. Ensure that necessary protective measures are implemented.

The safety standards and directives for the respective country where the actuator is in use define which protective measures are appropriate. Additionally, the system engineer who is responsible for the integration of the actuator must evaluate which measures have to be taken.

NOTE: The configuration of the actuator, the piston rod velocity, as well as the additional payload have an effect on the total energy, which can potentially be a source of damage and injury.

⚠ WARNING

CRUSHING, SHEARING, CUTTING AND IMPACT INJURY

- The actuator must be operated only within an enclosure.
- Open or enter the enclosure for cleaning and maintenance purposes only.
- Design the enclosure to withstand an impact from the actuator and to resist ejected parts from escaping the zone of operation.
- Design the enclosure to safely deactivate the actuator as soon as a person enters the zone of operation of the actuator.
- All barriers, protective doors, contact mats, light barriers, and other protective equipment, must be configured correctly and enabled whenever the actuator is under power.
- Define the clearance distance to the zone of operation of the actuator so that operational staff do not have access to, nor can be enclosed in, the actuator zone of operation.
- Design the enclosure to account for the maximum possible travel paths of the actuator; that is, the maximum path until the hardware safety system limits as well as the additional run-on paths, in case of a power interruption.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

BREAKDOWN OF THE INTERNAL MOTOR HOLDING BRAKE

- Do not consider the internal motor holding brake to be a functional safety device.
- Take into account a possible breakdown of the internal motor holding brake during your safety analysis.
- Take into account that the internal motor holding brake of the actuator only withstands a limited number of brake operations.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

DEVIATION FROM THE SPECIFIED MOVEMENT

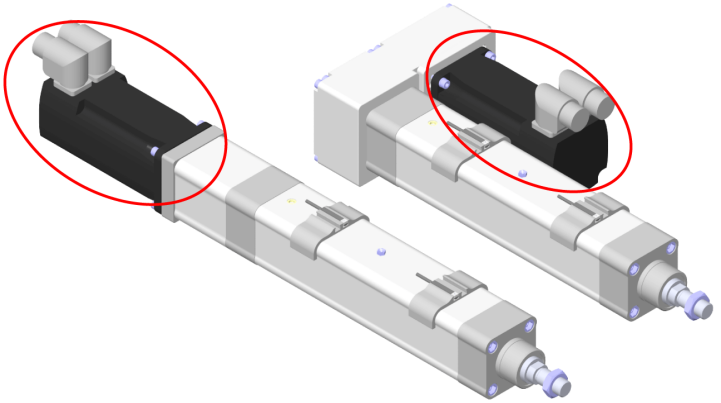
- Use the buffering of the 24 Vdc supply (UPS) in order to enable a controlled stop of the actuator, in accordance with stop category 1, by making use of the stored residual mechanical and electrical energy.
- If the power supply of the control system fails, the actuator deviates from the specified movement in an uncontrolled manner whether the motor has a brake or not.
- Ideally use a synchronous stop on the path to avoid collisions with obstacles.
- Observe the extension of the run-on path during the safety considerations.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Hot Surfaces

The motor, the belt drive, and the adaptation materials of the actuator may exceed 70 °C (158 °F) when subjected to heavy loads and/or high performance during operation.

The red circles in the following figure present the hot surfaces on the actuator.



⚠ WARNING

HOT SURFACES

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Hazardous Movements

There can be different sources of hazardous movements:

- No or incorrect calibration of the drive
- Wiring or cabling errors
- Errors in the application program
- Component errors
- Error in the measured value and signal transmitter

NOTE: Provide for personal safety by primary equipment monitoring or measures. Do not rely only on the internal monitoring of the drive components. Adapt the monitoring or other arrangements and measures to the specific conditions of the installation in accordance with a hazard and risk analysis.

⚠ DANGER

UNAVAILABLE OR INADEQUATE PROTECTION DEVICE(S)

- Prevent entry to a zone of operation with, for example, protective fencing, mesh guards, protective coverings, or light barriers.
- Dimension the protective devices properly and do not remove or modify them.
- Do not make any modifications that can degrade, incapacitate, or in any way invalidate protection devices.
- Bring the drives and the motors they control to a stop before accessing the drives or entering the zone of operation.
- Protect existing workstations and operating terminals against unauthorized operation.
- Position emergency stop switches so that they are easily accessible and can be reached quickly.
- Validate the functionality of emergency stop equipment before start-up and during maintenance periods.
- Prevent unintentional start-up by disconnecting the power connection of the drives using the emergency stop circuit or using an appropriate lock-out tag-out sequence.
- Validate the system and installation before the initial start-up.
- Avoid operating high-frequency, remote control, and radio devices close to the system electronics and their feed lines.
- Perform, if necessary, a special electromagnetic compatibility (EMC) verification of the system.

Failure to follow these instructions will result in death or serious injury.

Drive systems may perform unanticipated movements because of incorrect wiring, incorrect settings, incorrect data, or other errors.

⚠ WARNING

UNINTENDED MOVEMENT OR ACTUATOR OPERATION

- Carefully install the wiring in accordance with EMC standards.
- Do not operate the actuator with undetermined settings and data.
- Perform comprehensive commissioning tests that include verification of configuration settings and data that determine position and movement.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Noise Protection

The noise level of the actuator depends on the basic cycle and the payload, as well as on further application-specific accessory parts. Be aware of the fact that noise emissions multiply when several actuators are in use at the same time. If noise emissions reach a value of more than 70 dBA, wear hearing protection.

⚠ CAUTION
NOISE EMISSIONS OF THE ACTUATOR MECHANICS ● Wear hearing protection in accordance with the locally applicable regulations. ● Attach a sign on the actuator if the noise emissions reach an excessive value. **Failure to follow these instructions can result in injury or equipment damage.**

NOTE: Attach the following symbol where it can easily be seen on the actuator.

Emissions

During operation, a small amount of lubricant can leak. The leakage of small amounts of lubricants at the actuator is not an indication of a damaged actuator.

Hanging Loads

The actuator is capable of suspending heavy loads.

⚠ WARNING
FALLING LOADS Keep away from loads that are suspended. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Attachments or Modifications

If different products are transported by the actuator, then the applicable piston rod accessories must be selected from the original equipment. In doing so, ensure that the articulation movement is not restricted and/or that no motion errors can result from the modifications. Attachments and rebuilds must not influence the operation of the protective devices in any way and all EMERGENCY STOP buttons must be accessible and operational at all times.

⚠ WARNING
UNINTENDED MACHINE OPERATION ● Do not drill into or modify the actuator. ● Do not modify the cable set. ● Do not modify components of movable mechanics. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Options for Moving the Actuator Without Drive Energy

The actuator is not equipped with a security frame.

NOTE: Take appropriate security measures concerning the specific use before operating the actuator.

⚠ WARNING
MOVING PARTS OF THE EQUIPMENT Ensure that releasing the brake poses no subsequent risks in the zone of operation. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

If you have to move the complete actuator manually, perform the following steps:

Step	Action
1	Switch the actuator into a torque-free state.
2	Manually hold the actuator in position.
3	Open the motor brake. **NOTE:** The function for opening the brake as well as for torque-free switching of the motor is not controlled by the equipment delivered with the product reference, but must be addressed by the application.
4	Manually move the actuator. **NOTE:** A greater force could be necessary because the motor may pose resistance to movement.
5	Close the motor brake.

Chapter 2
System Overview

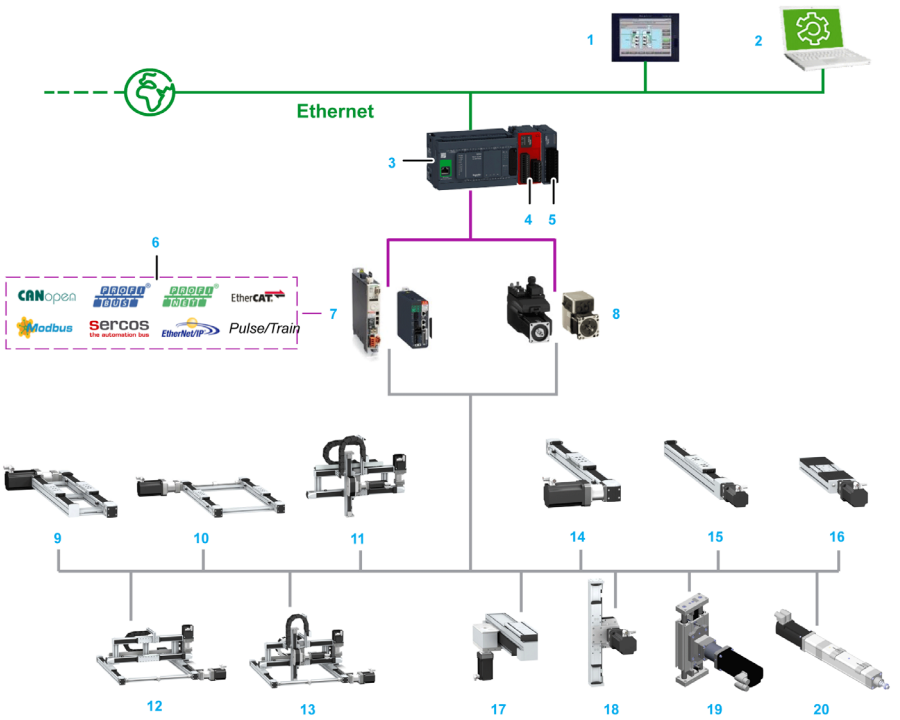
What Is in This Chapter?

This chapter contains the following topics:

System Architecture

Overview

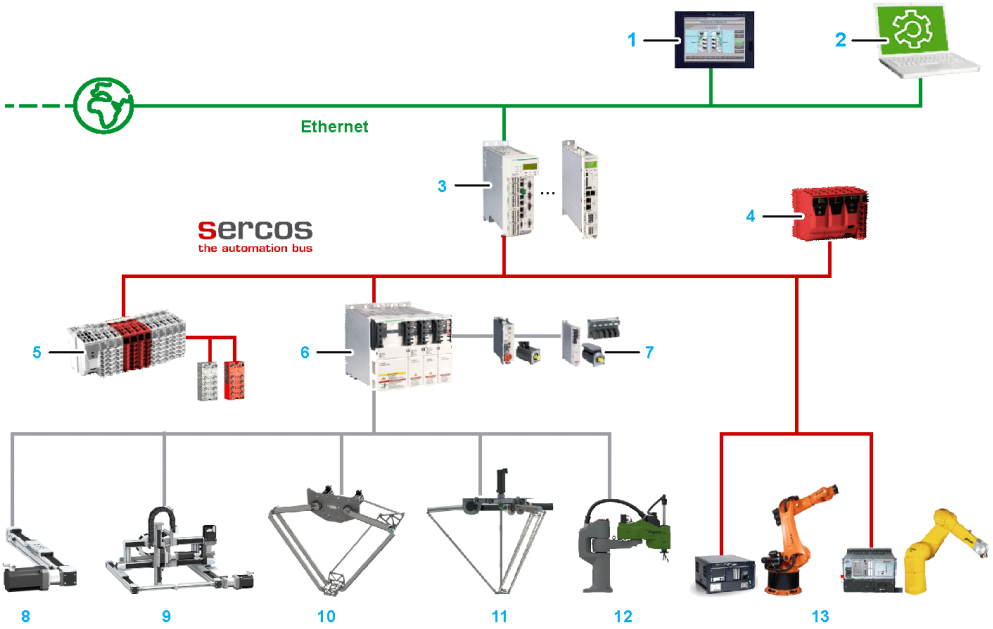
The control system consists of several components, depending on its application. The following figure presents an example of a control system.



1 Magelis HMI
2 SoMachine Motion / EcoStruxure Machine Expert
3 Logic/Motion Controller
4 Safety Module
5 I/O Module
6 Communication Interfaces
7 Drives
8 Integrated Drives
9 Lexium MAXH-Series
10 Lexium MAXS-Series
11 Lexium MAXP-Series
12 Lexium MAXR•2-Series
13 Lexium MAXR•3-Series
14 Lexium PAS4•B-Series
15 Lexium PAS4•S-Series
16 Lexium TAS4-Series
17 Lexium CAS2-Series
18 Lexium CAS4-Series
19 Lexium CAR4-Series
20 Lexium EAC1-Series

For more information about the several components, refer to the corresponding documentation at www.schneider-electric.com.

The following graphic presents an example of a PacDrive 3 system.



1 Magelis HMI
2 SoMachine Motion / EcoStruxure Machine Expert
3 Motion Controller
4 Safety Controller
5 I/O
6 Drives
7 Motors
8 Single Axes (PAS, TAS, CAS, CAR, EAC)
9 Multi-Axis Systems (MAXH, MAXS, MAXP, MAXR)
10 Delta-2 Robots (T-Series)
11 Delta-3 Robots (P-Series)
12 SCARA Robots (S-Series)
13 Articulated Robots

For more information about the several components, refer to the corresponding documentation at www.schneider-electric.com.

Product Overview

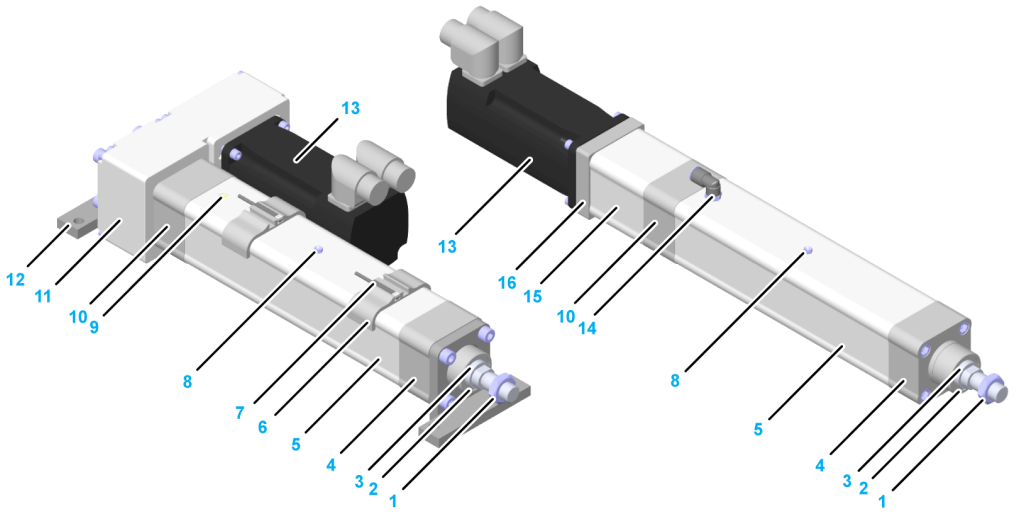
General Description of the Lexium EAC1-Series

The Lexium EAC1-Series is an electric actuator which can operate forward and backward in one dimension. The actuator is based on the standard ISO 15552, and is driven by a precision ball screw. The outer design and the dimensions of the Lexium EAC1-Series are very similar to pneumatic cylinders.

Components Overview

Lexium EAC1-Series with mounting brackets, driven by belt drive

Lexium EAC1-Series with option C or F, driven directly



1 Hex nut
2 Piston rod seal
3 Piston rod (stainless steel) with an anti-rotation device
4 Front cap
5 Actuator profile
6 Sensor holders (optional equipment)
7 Sensors (optional equipment)
8 Lubrication nipple
9 Pressure compensation
10 Drive cap
11 Belt drive (optional equipment, including clamping set)
12 Mounting brackets (optional equipment)
13 Motor (optional equipment)
14 Connections for pressure compensation (options C and F)
15 Coupling housing including elastomer coupling (optional equipment)
16 Motor adaptation (optional equipment)

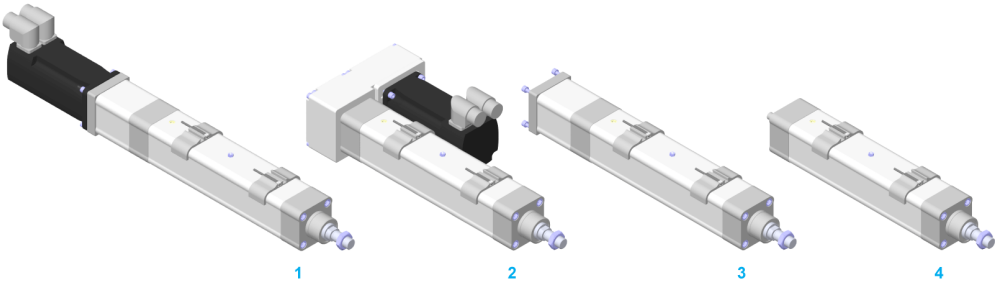
Characteristics of the Lexium EAC1-Series

The actuator provides the following features and options:

- High speeds
- Good positioning accuracy
- High repeatability
- Different stroke lengths available
- Reduced backlash
- Motor mounting via compact coupling systems
- Fastening thread at the end of the piston rod for mounting the payload or piston rod accessories
- Suitable lubricant for food and beverage applications
- Sensors as normally open contacts / normally closed contacts as PNP version
- Different motors
- Two motor mounting positions: axial or on the side mounting *(see page 34)*

Mounting Options for the Motor and/or the Belt Drive

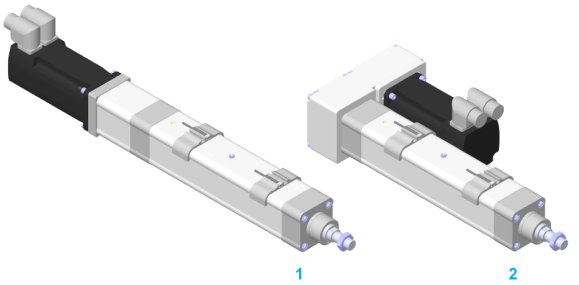
The following figure presents the mounting options for the motor and/or the belt drive for the Lexium EAC1-Series.



1 Straight mounted motor
2 Mounted belt drive and mounted motor
3 Mounted adaptation material (coupling housing including elastomer coupling and motor adaptation)
4 Without motor and without belt drive (with shaft extension)

Mounting Directions of the Motor and/or the Belt Drive

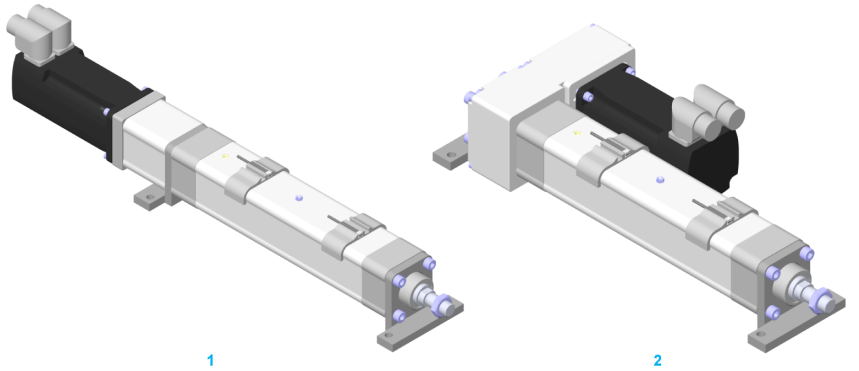
The following figure presents the mounting directions for the motor and/or belt drive. The motor is coupled by using a preloaded elastomer coupling and the belt drive is coupled by using a coupling set.



1 Straight mounted
2 Mounted with belt drive, rotatable 4 x 90°

Mounting Options for the Mounting Brackets

The following figure presents the mounting options for the mounting brackets of the Lexium EAC1-Series.

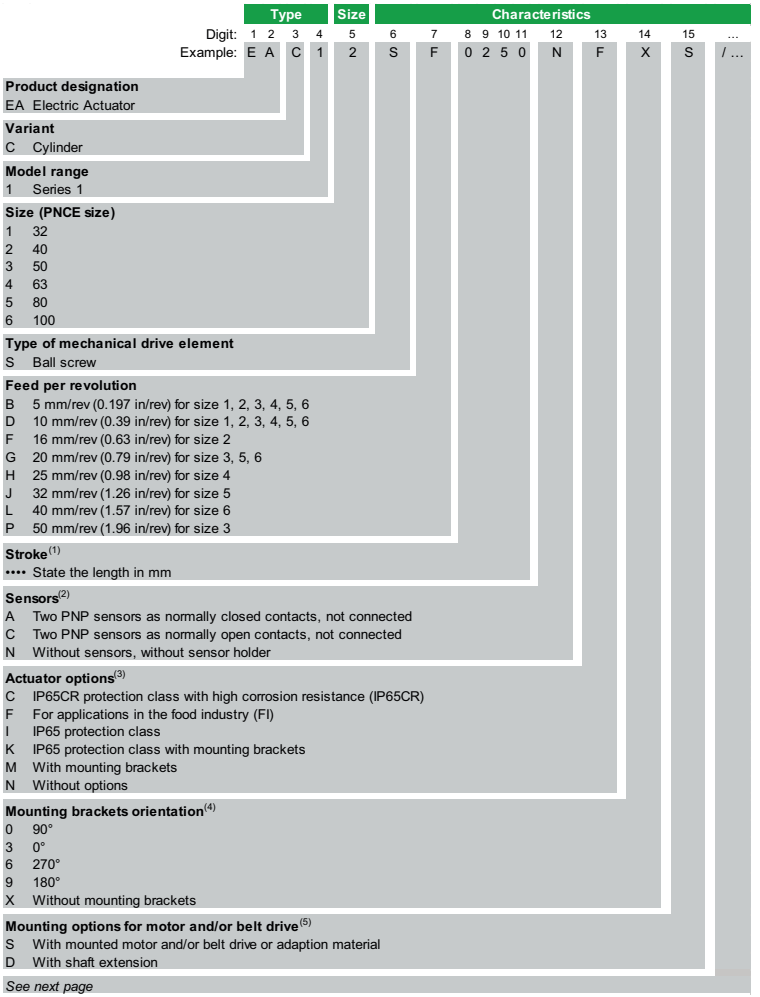


1 Straight mounted motor and mounted mounting brackets
2 Mounted motor driven by belt drive and mounted mounting brackets

Type Code

Overview

To find the appropriate actuator information, refer to the type plate *(see page 40)* located on the actuator.



(1) For the maximum stroke per size, refer to catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.
(2) Cable length: 300 mm (11.8 in); connector at one cable end. Extension cables are available as accessories.
(3) Mounting brackets are not available for option C and F.
(4) For further information, refer to *Mounting Brackets Orientation* *(see page 38)*.
(5) For further information, refer to *Mounting Options and Direction for Motor* *(see page 33)*.

		Characteristics						
Digit:		16	17	18	19	20	21	…
Example: EAC1 2 S F 0250 N F X S /		2	D	O	H	7	0	+ …

Motor and/or belt drive configuration[6]

1	Motor driven directly
2	Motor driven by belt drive
3	Without motor, with adaption material driven directly (select motor)
4	Without motor, with adaption material driven by belt drive (select ratio and orientation of the belt drive and the motor)
X	Without motor / without belt drive / without adaption material

Belt drive ratio

D	1
N	1,5
S	2
X	Without belt drive

Belt drive orientation[6]

O	Motor is above the actuator, driven by belt drive
U	Motor is below the actuator, driven by belt drive
L	Motor is on the left side of the actuator, driven by belt drive
R	Motor ts on the right side of the actuator, driven by belt drive
X	Without belt drive

Motor interface

V8	Stepper motors BRS 368
V9	Stepper motors BRS 397, 39A
V0	Stepper motors BRS 39B
V1	Stepper motors BRS 3AC, 3AD
I6	Integrated drive with stepper motor ILS•• 571, 572
I7	Integrated drive with stepper motor ILS•• 573
I9	Integrated drive with stepper motor ILS•• 851, 852
I8	Integrated drive with stepper motor ILS•• 853
E7	Integrated drive with brushless DC motor ILE•• 66 with spur wheel gear
A6	Integrated drive with servo motor ILA•• 57
H0	Servo motors BSH/SH3 0401, 0402
H5	Servo motors BSH/SH3 055
H7	Servo motors BSH/BMH/BMI/MH3/SH3/ILM 0701, 0702
H8	Servo motors BSH/BMH/BMI/MH3/SH3/ILM 0703
H1	Servo motors BSH/BMH/BMI/MH3/SH3/ILM 1001, 1002, 1003
H4	Servo motors BSH 1004
H2	Servo motors BSH/BMH/MH3/SH3/ILM 1401, 1402, 1403, 1404
C1	Servo motors BCH2•B A5, 01
C2	Servo motors BCH2•D 02, 04
C3	Servo motors BCH2•F 04
C4	Servo motors BCH2•F 07
C5	Servo motors BCH2•H 10, 20
C6	Servo motors BCH2•M 08
C7	Servo motors BCH2•M 03, 05, 06, 10, 09, 15, 20
C8	Servo motors BCH2•R 20, 30, 35, 45
YY	Third-party motor without mounting by Schneider Electric (motor drawing required)
ZZ	Third-party motor with mounting by Schneider Electric (motor drawing required; motor must be provided)
XX	Without motor

Motor orientation[6] with reference to motor connection

0	90°
3	0°
6	270°
9	180°
X	Without motor

Motor reference

State the complete motor reference at the end of the reference, in plain text.
Example: BMH 0702P01A2A

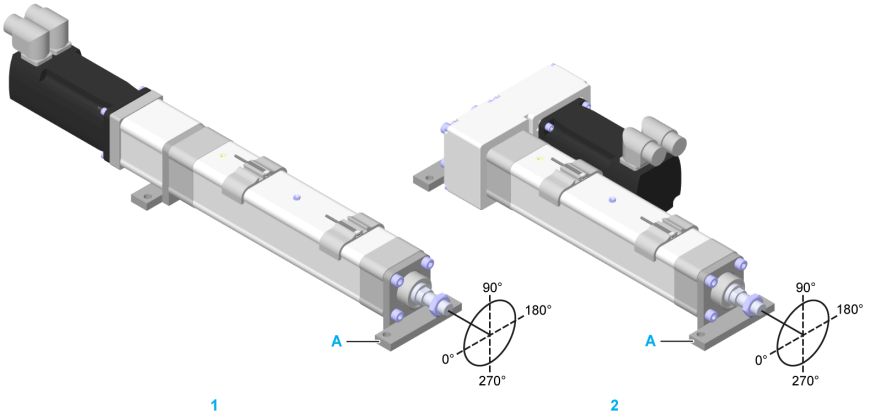
(6) For further information, refer to *Motor and/or Belt Drive Orientation and Configuration* *(see page 38)*.

If you have questions concerning the type code, contact your local Schneider Electric service representative.

Mounting Brackets Orientation

The following graphic presents the possible mounting brackets orientation for the Lexium EAC1• electric actuator.

The coordinate system refers to the input side of the Lexium EAC1• and indicates the orientation of the mounting brackets, which can be mounted in maximum four orientations (0°, 90°, 180° and 270°) with reference to the mounting side (A).



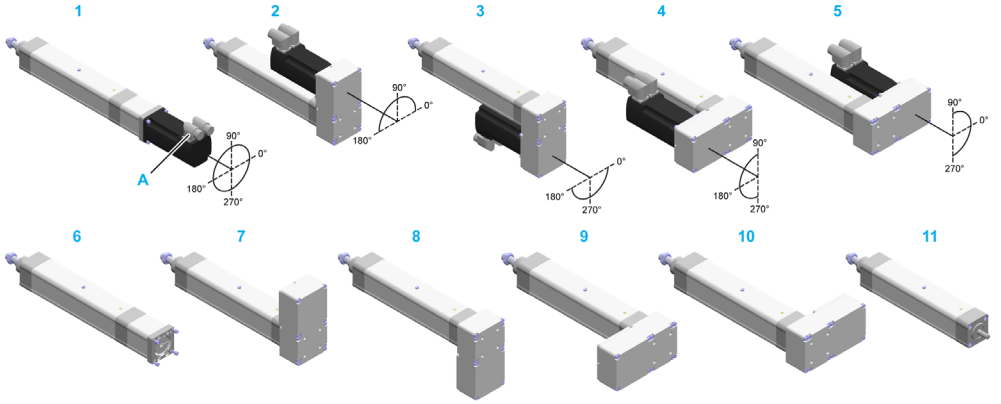
A Mounting side
1 EAC1••••••••M6S/1XX•••
2 EAC1••••••••M6S/2•L•••

For a detailed name description of the Lexium EAC1• series, refer to *Type Code* *(see page 35)*.

Motor and/or Belt Drive Orientation and Configuration

The following graphic presents the possible motor and/or belt drive orientation and configuration for the Lexium EAC1• electric actuator.

The coordinate system refers to the input side of the Lexium EAC1• and indicates the orientation of the motor, which can be mounted in maximum four orientations (0°, 90°, 180° and 270°) with reference to the motor connection (A).



1 EAC1••••••••••S/1XX•••
2 EAC1••••••••••S/2•O•••
3 EAC1••••••••••S/2•U•••
4 EAC1••••••••••S/2•L•••
5 EAC1••••••••••S/2•R•••
6 EAC1••••••••••S/3XX••X
7 EAC1••••••••••S/4•O••X
8 EAC1••••••••••S/4•U••X
9 EAC1••••••••••S/4•L••X
10 EAC1••••••••••S/4•R••X
11 EAC1••••••••••D/XXXXXX

For a detailed name description of the Lexium EAC1• series, refer to *Type Code* *(see page 35)*.

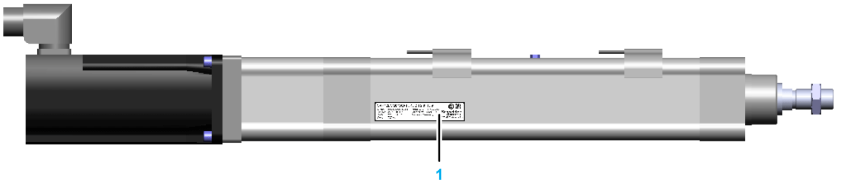
Designation of Customized Version

In the case of a customized version, the type code contains one or several dollar signs "$".
Example: EAC12SF0250$FXS/2D0H70

If you have questions concerning customized versions, contact your local Schneider Electric service representative.

Type Plate

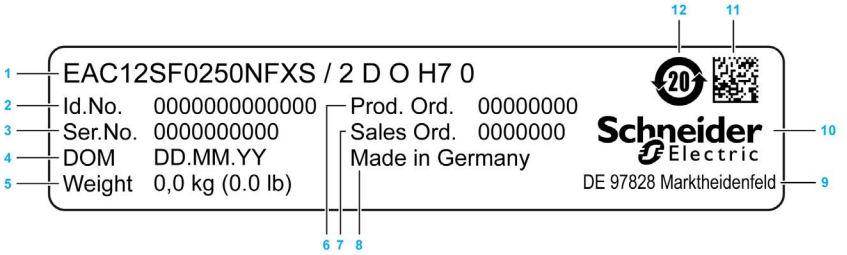
Position of the Type Plate



1 Type plate

Description of the Type Plate

The type plate contains the following data:



1 Product name*
2 Identification number
3 Serial number
4 Date of manufacture
5 Weight of the actuator
6 Product order number
7 Sales order number
8 Country of origin
9 Production site
10 Schneider Electric logo
11 Data matrix code
12 RoHS mark

***** For detailed information about the meaning of the particular digits, refer to *Type Code* *(see page 35)*.

Chapter 3
Technical Data

What Is in This Chapter?

This chapter contains the following sections:

Section 3.1
Ambient Conditions

Ambient Conditions

Overview

Procedure	Parameter	Unit	Value
Operation	**Class 3K3, 3Z12, 3Z2, 3B2, 3C1, 3M6** (according to IEC/EN 60721-3-3)(1)		
	Ambient temperature	°C (°F)	+0…+60 (+32…+140)(2)
	Condensation	–	prohibited
	Formation of ice	–	prohibited
	Relative humidity	%	5…85
Transport	**Set of class combinations IE21** (according to IEC/EN 60721-3-2)(3)		
	Ambient temperature	°C (°F)	-25…+60 (-13…+140)
	Condensation	–	prohibited
	Precipitation	–	prohibited
	Formation of ice	–	prohibited
	Other liquid	–	prohibited
	Wetness	–	prohibited
	Relative humidity	%	< 75

(1) All parameters conform to the specified class except for the ambient temperature which is limited by other components of the system.
(2) Power reduction with motors at ambient temperatures exceeding +40 °C (104 °F). For more information, contact your local Schneider Electric service representative.
(3) All parameters conform to the specified class but the relative humidity.
(4) In case of a belt drive, higher temperatures can cause damage to the superficial structure of the toothed belt. Lower temperatures increase the stiffness and reduce the service life of the toothed belt.
(5) In case of a belt drive, storing the toothed belt at a relative humidity of maximum 50% helps to avoid a reduced service life of the toothed belt.

Procedure	Parameter	Unit	Value
Long-term storage in transport packaging	**Class 1K3** (according to IEC/EN 60721-3-1)		
	Ambient temperature	°C (°F)	+5…+30 (+41…+86)(4)
	Condensation	–	prohibited
	Precipitation	–	prohibited
	Formation of ice	–	prohibited
	Other liquid	–	prohibited
	Wetness	–	prohibited
	Relative humidity	%	5…95(5)
	Maximum storage period	years	2

(1) All parameters conform to the specified class except for the ambient temperature which is limited by other components of the system.
(2) Power reduction with motors at ambient temperatures exceeding +40 °C (104 °F). For more information, contact your local Schneider Electric service representative.
(3) All parameters conform to the specified class but the relative humidity.
(4) In case of a belt drive, higher temperatures can cause damage to the superficial structure of the toothed belt. Lower temperatures increase the stiffness and reduce the service life of the toothed belt.
(5) In case of a belt drive, storing the toothed belt at a relative humidity of maximum 50% helps to avoid a reduced service life of the toothed belt.

Ambient conditions apply with motor. For further information, refer to the corresponding motor manual.

For detailed information about storage conditions, refer to *Transport and Storage* *(see page 51)*.

Information About Increased Corrosion Resistance

For detailed information about the materials used, contact your local Schneider Electric service representative.

Section 3.2
Mechanical Data

Mechanical Data of the Lexium EAC1-Series

Overview

For detailed mechanical data, dimensional drawings and characteristic curves of the respective Lexium EAC1-Series, refer to the catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

NOTE:

- EAC11 is equal to PNCE32
- EAC12 is equal to PNCE40
- EAC13 is equal to PNCE50
- EAC14 is equal to PNCE63
- EAC15 is equal to PNCE80
- EAC16 is equal to PNCE100

Section 3.3
Design of the Actuator Frame

Design of the Actuator Frame

System Requirements

The actuator can be mounted in vertical or horizontal orientation as well as in other orientations. For special applications, contact your local Schneider Electric service representative.

- Take into account the mass of the actuator that may act as a load, depending on the mounting position (vertical / horizontal / tilted).
- For the design of the actuator frame, take into account the varying height of the actuator.

For detailed information about mounting the actuator to the frame, refer to the catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

NOTE:

- EAC11 is equal to PNCE32
- EAC12 is equal to PNCE40
- EAC13 is equal to PNCE50
- EAC14 is equal to PNCE63
- EAC15 is equal to PNCE80
- EAC16 is equal to PNCE100

The precision of the actuator in the application is also determined by the frame. Deformations of the frame cause imprecisions on the Tool Center Point (TCP).

General Requirements Regarding the Frame of the Enclosure

The frame must not only withstand permanently the forces and torques described below, but also have sufficient stiffness so that the deformations and vibrations which occur do not lead to any major deviations on the TCP. Ensure a sufficient transverse bracing in the frame.

Note the forces and torques to be taken up by the frame during normal operation:

- Consider that forces and torques operating the frame change when you modify the stroke length or the payload.
- The mounting position, the speed, and the acceleration of the actuator, as well as the mounted payload, affect the total energy and may possibly cause damage.

NOTE: Fasten the actuator with screws of property class 8.8 or greater. For more information, refer to the respective dimensional drawing in *Mechanical Data* *(see page 44)*.

⚠ WARNING

CRUSHING, SHEARING, CUTTING AND IMPACT INJURY

- The actuator must be operated only within an enclosure.
- Open or enter the enclosure for cleaning and maintenance purposes only.
- Design the enclosure to withstand an impact from the actuator and to resist ejected parts from escaping the zone of operation.
- Design the enclosure to safely deactivate the actuator as soon as a person enters the zone of operation of the actuator.
- All barriers, protective doors, contact mats, light barriers, and other protective equipment, must be configured correctly and enabled whenever the actuator is under power.
- Define the clearance distance to the zone of operation of the actuator so that operational staff do not have access to, nor can be enclosed in, the actuator zone of operation.
- Design the enclosure to account for the maximum possible travel paths of the actuator; that is, the maximum path until the hardware safety system limits as well as the additional run-on paths, in case of a power interruption.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Interference Contours in the Enclosure

When designing the enclosure, ensure that the moving parts of the actuator will have a sufficient freedom of movement. Take into account the required space for the movement of the corresponding actuator.

For more information, refer to the respective dimensional drawing in *Mechanical Data* *(see page 44)*.

For detailed information about the interference areas caused by actuator motions, the dimensions, or the strokes, refer to the 3D-CAD data. For this, contact your local Schneider Electric service representative.

Section 3.4
Service Life

Service Life

Presentation

The service life of the ball screw of the actuator is a function of the mean forces and torques that act in the system.

For detailed information about the service life of the actuator, refer to the catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

Chapter 4
Transport and Commissioning

What Is in This Chapter?

This chapter contains the following sections:

Section 4.1
Transport and Unpacking

What Is in This Section?

This section contains the following topics:

Transport and Storage

Transport Conditions

The Lexium EAC1-Series must be handled with care. Shocks and impacts may damage the actuator. Damage may lead to reduced running accuracy, reduced service life, or to an inoperable actuator.

The actuator is pre-assembled before transport.

The actuator is transported in a wooden box or a cardboard box. The respective box dimensions vary according to the dimensions of the actuator and the order quantity.

Take into account that the piston rod may be damaged during transport if it is extended.

NOTICE
INOPERABLE EQUIPMENT The piston rod must be retracted before transport. **Failure to follow these instructions can result in equipment damage.**

For detailed information about transport conditions, refer to *Ambient Conditions* *(see page 42)*.

Storage

The Lexium EAC1-Series can be stored inside the packaging or unpacked. In both cases, ensure that it is stored in a sheltered and dry place. Avoid humidity which can have corrosive effects on the actuator.

NOTE: When stored, the actuator needs to be on a level surface.

For detailed information about storage conditions, refer to *Ambient Conditions* *(see page 42)*.

Unpacking

Overview

Before you start to unpack and position the actuator, pay special attention to the accident prevention regulations and the safety regulations.

⚠ WARNING

CRUSHING, SHEARING, CUTTING AND HITTING DURING HANDLING

- Observe the general construction and safety regulations for handling and assembly.
- Use appropriate mounting and transport equipment and use appropriate tools.
- Prevent clamping and crushing by taking appropriate precautions.
- Cover edges and angles to protect against cutting damage.
- Wear suitable protective clothing (for example, protective goggles, protective boots, protective gloves).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ CAUTION

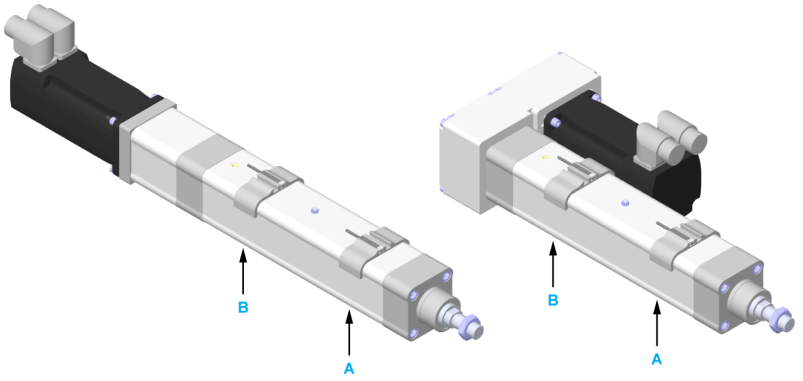
FALLING HEAVY LOAD

- If a motor and/or a belt drive is mounted to the actuator, simultaneously lift with one hand the actuator and with the other hand the motor and/or the belt drive.
- Do not lift the actuator only at the motor and/or the belt drive.
- Retract the piston rod during transport and handling.
- Use a suitable crane or other lifting gear to lift the actuator if this is required by the mass of the actuator.

Failure to follow these instructions can result in injury or equipment damage.

Unpacking

Step	Action
1	Transport the actuator in its packaging as close as possible to the installation site.
2	In case of a wooden box, unscrew the bolts on the lid of the box. In case of a cardboard box, open the box with appropriate tools.
3	Verify the actuator for transport damage.
4	Retract the piston rod if not already done.

Step	Action
5	Lift up the actuator at points A and B and remove the cardboard box or wooden box. If a motor or a belt drive is mounted to the actuator, lift between points A and B while supporting the motor or the belt drive. **NOTE:** ● Support the motor when lifting the actuator at points A and B. ● Do not lift the actuator at the motor, belt drive, or piston rod only. 

For further information on handling the actuator during unpacking, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder (see page 11)*.

NOTE: In case of any transport damages, contact your local Schneider Electric service representative.

Section 4.2
Mechanical Installation

What Is in This Section?

This section contains the following topics:

Information About Installation

Overview

Proceed with care during the following steps in order to help to prevent the following points:

- Injuries and material damage
- Incorrect installation and programming of components
- Incorrect operation of components
- Use of non-authorized cables or modified components

For further Information, refer to *Specific Safety Information* *(see page 15)*.

Accessibility for Servicing

When mounting the actuator, the motor, the belt drive, and the sensors, consider that these components may have to be accessed for servicing. Allow for such accessibility in your mechanical design.

Standard Tightening Torques

The following tightening torques apply to screws of property class 8.8:

Thread	Hex key size in mm (in)	Maximum tightening torque in Nm (lbf-in)
M2	1.5 (0.059)	0.4 (3.54)
M2.5	2 (0.079)	0.7 (6.2)
M3	2.5 (0.098)	1.3 (11.5)
M4	3 (0.118)	2.8 (25)
M5	4 (0.157)	5.6 (50)
M6	5 (0.197)	9.6 (85)
M8	6 (0.236)	23 (204)
M10	8 (0.315)	45 (398)
M12	10 (0.39)	74 (655)

Special Tightening Torques

The maximum tightening torque for the screw of the sensor is 0.6 Nm (5.3 lbf-in).

The maximum tightening torque for the screws of the sensor holder is 1.0 Nm (8.9 lbf-in).

The following tightening torques apply to the clamping screw of the clamping hub of the elastomer coupling:

Coupling type/size	Thread	Hex key size in mm (in)	Maximum tightening torque in Nm (lbf-in)
5	M3	2.5 (0.098)	2 (17.7)
10	M4	3 (0.118)	4 (35.4)

Coupling type/size	Thread	Hex key size in mm (in)	Maximum tightening torque in Nm (lbf-in)
20	M5	4 (0.157)	8 (71)
60	M6	5 (0.197)	15 (133)

The following tightening torques apply to the screws of the self-locking device:

Thread	Hex key size in mm (in)	Maximum tightening torque in Nm (lbf-in)
M2.5	2 (0.079)	1.2 (10.6)
M3	2.5 (0.098)	2.1 (18.6)
M4	3 (0.118)	4.9 (43)
M5	4 (0.157)	9.7 (86)
M6	5 (0.197)	17 (150)
M8	6 (0.236)	41 (363)

Mounting the Actuator

Overview

To mount the actuator to the installation surface, use the appropriate mounting attachment accessories.

For information about appropriate mounting attachment accessories, refer to the catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

⚠ WARNING

GREAT MASS OR FALLING PARTS

- Use a suitable crane or other suitable lifting gear to lift the actuator if this is required by the mass of the actuator.
- Use the necessary personal protective equipment (for example, safety shoes, safety glasses and protective gloves).
- Mount the actuator in such a way (tightening torque, securing screws) that parts cannot come loose, even in the case of shocks and vibration.
- Take all necessary measures to avoid unanticipated movements of the actuator mounted in vertical or tilted positions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

INCORRECT INSTALLATION

- If motors or belt drive with a cross section greater than the cross section of the actuator profile are used, the actuator must be supported or the installation surface must be cut out as required.
- Mount the actuator only with the appropriate mounting attachments accessories.

Failure to follow these instructions can result in equipment damage.

Running Accuracy

The length of the actuator can have an impact on the running accuracy. A long actuator may bend more easily, which can cause a reduced running accuracy. When mounting the actuator, ensure that there is no gap between the mounting surfaces of the actuator and the installation surface so that the installation surface is in full contact with the mounting surface of the actuator.

Dimensions for Mounting

For detailed information about the dimensions, refer to catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

Mounting the Actuator

NOTE: When mounting the actuator, keep in mind that it may have to be accessed for maintenance.

Step	Action
1	Ensure that the planarity of the installation surface does not exceed 0.1 mm/m (0.0012 in/ft).
2	Carefully position the actuator on its installation surface.
3	Provide a reference plane alongside the actuator profile.
4	Place a dial gauge onto the piston rod.
5	Move the piston rod and record the deviation regarding the reference plane over the entire stroke.
6	Correct the deviations by lateral alignment of the actuator and by tightening the screws appropriately. **NOTE:** Observe the standard tightening torques *(see page 55)*.

Section 4.3
Electrical Installation

Electrical Installation

Cabling the Actuator

Step	Action
1	Connect the motor. For details about connecting the motor, refer to the corresponding motor manual.
2	If applicable, connect the sensors. For details about sensor connections, refer to *Technical Data of the Sensors* *(see page 73)*.
3	Verify the correct routing and fastening of the cables to help prevent any collision of cables and moving parts.

⚠ ⚠ DANGER

LOOSE WIRING OR CABLING CAUSES ELECTRIC SHOCK

Tighten wiring or cabling connections in conformance with the torque specifications.

Failure to follow these instructions will result in death or serious injury.

Grounding the Actuator

The following components of the actuator have to be grounded:

- Motor (for more information about grounding the motor, refer to the corresponding motor manual)
- All costumer attachments

NOTE: When grounding the various equipment, use cables that respect the local standards that are in vigor.

⚠ ⚠ DANGER

ELECTRIC SHOCK DUE TO IMPROPER GROUNDING

- Ground actuator components in accordance with local, regional and/or national standards and regulations at a single, central point.
- Verify that the motor is connected to the central ground.

Failure to follow these instructions will result in death or serious injury.

Multipoint grounding is permissible if connections are made to an equipotential ground plane-dimensioned to help avoid cable shield damage in the event of power system short-circuit currents.

Section 4.4
Initial Start-Up

What Is in This Section?

This section contains the following topics:

Verifying the Installation

Overview

Verify that the actuator is installed correctly. For more information, refer to *Specific Safety Information* *(see page 15)*.

Pay special attention to:

- Properly bolted mechanical parts.
- Installation and wiring of the actuator. Make sure that the mains connection and the 24 V connection are wired correctly.
- Connection of all protective ground (earth) cables.
- Use of correct fuses.
- Isolation of all unused cable ends.
- Installation and connection of all cables and connectors.
- Installation of sensors.
- Function of sensors as required.
- Unobstructed movement of the actuator along the entire stroke.

⚠ ⚠ DANGER

ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires except under the specific conditions specified in the appropriate hardware guide for this equipment.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Operate electrical components only with a connected protective ground (earth) cable.
- Verify the secure connection of the protective ground (earth) cable to all electrical devices to ensure that connection complies with the connection diagram.
- Do not touch the electrical connection points of the components when the module is energized.
- Provide protection against indirect contact (EN 50178).
- Insulate any unused conductors on both ends of the motor cable.

Failure to follow these instructions will result in death or serious injury.

⚠ ⚠ DANGER

LOOSE WIRING OR CABLING CAUSES ELECTRIC SHOCK

Tighten wiring or cabling connections in conformance with the torque specifications.

Failure to follow these instructions will result in death or serious injury.

⚠ ⚠ DANGER

ELECTRIC SHOCK DUE TO IMPROPER GROUNDING

- Ground actuator components in accordance with local, regional and/or national standards and regulations at a single, central point.
- Verify that the motor is connected to the central ground.

Failure to follow these instructions will result in death or serious injury.

Multipoint grounding is permissible if connections are made to an equipotential ground plane dimensioned to help avoid cable shield damage in the event of power system short-circuit currents.

Start-Up

Overview

When the actuator is operated for the first time, there is a risk of unintended equipment operation caused by possible wiring errors or unsuitable parameters.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Verify that the actuator is properly fastened so it cannot come loose even in the case of fast acceleration.
- Take all necessary measures to ensure that the moving parts of the actuator cannot move in an unanticipated way.
- Verify that emergency stop equipment is operational and within reach of the zone of operation.
- Verify that the system is free and ready for the movement before starting the system.
- Run initial tests at reduced velocity.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

If the motor power supply is disabled unintentionally, for example as a result of power outage, errors or functions, the motor is no longer decelerated in a controlled way.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Verify that movements without braking effect cannot cause injuries or equipment damage.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The motor, the belt drive, and the adaptation materials of the actuator may exceed 70 °C (158 °F) when subjected to heavy loads and/or high performance during operation.

⚠ WARNING

HOT SURFACES

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

For further information, refer to *Hot Surfaces* *(see page 23)*.

NOTE: Perform a start-up in case of an already configured actuator when it is used under modified operating conditions. For more information, refer to *Specific Safety Information* *(see page 15)*.

Commissioning Procedure

Step	Action
1	Verify the installation. For more information, refer to *Verifying the Installation* *(see page 62)*.
2	Comply with the instructions provided in the manual of the motor used and in the manual of the drives used.
3	Verify that the loads conform to the appropriate specified forces and torques for the actuator and the machine it contains before operating the actuator.
4	Limit the maximum torque of the motor in accordance with the maximum drive torque of the actuator.
5	Verify the function of the sensors.
6	Verify the distance between the sensors and the mechanical stops. The movement must be stopped by the sensors before reaching a mechanical stop.
7	Perform initial tests at reduced velocity. During these tests, verify that the controller responds without any error or warning message to the signals of the sensors in both directions of movement. **NOTE:** Consider that the forward movement is stopped on a trigger signal of the forward overtravelling sensor and as does a backward movement.
8	Verify that the ambient conditions conform to the appropriate specified environments for the actuator and the machine it contains. For details, refer to *Ambient Conditions* *(see page 42)*.

NOTE: The maximum permissible dynamic forces and torques decrease with increasing velocities and depend on the mechanical fastening of the actuator. For more information, refer to the respective characteristic curves in catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

Section 4.5
Mounting the Payload

Mounting the Payload

Overview

To fasten the payload, use the thread at the piston rod or the designated piston rod accessories for the actuator.

For detailed instructions on mounting the payload to the piston rod, refer to the catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

Chapter 5
Optional Equipment

What Is in This Chapter?

This chapter contains the following sections:

Section 5.1
Motor and Belt Drive

What Is in This Section?

This section contains the following topics:

Technical Data of the Motor

Overview

For more information about the motor, record the motor reference on the type plate and refer to the corresponding motor manual.

Mounting the Motor and/or the Belt Drive

Overview

Optionally, the actuator is supplied with a pre-installed Schneider Electric motor and/or a belt drive.

Mounting Position of the Motor and/or the Belt Drive

In case of a new motor and/or a new belt drive, you can mount the new motor to the motor adaptation and the belt drive to the drive cap. The motor and/or belt drive can be mounted in different arrangements (turned in increments of 4 x 90°). For further information, refer to *Motor and/or Belt Drive Orientation and Configuration* *(see page 38)*.

Third-Party Motors

When choosing a third-party motor, take special care that the maximum drive torque is not exceeded. Otherwise the actuator could be damaged or destroyed.

⚠ WARNING

UNINTENDED MOVEMENTS

Observe the maximum permissible drive torque of the corresponding motor.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

FALLING HEAVY LOAD

Observe the limitations for the maximum permissible mass and the maximum permissible torque of the mounted motor and/or belt drive.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Coupling Assemblies for Motor and/or Belt Drive Mounting

A coupling assembly is required to mount a motor or a belt drive to the actuator.

When the motor of the actuator is driven directly, an elastomer coupling is used. The elastomer coupling consists of two clamping hubs and one elastomer spider.

When the motor of the actuator is driven by a belt drive, a clamping set is used. The clamping set consists of self-locking devices and belt pulleys.

Prerequisites

You need the following tools to mount the motor and the belt drive:

- Torque wrench with a set of hexagon sockets
- Caliper gauge (for distance measurement)

For suitable parts, refer to *Replacement Equipment of the Lexium EAC1-Series* *(see page 101)*.

Preparing the Mounting of the Motor and/or the Belt Drive

Step	Action
1	Clean all parts.
2	Inspect all parts for damage.

Mounting the Motor and/or the Belt Drive

For detailed instructions on mounting the motor and/or the belt drive, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder* *(see page 11)*.

Section 5.2
Sensors

What Is in This Section?

This section contains the following topics:

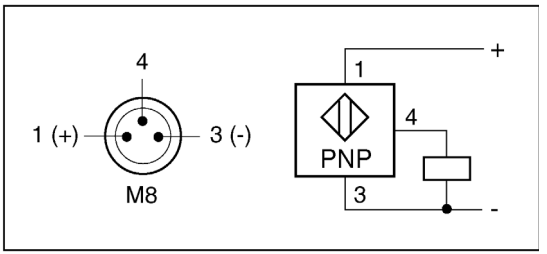
Technical Data of the Sensors

Technical Data of the Sensors

For detailed technical data of the sensors, refer to the catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

Connection Details of the Sensors

The optional sensors are equipped with an M8 x 1 connector. The following figure presents the connection assignment of the sensors.



Pin	Description
1	PELV supply voltage (+)
3	PELV supply voltage (-)
4	Output

The maximum cable length is 300 mm (11.8 in). For suitable extension cables with various lengths, refer to *Replacement Equipment of the Lexium EAC1-Series* *(see page 101)*.

Mounting the Sensors

Overview

To mount the sensors to the actuator profile, sensor holders are required. The sensor holders can be mounted at two sides of the actuator profile:

- On the lubrication nipple side
- On the opposite of the lubrication nipple side

Prerequisites

You need the following tools to mount a sensor:

- Torque wrench with a set of hexagon sockets

For suitable parts, refer to *Replacement Equipment of the Lexium EAC1-Series* *(see page 101)*.

Preparing the Mounting of the Sensor

Step	Action
1	Verify the sensor for correct type and function.
2	Verify that your controller and your interface are suitable for the sensor.
3	Clean all parts.
4	Inspect all parts for damage.

Mounting the Sensor

For detailed instructions on sensor mounting, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder* *(see page 11)*.

Section 5.3
Accessories

Mounting Accessories

Overview

The following accessories are available for the Lexium EAC1-Series:
- Piston rod accessories
- Mounting attachment accessories
- Guiding unit accessories

Prerequisites

You need the following tools to mount the accessories:
- Torque wrench with a set of hexagon sockets

NOTE: Do not use ball head hex keys. Excessive torque may cause the ball head to break away. A broken ball head makes the removal of the screw difficult.

For suitable parts, refer to *Replacement Equipment of the Lexium EAC1-Series* *(see page 101)*.

Preparing the Mounting of Accessories

Step	Action
1	Clean all parts.
2	Inspect all parts for damage.

Mounting Accessories

For detailed instructions on mounting accessories, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder* *(see page 11)*.

Chapter 6
Maintenance and Repair

What Is in This Chapter?

This chapter contains the following sections:

Section 6.1
Maintenance, Repair, and Cleaning

What Is in This Section?

This section contains the following topics:

General Information About Maintenance, Repair, and Cleaning

Overview

The use and application of the information contained herein require expertise in the design and programming of automated control systems. Only you, the user, machine builder or integrator, can be aware of all the conditions and factors present during installation and setup, operation, repair, and maintenance of the machine or process.

You must also consider any applicable standards and/or regulations with respect to grounding of all equipment. Verify compliance with any safety information, different electrical requirements, and normative standards that apply to your machine or process in the use of this equipment.

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers, or installing or removing any accessories, hardware, cables, or wires.
- Place a "Do Not Turn On" or equivalent hazard label on all power switches and lock them in the non-energized position.
- Wait 15 minutes to allow the residual energy of the DC bus capacitors to discharge.
- Measure the voltage on the DC bus with a properly rated voltage sensing device and verify that the voltage is less than 42.4 Vdc.
- Do not assume that the DC bus is voltage-free when the DC bus LED is off.
- Block the piston rod to prevent rotation of the drive system prior to performing any type of work on the drive system.
- Do not create a short-circuit across the DC bus terminals or the DC bus capacitors.
- Replace and secure all covers, accessories, hardware, cables, and wires and confirm that a proper ground connection exists before applying power to the unit.
- Use only the specified voltage when operating the actuator and any associated equipment.

Failure to follow these instructions will result in death or serious injury.

Poor maintenance can lead to premature wear, or even present potential safety hazards for production or maintenance operators.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Develop and follow a maintenance plan and associated protocols adapted to the requirements of your application and equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: Remove the part or the tool mounted to the actuator during maintenance operations if necessary.

Servicing

In case of issues which cannot be resolved, contact your local Schneider Electric service representative with the following information:

- Type plate information (type, identification number, serial number, DOM)
- Detailed description of the issue
- Previous and associated circumstances

Maintenance Plan

Overview

The maintenance intervals may have to be adapted to the greatly varying operational hours depending on the application.

For procedures to replace the different parts, refer to *Replacing Parts (see page 86)*.

Maintenance Schedule

Perform the following maintenance tasks after delivery:

Date	Action
After two months of service life	• Verify the actuator by visual inspection *(see page 84)* for any damage or missing parts, especially for moving parts and parts at risk for collisions such as mounting elements.

Perform the following maintenance tasks within the stated intervals:

Interval	Action
Every 500 hours of operation or when the travel path(1) is reached	• Clean the actuator *(see page 83)* if necessary. • Lubricate the actuator. For further information, refer to *Lubricating the Actuator (see page 98)*.
Every 2,000 hours of operation or when the travel path is reached four times	• Clean the actuator *(see page 83)*. • Verify the toothed belt abrasion *(see page 84)* and replace the toothed belt *(see page 94)*, if necessary. • Verify the actuator by visual inspection for any damage or missing parts *(see page 84)*. Especially moving parts and parts at risk for collisions such as mounting elements. • Verify the sensors for functionality. • Verify all parts for bolted connections.
Annually or after an uncontrolled stop (stop category 0)	• Verify the brake function during operations. For further information, refer to the corresponding motor manual of the optionally pre-installed Schneider Electric motor.
Every 20,000 hours of operation	• Replace the optionally pre-installed Schneider Electric motor. For further information, refer to the corresponding motor manual of the motor.
Every four years after the date of manufacturing (DOM)	• If a belt drive is installed: Replace the toothed belt as a precautionary measure *(see page 94)*.
(1) For the travel path at normal ambient conditions, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder (see page 11)*.	

NOTE: The ball bearings are lubricated for life.

Maintaining the Motor (Optional Equipment)

Overview

For information about maintaining the motor, record the motor reference on the type plate and refer to the corresponding motor manual.

Cleaning

Overview

Care must be taken with cleaning products as some active agents may have harmful effects on the material of the actuator.

NOTICE
CORROSION CAUSED BY CLEANING AGENTS ● Perform a compatibility test in relation to the cleaning agent and the component affected before using a cleaning agent. ● Do not use alkaline detergent in the interior of the mechanics. ● Do not use any chloride-containing cleaning agents. ● Do not use any sulphuric acid containing detergent. **Failure to follow these instructions can result in equipment damage.**

For more information about the material properties of the actuator, contact your local Schneider Electric service representative.

Cleaning the Actuator

The actuator must be inspected, large particles and dirt must be removed from the surface, and the actuator must be cleaned at regular intervals *(see page 81)*. When cleaning the actuator, note the following:

- Do not use compressed air for cleaning.
- The anodized surface only has a limited resistance to alkaline cleaning agents. Therefore, use only neutral cleaning agents for cleaning.
- Use only damp, soft, and lint-free cleaning cloths to wipe the surface.

NOTE: Depending on the operating conditions and requirements, verifying and cleaning may be necessary on a more frequent basis.

Repairing After Collisions

Overview

Components of the actuator may be damaged or destroyed as a result of a collision.

NOTE: After a collision, inspect the actuator unit for obvious damages. Verify that the actuator is running smoothly.

⚠ WARNING
FALLING OR EJECTED PARTS ● Thoroughly inspect all components of the actuator and all components attached to the actuator, including the motor and the belt drive (if installed), for damage after a collision. ● Do not use the actuator if any of the components are damaged or suspected to be damaged. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Verifying the Components

Step	Action
1	Verify the components for completeness. If any components are missing, locate the same and remove them from the surrounding machinery.
2	Replace damaged or missing components.

NOTE: In case of any suspect on mechanical damage or doubt, contact your local Schneider Electric service representative.

Verifying the Toothed Belt in the Belt Drive (Optional Equipment)

Step	Action
1	Remove the cover of the belt drive. For further information, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder* *(see page 11)*.
2	Verify the toothed belt by a visual inspection for damaged teeth and abrasion. To perform a visual inspection, maybe it is necessary to remove the toothed belt *(see page 94)*.

NOTE: A damaged toothed belt must be replaced *(see page 94)*.

Verifying the Piston Rod (Optional Equipment)

Step	Action
1	Inspect the piston rod for backlash. If the piston rod has backlash, it is appreciably worn.

Step	Action
2	Remove the motor *(see page 91)*.
3	Manually move the piston rod and inspect for irregular noise or vibration. Irregular noise or vibration indicates a damage of the piston rod. Damage causes rapid wear.

NOTE: A worn-out or damaged piston rod must be replaced. Contact your local Schneider Electric service representative.

Verifying the Elastomer Coupling or Clamping Set (Optional Equipment)

Step	Action
1	Remove the motor *(see page 91)*.
2	Verify the elastomer coupling or the clamping set by a visual inspection for damage.

NOTE: A damaged elastomer coupling must be replaced *(see page 93)*.

Other Repairs

In case of other repairs beyond those described in the present document, contact your local Schneider Electric service representative.

Section 6.2
Replacing Parts

What Is in This Section?

This section contains the following topics:

Information About Replacing Parts

Overview

The use and application of the information contained herein require expertise in the design and programming of automated control systems. Only you, the user, machine builder or integrator, can be aware of all the conditions and factors present during installation and setup, operation, repair, and maintenance of the machine or process.

You must also consider any applicable standards and/or regulations with respect to grounding of all equipment. Verify compliance with any safety information, different electrical requirements, and normative standards that apply to your machine or process in the use of this equipment.

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers, or installing or removing any accessories, hardware, cables, or wires.
- Place a "Do Not Turn On" or equivalent hazard label on all power switches and lock them in the non-energized position.
- Wait 15 minutes to allow the residual energy of the DC bus capacitors to discharge.
- Measure the voltage on the DC bus with a properly rated voltage sensing device and verify that the voltage is less than 42.4 Vdc.
- Do not assume that the DC bus is voltage-free when the DC bus LED is off.
- Block the piston rod to prevent rotation of the drive system prior to performing any type of work on the drive system.
- Do not create a short-circuit across the DC bus terminals or the DC bus capacitors.
- Replace and secure all covers, accessories, hardware, cables, and wires and confirm that a proper ground connection exists before applying power to the unit.
- Use only the specified voltage when operating the actuator and any associated equipment.

Failure to follow these instructions will result in death or serious injury.

The motor, the belt drive, and the adaptation materials of the actuator may exceed 70 °C (158 °F) when subjected to heavy loads and/or high performance during operation.

⚠ WARNING

HOT SURFACES

- Avoid unprotected contact with hot surfaces.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

For further information, refer to *Hot Surfaces* *(see page 23)*.

Replacing the Entire Actuator

Replacing the Entire Actuator

Perform the following steps to replace the entire actuator:

Step	Action
1	Remove the actuator from the frame.
2	Mount the new actuator *(see page 57)*.
3	Verify the installation *(see page 62)* and start up *(see page 64)*.

Replacing the Sensors (Optional Equipment)

Prerequisites

You need the following tools to replace the sensors:

- Set of hex keys

NOTE: Do not use ball head hex keys. Excessive torque may cause the ball head to break away. A broken ball head makes the removal of the screw difficult.

For suitable parts, refer to *Replacement Equipment of the Lexium EAC1-Series* *(see page 101)*.

Replacing the Sensors

For detailed instructions on replacing the sensors, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder* *(see page 11)*.

Replacing the Motor and/or Belt Drive (Optional Equipment)

Overview

The use and application of the information contained herein require expertise in the design and programming of automated control systems. Only you, the user, machine builder or integrator, can be aware of all the conditions and factors present during installation and setup, operation, repair, and maintenance of the machine or process.

You must also consider any applicable standards and/or regulations with respect to grounding of all equipment. Verify compliance with any safety information, different electrical requirements, and normative standards that apply to your machine or process in the use of this equipment.

The optional motor of the Lexium EAC1-Series is coupled by using a preloaded elastomer coupling.

NOTE: Before dismounting, note the mounting orientation of the motor and/or belt drive to remount the motor and/or belt drive in the same orientation.

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers, or installing or removing any accessories, hardware, cables, or wires.
- Place a "Do Not Turn On" or equivalent hazard label on all power switches and lock them in the non-energized position.
- Wait 15 minutes to allow the residual energy of the DC bus capacitors to discharge.
- Measure the voltage on the DC bus with a properly rated voltage sensing device and verify that the voltage is less than 42.4 Vdc.
- Do not assume that the DC bus is voltage-free when the DC bus LED is off.
- Block the piston rod to prevent rotation of the drive system prior to performing any type of work on the drive system.
- Do not create a short-circuit across the DC bus terminals or the DC bus capacitors.
- Replace and secure all covers, accessories, hardware, cables, and wires and confirm that a proper ground connection exists before applying power to the unit.
- Use only the specified voltage when operating the actuator and any associated equipment.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

UNINTENDED MOVEMENTS DUE TO DISMOUNTING

Secure the moving parts of the actuator mounted in a vertical or tilted position against unexpected movements.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Prerequisites

You need the following tools to replace the motor and/or belt drive:

- Set of hex keys

NOTE: Do not use ball head hex keys. Excessive torque may cause the ball head to break away. A broken ball head makes the removal of the screw difficult.

For suitable parts, refer to *Replacement Equipment of the Lexium EAC1-Series* *(see page 101)*.

Preparing the Replacement of the Motor and/or Belt Drive

Step	Action
1	If the actuator is mounted tilted or vertically, remove the payload or support the payload and the piston rod to keep it from falling.

Replacing the Motor and/or Belt Drive

For detailed instructions on replacing the motor and/or belt drive, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder* *(see page 11)*.

Replacing the Elastomer Coupling or Clamping Set (Optional Equipment)

Overview

An elastomer coupling is used when the motor of the Lexium EAC1-Series is driven directly. The elastomer coupling consists of two clamping hubs and one elastomer spider.

A clamping set is used when the motor of the Lexium EAC1-Series is driven by a belt drive. The clamping set consists of self-locking devices and belt pulleys.

⚠ WARNING

UNINTENDED MOVEMENTS DUE TO DISMOUNTING

Secure the moving parts of the actuator mounted in a vertical or tilted position against unexpected movements.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Prerequisites

You need the following tools to replace the elastomer coupling or clamping set:

- Set of hex keys

NOTE: Do not use ball head hex keys. Excessive torque may cause the ball head to break away. A broken ball head makes the removal of the screw difficult.

For suitable parts, refer to *Replacement Equipment of the Lexium EAC1-Series* *(see page 101)*.

Preparing the Replacement of the Elastomer Coupling or Clamping Set

Step	Action
1	If the actuator is mounted tilted or vertically, remove the payload or support the payload and the piston rod to keep it from falling.

Replacing the Elastomer Coupling or Clamping Set

For detailed instructions on replacing the elastomer coupling or clamping set, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder* *(see page 11)*.

Replacing the Toothed Belt (Optional Equipment)

Overview

The toothed belt is a part of the belt drive (optional equipment). Replacing the toothed belt can cause unintended movements.

⚠ WARNING

UNINTENDED MOVEMENTS DUE TO DISMOUNTING

Secure the moving parts of the actuator mounted in a vertical or tilted position against unexpected movements.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Prerequisites

You need the following tools to replace the toothed belt:

- Set of hex keys

NOTE: Do not use ball head hex keys. Excessive torque may cause the ball head to break away. A broken ball head makes the removal of the screw difficult.

For suitable parts, refer to *Replacement Equipment of the Lexium EAC1-Series* *(see page 101)*.

Preparing the Replacement of the Toothed Belt

Step	Action
1	If the actuator is mounted tilted or vertically, remove the payload or support the payload and the piston rod to keep it from falling.

Replacing the Toothed Belt

For detailed instructions on replacing the toothed belt, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder* *(see page 11)*.

Replacing Accessories

Prerequisites

You need the following tools to replace accessories:

- Set of hex keys

NOTE: Do not use ball head hex keys. Excessive torque may cause the ball head to break away. A broken ball head makes the removal of the screw difficult.

For suitable parts, refer to *Replacement Equipment of the Lexium EAC1-Series* *(see page 101)*.

Replacing the Accessories

For detailed instructions on replacing accessories, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder* *(see page 11)*.

Section 6.3
Lubrication

What Is in This Section?

This section contains the following topics:

Information About Lubrication

Overview

Lubricant is consumed continuously during operation of the actuator. The actuator must be lubricated at regular intervals. Incorrect lubricants may damage the actuator.

Insufficient lubrication or incorrect lubricants increase wear and reduce the service life.

NOTICE
INOPERABLE AXIS Only use the specified type and amount of lubricant. **Failure to follow these instructions can result in equipment damage.**

For lubricating the actuator, only use Lubcon TURMOGREASE LC 802 EP or alternative grease with label K HC P 2/3 N-30 according to DIN 51825.

Note that a small amount of lubricants may leak. For further information, refer to *Emissions* *(see page 26)*.

NOTE: Always wear protective clothing when working on the system. Repeated and prolonged exposure to the product can cause skin irritation, or sickness if ingested.

⚠ CAUTION
EYE OR SKIN CONTACT WITH, OR INGESTION OF, LUBRICANTS ● In the event of contact with the eyes or the skin, wash the affected areas with plenty of water; if irritation persists, consult a doctor. ● In the event of swallowing, do not provoke vomiting or administer any products orally; consult a doctor as soon as possible. **Failure to follow these instructions can result in injury or equipment damage.**

Lubricating the Actuator

Lubricating the Linear Ball Bearings

The linear ball bearings are lubricated for life.

Lubricating the Ball Screw

The ball screw must be lubricated.

The maintenance intervals at normal ambient conditions *(see page 42)* are indicated in the maintenance plan *(see page 81)*. For the travel path at normal ambient conditions, refer to *Unimotion Maintenance- and Assembly Instructions PNCE Electric Cylinder (see page 11)*.

For lubricating the ball screw, only use Lubcon TURMOGREASE LC 802 EP or alternative lubricants with label K HC P 2/3 N-30 according to DIN 51825.

Chapter 7
Replacement Equipment and Accessories

What Is in This Chapter?

This chapter contains the following topics:

Replacement Equipment and Accessories Inventory

Overview

Keeping a stock of important components helps ensure the availability of your machine. Only replace the equipment and the accessories of the actuator with identical types to help ensure compatibility.

Indicate the following information on the replacement equipment order, which can be found on the logistic type plate *(see page 40)*:

Parameter	Example value	Position on type plate
Actuator type	EAC12SF0250NFXS / 2 D O H7 0	First line
Identification number	0073000016016	Id.No.
Serial number	2700410441	Ser.No.

Replacement Equipment and Accessories Stock for Lexium EAC1-Series

When using the actuator in a production environment, consider keeping the following replacement equipment packages in stock:

Replacement equipment	Order number	Quantity for actuator					
		EAC11	EAC12	EAC13	EAC14	EAC15	EAC16
Sensor (optional equipment)	(1)	1	1	1	1	1	1
Clamping hub (optional equipment) (without belt drive)	(1)	2	2	2	2	2	2
Elastomer spider (optional equipment) (without belt drive)	(1)	1	1	1	1	1	1
Toothed belt (optional equipment) (with belt drive)	(1)	1	1	1	1	1	1
(1) Refer to *Replacement Equipment and Accessories* *(see page 101)*.							

NOTE: If there is an increased requirement on the availability of the actuator, keep also an appropriate motor and/or gearbox in stock.

Replacement Equipment of the Lexium EAC1-Series

Overview

The following replacement equipment and accessories are listed:

- Accessories *(see page 101)*
- Belt drives *(see page 101)*
- Clamping sets *(see page 101)*
- Elastomer couplings *(see page 101)*
- Lubrication guns *(see page 102)*
- Motor *(see page 102)*
- Nozzle pipes *(see page 103)*
- Sensors *(see page 103)*
- Sensor holders *(see page 103)*
- Sensor extension cables *(see page 104)*
- Toothed belts *(see page 104)*

Accessories

For detailed information about appropriate accessories for the Lexium EAC1-Series, refer to the accessories in the catalog *Unimotion PNCE Electric Cylinder (see page 11)*.

To order the respective accessories, contact your local Schneider Electric service representative.

Belt Drives

For detailed information about an appropriate belt drive for the Lexium EAC1-Series, refer to the motor side drives in the catalog *Unimotion PNCE Electric Cylinder (see page 11)*.

To order the respective belt drive, contact your local Schneider Electric service representative.

Clamping Sets

The clamping set consists of self-locking devices and belt pulleys.

To order the respective clamping set, contact your local Schneider Electric service representative.

Elastomer Couplings

The elastomer coupling consists of two clamping hubs and one elastomer spider.

For detailed information about an appropriate elastomer coupling for the Lexium EAC1-Series, refer to the couplings in the catalog *Unimotion PNCE Electric Cylinder (see page 11)*.

To order the respective elastomer coupling, contact your local Schneider Electric service representative.

Lubrication Guns

Order data

Representation	Description	Actuator	Characteristic feature	Order number
	For lubricating the actuator. Volume: 120 cm^3 (7.3 in^3); delivery volume: 0.5 cm^3 (0.03 in^3) / stroke: ● 1x single-hand lubrication gun	All	Grease	VW33MAP01

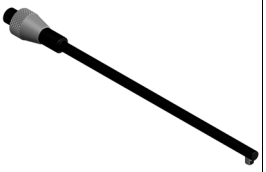
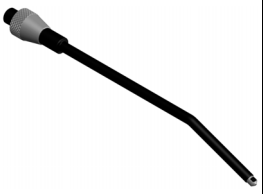
NOTE: The single-hand lubrication gun is empty. Furthermore, a nozzle pipe is required for lubrication.

Motor

For detailed information about appropriate motors for the Lexium EAC1-Series, contact your local Schneider Electric service representative.

Nozzle Pipes

Order data

Representation	Description	Actuator	Characteristic feature	Order number
	For extending the lubrication gun: ● 1x nozzle pipe Suitable for lubrication nipple type D6.	All	Pointed nozzle 90° lateral	VW33MAT01
			Pointed nozzle 20° angled	VW33MAT02

Sensors

For detailed information about appropriate sensors for the Lexium EAC1-Series, refer to the sensors in the catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

To order the respective sensors, contact your local Schneider Electric service representative.

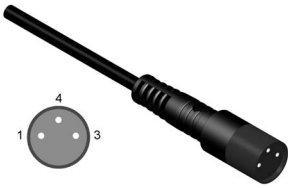
Sensor Holders

For detailed information about appropriate sensor holders for the Lexium EAC1-Series, refer to the sensor holders in the catalog *Unimotion PNCE Electric Cylinder* *(see page 11)*.

To order the respective sensor holders, contact your local Schneider Electric service representative.

Sensor Extension Cables

Order data

Representation	Description	For sensor contact type	Length in m (ft)	Order number
	For extending the sensor cable: ● 1x sensor extension cable Suitable for drag chain applications; sensor side end 3-pin M8 circular connector, second cable end is open.	PNP, normally closed PNP, normally open	5 (16.4)	VW32SBCBGA050
			10 (33)	VW32SBCBGA100
			20 (66)	VW32SBCBGA200

Toothed Belts

To order the appropriate toothed belt, contact your local Schneider Electric service representative.

Chapter 8
Troubleshooting

Troubleshooting

Overview

Malfunction	Probable cause	Solution
Sensor overtravelled.	Detected sensor error.	Adjust or replace the sensors. For more information, refer to *Replacing the Sensors (see page 90)*.
	Detected controller error.	Verify the controller.
Motor load increases, controller switches off because of overload.	Ball screw, ball bearings, or belt drive under mechanical tension.	Contact your local Schneider Electric service representative.
Noise and vibrations.	Velocity too high.	Reduce the velocity.
	Poor lubrication (in the case of noise).	Lubricate the Lexium EAC1-Series. For more information, refer to *Lubrication (see page 96)*.
	Ball screw, slide bearing and/or ball bearings of the piston rod are worn out or have backlash.	Verify the piston rod. For more information, refer to *Verifying the Piston Rod (see page 84)*.
	Toothed belt.	Use PTFE-spray on the toothed belt.
	Ambient conditions.	Verify the ambient conditions. For more information, refer to *Ambient Conditions (see page 42)*.
The piston rod has backlash and positions inaccurately.	Backlash at ball screw.	Contact your local Schneider Electric service representative.
	Worn out or damaged toothed belt, elastomer coupling or clamping set.	Replace the toothed belt, the elastomer coupling or the clamping set. For more information, refer to *Replacing the Toothed Belt (see page 94)* or *Replacing the Elastomer Coupling or Clamping Set (see page 93)*.

Appendices

What Is in This Appendix?

The appendix contains the following chapters:

Chapter	Chapter Name	Page
A	Further Information About the Manufacturer	109
B	Disposal	113

Appendix A
Further Information About the Manufacturer

What Is in This Chapter?

This chapter contains the following topics:

Contact Addresses

Schneider Electric Automation GmbH

Schneiderplatz 1

97828 Marktheidenfeld, Germany

Phone: +49 (0) 9391 / 606 - 0

Fax: +49 (0) 9391 / 606 - 4000

Email: info-marktheidenfeld@schneider-electric.com

Internet: *www.schneider-electric.com*

Machine Solution Service

Schneiderplatz 1

97828 Marktheidenfeld, Germany

Phone: +49 (0) 9391 / 606 - 0

Fax: +49 (0) 9391 / 606 - 4000

Email: automation.support.de@schneider-electric.com

Internet: *www.schneider-electric.com*

Additional Contact Addresses

See the homepage for additional contact addresses:

www.schneider-electric.com

Product Training Courses

Product Training Courses

Schneider Electric offers a number of product training courses.

The Schneider Electric training instructors will help you take advantage of the extensive possibilities offered by the system.

See the website (*www.schneider-electric.com*) for further information and the seminar schedule.

Appendix B
Disposal

Disposal

Information About the Disposal of Schneider Electric Products

The Lexium EAC1-Series is delivered in a cardboard box or a wooden box. The wooden box is treated according to IPPC-Standard. The cardboard box also comprises films.

NOTE: The components consist of different materials, which cannot be reused and must be disposed of separately. The packaging cannot be returned to the manufacturer.

- Dispose of the packaging in accordance with the relevant local, regional, or national regulations.
- Dispose of the packaging at the disposal sites provided for this purpose.
- Dispose of actuator in accordance with the applicable local, regional, or national regulations.

NOTE: The actuator and the motor contain lubricants whose disposal may be subject to local, regional, or national regulations apart from the packaging.

Index

E

F

G

H

I

L

M

N

O

P

Q

R

S

T

U

V

W