



# Can-Stack Linear Actuators

**Haydon® linear actuators provide both a broader range and, for a given size, significantly higher thrust**

The basic motors incorporate a threaded rotor in conjunction with a (lead-screw) shaft to provide rapid linear movement in two directions (inward and outward). Available step increments vary with the motor frame sizes and are dependent on the step angle of the motor and the lead-screw pitch. A captive or non-captive shaft (lead-screw) option can be supplied for every basic size. Most of the basic sizes also offer an external linear option. The captive shaft configuration features a built-in “anti-rotation” design whereas the non-captive shaft requires the customer to provide external anti-rotation. Both unipolar and bipolar coil configurations are available.

Unique features impart ruggedness and reliability that assure long life and consistent performance. Rare earth magnets are available for even higher thrust. All basic frame sizes are built with dual ball bearings for greater motion control, precise step accuracy and long life. Most of the Haydon® brand motors can also be electronically micro-stepped for tighter controls.

Applications include medical instrumentation, office equipment, machinery automation, robotics, sophisticated pumping systems and other automated devices which require precise remote controlled linear movement in a broad range of temperature environments.

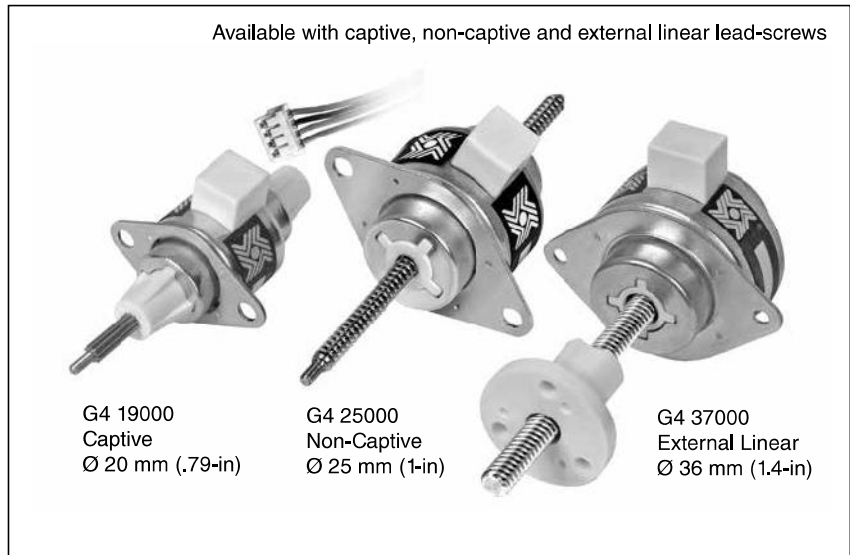
**G4 Series**

The G4 Can-Stack Series represents advanced motion control with the industry’s most robust and most powerful linear actuators.

The series features:

- Enhanced teeth geometry
- High energy neodymium magnets
- Optimized magnetic circuit design
- High-tech engineered polymers
- Oversized spline (captive)
- Larger ball bearings

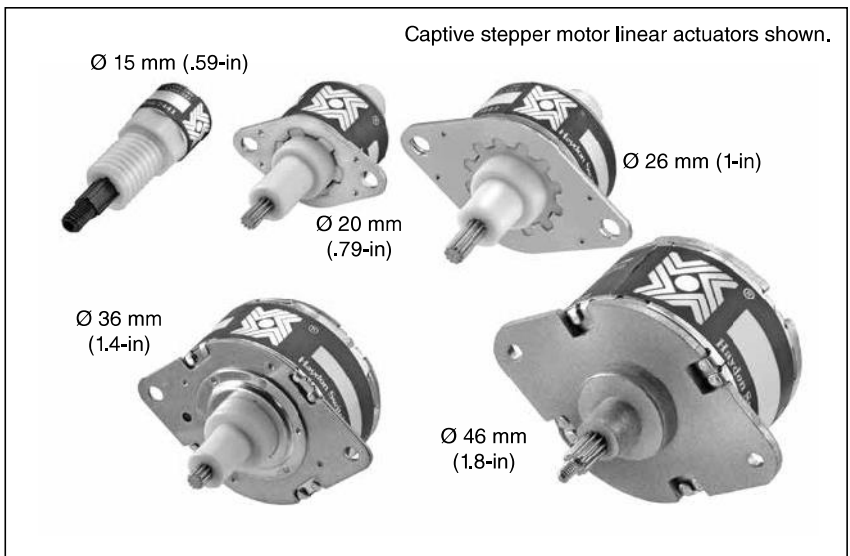
Available body-width diameters include Ø 20 mm (.79-in), Ø 26 mm (1-in), Ø 36 mm (1.4-in).



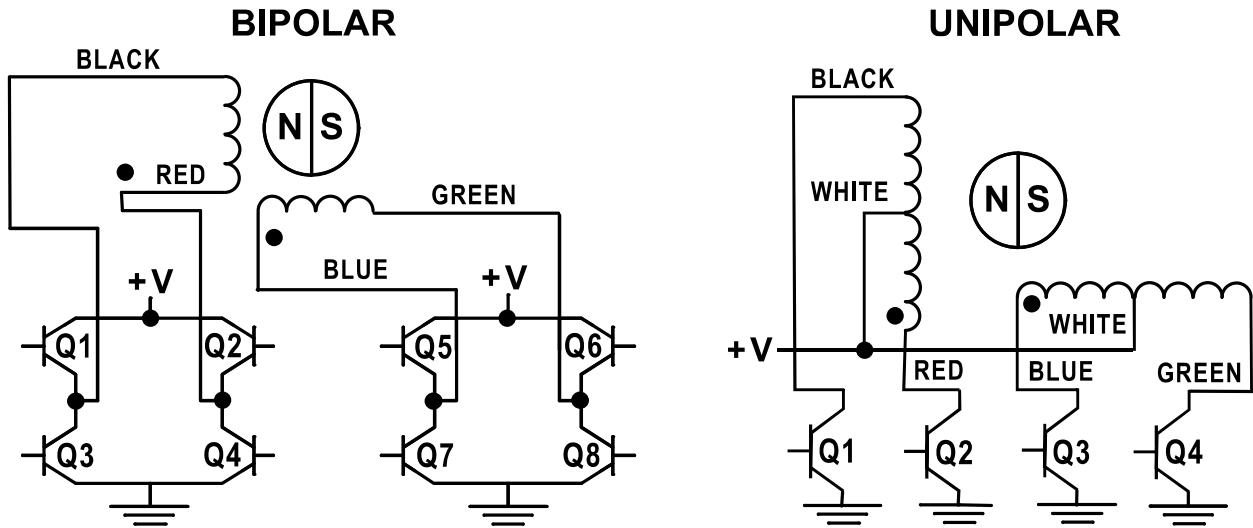
**Can-Stack Series**

Four basic frame sizes are available – Ø 20 mm (.79-in), Ø 26 mm (1-in), Ø 36 mm (1.4-in) and Ø 46 mm (1.8-in) – as well as a series of extremely compact, Ø 15 mm (.59-in) motors.

All Can-Stacks are available with captive, non-captive and external linear lead-screws except Ø 15 mm (.59-in) which is available with a captive and external linear lead-screw only.



**Can-Stack Linear Actuator: Bipolar and Unipolar Wiring**



**Can-Stack Linear Actuator: Stepping Sequence**

	Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8
	Unipolar	Q1	Q2	Q3	Q4
	Step				
EXTEND CW ↓	1	ON	OFF	ON	OFF
	2	OFF	ON	ON	OFF
	3	OFF	ON	OFF	ON
	4	ON	OFF	OFF	ON
	1	ON	OFF	ON	OFF
					RETRACT CCW ↑

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

## Haydon® 19000 Series generates the highest force of any similar size linear actuator stepper motor.

Utilizing high energy rare earth (neodymium) magnets, the G4 Series linear actuators consistently deliver exceptional performance. All units are built with dual ball bearings.

Ø20mm (.79-in)  
Non-captive



Ø20mm (.79-in)  
External Linear

Ø20mm (.79-in)  
Captive

### Specifications

Ø 20 mm (.79-in) motor					
Wiring		Bipolar			
Part No.	Captive	1944 ■ - ■■ - ■■■■	1954 ■ - ■■ - ■■■■		
	Non-captive	1934 ■ - ■■ - ■■■■	1984 ■ - ■■ - ■■■■		
	External	E1944 ■ - ■■ - ■■■■	E1954 ■ - ■■ - ■■■■		
Step angle		7.5°		15°	
Winding voltage		5 VDC	12 VDC	5 VDC	12 VDC
Current (RMS)/phase		350 mA	160 mA	338 mA	140 mA
Resistance/phase		14.0 Ω	74.5 Ω	14.8 Ω	85.5 Ω
Inductance/phase		6.24 mH	31.2 mH	6.84 mH	37.8 mH
Rotor inertia		1.052 gcm <sup>2</sup>		.548 gcm <sup>2</sup>	
Power consumption		3.38 W			
Insulation Class		Class B			
Weight		1.24 oz (35 g)			
Insulation resistance		20 MΩ			

Step	Linear Travel/Step		Order Code I.D.
	inches	mm	
7.5° Angle	0.0005	0.013	3
	0.001	0.0254	1
	0.002	0.051	2
15° Angle	0.001	0.0254	1
	0.002	0.051	2
	0.004	0.102	4

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

Standard motors are Class B rated for maximum temperature of 130° C (266° F).

[www.HaydonKerkExpress.com](http://www.HaydonKerkExpress.com)  
Standard products available 24-hrs.

### Identifying the Can-Stack part number codes when ordering

<b>E</b>	<b>19</b>	<b>4</b>	<b>4</b>	<b>2</b>	-	<b>05</b>	-	<b>1005</b>
<b>Prefix</b> (include only when using the following) <b>E</b> = External <b>K</b> = External with 40° thread form <b>P</b> = Proximity Sensor <b>S</b> = Home Position Switch	<b>Series number designation</b> <b>19 = 19000</b>  (Series numbers represent approximate diameters of motor body)	<b>Style</b> <b>3</b> = 7.5° non-captive <b>4</b> = 7.5° Captive or External (use "E" or "K" Prefix for External version) <b>5</b> = 15° Captive or External (use "E" or "K" Prefix for External version) <b>8</b> = 15° non-captive	<b>Coils</b> <b>4</b> = Bipolar (4 wire)	<b>Code ID Resolution Travel/Step</b> <b>1</b> = .001-in (.0254) <b>2</b> = .002-in (.051) <b>3</b> = .0005-in (.013) <b>4</b> = .004-in (.102)		<b>Voltage</b> <b>05</b> = 5 VDC <b>12</b> = 12VDC  <i>Custom V available</i>		<b>Suffix</b> <b>Stroke</b> Example: -1005 = captive 13mm stroke with leads <b>Suffix also represents:</b> -XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

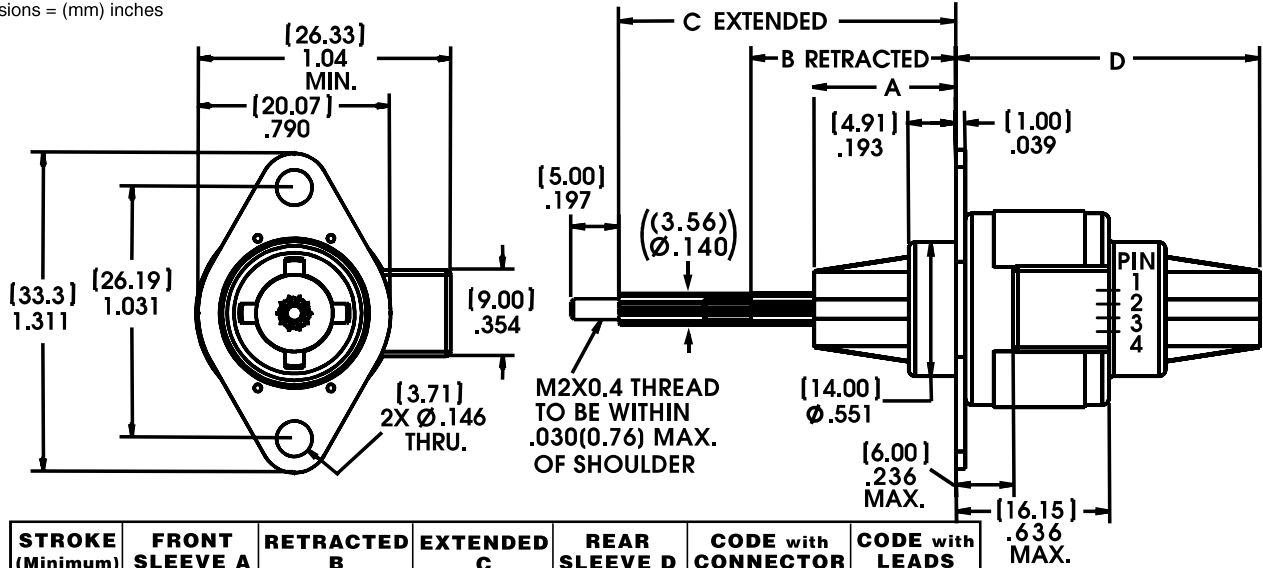
**NOTE:** Dashes must be included in Part Number (-) as shown above. For assistance or order entry, call our engineering team at 203 756 7441.

SCREW LENGTH OPTIONS and other OPTIONAL ASSEMBLIES also available



**Captive Lead-screw**

Dimensions = (mm) inches

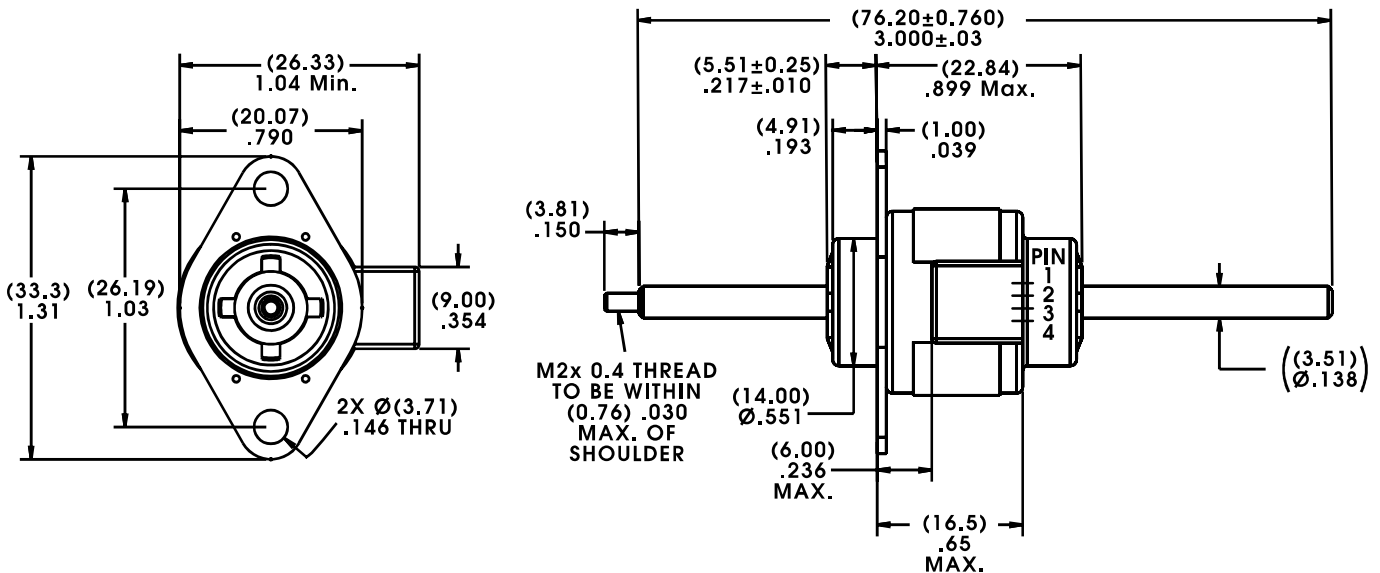


STROKE (Minimum)	FRONT SLEEVE A	RETRACTED B	EXTENDED C	REAR SLEEVE D	CODE with CONNECTOR	CODE with LEADS
(13 mm) .512	(14.75±0.25) .581±.010	(21.37±0.64) .841±.025	(35.17±0.38) 1.385±.015	(32.08 Max.) 1.263 Max.	- 905	- 1005
(18 mm) .708	(20.05±0.25) .789±.010	(26.67±0.64) 1.050±.025	(45.77±0.38) 1.802±.015	(37.38 Max.) 1.472 Max.	- 907	- 1007
(25 mm) .984	(27.05±0.25) 1.065±.010	(33.67±0.64) 1.325±.025	(59.77±0.38) 2.353±.015	(44.38 Max.) 1.747 Max.	- 910	- 1010
(31 mm) 1.22	(33.05±0.25) 1.301±.010	(39.67±0.64) 1.562±.025	(71.77±0.38) 2.826±.015	(63.08 Max.) 2.483 Max.	- 912	- 1012

**Non-Captive Lead-screw**

Dimensions = (mm) inches

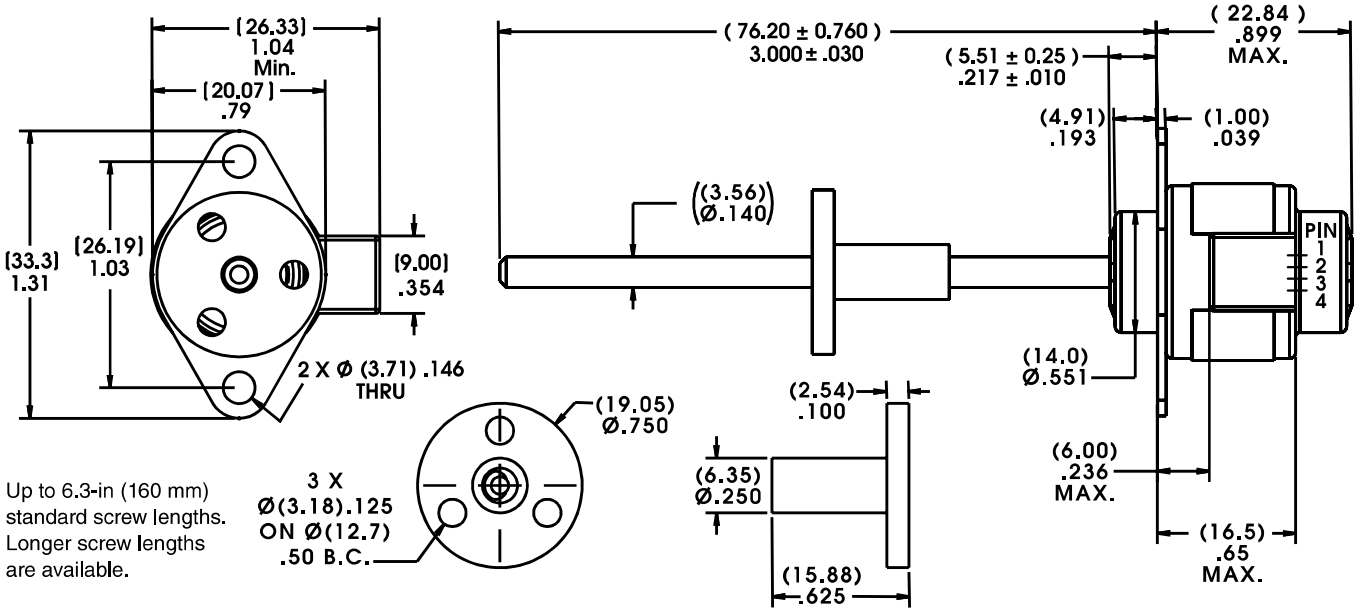
Up to 6.3-in (160 mm) standard screw lengths.  
Longer screw lengths are available.



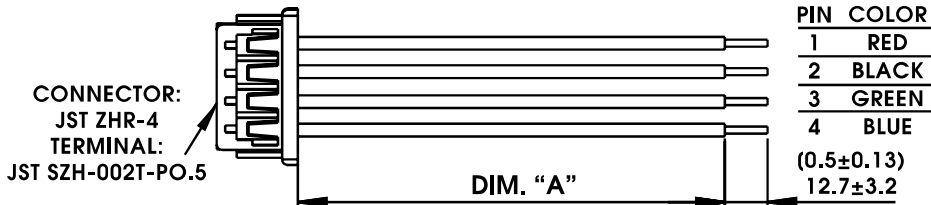
CAN-STACK LINEAR  
ACTUATOR MOTORS

## External Linear

Dimensions = (mm) inches



## Connector



Part Number	Dimension "A"
56-1318-4	(24 ± 0.39) 610 ± 10 mm
56-1318-3	(18 ± 0.39) 450 ± 10 mm
56-1318-2	(12 ± 0.39) 305 ± 10 mm
56-1318-1	(6 ± 0.39) 150 ± 10 mm

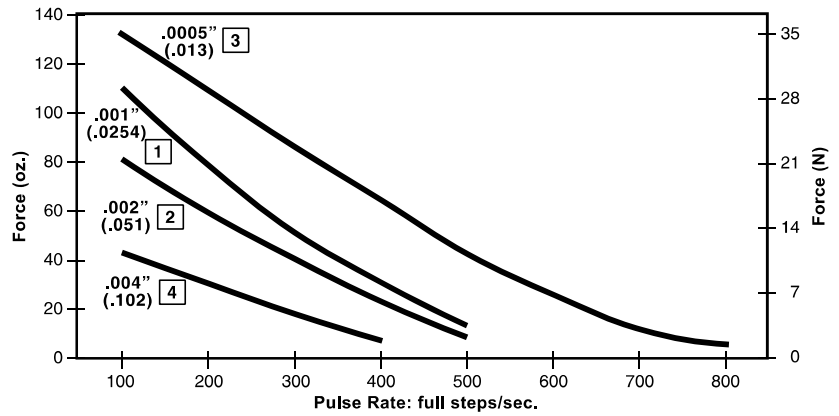
# 19000 G4 Series: Ø 20 mm (.79-in) Can-Stack Performance Curves



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## FORCE vs. PULSE RATE

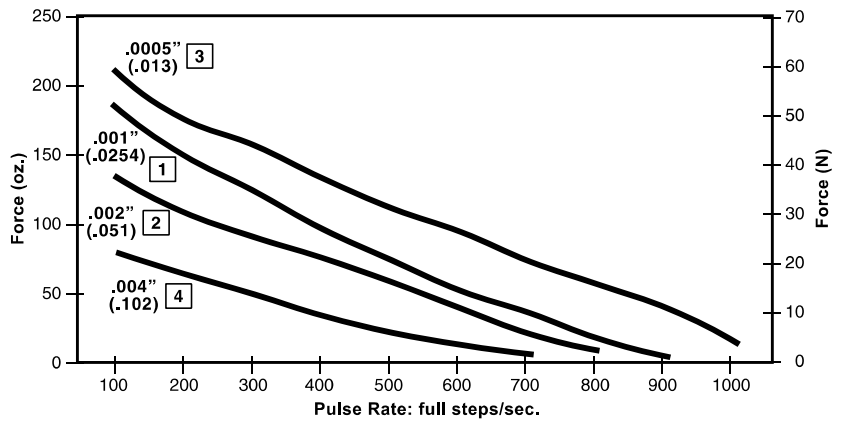
- L/R Drive
- Bipolar
- 100% Duty Cycle



## FORCE vs. PULSE RATE

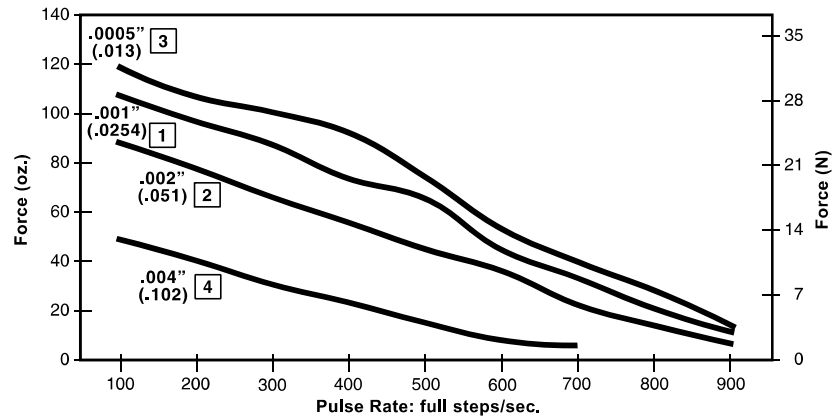
- L/R Drive
- Bipolar
- 25% Duty Cycle

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



## FORCE vs. PULSE RATE

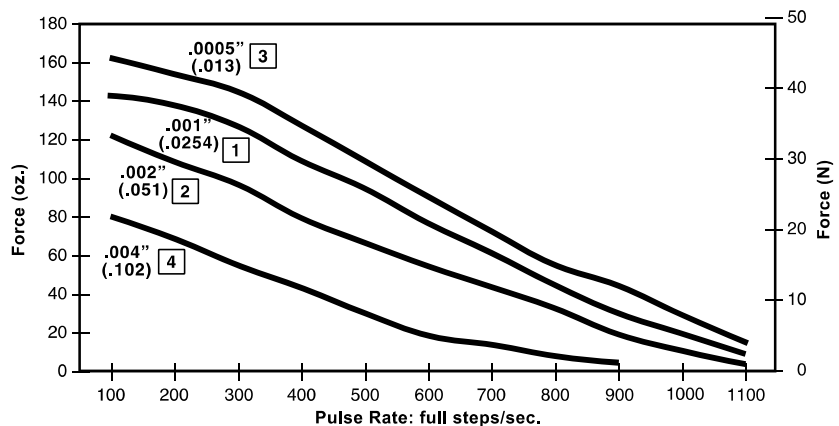
- Chopper Drive
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



## FORCE vs. PULSE RATE

- Chopper Drive
- Bipolar
- 25% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage

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



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

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

CAN-STACK LINEAR ACTUATOR MOTORS



G4 19000 Series, Captive

**TFE coated lead-screws for applications that require a permanent, dry lubricant**

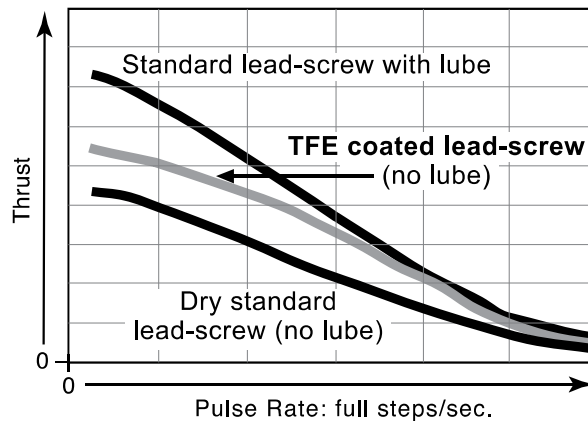
Haydon Kerk Motion Solutions, Inc. offers a TFE coated lead-screw option for its Can-Stack 19000 G4 Series linear actuators. This lead-screw option is ideal for applications where conventional oils and greases can not be used for lead-screw lubrication.

A non-lubricated TFE coated lead-screw provides improved performance in both life and thrust as compared to a “dry” stainless steel lead-screw. TFE can be applied to a wide variety of lead-screw pitches and is available for the Haydon® captive, non-captive and external linear actuators.

The TFE coated lead-screw is typically used for applications where contamination from grease or lubricants must be avoided, such as silicon wafer handling, clean rooms, medical equipment, laboratory instrumentation or anywhere precise linear motion is required.

**Lead-Screw Comparison**

**FORCE vs. PULSE RATE L/R Drive • 100% Duty Cycle**



**Home Position Switch**

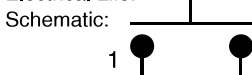
A miniature electronic home position switch capable of monitoring the home positions of linear actuators. The switch mounts on the rear sleeve of captive linear motors and allows the user to identify start, stop or home positions. Depending on your preference, contacts can be normally open or normally closed. The contact closure is repeatable to within one step position, identifying linear movements as low as 0.0005-in (0.0013 cm) per step. Multiple contact switches are also available.

The switch allows device manufacturers the ability to monitor movements more precisely for greater control and improved Q.C. When ordering motors with the home position switch, the part number should be preceded by an “S”.

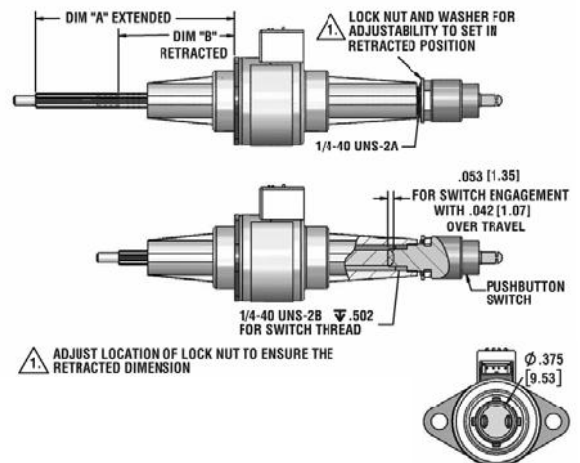
Activation force of 10 oz (2.78 N) required therefore may not be appropriate for smaller can-stack actuators.

**Specifications**

- Contact Ratings (Standard): 1.00 AMP @ 120 VAC  
1.00 AMP @ 28 VDC
- Operating Temperature: -30°C to +55°C (-22°F to 131°F)
- Contact Resistance: < 20 milliohms typ. initial at 2 - 4 V DC, 100 mA
- Electrical Life: Tested to 60,000 make-and-break cycles at full load



Multiple contact options available.



Dimensions = inches (mm)

S19000 Series Home Position Switch		
STROKE	DIM “A” Extended	DIM “B” Retracted
.512 (13)	1.385 (35.17)	.841 (21.37)
.708 (18)	1.802 (45.77)	1.050 (26.67)
.984 (25)	2.353 (59.77)	1.325 (33.67)
1.22 (31)	N/A-Contact Customer Service	



# 19000 G4 Series Options: Proximity Sensor



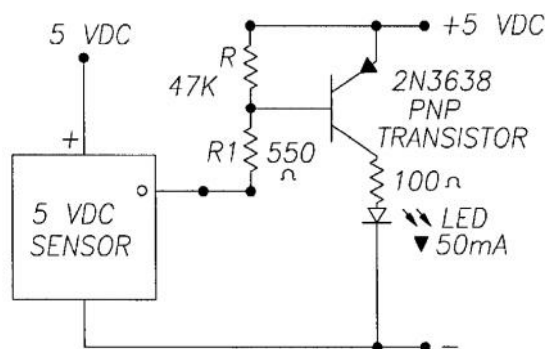
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## End of Stroke Proximity Sensor

The sensor incorporates a hall effect device, which is activated by a rare earth magnet embedded in the end of the internal screw. The compact profile of the sensor allows for installation in limited space applications.

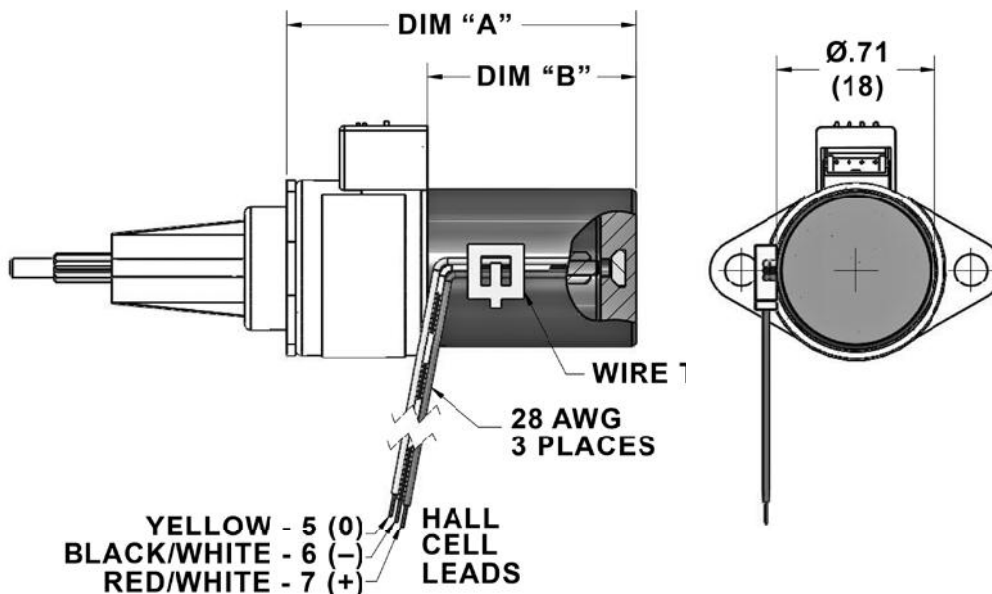
### Specifications

- Supply Voltage (VDC): 3.8 min. to 24 max.
- Current consumption: 10 mA max.
- Output voltage (operated): 0.15 typ., 0.40 max.; Sinking 20 mA max.
- Output current: 20 mA max.
- Output leakage current (released): 10µA max. @ Vout = 24 VDC; Vcc = 24 VDC
- Output switching time
  - Rise, 10 to 90%: .05 µs typ., 1.5 µs max. @ Vcc = 12 V, RL = 1.6 KOhm
  - Fall, 90 to 10%: .15 µs typ., 1.5 µs max. @ CL = 20 pF
- Temperature: - 40 to +150°C



Note: Sensor is category 2 ESD sensitive per DOD-STD-1686A. Assembly operations should be performed at workstations with conductive tops and operators grounded.

### Dimensional Drawings



Dimensions = inches (mm)

P19000 G4 SERIES		
STROKE	DIM "A"	DIM "B"
.512 (13)	1.360 (34.55)	.73 (18.55)
.708 (18)	1.569 (39.85)	.94 (23.85)
.984 (25)	1.844 (46.85)	1.21 (30.85)
1.22 (31)	2.081 (52.85)	1.45 (36.85)

The sensor has virtually unlimited cycle life. Special cabling and connectors can also be provided.

## Haydon® 25000 Series – generates higher force than all other competitors.

Offers high durability and exceptional performance. All units are built with high energy neodymium magnets and dual ball bearings.

### Specifications

Ø 25 mm (1.0-in) motor				
Wiring		Bipolar		
Part No.	Captive	2544	–	2554
	Non-captive	2534	–	2584
	External	E2544	–	E2554
Step angle	7.5°		15°	
Winding voltage	5 VDC	12 VDC	5 VDC	12 VDC
Current (RMS)/phase	385 mA	160 mA	385 mA	160 mA
Resistance/phase	13 Ω	72 Ω	13 Ω	72 Ω
Inductance/phase	10.8 mH	60 mH	8.08 mH	48 mH
Rotor inertia	1.07 gcm <sup>2</sup>			
Power consumption	3.85 W			
Insulation Class	Class B			
Weight	1.74 oz (49 g)			
Insulation resistance	20 MΩ			

Ø25mm (1.0-in) External Linear



Ø25mm (1.0-in) Non-captive

Ø25mm (1.0-in) Captive

Step	Linear Travel/Step		Order Code I.D.
	inches	mm	
7.5° Angle	0.0005	0.013	3
	0.001	0.0254	1
	0.002	0.051	2
15° Angle	0.001	0.0254	1
	0.002	0.051	2
	0.004	0.102	4

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

Standard motors are Class B rated for maximum temperature of 130° C (266° F).

### Identifying the Can-Stack part number codes when ordering

**Haydon kerk Express**  
www.HaydonKerkExpress.com  
Standard products available 24-hrs.

**E**

**Prefix**  
(include only when using the following)

- E** = External
- K** = External with 40° thread form
- P** = Proximity Sensor
- S** = Home Position Switch

**25**

**Series number designation**

**25 = 25000**

(Series numbers represent approximate diameters of motor body)

**5**

**Style**

- 3** = 7.5° non-captive
- 4** = 7.5° Captive or External (use "E" or "K" Prefix for External version)
- 5** = 15° Captive or External (use "E" or "K" Prefix for External version)
- 8** = 15° non-captive

**4**

**Coils**

- 4** = Bipolar (4 wire)

**4**

**Code ID Resolution Travel/Step**

- 1** = .001-in (.0254)
- 2** = .002-in (.051)
- 3** = .0005-in (.013)
- 4** = .004-in (.102)

**12**

**Voltage**

- 05** = 5 VDC
- 12** = 12VDC

Custom V available

**1010**

**Suffix**

**Stroke**  
Example: -1010 = captive 25mm stroke with leads

**Suffix also represents:**

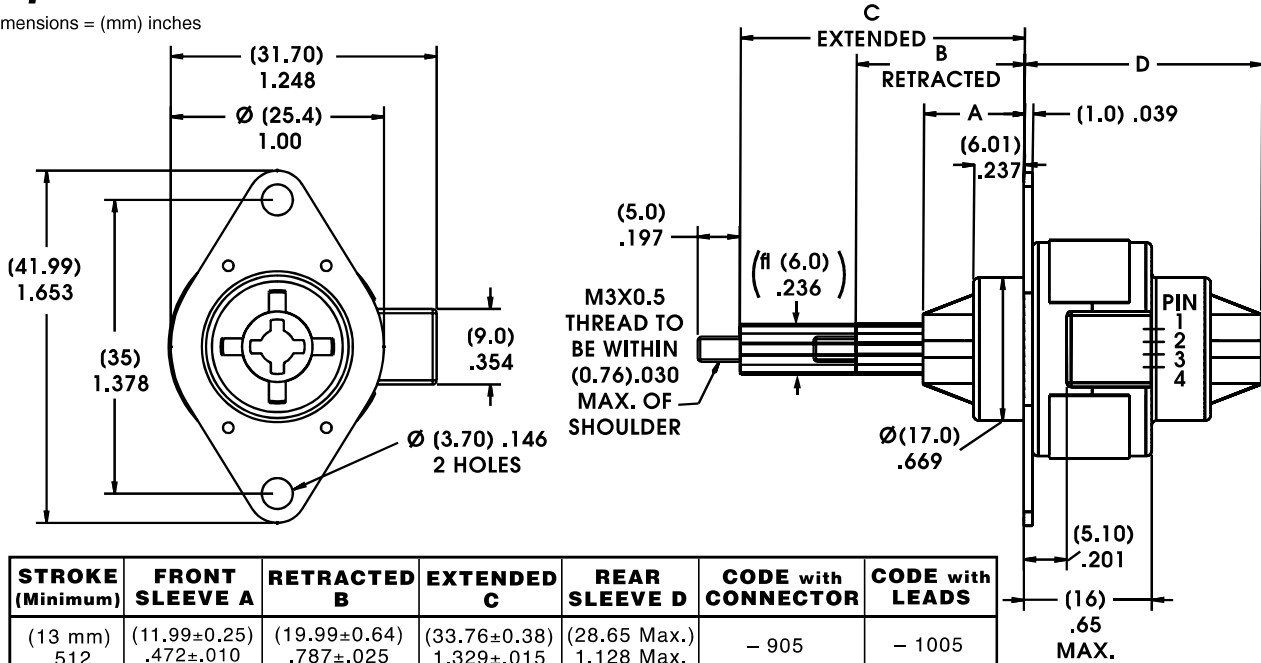
-XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

**NOTE:** Dashes must be included in Part Number (-) as shown above. For assistance or order entry, call our engineering team at 203 756 7441.

**SCREW LENGTH OPTIONS** and other **OPTIONAL ASSEMBLIES** also available

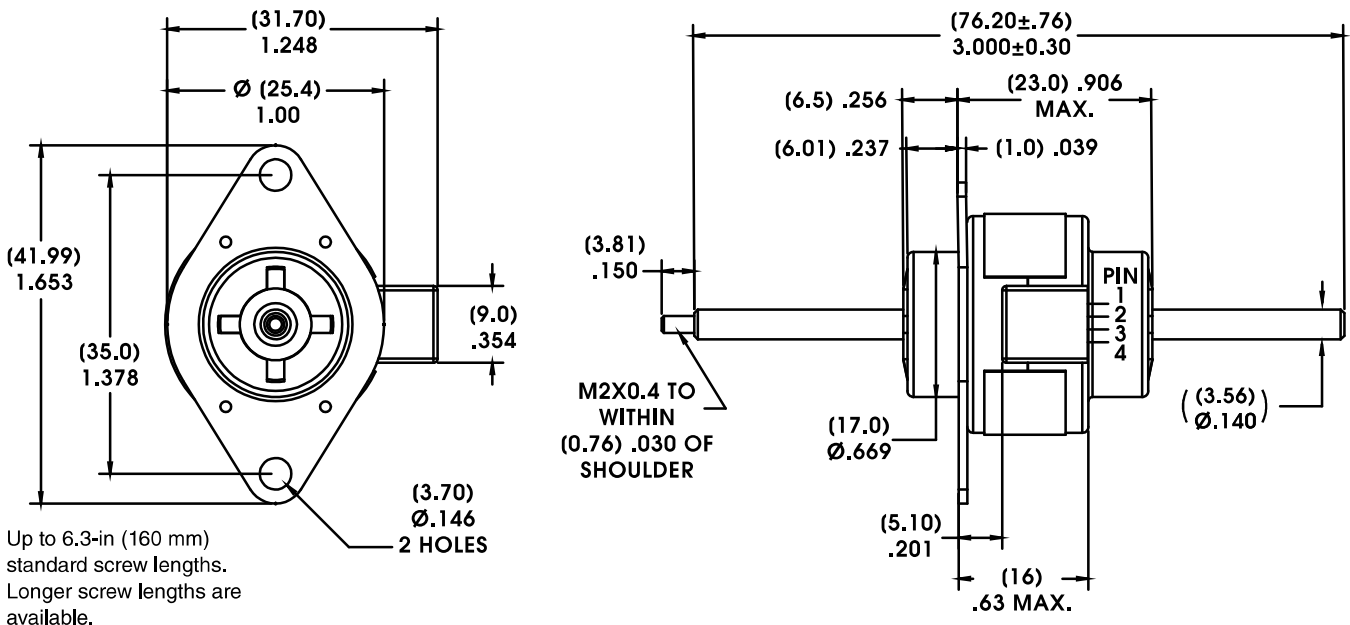
**Captive Lead-screw**

Dimensions = (mm) inches



**Non-Captive Lead-screw**

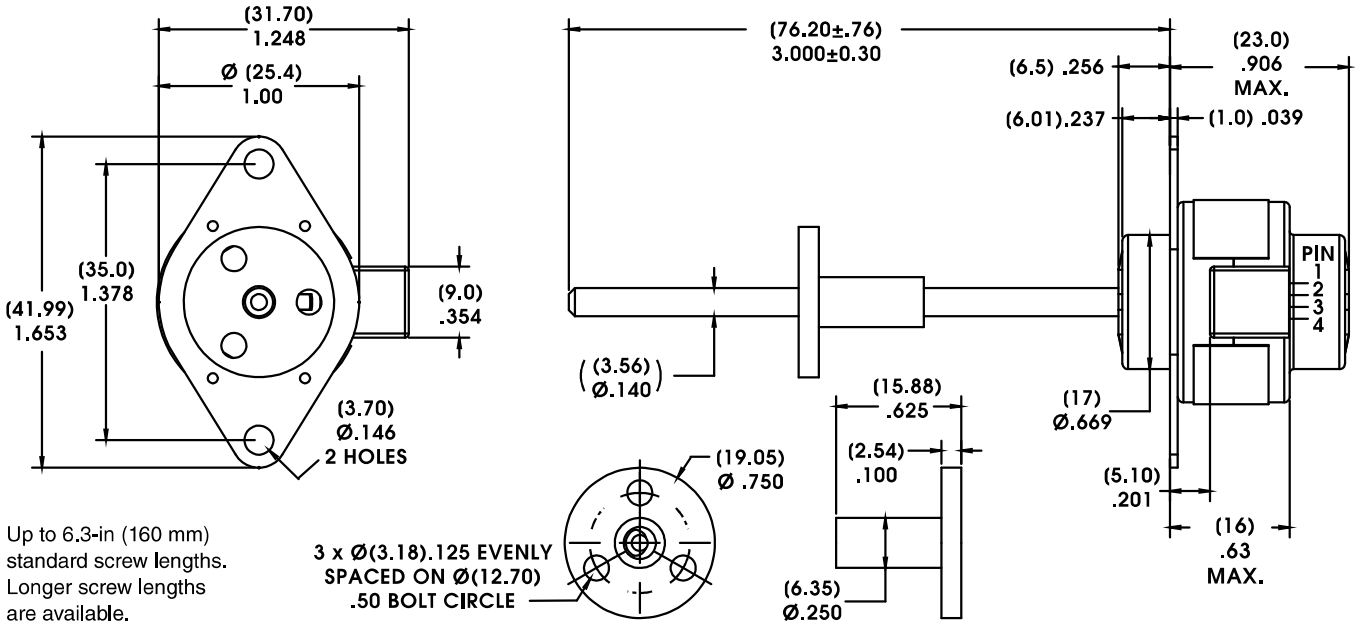
Dimensions = (mm) inches



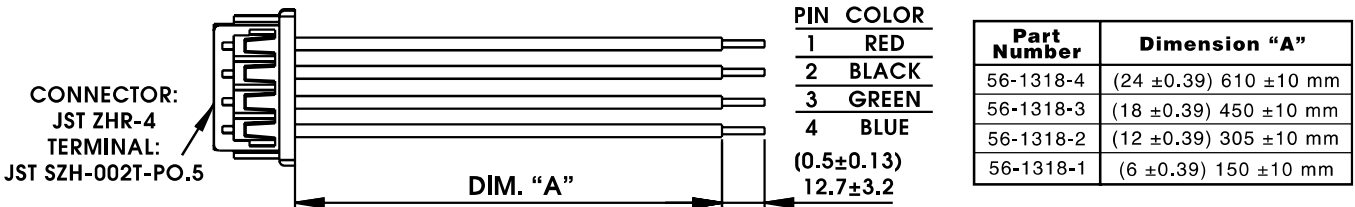
CAN-STACK LINEAR ACTUATOR MOTORS

**External Linear**

Dimensions = (mm) inches



**Connector**



CAN-STACK LINEAR ACTUATOR MOTORS



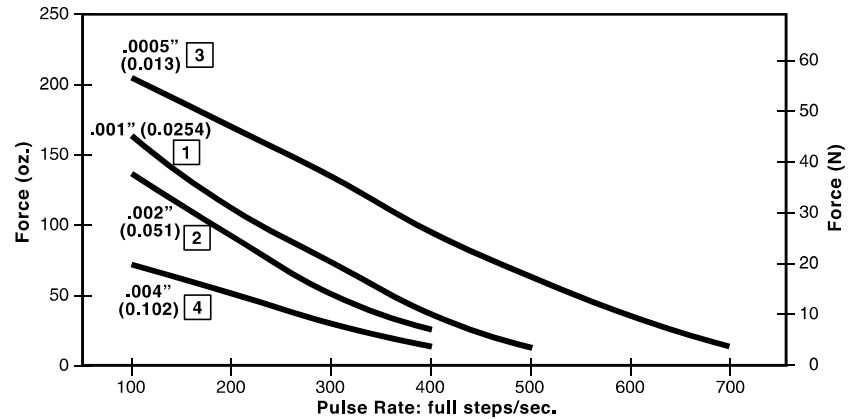
## 25000 G4 Series: Ø 25 mm (1.0-in) Can-Stack Performance Curves



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### FORCE vs. PULSE RATE

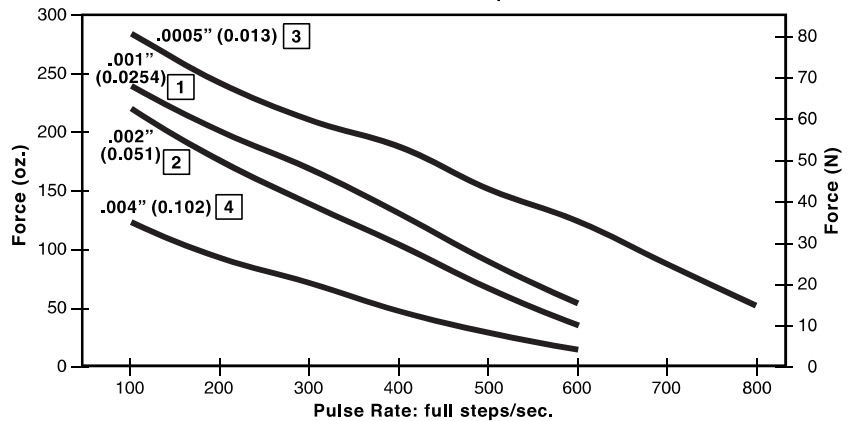
- L/R Drive
- Bipolar
- 100% Duty Cycle



### FORCE vs. PULSE RATE

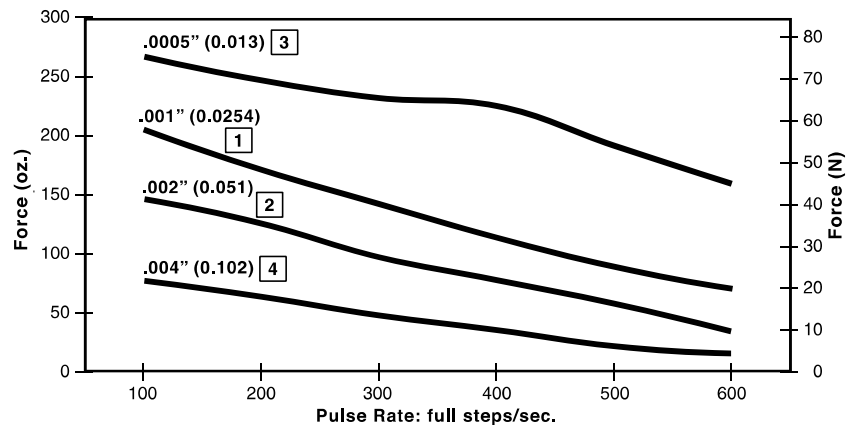
- L/R Drive
- Bipolar
- 25% Duty Cycle

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



### FORCE vs. PULSE RATE

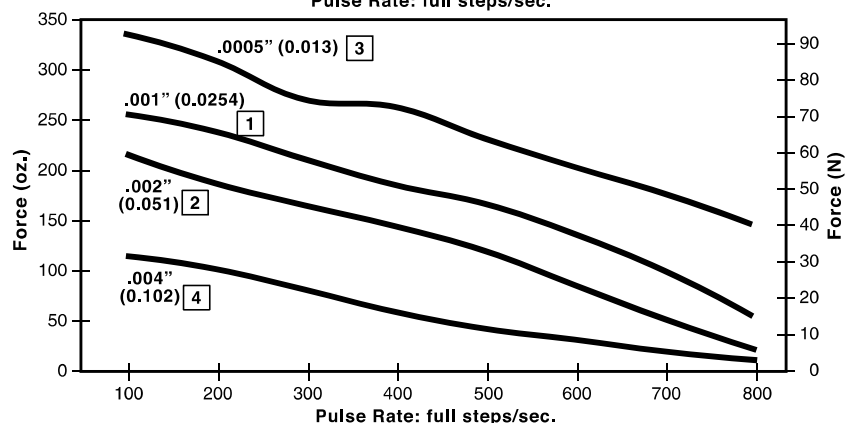
- Chopper Drive
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



### FORCE vs. PULSE RATE

- Chopper Drive
- Bipolar
- 25% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage

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



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

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

CAN-STACK LINEAR ACTUATOR MOTORS



G4 25000 Series, Non-captive

**TFE coated lead-screws for applications that require a permanent, dry lubricant**

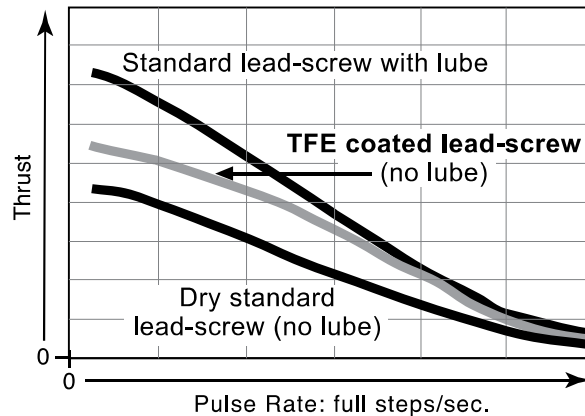
Haydon Kerk Motion Solutions, Inc. offers a TFE coated lead-screw option for its Can-Stack 25000 G4 Series linear actuators. This lead-screw option is ideal for applications where conventional oils and greases can not be used for lead-screw lubrication.

A non-lubricated TFE coated lead-screw provides improved performance in both life and thrust as compared to a “dry” stainless steel lead-screw. TFE can be applied to a wide variety of lead-screw pitches and is available for the Haydon® captive, non-captive and external linear actuators.

The TFE coated lead-screw is typically used for applications where contamination from grease or lubricants must be avoided, such as silicon wafer handling, clean rooms, medical equipment, laboratory instrumentation or anywhere precise linear motion is required.

**Lead-Screw Comparison**

**FORCE vs. PULSE RATE** L/R Drive • 100% Duty Cycle



**Home Position Switch**

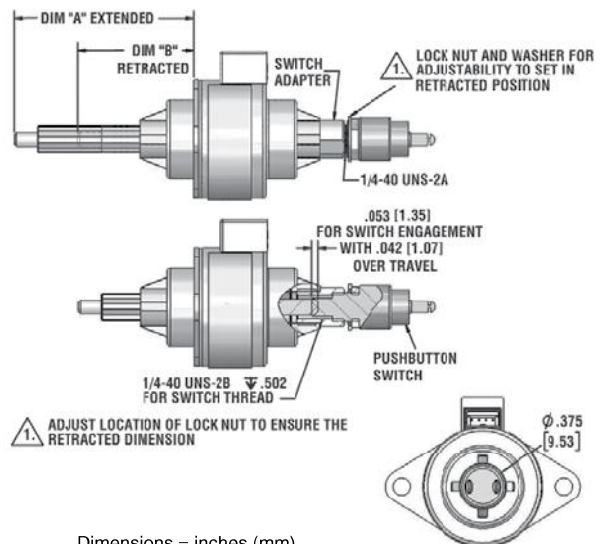
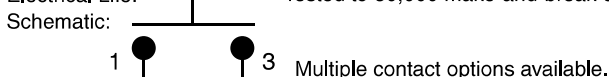
A miniature electronic home position switch capable of monitoring the home positions of linear actuators. The switch mounts on the rear sleeve of captive linear motors and allows the user to identify start, stop or home positions. Depending on your preference, contacts can be normally open or normally closed. The contact closure is repeatable to within one step position, identifying linear movements as low as 0.0005-in (0.0013 cm) per step. Multiple contact switches are also available.

The switch allows device manufacturers the ability to monitor movements more precisely for greater control and improved Q.C. When ordering motors with the home position switch, the part number should be preceded by an “S”

Activation force of 10 oz (2.78 N) required therefore may not be appropriate for smaller can-stack actuators.

**Specifications**

- Contact Ratings (Standard): 1.00 AMP @ 120 VAC  
1.00 AMP @ 28 VDC
- Operating Temperature: -30°C to +55°C (-22°F to 131°F)
- Contact Resistance: < 20 milliohms typ. initial at 2 - 4 V DC, 100 mA
- Electrical Life: Tested to 60,000 make-and-break cycles at full load



Dimensions = inches (mm)

S25000 Series Home Position Switch		
STROKE	DIM "A" Extended	DIM "B" Retracted
.512 (13)	1.329 (33.76)	.787 (19.99)
.708 (18)	1.743 (44.27)	.994 (25.25)
.984 (25)	2.293 (58.24)	1.269 (32.23)
1.22 (31)	2.765 (70.23)	1.505 (38.23)

## 25000 G4 Series Options: G4 Series E8T Encoder and Proximity Sensor



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### G4 25000 Series E8T Encoder

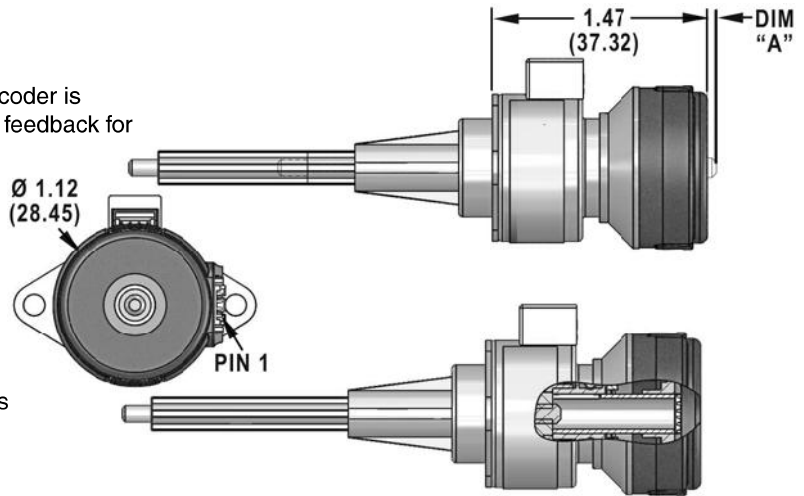
The G4 25000 Series E8T transmissive optical encoder is designed to provide the digital quadrature encoder feedback for high volume, compact space applications.

#### Features:

- Resolutions from 180 to 720
- Single ended / Differential
- Frequency response to 100 kHz
- Low power consumption, 5 V @ 30 mA max.
- High retention polarized connector

#### Assembly Options:

- Differential line driver with complementary outputs
- Detachable cable
- Through hole cover



Dimensions = inches (mm)

25000 G4 SERIES with E8T	
STROKE	DIM "A"
.512 (13)	0
.708 (18)	0
.984 (25)	.071 (1.80)
1.22 (31)	.307 (7.80)

25000 G4 SERIES SINGLE ENDED PINS	
PIN #	DESCRIPTION
1	+5 VDC Power
2	A Channel
3	Ground
4	B Channel

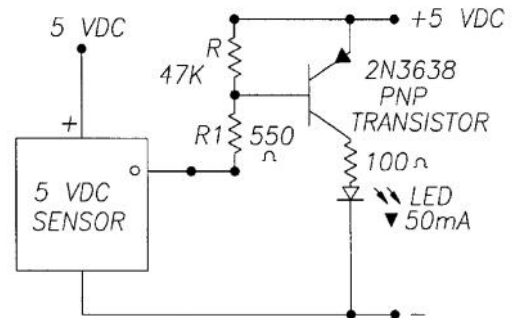
25000 G4 SERIES DIFFERENTIAL	
PIN #	DESCRIPTION
1	Ground
2	A Channel
3	A- Channel
4	+5 VDC Power
5	B Channel
6	B- Channel

### End of Stroke Proximity Sensor

The sensor incorporates a hall effect device, which is activated by a rare earth magnet embedded in the end of the internal screw. The compact profile of the sensor allows for installation in limited space applications.

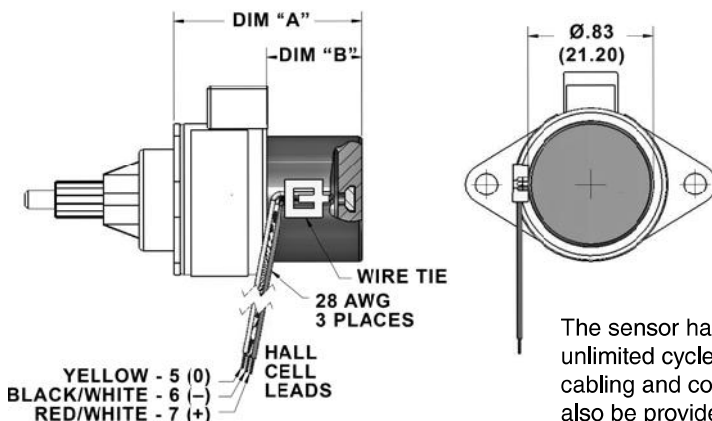
#### Specifications

- Supply Voltage (VDC): 3.8 min. to 24 max.  
 Current consumption: 10 mA max.  
 Output voltage (operated): 0.15 typ., 0.40 max.; Sinking 20 mA max.  
 Output current: 20 mA max.  
 Output leakage current (released): 10µA max. @ Vout = 24 VDC; Vcc = 24 VDC  
 Output switching time  
 Rise, 10 to 90%: .05 µs typ., 1.5 µs max. @ Vcc = 12 V, RL = 1.6 KOhm  
 Fall, 90 to 10%: .15 µs typ., 1.5 µs max. @ CL = 20 pF  
 Temperature: - 40 to +150°C



Note: Sensor is category 2 ESD sensitive per DOD-STD-1686A. Assembly operations should be performed at workstations with conductive tops and operators grounded.

#### Dimensional Drawings



The sensor has virtually unlimited cycle life. Special cabling and connectors can also be provided.

Dimensions = inches (mm)

P25000 G4 SERIES		
STROKE	DIM "A"	DIM "B"
.512 (13)	1.248 (31.71)	.632 (16.05)
.708 (18)	1.449 (36.81)	.833 (21.15)
.984 (25)	1.723 (43.76)	1.106 (28.10)
1.22 (31)	1.959 (49.76)	1.343 (34.10)

**Haydon® 37000 Series – exceptionally high linear force-to-size ratio, ideal for precision motion.**

Outstanding durability and high performance. The G4 Series features high energy neodymium magnets and dual ball bearings.

Ø36 mm (1.4-in)  
Non-captive



**Specifications**

Ø 36 mm (1.4-in) motor					
Wiring		Bipolar			
Part No.	Captive	3744 ■■■-■■■-■■■	3754 ■■■-■■■-■■■		
	Non-captive	3734 ■■■-■■■-■■■	3784 ■■■-■■■-■■■		
	External	E3744 ■■■-■■■-■■■	E3754 ■■■-■■■-■■■		
Step angle		7.5°		15°	
Winding voltage		5 VDC	12 VDC	5 VDC	12 VDC
Current (RMS)/phase		561 mA	230 mA	561 mA	230 mA
Resistance/phase		8.9 Ω	52 Ω	8.9 Ω	52 Ω
Inductance/phase		11.6 mH	65 mH	8.5 mH	46 mH
Rotor inertia		8.5 gcm <sup>2</sup>			
Power consumption		5.6 W			
Insulation Class		Class B			
Weight		4.2 oz (49 g)			
Insulation resistance		20 MΩ			

Step	Linear Travel/Step		Order Code I.D.
	inches	mm	
7.5° Angle	0.0005	0.013	3
	0.001	0.0254	1
	0.002	0.051	2
15° Angle	0.001	0.0254	1
	0.002	0.051	2
	0.004	0.102	4

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

Standard motors are Class B rated for maximum temperature of 130° C (266° F).

**Identifying the Can-Stack part number codes when ordering**



CAN-STACK LINEAR ACTUATOR MOTORS

<b>E</b>	<b>37</b>	<b>4</b>	<b>4</b>	<b>2</b>	-	<b>05</b>	-	<b>1015</b>
<b>Prefix</b> (include only when using the following) <b>E</b> = External <b>K</b> = External with 40° thread form <b>P</b> = Proximity Sensor <b>S</b> = Home Position Switch	<b>Series number designation</b> <b>37 = 37000</b> (Series numbers represent approximate diameters of motor body)	<b>Style</b> <b>3</b> = 7.5° non-captive <b>4</b> = 7.5° Captive or External (use "E" or "K" Prefix for External version) <b>5</b> = 15° Captive or External (use "E" or "K" Prefix for External version) <b>8</b> = 15° non-captive	<b>Coils</b> <b>4</b> = Bipolar (4 wire)	<b>Code ID Resolution Travel/Step</b> <b>1</b> = .001-in (.0254) <b>2</b> = .002-in (.051) <b>3</b> = .0005-in (.013) <b>4</b> = .004-in (.102)		<b>Voltage</b> <b>05</b> = 5 VDC <b>12</b> = 12VDC <i>Custom V available</i>	<b>Suffix</b> <b>Stroke</b> Example: -1015 = captive 38.1mm stroke with leads <b>Suffix also represents:</b> -XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.	

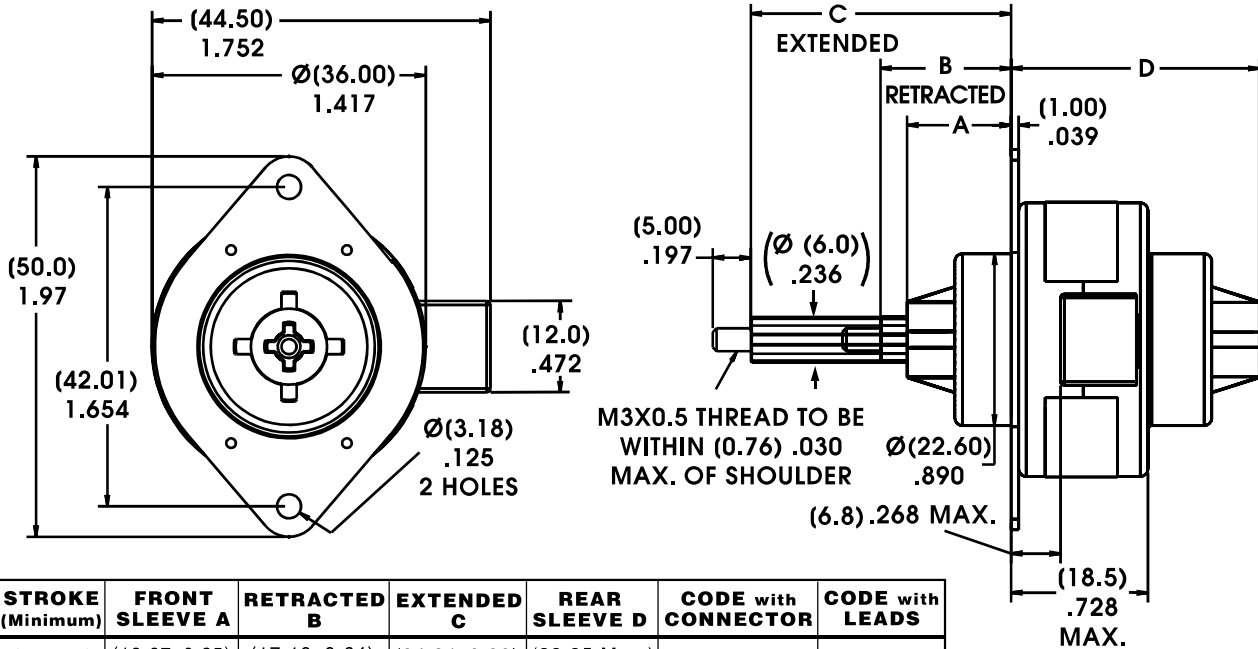
**NOTE:** Dashes must be included in Part Number (-) as shown above. For assistance or order entry, call our engineering team at 203 756 7441.

**SCREW LENGTH OPTIONS and other OPTIONAL ASSEMBLIES also available**



### Captive Lead-screw

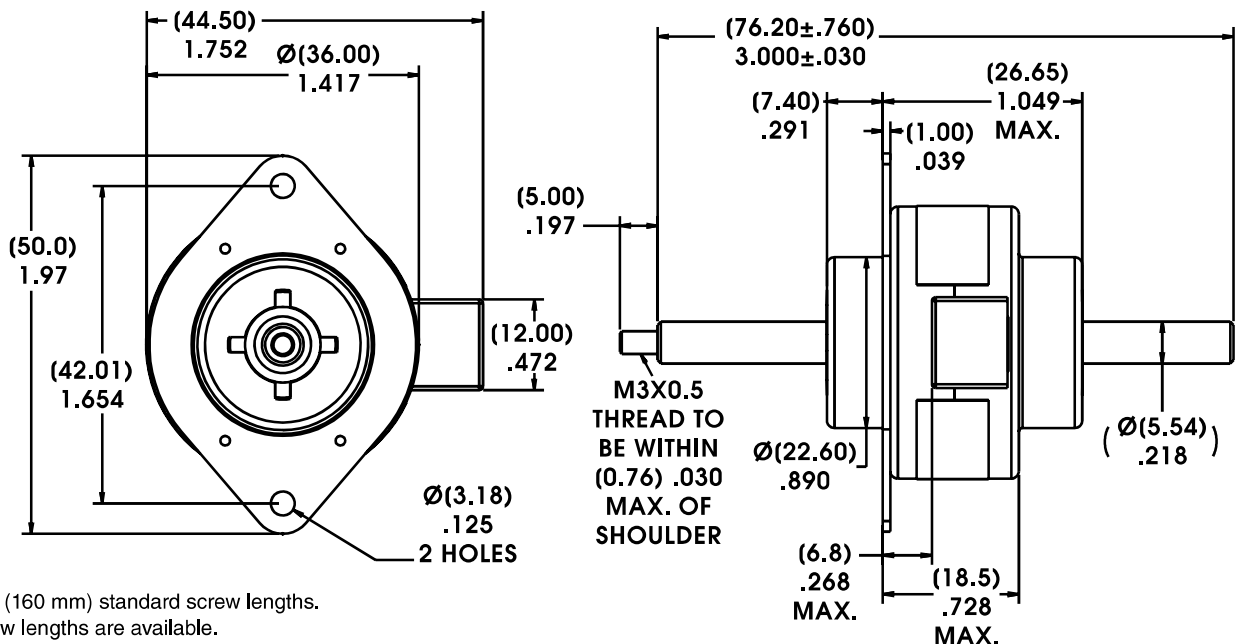
Dimensions = (mm) inches



STROKE (Minimum)	FRONT SLEEVE A	RETRACTED B	EXTENDED C	REAR SLEEVE D	CODE with CONNECTOR	CODE with LEADS
(16 mm) .631	(13.67±0.25) .538±.010	(17.19±0.64) .677±.025	(34.24±0.38) 1.348±.015	(33.85 Max.) 1.333 Max.	- 905	- 1005
(25.4 mm) 1.00	(26.37±0.25) 1.038±.010	(29.89±0.64) 1.177±.025	(56.94±0.38) 2.348±.015	(46.55 Max.) 1.833 Max.	- 910	- 1010
(38.1 mm) 1.50	(39.07±0.25) 1.538±.010	(42.59±0.64) 1.677±.025	(85.04±0.38) 3.348±.015	(59.25 Max.) 2.333 Max.	- 915	- 1015

### Non-Captive Lead-screw

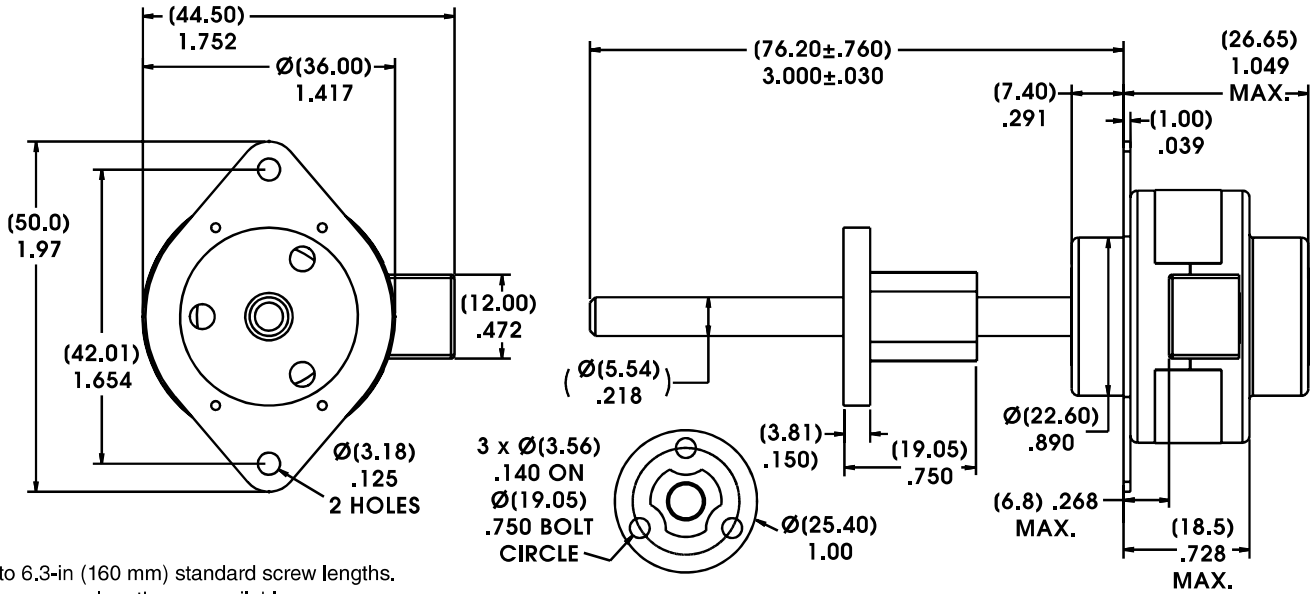
Dimensions = (mm) inches



Up to 6.3-in (160 mm) standard screw lengths.  
Longer screw lengths are available.

**External Linear**

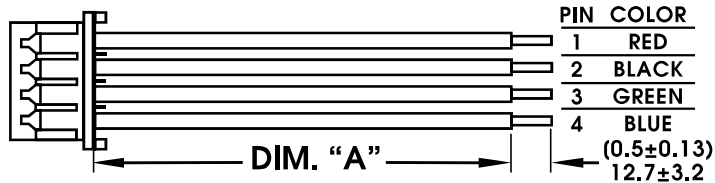
Dimensions = (mm) inches



Up to 6.3-in (160 mm) standard screw lengths.  
Longer screw lengths are available.

**Connector**

CONNECTOR:  
JST PHR-4  
TERMINAL: JST  
SPH-002T-PO.5S



Part Number	Dimension "A"
56-1436-1	(6.0 ±0.39) 152 ±10 mm
56-1436-2	(12 ±0.39) 305 ±10 mm

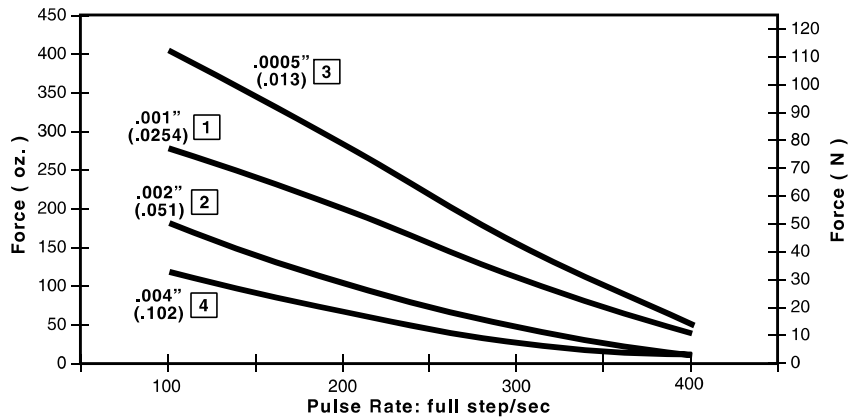
# 37000 G4 Series: Ø 36 mm (1.4-in) Can-Stack Performance Curves



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## FORCE vs. PULSE RATE

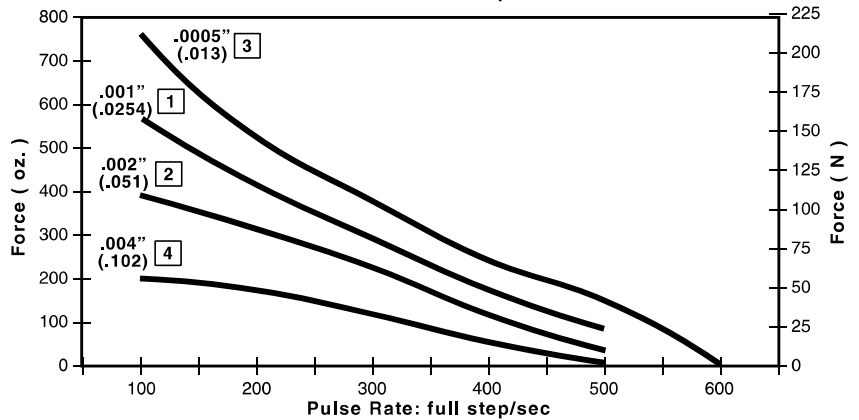
- L/R Drive
- Bipolar
- 100% Duty Cycle



## FORCE vs. PULSE RATE

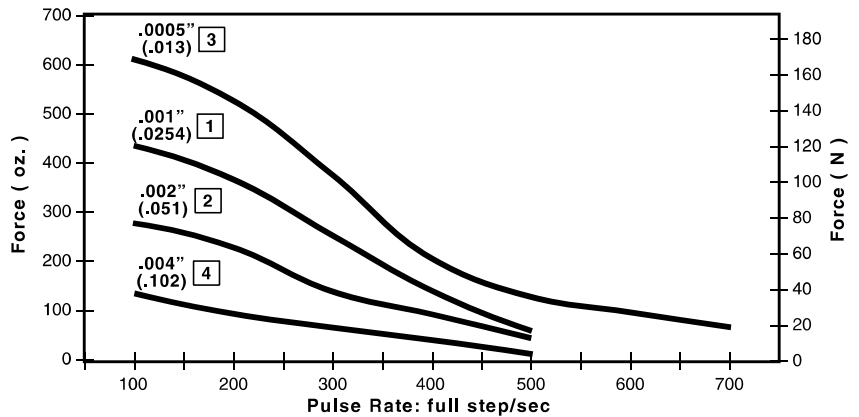
- L/R Drive
- Bipolar
- 25% Duty Cycle

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



## FORCE vs. PULSE RATE

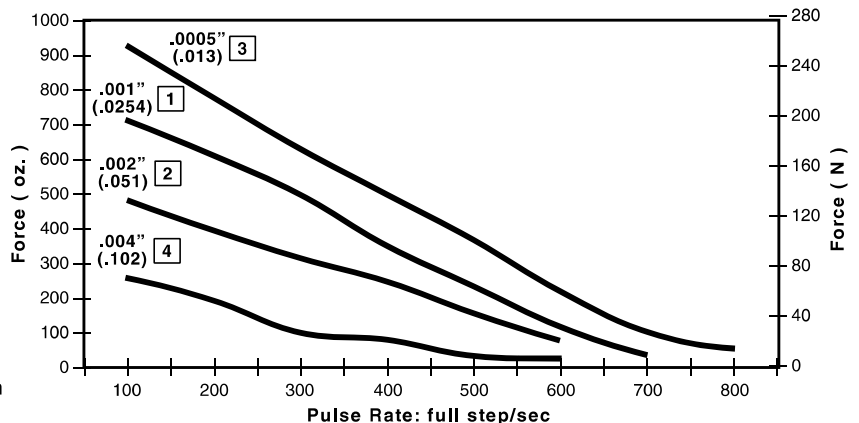
- Chopper Drive
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



## FORCE vs. PULSE RATE

- Chopper Drive
- Bipolar
- 25% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage

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



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

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

CAN-STACK LINEAR ACTUATOR MOTORS



G4 37000 Series, External Linear

**TFE coated lead-screws for applications that require a permanent, dry lubricant**

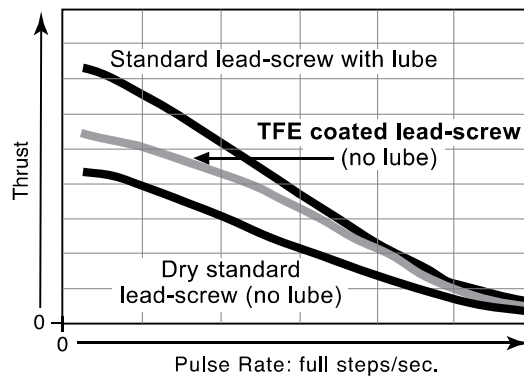
Haydon Kerk Motion Solutions, Inc. offers a TFE coated lead-screw option for its Can-Stack 37000 G4 Series linear actuators. This lead-screw option is ideal for applications where conventional oils and greases can not be used for lead-screw lubrication.

A non-lubricated TFE coated lead-screw provides improved performance in both life and thrust as compared to a “dry” stainless steel lead-screw. TFE can be applied to a wide variety of lead-screw pitches and is available for the Haydon® captive, non-captive and external linear linear actuators.

The TFE coated lead-screw is typically used for applications where contamination from grease or lubricants must be avoided, such as silicon wafer handling, clean rooms, medical equipment, laboratory instrumentation or anywhere precise linear motion is required.

**Lead-Screw Comparison**

**FORCE vs. PULSE RATE L/R Drive • 100% Duty Cycle**

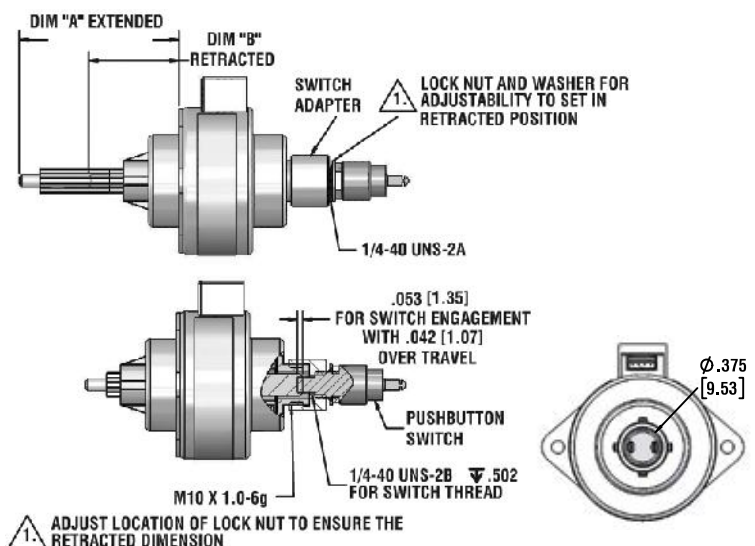


**Home Position Switch**

A miniature electronic home position switch capable of monitoring the home positions of linear actuators. The switch mounts on the rear sleeve of captive linear motors and allows the user to identify start, stop or home positions. Depending on your preference, contacts can be normally open or normally closed. The contact closure is repeatable to within one step position, identifying linear movements as low as 0.0005-in (0.0013 cm) per step. Multiple contact switches are also available.

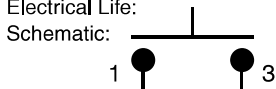
The switch allows device manufacturers the ability to monitor movements more precisely for greater control and improved Q.C. When ordering motors with the home position switch, the part number should be preceded by an “S”.

Activation force of 10 oz (2.78 N) required therefore may not be appropriate for smaller can-stack actuators.



**Specifications**

- Contact Ratings (Standard): 1.00 AMP @ 120 VAC  
1.00 AMP @ 28 VDC
- Operating Temperature: -30°C to +55°C (-22°F to 131°F)
- Contact Resistance: < 20 milliohms typ. initial at 2 - 4 V DC, 100 mA
- Electrical Life: Tested to 60,000 make-and-break cycles at full load



Dimensions = inches (mm)

S37000 G4 SERIES		
STROKE	DIM "A"	DIM "B"
.631 (16)	1.348 (34.24)	.677 (17.19)
1.00 (25.4)	2.348 (56.94)	1.177 (28.89)
1.50 (38.1)	3.348 (85.04)	1.677 (42.59)



## 37000 G4 Series: Ø 36 mm (1.4-in) Can-Stack Performance Curves



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### G4 37000 Series E8T Encoder

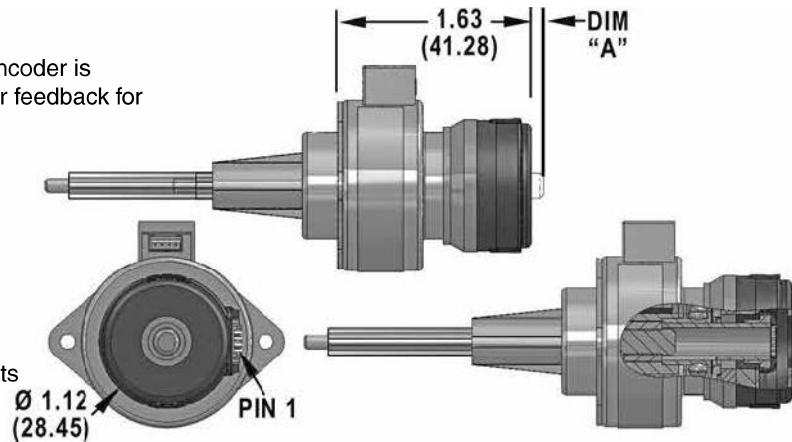
The G4 37000 Series E8T transmissive optical encoder is designed to provide the digital quadrature encoder feedback for high volume, compact space applications.

#### Features:

- Resolutions from 180 to 720
- Single ended / Differential
- Frequency response to 100 kHz
- Low power consumption, 5 V @ 30 mA max.
- High retention polarized connector

#### Assembly Options:

- Differential line driver with complementary outputs
- Detachable cable
- Through hole cover



Dimensions = inches (mm)

37000 G4 SERIES with E8T	
STROKE	DIM "A"
.631 (16)	0
1.00 (25.4)	.098 (2.50)
1.50 (38.1)	.598 (15.20)

37000 G4 SERIES SINGLE ENDED PINS	
PIN #	DESCRIPTION
1	+5 VDC Power
2	A Channel
3	Ground
4	B Channel

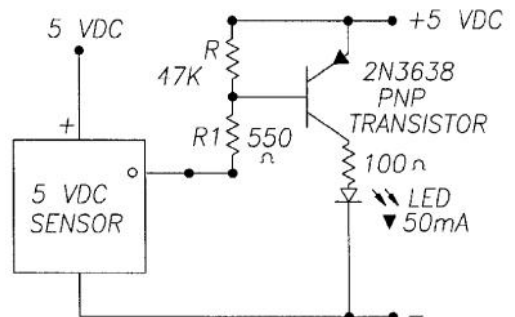
37000 G4 SERIES DIFFERENTIAL	
PIN #	DESCRIPTION
1	Ground
2	A Channel
3	A- Channel
4	+5 VDC Power
5	B Channel
6	B- Channel

### End of Stroke Proximity Sensor

The sensor incorporates a hall effect device, which is activated by a rare earth magnet embedded in the end of the internal screw. The compact profile of the sensor allows for installation in limited space applications.

#### Specifications

Supply Voltage (VDC):	3.8 min. to 24 max.
Current consumption:	10 mA max.
Output voltage (operated):	0.15 typ., 0.40 max.; Sinking 20 mA max.
Output current:	20 mA max.
Output leakage current (released):	10µA max. @ Vout = 24 VDC; Vcc = 24 VDC
Output switching time	
Rise, 10 to 90%:	.05 µs typ., 1.5 µs max. @ Vcc = 12 V, RL = 1.6 KOhm
Fall, 90 to 10%:	.15 µs typ., 1.5 µs max. @ CL = 20 pF
Temperature:	- 40 to +150°C

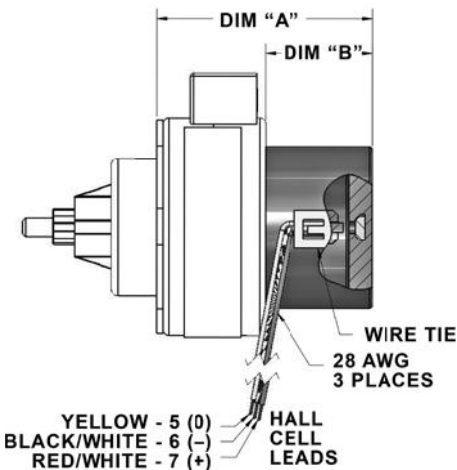


Note: Sensor is category 2 ESD sensitive per DOD-STD-1686A. Assembly operations should be performed at workstations with conductive tops and operators grounded.

Dimensions = inches (mm)

P37000 G4 SERIES		
STROKE	DIM "A"	DIM "B"
.631 (16)	1.404 (35.65)	.695 (17.65)
1.00 (25.4)	1.906 (48.41)	1.197 (30.41)
1.50 (38.1)	2.409 (61.18)	1.700 (43.18)

#### Dimensional Drawings



The sensor has virtually unlimited cycle life. Special cabling and connectors can also be provided.



## Specifications

Ø 15 mm (.59-in) motor			
Wiring		Bipolar	
Part No.	Captive	LC1574 ■-■-■-■	
	External Linear	LE1574 ■-■-■-■	
Step angle		18°	
Winding voltage		4 VDC	5 VDC
Current (RMS)/phase		0.2 A	0.16 A
Resistance/phase		20 Ω	31 Ω
Inductance/phase		5.6 mH	8.7 mH
Power consumption		1.6 W	
Rotor inertia		0.09 gcm <sup>2</sup>	
Insulation Class		Class B	
Weight		1 oz (28 g)	
Insulation resistance		100 MΩ	
Stroke		0.5-in. (12.7 mm)	

## Haydon® 15000 Series: The world's smallest commercial linear stepper motor.

The motor features bi-directional travel, ball bearings and a light weight. Motors are available in captive and external linear versions.

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

\* Values truncated

## Connectors for Series 15000

Standard Connectors Available	JST PHR-4
	12 inches (304.8 mm) flying leads
	Molex 51021-0400

## Connector Information

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

## Flying Leads

Length		Order Code I.D. Suffix (add to end on I.D.)
inches	mm	
12.0	304.8	- 999

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

Standard motors are Class B rated for maximum temperature of 130° C (266° F).

## Identifying the Can-Stack part number codes when ordering

<b>LC</b>	<b>15</b>	<b>7</b>	<b>4</b>	<b>W</b>	<b>04</b>	<b>999</b>
-----------	-----------	----------	----------	----------	-----------	------------

### Prefix

**LC** = Captive  
**LE** = External Linear

### Series number designation

**15** = 15000  
(Series numbers represent approximate diameters of motor body)

### Style

**7** = 18° captive

### Coils

**4** = Bipolar (4 wire)

### Code ID Resolution Travel/Step

**W** = .00079-in (.02)  
**AQ** = .00098-in (.025)  
**BH** = .00197-in (.05)  
**DC** = .00394-in (.10)

### Voltage

**04** = 4 VDC  
**05** = 5 VDC  
**12** = 12VDC  
*Custom V available*

### Suffix

Example: -999 = 12-in. leads

### Suffix also represents:

-XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

**NOTE:** Dashes must be included in Part Number (-) as shown above. For assistance or order entry, call our engineering team at 203 756 7441.

SCREW LENGTH  
OPTIONS and other  
OPTIONAL ASSEMBLIES  
also available

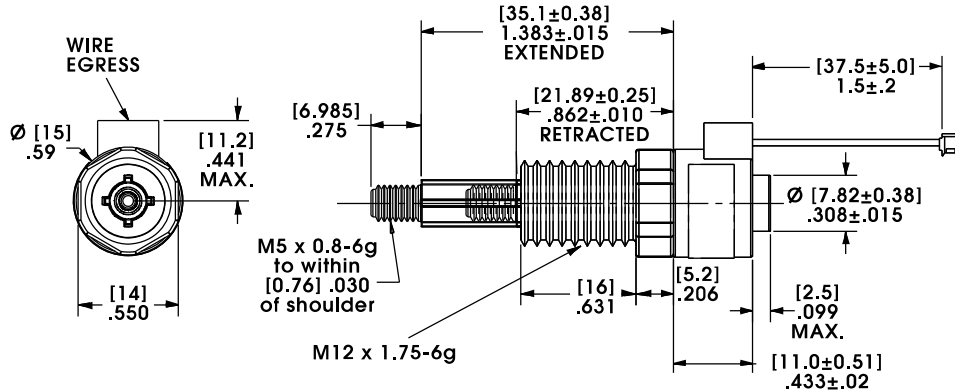
# 15000 L Series: Ø 15 mm (.59-in) Can-Stack Performance Curves



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## Captive Lead-screw

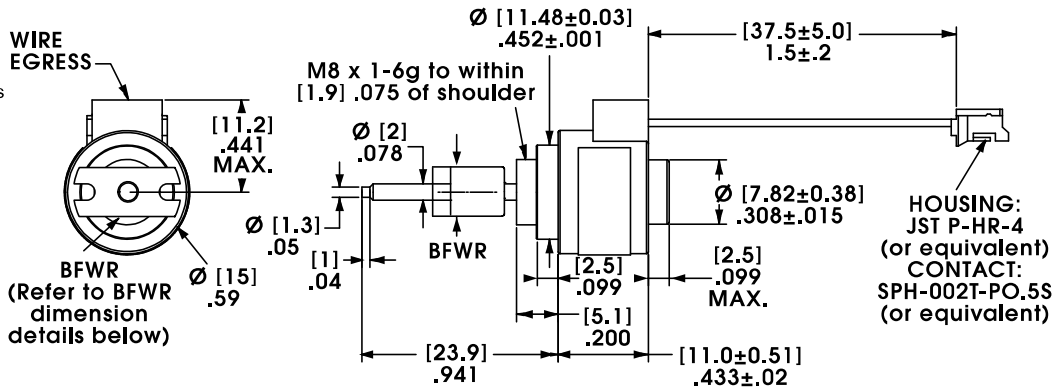
Dimensions = (mm) inches



## External Linear

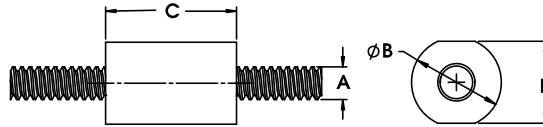
Dimensions = (mm) inches

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



## MICRO Series Nut Styles

Standard nut styles. Consult the factory for custom solutions.

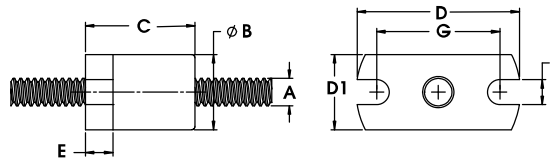


## Barrel Nut Style

BFW Nut Style	Screw Diameter A	Nut Diameter B	Nut Length C	Nut Flats D	Dynamic Load	Drag Torque
	inch (mm)	inch (mm)	inch (mm)	inch (mm)	lbs (Kg)	oz-in. (N-m)
<b>BFWB</b> Barrel Mount	5/64 (2)	0.22 (5.5)	0.32 (8)	0.20 (5.08)	10 (4.5)	Free Wheeling

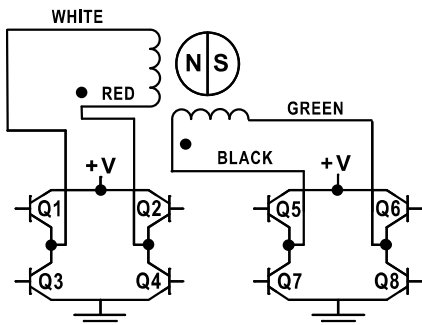
## Rectangular Nut Style

An optional **ZBMR Anti-Backlash Nut** is also available, please see page 29 for more information.



BFW Nut Style	Screw Diameter A	Nut Diameter B	Nut Length C	Flange Height D1	Flange Width D	Flange Thickness E	Slot Width F	Bolt Circle Diameter G	Dynamic Load	Drag Torque
	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	lbs (Kg)	oz-in. (N-m)
<b>BFWR</b> Rectangular Flange	5/64 (2)	0.22 (5.5)	0.32 (8)	0.22 (5.5)	0.47 (11.9)	0.08 (2.0)	0.07 (1.8)	0.35 (9.0)	10 (4.5)	Free Wheeling

## 15000 L Series Wiring



## 15000 L Series Stepping Sequence

EXTEND CW ↓

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

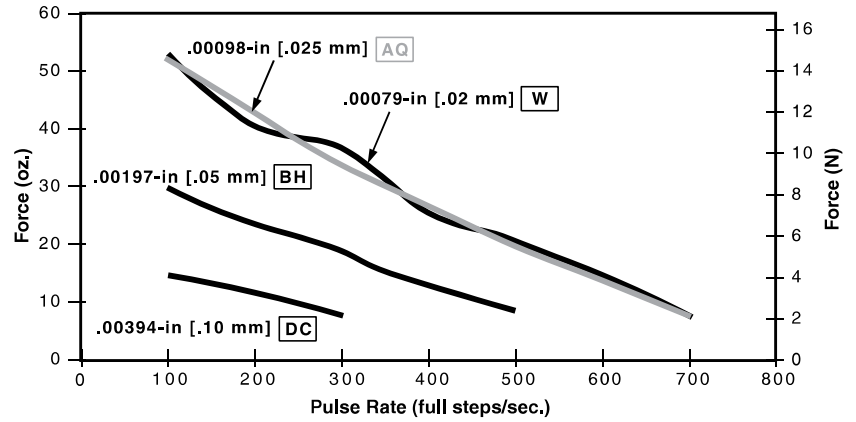
RETRACT CCW ↑

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

CAN-STACK LINEAR ACTUATOR MOTORS

**FORCE vs. PULSE RATE**

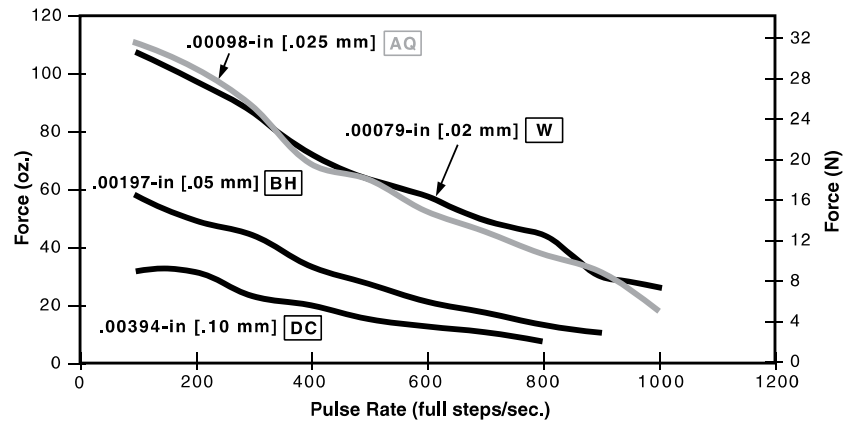
- L/R Drive
- Bipolar
- 100% Duty Cycle



**FORCE vs. PULSE RATE**

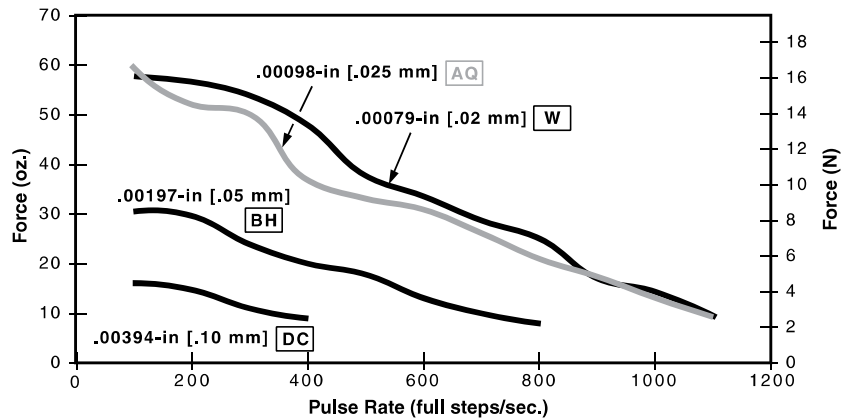
- L/R Drive
- Bipolar
- 25% Duty Cycle

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



**FORCE vs. PULSE RATE**

- Chopper Drive
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



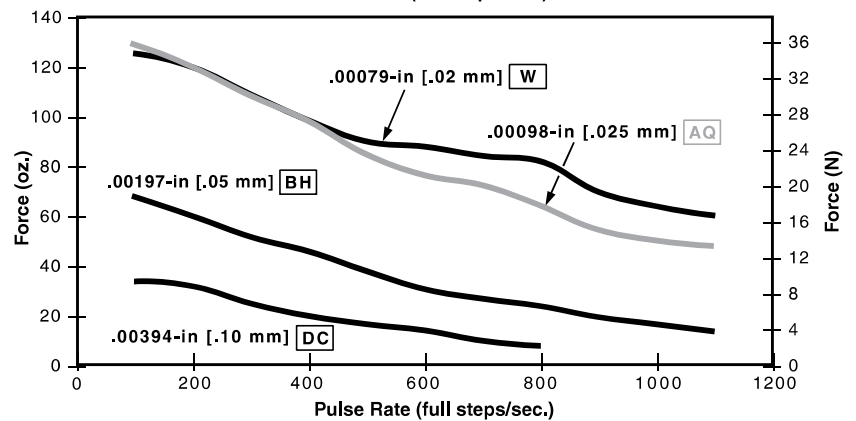
**FORCE vs. PULSE RATE**

- Chopper Drive
- Bipolar
- 25% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage

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

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

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



## Z20000 Series: Ø 20 mm (.79-in) Can-Stack Linear Actuator



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### Haydon® Z20000 Series – economical stepper motors for high volume, applications.

Utilizing rare earth (neodymium) magnets, the Haydon® Z-Series linear actuators consistently deliver exceptional performance at an economical price. Also available in a special “earless” configuration without a mounting flange, which is ideal for space constrained applications.

Three motors are available... captive, non-captive and external linear. All units are built with reliable dual ball bearings.

### Specifications

Ø 20 mm (.79-in) Z-Series motor		
Wiring		Bipolar
Part No.	Captive	Z2054 - - - -
	Non-captive	Z2084 - - - -
	External*	Z2054 - - - -9 - - *
Step angle		15°
Winding voltage	5 VDC	12 VDC
Current (RMS)/phase	250 mA	100 mA
Resistance/phase	20 Ω	118 Ω
Inductance/phase	5.4 mH	27 mH
Power consumption	2.5 W	
Rotor inertia	1.13 gcm <sup>2</sup>	
Insulation Class	Class B	
Weight	.85 oz. (24.1 g)	
Insulation resistance	20 M Ω	



Linear Travel / Step		Order Code I.D.
15° Step Angle		
inches	mm	
0.001	0.0254	1
0.002	0.051	2
0.004	0.102	4

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

Standard motors are Class B rated for maximum temperature of 130° C (266° F).

\*When ordering Z-Series External Linear motors, add -900 to end of the Part Number.

Option: Earless Z20000 Series Actuator



CAN-STACK LINEAR ACTUATOR MOTORS

### Identifying the Can-Stack part number codes when ordering

<b>Z</b>	<b>20</b>	<b>5</b>	<b>4</b>	<b>2</b>	-	<b>05</b>	-	<b>900</b>
<b>Prefix</b> Z = Series Code  (For a AC Synchronous compatibility information, see page 190.)	<b>Series number designation</b> <b>20 = 20000</b>  (Series numbers represent approximate diameters of motor body)	<b>Style</b> <b>5</b> = 15° Captive or External (use -900 Suffix for External version) <b>8</b> = 15° non-captive	<b>Coils</b> <b>4</b> = Bipolar (4 wire)	<b>Code ID Resolution Travel/Step</b> <b>1</b> = .001-in (.0254) <b>2</b> = .002-in (.051) <b>4</b> = .004-in (.102)		<b>Voltage</b> <b>05</b> = 5 VDC <b>12</b> = 12VDC  Custom V available		<b>Suffix</b> <b>Stroke</b> Example: -900 used to code Z-Series external linear <b>Suffix also represents:</b> -XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

**NOTE:** Dashes must be included in Part Number (-) as shown above. For assistance or order entry, call our engineering team at 203 756 7441.

#### OPTIONS

- SCREW LENGTH OPTIONS
- “EARLESS” NO FLANGE
- TFE COATED LEAD-SCREWS
- HIGH TEMPERATURE ASSEMBLY
- HOME POSITION SWITCH
- PROXIMITY SENSOR
- OPTIONAL ASSEMBLIES

**Haydon kerk Express**  
www.HaydonKerkExpress.com  
Standard products available 24-hrs.



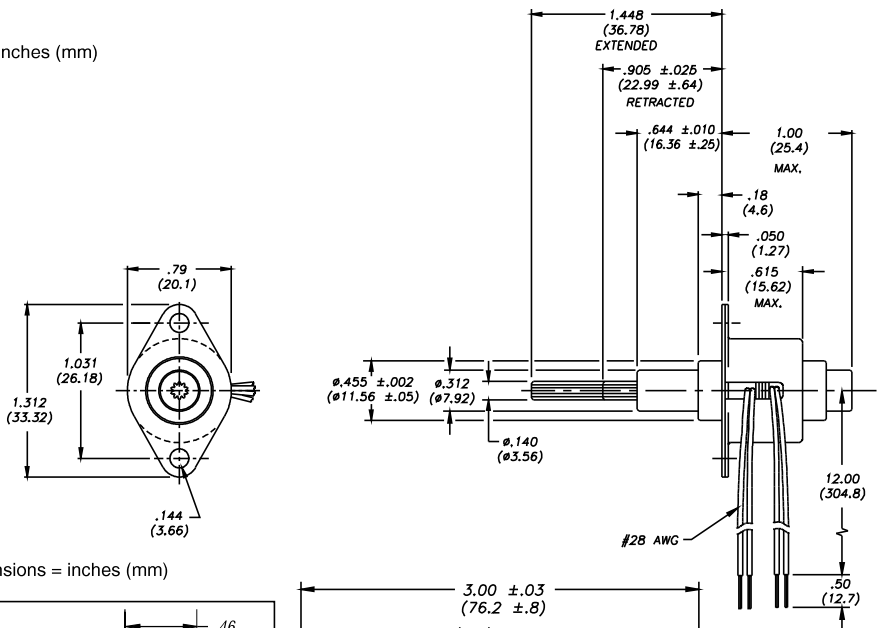
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**Captive Lead-screw** Dimensions = inches (mm)

**Spline Options**

#2-56 UNC-2A THREAD  
or M2 x 0.4 TO BE WITHIN  
.030 (.76) MAX. OF SHOULDER

Spline is also available with optional  
#4-40 UNC-2A or M3 x 0.5 threaded  
adapter as shown in  
non-captive drawing.



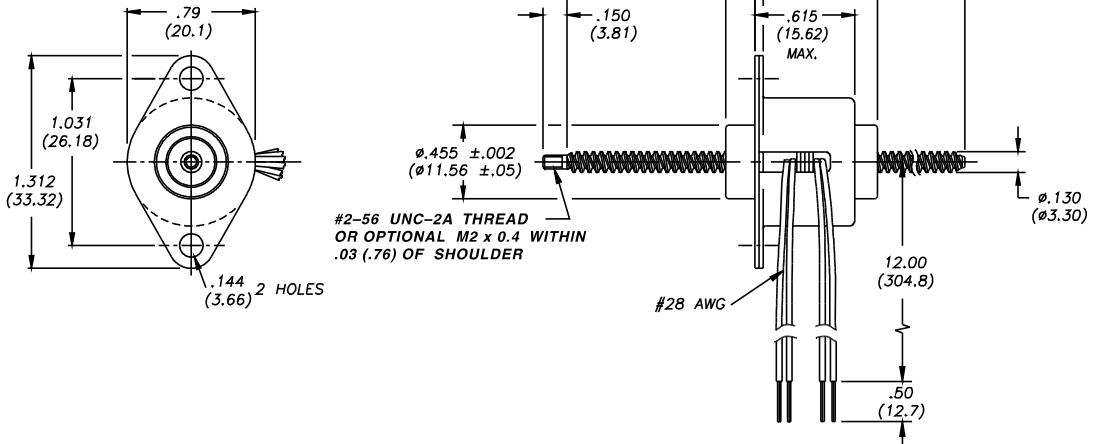
**Non-Captive Lead-screw** Dimensions = inches (mm)

**Optional Adapters**

M3 x 0.5 THREAD  
TO WITHIN .051 (1.3)  
OF SHOULDER

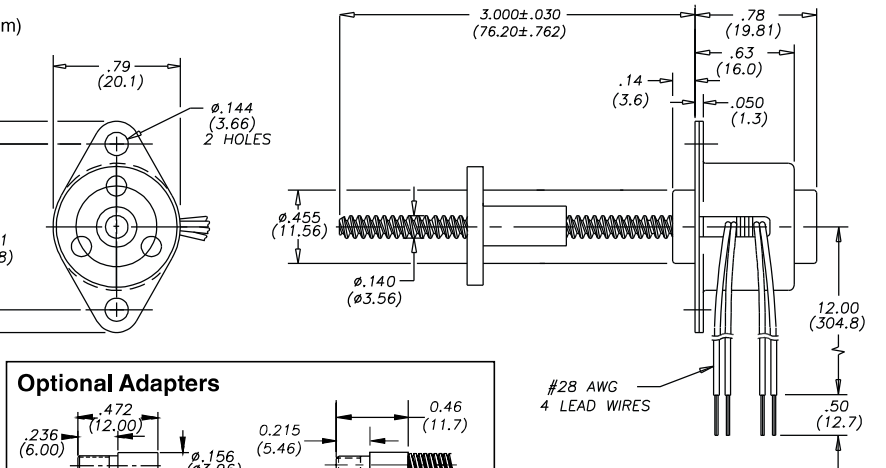
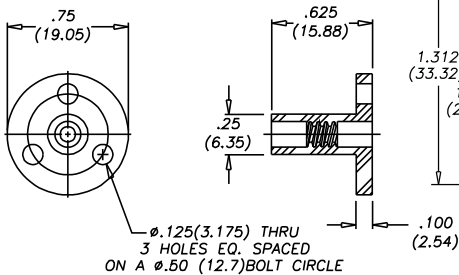
#4-40 UNC-2A THREAD or  
M3 x 0.5 TO WITHIN .06 (1.52)  
OF SHOULDER

Up to 6-in (152 mm)  
standard screw  
lengths.  
Longer screw  
lengths are  
available.



**External Linear** Dimensions = inches (mm)

Up to 6-in (152 mm) standard screw lengths.  
Longer screw lengths are available.



**Optional Adapters**

M3 x 0.5 THREAD  
TO WITHIN .051 (1.3)  
OF SHOULDER

#4-40 UNC-2A THREAD or  
M3 x 0.5 TO WITHIN .06 (1.52)  
OF SHOULDER

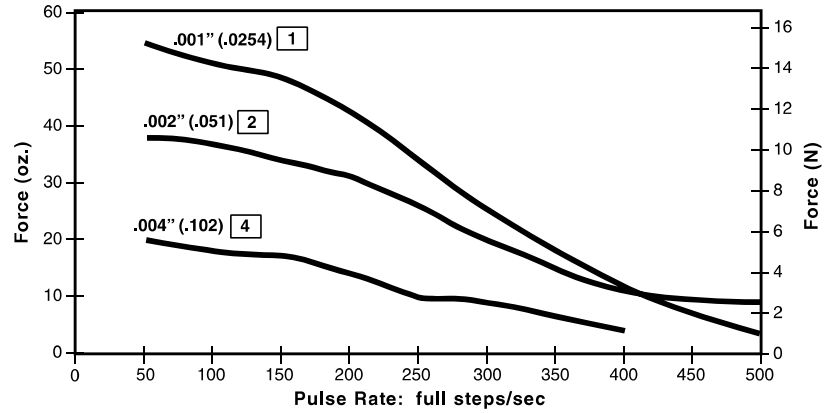
## Z20000 Series: Can-Stack Performance Curves



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### FORCE vs. PULSE RATE

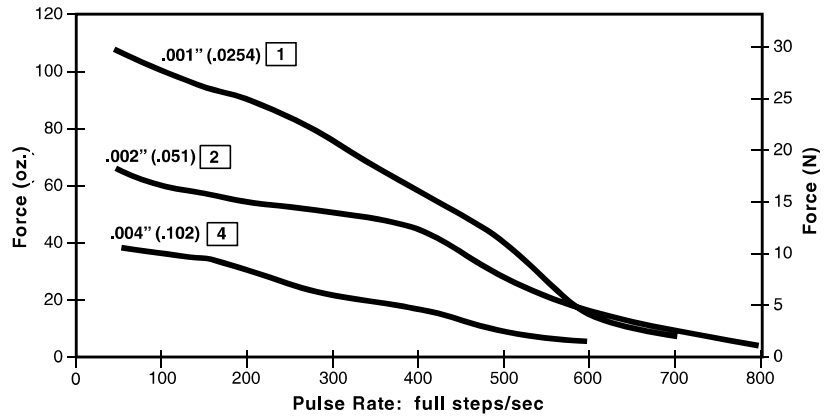
- L/R Drive
- Bipolar
- 100% Duty Cycle



### FORCE vs. PULSE RATE

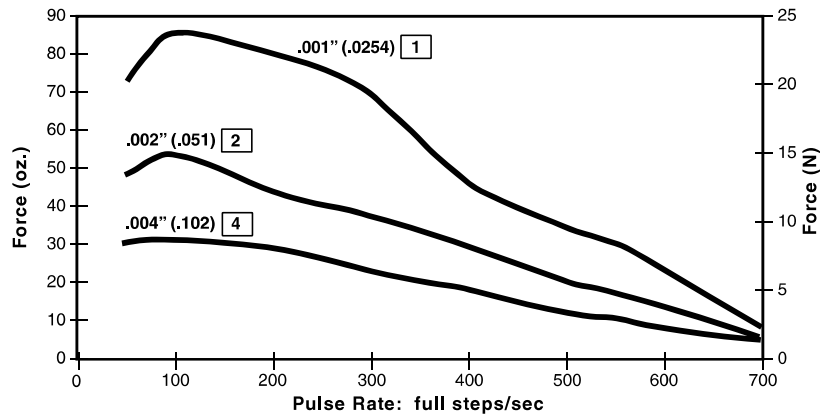
- L/R Drive
- Bipolar
- 25% Duty Cycle

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



### FORCE vs. PULSE RATE

- Chopper Drive
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



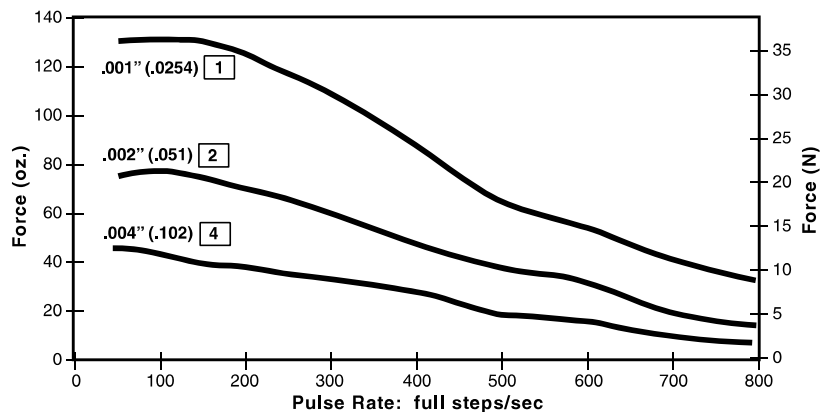
### FORCE vs. PULSE RATE

- Chopper Drive
- Bipolar
- 25% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage

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

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

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



**TFE Coated Lead-screws**

Haydon Kerk Motion Solutions, Inc. offers a TFE coated lead-screw option for its Can-Stack Series linear actuators. This lead-screw option is ideal for applications where conventional oils and greases can not be used for lead-screw lubrication.

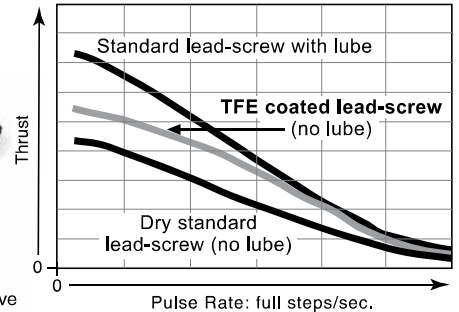
A non-lubricated TFE coated lead-screw provides improved performance in both life and thrust as compared to a “dry” stainless steel lead-screw. TFE can be applied to a wide variety of lead-screw pitches and is available for the Haydon® captive, non-captive and external linear linear actuators.



**Lead-Screw Comparison**

**FORCE vs. PULSE RATE**

L/R Drive  
100% Duty Cycle

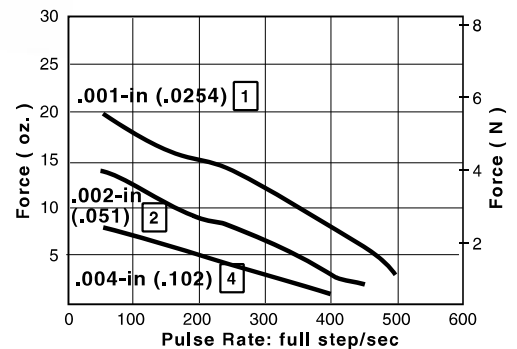


**Specially engineered can-stack linear actuators for high temperature applications**

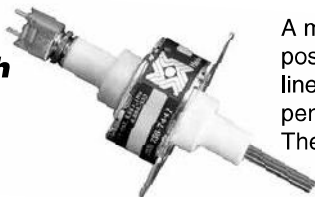
Haydon Kerk Motion Solutions, Inc. offers a line of stepping motors specially designed for high temperature environments. The motors are constructed using the proven techniques employed for Haydon® motors. Special materials which meet class F temperature ratings are used in construction. Specialized components include high temperature bobbins, coils, lead wires, lubricant and adhesives. For more information contact our applications group.

**Z20000 Series HIGH TEMPERATURE FORCE vs. PULSE RATE**

L/R Drive  
100% Duty Cycle



**Home Position Switch**



A miniature electronic home position switch capable of monitoring the home positions of linear actuators. The switch mounts on the rear sleeve of captive linear motors and allows the user to identify start, stop or home positions. Depending on your preference, contacts can be normally open or normally closed. The contact closure is repeatable to within one step position, identifying linear movements as low as 0.0005-in (0.0013 cm) per step. Multiple contact switches are also available.

**Specifications**

- Contact Ratings (Standard): 1.00 AMP @ 120 VAC  
1.00 AMP @ 28 VDC
- Operating Temperature: -30°C to +55°C (-22°F to 131°F)
- Contact Resistance: < 20 milliohms typ. initial at 2 - 4 V DC, 100 mA
- Electrical Life: Tested to 60,000 make-and-break cycles at full load
- Schematic: Multiple contact options available.

The switch allows device manufacturers the ability to monitor movements more precisely for greater control and improved Q.C. When ordering motors with the home position switch, the part number should be preceded by an “S”. Activation force of 10 oz (2.78 N) required therefore may not be appropriate for smaller can-stack actuators.

**End of Stroke Proximity Sensor**

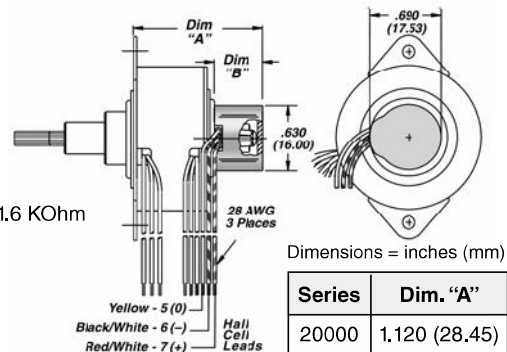
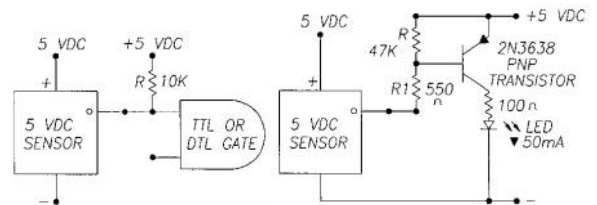
The sensor incorporates a hall effect device, which is activated by a rare earth magnet embedded in the end of the internal screw. The compact profile of the sensor allows for installation in limited space applications.

The sensor has virtually unlimited cycle life. Special cabling and connectors can also be provided.

**Specifications**

- Supply Voltage (VDC): 3.8 min. to 24 max.
- Current consumption: 10 mA max.
- Output voltage (operated): 0.15 typ., 0.40 max.; Sinking 20 mA max.
- Output current: 20 mA max.
- Output leakage current (released): 10µA max. @ Vout = 24 VDC; Vcc = 24 VDC
- Output switching time: Rise, 10 to 90%: .05 µs typ., 1.5 µs max. @ Vcc = 12 V, RL = 1.6 KOhm  
Fall, 90 to 10%: .15 µs typ., 1.5 µs max. @ CL = 20 pF
- Temperature: -40 to +150°C

Note: Sensor is category 2 ESD sensitive per DOD-STD-1686A. Assembly operations should be performed at workstations with conductive tops and operators grounded.



## Z26000 Series: Ø 26 mm (1-in) Can-Stack Linear Actuator



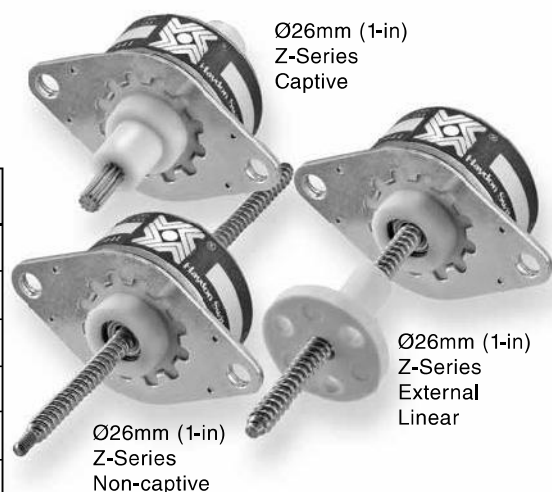
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**Haydon® Z26000 Series – designed to accommodate high volume applications.**

### Specifications

Ø 26 mm (1-in) Z-Series motor				
Wiring		Bipolar		
Part No.	Captive	Z2644 ■ - ■ - ■ ■ ■ †	Z2654 ■ - ■ - ■ ■ ■ †	
	Non-captive	Z2634 ■ - ■ - ■ ■ ■ †	Z2684 ■ - ■ - ■ ■ ■ †	
	External**	Z2644 ■ - ■ - ■ ■ ■ †**	Z2654 ■ - ■ - 9 ■ ■ †**	
Step angle		7.5°		15°
Winding voltage		5 VDC	12 VDC	5 VDC 12 VDC
Current (RMS)/phase		340 mA	140 mA	340 mA 140 mA
Resistance/phase		14.7 Ω	84 Ω	14.7 Ω 84 Ω
Inductance/phase		8.5 mH	55 mH	6.7 mH 44 mH
Power consumption		3.4 W		
Rotor inertia		1.4 gcm <sup>2</sup>		
Insulation Class		Class B		
Weight		1.2 oz (34 g)		
Insulation resistance		20 MΩ		

Ø 26 mm (1-in) Z-Series motor				
Wiring		Unipolar*		
Part No.	Captive	Z2646 ■ - ■ - ■ ■ ■ †	Z2656 ■ - ■ - ■ ■ ■ †	
	Non-captive	Z2636 ■ - ■ - ■ ■ ■ †	Z2686 ■ - ■ - ■ ■ ■ †	
	External**	Z2646 ■ - ■ - 9 ■ ■ †**	Z2656 ■ - ■ - 9 ■ ■ †**	
Step angle		7.5°		15°
Winding voltage		5 VDC	12 VDC	5 VDC 12 VDC
Current (RMS)/phase		340 mA	140 mA	340 mA 140 mA
Resistance/phase		14.7 Ω	84 Ω	14.7 Ω 84 Ω
Inductance/phase		4.3 mH	24 mH	3.4 mH 19 mH
Power consumption		3.4 W		
Rotor inertia		1.4 gcm <sup>2</sup>		
Insulation Class		Class B		
Weight		1.2 oz (34 g)		
Insulation resistance		20 MΩ		



The Z26000 Series motors are ideal for high volume. Utilizing rare earth (neodymium) magnets. Also, available in a special “earless” configuration without a mounting flange.

All units are built with durable dual ball bearings.

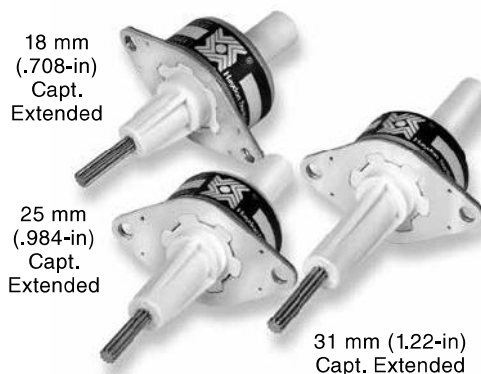
Step	Linear Travel/Step		Order Code I.D.
	inches	mm	
7.5° Angle	0.0005	0.013	3
	0.001	0.0254	1
	0.002	0.051	2
15° Angle	0.00164	0.04166	AS
	0.002	0.051	2
	0.004	0.102	4

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

Standard motors are Class B rated for maximum temperature of 130° C (266° F).

Also available...

**Specially engineered Z26000 (Ø 26 mm, 1-in) linear actuators that extend captive lead-screw travel beyond 12.7 mm (1/2-in).**



CAN-STACK LINEAR  
ACTUATOR MOTORS

† Part numbering information on page 155.

\* Unipolar drive gives approximately 40% less thrust compared to bipolar drive.

\*\* When ordering Z-Series External Linear motors, add -900 to end of the Part Number.

## Identifying the Can-Stack part number codes when ordering

**Z**

**Prefix**

**Z** = Series Code

(For a AC Synchronous compatibility information, see page 190.)

**26**

**Series number designation**

**26** = 26000

(Series numbers represent approximate diameters of motor body)

**4**

**Style**

- 3** = 7.5° non-captive
- 4** = 7.5° Captive or External (use "E" or "K" Prefix for External version)
- 5** = 15° Captive or External (use "E" or "K" Prefix for External version)
- 8** = 15° non-captive

**4**

**Coils**

- 4** = Bipolar (4 wire)
- 6** = Unipolar (6 wire)

**2**

**Code ID Resolution Travel/Step**

- 1** = .001-in (.0254)
- 2** = .002-in (.051)
- 3** = .0005-in (.013)
- 4** = .004-in (.102)
- AS** = .04166-in (.00164)

**05**

**Voltage**

- 05** = 5 VDC
- 12** = 12VDC
- Custom V available

**900**

**Suffix**

- Stroke**  
Example: -900 used to code Z-Series external linear
- Suffix also represents:**  
-XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

**NOTE:** Dashes must be included in Part Number (–) as shown above. For assistance or order entry, call our engineering team at 203 756 7441.

**OPTIONS**

- SCREW LENGTH OPTIONS
- EXTENDED CAPTIVE LEAD-SCREW
- TFE COATED LEAD-SCREWS
- HIGH TEMPERATURE ASSEMBLY
- HOME POSITION SWITCH
- PROXIMITY SENSOR
- OPTIONAL ASSEMBLIES



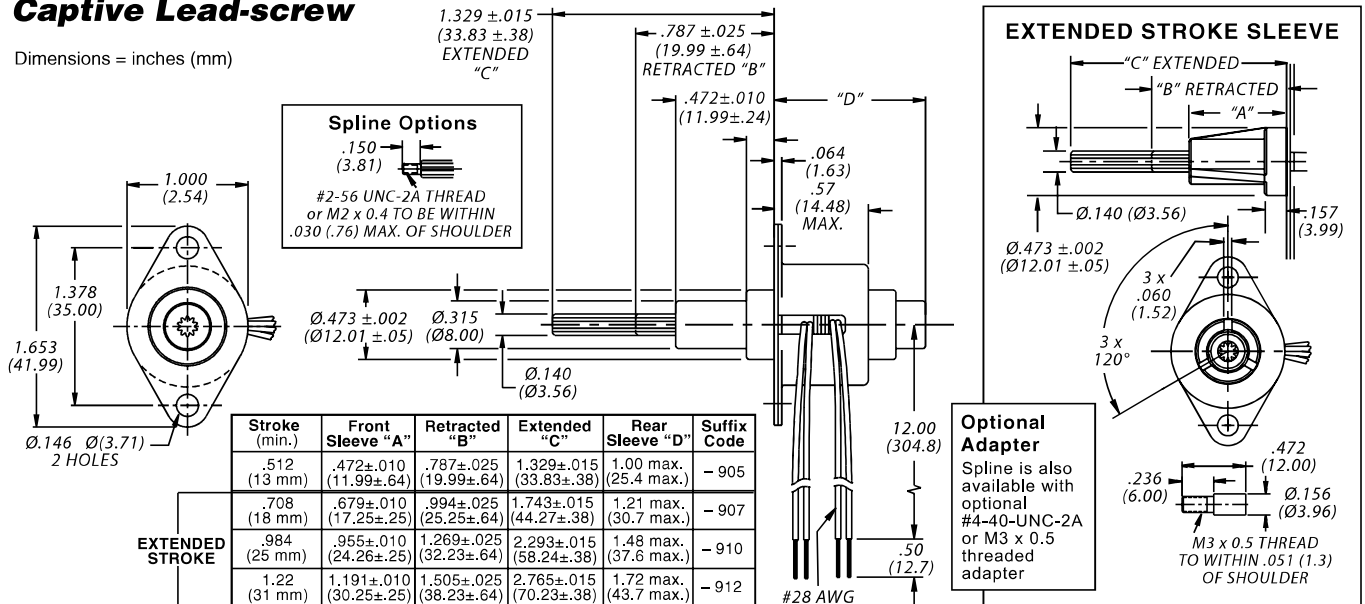
# Z26000 Series: Ø 26 mm (1-in) Can-Stack Dimensional Drawings



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## Captive Lead-screw

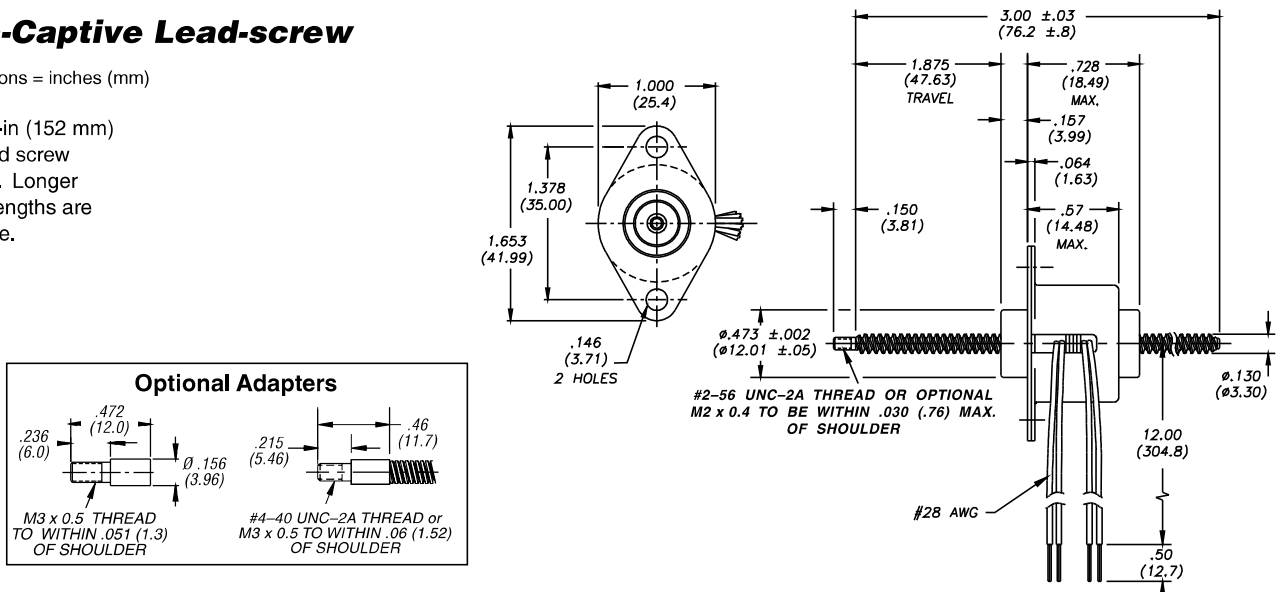
Dimensions = inches (mm)



## Non-Captive Lead-screw

Dimensions = inches (mm)

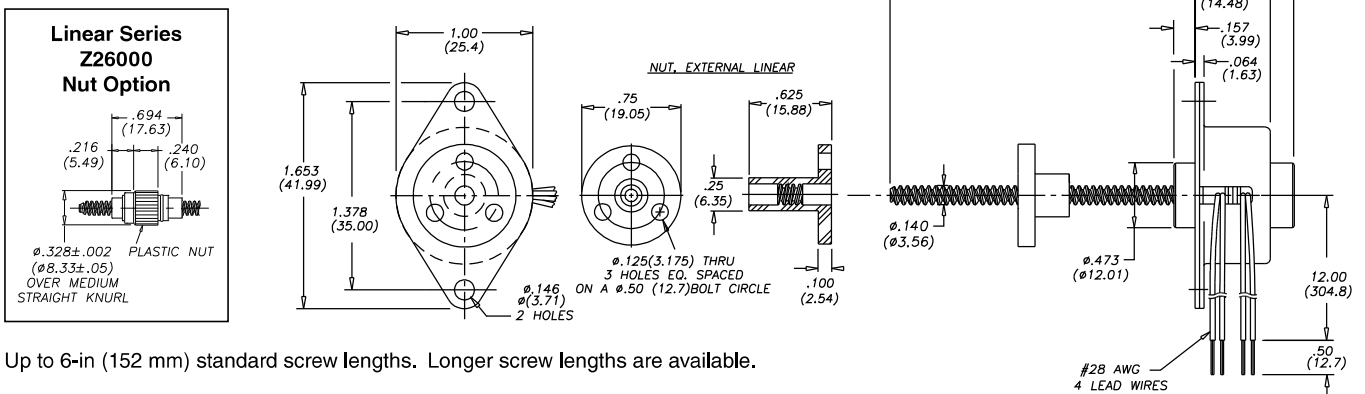
Up to 6-in (152 mm) standard screw lengths. Longer screw lengths are available.



CAN-STACK LINEAR ACTUATOR MOTORS

## External Linear

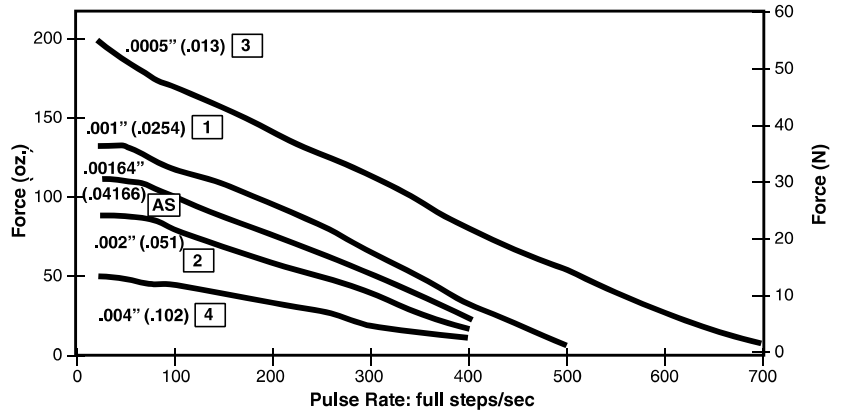
Dimensions = inches (mm)



Up to 6-in (152 mm) standard screw lengths. Longer screw lengths are available.

**FORCE vs. PULSE RATE**

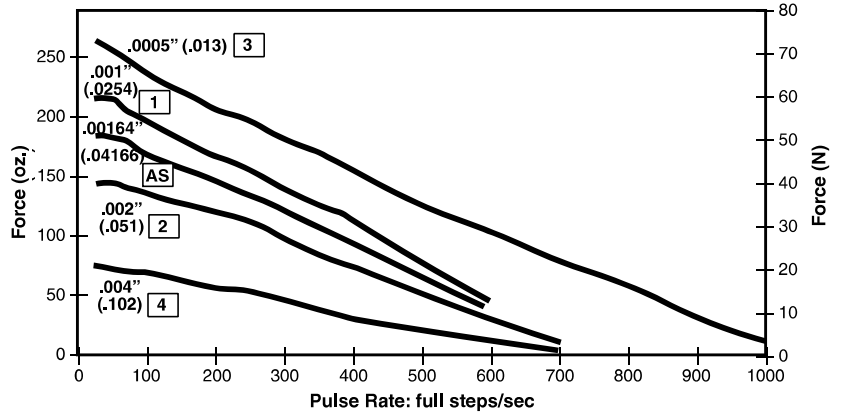
- L/R Drive
- Bipolar
- 100% Duty Cycle



**FORCE vs. PULSE RATE**

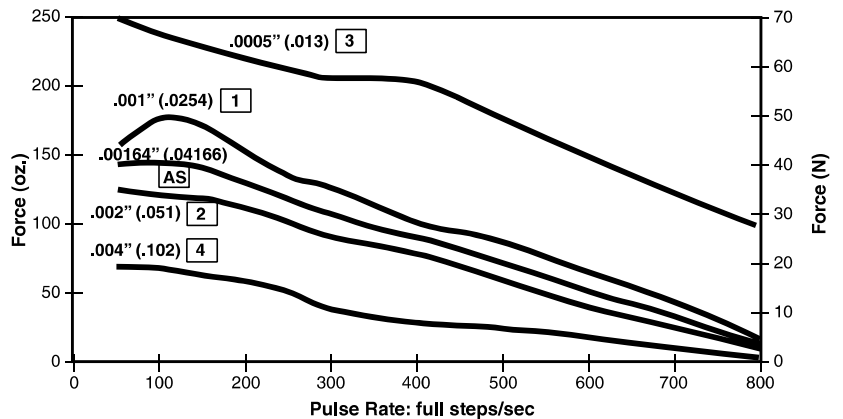
- L/R Drive
- Bipolar
- 25% Duty Cycle

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



**FORCE vs. PULSE RATE**

- Chopper Drive
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



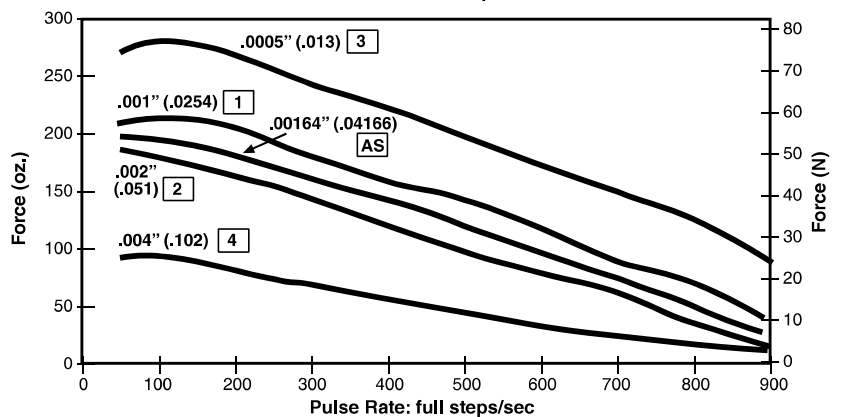
**FORCE vs. PULSE RATE**

- Chopper Drive
- Bipolar
- 25% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage

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

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

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



## Z26000 Series: Ø 26 mm (1-in) Can-Stack Options



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### TFE Coated Lead-screws

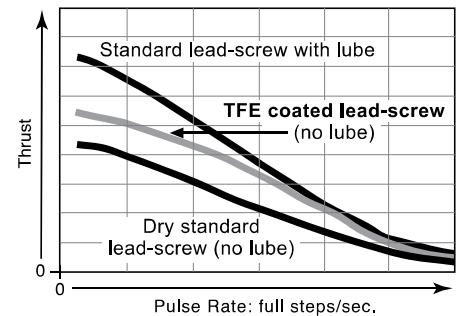
A non-lubricated TFE coated lead-screw provides improved performance in both life and thrust as compared to a "dry" stainless steel lead-screw. TFE can be applied to a wide variety of lead-screw pitches and is available for the Haydon® captive, non-captive and external linear actuators.



Z26000 Series, external linear

### Lead-Screw Comparison FORCE vs. PULSE RATE

L/R Drive  
100% Duty Cycle

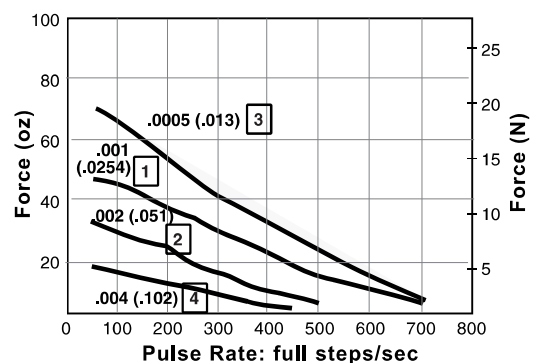


### Specially engineered can-stack linear actuators for high temperature applications

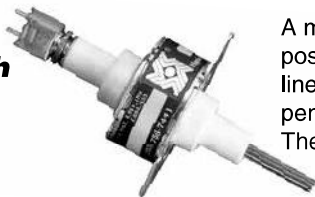
Special materials which meet class F temperature ratings are used in construction. Specialized components include high temperature bobbins, coils, lead wires, lubricant and adhesives. For more information contact our applications group.

### Z26000 Series HIGH TEMPERATURE FORCE vs. PULSE RATE

L/R Drive  
100% Duty Cycle



### Home Position Switch



#### Specifications

Contact Ratings (Standard): 1.00 AMP @ 120 VAC  
1.00 AMP @ 28 VDC  
Operating Temperature: -30°C to +55°C (-22°F to 131°F)  
Contact Resistance: < 20 milliohms typ. initial at 2 - 4 V DC, 100 mA  
Electrical Life: Tested to 60,000 make-and-break cycles at full load



Multiple contact options available.

A miniature electronic home position switch capable of monitoring the home positions of linear actuators. The switch mounts on the rear sleeve of captive linear motors and allows the user to identify start, stop or home positions. Depending on your preference, contacts can be normally open or normally closed. The contact closure is repeatable to within one step position, identifying linear movements as low as 0.0005-in (0.0013 cm) per step. Multiple contact switches are also available.

The switch allows device manufacturers the ability to monitor movements more precisely for greater control and improved Q.C. When ordering motors with the home position switch, the part number should be preceded by an "S". Activation force of 10 oz (2.78 N) required therefore may not be appropriate for smaller can-stack actuators.

### End of Stroke Proximity Sensor

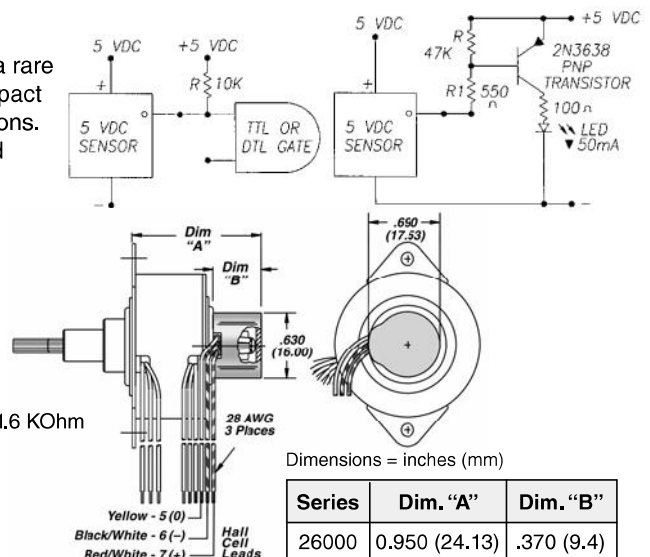
The sensor incorporates a hall effect device, which is activated by a rare earth magnet embedded in the end of the internal screw. The compact profile of the sensor allows for installation in limited space applications.

The sensor has virtually unlimited cycle life. Special cabling and connectors can also be provided.

#### Specifications

Supply Voltage (VDC): 3.8 min. to 24 max.  
Current consumption: 10 mA max.  
Output voltage (operated): 0.15 typ., 0.40 max.; Sinking 20 mA max.  
Output current: 20 mA max.  
Output leakage current (released): 10µA max. @ Vout = 24 VDC; Vcc = 24 VDC  
Output switching time  
Rise, 10 to 90%: .05 µs typ., 1.5 µs max. @ Vcc = 12 V, RL = 1.6 KOhm  
Fall, 90 to 10%: .15 µs typ., 1.5 µs max. @ CL = 20 pF  
Temperature: - 40 to +150°C

Note: Sensor is category 2 ESD sensitive per DOD-STD-1686A. Assembly operations should be performed at workstations with conductive tops and operators grounded.



Dimensions = inches (mm)

Series	Dim. "A"	Dim. "B"
26000	0.950 (24.13)	.370 (9.4)

## Haydon® 36000 Series – more powerful, versatile and robust

### Specifications

Ø 36 mm (1.4-in) motor				
Wiring		Bipolar		
Part No.	Captive	3644 ■■■■■†	3654 ■■■■■†	
	Non-captive	3634 ■■■■■†	3684 ■■■■■†	
	External	E3644 ■■■■■†	E3654 ■■■■■†	
Step angle		7.5°		15°
Winding voltage		5 VDC	12 VDC	5 VDC
Current (RMS)/phase		460 mA	190 mA	460 mA
Resistance/phase		11 Ω	63 Ω	11 Ω
Inductance/phase		7.2 mH	45 mH	5.5 mH
Power consumption		4.6 W		
Rotor inertia		10.5 gcm <sup>2</sup>		
Insulation Class		Class B		
Weight		3 oz (86 g)		
Insulation resistance		20 MΩ		

Ø 36 mm (1.4-in) motor				
Wiring		Unipolar**		
Part No.	Captive	3646 ■■■■■†	3656 ■■■■■†	
	Non-captive	3636 ■■■■■†	3686 ■■■■■†	
	External	E3646 ■■■■■†	E3656 ■■■■■†	
Step angle		7.5°		15°
Winding voltage		5 VDC	12 VDC	5 VDC
Current (RMS)/phase		460 mA	190 mA	460 mA
Resistance/phase		11 Ω	63 Ω	11 Ω
Inductance/phase		3.8 mH	19 mH	3 mH
Power consumption		4.6 W		
Rotor inertia		10.5 gcm <sup>2</sup>		
Insulation Class		Class B		
Weight		3 oz (86 g)		
Insulation resistance		20 MΩ		

† Part numbering information on page 161.

\*\* Unipolar drive gives approximately 30% less thrust than bipolar drive.

Ø36mm (1.4-in)  
Captive



Ø36mm  
(1.4-in)  
External  
Linear

Ø36mm (1.4-in)  
Non-captive

Step	Linear Travel/Step		Order Code I.D.
	inches	mm	
7.5° Angle	0.0005	0.013	3
	0.001	0.0254	1
	0.002	0.051	2
15° Angle	0.002	0.051	2
	0.004	0.102	4

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

Standard motors are Class B rated for maximum temperature of 130° C (266° F).

**\* High resolution steppers for applications requiring fine step increments down to 0.000125-in (0.0032 mm). See page 160.**

Motors can also be electronically micro-stepped.

Other 36000 Series styles available...

- TFE lead-screw
- High Temperature Option

# 36000 Series: Ø 36 mm (1.4-in) High Resolution Can-Stack Linear Actuator



Haydon Kerk Motion Solutions, Inc. • www.haydonkerkpittman.com • Phone: 800 243 2715 • International: 203 756 7441

## Haydon® 36000 Series High Resolution – the big motor with more precise control with resolutions down to .00025 inches (.0064 mm) and 0.000125-in (.0032 mm)

### Specifications

Ø 36 mm (1.4") High Resolution Motor					
Wiring		Bipolar		Unipolar**	
Part No.	Captive	3624 ■ - ■ - ■ - ■ - ■ †	3626 ■ - ■ - ■ - ■ - ■ †		
	Non-captive	3614 ■ - ■ - ■ - ■ - ■ †	3616 ■ - ■ - ■ - ■ - ■ †		
	External	E3624 ■ - ■ - ■ - ■ - ■ †	3626 ■ - ■ - ■ - ■ - ■ †		
Step angle		3.75°			
Winding voltage		5 VDC	12 VDC	5 VDC	12 VDC
Current (RMS)/phase		460 mA	190 mA	460 mA	190 mA
Resistance/phase		11 Ω	63 Ω	11 Ω	63 Ω
Inductance/phase		9.2 mH	53 mH	4.6 mH	26 mH
Power consumption		4.6 W			
Rotor inertia		10.5 gcm <sup>2</sup>			
Insulation Class		Class B			
Weight		3 oz (86 g)			
Insulation resistance		20 MΩ			

Step	Linear Travel/Step		Order Code I.D.
	inches	mm	
3.75°	0.000125	0.0032	7
Angle	0.00025	0.0064	9

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

Standard motors are Class B rated for maximum temperature of 130° C (266° F).

The Haydon® High Resolution 36000 Series features a choice of two extremely small step increments, 0.000125-in (0.0032 mm) and 0.00025-in (0.0064 mm). Motors can also be electronically micro-stepped.

† Part numbering information on page 161.

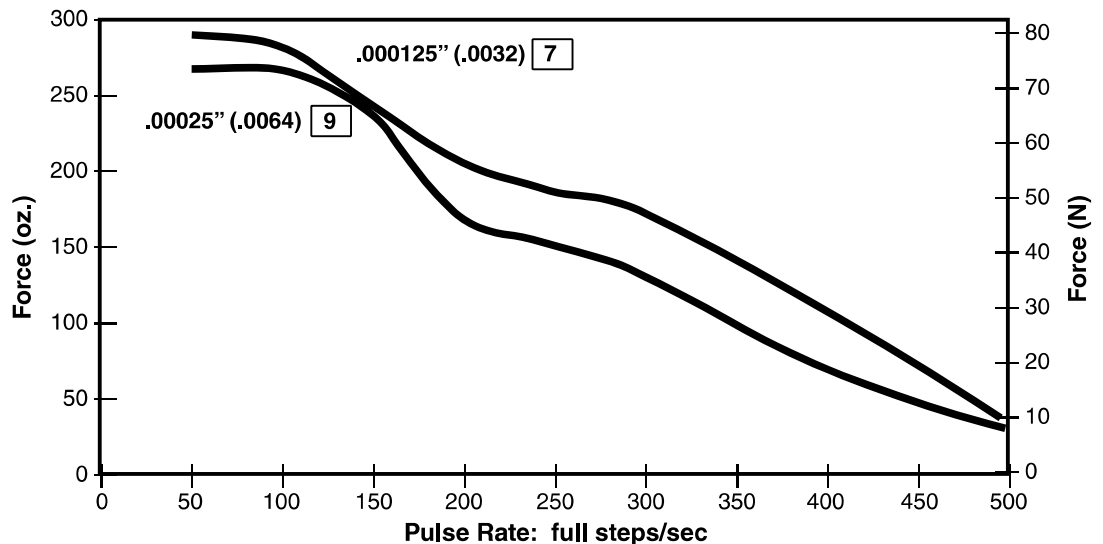
\*\* Unipolar drive gives approximately 30% less thrust than bipolar drive.

CAN-STACK LINEAR ACTUATOR MOTORS

### FORCE vs. PULSE RATE for the Can-Stack 36000 High Resolution Motor

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

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





## Identifying the Can-Stack part number codes when ordering



**Prefix**  
(include only when using the following)

- A** = A Coil (See AC Synchronous page 190)
- E** = External
- K** = External with 40° thread form
- P** = Proximity Sensor
- S** = Home Position Switch
- R** = Rare Earth Magnet

**Series number designation**  
**36 = 36000**

(Series numbers represent approximate diameters of motor body)

**Style**

- 1** = High Resolution 3.75° non-captive
- 2** = High Resolution 3.75° Captive or External (use "E" or "K" Prefix for External version)
- 3** = 7.5° non-captive
- 4** = 7.5° Captive or External (use "E" or "K" Prefix for External version)
- 5** = 15° Captive or External (use "E" or "K" Prefix for External version)
- 8** = 15° non-captive

**Coils**

- 4** = Bipolar (4 wire)
- 6** = Unipolar (6 wire)

**Code ID Resolution Travel/Step**

- 1** = .001-in (.0254)
- 2** = .002-in (.051)
- 3** = .0005-in (.013)
- 4** = .004-in (.102)

**High Resolution**

- 7** = .000125-in (.0032)
- 9** = .00025-in (.00635)

**Voltage**

- 05** = 5 VDC
  - 12** = 12VDC
- Custom V available

**Suffix**

**Stroke**  
Example: -900 = external linear with grease & flanged nut

**Suffix also represents:**  
-XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

**NOTE:** Dashes must be included in Part Number (-) as shown above. For assistance or order entry, call our engineering team at 203 756 7441.

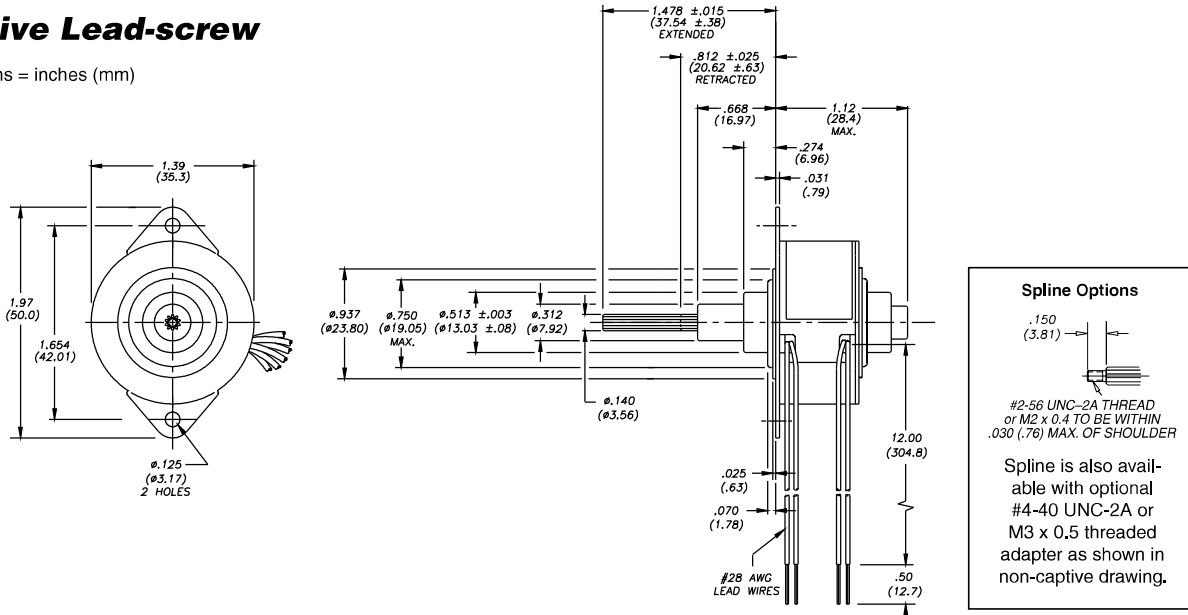
**OPTIONS**

- SCREW LENGTH OPTIONS
- TFE COATED LEAD-SCREWS
- HIGH TEMPERATURE ASSEMBLY
- HOME POSITION SWITCH
- PROXIMITY SENSOR
- OPTIONAL ASSEMBLIES

www.HaydonKerkExpress.com  
Standard products available 24-hrs.

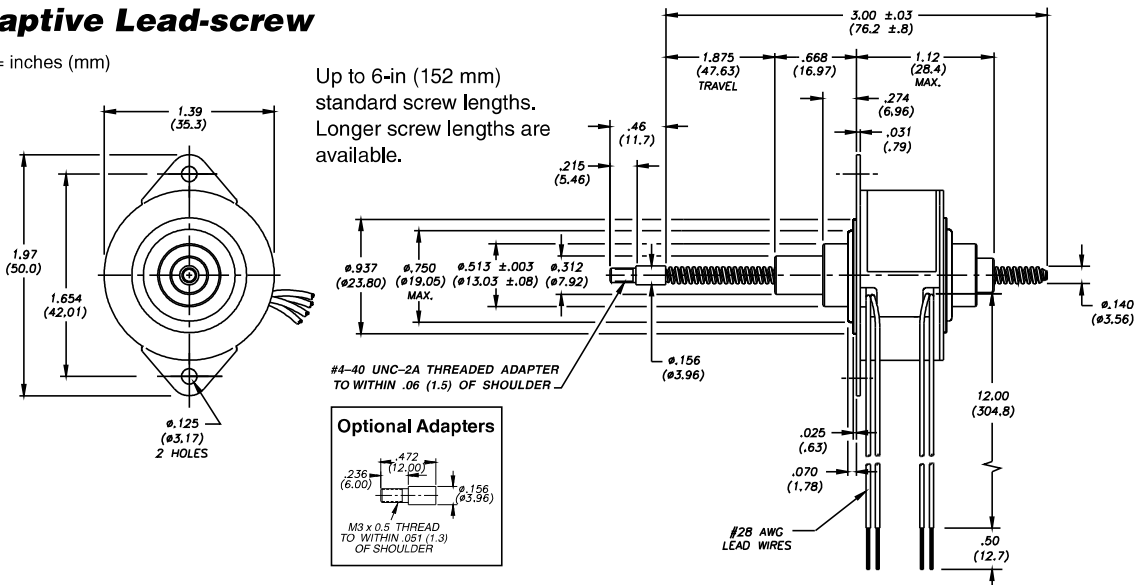
**Captive Lead-screw**

Dimensions = inches (mm)



**Non-Captive Lead-screw**

Dimensions = inches (mm)

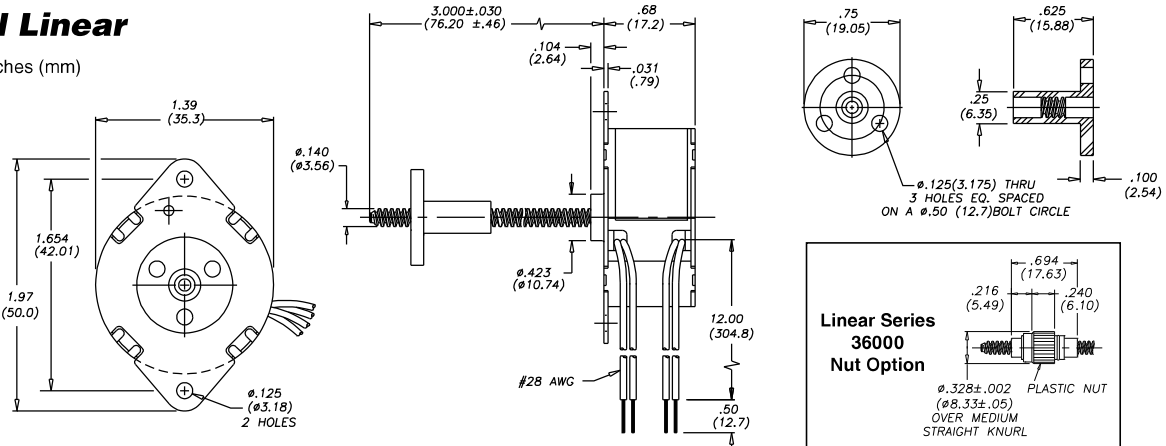


CAN-STACK LINEAR ACTUATOR MOTORS

**External Linear**

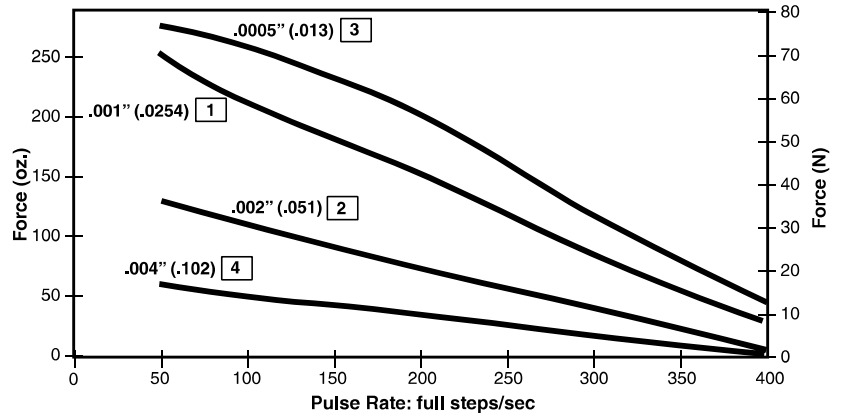
Dimensions = inches (mm)

Up to 6-in (152 mm) standard screw lengths. Longer screw lengths are available.



**FORCE vs. PULSE RATE**

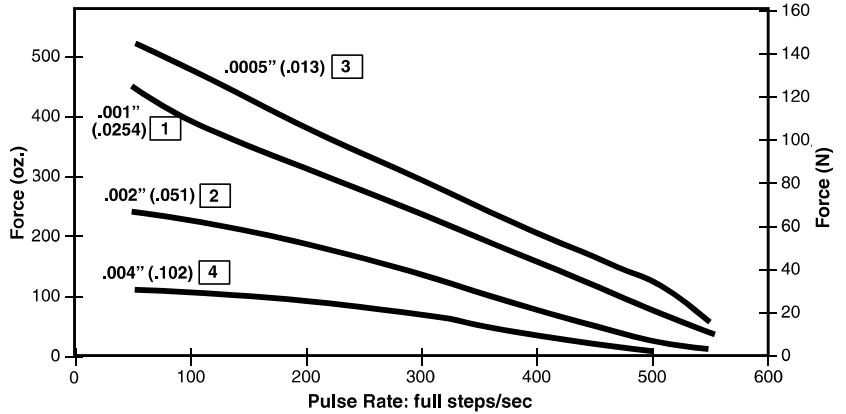
- L/R Drive
- Bipolar
- 100% Duty Cycle



**FORCE vs. PULSE RATE**

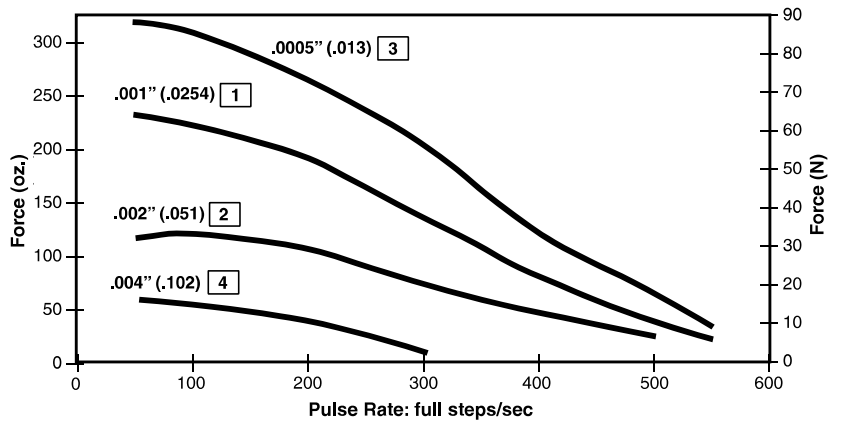
- L/R Drive
- Bipolar
- 25% Duty Cycle

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



**FORCE vs. PULSE RATE**

- Chopper Drive
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



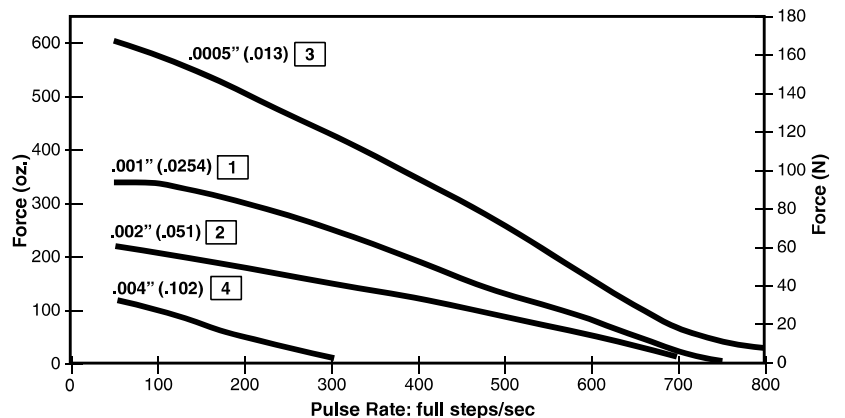
**FORCE vs. PULSE RATE**

- Chopper Drive
- Bipolar
- 25% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage

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

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

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



## 36000 Series: Ø 36 mm (1.4-in) Can-Stack Options



Haydon Kerk Motion Solutions, Inc. • www.haydonkerkpittman.com • Phone: 800 243 2715 • International: 203 756 7441

### TFE Coated Lead-screws

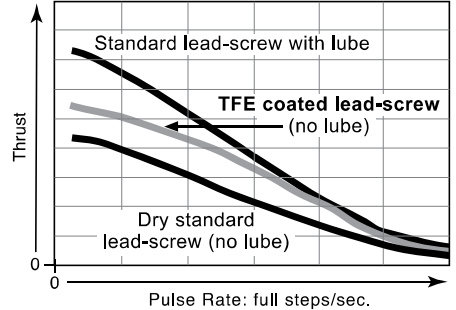
36000 Series, non-captive



A non-lubricated TFE coated lead-screw provides improved performance in both life and thrust as compared to a "dry" stainless steel lead-screw. TFE can be applied to a wide variety of lead-screw pitches and is available for the 36000 Series captive, non-captive and external linear linear actuators.

### Lead-Screw Comparison FORCE vs. PULSE RATE

L/R Drive  
100% Duty Cycle

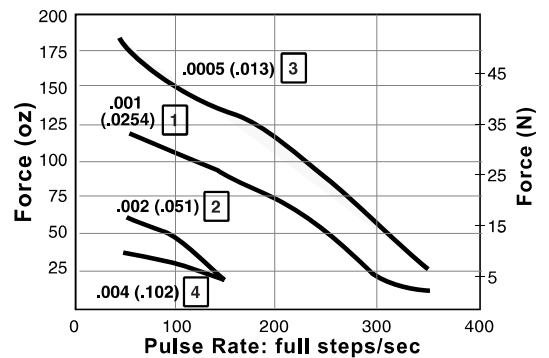


### Specially engineered can-stack linear actuators for high temperature applications

Special materials which meet class F temperature ratings are used in construction. Specialized components include high temperature bobbins, coils, lead wires, lubricant and adhesives. For more information contact our applications group.

### 36000 Series HIGH TEMPERATURE FORCE vs. PULSE RATE

L/R Drive  
100% Duty Cycle



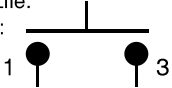
### Home Position Switch for 36000 Series Can-Stack



A miniature electronic home position switch capable of monitoring the home positions of linear actuators. The switch mounts on the rear sleeve of captive linear motors and allows the user to identify start, stop or home positions. Depending on your preference, contacts can be normally open or normally closed. The contact closure is repeatable to within one step position, identifying linear movements as low as 0.0005-in (0.0013 cm) per step. Multiple contact switches are also available.

### Specifications

Contact Ratings (Standard): 1.00 AMP @ 120 VAC  
1.00 AMP @ 28 VDC  
Operating Temperature: -30°C to +55°C (-22°F to 131°F)  
Contact Resistance: < 20 milliohms typ. initial at 2 - 4 V DC, 100 mA  
Electrical Life: Tested to 60,000 make-and-break cycles at full load  
Schematic:



Multiple contact options available.

The switch allows device manufacturers the ability to monitor movements more precisely for greater control and improved Q.C. When ordering motors with the home position switch, the part number should be preceded by an "S". Activation force of 10 oz (2.78 N) required therefore may not be appropriate for smaller can-stack actuators.

### End of Stroke Proximity Sensor

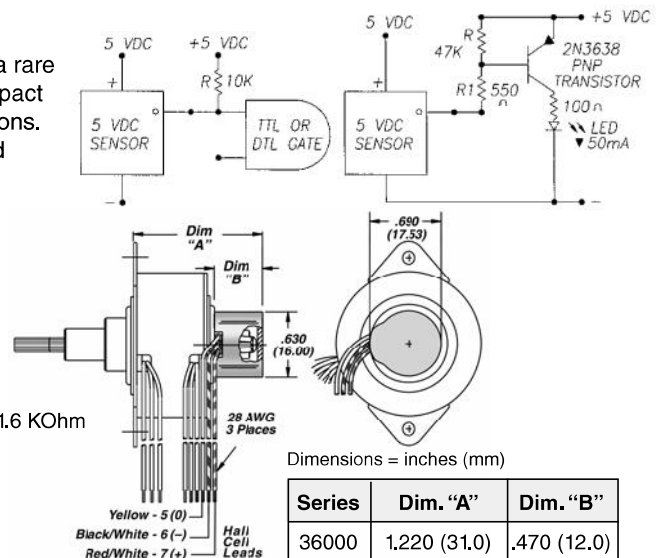
The sensor incorporates a hall effect device, which is activated by a rare earth magnet embedded in the end of the internal screw. The compact profile of the sensor allows for installation in limited space applications.

The sensor has virtually unlimited cycle life. Special cabling and connectors can also be provided.

### Specifications

Supply Voltage (VDC): 3.8 min. to 24 max.  
Current consumption: 10 mA max.  
Output voltage (operated): 0.15 typ., 0.40 max.; Sinking 20 mA max.  
Output current: 20 mA max.  
Output leakage current (released): 10µA max. @ Vout = 24 VDC; Vcc = 24 VDC  
Output switching time  
Rise, 10 to 90%: .05 µs typ., 1.5 µs max. @ Vcc = 12 V, RL = 1.6 KOhm  
Fall, 90 to 10%: .15 µs typ., 1.5 µs max. @ CL = 20 pF  
Temperature: -40 to +150°C

Note: Sensor is category 2 ESD sensitive per DOD-STD-1686A. Assembly operations should be performed at workstations with conductive tops and operators grounded.



**Haydon® 46000 Series - heavy-duty power, versatility and high output force**  
**Specifications**

Ø46mm (1.8-in)  
Non-captive



Ø 46 mm (1.8-in) motor				
Wiring		Bipolar		
Part No.	Captive	4644 ■ - ■ - ■ - ■ - ■ †	4654 ■ - ■ - ■ - ■ - ■ †	
	Non-captive	4634 ■ - ■ - ■ - ■ - ■ †	4684 ■ - ■ - ■ - ■ - ■ †	
	External	E4644 ■ - ■ - ■ - ■ - ■ †	E4654 ■ - ■ - ■ - ■ - ■ †	
Step angle		7.5°		15°
Winding voltage		5 VDC	12 VDC	5 VDC 12 VDC
Current (RMS)/phase		1.0 A	.41 A	1.0 A .41 A
Resistance/phase		5 Ω	29 Ω	5 Ω 29 Ω
Inductance/phase		9 mH	52 mH	7.1 mH 39 mH
Power consumption		10 W		
Rotor inertia		25.0 gcm <sup>2</sup>		
Insulation Class		Class B		
Weight		9.0 oz (255 g)		
Insulation resistance		20 MΩ		

Ø 46 mm (1.8-in) motor				
Wiring		Unipolar*		
Part No.	Captive	4646 ■ - ■ - ■ - ■ - ■ †	4656 ■ - ■ - ■ - ■ - ■ †	
	Non-captive	4636 ■ - ■ - ■ - ■ - ■ †	4686 ■ - ■ - ■ - ■ - ■ †	
	External	E4646 ■ - ■ - ■ - ■ - ■ †	E4656 ■ - ■ - ■ - ■ - ■ †	
Step angle		7.5°		15°
Winding voltage		5 VDC	12 VDC	5 VDC 12 VDC
Current (RMS)/phase		1.0 A	.41 A	1.0 A .41 A
Resistance/phase		5 Ω	29 Ω	5 Ω 29 Ω
Inductance/phase		4.5 mH	26 mH	3.5 mH 20 mH
Power consumption		10 W		
Rotor inertia		25.0 gcm <sup>2</sup>		
Insulation Class		Class B		
Weight		9.0 oz (255 g)		
Insulation resistance		20 MΩ		

Step	Linear Travel/Step		Order Code I.D.
	inches	mm	
7.5° Angle	0.0005	0.013	3
	0.001	0.0254	1
	0.002	0.051	2
	0.004	0.102	4
	0.008	0.203	8
15° Angle	0.004	0.102	4
	0.008	0.203	8
	0.016	0.406	G

Special drive considerations may be necessary when leaving shaft fully extended or fully retracted.

Standard motors are Class B rated for maximum temperature of 130° C (266° F).

Other 46000 Series styles available...

- TFE lead-screw
- High Temperature Option

† Part numbering information on page 166.

**Identifying the Can-Stack part number codes when ordering**

<b>E</b>	<b>46</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>05</b>	<b>900</b>
<b>Prefix</b> (include only when using the following) <b>A</b> = A Coil (See AC Synchronous page 190) <b>E</b> = External <b>K</b> = External with 40° thread form <b>P</b> = Proximity Sensor <b>S</b> = Home Position Switch <b>R</b> = Rare Earth Magnet	<b>Series number designation</b> <b>46 = 46000</b> (Series numbers represent approximate diameters of motor body)	<b>Style</b> <b>3</b> = 7.5° non-captive <b>4</b> = 7.5° Captive or External (use "E" or "K" Prefix for External version) <b>5</b> = 15° Captive or External (use "E" or "K" Prefix for External version) <b>8</b> = 15° non-captive	<b>Coils</b> <b>4</b> = Bipolar (4 wire) <b>6</b> = Unipolar (6 wire)	<b>Code ID Resolution Travel/Step</b> <b>1</b> = .001-in (.0254) <b>2</b> = .002-in (.051) <b>3</b> = .0005-in (.013) <b>4</b> = .004-in (.102) <b>8</b> = .0008-in (.203) <b>G</b> = .016-in (.406)	<b>Voltage</b> <b>05</b> = 5 VDC <b>12</b> = 12VDC  <i>Custom V available</i>	<b>Suffix</b> <b>Stroke</b> Example: -900 = external linear with grease & flanged nut  <b>Suffix also represents:</b> -XXX = Proprietary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part.

**NOTE:** Dashes must be included in Part Number (-) as shown above. For assistance or order entry, call our engineering team at 203 756 7441.

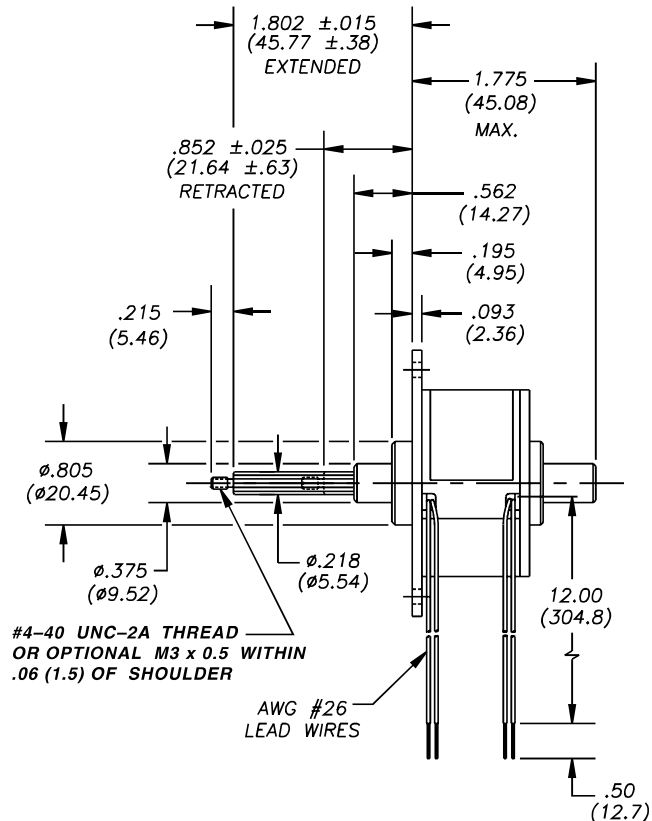
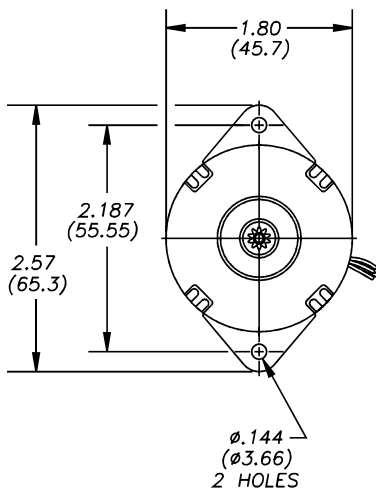


- OPTIONS**
- SCREW LENGTH OPTIONS
  - TFE COATED LEAD-SCREWS
  - HIGH TEMPERATURE ASSEMBLY
  - HOME POSITION SWITCH
  - NEMA FLANGE (SIZE 23)
  - OPTIONAL ASSEMBLIES

**46000 Series Can-Stack  
Dimensional Drawings**

**Captive Lead-screw**

Dimensions = inches (mm)



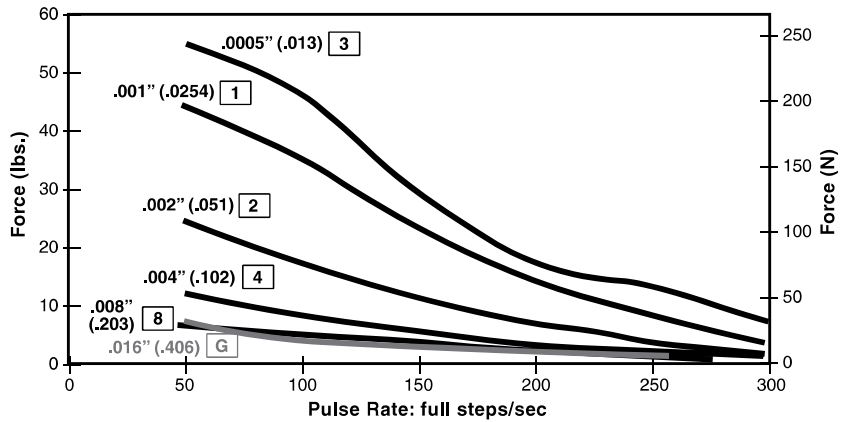
CAN-STACK LINEAR ACTUATOR MOTORS





**FORCE vs. PULSE RATE**

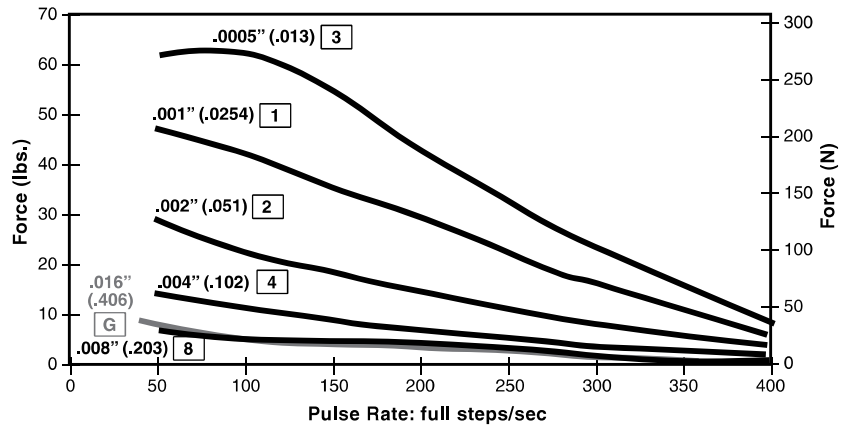
- L/R Drive
- Bipolar
- 100% Duty Cycle



**FORCE vs. PULSE RATE**

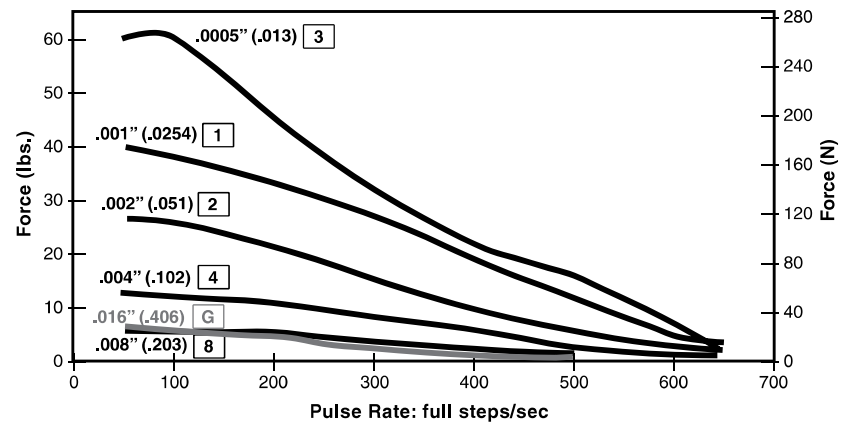
- L/R Drive
- Bipolar
- 25% Duty Cycle

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



**FORCE vs. PULSE RATE**

- Chopper Drive
- Bipolar
- 100% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage



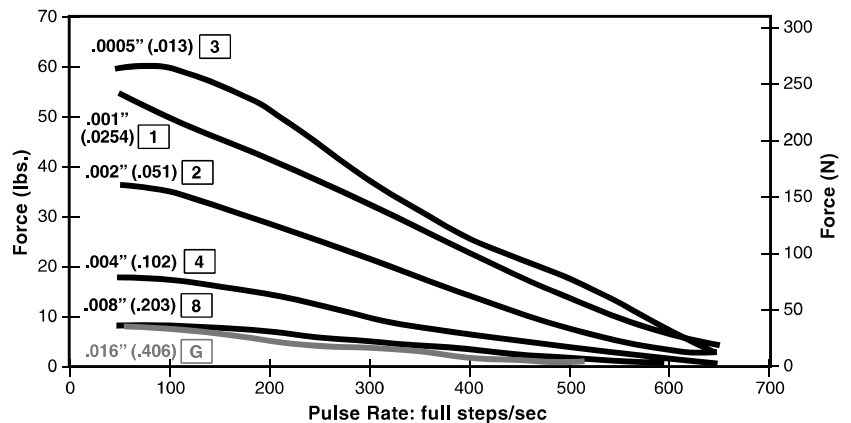
**FORCE vs. PULSE RATE**

- Chopper Drive
- Bipolar
- 25% Duty Cycle
- 8:1 Motor Coil to Drive Supply Voltage

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

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

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



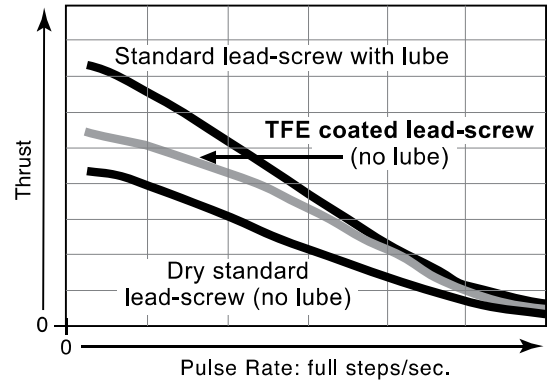
**TFE coated lead-screws for 46000 Series**



46000 Series, external linear

46000 series is also available with an optional, non-lubricated TFE coated lead-screw for improved performance in both life and thrust as compared to a “dry” stainless steel lead-screw. TFE can be applied to a wide variety of lead-screw pitches and is available for captive, non-captive and external linear actuators.

**Lead-Screw Comparison  
FORCE vs. PULSE RATE  
L/R Drive • 100% Duty Cycle**



**Specially engineered can-stacks for high temperature applications**

Haydon Kerk Motion Solutions, Inc. offers a line of stepping motors specially designed for high temperature environments. The motors are constructed using the proven techniques employed for Haydon® motors. Special materials which meet class F temperature ratings are used in construction. Specialized components include high temperature bobbins, coils, lead wires, lubricant and adhesives. For more information contact our applications group.

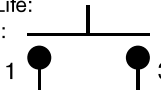
**Home Position Switch for 46000 Series Can-Stacks**

A miniature electronic home position switch capable of monitoring the home positions of linear actuators. The switch mounts on the rear sleeve of captive linear motors and allows the user to identify start, stop or home positions. Depending on your preference, contacts can be normally open or normally closed. The contact closure is repeatable to within one step position, identifying linear movements as low as 0.0005-in (0.0013 cm) per step. Multiple contact switches are also available.

The switch allows device manufacturers the ability to monitor movements more precisely for greater control and improved Q.C. When ordering motors with the home position switch, the part number should be preceded by an “S”. Activation force of 10 oz (2.78 N) required therefore may not be appropriate for smaller can-stack actuators.



**Specifications**

- Contact Ratings (Standard): 1.00 AMP @ 120 VAC  
1.00 AMP @ 28 VDC
- Operating Temperature: -30°C to +55°C (-22°F to 131°F)
- Contact Resistance: < 20 milliohms typ. initial at 2 - 4 V DC, 100 mA
- Electrical Life: Tested to 60,000 make-and-break cycles at full load
- Schematic: 

Multiple contact options available.

**NEMA Flange for Series 46000**

Assembly option available for applications that require a Size 23 mount.

