



Actuator LA25

Data sheet

LA25

With its robust design, high IP degree and aluminium housing, the actuator LA25 is ideal for harsh environments where operation under extreme conditions is required. Furthermore, the compact dimensions of the LA25 make it applicable for confined spaces.



Features:

- 12 or 24 V DC permanent magnetic motor
- Thrust from 600 N - 2500 N in push and pull
- Max. speed up to 25 mm/sec. depending on load and spindle pitch
- Stroke length from 20 - 300 mm
- Protection class: IP66 (dynamic) and IP69K (static)
- Built-in endstop switches
- Guided nut

Options in general:

- Back fixture and piston rod eye material: Steel or stainless steel
- Safety nut in push or pull (2500N version only safety nut in push)
- Exchangeable cables in different lengths up to 5 m
- Special anodised housing for extreme environments
- IECEx/ATEX certified for Zone 21
- Hall effect sensor
- Hall potentiometer
- IC options including:
 - IC - Integrated Controller
 - Integrated Parallel Controller
 - LIN bus communication and CAN bus communication
 - Analogue or digital feedback for precise positioning
 - Endstop signals
 - PC configuration tool

Usage:

- Duty cycle at is max. 20% (2 min. drive and 8 min. rest)
The duty cycles are valid for operation within an ambient temperature of +5°C to +40°C
- Ambient operating temperature: -40° to +85°C, full performance from +5°C to +40°C
- For IECEx/ATEX:
Ambient operating temperature: -25°C to +65°C

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Chapter 1

Specifications

Motor:	Permanent magnet motor 12 or 24V DC
Cable:	Motor: 8 x 18 AWG PVC cable
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
Temperature range:	- 40° C to +85° C For IECEx/ATEX: - 25° C to +65° C - 40° F to +185° F - 13° 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:	58.5 dB (A) measuring method DS/EN ISO 8746 actuator not loaded.
Safety factor:	Static safety factor: 2.0
Compatibility:	The LA25 IC is compatible with SMPS-T160 (For combination possibilities, please see the User Manual for SMPS-T160)



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

LA25 with 12V motor

Type	Push/Pull Max. (N)	Self-lock min. (N) Push/Pull				Spindle pitch (mm)	*Typical speed (mm/s)		Standard stroke length (mm)	*Typical amp. @ 12 V	
		With short circuit		Without short circuit			No load	Full load		No load	Full load
		Self-lock (N)	**Back-drive (mm)	Self-lock (N)	**Back-drive (mm)						
25030xxxxxxxxxA...	2500	2500	1	2500	1	3	3.1	2.5	20 - 300	0.8	3.8
25060xxxxxxxxxA...	1500	1500	1	1500	2	6	6.6	5.2	20 - 300	0.8	3.8
25090xxxxxxxxxA...	1200	1200	2	1200	4	9	9.9	7.5	20 - 300	0.9	4.0
25120xxxxxxxxxA...	900	900	3	900	7	12	13	9.6	20 - 300	0.9	3.8
25200xxxxxxxxxA...	600	600	5	600	12	20	25	18	20 - 300	0.9	4.0

LA25 with 24V motor

Type	Push/Pull Max. (N)	Self-lock min. (N) Push/Pull				Spindle pitch (mm)	*Typical speed (mm/s)		Standard stroke length (mm)	*Typical amp. @ 24 V	
		With short circuit		Without short circuit			No load	Full load		No load	Full load
		Self-lock (N)	**Back-drive (mm)	Self-lock (N)	**Back-drive (mm)						
25030xxxxxxxxxB...	2500	2500	1	2500	1	3	3.2	2.6	20 - 300	0.4	1.9
25060xxxxxxxxxB...	1500	1500	1	1500	2	6	6.4	5.5	20 - 300	0.4	1.9
25090xxxxxxxxxB...	1200	1200	2	1200	4	9	9.5	8.1	20 - 300	0.4	2.0
25120xxxxxxxxxB...	900	900	3	900	7	12	12.6	10.4	20 - 300	0.4	1.9
25200xxxxxxxxxB...	600	600	5	600	12	20	25	18	20 - 300	0.4	2.0

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

** The backdrive is measured with a stable power supply at an ambient temperature of 20°C after 120 seconds continuous push load.



Please note that all actuators featuring 'IC Advanced with softstop towards end stop', 'IC Parallel', 'LINBUS', 'CAN bus', IO-Link and 'MODBUS' will run at a regulated speed, which is typically around 80% of the nominal 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 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.

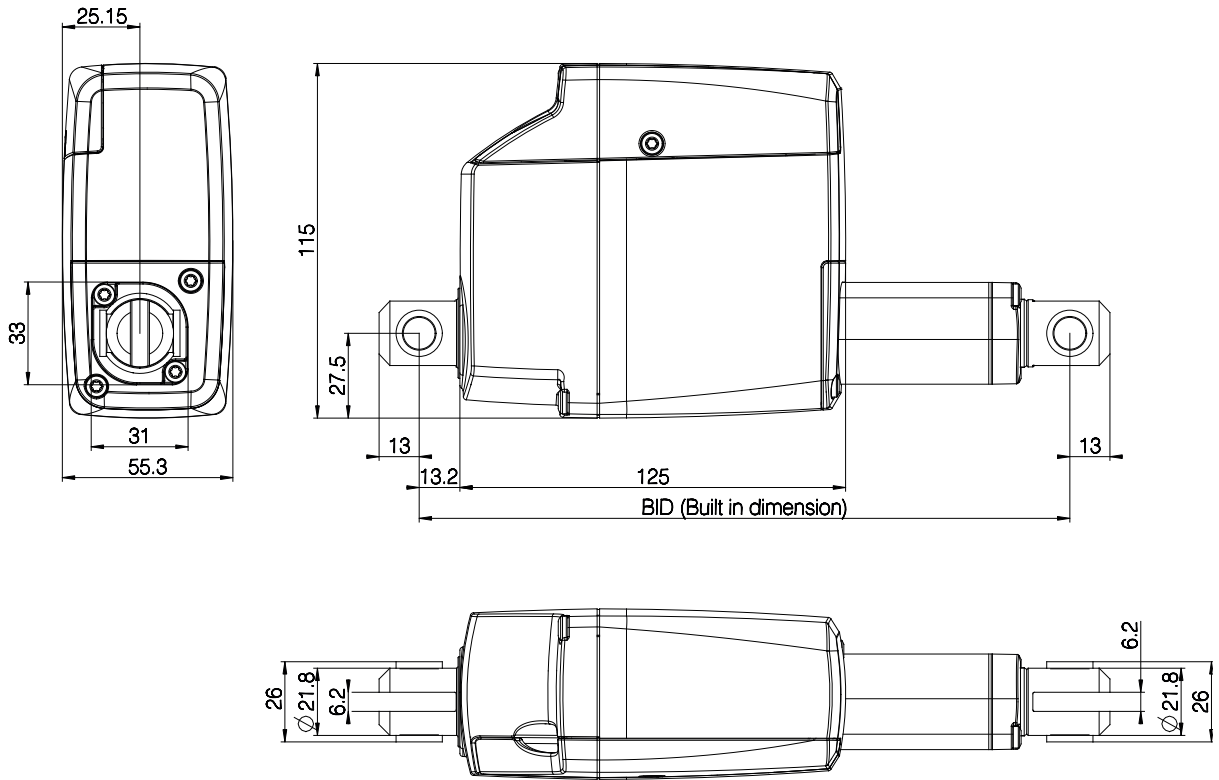
Stroke tolerances

Platform options	Descriptions	Stroke tolerance	Example for 200 mm stroke
25030/060/090/120XXXXXXXXXX0	With built-in limit switches	+ 2 / - 2 mm	198 to 202 mm
25200XXXXXXXXX0	With built-in limit switches	+ 3 / - 1 mm	199 to 203 mm
25XXXXXXXXXX3	Integrated controller	+ 1 / - 3 mm	197 to 201 mm

Built-in tolerances

Platform options	Descriptions	BID tolerance	Example for 200 mm BID
25XXXXXXXXXX	All variants	+ 2 / - 2 mm	198 to 202 mm

Dimensions



The built-in dimension depends upon the chosen safety option and stroke length (s).

				Piston rod types			
				1,2,3,4,A,B,C,D	M / from the surface	K,L / to the centre of the hole	F / from the surface
Back fixture types 1, 2, 3, 4 and A, B, C, D	Safety option	Stroke length	Spindle pitch	Min. built-in dimensions			
	No safety option	20 - 49	3	168	165	179	158
	No safety option	20 - 49	6, 9 or 12	160	157	171	150
	No safety option	20 - 48	20	160	157	171	150
	Safety nut for push	20 - 49	3	168	165	179	158
	Safety nut for push	20 - 49	6, 9 or 12	160	157	171	150
	Safety nut for pull	20 - 49	6, 9 or 12	172	169	183	162
	No safety option	50 - 200	3	118 + s	115 + s	129 + s	108 + s
	No safety option	50 - 200	6, 9 or 12	110 + s	107 + s	121 + s	100 + s
	No safety option	49 - 200	20	112 + s	109 + s	123 + s	102 + s
	Safety nut for push	50 - 200	3	118 + s	115 + s	129 + s	108 + s
	Safety nut for push	50 - 200	6, 9 or 12	110 + s	107 + s	121 + s	100 + s
	Safety nut for pull	50 - 200	6, 9 or 12	122 + s	119 + s	133 + s	112 + s
	No safety option	201 - 300	3	138 + s	135 + s	149 + s	128 + s
	No safety option	201 - 300	6, 9, 12 or 20	130 + s	127 + s	141 + s	120 + s
	Safety nut for push	201 - 300	3	138 + s	135 + s	149 + s	128 + s
	Safety nut for push	201 - 300	6, 9 or 12	130 + s	127 + s	141 + s	120 + s
	Safety nut for pull	201 - 300	6, 9 or 12	142 + s	139 + s	153 + s	132 + s

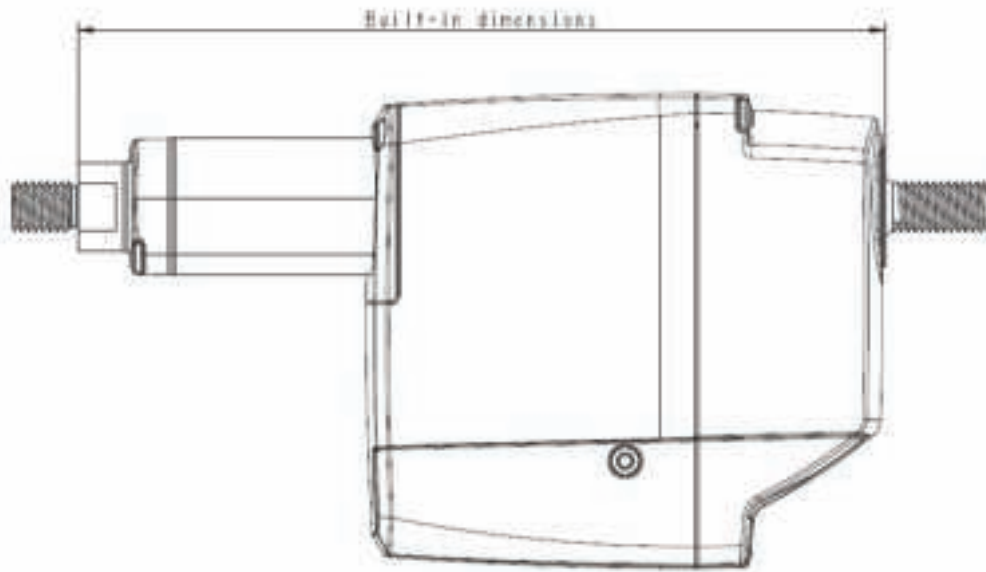
Built-in dimensions

				Piston rod types				
				1,2,3,4,A,B,C,D	M / from the surface	K,L / to the centre of the hole	F / from the surface	
Back fixture types 1, 2, 3, 4 and A, B, C, D	Safety option	Stroke length	Spindle pitch	Min. built-in dimensions				
	No safety option	20 - 49	3	168	165	179	158	
	No safety option	20 - 49	6, 9 or 12	160	157	171	150	
	No safety option	20 - 48	20	160	157	171	150	
	Safety nut for push	20 - 49	3	168	165	179	158	
	Safety nut for push	20 - 49	6, 9 or 12	160	157	171	150	
	Safety nut for pull	20 - 49	6, 9 or 12	172	169	183	162	
	No safety option	50 - 200	3	118 + s	115 + s	129 + s	108 + s	
	No safety option	50 - 200	6, 9 or 12	110 + s	107 + s	121 + s	100 + s	
	No safety option	49 - 200	20	112 + s	109 + s	123 + s	102 + s	
	Safety nut for push	50 - 200	3	118 + s	115 + s	129 + s	108 + s	
	Safety nut for push	50 - 200	6, 9 or 12	110 + s	107 + s	121 + s	100 + s	
	Safety nut for pull	50 - 200	6, 9 or 12	122 + s	119 + s	133 + s	112 + s	
	No safety option	201 - 400	3	138 + s	135 + s	149 + s	128 + s	
	No safety option	201 - 400	6, 9, 12 or 20	130 + s	127 + s	141 + s	120 + s	
	Safety nut for push	201 - 400	3	138 + s	135 + s	149 + s	128 + s	
	Safety nut for push	201 - 400	6, 9 or 12	130 + s	127 + s	141 + s	120 + s	
	Safety nut for pull	201 - 400	6, 9 or 12	142 + s	139 + s	153 + s	132 + s	
No safety option	401 - 600	3	158 + s	155 + s	169 + s	148 + s		
No safety option	401 - 600	6, 9, 12 or 20	150 + s	147 + s	161 + s	140 + s		
Safety nut for push	401 - 600	3	158 + s	155 + s	169 + s	148 + s		
Safety nut for push	401 - 600	6, 9 or 12	150 + s	147 + s	161 + s	140 + s		
Safety nut for pull	401 - 600	6, 9 or 12	162 + s	159 + s	173 + s	152 + s		

Built-in dimensions

				Piston rod types				
				1,2,3,4,A,B,C,D	M / from the surface	K,L / to the centre of the hole	F / from the surface	
Back fixture types 5, 6, 7, 8 and F, G, H, I	Safety option	Stroke length	Spindle pitch	Min. built-in dimensions				
	No safety option	20 - 49	3	174	171	185	164	
	No safety option	20 - 49	6, 9 or 12	166	163	177	156	
	No safety option	20 - 48	20	168	163	177	156	
	Safety nut for push	20 - 49	3	174	171	185	164	
	Safety nut for push	20 - 49	6, 9 or 12	166	163	177	156	
	Safety nut for pull	20 - 49	6, 9 or 12	178	175	189	168	
	No safety option	50 - 200	3	124 + s	121 + s	135 + s	114 + s	
	No safety option	50 - 200	6, 9 or 12	116 + s	113 + s	127 + s	106 + s	
	No safety option	49 - 200	20	118 + s	115 + s	129 + s	108 + s	
	Safety nut for push	50 - 200	3	124 + s	121 + s	135 + s	114 + s	
	Safety nut for push	50 - 200	6, 9 or 12	116 + s	113 + s	127 + s	106 + s	
	Safety nut for pull	50 - 200	6, 9 or 12	128 + s	125 + s	139 + s	118 + s	
	No safety option	201 - 300	3	144 + s	141 + s	155 + s	134 + s	
	No safety option	201 - 300	6, 9, 12 or 20	136 + s	133 + s	147 + s	126 + s	
	Safety nut for push	201 - 300	3	144 + s	141 + s	155 + s	134 + s	
	Safety nut for push	201 - 300	6, 9 or 12	136 + s	133 + s	147 + s	126 + s	
	Safety nut for pull	201 - 300	6, 9 or 12	148 + s	145 + s	159 + s	138 + s	

Built-in dimensions



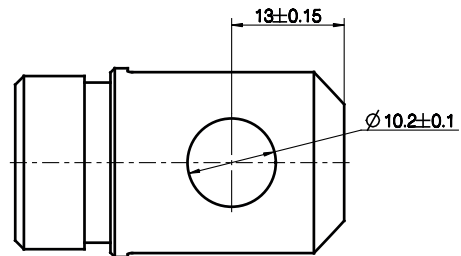
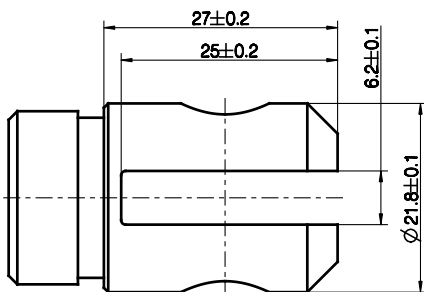
The built-in dimensions for options M and F are measured according to this illustration.

Piston Rod Eyes

Option "1" and "A"

Piston 0231033, Zinc coated steel

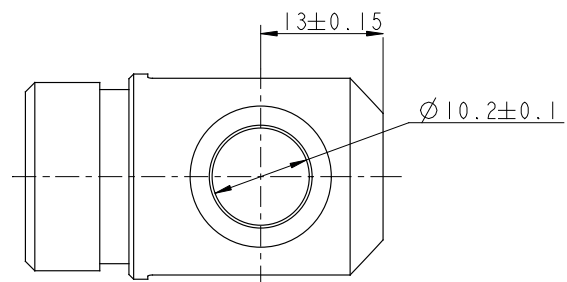
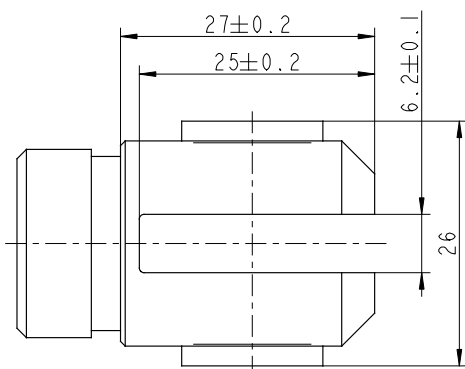
Piston 0231096, Stainless steel AISI 304



Option "2" and "B"

Piston 0231016 with bushings, Zinc coated steel

Piston 0231095 with bushings, Stainless steel AISI 304

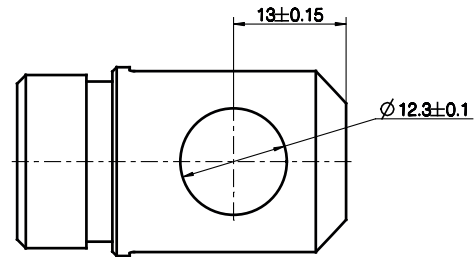
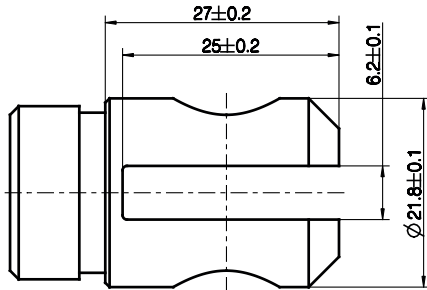


Piston Rod Eyes

Option "3" and "C"

Piston 0231016, Zinc coated steel

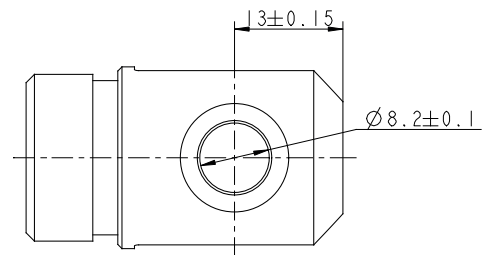
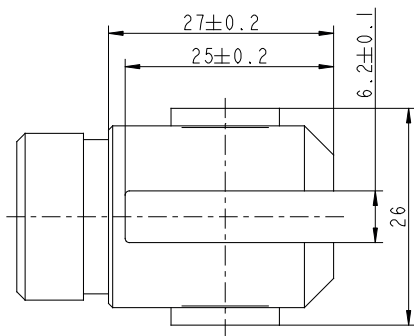
Piston 0231095, Stainless steel AISI 304



Option "4" and "D"

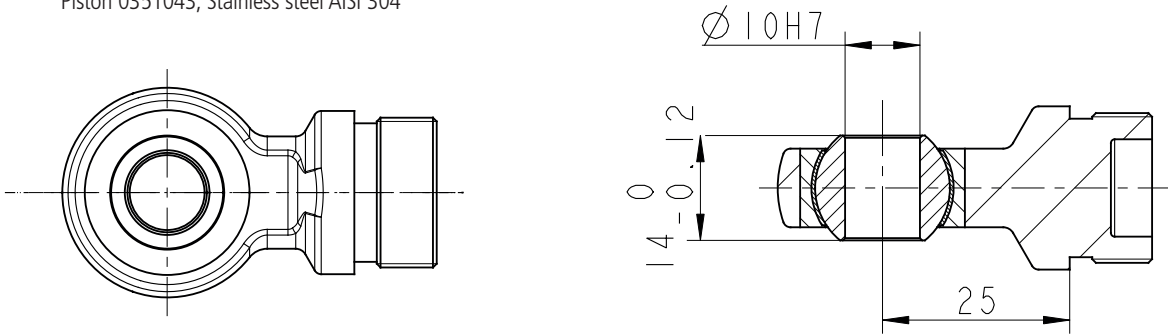
Piston 0231033 with bushings, Zinc coated steel

Piston 0231096 with bushings, Stainless steel AISI 304

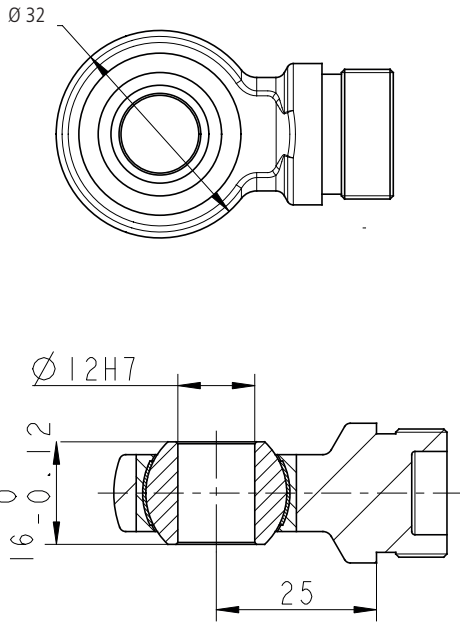


Piston Rod Eyes

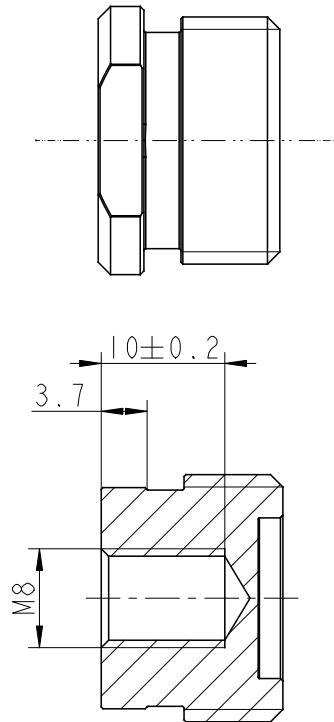
Option "K"
Piston 0351043, Stainless steel AISI 304



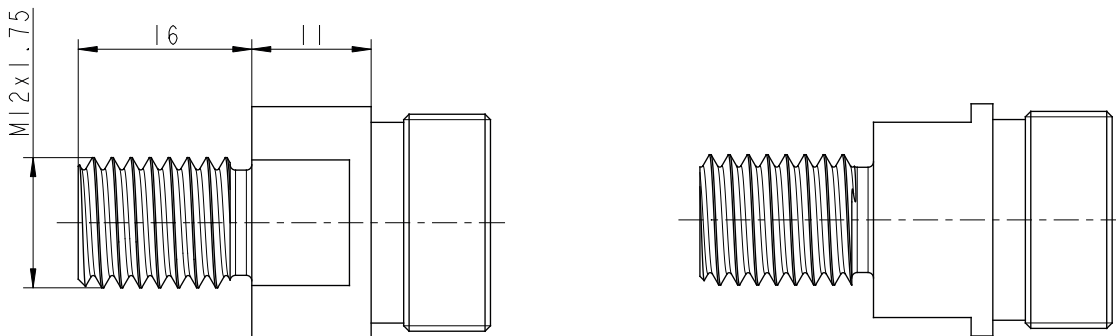
Option "L"
Piston 0351035, Stainless steel AISI 304



Option "F"
Piston 0251039, Stainless steel AISI 303



Option "M"
Piston 0231094, Stainless steel AISI 304

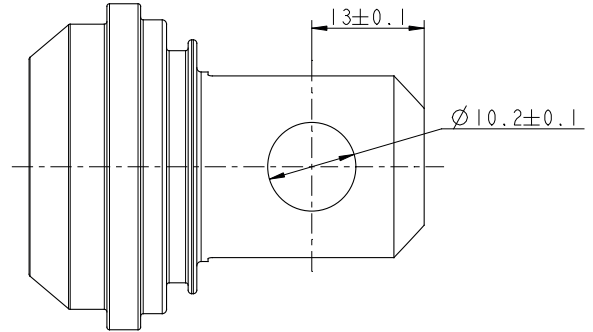
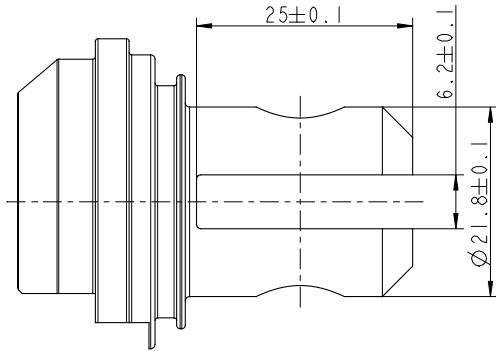


The Piston Rod Eye is only allowed to turn 0 - 90 degrees.

Back fixtures

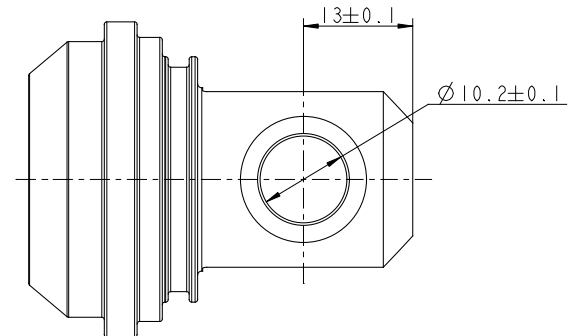
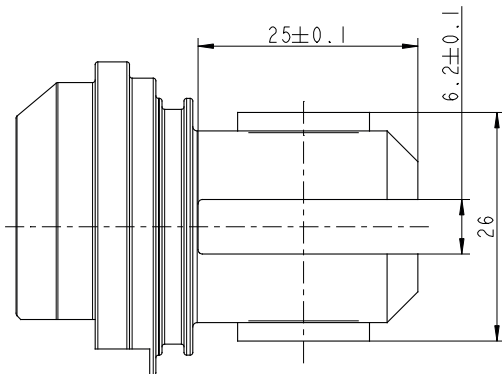
Option "1" and "A"

LINAK P/N: 0251011 without bushings, Zinc coated steel
0251015 without bushings, Stainless steel AISI 304



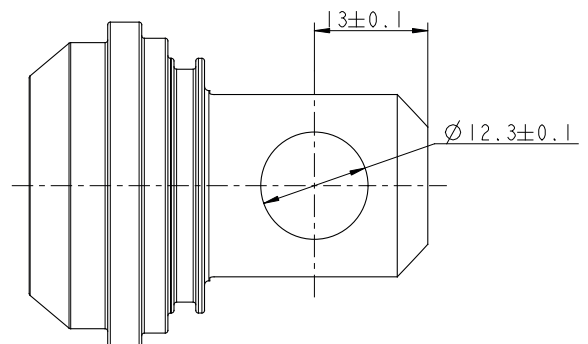
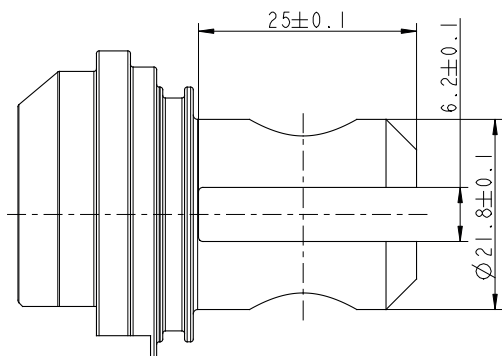
Option "2" and "B"

LINAK P/N: 0251010 with bushings, Zinc coated steel
0251014 with bushings, Stainless steel AISI 304



Option "3" and "C"

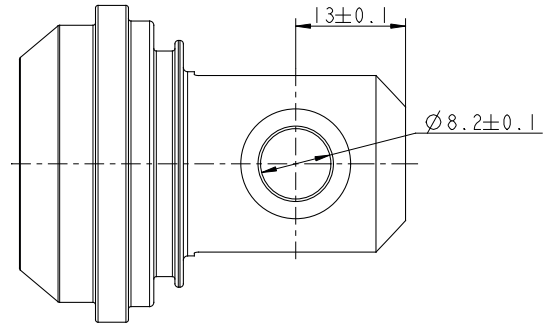
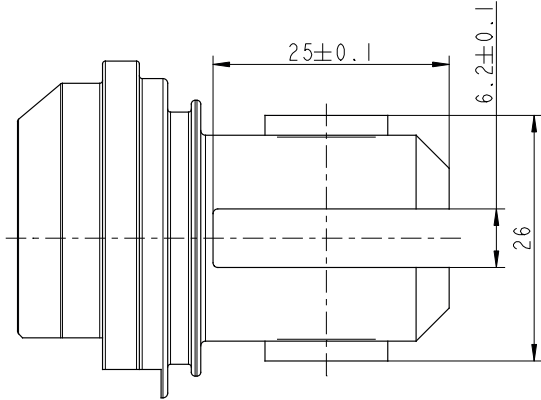
LINAK P/N: 0251010 without bushings, Zinc coated steel
0251014 without bushings, Stainless steel AISI 304



Back fixtures

Option "4" and "D"

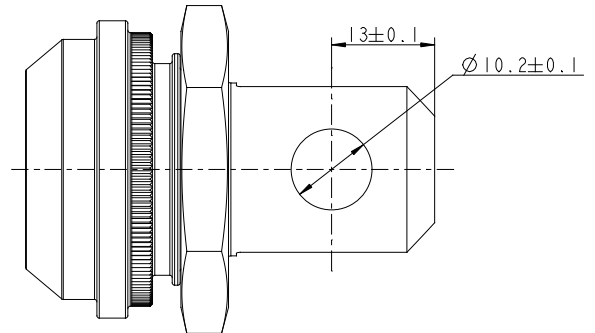
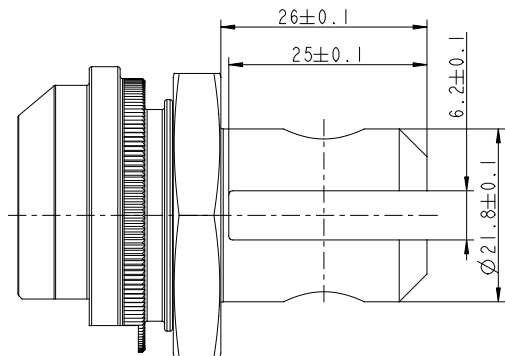
LINAK P/N: 0251011 with bushings, Zinc coated steel



Option "5" and "F"

LINAK P/N: 0251032 without bushings, Zinc coated steel

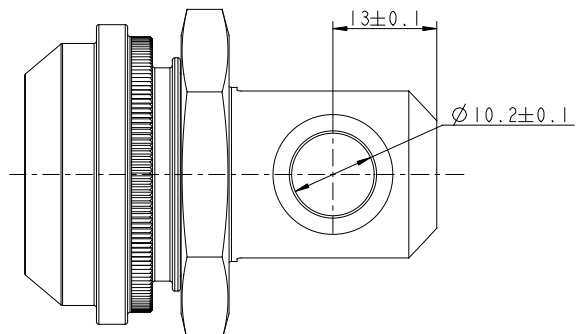
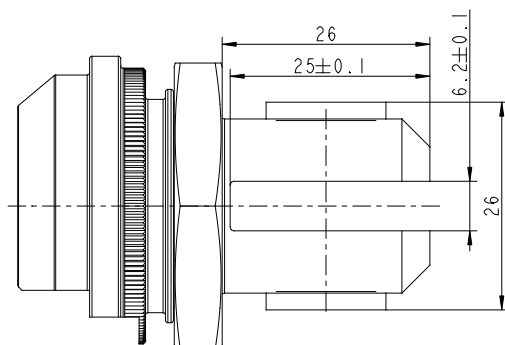
0251034 without bushings, Stainless steel AISI 304



Option "6" and "G"

LINAK P/N: 0251026 with bushings, Zinc coated steel

0251033 with bushings, Stainless steel AISI 304

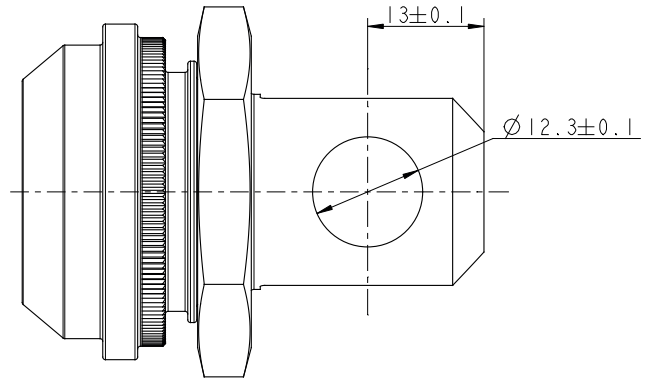
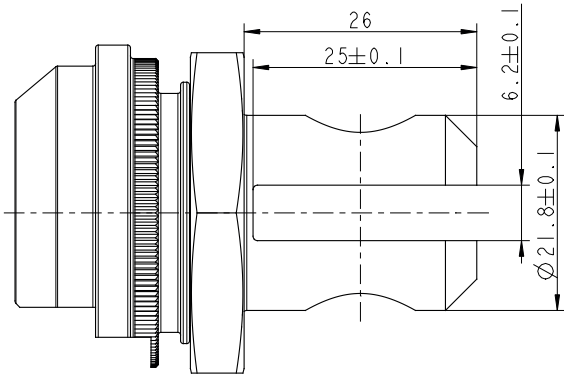


Back fixtures

Option "7" and "H"

LINAK P/N 0251026 without bushings, Zinc coated steel

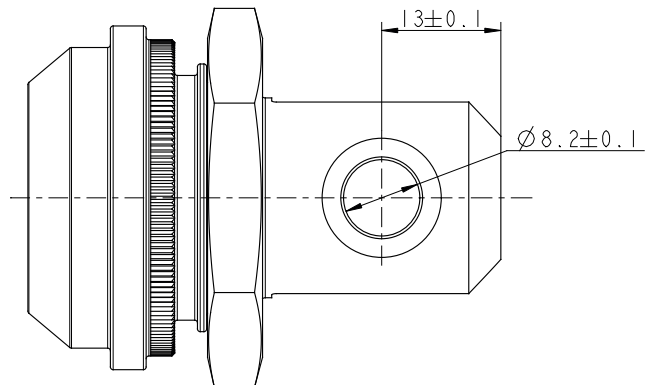
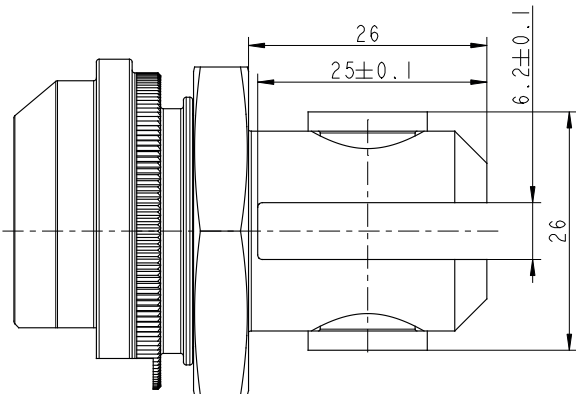
0251033 without bushings, Stainless steel AISI 304



Option "8" and "I"

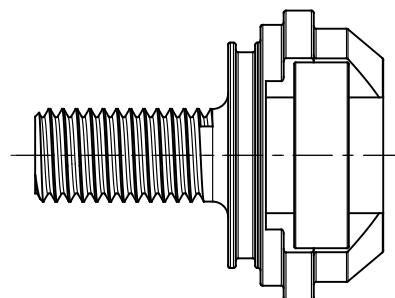
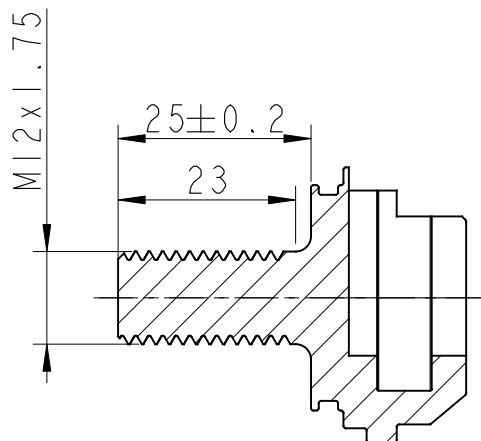
LINAK P/N 0251032 with bushings, Zinc coated steel

0251034 with bushings, Stainless steel AISI 304



Option "M"

LINAK P/N: 0251021, Stainless steel AISI 303



Back fixture orientation



Option 1 = 0°

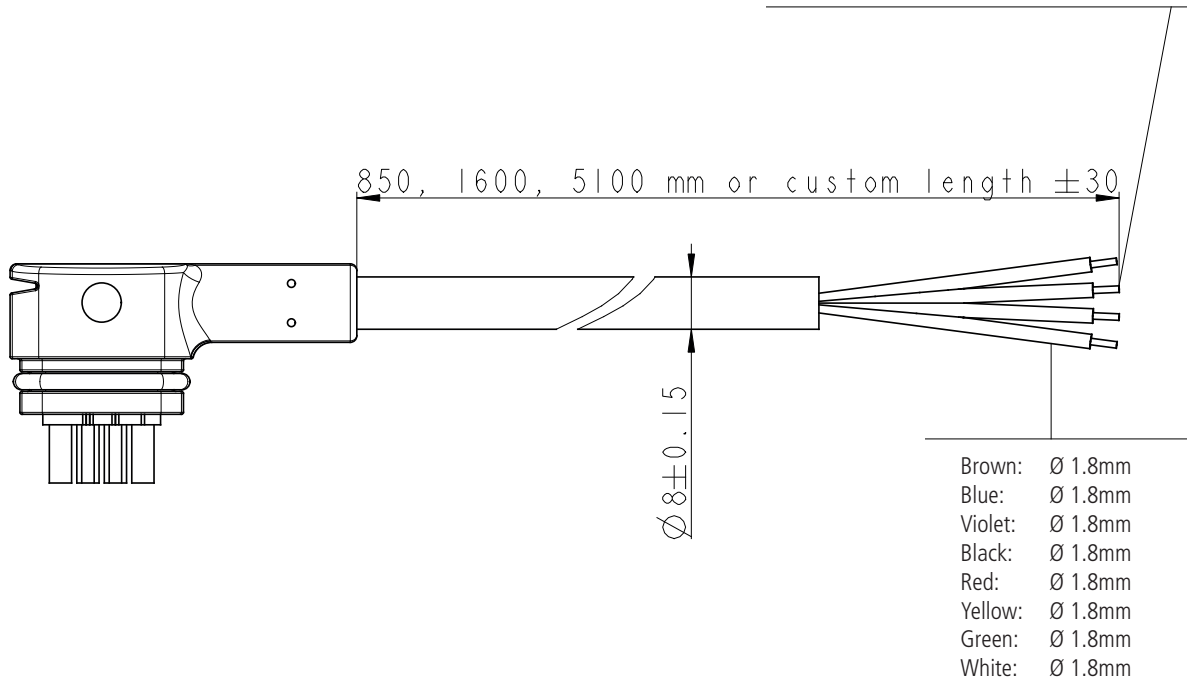


Option 2 = 90°

Cable dimensions

Brown: $\varnothing 1.0\text{mm}^2$ AWG*: 18mm
Blue: $\varnothing 1.0\text{mm}^2$ AWG : 18mm
Violet: $\varnothing 1.0\text{mm}^2$ AWG : 18mm
Black: $\varnothing 1.0\text{mm}^2$ AWG : 18mm
Red: $\varnothing 1.0\text{mm}^2$ AWG : 18mm
Yellow: $\varnothing 1.0\text{mm}^2$ AWG : 18mm
Green: $\varnothing 1.0\text{mm}^2$ AWG : 18mm
White: $\varnothing 1.0\text{mm}^2$ AWG : 18mm

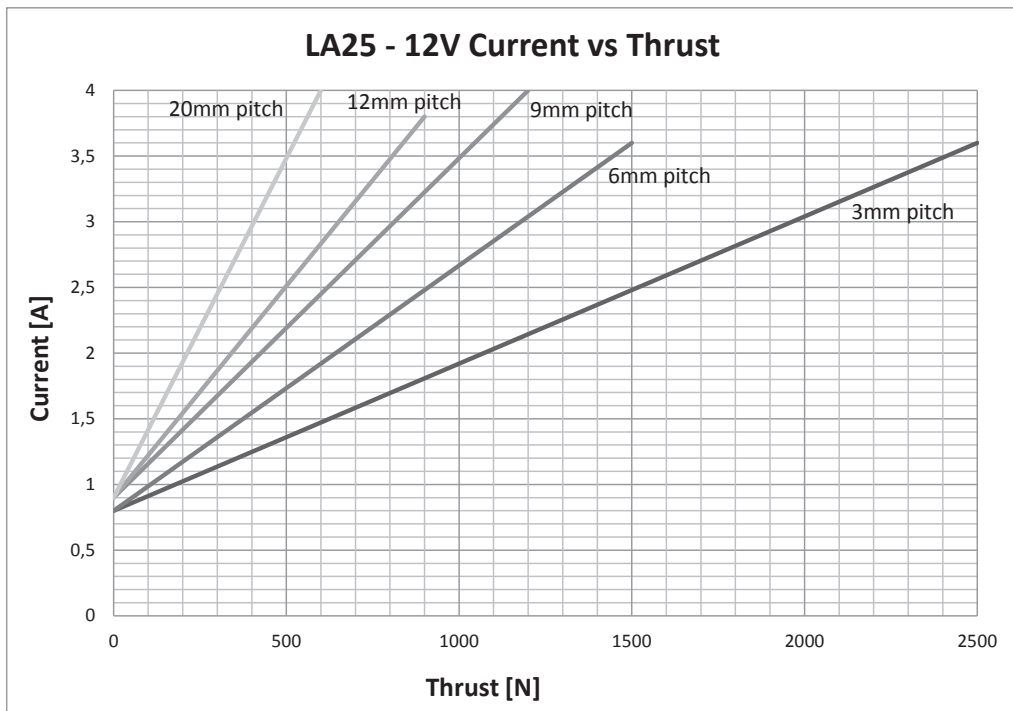
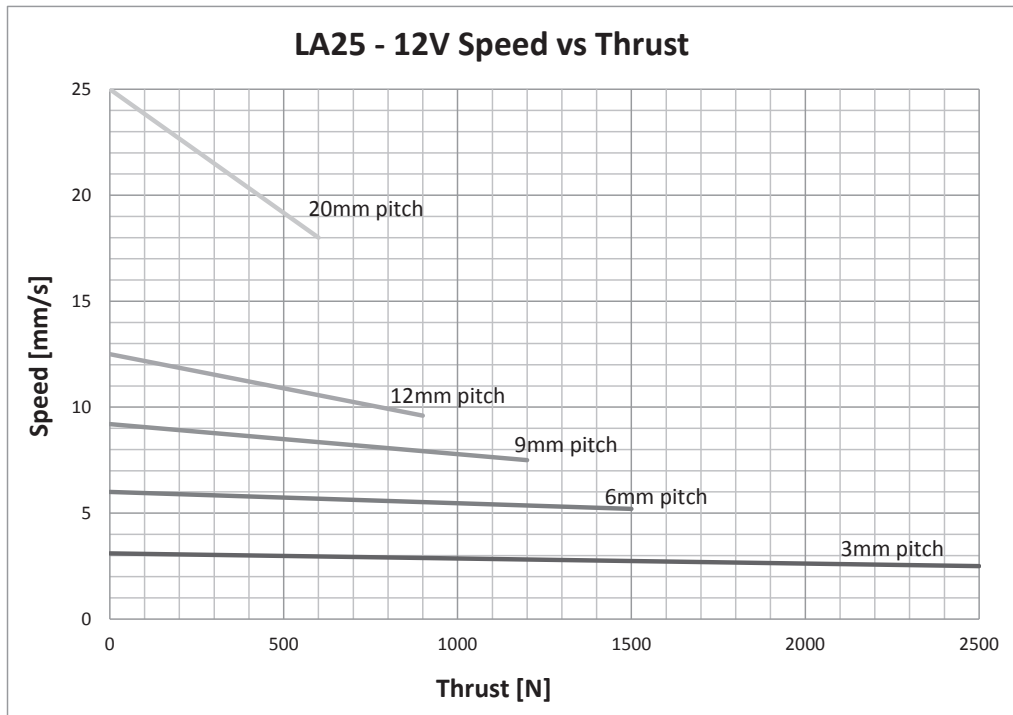
*AWG: American Wire Gauge



The LA25 standard cable is a UV resistant PVC cable.

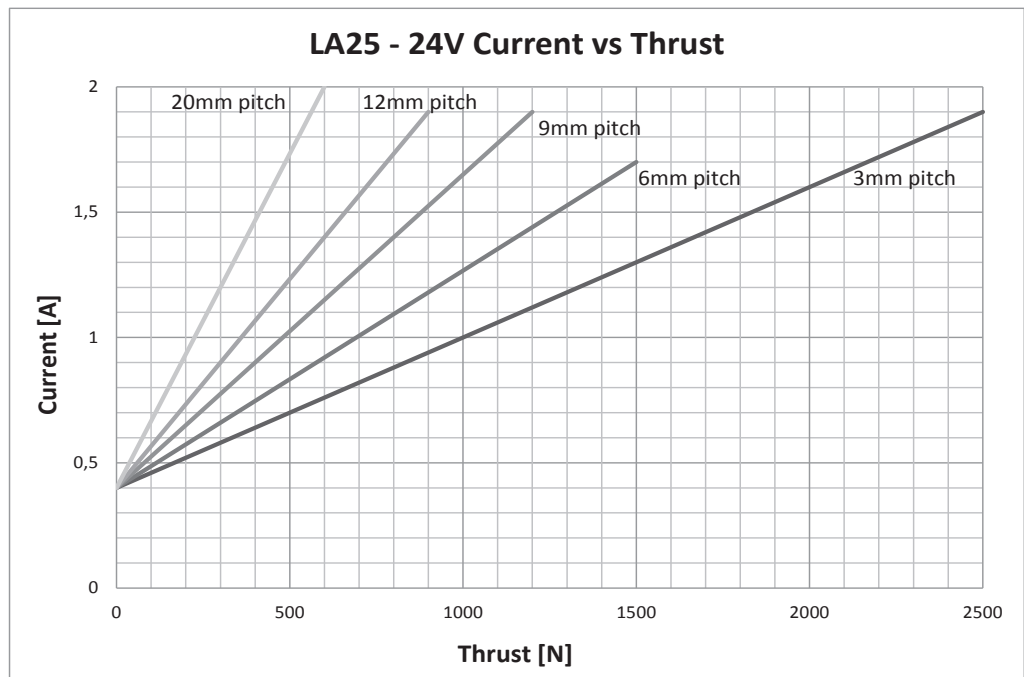
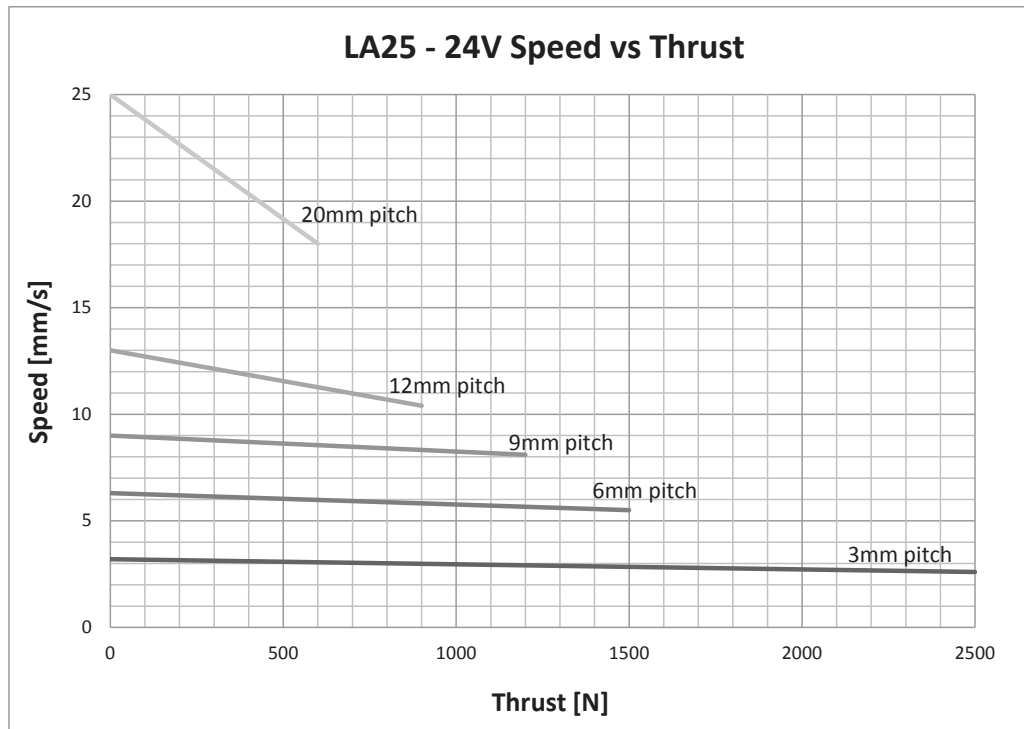
Speed and current curves - 12V motor

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



Speed and current curves - 24V motor

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



Chapter 2

IC options overview

	Basic	Advanced	Parallel	LIN bus	CAN Bus	CANopen	IO-Link
Control							
12V, 24V supply	√	√	√	√	√	√	√
H-bridge	√	√	√	√	√	√	√
Manual drive in/out	√	√	√	√	√	√	√
End Stop Signal 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 high/low combination between 0 - 10V

** Configure any high/low combination between 4 - 20mA

*** Configure any value between 0 - 30s

Feedback configurations available for IC Basic, IC Advanced and Parallel

	Pre-configured	Customised range	Pros	Cons
None			N/A	N/A
PWM Feedback	10 – 90 % 75 Hz	0 – 100 % 75 – 150 Hz	Suitable for long distance transmission. Effectual immunity to electrical noise.	More complex processing required, compared to AFV and AFC.
Single Hall*	N/A	N/A	Suitable for long distance transmission.	No position indication.
Analogue Feedback Voltage (AFV)*	0 - 10V	Any combination, going negative or positive. E.g. 8.5 – 2.2V over a full stroke.	High resolution. Traditional type of feedback suitable for most PLCs. Easy faultfinding. Independent on stroke length, compared to a traditional mechanical potentiometer.	Not recommended for applications with long distance cables or environments exposed to electrical noise.
Analogue Feedback Current (AFC)	4 - 20mA	Any combination, going negative or positive. E.g. 5.5 – 18mA over a full stroke.	High resolution. Better immunity to long cables and differences in potentials than AFV. Provides inherent error condition detection. Independent on stroke length, compared to a traditional mechanical potentiometer.	Not suitable for signal isolation.
Endstop signal in/out**	At physical end stops.	IC Advanced configurable as Active High, Active Low, High or Low see Compendium of Actuator Knowledge		



All feedback configurations are available for IC Advanced.

* IC Basic is available with ESS only.

** Parallel feedback configurations available: ESS, Hall and error codes.

Actuator configurations available for IC Basic, IC Advanced and Parallel

	Pre-configured	Customised range (IC Basic -only Speed, Softstop and Current limits optional)	Description
Current limit inwards	8 A with 12 V 5 A with 24 V Valid for both current limit directions. It is possible to reduce the current limit through buslink This means that if the current cut-off limits are pre-configured to 8 A or 5 A, it will not be possible to change the current limits through BusLink to go higher than 8 A or 5 A.	If the temperature drops below -10°C, the current limits are increase to: 9 A for 12 V 6 A for 24 V	The actuator's unloaded current consumption is very close to 4A, and if the current cut-off is customised below 4A 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 in- wards/outwards	100% equal to full performance. Please note: for parallel actuators the full performance equals 80% of the max. speed.	Lowest recommended speed at full load: 60% It is possible to reduce the speed below 60%, but this is depend-able on load, power supply and the environment.	The speed is based on a PWM principle, meaning that 100% equals the voltage output of the power supply in use, and not the actual speed.
Virtual endstop inwards	0mm for both virtual enstop direc-tions. (When the virtual endstops are at zero, it means that they are not in use).	It is only possible to run the ac-tuator with one virtual endstop, either inwards or outwards.	The virtual endstop positions are based on hall sensor technology, meaning that the positioning needs to be initialised from time to time. One of the physical endstops must be available for initialisation.
Virtual endstop outwards			

Chapter 3

Environmental tests - Climatic

Test	Specification	Comment
Cold test	EN60068-2-1 (Ab)	Storage at low temperature: Temperature: - 40°C Duration: 72 h Actuator is not connected/operated Tested at room temperature
		Storage at low temperature: Temperature: -55°C Duration: 24 h Actuator is not connected Tested at room temperature
	EN60068-2-1 (Ad)	Operating at low temperature: Temperature: -40°C Duration: 4 h Tested at room temperature within 5 minutes overload
Dry heat	EN60068-2-2 (Bb)	Storage at high temperature: Temperature: +85°C Duration: 72 h Actuator is not connected/operated Tested at room temperature
	EN60068-2-2 (Bb)	Storage at low temperature: Temperature: +105°C Duration: 24 h Actuator operated at high temperature
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: 21 cycles * 24 hours Actuator is operated during test
Salt mist.	EN ISO 9227	Dynamic salt spray test: Salt solution: 5% sodium chloride (NaCl) Temperature: 35 ± 2°C Duration: 500 h Actuator is operated
Thermal shock		Dunk test: Actuator is heated to +85°C for 4 h and submerged into a 0°C cold salt-water-detergent solution for 2 h Followed by 18 h dry time Duration: 5 cycles

Environmental tests - Climatic

Degrees of protection	EN60529 - IP66	IP6X - Dust: Dust-tight, No ingress of dust Actuator is not activated
	EN60529 - IP66	IPX6 - Water: Ingress of water in quantities causing harmful effects is not allowed Duration: 100 litres pr. minute in 3 minutes Actuator is not activated
	DIN40050 - IP69K	IPX9K: High pressure cleaner Temperature: +80°C Water pressure: 80 - 100 bar Water flow: 14 - 16 l/min Duration: 30 sec. each at 4 different angles 0°, 30°, 60° and 90° Actuator is not activated Ingress of water in quantities causing harmful effects is not allowed
Rain		Dynamic rain test: Actuators exposed to continuous rain Actuators operated and side loaded with 5N Duration: 10.000 cycles and 240 h

Environmental tests - Mechanical

Test	Specification	Comment
Mechanical Shock (Handling) - Drop test		3 drops on 6 faces onto a concrete floor. Drop height: 500 mm on all faces
Mechanical Shock Operational		Peak Pulse Amplitude: 50 G Pulse Duration: 11 ms Number of pulses: 18 total - 3 in each direction for all three axis
		Peak Pulse Amplitude: 30 G Pulse Duration: 18 ms Number of pulses: 18 total - 3 in each direction for all three axis
		Peak Pulse Amplitude: 25 G Pulse Duration: 6 ms Number of pulses: 6000 total - 1000 in each direction for all three axis
Vibration Random		Random vibration: From 18 Hz 0.0259 to 1000 Hz Duration: 2 h/axis

Environmental tests - Electrical

Standard	Specification	FOCUS ON
2004/104/EC	Automotive EMC Directive 2004/104/EC on electrical and electronic car components	<ul style="list-style-type: none"> VEHICLES AND MOBILITY
EN/IEC 60204 - 1: 2006 + A1: 2009	Safety of machinery - Electrical equipment of machines - Part 1: General requirements	<ul style="list-style-type: none"> INDUSTRIAL AUTOMATION
EN/IEC 60204 - 32: 2008	Safety of machinery - Electrical equipment of machines - Part 32: Requirements for hoisting machines	<ul style="list-style-type: none"> INDUSTRIAL AUTOMATION PLATFORMS AND LIFTS
EN/IEC 61000 - 6 - 1: 2007	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for industrial environments	<ul style="list-style-type: none"> INDUSTRIAL AUTOMATION
EN/IEC 61000 - 6 - 2: 2005	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments	<ul style="list-style-type: none"> INDUSTRIAL AUTOMATION
EN/IEC 61000 - 6 - 3: 2007 + A1:2011	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	<ul style="list-style-type: none"> INDUSTRIAL AUTOMATION
EN/IEC 61000 - 6 - 4: 2007 + A1:2011	Electromagnetic compatibility (EMC) - Part 6: Generic standards - Section 4: Emission standard for industrial environments	<ul style="list-style-type: none"> INDUSTRIAL AUTOMATION
EN 13309: 2010	Construction machinery	<ul style="list-style-type: none"> CONSTRUCTION
EN/ISO 13766: 2006	Earth-moving machinery - Electromagnetic compatibility	<ul style="list-style-type: none"> CONSTRUCTION
EN/ISO 14982: 2009	Agricultural and forestry machines - Electromagnetic compatibility	<ul style="list-style-type: none"> MOBILE AGRICULTURE OUTDOOR POWER EQUIPMENT
EU recreational crafts directive 94/25/EC		
IECEX / ATEX (Ex) EN60079-0:2012 EN60079-31:2014	This Ex certification allows the actuator to be mounted in Ex dust areas: II 2D Ex tb IIIC T135°C Db Tamb -25°C to +65°C	



All electrical tests are conducted and radiated emission (EMC) tests.

Non-complying standards

Standard	Explanation
IEC 60601-1	Please note that this product cannot be approved according to the medical electrical equipment standard. Due to the combination of the aluminium cast housing and the embedded PCB, we do not fulfill the regulations according to leakage current.

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