

# 15000 Series Ø 15 mm (.59-in) Can-Stack Stepper Motor Linear Actuators

Delivering force of up to 8 lbs (35N) without compromising long life or cost. Lightweight models can also be micro-stepped for even finer resolution. Bi-directional travel motor.

**The world's smallest commercial linear stepper motor**

### Multiple versions available

- Captive
- External Linear
- External Linear with ZBMR Nut



### Specifications

Ø 15 mm (.59-in) Motor			
Part No.	Captive	LC1574 <span style="color: lightblue;">■</span> - <span style="color: lightblue;">■</span> <span style="color: lightblue;">■</span> <span style="color: lightblue;">■</span> †	
	External Linear	LE1574 <span style="color: lightblue;">■</span> - <span style="color: lightblue;">■</span> <span style="color: lightblue;">■</span> <span style="color: lightblue;">■</span> †	
Wiring	Bipolar		
Step angle	18°		
Winding Voltage	4 VDC	5 VDC	12 VDC
Current (RMS)/phase	0.2 A	0.16 A	0.07 A
Resistance/phase	20 Ω	31 Ω	180 Ω
Inductance/phase	5.6 mH	8.7 mH	48.8 mH
Power Consumption	1.6 W		
Rotor Inertia	0.09 gcm <sup>2</sup>		
Insulation Class	Class B (Class F available)		
Weight	LC15 0.49 oz (14 g) LE15 0.39 oz (11 g)		
Insulation Resistance	20 MΩ		
Stroke	0.5-in. (12.7 mm)		

†Part numbering information below.

Linear Travel / Step		Order Code I.D.
inches	mm	
.00079*	.02	W
.00098*	.025	AQ
.00197*	.05	BH
.00394*	.10	DC

\*Values truncated

### Available Standard Connectors for Series 15000

Connector	PIN			
	1	2	3	4
JST PHR-4	Red	White	Green	Black
Molex 51021-0400	Black	Green	White	Red

### Available Flying Leads

Length	Order Code I.D. Suffix (add to end on I.D.)
12 inches (304.8 mm)	-999

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted. Standard motors are Class B rated for maximum temperature of 130° C (266° F).

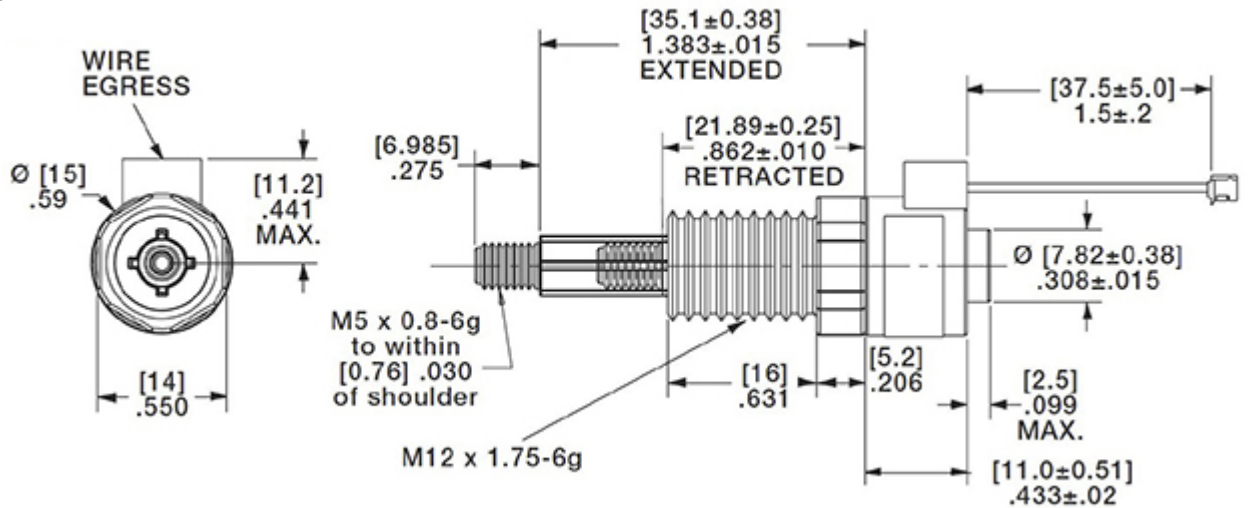
### Identifying the Can-Stack Number Codes when Ordering

LC	15	7	4	W	04	999
<b>Prefix</b>	<b>Series Number Designation</b>	<b>Style</b>	<b>Coils</b>	<b>Code ID Resolution Travel/Step</b>	<b>Voltage</b>	<b>Suffix Stroke</b>
LC = Captive LE = External Linear	15 = 15000 (Series numbers represent approximate diameters of motor body)	7 = 18° Captive	4 = Bipolar (4 wire)	W = .00079-in (.02) AQ = .00098-in (.025) BH = .00197-in (.05) DC = .00394-in (.10)	04 = 4 VDC 05 = 5 VDC 12 = 12 VDC  Custom V available	Example: -999 = 12-in leads -XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

NOTE: Dashes must be included in Part Number (-) as shown above. For assistance call our Engineering Team at 203 756 7441.

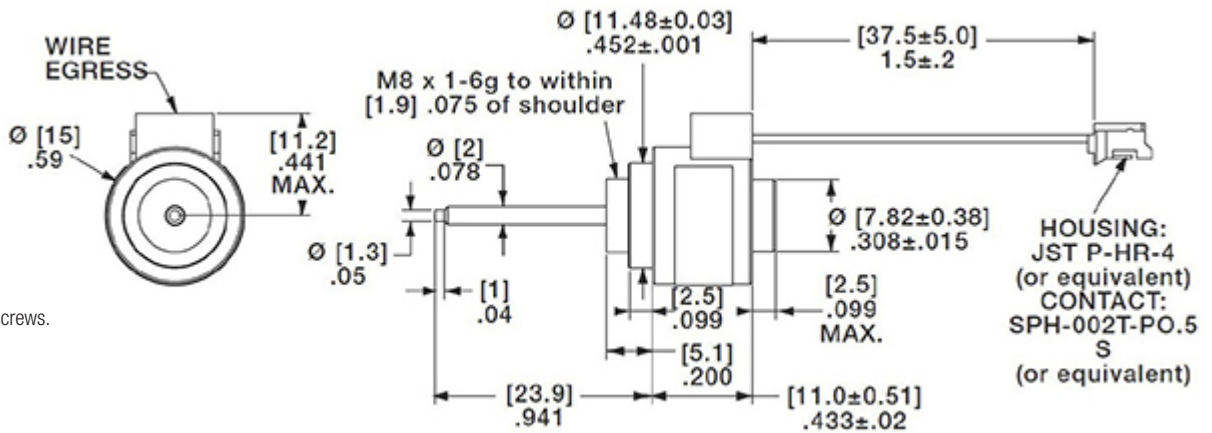
### Captive Lead Screw

Dimensions = (mm) inches



### External Linear

Dimensions = (mm) inches



Up to 2.36-in (59.9 mm) standard screw lengths. Consult factory for longer screws.

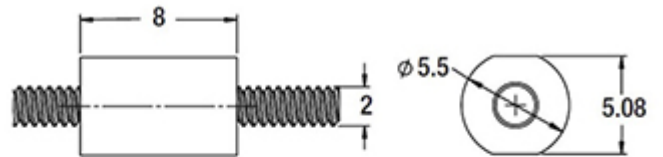
### MICRO Series

Dimensions = (mm) inches

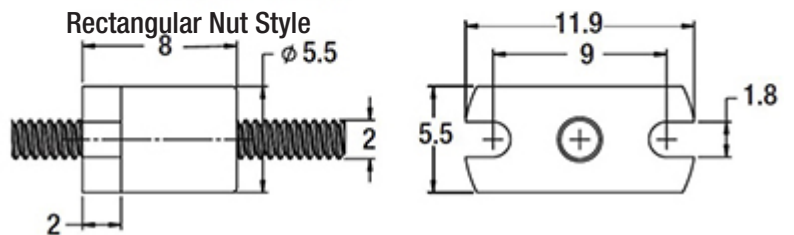
Standard nut styles. Consult the factory for custom solutions.

MICRO Series Nut Styles			
Part No.	BFW Nut Style	Dynamic Load lbs (Kg)	Drag Torque oz-in (NM)
BFWB	Barrel Mount	10 (4.5)	Free Wheeling
BFWR	Rectangular Flange		

#### Barrel Nut Style

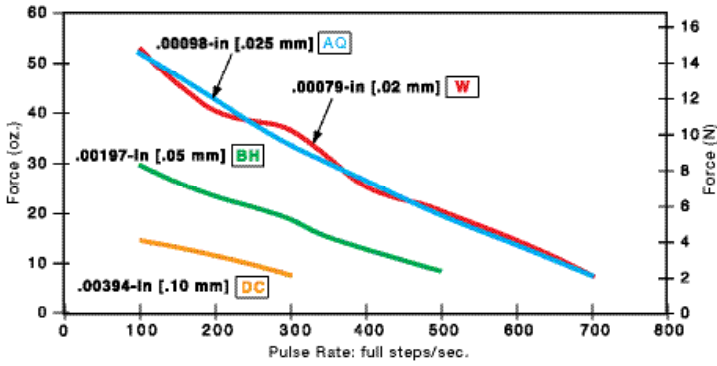


#### Rectangular Nut Style



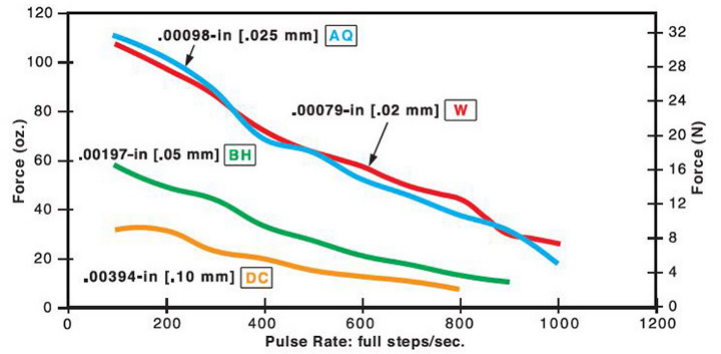
**FORCE vs. PULSE RATE**

– L/R Drive – Bipolar – 100% Duty Cycle



**FORCE vs. PULSE RATE**

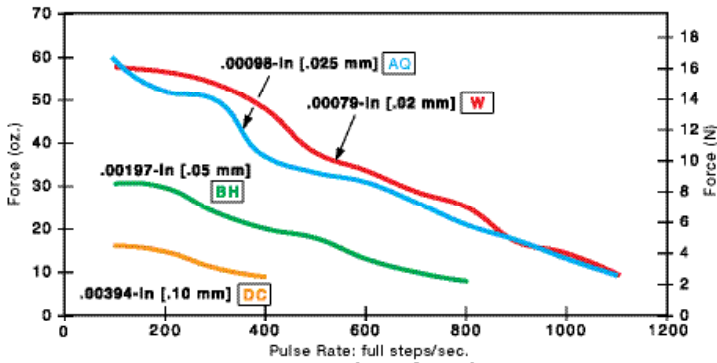
– L/R Drive – Bipolar – 25% Duty Cycle



Obtained by a special winding or by running a standard motor at double the rated current.

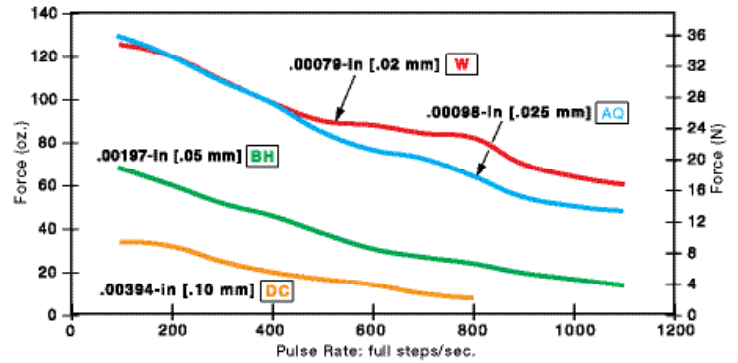
**FORCE vs. PULSE RATE**

– Chopper Drive – Bipolar – 100% Duty Cycle



**FORCE vs. PULSE RATE**

– Chopper Drive – Bipolar – 25% Duty Cycle

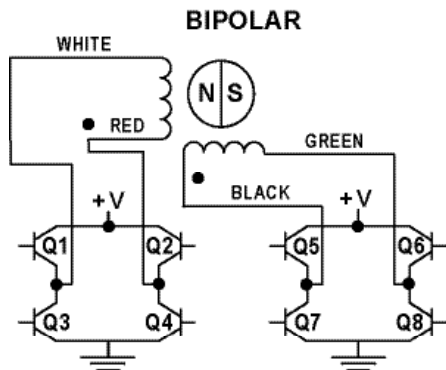


NOTE: All chopper drive curves were created with a 5 volt motor and a 40 volt power supply.

Ramping can increase the performance of a motor either by increasing the top speed or getting a heavier load accelerated up to speed faster. Also, deceleration can be used to stop the motor without overshoot.

15000 Series • Can-Stack Stepper Motor Linear Actuators Wiring & Stepping Sequence

Can-Stacks: **Wiring**



Can-Stacks: **Stepping Sequence**

Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8
Step				
1	ON	OFF	ON	OFF
2	OFF	ON	ON	OFF
3	OFF	ON	OFF	ON
4	ON	OFF	OFF	ON
1	ON	OFF	ON	OFF

Note: Half stepping is accomplished by inserting an off state between transitioning phases.