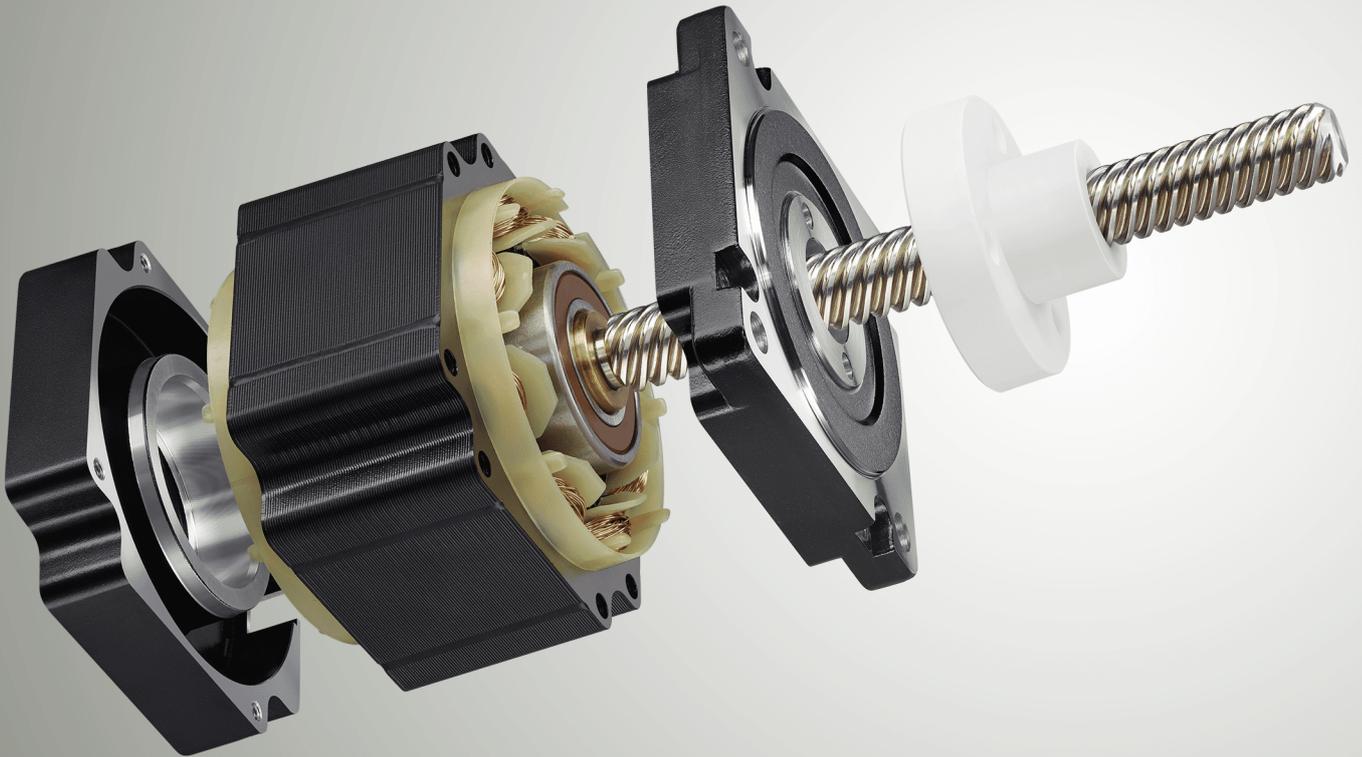




Intelligence in motion



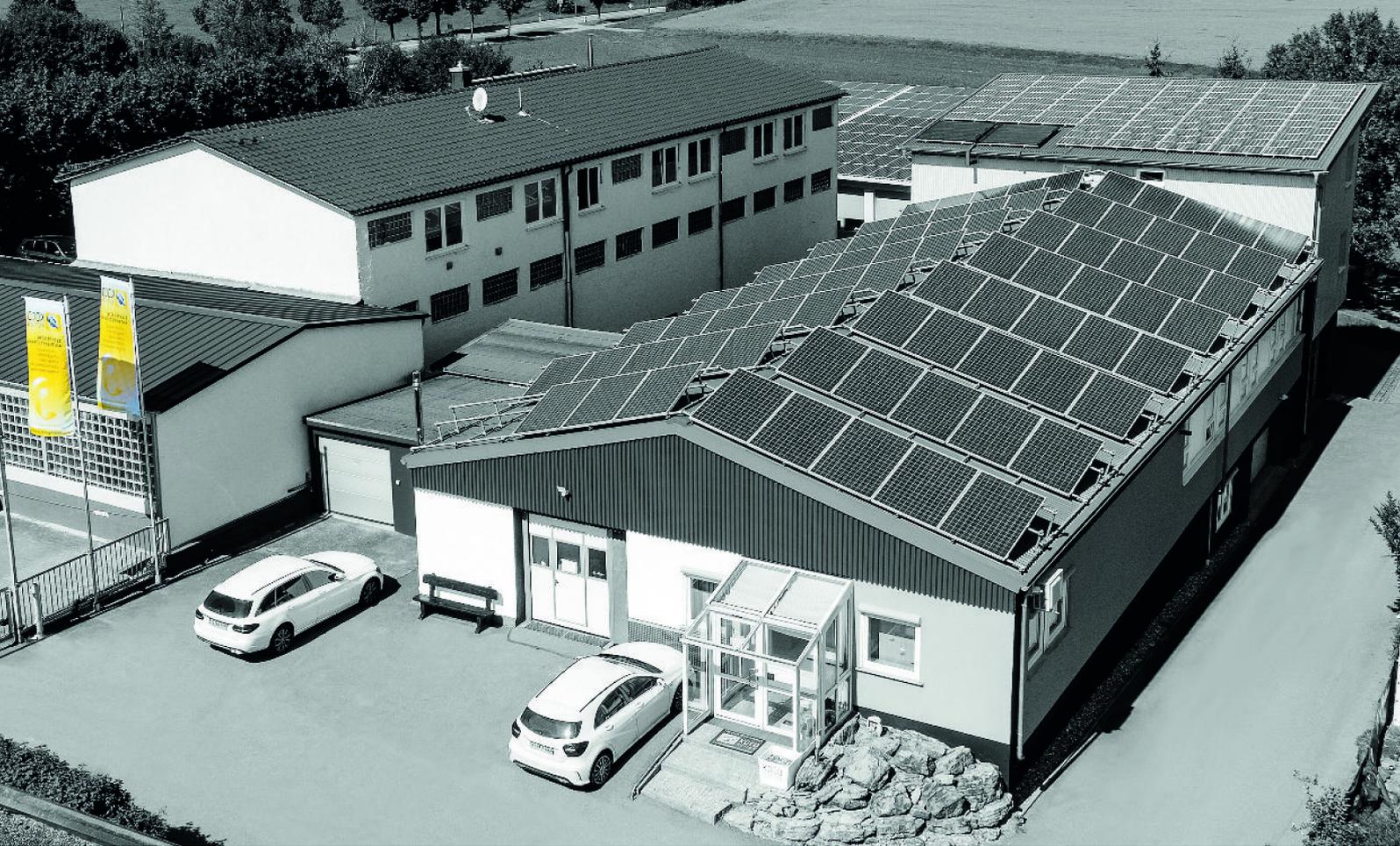
Force. Accuracy. Lifetime.

Linear Actuators



Linear Actuators

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HIGH CUSTOMER SATISFACTION IS OUR MOTIVATION

From tailor-made drive solutions in small series to complex projects with large quantities - our KOCO MOTION team is ready to provide our customers with advice and support.

We collaborate with our customers to coordinate requirements and specifications and ensure compliance with those through close inspections. On-time delivery and tested quality are always our claim and are also proven by certifications according to DIN EN ISO 9001 and DIN EN ISO 14001.

PERSONAL. ENVIRONMENTALLY FRIENDLY. AND WITH DRIVE.

Our employees are our greatest asset. Their motivation is not only based on good relationships with each other and with KOCO MOTION, but also lies in the opportunity to fully contribute their skills and achieve our company goals in an individual way.

We see ourselves as part of the environment and therefore treat the scarce natural resources we are given carefully. We actively look for ways to keep and improve our actions and behavior in an environmentally friendly manner.

We are KOCO MOTION

...Intelligence in motion

We are only satisfied when the optimal solution has been found for our customers.

As a system house, we always offer our customers the best drive solution and can rely on a global network of motor and control technologies. We implement our customers' projects in a highly professional and extremely flexible manner in partnership with our customers. Our aim is always to achieve the highest quality within the agreed budget.

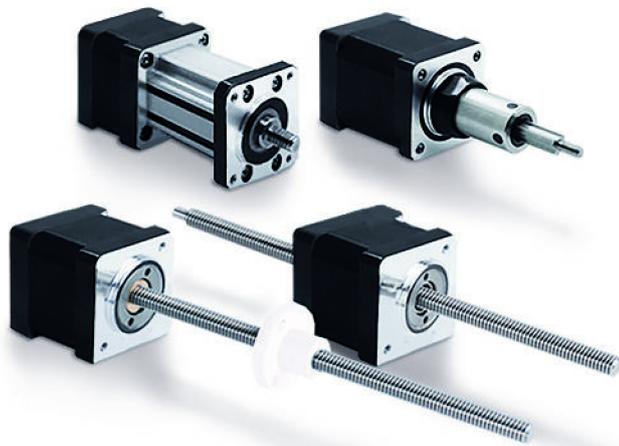
We draw on years of experience in the development and production of electric motors and respond individually to the wishes and ideas of our customers in project consulting. For us, the focus is on the personal relationship with customers, employees and suppliers. We understand our customers' needs exactly, achieve a high level of customer satisfaction and are THE partner for our customers when it comes to drives.

Applications

Linear actuators are used, among other things, for lifting, lowering, positioning and for opening and closing valves. Essentially anywhere linear motion is needed - in machines, devices and automation.

The trend is for small linear axes to replace pneumatic cylinders.

- Analyzer
- Packaging machines
- Format adjuster
- Bottling plants
- Robots
- Dosing systems
- Laser systems
- Medical technology



ADVANTAGES

- Great strength, high resilience
- Long lifetime
- High positioning accuracy
- Simple control
- Low noise
- Compact, efficient and reliable
- Flexibly adaptable for a variety of areas of application e.g. with nut-spindle combinations:
 - Cost-effective solutions with injection molded nuts for trapezoidal spindles
 - Versions with ball screw possible

Basics

F = Force	[N]	r = Radius	[m]
m = Mass	[kg]	t = Time	[s]
a = Acceleration	[m/s ²]	ρ = Specific density	[kg/m ³]
M = Torque	[Nm]	h = Height	[m]
J = Mass moment of inertia	[kg/m ²]	s = Distance traveled	[m]
α = Angular acceleration	[rad/s ²]	p = Spindle pitch	[m]
W = Work - Energy	[Nm]	Z = Number of teeth	[-]
∂ = Adjustment angle	[rad]	i = Reduction ratio	[-]
d = Travel path	[m]	η = Efficiency	[%]
P = Mechanical power	[N]		
v = Speed	[m/s]		
ω = Angular velocity	[rad/s]		

Efficiency

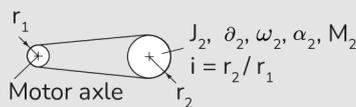
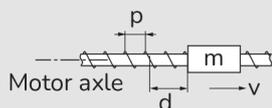
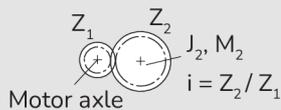
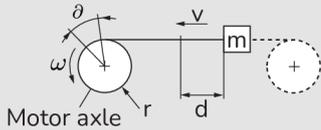
Leadscrew = 30-70 % · Ballscrew = 90-95 %

Force		Work - Energy		Mechanical power		Torque	
$F = m \cdot a$	[N]	$W = F \cdot d$	[Nm]	$P_m = F \cdot v$	[W]	$M = J \cdot \alpha$	[Nm]
		$W = M \cdot \partial$	[Nm]	$P_m = M \cdot \omega$	[W]		

Mass moment of inertia

Moment of inertia of a ring

$$J = m \cdot r^2 \quad [\text{kg/m}^2]$$



Moment of inertia of a cylinder

$$J = \frac{1}{2} m \cdot r^2 = \frac{\pi}{2} \cdot r^4 \cdot h \cdot \rho \quad [\text{kg/m}^2]$$

$$J = m \cdot r^2 \quad [\text{kg/m}^2]$$

$$\vartheta = \frac{d}{r} \quad [\text{rad}]$$

$$\omega = \frac{v}{r} \quad [\text{rad/s}]$$

$$\alpha = \frac{a}{r} \quad [\text{rad/s}^2]$$

Moment of inertia of a hollow cylinder

$$J = \frac{1}{2} m(r^2 + r^2) = \frac{\pi}{2} (r^4 - r^4) \cdot h \cdot \rho \quad [\text{kg/m}^2]$$

$$M = F \cdot \frac{r}{\eta} \quad [\text{Nm}]$$

$$r_{\text{opt.}} = \sqrt{\frac{J_m}{m}} \quad [\text{m}]$$

$$M = F \cdot \frac{p}{2\pi} \cdot \eta \quad [\text{Nm}]$$

$$p_{\text{opt.}} = 2\pi \sqrt{\frac{J_m}{m}} \quad [\text{m}]$$

$$J_1 = \frac{J_2}{i^2} \quad [\text{kg/m}^2]$$

$$\vartheta_1 = \vartheta_2 \cdot i \quad [\text{rad}]$$

$$\omega_1 = \omega_2 \cdot i \quad [\text{rad/s}]$$

$$\alpha_1 = \alpha_2 \cdot i \quad [\text{rad/s}^2]$$

$$M_1 = \frac{M_2}{i \cdot \eta} \quad [\text{Nm}]$$

$$i_{\text{opt.}} = \sqrt{\frac{J_2}{J_m}} \quad [\text{m}]$$

Linear motion with constant acceleration α for initial speed v_0

The above mentioned relations change, when the accelerated body has already a finite (constant) speed v_0 . The acceleration starts at time $t_s = 0$ and lasts until time t_e . The time difference $\Delta t = t_e - t_s = t_e$ is relevant for the resulting speed and travelled distance during the acceleration phase.

 New speed after time Δt

$$v(t_e) = \alpha \cdot t_e + v_0 = \alpha \cdot \Delta t + v_0$$

Travelled distance while accelerating

$$s(t_e) = (v(t) \cdot +v_0) \cdot \Delta t = (\alpha \cdot \Delta t + v_0) \Delta t = \alpha \cdot (\Delta t)^2 + v_0 \Delta t$$

 Acceleration α needed to reach a certain speed $v(t_e)$ in time Δt

$$\alpha = \frac{v(t_e) - v_0}{\Delta t}$$

 Time needed to reach a certain speed $v(t_e)$ applying a given acceleration α

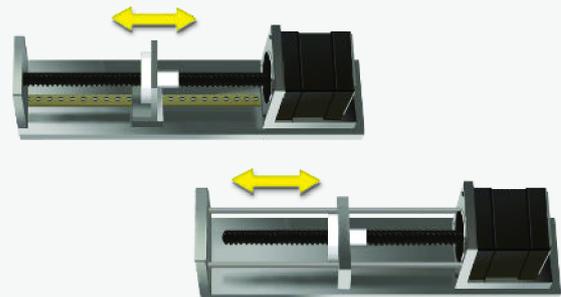
$$\Delta t = \frac{v(t_e) - v_0}{\alpha}$$

Motor Design

EXTERNAL. NON-CAPTIVE. CAPTIVE. KAPTIVE.

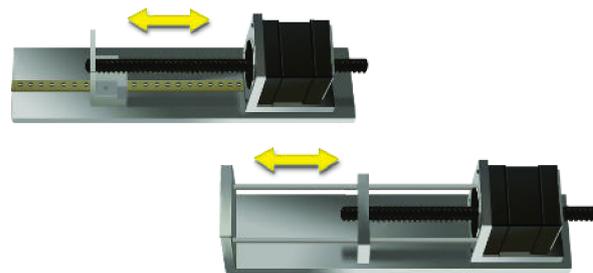
External and lineare guide rail

The spindle is firmly connected to the rotor of the motor and rotates with the rotor. The rotational movement of the spindle moves the nut linearly back and forth. The twisting of the nut must be prevented by an external guide. The length of the required installation space is defined by the motor length and spindle length. The travel path of the nut is the spindle length minus the nut length.



Non-captive

The motor rotor and the spindle are not firmly connected. The rotating rotor moves the spindle linearly back and forth. A guide for the nut prevents the nut and spindle from twisting.



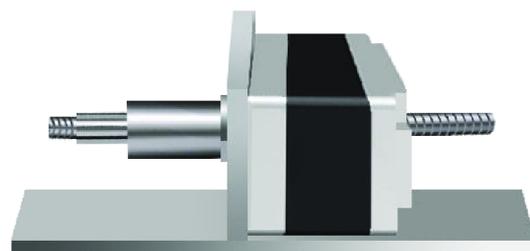
Captive (electrical cylinder)

The spindle is firmly connected to the rotor of the motor and rotates with the rotor. The rotational movement of the spindle moves the nut running in the cylinder linearly back and forth. The internal nut is secured against twisting by the cylinder and thus generates the linear movement. The spindle end can be mechanically fixed. The required installation space of the electric cylinder is fixed.



Kaptive

The motor rotor and the spindle are not firmly connected. The rotating rotor moves the spindle linearly back and forth. The integrated linear guide prevents the spindle from twisting.



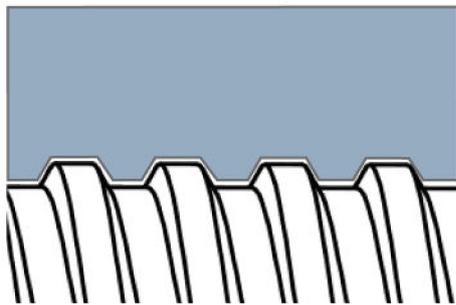
Differences

LEADSCREW

The simple threaded design where the nut moves along the screw threads convert the rotational movement of a stepper motor to linear motion. These linear actuators are available with strokes within 1000mm and can reach a max thrust of over 240kg.

Variety of customizations are available upon request, such as screw length, custom designed nuts, anti-backlash nut, safety brake, encoder and other customer special requirements.

Typical applications include X-Y tables, medical equipment, semiconductor handling, telecommunications equipment, valve control, and numerous other uses.



Sliding Friction

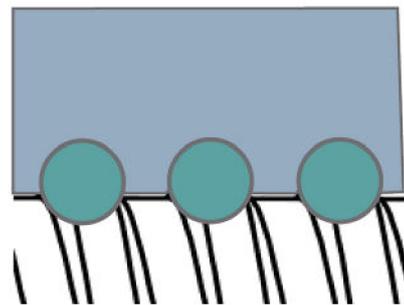
- Simple threaded design, easier to manufacture, lower manufacturing costs
- Sliding friction leads to higher overall screw friction compared to ballscrews. Thus, leadscrews show a lower efficiency which depends on materials, lubrication, coatings, lead pitch (typically around 30 - 70 %)
- Generally lower load capacity compared to ballscrews
- Typically, more backlash due to the clearance between the screw threads and the nut

BALLSCREW

With the need for high performance, high precision and endurance in a small package, the ballscrews fit best for converting the rotational movement of a stepper motor to a linear motion. These linear actuators are ideal for applications that require a combination of accurate positioning, rapid motion and longer life cycle compared to leadscrew driven linear actuators.

The different available grades from C7 rolled balls to high precision C5/C3 grinded balls allow transmission efficiency up to 90-96 %, which is much better compared to conventional trapezoidal screw plastic nuts. This leads to lower driving powers for the stepper motor with the same amount of load to be moved.

The rolling friction of the balls decreases the former heat rise and so in general the ballscrew can do higher speed transmission tasks. In addition, the surface damage of rolling friction is lower than sliding friction which then leads to higher lifetime compared to trapezoidal screw.



Rolling Contact

- Uses balls that roll between the screw and the nut
- The balls are circulated in a closed loop which can handle higher loads, reduce friction, achieve higher precision and increase efficiency (typically 90 % or higher)
- Generates less heat and requires less power for the same load compared to leadscrews
- Generally more expensive due to the complexity of the design and manufacturing process
- Commonly used in high-precision applications such as CNC machines, 3D printers, and robotics

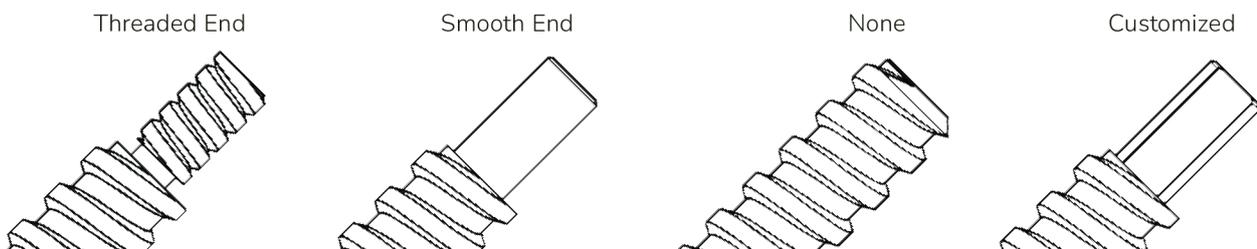
Details

LEAD SCREW SURFACE TREATMENT

Standard lead screws are coated with a thin layer of grease. When applications require greaseless screw and nut combination, we offer teflon coated lead screws. Teflon coated lead screws enable longer life cycle, lower friction and better thrust force generation against conventional lead screws made of stainless steel (SUS). Teflon coating can be applied for all lead screw options and all types of linear actuators such as External, Non-Captive, Electrical Cylinder and Kaptive. In addition, anti-backlash nuts also can be combined with teflon coated lead screws.

END MACHINING

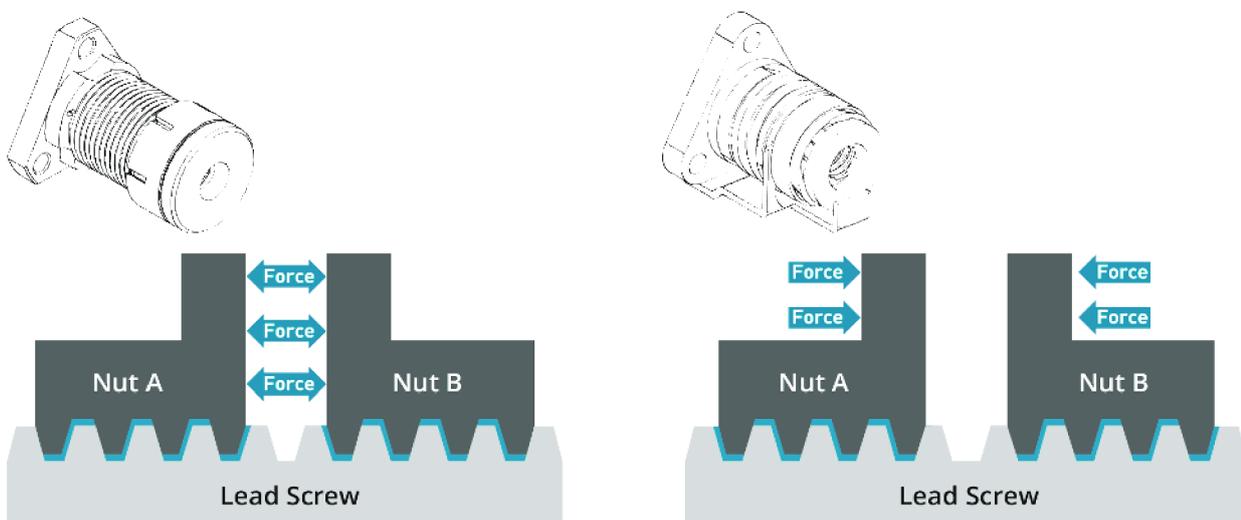
Screw end machining depends on the screw diameter.



ANTI-BACKLASH-NUT

Backlash refers to the relative axial movement between a screw and a nut. It can be problematic in positioning tasks when movement stops, or the movement direction is changed. It is quite normal for backlash to increase over time due to wear. To counteract this play, an anti-backlash nut can be used, which allows for compensation or correction of the backlash. Generally, backlash is particularly relevant in applications that require bi-directional positioning.

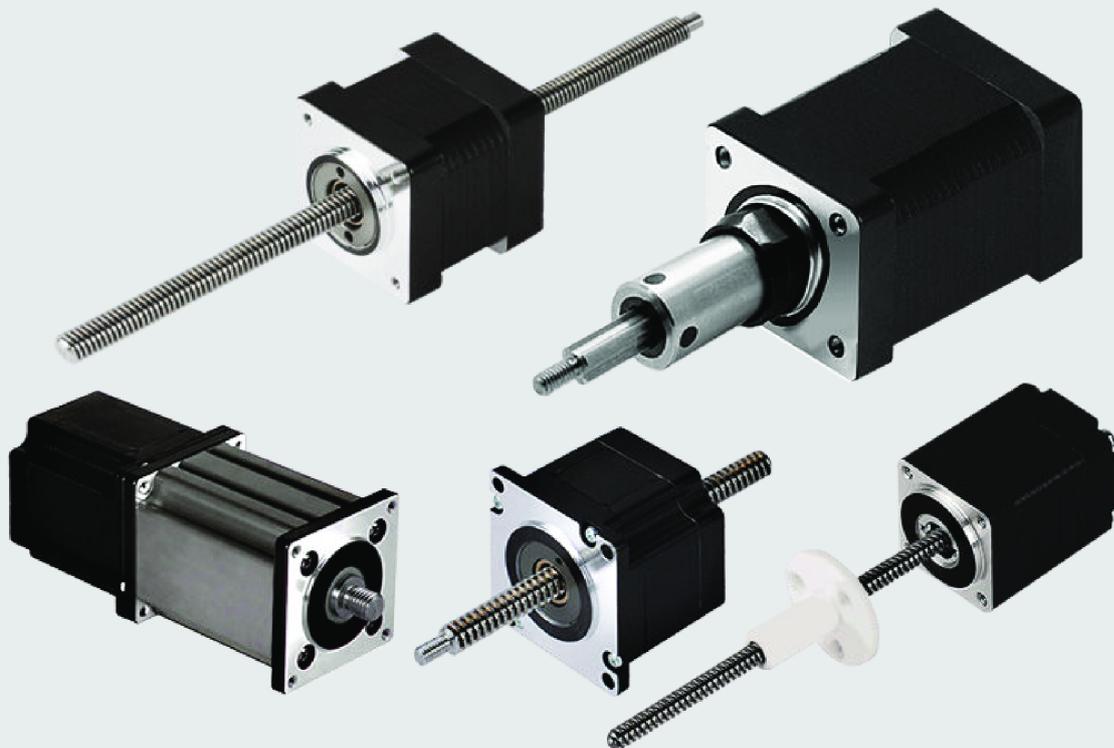
Depending on the main load direction, the preload of the anti-backlash nut can be changed to free the relevant direction of movement from axial play and thus optimize the positioning accuracy of the application.



Leadscrew

OVERVIEW.

Size (Nema)	Flange size (mm)	Stack	Motor length (mm)	Max. thrust at 60 rpm (kg)	Max. thrust at 60 rpm (N)	Lead pitch for max. thrust (mm)
6	14 x 14	1	32,0	1,9	19	
8	20 x 20	1	27,2	5,5	54	0,3
		2	38,1	8,3	81	
11	28 x 28	1	33,35	16,0	157	0,3175
		2	45,0	43,0	422	
14	35 x 35	1	33,6	37,0	363	0,6096
		2	45,6	69,0	677	
17	42 x 42	1	34,1	58,0	569	0,6096
		2	48,1	95,0	932	
23	57 x 57	1	45,0	135,0	1324	0,635
		2	65,0	255,0	2502	
24	60 x 60	1	47,0	130,0	1275	0,635
		2	68,3	240,0	2354	
34	86 x 86	1	76,0	220,0	2158	2,54



14mm Stepper Lead Screw Linear Actuator

SLSLA - Size 6 [14mm]

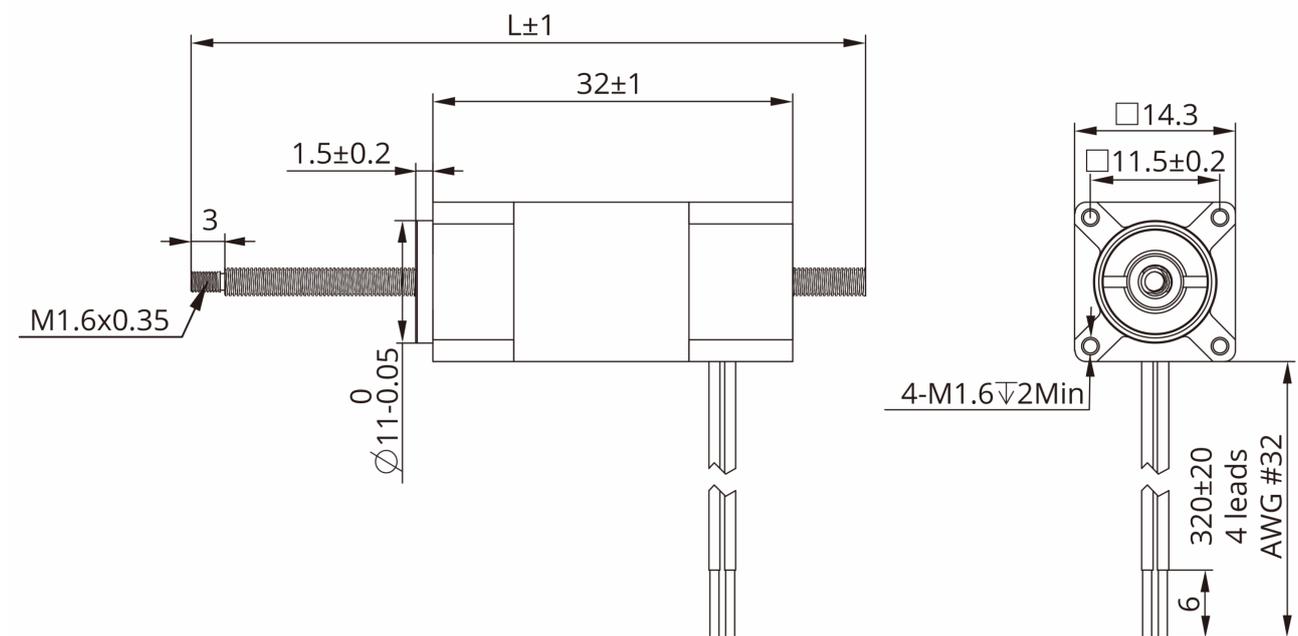
The SLSLA Size 6 [14mm] Stepper Lead Screw Linear Actuator delivers up to 19N thrust with a compact 14mm square footprint. Featuring multiple screw pitches (0.3-8mm) and thread diameters, it supports external, non-captive, and captive configurations. Key options include encoder feedback, customized machining, and Teflon coating for enhanced durability. Ideal for precision linear motion in space-constrained automation and instrumentation systems.


<https://www.kocomotion.de/produkt/slsa-size-6-14mm/>

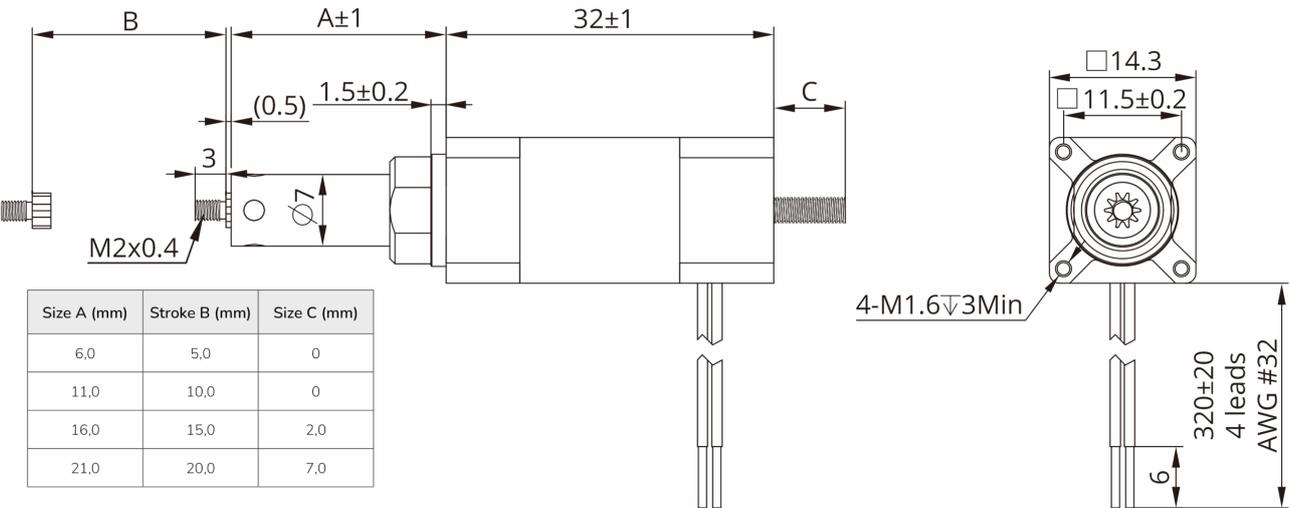
Motor Characteristics	Unit	6-2103
Size	Nema	6
Flange size	mm	14
Voltage	V	6.6
Current	A	0.25
Resistance	Ω	22
Inductance	mH	4.5
Weight	g	60
Lead Wire No.		4
Motor Length	mm	32

Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [μm]	Left-hand thread available	Notes
AA	0.6096	3.5	3		
B	1.2192	3.5	6.1		
J	2.4384	3.5	12.2		
AF	0.3	3.5	1.5		
AB	1	2.5	5		*
AB	1	3.24	5		*
G	2	3.5	10	yes	
M	4	3.5	20		
T	8	3.5	40		
AD	0.5	3	2.5		

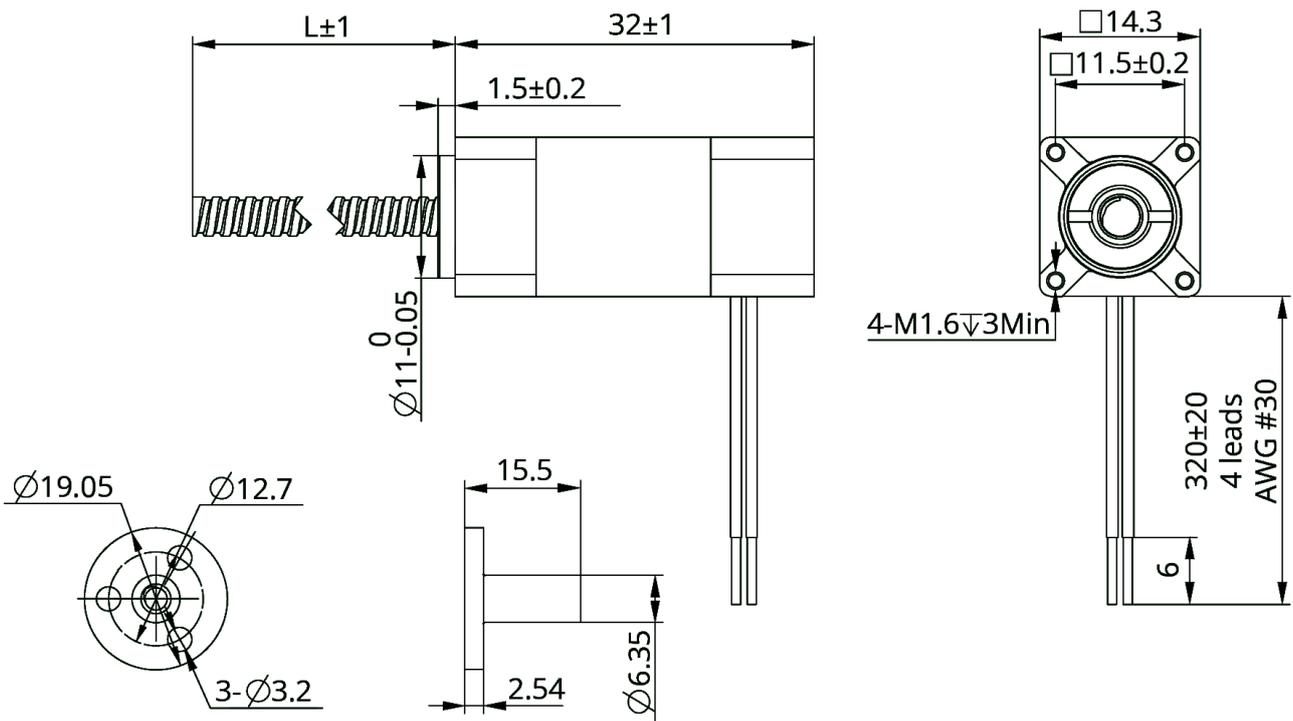
*only applicable screw for captive type



Non-Captive Actuator

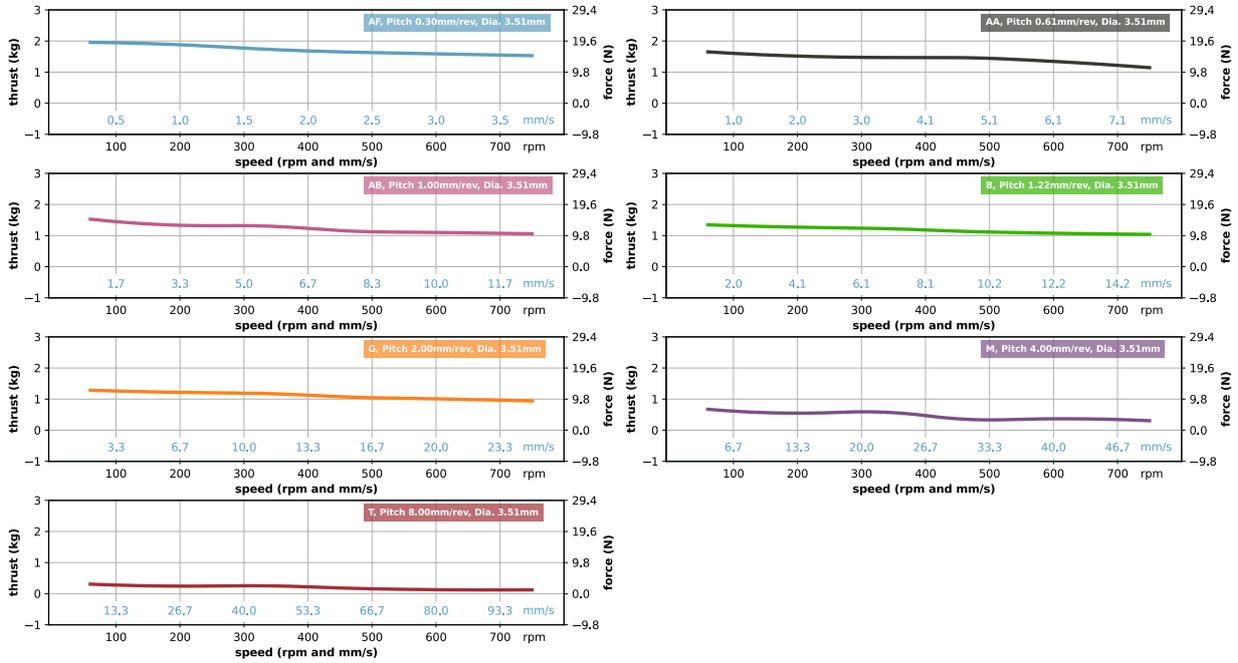


Kaptive Actuator



External Actuator

Speed/Thrust Curves



Speed-thrust curves for available screws, motor Nema 6, 6-2103. Motor driven in two-phase operation with 0.25A

Compact Stepper Linear Actuator

SLSLA - Size 8 [20mm]



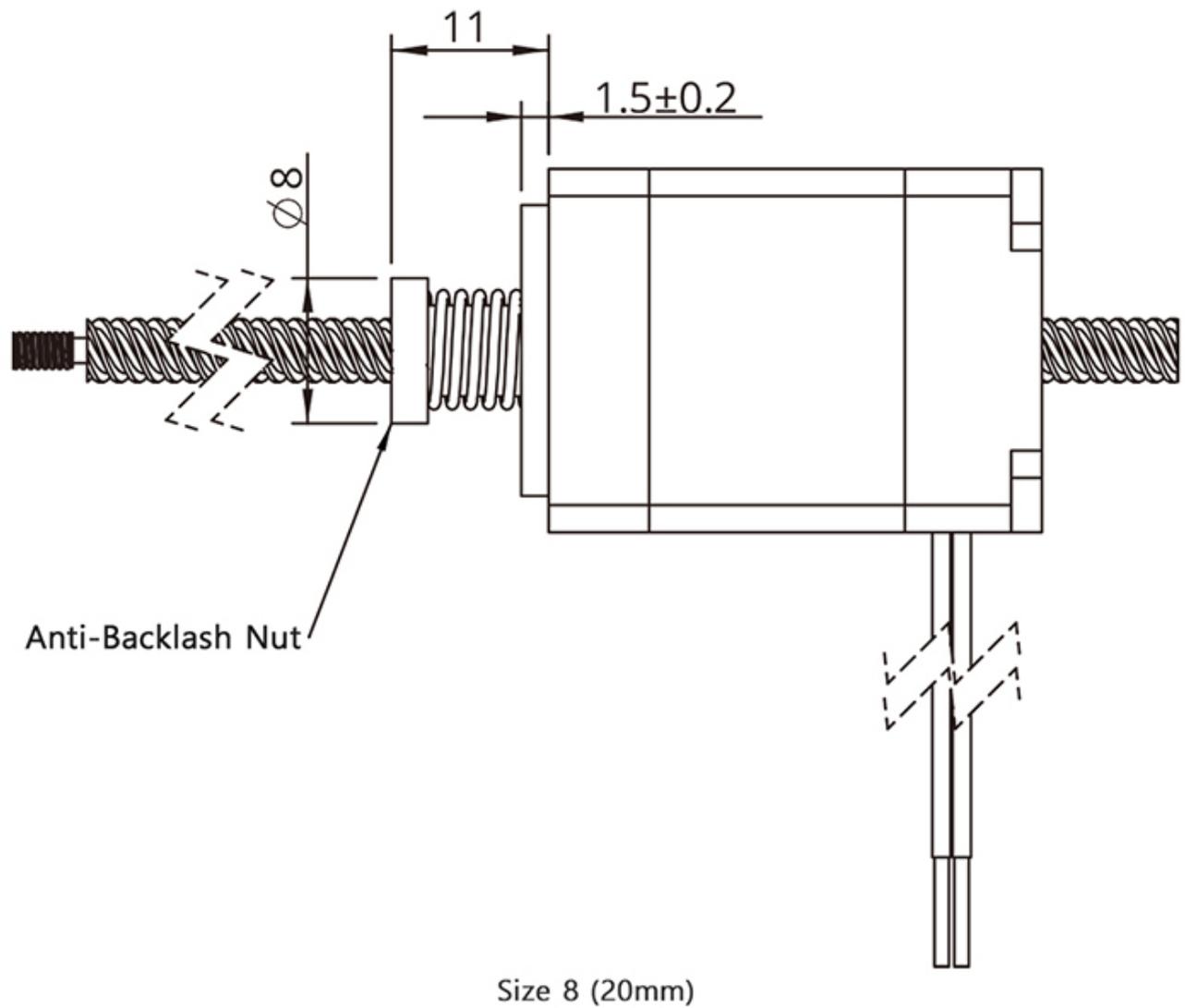
LEADSCREW

The SLSLA Size 8 [20mm] Stepper Lead Screw Linear Actuator offers precise linear motion in a compact package with a mounting area under 1 in². It delivers up to 45N continuous thrust and supports multiple screw leads, stack configurations, encoder feedback, and anti-backlash options. Ideal for applications requiring high-precision, space-saving motion solutions in automation, instrumentation, and miniaturized equipment.

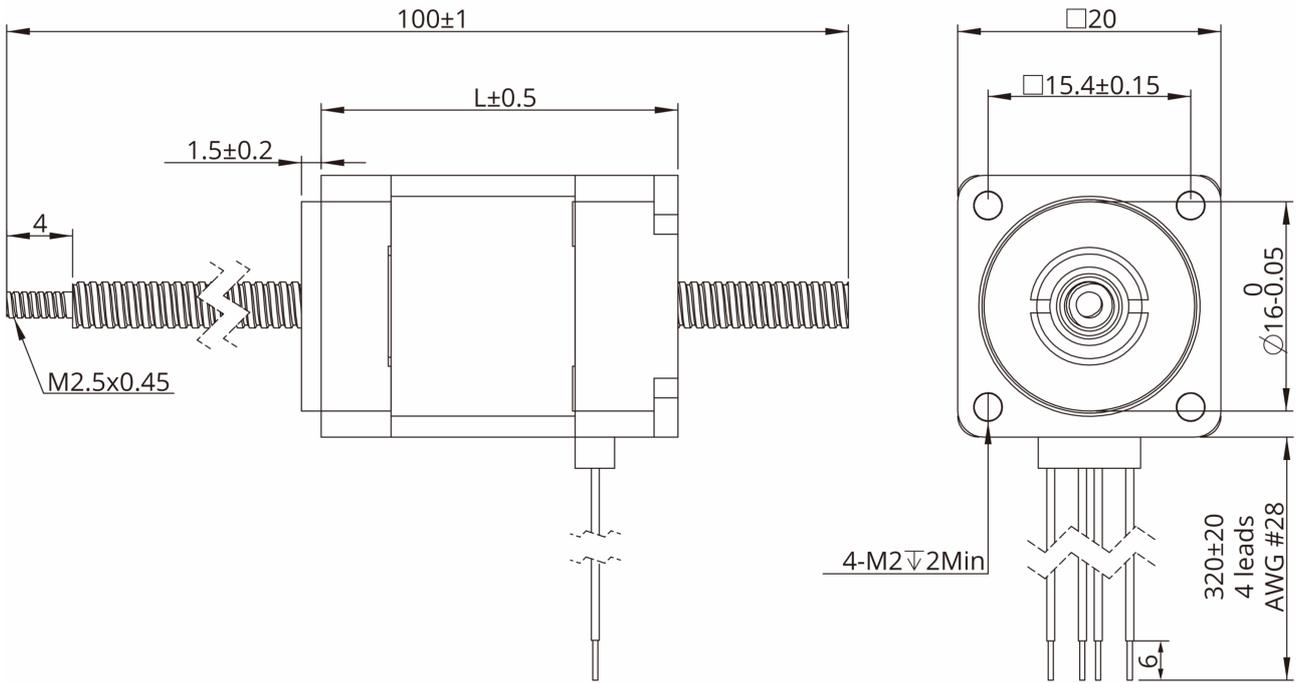

<https://www.kocomotion.de/produkt/slsla-size-8-20mm/>

Motor Characteristics	Unit	8-2105	8-2205
Size	Nema	8	8
Flange size	mm	20	20
Voltage	V	2.5	4.4
Current	A	0.5	0.5
Resistance	Ω	5.1	8.8
Inductance	mH	1.5	2.7
Weight	g	51	74
Lead Wire No.		4	4
Motor Length	mm	27.2	38.1

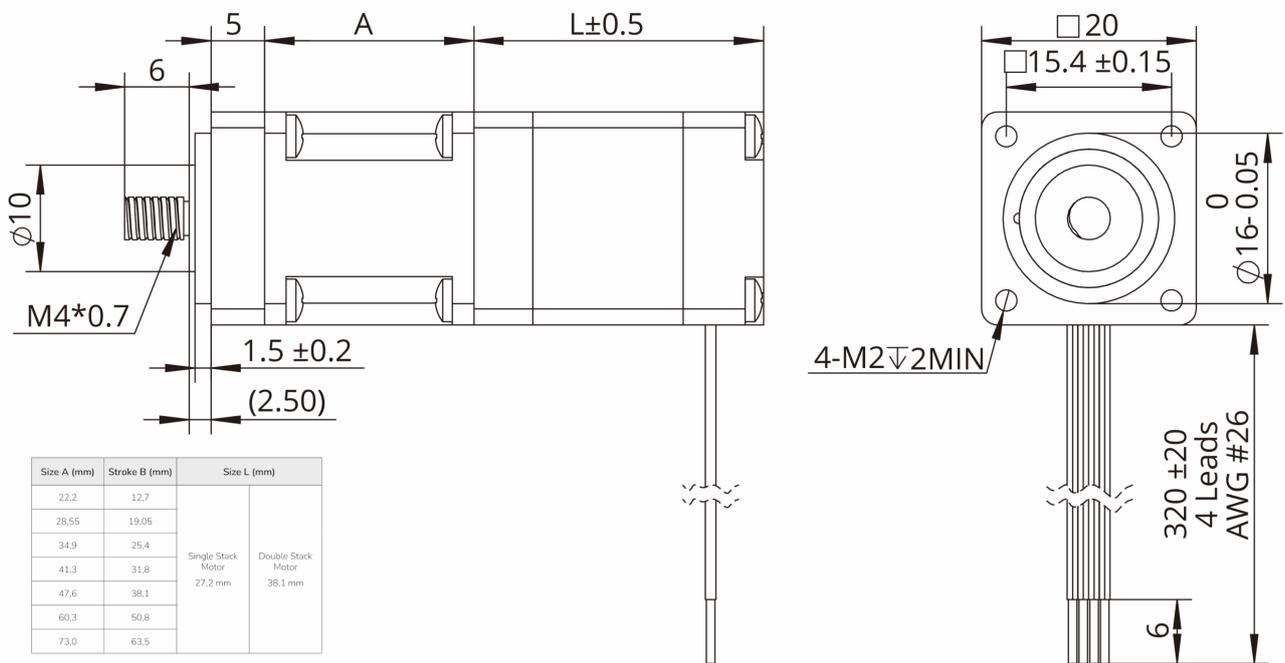
Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Left-hand thread available	Notes
AA	0.6096	3.5	3		
B	1.2192	3.5	6.1		
J	2.4384	3.5	12.2		
AF	0.3	3.5	1.5		
AB	1	3.24	5		
G	2	3.5	10	yes	
M	4	3.5	20		
T	8	3.5	40		
AD	0.5	3	2.5		



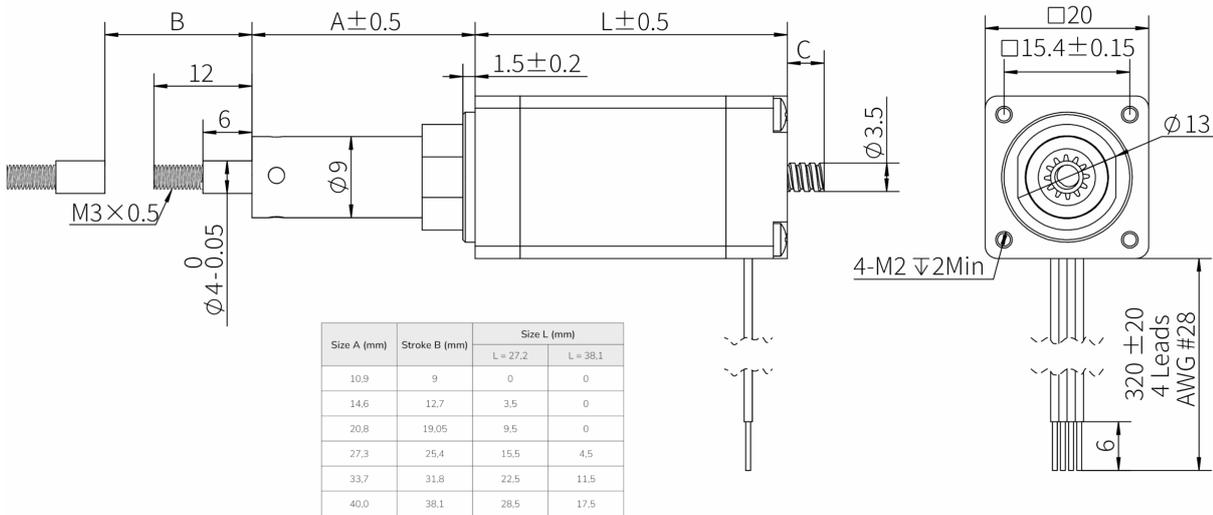
Non-Captive Anti-Backlash Nut



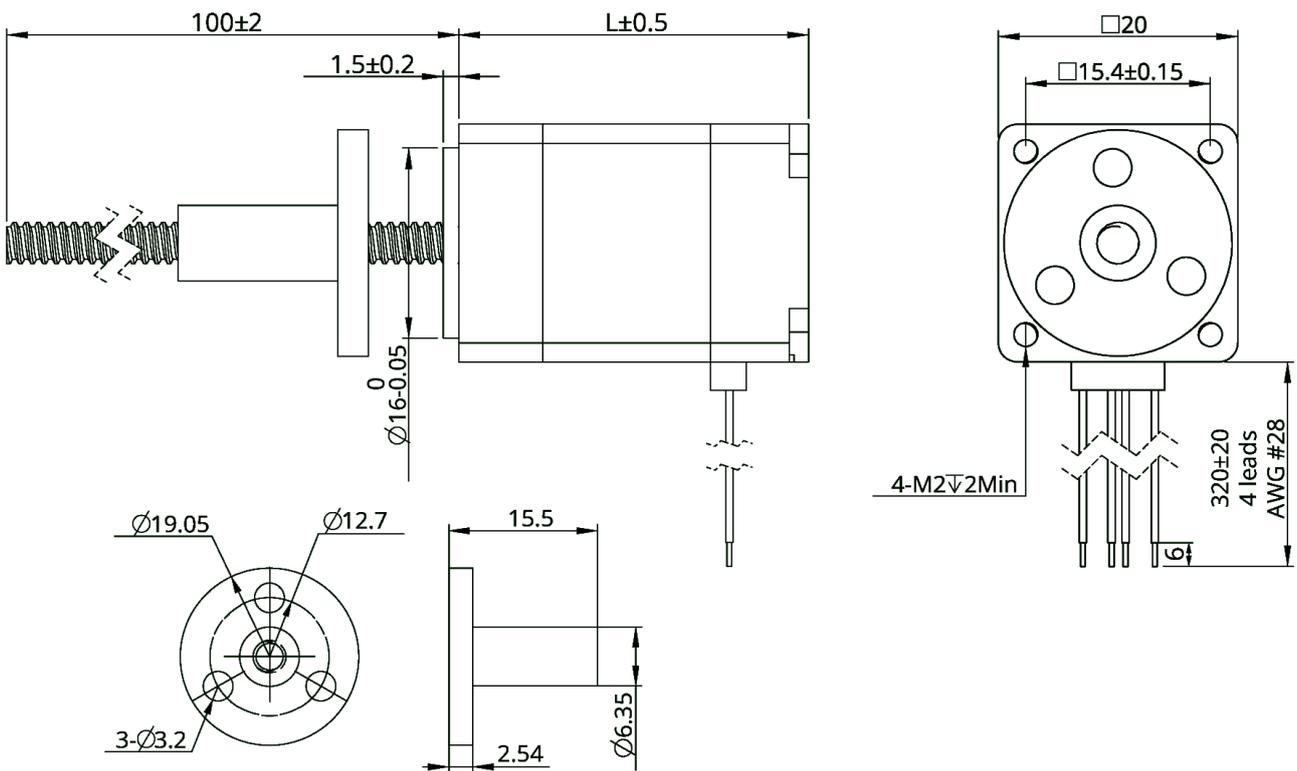
Non-Captive Actuator



Captive (Electrical Cylinder) Actuator

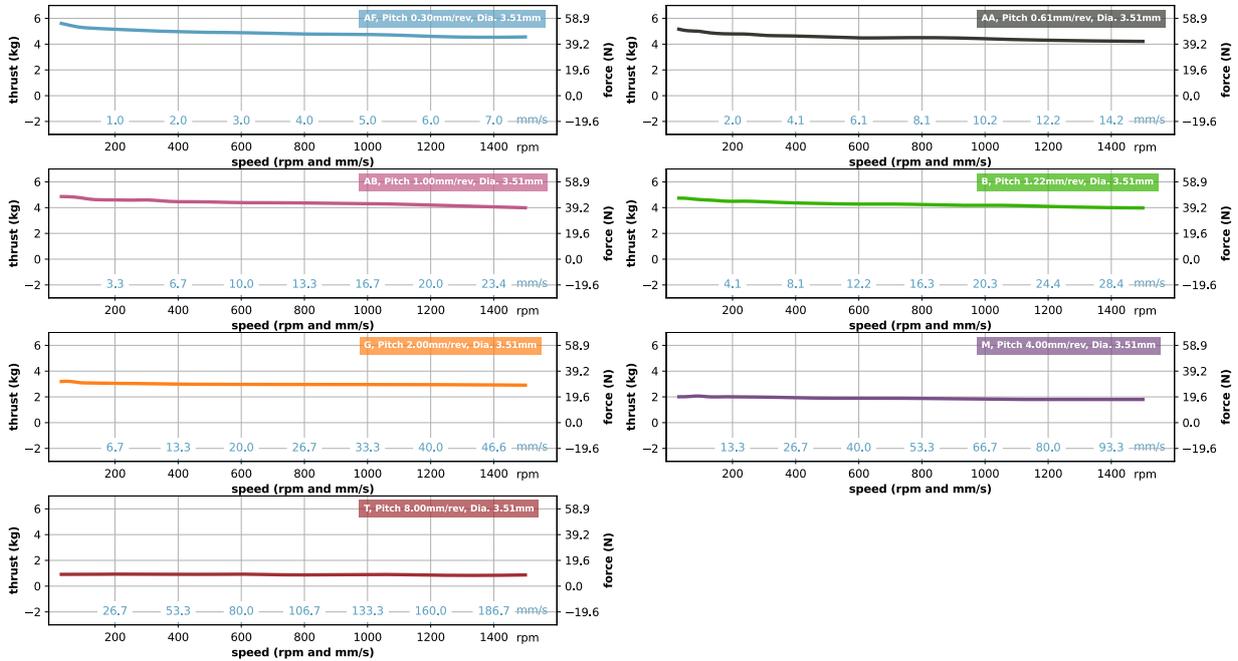


Kaptive Actuator

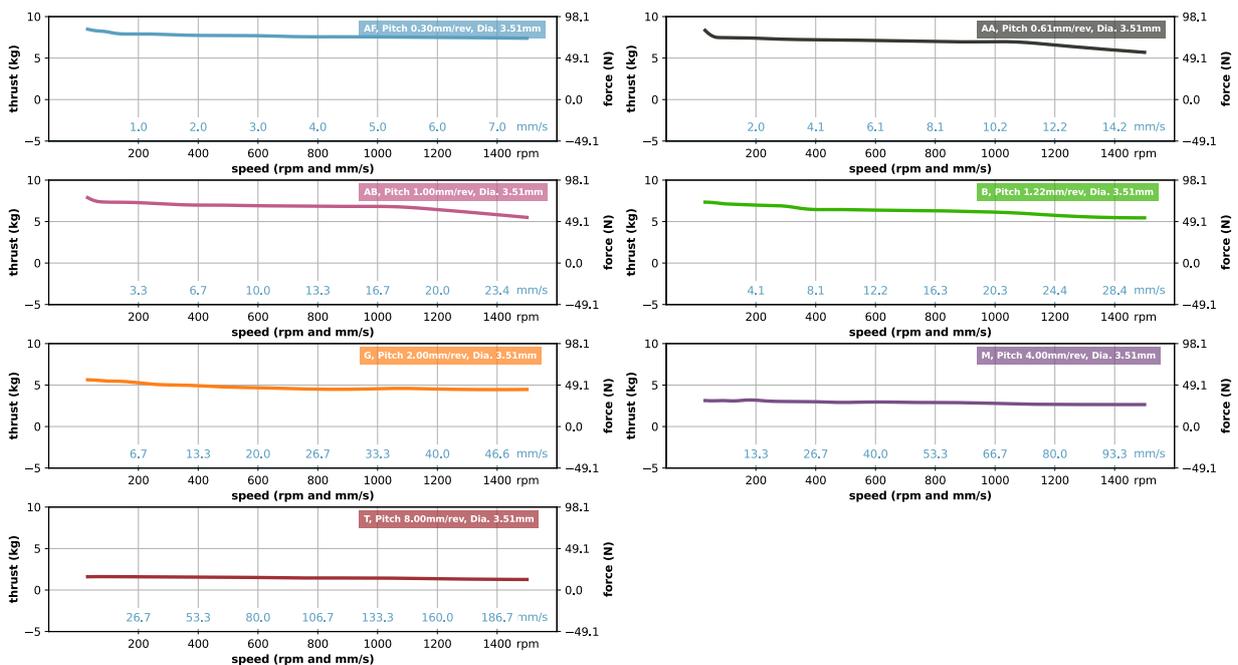


External Actuator

Speed/Thrust Curves



Speed-thrust curves for available screws, motor Nema 8, 8-2105. Motor driven in two-phase operation with 0.5A



Speed-thrust curves for available screws, motor Nema 8, 8-2205. Motor driven in two-phase operation with 0.5A

Compact High-Force Stepper Linear Actuator

SLSLA - Size 11 [28mm]

The SLSLA Size 11 (28mm) Stepper Lead Screw Linear Actuator provides over 140N continuous thrust in a compact, sub-1.1-inch footprint. Features include four screw configurations (External, Non-captive, Captive, Kaptive), multiple lead and diameter options, optional encoders, Teflon coating, anti-backlash nuts, and a power-off brake. Ideal for precision automation, medical, laboratory, and semiconductor handling applications.

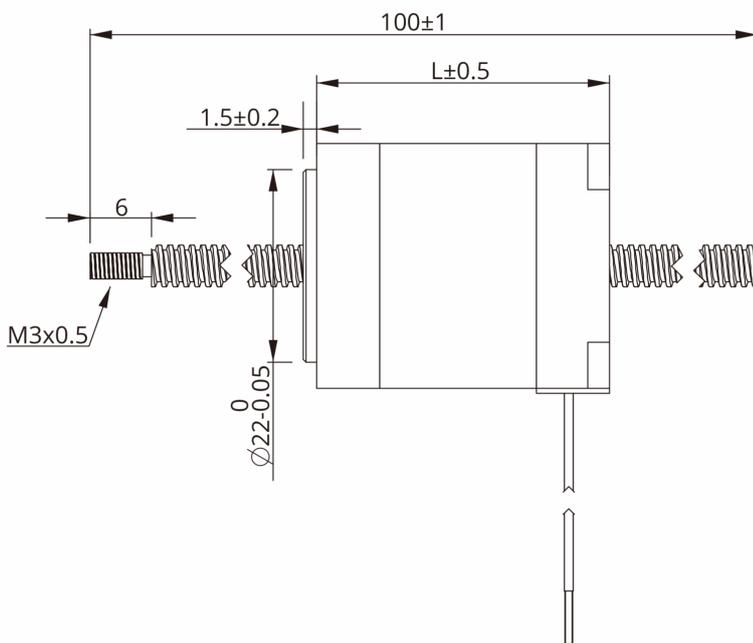


<https://www.kocomotion.de/produkt/slsla-size-11-28mm/>

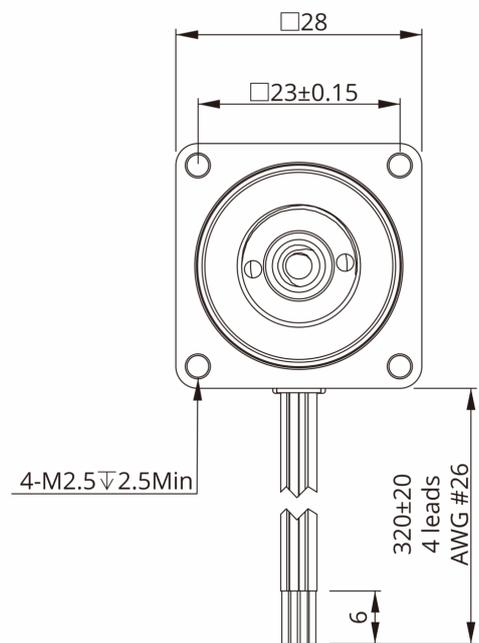
Motor Characteristics	Unit	11-2105	11-2110	11-2209	11-2216
Size	Nema	11	11	11	11
Flange size	mm	28	28	28	28
Voltage	V	4.55	2.1	3.9	2.4
Current	A	0.5	1	0.95	1.6
Resistance	Ω	9.1	2.1	4.1	1.5
Inductance	mH	6	1.5	4	1.3
Weight	g	117	117	173	173
Lead Wire No.		4	4	4	4
Motor Length	mm	33.35	33.35	45	45

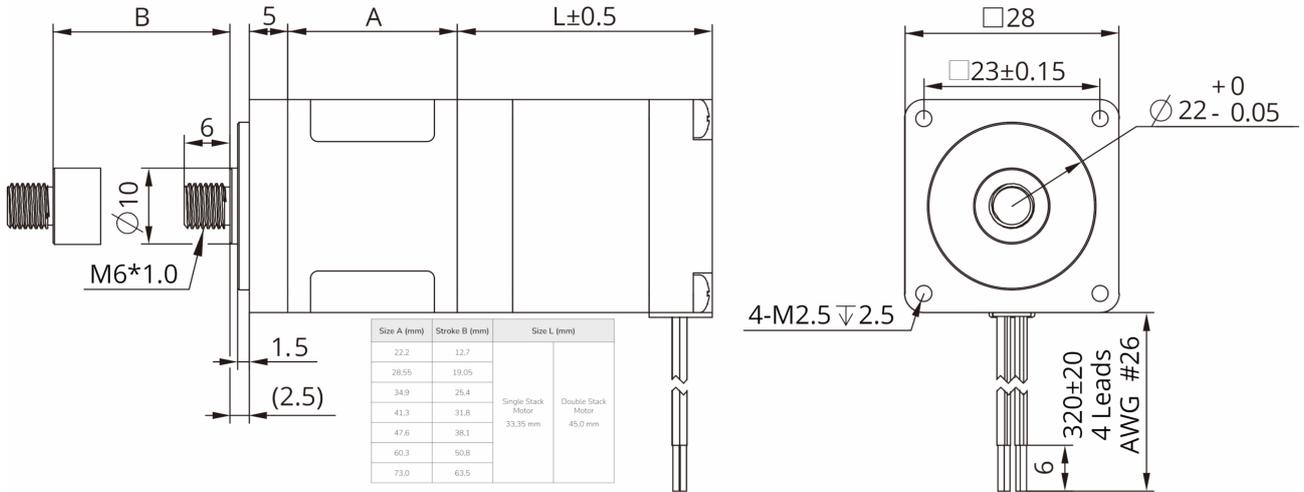
Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Left-hand thread available	Notes
AL	0.3175	4.77	1.6		
A	0.635	4.77	3.2		
D	1.27	4.77	6.4	yes	
F	1.5875	4.77	7.9		
J	2.4384	5.56	12.2		*
K	2.54	4.77	12.7		
Q	4.8768	4.77	24.4		
Q	4.8768	5.56	24.4		*
R	5.08	4.77	25.4		
X	10.16	4.77	50.8		
AC	4.76	4.77	23.8		

*custom 5,56mm screw diameter available for external type

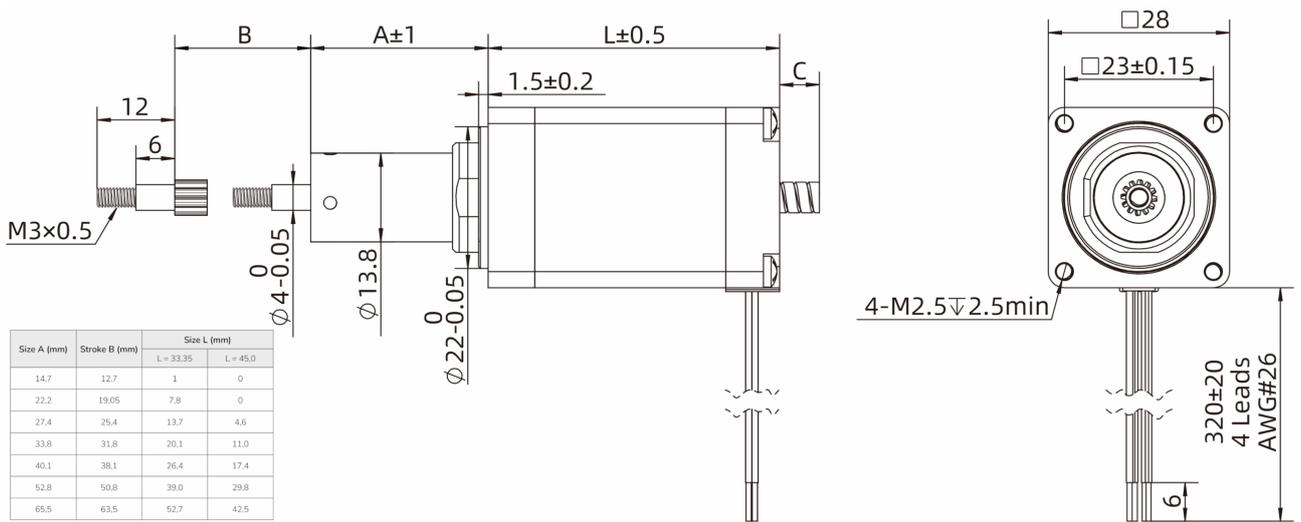


Non-Captive Actuator

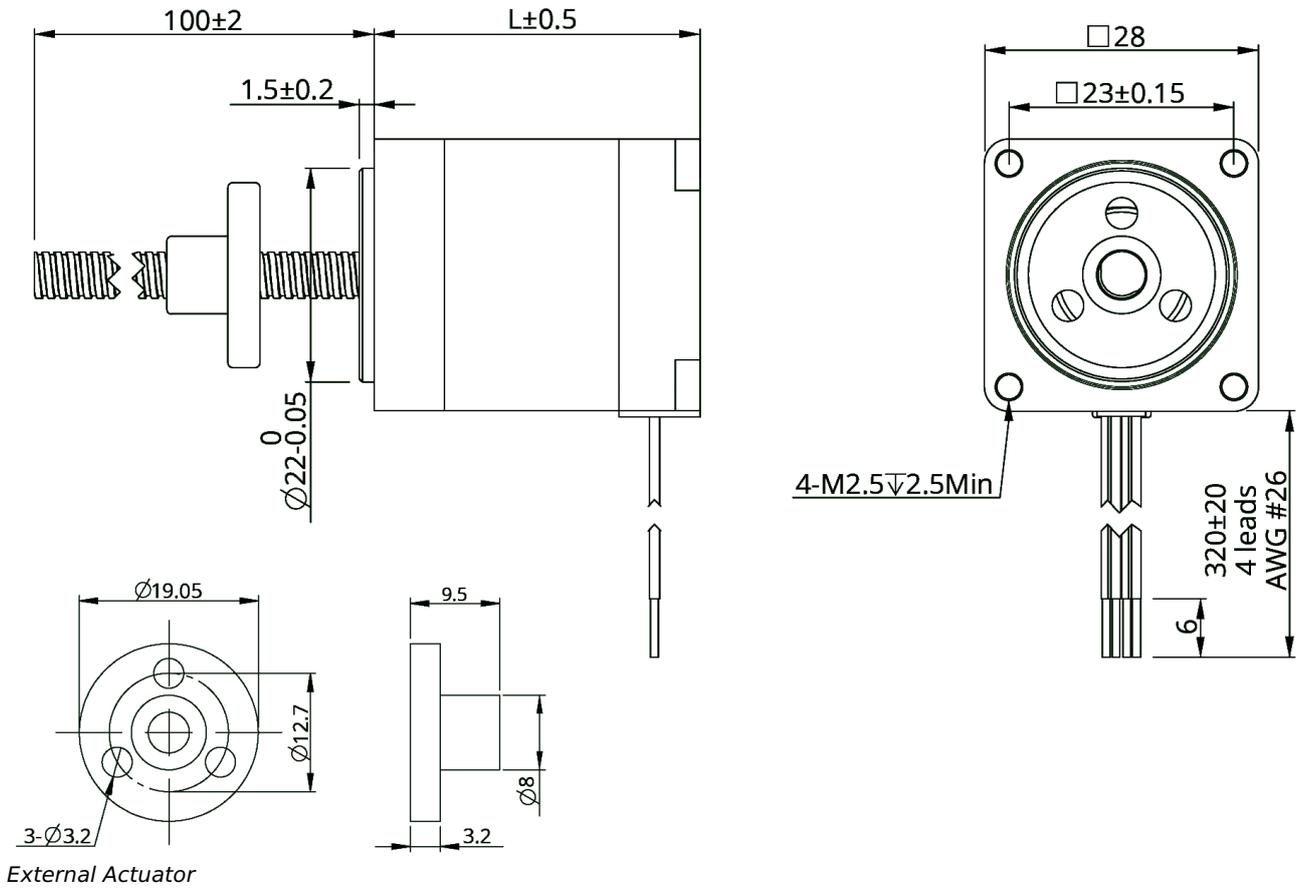




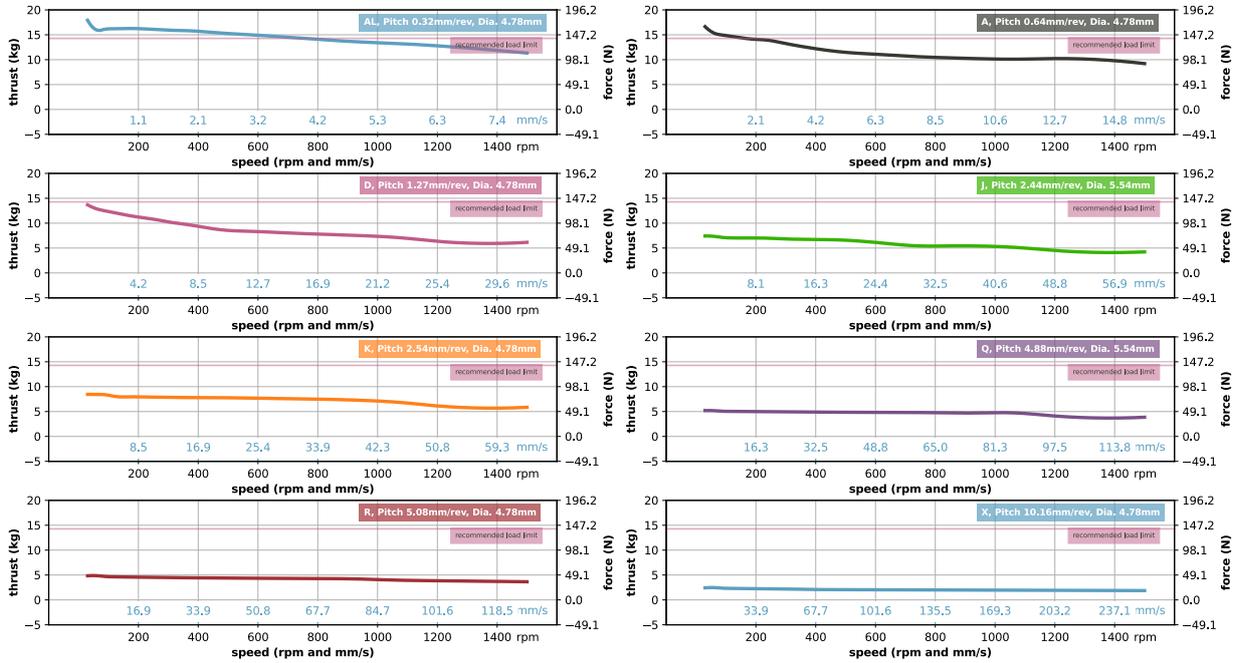
Captive (Electrical Cylinder) Actuator



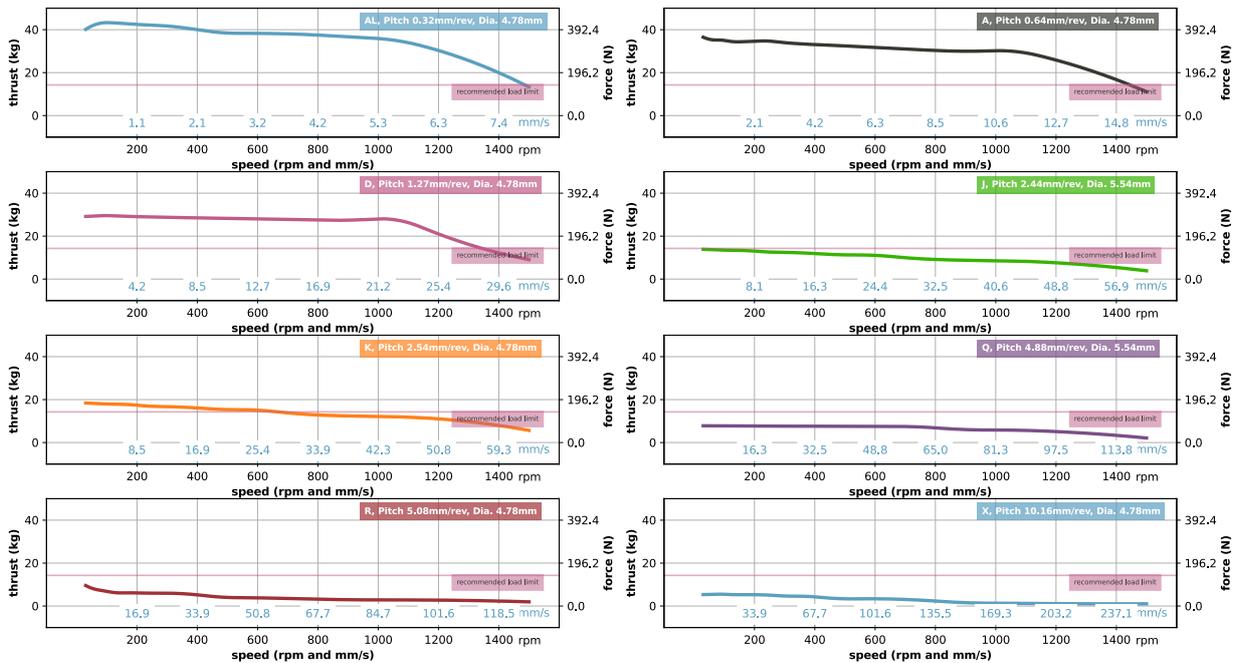
Kaptive Actuator



Speed/Thrust Curves



Speed-thrust curves for available screws, motor Nema 11, 11-2110. Motor driven in two-phase operation with 1A



Speed-thrust curves for available screws, motor Nema 11, 11-2216. Motor driven in two-phase operation with 1.6A

35mm Stepper Lead Screw Linear Actuators

SLSLA - Size 14 [35mm]

The SLSLA Size 14 (35mm) Stepper Lead Screw Linear Actuator delivers up to 230N continuous thrust, offering four adaptable form factors: External, Non-Captive, Electrical Cylinder (Captive), and Kaptive. With a 6.35 mm screw diameter, it supports diverse pitches from 0.61 to 25.4 mm and integrates options such as encoders, anti-backlash nuts, and Teflon coatings. Ideal for compact automation and high-precision OEM applications.



<https://www.kocomotion.de/produkt/slsla-size-14-35mm/>

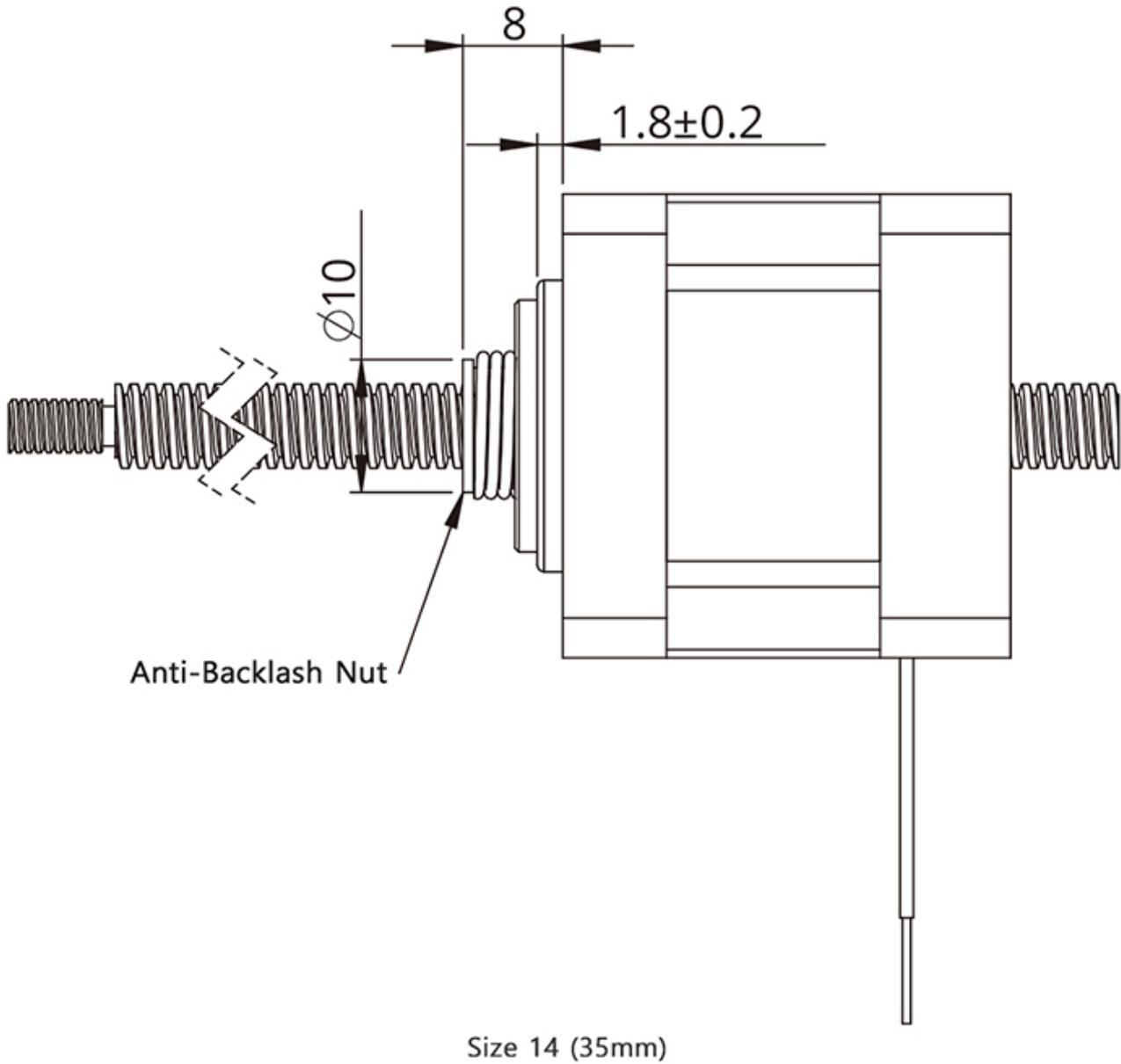
Motor Characteristics	Unit	14-2105	14-2110	14-2115	14-2205
Size	Nema	14	14	14	14
Flange size	mm	35	35	35	35
Voltage	V	6.6	3.5	2.7	12
Current	A	0.5	1	1.5	0.5
Resistance	Ω	13.2	3.5	1.8	24
Inductance	mH	14	3.6	1.9	29
Weight	g	189	189	189	210
Lead Wire No.		4	4	4	4
Motor Length	mm	33.6	33.6	33.6	45.6

Motor Characteristics	Unit	14-2210	14-2215
Size	Nema	14	14
Flange size	mm	35	35
Voltage	V	6	4
Current	A	1	1.5
Resistance	Ω	6	2.7
Inductance	mH	7.2	3.2
Weight	g	210	210
Lead Wire No.		4	4
Motor Length	mm	45.6	45.6

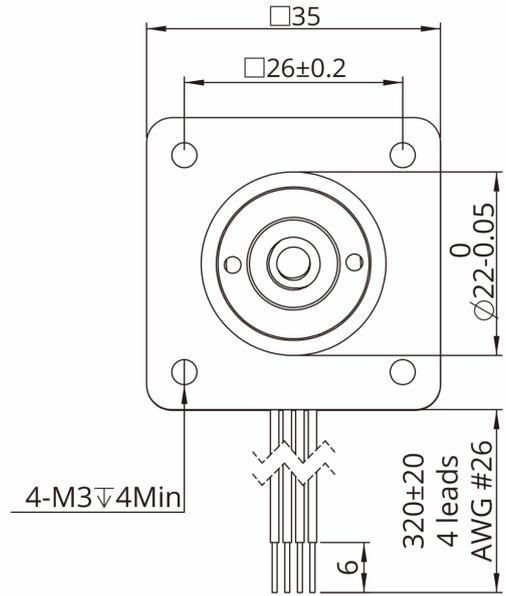
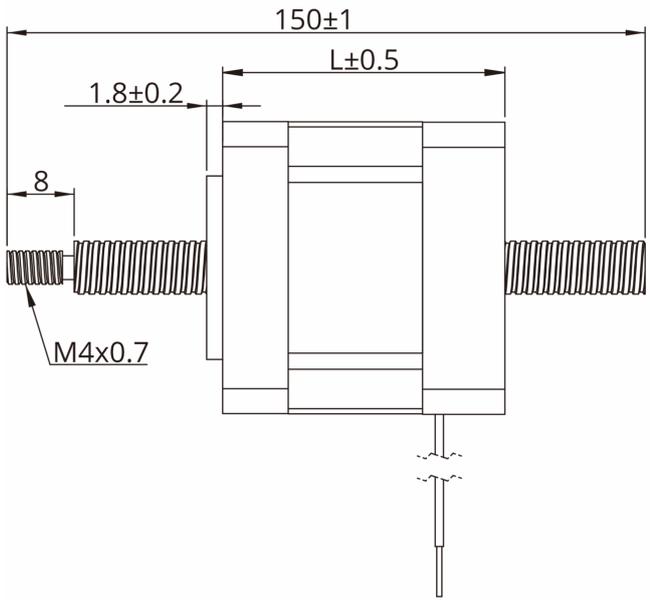
Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Left-hand thread available	Notes
AA	0.6096	6.35	3		
A	0.635	6.35	3.2		*
B	1.2192	6.35	6.1		
D	1.27	6.35	6.4		*
F	1.5875	6.35	7.9	yes	*
J	2.4384	6.35	12.2		
K	2.54	6.35	12.7	yes	*
L	3.175	6.35	15.9		*
Q	4.8768	6.35	24.4		
R	5.08	6.35	25.4		*
S	6.35	6.35	31.8		*
U	8.4667	6.35	42.3		
W	9.7536	6.35	48.8		*
Y	12.7	6.35	63.5		*
Z	25.4	6.35	127		*
AB	1	6	5		
AB	1	6.35	5		
AB	1	8	5		
G	2	6.35	10		
G	2	8	10		
M	4	8	20		
T	8	8	40		
E	5	6	25		
E	5	8	25		
C	10	8	50		
N	0.794	6.35	4		

*custom 9,525mm screw diameter available for external type

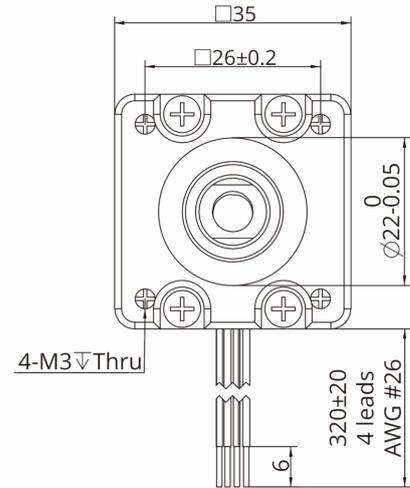
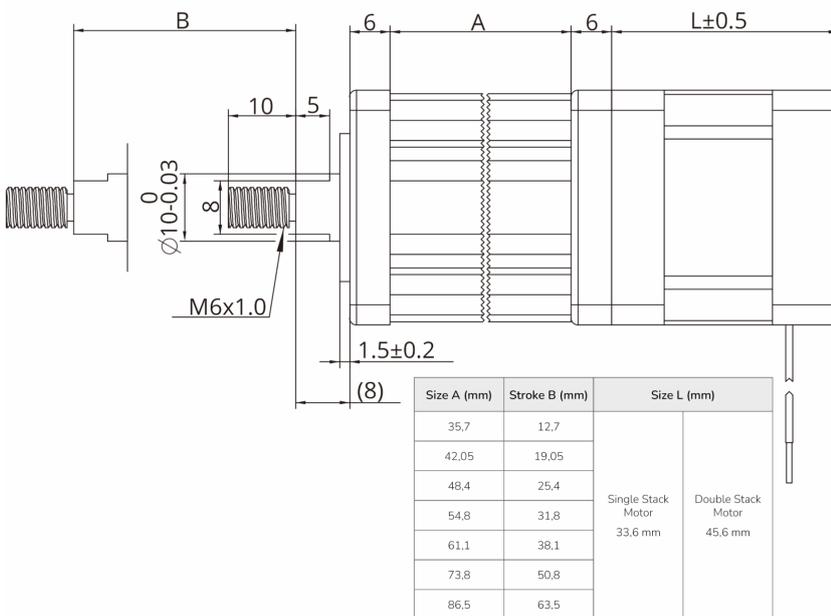
Drawings



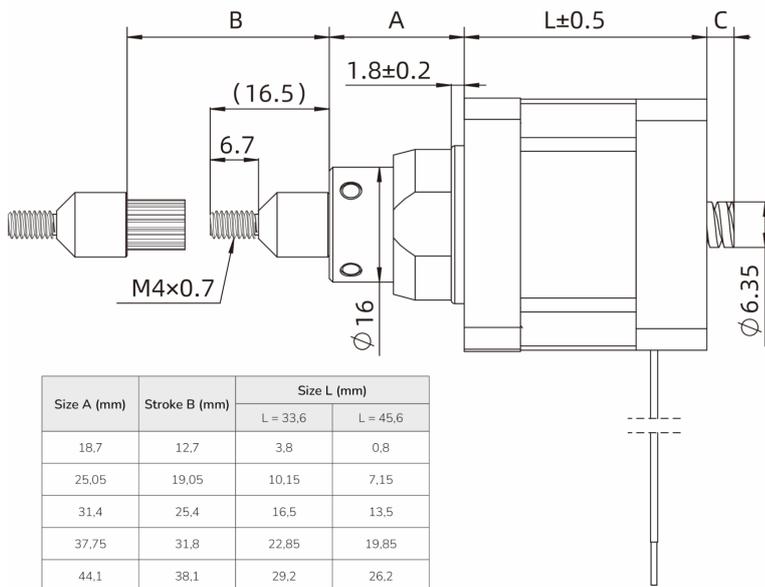
Non-Captive Anti-Backlash Nut



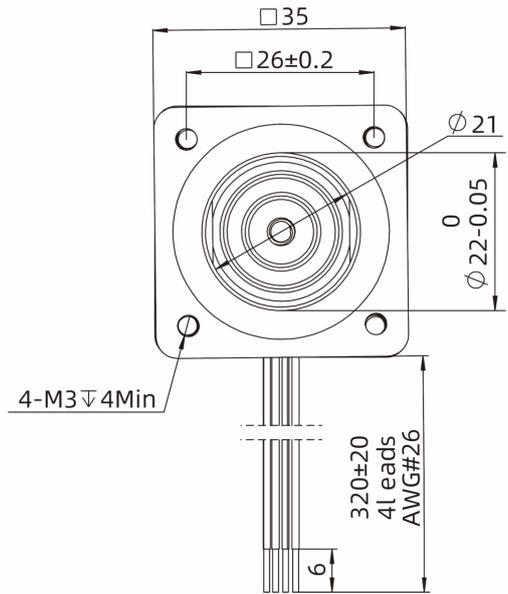
Non-Captive Actuator



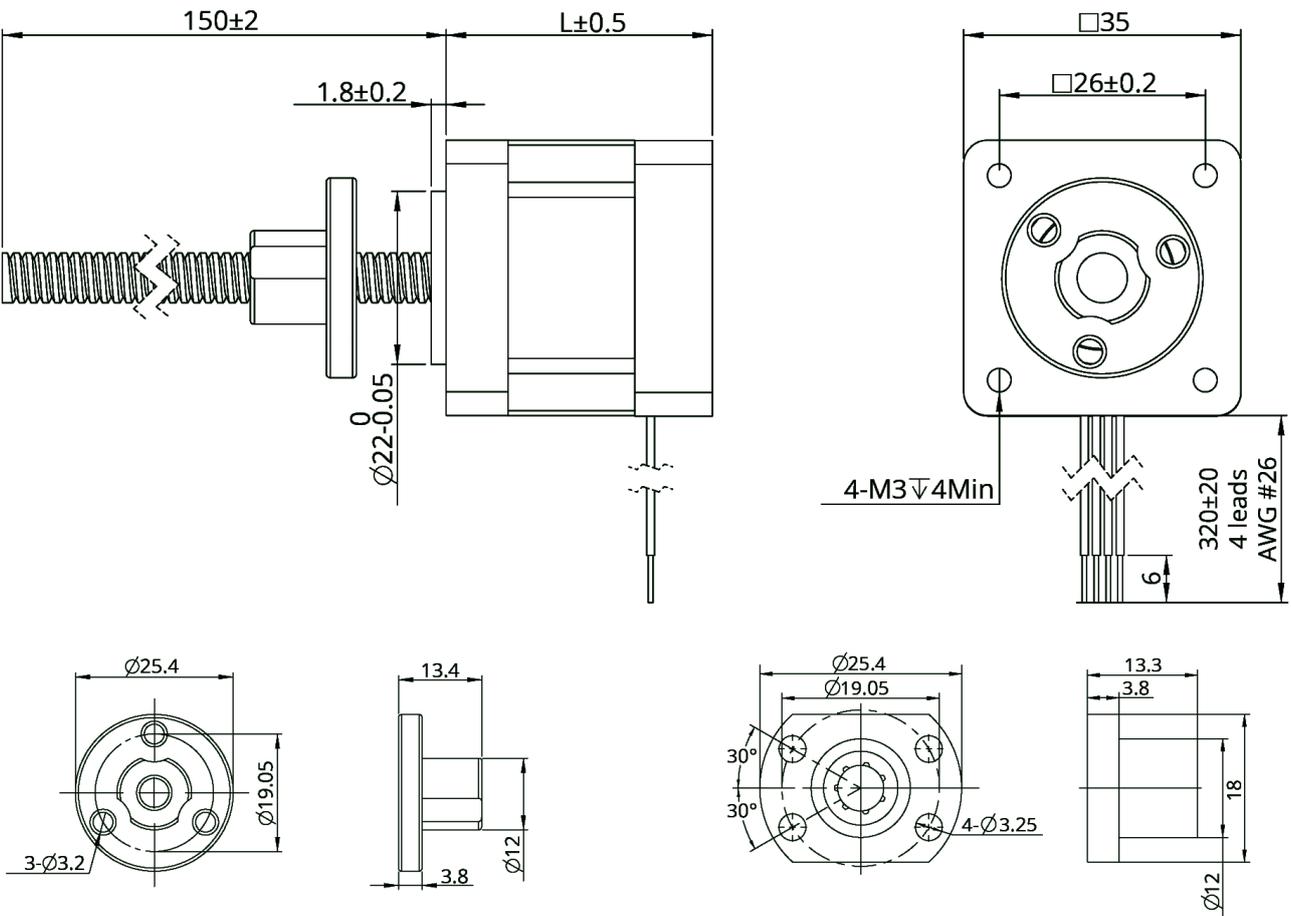
Captive (Electrical Cylinder) Actuator



Size A (mm)	Stroke B (mm)	Size L (mm)	
		L = 33.6	L = 45.6
18.7	12.7	3.8	0.8
25.05	19.05	10.15	7.15
31.4	25.4	16.5	13.5
37.75	31.8	22.85	19.85
44.1	38.1	29.2	26.2
56.8	50.8	41.9	38.9
69.5	63.5	54.6	51.6

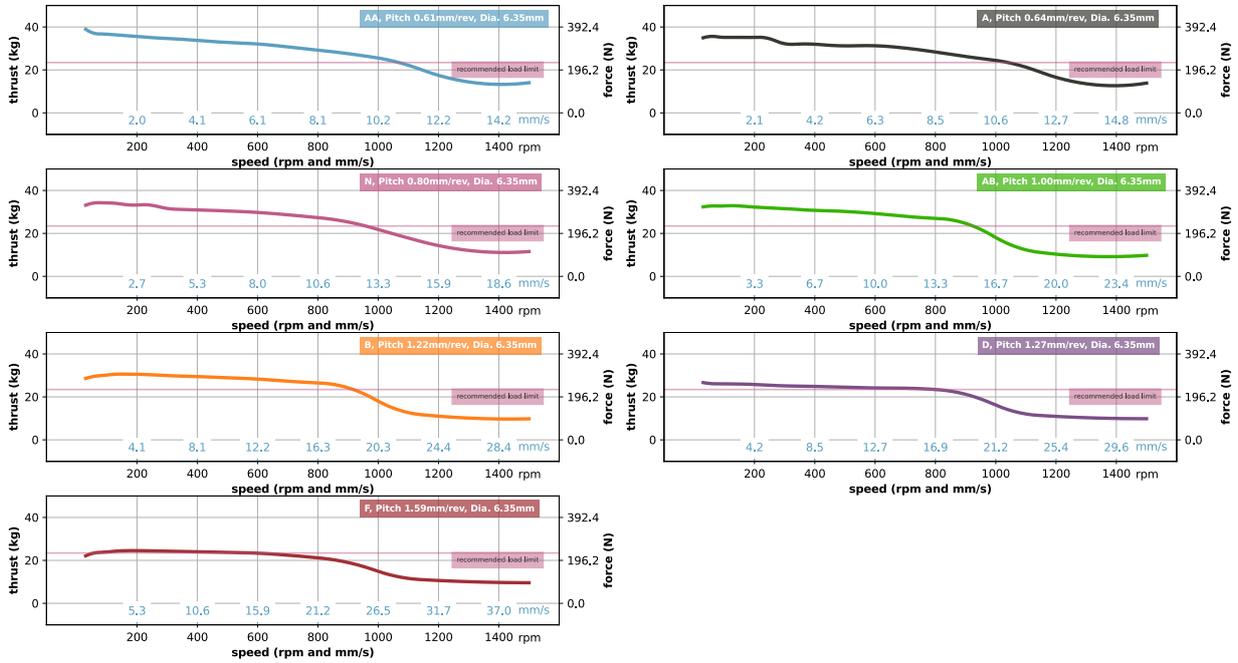


Kaptive Actuator

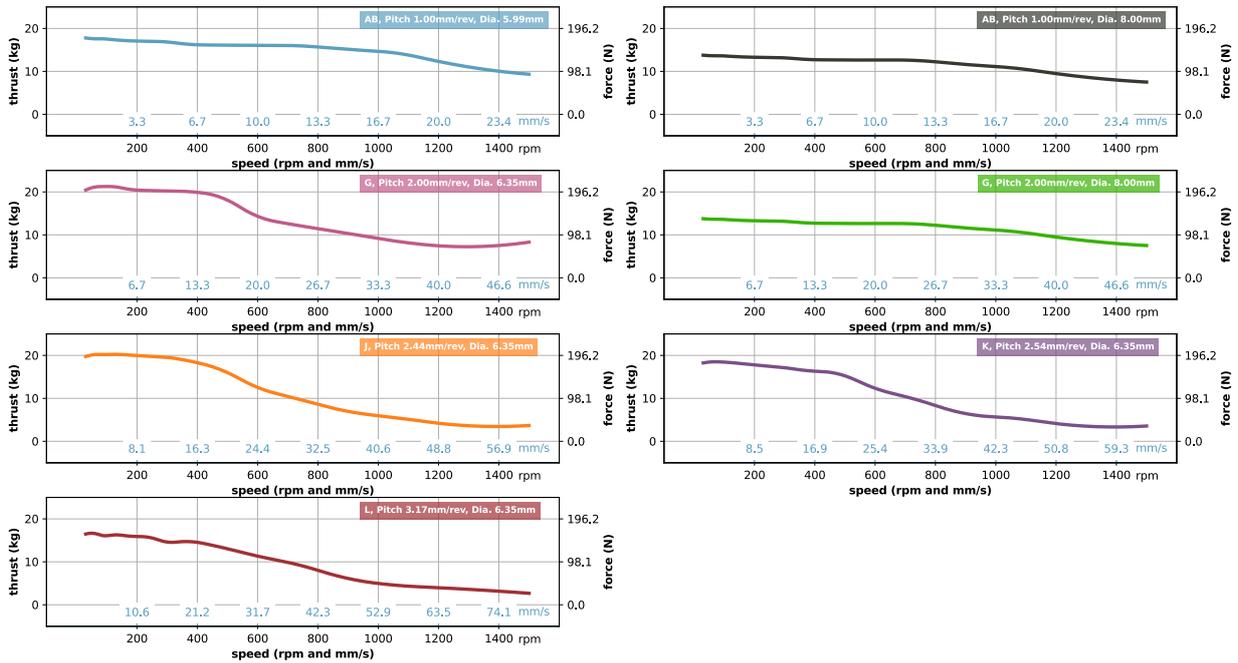


External Actuator

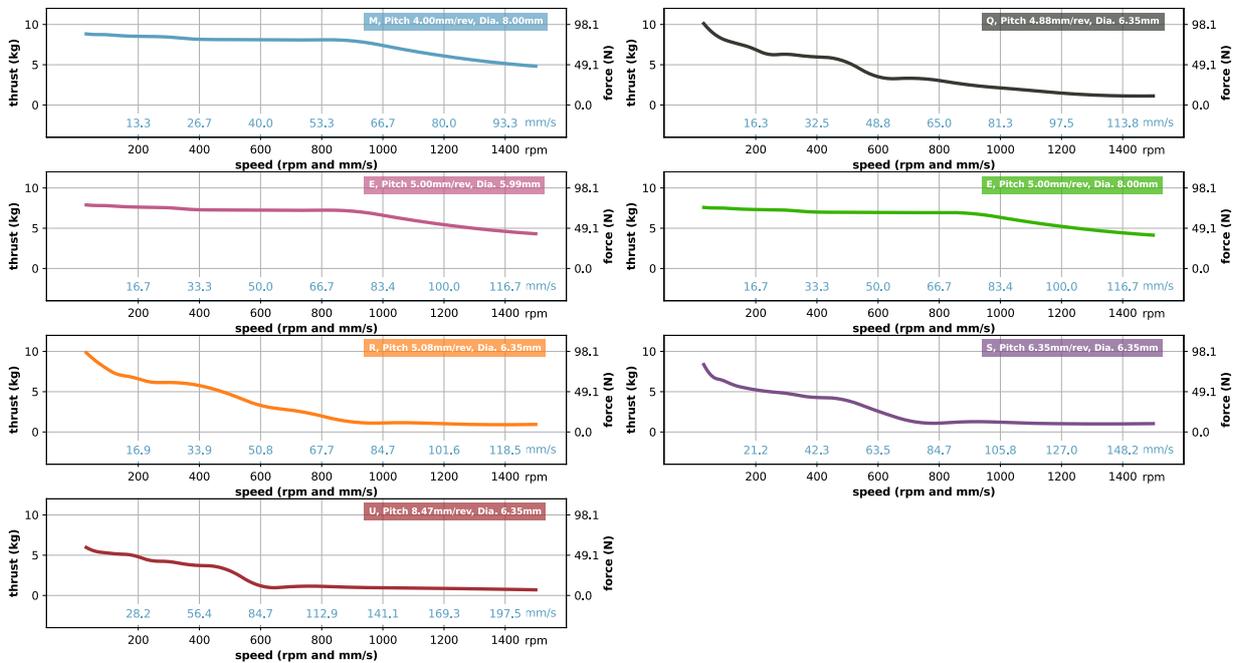
Speed/Thrust Curves



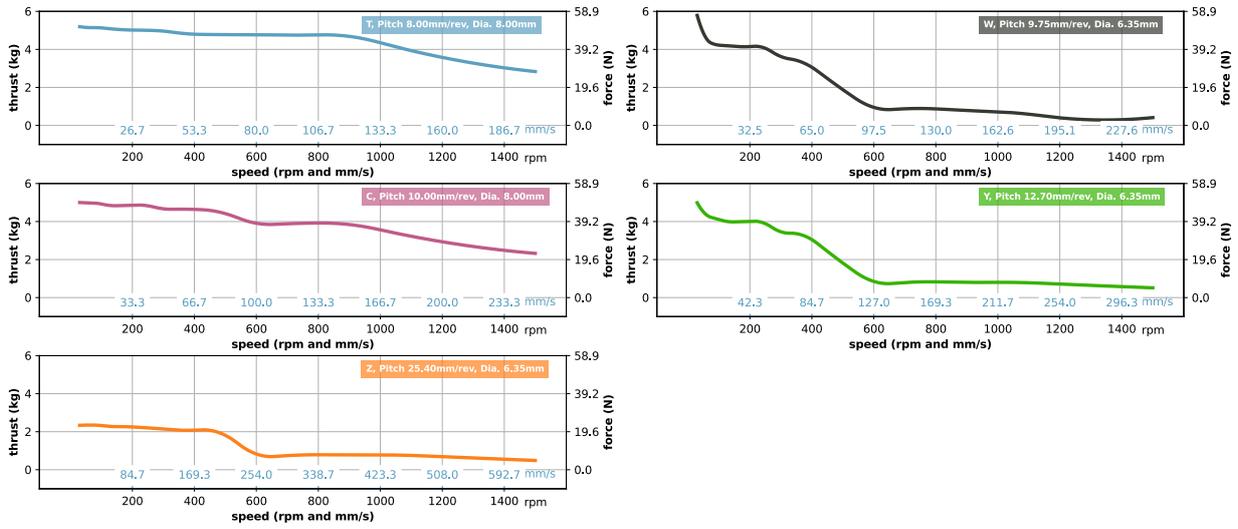
Speed-thrust curves for available screws, motor Nema 14, 14-2115, set 1. Motor driven in two-phase operation with 1.5A



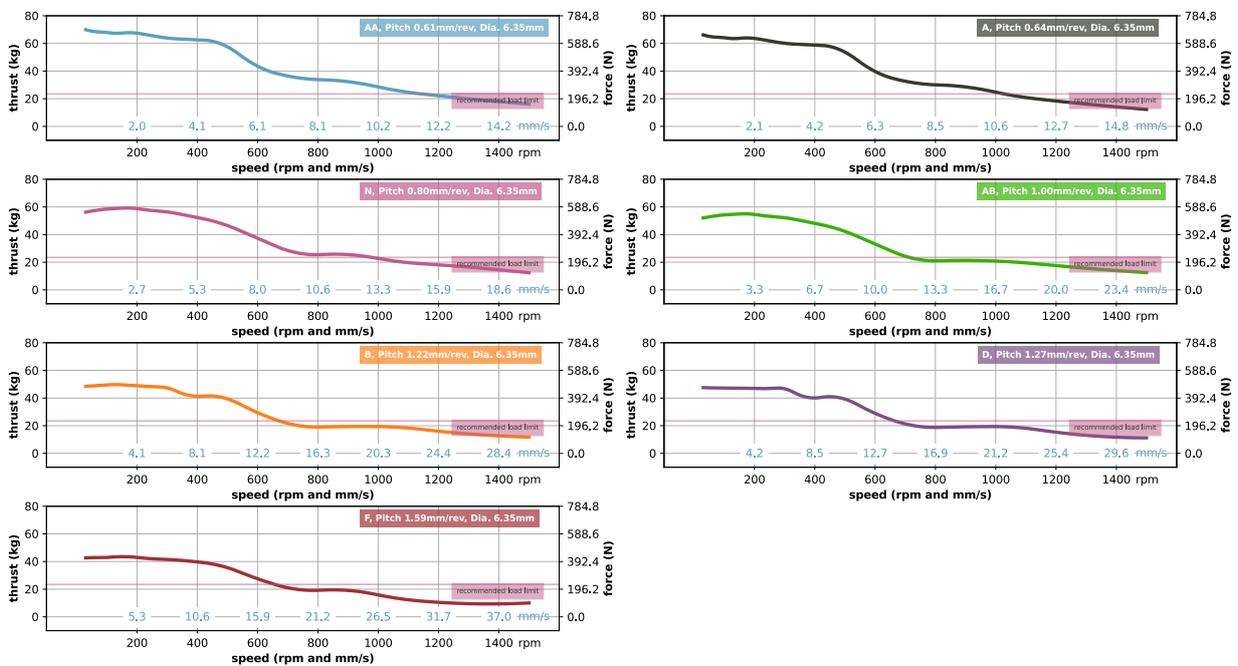
Speed-thrust curves for available screws, motor Nema 14, 14-2115, set 2. Motor driven in two-phase operation with 1.5A



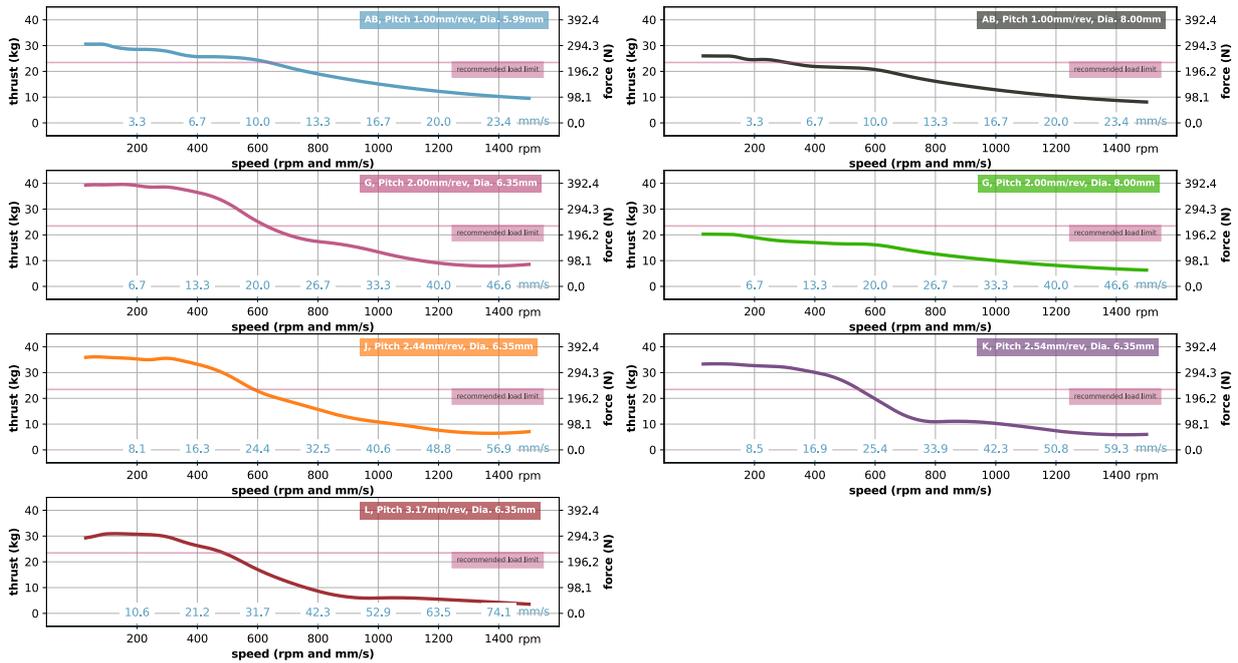
Speed-thrust curves for available screws, motor Nema 14, 14-2115, set 3. Motor driven in two-phase operation with 1.5A



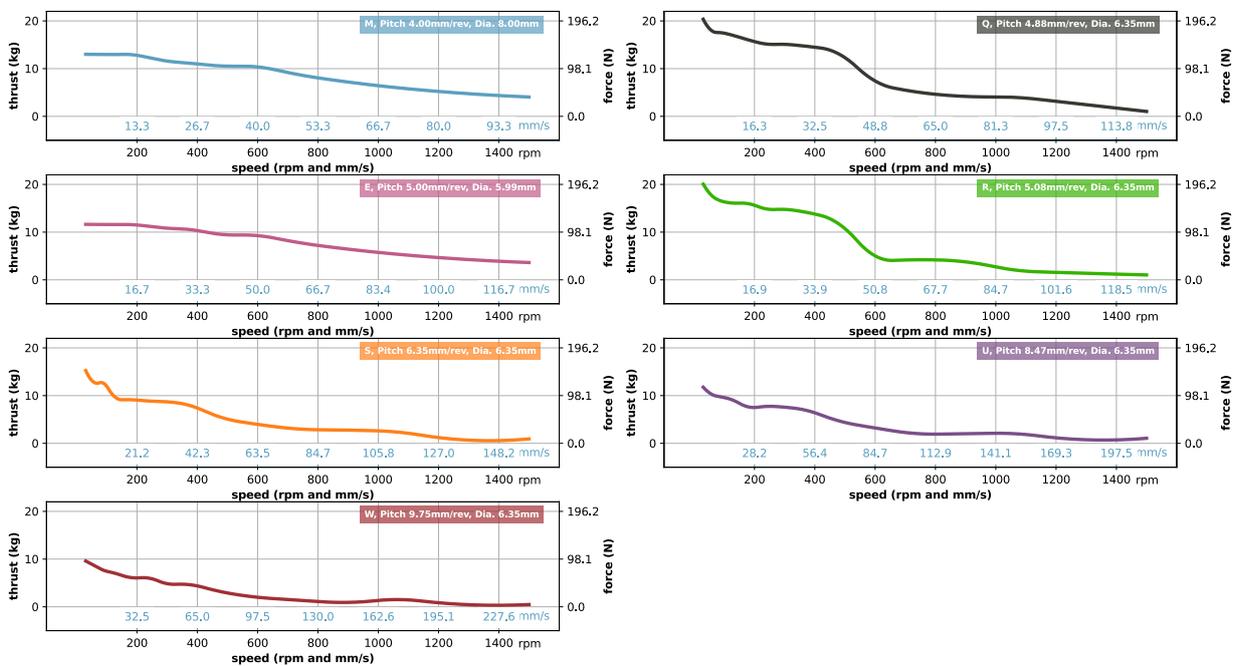
Speed-thrust curves for available screws, motor Nema 14, 14-2115, set 4. Motor driven in two-phase operation with 1.5A



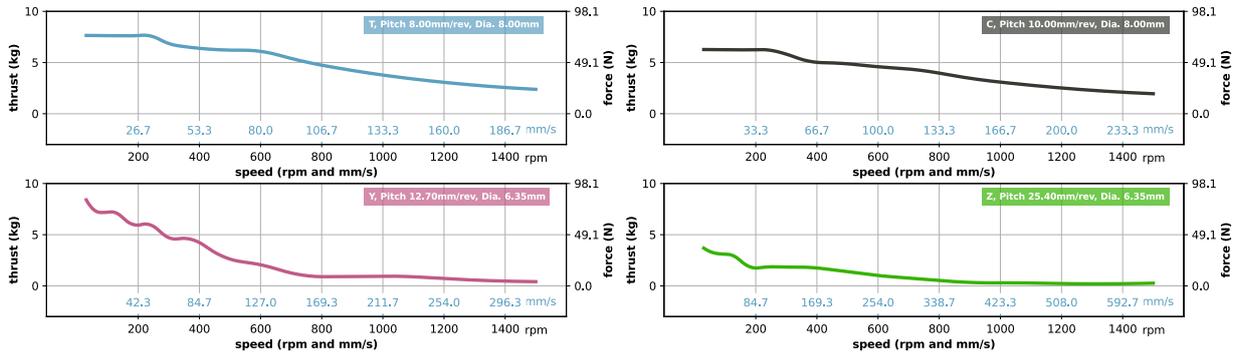
Speed-thrust curves for available screws, motor Nema 14, 14-2215, set 1. Motor driven in two-phase operation with 1.5A



Speed-thrust curves for available screws, motor Nema 14, 14-2215, set 2. Motor driven in two-phase operation with 1.5A



Speed-thrust curves for available screws, motor Nema 14, 14-2215, set 3. Motor driven in two-phase operation with 1.5A

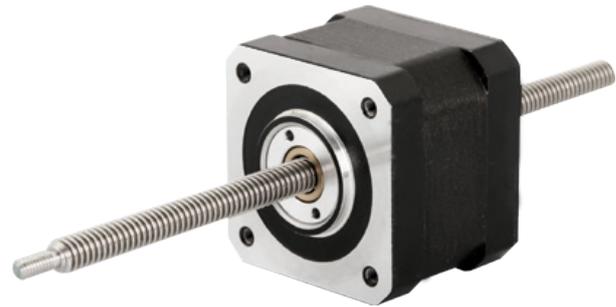


Speed-thrust curves for available screws, motor Nema 14, 14-2215, set 4. Motor driven in two-phase operation with 1.5A

42mm Stepper Lead Screw Linear Actuators

SLSLA - Size 17

[42mm]



LEADSCREW

The SLSLA - Size 17 [42mm] series delivers up to 330N continuous thrust in a compact NEMA 17 frame for high-precision linear motion. Available in External, Non-Captive, Captive (Electrical Cylinder), and Kaptive form factors with a wide selection of screw pitches (0.6096-25.4 mm), encoder options, anti-backlash nuts, Teflon-coated screws, and power-off brake. Ideal for precision positioning in automation, laboratory, and medical environments.

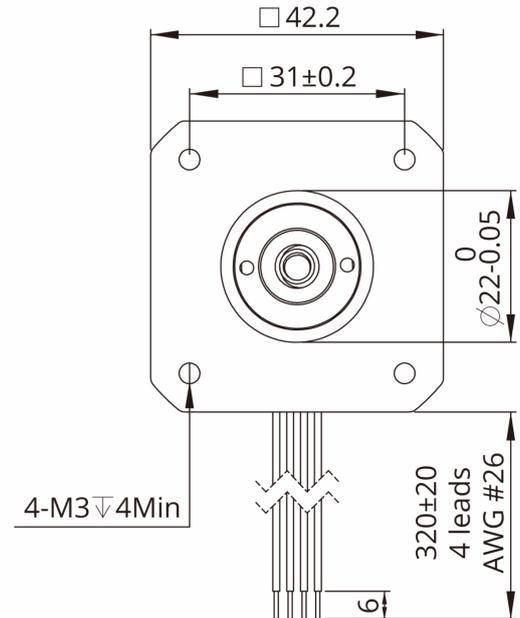
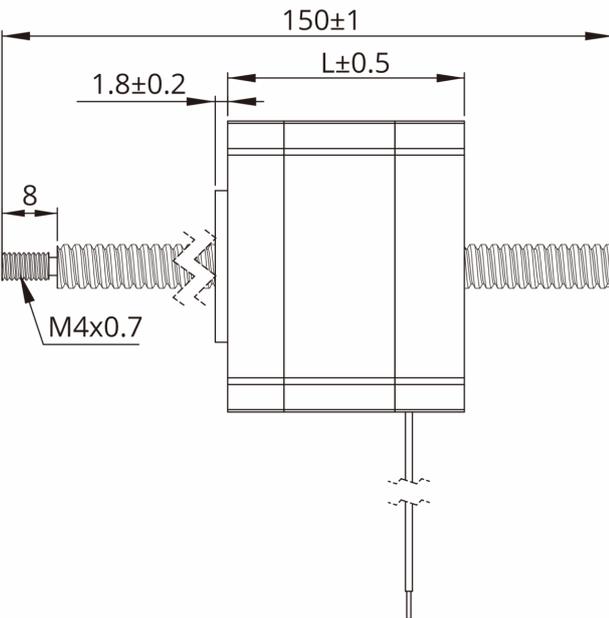

<https://www.kocomotion.de/produkt/slsa-size-17-42mm/>

Motor Characteristics	Unit	17-2105	17-2110	17-2115	17-2205
Size	Nema	17	17	17	17
Flange size	mm	42	42	42	42
Voltage	V	7.2	3.8	2.85	11
Current	A	0.5	1	1.5	0.5
Resistance	Ω	14.4	3.8	1.9	22
Inductance	mH	19.8	5	2.2	46
Weight	g	254	254	254	386
Lead Wire No.		4	4	4	4
Motor Length	mm	34.1	34.1	34.1	48.1

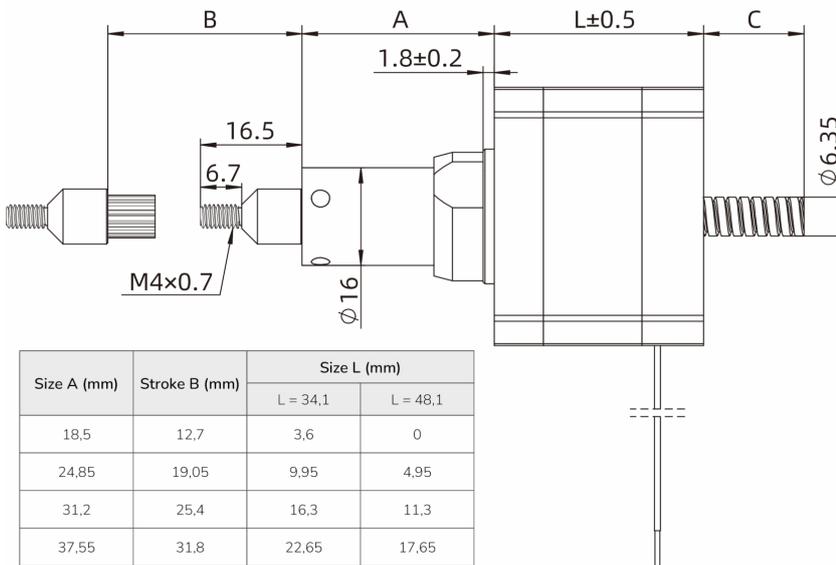
Motor Characteristics	Unit	17-2212	17-2225
Size	Nema	17	17
Flange size	mm	42	42
Voltage	V	4.5	2.2
Current	A	1.2	2.5
Resistance	Ω	3.8	1
Inductance	mH	8	1.8
Weight	g	386	386
Lead Wire No.		4	4
Motor Length	mm	48.1	48.1

Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Left-hand thread available	Notes
AA	0.6096	6.35	3		
A	0.635	6.35	3.2		*
B	1.2192	6.35	6.1		
D	1.27	6.35	6.4		*
F	1.5875	6.35	7.9	yes	*
J	2.4384	6.35	12.2		
K	2.54	6.35	12.7	yes	*
L	3.175	6.35	15.9		*
Q	4.8768	6.35	24.4		
R	5.08	6.35	25.4		*
S	6.35	6.35	31.8		*
U	8.4667	6.35	42.3		
W	9.7536	6.35	48.8		*
Y	12.7	6.35	63.5		*
Z	25.4	6.35	127		*
AB	1	6	5		
AB	1	6.35	5		
AB	1	8	5		
G	2	6.35	10		
G	2	8	10		
M	4	8	20		
T	8	8	40		
E	5	6	25		
E	5	8	25		
C	10	8	50		
N	0.794	6.35	4		

*custom 9,525mm screw diameter available for external type

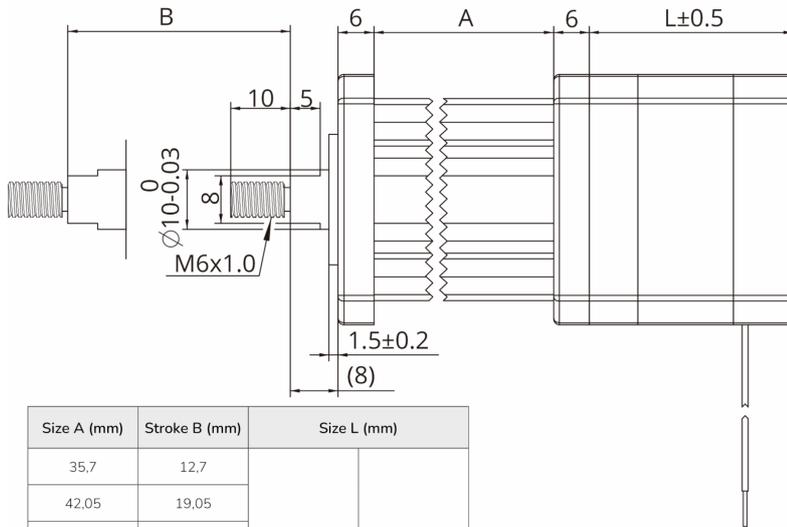


Non-Captive Actuator

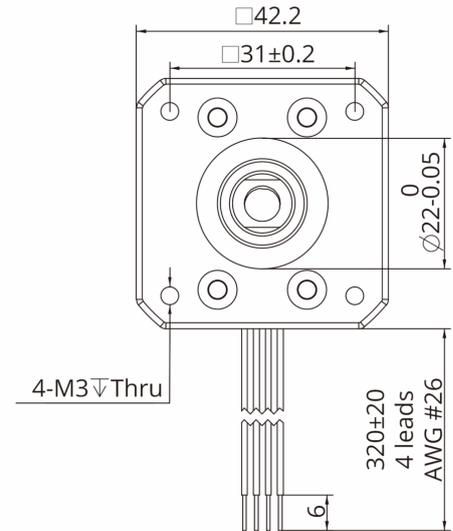


Size A (mm)	Stroke B (mm)	Size L (mm)	
		L = 34,1	L = 48,1
18,5	12,7	3,6	0
24,85	19,05	9,95	4,95
31,2	25,4	16,3	11,3
37,55	31,8	22,65	17,65
43,9	38,1	29,0	24,0
56,6	50,8	41,7	36,7
69,3	63,5	54,4	49,4

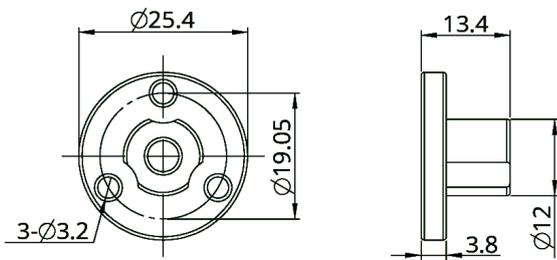
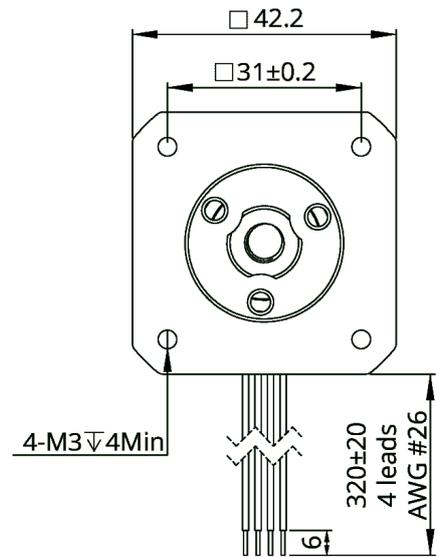
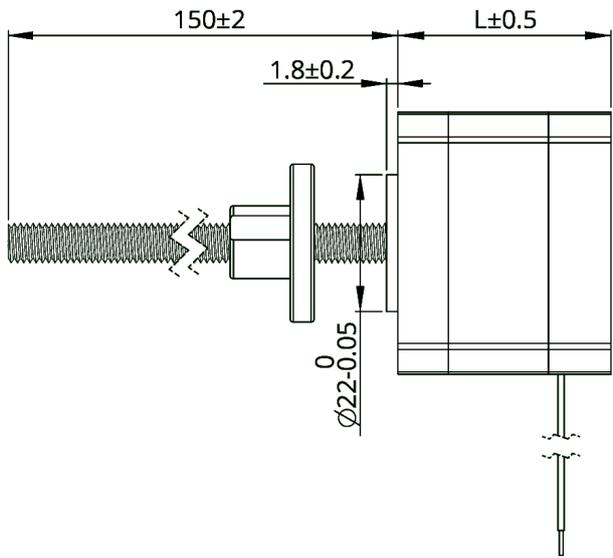
Captive Actuator



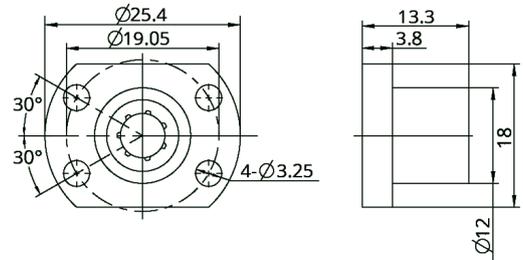
Size A (mm)	Stroke B (mm)	Size L (mm)	
35.7	12.7	Single Stack Motor 34.1 mm	Double Stack Motor 48.1 mm
42.05	19.05		
48.4	25.4		
54.8	31.8		
61.1	38.1		
73.8	50.8		
86.5	63.5		



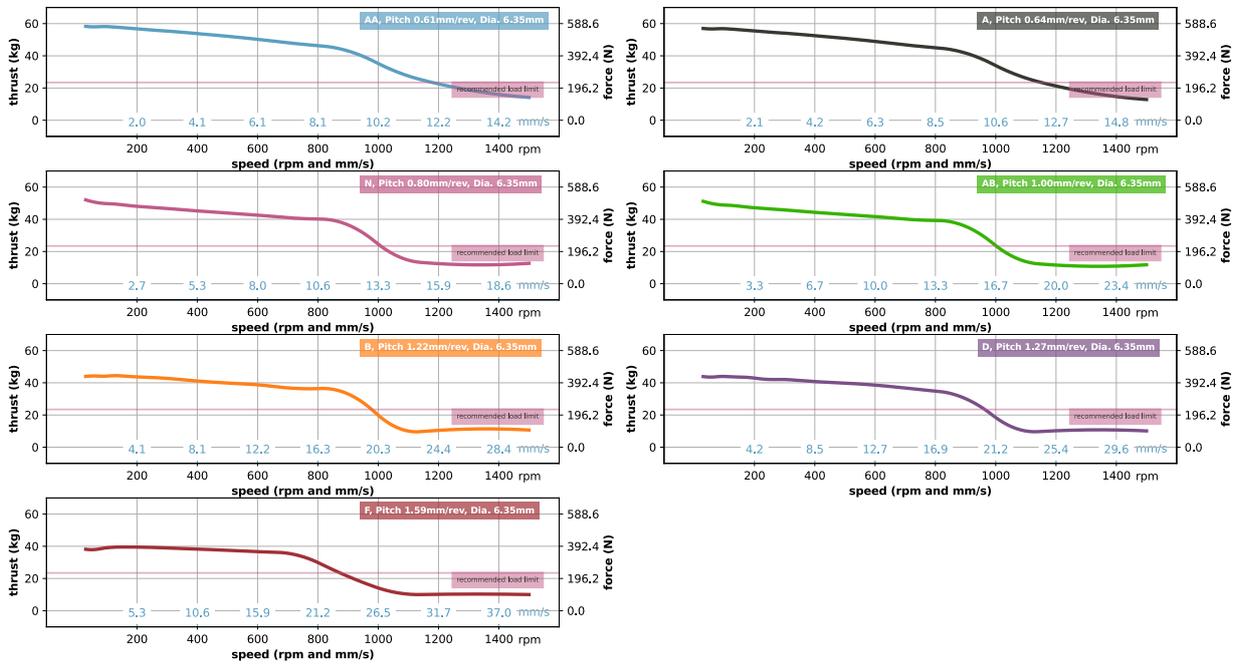
Captive (Electrical Cylinder) Actuator



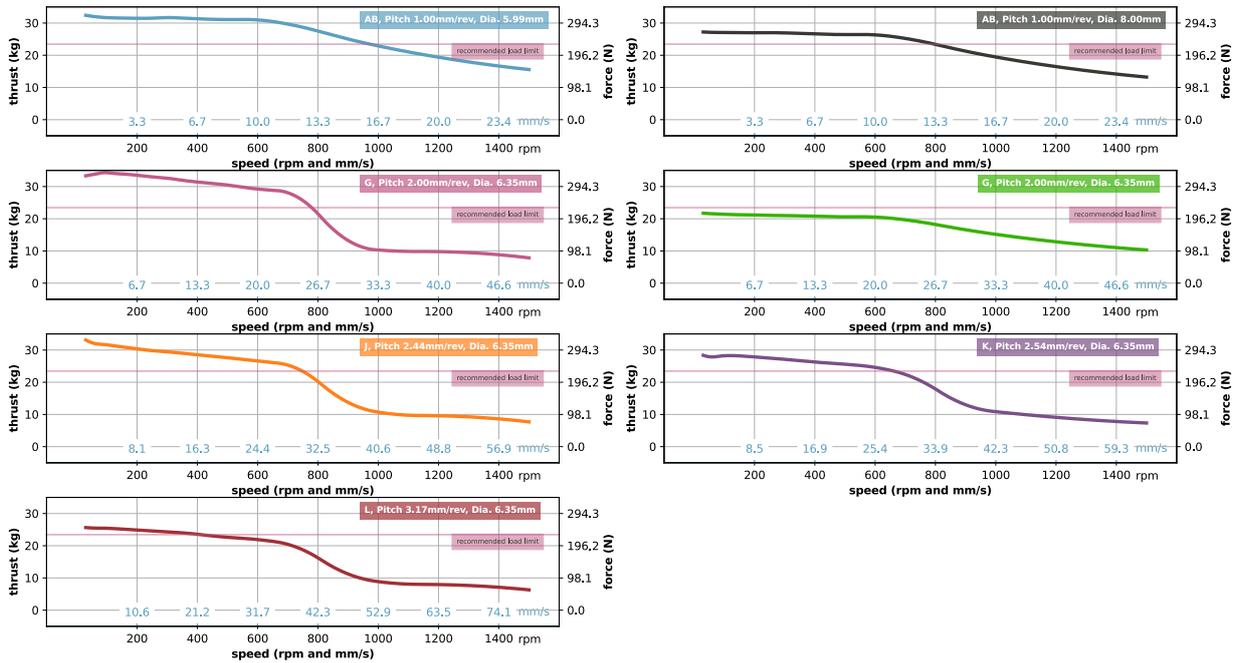
External Actuator



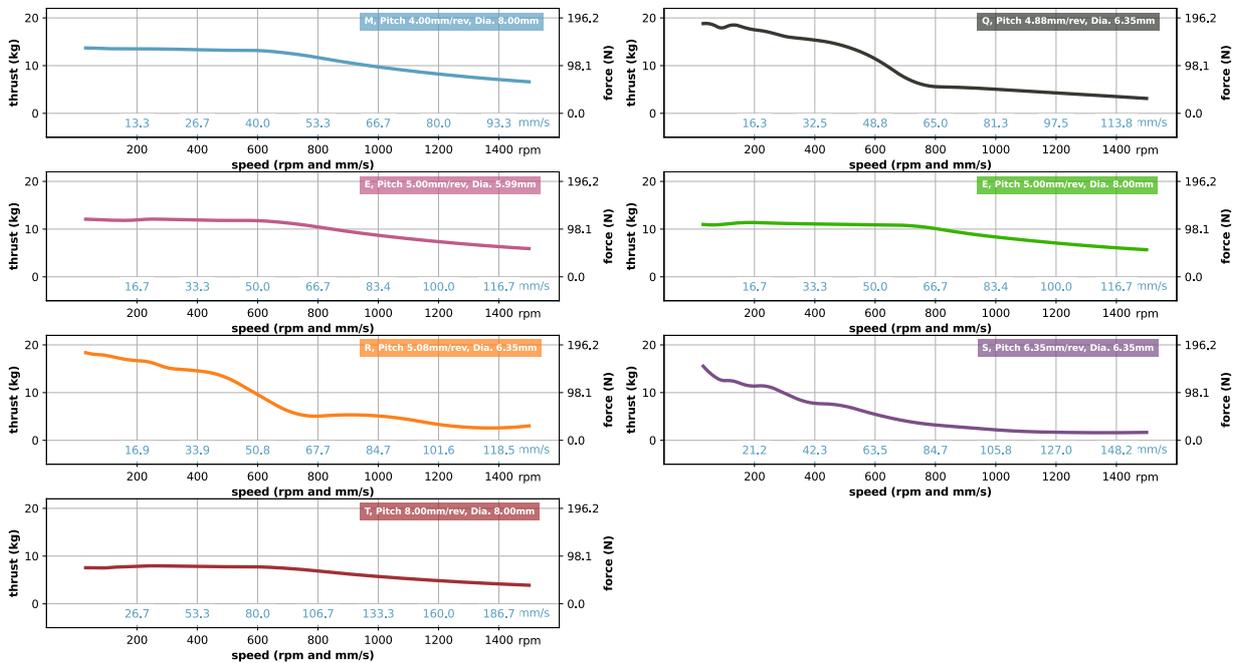
Speed/Thrust Curves



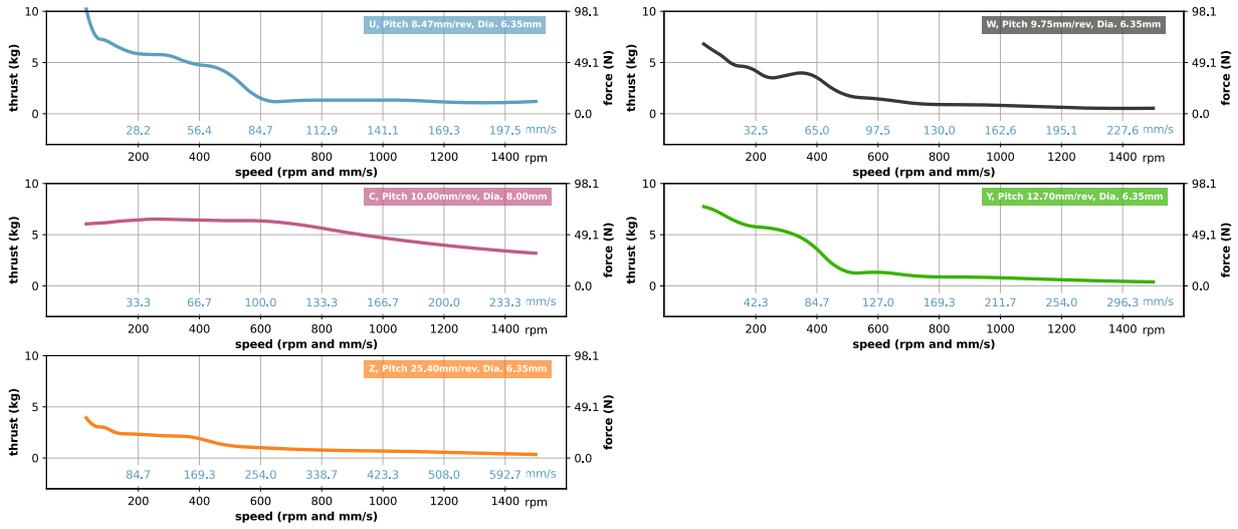
Speed-thrust curves for available screws, motor Nema 17, 17-2115, set 1. Motor driven in two-phase operation with 1.5A



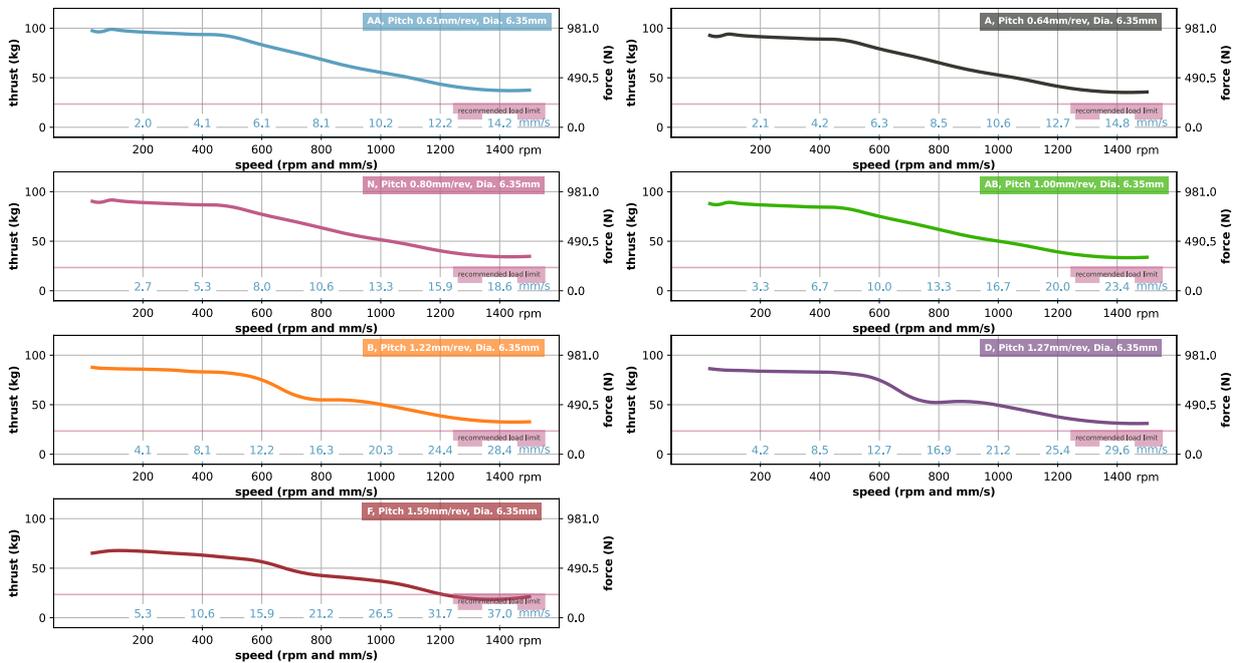
Speed-thrust curves for available screws, motor Nema 17, 17-2115, set 2. Motor driven in two-phase operation with 1.5A



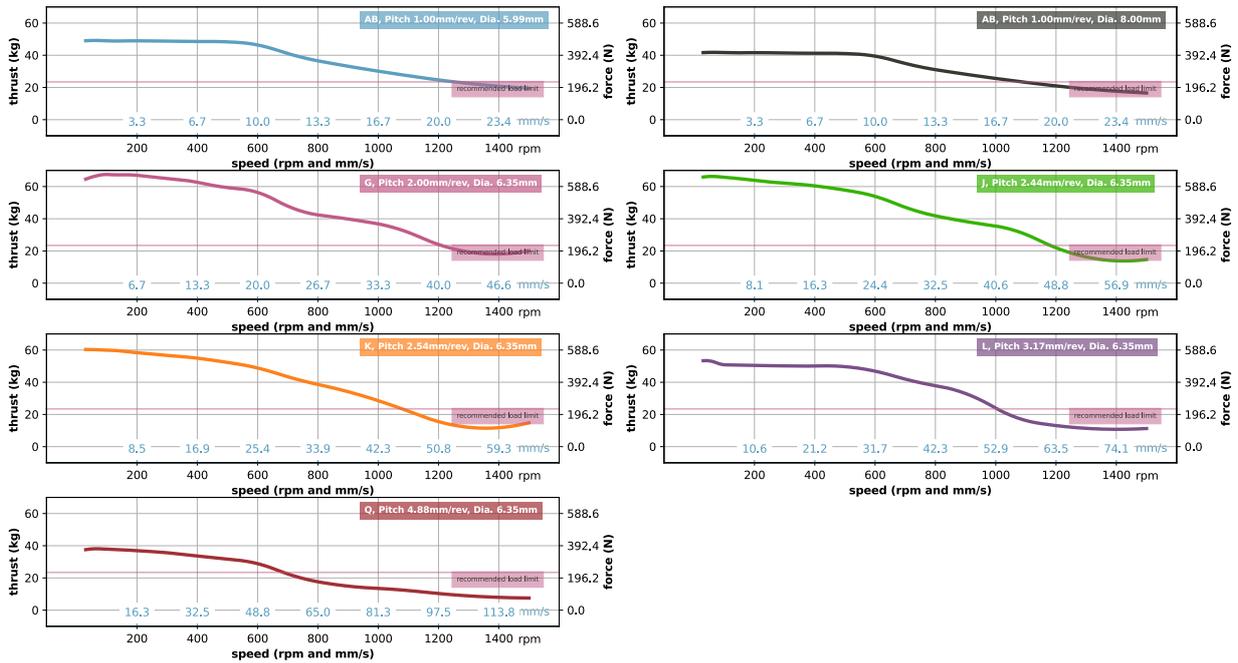
Speed-thrust curves for available screws, motor Nema 17, 17-2115, set 3. Motor driven in two-phase operation with 1.5A



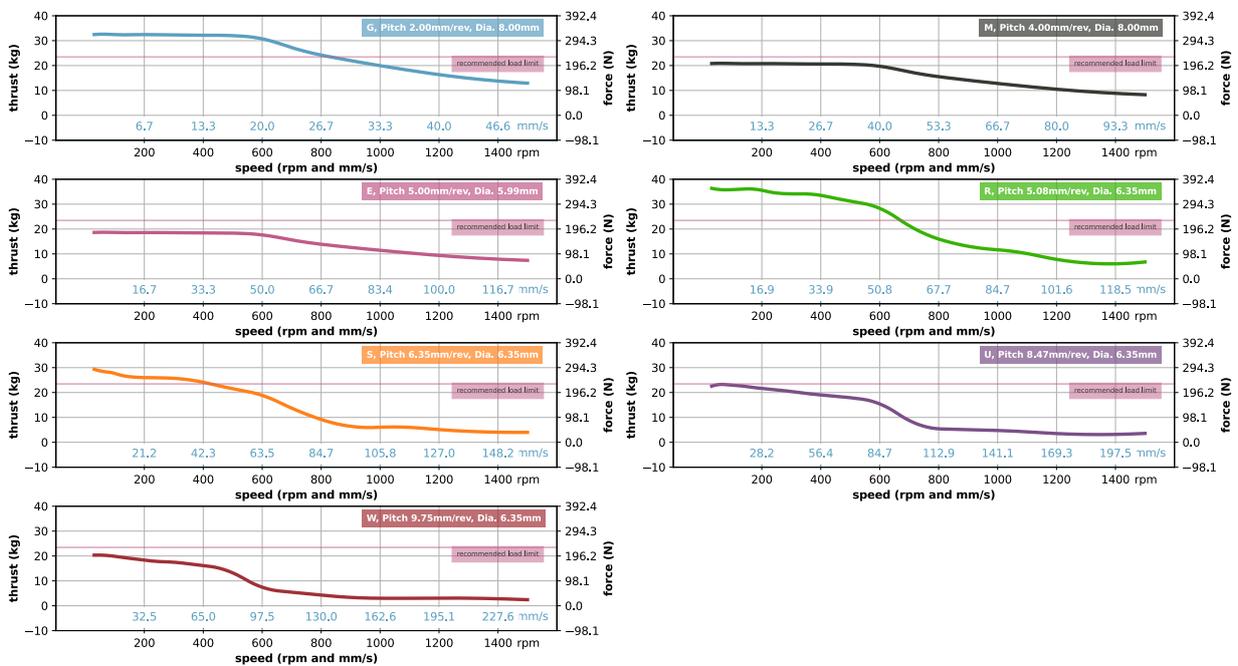
Speed-thrust curves for available screws, motor Nema 17, 17-2115, set 4. Motor driven in two-phase operation with 1.5A



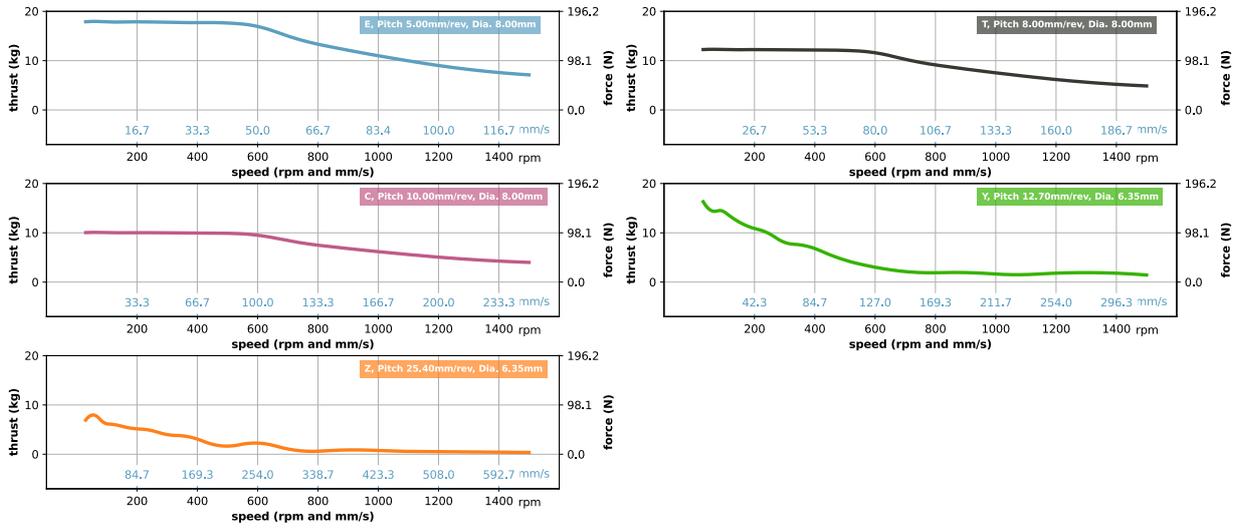
Speed-thrust curves for available screws, motor Nema 17, 17-2225, set 1. Motor driven in two-phase operation with 2.5A



Speed-thrust curves for available screws, motor Nema 17, 17-2225, set 2. Motor driven in two-phase operation with 2.5A



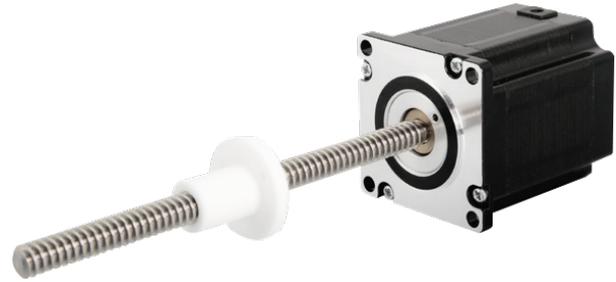
Speed-thrust curves for available screws, motor Nema 17, 17-2225, set 3. Motor driven in two-phase operation with 2.5A



Speed-thrust curves for available screws, motor Nema 17, 17-2225, set 4. Motor driven in two-phase operation with 2.5A

Stepper Lead Screw Linear Actuators, Size 23

SLSLA - Size 23 [57mm]



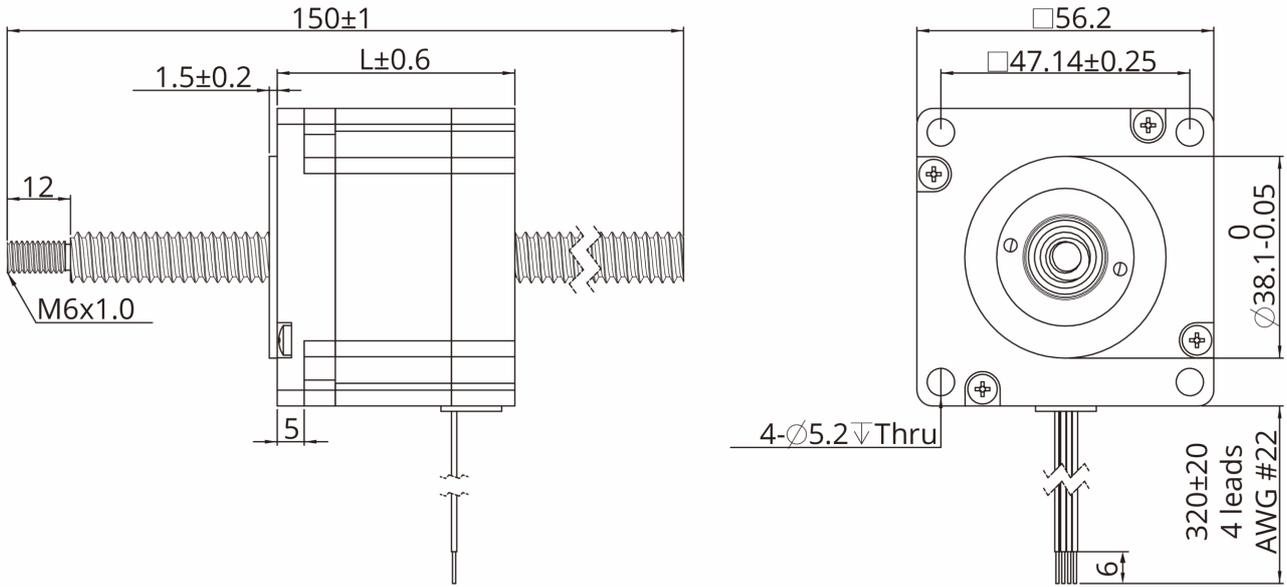
The SLSLA - Size 23 [57mm] Stepper Lead Screw Linear Actuator delivers high performance and extended duty cycles, supporting thrust loads up to 910N. Offered in External, Non-Captive, Captive (Electrical Cylinder), and Kaptive configurations, this family provides multiple screw lead and pitch options, Teflon coating availability, encoder feedback, and customizable screw ends, making it ideal for demanding precision linear motion applications.


<https://www.kocomotion.de/produkt/slsa-size-23-57mm/>

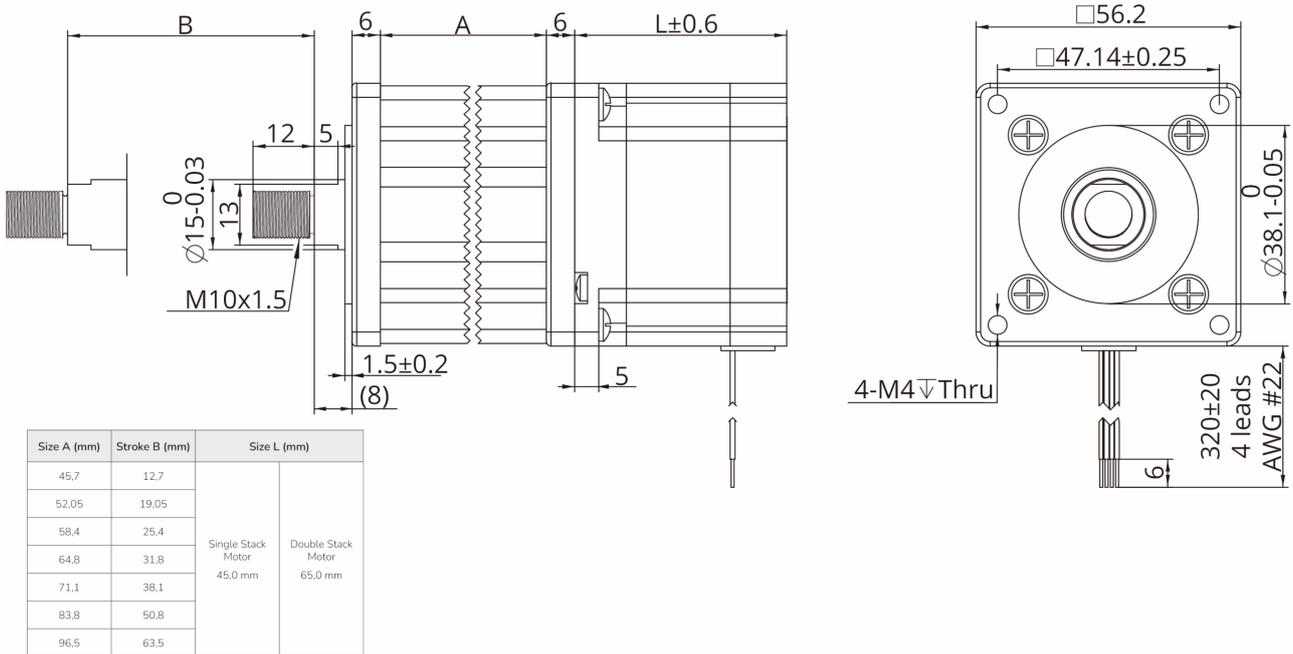
Motor Characteristics	Unit	23-2110	23-2120	23-2130	23-2210
Size	Nema	23	23	23	23
Flange size	mm	57	57	57	57
Voltage	V	6.4	3.5	2.4	11.5
Current	A	1	2	3	1
Resistance	Ω	6.4	1.75	0.8	11.5
Inductance	mH	16.4	4.1	1.7	32
Weight	g	585	585	585	880
Lead Wire No.		4	4	4	4
Motor Length	mm	45	45	45	65

Motor Characteristics	Unit	23-2225	23-2240
Size	Nema	23	23
Flange size	mm	57	57
Voltage	V	5	2.8
Current	A	2.5	4
Resistance	Ω	2	0.7
Inductance	mH	5.2	2
Weight	g	880	880
Lead Wire No.		4	4
Motor Length	mm	65	65

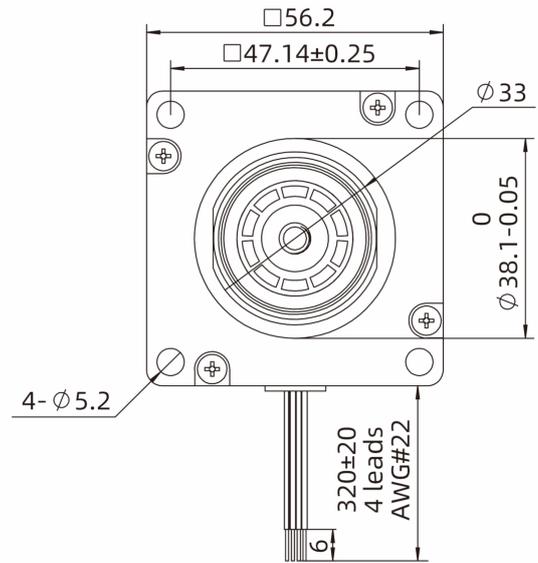
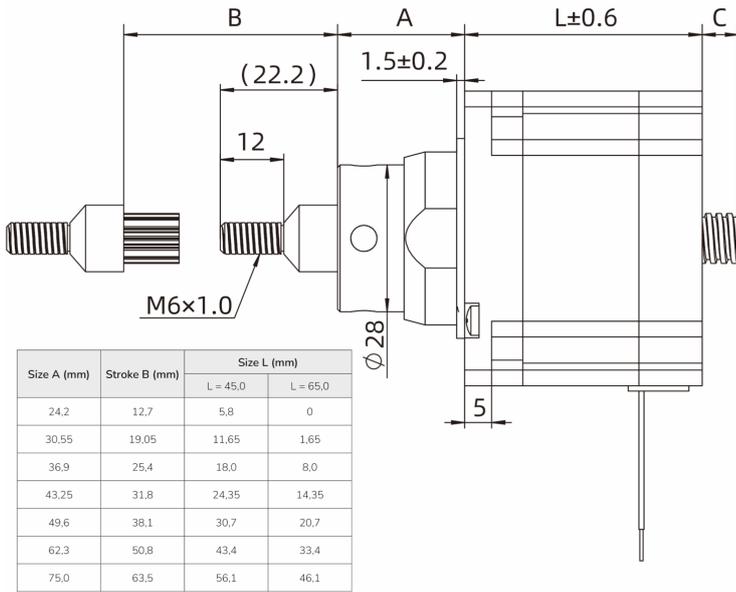
Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Left-hand thread available	Notes
A	0.635	9.525	3.2		
D	1.27	9.525	6.4		
F	1.5875	9.525	7.9		
H	2.1167	9.525	10.6		
K	2.54	9.525	12.7	yes	*
L	3.175	9.525	15.9		*
P	4.2333	9.525	21.2		
R	5.08	9.525	25.4		*
S	6.35	9.525	31.8		*
V	9.525	9.525	47.6		
W	9.7536	9.525	48.8		
X	10.16	9.525	50.8		
Y	12.7	9.525	63.5		*
Z	25.4	9.525	127		*
Z	25.4	12.7	127		
G	2	10	10		
G	2	12	10		
E	5	12	25		
C	10	10	50		
C	10	12	50		
I	20	10	100		
CE	15	12	75		
IE	25	12	125		



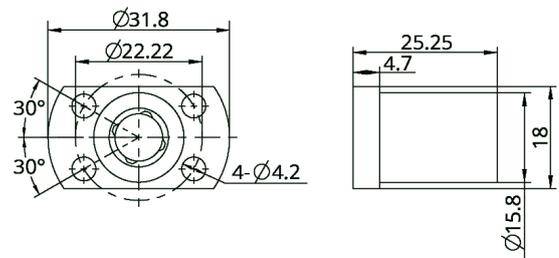
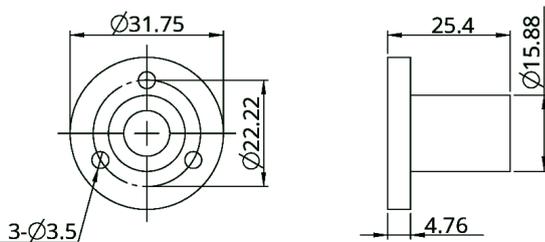
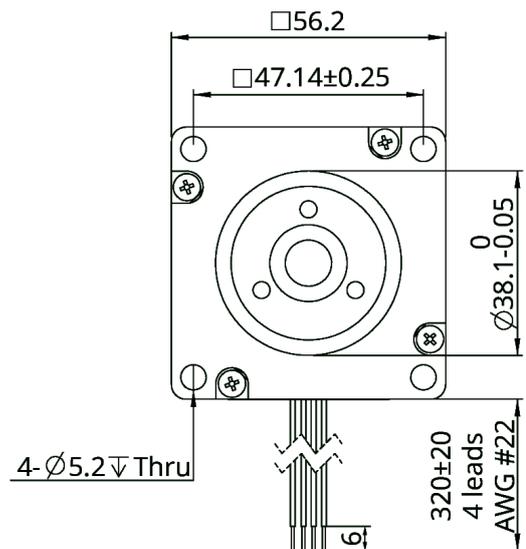
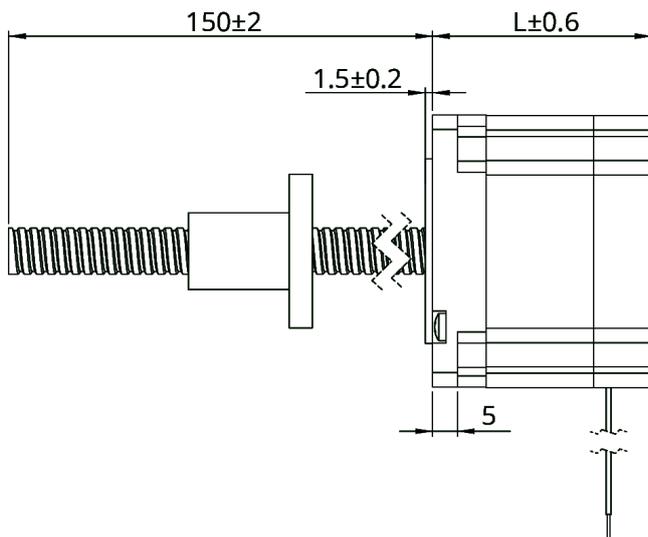
Non-Captive Actuator



Captive (Electrical Cylinder) Actuator



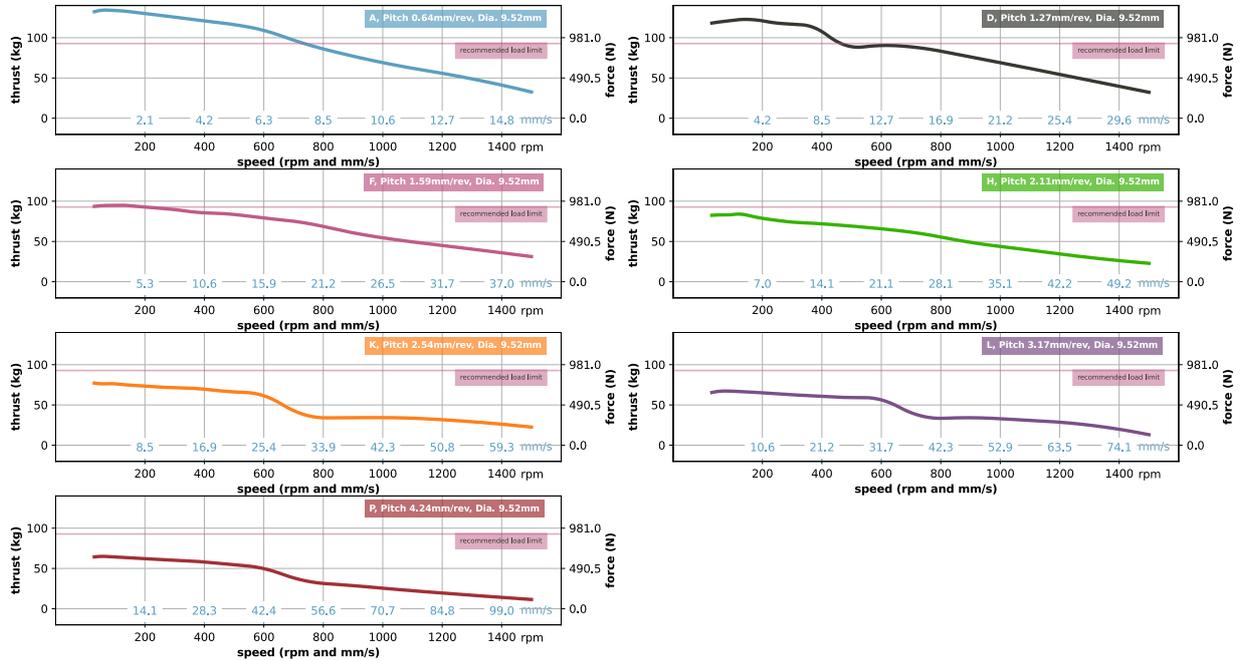
Kaptive Actuator



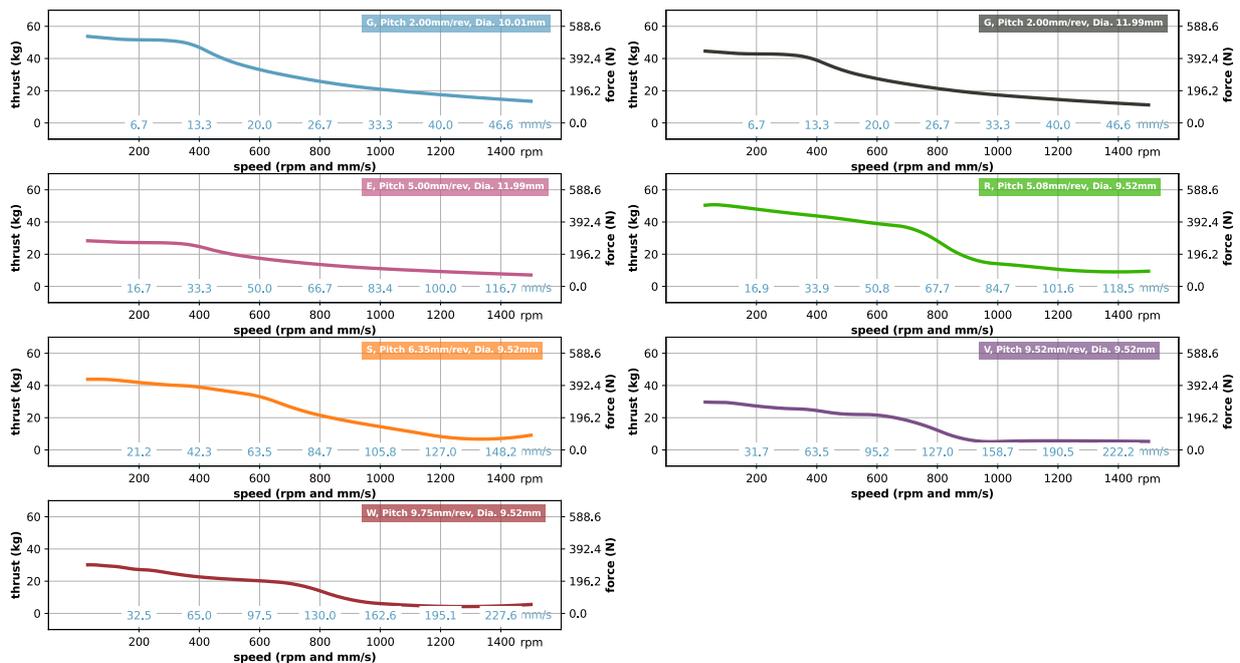
External Actuator

Speed/Thrust Curves

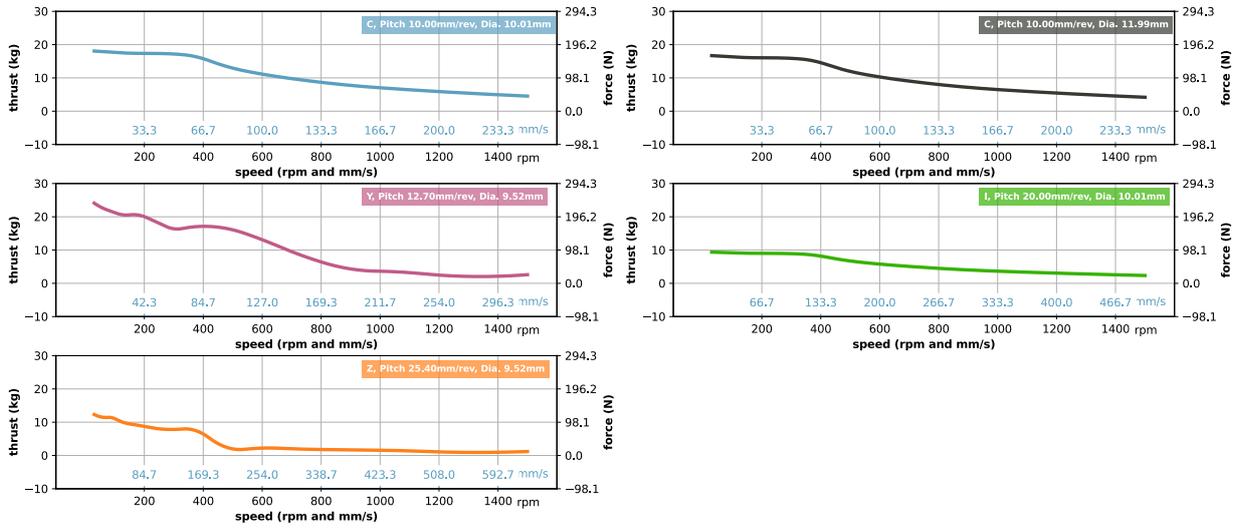
LEADSCREW



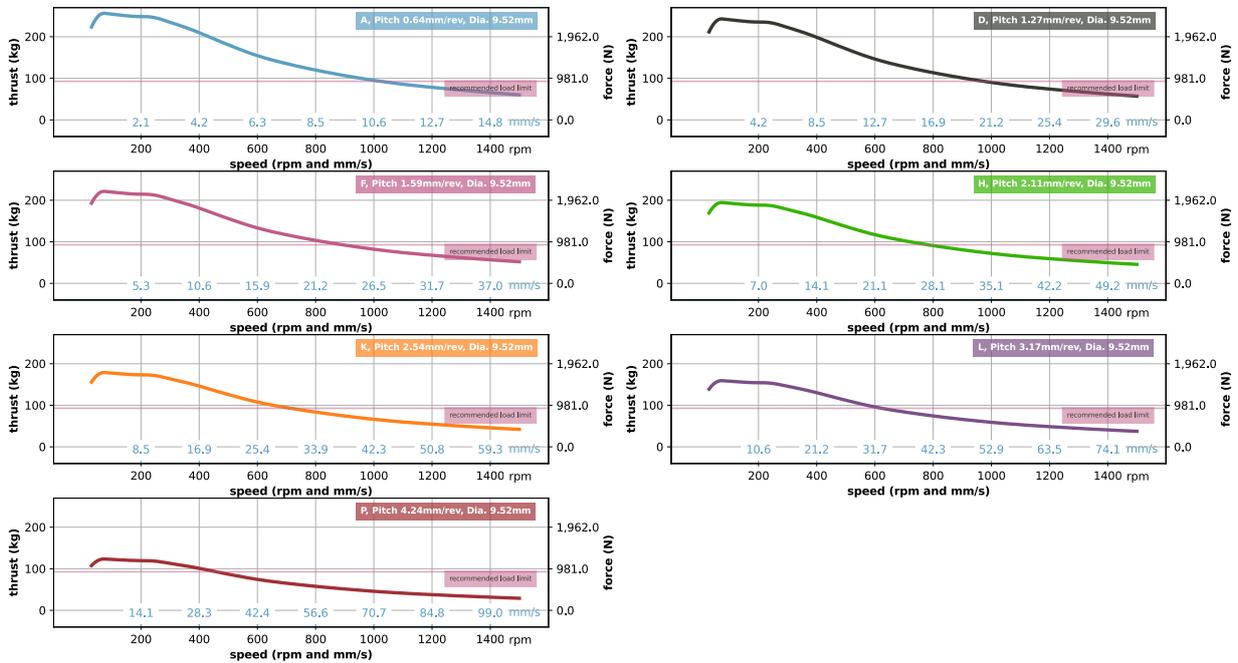
Speed-thrust curves for available screws, motor Nema 23, 23-2120, set 1. Motor driven in two-phase operation with 2A



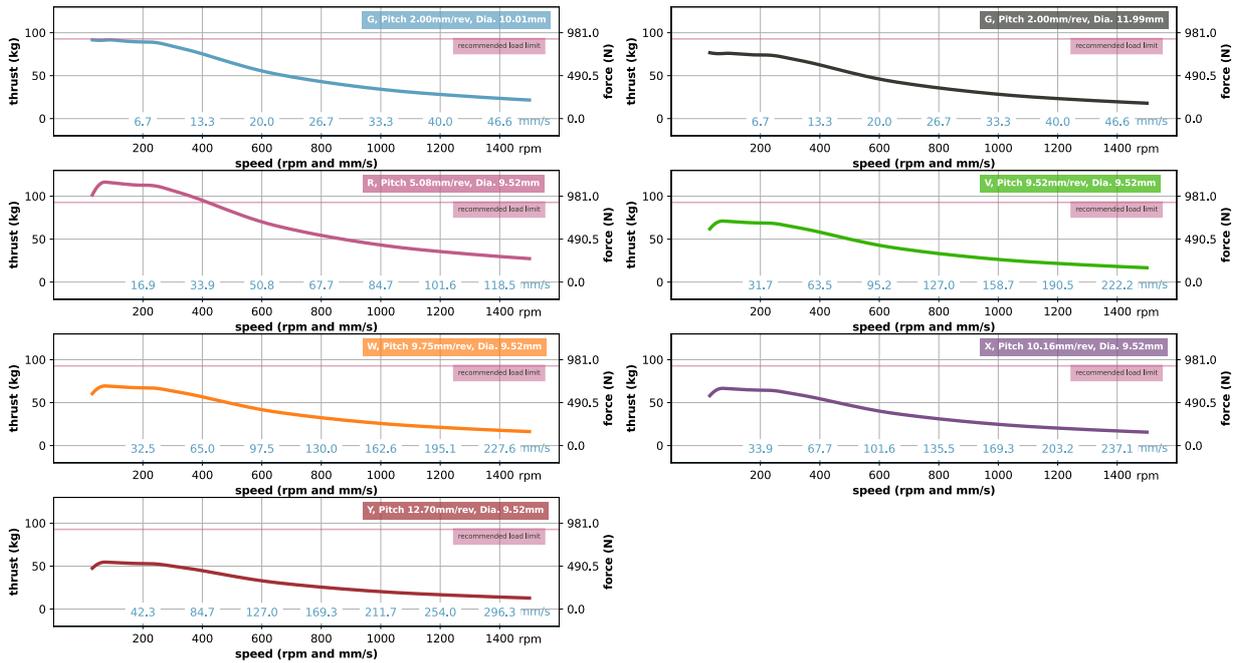
Speed-thrust curves for available screws, motor Nema 23, 23-2120, set 2. Motor driven in two-phase operation with 2A



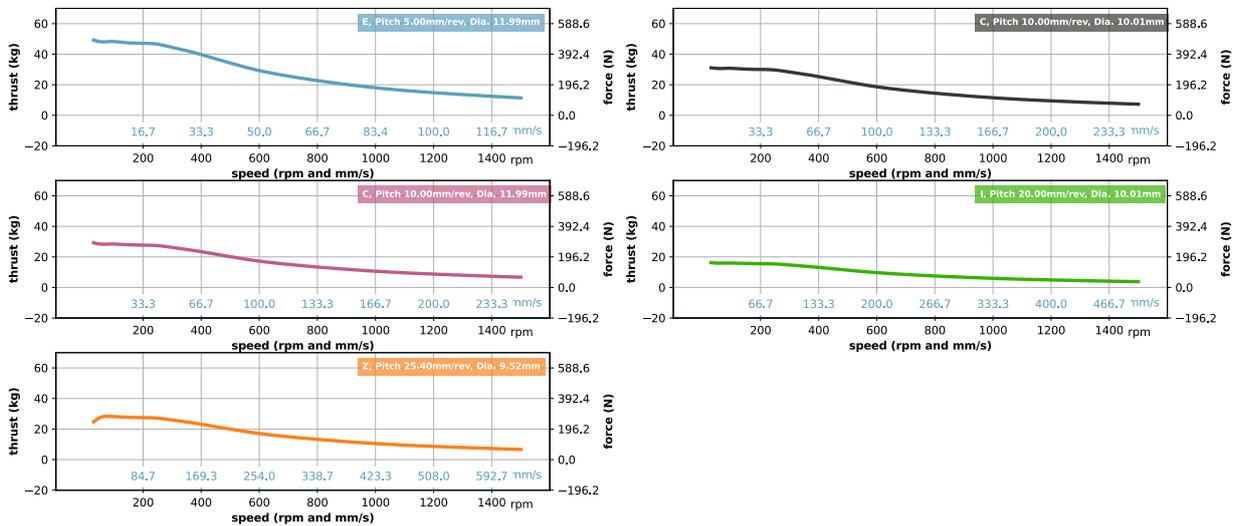
Speed-thrust curves for available screws, motor Nema 23, 23-2120, set 3. Motor driven in two-phase operation with 2A



Speed-thrust curves for available screws, motor Nema 23, 23-2225, set 1. Motor driven in two-phase operation with 2.5A



Speed-thrust curves for available screws, motor Nema 23, 23-2225, set 2. Motor driven in two-phase operation with 2.5A



Speed-thrust curves for available screws, motor Nema 23, 23-2225, set 3. Motor driven in two-phase operation with 2.5A

High-Force Stepper Lead Screw Linear Actuator, 60mm
(NEMA 24)

SLSLA - Size 24 [60mm]



The SLSLA - Size 24 [60mm] Stepper Lead Screw Linear Actuator delivers high performance, a long working cycle, and can handle loads up to 1050N. Available in four distinct form factors, it features multiple screw pitches and encoder options. Designed for versatile automation, this actuator supports precise linear motion in demanding industrial environments.



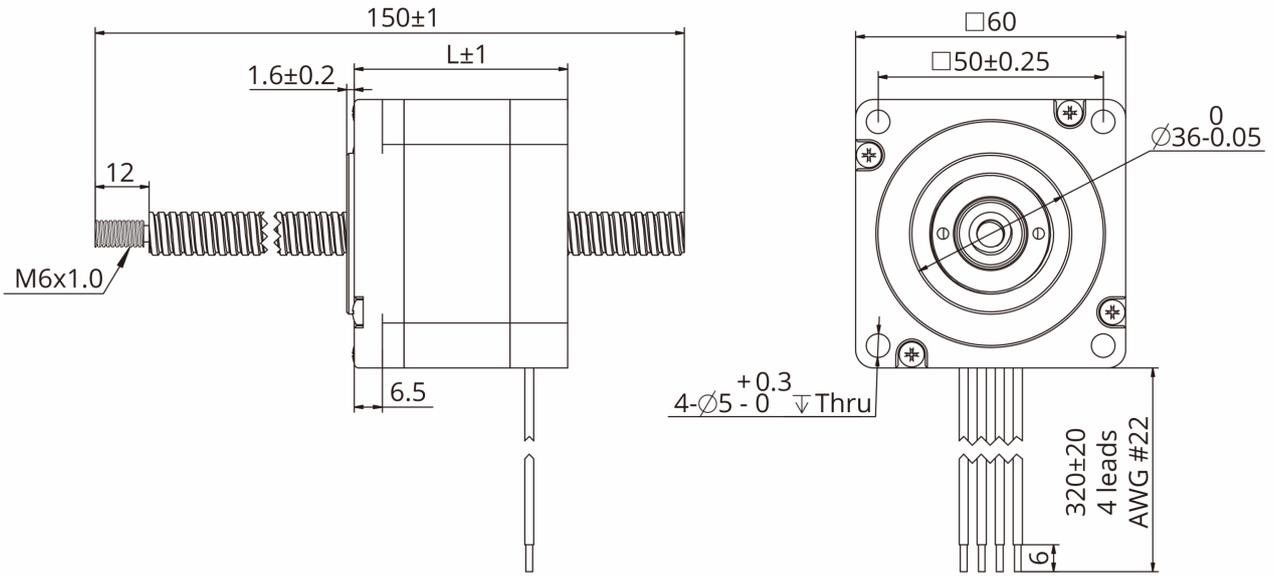
<https://www.kocomotion.de/produkt/slsa-size-24-60mm/>

Motor Characteristics	Unit	24-2120	24-2130	24-2140	24-2230
Size	Nema	24	24	24	24
Flange size	mm	60	60	60	60
Voltage	V	3	1.8	1.6	3
Current	A	2	3	4	3
Resistance	Ω	1.5	0.6	0.4	1
Inductance	mH	3.9	1.6	0.9	3.4
Weight	g	680	680	680	1080
Lead Wire No.		4	4	4	4
Motor Length	mm	47	47	47	68.3

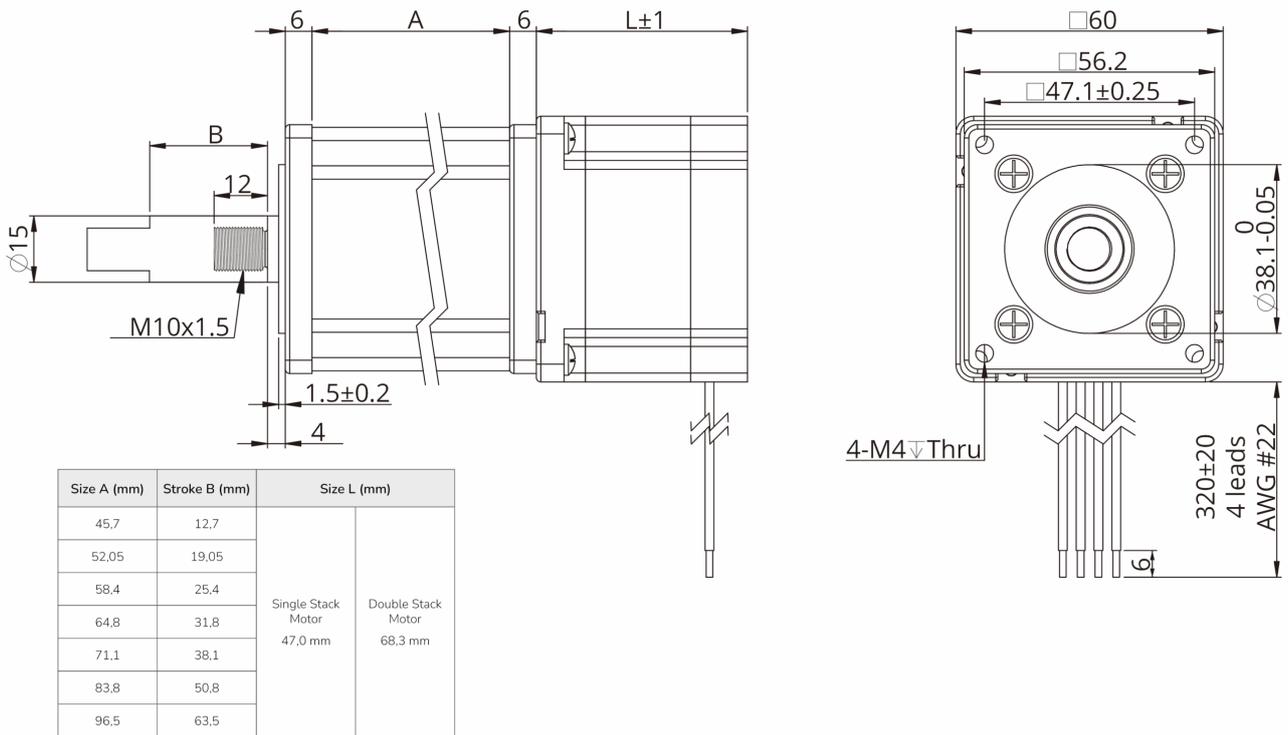
Motor Characteristics	Unit	24-2240	24-2250
Size	Nema	24	24
Flange size	mm	60	60
Voltage	V	2.4	1.5
Current	A	4	5
Resistance	Ω	0.6	0.3
Inductance	mH	1.9	1.2
Weight	g	1080	1080
Lead Wire No.		4	4
Motor Length	mm	68.3	68.3

Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Left-hand thread available	Notes
A	0.635	9.525	3.2		
D	1.27	9.525	6.4		
F	1.5875	9.525	7.9		
H	2.1167	9.525	10.6		
K	2.54	9.525	12.7	Yes	*
L	3.175	9.525	15.9		*
P	4.2333	9.525	21.2		
R	5.08	9.525	25.4		*
S	6.35	9.525	31.8		*
V	9.525	9.525	47.6		
W	9.7536	9.525	48.8		
X	10.16	9.525	50.8		
Y	12.7	9.525	63.5		*
Z	25.4	9.525	127		*
Z	25.4	12.7	127		*
G	2	10	10		
G	2	12	10		
E	5	12	25		
C	10	10	50		
C	10	12	50		
I	20	10	100		
CE	15	12	75		
IE	25	12	125		

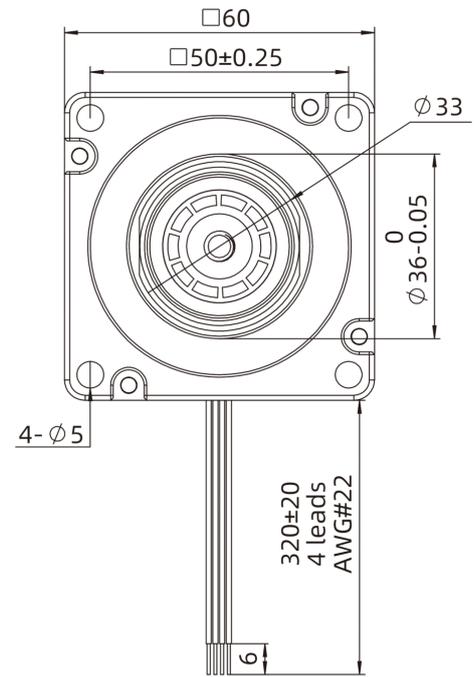
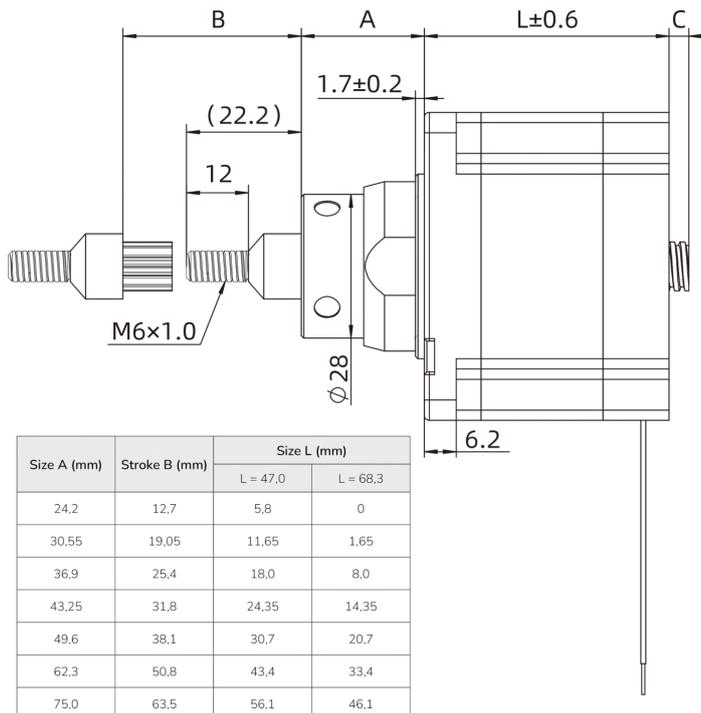
*custom 15,875mm screw diameter available for external type



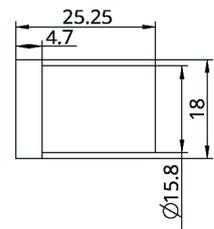
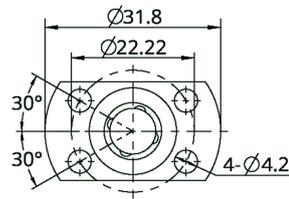
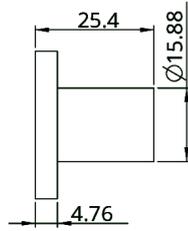
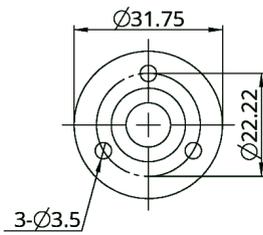
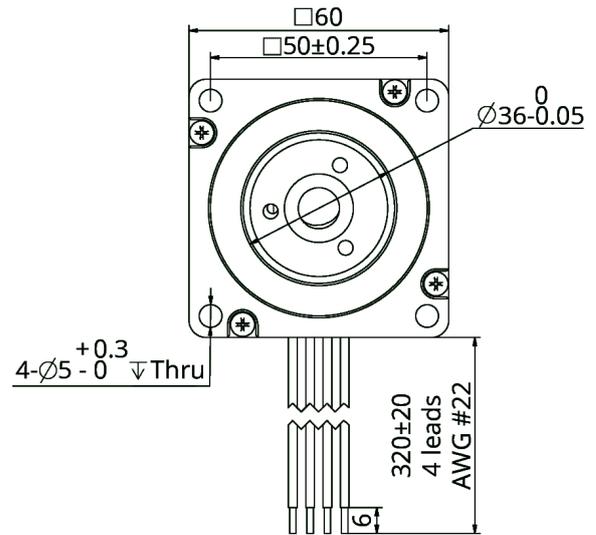
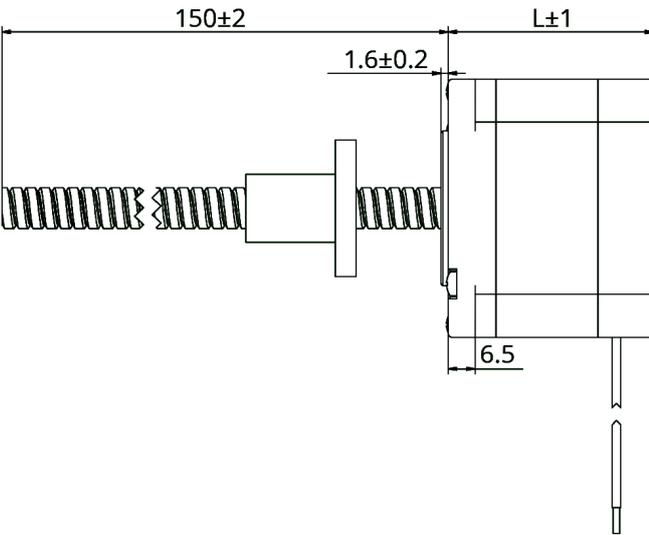
Non-Captive Actuator



Captive (Electrical Cylinder) Actuator



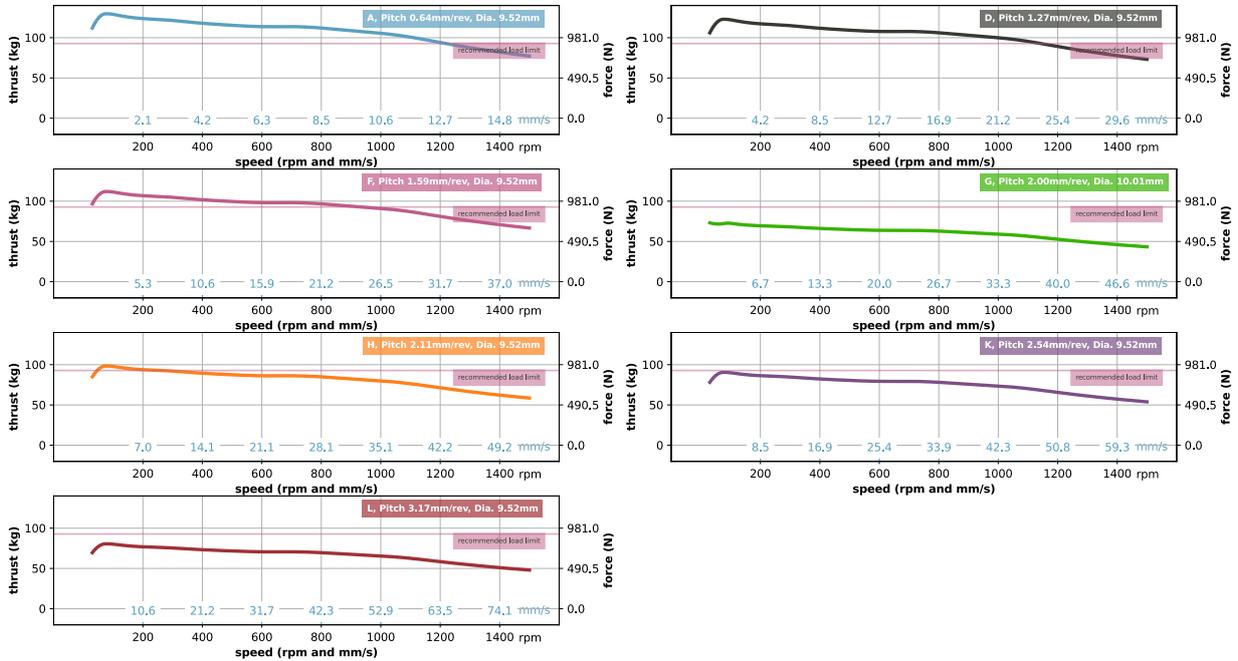
Kaptive Actuator



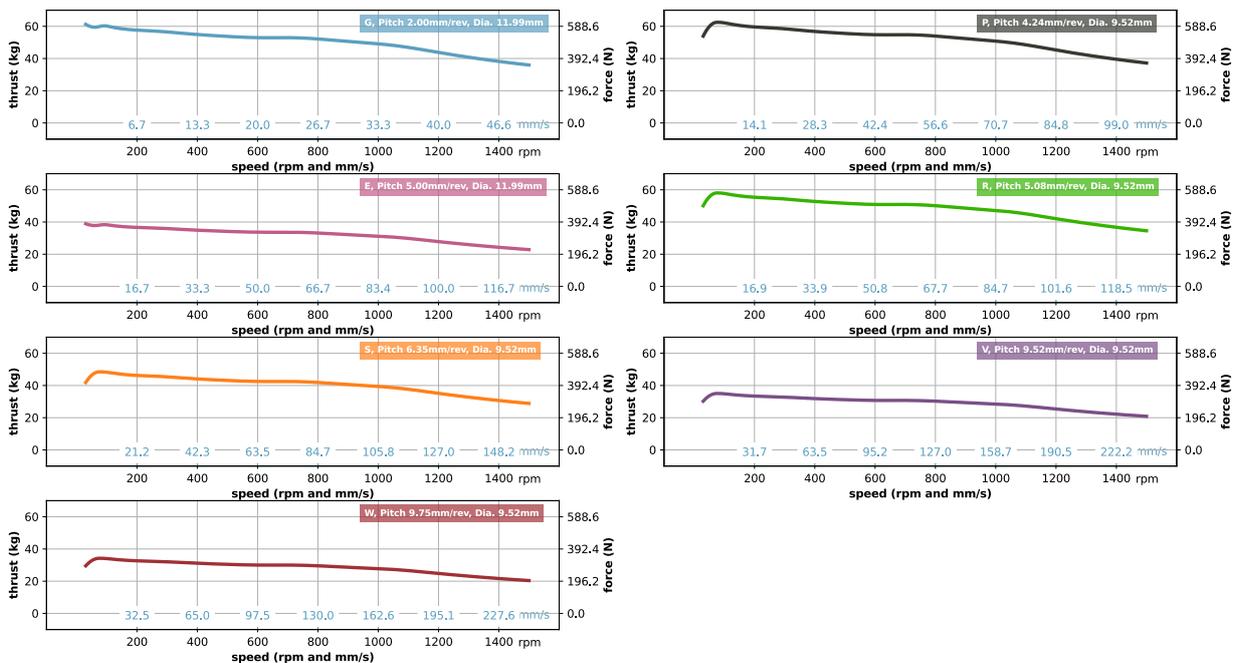
External Actuator

LEADSCREW

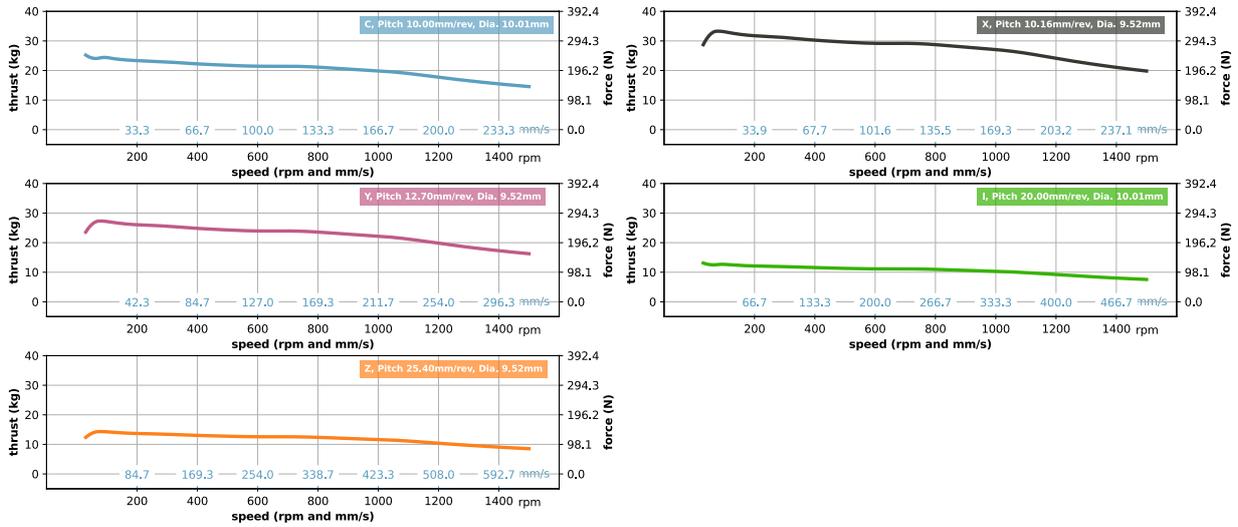
Speed/Thrust Curves



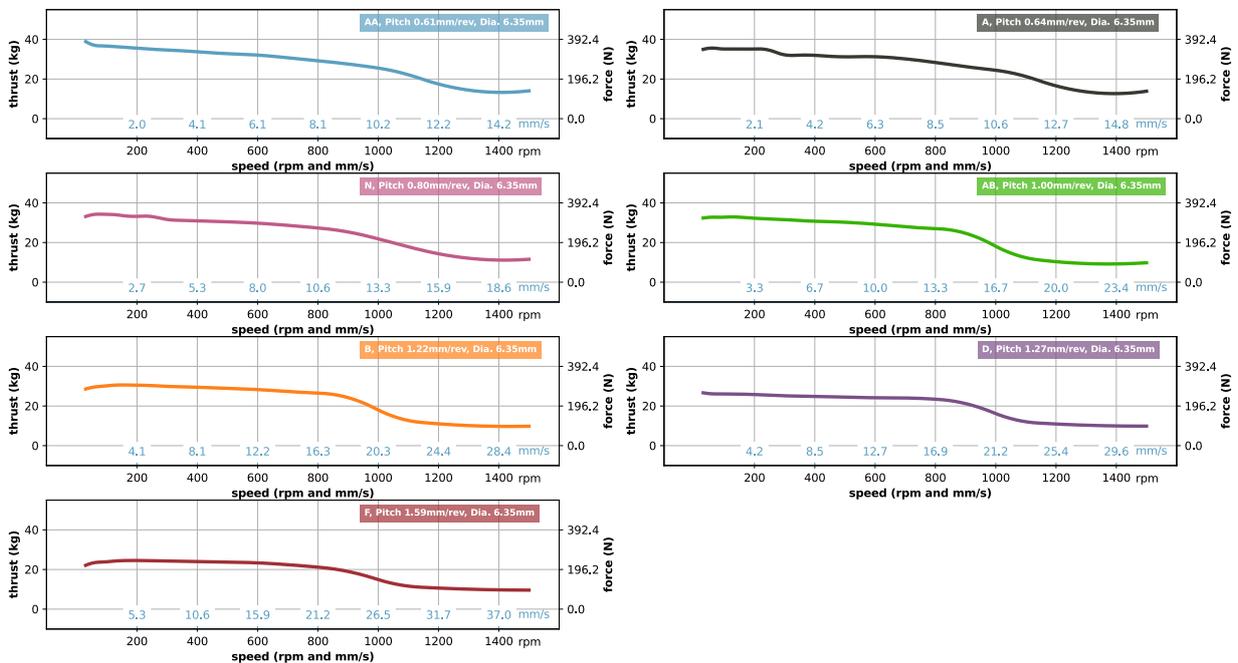
Speed-thrust curves for available screws, motor Nema 24, 24-2130, set 1. Motor driven in two-phase operation with 3A



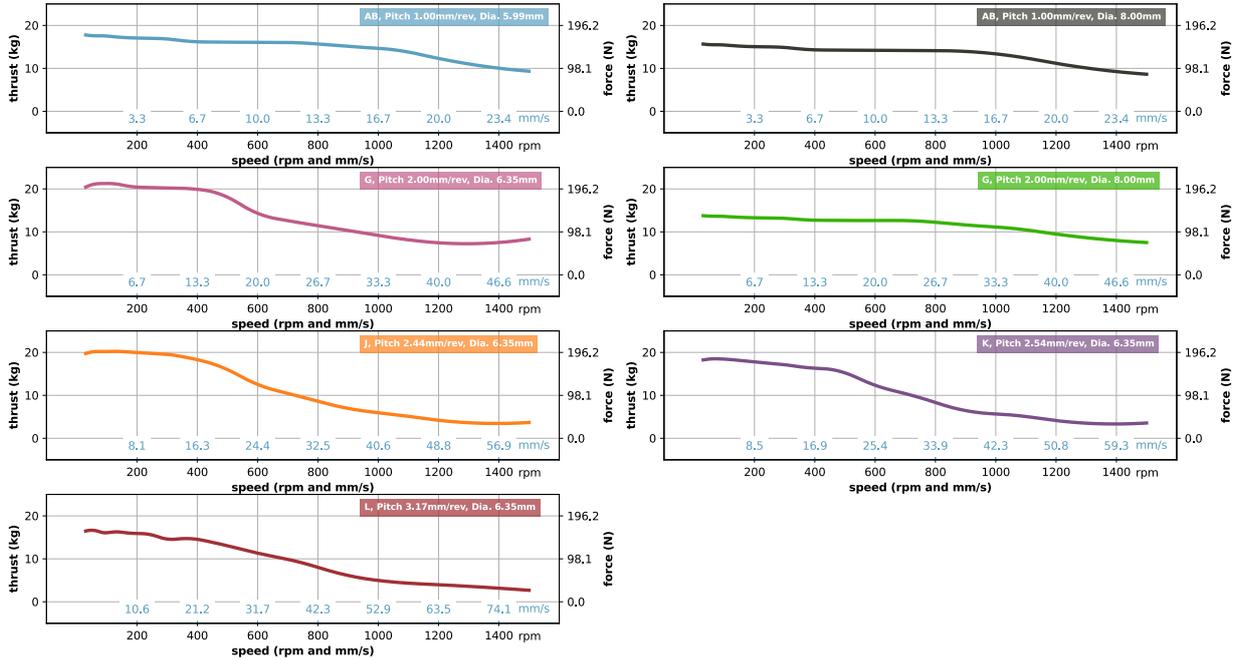
Speed-thrust curves for available screws, motor Nema 24, 24-2130, set 2. Motor driven in two-phase operation with 3A



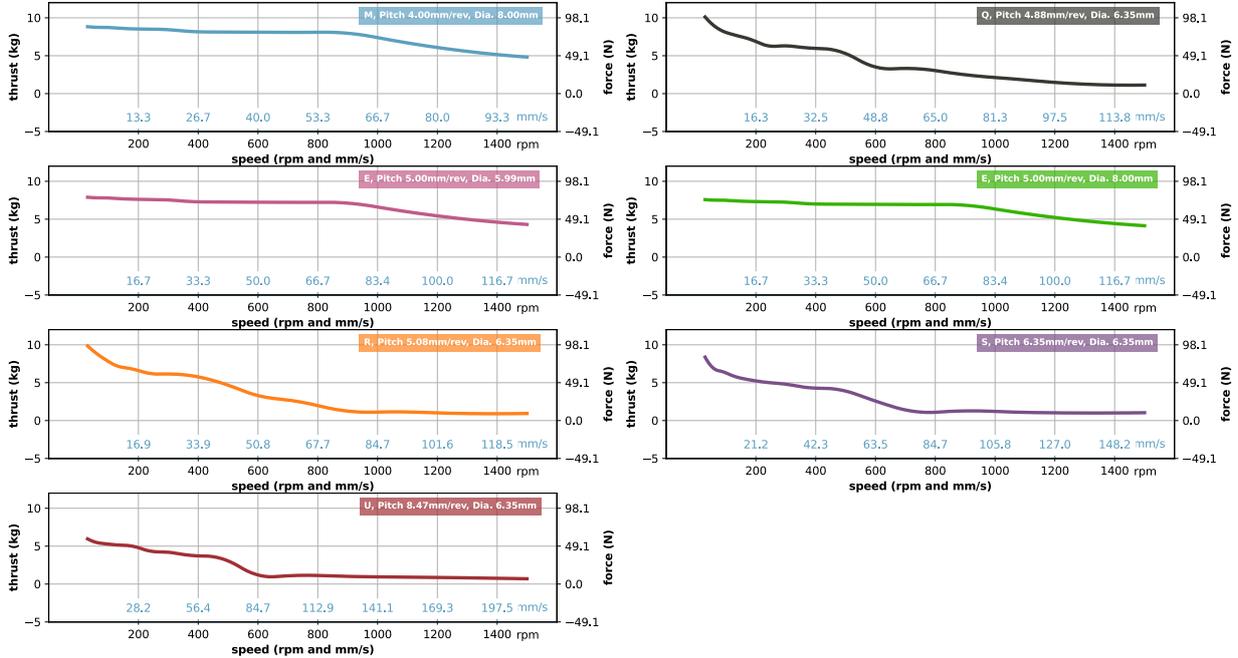
Speed-thrust curves for available screws, motor Nema 24, 24-2130, set 3. Motor driven in two-phase operation with 3A



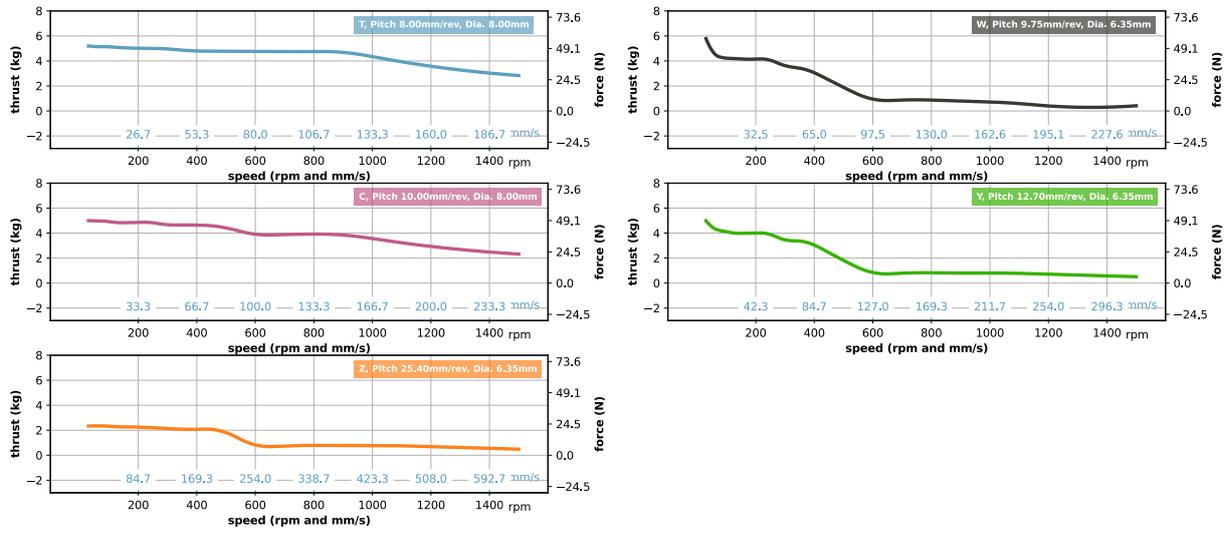
Speed-thrust curves for available screws, motor Nema 24, 24-2240, set 1. Motor driven in two-phase operation with 4A



Speed-thrust curves for available screws, motor Nema 24, 24-2240, set 2. Motor driven in two-phase operation with 4A



Speed-thrust curves for available screws, motor Nema 24, 24-2240, set 3. Motor driven in two-phase operation with 4A



Speed-thrust curves for available screws, motor Nema 24, 24-2240, set 4. Motor driven in two-phase operation with 4A

High-Thrust Stepper Linear Actuators

SLSLA - Size 34 [86mm]

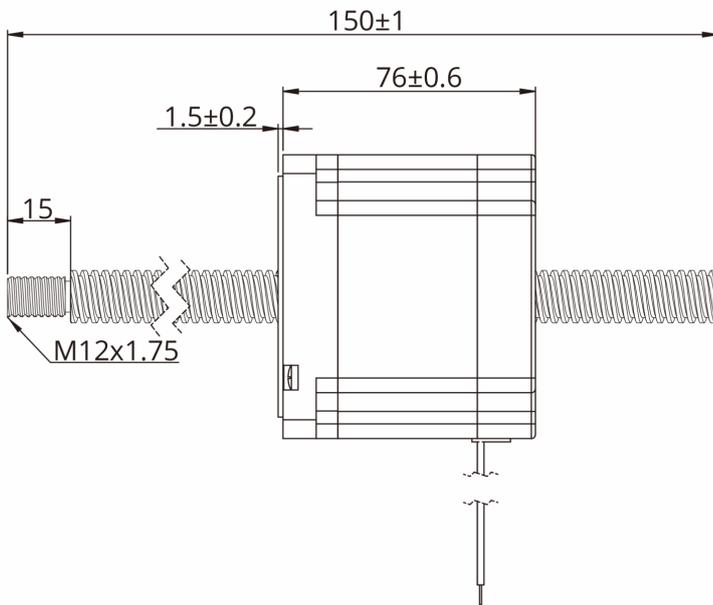
The SLSLA Size 34 [86mm] Stepper Lead Screw Linear Actuator delivers up to 2270N of continuous thrust, making it ideal for demanding automation tasks. Available in External and Non-Captive layouts, this largest-format actuator series features 15.875mm screw diameter, multiple lead pitches, encoder options, Teflon coating, and custom screw end machining. Engineered for reliability in industrial, packaging, and material handling applications.


<https://www.kocomotion.de/produkt/slsla-size-34-86mm/>

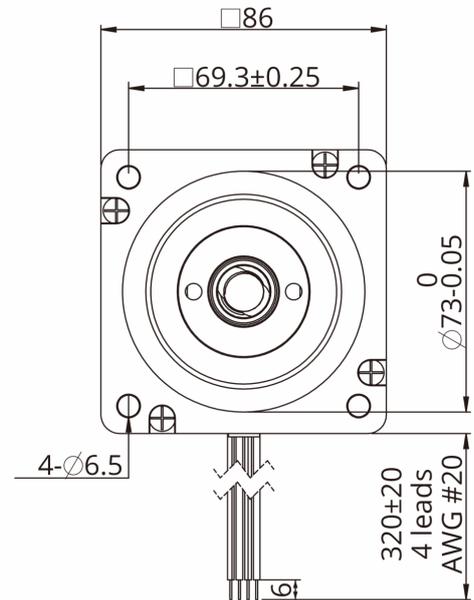
Motor Characteristics	Unit	34-2113	34-2130	34-2155
Size	Nema	34	34	34
Flange size	mm	86	86	86
Voltage	V	12	5.7	2.85
Current	A	1.3	3	5.5
Resistance	Ω	9.2	1.9	0.52
Inductance	mH	71	15	4.5
Weight	g	2370	2370	2370
Lead Wire No.		4	4	4
Motor Length	mm	76	76	76

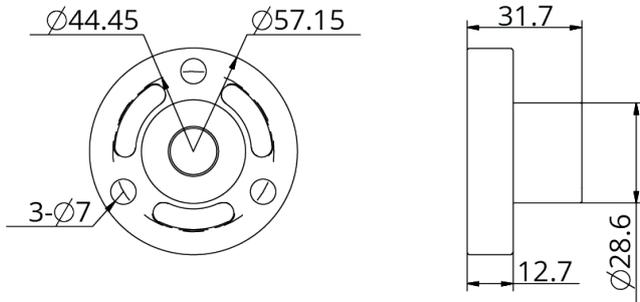
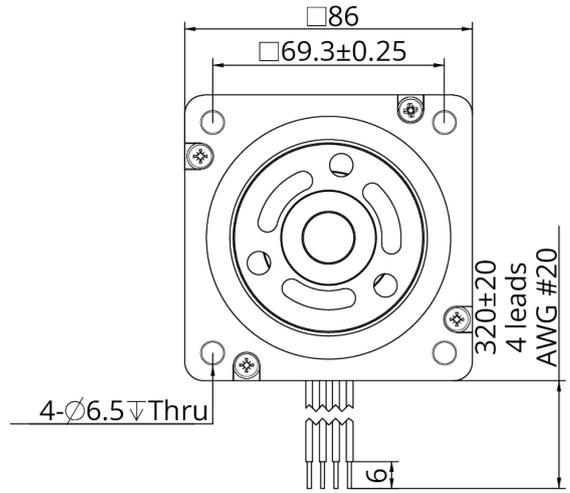
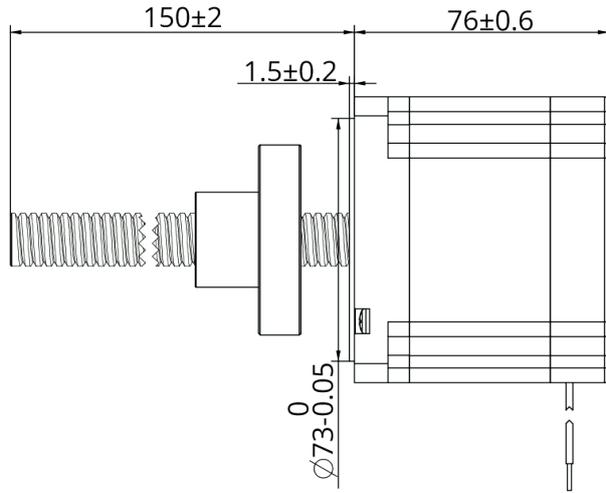
Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [μm]	Left-hand thread available	Notes
K	2.54	15.875	12.7		*
L	3.175	15.875	15.9		*
R	5.08	15.875	25.4		*
S	6.35	15.875	31.8		*
Y	12.7	15.875	63.5		*
Z	25.4	15.875	127		*

*only available for external and non captive type



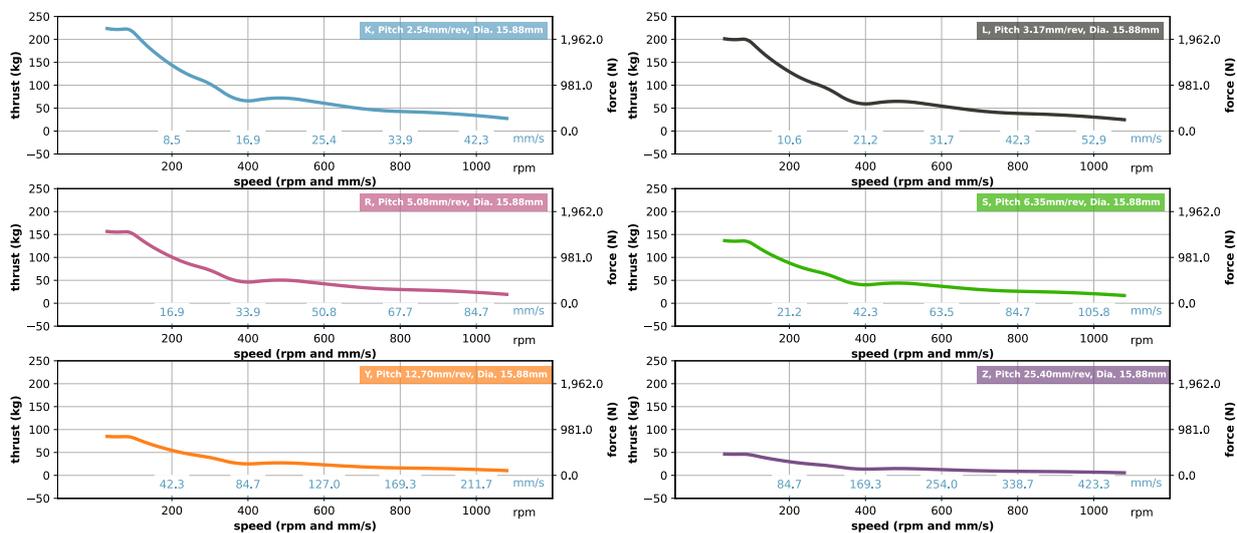
Non-Captive Actuator





External Actuator

Speed/Thrust Curves

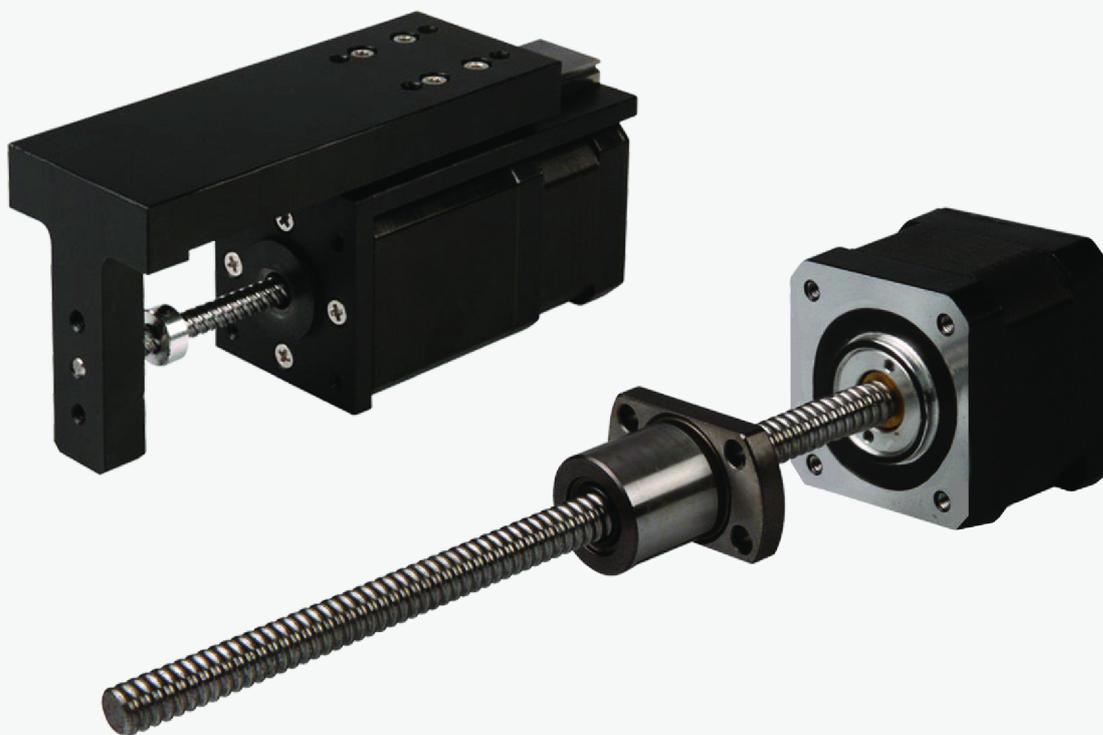


Speed-thrust curves for available screws, motor Nema 34, 34-2130. Motor driven in two-phase operation with 5.5A

Ballscrew

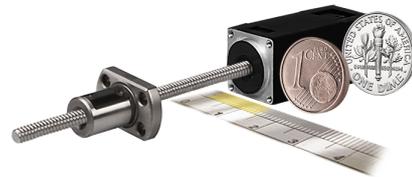
OVERVIEW.

Size (Nema)	Flange size (mm)	Stack	Motor length (mm)	Max. thrust at 60 rpm (kg)	Max. thrust at 60 rpm (N)	Lead pitch for max. thrust (mm)
6	14 x 14	1	32,0	1,1	11	1,0
8	20 x 20	1	27,2	1,4	14	
		2	38,1	2,5	25	
11	28 x 28	1	33,35	14,1	138	
		2	45,0	19,4	190	
14	35 x 35	1	33,6	20,9	205	
		2	45,6	40,3	395	
17	42 x 42	1	34,1	45,9	450	
		2	48,1	74,9	735	
23	57 x 57	1	45,0	86,6	850	
		2	65,0	168,2	1650	



Miniature Stepper Ball Screw Linear Actuators

SBSLA - Size 6 [14mm]



The SBSLA Size 6 [14mm] is KOCO's most compact Stepper Ball Screw Linear Actuator, offering precision motion in a miniature form factor. Standard screw types (0401, 0402), right-hand thread, and hardened SCM415H materials ensure reliability. Customizable screw end machining and encoder options provide flexibility. Ideal for tight-space automation, medical devices, and miniature equipment requiring accurate, repeatable linear positioning.



<https://www.kocomotion.de/produkt/sbsla-size-6-14mm/>

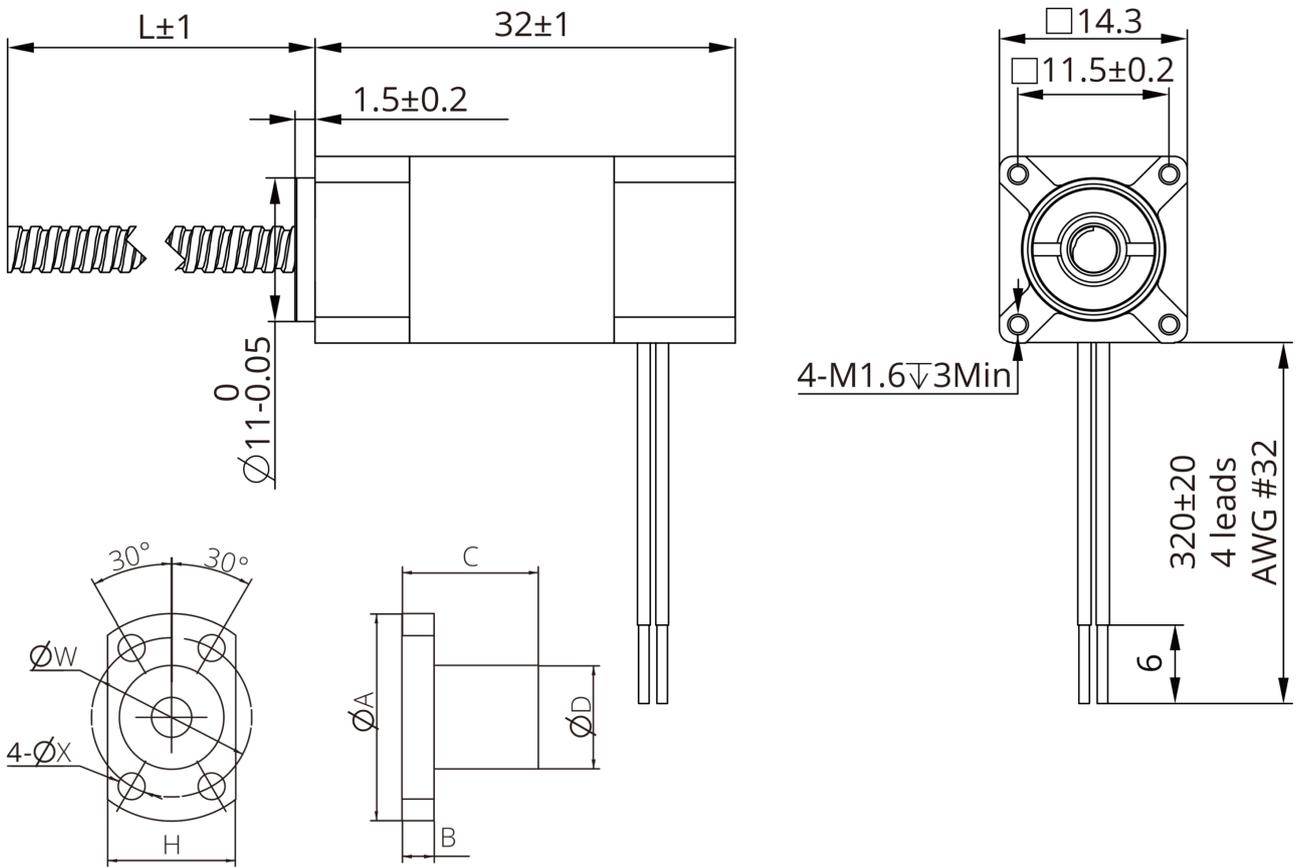
Motor Characteristics	Unit	6E2103
Size	Nema	6
Flange size	mm	14
Voltage	V	6.6
Current	A	0.25
Resistance	Ω	22
Inductance	mH	3.6
Lead Wire No.		4
Motor Length	mm	30

Ball screw type	0401	0402
Ball size	Ø0.8	Ø0.8
Number of threads	1	1
Thread direction	Right	Right
Shaft root dia.	Ø3.3	Ø3.3
Number of circuits	3.7x1	2.7x1
Shaft nut material	SCM415H	SCM415H
Surface hardness	HRC58-62	HRC58-62
Anti-rust treatment	Anti-rust oil	Anti-rust oil
Grade	C7	C7

Nut size	A	B	C	D	H	W	X	Axial play	Dynamic load [N]	Static load [N]
BS0401	19	3	13	9	13	14	2.9	≤0.02	560	790
BS0402	23	4	19	11	15	17	3.4	≤0.02	420	570

Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Number of threads
0401	1	4	5	1
0402	2	4	10	1

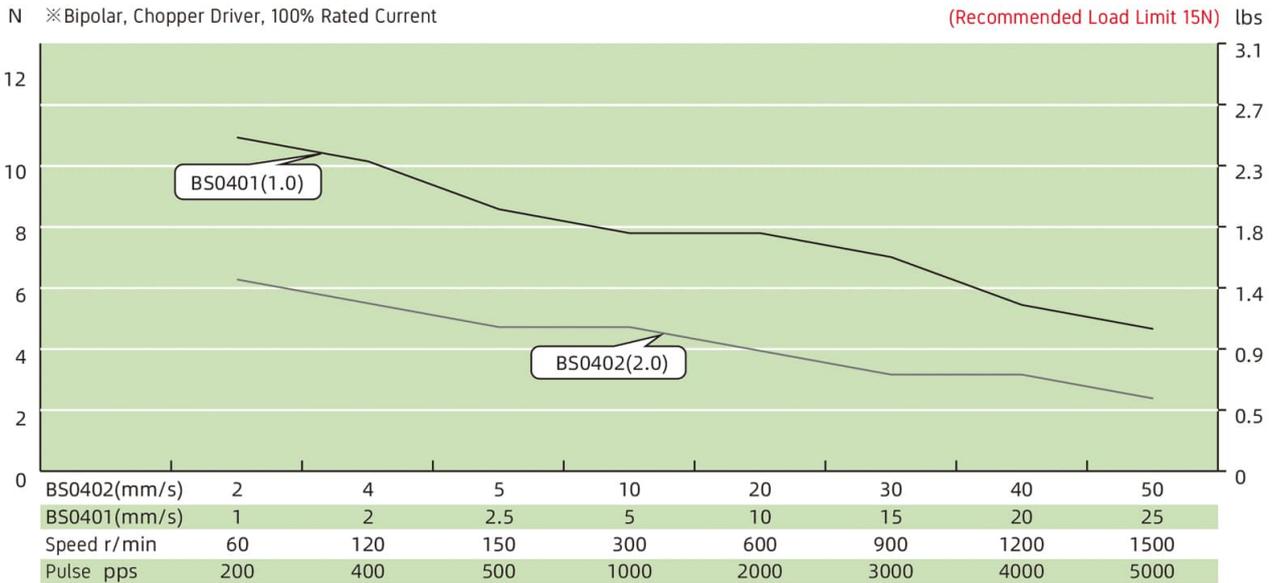
Drawings



External Actuator

Speed/Thrust Curves

Size 6 Single Stack Speed Thrust Curves



TEST CONDITION

Testing Voltage: 12Vdc, Driver Model: DS-OLS2-FPD bipolar, chopper driver at rated current (rms). Motor's thrust will be changed with different voltage and driver. 50% thrust margin is recommended.

Speed-thrust curves for available screws, motor Nema 6, 6E2103

20mm Stepper Ball Screw Linear Actuator

SBSLA - Size 8 [20mm]



The SBSLA - Size 8 [20mm] External Stepper Ball Screw Linear Actuator delivers precise motion control in a compact form factor. Available with multiple screw end machining and encoder options, it features high-grade SCM415H nut material, Ø0.8 mm ball size, and C7 accuracy. Ideal for demanding automation applications requiring reliable, accurate linear movement and customizable configurations.


<https://www.kocomotion.de/produkt/sbsla-size-8-20mm/>

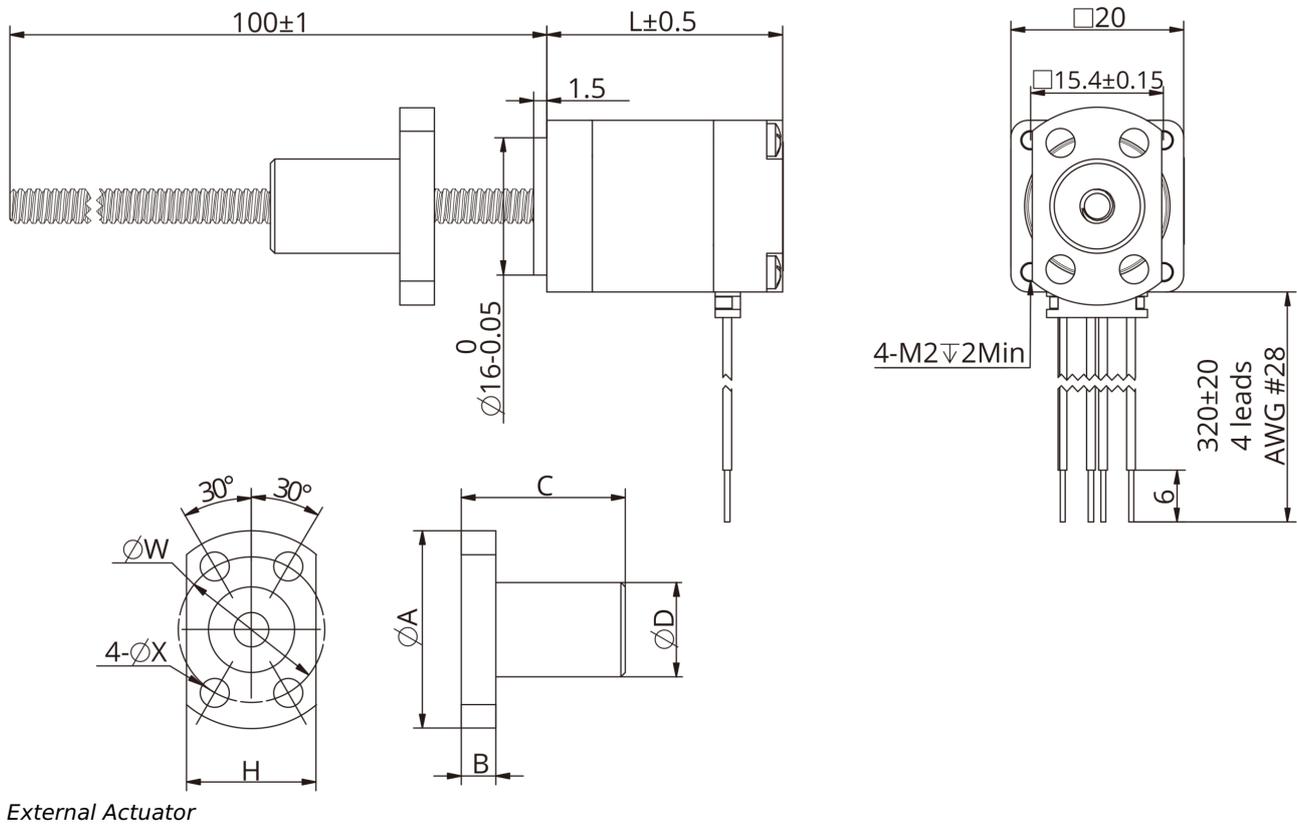
Motor Characteristics	Unit	8E2105	8E2205
Size	Nema	8	8
Flange size	mm	20	20
Voltage	V	2.5	4.4
Current	A	0.5	0.5
Resistance	Ω	5.1	8.8
Inductance	mH	1.5	2.7
Motor Length	mm	27.2	38.1
Lead Wire No.		4	4

Ball screw type	0401	0402
Ball size	Ø0.8	Ø0.8
Number of threads	1	1
Thread direction	Right	Right
Shaft root dia.	Ø3.3	Ø3.3
Number of circuits	3.7x1	2.7x1
Shaft nut material	SCM415H	SCM415H
Surface hardness	HRC58-62	HRC58-62
Anti-rust treatment	Anti-rust oil	Anti-rust oil
Grade	C7	C7

Nut size	A	B	C	D	H	W	X	Axial play	Dynamic load [N]	Static load [N]
BS0401	19	3	13	9	13	14	2.9	≤0.02	560	790
BS0402	23	4	19	11	15	17	3.4	≤0.02	420	570

Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Number of threads
0401	1	4	5	1
0402	2	4	10	1

Drawings

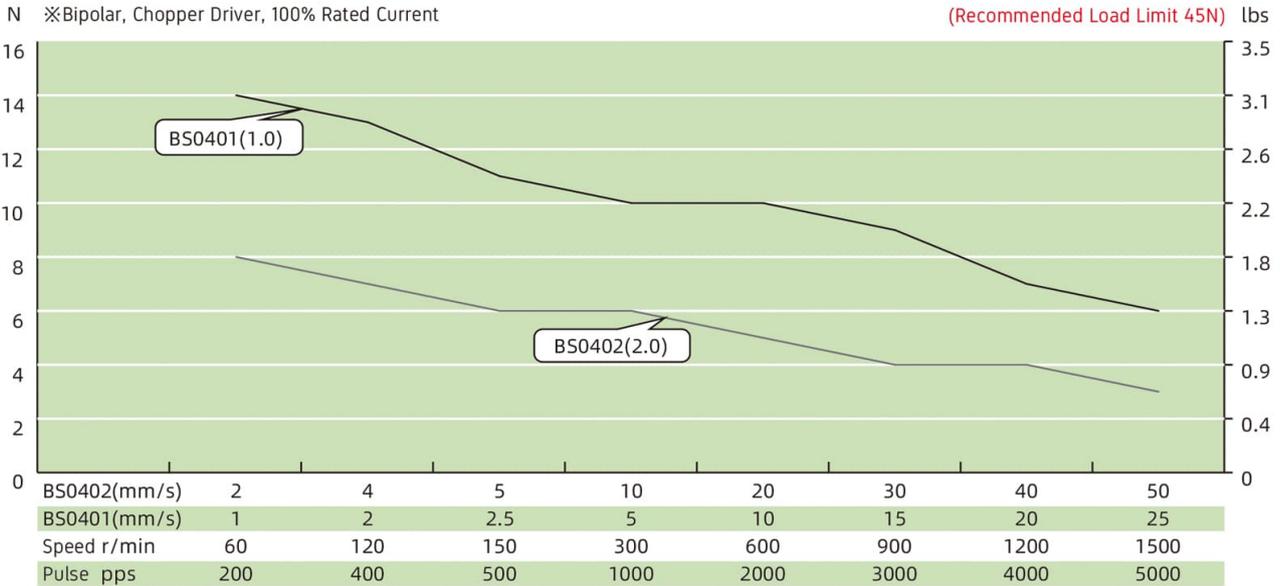


External Actuator

Speed/Thrust Curves

BALLSCREW

Size 8 Single Stack Speed Thrust Curves

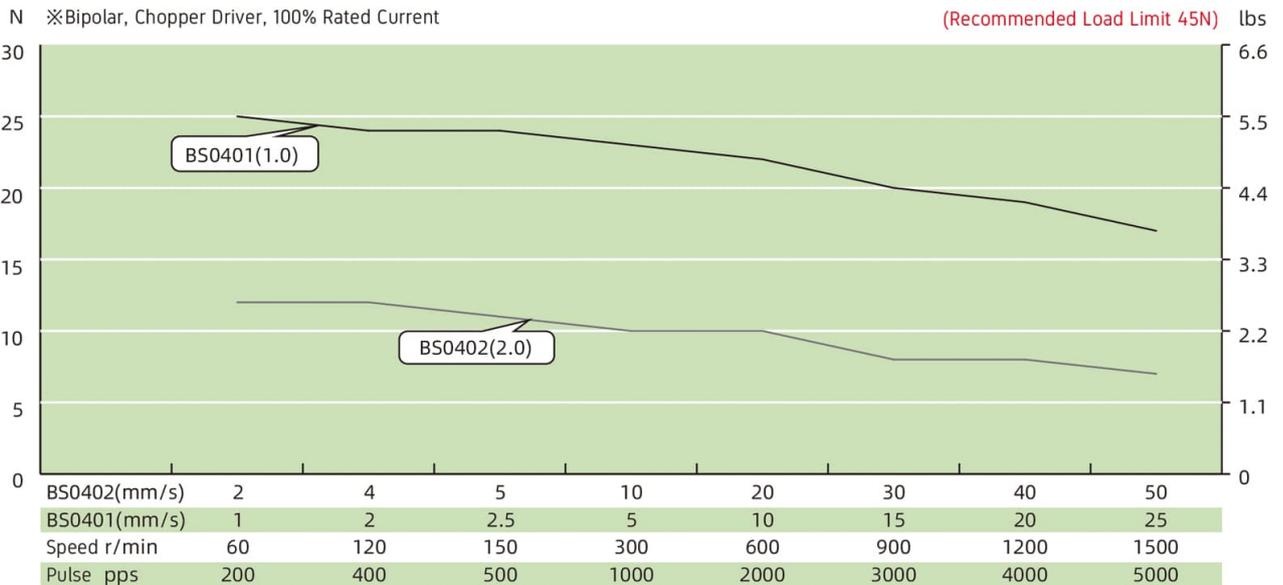


TEST CONDITION

Testing Voltage: 24Vdc, Driver Model: DS-OLS2-FPD bipolar, chopper driver at rated current (rms). Motor's thrust will be changed with different voltage and driver. 50% thrust margin is recommended.

Speed-thrust curves for available screws, motor Nema 8, 8E2105

Size 8 Double Stack Speed Thrust Curves



TEST CONDITION

Testing Voltage: 24Vdc, Driver Model: DS-OLS2-FPD bipolar, chopper driver at rated current (rms). Motor's thrust will be changed with different voltage and driver. 50% thrust margin is recommended.

Speed-thrust curves for available screws, motor Nema 8, 8E2205

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Size 11 Stepper Ball Screw Linear Actuator

SBSLA - Size 11

[28mm]



The SBSLA Size 11 (28mm) External Stepper Ball Screw Linear Actuator combines compact form with high-precision motion. Featuring C7-grade ball screws (0601/0602/0606/0610/0504), robust SCM415H construction, and options for encoder feedback, power-off brake, and various screw end machinations, this actuator is ideal for demanding positioning applications in automation, lab equipment, and miniature machinery.


<https://www.kocomotion.de/produkt/sbsla-size-11-28mm/>

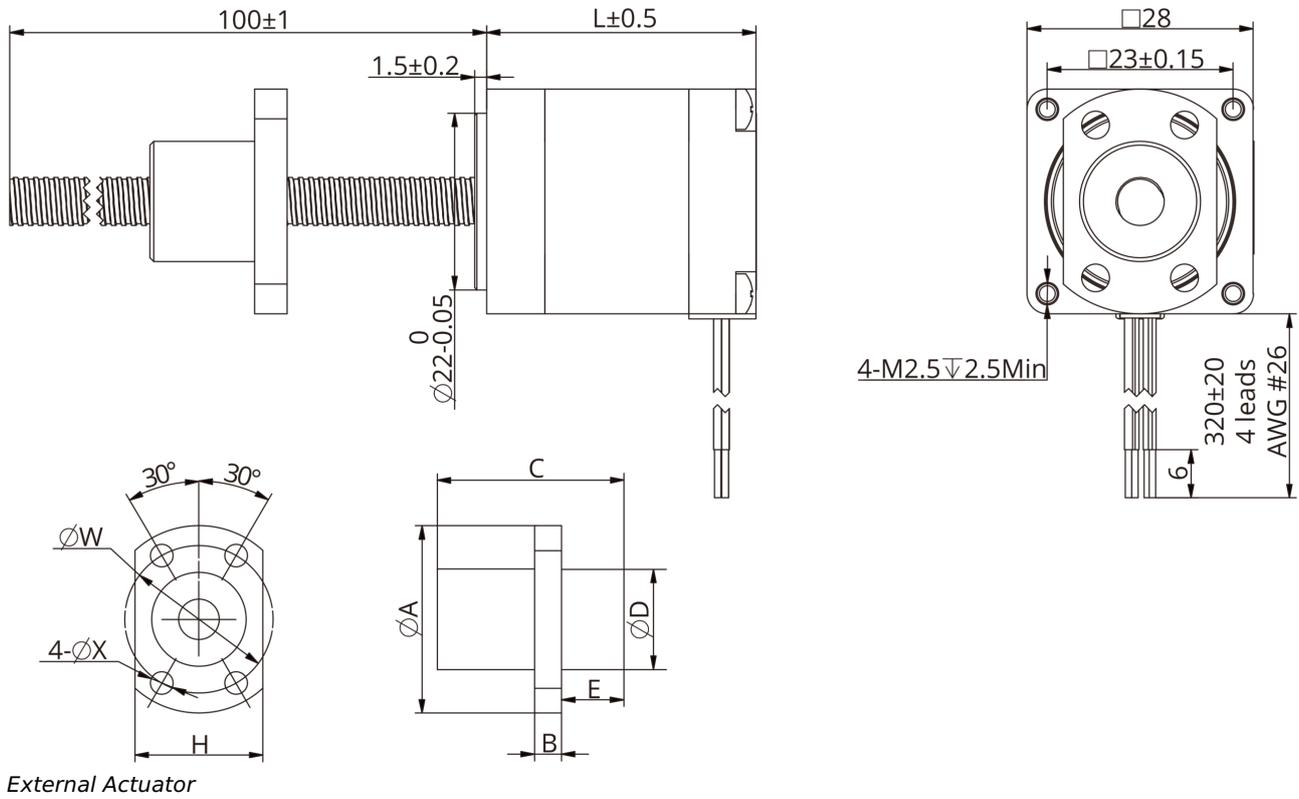
Motor Characteristics	Unit	11E2110	11E2209
Size	Nema	11	11
Flange size	mm	28	28
Voltage	V	2.1	3.9
Current	A	1	0.95
Resistance	Ω	2.1	4.1
Inductance	mH	1.5	4
Motor Length	mm	33.35	45
Lead Wire No.		4	4

Ball screw type	0601	0602	0606	0610	0504
Ball size	Ø0.8	Ø0.8	Ø0.8	Ø1.2	Ø0.8
Number of threads	1	1	2	2	1
Thread direction	Right	Right	Right	Right	Right
Shaft root dia.	Ø5.3	Ø5.1	Ø5.2	Ø5.0	Ø4.3
Number of circuits	3.7x1	2.7x1	1.6x2	1.2x2	2.7x1
Shaft nut material	SCM415H	SCM415H	SCM415H	SCM415H	SCM415H
Surface hardness	HRC58-62	HRC58-62	HRC58-62	HRC58-62	HRC58-62
Anti-rust treatment	Anti-rust oil				
Grade	C7	C7	C7	C7	C7

Nut size	A	B	C	D	H	W	X	E	Axial play	Dynamic load [N]	Static load [N]
BS0601	24	3.5	15	12	16	18	3.4		≤0.02	680	1200
BS0602	29	4	17	15	19	22	3.4		≤0.02	880	1500
BS0606	27	4	17.2	14	16	21	3.4	5.2	≤0.02	870	1450

Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Number of threads
0601	1	6	5	1
0602	2	6	10	1
0606	6	6	30	2

Drawings



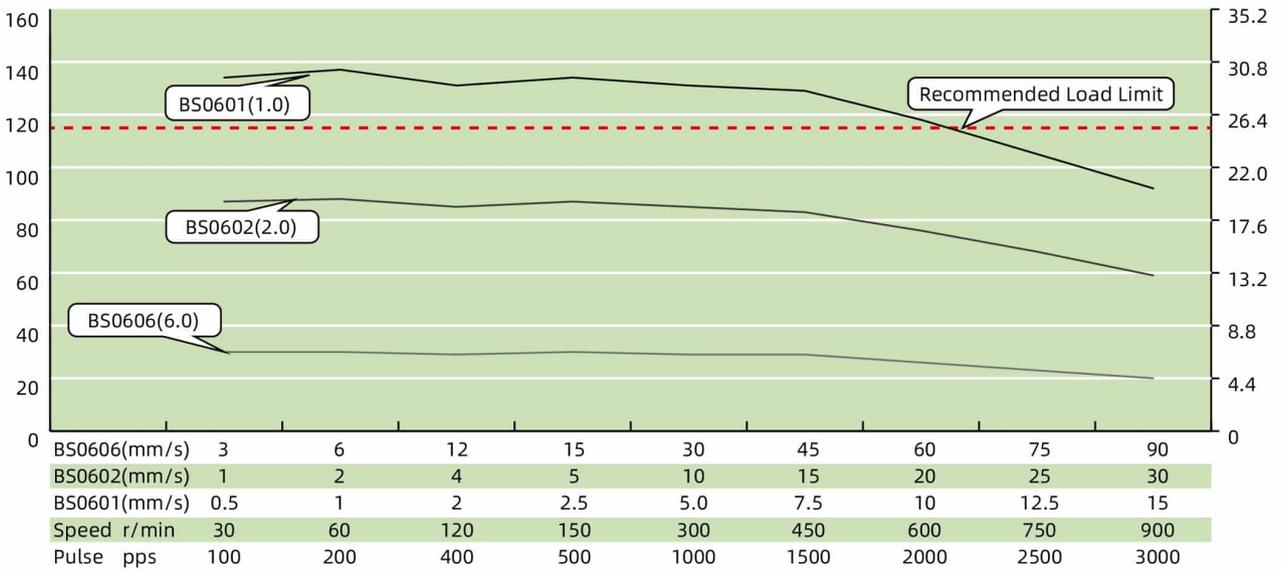
Speed/Thrust Curves

BALLSCREW

Size 11 Single Stack Speed Thrust Curves

N ※Bipolar, Chopper Driver, 100% Rated Current

(Recommended Load Limit 115N) lbs

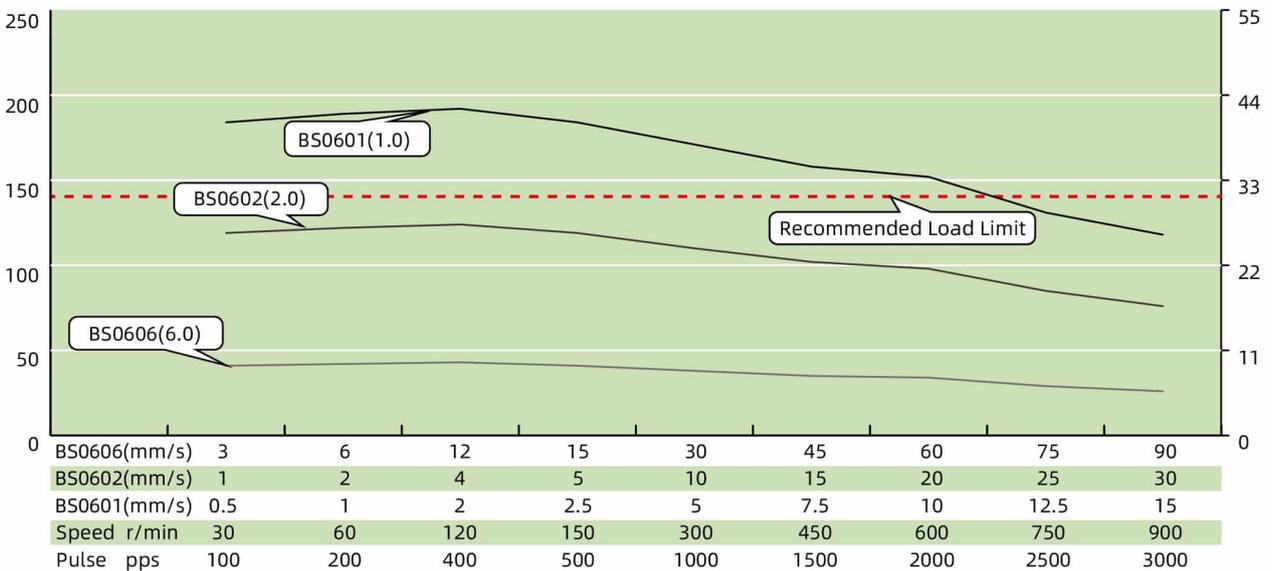


Speed-thrust curves for available screws, motor Nema 11, 11E2110

Size 11 Double Stack Speed Thrust Curves

N ※Bipolar, Chopper Driver, 100% Rated Current

(Recommended Load Limit 140N) lbs



Speed-thrust curves for available screws, motor Nema 11, 11E2209

35mm Stepper Ball Screw Linear Actuators

SBSLA - Size 14 [35mm]



The SBSLA Size 14 (35mm) external stepper ball screw linear actuator family delivers high-precision linear motion with integrated stepper motor drive. Available in multiple ball screw types and nut sizes, these actuators offer customizable screw end machining, encoder options (EK1, EK2, EK5), and a range of thread designs. Ideal for compact automation applications requiring accuracy and robust construction with C7-grade ball screws and anti-rust treatment.


<https://www.kocomotion.de/produkt/sbsla-size-14-35mm/>

Motor Characteristics	Unit	14E2110	14E2115	14E2210	14E2215
Size	Nema	14	14	14	14
Flange size	mm	35	35	35	35
Voltage	V	3.5	2.7	6.0	4.0
Current	A	1.0	1.5	1.0	1.5
Resistance	Ω	3.5	1.8	6.0	2.7
Inductance	mH	3.6	1.9	7.2	3.2
Motor Length	mm	33.6	33.6	45.6	45.6
Lead Wire No.		4	4	4	4

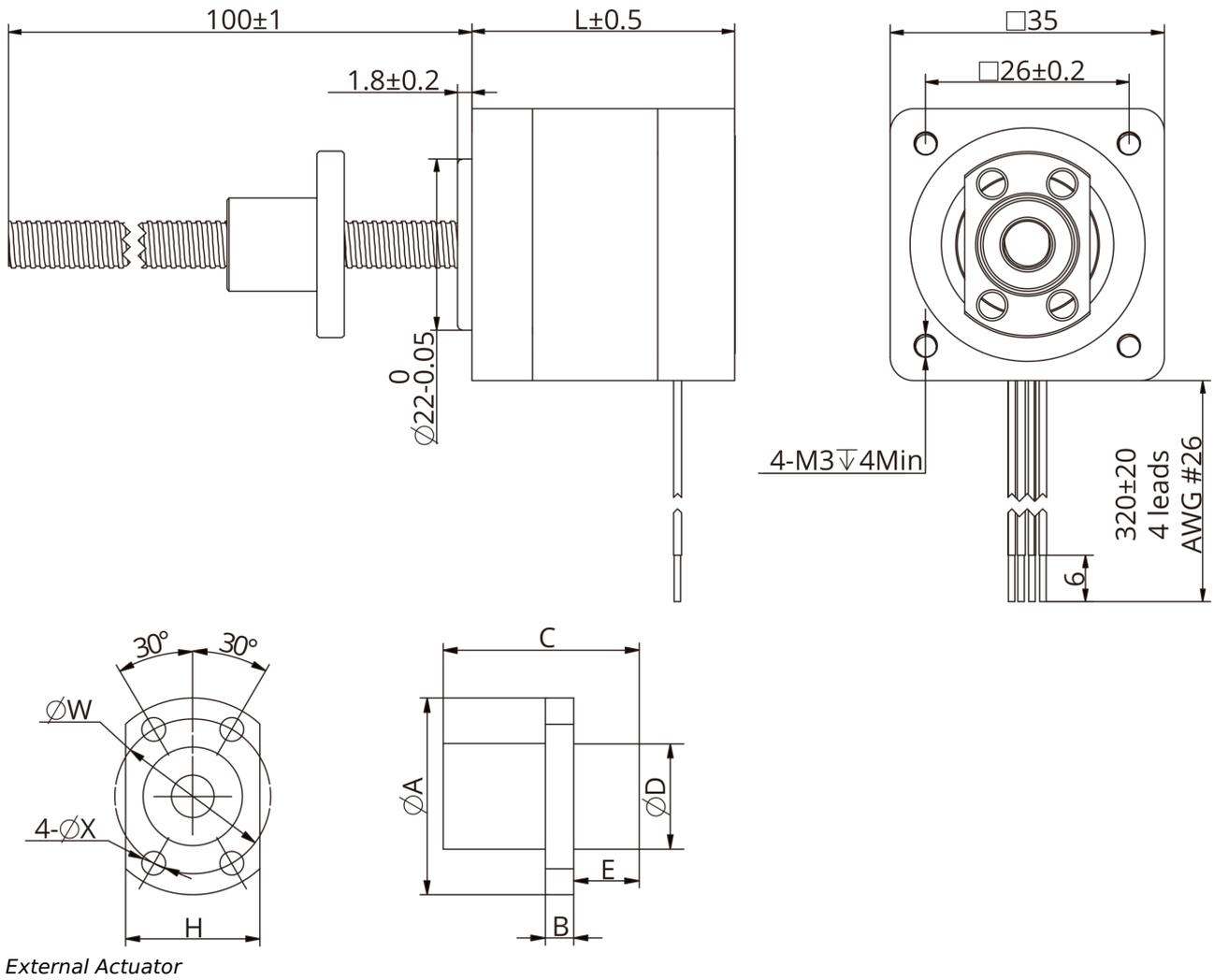
Ball screw type	0601	0602	0606	0801	0802
Ball size	Ø0.8	Ø0.8	Ø0.8	Ø0.8	Ø1.5875
Number of threads	1	1	2	1	1
Thread direction	Right	Right	Right	Right	Right
Shaft root dia.	Ø5.3	Ø5.1	Ø5.2	Ø7.3	Ø6.6
Number of circuits	3.7x1	2.7x1	1.6x2	3.7x1	3.7x1
Shaft nut material	SCM415H	SCM415H	SCM415H	SCM415H	SCM415H
Surface hardness	HRC58-62	HRC58-62	HRC58-62	HRC58-62	HRC58-62
Anti-rust treatment	Anti-rust oil				
Grade	C7	C7	C7	C7	C7

Ball screw type	0805	0808	0810
Ball size	Ø1.5875	Ø1.5875	Ø1.5875
Number of threads	1	2	2
Thread direction	Right	Right	Right
Shaft root dia.	Ø6.6	Ø6.7	Ø6.7
Number of circuits	2.7x1	1.6x2	1.6x2
Shaft nut material	SCM415H	SCM415H	SCM415H
Surface hardness	HRC58-62	HRC58-62	HRC58-62
Anti-rust treatment	Anti-rust oil	Anti-rust oil	Anti-rust oil
Grade	C7	C7	C7

Nut size	A	B	C	D	H	W	X	E	Axial play	Dynamic load [N]	Static load [N]
BS0601	24	3.5	15	12	16	18	3.4		≤0.02	680	1200
BS0602	29	4	17	15	19	22	3.4		≤0.02	880	1500
BS0606	27	4	17.2	14	16	21	3.4	5.2	≤0.02	870	1450
BS0801	26	4	16	13	17	20	3.4		≤0.02	780	1650
BS0802	27	4	16	14	18	21	3.4		≤0.02	1300	2300
BS0805	31	4	28	18	20	25	3.4		≤0.02	1850	3000
BS0808	31	4	21.5	18	20	25	3.4	6	≤0.02	2200	3800
BS0810	31	4	24	18	20	25	3.4	7	≤0.02	2200	3900

Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [μm]	Number of threads
0601	1	6	5	1
0602	2	6	10	1
0606	6	6	30	2
0801	1	8	5	1
0802	2	8	10	1
0805	5	8	25	1
0808	8	8	40	2
0810	10	8	50	2

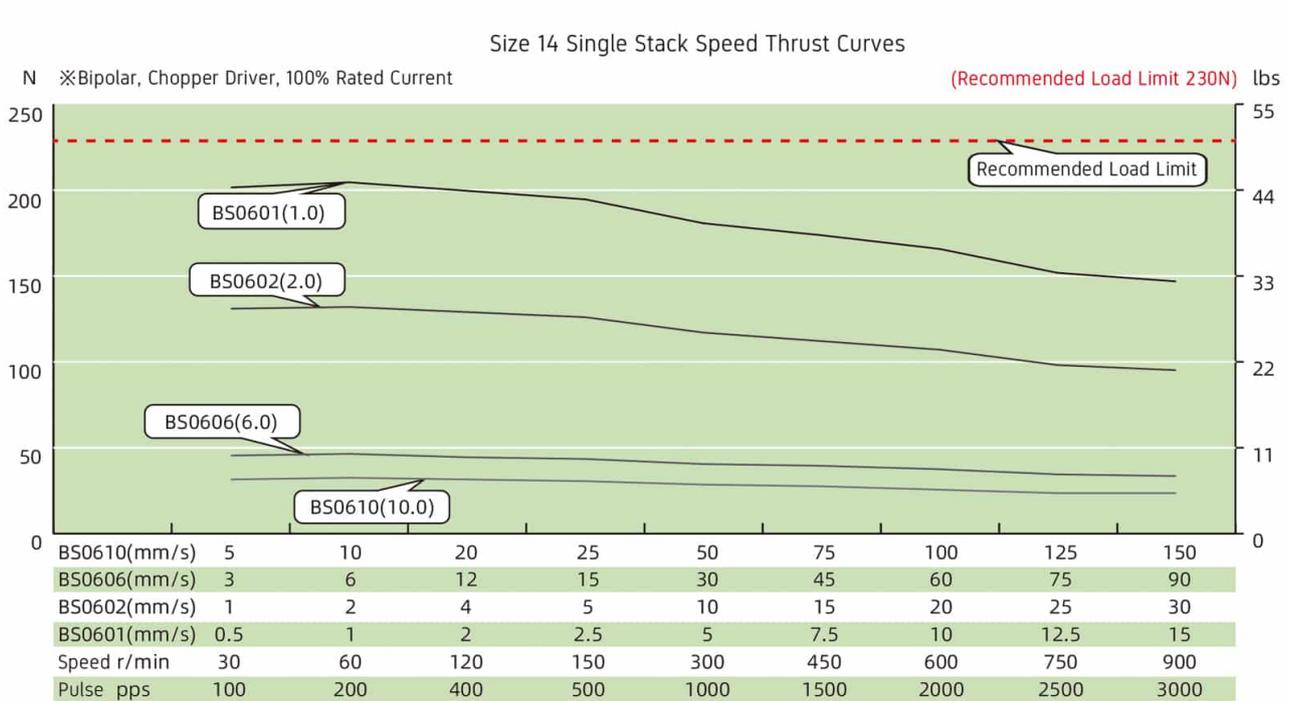
Drawings



External Actuator

BALLSCREW

Speed/Thrust Curves



TEST CONDITION

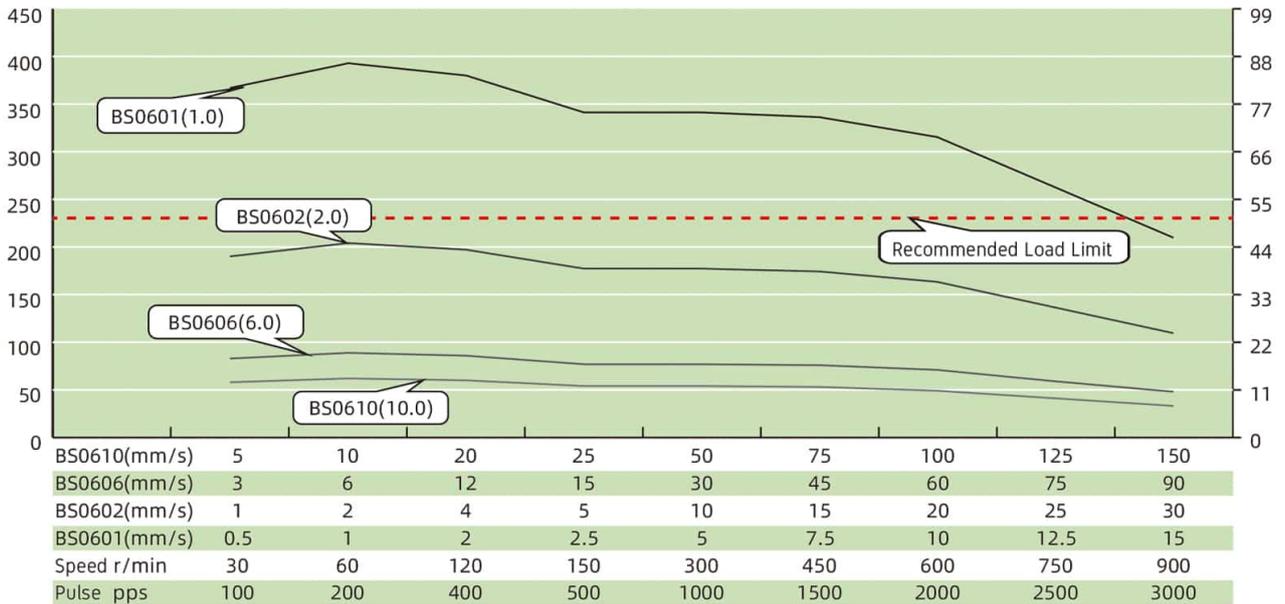
Testing Voltage: 24Vdc, Driver Model: DS-OLS2-FPD bipolar, chopper driver at rated current (rms). Motor's thrust will be changed with different voltage and driver. 50% thrust margin is recommended.

Speed-thrust curves for available screws, motor Nema 14, 14E2115

Size 14 Double Stack Speed Thrust Curves

N ※Bipolar, Chopper Driver, 100% Rated Current

(Recommended Load Limit 230N) lbs



TEST CONDITION

Testing Voltage: 24Vdc, Driver Model: DS-OLS2-FPD bipolar, chopper driver at rated current (rms). Motor's thrust will be changed with different voltage and driver. 50% thrust margin is recommended.

Speed-thrust curves for available screws, motor Nema 14, 14E2215

Size 17 Stepper Ball Screw Linear Actuator

SBSLA - Size 17

[42mm]



The SBSLA Size 17 [42mm] series features high-precision stepper-driven external ball screw linear actuators, available with multiple ball screw leads (0801-0812) and nut profiles. Standard options include threaded, smooth, or customizable screw ends, a wide range of incremental encoders (EK1/EK2/EK4/EK5), and optional power-off brakes. Suited for precise linear motion tasks demanding compact size, durability, and flexible configuration across automation and motion control applications.


<https://www.kocomotion.de/produkt/sbsla-size-17-42mm/>

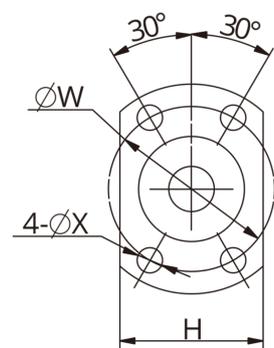
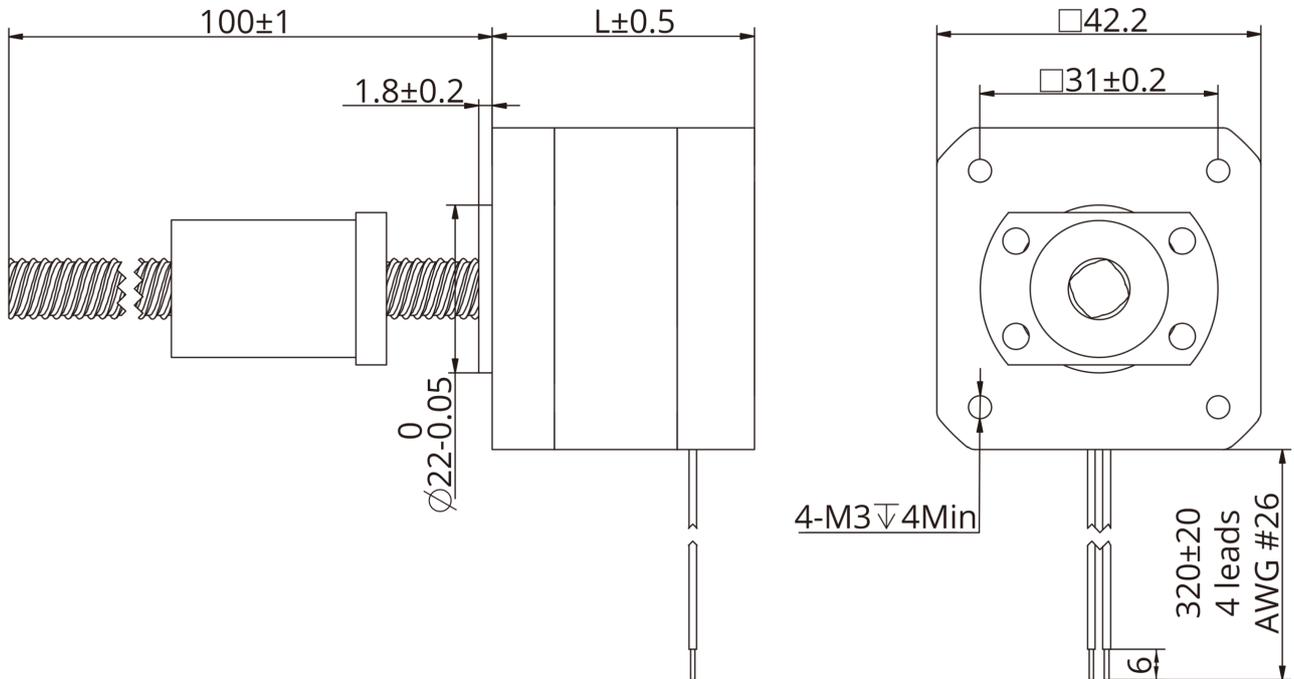
Motor Characteristics	Unit	17E2110	17E2115	17E2212	17E2225
Size	Nema	17	17	17	17
Flange size	mm	42	42	42	42
Voltage	V	3.8	2.78	4.56	2.5
Current	A	1.0	1.5	1.2	2.5
Resistance	Ω	3.8	1.85	3.8	1.0
Inductance	mH	5	2.2	8.0	1.8
Motor Length	mm	34.1	34.1	48.1	48.1
Lead Wire No.		4	4	4	4

Ball screw type	0801	0802	0805	0808	0810
Ball size	Ø1.5875	Ø1.5875	Ø1.5875	Ø1.5875	Ø1.5875
Number of threads	1	1	1	2	2
Thread direction	Right	Right	Right	Right	Right
Shaft root dia.	Ø7.3	Ø6.6	Ø6.6	Ø6.7	Ø6.7
Number of circuits	3.7x1	3.7x1	2.7x1	1.6x2	1.6x2
Shaft nut material	SCM415H	SCM415H	SCM415H	SCM415H	SCM415H
Surface hardness	HRC58-62	HRC58-62	HRC58-62	HRC58-62	HRC58-62
Anti-rust treatment	Anti-rust oil				
Grade	C7	C7	C7	C7	C7

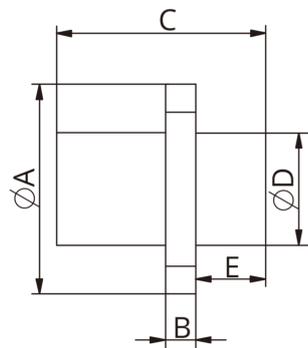
Nut size	A	B	C	D	H	W	X	E	Axial play	Dynamic load [N]	Static load [N]
BS0801	26	4	16	13	17	20	3.4		≤0.02	780	1650
BS0802	27	4	16	14	18	21	3.4		≤0.02	1300	2300
BS0805	31	4	28	18	20	25	3.4		≤0.02	1850	3000
BS0808	31	4	21.5	18	20	25	3.4	6	≤0.02	2200	3800
BS0810	31	4	24	18	20	25	3.4	7	≤0.02	2200	3900

Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Number of threads
0801	1	8	5	1
0802	2	8	10	1
0805	5	8	25	1
0808	8	8	40	2
0810	10	8	50	2

Drawings



External Actuator



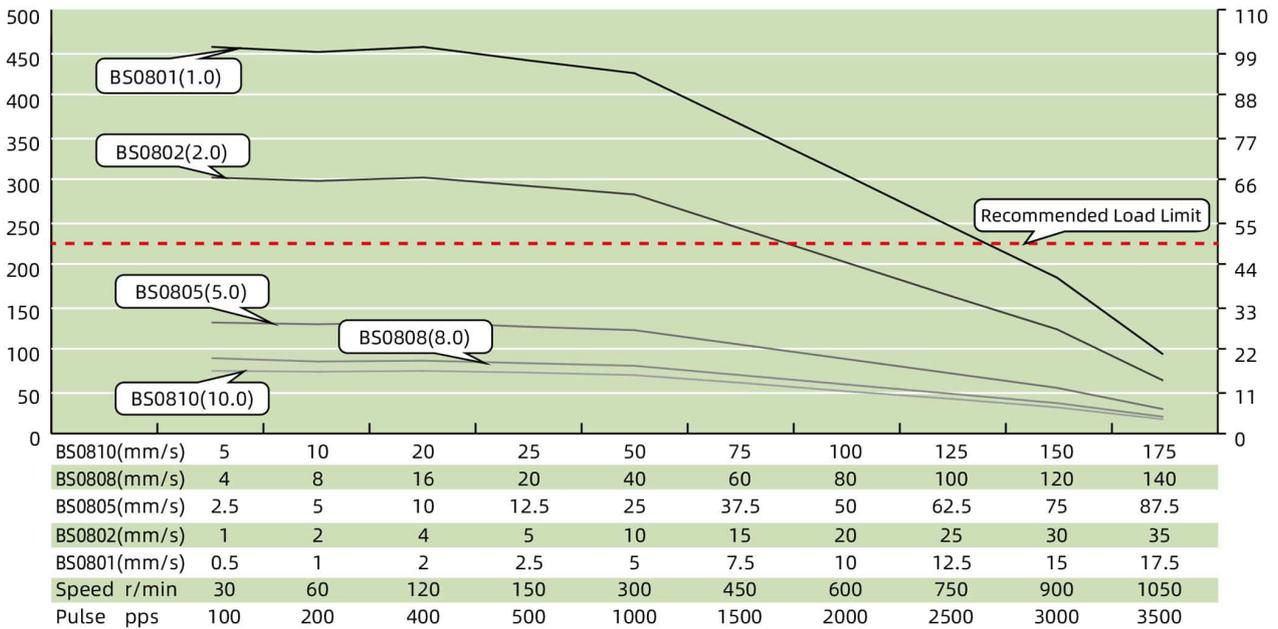
Speed/Thrust Curves

BALLSCREW

Size 17 Single Stack Speed Thrust Curves

N ※ Bipolar, Chopper Driver, 100% Rated Current

(Recommended Load Limit 230N) lbs

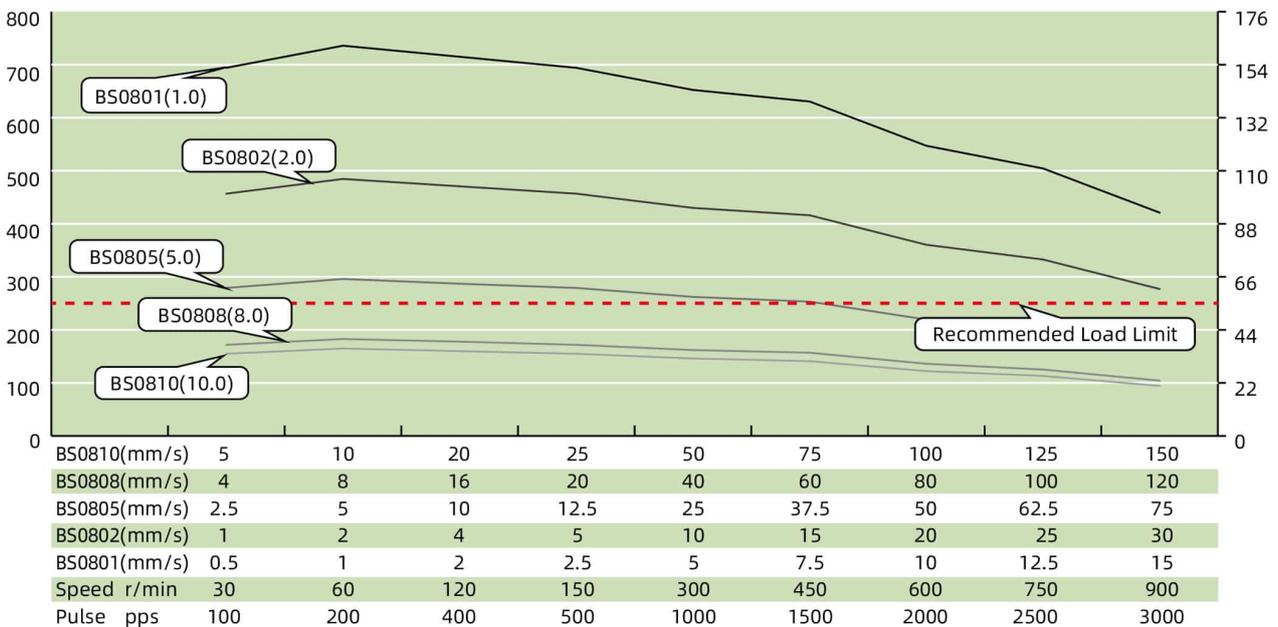


Speed-thrust curves for available screws, motor Nema 17, 17E2115

Size 17 Double Stack Speed Thrust Curves

N ※ Bipolar, Chopper Driver, 100% Rated Current

(Recommended Load Limit 230N) lbs



Speed-thrust curves for available screws, motor Nema 17, 17E2225

Stepper Ball Screw Linear Actuator, Size 23

SBSLA - Size 23 [57mm]



The SBSLA Size 23 [57mm] external stepper ball screw linear actuator integrates a stepper motor with high-performance precision ball screws. Available in multiple ball screw types and nut sizes, it offers various screw end machinations, encoder options (EK2/EK3), and customizable configurations. Suitable for automation applications needing compact, accurate, and reliable linear motion with the benefit of encoder and brake integration.


<https://www.kocomotion.de/produkt/sbsla-size-23-57mm/>

Motor Characteristics	Unit	23E2120	23E2130	23E2225	23E2240
Size	Nema	23	23	23	23
Flange size	mm	57	57	57	57
Voltage	V	3.5	2.4	5.0	2.8
Current	A	2.0	3.0	2.5	4.0
Resistance	Ω	1.75	0.8	2.0	0.7
Inductance	mH	4.1	1.7	5.2	2.0
Motor Length	mm	45	45	65	65
Lead Wire No.		4	4	4	4

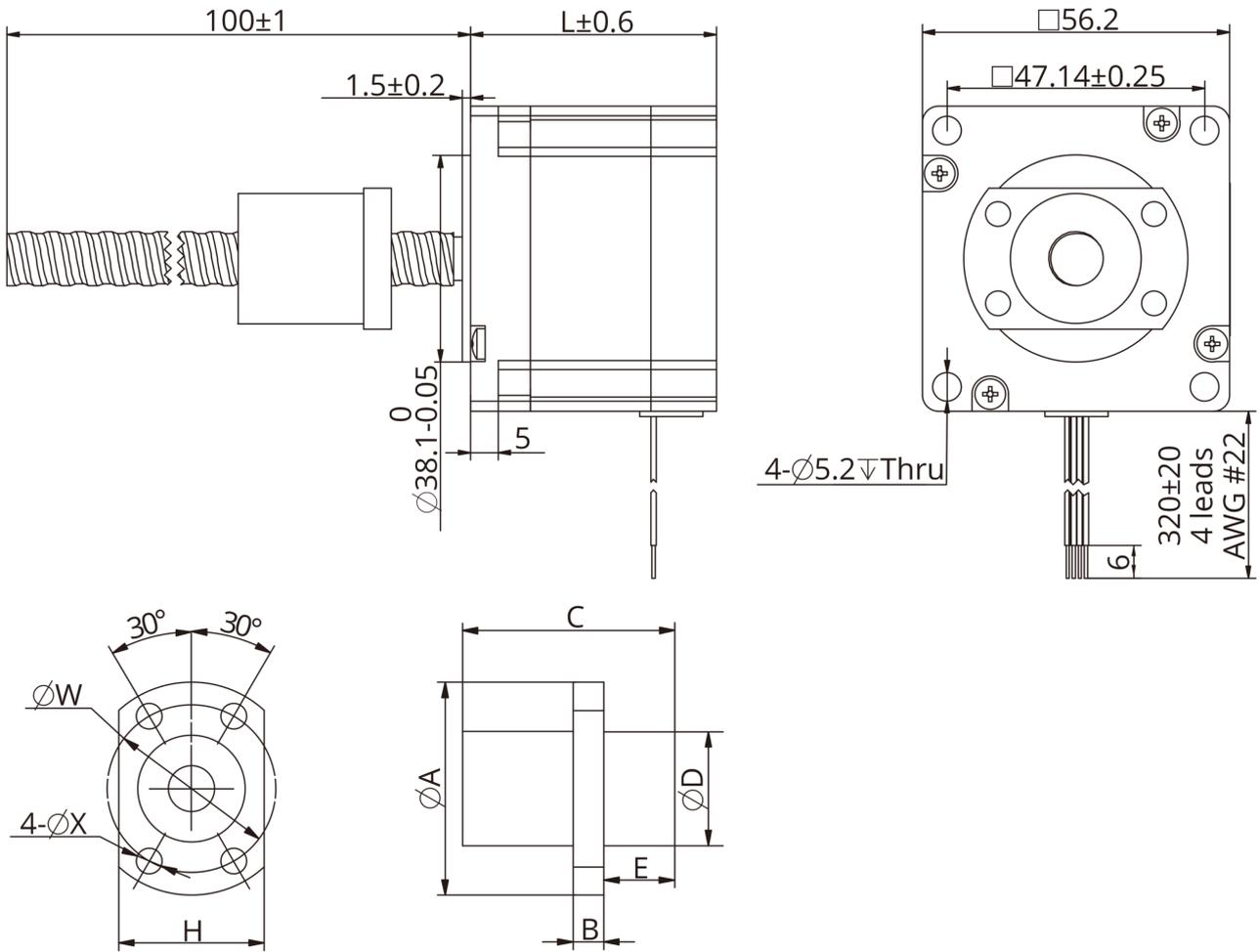
Ball screw type	1002	1004	1005	1010	1015	1020	1202
Ball size	Ø1.5875	Ø2.0	Ø2.0	Ø2.0	Ø2.0	Ø1.5875	Ø1.5875
Number of threads	1	1	1	2	2	4	1
Thread direction	Right						
Shaft root dia.	Ø8.6	Ø8.2	Ø8.2	Ø8.4	Ø8.4	Ø8.7	Ø10.6
Number of circuits	3.7x1	2.7x1	2.7x1	1.6x2	1.6x2	0.7x4	3.7x1
Shaft nut material	SCM415H						
Surface hardness	HRC58-62						
Anti-rust treatment	Anti-rust oil						
Grade	C7						

Ball screw type	1210
Ball size	Ø2.381
Number of threads	2
Thread direction	Right
Shaft root dia.	Ø10.2
Number of circuits	3.7x2
Shaft nut material	SCM415H
Surface hardness	HRC58-62
Anti-rust treatment	Anti-rust oil
Grade	C7

Nut size	A	B	C	D	H	W	X	E	Axial play	Dynamic load [N]	Static load [N]
BS1202	37	5	28	20	24	29	4.5		≤0.02	1600	3700
BS1205	40	10	30	24	30	32	4.5	15	≤0.02	6610	13160
BS1210	40	10	42	24	30	32	4.5	27	≤0.02	6420	12870
BS1220	40	5	46	24	24	32	4.5	37	≤0.02	6700	10100

Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [μm]	Number of threads
1002	2	10	10	1
1004	4	10	20	1
1005	5	10	25	1
1010	10	10	50	2
1015	15	10	75	2
1020	20	10	100	4
1202	2	12	10	1
1210	10	12	50	2

Drawings

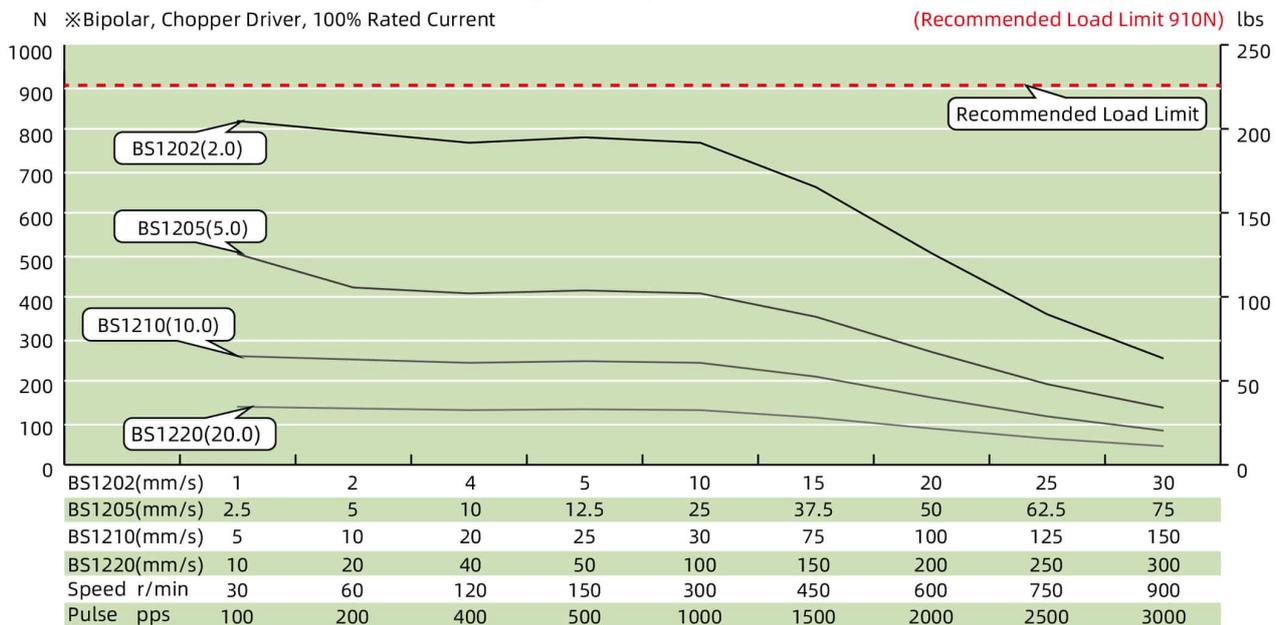


External Actuator

BALLSCREW

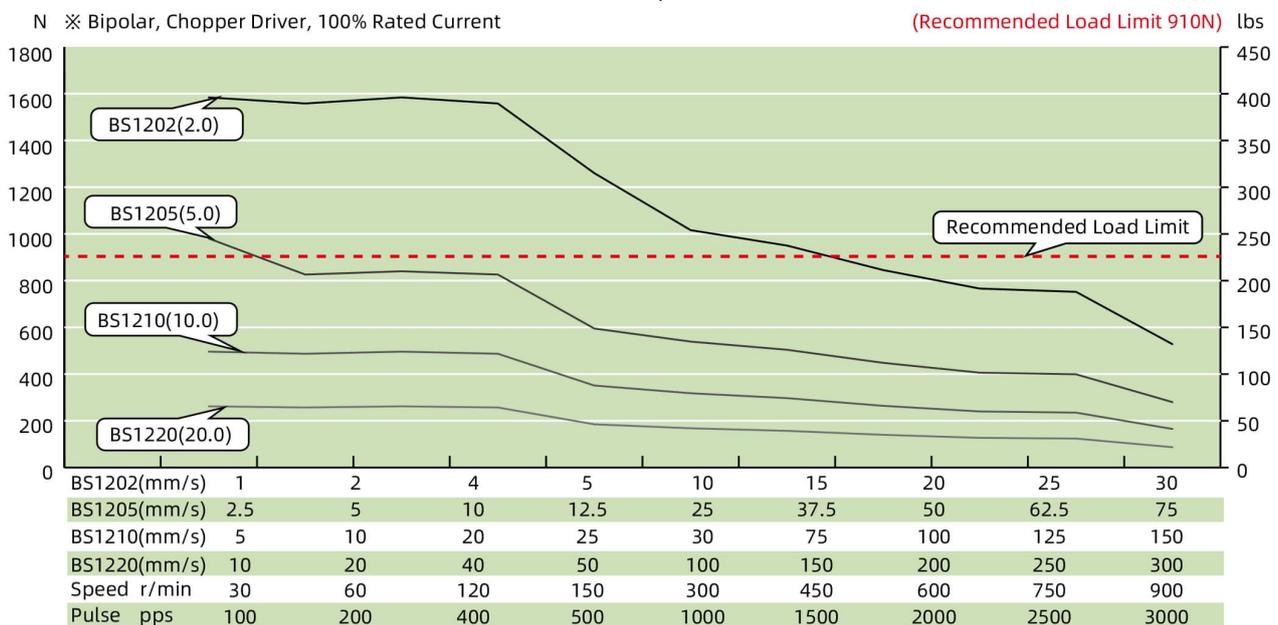
Speed/Thrust Curves

Size 23 Single Stack Speed Thrust Curves



Speed-thrust curves for available screws, motor Nema 23, 23E2130

Size 23 Double Stack Speed Thrust Curves



Speed-thrust curves for available screws, motor Nema 23, 23E2240

Incremental Encoders for Stepper Systems

Encoder



KOCO MOTION encoders are engineered for seamless integration with stepper motors and linear actuators. They offer selectable resolutions, single-ended or differential outputs, and are ideal for precise positioning, speed regulation, and defined movement control. Flexible output options and customizable resolutions enable accurate motion feedback across automation and precision engineering applications.



<https://www.kocomotion.de/produkt/encoder/>

Encoder characteristics	Unit	ER14S-P	ER20M-P	ER28C-P
Flange size		14	20	28
Supply voltage	V	T: TTL 5	T: TTL 5	T: TTL 5V; H: HTL 8-30
Matching motor	NEMA	14	20	28/35/42
Shape		S: square	M/N	C: circle
Resolution	cpr	1000	1000	1000
Remark		optical encoder	optical encoder	optical encoder
Special IP class		no	no	no
Detection principle		ER: reflective	ER: reflective	ER: reflective
Channel		2: A/B; 3: A/B/Z	2: A/B; 3: A/B/Z	2: A/B; 3: A/B/Z
Output		D: Differential; S: Single-ended	D: Differential; S: Single-ended	D: Differential; S: Single-ended

Encoder characteristics	Unit	ER40M-P	EM20M-P	EM28C-P
Flange size		40	20	28
Supply voltage	V	T: TTL 5V; H: HTL 12-24	T: TTL 5	T: TTL 5; H: HTL 8-30
Matching motor	NEMA	57/60	20	28/35/42
Shape		M/N	M/N	C: circle
Resolution	cpr	1000	1000	1000
Remark		optical encoder	magnetic encoder	magnetic encoder
Special IP class		no	no	no
Detection principle		ER: reflective	EM: magnet	EM: magnet
Channel		2: A/B; 3: A/B/Z	2: A/B; 3: A/B/Z	2: A/B; 3: A/B/Z
Output		D: Differential; S: Single-ended	D: Differential; S: Single-ended	D: Differential; S: Single-ended

Encoder characteristics	Unit	KPL28	KPL40	KPL56
Flange size		Ø28	Ø40	Ø56
Supply voltage	V	5	5	5
Matching motor	NEMA	28/35	42	57/60/86
Shape		C: circle	C: circle	C: circle
Resolution	cpr	1000	1000	1000
Remark		optical encoder	optical encoder	optical encoder
Special IP class		no	no	no
Detection principle		-	-	-
Channel		A/B/Z	A/B/Z	A/B/Z
Output		D: Differential; S: Single-ended	D: Differential; S: Single-ended	D: Differential; S: Single-ended

Power/off Brakes



KOCO MOTION's power-off Brakes provide secure holding and emergency stopping for motors in vertical, safety-critical, or power-loss applications. Compatible with NEMA 8, 11, 14, 17, 23, 24, and 34 motor sizes, these 24VDC magnetic brakes deliver reliable performance with hold torques from 0.06Nm to 5Nm, low noise (60dB), and up to 500,000 cycles lifetime for dependable motion control and machine safety.

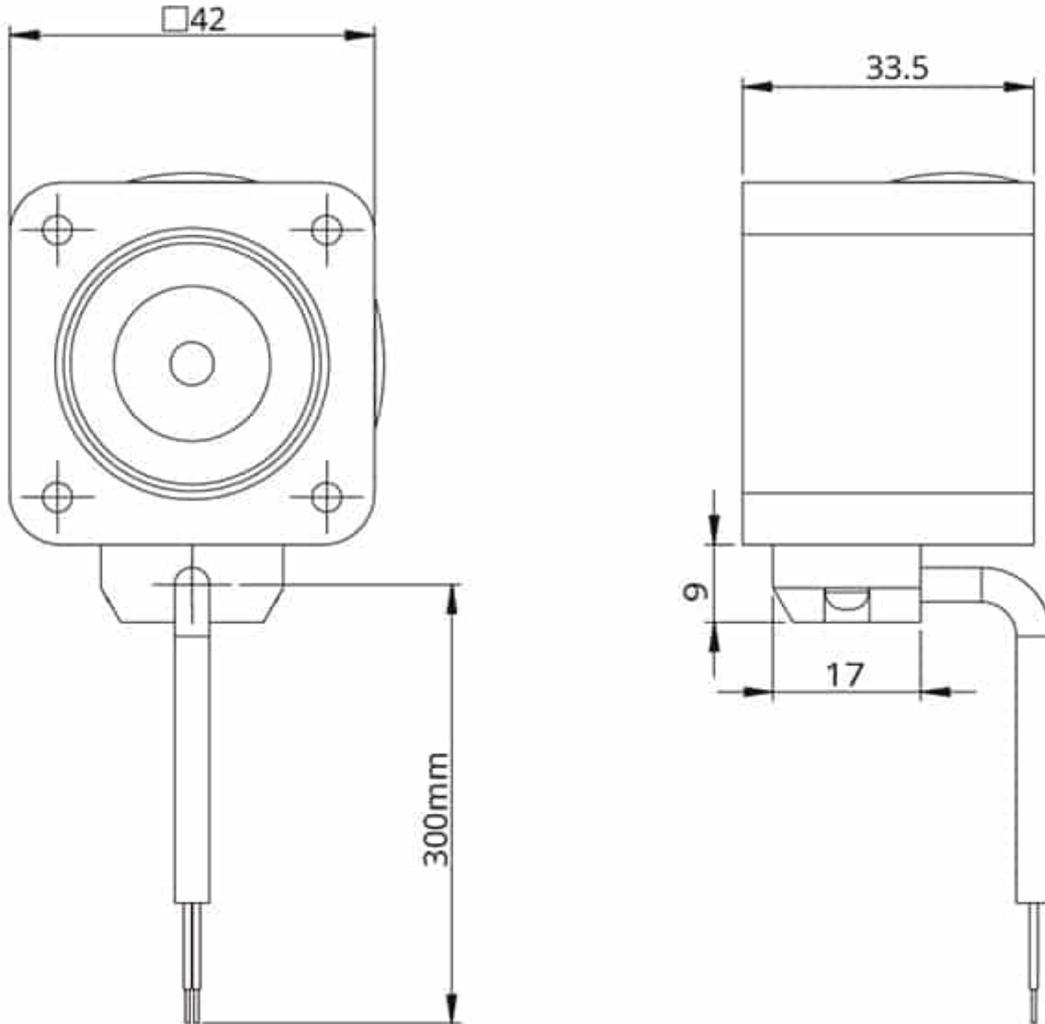


<https://www.kocomotion.de/produkt/power-off-brakes/>

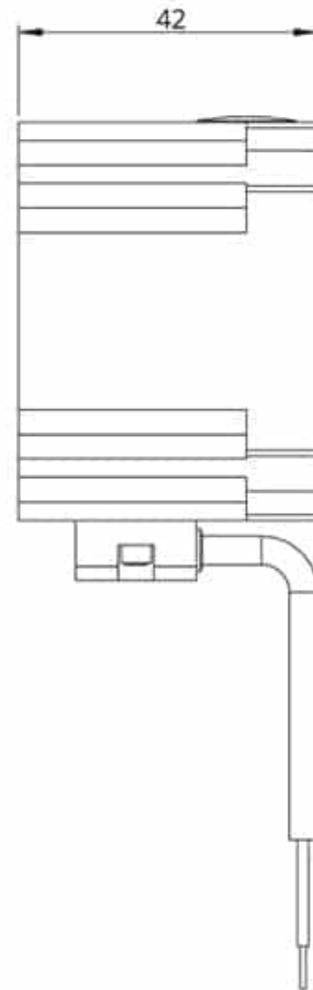
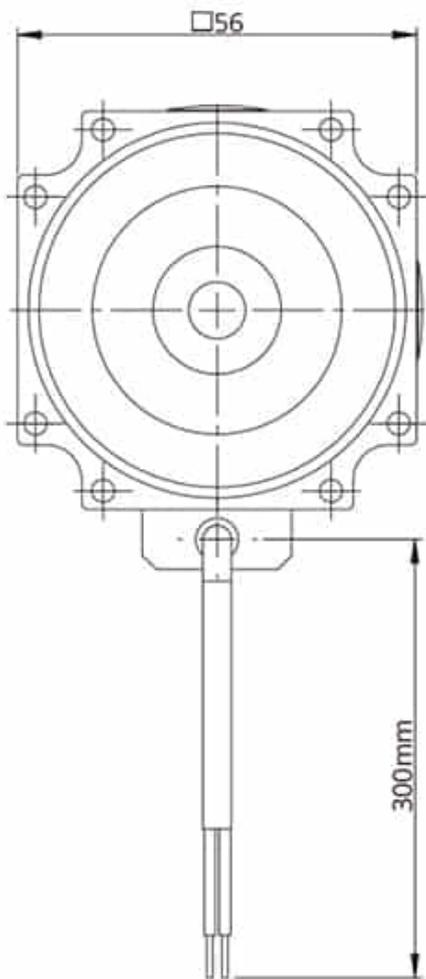
Parameter	Unit	0.06Nm for Size 8 Motor	0.3Nm for Size 11 Motor	0.3Nm for Size 14 Motor	0.5Nm for Size 17 Motor
Rated Voltage	VDC	24 +/- 5%	24 +/- 5%	24 +/- 5%	24 +/- 5%
Gyration Gap	°	1	1	1	1
Emergency Brake Cycles	cycles	200	200	200	200
Lifetime	cycles	500000	500000	500000	500000
Noise Level	dB	60	60	60	60
Resistance	Ω	55 +/- 10%	143.7 +/- 10%	217 +/- 10%	145 +/- 10%
Power Consumption	W	9.6	5.5	4	5
Hold Torque	Nm	>0.06	>0.3	>0.3	>0.5
Insulation Class		B	B	B	B
Insulation Resistance (@500VDC)	MΩ	>100	>100	>100	>100
Dielectrical Strength (for 1s)	VAC	1000	1000	1000	1000
Retraction Time	ms	50	50	50	50
Release Time	ms	50	50	50	50

Parameter	Unit	2.3Nm for Size 23 Motor	2.3Nm for Size 24 Motor	5.0Nm for Size 34 Motor
Rated Voltage	VDC	24 +/- 5%	24 +/- 5%	24 +/- 5%
Gyration Gap	°	1	1	1
Emergency Brake Cycles	cycles	200	200	200
Lifetime	cycles	500000	500000	500000
Noise Level	dB	60	60	60
Resistance	Ω	141 +/- 10%	141 +/- 10%	69 +/- 10%
Power Consumption	W	5	5	12
Hold Torque	Nm	>2.3	>2.3	>5
Insulation Class		B	B	B
Insulation Resistance (@500VDC)	MΩ	>100	>100	>100
Dielectrical Strength (for 1s)	VAC	1000	1000	1000
Retraction Time	ms	50	50	50
Release Time	ms	50	30	50

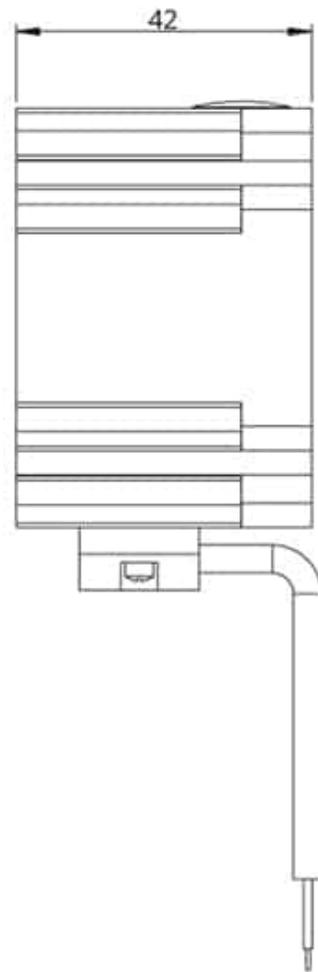
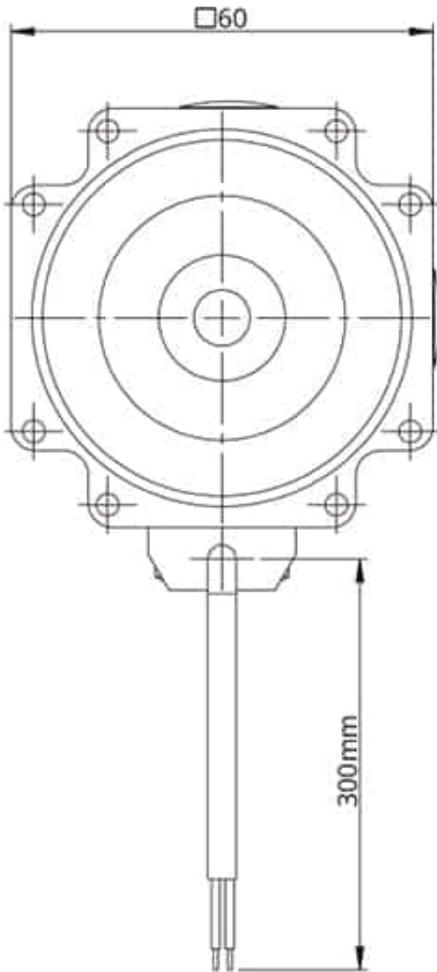
Drawings



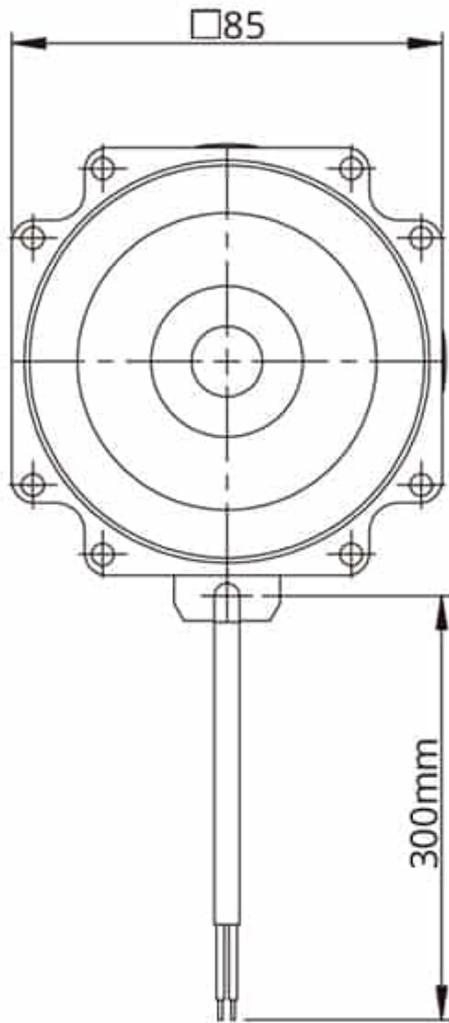
0.5Nm for Size 17 Motor



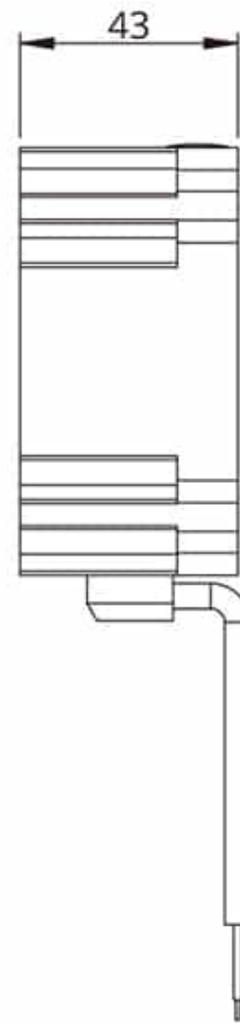
2.3Nm for Size 23 Motor



2.3Nm for Size 24 Motor



5.0Nm for Size 34 Motor





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Version 09/2025 – technical and optical
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