

Linear Actuator LA14

User Manual



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Preface

Dear User,

We are delighted that you have chosen a LINAK® product.

LINAK systems are high-tech products based on many years of experience in the manufacture and development of actuators, lifting columns, desk frames, electric control boxes, controls, batteries, accessories and chargers.

This User Manual does not address the end user. It is intended as a source of information for the equipment or system manufacturer only, and it will tell you how to install, use and maintain your LINAK electronics. The manufacturer of the end product has the responsibility to provide a User Manual, where relevant safety information from this manual is passed on to the end user.

We are convinced that your LINAK product/system will give you many years of problem-free operation.

Before our products leave the factory, they undergo both function and quality testing. Should you, nevertheless, experience problems with your product/system, you are always welcome to contact your supplier.

LINAK subsidiaries and some distributors situated all over the world have authorised service centres, which are always ready to help you. Locate your local contact information on the back page.

LINAK provides a warranty on all products. (See warranty section).

This warranty, however, is subject to correct use in accordance with the specifications, maintenance being done correctly, and any repairs being carried out at a service centre, which is authorised to repair LINAK products.

Changes in installation and use of LINAK systems can affect their operation and durability. The products may only be opened by authorised personnel.

This User Manual has been written based on the present technical knowledge. LINAK reserves the right to carry out technical modifications and keeps the associated information updated.

LINAK A/S

Terms of use

LINAK® takes great care in providing accurate and up-to-date information on its products. However, the user is responsible for determining the suitability of LINAK products for a specific application.

Due to continual development, LINAK products are subject to frequent modifications and changes. LINAK reserves the rights to conduct modifications, updates, and changes without any prior notice. For the same reason, LINAK cannot guarantee the correctness and actual status of imprinted information on its products.

LINAK uses its best efforts to fulfil orders. However, for the reasons mentioned above, LINAK cannot guarantee availability of any particular product at any given time. LINAK reserves the right to discontinue the sale of any product displayed on its website or listed in its catalogues or in other written material created and produced by LINAK, LINAK subsidiaries, or LINAK affiliates.

All sales are subject to the 'Standard Terms of Sale and Delivery for LINAK A/S' available on LINAK websites.

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Introduction

Extremely durable short-range linear actuator for applications operating in rough environments. Ensures reliable performance in temperatures ranging from -40 to +85° Celsius.

The actuator LA14 is a very tough actuator with a high IP degree and aluminium housing, making it ideal for use in harsh and demanding environments. Also, it is available with an optional ATEX/IECEX/CCC Ex approval.

Safety instructions

Please read this safety information carefully.

Be aware of the following three symbols throughout the document:



Warning!

Failing to follow these instructions can cause accidents resulting in serious personal injury.



Recommendations

Failing to follow these instructions can result in the actuator suffering damage or being ruined.



Additional information

Usage tips or additional information that is important in connection with the use of the actuator.

Furthermore, ensure that all staff who are to connect, mount, or use the actuator are in possession of the necessary information and that they have access to this document.

Persons who do not have the necessary experience or knowledge of the product/products must not use the product/products. Besides, persons with reduced physical or mental abilities must not use the product/products, unless they are under surveillance or they have been thoroughly instructed in the use of the apparatus by a person who is responsible for the safety of these persons.

Moreover, children must be under surveillance to ensure that they do not play with the product.

Before you start mounting/dismounting, ensure that the following points are observed:

- The actuator is not in operation.
- The actuator is free from loads that could be released during this work.

Before you put the actuator into operation, check the following:

- The actuator is correctly mounted as indicated in the relevant user instructions.
- The equipment can be freely moved over the actuator's whole working area.
- The actuator is connected to a mains electricity supply/transformer with the correct voltage and which is dimensioned and adapted to the actuator in question.
- Ensure that the voltage applied matches to the voltage specified on the actuator label.
- Ensure that the connection bolts can withstand the wear.
- Ensure that the connection bolts are secured safely.

During operation, please be aware of the following:

- Listen for unusual sounds and watch out for uneven running. Stop the actuator immediately if anything unusual is observed.
- Do not sideload the actuator.
- Only use the actuator within the specified working limits.
- Do not step on or kick the actuator.

When the equipment is not in use:

- Switch off the mains supply in order to prevent unintentional operation.
- Check regularly for extraordinary wear.

Classification

The equipment is not suitable for use in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide.

**Warnings**

- Do not sideload the actuator.
- When mounting the actuator in the application ensure that the bolts can withstand the wear and that they are secured safely.
- If irregularities are observed, the actuator must be replaced.
- The actuator is not to be opened by unauthorised personnel. In case the actuator is opened, the warranty will be invalid.

**Recommendations**

- Do not place load on the actuator housing.
- Prevent impact or blows, or any other form of stress to the housing.
- Ensure that the cable cover is mounted correctly. Use 1.5 Nm torque.
- Ensure that the duty cycle and the usage temperatures for LA14 actuators are respected.
- Ensure that the cable cannot be squeezed, pulled or subjected to any other stress.
- Furthermore, it will be good practice to ensure that the actuator is fully retracted in the “normal” position. The reason is that there will be a vacuum inside the actuator if it is extended which over time can lead to water entering the actuator.

Features

- Protection class: IP66 for outdoor use (dynamic). Furthermore, the actuator can be washed down by a high pressure cleaner (IP69K - static)
- Heavy duty aluminium housing for harsh conditions
- Mechanical endstop
- Guided nut
- Static safety factor: 2.0
- Noise level: Max. 50-53 dB (A) with standard motor / 58-63 dB (A) with fast motor at nominal voltage and with no load, according to EN ISO 3743-1.
- Weight: 1.3 kg
(Cable not included; weight varies by selected options)

Options in general

- 12 / 24 V DC Brushed motor
- Load up to 750 N
- Max. speed 8 to 45 mm/sec. depending on load and spindle pitch
- Stroke length from 19 to 130 mm (Zero Point: 75 to 130 mm)
- Built-in dimensions 245 mm (up to 345 mm)
- Various back fixtures and piston rod eyes in stainless and zinc-coated steel
- Back fixture available in 2 different positions: 0° or 90°
- Colour: Dark olivish grey or black (Harsh environment housing)
- Exchangeable cables in different lengths up to 10 m
- Analogue or digital feedback for precise positioning
- Potentiometer for feedback positioning - max. stroke length 100 mm (not with IC)
- Endstop reached signals
- Built-in Zero Point or endstop switch initialisation principle
- Hall effect sensor for precise positioning
- Special anodised housing for extreme environments
- CCC Ex, IECEx/ATEX (Ex) certified for Zone 21*
- IC options (see specific interface user manuals at the [TECHLINE webpage](#) for Connection Diagrams and I/O Specifications) including:
 - I/O
 - IO-Link
 - LIN bus
 - CAN bus J1939
 - CANopen
 - Modbus RTU
 - Modbus TCP/IP
 - Ethernet/IP
 - Profinet
- PC configuration tool (Actuator Connect™ and BusLink)



For more information about interfaces, please see the respective user manual on LINAK.com.

* Only available for actuators with 8-pin connector.

Usage

- Duty cycle at 750 N and 2 mm pitch is max. 20% (4 min. drive and 16 min. rest)
Duty cycle at 300 N and 4 mm pitch is max. 40% (8 min. drive and 12 min. rest)
The duty cycles are valid for operation within an ambient temperature of +5°C to +40°C



Please note: For actuators with short stroke length, low load, and infrequent operation where running time is critical, variations in running time may occur over time.
To ensure the optimal solution for your application, contact LINAK A/S.

- Ambient operating temperature: -40°C to + 85°C (for IECEx/ATEX/CCC Ex: -25°C to +65°C), full performance from +5°C to +40°C
- Storage temperature: -55°C to +105°C

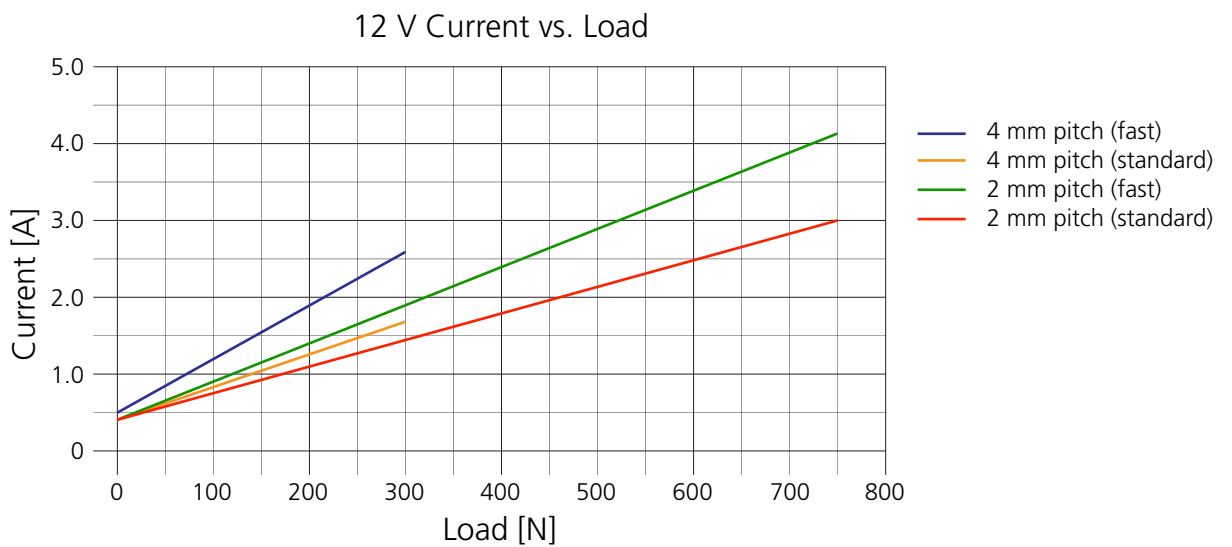
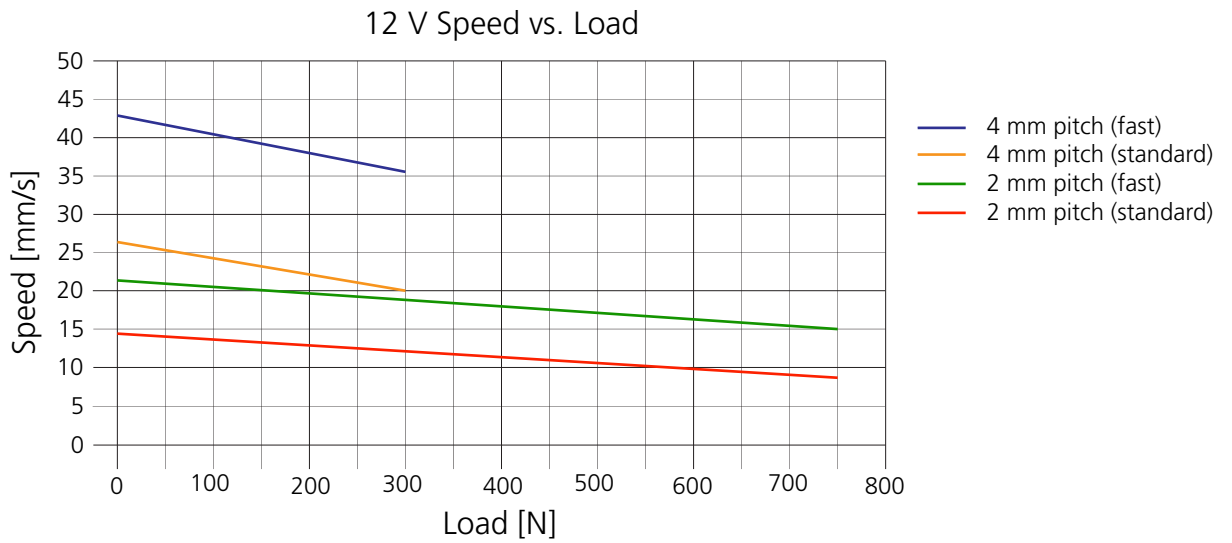
Housing for harsh environments

This housing (ordering example value IP: 9) should be recommended for use in particularly harsh environments such as stables, where the actuator is in contact with extremely corrosive liquids and/or vapours such as ammoniac.

The anodised housing option embodies a special surface treatment of the aluminium housing in order to reduce corrosion of the housing and avoid any vapours or liquids entering the actuator. The anodised housing is also certified IP66/IP69K. This is only available in the colour black.

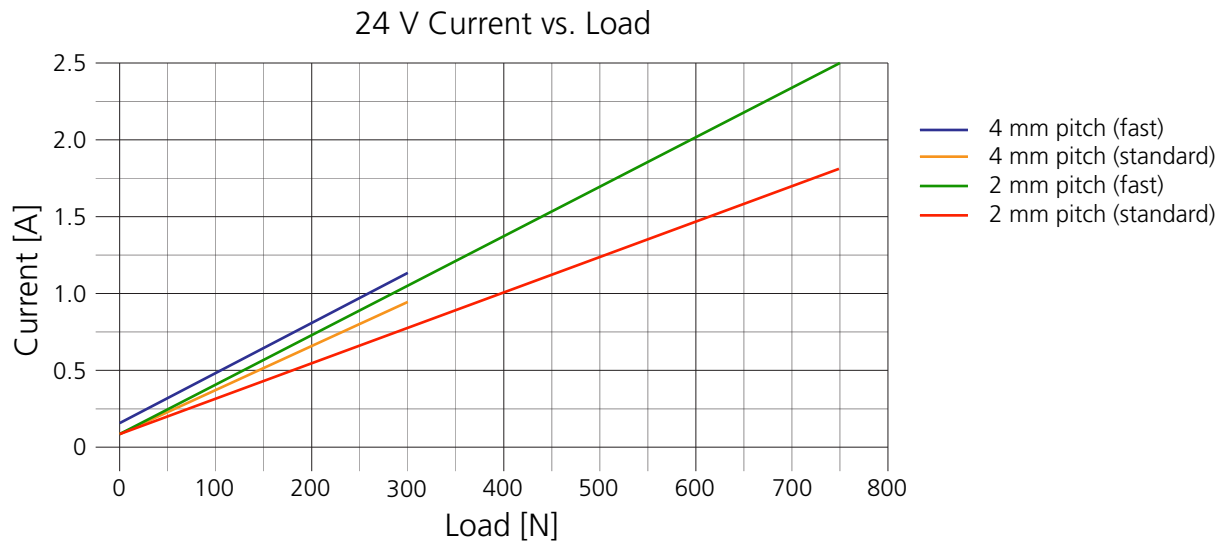
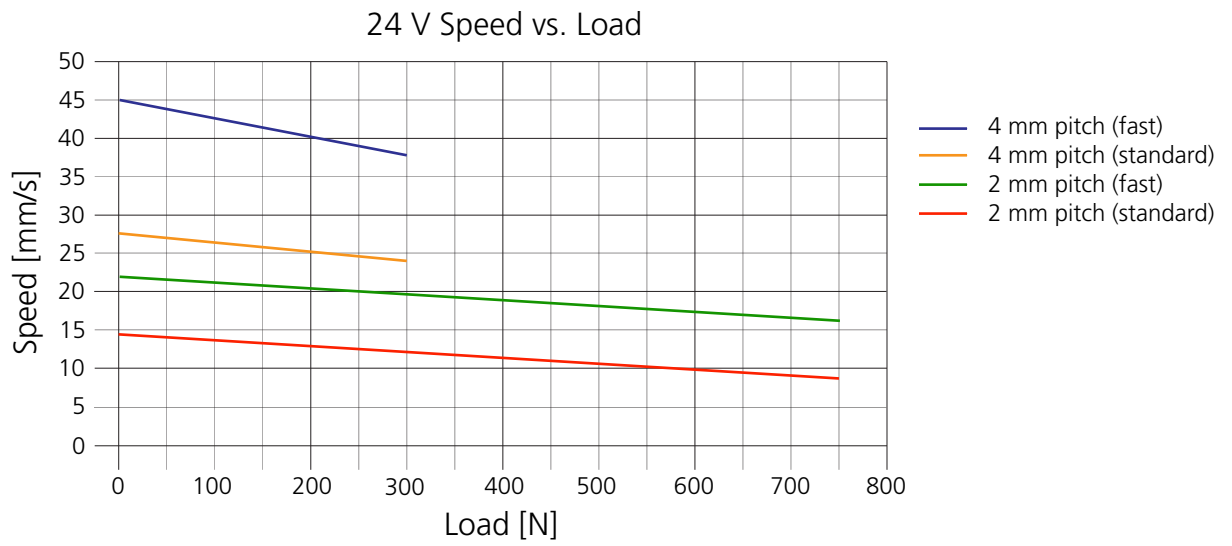
Speed and current curves

The charts below display typical values made with a nominal power supply and an ambient temperature of 20°C.



Speed and current curves

The charts below display typical values made with a nominal power supply and an ambient temperature of 20°C.



Current limits

If the actuator's current consumption rises above the set limit, the actuator regulates and tries to keep it below the set current limit by reducing the PWM and therefore also the speed accordingly. The actuator does this continuously, until the actuator stops moving (mechanically blocked). If there are no changes to the Hall feedback signal during the set time frame, the integrated controller will cut power to the H-bridge motor circuit.

If the actuator is stopped due to the above-mentioned criteria, it automatically drives slightly in the opposite direction to reduce the torque in a blocking situation.

For more detailed information, please see the I/O interface manual.

Platform		12 V	24 V	Reference temperature: 0°C
A B C E F G	IO-Link (8-pin) I/O Basic I/O Customised Ethernet/IP I/O Full CAN bus J1939	8 A	5 A	Above
H P Q S T	CANopen Profinet Modbus RTU IO-Link (12-pin) Modbus TCP/IP	9 A	6 A	Below

Current cut-offs

The principle behind the current cut-off measurement is an 'above limit' and a 'below limit' accumulating counter. When the time-out counter reaches a specific value the current cut-off goes into effect. The time-out value is pre-set at 500 ms.

Platform		12 V	24 V	Reference temperature: 0°C
3 6 7 9	IC (Not for OpenBus™) LIN bus CAN bus J1939 CANopen	8 A	5 A	Above
		8 A	8 A	Below

Mounting guidelines

LINAK® linear actuators are quickly and easily mounted by slipping pins through the holes on each end of the units and into brackets on the machine frame and the load.

The mounting pins must be parallel to each other as shown in Figure 1. Pins, which are not parallel to each other, may cause the actuator to bend and become damaged.

The load should act along the stroke axis of the actuator, as off-centre loads may cause bending and lead to premature failure. See Figure 2.

Make sure the mounting pins are supported in both ends. Failure to do so could shorten the lifespan of the actuator. Also, avoid applying a skewed load onto the actuator.

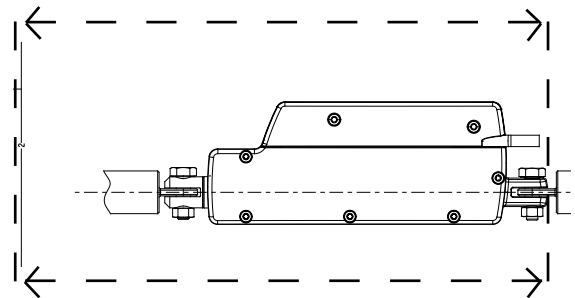


Fig. 1

The actuator can rotate around the pivot point in the front and rear end. Because of this, it is of high importance that the actuator is able to move freely over the full stroke length, both during the development and daily operation. Please pay special attention to the area around the housing, where parts can be trapped and cause damage to the application and actuator.

In applications with high dynamic forces, LINAK recommends not using the fully extended or retracted position over a longer period of time, as this can damage the endstop system permanently.

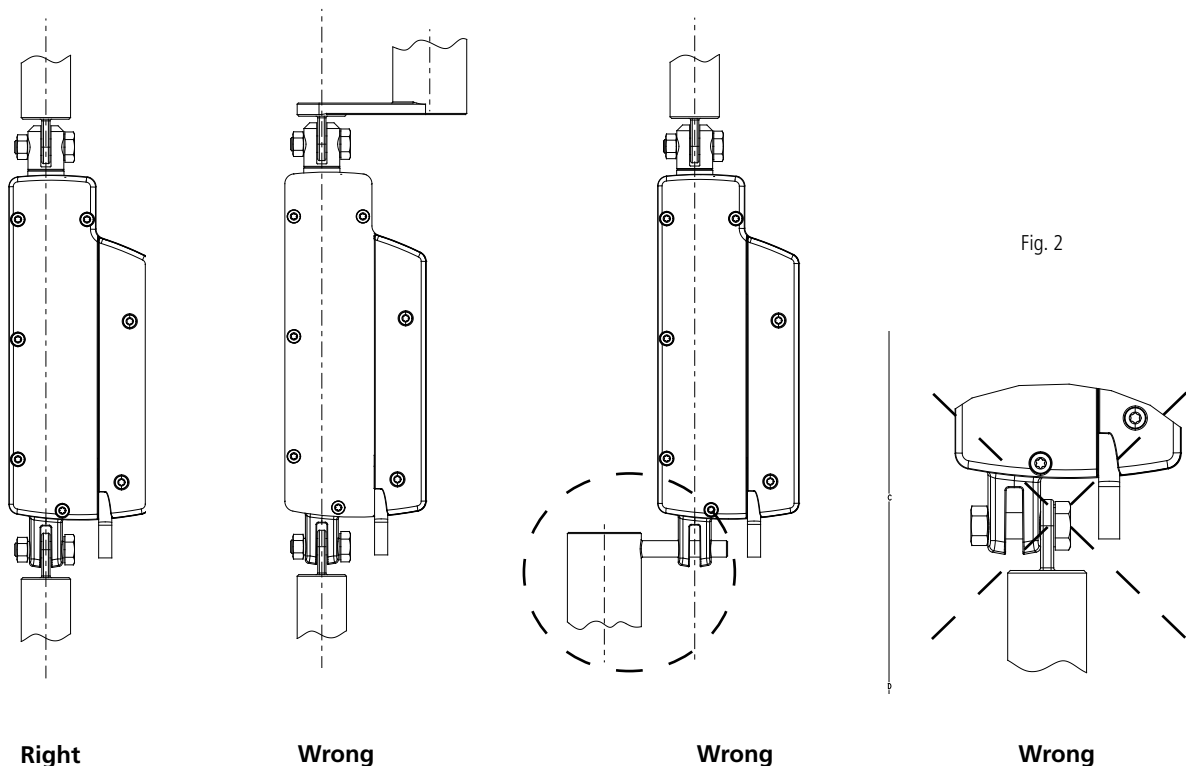


Fig. 2

Mounting guidelines



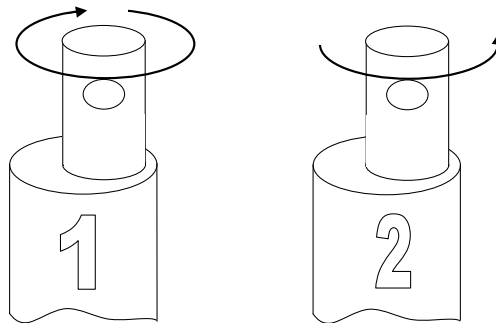
- The mounting pins must have the correct dimension
- The bolts and nuts must be made of a high quality steel grade (min. 8.8). No thread on the bolt inside the back fixture or the piston rod eye.
- Bolts and nuts must be secured so there is no risk for them to fall out.
- Do not use a torque that is too high when mounting the bolts for the back fixture or the piston rod eye. This will stress the fixtures.

Please note: The piston rod eye is only allowed to turn 0-180 degrees.



Instruction concerning the turning of the piston rod eye and inner tube:

- When mounting and taking into use, it is not permitted to make excessive turns of the piston rod eye. In cases where the eye is not positioned correctly, it is permitted to:
 1. Screw the eye down to its bottom position at a max. torque of 2 Nm clockwise (1)
 2. And thereafter a max. 180° turn out again (2).
- As the piston rod eye can turn freely, it is important to ensure that the eye cannot rotate if the actuator is used in a pull application. If this happens, the actuator will be pulled apart.



Warning!

If the actuator is used in an application where personal injury can occur, it is the application manufacturer's responsibility to incorporate a suitable safety arrangement, which will prevent personal injury from occurring, if the actuator should fail.

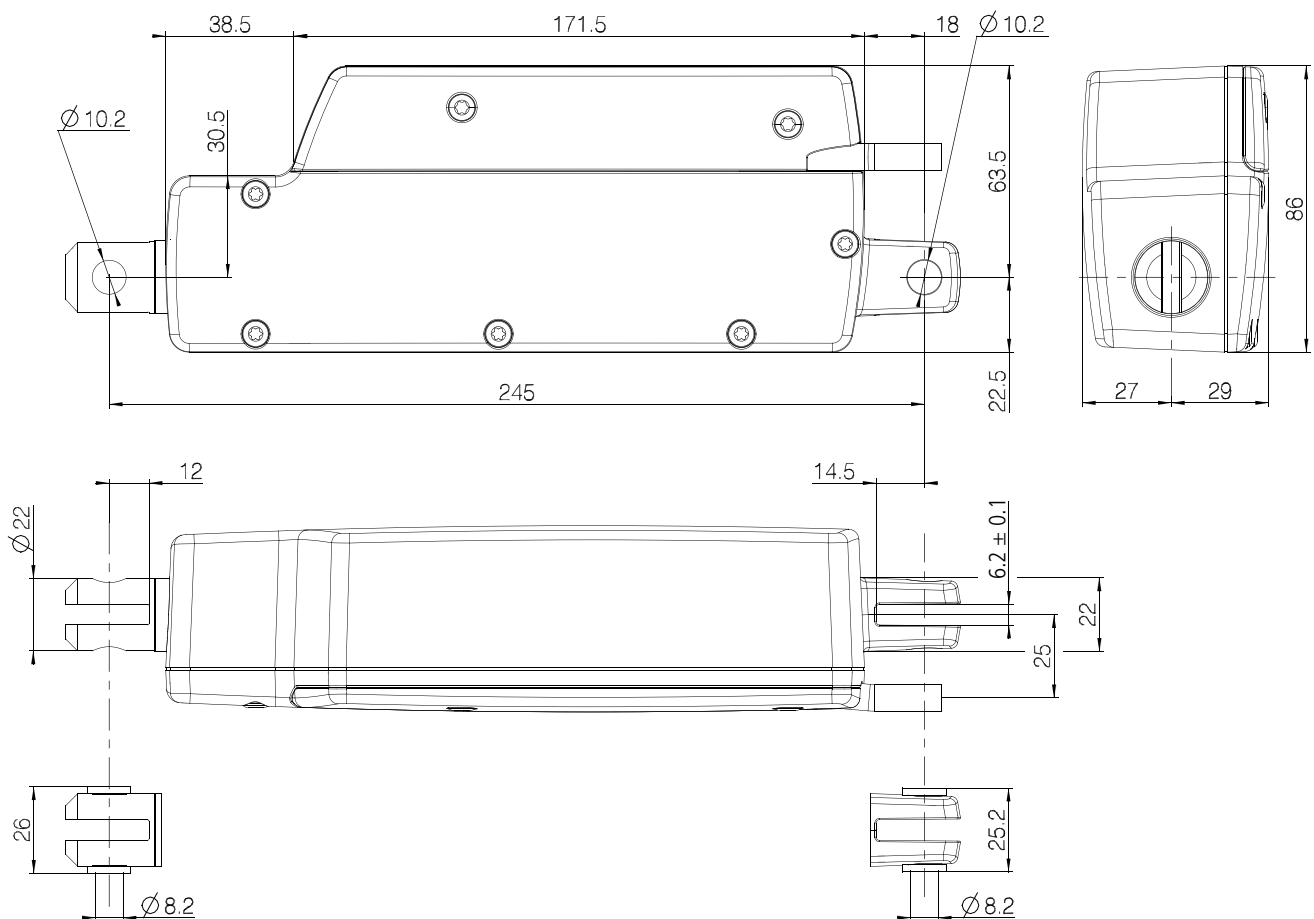
Stroke and built-in tolerances

Platforms		Stroke tolerance	Example for 130 mm stroke	BID tolerance	Example for 245 mm BID
0	None with built-in limit switches or Zero Point	+2/- 2 mm	128 to 132 mm	+2/- 2 mm	243 to 247 mm
A B C E F G H P Q S T	IO-Link (8-pin) I/O Basic I/O Customised Ethernet/IP I/O Full CAN J1939 CANopen Profinet Modbus RTU IO-Link (12-pin) Modbus TCP/IP	+1/-3 mm	127 to 131 mm	+2/- 2 mm	243 to 247 mm
All	All with Piston Rod Eye (PRE): K and L*	-	-	+2/- 2 mm	254 to 258 mm

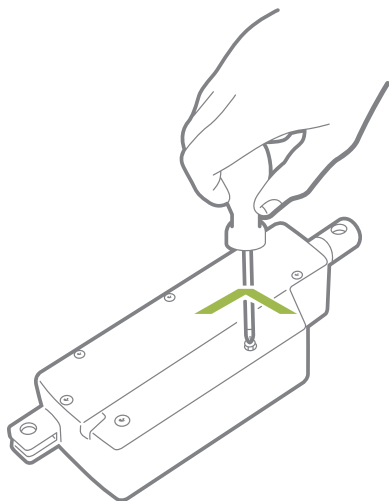
*BID is 11 mm longer with PRE: K and L

Dimensions

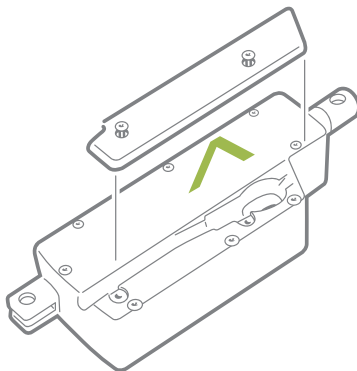
All dimensions are in mm



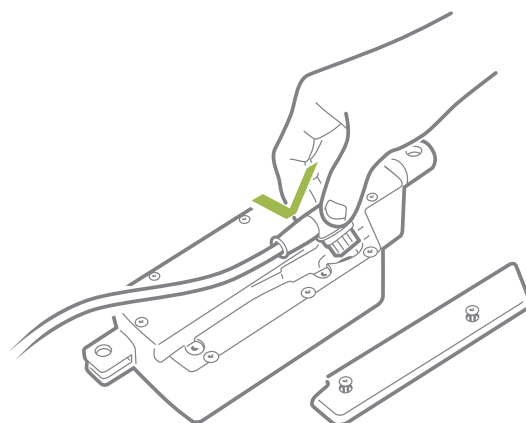
Cable mounting



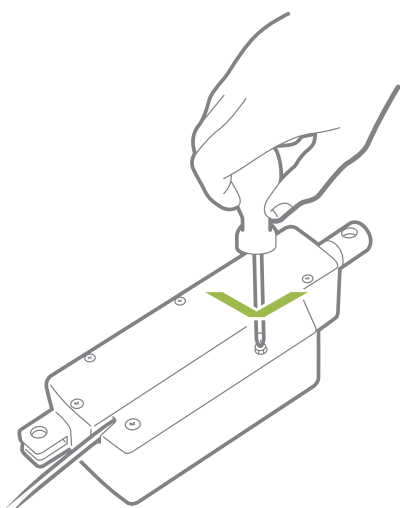
1. Unscrew the cover



2. Remove the cover



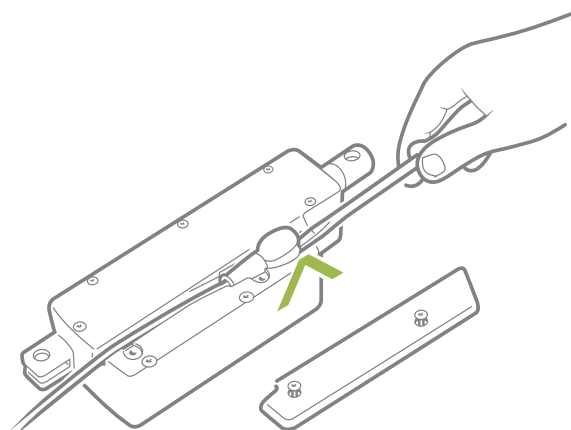
3. Plug in the cable gently without using any tools



4. Screw the cover back onto the actuator

The torque of the cover screw is approx. 1.5 Nm

Removing cables



5. Use a screwdriver to pull up the cable



When changing the cables on a LINAK® actuator, it is important that this is done carefully, in order to protect the plugs and pins. Before the new cable is mounted, we recommend that the socket is greased with Vaseline®, to keep the high IP protection and ensure an easy mounting. Please be sure that the plug is in the right location and fully pressed in before the cable lid is mounted.

Please note that if the cables are mounted and dismantled more than 3 times the plugs can be damaged. Therefore, we recommend that such cables are discarded and replaced.

Also note that the cables should not be used for carrying the actuator.

We recommend to take some precaution and design the wire connection in a way, where the cable end is kept inside a closed, protected area to guarantee the high IP protection.



NOT valid for ATEX cables, please refer to the ATEX section for correct cable mounting on ATEX actuators.

Electrical installation



- To ensure maximum self-locking ability, please be sure that the motor is shorted when stopped. Actuators with integrated controller provide this feature, as long as the actuator is powered.
- When using soft stop on a DC-motor, a short peak of higher voltage will be sent back towards the power supply. It is important when selecting the power supply that it does not turn off the output, when this backwards load dump occurs.
- When using actuators without integrated controller, it is strongly recommended to use a fuse between power supply and actuator.



The power supply for actuators without integrated controller must be monitored externally and cut off in case of current overload.

Recommended fuse for power supplies and actuators without integrated controller

Platform		Motor type	Spindle pitch (mm)	Load max. Push/Pull (N)	Typical amp. at full load (A)		Recommended fuse	
					24 V	12 V	24 V	12 V
0	None with built-in limit switches	A/B	2	750	1.3	2.4	2.5	5
		C/D	2	750	2.5	4.2	6	10
		A/B	4	300	0.9	1.7	2.5	5
		C/D	4	300	1.3	2.6	6	10

Test of conducted and radiated emission (EMC)

All TECHLINE® actuators have been tested in accordance with EN55011 class B (2007) (CISPR 11). A 1 m cable has been used in the test set-up.

Actuator without H-bridge

1) For normal operation the following is valid:

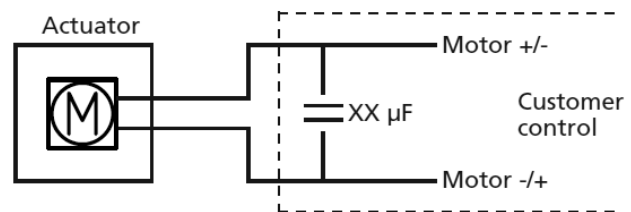
- Radiated emission requirements are met.
- Conducted emission requirements are met. However, to meet with these requirements, a capacitor has been mounted across the motor wires outside the actuator, and tests have then been made with this capacitor. Capacitor values for some of the TECHLINE actuators can be found in the scheme below.



To comply with EN55011 class B (2007), a capacitor must be added across the motor wires, or the connected control box must have similar/better filtering. The actuator is not delivered with a built-in capacitor, because then it would not be possible to PWM the motor for those who would want to do that.

Please view the scheme below for the correct choice of capacitor for the actuator in question.

Product	Capacitor value
LA14	4.7 μ F



2) For systems/operations that use PWM-control, it is up to the customer to test and meet the requirements.

Actuator with H-Bridge

1) For normal operation with soft start/stop the following is valid:

- The actuator has been tested when operating with constant 80% PWM.
- Radiated emission requirements are met.
- Conducted emission requirements are met.

2) For systems with LINAK® PWM regulation (among other things parallel operation and speed regulation) the following is valid:

- Radiated emission requirements are met.
- Conducted emission requirements are met.

3) Speed regulation:

- If the speed is regulated below a nominal speed of 80% (80% PWM), it is necessary to mount a filter in order to comply with the conducted emission requirements. For systems/operations that are speed regulated, it is up to the customer to test and meet the requirements.

IECEX/ATEX/CCC Ex Certified (optional)

LA14 can be ordered in an Ex certified version designed for installation in dust filled atmospheres, such as grain handling facilities, cement plants, saw mills, or other dusty surroundings.



Please note: The approval is only for dust, and NOT for gas.

The IECEX/ATEX versions are suitable for applications in Group IIIC, Category 2D. Zone 21 and 22. Certified according to EN60079-0:2018 and EN60079-31:2014.

The CCC Ex version is designed to be used in group IIIC tb T135°C Db and certified according to CNCA-C23-01:2019 and CNEX-C2301-2019, in accordance to the GB/T 3836.1-2021 and GB/T 3836.31-2021 standards.



LINAK

Designed in Denmark
DK - 6430 Nordborg

Type : 14XXXXXXXXXXXXT=XXXXXXXXXXXX
Item No. : JXXXX / 14XXXX-XX
Prod. Date : 2024.02.19
Max Load : Push xxxx N / Pull xxxx N IP66
Power Rate: xx V=, Max. xx A
Duty Cycle :xx%, Max x min. / x min.

NOT TO BE OPENED BY UNAUTHORIZED PERSONNEL
NE PAS OUVRIR PAR DU PERSONNEL NON AUTORISE

W/O #-0001 Made in Denmark

CE 2804 II 2D
Ex tb IIIC T135°C Db
Tamb -25°C to +65°C
Certificate no.: TÜV 15 ATEX 143740 X
IECEX TUN 14.0019X

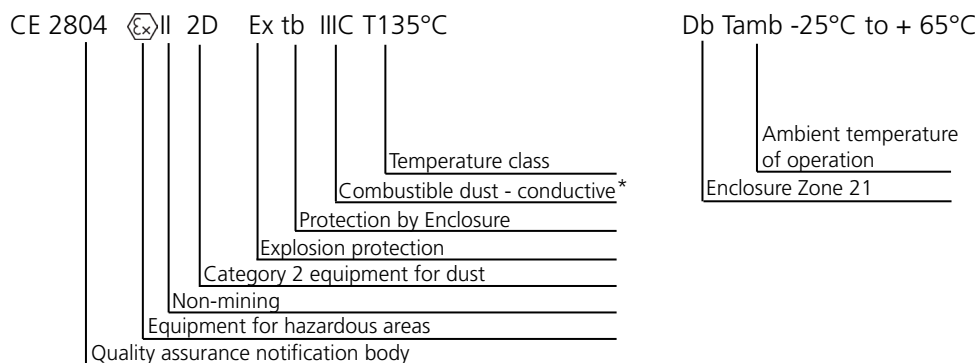
WARNING !

DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT.

DO NOT SEPARATE WHEN ENERGISED.

DO NOT OPEN WHEN ENERGISED.

POTENTIAL ELECTROSTATIC CHARGING HAZARD : SEE INSTRUCTIONS !



* Not a source of ignition in normal operation or when subjected to faults that may be expected, though not on a regular basis.

IECEX/ATEX/CCC Ex Certified (optional)

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LINAK®

Designed in Denmark
DK - 6430 Nordborg

Type : 14XXXXXXXXXXXXT=XXXXXXXXXXXX
Item No. : JXXXX / 14XXXX-XX
Prod. Date : 2024.02.19
Max Load : Push xxxx N / Pull xxxx N IP66
Power Rate: xx V=, Max. xx A
Duty Cycle :xx%, Max x min. / x min.

NOT TO BE OPENED BY UNAUTHORIZED PERSONNEL
NE PAS OUVRIR PAR DU PERSONNEL NON AUTORISE

W/O #-0001 Made in Denmark

CE 2804 II 2D
Ex tb IIIC T135°C Db
Tamb -25°C to +65°C
Certificate no.: TÜV 15 ATEX 143740 X
IECEX TUN 14.0019X

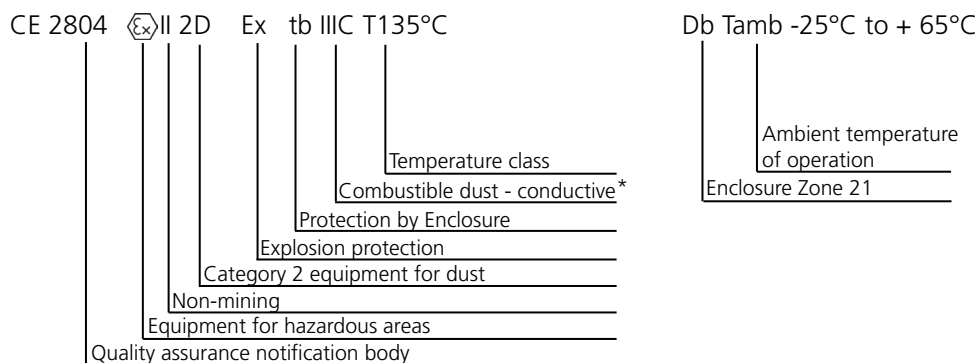
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POTENTIAL ELECTROSTATIC CHARGING HAZARD : SEE INSTRUCTIONS !



* Not a source of ignition in normal operation or when subjected to faults that may be expected, though not on a regular basis.

IECEX/ATEX/CCC Ex Certified (optional)

The IECEX/ATEX/CCC Ex versions are suitable for applications in Group IIIC, Category 2D. E.g. Zone 21 and 22 with the following markings:

IECEX: EX tb IIIC T135°C dB

ATEX: II 2D Ex tb IIIC T135°C dB

CCC Ex: Ex tb T135°C dB

Special conditions for use as stated in the certificates:

1. The max duty cycle is specified at an ambient temperature of +25°C.
The duty cycle is max. 20% (4 min continuous drive followed by 16 min rest).
2. Ambient temperature area are specified to -25 °C +65 °C.
3. The power supply cable is of special design fulfilling IP 6X ingress protection. The cable can be delivered in different lengths. Only cables delivered by LINAK A/S shall be mounted.
4. The connection between the actuator and the rest of the machine/device shall be conductive, and furthermore the application shall be grounded in order to remove any Electro Static Discharge. This counts for both of the actuator's fixation points (Back Fixture and Piston Rod Eye).
5. The cable is not UV-resistant and shall be protected from direct sunlight.
6. The supply has to be protected by a fuse according to the electrical data.
7. The Linear Actuator has to be installed in such a way, that highly effective potential electrostatic charges are prevented. The cleaning of the Linear Actuator shall be done only with a damp cloth.

Warning

If the following is not complied with, the IECEX/ATEX/CCC Ex certification will not be valid:

- Actuator use must be in compliance with specification.
- If the actuator has no built-in current cut-off, one must be mounted (Please see the Max current on the type-plate placed on the actuator)
- Only IECEX/ATEX/CCC Ex approved cables are to be used:

Cable type	No. of wires in cable	LA14 IECEX/ATEX/CCC Ex cable	Cable length (mm)
Power and signal	8 Pins 6 x 20 AWG + 2 x 18 AWG	0147006-xxxx	850 / 1,600 / 5,000 mm
Power and signal	11 Pins 9 x 20 AWG + 2 x 18 AWG	0257084-xxxx	1,650 / 5,150 mm

- The power supply/signal cables for the actuator must be terminated in a safe location or alternatively by use of an Ex terminal box certified for special conditions for safe use
- When mounting or if changing cables in IECEX/ATEX/CCC Ex approved applications, the standard EN IEC 60079-19 must be respected to maintain the certification. It is crucial that a proper tightness is obtained after installing/replacing the cables, therefore the installation guideline below must be strictly followed
- The actuator is not to be opened in areas with dust, and unauthorized personnel is never to produce, modify or repair actuators in order to sustain the approval
- No changes are to be made to the actuator after delivery. This manual is part of the equipment. LINAK A/S keeps the right to modify specifications without advanced notice. Spare this manual for later use

The product may only be used if:

1. The product is used under the conditions described in the installation - and operation instruction
2. Special conditions for safe use are obtained (see above)
3. Atmospheric conditions: Pressure 80 kPa (0.8 bar) to 110 kPa (1.1 bar); and air with normal oxygen content, typically 21% v/v
4. Safety and operation instructions are accessible and followed
5. The production of IECEx/ATEX/CCC Ex actuators require quality management systems and auditing. Therefore, only LINAK A/S is allowed to produce, modify or repair actuators in order to sustain the certification.

IECEx/ATEX/CCC Ex**General indication of risk:**

Installation of the device shall be performed by trained staff only, familiar with the safety requirements and risks. The installation shall be according to EN IEC 60079-14 and all local safety regulations shall be complied with.

Prevent failures, protect persons against injuries and protect the device against damage.

The person responsible for the system must secure that:

- Safety and operation instructions are accessible and followed
- Local safety regulations and standards are obeyed
- Performance data and installation specifications are complied with
- Safety devices are installed correctly and recommended maintenance is performed
- National regulations for disposal of electrical equipment are obeyed

Maintenance and repair

- Repairs of the device must be carried out by LINAK® authorised persons only or by authorised repair shop fulfilled EN IEC 60079-19
- Only perform mounting as described as in this manual

During maintenance regard all safety regulations and internal operation instructions.

Mounting and replacement of ATEX cables

When mounting the necessary ATEX-approved cables on an ATEX certified LINAK actuator, it is important that this is done carefully by a competent person, in order to protect the plugs and pins -and ensuring the ingress protection of the product. Before the new cable is mounted, the socket shall be greased with Vaseline®, to maintain the high ingress protection and ensuring easy mounting. The plug shall be in the right location and fully pressed in before the cable lid is mounted.

Please note that if the cables are mounted and dismantled more than 3 times the plugs can be damaged. Therefore, such cables shall be discarded and replaced.

Also note that the actuator must not be carried in the cables.

We recommend to take some precaution and design the wire connection in a way, where the cable end is kept inside a closed, protected area to guarantee the high IP protection.

Replacing an ATEX cable



Loosen the screw to disassemble the cable relief.



Remove the cable relief by pulling it in the same direction as the screw.



Remove the plugged cable.



Insert the cable (0147006-xxxx or 0257084-xxxx) with an ATEX-approved O-ring.

The colour of the O-ring must be **Brown**.

Replacing an ATEX cable



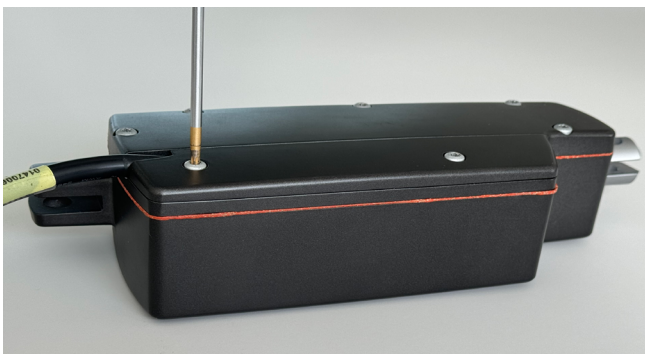
Correct mounting of cable

The brown O-ring is not visible.



Incorrect mounting of cable

The brown O-ring is visible and the application is NOT tight.



Place the cable relief on the actuator housing, then place and tighten the screw.

Fasten it to $1.5 \text{ Nm} \pm 0.5 \text{ Nm}$

Maintenance

- The actuator must be cleaned at regular intervals to remove dust and dirt, and it must be inspected for mechanical damages or wear.
- Inspect attachment points, wires, piston rod, cabinet, and plug. Also check whether the actuator functions correctly.
- To ensure that the pre-greased inner tube remains lubricated, the actuator must only be washed down when the piston rod is fully retracted.
- The actuator is a closed unit and therefore requires no internal maintenance.
- In order to maintain a proper performance of the spherical eyes and to increase the resistance against environmental wear, we strongly recommend that the spherical eyes (ball bearings) mounted on actuators from LINAK® are greased with anticorrosive grease or similar.

Repair

See warranty disclaimer.

Main groups of disposal

LINAK's products may be disposed of, possibly by dividing them into different waste groups for recycling or combustion.

We recommend that our product is disassembled as much as possible at the disposal and that you try to recycle it.

Product	Metal scrap	Cable scrap	Electronic scrap	Plastic recycling or combustion
LA14	X	X	X	X

Warranty

There is an 18 months' warranty on TECHLINE® products against manufacturing faults starting from the production date of the individual products (see label). LINAK's warranty is only valid in so far as the equipment has been used and maintained correctly and has not been tampered with. Furthermore, the actuator must not be exposed to violent treatment. In the event of this, the warranty will be ineffective/invalid. For further details, please see standard terms of sale and delivery for LINAK A/S.

Note

Only an authorised LINAK service centre should repair LINAK actuator systems. Systems to be repaired under warranty must be sent to an authorised LINAK service centre.

In order to avoid the risk of malfunction, all actuator repairs must only be carried out by an authorised LINAK Service shop or repairer, as special tools and parts must be used.

If a system is opened by unauthorised personnel there is a risk that it may malfunction at a later date.

The actuator is not to be opened by unauthorised personnel. In case the actuator is opened, the warranty will be invalid.



DECLARATION OF CONFORMITY

LINAK A/S
 Smedevænget 8
 DK - 6430 Nordborg

Hereby declares that

Actuator 14xxxxxxxx0xxxxxxxxxxxxxxxxx
 14xxxxxxxx3xxxxxxxxxxxxxxxxx
 14xxxxxCDxxxxx

(The 'X' s in the product description can either be a character or a number, thereby defining the variation of the product)

complies with the EMC Directive: 2014/30/EU according to following harmonized standards:
 EN 61000-6-1:2019, EN 61000-6-2:2019, EN 61000-6-3:2021, EN 61000-6-4:2019

complies with the ATEX Directive 2014/34/EU according to following standards:
 EN IEC 60079-0:2018, EN 60079-31:2014
 TÜV NORD CERT GmbH, Notified Body No. 0044. Certificate Number TÜV 15 ATEX 143740 X

NOTE: Applies only for ATEX specified actuators. Marking plate shows the CE-ATEX approval marking.

complies with RoHS2 Directive 2011/65/EU according to the harmonized standard:
 EN 63000:2018

Nordborg, 2025-03-06

LINAK A/S
 John Kling, B.Sc.E.E.
 Certification and Regulatory Affairs
 Authorized to compile the relevant technical documentation

This declaration of conformity is issued under the sole responsibility of the manufacturer.
 Original declaration



DECLARATION OF CONFORMITY

LINAK A/S
Smedevænget 8
DK - 6430 Nordborg

Hereby declares that

Actuator (LA14 CAN) 14xxxxxxxxx7Cxxxxxxxxxxxxxxxxx, 14xxxxxxxxx7Dxxxxxxxxxxxxxxxxx

(The "*" in the product description can either be a character or a number, thereby defining the variation of the product)

complies with the EMC Directive 2014/30/EU according to following harmonised standards:
EN 61000-6-1:2019, EN 61000-6-2:2019, EN 61000-6-3:2021, EN 61000-6-4:2019

complies with the ATEX Directive 2014/34/EU according to following standards:
EN IEC 60079-0:2018, EN 60079-31:2014
TÜV NORD CERT GmbH, Notified Body No. 0044. Certificate Number TÜV 15 ATEX 143740 X

NOTE: Applies only for ATEX specified actuators. Marking plate shows the CE-ATEX approval marking.

complies with the RoHS2 Directive 2011/65/EU according to the harmonised standard:
EN 63000:2018

Nordborg, 2025-03-06

LINAK A/S
John Kling, B.Sc.E.E.
Regulatory Affairs Manager
Authorized to compile the relevant technical documentation

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Original Declaration



DECLARATION OF CONFORMITY

LINAK A/S
Smedevænget 8
DK - 6430 Nordborg

hereby declares that

Actuator (LA14IO) 14*****B**_*_*****, 14*****C**_*_*****,
14*****F**_*_*****

(The '*' in the product description can either be a character or a number, thereby defining the variation of the product)

complies with the Radio Equipment Directive (RED) 2014/53/EU according to following standards:

EN 300 328 V2.2.2. (2019-07)
EN 301 489-1 V2.2.3 (2019-11)
EN 301 489-17 V3.2.6 (2023-06)
EN 62479:2010
EN 50663:2017
EN 60335:2012 + A1, A11, A13, A14, A15, A16
EN62233:2008

complies with the ATEX Directive 2014/34/EU according to following standards:

EN IEC 60079-0:2018, EN 60079-31:2014
TÜV NORD CERT GmbH, Notified Body No. 0044. Certificate Number TÜV 15 ATEX 143740 X

NOTE: Applies only for ATEX specified actuators. Marking plate shows the CE-ATEX approval marking.

complies with the RoHS2 Directive 2011/65/EU according to the harmonised standard:

EN 63000:2018

Additional information:

The actuator complies with:

EN IEC 61000-6-2:2019, Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments
EN IEC 61000-6-4:2019, Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments

Nordborg, 2025-03-06

LINAK A/S
John Kling, B.Sc.E.E.
Regulatory Affairs Manager
Authorized to compile the relevant technical documentation

This declaration of conformity is issued under the sole responsibility of the manufacturer
Original Declaration



DECLARATION OF CONFORMITY

LINAK A/S
Smedevænget 8
DK - 6430 Nordborg

Hereby declares that

Actuator (LA14 with communication interface)

14*****§***=*****

where § can be: A, E, G, H, I, J, N, P, Q, R, S, T, U

(The ** in the product description can either be a character or a number, thereby defining the variation of the product)

complies with the EMC Directive 2014/30/EU according to following harmonised standards:
EN 61000-6-2:2019, EN 61000-6-4:2019

complies with the ATEX Directive 2014/34/EU according to following standards:
EN IEC 60079-0:2018, EN 60079-31:2014
TÜV NORD CERT GmbH, Notified Body No. 0044. Certificate Number TÜV 15 ATEX 143740 X

NOTE: Applies only for ATEX specified actuators. Marking plate shows the CE-ATEX approval marking.

complies with the RoHS2 Directive 2011/65/EU according to the standard:
EN 63000:2018

Nordborg, 2025-03-06

LINAK A/S
John Kling, B.Sc.E.E.
Regulatory Affairs Manager
Authorized to compile the relevant technical documentation

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Original Declaration



Translation

(1) EU-Type Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 2014/34/EU**

(3) **Certificate Number** TÜV 15 ATEX 143740 X **Issue:** 00

(4) for the product: Linear Actuator, Model: LA14 series

(5) of the manufacturer: **LINAK A/S**

(6) Address: Smedevænget 8, Guderup
6430 Nordborg
Denmark

Order number: 8003051498

Date of issue: See date of signature

(7) The design of this product and any acceptable variation thereto are specified in the schedule to this EU-Type Examination Certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, Notified Body No. 0044, in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential ATEX Assessment Report No. 23 203 334889.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018/AC:2020-02

EN 60079-31:2014

except in respect of those requirements listed at item 18 of the schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions for Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design, and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the product shall include the following:

Ex II 2 D Ex tb IIIC T135°C Db

TÜV NORD CERT GmbH, Am TÜV 1, 45307 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The deputy head of the notified body

TUVNORD
Digital unterschrieben
von Drews Anke
Datum: 2023.12.20
19:06:09 +01'00'

Hanover office, Am TÜV 1, 30519 Hannover, Tel. +49 511 998-61455, Fax +49 511 998-61590

This certificate may only be reproduced without any change, schedule included.
Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH



(13) **SCHEDULE**

(14) **EU-Type Examination Certificate TÜV 15 ATEX 143740 X Issue 00**

(15) Description of product

The LA14 series of linear actuators creates motion in a straight line, as contrasted with circular motion of a conventional electric motor. The actuator consists of a motor, a gearbox and a spindle that causes the actuator to either extend or retract. The motor housing consists of a two part aluminium assembly with a cork gasket and an aluminium outer tube. The equipment is earthed externally through actuators fixation points: the piston rod eye and the back fixture. The actuators are rated for 12 V or 24 V d.c. with push / pull specifications up to 750 N.

Type key:

LA 14 series

Type variants

The LA14 series of linear actuators can be delivered in different type variants in accordance with the manufacturers ordering nomenclature (below). The different type variants, which do not involve the design of the motor housing itself, has no influence on the Ex-protection principle Ex tb IIC T135 °C Db as long as the supplied power cable is delivered by the manufacturer.

Actuator type	Spindle Pitch	Stroke length	Safety	Feedback	Platform	Motortype	Endstop	IP degree	Colour	Backfixture	Piston Rod Eye	EOS	Brake	BID	Firecategory	Plugtype	Cable	Safety factor	Feedback level	Not specified
1 4	* * *	* * *	* * *	* * *	*	*	*	*	=	*	*	*	*	***	*	*	*	*	*	*

The actuators are certified under the type LA14 including various type variants which have no influence on the ingress protection / Ex-protection principle. The manufacturers "Scheduled Drawings" specify the fixed part of the construction.

Electrical data:

Supply (brown and blue)

Type 1 $U_n = 12 \text{ V d.c.} + 20\%$
 $I_n = 5 \text{ A}$

Type 2 $U_n = 24 \text{ V d.c.} + 10\%$
 $I_n = 2.5 \text{ A}$

Signal Power supply (red and black)

$U_n = 12 - 24 \text{ V d.c.}$
 $I_n = 40 \text{ mA}$

The permissible ambient temperature range during operation is -25 °C...+65 °C.

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 Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH

Schedule to EU-Type Examination Certificate TÜV 15 ATEX 143740 X Issue 00

(16) Drawings and documents are listed in the ATEX Assessment Report No. 23 203 334889.

(17) Specific Conditions for Use

1. The duty cycle is max. 20% (4 min drive and 16 min rest).
2. Ambient temperature area is specified to -25 °C...+65 °C.
3. The power supply cable is of special design fulfilling IP 6X ingress protection. The cable can be delivered in different lengths. Only cables delivered by LINAK A/S shall be mounted.
4. The connection between the actuator and the rest of the machine/device shall be conductive, and furthermore the application shall be grounded in order to remove any Electro Static Discharge. This counts for both of the actuator's fixation points (Back Fixture and Piston Rod Eye).
5. The cable is not UV-resistant and shall be protected from direct sunlight.
6. The supply shall be protected by a fuse according to the electrical data.
7. The Linear Actuator has to be installed in such a way, that highly effective potential electrostatic charges are prevented. The cleaning of the Linear Actuator shall be done only with a damp cloth.

(18) Essential Health and Safety Requirements

No additional ones

- End of EU-Type Examination Certificate -

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Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH



CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

No.: 2021312307000227

Applicant	LINAK (SHENZHEN) ACTUATOR SYSTEMS LTD.
Address	Block B, Shanghe Industrial Park, Nanchang Road, Xixiang Street, Bao'an District, Shenzhen
Manufacturer	Linak A/S
Address	Smedevænget 8, Guderup, 6430 Nordborg, Denmark
Production Factory	Linak A/S
Production Address	Smedevænget 8, Guderup, 6430 Nordborg, Denmark
Product	Actuator
Model/Type	14XXX XXX XX XX X X T = X X X X XXX X X X X X X
Ex marking	Ex tD A21 IP6X T135°C
Reference Standards	GB12476.1-2013, GB12476.5-2013

Certification mode Type Test + Initial Factory Inspection + Post-Certification Surveillance

The product(s) is verified and certified according to CNCA-C23-01: 2019 *China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product* and CNEC-C2301-2019 *Guideline of China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product*.

See Annex for the detailed product information (5 pages).

Issued on: 2021-12-16

Valid to: 2026-12-15

The validity of this certificate is maintained through the regular supervision of the issuing authority during the validity period.

Where any discrepancy arises between the English translation and the original Chinese version, the Chinese version shall prevail.

Director:



Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.



<http://www.ccc-cnex.com>
ccc.china-ex.com

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Tel: 0377-63239734

P.C.: 473008
Email: ccc@cn-ex.com

CN 0000938



CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION (Annex)

No.: 2021312307000227

Page 1 of 5

Product information:

1. This certificate covers the following models:

- 14XXX XXX XX XX X X X T = X X X X XXX X X X X X X

Nomenclature

1	X	X	X	X	X	X	X	T	=	X	X	X	X	X	X	X	X	X	X	
4	X	X	X	X										X	X	X	X	X	X	
	X	X												X						
	X	X												X						
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u

- a: Actuator Type 14=LA14
- b: Spindle Pitch
020=2mm
040=4mm
- c: Stroke Length, mm (Stroke from 19 mm to 130 mm)
with Potentiometer: Max. 100 mm
- d: Safety
00=None
- e: Feedback
00=None (F1)
0P=Potentiometer (F6)
0K=Single Hall
0A=Hall potentiometer
0F=PWM
- f: Platform
0=None (P0)
3=IC integrated Control not for openbus
6=LIN bus
7=CANbus

Issued on: 2021-12-16

Director:



Nanyang Explosion Protected Electrical
Apparatus Research Institute Co.,Ltd.





CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION (Annex)

No.: 2021312307000227

Page 2 of 5

- g: Motor Type
 A=12VDC Normal (V1)
 B=24VDC Normal (V2)
 C=12VDC Fast (V1)
 D=24VDC Fast (V2)
 X=Other
- h: Endstop
 0=Power switch (E1)
 1=Signal switch
- i: IP 6X
- j: Colour
 "="=Dark Olivish Grey NCS S7000-N
- k: Back fixture
 1=0 degrees A=0 degrees with POM
 2=90 degrees B=90 degrees with POM
- l: Piston Rod Eye
 1=Φ10.2mm zink coated steel 2=Φ12.3mm zink coated steel
 3=Φ12.3mm AISI 304 4=Φ12.3mm AISI 304
 5=Φ8.1mm zink coated steel + bush 6=Φ10.2mm zink coated steel + bush
 A=Φ10.2mm AISI 304 C=Φ8.1mm AISI 304 + bush
 D=Φ10.2mm AISI 304 + bush E=Φ10.2mm AISI 303 + bush
 F=Female adapter M8 K=Ball Eye Φ10H7
 L=Ball Eye Φ12H7 M=Male Adapter M12 AISI304
 X=Special rod eye
- m: EOS
 0=No EOS (End of Stroke) signal
 1=with EOS signal
- n: Brake
 0=None

Issued on: 2021-12-16

Director:



Nanyang Explosion Protected Electrical
Apparatus Research Institute Co.,Ltd.





CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION (Annex)

No.: 2021312307000227

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- o: BID
XXX = 3 digits could be any number, min 245
- p: Fire Category
0=None
- q: Plug Type
0=None. Is to be chosen, if cable and connectors is not wanted
C=Flying leads. Is to be chosen, if connector is not wanted
I=Moulded Deutsch (DT4)
J=Deutsch (DT4)
K=AMP Superseal
L=Moulded AMP superseal
S=SMPS (Cable length only 0.3 and 1.5 m)
X=Special
- r: Cable
0=None
S=Straight 0.75 m (8-core or 2 core when no feedback is needed)
T=Straight 1.5m (8-core or 2 core when no feedback is needed)
R=Straight 5.0m (8-core or 2 core when no feedback is needed)
U=Straight 0.3 m (Only SMPS)
V=Straight 10 m (8-core or 2 core when no feedback is needed)
X=Special
- s: Safety Factor
0=2.0

t: Feedback level		Platform		
None	IC type basic	IC type advanced	IC type parallel	LIN bus
0=None	8=None	0=None	Z=parallel	0=LIN address 0
A=0-10V	--	G=0-10V		1=LIN address 1
B=0.5-4.5V	--	H=0.5-4.5V		⋮
C=4-20mA	--	J=4-20mA		⋮

Issued on: 2021-12-16

Director:



**Nanyang Explosion Protected Electrical
Apparatus Research Institute Co.,Ltd.**





CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION (Annex)

No.: 2021312307000227

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D=10-90%	--	K=10-90%		E=LIN address E
E=20-80%	--	L=20-80%		F=LIN address F
F=Special feedback	--	X=Special feedback		X=Special LIN software

u: Parallelmode (Not affecting Ex performance)
0=Non critical Parallel
2-8=critical parallel (count of actuators)

The electrical data are as follows:

Supply (brown and blue)		
Type 1	$U_n = 12VDC \pm 20\%$	$I_n = 1-5A$
Type 2	$U_n = 24VDC \pm 10\%$	$I_n = 0.5-2.5A$
Signal Power supply (red and black)		
$U_n = 12V DC \pm 20\%$	$I_n = 40mA$	

Ex marking: Ex tD A21 IP6X T135°C

- Producers should organize production in accordance with the technical documents approved by the certification body.
- 2. Specific conditions of safety use:
 - The duty cycle is max. 20% (4 min drive and 16 min rest).
 - Ambient temperature range is specified to -25 °C to +65 °C.
 - The power supply cable is of special design fulfilling IP 6X ingress protection. The cable can be delivered in different lengths. Only cables delivered by LINA K A/S shall be mounted.
 - The connection between the actuator and the fixing points must be conductive and furthermore the application must be grounded in order to remove any electrostatic charge. This relates to both the fixing point on the motor housing and the point on the piston rod.

Issued on: 2021-12-16

Director:



Nanyang Explosion Protected Electrical
Apparatus Research Institute Co.,Ltd.





CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION (Annex)

No.: 2021312307000227

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- The supply cable must be protected against UV-light.
 - The supply must be protected by a fuse according to the electrical data.
 - Warning - DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT !
 - Warning - DO NOT SEPARATE WHEN ENERGISED !
 - Warning - DO NOT OPEN WHEN ENERGISED !
 - Warning - POTENTIAL ELECTROSTATIC CHARGING HAZARD: SEE INSTRUCTIONS !
 - See instruction for other information.
3. Certificate related report(s):
- Type test report: CQST2107C010
 - Factory inspection report: CN2021Q010402
4. Certificate change information: None

Issued on: 2021-12-16

Director:



Nanyang Explosion Protected Electrical
Apparatus Research Institute Co.,Ltd.



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