# Slide Guided Rail Systems

Haydon Kerk Slide Guided Rails are available in many styles and sizes to meet your application needs. Many rails are offered with integrated drive, motorized, non-motorized or guide only versions without lead screw. Rails are available with wear-compensating, anti-backlash driven carriages to insure repeatability and accurate positioning. All moving surfaces include engineered polymers that provide a precise, strong and stable platform for a variety of linear motion applications.

Performance	Performance Atributes										
Series	Description	Sizes	Max Stroke m	Max Load N	Motorized	Rail Only	Guide Only	Stiffness	Major Attributes		
RGS	Aluminum rail w/ wear compensation	4, 6, 8, 10	2.5	67-445	•	•	•	*	High speed		
RGW	Aluminum rail w/ wear compensation	6, 10	2.5	156-445	•	•	•	**	Wide base		
WGS	Aluminum rail w/ wear compensation	6	2.5	156	•	•		***	Low profile		
LRS	Aluminum rail w/ wear compensation	4		222	•	•		***	Higher thrust		
SRA	Steel tube, no wear compensation	3, 4, 6, 8	1.6	45-440		•			Compact		
SRZ	Steel tube, no wear compensation	3, 4, 6, 8	1.6	45-440		•			Compact		

# RGS04 Motorized with 28000 Series

#### Linear Rail with Size 11 Double Stack Hybrid Stepper

The RGS04 28000 Series is our smallest screw driven slide that offers exceptional linear speed, accurate positioning and long life in a compact, value-priced assembly. The length and speed of the RGS is not limited by critical screw speed, allowing high RPM and linear speeds, even over long spans. Recommended for horizontal loads up to 15 lbs (67N).

RGS04 Motorized Size 11 28000 Series Double Stack

To determine what is best for your application see the Linear Rail Applications Checklist.



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 M3, M4.

Size 11 Double Stack: 28 mm (1.1-in) Hybrid External Linear Actuator (1.8° Step Angle)										
Wiring	Bipolar	Power Consumption	7.5 W Total							
Winding Voltage	2.1 VDC	Rotor Inertia	13.5 gcm <sup>2</sup>							
Current (RMS)/phase	1.9 A	Insulation Class	Class B (Class F available)							
Resistance/phase	1.1 Ω	Weight	5.8 oz (180 g)							
Inductance/phase	1.1 mH	Insulation Resistance	20 MΩ							

Size 11 Double Stack 28000 Series External Linear Actuator

Standard motors are Class B rated for maximum temperature of 130°C.



\*Metric threads also available for carriage.





Z2

(0.2)

5.1

Z3

(0.09)

2.3

n

### Double Stack

#### FORCE vs. PULSE RATE



# FORCE vs. LINEAR VELOCITY

- Chopper - Bipolar - 100% Duty Cycle



NOTE: All chopper onve curves were created with a 5 voir motor and a 40 voir 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.

#### Size 11 28000 Series • Stepping Sequence & Wiring

### Hybrids: Stepping Sequence

	Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8
Q	Step				
TEND	1	ON	OFF	ON	OFF
CM -	2	OFF	ON	ON	OFF
	3	OFF	ON	OFF	ON
۲	4	ON	OFF	OFF	ON
	1	ON	OFF	ON	OFF

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

#### Size 11 28000 Series • Integrated Connector

Offered alone or with a harness assembly, the integrated 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. Ideal for those that want to plug in directly to pre-existing harnesses.

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 # 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





Hybrids: Wiring **BIPOLAR** RED Ν S **RED / WHITE** GREEN / WHITE GREEN +V

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Motorized Size 17 Single or **Double Stack** 

#### **RGS Series • RGS04**



Size 17 43000 Series Double Stack

RGS04 Motorized

# RGS04 Motorized with 43000 Series

#### Linear Rail with Size 17 Single or Double Stack Hybrid Stepper with or without an integrated programmable IDEA<sup>™</sup> Drive

The RGS04 is a screw driven rail that offers exceptional linear speed, accurate positioning and long life in a compact assembly. The length and speed of the RGS is not limited by critical screw speed, allowing high RPM and linear speeds even over long spans. Recommended for horizontal loads up to 15 lbs (67N).



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 M3, M4, M5, M6.

	Size 17: 43 mm (1.7-in) External Linear Actuator (1.8° Step Angle)										
		S	ingle Stack	Double Stack							
Wiring		Bipolar		Unipo	olar**	Bipolar					
Programmable Drive	IDEA⊤	<sup>™</sup> Drive Availa	able	N	/A	IDEA	™ Drive Avai	lable			
Winding Voltage	$2.33  \text{VDC}^{\dagger}$	5 VDC	12 VDC	5 VDC 12 VDC		$2.33 \text{ VDC}^{\dagger}$	5 VDC	12 VDC			
Current (RMS)/phase	1.5 A	700 mA	290 mA	700 mA	290 mA	2.6 A	1.3 A	550 mA			
Resistance/phase	1.56 Ω 7.2 Ω 41.5 Ω		41.5 Ω	7.2 Ω	41.5 Ω	0.9 Ω	3.8 Ω	21.9 Ω			
Inductance/phase	1.9 mH	8.7 mH	54.0 mH	4.4 mH	27.0 mH	1.33 mH	8.21 mH	45.1 mH			
Power Consumption			7 W			13.2 W					
Rotor Inertia			37 gcm <sup>2</sup>				78 gcm <sup>2</sup>				
Insulation Class		Class B	(Class F ava		Class B (Class F available)						
Weight		8	.5 oz (241 g)		12.5 oz (352 g)						
Insulation Resistance			20 MΩ				20 MΩ				



<sup>†</sup>43000 Series with IDEA<sup>™</sup> Drive. Contact us if higher voltage motor is desired.

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

#### Simple to use IDEA<sup>™</sup> Drive software with on-screen buttons and easy-to-understand programming guides

Software program generates motion profiles directly into the system and also contains a "debug" utility allowing line-by-line execution of a motion program for easy troubleshooting.

NOTE: For more information see the Haydon Kerk IDEA Drive webpages

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Motion -			Program Row -			Other	
- 60	•••	Stop	Geto	Return	Int on Pos	Set Durputs	Set Position
- Ret	nect	£-540p	Goto If	Return To	Int on input	Reset	Abort
Mes	e 3o		Jump N Time	i Wat		Encoder	
Ge Al	Speed		Go At Speed	Wait for Move		Convnext	
Action	Label	Description		Comment		Program Edit	
0	Start	Extend 2 in				Program Name:	
2		Wait for Move Wait 1 sec				Capy	Paste
4		Report 1 in Wait for More				Renove	New
5		Wait 2 sec				Vew/Edit	Fiet
2		Wait for Move				Down	foad
- 22						Run Cantral	
		The second	1044			Program To Run:	
	Devoration	244M	1000			Stat	Stee
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# Motorized Size 17 Single or **Double Stack**



RGS04 with 43000 Series Size 17 Single or Double Stack Linear Actuator (drawing above) or Double Stack Linear Actuator with integrated programmable IDEA <sup>™</sup> Drive (drawing below)																				
	Α	D	D1	E	F	G	Н	l*	L1	N	N1	Р	Q	S	Т	U	V	Z1	Z2	Z3
(inch)	(inch) (0.40) (0.75) (0.75) (0.75) (0.53) (1.40) (1.00) (0.50) 4-40 (0.50) (0.38) (1.00) (0.60) (0.5) (0.37) (0.15) (0.23) (0.73) (0.11) (0.2) (0.09)																			
mm	10.2	19	19	13.5	35.6	25.4	12.7	UNC	12.7	9.52	25.4	15.2	12.7	9.4	3.8	5.8	18.0	2.8	5.1	2.3

\*Metric threads also available for carriage.



# Hybrids: Stepping Sequence

Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8	
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	

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



Hybrids: Wiring





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www.haydonkerkpittman.com

Single Stack

# FORCE vs. PULSE RATE



# FORCE vs. PULSE RATE

- 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.

# Size 17 47000 Series • Integrated Connector

Offered alone or with a harness assembly, the integrated 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. Ideal for those that want to plug in directly to pre-existing harnesses.

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 # 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



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# FORCE vs. LINEAR VELOCITY

Motorized Size 17 Single or

**Double Stack** 





# FORCE vs. LINEAR VELOCITY

- Chopper - Bipolar - 100% Duty Cycle





# RGS04 Non-Motorized Linear Rails

#### Screw driven linear rail or linear rail without screw

The non-motorized RGS Series features standard wear compensating, anti-backlash driven carriages to ensure repeatable and accurate nositioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers

positioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers running on Kerkote<sup>®</sup> TFE coating, providing a strong, stable platform for a variety of linear motion applications. RGS04 Non-Motorized Screw Driven Linear Rail

### Identifying the Non-Motorized RGS Part Numbers when Ordering

RG	S	04	К	Α	0100 —	XXX
<b>Prefix</b> <b>RG</b> = Rapid Guide Screw	Frame Style S = Standard	Frame Size Load 04 = 15 lbs (67 N) (Maximum static load)	Coating K = TFE Kerkote	Drive / Mounting A = None	Nominal Thread Lead Code 0000 = No Screw 0100 = .100-in (2.54) 0200 = .200-in (5.08) 0500 = .500-in (12.70) 1000 = 1.000-in (2.54)	Unique Identifier Suffix used to identify specific motors or a propri- etary 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 M3, M4.

### Specifications

	Inch Lead	Thread Lead Code	Nominal Rail Diam.	Nominal Screw Diam.	Typical Drag Torque	Life @ 1/4 Design Load*	Torque-to- Move Load	Design Load	Screw Inertia
RGS04 Non-Motorized	inch (mm)		inch (mm)	inch (mm)	oz - in (N-m)	inch (cm)	oz-inc/lb (Nm/Kg)	lbs (N)	oz-in-sec²/in (kg-m-sec²/m)
with Guide	.100 (2.54)	0100			3.0 (0.2)		1.0 (.016)		
Screw	.200 (5.08)	0200	0.4	1/4	4.0 (.03)	100,000,000	1.5 (.023)	1 = (67)	.3 x 10-⁵
	.500 (12.70)	<b>0500</b> (10.2)	(6.4)	5.0 (.04)	(254,000,000)	2.5 (.039)	1 15 (67)	(6.5 x 10- <sup>6</sup> )	
	1.000 (25.40)	1000			6.0 (.04)		4.5 (.070)		

**NOTE**: RGS assemblies with lengths over 36 inches (914.4 mm) and/or leads higher than .5 inch (12.7 mm) will likely have higher drag torque than listed values. \*Determined with load in a horizontal position.



	Α	B	C	D	D1	E	F	G	Н	*	K	L1	L2	Ν	Р	Q	R	S	T	U	V	Х	Z1	Z2	Z3
inch	0.40	.83	.1250	0.75	0.75	0.53	1.38	1.00	0.50	4-40	0.6	.53	.47	.375	.60	.50	.52	0.37	0.15	0.23	0.7	.38	0.115	0.20	0.09
mm	10.2	21.1	3.175	19.1	19.1	13.5	35.1	25.4	12.7	UNC	15	13.5	11.9	9.53	15.24	12.7	13.2	9.4	3.8	5.8	18.0	9.7	2.92	5.1	2.3

\*Metric carriage hole sizes available M3, M4.



Non-Motorized without Lead Screw Dimensional Drawings





	Α	D	D1	E	F	G	Н	<b>I</b> *	Ν	Р	Q	S	Т	U	V	Z1	Z2	Z3
inch	0.40	0.75	0.75	0.53	1.4	1.00	0.50	4-40	.375	.60	.50	0.37	0.15	0.23	0.7	0.11	0.20	0.09
mm	10.2	19.1	19.1	13.5	36	25.4	12.7	UNC	9.53	15.24	12.7	9.4	3.8	5.8	18.0	2.8	5.1	2.3

\*Metric carriage hole sizes available M3, M4.

To determine what is best for your application see the Linear Rail Applications Checklist.

#### Material Coatings

#### Kerkite<sup>®</sup> Polymers

Compounded with lubricants, reinforcements and thermoplastic polymers, Kerkite Polymers are formulated to provide optimum performance in its target conditions and applications.

- Injection molded
- High performance
- Exceptional wear properties

#### Kerkote<sup>®</sup> TFE Coating

A dry lubricant, Kerkote will not become dry and paste-like, and does not attract dirt or debris. Kerkote differs from conventional plating and coating because it is soft, more evenly distributed than other lubricants, and decreases erratic drag torques and unpredictable wear.

- Reduces friction
- Cost effective
- Long term and maintenance free

Kerkote provides the maximum level of self-lubrication, requiring no additional external lubrication or maintenance.





# RGS06 and RGW06 Wide Linear Rails with 43000 Series Hybrid Motor

\*Also available with 57000 Series Hybrid Motor (see pages 247-251)

Combines many Haydon Kerk Motion Solutions patented motion technologies into a single integrated, linear motion control system. The Motorized RGS linear rails feature standard wear-compensating, anti-backlash driven carriages to insure repeatable and accurate positioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers running on Kerkote<sup>®</sup> TFE coating, providing a strong, stable platform for a variety of linear motion applications. When integrated with an IDEA Drive, the system combines Haydon<sup>®</sup> hybrid linear actuator technology with a fully programmable, integrated stepper motor drive. RGS Series Linear Rail with Hybrid 43000 Series Size 17 Linear Actuator Stepper Motors.

Technical specifications for 43000 Series Size 17 Hybrid Linear Actuator Stepper Motors are on page 247.

To determine what is best for your application see the Linear Rail Applications Checklist.

RGW06 43000 Series Size 17 Double Stack with programmable IDEA™ Drive

#### Identifying the RGS06 Part Number Codes when Ordering

RG	S	06	К —	М	0100	XXX
Prefix	Frame Style	Frame Size Load*	Lubrication	Drive / Mounting	Nominal Thread Lead Code	Unique Identifier
RG = Rapid Guide Screw	S = Standard W = Wide sensor mount capability	<b>06</b> = 35 lbs (156 N) (Maximum static load)	K = TFE Kerkote®	$\begin{split} \boldsymbol{M} &= Motorized \\ \boldsymbol{G} &= Motorized + IDEA^{\mathsf{TM}} \\ & integrated \ programmable \\ & drive - USB \ communi- \\ & cations \\ \boldsymbol{J} &= Motorized + IDEA^{\mathsf{TM}} \\ & integrated \ programmable \\ & drive - RS485 \\ & communications \\ \end{split}$	0050 = .050-in (1.27) 0079 = .079-in (2.00) 0100 = .100-in (2.54) 0157 = .157-in (4.00) 0197 = .197-in (5.00) 0200 = .200-in (5.08) 0250 = .250-in (6.35) 0375 = .375-in (9.53) 0400 = .400-in (10.16) 0472 = .472-in (12.00) 0500 = .500-in (12.70) 0750 = .750-in (19.05) 0984 = .984-in (25.00) 1000 = 1.000-in (25.4) 1200 = 1.200-in (30.48)	Suffix used to identify specific motors (43000 Single/ Double Stack – 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, M4, M5, M6





#### RGS06 Linear Rail with 43000 Series Size 17 Single and Double Stack Linear Actuators

Recommended for horizontal loads up to 35 lbs (156 N)



#### RGW06 Wide Linear Rail with 43000 Series Size 17 Single and Double Stack Linear Actuators

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

	Α	D	D1	F	G	Н	<b>I</b> *	L1	Ν	Р	Q	S	Т	U	۷	Z1	Z2	Z3
(inch)	(0.6)	(2.0)	(1.13)	(2.0)	(1.5)	(0.75)	6-32	(1.0)	(0.5)	(1.46)	(1.04)	(0.83)	(0.51)	(0.63)	(1.39)	(0.14)	(0.25)	(0.14)
mm	15.2	50.8	28.7	50.8	38.1	19.0	UNC	25.4	12.7	22.9	26.4	21.1	13.0	16.0	35.3	3.6	6.3	3.6

\* Metric threads also available for carriage.







**FLAG** mounts to side of

#### SENSOR MOUNT inserts into slot of **RGW** base

Sensor mount kits, based on a U-channel optical sensor, are available for the RGW Series. Each kit includes one flag, three sensor mounts, and all mounting hardware. Sensors are not included in the kit and must be ordered separately from the sensor manufacturer.

43000 Series Size 17 Single Stack External Linear

# Single Stack

#### 43000 Series Size 17

Size 17: 43	8 mm (1.7-in)	Hybrid Linear	Actuator (1.8°	Step Angle)						
Wiring		Bipolar		Unipo	olar**					
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 m           1.5 A         700 mA         290 mA         700 mA         290 m									
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 <sup>2</sup>							
Insulation Class	Class B (Class F available)									
Weight	8.5 oz (241 g)									
Insulation Resistance			20 MΩ							

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

# and easy-tounderstand

• 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 <u>IDEA™ Drive Data Sheet</u>

Size 17 External Linear with programmable IDEA Drive

43000 Series Size 17 Double Stack External Linear





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43000 Series Size 17

**Double Stack** 

Size 17 Double Stack	Size 17 Double Stack: 43 mm (1.7-m) Hybrid Linear Actuator (1.8*										
	Step Angl	e)									
Wiring		Bipolar									
Winding Voltage	2.33 VDC	5 VDC	12 VDC								
Current (RMS)/phase	2.6 A	1.3 A	550 mA								
Resistance/phase	0.9 Ω	3.8 Ω	21.9 <b>Ω</b>								
Inductance/phase	1.33 mH	8.21 mH	45.1 mH								
Power Consumption		13.2 W									
Rotor Inertia		78 gcm <sup>2</sup>									
Insulation Class	Clas	s B (Class F avail	able)								
Weight	12.5 oz (352 g)										
Insulation Resistance	20 MΩ										

\* 43000 Series Single Stack with IDEA programmable drive. Contact Haydon Kerk if higher voltage motor is desired. Standard motors are Class B rated for maximum temperature of 130°C.



### RGS06 with 43000 Series Size 17 Single and Double Stack linear motors with IDEA Drive

Recommended for horizontal loads up to 35 lbs (156 N)

	Α	D	D1	E	F	G	Н	<b>I</b> *	L1	Ν	N1	Р	Q	S	Т	U	V	Z1	Z2	Z3
(inch)	(0.6)	(1.13)	(1.13)	(0.79)	(2.0)	(1.5)	(0.75)	6-32	(1.0)	(0.5)	(1.5)	(0.9)	(0.74)	(0.55)	(0.22)	(0.35)	(1.1)	(0.14)	(0.25)	(0.13)
mm	15.2	28.7	28.7	20.1	50.8	38.1	19.0	UNC	25.4	12.7	38.1	22.9	18.8	13.9	5.6	8.9	27.9	3.6	6.3	3.3





# RGW06 Wide Rail with 43000 Series Size 17 Single Stack and Double Stack linear motors with IDEA Drive

Recommended for horizontal loads up to 35 lbs (156 N)







carriage SENSOR MOUNT inserts into slot of

RGW base

hardware. Sensors are not included in the kit and must be ordered separately

from the sensor manufacturer.

**Maydon** [kerk]





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





# RGS06 and RGW06 Wide Linear Rails with 57000 Series Hybrid Motor

A combination of Haydon Kerk Motion Solutions patented motion technologies into a single integrated, linear motion control system. RGS linear rails feature standard wear-compensating, anti-backlash driven carriages to insure repeatable and accurate positioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers running on Kerkote<sup>®</sup> TFE coating, providing a strong, stable platform for a variety of linear motion applications. RGS Series Linear Rail with Hybrid 57000 Series Size 23 Linear Actuator Stepper Motors

Technical specifications for 57000 Series Size 23 Hybrid Linear Actuator Stepper Motors are on page 249.

To determine what is best for your application see the Linear Rail Applications Checklist.

RGW06 57000 Series Size 23 Double Stack

#### Identifying the BGS Part Number Codes when Ordering

RG	S	06	К —	М	0100	XXX
Prefix	Frame Style	Frame Size Load*	Lubrication	Drive / Mounting	Nominal Thread Lead Code	Unique Identifier
RG = Rapid Guide Screw	S = Standard W = Wide sensor mount capability	<b>06</b> = 35 lbs (156 N) (Maximum static load)	K = TFE Kerkote®	M = Motorized	0050 = .050-in (1.27) 0079 = .079-in (2.00) 0100 = .100-in (2.54) 0157 = .157-in (4.00) 0197 = .197-in (5.00) 0200 = .200-in (5.08) 0250 = .250-in (6.35) 0375 = .375-in (9.53) 0400 = .400-in (10.16) 0472 = .472-in (12.00) 0500 = .500-in (12.70) 0750 = .750-in (19.05) 0984 = .984-in (25.00) 1000 = 1.000-in (25.4) 1200 = 1.200-in (30.48)	Suffix used to identify specific motors (43000 Single/ Double Stack - 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 M3, M4, M5, M6



Motorized Size 23

#### RGS06 with 57000 Series Size 23 Single and Double Stack linear motors

Recommended for horizontal loads up to 35 lbs (156 N)



# RGW06 Wide 57000 Series Size 23 Single Stack and Double Stack linear motors

Dimensions = (inches) mm

Recommended for horizontal loads up to 35 lbs (156  $\ensuremath{\text{N}}\xspace$ )



\* Metric threads also available for carriage.

#### RGW06 Sensor Mount Kit Part No. RGW06SK

Sensor mount kits, based on a U-channel optical sensor, are available for the RGW Series. Each kit includes one flag, three sensor mounts, and all mounting hardware. Sensors are not included in the kit and must be ordered separately from the sensor manufacturer.



FLAG mounts to side of carriage

SENSOR MOUNT inserts into slot of RGW base



### Single Stack

#### 57000 Series Size 23

Size	23: 57 mm (2.3	-in) Hybrid Linea	ar Actuator (1.8°	Step Angle)						
Wiring		Bipolar		Unip	olar**					
Winding Voltage	3.25 VDC	5 VDC	12 VDC	5 VDC	12 VDC					
Current (RMS)/phase	2.0 A	1.3 A	.54 A	1.3 A	.54 A					
Resistance/phase	1.63 Ω         3.85 Ω         22.2 Ω         3.85 Ω         22.2 Ω									
Inductance/phase	3.5 mH 10.5 mH 58 mH 5.3 mH 23.6 mH									
Power Consumption			13 W							
Rotor Inertia			166 gcm <sup>2</sup>							
Insulation Class	Class B (Class F available)									
Weight	18 oz (511 g)									
Insulation Resistance			20 MΩ							

\*\* Unipolar drive gives approximately 30% less thrust than bipolar drive. Standard motors are Class B rated for maximum temperature of 130°C.

# **Double Stack**

#### 57000 Series Size 23

Size 23 Double Stack:	57 mm (2.3-in) Hyb	orid Linear Actuator	(1.8° Step Angle)
Wiring		Bipolar	
Winding Voltage	3.25 VDC	5 VDC	12 VDC
Current (RMS)/phase	3.85 A	2.5 A	1 A
Resistance/phase	0.98 Ω	2.0 Ω	12.0 Ω
Inductance/phase	2.3 mH	7.6 mH	35.0 mH
Power Consumption		25 W Total	
Rotor Inertia		321 gcm <sup>2</sup>	
Insulation Class	Cla	ass B (Class F availat	ole)
Weight		32 oz (958 g)	
Insulation Resistance		20 MΩ	









FORCE vs. PULSE RATE – Chopper – Bipolar – 100% Duty Cycle

FORCE vs. LINEAR VELOCITY – Chopper – Bipolar

- 100% Duty Cycle



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



#### 43000 Series Size 17 and 57000 Series Size 23

Hybrids: Stepping Sequence

Hybrids: Wiring

	Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8	
Ţ	Unipolar	Q1	Q2	Q3	Q4	
TEND	Step					
€ I	1	ON	OFF	ON	OFF	NOC .
	2	OFF	ON	ON	OFF	
V	3	OFF	ON	OFF	ON	
	4	ON	OFF	OFF	ON	
	1	ON	OFF	ON	OFF	

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



# Size 17 43000 Series • Integrated Connectors

Haydon Kerk Hybrid Size 17 Single and Double 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: Mating Connector:

JST part # S06B-PASK-2 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 43000 Series Size 17

Dimensions = (mm) inches



# RGS06 Non-Motorized Linear Rails

#### Screw driven linear rails in standard or wide format

#### • Linear rails without screw in standard or wide format

The non-motorized RGS Series features standard wear compensating, anti-backlash driven carriages to ensure repeatable and accurate positioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers running on Kerkote<sup>®</sup> TFE coating, providing a strong, stable platform for a variety of linear motion applications.

Recommended for horizontal loads up to 35 lbs (156 N).





NOTE: Dashes must be included in Part Number (-) as shown above. For assistance call our Engineering Team at 603 213 6290.

#### Specifications

	Inch Lead	Thread Lead Code	Nominal Rail Diam.	Nominal Screw Diam.	Typical Drag Torque	Life @ 1/4 Design Load*	Torque-to- Move Load	Design Load*	Screw Inertia
RGS06 Non-Motorized	inch (mm)		inch (mm)	inch (mm)	oz - in (N-m)	inch (cm)	oz-inc/lb (Nm/Kg)	lbs (N)	oz-in-sec²/in (kg-m-sec²/m)
with Guide	.100 (2.54)	0100			4.0 (0.3)		1.0 (.016)		
Sciew	.200 (5.08)	0200	0.6	3/8	5.0 (.04)	100,000,000	1.5 (.023)		1.5 x 10-⁵
	.500 (12.70)	0500	(15.2)	(9.5)	6.0 (.04)	(254,000,000)	2.5 (.039)	30 (100)	(4.2 x 10- <sup>6</sup> )
	1.000 (25.40)	1000			7.0 (.05)		4.5 (.070)		

**NOTE:** RGS assemblies with lengths over 36 inches (914.4 mm) and/or leads higher than .5 inch (12.7 mm) will likely have higher drag torque than listed values. \*Determined with load in a horizontal position.

Dimensional Drawings	
<ul><li>Screw Driven</li><li>Standard Frame</li></ul>	



#### RGS06 Non-Motorized. Screw Driven

				.,																					
	Α	В	C	D	D1	E	F	G	Н	<b>I</b> *	K	L1	L2	Ν	Р	Q	R	S	Т	U	٧	X	Z1	Z2	Z3
inch	0.60	1.25	.1875	1.13	1.13	0.79	2.0	1.50	0.750	6-32	0.9	.80	.80	.50	.90	.74	.80	.55	.22	.35	1.1	.50	.14	.25	.13
mm	15.2	31.8	4.762	28.6	28.6	20.1	51	38.1	19.1	UNC	23	20.3	20.3	12.7	22.8	18.8	20.3	14.0	5.6	8.9	28	12.7	3.6	6.4	3.3

\*Metric carriage hole sizes available M3, M4, M5, M6.





#### RGW06 Wide Series, Non-Motorized, Screw Driven

	Α	В	C	D	D1	F	G	Н	*	K	L1	L2	Ν	Р	Q	R	S1	Т	U	V	Х	Y	Z1	Z2	Z3
inch	0.60	1.25	.1875	2.0	1.13	2.0	1.50	0.750	6-32	1.2	.80	.80	.50	1.46	1.04	.80	.83	.51	.63	1.4	.50	.170	.14	.25	.14
mm	15.2	31.8	4.762	50.8	28.6	50.8	38.1	19.1	UNC	30	20.3	20.3	12.7	37.0	26.4	20.3	21.2	13.0	16.0	36	12.7	4.32	3.6	6.4	3.6

\*Metric carriage hole sizes available M3, M4, M5, M6.



NOTE: The coupling shown in the dimensional drawing is not included.

#### RGW06 Motor Mount, Wide Series, Non-Motorized, Screw Driven

					,	-		,	-																
	Α	В	C	D	D1	F	G	Н	l*	K	L1	L2	Ν	Р	Q	R	S1	T	U	V	Х	Y	Z1	Z2	Z3
inch	0.60	1.25	.1875	2.0	1.13	2.0	1.50	0.750	6-32	1.2	.80	.80	.50	1.46	1.04	.80	.83	.51	.63	1.4	.50	.170	.14	.25	.14
mm	15.2	31.8	4.762	50.8	28.6	50.8	38.1	19.1	UNC	30	20.3	20.3	12.7	37.0	26.4	20.3	21.2	13.0	16.0	36	12.7	4.32	3.6	6.4	3.6

\*Metric carriage hole sizes available M3, M4, M5, M6.

# **RGW06 Sensor Mount Kits**

Sensor mounting kits based on U-channel optical sensor. Each kit includes one flag, three sensor mounts and all mounting hardware. Sensors are not included in the kit and must be ordered separately from sensor manufacturer. Part # RGW06SK





**Non- Motorized** 



#### RGS06 Non-Motorized, Without Screw Driven

	Α	D	D1	Е	F	G	Н	<b>I</b> *	Ν	Р	Q	S	Т	U	V	Z1	Z2	Z3
inch	0.60	1.13	1.13	.79	2.0	1.50	.75	6-32	.50	.90	.74	.55	.22	.35	1.1	.14	.25	.13
mm	15.2	28.6	28.6	20.1	51	38.1	19	UNC	12.7	22.8	18.8	14	5.6	8.9	28	3.6	6.4	3.3

\*Metric carriage hole sizes available M3, M4, M5, M6.



	A	D	D1	F	G	Н	<b>I</b> *	Ν	Р	Q	S	Т	U	V	Z1	Z2	Z3
inch	0.60	1.13	1.13	2.0	1.50	.75	6-32	.50	1.46	1.04	.83	.51	.63	1.4	.14	.25	.14
mm	15.2	28.6	28.6	51	38.1	19	UNC	12.7	37	26.4	21.2	13	16	36	3.6	6.4	3.6
inch mm	0.60 15.2	1.13 28.6	1.13 28.6	2.0 51	1.50 38.1	.75 19	6-32 UNC	.50 12.7	1.46 37	1.04 26.4	.83 21.2	.51 13	.63 16	1.4 36	.14 3.6	; ;	.25 6.4

\*Metric carriage hole sizes available M3, M4, M5, M6.

To determine what is best for your application see the Linear Rail Applications Checklist.

### Material Coatings

#### Kerkite<sup>®</sup> Polymers

Compounded with lubricants, reinforcements and thermoplastic polymers, Kerkite Polymers are formulated to provide optimum performance in its target conditions and applications.

- Injection molded
- · High performance
- · Exceptional wear properties

#### Kerkote<sup>®</sup> TFE Coating

A dry lubricant, Kerkote will not become dry and paste-like, and does not attract dirt or debris. Kerkote differs from conventional plating and coating because it is soft, more evenly distributed than other lubricants, and decreases erratic drag torques and unpredictable wear.

- Reduces friction
- Cost effective
- · Long term and maintenance free

Kerkote provides the maximum level of self-lubrication, requiring no additional external lubrication or maintenance.



# RGW06 Non-Motorized Linear Rails

#### • Screw driven linear rails in wide format

#### · Linear rails without screw in wide format

The non-motorized RGW Series features standard wear compensating, anti-backlash driven carriages to ensure repeatable and accurate positioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers running on Kerkote<sup>®</sup> TFE coating, providing a strong, stable platform for a variety of linear motion applications. Recommended for horizontal loads up to 35 lbs (156 N).

To determine what is best for your application see the Linear Rail Applications Checklist.



Identifying the Non-Motorized RGW Part Numbers when Ordering

RG	W	06	К —	А	0100 —	XXX
<b>Prefix</b> <b>RG</b> = Rapid Guide Screw	Frame Style W = Wide Sensor Mount Capability	Frame Size Load 06 = 35 lbs (156 N) (Maximum static load)	Coating K = TFE Kerkote	Drive / Mounting A = None B = Inline Screw Motor Mount	Nominal Thread Lead Code 0000 = No Screw 0100 = .100-in (2.54) 0200 = .200-in (5.08) 0500 = .500-in (12.70) 1000 = 1.000-in (2.54)	Unique Identifier Suffix used to identify specific motors 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.

### Specifications

	Inch Lead	Thread Lead Code	Nominal Rail Diam.	Nominal Screw Diam.	Typical Drag Torque	Life @ 1/4 Design Load*	Torque-to- Move Load	Design Load*	Screw Inertia
RGW06 Non-Motorized	inch (mm)		inch (mm)	inch (mm)	oz - in (N-m)	inch (cm)	oz-inc/lb (Nm/Kg)	lbs (N)	oz-in-sec²/in (kg-m-sec²/m)
with Lead	.100 (2.54)	0100			4.0 (0.3)		1.0 (.016)		
Screw	.200 (5.08)	0200	0.6	3/8	5.0 (.04)	100,000,000	1.5 (.023)		1.5 x 10-⁵
	.500 (12.70)	0500	(15.2)	(9.5)	6.0 (.04)	(254,000,000)	2.5 (.039)	35 (156)	(4.2 x 10- <sup>6</sup> )
	1.000 (25.40)	1000			7.0 (.05)		4.5 (.070)		

**NOTE**: RGW assemblies with lengths over 36 inches (914.4 mm) and/or leads higher than .5 inch (12.7 mm) will likely have higher drag torque than listed values. \*Determined with load in a horizontal position.

Non-N Dimen	Aotorized Isional D	with Le rawings	ad Scre	w							Ov	verall '	— L "L" = \$	Stroke	+ L1 +	⊦ F		+- B -  ≁I	.2-	Dim	ension	s = inc	ches (n	nm)	
• Scr • Wic	rew Driv de Fram	ven ie									063) .60 WID	H 4						DSS FI	AT	- K - K - K 	/ T / T / T - U	D1 A- 		<b>b</b>	
										SL	OT Z	3 DEE	Ρ	Х	Z3 D	EEP									
	KGW06	wides	series,	Non-Me	DIOTIZE	a, Screv		n u	I*	V	14	10	N	<b>_</b>	0	D	01	т		V	v	v	74	70	Г
	A	B	U	U	וע	F	G	Н	ſ	K	L1	L2	N	P	Q	К	51	1	U	V	X	Ŷ	21	22	L
inch	0.60	1.25	.1875	2.0	1.13	2.0	1.50	0.750	6-32	1.2	.80	.80	.50	1.46	1.04	.80	.83	.51	.63	1.4	.50	.170	.14	.25	L
mm	15.2	31.8	4.762	50.8	28.6	50.8	38.1	19.1	UNC	30	20.3	20.3	12.7	37.0	26.4	20.3	21.2	13.0	16.0	36	12.7	4.32	3.6	6.4	L
*Motric	corriggo h			. M2 M	4 M5 M																				-

\*Metric carriage hole sizes available M3, M4, M5, M6





**Z3** .14 3.6 Non- Motorized



NOTE: The coupling shown in the dimensional drawing is not included.

#### RGW06 Motor Mount, Wide Series, Non-Motorized, Screw Driven

	-	-		_		_	-							-	-	_		_							
	Α	В	C	D	D1	F	G	H	*	K	L1	L2	N	Р	Q	R	S1	T	U	V	X	Ŷ	Z1	Z2	Z3
inch	0.60	1.25	.1875	2.0	1.13	2.0	1.50	0.750	6-32	1.2	.80	.80	.50	1.46	1.04	.80	.83	.51	.63	1.4	.50	.170	.14	.25	.14
mm	15.2	31.8	4.762	50.8	28.6	50.8	38.1	19.1	UNC	30	20.3	20.3	12.7	37.0	26.4	20.3	21.2	13.0	16.0	36	12.7	4.32	3.6	6.4	3.6

\*Metric carriage hole sizes available M3, M4, M5, M6.



#### RGW06 Wide Series, Non-Motorized, Without Screw Driven

	Α	D	D1	F	G	Н	<b>I</b> *	Ν	Р	Q	S	Т	U	V	Z1	Z2	Z3
inch	0.60	1.13	1.13	2.0	1.50	.75	6-32	.50	1.46	1.04	.83	.51	.63	1.4	.14	.25	.14
mm	15.2	28.6	28.6	51	38.1	19	UNC	12.7	37	26.4	21.2	13	16	36	3.6	6.4	3.6

\*Metric carriage hole sizes available M3, M4, M5, M6.

### Material Coatings

#### Kerkite<sup>®</sup> Polymers

Compounded with lubricants, reinforcements and thermoplastic polymers.

- Injection molded
- High performance
- · Exceptional wear properties

#### Kerkote<sup>®</sup> TFE Coating

A dry lubricant, Kerkote will not become dry and paste-like, and does not attract dirt or debris.

- Reduces friction
- Cost effective
- · Requires no additional external lubrication or maintenance



# RGW06 Sensor Mount Kits

Sensor mounting kits based on U-channel optical sensor. Each kit includes one flag, three sensor mounts and all mounting hardware. Sensors are

Accessory

not included in the kit and must be ordered separately from sensor manufacturer. Part # RGW06SK

www.haydonkerkpittman.com

# RGS08 Linear Rail for Heavier Weight Applications

### with 57000 Series Size 23 Single and Double Stack Hybrid Linear Actuators

A combination of Haydon Kerk Motion Solutions patented motion technologies into a single integrated, linear motion control system. RGS linear rails feature standard wear-compensating, anti-backlash driven carriages to insure repeatable and accurate positioning. All moving surfaces include Kerkite® engineered polymers running on Kerkote® TFE coating, providing a strong, stable platform for a variety of linear motion applications.

Technical specifications for 57000 Series Size 23 Hybrid Linear Actuator Stepper Motors are on page 3.

To determine what is best for your application see the Linear Rail Applications Checklist.

RGS08 57000 Series Size 23 Double Stack

#### Identifying the RGS08 Part Number Codes when Ordering

RG	S	08	К —	- M	0100	XXX
Prefix	Frame Style	Frame Size Load*	Lubrication	Drive / Mounting	Nominal Thread Lead Code	Unique Identifier
RG = Rapid Guide Screw	$\mathbf{S} = Standard$	<b>08</b> = 50 lbs (222 N) (Maximum static load)	K = TFE Kerkote® X = Special (example: Kerkote with grease)	<b>M</b> = Motorized	0098 = .098-in (2.50) 0100 = .100-in (2.54) 0197 = .197-in (5.00) 0200 = .200-in (5.08) 0500 = .500-in (12.70) 0630 = .630-in (16.00) 1000 = 1.000-in (25.4)	Suffix used to identify specific motors (43000 Single/ Double Stack - 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 M3, M4, M5, M6



### RGS08 with 57000 Series Size 23 Single and Double Stack Linear Actuators

Recommended for horizontal loads up to 50 lbs (222 N)



	A	D	UI	E	F	G	н	l I	L1	N	N1	۲	Q	S		U	V	Z1	Z2	Z3
(inch)	(0.8)	(1.6)	(1.6)	(1.06)	(2.7)	(1.75)	(1.0)	10-20	(1.0)	(0.625)	(1.5)	(1.25)	(1.0)	(0.74)	(0.3)	(0.51)	(1.47)	(0.2)	(0.33)	(0.19)
mm	20.3	40.6	40.6	26.9	68.6	44.5	25.4	UNC	25.4	15.9	38.1	15.9	25.4	18.8	7.6	12.9	37.3	5.1	8.4	4.8

\* Metric threads also available for carriage.

**RGS Series • RGS08 • Specifications** 

# Single Stack

### 57000 Series Size 23

Size 23: 57 mm (2.3-in) Hybrid Linear Actuator (1.8° Step Angle)										
Wiring		Bipolar	Unipolar**							
Winding Voltage	3.25 VDC	5 VDC	12 VDC	5 VDC	12 VDC					
Current (RMS)/phase	2.0 A	1.3 A	.54 A	1.3 A	.54 A					
Resistance/phase	1.63 Ω	3.85 Ω	22.2 Ω	3.85 Ω	22.2 Ω					
Inductance/phase	3.5 mH	10.5 mH	58 mH	5.3 mH	23.6 mH					
Power Consumption			13 W	-	·					
Rotor Inertia			166 gcm <sup>2</sup>							
Insulation Class		Class B (Class F available)								
Weight	18 oz (511 g)									
Insulation Resistance	20 MΩ									

.....

Standard motors are Class B rated for maximum temperature of 130°C.

.....

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

### **Double Stack**

#### 57000 Series Size 23

Size 23 Double Stack: 57 mm (2.3-in) Hybrid Linear Actuator (1.8° Step Angle)									
Wiring	Bipolar								
Winding Voltage	3.25 VDC	5 VDC	12 VDC						
Current (RMS)/phase	3.85 A	2.5 A	1 A						
Resistance/phase	0.98 Ω	2.0 Ω	12.0 Ω						
Inductance/phase	2.3 mH	7.6 mH	35.0 mH						
Power Consumption		25 W Total							
Rotor Inertia		321 gcm <sup>2</sup>							
Insulation Class	Class B (Class F available)								
Weight	32 oz (958 g)								
Insulation Resistance	20 MΩ								



# Size 23 57000 Series • Stepping Sequence & Wiring

# Hybrids: Stepping Sequence

	Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8
핏	Unipolar	Q1	Q2	Q3	Q4
TEND C	Step				
¥ ∣	1	ON	OFF	ON	OFF
	2	OFF	ON	ON	OFF
v	3	OFF	ON	OFF	ON
	4	ON	OFF	OFF	ON
	1	ON	OFF	ON	OFF
	NI. I				

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

# Hybrids: Wiring



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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





# RGS Series • RGW08

# RGS08 Non-Motorized Linear Rails

#### Screw driven linear rail or linear rail without screw

The non-motorized RGS Series features standard wear compensating, anti-backlash driven carriages to ensure repeatable and accurate positioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers running on Kerkote<sup>®</sup> TFE coating, providing

a strong, stable platform for a variety of linear motion applications. Recommended for horizontal loads up to 50 lbs (222 N).

Recommended for nonzontal loads up to 50 lbs (222 N).



RG S 08 K — A 0100 —	
	XXX
Prefix RG = Rapid Guide ScrewFrame StyleFrame Size LoadCoating NB = 50 lbs (222 N) (Maximum static load)Drive / K = TFE KerkoteNominal Thread Lead CodeUNominal Thread Lead Code08 = 50 lbs (222 N) (Maximum static load)K = TFE KerkoteA = None0000 = No ScrewSuf 0100 = .100-in (2.54)Suf propri 0200 = .200-in (5.08)Nominal Thread Lead Code0000 = No ScrewSuf 0100 = .100-in (2.54)Suf propri 0200 = .200-in (5.08)Suf to a oto a static	Unique Identifier uffix used to identify specific motors or a orietary suffix assigned ) a specific customer plication. The identifier can apply to either a andard or custom part

NOTE: Dashes must be included in Part Number (-) as shown above. For assistance call our Engineering Team at 603 213 6290.

#### Specifications

				•						
	Inch Lead	Thread Lead Code	Nominal Rail Diam.	Nominal Screw Diam.	Typical Drag Torque	Life @ 1/4 Design Load*	Torque-to- Move Load	Design Load*	Screw Inertia	
RGS08 Non-Motorized with Lead Screw	inch (mm)		inch (mm)	inch (mm)	oz - in (N-m)	inch (cm)	oz-inc/lb (Nm/Kg)	lbs (N)	oz-in-sec²/in (kg-m-sec²/m)	
	.100 (2.54)	0100			5.0 (0.4)		1.1 (.018)			
	.200 (5.08)	0200	0.8	1/2	6.0 (.04)	100,000,000	1.7 (.027)	E0 (000)	5.2 x 10- <sup>5</sup> (20.0 x 10- <sup>6</sup> )	
	.500 (12.70)	0500	(20.3)	(12.7)	7.0 (.05)	(254,000,000)	3.0 (.047)	50 (222)		
	1.000 (25.40)	1000			8.0 (.06)		6.0 (.096)			

**NOTE**: RGS assemblies with lengths over 36 inches (914.4 mm) and/or leads higher than .5 inch (12.7 mm) will likely have higher drag torque than listed values. \*Determined with load in a horizontal position.

n-Motorized with Lead Screw nensional Drawings	Overall "L" = Stroke + L1 + F
Screw Driven Standard Frame	$\begin{array}{c} \hline \\ \hline $
	$\begin{array}{c} (.063) \\ 1.60 \\ \hline H \\ \hline$
	Z1 WIDE SLOT THRU Z1 THRU HOLE WITH

Z3 0.80 2.7 1.09 .77 .625 1.25 1.04 .74 .30 .51 1.47 .22 .19 inch 1.50 .250 1.60 1.60 1.06 1.75 1.00 10-24 1.3 1.0 .70 .33 UNC mm 20.3 38.1 6.35 40.6 40.6 26.9 69 44.4 25.4 33 27.7 19.6 15.8 31.75 25.4 26.4 18.8 7.6 13 37.3 17.8 5.5 8.4 4.8

\*Metric carriage hole sizes available M3, M4, M5, M6.



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Non- Motorized



#### RGS08 Non-Motorized, Without Screw Driven

	Α	D	D1	Ε	F	G	Н	<b>I</b> *	Ν	Р	Q	S	Т	U	V	Z1	Z2	Z3
inch	0.80	1.60	1.60	1.06	2.7	1.75	1.00	10-24	.625	1.25	1.00	.74	.30	.51	1.47	.20	.33	.19
mm	20.3	40.6	40.6	26.9	69	44.4	25.4	UNC	15.8	31.7	25.4	18.8	7.6	13	37.3	5.1	8.3	4.8

\*Metric carriage hole sizes available M3, M4, M5, M6.

To determine what is best for your application see the Linear Rail Applications Checklist.

### **Material Coatings**

#### Kerkite<sup>®</sup> Polymers

Compounded with lubricants, reinforcements and thermoplastic polymers, Kerkite Polymers are formulated to provide optimum performance in its target conditions and applications.

- Injection molded
- High performanceExceptional wear properties
- Exceptional wear properties

#### Kerkote<sup>®</sup> TFE Coating

A dry lubricant, Kerkote will not become dry and paste-like, and does not attract dirt or debris. Kerkote differs from conventional plating and coating because it is soft, more evenly distributed than other lubricants, and decreases erratic drag torques and unpredictable wear.

- · Reduces friction
- Cost effective
- Long term and maintenance free

Kerkote provides the maximum level of self-lubrication, requiring no additional external lubrication or maintenance.



# RGS10 and RGW10 Wide Linear Rails

#### with 57000 Series Size 23 Hybrid Linear Actuators

Driven by a Size 23 Hybrid motor, the 25.4 mm (1-inch) diameter splined carriage guide has been designed to carry a weight load up to 100 lbs (445 N). A high performance motion control system combines power and precison. The system combines many Haydon Kerk Motion Solutions patented motion technologies into a single integrated, linear motion control system. The Motorized RGS linear rails feature standard wear-compensating, anti-backlash driven carriages to insure repeatable and accurate positioning. All moving surfaces include Kerkite® engineered polymers running on Kerkote® TFE coating, providing a strong, stable platform for a variety of linear motion applications. RGS Series Linear Rail with Hybrid 57000 Series Size 23 Linear Actuator Stepper Motors

Technical specifications for 57000 Series Size 23 Hybrid Linear Actuator Stepper Motors are on page 3.

To determine what is best for your application see the Linear Rail Applications Checklist.

RGS08 57000 Series Size 23 Double Stack

### Identifying the RGS10 and RGW10 Part Number Codes when Ordering

RG	S	10	К _	M	—	0100	_	XXX
Prefix	Frame Style	Frame Size Load*	Lubrication	Drive / Mounting		Nominal Thread Lead Code		Unique Identifier
RG = Rapid Guide Screw	<ul><li>S = Standard</li><li>W = Wide sensor mount</li><li>capability</li></ul>	<b>10</b> = 100 lbs (445 N) (Maximum static load)	K = TFE Kerkote®	M = Motorized		$\begin{array}{l} 0100 = .100 \text{-in} (2.54) \\ 0125 = .125 \text{-in} (3.18) \\ 0200 = .200 \text{-in} (5.08) \\ 0250 = .250 \text{-in} (6.35) \\ 0315 = .315 \text{-in} (8.00) \\ 0500 = .500 \text{-in} (12.70) \\ 0630 = .630 \text{-in} (16.00) \\ 1000 = 1.000 \text{-in} (25.4) \\ 1500 = 1.500 \text{-in} (38.10) \\ 2000 = 2.000 \text{-in} (50.80) \end{array}$		Suffix used to identify specific motors (43000 Single/ Double Stack – 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 in	ncluded in Part Number () as shown above	e. For assistance call our Engineering Te	am at 603 213 6290.					

Carriage holes available in Metric sizes M3, M4, M5, M6





Motorized Size 23

#### RGS10 with 57000 Series Size 23 Single and Double Stack Linear Actuators

Recommended for horizontal loads up to 100 lbs (445 N)



#### RGW10 Wide with 57000 Series Size 23 Single and Double Stack Linear Actuators

Recommended for horizontal loads up to 100 lbs (445 N)



Metric threads also available for carriage.

#### RGW10 Sensor Mount Kit Part No. RGW10SK

Sensor mount kits, based on a U-channel optical sensor, are available for the RGW Series. Each kit includes one flag, three sensor mounts, and all mounting hardware. Sensors are not included in the kit and must be ordered separately from the sensor manufacturer.





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### Single Stack

#### 57000 Series Size 23

Size	Size 23: 57 mm (2.3-in) Hybrid Linear Actuator (1.8° Step Angle)											
Wiring		Bipolar	Unipolar**									
Winding Voltage	3.25 VDC	5 VDC	12 VDC	5 VDC	12 VDC							
Current (RMS)/phase	2.0 A	1.3 A	.54 A	1.3 A	.54 A							
Resistance/phase	1.63 Ω	3.85 Ω	22.2 Ω	3.85 Ω	22.2 Ω							
Inductance/phase	3.5 mH	10.5 mH	58 mH	5.3 mH	23.6 mH							
Power Consumption			13 W									
Rotor Inertia			166 gcm <sup>2</sup>									
Insulation Class		Class B (Class F available)										
Weight	18 oz (511 g)											
Insulation Resistance	20 ΜΩ											

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

Standard motors are Class B rated for maximum temperature of 130°C.

### **Double Stack**

#### 57000 Series Size 23

Size 23 Double Stack:	57 mm (2.3-in) Hyb	orid Linear Actuator	(1.8° Step Angle)
Wiring		Bipolar	
Winding Voltage	3.25 VDC	5 VDC	12 VDC
Current (RMS)/phase	3.85 A	2.5 A	1 A
Resistance/phase	0.98 Ω	2.0 Ω	12.0 Ω
Inductance/phase	2.3 mH	7.6 mH	35.0 mH
Power Consumption		25 W Total	
Rotor Inertia		321 gcm <sup>2</sup>	
Insulation Class	Cla	ass B (Class F availat	ole)
Weight		32 oz (958 g)	
Insulation Resistance		20 MΩ	



### Size 23 57000 Series • Stepping Sequence & Wiring

#### Hybrids: Stepping Sequence

	Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8	
EX	Unipolar	Q1	Q2	Q3	Q4	▲
TEND	Step					
CX -	1	ON	OFF	ON	OFF	SC
	2	OFF	ON	ON	OFF	RACT
V	3	OFF	ON	OFF	ON	E
	4	ON	OFF	OFF	ON	
	1	ON	OFF	ON	OFF	

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





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# RGS Series • RGS10

# RGS10 Non-Motorized Linear Rails

#### · Screw driven linear rails in standard or wide format

#### · Linear rails without screw in standard or wide format

The non-motorized RGS Series features standard wear compensating, anti-backlash driven carriages to ensure repeatable and accurate positioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers running on Kerkote<sup>®</sup> TFE coating, providing

a strong, stable platform for a variety of linear motion applications. Recommended for horizontal loads up to 100 lbs (445 N). RGW10 Wide Series, Non-Motorized Screw Driven Linear Rail



#### Specifications

	Inch Lead	Thread Lead Code	Nominal Rail Diam.	Nominal Screw Diam.	Typical Drag Torque	Life @ 1/4 Design Load*	Torque-to- Move Load	Design Load*	Screw Inertia
RGS10 Non-Motorized	inch (mm)		inch (mm)	inch (mm)	oz - in (N-m)	inch (cm)	oz-inc/lb (Nm/Kg)	lbs (N)	oz-in-sec²/in (kg-m-sec²/m)
with Lead	.100 (2.54)	0100			5.0 (0.4)		1.3 (.020)		
with Lead Screw –	.200 (5.08)	0200	1.0	5/8	6.5 (.05)	100,000,000	2.0 (.031)	100 (445)	14.2 x 10-5
	.500 (12.70)	0500	(25.4)	(15.9)	7.0 (.05)	(254,000,000)	3.0 (.047)	100 (445)	(3.9 x 10- <sup>6</sup> )
	1.000 (25.40)	1000			8.5 (.06)		6.5 (.101)		

**NOTE**: RGS assemblies with lengths over 36 inches (914.4 mm) and/or leads higher than .5 inch (12.7 mm) will likely have higher drag torque than listed values. \*Determined with load in a horizontal position.

Non-N Dimer	Aotorized nsional D	d with L Drawing	.ead Scr s	ew							-	Ov	erall		- L Stro <b></b> F	ke +	L1 +   _=	- ►   ◄ F   → L 1   ◄	-B  L2	-	Di	mensi	ons =	inche	s (mn	1)
• Sci • Sta	rew Dri andard	ven Frame	!							Q									<b>- X</b> 		K	•		╺ ┝╾┤	 @	D1 Ø A
																ΥA		SS F	LAT –		_	3-	]			- E
									(.( 1 - - - - - - - - - - - - - - - - - -	263) .60 P N 21 WI 22 C			4 x	I — H — DEEP		G -	HRU BORE	- N HOLI x Z3			0005 p.013)	T_	U			
	RGS10	Non-N	Aotorize	ed, Scr	ew Dri	ven									-			-	_							
	A	В	C	D	D1	E	F	G	H	*	K	L1	L2	N	P	Q	R	S	T	U	V	X	Y	Z1	Z2	Z3
inch	1.0	1.75	.312	2.0	2.0	1.32	3.3	2.25	1.25	1/4-20	1.6	1.3	.30	.75	1.5	1.25	1.3	.92	.375	.64	1.83	.88	.28	.26	.50	.22
mm	25.4	44.5	7.93	50.8	50.8	33.5	83	57.1	31.8	UNC	41	33	33	19	38.1	31.8	33	23.4	9.5	16.3	46.5	22.4	7.1	6.6	12.7	5.6
*Metric	carriage	hole size	es availat	ole M3, I	M4, M5,	M6.																				



RGS Series • RGS10 • Dimensional Drawings

Non- Motorized



	Α	В	C	D	D1	F	G	Н	<b>I</b> *	K	L1	L2	Ν	Р	Q	S	Т	U	V	Х	Y	Z1	Z2	Z3
inch	1.0	1.75	.312	3.38	2.0	3.3	2.25	1.25	1/4-20	1.9	1.3	1.3	.75	2.6	1.5	1.2	.69	1.3	2.1	.88	.28	.14	.40	.43
mm	25.4	44.5	7.93	85.7	50.8	83	57.1	31.7	UNC	48	33	33	19	66	39.6	31	17.5	33.8	54.6	22.4	7.11	6.6	10.2	10.9

\*Metric carriage hole sizes available M3, M4, M5, M6.



Dimensions = inches (mm)

\*NOTE: The coupling shown in the dimensional drawing is not included.

	RGW10	Motor	Mount,	Wide S	Series, I	Non-Mo	otorized	d, Screv	v Drive	n															
	Α	В	C	D	D1	F	G	H	l*	Κ	L1	L2	N	Р	Q	R	S1	T	U	V	Х	Y	Z1	Z2	Z3
inch	0.60	1.25	.1875	2.0	1.13	2.0	1.50	0.750	6-32	1.2	.80	.80	.50	1.46	1.04	.80	.83	.51	.63	1.4	.50	.170	.14	.25	.14
mm	15.2	31.8	4.762	50.8	28.6	50.8	38.1	19.1	UNC	30	20.3	20.3	12.7	37.0	26.4	20.3	21.2	13.0	16.0	36	12.7	4.32	3.6	6.4	3.6

\*Metric carriage hole sizes available M3, M4, M5, M6.

# **RGW10 Sensor Mount Kits**

Sensor mounting kits based on U-channel optical sensor. Each kit includes one flag, three sensor mounts and all mounting hardware. Sensors are not included in the kit and must be ordered separately from sensor manufacturer. Part # RGW10SK



# RGS Series • RGS10 • Dimensional Drawings



Dimensional Drawings

Without Guide ScrewStandard Frame



#### RGS10 Non-Motorized, Without Screw Driven

			,			••••												
	Α	D	D1	E	F	G	Н	<b>I</b> *	Ν	Р	Q	S	Т	U	V	Z1	Z2	Z3
inch	1.0	2.0	2.0	1.32	3.3	2.25	1.25	1/4-200	.75	1.5	1.25	.92	.375	.64	1.83	.26	.50	.22
mm	25.4	50.8	50.8	33.5	83	57.1	31.7	UNC	19	38.1	31.8	14	9.5	16.3	46.5	6.6	12.7	5.6
****	ware bala																	

\*Metric carriage hole sizes available M3, M4, M5, M6.



	Α	D	D1	F	G	Н	<b>I</b> *	Ν	Р	Q	S	Т	U	V	Z1	Z2	Z3
inch	1.0	3.38	2.0	3.3	2.25	1.25	1/4-200	.75	2.6	1.5	1.2	.69	1.3	2.15	.26	.40	.43
mm	25.4	85.7	50.8	83	57.1	31.7	UNC	19	66	39.6	31	17.5	33.8	54.6	6.6	10.2	10.9

\*Metric carriage hole sizes available M3, M4, M5, M6.

To determine what is best for your application see the Linear Rail Applications Checklist.

# Material Coatings

#### Kerkite<sup>®</sup> Polymers

Compounded with lubricants, reinforcements and thermoplastic polymers, Kerkite Polymers are formulated to provide optimum performance in its target conditions and applications.

- · Injection molded
- High performance
- · Exceptional wear properties

#### Kerkote<sup>®</sup> TFE Coating

A dry lubricant, Kerkote will not become dry and paste-like, and does not attract dirt or debris. Kerkote differs from conventional plating and coating because it is soft, more evenly distributed than other lubricants, and decreases erratic drag torques and unpredictable wear.

- Reduces friction
- Cost effectiveLong term and maintenance free
- \_\_\_\_\_

Kerkote provides the maximum level of self-lubrication, requiring no additional external lubrication or maintenance.



# RGW10 Non-Motorized Linear Rails

#### · Screw driven linear rails in wide format

#### · Linear rails without screw in wide format

The non-motorized RGW Series features standard wear compensating, anti-backlash driven carriages to ensure repeatable and accurate positioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers running on Kerkote<sup>®</sup> TFE coating, providing a strong, stable platform for a variety of linear motion applications. Recommended for horizontal loads up to 100 lbs (445 N).

To determine what is best for your application see the Linear Rail Applications Checklist.

RGW10 Wide Series, Non-Motorized Screw Driven Linear Rail



Identifying the Non-Motorized	RGW Part	Numbers	when	Ordering
-------------------------------	----------	---------	------	----------

RG	W	10	К	А	0500 —	XXX
Prefix RG = Rapid Guide Screw	Frame Style W = Wide Sensor Mount Capability	Frame Size Load 10 = 100 lbs (445 N) (Maximum static load)	Coating K = TFE Kerkote	Drive / Mounting A = None B = Inline Screw Motor Mount	Nominal Thread Lead Code 0000 = No Screw 0100 = .100-in (2.54) 0200 = .200-in (5.08) 0500 = .500-in (12.70) 1000 = 1.000-in (2.54)	Unique Identifier Suffix used to identify specific motors 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.

### Specifications

	Inch Lead	Thread Lead Code	Nominal Rail Diam.	Nominal Screw Diam.	Typical Drag Torque	Life @ 1/4 Design Load*	Torque-to- Move Load	Design Load*	Screw Inertia
RGW10 Non-Motorized	inch (mm)		inch (mm)	inch (mm)	oz - in (N-m)	inch (cm)	oz-inc/lb (Nm/Kg)	lbs (N)	oz-in-sec²/in (kg-m-sec²/m)
with Lead	.100 (2.54)	0100			5.0 (0.4)		1.3 (.020)		
Screw	.200 (5.08)	0200	1.0	5/8	6.5 (.05)	100,000,000	2.0 (.031)	100 (445)	14.2 x 10-⁵
Screw	.500 (12.70)	0500	(25.4)	(15.9)	7.0 (.05)	(254,000,000)	3.0 (.047)	100 (445)	(3.9 x 10- <sup>6</sup> )
	1.000 (25.40)	1000			8.5 (.06)		6.5 (.101)		

**NOTE**: RGW assemblies with lengths over 36 inches (914.4 mm) and/or leads higher than .5 inch (12.7 mm) will likely have higher drag torque than listed values. \*Determined with load in a horizontal position.

Non-I Dime	Aotorized Isional D	l with Le rawings	ad Scre	W							٥v	/erall	"L" =	Stroke	e + L1	+ F	 	─=┿╾╵ ┨╼┥	B —- L2-	Dir	mens	ions =	= inch	ies (mm)
• Sc • Wi	rew Driv de Fran	ven ne							Ŧ						<u>F</u>				-X-	<u> </u>		L	D1	
									Q -					0	0					<b>⊢</b> κ	Ţ		<u>A-</u>	
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										5		_									1	-U-1	D —	
												_		-0		0			തറ	_ <b>%</b>	ĸ			
									N	Z1 TH SL	WID IRU Z .OT Z	E SLC 2 C'B 3 DEE	OT ORE P		Z1 TH WITH x Z3	RU H Z2 C DEEP	OLE 'BOR	₹ ?E	+.0 (+(	000–.0 ).0–0.0	005 13)			
	RGW10	) Wide S	eries,	Non-Me	otorize	d, Scre	w Drive	en		-														
	A	В	C	D	D1	F	G	H	<b>I</b> *	K	L1	L2	N	Р	Q	S	T	U	V	X	Ŷ	Z1	Z2	Z3

	Α	В	C	D	D1	F	G	Н	<b>I</b> *	K	L1	L2	Ν	Р	Q	S	T	U	V	Х	Y	Z1	Z2	Z3
inch	1.0	1.75	.312	3.38	2.0	3.3	2.25	1.25	1/4-20	1.9	1.3	1.3	.75	2.6	1.5	1.2	.69	1.3	2.1	.88	.28	.14	.40	.43
mm	25.4	44.5	7.93	85.7	50.8	83	57.1	31.7	UNC	48	33	33	19	66	39.6	31	17.5	33.8	54.6	22.4	7.11	6.6	10.2	10.9

\*Metric carriage hole sizes available M3, M4, M5, M6.





Dimensions = inches (mm)

\*NOTE: The coupling shown in the dimensional drawing is not included.

#### RGW10 Motor Mount, Wide Series, Non-Motorized, Screw Driven

	Α	В	C	D	D1	F	G	Н	l*	K	L1	L2	N	Р	Q	R	S1	Т	U	V	X	Y	Z1	Z2	Z3
inch	0.60	1.25	.1875	2.0	1.13	2.0	1.50	0.750	6-32	1.2	.80	.80	.50	1.46	1.04	.80	.83	.51	.63	1.4	.50	.170	.14	.25	.14
mm	15.2	31.8	4.762	50.8	28.6	50.8	38.1	19.1	UNC	30	20.3	20.3	12.7	37.0	26.4	20.3	21.2	13.0	16.0	36	12.7	4.32	3.6	6.4	3.6

\*Metric carriage hole sizes available M3, M4, M5, M6.



	nuwiu	aw to wide Selles, Noll-Motorized, without Sciew Driven															
	Α	D	D1	F	G	Н	<b>I</b> *	Ν	Р	Q	S	Т	U	V	Z1	Z2	Z3
inch	1.0	3.38	2.0	3.3	2.25	1.25	1/4-200	.75	2.6	1.5	1.2	.69	1.3	2.15	.26	.40	.43
mm	25.4	85.7	50.8	83	57.1	31.7	UNC	19	66	39.6	31	17.5	33.8	54.6	6.6	10.2	10.9

\*Metric carriage hole sizes available M3, M4, M5, M6.

#### **Material Coatings**

#### Kerkite<sup>®</sup> Polymers

Compounded with lubricants, reinforcements and thermoplastic polymers.

- Injection molded
- High performance
- · Exceptional wear properties

#### Kerkote<sup>®</sup> TFE Coating

A dry lubricant, Kerkote will not become dry and paste-like, and does not attract dirt or debris.

- Reduces friction
- Cost effective
- Requires no additional external lubrication or maintenance

#### Accessory

#### **RGW10 Sensor Mount Kits**

Sensor mounting kits based on U-channel optical sensor. Each kit includes one flag, three sensor mounts and all mounting hardware. Sensors are

not included in the kit and must be ordered separately from sensor manufacturer. Part # RGW10SK





# WGS06 Linear Rails with 43000 Series Hybrid Motor

\*Also available with 57000 Series Hybrid Motor (info available starting on page 5)

The Motorized WGS Linear Slide utilizes a screw-driven carriage that offers reliable, continuous linear speed while maintaining accurate positioning. The length and speed of the WGS is not limited by critical screw speed, allowing high RPM, linear speed and long stroke lengths. The WGS slide has a unique, compact profile that provides improved torsional stiffness and stability over RGS and RGW products.

Technical specifications for 43000 Series Size 17 Hybrid Linear Actuator Stepper Motors and Haydon Kerk IDEA<sup>™</sup> programmable drives are on page 3, 57000 Series Size 23 specifications are on page 5.

To determine what is best for your application see the Linear Rail Applications Checklist.

WGS06 with 43000 Series Size 17 with an optional IDEA<sup>™</sup> Drive (not available for Size 23 motor)

WGS06 with 43000 Series Size 17

hybrid linear stepper motor

Identifying the WGS06 Part Number Codes when Ordering

WG	S	06	К —	G	0100	XXX				
Prefix	Frame Style	Frame Size Load*	Lubrication	Drive / Mounting	Nominal Thread Lead Code	Unique Identifier				
WG = Wide Guide Screw	<b>S</b> = Standard	<b>06</b> = 35 lbs (156 N) (Maximum static load)	K = TFE Kerkote®	$\begin{split} \boldsymbol{M} &= \text{Motorized} \\ \boldsymbol{G} &= \text{Motorized} + \text{IDEA}^{\text{TM}} \\ & \text{integrated programmable} \\ & \text{drive} - \text{USB communi-} \\ & \text{cations} \\ \boldsymbol{J} &= \text{Motorized} + \text{IDEA}^{\text{TM}} \\ & \text{integrated programmable} \\ & \text{drive} - \text{RS485} \\ & \text{communications} \\ \end{split}$	0100 = .100-in (2.54) 0200 = .200-in (5.08) 0500 = .500-in (12.70) 1000 = 1.000-in (25.4)	<ul> <li>- M43 = 43000 Series- Size 17 Motor</li> <li>- G43 = 43000 Series</li> <li>Size 17 Motor with IDEA Drive</li> <li>- M57 = 57000 Series- Size 23 Motor</li> <li>- or a proprietary suffix assigned to a specific customer application.</li> <li>The identifier can apply to either a standard or custom part.</li> </ul>				
NOTE: Dashes must be i	E: 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 M3, M4, M5, M6



Motorized Size 17

### WGS06 Linear Slide with 43000 Series Size 17 Linear Actuator

Recommended for horizontal loads up to 35 lbs (156 N)



#### ...with IDEA™ Drive



\* Metric threads also available for carriage



# Single Stack

#### 43000 Series Size 17

Size 17: 43	Size 17: 43 mm (1.7-in) Hybrid Linear Actuator (1.8° Step Angle)									
Wiring		Bipolar		Unipo	olar**					
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 <b>Ω</b>					
Inductance/phase	1.9 mH	8.7 mH	54.0 mH	4.4 mH	27.0 mH					
Power Consumption			7 W							

.....

Nominal T	hread Lead	Lood Codo				
inches	mm	Leau Goue				
0.1	2.54	0100				
0.2	5.08	0200				
0.5	12.7	0500				
1.0	25.4	1000				



### **Double Stack**

#### 43000 Series Size 17

Size 17 Double Stack: 43 mm (1.7-in) Hybrid Linear Actuator (1.8° Step Angle)										
Wiring	Bipolar									
Programmable Drive	IDEA Drive option available									
Winding Voltage	2.33 VDC	5 VDC	12 VDC							
Current (RMS)/phase	2.6 A	1.3 A	550 mA							
Resistance/phase	0.9 Ω	3.8 Ω	21.9 Ω							
Inductance/phase	1.33 mH	8.21 mH	45.1 mH							
Power Consumption		13.2 W								

\* 43000 Series Single Stack with IDEA programmable drive. Contact Haydon Kerk if higher voltage motor is desired.

Nominal T	hread Lead	Lood Codo			
inches	mm				
0.1	2.54	0100			
0.2	5.08	0200			
0.5	12.7	0500			
1.0	25.4	1000			

43000 Series Size 17 Single Stack External Linear

#### IDEA™ Drive sonware is simple to use with on-screen buttons and easy-tounderstand 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

anna

and Current Control

For more information see the IDEA<sup>™</sup> Drive Data Sheet







**Single Stack** 

FORCE vs. PULSE RATE - Chopper - Bipolar - 100% Duty Cycle



Motorized

Size 17

Double Stack

FORCE vs. PULSE RATE

- 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



Nominal Thread Lead

mm

2.54

5.08

12.7

25.4

Size 23 Single Stack External Linear

inches

0.1

0.2

0.5

1.0

Lead Code

0100

0200

0500

1000

# Single Stack

### 57000 Series Size 23

Size	Size 23: 57 mm (2.3-in) Hybrid Linear Actuator (1.8° Step Angle)										
Wiring		Bipolar	Unipolar**								
Winding Voltage	3.25 VDC	5 VDC	12 VDC	5 VDC	12 VDC						
Current (RMS)/phase	2.0 A	1.3 A	.54 A	1.3 A	.54 A						
Resistance/phase	1.63 Ω	3.85 Ω	22.2 Ω	3.85 Ω	22.2 Ω						
Inductance/phase	3.5 mH	10.5 mH	58 mH	5.3 mH	23.6 mH						
Power Consumption			13 W								

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

n.		<b>C</b> .	L	Ŀ

#### 57000 Series Size 23

Size 23 Double Stack: 57 mm (2.3-in) Hybrid Linear Actuator (1.8° Step Angle)									
Wiring	Bipolar								
Winding Voltage	3.25 VDC	5 VDC	12 VDC						
Current (RMS)/phase	3.85 A	2.5 A	1 A						
Resistance/phase	0.98 Ω	2.0 Ω	12.0 Ω						
Inductance/phase	2.3 mH	7.6 mH	35.0 mH						
Power Consumption		25 W Total							

Nominal T	hread Lead	Lead Code		
inches	mm			
0.1	2.54	0100		
0.2	5.08	0200		
0.5	12.7	0500		
1.0	25.4	1000		

.....

Size 23 Double Stack External Linear



¢ ₽1 THRU

Ú Ø P2 ▼ P3 TYP

U

(2.3)

0.090

#### WGS Series • WGS06 Motorized • Size 23 57000 Series • Dimensional Drawings WGS06 Linear Slide with 57000 Series Size 23 Linear Actuator Recommended for horizontal loads up to 35 lbs (156 N) CONTACT HAYDON KERK FOR EXACT LOCATIONS Ν OR CUSTOM LOCATIONS. 00 ŧÔ П ¢ Œ **Nation** (Kerk) Ð 00 4X 8-32 UNC - 2B\* ▼ .250 2X Ø P1 THRU ∟ Ø P2 ▼ P3 U TYP. SINGLE STACK B OVERALL RAIL LENGTH = STROKE + D + F + G DOUBLE STACK C 🗕 D 🗕 Ε G 0 0 П .... 0 AD 06 7 Н 0 0 4 В С D Ε F G Н J Κ М Ν P1 P2 P3 Q R S Т А I L (24.9) (27.9) (53.95) (mm) (56.4) (45.2)(66) (63.5) (11.2)(16.5)(6.4) (50.8) (25.4) (19.1) (38.1) (25.4) (3.81) (6.60)(6.50) (41.25) (56.4)(23.3)2.220 1.780 2.598 2.220 1.50 0.98 2.50 0.65 0.250 2.00 1.000 0.75 1.000 0.150 0.260 0.256 1.624 0.92 1.1 0.44 2.124 inch MAX. MAX. MAX. MAX. \* Metric threads also available for carriage





1400

1200

1000

800 8

400

200

1400

1200

1000

800 8

400

200

Ξ

600 E

- 0

1400 1500

ĩ

600 P

Ø .375 (9.53) Lead-screw

Reco

Ø .375 (9.53) Lead-screw

Recommended

Load Limit

.002" 2

500 600 700 800 900 1000 1100 1200

Pulse Rate: full steps/sec.

.001" 1

ended

1300

Load Limit

Motorized Size 23

0004167

(.010584) S

.0005" (.0127) 3

.001" (.0254) 1

.002" (.0508) 2

100 200 300

.0003125" A

.0004167" S

.000833" (.0211) 🔽

400

.0005" 3

0008333" T (.0211)

.0003125" (.0079375) A

350

300

250

200

9150

100

50

0

350

300

250

(1200 See

90 150

100

50

0

(Ibs)

#### Single Stack



FORCE vs. LINEAR VELOCITY – Chopper – Bipolar – 100% Duty Cycle

### **Double Stack**

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



Motorized Size 17 and 23

#### 43000 Series Size 17 and 57000 Series Size 23

Hybrids: Stepping Sequence

Hybrids: Wiring

	Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8	
IJ	Unipolar	Q1	Q2	Q3	Q4	4
TEND	Step					
€ 	1	ON	OFF	ON	OFF	MJJ J
	2	OFF	ON	ON	OFF	
V	3	OFF	ON	OFF	ON	
	4	ON	OFF	OFF	ON	
	1	ON	OFF	ON	OFF	

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



# Size 17 43000 Series • Integrated Connectors

Haydon Kerk Hybrid Size 17 Single and Double 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:

Mating Connector:

Wire to Board Connector:



### **Dimensional Drawings**

Integrated Connector with 43000 Series Size 17

Dimensions = (mm) inches





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

JST part # S06B-PASK-2

JST part # PAP-06V-S Haydon Kerk Part #56-1210-5 (12 in. Leads)

JST part number SPHD-001T-P0.5



www.haydonkerkpittman.com



# WGS06 Non-Motorized Linear Rails

#### • Wide, low profile screw driven linear rails

The non-motorized WGS Series features standard wear compensating, anti-backlash driven carriages to ensure repeatable and accurate positioning. All moving surfaces include Kerkite<sup>®</sup> engineered polymers running on Kerkote<sup>®</sup> TFE coating, providing

a strong, stable platform for a variety of linear motion applications. Recommended for horizontal loads up to 35 lbs (156 N).

To determine what is best for your application see the Linear Rail Applications Checklist.



### Identifying the Non-Motorized WGS Part Numbers when Ordering

WG	S	06	К —	А	0100 —	- XXX
Prefix WG = Wide Guide Screw	Frame Style S = Standard	Frame Size Load 06 = 35 lbs (156 N) (Maximum static load)	Coating K = TFE Kerkote	Drive / Mounting A = None B = Inline Screw Motor Mount	Nominal Thread Lead Code 0100 = .100-in (2.54) 0200 = .200-in (5.08) 0500 = .500-in (12.70) 1000 = 1.000-in (2.54)	Unique Identifier Suffix used to identify specific motors or a propri- etary suffix assigned to a specific customer application. The identifier can apply to either a standard or custom part
		NOTE: Dashes must be inclu	uded in Part Number () as shown abo	we. For assistance call our	Engineering Team at 603 213 6290.	

Specifications
----------------

	Inch Lead	Thread Lead Code	Nominal Rail Diam.	Nominal Screw Diam.	Typical Drag Torque	Life @ 1/4 Design Load*	Torque-to- Move Load	Design Load*	Screw Inertia
WGS06 Non-Motorized	inch (mm)		inch (mm)	inch (mm)	oz - in (N-m)	inch (cm)	oz-inc/lb (Nm/Kg)	lbs (N)	oz-in-sec²/in (kg-m-sec²/m)
with Lead	.100 (2.54)	0100			4.0 (0.3)		1.0 (.016)		
Screw	.200 (5.08)	0200		3/8	5.0 (.04)	100,000,000	1.5 (.023)	25 (156)	1.5 x 10-⁵
	.500 (12.70)	0500		(9.5)	6.0 (.04)	(254,000,000)	2.5 (.039)	33 (130)	(4.2 x 10- <sup>6</sup> )
	1.000 (25.40)	1000			7.0 (.05)		4.5 (.070)		

**NOTE**: WGS assemblies with lengths over 36 inches (914.4 mm) and/or leads higher than .5 inch (12.7 mm) will likely have higher drag torque than listed values. \*Determined with load in a horizontal position.



Non- Motorized



#### WSG06 Wide Series, Non-Motorized, Screw Driven

	Α	В	C	D	E	F	G	H	I	J	K	L	М	N*	0	P1	P2	P3	Q	R
inch	1.0	2.5	1.1	.44	2.0	1.0	.75	.63	.39	.187	1.2	2.1	1.62	8-32	.09	.15	.26	.256	.45	.92
mm	25.4	63.5	28	11.2	50.8	25.4	19.1	16	9.9	4.76	39.9	53.9	41.2	UNC-2B	2.3	3.8	6.6	6.5	11.4	23.3
***		11.12.11.1			15 140															

\*Metric carriage hole sizes available M3, M4, M5, M6.

#### Material Coatings

### Kerkite<sup>®</sup> Polymers

Compounded with lubricants, reinforcements and thermoplastic polymers, Kerkite Polymers are formulated to provide optimum performance in its target conditions and applications.

- Injection molded
- High performance
- Exceptional wear properties

#### Kerkote<sup>®</sup> TFE Coating

A dry lubricant, Kerkote will not become dry and paste-like, and does not attract dirt or debris. Kerkote differs from conventional plating and coating because it is soft, more evenly distributed than other lubricants, and decreases erratic drag torques and unpredictable wear.

- Reduces frictionCost effective
- Long term and maintenance free

Kerkote provides the maximum level of self-lubrication, requiring no additional external lubrication or maintenance.



# LRS04 Motorized Linear Rails with 43000 Series

The LRS Linear Rail System in a variety of configurations, both motorized and non-motorized. These precision linear rail systems consist of a stationary base and a load bearing carriage that travels along a rigid extruded aluminum rail. The LRS Linear Rail System is available with several in-line motor options including a single stack or double stack size 17 stepper motor, a stepper motor with an integral chopper drive, or the IDEA<sup>TM</sup> programmable linear actuator, consisting of the stepper motor, drive, and controller programmed through a graphic user interface (GUI). The LRS is also available without a motor, easily allowing the designer flexibility to integrate with a variety of motor types and belt and pulley configurations.

### **Key Product Features**

- "T" slots integrated into exterior rail bottom and sides that accommodate full length support and various mounting options.
- Loads easily attach to the compact, moving carriage with four or six M4 x 0.7 size screws.
- Load bearing carriage moves efficiently and smoothly within the internal rail geometry of this specially designed aluminum extrusion.
- Rail provides end-to-end axial stability and precise motion system accuracy.
- Automatic adjustments of slide bearing play with a patent pending "anti-backlash" linear bearing.
- Rated life equals that of the existing lead-screws of similar size.
- Lead screw end configurations adapt to various rotary motion sources.
- Kerkote® or Black Ice® TFE coatings on a 303 stainless steel lead-screw.
- Designed to Metric global engineering standards.
- For extreme control, LRS can be used with CMP or WDG high-precision anti-backlash nuts, as well as a freewheeling general purpose nut.

To determine what is best for your application see the Linear Rail Applications Checklist.

### Identifying the LRS04 Part Number Codes when Ordering

Double Stack Hybrid Linear Actuator with IDEA programmable Drive and Black Ice® TFE Lead-screw.

LRS with Size 17

LRS with Size 17 Double Stack Hybrid Linear Actuator

LRS Non-Motorized

LR	W	04	В —	M	0025	XXX
Prefix	Frame Style	Frame Size Load*	Lubrication	Drive / Mounting	Nominal Thread Lead Code	Unique Identifier
LR = Linear Rail System (LRS)	<ul> <li>B = BFW nut</li> <li>C = CMP nut</li> <li>W = WDG nut</li> <li>G = Guide only</li> </ul>	<b>04</b> = 50 lbs (222 N) (Maximum static load)	S = Uncoated B = Black Ice® TFE N = No screw	<ul> <li>A = None</li> <li>M = Motorized 43000 Series Size 17 Hybrid</li> <li>G = Motor with IDEA<sup>™</sup> integrated programmable drive - USB communi- cations</li> <li>J = Motor with IDEA<sup>™</sup> integrated programmable drive - RS485 commu- nications</li> </ul>	0000 = No screw 0025 = .25-in (.635) 0031 = .03125-in (.794) 0039 = .0394-in (1.0) 0050 = .05-in (1.27) 0063 = .0625-in (1.588) 0079 = .0787-in (2.0) 0100 = .01-in (2.54) 0125 = .125-in (3.175) 0197 = .1969-in (5.0) 0250 = .25-in (6.35) 0394 = .3937-in (10.0) 0500 = .5-in (12.7)	Proprietary suffix assigned to a specificcustomer application.The identifier can apply to either a standard or custom part.
					<b>0750</b> = .75-in (19.05) <b>1000</b> = 1.0-in (25.4)	

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 M3, M4, M5, M6



### Motorized Size 17

#### LRS04 Linear Rail with 43000 Series Size 17 Linear Actuator

Recommended for horizontal loads up to 50 lbs (222 N)

#### Specifications

Width	Length of stroke (max)	Speed (max)	Straight llne accuracey	Twist
1-5/8 in square	40 in	20 in/sec	+/- 0.012 in/ft	+/- 0.25° in/ft
(4.3 cm square)	(1000 mm)	(0.5 M/sec)	(+/- 1.0 mm/M)	(+/- 0.75° /M)

#### Load Ratings (max)

Top load "Z" direction	Hanging / Gantry	Max. Pitch Moment	Max. Moment Roll	Max. Moment Yar
50 lbs.	50 lbs.	75 in – Ibs	75 in – Ibs	(8.5 N – M)
(225 N)	(225 N)	(8.5 N – M)	(8.5 N – M)	







.....

### Single Stack

### 43000 Series Size 17

Size 23: Si	Size 23: 57 mm (2.3-in) Hybrid Linear Actuator (1.8° Step Angle)						
Wiring		Bipolar	Unipolar**				
Programmable Drive	IDEA I	IDEA Drive option available			plicable		
Winding Voltage	3.25 VDC	5 VDC	12 VDC	5 VDC	12 VDC		
Current (RMS)/phase	2.0 A	1.3 A	.54 A	1.3 A	.54 A		
Resistance/phase	1.63 Ω	3.85 Ω	22.2 Ω	3.85 Ω	22.2 Ω		
Inductance/phase	3.5 mH	10.5 mH	58 mH	5.3 mH	23.6 mH		
Power Consumption			13 W				
Rotor Inertia			166 gcm <sup>2</sup>				
Insulation Class	Class B (Class F available)						
Weight		18 oz (511 g)					
Insulation Resistance			20 MΩ				

\* 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.



# IDEA<sup>™</sup> Drive software is simple to use with on-screen buttons and easy-tounderstand 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

Size 17 Double Stack External Linear

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# Double Stack

### 43000 Series Size 17

Size 23 Double Stack: 57 mm (2.3-in) Hybrid Linear Actuator (1.8° Step Angle)							
Wiring	Bipolar						
Programmable Drive	IDEA Drive option available						
Winding Voltage	3.25 VDC	5 VDC	12 VDC				
Current (RMS)/phase	3.85 A	2.5 A	1 A				
Resistance/phase	0.98 Ω	2.0 Ω	12.0 Ω				
Inductance/phase	2.3 mH	7.6 mH	35.0 mH				
Power Consumption		25 W Total					
Rotor Inertia		321 gcm <sup>2</sup>					
Insulation Class	Class B (Class F available)						
Weight	32 oz (958 g)						
Insulation Resistance		20 MΩ					

\* 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.



Single Stack

FORCE vs. PULSE RATE

- Chopper - Bipolar - 100% Duty Cycle

.005" (.127)

200

400

600

800

1000

Pulse Rate (full steps/sec.)

1200

1400

1600

1800

100



Motorized

Size 17

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.

0

Ó

(25.4)

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



(76.2)

(50.8)

(101.6)

Linear Velocity: in./sec. (mm/sec.)

(127.0)

(152.4)

(177.8)

0

(203.2)

Motorized Size 17

### 43000 Series Size 17

Hybrids: Stepping Sequence

Motor Connector:

Mating Connector:

Wire to Board Connector:

Hybrids: Wiring

	Bipolar	Q2-Q3	Q1-Q4	Q6-Q7	Q5-Q8	
Ţ	Unipolar	Q1	Q2	Q3	Q4	
TEND	Step					
CV -	1	ON	OFF	ON	OFF	NOC
	2	OFF	ON	ON	OFF	
V	3	OFF	ON	OFF	ON	
	4	ON	OFF	OFF	ON	
	1	ON	OFF	ON	OFF	

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



### Size 17 43000 Series • Integrated Connectors

Hybrid Size 17 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.



### **Dimensional Drawings**

Integrated Connector with 43000 Series Size 17

Dimensions = (mm) inches



[7.20]

0.28

[12.70]

0.50

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

JST part # S06B-PASK-2

JST part # PAP-06V-S Haydon Kerk Part #56-1210-5 (12 in. Leads)

JST part number SPHD-001T-P0.5



LRS Series • LRS04

# LRS04 Non-Motorized Linear Rails

#### T-slots integrated into exterior rail bottom and sides that accommodate full length support and various mounting options

The non-motorized LRS Linear Rail System consists of a stationary base and a load -bearing carriage that travels along a rigid extruded aluminum rail. Easily allows flexibility to integrate with a variety of motor types, belt and pulley configurations.

Also available with several inline motor options, including a single stack or double stack Size 17 stepper motor, with or without a programmable IDEA<sup>™</sup> Drive.

For extreme loads, the LRS04 can be used with CMP or WDG high precision

anti-backlash nuts, as well as a freewheeling general purpose nut.



To determine what is best for your application see the Linear Rail Applications Checklist.

		Identifying	the Non-Motorized L	RS Part Numbe	rs when Ordering	
LR	W	04	В —	A	0025 —	XXX
Prefix LR = Linear Rail System	Frame Style B = BFW Nut C = CMP Nut W = WDG Nut G = Guide only	Frame Size Load 04 = 50 lbs (222 N) (Maximum static load)	Coating S = Uncoated B = Black Ice TFE N = No screw	Drive / Mounting A = None	Nominal Thread Lead Code 0000 = No  screw 0025 = 0.25 - in  (.635) 0031 = 0.3125 - in  (.794) 0039 = .0394 - in  (1.0) 0050 = .05 - in  (1.27) 0063 = .0625 - in  (1.588) 0079 = 0.079 - in  (2.0) 0100 = .100 - in  (2.54) 0125 = 0.125 - in  (3.175) 0197 = 0.197 - in  (5.0) 0250 = 0.250 - in  (6.35) 0394 = 0.3937 - in  (10.0) 0500 = .500 - in  (12.70) 0750 = 0.75 - in  (19.05) 1000 = 1.0 - in  (25.4)	Unique Identifier Suffix used to identify specific motors 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.

#### **Dimensional Drawings**







### Non-Motorized

# SRA Screw Rail® Linear Actuators

• Coaxial Screw and Rail Guides

### • Recommended anywhere low drag and minimal free play is required

Traditionally, linear motion has required separate components to handle drive, support and guidance. The compact Screw Rail combines all functions in a single, coaxial component.

By eliminating the need for external rail-to-screw alignment, the Screw Rail simplifies the design, manufacture and assembly of motion systems. The coaxial design saves as much as 80% of the space used by a two-rail system and is generally less expensive than the equivalent components purchased separately. An added benefit is the ability to get three-dimensional motion from a single Screw Rail.



the Screw Rail can be used to simultaneously lift and rotate (Z-theta motion). With one motor driving the screw and a second rotating the rail, a compact, self-supporting pick and place mechanism can be created.

		Identify	ing SRA Screw Rail	Part Numbers w	vhen Ordering	
SR	А	03	К —	A	0100 —	XXX
Prefix SR = Screw Rail	Nut Style A = Freewheeling	Nominal Rail Diam. 03 = 3/8-in (10 mm) 04* = 1/2-in (13 mm) 06* = 3/4-in (19 mm) 08* = 1-in (25 mm)	Coating S = Uncoated K = Kerkote®	Drive / Mounting A = None	Nominal Thread Lead Code 0050 = .05 - in (1.27) SRA03, SRA04 0100 = .100 - in (2.54) SRA03, SRA06, SRA08 0200 = .200 - in (5.08) SRA06, SRA08 0250 = .250 - in (6.35) SRA03, SRA04 0375 = .375 - in (9.53) SRA03 0500 = .500 - in (12.70) SRA04, SRA06, SRA08 1000 = 1.00 - in (25.4) SRA04, SRA06, SRA08	Unique Identifier Suffix used to identify specific motors 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. Right-hand and left-hand assemblies available. \*End supports available, see page 2.



Part N	0.	A Diam.	В	C Diam.	D Diam.	E	F	G Diam.	H (B, C, D)	I	L1	L2
CDA02	inch	.364/.367	.38	.1245/.1250	.98	1.0	.28	.562	.75	.094	.37	.38
ShAus	mm	9.24/9.32	9.56	3.16/3.18	24.9	25.4	7.2	14.3	19.1	2.39	9.4	9.66
CDA04	inch	.489/.492	0.62	.1870/.1875	1.25	1.4	.38	.750	1.03	0.140	0.26	0.36
SNAU4	mm	12.42/12.5	15.75	4.75/4.76	31.8	36	9.5	19.1	26.2	3.56	6.6	9.1
SBV06	inch	.739/.742	0.75	.2490/.2495	1.75	2.0	.50	1.120	1.48	0.173	0.38	0.70
SIAOO	mm	18.77/18.85	19.05	6.33/6.34	44.5	51	12.7	28.4	37.6	4.39	9.7	17.8
60400	inch	.989/.992	0.75	.2490/.2495	2.23	2.5	.63	1.495	1.92	0.200	0.48	0.77
Shauo	mm	25.12/25.2	19.05	6.33/6.34	56.6	64	15.9	38.0	48.8	5.08	12.2	19.6

Metric available as requested.





Non-Motorized

Part No.	Inch	Lead <sup>™</sup>	Thread Lead Code	Norr Rail [	ninal Diam.	Norr Screw	ninal Diam.	Max Tor	Drag que	Life C Design x	@ 1/4 n Load 10 <sup>6</sup> Backlash)	Torque Lo	-to-Move ead	Desig	n Load	Sci inertia Ler	rew per Unit ıgth	Equiv Dia	alent m*	
	inch	mm		inch	mm	inch	mm	oz-in	NM	inch	cm	oz-in/lb	NM/Kg	lbs	NM	oz-in sec²/in	KgM²/M	inch	mm	
	.050	1.27	0050					1.5	0.014			0.5	0.007							
SBV03	.100	2.54	0100	3/8	10	3/16	5	2.0	0.018	100 to	250 to	1.0	0.016	10	15	.1 x	.4 x	30	7.6	
311403	.250	6.35	0250	5/0	10	3/10	5	2.5	0.020	150	380	1.25	0.019	10	4.5	10-5	10-6	50	7.0	
	.375	9.53	0375					3.0	0.025			2.0	0.030							
	.050	1.27	0050					2.0	0.015			0.5	0.007							
SBA04	.250	6.35	0250	1/2	13	1//	6	3.0	0.020	150 to	380 to	1.5	0.023	25	10	.3 x	1.3 x	30	۵۵	
011/104	.500	12.7	0500	1/2	10	1/4	0	4.0	0.030	200	500	2.5	0.039	20		10-5	10-6	.00	0.0	
	1.00	25.40	1000					5.0	0.040			4.5	.0.70							
	.100	2.54	0100					3.0	0.020			1.0	0.016							
SRAGE	.200	5.08	0200	3//	10	3/8	10	4.0	0.030	180 to	450 to	1.5	0.023	50	20	1.5 x	6.5 x	60	15.2	
311400	.500	12.7	0500	0/4	13	5/0	10	5.0	0.040	280	710	2.5	0.039	50	20	10-5	10-6	.00	10.2	
	1.00	25.40	1000					6.0	0.045			4.5	0.070							
	.100	2.54	0100					4.0	0.030			1.0	0.016							
CDA09	.200	5.08	0200	1	05	1/0	10	5.0	0.040	280 to	710 to	1.5	0.023	100	45	5.2 x	20.0 x	01	20.5	
SRA08 .50	.500	12.7	0500		20	25 1/2	13	6.0	0.045	45 320 60	230 to         710 to           045         320         810           060	810	2.5	0.039	100 4	40	10-5	10-6	.01	20.5
	1.00	25.40	1000					8.0	0.060				4.5	0.070						

\*Screw Rail stiffness may be modeled using Classical Beam Deflection Theory with equivalent stainless steel beam of diameter given. \*\*Other leads available as custom orders.

# Screw Rail® End Supports

• Optional accessory providing convenience of simple and compact mounting

• End Supports slide over the outside diameter of each rail end and "key" off the slot in the Screw Rail

Kerkite® composite polymer End Supports come standard with three hex nuts that are captured in the flange for easy assembly. Also supplied with a brass threaded insert and a set screw to fasten to the outside diameter of the rail.







#### Identifying Screw Rail End Support Part Numbers when Ordering

		oning		
SR	04	ES	—	Z00
Prefix	Nominal Size	Accessory		Identifier
SR = Screw	Diameter	ES = End		Standard
Rail	04 = 1/2-in (13 mm)	Support		
	06 = 3/4-in (19 mm)			
	<b>08</b> = 1-in (25 mm)			
N	IOTE: Dashes must be included in Pa	rt Number (–) as shov	/n abov	э.

	A Diam. inch (mm)	D inch (mm)	F inch (mm)	H Diam. inch (mm)	L3 inch (mm)	L4 inch (mm)	<b>Q</b> inch (mm)	R inch (mm)	<b>S</b> inch	T inch (mm)	<b>U</b> inch	W Diam. Brass Insert Inch (mm)	X inch (mm)	Y inch (mm)
SRA04	.624/.626 (15.85/15.90)	1.35 (34.3)	0.200 (5.08)	0.150 (3.81)	0.390 (9.91)	.720 (18.29)	0.080 (2.03)	0.060 (1.52)	#6-32	1.03 (26.2)	#8-32	0.47 (12.0)	0.460 (11.68)	0.500 (12.70)
SRA06	.749/.751 (19.03/19.08)	1.60 (40.6)	0.250 (6.35)	0.173 (4.39)	0.603 (15.32)	0.900 (22.86)	0.100 (2.54)	0.100 (2.54)	#8-32	1.31 (33.3)	#10-32	0.60 (15.3)	0.594 (15.09)	0.645 (16.38)
SRA08	.999/1.001 (25.38/25.43)	2.20 (55.9)	0.375 (9.53)	0.200 (5.08)	0.920 (23.37)	1.200 (30.48)	0.125 (3.18)	0.175 (4.45)	#10-32	1.82 (46.2)	#10-32	0.82 (20.9)	0.800 (20.32)	0.820 (20.83)

\*Metric carriage hole sizes available M3, M4, M5, M6.





# SRZ Screw Rail® Linear Actuators

#### • Coaxial Screw and Rail Guides

#### Continuous Self-Adjusting Anti-Backlash

Traditionally, linear motion has required separate components to handle drive, support and guidance. The compact Screw Rail combines all functions in a single, coaxial component.

By eliminating the need for external rail-to-screw alignment, the Screw Rail simplifies the

design, manufacture and assembly of motion systems. The coaxial design saves as much as 80% of the space used by a two-rail system and is generally less expensive than the equivalent components purchased separately. An added benefit is the ability to get three-dimensional motion from a single Screw Rail.



When mounted vertically, the Screw Rail can be used to simultaneously

lift and rotate (Z-theta motion). With one motor driving the screw and a second rotating the rail, a compact, self-support-

ing pick and place mechanism can be created.

		Identify	ying SRZ Screw Rail P	art Numbers w	vhen Ordering	
SR	Z	06	К —	А	0100 —	XXX
Prefix SR = Screw Rail	Nut Style A = Anti- Backlash	Nominal Rail Diam. 03 = 3/8-in (10 mm) 04* = 1/2-in (13 mm) 06* = 3/4-in (19 mm) 08* = 1-in (25 mm)	Coating S = Uncoated K = Kerkote®	Drive / Mounting A = None	Nominal Thread Lead Code 0050 = .05 - in (1.27) SRZ03, SRZ04 0100 = .100 - in (2.54) SRZ03, SRZ06, SRZ08 0200 = .200 - in (5.08) SRZ06, SRZ08 0250 = .250 - in (6.35) SRZ03, SRZ04 0375 = .375 - in (9.53) SRZ03 0500 = .500 - in (12.70) SRZ04, SRZ06, SRZ08 1000 = 1.00 - in (25.4) SRZ04, SRZ06, SRZ08	Unique Identifier Suffix used to identify specific motors 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. Right-hand and left-hand assemblies available.



Part N	0.	A Diam.	В	C Diam.	D Diam.	E	F	G Diam.	H (B, C, D)	Ι	L1	L2
00700	inch	.364/.367	.38	.1245/.1250	.98	1.1	.28	.73	.75	.094	.37	.38
3HZU3	mm	9.24/9.32	9.56	3.16/3.18	24.9	27.94	7.2	18.5	19.1	*	9.4	9.66
00704	inch	.489/.492	0.62	.1870/.1875	1.31	1.4	.38	.97	1.03	0.140	0.26	0.36
SRZ04 mi	mm	12.42/12.5	15.75	4.75/4.76	33.3	36	9.5	24.7	26.2	*	6.6	9.1
SRZ06	inch	.739/.742	0.75	.2490/.2495	1.81	2.0	.50	1.38	1.48	0.173	0.38	0.70
	mm	18.77/18.85	19.05	6.33/6.34	46.0	51	12.7	35.1	37.6	*	9.7	17.8
SD208	inch	.989/.992	0.75	.2490/.2495	2.30	2.5	.63	1.72	1.92	0.200	0.48	0.77
30200	mm	25.12/25.2	19.05	6.33/6.34	58.4	64	15.9	43.7	48.8	*	12.2	19.6

\*Metric available as requested.



Part No.	Inch	Lead**	Thread Lead Code	Norr Rail [	ninal Diam.	Non Screw	ninal Diam.	Max Drag Torque		Life @ 1/4 Design Load x 10 <sup>6</sup> (Non Anti-Backlash)		Torque-to-Move Lead		Design Load		Screw inertia per Unit Length		Equivalent Diam*		
	inch	mm		inch	mm	inch	mm	oz-in	NM	inch	cm	oz-in/lb	NM/Kg	lbs	NM	oz-in sec²/in	KgM²/M	inch	mm	
	.050	1.27	0050					2.0	0.014			0.5	0.007							
60702	.100	2.54	0100	2/9	10	2/16	5	2.5	0.018	50 to	130 to	1.0	0.016	10	50	.1 x	.4 x	20	76	
36203	.250	6.35	0250	3/0	10	3/10	5	3.0	0.020	80	200	1.25	0.019	10	50	10-5	10-6	30	7.0	
	.375	9.53	0375					3.5	0.025			2.0	0.030							
	.050	1.27	0050					3.0	0.020			0.5	0.007							
SRZ04	.250	6.35	0250	1/2	13	1/4	6	4.0	0.030	75 to 100	190 to	1.5	0.023	25	10	.3 x	1.3 x	30	aa	
	.500	12.7	0500	1/2	13			5.0	0.040		250	2.5	0.039	25	10	10-5	10-6	.00	3.3	
	1.00	25.40	1000					6.0	0.045			4.5	.0.70							
	.100	2.54	0100					6.0	0.045			1.0	0.016							
SB206	.200	5.08	0200	3//	10	3/8	10	6.5	0.047	90 to	230 to	1.5	0.023	50	20	1.5 x	6.5 x	60	15.2	
011200	.500	12.7	0500	- 10	15	5/0	10	7.0	0.050	140	350	2.5	0.039	50	20	10-5	10-6	.00	10.2	
	1.00	25.40	1000					7.5	0.053			4.5	0.070							
SRZ08	.100	2.54	0100					8.0	0.057			1.0	0.016							
	.200	5.08	0200	1	25	1/2	12	8.5	0.060	120 to	350 to	1.5	0.023	100	15	5.2 x	20.0 x	Q1	20.5	
	.500	12.7	0500		25	1/2 13	13	9.0	0.064	160	34 160 410	410	2.5	0.039	100	45 10	10-5	10-6	.01	20.0
	1.00	25.40	1000				9.5	0.067	7		4.5	0.070								

\*Screw Rail stiffness may be modeled using Classical Beam Deflection Theory with equivalent stainless steel beam of diameter given. \*\*Other leads available as custom orders.

www.haydonkerkpittman.com





# Linear Guide Elements

Spline Shafts and Guide Rails deliver low-cost, low friction and long life for a variety of linear motion control applications.

KERK<sup>®</sup> SS and SZ Spline shafts are available in stainless steel and can be coated with our proprietary Kerkote<sup>®</sup> TFE or Black Ice<sup>®</sup> coatings. Spline Shafts provide anti-rotation for one axis motion or a drive mechanism with rotation for two axes of motion. The bushing is supplied with an integral brass collar to facilitate various mounting configurations without nut distortion.

KERK GR Guide Rail is the perfect choice for light load applications requiring minimal frictional drag, low cost and long wear. It features a burnished, centerless ground stainless steel shaft (available either uncoated or with Kerkote<sup>®</sup> TFE for additional lubricity) and a graphite and PTFE-filled thermoplastic bushing.



# SS and SZ Series Spline Shafts

The Kerk® Spline Shaft (SS/SZ) series spline shaft system has been designed for light to moderate load applications, where low cost, low friction, and long life are primary design considerations. Kerk Spline Shafts provide anti-rotation for one axis motion or a drive mechanism with rotation for two axes of motion. They are excellent alternatives for applications where hex shafts, square shafts and high-cost ball splines are typically used. The assembly consists of a stainless steel spline shaft treated with Haydon Kerk Motion Solutions, Inc. proprietary low friction Kerkote® TFE coating, mated with a Kerkite® composite polymer bushing. The bushing is supplied with an integral brass collar to facilitate various mounting configurations without nut distortion. Standard shaft straightness is .003-in (.08mm/30cm) per foot. Typical radial and torsional clearance between shaft and bushing for a basic assembly (SSA) is .002-in to .003-in (.05-.08mm). An anti-backlash assembly (SZA) is available for applications requiring minimum torsional play. As with other Kerk assemblies, special bushing configurations and end machining configurations are available upon request. Aluminum or carbon steel spline shafts are also available upon request.



# GR Series Linear Rails and Bushings

The GR Series linear rail system has been designed for light load applications where low cost, minimum frictional drag and long wear life are primary design considerations. The assembly consists of a centerless ground and burnished stainless steel shaft mated with a Kerkite<sup>®</sup> composite polymer bushing. The material combinations have been selected so that thermal fluctuations have minimal effect on system performance. Additional lubricity and extended life can be obtained by using a low friction Kerkote<sup>®</sup> TFE coating on support shafts available in both stainless and alloy steel. Standard shaft straightness is .002-in (0.05mm) per foot and typical radial clearance between shaft and bushing is .0005-in (.013mm) on non-coated assemblies and .001-in (.025mm) on Kerkote TFE coated assemblies. Bushings are manufactured with standard retaining ring grooves.

# Identifying the Spline Shafts and Guide Rails Part Number Codes when Ordering

SZ	А	Р	04	1	К –	- 08	XXX
Prefix	Nut Style	Mounting	Rail Diameter	Number of Bushings	Lubrication	Length in Inches	Unique Identifier
				per nali		(Rounded up)	
$\boldsymbol{SS} = \text{Spline}$	A = Assembly	$\mathbf{T} = \text{Threaded}$	<b>02</b> = 1/8-in	0	$\mathbf{S} = Uncoated$	Example:	Proprietary suffix
Shaft	<b>B</b> = Bushing only	(for Spline Shafts only)	<b>04</b> = 1/4-in	1	K = Kerkote®	<b>06</b> = 6-in	assigned to a specific
	S - Shaft only	$\mathbf{G} = \mathrm{Snap} \mathrm{ring} \mathrm{groove}$	<b>06</b> = 3/8-in	2	$\mathbf{B} = \text{Black Ice}^{\text{TM}}$	<b>08</b> = 8-in	customer application.
SZ = Anti- Backlash Spline Shaft		(for Guide Rails only)	<b>08</b> = 1/2-in	-	$\mathbf{N} = Bushing \text{ only}$	00 = Bushing only	The identifier can apply
opinio onare		P = Plain (no features)	<b>12</b> = 3/4-in	5			custom part
$\mathbf{GR} = \mathrm{Guide}$		S = Shaft only		4			custom part.
Rail		V Custom		5			
				Use "0" for Shaft only			
				and "1" if Bushing			
				only			

NOTE: Dashes must be included in Part Number (-) as shown above. For assistance call our Engineering Team at 603 213 6290.



M

**Non-Motorized** 

SRA Series Standard ScrewRail Linear Actuators



		Shaft	Root Diameter	Tube I.D.	Bushing Diameter	Bushing Length	Thread	Thread Length	Equivalent Diameter**
	Rail Diameter Code	<b>A</b> in ± .002 (mm ± 0.05)	in ± .002 (mm ± 0.05)	in ± .002 (mm ± 0.05)	<b>B</b> in ± .001 (mm ± 0.025)	<b>C</b> in ± .01 (mm ± 0.25)	м	N in ± .002 (mm ± 0.05)	inch (mm)
	02	0.125 (3.18)	0.095 (2.41)	NA	0.375 (9.53)	0.500 (12.70)	3/8-24	0.250 (6.35)	0.110 (2.79)
	04	0.250 (6.35)	0.202 (5.13)	NA	0.500 (12.70)	0.75 (19.1)	7/16-20	0.250 (6.35)	0.226 (5.74)
SS/SZ	06	0.375 (9.53)	0.306 (7.77)	NA	0.625 (15.88)	1.00 (25.4)	9/16-20	0.375 (9.53)	0.341 (8.65)
	08	0.500 (12.70)	0.419 (10.64)	NA	0.813 (20.65)	1.50 (38.1)	3/4-20	0.500 (12.70)	0.458 (11.63)
	12	0.750 (19.05)	0.630 (16.00)	NA	1.125 (28.58)	2.25 (57.2)	1-16	0.750 (19.05)	0.690 (17.53)

GR Series Linear Rails and Bushings



	Rail Diamete Code	Standard Part Lengths in ±.010 (mm ± 0.25)	<b>Rail</b> <b>Diameter</b> <b>A</b> In±.0006 (mm±0.015)	Rail Diameter w/TFE A in±.0006 (mm±0.015)	Bushing Outside Diam. B in±.0006 (mm±0.015)	Bushing Length C in±.010 (mm±0.25)	Bushing Inside Diam. D in±.0005 (mm±0.018)	$\begin{array}{c} \textbf{Snap Ring}\\ \textbf{Groove}\\ \textbf{Location}\\ \textbf{E}\\ \text{in} \begin{array}{c} +.010\\000\\ \end{array}\\ \left(\text{mm} \begin{array}{c} +0.25\\ 0.00\\ \end{array}\right) \end{array}$	Snap Ring Groove Diam. F in±.004 (mm±0.100)	Snap Ring Groove Width G in±.0003 (mm±0.008)	l Rail Chamfer H in (mm)	Radial Load bs (Kg)
	04	6/8 10/12	.2475 (6.287)	.2472 (6.279)	.5000 (12.700)	.765 (19.43)	.2485 (6.311)	.535 (13.59)	.450 (11.43)	.040 (1.02)	.020 (.51)	5 (2.3)
	06	6/12 15/18	.3715 (9.436)	.3712 (9.428)	.7500 (19.050)	1.275 (32.39)	.3725 (9.462)	.995 (25.27)	.676 (17.17)	.046 (1.17)	.020 (.51)	10 (4.5)
GR	08	12/15 18/24	.4965 (12.611)	.4962 (12.603)	1.0000 (25.400)	1.660 (42.16)	.4975 (12.637)	1.330 (33.78)	.900 (22.86)	.046 (1.17)	.020 (.51)	15 (6.8)
	12	18/24 36	.7415 (18.834)	.7412 (18.826)	1.2500 (31.750)	2.036 (51.72)	.7425 (18.860)	1.620 (41.15)	1.125 (28.60)	.058 (1.47)	.030 (.76)	25 (11.4)

# Information needed to properly size a linear rail system

Our Linear Rail Systems are designed to be precision motion devices. Many variables must be considered before applying a particular rail system in an application. The following is a basic checklist of information needed that will make it easier for the Haydon Kerk Pittman Engineering Team to assist you in choosing the proper linear rail. See order form on page 4.



Stroke Length to Move Load? \_\_ (mm or inches) Overall rail size will be a function of stroke length needed to move the load, the rail frame size (load capability), the motor size, and whether or not an integrated stepper motor programmable drive system is added.

4.



5. Move Profile? A *trapezoidal* move profile divided into 3 equal segments (J) is a common move profile and easy to work with. Another common move profile is a *triangular* profile divided into 2 equal segments (K).



If using a trapezoidal (J) or triangular (K) move profile, the following is needed.

a. Point to point move distance \_\_\_\_\_ (mm or inches)

b. Move time \_\_\_\_\_ (seconds) including time of acceleration and deceleration

c. Dwell time between moves \_\_\_\_\_ (seconds)

The trapezoidal move profile (J) is a good starting point in helping to size a system for prototype work.

A complex move profile (L) requires more information.

a. Time (in seconds) including: T1, T2, T3, T4, T5...Tn and Tdwell

b. Acceleration / Deceleration (mm/sec.<sup>2</sup> or inches/sec.<sup>2</sup>) including: A1, A2, A3...An



Accuracy is defined as the difference between the theoretical position and actual position capability of the system. Due to manufacturing tolerances in components, actual travel will be slightly different than theoretical "commanded" position. See M.

Position Repeatability Required? \_\_\_\_\_\_ (mm or inches) Repeatability is defined as the range of positions attained when the rail is commanded to approach the same position multiple times under identical conditions. 7. See M.

	M Repeatability Accuracy					
8. P P fa	ositioning Resolution Required? (mm/step or inches/step) ositioning resolution is the smallest move command that the system can generate. The resolution is a function of many actors including the drive electronics, lead screw pitch, and encoder (if required). The terms "resolution" and "accuracy" hould never be used interchangeably.					
9. C In (e	Closed-Loop Position Correction Required? YES NO n stepper motor-based linear rail systems, position correction is typically accomplished using a rotary incremental encoder either optical or magnetic).					
10. 🗌 Li	ife Requirement? (select the most important application parameter)					
а	. Total mm or inches, or					
b	. Number of Full Strokes, or					
C	. Number of Cycles					
<b>11</b> . 🗌 0	perating Temperature Range (°C or °F)					
a	a. 🗌 Will the system operate in an environment in which the worst case temperature is above room temperature?					
b	. 🗌 Will the system be mounted in an enclosure with other equipment generating heat?					
12. 🗌 C	Controller / Drive Information?					
a						
h						
D						
<b>13</b>	Model / Style of Drive:					
14.	ten Besolution?* a. Full Sten b. Half-Sten C. Micro-Sten					
15. D	Drive Current?* (Arms / Phase) and (Aneak / Phase)					
16. 🗌 C	Current Boost Capability?* (%)					

\*NOTE: If the Haydon Kerk IDEA<sup>™</sup> Drive is used with 43000 Series Size 17 linear actuator stepper motor disregard items 14, 15, and 16.





# Linear Rail Application Checklist

Upon completion, email to: info.haydonkerk@ametek.com

Nam	1e		Company				
Address			City		State	Zip	
Cou	ntry	Phone	Email				
1.	Maximum Load?	(N or lbs.)					
2	Load Center of Gravity (c	a) Distance and Height (mm o	r inches)? See illustrations (A) (B) (C) below				
	Dimensions: mm or	· inch A	, or B and C				
3.	Rail Mount Orientation? T For example, total require Total force in the vertical Orientation:	The force needed to move the ed force in the horizontal plane plane is a function of friction,	load is dependent on the orientation of the load relative to the e (D) is a function of friction and the force needed for load acceleration, and gravity (Ff + Fa + Fg). $\Box F \_ G \_$	force of gravity. eleration (Ff + Fa).	0		
4.	Stroke Length to Move	oad? (m or not an integrated stepper n	m or inches)Overall rail size will be a function of stroke length notor programmable drive system is added.	needed to move the loa	d, the rail fra	ame size (load capability), the	
5.	Move Profile? A <i>trapezoidal</i> move profile divided into 3 equal segments (J) is a common move profile and easy to work with. Another common move profile is a <i>triangular</i> profile divided into 2 equal segments (K).						
	If using a trapezoid	lal (J) or triangular (K) move pr	ofile, the following is needed.				
	a. Point to po	bint move distance	(mm or inches)				
	b Move time	; (seconds) inclu	uding time of acceleration and deceleration				
	c. 🗌 Dwell time	between moves	_ (seconds)				
	The trapezoidal mo	ve profile (J) is a good starting	point in helping to size a system for prototype work.				
	A complex move pr	rofile (L) requires more informa	ation.				
	a. 🗌 Time (in se	econds) including: T <sub>1</sub> , T <sub>2</sub> , T <sub>3</sub> , T <sub>4</sub>	$_{4}, T_{5}T_{n}$ and $T_{dwell}$				
	b. Acceleratio	on / Deceleration (mm/sec. <sup>2</sup> or	r inches/sec. <sup>2</sup> ) including: A <sub>1</sub> , A <sub>1</sub> , A <sub>1</sub> , A <sub>n</sub>				
6.	Position Accuracy Requir Accuracy is defined as the manufacturing tolerances	ed? (mm or inc e difference between the theo s in components, actual travel	thes) pretical position and actual position capability of the system. Du will be slightly different than theoretical "commanded" positior	ue to n. See <b>M</b> .			
7.	Position Repeatability Required? (mm or inches) Repeatability is defined as the range of positions attained when the rail is commanded to approach the same position multiple times under identical conditions. See M.						
8.	Positioning Resolution Required? (mm/step or inches/step) Positioning resolution is the smallest move command that the system can generate. The resolution is a function of many factors including the drive electronics, lead screw pitch, and encoder (if required). The terms "resolution" and "accuracy" should never be used interchangeably.						
9.	Closed-Loop Position Co encoder (either optical o	rrection Required? YES or magnetic).	NO In stepper motor-based linear rail systems, position	n correction is typically a	iccomplishe	d using a rotary incremental	
10.	Life Requirement? (selec	t the most important application	on parameter)				
	a. 🗌 Total mm or inches, or b. 🗌 Number of Full Strokes, or c. 🗌 Number of Cycles						
11.	Operating Temperature F	lange (°C c	rr°F)				
	a. 🗌 Will the sy	stem operate in an environme	nt in which the worst case temperature is above room tempera	ature?			
	b. 🗌 Will the sy	stem be mounted in an enclos	sure with other equipment generating heat?				
12.	Controller / Drive Informa	ation?					
	a. 🗌 Haydon Ke	erk IDEA <sup>™</sup> Drive (with Size 17 S	Stepper Motors only)				
	b. Customer Model / St	Supplied Drive. Type?	Chopper Drive L / R Drive				
13.	Power Supply Voltage? _	(VDC)					
14*.	Step Resolution?* a.	Full Step b Half-S	tep c. 🗌 Micro-Step				
15*.	Drive Current?*	(A <sub>rms</sub> / Phase) and	d (A <sub>peak</sub> / Phase)				
16*.	Current Boost Capability	?* (%)					
			*NOTE: If 1 43 di:	the Haydon Kerk IDEA <sup>™</sup> E 3000 Series Size 17 linea sregard items 14, 15, and	rive is used r actuator st d 16.	with epper motor	
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