



KOCOTM
MOTION

...Intelligence in motion

Compact Ball Screw Linear Actuators

DINGS'



**Advanced
Technology of
"Miniature"**

COMPACT BALL SCREW LINEAR ACTUATORS

PRODUCT OVERVIEW

A 'ball screw linear actuator' is a linear actuator combined with a ball screw in a manner that results in reduced form factor, as compared to typical linear actuators. This reduced form factor is accomplished by mounting the linear actuator directly onto the motor shaft, eliminating the need for a coupling to accomplish this configuration.

KSS Direct Drive Series ball screw linear actuators **take the concept of compact form factor to a new level – the “Advanced Technology of Miniature”** – with its Direct Drive Series solution offerings (available in Captive and Non-Captive versions).

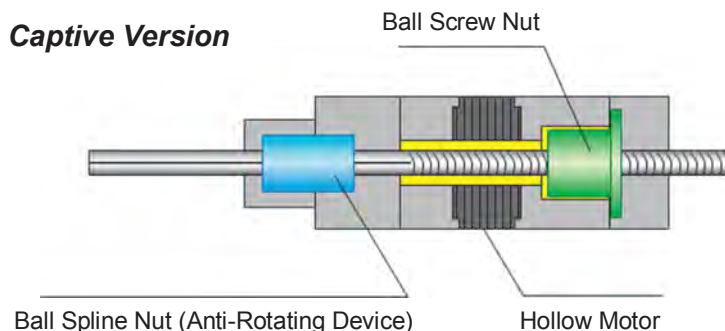
FEATURES / BENEFITS

- Direct drive coupling structure results in high efficiency and high level of precision
- VERY COMPACT DESIGN significantly reduces number of components and assembly time
- Greater thrust / high load capacity, longer life and greater accuracy as compared to traditional linear actuator technology
- Able to support multi-directional force on all axes
- Available in a variety of configurations (motor size, ball screw type, lead screw lead) to fit customer application / specification requirements

APPLICATION

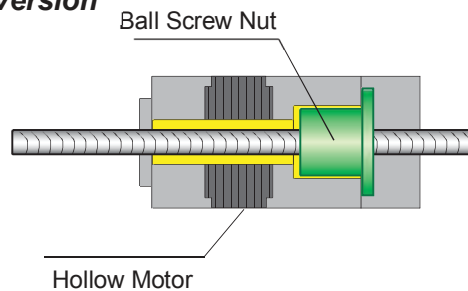
Ball screw linear actuators are capable of supporting a variety of applications such as micro-positioning (X-Y) tables, medical devices, semiconductor manufacturing (handlers, wafer cassette elevators), telecommunications equipment, control valves, micro-handling devices / systems, CCD camera focus apparatus, and dispensing equipment, to name a few.

INTERNAL MOTOR STRUCTURE



KSS' Captive version motor utilizes a ball-spline nut as an anti-rotation device, eliminating the need for an external design to accomplish this function.

Non-Captive Version



The Non-Captive version motor employs a simple design – a ball screw shaft inside a hollow motor (a structure in which the rotor is hollowed out and the ball screw stored inside).

The Non-Captive version is available with (2) drive screw types: Precision Ball Screw and Rolled Ball Screw.

PRODUCT VARIATIONS

Motor Version	Drive (Ball) Screw Type	NEMA 11 · 28 mm Motor		NEMA 17 · 42 mm Motor	
		Lead (mm)	Travel (mm)	Lead (mm)	Travel (mm)
Captive Version	Precision	1.0, 2.0	40.0	2.0, 5.0	50.0
Non-Captive Version	Precision	1.0, 2.0	40.0, 80.0	2.0, 5.0	50.0, 100.0
	Rolled	1.0, 2.0	40.0, 80.0	2.0, 5.0	50.0, 100.0

PRODUCT SELECTION SYSTEM

EXAMPLE – P/N DDAAR28-G05 050 N: Direct Drive Actuator Series, Captive version, NEMA 28 stepper motor, precision ball screw, 5.0 mm lead, 50.0 mm travel, no connector

DDA AR 28 - G 05 050 N
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 ① ② ③ | ④ ⑤ ⑥ ⑦

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>① Product Series:
DDA: Direct Drive Series</p> <p>② Motor Type:
AR: Captive
CL: Non-Captive</p> <p>③ Motor NEMA Size:
28 = NEMA 11 (28.0 mm)
42 = NEMA 17 (42.0 mm)</p> <p>④ Ball Screw Type:
G: Precision Ball Screw
R: Rolled Ball Screw</p> <p>⑤ Lead:</p> | <p>01 = 1.0 mm
02 = 2.0 mm
05 = 5.0 mm</p> <p>⑥ Travel:
040 = 40.0 mm
050 = 50.0 mm
080 = 80.0 mm
100 = 100.0 mm</p> <p>⑦ Connector Type:
N: No Connector
E: Tyco EI Connector</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

PRODUCT SPECIFICATIONS



SPECIFICATIONS · CAPTIVE VERSION*

Motor NEMA Size**	Travel (mm)	Shaft Diameter (mm)	Lead (mm)	Drive (Ball) Screw Type	Thrust (N)	Max. Speed (mm / sec)	Repeatability (Max.)	Lost Motion (Max.)	Model
11	40.0	6.0	1.0	Precision	50	20	±0.005	0.010	DDAAR28-G01 040
			2.0		25	40	±0.005	0.010	DDAAR28-G02 040
17	50.0	8.0	2.0	Precision	80	40	±0.005	0.010	DDAAR42-G02 050
			5.0		30	100	±0.005	0.010	DDAAR42-G05 050

* Includes internal anti-rotation device.

** 2-phase captive linear actuator



SPECIFICATIONS · NON-CAPTIVE VERSION*

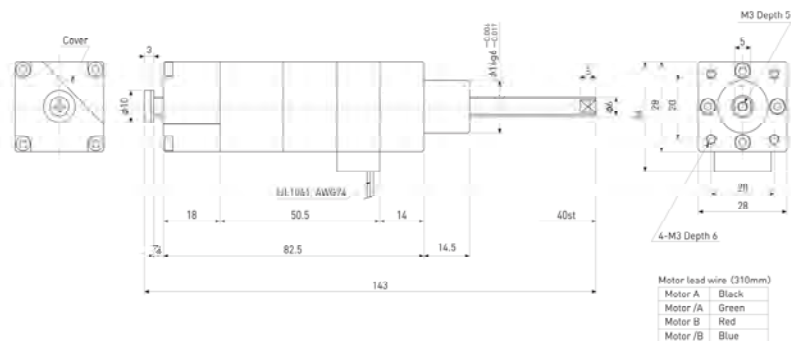
Motor NEMA Size**	Travel (mm)	Shaft Diameter (mm)	Lead (mm)	Drive (Ball) Screw Type	Thrust (N)	Max. Speed (mm / sec)	Repeatability (Max.)	Lost Motion (Max.)	Model
11	40.0, 80.0	6.0	1.0	Precision	50	20	±0.005	0.010	DDACL28-G01 040 DDACL28-G01 080
				Rolled	50	20	±0.010	0.020	DDACL28-R01 040 DDACL28-R01 080
			2.0	Precision	25	40	±0.005	0.010	DDACL28-G02 040 DDACL28-G02 080
				Rolled	25	40	±0.010	0.020	DDACL28-R02 040 DDACL28-R02 080
17	50.0, 100.0	8.0	2.0	Precision	80	40	±0.005	0.010	DDACL42-G02 050 DDACL42-G02 100
				Rolled	80	40	±0.010	0.020	DDACL42-R02 050 DDACL42-R02 100
			5.0	Precision	30	100	±0.005	0.010	DDACL42-G05 050 DDACL42-G05 100
				Rolled	30	100	±0.010	0.020	DDACL42-R05 050 DDACL42-R05 100

* Requires external anti-rotation device.

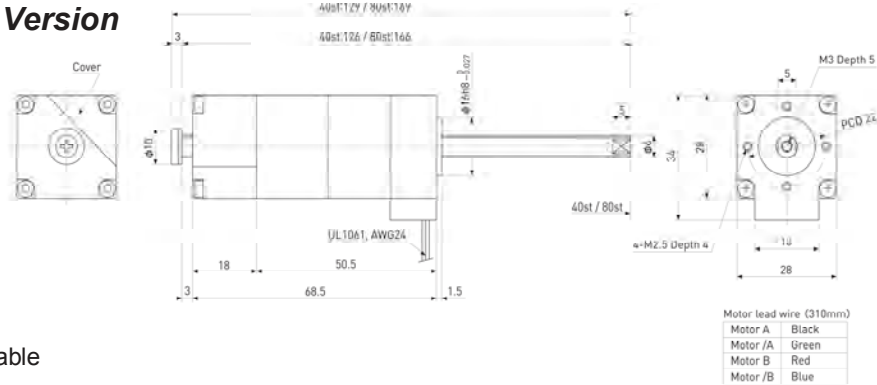
** 2-phase non-captive linear actuator

GENERAL SPECIFICATIONS / DIMENSIONAL DRAWINGS · NEMA 11 (28.0 MM)*

Captive Version



Non-Captive Version



* 2D / 3D drawings available

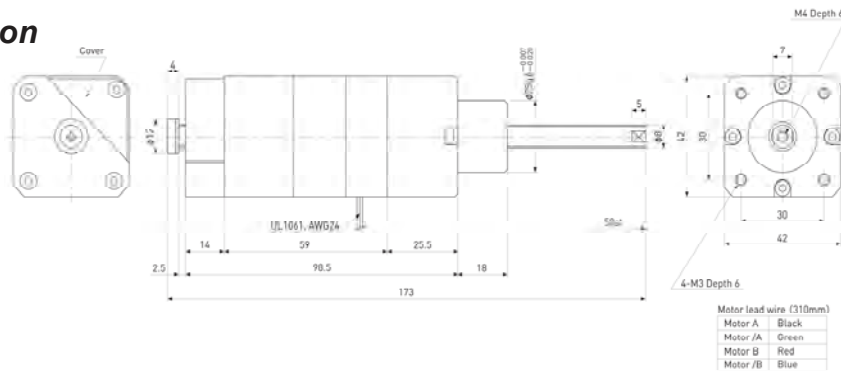
NEMA 11 (28.0 MM) Motor Specifications		
Drive Method	2-phase / bi-polar	
Rated Voltage (VDC)	3.8	
Rated Current / Phase (Amps)	0.67	
Winding Resistance (Ω)	5.6	
Insulation Class	B (130° C)	
Acceleration / Deceleration Time (minimum)	0.2 seconds	
Mass (g)	Captive	270
	Non-Captive (40.0 mm Travel)	230
	Non-Captive (80.0 mm Travel)	240

PRECAUTIONS:

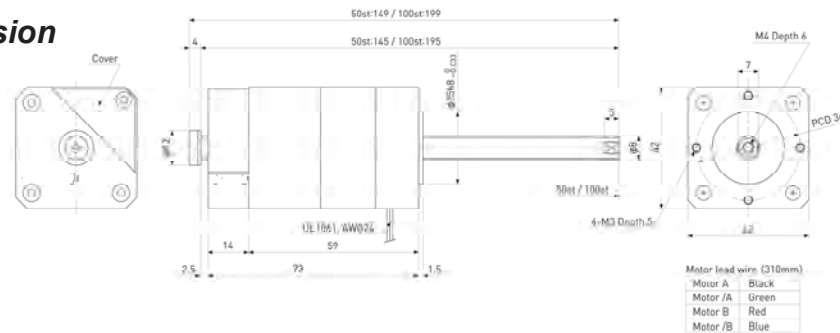
- Do **NOT** apply radial load to motor
- Non-Captive version requires external anti-rotating device (must be set up / available with usage)
- Specifications per Page 4 are reference values measured in vertical position *measured under ideal conditions*

GENERAL SPECIFICATIONS / DIMENSIONAL DRAWINGS · NEMA 17 (42.0 MM)*

Captive Version



Non-Captive Version



* 2D / 3D drawings available

NEMA 17 (42.0 MM) Motor Specifications		
Drive Method	2-phase / bi-polar	
Rated Voltage (VDC)	2.5	
Rated Current / Phase (Amps)	1.2	
Winding Resistance (Ω)	2.1	
Insulation Class	B (130° C)	
Acceleration / Deceleration Time (minimum)	0.2 seconds	
Mass (g)	<i>Captive</i>	660
	<i>Non-Captive (50.0 mm Travel)</i>	530
	<i>Non-Captive (100.0 mm Travel)</i>	550

PRECAUTIONS:

- Do **NOT** apply radial load to motor
- Non-Captive version requires external anti-rotating device (must be set up / available with usage)
- Specifications per Page 4 are reference values measured in vertical position *measured under ideal conditions*

PRODUCT OPTIONS / ACCESSORIES

For your convenience, we offer a stepper motor driver and a variety of mating driver / motor cables to meet your needs.

STEPPER MOTOR DRIVER · P/N SD4030B2

The **SD4030B2** stepper motor driver is recommended for 2-phase stepper motors.

SD4030B2 FEATURES / PRECAUTIONS:

- Recommended for 2-phase stepper motors
- 1/8 micro-step function
- SD4040B2 factory setting: 2.0 A
- **NOTE:** SD4030B2 **REQUIRES** current set-up based on motor rated current **PRIOR to use**



SD4030B2 Stepper Motor Driver

MATING DRIVER / MOTOR CABLES · PRODUCT SELECTION / CONNECTION DIAGRAM

We offer extension cables to connect your ball screw linear actuator to the SD4030B2 driver in a variety of lengths.

Please reference the following Product Selection System to determine the correct P/N for your application requirements:

EXAMPLE – P/N ECR-2-E(4): Extension cable, robot type, cable length 2 meters, 4-pin EI connector

EC R - 2 - E(4)

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②
③
④

① Product Type:

EC: Extension Cable (Mating Driver / Motor)

② Cable Type:

R: Robot

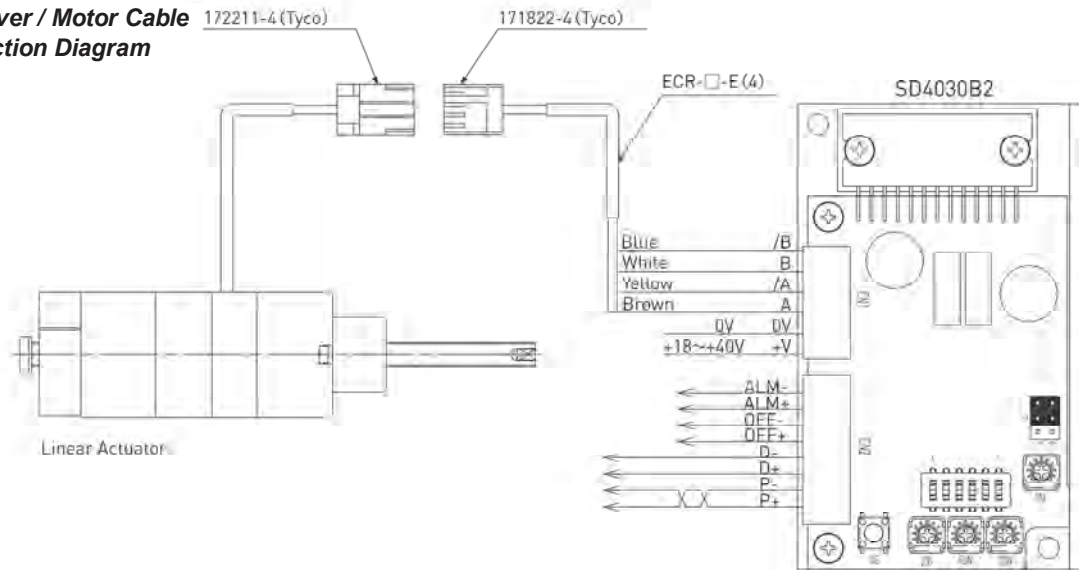
③ Cable Length (Meters)

④ Connector Type:

N: No Connector (cable cut end only)

E(4): Tyco EI Connector, Female 4-Pin (on one cable end / flying leads other cable end)

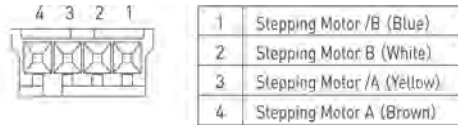
Mating Driver / Motor Cable Connection Diagram



Motor cable 172211-4 (male)



Motor Extension cable 171822-4 (female)



OTHER LINEAR ACTUATOR PRODUCT OFFERINGS



“For Us, CUSTOM is STANDARD!”

Koco Motion US LLC | DINGS’ offers a range of linear actuator motion solutions for our customers’ unique application requirements.

Our core competency, the ability to ROUTINELY create innovative CUSTOM solutions for our OEM customers’ diverse application requirements, allows us the FLEXIBILITY to TAILOR our solutions from the ground up based on customers’ unique specifications.

Our linear actuator assemblies are manufactured both in China and California, and our lead screws are precision rolled at our California manufacturing facility per each customer’s specific application

requirements. Completed linear actuator assemblies are then fully tested and inspected at our California manufacturing facility before shipping directly to our OEM customers.

Our dedicated California **Quick-Turn Prototyping Center** allows for rapid response to OEM customers seeking an abbreviated time to market and design cycle / time to concept approval.

The recent addition of our patented ServoTrack™ Family of Drivers and Controllers offers products able to stand alone, or become an integrated part of our OEM customers' linear actuator solutions.

Our **world class Applications Engineering / Customer Service team further enhances the experience by guiding our customers** toward selection and development of the most optimal solution for their application needs.

Koco Motion US LLC | DINGS'
VAST SELECTION OF SOLUTION ALTERNATIVES

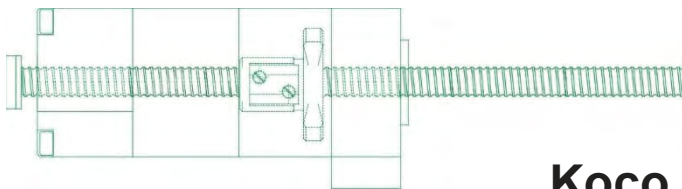
means

Our OEM customers rarely need to compromise linear actuator solution specifications optimal to their application.

\$\$ All at very competitive prices \$\$

**LET OUR APPLICATIONS ENGINEERING TEAM HELP YOU
CHOOSE YOUR SOLUTION TODAY!**

(408) 612-4970 or sales@kocomotionus.com



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...Intelligence in motion

Koco Motion US LLC | DINGS'

335 Cochrane Circle
Morgan Hill, CA 95037

Phone: 408-612-4970

Email: Sales@KocoMotionUS.com

Website: www.kocomotionus.com

