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# EADmotors: High-Performance Solutions

## EADmotors

Since 1942, EADmotors has been manufacturing high-performance rotating products for industry.

We have broad experience designing and producing motors, blowers, and fans that meet extremely precise engineering requirements. We are capable of solving difficult design problems involving motion technology.

## Achieving Your Goals

If your company is involved in producing high-performance products such as instruments, satellite tracking systems, control products, etc., EADmotors can provide valuable help. We believe the key to achieving your performance goals is working together. With our strong engineering capabilities, we can work with you to develop precision motion products to meet your most exacting requirements.

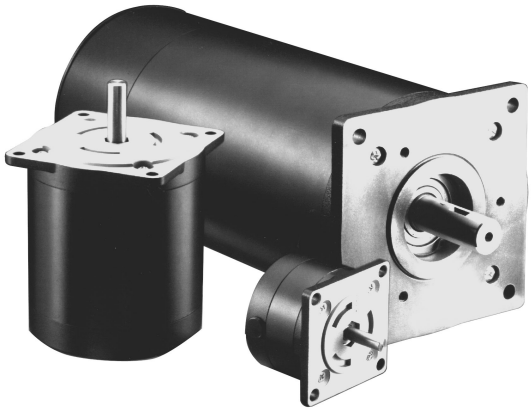
## Stepping Motors

For over 25 years, EADmotors has designed stepping motors for a wide range of applications. EAD stepping motors have been used on a variety of products in diverse applications such as packaging, semiconductor handling and testing, antenna positioning, laboratory equipment, and even electric braking systems for railway cars. EAD stepping motors are known throughout the industry for high quality, long life, and unparalleled consistency.

## Linear Actuators

EADmotors digital linear actuators are based on modified hybrid stepping motors that incorporate an integral nut assembly and precision lead screw design. They are extremely reliable devices that provide a simple and efficient method of creating a linear positioning system. EADmotors linear actuators are available in a variety of sizes from 17 through 42 frame. These precision devices are capable of producing a linear force of up to 700 pounds and resolution up to 0.000125" per 1.8° step.

Conventional designs feature internal rotating nuts made from SAE 660 bearing bronze. The *DuraPlus* series, available in both the L1, L2, and L3 frames, features a precision stainless steel shaft with low friction internal nuts made of a variety of engineered polymers. The *DuraPlus* series is the latest advance in integrated linear motion yielding both long life and smooth, quiet operation.



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*Solutions in motion*

EADmotors™ Eastern Air Devices Inc.

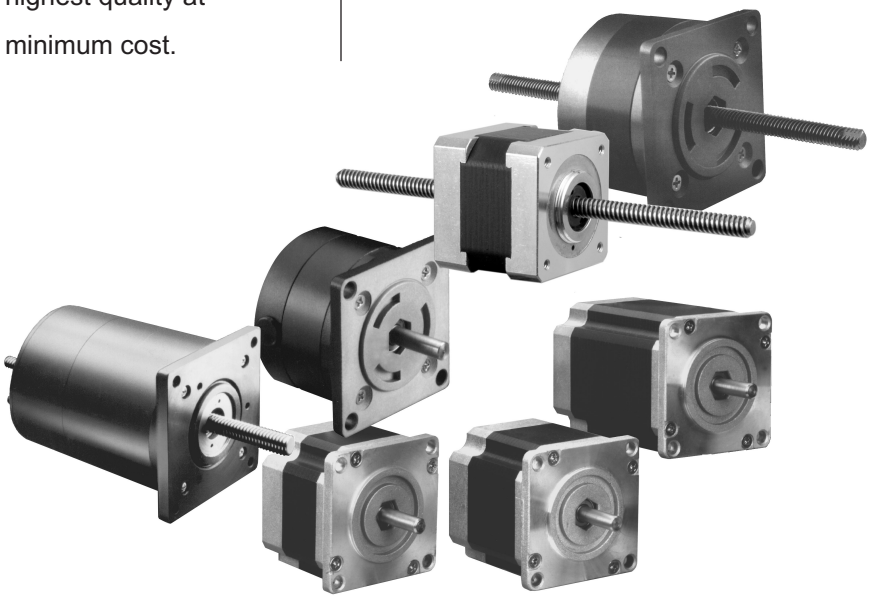
# Solutions to Problems

Think of EADmotors as the company that gives you solutions. We are capable of supplying auxiliary components and hardware to improve the performance and profitability of your products. We'd like to be a member of your team, working with you to produce products of the highest quality at minimum cost.

### Quick Delivery for Custom Products

EADmotors specializes in meeting individual customer requirements. We have developed the ability to quickly design and manufacture custom products and modified standards. Some typical examples of the type of modifications we do every day are:

- Connectors
- Shielded cables
- Special shafts
- Custom end caps and mounting configurations
- Custom windings to optimize performance
- Special packaging for harsh environments
- Precision tolerances



## Other Products in Motion

### Brushless DC Servo Motors

EADmotors offers a full line of brushless DC servo motors from size 17 through size 42. Our servo motors feature high energy neodymium magnets for high torque in a compact package. EAD servo motors offer high speed and extremely smooth and precise motion. They are fully compatible with industry standard analog and digital servo amplifiers. Our servo motors operate at high speed and provide extremely smooth and precise motion when stepping motor technology has reached its limits. Typical applications include high speed inspection systems, semiconductor handling equipment, document sorting equipment, and medical systems.

### Axial Fans

EADmotors manufactures a broad line of vane axial, tube axial, and axial fans. They encompass a wide range of air volumes at low to relatively high pressures. Designed for maximum efficiency at minimum input, these high-performance fans offer exceptionally long life and reliability. Quiet, smooth-running ball bearings eliminate the need for maintenance and lubrication.

# Other Products in Motion

## Centrifugal Blowers

EADmotors centrifugal blowers are known for quiet, reliable operation. Made in single, double, and inverted styles, they deliver up to 600 CFM airflow. The AC blowers have near-constant speed permanent split capacitor motors. Brushless DC models operate at fixed or variable speed.

## Synchronous Motors

Synchronous motors run at an exact speed. The speed will not vary with load or voltage. We make hysteresis and reluctance types in a wide range of frame sizes. EAD hysteresis-synchronous motors develop smooth, constant starting and accelerating torques. They synchronize any load within their torque rating—regardless of inertia.

EAD reluctance-synchronous motors function at constant speeds—and cost very little more than standard induction motors.

## Induction Motors

In single and 3-phase models, EAD induction motors are designed for a wide range of commercial and military applications. For low starting torque applications, permanent-split capacitor types offer higher efficiency and a higher power factor than other designs. Capacitor start and split phase motors are used when a high starting torque is required. EADmotors manufactures both high and low slip permanent split capacitor motors to meet a wide range of application requirements.

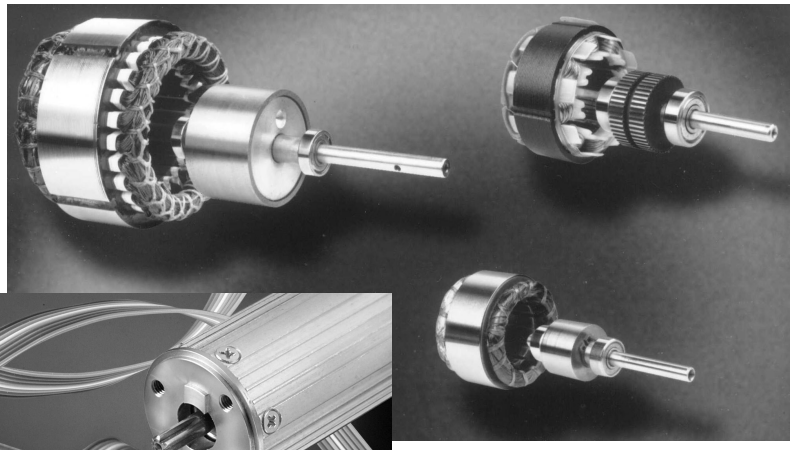
## Torque Motors

They may involve either static or dynamic forces. Applications may require smooth, moderate accelerating torque and low speed with speed ranges from near synchronous to zero.

## Stator/Rotor Sets

EADmotors provides frameless versions of all of our designs. Stator/rotor sets offer the advantage of eliminating component parts in a system such as redundant bearings and couplings. They also allow systems to be smaller and more reliable as possible failure modes are eliminated at the design stage. Contact us for more information about how stator/rotor sets can make your products more competitive.

In addition to stepping motors, EADmotors manufactures a wide range of other types of motors and controls as well as blowers and fans.

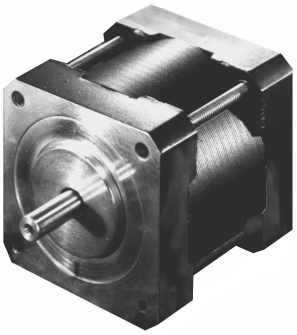




# Rotary Hybrid Stepping Motor 1.8°

SIZE
**17**
**1.57"**
SQ

## Conventional



EADmotors Size 17 hybrid DC stepping motors are precision bi-directional devices with position accuracy of ±5% non-cumulative.

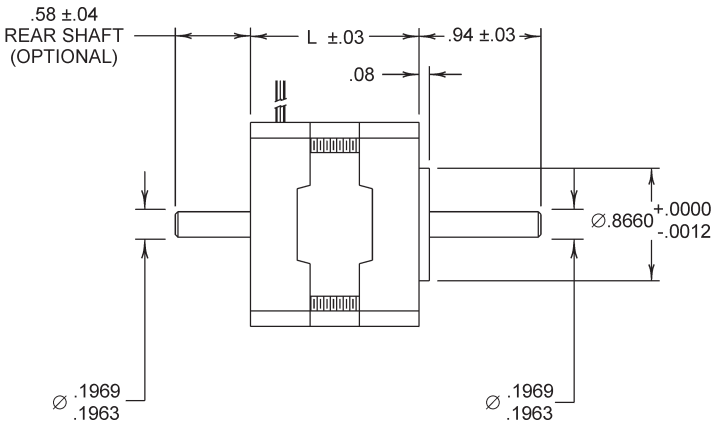
Motors are totally enclosed with permanently lubricated ball bearings.

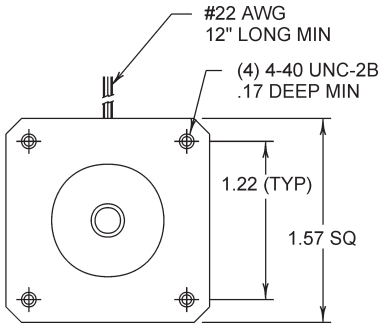
Standard motors have 4 or 6 leads. Motors with 5 or 8 leads can be furnished to meet existing applications.

EADmotors specializes in meeting the individual requirements of each application and offers engineering assistance for your design requirements.

## Electrical Ratings

| | | Unipolar Connection | | | | | Bipolar Connection | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Rotor Inertia (oz-in-sec$^2$) | Weight (ounces) |
| ZB17GBK-10 | 6 | 4.00 | 0.95 | 4.20 | 2.9 | 13.9 | 5.60 | 0.67 | 8.40 | 11.6 | 19 | 0.00024 | 7 |
| ZB17GBK-11 | 6 | 6.00 | 0.63 | 9.60 | 4.90 | 13.9 | 8.50 | 0.45 | 19.20 | 19.60 | 19 | | |
| ZB17GBK-12 | 6 | 12.00 | 0.32 | 38.40 | 22 | 13.9 | 17.00 | 0.23 | 76.80 | 88.0 | 19 | | |
| ZB17GBK-200 | 4 | | | | | | 1.90 | 2.00 | 0.95 | 1.40 | 19 | | |
| ZB17EBK-10 | 6 | 4.00 | 1.10 | 3.50 | 2.50 | 19 | 5.60 | 0.78 | 7.00 | 10.00 | 24.5 | 0.00035 | 7.7 |
| ZB17EBK-11 | 6 | 6.00 | 0.80 | 7.50 | 5.30 | 19 | 8.50 | 0.57 | 15.00 | 21.20 | 24.5 | | |
| ZB17EBK-12 | 6 | 12.00 | 0.40 | 30.00 | 27.3 | 19 | 17.00 | 0.28 | 60.00 | 109.2 | 24.5 | | |
| ZB17EBK-200 | 4 | | | | | | 2.40 | 2.00 | 1.20 | 2.40 | 24.5 | | |
| ZB17BBK-10 | 6 | 4.00 | 1.20 | 3.30 | 3.2 | 28.3 | 5.90 | 0.85 | 6.60 | 12.8 | 35 | 0.00051 | 10.6 |
| ZB17BBK-11 | 6 | 6.00 | 0.92 | 6.50 | 6.0 | 28.3 | 8.50 | 0.65 | 13.00 | 24.0 | 35 | | |
| ZB17BBK-12 | 6 | 12.00 | 0.46 | 36.00 | 23.5 | 28.3 | 17.00 | 0.33 | 52.00 | 94.0 | 35 | | |
| ZB17BBK-200 | 4 | | | | | | 2.75 | 2.00 | 1.38 | 2.70 | 35 | | |




**Size 17**

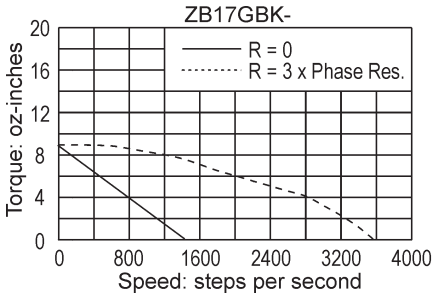
| Model Series | Dimension "L" (inches) |
|---|---|
| ZB17GBK | 1.30 |
| ZB17EBK | 1.54 |
| ZB17BBK | 1.85 |

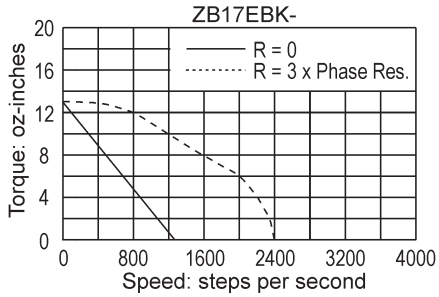
See page 38 for Connection Diagrams.

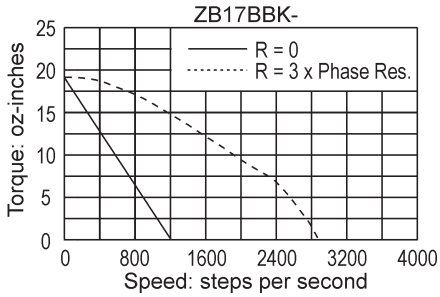
For the rear shaft option, use the suffix "R" (for example, ZB17GBK-10R).

## Pullout Torque Speed Curves

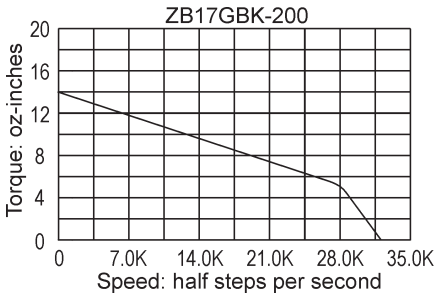
### Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On

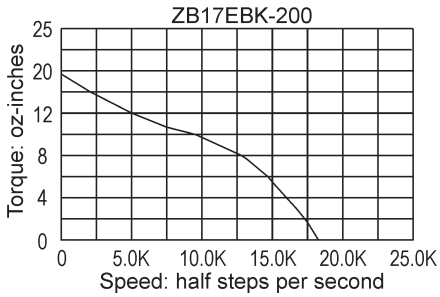


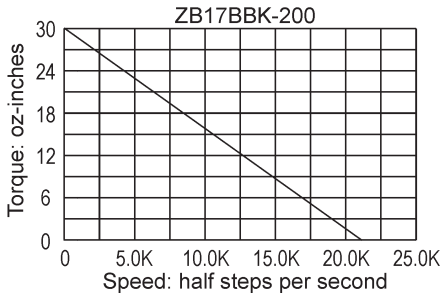




### Typical Bipolar Performance: 40 VDC Power Supply, 2 Amp/Phase



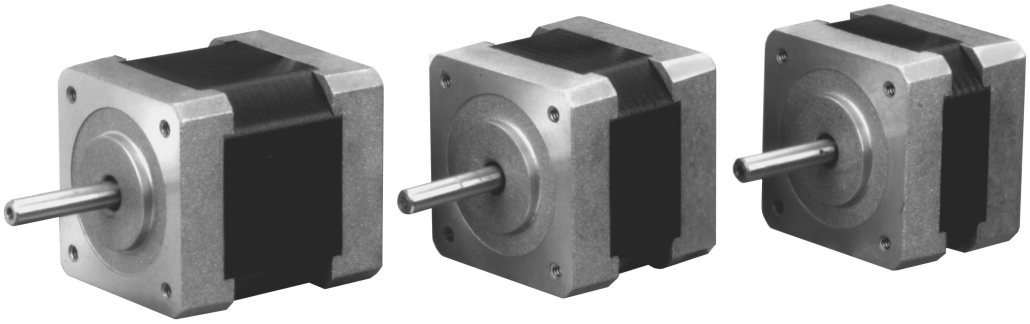



# Rotary Hybrid Stepping Motor 1.8°

SIZE **17** **1.65"** SQ

## High Torque



EADmotors Size 17 hybrid DC stepping motors are precision bi-directional devices with position accuracy of ±6% non-cumulative.

Motors are totally enclosed with permanently lubricated ball bearings.

Standard motors have 4 or 6 leads. Motors with 5 or 8 leads can be furnished to meet existing applications.

EADmotors specializes in meeting the individual requirements of each application and offers engineering assistance for your design requirements.

## Electrical Ratings

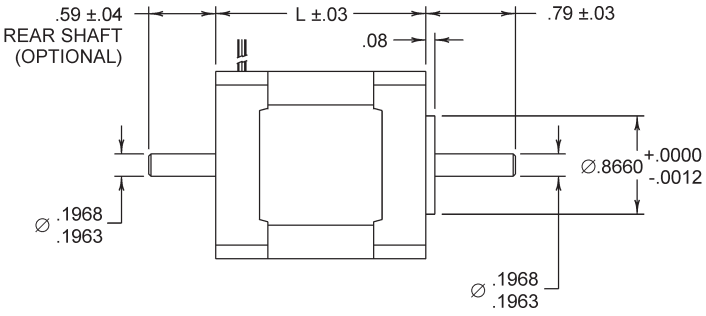
| | | Unipolar Connection | | | | | Bipolar Connection | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Rotor Inertia (oz-in-sec$^2$) | Weight (ounces) |
| LH1713-10 | 6 | 4.00 | 0.95 | 4.20 | 2.5 | 22.2 | 5.60 | 0.67 | 8.40 | 10.0 | 29.0 | | |
| LH1713-11 | 6 | 6.00 | 0.62 | 9.60 | 5.8 | 22.2 | 8.50 | 0.44 | 19.2 | 23.2 | 29.0 | | |
| LH1713-12 | 6 | 12.00 | 0.31 | 38.5 | 23 | 22.2 | 17.00 | 0.22 | 77 | 92 | 29.0 | | |
| LH1713-14 | 6 | 9.60 | 0.40 | 24.0 | 15.0 | 22.2 | 13.6 | 0.28 | 48.0 | 60 | 29.0 | 0.00053 | 7.0 |
| LH1713-M100 | 4 | | | | | | 3.8 | 1.00 | 3.8 | 4.8 | 29.0 | | |
| LH1713-M150 | 4 | | | | | | 2.8 | 1.5 | 1.90 | 2.3 | 29.0 | | |
| LH1713-M200 | 4 | | | | | | 1.9 | 2.0 | 0.95 | 1.2 | 29.0 | | |
| LH1715-10 | 6 | 4.00 | 1.2 | 3.3 | 3.2 | 36.1 | 5.60 | 0.85 | 6.60 | 12.8 | 47.0 | | |
| LH1715-11 | 6 | 6.00 | 0.80 | 7.50 | 7.0 | 36.1 | 8.50 | 0.57 | 15.0 | 28 | 47.0 | | |
| LH1715-12 | 6 | 12.00 | 0.40 | 30.0 | 28 | 36.1 | 17.00 | 0.28 | 60.0 | 112 | 47.0 | | |
| LH1715-13 | 6 | 24.0 | 0.20 | 120 | 112 | 36.1 | 33.9 | 0.14 | 240 | 448 | 47.0 | 0.00081 | 9.0 |
| LH1715-M100 | 4 | | | | | | 4.7 | 1.00 | 4.7 | 9.1 | 47.0 | | |
| LH1715-M150 | 4 | | | | | | 3.6 | 1.5 | 2.4 | 4.7 | 47.0 | | |
| LH1715-M200 | 4 | | | | | | 2.4 | 2.0 | 1.2 | 2.3 | 47.0 | | |
| LH1719-10 | 6 | 4.00 | 1.20 | 3.30 | 2.8 | 44.4 | 5.7 | 0.85 | 6.60 | 11.2 | 58.0 | | |
| LH1719-11 | 6 | 6.00 | 0.80 | 7.50 | 7.0 | 44.4 | 8.50 | 0.57 | 15.0 | 28 | 58.0 | | |
| LH1719-12 | 6 | 12.00 | 0.40 | 30.0 | 28 | 44.4 | 17.00 | 0.28 | 60.0 | 112 | 58.0 | | |
| LH1719-13 | 6 | 24.0 | 0.20 | 120 | 112 | 44.4 | 33.9 | 0.14 | 240 | 448 | 58.0 | 0.00106 | 11.8 |
| LH1719-M100 | 4 | | | | | | 5.2 | 1.00 | 5.2 | 8.4 | 58.0 | | |
| LH1719-M150 | 4 | | | | | | 3.7 | 1.5 | 2.5 | 4.3 | 58.0 | | |
| LH1719-M200 | 4 | | | | | | 2.4 | 2.0 | 1.2 | 2.2 | 58.0 | | |

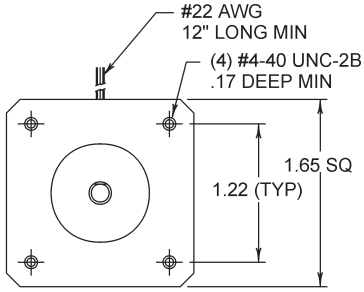
*Solutions in motion*

EAD™ motors Eastern Air Devices Inc.



1 Progress Drive, Dover, New Hampshire 03820-5449 USA, (603) 742-3330, Fax: (603) 742-9080, www.eadmotors.com




**Size 17**

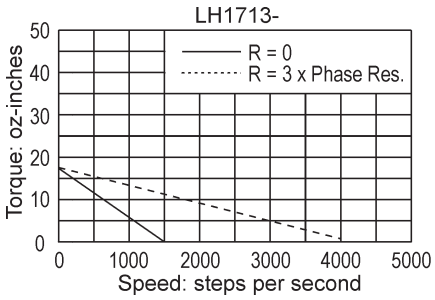
| Model Series | Dimension "L" (inches) |
|---|---|
| LH1713 | 1.28 |
| LH1715 | 1.52 |
| LH1719 | 1.85 |

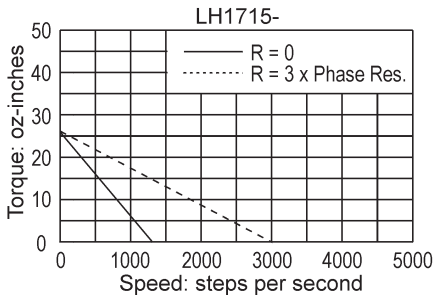
See page 38 for Connection Diagrams.

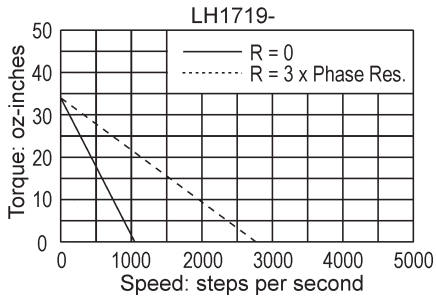
For the rear shaft extension, use the suffix "R" (for example, LH1713-10R).

## Pullout Torque Speed Curves

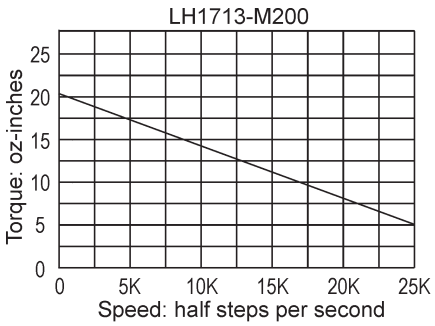
### Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On

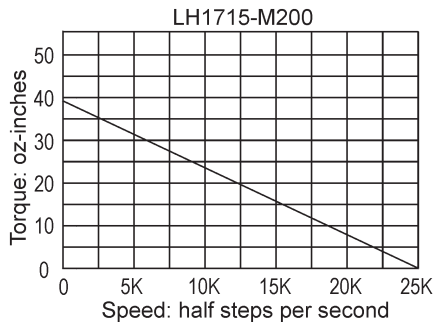


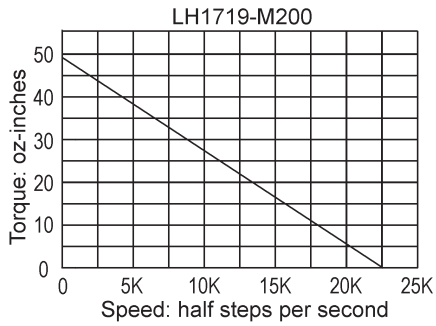




### Typical Bipolar Performance: 40 VDC Power Supply, 2 Amps/Phase



# Rotary Hybrid Stepping Motor 1.8°

SIZE **23** **2.25"** DIA

## Conventional



EADmotors Size 23 hybrid DC stepping motors are precision bi-directional devices with position accuracy of ±3% non-cumulative.

Motors are totally enclosed with permanently lubricated ball bearings.

Standard motors have 4 or 6 leads. Motors with 5 or 8 leads can be furnished to meet existing applications. These motors are also available in 5 and 7.5 degree step angles.

EADmotors specializes in meeting the individual requirements of each application and offers engineering assistance for your design requirements.

## Electrical Ratings

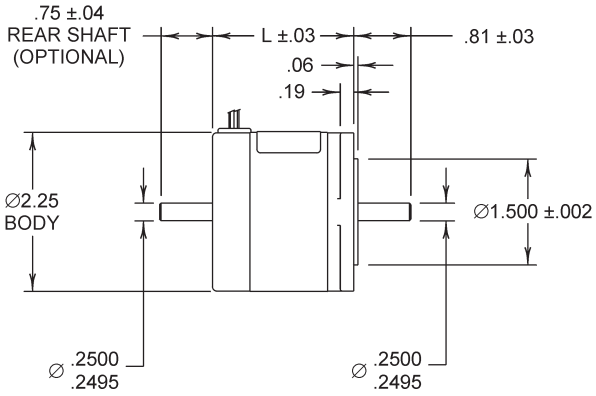
| | | Unipolar Connection | | | | | Bipolar Connection | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Rotor Inertia (oz-in-sec$^2$) | Weight (ounces) |
| LA23GCK-209 | 6 | 1.40 | 5.90 | 0.235 | 0.3 | 38.5 | 1.98 | 4.18 | 0.47 | 1.0 | 48 | | |
| LA23GCK-210 | 6 | 4.00 | 1.54 | 2.60 | 3.2 | 38.5 | 5.70 | 1.10 | 5.20 | 12.7 | 48 | | |
| LA23GCK-211 | 6 | 6.00 | 1.20 | 5.00 | 5.4 | 38.5 | 8.50 | 0.85 | 10.00 | 21.6 | 48 | | |
| LA23GCK-212 | 6 | 12.00 | 0.60 | 20.00 | 21.6 | 38.5 | 17.00 | 0.42 | 40.00 | 86.4 | 48 | | |
| LA23GCK-213 | 6 | 24.00 | 0.30 | 80.00 | 81.2 | 38.5 | 34.00 | 0.21 | 160.00 | 324.6 | 48 | 0.00081 | 14 |
| LA23GCK-M100 | 4 | | | | | | 6.0 | 1.00 | 5.90 | 16.9 | 48 | | |
| LA23GCK-M200 | 4 | | | | | | 3.0 | 2.00 | 1.50 | 4.2 | 48 | | |
| LA23GCK-M300 | 4 | | | | | | 2.0 | 3.00 | 0.66 | 1.9 | 48 | | |
| LA23GCK-M400 | 4 | | | | | | 1.5 | 4.00 | 0.37 | 1.1 | 48 | | |
| LA23ECK-3 | 6 | 1.40 | 3.89 | 0.36 | 0.6 | 57.5 | 2.00 | 2.78 | 0.72 | 2.4 | 72 | | |
| LA23ECK-6 | 6 | 3.40 | 1.55 | 2.20 | 4.1 | 57.5 | 4.80 | 1.09 | 4.40 | 16.2 | 72 | | |
| LA23ECK-4 | 6 | 5.10 | 1.00 | 5.10 | 9.7 | 57.5 | 7.20 | 0.71 | 10.20 | 38.9 | 72 | | |
| LA23ECK-11 | 6 | 6.00 | 0.97 | 6.20 | 10.6 | 57.5 | 8.50 | 0.68 | 12.40 | 42.4 | 72 | | |
| LA23ECK-12 | 6 | 12.00 | 0.48 | 25.00 | 41.19 | 57.5 | 17.00 | 0.34 | 50.00 | 164.76 | 72 | 0.00166 | 19 |
| LA23ECK-13 | 6 | 24.00 | 0.25 | 96.00 | 131.40 | 57.5 | 34.00 | 0.18 | 192.00 | 525.60 | 72 | | |
| LA23ECK-M100 | 4 | | | | | | 5.6 | 1.00 | 5.6 | 25.6 | 72 | | |
| LA23ECK-M200 | 4 | | | | | | 2.8 | 2.00 | 1.4 | 6.4 | 72 | | |
| LA23ECK-M300 | 4 | | | | | | 1.9 | 3.00 | 0.62 | 2.8 | 72 | | |
| LA23ECK-M400 | 4 | | | | | | 1.4 | 4.00 | 0.35 | 1.6 | 72 | | |
| LA23BCK-9 | 6 | 1.70 | 4.59 | 0.37 | 0.8 | 120 | 2.40 | 3.25 | 0.74 | 3.0 | 150 | | |
| LA23BCK-10 | 6 | 4.30 | 1.79 | 2.40 | 5.3 | 120 | 6.10 | 1.27 | 4.80 | 21.3 | 150 | | |
| LA23BCK-11 | 6 | 5.40 | 1.54 | 3.50 | 7.8 | 120 | 7.60 | 1.09 | 7.00 | 31.2 | 150 | | |
| LA23BCK-47 | 6 | 6.00 | 1.25 | 4.80 | 11.4 | 120 | 8.50 | 0.88 | 9.60 | 45.6 | 150 | | |
| LA23BCK-40 | 6 | 12.00 | 0.66 | 18.20 | 41.2 | 120 | 17.00 | 0.47 | 36.40 | 164.6 | 150 | | |
| LA23BCK-41 | 6 | 24.00 | 0.36 | 66.00 | 143.3 | 120 | 34.00 | 0.26 | 132.00 | 573.2 | 150 | 0.00331 | 32 |
| LA23BCK-M100 | 4 | | | | | | 7.6 | 1.00 | 7.6 | 35.2 | 150 | | |
| LA23BCK-M200 | 4 | | | | | | 3.8 | 2.00 | 1.9 | 8.8 | 150 | | |
| LA23BCK-M300 | 4 | | | | | | 2.5 | 3.00 | 0.84 | 3.9 | 150 | | |
| LA23BCK-M400 | 4 | | | | | | 1.9 | 4.00 | 0.48 | 2.2 | 150 | | |
| LA23DGK-1 | 6 | 2.20 | 4.58 | 0.48 | 1.1 | 168 | 3.10 | 3.23 | 0.96 | 4.4 | 210 | | |
| LA23DGK-2 | 6 | 3.40 | 2.83 | 1.20 | 2.9 | 168 | 4.80 | 2.00 | 2.40 | 11.4 | 210 | | |
| LA23DGK-23 | 6 | 6.00 | 1.76 | 3.40 | 8.4 | 168 | 8.50 | 1.25 | 6.80 | 33.4 | 210 | | |
| LA23DGK-24 | 6 | 12.00 | 0.75 | 16.00 | 39.0 | 168 | 17.00 | 0.53 | 32.00 | 156.0 | 210 | 0.00497 | 47 |
| LA23DGK-25 | 6 | 24.00 | 0.44 | 55.00 | 117.1 | 168 | 34.00 | 0.31 | 110.00 | 468.0 | 210 | | |
| LA23DGK-M200 | 4 | | | | | | 5.3 | 2.00 | 2.65 | 13.2 | 210 | | |
| LA23DGK-M300 | 4 | | | | | | 3.54 | 3.00 | 1.18 | 5.88 | 210 | | |
| LA23DGK-M400 | 4 | | | | | | 2.65 | 4.00 | 0.66 | 3.3 | 210 | | |

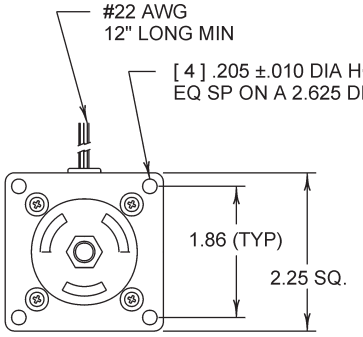
*Solutions in motion*

EAD motors™ Eastern Air Devices Inc.



1 Progress Drive, Dover, New Hampshire 03820-5449 USA, (603) 742-3330, Fax: (603) 742-9080, www.eadmotors.com




## Size 23

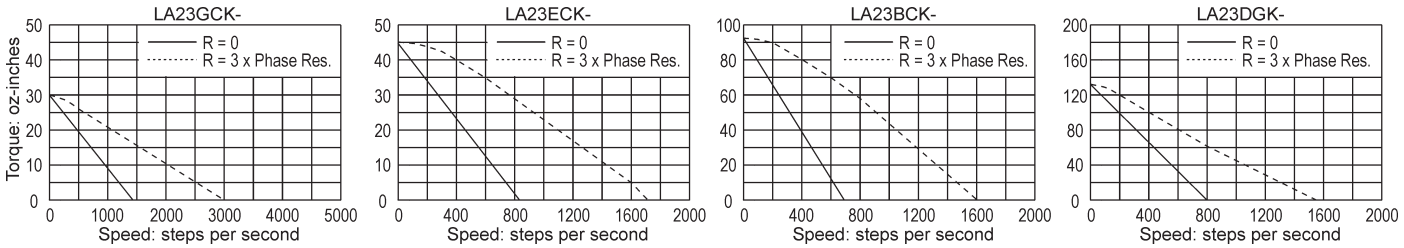
| Model Series | Dimension "L" (inches) |
|---|---|
| LA23GCK | 1.60 |
| LA23ECK | 2.00 |
| LA23BCK | 3.00 |
| LA23DGK | 4.00 |

See page 38 for Connection Diagrams.

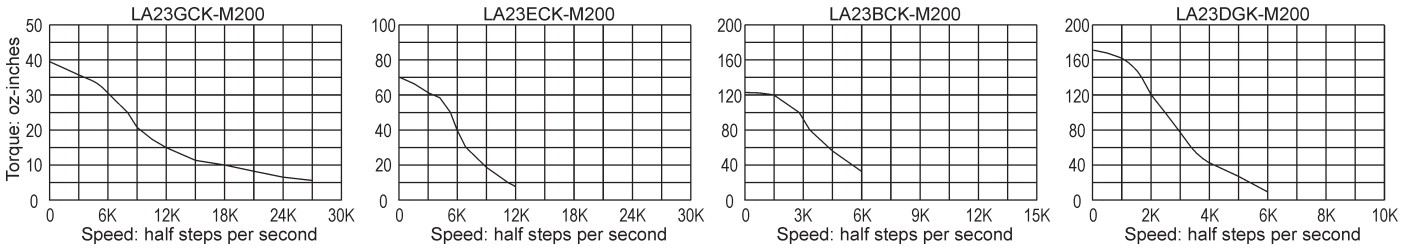
For the rear shaft option, use the suffix "R" (for example, LA23GCK-209R).

## Pullout Torque Speed Curves

### Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On



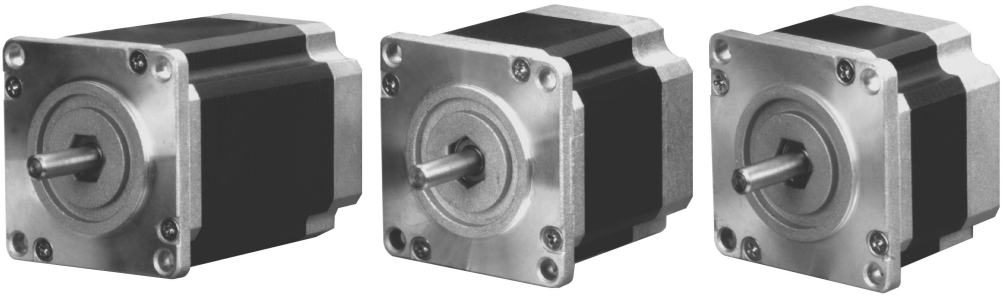

### Typical Bipolar Performance: 40 VDC Power Supply, 2 Amps



# Rotary Hybrid Stepping Motor 1.8°

SIZE **23** **2.22"** SQ

## High Torque



EADmotors Size 23 hybrid DC stepping motors are precision bi-directional devices with position accuracy of ±3% non-cumulative.

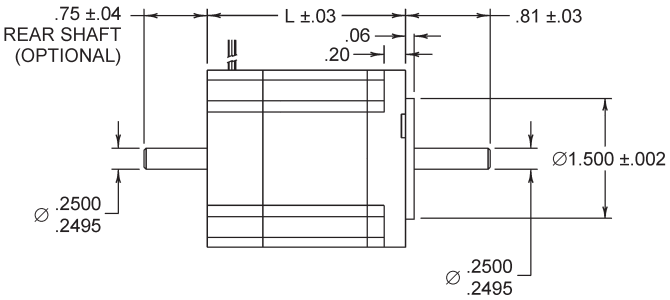
Motors are totally enclosed with permanently lubricated ball bearings.

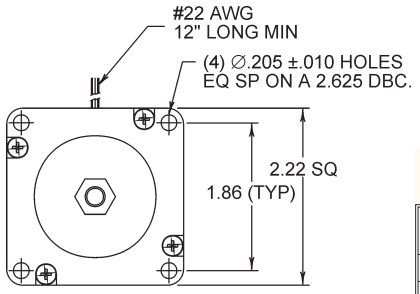
Standard motors have 4 or 6 leads. Motors with 5 or 8 leads can be furnished to meet existing applications.

EADmotors specializes in meeting the individual requirements of each application and offers engineering assistance for your design requirements.

## Electrical Ratings

| | | Unipolar Connection | | | | | Bipolar Connection | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Rotor Inertia (oz-in-sec$^2$) | Weight (ounces) |
| LH2318-05 | 6 | 11.90 | 0.50 | 23.50 | 41.4 | 72 | 16.8 | 0.35 | 47.00 | 165.6 | 90 | | |
| LH2318-1 | 6 | 6.00 | 1.00 | 6.00 | 10.8 | 72 | 8.49 | 0.71 | 12.00 | 43.2 | 90 | | |
| LH2318-2 | 6 | 3.00 | 2.00 | 1.57 | 2.6 | 72 | 4.24 | 1.41 | 3.14 | 10.4 | 90 | | |
| LH2318-3 | 6 | 1.80 | 3.00 | 0.61 | 1.0 | 72 | 2.55 | 2.12 | 1.22 | 4.0 | 90 | 0.002 | 17 |
| LH2318-M100 | 4 | | | | | | 5.80 | 1.00 | 5.78 | 20.3 | 90 | | |
| LH2318-M200 | 4 | | | | | | 3.00 | 2.00 | 1.50 | 5.2 | 90 | | |
| LH2318-M300 | 4 | | | | | | 1.80 | 3.00 | 0.60 | 2.0 | 90 | | |
| LH2322-05 | 6 | 15.40 | 0.50 | 30.90 | 67.3 | 120 | 21.8 | 0.35 | 61.80 | 269.2 | 150 | | |
| LH2322-1 | 6 | 7.60 | 1.00 | 7.59 | 17.7 | 120 | 10.8 | 0.71 | 15.18 | 70.8 | 150 | | |
| LH2322-2 | 6 | 3.80 | 2.00 | 1.91 | 4.2 | 120 | 5.37 | 1.41 | 3.82 | 16.8 | 150 | | |
| LH2322-3 | 6 | 2.30 | 3.00 | 0.76 | 1.6 | 120 | 3.25 | 2.12 | 1.52 | 6.4 | 150 | 0.0035 | 24 |
| LH2322-M100 | 4 | | | | | | 7.90 | 1.00 | 7.92 | 35.00 | 150 | | |
| LH2322-M200 | 4 | | | | | | 3.80 | 2.00 | 1.90 | 8.60 | 150 | | |
| LH2322-M300 | 4 | | | | | | 2.40 | 3.00 | 0.80 | 3.50 | 150 | | |
| LH2331-05 | 6 | 17.90 | 0.50 | 35.70 | 93.8 | 190 | 25.3 | 0.35 | 71.40 | 375.2 | 240 | | |
| LH2331-1 | 6 | 9.20 | 1.00 | 9.23 | 22.5 | 190 | 13.0 | 0.71 | 18.46 | 90.0 | 240 | | |
| LH2331-2 | 6 | 4.50 | 2.00 | 2.24 | 5.2 | 190 | 6.36 | 1.41 | 4.48 | 20.8 | 240 | | |
| LH2331-3 | 6 | 2.80 | 3.00 | 0.92 | 2.1 | 190 | 3.96 | 2.12 | 1.84 | 8.4 | 240 | 0.0061 | 37 |
| LH2331-M100 | 4 | | | | | | 9.10 | 1.00 | 9.13 | 45.4 | 240 | | |
| LH2331-M200 | 4 | | | | | | 4.70 | 2.00 | 2.33 | 11.5 | 240 | | |
| LH2331-M300 | 4 | | | | | | 3.00 | 3.00 | 1.00 | 4.8 | 240 | | |



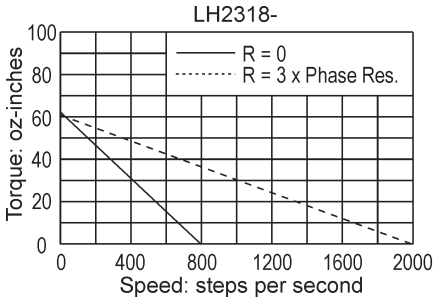

**Size 23**

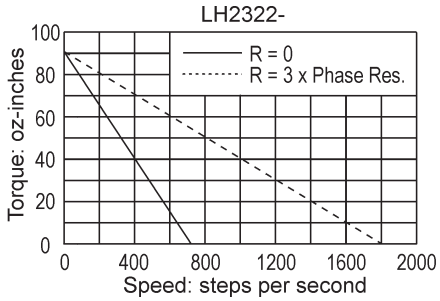
| Model Series | Dimension "L" (inches) |
|---|---|
| LH2318 | 1.75 |
| LH2322 | 2.21 |
| LH2331 | 3.09 |

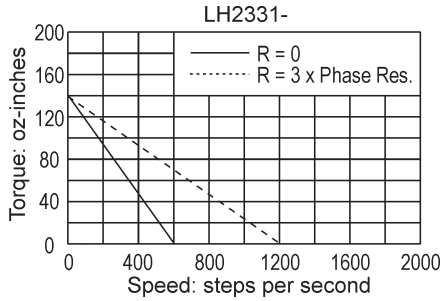
See page 38 for Connection Diagrams.
For the rear shaft option, use the suffix "R" (for example, LH2318-2R).

## Pullout Torque Speed Curves

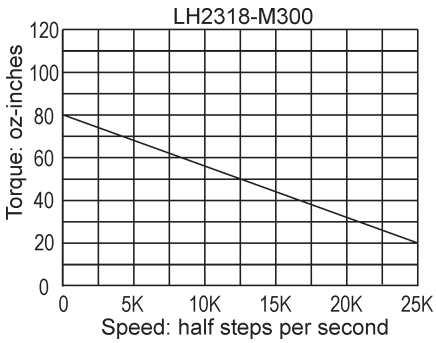
### Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On

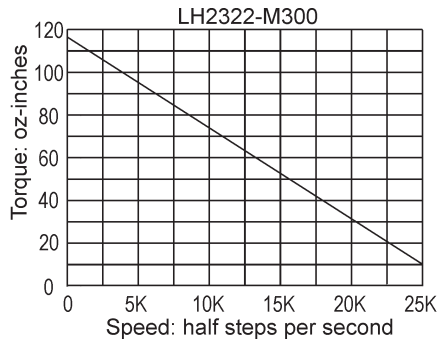


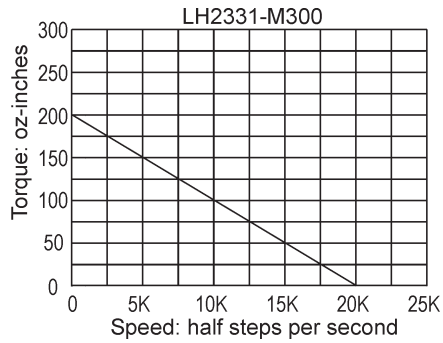




### Typical Bipolar Performance: 80 VDC Power Supply, 3 Amps/Phase



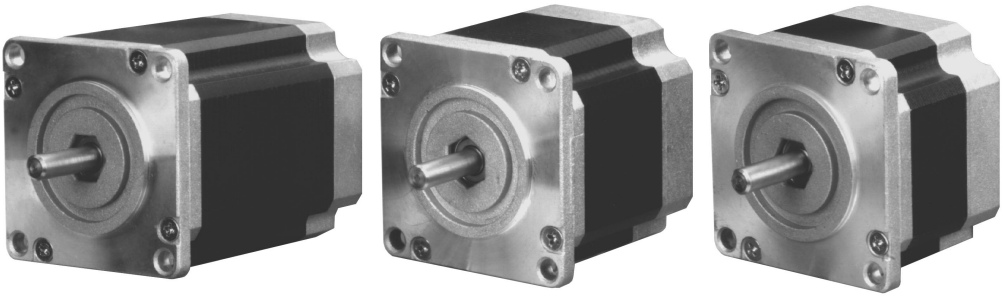



# Rotary Hybrid Stepping Motor 0.9°

SIZE **23** **2.22"** SQ

## High Torque



EADmotors Size 23 hybrid DC 0.9° stepping motors are precision bi-directional devices with position accuracy of ±8% non-cumulative.

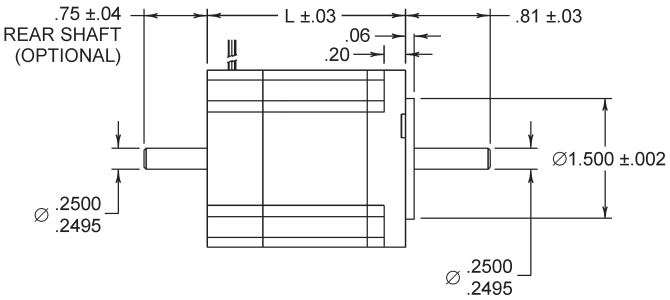
Motors are totally enclosed with permanently lubricated ball bearings.

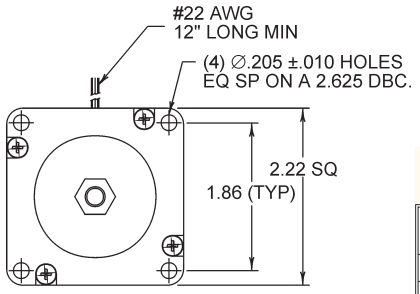
Standard motors have 4 or 6 leads. Motors with 5 or 8 leads can be furnished to meet existing applications.

EADmotors specializes in meeting the individual requirements of each application and offers engineering assistance for your design requirements.

## Electrical Ratings

| | | Unipolar Connection | | | | | Bipolar Connection | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque ($oz\text{-}in$) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Rotor Inertia ($oz\text{-}in\text{-}sec^2$) | Weight (ounces) |
| MH2318-05 | 6 | 11.90 | 0.50 | 23.50 | 41.4 | 72 | 16.8 | 0.35 | 47.00 | 165.6 | 90 | | |
| MH2318-1 | 6 | 6.00 | 1.00 | 6.00 | 10.8 | 72 | 8.49 | 0.71 | 12.00 | 43.2 | 90 | | |
| MH2318-2 | 6 | 3.00 | 2.00 | 1.57 | 2.6 | 72 | 4.24 | 1.41 | 3.14 | 10.4 | 90 | | |
| MH2318-3 | 6 | 1.80 | 3.00 | 0.61 | 1.0 | 72 | 2.55 | 2.12 | 1.22 | 4.0 | 90 | 0.002 | 17 |
| MH2318-M100 | 4 | | | | | | 5.80 | 1.00 | 5.78 | 20.3 | 90 | | |
| MH2318-M200 | 4 | | | | | | 3.00 | 2.00 | 1.50 | 5.2 | 90 | | |
| MH2318-M300 | 4 | | | | | | 1.80 | 3.00 | 0.60 | 2.0 | 90 | | |
| MH2322-05 | 6 | 15.40 | 0.50 | 30.90 | 67.3 | 120 | 21.8 | 0.35 | 61.80 | 269.2 | 150 | | |
| MH2322-1 | 6 | 7.60 | 1.00 | 7.59 | 17.7 | 120 | 10.8 | 0.71 | 15.18 | 70.8 | 150 | | |
| MH2322-2 | 6 | 3.80 | 2.00 | 1.91 | 4.2 | 120 | 5.37 | 1.41 | 3.82 | 16.8 | 150 | | |
| MH2322-3 | 6 | 2.30 | 3.00 | 0.76 | 1.6 | 120 | 3.25 | 2.12 | 1.52 | 6.4 | 150 | 0.0035 | 24 |
| MH2322-M100 | 4 | | | | | | 7.90 | 1.00 | 7.92 | 35.00 | 150 | | |
| MH2322-M200 | 4 | | | | | | 3.80 | 2.00 | 1.90 | 8.60 | 150 | | |
| MH2322-M300 | 4 | | | | | | 2.40 | 3.00 | 0.80 | 3.50 | 150 | | |
| MH2331-05 | 6 | 17.90 | 0.50 | 35.70 | 93.8 | 190 | 25.3 | 0.35 | 71.40 | 375.2 | 240 | | |
| MH2331-1 | 6 | 9.20 | 1.00 | 9.23 | 22.5 | 190 | 13.0 | 0.71 | 18.46 | 90.0 | 240 | | |
| MH2331-2 | 6 | 4.50 | 2.00 | 2.24 | 5.2 | 190 | 6.36 | 1.41 | 4.48 | 20.8 | 240 | | |
| MH2331-3 | 6 | 2.80 | 3.00 | 0.92 | 2.1 | 190 | 3.96 | 2.12 | 1.84 | 8.4 | 240 | 0.0061 | 37 |
| MH2331-M100 | 4 | | | | | | 9.10 | 1.00 | 9.13 | 45.4 | 240 | | |
| MH2331-M200 | 4 | | | | | | 4.70 | 2.00 | 2.33 | 11.5 | 240 | | |
| MH2331-M300 | 4 | | | | | | 3.00 | 3.00 | 1.00 | 4.8 | 240 | | |



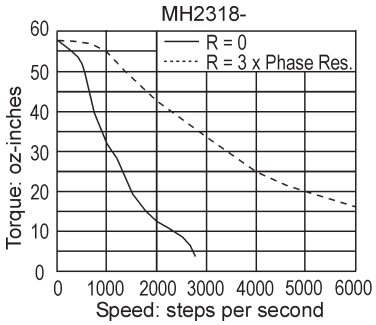

**Size 23**

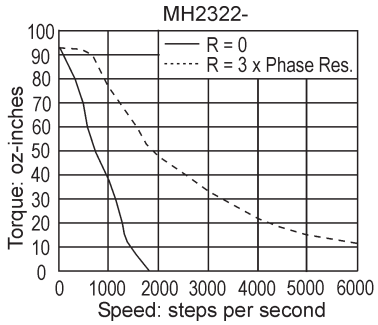
| Model Series | Dimension "L" (inches) |
|---|---|
| MH2318 | 1.75 |
| MH2322 | 2.21 |
| MH2331 | 3.09 |

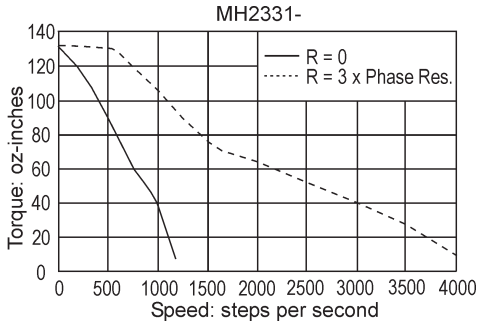
See page 38 for Connection Diagrams.
For the rear shaft option, use the suffix "R" (for example, MH2318-2R).

## Pullout Torque Speed Curves

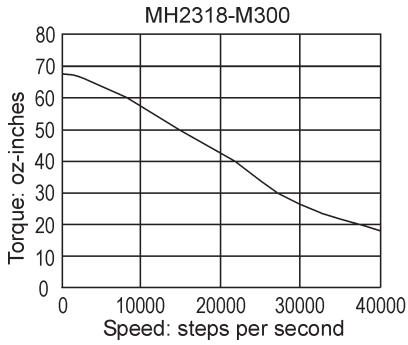
### Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On

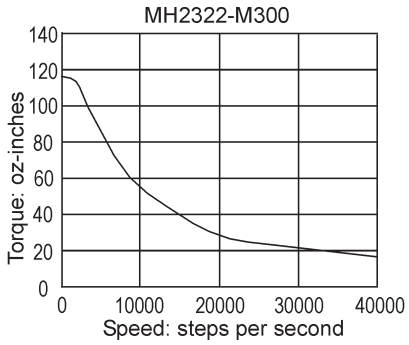


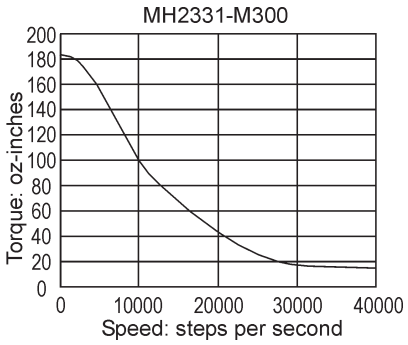




### Typical Bipolar Performance: 80 VDC Power Supply, 3 Amps/Phase



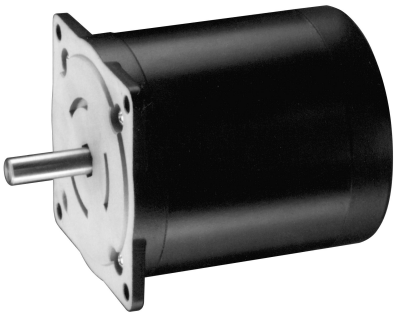



# Rotary Hybrid Stepping Motor 1.8°

SIZE
**34**
**3.38"**
DIA

## Conventional



EADmotors Size 34 hybrid DC stepping motors are precision bi-directional devices with position accuracy of ±3% non-cumulative.

Motors are totally enclosed with permanently lubricated ball bearings.

Standard motors have 4 or 6 leads. Motors with 5 or 8 leads can be furnished to meet existing applications. These motors are also available in 1.875 and 5 degree step angles.

EADmotors specializes in meeting the individual requirements of each application and offers engineering assistance for your design requirements.

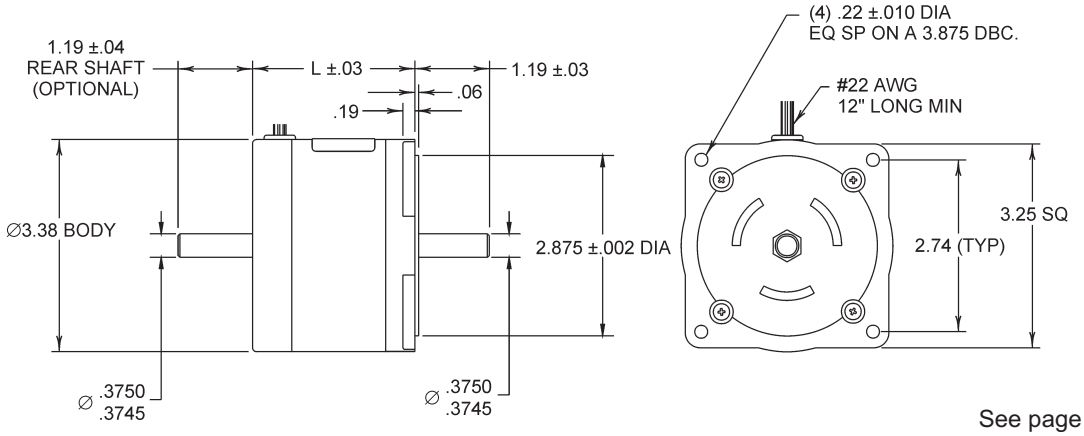
## Electrical Ratings

| | | Unipolar Connection | | | | | Bipolar Connection | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Rotor Inertia (oz-in-sec²) | Weight (ounces) |
| LA34AGK-1 | 6 | 1.70 | 4.72 | 0.36 | 1.62 | 188 | 2.4 | 3.34 | 0.72 | 6.48 | 235 | | |
| LA34AGK-2 | 6 | 2.60 | 3.06 | 0.85 | 4.15 | 188 | 3.7 | 2.17 | 1.70 | 16.60 | 235 | | |
| LA34AGK-4 | 6 | 5.30 | 1.61 | 3.30 | 17.50 | 188 | 7.5 | 1.14 | 6.60 | 70.00 | 235 | | |
| LA34AGK-9 | 6 | 12.00 | 0.67 | 18.00 | 80.00 | 188 | 17.0 | 0.47 | 36.00 | 320.00 | 235 | | |
| LA34AGK-10 | 6 | 24.00 | 0.33 | 72.00 | 315.00 | 188 | 34.0 | 0.24 | 144.00 | 1260.00 | 235 | 0.0091 | 48 |
| LA34AGK-M200 | 4 | | | | | | 4.4 | 2.00 | 2.2 | 20.4 | 235 | | |
| LA34AGK-M300 | 4 | | | | | | 2.9 | 3.00 | 0.96 | 9.07 | 235 | | |
| LA34AGK-M400 | 4 | | | | | | 2.2 | 4.00 | 0.55 | 5.1 | 235 | | |
| LA34AGK-M600 | 4 | | | | | | 1.5 | 6.00 | 0.24 | 2.27 | 235 | | |
| LA34BJK-1 | 6 | 2.50 | 4.55 | 0.55 | 2.75 | 336 | 3.5 | 3.18 | 1.10 | 11.00 | 420 | | |
| LA34BJK-2 | 6 | 3.00 | 4.00 | 0.75 | 3.60 | 336 | 4.2 | 2.80 | 1.50 | 14.40 | 420 | | |
| LA34BJK-30 | 6 | 6.00 | 2.00 | 3.00 | 16.45 | 336 | 8.5 | 1.42 | 6.00 | 65.80 | 420 | | |
| LA34BJK-31 | 6 | 12.00 | 1.04 | 11.50 | 64.20 | 336 | 17.0 | 0.74 | 23.00 | 256.80 | 420 | | |
| LA34BJK-32 | 6 | 24.00 | 0.55 | 44.00 | 237.00 | 336 | 34.0 | 0.39 | 88.00 | 948.00 | 420 | 0.0170 | 80 |
| LA34BJK-M200 | 4 | | | | | | 6.0 | 2.00 | 3.0 | 33.2 | 420 | | |
| LA34BJK-M300 | 4 | | | | | | 4.0 | 3.00 | 1.33 | 14.8 | 420 | | |
| LA34BJK-M400 | 4 | | | | | | 3.0 | 4.00 | 0.75 | 8.3 | 420 | | |
| LA34BJK-M600 | 4 | | | | | | 2.0 | 6.00 | 0.33 | 3.7 | 420 | | |
| LA34CKK-2 | 6 | 2.20 | 7.10 | 0.31 | 1.81 | 496 | 3.1 | 5.00 | 0.62 | 7.24 | 620 | | |
| LA34CKK-1 | 6 | 2.80 | 5.38 | 0.52 | 3.10 | 496 | 4.0 | 3.85 | 1.04 | 12.40 | 620 | | |
| LA34CKK-3 | 6 | 4.30 | 3.58 | 1.20 | 7.65 | 496 | 6.1 | 2.54 | 2.40 | 30.60 | 620 | | |
| LA34CKK-37 | 6 | 6.00 | 2.31 | 2.60 | 15.50 | 496 | 8.5 | 1.63 | 5.20 | 62.00 | 620 | | |
| LA34CKK-38 | 6 | 12.00 | 1.17 | 10.30 | 60.00 | 496 | 17.0 | 0.82 | 20.60 | 240.00 | 620 | 0.0265 | 121 |
| LA34CKK-39 | 6 | 24.00 | 0.59 | 41.00 | 249.00 | 496 | 34.0 | 0.41 | 82.00 | 996.00 | 620 | | |
| LA34CKK-M200 | 4 | | | | | | 7.7 | 2.00 | 3.8 | 54.5 | 620 | | |
| LA34CKK-M300 | 4 | | | | | | 5.1 | 3.00 | 1.7 | 24.2 | 620 | | |
| LA34CKK-M400 | 4 | | | | | | 3.8 | 4.00 | 0.96 | 13.6 | 620 | | |
| LA34CKK-M600 | 4 | | | | | | 2.6 | 6.00 | 0.43 | 6.1 | 620 | | |

*Solutions in motion*

EAD motors™ Eastern Air Devices Inc.


1 Progress Drive, Dover, New Hampshire 03820-5449 USA, (603) 742-3330, Fax: (603) 742-9080, www.eadmotors.com




**Size 34**

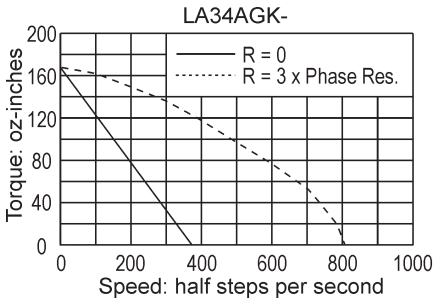
| Model Series | Dimension "L" (inches) |
|---|---|
| LA34AGK | 2.45 |
| LA34BJK | 3.70 |
| LA34CKK | 5.08 |

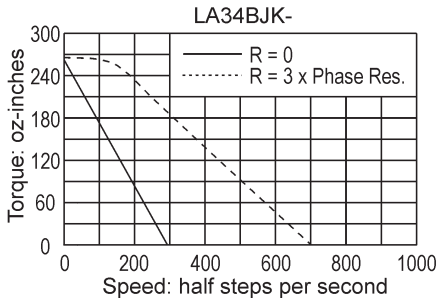
See page 38 for Connection Diagrams.

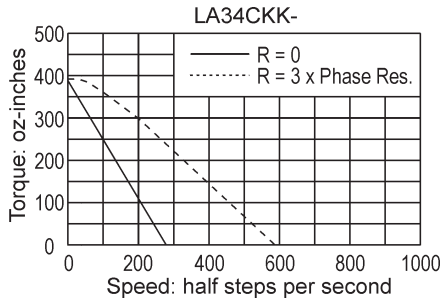
For the rear shaft option, use the suffix "R" (for example, LA34AGK-1R).

## Pullout Torque Speed Curves

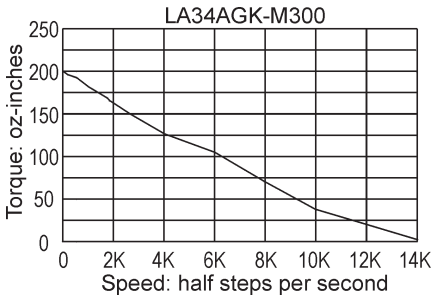
### Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On

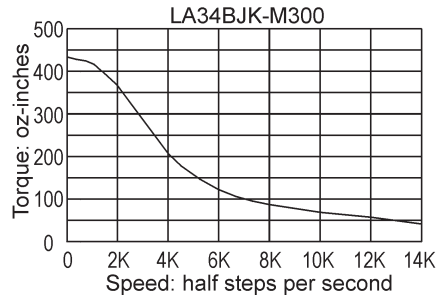


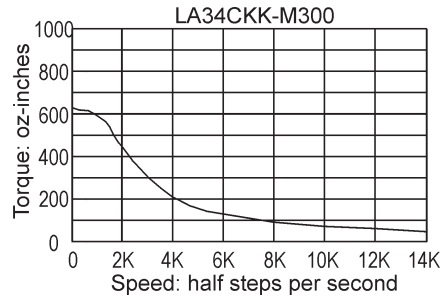




### Typical Bipolar Performance: 80 VDC Power Supply, 3 Amps/Phase



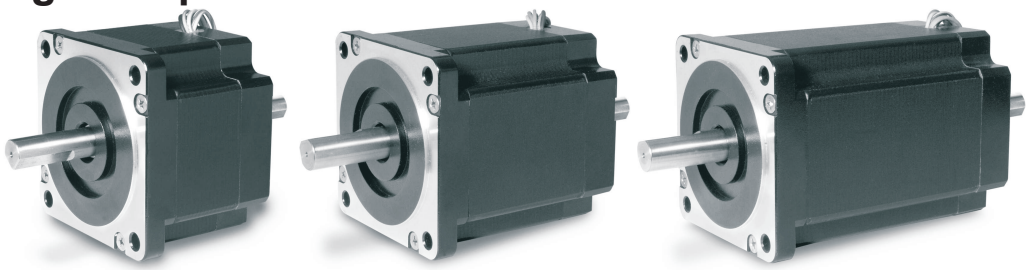



# Rotary Hybrid Stepping Motor 1.8°

SIZE
**34**
**3.38"**
DIA

## High Torque



EADmotors Size 34 hybrid DC stepping motors are precision bi-directional devices with position accuracy of ±3% non-cumulative.

Motors are totally enclosed with permanently lubricated ball bearings.

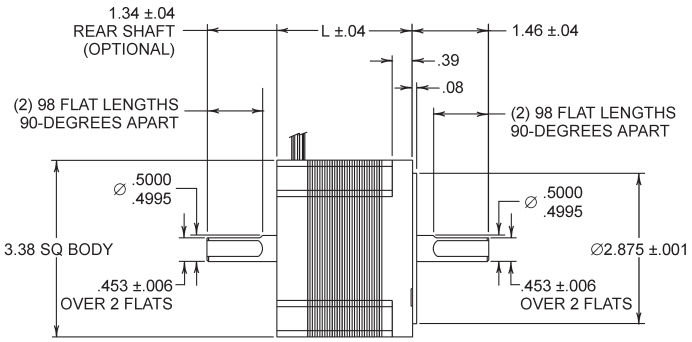
Standard motors have 4 or 6 leads. Motors with 5 or 8 leads can be furnished to meet existing applications.

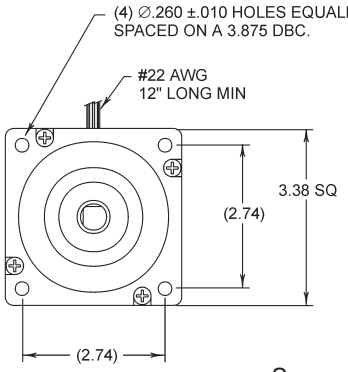
EADmotors specializes in meeting the individual requirements of each application and offers engineering assistance for your design requirements.

## Electrical Ratings

| | | Unipolar Connection | | | | | Bipolar Connection | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) |
| LH3427-2 | 6 | 5.04 | 2.00 | 2.52 | 10.90 | 305 | 7.11 | 1.41 | 5.04 | 43.70 | 396 |
| LH3427-3 | 6 | 3.00 | 3.00 | 1.00 | 4.34 | 305 | 4.24 | 2.12 | 2.00 | 17.40 | 396 |
| LH3427-4 | 6 | 2.25 | 4.50 | 0.50 | 2.17 | 305 | 3.00 | 3.00 | 1.00 | 8.67 | 396 |
| LH3427-M200 | 4 | | | | | | 5.04 | 2.00 | 2.52 | 21.90 | 396 |
| LH3427-M300 | 4 | | | | | | 3.00 | 3.00 | 1.00 | 8.67 | 396 |
| LH3427-M500 | 4 | | | | | | 2.00 | 5.00 | 0.40 | 3.44 | 396 |
| LH3439-2 | 6 | 7.86 | 2.00 | 3.93 | 17.10 | 610 | 11.08 | 1.41 | 7.86 | 68.50 | 793 |
| LH3439-3 | 6 | 4.68 | 3.00 | 1.56 | 6.80 | 610 | 6.61 | 2.12 | 3.12 | 27.20 | 793 |
| LH3439-4 | 6 | 3.51 | 4.50 | 0.78 | 3.40 | 610 | 4.68 | 3.00 | 1.56 | 13.60 | 793 |
| LH3439-M200 | 4 | | | | | | 7.86 | 2.00 | 3.93 | 34.30 | 793 |
| LH3439-M300 | 4 | | | | | | 4.68 | 3.00 | 1.56 | 13.60 | 793 |
| LH3439-M500 | 4 | | | | | | 3.10 | 5.00 | 0.62 | 5.39 | 793 |
| LH3450-2 | 6 | 8.66 | 2.00 | 4.33 | 22.2 | 916 | 12.22 | 1.41 | 8.67 | 88.70 | 1190 |
| LH3450-3 | 6 | 5.18 | 3.00 | 1.72 | 8.6 | 916 | 7.29 | 2.12 | 3.44 | 35.20 | 1190 |
| LH3450-4 | 6 | 3.87 | 4.50 | 0.86 | 4.4 | 916 | 5.16 | 3.00 | 1.72 | 17.60 | 1190 |
| LH3450-M200 | 4 | | | | | | 8.66 | 2.00 | 4.33 | 44.30 | 1190 |
| LH3450-M300 | 4 | | | | | | 5.16 | 3.00 | 1.72 | 17.60 | 1190 |
| LH3450-M500 | 4 | | | | | | 3.40 | 5.00 | 0.68 | 6.98 | 1190 |

| Model Number | Rotor Inertia (oz-in-sec$^2$) | Weight (ounces) |
|---|---|---|
| LH3427-* | .0198 | 61.7 |
| LH3439-* | .0382 | 98.8 |
| LH3450-* | .0566 | 138.6 |




**Size 34**

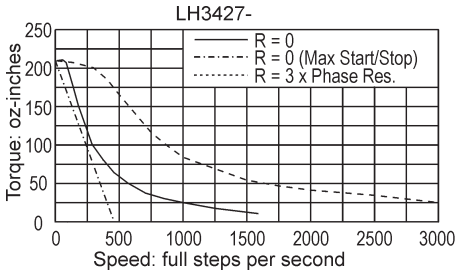
| Model Series | Dimension "L" (inches) |
|---|---|
| LH3427 | 2.60 |
| LH3439 | 3.78 |
| LH3450 | 4.96 |

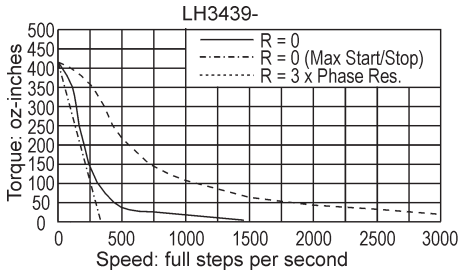
See page 38 for Connection Diagrams.

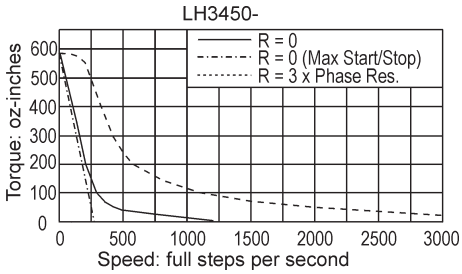
For the rear shaft option, use the suffix "R" (for example, LH3427-1R).

## Pullout Torque Speed Curves

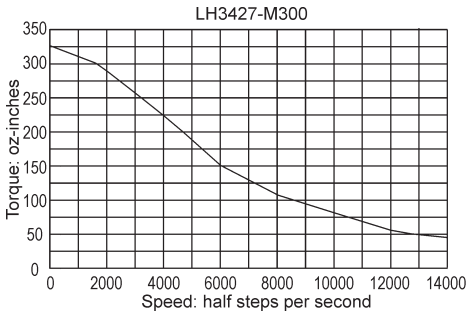
### Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On

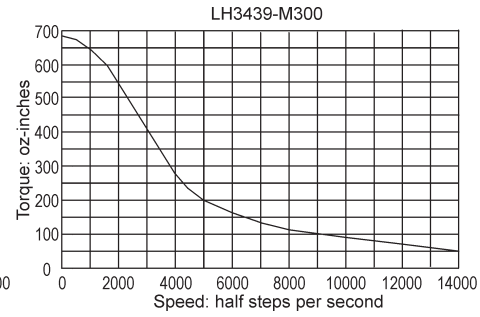


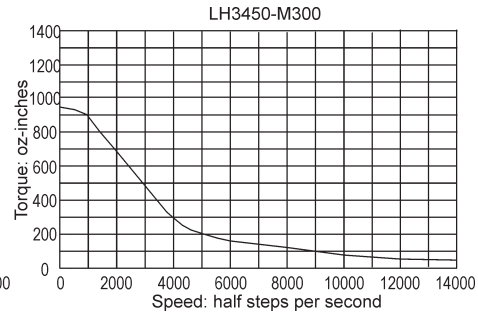




### Typical Bipolar Performance: 80 VDC Power Supply, 3 Amps/Phase



# Rotary Hybrid Stepping Motor 1.8°

SIZE **42** **4.28"** DIA

## Conventional



EADmotors Size 42 hybrid DC stepping motors are precision bi-directional devices with position accuracy of ±3% non-cumulative.

Motors are totally enclosed with permanently lubricated ball bearings.

EADmotors specializes in meeting the individual requirements of each application and offers engineering assistance for your design requirements.

## Electrical Ratings

| | Unipolar Connection | | | | | Bipolar Connection | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz-in) | Phase Voltage (VDC) series | Phase Voltage (VDC) parallel | Phase Current (amps) series | Phase Current (amps) parallel | Phase Resistance (ohms) series | Phase Resistance (ohms) parallel | Phase Inductance (mH) series | Phase Inductance (mH) parallel | Holding Torque (oz-in) |
| LA42BLK-5 | 2.26 | 6.11 | 0.37 | 3.5 | 650 | 3.2 | 1.6 | 4.32 | 8.64 | 0.74 | 0.185 | 14 | 3.5 | 810 |
| LA42BLK-6 | 4.10 | 3.50 | 1.17 | 10.5 | 650 | 5.8 | 2.9 | 2.48 | 4.96 | 2.34 | 0.585 | 41.9 | 10.5 | 810 |
| LA42BLK-7 | 7.93 | 1.77 | 4.47 | 40.1 | 650 | 11.2 | 5.6 | 1.25 | 2.50 | 8.94 | 2.24 | 160 | 40.1 | 810 |
| LA42BLK-8 | 9.80 | 1.40 | 7.00 | 63.8 | 650 | 13.9 | 6.95 | 0.99 | 1.98 | 14 | 3.5 | 255 | 63.8 | 810 |
| LA42BLK-200 | | | | | | 7.0 | 3.5 | 2.0 | 4.0 | 3.5 | 0.4 | 63.8 | 16.0 | 810 |
| LA42BLK-300 | | | | | | 4.7 | 2.3 | 3.0 | 6.0 | 1.6 | 0.4 | 28.3 | 7.1 | 810 |
| LA42BLK-500 | | | | | | 2.8 | 1.4 | 5.0 | 10 | 0.6 | 0.150 | 10.2 | 2.6 | 810 |
| LA42CNK-5 | 3.66 | 6.10 | 0.60 | 7.0 | 1150 | 5.18 | 2.54 | 4.31 | 8.62 | 1.2 | 0.3 | 28 | 7.0 | 1440 |
| LA42CNK-6 | 4.60 | 4.74 | 0.97 | 11.3 | 1150 | 6.5 | 3.25 | 3.35 | 6.70 | 1.94 | 0.485 | 45 | 11.3 | 1440 |
| LA42CNK-7 | 5.80 | 3.79 | 1.53 | 17.4 | 1150 | 8.2 | 4.1 | 2.68 | 5.36 | 3.06 | 0.765 | 70 | 17.4 | 1440 |
| LA42CNK-8 | 7.44 | 3.10 | 2.40 | 26.9 | 1150 | 10.52 | 5.26 | 2.19 | 4.38 | 4.8 | 1.2 | 108 | 26.9 | 1440 |
| LA42CNK-200 | | | | | | 11.0 | 5.5 | 2.0 | 4.0 | 5.5 | 1.4 | 186 | 46.6 | 1440 |
| LA42CNK-300 | | | | | | 7.3 | 3.7 | 3.0 | 6.0 | 2.4 | 0.6 | 82.8 | 20.7 | 1440 |
| LA42CNK-500 | | | | | | 4.4 | 2.2 | 5.0 | 10 | 0.9 | 0.2 | 29.8 | 7.5 | 1440 |
| LA42HRK-5 | 2.40 | 10.40 | 0.23 | 2.6 | 1650 | 3.4 | 1.7 | 7.3 | 14.6 | 0.46 | 0.115 | 10.4 | 2.6 | 2100 |
| LA42HRK-6 | 3.20 | 8.40 | 0.38 | 4.0 | 1650 | 4.5 | 2.25 | 6.0 | 12.0 | 0.76 | 0.19 | 16 | 4.0 | 2100 |
| LA42HRK-7 | 3.85 | 6.80 | 0.57 | 6.9 | 1650 | 5.4 | 2.7 | 4.8 | 9.6 | 1.14 | 0.285 | 27.6 | 6.9 | 2100 |
| LA42HRK-8 | 4.50 | 5.20 | 0.86 | 10.6 | 1650 | 6.3 | 3.15 | 3.7 | 7.4 | 1.72 | 0.43 | 42.4 | 10.6 | 2100 |
| LA42HRK-200 | | | | | | 12.5 | 6.3 | 2.0 | 4.0 | 6.25 | 1.6 | 140 | 35 | 2100 |
| LA42HRK-300 | | | | | | 8.3 | 4.2 | 3.0 | 6.0 | 3.04 | 0.76 | 64 | 16 | 2100 |
| LA42HRK-500 | | | | | | 5.0 | 2.5 | 5.0 | 10 | 1.0 | 0.25 | 22.2 | 5.6 | 2100 |

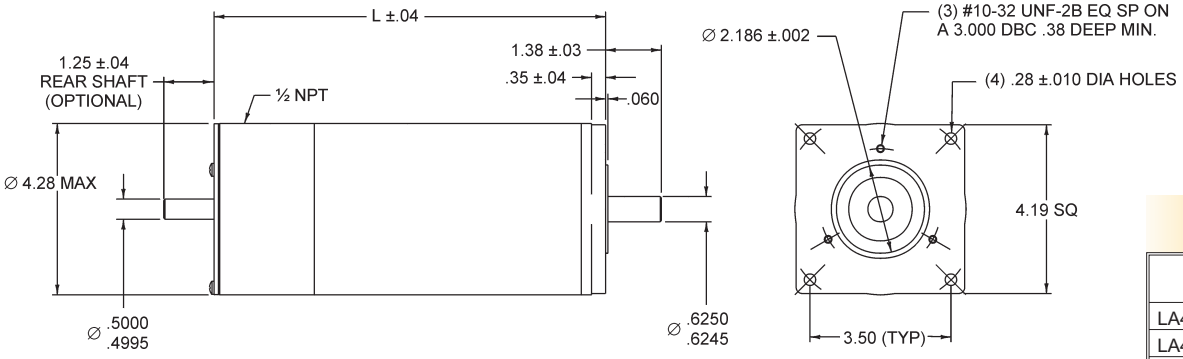
| Model Number | Rotor Inertia (oz-in-sec$^2$) | Weight (ounces) |
|---|---|---|
| LA42BLK-* | 0.055 | 216 |
| LA42CNK-* | 0.114 | 320 |
| LA42HRK-* | 0.172 | 424 |

*Solutions in motion*

EADmotors™ Eastern Air Devices Inc.



1 Progress Drive, Dover, New Hampshire 03820-5449 USA, (603) 742-3330, Fax: (603) 742-9080, www.eadmotors.com



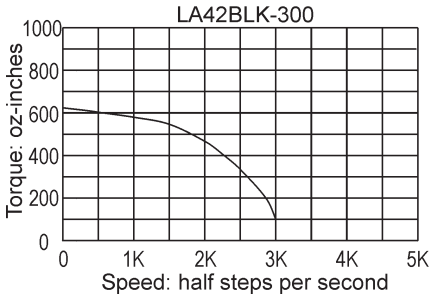

**Size 42**

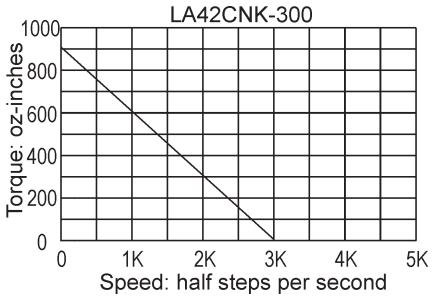
| Model Series | Dimension "L" (inches) |
|---|---|
| LA42BLK | 5.39 |
| LA42CNK | 7.56 |
| LA42HRK | 9.90 |

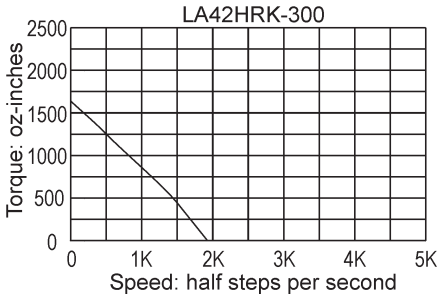
See page 38 for Connection Diagrams.
For the rear shaft option, use the suffix "R" (for example, LA42BLK-300R).

## Pullout Torque Speed Curves

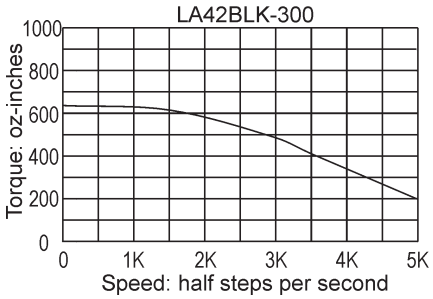
### Typical Bipolar Performance: 80 VDC Power Supply, 3 Amps/Phase—Series

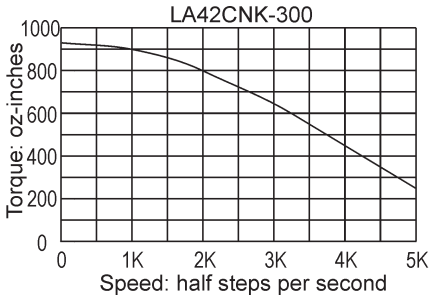


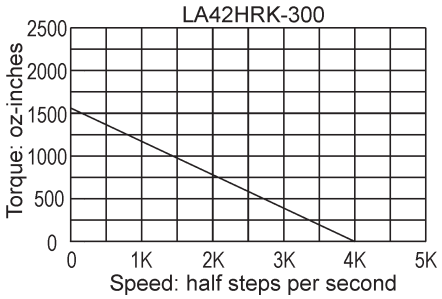




### Typical Bipolar Performance: 80 VDC Power Supply, 6 Amps/Phase—Parallel



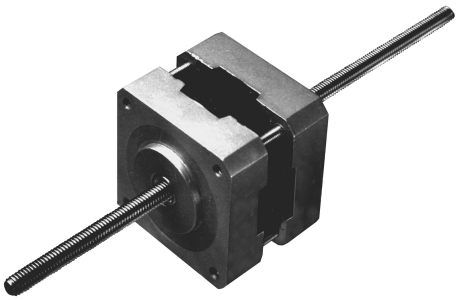



# Linear Actuator

SIZE
**17**
**1.57"**
SQ

## Conventional



EADmotors Size 17 linear actuators are based on the 1.8° hybrid stepping motor. Size 17 linear actuators are bi-directional devices and are totally enclosed with permanently lubricated ball bearings.

The internal rotating nut is made of SAE 660 bearing bronze and the actuating leadscrew is made of cold rolled steel.

Leadscrew lubrication is required for maximum life. Lubricants containing molybdenum disulfide are recommended. The lubricant used in tests conducted to develop these force speed curves is available in two tube sizes:

¼ oz. Leadscrew Lube
P/N 12210105

3½ oz. Leadscrew Lube
P/N 12210106

Note: Anti-backlash nuts can be made available.

### Part Number Description

**ZB17GBK __-__-__**

- Thread Description (N, R, or P)
- Leadscrew Length (1-inch increments)
- Winding Number

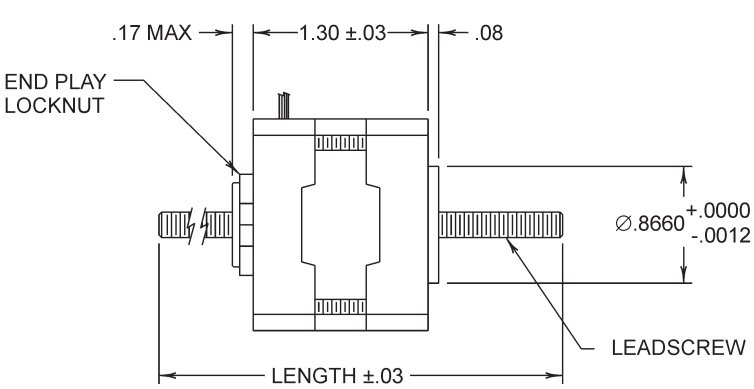
## Electrical Ratings

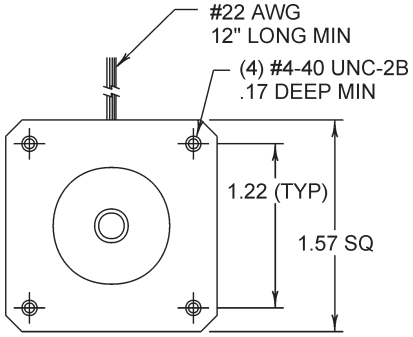
| Model Number | Number of Leads | Unipolar Connection | | | | Bipolar Connection | | | | Rotor Inertia (oz-in-sec²) | Weight (ounces) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | | |
| ZB17GBK_-10-_ | 6 | 4.00 | 0.95 | 4.20 | 2.9 | 5.60 | 0.67 | 8.40 | 11.6 | 0.00024 | 7.0 |
| ZB17GBK_-11-_ | 6 | 6.00 | 0.63 | 9.60 | 4.9 | 8.50 | 0.45 | 19.20 | 19.6 | | |
| ZB17GBK_-12-_ | 6 | 12.00 | 0.32 | 38.40 | 22 | 17.00 | 0.23 | 76.80 | 88.0 | | |
| ZB17GBK_-200-_ | 4 | | | | | 1.90 | 2.00 | 0.95 | 1.4 | | |

## Leadscrew Specifications

| Letter Designation | Thread Description | Thread Lead (inches) | Linear Travel per 1.8° Step (inches) | Maximum Linear Force (pounds) | |
|---|---|---|---|---|---|
| | | | | Unipolar Connection | Bipolar Connection |
| N | #10-32UNF | 0.03215 | 0.00015625 | 21 | 35 |
| R | #10-32UN(2)* | 0.0625 | 0.0003125 | 20 | 32 |
| P | #10-32UN(4)* | 0.1250 | 0.000625 | 16 | 27 |

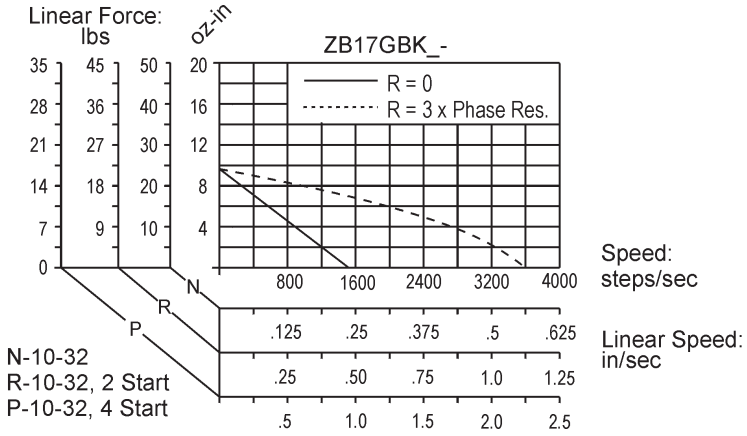
* Number of starts to the leadscrew: (2) = 2 starts, (4) = 4 starts, etc.



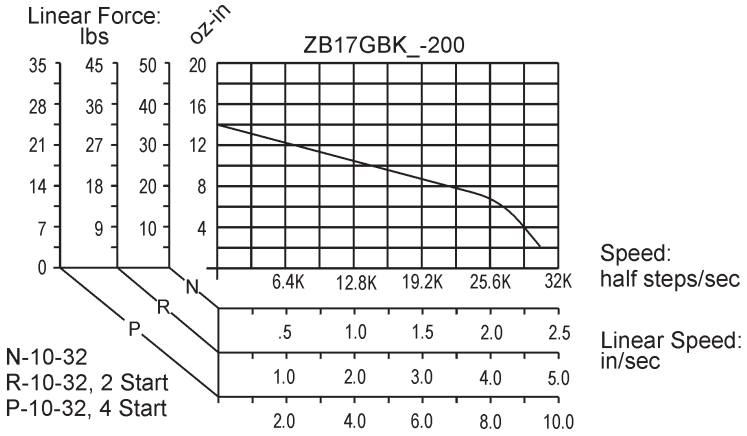




See page 38 for Connection Diagrams.

**Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On**



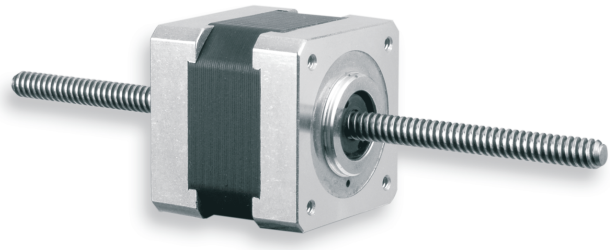

**Typical Bipolar Performance: 40 VDC Power Supply, 2 Amps/Phase**



# *DuraPlus* Linear Actuator

SIZE
**L1**
**1.65"**
SQ

## High Torque



EADmotors high torque Size 17 stepping motors and our new *DuraPlus* system have been combined in our L1 series actuator. The L1 frame *DuraPlus* actuator is a precision engineered device based on a high performance 1.8° stepping motor with an integrated rotating nut. The nut is fabricated from a wide range of optional engineered polymers or SAE 660 bearing bronze to suit the application requirement. The standard polymer used for the catalog offering is Delrin AF. For details, visit www.eadmotors.com.

The actuating screw is made of precision rolled stainless steel designed to minimize tolerances in positioning applications. When combined with the polymer nut, the *DuraPlus* system provides longer life and smoother, quieter operation than conventional designs.

Leadscrew lubrication is not required for polymer nuts; however, it is recommended for maximum life. Consult the factory for assistance with choice of lubricants.

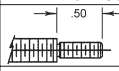
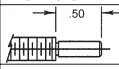
Note: Anti-backlash nuts, custom leadscrews, and anti-rotation options are available.

### Part Number Description

**L1MG __-__ __ __ __ __ __ __ __ __**

- Motor Length (S or M)
- Thread Material Description
- Thread Designation (see chart below)
- Winding Number (see chart below)
- Leadscrew Length (0.1-inch increments) Ex: 8.0" = 080, 6.5" = 065

| | Encoder Option |
|---|---|
| B | 100 CPR |
| C | 200 CPR |
| E | 400 CPR |
| F | 500 CPR |
| X | No Encoder |
| * Consult factory for encoder details. | |

| | Standard Leadscrew End Features |
|---|---|
| |   |
| A | #8-32 UNC-2A |
| B | #10-32 UNF-2A |
| C | M4 x 0.7 |
| D | M5 x 0.8 |
| |   |
| E | ∅ .187/.186 (3/16) |
| F | ∅ .196/.195 (5mm) |
| G | ∅ .157/.156 (4mm) |
| X | None |

## Electrical Ratings

| Model Number | Number of Leads | Unipolar/Bipolar | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Model Number | Number of Leads | Unipolar/Bipolar | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L1SG_-H10 | 6 | U | 4.0 | 0.95 | 4.2 | 2.5 | L1MG_-H10 | 6 | U | 4.0 | 1.2 | 3.3 | 3.2 |
| L1SG_-H11 | 6 | U | 6.0 | 0.62 | 9.6 | 5.8 | L1MG_-H11 | 6 | U | 6.0 | 0.8 | 7.5 | 7.0 |
| L1SG_-H12 | 6 | U | 12.0 | 0.31 | 38.5 | 23 | L1MG_-H12 | 6 | U | 12.0 | 0.4 | 30 | 28 |
| L1SG_-H13 | 6 | U | 9.6 | 0.40 | 24 | 15 | L1MG_-H13 | 6 | U | 24.0 | 0.2 | 120 | 112 |
| L1SG_-M100 | 4 | B | 3.8 | 1.00 | 3.8 | 4.8 | L1MG_-M100 | 4 | B | 4.7 | 1.0 | 4.7 | 9.1 |
| L1SG_-M150 | 4 | B | 2.8 | 1.50 | 1.9 | 2.3 | L1MG_-M150 | 4 | B | 3.6 | 1.5 | 2.4 | 4.7 |
| L1SG_-M200 | 4 | B | 1.9 | 2.00 | 0.95 | 1.2 | L1MG_-M200 | 4 | B | 2.4 | 2.0 | 1.2 | 2.3 |

6-wire/Unipolar available as 4-wire/Bipolar (e.g., "-H10" is then "-M10"). See page 6 (LH1713=L1S; LH1715=L1M).
NOTE: 6 lead motors-Unipolar data shown.

## Leadscrew Specifications

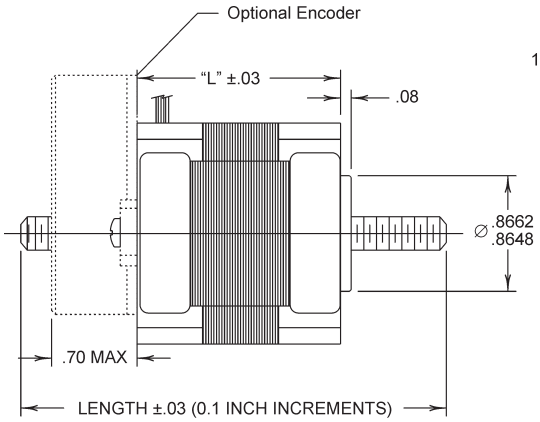
| Letter Designation | Thread Description* | Thread Lead (inches) | Linear Travel per1.8° Step (inches) | Approximate Linear Holding Force (pounds)** | | | |
|---|---|---|---|---|---|---|---|
| | | | | L1S Unipolar | L1S Biipolar | L1M Unipolar | L1M Bipolar |
| J | 1/4-40UN(1) | 0.025 | 0.000125 | 29 | 48 | 43 | 70 |
| V | 1/4-32ACME(1) | 0.03125 | 0.00015625 | 27 | 45 | 41 | 67 |
| E | 1/4-20ACME(1) | 0.050 | 0.000250 | 26 | 43 | 38 | 63 |
| A | 1/4-16ACME(1) | 0.0625 | 0.0003125 | 26 | 43 | 38 | 63 |
| B | 1/4-16ACME(2) | 0.125 | 0.000625 | 21 | 35 | 32 | 52 |
| F | 1/4-20ACME(4) | 0.200 | 0.001000 | 17 | 29 | 25 | 42 |
| C | 1/4-16ACME(4) | 0.250 | 0.001250 | 14 | 24 | 20 | 34 |

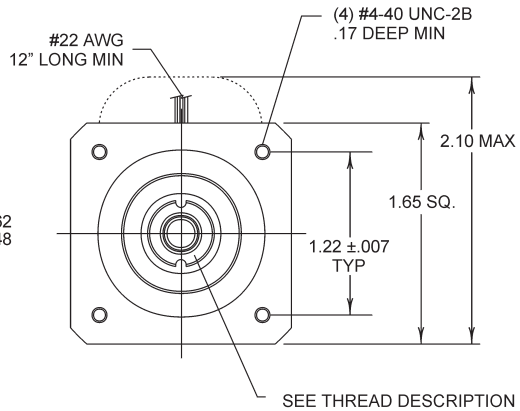
* Number of starts to the leadscrew: (1) = 1 start, (2) = 2 starts, etc.
** Recommended maximum linear force = 50 lb. (bearing performance limitation).

*Solutions in motion*

EAD motors™ Eastern Air Devices Inc.


1 Progress Drive, Dover, New Hampshire 03820-5449 USA, (603) 742-3330, Fax: (603) 742-9080, www.eadmotors.com



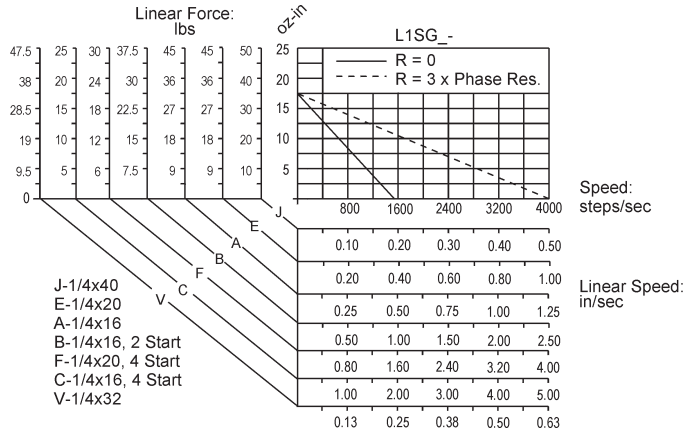



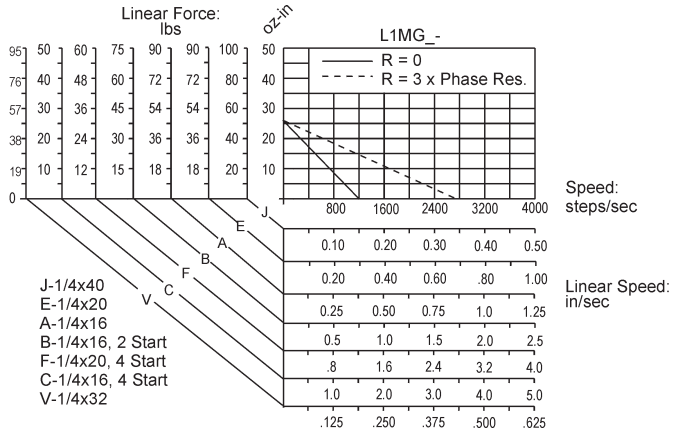

### Size L1

| Model Series | L1S | L1M |
|---|---|---|
| Dimension "L" (inches) | 1.28 | 1.52 |
| Holding Torque (oz.in) | 22 | 28 |
| Rotor Inertia (oz-in-sec$^2$) | 0.00053 | 0.00081 |
| Weight (oz) | 7 | 9 |

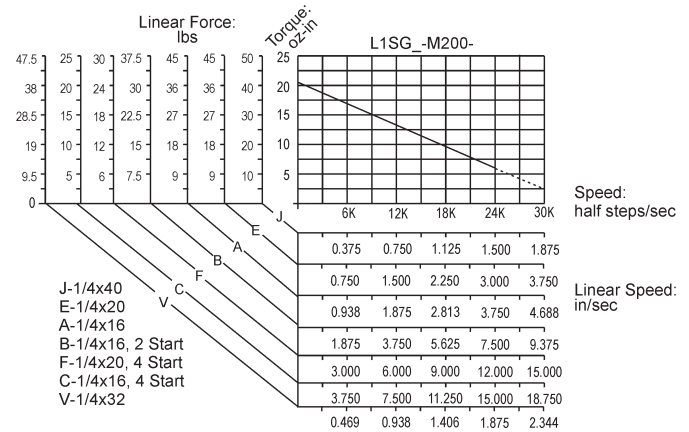
See page 38 for Connection Diagrams.

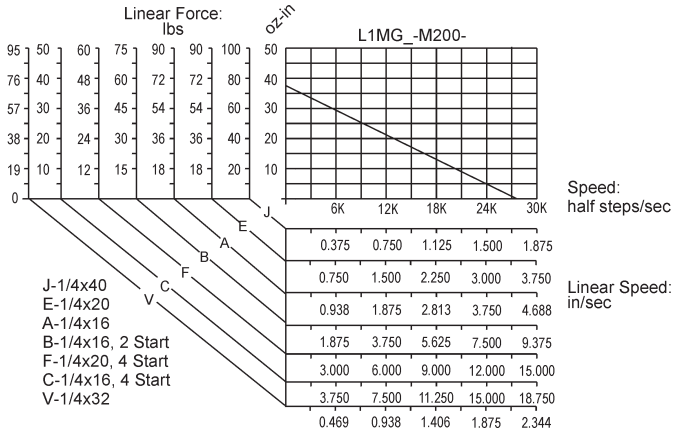
**Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On**




**Typical Bipolar Performance: 40 VDC Power Supply, 2 Amps/Phase**

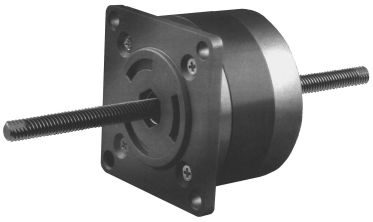


# Linear Actuator

SIZE **23** **2.25"** DIA

## Conventional



EADmotors Size 23 linear actuators are based on the 1.8° Size 23 hybrid stepping motor. As such, Size 23 linear actuators are bi-directional devices.

The internal rotating nut is made of SAE 660 bearing bronze and the actuating shaft is a rolled thread made of cold rolled steel.

Leadscrew lubrication is required for maximum life. Lubricants containing molybdenum disulfide are recommended. The lubricant used in tests conducted to develop these force speed curves is available in two tube sizes:

¼ oz. Leadscrew Lube
P/N 12210105

3½ oz. Leadscrew Lube
P/N 12210106

Note: Anti-backlash nuts can be made available.

### Part Number Description

**LA23__CK __-__-__**

- Series Motor (G or E)
- Thread Description (J, E, A, B, F, or C)
- Leadscrew Length (1-inch increments)
- Winding Number

## Electrical Ratings

| | | Unipolar Connection | | | | Bipolar Connection | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Rotor Inertia (oz-in-sec$^2$) | Weight (ounces) |
| LA23GCK_-209 | 6 | 1.30 | 5.90 | 0.22 | 0.3 | 1.84 | 4.18 | 0.44 | 1.0 | | |
| LA23GCK_-210 | 6 | 4.00 | 1.54 | 2.60 | 3.2 | 5.70 | 1.10 | 5.20 | 12.7 | | |
| LA23GCK_-211 | 6 | 6.00 | 1.20 | 5.00 | 5.4 | 8.50 | 0.85 | 10.00 | 21.6 | | |
| LA23GCK_-212 | 6 | 12.00 | 0.60 | 20.00 | 21.6 | 17.00 | 0.42 | 40.00 | 86.4 | | |
| LA23GCK_-213 | 6 | 24.00 | 0.30 | 80.00 | 81.2 | 34.00 | 0.21 | 160.00 | 324.6 | 0.00081 | 14 |
| LA23GCK_-M100 | 4 | | | | | 6.0 | 1.00 | 5.90 | 16.9 | | |
| LA23GCK_-M200 | 4 | | | | | 3.0 | 2.00 | 1.50 | 4.2 | | |
| LA23GCK_-M300 | 4 | | | | | 2.0 | 3.00 | 0.66 | 1.9 | | |
| LA23GCK_-M400 | 4 | | | | | 1.5 | 4.00 | 0.37 | 1.1 | | |
| LA23ECK_-3 | 6 | 1.40 | 3.89 | 0.36 | 0.6 | 2.00 | 2.78 | 0.72 | 2,4 | | |
| LA23ECK_-6 | 6 | 3.40 | 1.55 | 2.20 | 4.1 | 4.80 | 1.09 | 4.40 | 16.2 | | |
| LA23ECK_-4 | 6 | 5.10 | 1.00 | 5.10 | 9.7 | 7.20 | 0.71 | 10.20 | 38.9 | | |
| LA23ECK_-11 | 6 | 6.00 | 0.97 | 6.20 | 10.6 | 8.50 | 0.68 | 12.40 | 42.4 | | |
| LA23ECK_-12 | 6 | 12.00 | 0.48 | 25.00 | 41.19 | 17.00 | 0.34 | 50.00 | 164.76 | | |
| LA23ECK_-13 | 6 | 24.00 | 0.25 | 96.00 | 131.40 | 34.00 | 0.18 | 192.00 | 525.60 | 0.00166 | 19 |
| LA23ECK_-M100 | 4 | | | | | 5.6 | 1.00 | 5.6 | 25.6 | | |
| LA23ECK_-M200 | 4 | | | | | 2.8 | 2.00 | 1.4 | 6.4 | | |
| LA23ECK_-M300 | 4 | | | | | 1.9 | 3.00 | 0.62 | 2.8 | | |
| LA23ECK_-M400 | 4 | | | | | 1.4 | 4.00 | 0.35 | 1.6 | | |

## Leadscrew Specifications

| Letter Designation | Description | Thread Lead (inches) | Linear Travel per 1.8° Step (inches) | Maximum Linear Force (pounds) | | | |
|---|---|---|---|---|---|---|---|
| | | | | GCK Unipolar | GCK Bipolar | ECK Unipolar | ECK Bipolar |
| J | 1/4-40UN | 0.0250 | 0.000125 | 60 | 76 | 100 | 140 |
| E | 1/4-20ACME | 0.0500 | 0.000250 | 54 | 68 | 90 | 126 |
| A | 1/4-16ACME | 0.0625 | 0.0003125 | 54 | 68 | 90 | 126 |
| B | 1/4-16ACME(2)* | 0.1250 | 0.000625 | 45 | 57 | 75 | 105 |
| F | 1/4-20ACME(4)* | 0.2000 | 0.001000 | 36 | 46 | 60 | 84 |
| C | 1/4-16ACME(4)* | 0.2500 | 0.001250 | 30 | 38 | 50 | 70 |

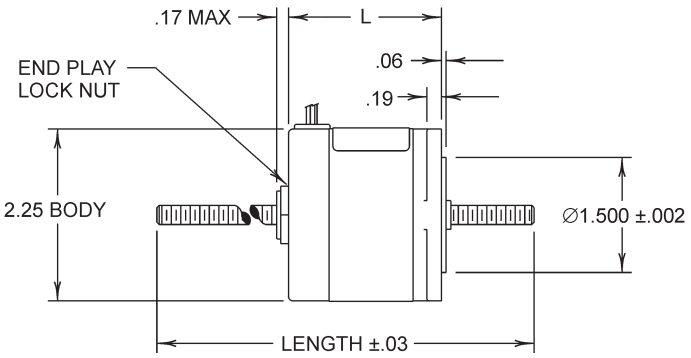
* Number of starts to the leadscrew: (2) = 2 starts, (4) = 4 starts, etc.

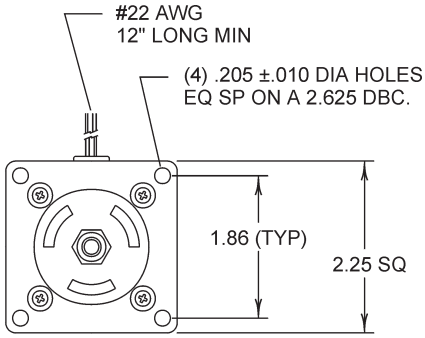
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EAD motors™ Eastern Air Devices Inc.



1 Progress Drive, Dover, New Hampshire 03820-5449 USA, (603) 742-3330, Fax: (603) 742-9080, www.eadmotors.com



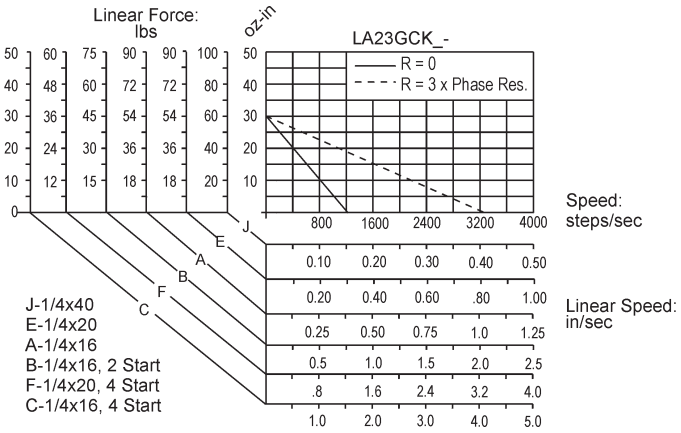



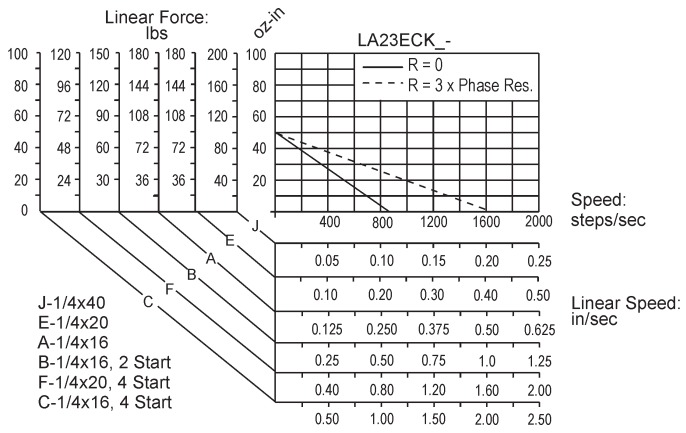

**Size 23**

| Model Series | Dimension "L" (inches) |
|---|---|
| LA23GCK | 1.6 |
| LA23ECK | 2.0 |

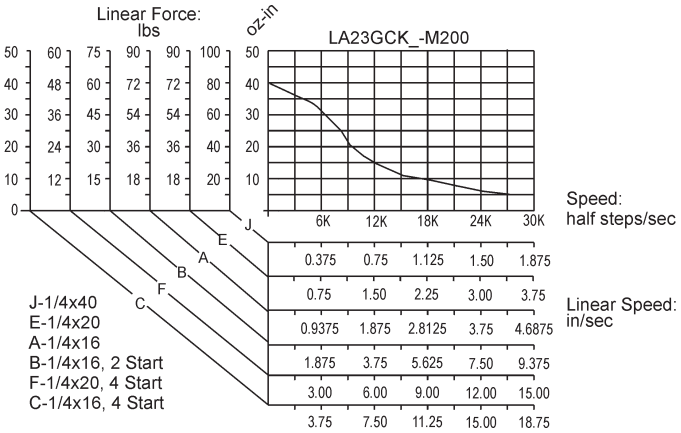
See page 38 for Connection Diagrams.

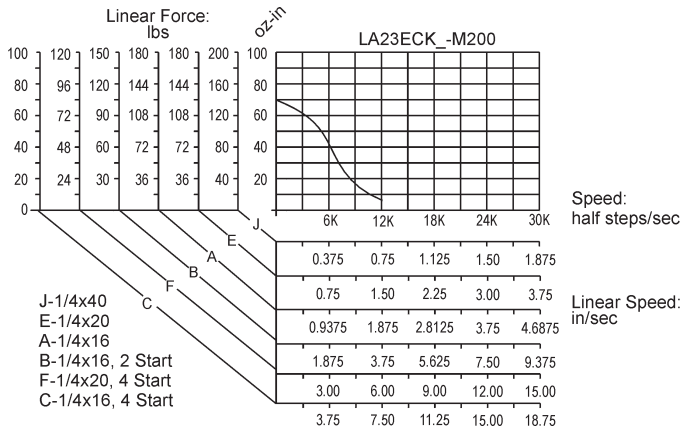
### Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On




### Typical Bipolar Performance: 40 VDC Power Supply, 2 Amps/Phase

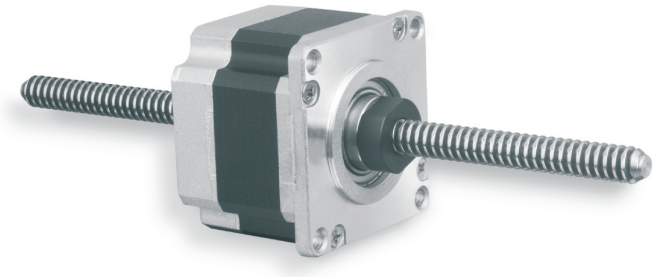


# *DuraPlus* Linear Actuator

SIZE
**L2**
**2.22"**
SQ

## High Torque



EADmotors high torque Size 23 stepping motors and our new *DuraPlus* system have been combined in our L2 series actuator. The L2 frame *DuraPlus* actuator is a precision engineered device based on a high performance 1.8° stepping motor with an integrated rotating nut. The nut is fabricated from a wide range of optional engineered polymers or SAE 660 bearing bronze to suit the application requirement. The standard polymer used for the catalog offering is Delrin AF. Visit www.eadmotors.com for details.

The actuating screw is made of precision rolled steel designed to minimize tolerances in positioning applications. When combined with the polymer nut, the *DuraPlus* system provides longer life and smoother, quieter operation than conventional designs.

Leadscrew lubrication is not required for polymer nuts; however, it is recommended for maximum life. Consult the factory for assistance with choice of lubricants.

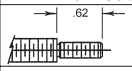
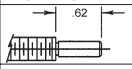
Note: Anti-backlash nuts, custom leadscrews, and anti-rotation options are available.

### Part Number Description

L2SG __-_ _ _ _ _ _ _ _ _ _

- Motor Length (S or M)
- Thread Material Description
- Thread Designation (see chart below)
- Winding Number (see chart below)
- Leadscrew Length (0.1-inch increments) Ex: 8.0" = 080, 6.5" = 065

| | Encoder Option |
|---|---|
| B | 100 CPR |
| C | 200 CPR |
| E | 400 CPR |
| F | 500 CPR |
| X | No Encoder |
| * Consult factory for encoder details. | |

| | Standard Leadscrew End Features |
|---|---|
| |   |
| M | 1/4-20 UNC-2A |
| N | 1/4-28 UNF-2A |
| P | M6 x 1.0 |
| |   |
| R | ∅ .235/.236 (6mm) |
| X | None |

## Electrical Ratings

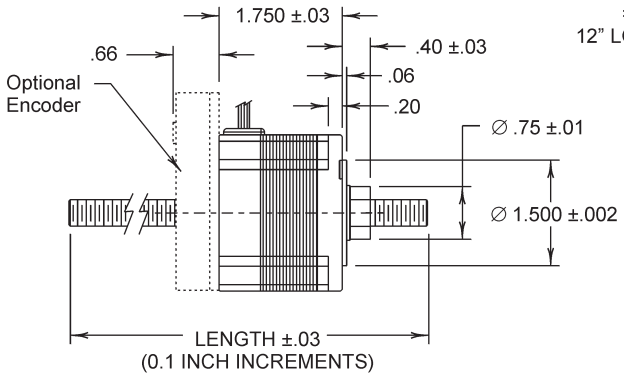
| Model Number | Number of Leads | Unipolar Connection | | | | Bipolar Connection | | | | Rotor Inertia (oz-in-sec²) | Weight (ounces) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | | |
| L2SG_-H05 | 6 | 11.90 | 0.50 | 23.50 | 41.4 | 16.8 | 0.35 | 47.00 | 165.6 | | |
| L2SG_-H1 | 6 | 6.00 | 1.00 | 6.00 | 10.8 | 8.49 | 0.71 | 12.00 | 43.2 | | |
| L2SG_-H2 | 6 | 3.00 | 2.00 | 1.57 | 2.6 | 4.24 | 1.41 | 3.14 | 10.4 | | |
| L2SG_-H3 | 6 | 1.80 | 3.00 | 0.61 | 1.0 | 2.55 | 2.12 | 1.22 | 4.0 | 0.002 | 17 |
| L2SG_-M100 | 4 | | | | | 5.80 | 1.00 | 5.78 | 20.3 | | |
| L2SG_-M200 | 4 | | | | | 3.00 | 2.00 | 1.50 | 5.2 | | |
| L2SG_-M300 | 4 | | | | | 1.80 | 3.00 | 0.60 | 2.0 | | |

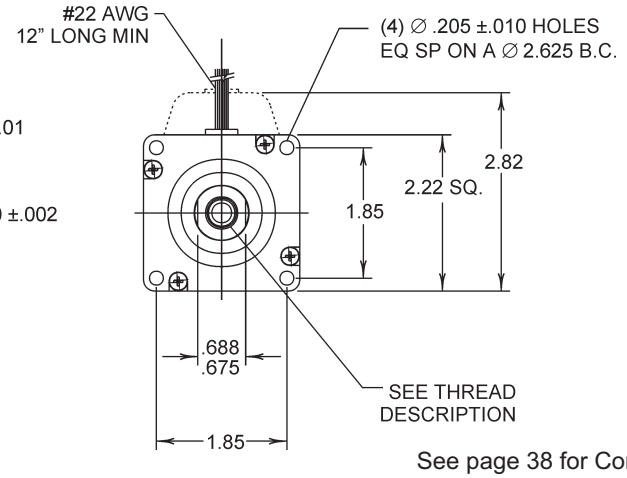
H05-H3 available with 4 leads (M05-M3).

## Leadscrew Specifications

| Letter Designation | Thread Description* | Thread Lead (inches) | Linear Travel per 1.8° Step (inches) | Unipolar Maximum Force (pounds) | Bipolar Connection Maximum Linear Force (pounds) |
|---|---|---|---|---|---|
| Q | 3/8-20ACME | 0.0500 | 0.00025 | 100 | 125 |
| T | 3/8-16ACME | 0.0625 | 0.0003125 | 98 | 115 |
| S | 3/8-10ACME | 0.1000 | 0.000500 | 85 | 100 |

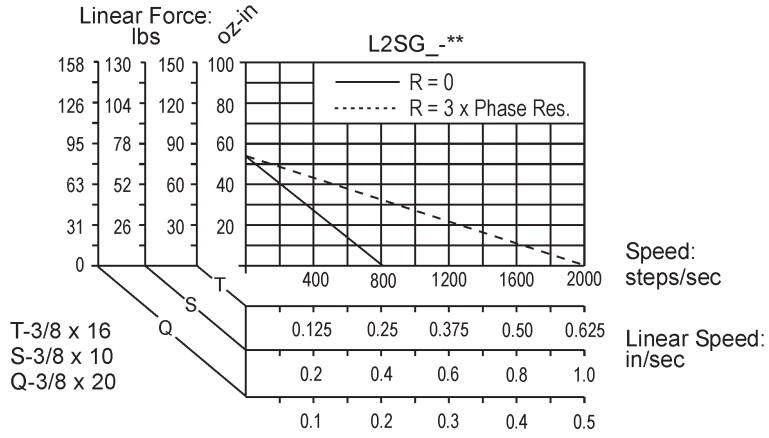
* Anti-backlash nuts and custom leadscrew options are available.



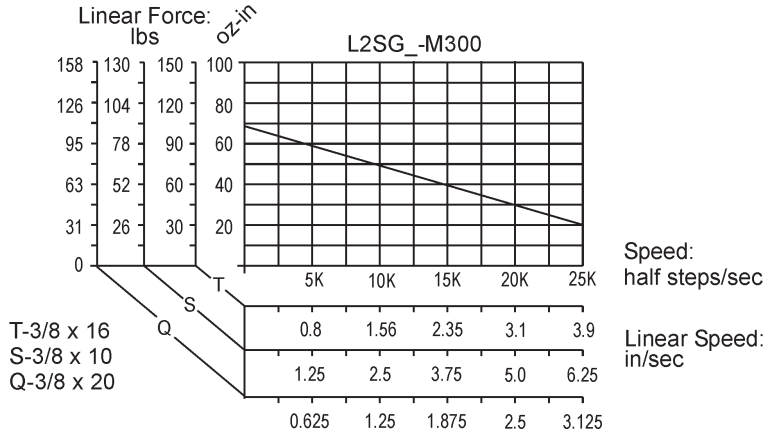




See page 38 for Connection Diagrams.

**Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On**



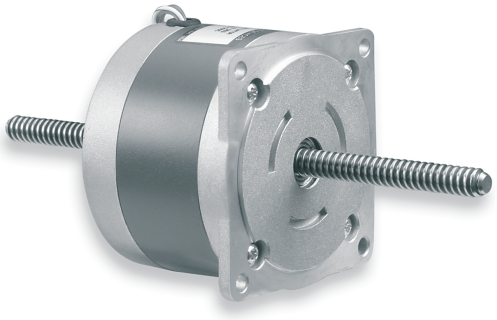

**Typical Bipolar Performance: 80 VDC Power Supply, 3 Amps/Phase**



# Linear Actuator

SIZE **34** **3.38"** DIA

## Conventional



EADmotors Size 34 linear actuators are based on EAD's standard single stack 1.8° hybrid stepping motors. Size 34 linear actuators are totally enclosed with permanently lubricated ball bearings.

The internal rotating nut is made of bearing bronze and the actuating shaft is a rolled thread made of cold rolled steel.

Leadscrew lubrication is required for maximum life. Lubricants containing molybdenum disulfide are recommended. The lubricant used in tests conducted to develop these force speed curves is available in two tube sizes:

¼ oz. Leadscrew Lube
P/N 12210105

3½ oz. Leadscrew Lube
P/N 12210106

Note: Anti-backlash nuts and custom leadscrew options are available.

### Part Number Description

**LA34AGK __-__-__**

- Thread Description (T or S)
- Leadscrew Length (1-inch increments)
- Winding Number

## Electrical Ratings

| | | Unipolar Connection | | | | Bipolar Connection | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Rotor Inertia (oz-in-sec$^2$) | Weight (ounces) |
| LA34AGK_-1 | 6 | 1.70 | 4.72 | 0.36 | 1.62 | 2.4 | 3.34 | 0.72 | 6.48 | | |
| LA34AGK_-2 | 6 | 2.60 | 3.06 | 0.85 | 4.15 | 3.7 | 2.17 | 1.70 | 16.60 | | |
| LA34AGK_-4 | 6 | 5.30 | 1.61 | 3.30 | 17.50 | 7.5 | 1.14 | 6.60 | 70.00 | | |
| LA34AGK_-9 | 6 | 12.00 | 0.67 | 18.00 | 80.00 | 17.0 | 0.47 | 36.00 | 320.00 | | |
| LA34AGK_-10 | 6 | 24.00 | 0.33 | 72.00 | 315.00 | 34.0 | 0.24 | 144.00 | 1260.00 | 0.0091 | 48 |
| LA34AGK_-M200 | 4 | | | | | 4.4 | 2.00 | 2.2 | 20.4 | | |
| LA34AGK_-M300 | 4 | | | | | 2.9 | 3.00 | 0.96 | 9.07 | | |
| LA34AGK_-M400 | 4 | | | | | 2.2 | 4.00 | 0.55 | 5.1 | | |
| LA34AGK_-M600 | 4 | | | | | 1.5 | 6.00 | 0.24 | 2.27 | | |

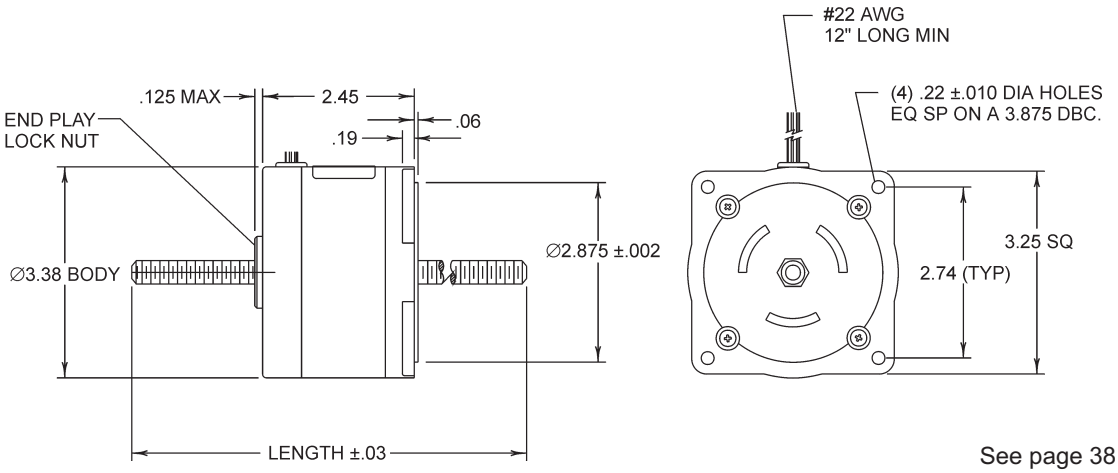
## Leadscrew Specifications

| Letter Designation | Description | Thread Lead (inches) | Linear Travel per 1.8° Step (inches) | Bipolar Connection Maximum Linear Force (pounds) |
|---|---|---|---|---|
| T | 3/8-16ACME | 0.0625 | .0003125 | 350 |
| S | 3/8-10ACME | 0.1000 | .000500 | 300 |

*Solutions in motion*

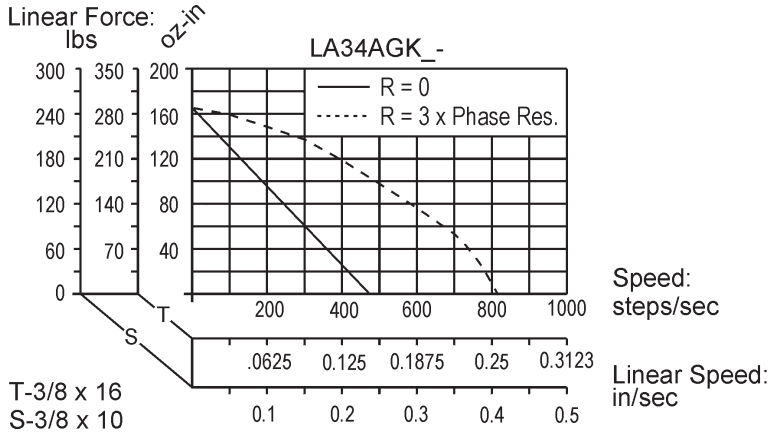
EAD motors™ Eastern Air Devices Inc.


1 Progress Drive, Dover, New Hampshire 03820-5449 USA, (603) 742-3330, Fax: (603) 742-9080, www.eadmotors.com

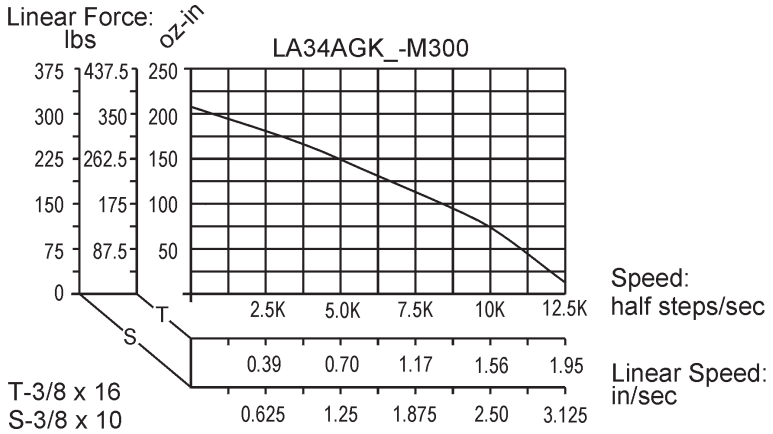



See page 38 for Connection Diagrams.

**Typical Unipolar Performance (6 Lead Motor): Constant Voltage Drive (L/R), 2 Phase On**



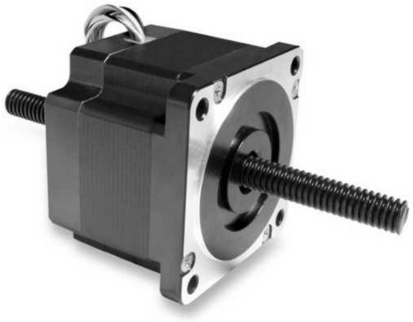

**Typical Bipolar Performance: 80 VDC Power Supply, 3 Amps/Phase**



# *DuraPlus* Linear Actuator

SIZE
**L3**
**3.38"**
SQ

## High Torque



EADmotors high torque Size 34 stepping motors and the new *DuraPlus* system have been combined with shaft bearing enhancements in our L3 series actuator. The combination provides longer life with smoother and quieter operation than conventional designs.

The L3 actuator is a precision engineered device based on a high performance 1.8° stepping motor with an integrated rotating acme-threaded nut and a translating leadscrew. The nut is fabricated from Torlon for maximum thread life and, with high quality lubrication (vacuum compliant), couples with a leadscrew-hardening friction-reducing coating to provide long life, provide maximum efficiency, and minimize positioning deadband. The stainless steel leadscrew allows modifications to be made without introducing a corrosion tendency while maximizing positioning stiffness and performance uniformity over the full length of travel.

Options: Rotating leadscrew designs, anti-backlash nuts, anti-rotation features, Acetyl nuts, and alternate lubes are common enhancements.

Note: Design adjustments can carry penalties to load capacity and speed capacity. (Lubricant can be shipped separately.)

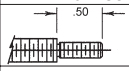
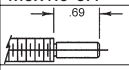
| | Encoder Option |
|---|---|
| B | 100 CPR |
| C | 200 CPR |
| E | 400 CPR |
| F | 500 CPR |
| G | 1000 CPR |
| H | 2000 CPR |
| J | 2048 CPR |
| T | 1024 CPR |
| X | No Encoder |

* Consult factory for encoder details.

### Part Number Description

**L3SA __-_ _ _ _ _ _ _ _ _**

- Motor Length (S or M)
- Thread Material Description
- Thread Designation (see chart below)
- Winding Number (see chart below)
- Leadscrew Length (0.1-inch increments) Ex: 8.0" = 080, 6.5" = 065

| | Standard Leadscrew End Features |
|---|---|
| |  |
| A | 1/4-28UNF-2B |
| B | M6x1.0-6H |
| |  |
| C | ∅0.2502/∅.2499 |
| D | ∅0.2364/∅.2361 |
| X | None |

## Electrical Ratings

| Model Number | Number of Leads | Phase Voltage (VDC) | Phase Current (amps) | Phase Resistance (ohms) | Phase Inductance (mH) | Holding Torque (oz.in) | Rotor Inertia (oz-in-sec²) | Weight (ounces) |
|---|---|---|---|---|---|---|---|---|
| L3SX-M200 | 4 | 5 | 2 | 2.5 | 21.9 | 396 | 0.04 | 65 |
| L3SX-M300 | 4 | 3 | 3 | 1 | 8.67 | | | |
| L3SX-M500 | 4 | 2 | 5 | 0.4 | 3.44 | | | |

## Leadscrew Specifications

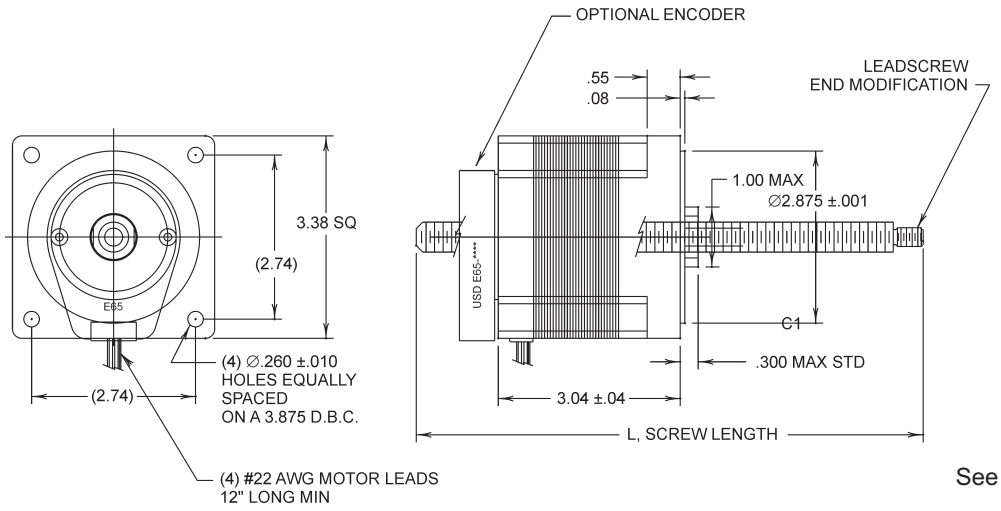
| Letter Designation | Thread Description* | Thread Lead (in) | Travel per Step (in) | Minor Diameter | Back Drivable | Maximum Thrust (lbs) |
|---|---|---|---|---|---|---|
| Q | 3/8-20ACME(1) | 0.05 | 0.000250 | .2994 | no | 1060 |
| T | 3/8-16ACME(1) | 0.0625 | 0.000312 | .2857 | no | 970 |
| W | 3/8-12ACME(1) | 0.0633 | 0.000416 | .2632 | no | 860 |
| S | 3/8-10ACME(1) | 0.1 | 0.000500 | .2353 | yes | 780 |
| A | 1/2-10ACME(1) | 0.1 | 0.000500 | .3574 | no | 670 |
| L | 3/8-12ACME(2) | 0.1667 | 0.000834 | .2632 | yes | 580 |
| F | 1/2-10ACME(2) | 0.2 | 0.001000 | .3576 | yes | 470 |

* Number of starts to the leadscrew: (1) = 1 start, (2) = 2 starts, etc.

*Solutions in motion*

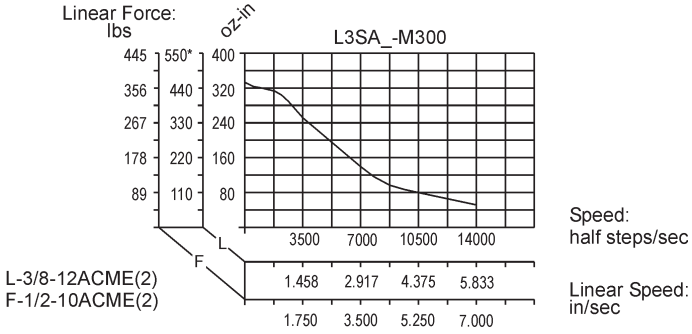
EAD motors™ Eastern Air Devices Inc.


1 Progress Drive, Dover, New Hampshire 03820-5449 USA, (603) 742-3330, Fax: (603) 742-9080, www.eadmotors.com




See page 38 for Connection Diagrams.

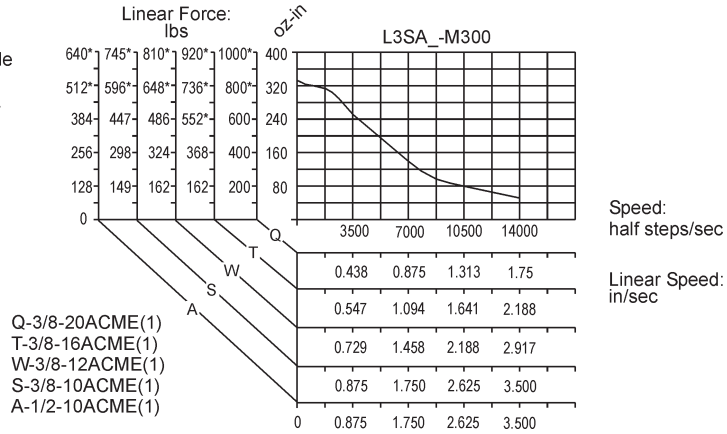
**Typical Bipolar Performance (4 Lead Motor): 80 VDC Power Supply, 3 Amps/Phase - High Speed Thread Series**




* Alignment, lubricant and lube quantity, cleanliness, leadscrew balance, and machine vibration can, individually or as a group, prevent high speed operation.

**Typical Bipolar Performance: 80 VDC Power Supply, 3 Amps/Phase - High Force Thread Series**

* Enhanced bearing module required to achieve force ratings above 500 pounds.

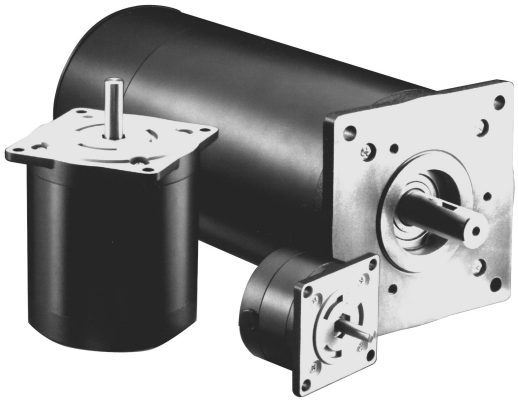


# 72 RPM AC Synchronous Motors

SIZE

| 23 | 34 | 42 |
|---|---|---|
| 2.25" | 3.38" | 4.28" |

DIA



EADmotors 72 RPM synchronous motors are available in frame sizes 23, 34, and 42. These motors are totally enclosed with permanently lubricated ball bearings. And, the 72 RPM speed is obtained without gearing.

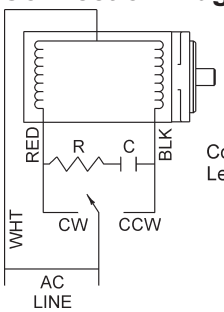
The motors may be reversed with a single pole double throw switch and may be stalled without any harmful effects.

In addition, versions of these motors can be provided to run at 60 RPM from 50 Hz AC.

## Electrical Ratings

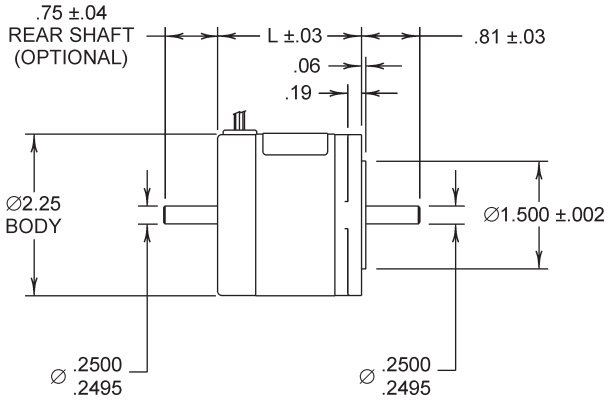
| Size | Model Number | Voltage (AC) | Current (amps) | Torque (oz-in) | Rotor Inertia (oz-in-sec²) | Resistor | Capacitor | Weight (ounces) |
|---|---|---|---|---|---|---|---|---|
| 23 | LA23ACB-1 | 120 | 0.10 | 25 | .0012 | 500 OHM 5 WATT | 0.75 mfd 330 VAC | 20 |
| | LA23ACB-2 | 120 | 0.08 | 44 | .0017 | 100 OHM 5 WATT | 0.75 mfd 330 VAC | 20 |
| | LA23BCB-1 | 120 | 0.20 | 100 | .00331 | 400 OHM 25 WATT | 2.25 mfd 330 VAC | 32 |
| 34 | LA34ADB-2 | 120 | 0.30 | 100 | .0078 | 400 OHM 25 WATT | 2.25 mfd 330 VAC | 48 |
| | LA34ADB-4 | 120 | 0.18 | 100 | .0078 | 500 OHM 25 WATT | 2.0 mfd 330 VAC | 48 |
| | LA34BGB-5 | 120 | 0.35 | 210 | .0170 | 200 OHM 25 WATT | 4.0 mfd 330 VAC | 80 |
| | LA34CJB-6 | 120 | 0.45 | 300 | .0265 | 200 OHM 50 WATT | 5.0 mfd 330 VAC | 121 |
| 42 | LB42BCB-1 | 120 | 0.4 | 175 | .0550 | 250 OHM 25 WATT | 3.75 mfd 330 VAC | 150 |
| | LB42BCB-2 | 120 | 0.6 | 275 | .0550 | 150 OHM 50 WATT | 6.5 mfd 330 VAC | 150 |
| | LB42CNB-1 | 120 | 0.6 | 450 | .1140 | 150 OHM 50 WATT | 6.5 mfd 330 VAC | 254 |

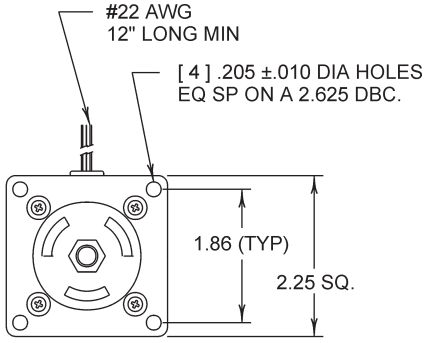
### Connection Diagram




Connections for AC operation.
Lead end rotation.

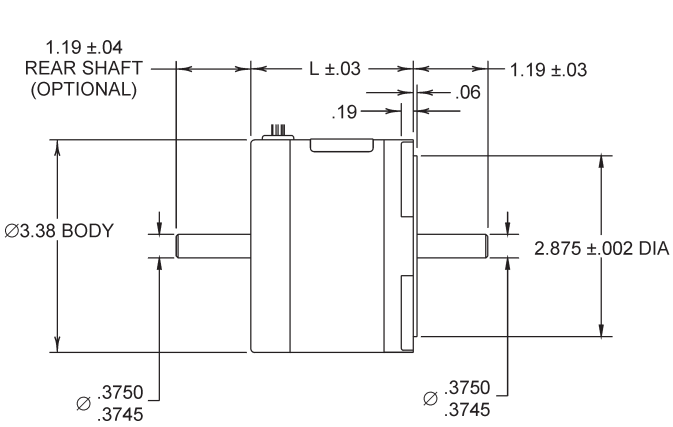
Note:
Resistor/capacitor networks are supplied by the customer unless otherwise indicated. Consult the factory for further information.

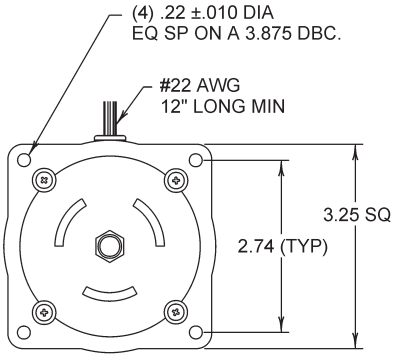



## Size 23

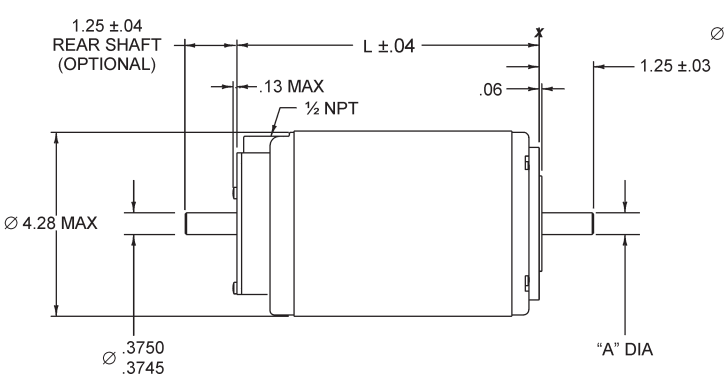
| Model Series | Dimension "L" (inches) |
|---|---|
| LA23ACB-1 | 2.25 |
| LA23ACB-2 | 2.25 |
| LA23BCB-1 | 3.00 |

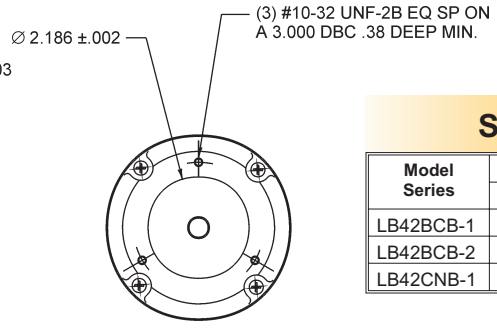



## Size 34

| Model Series | Dimension "L" (inches) |
|---|---|
| LA34ADB-2 | 2.45 |
| LA34ADB-4 | 2.45 |
| LA34BGB-5 | 3.70 |
| LA34CJB-6 | 5.06 |




## Size 42

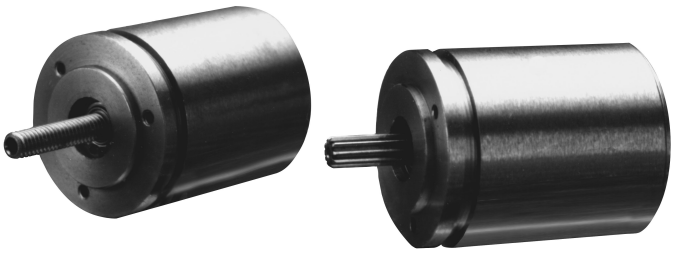
| Model Series | Dimension (inches) | |
|---|---|---|
| | "L" | "A" |
| LB42BCB-1 | 4.80 | .3750/.3745 |
| LB42BCB-2 | 4.80 | .3750/.3745 |
| LB42CNB-1 | 6.97 | .5000/.4995 |

# VR and PM Stepping Motors
# 7.5° 15° 45° 90°

SIZE

| 11 | 15 | 20 |
|---|---|---|
| 1.06" | 1.44" | 2.00" |

DIA



EADmotors Variable Reluctance (VR) and Permanent Magnet (PM) DC stepping motors are precision bi-directional devices used in paper tape punches, plotters, printers, and tape readers. Standard motors also are available with heat sinks.

The motors are totally enclosed with permanently lubricated ball bearings.

EADmotors specializes in meeting the individual requirements of each application and offers engineering assistance for your design requirements.

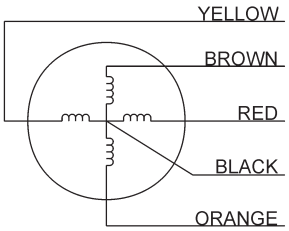
## Electrical Ratings

| Size | Step Angle (degrees) | Type | Model Number | Phase Voltage (VDC) | Phase Resistance (ohms) | Holding Torque (oz-in) | Rotor Inertia (oz-in-sec$^2$) | Weight (ounces) |
|---|---|---|---|---|---|---|---|---|
| 11 | 7.5 | 4Ø/VR | LD11EAY-1 | 28 | 95 | 2.3 | .031 E-3 | 5.0 |
| | 15 | 4Ø/VR | LD11EAM-3 | 28 | 55 | 5.8 | .014 E-3 | 4.7 |
| | 15 | 3Ø/VR | LD11EAL-1 | 28 | 80 | 2.7 | .014 E-3 | 4.7 |
| | 45 | 4Ø/PM | LD11EAD-2 | 28 | 45 | 2.5 | .017 E-3 | 4.5 |
| | 90 | 4Ø/PM | LD11EAE-4 | 28 | 60 | 2.5 | .017 E-3 | 4.3 |
| 15 | 7.5 | 4Ø/VR | LD15EAY-4 | 28 | 55 | 8.0 | .042 E-3 | 6.5 |
| | 15 | 4Ø/VR | LD15EAM-5 | 28 | 35 | 8.0 | .010 E-3 | 6.5 |
| | 15 | 3Ø/VR | LD15EAL-4 | 28 | 16 | 5.8 | .008 E-3 | 6.5 |
| | 45 | 4Ø/PM | LD15EAD-3 | 28 | 30 | 8.1 | .071 E-3 | 10 |
| | 90 | 4Ø/PM | LD15EAE-1 | 28 | 20 | 11 | .071 E-3 | 10 |
| 20 | 15 | 3Ø/VR | LD20ACL-10 | 28 | 10 | 45 | .142 E-3 | 20 |
| | 15 | 3Ø/VR | LD20ACL-12 | 28 | 20 | 35 | .142 E-3 | 20 |
| | 15 | 3Ø/VR | LD20DDL-10 | 12 | 2.1 | 65 | .284 E-3 | 24 |
| | 15 | 4Ø/VR | LD20ACM-7 | 14 | 5 | 30 | .142 E-3 | 20 |
| | 15 | 4Ø/VR | LD20ACM-8 | 28 | 10 | 42 | .142 E-3 | 20 |
| | 15 | 4Ø/VR | LD20ACM-9 | 28 | 20 | 38 | .142 E-3 | 20 |
| | 15 | 4Ø/VR | LD20ACM-10 | 28 | 30 | 30 | .142 E-3 | 20 |
| | 15 | 4Ø/VR | LD20DDM-2 | 28 | 10 | 65 | .284 E-3 | 24 |
| | 45 | 4Ø/PM | LD20ABD-2 | 28 | 12 | 15 | .212 E-3 | 20 |
| | 90 | 4Ø/PM | LD20ABE-1 | 28 | 12 | 20 | .212 E-3 | 20 |

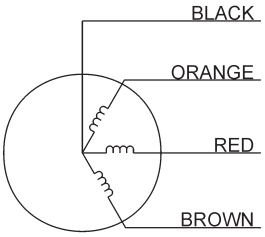
| Type | Shaft Description |
|---|---|
| b | PINION, 13T, 120DP, 20°, AGMA QUAL. No. 9 |
| c | PINION, 10T, 96DP, 20°, AGMA QUAL. No. 9 |
| d | PINION, 15T, 96DP, 20°, AGMA QUAL. No. 9 |

## Connection Diagrams

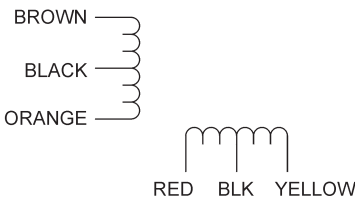
4 Phase VR




3 Phase VR




4 Phase PM




## Switching Sequence for Clockwise Rotation Facing Mounting End

One Phase Excitation

| Step | BRN | RED | ORN | YEL | BLK |
|---|---|---|---|---|---|
| 1 | — | 0 | 0 | 0 | + |
| 2 | 0 | — | 0 | 0 | + |
| 3 | 0 | 0 | — | 0 | + |
| 4 | 0 | 0 | 0 | — | + |

One Phase Excitation

| Step | BRN | RED | ORN | BLK |
|---|---|---|---|---|
| 1 | — | 0 | 0 | + |
| 2 | 0 | — | 0 | + |
| 3 | 0 | 0 | — | + |

One Phase Excitation

| Step | BRN | RED | ORN | YEL | BLK |
|---|---|---|---|---|---|
| 1 | — | 0 | 0 | 0 | + |
| 2 | 0 | — | 0 | 0 | + |
| 3 | 0 | 0 | — | 0 | + |
| 4 | 0 | 0 | 0 | — | + |

Two Phase Excitation

| Step | BRN | RED | ORN | YEL | BLK |
|---|---|---|---|---|---|
| 1 | — | — | 0 | 0 | + |
| 2 | 0 | — | — | 0 | + |
| 3 | 0 | 0 | — | — | + |
| 4 | — | 0 | 0 | — | + |

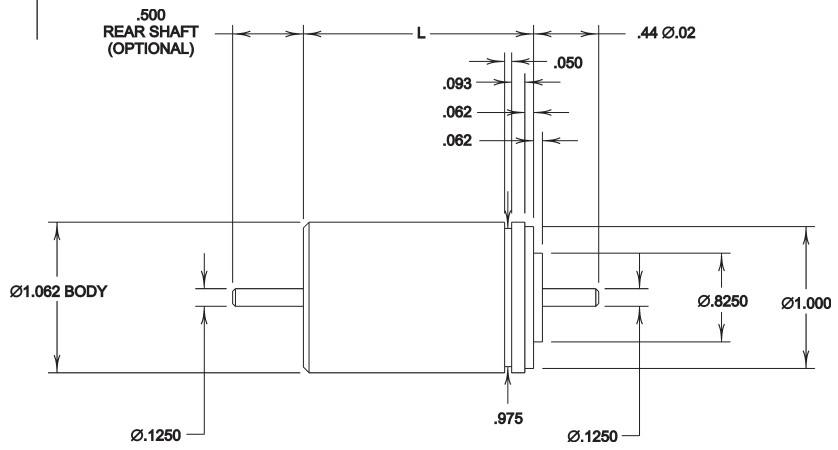
Two Phase Excitation

| Step | BRN | RED | ORN | BLK |
|---|---|---|---|---|
| 1 | — | — | 0 | + |
| 2 | 0 | — | — | + |
| 3 | — | 0 | — | + |

Two Phase Excitation

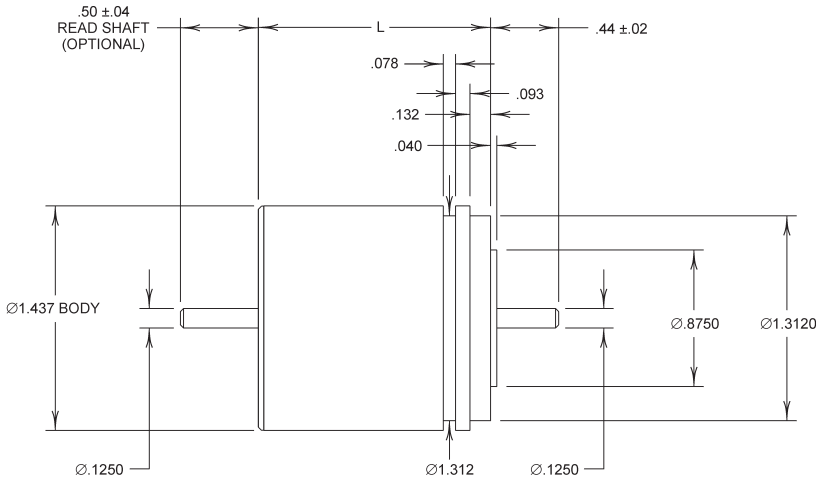
| Step | BRN | RED | ORN | YEL | BLK |
|---|---|---|---|---|---|
| 1 | — | — | 0 | 0 | + |
| 2 | 0 | — | — | 0 | + |
| 3 | 0 | 0 | — | — | + |
| 4 | — | 0 | 0 | — | + |

# VR and PM Stepping Motors 7.5° 15° 45° 90°



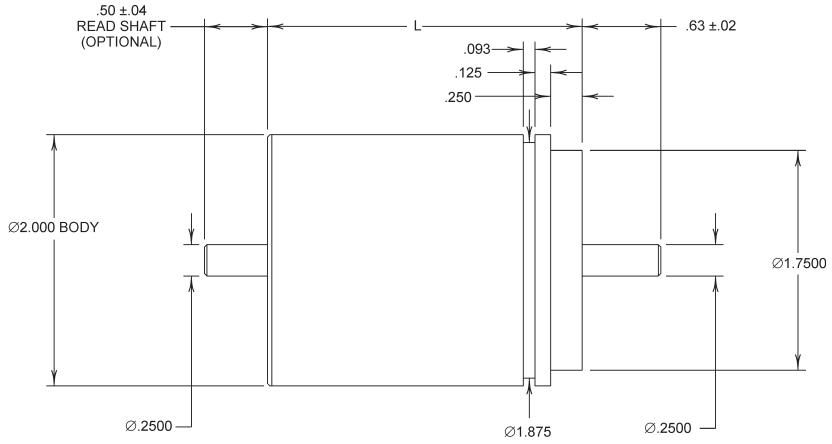

## Size 11

| Model Series | Dimension "L" (inches) | Mounting Holes |
|---|---|---|
| LD11EAY-1 | 1.400 | 4-40 UNC-2B on .812 B.C., 90° apart |
| LD11EAM-3 | 1.625 | |
| LD11EAL-1 | 1.625 | |
| LD11EAD-2 | 1.625 | |
| LD11EAE-4 | 1.625 | |



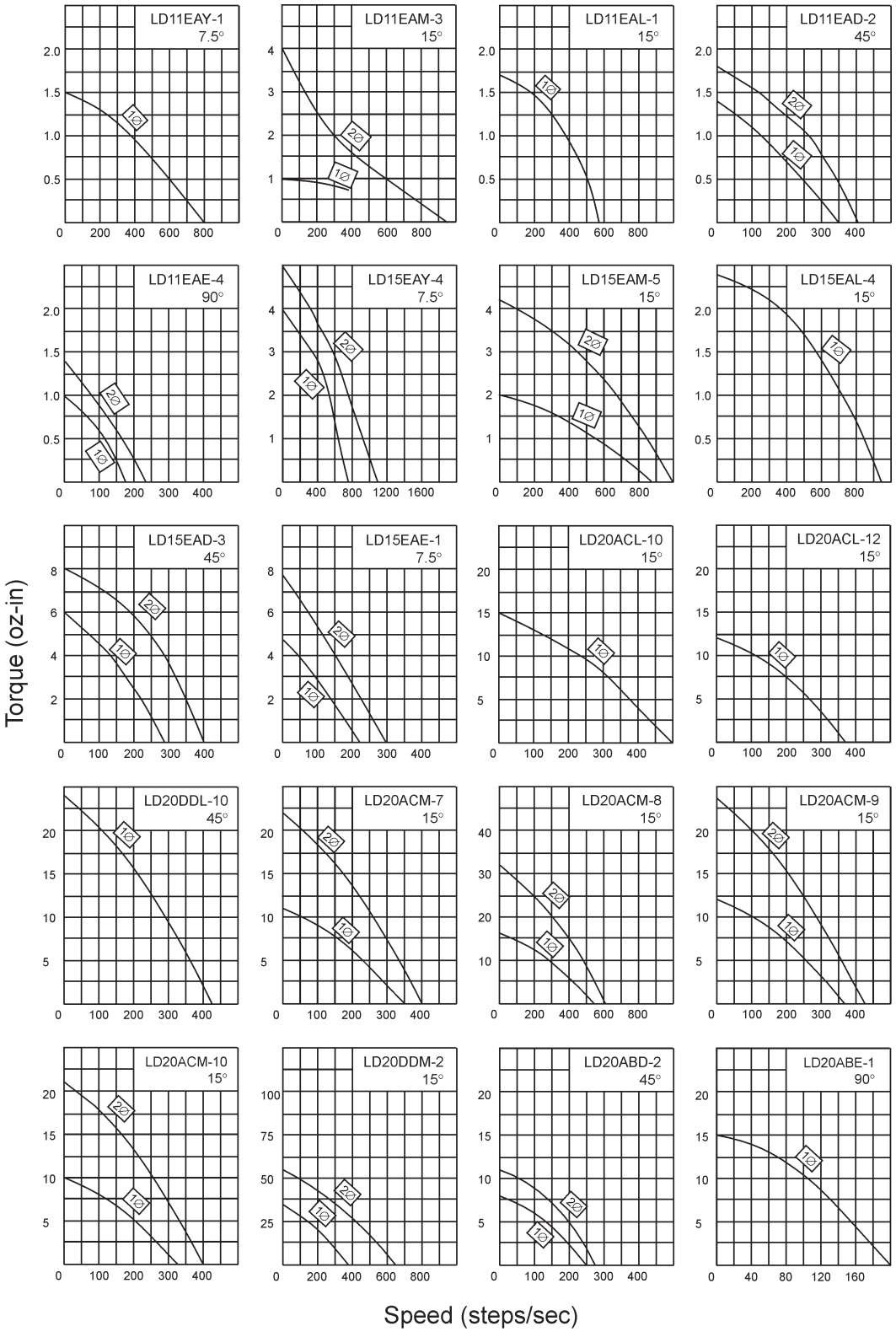

## Size 15

| Model Series | Dimension "L" (inches) | Mounting Holes |
|---|---|---|
| LD15EAY-4 | 1.500 | 4-40 UNC-2B on 1.100 B.C., 90° apart |
| LD15EAM-5 | 1.500 | |
| LD15EAL-4 | 1.500 | |
| LD15EAD-3 | 2.100 | |
| LD15EAE-1 | 2.100 | |




## Size 20

| Model Series | Dimension "L" (inches) | Mounting Holes |
|---|---|---|
| LD20ACK-10 | 2.500 | None |
| LD20ACL-12 | 2.500 | |
| LD20DDL-10 | 3.500 | |
| LD20ACM-7 | 2.500 | |
| LD20ACM-8 | 2.500 | |
| LD20ACM-9 | 2.500 | |
| LD20ACM-10 | 2.500 | |
| LD20DDM-2 | 3.500 | |
| LD20ABD-2 | 2.500 | |
| LD20ABE-1 | 2.500 | |


LD11EAY-1 7.5°
LD11EAM-3 15°
LD11EAL-1 15°
LD11EAD-2 45°
LD11EAE-4 90°
LD15EAY-4 7.5°
LD15EAM-5 15°
LD15EAL-4 15°
LD15EAD-3 45°
LD15EAE-1 7.5°
LD20ACL-10 15°
LD20ACL-12 15°
LD20DDL-10 45°
LD20ACM-7 15°
LD20ACM-8 15°
LD20ACM-9 15°
LD20ACM-10 15°
LD20DDM-2 15°
LD20ABD-2 45°
LD20ABE-1 90°
1Ø
2Ø
Torque (oz-in)
Speed (steps/sec)

# Hybrid Motor Connection Diagrams

These diagrams show the unipolar and bipolar switching sequence. The direction of the rotation is viewed from the lead end.

Notes:

Other electrical and mechanical configurations are available upon request.

Class B insulation 130°C is standard. Higher rating is available upon request.

## Unipolar

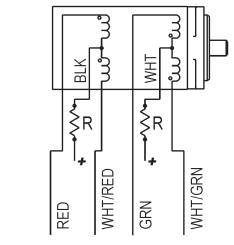



Diagram 1 (6 Leads)

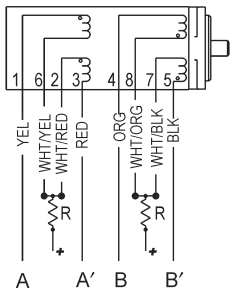
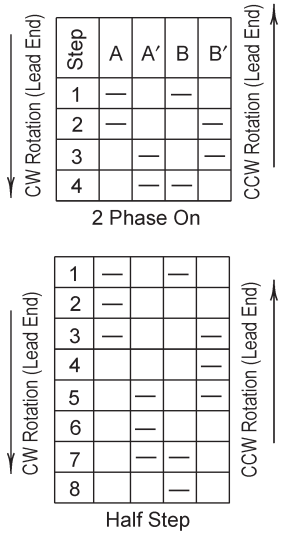



Diagram 4 (8 Leads)




## Bipolar

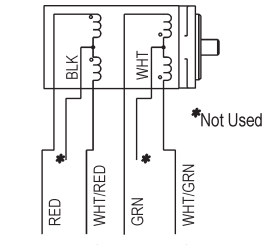



Diagram 2 (6 Leads)

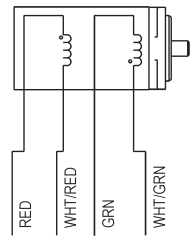



Diagram 3 (4 Leads)

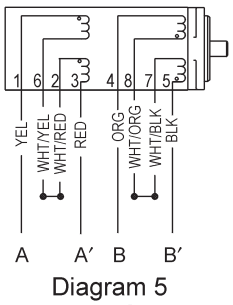



Diagram 5
(8 Leads Series)

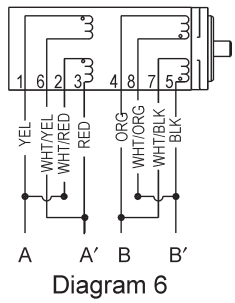
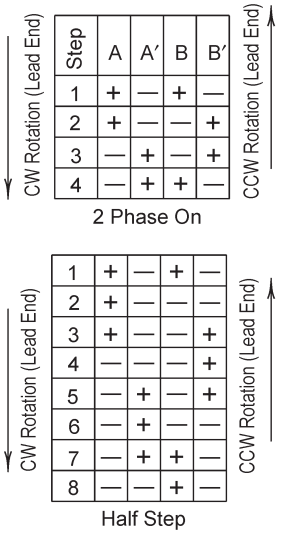



Diagram 6
(8 Leads Parallel)



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