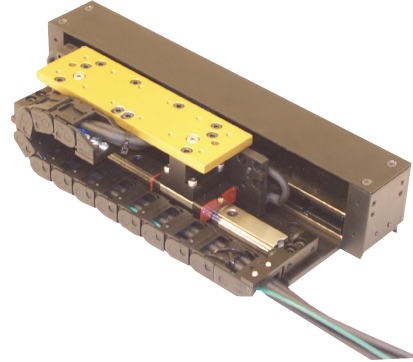


# Trilogy I-FORCE Ironless Linear Positioners

High performance and design flexibility

- Trilogy positioners use ground steel or aluminum bases for flatness and parallelism
- Single- or dual-bearing rail positioners for application flexibility
- Available with magnetic or optical encoder



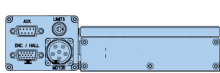
Linear Motor  
Driven Tables

- Dual-rail positioners have bellows as a standard option.
- Multiple carriage options are available on all positioner series.
- Different cable track widths available for added stiffness and rigidity
- Different cable track widths available as custom options for user payload tubes and cables

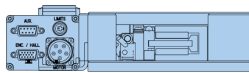
Series	T1S / T1D	T2S / T2D	T3S / T3D	T4S / T4D
Motor	110 ironless	210 ironless	310 ironless	410 ironless
Max base length (in)	33.6	120	144	137.76
Load (kg)	11.3*/13.5**	27.2*/45.3**	72*/108**	90*/181**
Acceleration (G's) ***	5	5	5	5
Velocity (m/s) †	up to 3	up to 5	up to 5	up to 5
Peak force (N)	202.5	494.2	1170.0	3928.1
Continuous force (N)	45.4	110.3	262.0	878.6
Resolution (micron)	0.1 to 5.0	0.1 to 5.0	0.1 to 5.0	0.1 to 5.0
Repeatability (micron) ‡	±1	±1	±1	±1

\* Single rail load specifications  
 \*\* Dual rail load specifications  
 \*\*\* Consult factory for higher accelerations

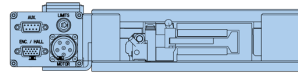
† Peak velocity is encoder dependent  
 ‡ Repeatability is resolution dependent



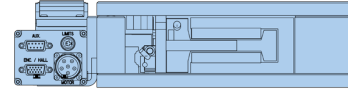
T1D/T1S



T2D/T2S



T3D/T3S



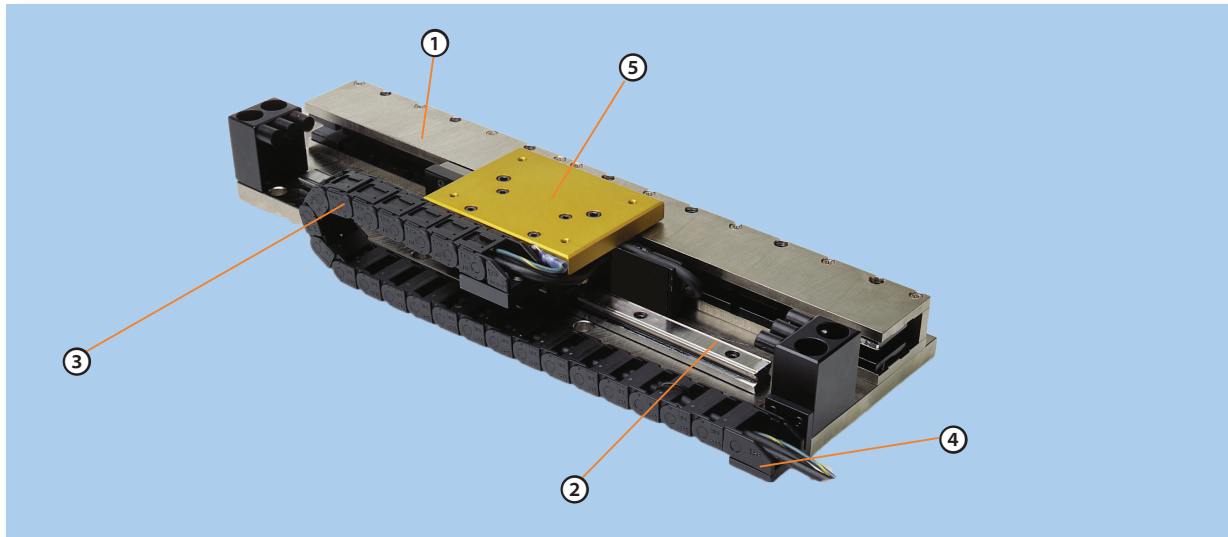
T4D/T4S

Parker Trilogy's I-Force linear positioners utilize our high-performance I-Force ironless linear motors in a pre-engineered, easily integrated, ready-to-run package. The principal design goal for these positioners is to achieve high performance at an economical cost while preserving the design flexibility to accommodate customization.

Trilogy's positioners have selectable single- or dual-bearing to match the performance and cost requirements for each application. In addition, they are designed to connect together using transition plates for XY or multi-axis configurations. Options include a variety of cable management systems in addition

to bellows and hard covers. Consult the factory for more details on the bellows positioner option (2D, 3D, and 4D positioners).

Flexibility, multi-axis compatibility, and ease of customization make the I-Force linear positioners a superior choice for high performance and value.



- ① Trilogy positioners use **ground steel or aluminum bases** for flatness and parallelism because aluminum extrusions often do not meet the accuracy requirements for straightness and flatness.
- ② Trilogy has **single- or dual-bearing rail positioners** to better match the performance and cost requirements for each application
- ③ **Flexible cable management system** for various customer options
- ④ **Single rail of high energy rare earth magnets** offers lower weight and lower cost than double magnet type.
- ⑤ **Multiple carriage options** available for each Trilogy Series model

Trilogy positioners are powered by Trilogy I-FORCE Ironless Linear Motors



For detailed specifics on standalone Trilogy Linear Motors, visit [http://bit.ly/AT\\_IM](http://bit.ly/AT_IM).

Series	I-Force Ironless
<b>Continuous force</b>	5.5 to 197.5 lbf (24.5 to 878.6 N)
<b>Peak force</b>	45.5 to 883 lbf (202.5 to 3928 N)
<b>Cogging force</b>	Zero
<b>Attractive force</b>	Zero
<b>Magnet tracks</b>	Dual
<b>Heat dissipation</b>	Good
<b>Applications</b>	Rapid accelerations, extremely smooth motion

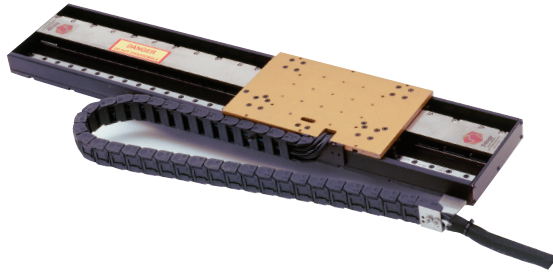
## SPECIFICATIONS

## SPECIFICATIONS

### T1D

PERFORMANCE		LINEAR MAGNETIC ENCODER		LINEAR OPTICAL ENCODER OPTIONS (NOTE 5)	
		5.0µm	1.0µm	5.0µm	1.0µm
<b>Peak Velocity</b>	in/s (m/s)	275 (7)	100 (2.5)	196 (5)	120 (3)
<b>Resolution</b>	in (µm)	0.0002 (5)	0.000 04 (1.0)	0.000 02 (0.5)	0.000 004 (0.1)
<b>Repeatability</b>	in (µm)	±0.0004 (±10)	±0.000 8 (2.0)	±0.000 06 (1.5)	±0.000 04 (1.0)
<b>Accuracy – Magnetic</b>	±(30µm +50µm/m) ± (25µm +50µm/m)				
<b>Accuracy – Optical</b>	±(5µm +30µm/m)				

Note: For travels less than 1 meter, accuracy should be calculated at 1 meter



MOTOR MODEL		110-1	110-2
<b>Peak Force</b>	N	108.5	202.5
	lb	24.4	45.5
<b>Continuous Force</b>	N	24.5	45.4
	lb	5.5	10.2
<b>Peak Power</b>	W	938	1641
<b>Continuous Power</b>	W	47	82

Linear Motor Driven Tables

### ACCURACY

#### STANDARD

#### LASER ALIGNMENT OPTION

Straightness restrained on flat surface in (µm)	±.000127 in/in (±127µm/m)	±.000013 in/in (±13µm/m)
Flatness restrained on flat surface in (µm)	±0.013 (±330)	

Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

### PHYSICAL

#### - 1

#### - 2

<b>Carriage Assembly</b>	lbs (kg)	Please consult factory for weight.	
<b>Base Assembly</b>			
T1DA Aluminum (0.375" thick)	lbs/ft (kg/m)	Please consult factory for weight.	
<b>Carriage Assembly</b>	in (mm)	5.4 (137.2)	7.8 (198.1)
<b>Coil Bar Length</b>	in (mm)	3.20 (81.3)	5.60 (142.2)

### LOAD

<b>Vertical (Fv) see note 11</b>	lbs (kg)	30 (13.5)	30 (13.5)
<b>Side (Fs) see note 11</b>	lbs (kg)	15 (6.8)	15 (6.8)
<b>Moments - Roll (Mr) see note 11</b>	Lb-ft (N-m)	15 (20)	15 (20)
<b>Moments - Pitch (Mp) see note 11</b>	Lb-ft (N-m)	52 (70)	52 (70)
<b>Moments - Yaw (My) see note 11</b>	Lb-ft (N-m)	52 (70)	52 (70)

- Total travel = OAL - .45" (11.43 mm) – carriage length.
- Maximum base length is 33.6" (853.4 mm).
- Aluminum base is black anodized.
- For complete motor specifications, refer to 110 series motor data sheet.
- Optical encoder, RGH series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cables extend past base by approximately 0.6" when carriage is at negative hard stop.
- Cable Track extends 0.280" higher than carriage mounting surface. Space must be taken into account when mounting load.

- Standard cable track provided is 20mm wide 18mm BR.
- Base mounting holes are equidistant, 1.200" (12.0, 16.8, 21.6....) or 2.400" (9.6, 14.4, 19.2, 24.0....) from each end depending on base length.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.
- For high load, high speed applications, customer-supplied deceleration shocks are required (not included with product).
- The repeatability for the home switch is estimated to be +/- 10-20 microns. However, repeatability of the home switch does not dictate the system or encoder repeatability.



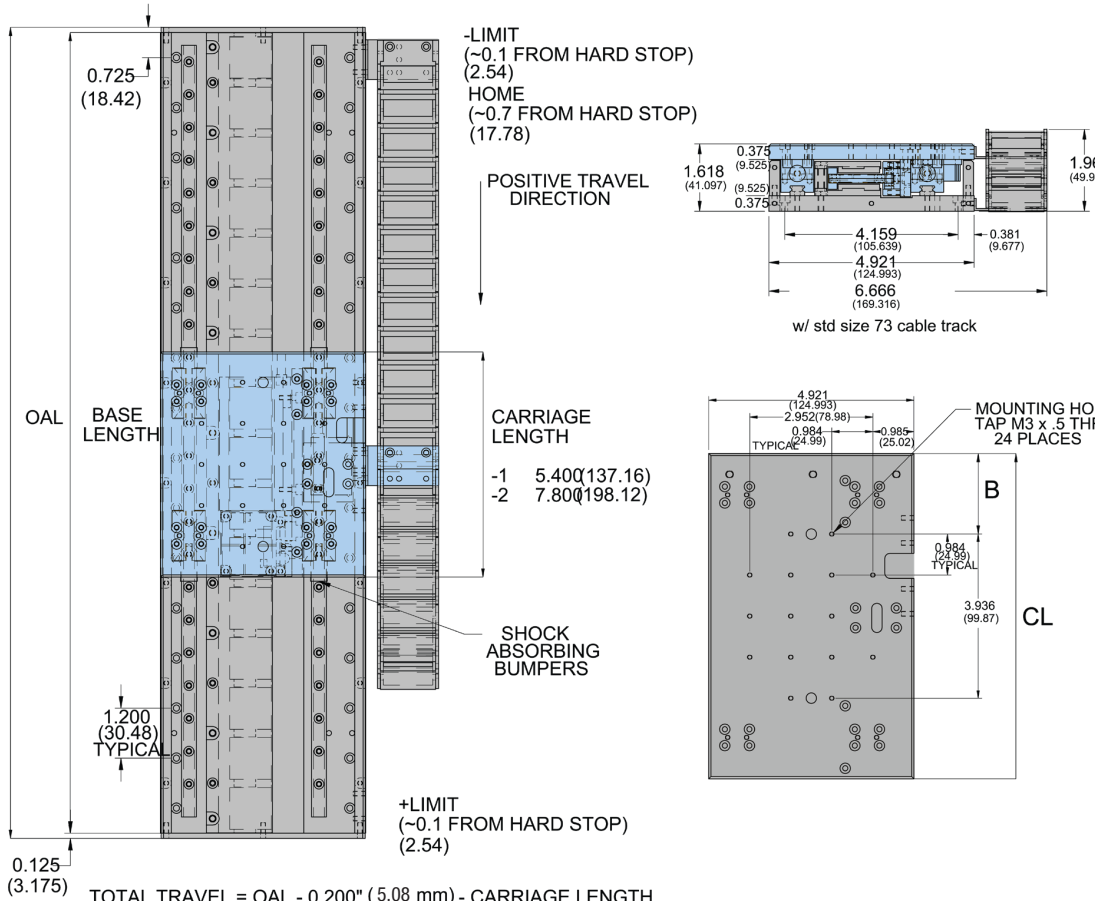
# DIMENSIONS

## T1D

Dimensions shown in inches.

- Moving Carriage Assembly
- Stationary Base Assembly

Dimensions – mm (in)



TOTAL TRAVEL = OAL - 0.200" (5.08 mm) - CARRIAGE LENGTH  
 OAL = BASE LENGTH + 0.250" (6.35 mm)  
 BASE LENGTH = MULTIPLE OF 2.400" (60.96)

### CARRIAGE SIZE

	- 1	mm	- 2	mm
<b>CL</b>	5.400	137.16	7.800	198.12
<b>B</b>	0.732	18.59	1.932	49.07
<b>Coil</b>	110-1	110-1	110-2	110-2

Free sizing and selection support  
 from Virtual Engineer at  
[parker.com/VirtualEngineer](http://parker.com/VirtualEngineer)



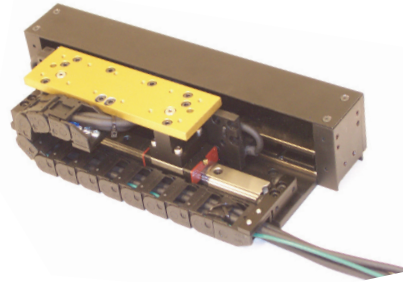
# SPECIFICATIONS

## T1S

PERFORMANCE		LINEAR MAGNETIC ENCODER		LINEAR OPTICAL ENCODER OPTIONS (NOTE 5)	
		5.0µm	1.0µm	5.0µm	1.0µm
Peak Velocity	in/s (m/s)	275 (7)	100 (2.5)	196 (5)	120 (3)
Resolution	in (µm)	0.0002 (5)	0.000 04 (1.0)	0.000 02 (0.5)	0.000 004 (0.1)
Repeatability	in (µm)	±0.0004 (±10)	±0.000 8 (2.0)	±0.000 06 (1.5)	±0.000 04 (1.0)
Accuracy – Magnetic		±(30µm +50µm/m)		±(25µm +50µm/m)	
Accuracy – Optical		±(5µm +30µm/m)			

Note: For travels less than 1 meter, accuracy should be calculated at 1 meter

MOTOR MODEL		110-1	110-2
Peak Force	N	108.5	202.5
	lb	24.4	45.5
Continuous Force	N	24.5	45.4
	lb	5.5	10.2
Peak Power	W	938	1641
Continuous Power	W	47	82



Linear Motor Driven Tables

ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in [µm]	±0.000127 in/in (±127µm/m)	±.000013 in/in (±13µm/m)
Flatness restrained on flat surface in [µm]	±0.013 (±330)	

Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

PHYSICAL		- 2	- 3
Carriage Assembly	lbs (kg)	1.1 (0.50)	1.5 (0,68)
Base Assembly			
T1SA Aluminum (0.375" thick)	lbs/ft (kg/m)	2.8 (1.3)	2.8 (1.3)
Carriage Assembly	in (mm)	3.40 (86.4)	5.80 (147.3)
Coil Bar Length	in (mm)	3.20 (81.3)	5.60 (142.2)

LOAD		- 1	- 2
Vertical (Fv) see note 11	lbs (kg)	25 (11.3)	25 (11.3)
Side (Fs) see note 11	lbs (kg)	13 (5.7)	13 (5.7)
Moments - Roll (Mr) see note 11	Lb-ft (N-m)	11 (15)	11 (15)
Moments - Pitch (Mp) see note 11	Lb-ft (N-m)	44 (60)	44 (60)
Moments - Yaw (My) see note 11	Lb-ft (N-m)	44 (60)	44 (60)

- Total travel = OAL – 2.85" (72.39 mm) – carriage length.
- Maximum base length is 33.6" (853.4mm).
- Aluminum base is black anodized.
- For complete motor specifications, refer to 110 series motor data sheet.
- Optical encoder, RGH series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cables extend past base by approximately 0.6" when carriage is at negative hard stop.
- Standard cable track provided is 33mm wide 18mm BR.
- Base mounting holes are equidistant, 1.200" (12.0, 16.8, 21.6...) or 2.400" (9.6, 14.4, 19.2, 24.0...) from each end depending on base length.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.
- For high load, high speed applications, customer-supplied deceleration shocks are required (not included with product).
- The repeatability for the home switch is estimated to be +/- 10-20 microns. However, repeatability of the home switch does not dictate the system or encoder repeatability.



# DIMENSIONS

## T1S

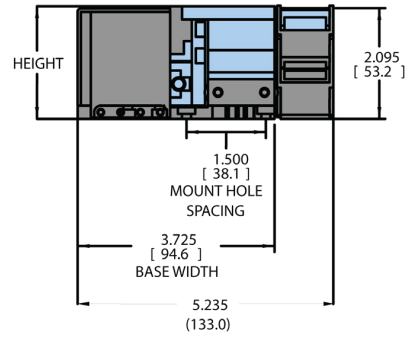
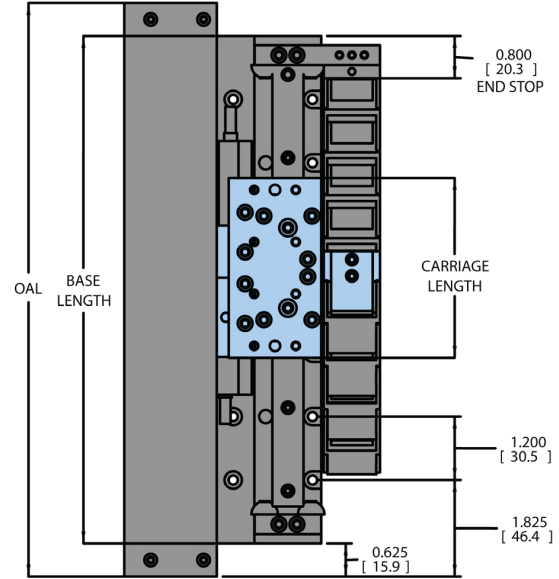
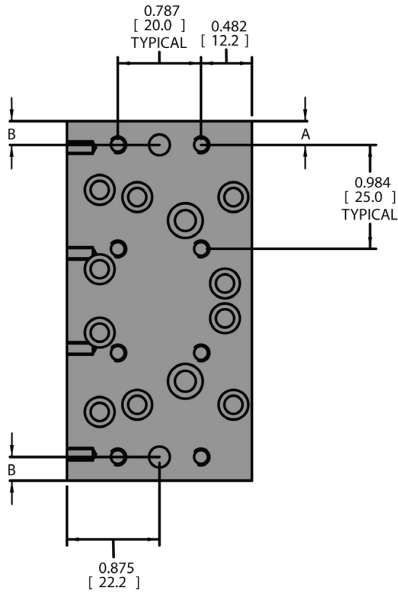
Dimensions shown in inches.

- Moving Carriage Assembly
- Stationary Base Assembly

$$OAI = \text{BASE LENGTH} + 1.25 \text{ IN (31.75)}$$

$$\text{TRAVEL} = \text{BASE LENGTH} - 1.6 - \text{CARRIAGE LENGTH}$$

$$\text{TRAVEL (mm)} = \text{BASE LENGTH} - 40.64 - \text{CARRIAGE LENGTH}$$



### COIL SIZE

	- 1	- 2
<b>CARRIAGE LENGTH</b>	3.4 (86.4)	5.8 (147.3)
<b>A (1ST MOUNTING HOLE)</b>	0.224 (5.7)	0.440 (11.2)
<b>B (DOWEL PIN HOLE)</b>	0.224 (5.7)	0.440 (11.2)

Free sizing and selection support from Virtual Engineer at [parker.com/VirtualEngineer](http://parker.com/VirtualEngineer)



## ORDERING INFORMATION

ORDERING INFORMATION

### T1D/T1S

Fill in an order code from each of the numbered fields to create a complete model order code for T1D/T1S.

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

**Order Example:** T 1 D A 012 3 N S B A G 2

① **Series**  
T Open Positioner

② **Motor Coil Series**  
1 110 Motor Coil

③ **Bearing Rail Configuration**  
D Dual Bearing Rails  
S Single Bearing Rails

④ **Base Material**  
A 0.375" Al

⑤ **Length of Base**  
XXX Length of base in inches\*  
Maximum: 33.6"  
Minimum: 9.6"  
Increment: 2.4"  
**T1S Base Length (increments of 2.4" [60.96mm]) =**  
Travel + Carriage Length + 1.6" [40.64mm]  
**T1D Base Length (increments of 2.4" [60.96mm]) =**  
Travel + Carriage Length + 0.2" [5.08mm]  
\*Truncate base length in part number. Example: for a 16.8 inch base, "XXX" equals "016"

⑥ **Coil Size**                      **Carriage Length**  
1                      1 pole                      T1S 3.4" (86.4mm)  
2                      2 pole                      T1S 5.8" (147.3mm)  
                         1 pole                      T1D 5.4" (137.6mm)  
                         2 pole                      T1D 7.8" (198.12mm)

⑦ **Cooling**  
N No cooling

⑧ **Winding Type**  
S Series  
P Parallel

⑨ **Encoder**  
A Magnetic 1µm  
B Magnetic 5µm  
Q Optical 5µm  
L Optical 1µm  
M Optical 0.5µm  
P Optical 0.1µm  
R Optical 1 V p-p sine/cosine  
X No encoder

⑩ **Cable Length**  
A 1 Meter  
B 3 Meter  
C 7.5 Meter  
L 3 Meter Extension Cables (with Connector Box)  
M 7.5 Meter Extension Cables (with Connector Box)  
Z Connector Box ONLY (no cables)  
\*Options A, B, C: cable measured from last cable carrier link  
\*Options L, M: cable measured from connection box at end of base.

⑪ **Cable Connectorization**  
A P-Series DC  
B Flying Leads  
C HD15M-CF12 Connector  
G Gemini  
V HD15M-VF Connector  
Z No cables  
Notes - HD15M-VF Connector compatible with IPA, Vix and Aries Feedback Connector  
HD15M-CF12 Connector compatible with Compax 3 F12 Feedback Connector  
MD14-PF Connector compatible with P Series (PD-xxP) Feedback Connector

⑫ **Cable Track**  
0 None  
2 Standard

Linear Motor Driven Tables

Free sizing and selection support  
from Virtual Engineer at  
[parker.com/VirtualEngineer](http://parker.com/VirtualEngineer)

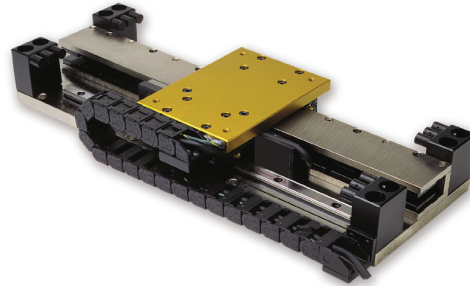


## T2D

PERFORMANCE		LINEAR MAGNETIC ENCODER		LINEAR OPTICAL ENCODER OPTIONS (NOTE 5)	
		5.0µm	1.0µm	5.0µm	1.0µm
<b>Peak Velocity</b>	in/s (m/s)	275 (7)	100 (2.5)	196 (5)	120 (3)
<b>Resolution</b>	in (µm)	0.0002 [5]	0.000 04 (1.0)	0.000 02 (0.5)	0.000 004 (0.1)
<b>Repeatability</b>	in (µm)	±0.0004 [±10]	±0.000 8 (2.0)	±0.000 06 (1.5)	±0.000 04 (1.0)
<b>Accuracy – Magnetic</b>		±(30µm +50µm/m)		±(5µm +30µm/m)	
<b>Accuracy – Optical</b>		±(5µm +30µm/m)			

Note: For travels less than 1 meter, accuracy should be calculated at 1 meter

MOTOR MODEL		210-2	210-3	210-4
<b>Peak Force</b>	N	255.8	375.0	494.2
	lb	57.5	84.3	111.1
<b>Continuous Force</b>	N	57.4	84.1	110.3
	lb	12.9	18.9	24.8
<b>Peak Power</b>	W	1583	2261	2940
<b>Continuous Power</b>	W	79	113	147



### ACCURACY

	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in (µm)	±0.000127 in/in (±127µm/m)	±.000013 in/in (±13µm/m)
Flatness restrained on flat surface in (µm)	±0.003 + .000254 in/in (±76 + 254µm/m)	

Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

### PHYSICAL

		- 2	- 3	- 4
<b>Carriage Assembly</b>	lbs (kg)	3.1 (1.4)	4.1 (1.9)	5.5 (2.5)
<b>Base Assembly</b>				
T2DA Aluminum (0.375" thick)	lbs/ft (kg/m)	10.8 (4.9)	10.8 (4.9)	10.8 (4.9)
<b>Carriage Assembly</b>	in (mm)	4.20 (106.7)	6.60 (167.6)	9.00 (228.6)
<b>Coil Bar Length</b>	in (mm)	7.20 (182.9)	9.60 (243.8)	12.00 (304.8)

### LOAD

		- 2	- 3	- 4
<b>Vertical (Fv) see note 11</b>	lbs (kg)	60 (27.1)	80 (36.3)	100 (45.3)
<b>Side (Fs) see note 11</b>	lbs (kg)	40 (18.1)	60 (27.2)	60 (27.2)
<b>Moments - Roll (Mr) see note 11</b>	Lb-ft (N-m)	40 (53)	60 (80)	60 (80)
<b>Moments - Pitch (Mp) see note 11</b>	Lb-ft (N-m)	100 (34)	200 (270)	200 (270)
<b>Moments - Yaw (My) see note 11</b>	Lb-ft (N-m)	100 (34)	200 (270)	200 (270)

- Total travel = OAL – 3.00" (76.2 mm) – carriage length.
- Maximum base length is 120" (3048 mm).
- Aluminum base is black anodized.
- For complete motor specifications, refer to 210 series motor data sheet.
- Optical encoder, RGH series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cables extend past base by approximately 0.6" when carriage is at negative hard stop.
- Cable Track extends 0.15" higher than carriage mounting surface. Space must be taken into account when mounting load.
- Standard cable track provided is 30mm wide 18mm BR.
- Base mounting holes are equidistant, 1.200" (12.0, 16.8, 21.6...) or 2.400" (9.6, 14.4, 19.2, 24.0...) from each end depending on base length.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.
- For high load, high speed applications, customer-supplied deceleration shocks are required (not included with product).
- The repeatability for the home switch is estimated to be +/- 10-20 microns. However, repeatability of the home switch does not dictate the system or encoder repeatability.





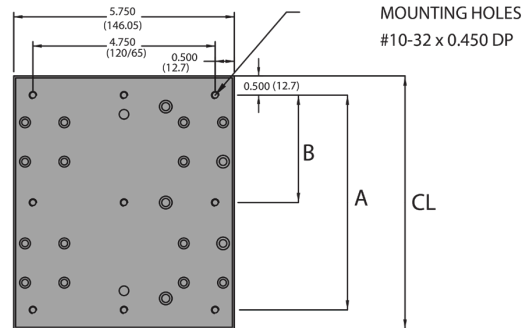
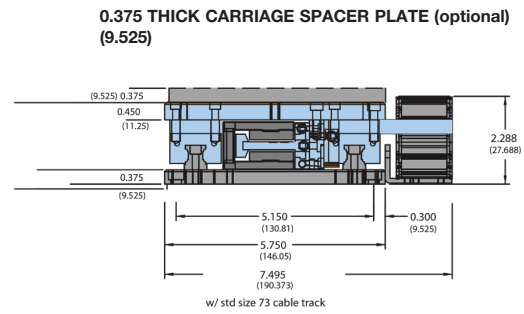
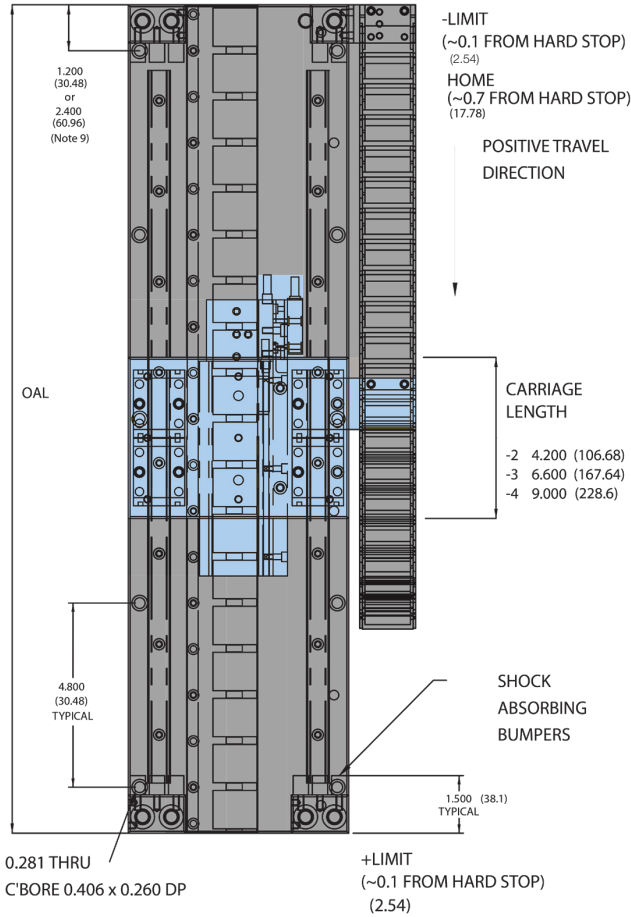
# DIMENSIONS

## T2D

Dimensions shown in inches.

Moving Carriage Assembly

Stationary Base Assembly



TOTAL TRAVEL = OAL - 3.00" (76.2 mm) - CARRIAGE LENGTH  
 OAL = MULTIPLE OF 2.400" (60.96)

### CARRIAGE SIZE

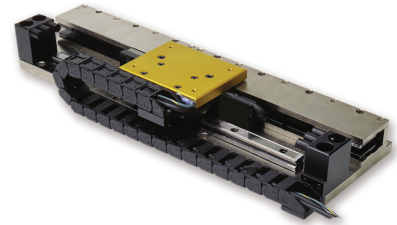
	- 2	mm	- 3	mm	- 4	mm
<b>CL</b>	4.200	106.68	6.600	167.64	9.00	228.6
<b>A</b>	3.200	81.28	5.600	142.24	8.00	203.80
<b>B</b>	—	—	2.800	71.12	4.0	101.60
<b>Coil</b>	210-2		210-3		210-4	

## T2S

PERFORMANCE		LINEAR MAGNETIC ENCODER		LINEAR OPTICAL ENCODER OPTIONS (NOTE 5)	
		5.0µm	1.0µm	5.0µm	1.0µm
Peak Velocity	in/s (m/s)	275 (7)	100 (2.5)	196 (5)	120 (3)
Resolution	in (µm)	0.0002 (5)	0.000 04 (1.0)	0.000 02 (0.5)	0.000 004 (0.1)
Repeatability	in (µm)	±0.0004 (±10)	±0.000 8 (2.0)	±0.000 06 (1.5)	±0.000 04 (1.0)
Accuracy – Magnetic		±(30µm +50µm/m)			
Accuracy – Optical				±(5µm +30µm/m)	

Note: For travels less than 1 meter, accuracy should be calculated at 1 meter

MOTOR MODEL		210-2	210-3	210-4
Peak Force	N	255.8	375.0	494.2
	lb	57.5	84.3	111.1
Continuous Force	N	57.4	84.1	110.3
	lb	12.9	18.9	24.8
Peak Power	W	1583	2261	2940
Continuous Power	W	79	113	147



ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in (µm)	±0.000127 in/in (±127µm/m)	±.000013 in/in (±13µm/m)
Flatness restrained on flat surface in (µm)	±0.003 + .000254 in/in (±76 + 254µm/m)	

Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

PHYSICAL		- 2	- 3	- 4
Carriage Assembly	lbs(kg)	2.1 (0.9)	3.1 (1.4)	3.8 (1.7)
Base Assembly				
T2SA Aluminum (0.375" thick)	lbs/ft (kg/m)	9.10 (4.2)	9.10 (4.2)	9.10 (4.2)
Carriage Assembly	in (mm)	4.20 (106.7)	6.60 (167.6)	9.00 (228.6)
Coil Bar Length	in (mm)	7.20 (182.9)	9.60 (243.8)	12.00 (304.8)

LOAD		- 2	- 3	- 4
Vertical (Fv) see note 11	lbs (kg)	40 (18.1)	50 (22.7)	60 (27.2)
Side (Fs) see note 11	lbs (kg)	20 (9.1)	30 (13.6)	30 (13.6)
Moments - Roll (Mr) see note 11	Lb-ft (N-m)	20 (27)	30 (40)	30 (40)
Moments - Pitch (Mp) see note 11	Lb-ft (N-m)	50 (67)	100 (135)	100 (135)
Moments - Yaw (My) see note 11	Lb-ft (N-m)	50 (67)	100 (135)	100 (135)

- Total travel = OAL – 3.00" (76.2 mm) – carriage length.
- Maximum base length is 120" (3048 mm).
- Aluminum base is black anodized.
- For complete motor specifications, refer to 210 series motor data sheet.
- Optical encoder, RGH series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cables extend past base by approximately 0.6" when carriage is at negative hard stop.
- Cable Track extends 0.15" higher than carriage mounting surface. Space must be taken into account when mounting load.
- Standard cable track provided is 30mm wide 18mm BR.
- Base mounting holes are equidistant, 1.200" (12.0, 16.8, 21.6....) or 2.400" (9.6, 14.4, 19.2, 24.0....) from each end depending on base length.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.
- For high load, high speed applications, customer-supplied deceleration shocks are required (not included with product).
- The repeatability for the home switch is estimated to be +/- 10-20 microns. However, repeatability of the home switch does not dictate the system or encoder repeatability.

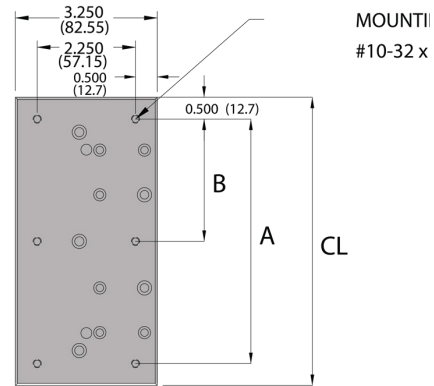
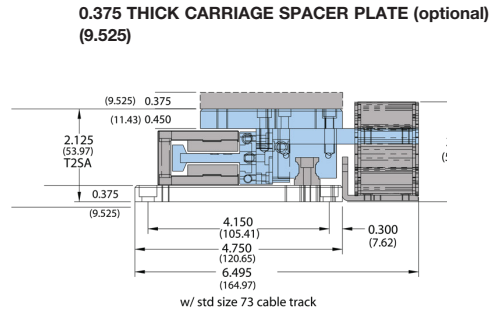
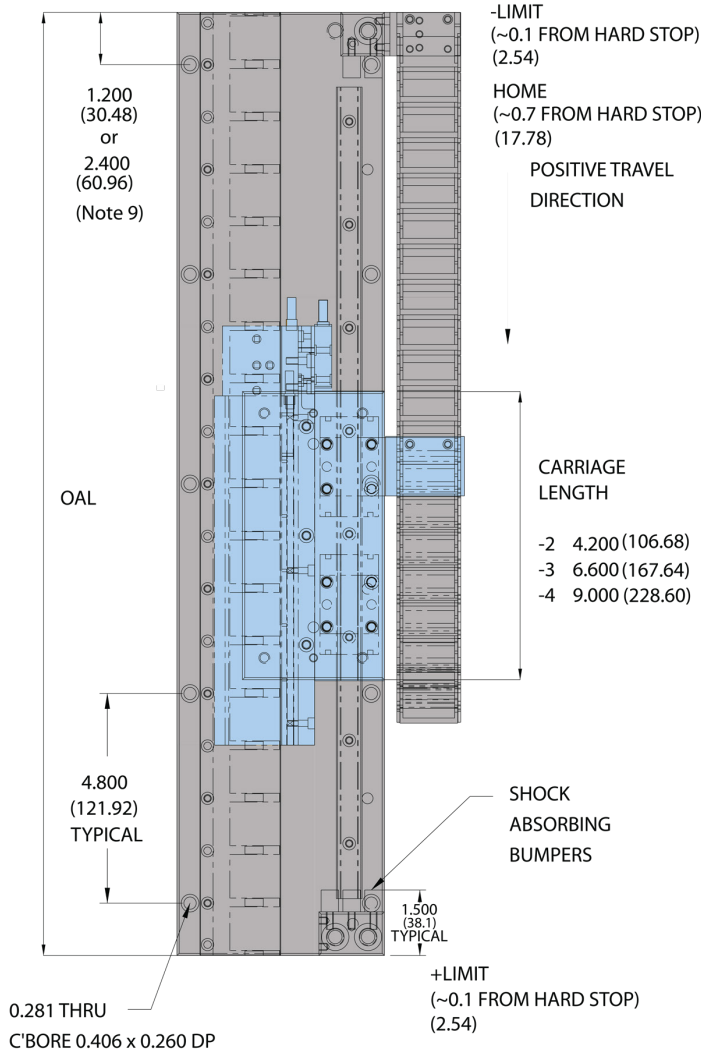


## DIMENSIONS T2S

**Dimensions shown in inches.**

**Moving Carriage Assembly**

**Stationary Base Assembly**



TOTAL TRAVEL = OAL - 3.00" - CARRIAGE LENGTH  
 = OAL - 76.2 mm - CARRIAGE LENGTH  
 OAL = MULTIPLE OF 2.400" (60.96)

### CARRIAGE SIZE

	- 2	mm	- 3	mm	- 4	mm
<b>CL</b>	4.200	106.68	6.600	167.64	9.00	228.6
<b>A</b>	3.200	81.28	5.600	142.24	8.00	203.80
<b>B</b>	—	71.12	2.800	101.60	4.00	101.64
<b>Coil</b>	210-2		210-3		210-4	

## ORDERING INFORMATION

### T2D/T2S

Fill in an order code from each of the numbered fields to create a complete model order code **for T2D/T2S**.

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

**Order Example:**

T 2 D A 012 3 N S B A B 3

- ① **Series**  
**T** Open Positioner  
**B** Bellows Positioner available - consult factory for details

- ② **Motor Coil Series**  
**2** 210 Motor Coil

- ③ **Bearing Rail Configuration**  
**D** Dual Bearing Rails  
**S** Single Bearing Rails

- ④ **Base Material**  
**A** 0.375" Al

- ⑤ **Length of Base**  
**XXX** Length of base in inches\*  
 Maximum: 120.0" \*  
 Minimum: 9.6"  
 Increment: 2.4"  
**Base Length (increments of 2.4" [60.96mm]) =**  
 Travel + Carriage Length + 3.0" [76.2mm]  
 \*Truncate base length in part number. Example: for a 16.8 inch base, "XXX" equals "016"  
 \*Consult factory for longer lengths.

- ⑥ **Coil Size**                      **Carriage Length**  
**2**      2 pole                      4.2" (106.68mm)  
**3**      3 pole                      6.6" (106.64mm)  
**4**      4 pole                      9.0" (228.60mm)

- ⑦ **Cooling**  
**N** No cooling

- ⑧ **Winding Type**  
**S** Series  
**P** Parallel

- ⑨ **Encoder**  
**A** Magnetic 1µm  
**B** Magnetic 5µm  
**Q** Optical 5µm  
**L** Optical 1µm  
**M** Optical 0.5µm  
**P** Optical 0.1µm  
**R** Optical 1 V p-p sine/cosine  
**X** No encoder

- ⑩ **Cable Length**  
**A** 1 Meter  
**B** 3 Meter  
**C** 7.5 Meter  
**L** 3 Meter Extension Cables (with Connector Box)  
**M** 7.5 Meter Extension Cables (with Connector Box)  
**Z** Connector Box ONLY (no cables)

\*Options A, B, C: cable measured from last cable carrier link

\*Options L, M: cable measured from connection box at end of base.

\*7.5 Meter Flying Lead Cables available on:

- All bases with Magnetic encoder
- All bases with Optical encoder under 86"
- For bases with Optical encoder over 86" the cable length will be CL = 10M - (base length in meters + 0.3M)

- ⑪ **Cable Connectorization**

- A** P-Series DC  
**B** Flying Leads  
**C** HD15M-CF12 Connector  
**G** Gemini  
**V** HD15M-VF Connector  
**Z** No cables

Notes - HD15M-VF Connector compatible with IPA, Vix and Aries Feedback Connector  
 HD15M-CF12 Connector compatible with Compax 3 F12 Feedback Connector  
 MD14-PF Connector compatible with P Series (PD-xxP) Feedback Connector

- ⑫ **Cable Track**

- 0** None  
**3** Standard

Free sizing and selection support  
 from Virtual Engineer at  
[parker.com/VirtualEngineer](http://parker.com/VirtualEngineer)



## SPECIFICATIONS

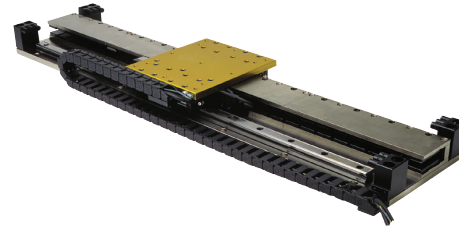
## SPECIFICATIONS

### T3D

PERFORMANCE		LINEAR MAGNETIC ENCODER		LINEAR OPTICAL ENCODER OPTIONS (NOTE 5)	
		5.0µm	1.0µm	5.0µm	1.0µm
Peak Velocity	in/s (m/s)	275 (7)	100 (2.5)	196 (5)	120 (3)
Resolution	in (µm)	0.0002 (5)	0.000 04 (1.0)	0.000 02 (0.5)	0.000 004 (0.1)
Repeatability	in (µm)	±0.0004 (±10)	±0.000 8 (2.0)	±0.000 06 (1.5)	±0.000 04 (1.0)
Accuracy – Magnetic		±(30µm +50µm/m)		±(25µm +50µm/m)	
Accuracy – Optical		±(5µm +30µm/m)			

Note: For travels less than 1 meter, accuracy should be calculated at 1 meter

MOTOR MODEL		310-2	310-3	310-4	310-5	310-6
Peak Force	N	409.3	600.0	790.0	980.0	1170.0
	lb	92.0	135.1	177.2	220.3	263.2
Continuous Force	N	91.6	133.9	176.2	219.3	262.0
	lb	20.6	30.1	39.6	49.3	58.9
Peak Power	W	1885	2693	3500	4308	5116
Continuous Power	W	4	135	179	215	256



Linear Motor Driven Tables

ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in (µm)	±0.000127 in/in (±127µm/m)	±.000013 in/in (±13µm/m)
Flatness restrained on flat surface in (µm)	±0.003 + .000254 in/in (±76 + 254µm/m)	

Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

PHYSICAL		- 2	- 3	- 4	- 5	- 6
Carriage Assembly	lbs (kg)	4.6 (2.1)	6.7 (3.0)	8.1 (3.7)	9.5 (4.3)	11.0 (5.0)
Base Assembly						
T3DB Aluminum (0.500" thick)	lbs/ft (kg/m)	16.9 (25.1)	16.9 (25.1)	16.9 (25.1)	16.9 (25.1)	16.9 (25.1)
Carriage Assembly	in (mm)	4.20 (106.7)	6.60 (167.6)	9.00 (228.6)	11.40 (289.6)	13.80 (350.5)
Coil Bar Length	in (mm)	7.20 (182.9)	9.60 (243.8)	12.00 (304.8)	14.40 (365.8)	16.8 (426.7)

LOAD		- 2	- 3	- 4	- 5	- 6
Vertical (Fv) see note 11	lbs (kg)	120 (54)	150 (68)	180 (81)	210 (95)	240 (108)
Side (Fs) see note 11	lbs (kg)	80 (36)	100 (45)	100 (45)	100 (45)	100 (45)
Moments - Roll (Mr) see note 11	Lb-ft (N-m)	80 (107)	100 (134)	100 (134)	100 (134)	100 (134)
Moments - Pitch (Mp) see note 11	Lb-ft (N-m)	160 (214)	300 (402)	300 (402)	300 (402)	300 (402)
Moments - Yaw (My) see note 11	Lb-ft (N-m)	160 (214)	300 (402)	300 (402)	300 (402)	300 (402)

- Total travel = OAL – 3.00" (76.2 mm) – carriage length.
- Maximum base length is 144" (3657 mm).
- Aluminum base is black anodized.
- For complete motor specifications, refer to 310 series motor data sheet.
- Optical encoder, RGH series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cables extend past base by approximately 0.6" when carriage is at negative hard stop.
- Cable Track extends 0.15" higher than carriage mounting surface. Space must be taken into account when mounting load.
- Standard cable track provided is 30mm wide 18mm BR.
- Base mounting holes are equidistant, 1.200" (12.0, 16.8, 21.6....) or 2.400" (9.6, 14.4, 19.2, 24.0....) from each end depending on base length.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.
- For high load, high speed applications, customer-supplied deceleration shocks are required (not included with product).
- The repeatability for the home switch is estimated to be +/- 10-20 microns. However, repeatability of the home switch does not dictate the system or encoder repeatability.

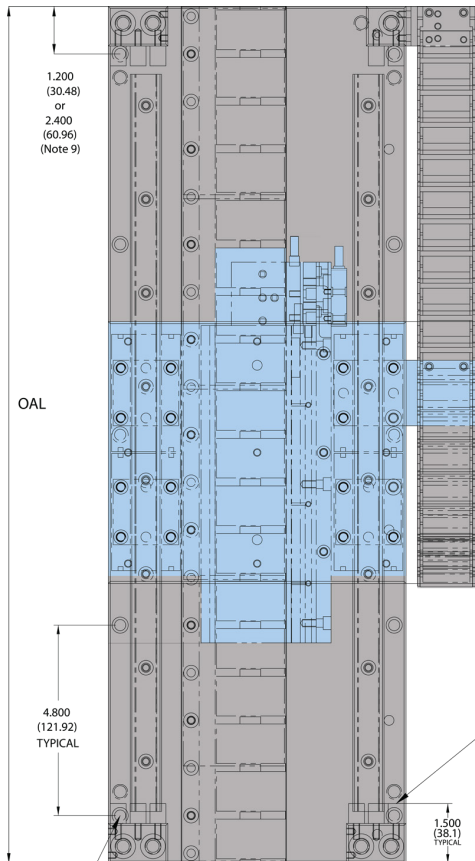


# DIMENSIONS

## T3D

Dimensions shown in inches.

- Moving Carriage Assembly
- Stationary Base Assembly



-LIMIT  
(~0.1 FROM HARD STOP)  
(2.54)  
HOME  
(~0.7 FROM HARD STOP)  
(17.78)

POSITIVE TRAVEL  
DIRECTION

CARRIAGE  
LENGTH

-2	4.200	(106.68)
-3	6.600	(167.64)
-4	9.000	(228.60)
-5	11.400	(289.56)
-6	13.800	(350.52)

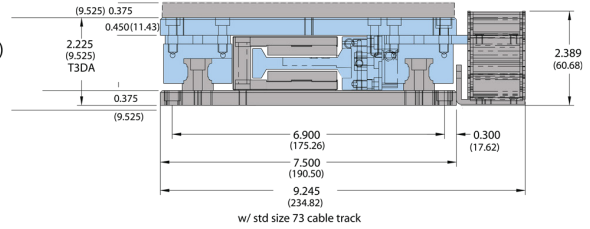
SHOCK  
ABSORBING  
BUMPERS

0.281 THRU  
C'BORE 0.406 x 0.260 DP

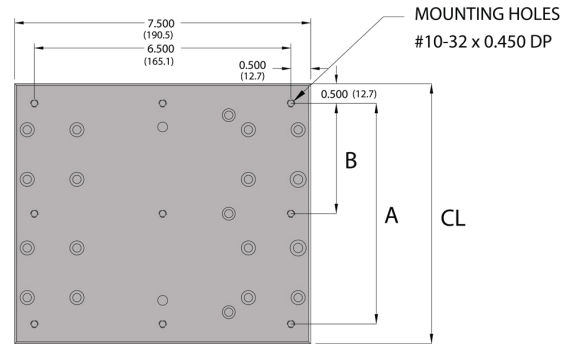
+LIMIT  
(~0.1 FROM HARD STOP)  
(2.54)

TOTAL TRAVEL = OAL - 3.00" (76.2) - CARRIAGE LENGTH  
OAL = MULTIPLE OF 2.400" (60.96)

### 0.375 THICK CARRIAGE SPACER PLATE (optional) (9.525)



w/ std size 73 cable track



### CARRIAGE SIZE

	- 2	mm	- 3	mm	- 4	mm	- 5	mm	- 6	mm
<b>CL</b>	4.200	106.68	6.600	167.64	9.00	228.6	11.400	289.56	13.800	350.52
<b>A</b>	3.200	81.28	5.600	142.24	8.00	203.80	10.400	264.16	12.800	325.12
<b>B</b>	—	71.12	2.800	101.60	4.00	101.64	5.200	132.08	6.400	162.56
<b>Coil</b>	310-2		310-3		310-4		310-5		310-6	

## SPECIFICATIONS

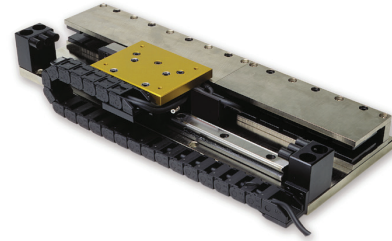
### T3S

## SPECIFICATIONS

PERFORMANCE		LINEAR MAGNETIC ENCODER		LINEAR OPTICAL ENCODER OPTIONS (NOTE 5)	
		5.0µm	1.0µm	5.0µm	1.0µm
Peak Velocity	in/s (m/s)	275 (7)	100 (2.5)	196 (5)	120 (3)
Resolution	in (mm)	0.0002 (5)	0.000 04 (1.0)	0.000 02 (0.5)	0.000 004 (0.1)
Repeatability	in (mm)	±0.0004 (±10)	±0.000 8 (2.0)	±0.000 06 (1.5)	±0.000 04 (1.0)
Accuracy – Magnetic		±(30µm +50µm/m)		±(25µm +50µm/m)	
Accuracy – Optical		±(5µm +30µm/m)			

Note: For travels less than 1 meter, accuracy should be calculated at 1 meter

MOTOR MODEL		310-2	310-3	310-4	310-5	310-6
Peak Force	N	409.3	600.0	790.0	980.0	1170.0
	lb	92.0	135.1	177.2	220.3	263.2
Continuous Force	N	91.6	133.9	176.2	219.3	262.0
	lb	20.6	30.1	39.6	49.3	58.9
Peak Power	W	1885	2693	3500	4308	5116
Continuous Power	W	4	135	179	215	256



Linear Motor Driven Tables

ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in (µm)	±0.000127 in/in (±127µm/m)	±0.00013 in/in (±13µm/m)
Flatness restrained on flat surface in (µm)	±0.003 + .000254 in/in (±76 + 254µm/m)	

Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

PHYSICAL		- 2	- 3	- 4	- 5	- 6
Carriage Assembly	lbs (kg)	3.0 (1.4)	4.4 (2.0)	5.5 (2.5)	6.4 (2.9)	7.4 (3.4)
Base Assembly						
T3SB Aluminum (0.500" thick)	lbs/ft (kg/m)	14.3 (21.2)	14.3 (21.2)	14.3 (21.2)	14.3 (21.2)	14.3 (21.2)
Carriage Assembly	in (mm)	4.20 (106.6)	6.60 (167.6)	9.00 (228.6)	11.40 (289.6)	13.80 (350.5)
Coil Bar Length	in (mm)	7.20 (182.9)	9.60 (243.8)	12 (304.8)	14.40 (365.8)	16.80 (426.7)
LOAD		- 2	- 3	- 4	- 5	- 6
Vertical (Fv) see note 11	lbs (kg)	80 (36)	100 (45)	120 (54)	140 (63)	160 (72)
Side (Fs) see note 11	lbs (kg)	30 (13)	50 (22)	50 (22)	50 (22)	50 (22)
Moments - Roll (Mr) see note 11	Lb-ft (N-m)	35 (47)	50 (67)	50 (67)	50 (67)	50 (67)
Moments - Pitch (Mp) see note 11	Lb-ft (N-m)	75 (100)	150 (201)	150 (201)	150 (201)	150 (201)
Moments - Yaw (My) see note 11	Lb-ft (N-m)	75 (100)	150 (201)	150 (201)	150 (201)	150 (201)

- Total travel = OAL – 3.00" (76.2 mm) – carriage length.
- Maximum base length is 144" (3657 mm).
- Aluminum base is black anodized.
- For complete motor specifications, refer to 310 series motor data sheet.
- Optical encoder, RGH series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cables extend past base by approximately 0.6" when carriage is at negative hard stop.
- Cable Track extends 0.15" higher than carriage mounting surface. Space must be taken into account when mounting load.
- Standard cable track provided is 30mm wide 18mm BR.
- Base mounting holes are equidistant, 1.200" (12.0, 16.8, 21.6...) or 2.400" (9.6, 14.4, 19.2, 24.0...) from each end depending on base length.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.
- For high load, high speed applications, customer-supplied deceleration shocks are required (not included with product).
- The repeatability for the home switch is estimated to be +/- 10-20 microns. However, repeatability of the home switch does not dictate the system or encoder repeatability.

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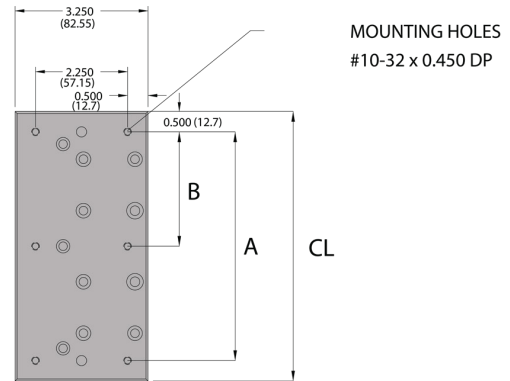
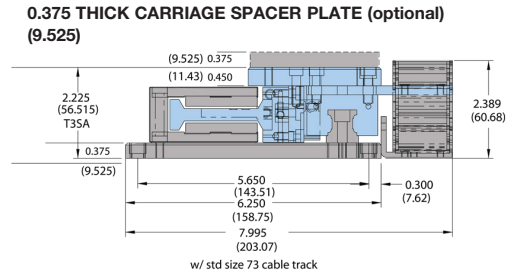
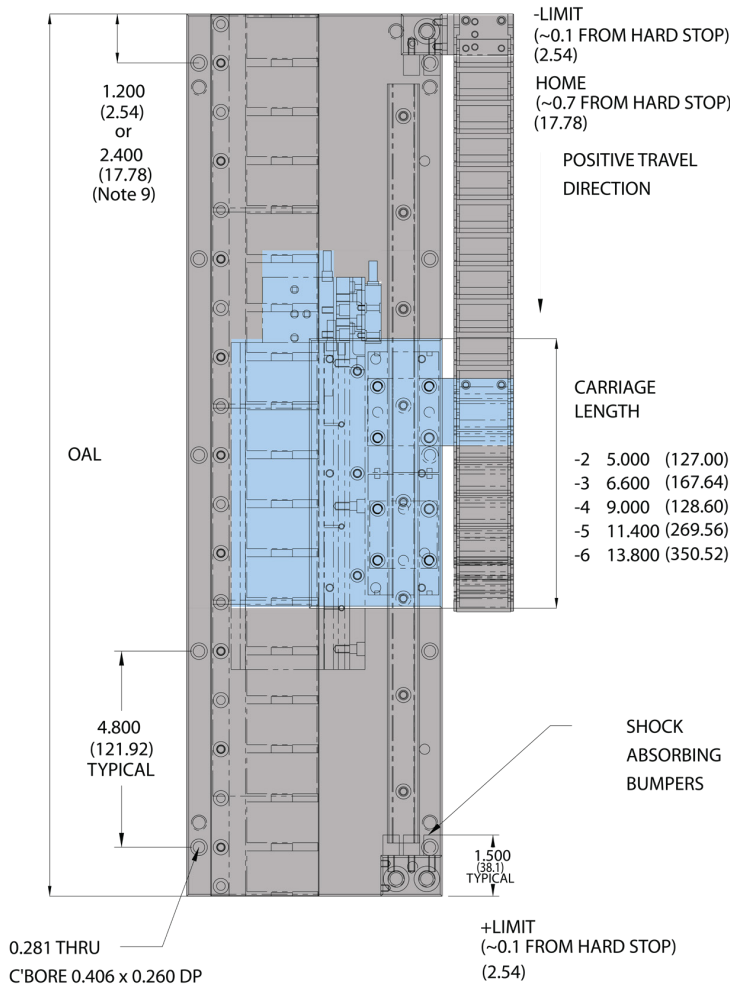
# DIMENSIONS

## T3S

**Dimensions shown in inches.**

**Moving Carriage Assembly**

**Stationary Base Assembly**



TOTAL TRAVEL = OAL - 3.00" (76.2) - CARRIAGE LENGTH  
OAL = MULTIPLE OF 2.400" (60.96)

### CARRIAGE SIZE

	- 2	mm	- 3	mm	- 4	mm	- 5	mm	- 6	mm
<b>CL</b>	5.00	127.00	6.600	167.64	9.00	228.6	11.400	289.56	13.800	350.52
<b>A</b>	4.00	101.60	5.650	142.24	8.00	203.2	10.400	264.16	12.800	325.12
<b>B</b>	2.00	50.8	2.800	71.12	4.00	101.64	5.200	132.08	6.400	162.56
<b>Coil</b>		310-2		310-3		310-4		310-5		310-6



## ORDERING INFORMATION

### T3D/T3S

## ORDERING INFORMATION

Fill in an order code from each of the numbered fields to create a complete model order code for T3D/T3S.

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

#### Order Example:

T 3 D B 012 3 N S B A C 3

- |   |  |
|---|--|
| <p>① <b>Series</b><br/> <b>T</b> Open Positioner<br/> <b>B</b> Bellows Positioner available - consult factory for details</p> <p>② <b>Motor Coil Series</b><br/> <b>3</b> 310 Motor Coil</p> <p>③ <b>Bearing Rail Configuration</b><br/> <b>D</b> Dual Bearing Rails<br/> <b>S</b> Single Bearing Rails</p> <p>④ <b>Base Material</b><br/> <b>B</b> 0.5" Al</p> <p>⑤ <b>Length of Base</b><br/> <b>XXX</b> Length of base in inches*<br/>         Maximum: 144.0"<br/>         Minimum: 9.6"<br/>         Increment: 2.4"<br/> <b>Base Length (increments of 2.4" [60.96mm]) =</b><br/>         Travel + Carriage Length + 3.0" [76.2mm]<br/>         *Truncate base length in part number. Example: for a 16.8 inch base, "XXX" equals "016"</p> <p>⑥ <b>Coil Size</b>                      <b>Carriage Length</b><br/> <b>2</b>    2 pole                      4.2" (106.68mm)<br/> <b>3</b>    3 pole                      6.6" (106.64mm)<br/> <b>4</b>    4 pole                      9.0" (228.60mm)<br/> <b>5</b>    5 pole                      11.4" (289.56mm)<br/> <b>6</b>    6 pole                      13.8" (350.52mm)</p> <p>⑦ <b>Cooling</b><br/> <b>N</b> No cooling</p> <p>⑧ <b>Winding Type</b><br/> <b>S</b> Series<br/> <b>P</b> Parallel</p> <p>⑨ <b>Encoder</b><br/> <b>A</b> Magnetic 1µm<br/> <b>B</b> Magnetic 5µm<br/> <b>Q</b> Optical 5µm<br/> <b>L</b> Optical 1µm<br/> <b>M</b> Optical 0.5µm<br/> <b>P</b> Optical 0.1µm<br/> <b>R</b> Optical 1 V p-p sine/cosine<br/> <b>X</b> No encoder</p> | <p>⑩ <b>Cable Length</b><br/> <b>A</b> 1 Meter<br/> <b>B</b> 3 Meter<br/> <b>C</b> 7.5 Meter<br/> <b>L</b> 3 Meter Extension Cables (with Connector Box)<br/> <b>M</b> 7.5 Meter Extension Cables (with Connector Box)<br/> <b>Z</b> Connector Box ONLY (no cables)<br/>         *Options A, B, C: cable measured from last cable carrier link<br/>         *Options L, M: cable measured from connection box at end of base.<br/>         *7.5 Meter Flying Lead Cables available on:<br/>         • All bases with Magentic encoder<br/>         • All bases with Optical encoder under 86"<br/>         • For bases with Optical encoder over 86" the cable length will be CL = 10M - (base length in meters + 0.3M)</p> <p>⑪ <b>Cable Connectorization</b><br/> <b>A</b> P-Series DC<br/> <b>B</b> Flying Leads<br/> <b>C</b> HD15M-CF12 Connector<br/> <b>G</b> Gemini<br/> <b>V</b> HD15M-VF Connector<br/> <b>Z</b> No cables<br/>         Notes - HD15M-VF Connector compatible with IPA, Vix and Aries Feedback Connector<br/>         HD15M-CF12 Connector compatible with Compax 3 F12 Feedback Connector<br/>         MD14-PF Connector compatible with P Series (PD-xxP) Feedback Connector</p> <p>⑫ <b>Cable Track</b><br/> <b>0</b> None<br/> <b>3</b> Standard</p> |
|---|--|

Linear Motor Driven Tables

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 from Virtual Engineer at  
[parker.com/VirtualEngineer](http://parker.com/VirtualEngineer)



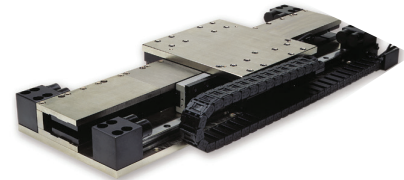
# SPECIFICATIONS

## T4D

PERFORMANCE		LINEAR MAGNETIC ENCODER		LINEAR OPTICAL ENCODER OPTIONS (NOTE 5)	
		5.0µm	1.0µm	5.0µm	1.0µm
<b>Peak Velocity</b>	in/s (m/s)	275 (7)	100 (2.5)	196 (5)	120 (3)
<b>Resolution</b>	in (µm)	0.0002 (5)	0.000 04 (1.0)	0.000 02 (0.5)	0.000 004 (0.1)
<b>Repeatability</b>	in (µm)	±0.0004 (±10)	±0.000 8 (2.0)	±0.000 06 (1.5)	±0.000 04 (1.0)
<b>Accuracy – Magnetic</b>		±(30µm +50µm/m)		±(25µm +50µm/m)	
<b>Accuracy – Optical</b>		±(5µm +30µm/m)			

Note: For travels less than 1 meter, accuracy should be calculated at 1 meter

MOTOR MODEL		410-2	410-3	410-4	410-5	410-6
<b>Peak Force</b>	N	1041.4	1523.6	2006.3	2967.2	3928.1
	lb	234.1	342.5	451.0	667.0	883.0
<b>Continuous Force</b>	N	233.1	340.8	448.9	663.7	878.6
	lb	52.4	76.6	100.9	149.2	197.5
<b>Peak Power</b>	W	2835	4050	5265	7695	10125
<b>Continuous Power</b>	W	142	203	263	385	506



ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in [µm]	±0.000127 in/in (±127µm/m)	±.000013 in/in (±13µm/m)
Flatness restrained on flat surface in [µm]	±0.003 + .000254 in/in (±76 + 254µm/m)	

Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

PHYSICAL		- 2	- 3	-4	- 6	- 8
<b>Carriage Assembly</b>						
T4DB Aluminum (0.500" thick)	lbs (kg)	9.0 (4.1)	14.9 (6.8)	18.1 (8.2)	24.1 (11.0)	30.0 (13.6)
<b>Base Assembly</b>						
T4DB Aluminum (0.500" thick)	lbs/ft (kg/m)	29.4 (43.8)	29.4 (43.8)	29.4 (43.8)	29.4 (43.8)	29.4 (43.8)
<b>Carriage Assembly</b>	in (mm)	4.8 (121.9)	8.15 (207.0)	11.50 (292.1)	18.20 (462.3)	24.90 (632.5)
<b>Coil Bar Length</b>	in (mm)	10.00 (254)	13.36 (339)	16.72 (424)	23.44 (595)	30.16 (766)

LOAD		- 2	- 3	- 4	- 5	- 6
<b>Vertical (Fv) see note 11</b>	lbs (kg)	200 (90)	250 (113)	300 (136)	400 (181)	400 (181)
<b>Side (Fs) see note 11</b>	lbs (kg)	150 (68)	150 (68)	150 (68)	150 (68)	150 (68)
<b>Moments - Roll (Mr) see note 11</b>	Lb-ft (N-m)	100 (133)	150 (200)	150 (200)	150 (200)	150 (200)
<b>Moments - Pitch (Mp) see note 11</b>	Lb-ft (N-m)	200 (266)	400 (532)	400 (532)	400 (532)	400 (532)
<b>Moments - Yaw (My) see note 11</b>	Lb-ft (N-m)	200 (266)	400 (532)	400 (532)	400 (532)	400 (532)

- Total travel = OAL – 5.5" (139.7 mm) – carriage length.
- Maximum base length is 137.76" (3499 mm).
- Aluminum base is black anodized.
- For complete motor specifications, refer to 410 series motor data sheet.
- Optical encoder, RGH series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cables extend past base by approximately 0.6" when carriage is at negative hard stop.
- Cable Track extends 0.050" below carriage mounting surface. Space must be taken into account when mounting load.
- Standard cable track provided is 40mm wide 18mm BR.
- Base mounting holes are equidistant, 1.68" (12.0, 16.8, 21.6....) or 3.36" (9.6, 14.4, 19.2, 24.0....) from each end depending on base length.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.
- For high load, high speed applications, customer-supplied deceleration shocks are required (not included with product).
- The repeatability for the home switch is estimated to be +/- 10-20 microns. However, repeatability of the home switch does not dictate the system or encoder repeatability.



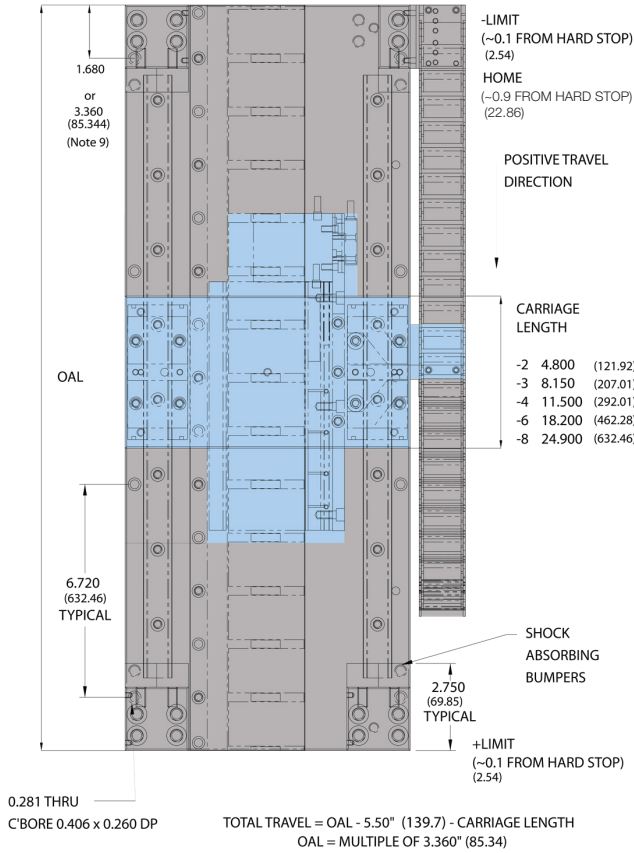
# DIMENSIONS

## T4D

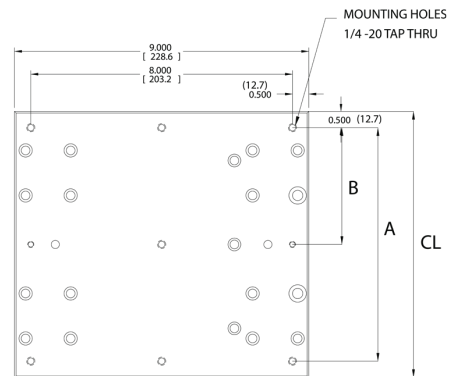
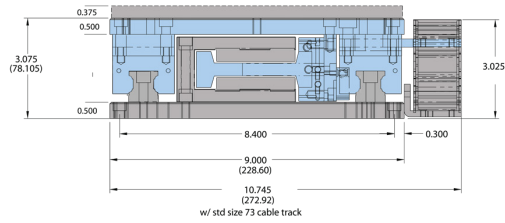
Dimensions shown in inches.

Moving Carriage Assembly

Stationary Base Assembly



0.375 THICK CARRIAGE SPACER PLATE (optional) (9.525)



Linear Motor Driven Tables

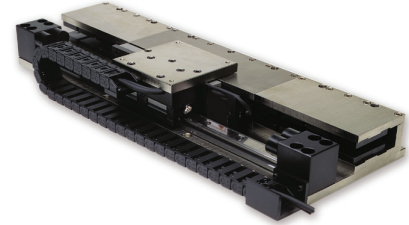
### CARRIAGE SIZE

	- 2	mm	- 3	mm	- 4	mm	- 6	mm	- 8	mm
<b>CL</b>	4.80	121.92	8.150	207.01	11.50	292.10	18.200	462.28	24.900	632.46
<b>A</b>	3.800	96.52	7.150	181.61	10.500	266.70	17.200	436.88	23.900	607.66
<b>B</b>	—	—	3.575	90.805	5.250	133.35	8.600	218.44	11.950	303.53
<b>Coil</b>	410-2		410-3		410-4		410-5		410-6	

PERFORMANCE		LINEAR MAGNETIC ENCODER		LINEAR OPTICAL ENCODER OPTIONS (NOTE 5)	
		5.0µm	1.0µm	5.0µm	1.0µm
Peak Velocity	in/s (m/s)	275 (7)	100 (2.5)	196 (5)	120 (3)
Resolution	in (µm)	0.0002 (5)	0.000 04 (1.0)	0.000 02 (0.5)	0.000 004 (0.1)
Repeatability	in (µm)	±0.0004 (±10)	±0.000 8 (2.0)	±0.000 06 (1.5)	±0.000 04 (1.0)
Accuracy – Magnetic		±(30µm +50µm/m) ±(25µm +50µm/m)			
Accuracy – Optical		±(5µm +30µm/m)			

Note: For travels less than 1 meter, accuracy should be calculated at 1 meter

MOTOR MODEL		410-2	410-3	410-4	410-6	410-8
Peak Force	N	1041.4	1523.6	2006.3	2967.2	3928.1
	lb	234.1	342.5	451.0	667.0	883.0
Continuous Force	N	233.1	340.8	448.9	663.7	878.6
	lb	52.4	76.6	100.9	149.2	197.5
Peak Power	W	2835	4050	5265	7695	10125
Continuous Power	W	142	203	263	385	506



ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in (µm)	±0.000127 in/in (±127µm/m)	±.000013 in/in (±13µm/m)
Flatness restrained on flat surface in (µm)	±0.003 + .000254 in/in (±76 + 254µm/m)	

Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

PHYSICAL		- 2	- 3	- 4	- 6	- 8
<b>Carriage Assembly</b>						
T4SB Aluminum (0.500" thick)	lbs (kg)	6.5 (3.0)	10.3 (4.7)	13.0 (5.9)	17.8 (8.1)	22.7 (10.3)
<b>Base Assembly</b>						
T4SB Aluminum (0.500" thick)	lbs/ft (kg/m)	26.7 (39.8)	26.7 (39.8)	26.7 (39.8)	26.7 (39.8)	26.7 (39.8)
<b>Carriage Assembly</b>	in (mm)	4.8 (121.9)	8.15 (207.0)	11.50 (292.1)	18.20 (462.3)	24.90 (632.5)
<b>Coil Bar Length</b>	in (mm)	10.00 (254)	13.36 (339)	16.72 (424)	23.44 (595)	30.16 (766)

LOAD		- 2	- 3	- 4	- 6	- 8
<b>Vertical (Fv) see note 11</b>	lbs (kg)	150 (68)	175 (79)	175 (79)	200 (90)	200 (90)
<b>Side (Fs) see note 11</b>	lbs (kg)	75 (34)	75 (34)	75 (34)	75 (34)	75 (34)
<b>Moments - Roll (Mr) see note 11</b>	Lb-ft (N-m)	50 (66)	100 (133)	100 (133)	100 (133)	100 (133)
<b>Moments - Pitch (Mp) see note 11</b>	Lb-ft (N-m)	100 (133)	200 (266)	200 (266)	200 (266)	200 (266)
<b>Moments - Yaw (My) see note 11</b>	Lb-ft (N-m)	100 (133)	200 (266)	200 (266)	200 (266)	200 (266)

- Total travel = OAL – 5.5" (139.7 mm) – carriage length.
- Maximum base length is 137.76" (3499 mm).
- Aluminum base is black anodized.
- For complete motor specifications, refer to 410 series motor data sheet.
- Optical encoder, RGH series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cables extend past base by approximately 0.6" when carriage is at negative hard stop.
- Cable Track extends 0.050" below carriage mounting surface. Space must be taken into account when mounting load.
- Standard cable track provided is 40mm wide 18mm BR.
- Base mounting holes are equidistant, 1.68" (12.0, 16.8, 21.6....) or 3.36" (9.6, 14.4, 19.2, 24.0....) from each end depending on base length.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.
- For high load, high speed applications, customer-supplied deceleration shocks are required (not included with product).
- The repeatability for the home switch is estimated to be +/- 10-20 microns. However, repeatability of the home switch does not dictate the system or encoder repeatability.

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## DIMENSIONS T4S

Download 2D & 3D files from  
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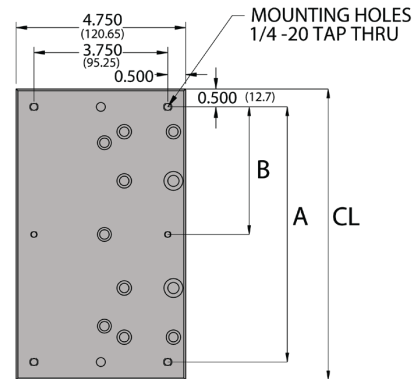
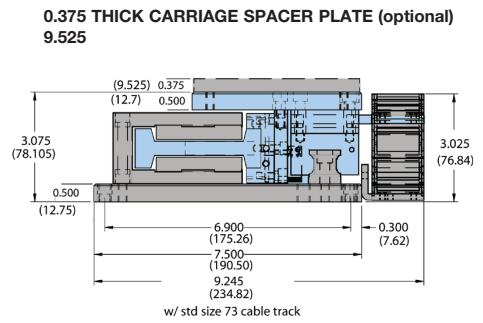
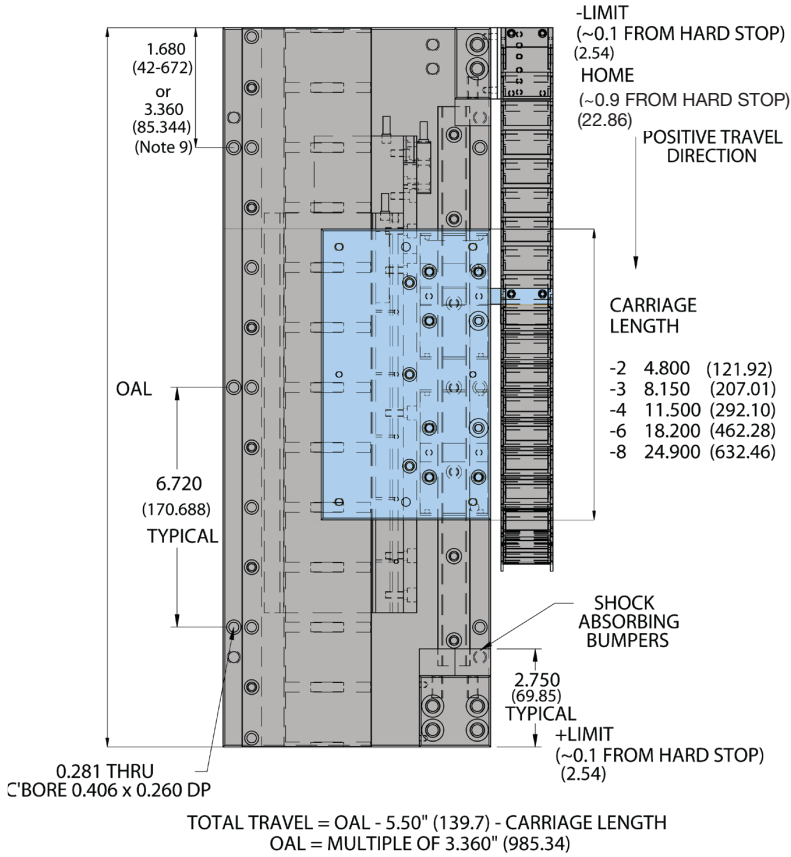


DIMENSIONS

Dimensions shown in inches.

Moving Carriage Assembly

Stationary Base Assembly



Linear Motor  
Driven Tables

### CARRIAGE SIZE

	- 2	mm	- 3	mm	- 4	mm	- 6	mm	- 8	mm
<b>CL</b>	4.800	121.92	8.150	207.01	11.500	292.10	18.200	462.28	24.900	632.46
<b>A</b>	3.800	96.52	7.150	181.61	10.500	266.70	17.200	436.88	23.900	607.66
<b>B</b>	—	—	3.575	90.805	5.250	133.35	8.600	218.44	11.950	303.53
<b>Coil</b>	410-2		410-3		410-4		410-6		410-8	

## ORDERING INFORMATION

### T4D/T4S

Fill in an order code from each of the numbered fields to create a complete model order code for T4D/T4S.

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

**Order Example:**

T 4 D B 012 3 N S B A B 4

- |   |   |
|---|---|
| <p>① <b>Series</b><br/> <b>T</b> Open Positioner<br/> <b>B</b> Bellows Positioner available - consult factory for details</p> <p>② <b>Motor Coil Series</b><br/> <b>4</b> 410 Motor Coil</p> <p>③ <b>Bearing Rail Configuration</b><br/> <b>D</b> Dual Bearing Rails<br/> <b>S</b> Single Bearing Rails</p> <p>④ <b>Base Material</b><br/> <b>B</b> 0.5" Al</p> <p>⑤ <b>Length of Base</b><br/> <b>XXX</b> Length of base in inches*<br/> Maximum: 137.76" *<br/> Minimum: 13.44"<br/> Increment: 3.36"<br/> <b>Base Length (increments of 3.36" [85.344mm]) =</b><br/> Travel + Carriage Length + 5.5" [39.7mm]<br/> *Truncate base length in part number. Example: for a 16.8 inch base, "XXX" equals "016"<br/> *Consult factory for longer lengths.</p> <p>⑥ <b>Coil Size</b>                      <b>Carriage Length</b><br/> <b>2</b>      2 pole                      4.8" (121.92mm)<br/> <b>3</b>      3 pole                      8.15" (207.01mm)<br/> <b>4</b>      4 pole                      11.5" (292.10mm)<br/> <b>6</b>      6 pole                      18.2" (462.28mm)<br/> <b>8</b>      8 pole                      24.9" (632.46mm)</p> <p>⑦ <b>Cooling</b><br/> <b>N</b> No cooling</p> <p>⑧ <b>Winding Type</b><br/> <b>S</b> Series<br/> <b>P</b> Parallel</p> <p>⑨ <b>Encoder</b><br/> <b>A</b> Magnetic 1µm<br/> <b>B</b> Magnetic 5µm<br/> <b>Q</b> Optical 5µm<br/> <b>L</b> Optical 1µm<br/> <b>M</b> Optical 0.5µm<br/> <b>P</b> Optical 0.1µm<br/> <b>R</b> Optical 1 V p-p sine/cosine<br/> <b>X</b> No encoder</p> | <p>⑩ <b>Cable Length</b><br/> <b>A</b> 1 Meter<br/> <b>B</b> 3 Meter<br/> <b>C</b> 7.5 Meter<br/> <b>L</b> 3 Meter Extension Cables (with Connector Box)<br/> <b>M</b> 7.5 Meter Extension Cables (with Connector Box)<br/> <b>Z</b> Connector Box ONLY (no cables)<br/> *Options A, B, C: cable measured from last cable carrier link<br/> *Options L, M: cable measured from connection box at end of base.<br/> *7.5 Meter Flying Lead Cables available on:<br/> <ul style="list-style-type: none"> <li>• All bases with Magnetic encoder</li> <li>• All bases with Optical encoder under 86"</li> <li>• For bases with Optical encoder over 86" the cable length will be CL = 10M - (base length in meters + 0.3M)</li> </ul> </p> <p>⑪ <b>Cable Connectorization</b><br/> <b>A</b> P-Series DC<br/> <b>B</b> Flying Leads<br/> <b>C</b> HD15M-CF12 Connector<br/> <b>G</b> Gemini<br/> <b>V</b> HD15M-VF Connector<br/> <b>Z</b> No cables<br/> Notes - HD15M-VF Connector compatible with IPA, Vix and Aries Feedback Connector<br/> HD15M-CF12 Connector compatible with Compax 3 F12 Feedback Connector<br/> MD14-PF Connector compatible with P Series (PD-xxP) Feedback Connector</p> <p>⑫ <b>Cable Track</b><br/> <b>0</b> None<br/> <b>4</b> Standard</p> |
|---|---|

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## Cable Connector Configuration

### HD15M-VF

15 Pin HD-SUB Plug

Pin #	Function
1	Z+
2	Z-
3	GND
4	NO CONN
5	+5V
6	GND
7	A-
8	A+
9	HALL1
10	TEMP
11	B-
12	B+
13	HALL2
14	HALL3
15	NO CONN
HD15M-VF Connector compatible with IPA, Vix and Aries Feedback Connector	

### HD15M-CF12

15 Pin HD-SUB Plug

Pin #	Function
1	SENSE-
2	SENSE+
3	HALL1
4	+5V
5	+5V
6	HALL2
7	A-/SIN-
8	A+/SIN+
9	HALL3
10	TEMP
11	B-/COS-
12	B+/COS+
13	Z+
14	Z-
15	GND
HD15M-CF12 Connector compatible with Compax 3 F12 Feedback Connector	