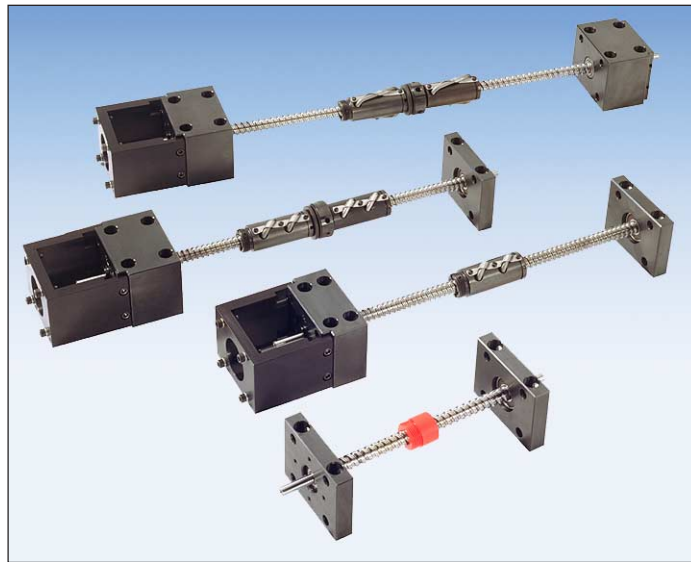
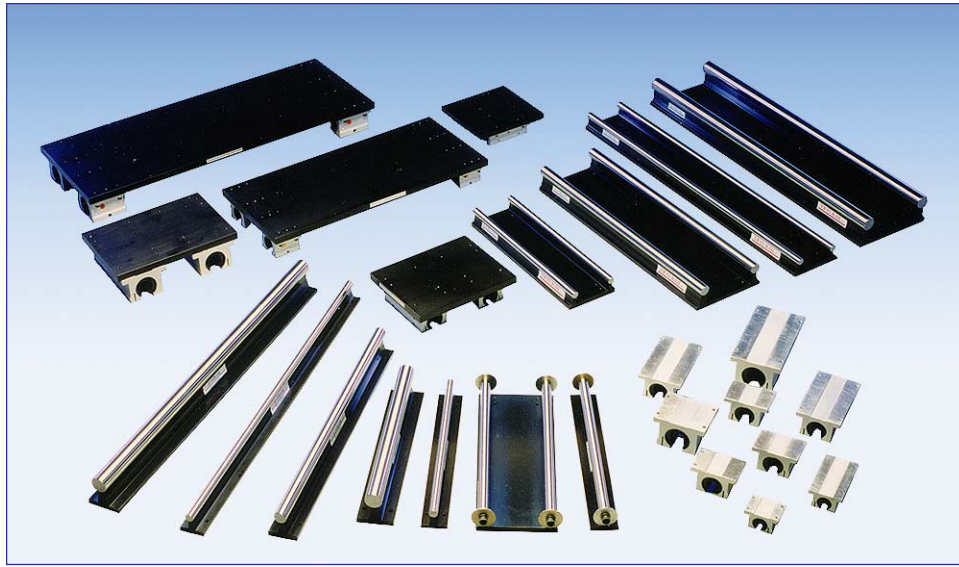




# Positioning Components



# INSTALLATION & SERVICE MANUAL

Registered by UL to ISO 9001



Certificate No. A6916

# Welcome to *LINTECH*

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For over thirty years *LINTECH* has designed, engineered, and manufactured linear positioning components for use in a wide range of applications. Whether it is a standard positioning component, or a custom positioning assembly, *LINTECH* takes great pride in manufacturing a quality product.

At *LINTECH* we are proud to provide the motion control user with this product guide. It was established to assist you with the design, selection, and implementation of mechanical positioning components.

Depending on the requirements, standard positioning components can often be assembled and shipped in less than 2 weeks. Custom positioning assemblies require a different approach. We evaluate your special application, use our many years of experience to guide you, and then manufacture a quality product designed to meet your performance specifications.

*LINTECH's* technical support consists of a well trained inside customer service & application engineering staff, a team of experienced design engineers, a modernized CAD system, full functional CNC machines, and a versatile machining facility that is ISO 9001 certified.

Our local technical support group consists of Automation Specialists located throughout the United States & Canada. These Automation Specialists are experienced in the use of electronic and mechanical motion control products. They are well trained on the performance capabilities of *LINTECH* positioning components.

*LINTECH* is constantly designing new products and improving upon the many options available with our standard products. Whether it is a standard or custom positioning system you need, please write, call, or e-mail us. We look forward to hearing from you.

For the nearest Automation Specialist in your area call:

***LINTECH***<sup>®</sup>

1845 Enterprise Way  
Monrovia, CA. 91016

Toll Free: (800) 435 - 7494  
Phone: (626) 358 - 0110  
Fax: (626) 303 - 2035

Web Site: [www.lintechmotion.com](http://www.lintechmotion.com)  
e-mail: [lintech@lintechmotion.com](mailto:lintech@lintechmotion.com)

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## Overview

Thank you for purchasing a *LINTECH* positioning component. **This manual provides you with important information about your *LINTECH* product. It also points out some precautions which should be taken to ensure proper operation, and the longest possible life of your *LINTECH* component.** *LINTECH* manufactures both standard and custom positioning components which are used in a wide variety of applications and industries. For a full description and details on your component, please refer to the proper *LINTECH* Positioning Component catalog or your original quotation if a custom assembly was purchased.

## Technical Assistance

Please do not hesitate to call *LINTECH* with any questions you have. You may contact the *LINTECH* Automation Specialist in your area for local help, visit our web site, or call the factory direct. If, for any reason, you need to contact *LINTECH*, or an Automation Specialist, please have ready the Model & Serial numbers of your positioning component, as this may speed the process of answering your question.

### ***LINTECH***

1845 Enterprise Way  
Monrovia, CA 91016

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Web Site: [www.lintechmotion.com](http://www.lintechmotion.com)

E-mail: [lintech@lintechmotion.com](mailto:lintech@lintechmotion.com)

## Standard Warranty Policy

All *LINTECH* positioning components are guaranteed to be free from defects in material and workmanship, under normal use, for a period of one year after date of shipment. This warranty covers the repair or replacement of a product when it is sent prepaid to *LINTECH*. *LINTECH* does not assume liability for installation, abuse, alteration, insufficient application data provided for a design, or misuse of any positioning component. Products furnished by *LINTECH*, but not manufactured by *LINTECH* (motors, gearheads, encoders, amplifiers, etc....), are subject to the manufacturers standard warranty terms and conditions.

## Return Policy

Any product requiring a return to *LINTECH* (for warranty or non-warranty repair) requires pre-approval from the factory prior to shipment. Contact the customer service department at (800) 435-7494 in order to obtain a RMA (Return Materials Authorization) number. At that time, please have your system Model & Serial numbers available, along with the reason for the return. The RMA number should be clearly marked on the returned package label and your packing list, or shipping document. Return product freight prepaid in its original package, or one with comparable protection. *LINTECH* will not accept return shipments sent freight collect. Product damage incurred during return shipment, from poor packaging, will not be warranted by *LINTECH*. Keeping original packing materials is recommended until initial inspection & testing is completed.

## Dimensions and Product Changes

Published dimensions shown in the Positioning Component catalogs are known to be accurate at the time of printing. *LINTECH* shall not be held liable, under any circumstances, for any wrongly documented dimension or specification. Changes in design are made whenever *LINTECH* believes its product will improve by the change. No obligation to incorporate these changes in units manufactured prior to a change, will be assumed.

### **Lubrication - Ball Screw Assemblies**

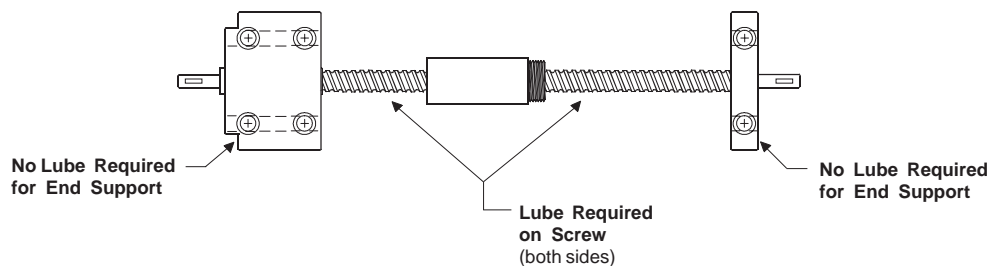
Every *LINTECH* Ball Screw Assembly requires a small amount of grease or oil for proper, long term operation. Lubrication will decrease system wear and the potential for oxidation of the ball screw surface. For most applications, a medium to heavy oil, light grease, or Synthetic Teflon based lubricant is recommended. The many built-in pockets within the ball screw nut allow the adhesive properties of these lubricants to be stored for extended periods of time.

For high speed applications, a light grease is recommended, while the ball screw should NEVER be operated dry for any length of time. For some low speed and lightly loaded applications, a ball screw assembly can typically be operated without lubrication, but for the most part, this is not recommended. Use of WD-40, or other cleaning solvents, should strictly be avoided, as they can cause damage to the ball screw nut.

Because turcite nut ball screw assemblies have a solid surface contacting a solid surface, sufficient lubrication becomes a must. If there is not proper lubrication, the higher frictional forces of these nuts will cause excess wear to the assembly, thus preventing required screw life from occurring. Applying lubrication directly onto the entire length of the screw on a regular basis is highly recommended.

All ball screw assemblies are shipped with grease applied to the ball screw & ball nut. It is recommended that lubricant be applied to the ball screw and linear rails prior to operation. Also, periodic re-lubrication helps assure that the rated life of the ball screw assembly is attained.

All support housings do NOT require lubrication. The housings and bearings are internally lubricated for life, and sealed to prevent outside contamination from getting in.



### **Recommended Lubrication Types**

The type of lubrication may vary depending upon the application, speed, and environment in which the ball screw assembly is installed into. The recommended lubrication types include: High Grade Bearing Grease, Light Weight Oil (50 weight or higher), 80/90 Weight Gear Oil, or a Synthetic Teflon based compound. These type of lubricants should be available through your local lubricant supplier, or hardware/automotive supply store. Use of WD-40, or other cleaning solvents, **should strictly be avoided**, as they can cause damage to the screw assembly.

### **Guidelines for Lubrication**

There is no specific equation *LINTECH* can provide for lubrication. We can only provide guidelines based upon numerous ball screw assembly installations. Ultimately, the frequency of lubrication is determined by your personal preference and the ball screw assembly application. Some applications will require a high frequency of lubrication. These include but are not limited to: high linear speeds, heavy loads, extreme smoothness, high accelerations, high duty cycles, applications which require friction free motion, or high frequency oscillating moves.

High speed applications can use grease or oil type lubrication. The screw assembly should NEVER be operated dry for any length of time. Grease is the preferred type since the grease stays on the ball screw for a longer period of time than oil lubricants. Oil type lubricants can also cause oil "splattering" to surrounding equipment. However, an automatic oil lubrication system may be required for some 24 hours per day, 7 days per week continuous operating applications.

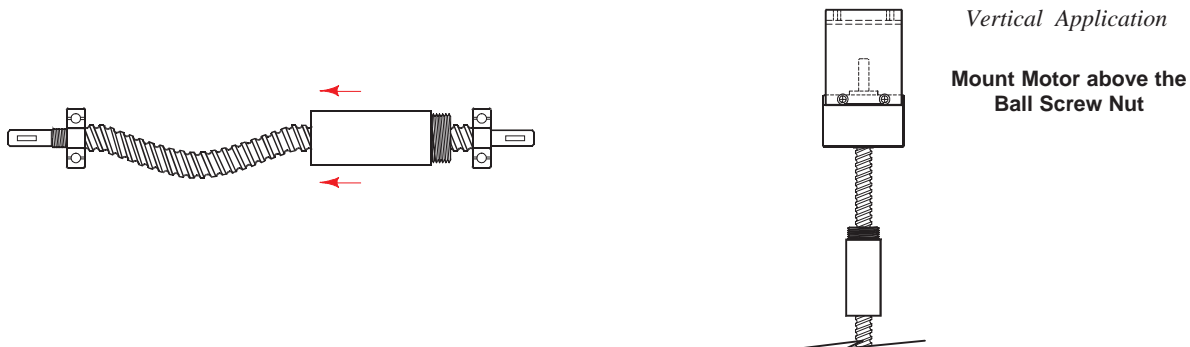
### **Maximum Acceleration Rate & Thrust Forces**

This rating is the maximum acceleration that a ball nut or support housing can handle on a regular basis. It is also limited by the maximum thrust force a particular nut or support housing can sustain. For example, if the maximum acceleration for a ball screw assembly is 772 inches/sec<sup>2</sup>, but a specific load accelerated at 100 inches/sec<sup>2</sup> produces the maximum thrust force for the ball screw or support housing - then the maximum acceleration rate for that load is 100 inches/sec<sup>2</sup>. ( $F = MA$ ). Refer to the Positioning Component catalog specification section for the maximum acceleration rate and thrust force capacity for a particular Ball Screw model number. **WARNING - Exceeding these ratings can cause damage to, and/or shorten the life of, the Ball Screw Assembly and should be avoided.**

### **Maximum Compression Load**

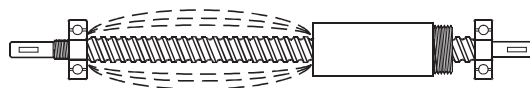
A compression load is a force that tends to compress, or buckle a ball screw shaft. If a compressive force is applied to a screw that exceeds its column strength, the screw will bend. Thus causing premature, or permanent failure. This can happen in either horizontal or vertical applications. In some cases, you may have to select a more rigid end support housing arrangement, and/or a larger diameter screw in order for the ball screw assembly to withstand your compression load. Refer to the Positioning Component catalog specification section for the maximum compression load for a particular Ball Screw model number.

If a sufficiently heavy load is applied to a nut with a long ball screw in a horizontal application, the ball screw could buckle. In a vertical application, if a Fixed or Rigid motor driven housing is mounted below the ball screw, the ball screw weight & load weight could buckle the screw. Therefore, in a vertical application, installing the motor driven support housing above the ball screw puts the ball screw assembly in a tension mode, while the bottom end support bearing is free to "float axially" and is used only to guide the end of the screw. By loading the screw in tension, most of the time you avoid any compression load issues, and only need to be concerned with the load capacity of the nut and end support bearings. However in some vertical applications with the ball screw mounted in a tension mode, you will have to be concerned about compression loads if you have a reversing force that exceeds the load weight being moved. **WARNING - Exceeding these ratings can cause damage to the Ball Screw Assembly and should be avoided.**



### **Maximum Speed**

The maximum rotational speed of a ball screw assembly (RPM's) depends on the diameter of the screw, the length of the screw, and the support housing configuration. This is the point at which the rotational speed of the ball screw creates excessive vibration within the assembly. The maximum speed should never be exceeded since it could cause immediate, or premature failure of a ball screw assembly. Refer to the Positioning Component catalog specification section for the maximum speed for a particular Ball Screw model number. **WARNING - Exceeding these ratings can cause damage to the Ball Screw Assembly and should be avoided.**



## Motor Couplings

*LINTECH* provides three different types of couplings that can be used to mount a motor to a ball screw assembly. These couplings compensate for misalignment between the motor shaft & screw drive shaft extension. This provides for trouble-free operation as long as certain precautions are taken. The connected motor output torque should never exceed the coupling maximum torque capacity.

These couplings are not limited by speed, but can be damaged if a move profile has large acceleration rates or is constantly "SLAMMED" into a mechanical hard stop (or nut bracket). Large inertia loads with quick acceleration and deceleration rates could also have the damaging effects to a coupling by weakening it over time. Couplings with larger torque capacity may be required for high accelerations, large back driving vertical loads, high torque output motors or gear boxes, etc..

One common cause for coupling failure is from the user not connecting EOT switches to a position controller. This situation can result in the carriage over traveling the EOT switches to the point where the nut bracket collides with the ball screw end supports. This sudden mechanical stop fatigues the coupling, which can cause coupling failure. This also can destroy the ball screw nut assembly. Therefore, it is not a good practice to use any positioning systems's mechanical hard stops as a normal stopping procedure.

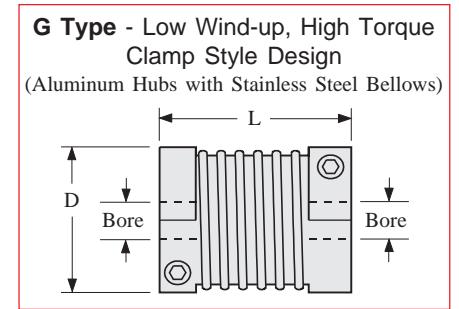
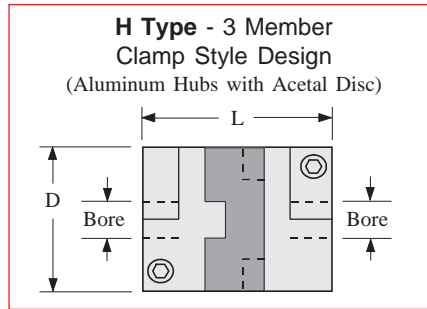
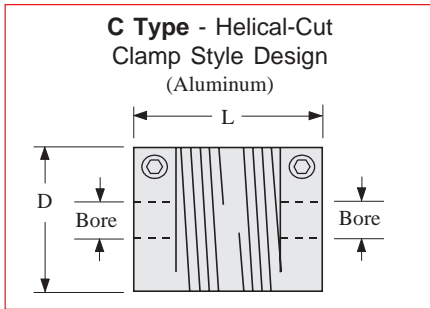
Another cause of coupling failure can occur during the tuning of a servo system that is attached to the ball screw assembly. When servo gains are first adjusted, violent oscillations can occur, which can fatigue, or damage, a coupling. Care should be taken to limit these wild oscillations, by either tuning the servo system before coupling the motor to the ball screw assembly, or by limiting the current in the servo drive during the tuning process.

**Motor Adapter Brackets** - Another important area of coupling concern is in cases where a non- *LINTECH* motor adapter bracket is being installed by the user to a ball screw assembly. In some cases, the added bracket thickness along with a potentially short motor shaft extension, can cause the *LINTECH* supplied coupling to be too short to "clamp" onto the motor shaft. If such a situation arises, a different coupling with a longer length may be required. See page 5 for a list of standard *LINTECH* couplings. Custom couplings will require factory contact to determine torque capacity.

Specification		Ball Screw Diameters								
		0.500 inch		0.625 inch & 16 mm		0.750 inch & 20 mm		1.000 inch		1.500 inch
		NEMA 23 Mount	NEMA 34 Mount	NEMA 23 Mount	NEMA 34 Mount	NEMA 23 Mount	NEMA 34 Mount	NEMA 34 Mount	NEMA 42 Mount	NEMA 42 Mount
<b>Shaft extension diameter at motor mount end</b>	inches (mm)	.312 (7,92)		.375 (9,52)		.500 (12,70)		.625 (15,87)		.750 (19,05)
<b>Maximum coupling diameter</b>	inches (mm)	2.00 (50,8)	2.00 (50,8)	2.00 (50,8)	2.00 (50,8)	2.00 (50,8)	2.00 (50,8)	3.20 (50,8)	2.80 (71,1)	3.80 (96,5)
<b>Maximum coupling length</b>	inches (mm)	2.10 (53,3)	2.10 (53,3)	2.10 (53,3)	2.10 (53,3)	2.10 (53,3)	2.10 (53,3)	2.60 (66,0)	3.60 (91,4)	3.40 (86,4)

Note: Custom motor mounts available upon request.

## Motor Couplings



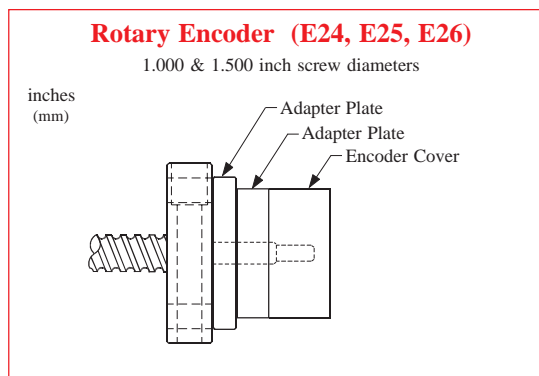
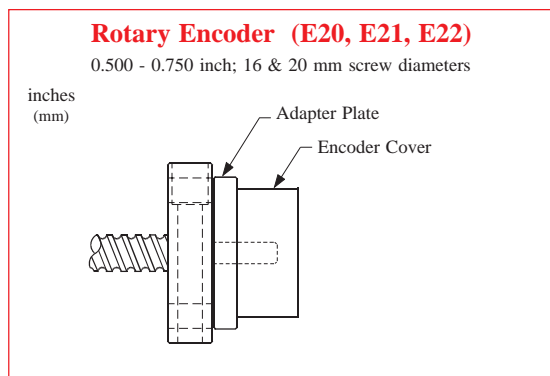
Model #	D inches (mm)	L inches (mm)	Table	Bore Diameters				Weight ounces (grams)	Inertia oz-in <sup>2</sup> (g-cm <sup>2</sup> )	Wind-up arc-sec/oz-in (deg/N-m)	Max Torque oz-in (N-m)
				Motor	Minimum (in) (mm)	Maximum (in) (mm)					
<b>C075-xxx-aaa</b>	0.75 (19,1)	1.00 (25,4)	<b>xxx</b>	<b>aaa</b>	.187 5	.250 8	0.8 (23)	0.06 (10)	45.0 (1,8)	200 (1,4)	
<b>C100-xxx-aaa</b>	1.00 (25,4)	1.50 (38,1)	<b>xxx</b>	<b>aaa</b>	.250 6	.375 10	1.5 (43)	.19 (35)	23.0 (0,9)	400 (2,8)	
<b>C125-xxx-aaa</b>	1.25 (31,8)	2.00 (50,8)	<b>xxx</b>	<b>aaa</b>	.250 6	.500 14	3.5 (99)	.68 (124)	15.0 (0,59)	700 (4,9)	
<b>C150-xxx-aaa</b>	1.50 (38,1)	2.37 (60,2)	<b>xxx</b>	<b>aaa</b>	.375 10	.625 16	5.5 (156)	1.54 (282)	13.0 (0,51)	950 (6,7)	
<b>H075-xxx-aaa</b>	0.75 (19,1)	1.02 (25,9)	<b>xxx</b>	<b>aaa</b>	.187 5	.250 8	0.5 (14)	0.04 (6)	12.6 (0,50)	225 (1,5)	
<b>H100-xxx-aaa</b>	1.00 (25,4)	1.28 (32,5)	<b>xxx</b>	<b>aaa</b>	.250 6	.375 10	1.2 (34)	.15 (27)	7.2 (0,28)	450 (2,8)	
<b>H131-xxx-aaa</b>	1.31 (33,3)	1.89 (48,0)	<b>xxx</b>	<b>aaa</b>	.250 6	.625 16	2.9 (82)	.62 (114)	2.5 (0,098)	1,000 (7,1)	
<b>H163-xxx-aaa</b>	1.63 (41,4)	2.00 (50,8)	<b>xxx</b>	<b>aaa</b>	.375 10	.750 20	5.4 (153)	1.79 (328)	1.2 (0,047)	2,000 (14,1)	
<b>H197-xxx-aaa</b>	1.97 (50,0)	2.35 (59,7)	<b>xxx</b>	<b>aaa</b>	.375 10	.750 20	7.6 (215)	3.69 (674)	1.1 (0,043)	3,600 (25,4)	
<b>H225-xxx-aaa</b>	2.25 (57,2)	3.07 (78,0)	<b>xxx</b>	<b>aaa</b>	.500 12	1.000 24	13.1 (371)	8.29 (1516)	0.6 (0,024)	5,300 (37,4)	
<b>G075-xxx-aaa</b>	0.79 (20,0)	1.02 (26,0)	<b>xxx</b>	<b>aaa</b>	.187 5	.375 10	0.8 (22)	0.06 (11)	2.0 (0,079)	300 (2,1)	
<b>G100-xxx-aaa</b>	0.99 (25,2)	1.26 (32,0)	<b>xxx</b>	<b>aaa</b>	.250 6	.500 12	1.3 (36)	.16 (29)	1.0 (0,39)	500 (3,5)	
<b>G126-xxx-aaa</b>	1.26 (32,1)	1.62 (41,0)	<b>xxx</b>	<b>aaa</b>	.250 6	.625 16	2.7 (74)	.54 (99)	0.3 (0,012)	1,100 (7,7)	
<b>G158-xxx-aaa</b>	1.58 (40,2)	1.85 (47,0)	<b>xxx</b>	<b>aaa</b>	.375 10	.750 20	4.3 (120)	1.34 (245)	0.2 (0,008)	2,400 (17,0)	
<b>G177-xxx-aaa</b>	1.77 (45,0)	2.48 (63,0)	<b>xxx</b>	<b>aaa</b>	.375 10	.750 20	7.1 (200)	2.78 (508)	0.2 (0,008)	4,250 (30,0)	
<b>G220-xxx-aaa</b>	2.20 (56,0)	2.56 (65,0)	<b>xxx</b>	<b>aaa</b>	.500 12	1.000 24	10.6 (300)	6.41 (1172)	0.04 (0,002)	7,100 (50,0)	
<b>G260-xxx-aaa</b>	2.60 (66,0)	3.07 (78,0)	<b>xxx</b>	<b>aaa</b>	.625 16	1.000 24	21.2 (600)	17.91 (3276)	0.03 (0,001)	9,600 (68,0)	
Possible values for <b>xxx &amp; aaa</b>	250 = .250 inch 375 = .375 inch 500 = .500 inch 625 = .625 inch	750 = .750 inch 999 = 1.000 inch			005 = 5 mm 006 = 6 mm 008 = 8 mm 010 = 10 mm	012 = 12 mm 014 = 14 mm 016 = 16 mm 018 = 18 mm			019 = 19 mm 020 = 20 mm 024 = 24 mm		

Specifications subject to change without notice

## Rotary Incremental Encoders

If a rotary encoder is supplied by *LINTECH*, it comes installed on the ball screw assembly opposite the motor mount end. This rotary encoder is shaftless and is physically mounted to the screw shaft extension. **WARNING - It is important NOT to remove the rotary encoder from the ball screw assembly. Removing the encoder will void its warranty.** The glass disk is pre-aligned by *LINTECH* for proper operation. Removing the encoder could effect its performance. The encoder is protected with a sheet metal cover, which is not totally sealed. Therefore if splashing fluid, or other materials is present, precautions should be made to redirect these items away from the encoder housing since contaminants which penetrate the housing can cause encoder failure.

Specification	ROTARY ENCODERS		
	E20/E24	E21/E25	E22/E26
<b>Line Count</b>	500 lines/rev	1000 lines/rev	1270 lines/rev
<b>Pre Quadrature Resolution</b>	0.002 revs/pulse	0.001 revs/pulse	0.00079 revs/pulse
<b>Post Quadrature Resolution</b>	0.0005 revs/pulse	0.00025 revs/pulse	0.00019 revs/pulse
<b>Maximum Speed</b>	60 revs/sec		
<b>Maximum Accel</b>	4 G's		
<b>Excitation Power</b>	+ 5 VDC @ 125 ma		
<b>Operating Temperature</b>	32 <sup>o</sup> F to 230 <sup>o</sup> F (0 <sup>o</sup> C to 100 <sup>o</sup> C)		
<b>Humidity</b>	20% to 98% non condensing		
<b>Shock</b>	50 G's for 11 msec duration		
<b>Weight</b>	4.5 ounces		
<b>Cable Length</b>	10 ft (3 m), unterminated 26 gauge leads		
<b>Zero Reference Output</b>	Once per revolution		
<b>Outputs</b>	TTL square wave; Two channel (A+ & B+); Differential (A- & B-); Line Driver		



Wire Color	Description
White	Channel A+ (or A)
Blue	Channel A- (or $\bar{A}$ )
Green	Channel B+ (or B)
Orange	Channel B- (or $\bar{B}$ )
White/Black	Channel Z+ (or Z)
Red/Black	Channel Z- (or $\bar{Z}$ )
Black	Common
Red	+ 5 vdc (+/- 5%)

**Notes:**

1. Rotary encoders are not totally sealed, and precautions should be taken to protect the encoder in corrosive or fluid splashing type of environments.
2. **DO NOT** remove rotary encoders from the ball screw assembly. Their mounting orientation is critical for proper operation. Encoders are adjusted by *LINTECH*, prior to shipping, for proper operation.



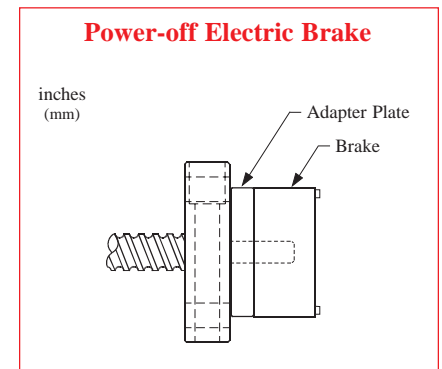
## Power-Off Electric Brakes - Operation & Interface

This mechanical brake is primarily used in vertical ball screw applications. Since a ball screw is a very efficient drive mechanism, the load attached to the ball nut has the potential to backdrive when motor power is off (for most applications). Thus, if a power-off electric brake is used, and properly interfaced with a position controller, it will hold the ball nut in-place whenever motor power is off, or in case of a power failure. The brake is a "friction type" and is mounted to the screw shaft extension on the end support opposite the motor mount end. When power is applied to the brake, the brake is opened or "released". When power is removed, the brake is activated which prevents the ball screw from moving, so long as the brake holding torque is greater than the backdriving force of the screw with the attached load.

The brake comes with two wires for power (24 or 90 VDC). These should be wired directly to an external power supply, or user supplied relay network. In most cases, your motor drive and brake power should come from the same source. Thus, when the drive loses power, so will the brake. For stepper & servo systems, further interfacing is required to ensure power-off braking if a motor stalls or there is a drive fault. This requires an encoder to be interfaced to a position controller which will activate relays to remove brake power when a fault occurs. Below is a block diagram of a recommended interface.

### Brakes

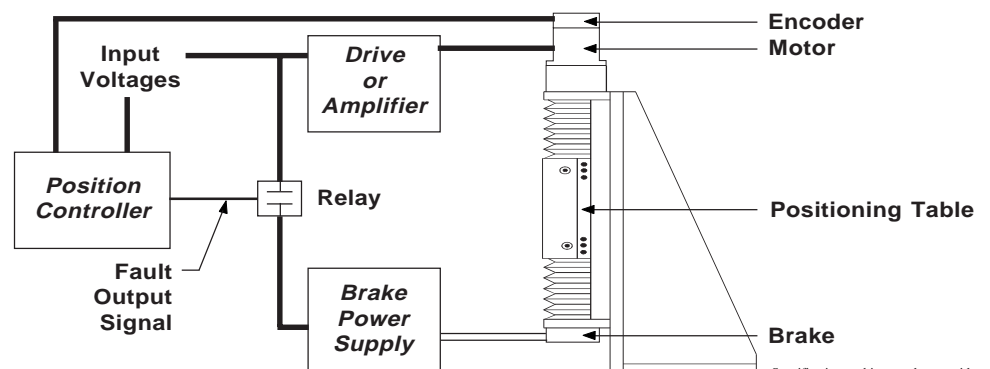
Screw Diameters	Brake Version	Holding Force	Excitation Voltage	Current
		in-lbs (N-m)	volts	amps
0.500 to 0.750 inch 16 & 20 mm	B20	18 (2,03)	24 VDC	0.733
	B21	18 (2,03)	90 VDC	0.178
1.000 inch	B22	84 (9,49)	24 VDC	0.973
	B23	84 (9,49)	90 VDC	0.239
1.500 inch	B24	180 (20,3)	24 VDC	1.136
	B25	180 (20,3)	90 VDC	0.287



### Power Supplies

Model Number	DC Output			AC Input		
	volts	amps	style	volts	amps	Hz
41970	5	3.0	regulated	120 / 240	0.8 / 0.4	47-63
37488	24	1.2	regulated	120 / 240	0.8 / 0.4	47-63
37489	90	0.8	unregulated	120	1.0	50/60
37490	90	0.8	unregulated	240	0.5	50/60

**Note:** The power-off electric brake **MUST NOT** be engaged when the positioning table is in motion. Moving the table with the brake applied could damage the brake and the positioning table. Also, continuous use of the brake to stop a table (and load) that is in motion, could damage the brake.



Specifications subject to change without notice

### **Lubrication - Shaft Assemblies**

*LINTECH* shaft assemblies & linear bearings require a small amount of grease or oil for proper, long term operation. Lubrication will decrease system wear and the potential for rusting of shafts & linear bearing surfaces. For most applications a medium to heavy oil, light grease, or Synthetic Teflon based lubricant is recommended. The many built-in pockets within the linear bearing allows the adhesive properties of these lubricants to be stored for extended periods of time while minimizing sealing problems.

For high speed applications a light oil is recommended. The linear bearings should be prevented from operating dry for any length of time. For some low speed and lightly loaded applications, the linear bearings can be used without lubrication, but for the most part this is not recommended.

All *LINTECH* shaft assemblies are shipped with a lightly coated rust preventative oil on all shafts. This will help prevent corrosion of the shaft due to environmental conditions. All *LINTECH* linear bearings are shipped with a rust preventative oil. It is highly recommended that all linear bearings be lubricated during installation or prior to operation. Also, periodic relubrication of the linear bearings, and/or shaft, helps assure the rated life of the system is attained.

**Use of WD-40, or other cleaning solvents, should strictly be avoided, as they can cause damage to the linear bearing and shaft.**

### **Recommended Lubrication Types**

The type of lubrication may vary depending upon the application, speed, and environment in which the shaft assembly is installed into. The recommended lubrication types include: High Grade Bearing Grease, Light Weight Oil (50 weight or higher), 80/90 Weight Gear Oil, or a Synthetic Teflon based compound. These type of lubricants should be available through your local lubricant supplier, or hardware/automotive supply store. Use of WD-40, or other cleaning solvents, **should strictly be avoided**, as they can cause damage to the shaft assembly.

### **Guidelines for Lubrication**

There is no specific equation *LINTECH* can provide for lubrication. We can only provide guidelines based upon numerous shaft assembly installations. Ultimately, the frequency of lubrication is determined by your personal preference and the shaft assembly application. Some applications will require a high frequency of lubrication. These include but are not limited to: high linear speeds, heavy loads, extreme smoothness, high accelerations, high duty cycles, applications which require friction free motion, or high frequency oscillating moves.

High speed applications can use grease or oil type lubrication. The shaft assembly should NEVER be operated dry for any length of time. Grease is the preferred type since the grease stays on the shaft assembly for a longer period of time than oil lubricants. Oil type lubricants can also cause oil "splattering" to surrounding equipment. However, an automatic oil lubrication system may be required for some 24 hours per day, 7 days per week continuous operating applications.

### **SA (Shaft Assemblies) Alignment**

For most applications it is recommended that two (2) shaft assemblies (SA's) and four (4) linear bearings be used. This will assure system stability as well as optimum performance. This will require two (2) SLBO's, or one (1) DLBO, linear bearing to be used on each SA. The ratio of the two (2) SA assemblies spacing versus two (2) of the SLBO spacing on one SA assembly should always be less than three (3) to one (1). This will assure a constant breakaway and operating friction.

In order to achieve the published flatness of 0.002 in/ft for the SA series, the mounting surface must be as flat, or flatter, than 0.002 in/ft. Shimming may be required between your base and the bottom of the SA assembly.

The maximum acceptable out of parallelism between the two (2) SA's is .001 inch over the entire full system length. Loosely mount both SA assemblies to your mounting surface. Then using indicators, micrometers, or straight edges properly align the two (2) SA assemblies. For more precise applications, use auto-collimators, lasers, or alignment telescopes.

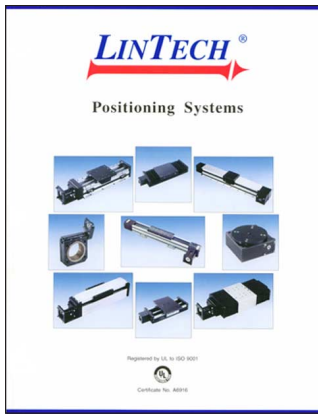
The carriage surface plate where the SLBO's, or DLBO's, are mounted to needs to be flat within 0.002 in/ft. Slide the SLBO's, or DLBO's, on to the SA assemblies and then loosely mount the carriage surface plate to the linear bearings. Move the carriage surface plate from one end of travel to the other end, making sure there is no binding in the assembly. Then securely tighten the linear bearing housings to the carriage surface plate.

### **TRSA (Shaft Assemblies) Alignment**

The TRSA shaft assembly is a complete pre-aligned assembly which simplifies the use of a linear bearing system in a mechanical positioning application. Two (2) shafts are mounted and pre-aligned on a common precision machined aluminum plate, therefore eliminating the time consuming alignment process normally required for two separate shafts.

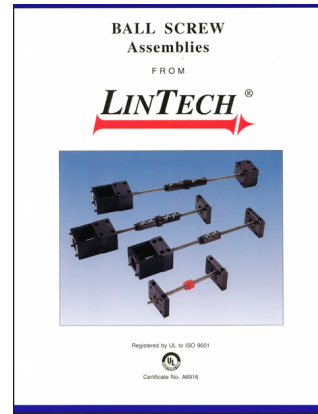
In order to achieve the published flatness of 0.002 in/ft for the TRSA series, the mounting surface must be as flat, or flatter, than 0.002 in/ft. Each 6, 12, 18, & 24 inch aluminum support has two (2) threaded holes at one end, to assist in leveling the assembly in the final mechanical structure.

*LINTECH's* TRCA carriage assemblies are an ideal partner to the TRSA shaft assemblies. The SLBO or DLBO linear bearings are doweled and pre-aligned on a precision machined aluminum plate.



## Positioning Systems

340 page catalog details round & square rail linear positioning tables that are either screw or belt driven. Twelve (12) different models to choose from with load capacities from 25 pounds (11 kg) to 16,600 pounds (7530 kg). Some models have over 46 different screw drive options. Also, two (2) different worm gear driven rotary tables to choose from.



## Ball Screw Assemblies

LINTECH provides three different types of ball screw assemblies - rolled, precision rolled and precision ground ball screws. From 0.500 to 1.500 inch, and 16 to 20 mm diameters, with lengths to 138 inches (3500 mm). English & Metric leads available. Simple, Fixed and Rigid supports in various combinations.



## Positioning Components

LINTECH shaft assembly products provide solutions to many linear motion applications. Single and TWIN RAIL® shaft assemblies are provided from 0.500 to 2.00 inch (12 to 50mm) diameters, in lengths up to 192 inches (4875 mm). TWIN RAIL® carriage assemblies easily adapt to the TWIN RAIL® shaft assemblies for a complete transport system.

Registered by UL to ISO 9001



Certificate No. A6916



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