Linear Actuator LA20 Inline

Data Sheet



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Introduction



LA20 is a slim inline actuator created to cover a wide range of applications, where design, size and power are crucial. The combination of a high lifting capacity of 2,500 N with its robust but stylish, small form factor makes the LA20 the ideal solution for many of today's demanding applications.

The actuator is equipped with a socket for exchangeable cables and is to be used with an angled Microfit 30 Deg plug.

Some of the benefits that LA20 Inline offers you:

- Compact and slim design
- High lifting capacity
- Exchangeable cable
- Feedback options for positioning

LA20 is a small inline actuator with a robust design, high efficiency, high lifting capacity at 2500 N, feedback signals for positioning and electrical endstop. It withstands harsh environments within the medical industry.

The LA20 Inline can be used in various applications where space is limited or where size is important.

Features and options

Load in push:	2500 N
Load in pull:	800 N
Dynamic push and pull:	Actuators are designed for push or pull applications. If a combination is required, please contact your local LINAK salesperson.
Housing colour:	Black (RAL 9005), black outer tube, or Light grey (RAL 7035) Black/grey only available as special solution
Protection class:	IPX4, IPX6
Motor:	24VDC, standard motor (type B or G)
Stroke length:	20 – 300 mm (in steps of 1 mm) (Stroke from 201-300 mm will add 20 mm extension)
Built-in dimensions:	170 mm + stroke length (minimum 220 mm)
Mechanical spline:	Yes, as option (will add 20 mm to BID)
Static safety factor:	2.5 in push and 5.0 in pull
Noise level:	Max 58 dB(A) (at nominal voltage and with no load, according to EN ISO 3743-1)
Exchangeable cable:	Yes, LA20 connection plug (Microfit 30 Deg) (Always use cable lock)
Back fixture material:	Solid composite (plastic bushings inside)
Nut:	Guided
Safety nut:	Yes. In pull only for 6 mm spindle pitch
Feedback options:	Dual Hall or Hall potentiometer
Piston rod eye:	Steel Ø22 mm +/- 0,25 mm

Usage

Operation temperature:	+5 °C to +45 °C normal operating temperature -27 °C to +50 °C (according to test conditions ISO 7176-9)
Storage temperature:	-40 °C to +70 °C (according to ISO 7176-9)
Compatibility:	Compatible with LINAK control boxes. Please contact LINAK.
Relative humidity:	20% to 80% – non-condensing
Atmospheric pressure:	700 to 1060 hPa
Meters above sea level:	Max. 3000 meters
Duty cycle:	Max. 10%, 2 minutes continuous use followed by 18 minutes not in use
Cycles:	The LA20 life cycle test has been performed with a stabilised power supply (10% duty cycle) on a 120mm stroke actuator at max. load for 10,000 cycles (at ambient temperature)
Flammability rating:	UL94-V0
Approvals:	IEC60601-1 ANSI/AAMI ES60601-1 CAN/CSA-22.2 No 60601-1 In compliance with ISO 7176-8

Ordering example

	LA	
Actuator type:	20	
Spindel pitch:	060	**025** = 2.5 mm (2500 N) **030** = 3 mm (2200 N) **040** = 4 mm (1300 N) **050** = 5 mm (800 N) **060** = 6 mm (600 N)
Stroke length:	050	**xxx** = mm (valid from 20 mm to 300 mm)
Safety:	00	**00** = No safety options **0A** = Safety nut for Push **0C** = Mech. spline without safety nut **0D** = Mech. spline with safety nut **0P** = Safety nut for pull
Feedback:	00	**00** = None (F1) **0A** = Hall Potentiometer (F7) **0H** = Dual Hall (Digital) (F2) **0M** = Dual Hall (Encoded) (F3)
Platform:	0	**0** = None
Motor type:	B	**A** = 12 VDC (V1) **B** = 24 VDC (V2) Running mainly with battery (e.g. CBJ1, CBJ2, CBJH, CBJC, CB8A & Customer supplied CB **G** = 24 VDC (V3) Running mainly on LINAK CB platforms e.g (CO61, CO71, CO41, CA30/40)
Endstop:	0	**0** = Power switch (E1) **1** = Signal switch (E2) 2 = Encoded (E3)
IP degree:	6	**4** = IPx4 **6** = IPx6
Housing colour:	-	**-** = Black (RAL9005) - black outer tube **+** = Light Grey (RAL7035)
Back fixture:	0	**0** = Ø10.2 mm with plastic bushings **1** = Ø12.3mm without plastic bushings
Piston rod eye:	0	**0** = Steel solid, Ø10.2 mm with plastic bushings **3** = Steel with 6.1 mm slot, Ø10.2 mm without plastic bushings (+6,5 BID) **1** = Steel solid, Ø12.3 mm without plastic bushings **4** = Steel with 6.1 mm slot, Ø12.3 mm without plastic bushings (+6,5 BID) **2** = Steel with 6.1 mm slot, Ø10.2 mm with plastic bushings (+6,5 BiD)
Gear Option:	3	**3** = 3 Stage gear, ratio - 1 : 56
Not Used:	0	**0** =
Safety Factor:	2	**1** = 1.5 **2** = 2.5
Not Used:	0	**0** =
Load Direction:	0	**0** = Push **P** = Pull
Not Used:	000	**000** =
Installation dimension:	220	**xxx** = mm (min. installation 220 mm) (extension from 6 mm to 220 mm)
Chosen item number:	2006005000000B06-0030200000220	

Note:

- Cable must be ordered separately
- LA20 comes with one cable lock. If extra cable locks are needed they must be ordered separately for LA20 (for item number see later page)
- Noise can occur if plastic bushings are not fitted in the piston rod eye/Back fixture
- Black housing with grey outer tube is available as special solution

Approvals and certifications

For approval documentation, LINAK recommends specifying the product type instead of individual item numbers to ensure broader approval coverage and simplify future product changes.

Listed LINAK item for application approval: LA20 Inline

If this is not possible, we advise being as non-specific as possible when specifying LINAK products in your approval application:

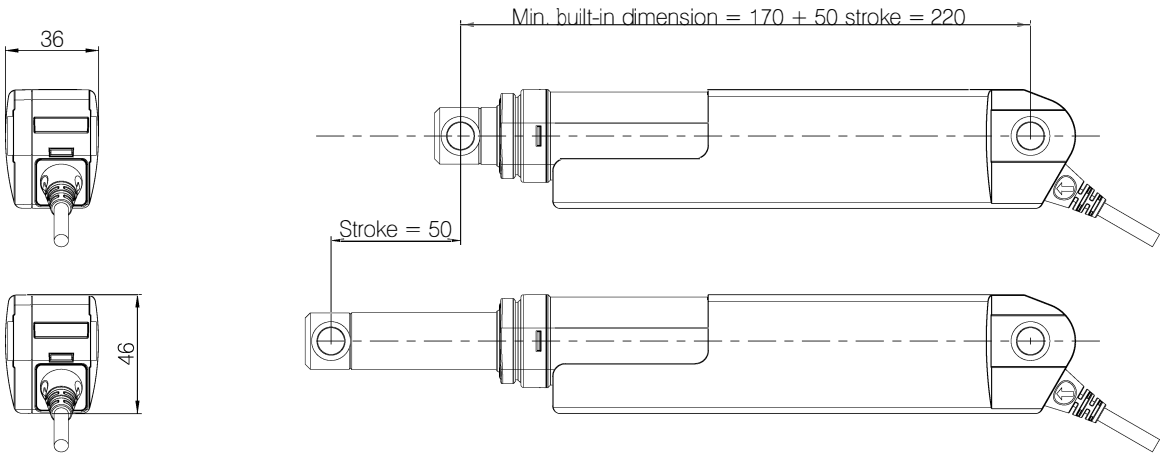
Listed LINAK item for application approval: LA20******SS***S*S****S*S*S***

" * " is not safety critical and we recommend including a non-specific signifier such as an asterisk.

" S " is safety critical and represents a listed critical component in the product and cannot be left out.

For more information, please refer to "Approvals and certifications" in LINAK Application Design Recommendations found under User Manual for any given product on LINAK.com

Dimensions

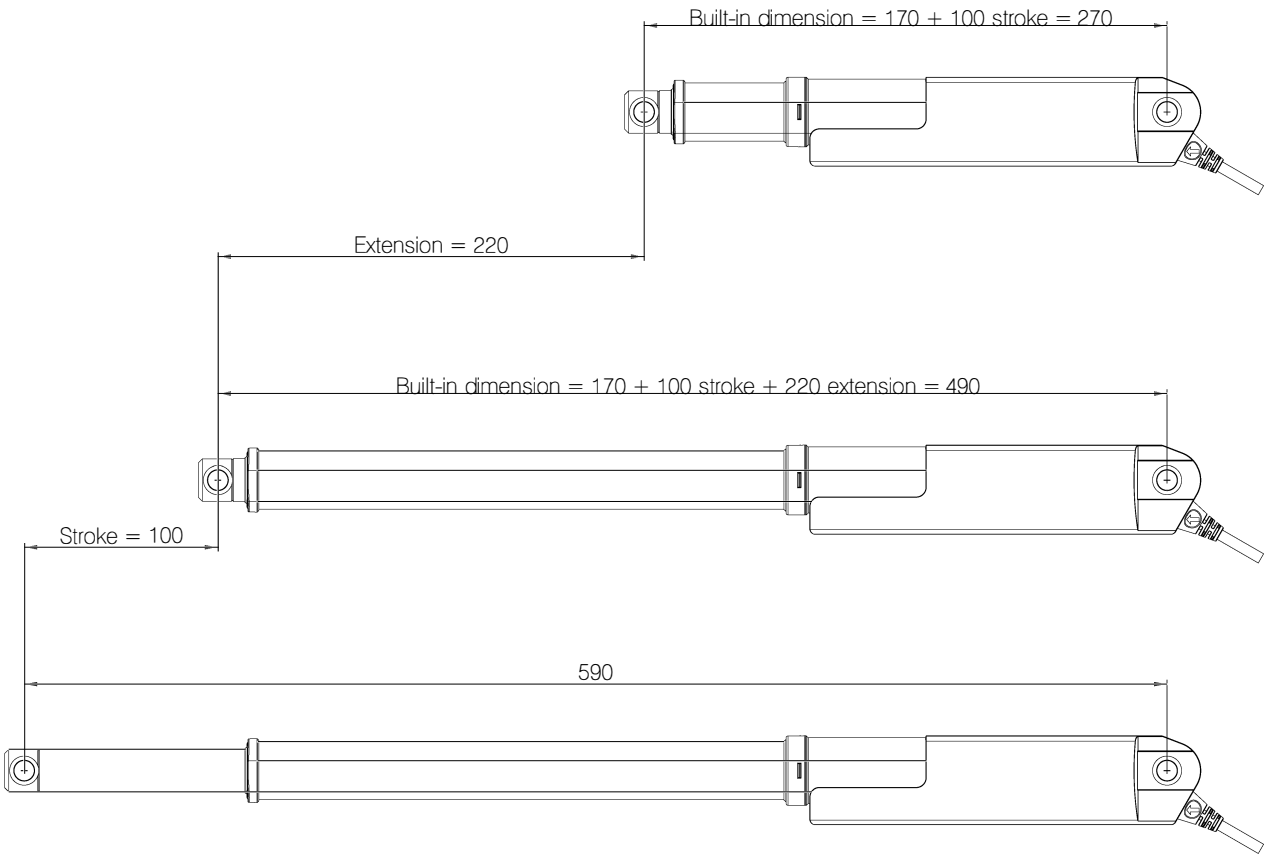


Dimension drawings with extended BID

(100 mm stroke without extension and addition of 220 mm extension)
It is possible to order LA20 with extended built-in dimensions.
The total BID cannot exceed 490 mm (incl. extension).

For steps between 1 mm and 5 mm contact LINAK A/S.

For steps of 5 mm use eCon.



Tolerances: For Built-In Dimensions and stroke ± 2 mm.

Drawing No: 1001W4011

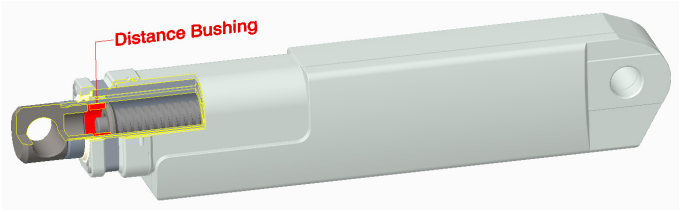
Built-in dimensions

The built-in dimension depends on the chosen safety nut and stroke length.

Please see the table below to decide on built-in dimension.

Safety option	Pitch [mm]	Stroke [mm]	Minimum BID [mm]
0 = No safety nut in push/pull	2.5,3,4,5 & 6	20-49	220
		50-200	170 + stroke
		201-300	190 + stroke
1 = Safety nut in push	2.5,3,4,5 & 6	20-40	220
		50-200	170 + stroke
		201-300	190 + stroke
2 = Safety nut Pull	6	20-37	220
		38-200	182 + stroke
		201-300	202 + stroke
3 = Mechanical spline	2.5,3,4 & 5	20-21	220
		22-200	198 + stroke
		201-300	218 + stroke
	6	20-24	220
		30-200	190 + stroke
		201-300	210 + stroke
4 = Mechanical spline + safety nut	2.5,3,4 & 5	20-21	220
		22-200	198 + stroke
		201-300	218 + stroke
	6	20-29	220
		30-200	190 + stroke
		201-300	220 + stroke

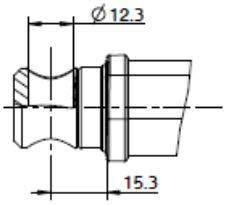
A specific stroke length will increase the BID with minimum 6 mm due to installation of a distance bushing that ensures the mechanical endstop to be activated at inwards direction.



Details on piston rod eyes

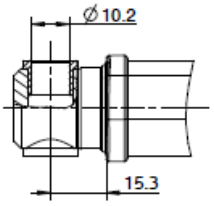
	Piston rod eyes				
	Picture 1	**Picture 2**	**Picture 3**	**Picture 4**	**Picture 5**
Specification	Solid No bushings	Solid With bushings	Slot No bushings	Slot With bushings	Slot No bushings
Added BID	-	-	+ 6.5 mm*	+ 6.5 mm*	+ 6.5 mm*
Piston rod eye combicode	1	0	4	2	3

Picture 1



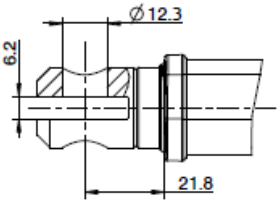
Piston: 1001W1040
Material: Steel Solid
Bushings: No

Picture 2



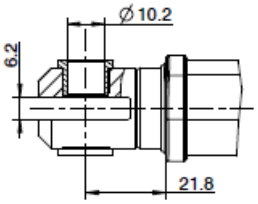
Piston: 1001W1040
Material: Steel Solid
Bushings: Yes

Picture 3



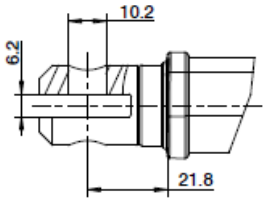
Piston: 0231016
Material: Steel
Bushings: No

Picture 4



Piston: 0231016
Material: Steel
Bushings: Yes

Picture 5

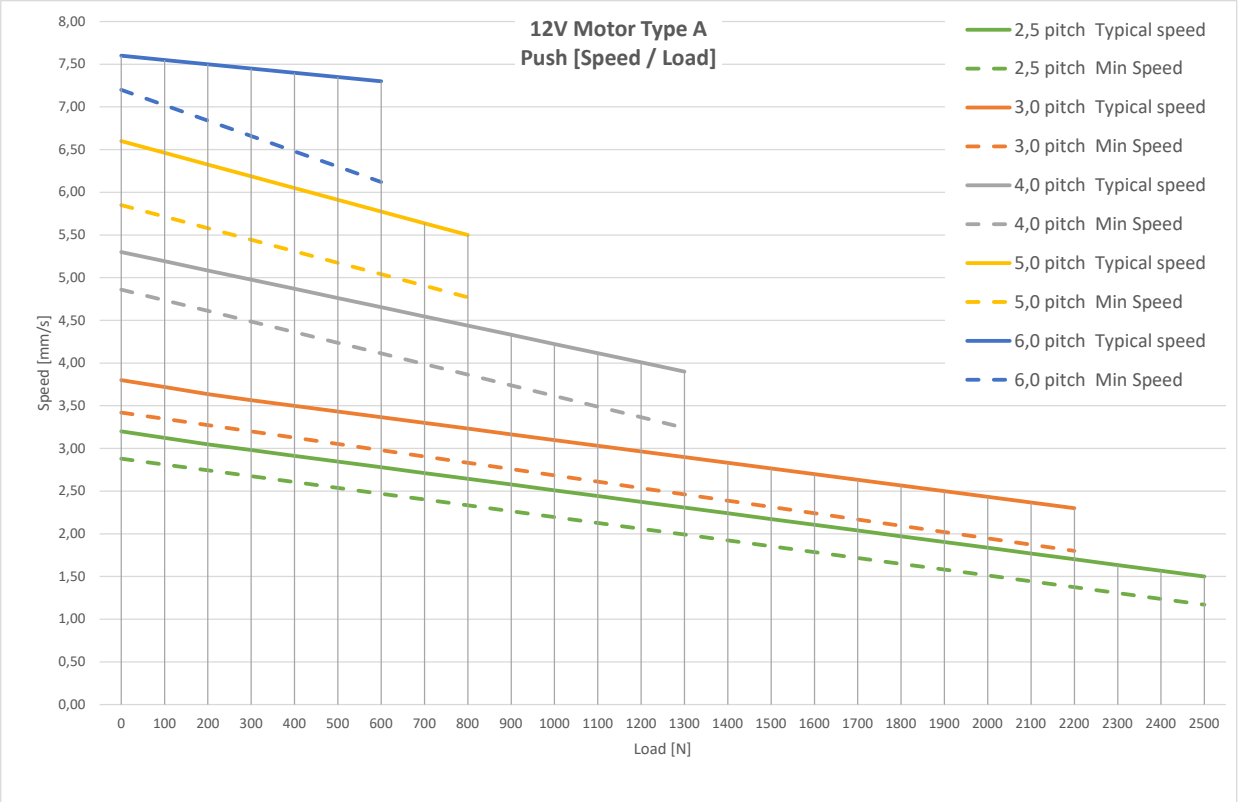


Piston: 0231033
Material: Steel
Bushings: No

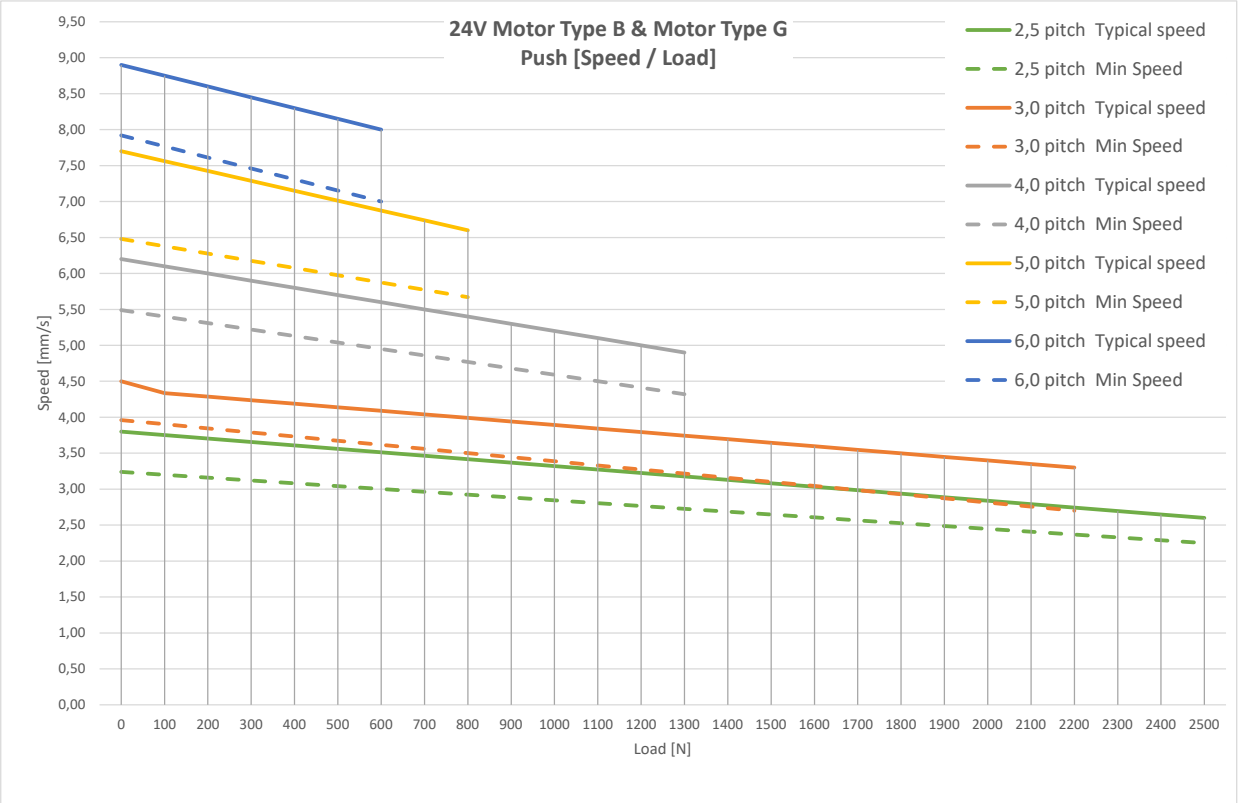
* Use 7 mm BID for the combicode

Speed and load curves

Motor Type A, push

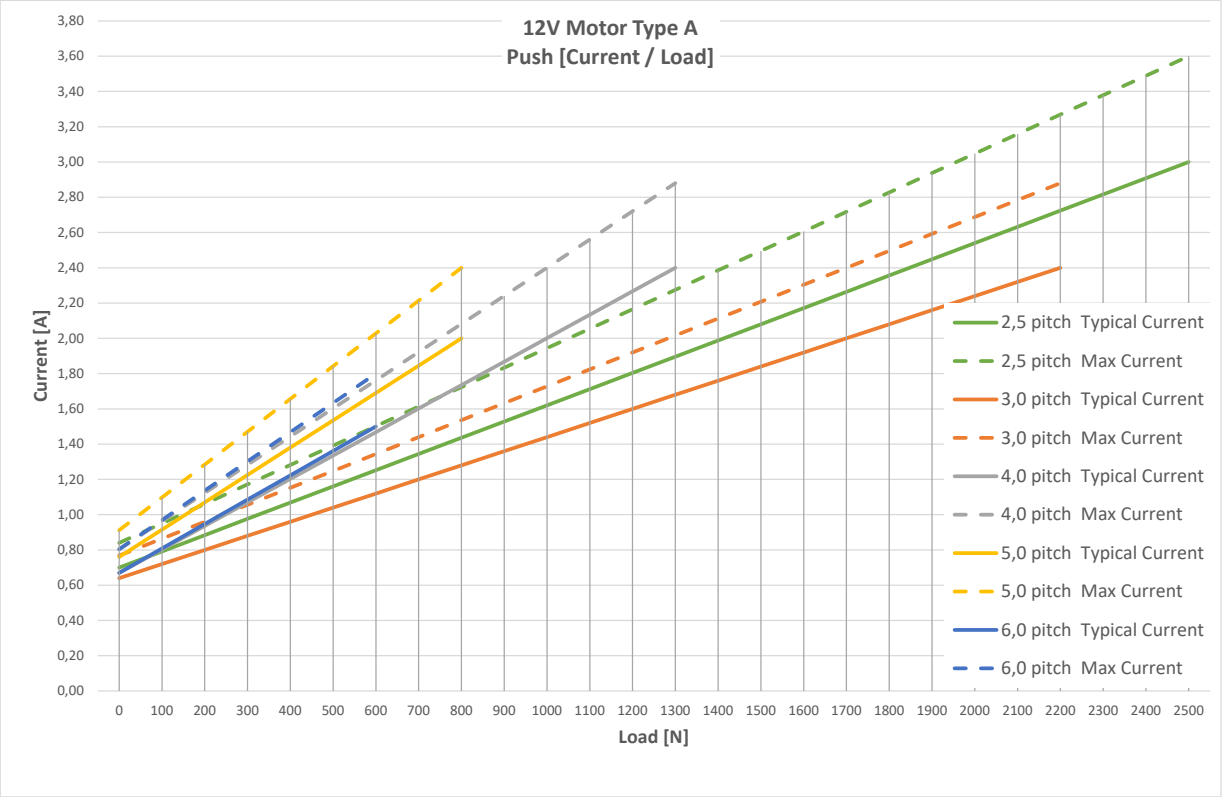


Motor Type B and G, push

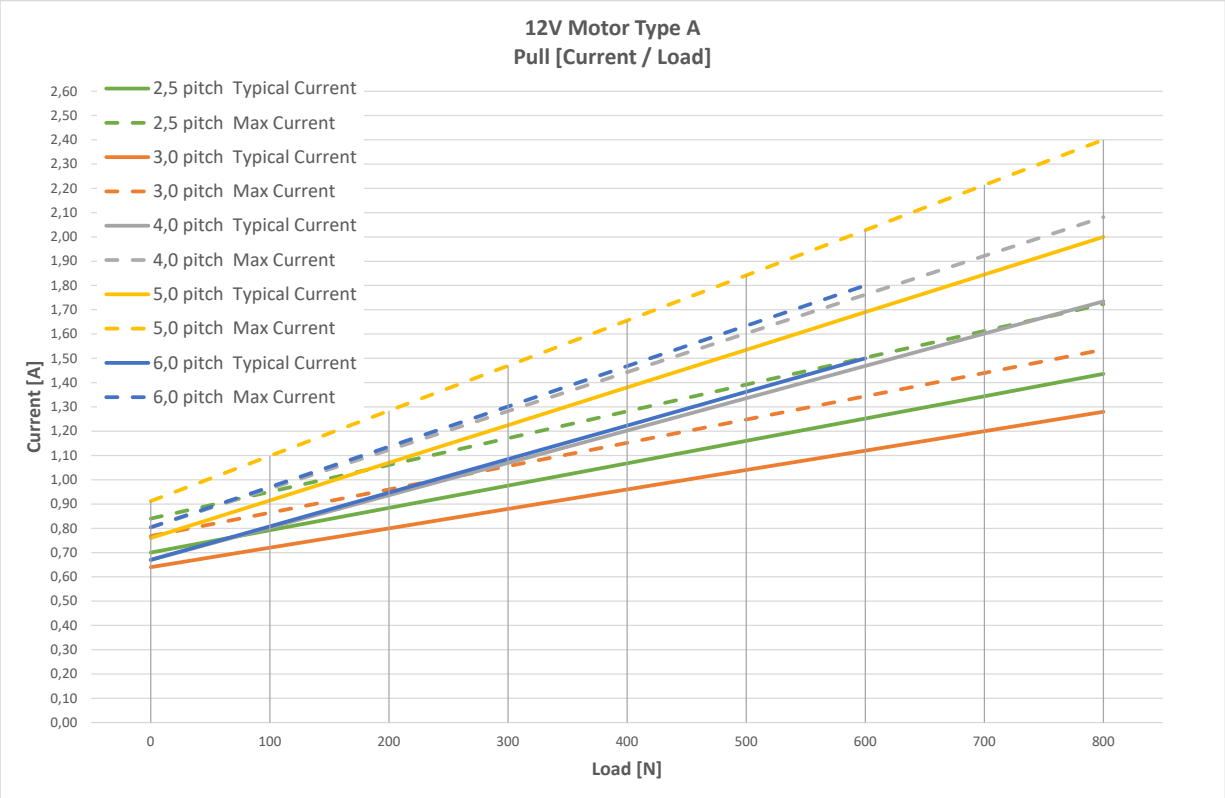


Current and load curves

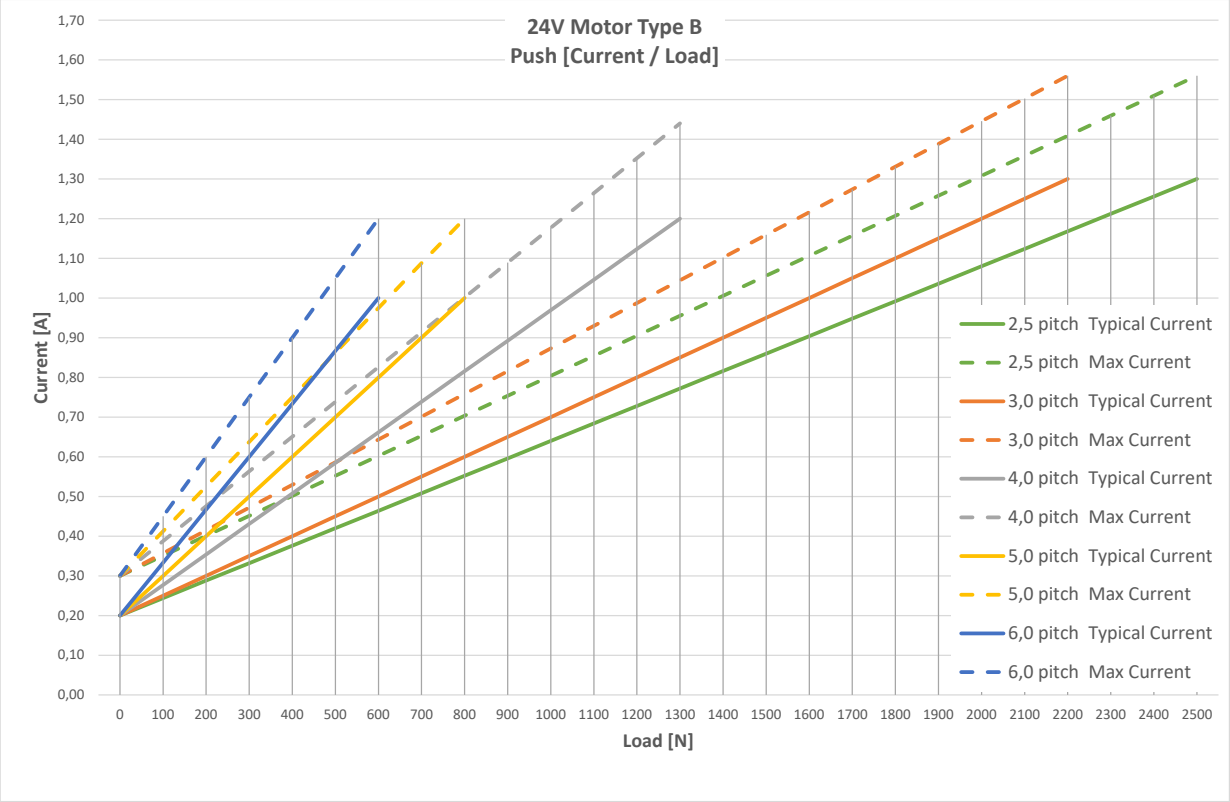
Motor Type A, push



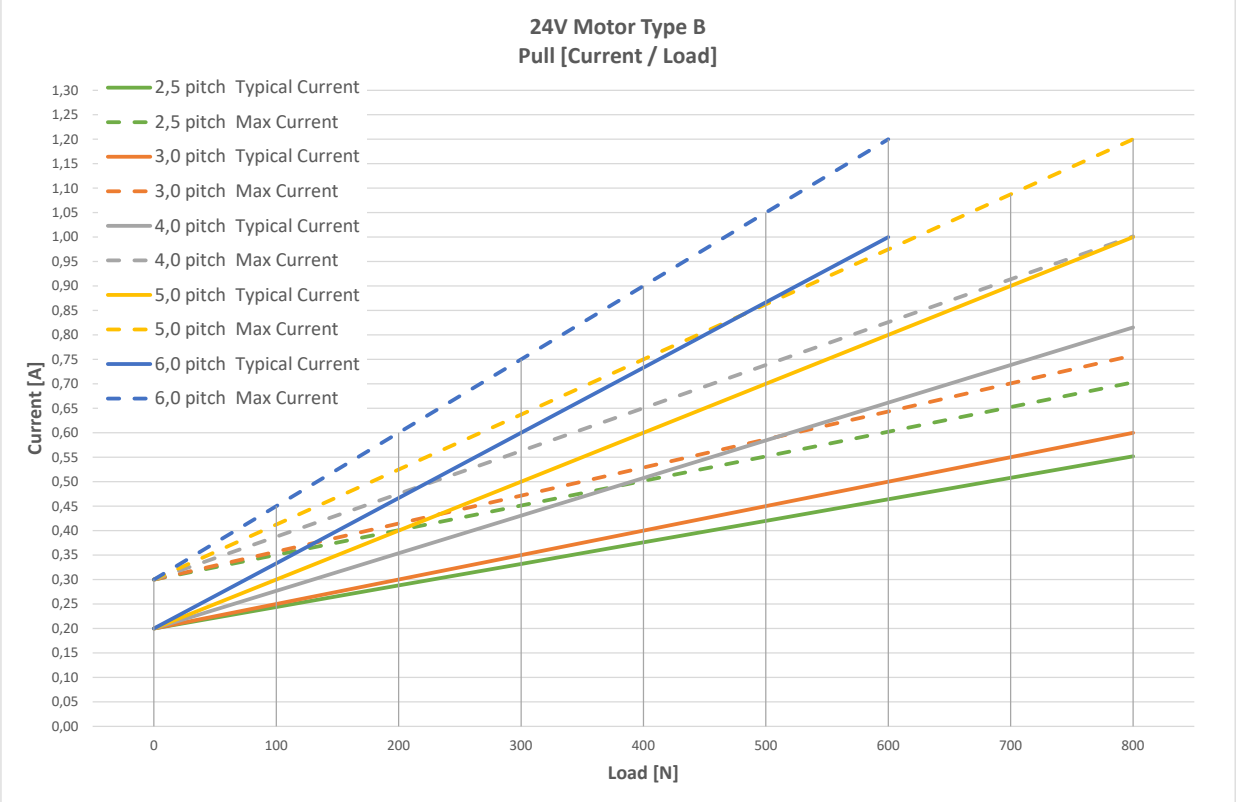
Motor Type A, pull



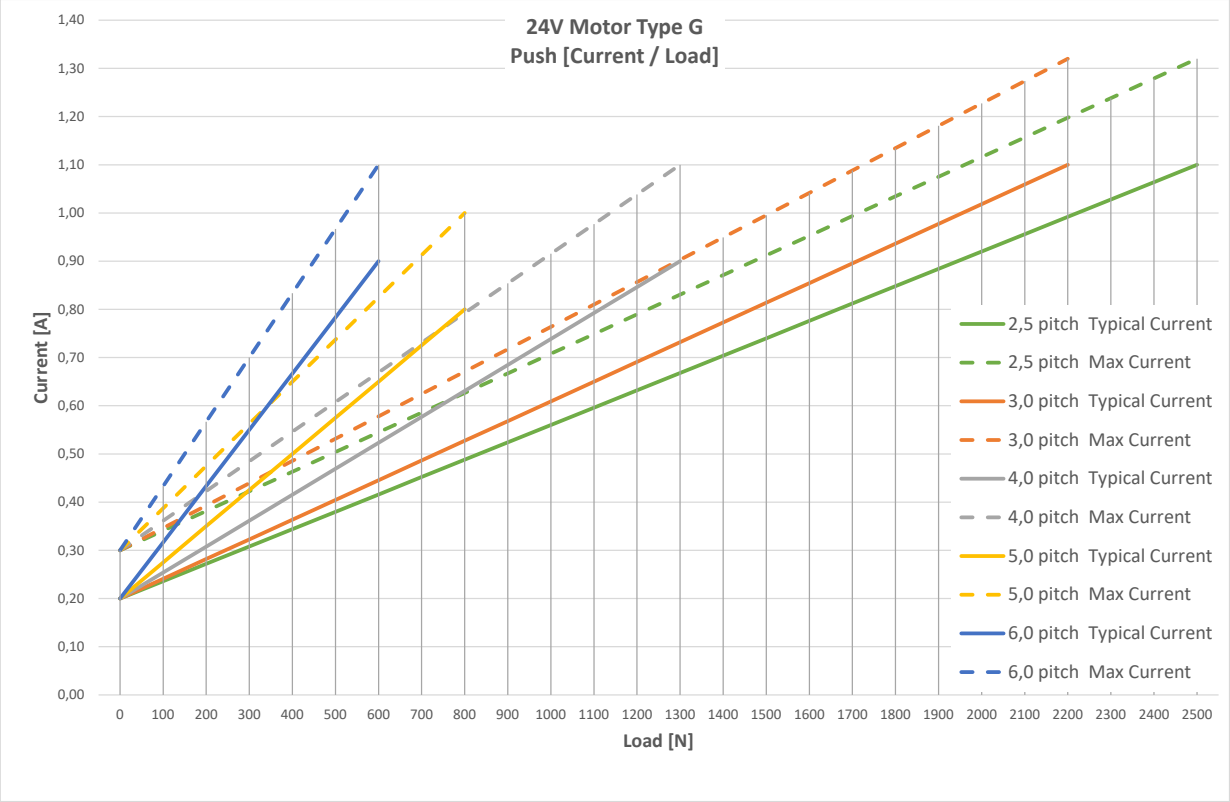
Motor Type B, push



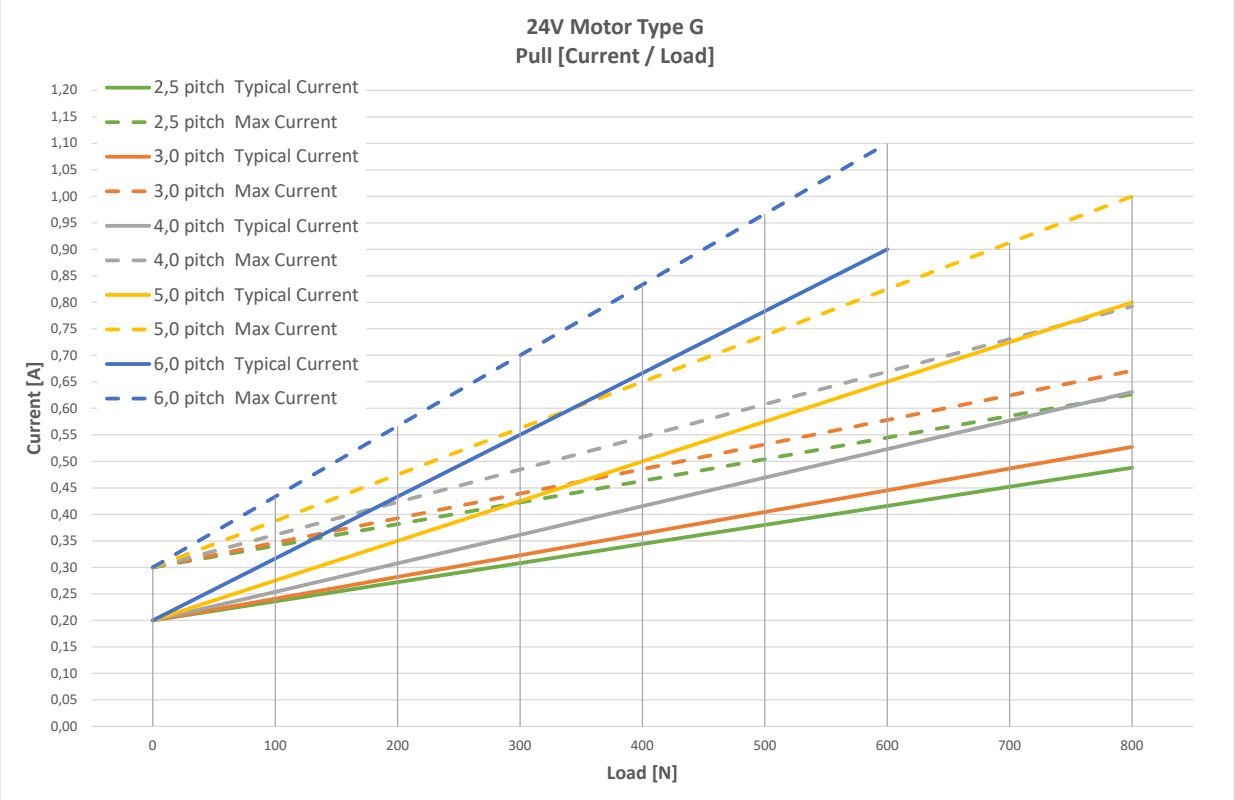
Motor Type B, pull



Motor Type G, push



Motor Type G, pull



Input/output specifications

Dual Hall positioning

Item	Specification	Comment
Pin configuration	Pin1 GND Pin2 VCC Pin3 M+ Pin4 HALL A Pin5 HALL B Pin6 M-	

Dual Hall encoded

Item	Specification	Comment
Pin configuration	Pin1 External supply: 0 V Pin2 VCC Pin3 M+ (motor/power) Pin4 HALL A, analogue encoded (Hann-A +EOS* IN/OUT) Pin5 HALL B with dual Hall or N/C when testing without dual Hall Pin6 M- (motor/power)	Interval / Hall-A / *EOS 2.65V-3.25V / LOW / NONE 2.15V-2.65V / HIGH / NONE 1.65V-2.15V / LOW / OUT 1.15V-1.65V / HIGH / OUT 0.65V-1.15V / LOW / IN 0.05V-0.65V / HIGH / IN

Hall potentiometer feedback

Item	Specification	Comment
Pin configuration	Pin1 External supply: V0 Pin2 VCC Pin3 M+ (motor/power) Pin4 Hall potentiometer Pin5 Not connected Pin6 M- (motor/power)	Actuator connector front view:

Motor specification

Item	Specification	Comment
Pin connection	Pin1 Pin2 Pin3 M+/- Pin4 Pin5 Pin6 M-/+	Outwards: Pin3: + Pin6: - Inwards: Pin3: - Pin6: +

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