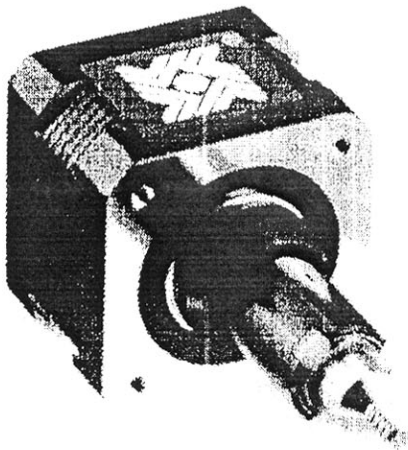


43000Series Size17LinearActuator

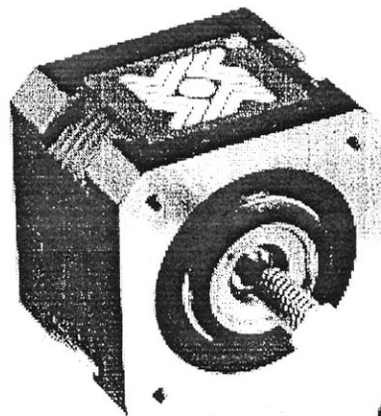
HSI's size 17 hybrid linear actuators are our bestselling compact hybrid motors. The various patent pending designs deliver high performance, opening avenues for equipment designers who previously settled for products with inferior performance and endurance.

Three designs are available, captive, non-captive and external linear versions.

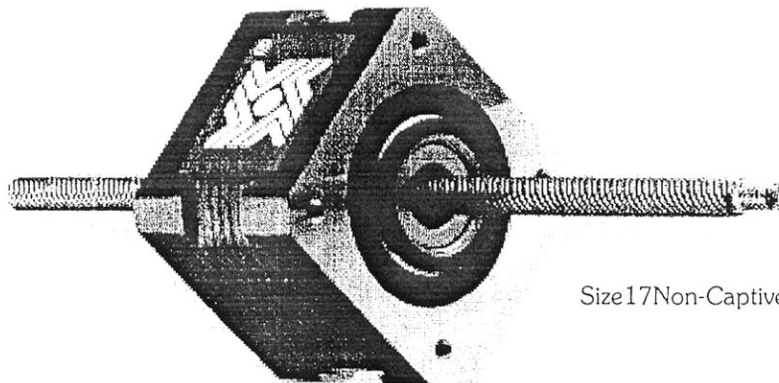
The 43000 Series is available in a wide variety of resolutions—from 0.00006" (.001524mm) per step to 0.00192" (.048768mm) per step—and deliver thrust of up to 50 lbs. (23Kg), or speed exceeding 3 inches (7.62cm) per second.



Size 17 Captive Shaft



Size 17 External Linear



Size 17 Non-Captive Shaft

Series43000Size17LinearActuator

Salient Characteristics

Size17:43mm(1.7")HybridLinearActuator					(1.8°StepAngle)
Part No.	Captive	43H4(X)-V			43H6(X)-V
	Non-captive	43F4(X)-V			43F6(X)-V
	External Lin.	E43H4(X)-V			E43H6(X)-V
Wiring		Bipolar			Unipolar**
Operating voltage	2.33 VDC	5 VDC	12 VDC	5 VDC	12 VDC
Current/phase	1.5 A	700mA	290mA	700mA	290mA
Resistance/phase	1.56 Ω	7.2 Ω	41.5 Ω	7.2 Ω	41.5 Ω
Inductance/phase	1.9mH	8.7mH	54.0mH	4.4mH	27.0mH
Power consumption	7W				
Rotor inertia	37gcm ²				
Temperature rise	135°F Rise (75 °C Rise)				
Weight	8.5oz (241g)				
Insulation resistance	20M Ω				

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

Linear Travel/Step			
Screw Ø .218" (5.54mm)		Screw Ø .250" (6.35mm)	
inches	mm	inches	mm
.00006	.0015*	.000078*	.002
.00012	.0030*	.00015625	.0039*
.00024	.0060*	.0003125	.0079*
.00048	.0121*	.000625	.0158*
.00096	.0243*	.00125	.0317*
.00192	.0487*		

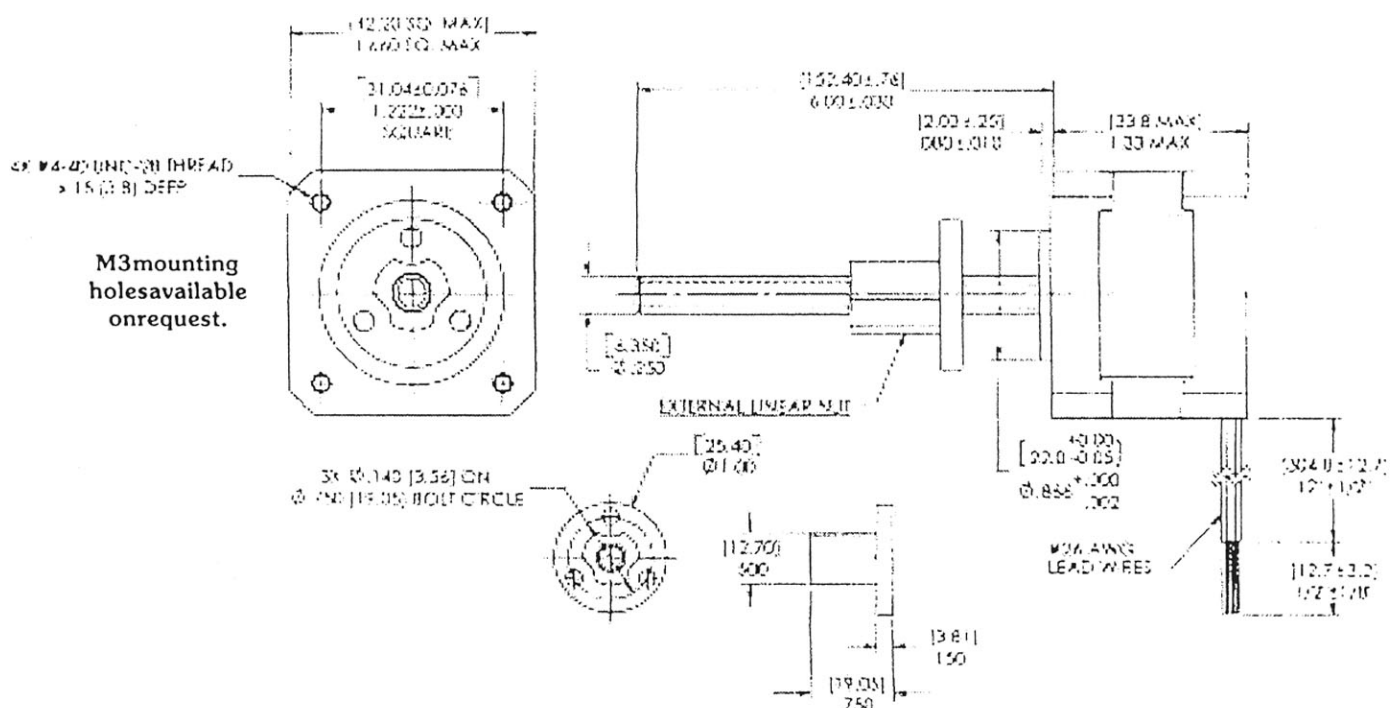
*Value truncated

Standard motors are Class B rated for maximum temperature of 130 °C. Also available, motors with high temperature capability windings up to 155 °C.

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

NOTE: See page 21 to identify product code information before placing order.

External Linear



Identifying Part Numbers for Orders

A standard HSI motor part number consists of 7 digits-XXXXX-VV

- The **first and second** digits indicate the motor's series or size (in mm).
Example: 35000 Series = 35 mm square
- The **third** digit or letter indicates the motor's step angle
Example: F = 1.8° non-captive; H = 1.8° captive or external linear
(NOTE: External linear actuators have the prefix "E" to distinguish them from the captive actuators; High Temperature actuators require the prefix "T")
- The **fourth** digit indicates the number of leads. (4 leads for bipolar; 6 leads for unipolar).
- The **fifth** digit indicates the travel per step (see chart) Example: N = .00012" (.003048 mm)
- The **sixth and seventh** digits indicate the motor's voltage. Standard voltages are 5 (05) and 12 (12) volt. We also have low inductance coils available for chopper drives. Custom voltages are also available.

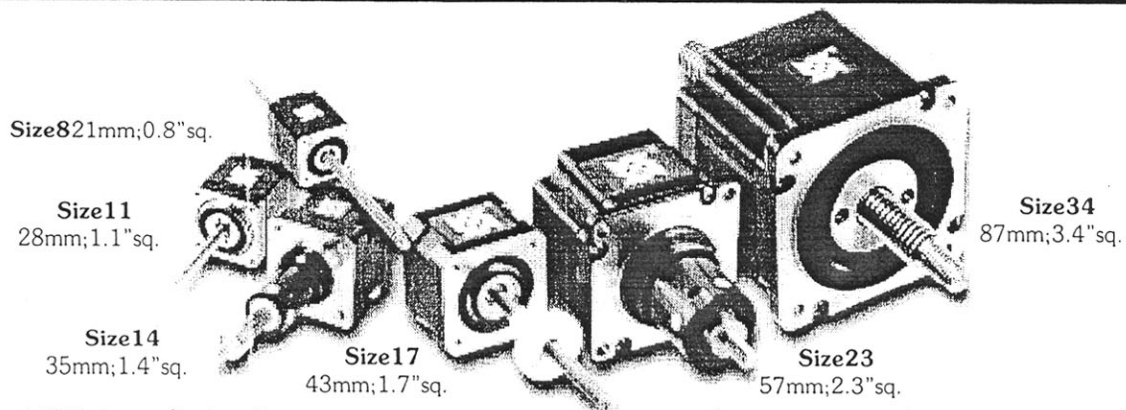
SCREW LENGTH OPTIONS : For non-captive shaft and external linear motors various screw lengths are available to accommodate any travel requirement.

For assistance with a part number or a custom design, please us at call 203.756.7441.

Travel Per Step Code Letter or Digit	Linear Travel Per Step		21000 Series Size 8 21 mm	28000 Series Size 11 28 mm	35000 Series Size 14 35 mm		43000 Series Size 17 43 mm	57000 Series Size 23 57 mm	87000 Series Size 34 87 mm
	Inches	Millimeters	Ø .138" (3.50) Screw	Ø .1875" (4.76) Screw	Ø .218" (5.54) Screw	Ø .240" (6.35) Screw	Ø .218" (5.54) Screw	Ø .250" (6.35) Screw	Ø .625" (15.88) Screw
U	0.00006	0.0015*	•				•		
V	0.000078*	0.002					•		
AA	0.000098*	0.0025	•						
N	0.00012	0.0030*	•		•		•		
7	0.000125	0.0031		•					
P	0.00015625	0.0039*				•	•		
AB	0.00019*	0.005	•						
K	0.00024	0.0060*	•		•		•		
9	0.00025	0.0063*		•					
A	0.0003125	0.0079*				•	•	•	
AC	0.00039*	0.01	•						
S	0.0004167	0.0105*						•	
J	0.00048	0.0121*	•		•		•		
3	0.0005	0.0127		•				•	•
B	0.000625	0.0158*				•	•		•
AD	0.00078*	0.02	•						
T	0.0008333	0.0211*						•	
Q	0.00096	0.0243*			•		•		
1	0.001	0.0254		•				•	
C	0.00125	0.0317*				•	•		•
AE	0.00157*	0.04	•						
R	0.00192	0.0487*			•		•		
2	0.002	0.0508		•				•	
Y	0.0025	0.0635							•
Z	0.005	0.127							•

*Value truncated

Overview of Hybrid Linear Actuators



HSI's line of hybrid linear actuators opens new avenues for equipment designers who require high performance and exceptional endurance in a very small package. The various patent pending designs use a proprietary manufacturing process, which incorporates engineering thermoplastics in the rotor driven nut and a stainless steel acme lead screw. This allows the motor to be much quieter, more efficient and more durable than the v-thread and bronze nut configuration commonly used in other actuators. Motor life is improved more than 10 times over the traditional bronze nut style—and it requires no maintenance and does not affect the cost. An additional feature is the bearing pre-load adjustment which, unlike other designs, does not protrude from the motor configuration commonly used in other actuators.

The HSI hybrid actuators come in six sizes, from 21 mm square to 87 mm square. Each size has three designs available—captive, non-captive and an external linear version.

There are twenty different travels per step available, from .00006 inch (.001524 mm) to .005 inch (.127 mm). Microstepping can be used for even finer resolution. Our 87 mm actuator delivers up to 500 pounds (227 Kg) of force.

These linear actuators are ideal for application requiring a combination of precise positioning, rapid motion and long life.

Typical applications include X-Y tables, medical equipment, semiconductor handling, telecommunication equipment, valve control, and numerous other uses. Sold at competitive prices, this product is an excellent value for incorporation into your next project. In addition to standard configurations, HSI can custom design these motors to meet your specific application needs. Lead time for prototypes is a 2 to 3 days, and 4 to 6 weeks for production orders.

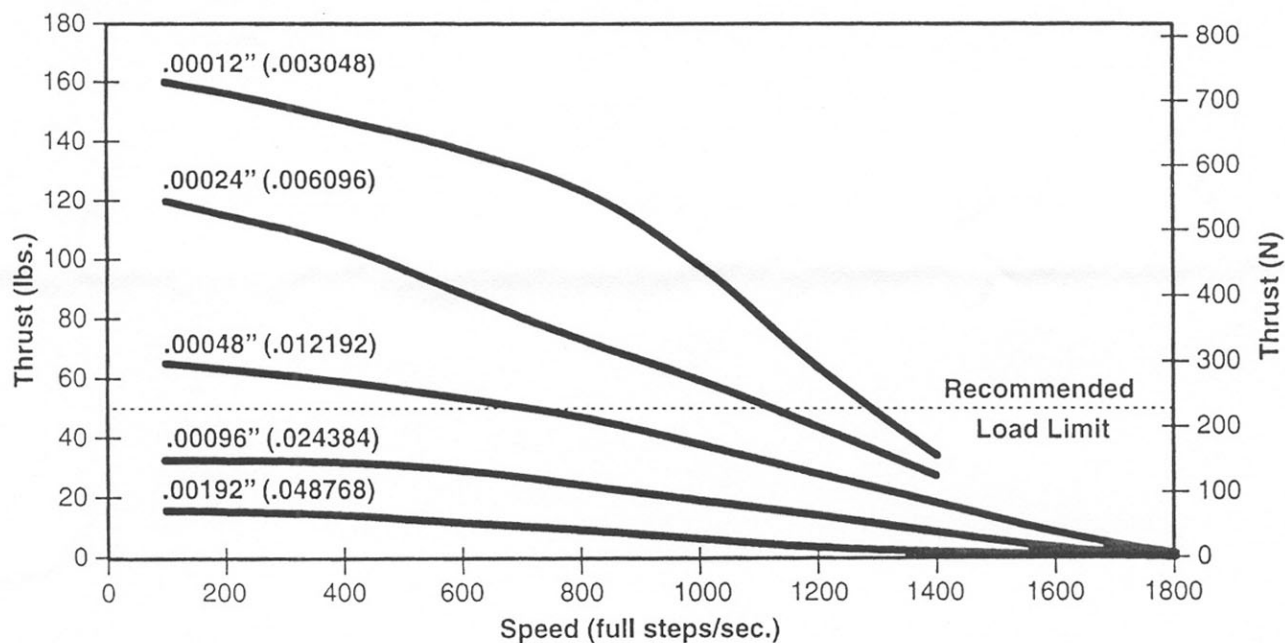
	Size(square)	Configuration	Stroke(mm)	MaxForce(N)	Travel/step(micron)	InputPower(W)
21000	21mm(0.8")	C/NC,EL	6.4-38.1 Upto ≈200	2-98	1.5-40	2.45
28000	28mm(1.1")	C/NC,EL	12.7-63.5 Upto ≈250	15-90	3-50	4.2
35000	35mm(1.4")	C/NC,EL	12.7-63.5 Upto ≈300	50-220	3-50	5.7
43000	43mm(1.7")	C/NC,EL	12.7-63.5 Upto ≈400	100-220	1.5-50	7.0
57000	57mm(2.3")	C/NC,EL	12.7-50.8 Upto ≈500	300-880	8-50	13.0
87000	87mm(3.4")	C/NC,EL	12.7-63.5 Upto ≈500	400-2200	12.7-127	31.2

Series43000Size17Speedvs.ThrustCurves

NOTE: Allchopperdrivecurveswerecreatedwitha5voltmotoranda40voltpowersupply.

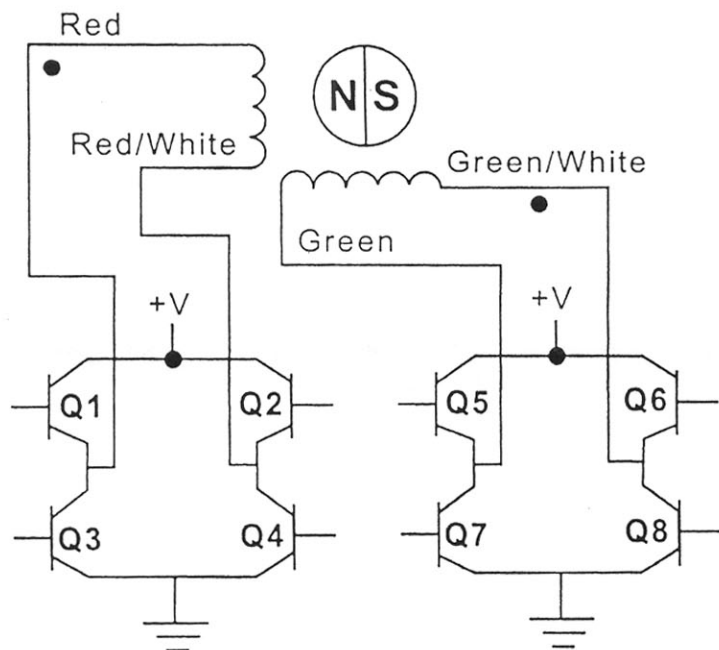
Bipolar Chopper Drive • 100% Duty Cycle

Ø.218(5.54)LeadScrew



HybridLinearActuatorWiring

Bipolar



HybridLinearActuatorSteppingSequence

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

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