

PROmech™ LD28 Miniature Linear Positioner

Features

- Miniature profile
- Independent thrust bearing set
- High thrust per package size
- Stepper or servo motor
- Stroke from 5 mm to 300 mm
- Backlash compensation

Attributes

- Miniature cross section (28 mm x 28 mm)
- High-performance leadscrew drive train
- 1 mm, 3 mm, 10 mm, and 1" screw lead options
- Anti-backlash nut design
- Travels selectable by the mm from 5 mm to 300 mm
- NEMA 11 or NEMA 17 stepper motors included as standard
- Independent, preloaded thrust bearing set for long life

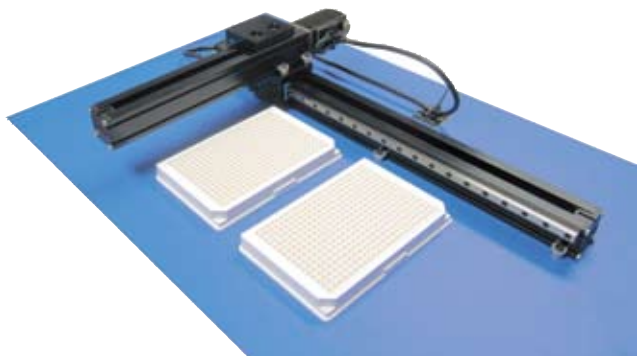


Designed for OEMs needing simple positioning solutions for instrument and light industrial applications, the PROmech family of positioners offers a complete positioning solution at a price OEMs can afford to design into their equipment.

The PROmech LD28 is a packaged linear actuator whose completeness reduces OEM component selection and system design time. Further, PROmech positioners minimize re-engineering requirements because the positioner's design is already fully tested. Together these benefits help engineering teams keep aggressive project time lines on schedule and reduce time to market.

Once a design goes into production PROmech positioners help reduce both costs and assembly time. Building a linear motion axis from scratch requires the procurement, tracking, receiving, inventorying, kiting, assembly, and testing of about a dozen parts. Every time a component must be "touched" to help it navigate this process, it consumes part of a resource and adds a hidden cost of both time and money. Instead of a dozen parts, a PROmech actuator is a single piece, sourced from a domestic supplier with short lead times. PROmech actuators are easy to procure and once on the assembly floor, are quick to install.

The PROmech LD28 is engineered for thrusting small payloads over distances as short as 5 mm and as long as 300 mm. The LD28 is commonly used in life sciences, medical, and semiconductor equipment although it is not limited to these markets. Typical applications include syringe pumps and positioning stages. The LD28's light weight also makes it suitable for mobile equipment.

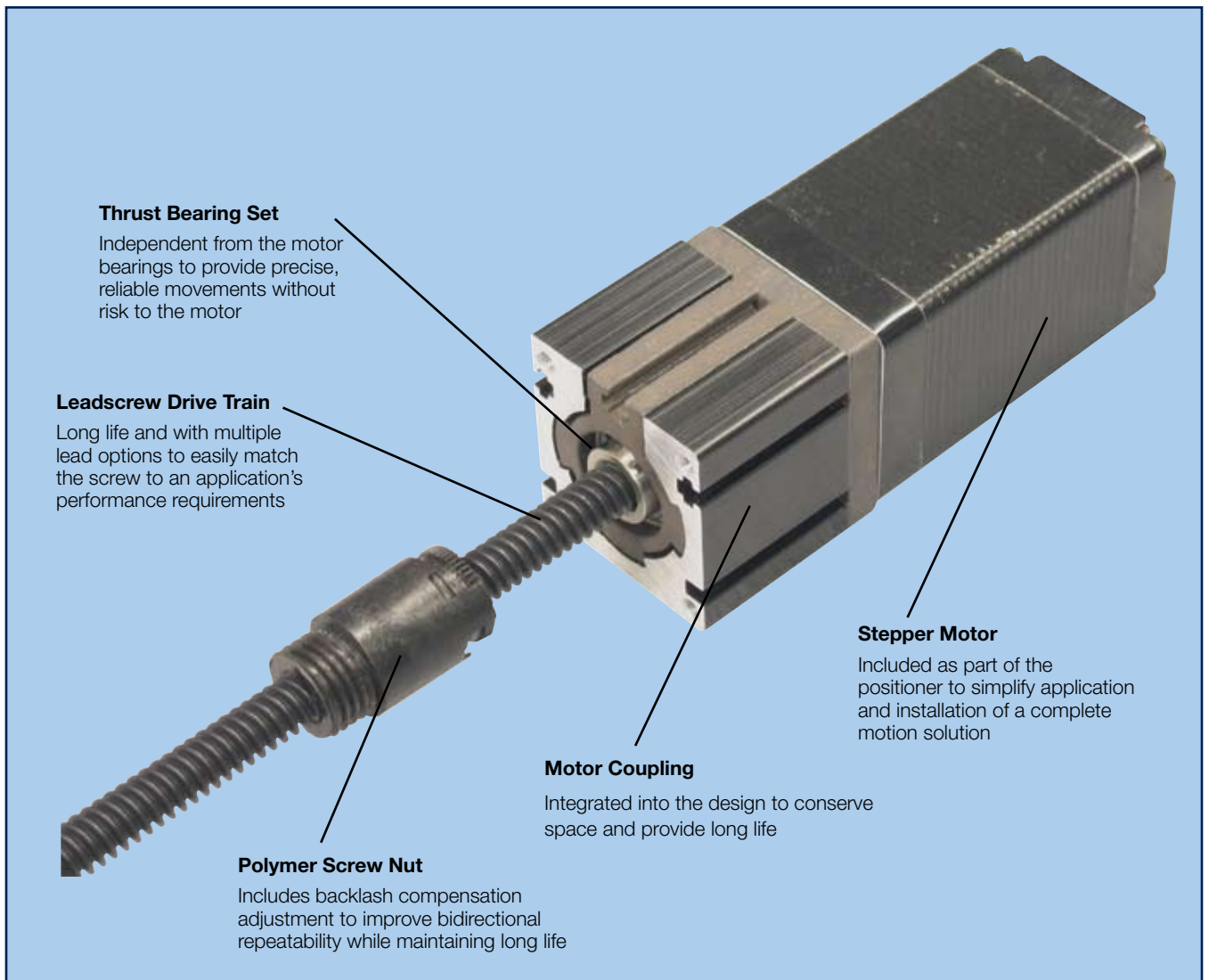




Customizable

Beyond the standard configurations, PROmech LD28 actuators can be customized to address the unique requirements of a particular high-volume application. These modifications may further reduce the installed cost and could include special motors (stepper, servo, or DC), special screws (finer leads, ballscrews, special nuts, etc.), and environmental preparation (vacuum, high temperature, etc.) just to mention a few.

Whether you use 10 axes/year or 10,000 axes/year, Parker’s PROmech series positioners offer the flexibility, reliability, and ease of use that will enable you to achieve your company’s business objectives.



Miniature Positioners

Common Performance Characteristics

		1 mm Lead	3 mm Lead	10 mm Lead	1" Lead
Bidirectional Repeatability	µm	±50	±50	±100	±100
Duty Cycle	%	100	100	100	100
Maximum Acceleration	m/sec ² (ips ²)	20 (787)	20 (787)	20 (787)	20 (787)
Maximum Axial Load ⁽¹⁾	N (lb)	45 (10)	45 (10))	45 (10))	45 (10)
Screw Efficiency	%	40	65	75	80
Breakaway Torque	Nm (oz-in)	0.02 (2.8)	0.02 (2.8)	0.03 (4.2)	0.06 (8.5)
Screw Diameter	mm	6.35	6.35	6.35	6.35

(1) See speed/thrust curves for combined motor-screw thrust capacity.

Travel Dependent Performance Characteristics

Travel mm	Maximum Speed – mm/s				Total Mass – Kg (lbs)		
	1 mm Lead	3 mm Lead	10 mm Lead	1.0" Lead	M11xx	M13xx	M71xx
5	15	45	150	375	0.39 (0.85)	0.48 (1.05)	0.52 (1.14)
25	15	45	150	375	0.42 (0.90)	0.51 (1.12)	0.55 (1.20)
50	15	45	150	375	0.46 (1.00)	0.55 (1.20)	0.59 (1.29)
75	15	45	150	375	0.49 (1.08)	0.58 (1.28)	0.62 (1.37)
100	15	45	150	375	0.53 (1.17)	0.62 (1.36)	0.66 (1.45)
150	15	45	150	375	0.61 (1.33)	0.70 (1.53)	0.74 (1.62)
200	15	45	150	375	0.68 (1.50)	0.77 (1.69)	0.81 (1.78)
250	15	45	150	375	0.76 (1.66)	0.85 (1.86)	0.89 (1.95)
300	15	45	150	375	0.83 (1.83)	0.92 (2.02)	0.96 (2.11)
350	15	45	150	375	0.91 (1.99)	1.00 (2.19)	1.04 (2.28)
400	15	45	150	375	0.98 (2.16)	1.07 (2.35)	1.11 (2.44)
450	15	45	150	375	1.06 (2.32)	1.15 (2.52)	1.19 (2.61)
500	15	45	150	375	1.13 (2.49)	1.22 (2.68)	1.26 (2.77)



Independent Thrust Bearings

Because high reliability and long life are critical requirements of OEM designs, the LD28 includes a pair of independent thrust bearings, dedicated to managing the positioner's axial loads. Some competitive miniaturized drive trains use the radial bearings in the step motor to contain the motor rotor, manage thermal expansion as the motor heats, and bear the axial loads generated by the application. In some cases this is an acceptable practice, but may prove to be a reliability risk down the road. The LD28's bearing design allows thrust bearings to be thrust bearings and motor bearings to be motor bearings resulting in a highly reliable and long life positioner.



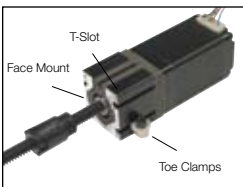
Motor Coupling

Integrated into the PROmech design is a motor coupling. The innovative design minimizes part count and overall length. And when necessary, enables a measure of flexibility when a special motor is required.



Toe Clamp or Tapped Face Mounting

Installation of the LD28 is very simple with the option to use toe clamps or T-Slots for mounting on surfaces that are parallel with the axis or a tapped face mount for surfaces that are perpendicular to the axis. The cam style toe clamps can be "loosely" installed without the positioner allowing fingers to quickly and efficiently place the toe clamps and start the screws without interference. Once started, the actuator can be placed and the toe clamps rotated into the lower slot and tightened. Toe clamps are available as an accessory and may be purchased in a 4 pack (part #002-2530-01) or in bulk (part #002-2531-01). The T-Slot enables a bolt to come through a surface into a T-nut and for the face mount, the LD28 includes four M2.5 tapped holes in a 23.1 mm square pattern.



Motor Options

The PROmech Series includes a number of standard motors. For most applications the NEMA 11 motors options will easily fulfill requirements. These are available in multiple stack lengths. The motors may include a rear shaft for encoder mounting or for manually positioning the stage. You may also choose between 12" flying motor leads or a 10' long cable. Further, the faster lead screw options will require the higher torque capacities of the standard NEMA 17 stepper. If you have special motor requirements such as a servo or DC motor, contact Daedal as these can be accommodated as well.



Encoder Options

Rotary encoders on the back of the motor are available. Contact Daedal for more information.



Screw Lead Flexibility

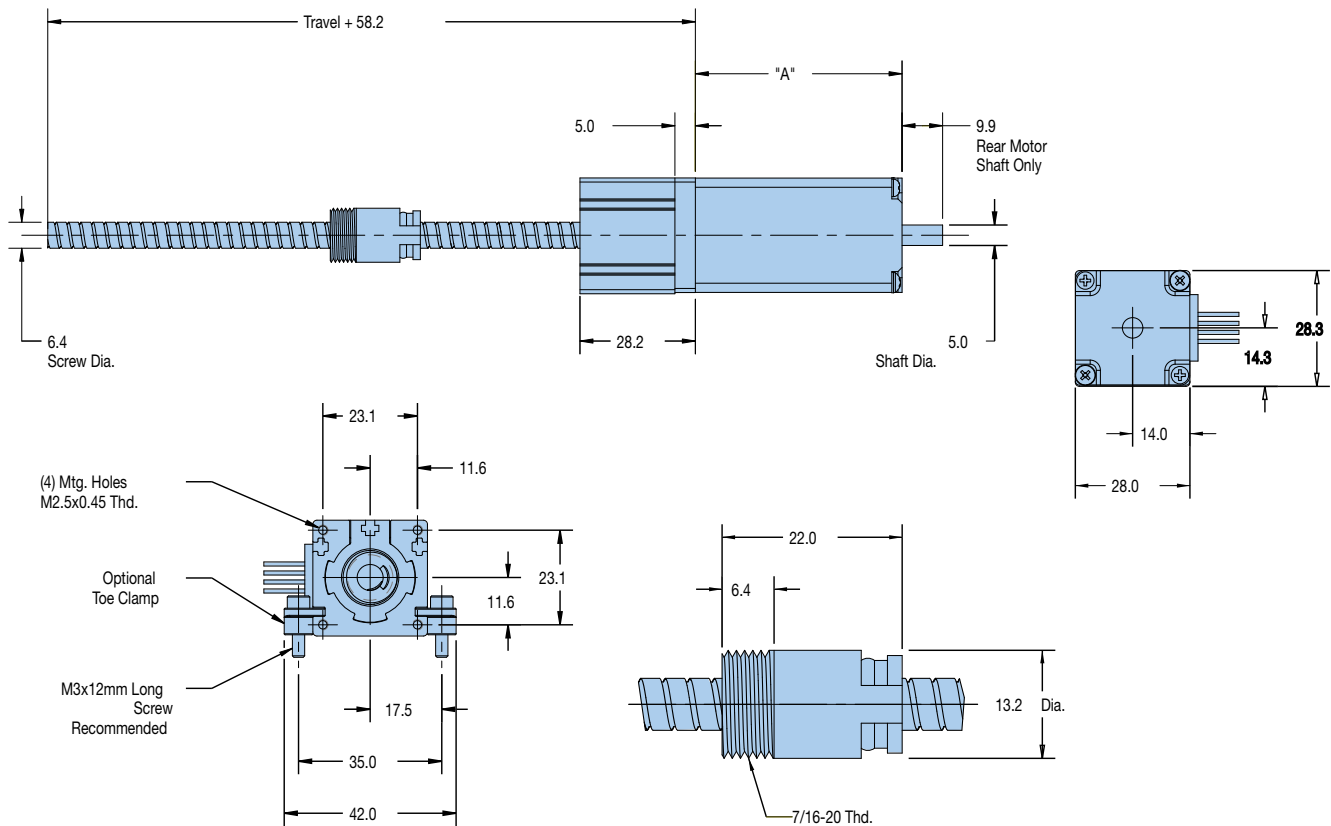
The PROmech Series offers 4 standard screw lead options: 1 mm lead, 3 mm lead, 10 mm lead, and 1.0" lead. Whether your application is slow and precise, long and fast, or somewhere in between, the options will allow you to performance match the drive train to your application.



Travel by the mm

Because the LD28 is miniature and must often fit into miniature spaces, the travel of the LD28 is selectable by the millimeter from 5 mm to 300 mm. This offers the greatest flexibility and enables designs to have the required travel with the minimum overall length.

Miniature Positioners



Model	"A" mm	Amps/Phase	Torque Nm (oz-in)	Resistance ohm/phase	Inductance mH	Rotor Inertia oz-in ²	Weight Kg (lb)	Wire Color
M11xx	31.5	0.67 Peak/0.5 RMS	0.06 (9.2)	5.6	3.4	0.05	0.11 (0.24)	A+ Red
M12xx	44.5	0.67 Peak/0.5 RMS	0.10 (13.7)	7.1	4.8	0.07	0.14 (0.31)	A- Black
M13xx	50.6	0.67 Peak/0.5 RMS	0.14 (16.6)	8.6	6.7	0.10	0.20 (0.40)	B+ White
M71xx (Series)	50	0.14 Peak/0.8 RMS	0.40 (56.0)	11.09	14.29	0.18	0.18 (0.40)	B- Green
M71xx (Parallel)	50	2.28	0.40 (56.0)	2.77	3.57	0.18	0.18 (0.40)	Refer to Manual



Fill in an order code from each of the numbered fields to create a complete model order code.

① ② ③ ④

Order Example: LD28 T0050 D01 M1111

- ① **Series**
LD28
- ② **Travel – mm**
Txxxx Specify length in mm
- ③ **Drive**
 - D00 Idler only
 - D01 1 mm lead screw ⁽¹⁾
 - D03 3 mm lead screw
 - D10 10 mm lead screw
 - D26 1" lead screw ⁽²⁾
- ④ **Motor**
 - M1111 Stepper, NEMA 11, 1 Stack, 12" Leads ⁽²⁾
 - M1112 Stepper, NEMA 11, 1 Stack, 10' Cable ⁽²⁾
 - M1321 Stepper, NEMA 11, 3 Stack, Rear Shaft, 12" Leads ⁽²⁾
 - M1322 Stepper, NEMA 11, 3 Stack, Rear Shaft, 10' Cable ⁽²⁾
 - M7122 Stepper, NEMA 17, 1 Stack, Rear Shaft, 10' Cable ⁽¹⁾

(1) D01 not available with M7xxx
 (2) D26 not available with M1xxx

Miniature Positioners

Accessories & Spare Parts

Availability		Part Number	Description
LP28	LD28		
•	•	002-2530-01	Toe Clamp Kit - Includes (4) Toe Clamps and (4) M3x12 SHCS
•	•	002-2531-01	Bulk Toe Clamps - Includes (100) Toe Clamps Only
•		002-2532-01	Sensor Mounting Kit - Includes Mounting Clip, M2 Square Nut, and M2x5 Pan Head Screw
•	•	002-2533-01	T-Nut Kit - Includes (10) M2 Square Nuts
•	•	002-2534-01	NEMA 17 Motor Adapter Kit - Includes Adapter, (4) M2.5x20 SHCS, and (4) M3x16 SHCS
•	•	003-3550-01	Motor, NEMA 11 Triple Stack, Rear Shaft, 12' Leads - For M1321 Option
•	•	003-3550-08	Motor, NEMA 11 Single Stack, 12' Leads - For M111 Option
•	•	003-3550-09	Motor, NEMA 11 Triple Stack, Rear Shaft, 10' Cable - For M1322 Option
•	•	003-3550-12	Motor, NEMA 11 Single Stack, 10' Cable - For M1112 Option
•	•	003-3551-01	M2.5x60 Pan Head Screw, Mounts NEMA 11 Triple Stack Motor
•	•	003-3551-02	M2.5x40 Pan Head Screw, Mounts NEMA 11 Single Stack Motor
•	•	003-3558-03	Coupling Hub, 5 mm Bore
•	•	003-3560-01	Coupling Torque Disk
•		003-3743-07	Sensor, N.C. Current Sinking, 3 m Cable to Flying Leads - For H2 or L2 Option
•		003-3743-05	Sensor, N.O. Current Sinking, 3 m Cable to Flying Leads - For H3 or L3 Option
•		003-3743-08	Sensor, N.C. Current Sourcing, 3 m Cable to Flying Leads - For H4 or L4 Option
•		003-3743-06	Sensor, N.O. Current Sourcing, 3 m Cable to Flying Leads - For H5 or L5 Option
•	•	003-3908-01	M2 Square Nut
•	•	101-1564-01	Toe Clamp
•	•	101-1567-01	NEMA 17 Motor Adapter
•	•	C*LV171-02-10	Motor, NEMA 17 Single Stack, Rear Shaft, 10' Cable - For M7122 Option
•	•	101-1564-01	Toe Clamp 101-1567-01 NEMA 17 Motor Adapter
•		002-2535-01	Strip Seal kit including 600 mm strip seal, and all necessary mounting hardware