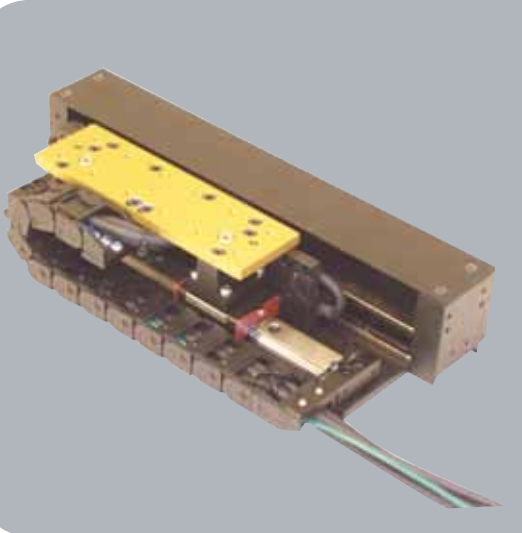


# I-FORCE Ironless Linear Positioners



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.

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

- 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.
- Trilogy has single- or dual-bearing rail positioners to better match the performance and cost requirements for each application.
- Every positioner includes a magnetic encoder for industrial environments or an optical encoder with resolutions down to 0.1 $\mu$ m (0.000 04").
- 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

PERFORMANCE		LINEAR MAGNETIC ENCODER 5.0µm 1.0µm		RENISHAW ENCODER OPTIONS (Note 5) 0.5µm 0.1µm	
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
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 – LME		±(30µm +50µm/m) ±(25µm +50µm/m)			
Accuracy – Renishaw		±(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

ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in [µm]	±0.000127 in/in [±127µm/m]	±.0000127 in/in
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

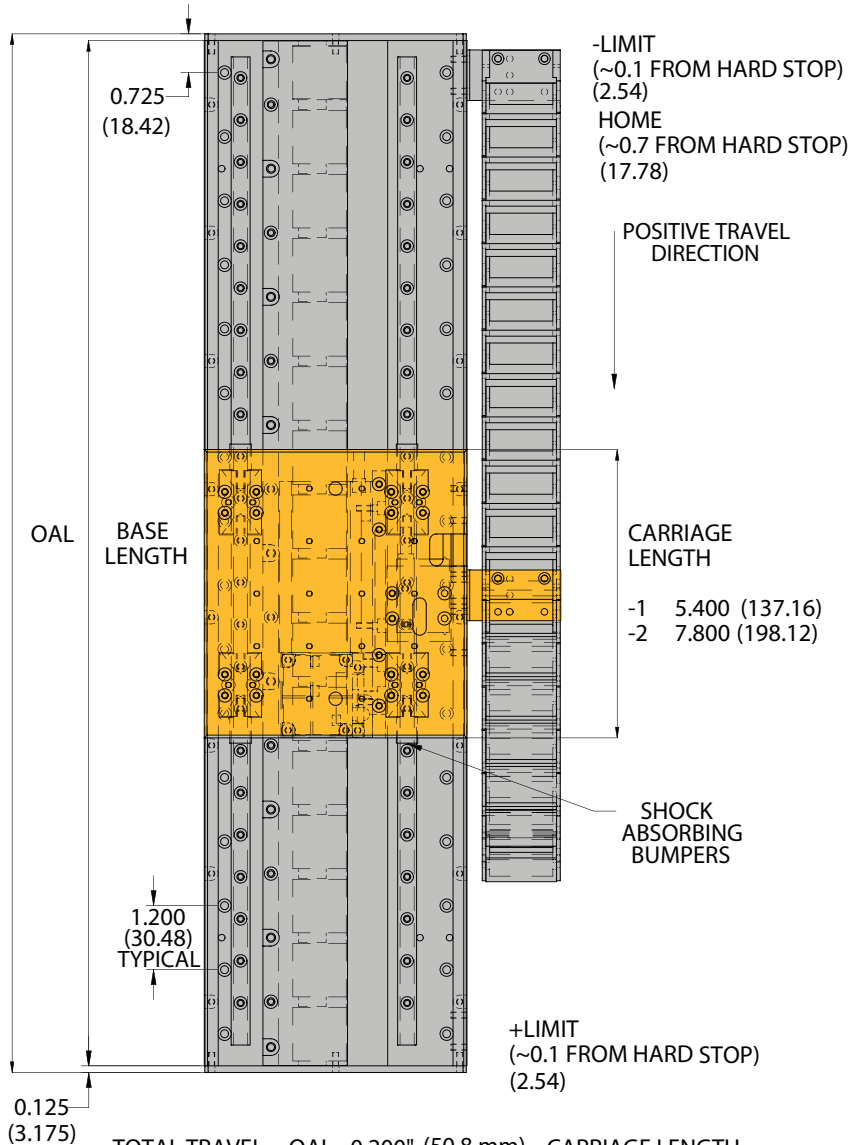
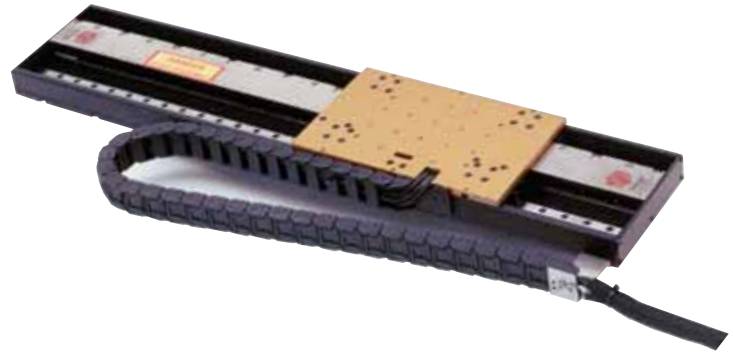
LOAD		- 1	- 2
Vertical (Fv) see note 11	lbs [kg]	30 [13, 5]	30 [13, 5]
Side (Fs) see note 11	lbs [kg]	15 [6, 8]	15 [6, 8]
Moments–Roll (Mr) see note 11	lb-ft [N-m]	15 [20]	15 [20]
Moments–Pitch (Mp) see note 11	lb-ft [N-m]	52 [70]	52 [70]
Moments–Yaw (My) see note 11	lb-ft [N-m]	52 [70]	52 [70]



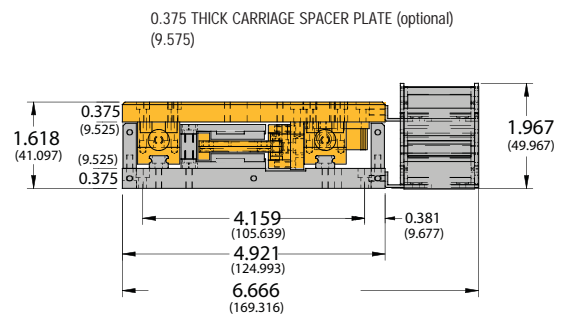
Dimensions shown in inches.

● Moving Carriage Assembly

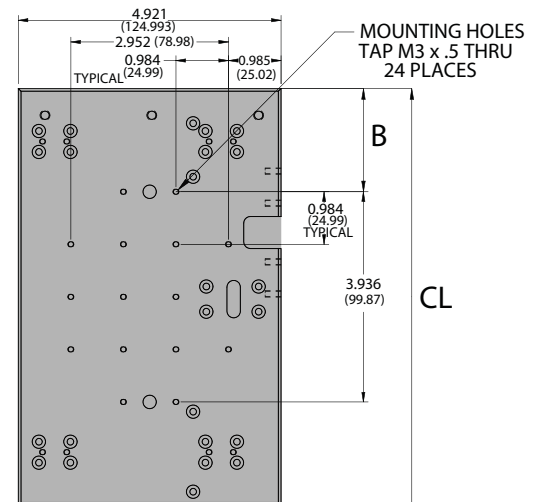
● Stationary Base Assembly



TOTAL TRAVEL = OAL - 0.200" (50.8 mm) - CARRIAGE LENGTH  
 OAL = BASE LENGTH + 0.250" (6.35 mm)  
 BASE LENGTH = MULTIPLE OF 2.400" (60.96)



w/ std size 73 cable track



## CARRIAGE SIZE

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

PERFORMANCE		LINEAR MAGNETIC ENCODER		RENISHAW ENCODER OPTIONS (Note 5)	
		5.0µm	1.0µm	0.5µm	0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
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 – LME		±(30µm +50µm/m)			
Accuracy – Renishaw				±(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

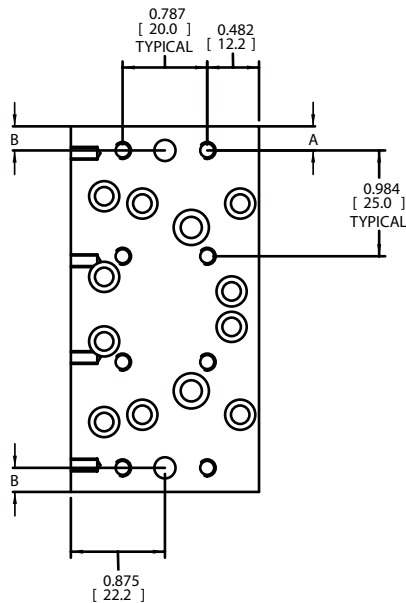
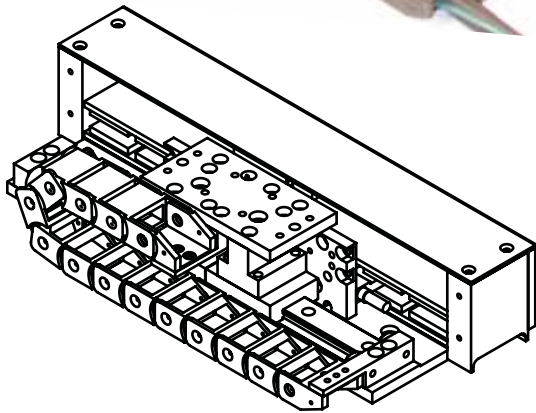
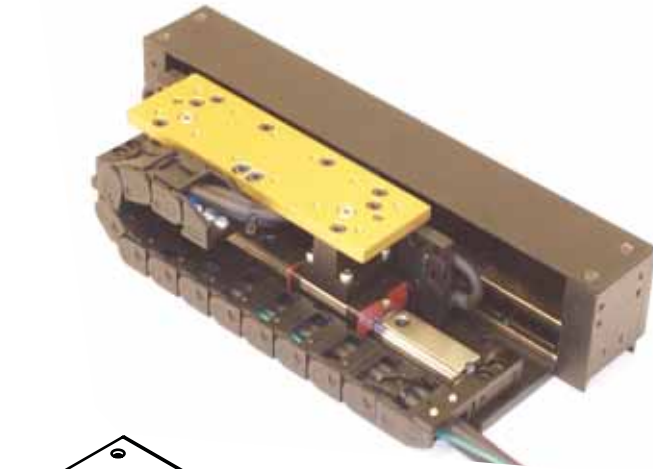
ACCURACY		STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in [µm]		±0.000127 in/in [±127µm/m]	±.000013 in/in [±13 µm/m]
Flatness restrained on flat surface in [µm]		±0.013 [±330]	
Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft			

PHYSICAL		- 2	- 3
Carriage Assembly	lbs [kg]	1.10 [0,50]	1.50 [0,68]
Base Assembly			
T1SD Aluminum (0.250" thick)	lbs/ft [kg/m]	2.25 [3,35]	.....➔
T1SA Aluminum (0.375" thick)	lbs/ft [kg/m]	2.78. [4,13]	.....➔
Carriage Length	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]

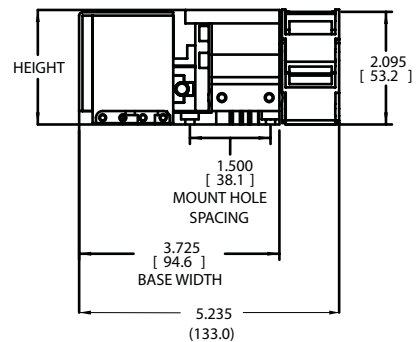
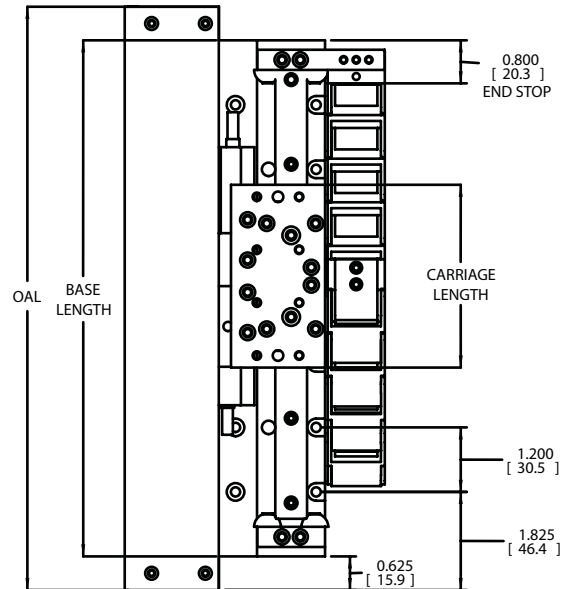
## NOTES

- Total travel (in) = BASE LENGTH - 1.6 (40.64 mm) - CARRIAGE LENGTH.
- Maximum base length is 40.8", 1m
- Aluminum base is black anodized.
- For complete motor specifications, refer to 110 series motor data sheet.
- Renishaw encoder, RGH24 series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Standard cable track provided is Igus 07.20.018.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.



$OAL = BASE\ LENGTH + 1.25\ IN\ (31.75)$   
 $TRAVEL = BASE\ LENGTH - 1.6 - CARRIAGE\ LENGTH$   
 $TRAVEL\ (mm) = BASE\ LENGTH - 40.64 - CARRIAGE\ LENGTH$

## T1S



CARRIAGE TABLE		
COIL SIZE	-1	-2
CARRIAGE LENGTH	3.4 [86.4]	5.8 [147.3]
A (1ST MOUNTING HOLE)	0.224 [5.7]	0.440 [11.2]
B (DOWEL PIN HOLE)	0.224 [5.7]	0.440 [11.2]

PERFORMANCE		LINEAR MAGNETIC ENCODER		RENISHAW ENCODER OPTIONS (Note 5)	
		5.0µm	1.0µm	0.5µm	0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
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 – LME		±(30µm +50µm/m)			
Accuracy – Renishaw				±(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]	±0.000127in/in [±127µm/m]	±0.0000127 in/in [±13µm/m]
Flatness restrained on flat surface in [µm]	±0.003 + 000254 in/in [±76 + 254µm/m]	
Note: For travels less than 1 meter, Flatness should be calculated at 1 meter Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft		

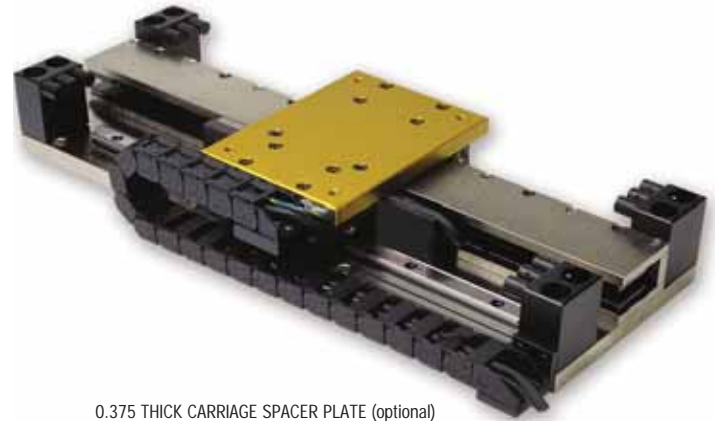
PHYSICAL		- 2	- 3	- 4
Carriage Assembly	lbs [kg]	3.10 [1,4]	4.10 [2,1]	5.50 [2,5]
Base Assembly				
T2DA Aluminum (0.375" thick)	lbs/ft [kg/m]	10.80 [16,1]		
T2DB Aluminum (0.500" thick)	lbs/ft [kg/m]	11.70 [17,4]		
T2DS Steel (0.500" thick)	lbs/ft [kg/m]	18.10 [26,9]	.....▶	.....▶
Carriage Length	in [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]	60 [27,1]	80 [36,3]	100 [45,3]
Side (Fs) see note 11	lbs [kg]	40 [18,1]	60 [27,2]	60 [27,2]
Moments–Roll (Mr) see note 11	lb-ft [N-m]	40 [53]	60 [80]	60 [80]
Moments–Pitch (Mp) see note 11	lb-ft [N-m]	100 [134]	200 [270]	200 [270]
Moments–Yaw (My) see note 11	lb-ft [N-m]	100 [134]	200 [270]	200 [270]

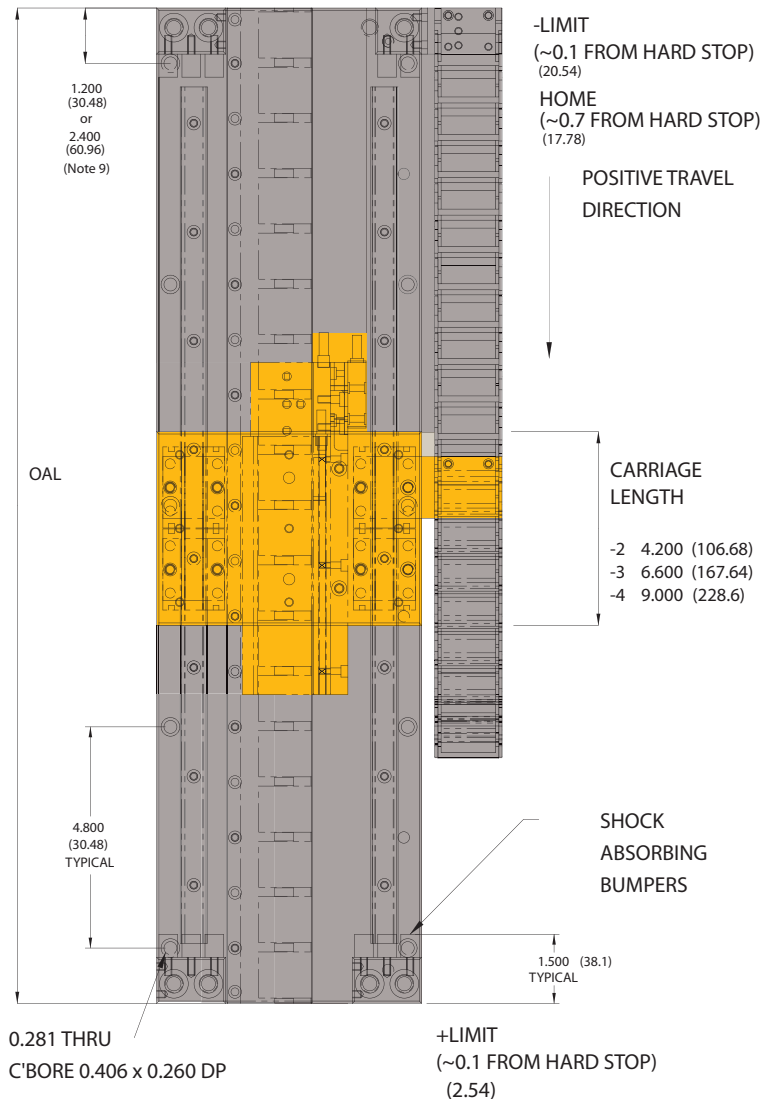
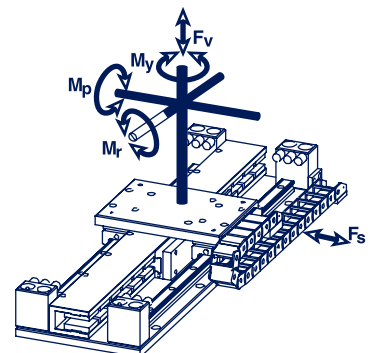
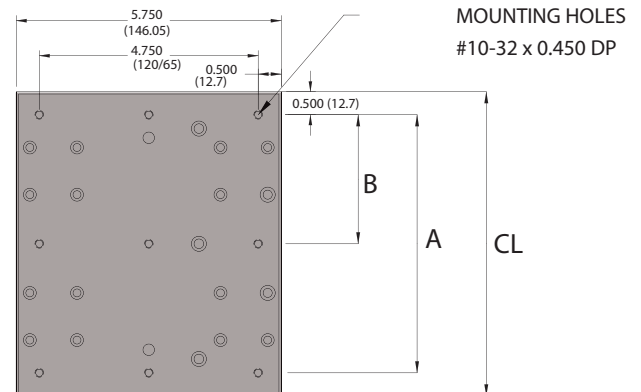
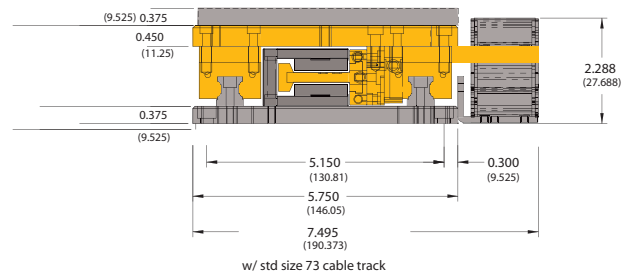
## NOTES

- Total travel = OAL – 3.00" (76.2 mm) – carriage length.
- Maximum base length is 120" (3048 mm).
- Aluminum base is black anodized. Steel base is nickel plated.
- For complete motor specifications, refer to 210 series motor data sheet.
- Renishaw encoder, RG24 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 0.175" higher than carriage mounting surface. It is recommended to use optional Spacer Plate for custom mounting holes.
- Standard cable track provided is Igus 07.30.018.
- 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.

- Stationary Base Assembly



0.375 THICK CARRIAGE SPACER PLATE (optional)  
(9.525)



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
CL	4.200	106.68	6.600	167.64	9.000	228.6
A	3.200	81.28	5.600	142.24	8.000	203.80
B	—	—	2.800	71.12	4.000	101.60
COIL	210-2		210-3		210-4	

PERFORMANCE		LINEAR MAGNETIC ENCODER		RENISHAW ENCODER OPTIONS (Note 5)	
		5.0µm	1.0µm	0.5µm	0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
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 – LME		±(30µm + 50µm/m)			
Accuracy – Renishaw				±(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/m [±127mm/m]	±0.0000127 in/in [±13mm/m]
Flatness restrained on flat surface in [µm]		±0.003 + 0.000254 in/in [±76 + 254µm/m]	

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

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

PHYSICAL		- 2	- 3	- 4
Carriage Assembly	lbs [kg]	2.10 [0,95]	3.10 [1,38]	3.80 [1,70]
Base Assembly		.....→		
T2SA Aluminum (0.375" thick)	lbs/ft [kg/m]	9.10 [13,5]	.....→	
T2SB Aluminum (0.500" thick)	lbs/ft [kg/m]	9.90 [14,7]	.....→	
T2SS Steel (0.500" thick)	lbs/ft [kg/m]	15.10 [22,5]	.....→	
Carriage Length	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]

### NOTES

- Total travel = OAL – 3.00" (76.2 mm) – carriage length.
- Maximum base length is 120" (3048 mm).
- Aluminum base is black anodized. Steel base is nickel plated.
- For complete motor specifications, refer to 210 series motor data sheet.
- Renishaw encoder, RGH24 series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cable extends past base by approximately 0.6" when carriage is at negative hard stop.
- Cable Track extends 0.175" higher than carriage mounting surface. It is recommended to use optional Spacer Plate for custom mounting holes.
- Standard cable track provided is Igus 07.30.018.
- 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.

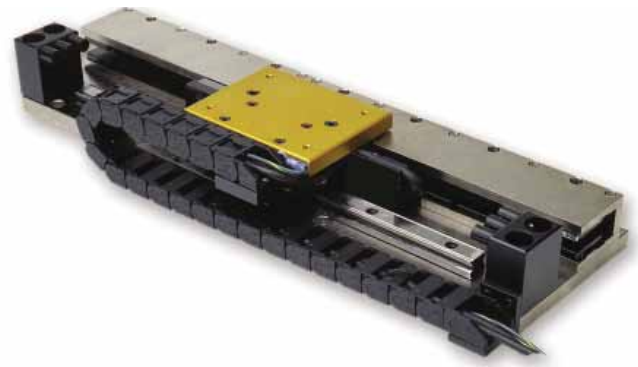
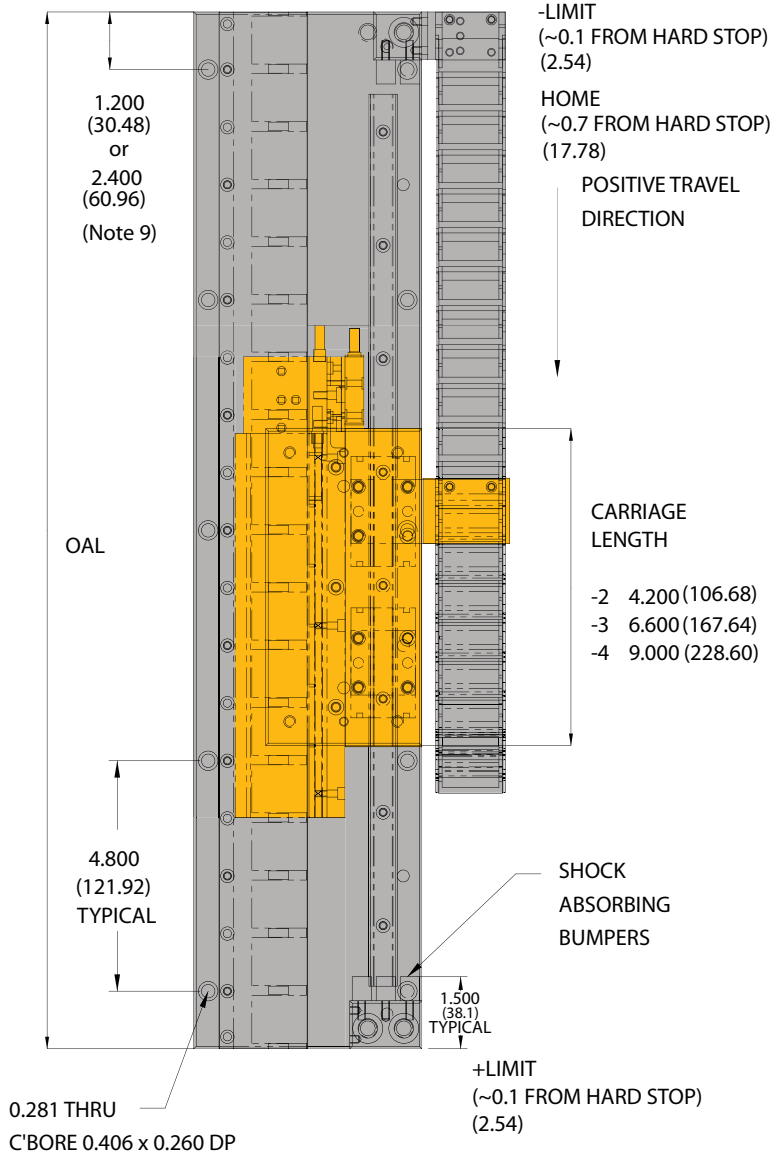




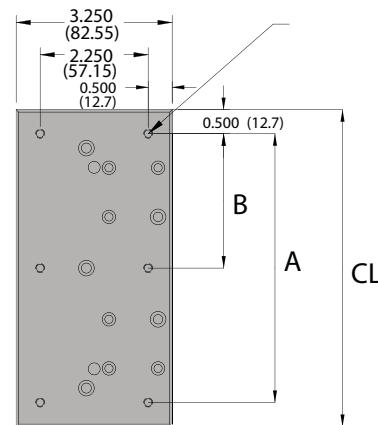
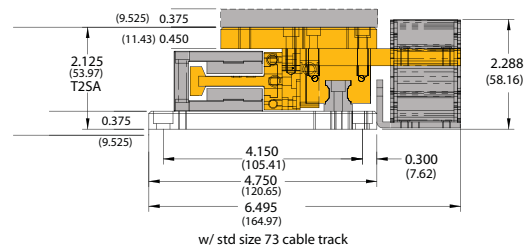
Dimensions shown in inches.

● Moving Carriage Assembly

● Stationary Base Assembly



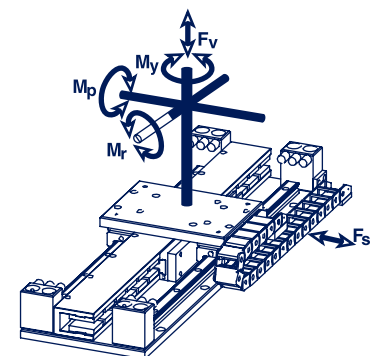
0.375 THICK CARRIAGE SPACER PLATE (optional) (9.525)



MOUNTING HOLES  
#10-32 x 0.450 DP

$$\begin{aligned} \text{TOTAL TRAVEL} &= \text{OAL} - 3.00" - \text{CARRIAGE LENGTH} \\ &= \text{OAL} - 76.2 \text{ mm} - \text{CARRIAGE LENGTH} \\ \text{OAL} &= \text{MULTIPLE OF } 2.400" (60.96) \end{aligned}$$

	CARRIAGE SIZE					
	- 2	mm	- 3	mm	- 4	mm
CL	4.200	106.68	6.600	167.64	9.000	228.60
A	3.200	81.28	5.600	142.24	8.000	203.20
B	—	71.12	2.800	101.60	4.000	101.64
COIL	210-2		210-3		210-4	



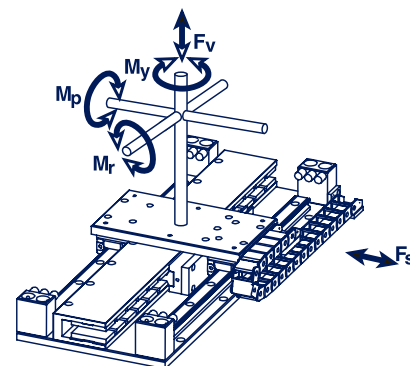
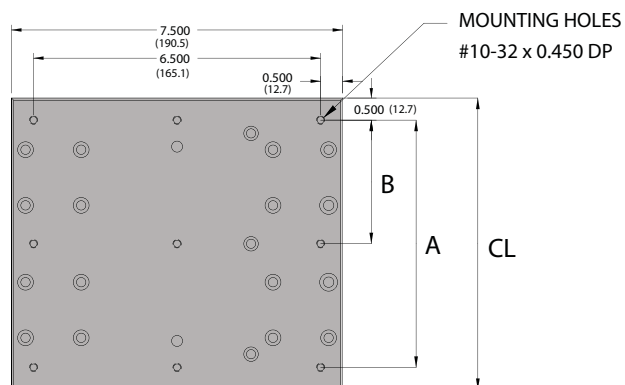
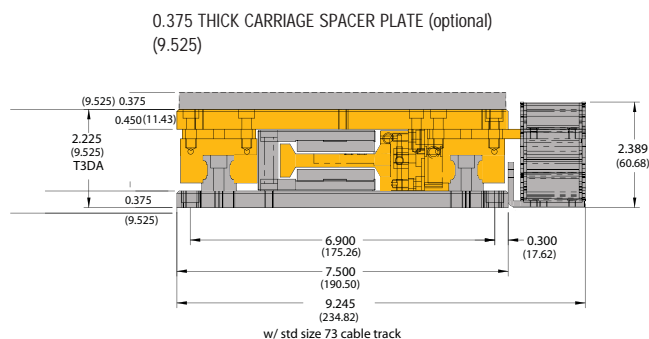
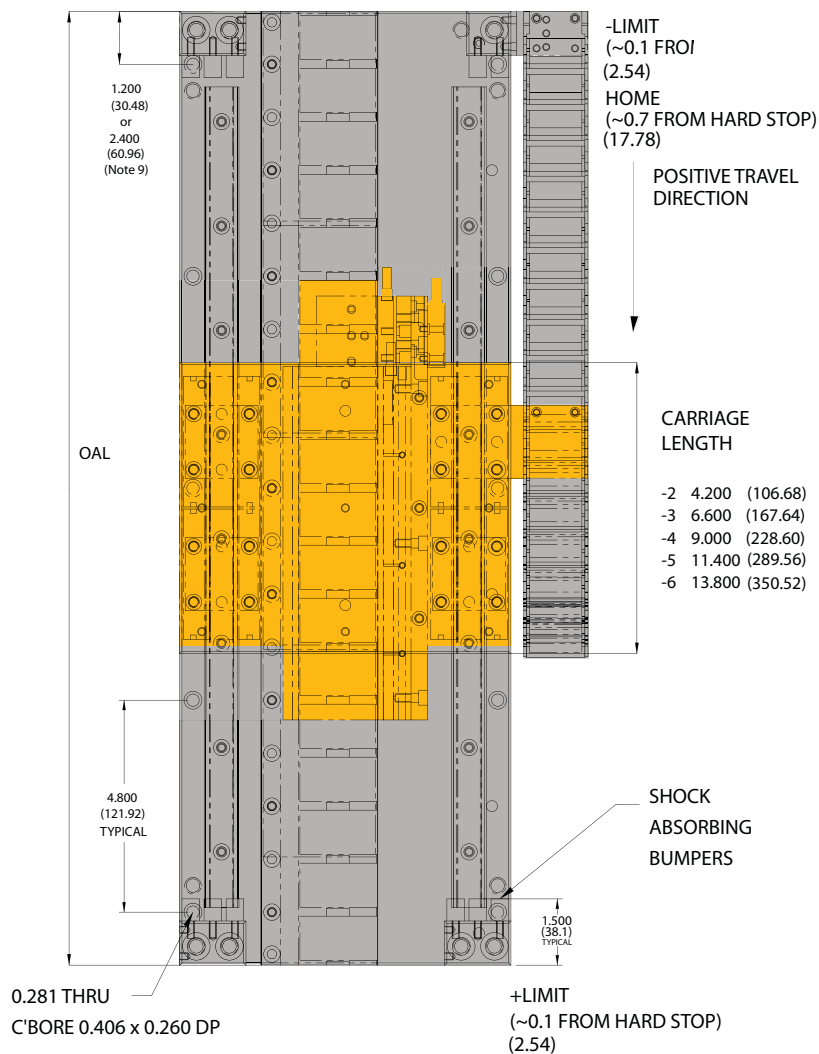
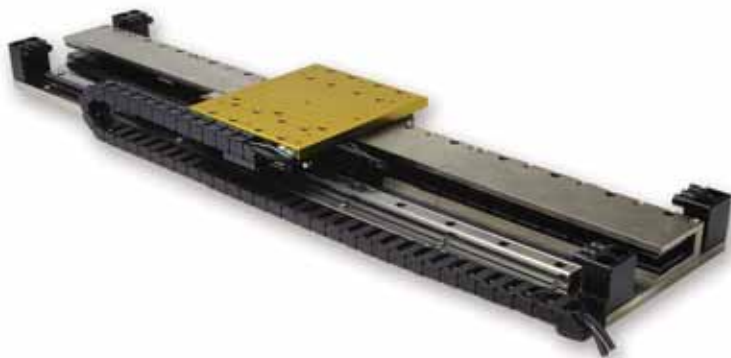




Dimensions shown in inches.

● Moving Carriage Assembly

● Stationary Base Assembly



CARRIAGE SIZE										
	-2	mm	-3	mm	-4	mm	-5	mm	-6	mm
CL	4.200	106.68	6.600	167.64	9.000	228.60	11.400	289.56	13.800	350.52
A	3.200	81.28	5.650	142.24	8.000	203.20	10.400	264.16	12.800	325.12
B	—		2.800	71.12	4.000	101.60	5.200	132.08	6.400	162.56
COIL	310-2		310-3		310-4		310-5		310-6	

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

### LASER ALIGNMENT OPTION

*Note: For travels less than 1 meter, Flatness should be calculated at 1 meter*  
*Straightness/Flatness specifications based on system mounted to surface of flatness  $\pm 0.0005\text{in/ft}$*

- 6

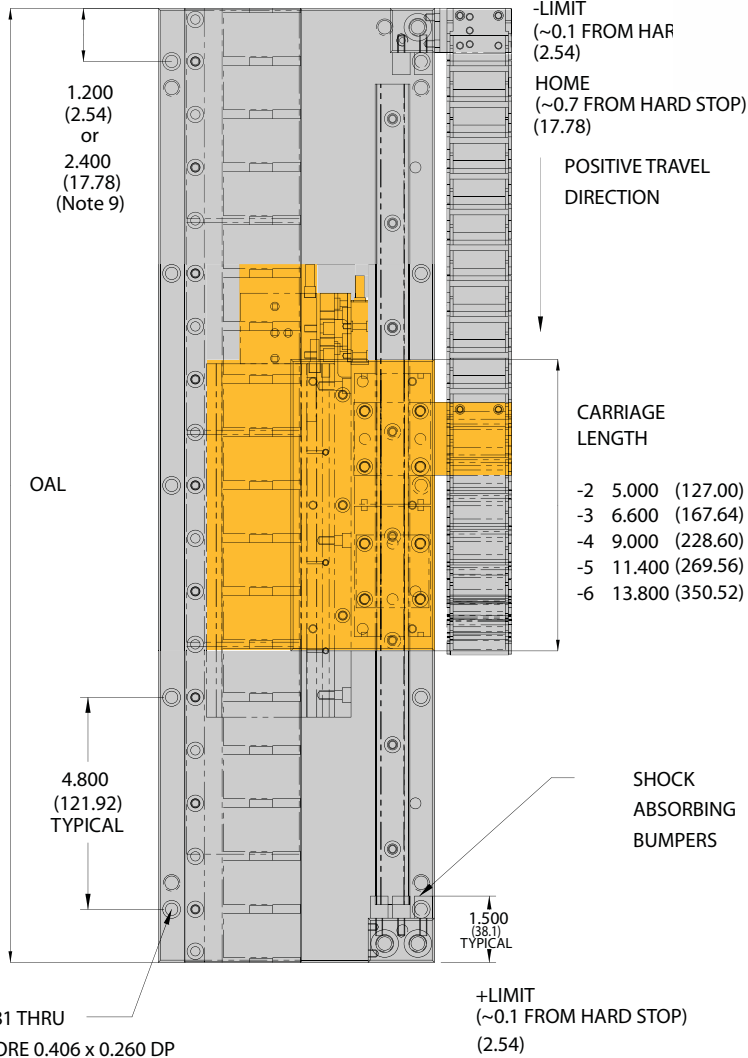
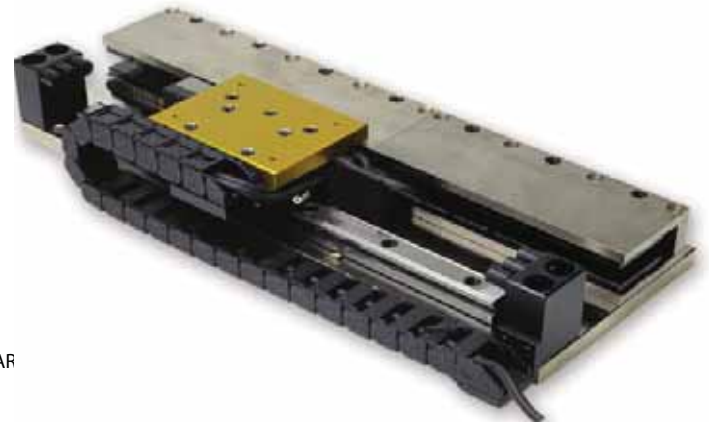
- 1 Total travel = OAL – 3.00" (76.2 mm) – carriage length.
- 2 Maximum base length is 120" (3048 mm).
- 3 Aluminum base is black anodized. Steel base is nickel plated.
- 4 For complete motor specifications, refer to 310 series motor data sheet.
- 5 Renishaw encoder, RGH24 series, available in 0.05.0µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- 6 Cable extends past base by approximately 0.6" when carriage is at negative hard stop.
- 7 Cable Track extends 0.175" higher than carriage mounting surface. It is recommended to use optional Spacer Plate for custom mounting holes.
- 8 Standard cable track provided is Igus 07.30.018.
- 9 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.
- 10 Specification subject to change without notice.
- 11 Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.



Dimensions shown in inches.

● Moving Carriage Assembly

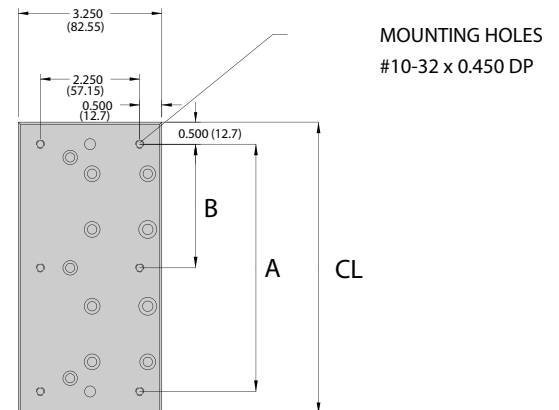
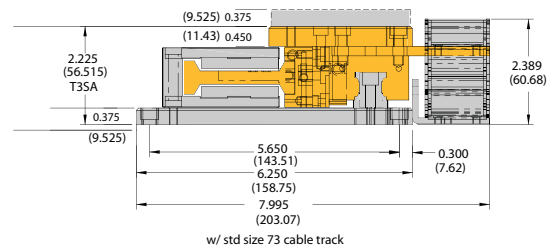
● Stationary Base Assembly



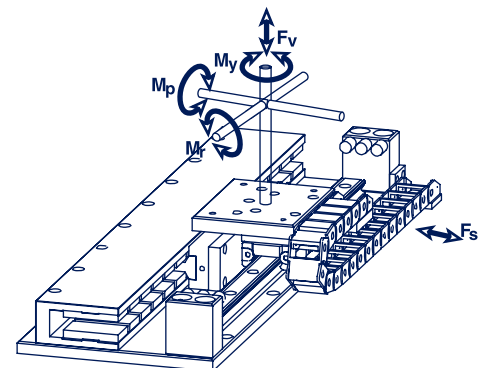
TOTAL TRAVEL = OAL - 3.00" (76.2) - CARRIAGE LENGTH

OAL = MULTIPLE OF 2.400" (60.96)

0.375 THICK CARRIAGE SPACER PLATE (optional) (9.525)



	CARRIAGE SIZE									
	-2	mm	-3	mm	-4	mm	-5	mm	-6	mm
CL	5.000	127.00	6.600	167.64	9.000	228.60	11.400	289.56	13.800	350.52
A	4.000	101.60	5.650	142.24	8.000	203.20	10.400	264.16	12.800	325.12
B	2.000	50.8	2.800	71.12	4.000	101.60	5.200	132.08	6.400	162.56
COIL	310-2		310-3		310-4		310-5		310-6	



PERFORMANCE		LINEAR MAGNETIC ENCODER		RENISHAW ENCODER OPTIONS (Note 5)	
		5.0µm	1.0.1µm	0.5µm	0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
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 – LME		±(30µm +50µm/m)		±(5µm +30µm/m)	
Accuracy – Renishaw					
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]		±.003 + .000254 in/in [±76 + 254µm/m]	
Note: For travels less than 1 meter, Flatness should be calculated at 1 meter			
Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft			

PHYSICAL		- 2	- 3	- 4	- 6	- 8
Carriage Assembly						
T4DB Aluminum	lbs [kg]	9.0 [4,1]	14.9 [6,8]	18.1 [8,2]	24.1 [10,9]	30.2 [13,7]
T4DS Steel	lbs [kg]	13.29 [6,0]	22.20 [10,1]	28.46 [12,9]	40.51 [18,4]	52.59 [23,9]
Base Assembly						
T4DB Aluminum	lbs/ft [kg/m]	29.4 [43,8]	.....▶	.....▶	.....▶	.....▶
T4DS Steel	lbs/ft [kg/m]	39.3 [58,5]	.....▶	.....▶	.....▶	.....▶
Carriage Length	in [mm]	4.80 [121,9]	8.15 [207,0]	11.50 [292,1]	18.20 [462,3]	24.90 [632,5]
Coil Bar Length	in [mm]	10.00 [254]	13.36 [339]	16.72 [424]	23.44 [595]	30.16 [766]

LOAD		- 2	- 3	- 4	- 6	- 8
Vertical (Fv) see note 11	lbs [kg]	200 [90]	250 [113]	300[136]	400 [181]	400 [181]
Side (Fs) see note 11	lbs [kg]	150 [68]	150 [68]	150 [68]	150 [68]	150 [68]
Moments–Roll (Mr) see note 11	lb-ft [N-m]	100 [133]	150 [200]	150 [200]	150 [200]	150 [200]
Moments–Pitch (Mp) see note 11	lb-ft [N-m]	200 [266]	400 [532]	400 [532]	400 [532]	400 [532]
Moments–Yaw (My) see note 11	lb-ft [N-m]	200 [266]	400 [532]	400 [532]	400 [532]	400 [532]

### NOTES

- 1 Total travel = OAL – 5.50" (139.7 mm) – carriage length.
- 2 Maximum base length is 120" (3048)
- 3 Aluminum base is black anodized. Steel base is nickel plated.
- 4 For complete motor specifications, refer to 410 series motor data sheet.
- 5 Renishaw encoder, RGH24 series, available in 0.05.0µm. 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- 6 Cable extends past base by approximately 0.6" when carriage is at negative hard stop.
- 7 Cable Track extends 0.175" higher than carriage mounting surface. It is recommended to use optional Spacer Plate for custom mounting holes.
- 8 Standard cable track provided is Igus 07.30.028.
- 9 Base mounting holes are equidistant, 1.680" (16.80, 23.52....) or 3.360" (20.16, 26.88....) from each end depending on base length.
- 10 Specification subject to change without notice.
- 11 Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.

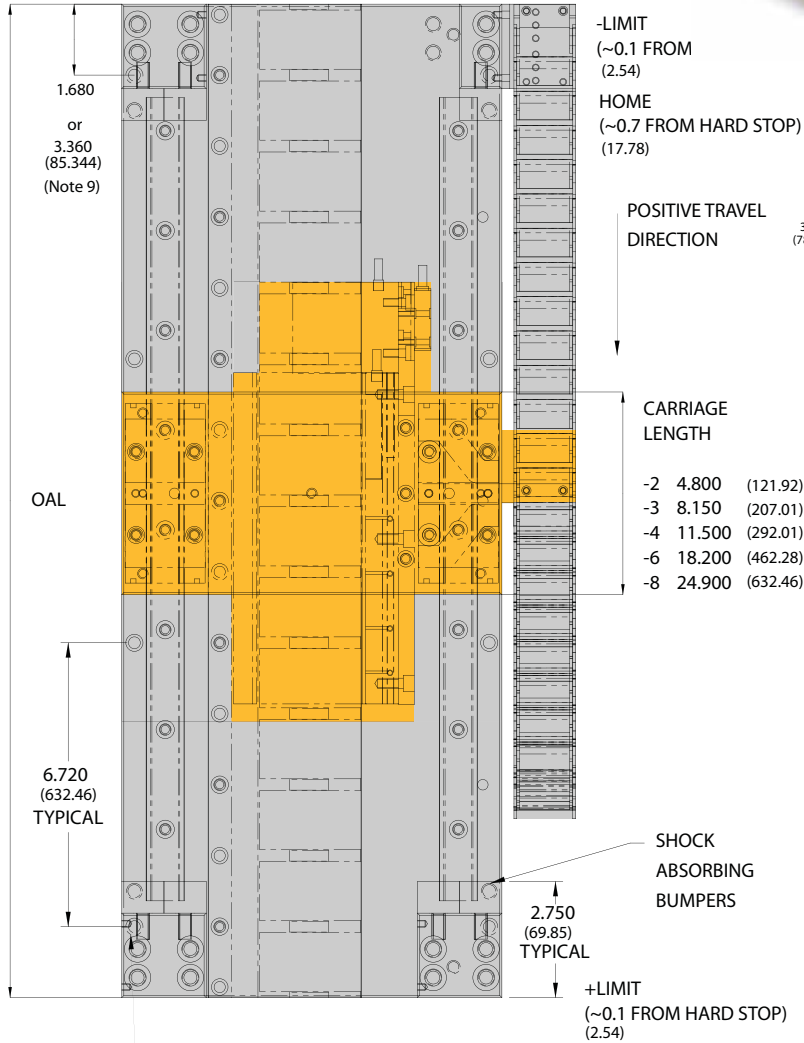
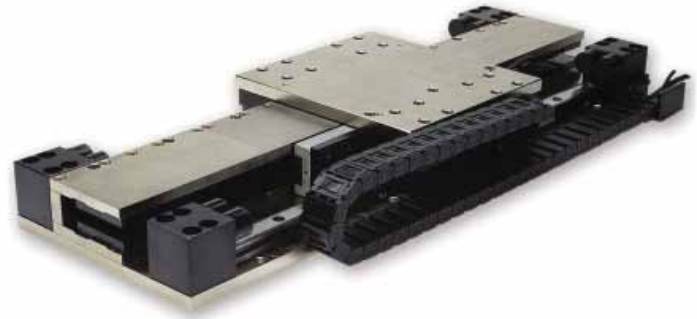




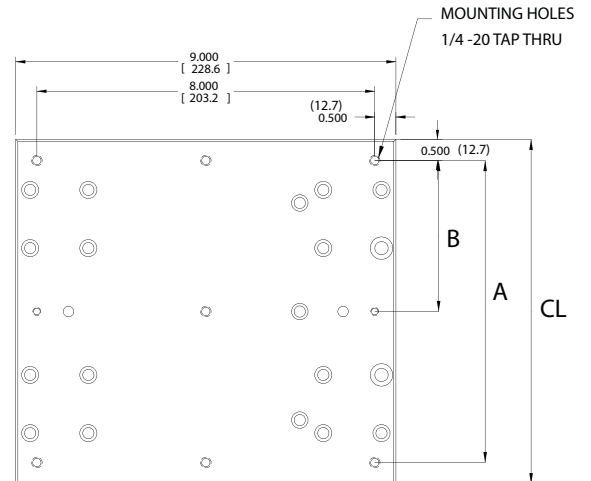
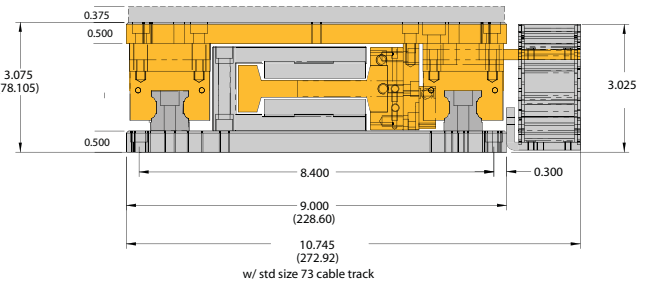
Dimensions shown in inches.

● Moving Carriage Assembly

● Stationary Base Assembly



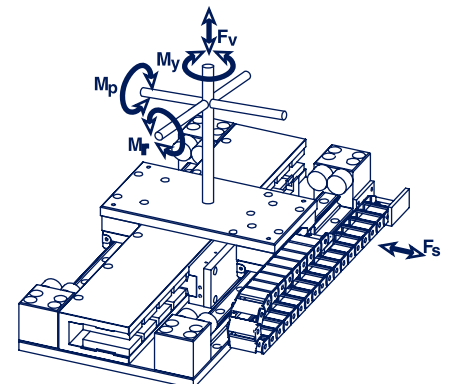
0.375 THICK CARRIAGE SPACER PLATE (optional)  
(9.525)



0.281 THRU  
C'BORE 0.406 x 0.260 DP

TOTAL TRAVEL = OAL - 5.50" (139.7) - CARRIAGE LENGTH  
OAL = MULTIPLE OF 3.360" (85.34)

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





PERFORMANCE		LINEAR MAGNETIC ENCODER		RENISHAW ENCODER OPTIONS (Note 5)	
		5.0µm	1.0µm	0.5µm	0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
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 – LME		±(30µm + 50µm/m)			
Accuracy – Renishaw				±(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]		±0.000125in/in [±127µm/m]	±0.000013 in/in [±13µm/m]
Flatness restrained on flat surface in [µm]		±0.003 + .000254 in/in [±76 + 254µm/m]	

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

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

PHYSICAL		- 2	- 3	- 4	- 6	- 8
Carriage Assembly						
T4SB Aluminum	lbs [kg]	6.5 [3,0]	10.3 [4,7]	13.0 [5,9]	17.8 [8,1]	22.7 [10,3]
T4SS Steel	lbs [kg]	8.78 [4,0]	14.22 [6,5]	18.47 [8,4]	26.49 [12,0]	34.54 [15,7]
Base Assembly						
T4SB Aluminum	lbs/ft [kg/m]	26.7 [39,8]	.....▶	.....▶	.....▶	.....▶
T4SS Steel	lbs/ft [kg/m]	34.9 [52,0]	.....▶	.....▶	.....▶	.....▶
Carriage Length	in [mm]	4.80 [121,9]	8.15 [207,0]	11.50 [292,1]	18.20 [462,3]	24.90 [632,5]
Coil Bar Length	in [mm]	10.00 [254]	13.36 [339]	16.72 [424]	23.44 [595]	30.16 [766]

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

### NOTES

- Total travel = OAL – 5.50" (139.7 mm) – carriage length.
- Maximum base length is 168", 4.2 meters.
- Aluminum base is black anodized. Steel base is nickel plated.
- For complete motor specifications, refer to 410 series motor data sheet.
- Renishaw encoder, RG24 series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
- Cable extends past base by approximately 0.6" when carriage is at negative hard stop.
- Cable Track extends 0.175" higher than carriage mounting surface. It is recommended to use optional Spacer Plate for custom mounting holes.
- Standard cable track provided is Igus 07.30.028.
- Base mounting holes are equidistant, 1.680" (16.80, 23.52....) or 3.360" (20.16, 26.88....) from each end depending on base length.
- Specification subject to change without notice.
- Listed specifications based on motor size and typical performance require Bearing manufacturer specifications exceed listed specifications.



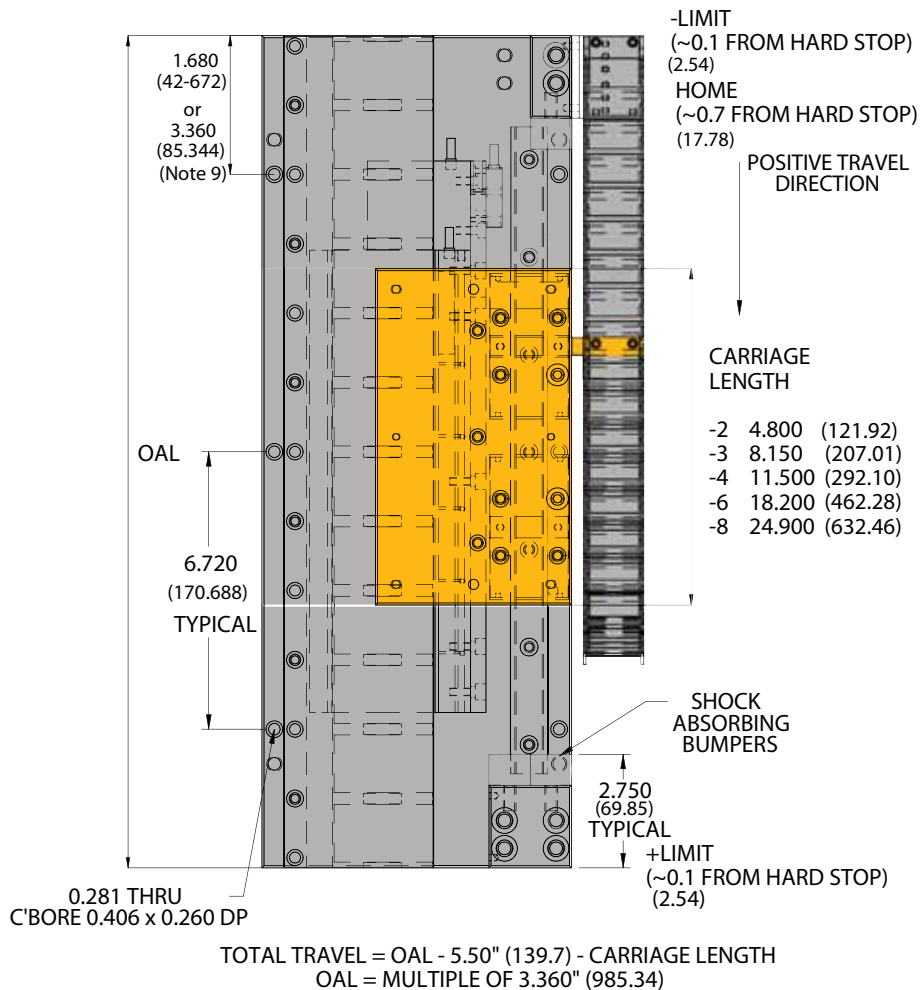




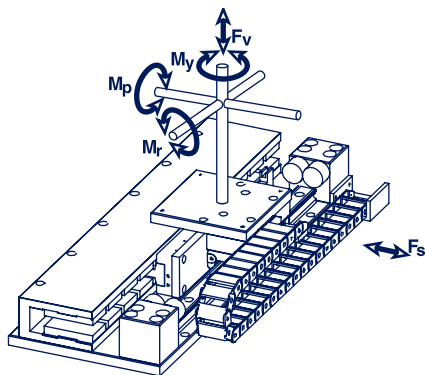
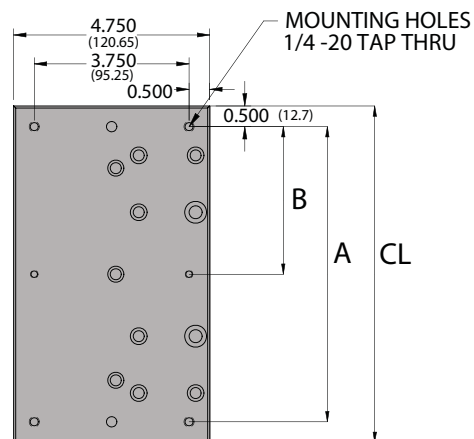
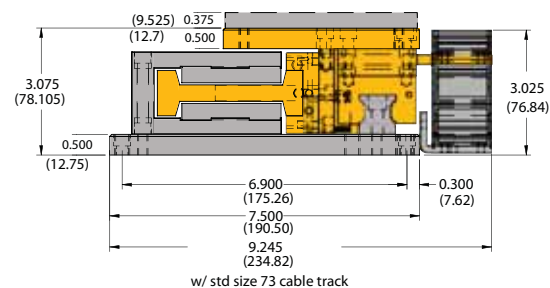
Dimensions shown in inches.

● Moving Carriage Assembly

● Stationary Base Assembly



0.375 THICK CARRIAGE SPACER PLATE (optional)  
9.525



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

Order Example:

T 1 D A 012 3 N S B A G 2

### Series

T = Open Positioner

### Motor Coil Series

1 = 110 Motor Coil

### Bearing Rail Configuration

D = Dual Bearing Rails  
S = Single Bearing Rails

### Base Material

A = 3/8" Al

### Length of Base

XXX = Length of base in inches

Max.: 33.6"

Min.: 9.6"

Increment: 2.4"

\* Truncate base length in part number. Example: for a 16.8 inch base, "XXX" equal "016"

T1S Base Length = Travel (increments of 2.4" [60.96mm])

+1.6" [40.64] + carriage length

T1D Base Length = Travel Travel (increments of 2.4" [60.96 mm])

-0.05" [1027 mm] + carriage length

### Coil Size

1 = 1 pole, T1S 3.4" (86.4 mm)

2 = 2 pole T1S 5.8" (147.3 mm)

T1D 5.4" (137.6 mm)

T1D 7.8" (198.12 mm)

T1S 3.4" (86.4 mm)

### Cooling

N no cooling

### Winding Type

S Series

P Parallel

### Cable track

0 = None  
2 = Std.

### Connector

Cable Connectorization

A = Aries

B = Flying Leads

C = Compax3

G = Gemini

V = ViX

Z = no cables

\*Connectorized cables  
only available with  
Connector Box

### Cable length

Cable Length

A = 1 Meter Flying Leads

B = 3 Meter Flying Leads

C = 7.5 Meter Flying Leads

L = 3 Extension Cables  
(with Connector Box)

M = 7.5 Extension Cables  
(with Connector Box)

Z = Connector Box ONLY  
(no extension cables)

\*Flying leads – cable  
measured from last cable  
carrier link

\*Extension Cables – cable  
measured from  
connection box at  
end of base

### Encoder

A = LME, 1um

B = LME, 5um

Q = Renishaw, 5um

L = Renishaw, 1um

M = Renishaw, 0.5m

P = Renishaw, 0.1um

R = Renishaw, 1 V p-p  
sine/cosine

X = No encoder

## Order Example:

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

**Series**

T = Open Positioner  
B = Bellows Positioner

**Motor Coil Series**

2 = 210 motor coil

**Bearing Rail Configuration**

D = Dual Bearing Rails  
S = Single Bearing Rails  
\* Bellows positioners not available in single rail

**Base material**

A = 0.375" Al

**Length of Base**

XXX = Length of base in inches  
Max.: 120"  
Min.: 9.6"  
Increment: 2.4"

\* Truncate base length in part number. Example: for a 16.8 inch base, "XXX" equal "016"

T1S Base Length = Travel (increments of 2.4" [60.96 mm])  
+ 3.0" [76.2] + carriage length

T1D Base Length = Travel Travel (increments of 2.4" [60.96 mm])

**Coil size**

2 = 2 pole, 4.2 in (106.68 mm)  
3 = 3 pole, 6.6 in (167.64 mm)  
4 = 4 pole, 9.0 in (228.60 mm)

**Cooling**

N no cooling

**Winding Type**

S Series  
P Parallel

**Cable track**

0 = (no track)  
3 = (standard)

**Connector****Cable Connectorization**

A = Aries  
B = Flying Leads  
C = Compax3  
G = Gemini  
V = ViX  
Z = no cables

\*Connectorized cables only available with Connector Box

**Cable length**

A = 1 Meter Flying Leads  
B = 3 Meter Flying Leads  
C = 7.5 Meter Flying Leads  
L = 3 Extension Cables (with Connector Box)  
M = 7.5 Extension Cables (with Connector Box)  
Z = Connector Box ONLY (no extension cables)

\*Flying leads – cable measured from last cable carrier link

\*Extension Cables – cable measured from connection box at end of base

\*7.5 Meter Flying Lead Cables available on:

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

**Encoder**

A = LME 1 um  
B = LME 5 um  
Q = Renishaw 5 um  
L = Renishaw 1 um  
M = Renishaw 0.5 um  
P = Renishaw 0.1 um  
R = Renishaw IV p-p sine/cosine  
X = No Encoder

\*Consult factory for longer lengths.

Order Example:

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

### Series

T = Open Positioner  
B = Bellows Positioner

### Motor Coil Series

3 = 310 Motor Coil

### Bearing Rail Configuration

D = Dual Bearing Rails  
S = Single Bearing Rails  
\* Bellows positioners not available in single rail

### Base Material

B = 1/2" Al

### Length of Base

XXX = Length of base in inches

Max.: 118"

Min.: 9.6"

Increment: 2.4"

\* Truncate base length in part number. Example: for a 16.8 inch base, "XXX" equal "016"  
Base Length = Travel (increments of 2.4" [60.96mm])  
+3.0" [76.2 mm] + carriage length

### Coil Size

2 = 2 pole T3S 5.0" [127 mm], T3D 4.2" [106.68]

3 = 3 pole 6.6" [167.64 mm]

4 = 4 pole 9.0" [228.60 mm]

5 = 5 pole 11.4" [289.56 mm]

6 = 6 pole 13.3" [350.62 mm]

### Cooling

N no cooling

### Winding Type

S Series

P Parallel

### Cable track

0 = None  
3 = Std.

### Connector

Cable Connectorization

A = Aries

B = Flying Leads

C = Compax3

G = Gemini

V = ViX

Z = no cables

\*Connectorized cables only available with Connector Box

### Cable length

Cable Length

A = 1 Meter Flying Leads

B = 3 Meter Flying Leads

C = 7.5 Meter Flying Leads

L = 3 Extension Cables (with Connector Box)

M = 7.5 Extension Cables (with Connector Box)

Z = Connector Box ONLY (no extension cables)

\*Flying leads – cable measured from last cable carrier link

\*Extension Cables – cable measured from connection box at end of base

\*7.5 Meter Flying Lead Cables available on:

All bases with LME encoder

All bases with Renishaw encoder under 86"

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

### Encoder

A = LME, 1um

B = LME, 5um

Q = Renishaw, 5um

L = Renishaw, 1um

M = Renishaw, 0.5m

P = Renishaw, 0.1um

R = Renishaw, 1 V p-p sine/cosine

X = No encoder

Order Example:

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

**Series**

T = Open Positioner  
B = Bellows Positioner

**Motor Coil Series**

4 = 410 motor coil

**Bearing Rail Configuration**

D = Dual Bearing Rails  
S = Single Bearing Rails  
\* Bellows positioners not available in single rail

**Base material**

B = 1/2" Al

**Length of Base**

XXX = Length of base in inches  
Max.: 120"  
Min.: 13.44"  
Increment: 3.36"

\* Truncate base length in part number.  
Example: for a 16.8 inch base, "XXX" equal "016"

Base Length = Travel (increments of 2.4" [60.96mm])  
+ 5.5" [39.7 mm] + carriage length

**Coil size**

2 = 2 pole 4.8" [121.92 mm]  
3 = 3 pole 8.15" [207.01 mm]  
4 = 4 pole 11.5" [292.10 mm]  
6 = 6 pole 18.2" [462.28 mm]  
8 = 8 pole 24.9" [632.46 mm]

**Cooling**

N no cooling

**Winding Type**

S Series  
P Parallel

**Cable track**

0 = (no track)  
4 = (standard)

**Connector**

Cable Connectorization

A = Aries  
B = Flying Leads  
C = Compax3  
G = Gemini  
V = ViX  
Z = no cables

\*Connectorize cables only available with Connector Box

**Cable length**

A = 1 Meter Flying Leads  
B = 3 Meter Flying Leads  
C = 7.5 Meter Flying Leads  
L = 3 Extension Cables (with Connector Box)  
M = 7.5 Extension Cables (with Connector Box)  
Z = Connector Box ONLY (no extension cables)

\*Flying leads – cable measured from last cable carrier link

\*Extension Cables – cable measured from connection box at end of base

\*7.5 Meter Flying Lead Cables available on:

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

**Encoder**

A = LME 1 um  
B = LME 5 um  
Q = Renishaw 5 um  
L = Renishaw 1 um  
M = Renishaw 0.5 um  
P = Renishaw 0.1 um  
R = Renishaw IV p-p sine/cosine  
X = No Encoder

\*Consult factory for longer lengths.