TECHLINE®
IMPROVING FLEXIBILITY

Actuator LA36 Long Life
Data sheet

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LA36 Long Life

The actuator LA36 Long Life is one of the most solid and powerful LINAK actuators, designed to operate under extreme conditions. The LA36 is a maintenance-free product with a long lifetime and a high IP degree. This high-quality actuator offers a very strong alternative to hydraulic and pneumatic solutions.

IC INTEGRATED CONTROLLER

This **TECHLINE®** actuator comes with IC - Integrated controller.
For more information on our IC options, please see: www.linak.com/techline

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Features:
- 24 and 48 V BLDC (Brushless motor)
- Thrust from 500 N - 6,800 N depending on gear ratio and spindle pitch
- Max. speed up to 142 mm/sec. depending on load and spindle pitch
- Stroke length from 100 to 1200 mm
- Built-in endstop system (Zeropoint)
- Non rotating piston rod eye
- Noise level: 63.4 dB (A) measuring method DS/EN ISO 3746 actuator not loaded in extend
- Noise level: 64.2 dB (A) measuring method DS/EN ISO 3746 actuator not loaded in retract
- Protection class: IP66 (dynamic) and IP69K (static)

Options in general:
- Exchangeable cables in different lengths
- Reinforced housing for extreme environments
- Hall effect sensor
- IC options including:
  - CANbus J1939 communication
  - CANopen communication
  - PC configuration tool

Usage:
- Duty cycle is max. 20%
- Ambient operating temperature -30°C to +65°C, full performance from +5°C to +40°C

Contents

Chapter 1

Specifications

Motor:	Brushless motor 24 V DC or 48 V DC*
Cable:	Motor: 2 x 14 AWG PVC cable Control: 9 x 20 AWG PVC cable **
Gear ratio:	4 different gear ratios available in steel (500 N, 1,700/2,600 N, 4,500 N, and 6,800 N)
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
Housing:	The housing is made of casted aluminium, coated for outdoor use and in harsh conditions
Spindle part:	Outer tube: Extruded aluminium anodised Inner tube: Stainless steel AISI304/SS2333 Acme spindle: Trapezoidal spindle with high efficiency
Piston rod eye and back fixture:	When ordering AISI (304 and up) piston rod eye and back fixture, stainless steel screws are automatically included
Temperature range:	- 30° C to +65° C - 22° F to +149° F Full performance +5° C to +40° C
Storage temperature:	-55°C to +105°C
Weather protection:	Rated IP66 for outdoor use. Furthermore, the actuator can be washed down with a high-pressure cleaner (IP69K).
Noise level:	63.4 dB (A) measuring method DS/EN ISO 3746 actuator not loaded in extend 64.2 dB (A) measuring method DS/EN ISO 3746 actuator not loaded in retract

Be aware of the following two symbols throughout this product data sheet:

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.

Technical specifications

LA36 with 24V motor

Order number	Push max. (N)	Pull max. (N)	Self-lock min. (N) Push	Self-lock min. (N) Pull	Pitch (mm/ spindle rev.)	*Typical speed (mm/s) Load		Standard stroke lengths (mm) in steps of 50mm	*Typical amp. (A) 24V	
						No	Full		No load	Full load
36120xxxxxxx2x=xxxHxxxxxxxxxx	6800	6800	8800	8800	12	15	15	100-1200**	1	10
36120xxxxxxx2x=xxxGxxxxxxxxxx	4500	4500	5800	5800	12	23	23	100-1200**	1	10
36120xxxxxxx2x=xxxFxxxxxxxxxx	2600	2600	3400	3400	12	39	39	100-1200	1	10
36200xxxxxxx2x=xxxFxxxxxxxxxx	1700	1700	2200	2200	20	65	65	100-1200	1	10
36200xxxxxxx2x=xxxExxxxxxxxxx	500	500	1000	1000	20	142	142	100-1200	2	11

LA36 with 48V motor

Order number	Push max. (N)	Pull max. (N)	Self-lock min. (N) Push	Self-lock min. (N) Pull	Pitch (mm/ Spindle rev.)	*Typical speed (mm/s) Load		Standard stroke lengths (mm) in steps of 50mm	*Typical amp. (A) 48V	
						No	Full		No load	Full load
36120xxxxxxx4x=xxxHxxxxxxxxxx	6800	6800	8800	8800	12	15	15	100-1200**	1	5,4
36120xxxxxxx4x=xxxGxxxxxxxxxx	4500	4500	5800	5800	12	23	23	100-1200**	1	5,4
36120xxxxxxx4x=xxxFxxxxxxxxxx	2600	2600	3400	3400	12	39	39	100-1200	1	5,4
36200xxxxxxx4x=xxxFxxxxxxxxxx	1700	1700	2200	2200	20	65	65	100-1200	1	5,4
36200xxxxxxx4x=xxxExxxxxxxxxx	500	500	1000	1000	20	142	142	100-1200	1	5,4

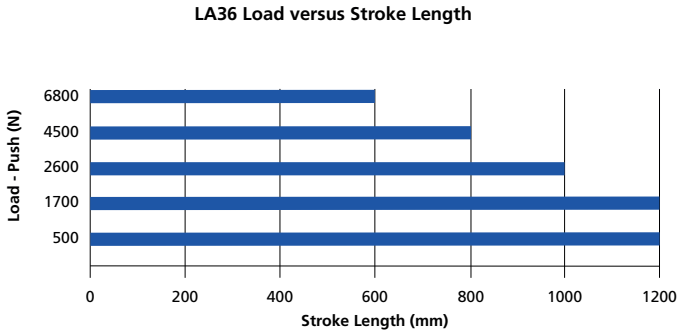
* The typical values can have a variation of ± 10% on the current values and ± 5% on the speed values. Measurements are made with an actuator in connection with a stable power supply and an ambient temperature at 20°C.

** There are limitations on the stroke length if you need full load, please see "LA36 Load v. Stroke Length"

Please note that due to the regulated speed, an actuator with "CANbus" utilizing softstop towards end stop, will only run with 80% of the typical speed.

- **Self locking ability**
  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 BLDC-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.



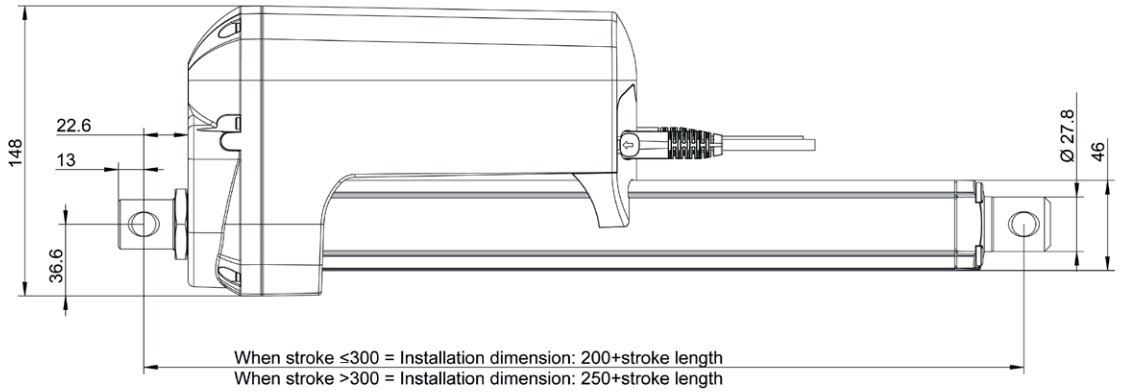
N.B.
LA36 500-1700 N is with 20 mm spindle pitch
LA36 500-6800 N is with 12 mm spindle pitch

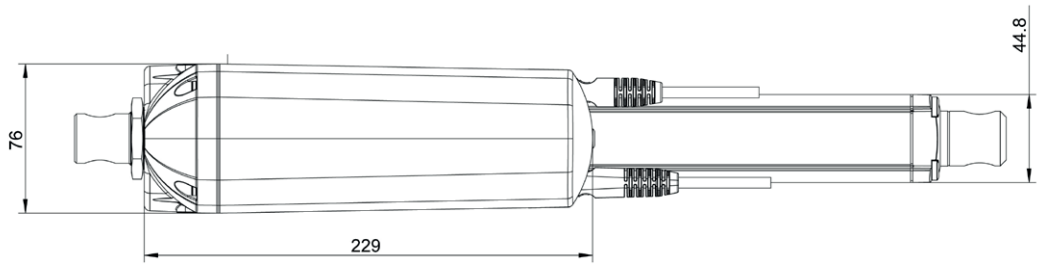
For applications that only operate in pull the limitations are 1200 mm stroke and 6.800 N load.
Safety factor 2.

Stroke and built-in tolerances

Platform options E.g. 36XXXXXXXXA7... 36XXXXXXXXA8...	**Descriptions**	**Stroke tolerance**	**Example for 200mm stroke**	**BID tolerance**	**Example for 200mm BID**
E.g. 36XXXXXXXXA7... 36XXXXXXXXA8...	Integrated controller CANbus (J1939 and CANopen)	+/- 2 mm	198 to 202mm	+/- 2 mm	198 to 202mm

LA36 Dimensions

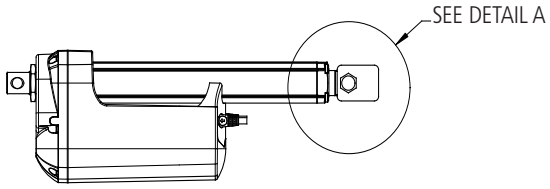


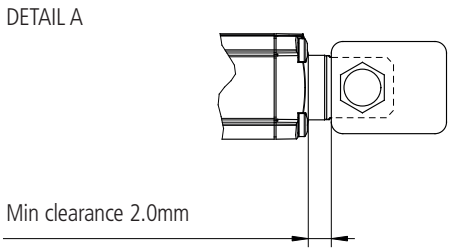


Piston rod	"1" / to the centre of the hole		"2A" / to the centre of the hole	
Back fixture	Stroke <=300 Stroke > 300		Stroke <=300 Stroke > 300	
"1" and "2" / to the centre of the hole	200	250	200	250

Keep a clearance when mounting a bracket

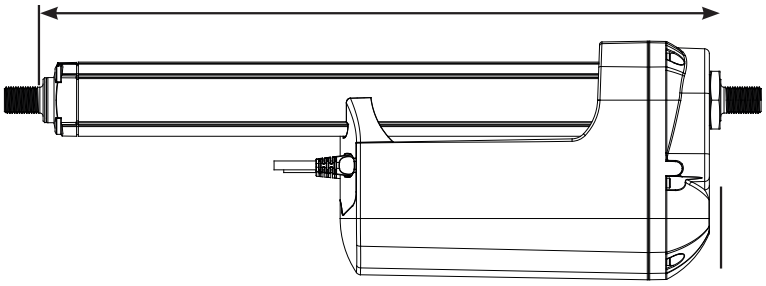
When mounting a custom bracket on the moving part of the actuator, please observe the minimum clearance between bracket and cylinder top, when fully retracted, to avoid jamming and destruction of actuator drive train.





Piston rod	"C" / to the centre of the hole		"D" / to the centre of the hole	
Back fixture	Stroke <=300 Stroke > 300		Stroke <=300 Stroke > 300	
"1" and "2" / to the centre of the hole	215	265	215	265

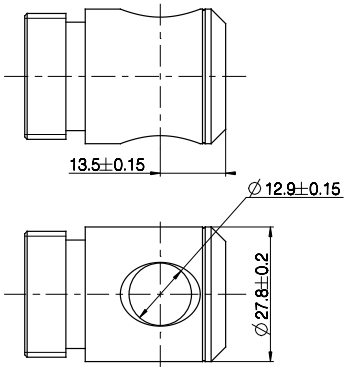
* These built-in dimensions are measured according to the illustration below.



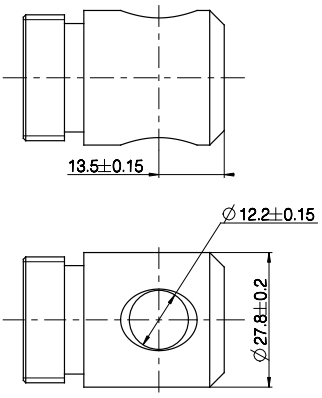
LA36 Piston Rod Eyes

When ordering AISI (304 and up) piston rod eye and back fixture, stainless steel screws are automatically included.

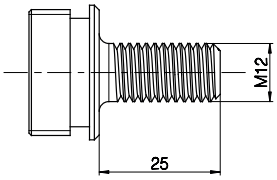
Option "1"
LINAK P/N: 0361018
Free cutting steel galvanised surface



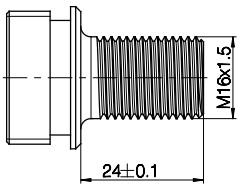
Option "2"
LINAK P/N: 0361109
Free cutting steel galvanised surface



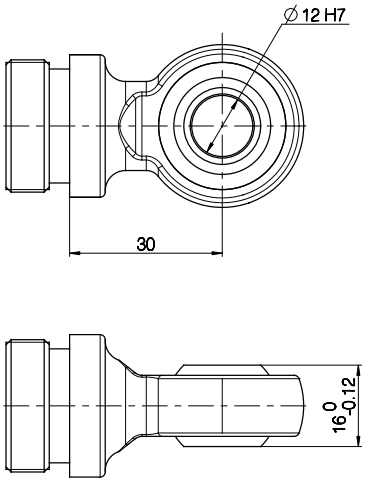
Option "3"
LINAK P/N: 0361224
AISI 303



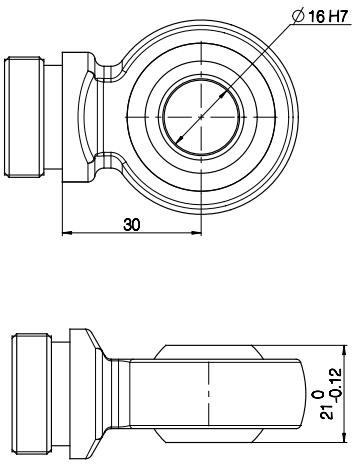
Option "4"
LINAK P/N: 0361135
AISI 303



Option "C"
LINAK P/N: 0361350
AISI 304



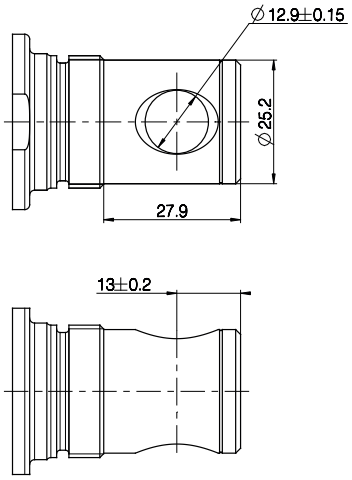
Option "D"
LINAK P/N: 0361351
AISI 304



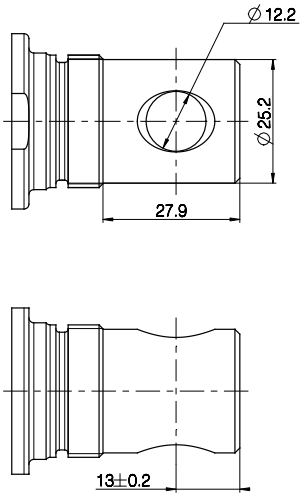
The Piston Rod Eye is only allowed to turn 0 - 90 degrees.

LA36 Back fixtures

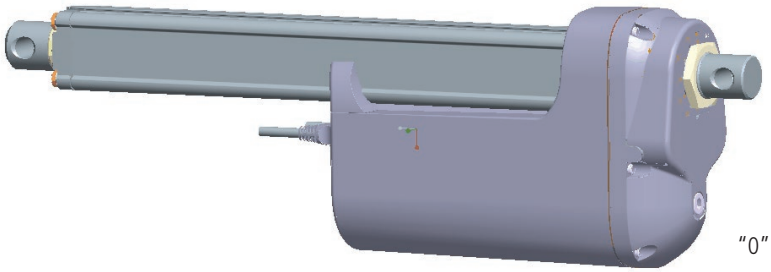
Option "1" Back fixture: 0° and "2" Back fixture: 90°
LINAK P/N: 0361715
Free cutting steel galvanised surface



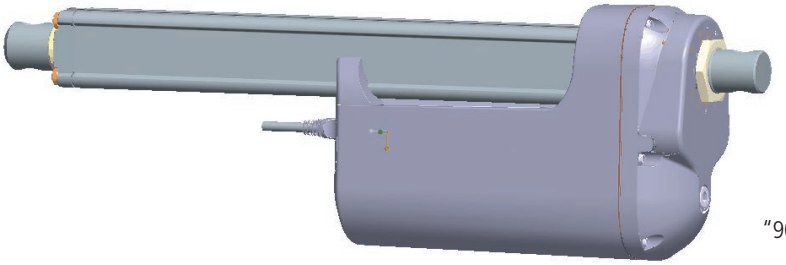
Option "3" Back fixture: 0° and "4" Back fixture: 90°
LINAK P/N: 0361714
Free cutting steel galvanised surface



LA36 Back fixture orientation



"0" Degrees



"90" Degrees

"30" Degrees

"60" Degrees

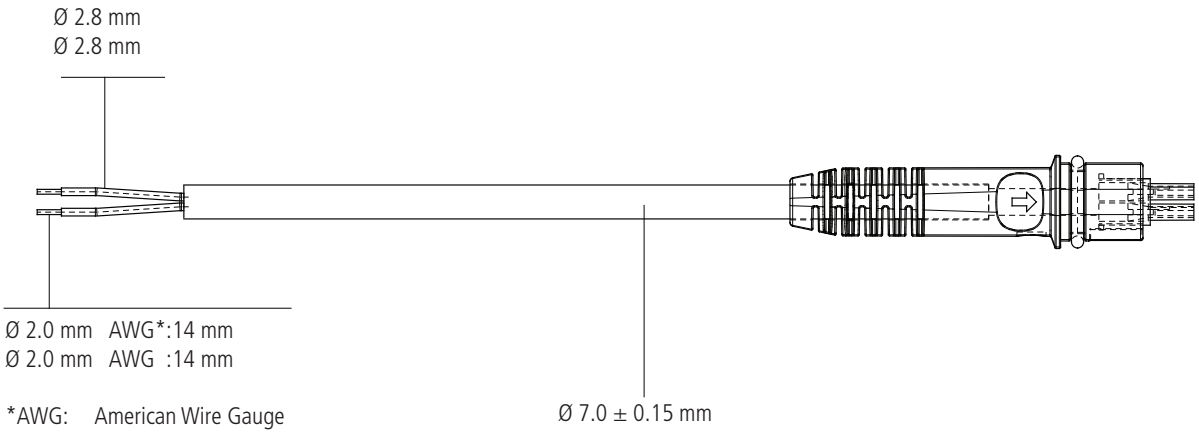
"120" Degrees

"150" Degrees

NB. All with tolerance of ± 4°

Cable dimensions

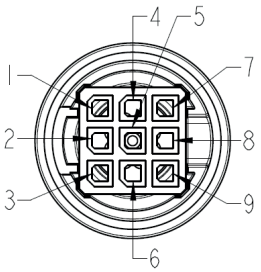
Power cable dimensions:



9 - pole signal cable dimensions

Signal cable dimensions:

J1:	Outer Ø:	Colour:	Conductor:
1:	Ø 1.5 mm	Gray:	0.5 mm^2 / AWG*: 20
2:	Ø 1.5 mm	Orange:	0.5 mm^2 / AWG : 20
3:	Ø 1.5 mm	Black:	0.5 mm^2 / AWG : 20
4:	Ø 1.5 mm	White:	0.5 mm^2 / AWG : 20
5:	Ø 1.5 mm	Violet:	0.5 mm^2 / AWG : 20
6:	Ø 1.5 mm	Red:	0.5 mm^2 / AWG : 20
7:	Ø 1.5 mm	Yellow:	0.5 mm^2 / AWG : 20
8:	Ø 1.5 mm	Green:	0.5 mm^2 / AWG : 20
9:	Ø 1.5mm	Light blue:	0.5 mm^2 / AWG : 20

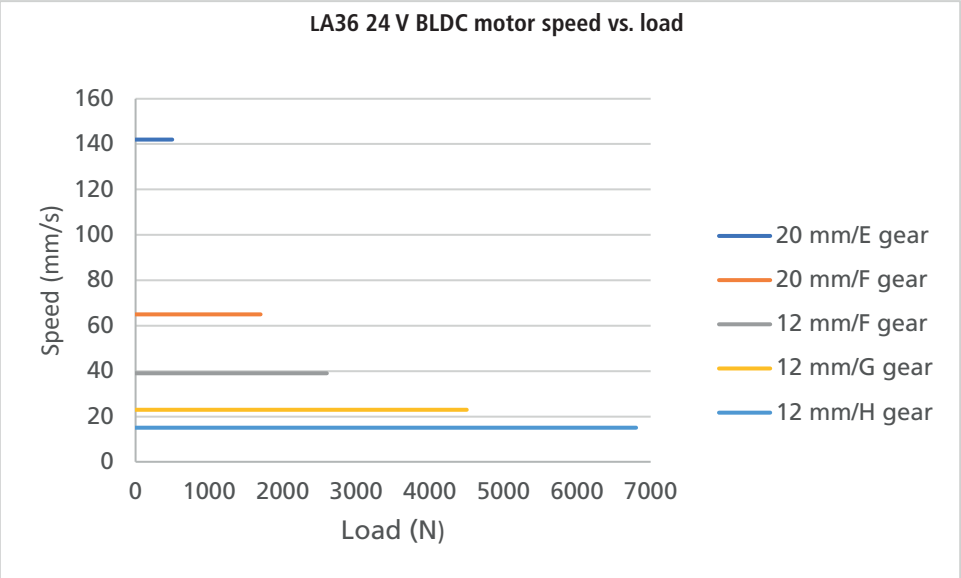


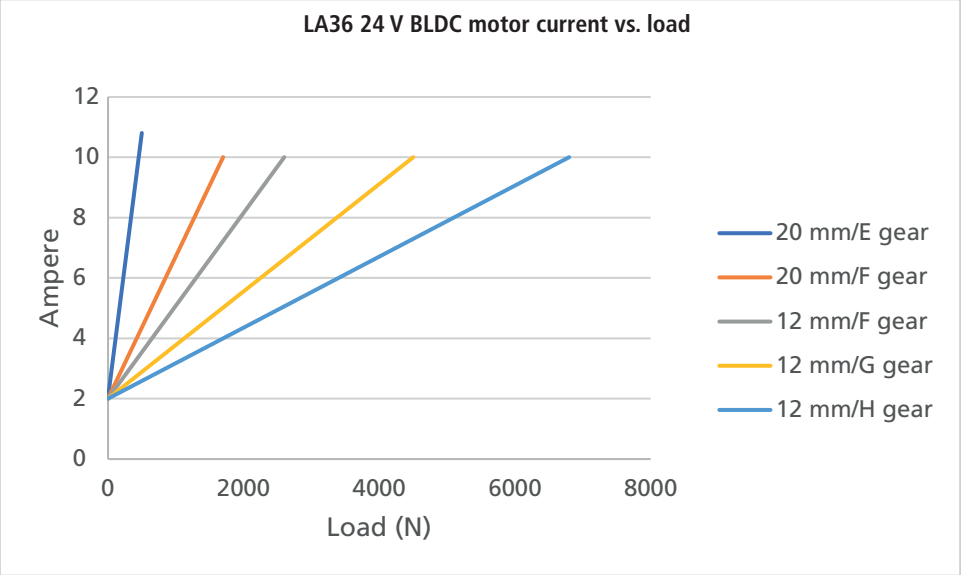
Purpose	Plug type	Article No.	Material	# Wires	Size	Colour	Length (mm)	Cable type
Signal	Flying leads*	0368543-1500	PVC	9	20 AWG	Black	1500	Straight
Signal	Flying leads*	0368543-5000	PVC	9	20 AWG	Black	5000	Straight
Power	Flying leads*	0367046-1500	PVC	2	14 AWG	Black	1500	Straight
Power	Flying leads*	0367046-5000	PVC	2	14 AWG	Black	5000	Straight

* The cable comes with an AMP connector that can beremoved for flying leads

Speed and current curves - 24 V motor

The values below are typical values and made with a stable power supply and an ambient temperature of 20˚C.



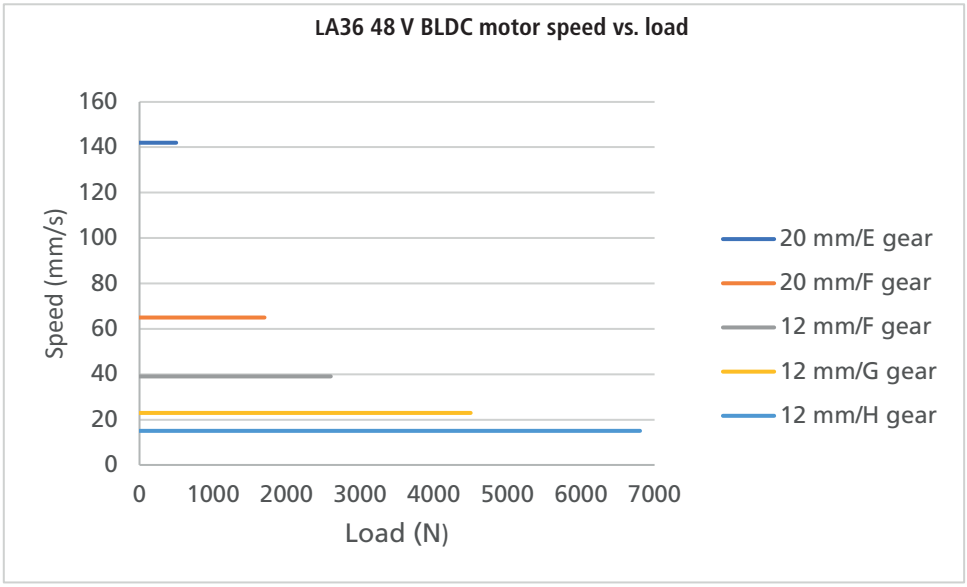


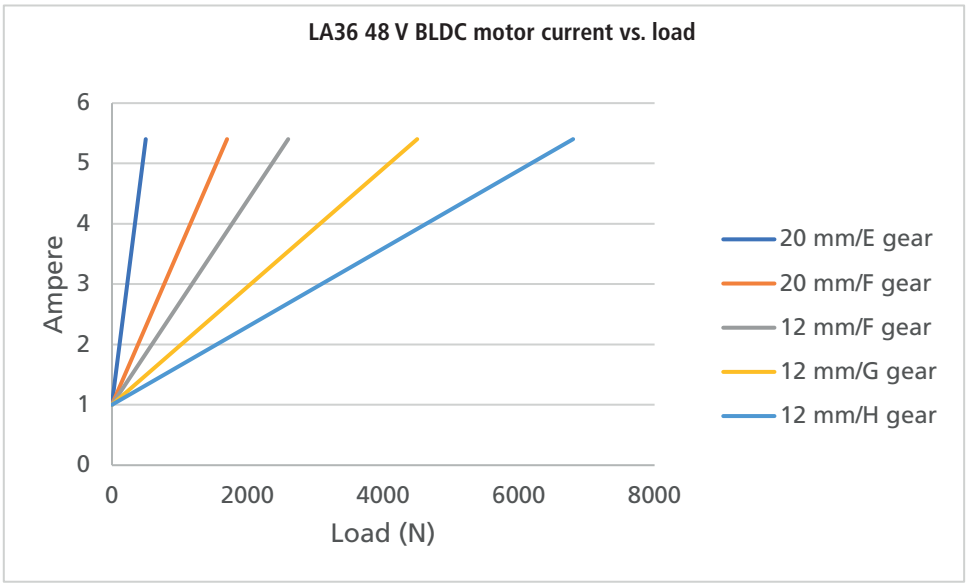
All measurements above describe the spindle pitch (e.g. 20 mm) and the gear type (e.g. E gear) of the actuator.

Speed and current are based on a nominal power supply of 24 VDC.

Speed and current curves - 48 V motor

The values below are typical values and made with a stable power supply and an ambient temperature of 20˚C.





All measurements above describe the spindle pitch (e.g. 20 mm) and the gear type (e.g. E gear) of the actuator.

Speed and current are based on a nominal power supply of 48 VDC.

Chapter 2

IC options overview

	Advanced	Parallel	LIN bus	CANbus	CANopen
Control					
24 V, 48 V supply	-	-	-	√	√
H-bridge	-	-	-	√	√
Manual drive in/out	-	-	-	√	√
EOS in/out	-	-	-	-	-
Soft start/stop	-	-	-	√	√
Feedback					
Voltage	-	-	-	-	-
Current	-	-	-	-	-
Single Hall	-	-	-	-	-
PWM	-	-	-	-	-
Position (mm)	-	-	-	√	√
Custom feedback type	-	-	-	-	-
Monitoring					
Temperature monitoring	-	-	-	√	√
Current cut-off	-	-	-	√	√
Ready signal	-	-	-	-	-
BusLink					
Service counter	-	-	-	√	√
Custom soft start/stop	-	-	-	√*	√ *
Custom current limit	-	-	-	√	√
Speed setting	-	-	-	√	√
Virtual end stop	-	-	-	√	√

* Configure any value between 0,3 - 30 s

Actuator configurations available for IC

	Pre-configured	**Customised range (Not IC Basic)**	**Description**
Current limit inwards	7.5 A for 48 V 13 A for 24 V in both current limit directions. Be aware: When the actuator comes with current cut-off limits that are factory pre-configured for certain values, the pre-configured values will be the new maximum level of current cut-off. This means that if the current cut-off limits are pre-configured to 14 A, it will not be possible to change the current limits through BusLink to go higher than 14 A.	Recommended range: 24 V = 1 A- 13 A 48 V = 1 A -7,5 A If the temperature drops below 0°C, all current limits will automatically increase to the double - approximately 26 A for 24 V and 15 A for 48 V, indenpendent of the pre-configured value.	The actuator's unloaded current consumption is very close to 1 A, for 24 V and 48 V, and if the current cut-off is customised below 1 A there is a risk that the actuator will not start. The inwards and outwards current limits can be configured separately and do not have to have the same value.
Current limit outwards			
Max. speed inwards/ outwards	100% equal to full performance	Lowest recommended speed at full load: 60% It is possible to reduce the speed below 60%, but this is dependable on load, power supply and the environment.	The speed is based on a PWM principle.
Virtual endstop inwards	0mm for both virtual enstop directions. (When the virtual end-stops are at zero, it means that they are not in use).	Scaling of feedback when choosing analogue feedback. All Absolute feedback levels must follow the chosen virtual end-stop, if any are set. When virtual end-stop is chosen through the bus link, the actuator will need initialisation and feedback will be adjusted accordingly to the virtual end-stop.	The virtual endstop positions are based on hall sensor technology, meaning that the positioning needs to be initialised from time to time.
Virtual endstop outwards			
Soft stop inwards	0.3 sec. for both soft stop directions.	0.3 sec. to 30 sec. 0 sec. can be chosen for hard stop.	It is not possible to configure values between 0.01 sec. to 0.29 sec. This is due to the back-EMF from the motor (increasing the voltage). Be aware that the soft stop value equals the deacceleration time after stop command.
Soft stop outwards			
Soft start inwards	0.3 sec. for both soft start directions.	0 sec. to 30 sec.	Be aware that the soft start value equals the acceleration time after start command. To avoid stress on the actuator, it is not recommended to use 0 sec. for soft start, due to higher inrush current.
Soft start outwards			

Chapter 3

Environmental tests - Climatic

Test	Specification	Comment
Cold test		Operation in cold Temperature: -30° C Duration: 24h in climate chamber Actuation: 1 full cycle
Salt mist	DS/EN ISO 9227	Salt spray test: Salt solution: 5% sodium chloride (NaCl) 4 spraying periods, each of 2 hours. Humidity storage 7 days after each. Actuator not activated/connected Exposure time: 500 hours
Degrees of protection	IEC 60529 Edition 2.1 2001-02	IP6X - Dust: Dust-tight, no ingress of dust. Actuator is not activated.
	IEC 60529 Edition 2.1 2001-02	High pressure cleaner: Water temperature: 80 ±5°C Water pressure: 80 bar Spray angle: 0°, 30°, 60° and 90° Spray distance: 100 to 150 mm Duration: from any direction 30s of spraying. Actuator not activated Ingress of water in quantities causing harmful effects is not allowed
	DUNK test	The actuator has been warmed up to 85° C for 4 hours. After this it is cooled down in 0° C saltwater. Cooling time: 2 hours Weighed before and after to check for water ingress.
Chemicals	ISO 16750-5/4/2010	Chemical brushed on all surfaces Diesel fuel Bio diesel fuel Engine oil Transmission fluid Hydraulic fluid Grease Anti-freezr Urea Cold cleaner Contact spray Ammonium hydroxide Liquid agricultural lime NPK compound fertilizer
Free fall		Free fall in X, Y and Z direction 6 times on a concrete floor Height: 450 mm