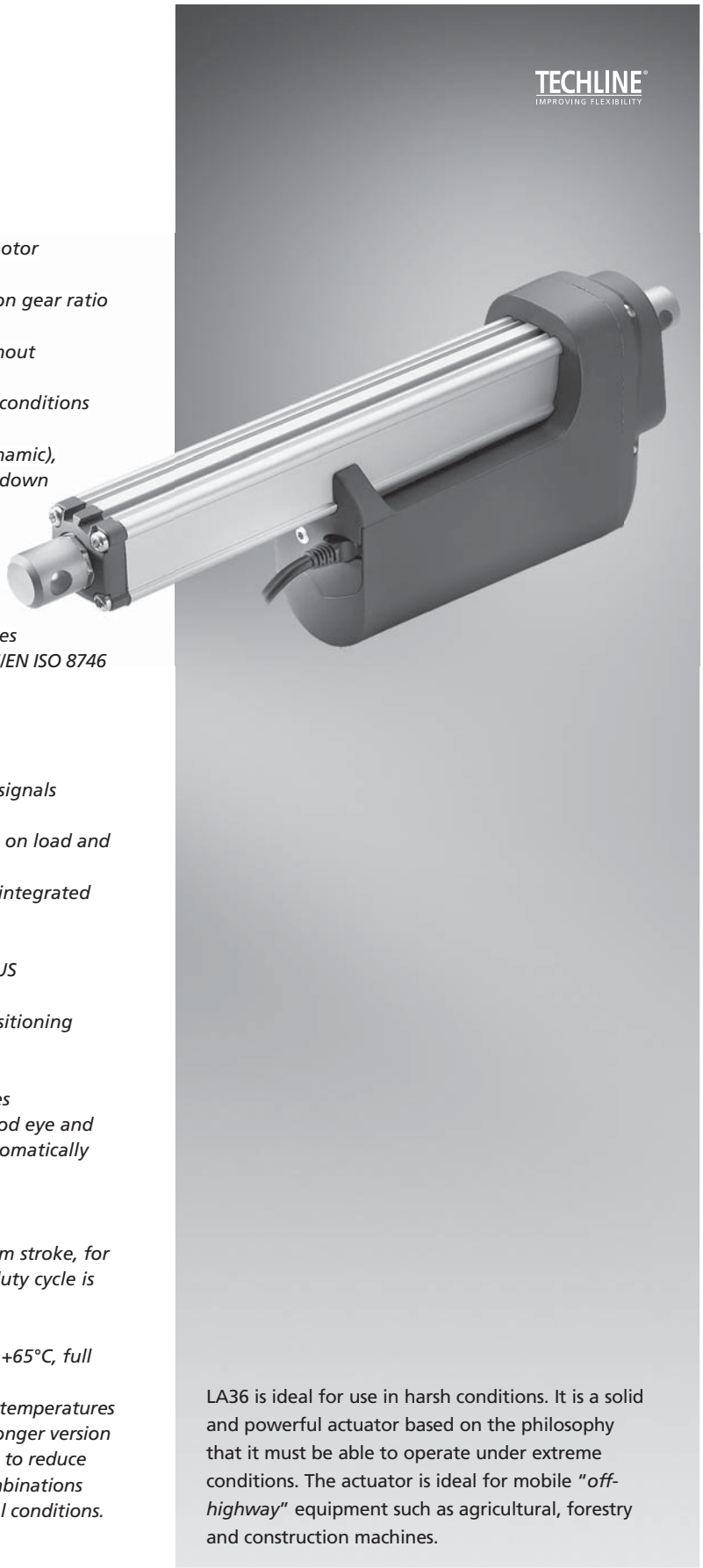
PRODUCT DATA SHEET

ACTUATOR LA36



Features:

- *12, 24 or 36 V DC Permanent magnetic motor (IC only 12/24 V DC)*
- *Thrust from 500 N - 10.000 N depending on gear ratio and spindle pitch*
- *10.000 N actuator cannot be ordered without electrical endstop*
- *Heavy duty aluminium housing for harsh conditions*
- *Highly efficient acme thread spindle*
- *Protection class: IP66 for outdoor use (dynamic), furthermore the actuator can be washed down by a high pressure cleaner (IP69K – static)*
- *Hand crank for manual operation*
- *Integrated brake, high self-lock ability*
- *Endplay – 2 mm max.*
- *Non rotating piston rod eye*
- *Back fixture turnable in steps of 30 degrees*
- *Noise level: 73dB (A) measuring method DS/EN ISO 8746 actuator not locked*

Options in general:

- *Built in endstop switches*
- *Adjustable magnetic sensors for endstop signals (code no. 1017031)*
- *Max. speed up to 160 mm/sec. depending on load and spindle pitch*
- *Mechanical overload protection through integrated slip clutch*
- *Hall effect sensor*
- *iFLEX options including IC, Parallel and BUS*
- *Mechanical potentiometer (not with IC)*
- *Analog or digital feedback for precise positioning*
- *Endstop signals (not potential free)*
- *Exchangeable cables in different lengths*
- *Different back fixtures and piston rod eyes*
- *When ordering AISI (304 and up) piston rod eye and back fixture, stainless steel screws are automatically included*

Usage:

- *Duty cycle at max. load 20% (up to 600 mm stroke, for strokes between 601- 999 mm the max. duty cycle is 15%) at ambient temperature 25°C. N.B. 10.000N 5% duty cycle.*
- *Ambient operating temperature -30°C to +65°C, full performance from 5 - 40°C*
- *For applications operated at constant low temperatures it might be beneficial to recommend a stronger version of the LA36. This recommendation is done to reduce the current consumption that in some combinations can be up to 3 times higher than at normal conditions. See TRD4187 and TRD4262*

LA36 is ideal for use in harsh conditions. It is a solid and powerful actuator based on the philosophy that it must be able to operate under extreme conditions. The actuator is ideal for mobile "*off-highway*" equipment such as agricultural, forestry and construction machines.

iFLEX Integrated Flexibility

iFLEX is a descriptive term under which every **TECHLINE®** actuator with built-in intelligence is unified.

For more information on iFLEX, please see: www.linak.com/techline

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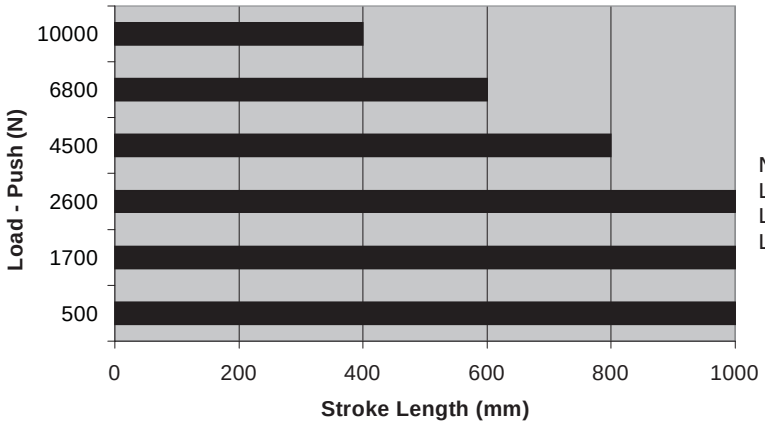
LA36 Load versus Stroke Length



N.B.
LA36 500 - 1.700 N is with 20 mm spindle pitch
LA36 500 - 6.800 N is with 12 mm spindle pitch
LA36 500 - 10.000 N is with 8 mm spindle pitch

- For applications that only operate in pull the limitations are 999 mm stroke and 10,000 N load.
- **The Piston Rod Eye is only allowed to turn 0-90 degrees**
- Safety factor 2

Technical specifications

LA36 with 12V 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 50 mm	Typical amp. (A) 12 V	
						No	Full		No load	Full load
36080xxxxxxAxxxxHxxxxxxxxxxx	10000	10000	13000	13000	8	11	7	100 - 999*	4.5	22
36120xxxxxxAxxxxFxxxxxxxxxxx	2600	2600	3400	3400	12	40.7	30.6	100 - 999	4.5	21
36120xxxxxxAxxxxGxxxxxxxxxxx	4500	4500	5800	5800	12	23.1	17.8	100 - 999*	4.5	20.7
36120xxxxxxAxxxxHxxxxxxxxxxx	6800	6800	8800	8800	12	15.5	11.9	100 - 999*	4.5	21
36200xxxxxxAxxxxFxxxxxxxxxxx	1700	1700	2200	2200	20	68	52	100 - 999	4.5	22
36200xxxxxxAxxxxExxxxxxxxxxx	500**	500**	1000	1000	20	160	135	100 - 999	4.5	20

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 50 mm	Typical amp. (A) 24 V	
						No	Full		No load	Full load
36080xxxxxxBxxxxHxxxxxxxxxxx	10000	10000	13000	13000	8	11	7	100 - 999*	2.4	10.4
36120xxxxxxBxxxxFxxxxxxxxxxx	2600	2600	3400	3400	12	41	32.3	100 - 999	2.4	10.4
36120xxxxxxBxxxxGxxxxxxxxxxx	4500	4500	5800	5800	12	23.3	18.9	100 - 999*	2.4	10.2
36120xxxxxxBxxxxHxxxxxxxxxxx	6800	6800	8800	8800	12	15.7	12.7	100 - 999*	2.4	10.3
36200xxxxxxBxxxxFxxxxxxxxxxx	1700	1700	2200	2200	20	68	52	100 - 999	2.4	10.3
36200xxxxxxBxxxxExxxxxxxxxxx	500**	500**	1000	1000	20	160	135	100 - 999	2.4	10.0

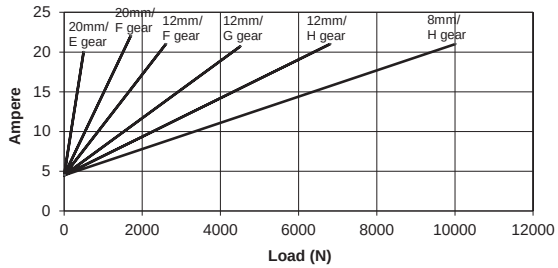
LA36 with 36V motor

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 50 mm	Typical amp. (A) 36 V	
						No	Full		No load	Full load
36080xxxxxxCxxxxHxxxxxxxxxxx	10000	10000	13000	13000	8	11	7	100 - 999*	2.0	8.0
36120xxxxxxCxxxxFxxxxxxxxxxx	2600	2600	3400	3400	12	41	33.5	100 - 999	2.0	8.0
36120xxxxxxCxxxxGxxxxxxxxxxx	4500	4500	5800	5800	12	23.3	19.1	100 - 999*	2.0	8.0
36120xxxxxxCxxxxHxxxxxxxxxxx	6800	6800	8800	8800	12	15.7	12.8	100 - 999*	2.0	8.0
36200xxxxxxCxxxxFxxxxxxxxxxx	1700	1700	2200	2200	20	68	52	100 - 999	2.0	8.0
36200xxxxxxCxxxxExxxxxxxxxxx	500**	500**	1000	1000	20	160	135	100 - 999	2.0	8.0

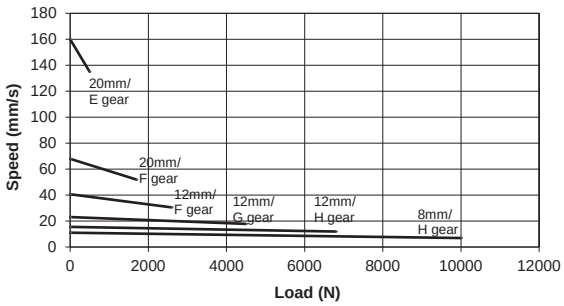
* There are limitations on the stroke length if you need full load, please see " LA36 Load v. Stroke Length"
** Note: Fully loaded actuators need a softstart in order to prevent the clutch from slipping when starting (see curves).
** Note: Or available with iFLEX.

Speed and current curves:

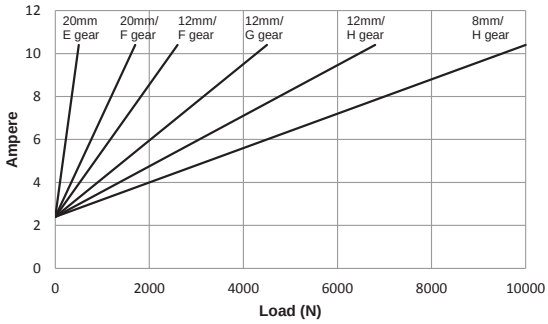
LA36 12V motor current vs. load



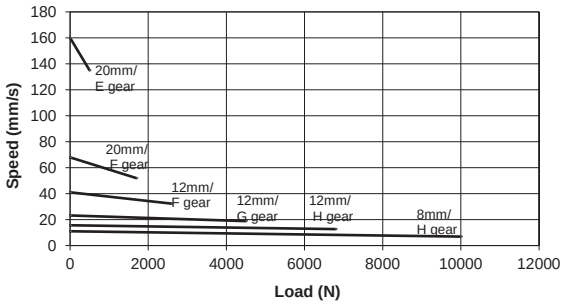
LA36 12V motor speed vs. load



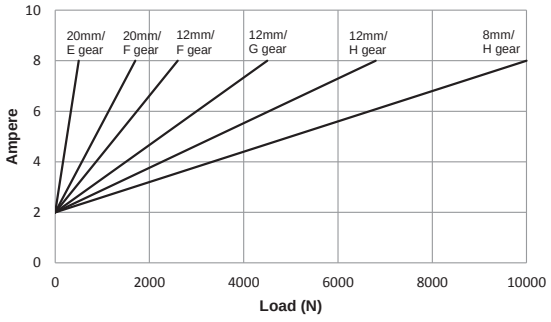
LA36 24V motor current vs. load



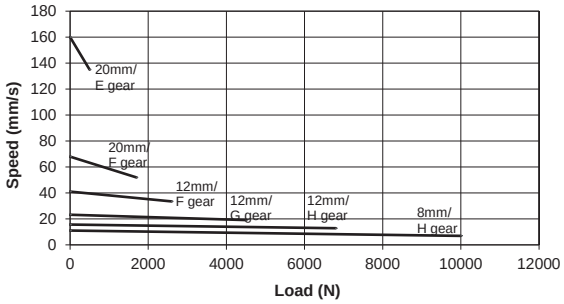
LA36 24V motor speed vs. load



LA36 36V motor current vs. load



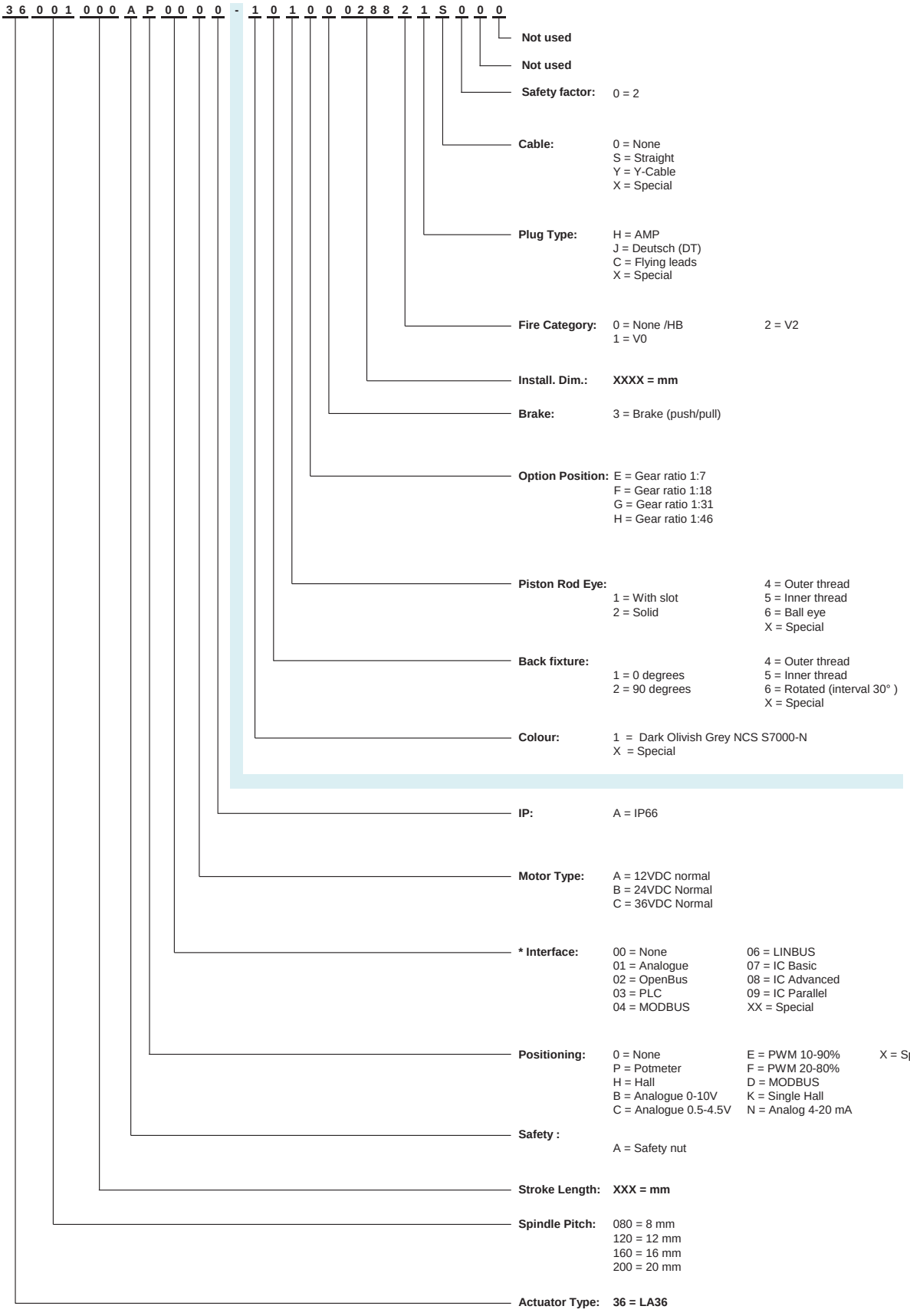
LA36 36V motor speed vs. load



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

Speed and current are based on a nominal power supply of 12, 24, 36VDC.

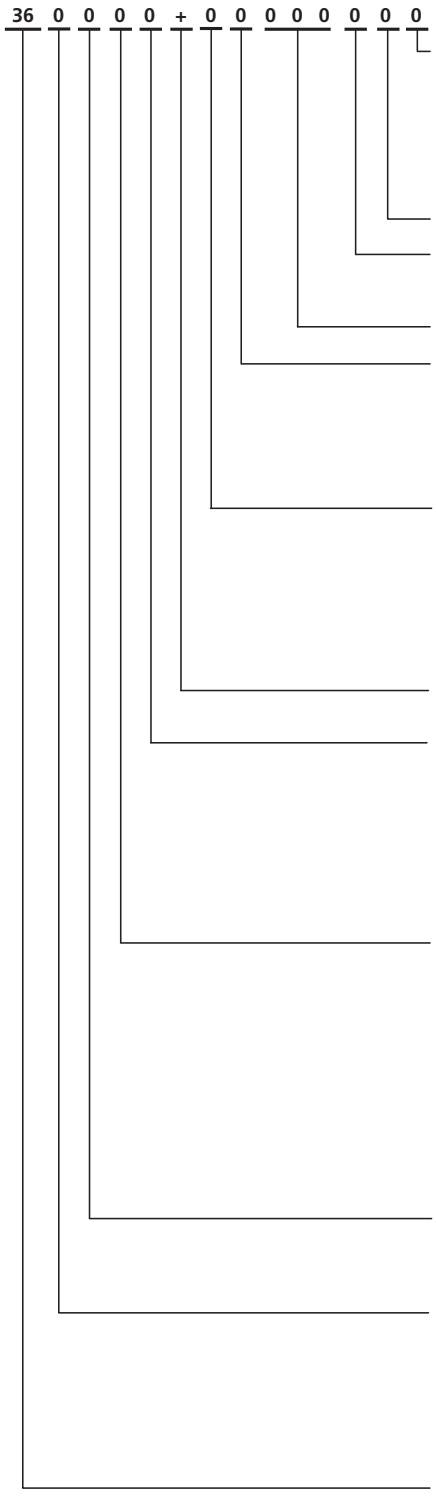
LA36
Ordering example Econ:



*

iFLEX options:	IC	LINbus	Modbus	Parallel
LA36 actuator:	✓	✓	✓	✓

LA36
Ordering example:



Cable:

0 = No cable	
1 = 1,5 m power cable	(0367046-1500)
2 = 5 m power cable	(0367046-5000)
3 = 0,2 m power cable with AMP connector	(0367006)
4 = 1,5 m power and 1,5 signal	(0367046-1500+0367049-1500)
5 = 5 m power and 5 m signal	(0367046-5000+0367049-5000)
6 = 1,5 m Y-cable, power and signal in one	(0367020)
7 = 5 m power Cable + Data cable M12x1	(Bus)

IP-degree: 2 = Standard (IP66)

Motor type:
A = 12 V DC with clutch
B = 24 V DC with clutch
C = 36 V DC with clutch

Stroke length: XXX = mm — Acme spindle: 100, 150....999 mm

Feedback:

0 = Standard (No feedback)	**IFLEX feedback**
Standard feedback	D = Bus
B = Analogue feedback 0 - 10V	1 = Single Hall
C = Analogue feedback 0.5 - 4.5V	2 = Analogue feedback 0 - 10V
H = Dual Hall	3 = Analogue feedback 0.5 - 4.5V } Magnet
P = Potentiometer	4 = Feedback 4-20mA
	5 = PWM 10-90%
	6 = PWM 20-80%

End stop:

0 = Without limt switches	
1 = With limt switches	
2 = With limt switches and endstop signals	
3 = CS36	
4 = CS36 with endstop signals	
5 = With potential free limt switches	
7 = IC Basic	A = Modbus
8 = IC Advanced	B = Linbus
9 = IC Parallel	

Safety nut:
+ = Standard
S = With safety nut - only in push

Piston rod eye:

0 = M20 X 1 female adapter	0361016
1 = ø 12,9 mm hole, for 1/2" pin	0361018-B
2 = ø 12,2 mm hole, for 12 mm pin	0361109-B
3 = M12 X 1,75 male adapter	0361224
4 = M16 X 1,5 male adapter	0361135
5 = ø 12,2 hole with slide (Like LA34)	0361138
A = ø 12,2 hole with slide AISI 304	0361260
B = ø 12,9 hole with slide AISI 304	0361275
C = ø 12 H7 Ledøje AISI 304	0361350
D = ø 16 H7 Ledøje AISI 304	0361351

Back fixture:

0 = M20 X 1 female adapter	0361128
1 = ø 12,9 mm hole, for 1/2" pin	0361129
2 = ø 12,9 mm hole turned 90°, for 1/2" pin	0361129
3 = ø 12,2 mm hole, for 12 mm pin	0361119
4 = ø 12,2 mm hole turned 90°, for 12 mm pin	0361119
5 = M12 X 1,75 male adapter	0361126
6 = M16 X 1,5 male adapter	0361247
7 = ø 12,2 hole with slide (Like LA34)	0361140
8 = ø 12,2 hole with slide (LA34) turned 90°	0361140
A = ø 12,2 hole with slide AISI 304	0361261
B = ø 12,2 hole with slide AISI 304 turned 90°	0361261
C = ø 12,9 hole with slide AISI 304	0361276
D = ø 12,9 hole with slide AISI 304 turned 90°	0361276

Gearbox:

	8 mm pitch	12 mm pitch	20 mm pitch
A = Gear ratio 1 : 18	N.A.	2.600 N	1.700 N
B = Gear ratio 1 : 31	N.A.	4.500 N	2.400 N
C = Gear ratio 1 : 46	10.000 N	6.800 N	N.A.
F = Gear ratio 1 : 7	N.A.	N.A.	500 N

Spindle type:

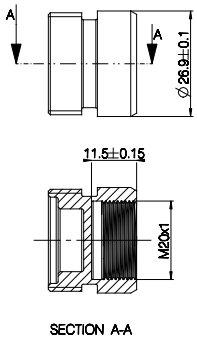
1 = 1-threaded acme spindle	(2.5 mm pitch)
2 = 2-threaded acme spindle	(8 mm pitch)
3 = 3-threaded acme spindle	(12 mm pitch)
4 = 4-threaded acme spindle	(16 mm pitch)
5 = 5-threaded acme spindle	(20 mm pitch)
A = 2 + adjustable reed limit switches	(on outer tube)
C = 3 + adjustable reed limit switches	(on outer tube)
D = 4 + adjustable reed limit switches	(on outer tube)
E = 5 + adjustable reed limit switches	(on outer tube)

Actuator type: 36 = LA36

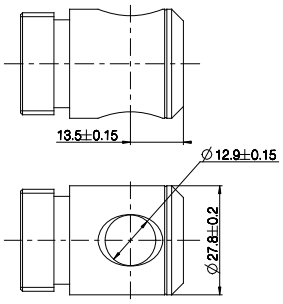
When ordering standard stroke length with endstop 1, 2, 3 or 4 the stroke length will be up to 4 mm shorter.

LA36 Piston Rod Eye

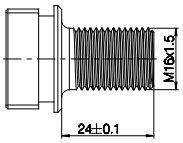
Option "0"
LINAK P/N: 0361016



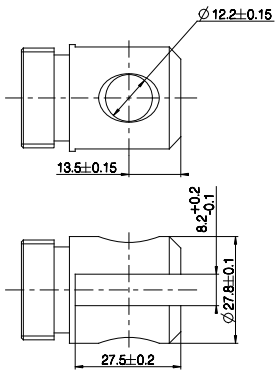
Option "1"
LINAK P/N: 0361018



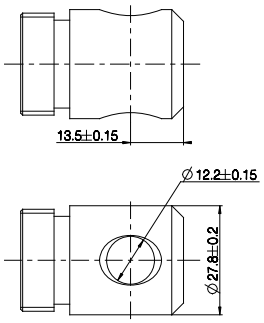
Option "4"
LINAK P/N: 0361135



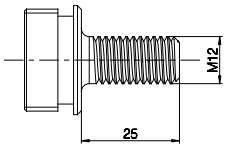
Option "5"
LINAK P/N: 0361138



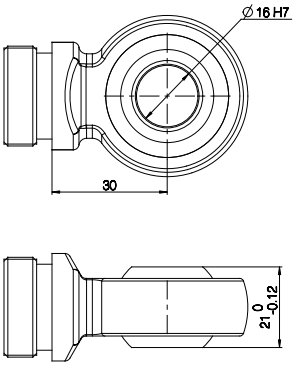
Option "2"
LINAK P/N: 0361109



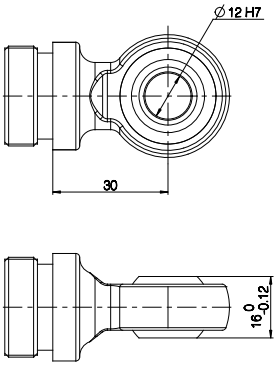
Option "3"
LINAK P/N: 0361224



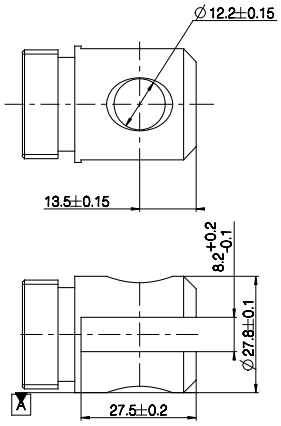
Option "D"
LINAK P/N: 0361351



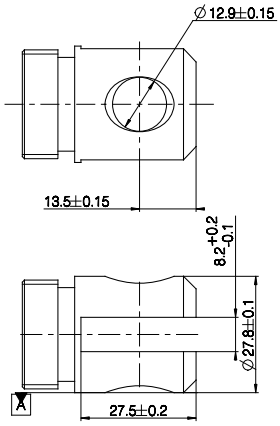
Option "C"
LINAK P/N: 0361285
10KN = Max. load 6800 N in pull



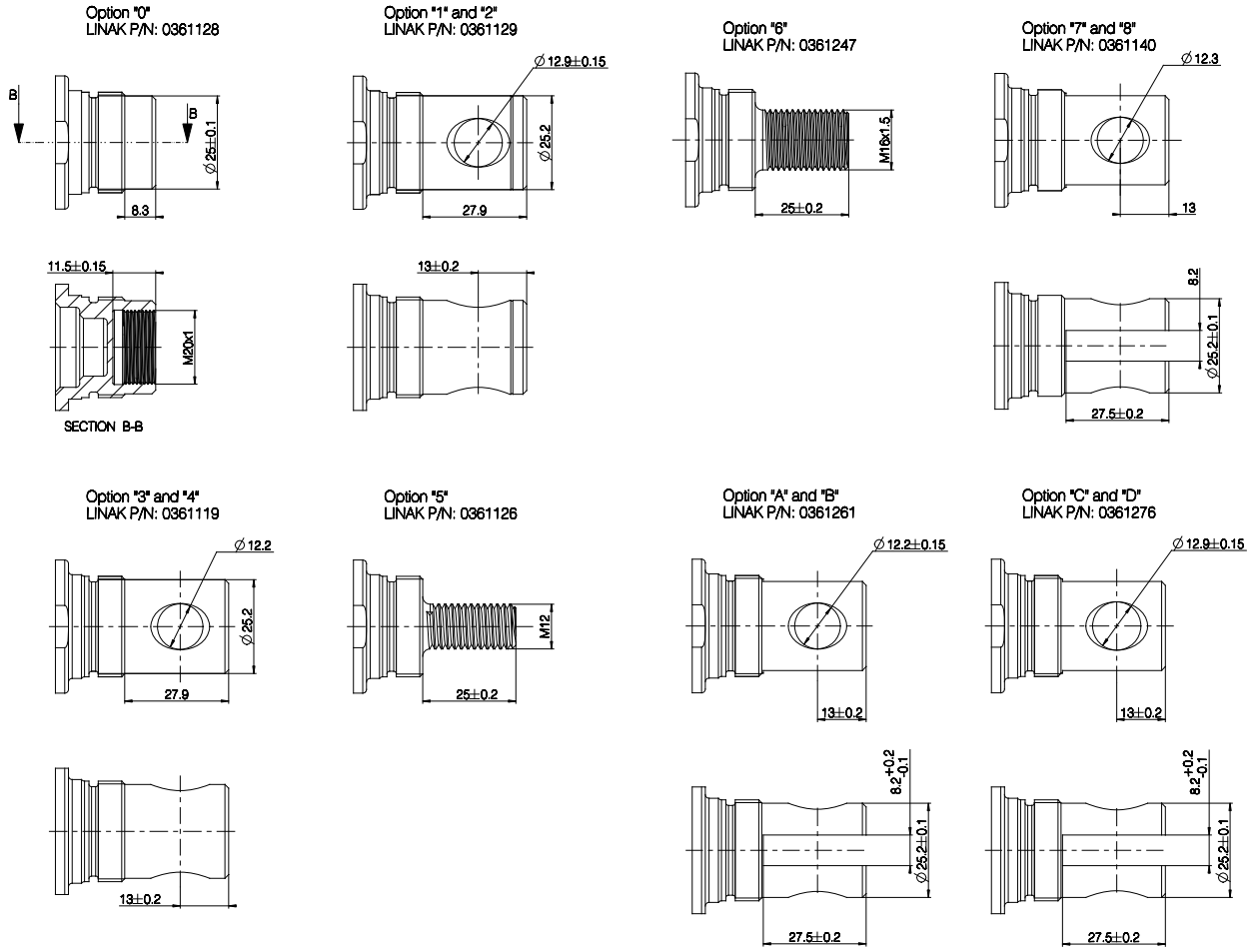
Option "A"
LINAK P/N: 0361260



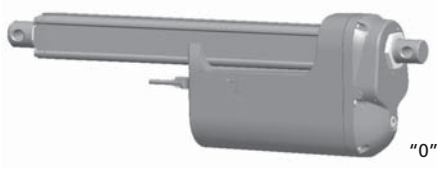
Option "B"
LINAK P/N: 0361275

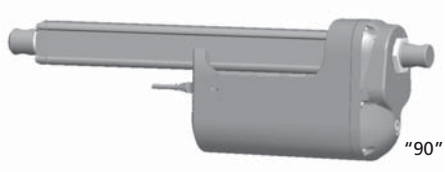


LA36 Back Fixture



LA36 Back Fixture Orientation


"0" Degrees


"90" Degrees


"30" Degrees

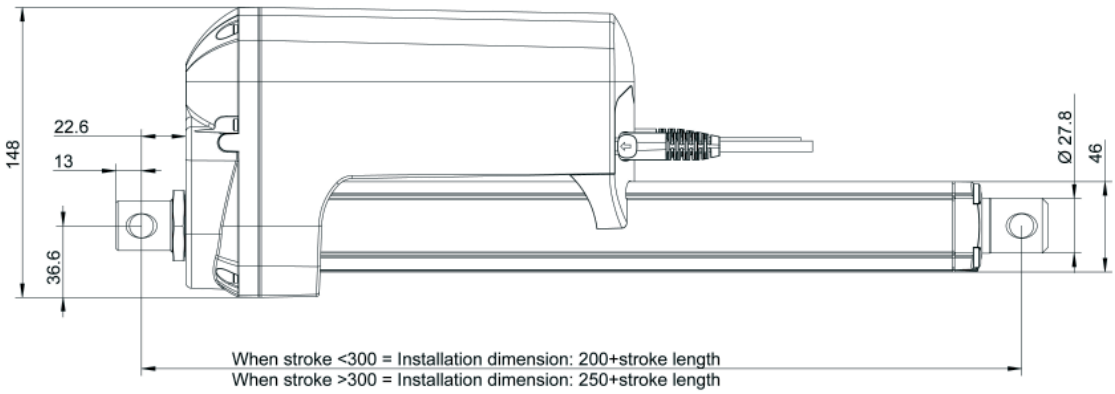

"60" Degrees

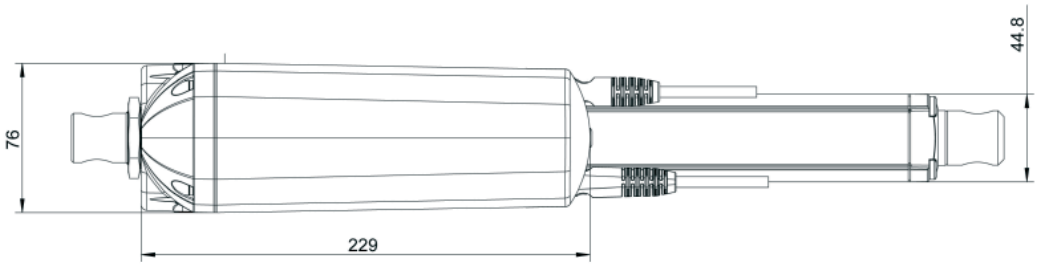

"120" Degrees


"150" Degrees

NB. All with tolerance of ±4°

LA36 built-in dimensions:





I/O specifications: Power supply - Motor.

Item	Specification	Comment
Power supply		
Input voltage	12 VDC, ± 20% 24 VDC, ± 10% 36 VDC, ± 10%	Cable dimension: 2 x 2.2 mm² (2 x AWG14) for all different voltages.
Duty cycle	20% at max. load	Ambient temperature 25° C
Current consumption	2 - 23 Amp. depending on load and voltage (see graphs)	
Connection	To extend actuator: Connect Brown to positive Connect Blue to negative To retract actuator: Connect Brown to negative Connect Blue to positive	Actuator direction can be controlled with a double-throw switch with the middle position *"off"*. Please note that for all iFLEX options the power supply must NOT be switched between plus and minus for extending or retracting the actuator.

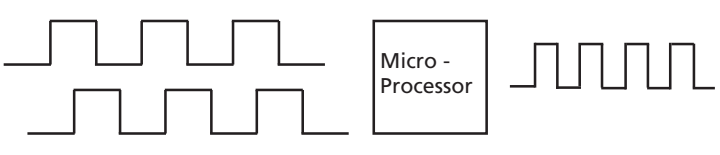
** For differentiated duty cycle see "Usage"*

Positioning feedback – Potentiometer.

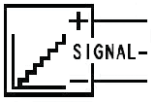
Item	Specification	Comment
Absolute positioning		
Potentiometer	Bourns 0-10 K ohm A 5%, 10-Turn	Type: 3540 Wirewound
Output range with 8 mm spindle pitch	0 K ohm = 0 mm stroke 10 K ohm = 333 mm stroke	The same for all LA36 8 mm models.e.g. 166.6 mm stroke = 5 Kohm.
Output range with 12 mm spindle pitch	0 K ohm = 0 mm stroke 10 K ohm = 500 mm stroke	The same for all LA36 12 mm models.e.g. 250 mm stroke = 5 Kohm.
Output range with 20 mm spindle pitch	0 K ohm = 0 mm stroke 10 K ohm = 833 mm stroke	The same for all LA36 20mm models.e.g. 416.5 mm stroke = 5 Kohm.
Linearity	± 0.25%	
Output protection	1 Kohm protection resistor	
Connection	Common - = Black +10V exitation = White 0 = 10V out = Violet	+10V or other value

NOTE: Please note that Potentiometer is not possible on varients with fast gear (Spindle pitch 20 mm, H Gear).

Positioning feedback – Hall sensors

Item	Specification	Comment
Relative positioning		
Signal description	Can be used for positioning.	
Input Voltage	12 – 36 V DC	Cable dimension: 6 x 0.5 mm² (6 x AWG20) for all different voltages.
Output voltage	Always the same as input voltage Note: max. output voltage 24V DC 12V : 11V ± 1V 24V : 23V ± 1V 36V : 35V ± 1V	
Resolution (Distance the piston rod moves per count)	LA362C: Actuator = 0.1 mm per count LA363C: Actuator = 0.2 mm per count LA363B: Actuator = 0.3 mm per count LA363A: Actuator = 0.4 mm per count LA365A: Actuator = 0.7 mm per count Movement per single Hall pulse: LA362C Actuator = 0.4 mm per pulse LA363C Actuator = 0.7 mm per pulse LA363B Actuator = 1.0 mm per pulse LA363A Actuator = 1.7 mm per pulse LA365A Actuator = 2.9 mm per pulse	The Hall sensor signals are generated by the turning of the actuator gearing. These signals can be fed into PLC. The PLC quadrature signals (fig. 1 below) can be used to register position of the piston rod. N.B. For more precise measurements, please contact LINAK A/S.
Frequency	Frequency is 14-26 Hz on XOR output depending on load. Every pulse is "ON" for 10 ms	Low frequency with a high load.Higher frequency with no load.
Current consumption (standby)	15 mA	When actuator is not running.
Switching capacity	Max. 12 mA	Max. 680n F
Connection	XOR Hall output = Purple Signal GND = White	
Diagram of Single Hall:	 Fig. 1	

I/O Specifications: Analogue feedback.

Item	Specification	Comment
Description	The actuator can be equipped with electronic circuit that gives an analog feedback signal when the actuator moves	
Input voltage	12 - 36 V DC	Feedback circuit to be powered 1 second before motor runs, and until 1 second after the motor has stopped. Cable dimension 6 x 0,5 mm^2 (6 x AWG20)
Output voltage	0 -10 V (Option B) 0V = Fully retracted 10V = Fully extended 0,5 - 4,5V (Option C) 0,5V = Fully retracted 4,5V = Fully extended	+/- 0.2 V
Current consumption	Max. 40 mA	Also when actuator is not running
Connection	Supply: Brown Supply : Blue Signal power: White Signal: Purple Signal GND: Black	Use cable 0367003-XXXX
Combinations	The Absolute positioning must be combined with limit switches. Can be combined with endstop signal.	

Note: It is recommendable to have the actuator to activate its limit switches on a regular basis.
Endstop signal: max 20 mA available.

I/O Specification: IC (Basic and Advanced)

Item	Specification	Comment
Description	Easy to use interface with integrated power electronics (H-bridge) for direct IC connection. Soft start of the actuator	
Power supply		
Input voltage	12VDC ± 20% 24VDC ± 10%	Cable dimension 2 x 2 mm^2 (2 x AWG14) for all voltages
Current consumption	12V, 4-26A depending on load 24V, 2-13A depending on load	
Duty cycle	20% at maximum load	
Power connection	Connect Brown to positive Connect Blue to negative	
Input: Signals to the actuator		
Outwards direction	Extends the actuator FW - Red (Pin 2)	
Inwards direction	Retracts the actuator BW - Black (Pin 1)	
On/off voltages	> 67% of V_{IN} = ON < 33% of V_{IN} = OFF	
Input current	> 10 mA	
Current consumption (standby)	70 mA	When actuator is not running.
Output: Signals from the actuator		
Signal GND	Minimising signal noise	To be used with all signal outputs
Actuator fully extended (OUT)	Signal when endstop switch in extended position is activated IN = Yellow (Pin 5)	Source current max. 100 mA Output voltage min. V_{IN} - 1V
Actuator fully retracted (IN)	Signal when endstop switch in retracted position is activated OUT = Green (Pin 6)	

Feedback: IC (Basic)

Item	Specification	Comment
Feedback, Hall	Single Hall signal	XOR: See fig. 1, page 9
Feedback, Voltage	0 - 10V / 0.5 - 4.5V	Ripple max. 200mV Transaction delay max. 20ms Linear feedback 0.5% Source current max. 1mA
Output voltage	Typical: Input voltage -1V	Example on 24V version: Output voltage on IN = 23V (± 0.5V) Output voltage on OUT = 23V (± 0.5V)
Connection		See User manual

Feedback: IC (Advanced).

Item	Specification	Comment
Feedback, PWM	Frequency: Up to 200 Hz ± 5Hz Duty cycle: Any low/high combination between 0 and 100 percent	Output voltage: (V_{IN} - 1V) ± 1V Open Drain source current max. 12 mA
Feedback, Hall	Single Hall signal	XOR: See fig. 1, page 9
Feedback, Voltage	Any low/high voltage combination between 0 and 10 volts	Ripple max. 200 mV Transaction delay max. 20 ms Linear feedback 0.5%
Feedback, Current	Any low/high current combination between 4 and 20 mA	Transaction delay max. 20 ms Linear feedback 0.5% Source
Connection		See user manual

I/O Specification: Parallel

Item	Specification	Comment
Description	The parallel drive option supports up to 8 actuators	
Power supply	12 V DC ± 20% 24 V DC ± 10%	Cable dimension 2 x 2 mm^2 (2 x AWG14) for all voltages
Current consumption	12 V, 4 - 26 A depending on load 24 V, 2 - 13 A depending on load	Consumption per actuator
Feedback	No feedback available during parallel drive	
Power connections	Black (Pin 1): Enable backward (Master) Red (Pin 2): Enable forward (Master) White (Pin 3): Signal GND Purple (Pin 4): Inter communication Yellow (Pin 5): Endstop signal out Green (Pin 6): Endstop signal in	Cable dimension 6 x 0.5 mm^2 (6 x AWG20) See user manual

Environmental test – Climatic

Test	Specification	Comment	TRD number
Cold test	EN60068-2-1 (Ab)	Storage at low temperature: Temperature: -40°C Duration: 72h Not connected Tested at room temperature.	TRD0509
	EN60068-2-1 (Ad)	Operating at low temperature: Temperature: -30°C Duration: 2h Actuator is not activated/connected Tested at low temperature.	TRD0509
Dry Heat	EN60068-2-2 (Bb)	Storage at high temperature: Temperature: +90°C Duration: 72h Actuator is not activated/connected. Tested at room temperature	TRD0510
		Storage at high temperature: Temperature: +70°C Duration: 1000h Actuator is not activated/connected Tested at high temperature.	TRD0507
	EN60068-2-2 (Bd)	Operating at high temperature: Temperature: +60°C Int. max. 17% Duration:700h Actuator is activated Tested at high temperature.	
Change of temperature	EN60068-2-14 (Na)	Rapid change of temperature: High temperature: +100°C in 60 minutes. Low temperature: -30°C in 60 minutes. Transition time:<10 seconds Duration: 100 cycles Actuator is not activated/connected. Tested at room temperature.	TRD0501
	EN60068-2-14 (Nb)	Controlled change of temperature: Temperature change 5°C pr. minute High temperature: +70°C in 60 minutes. Low temperature: -30°C in 30 minutes. 130 minutes pr. Cycle. Duration: 1.000 cycles (90days) Actuator is not activated/connected. Tested at 250, 500 and 1.000 cycles at low and high temperatures.	TRD0508
Damp heat	EN60068-2-30 (Db)	Damp heat, Cyclic: Relative humidity: 93-98% High temperature: +55°C in 12 hours Low temperature: +25°C in 12 hours Duration: 21cycles * 24hours Actuator is not activated/connected Tested within 1 hour after condensation, That means after upper temperature has been reached.	TRD0505
	EN60068-2-3 (Ca)	Damp heat, Steady state: Relative humidity: 93-95% Temperature: +40 ±2°C Duration: 56 days Actuator is not activated/connected. Tested within one hour after exposure.	TRD0518
Salt mist.	EN60068-2-52 (Kb)	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	TRD0506

Degrees of protection	EN60529 – IP66	<u>IP6X - Dust:</u> Dust-tight, No ingress of dust. Actuator is not activated.	TRD0514
		<u>IPX6 – Water:</u> Ingress of water in quantities causing harmful effects is not allowed. Duration: 100 litres pr. minute in 3 minutes Actuator is not activated.	TRD0513
		<u>IPX6 –Connected actuator:</u> Actuator is driving out and in for 3 min. 100(l/min) jet of water is placed at the wiper ring for 3 (min).	TRD0513
	DIN40050 – IP69K	<u>IPX6 –Connected actuator and push 6800 (N)</u> Actuator is driving out and in for 3 min. and Push 6800(N) at the end-pos. 100 (l/min.) jet of water is placed at the wiper ring for 3 min.	TRD0513
		<u>High pressure cleaner:</u> Water temperature: +80°C Water pressure: 80 bar Spray angle: 45° Spray distance: 100mm Duration: From any direction 10 seconds of spraying followed by 10 seconds rest. Actuator is not activated. Ingress of water in quantities causing harmful effects is not allowed.	TRD0512
	DUNK test	The actuator has been warmed up to 115°C for 20 hours. After this it is cooled down in 20°C saltwater. Cooling time: 5 minutes Opened for checking salt deposit and water.	TRD0515
Chemicals	BS7691 / 96hours	Diesel 100% Hydraulic oil 100% Ethylene Glucol 50% Urea Nitrogen saturated solution Liquid lime 10% (Super- Cal) NPK Fertilizer (NPK 16-4-12) saturated Tested for corrosion.	TRD0525

Environmental test - Mechanical

Test	Specification	Comment	TRD number
Free fall		Free fall from all sides: Height of fall: 0.4 meter onto steel. Actuator not activated/connected.	TRD0511
Vibration	EN60068-2-36 (Fdb)	Random vibration: Short time test:6.29g RMS Actuator is not connected Long time test: 7.21g RMS Actuator is not connected Duration: 2 hours in each direction	TRD0502
	EN 60068-2-6 (Fc)	Sinus vibration: Frequency 5-25Hz: Amplitude = 3.3mm pp Frequency 25-200Hz: Acceleration 4g Number of directions: 3 (X-Z-Y) Duration: 2 hours in each direction. Actuator is not activated	TRD0517
Bump	EN60068-2-29 (Eb)	Bump test: Level: 40g Duration: 6 milliseconds Number of bumps: 500 shocks in each of 6 directions. Actuator is not connected.	TRD0503
Shock	EN60068-2-27 (Ea)	Shock test: Level: 100g Duration: 6 milliseconds Number of bumps: 3 shocks in each of 6 directions. Actuator is not connected.	TRD0504

Environmental test - Electrical

Test	Specification	Comment	TRD number
Power supply	ASAE EP455 (1990)	Operating voltages +10V - +16V Over voltage +26(V) / 5min. Reverse polarity –26(V) / 5min. Short circuit to ground 16 (V) / 5 min. Short circuit to supply 16(V) / 5 min.	TRD0522
HF-immunity	EN61000-6-2	Level: 30 V/m. at 26 MHz – 1000 mHz 80% 1 KHz	TRD0516
Emmision	EN61000-6-4	Level is inside limits for 12 V motor	TRD0516
Insulation test		Level: 500 VAC/25-100hz for 1 minute	TRD0516
Automotive transients	ISO 7637	Load dump test only accepted on motor power connection.	TRD0521

Manual hand crank

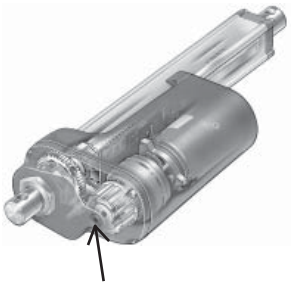
The manual hand crank can be used in the case of power failure.

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: Max.16 Nm (at maximum load)

Piston Rod movement per turn

Gear A = 10.5 mm
Gear B = 6.0 mm
Gear C = 4.0 mm
Gear F = 27 mm



Note:

- The power supply has to be disconnected during manual operation.
- If the actuator is operated as a Hand crank, it must be operated by hand or carefully by machine, otherwise there is a potential risk of overloading and hereby damaging the actuator. LA36 with CS or Modbus options only operate by hand.
- With stainless steel screws: 5 mm Allen Key