

Haydon[®] 20000 Series – versatile and compact

Engineered with unique features reliable long life and performance.



Specifications

Ø 20 mm (.79") motor		
Wiring		Bipolar
Part No.	Captive	2054 ■ - ■ ■ - ■ ■ ■ #
	Non-captive	2084 ■ - ■ ■ - ■ ■ ■ #
Step angle		15°
Winding voltage		5 VDC 12 VDC
Current (RMS)/phase		270 mA 113 mA
Resistance/phase		18.5 Ω 106 Ω
Inductance/phase		5.5 mH 32 mH
Power consumption		2.7 W
Rotor inertia		0.5 gcm ²
Insulation Class		Class B
Weight		1 oz (28 g)
Insulation resistance		20 MΩ

Linear Travel / Step 15° Step Angle		Order Code I.D.
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.

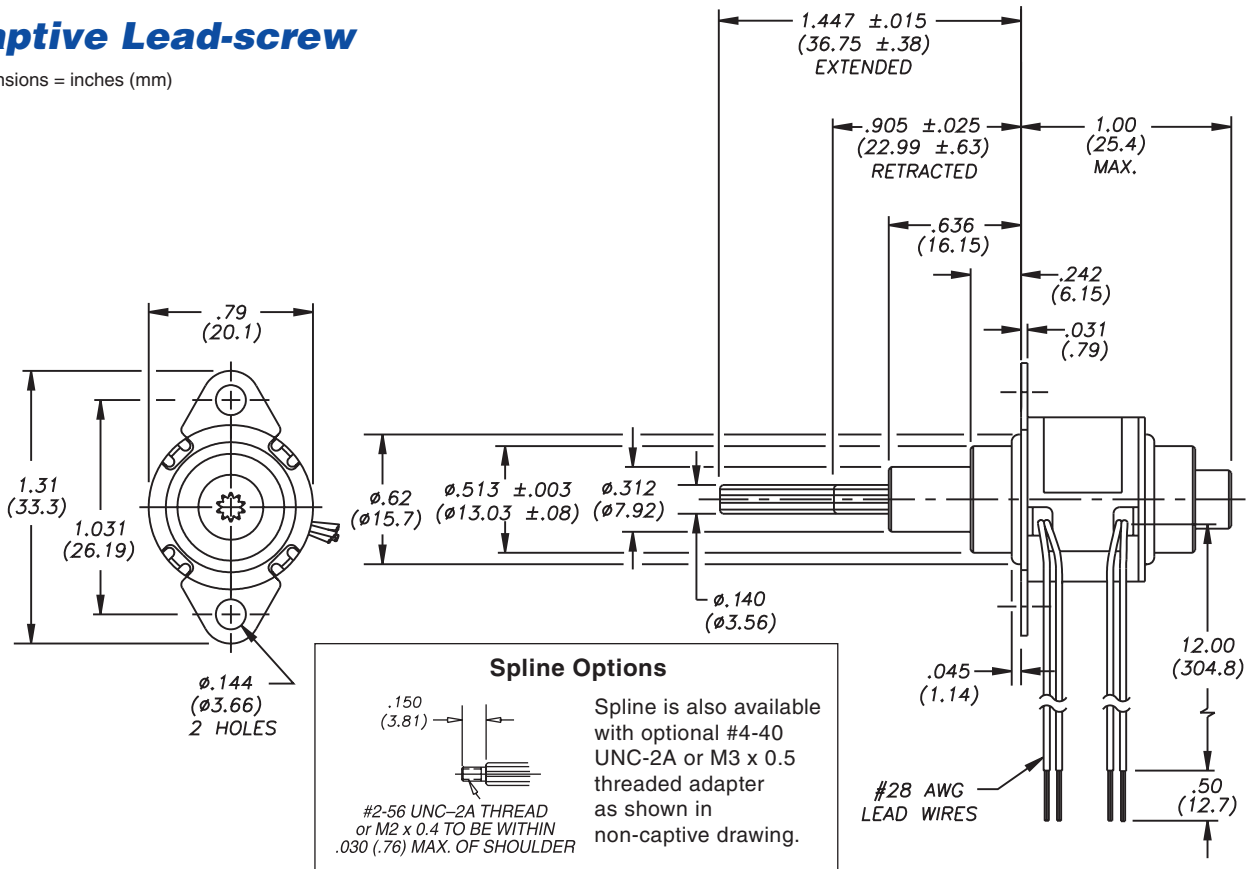
Standard motors are Class B rated for maximum temperature of 130° C (266° F).

NOTE: External Linear not available

Part numbering information on page 4

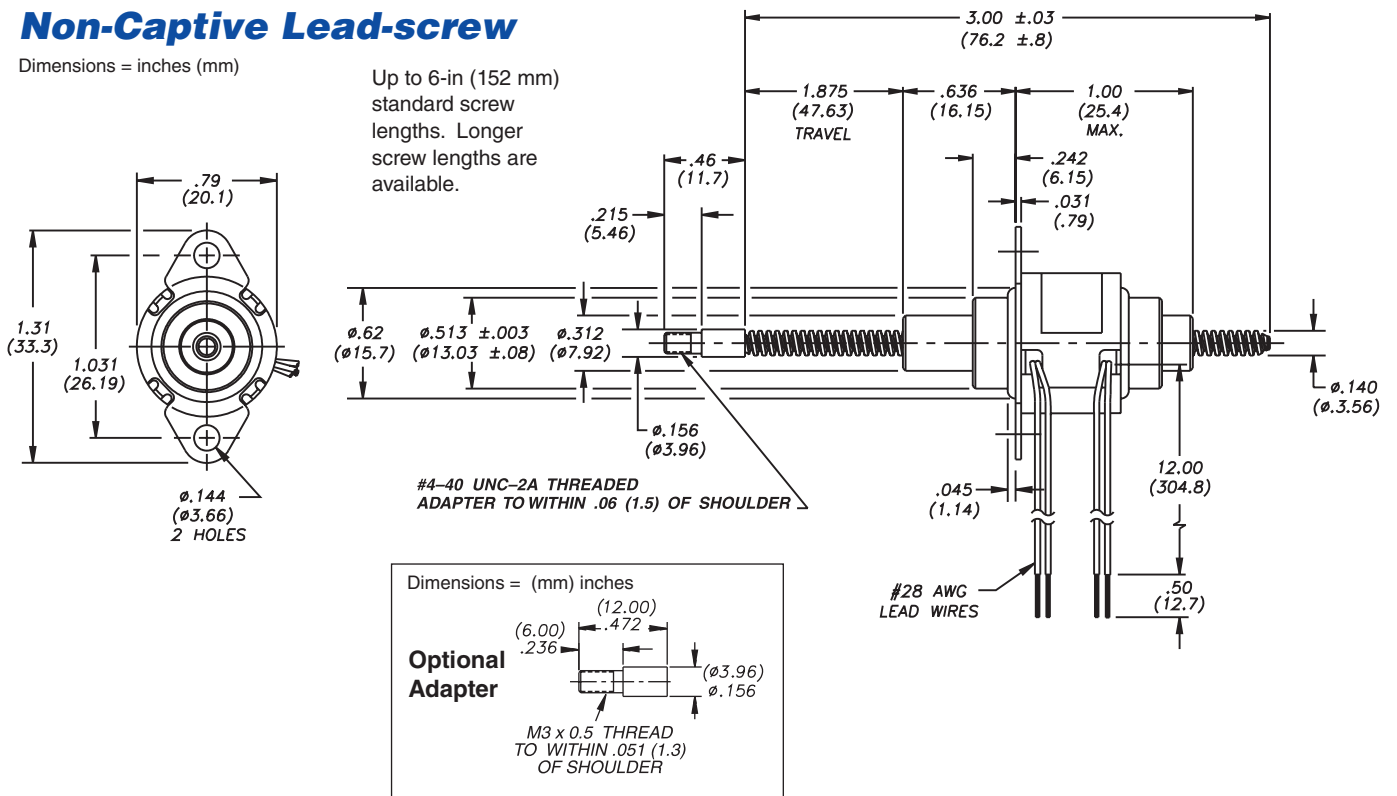
Captive Lead-screw

Dimensions = inches (mm)



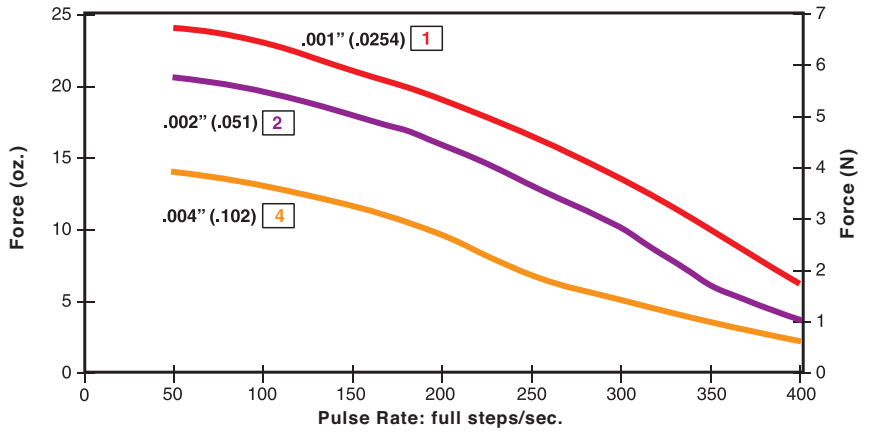
Non-Captive Lead-screw

Dimensions = inches (mm)



FORCE vs. PULSE RATE

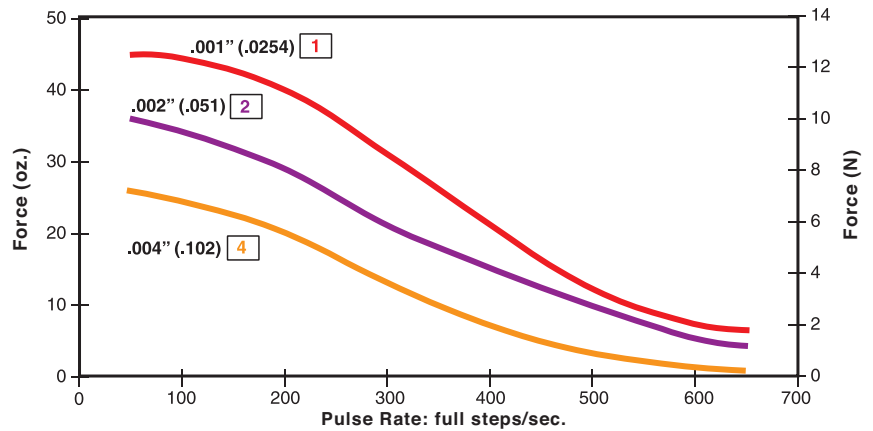
L/R Drive • Bipolar
100% Duty Cycle



FORCE vs. PULSE RATE

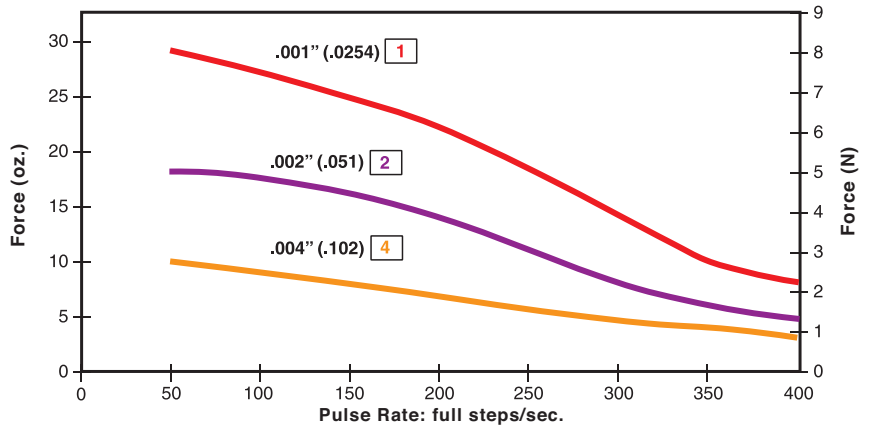
L/R Drive • Bipolar
25% Duty Cycle

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



FORCE vs. PULSE RATE

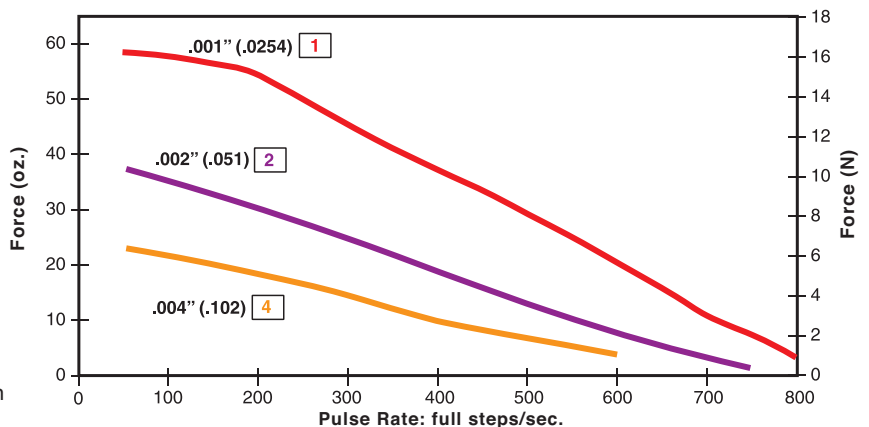
Chopper Drive • Bipolar
100% Duty Cycle



FORCE vs. PULSE RATE

Chopper Drive • Bipolar
25% Duty Cycle

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.

Identifying the Can-Stack part number codes when ordering

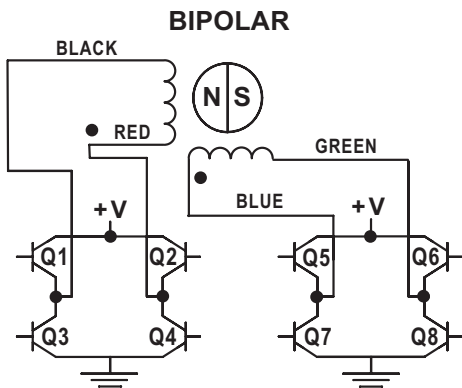
 	20	8	4	2 –	05 –	900
Prefix (include only when using the following) P = Proximity Sensor S = Home Switch R = Rare Earth Magnet	Series number designation 20 = 20000 (Series numbers represent approximate diameters of motor body)	Style 5 = 15° captive 8 = 15° non-captive	Coils 4 = Bipolar (4 wire)	Code ID Resolution Travel/Step 1 = .001-in (.0254) 2 = .002-in (.051) 4 = .004-in (.102)	Voltage 05 = 5 VDC 12 = 12VDC <i>Custom V available</i>	Suffix Stroke Assigned code number 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.

NOTE:
 20000 Series
 EXTERNAL
 LINEAR NOT
 AVAILABLE.

Haydon kerk Express
 Motion Solutions
 Standard products available 24-hrs. at
www.haydonkerkexpress.com

Can-Stacks: Wiring



Can-Stacks: Stepping Sequence

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

EXTEND CW ← RETRACT CCW ↑

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

Can-Stack Stepper Motor Linear Actuators: OPTIONS

- **SCREW LENGTH OPTIONS**
for non-captive linear shaft motor various screw lengths are available to accommodate almost any travel requirement.
- **PROXIMITY SENSOR** for 20000, 26000 AND 36000 Series
- **HOME POSITION SWITCH** for captive shaft can-stack motors
- **TFE COATED LEAD-SCREWS** for can-stack motors
- **OPTIONAL ASSEMBLIES** for Can-Stack Linear Actuator Motors.



20000 Series,
non-captive

TFE coated leadscrews for applications that require a permanent, dry lubricant

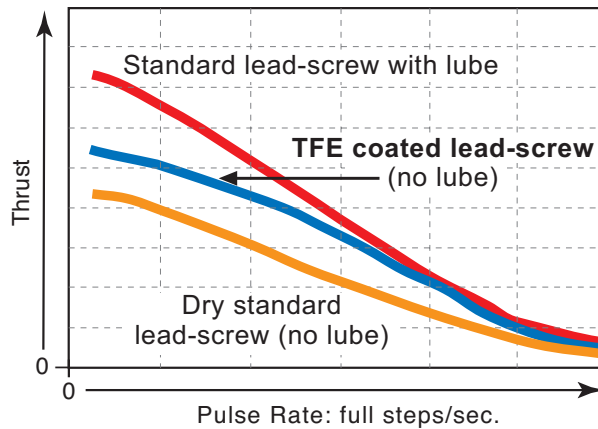
Haydon Kerk Motion Solutions, Inc. offers a TFE coated lead-screw option for its Can-Stack Series linear actuators. This lead-screw option is ideal for applications where conventional oils and greases can not be used for lead-screw lubrication.

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.

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

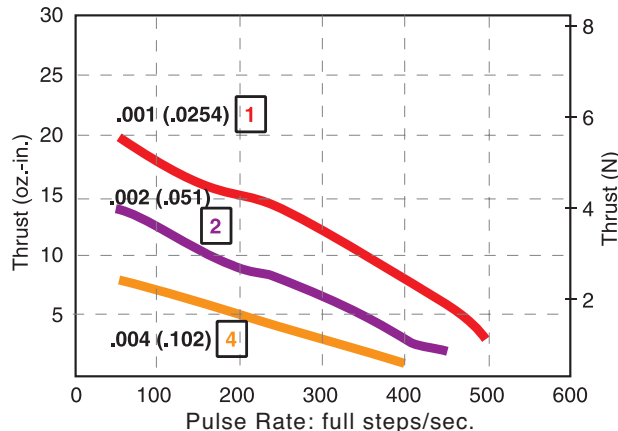
FORCE vs. PULSE RATE L/R Drive • 100% Duty Cycle



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.

20000 Series • HIGH TEMPERATURE
FORCE vs. PULSE RATE L/R Drive • 100% Duty Cycle

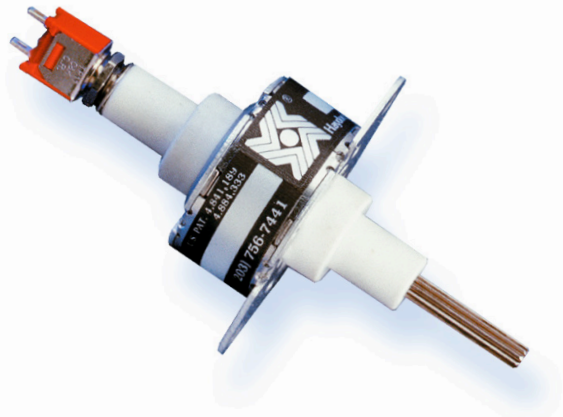


Home Position Switch

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.

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.

End of Stroke Proximity Sensor

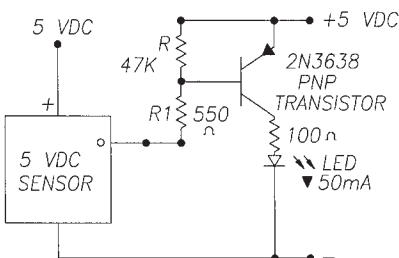
The sensor incorporates a hall effect device, which is activated by a rare earth magnet embedded in the end of the internal screw. The compact profile of the sensor allows for installation in limited space applications.

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

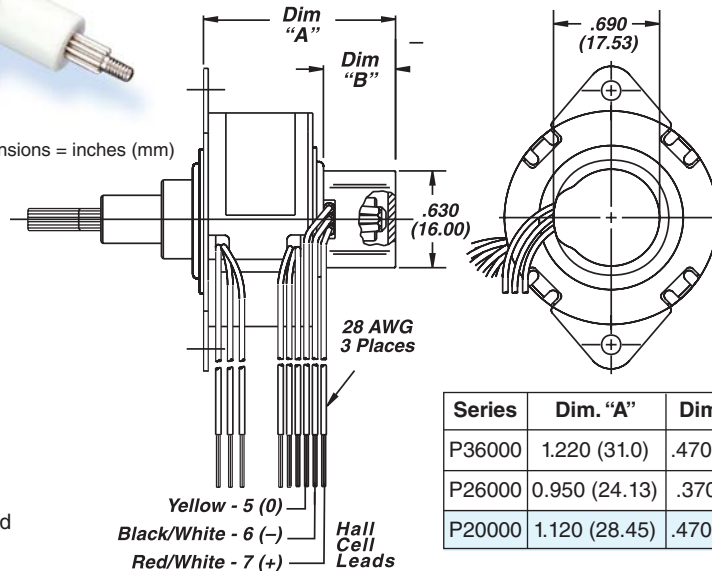


Specifications

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



Dimensions = inches (mm)



Series	Dim. "A"	Dim. "B"
P36000	1.220 (31.0)	.470 (12.0)
P26000	0.950 (24.13)	.370 (9.4)
P20000	1.120 (28.45)	.470 (12.0)

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