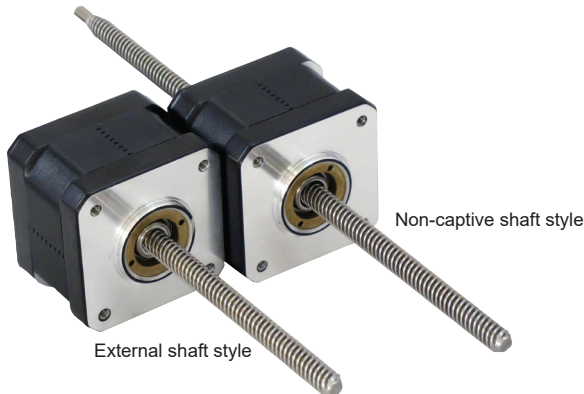


NEMA17 linear actuator

1.8° 2-phase stepper motors



Linear actuator stepper motors deliver long life, high accuracy and unsurpassed repeatability in a package that is extremely compact and low cost. These 1.8° 2-phase linear actuator stepper motors with NEMA 17 (1.7"/42.7mm square flange) can be operated at very high resolutions, dependent on the stepper motor drive.

Shaft styles

To meet the needs of a wide range of linear motion applications, two (2) linear actuator shaft styles are offered:

Non-captive shaft

A threaded shaft extends through the motor, moving axially as the motor rotates.

External shaft

A threaded shaft, integral to the motor's rotor, rotates to move a nut axially along it. Two nut styles are offered: general purpose and anti-backlash.

Lead screw characteristics

Precision rolled screws are designed specifically for motion control applications, delivering maximum life and quiet operation. Manufactured from premium grade stainless steel, screws are corrosion resistant and non-magnetic. An optional Teflon® coating is available for smooth operation and extended life.

Customization of linear actuators and screws is available for volume opportunities.

Drive systems

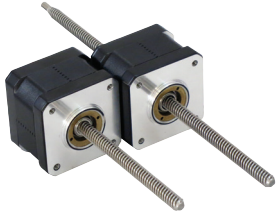
For compact, high performance linear motion systems, combine motors with SEM drives:

MForce – available in 3.0 A and 5.0 A versions, with choices of:

- Motion Control (programmable motion control units, RS-485 or CANopen interface)
- Microstepping (drive-only units programmed via pulse/direction interface)

Liberty Motion Module (LMM) – ultra-compact programmable motion controller, RS-485 or CANopen interface, up to 48 VDC. Offered with starter kits and development boards.

Linear actuator stepper motors Size 17



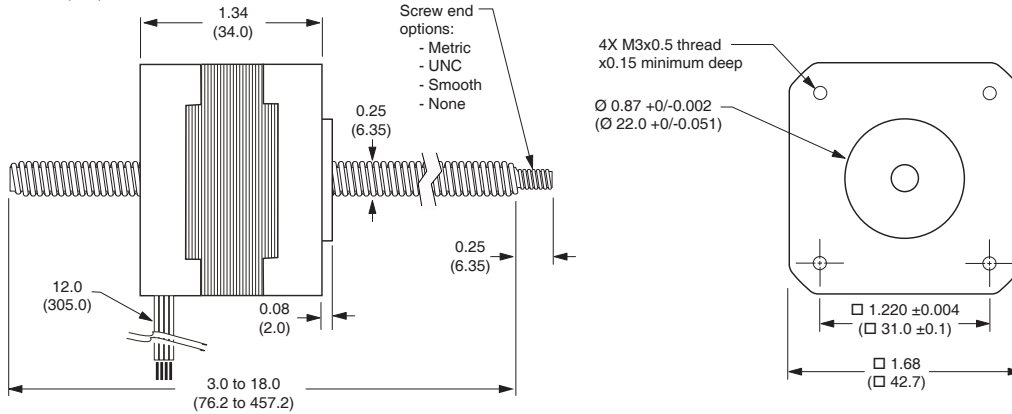
			Size 17
Motor	Frame size	NEMA	17
		inches	1.7
		mm	42.7
	Length	stack size	single
Maximum thrust (1)	Non-captive shaft	lbs	50
		kg	22
	External shaft with general purpose nut	lbs	25
		kg	11
External shaft with anti-backlash nut	lbs	5	
	kg	2	
Maximum repeatability	Non-captive shaft	inch	0.005
		mm	0.127
	External shaft with general purpose nut	inch	0.005
		mm	0.127
External shaft with anti-backlash nut	inch	0.0005	
	mm	0.0127	
Phase current		amps	1.5
Number of leads			4
Phase resistance		ohms	1.3
Phase inductance		mH	2.1
Weight (without screw)		oz/g	8/227
Step angle α		$^{\circ}$	1.8

(1) Performance data for maximum force/load is based on a static load and will vary with a dynamic load.

Lead screw	Centering collar	Flange size	Length (without screw)	Winding	Motor connection	
Size 17 Acme-style lead screw with end finish options	\varnothing 0.25" / \varnothing 2.0 mm	\varnothing 0.87" / \varnothing 22.0 mm	NEMA 17 1.7" / 42.7 mm	1.34" / 34.0 mm	2-phase full coil for bi-polar operation	Flying leads

Size 17 Non-captive shaft

inches (mm)

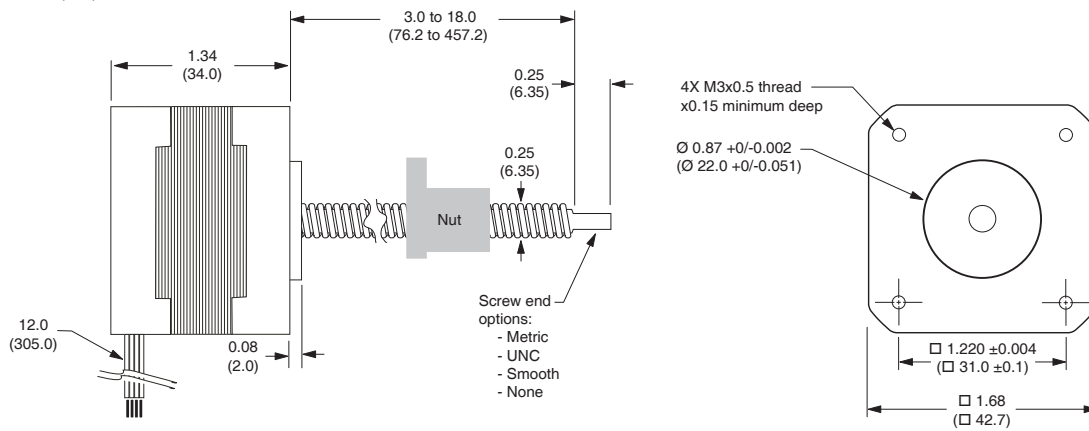


NOTE

Unsupported loads and side loading are not recommended for non-captive shaft linear actuators.

Size 17 External shaft

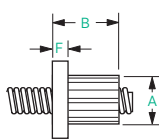
inches (mm)



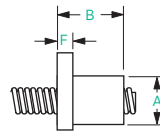
NOTE

Cantilevered loads for external shaft linear actuators MUST BE supported. Side loading is not recommended.

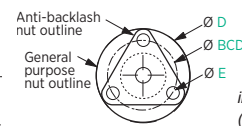
Nut specifications for external shaft linear actuators



General purpose nut
For applications not requiring anti-backlash and wear compensation.
Flange shape: round



Anti-backlash nut
Purpose: backlash free operation for high accuracy and low drag torque.
Flange shape: triangle



inches (mm)	A	B	D	E	F	BCD	drag torque
General purpose	0.50 (12.7)	0.75 (19.1)	1.0 (25.4)	0.14 (3.6)	0.15 (3.81)	0.75 (19.1)	free wheeling
Anti-backlash	0.50 (12.7)	0.9 (22.86) max	1.0 (25.4)	0.143 (3.63)	0.18 (4.57)	0.75 (19.1)	< 1.0 oz-in < 0.7 N-cm

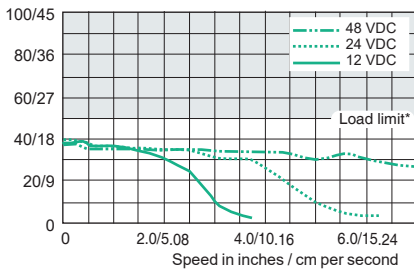
Lead screw specifications

		Screw A	Screw B	Screw C	Threaded end	Metric end: M4 x 0.7mm thread to within 0.03"/ 0.76 mm of shoulder	UNC end: #8-32 UNC-2A thread to within 0.03"/ 0.76 mm of shoulder
Travel	Per revolution	0.25" / 6.35 mm	0.125" / 3.175 mm	0.063" / 1.588 mm			
	Per full step	0.00125" / 0.0317 mm	0.00063" / 0.0158 mm	0.00031" / 0.0079 mm		Ø 0.1967" ±0.001 Ø 5 mm ±0.003	
Load limit*	Non-captive shaft	50 lbs / 22 kg			None		
	External shaft nuts	General purpose	25 lbs / 11 kg				
		Anti-backlash	5 lbs / 2 kg				

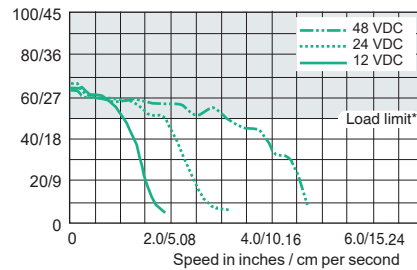
*Performance data for maximum force/load is based on a static load and will vary with a dynamic load.

Size 17 speed-force curves

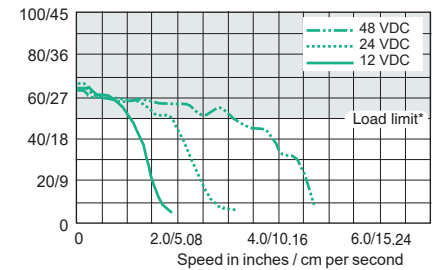
Screw A — 0.25"/6.35 mm travel per revolution
Force in lbs / kg



Screw B — 0.125"/3.175 mm travel per revolution
Force in lbs / kg



Screw C — 0.063"/1.588 mm travel per revolution
Force in lbs / kg



*Load limit for non-captive shaft linear actuators is 50 lbs / 22 kg. Load limit for external shaft linear actuators is determined by selected nut.
NOTE: Above performance data for maximum force/load is based on a static load and will vary with a dynamic load.

Size 17 part numbers

	example part number	LM17A200A1M060ZT
Motor type	LM = linear actuator stepper motor	L M17A200A1M060ZT
Frame size	17 = NEMA 17 / 42 mm square flange	LM 17 A200A1M060ZT
Motor length	A = single stack	LM17 A 200A1M060ZT
Phase current	200 = 1.5A	LM17A 200 A1M060ZT
Screw lead	A = 0.25" / 6.35 mm B = 0.125" / 3.175 mm C = 0.063" / 1.588 mm	LM17A200 A 1M060ZT
Shaft style	1 = non-captive shaft 3 = external shaft	LM17A200A 1 M060ZT
Screw end finish	M = metric U = UNC S = smooth Z = none	LM17A200A1 M 060ZT
Screw length (1) (2)	lengths may vary from: 030 = 03.0" / 76 mm minimum 180 = 18.0" / 457 mm maximum Note: lengths in even or 0.1" increments	LM17A200A1M 060 ZT
Nut	Z = default (non-captive shaft only) G = general purpose (external shaft only) A = anti-backlash (external shaft only)	LM17A200A1M0 60Z T
Screw coating	T = Teflon® Z = none	LM17A200A1M060 Z T

(1) To calculate screw length for non-captive shaft linear motors: screw length = [mounting surface plate thickness] + 1.4" / 36 mm + [desired stroke length]
(2) To calculate screw length for external shaft linear motors: screw length = [desired stroke length] + [nut length] + [mounting surface plate thickness]

Novanta IMS

370 North Main Street
Marlborough, CT 06447
Phone: (860) 295-6102
www.novantaims.com

