

# Actuator LA34

## Data sheet

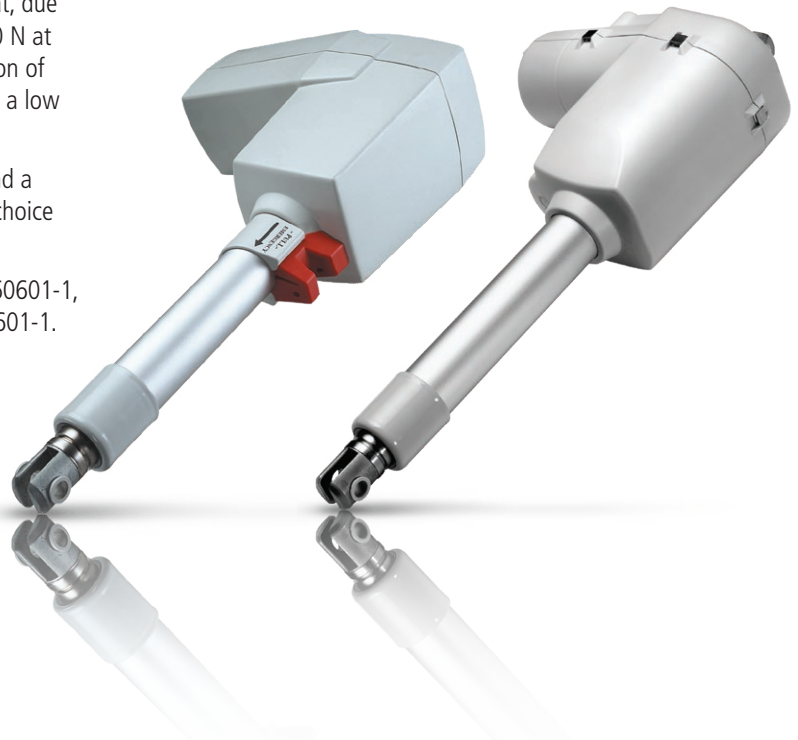
# LA34

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LA34 is a technological state-of-the-art actuator that, due to its innovative construction can push up to 10,000 N at a speed of 5 mm/sec. and with a current consumption of approx. 7 Amp. The strong LA34 actuator is made in a low weight composite material.

Its compact design, the outstanding performance and a wide range of safety options makes LA34 the right choice for a variety of medical and industrial applications.

The LA34 24V actuator is approved according to IEC 60601-1, ANSI / AAMI ES60601-1, and CAN / CSA-22.2 No 60601-1.



## Features:

- Max. thrust 10,000 N (in push)
- Max. thrust 4,000 N (in pull)
- 24 V DC permanent magnet motor (3 standard 24 V DC types)
- 12 V DC permanent magnet motor
- Safety factor 2 (10,000 N up to 150 mm stroke)
- Safety nut in push direction
- Built-in limit switches (not adjustable)
- Noise level below 50 dB (A), measured according to DS/EN ISO 3743-1 (Standard LA34)
- Adjustment of installation dimension +4/-0 mm (not possible with mechanical splines)
- Standard protection class: IPX4
- Colour: grey
- Stroke length: 100 - 400 mm, up to 600 mm stroke with long "L" option
- Installation dim. standard S + 210 mm or long "L" S + 267 mm
- 2.25 m straight cable with 6.3 mm jack plug (DIN-plug for CB9)
- The collar on the outer tube is not mounted on the LA34 with small motor

## Options:

- Max thrust 4,000-6,000 N in pull (with reinforced jaw, safety nut in pull and steel piston rod eye - see ordering example)
- Mechanical spline: When using the actuator in a vertical position, the force needed to activate the mechanical spline is maximum 60 N + the weight of the application. To reengage the spline function, a force of maximum 60 N is needed. Same installation dim. as standard actuator
- Quick release system (push/pull) enables stepless retraction of the actuator when lowering (mechanical emergency lowering). When ordering quick release freewheeling is automatically included
- Quick release actuators with an installation dimension below 340 mm can only be ordered as a special article
- Bowden cable solution for quick release (min. stroke 150 mm)
- Quick release with signal switch can be ordered as a special article
- A modified bowden cable holder is available (as a special article), with better cable alignment and improved guidance of the cables
- Double bowden cable solution for quick release

*...to be continued*

(...continued)

### Options:

- Stroke length: up to 600 mm for version with short installation dim. as a special article
- Compact housing
- Safety nut in pull direction (increases the installation dimension by 10 mm)
- Protection class IPX6
- Electric spline: When using the actuator in a vertical position, the force needed to activate the electric spline is maximum 100N + the weight of the application.  
To reengage the spline function, a force of maximum 100N is needed
- Hall sensor for use with CB6 OBF, CB16 OBF, CB20  
If used in combination with QR, the position will be lost when the QR is activated. Has to be ordered as a special article
- Exchangeable cables
- Reed switch system, only as a special article and if the application is approved by LINAK A/S
- The choice of Reed with DIN cable, option A, will reduce the cable length by approx. 80 mm.
- Potentiometer (max. stroke lengths):  
(zero positioning < 0,1 V at a stable 10 V supply)  
LA34 with 12 mm pitch    max. 250 mm  
LA34 with 16 mm pitch    max. 330 mm  
LA34 with 20 mm pitch    max. 416 mm

- Potentiometer in combination with Jack and DIN plugs is not possible in the LA34 composite actuator. These options are still available in LA34 zinc Potentiometer with Jack plug can only be ordered as a special article. Potentiometer cannot be combined with electric spline.
- Colour black (only housing and cable)

### Usage:

- Duty cycle 2/18 - 2 minutes continuous use followed by 18 minutes not in use
- Ambient temperature: +5° to 40°C
- Compatible with CB9 with EAS, CB12 with EAS, CB14\*, CB18, CB20 and CBJ, CB6 OBL/F, CB16 OBL/F, (\* = only possible with customised software)
- Approvals: IEC60601-1, ANSI / AAMI ES60601-1 and CAN / CSA-22.2 No 60601-1 for LA34 24V zinc and composite versions.



### Warning

An LA34 actuator is not designed for repeated dynamic push-to-pull movements. This cause extra strain to the actuator and can give safety considerations, the consequence being possible damage to the actuator. Therefore, if repeated dynamic push-to-pull movements are essential for the application, perform tests to validate the performance and use a steel piston rod eye (contact LINAK A/S).



### Recommendations:

#### Patient Lifts:

- Long installation dimension "L" stroke length + 267 mm must always be used for patient lifts.

#### Stand aids:

- We recommend that the long installation dimension "L" (stroke length + 267 mm) is used when specifying "stand-aids" applications.
- However there are cases where low loads and short installation dimensions are required. In such cases the short installation dimension (stroke length + 210 mm) can be used, as long as it is ensured that Safety Factor 2 is fulfilled, according to the graphs.

**Technical specifications:**

Type	Spindle pitch	Thrust max. push (N)	Thrust max. pull (N) Zinc/Composite	*Speed at 0/full load (mm/s)	Stroke length (mm)	*Amp. at full load (A)
LA34 Std. motor	12	10,000	6,000# / 4,000	8.2 / 4.8	100 / 600	7
LA34 Std. motor	16	7,000	6,000# / 4,000	10.8 / 7.9	100 / 600	7
LA34 Std. motor	20	5,000	5,000# / 4,000	13.5 / 10	100 / 600	7
LA34 Fast motor	12	10,000	6,000# / 4,000	11 / 7	100 / 600	10
LA34 Fast motor	16	7,500	6,000# / 4,000	15 / 9	100 / 600	10
LA34 Fast motor	20	5,000	5,000# / 4,000	18 / 13.2	100 / 600	10
LA34 Small motor	12	4,000	n / a / 4,000	9 / 7	100 / 600	3.5
LA34 Small motor	16	3,000	n / a / 3,000	12 / 9	100 / 600	3.5
LA34 Small motor	20	2,000	n / a / 2,000	15 / 12	100 / 600	3.5
12V motor only available with zinc version.						
LA34 12V motor	12	7,000	6,000#	10 / 5.2	100 / 600	15
LA34 12V motor	16	5,500	5,500#	14 / 7.4	100 / 600	15
LA34 12V motor	20	4,000	4,000#	17.5 / 12	100 / 600	15

\* Typical values, measurements are made with an actuator in connection with a stable 24V / 12V power supply.

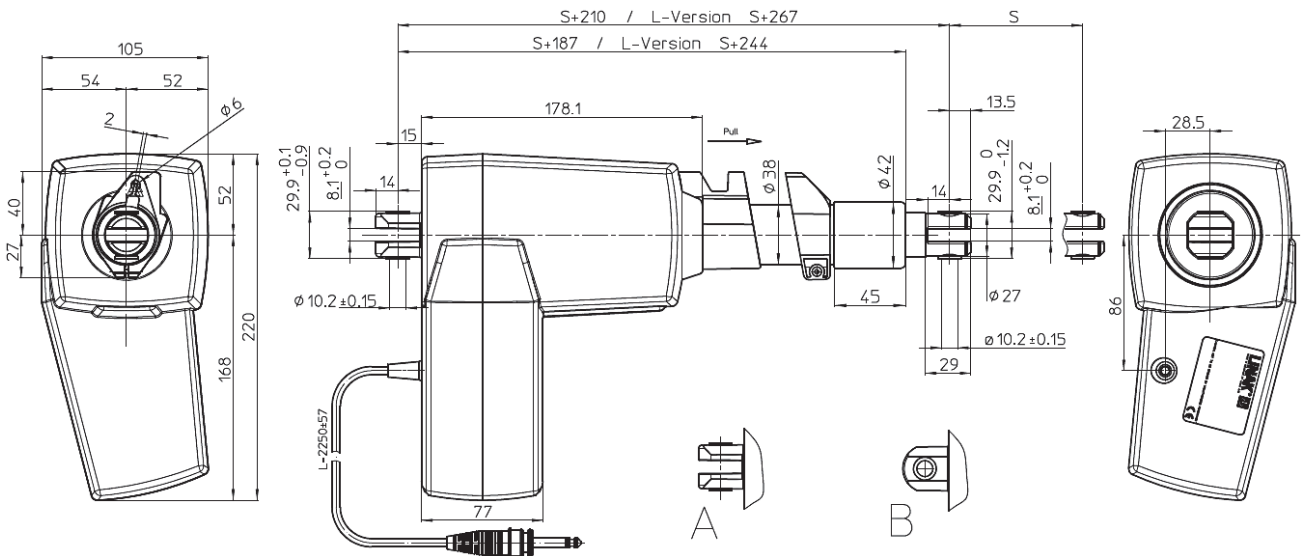
# Has to be with a steel piston rod eye and reinforced jaw.

**Ordering example for standard LA34 composite:**

NOTE: Composite has to be ordered unless more than 4,000 N Pull or 12 volt is needed

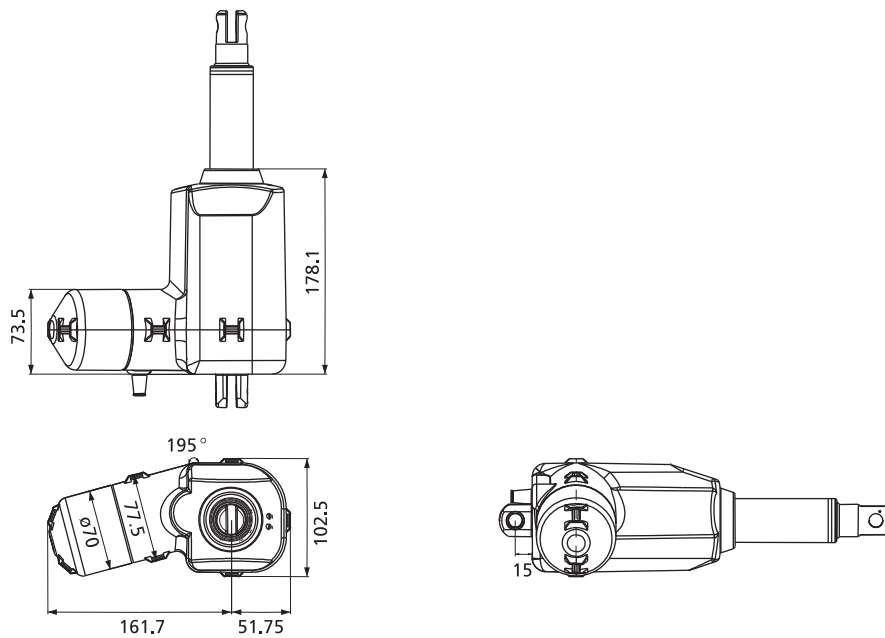
34 3 A 0 0 + 0 0 2 5 0 0 4 0	<p><b>Cables:</b></p> <p>24 V cables  <b>Jack cables</b>                  0 = Straight 2.25 m (±0.08)                  1 = Straight 1.0 m (±0.08)                  2 = Coiled 0.4 m                  3 = Coiled 0.2 m</p> <p><b>IP Degree:</b></p> <p>4 = IPX4, standard housing                  2 = IPX6, standard housing</p> <p><b>Motor type:</b></p> <p>0 = Standard 24V                  1 = Fast motor 24V                  2 = Small motor 24V</p> <p><b>Stroke length:</b></p> <p>XXX = mm</p> <p><b>Installation dimension:</b></p> <p>0 = Standard                  L = Long                  X = Another installation dimension</p> <p><b>Safety option:</b></p> <p>0 = Safety nut in push Standard                  1 = Safety nut in pull and steel piston rod eye, "Push" safety nut also mounted (Increases installation dimension by 10 mm) (max. pull remains 4000 N or below)                  3 = Mechanical spline                  4 = Electrical spline push actuator</p> <p><b>Colour:</b></p> <p>+ = Grey                      Standard                  - = Black</p> <p><b>Special option:</b></p> <p>0 = No                  F = Quick release + free wheeling + adjustable release (push)                  K = Quick release + free wheeling + adjustable release Bowden cable holder (push)                  W = Free wheeling (push)</p> <p><b>Positioning:</b></p> <p>0 = No                  H = Hall for use with CB6 OBF, CB16 OBF, CB20 (only with U-cable)                  P = Potentiometer 10 Kohm (not possible with DIN and Jack plug)                  R = Relative positioning, only as a special article (not for 12 V)</p> <p><b>Fixture type:</b></p> <p>A = Composite standard                  B = Composite turned 90 degrees</p> <p><b>Spindle type:</b></p> <p>3 = 12 mm                      Standard                  4 = 16 mm                  5 = 20 mm</p> <p><b>Actuator type:</b></p> <p>34 = LA34</p>	<p><b>DIN cables</b></p> <p>A = Straight 2.25 m (± 0.08)                  C = Coiled 0.4 m                  D = Coiled 0.2 m</p> <p><b>Other cables:</b></p> <p>U = Exch. cables (mini-fit)                  (0.03 m ± 0.02 m std. housing,                  0.105 m ± 0.02 m compact housing)                  Z = 5-core 0.5 m flying leads (± 0.03)                  X = Another cable/length (± 0.04)</p> <p>A = IPX4, compact housing                  B = IPX6, compact housing</p> <p>Max. 400 mm for "0" version (up to 600 mm as special article)                  Max. 600 mm for "L" version                  Min. 100 mm (in steps of 1 mm)</p> <p>S + 210                  S + 267 Always for patient lifts</p>
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**Dimensions standard housing:**



The LA34 actuator is as standard delivered with bushings in rod eye and back fixture. If the hole dimension in rod eye or back fixture is changed from standard - bushings are not mounted.

**Compact housing:**



**Safety factor:**

The max. load of the LA34 actuator when observing safety factor 2 will depend upon the stroke length of the actuator. The following graphs show the max. load during the entire stroke length.

**Safety factor 2 curve for 150 mm S+210 mm actuator**

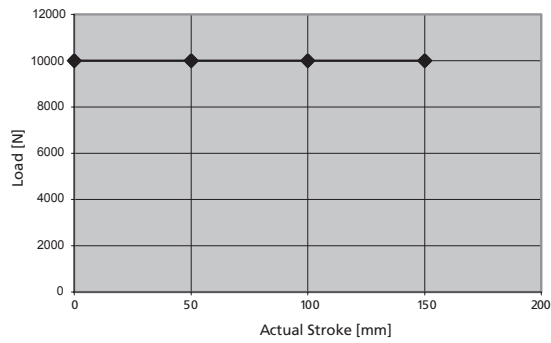


Fig. 1, 150 mm actuator (item nr. 343AXX+X0150XXX)

**Safety factor 2 curve for 200 mm S+210 mm actuator**

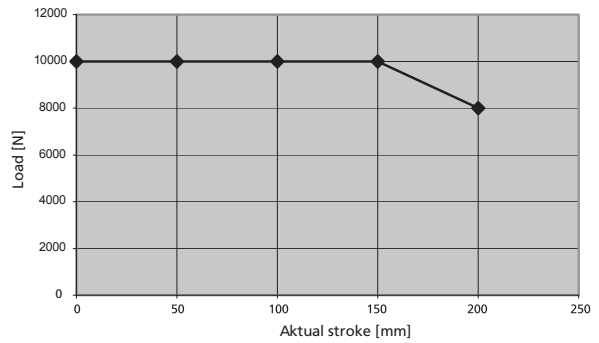


Fig. 2, 200 mm actuator (item nr. 343AXX+X0200XXX)

**Safety factor 2 curve for 250 mm S+210 mm actuator**

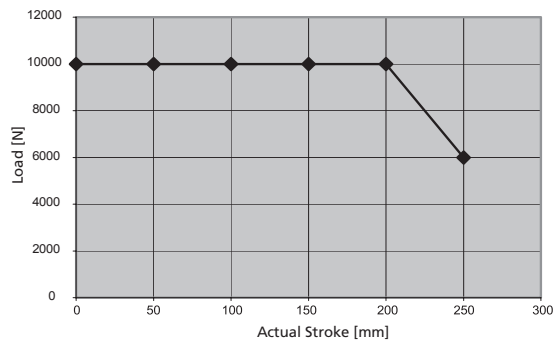


Fig. 3, 250 mm actuator (item nr. 343AXX+X0250XXX)

**Safety factor 2 curve for 300 mm S+210 mm actuator**

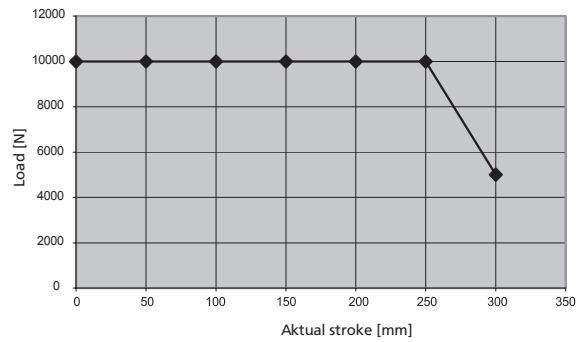


Fig. 4, 300 mm actuator (item nr. 343AXX+X0300XXX)

**Safety factor 2 curve for 350 mm S+210 mm actuator**

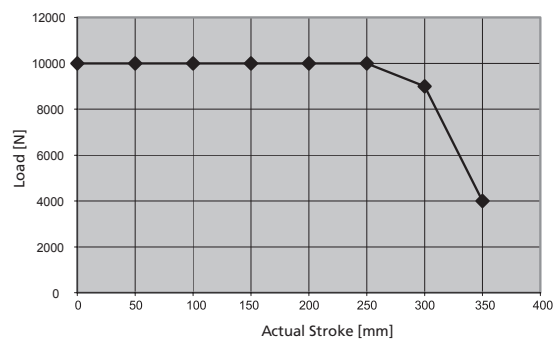


Fig. 5, 350 mm actuator (item nr. 343AXX+X0350XXX)

**Safety factor 2 curve for 400 mm S+210 mm actuator**

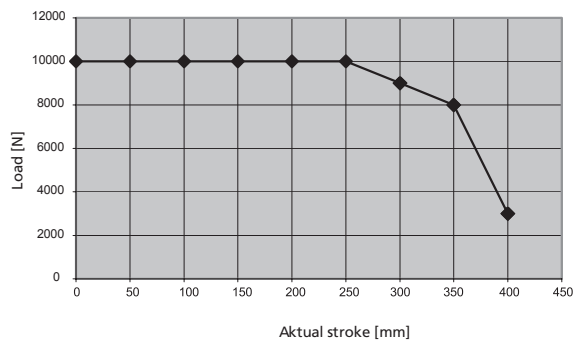


Fig. 6, 400 mm actuator (item nr. 343AXX+X0400XXX)

**Safety factor 2 curve for 450 mm S+210 mm actuator**

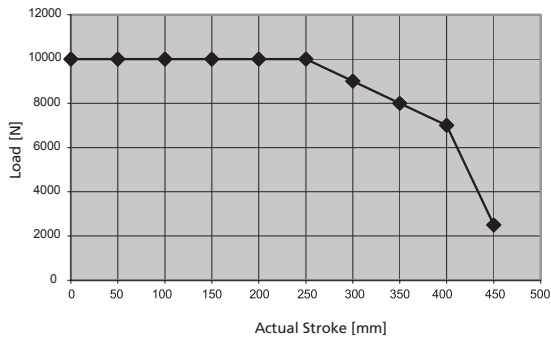


Fig. 7, 450 mm actuator (item nr. 343AXX+X0450XXX)

**Safety factor 2 curve for 500 mm S+210 mm actuator**

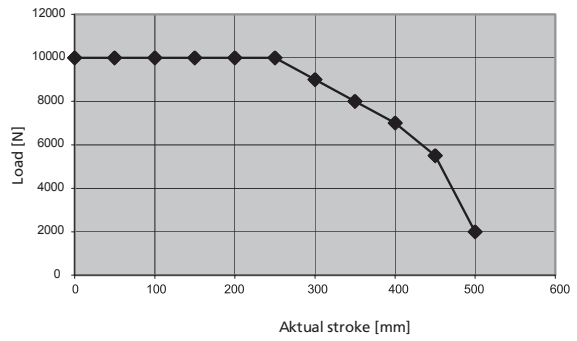


Fig. 8, 500 mm actuator (item nr. 343AXX+X0500XXX)

**Safety factor 2 curve for 550 mm S+210 mm actuator**

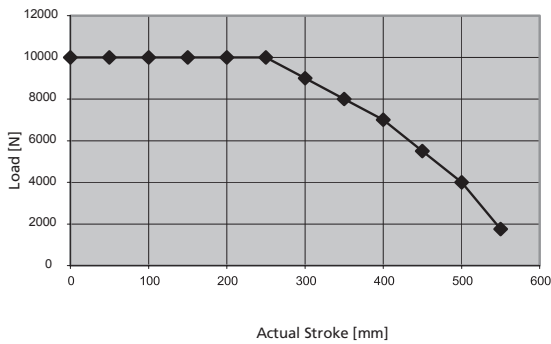


Fig. 9, 550 mm actuator (item nr. 343AXX+X0550XXX)

**Safety factor 2 curve for 600 mm S+210 mm actuator**

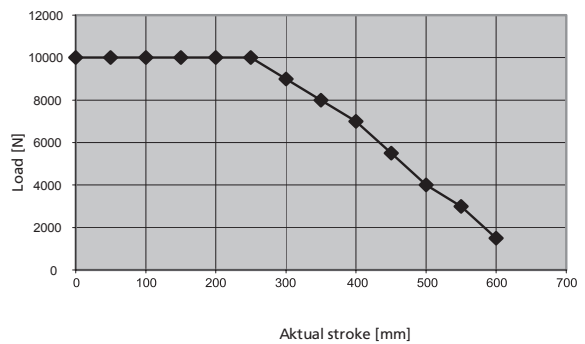


Fig. 10, 600 mm actuator (item nr. 343AXX+X0600XXX)

The graphs show that standard installation (S + 210 mm) LA34 with strokes up till 150 mm, has a safety factor 2 with a 10,000 N load (fig. 2). With a further increase of the stroke the safety factor 2 is no longer observed with 10,000 N load at the full stroke length.

Not all applications require a safety factor of 2.

LINAK recommends that a safety factor of minimum 1.5 is always observed in all applications, even though the actuator is to be used in a situation with norms or standards specifying a lower factor. The load limit of maximum 10,000 N must never be exceeded regardless of the safety factor used.

**Long installation (S + 267 mm):**

**Safety factor 2 with full stroke S+267 mm**

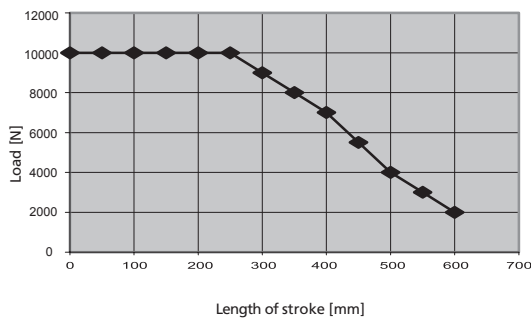


Fig. 11, Safety factor 2 with LA34 (S+267 mm)

**Safety factor 1.5 with full stroke S+267 mm**

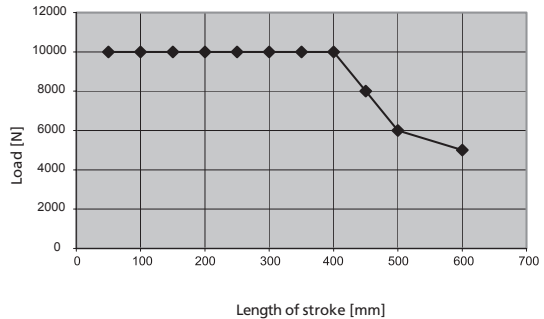


Fig. 12, Safety factor 1.5 with LA34 (S+267 mm)

The long installation dimension (S + 267 mm) is designed for use in patient hoist applications where safety factor 1.5 is required. See the safety factor 1.5 graph in fig. 12.

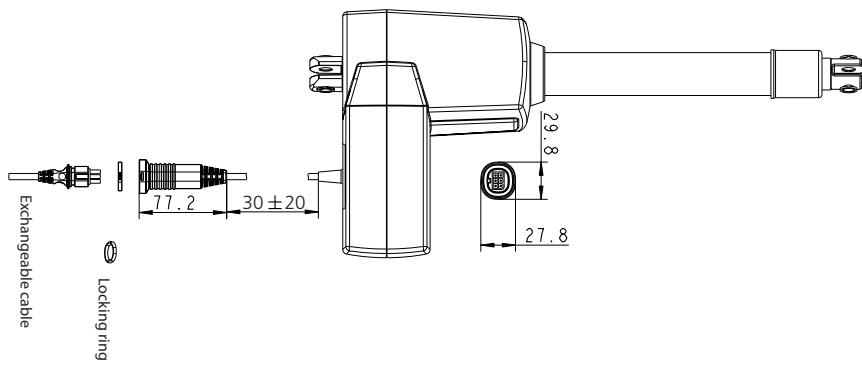
The long installation dimension (S + 267 mm) can also be used in hospital bed applications where safety factor 2 is required.

Using the long installation dimension you get a higher max. load with safety factor 2 at the same stroke length.

The safety factor 2 graph is shown in fig. 11.



**LA34 with mini-fit cable connector.**



N.B. The cable length between the socket and the housing is 30 mm on the standard LA34 and 105 mm on LA34 with compact housing.

**LA34 with quick release**

LA34 is available with quick release as an option. The quick release is mounted on the motor part.

The quick release is e.g. used for emergency lowering on a patient lift or for manual lowering of the head part of a bed.

The quick release is available with a manual activation where a finger grip is mounted on the actuator. When pulling the finger grip the declutching is activated. To release the handle it is necessary to pull approx. 10 mm with 80 - 100 N.

The function can also be extended with one or two bowden cables which are connected to the finger grip. Below the finger grip there is an adjusting screw to increase or decrease lowering speed.

The adjusting screw is adjusted from the factory in accordance with the table below.

The table below shows the standard adjustment criteria.

Motor type	Spindle type	Adjustment load	Speed criteria
Standard/Fast (24 V)	3-threaded (12 mm pitch)	6,000 N	15 - 55 mm/s
	4- threaded (16 mm pitch)	5,000 N	
	5- threaded (20 mm pitch)	4,000 N	
Small (24 V)	3- threaded (12 mm pitch)	2,000 N	
	4- threaded (16 mm pitch)	1,500 N	
	5- threaded (20 mm pitch)	1,000 N	
12 V	3- threaded (12 mm pitch)	5,000 N	
	4- threaded (16 mm pitch)	4,000 N	
	5- threaded (20 mm pitch)	3,000 N	

Table notes:

- Speeds are measured for an 80 mm distance.
- The ambient temperature is 20 degrees Celcius.

Note: The QR speed at a certain load is dependent on multiple parameters such as: ambient temperature, number of activations, wear, whether the actuator has run just prior to a QR engagement.

## LA34

If more than 4,000 N in pull or a 12 volt motor is needed.

34	3	1	0	0	+	0	0	2	5	0	3	4	V									
															<b>Cables:</b>	24 V cables <b>Jack cables</b> 0 = Straight 2.25 m (± 0.08) 1 = Straight 1.0 m (± 0.08) 2 = Coiled 0.4 m 3 = Coiled 0.2 m	<b>DIN cables</b> A = Straight 2.25 m (± 0.08) C = Coiled 0.4 m D = Coiled 0.2 m	<b>Other cables:</b> U = Exch. cables (mini-fit) (0.03 m ± 0.02 m std. housing, 0.105 m ± 0.02 m compact housing) Z = 5-core 0.5 m flying leads (± 0.03) X = Another cable/length (± 0.04)				
																12 V cables V = Straight 2 core 0.5 m (1.5 mm <sup>2</sup> ) (± 0.03) N = Straight 7 core 0.5 m (1.5 mm <sup>2</sup> ) for potentiometer (± 0.03)						
															<b>IP Degree:</b>	4 = IPX4, standard housing 2 = IPX6, standard housing	A = IPX4, compact housing B = IPX6, compact housing					
															<b>Motor type:</b>	0 = Standard 24V 1 = Fast motor 24V 2 = Small motor 24V 3 = 12 volt motor (steel piston rod eye)						
															<b>Stroke length:</b>	XXX = mm Max. 400 mm for "0" version Max. 600 mm for "L" version Min. 100 mm		(up to 600 mm as special article)				
															<b>Installation dimension:</b>	0 = Standard L = Long X = Another installation dimension	S + 210 S + 267 Always for patient lifts					
															<b>Safety option:</b>	0 = Safety nut in push Standard 1 = Safety nut in pull and steel piston rod eye "Push" safety nut also mounted (Increases installation dimension by 10 mm) 3 = Mechanical spline 4 = Electrical spline push actuator (not for 12 volt)						
															<b>Colour:</b>	+ = Grey - = Black	Standard					
															<b>Special option:</b>	0 = No W = Free wheeling (push) Z = Free wheeling (pull)* F = Quick release + free wheeling + adjustable release (push) T = Quick release + free wheeling + adjustable release (pull)* K = Quick release + free wheeling + adjustable release + Bowden cable holder(push) H = Quick release + free wheeling + adjustable release + Bowden cable holder (pull)*						
															<b>Positioning:</b>	0 = No P = Potentiometer 10 Kohm (12 volt - only special article) R = Relative positioning, only as a special article (not for 12V) H = Hall for use with CB6 OBF, CB16 OBF, CB20 (only with U-cable)						
															<b>Fixture type:</b>	1 = Zinc Standard 2 = Zinc turned 90 degrees						
															<b>Spindle type:</b>	3 = 12 mm 4 = 16 mm 5 = 20 mm	Standard					
															<b>Actuator type:</b>	34 = LA34						

\*= The reinforced jaw and safety nut in pull are included when choosing this option ( does not apply to versions with the small motor).



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