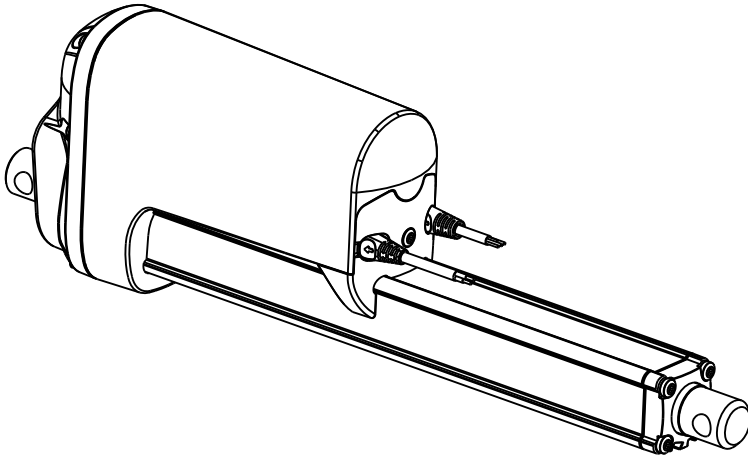


# LA36 ACTUATOR



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## Preface

We are delighted that you have chosen a product from LINAK. LINAK systems are high-tech products based on many years of experience in the manufacture and development of actuators, electronic control boxes, controls, and chargers. We are also constantly improving our products to meet customer requirements.

This user manual will tell you how to install, use, and maintain your LINAK LA36 actuator.

We are sure that the LA36 actuator will give you a problemfree operation. Before our products leave the factory they undergo full function and quality testing. Should you nevertheless experience problems with your LINAK products, you are always welcome to contact our service departments or service centres.

Most LINAK subsidiaries have authorised service centres, which are always ready to help you.

LINAK provides a warranty on all its products. 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.

**LINAK A/S**

## Safety instructions



Please read the following safety information carefully.

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 user manual.

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 mains current supply is switched off and the plug has been pulled out.
- 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.

**During operation**

- Listen for unusual sounds and watch out for uneven running. Stop the actuator immediately if anything unusual is observed.

**When the equipment is not in use**

- Switch off the mains supply or pull out the plug in order to prevent unintentional operation.

**Classification**

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

## Important information

Information about the actuators is described under the following two headings:



### Warning!

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



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

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## DECLARATION OF CONFORMITY

LINAK A/S  
Smedevænget 8  
DK - 6430 Nordborg

hereby declares that LINAK Actuator Systems composed of:

12 V Battery and Linear Actuator 36xxxxxxxx\*xx (\* = 1 or A),

complies with the EMC-directive 89/336/EØF according to the standards  
EN 61000-6-4:2001 (Electromagnetic compatibility, industry, emission)  
EN 61000-6-2:2001 (Electromagnetic compatibility, industry, immunity)  
EN 61000-6-3:2001 (Electromagnetic compatibility, residential, commercial and light-industry, emission)  
EN 61000-6-1:2001 (Electromagnetic compatibility, residential, commercial and light-industry, immunity)

Machinery Directive 98/37/EC Attachment IIB: LINAK A/S prohibit that the actuator system is put into service until the machinery into which the actuator system is to be incorporated has been declared in conformity with the provisions of all relevant directives

Date: 2005-05-13

Signature:

  
(Hans Schou Christensen)

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Date: 2005-05-13

Signature:



(Hans Schou Christensen)

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system is to be incorporated has been declared in conformity with the  
provisions of all relevant directives

Date: 2005-08-24

Signature:



(Hans Schou Christensen)

## Misc. on the TECHLINE™ actuator system

### Warranty

There is a 12 months' warranty on the TECHLINE products against manufacturing faults calculated 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 LINAK A/S ordinary conditions of sale.

### Maintenance

- The actuator must be cleaned at regular intervals to remove dust and dirt and inspected for mechanical damages or wear.
- Inspect attachment points, wires, piston rod, cabinet, and plug, as well as check that the actuator functions correctly.
- The actuator is a closed unit and requires no internal maintenance.
- To ensure that the pregreased inner tube remains lubricated the actuator must only be washed down when the piston rod is fully retracted.



### Warning!

If irregularities are observed, the actuator must be replaced.



## Specifications

Motor:	Permanent magnet motor 12, 24, or 36V
Motor protection:	Automatic protection resets thermal overload
Cable:	Motor: 2 x 14 AWG PVC cable Control: 6 x 20 AWG PVC cable
Gear ratio:	4 different gear ratios available in steel (2600 N/1700 N, 4500 N, and 10,000 N)
Slip clutch:	Mechanical - overload protection through an integrated slip clutch is optional adjusted to 1.2-1.4 times max. load
Brake:	Integrated brake ensures a high self-locking ability. The brake is deactivated when the actuator is powered in order to obtain a high efficiency
Hand crank:	As a standard feature the actuator can be operated manually
Housing:	The housing is made of casted aluminium, coated for outdoor use and in harsh conditions
Spindle part:	Outer tube: Extended aluminium anodised Inner tube: Stainless steel AISi304/SS2333 Acme spindle: Trapezoidal spindle with high efficiency
Temperature range:	- 30° C to +65° C - 22° F to +150° F Full performance +5° C to +40° C
End play:	2 mm maximum
Weather protection:	Rated IP 66 for outdoor use. Furthermore the actuator can be washed down with a high-pressure washer.

## 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 bind and be damaged.

The load should act along the stroke axis of the actuator since 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 life of the actuator. Cantilever mounts are unacceptable.

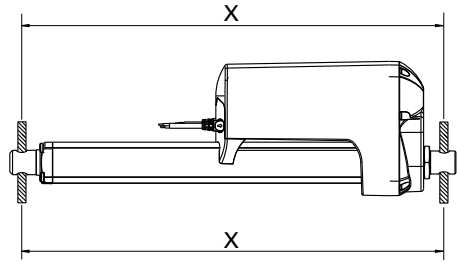


Figure 1

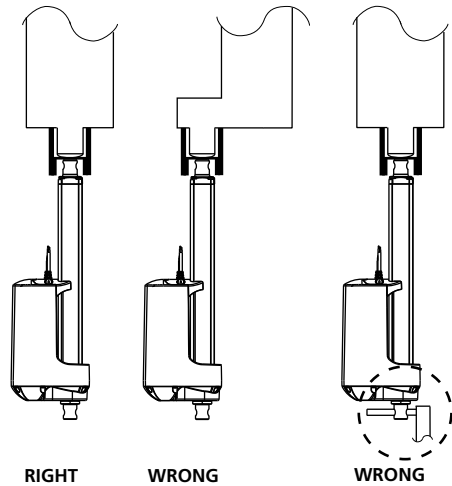


Figure 2



### Warning!

If the actuator is used for pull in an application where personal injury can occur, the following is valid:

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.



### Warning!

LINAK's actuators are not constructed for use within the following fields:

- Offshore installations
- Aeroplanes and other aircraft
- Explosive environments
- Nuclear power generation

## Application hints

The actuator is weather proof for use in outdoor applications. The actuator can be washed down with a high pressure washer, but it should not be used under water.

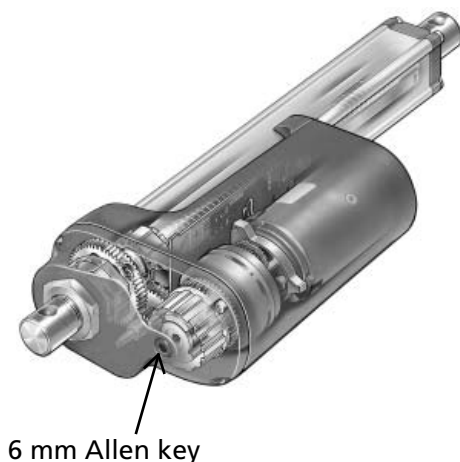
Optionally the actuator is overload protected with a slip clutch. The clutch will slip when the load exceeds approx. 1.2 - 1.4 times the actuators rating.

The duty cycle at max. load is 20% on time. This means if the actuator runs continuously for 20 seconds it must remain off for 80 seconds before operating again.

---

## Manual hand crank

The manual hand crank can be used in the case of power failure.



**The cover over the Allen key socket must be unscrewed before the Allen key can be inserted and the Hand Crank operated.**

**Hand Crank Torque:** 6 - 8 Nm ( 2600 N – 6800 N load )

**Piston Rod movement per turn**

Gear A = 10.5 mm

Gear B = 6.0 mm

Gear C = 4.0 mm

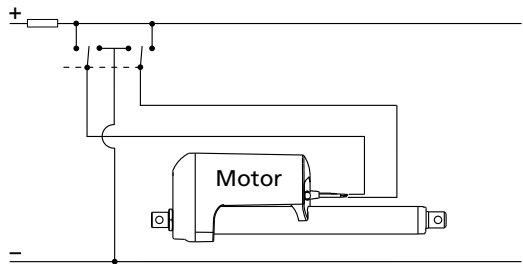


**Note:** The power supply has to be disconnected during manual operation.

# Electrical installation

## Motor connection

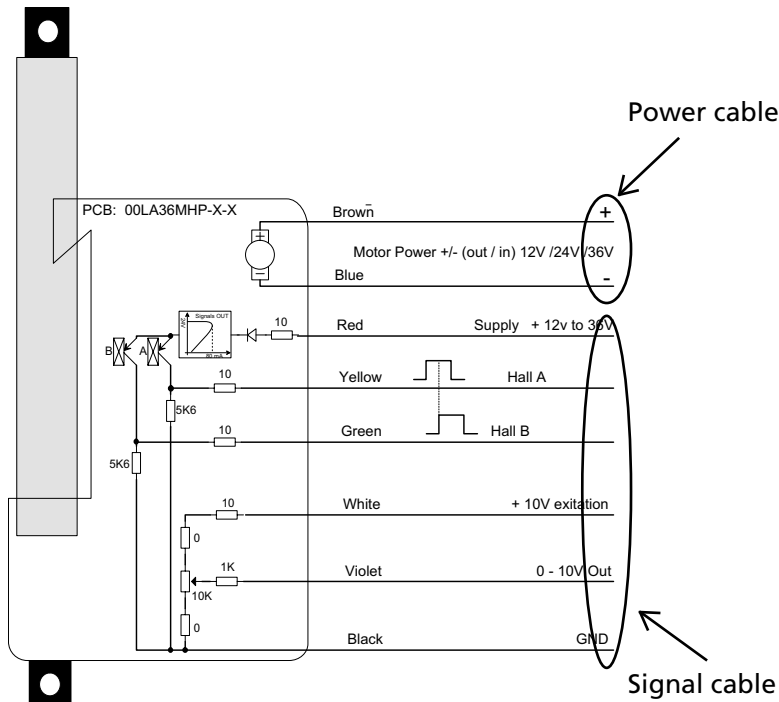
Wiring: The actuator direction (forward, reverse) is controlled with a doublethrow switch with the centre postion "off".



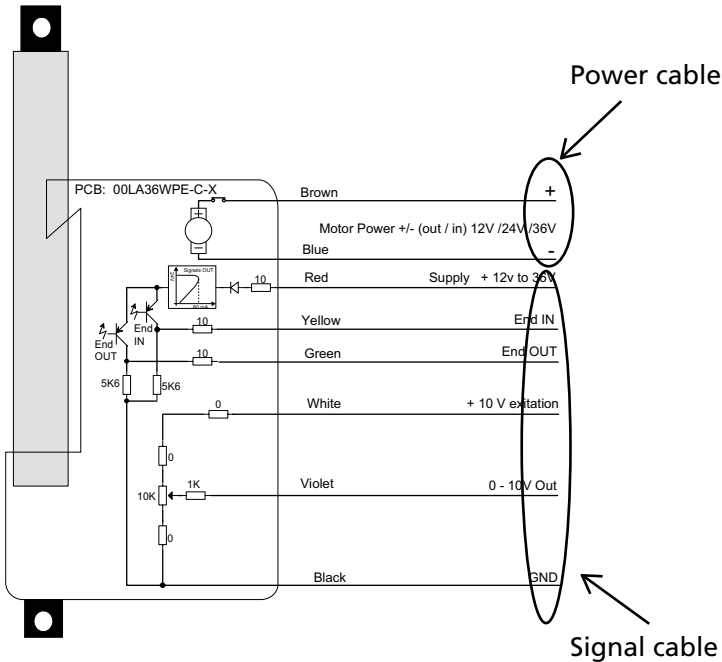
## Actuation

To extend the actuator, connect brown to positive and blue to negative.  
To retract the actuator, connect blue to positive and brown to negative.

Connections diagram: For 36xxxxx0H/Pxxxxxx and 36xxxxx1H/Pxxxxxx

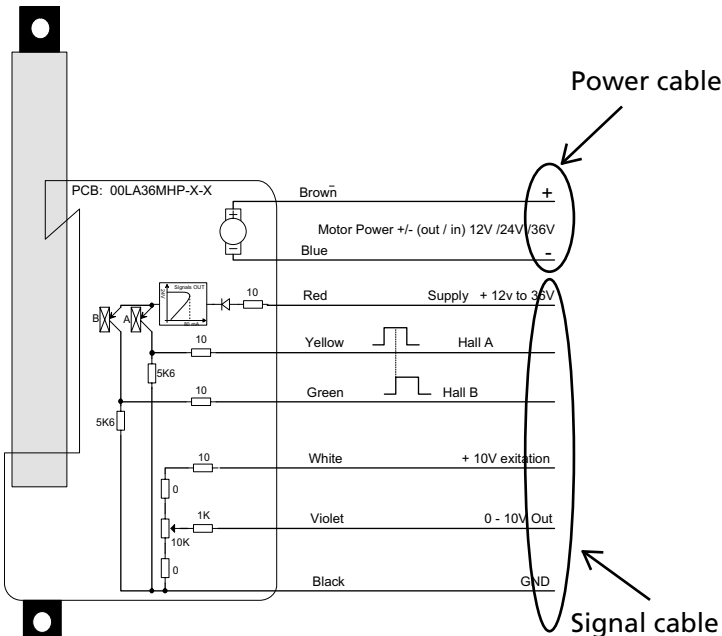


Connections diagram: For 36xxxxx2Pxxxxxx and 36xxxxx20xxxxxx:

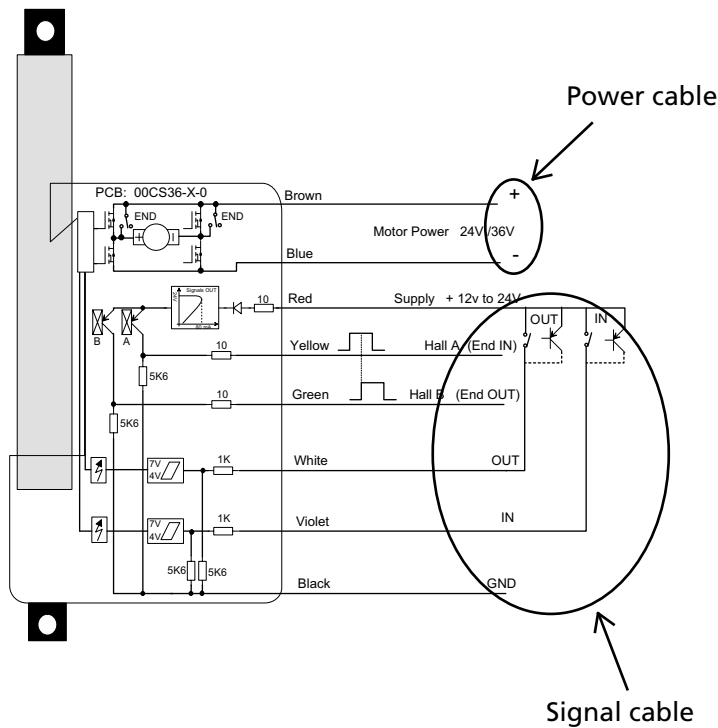


**Note:**  
If you wish to use the end-stop signals, you will have to keep power on the brown and blue wires, otherwise the signal will be lost.

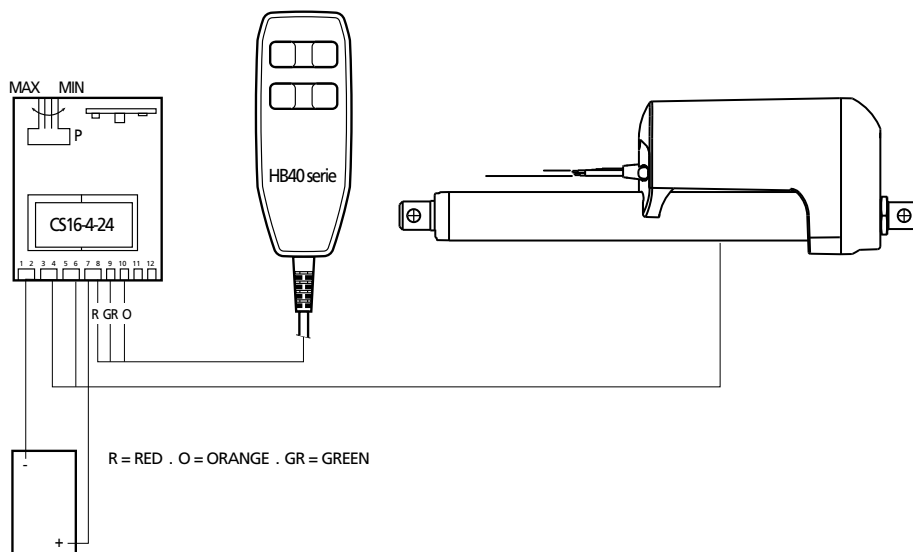
Connections diagram: For 36xxxxx2Hxxxxxx



Connections diagram: For 36xxxxx3xxxxBxx + 36xxxxx40xxxBxx:



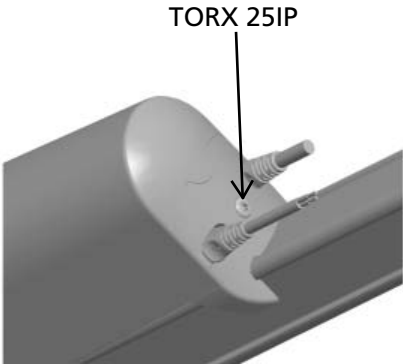
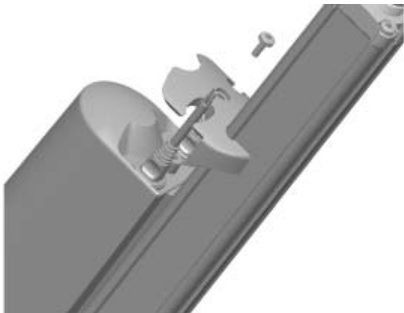
## Connection of the LA36 with the CS16



## Troubleshooting

Symptom	Possible cause	Action
No motor sound or movement of piston rod	<ul style="list-style-type: none"> <li>• The actuator is not connected to the power supply</li> <li>• Cable damaged</li> </ul>	<ul style="list-style-type: none"> <li>• Connect the actuator to the power supply</li> <li>• Change cable</li> <li>• Send actuator for repair</li> </ul>
Excessive electricity consumption	<ul style="list-style-type: none"> <li>• Misalignment or overload in application</li> </ul>	<ul style="list-style-type: none"> <li>• Align or reduce load</li> <li>• Send actuator for repair</li> </ul>
Motor runs but spindle does not move	<ul style="list-style-type: none"> <li>• Gearwheel or spindle damaged</li> </ul>	<ul style="list-style-type: none"> <li>• Send actuator for repair</li> </ul>
Actuator cannot lift full load	<ul style="list-style-type: none"> <li>• Clutch is worn</li> <li>• Motor is damaged</li> </ul>	<ul style="list-style-type: none"> <li>• Send actuator for repair</li> </ul>
No signal from potentiometer or hall effect sensor	<ul style="list-style-type: none"> <li>• Cable damaged</li> <li>• Potentiometer damaged</li> </ul>	<ul style="list-style-type: none"> <li>• Change cable</li> <li>• Send actuator for repair</li> </ul>
Motor runs too slowly or does not give full force	<ul style="list-style-type: none"> <li>• Insufficient power supply</li> <li>• Voltage drop in cable</li> </ul>	<ul style="list-style-type: none"> <li>• Increase power supply</li> <li>• Thicker cable</li> </ul>
Actuator cannot hold the chosen load	<ul style="list-style-type: none"> <li>• Load is higher than specified</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce load</li> </ul>

# Mounting of cables



- Unscrew the cover and remove the two blind plugs
  - Plug in the power cable and/or the signal cable
  - Slide the cover onto the actuator.
- The torque of the cover screw is +/- 0.3 Nm

## Accessories

Cables:

Power cables (Ordered separately)	Order no.
1.5 m cable	0367002-1500
5 m	0367002-5000
0.2 m cable (AMP connectors)	0367006

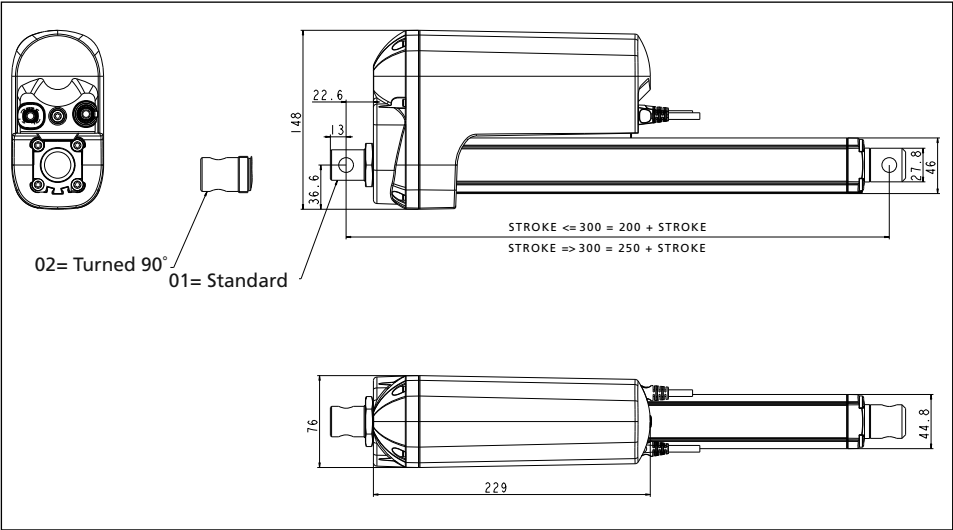
Signal cable (Ordered separately)	Order no.
1.5 m cable	0367003-1500
5 m	0367003-5000



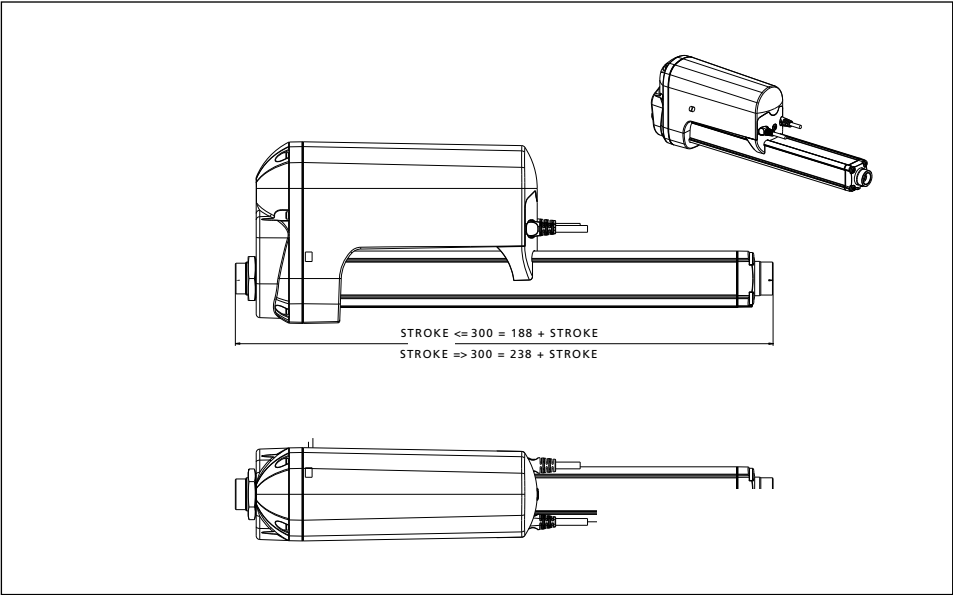
**DRAWING APPENDIX**

**TECHLINE™ LA36:**

LA36



LA36 with adapter



## Main groups of disposal

Product	Metal scrap	Cable scrap	Electronic scrap	Plastic recycling or combustion
LA36	X	X	X	X

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. As examples of main groups within sorting of waste we can mention the following:

Metal scrap

Plastic scrap

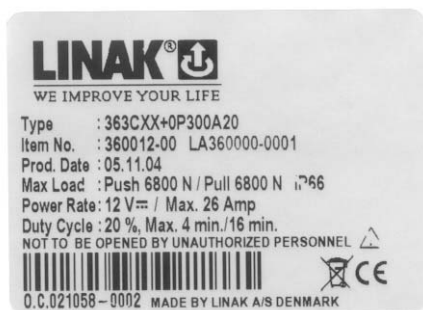
Cable scrap

Combustible material and collection for recoverable resources.

Some of these main groups can be sub-divided into groups e.g. metal can be divided into steel and aluminium or plastic can be divided into ABS and PP.

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## Label for LA36



## **LINAK APPLICATION POLICY**

The purpose of the application policy is to define areas of responsibilities in relation to applying a LINAK product defined as hardware, software, technical advice, etc. related to an existing or new customer application.

LINAK products as defined above are applicable for a wide range of applications within the Medical, Furniture, Desk, and Industry areas. Yet, LINAK cannot know all the conditions under which LINAK products will be installed, used, and operated, as each individual application is unique.

The suitability and functionality of the LINAK product and its performance under varying conditions (application, vibration, load, humidity, temperature, frequency, etc.) can only be verified by testing, and shall ultimately be the responsibility of the LINAK customer using any LINAK product.

LINAK shall be responsible solely that the LINAK products comply with the specifications set out by LINAK and it shall be the responsibility of the LINAK customer to ensure that the specific LINAK product can be used for the application in question.

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