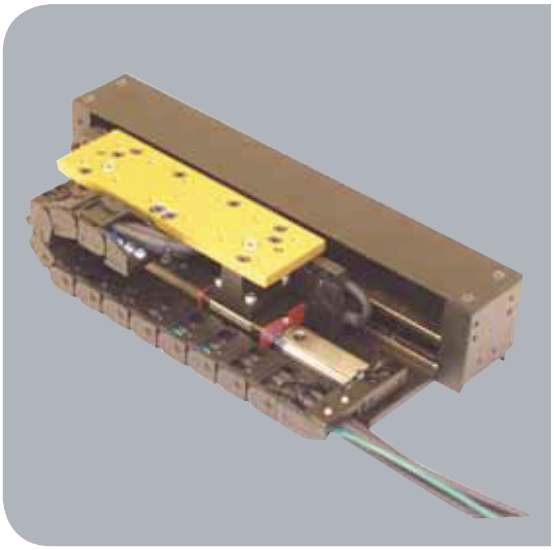
I-FORCE Ironless Linear Positioners



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 0.1um (0.00004").
- 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

T1D Specifications

PERFORMANCE		LINEAR MAGNETIC ENCODER 5.0µm	LINEAR MAGNETIC ENCODER 1.0µm	RENISHAW ENCODER OPTIONS (Note 5) 0.5µm	RENISHAW ENCODER OPTIONS (Note 5) 0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
Resolution	in [µm]	0.0002 [5]	0.00004 [1.0]	0.00002 [0.5]	0.000004 [0.1]
Repeatability	in [µm]	±0.0004 [±10]	±0.00008 [2.0]	±0.00006 [1.5]	±0.00004 [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

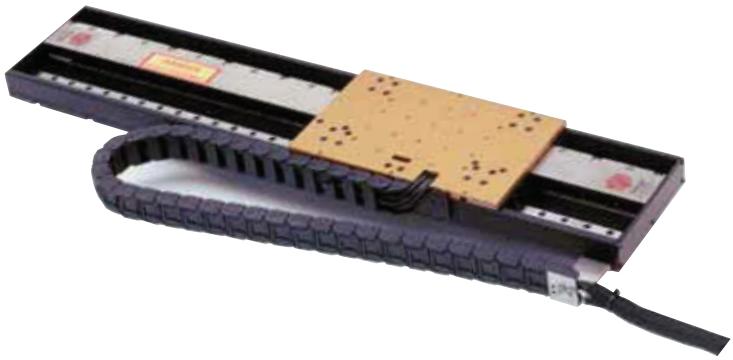
ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in [µm]	±0.000127in/in [±12.7µm/m]	±.000000127in/in
Flatness restrained on flat surface in [µm]	±0.013 [±330]	

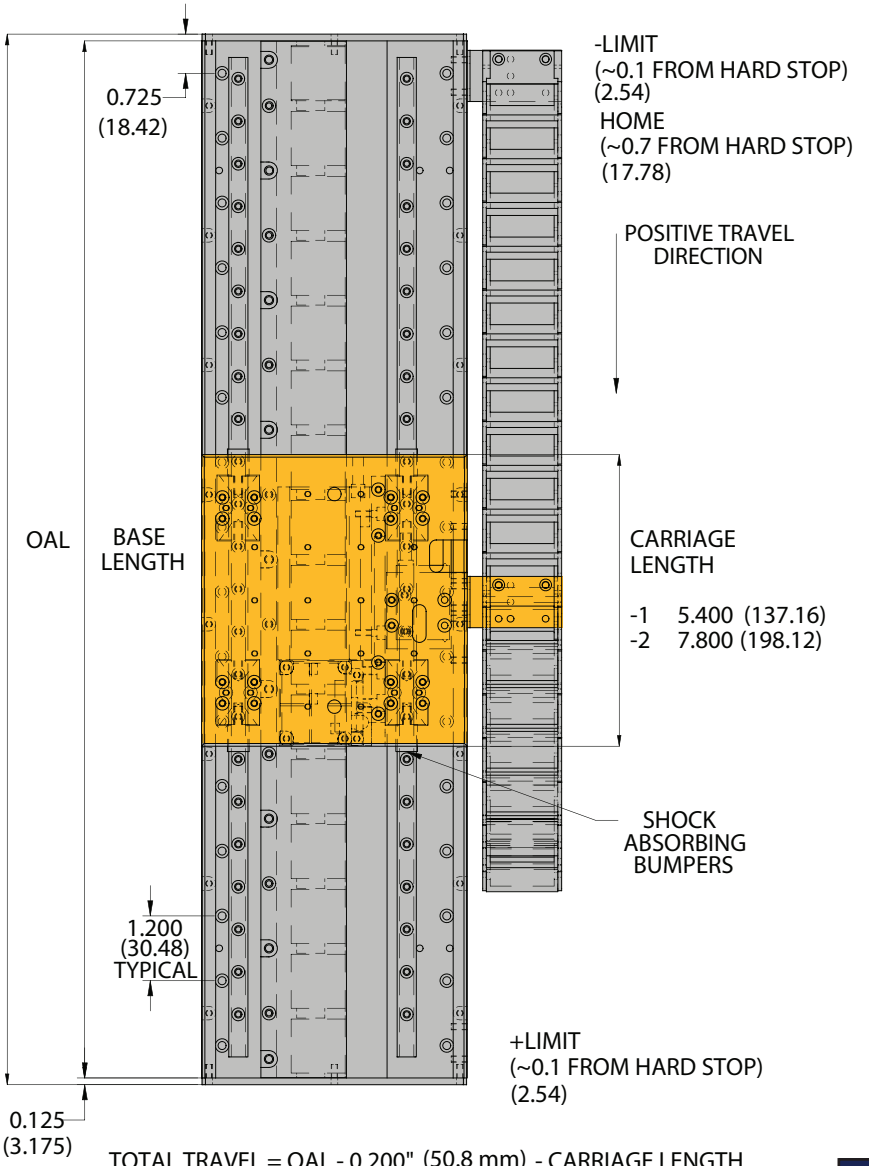
Note: Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

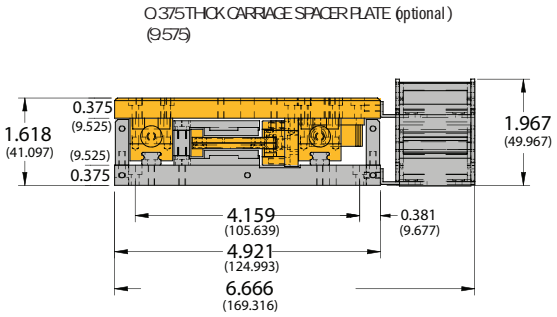
LOAD		- 1	- 2
Vertical (Fv) see note 11	lbs [kg]	30 [13.5]	30 [13.5]
Side (Fs) see note 11	lbs [kg]	15 [6.8]	15 [6.8]
Moments–Roll (Mr) see note 11	lb-ft [N-m]	15 [20]	15 [20]
Moments–Pitch (Mp) see note 11	lb-ft [N-m]	52 [70]	52 [70]
Moments–Yaw (My) see note 11	lb-ft [N-m]	52 [70]	52 [70]

Dimensions shown in inches.

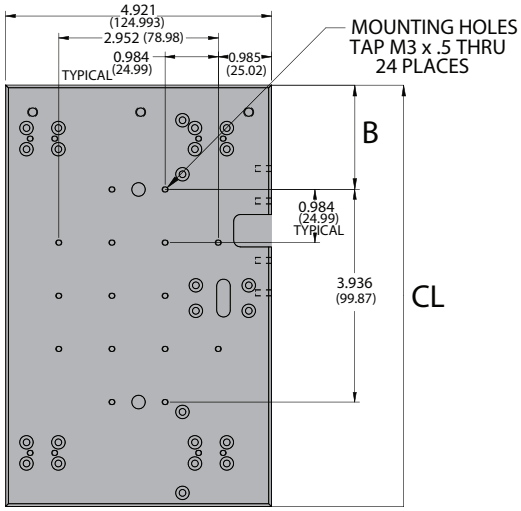
- Moving Carriage Assembly
- Stationary Base Assembly







w/ std size 73 cable track



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)

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		110-2	

T1S Specifications

PERFORMANCE		LINEAR MAGNETIC ENCODER 5.0µm	LINEAR MAGNETIC ENCODER 1.0µm	RENISHAW ENCODER OPTIONS (Note 5) 0.5µm	RENISHAW ENCODER OPTIONS (Note 5) 0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
Resolution	in [µm]	0.0002 [5]	0.00004 [1.0]	0.00002 [0.5]	0.000004 [0.1]
Repeatability	in [µm]	±0.0004 [±10]	±0.00008 [2.0]	±0.00006 [1.5]	±0.00004 [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	988	1641
Continuous Power	W	47	82

ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in [µm]	±0.000127in/in [±127µm/m]	±.0000013in/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]	1.10 [0.50]	1.50 [0.68]
Base Assembly			
T1SD Aluminum (0.250" thick))	lbs/ft [kg/m]	2.25 [3.36]	·····►
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

1 Total travel (in) = BASE LENGTH - 1.6 (40.64mm) - CARRIAGE LENGTH

2 Maximum base length is 40.8", 1m

3 Aluminum base is black anodized.

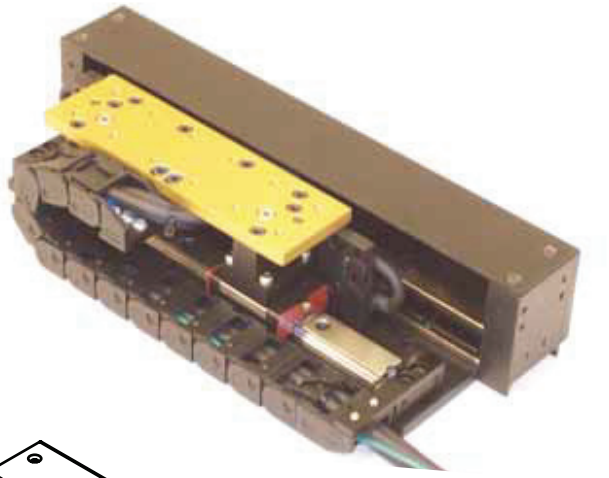
4 For complete motor specifications, refer to 110 series motor data sheet.

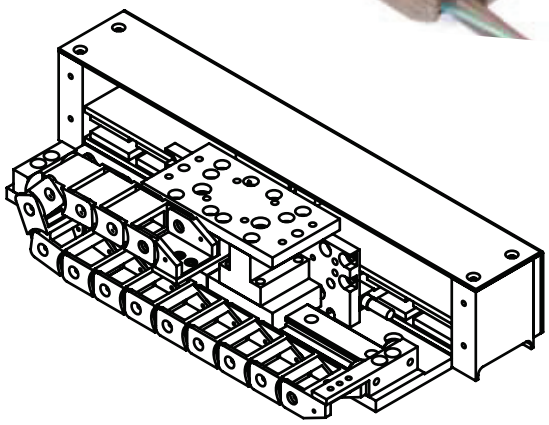
5 Renishaw encoder, RGH24 series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.

7 Standard cable track provided is Igus 07.20.018

8 Specification subject to change without notice.

9 Listed specifications based on motor size and typical performance requirements. Bearing manufacturer specifications exceed listed specifications.





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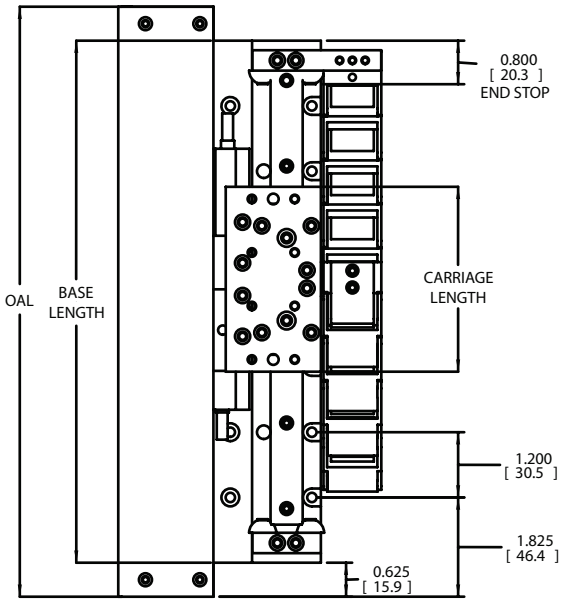
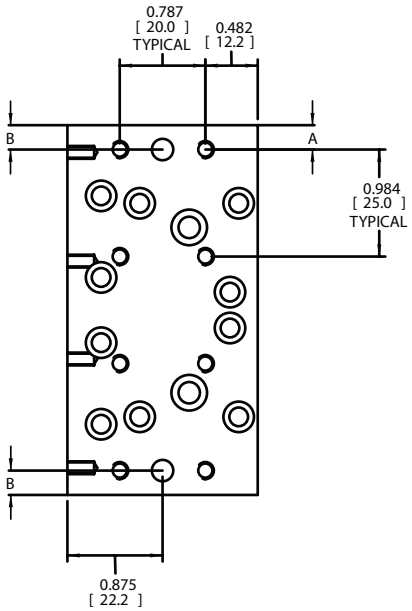
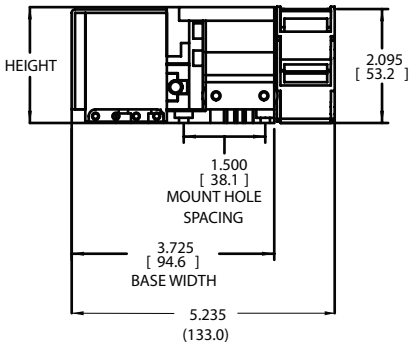






OAL = BASE LENGTH + 1.25 IN (31.75)
TRAVEL = BASE LENGTH - 1.6 - CARRIAGE LENGTH
TRAVEL (mm) = BASE LENGTH - 40.64 - CARRIAGE LENGTH

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]

T2D Specifications

PERFORMANCE		LINEAR MAGNETIC ENCODER 5.0µm	LINEAR MAGNETIC ENCODER 1.0µm	RENISHAW ENCODER OPTIONS (Note 5) 0.5µm	RENISHAW ENCODER OPTIONS (Note 5) 0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
Resolution	in [µm]	0.0002 [5]	0.00004 [1.0]	0.00002 [0.5]	0.000004 [0.1]
Repeatability	in [µm]	±0.0004 [±10]	±0.00008 [20]	±0.00006 [1.5]	±0.00004 [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		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]	±.0.0000127in/in [±13µm/m]
Flatness restrained on flat surface in [µm]	±0.0003+0.000254in/in [±76+254µm/m]	

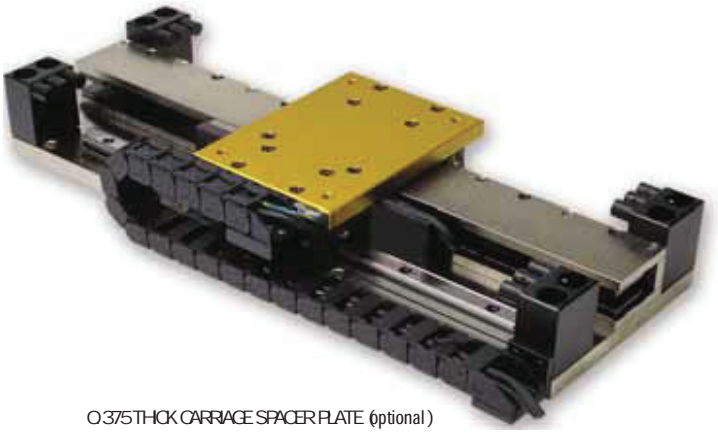
Note: For travels less than 1 meter, Flatness should be calculated at 1 meter
Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

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

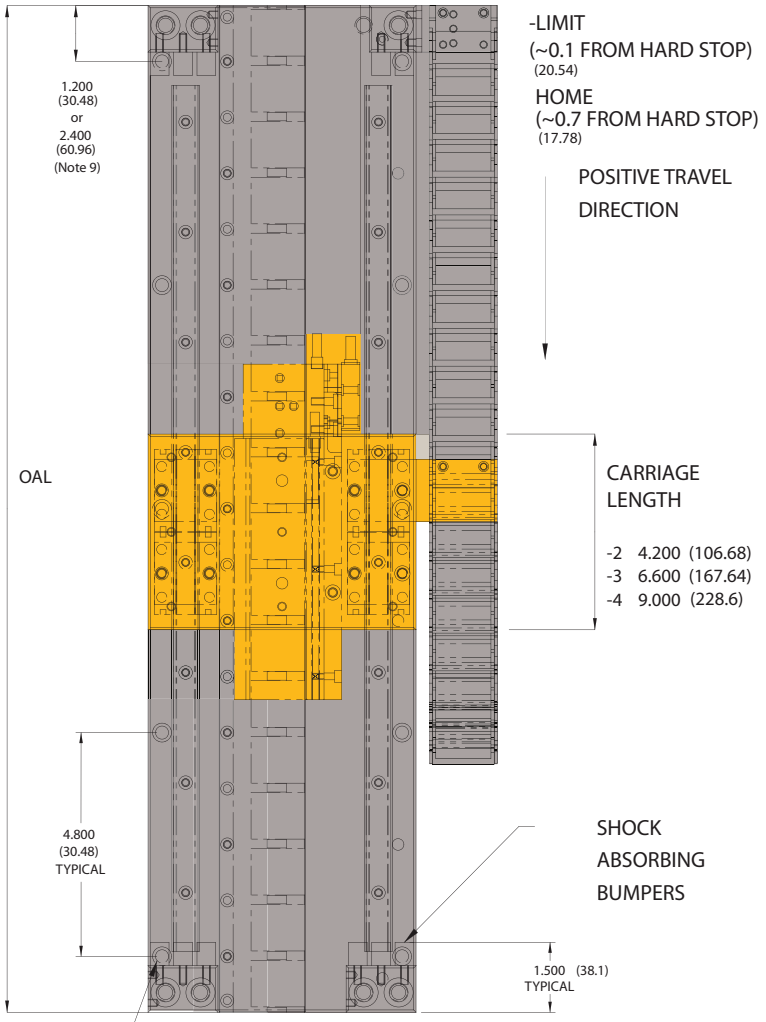
1. Total travel = OAL – 3.00" (76.2mm) – carriage length.
2. Maximum base length is 120" (3048mm).
3. Aluminum base is black anodized. Steel base is nickel plated.
4. For complete motor specifications, refer to 210 series motor data sheet.
5. Renishaw encoder, RGH-24 series, available in 0.05µm, 0.1µm, 0.5µm, 1.0µm, 5.0µm.
6. Cables extend 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" (120, 168, 216...) or 2.400" (96, 144, 192, 240...) 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.

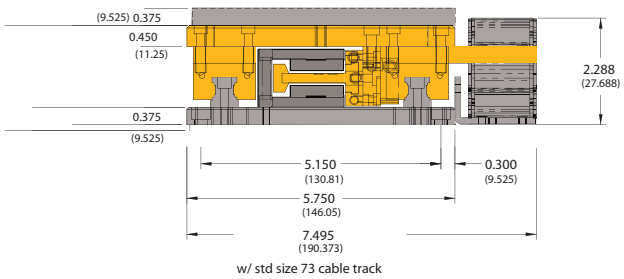


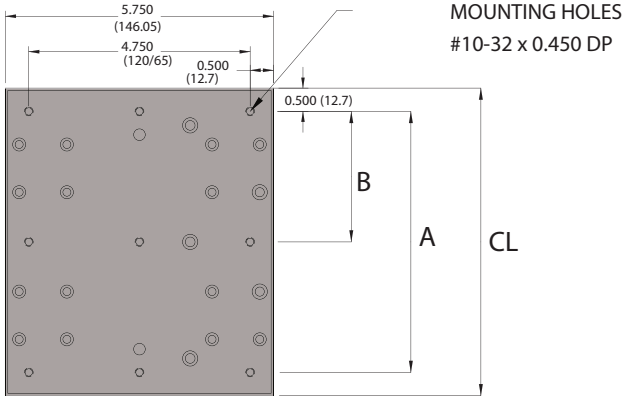
Dimensions shown in inches.

● Moving Carriage Assembly

● Stationary Base Assembly



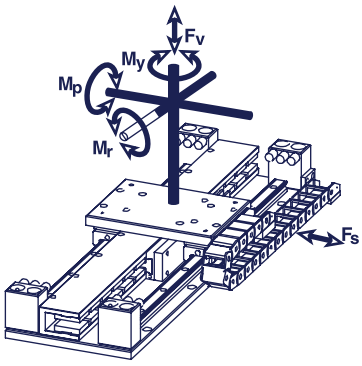




TOTAL TRAVEL = OAL - 3.00" (76.2 mm) - CARRIAGE LENGTH

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	203.20
B	—	—	2.800	71.12	4.000	101.60
COL	210-2		210-3		210-4	



T2S Specifications

PERFORMANCE		LINEAR MAGNETIC ENCODER 5.0µm	LINEAR MAGNETIC ENCODER 1.0µm	RENISHAW ENCODER OPTIONS (Note 5) 0.5µm	RENISHAW ENCODER OPTIONS (Note 5) 0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
Resolution	in [µm]	0.0002 [5]	0.00004 [1.0]	0.00002 [0.5]	0.000004 [0.1]
Repeatability	in [µm]	±0.0004 [±10]	±0.00008 [2.0]	±0.00006 [1.5]	±0.00004 [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		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 [±127mm/m]	±0.0000127in/in [±13mm/m]
Flatness restrained on flat surface in [µm]	±0.0003+.000254in/in [±76+254µm/m]	

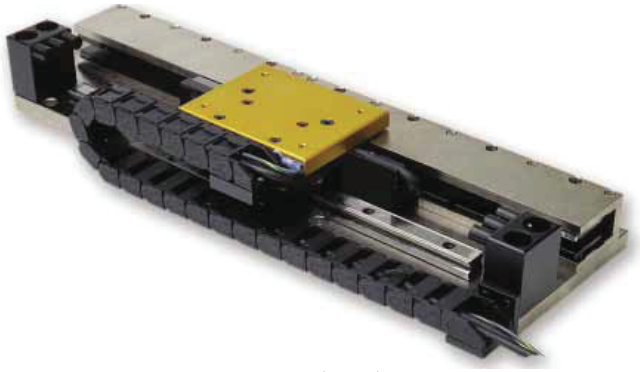
Note: For travels less than 1 meter, Flatness should be calculated at 1 meter
Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

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]

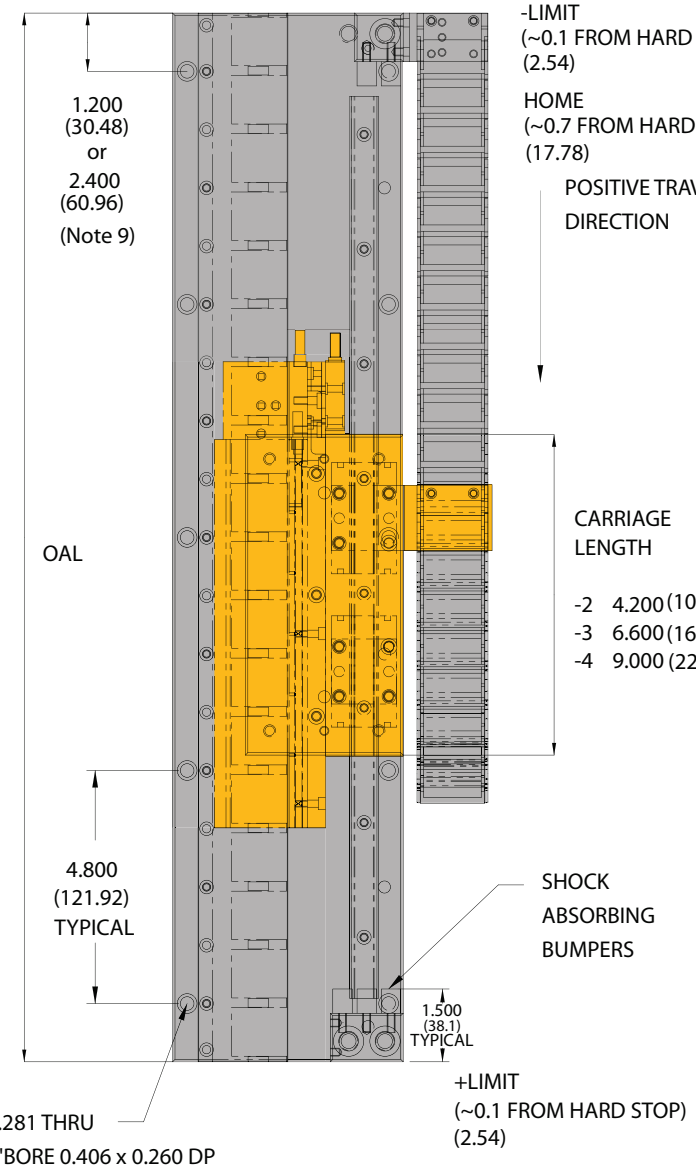
NOTES

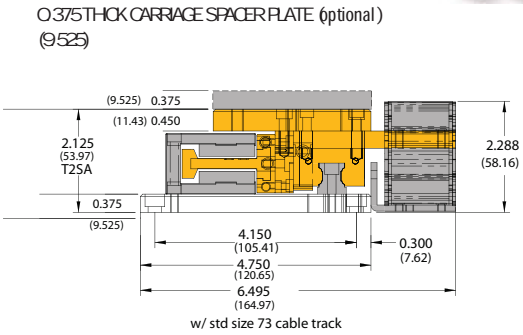
1. Total travel = OAL – 3.00" (76.2mm) – carriage length.
2. Maximum base length is 120" (3048mm).
3. Aluminum base is black anodized. Steel base is nickel plated.
4. For complete motor specifications, refer to 210 series motor data sheet.
5. Renishaw encoder, RGH24 series, available in 0.05µm, 0.1µm, 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. ments. Bearing manufacturer specifications exceed listed specifications.

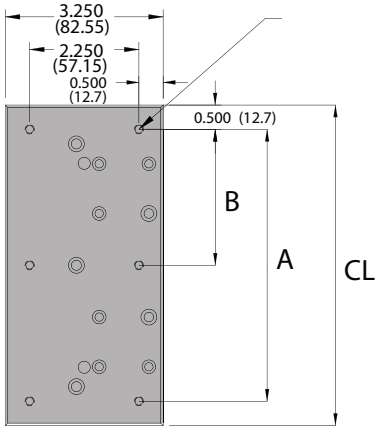


Dimensions shown in inches.

- Moving Carriage Assembly
- Stationary Base Assembly

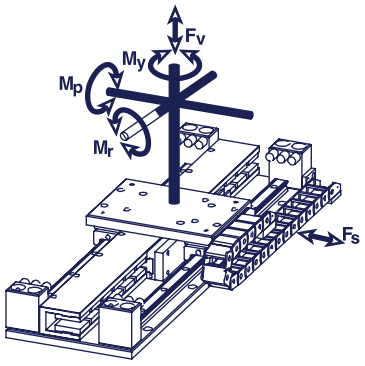






TOTAL TRAVEL = OAL - 3.00" - CARRIAGE LENGTH
= OAL - 76.2 mm - CARRIAGE LENGTH

OAL = MULTIPLE OF 2.400" (60.96)



CARRIAGE SIZE	-2	mm	-3	mm	-4	mm
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	

T3D Specifications

PERFORMANCE		LINEAR MAGNETIC ENCODER 5.0µm	LINEAR MAGNETIC ENCODER 1.0µm	RENISHAW ENCODER OPTIONS (Note 5) 0.5µm	RENISHAW ENCODER OPTIONS (Note 5) 0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
Resolution	in [µm]	0.0002 [5]	0.00004 [1.0]	0.00002 [0.5]	0.000004 [0.1]
Repeatability	in [µm]	±0.0004 [±10]	±0.00008 [2.0]	±0.00006 [1.5]	±0.00004 [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		310-2	310-3	310-4	310-5	310-6
Peak Force	N	409.3	600.0	790.0	980.0	1170.01
	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	3600	4308	5116
Continuous Power	W	4	135	179	215	256

ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in [µm]	±0.000127in/in [±12.7µm/m]	±.000013in/in [13µm/m]
Flatness restrained on flat surface in [µm]	±0.003+.000254in/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	- 5	- 6
Carriage Assembly	lbs [kg]	4.60 [2.1]	6.70 [3.0]	8.10 [3.7]	9.50 [4.3]	11.00 [5.0]
Base Assembly						
T3DA Aluminum (3.375" thick)	lbs/ft [kg/m]	15.75 [23.4]	▸	▸	▸	▸
T3DB Aluminum (0.500" thick)	lbs/ft [kg/m]	16.88 [25.1]	▸	▸	▸	▸
T3DS Steel (0.500" thick)	lbs/ft [kg/m]	25.27 [37.6]	▸	▸	▸	▸
Carriage Length	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]	16.80 [426.7]

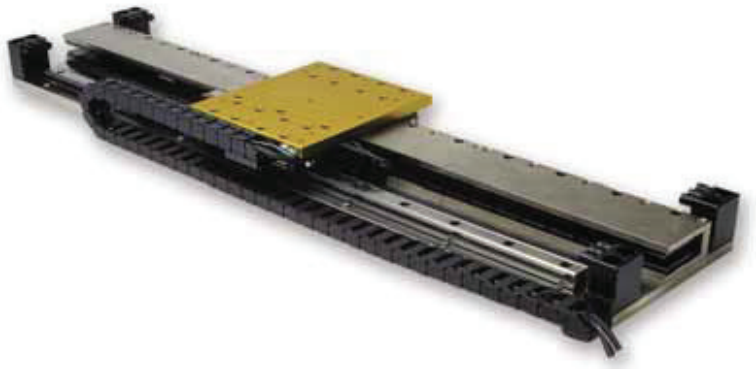
LOAD		- 2	- 3	- 4	- 5	- 6
Vertical (Fv) see note 11	lbs [kg]	120 [54]	150 [68]	180 [81]	210 [95]	240 [108]
Side (Fs) see note 11	lbs [kg]	80 [36]	100 [45]	100 [45]	100 [45]	100 [45]
Moments–Roll (Mr) see note 11	lb-ft [N-m]	80 [107]	100 [134]	100 [134]	100 [134]	100 [134]
Moments–Pitch (Mp) see note 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]

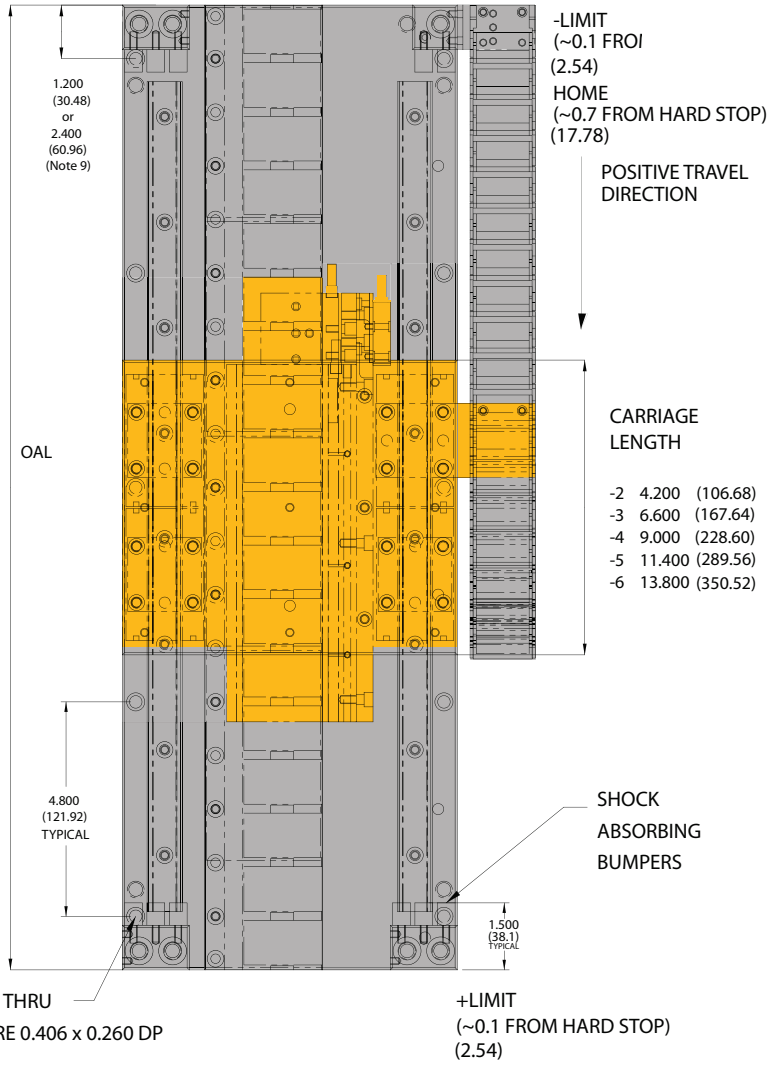
NOTES

1 Total travel = OAL – 3.00" (76.2mm) – carriage length.
2 Maximum base length is 120" (3048mm).
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 0.05µm, 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.

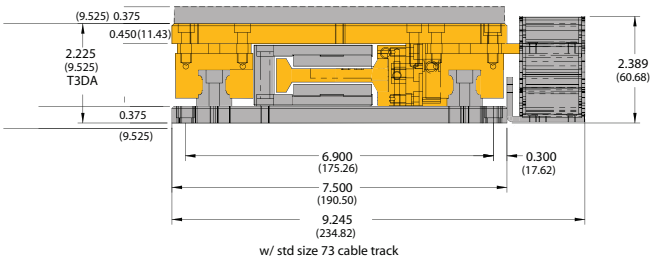
- Moving Carriage Assembly
- Stationary Base Assembly



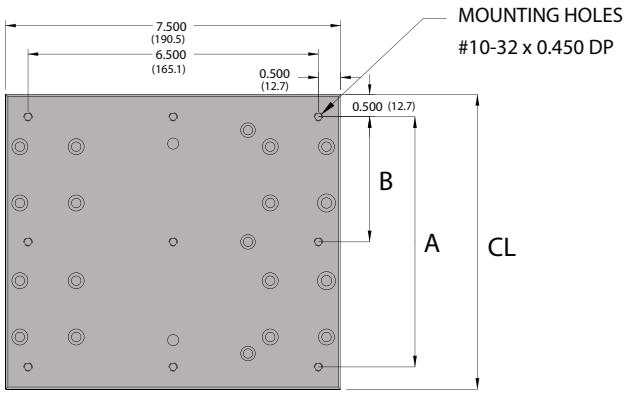


TOTAL TRAVEL = OAL - 3.00" (76.2) - CARRIAGE LENGTH
OAL = MULTIPLE OF 2.400" (60.96)

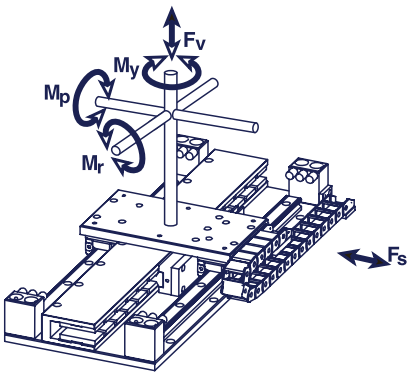
0.375 THICK CARRIAGE SPACER PLATE (optional)
(9.525)



w/ std size 73 cable track



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	



T3S Specifications

PERFORMANCE		LINEAR MAGNETIC ENCODER 5.0µm	LINEAR MAGNETIC ENCODER 1.0/0.1µm	RENISHAW ENCODER OPTIONS (Note 5) 0.5µm	RENISHAW ENCODER OPTIONS (Note 5) 0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
Resolution	in [µm]	0.0002 [5]	0.00004 [1.0]	0.00002 [0.5]	0.000004 [0.1]
Repeatability	in [µm]	±0.0004 [±10]	±0.0008 [20]	±0.00006 [1.5]	±0.00004 [1.0]
Accuracy – LIVE		± (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		310-2	310-3	310-4	310-5	310-6
Peak Force	N	409.3	600.0	790.0	980.0	1170.01
	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	3600	4308	5116
Continuous Power	W	4	135	179	215	256

ACCURACY	STANDARD	LASER ALIGNMENT OPTION
Straightness restrained on flat surface in [µm]	±0.000127 [±127µm/m]	±.00013in/in [±13µm/m]
Flatness restrained on flat surface in [µm]	±0.003+.00254in/in [±76+254µm/m]	

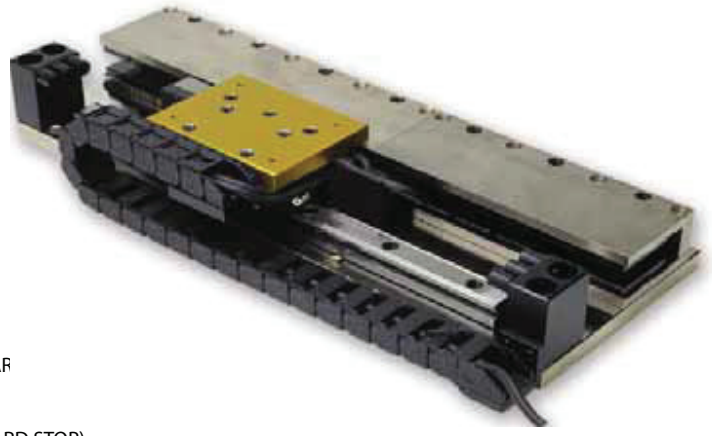
Note: For travels less than 1 meter, Flatness should be calculated at 1 meter
Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

PHYSICAL		- 2	- 3	- 4	- 5	- 6
Carriage Assembly	lbs [kg]	3.00 [1.4]	4.40 [2.0]	5.50 [2.5]	6.40 [2.9]	7.40 [3.3]
Base Assembly						
T3SA Aluminum (3.375" thick)	lbs/ft [kg/m]	13.30 [19.8]	▶	▶	▶	▶
T3SB Aluminum (0.500" thick)	lbs/ft [kg/m]	14.25 [21.2]	▶	▶	▶	▶
T3SS Steel (0.500" thick)	lbs/ft [kg/m]	21.24 [31.6]	▶	▶	▶	▶
Carriage Length	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]	16.80 [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]

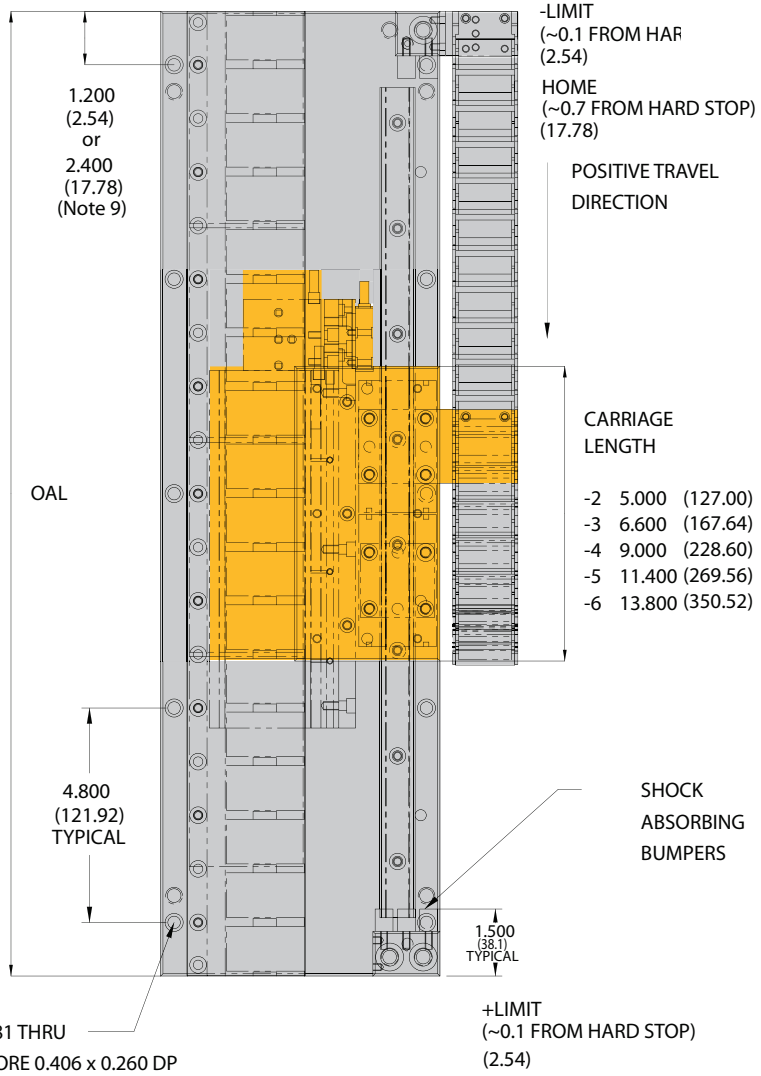
NOTES

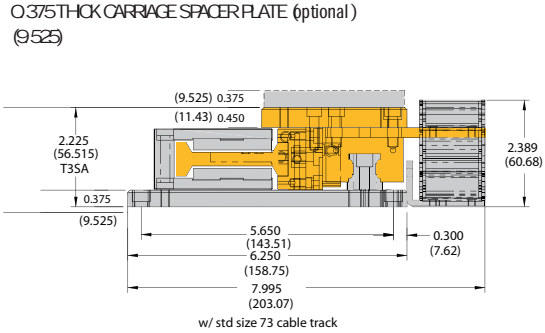
1. Total travel = OAL – 3.00" (76.2mm) – carriage length.
2. Maximum base length is 120" (3048mm).
3. Aluminum base is black anodized. Steel base is nickel plated.
4. For complete motor specifications, refer to 310 series motor data sheet.
5. Renishaw encoder, RGH24 series, available in 0.05µm, 0.1µm, 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" (120, 168, 216...) or 2.400" (96, 144, 192, 240...) 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.

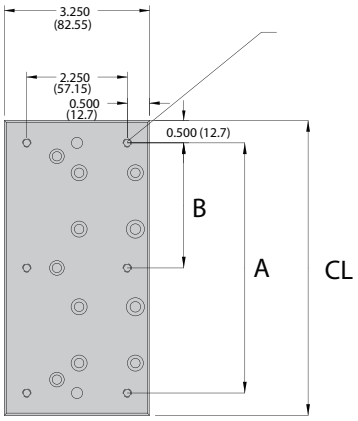


Dimensions shown in inches.

- Moving Carriage Assembly
- Stationary Base Assembly

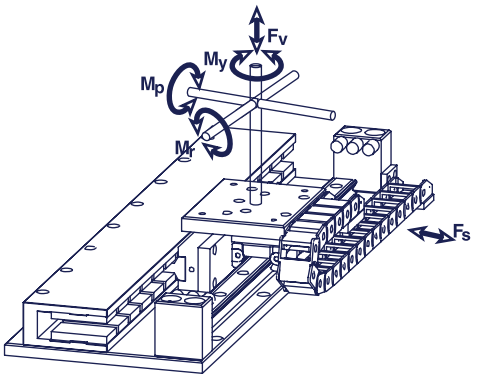






TOTAL TRAVEL = OAL - 3.00" (76.2) - CARRIAGE LENGTH
OAL = MULTIPLE OF 2.400" (60.96)

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	5.600	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	



T4D Specifications

PERFORMANCE		LINEAR MAGNETIC ENCODER 5.0µm	LINEAR MAGNETIC ENCODER 1.0/.1µm	RENISHAW ENCODER OPTIONS (Note 5) 0.5µm	RENISHAW ENCODER OPTIONS (Note 5) 0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
Resolution	in [µm]	0.0002 [5]	0.00004 [1.0]	0.00002 [0.5]	0.000004 [0.1]
Repeatability	in [µm]	±0.0004 [±10]	±0.0008 [20]	±0.00006 [1.5]	±0.00004 [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		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]	±.000127in/in [±127µm/m]	±.0000013in/in [±13µm/m]
Flatness restrained on flat surface in [µm]	±.003+.000254in/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]	2.94 [4.38]	····►	····►	····►	····►
T4DS Steel	lbs/ft [kg/m]	3.93 [5.85]	····►	····►	····►	····►
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]

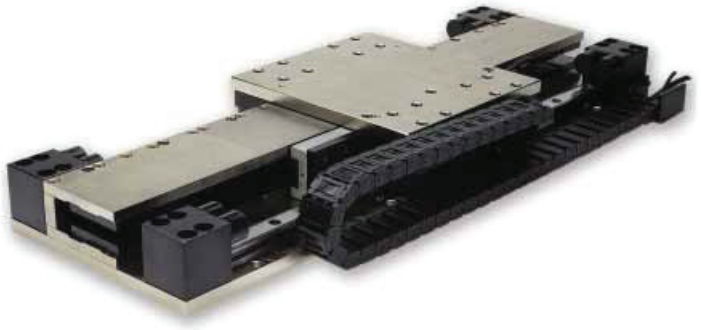
LOAD		- 2	- 3	- 4	- 6	- 8
Vertical (Fv) see note 11	lbs [kg]	200 [90]	250 [113]	300 [136]	400 [181]	400 [181]
Side (Fs) see note 11	lbs [kg]	150 [68]	150 [68]	150 [68]	150 [68]	150 [68]
Moments–Roll (Mr) see note 11	lb-ft [N-m]	100 [133]	150 [200]	150 [200]	150 [200]	150 [200]
Moments–Pitch (Mp) see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

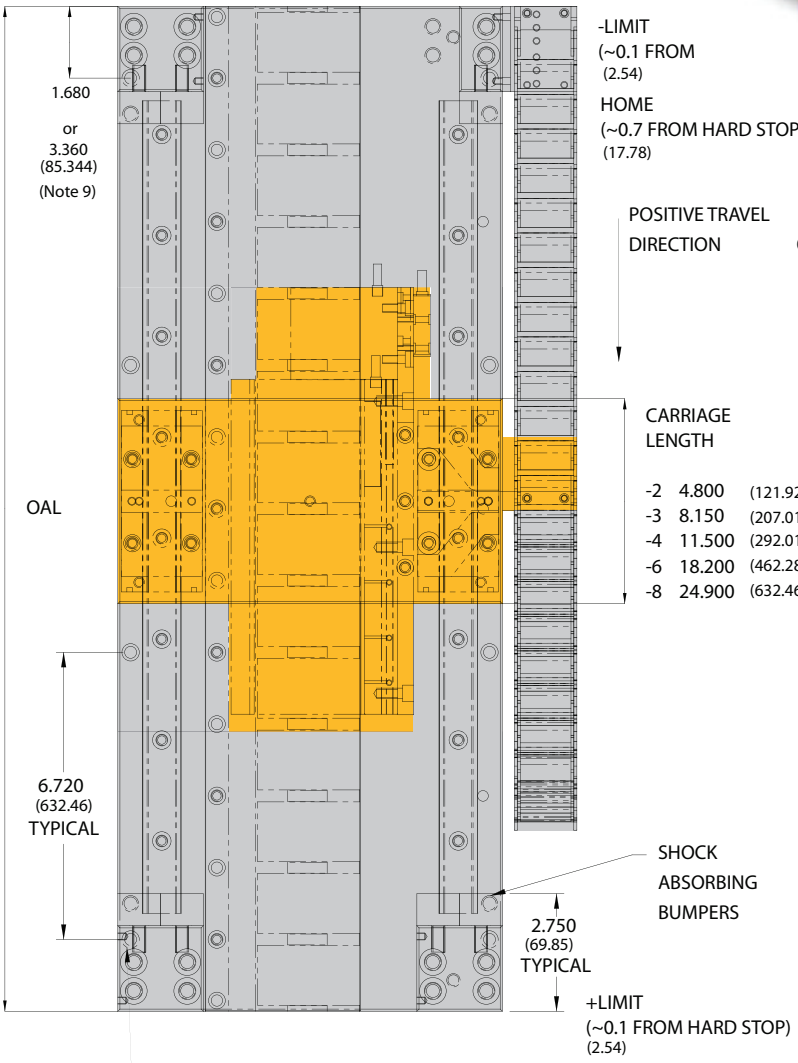
NOTES

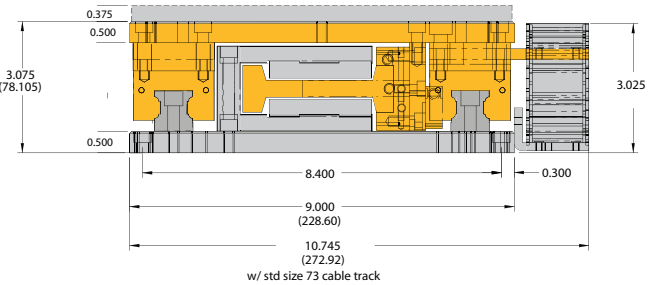
1. Total travel = OAL – 5.50" (139.7mm) – carriage length.
2. Maximum base length is 120" (3048)
3. Aluminum base is black anodized. Steel base is nickel plated.
4. For complete motor specifications, refer to 410 series motor data sheet.
5. Renishaw encoder, RGH24 series, available in 0.05µm. 0.1µm, 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" (168.0, 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.

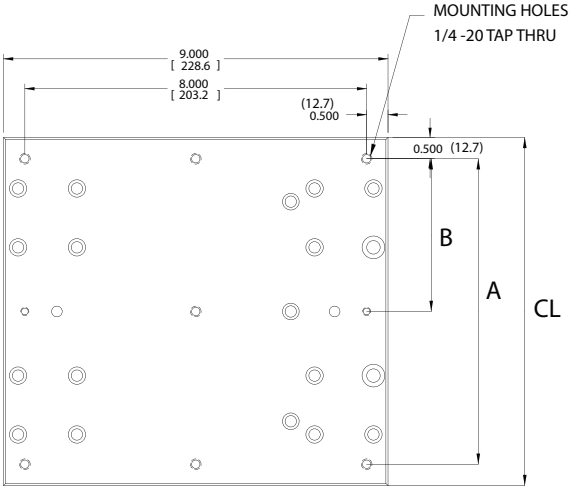
Dimensions shown in inches.

- Moving Carriage Assembly
- Stationary Base Assembly

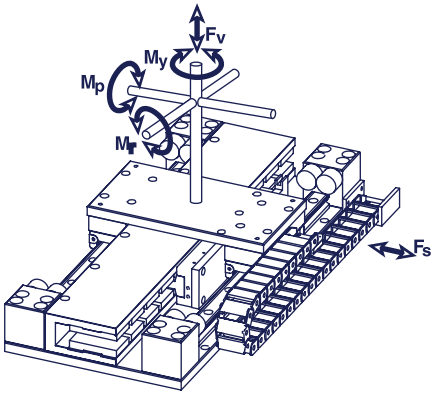








TOTAL TRAVEL = OAL - 5.50" (139.7) - CARRIAGE LENGTH
OAL = MULTIPLE OF 3.360" (85.34)



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	

T4S Specifications

PERFORMANCE		LINEAR MAGNETIC ENCODER 5.0µm	LINEAR MAGNETIC ENCODER 1.0µm	RENISHAW ENCODER OPTIONS (Note 5) 0.5µm	RENISHAW ENCODER OPTIONS (Note 5) 0.1µm
Peak Velocity	in/s [m/s]	275 [7]	100 [2.5]	120 [3]	15 [0.4]
Resolution	in [µm]	0.0002 [5]	0.00004 [1.0]	0.00002 [0.5]	0.000004 [0.1]
Repeatability	in [µm]	±0.0004 [±10]	±0.0008 [20]	±0.00006 [1.5]	±0.00004 [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		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 [±12.7µm/m]	±0.0000013in/in [±1.3µm/m]
Flatness restrained on flat surface in [µm]	±0.003+.000254in/in [±76+254µm/m]	

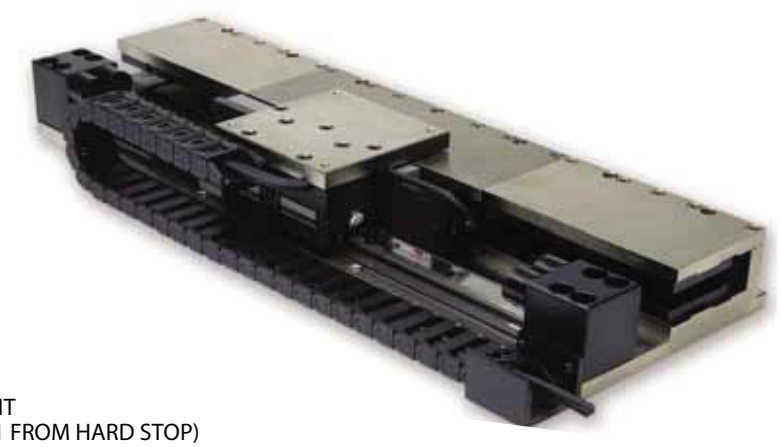
Note: For travels less than 1 meter, Flatness should be calculated at 1 meter
Straightness/Flatness specifications based on system mounted to surface of flatness ±0.0005in/ft

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]

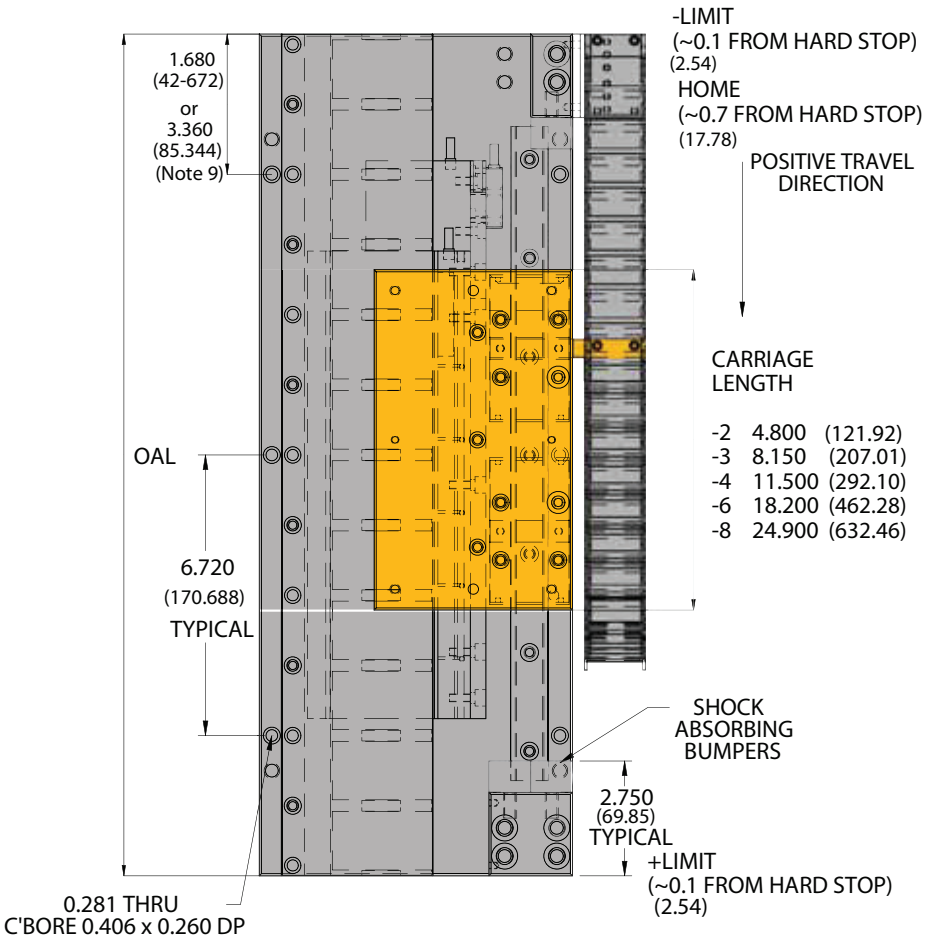
NOTES

1 Total travel = OAL – 5.50" (139.7mm) – carriage length.
2 Maximum base length is 168", 4.2 meters.
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 0.05µm, 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 require Bearing manufacturer specifications exceed listed specifications.



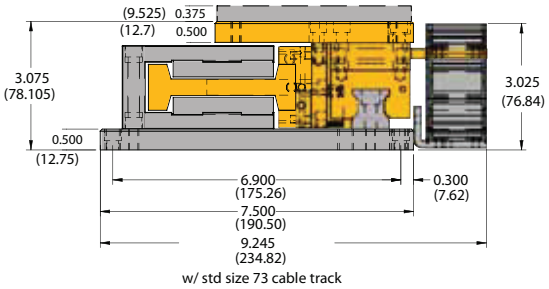
Dimensions shown in inches.

- Moving Carriage Assembly
- Stationary Base Assembly

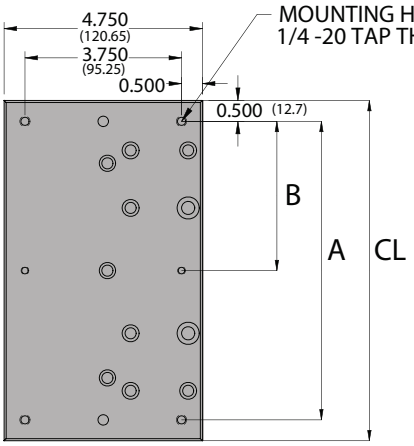


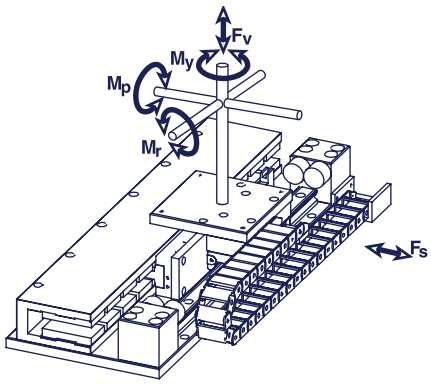
TOTAL TRAVEL = OAL - 5.50" (139.7) - CARRIAGE LENGTH
OAL = MULTIPLE OF 3.360" (985.34)

0.375 THICK CARRIAGE SPACER PLATE (optional)
9.525



w/ std size 73 cable track





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.: 336"
Min.: 96"
Increment: 24"

* Truncate base length in part number. Example: for a 168 inch base, "XXX" equal "016"

T1S Base Length = Travel (increments of 24" [609.6mm]) +1.6" [40.64] + carriage length
T1D Base Length = Travel Travel (increments of 24" [609.6mm]) -0.05" [1.027mm] + carriage length

Coil Size
1 = 1 pole, T1S 3.4" (86.4mm)
2 = 2 pole T1S 5.8" (147.3mm)
T1D 5.4" (137.6mm)
T1D 7.8" (198.12mm)
T1S 3.4" (86.4mm)

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 = Compax 3
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 = LIME, 1um
B = LIME, 5um
Q = Renishaw, 5um
L = Renishaw, 1um
M = Renishaw, 0.5m
P = Renishaw, 0.1um
R = Renishaw, 1 Vp-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.: 96"
Increment: 24"

* Truncate base length in part number. Example: for a 168 inch base, "XXX" equal "016"

T1S Base Length = Travel (increments of 24" [609.6mm])
+30" [762] + carriage length
T1D Base Length = Travel Travel (increments of 24" [609.6mm])

Coil size
2 = 2 pole, 4.2 in (106.68mm)
3 = 3 pole, 6.6 in (106.64mm)
4 = 4 pole, 9.0 in (228.60mm)

Cooling
N no cooling

Winding Type
S Series
P Parallel

*Consult factory for longer lengths.

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

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 LIME 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)

Connector

Cable Connectorization
A = Aries
B = Flying Leads
C = Compax 3
G = Gemini
V = VIX
Z = no cables

*Connectorized cables only available with Connector Box

Cable track
0 = (no track)
3 = (standard)

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" [76.2mm] + carriage length

Coil Size
2 = 2 pole T3S 5.0" [127mm], T3D 4.2" [106.68]
3 = 3 pole 6.6" [167.64mm]
4 = 4 pole 9.0" [228.60mm]
5 = 5 pole 11.4" [289.56mm]
6 = 6 pole 13.3" [350.62mm]

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 = Compax 3
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 LIME encoder
All bases with Renishaw encoder under 86"
For bases with Renishaw encoder over 86" the cable length (CL) will be CL = 10 MM - (base length in meters + 0.3 M)

Encoder
A = LIME, 1um
B = LIME, 5um
Q = Renishaw, 5um
L = Renishaw, 1um
M = Renishaw, 0.5m
P = Renishaw, 0.1um
R = Renishaw, 1 Vp-p sine/cosine
X = No encoder

Order Example:

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

Series
T = Open Posititioner
B = Bellows Posititioner

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" [139.7mm] + carriage length

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

Cooling
N no cooling

Winding Type
S Series
P Parallel

*Consult factory for longer lengths.

Cable track
O = (no track)
4 = (standard)

Connector
Cable Connectorization
A = Aries
B = Flying Leads
C = Compax 3
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 LIME 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 = LIME 1um
B = LIME 5um
Q = Renishaw 5um
L = Renishaw 1um
M = Renishaw 0.5um
P = Renishaw 0.1um
R = Renishaw 1Vp-p sine/cosine
X = No Encoder