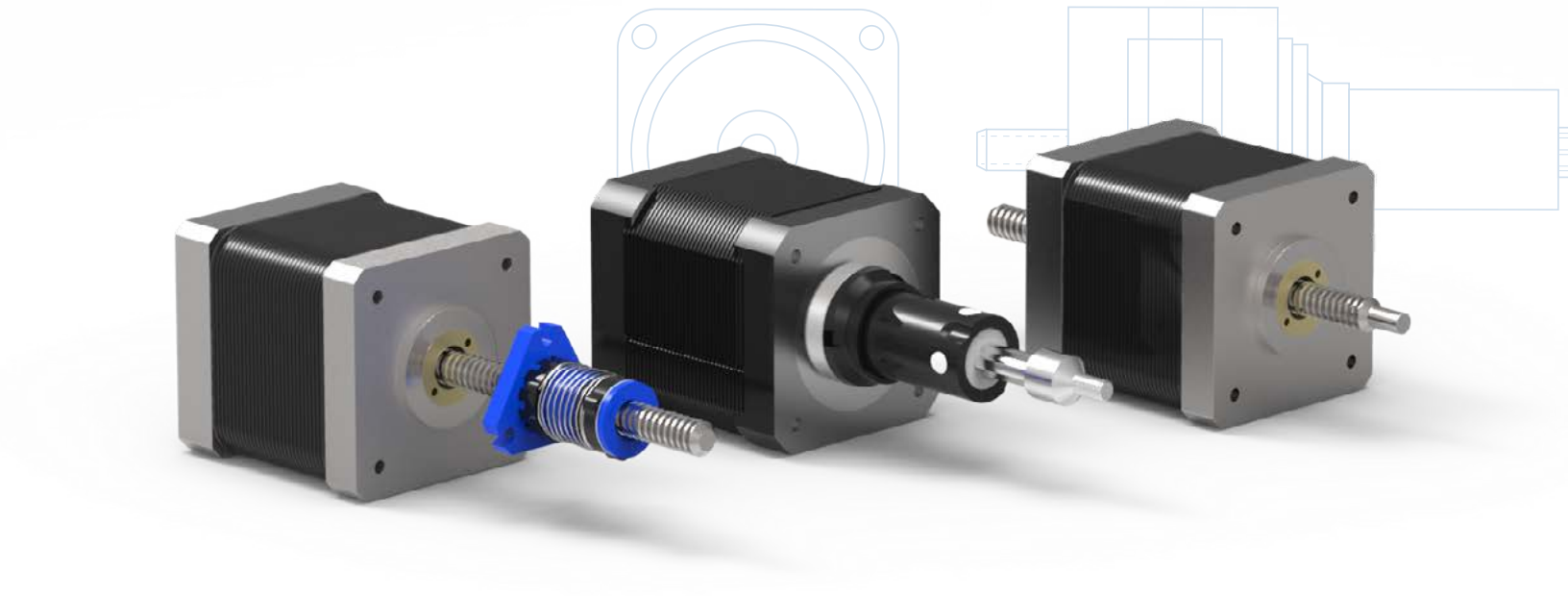

# Stepper Motor Linear Actuators

HELIX™
LINEAR TECHNOLOGIES

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ASSOCIATION FOR HIGH TECHNOLOGY DISTRIBUTION AHTD

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## Certifications

ISO 9001 : 2015 CERTIFIED

AS9100D CERTIFIED ISO 9001

ITAR International Traffic in Arms Regulations Compliant

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Helix Linear Technologies, Inc., Beachwood, Ohio USA

## Company

Helix Linear Technologies is a global manufacturer of linear actuators, lead screws and ball screws. Serving clients in the ærospace, medical, life science, security, semiconductor, and defense industries, we focus on helping our customers achieve their application and profitability goals. Our innovative product design and world-class engineering capabilities solve real-world linear motion issues, building a foundation for our client's long-term success.

## Culture

Our culture is rooted in agility, responsiveness, and teamwork. Our team comprises happy, competitive professionals who are experts in manufacturing innovative electromechanical linear motion solutions. We strive to exceed our customers' expectations in all interactions and are committed to continuous improvement.

## History

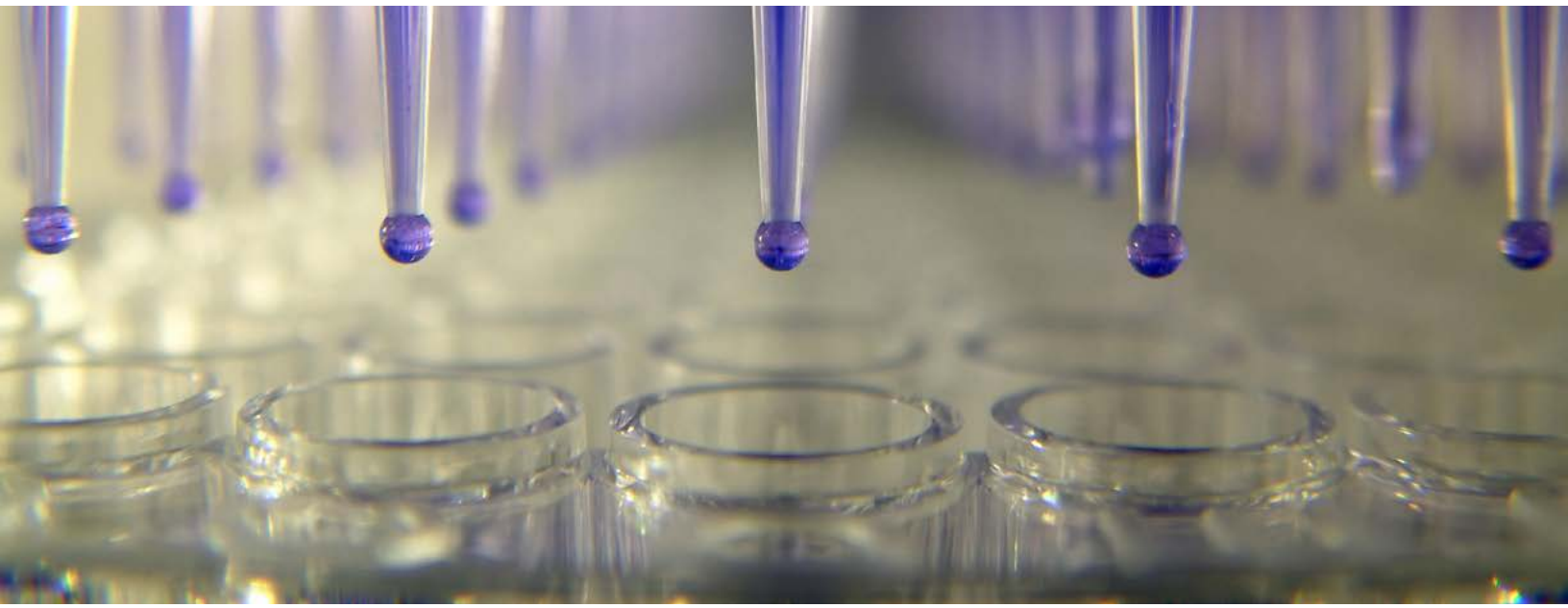
Helix Linear Technologies was founded in 2011 to meet the growing demand for high-precision lead screws in the electromechanical actuation industry. Our rapid growth and expanded product lines now include end-to-end linear actuator solutions, providing our clients with customized options and fully integrated solutions.

## Market Segments Served

- Medical & Diagnostic
- Aerospace
- Packaging
- Automotive
- Electronics
- Transportation
- Patient Handling
- Entertainment
- Semiconductor
- Military and Defense
- Factory Automation
- Pulp & Paper
- Steel
- Chemical
- Agriculture/Food Handling
- Tire Manufacture

In a captive linear actuator design, the lead screw is connected to a spline shaft that passes through a spline bushing to keep it from rotating. The spline bushing prevents the lead screw from rotating but allows enough clearance for the shaft to move axially as the lead screw is driven back and forth with a corresponding clockwise and counterclockwise turn of the motor. The anti-rotation feature is inherent in the design and creates a stand-alone unit that pushes and pulls whatever device it is attached to. Because it is independent, this actuator can also provide a push force without being attached to anything. For this reason, it's an excellent choice for push-button applications where the return motion is handled by a spring pre-load or influenced by gravity.

Captive stepper motor linear actuators from Helix Linear Technologies are available in NEMA sizes 8, 11, 14, 17, and 23 with single and double stack options.



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**SMA - 8 S 2.5 - C - W12125 - 1.00 - ME - ER - B**

**NEMA Stepper Motor Size**
8 11 14 17 23

**Motor Length**
S = single stack
D = double stack

**Voltage** (see table below)

**Captive Stepper Motor Actuator**

**Lead Screw**
See Lead Screw Table on page 56

**Stroke Code** (in inches)
0.25 0.50 0.75 1.00 1.25 1.50 2.00

**Machined End**
SE = imperial machined end
ME = metric machined end

**Encoder**
ER = encoder-ready
E200 = 200 counts per rev
E500 = 500 counts per rev
E1000 = 1000 counts per rev
E2000 = 2000 counts per rev
00 = no encoder

**Encoder Position** (see table below)
A = up
B = down
00 = no encoder

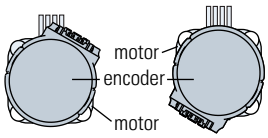
## Available Motor Voltages

| Motor Size | Available Voltages | | |
|---|---|---|---|
| NEMA 8 | 2.5 | 5 | 7.5 |
| NEMA 11 | 2.1 | 5 | 12 |
| NEMA 14 | 2.33 | 5 | 12 |
| NEMA 17 | 2.33 | 5 | 12 |
| NEMA 23 | 3.25 | 5 | 12 |

## Encoder Positions

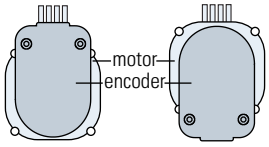
### NEMA 8

Position A Position B



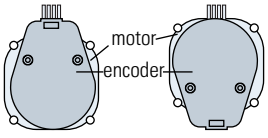

### NEMA 11, 14, 17

Position A Position B




### NEMA 23, 34

Position A Position B

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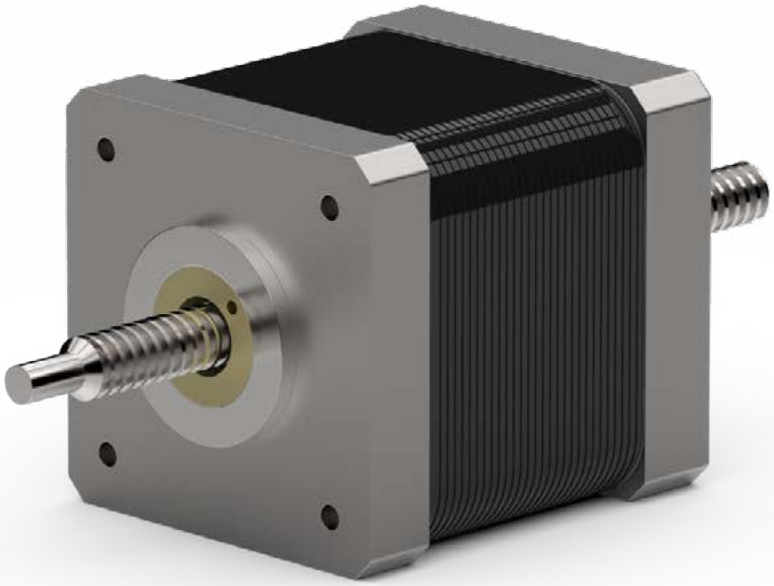
# Non-Captive Stepper Motor Linear Actuators
## Overview



In a non-captive actuator linear actuator, the lead screw dœs not have an anti-rotation feature. Instead, external mechanical components separate from the motor are introduced into the design to keep the lead screw from rotating. As a result, the lead screw moves back and forth axially by restricting its rotation, which then drives the device it is attached to back and forth.

A non-captive actuator is more straightforward and compact than a captive linear actuator. It is an excellent option when the machine design already includes a built-in guide mechanism or anti-rotation feature. In some specific applications, the lead screw can be provided in longer lengths, supported at each end, and held in tension.

Non-captive stepper motor linear actuators from Helix Linear Technologies are available in NEMA sizes 8, 11, 14, 17, 23, and 34 with single and double stack options.

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**SMA - 8 S 2.1 - N - W12125 - 00 - 8.00 - SE - 00 - 00**

**NEMA Stepper Motor Size**
8 11 14 17 23 34

**Motor Length**
S = single stack
D = double stack

**Voltage** (see table below)

**Non-Captive Stepper Motor Actuator**

**Lead Screw**
see Lead Screw Table on page 56

**Coating**
00 = no coating

**Lead Screw Length**
in inches

**Machined End**
ME = metric machined end
SE = imperial machined end
00 = no end machining

**Encoder**
ER = encoder-ready
E200 = 200 counts per rev
E500 = 500 counts per rev
E1000 = 1000 counts per rev
E2000 = 2000 counts per rev
00 = no encoder

**Encoder Position** (see table below)
A = up
B = down
00 = no encoder

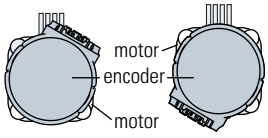
## Available Motor Voltages

| Motor Size | Available Voltages | | |
|---|---|---|---|
| NEMA 8 | 2.5 | 5 | 7.5 |
| NEMA 11 | 2.1 | 5 | 12 |
| NEMA 14 | 2.33 | 5 | 12 |
| NEMA 17 | 2.33 | 5 | 12 |
| NEMA 23 | 3.25 | 5 | 12 |
| NEMA 34 | 2.85 | 5 | 12 |

## Encoder Positions

### NEMA 8

Position A

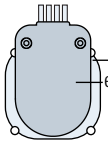



Position B

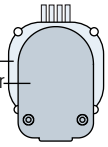


### NEMA 11, 14, 17

Position A

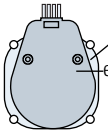



Position B

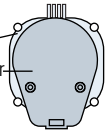


### NEMA 23, 34

Position A




Position B



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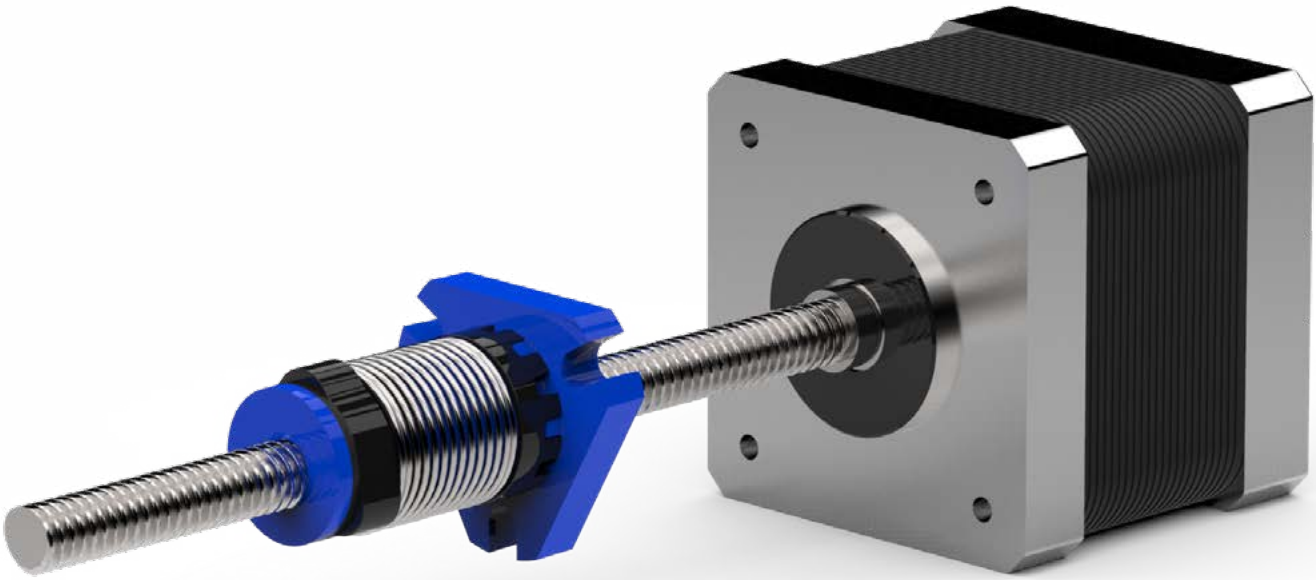
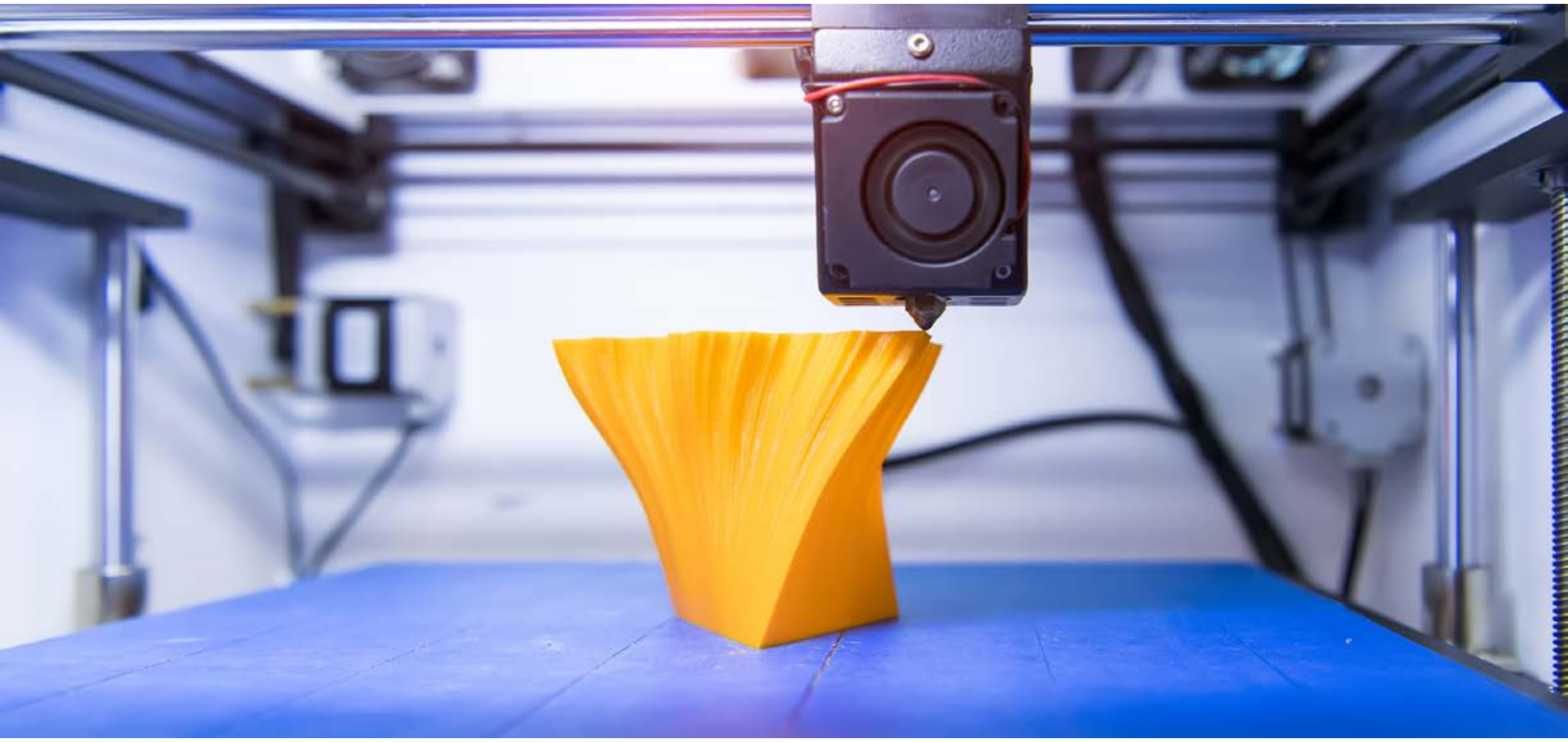
# External Stepper Motor Linear Actuators
## Overview



External stepper motor linear actuators feature a lead screw that is press-fit directly into the rotor of the motor. As a result, the threaded screw rotates outside of the motor body and is paired with a mating nut. This design configuration eliminates the coupling between the motor and lead screw, saving valuable design space and increasing stroke length. External stepper motor linear actuators from Helix Linear Technologies are also highly configurable with a wide range of standard lead options and numerous freewheeling and anti-backlash nuts styles. Rotation prevention of the nut is necessary to create high-resolution linear motion.



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# External Stepper Motor Linear Actuators
## Part Number Configuration Guide

**SMA - 8 S 2.1 - E - 012125 - NFA - 8.00 - T - M1 - E200 - A**

**NEMA Stepper Motor Size**
8 11 14 17 23 34

**Motor Length**
S = single stack
D = double stack

**Voltage** (see table below)

**External Stepper Motor Actuator**

**Lead Screw**
see Lead Screw Table on page 57

**Nut Style** (see table)

**Lead Screw Length**
in inches

**Screw Coating**
T = H10X™ PTFE coating
00 = no coating

**Bearing Support**
M1 = universal mount single bearing
F1 = flanged mount single bearing
00 = no bearing support

**Encoder**
ER = encoder ready
E200 = 200 counts per rev
E500 = 500 counts per rev
E1000 = 1000 counts per rev
E2000 = 2000 counts per rev
00 = no encoder

**Encoder Position** (see table below)
A = up
B = down
00 = no encoder

## Available Motor Voltages

| Motor Size | Available Voltages | | |
|---|---|---|---|
| NEMA 8 | 2.5 | 5 | 7.5 |
| NEMA 11 | 2.1 | 5 | 12 |
| NEMA 14 | 2.33 | 5 | 12 |
| NEMA 17 | 2.33 | 5 | 12 |
| NEMA 23 | 3.25 | 5 | 12 |
| NEMA 34 | 2.85 | 5 | 12 |

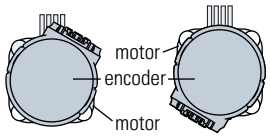
## Nut Style Matrix

| Style | Threaded | Flanged |
|---|---|---|
| Standard | NTA | NFA |
| Anti-Backlash Axial | ATA | AFA |
| Anti-Backlash Radial | RTA | RFA |
| Anti-Backlash Torsional | KTA | KFA |

## Encoder Positions

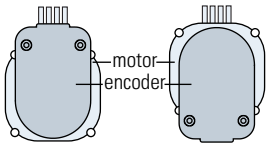
### NEMA 8

Position A Position B



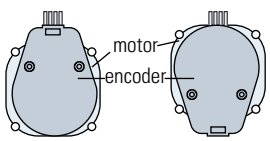

### NEMA 11, 14, 17, 23

Position A Position B




### NEMA 34

Position A Position B

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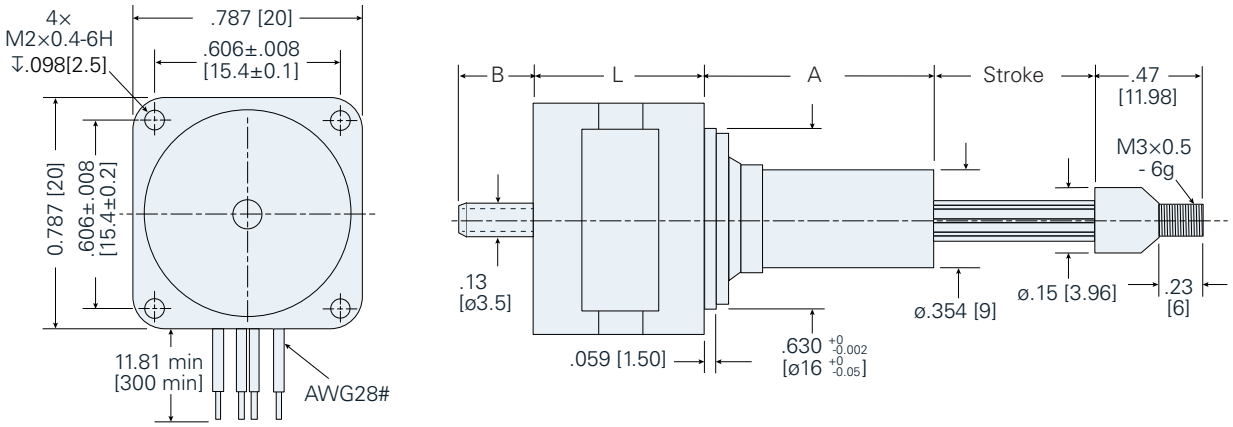



## Motor Specifications

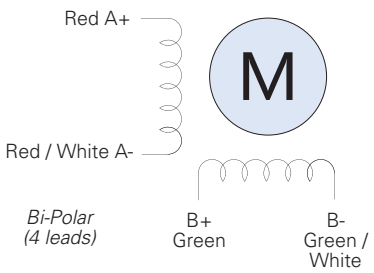
- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167° F (75° C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.5 | 0.49 | 5.1 | 1.5 | 1.5 | 43 | 4.2 | 1.18 | 30 |
| | 5 | 0.24 | 20.4 | 6.7 | 1.5 | 43 | 4.2 | 1.18 | 30 |
| | 7.5 | 0.16 | 45.9 | 39 | 1.5 | 43 | 4.2 | 1.18 | 30 |
| Double Stack | 2.5 | 1.9 | 1.1 | 1.1 | 2.4 | 68 | 7.5 | 1.496 | 38 |
| | 5 | 0.75 | 6.7 | 5.8 | 2.4 | 68 | 7.5 | 1.496 | 38 |
| | 7.5 | 0.35 | 34.8 | 35.6 | 2.4 | 68 | 7.5 | 1.496 | 38 |

## Stroke Codes

| Stroke Code | Stroke | | A | | B | |
|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm |
| 0.35 | .35 | 9.0 | .44 | 11.1 | .06 | 1.6 |
| 0.50 | .50 | 12.7 | .58 | 14.8 | .21 | 5.3 |
| 0.75 | .75 | 19.1 | .83 | 21.2 | .46 | 11.6 |
| 1.00 | 1.00 | 25.4 | 1.08 | 27.5 | .72 | 17.9 |
| 1.25 | 1.25 | 31.8 | 1.33 | 33.9 | .96 | 24.3 |
| 1.50 | 1.50 | 38.1 | 1.58 | 40.2 | 1.20 | 30.7 |

## Wiring Diagram



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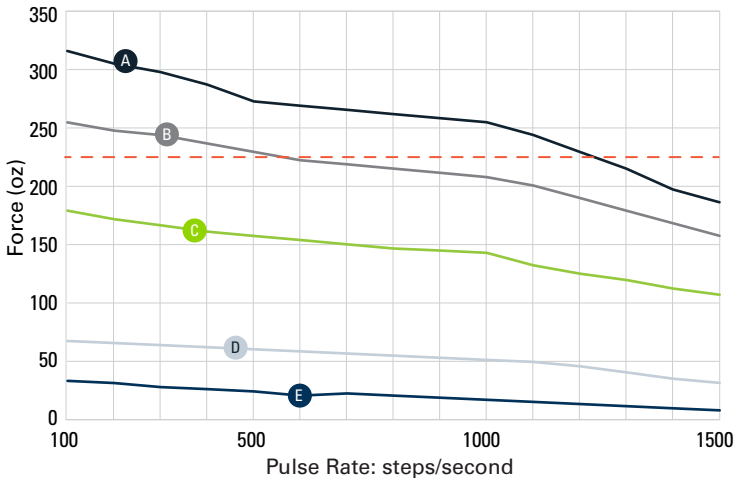
## Screw Specifications

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| W12012 | .140 | 3.6 | .012 | 0.3048 | .00006 | .001524 | A |
| W12024 | .140 | 3.6 | .024 | 0.6096 | .00012 | .003048 | B |
| W12039 | .140 | 3.6 | .03937 | 1 | .000197 | .005 | C |
| W12048 | .140 | 3.6 | .048 | 1.2192 | .00024 | .006096 | |
| W12078 | .140 | 3.6 | .07874 | 2 | .000394 | .010 | |
| W12096 | .140 | 3.6 | .096 | 2.4384 | .00048 | .012192 | D |
| W12157 | .140 | 3.6 | .15748 | 4 | .000787 | .020 | |
| W12315 | .140 | 3.6 | .31496 | 8 | .001575 | .040 | E |

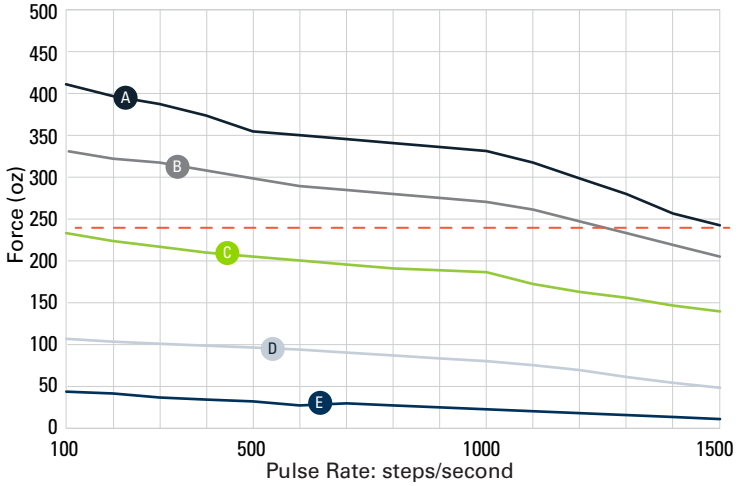
Native units: ☐ imperial ☐ metric

## Force v Pulse Rate Charts

Single Stack




Double Stack




- - - - = Recommended load limit

Speed charts are based on using bi-polar motors with chopper drives at 100% duty cycle. Chopper drive curves were created using full steps on a 5 volt motor and a 40v power supply.

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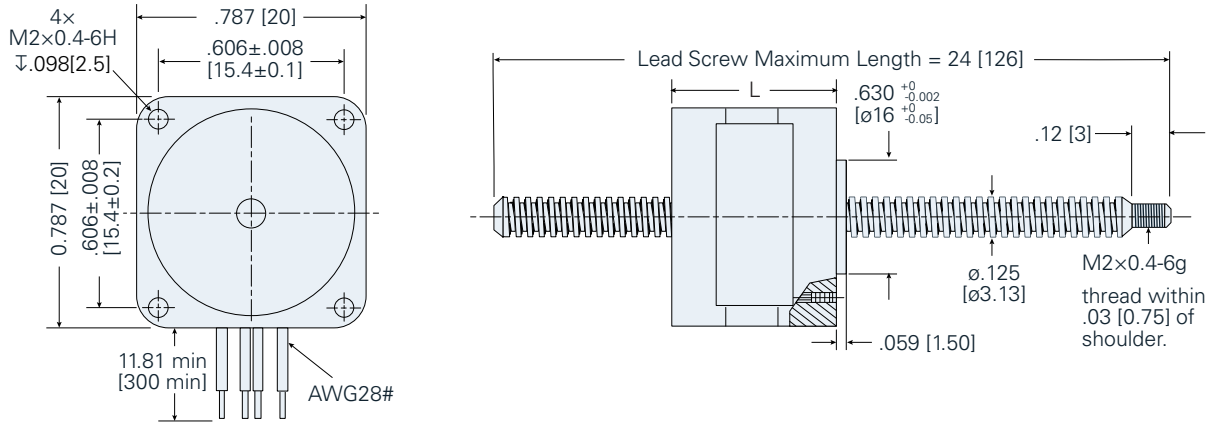
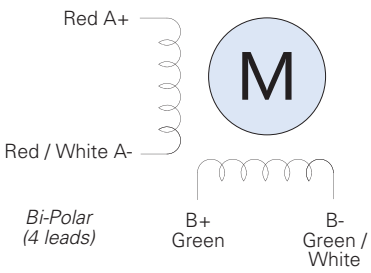


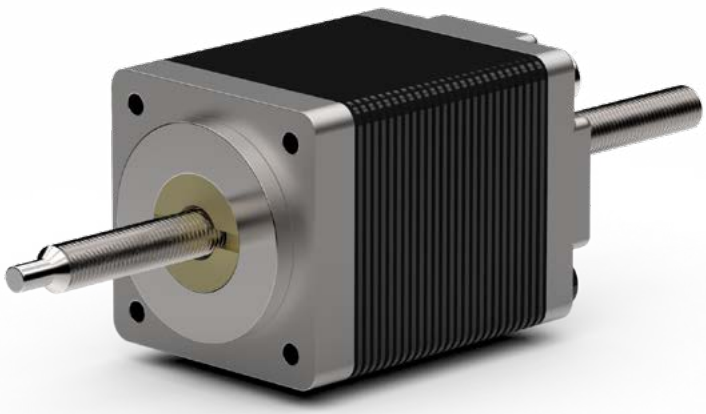

## Motor Specifications

- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167° F (75° C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L (max) | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.5 | 0.49 | 5.1 | 1.5 | 1.5 | 43 | 4.2 | 1.18 | 30 |
| | 5 | 0.24 | 20.4 | 6.7 | 1.5 | 43 | 4.2 | 1.18 | 30 |
| | 7.5 | 0.16 | 45.9 | 39 | 1.5 | 43 | 4.2 | 1.18 | 30 |
| Double Stack | 2.5 | 1.9 | 1.1 | 1.1 | 2.4 | 68 | 7.5 | 1.496 | 38 |
| | 5 | 0.75 | 6.7 | 5.8 | 2.4 | 68 | 7.5 | 1.496 | 38 |
| | 7.5 | 0.35 | 34.8 | 35.6 | 2.4 | 68 | 7.5 | 1.496 | 38 |

## Wiring Diagram



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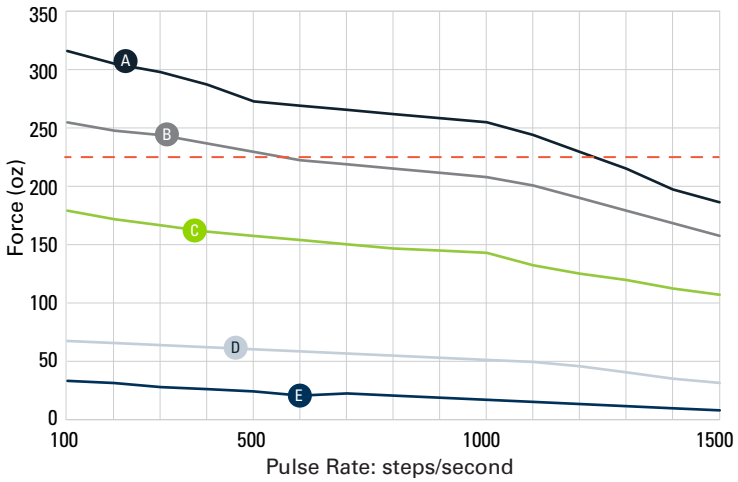
## Screw Specifications

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| W12012 | .140 | 3.6 | .012 | 0.3048 | .00006 | .001524 | A |
| W12024 | .140 | 3.6 | .024 | 0.6096 | .00012 | .003048 | B |
| W12039 | .140 | 3.6 | .03937 | 1 | .000197 | .005 | C |
| W12048 | .140 | 3.6 | .048 | 1.2192 | .00024 | .006096 | |
| W12078 | .140 | 3.6 | .07874 | 2 | .000394 | .010 | |
| W12096 | .140 | 3.6 | .096 | 2.4384 | .00048 | .012192 | D |
| W12157 | .140 | 3.6 | .15748 | 4 | .000787 | .020 | |
| W12315 | .140 | 3.6 | .31496 | 8 | .001575 | .040 | E |

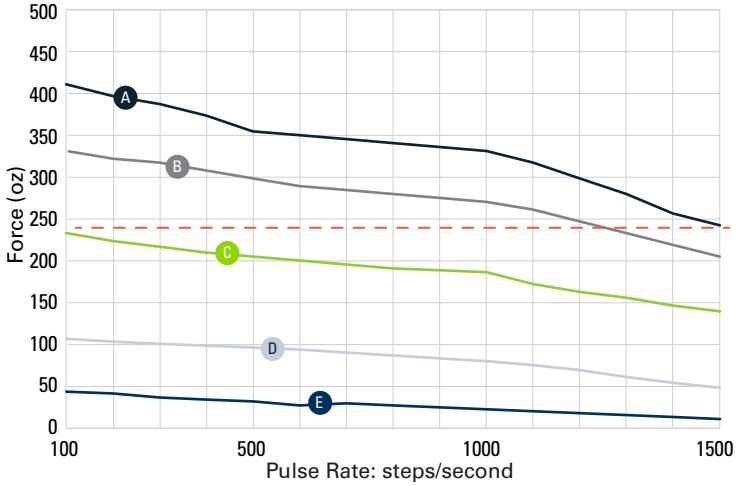
Native units: ☐ imperial ☐ metric

## Force v Pulse Rate Charts

Single Stack




Double Stack




- - - - = Recommended load limit

Speed charts are based on using bi-polar motors with chopper drives at 100% duty cycle. Chopper drive curves were created using full steps on a 5 volt motor and a 40v power supply.

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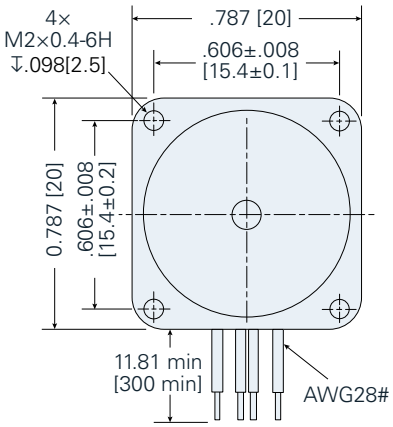
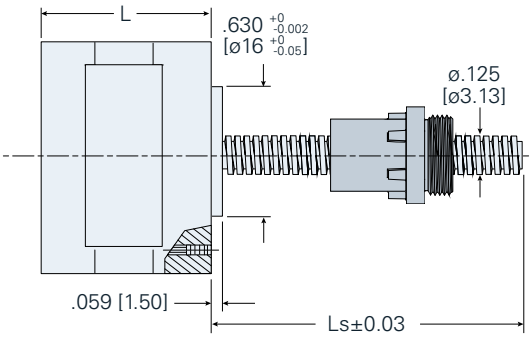


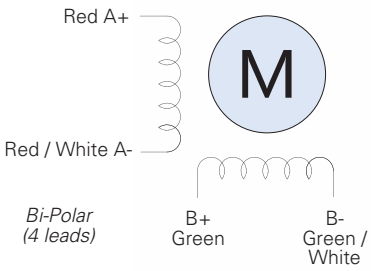




## Motor Specifications

- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167°F (75°C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.5 | 0.49 | 5.1 | 1.5 | 1.5 | 43 | 4.2 | 1.18 | 30 |
| | 5 | 0.24 | 20.4 | 6.7 | 1.5 | 43 | 4.2 | 1.18 | 30 |
| | 7.5 | 0.16 | 45.9 | 39 | 1.5 | 43 | 4.2 | 1.18 | 30 |
| Double Stack | 2.5 | 1.9 | 1.1 | 1.1 | 2.4 | 68 | 7.5 | 1.496 | 38 |
| | 5 | 0.75 | 6.7 | 5.8 | 2.4 | 68 | 7.5 | 1.496 | 38 |
| | 7.5 | 0.35 | 34.8 | 35.6 | 2.4 | 68 | 7.5 | 1.496 | 38 |

## Wiring Diagram



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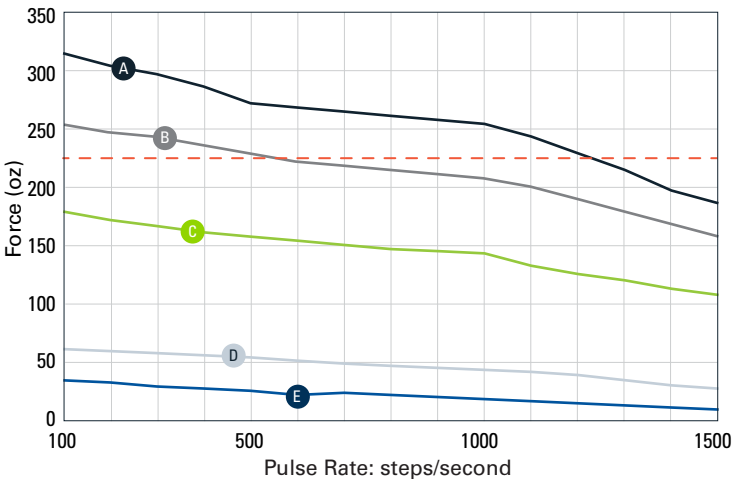
## Screw Specifications

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| 012012 | .125 | 3.13 | .012 | 0.3048 | .00006 | .001524 | A |
| 012019 | .125 | 3.13 | .01969 | 0.5 | .000098 | .0025 | |
| 012024 | .125 | 3.13 | .024 | 0.6096 | .00012 | .003048 | B |
| 012039 | .125 | 3.13 | .03937 | 1 | .000197 | .005 | C |
| 012048 | .125 | 3.13 | .048 | 1.2192 | .00024 | .006096 | |
| 012062 | .125 | 3.13 | .0625 | 1.5875 | .000313 | .007938 | |
| 012078 | .125 | 3.13 | .07874 | 2 | .000394 | .010 | |
| 012096 | .125 | 3.13 | .096 | 2.4384 | .00048 | .012192 | |
| 012125 | .125 | 3.13 | .125 | 3.175 | .000625 | .015875 | D |
| 012157 | .125 | 3.13 | .15748 | 4 | .000787 | .020 | |
| 012314 | .125 | 3.13 | .31496 | 8 | .001575 | .040 | E |

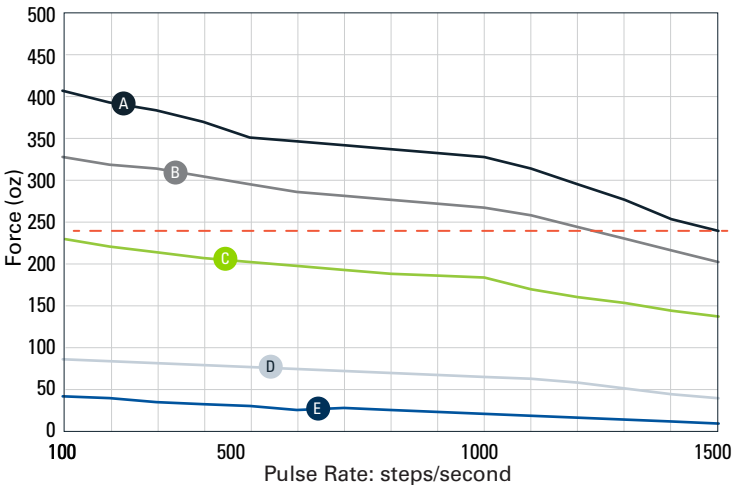
Native units: ☐ imperial ☐ metric

## Force v Pulse Rate Charts

Single Stack




Double Stack

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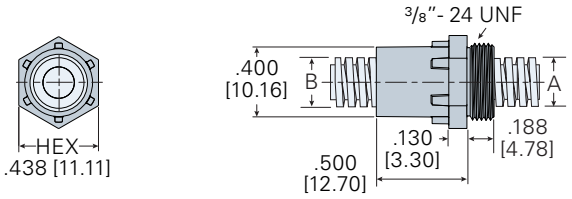
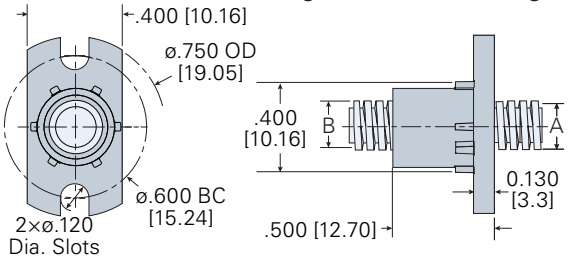
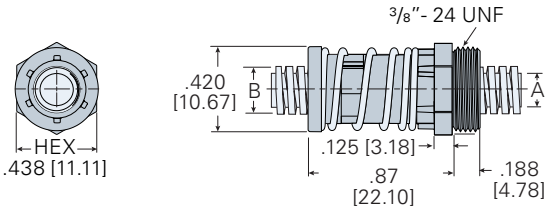
## Standard Freewheeling Nut (NTA) - Threaded



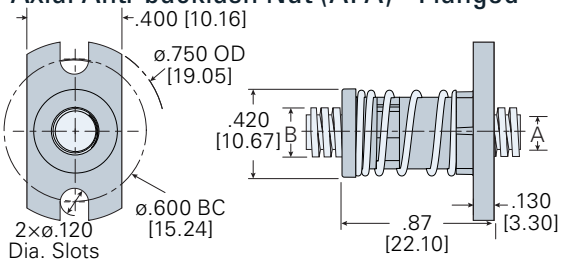

## Standard Freewheeling Nut (NFA) - Flanged

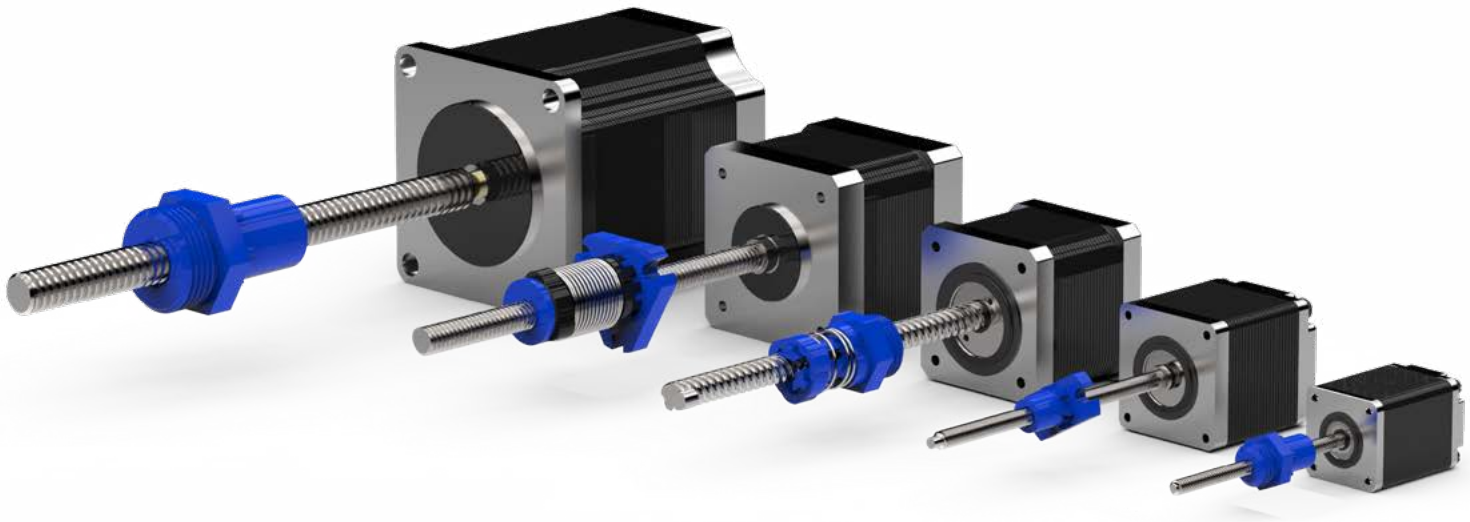



## Axial Anti-backlash Nut (ATA) - Threaded




## Axial Anti-backlash Nut (AFA) - Flanged



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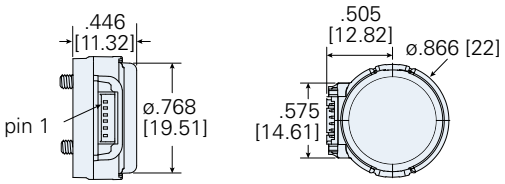
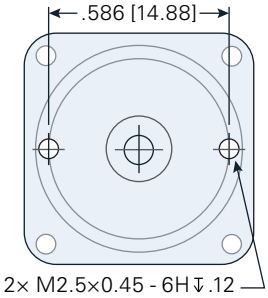
## Encoder

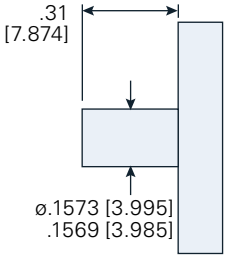



## Encoder-Ready Options

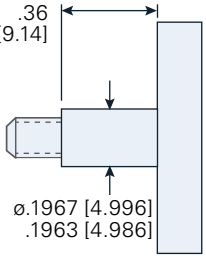
Rear View



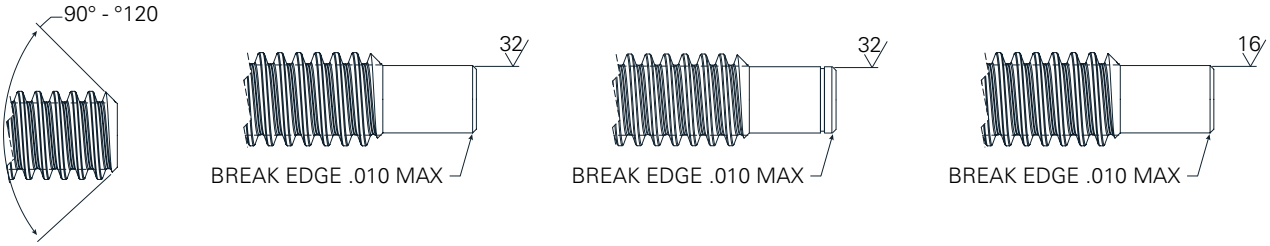

External




Non-Captive & Captive

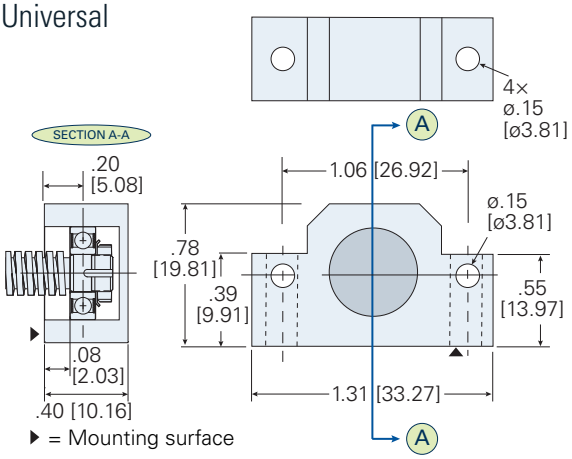



## Screw End Machining

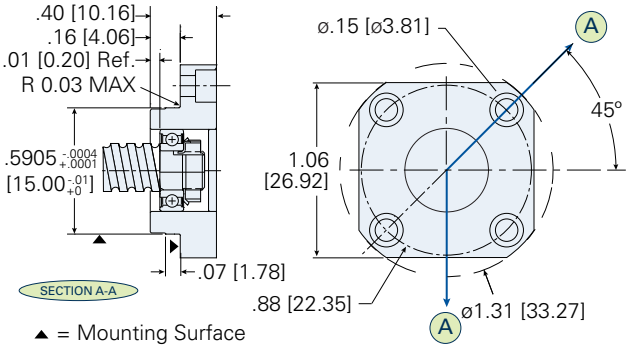



## Ezze Mount™ Bearing Support

Universal




Flanged

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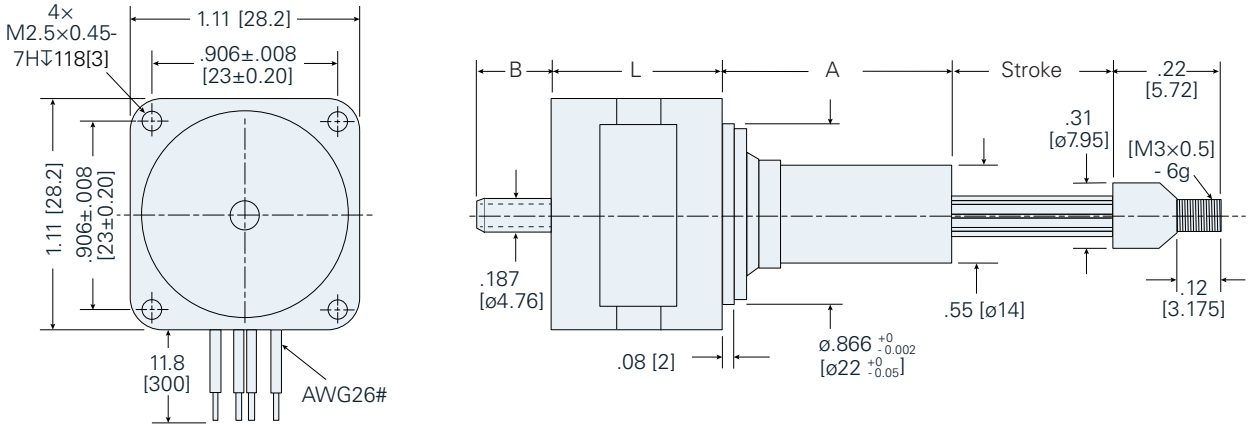



## Motor Specifications

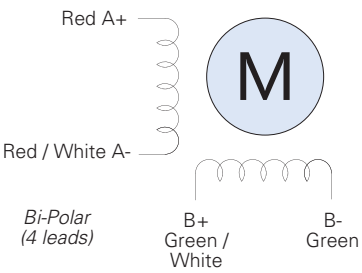
- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167°F (75°C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.1 | 1.00 | 2.1 | 1.5 | 4.2 | 119 | 4.2 | 1.26 | 32.2 |
| | 5 | 0.42 | 11.9 | 6.7 | 4.2 | 119 | 4.2 | 1.26 | 32.2 |
| | 12 | 0.18 | 68.6 | 39 | 4.2 | 119 | 4.2 | 1.26 | 32.2 |
| Double Stack | 2.1 | 1.90 | 1.1 | 1.1 | 6.35 | 180 | 7.5 | 1.81 | 46 |
| | 5 | 0.75 | 6.7 | 5.8 | 6.35 | 180 | 7.5 | 1.81 | 46 |
| | 12 | 0.35 | 34.8 | 35.6 | 6.35 | 180 | 7.5 | 1.81 | 46 |

## Stroke Codes

| Stroke Code | Stroke | | A | | B | |
|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm |
| 0.50 | .50 | 12.7 | .82 | 20.5 | .07 | 1.7 |
| 0.75 | .75 | 19.1 | 1.05 | 26.8 | .32 | 8.0 |
| 1.00 | 1.00 | 25.4 | 1.30 | 33.2 | .57 | 14.4 |
| 1.25 | 1.25 | 31.8 | 1.55 | 39.5 | .82 | 20.7 |
| 1.50 | 1.50 | 38.1 | 1.80 | 45.9 | 1.07 | 27.1 |
| 2.00 | 2.00 | 50.8 | 2.30 | 58.6 | 1.57 | 39.8 |

## Wiring Diagram



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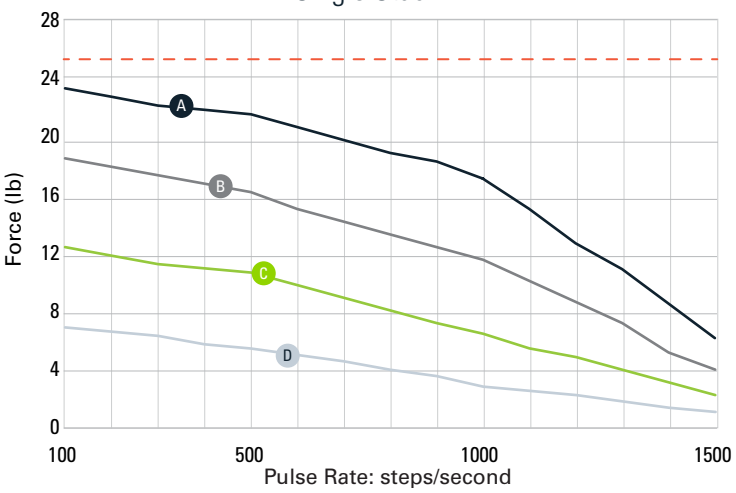
## Screw Specifications

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| W18025 | .1875 | 4.76 | .025 | 0.635 | .000125 | 0.003175 | A |
| W18050 | .1875 | 4.76 | .050 | 1.27 | .00025 | 0.00635 | B |
| W18100 | .1875 | 4.76 | .100 | 2.54 | .00050 | 0.01270 | C |
| W18200 | .1875 | 4.76 | .200 | 5.08 | .00100 | 0.02540 | D |
| W18400 | .1875 | 4.76 | .400 | 10.16 | .002 | 0.0508 | |

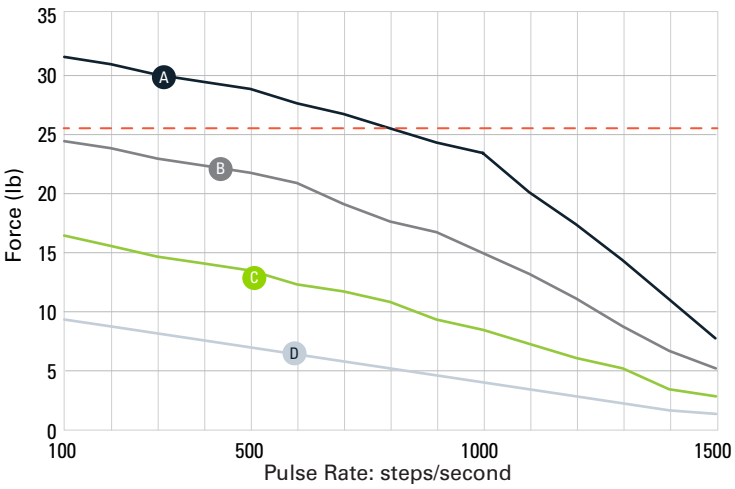
Native units: ☐ imperial ☐ metric

## Force v Pulse Rate Charts

Single Stack




Double Stack

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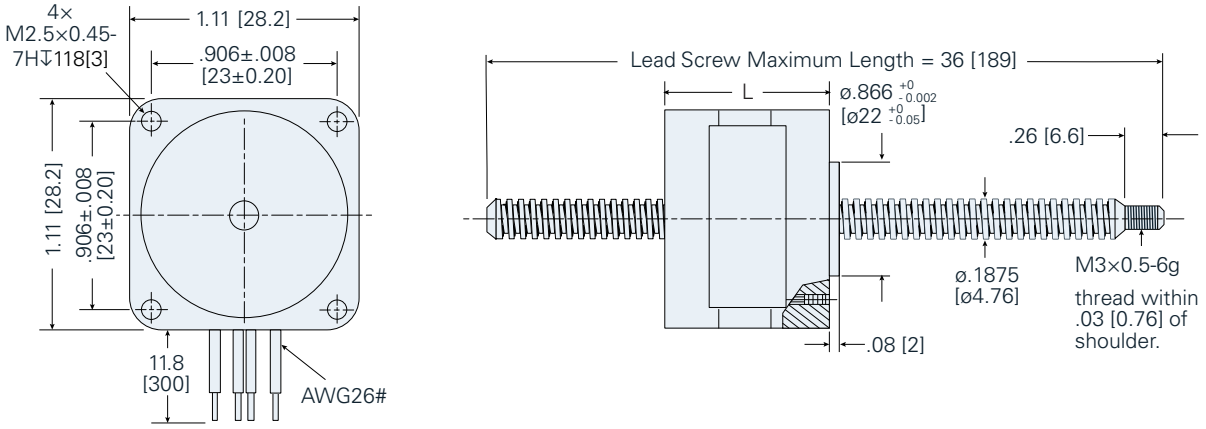
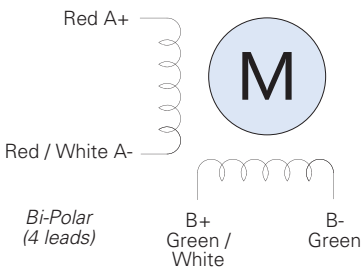


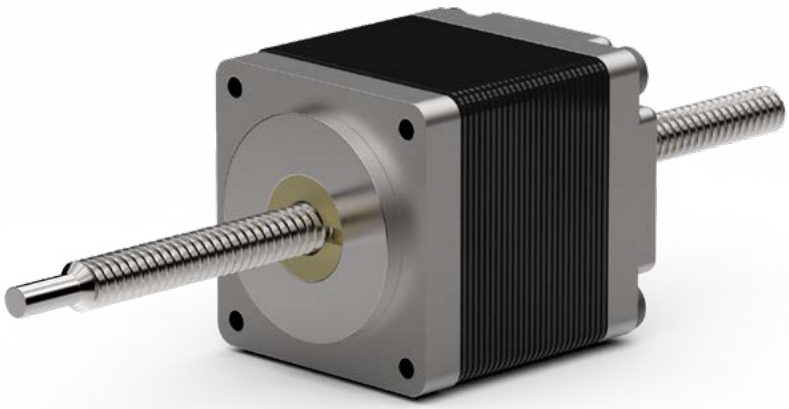

## Motor Specifications

- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167° F (75° C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.1 | 1.00 | 2.1 | 1.5 | 4.2 | 119 | 4.2 | 1.26 | 32.2 |
| | 5 | 0.42 | 11.9 | 6.7 | 4.2 | 119 | 4.2 | 1.26 | 32.2 |
| | 12 | 0.18 | 68.6 | 39 | 4.2 | 119 | 4.2 | 1.26 | 32.2 |
| Double Stack | 2.1 | 1.90 | 1.1 | 1.1 | 6.35 | 180 | 7.5 | 1.81 | 46 |
| | 5 | 0.75 | 6.7 | 5.8 | 6.35 | 180 | 7.5 | 1.81 | 46 |
| | 12 | 0.35 | 34.8 | 35.6 | 6.35 | 180 | 7.5 | 1.81 | 46 |

## Wiring Diagram



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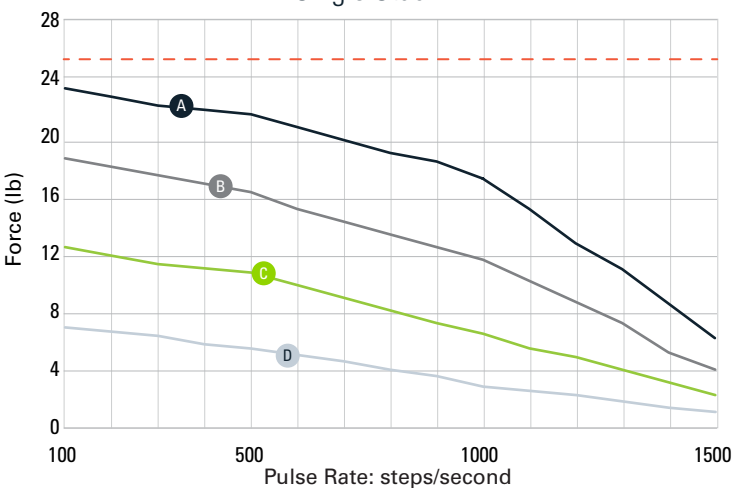
| W18050 | .1875 | 4.76 | .050 | 1.27 | .00025 | 0.00635 | B |
| W18100 | .1875 | 4.76 | .100 | 2.54 | .00050 | 0.01270 | C |
| W18200 | .1875 | 4.76 | .200 | 5.08 | .00100 | 0.02540 | D |
| W18400 | .1875 | 4.76 | .400 | 10.16 | .002 | 0.0508 | |

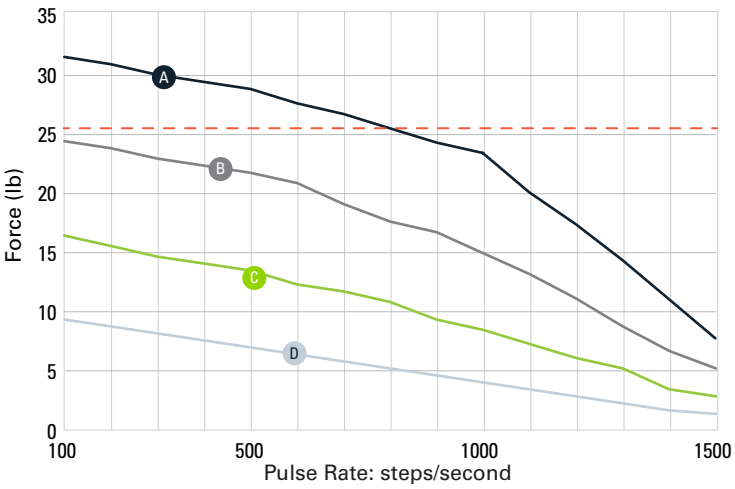
Native units: ☐ imperial ☐ metric

## Force v Pulse Rate Charts

Single Stack




Double Stack

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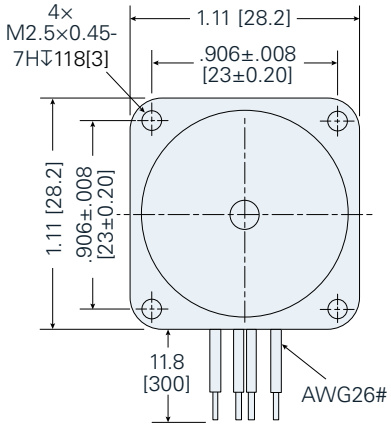
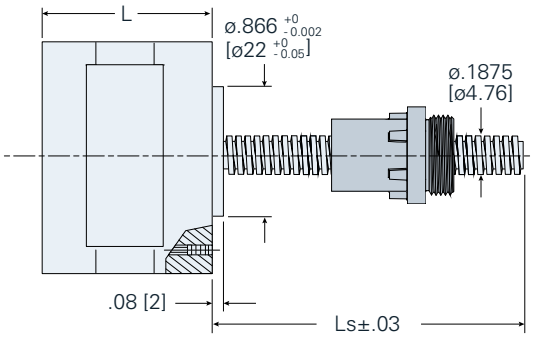


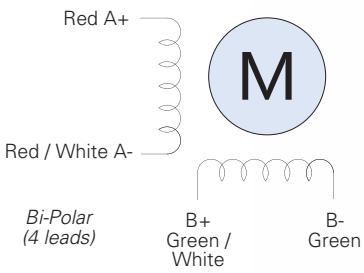



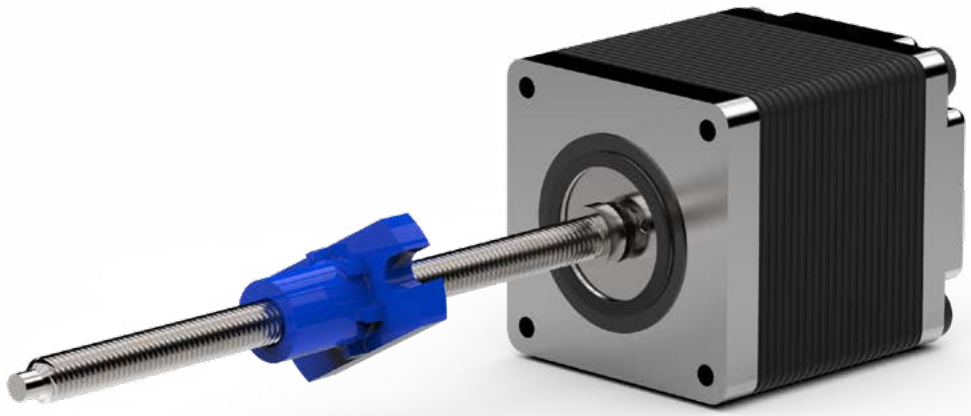

## Motor Specifications

- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167° F (75° C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.1 | 1.00 | 2.1 | 1.5 | 4.2 | 119 | 4.2 | 1.26 | 32.2 |
| | 5 | 0.42 | 11.9 | 6.7 | 4.2 | 119 | 4.2 | 1.26 | 32.2 |
| | 12 | 0.18 | 68.6 | 39 | 4.2 | 119 | 4.2 | 1.26 | 32.2 |
| Double Stack | 2.1 | 1.90 | 1.1 | 1.1 | 6.35 | 180 | 7.5 | 1.81 | 46 |
| | 5 | 0.75 | 6.7 | 5.8 | 6.35 | 180 | 7.5 | 1.81 | 46 |
| | 12 | 0.35 | 34.8 | 35.6 | 6.35 | 180 | 7.5 | 1.81 | 46 |

## Wiring Diagram



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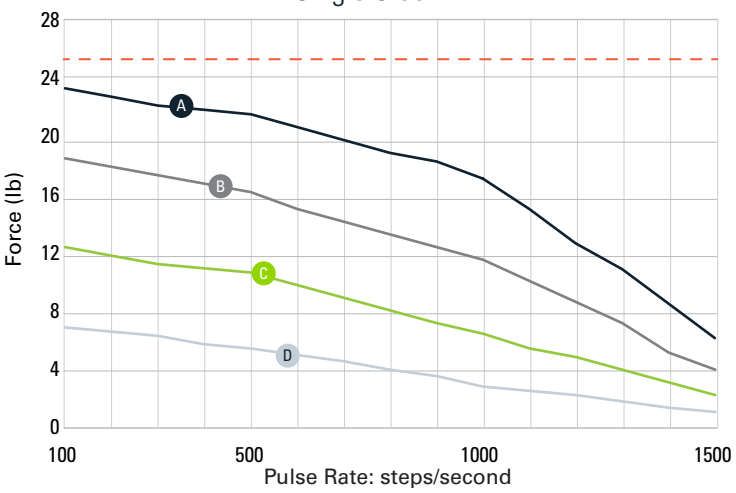
| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| 018025 | .1875 | 4.76 | .025 | 0.635 | .000125 | 0.003175 | A |
| 018050 | .1875 | 4.76 | .050 | 1.27 | .00025 | 0.00635 | B |
| 018100 | .1875 | 4.76 | .100 | 2.54 | .00050 | 0.01270 | C |
| 018200 | .1875 | 4.76 | .200 | 5.08 | .00100 | 0.02540 | D |

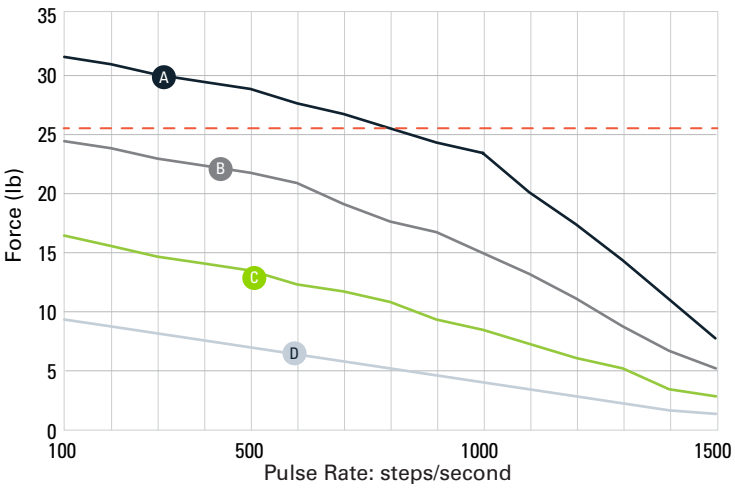
Native units: ☐ imperial ☐ metric

## Force v Pulse Rate Charts

Single Stack




Double Stack

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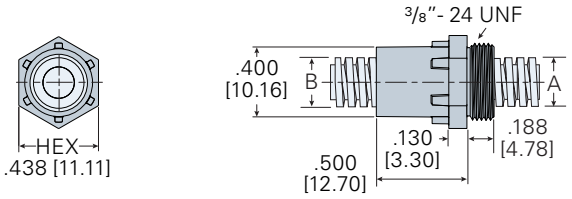
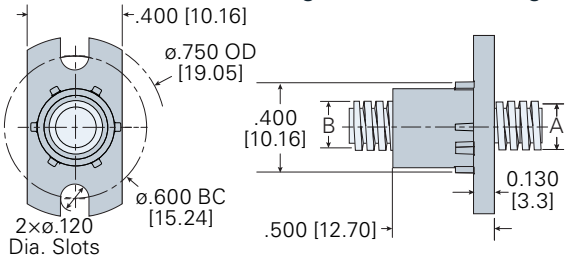
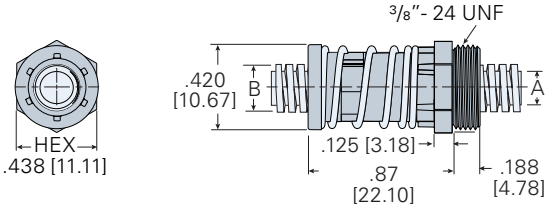
## Standard Freewheeling Nut (NTA) - Threaded



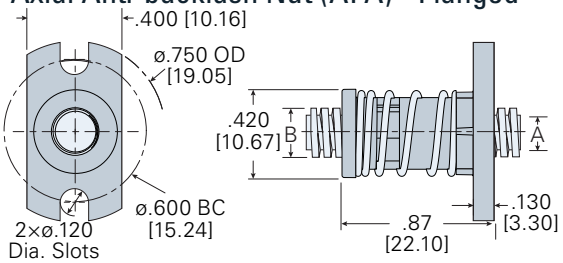

## Standard Freewheeling Nut (NFA) - Flanged

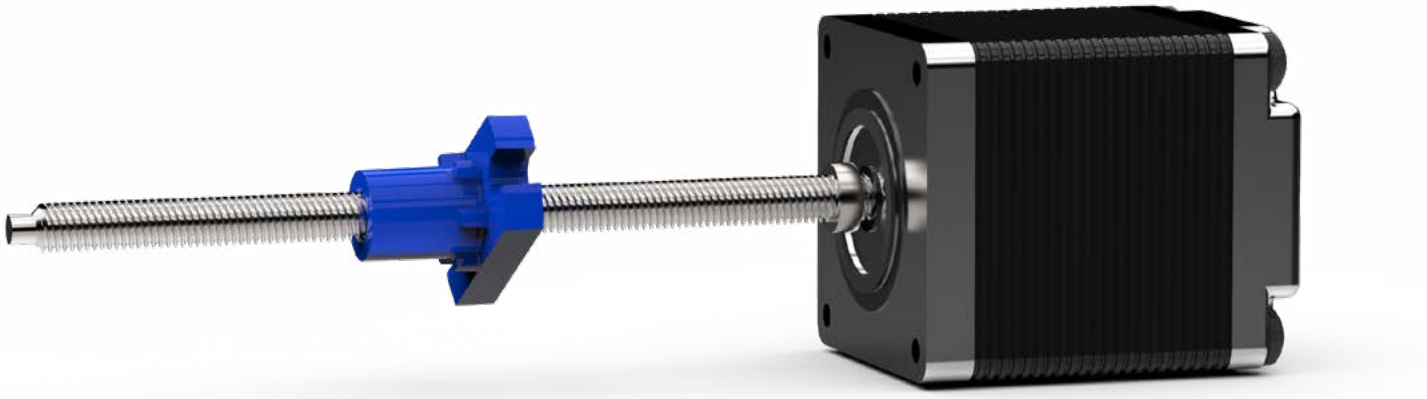



## Axial Anti-backlash Nut (ATA) - Threaded




## Axial Anti-backlash Nut (AFA) - Flanged



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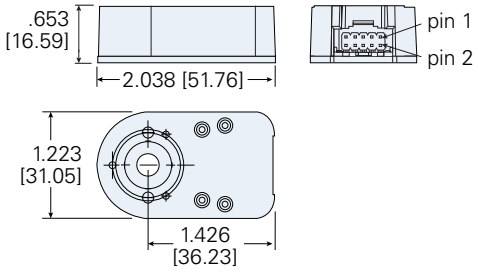
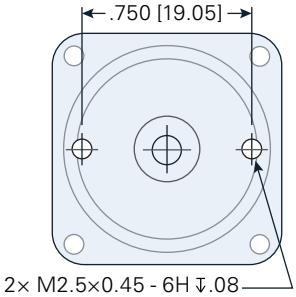
## Encoder

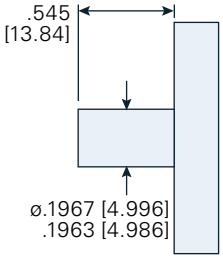



## Encoder-Ready Options

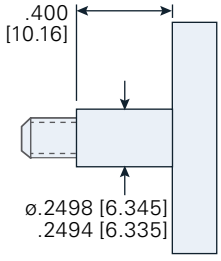
Rear View



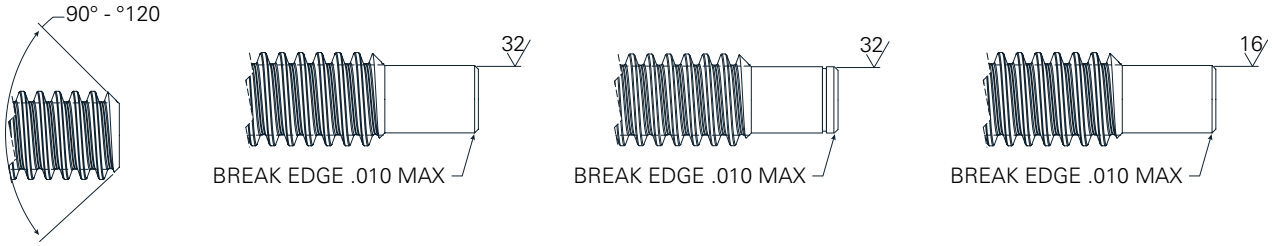

External




Non-Captive & Captive

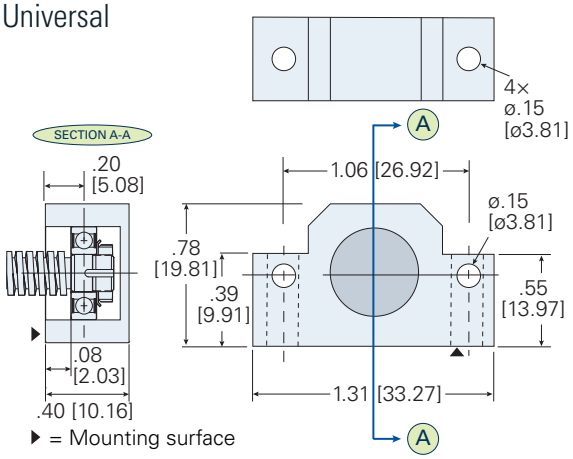



## Screw End Machining

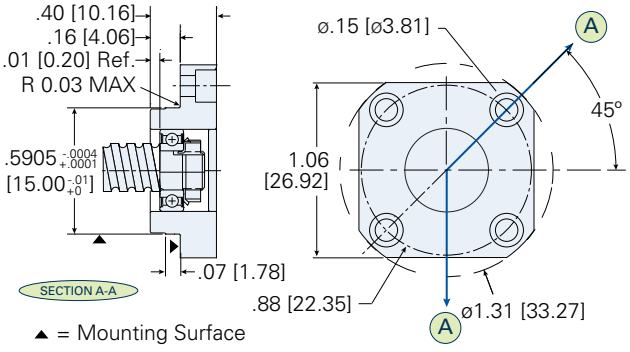



## Ezze Mount™ Bearing Support

Universal




Flanged

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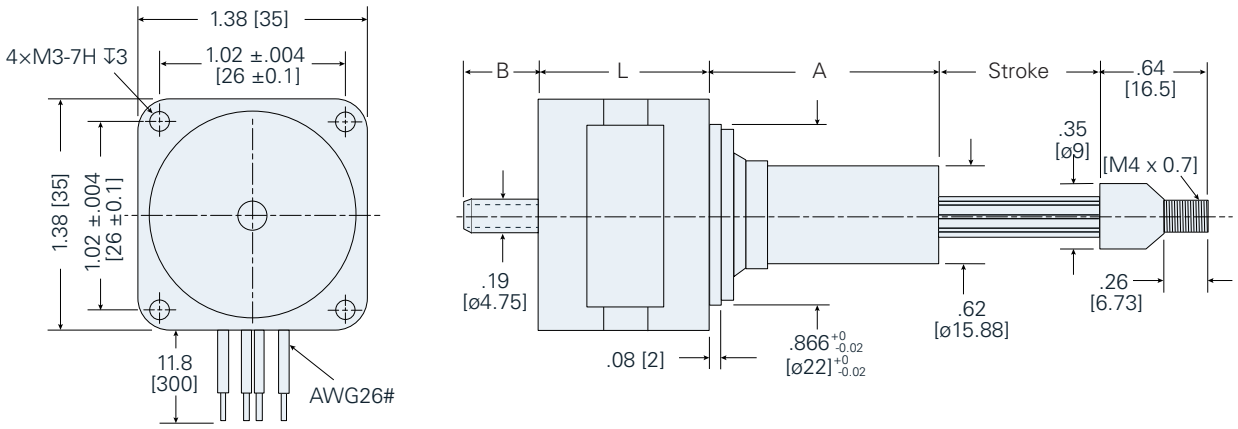



## Motor Specifications

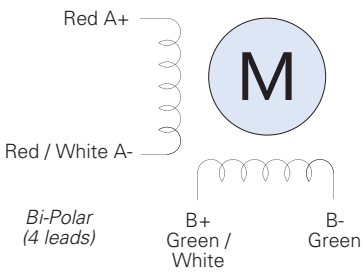
- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167°F (75°C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.33 | 1.25 | 1.86 | 2.8 | 5.7 | 162 | 5.7 | 1.36 | 34.5 |
| | 5 | 0.57 | 8.8 | 13 | 5.7 | 162 | 5.7 | 1.36 | 34.5 |
| | 12 | 0.24 | 50.5 | 60 | 5.7 | 162 | 5.7 | 1.36 | 34.5 |
| Double Stack | 2.33 | 2.0 | 1.2 | 1.95 | 8.47 | 240 | 9.1 | 1.89 | 48 |
| | 5 | 0.91 | 5.5 | 7.63 | 8.47 | 240 | 9.1 | 1.89 | 48 |
| | 12 | 0.38 | 31.6 | 65.1 | 8.47 | 240 | 9.1 | 1.89 | 48 |

## Stroke Codes

| Stroke Code | Stroke | | A | | B | |
|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm |
| 0.50 | .50 | 12.7 | .82 | 20.8 | .04 | 1 |
| 0.75 | .75 | 19.1 | 1.07 | 27.2 | .29 | 7.4 |
| 1.00 | 1.00 | 25.4 | 1.32 | 33.5 | .54 | 13.7 |
| 1.25 | 1.25 | 31.8 | 1.57 | 39.9 | .79 | 20.1 |
| 1.50 | 1.50 | 38.1 | 1.82 | 46.2 | 1.04 | 26.4 |
| 2.00 | 2.00 | 50.8 | 2.32 | 58.9 | 1.54 | 39.1 |

## Wiring Diagram



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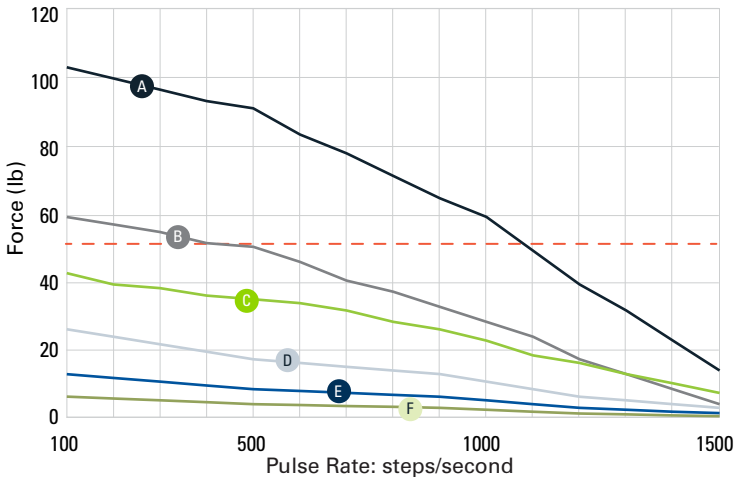
## Screw Specification

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| W25024 | .219 | 5.6 | .024 | 0.6096 | .00012 | 0.003048 | A |
| W25031 | .219 | 5.6 | .03125 | 0.79375 | .000156 | 0.003969 | B |
| W25039 | .219 | 5.6 | .03937 | 1 | .000197 | 0.005 | |
| W25048 | .219 | 5.6 | .048 | 1.2192 | .00024 | 0.006096 | |
| W25050 | .219 | 5.6 | .050 | 1.27 | .00025 | 0.00635 | |
| W25062 | .219 | 5.6 | .0625 | 1.5875 | .0003125 | 0.0079375 | |
| W25096 | .219 | 5.6 | .096 | 2.438 | .00048 | 0.012192 | C |
| W25100 | .219 | 5.6 | .100 | 2.54 | .0005 | 0.0127 | |
| W25125 | .219 | 5.6 | .125 | 3.175 | .000625 | 0.015875 | D |
| W25192 | .219 | 5.6 | .192 | 4.877 | .00096 | 0.024384 | |
| W25250 | .219 | 5.6 | .250 | 6.35 | .00125 | 0.03175 | E |
| W25384 | .219 | 5.6 | .384 | 9.754 | .00192 | 0.048768 | |
| W25500 | .219 | 5.6 | .500 | 12.7 | .0025 | 0.0635 | F |
| W25999 | .219 | 5.6 | 1.000 | 25.4 | .005 | 0.127 | |

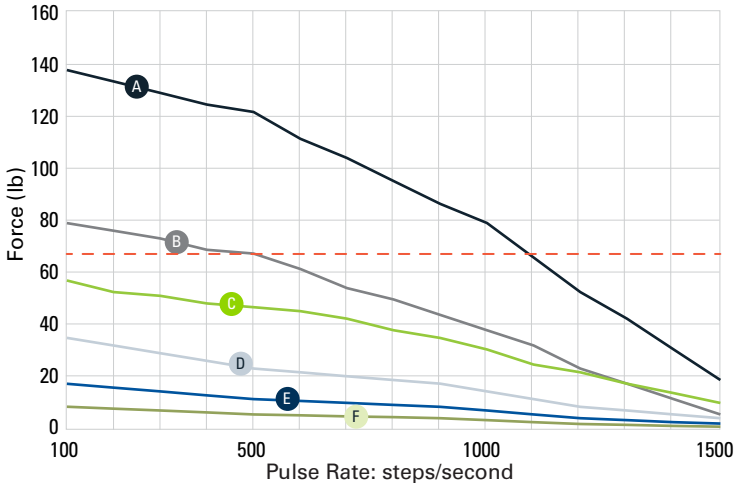
Native units: ☐ imperial ☐ metric

## Force v Pulse Speed Chart

Single Stack




Double Stack




- - - - = Recommended load limit

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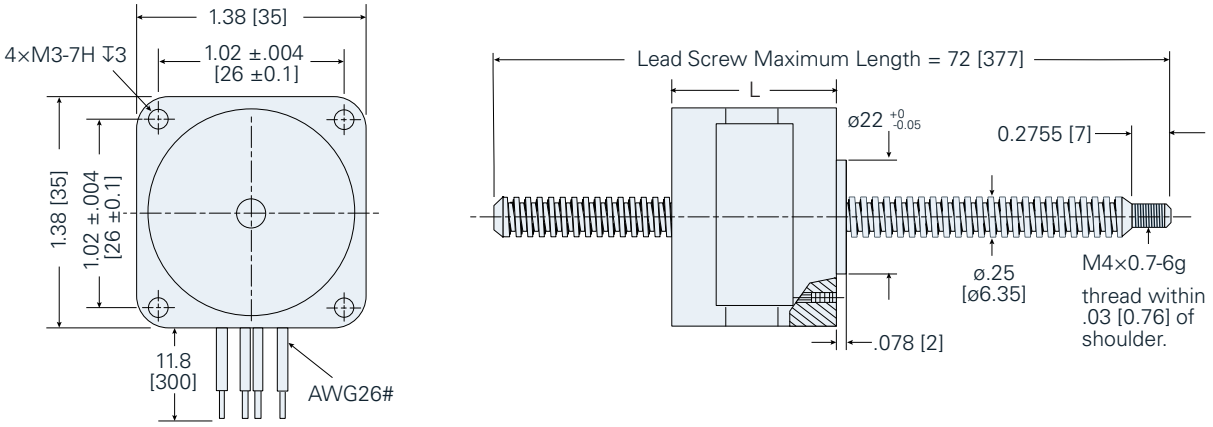


## Motor Specifications

- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167° F (75° C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.33 | 1.25 | 1.86 | 2.8 | 5.7 | 162 | 5.7 | 1.36 | 34.5 |
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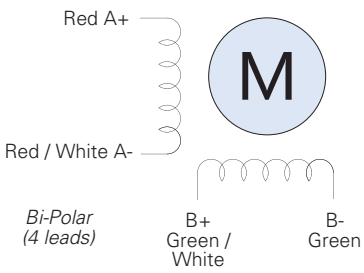
## Wiring Diagram



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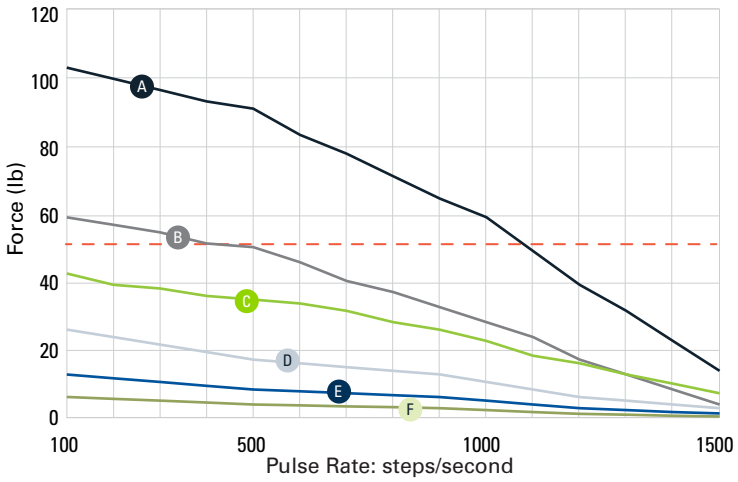
| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| W25024 | .219 | 5.6 | .024 | 0.6096 | .00012 | 0.003048 | A |
| W25031 | .219 | 5.6 | .03125 | 0.79375 | .000156 | 0.003969 | B |
| W25039 | .219 | 5.6 | .03937 | 1 | .000197 | 0.005 | |
| W25048 | .219 | 5.6 | .048 | 1.2192 | .00024 | 0.006096 | |
| W25050 | .219 | 5.6 | .050 | 1.27 | .00025 | 0.00635 | |
| W25062 | .219 | 5.6 | .0625 | 1.5875 | .0003125 | 0.0079375 | |
| W25096 | .219 | 5.6 | .096 | 2.438 | .00048 | 0.012192 | C |
| W25100 | .219 | 5.6 | .100 | 2.54 | .0005 | 0.0127 | |
| W25125 | .219 | 5.6 | .125 | 3.175 | .000625 | 0.015875 | D |
| W25192 | .219 | 5.6 | .192 | 4.877 | .00096 | 0.024384 | |
| W25250 | .219 | 5.6 | .250 | 6.35 | .00125 | 0.03175 | E |
| W25384 | .219 | 5.6 | .384 | 9.754 | .00192 | 0.048768 | |
| W25500 | .219 | 5.6 | .500 | 12.7 | .0025 | 0.0635 | F |
| W25999 | .219 | 5.6 | 1.000 | 25.4 | .005 | 0.127 | |

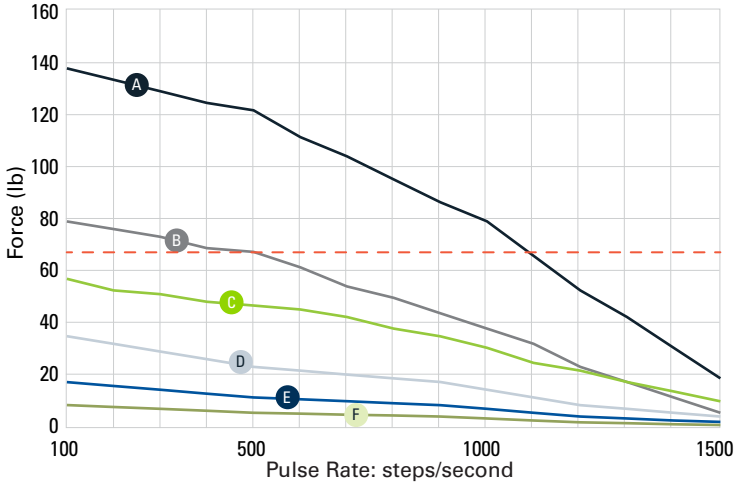
Native units: ☐ imperial ☐ metric

## Force v Pulse Speed Chart

Single Stack




Double Stack

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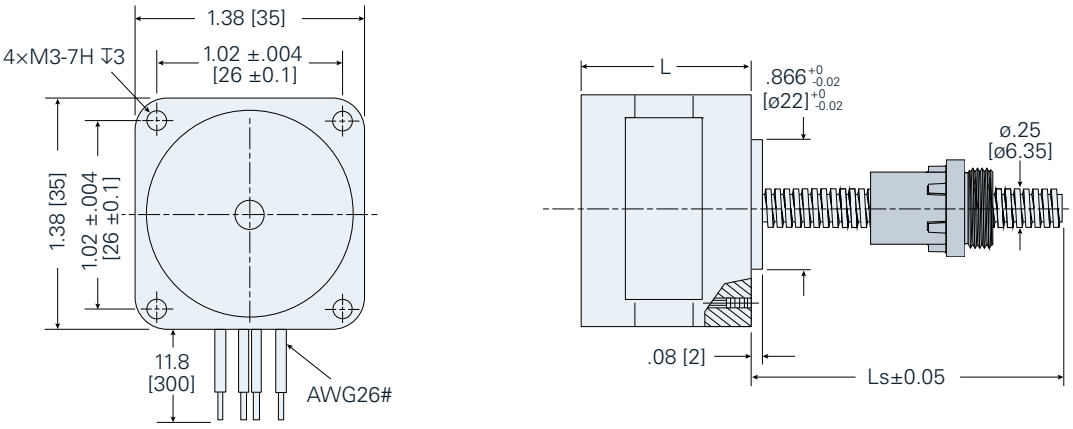


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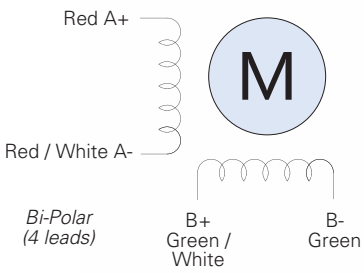
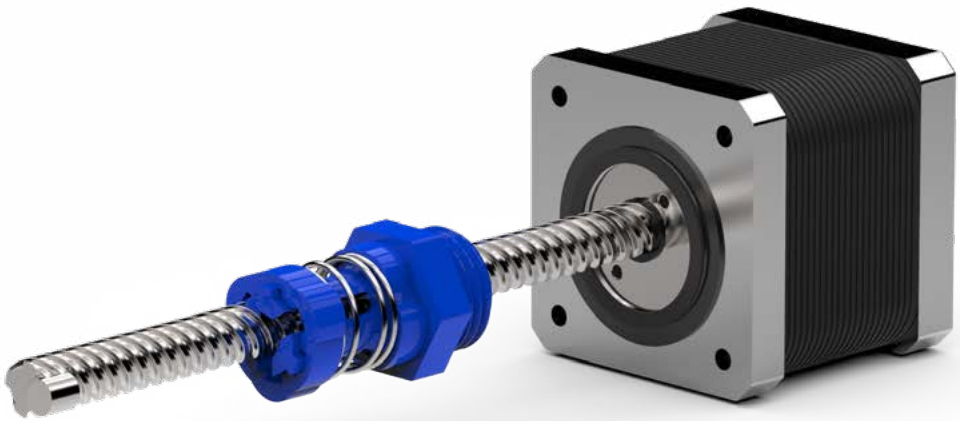
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167° F (75° C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.33 | 1.25 | 1.86 | 2.8 | 5.7 | 162 | 5.7 | 1.36 | 34.5 |
| | 5 | 0.57 | 8.8 | 13 | 5.7 | 162 | 5.7 | 1.36 | 34.5 |
| | 12 | 0.24 | 50.5 | 60 | 5.7 | 162 | 5.7 | 1.36 | 34.5 |
| Double Stack | 2.33 | 2.0 | 1.2 | 1.95 | 8.47 | 240 | 9.1 | 1.89 | 48 |
| | 5 | 0.91 | 5.5 | 7.63 | 8.47 | 240 | 9.1 | 1.89 | 48 |
| | 12 | 0.38 | 31.6 | 65.1 | 8.47 | 240 | 9.1 | 1.89 | 48 |

## Wiring Diagram



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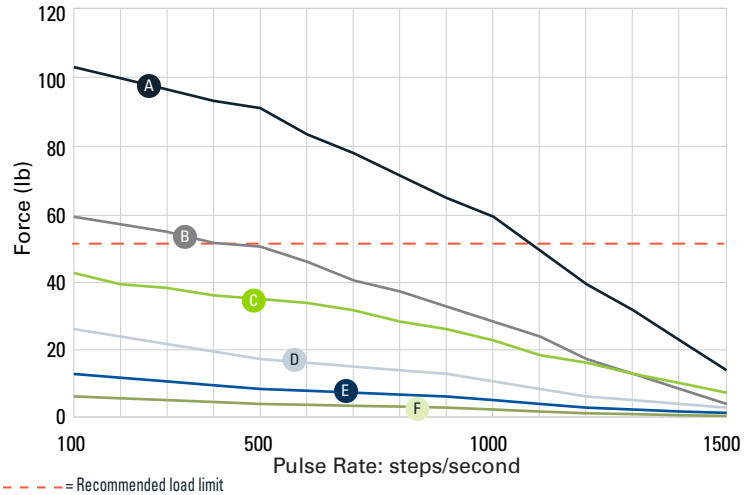
## Screw Specifications

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| 025024 | .250 | 6.35 | .024 | 0.6096 | .00012 | 0.003048 | A |
| 025031 | .250 | 6.35 | .03125 | 0.79375 | .000156 | 0.003969 | B |
| 025039 | .250 | 6.35 | .03937 | 1 | .000197 | 0.005 | |
| 025048 | .250 | 6.35 | .048 | 1.2192 | .00024 | 0.006096 | |
| 025050 | .250 | 6.35 | .050 | 1.27 | .00025 | 0.00635 | |
| 025062 | .250 | 6.35 | .0625 | 1.5875 | .0003125 | 0.0079375 | |
| 025096 | .250 | 6.35 | .096 | 2.438 | .00048 | 0.012192 | C |
| 025100 | .250 | 6.35 | .100 | 2.54 | .0005 | 0.0127 | |
| 025125 | .250 | 6.35 | .125 | 3.175 | .000625 | 0.015875 | D |
| 025192 | .250 | 6.35 | .192 | 4.877 | .00096 | 0.024384 | |
| 025196 | .250 | 6.35 | .19685 | 5 | .00098 | 0.025 | |
| 025250 | .250 | 6.35 | .250 | 6.35 | .00125 | 0.03175 | E |
| 025384 | .250 | 6.35 | .384 | 9.754 | .00192 | 0.048768 | |
| 025393 | .250 | 6.35 | .3937 | 10 | .00197 | 0.050 | |
| 025500 | .250 | 6.35 | .500 | 12.7 | .0025 | 0.0635 | F |
| 025750 | .250 | 6.35 | .750 | 19.05 | .00375 | 0.09525 | |
| 025999 | .250 | 6.35 | 1.000 | 25.4 | .005 | 0.127 | |

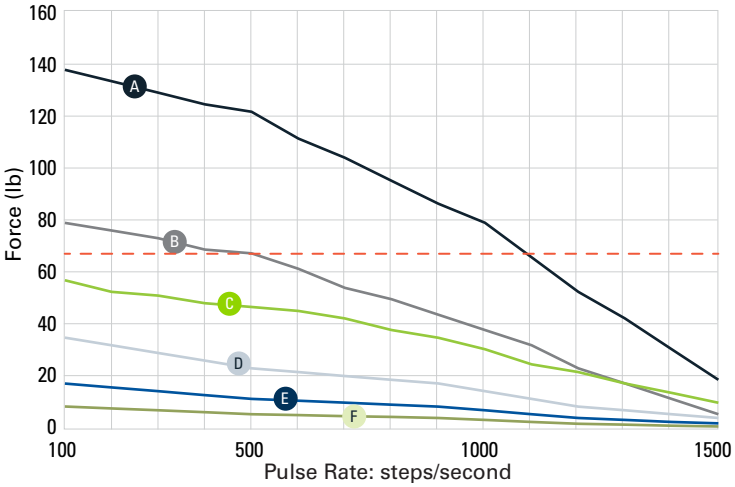
Native units: ☐ imperial ☐ metric

## Force v Pulse Speed Chart

### Single Stack




### Double Stack

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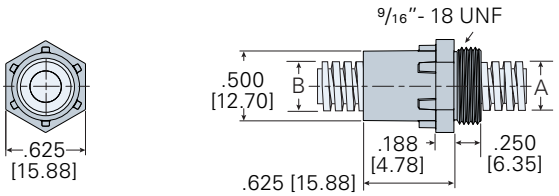
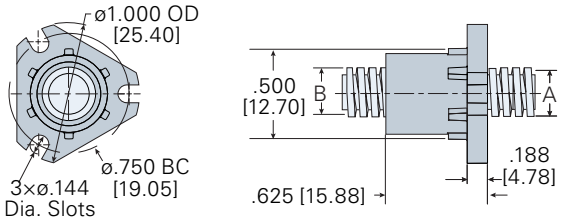
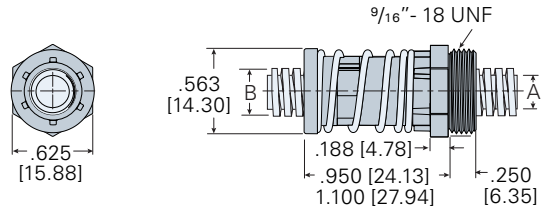


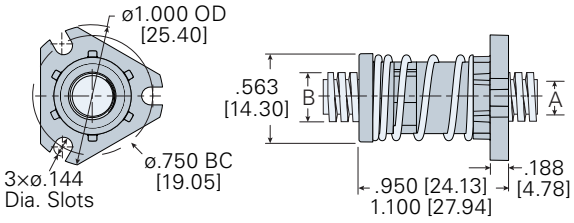

## Standard Freewheeling Nut (NFA) - Flanged



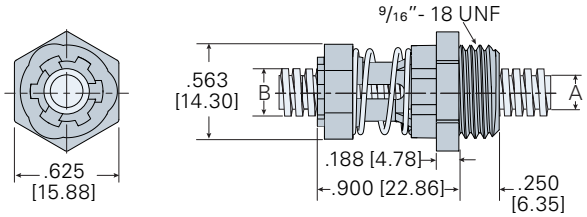

## Axial Anti-backlash Nut (ATA) - Threaded



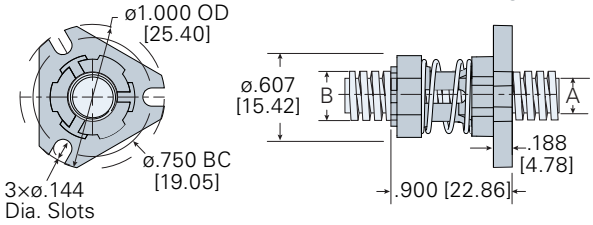

## Axial Anti-backlash Nut (AFA) - Flanged



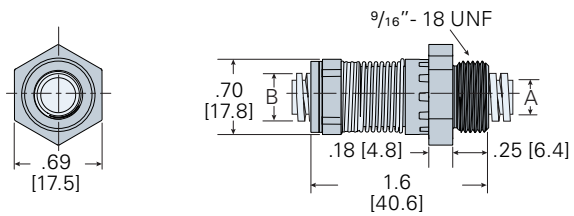

## Radial Anti-backlash Nut (RTA) - Threaded



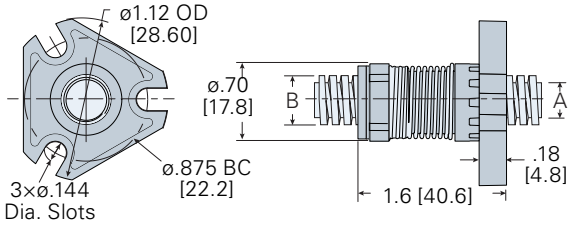

## Radial Anti-backlash Nut (RFA) - Flanged




## Torsional Anti-backlash Nut (KTA) - Threaded




## Torsional Anti-backlash Nut (KFA) - Flanged

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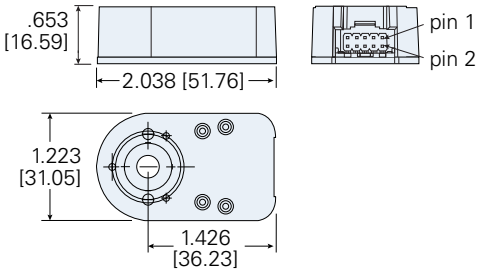
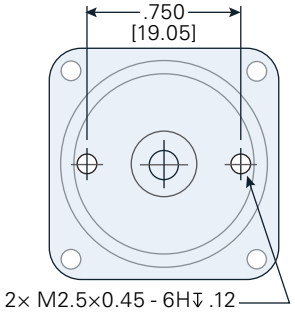
## Encoder

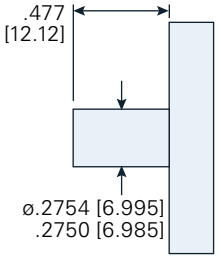



## Encoder-Ready Options

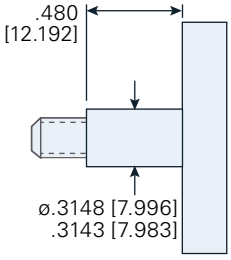
Rear View



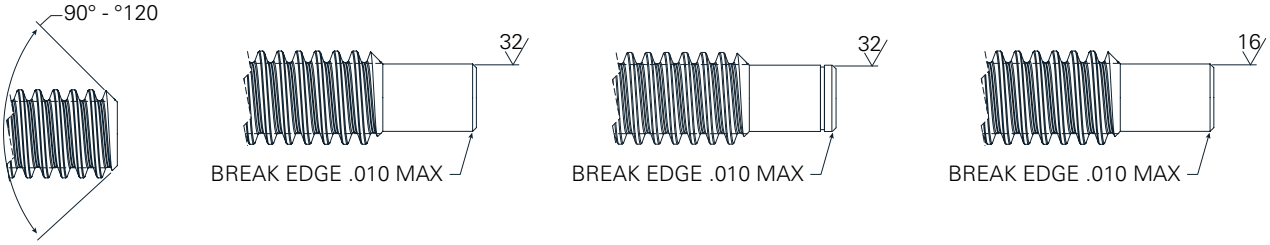

External




Non-Captive & Captive

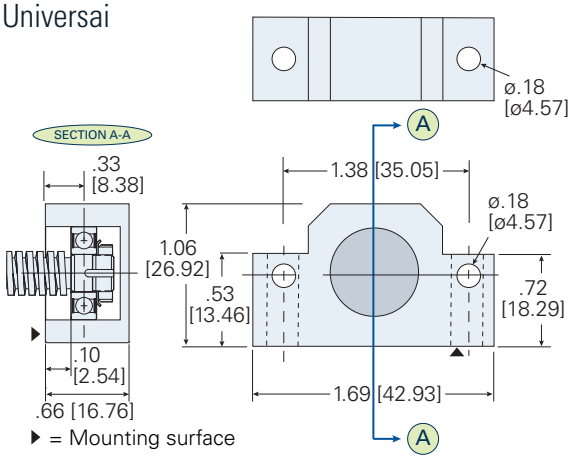



## Screw End Machining

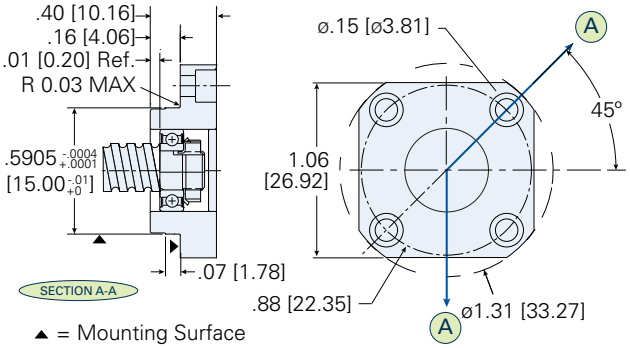



## Ezze Mount™ Bearing Support

Universai




Flanged

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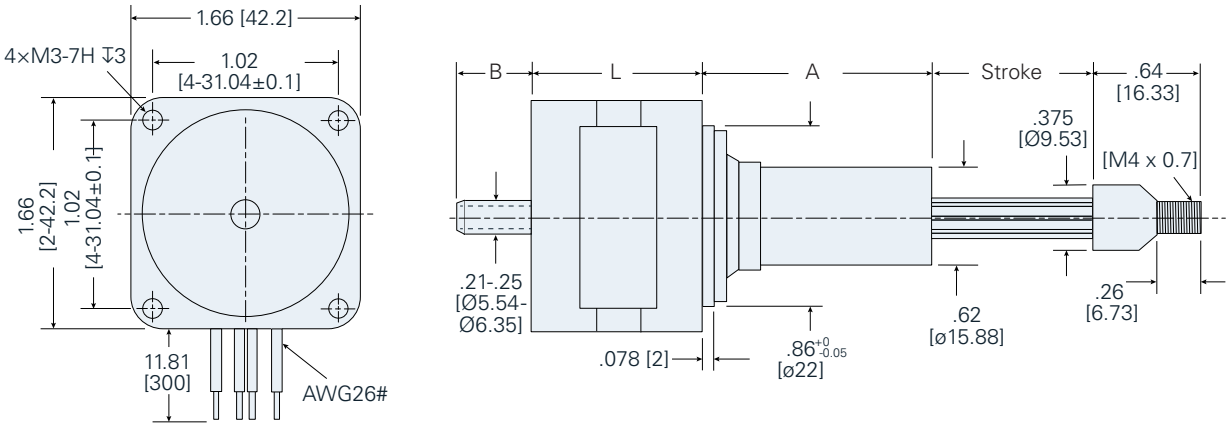



## Motor Specifications

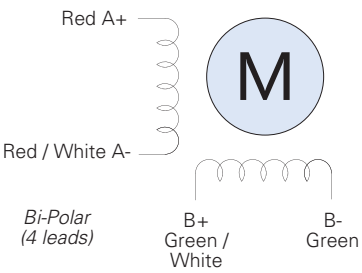
- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167°F (75°C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.33 | 1.50 | 1.56 | 1.9 | 8.5 | 241 | 13 | 1.33 | 33.8 |
| | 5 | 0.70 | 7.2 | 10.6 | 8.5 | 241 | 13 | 1.33 | 33.8 |
| | 12 | 0.29 | 41.5 | 73.3 | 8.5 | 241 | 13 | 1.33 | 33.8 |
| Double Stack | 2.33 | 2.60 | 0.9 | 1.33 | 12.4 | 352 | 14 | 1.88 | 47.75 |
| | 5 | 1.30 | 3.8 | 6.6 | 12.4 | 352 | 14 | 1.88 | 47.75 |
| | 12 | 0.55 | 21.9 | 45.1 | 12.4 | 352 | 14 | 1.88 | 47.75 |

## Stroke Codes

| Stroke Code | Stroke | | A | | B | |
|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm |
| 0.50 | .50 | 12.7 | .79 | 19.8 | .02 | 0.51 |
| 0.75 | .75 | 19.1 | 1.03 | 26.2 | .27 | 6.86 |
| 1.00 | 1.00 | 25.4 | 1.28 | 32.5 | .52 | 13.21 |
| 1.25 | 1.25 | 31.8 | 1.53 | 38.9 | .77 | 19.56 |
| 1.50 | 1.50 | 38.1 | 1.78 | 45.2 | 1.02 | 25.91 |
| 2.00 | 2.00 | 50.8 | 2.28 | 57.9 | 1.52 | 38.61 |

## Wiring Diagram



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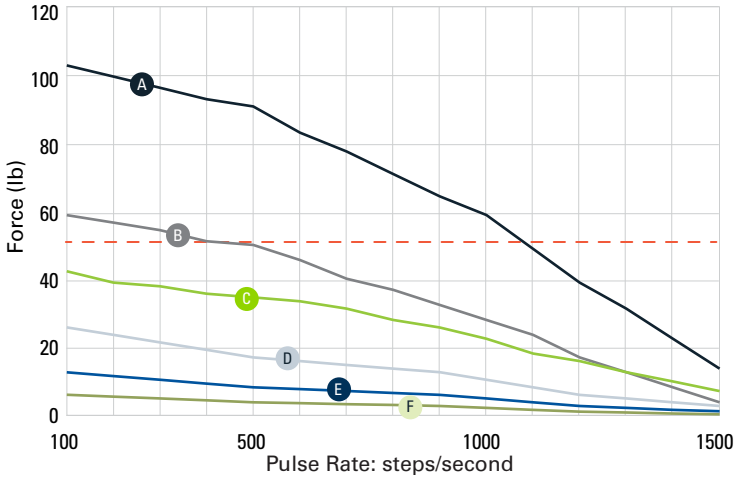
## Screw Specification

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| W25024 | .219 | 5.6 | .024 | 0.6096 | .00012 | 0.003048 | A |
| W25031 | .219 | 5.6 | .03125 | 0.79375 | .000156 | 0.003969 | B |
| W25039 | .219 | 5.6 | .03937 | 1 | .000197 | 0.005 | |
| W25048 | .219 | 5.6 | .048 | 1.2192 | .00024 | 0.006096 | |
| W25050 | .219 | 5.6 | .050 | 1.27 | .00025 | 0.00635 | |
| W25062 | .219 | 5.6 | .0625 | 1.5875 | .0003125 | 0.0079375 | |
| W25096 | .219 | 5.6 | .096 | 2.438 | .00048 | 0.012192 | C |
| W25100 | .219 | 5.6 | .100 | 2.54 | .0005 | 0.0127 | |
| W25125 | .219 | 5.6 | .125 | 3.175 | .000625 | 0.015875 | D |
| W25192 | .219 | 5.6 | .192 | 4.877 | .00096 | 0.024384 | |
| W25250 | .219 | 5.6 | .250 | 6.35 | .00125 | 0.03175 | E |
| W25384 | .219 | 5.6 | .384 | 9.754 | .00192 | 0.048768 | |
| W25500 | .219 | 5.6 | .500 | 12.7 | .0025 | 0.0635 | F |
| W25999 | .219 | 5.6 | 1.000 | 25.4 | .005 | 0.127 | |

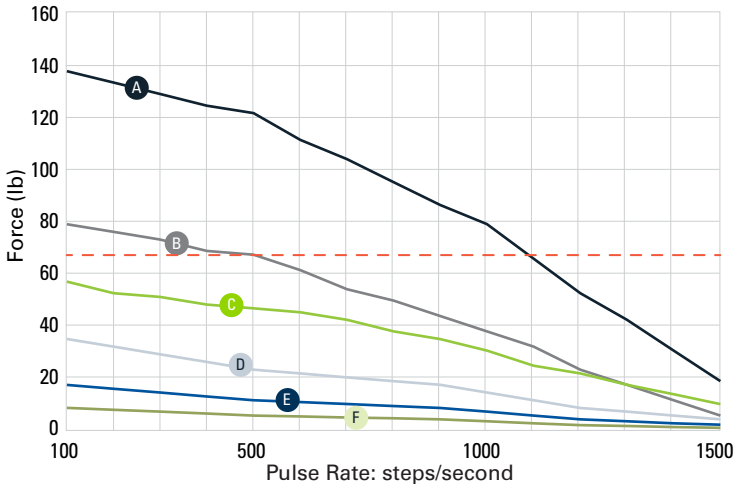
Native units: ☐ imperial ☐ metric

## Force v Pulse Speed Chart

Single Stack




Double Stack




- - - - = Recommended load limit

Speed charts are based on using bi-polar motors with chopper drives at 100% duty cycle. Chopper drive curves were created using full steps on a 5 volt motor and a 40v power supply.

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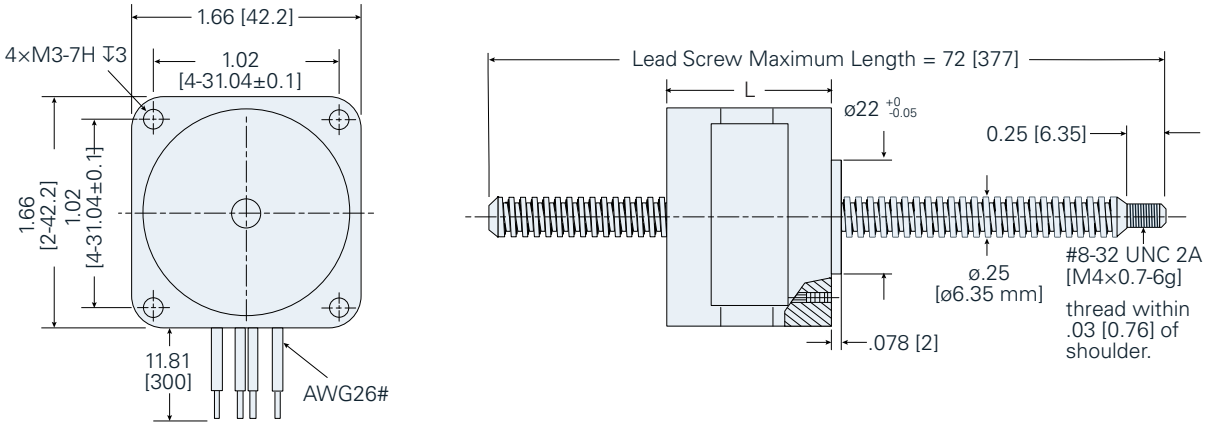
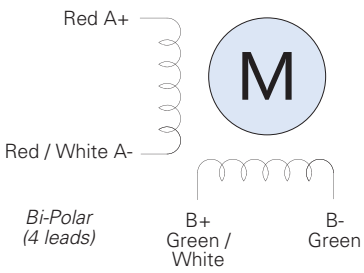



## Motor Specifications

- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167° F (75° C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.33 | 1.50 | 1.56 | 1.9 | 8.5 | 241 | 13 | 1.33 | 33.8 |
| | 5 | 0.70 | 7.2 | 10.6 | 8.5 | 241 | 13 | 1.33 | 33.8 |
| | 12 | 0.29 | 41.5 | 73.3 | 8.5 | 241 | 13 | 1.33 | 33.8 |
| Double Stack | 2.33 | 2.6 | 0.9 | 1.33 | 12.4 | 352 | 14 | 1.88 | 47.75 |
| | 5 | 1.3 | 3.8 | 6.6 | 12.4 | 352 | 14 | 1.88 | 47.75 |
| | 12 | 0.55 | 21.9 | 45.1 | 12.4 | 352 | 14 | 1.88 | 47.75 |

## Wiring Diagram



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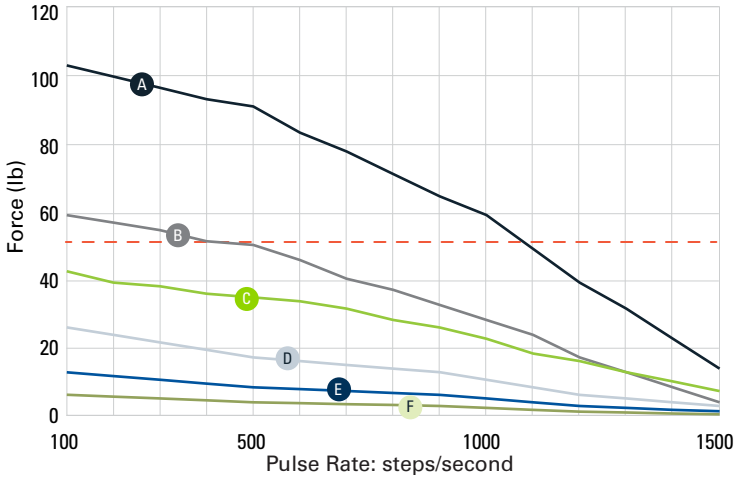
## Screw Specification

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| W25024 | .219 | 5.6 | .024 | 0.6096 | .00012 | 0.003048 | A |
| W25031 | .219 | 5.6 | .03125 | 0.79375 | .000156 | 0.003969 | B |
| W25039 | .219 | 5.6 | .03937 | 1 | .000197 | 0.005 | |
| W25048 | .219 | 5.6 | .048 | 1.2192 | .00024 | 0.006096 | |
| W25050 | .219 | 5.6 | .050 | 1.27 | .00025 | 0.00635 | |
| W25062 | .219 | 5.6 | .0625 | 1.5875 | .0003125 | 0.0079375 | |
| W25096 | .219 | 5.6 | .096 | 2.438 | .00048 | 0.012192 | C |
| W25100 | .219 | 5.6 | .100 | 2.54 | .0005 | 0.0127 | |
| W25125 | .219 | 5.6 | .125 | 3.175 | .000625 | 0.015875 | D |
| W25192 | .219 | 5.6 | .192 | 4.877 | .00096 | 0.024384 | |
| W25250 | .219 | 5.6 | .250 | 6.35 | .00125 | 0.03175 | E |
| W25384 | .219 | 5.6 | .384 | 9.754 | .00192 | 0.048768 | |
| W25500 | .219 | 5.6 | .500 | 12.7 | .0025 | 0.0635 | F |
| W25999 | .219 | 5.6 | 1.000 | 25.4 | .005 | 0.127 | |

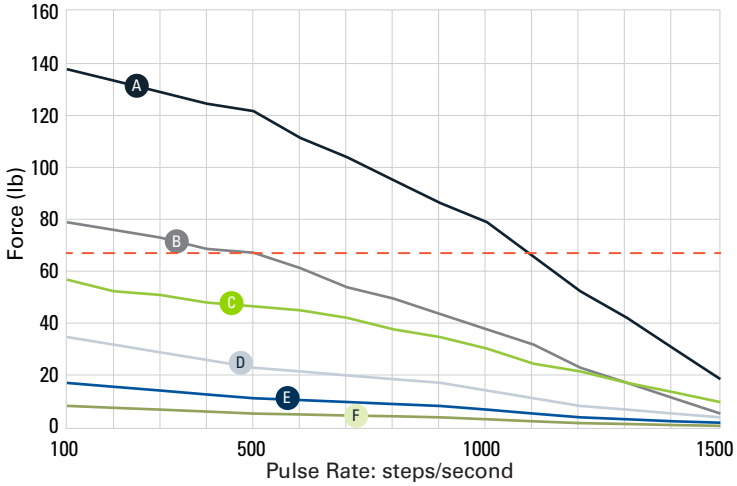
Native units: ☐ imperial ☐ metric

## Force v Pulse Speed Chart

Single Stack




Double Stack

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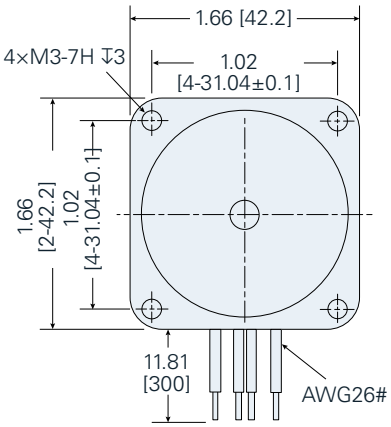


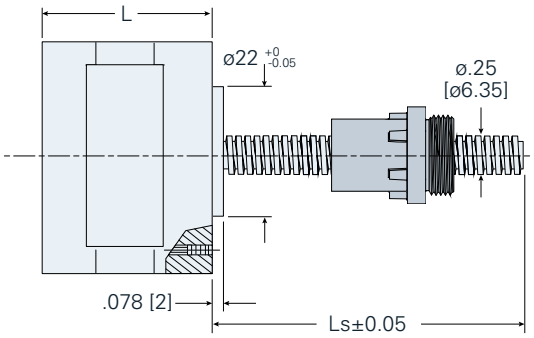


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| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
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| | 5 | 0.70 | 7.2 | 10.6 | 8.5 | 241 | 13 | 1.33 | 33.8 |
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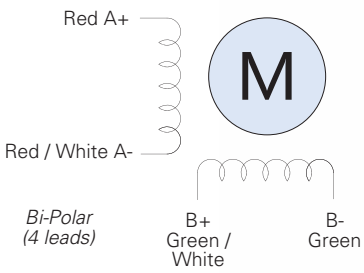
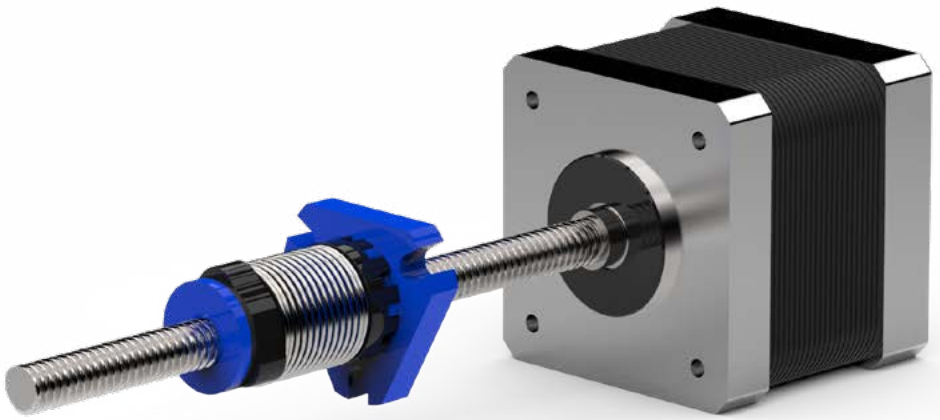
| Double Stack | 2.33 | 2.6 | 0.9 | 1.33 | 12.4 | 352 | 14 | 1.88 | 47.75 |
| | 5 | 1.3 | 3.8 | 6.6 | 12.4 | 352 | 14 | 1.88 | 47.75 |
| | 12 | 0.55 | 21.9 | 45.1 | 12.4 | 352 | 14 | 1.88 | 47.75 |

## Wiring Diagram



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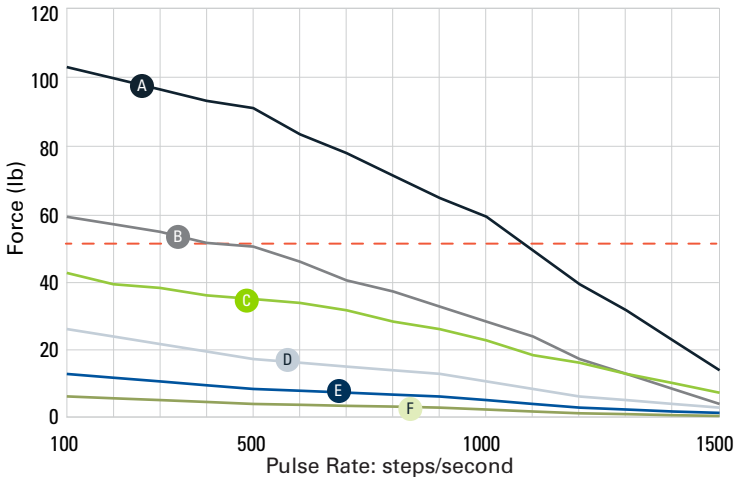
## Screw Specifications

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| 025024 | .250 | 6.35 | .024 | 0.6096 | .00012 | 0.003048 | A |
| 025031 | .250 | 6.35 | .03125 | 0.79375 | .000156 | 0.003969 | B |
| 025039 | .250 | 6.35 | .03937 | 1 | .000197 | 0.005 | |
| 025048 | .250 | 6.35 | .048 | 1.2192 | .00024 | 0.006096 | |
| 025050 | .250 | 6.35 | .050 | 1.27 | .00025 | 0.00635 | |
| 025062 | .250 | 6.35 | .0625 | 1.5875 | .0003125 | 0.0079375 | |
| 025096 | .250 | 6.35 | .096 | 2.438 | .00048 | 0.012192 | C |
| 025100 | .250 | 6.35 | .100 | 2.54 | .0005 | 0.0127 | |
| 025125 | .250 | 6.35 | .125 | 3.175 | .000625 | 0.015875 | D |
| 025192 | .250 | 6.35 | .192 | 4.877 | .00096 | 0.024384 | |
| 025196 | .250 | 6.35 | .19685 | 5 | .00098 | 0.025 | |
| 025250 | .250 | 6.35 | .250 | 6.35 | .00125 | 0.03175 | E |
| 025384 | .250 | 6.35 | .384 | 9.754 | .00192 | 0.048768 | |
| 025393 | .250 | 6.35 | .3937 | 10 | .00197 | 0.050 | |
| 025500 | .250 | 6.35 | .500 | 12.7 | .0025 | 0.0635 | F |
| 025750 | .250 | 6.35 | .750 | 19.05 | .00375 | 0.09525 | |
| 025999 | .250 | 6.35 | 1.000 | 25.4 | .005 | 0.127 | |

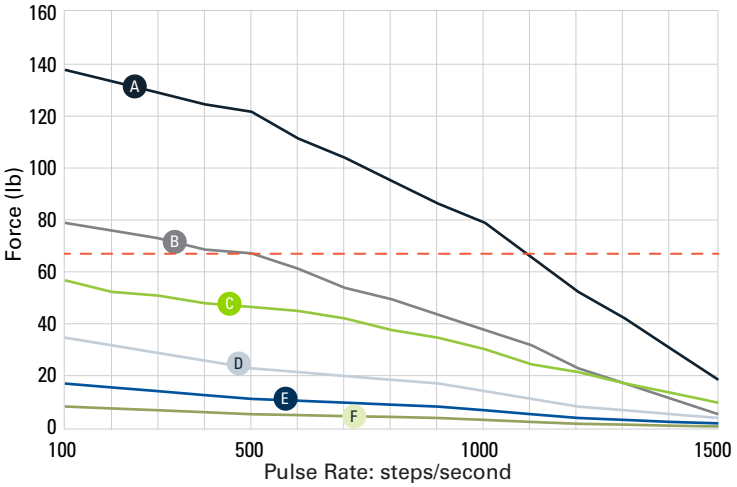
Native units: ☐ imperial ☐ metric

## Force v Pulse Speed Chart

### Single Stack




### Double Stack

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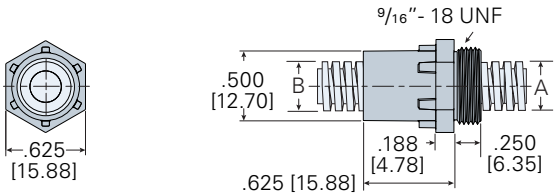
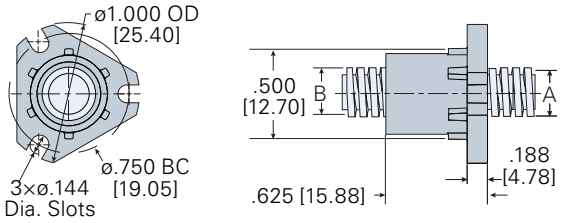
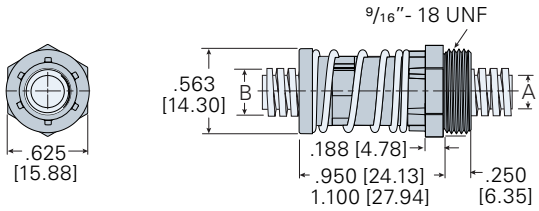


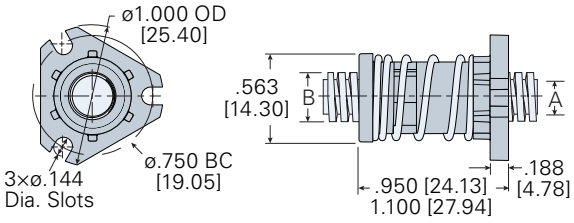

## Standard Freewheeling Nut (NFA) - Flanged



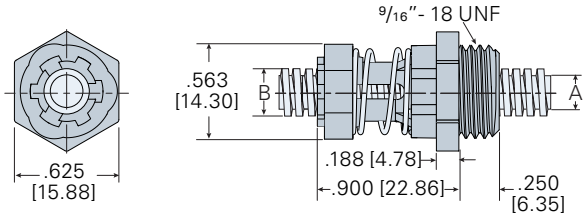

## Axial Anti-backlash Nut (ATA) - Threaded



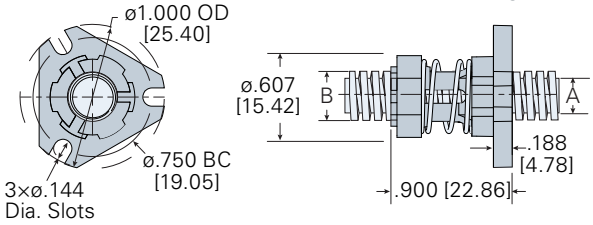

## Axial Anti-backlash Nut (AFA) - Flanged



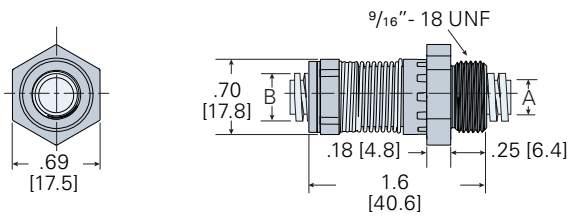

## Radial Anti-backlash Nut (RTA) - Threaded



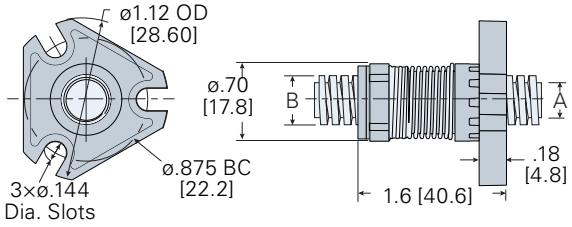

## Radial Anti-backlash Nut (RFA) - Flanged




## Torsional Anti-backlash Nut (KTA) - Threaded




## Torsional Anti-backlash Nut (KFA) - Flanged

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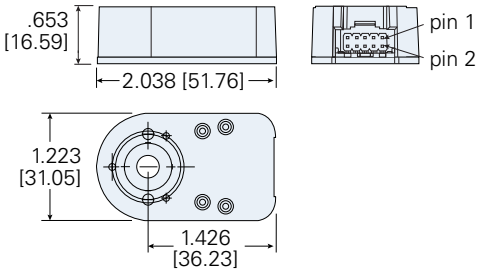
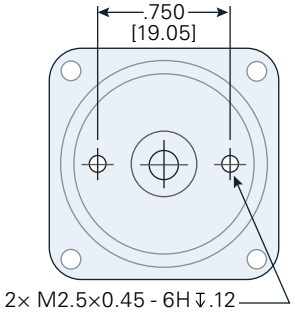
## Encoder

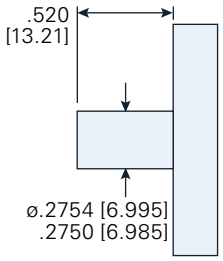



## Encoder-Ready Options

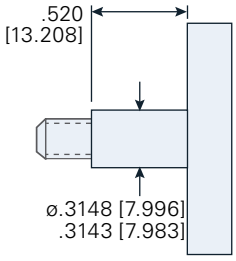
Rear View



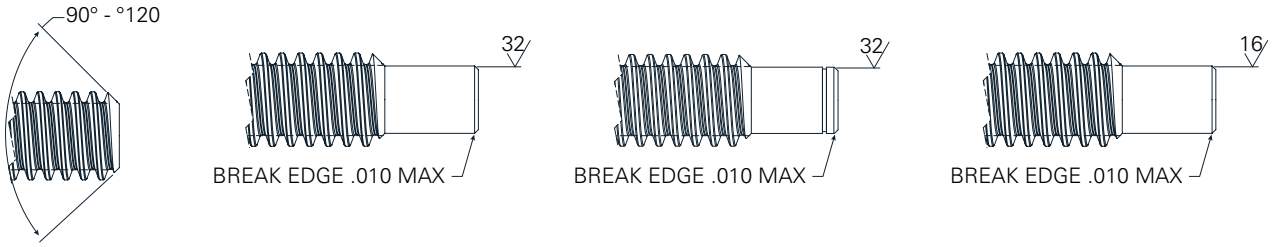

External




Non-Captive & Captive

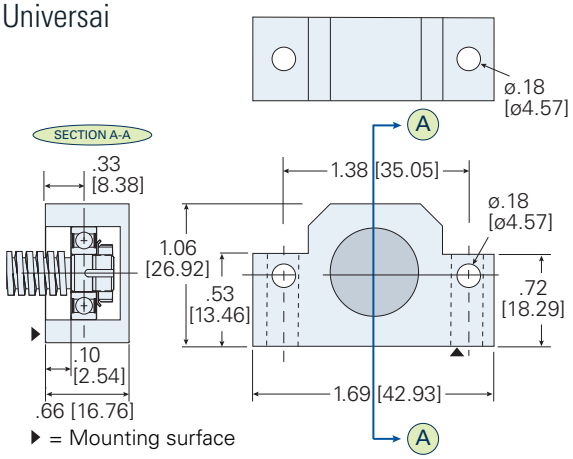



## Screw End Machining

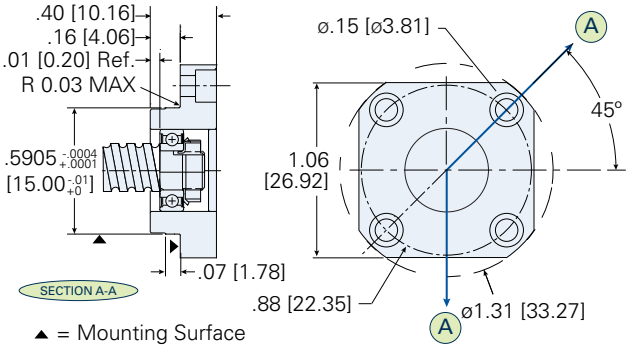



## Ezze Mount™ Bearing Support

Universai




Flanged

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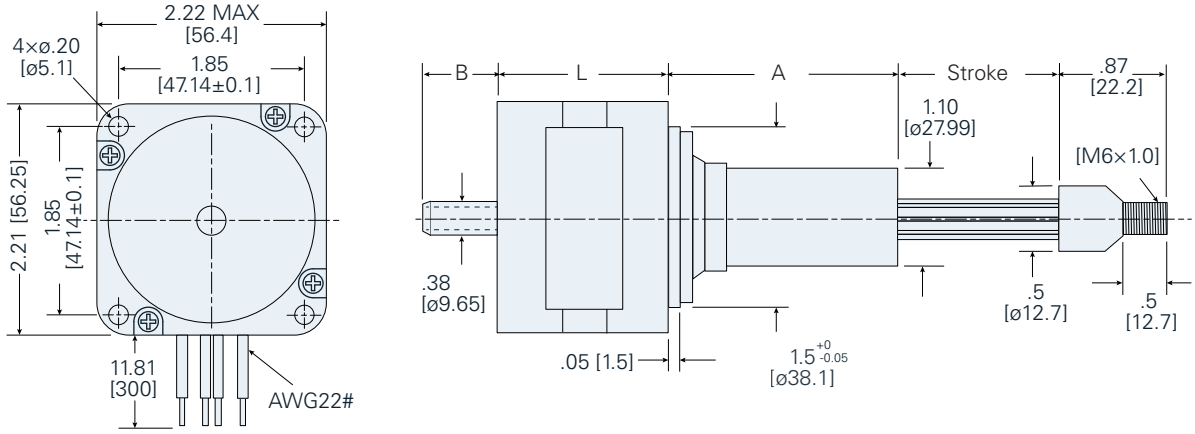



## Motor Specifications

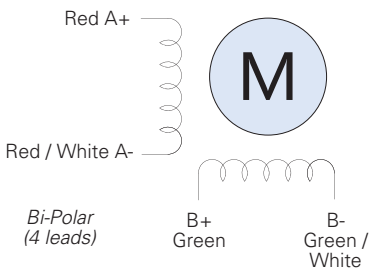
- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167° F (75° C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 3.25 | 2 | 1.63 | 3.5 | 18 | 511 | 13 | 1.78 | 45.2 |
| | 5 | 1.3 | 3.85 | 10.5 | 18 | 511 | 13 | 1.78 | 45.2 |
| | 12 | 0.54 | 22.2 | 47 | 18 | 511 | 13 | 1.78 | 45.2 |
| Double Stack | 3.25 | 3.32 | 0.98 | 1.33 | 33.8 | 958 | 14 | 2.60 | 66.0 |
| | 5 | 2.16 | 2.31 | 6.6 | 33.8 | 958 | 14 | 2.60 | 66.0 |
| | 12 | 0.9 | 13.33 | 45.1 | 33.8 | 958 | 14 | 2.60 | 66.0 |

## Stroke Codes

| Stroke Code | Stroke | | A | | B | |
|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm |
| 0.50 | .50 | 12.7 | 1.01 | 25.7 | 0.06 | 1.5 |
| 0.75 | .75 | 19.1 | 1.26 | 32.0 | 0.31 | 7.9 |
| 1.00 | 1.00 | 25.4 | 1.51 | 38.4 | 0.56 | 14.2 |
| 1.25 | 1.25 | 31.8 | 1.76 | 44.7 | 0.81 | 20.6 |
| 1.50 | 1.50 | 38.1 | 2.01 | 51.1 | 1.06 | 26.9 |
| 2.00 | 2.00 | 50.8 | 2.51 | 63.8 | 1.56 | 39.6 |

## Wiring Diagram



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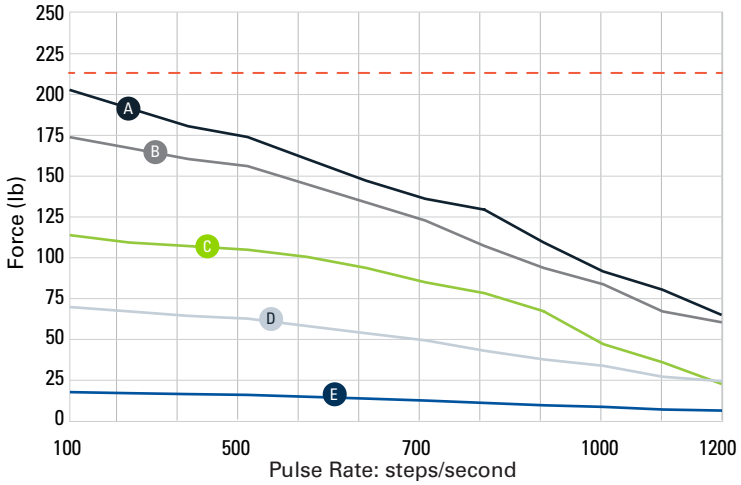
## Screw Specifications

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| W37050 | .375 | 9.53 | .050 | 1.27 | .00025 | 0.00635 | |
| W37062 | .375 | 9.53 | .0625 | 1.5875 | .0003125 | 0.0079375 | |
| W37083 | .375 | 9.53 | .08334 | 2.117 | .000417 | 0.010584 | A |
| W37100 | .375 | 9.53 | .100 | 2.54 | .0005 | 0.0127 | B |
| W37125 | .375 | 9.53 | .125 | 3.175 | .000625 | 0.015875 | |
| W37166 | .375 | 9.53 | .16666 | 4.233 | .000833 | 0.021166 | C |
| W37200 | .375 | 9.53 | .200 | 5.08 | .001 | 0.0254 | |
| W37250 | .375 | 9.53 | .250 | 6.35 | .00125 | 0.03175 | D |
| W37400 | .375 | 9.53 | .400 | 10.16 | .002 | 0.0508 | |
| W37999 | .375 | 9.53 | 1.000 | 25.4 | .005 | 0.127 | E |

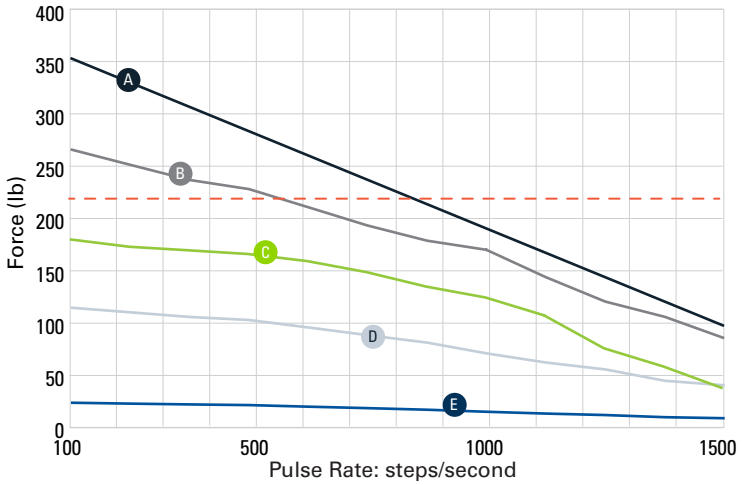
Native units: ☐ imperial ☐ metric

## Force v Pulse Rate Charts

Single Stack




Double Stack




- - - - = Recommended load limit

Speed charts are based on using bi-polar motors with chopper drives at 100% duty cycle. Chopper drive curves were created using full steps on a 5 volt motor and a 40v power supply.

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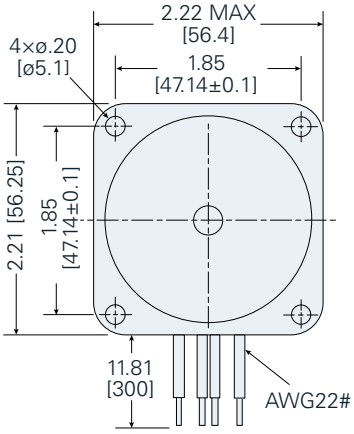


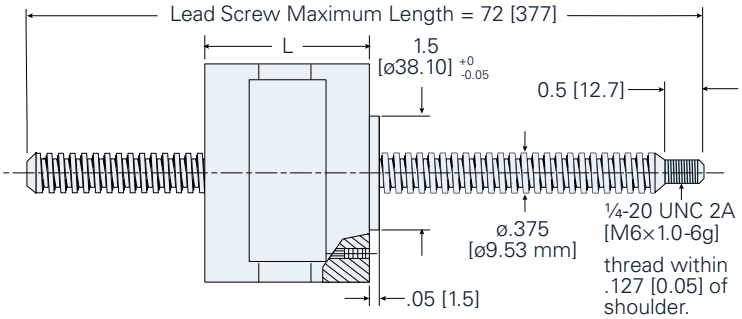


## Motor Specifications

- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167°F (75°C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 3.25 | 2 | 1.63 | 3.5 | 18 | 511 | 13 | 1.78 | 45.2 |
| | 5 | 1.3 | 3.85 | 10.5 | 18 | 511 | 13 | 1.78 | 45.2 |
| | 12 | 0.54 | 22.2 | 47 | 18 | 511 | 13 | 1.78 | 45.2 |
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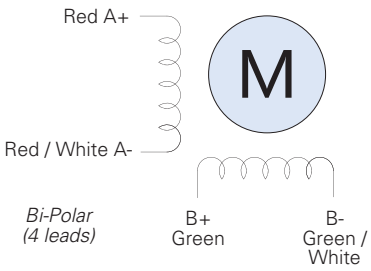
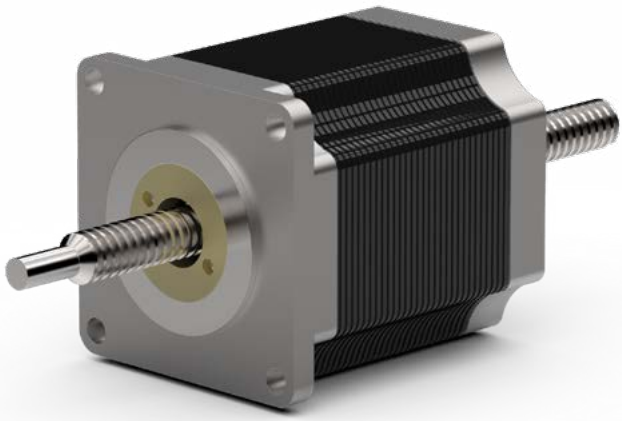
## Wiring Diagram



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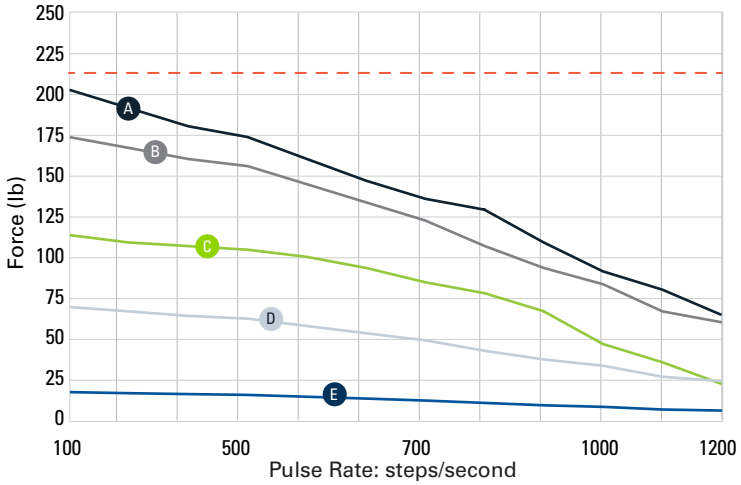
| W37062 | .375 | 9.53 | .0625 | 1.5875 | .0003125 | 0.0079375 | |
| W37083 | .375 | 9.53 | .08334 | 2.117 | .000417 | 0.010584 | A |
| W37100 | .375 | 9.53 | .100 | 2.54 | .0005 | 0.0127 | B |
| W37125 | .375 | 9.53 | .125 | 3.175 | .000625 | 0.015875 | |
| W37166 | .375 | 9.53 | .16666 | 4.233 | .000833 | 0.021166 | C |
| W37200 | .375 | 9.53 | .200 | 5.08 | .001 | 0.0254 | |
| W37250 | .375 | 9.53 | .250 | 6.35 | .00125 | 0.03175 | D |
| W37400 | .375 | 9.53 | .400 | 10.16 | .002 | 0.0508 | |
| W37999 | .375 | 9.53 | 1.000 | 25.4 | .005 | 0.127 | E |

Native units: ☐ imperial ☐ metric

## Force v Pulse Rate Charts

Single Stack

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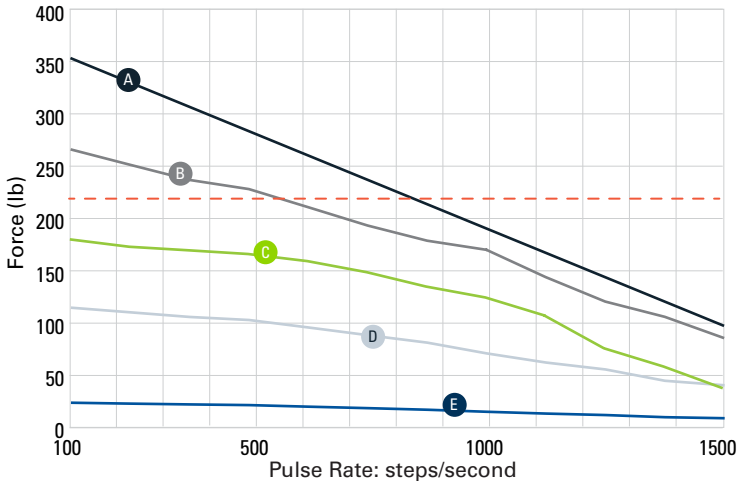


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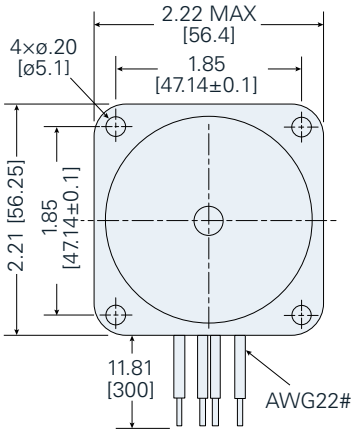


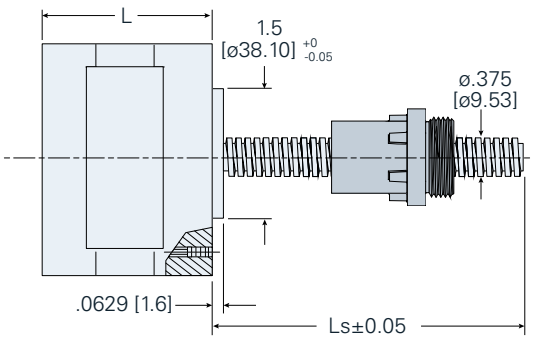


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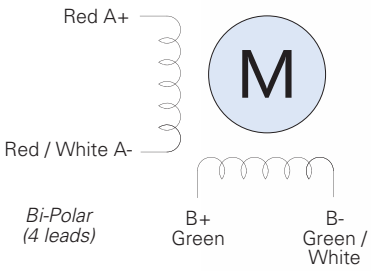
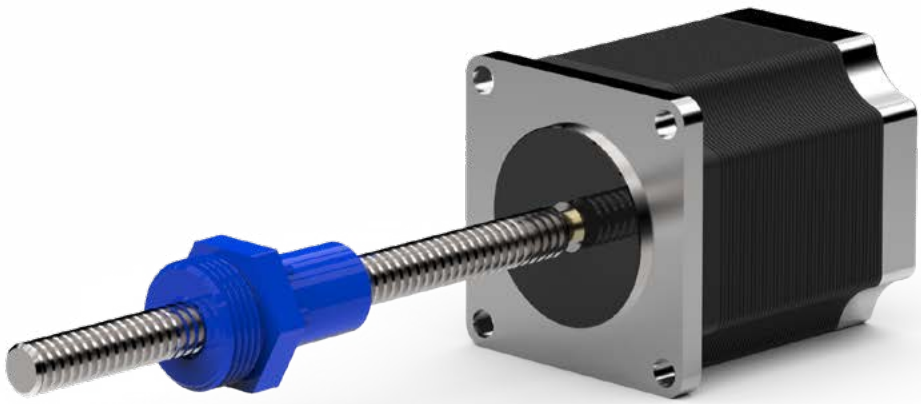
## Wiring Diagram



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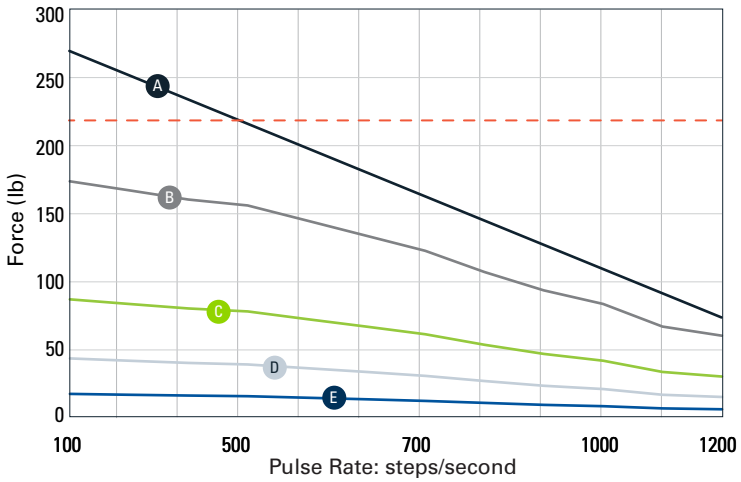
| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| 037050 | .375 | 9.53 | .050 | 1.27 | .00025 | 0.00635 | |
| 037062 | .375 | 9.53 | .0625 | 1.5875 | .0003125 | 0.0079375 | |
| 037083 | .375 | 9.53 | .08334 | 2.117 | .000417 | 0.010584 | |
| 037100 | .375 | 9.53 | .100 | 2.54 | .0005 | 0.0127 | B |
| 037125 | .375 | 9.53 | .125 | 3.175 | .000625 | 0.015875 | |
| 037166 | .375 | 9.53 | .16666 | 4.233 | .000833 | 0.021166 | |
| 037196 | .375 | 9.53 | .19685 | 5 | .00098 | 0.025 | |
| 037200 | .375 | 9.53 | .200 | 5.08 | .001 | 0.0254 | |
| 037250 | .375 | 9.53 | .250 | 6.35 | .00125 | 0.03175 | C |
| 037393 | .375 | 9.53 | .3937 | 10 | .00197 | 0.050 | D |
| 037400 | .375 | 9.53 | .400 | 10.16 | .002 | 0.0508 | |
| 037472 | .375 | 9.53 | .47244 | 12 | .002362 | 0.060 | |
| 037590 | .375 | 9.53 | .59055 | 15 | .002953 | 0.075 | |
| 037999 | .375 | 9.53 | 1.000 | 25.4 | .005 | 0.127 | E |
| 037M30 | .375 | 9.53 | 1.1811 | 30 | .005906 | 0.150 | |

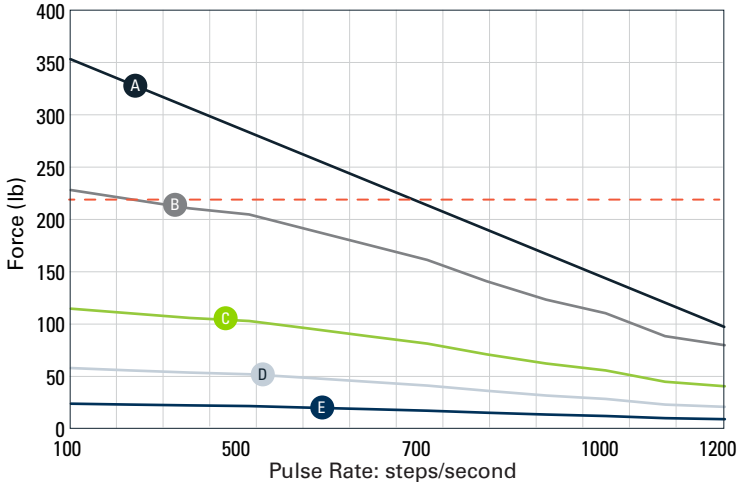
Native units: ☐ imperial ☐ metric

## Force v Pulse Rate Charts

Single Stack




Double Stack

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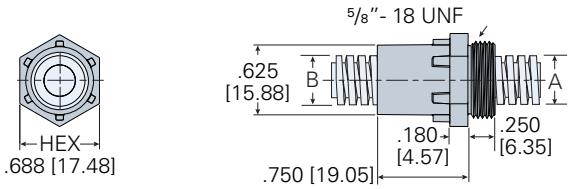
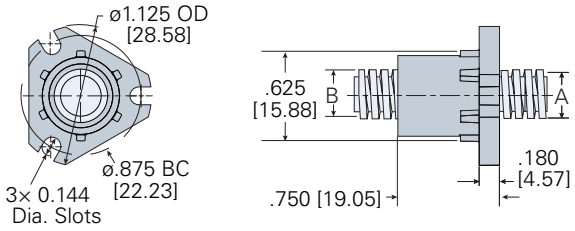
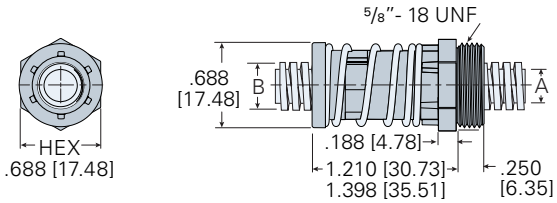


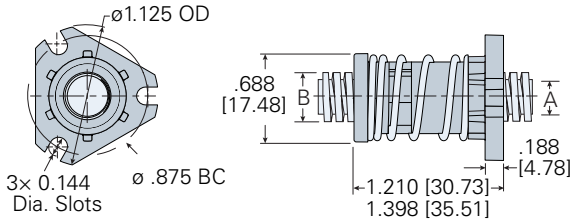

## Standard Freewheeling Nut (NFA) - Flanged



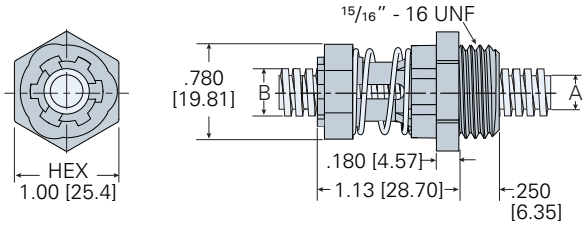

## Axial Anti-backlash Nut (ATA) - Threaded



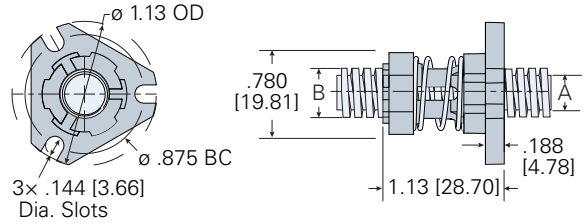

## Axial Anti-backlash Nut (AFA) - Flanged



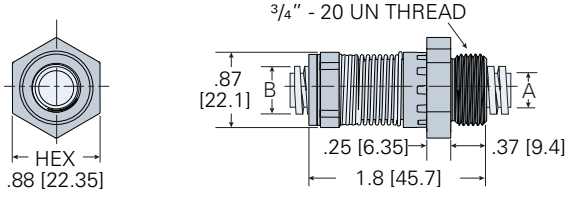

## Radial Anti-backlash Nut (RTA) - Threaded



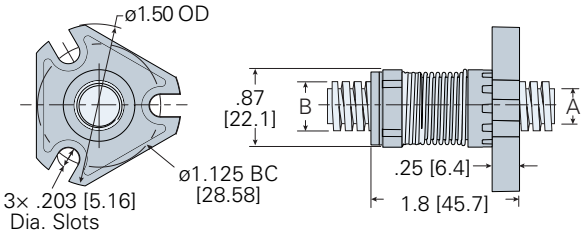

## Radial Anti-backlash Nut (RFA) - Flanged




## Torsional Anti-backlash Nut (KTA) - Threaded




## Torsional Anti-backlash Nut (KFA) - Flanged

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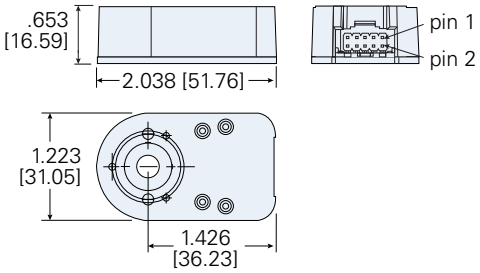
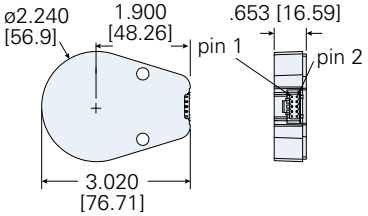
## Encoder

External

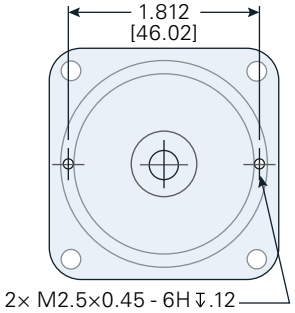



Non-Captive & Captive




## Encoder-Ready Options

Rear View

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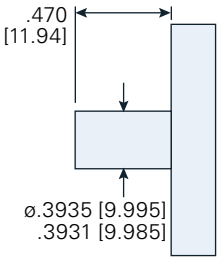
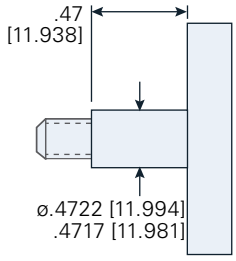
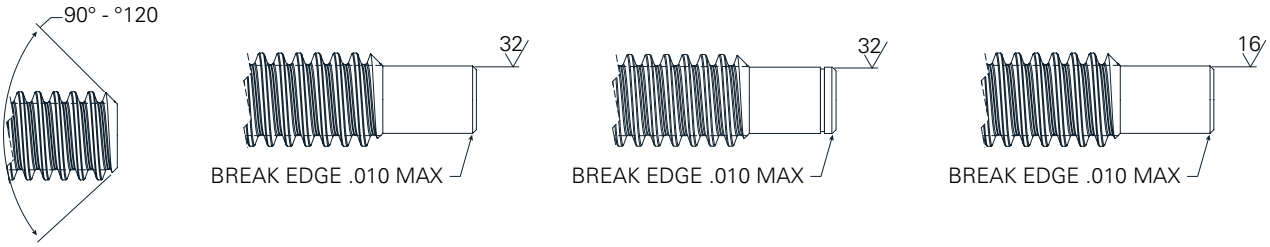



Non-Captive & Captive

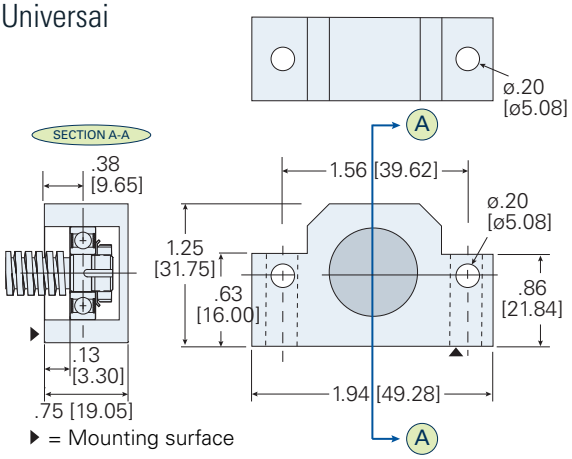



## Screw End Machining

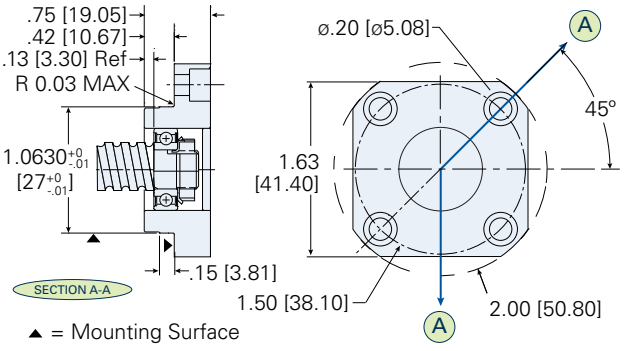



## Ezze Mount™ Bearing Support

Universai




Flanged

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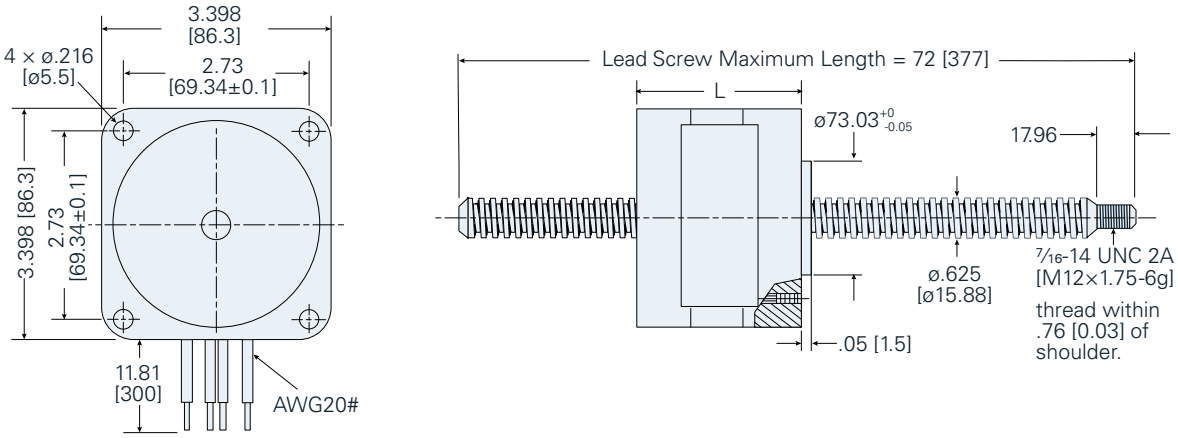
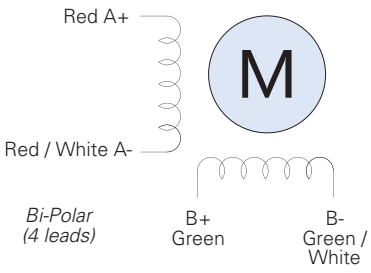


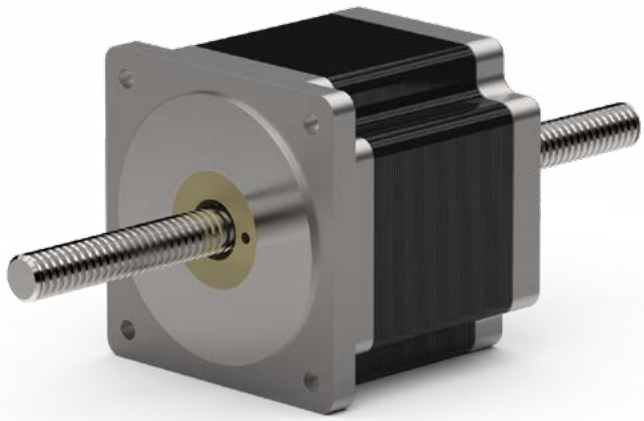

## Motor Specifications

- Bipolar Wiring
- 1.8° Step Angle
- Insulation Resistance: 20 MΩ
- Temperature Rise: 167°F (75°C)

| | Voltage | Current | Resistance/ Phase | Inductance/ Phase | Motor Weight | | Power Input | L | |
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.85 | 5.47 | .52 | 2.86 | 5.07 | 2.3 | 31.2 | 3.0929 | 78.560 |
| | 5 | 3.12 | 1.6 | 8.8 | 5.07 | 2.3 | 31.2 | 3.0929 | 78.560 |
| | 12 | 1.3 | 9.23 | 51 | 5.07 | 2.3 | 31.2 | 3.0929 | 78.560 |

## Wiring Diagram



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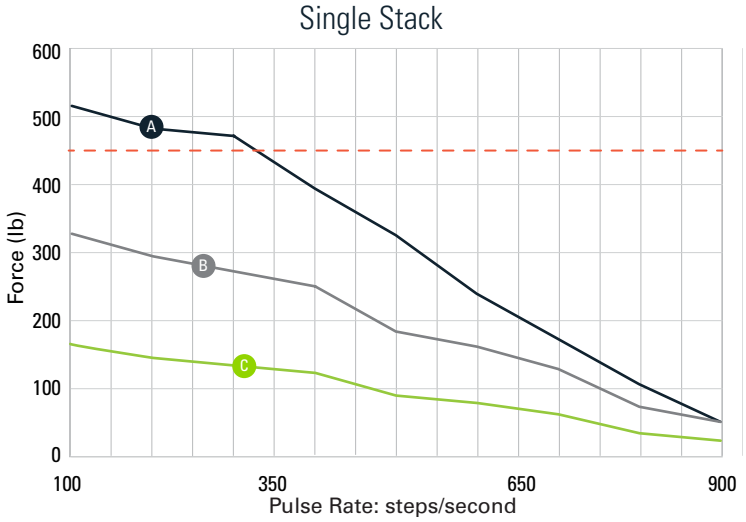
## Screw Specifications

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| W62100 | .625 | 15.88 | .100 | 2.54 | .0005 | 0.0127 | A |
| W62250 | .625 | 15.88 | .250 | 6.35 | .00125 | 0.03175 | B |
| W62500 | .625 | 15.88 | .500 | 12.7 | .0025 | 0.0635 | C |

Native units: ☐ imperial ☐ metric

## Force v Pulse Chart




- - - - = Recommended load limit

Speed charts are based on using bi-polar motors with chopper drives at 100% duty cycle. Chopper drive curves were created using full steps on a 5 volt motor and a 40v power supply.

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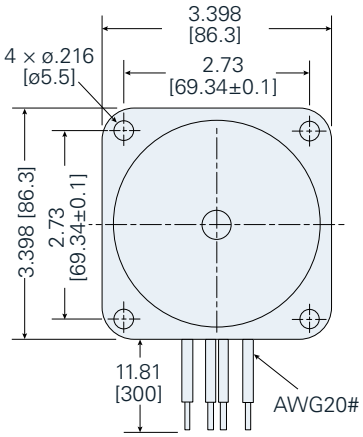


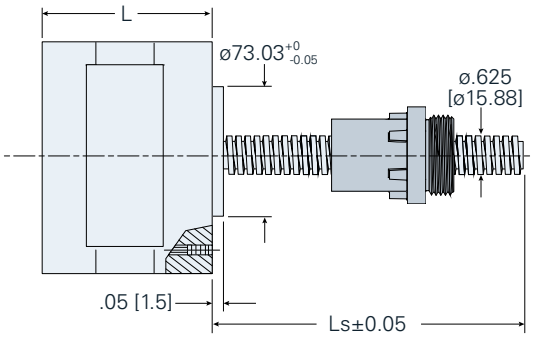


## Motor Specifications

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- Insulation Resistance: 20 MΩ
- Temperature Rise: 167°F (75°C)

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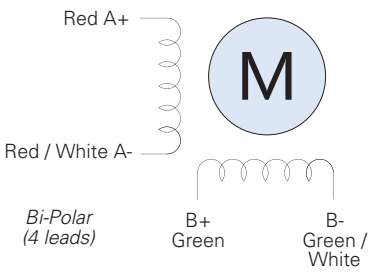
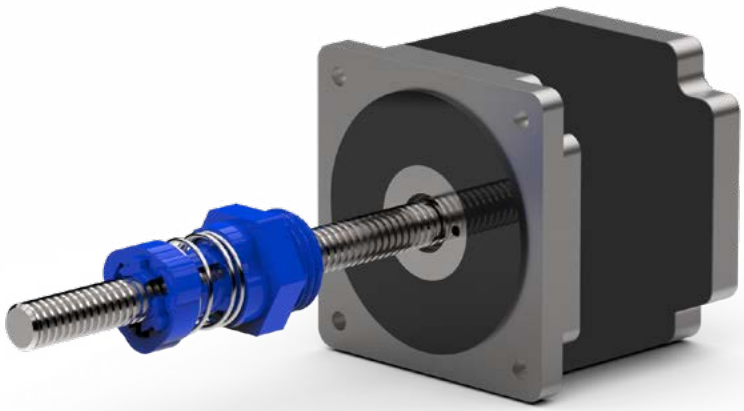
|---|---|---|---|---|---|---|---|---|---|
| | V | A | Ω | mH | oz | g | W | in | mm |
| Single Stack | 2.85 | 5.47 | .52 | 2.86 | 5.07 | 2.3 | 31.2 | 3.0929 | 78.560 |
| | 5 | 3.12 | 1.6 | 8.8 | 5.07 | 2.3 | 31.2 | 3.0929 | 78.560 |
| | 12 | 1.3 | 9.23 | 51 | 5.07 | 2.3 | 31.2 | 3.0929 | 78.560 |

## Wiring Diagram



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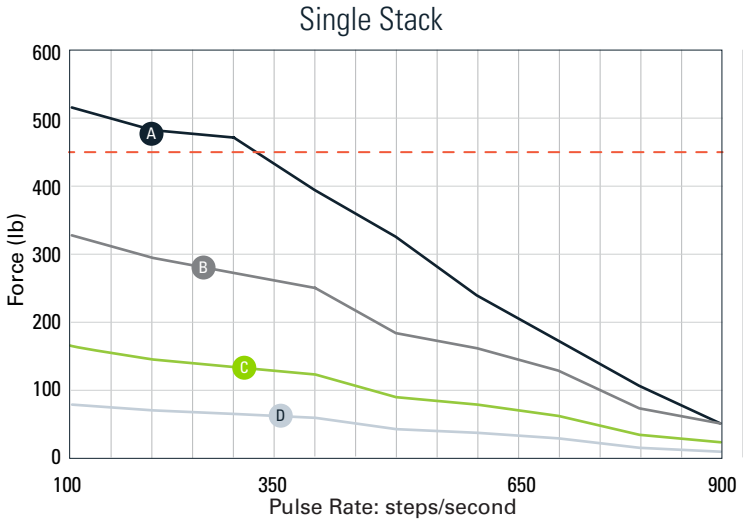
## Screw Specifications

| Screw Code | Diameter | | Lead | | Travel per Step | | |
|---|---|---|---|---|---|---|---|
| | in | mm | in | mm | in | mm | |
| 062100 | .625 | 15.88 | .100 | 2.54 | .0005 | 0.0127 | A |
| 062250 | .625 | 15.88 | .250 | 6.35 | .00125 | 0.03175 | B |
| 062500 | .625 | 15.88 | .500 | 12.7 | .0025 | 0.0635 | C |
| 062750 | .625 | 15.88 | .750 | 19.05 | .00375 | 0.09525 | |
| 062999 | .625 | 15.88 | 1.000 | 25.4 | .005 | 0.127 | D |

Native units: ☐ imperial ☐ metric

## Force v Pulse Chart

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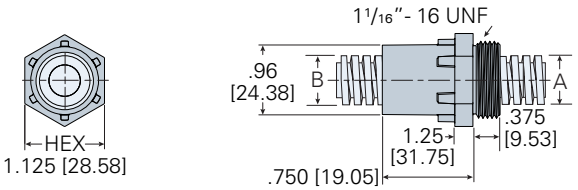
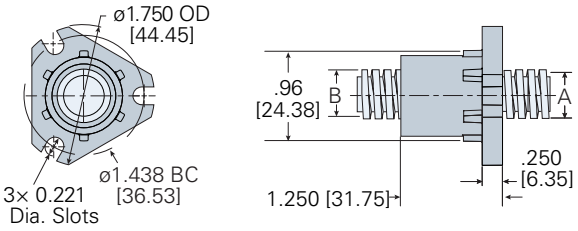
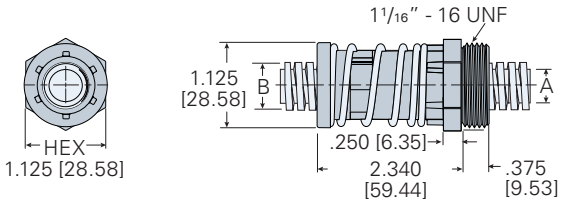
## Standard Freewheeling Nut (NTA) - Threaded



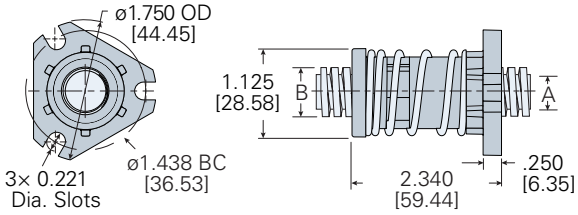

## Standard Freewheeling Nut (NFA) - Flanged



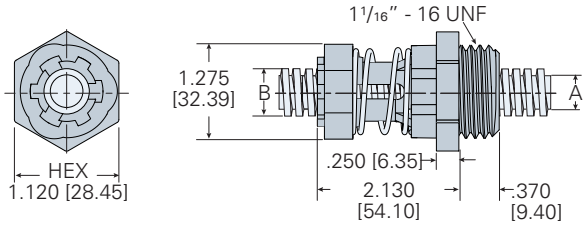

## Axial Anti-backlash Nut (ATA) - Threaded



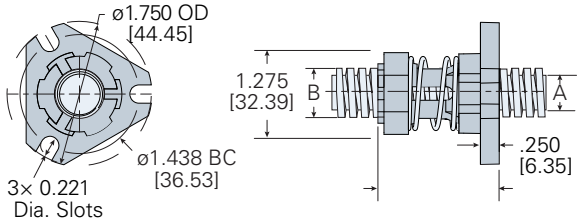

## Axial Anti-backlash Nut (AFA) - Flanged




## Radial Anti-backlash Nut (RTA) - Threaded




## Radial Anti-backlash Nut (RFA) - Flanged

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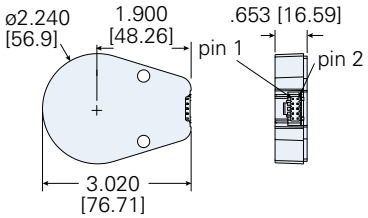
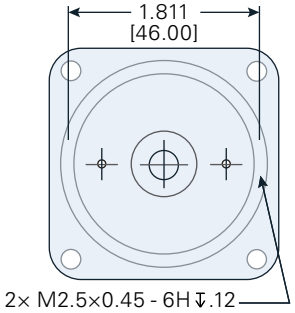
## Encoder




## Encoder-Ready Options

Rear View

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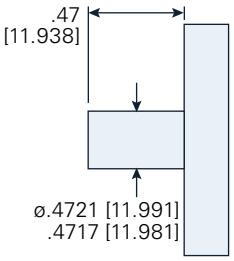
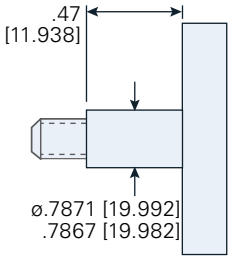
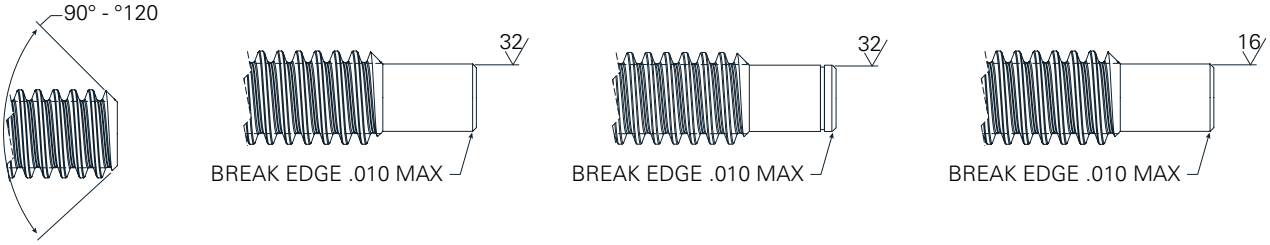



Non-Captive & Captive




## Screw End Machining




## Ezze Mount™ Bearing Support

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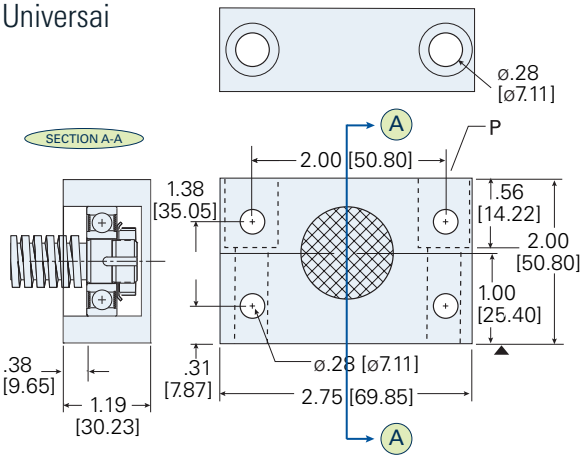
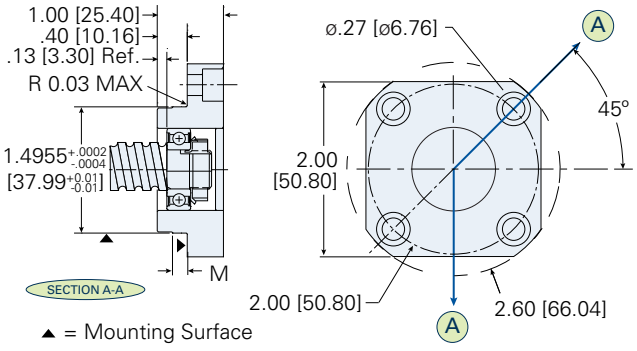



Flanged

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# Available Lead Screws

## Captive and Non-Captive Stepper Motor Linear Actuators

| Lead | | Travel per Step | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| in | mm | in | mm | NEMA 8 | NEMA 11 | NEMA 14 | NEMA 17 | NEMA 23 | NEMA 34 |
| .012 | 0.3048 | .00006 | .001524 | W12012 | | | | | |
| .01969 | 0.5 | .000098 | .0025 | W12019 | | | | | |
| .024 | 0.6096 | .00012 | .003048 | W12024 | | W25024 | W25024 | | |
| .025 | 0.635 | .000125 | .003175 | | W18025 | | | | |
| .03125 | 0.79375 | .000156 | .003969 | | | W25031 | W25031 | | |
| .03937 | 1 | .000197 | .005 | W12039 | | W25039 | W25039 | | |
| .048 | 1.2192 | .00024 | .006096 | W12048 | | W25048 | W25048 | | |
| .050 | 1.27 | .00025 | .00635 | | W18050 | W25050 | W25050 | W37050 | |
| .0625 | 1.5875 | .000313 | .007938 | | | W25062 | W25062 | W37062 | |
| .07874 | 2 | .000394 | .010 | W12078 | | | | | |
| .08334 | 2.1168 | .000417 | .010584 | | | | | W37083 | |
| .096 | 2.4384 | .00048 | .012192 | W12096 | | W25096 | W25096 | | |
| .100 | 2.54 | .0005 | .0127 | | W18100 | W25100 | W25100 | W37100 | W62100 |
| .125 | 3.175 | .000625 | .015875 | | | W25125 | W25125 | W37125 | |
| .15748 | 4 | .000787 | .020 | W12157 | | | | | |
| .16666 | 4.2332 | .000833 | .021166 | | | | | W37166 | |
| .192 | 4.8768 | .00096 | .024384 | | | W25192 | W25192 | | |
| .200 | 5.08 | .001 | .0254 | | W18200 | | | W37200 | |
| .250 | 6.35 | .00125 | .03175 | | | W25250 | W25250 | W37250 | W62250 |
| .31496 | 8 | .001575 | .040 | W12314 | | | | | |
| .384 | 9.7536 | .00192 | .048768 | | | W25384 | W25384 | | |
| .400 | 10.16 | .002 | .0508 | | W18400 | | | W37400 | |
| .500 | 12.7 | .0025 | .0635 | | | W25500 | W25500 | | W62500 |
| 1.000 | 25.4 | .005 | .127 | | | W25999 | W25999 | W37999 | |

Native units: ☐ imperial ☐ metric

* only available with External Stepper Motor Linear Actuators

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# Available Lead Screws
## External Stepper Motor Linear Actuators

| Lead | | Travel per Step | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| in | mm | in | mm | NEMA 8 | NEMA 11 | NEMA 14 | NEMA 17 | NEMA 23 | NEMA 34 |
| .012 | 0.3048 | .00006 | .001524 | 012012 | | | | | |
| .01969 | 0.5 | .000098 | .0025 | 012019 | | | | | |
| .024 | 0.6096 | .00012 | .003048 | 012024 | | 025024 | 025024 | | |
| .025 | 0.635 | .000125 | .003175 | | 018025 | | | | |
| .03125 | 0.79375 | .000156 | .003969 | | | 025031 | 025031 | | |
| .03937 | 1 | .000197 | .005 | 012039 | | 025039 | 025039 | | |
| .048 | 1.2192 | .00024 | .006096 | 012048 | | 025048 | 025048 | | |
| .050 | 1.27 | .00025 | .00635 | | 018050 | 025050 | 025050 | 037050 | |
| .0625 | 1.5875 | .000313 | .007938 | 012062* | | 025062 | 025062 | 037062 | |
| .07874 | 2 | .000394 | .010 | 012078 | | | | | |
| .08334 | 2.1168 | .000417 | .010584 | | | | | 037083 | |
| .096 | 2.4384 | .00048 | .012192 | 012096 | | 025096 | 025096 | | |
| .100 | 2.54 | .0005 | .0127 | | 018100 | 025100 | 025100 | 037100 | 062100 |
| .125 | 3.175 | .000625 | .015875 | 012125* | | 025125 | 025125 | 037125 | |
| .15748 | 4 | .000787 | .020 | 012157 | | | | | |
| .16666 | 4.2332 | .000833 | .021166 | | | | | 037166 | |
| .192 | 4.8768 | .00096 | .024384 | | | 025192 | 025192 | | |
| .19685 | 5 | .000984 | .025 | | | 025196* | 025196* | 037196* | |
| .200 | 5.08 | .001 | .0254 | | 018200 | | | 037200 | |
| .250 | 6.35 | .00125 | .03175 | | | 025250 | 025250 | 037250 | 062250 |
| .31496 | 8 | .001575 | .040 | 012314 | | | | | |
| .384 | 9.7536 | .00192 | .048768 | | | 025384 | 025384 | | |
| .3937 | 10 | .001969 | .050 | | | 025393* | 025393* | 037393* | |
| .400 | 10.16 | .002 | .0508 | | 018400 | | | 037400 | |
| .47244 | 12 | .002362 | .060 | | | | | 037472* | |
| .500 | 12.7 | .0025 | .0635 | | | 025500 | 025500 | | 062500 |
| .59055 | 15 | .002953 | .075 | | | | | 037590* | |
| .750 | 19.05 | .00375 | .09525 | | | 025750* | 025750* | | 062750* |
| 1.000 | 25.4 | .005 | .127 | | | 025999 | 025999 | 037999 | 062999* |
| 1.1811 | 30 | .005906 | .150 | | | | | 037M30* | |

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