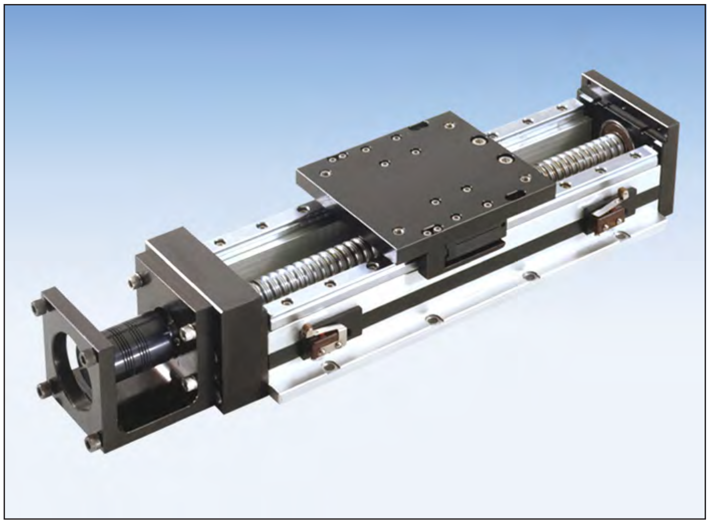
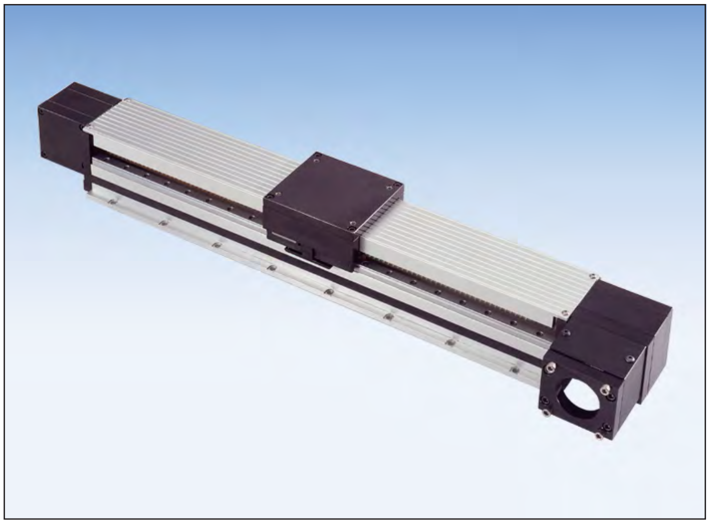
100, 110, & 120 Series Positioning Tables





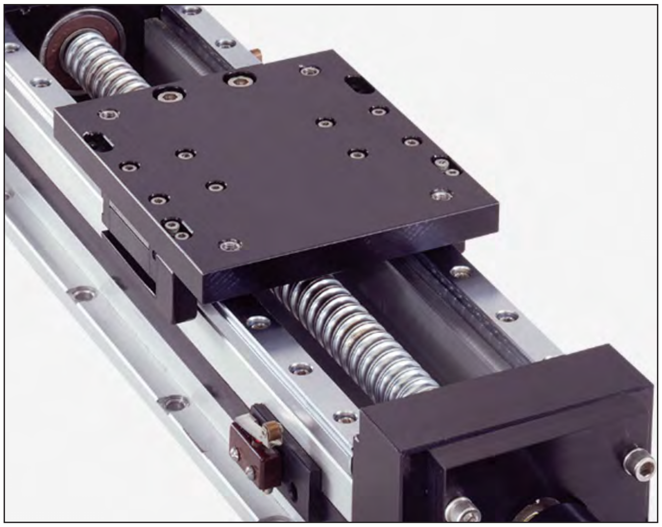
Single or Multiple Axis

LINTECH's 100 & 110 series positioning tables offer precision performance and design flexibility for use in a wide variety of Motion Control applications.

- *Welding*
- *Test Stands*
- *Part Insertion*
- *Laser Positioning*
- *Liquid Dispensing*
- *Semiconductor Processing*
- *Gluing*
- *Pick & Place*
- *Part Scanning*
- *Inspection Stations*
- *General Automation*

Quality Construction

LINTECH's 100 & 110 series tables are designed to maximize performance while minimizing physical size and cost. These tables use a low friction, preloaded, recirculating linear ball bearing system, which rides on precision ground linear rails. The linear rails are mounted to a precision machined aluminum base, which offers a rigid support over the entire travel of the table's carriage. The load is mounted to a precision machined aluminum carriage, which has threaded stainless steel inserts for high strength and wear life. There are 30 different acme & ball screw options, that offer high efficiencies and long life at an economical price. These tables are designed to allow for numerous options. They include EOT & Home switches, linear & rotary encoders, power-off electric brakes, motor wrap packages and versatile mounting brackets for multiple axis applications.



Available Options

Acme Screws & Ball Screws

An assortment of acme screws and ball screws can be installed in the 100 & 110 series tables, providing solutions to load back driving, high duty cycle, high speed, extreme smoothness, and sensitive positioning applications.

Carriage Adapter Plates & Vertical Angle Brackets

Optional carriage adapter plates and vertical angle brackets can be mounted directly to the top of various *LINTECH* positioning tables, thus providing for easy multiple axis configurations.

Cover Plates and Waycovers

For harsh environmental conditions, or for operator protection, these tables can be fitted with either aluminum cover plates, or a waycover. The entire length of the lead screw and linear bearing system will be covered.

End of Travel and Home Switches

The 100 & 110 series tables can be provided with end of travel (EOT) and home switches mounted and wired for each axis. Most position controllers can utilize the EOT switches to stop carriage motion when the extreme table travel has been reached in either direction. The home switch provides a known mechanical location on the table.

Linear and Rotary Encoders

Incremental encoders can be mounted to the table in order to provide positional data back to either a motion controller, or a digital display.

Motor Adapter Brackets

NEMA 23, NEMA 34, or any metric mount motor can be mounted to a 100 & 110 series positioning table with the use of adapter brackets.

Turcite Nut With Rolled Ball Screw

This solid polymer nut has no rolling elements in it, and performs very similar to an acme nut. It can provide smoother motion & less audible noise than most ball nuts, and is ideal for corrosive & vertical applications.

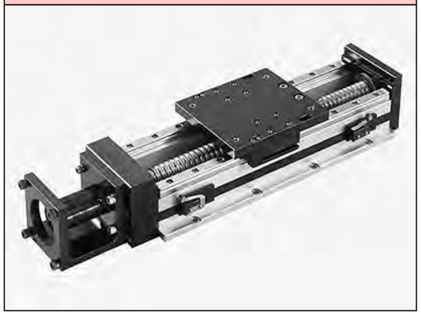
Other

The 100 & 110 series tables can accommodate **chrome plated linear bearings, rails, & screws** for corrosive environment applications, **power-off electric brakes** for load locking applications, **motor wrap packages** for space limited applications, and a **hand crank** for manually operated applications.

Standard Features - 100 & 110 Series

- Compact 3.50 inches (89 mm) wide by 2.375 inches (60 mm) tall - 100 series
- Compact 5.25 inches (133 mm) wide by 2.375 inches (60 mm) tall - 110 series
- Travel lengths from 2 inches (50 mm) to 60 inches (1520 mm)
- Threaded stainless steel inserts in carriage for load mounting
- 0° F to +185° F (-18° C to +85° C) operating temperature
- Recirculating linear ball bearing system
- Precision ground square rail design
- 2 rails, 2 or 4 bearing carriages

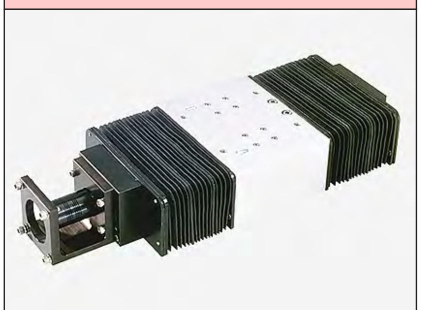
100-CP0 Series



100-CP1 Series

100-CP2 Series

110-WC1 Series



Options - 100 & 110 Series

- Chrome plated linear bearings, rails and screws
- End of travel (EOT) and home switches wired
- CAD drawings available via the internet
- Adapter brackets for non-NEMA motors
- Linear and rotary incremental encoders
- NEMA 23 & 34 motor wrap packages
- NEMA 34 adapter bracket
- Power-off electric brakes
- Carriage adapter plates
- Vertical angle bracket
- Turcite nut option
- Motor couplings
- Cover plates
- Waycovers
- Hand crank

- Ball screws:

  Rolled - Non-preloaded & Preloaded Nuts:

  0.625 inch diameter, 0.200 inch lead
  * 0.500 inch diameter, 0.500 inch lead
  0.625 inch diameter, 1.000 inch lead

  Precision - Non-preloaded & Preloaded Nuts:

  0.625 inch diameter, 0.200 inch lead
  16 mm diameter, 5 mm lead
  * 16 mm diameter, 10 mm lead
  * 16 mm diameter, 16 mm lead

  Ground - Preloaded Nuts Only:

  0.625 inch diameter, 0.200 inch lead
  16 mm diameter, 5 mm lead
  16 mm diameter, 16 mm lead

  *** (Reduction of travel with preloaded nut)**

- Acme screws:

  Rolled - Non-preloaded & Preloaded Nuts:

  0.625 inch diameter, 0.100 inch lead
  0.625 inch diameter, 0.200 inch lead
  16 mm diameter, 4 mm lead

10 4 4 02 - CP0 - 1 - S114 - M02 - C145 - L01 - E00 - B00

Table Series

Number of Bearings

- **2** - 2 bearing per carriage
- **4** - 4 bearings per carriage

Carriage Length

- **4** - 4 inches

Travel Length (see pages C-6, C-8 & C-10)

- **02** - 2 to 60 inches

Cover Plate

- **CP0** - no cover plates
- **CP1** - top cover plate only
- **CP2** - top & side cover plates

Carriage Inserts (see pages C-7, C-9 & C-11)

- **1** - English mount
- **2** - Metric mount

Screw Options (see pages C-18 to C-23)

Rolled ball screws

- **S001** - .500 x .500 NPL
- **S002** - .500 x .500 PL
- **S003** - .500 x .500 NPL(T)
- **S004** - .500 x .500 PL(T)
- **S005** - .625 x .200 NPL
- **S006** - .625 x .200 PL
- **S007** - .625 x .200 NPL(T)
- **S008** - .625 x .200 PL(T)
- **S009** - .625 x 1.000 NPL
- **S010** - .625 x 1.000 PL
- **S011** - .625 x 1.000 NPL(T)
- **S012** - .625 x 1.000 PL(T)

Precision ball screws

- **S114** - .625 x .200 NPL
- **S115** - .625 x .200 PL
- **S116** - 16 x 5 NPL
- **S117** - 16 x 5 PL
- **S118** - 16 x 10 NPL
- **S119** - 16 x 10 PL
- **S120** - 16 x 16 NPL
- **S121** - 16 x 16 PL

- **S999** - other

Ground ball screws

- **S212** - .625 x .200 PL
- **S213** - .625 x .500 PL
- **S214** - 16 x 5 PL
- **S215** - 16 x 16 PL

Rolled acme screws

- **S300** - .625 x .100 NPL
- **S301** - .625 x .100 PL
- **S302** - .625 x .200 NPL
- **S303** - .625 x .200 PL
- **S304** - 16 x 4 NPL
- **S305** - 16 x 4 PL

Motor Mount (see pages C-7, C-9, C-11, C-46 & C-47)

- **M00** - none
- **M01** - hand crank
- **M99** - other
- **M02** - NEMA 23 mount (E)
- **M03** - NEMA 23 mount (M)
- **M04** - NEMA 34 mount (E)
- **M05** - NEMA 34 mount (M)
- **M06** - NEMA 23 (RH) wrap
- **M07** - NEMA 23 (LH) wrap
- **M08** - NEMA 34 (RH) wrap
- **M09** - NEMA 34 (LH) wrap

Coupling Options (see pages C-40 to C-41)

- **C000** - none
- **C999** - other
- **C020** *to* **C024** - C100
- **C040** *to* **C047** - C125
- **C125** *to* **C129** - H100
- **C145** *to* **C154** - H131
- **C400** *to* **C406** - G100
- **C425** *to* **C434** - G126

Limit & Home Switches (see pages C-37 to C-39)

- **L00** - no switches
- **L99** - other

	Mechanical	Reed	Hall	Prox (NPN)	Prox (PNP)
EOT & home switches	**L01**	**L04**	**L07**	**L10**	**L13**
EOT switches only	**L02**	**L05**	**L08**	**L11**	**L14**
home switch only	**L03**	**L06**	**L09**	**L12**	**L15**

Encoder Options (see page C-49)

- **E00** - none
- **E01** - rotary (500 lines/rev)
- **E02** - rotary (1000 lines/rev)
- **E03** - rotary (1270 lines/rev)
- **E10** - linear (2500 lines/inch)
- **E11** - linear (125 lines/mm)
- **E99** - other

Power-off Brakes (see page C-48)

- **B00** - none
- **B01** - 24 VDC
- **B02** - 90 VDC
- **B99** - other

(E) -	English Interface	(NPL) -	Non Preloaded
(LH) -	Left Hand	(PL) -	Preloaded
(M) -	Metric Interface	(RH) -	Right Hand
		(T) -	Turcite Nut

Specifications

Load Capacities		Two (2) Bearing Carriage	Four (4) Bearing Carriage
Dynamic Horizontal	2 million inches (50 km) of travel	1,550 lbs (703 kg)	3,100 lbs (1406 kg)
Dynamic Horizontal	50 million inches (1270 km) of travel	525 lbs (238 kg)	1,060 lbs (480 kg)
Static Horizontal		2,360 lbs (1070 kg)	4,720 lbs (2140 kg)
Dynamic Roll Moment	2 million inches (50 km) of travel	140 ft-lbs (190 N-m)	280 ft-lbs (379 N-m)
Dynamic Roll Moment	50 million inches (1270 km) of travel	47 ft-lbs (64 N-m)	95 ft-lbs (129 N-m)
Static Roll Moment		210 ft-lbs (285 N-m)	425 ft-lbs (576 N-m)
Dyn. Pitch & Yaw Moment	2 million inches (50 km) of travel	18 ft-lbs (24 N-m)	240 ft-lbs (325 N-m)
Dyn. Pitch & Yaw Moment	50 million inches (1270 km) of travel	6 ft-lbs (8 N-m)	82 ft-lbs (111 N-m)
Static Pitch & Yaw Moment		30 ft-lbs (41 N-m)	365 ft-lbs (495 N-m)
Each Bearing Dyn. Capacity	2 million inches (50 km) of travel	775 lbs (351 kg)	775 lbs (351 kg)
Each Bearing Dyn. Capacity	50 million inches (1270 km) of travel	263 lbs (119 kg)	263 lbs (119 kg)
Each Bearing Static Load Capacity		1,180 lbs (535 kg)	1,180 lbs (535 kg)
Thrust Force Capacity	10 million screw revolutions	665 lbs (302 kg)	665 lbs (302 kg)
Thrust Force Capacity	500 million screw revolutions	180 lbs (82 kg)	180 lbs (82 kg)
Maximum Acceleration		386 in/sec^2 (9,8 m/sec^2)	772 in/sec^2 (19,6 m/sec^2)
d_1	Center to center distance (spread) between the two rails	2.375 in (60,3 mm)	2.375 in (60,3 mm)
d_2	Center to center distance (spacing) of the bearings on a single rail	-	2.088 in (53,0 mm)
d_r CP0 version	Center distance of the bearing to top of carriage plate surface	.750 in (19,1 mm)	.750 in (19,1 mm)
d_r CP1 version	Center distance of the bearing to top of carriage plate surface	1.375 in (34,9 mm)	1.375 in (34,9 mm)

Other	For Two (2) & Four (4) Bearing Carriages
Table Material	Base, Carriage, End Plates, & Cover Plate option - 6061 anodized aluminum
Linear Rail Material	Stainless Steel
Screw Material (see pages C-18 to C-23)	Acme Screw - Stainless Steel
Screw Material (see pages C-18 to C-23)	Rolled Ball, Precision Ball, & Ground Ball - Case Hardened Steel
Straightness	<0.00013 in/in (< 3,30 microns/25mm)
Flatness	<0.00013 in/in (< 3,30 microns/25mm)
Orthogonality (multi-axis systems)	< 30 arc-seconds
Friction Coefficient	< 0.01
Motor Mount	NEMA 23 & 34 Mounts, Metric Mounts, Motor Wraps, and Hand Crank Option
Coupling	Three (3) different styles available

Dimensions & Specifications

- Without Cover Plates -

Model Number	Travel Length inches (mm)	Table Dimensions inches (mm)		Mounting Dimensions inches (mm)				Screw Length inches (mm)	Table Weight (1) lbs (kg)
		A	B	C	D	E	M		
10x402-CP0	2 (50)	6.0 (152,4)	9.875 (250,8)	0.500 (12,7)	1.250 (31,7)	1	8	9.25 (235)	5.1 (2,3)
10x404-CP0	4 (100)	8.0 (203,2)	11.875 (301,6)	0.250 (6,3)	2.500 (63,5)	1	8	11.25 (286)	5.9 (2,7)
10x406-CP0	6 (150)	10.0 (254,0)	13.875 (352,4)	1.250 (31,7)	2.500 (63,5)	1	8	13.25 (337)	6.7 (3,0)
10x408-CP0	8 (200)	12.0 (304,8)	15.875 (403,2)	0.250 (6,3)	2.000 (50,8)	3	12	15.25 (387)	7.5 (3,4)
10x412-CP0	12 (300)	16.0 (406,4)	19.875 (504,8)	0.250 (6,3)	1.500 (38,1)	5	16	19.25 (489)	9.1 (4,1)
10x416-CP0	16 (405)	20.0 (508,0)	23.875 (606,4)	1.250 (31,7)	2.500 (63,5)	5	16	23.25 (591)	10.7 (4,8)
10x420-CP0	20 (505)	24.0 (609,6)	27.875 (708,0)	0.750 (19,0)	2.500 (63,5)	7	20	27.25 (692)	12.3 (5,6)
10x424-CP0	24 (605)	28.0 (711.2)	31.875 (809,6)	0.250 (6,3)	2.500 (63,5)	9	24	31.25 (794)	13.9 (6,3)
10x430-CP0	30 (760)	34.0 (863,6)	37.875 (962,0)	0.750 (19,0)	2.500 (63,5)	11	28	37.25 (946)	16.3 (7,4)
10x436-CP0	36 (910)	40.0 (1016,0)	43.875 (1114,4)	1.250 (31,7)	2.500 (63,5)	13	32	43.25 (1099)	18.7 (8,5)
10x442-CP0	42 (1060)	46.0 (1168,4)	49.875 (1266,8)	1.750 (44,4)	2.500 (63,5)	15	36	49.25 (1251)	21.1 (9,6)
10x448-CP0	48 (1215)	52.0 (1320,8)	55.875 (1419,2)	2.250 (57,1)	2.500 (63,5)	17	40	55.25 (1403)	23.5 (10,6)
10x454-CP0	54 (1370)	58.0 (1473,2)	61.875 (1571,6)	0.250 (6,3)	2.500 (63,5)	21	48	61.25 (1556)	25.9 (11,4)
10x460-CP0	60 (1520)	64.0 (1625,6)	67.875 (1724,0)	0.750 (19,0)	2.500 (63,5)	23	52	67.25 (1708)	28.3 (12,8)

x = 2; Carriage has 2 bearings; Carriage weight = 1.2 lbs. (0,54 kg)

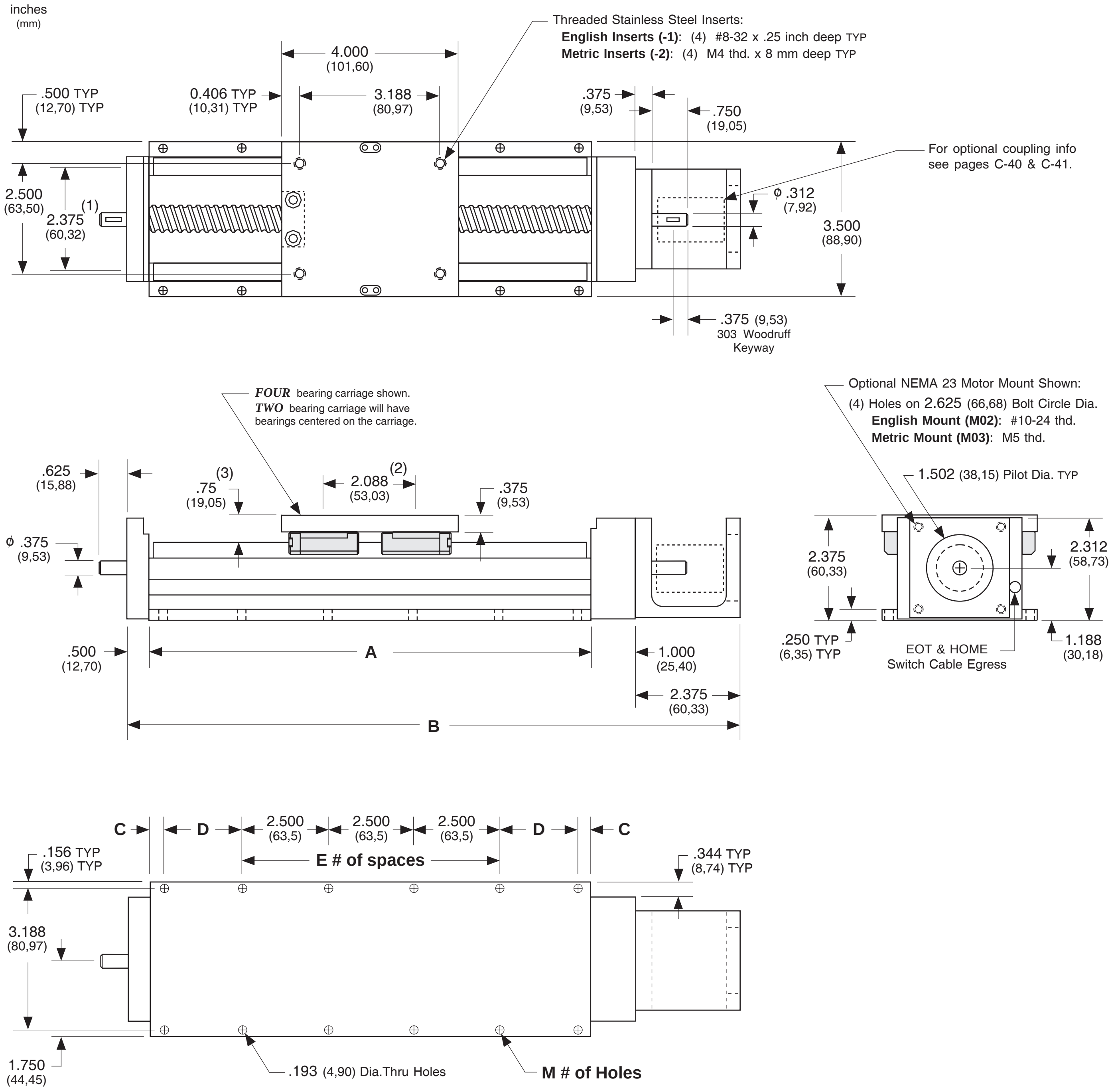
x = 4; Carriage has 4 bearings; Carriage weight = 1.4 lbs. (0,63 kg)

Footnotes:

(1) Weight shown is with a 0.625 inch (16 mm) diameter screw, a 2 bearing carriage [1.2 lbs (0,54 kg)], a NEMA 23 motor mount [0.34 lbs (0,16 kg)], and a C100 style [0.09 lbs (0,04 kg)] coupling. When using a 0.500 inch diameter screw subtract 0.022 lbs per inch (0,00039 kg per mm) of screw length for a given model number. When using a 4 bearing carriage add 0.2 lbs (0,09 kg) to each value.

Dimensions

- Without Cover Plates -



(1) This value is center to center distance (spread) between the two rails **(d_1)**.

(2) This value is center to center distance (spacing) of the bearings on a single rail **(d_2)**.

(3) This value is center distance of the bearing to top of carriage plate surface **(d_r)**.

Note: Any 100, 110, 120 or 130 series table can be mounted on top of any second 100, 110, 120 series table by the user, in order to create X-Y multiple axis configurations. The 100-CP1, 100-CP2, or 120 series tables require one of the *Carriage Adapter Plate* options. The carriage's threaded stainless steel insert hole pattern exactly matches the base mounting hole pattern on each table, therefore no extra adapter bracket or machining is required. However a precision square tool, or micrometer depth gauge, is required in order to obtain an orthogonality between the two tables of < 30 arc-seconds. The table base, carriage top & carriage sides are all precision machined. *LINTECH*'s 100 series, 4 bearing carriage, should be used for the bottom axis in a mutiple axes application for better system rigidity, performance, and life.

Dimensions & Specifications

- With Top Cover Plate Only -

Model Number	Travel Length inches (mm)	Table Dimensions inches (mm)		Mounting Dimensions inches (mm)				Screw Length inches (mm)	Table Weight (1) lbs (kg)
		A	B	C	D	E	M		
10x402-CP1	2 (50)	6.0 (152,4)	9.875 (250,8)	0.500 (12,7)	1.250 (31,7)	1	8	9.25 (235)	6.1 (2,8)
10x404-CP1	4 (100)	8.0 (203,2)	11.875 (301,6)	0.250 (6,3)	2.500 (63,5)	1	8	11.25 (286)	7.0 (3,2)
10x406-CP1	6 (150)	10.0 (254,0)	13.875 (352,4)	1.250 (31,7)	2.500 (63,5)	1	8	13.25 (337)	7.9 (3,6)
10x408-CP1	8 (200)	12.0 (304,8)	15.875 (403,2)	0.250 (6,3)	2.000 (50,8)	3	12	15.25 (387)	8.8 (4,0)
10x412-CP1	12 (300)	16.0 (406,4)	19.875 (504,8)	0.250 (6,3)	1.500 (38,1)	5	16	19.25 (489)	10.6 (4,8)
10x416-CP1	16 (405)	20.0 (508,0)	23.875 (606,4)	1.250 (31,7)	2.500 (63,5)	5	16	23.25 (591)	12.3 (5,6)
10x420-CP1	20 (505)	24.0 (609,6)	27.875 (708,0)	0.750 (19,0)	2.500 (63,5)	7	20	27.25 (692)	14.0 (6,3)
10x424-CP1	24 (605)	28.0 (711.2)	31.875 (809,6)	0.250 (6,3)	2.500 (63,5)	9	24	31.25 (794)	15.9 (7,2)
10x430-CP1	30 (760)	34.0 (863,6)	37.875 (962,0)	0.750 (19,0)	2.500 (63,5)	11	28	37.25 (946)	18.6 (8,4)
10x436-CP1	36 (910)	40.0 (1016,0)	43.875 (1114,4)	1.250 (31,7)	2.500 (63,5)	13	32	43.25 (1099)	21.3 (9,7)
10x442-CP1	42 (1060)	46.0 (1168,4)	49.875 (1266,8)	1.750 (44,4)	2.500 (63,5)	15	36	49.25 (1251)	24.0 (10,9)
10x448-CP1	48 (1215)	52.0 (1320,8)	55.875 (1419,2)	2.250 (57,1)	2.500 (63,5)	17	40	55.25 (1403)	26.7 (12,1)
10x454-CP1	54 (1370)	58.0 (1473,2)	61.875 (1571,6)	0.250 (6,3)	2.500 (63,5)	21	48	61.25 (1556)	29.4 (13,3)
10x460-CP1	60 (1520)	64.0 (1625,6)	67.875 (1724,0)	0.750 (19,0)	2.500 (63,5)	23	52	67.25 (1708)	32.1 (14,6)

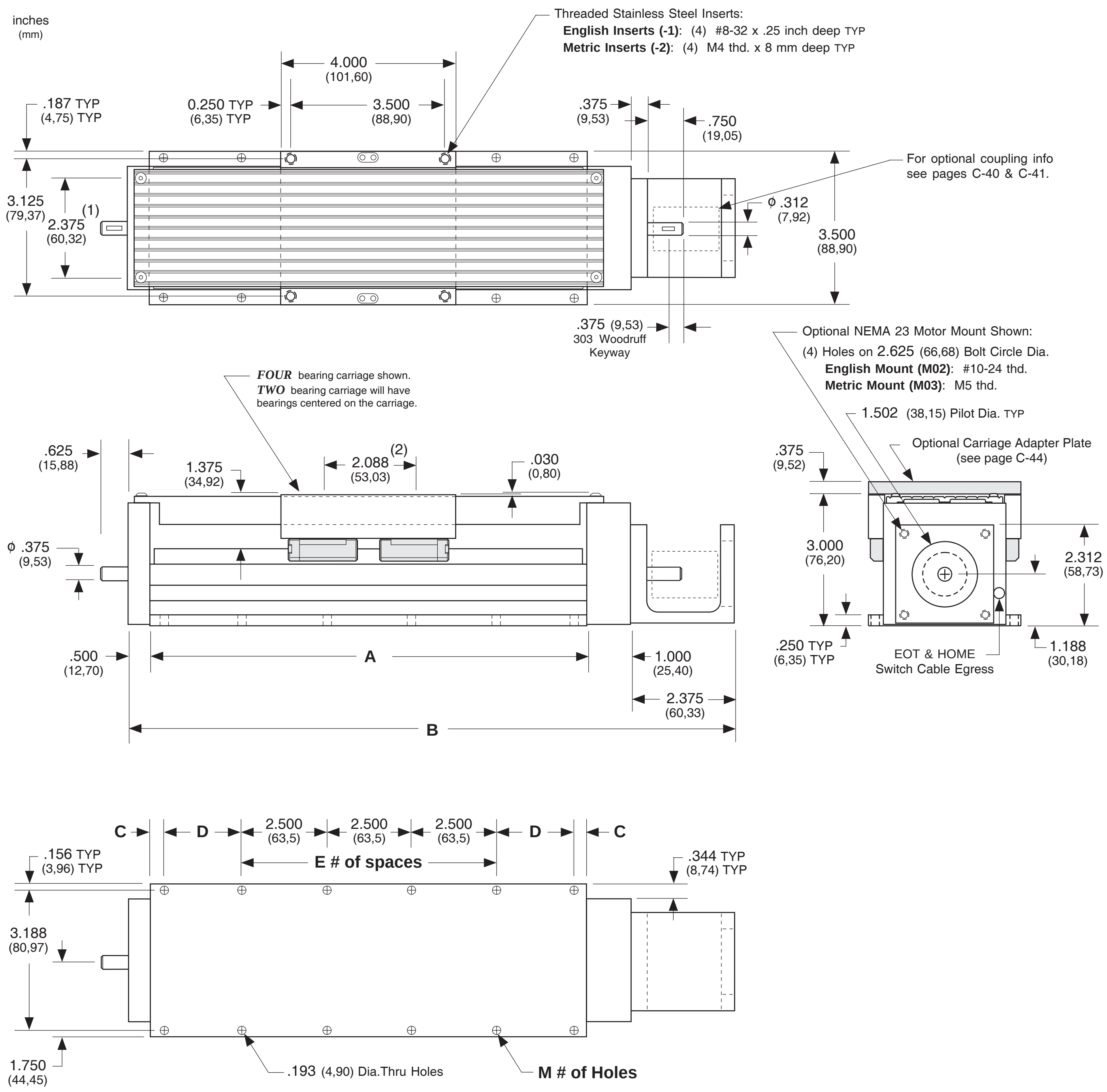
x = 2; Carriage has 2 bearings; Carriage weight = 1.5 lbs. (0,68 kg)
x = 4; Carriage has 4 bearings; Carriage weight = 1.7 lbs. (0,77 kg)

Footnotes:

(1) Weight shown is with a 0.625 inch (16 mm) diameter screw, a 2 bearing carriage [1.5 lbs (0,68 kg)], a NEMA 23 motor mount [0.34 lbs (0,16 kg)], and a C100 style [0.09 lbs (0,04 kg)] coupling. When using a 0.500 inch diameter screw subtract 0.022 lbs per inch (0,00039 kg per mm) of screw length for a given model number. When using a 4 bearing carriage add 0.2 lbs (0,09 kg) to each value.

Dimensions

- With Top Cover Plate Only -



(1) This value is center to center distance (spread) between the two rails **(d_1)**.

(2) This value is center to center distance (spacing) of the bearings on a single rail **(d_2)**.

(3) This value is center distance of the bearing to top of carriage plate surface **(d_r)**.

Note: Any 100, 110, 120, or 130 series table can be mounted on top of any second 100, 110, 120 series table by the user, in order to create X-Y multiple axis configurations. The 100-CP1, 100-CP2, or 120 series tables require one of the *Carriage Adapter Plate* options. The carriage's threaded stainless steel insert hole pattern exactly matches the base mounting hole pattern on each table, therefore no extra adapter bracket or machining is required. However a precision square tool, or micrometer depth gauge, is required in order to obtain an orthogonality between the two tables of < 30 arc-seconds. The table base, carriage top & carriage sides are all precision machined. *LinTech*'s 100 series, 4 bearing carriage, should be used for the bottom axis in a mutiple axes application for better system rigidity, performance, and life.

Dimensions & Specifications

- With Top & Side Cover Plates -

Model Number	Travel Length inches (mm)	Table Dimensions inches (mm)		Mounting Dimensions inches (mm)				Screw Length inches (mm)	Table (1) Weight lbs (kg)
		A	B	C	D	E	M		
10x402-CP2	2 (50)	6.0 (152,4)	9.875 (250,8)	0.500 (12,7)	1.250 (31,7)	1	8	9.25 (235)	6.4 (2,9)
10x404-CP2	4 (100)	8.0 (203,2)	11.875 (301,6)	0.250 (6,3)	2.500 (63,5)	1	8	11.25 (286)	7.3 (3,3)
10x406-CP2	6 (150)	10.0 (254,0)	13.875 (352,4)	1.250 (31,7)	2.500 (63,5)	1	8	13.25 (337)	8.3 (3,8)
10x408-CP2	8 (200)	12.0 (304,8)	15.875 (403,2)	0.250 (6,3)	2.000 (50,8)	3	12	15.25 (387)	9.2 (4,2)
10x412-CP2	12 (300)	16.0 (406,4)	19.875 (504,8)	0.250 (6,3)	1.500 (38,1)	5	16	19.25 (489)	11.1 (5,0)
10x416-CP2	16 (405)	20.0 (508,0)	23.875 (606,4)	1.250 (31,7)	2.500 (63,5)	5	16	23.25 (591)	13.0 (5,9)
10x420-CP2	20 (505)	24.0 (609,6)	27.875 (708,0)	0.750 (19,0)	2.500 (63,5)	7	20	27.25 (692)	14.8 (6,7)
10x424-CP2	24 (605)	28.0 (711.2)	31.875 (809,6)	0.250 (6,3)	2.500 (63,5)	9	24	31.25 (794)	16.8 (7,6)
10x430-CP2	30 (760)	34.0 (863,6)	37.875 (962,0)	0.750 (19,0)	2.500 (63,5)	11	28	37.25 (946)	19.6 (8,9)
10x436-CP2	36 (910)	40.0 (1016,0)	43.875 (1114,4)	1.250 (31,7)	2.500 (63,5)	13	32	43.25 (1099)	22.5 (10,2)
10x442-CP2	42 (1060)	46.0 (1168,4)	49.875 (1266,8)	1.750 (44,4)	2.500 (63,5)	15	36	49.25 (1251)	25.4 (11,5)
10x448-CP2	48 (1215)	52.0 (1320,8)	55.875 (1419,2)	2.250 (57,1)	2.500 (63,5)	17	40	55.25 (1403)	28.2 (12,8)
10x454-CP2	54 (1370)	58.0 (1473,2)	61.875 (1571,6)	0.250 (6,3)	2.500 (63,5)	21	48	61.25 (1556)	31.1 (14,1)
10x460-CP2	60 (1520)	64.0 (1625,6)	67.875 (1724,0)	0.750 (19,0)	2.500 (63,5)	23	52	67.25 (1708)	34.0 (15,4)

x = 2; Carriage has 2 bearings; Carriage weight = 1.5 lbs. (0,68 kg)

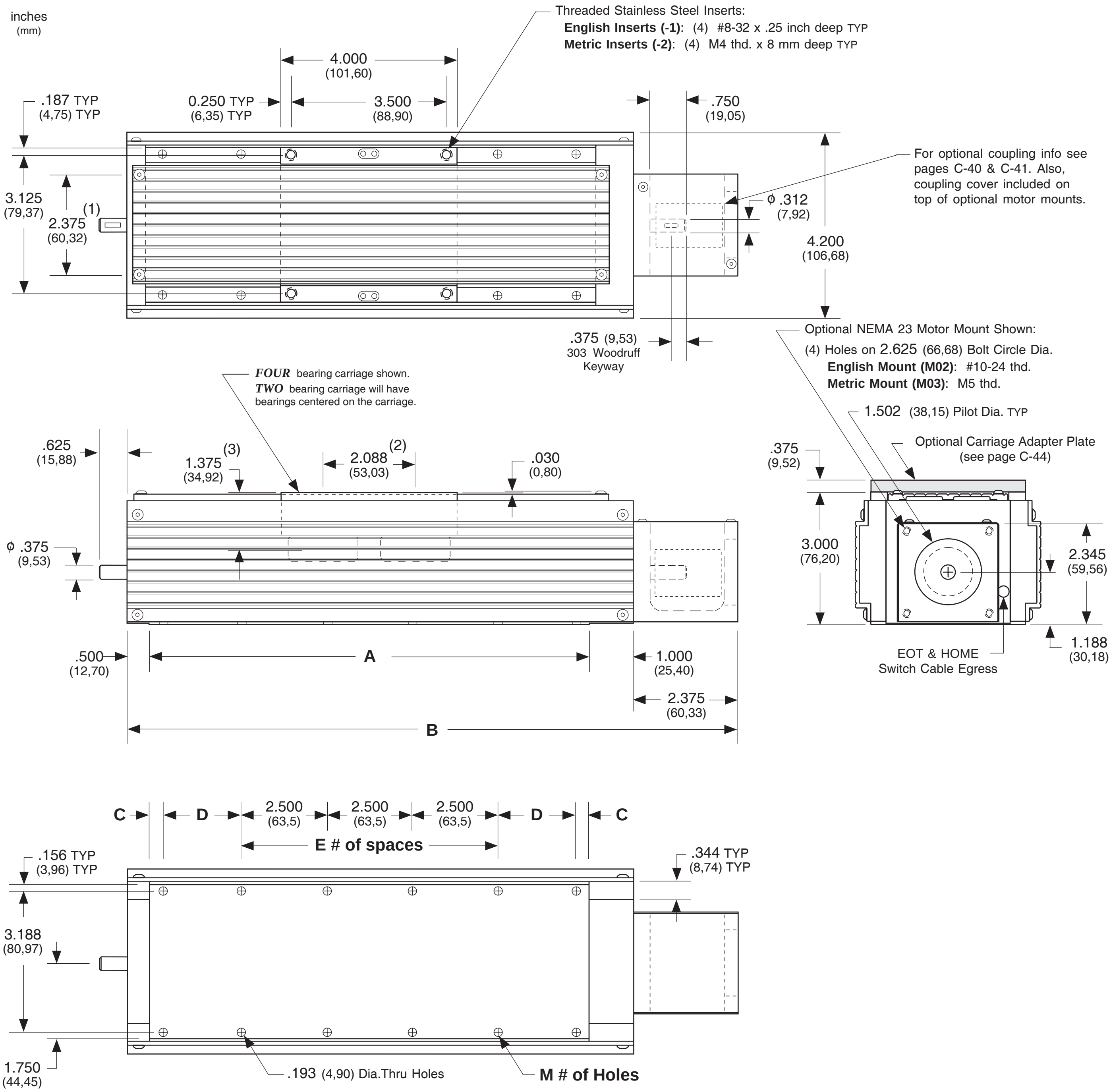
x = 4; Carriage has 4 bearings; Carriage weight = 1.7 lbs. (0,77 kg)

Footnotes:

(1) Weight shown is with a 0.625 inch (16 mm) diameter screw, a 2 bearing carriage [1.5 lbs (0,68 kg)], a NEMA 23 motor mount [0.34 lbs (0,16 kg)], and a C100 style [0.09 lbs (0,04 kg)] coupling. When using a 0.500 inch diameter screw subtract 0.022 lbs per inch (0,00039 kg per mm) of screw length for a given model number. When using a 4 bearing carriage add 0.2 lbs (0,09 kg) to each value.

Dimensions

- With Top & Side Cover Plates -



(1) This value is center to center distance (spread) between the two rails **(d_1)**.

(2) This value is center to center distance (spacing) of the bearings on a single rail **(d_2)**.

(3) This value is center distance of the bearing to top of carriage plate surface **(d_r)**.

Note: Any 100, 110, 120, or 130 series table can be mounted on top of any second 100, 110, 120 series table by the user, in order to create X-Y multiple axis configurations. The 100-CP1, 100-CP2, or 120 series tables require one of the *Carriage Adapter Plate* options. The carriage's threaded stainless steel insert hole pattern exactly matches the base mounting hole pattern on each table, therefore no extra adapter bracket or machining is required. However a precision square tool, or micrometer depth gauge, is required in order to obtain an orthogonality between the two tables of < 30 arc-seconds. The table base, carriage top & carriage sides are all precision machined. *LinTech*'s 100 series, 4 bearing carriage, should be used for the bottom axis in a mutiple axes application for better system rigidity, performance, and life.

11 4 4 01 - WC1 - 1 - S114 - M02 - C145 - L01 - E00 - B00

Table Series

Number of Bearings
2 - 2 bearing per carriage
4 - 4 bearings per carriage

Carriage Length
4 - 4 inches

Travel Length (see page C-14)
01 - 1 to 45 inches

Waycovers
WC1 - with waycovers

Carriage Inserts (see pages C-15)
1 - English mount
2 - Metric mount

Screw Options (see pages C-18 to C-23)

Rolled ball screws
S001 - .500 x .500 NPL
S002 - .500 x .500 PL
S003 - .500 x .500 NPL(T)
S004 - .500 x .500 PL(T)
S005 - .625 x .200 NPL
S006 - .625 x .200 PL
S007 - .625 x .200 NPL(T)
S008 - .625 x .200 PL(T)
S009 - .625 x 1.000 NPL
S010 - .625 x 1.000 PL
S011 - .625 x 1.000 NPL(T)
S012 - .625 x 1.000 PL(T)

Precision ball screws
S114 - .625 x .200 NPL
S115 - .625 x .200 PL
S116 - 16 x 5 NPL
S117 - 16 x 5 PL
S118 - 16 x 10 NPL
S119 - 16 x 10 PL
S120 - 16 x 16 NPL
S121 - 16 x 16 PL

S999 - other

Ground ball screws
S212 - .625 x .200 PL
S213 - .625 x .500 PL
S214 - 16 x 5 PL
S215 - 16 x 16 PL

Rolled acme screws
S300 - .625 x .100 NPL
S301 - .625 x .100 PL
S302 - .625 x .200 NPL
S303 - .625 x .200 PL
S304 - 16 x 4 NPL
S305 - 16 x 4 PL

Motor Mount (see pages C-15, C-46 & C-47)
M00 - none
M01 - hand crank
M99 - other
M02 - NEMA 23 mount (E)
M03 - NEMA 23 mount (M)
M04 - NEMA 34 mount (E)
M05 - NEMA 34 mount (M)
M06 - NEMA 23 (RH) wrap
M07 - NEMA 23 (LH) wrap
M08 - NEMA 34 (RH) wrap
M09 - NEMA 34 (LH) wrap

Coupling Options (see pages C-40 to C-41)
C000 - none
C999 - other
C020 *to* **C024** - C100
C040 *to* **C047** - C125
C125 *to* **C129** - H100
C145 *to* **C154** - H131
C400 *to* **C406** - G100
C425 *to* **C434** - G126

Limit & Home Switches (see pages C-37 to C-39)
L00 - no switches
L99 - other

	Mechanical	Reed	Hall	Prox (NPN)	Prox (PNP)
EOT & home switches	L01	L04	L07	L10	L13
EOT switches only	L02	L05	L08	L11	L14
home switch only	L03	L06	L09	L12	L15

Encoder Options (see page C-49)
E00 - none
E01 - rotary (500 lines/rev)
E02 - rotary (1000 lines/rev)
E03 - rotary (1270 lines/rev)
E10 - linear (2500 lines/inch)
E11 - linear (250 lines/mm)
E99 - other

Power-off Brakes (see page C-48)
B00 - none
B01 - 24 VDC
B02 - 90 VDC
B99 - other

(E) - English Interface
(LH) - Left Hand
(M) - Metric Interface
(NPL) - Non Preloaded
(PL) - Preloaded
(RH) - Right Hand
(T) - Turcite Nut

Specifications

Load Capacities		Two (2) Bearing Carriage	Four (4) Bearing Carriage
Dynamic Horizontal	2 million inches (50 km) of travel	1,550 lbs (703 kg)	3,100 lbs (1406 kg)
Dynamic Horizontal	50 million inches (1270 km) of travel	525 lbs (238 kg)	1,060 lbs (480 kg)
Static Horizontal		2,360 lbs (1070 kg)	4,720 lbs (2140 kg)
Dynamic Roll Moment	2 million inches (50 km) of travel	140 ft-lbs (190 N-m)	280 ft-lbs (379 N-m)
Dynamic Roll Moment	50 million inches (1270 km) of travel	47 ft-lbs (64 N-m)	95 ft-lbs (129 N-m)
Static Roll Moment		210 ft-lbs (285 N-m)	425 ft-lbs (576 N-m)
Dyn. Pitch & Yaw Moment	2 million inches (50 km) of travel	18 ft-lbs (24 N-m)	240 ft-lbs (325 N-m)
Dyn. Pitch & Yaw Moment	50 million inches (1270 km) of travel	6 ft-lbs (8 N-m)	82 ft-lbs (111 N-m)
Static Pitch & Yaw Moment		30 ft-lbs (41 N-m)	365 ft-lbs (495 N-m)
Each Bearing Dyn. Capacity	2 million inches (50 km) of travel	775 lbs (351 kg)	775 lbs (351 kg)
Each Bearing Dyn. Capacity	50 million inches (1270 km) of travel	263 lbs (119 kg)	263 lbs (119 kg)
Each Bearing Static Load Capacity		1,180 lbs (535 kg)	1,180 lbs (535 kg)
Thrust Force Capacity	10 million screw revolutions	665 lbs (302 kg)	665 lbs (302 kg)
Thrust Force Capacity	500 million screw revolutions	180 lbs (82 kg)	180 lbs (82 kg)
Maximum Acceleration		386 in/sec^2 (9,8 m/sec^2)	772 in/sec^2 (19,6 m/sec^2)
d_1	Center to center distance (spread) between the two rails	2.375 in (60,3 mm)	2.375 in (60,3 mm)
d_2	Center to center distance (spacing) of the bearings on a single rail	-	2.088 in (53,0 mm)
d_r	Center distance of the bearing to top of carriage plate surface	.750 in (19,1 mm)	.750 in (19,1 mm)

Other	For Two (2) & Four (4) Bearing Carriages
Table Material	Base, Carriage, End Plates, & Cover Plate option - 6061 anodized aluminum
Linear Rail Material	Stainless Steel
Screw Material (see pages C-18 to C-23)	Acme Screw - Stainless Steel
Screw Material (see pages C-18 to C-23)	Rolled Ball, Precision Ball, & Ground Ball - Case Hardened Steel
Straightness	<0.00013 in/in (< 3,30 microns/25mm)
Flatness	<0.00013 in/in (< 3,30 microns/25mm)
Orthogonality (multi-axis systems)	< 30 arc-seconds
Friction Coefficient	< 0.01
Motor Mount	NEMA 23 & 34 Mounts, Metric Mounts, Motor Wraps, and Hand Crank Option
Coupling	Three (3) different styles available
Waycover Material	Hypilon Polyester Bellows firmly mounted to carriage & end plates

Dimensions & Specifications

- With Waycovers -

Model Number	Travel Length inches (mm)	Table Dimensions inches (mm)		Mounting Dimensions inches (mm)				Screw Length inches (mm)	Table Weight (1) lbs (kg)
		A	B	C	D	E	M		
11x401-WC1	1.000 (25)	6.250 (158,7)	9.875 (250,8)	0.500 (12,7)	1.250 (31,7)	1	8	9.25 (235)	6.3 (2,9)
11x402-WC1	2.500 (63)	8.250 (203,2)	11.875 (301,6)	0.250 (6,3)	2.500 (63,5)	1	8	11.25 (286)	7.3 (3,3)
11x404-WC1	4.000 (100)	10.250 (260,3)	13.875 (352,4)	1.250 (31,7)	2.500 (63,5)	1	8	13.25 (337)	8.2 (3,7)
11x405-WC1	5.500 (139)	12.250 (311,1)	15.875 (403,2)	0.250 (6,3)	2.000 (50,8)	3	12	15.25 (387)	9.2 (4,2)
11x408-WC1	8.500 (215)	16.250 (412,7)	19.875 (504,8)	0.250 (6,3)	1.500 (38,1)	5	16	19.25 (489)	11.1 (5,0)
11x411-WC1	11.500 (292)	20.250 (514,3)	23.875 (606,4)	1.250 (31,7)	2.500 (63,5)	5	16	23.25 (591)	13.0 (5,9)
11x414-WC1	14.375 (365)	24.250 (615,9)	27.875 (708,0)	0.750 (19,0)	2.500 (63,5)	7	20	27.25 (692)	14.9 (6,8)
11x417-WC1	17.375 (441)	28.250 (717,5)	31.875 (809,6)	0.250 (6,3)	2.500 (63,5)	9	24	31.25 (794)	16.9 (7,7)
11x422-WC1	22.000 (558)	34.250 (869,9)	37.875 (962,0)	0.750 (19,0)	2.500 (63,5)	11	28	37.25 (946)	19.8 (9,0)
11x428-WC1	28.000 (711)	40.250 (1022,3)	43.875 (1114,4)	1.250 (31,7)	2.500 (63,5)	13	32	43.25 (1099)	22.6 (10,2)
11x431-WC1	31.750 (806)	46.250 (1174,7)	49.875 (1266,8)	1.750 (44,4)	2.500 (63,5)	15	36	49.25 (1251)	25.5 (11,6)
11x436-WC1	36.375 (923)	52.250 (1327,1)	55.875 (1419,2)	2.250 (57,1)	2.500 (63,5)	17	40	55.25 (1403)	28.4 (12,9)
11x440-WC1	40.750 (1035)	58.250 (1479,5)	61.875 (1571,6)	0.250 (6,3)	2.500 (63,5)	21	48	61.25 (1556)	31.3 (14,2)
11x445-WC1	45.500 (1155)	64.250 (1631,9)	67.875 (1724,0)	0.750 (19,0)	2.500 (63,5)	23	52	67.25 (1708)	34.1 (15,5)

x = 2; Carriage has 2 bearings; Carriage weight = 1.8 lbs. (0,82 kg)

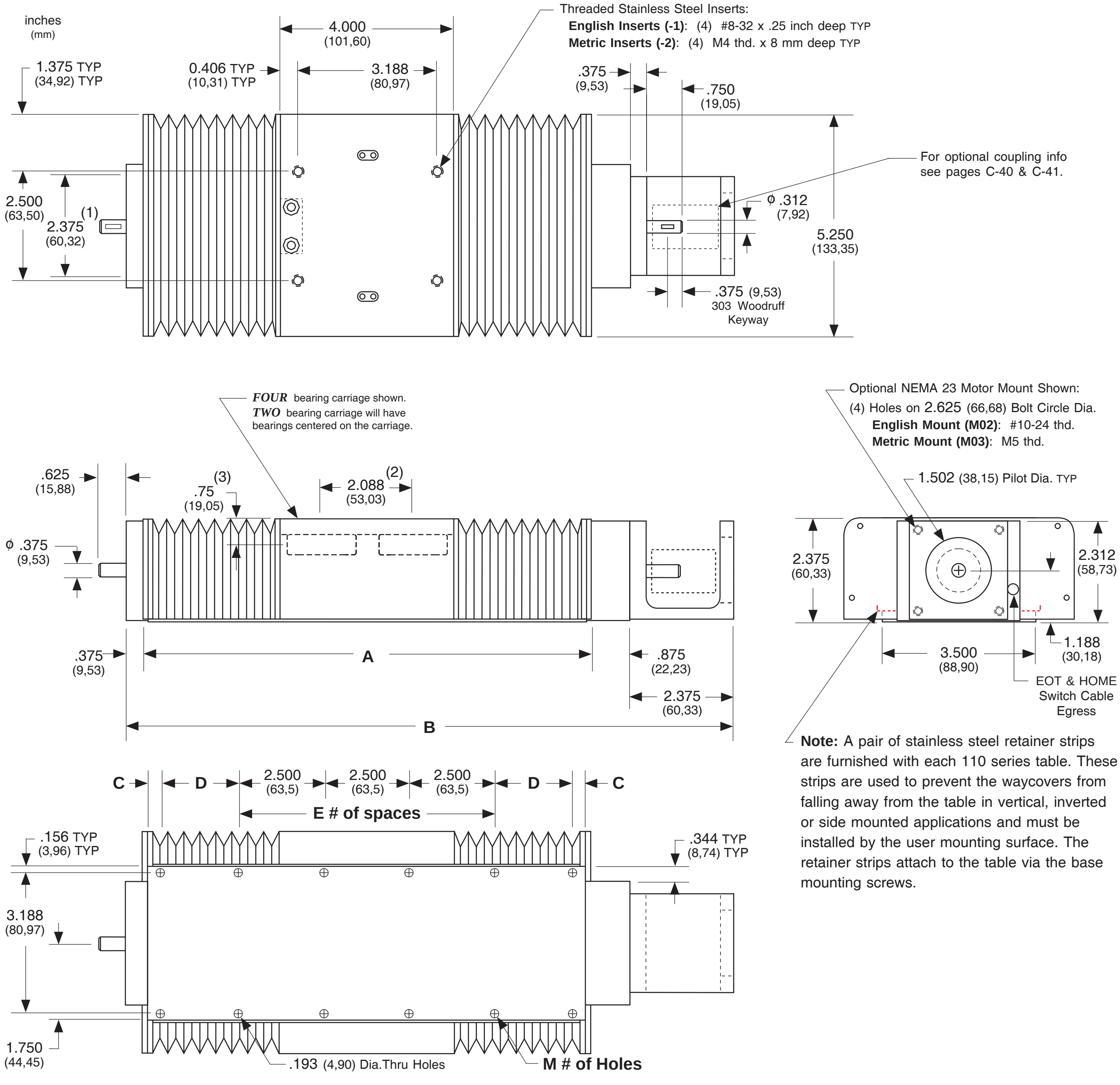
x = 4; Carriage has 4 bearings; Carriage weight = 2.0 lbs. (0,91 kg)

Footnotes:

(1) Weight shown is with a 0.625 inch (16 mm) diameter screw, a 2 bearing carriage [1.8 lbs (0,82 kg)], a NEMA 23 motor mount [0.34 lbs (0,16 kg)], and a C100 style [0.09 lbs (0,04 kg)] coupling. When using a 0.500 inch diameter screw subtract 0.022 lbs per inch (0,00039 kg per mm) of screw length for a given model number. When using a 4 bearing carriage add 0.2 lbs (0,09 kg) to each value.

Dimensions

- With Waycovers -



Note: A pair of stainless steel retainer strips are furnished with each 110 series table. These strips are used to prevent the waycovers from falling away from the table in vertical, inverted or side mounted applications and must be installed by the user mounting surface. The retainer strips attach to the table via the base mounting screws.

(1) This value is center to center distance (spread) between the two rails **(d_1)**.

(2) This value is center to center distance (spacing) of the bearings on a single rail **(d_2)**.

(3) This value is center distance of the bearing to top of carriage plate surface **(d_r)**.

Note: Any 100, 110, 120 or 130 series table can be mounted on top of any second 100, 110, 120 series table by the user, in order to create X-Y multiple axis configurations. The 100-CP1, 100-CP2, or 120 series tables require one of the *Carriage Adapter Plate* options. The carriage's threaded stainless steel insert hole pattern exactly matches the base mounting hole pattern on each table, therefore no extra adapter bracket or machining is required. However a precision square tool, or micrometer depth gauge, is required in order to obtain an orthogonality between the two tables of < 30 arc-seconds. The table base, carriage top & carriage sides are all precision machined. *LINTECH*'s 100 series, 4 bearing carriage, should be used for the bottom axis in a mutiple axes application for better system rigidity, performance, and life.

Thrust Capacity (axial load)

The life of the screw end support bearings can be estimated by evaluating the applied axial (thrust) load. The applied load "as seen by the bearings" depends upon the table orientation. Typically, the extra force acting upon the bearings during the acceleration interval is offset by a reduction in force during the deceleration interval. Therefore, evaluating the life of the bearings at a constant speed is adequate. The life of the screw end support bearings may not be the limiting element for a given application. See page C-17 for load/life capacity of acme and ball screw nuts.

Horizontal Application

$$F = (W \times \mu) + E$$

Vertical Application

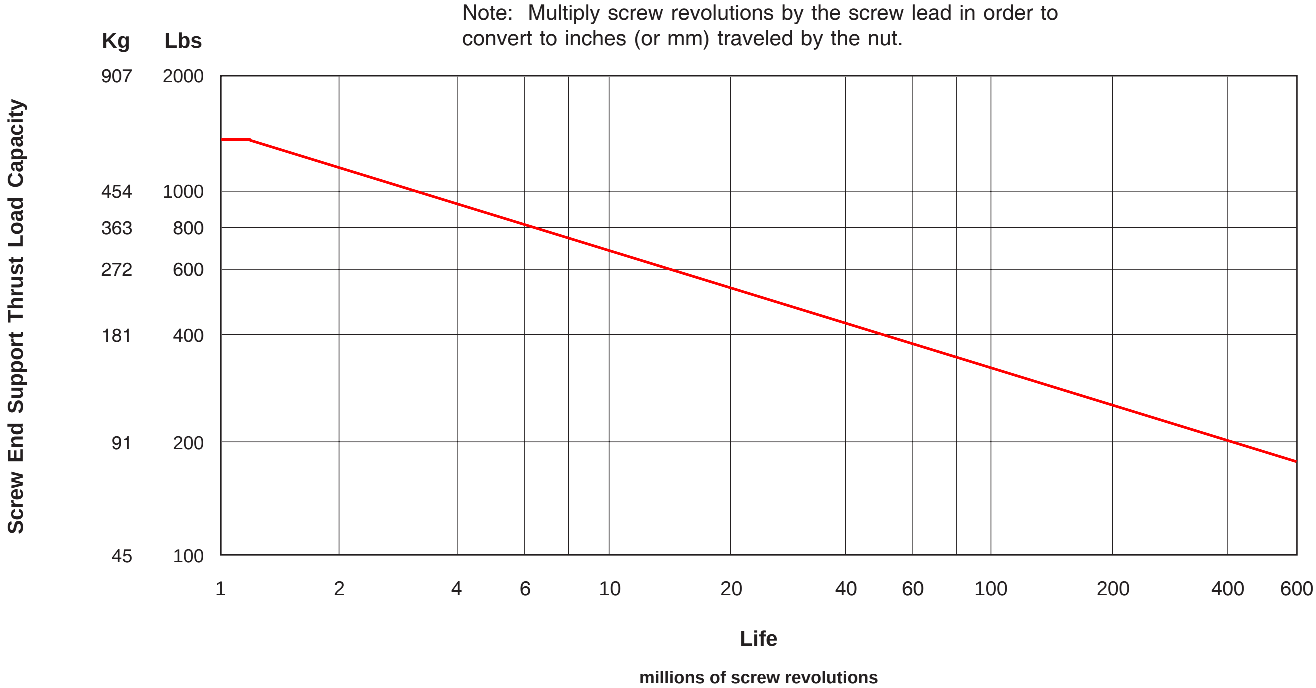
$$F = W + E$$

$$L = \left[\frac{R}{F \times S} \right]^3 \times B$$

B	=	2 (for millions of revolutions)
E	=	externally applied extra forces
F	=	applied axial load *(as seen by the bearings)*
L	=	calculated life (millions of revolutions)
R	=	dynamic load capacity of bearings at 2 million screw revolutions (see below)
S	=	safety factor (1 to 8)
W	=	user mounted load weight to carriage
μ	=	coefficient of friction for linear bearing system (0.01)

Screw End Supports		Number of Screw Revolutions millions of screw revolutions						
		Static	1	2	10	50	100	500
Thrust Capacity	lbs (kg)	1,355 (615)	1,355 (615)	1,145 (519)	665 (302)	395 (179)	305 (138)	180 (82)

Note: Multiply screw revolutions by the screw lead in order to convert to inches (or mm) traveled by the nut.



Screw Travel Life

The life of an acme or ball screw can be estimated by evaluating the load applied to the nut. The applied load "as seen by the screw nut" depends upon the table orientation. Typically, the extra force acting upon the screw nut during the acceleration interval is offset by a reduction in force during the deceleration interval. Therefore, evaluating the life of the screw nut at a constant speed is adequate. The life of the screw nut may not be the limiting element for a given application. See page C-16 for load/life capacity of the screw end support bearings.

Horizontal Application

$$F = (W \times \mu) + E$$

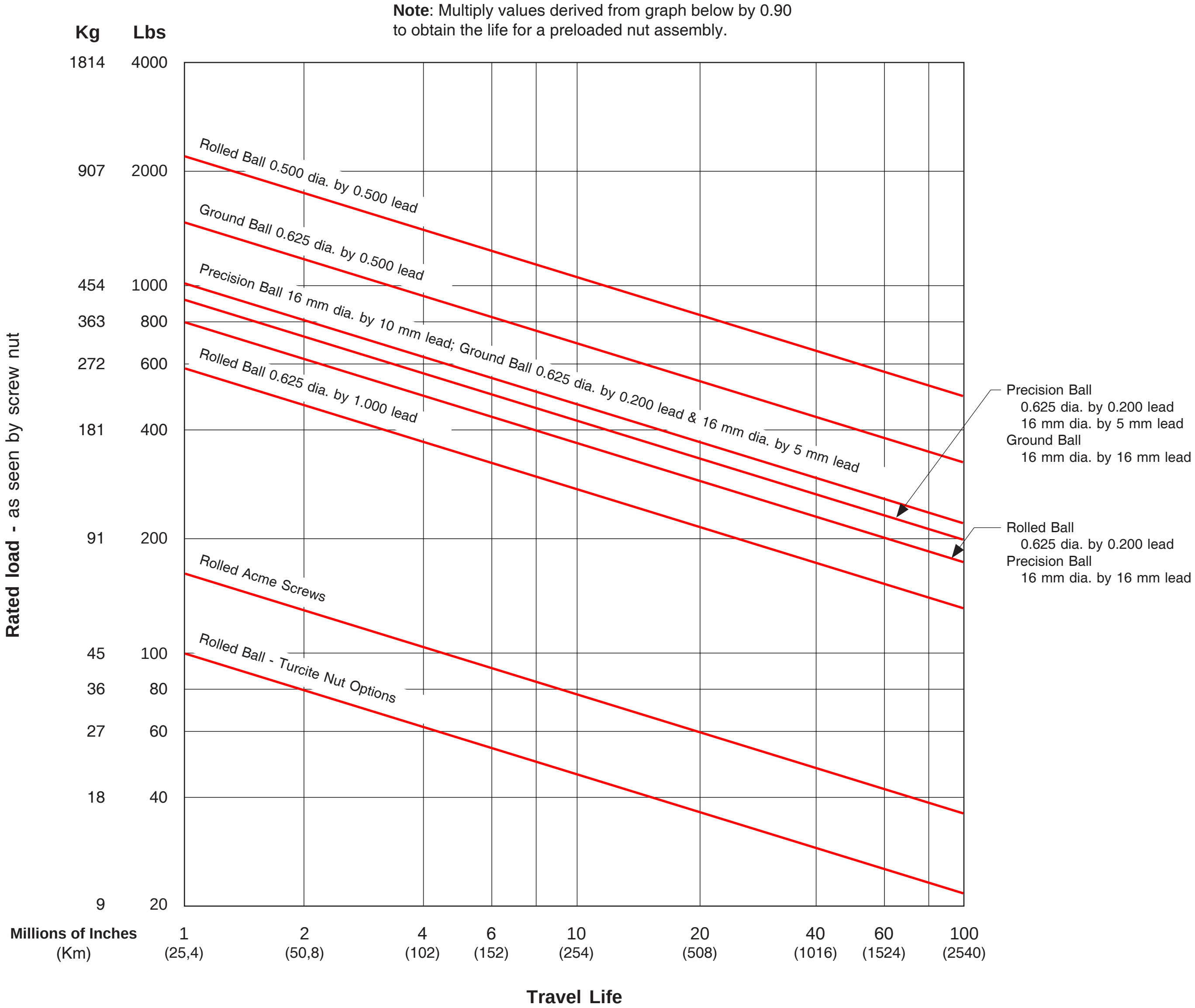
Vertical Application

$$F = W + E$$

$$L = \left[\frac{R}{F \times S}\right]^3 \times B$$

B = either 1 (for millions of inches) or 25 (for Km)
E = externally applied extra forces
F = applied axial load *(as seen by screw nut)*
L = calculated travel life (millions of inches or Km)
R = rated dynamic load capacity of screw nut at 1 million inches of travel or 25 Km (see pages C-20 to C-23)
S = safety factor (1 to 8)
W = user mounted load weight to carriage
μ = coefficient of friction for linear bearing system (0.01)

Note: Multiply values derived from graph below by 0.90 to obtain the life for a preloaded nut assembly.



Screws - Acme & Ball

Acme screws use a turcite (polymer), or bronze nut. The nut threads ride in the matching acme screw threads, much like the ordinary nut and bolt system. This produces a higher friction (lower efficiency) system than a ball screw assembly, since there are no rolling elements between the nut and the acme screw threads. For applications requiring low speeds, noise and duty cycles, an acme screw works fine. Also, an acme screw is a good choice for most vertical applications, as it typically prevents back driving of the attached load.

Ball screws are the screw of choice for high duty cycle, high speed, and long life applications. The 100 & 110 series tables can be fitted with an assortment of ball screws. The ball screw nut uses one or more circuits of recirculating steel balls which roll between the nut and ball screw grooves, providing an efficient low friction system. Using a higher lead ball screw (for example a 0.500 inch lead instead of a 0.200 inch lead) will offer greater carriage speed for applications requiring rapid traverse, or fast, short incremental moves. Low wear and long life are key features of a ball screw system.

LinTech provides three different ball screw configurations. The rolled ball screw system utilizes a tapped nut with a standard accuracy grade rolled screw. The precision ball screw system utilizes a ground nut with a higher accuracy grade rolled screw. The ground ball screw system utilizes a ground nut with a high accuracy precision ground screw.

Some screws are available with preloaded nuts. The preloaded nut assembly offers high *bidirectional* repeatability by eliminating backlash.

Consideration	Acme Screw	Ball Screws			Comments
		Rolled	**Precision**	**Ground**	
Audible noise	least audible noise	most audible noise	less audible noise than rolled screw	less audible noise than precision screw	***Acme***: no rolling elements provide for quiet operation. ***Ball***: recirculating balls in nut assembly transmit audible noise during motion; due to more accurate machining procedures - precision & ground ball screws are quieter than rolled ball screws.
Back Driving Loads	may prevent back driving	can easily back drive a load	can easily back drive a load	can easily back drive a load	***Acme***: good for light loads & vertical applications. ***Ball***: recirculating balls in nut assembly produce a low friction system; vertical applications may require a brake to hold the load when no power is applied to the motor.
Backlash *non-preloaded nut*	will increase with wear	constant	constant	constant	***Acme***: preloaded nut assembly eliminates backlash. ***Ball***: preloaded nut assembly eliminates backlash.
Duty Cycle	low to medium (< 50 %)	high (100 %)	high (100 %)	high (100 %)	***Acme***: low duty cycle due to high sliding friction. ***Ball***: high duty cycle due to recirculating balls in nut assembly; high efficiency & low friction system.
Life	shorter due to higher friction	long	long	long	***Acme***: mechanical wear related to duty cycle, load & speed. ***Ball***: minimal wear if operated in proper environment, within load specifications, and periodically lubricated.
Relative - Cost	slightly more than rolled ball	least expensive	slightly more than rolled ball	most expensive	***Acme***: a little more expensive than the rolled ball screw. ***Ball***: due to more accurate manufacturing procedures precision rolled & ground ball screws are more expensive.
Screw Efficiency	low 40 % -Acme 60 % -Turcite	high (90 %)	high (90 %)	high (90 %)	***Acme***: low efficiency due to high sliding friction. ***Ball***: high efficiency due to recirculating balls in nut assembly - low friction system.
Smoothness	can be smooth	least smooth	medium smoothness	smoothest	***Acme***: due to friction can start/stop at very low speeds. ***Ball***: smoothness is constant through a wide speed range; due to more accurate manufacturing procedures precision rolled & ground ball screws are smoother than rolled ball screws.
Speeds	low	high	high	high	***Acme***: high friction can causes excess heat & wear at high speeds. ***Ball***: recirculating balls in nut provide for a high speed system due to low friction & high efficiency.

Screws - Acme & Ball

100 Series Model Number	100 Series Travel Length in (mm)	110 Series Model Number	110 Series Travel Length in (mm)	Maximum Safe Table Operating Speed (1) in/sec (mm/sec) — Screw: 0.500 dia. 0.500 lead	0.625 dia. 0.100 lead	0.625 dia. 0.200 lead	0.625 dia. 0.500 lead	0.625 dia. 1.000 lead	16 mm dia. 4 mm lead	16 mm dia. 5 mm lead	16 mm dia. 10 mm lead	16 mm dia. 16 mm lead
10x402	2 (50)	**11x401**	1.0 (50)	25.0 (635)	5.0 (127)	10.0 (254)	25.0 (635)	50.0 (1270)	7.9 (201)	9.8 (249)	19.7 (500)	31.5 (800)
10x404	4 (100)	**11x402**	2.5 (63)	25.0 (635)	5.0 (127)	10.0 (254)	25.0 (635)	50.0 (1270)	7.9 (201)	9.8 (249)	19.7 (500)	31.5 (800)
10x406	6 (150)	**11x404**	4.0 (100)	25.0 (635)	5.0 (127)	10.0 (254)	25.0 (635)	50.0 (1270)	7.9 (201)	9.8 (249)	19.7 (500)	31.5 (800)
10x408	8 (200)	**11x405**	5.5 (139)	25.0 (635)	5.0 (127)	10.0 (254)	25.0 (635)	50.0 (1270)	7.9 (201)	9.8 (249)	19.7 (500)	31.5 (800)
10x412	12 (300)	**11x408**	8.5 (215)	25.0 (635)	5.0 (127)	10.0 (254)	25.0 (635)	50.0 (1270)	7.9 (201)	9.8 (249)	19.7 (500)	31.5 (800)
10x416	16 (405)	**11x411**	11.5 (292)	25.0 (635)	5.0 (127)	10.0 (254)	25.0 (635)	50.0 (1270)	7.9 (201)	9.8 (249)	19.7 (500)	31.5 (800)
10x420	20 (505)	**11x414**	14.3 (365)	21.5 (546)	5.0 (127)	10.0 (254)	25.0 (635)	50.0 (1270)	7.9 (201)	9.8 (249)	19.7 (500)	31.5 (800)
10x424	24 (605)	**11x417**	17.3 (441)	16.1 (409)	4.2 (107)	8.4 (213)	21.0 (533)	41.9 (1064)	6.5 (165)	8.2 (208)	16.4 (416)	26.2 (665)
10x430	30 (760)	**11x422**	22.0 (558)	11.2 (284)	2.9 (74)	5.8 (147)	14.5 (368)	29.0 (737)	4.5 (114)	5.6 (142)	11.3 (287)	18.1 (460)
10x436	36 (910)	**11x428**	28.0 (711)	8.2 (208)	2.1 (53)	4.2 (107)	10.6 (269)	21.3 (541)	3.3 (84)	4.1 (104)	8.3 (211)	13.3 (338)
10x442	42 (1060)	**11x431**	31.7 (806)	6.2 (157)	1.6 (41)	3.3 (81)	8.1 (206)	16.3 (414)	2.5 (63)	3.2 (81)	6.3 (160)	10.1 (257)
10x448	48 (1215)	**11x436**	36.3 (923)	4.9 (124)	1.3 (33)	2.5 (63)	6.4 (162)	12.8 (325)	2.0 (51)	2.5 (63)	5.0 (127)	8.0 (203)
10x454	54 (1370)	**11x440**	40.7 (1035)	4.0 (102)	1.0 (25)	2.0 (51)	5.2 (132)	10.4 (264)	1.6 (41)	2.0 (51)	4.0 (102)	6.5 (165)
10x460	60 (1520)	**11x445**	45.5 (1155)	3.3 (84)	0.8 (20)	1.7 (43)	4.3 (109)	8.6 (218)	1.3 (33)	1.7 (43)	3.3 (84)	5.3 (135)

Footnotes:

(1) These listed speeds are a mechanical limitation. The maximum speed of a positioning table depends on the screw diameter, screw lead, screw length, and the screw end bearing support configuration. *LINTECH* uses a fixed-simple screw end bearing support configuration in its positioning tables. The correct motor & drive system needs to be selected in order to obtain the above maximum table speeds.

Screws - Acme & Ball

SCREW		ROLLED BALL SCREWS							
		Dyn. Capacity [1] lbs (kg)	Static Capacity lbs (kg)	Screw Efficiency %	Breakaway Torque oz-in (N-m)	Position Accuracy inch/ft (microns/300 mm)	Backlash inches (microns)	Unidirectional Repeatability inches (microns)	Bidirectional Repeatability inches (microns)
0.500 inch dia. 0.500 inch lead	*Non-preloaded* (S001)	2,200 (997)	13,350 (6055)	90	15 (0,11)	< 0.003 (75)	< 0.008 (203)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0082 (208)
	[2] *Preloaded* (S002)	1,980 (898)	13,130 (5955)		30 (0,21)		0		+ 0.0002 (5) *to* - 0.0002 (5)
	Non-preloaded Turcite Nut (S003)	100 (45)	800 (363)	60	25 (0,18)		< 0.008 (203)		+ 0.0002 (5) *to* - 0.0082 (208)
	Preloaded Turcite Nut (S004)	90 (41)	800 (363)		40 (0,28)		0		+ 0.0002 (5) *to* - 0.0002 (5)
0.625 inch dia. 0.200 inch lead	*Non-preloaded* (S005)	800 (363)	6,150 (2790)	90	10 (0,07)	< 0.003 (75)	< 0.008 (203)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0082 (208)
	Preloaded (S006)	720 (326)	6,070 (2753)		20 (0,14)		0		+ 0.0002 (5) *to* - 0.0002 (5)
	Non-preloaded Turcite Nut (S007)	100 (45)	800 (363)	60	15 (0,11)		< 0.008 (203)		+ 0.0002 (5) *to* - 0.0082 (208)
	Preloaded Turcite Nut (S008)	90 (41)	800 (363)		30 (0,21)		0		+ 0.0002 (5) *to* - 0.0002 (5)
0.625 inch dia. 1.000 inch lead	*Non-preloaded* (S009)	590 (267)	2,425 (1100)	90	25 (0,18)	< 0.004 (100)	< 0.008 (203)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0082 (208)
	Preloaded (S010)	530 (240)	2,390 (1084)		40 (0,28)		0		+ 0.0002 (5) *to* - 0.0002 (5)
	Non-preloaded Turcite Nut (S011)	100 (45)	800 (363)	60	35 (0,25)		< 0.008 (203)		+ 0.0002 (5) *to* - 0.0082 (208)
	Preloaded Turcite Nut (S012)	90 (41)	800 (363)		60 (0,42)		0		+ 0.0002 (5) *to* - 0.0002 (5)

Footnotes:

(1) Dynamic load capacity of screw based on 1 million inches of travel (25Km).

(2) There is a 2.2 inch (55,9 mm) reduction of carriage travel (from the listed travel) when using a preloaded nut with this screw option for the 100 series. For the 110 series 1 inch listed travel (this option is not available), for the 2.5 inch listed travel (reduction of travel to 1.0 inch), for the 4 inch listed travel (reduction of travel to 2.75 inches), for the 5.5 inch listed travel (reduction of travel to 4.5 inches), for the 8.0 inch listed travel (reduction of travel to 7.75 inches).

Screws - Acme & Ball

SCREW		PRECISION BALL SCREWS							
		Dyn. Capacity [1] lbs (kg)	Static Capacity lbs (kg)	Screw Efficiency %	Breakaway Torque oz-in (N-m)	Position Accuracy inch/ft (microns/300 mm)	Backlash inches (microns)	Unidirectional Repeatability inches (microns)	Bidirectional Repeatability inches (microns)
0.625 inch dia. 0.200 inch lead	*Non-preloaded* **(S114)**	876 (397)	2,700 (1224)	90	10 (0,07)	< 0.002 (50)	< 0.003 (76)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0032 (81)
	Preloaded **(S115)**	788 (357)	2,430 (1102)		20 (0,14)		0		+ 0.0002 (5) *to* - 0.0002 (5)
16 mm dia. 5 mm lead	*Non-preloaded* **(S116)**	876 (397)	2,700 (1224)	90	10 (0,07)	< 0.002 (50)	< 0.003 (76)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0032 (81)
	Preloaded **(S117)**	788 (357)	2,430 (1102)		20 (0,14)		0		+ 0.0002 (5) *to* - 0.0002 (5)
16 mm dia. 10 mm lead	*Non-preloaded* **(S118)**	1,080 (489)	2,630 (1192)	90	15 (0,11)	< 0.002 (50)	< 0.003 (76)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0032 (81)
	(2) *Preloaded* **(S119)**	972 (440)	2,365 (1072)		25 (0,18)		0		+ 0.0002 (5) *to* - 0.0002 (5)
16 mm dia. 16 mm lead	*Non-preloaded* **(S120)**	819 (371)	1,620 (734)	90	20 (0,14)	< 0.002 (50)	< 0.003 (76)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0032 (81)
	(3) *Preloaded* **(S121)**	737 (334)	1,455 (659)		35 (0,24)		0		+ 0.0002 (5) *to* - 0.0002 (5)

Footnotes:

(1) Dynamic load capacity of screw based on 1 million inches of travel (25Km).

(2) There is a 0.5 inch (12,7 mm) reduction of carriage travel (from the listed travel length) when using a preloaded nut with this screw option for the 100 series.

(3) There is a 0.7 inch (17,8 mm) reduction of carriage travel (from the listed travel length) when using a preloaded nut with this screw option for the 100 series.

Screws - Acme & Ball

SCREW	GROUND BALL SCREWS [2]							
	Dyn. [1] Capacity lbs (kg)	Static Capacity lbs (kg)	Screw Efficiency %	Breakaway Torque oz-in (N-m)	Position Accuracy inch/ft (microns/300 mm)	Backlash inches (microns)	Unidirectional Repeatability inches (microns)	Bidirectional Repeatability inches (microns)
0.625 dia., 0.200 lead ***Preloaded*** **(S212)**	987 (447)	3,080 (1397)	90	20 (0,14)	< 0.0012 (30)	0	+/- 0.0001 (2,5)	+ 0.0001 (2,5) *to* - 0.0001 (2,5)
0.625 dia., 0.500 lead ***Preloaded*** **(S213)**	1430 (649)	4,191 (1901)	90	30 (0,21)	< 0.0012 (30)	0	+/- 0.0001 (2,5)	+ 0.0001 (2,5) *to* - 0.0001 (2,5)
16 mm dia., 5 mm lead ***Preloaded*** **(S214)**	987 (447)	3,080 (1397)	90	20 (0,14)	< 0.0012 (30)	0	+/- 0.0001 (2,5)	+ 0.0001 (2,5) *to* - 0.0001 (2,5)
16 mm dia., 16 mm lead ***Preloaded*** **(S215)**	910 (412)	1,800 (816)	90	35 (0,24)	< 0.0012 (30)	0	+/- 0.0001 (2,5)	+ 0.0001 (2,5) *to* - 0.0001 (2,5)

Footnotes:

(1) Dynamic load capacity of screw based on 1 million inches of travel (25Km).

(2) The Ground Ball Screw options are only available in travel lengths up to 36 inches for the 100 series and up to 28 inches of travel for the 110 series.

Screws - Acme & Ball

SCREW		ROLLED ACME SCREWS							
		Dyn. Capacity [1] lbs (kg)	Static Capacity lbs (kg)	Screw Efficiency %	Breakaway Torque oz-in (N-m)	Position Accuracy inch/ft (microns/300 mm)	Backlash inches (microns)	Unidirectional Repeatability inches (microns)	Bidirectional Repeatability inches (microns)
0.625 inch dia. 0.100 inch lead	***Non-preloaded* (S300)**	160 (73)	800 (363)	40	10 (0,07)	< 0.003 (75)	< 0.008 (203)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0082 (208)
	***Preloaded* (S301)**	140 (64)	720 (327)		20 (0,14)		0		+ 0.0002 (5) *to* - 0.0002 (5)
0.625 inch dia. 0.200 inch lead	***Non-preloaded* (S302)**	160 (73)	800 (363)	40	15 (0,11)	< 0.003 (75)	< 0.008 (203)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0082 (208)
	***Preloaded* (S303)**	140 (64)	720 (327)		30 (0,21)		0		+ 0.0002 (5) *to* - 0.0002 (5)
16 mm dia. 4 mm lead	***Non-preloaded* (S304)**	160 (73)	800 (363)	40	15 (0,11)	< 0.003 (75)	< 0.008 (203)	+/- 0.0002 (5)	+ 0.0002 (5) *to* - 0.0082 (208)
	***Preloaded* (S305)**	140 (64)	720 (327)		30 (0,21)		0		+ 0.0002 (5) *to* - 0.0002 (5)

Footnotes:

(1) Dynamic load capacity of screw based on 1 million inches of travel (25Km).

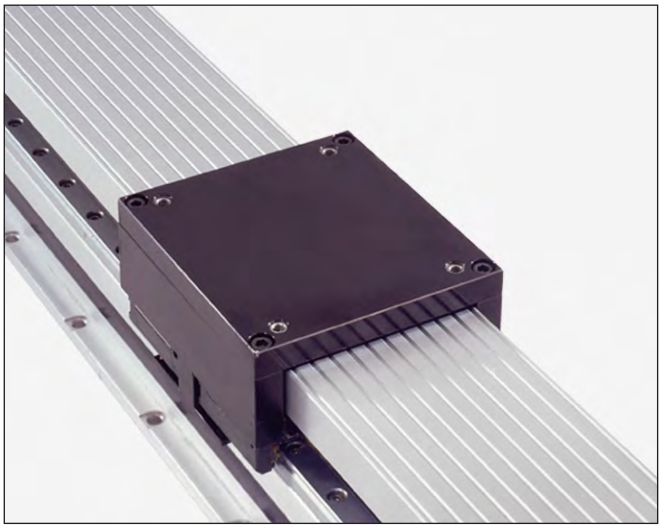
Single or Multiple Axis

LINTECH's 120 series positioning tables offer precision performance and design flexibility for use in a wide variety of Motion Control applications.

- *Welding*
- *Test Stands*
- *Part Insertion*
- *Laser Positioning*
- *Liquid Dispensing*
- *Semiconductor Processing*
- *Gluing*
- *Pick & Place*
- *Part Scanning*
- *Inspection Stations*
- *General Automation*

Quality Construction

LINTECH's 120 series tables are designed to handle light loads at very high speeds. These tables use a low friction, preloaded, recirculating linear ball bearing system, which rides on precision ground linear rails. The linear rails are mounted to a precision machined aluminum base, which offers a rigid support over the entire travel of the table's carriage. The load is mounted to a precision machined aluminum carriage, which has threaded stainless steel inserts for high strength and wear life. The drive system uses two pulleys, along with a high strength, steel reinforced polyurethane belt, which provides 3.543 inches (90 mm) of linear movement per revolution of the input shaft. The simple belt tensioning system allows for easy adjustment of belt tension by the user. NEMA 23 & 34 motor mounts, or gearhead mounts are available as well as planetary gearheads.



Available Options

Carriage Adapter Plates & Vertical Angle Brackets

Optional carriage adapter plates and vertical angle brackets can be mounted directly to the top of various *LINTECH* positioning tables, thus providing for easy multiple axis configurations.

End of Travel and Home Switches

The 120 series tables can be provided with end of travel (EOT) and home switches mounted and wired for each axis. Most position controllers can utilize the EOT switches to stop carriage motion when the extreme table travel has been reached in either direction. The home switch provides a known mechanical location on the table.

Motor Adapter Brackets

NEMA 34 or any metric mount motor can be mounted to a 120 series positioning table with the use of adapter brackets.

Rotary Encoders

Incremental rotary encoders can be mounted to the table in order to provide positional data back to either a motion controller, or a digital display.

Planetary Gearheads

LINTECH provides planetary gearheads which can be used with a 120 series. These gearheads are provided in either an in-line or right angle version, with standard gear ratios of 1:1, 2:1 & 3:1. Gearheads may be required for applications which have a large mismatch of load to motor inertias. They also help reduce the torque required from the motor for a particular application.

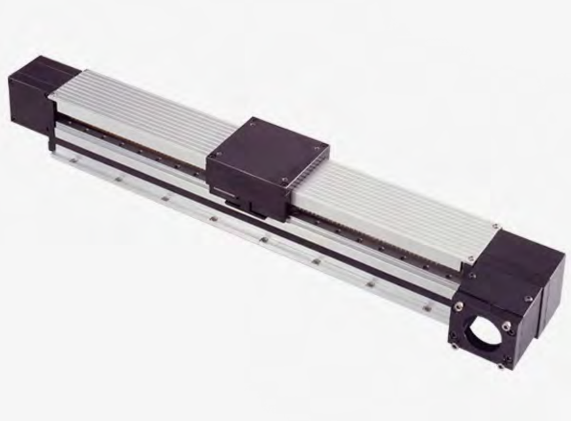
Other

The 120 series tables can accommodate **chrome plated linear bearings & rails** for corrosive environment applications and **power-off electric brakes** for load locking applications.

Standard Features - 120 Series

- Compact 3.500 inches (89 mm) wide by 3.000 inches (76 mm) tall
- Travel lengths from 4 inches (100 mm) to 10 feet (3,0 meters)
- Threaded stainless steel inserts in carriage for load mounting
- Polyurethane belt with high strength steel tension members
- 0° F to +176° F (-18° C to +80° C) operating temperature
- Single screw belt tensioning with self locking thread
- Dynamic Load Capacity to 3,100 lbs (1406 kg)
- Recirculating linear ball bearing system
- Precision ground square rail design
- 2 rails, 2 or 4 bearing carriages

120 Series



Options - 120 Series

- End of travel (EOT) and home switches wired
- CAD drawings available via the internet
- Adapter brackets for non-NEMA motors
- Chrome plated linear bearings & rails
- Rotary incremental encoders
- NEMA 34 adapter bracket
- Power-off electric brakes
- Carriage adapter plates
- Vertical angle bracket
- Motor couplings

Ordering Guide

- Belt Drive -

120 Series

12 4 4 004 - CP1 - 1 - D1 - M02 - C155 - L04 - E00 - B00

Table Series

Number of Bearings
- **2** - 2 bearing per carriage
- **4** - 4 bearings per carriage

Carriage Length
- **4** - 4 inches

Travel Length (see pages C-28 & C-30)
- **004** - 4 to 120 inches

Cover Plate
- **CP0** - no cover plate
- **CP1** - top cover plate only

Carriage Inserts (see pages C-29 & C-31)
- **1** - English mount
- **2** - Metric mount

Drive Shaft (see pages C-29 & C-31)
- **D1** - Right Hand single shaft
- **D2** - Left Hand single shaft
- **D3** - Right Hand thru shaft
- **D4** - Left Hand thru shaft

Motor Mount (see pages C-29, C-31 & C-46)
- **M00** - none
- **M99** - other
- **M02** - NEMA 23 mount (E)
- **M03** - NEMA 23 mount (M)
- **M04** - NEMA 34 mount (E)
- **M05** - NEMA 34 mount (M)

Coupling Options (see pages C-40 & C-41)
- **C000** - none
- **C999** - none
- **C130** *to* **C134** - H100
- **C155** *to* **C164** - H131
- **C190** *to* **C200** - H163
- **C407** *to* **C413** - G100
- **C435** *to* **C444** - G126
- **C470** *to* **C480** - G158

Limit & Home Switches (see pages C-37 to C-39)
- **L00** - no switches
- **L99** - other

	Reed	Hall	Prox (NPN)	Prox (PNP)
EOT & home switches	**L04**	**L07**	**L10**	**L13**
EOT switches only	**L05**	**L08**	**L11**	**L14**
home switch only	**L06**	**L09**	**L12**	**L15**

Encoder Options (see page C-49)
- **E00** - none
- **E01** - rotary (500 lines/rev)
- **E02** - rotary (1000 lines/rev)
- **E03** - rotary (1270 lines/rev)
- **E99** - other

note: When selecting any rotary encoder option, the Drive Shaft D3 or D4 above is required.

Power-off Brakes (see page C-48)
- **B00** - none
- **B01** - 24 VDC
- **B02** - 90 VDC
- **B99** - other

note: When selecting any brake option, the Drive Shaft D3 or D4 above is required.

(E) - English Interface
(M) - Metric Interface

Specifications

Load Capacities		Two (2) Bearing Carriage	Four (4) Bearing Carriage
Dynamic Horizontal	2 million inches (50 km) of travel	1,550 lbs (703 kg)	3,100 lbs (1406 kg)
Dynamic Horizontal	50 million inches (1270 km) of travel	525 lbs (238 kg)	1,060 lbs (480 kg)
Static Horizontal		2,360 lbs (1070 kg)	4,720 lbs (2140 kg)
Dynamic Roll Moment	2 million inches (50 km) of travel	140 ft-lbs (190 N-m)	280 ft-lbs (379 N-m)
Dynamic Roll Moment	50 million inches (1270 km) of travel	47 ft-lbs (64 N-m)	95 ft-lbs (129 N-m)
Static Roll Moment		210 ft-lbs (285 N-m)	425 ft-lbs (576 N-m)
Dyn. Pitch & Yaw Moment	2 million inches (50 km) of travel	18 ft-lbs (24 N-m)	240 ft-lbs (325 N-m)
Dyn. Pitch & Yaw Moment	50 million inches (1270 km) of travel	6 ft-lbs (8 N-m)	82 ft-lbs (111 N-m)
Static Pitch & Yaw Moment		30 ft-lbs (41 N-m)	365 ft-lbs (495 N-m)
Each Bearing Dyn. Capacity	2 million inches (50 km) of travel	775 lbs (351 kg)	775 lbs (351 kg)
Each Bearing Dyn. Capacity	50 million inches (1270 km) of travel	263 lbs (119 kg)	263 lbs (119 kg)
Each Bearing Static Load Capacity		1,180 lbs (535 kg)	1,180 lbs (535 kg)
Maximum Belt Tensile Force		250 lbs (113 kg)	250 lbs (113 kg)
Maximum Carriage Thrust Force		115 lbs (52 kg)	115 lbs (52 kg)
Maximum Speed		118 in/sec (3 m/sec)	118 in/sec (3 m/sec)
Maximum Acceleration		386 in/sec^2 (9,8 m/sec^2)	772 in/sec^2 (19,6 m/sec^2)
d_1	Center to center distance (spread) between the two rails	2.375 in (60,3 mm)	2.375 in (60,3 mm)
d_2	Center to center distance (spacing) of the bearings on a single rail	-	2.088 in (53,0 mm)
d_r	Center distance of the bearing to top of carriage plate surface	1.375 in (34,9 mm)	1.375 in (34,9 mm)

Other	For Two (2) & Four (4) Bearing Carriages
Table Material	Base, Carriage, End Plates, & Cover Plate - 6061 anodized aluminum
Linear Rail Material	Stainless Steel
Belt Properties	Black, 16 mm wide, Polyurethane, Steel reinforced belt
Drive Pulley Weight	0.21 lbs (0,10 kg)
Drive Pulley Diameter	1.128 in (28,65 mm)
Drive Lead	3.543 in (90,00 mm)
Belt Stretch - x Load (lbs or N)	0.00025 in/ft per lbs (0,00476 mm/m per N)
Unidirectional Repeatability	+/- 0.001 in (+/- 0,0254 mm)
Bidirectional Repeatability	+/- 0.004 in (+/- 0,1016 mm)
Position Accuracy (Belt) (1)	< 0.010 in/ft (< 0,254 mm/300mm)
Orthogonality (multi-axis systems)	< 30 arc-seconds
Friction Coefficient	< 0.01
Breakaway Torque	< 60 oz-in (0,424 N-m)
Motor Mount	NEMA 23 & 34 Mounts, Metric Mounts, and Gearheads
Coupling	Two (2) different styles available

Footnotes:

(1) Position accuracy varies based on belt stretch. The given rating is based upon a carriage speed of 5 inches/sec (127 mm/sec) and a no load condition.

Dimensions & Specifications

- Without Cover Plates -

Model Number	Travel Length inches (mm)	Table Dimensions inches (mm)		Mounting Dimensions inches (mm)				Belt Weight ounces (gm)	Table (1) Weight lbs (kg)
		A	B	C	D	E	M		
12x4004-CP0	4 (100)	8.0 (203,2)	14.000 (355,6)	0.250 (6,3)	2.500 (63,5)	1	8	1.3 (36,8)	8.4 (3,8)
12x4006-CP0	6 (150)	10.0 (254,0)	16.000 (406,4)	1.250 (31,7)	2.500 (63,5)	1	8	1.5 (42,5)	9.1 (4,1)
12x4008-CP0	8 (200)	12.0 (304,8)	18.000 (457,2)	0.250 (6,3)	2.000 (50,8)	3	12	1.7 (48,2)	9.8 (4,4)
12x4012-CP0	12 (300)	16.0 (406,4)	22.000 (558,8)	0.250 (6,3)	1.500 (38,1)	5	16	2.1 (59,5)	11.1 (5,0)
12x4016-CP0	16 (405)	20.0 (508,0)	26.000 (660,4)	1.250 (31,7)	2.500 (63,5)	5	16	2.5 (70,9)	12.4 (5,6)
12x4020-CP0	20 (505)	24.0 (609,6)	30.000 (762,0)	0.750 (19,0)	2.500 (63,5)	7	20	2.9 (82,2)	13.7 (6,2)
12x4024-CP0	24 (605)	28.0 (711,2)	34.000 (863,6)	0.250 (6,3)	2.500 (63,5)	9	24	3.3 (93,6)	15.1 (6,8)
12x4030-CP0	30 (760)	34.0 (863,6)	40.000 (1016,0)	0.750 (19,0)	2.500 (63,5)	11	28	3.9 (110,6)	17.1 (7,8)
12x4036-CP0	36 (910)	40.0 (1016,0)	46.000 (1168,4)	1.250 (31,7)	2.500 (63,5)	13	32	4.5 (127,6)	19.1 (8,7)
12x4042-CP0	42 (1060)	46.0 (1168,4)	52.000 (1320,8)	1.750 (44,4)	2.500 (63,5)	15	36	5.1 (144,6)	21.1 (9,6)
12x4048-CP0	48 (1215)	52.0 (1320,8)	58.000 (1473,2)	2.250 (57,1)	2.500 (63,5)	17	40	5.7 (161,6)	23.1 (10,4)
12x4054-CP0	54 (1370)	58.0 (1473,2)	64.000 (1625,6)	0.250 (6,3)	2.500 (63,5)	21	48	6.3 (178,6)	25.1 (11,4)
12x4060-CP0	60 (1520)	64.0 (1625,6)	70.000 (1778,0)	0.750 (19,0)	2.500 (63,5)	23	52	6.9 (195,6)	27.1 (12,3)
12x4072-CP0	72 (1820)	76.0 (1930,4)	82.000 (2082,8)	1.750 (44,4)	2.500 (63,5)	27	60	8.1 (229,6)	31.1 (14,1)
12x4084-CP0	84 (2130)	88.0 (2235,2)	94.000 (2387,6)	0.250 (6,3)	2.500 (63,5)	33	72	9.3 (263,7)	35.1 (15,9)
12x4096-CP0	96 (2435)	100.0 (2540,0)	106.000 (2692,4)	1.250 (31,7)	2.500 (63,5)	37	80	10.5 (297,7)	39.1 (17,7)
12x4108-CP0	108 (2740)	112.0 (2844,8)	118.000 (2997,2)	2.250 (57,1)	2.500 (63,5)	41	88	11.7 (331,7)	43.1 (19,6)
12x4120-CP0	120 (3045)	124.0 (3149,6)	130.000 (3302,0)	0.750 (19,0)	2.500 (63,5)	47	100	12.9 (365,7)	47.1 (21,4)

x = 2; Carriage has 2 bearings; Carriage weight = 1.6 lbs. (0,73 kg)

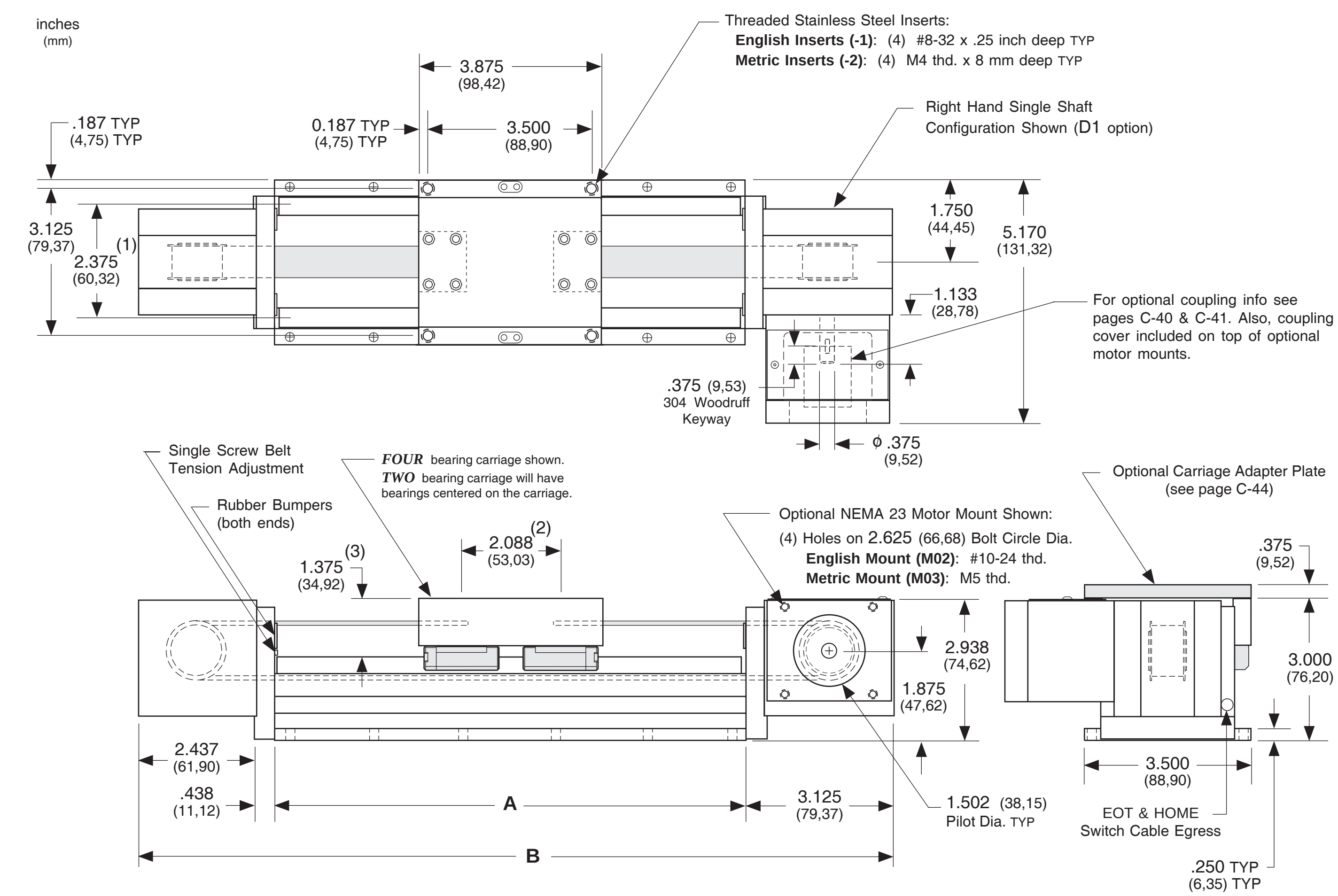
x = 4; Carriage has 4 bearings; Carriage weight = 1.8 lbs. (0,82 kg)

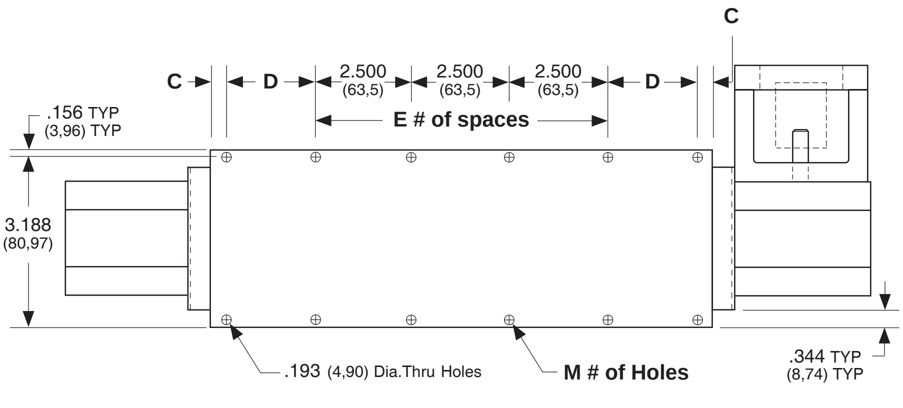
Footnotes:

(1) Weight shown is with a 2 bearing carriage [1.6 lbs (0,73 kg)], a NEMA 23 motor mount [0.34 lbs (0,16 kg)], and a H100 style [0.08 lbs (0,04 kg)] coupling. When using a 4 bearing carriage add 0.2 lbs (0,09 kg) to each value.

Dimensions

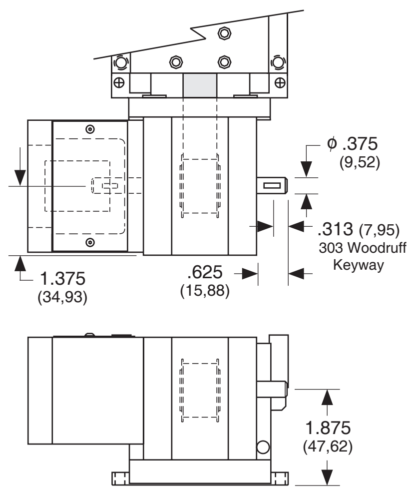
- Without Cover Plates -





Thru Shaft Option

(D3 & D4) (D3 shown)



(1) This value is center to center distance (spread) between the two rails **(d_1)**.

(2) This value is center to center distance (spacing) of the bearings on a single rail **(d_2)**.

(3) This value is center distance of the bearing to top of carriage plate surface **(d_r)**.

Note: Any 100, 110, 120 or 130 series table can be mounted on top of any second 100, 110, 120 series table by the user, in order to create X-Y multiple axis configurations. The 100-CP1, 100-CP2, or 120 series tables require one of the *Carriage Adapter Plate* options. The carriage's threaded stainless steel insert hole pattern exactly matches the base mounting hole pattern on each table, therefore no extra adapter bracket or machining is required. However a precision square tool, or micrometer depth gauge, is required in order to obtain an orthogonality between the two tables of < 30 arc-seconds. The table base, carriage top & carriage sides are all precision machined. *LINTECH*'s 100 series, 4 bearing carriage, should be used for the bottom axis in a mutiple axes application for better system rigidity, performance, and life.

Dimensions & Specifications

- With Top Cover Plate Only -

Model Number	Travel Length (1) inches (mm)	Table Dimensions inches (mm)		Mounting Dimensions inches (mm)				Belt Weight ounces (gm)	Table Weight (2) lbs (kg)
		A	B	C	D	E	M		
12x4004-CP1	4 (100)	8.0 (203,2)	14.000 (355,6)	0.250 (6,3)	2.500 (63,5)	1	8	1.3 (36,8)	8.4 (3,8)
12x4006-CP1	6 (150)	10.0 (254,0)	16.000 (406,4)	1.250 (31,7)	2.500 (63,5)	1	8	1.5 (42,5)	9.1 (4,1)
12x4008-CP1	8 (200)	12.0 (304,8)	18.000 (457,2)	0.250 (6,3)	2.000 (50,8)	3	12	1.7 (48,2)	9.8 (4,4)
12x4012-CP1	12 (300)	16.0 (406,4)	22.000 (558,8)	0.250 (6,3)	1.500 (38,1)	5	16	2.1 (59,5)	11.1 (5,0)
12x4016-CP1	16 (405)	20.0 (508,0)	26.000 (660,4)	1.250 (31,7)	2.500 (63,5)	5	16	2.5 (70,9)	12.4 (5,6)
12x4020-CP1	20 (505)	24.0 (609,6)	30.000 (762,0)	0.750 (19,0)	2.500 (63,5)	7	20	2.9 (82,2)	13.7 (6,2)
12x4024-CP1	24 (605)	28.0 (711,2)	34.000 (863,6)	0.250 (6,3)	2.500 (63,5)	9	24	3.3 (93,6)	15.1 (6,8)
12x4030-CP1	30 (760)	34.0 (863,6)	40.000 (1016,0)	0.750 (19,0)	2.500 (63,5)	11	28	3.9 (110,6)	17.1 (7,8)
12x4036-CP1	36 (910)	40.0 (1016,0)	46.000 (1168,4)	1.250 (31,7)	2.500 (63,5)	13	32	4.5 (127,6)	19.1 (8,7)
12x4042-CP1	42 (1060)	46.0 (1168,4)	52.000 (1320,8)	1.750 (44,4)	2.500 (63,5)	15	36	5.1 (144,6)	21.1 (9,6)
12x4048-CP1	48 (1215)	52.0 (1320,8)	58.000 (1473,2)	2.250 (57,1)	2.500 (63,5)	17	40	5.7 (161,6)	23.1 (10,4)
12x4054-CP1	54 (1370)	58.0 (1473,2)	64.000 (1625,6)	0.250 (6,3)	2.500 (63,5)	21	48	6.3 (178,6)	25.1 (11,4)
12x4060-CP1	60 (1520)	64.0 (1625,6)	70.000 (1778,0)	0.750 (19,0)	2.500 (63,5)	23	52	6.9 (195,6)	27.1 (12,3)
12x4072-CP1	72 (1820)	76.0 (1930,4)	82.000 (2082,8)	1.750 (44,4)	2.500 (63,5)	27	60	8.1 (229,6)	31.1 (14,1)

- x = 2; Carriage has 2 bearings; Carriage weight = 1.6 lbs. (0,73 kg)
- x = 4; Carriage has 4 bearings; Carriage weight = 1.8 lbs. (0,82 kg)

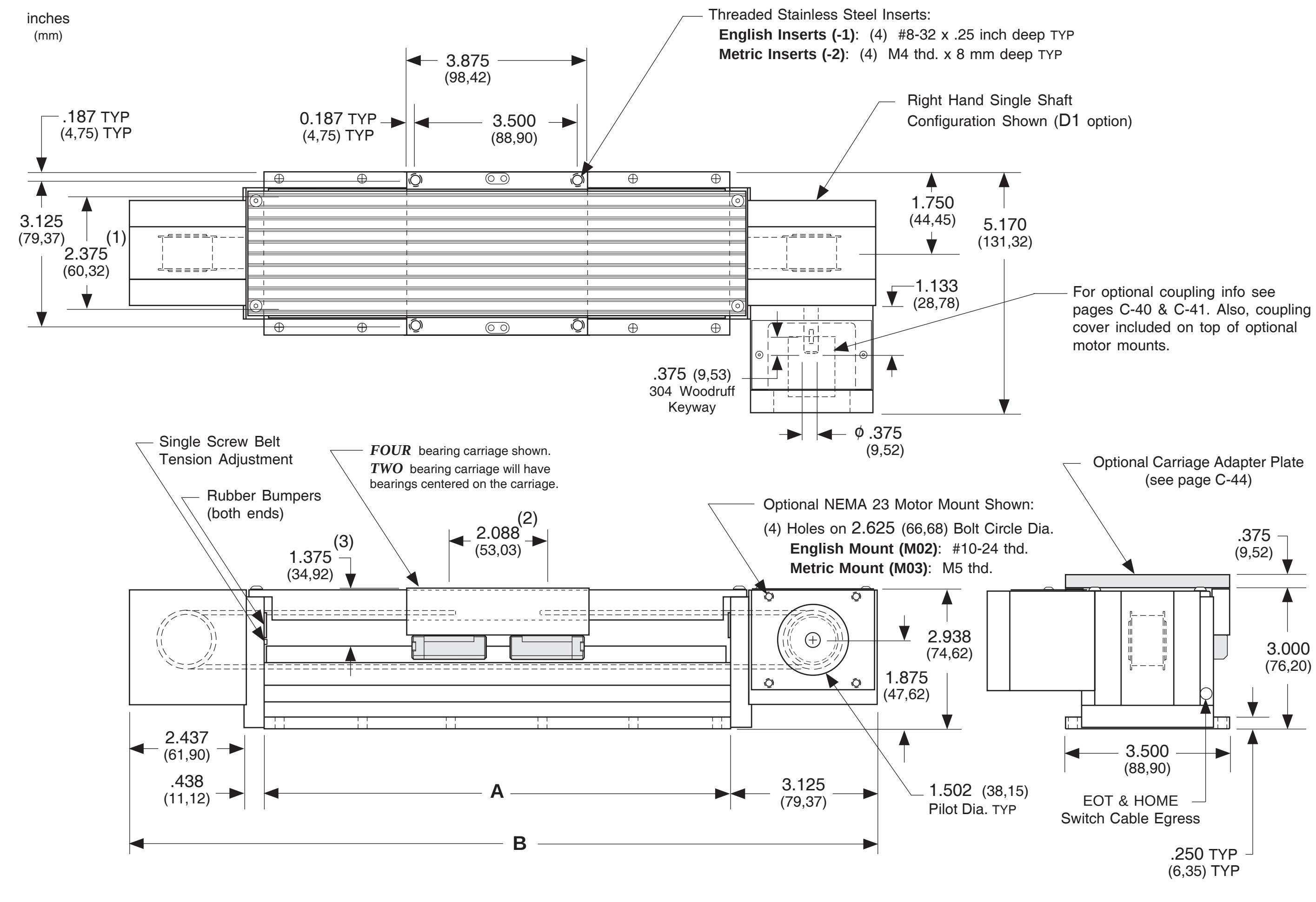
Footnotes:

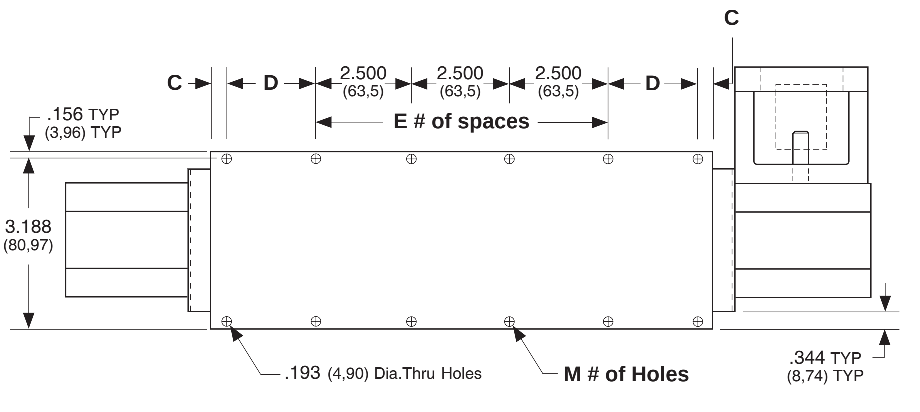
(1) For travels greater than 72 inches (1820 mm) a cover plate **(-CP1)** cannot be used due to the sag of the cover plate.

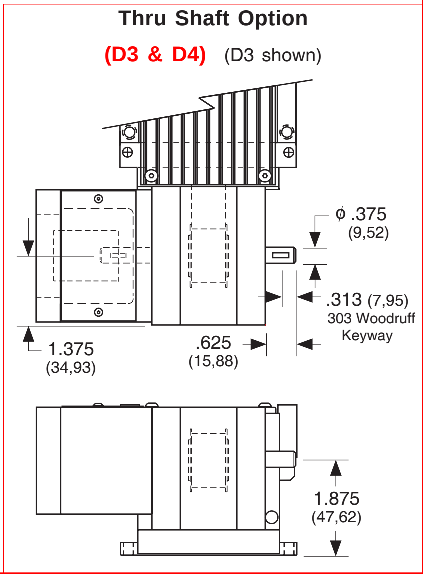
(2) Weight shown is with a 2 bearing carriage [1.6 lbs (0,73 kg)], a NEMA 23 motor mount [0.34 lbs (0,16 kg)], and a H100 style [0.08 lbs (0,04 kg)] coupling. When using a 4 bearing carriage add 0.2 lbs (0,09 kg) to each value.

Dimensions

- With Top Cover Plate Only -







(1) This value is center to center distance (spread) between the two rails **(d_1)**.

(2) This value is center to center distance (spacing) of the bearings on a single rail **(d_2)**.

(3) This value is center distance of the bearing to top of carriage plate surface **(d_r)**.

Note: Any 100, 110, 120 or 130 series table can be mounted on top of any second 100, 110, 120 series table by the user, in order to create X-Y multiple axis configurations. The 100-CP1, 100-CP2, or 120 series tables require one of the *Carriage Adapter Plate* options. The carriage's threaded stainless steel insert hole pattern exactly matches the base mounting hole pattern on each table, therefore no extra adapter bracket or machining is required. However a precision square tool, or micrometer depth gauge, is required in order to obtain an orthogonality between the two tables of < 30 arc-seconds. The table base, carriage top & carriage sides are all precision machined. *LINTECH*'s 100 series, 4 bearing carriage, should be used for the bottom axis in a mutiple axes application for better system rigidity, performance, and life.

Maximum Motor Input Torque, Maximum Belt Force, & Maximum Acceleration Rate

Maximum Motor Input Torque

The maximum safe speed/torque of a motor/drive system that can be used with the 120 series, is limited by the belt strength at a given speed. The maximum linear forces the belt can adequately handle are determined by the number of teeth on the pulley and the belt width. The chart below illustrates the relationship between motor input torque/belt force and carriage speed. Care should be taken when sizing and selecting a motor/drive system for use with a 120 series table. Exceeding the maximum input torque values at the listed speeds can cause belt "skipping" over pulley teeth. This will result in mis-positioning of the carriage.

Maximum Acceleration

The maximum acceleration rate using a 120 series table can be determined by the simple equation **F = M x A**. Knowing the mass of the load, and the maximum safe operating force for the belt, the maximum possible acceleration rate can be determined. **Note:** The mechanical limitation for acceleration of the 120 series table is 2 g's.

Maximum Acceleration Example

F = **M** x **A**

F = maximum belt force at desired speed

M = user applied load

A = maximum acceleration rate (g's)

Sin ϕ = angle of table from horizontal (degrees)

Horizontal Application

$$A = \frac{F}{M}$$

Vertical Application

$$A = \frac{F - M \sin\phi}{M}$$

Example: A 40 lb load is mounted to a 120 series carriage in a horizontal application. Determine the maximum accel rate in g's & in/sec^2 that can be used to achieve a maximum speed of 75 IPS.

Step 1: From graph below, determine the maximum belt force at 75 IPS : (F = 80 lbs).

Step 2: Add up your total mass = load weight + carriage weight : (M = 40 + 1.8 = 41.8 lbs).

Step 3: Solve for A : (A = 80/41.8 = 1.9 g's).

Note: 1 g = 386 in/sec^2

Step 5: 1.9 g's x 386 = 733 in/sec^2.

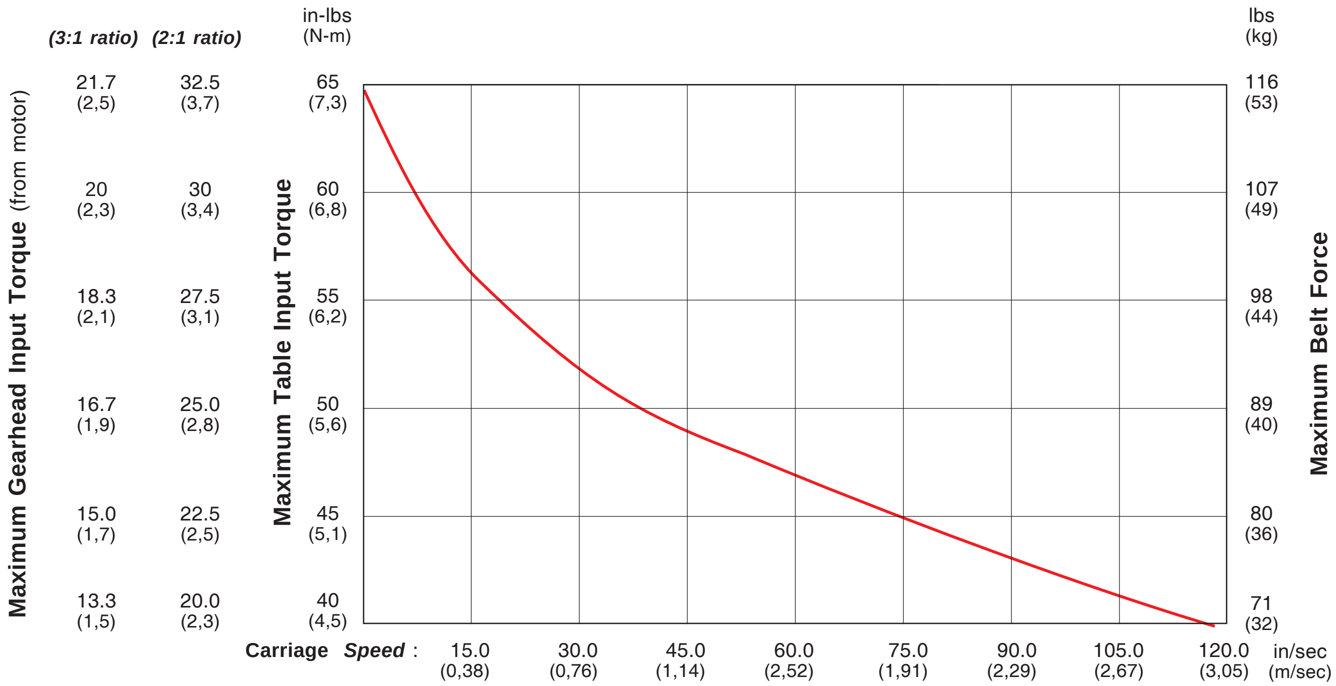


Table Input Shaft - *RPS* :	4.2	8.5	12.7	16.9	21.2	25.4	29.6	33.9
Gearhead Input *(2:1 ratio)* - *RPS* :	8.4	17.0	25.4	33.8	42.4	50.8	59.2	67.8
Gearhead Input *(3:1 ratio)* - *RPS* :	12.6	25.5	38.1	50.7	63.6	76.2	88.8	101.7

RPS - revs/sec

1) Table friction & breakaway forces have already been deducted from the above maximum belt force values.
2) Curve based upon maximum belt values. Select a motor coupling that can handle the required torque.

Master/Slave 120 Series Configuration

For some X-Y belt drive applications, the master/slave configuration shown to the right may be required. This system provides two bottom (X) axes spread apart a set distance, yet driven by one motor. The spreading of the two bottom axes minimizes the deflection on the Y axis, reduces the moment loading on the X axes carriages, increases the system rigidity, and prevents twisting of the Y axis as it accelerates to a set speed. LINTECH can provide the shaft supports, the cross shaft, the couplings, and the 120 series belt drive table without a motor mount bracket. The shaft supports are required as the couplings DO NOT provide adequate support of the shaft by themselves. Also, the shaft supports prevent the cross shaft from "whipping" at long lengths and high speeds.

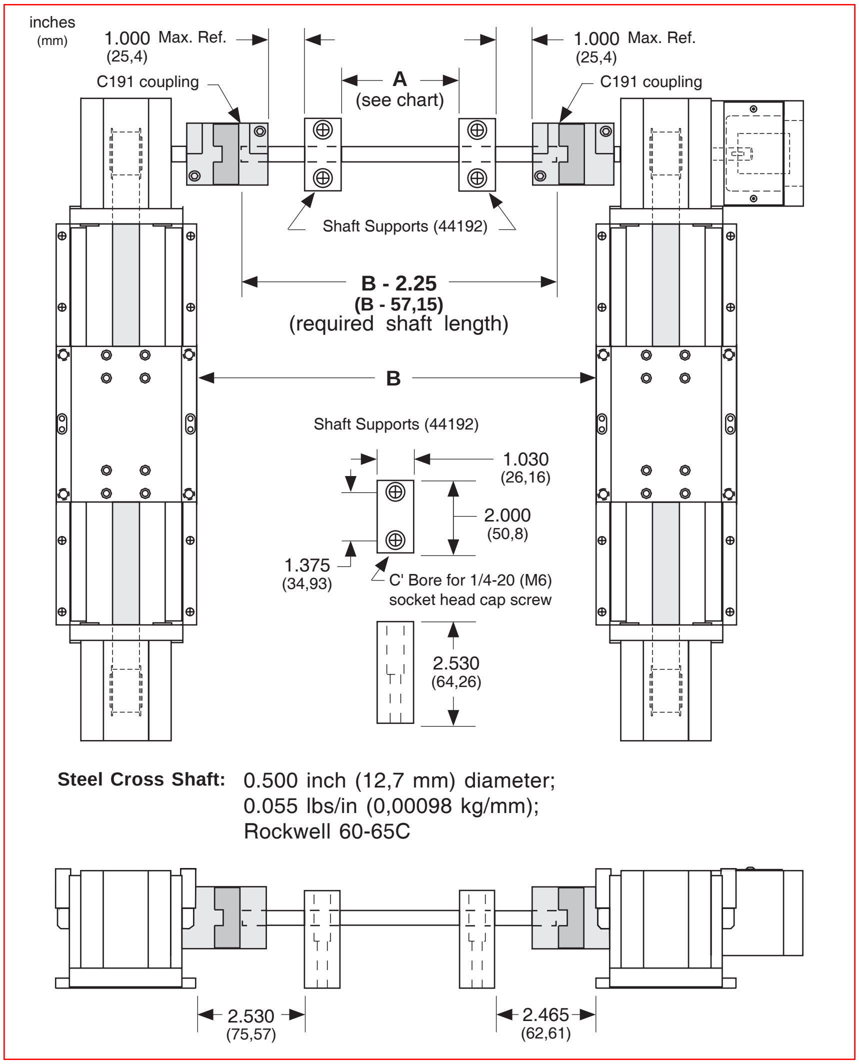
The chart below lists the maximum carriage speed available with a given distance between shaft supports. A minimum of two shaft supports is always required. More than two can be used to increase the speed of a longer spread system. The equations below show the relationship between the # of shaft supports, the spread between the two bottom axes (B), and the distance between individual shaft supports (A).

A = *distance between shaft supports*
B = *distance between 2 bottom axes*

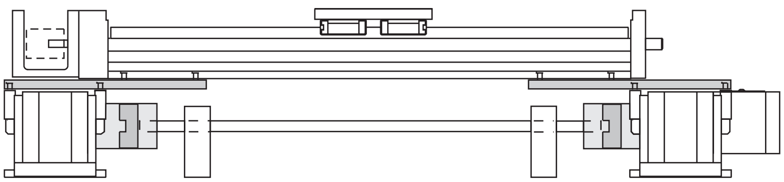
2 Shaft Supports: **A** = [**B** - 7.50 in (190,5 mm)]
3 Shaft Supports: **A** = [**B** - 8.53 in (216,7 mm)] / 2
4 Shaft Supports: **A** = [**B** - 9.56 in (242,8 mm)] / 3

Maximum Distance Between Shaft Supports A (inches)	(mm)	Maximum Shaft Speed (RPM)	Equivalent Carriage Speed (in/sec)	(mm/sec)
<= 30	762	2000	118	3000
<= 36	914	1500	89	2250
<= 48	1219	840	50	1260
<= 54	1372	660	39	990
<= 60	1524	535	32	802
<= 66	1676	440	26	660
<= 72	1829	370	22	555
<= 84	2134	270	16	405
<= 96	2438	208	12	312
<=108	2743	164	10	246
<=120	3048	133	8	200

Note: The user is required to supply the mounting surface for the above configurations. LINTECH normally only supplies all the positioning hardware. A common base plate can be provided by LINTECH upon request.



Example #1: Above configuration with Y axis and 2 extended carriage adapter plates.



Example #2: Above configuration with Y axis, 2 extended carriage adapter plates, and 2 horizontal angle brackets.

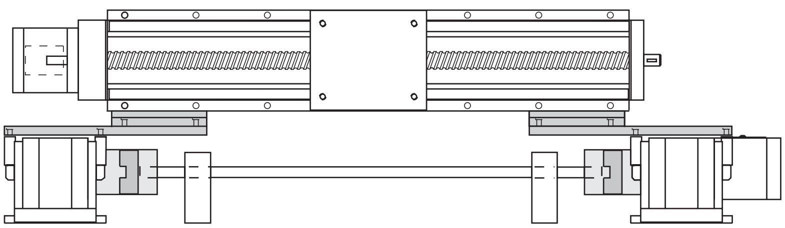
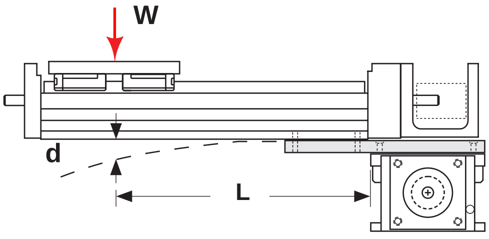
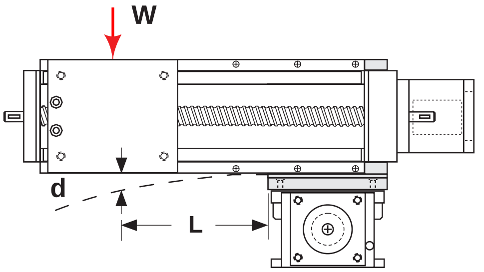


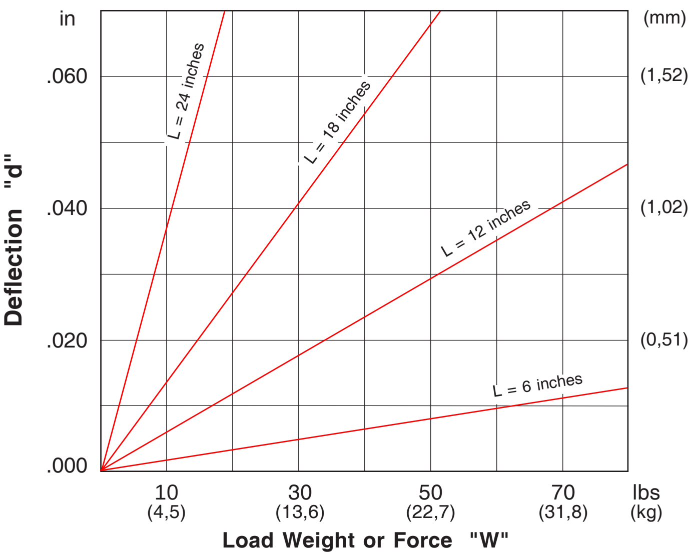
Table Deflection - Multiple Axis Configurations

The "moment of inertia" of an object is a gauge of the strength of that object to resist deflecting when used in an application or orientation where deflection might occur. The higher an I value relates to a lower amount of deflection. The following graphs can be used to estimate the deflection value for a given configuration. The information in the graphs was obtained with the bottom axis firmly mounted to a granite surface plate and also includes the deflection of the bottom axis carriage assembly & all mounting hardware. Individual applications will vary depending on the user mounting surface, user mounting hardware, and user mounting configuration. If the deflection values below are too high for your application, a steel sub plate, or aluminum cross member, can be added for additional "Y" axis support. Contact *LINTECH* for more details.

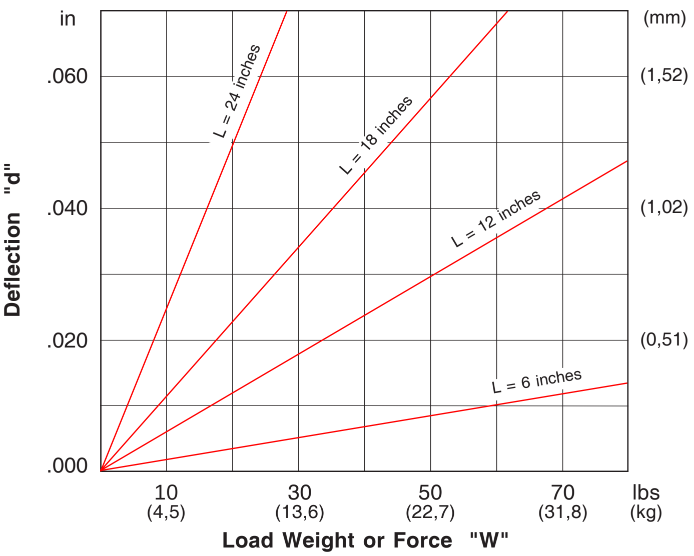




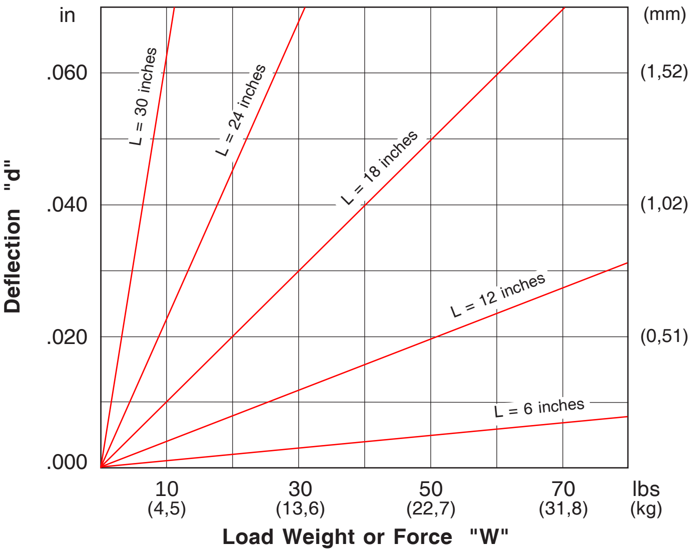
2 Bearing 100, 110 or 120 Series on Bottom Axis



2 Bearing 100, 110 or 120 Series on Bottom Axis



4 Bearing 100, 110 or 120 Series on Bottom Axis



4 Bearing 100, 110 or 120 Series on Bottom Axis

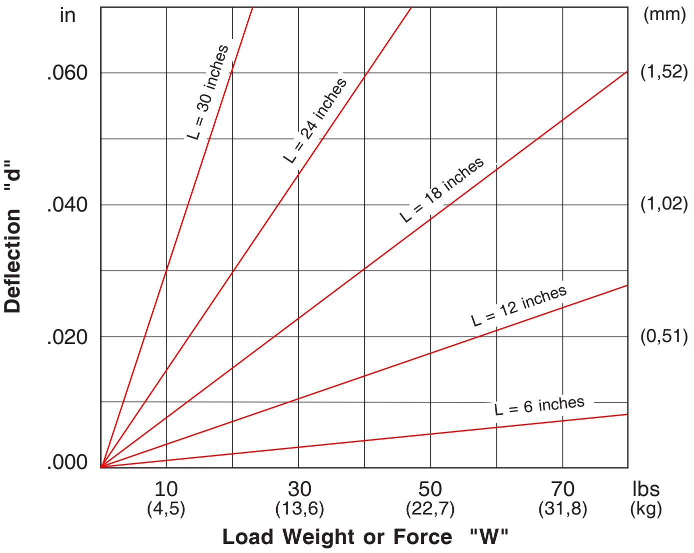
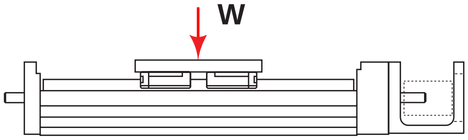
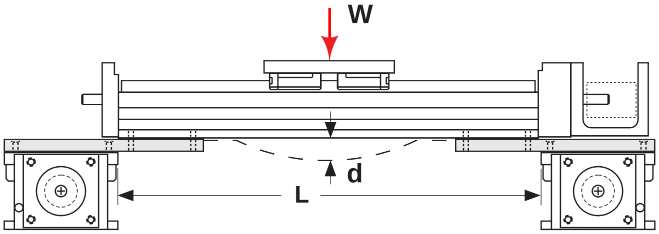


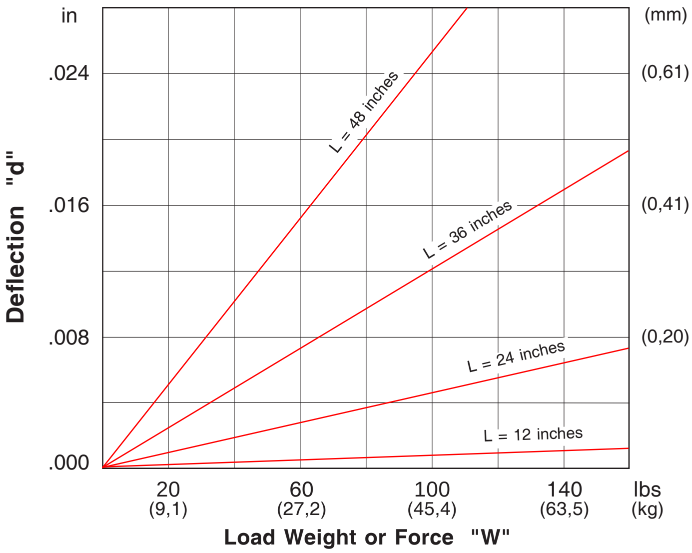
Table Deflection - Multiple Axis Configurations

I = 0.30 in^4 (1.25×10^5 mm^4)

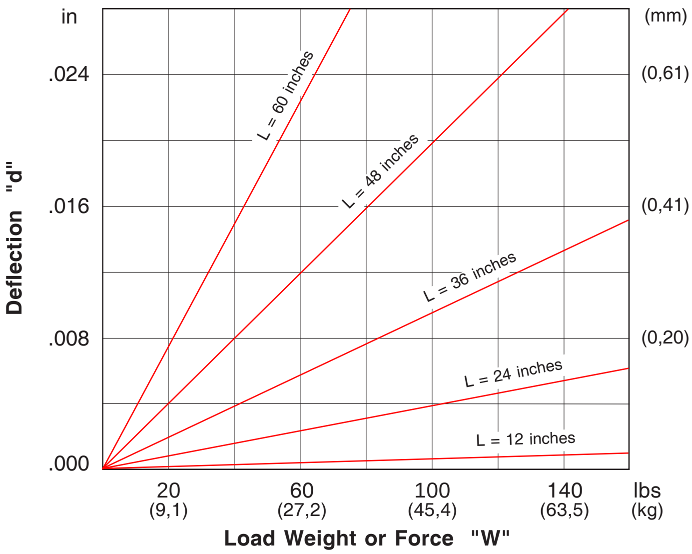




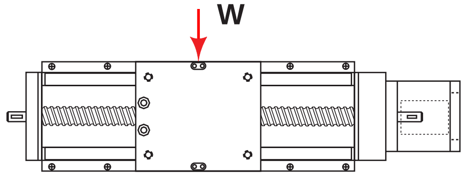
2 Bearing 100, 110 or 120 Series on Bottom Axis

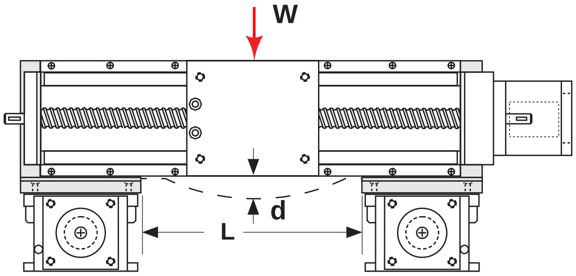


4 Bearing 100, 110 or 120 Series on Bottom Axis

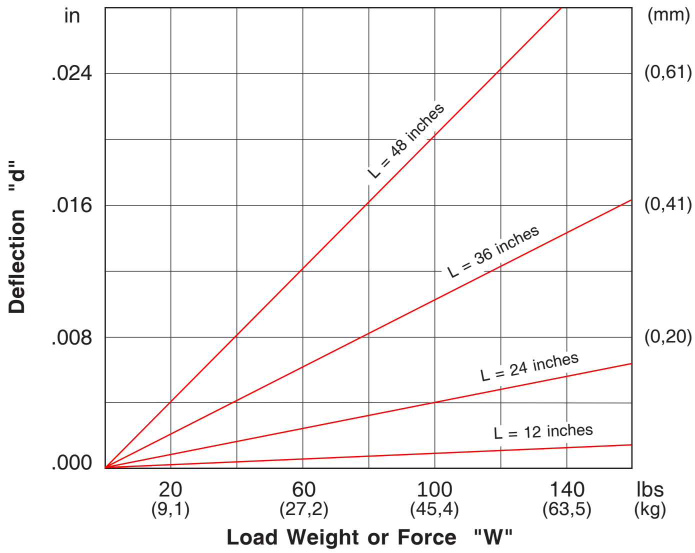


I = 3.50 in^4 (1.46×10^6 mm^4)

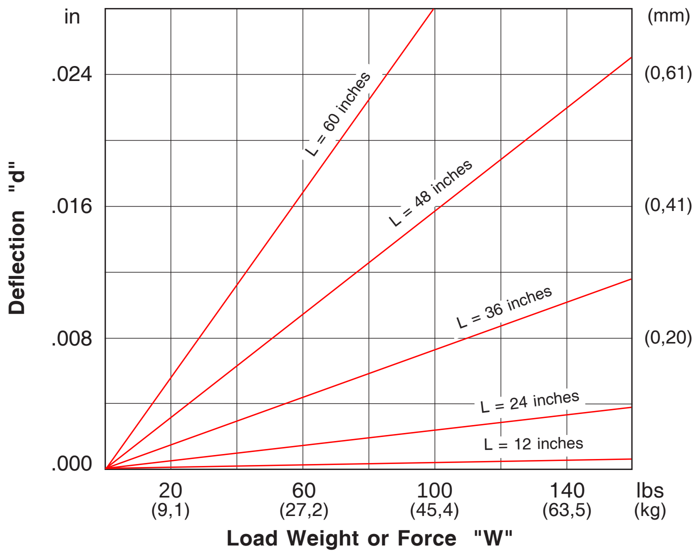




2 Bearing 100, 110 or 120 Series on Bottom Axis



4 Bearing 100, 110 or 120 Series on Bottom Axis

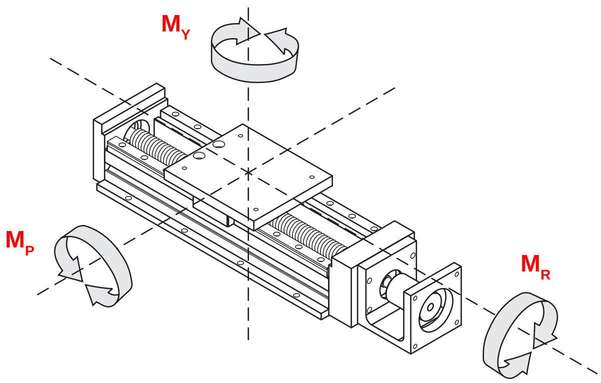


Linear Bearing Load Capacities

The following equation, and graphs, can be used to help determine the linear bearing life, and load capacity, of a 100, 110 or 120 series positioning table.

$$L = \left[\frac{R}{F \times S}\right]^3 \times B$$

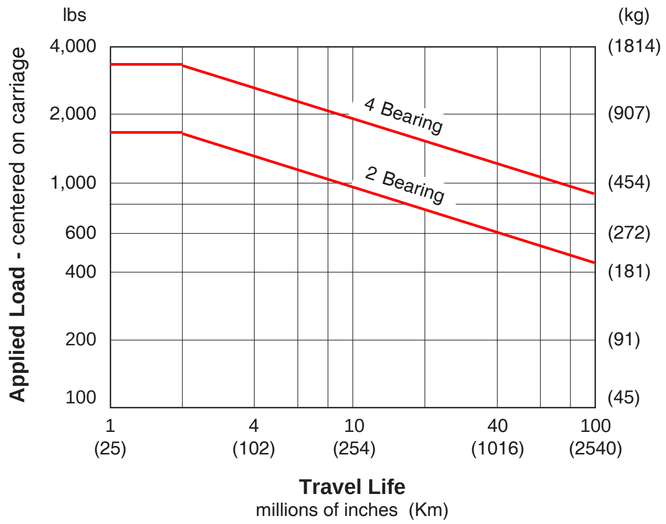
- **L** = calculated travel life (millions of inches or Km)
- **R** = rated dynamic load capacity of carriage (or each bearing) at 2 million inches of travel or 50 Km
- **F** = user applied load
- **S** = safety factor (1 to 8)
- **B** = either 2 (for millions of inches) or 50 (for Km)



Dynamic Horizontal Load Capacity

Load Centered on Carriage

travel life		2 Bearing		4 Bearing	
millions of inches	(Km)	lbs	(kg)	lbs	(kg)
2	(50)	1,550	(703)	3,100	(1406)
50	(1270)	525	(238)	1,060	(480)
100	(2540)	415	(188)	840	(381)

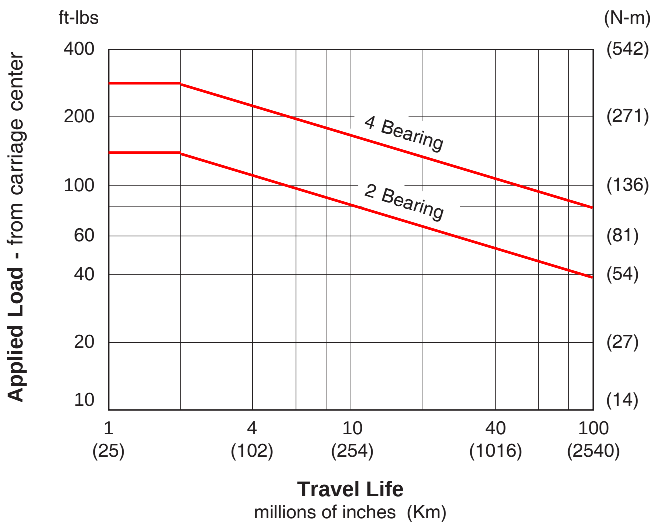


Dynamic Moment Load (M_R) Capacity

Load applied away from Carriage Center

travel life		2 Bearing		4 Bearing	
millions of inches	(Km)	ft-lbs	(N-m)	ft-lbs	(N-m)
2	(50)	140	(190)	280	(379)
50	(1270)	47	(64)	95	(129)
100	(2540)	37	(50)	75	(101)

Ratings are based on d_3 = 12 inches (305 mm) & d_4 = 0

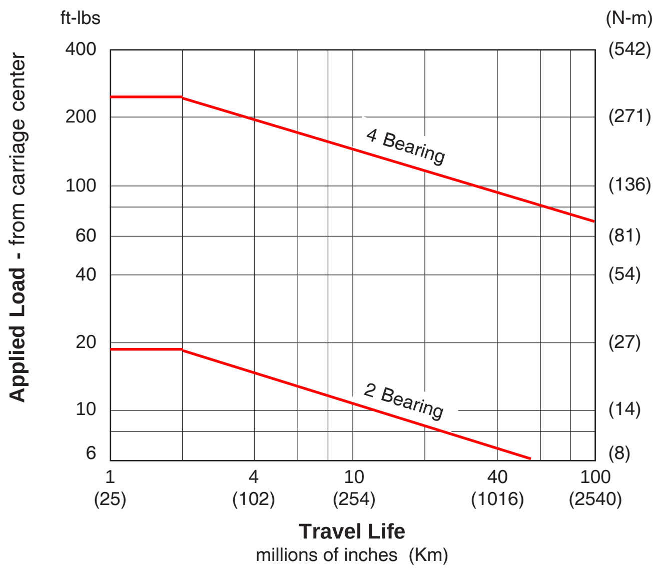


Dynamic Moment Load (M_P & M_Y) Capacity

Load applied away from Carriage Center

travel life		2 Bearing		4 Bearing	
millions of inches	(Km)	ft-lbs	(N-m)	ft-lbs	(N-m)
2	(50)	18	(24)	240	(325)
50	(1270)	6	(8)	82	(111)
100	(2540)	5	(7)	65	(88)

Ratings are based on d_3 = 0 & d_4 = 12 inches (305 mm)



End of Travel (EOT) Switches & Home Switch

LINTECH provides several options for EOT & home switches. One style uses mechanically actuated switches, while other styles use "non-contact" versions. When ordered with a *LINTECH* 100, 110 or 120 series table, each switch is mounted to the side of the table, while the actuating cams are mounted to the carriage assembly. The *T-slot* which runs along both sides of the 100, 110 and 120 series, allows the switches to be located anywhere along the table. The switches are pre-wired by *LINTECH* for easy interfacing to the users Motion Controller.

End of Travel (EOT) Switches

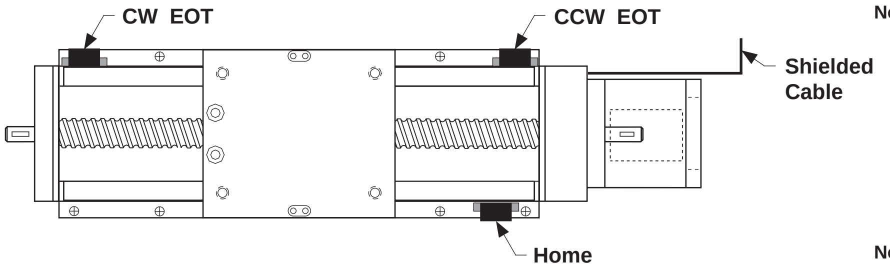
End of travel (EOT) switches can be utilized by a motion controller to stop carriage motion, thereby preventing any damage to personnel, table carriage, or user mounted load if the extreme end of travel has been reached by the carriage. There are two EOT switches mounted to the side of the table, one on each end. The CCW switch is mounted at the motor mount end, while the CW switch is located at the opposite end of the table. *LINTECH* provides normally closed (NC) end of travel switches. This provides for a power-off fail safe system, where the position controller can detect broken wires. *It is highly recommended that any positioning table used with a position controller, should have end of travel switches installed for protection of personnel, table carriage, and user mounted load.*

Home Switch

The home switch can be utilized by a motion controller as a known fixed mechanical location on the positioning table. The switch is located on the opposite side of the EOT switches, at the motor mount end, and is a normally open (NO) switch.

Switch Locations

The following diagram shows the locations of the switches when ordered from *LINTECH*.



Note: For the 100 & 120 series, EOT switches are normally located 0.125 inches (3 mm) inward from the maximum travel hard stops. Thus, reducing overall system travel by 0.25 inches (6 mm) from listed table travel for each model #. For the 110 series there is NO reduction of listed travel length when using EOT switches.

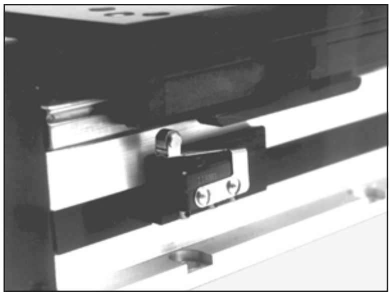
Note: Each switch can be located anywhere along the T-slots, which run on both sides of the table.

Switch Type	Cost	Repeatability inches (microns)	Actuated	Power Supply Required	Activation Area inches (mm)	Comments
mechanical	least expensive	+/- 0.0002 (5)	mechanical	No	1.75 (44,45)	for most applications
reed	slightly more	+/- 0.0020 (50)	magnetic	No	0.30 (7,62)	for non-contact & low repeatable applications
hall effect	medium priced	+/- 0.0002 (5)	magnetic	Yes	0.32 (8,13)	for non-contact and wash down applications
proximity	most expensive	+/- 0.0002 (5)	non-magnetic	Yes	1.75 (44,45)	for non-contact, high speed, & wash down applications

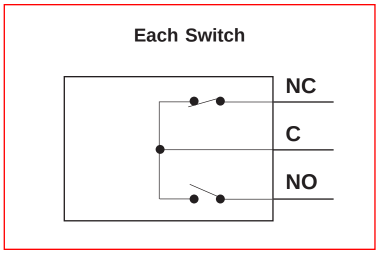
Note: The repeatability of any switch is dependent upon several factors: carriage speed, accel rate, load weight, switch style, and the position controller. *LINTECH*'s ratings are based upon a carriage speed of 0.5 inches/sec (12.7 mm/sec) and a no load condition.

End of Travel (EOT) Switches & Home Switch

Mechanical Switches



Repeatability	: +/- 0.0002 inch (5 microns)
Electrical	: 5 amps @ 125 VAC 1 amp @ 85 VDC
Activation Style	: mechanical cam
Activation Area	: 1.75 inches (44,45 mm) of travel
Temperature Range	: - 25° C to + 85° C
Environment	: non wash down
Added Table Width (100 & 120 series)	: 0.063 inch (1,6 mm) (EOT switches) 0.063 inch (1,6 mm) (with Home switch)
Individual Switch Wiring	: none



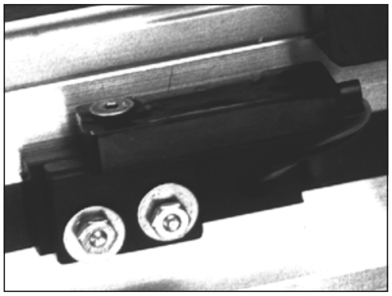
Standard *LINTECH* Wiring : from table end plate, 10 foot (3 m) shielded cable, 6 conductor, 24 AWG, unterminated leads

(provided when switch option is ordered with any table)

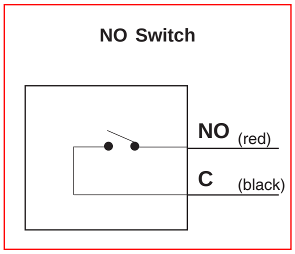
Wire Color	Description	
Black	CW EOT	NC
Blue	CW Common	
Red	CCW EOT	NC
White	CCW Common	
Brown	HOME	NO
Green	HOME Common	
Silver	Shield	

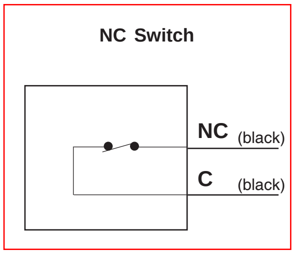
Note: Hermetically sealed mechanical switches can be ordered as an option. This may be desired for "wash down" applications. Contact *LINTECH*.

Non-Contact Reed Switches



Repeatability	: +/- 0.0020 inch (50 microns)
Electrical	: 1.0 amps @ 125 VAC 0.5 amps @ 100 VDC
Activation Style	: magnetic
Activation Area	: 0.30 inches (7,62 mm) of travel
Temperature Range	: - 10° C to + 60° C
Environment	: non wash down
Added Table Width	: none
Individual Switch Wiring	: 12 inch (305 mm) leads





Standard *LINTECH* Wiring : from table end plate, 10 foot (3 m) shielded cable, 6 conductor, 24 AWG, unterminated leads

(provided when switch option is ordered with any table)

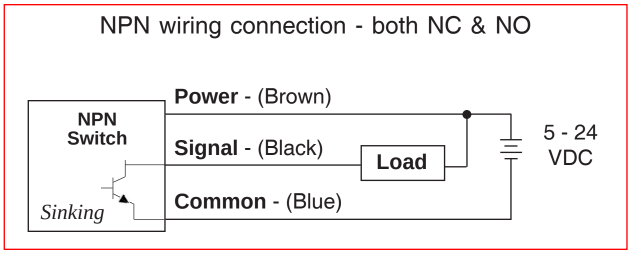
Wire Color	Description		
Black	CW EOT	(black)	NC
Blue	CW Common	(black)	
Red	CCW EOT	(black)	NC
White	CCW Common	(black)	
Brown	HOME	(red)	NO
Green	HOME Common	(black)	
Silver	Shield		

CW - Clockwise
CCW - Counter Clockwise
EOT - End of Travel
NC - Normally Closed
NO - Normally Open

End of Travel (EOT) Switches & Home Switch

Non-Contact Hall Effect Switches

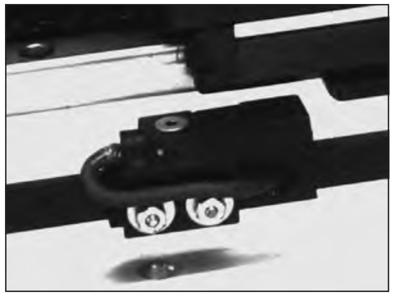
Repeatability	: +/- 0.0002 inch (5 microns)
Electrical	: 5 - 24 VDC 15 mA - power input 25 mA max - signal
Actuation Style	: magnetic
Activation Area	: 0.32 inches (8,13 mm) of travel
Temperature Range	: - 10° C to + 60° C
Environment	: wash down
Added Table Width	: none
Individual Switch Wiring	: 12 inch (305 mm) leads



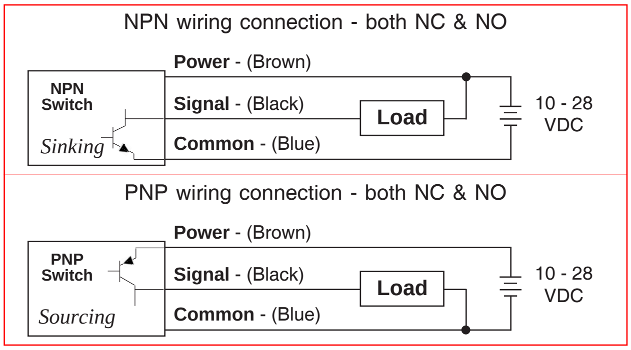
Standard *LINTECH* Wiring : from table end plate, 10 foot (3 m) shielded cable; 9 conductor, 24 AWG, unterminated leads
(provided when switch option is ordered with any table)

Wire Color	Description		
Brown	CW Power	(brown)	
Black	CW EOT	(black) switch	NC
Blue	CW Common	(blue)	
Red	CCW Power	(brown)	
White	CCW EOT	(black) switch	NC
Green	CCW Common	(blue)	
Orange	Home Power	(brown)	
Yellow	Home	(black) switch	NO
Grey	Home Common	(blue)	
Silver	Shield		

Non-Contact Proximity Switches



Repeatability	: +/- 0.0002 inch (5 microns)
Electrical	: 10 - 28 VDC 15 mA - power input 100 mA max - signal
Actuation Style	: non-magnetic cam
Activation Area	: 1.75 inches (44,45 mm) of travel
Temperature Range	: - 25° C to + 75° C
Environment	: IEC IP67 wash down
Added Table Width (100 & 120 series)	: 0.20 inch (5,1 mm) (EOT switches) 0.20 inch (5,1 mm) (Home switch)
Individual Switch Wiring	: 6.5 foot (2 m) cable for NPN : 3.3 foot (1 m) cable for PNP



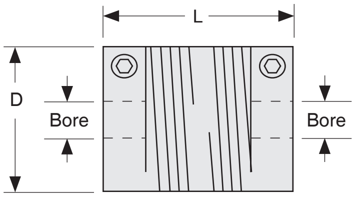
Standard *LINTECH* Wiring : from table end plate, 10 foot (3 m) shielded cable; 9 conductor, 24 AWG, unterminated leads
(provided when switch option is ordered with any table)

Wire Color	Description		
Brown	CW Power	(brown)	
Black	CW EOT	(black) switch	NC
Blue	CW Common	(blue)	
Red	CCW Power	(brown)	
White	CCW EOT	(black) switch	NC
Green	CCW Common	(blue)	
Orange	Home Power	(brown)	
Yellow	Home	(black) switch	NO
Grey	Home Common	(blue)	
Silver	Shield		

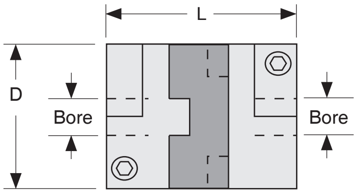
Motor Couplings

LinTech provides three different types of couplings that can be used to mount a motor to a positioning table. These couplings compensate for misalignment between the motor shaft & screw (or belt) 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. Larger capacity couplings may be required for applications having high accelerations, large back driving loads, high torque output motors, or servo motors.

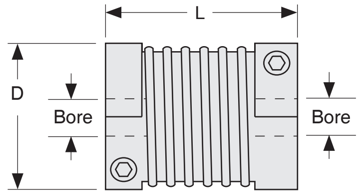
C Type - Helical-Cut Clamp Style Design
(Aluminum)



H Type - 3 Member Clamp Style Design
(Aluminum Hubs with Acetal Disc)



G Type - Low Wind-up, High Torque Clamp Style Design
(Aluminum Hubs with Stainless Steel Bellows)



Model Number	D inches (mm)	L inches (mm)	Bore Diameters *Table*	*Motor*	*Minimum* (in)	(mm)	*Maximum* (in)	(mm)	Weight ounces (grams)	Inertia oz-in² (g-cm²)	Wind-up arc-sec/oz-in (deg/N-m)	Max Torque oz-in (N-m)
C100-312-aaa	1.00 (25,4)	1.50 (38,1)	**312**	**aaa**	.250	6	.375	10	1.5 (43)	.19 (35)	23.0 (0,9)	400 (2,8)
C125-312-aaa (1)	1.25 (31,8)	2.00 (50,8)	**312**	**aaa**	.250	6	.500	14	3.5 (99)	.68 (124)	15.0 (0,59)	700 (4,9)
H100-312-aaa	1.00 (25,4)	1.28 (32,5)	**312**	**aaa**	.250	6	.375	10	1.2 (34)	.15 (27)	7.2 (0,28)	450 (2,8)
H100-375-aaa	1.00 (25,4)	1.28 (32,5)	**375**	**aaa**	.250	6	.375	10	1.2 (34)	.15 (27)	7.2 (0,28)	450 (2,8)
H131-312-aaa (1)	1.31 (33,3)	1.89 (48,0)	**312**	**aaa**	.250	6	.625	16	2.9 (82)	.62 (114)	2.5 (0,098)	1,000 (7,1)
H131-375-aaa	1.31 (33,3)	1.89 (48,0)	**375**	**aaa**	.250	6	.625	16	2.9 (82)	.62 (114)	2.5 (0,098)	1,000 (7,1)
H163-375-aaa (2)	1.63 (41,4)	2.00 (50,8)	**375**	**aaa**	.375	10	.750	20	5.4 (153)	1.79 (328)	1.2 (0,047)	2,000 (14,1)
G100-312-aaa	0.99 (25,2)	1.26 (32,0)	**312**	**aaa**	.250	6	.500	12	1.3 (36)	.16 (29)	1.0 (0,39)	500 (3,5)
G100-375-aaa	0.99 (25,2)	1.26 (32,0)	**375**	**aaa**	.250	6	.500	12	1.3 (36)	.16 (29)	1.0 (0,39)	500 (3,5)
G126-312-aaa	1.26 (32,1)	1.62 (41,0)	**312**	**aaa**	.250	6	.625	16	2.7 (74)	.54 (99)	0.3 (0,012)	1,100 (7,7)
G126-375-aaa	1.26 (32,1)	1.62 (41,0)	**375**	**aaa**	.250	6	.625	16	2.7 (74)	.54 (99)	0.3 (0,012)	1,100 (7,7)
G158-375-aaa (2)	1.58 (40,2)	1.85 (47,0)	**375**	**aaa**	.375	10	.750	20	4.3 (120)	1.34 (245)	0.2 (0,008)	2,400 (17,0)
Possible values for **aaa**	250 = .250 inch 375 = .375 inch 500 = .500 inch 625 = .625 inch	750 = .750 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	

Footnotes:

(1) This coupling option can not be used with the optional NEMA 23 motor mount for the 100 & 110 series because its length is too long. However, this coupling option can be used with the optional NEMA 34 motor mount. Custom motor mounts can be provided upon request. See page C-41 for more details.

(2) This coupling option can not be used with the optional NEMA 23 motor mount for the 120 series because its diameter is too big. However, this coupling option can be used with the optional NEMA 34 motor mount. Custom motor mounts can be provided upon request. See page C-41 for more details.

Motor Couplings

Coupling	Cost	Torque Capacity	Wind-up	Suggested Motor	Comments
C Type	least expensive	light	the most	stepper	ideal for most step motor applications
H Type	medium priced	medium	medium	stepper or servo	use for high accels & for starting & stopping large inertia loads
G Type	most expensive	high	the least	servo	use for very high torque requirements & very high servo accelerations

Specification	**100 & 110 Series** NEMA 23 bracket inches (mm)	**100 & 110 Series** NEMA 34 bracket inches (mm)	**120 Series** NEMA 23 bracket inches (mm)	**120 Series** NEMA 34 bracket inches (mm)
Shaft extension diameter at motor mount end	0.312 (7,92)	0.312 (7,92)	0.375 (9,53)	0.375 (9,53)
Maximum coupling diameter	1.500 (38,10)	1.500 (38,10)	1.500 (38,10)	2.000 (50,80)
Maximum coupling length	1.750 (44,45)	2.250 (57,15)	1.900 (48,26)	2.375 (60,32)
Note: Custom brackets available upon request.				

Coupling Part Numbers

C020 C100-312-250
C021 C100-312-375
C022 C100-312-006
C023 C100-312-008
C024 C100-312-010

C040 C125-312-250
C041 C125-312-375
C042 C125-312-500
C043 C125-312-006
C044 C125-312-008
C045 C125-312-010
C046 C125-312-012
C047 C125-312-014

C125 H100-312-250
C126 H100-312-375
C127 H100-312-006
C128 H100-312-008
C129 H100-312-010

C130 H100-375-250
C131 H100-375-375
C132 H100-375-006
C133 H100-375-008
C134 H100-375-010

C145 H131-312-250
C146 H131-312-375
C147 H131-312-500
C148 H131-312-625
C149 H131-312-006
C150 H131-312-008
C151 H131-312-010
C152 H131-312-012
C153 H131-312-014
C154 H131-312-016

C155 H131-375-250
C156 H131-375-375
C157 H131-375-500
C158 H131-375-625
C159 H131-375-006
C160 H131-375-008
C161 H131-375-010
C162 H131-375-012
C163 H131-375-014
C164 H131-375-016

C190 H163-375-375
C191 H163-375-500
C192 H163-375-625
C193 H163-375-750
C194 H163-375-010
C195 H163-375-012
C196 H163-375-014
C197 H163-375-016
C198 H163-375-018
C199 H163-375-019
C200 H163-375-020

C400 G100-312-250
C401 G100-312-375
C402 G100-312-500
C403 G100-312-006
C404 G100-312-008
C405 G100-312-010
C406 G100-312-012

C407 G100-375-250
C408 G100-375-375
C409 G100-375-500
C410 G100-375-006
C411 G100-375-008
C412 G100-375-010
C413 G100-375-012

C425 G126-312-250
C426 G126-312-375
C427 G126-312-500
C428 G126-312-625
C429 G126-312-006
C430 G126-312-008
C431 G126-312-010
C432 G126-312-012
C433 G126-312-014
C434 G126-312-016

C435 G126-375-250
C436 G126-375-375
C437 G126-375-500
C438 G126-375-625
C439 G126-375-006
C440 G126-375-008
C441 G126-375-010
C442 G126-375-012
C443 G126-375-014
C444 G126-375-016

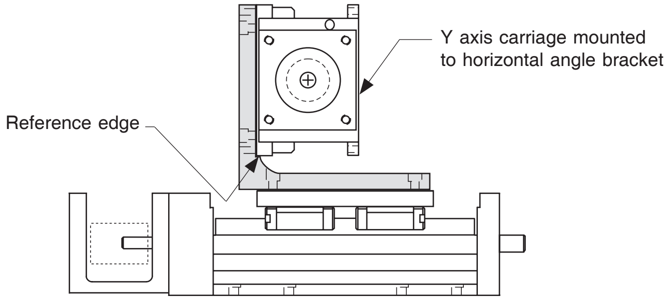
C470 G158-375-375
C471 G158-375-500
C472 G158-375-625
C473 G158-375-750
C474 G158-375-010
C475 G158-375-012
C476 G158-375-014
C477 G158-375-016
C478 G158-375-018
C479 G158-375-019
C480 G158-375-020

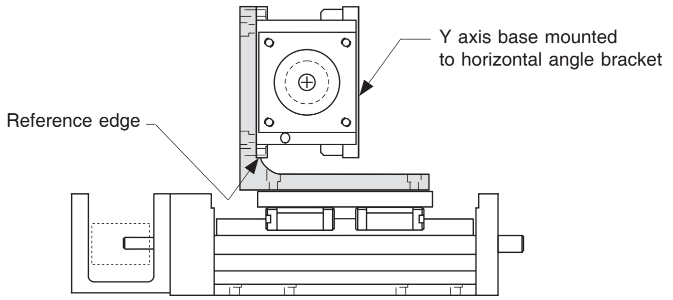
Horizontal & Vertical Angle Brackets

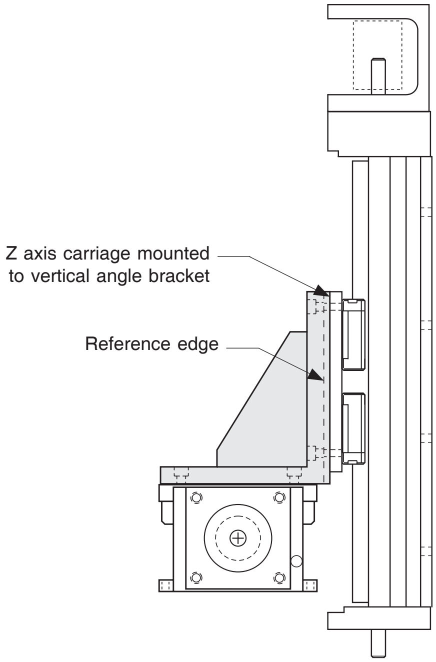
LINTECH has provided a simple solution for those applications requiring multiple axis positioning. Two different angle brackets (a horizontal mount and a vertical mount) provide for X-Y, X-Z, and X-Y-Z configurations. These angle brackets are used to mount single axis tables together in order to form multiple axis configurations, or to orient the single axis table in a different plane of motion.

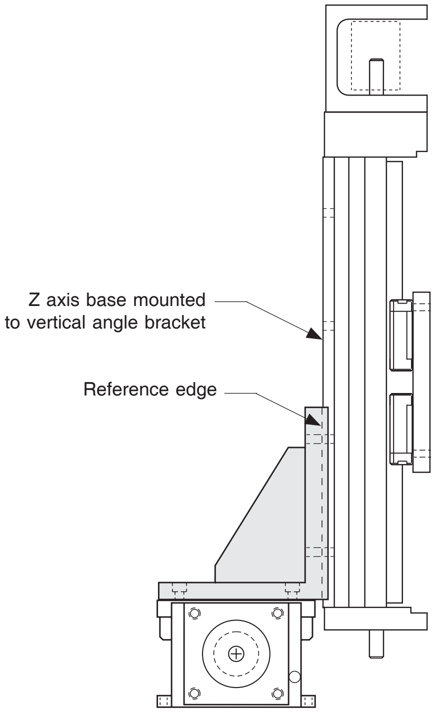
These precision machined aluminum angle brackets ensure that the orthogonality of the two tables is maintained to < 30 arc-seconds. To achieve this orthogonality, one side of the angle bracket must be mounted to the table carriage with a precision square tool or micrometer depth gauge, while the second axis is mounted securely against the reference edge of the angle bracket. The angle bracket hole pattern is pre-engineered for easy mounting of either the table carriage or table base.

When ordered, the angle bracket is shipped separately from the tables. The user is required to assemble the angle bracket to the tables. However, if requested to, *LINTECH* can pre-assemble the multiple axis system before shipping. Anytime an angle bracket is used for multiple axis configurations, moment loads will result on one or more axes. Be sure to review moment loads, and the positioning table life, for your application.





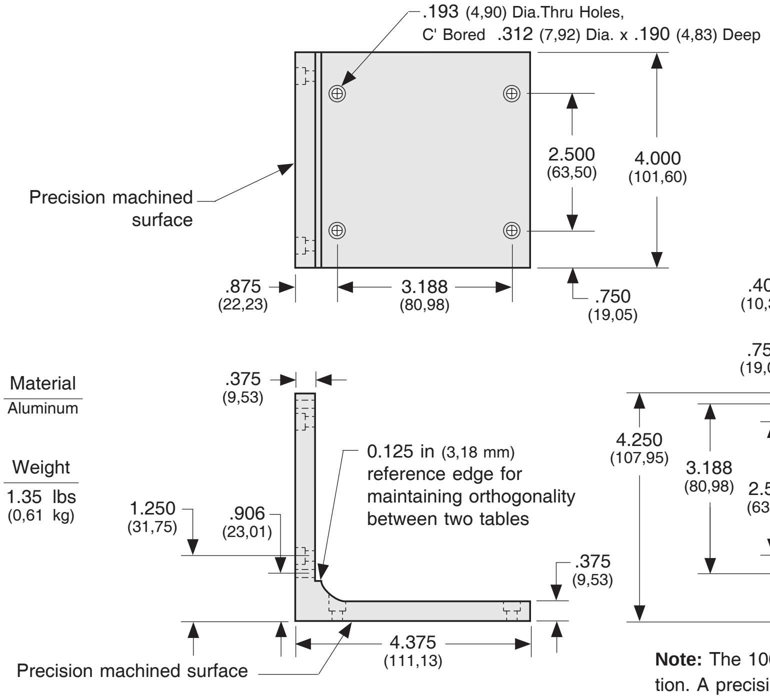




Horizontal Angle Bracket

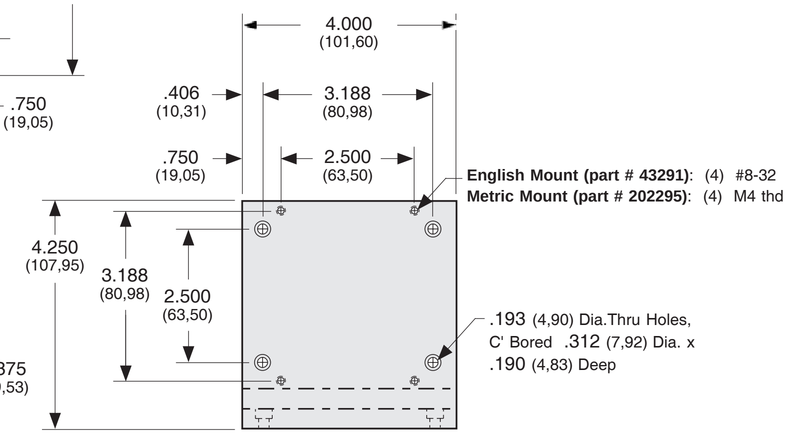
inches
(mm)

Note: This angle bracket is NOT compatible with the 110 series tables.



Material
Aluminum

Weight
1.35 lbs
(0,61 kg)

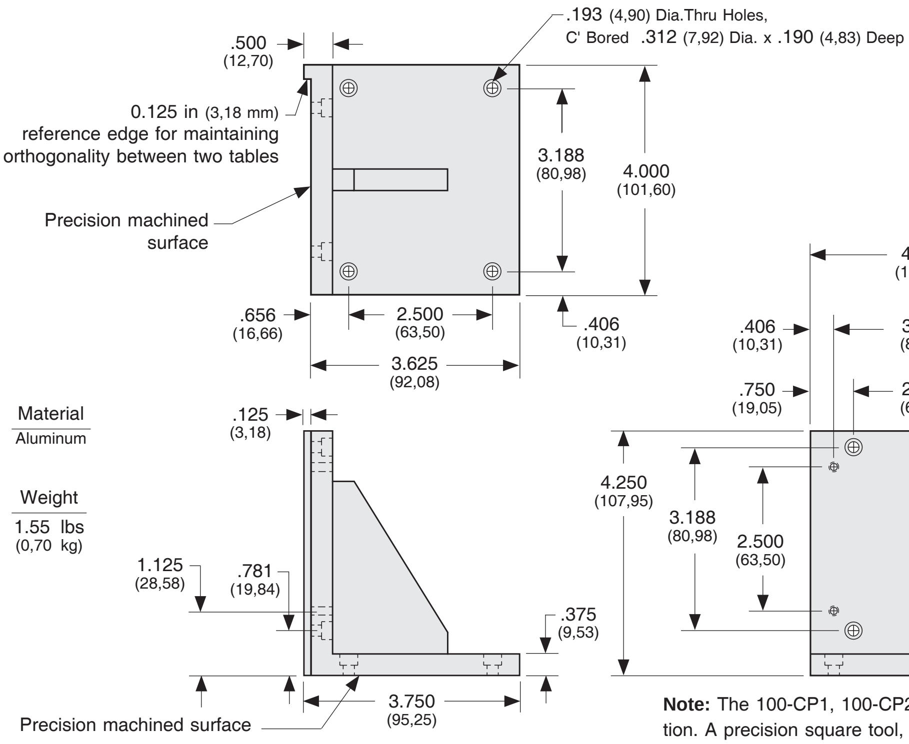


Note: The 100-CP1, 100-CP2, and 120 series require the *Carriage Adapter Plate* option. A precision square tool, or micrometer depth gauge, must be used when mounting the non-referenced side of the angle bracket to the table base, or carriage, in order to maintain the < 30 arc-seconds orthogonality between the two tables.

Vertical Angle Bracket

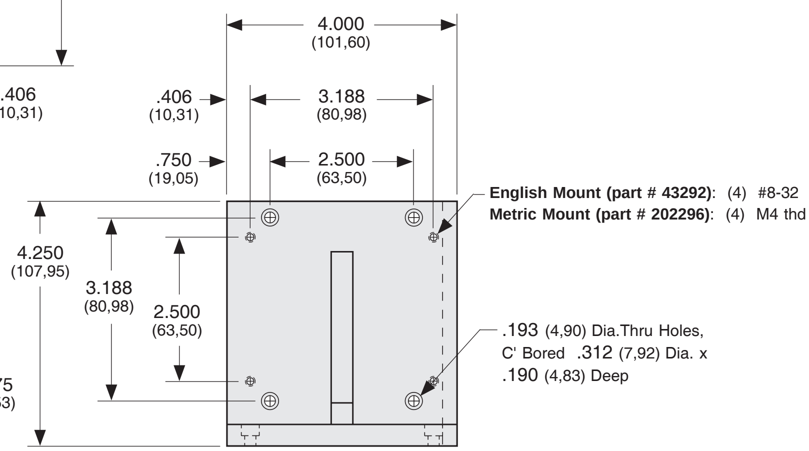
inches
(mm)

Note: This angle bracket can be modified to be compatible with the 110 series. Please contact LINTECH for details.



Material
Aluminum

Weight
1.55 lbs
(0,70 kg)



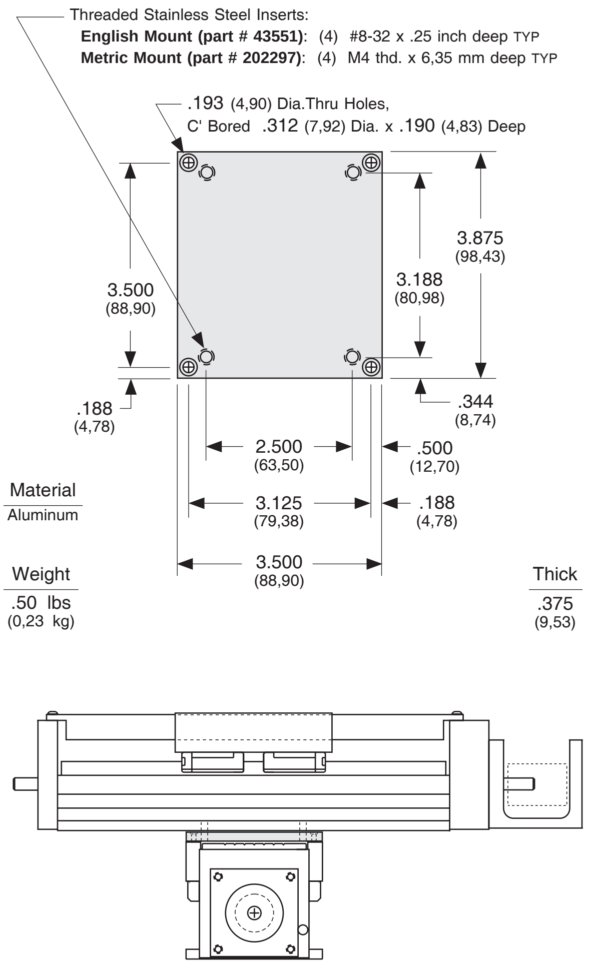
Note: The 100-CP1, 100-CP2, and 120 series require the *Carriage Adapter Plate* option. A precision square tool, or micrometer depth gauge, must be used when mounting the non-referenced side of the angle bracket to the table base, or carriage, in order to maintain the < 30 arc-seconds orthogonality between the two tables.

Carriage Adapter Plates

Optional carriage adapter plates assist in the creation of simple X-Y, X-Z, and X-Y-Z multiple axis systems. The regular carriage adapter plate can be used by either the 100-CP1, 100-CP2, or 120 series tables, while the extended adapter plate can be used with the 100, 110, or 120 series tables. The extended carriage adapter plate can be used in applications to increase the Y axis travel without having to use a longer travel table. A precision square tool, or micrometer depth gauge, is required in order to obtain an orthogonality between the two tables of < 30 arc-seconds.

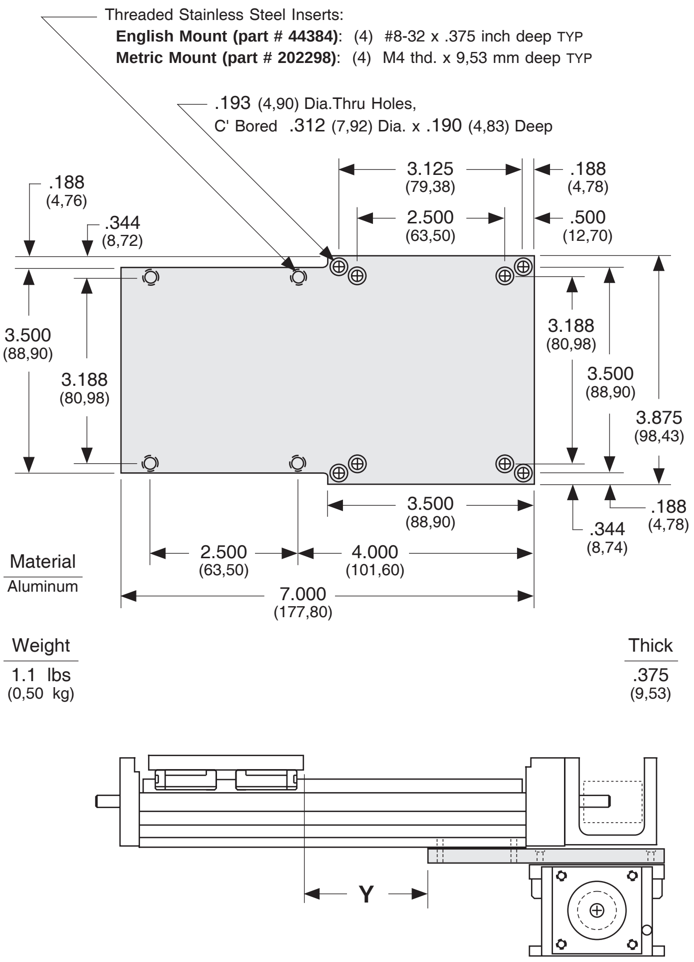
Regular Carriage Adapter Plate

inches (mm)



Extended Carriage Adapter Plate

inches (mm)



Notes:

(1) Above **Y** travel distance (need to refer to Base Mounting Dimensions on pages C-6, C-8, C-10, C-14 & C-28):

For **D** dimension = 2.50 inches (63,5 mm): **Y** = [table travel length] - [**C** dimension] + [0.50 inches (12,7 mm)]

For **D** dimension < 2.50 inches (63,5 mm): **Y** = [table travel length] - [**C** dimension] - [**D** dimension] + [0.50 inches (12,7 mm)]

- * Subtract an additional 0.875 inches (22,22 mm) from the above values if a 110 series table is used as the bottom axis.
- * If a 110 series table is used as the top axis, the **Y** travel distance is the same as the 110 series table travel due to the waycovers.
- * The extended carriage adapter plate works with all top axis tables that use the optional NEMA 23 motor mount. Care should be taken if the optional NEMA 34 motor mount, or any other motor mount is used on the top axis table. The motor mount could extend below the table base, thus interfering with the extended carriage adapter plate.

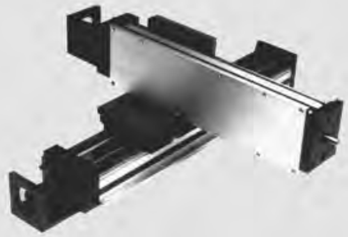
Multiple Axis Configurations

With *LinTech* 's uniquely designed angle brackets & carriage adapter plates, along with the symmetrical base mounting hole pattern & carriage insert pattern of the 100 and 120 series positioning tables, numerous X-Y, X-Z, and X-Y-Z configurations are possible. The 100-CP1, 100-CP2, and 120 series tables require the use of a "Carriage Adapter Plate". The increased width of the 110 (waycover) series prohibits the use of the horizontal and vertical angle brackets with these positioning tables.

1

2

3



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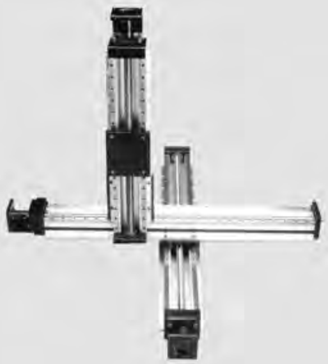

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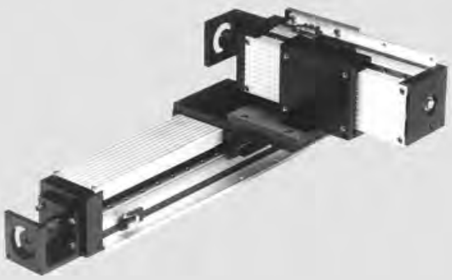

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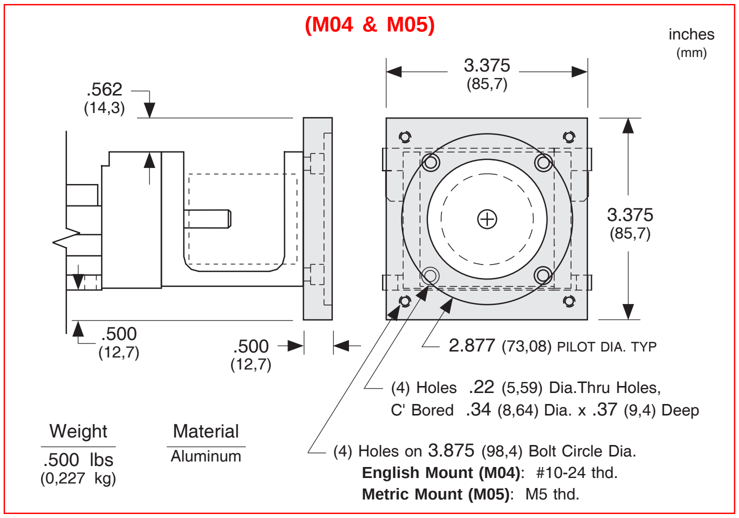
12

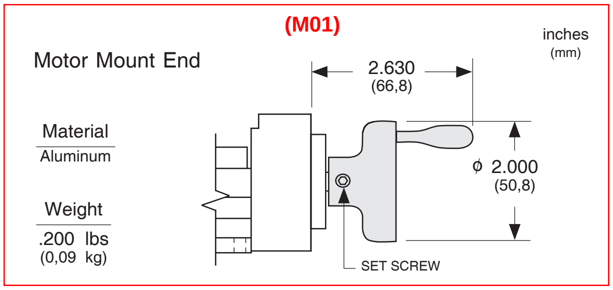
NEMA 34 Motor Mount for 100 & 110 Series

The NEMA 34 motor adapter bracket is an aluminum flange that mounts to the front of the NEMA 23 motor mount. The bracket can be ordered in either an English, or Metric motor mount. *LinTech* can provide adapter brackets for any step motor, or servo motor, that has other mounting requirements.



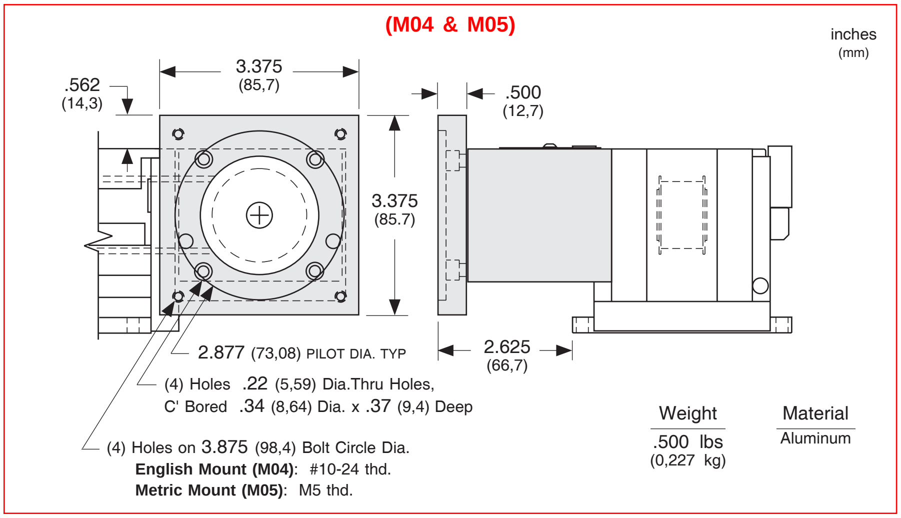
Hand Crank for 100 & 110 Series

For manually operated applications, *LinTech* provides a hand crank option for the 100 & 110 table series. The hand crank replaces the motor mount and coupling on the table.



NEMA 34 Motor Mount for 120 Series

The 120 series positioning table can be provided with an optional NEMA 34 motor adapter bracket. The bracket can be ordered in either an English, or Metric motor mount. *LinTech* can provide adapter brackets for any step motor, or servo motor, that has other mounting requirements.



Chrome Plated Linear Bearings, Rails, and Screws

For applications in high moisture, high humidity, clean room, or highly corrosive environments, chrome plating of the linear bearings, linear rails, and screw will offer superior resistance to corrosion than stainless steel components, resulting in longer table life. The process uniformly deposits dense, hard, high chromium alloy on the rails or screw, and has a Rockwell C hardness value of 67-72. This process also conforms to MIL Spec: (MIL-C-23422). The chrome plating bonds to the parent material and will not crack or peel off under the high point loading of balls on the rail, or screw. This chrome plating process differs from a normal hard chrome plate which just lays on the surface of the part plated.

Motor Wrap Packages for 100 & 110 Series

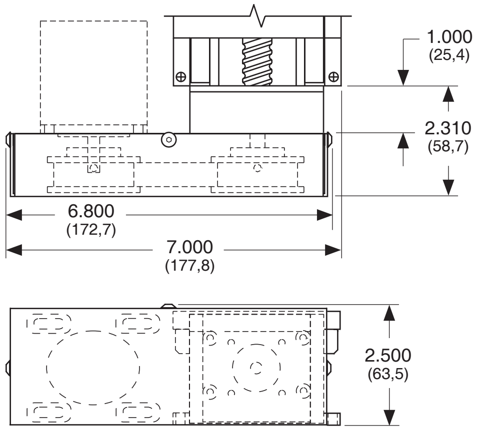
For space limited 100 & 110 series applications, a belt and pulley system can couple the screw shaft extension to the motor shaft. This wraps the motor parallel to the table in order to decrease the overall positioning system length. Pulley weights and diameters are given in order to assist in calculating motor torque requirements.

NEMA 23 Right Hand Motor Wrap 100 Series (M06)

0.7 lbs (0,32 kg) added to table weight

Motor Pulley Bore: 0.250 inch (6,35 mm)

inches (mm)

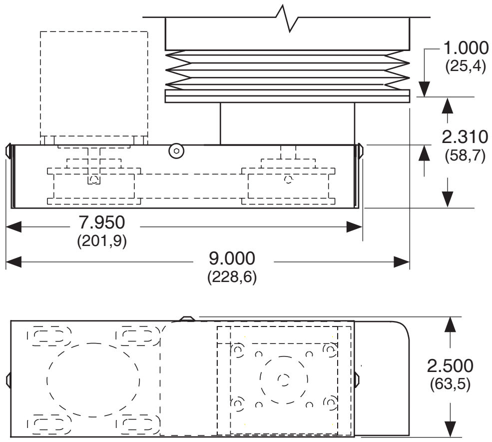


NEMA 23 Right Hand Motor Wrap 110 Series (M06)

0.9 lbs (0,41 kg) added to table weight

Motor Pulley Bore: 0.250 inch (6,35 mm)

inches (mm)

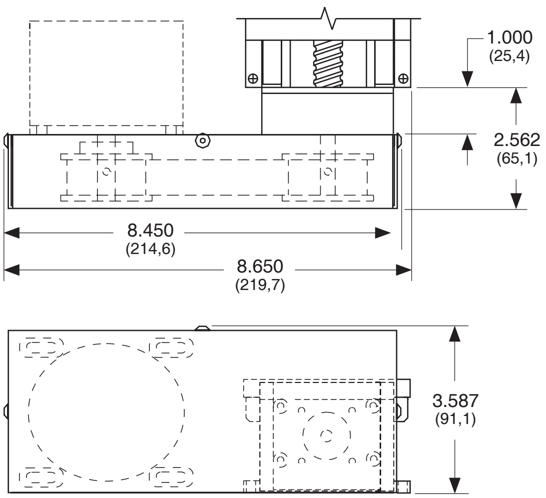


NEMA 34 Right Hand Motor Wrap 100 Series (M08)

1.1 lbs (0,50 kg) added to table weight

Motor Pulley Bore: 0.375 inch (9,52 mm)

inches (mm)

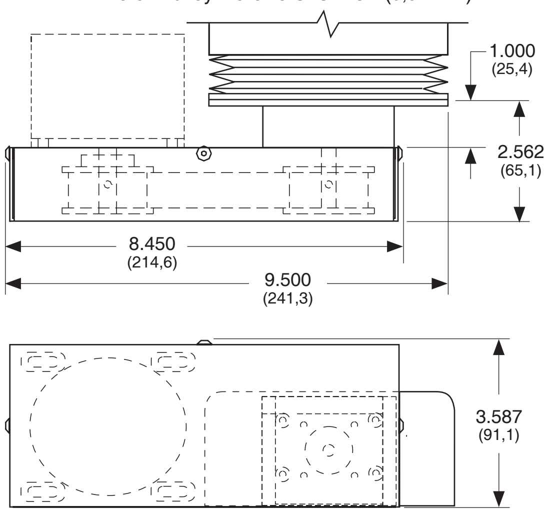


NEMA 34 Right Hand Motor Wrap 110 Series (M08)

1.1 lbs (0,50 kg) added to table weight

Motor Pulley Bore: 0.375 inch (9,52 mm)

inches (mm)



Motor Wrap Frame Size	**Motor Pulley Dia.** inches (mm)	**Motor Pulley Wt.** ounces (kg)	**Screw Pulley Dia.** inches (mm)	**Screw Pulley Wt.** ounces (kg)	**Belt Weight** ounces (kg)
NEMA 23	1.65 (41,9)	7.5 (0,21)	1.65 (41,9)	7.5 (0,21)	1.0 (0,028)
NEMA 34	1.65 (41,9)	8.0 (0,23)	1.65 (41,9)	8.0 (0,23)	1.2 (0,034)

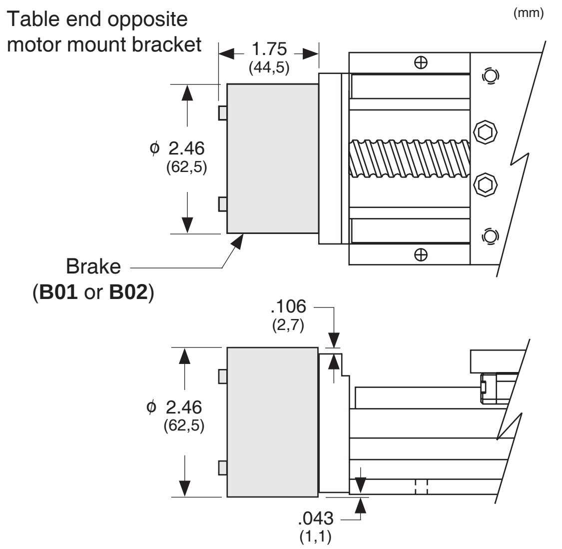
Note: Right hand motor wraps shown. The left hand wrap packages orient the motor to the opposite side of the table. Motor pulley & belt shipped "loose". No motor mount nuts & bolts are provided. Custom motor wrap packages are available upon request. Other motor pulley bores MUST be specified for non-NEMA motors.

Power-off Electric Brakes

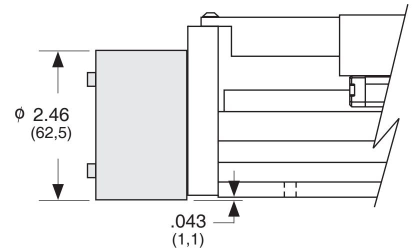
For vertical table applications, or for those applications requiring the load to be locked securely in place, an electric brake may be mounted to the positioning table. The 100 or 110 series will have the brake mounted to the screw shaft extension located on the table end, opposite the motor mount bracket. The 120 series will have the brake mounted to the thru drive shaft option. With proper wiring from a control system, this power-off friction brake can ensure that the carriage is firmly held in place, when no electric power is applied to the brake. When power is applied to the brake, the brake is opened or "released".

For proper emergency braking of the positioning table, this electric brake needs to be interfaced to a position controller or relay network. *LINTECH* also provides 24 & 90 VDC power supplies which can be used to power the brakes.

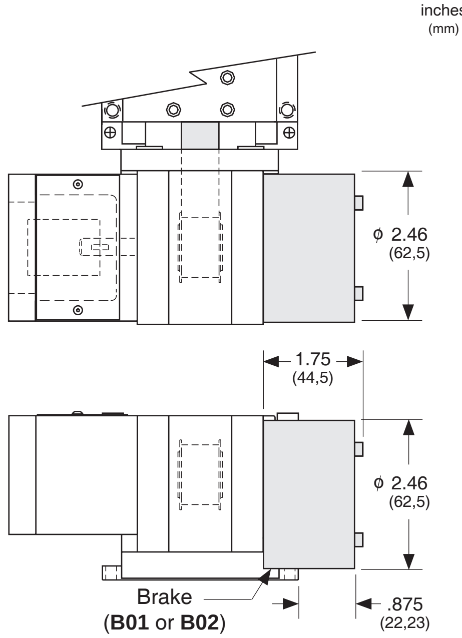
100-CP0 or 110 Series



100-CP1 or 100-CP2 Series



120 Series



Brakes

Model Number	Holding Force in-lbs (N-m)	Excitation Voltage volts	Current amps	Weight lbs (kg)
B01	18 (2,0)	24 VDC	0.733	1.4 (0,62)
B02	18 (2,0)	90 VDC	0.178	1.4 (0,62)

Note: This 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 this brake to stop a table (load) that is in motion could damage the brake and the positioning table. Dynamic braking of a positioning table should be done by the motor and not the brake.

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

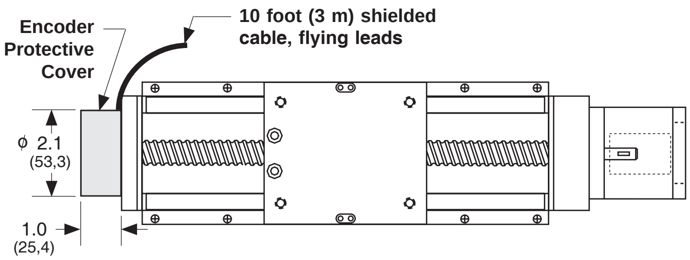
Linear & Rotary Incremental Encoders

Fully enclosed, incremental, optical linear encoders can be mounted along side any *LINTECH* 100 or 110 series table. Shaftless, incremental, optical rotary encoders can be mounted to the screw shaft extension opposite the motor mount end on the 100, 110 or 120 series positioning tables. These encoders provide positional feedback to either a motion controller, or a digital position display.

LINEAR Din Pin #	LINEAR Wire Color	ROTARY Wire Color	Description
C	*Green*	*White*	Channel A^+ (or A)
D	*Yellow*	*Blue*	Channel A^- (or $\overline{A}$)
E	*Pink*	*Green*	Channel B^+ (or B)
L	*Red*	*Orange*	Channel B^- (or $\overline{B}$)
G	*Brown*	*White/Black*	Channel Z^+ (or Z)
H	*Grey*	*Red/Black*	Channel Z^- (or $\overline{Z}$)
A	*Shield*		Case ground
B	*White*	*Black*	Common
K	*Black*	*Red*	+ 5 vdc (+/- 5%)

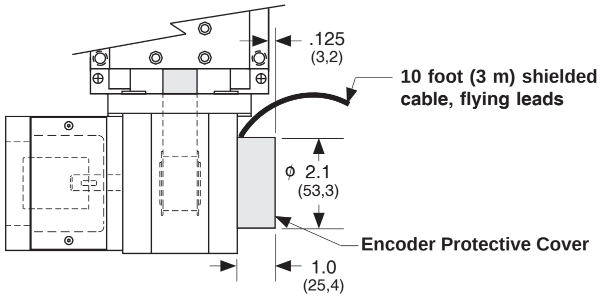
Rotary Encoder - 100 or 110 Series

inches (mm)



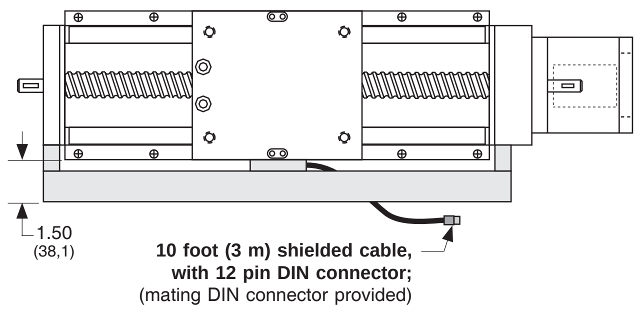
Rotary Encoder - 120 Series

inches (mm)



Linear Encoder - 100 or 110 Series

inches (mm)



Note: The encoder read head is mounted to the table carriage with the encoder lip seal facing down.

Specification	ROTARY ENCODERS E01	ROTARY ENCODERS E02	ROTARY ENCODERS E03	LINEAR ENCODERS E10	LINEAR ENCODERS E11
Line Count	500 lines/rev	1000 lines/rev	1270 lines/rev	2500 lines/inch	125 lines/mm
Pre Quadrature Resolution	0.002 revs/pulse	0.001 revs/pulse	0.00079 revs/pulse	0.0004 inch/pulse	8 microns/pulse
Post Quadrature Resolution	0.0005 revs/pulse	0,00025 revs/pulse	0.00019 revs/pulse	0.0001 inch/pulse	2 micron/pulse
Accuracy				+/- 0.0002 in/40"	+/- 5 microns/m
Maximum Speed	50 revs/sec			79 inches/sec	2 m/sec
Maximum Accel	40 $revs/sec^2$			130 ft/sec^2	40 m/sec^2
Excitation Power	+ 5 VDC @ 125 ma			+ 5 VDC @ 150 ma	
Operating Temperature	32^0 F to 140^0 F (0^0 C to 60^0 C)			32^0 F to 120^0 F (0^0 C to 50^0 C)	
Humidity	20% to 80% non condensing			20% to 80% non condensing	
Shock	10 G's for 11 msec duration			15 G's for 8 msec duration	
Weight	0.7 lbs (0,283 kg)			0.7 oz/inch (0,00078 kg/mm) length of scale + 0.5 lbs (0,23 kg) read head and brackets	
Cable Length	10 ft (3 m), unterminated 26 gauge leads			10 ft (3 m) with DIN connector	
Zero Reference Output	Once per revolution			At center of encoder length	
Outputs	TTL square wave; Two channel (A+ & B+); Differential (A- & B-); Line Driver				

Notes