Hybrid Stepper Motor Lead Screw Linear Actuators

DINGS' hybrid linear actuators come in six sizes, ranging from a 20 mm (NEMA 8) square frame to 86 mm (NEMA 34). There are four available form factors – External, Non-Captive, Electric Cylinder and Kaptive. We also provide over twenty different travels per step available, ranging from 0.00006 inch (.001524 mm) to .005 inch (.127 mm). Micro stepping can be used for even finer resolution.

External **Non-Captive** **Electric Cylider** **Kaptive**

DINGS' offers a unique line of stepper motor linear actuators that open new avenues for equipment designers that require high performance and endurance in a small package. The various products convert the rotational movement of a stepper motor to linear motion, with the use of a lead screw and an engineered thermoplastic nut (Delrin). This allows linear actuators to provide quiet, efficient, durable and cost effective linear motion solutions.

These linear actuators are ideal for applications that require a combination of precise positioning, rapid motion and long life. Typical applications include X-Y tables, medical equipment, semiconductor handling, telecommunications equipment, valve control, and numerous other uses.

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

For applications requiring higher efficiency, precision, and life, DINGS' provides the linear actuators with different grades of balls screws at a reasonable cost.

	Motor Sizes(mm)	Max Thrust(N)	Recommended Load Limit(N)
Hybrid stepper linear actuators	20	70	45
	28	150	140
	35	300	230
	42	600	230
	57	1300	910
	86	2400	2270

Part Number Construction

17N 2 1 15 K 4 -101.6 T M S EK2 - 001

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)

(1) Motor Size

CODE	8	11	14	17	23	34
MOTOR SIZE (mm)	20	28	35	42	57	86

(2) Linear Actuator Type
- E = External Linear
- N = Non-captive linear
- C = Electric cylinder linear
- K = Kaptive linear

(3) Step Angle
- 2 = 2 Phase with 1.8°
- 4 = 2 Phase with 0.9°
- 3 = 3 Phase with 1.2°
- 5 = 5 Phase with 0.72°

(4) Motor Length / Stack
- 1 = Single Stack
- 2 = Double Stack

(5) Rated Current/Phase
- XX = X.X (A)/Phase

(6) Lead Screw Code

(7) Number of Lead Wires
- 4 = Qty 4 Flying Leads
- 6 = Qty 6 Flying Leads
- 8 = Qty 8 Flying Leads

(8) Lead Screw Length / Stroke
- XXX = XXX mm Lead screw length (For External Linear/Non-Captive Linear)
- XXX = X.XX inch Stroke (For Electric cylinder & Kaptive Linear)

(9) Lead Screw Surface Treatment
- T = Teflon Coating
- S = Standard (No Teflon Coating)

(10) End Machining
- M = Metric
- U = UNC
- S = Smooth
- C = Customize
- N = None

(11) Nut Style
- S = Standard Flange Nut
- A = Anti-Backlash Nut
- C = Customized Nut

(12) Encoder Option
- EKX = Encoder (XX = Encoder Code)
- B = Brake
- X = Rear Shaft
- R = Encoder Ready (Hole and Shaft)
- C = Customize
- N = None
- R20 = RMB20SC10BC10 for NEMA 8
- R28 = RMB28SC10BC10 for NEMA 11

(13) Customer Sequence Number

EXAMPLE

Part Number	17N2115K4-101.6TMSEK2
Description	Nema 17 Non-captive Linear Actuator 2 Phase with 1.8 Degree Step Angle Single Stack 1.5A / Phase "K" Lead (0.1"/2.54mm) 4 Flying Leads Screw Length: 101.6mm Teflon Coated Screw Metric End Machining Standard Nut EK2 Encoder

Lead Screw Code Table

Lead Code	1.8 Degree Motor Travel per Step inch(mm)	Motor Size (mm)							
		20		28	35	42	57		86
		Screw Dia. mm(inch)							
		Φ3.5 (0.138″)	Φ4.77 (0.188″)	Φ5.56 (0.218″)	Φ6.35 (0.25″)	Φ8 (0.315″)	Φ9.525 (0.375″)	Φ10 (0.394″)	Φ15.875 (0.625″)
AL	0.000063″ (0.001588)		0.0125″ (0.3175)						
AA	0.00012″ (0.003048)	0.024″ (0.6096)			0.024″ (0.6096)				
A	0.000125″ (0.003175)		0.025″ (0.635)				0.025″ (0.635)		
B	0.00024″ (0.006096)	0.048″ (1.2192)			0.048″ (1.2192)				
D	0.00025″ (0.00635)		0.05″ (1.27)		0.05″ (1.27)		1.27 (0.05″)		
F	0.0003125″ (0.0079375)				0.0625″ (1.5875)		0.0625″ (1.5875)		
H	0.000417″ (0.010583)					0.083″ (2.1167)	0.083″ (2.1167)		
J	0.00048″ (0.012192)			0.096″ (2.4384)	0.096″ (2.4384)				
K	0.0005″ (0.0127)		0.1″ (2.54)		0.1″ (2.54)		0.1″ (2.54)		0.1″ (2.54)
L	0.000625″ (0.015875)				0.125″ (3.175)		0.125″ (3.175)		0.125″ (3.175)
P	0.000833″ (0.021167)						0.167″ (4.2333)		
Q	0.00096″ (0.024384)			0.192″ (4.8768)	0.192″ (4.8768)				
R	0.001″ (0.0254)		0.2″ (5.08)				0.2″ (5.08)		0.2″ (5.08)
S	0.00125″ (0.03175)				0.25″ (6.35)		0.25″ (6.35)		0.25″ (6.35)
U	0.001665″ (0.042291)				0.333″ (8.4582)				
UA	0.0016667″ (0.042333)				0.3333″ (8.4667)				
V	0.001875″ (0.047625)						0.375″ (9.525)		
W	0.00192″ (0.048768)				0.384″ (9.7536)		0.384″ (9.7536)		
X	0.002″ (0.0508)		0.4″ (10.16)				0.4″ (10.16)		
Y	0.0025″ (0.0635)				0.5″ (12.7)		0.5″ (12.7)		0.5″ (12.7)
Z	0.005″ (0.127)						1″ (25.4)		1″ (25.4)
AF	0.00015 (0.000059″)	0.3 (0.0118″)							
AB	0.005 (0.000197″)	1.0 (0.0394″)			1.0 (0.0394″)				
G	0.01 (0.000394″)	2.0 (0.0787″)				2.0 (0.0787″)		2.0 (0.0787″)	
M	0.02 (0.000787″)	4.0 (0.1575″)				4.0 (0.1575″)			
T	0.04 (0.001575″)	8.0 (0.3150″)				8.0 (0.3150″)			

* Remarks: 8mm diameter of lead screw of 35, 42 and 57mm is not applicable for Non-Captive and Anti-Backlash Nut *

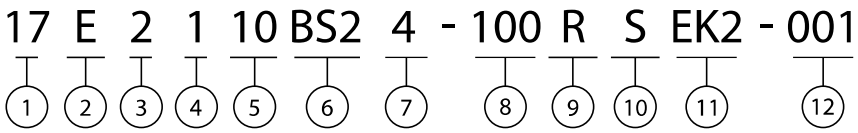
Hybrid Stepper Motor Ball Screw Linear Actuators

From 20mm~57mm flange, 5 size of Hybrid Ball Screw Stepper Linear Actuator made with External Ball Screw Linear Actuators are available in External Linear versions, from Nema 8 to Nema 23.
Various step resolutions are available, from 0.005mm/step to 0.1mm/step.
Maximum thrust can reach over 1600N.
Encoder options are available for all versions.

Ball Screw Lead Code Aelection

Motor size	20	28		35		42		57	
Diameter / Lead	Φ4	Φ5	Φ6	Φ6	Φ8	Φ6	Φ8	Φ10	Φ12
1.0 mm	*		*	*	*	*	*		
2.0 mm	*		*	*	*	*	*	*	*
2.5 mm					*		*		
4.0 mm		*						*	
5.0 mm					*		*	*	
6.0 mm			*	*		*			
8.0 mm					*		*		
10.0 mm			*	*	*	*	*	*	*
12.0 mm					*		*		
15.0 mm								*	
20.0 mm								*	

Part Number Construction



① Motor Size

CODE	8	11	14	17	23
MOTOR SIZE (mm)	20	28	35	42	57

② Motor Type
E=External Linear

③ Step Angle
2= 2 Phase with 1.8°
4= 2 Phase with 0.9°

④ Motor Length/Stack
1=single stack
2=double stack

⑤ Rated Current/Phase
10=1.0A;

⑥ Ball Screw Code
BS2=2mm

⑦ Number of Lead Wires
4= 4 flying lead wire
6= 6 flying lead wire

⑧ Ball Screw Length
100=100mm

⑨ Thread Direction
R= right
L= left

⑩ End Machining
N=None
S=Smooth
C=Customer design

⑪ Optional Accessories
EKX=Encoder(xx=encoder type)
B=brake
X=rear shaft
R=encoder ready
C= customize
N=none

⑫ Customer Sequence Number
*different grade and ball screw optional

Example

Part number 17E2110BS24-100RSEK2-001

Description
Size 17 serial hybrid ball screw linear stepper actuator
External
2 phase with 1.8° step angle
Single stack
1.0A
Ball screw lead 2mm
4 flying lead wire
Screw length:100mm
Right thread direction
Smooth screw end
EK2 Encoder