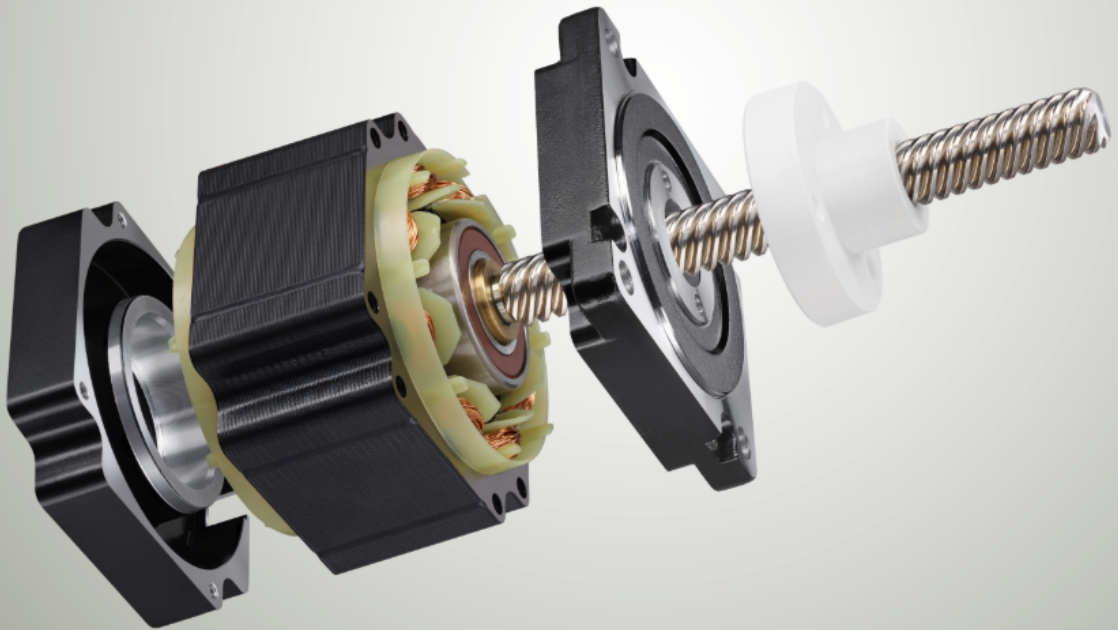




Intelligence in motion



Force. Accuracy. Lifetime.

Linear Actuators, Gripper and Linear Modules



Linear Actuators, Gripper and Linear Modules

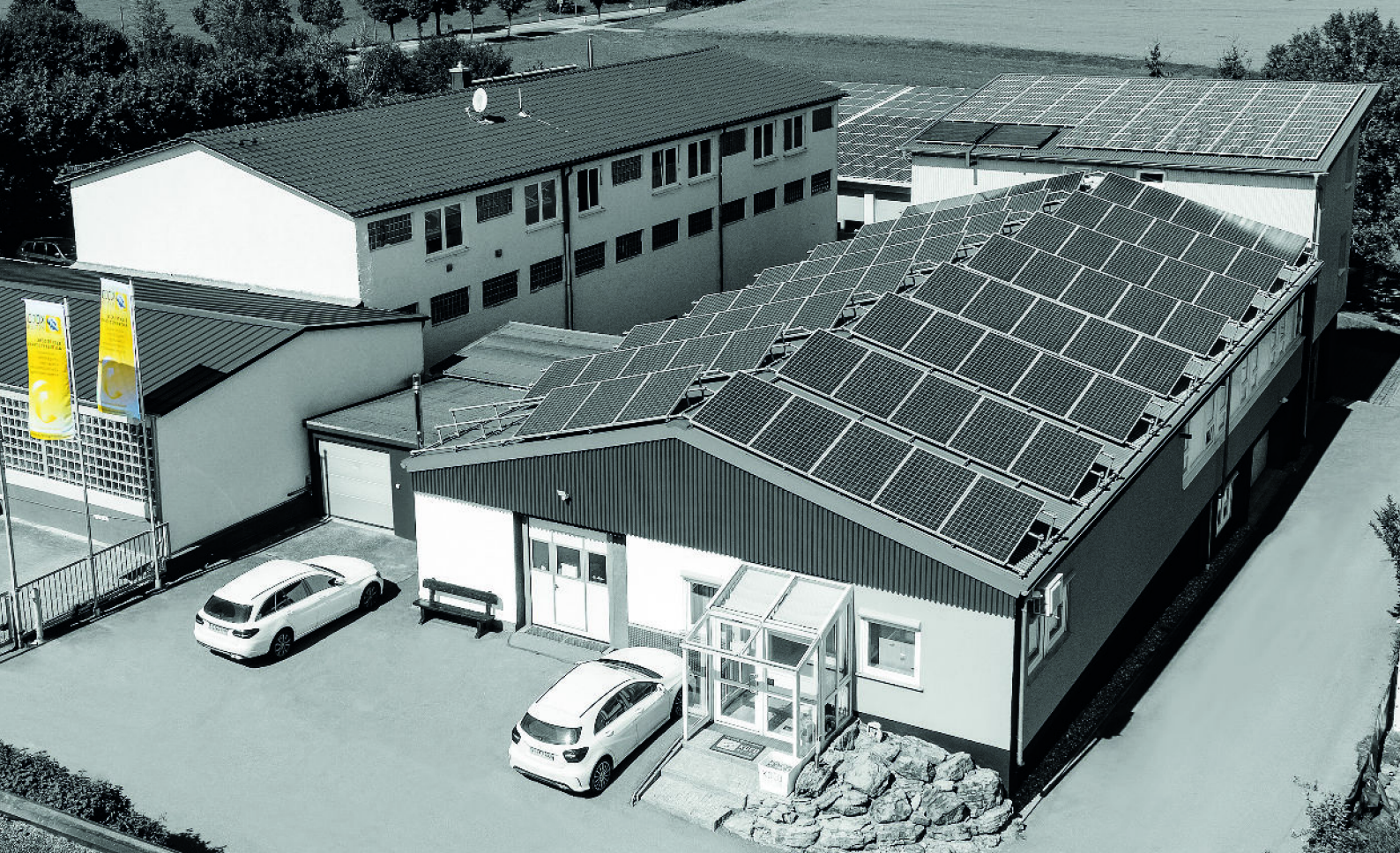
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HIGH CUSTOMER SATISFACTION IS OUR MOTIVATION

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.

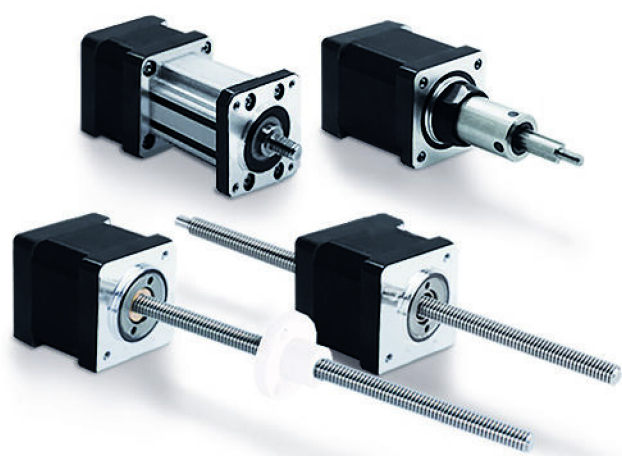
We draw on years of experience in the development and production of electric motors and respond individually to the wishes and ideas of our customers in project consulting. For us, the focus is on the personal relationship with customers, employees and suppliers. We understand our customers' needs exactly, 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]
m = Mass	[kg]
a = Acceleration	[m/s ²]
M = Torque	[Nm]
J = Mass moment of inertia	[kg/m ²]
α = Angular acceleration	[rad/s ²]
W = Work - Energy	[Nm]
∂ = Adjustment angle	[rad]
d = Travel path	[m]
P = Mechanical power	[N]
v = Speed	[m/s]
ω = Angular velocity	[rad/s]

r = Radius	[m]
t = Time	[s]
ρ = Specific density	[kg/m ³]
h = Height	[m]
s = Distance traveled	[m]
p = Spindle pitch	[m]
Z = Number of teeth	[-]
i = Reduction ratio	[-]
η = Efficiency	[%]

Efficiency

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

Force

$$F = m \cdot a \quad [N]$$

Work - Energy

$$W = F \cdot d \quad [Nm]$$

$$W = M \cdot \partial \quad [Nm]$$

Mechanical power

$$P_m = F \cdot v \quad [W]$$

$$P_m = M \cdot \omega \quad [W]$$

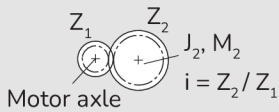
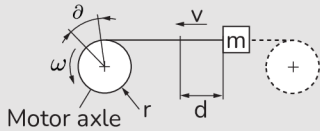
Torque

$$M = J \cdot \alpha \quad [Nm]$$

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

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

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

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

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

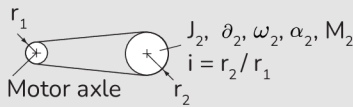
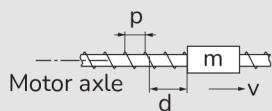
$$\alpha = \frac{a}{r} \quad [\text{rad/s}^2]$$

Moment of inertia of a hollow cylinder

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

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

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



$$J = m \left(\frac{p}{2\pi} \right)^2 \quad [\text{kg/m}^2]$$

$$\vartheta = 2\pi \cdot \frac{d}{p} \quad [\text{rad}]$$

$$\omega = 2\pi \cdot \frac{v}{p} \quad [\text{rad/s}]$$

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

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

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

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

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

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

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

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

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

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

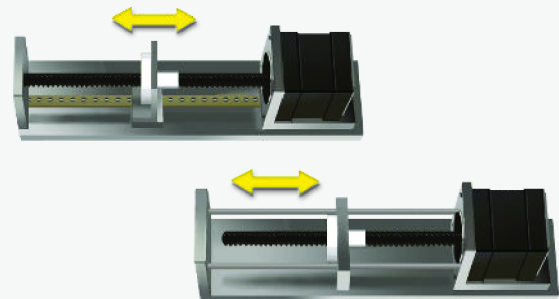
$$\Delta t = \frac{v(t_e) - v_0}{\alpha}$$

Motor Design

EXTERNAL. NON-CAPTIVE. CAPTIVE. KAPTIVE.

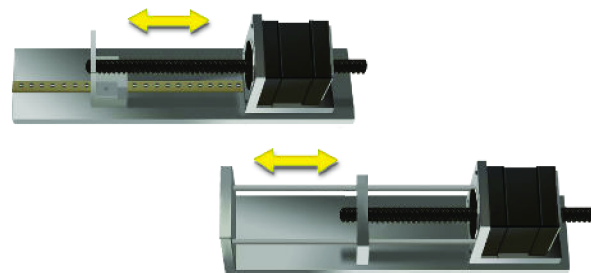
External and lineare guide rail

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.



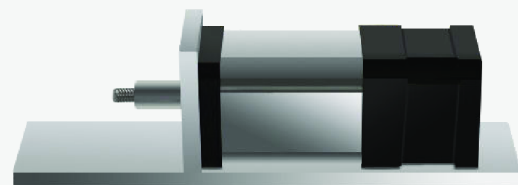
Non-captive

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.



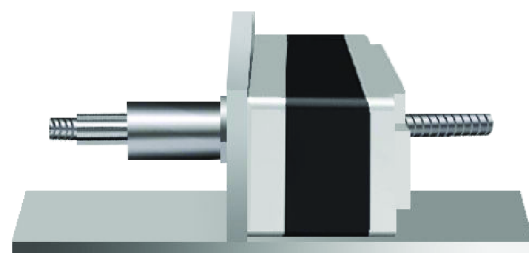
Captive (electrical cylinder)

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.



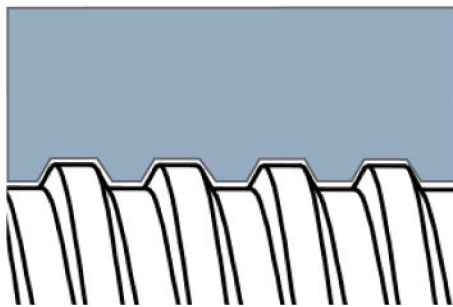
Differences

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

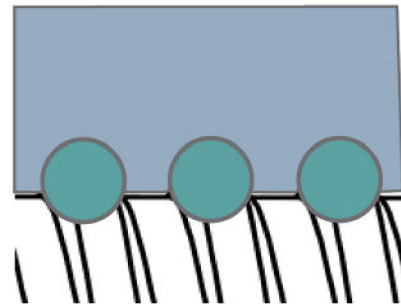
- Simple threaded design, easier to manufacture, lower manufacturing costs
- Sliding friction leads to higher overall screw friction compared to ballscrews. Thus, leadscrews show a lower efficiency which depends on materials, lubrication, coatings, lead pitch (typically around 30 - 70 %)
- Generally 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

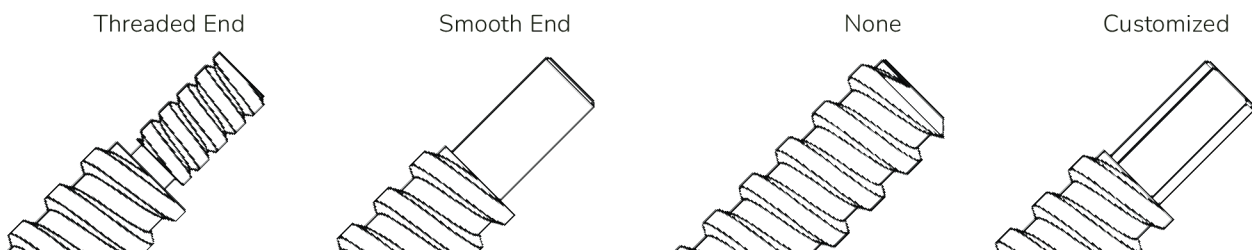
Details

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

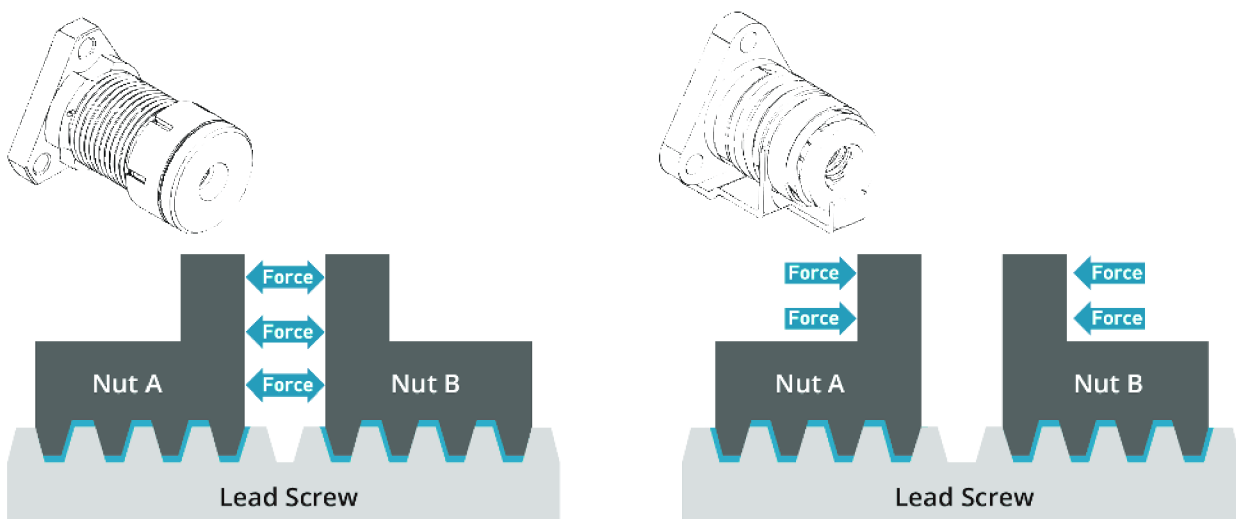
Screw end machining depends on the screw diameter.



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.

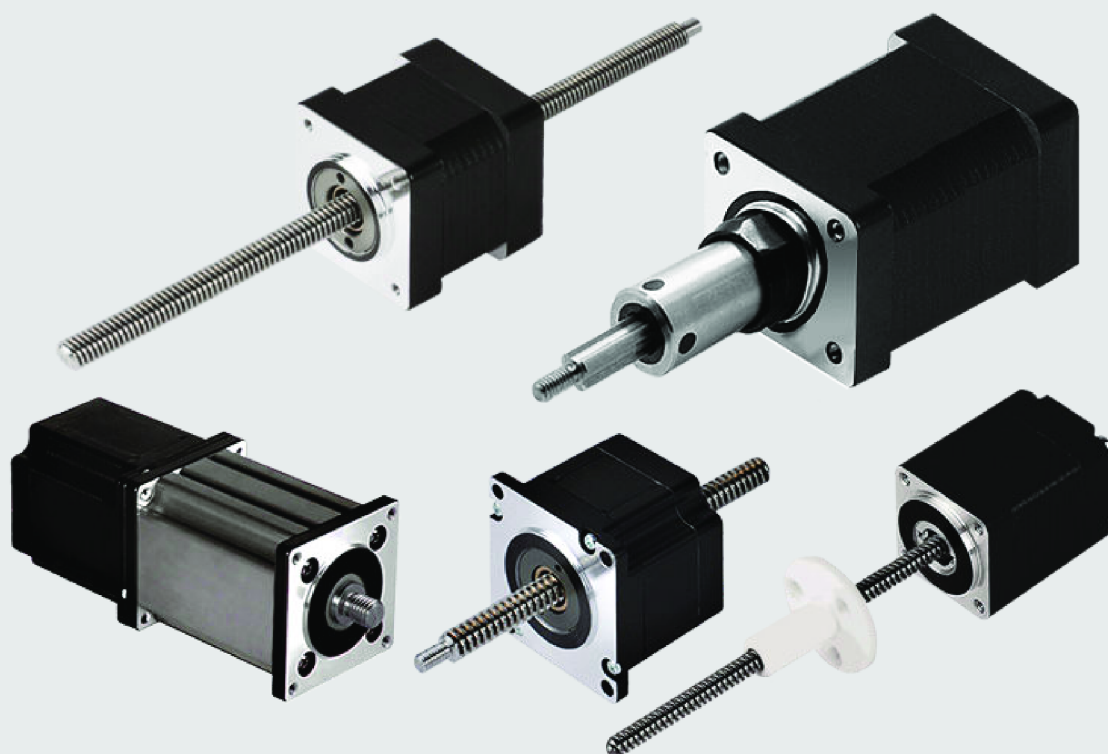
Depending on the main load direction, the preload of the anti-backlash nut can be changed to free the relevant direction of movement from axial play and thus optimize the positioning accuracy of the application.



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	0,3
8	20 x 20	1	27,2	5,5	54	
		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	
		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	
		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]

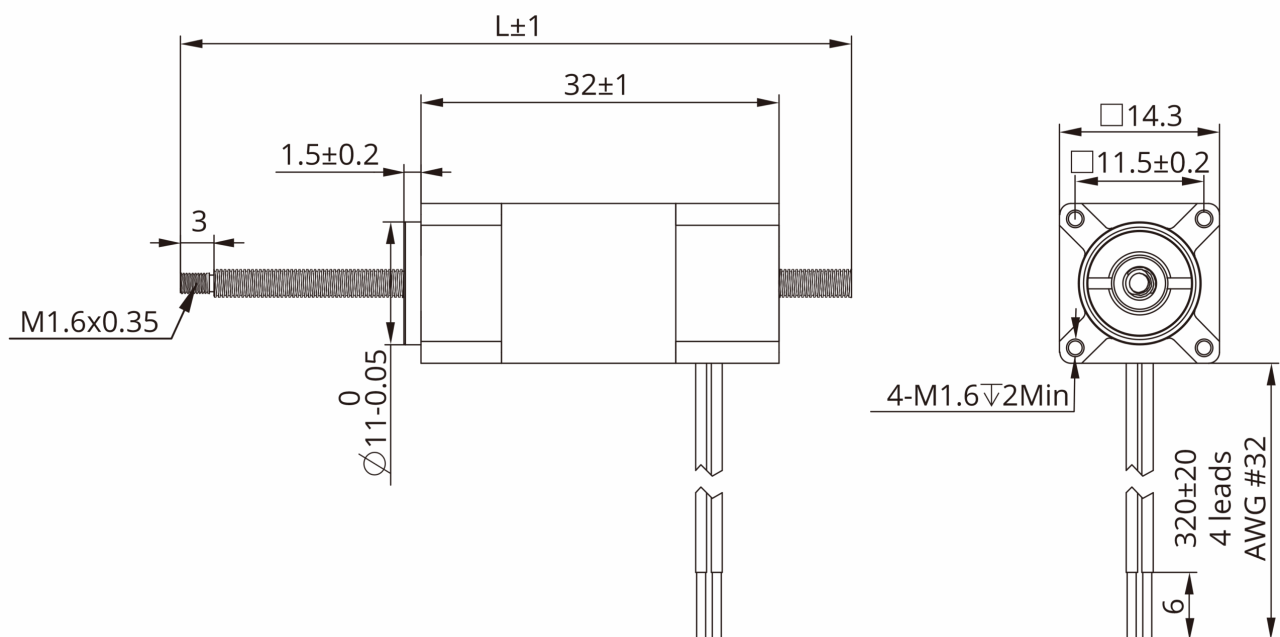
The SLSLA Size 6 [14mm] Stepper Lead Screw Linear Actuator delivers up to 19N thrust with a compact 14mm square footprint. Featuring multiple screw pitches (0.3-8mm) and thread diameters, it supports external, non-captive, and captive configurations. Key options include encoder feedback, customized machining,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


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

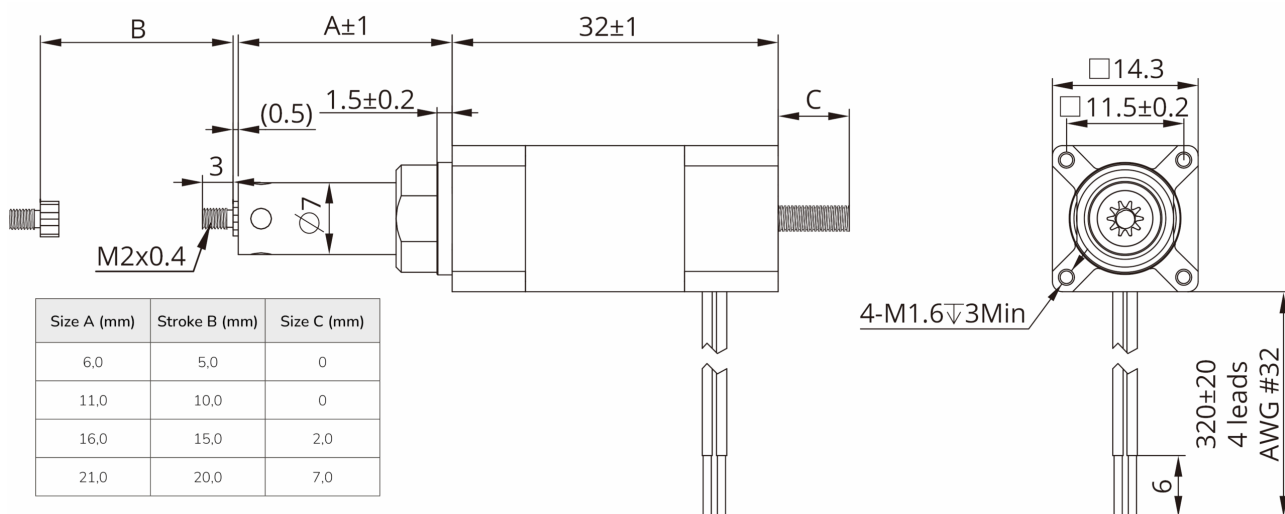
Motor Characteristics	Unit	6-2103
Size	Nema	6
Flange size	mm	14
Rated voltage	V	6.6
Current	A	0.25
Winding resistance	Ω	22
Inductance	mH	4.5
Weight	g	60
Lead Wire No.		4
Motor length	mm	32

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	-	-

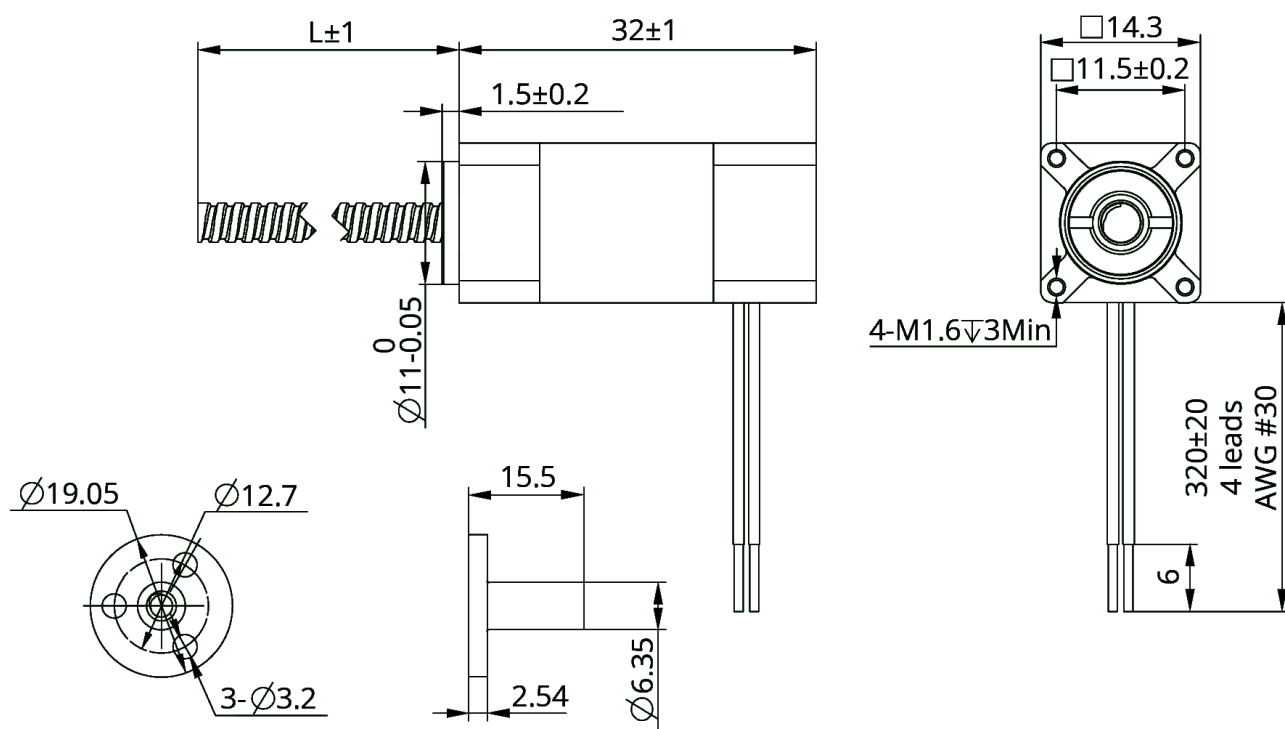
**only applicable screw for captive type*



Non-Captive Actuator

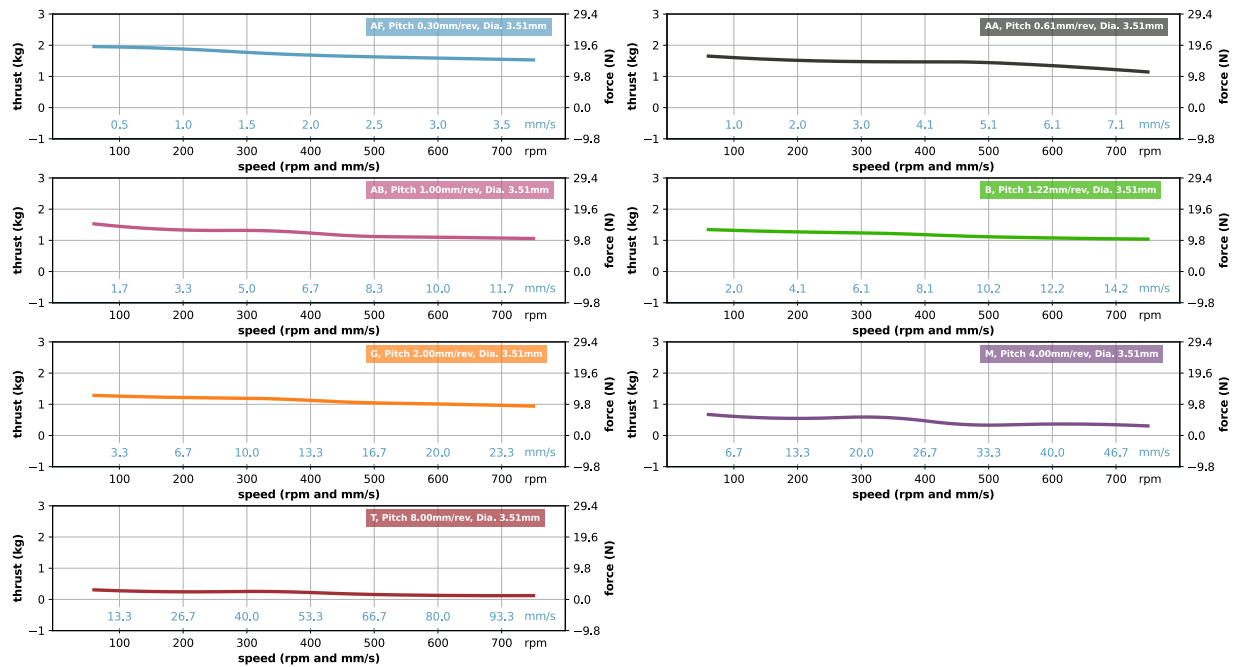


Kaptive Actuator



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]

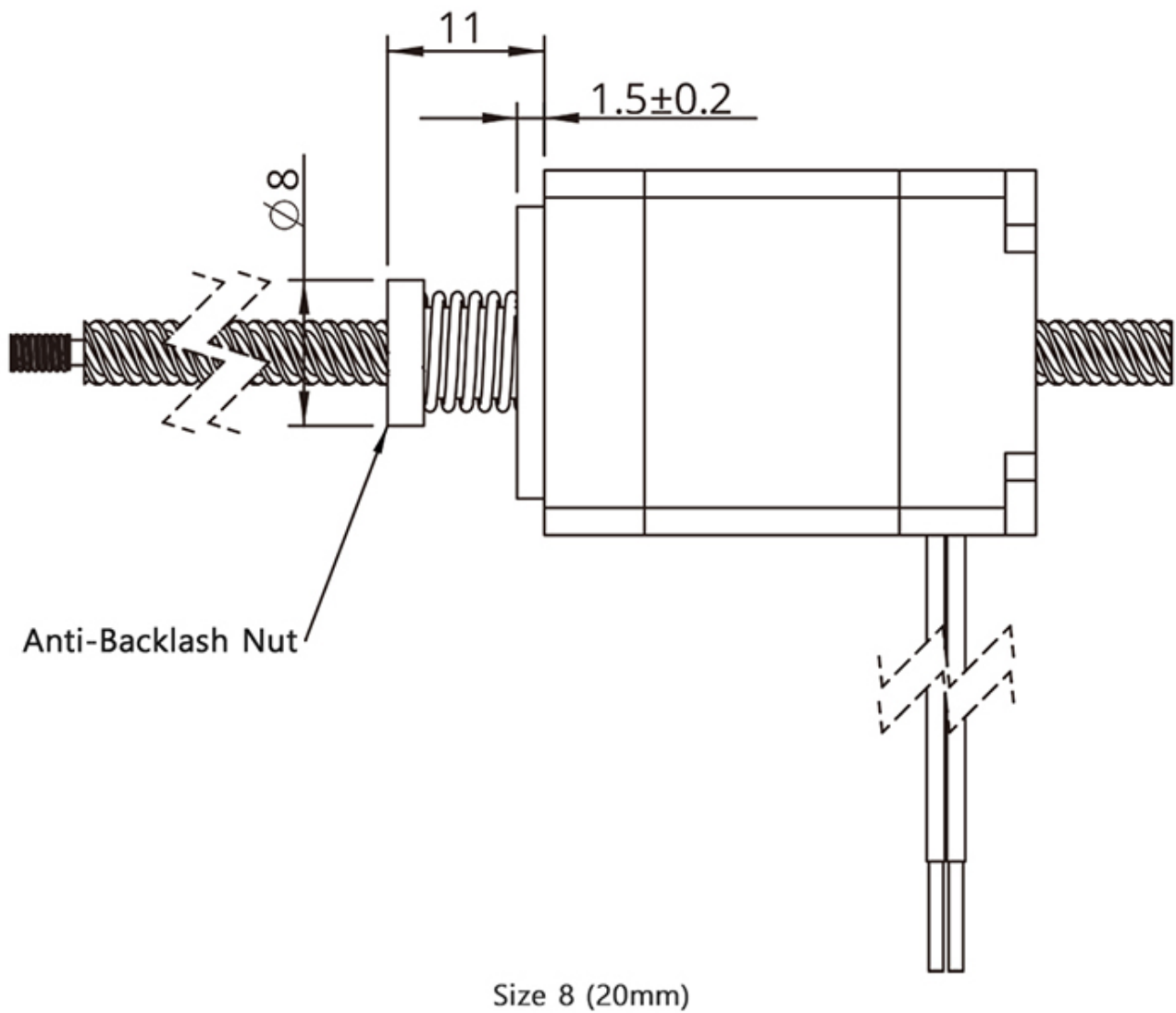


The SLSLA Size 8 [20mm] Stepper Lead Screw Linear Actuator offers precise linear motion in a compact package with a mounting area under 1 in². It delivers up to 45N continuous thrust and supports multiple screw leads, stack configurations, encoder feedback, and anti-backlash options. Ideal for applications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

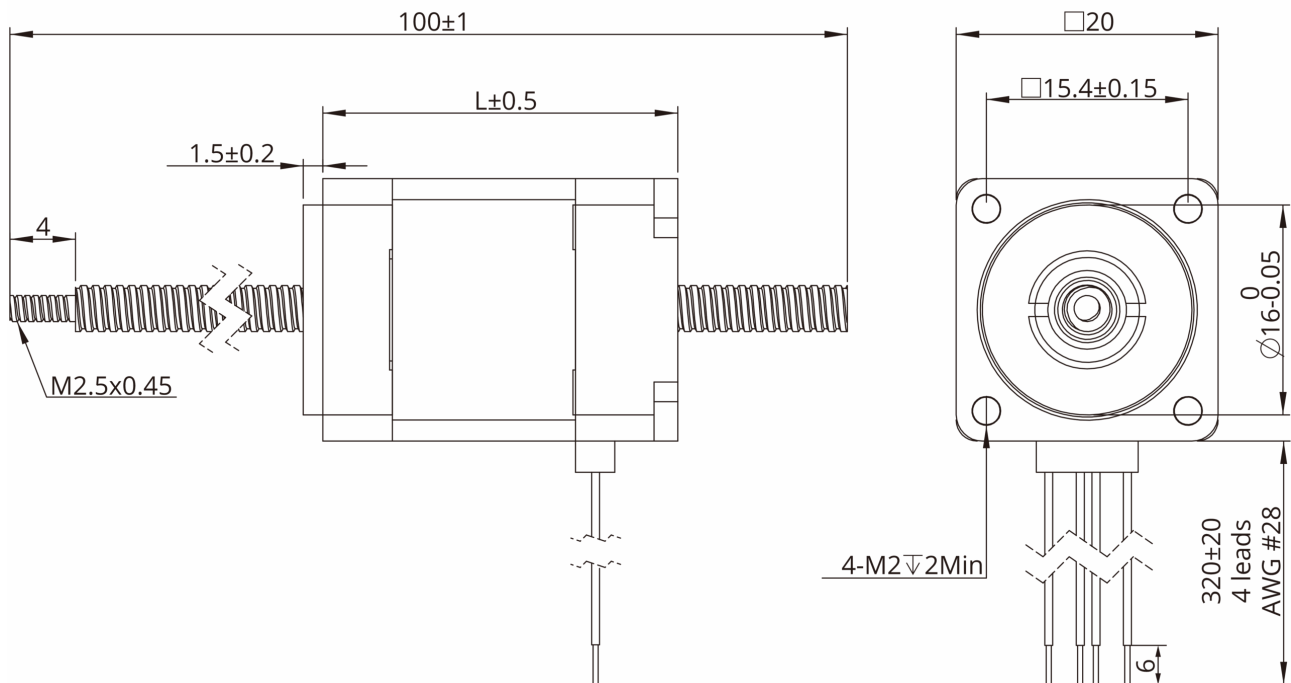

<https://www.kocomotion.de/produkt/slsla-size-8-20mm/>

Motor Characteristics	Unit	8-2105	8-2205
Size	Nema	8	8
Flange size	mm	20	20
Rated voltage	V	2.5	4.4
Current	A	0.5	0.5
Winding 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

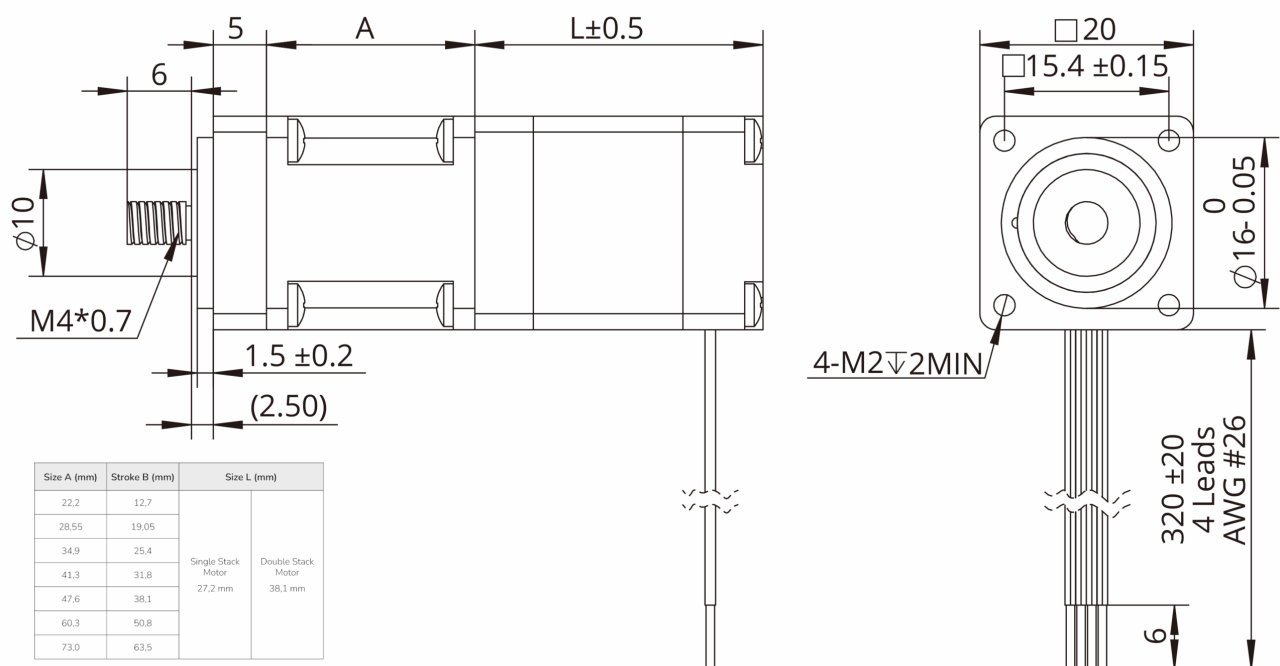
Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Left-hand thread available	Notes
AA	0.6096	3.5	3	-	-
B	1.2192	3.5	6.1	-	-
J	2.4384	3.5	12.2	-	-
AF	0.3	3.5	1.5	-	-
AB	1	3.24	5	-	-
G	2	3.5	10	yes	-
M	4	3.5	20	-	-
T	8	3.5	40	-	-
AD	0.5	3	2.5	-	-



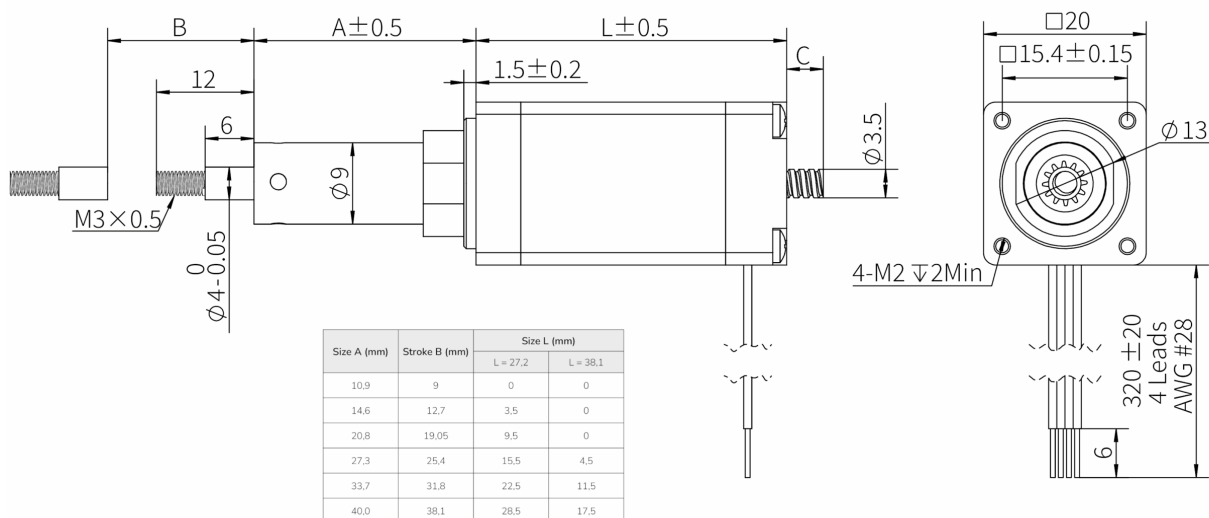
Non-Captive Anti-Backlash Nut



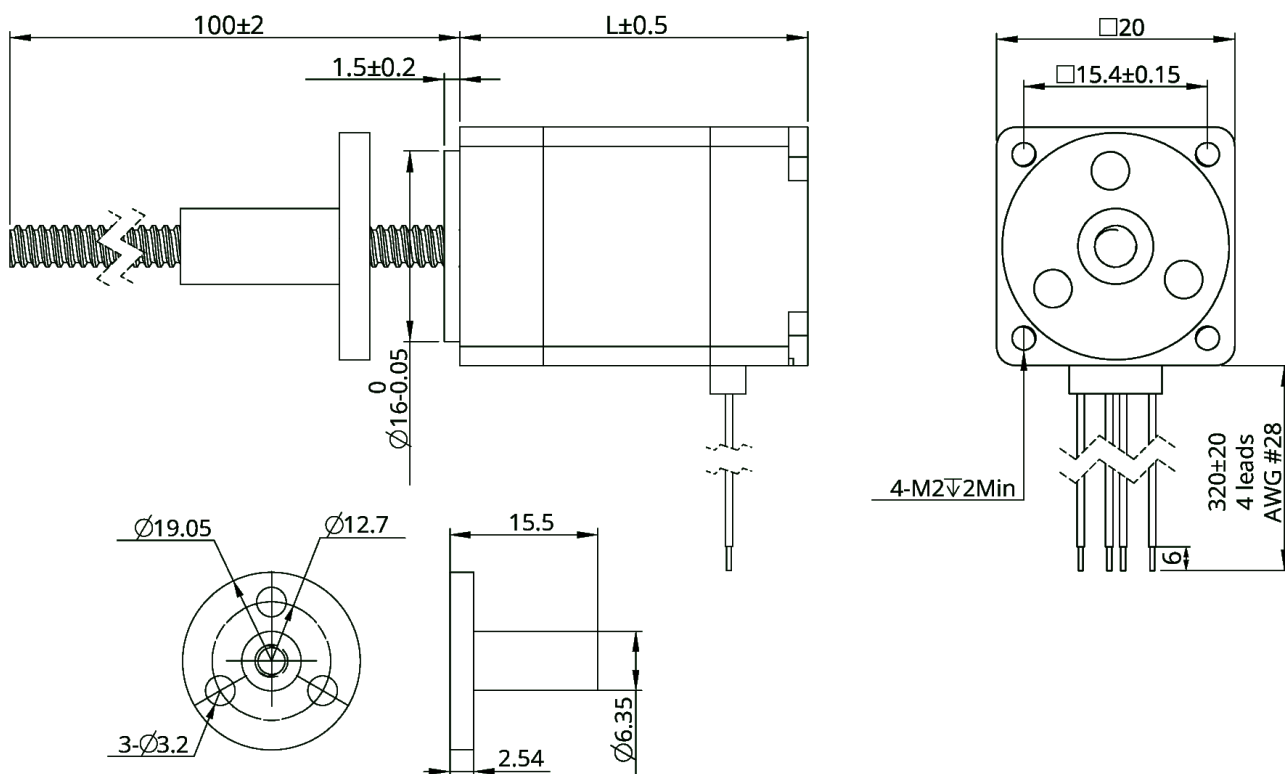
Non-Captive Actuator



Captive (Electrical Cylinder) Actuator

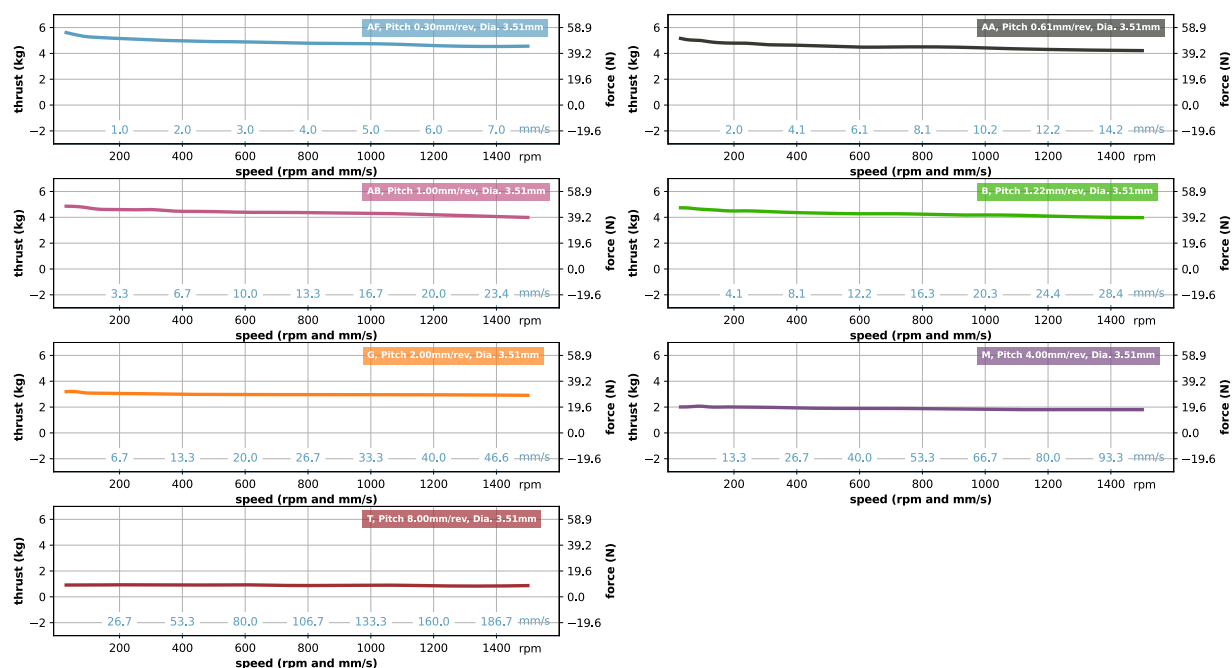


Kaptive Actuator

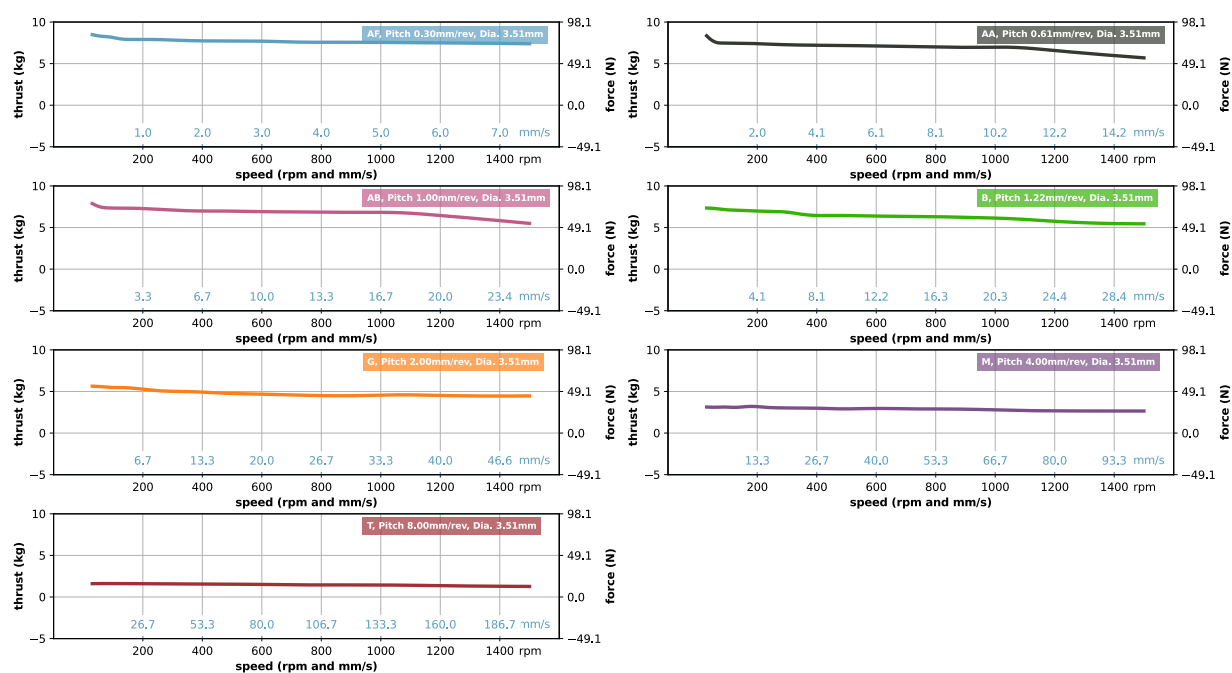


External Actuator

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.

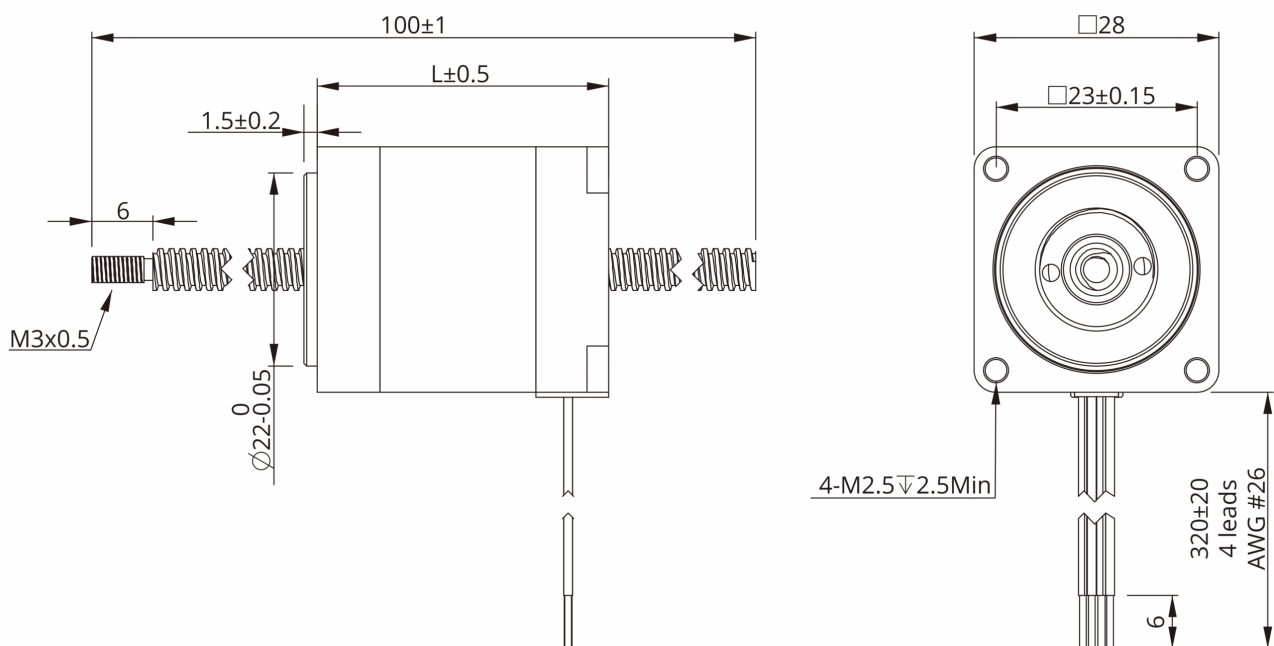


<https://www.kocomotion.de/produkt/slsla-size-11-28mm/>

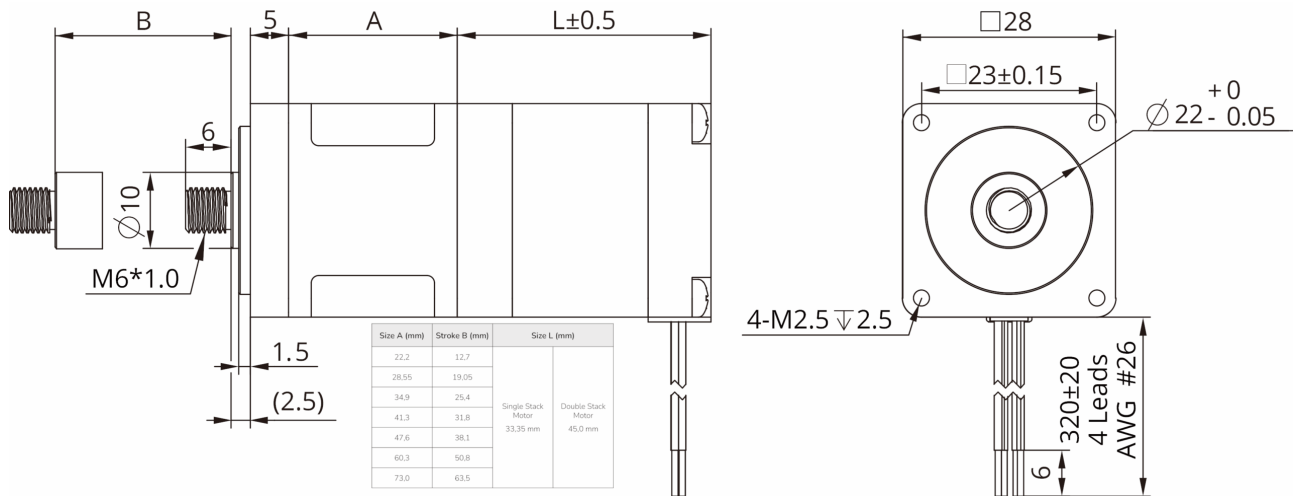
Motor Characteristics	Unit	11-2105	11-2110	11-2209	11-2216
Size	Nema	11	11	11	11
Flange size	mm	28	28	28	28
Rated voltage	V	4.55	2.1	3.9	2.4
Current	A	0.5	1	0.95	1.6
Winding resistance	Ω	9.1	2.1	4.1	1.5
Inductance	mH	6	1.5	4	1.3
Weight	g	117	117	173	173
Lead Wire No.		4	4	4	4
Motor length	mm	33.35	33.35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

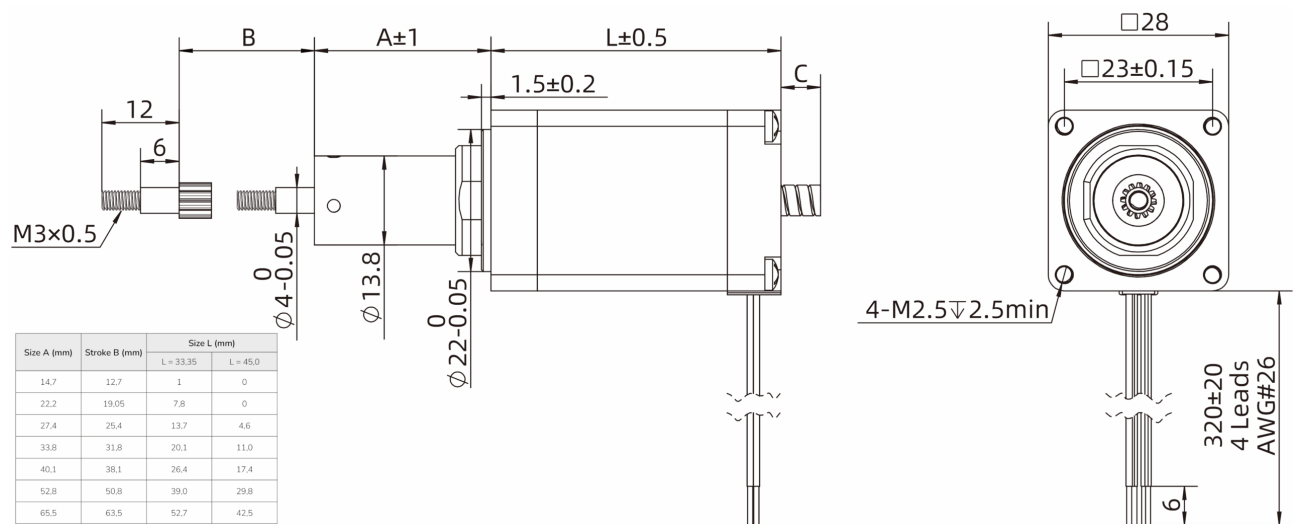
*custom 5,56mm screw diameter available for external type



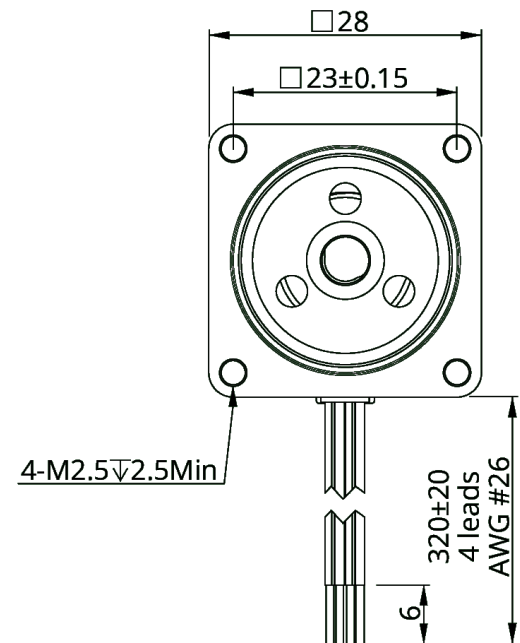
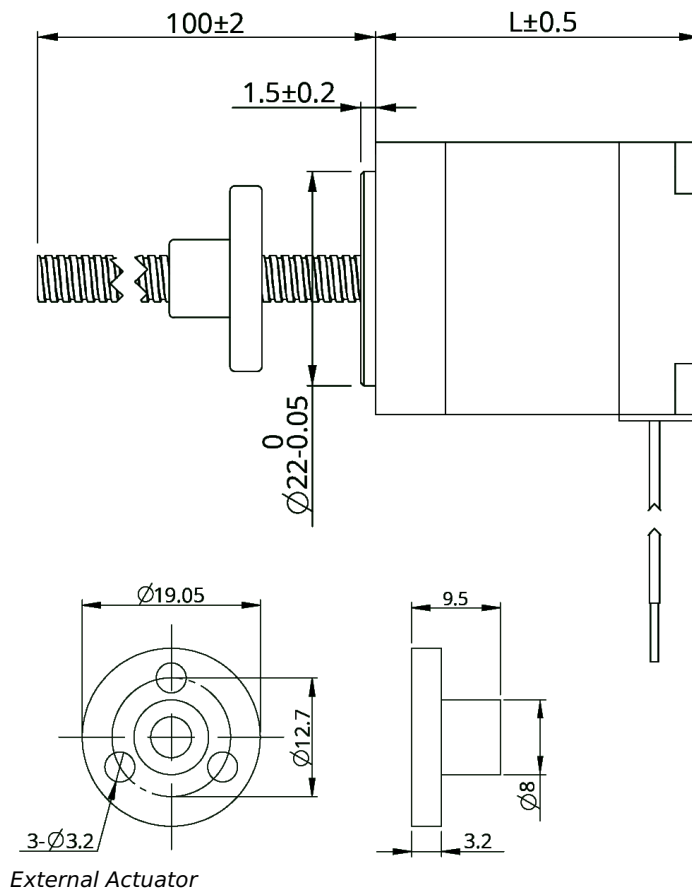
Non-Captive Actuator



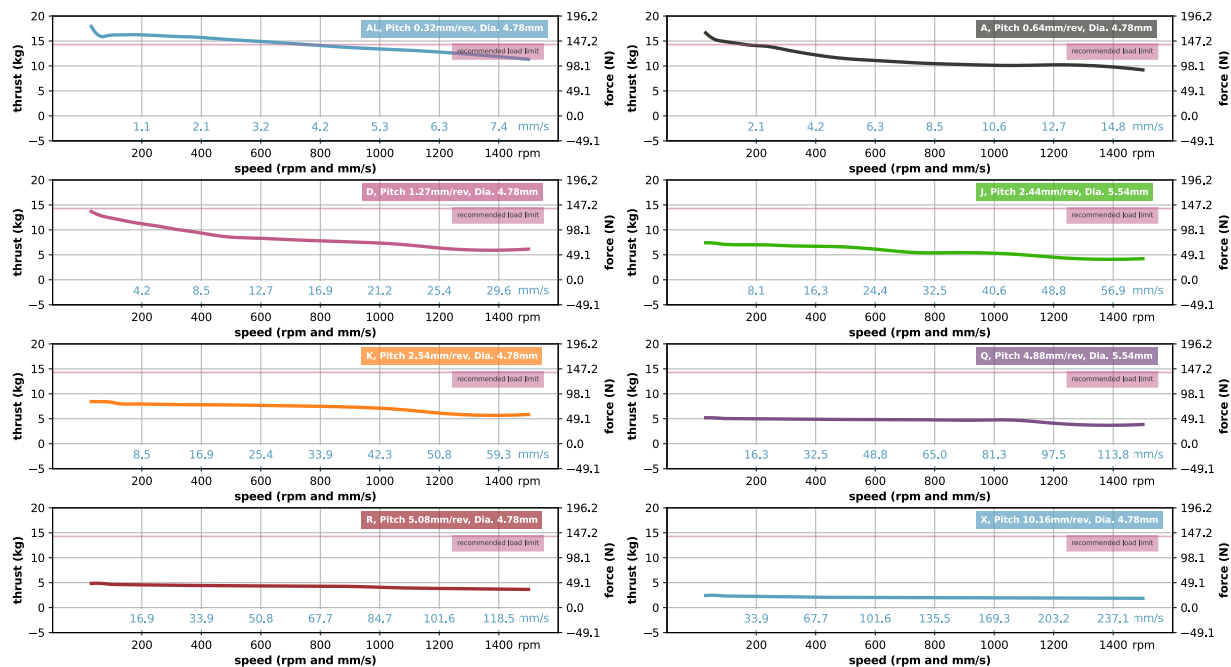
Captive (Electrical Cylinder) Actuator



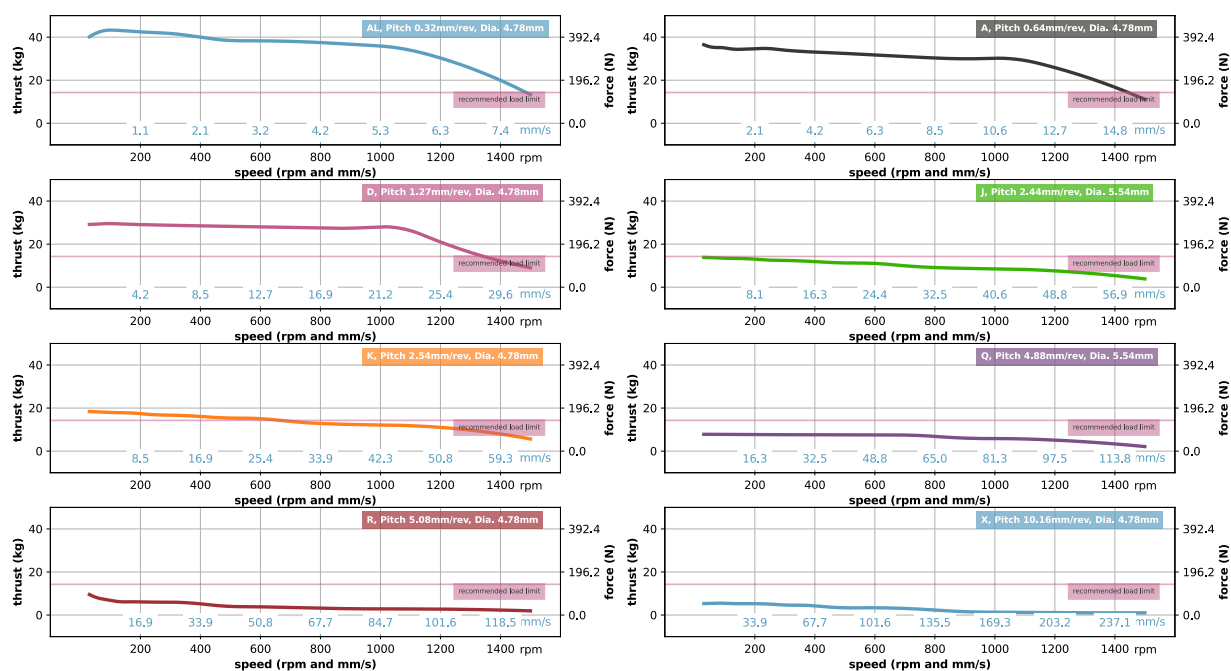
Kaptive Actuator



Speed/Thrust Curves



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

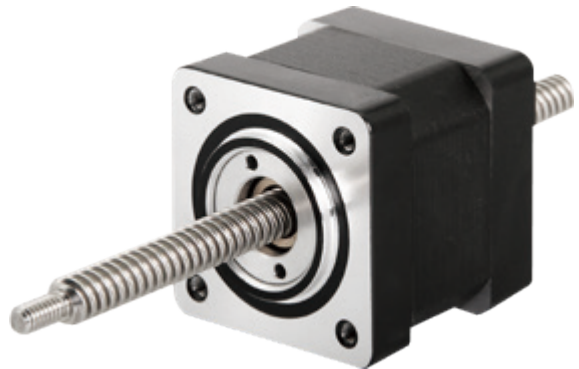


Speed-thrust curves for available screws, motor Nema 11, 11-2216. Motor driven in two-phase operation with 1.6A

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.

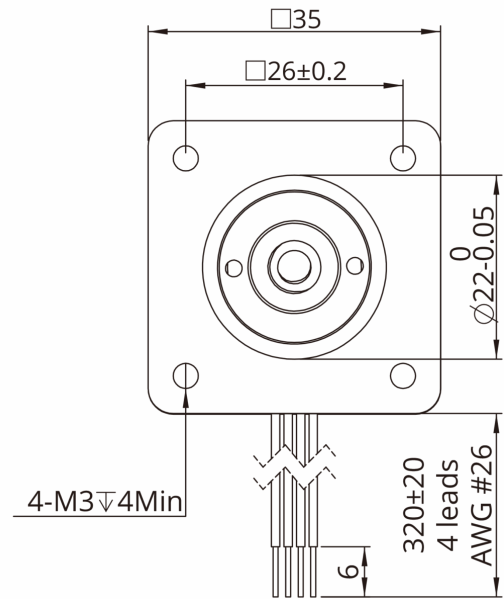
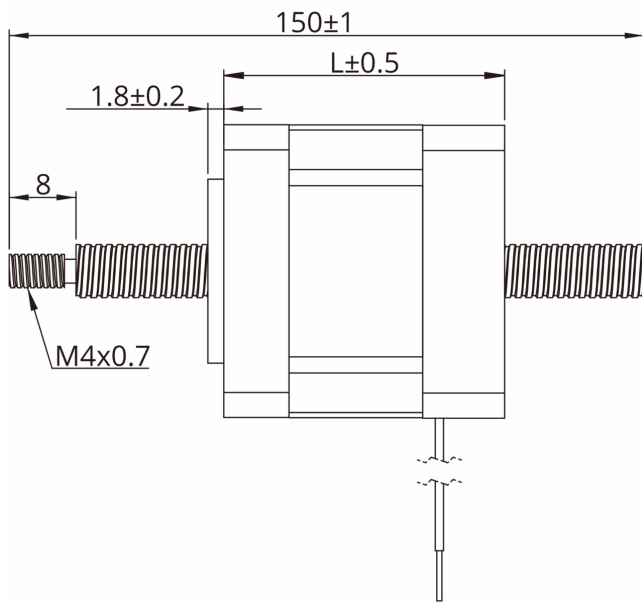
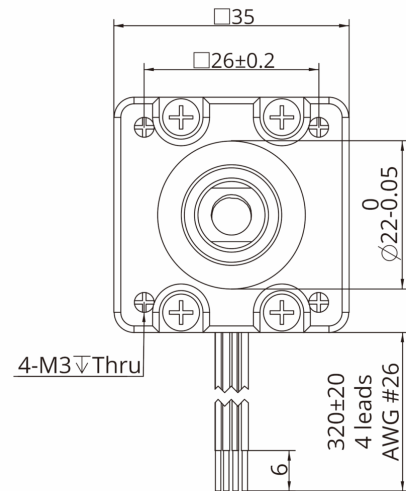
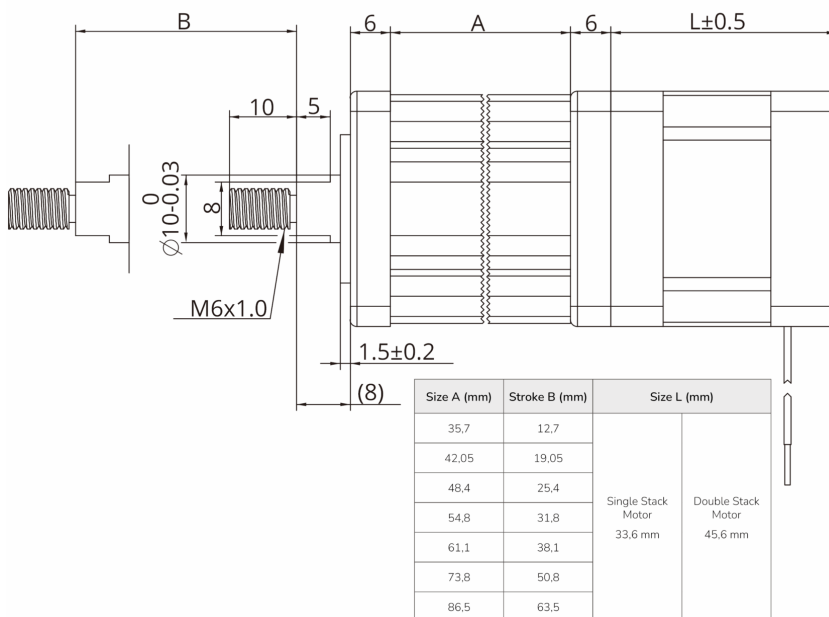

<https://www.kocomotion.de/produkt/slsla-size-14-35mm/>

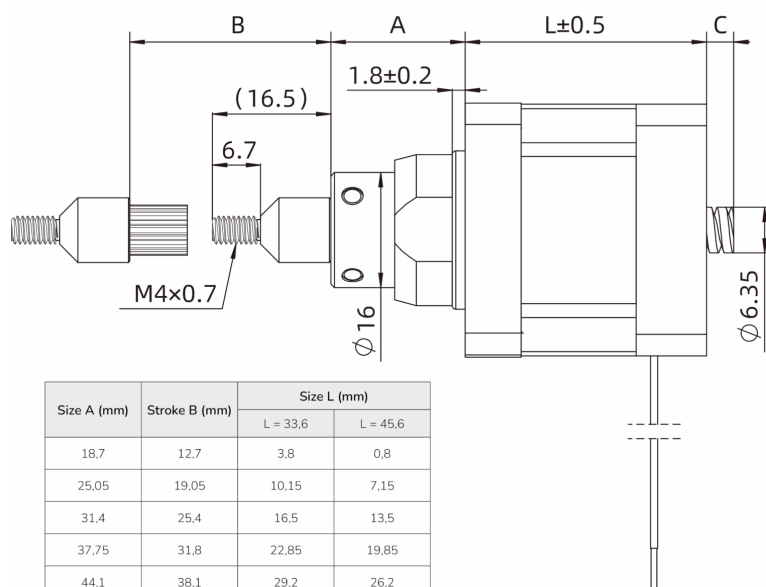
Motor Characteristics	Unit	14-2105	14-2110	14-2115	14-2205
Size	Nema	14	14	14	14
Flange size	mm	35	35	35	35
Rated voltage	V	6.6	3.5	2.7	12
Current	A	0.5	1	1.5	0.5
Winding resistance	Ω	13.2	3.5	1.8	24
Inductance	mH	14	3.6	1.9	29
Weight	g	189	189	189	210
Lead Wire No.		4	4	4	4
Motor length	mm	33.6	33.6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

Motor Characteristics	Unit	14-2210	14-2215
Size	Nema	14	14
Flange size	mm	35	35
Rated voltage	V	6	4
Current	A	1	1.5
Winding 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	-	-

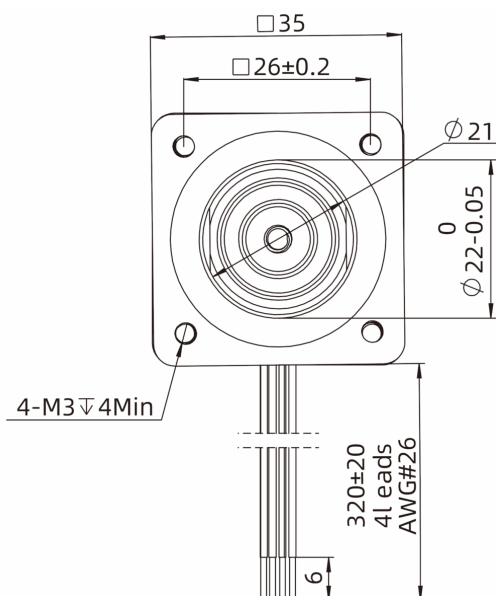
**custom 9,525mm screw diameter available for external type*

*Non-Captive Actuator**Captive (Electrical Cylinder) Actuator*

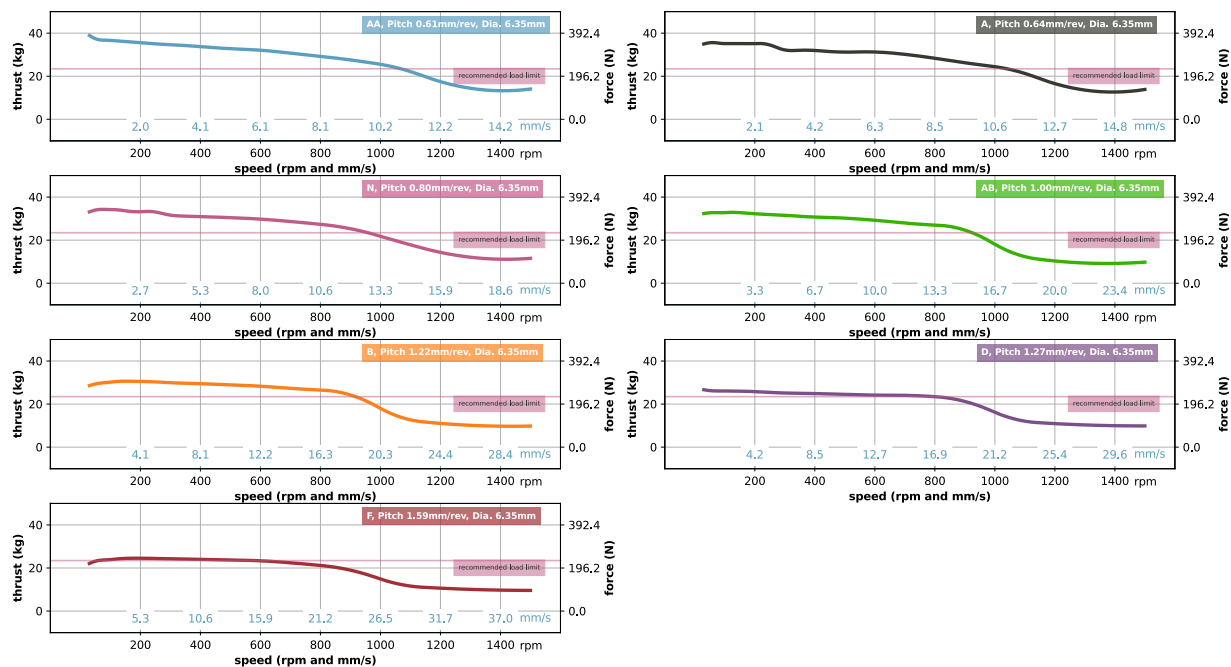


Size A (mm)	Stroke B (mm)	Size L (mm)	
		L = 33.6	L = 45.6
18.7	12.7	3.8	0.8
25.05	19.05	10.15	7.15
31.4	25.4	16.5	13.5
37.75	31.8	22.85	19.85
44.1	38.1	29.2	26.2
56.8	50.8	41.9	38.9
69.5	63.5	54.6	51.6

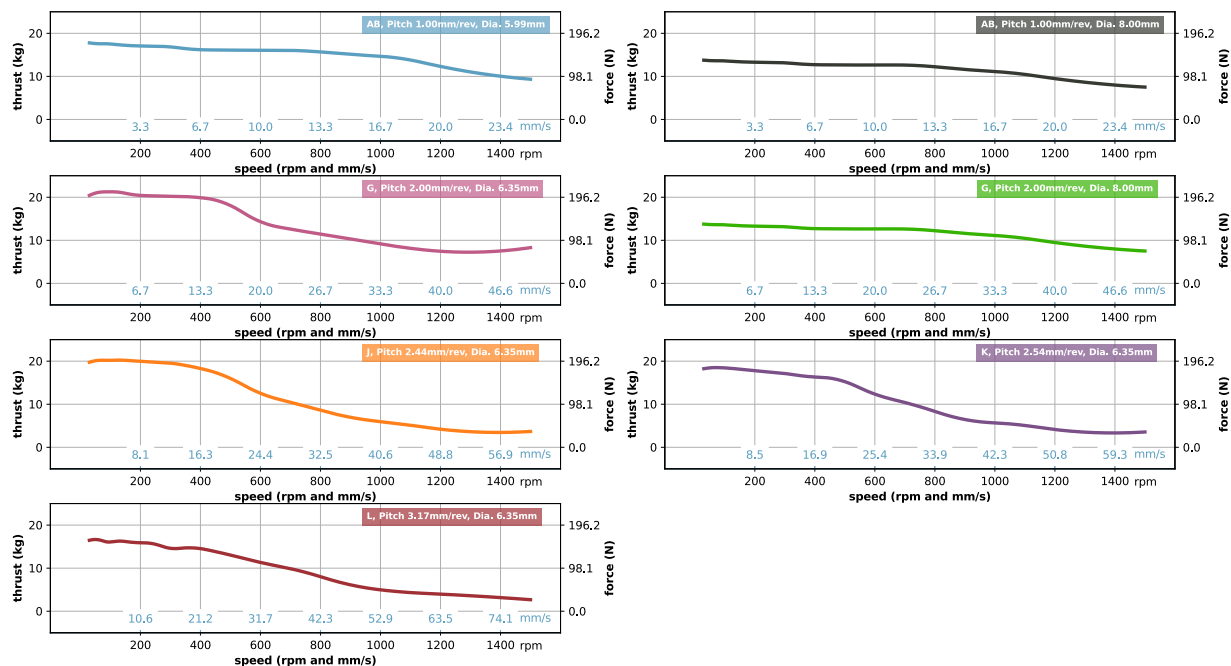
Kaptive Actuator



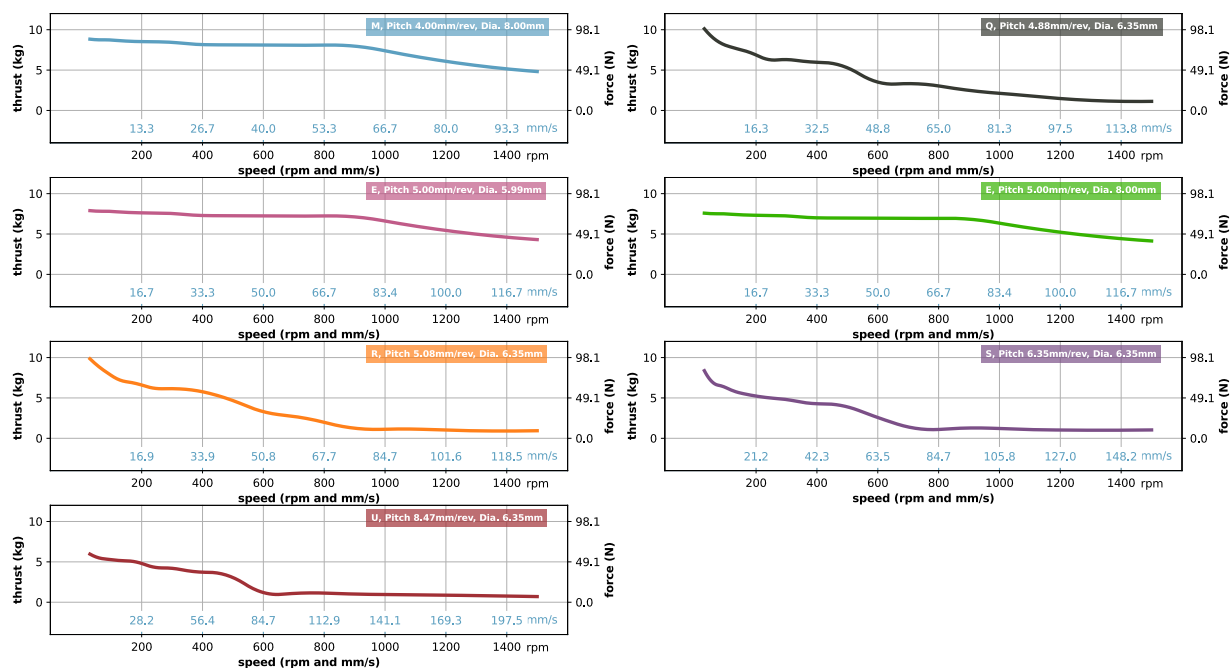
Speed/Thrust Curves



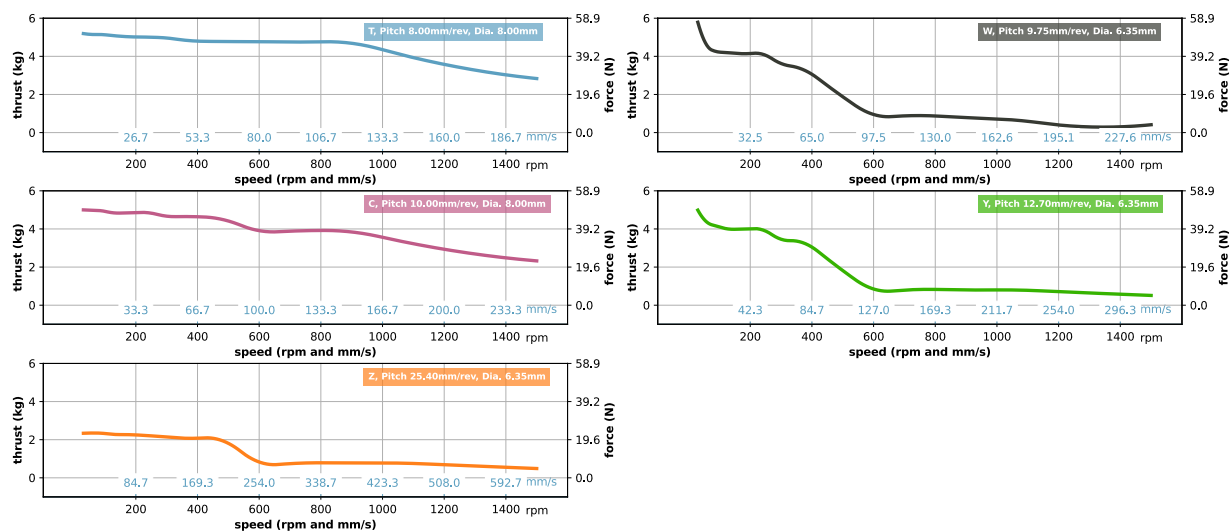
Speed-thrust curves for available screws, motor Nema 14, 14-2115, set 1. Motor driven in two-phase operation with 1.5A



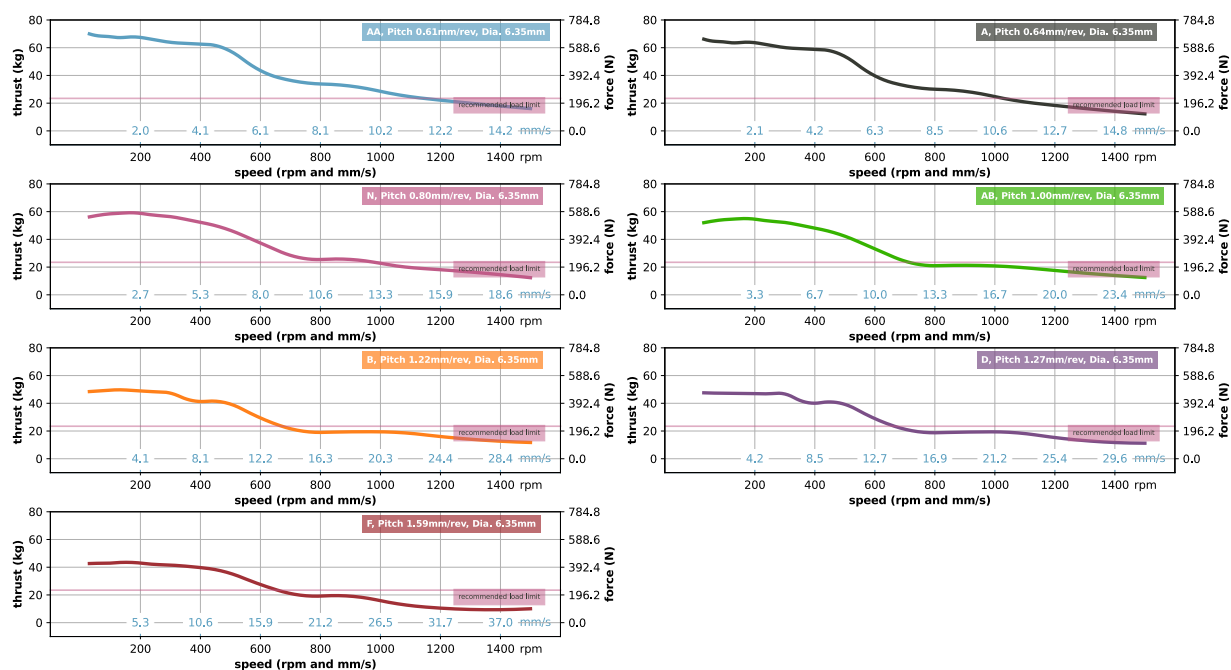
Speed-thrust curves for available screws, motor Nema 14, 14-2115, set 2. Motor driven in two-phase operation with 1.5A



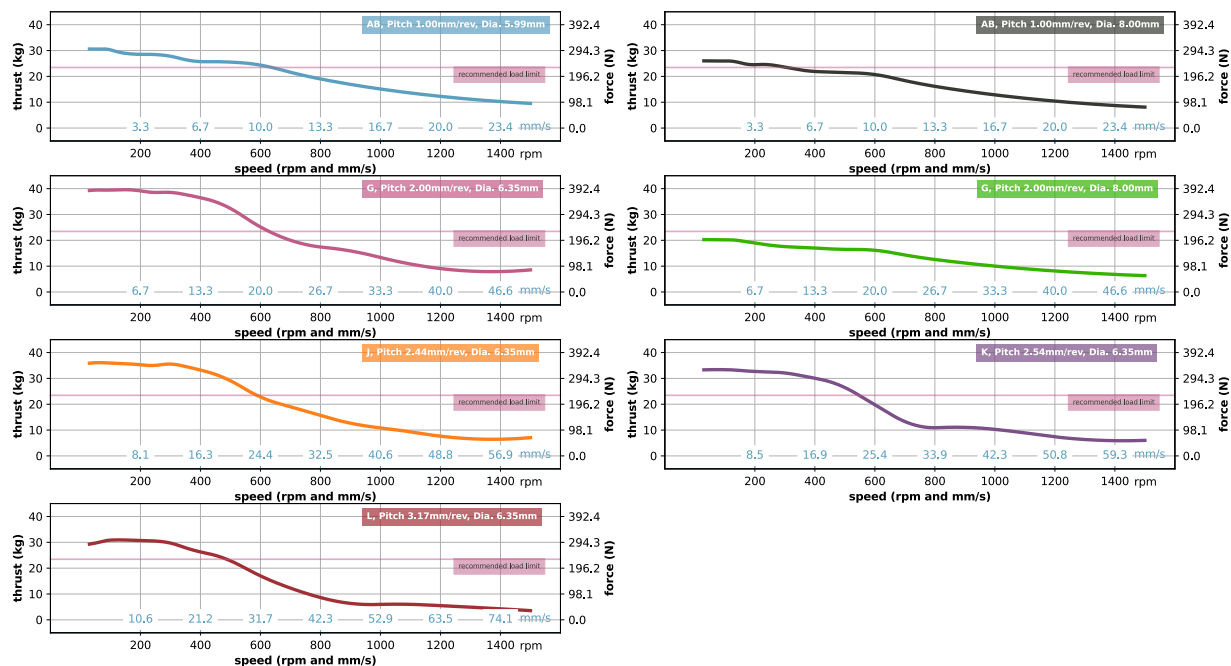
Speed-thrust curves for available screws, motor Nema 14, 14-2115, set 3. Motor driven in two-phase operation with 1.5A



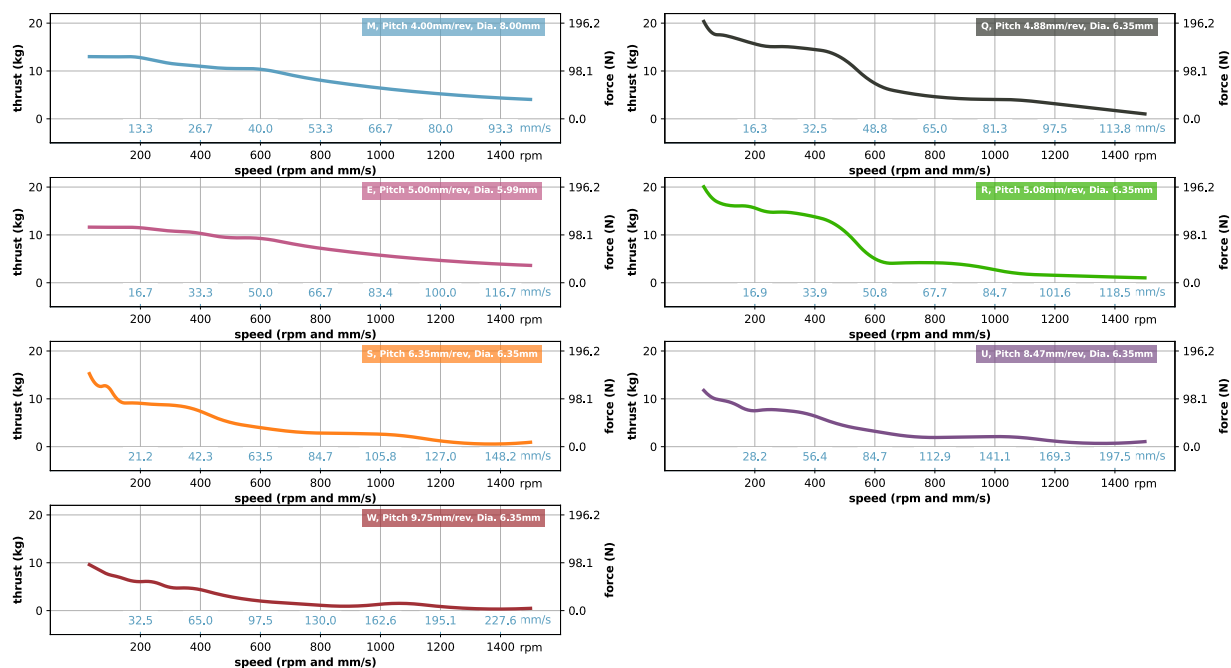
Speed-thrust curves for available screws, motor Nema 14, 14-2115, set 4. Motor driven in two-phase operation with 1.5A



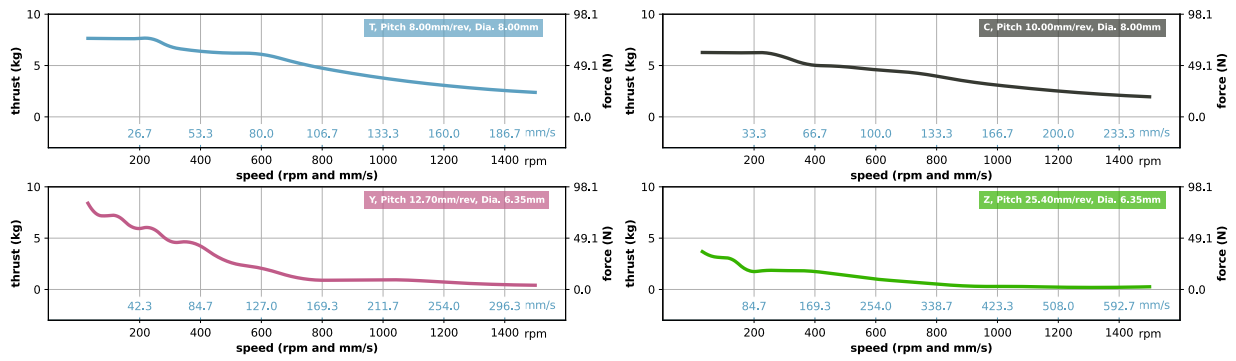
Speed-thrust curves for available screws, motor Nema 14, 14-2215, set 1. Motor driven in two-phase operation with 1.5A



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

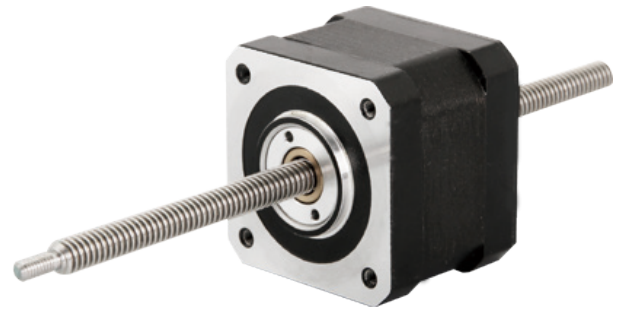


Speed-thrust curves for available screws, motor Nema 14, 14-2215, set 4. Motor driven in two-phase operation with 1.5A

42mm Stepper Lead Screw Linear Actuators

SLSLA - Size 17

[42mm]



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.

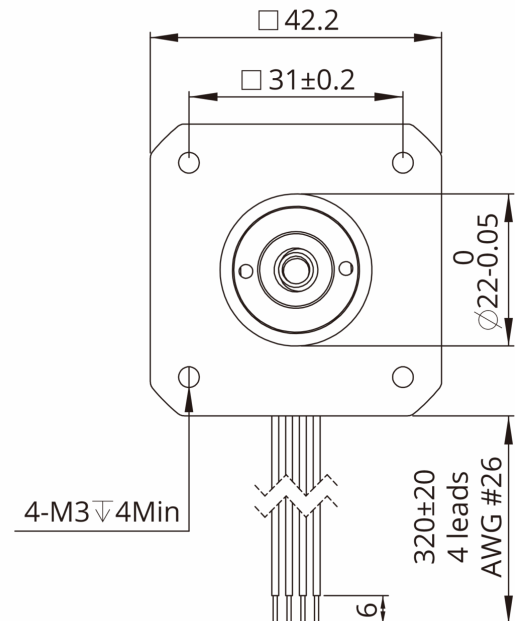
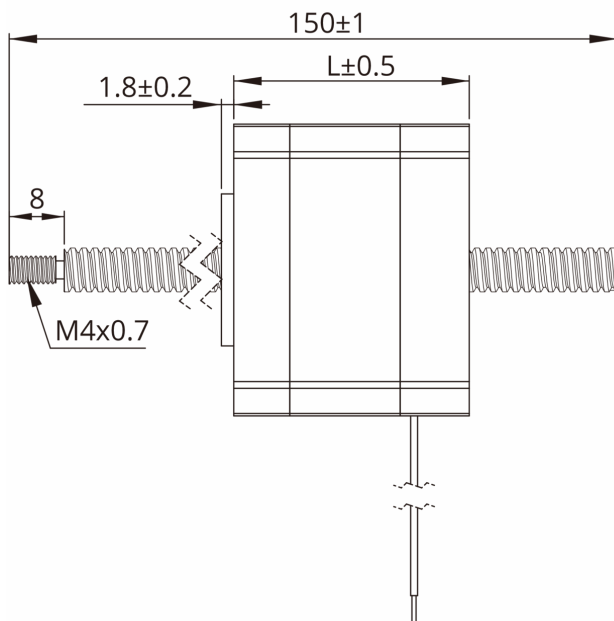
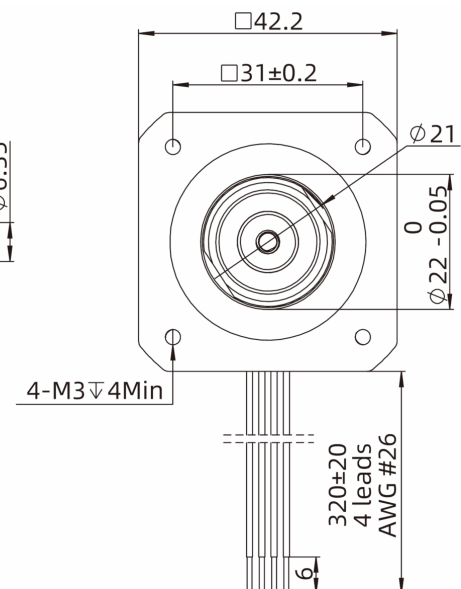
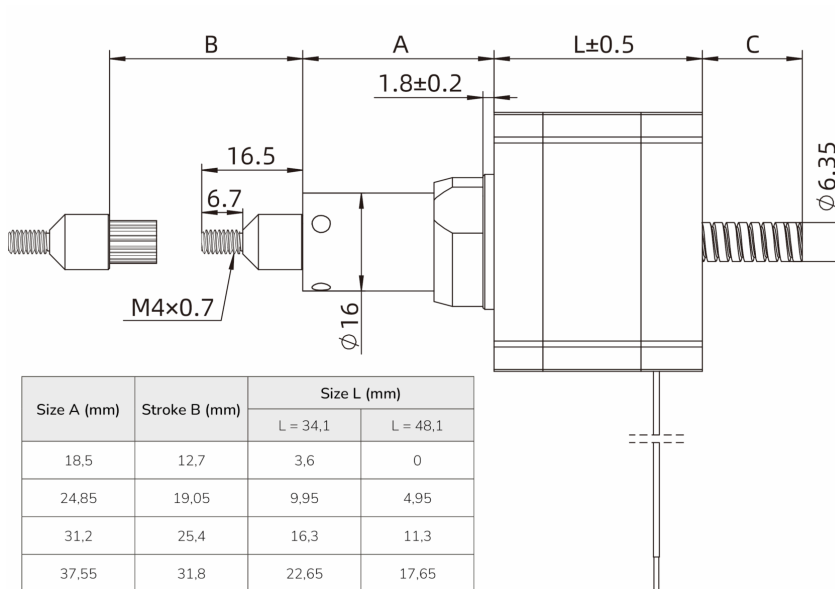

<https://www.kocomotion.de/produkt/slsa-size-17-42mm/>

Motor Characteristics	Unit	17-2105	17-2110	17-2115	17-2205
Size	Nema	17	17	17	17
Flange size	mm	42	42	42	42
Rated voltage	V	7.2	3.8	2.85	11
Current	A	0.5	1	1.5	0.5
Winding 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
Rated voltage	V	4.5	2.2
Current	A	1.2	2.5
Winding 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

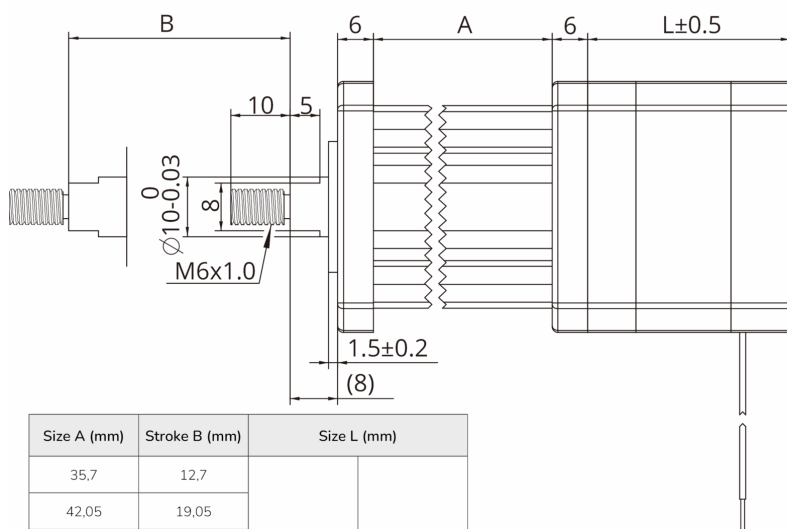
Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Left-hand thread available	Notes
AA	0.6096	6.35	3	-	-
A	0.635	6.35	3.2	-	*
B	1.2192	6.35	6.1	-	-
D	1.27	6.35	6.4	-	*
F	1.5875	6.35	7.9	yes	*
J	2.4384	6.35	12.2	-	-
K	2.54	6.35	12.7	yes	*
L	3.175	6.35	15.9	-	*
Q	4.8768	6.35	24.4	-	-
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*

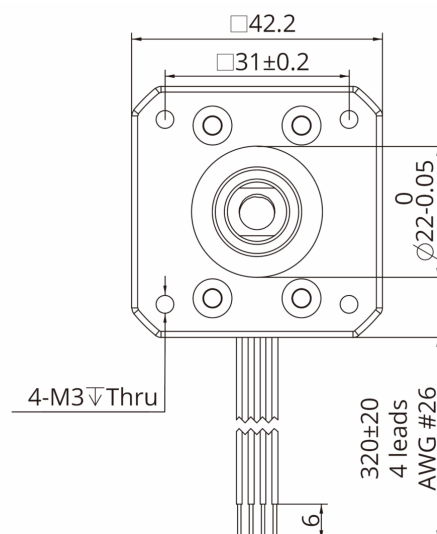
*Non-Captive Actuator*

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

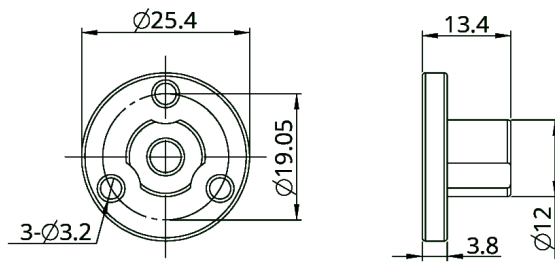
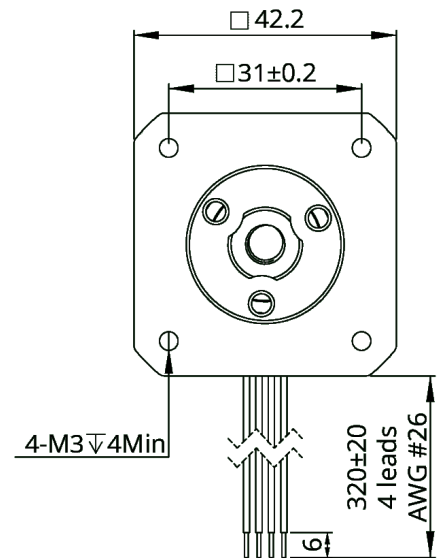
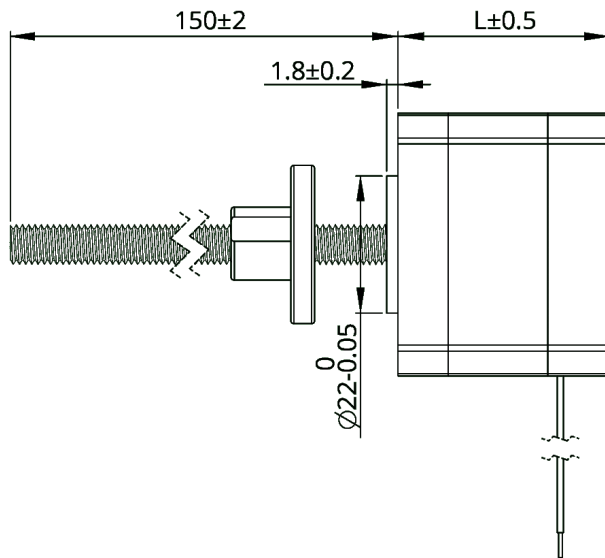
Kaptive Actuator



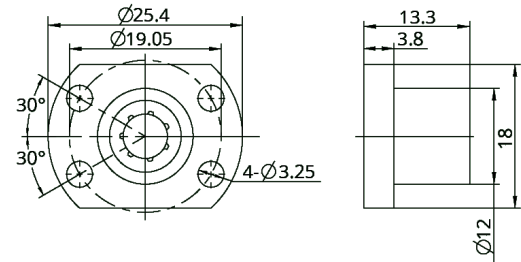
Size A (mm)	Stroke B (mm)	Size L (mm)	
35,7	12,7	Single Stack Motor 34,1 mm	Double Stack Motor 48,1 mm
42,05	19,05		
48,4	25,4		
54,8	31,8		
61,1	38,1		
73,8	50,8		
86,5	63,5		



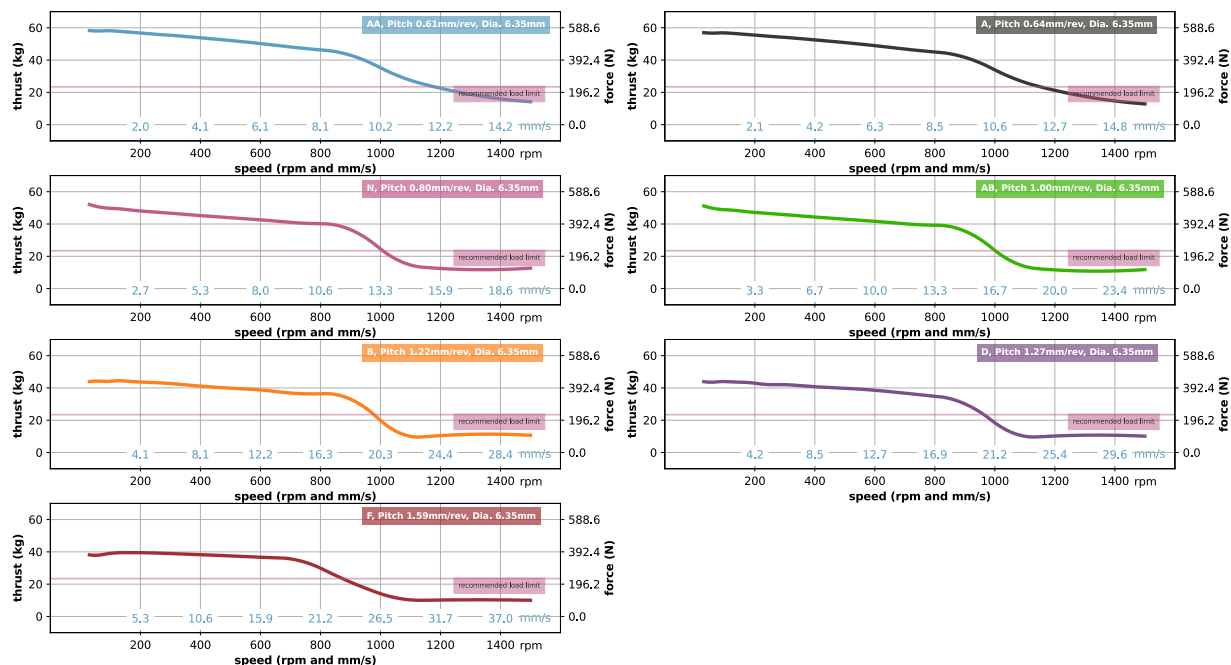
Captive (Electrical Cylinder) Actuator



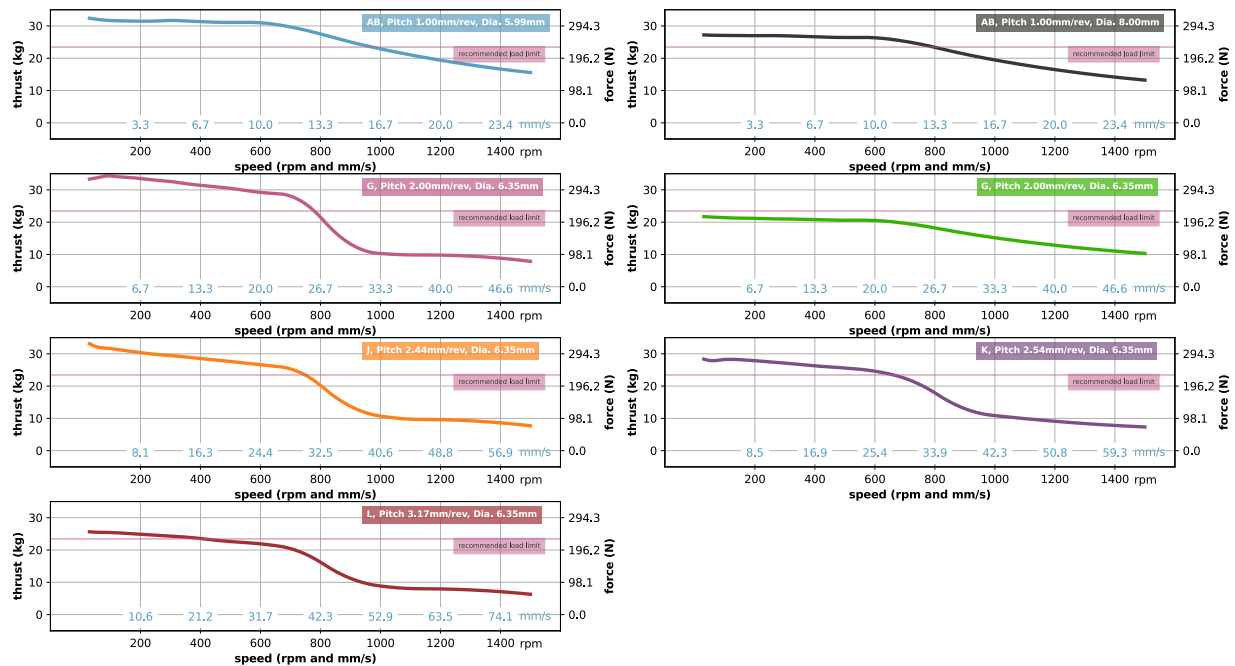
External Actuator



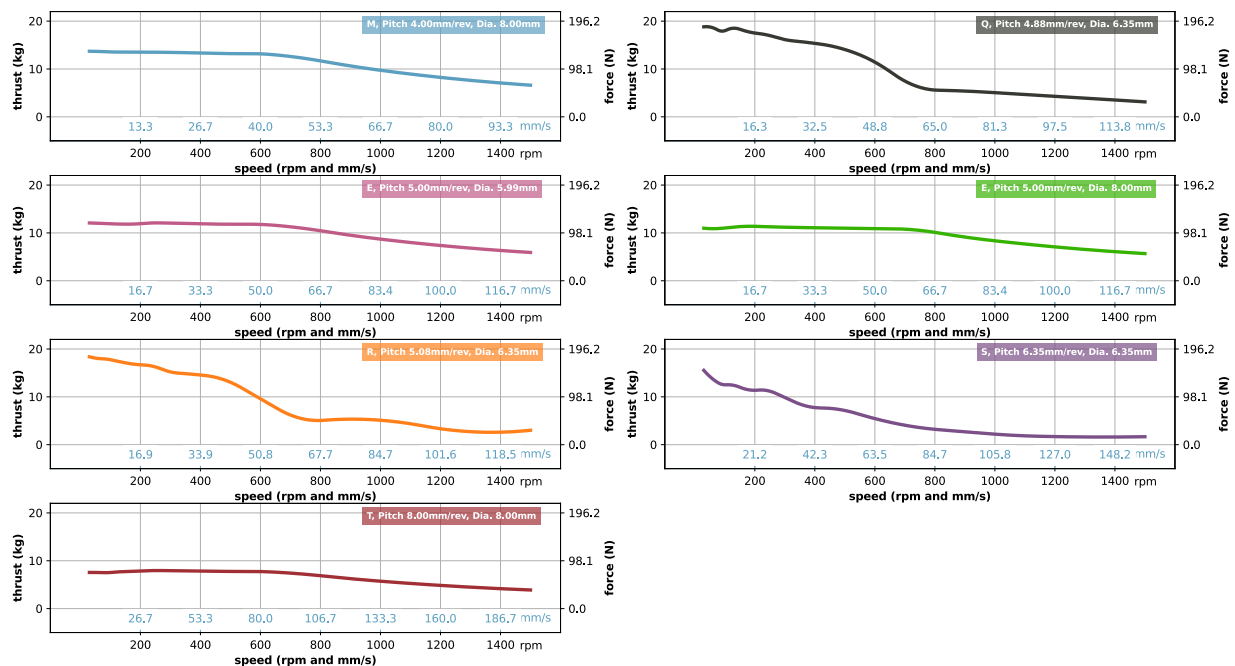
Speed/Thrust Curves



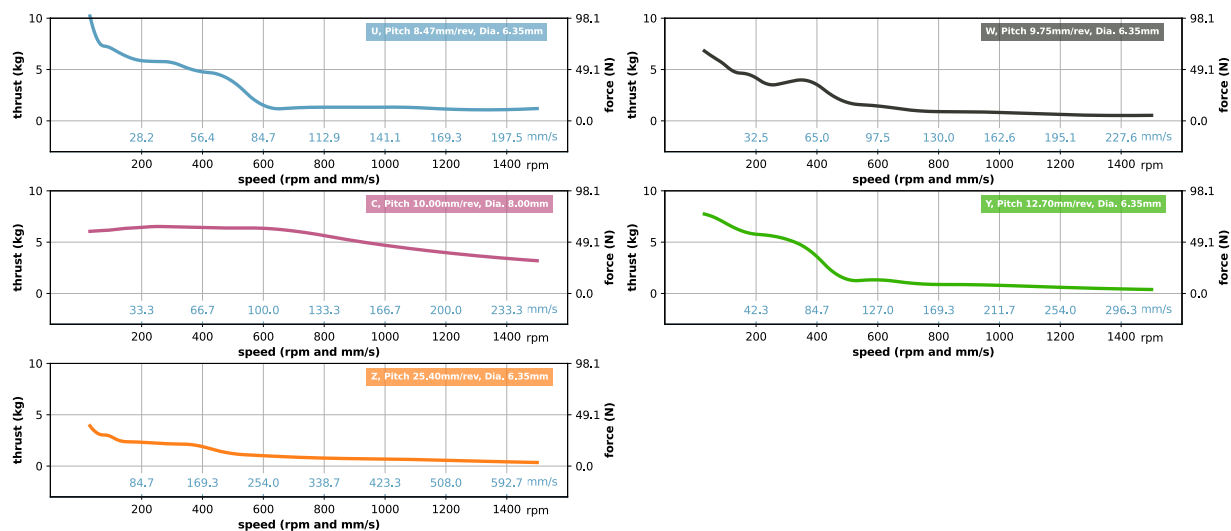
Speed-thrust curves for available screws, motor Nema 17, 17-2115, set 1. Motor driven in two-phase operation with 1.5A



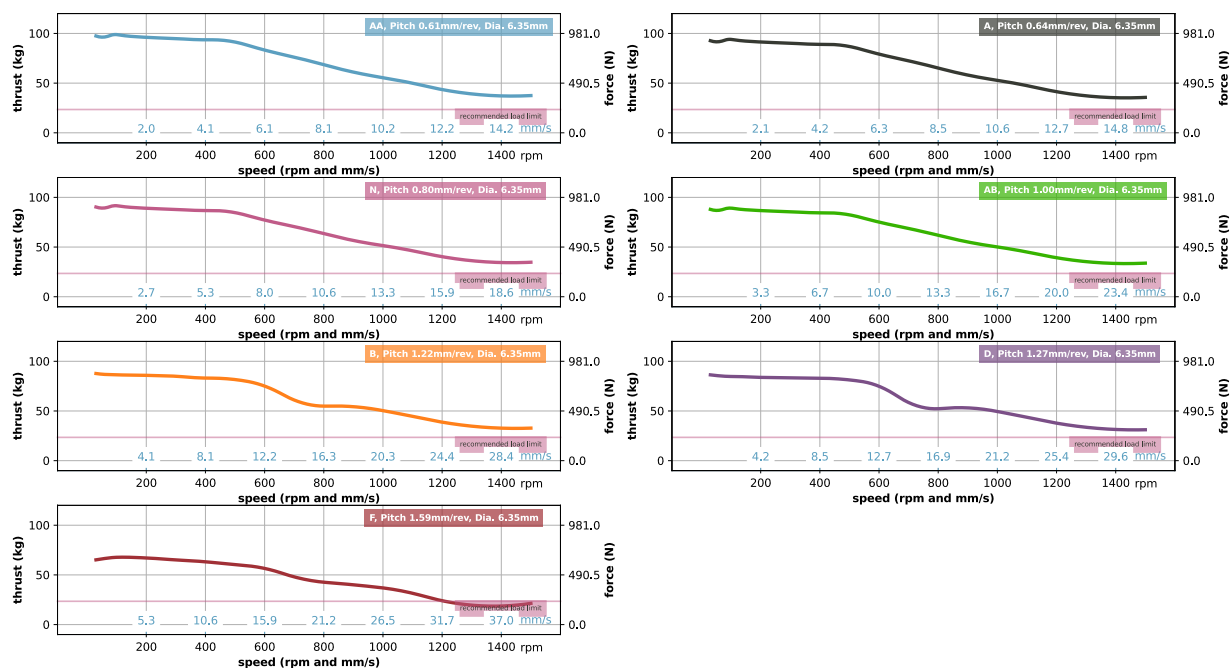
Speed-thrust curves for available screws, motor Nema 17, 17-2115, set 2. Motor driven in two-phase operation with 1.5A



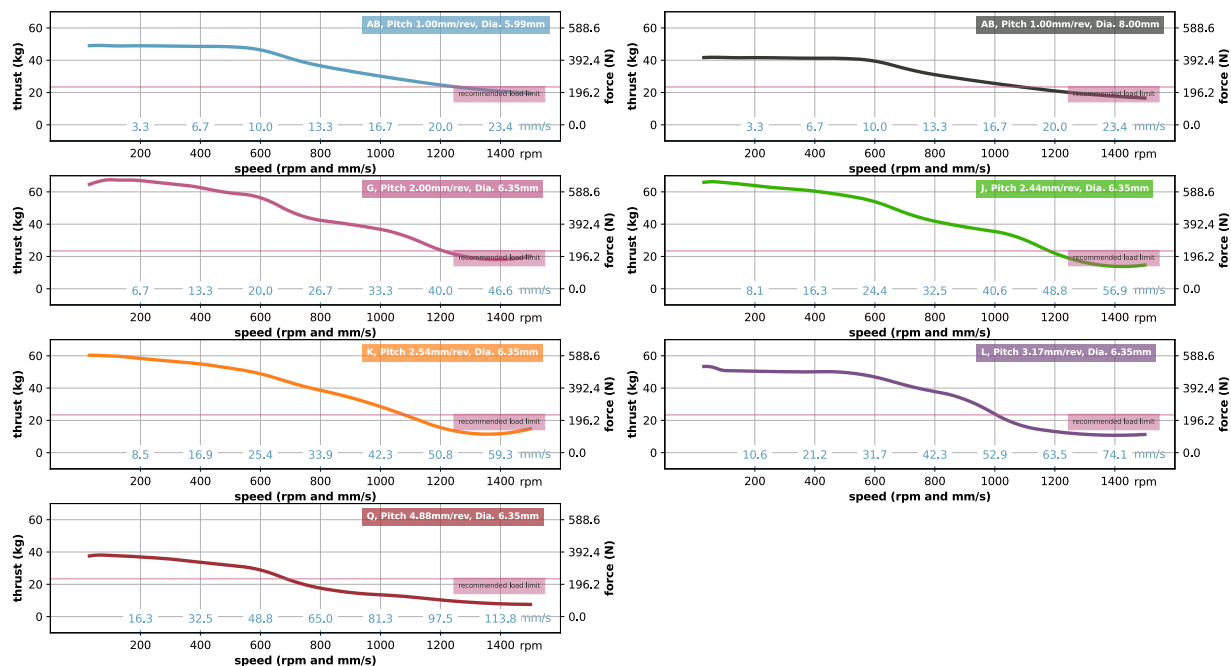
Speed-thrust curves for available screws, motor Nema 17, 17-2115, set 3. Motor driven in two-phase operation with 1.5A



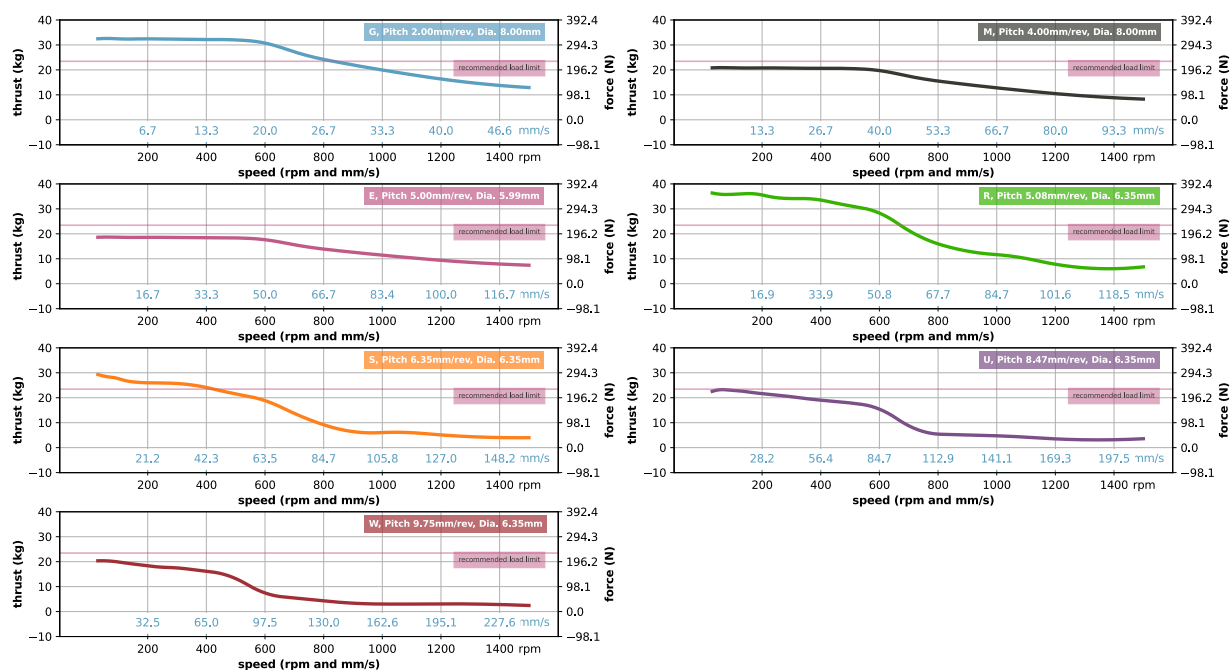
Speed-thrust curves for available screws, motor Nema 17, 17-2115, set 4. Motor driven in two-phase operation with 1.5A



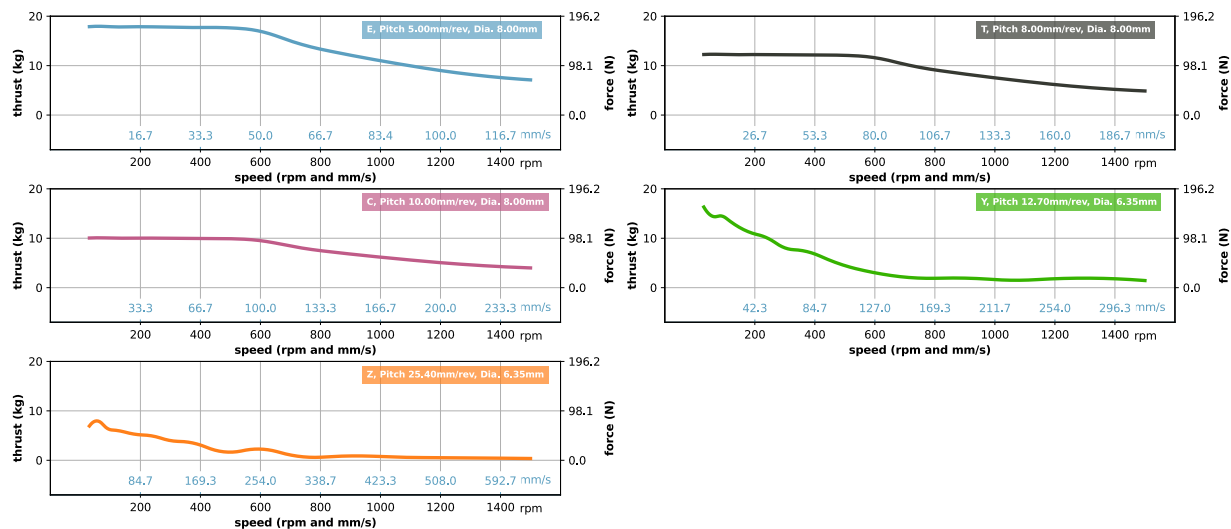
Speed-thrust curves for available screws, motor Nema 17, 17-2225, set 1. Motor driven in two-phase operation with 2.5A



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

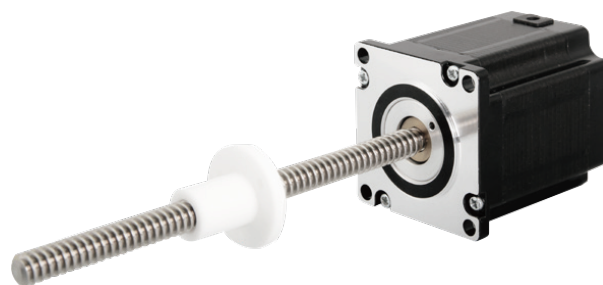


Speed-thrust curves for available screws, motor Nema 17, 17-2225, set 4. Motor driven in two-phase operation with 2.5A

Stepper Lead Screw Linear Actuators, Size 23

SLSLA - Size 23

[57mm]



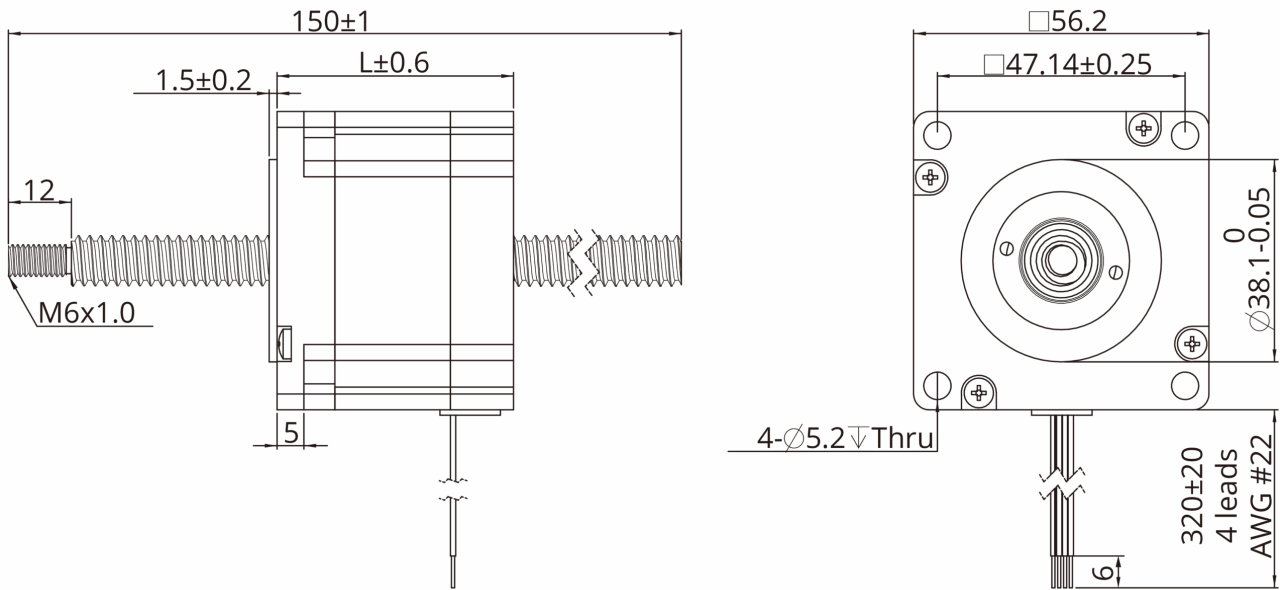
The SLSLA - Size 23 [57mm] Stepper Lead Screw Linear Actuator delivers high performance and extended duty cycles, supporting thrust loads up to 910N. Offered in External, Non-Captive, Captive (Electrical Cylinder), and Kaptive configurations, this family provides multiple screw lead and pitch options, 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/>

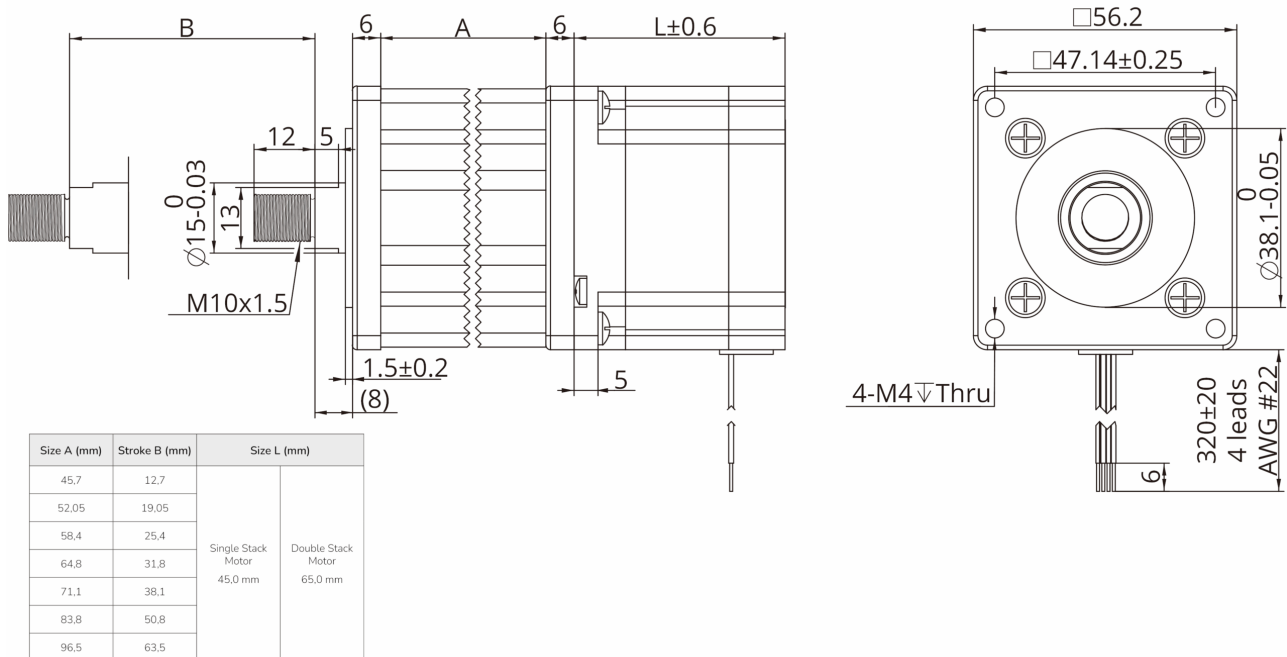
Motor Characteristics	Unit	23-2110	23-2120	23-2130	23-2210
Size	Nema	23	23	23	23
Flange size	mm	57	57	57	57
Rated voltage	V	6.4	3.5	2.4	11.5
Current	A	1	2	3	1
Winding resistance	Ω	6.4	1.75	0.8	11.5
Inductance	mH	16.4	4.1	1.7	32
Weight	g	585	585	585	880
Lead Wire No.		4	4	4	4
Motor length	mm	45	45	45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

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

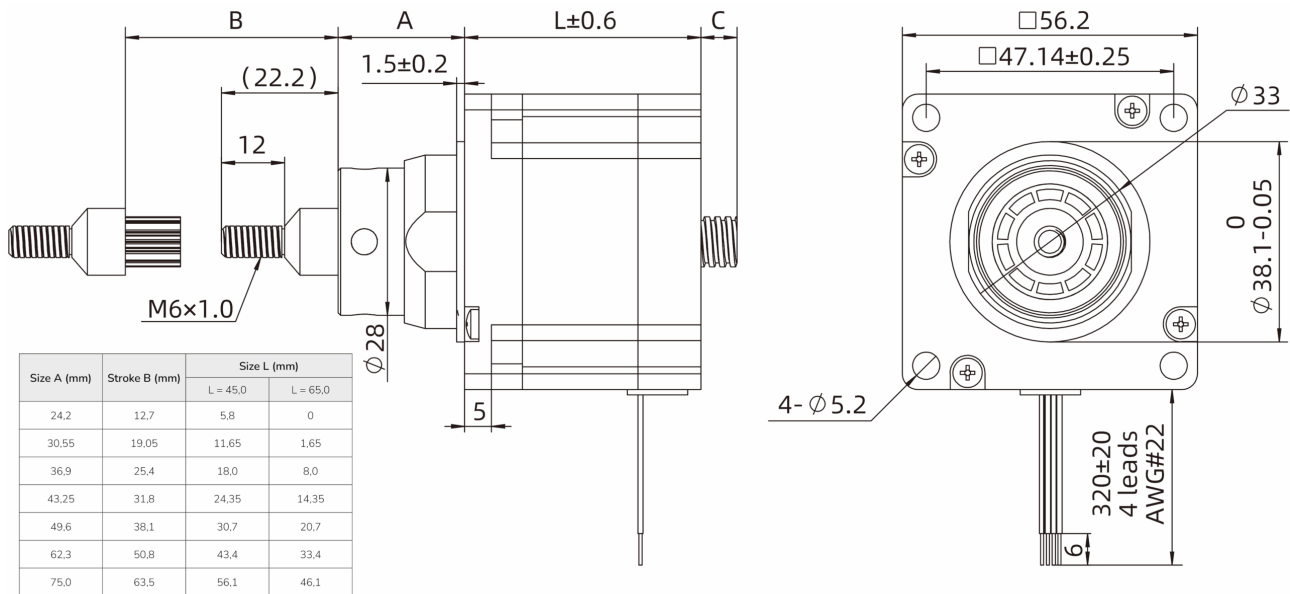
Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [µm]	Left-hand thread available	Notes
A	0.635	9.525	3.2	-	-
D	1.27	9.525	6.4	-	-
F	1.5875	9.525	7.9	-	-
H	2.1167	9.525	10.6	-	-
K	2.54	9.525	12.7	yes	*
L	3.175	9.525	15.9	-	*
P	4.2333	9.525	21.2	-	-
R	5.08	9.525	25.4	-	*
S	6.35	9.525	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	-	-



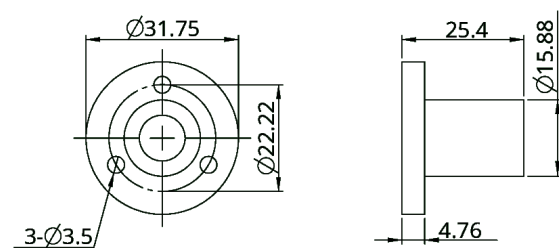
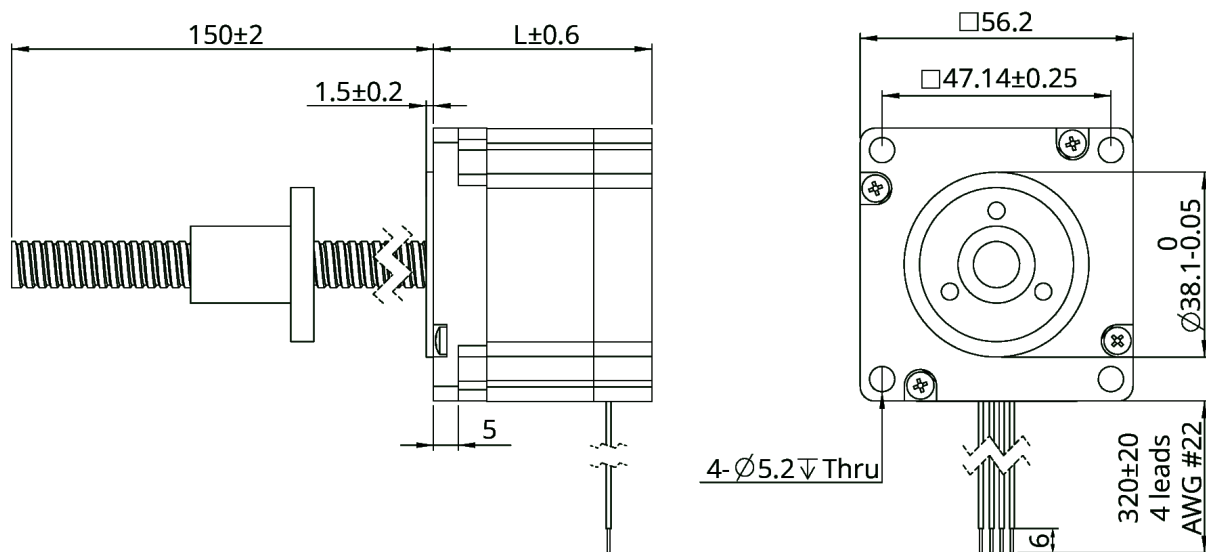
Non-Captive Actuator



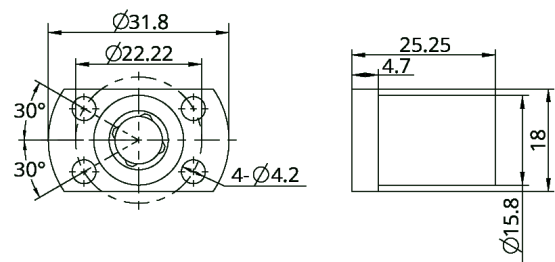
Captive (Electrical Cylinder) Actuator



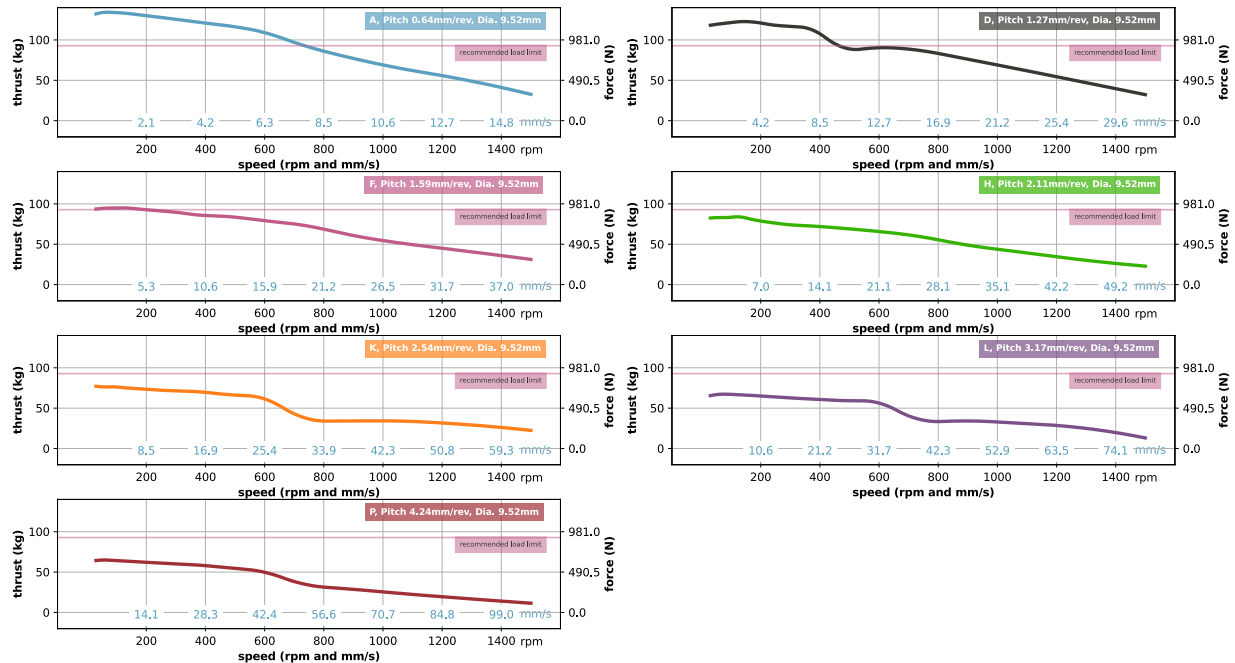
Kaptive Actuator



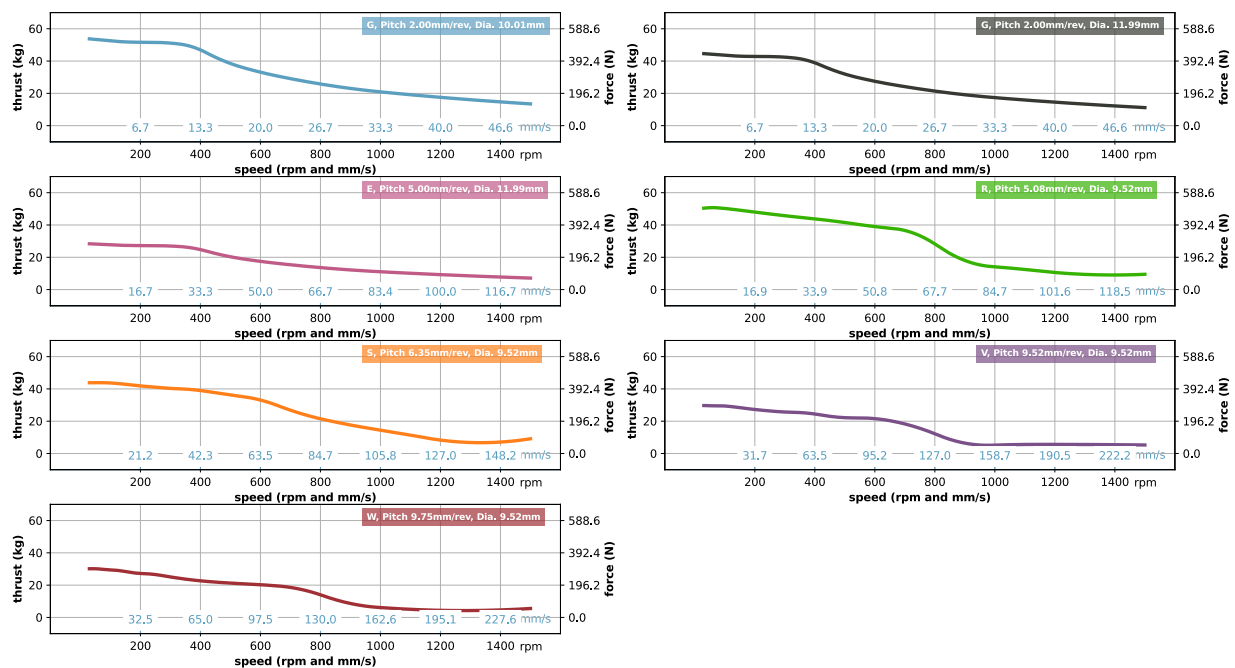
External Actuator



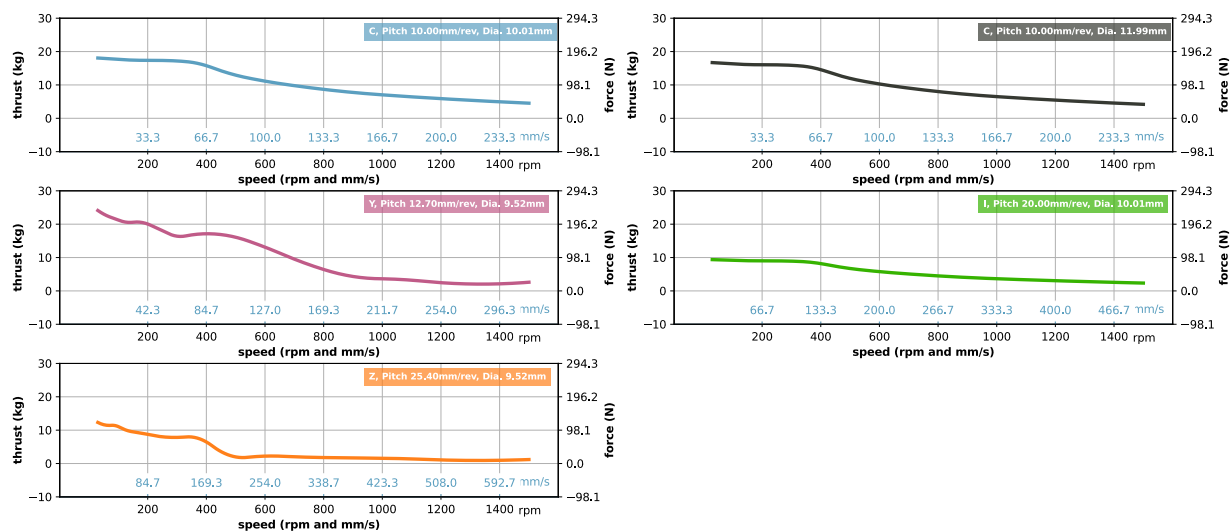
Speed/Thrust Curves



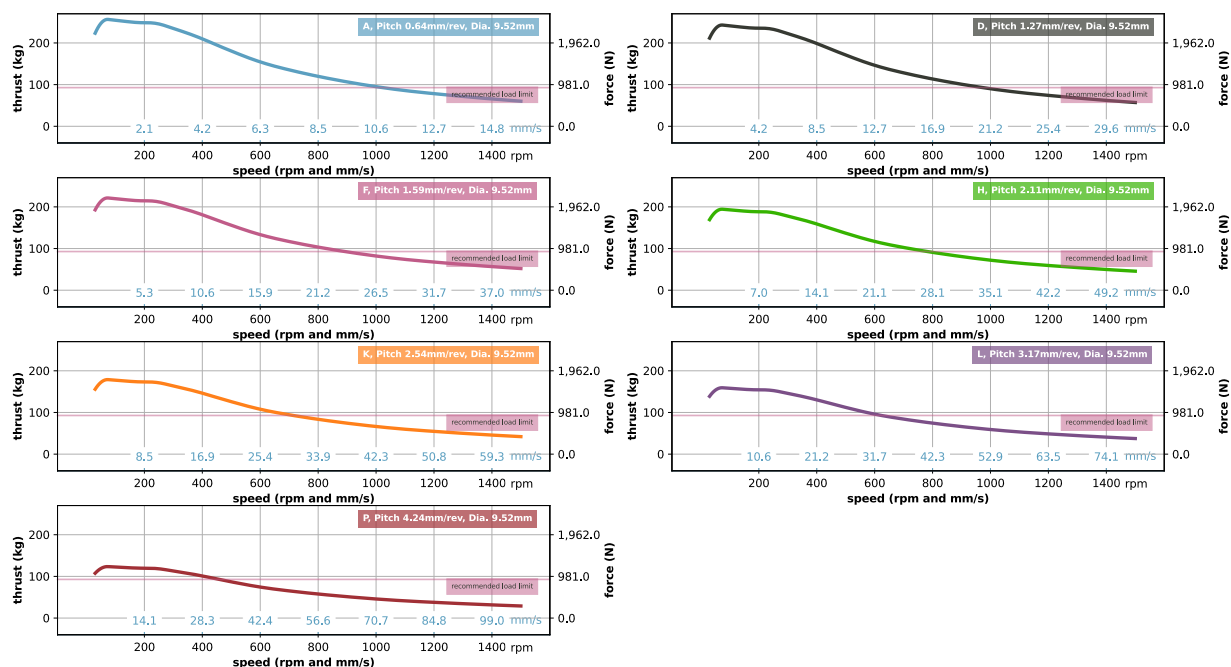
Speed-thrust curves for available screws, motor Nema 23, 23-2120, set 1. Motor driven in two-phase operation with 2A



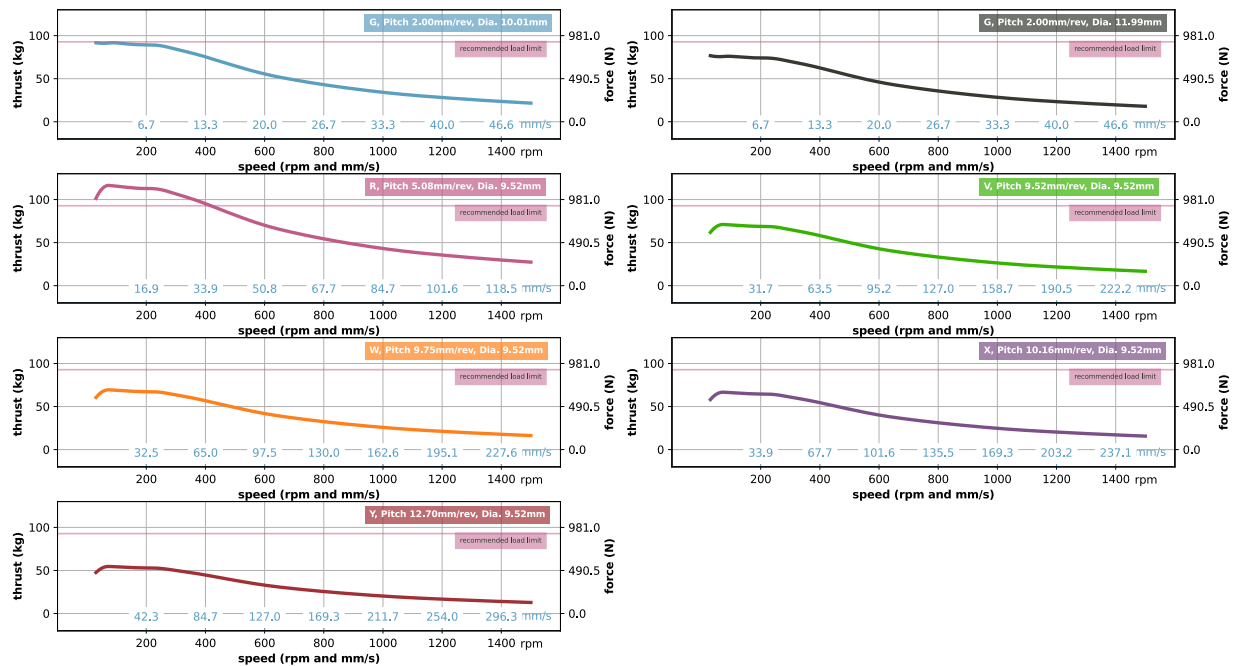
Speed-thrust curves for available screws, motor Nema 23, 23-2120, set 2. Motor driven in two-phase operation with 2A



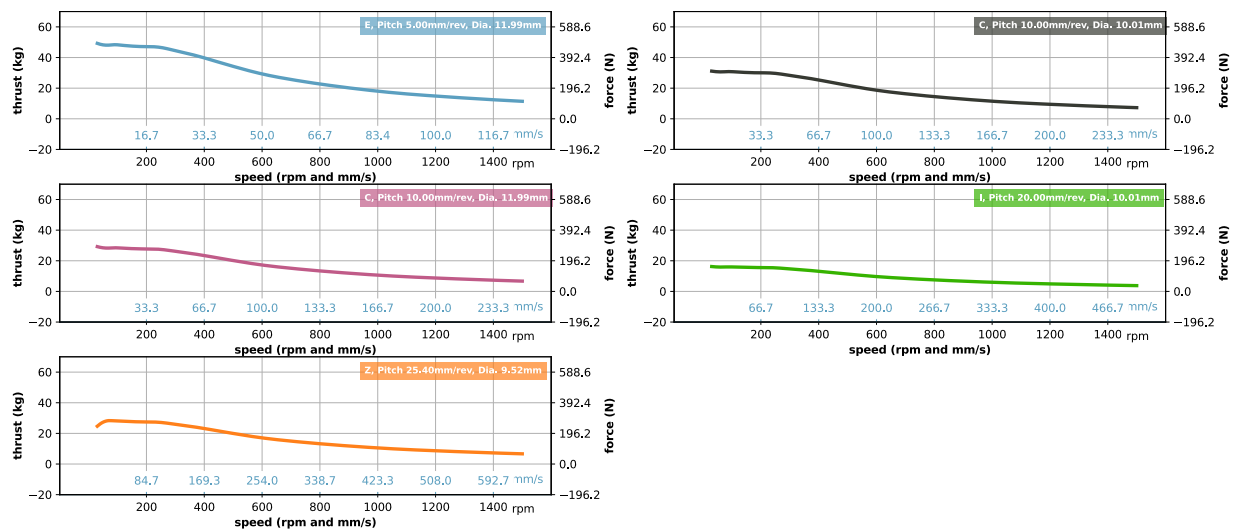
Speed-thrust curves for available screws, motor Nema 23, 23-2120, set 3. Motor driven in two-phase operation with 2A



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.



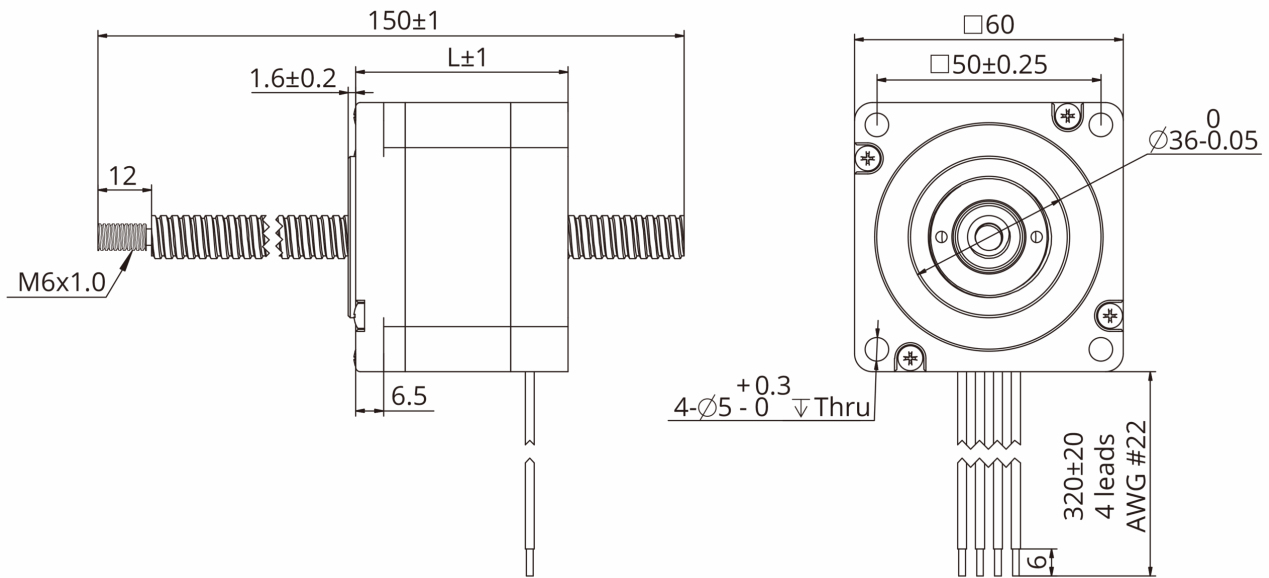
<https://www.kocomotion.de/produkt/slsla-size-24-60mm/>

Motor Characteristics	Unit	24-2120	24-2130	24-2140	24-2230
Size	Nema	24	24	24	24
Flange size	mm	60	60	60	60
Rated voltage	V	3	1.8	1.6	3
Current	A	2	3	4	3
Winding 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

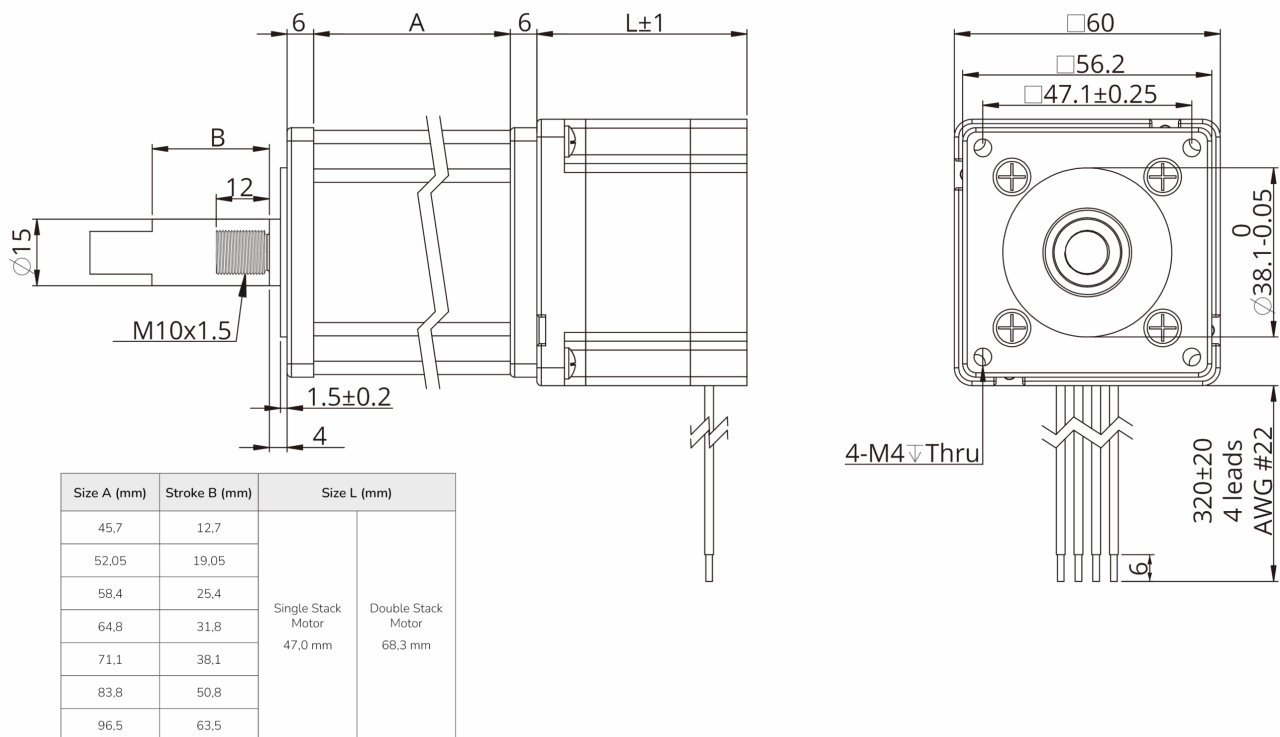
Motor Characteristics	Unit	24-2240	24-2250
Size	Nema	24	24
Flange size	mm	60	60
Rated voltage	V	2.4	1.5
Current	A	4	5
Winding resistance	Ω	0.6	0.3
Inductance	mH	1.9	1.2
Weight	g	1080	1080
Lead Wire No.		4	4
Motor length	mm	68.3	68.3

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	-	-

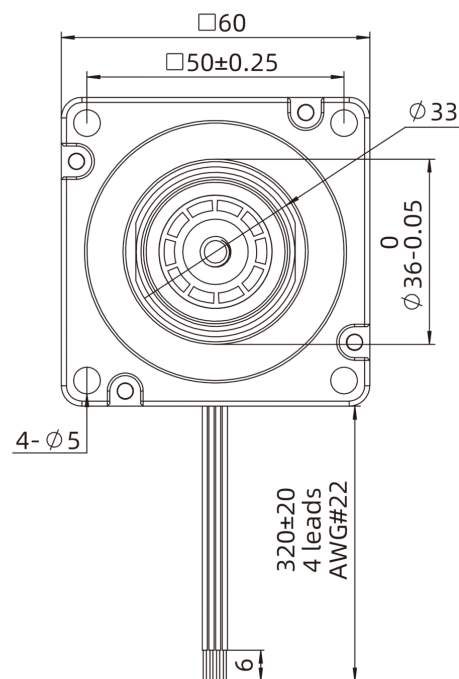
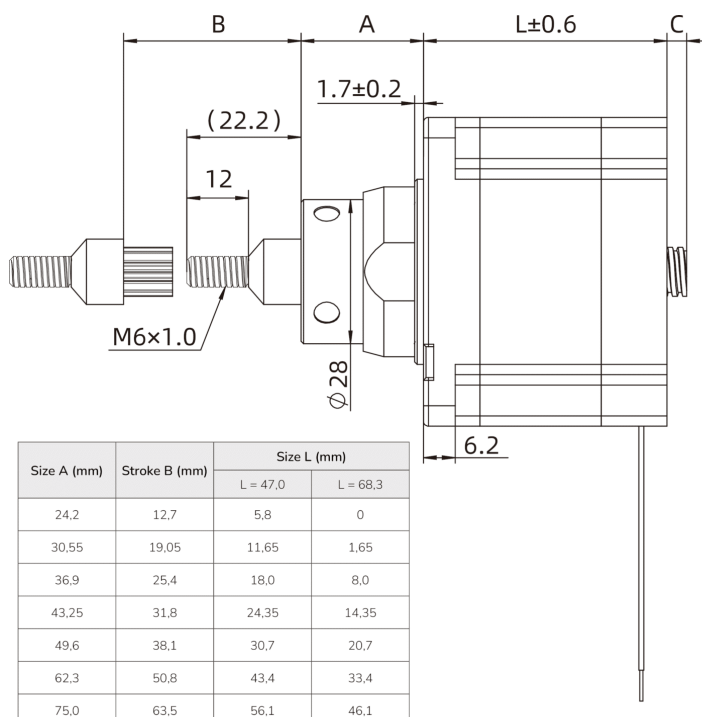
**custom 15,875mm screw diameter available for external type*



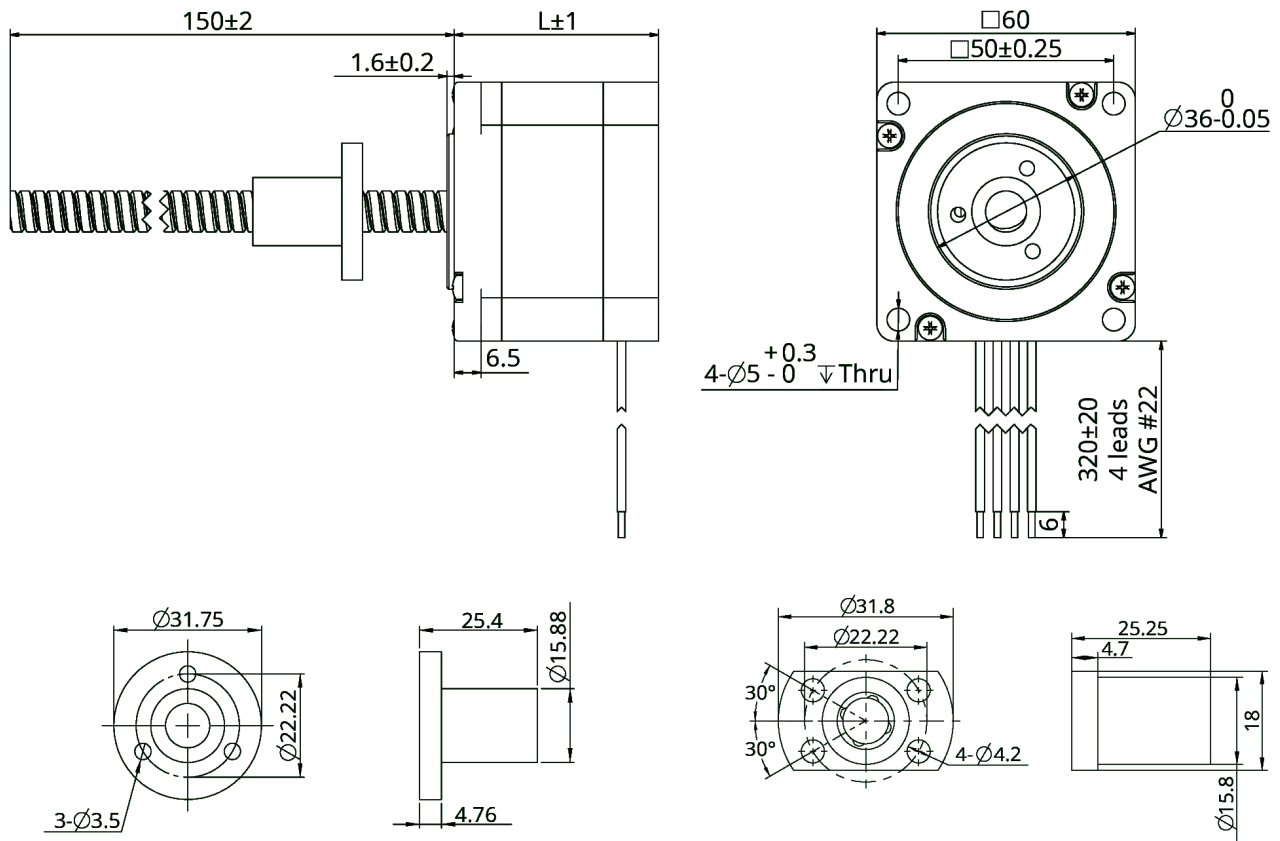
Non-Captive Actuator



Captive (Electrical Cylinder) Actuator

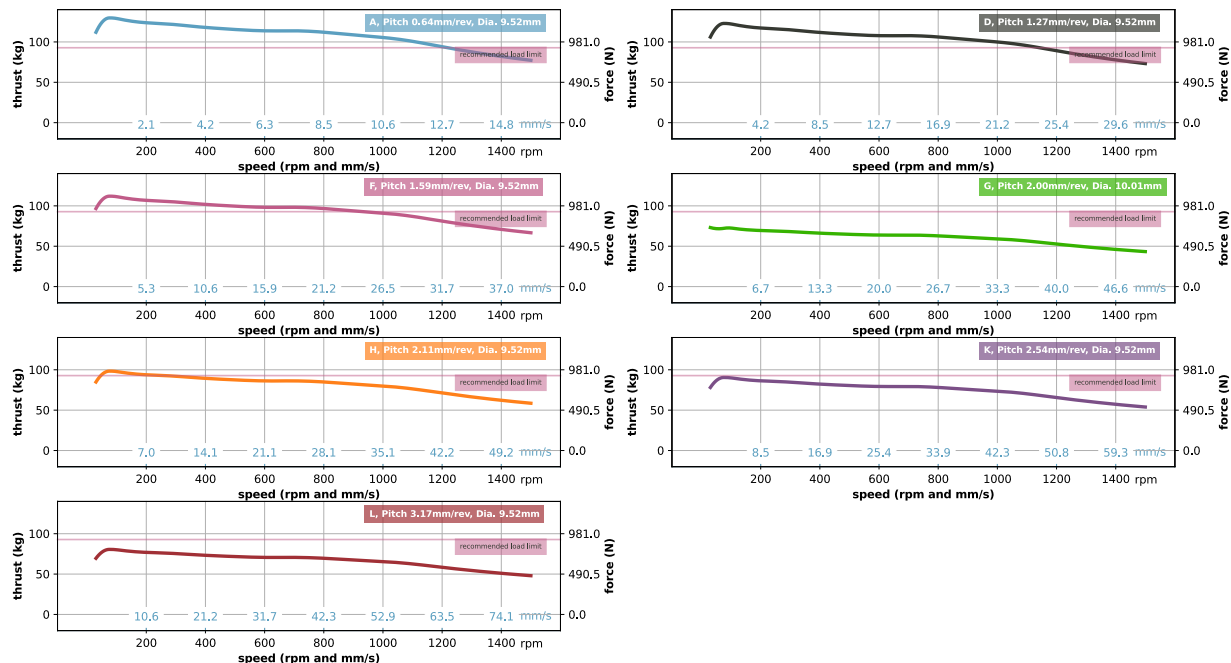


Kaptive Actuator

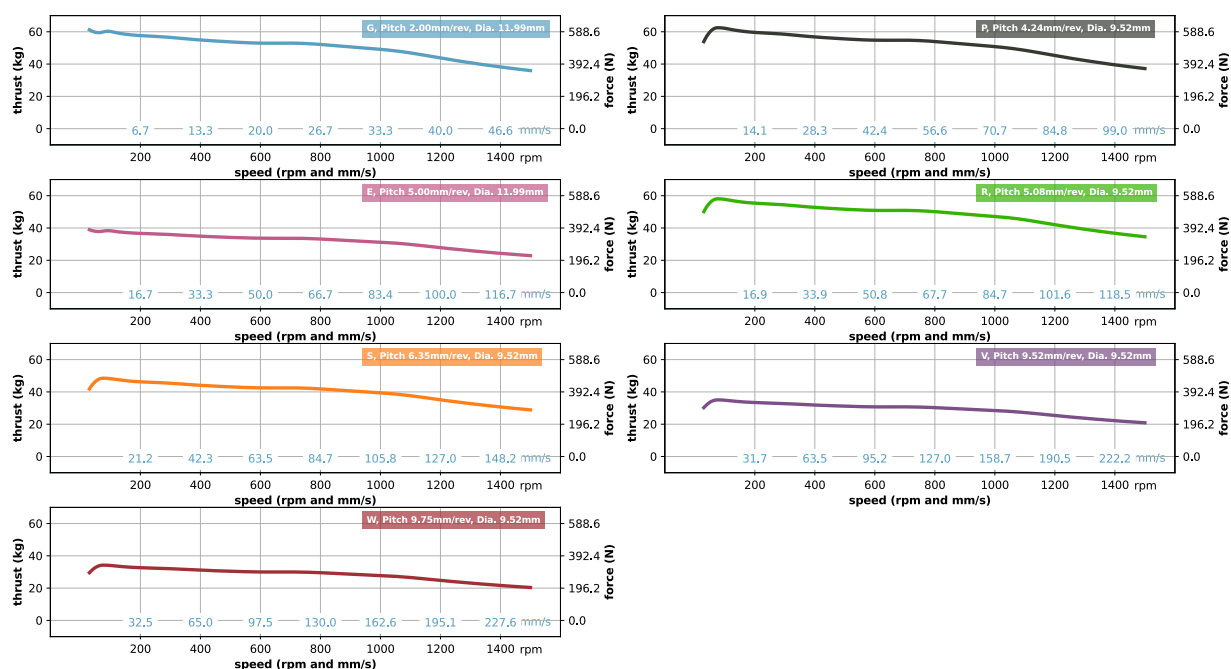


External Actuator

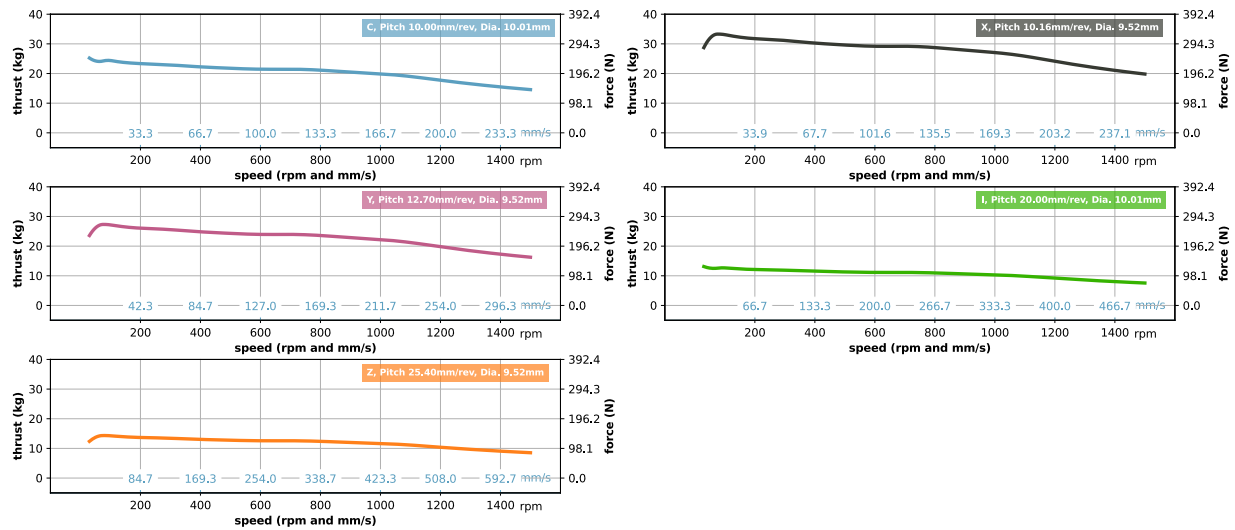
Speed/Thrust Curves



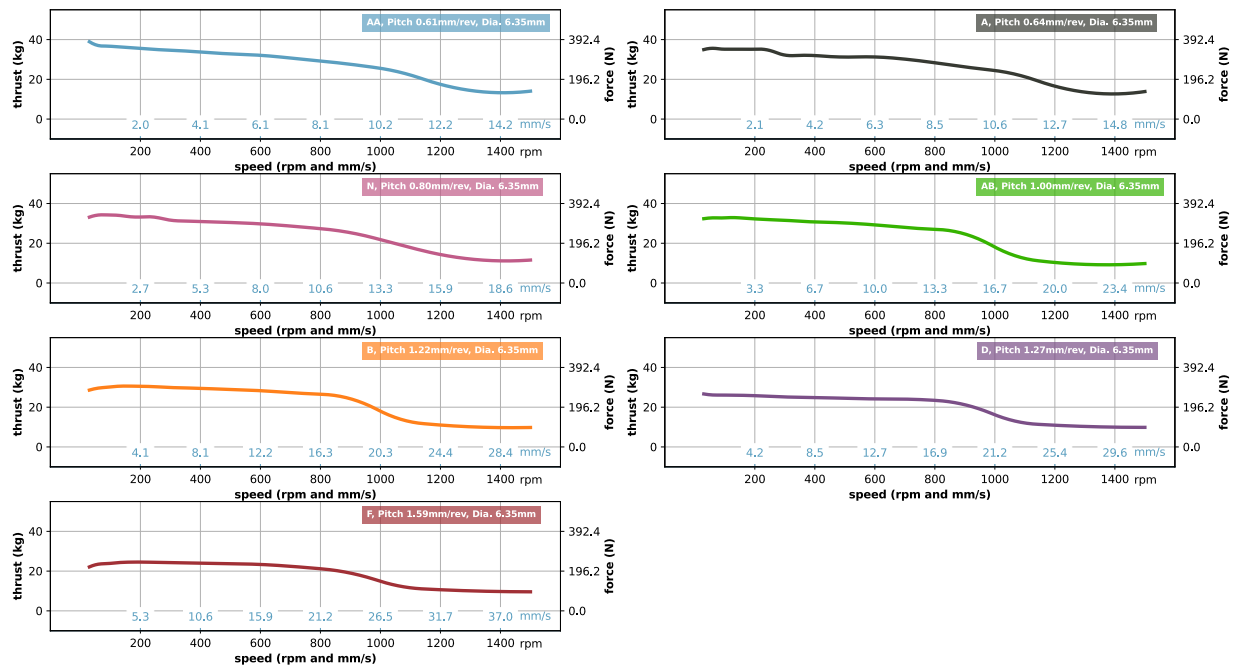
Speed-thrust curves for available screws, motor Nema 24, 24-2130, set 1. Motor driven in two-phase operation with 3A



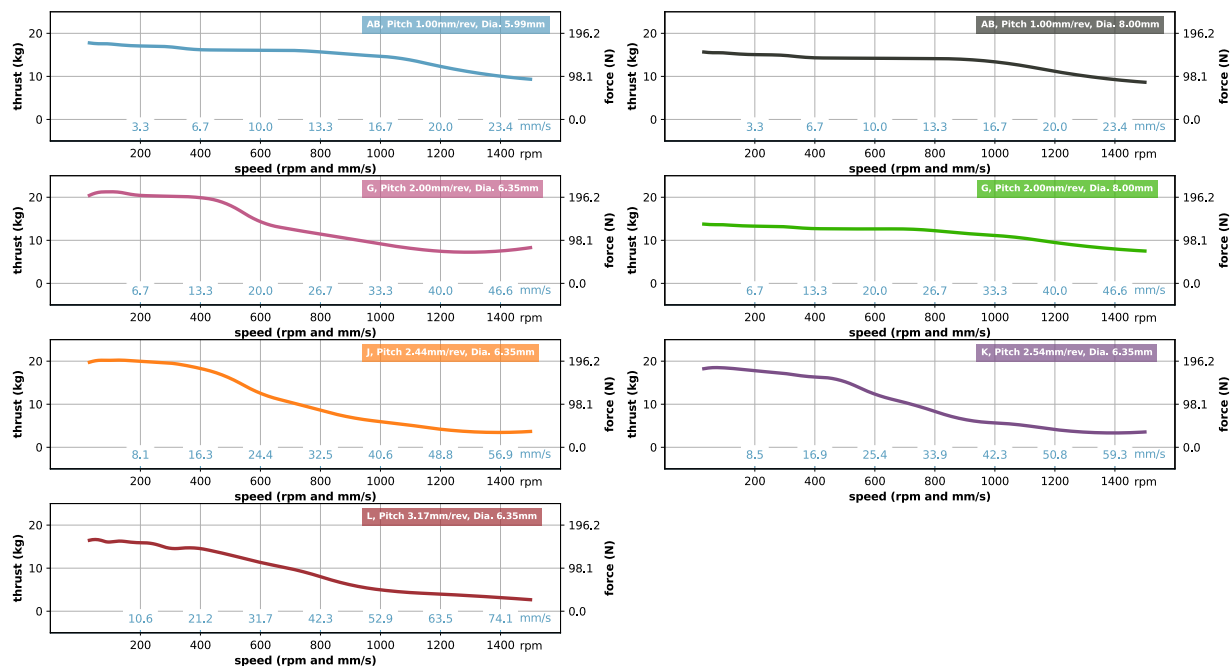
Speed-thrust curves for available screws, motor Nema 24, 24-2130, set 2. Motor driven in two-phase operation with 3A



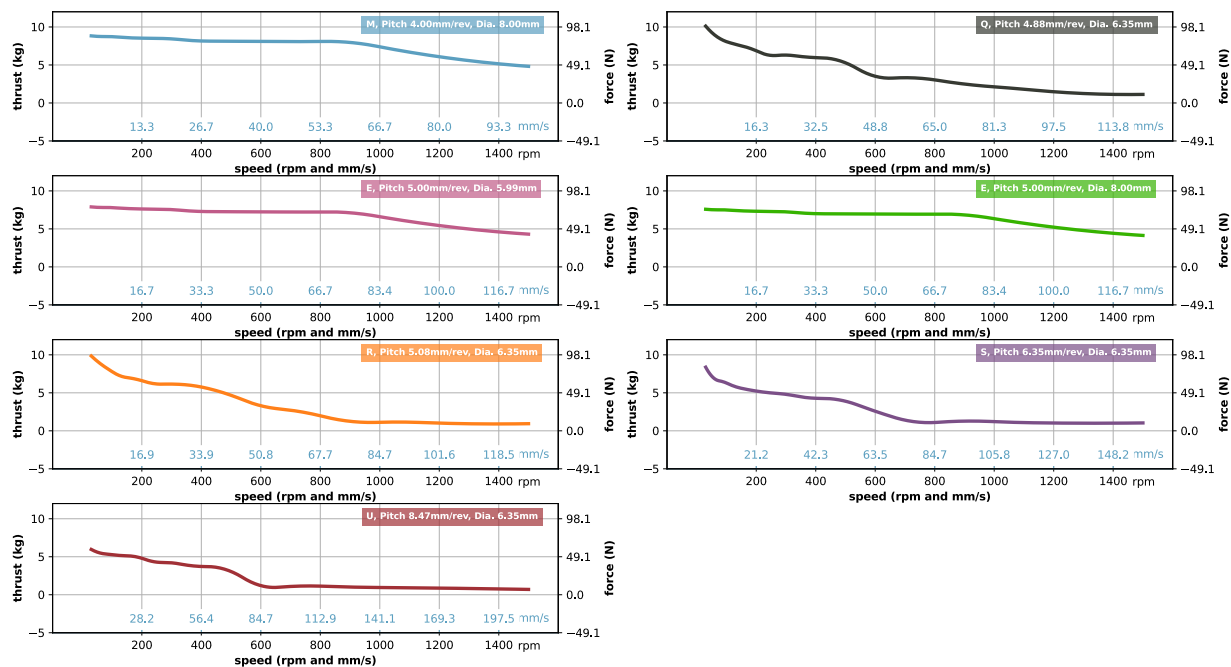
Speed-thrust curves for available screws, motor Nema 24, 24-2130, set 3. Motor driven in two-phase operation with 3A



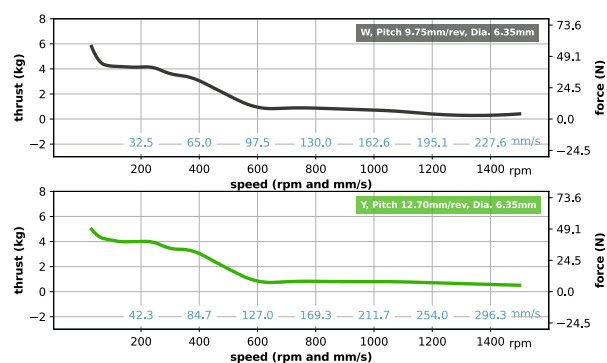
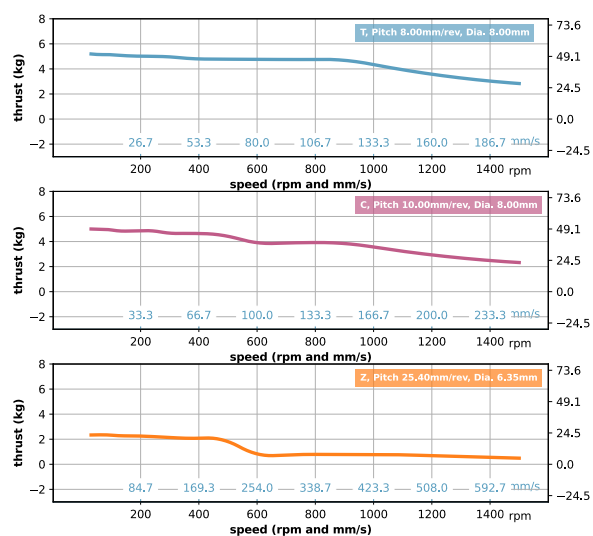
Speed-thrust curves for available screws, motor Nema 24, 24-2240, set 1. Motor driven in two-phase operation with 4A



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

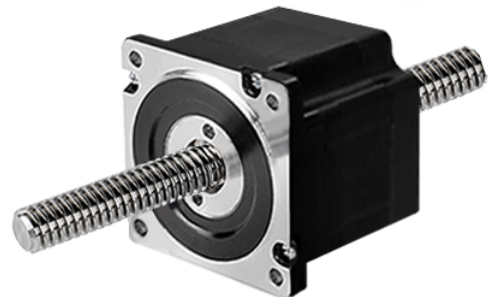


Speed-thrust curves for available screws, motor Nema 24, 24-2240, set 4. Motor driven in two-phase operation with 4A

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.

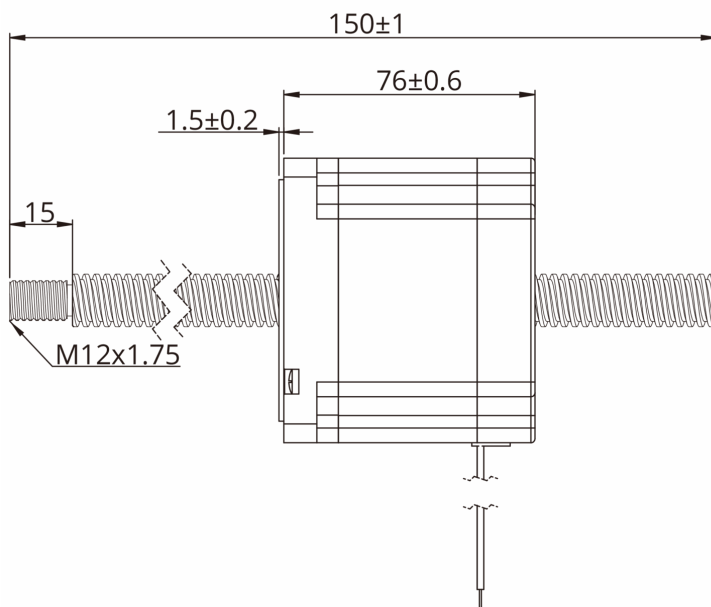

<https://www.kocomotion.de/produkt/slsla-size-34-86mm/>

Motor Characteristics	Unit	34-2113	34-2130	34-2155
Size	Nema	34	34	34
Flange size	mm	86	86	86
Rated voltage	V	12	5.7	2.85
Current	A	1.3	3	5.5
Winding 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

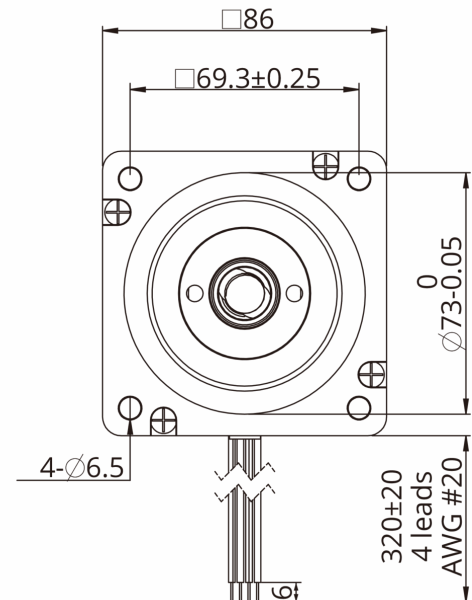
Lead Code	Lead Pitch [mm]	Screw Diameter [mm]	Travel per 1.8° Step [μm]	Left-hand thread available	Notes
K	2.54	15.875	12.7	-	*
L	3.175	15.875	15.9	-	*
R	5.08	15.875	25.4	-	*
S	6.35	15.875	31.8	-	*
Y	12.7	15.875	63.5	-	*
Z	25.4	15.875	127	-	*

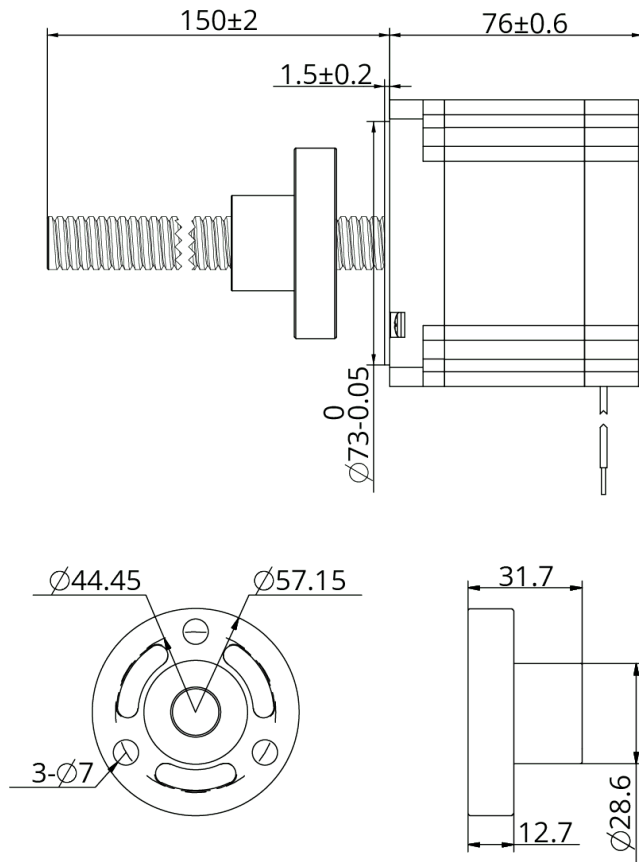
*only available for external and non captive type

Drawings

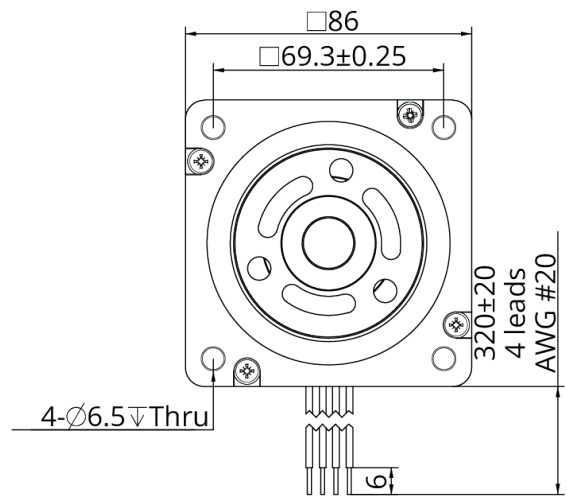


Non-Captive Actuator

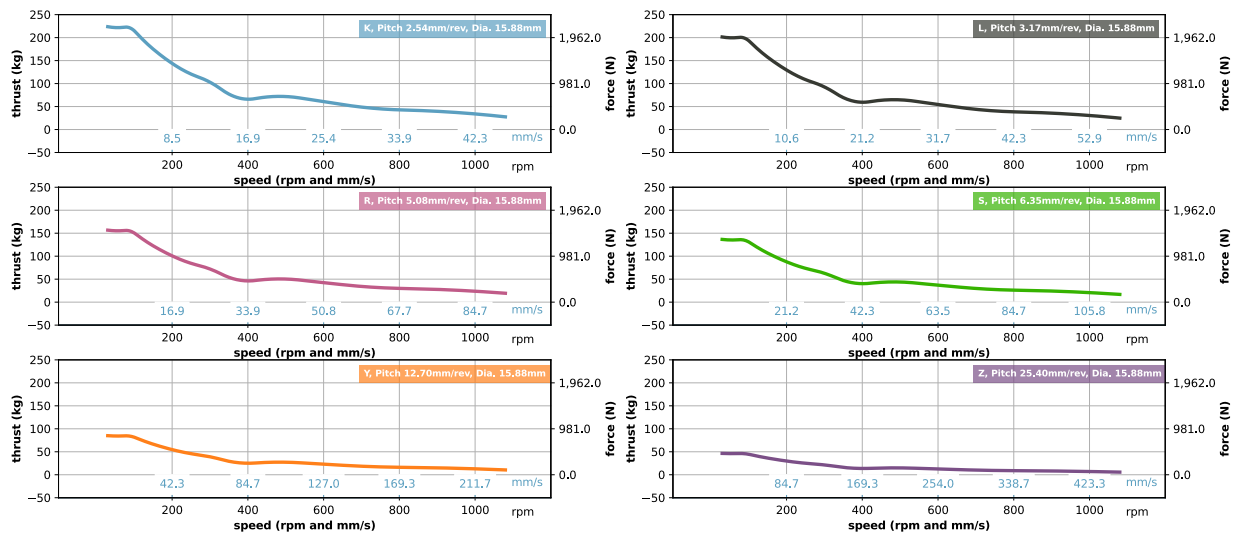




External Actuator



Speed/Thrust Curves

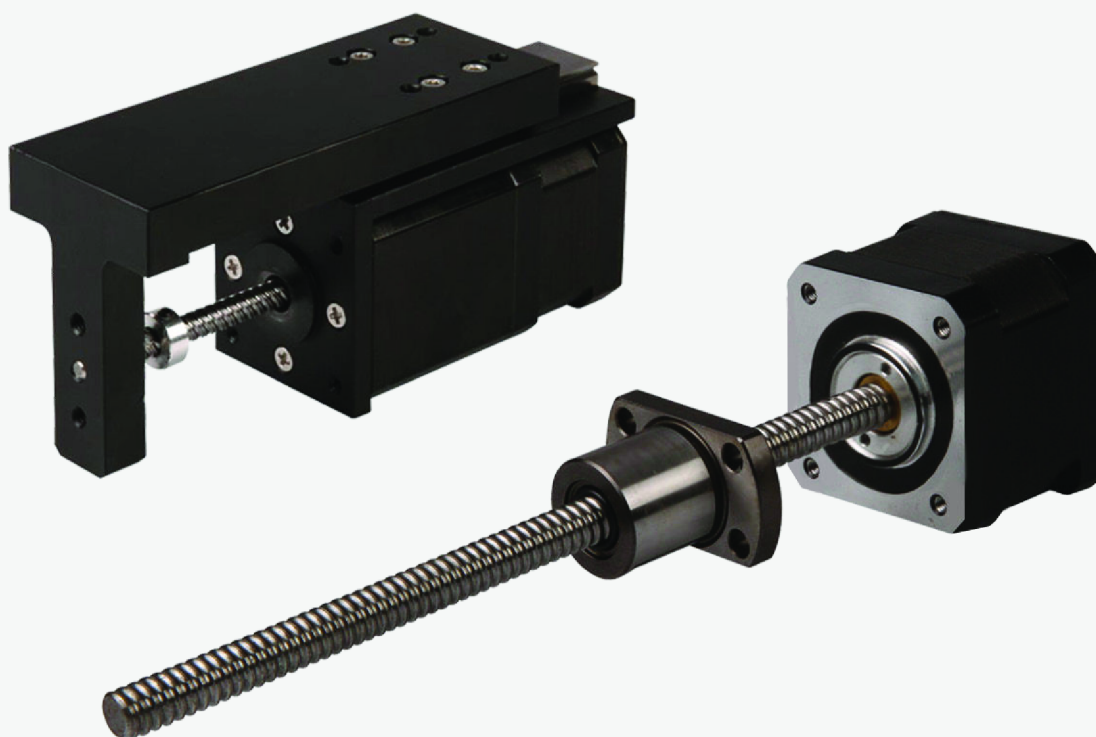


Speed-thrust curves for available screws, motor Nema 34, 34-2130. Motor driven in two-phase operation with 5.5A

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	2,0
		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/>

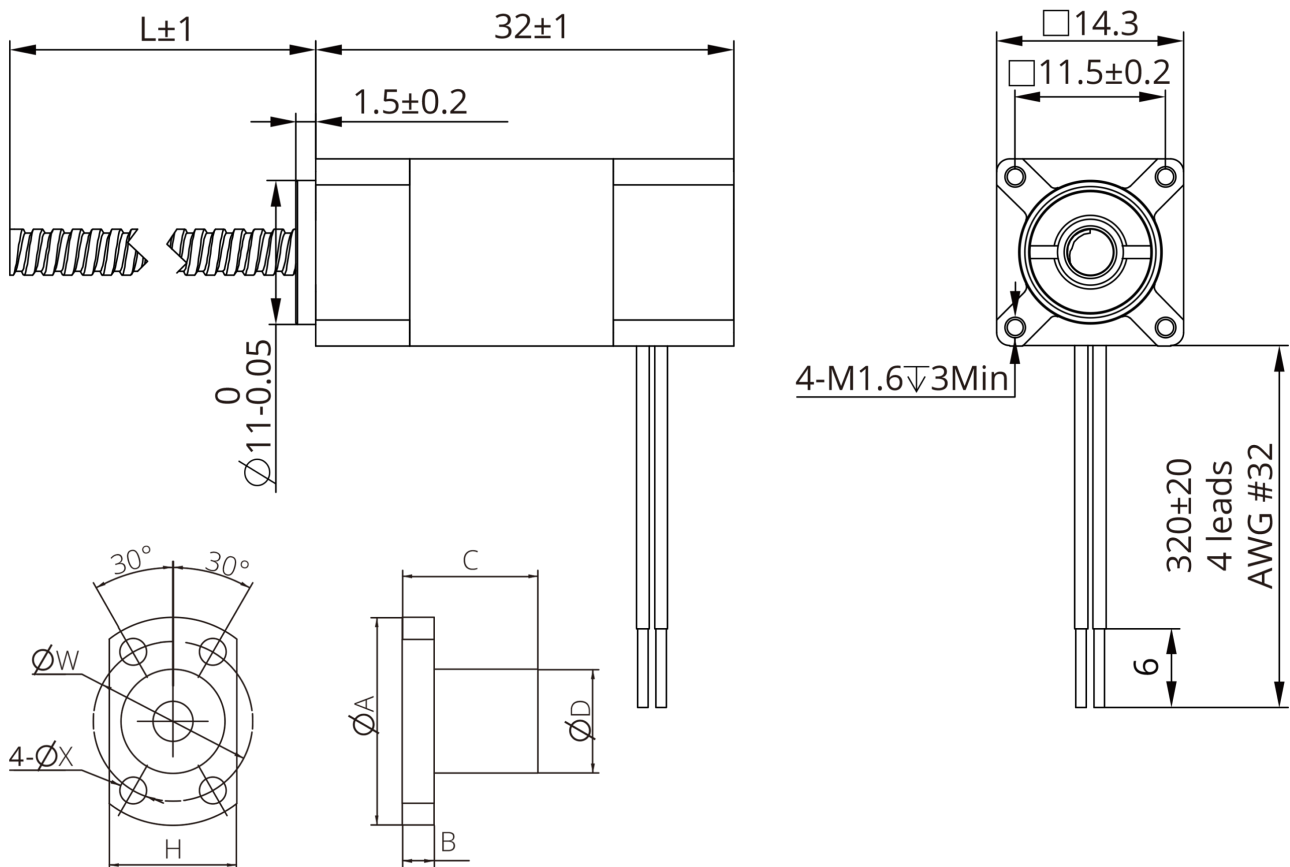
Motor Characteristics	Unit	6E2103
Size	Nema	6
Flange size	mm	14
Rated voltage	V	6.6
Current	A	0.25
Winding resistance	Ω	22
Inductance	mH	3.6
Lead Wire No.		4
Motor length	mm	30

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



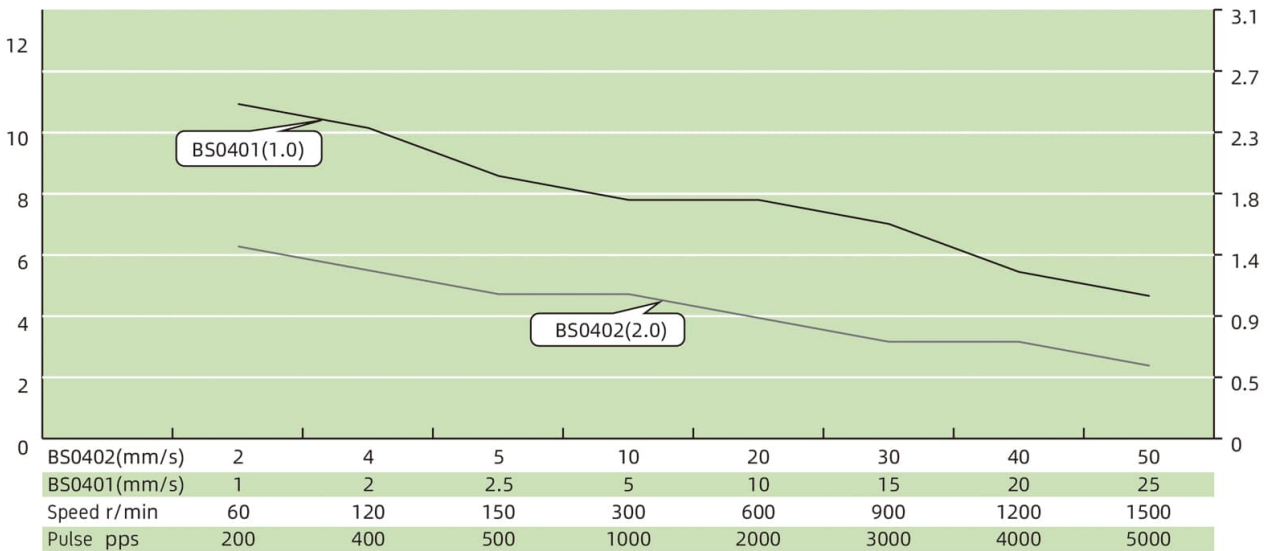
External Actuator

Speed/Thrust Curves

Size 6 Single Stack Speed Thrust Curves

N ※Bipolar, Chopper Driver, 100% Rated Current

(Recommended Load Limit 15N) lbs



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/>

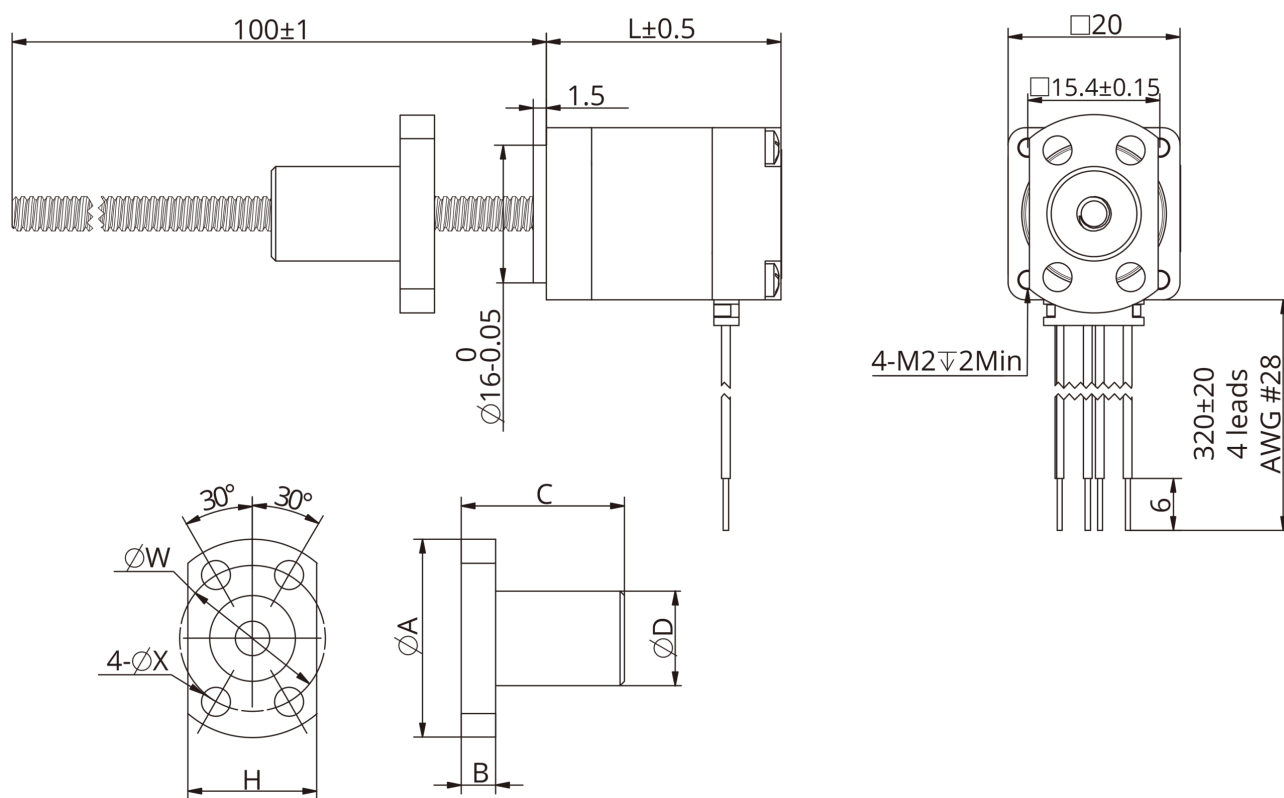
Motor Characteristics	Unit	8E2105	8E2205
Size	Nema	8	8
Flange size	mm	20	20
Rated voltage	V	2.5	4.4
Current	A	0.5	0.5
Winding resistance	Ω	5.1	8.8
Inductance	mH	1.5	2.7
Motor length	mm	27.2	38.1
Lead Wire No.		4	4

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

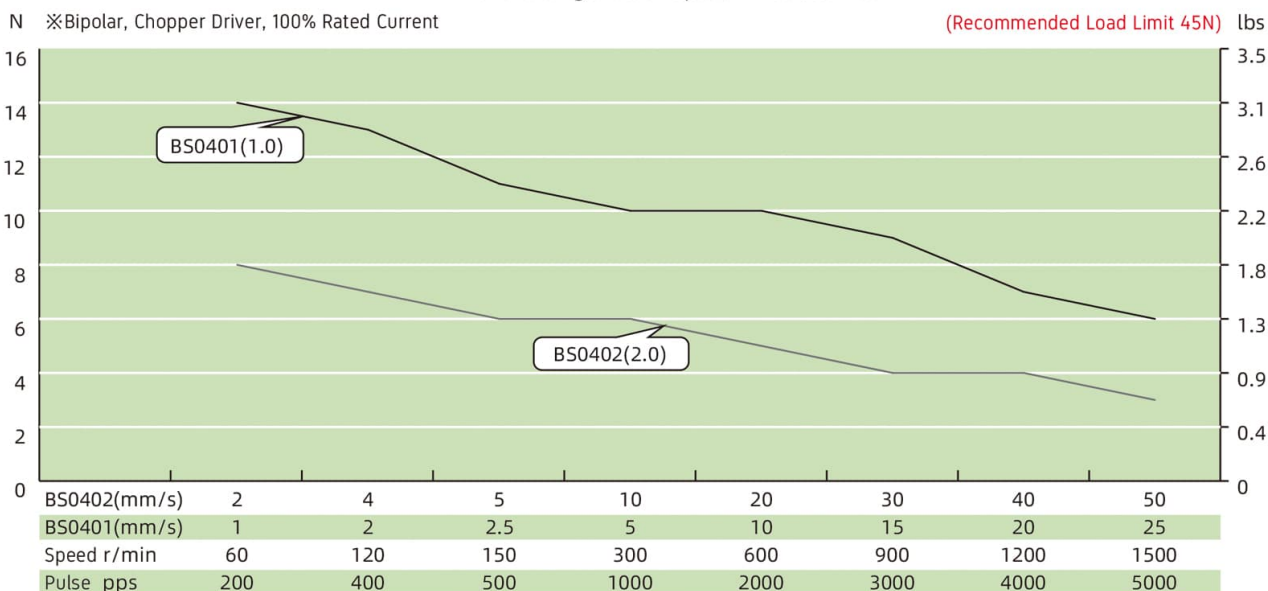
Drawings



External Actuator

Speed/Thrust Curves

Size 8 Single Stack Speed Thrust Curves

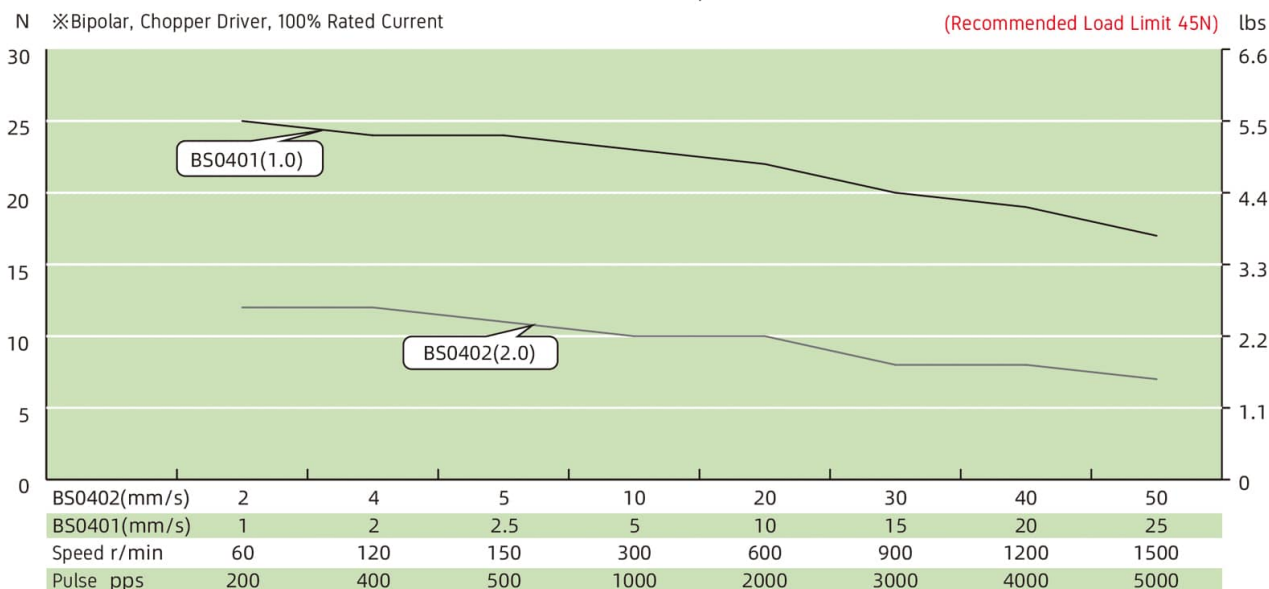


TEST CONDITION

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

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/>

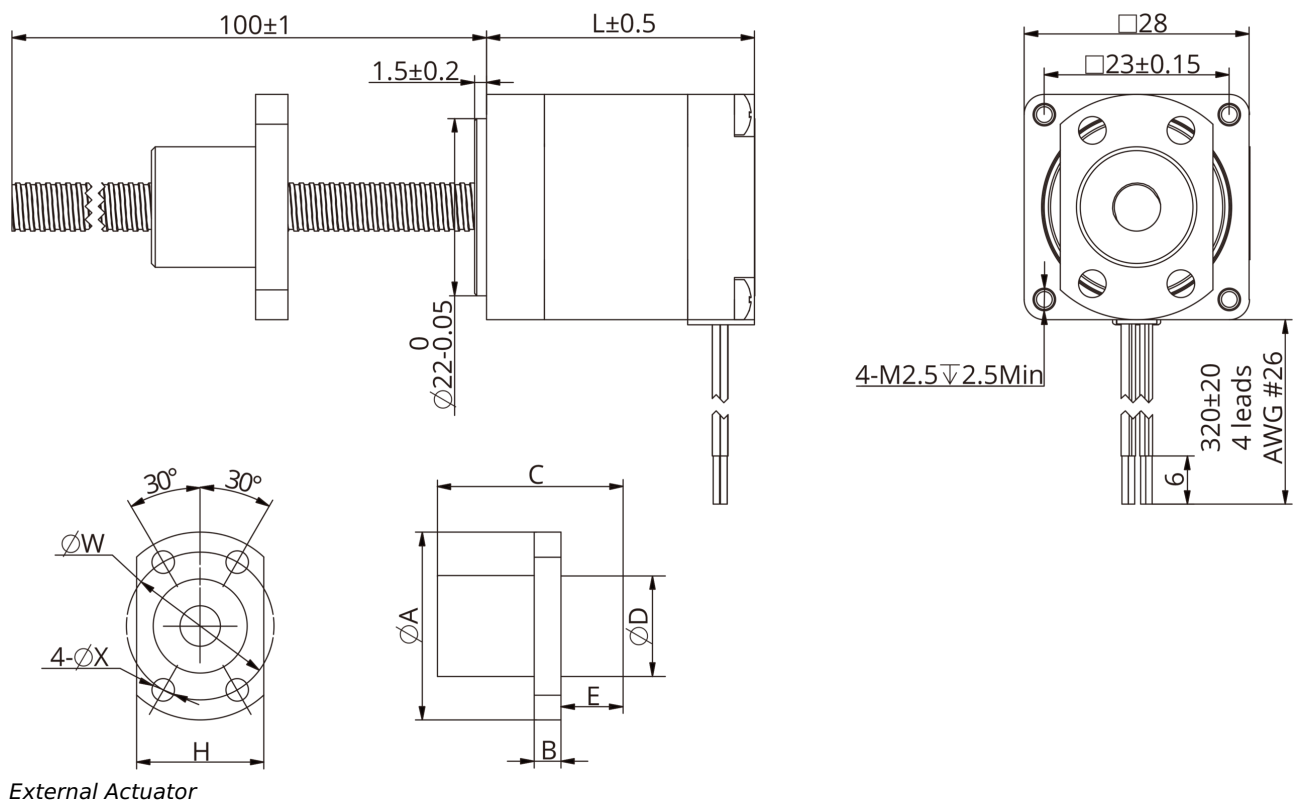
Motor Characteristics	Unit	11E2110	11E2209
Size	Nema	11	11
Flange size	mm	28	28
Rated voltage	V	2.1	3.9
Current	A	1	0.95
Winding resistance	Ω	2.1	4.1
Inductance	mH	1.5	4
Motor length	mm	33.35	45
Lead Wire No.		4	4

Ball screw type	0601	0602	0606
Ball size	Ø0.8	Ø0.8	Ø0.8
Number of threads	1	1	2
Thread direction	Right	Right	Right
Shaft root dia.	Ø5.3	Ø5.1	Ø5.2
Number of circuits	3.7x1	2.7x1	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

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

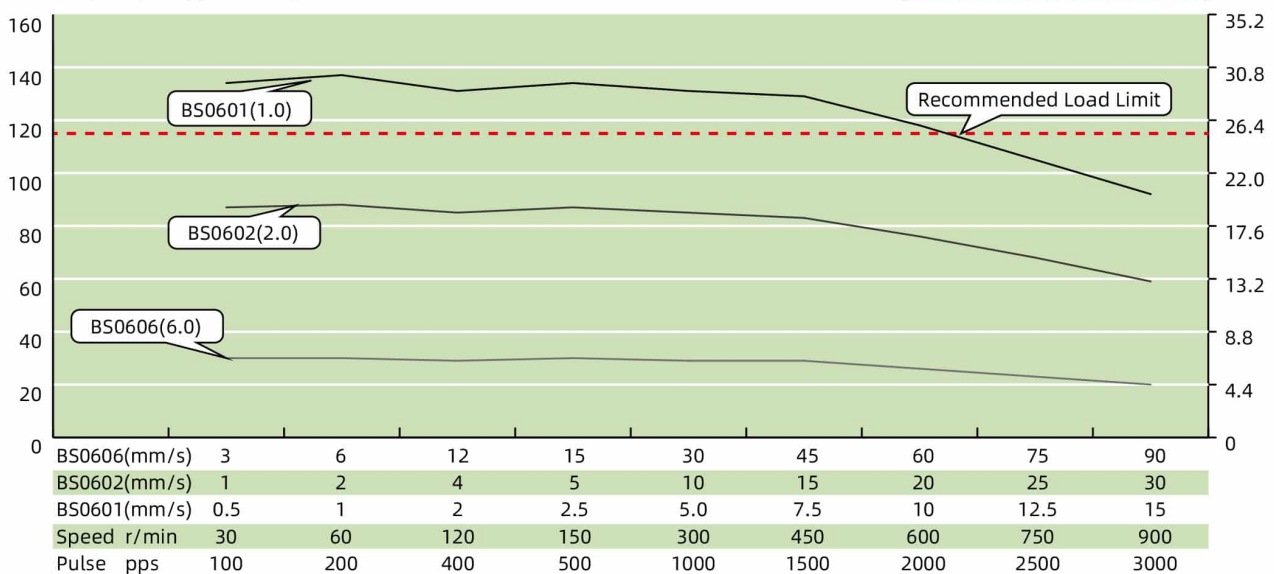


Speed/Thrust Curves

Size 11 Single Stack Speed Thrust Curves

N ※Bipolar, Chopper Driver, 100% Rated Current

(Recommended Load Limit 115N) lbs

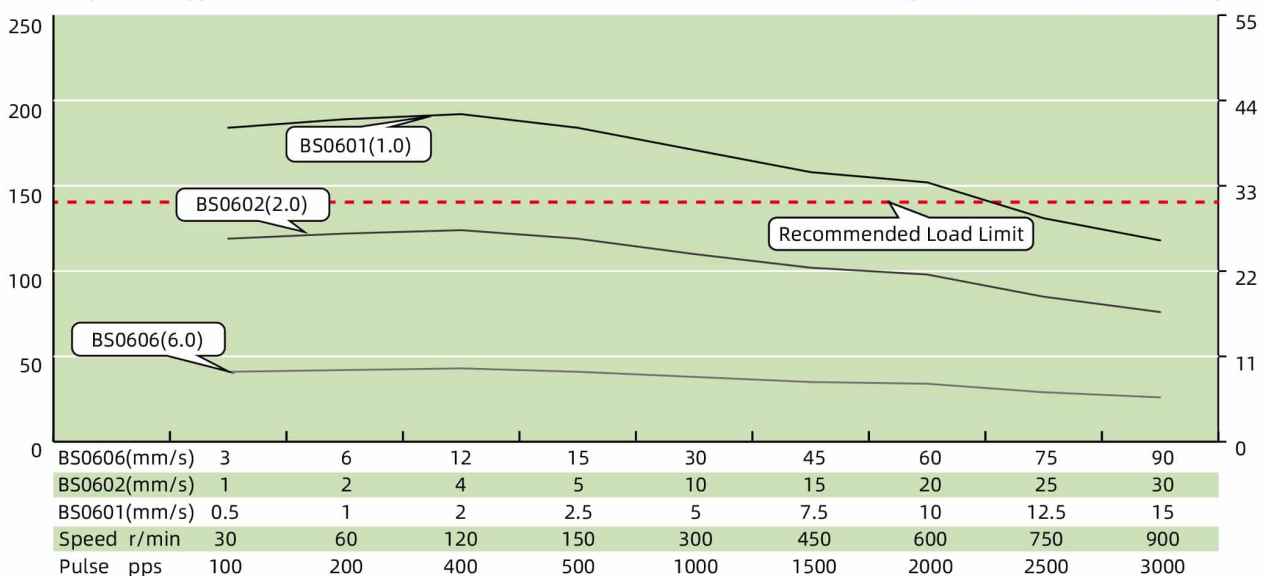


Speed-thrust curves for available screws, motor Nema 11, 11E2110

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
Rated voltage	V	3.5	2.7	6.0	4.0
Current	A	1.0	1.5	1.0	1.5
Winding 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

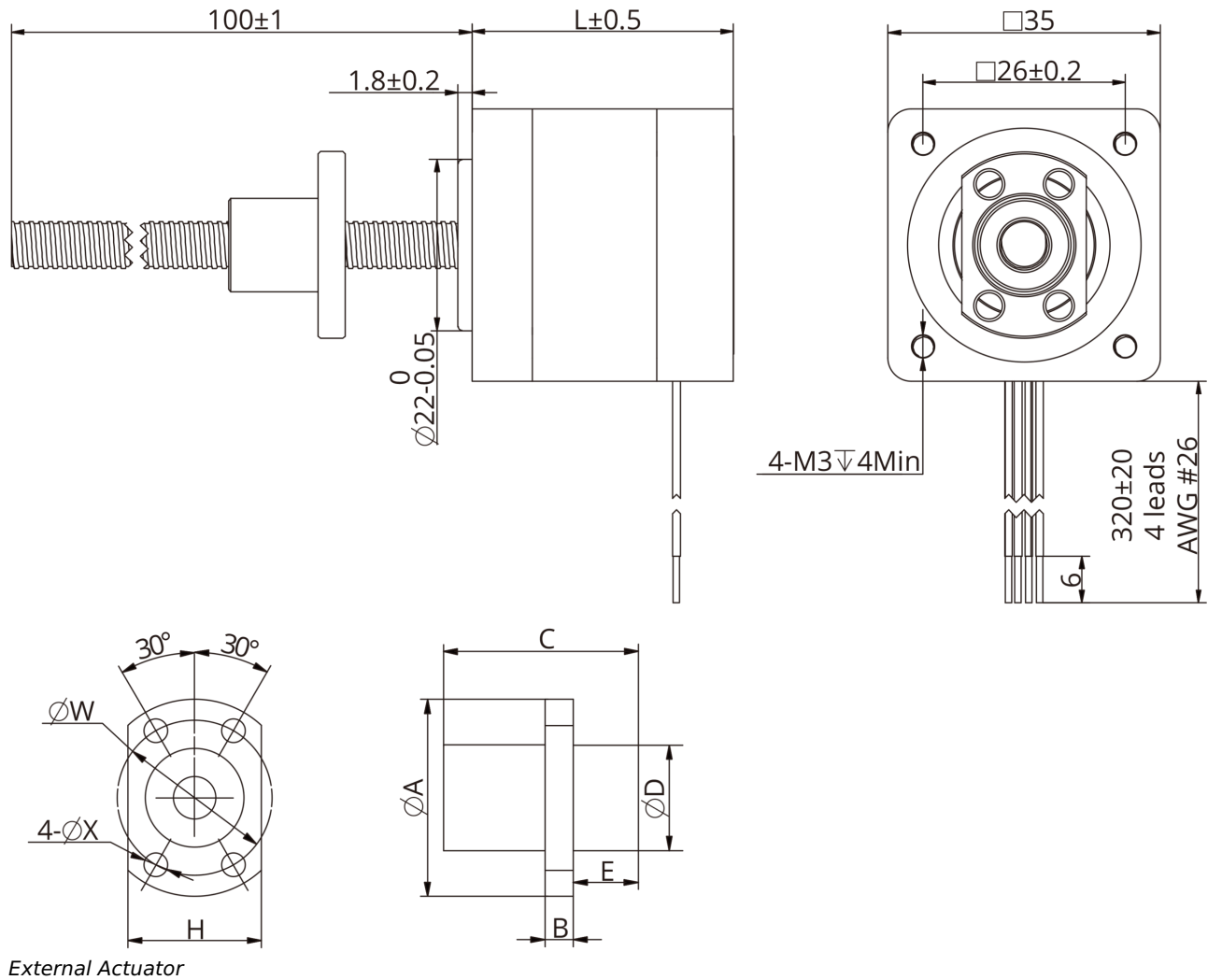
Ball screw type	0601	0602	0606	-	0801	0802	-
Ball size	Ø0.8	Ø0.8	Ø0.8	-	Ø0.8	Ø1.5875	-
Number of threads	1	1	2	-	1	1	-
Thread direction	Right	Right	Right	-	Right	Right	-
Shaft root dia.	Ø5.3	Ø5.1	Ø5.2	-	Ø7.3	Ø6.6	-
Number of circuits	3.7x1	2.7x1	1.6x2	-	3.7x1	3.7x1	-
Shaft nut material	SCM415H	SCM415H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

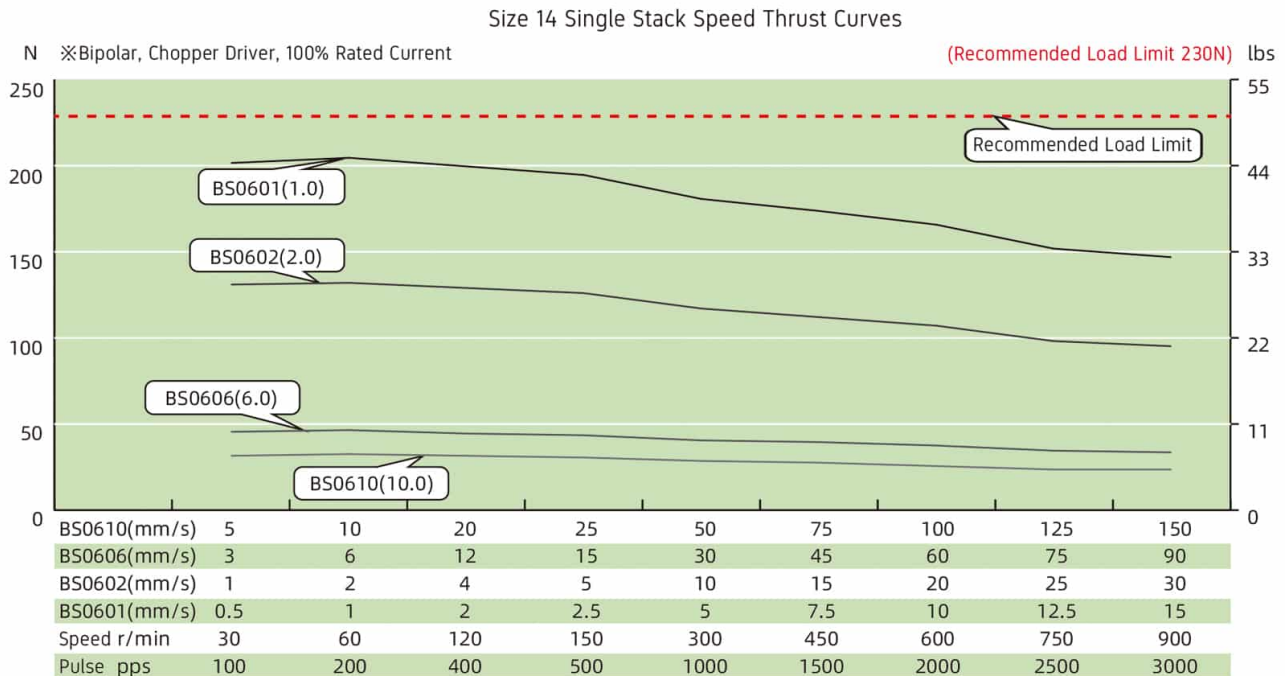
Nut size	A	B	C	D	H	W	X	E	Axial play	Dynamic load [N]	Static load [N]
BS0601	24	3.5	15	12	16	18	3.4	-	≤0.02	680	1200
BS0602	29	4	17	15	19	22	3.4	-	≤0.02	880	1500
BS0606	27	4	17.2	14	16	21	3.4	5.2	≤0.02	870	1450
BS0801	26	4	16	13	17	20	3.4	-	≤0.02	780	1650
BS0802	27	4	16	14	18	21	3.4	-	≤0.02	1300	2300
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



Speed/Thrust Curves

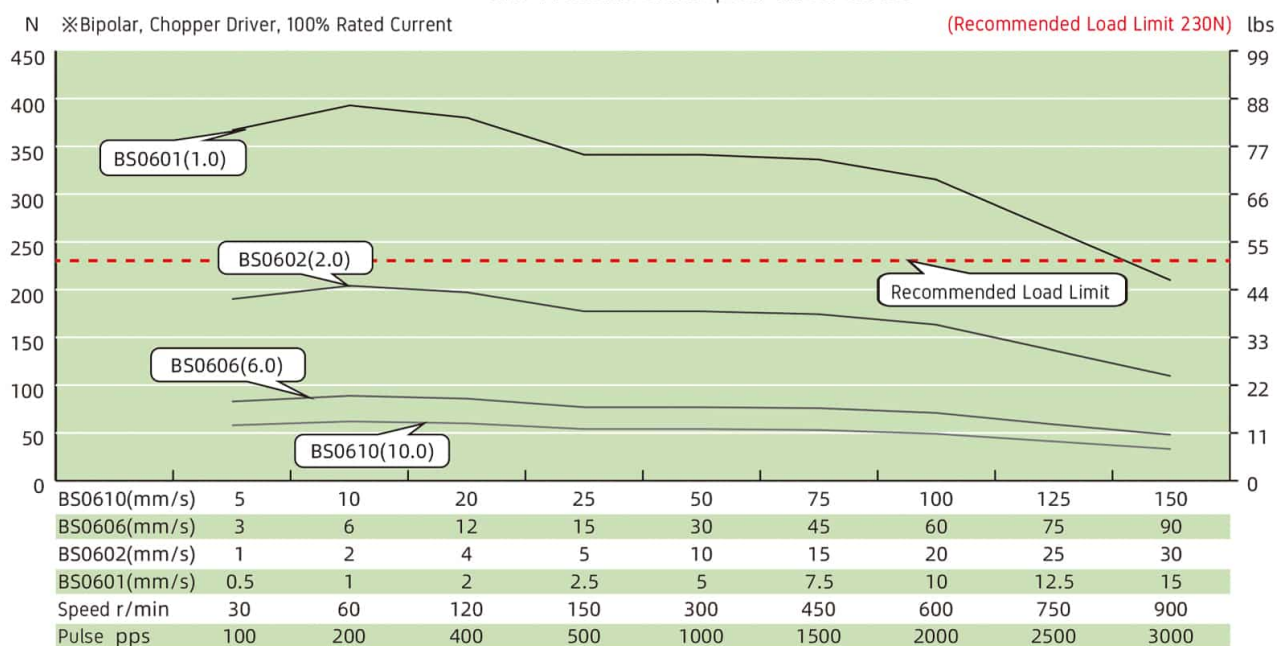


TEST CONDITION

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



TEST CONDITION

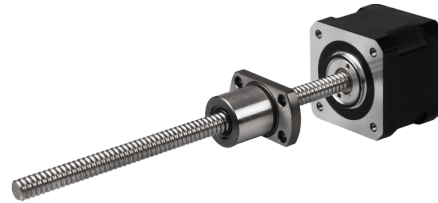
Testing Voltage: 24Vdc, Driver Model: DS-OLS2-FPD bipolar, chopper driver at rated current (rms). Motor's thrust will be changed with different voltage and driver. 50% thrust margin is recommended.

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/>

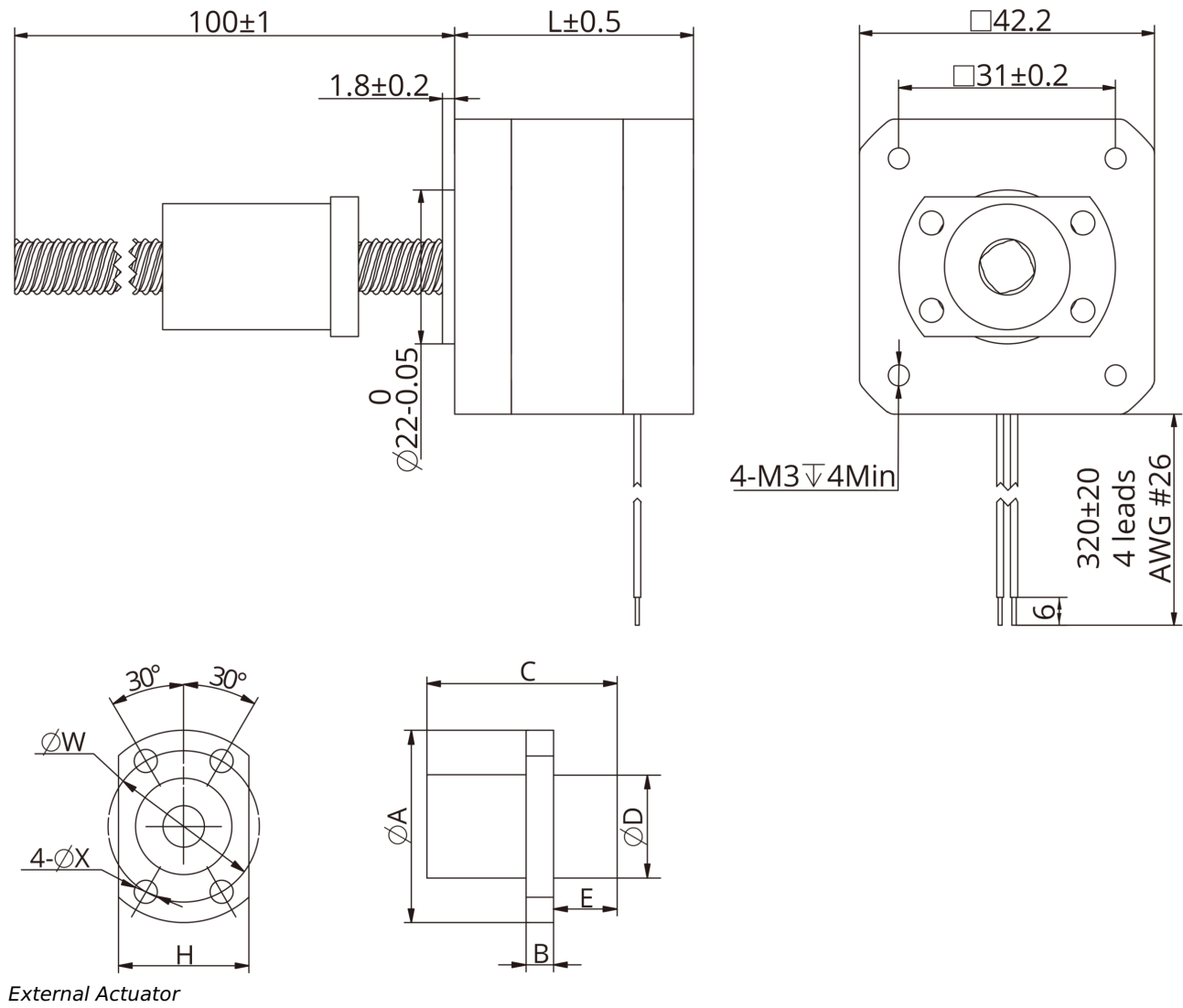
Motor Characteristics	Unit	17E2110	17E2115	17E2212	17E2225
Size	Nema	17	17	17	17
Flange size	mm	42	42	42	42
Rated voltage	V	3.8	2.78	4.56	2.5
Current	A	1.0	1.5	1.2	2.5
Winding resistance	Ω	3.8	1.85	3.8	1.0
Inductance	mH	5	2.2	8.0	1.8
Motor length	mm	34.1	34.1	48.1	48.1
Lead Wire No.		4	4	4	4

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	Anti-rust oil	-	Anti-rust oil	Anti-rust oil	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

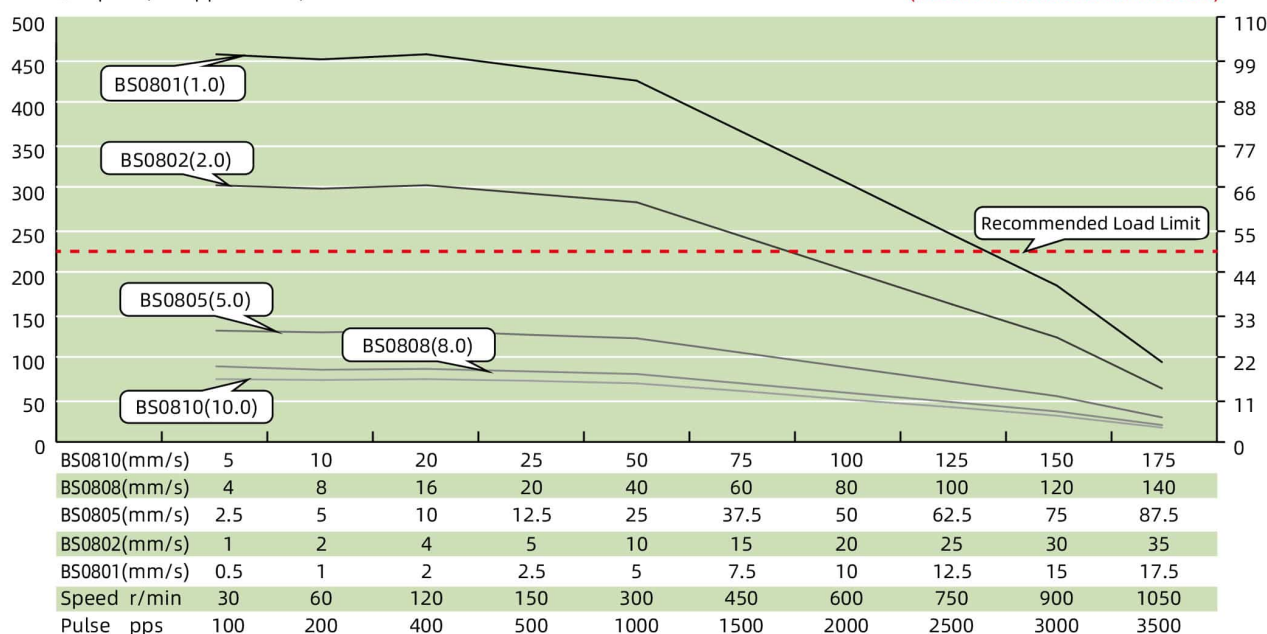


Speed/Thrust Curves

Size 17 Single Stack Speed Thrust Curves

N ※ Bipolar, Chopper Driver, 100% Rated Current

(Recommended Load Limit 230N) lbs

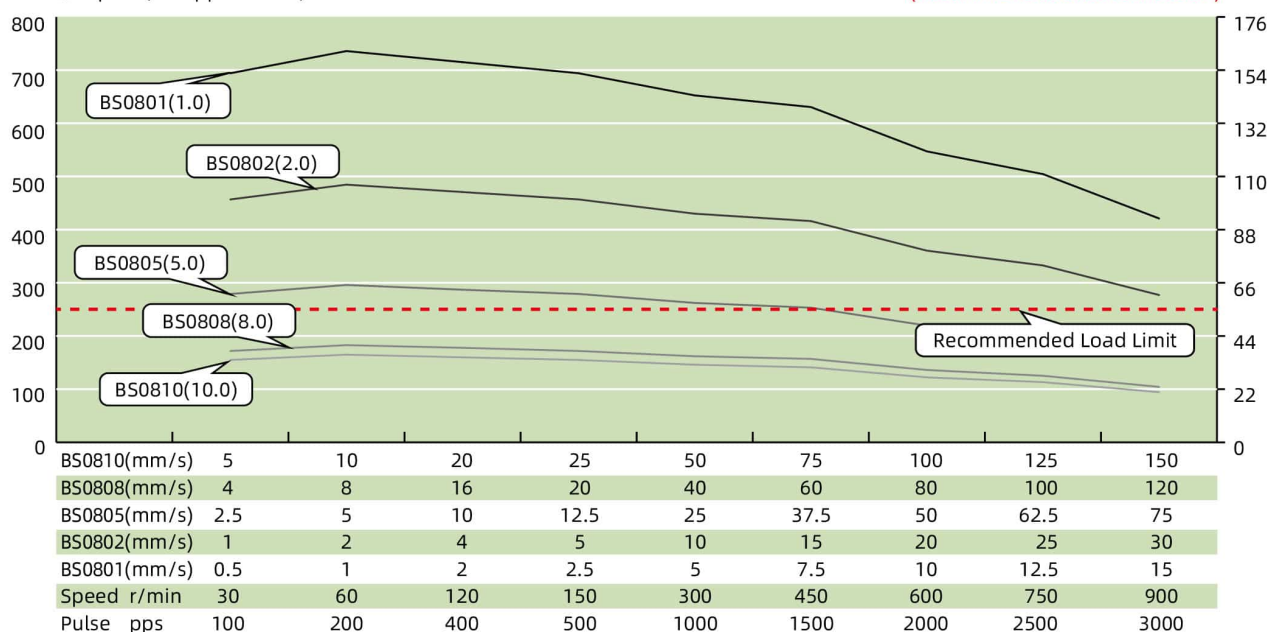


Speed-thrust curves for available screws, motor Nema 17, 17E2115

Size 17 Double Stack Speed Thrust Curves

N ※ Bipolar, Chopper Driver, 100% Rated Current

(Recommended Load Limit 230N) lbs

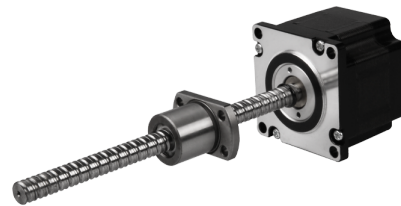


Speed-thrust curves for available screws, motor Nema 17, 17E2225

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
Rated voltage	V	3.5	2.4	5.0	2.8
Current	A	2.0	3.0	2.5	4.0
Winding 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

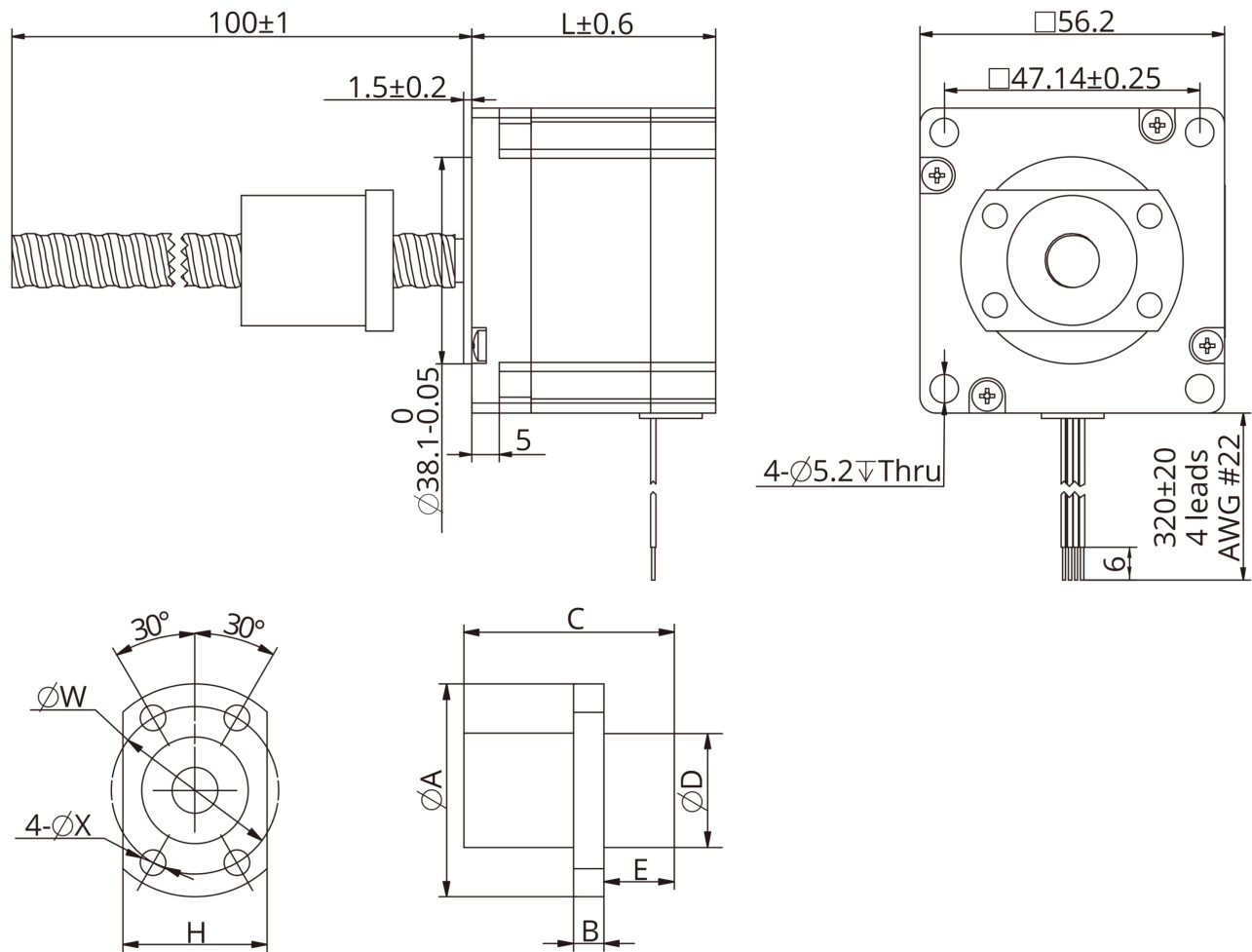
Ball screw type	1002	1004	1005	1010	1015	1020	1202
Ball size	Ø1.5875	Ø2.0	Ø2.0	Ø2.0	Ø2.0	Ø1.5875	Ø1.5875
Number of threads	1	1	1	2	2	4	1
Thread direction	Right	Right	Right	Right	Right	Right	Right
Shaft root dia.	Ø8.6	Ø8.2	Ø8.2	Ø8.4	Ø8.4	Ø8.7	Ø10.6
Number of circuits	3.7x1	2.7x1	2.7x1	1.6x2	1.6x2	0.7x4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

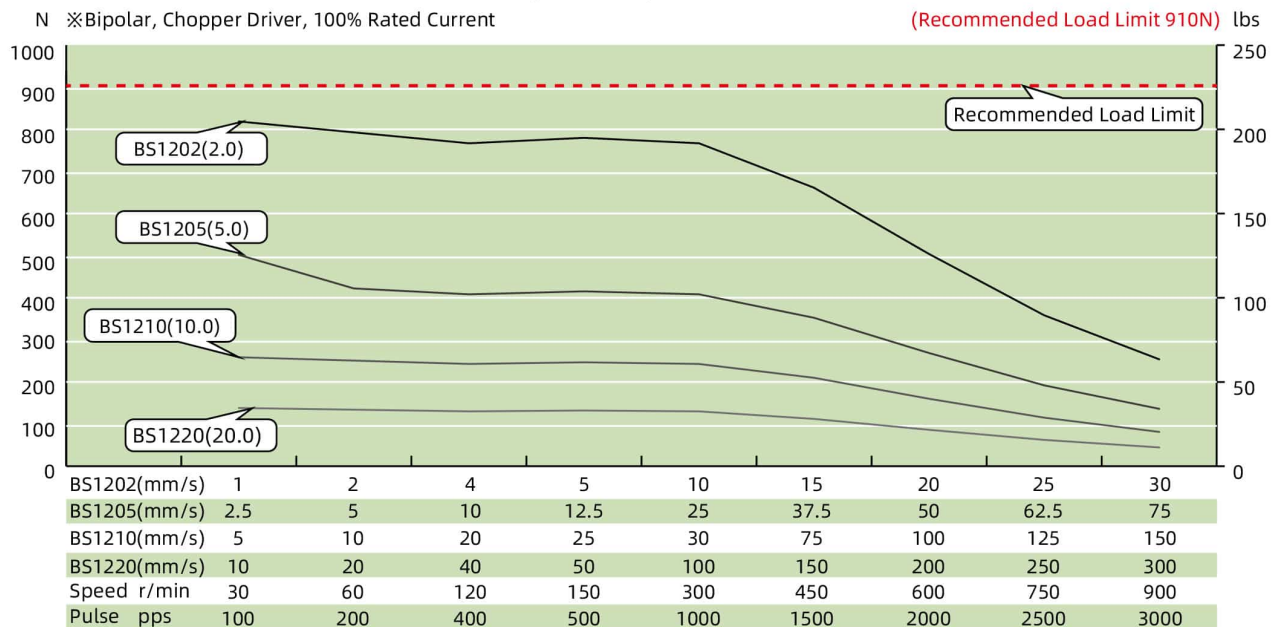
Drawings



External Actuator

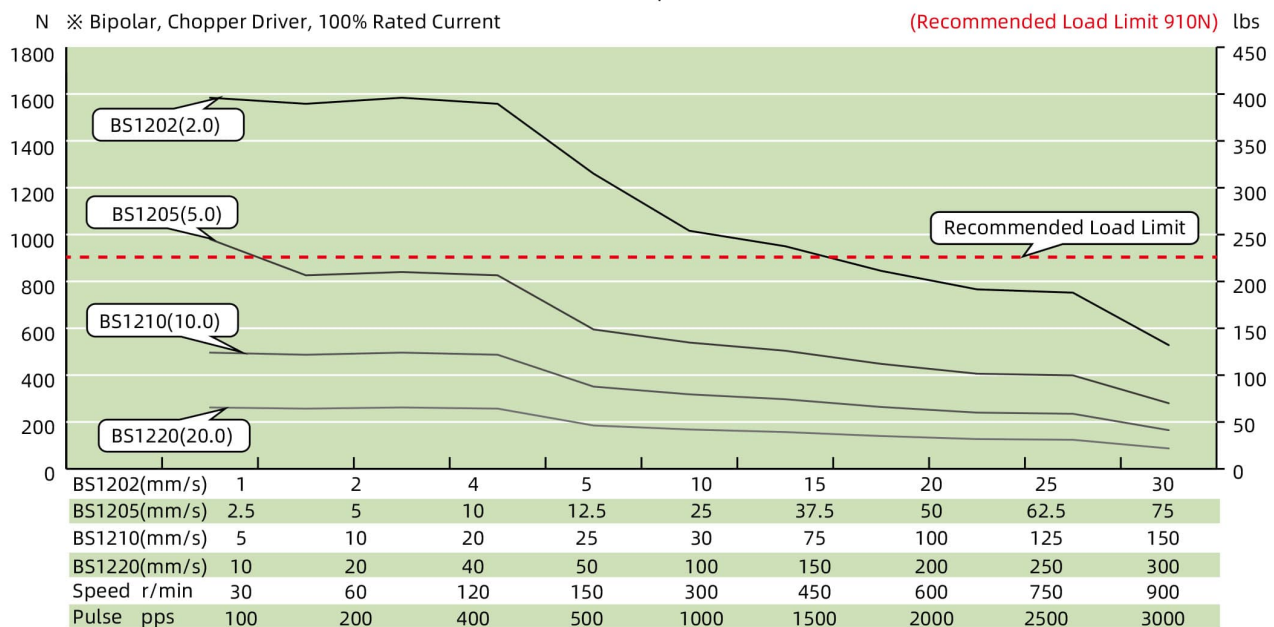
Speed/Thrust Curves

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

DC Power-Off Motor Brakes

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
Winding resistance	Ω	55 +/- 10%	143.7 +/- 10%	217 +/- 10%	145 +/- 10%
Power Consumption	W	9.6	5.5	4	5
Holding 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%
Gyratation gap	°	1	1	1
Emergency Brake Cycles	cycles	200	200	200
Lifetime	cycles	500000	500000	500000
Noise Level	dB	<60	<60	<60
Winding resistance	Ω	141 +/- 10%	141 +/- 10%	69 +/- 10%
Power Consumption	W	5	5	12
Holding 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

20mm Gripper (6mm Stroke)

Based on our own design and development of through motor foundation, for 20mm motor size, the stroke of 6mm Gripper can be selected. The structure is compact and simple, which can replace the pneumatic clamping claw, reduce the use noise, and effectively improve the accuracy. High resolution of encoder based closed loop torque control is optional (DS-CLS9-FRS4-01).


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

Motor Characteristics	Unit	8N2105	8N2205
Rated voltage	V	2.5	4.4
Current	A	0.5	0.5
Winding resistance	Ω	5.1	8.8
Inductance	mH	1.5	2.7
Lead Wire No.		4	4
Motor length	mm	27.2	38.1

Motor Size	Body Length	Part Code	Stroke	Lead Code	Lead	Max. Gripping Force	Rec. Gripping Force
20 mm	27.2 mm	8N2105	6 mm	AB	1 mm	25 N	13 N
20 mm	27.2 mm	8N2105	6 mm	G	2 mm	21 N	11 N
20 mm	27.2 mm	8N2105	6 mm	M	4 mm	11 N	6 N
20 mm	38.1 mm	8N2205	6 mm	AB	1 mm	50 N	25 N
20 mm	38.1 mm	8N2205	6 mm	G	2 mm	36 N	18 N
20 mm	38.1 mm	8N2205	6 mm	M	4 mm	32 N	16 N

Drawings

28mm Gripper (6mm, 12mm Stroke)

Based on our own design and development of through motor foundation, for 28mm motor size, the stroke of 6mm/12mm Gripper can be selected. The structure is compact and simple, which can replace the pneumatic clamping claw, reduce the use noise, and effectively improve the accuracy. High resolution of encoder based closed loop torque control is optional (DS-CLS9-FRS4-01).



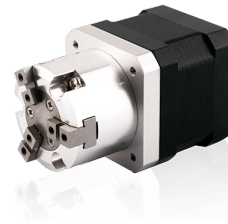
<https://www.kocomotion.de/produkt/gripper-size-28mm/>

Motor Characteristics	Unit	11N2105	11N2110	11N2210	11N2216
Rated voltage	V	4.5	2.2	4.1	2.4
Current	A	0.5	1	1	1.6
Winding resistance	Ω	9.1	2.1	4.1	1.5
Inductance	mH	6	1.5	4	1.3
Lead Wire No.		4	4	4	4
Motor length	mm	33.5	33.5	45	45

Motor Size	Body Length	Part Code	Stroke	Lead Code	Lead	Max. Gripping Force	Rec. Gripping Force
28 mm	33.5 mm	11N2105, 11N2110	6 mm, 12 mm	A	0.635 mm	110 N	55 N
28 mm	33.5 mm	11N2105, 11N2110	6 mm, 12 mm	D	1.27 mm	84 N	42 N
28 mm	33.5 mm	11N2105, 11N2110	6 mm, 12 mm	K	2.54 mm	56 N	28 N
28 mm	33.5 mm	11N2105, 11N2110	6 mm, 12 mm	R	5.08 mm	36 N	18 N
28 mm	45 mm	11N2210, 11N2216	6 mm, 12 mm	A	0.635 mm	140 N	70 N
28 mm	45 mm	11N2210, 11N2216	6 mm, 12 mm	D	1.27 mm	120 N	60 N
28 mm	45 mm	11N2210, 11N2216	6 mm, 12 mm	K	2.54 mm	100 N	50 N
28 mm	45 mm	11N2210, 11N2216	6 mm, 12 mm	R	5.08 mm	60 N	30 N

Drawings

35mm Gripper (3-Finger)


<https://www.kocomotion.de/produkt/35mm-3-finger-gripper/>


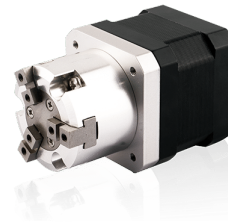
Motor Characteristics	Unit	14N2105	14N2110	14N2115	14N2205
Rated voltage	V	6.6	3.5	2.7	12.0
Current	A	0.5	1.0	1.5	0.5
Winding resistance	Ω	13.2	3.5	1.8	24.0
Inductance	mH	14.0	3.6	1.9	29.0
Weight	g	189	189	189	210
Lead wire No.		4	4	4	4
Motor length	mm	33.6	33.6	33.6	33.6

Motor Characteristics	Unit	14N2210	14N2215
Rated voltage	V	6.0	4.0
Current	A	1.0	1.5
Winding resistance	Ω	6.0	2.7
Inductance	mH	7.2	3.2
Weight	g	210	210
Lead wire No.		4	4
Motor length	mm	45.6	45.6

Motor Size	Body Length	Part Code	Stroke	Screw Code	Lead	Max. Gripping Force	Rec. Gripping Force
35 mm	33.6	14N2105, 14N2110, 14N2115	6 mm	AA	0.6096 mm	85 N	42.5 N
35 mm	33.6	14N2105, 14N2110, 14N2115	6 mm	D	1.27 mm	73 N	36.5 N
35 mm	33.6	14N2105, 14N2110, 14N2115	6 mm	K	2.54 mm	42 N	21 N
35 mm	33.6	14N2105, 14N2110, 14N2115	6 mm	R	5.08 mm	21 N	10.5 N
35 mm	45.6	14N2205, 14N2210, 14N2215	6 mm	AA	0.6096 mm	193 N	96.5 N
35 mm	45.6	14N2205, 14N2210, 14N2215	6 mm	D	1.27 mm	184 N	92 N
35 mm	45.6	14N2205, 14N2210, 14N2215	6 mm	K	2.54 mm	110 N	55 N
35 mm	45.6	14N2205, 14N2210, 14N2215	6 mm	R	5.08 mm	67 N	33.5 N

Drawings

42mm Gripper (3-Finger)


<https://www.kocomotion.de/produkt/42mm-gripper-3-finger/>


Motor Characteristics	Unit	17N2105	17N2110	17N2115	17N2205
Rated voltage	V	7.2	3.8	2.85	11.0
Current	A	0.5	1.0	1.5	0.5
Winding resistance	Ω	14.4	3.8	1.9	22.0
Inductance	mH	19.8	5.0	2.2	46.0
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	17N2212	17N2225
Rated voltage	V	4.5	2.5
Current	A	1.2	2.5
Winding resistance	Ω	3.8	1.0
Inductance	mH	8.0	1.8
Weight	g	386	386
Lead wire No.		4	4
Motor length	mm	48.1	48.1

Motor Size	Body Length	Part Code	Stroke	Screw Code	Lead	Max. Gripping Force	Rec. Gripping Force
42 mm	34.1 mm	17N2105, 17N2110, 17N2115	6 mm	AA	0.6096 mm	270 N	135 N
42 mm	34.1 mm	17N2105, 17N2110, 17N2115	6 mm	D	1.27 mm	163 N	81.5 N
42 mm	34.1 mm	17N2105, 17N2110, 17N2115	6 mm	K	2.54 mm	91 N	45.5 N
42 mm	34.1 mm	17N2105, 17N2110, 17N2115	6 mm	R	5.08 mm	56 N	28 N
42 mm	48.1 mm	17N2205, 17N2212, 17N2225	6 mm	AA	0.6096 mm	371 N	185.5 N
42 mm	48.1 mm	17N2205, 17N2212, 17N2225	6 mm	D	1.27 mm	336 N	168 N
42 mm	48.1 mm	17N2205, 17N2212, 17N2225	6 mm	K	2.54 mm	204 N	102 N
42 mm	48.1 mm	17N2205, 17N2212, 17N2225	6 mm	R	5.08 mm	146 N	73 N

Drawings

DLM

DLM - Size 20mm

DLM Size 20 mm is a compact, reliable lead screw linear module for precise linear motion and customized integrated solutions. It offers multiple lead and stroke options, dynamic force up to 445 N, static force up to 720 N, and travel per step from 0.0015 to 0.04 mm.


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

Motor Characteristics	Unit	8E2105	8E2205
Rated voltage	V	2.5	4.4
Current	A	0.5	0.5
Winding resistance	Ω	5.1	8.8
Inductance	mH	1.5	2.7
Motor length	mm	27.2	38.1
Lead Wire No.		4	4

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
3.5 mm	0.3 mm	AF	0.0015 mm
3.5 mm	0.6096 mm	AA	0.003048 mm
3.5 mm	1 mm	AB	0.005 mm
3.5 mm	1.2192 mm	B	0.006096 mm
3.5 mm	2 mm	G	0.01 mm
3.5 mm	2.4384 mm	J	0.012192 mm
3.5 mm	4 mm	M	0.02 mm
3.5 mm	8 mm	T	0.04 mm

Mechanical Specifications	
Max dynamic force for 100km stage travel distance C100B(dyn)	445 N
Max static force in movement direction Co(stat)	720 N
Max torque around roll axis (M_roll)	2.6 Nm
Max torque around pitch axis (M_pitch)	1.65 Nm
Max torque around yaw axis (M_yaw)	1.65 Nm

Drawings

Speed/Thrust Curves

DLM

DLM - Size 28mm

DLM 28mm is a compact lead screw linear module for precise, reliable linear motion. It supports customized stroke and lead options, with travel per step from 0.0016 to 0.0508 mm. The series delivers up to 445 N dynamic force and 720 N static force for integrated linear positioning solutions.


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

Motor Characteristics	Unit	11E2105	11E2110	11E2210	11E2216
Rated voltage	V	4.55	2.1	3.9	2.4
Current	A	0.5	1	0.95	1.6
Winding resistance	Ω	9.1	2.1	4.1	1.5
Inductance	mH	6	1.5	4	1.3
Motor length	mm	33.35	33.35	45	45
Lead Wire No.		4	4	4	4

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
4.77 mm	0.3175 mm	AL	0.0016 mm
4.77 mm	0.635 mm	A	0.003175 mm
4.77 mm	1.27 mm	D	0.00635 mm
4.77 mm	1.5875 mm	F	0.0079 mm
4.77 mm	2.54 mm	X	0.0127 mm
4.77 mm	4.8768 mm	Q	0.0244 mm
4.77 mm	5.08 mm	R	0.0254 mm
4.77 mm	10.16 mm	X	0.0508 mm

Mechanical Specifications	
Max dynamic force for 100km stage travel distance C100B(dyn)	445 N
Max static force in movement direction Co(stat)	720 N
Max torque around roll axis (M_roll)	2.6 Nm
Max torque around pitch axis (M_pitch)	1.65 Nm
Max torque around yaw axis (M_yaw)	1.65 Nm

Drawings

Speed/Thrust Curves

DLM

DLM - Size 35mm

DLM 35mm is a compact lead screw linear module for precise linear motion in integrated machine designs. It offers customizable stroke and lead options, with max dynamic force up to 785 N, max static force up to 1247.5 N, and multiple travel-per-step configurations for application-specific positioning.


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

Motor Characteristics	Unit	14E2105	14E2110	14E2115	14E2205
Rated voltage	V	6.6	3.5	2.7	12
Current	A	0.5	1.0	1.5	0.5
Winding resistance	Ω	13.2	3.5	1.8	24
Inductance	mH	14	3.6	1.9	29
Motor length	mm	33.6	33.6	33.6	45.6
Lead Wire No.		4	4	4	4

Motor Characteristics	Unit	14E2210	14E2215
Rated voltage	V	6.0	4.0
Current	A	1.0	1.5
Winding resistance	Ω	6.0	2.7
Inductance	mH	7.2	3.2
Motor length	mm	45.6	45.6
Lead Wire No.		4	4

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
6.35 mm	0.024 mm	AA	0.003048 mm
6.35 mm	0.0394 mm	AB	0.005 mm
6.35 mm	0.025 mm	A	0.003175 mm
6.35 mm	0.048 mm	B	0.006096 mm
6.35 mm	0.05 mm	D	0.00635 mm
6.35 mm	0.0625 mm	F	0.0079 mm
6.35 mm	0.096 mm	J	0.0122 mm
6.35 mm	0.1 mm	K	0.0127 mm
6.35 mm	0.125 mm	L	0.0159 mm
6.35 mm	0.192 mm	Q	0.024 mm
6.35 mm	0.2 mm	R	0.0254 mm
6.35 mm	0.25 mm	S	0.0318 mm
6.35 mm	0.333 mm	U	0.0423 mm
6.35 mm	0.384 mm	W	0.0488 mm
6.35 mm	0.5 mm	Y	0.0635 mm
6.35 mm	1 mm	Z	0.127 mm
8 mm	0.1575 mm	M	0.02 mm
8 mm	0.315 mm	T	0.04 mm
8 mm	0.0787 mm	G	0.01 mm
8 mm	0.3937 mm	C	0.05 mm

Mechanical Specifications	
Max dynamic force for 100km stage travel distance C100B(dyn)	785 N
Max static force in movement direction Co(stat)	1247.5 N
Max torque around roll axis (M_roll)	5.85 Nm
Max torque around pitch axis (M_pitch)	3.2 Nm
Max torque around yaw axis (M_yaw)	3.2 Nm

Drawings

Speed/Thrust Curves

DLM

DLM - Size 42mm

DLM 42 mm linear modules combine a lead screw linear actuator with a compact, reliable structure for precise linear motion. The series supports customizable stroke and lead options, with travel per step from 0.003048 to 0.127 mm, enabling integrated linear solutions for varied application requirements.


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

Motor Characteristics	Unit	17E2105	17E2110	17E2115	17E2205
Rated voltage	V	7.2	3.8	2.85	11.0
Current	A	0.5	1.0	1.5	0.5
Winding resistance	Ω	14.4	3.8	1.9	22.0
Inductance	mH	19.8	5	2.2	46
Motor length	mm	34.1	34.1	34.1	48.1
Lead Wire No.		4	4	4	4

Motor Characteristics	Unit	17E2212	17E2225
Rated voltage	V	4.5	2.5
Current	A	1.2	2.5
Winding resistance	Ω	3.8	1.0
Inductance	mH	8.0	1.8
Motor length	mm	48.1	48.1
Lead Wire No.		4	4

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
6.35 mm	0.6096 mm	AA	0.003048 mm
6.35 mm	1.0 mm	AB	0.005 mm
6.35 mm	0.635 mm	A	0.003175 mm
6.35 mm	1.2192 mm	B	0.006096 mm
6.35 mm	1.27	D	0.00635 mm
6.35 mm	1.5875	F	0.0079 mm
6.35 mm	2.4384	J	0.0122 mm
6.35 mm	2.54	K	0.0127 mm
6.35 mm	3.175	L	0.0159 mm
6.35 mm	4.8768	Q	0.024 mm
6.35 mm	5.08	R	0.0254 mm
6.35 mm	6.35	S	0.0318 mm
6.35 mm	8.4667	U	0.0423 mm
6.35 mm	9.7536	W	0.0488 mm
6.35 mm	12.7	Y	0.0635 mm
6.35 mm	25.4	Z	0.127 mm
8 mm	4	M	0.02 mm
8 mm	8	T	0.04 mm
8 mm	2	G	0.01 mm
8 mm	10	C	0.05 mm

Mechanical Specifications	
C100B(dyn)	1154 N
Co(stat)	1732.5 N
Mro	10.75 Nm
Mpo	6.45 Nm
Myo	6.45 Nm

Drawings

Speed/Thrust Curves

DLM

DLM - Size 57mm

DLM 57mm is a compact lead screw linear module for precise, customizable linear motion. Built on KOCO platform products, it offers a reliable structure, optional stroke and lead configurations, and integrated customization. Mechanical capacity reaches 1905 N dynamic force and 2795 N static force.


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

Motor Characteristics	Unit	23E2110	23E2120	23E2130	23E2210
Rated voltage	V	6.4	3.5	2.4	11.5
Current	A	1.0	2.0	3.0	1.0
Winding resistance	Ω	6.4	1.75	0.8	11.5
Inductance	mH	16.4	4.1	1.7	32
Motor length	mm	45	45	45	65
Lead Wire No.		4	4	4	4

Motor Characteristics	Unit	23E2225	23E2240
Rated voltage	V	5.0	2.8
Current	A	2.5	4.0
Winding resistance	Ω	2.0	0.7
Inductance	mH	5.2	2.0
Motor length	mm	65	65
Lead Wire No.		4	4

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
9.525 mm	0.635 mm	A	0.0032
9.525 mm	1.27 mm	D	0.0064
9.525 mm	1.5875 mm	F	0.0079
9.525 mm	2.1167 mm	H	0.0106
9.525 mm	2.54 mm	K	0.0127
9.525 mm	3.175 mm	L	0.0159
9.525 mm	4.233 mm	P	0.0212
9.525 mm	5.08 mm	R	0.0254
9.525 mm	6.35 mm	S	0.0318
9.525 mm	9.525 mm	V	0.0476
9.525 mm	9.7536 mm	W	0.0488
9.525 mm	10.16 mm	X	0.0508
9.525 mm	12.7 mm	Y	0.0635
9.525 mm	25.4 mm	Z	0.127
10 mm	2	G	0.01
10 mm	10	C	0.05
10 mm	20	I	0.1

Mechanical Specifications	
Max dynamic force for 100km stage travel distance C100B(dyn)	1905 N
Max static force in movement direction Co(stat)	2795 N
Max torque around roll axis (M_roll)	21.8 Nm
Max torque around pitch axis (M_pitch)	13.8 Nm
Max torque around yaw axis (M_yaw)	13.5 Nm

Drawings

Speed/Thrust Curves

VC - Size 25.4mm

Size 25.4mm Voice Coil Motor is smallest solution from KOCO at this moment. Not only standard 9.5mm stroke, different stroke of voice coil motor can be customized. Also CANOpen and EtherCAT supported Voice Coil Motor Electronics, DS-BVM-FCAO and DS-BVM-FETC are available. For details, please check KOCO website motion control products section.



<https://www.kocomotion.de/produkt/vc-size-25-4mm/>

Motor Characteristics	Unit	Voice Coil Motor 25.4mm
Stroke	mm	9.5
Coil Max. Temperature	°C	100
Coil assembly mass	g	33
Body assembly mass	g	102
Back-EMF constant	V/m/s	9
Continuous Force	N	11
Continuous Current Coil@100	°C	1.25
Peak Thrust Force	N	31
Force Sensitivity(N/A)(Middle Position)		9
Phase resistance	Ω	6.9
Phase inductance	mH	2
Coil Gap	mm	0.38

Drawings

Speed/Thrust Curves

VC - Size 30mm

Size 30mm Voice Coil Motor is also popular solution among KOCO VCM Series. Not only standard 13, 15mm stroke, different stroke of voice coil motor can be customized. Also CANOpen and EtherCAT supported Voice Coil Motor Electronics, DS-BVM-FCAO and DS-BVM-FETC are available. For details, please check KOCO website motion control products section.


<https://www.kocomotion.de/produkt/vc-size-30mm/>

Motor Characteristics	Unit	Voice Coil Motor 30-13	Voice Coil Motor 30-15
Stroke	mm	13	15
Coil Max. Temperature	°C	100	100
Coil assembly mass	g	25	25
Body assembly mass	g	96	96
Back-EMF constant	V/m/s	7.35	7.35
Continuous Force	N	4.63	4.63
Continuous Current Coil@100	°C	0.63	0.63
Peak Thrust Force	N	29.4	29.4
Force Sensitivity(N/A)(Middle Position)		7.35	7.35
Phase resistance	Ω	10.2	10.2
Phase inductance	mH	2.63	2.63
Coil Gap	mm	0.6	0.6

Drawings

Speed/Thrust Curves

VC - Size 38mm

Size 38mm Voice Coil Motor is also popular solution among KOCO VCM Series. Not only standard 7.7mm stroke, different stroke of voice coil motor can be customized. Also CANOpen and EtherCAT supported Voice Coil Motor Electronics, DS-BVM-FCAO and DS-BVM-FETC are available. For details, please check KOCO website motion control products section.



<https://www.kocomotion.de/produkt/vc-size-38mm/>

Motor Characteristics	Unit	Voice Coil Motor 38mm
Stroke	mm	7.7
Operating temperature	°C	2.63
Coil Maximum Temperature	°C	120
Gas Leakage	sccm@12Kpa	<10
Force Constant		4.8
Continuous Force	N	5
Peak Thrust Force	N	22.5
Insulation resistance	MΩ	100
Dynamic Response	ms	<20
Retarding Force	mN	<40
Frictional Force	mN	<50
Life Cycle	Mil	>30

Drawings

DSM

DSM - Size 14mm

DSM Size 14 mm is a compact lead screw linear actuator and simple linear module for precise, reliable linear motion. It supports integrated customization with multiple lead and stroke options. Available 3.5 mm screw leads from 0.3 to 8 mm provide travel per 1.8° step from 0.0015 to 0.04 mm.


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

Motor Characteristics	Unit	6E2103
Rated voltage	V	6.6
Current	A	0.3
Winding resistance	Ω	22
Inductance	mH	4.5
Weight	g	60
Lead wire No.		4
Motor length	mm	32

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
3.5 mm	0.3 mm	AF	0.0015
3.5 mm	0.6096 mm	AA	0.003048
3.5 mm	1.2192 mm	B	0.006096
3.5 mm	2	G	0.01
3.5 mm	4	M	0.02
3.5 mm	8	T	0.04

Mechanical Specifications	
Max dynamic force for 100km stage travel distance C100B(dyn)	714 N
Max static force in movement direction Co(stat)	1071 N
Max torque around roll axis (M_roll)	3.794 Nm
Max torque around pitch axis (M_pitch)	2.219 Nm
Max torque around yaw axis (M_yaw)	2.219 Nm

Drawings

DSM

DSM - Size 20mm

DSM Size 20 mm is a compact lead screw linear module for precise, customizable linear motion. It combines a high-precision lead screw actuator with a simple, reliable structure, offering multiple lead and stroke options. The series supports integrated linear solutions with up to 1379 N dynamic force and 1820 N static force.


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

Motor Characteristics	Unit	8E2105	8E2205
Rated voltage	V	2.5	4.4
Current	A	0.5	0.5
Winding resistance	Ω	5.1	8.8
Inductance	mH	1.5	2.7
Lead wire No.		4	4
Motor length	mm	27.2	38.1

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
3.5 mm	0.3 mm	AF	0.0015 mm
3.5 mm	0.6096 mm	AA	0.003048 mm
3.24 mm	1 mm	AB	0.005 mm
3.5 mm	1.2192 mm	B	0.006096 mm
3.5 mm	2 mm	G	0.01 mm
3.5 mm	2.4384 mm	J	0.012192 mm
3.5 mm	4 mm	M	0.02 mm
3.5 mm	8 mm	T	0.04 mm

Mechanical Specifications	
Max dynamic force for 100km stage travel distance C100B(dyn)	1379 N
Max static force in movement direction Co(stat)	1820 N
Max torque around roll axis (M_roll)	8.288 Nm
Max torque around pitch axis (M_pitch)	5.733 Nm
Max torque around yaw axis (M_yaw)	5.733 Nm

Drawings

DSM

DSM - Size 28mm

DSM Size 28 mm is a compact lead screw linear module for precise linear motion in customized automation solutions. It offers multiple lead options from 0.3175 to 10.16 mm, travel per step from 0.0016 to 0.0508 mm, and supports high loads up to 2128 N dynamic and 2702 N static.


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

Motor Characteristics	Unit	11E2105	11E2110	11E2209	11E2216
Rated voltage	V	4.55	2.1	3.9	2.4
Current	A	0.5	1.0	0.95	1.6
Winding resistance	Ω	9.1	2.1	4.1	1.5
Inductance	mH	6.0	1.5	4.0	1.3
Lead wire No.		4	4	4	4
Motor length	mm	33.35	33.35	45	45

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
4.77 mm	0.3175 mm	AL	0.0016 mm
4.77 mm	0.635 mm	A	0.003175 mm
4.77 mm	1.27 mm	D	0.00635 mm
4.77 mm	1.5875 mm	F	0.0079 mm
4.77 mm	2.54 mm	K	0.0127 mm
4.77 mm	4.8768 mm	Q	0.0244 mm
4.77 mm	5.08 mm	R	0.0254 mm
4.77 mm	10.16 mm	X	0.0508 mm

Mechanical Specifications	
Max dynamic force for 100km stage travel distance C100B(dyn)	2128 N
Max static force in movement direction Co(stat)	2702 N
Max torque around roll axis (M_roll)	16.541 Nm
Max torque around pitch axis (M_pitch)	8.799 Nm
Max torque around yaw axis (M_yaw)	8.799 Nm

Drawings

DSM

DSM - Size 35mm

DSM 35mm is a compact linear actuator module for precise linear motion with customizable lead and stroke options. Based on KOCO platform products, it combines a lead screw actuator with a simple linear module design for reliable integration. Mechanical capacity reaches 2989 N dynamic and 3990 N static force.


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

Motor Characteristics	Unit	14E2105	14E2110	14E2115	14E2205
Rated voltage	V	6.6	3.5	2.7	12.0
Current	A	0.5	1.0	1.5	0.5
Winding resistance	Ω	13.2	3.5	1.8	24.0
Inductance	mH	14	3.6	1.9	29
Lead wire No.		4	4	4	4
Motor length	mm	33.6	33.6	33.6	45.6

Motor Characteristics	Unit	14E2210	14E2215
Rated voltage	V	6.0	4.0
Current	A	1.0	1.5
Winding resistance	Ω	6.0	2.7
Inductance	mH	7.2	3.2
Lead wire No.		4	4
Motor length	mm	45.6	45.6

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
6.35 mm	0.6096 mm	AA	0.003048 mm
6.35 mm	1.0 mm	AB	0.005 mm
6.35 mm	1.2192 mm	B	0.006096 mm
6.35 mm	1.27 mm	D	0.00635 mm
6.35 mm	1.5875 mm	F	0.0079 mm
6.35 mm	2.4384 mm	J	0.0122 mm
6.35 mm	2.54 mm	K	0.0127 mm
6.35 mm	3.175 mm	L	0.0259 mm
6.35 mm	4.8768 mm	Q	0.024 mm
6.35 mm	5.08 mm	R	0.0254 mm
6.35 mm	6.35 mm	S	0.0318 mm
6.35 mm	8.4667 mm	U	0.0423 mm
6.35 mm	9.7536 mm	W	0.0488 mm
6.35 mm	12.7 mm	Y	0.0635 mm
6.35 mm	25.4 mm	Z	0.0127 mm
8 mm	4 mm	M	0.02 mm
8 mm	8 mm	T	0.04 mm
8 mm	2 mm	G	0.01 mm
8 mm	10 mm	C	0.05 mm

Mechanical Specifications	
Max dynamic force for 100km stage travel distance C100B(dyn)	2989 N
Max static force in movement direction Co(stat)	3990 N
Max torque around roll axis (M_roll)	31.535 Nm
Max torque around pitch axis (M_pitch)	16.135 Nm
Max torque around yaw axis (M_yaw)	16.135 Nm

Drawings

DSM

DSM - Size 42mm

DSM Size 42 mm is a compact lead screw linear actuator module for precise linear motion in integrated machine designs. It combines a reliable structure with configurable lead and stroke options, offering travel per step from 0.003048 to 0.127 mm and high force capacity up to 2989 N dynamic.


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

Motor Characteristics	Unit	17E2105	17E2110	17E2115	17E2205
Rated voltage	V	7.2	3.8	2.85	11.0
Current	A	0.5	1.0	1.5	0.5
Winding resistance	Ω	14.4	3.8	1.9	22
Inductance	mH	19.8	5.0	2.2	46
Lead wire No.		4	4	4	4
Motor length	mm	34.1	34.1	34.1	48.1

Motor Characteristics	Unit	17E2212	17E2225
Rated voltage	V	4.5	2.5
Current	A	1.2	2.5
Winding resistance	Ω	3.8	1.0
Inductance	mH	8.0	1.8
Lead wire No.		4	4
Motor length	mm	48.1	48.1

Screw Dia.	Lead	Lead Code	Travel Per Step @ 1.8°
6.35 mm	0.6096 mm	AA	0.003048 mm
6.35 mm	1.0 mm	AB	0.005 mm
6.35 mm	1.2192 mm	B	0.006096 mm
6.35 mm	1.27 mm	D	0.00635 mm
6.35 mm	1.5875 mm	F	0.0079 mm
6.35 mm	2.4384 mm	J	0.0122 mm
6.35 mm	2.54 mm	K	0.0127 mm
6.35 mm	3.175 mm	L	0.0159 mm
6.35 mm	4.8768 mm	Q	0.024 mm
6.35 mm	5.08 mm	R	0.0254 mm
6.35 mm	6.35 mm	S	0.0318 mm
6.35 mm	8.4667 mm	U	0.0423 mm
6.35 mm	9.7536 mm	W	0.0488 mm
6.35 mm	12.7 mm	Y	0.0635 mm
6.35 mm	25.4 mm	Z	0.127 mm
8 mm	4 mm	M	0.02 mm
8 mm	8 mm	T	0.04 mm
8 mm	2 mm	G	0.01 mm
8 mm	10 mm	C	0.05 mm

Mechanical Specifications	
Max dynamic force for 100km stage travel distance C100B(dyn)	2989 N
Max static force in movement direction Co(stat)	3990 N
Max torque around roll axis (M_roll)	31.535 Nm
Max torque around pitch axis (M_pitch)	16.135 Nm
Max torque around yaw axis (M_yaw)	16.135 Nm

Drawings

SKA DDL

Based on direct drive iron core technology, SKA DDL linear electric motors provide the typical advantages of direct drive motors. No kinematic chain means improved performance and positioning accuracy, increased energy savings, minimised maintenance, got higher velocity control. In their frameless version (i.e. primary and secondary parts), SKA DDL linear motors offer the possibility to integrate the motion into the mechanics of the machine in a completely immersive way. No energy losses associated with mechanical transmissions, resulting in higher overall system efficiency. Complete integration can be particularly useful in applications where space is limited or where precision is critical.


<https://www.kocomotion.de/produkt/ska-ddl/>

Specification	Unit	SKA DDL 30.40	SKA DDL 30.80	SKA DDL 50.75	SKA DDL 50.150
Peak force	N	134.8	269.5	247	495
Magnet track width	mm	50	50	70	70
Magnet track height	mm	10.8	10.8	10.8	10.8
Magnet track weight	kg/m	3.3	3.3	5	5
Continuous force	N	40	80	75	150
Magnetic attraction	N	260	520	430	860
Speed	m/s	5	5	5	5
Acceleration	m/s ²	50	50	50	50
Coil length	mm	102	186	102	186
Coil width	mm	56	56	76	76
Coil height	mm	23	23	23	23
Coil weight	kg	0.55	1	0.8	1.6

Specification	Unit	SKA DDL 55.275	SKA DDL 55.550	SKA DDL 75.660	SKA DDL 75.990
Peak force	N	825	1650	1980	2970
Magnet track width	mm	90	90	120	120
Magnet track height	mm	14.8	14.8	14.8	14.8
Magnet track weight	kg/m	9.1	9.1	12.2	12.2
Continuous force	N	275	550	660	990
Magnetic attraction	N	1202	2405	3143	4663
Speed	m/s	5	5	5	5
Acceleration	m/s ²	50	50	50	50
Coil length	mm	186	354	354	522
Coil width	mm	80	80	100	100
Coil height	mm	47.5	47.5	47.5	47.5
Coil weight	kg	3	7	10	14

Specification	Unit	SKA DDL 100.1200	SKA DDL 100.1600	SKA DDL 125.2000	SKA DDL 150.2400
Peak force	N	3600	4800	6000	7200
Magnet track width	mm	140	140	175	200
Magnet track height	mm	14.8	14.8	14.8	14.8
Magnet track weight	kg/m	14.6	14.6	18	21.4
Continuous force	N	1200	1600	2000	2400
Magnetic attraction	N	5831	7774	9829	11790
Speed	m/s	5	5	3	3
Acceleration	m/s ²	50	50	50	50
Coil length	mm	522	690	690	690
Coil width	mm	125	125	150	175
Coil height	mm	47.5	47.5	47.5	47.5
Coil weight	kg	18	25	31	38

SKA COMPACT

SKA COMPACT

SKA COMPACT is a compact linear motor family for high-dynamic positioning and motion tasks. The range delivers up to 550 N continuous force and 1625 N peak force, with speeds up to 5 m/s and acceleration up to 50 m/s². Available stroke lengths reach 3000 mm.


<https://www.kocomotion.de/produkt/ska-compact/>


Specification	Unit	SKA COMPACT 140.275	SKA COMPACT 140.550
Peak force	N	825	1625
Continuous force	N	275	550
Speed	m/s	5	5
Acceleration	m/s ²	50	50
Stroke	mm	500 ÷ 3000	-



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