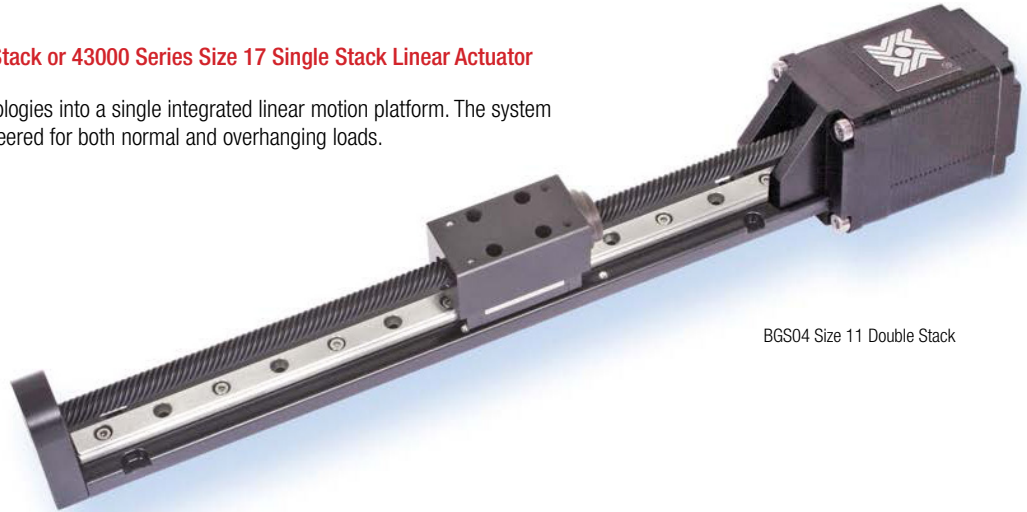


BGS04™ Linear Rail

with Hybrid 28000 Series Size 11 Double Stack or 43000 Series Size 17 Single Stack Linear Actuator

The BGS™ Linear Rail combines many technologies into a single integrated linear motion platform. The system provides excellent load capability and is engineered for both normal and overhanging loads.



BGS04 Size 11 Double Stack

Specifications: BGS04

BGS with Hybrid Linear Actuator Motor	Size 11 Double Stack Size 17 Single Stack*
Max. Stroke Length	18 in (460 mm)
Max. Load (horizontal)	22 lbs (100 N)
Roll Moment	5.72 lbs-ft (7.75 Nm)
Pitch Moment	4.88 lbs-ft (6.60 Nm)
Yaw Moment	5.68 lbs-ft (7.70 Nm)

* Size 17 is available with an optional programmable IDEA™ Drive.

Nominal Thread Lead		Lead Code
inches	mm	
0.025	0.635	0025
0.039	1.00	0039
0.050	1.27	0050
0.0625	1.59	0063
0.079	2.00	0079
0.100	2.54	0100
0.118	3.00	0118
0.200	5.08	0200

Nominal Thread Lead		Lead Code
inches	mm	
0.250	6.35	0400
0.394	10.00	0472
0.500	12.70	0500
0.750	19.05	0750
1.000	25.40	1000

To determine what is best for your application see the [Linear Rail Applications Checklist](#).

Identifying the BGS Part Number Codes when Ordering

BG	S	04	B	M	0025	XXX
Prefix	Frame Style	Frame Size Load*	Lubrication	Drive / Mounting	Nominal Thread Lead Code	Unique Identifier
BG = Ball Guide System	S = Standard	04 = Max. static load 22 lbs (100 N)	B = TFE wear resist, dry lubricant Black Ice®	M = Motorized For 43000 Series Size 17 Only G = IDEA™ integrated programmable drive – USB communications J = IDEA™ integrated programmable drive – RS485 communications	0025 = .025-in (.635) (see Lead Code charts above)	Suffix used to identify Size 11 or Size 17 motor – or a 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 call our Engineering Team at 603 213 6290.

Carriage holes available in Metric sizes M2, M2.5, M3, M4

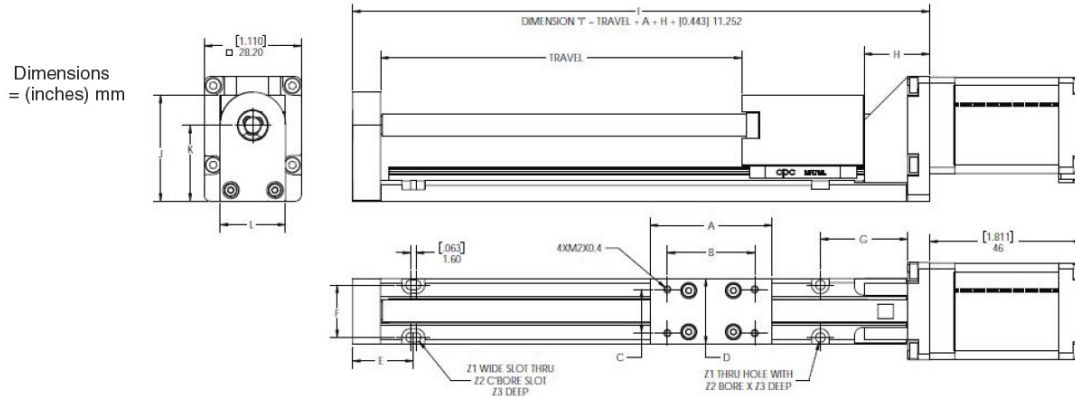
Double Stack

■ BGS04 Linear Rail with 28000 Series Size 11 Linear Actuator

Recommended for horizontal loads up to 22 lbs (100 N)

	A	B	C	D	E	F	G	H	I	J	K	L	Z1	Z2	Z3
(inch)	(1.40)	(1.00)	(0.50)	(0.75)	(0.69)	(0.60)	(1.00)	(0.75)	*	(1.22)	(0.87)	(0.75)	(0.11)	(0.20)	(0.09)
mm	35.56	25.40	12.70	19.05	17.53	15.24	25.4	19.05		30.86	22.10	19.05	2.8	5.1	2.3

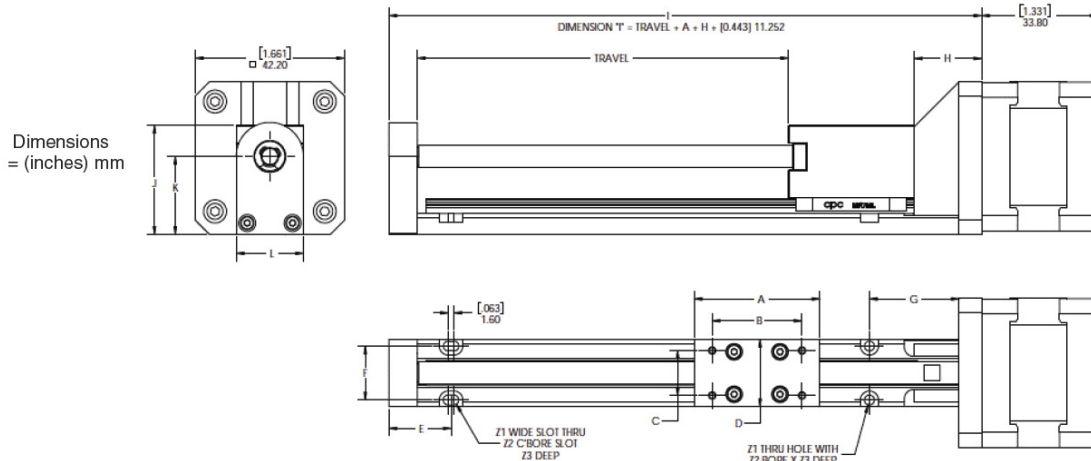
* Dimension "I" is a function of required travel distance.



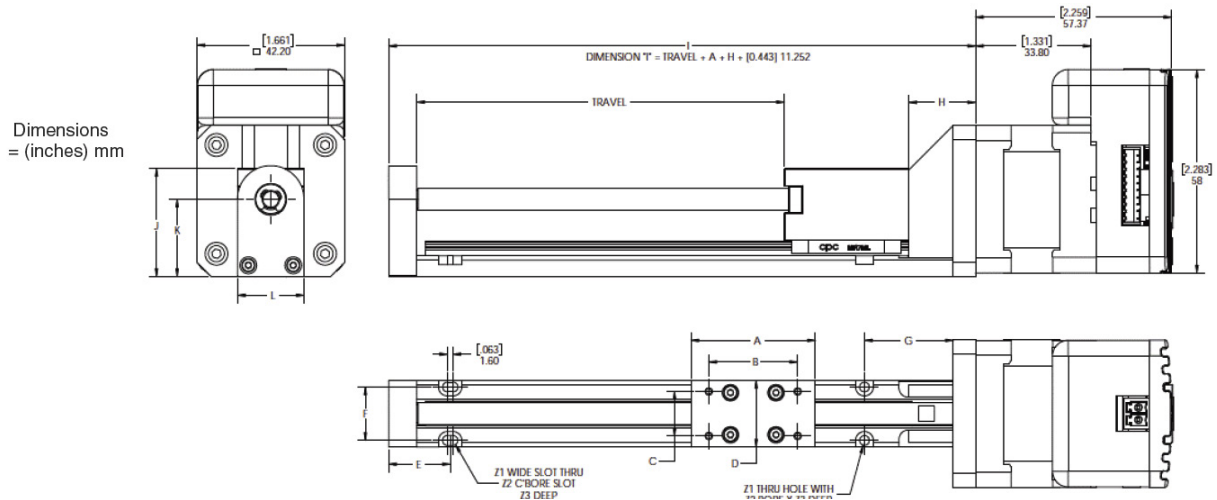
Single Stack

■ BGS04 Linear Rail with 43000 Series Size 17 Linear Actuator

Recommended for horizontal loads up to 22 lbs (100 N)



...with IDEA™ Drive



Double Stack

■ **28000 Series Size 11 Linear Actuator**

Size 11 Double Stack: 28 mm (1.1-in) Hybrid Linear Actuator (1.8° Step Angle)

Wiring	Bipolar		
	Winding Voltage	2.1 VDC	5 VDC
Current (RMS)/phase	1.9 A	750 mA	313 mA
Resistance/phase	1.1 Ω	6.7 Ω	34.8 Ω
Inductance/phase	1.1 mH	5.8 mH	35.6 mH
Power Consumption	7.5 W Total		
Rotor Inertia	13.5 gcm ²		
Insulation Class	Class B (Class F available)		
Weight	5.8 oz (180 g)		
Insulation Resistance	20 MΩ		



Size 11
Double Stack External Linear

Single Stack

■ **43000 Series Size 17 Linear Actuator**

Size 17: 43 mm (1.7-in) Hybrid Linear Actuator (1.8° Step Angle)

Wiring	Bipolar			Unipolar**	
	Programmable Drive	IDEA™ Drive Option Available			Not Applicable
Winding Voltage	2.33 VDC	5 VDC	12 VDC	5 VDC	12 VDC
Current (RMS)/phase	1.5 A	700 mA	290 mA	700 mA	290 mA
Resistance/phase	1.56 Ω	7.2 Ω	41.5 Ω	7.2 Ω	41.5 Ω
Inductance/phase	1.9 mH	8.7 mH	54.0 mH	4.4 mH	27.0 mH
Power Consumption	7 W				
Rotor Inertia	37 gcm ²				
Insulation Class	Class B (Class F available)				
Weight	8.5 oz (241 g)				
Insulation Resistance	20 MΩ				

Size 17 External Linear



Size 17 External Linear
with programmable IDEA Drive

IDEA™ Drive software is simple to use with on-screen buttons and easy-to-understand programming guides.

- Fully Programmable
- RoHS Compliant
- USB or RS-485 Communication
- Microstepping Capability – Full, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64
- Graphic User Interface
- Auto-population of Drive Parameters
- Programmable Acceleration/Deceleration and Current Control

For more information see the [IDEA™ Drive Data Sheet](#)

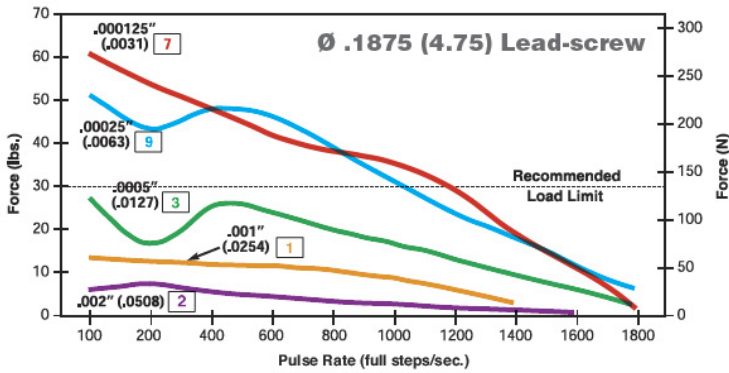
* 43000 Series Single Stack with IDEA programmable drive. Contact Haydon Kerk if higher voltage motor is desired.
** Unipolar drive gives approximately 30% less thrust than bipolar drive.

Double Stack

■ 28000 Series Size 11 Linear Actuator

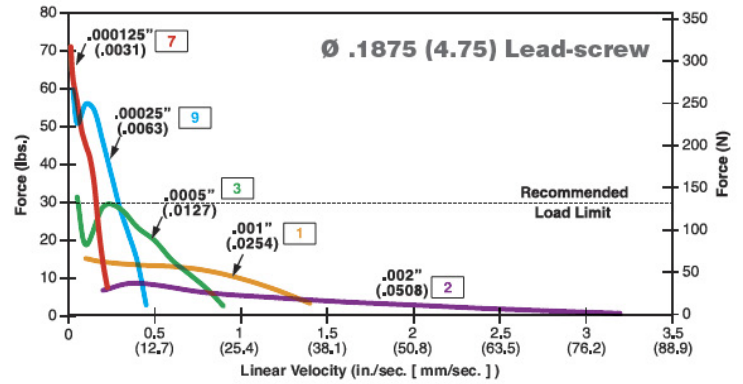
FORCE vs. PULSE RATE

– Chopper – Bipolar – 100% Duty Cycle



FORCE vs. LINEAR VELOCITY

– Chopper – Bipolar – 100% Duty Cycle

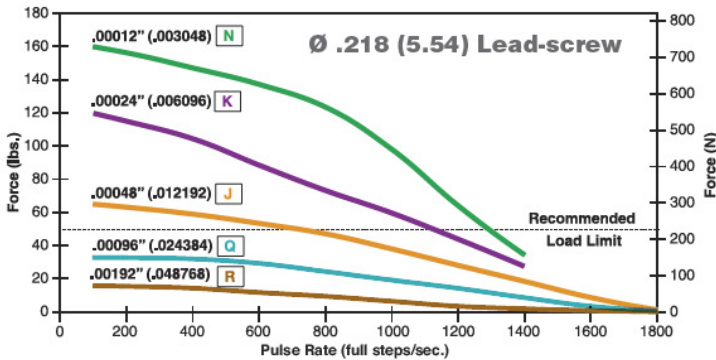


Double Stack

■ 43000 Series Size 17 Linear Actuator

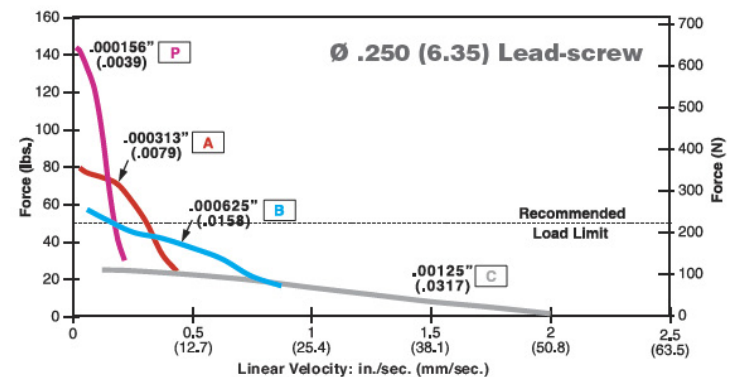
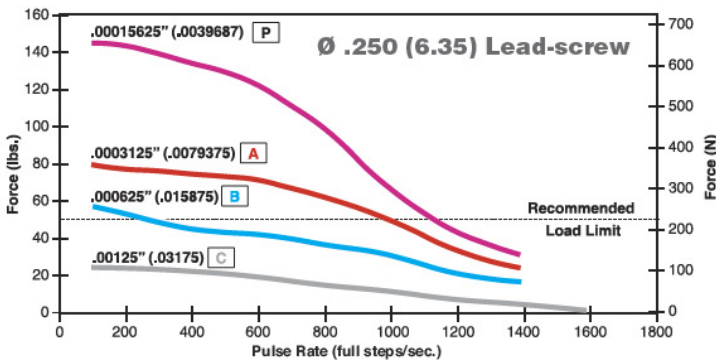
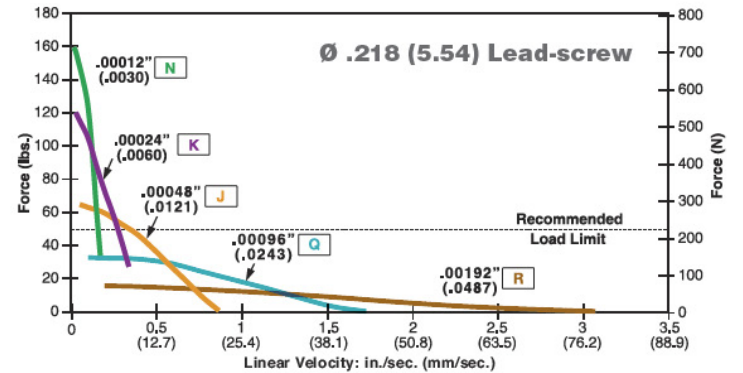
FORCE vs. PULSE RATE

– Chopper – Bipolar – 100% Duty Cycle



FORCE vs. LINEAR VELOCITY

– Chopper – Bipolar – 100% Duty Cycle



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.

With L/R drives peak force and speeds are reduced, using a unipolar drive will yield a further 30% force reduction.

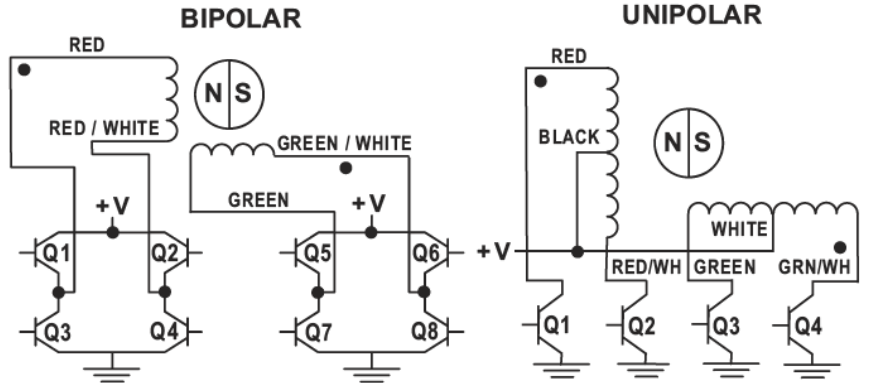
■ 28000 Series Size 11 and 43000 Series Size 17 Linear Actuators

Hybrids: Stepping Sequence

Hybrids: Wiring

	Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8
EXTEND CW	Unipolar	Q1	Q2	Q3	Q4
	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
		RETRACT CCW			

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



Size 11 28000 Series and Size 17 43000 Series • Integrated Connectors

Hybrid Size 11 Double Stack and Size 17 Single Stack linear actuators are available with an integrated connector. Offered alone or with a harness assembly, this connector is RoHS compliant and features a positive latch in order for high connection integrity. The connector is rated up to 3 amps and the mating connector will handle a range of wire gauges from 22 to 28. This motor is ideal for those that want to plug in directly to pre existing harnesses. In addition to standard configurations, Haydon Kerk Motion Solutions can custom design this motor to meet your specific application requirements.

- Motor Connector:** JST part # S06B-PASK-2
- Mating Connector:** JST part # PAP-06V-S
- Haydon Kerk Part #56-1210-5 (12 in. Leads)
- Wire to Board Connector:**
JST part number SPHD-001T-P0.5

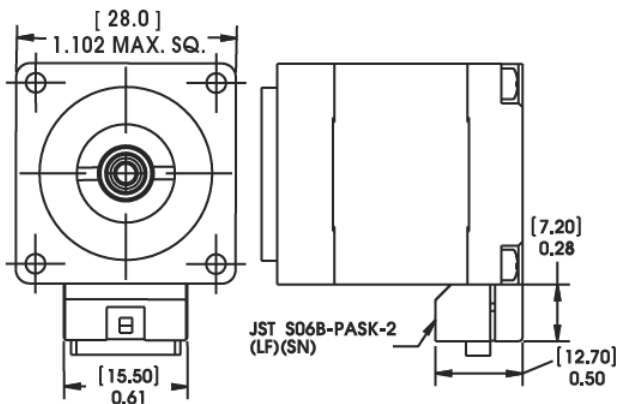


Pin #	Bipolar	Unipolar	Color
1	Phase 2 Start	Phase 2 Start	G/W
2	Open	Phase 2 Common	-
3	Phase 2 Finish	Phase 2 Finish	Green
4	Phase 1 Finish	Phase 1 Finish	R/W
5	Open	Phase 1 Common	-
6	Phase 1 Start	Phase 1 Start	Red

Dimensional Drawings

■ Integrated Connector with 28000 Series Size 11 Linear Actuator

Dimensions = (mm) inches



■ Integrated Connector with 43000 Series Size 17

Dimensions = (mm) inches

