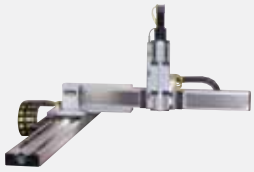
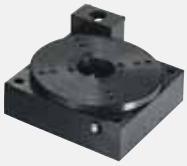
Screw Driven Tables

Contents

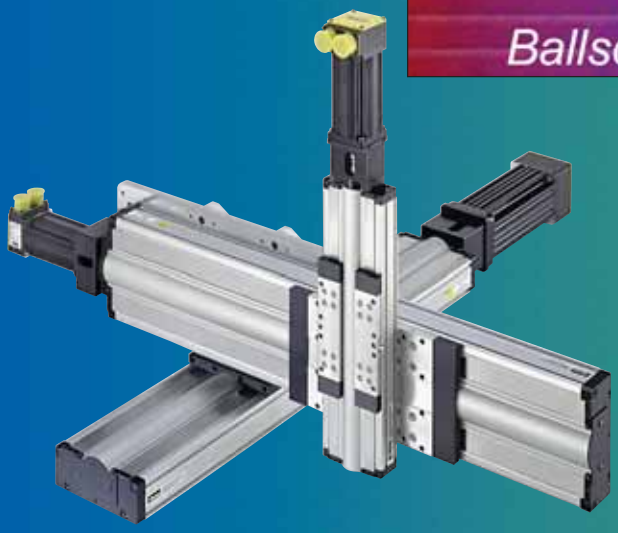
(click on desired subject)

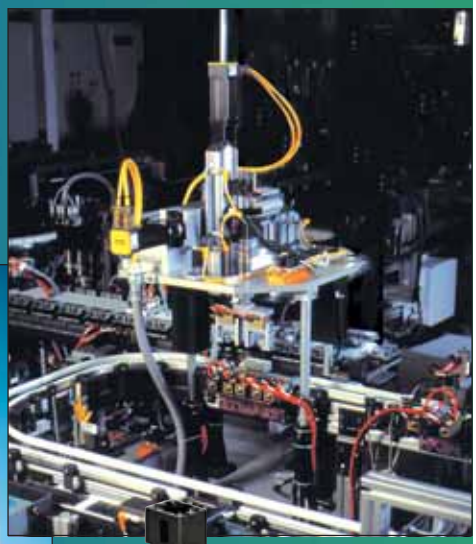




High Precision

Ballscrew and Leadscrew Driven Tables





Precise multi-axis positioning systems play an integral part in today's semiconductor, computer peripheral, biomedical and electronics industries. The demands for tighter specifications, improved throughput and consistent quality have become increasingly stringent. Because of the complexity associated with these systems, many manufacturers insist on a single source supplier to eliminate multiple vendor design incompatibilities and delivery conflicts.

With over thirty years experience as a global leader in the development of products and technology, Parker provides the most advanced, easy to integrate high precision electromechanical systems.

Parker High Precision Systems and Services include:

- *Selectable Levels of Integration™ that let you pick the product or system which suits your need and fits your capability*
- *The most comprehensive array of products in the industry*
- *Advanced product development*
- *Seamless integration with other Parker components including servo motors, motor drives, controls, interfaces, actuators, pneumatics, and structural components*
- *Modular construction from standard catalog tables or custom systems designed and built to specification*
- *Global Parker support network (1-800-C-PARKER)*

High Precision System Features

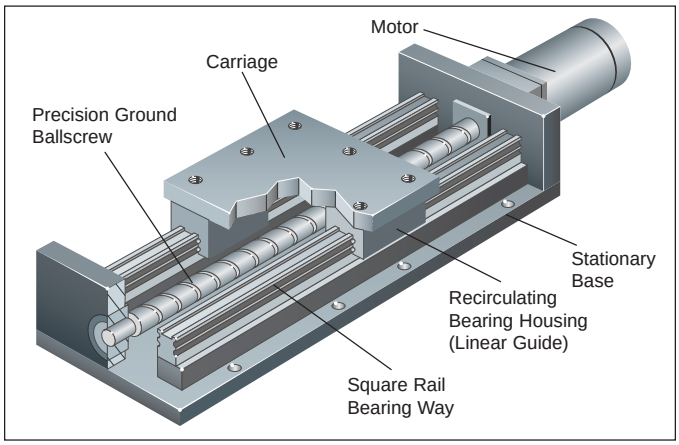
- ***Easy, multi-axis connectivity***
- ***Submicron precision***
- ***Velocities up to 1.5 meters per second***
- ***Cleanroom and vacuum compatible***
- ***Thorough testing and certification***

Overview

The vast majority of precision tables in use today employ rolling element (ball or cross roller) linear bearings. These are grouped into two primary categories: recirculating bearings (square rail and round rail), which facilitate very long travel distances and nonrecirculating (ball and rod, and cross roller) which offer the smoothest translation. Here you will find a condensed description of each style. The pages which follow describe Parker's screw driven, high precision table product offering.

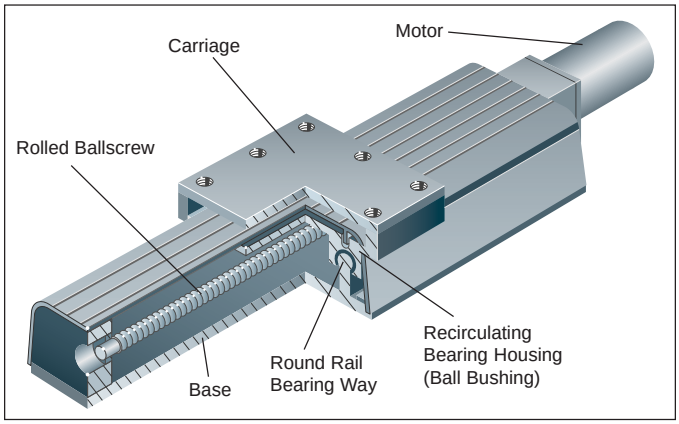
Square Rail Linear Tables

Square rail bearings are recirculating ball bearings designed to move heavy loads on a precise linear path. Linear guides which house several rows of re-circulating ball bearings ride on a square or rectangular steel rail. The rail cross section enables bearing ways to be ground into the sides of the rail. These bearing ways are shaped in an arch which approximates the same radius as the ball bearing. This increases the contact surface between the ball and the rail, thereby increasing the load capacity of the linear bearing. Travel with this bearing type is only limited by the available base, rail length, and drive mechanism. These tables are driven by a precision ground ballscrew, which is performance matched to the linear bearings to optimize load/life performance as well as positioning precision.



Round Rail Linear Tables

Round rail bearings are a re-circulating type linear bearing system consisting of two large diameter ground steel rods on which ball bushings ride. These bushings, have several rows of recirculating ball bearings, which support the moving carriage and permit very long travel lengths. The ball bushings provide good load capacity with very low friction and its modular design permits easy replacement of bearing components. A rolled ball-screw is normally employed as the drive mechanism. With characteristics of low friction, high-speed, long travel and low cost, this drive is well suited for tables utilizing a dual round rail bearing system. These tables are ideal for assembly and automation applications where higher speed, long life and easy, low cost maintenance is important.



Linear Bearings

The linear bearing supports the moving carriage and determines the straightness of the linear travel path. It is the key element in determining the load capacity. Parker precision tables are offered in four bearing styles: Square Rail, Round Rail, Linear Ball, and Cross Roller. This table shows the relative comparisons between each style.

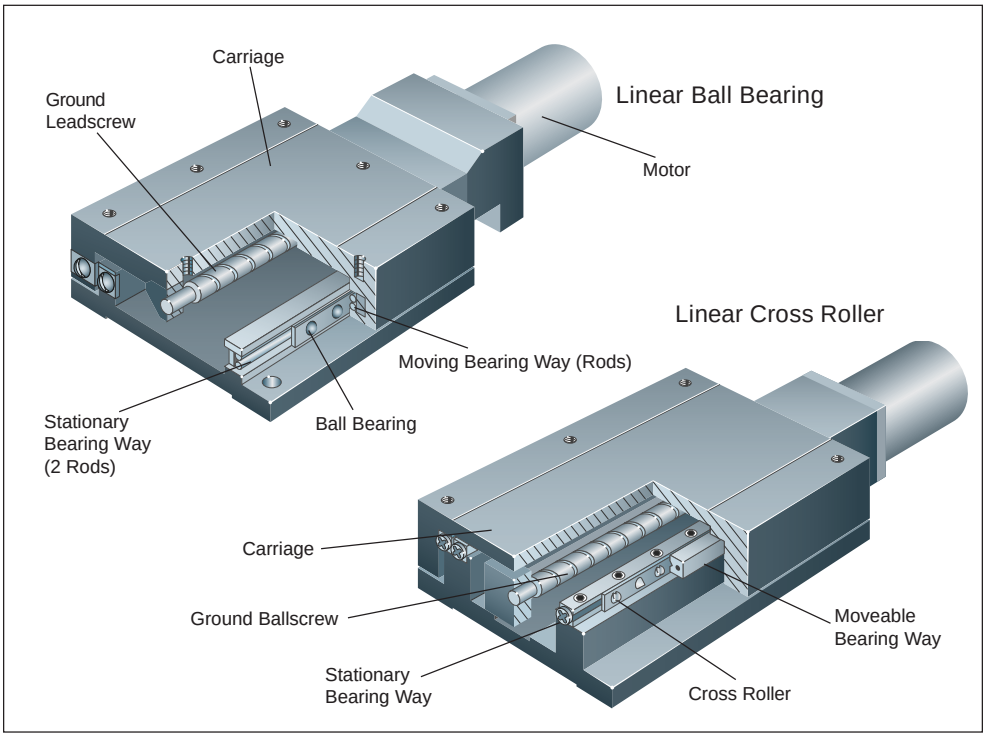
Attribute Comparison of Linear Bearing Technologies

Attribute	Square Rail	Round Rail	Ball and Rod	Cross Roller
Travel (Max.)	unlimited*	unlimited*	12 inches	18 inches
Friction	Low	Very Low	Extremely Low	Very Low
Smoothness	Moderate	Moderate	Extremely Smooth	Very Smooth
Straightness (travel)	Good	Moderate	Very Good	Excellent
Flatness (travel)	Good	Moderate	Very Good	Excellent
Load Capacity	Very High	Moderate	Low	Moderate/High

*Limited only by the available length of base and rails, travels of up to 3 meters are standard, and custom lengths are available.

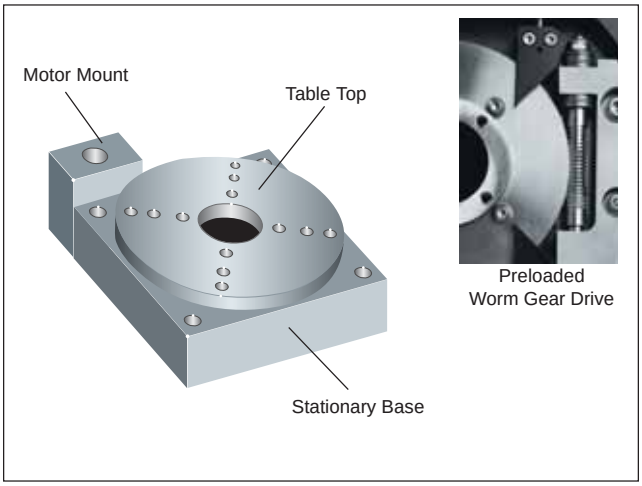
Linear Ball Bearing and Cross Roller Linear Tables

The nonrecirculating linear bearings found in both Linear Ball and Rod, and the Cross Roller style tables provide the smoothest translation (least mechanical noise) of any mechanical bearing table. The bearing system in the linear ball bearing (ball and rod) style table consists of two rows of hardened steel balls located on either side of the table. Each row is captured between two sets of ground steel rods (two stationary, two moving) and preloaded to provide ultra smooth, very straight, extremely low friction motion. The cross roller style functions in a similar manner except the balls are replaced by cylindrical rollers and the rods by ground "V" groove ways. The result of this difference is an increased load capacity of two to three times the equivalent size ball bearing table. The ball bearing tables utilize either leadscrew or ballscrew drive–depending on load ratings. Both tables are limited in travel as a result of the nonrecirculating nature of the bearings.



Rotary Indexing Tables

Precision rotary tables, used for precise angular indexing, employ an integral angular contact ball bearing or cross roller bearing system. The bearing system is preloaded to eliminate any eccentricity and provide smooth, flat rotary motion. The drive mechanism is a precision worm gear assembly which is compliantly preloaded to minimize backlash and assure positional accuracy and repeatability.



Precision Linear Drive Assemblies

The drive assembly physically moves the positioner and is the principal element in determining positional accuracy, repeatability and resolution.

Ground Leadscrew Drive

This drive mechanism is comprised of a precision ground steel leadscrew and a preloaded nut of phosphorus bronze. It offers the smoothest translation of all the drive assemblies and is recommended for applications with a duty cycle of 75% or less. As a result of the compliant preload (the nut threads are loaded against the screw threads to remove backlash) it offers repeatable self-locking positioning.

Ballscrew Drive

Ballscrews are very similar in appearance and function to leadscrews except ballscrews incorporate recirculating ball bearings in the nut assembly. This greatly reduces friction and wear resulting in improved efficiency of the drive assembly (30% for leadscrews vs. 90% for ballscrews) and a duty cycle rating of 100%. This increase in efficiency enables the ballscrew to deliver more thrust with less input torque. And since the load is applied to rolling elements instead of sliding elements, wear is greatly reduced.

For Belt drives, see page D1
For Linear Motor drives, see page A1.

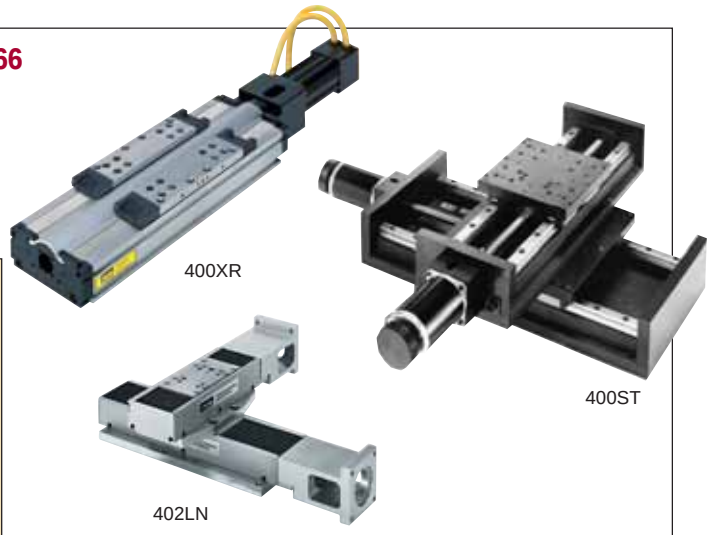
Product Comparisons: Parker high precision screw driven tables are divided into five families (or groups) which are distinguished by the primary bearing style. All tables are offered with several drive mechanism options and are designed for direct connection to standard frame size stepper or servo motors. Each family is shown here for a quick comparison based on key parameters.

Square Rail Linear Tables / see pages B7 - B66

The key attributes of the Square Rail Tables are high strength, long travel range, and high precision. These tables can satisfy the vast majority of high precision positioning applications ranging from industrial automation to high-end scientific markets.

Parameters:

Travel Range:	2000 mm
Load Capacity:	1470 kg
Maximum Speed:	1.5 meters/sec.
Duty Cycle:	100%
Repeatability: (bidirectional)	+/-1.3 µm



400XR

400ST

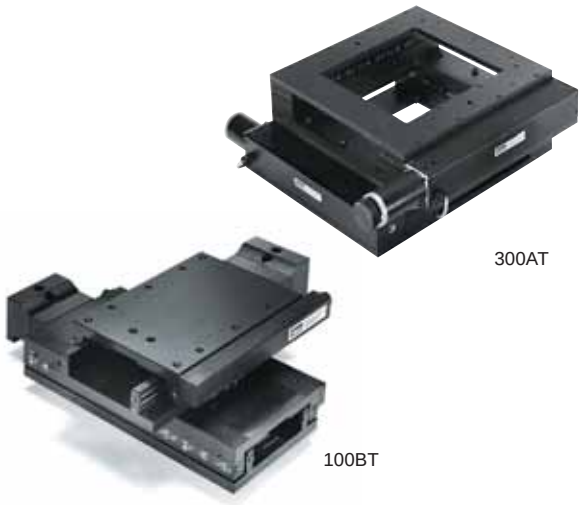
402LN

Linear Ball Bearing Tables / see pages B67 - B74

These tables, having a nonrecirculating ball bearing system, are ideal for short travel, light load requirements – where ultra-smooth – highly precise motion and positioning are paramount.

Parameters:

Travel Range:	600 mm
Load Capacity:	200 kg
Maximum Speed:	125 mm/sec.
Duty Cycle:	75%
Repeatability: (bidirectional)	+/-3.0 µm



300AT

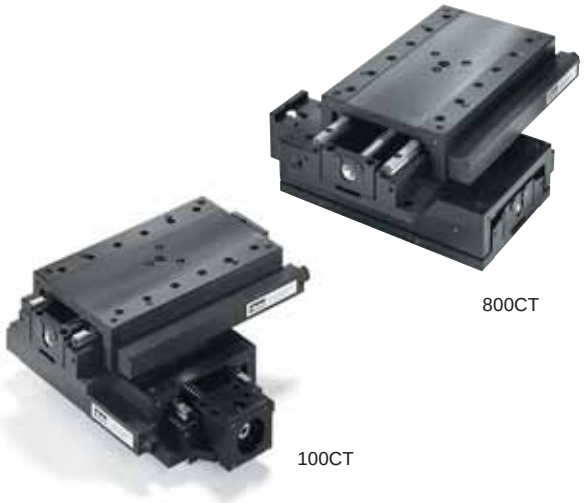
100BT

Cross Roller Linear Tables / see pages B75- B78

These tables, like the linear ball bearing tables, offer ultra-smooth highly precise motion and positioning. They are much stronger – providing twice the load carrying capability and offer a 100% duty cycle.

Parameters:

Travel Range:	300 mm
Load Capacity:	400 pounds
Maximum Speed:	250 mm/sec.
Duty Cycle:	100%
Repeatability: (bidirectional)	+/-1.3 µm



800CT

100CT

Rotary Tables / see pages B79 - B82

Rotary Tables provide continuous motor driven rotary motion and precise positioning. They are offered in 5, 6, 8, 10, and 12 inch diameters. Their low profile and light-weight make them ideal indexing units for multi-axis combination with high precision linear tables.

Parameters:

Travel Range:	continuous
Load Capacity:	90 kg
Maximum Speed:	150 deg./sec.
Duty Cycle:	50%
Repeatability: (unidirectional)	0.2 arc min.

200RT

Additional Capabilities / see pages B83 - B84

These pre-engineered tables are utilized primarily by OEMs for requirements which exceed Parker's standard catalog offering. They include high precision square rail units, belt driven round rail units, heavy duty cross roller units, and high speed rotary units.

406LN

600CT

506ET, 506ST

Motor Drives and Controls

The "400XR" Product Family

- Pre-engineered package
- Performance matched components
- Protection from environment
- Certified precision

1. High Strength Aluminum Body

Extruded aluminum housing is precision machined to provide outstanding straightness and flatness.

2. Square Rail Linear Bearing

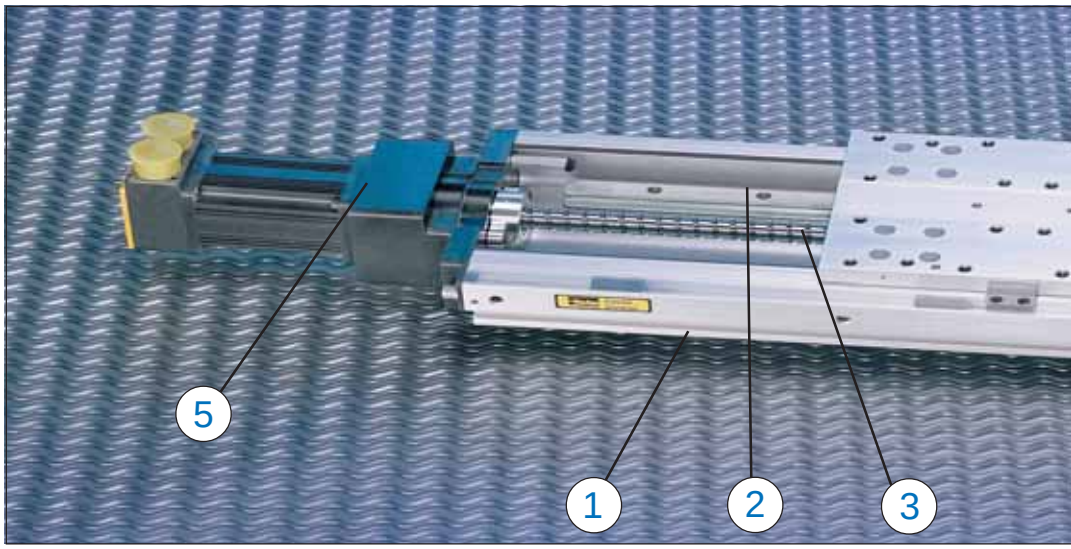
These tables are equipped with square rail carriage support bearings which provide high load carrying capabilities, smooth precise motion and dependable performance.

3. High Efficiency Ballscrew Drive

Precision ground, or rolled ballscrew drive (5, 10, 20, 25, 32 mm lead) offers high throughput, efficiency, accuracy and repeatability.

4. Limit/HomeSensors

Proximity sensors establish "end of travel" and "home" location and are easily adjustable over entire length to restrict the travel envelope.



Cleanroom Preparation

Class 10 cleanroom preparation is a standard option for the 400XR series. For detailed technical information on cleanroom preparation, contact Parker's Application Engineering Department.

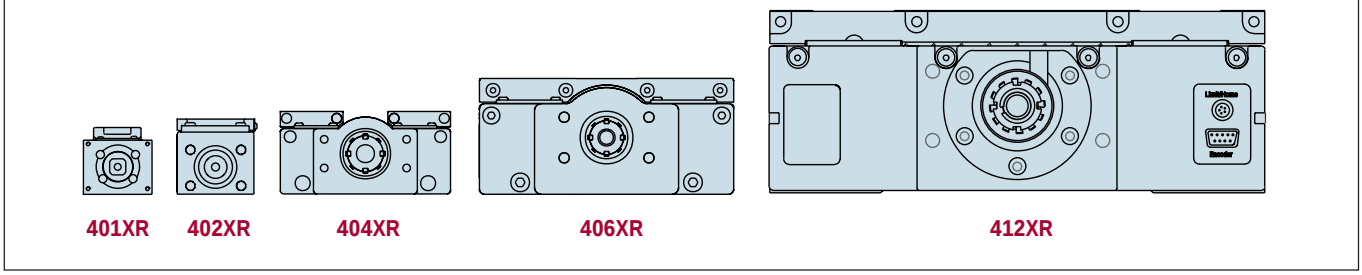
The “400XR” precision linear positioners family has achieved global recognition for consistent accuracy, reliable performance, high strength, and unmatched versatility. The XRs have excelled in industriessuch as life sciences, fiber optics and instru-mentation, where the highest degree of precision is required. And yet, because of the rugged construction, strength, and sealed design, these units have been used extensively for industrial automation applications (packaging, automotive, etc).

The XR family offers an unrivaled array of features and options which are easily matched to fit any application, from the very basic to the highly complex. Premier performance, modular compatibility, and quick delivery have made these tables the perfect building blocks for cost-effective multi-axis systems.

Typical Enhancements

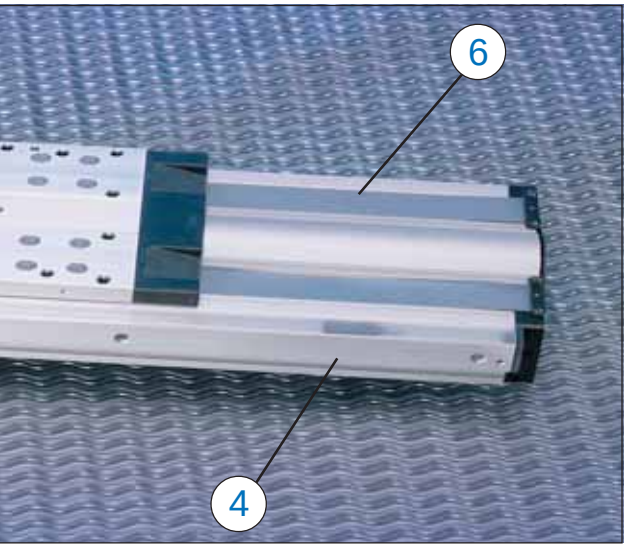
- **Limit/home position sensors**
- **Linear encoder feedback**
- **Cleanroom preparation**
- **Multi-axis brackets & adapters**
- **Selectable motor mounts**
- **Servo motors and drives**
- **Programmable controls**
- **Cable management system**

	401XR	402XR	404XR	406XR	412XR
Travel	300 mm	600 mm	600 mm	2000 mm	2000 mm
Load	50 kg	100 kg	170 kg	630 kg	1470 kg
Accel.	20 m/sec^2	20 m/sec^2	20 m/sec^2	20 m/sec^2	20 m/sec^2



5.Motor Mounts

A large selection of servo and stepper motor sizes; plus selectable mounting configurations (in-line, parallel) permit a wide variety of motor mounting possibilities.



6.IP30 Rated Strip Seals

An anodized aluminum cover combined with stainless steel strip seals provide IP30 protection to interior components as well as enhance the overall appearance.

Encoders

The linear encoder option offers direct positional feedback of the carriage location. The rotary shaft encoder couples directly to the drive shaft to nullify any incurred mechani-cal error (particularly useful with the parallelmotor mount). *Not shown*

Positive Pressure Port

(1/8 NPT) for pressurizing the interior to prevent particle intrusion.

Easy Lube System

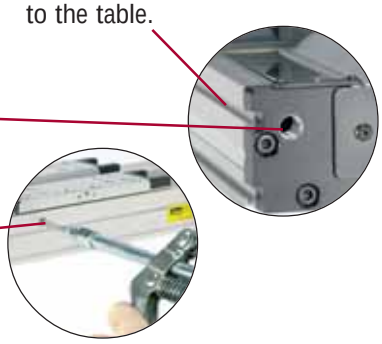
A standard option on some models, enables easy access for ballscrew and bearing lubrication.

Shaft Brake

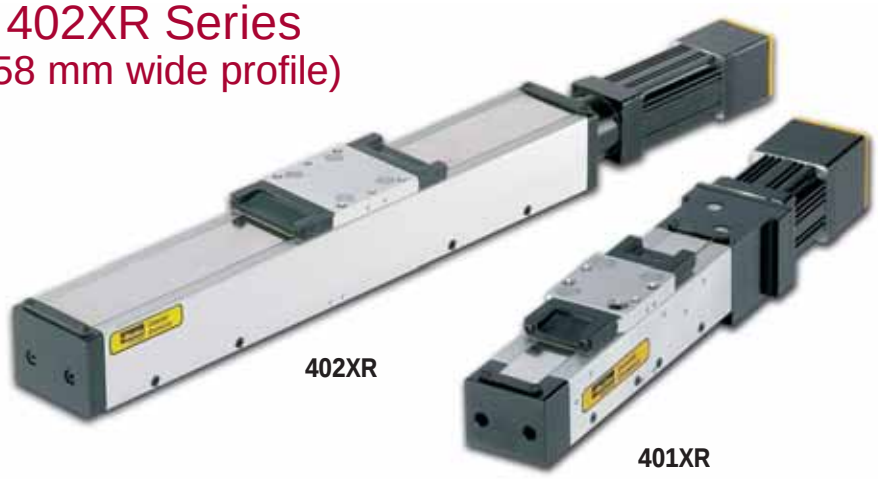
The electromagnetic shaft brake option couples directly to the drive screw and is employed primarily on vertical axes to halt carriage motion during a power loss. *Not shown*

Convenient Mounting Slots

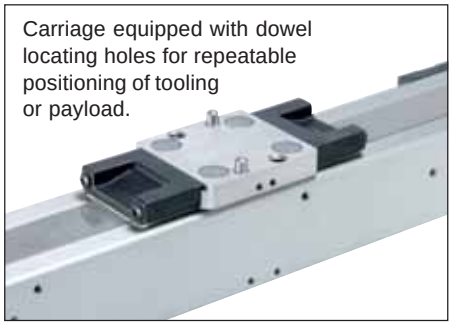
Continuous T-slots along the side of the table body provide a convenient means of mounting the table to a work surface as well as mounting accessories to the table.



401XR & 402XR Series
(41 mm & 58 mm wide profile)



The 401XR and 402XR Series positioners enhance the 400XR family of precision linear positioners, addressing applications which involve precise positioning of smaller payloads within a very small space envelope. These ballscrew driven positioners were developed to address the needs of industries such as photonics, life sciences, semiconductor, and instrumentation, where technology advancements dictate miniaturization of work envelopes.


Carriage equipped with dowel locating holes for repeatable positioning of tooling or payload.

	Precision*		Standard	
Common Characteristics	**401XR**	**402XR**	**401XR**	**402XR**
Performance				
Bidirectional Repeatability (µm)				
2 mm lead	±1.3	NA	±5	NA
5 or 10 mm lead	±1.3	±1.3	±12	±12
Duty Cycle	100%	100%	100%	100%
Max Acceleration – m/sec² (in/sec²)	20 (773)	20 (773)	20 (773)	20 (773)
Rated Capacity(1)				
Normal load – kgf (lbs)	50 (110)	100 (220)	50 (110)	100 (220)
Axial load – kgf (lbs)				
2 mm lead	5.5 (12.1)	NA	5.5 (12.1)	NA
5 or 10 mm lead	15.5 (34.2)	38 (84)	15.5 (34.2)	38 (84)
Motor Sizing				
Drive Screw Efficiency	80%	80%	80%	80%
Max Break-Away Torque – Nm (in-oz)	0.03 (4.2)	0.086 (12.0)	0.03 (4.2)	0.086 (12.0)
Max Running Torque(2) – Nm (in-oz)	0.028 (4.0)	0.08 (11.3)	0.028 (4.0)	0.08 (11.3)
Linear Bearing – Coefficient of Friction	0.01	0.01	0.01	0.01
Ballscrew Diameter – mm				
2 mm lead	6	NA	6	NA
5 or 10 mm lead	8	12	8	12
Carriage Weight – kgf (lbs)	0.045 (0.1)	0.11 (0.25)	0.045 (0.1)	0.11 (0.25)

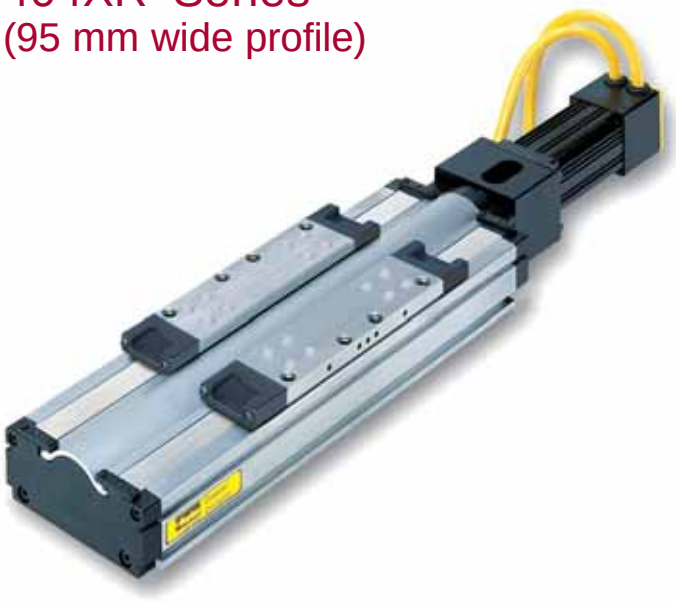
*Requires Linear Encoder Option E 3 or E 4
(1) Refer to life/load charts found on page B13. (2)Ratings established @ 2 rps

Travel Dependent Characteristics

Travel (mm)	Positional Accuracy (µm) 401 P*	401 S	402 P*	402 S	Straightness & Flatness Accuracy (µm) 401	402	Input Inertia 10^{-3} kg-cm² 401 2 mm	401 10 mm	402 5 mm	402 10 mm	Max Screw Speed (Revs Per Second) 401	402	Unit Weight (kg) 401	402
50	10	20	–	–	20	–	0.6	–	–	–	100	–	1.0	–
100	10	20	10	20	20	20	0.9	–	12.0	–	100	90	1.2	2.3
150	12	20	12	20	20	20	1.1	–	15.0	–	100	90	1.3	2.6
200	16	30	16	30	25	25	–	4.7	20.0	–	100	90	1.5	2.8
300	18	40	18	40	25	25	–	5.2	–	25.0	100	90	1.7	3.2
400	–	–	21	40	–	30	–	–	–	29.0	–	95	–	3.8
600	–	–	25	50	–	30	–	–	–	39.0	–	50	–	4.8

*Accuracy stated is at 20°C utilizing slope correction factor provided.

404XR Series
(95 mm wide profile)



Parallel Motor Mount-
(with limit/home sensor pack option)

The 404XR is a sleek compact positioner (47.3 x 95 mm profile) capable of carrying 170 kg loads up to a distance of 600 mm. Its quick and accurate positioning capability can be attributed to a high strength extruded housing, square rail ball bearing system, and precision ground ballscrew drive. With its low profile design the 404XR is ideal for height restricted applications, and its lightweight construction makes it well suited as secondary axes on multi-axis systems. These units offer a wide array of easily adapted options and accessories which permit easy configuration to specific requirements.

Common Characteristics		Precision	Standard
Performance			
Bidirectional Repeatability[5] (µm)		±1.3	±3.0
Duty Cycle	Ballscrew	100%	100%
	Leadscrew	75%	75%
Max Acceleration – m/sec² (in/sec²)		20 (773)	20 (773)
Rated Capacity[1]			
Normal load – kgf (lbs)		170 (375)	170 (375)
Axial load – kgf (lbs)[2]	Ballscrew	90 (198)	90 (198)
	Leadscrew	n/a	25(55)
Motor Sizing			
Drive Screw Efficiency	Ballscrew	90%	90%
	Leadscrew	30%	30%
Max Break-Away Torque – Nm (in-oz)		0.13 (18)	0.18 (26)
Max Running Torque[3] – Nm (in-oz)		0.11 (16)	0.17 (24)
Linear Bearing – Coefficient of Friction		0.01	0.01
Ballscrew Diameter (mm)		16	16
Carriage Weight – kg (lbs)		0.70 (1.55)	0.70 (1.55)

(1) Refer to life/load charts found on page B13.
(2) Axial load for parallel mounts is limited by a maximum input torque of 2.5Nm
(3) Ratings established @ 2 rps

Travel Dependent Characteristics

Travel (mm)	Positional[4][5] Accuracy (µm) Prec.	Std.	Straightness & Flatness Accuracy (µm) Prec./Std.	Input Inertia 10^{-5} kg-m² 5 mm	10 mm	20 mm	Max Screw Speed[6] (Revs Per Second) Prec./Std.	Total Table Weight (kg) Prec./Std.
50	8	12	6	1.68	1.81	2.34	60	2.8
100	8	12	6	1.93	2.07	2.60	60	3.0
150	10	14	9	2.19	2.32	2.85	60	3.3
200	12	20	10	2.44	2.57	3.11	60	3.6
250	12	22	12	2.69	2.83	3.36	60	3.9
300	14	24	13	2.95	3.08	3.61	60	4.2
350	14	26	15	3.20	3.33	3.87	60	4.5
400	16	26	16	3.46	3.59	4.12	60	4.8
450	19	28	18	3.71	3.84	4.37	60	5.1
500	21	34	19	3.96	4.10	4.63	60	5.4
550	23	36	21	4.22	4.35	4.88	60	5.7
600	25	40	22	4.47	4.60	5.14	54	6.0

(4) Positional accuracy applies to in-line motor configurations only. Contact factory for parallel motor specifications.
(5) Consult factory for specs with linear encoder.
(6) Consult factory for higher screw speeds.

406XR Series
(150 mm wide profile)


Parallel Motor Mount-
(with limit/home sensor pack option)

The 406XR can position high loads (up to 630 kgf) over distances up to two meters. Because of its size and strength (270 Nm, 200 lb-ft. moment load capacity) this durable table is ideal as the base unit in a multi-axis system. From high resolution to high throughput, selectable ballscrew leads (5, 10, 20, 25 mm) make the desired resolution/velocity ratio easy to achieve, and stainless steel seal strips alleviate environmental concerns.

Common Characteristics	Precision	Standard
Performance		
Bidirectional Repeatability[5] (µm)	±1.3	±3.0
Duty Cycle	100%	100%
Max Acceleration – m/sec² (in/sec²)	20 (773)	20 (773)
Rated Capacity[1]		
Normal load – kgf (lbs)	630 (1390)	630 (1390)
Axial load – kgf (lbs)[2][3]		
0 to 600 mm Travel	90 (198)	90 (198)
700 to 2000 mm Travel	n/a	200 (440)
Motor Sizing		
Drive Screw Efficiency	90%	90%
Max Break-Away Torque – Nm (in-oz)		
0 to 600 mm Travel	0.13 (18)	0.18 (26)
700 to 2000 mm Travel	na	0.39 (55)
Max Running Torque[4] – Nm (in-oz)		
0 to 600 mm Travel	0.11 (16)	0.17 (24)
700 to 2000 mm Travel	na	0.34 (48)
Linear Bearing – Coefficient of Friction	0.01	0.01
Ballscrew Diameter	refer to chart page B23	
Carriage Weight kg (lbs)	2.7 (5.94)	2.7 (5.94)

(1) Refer to life/load charts found on page B13.
(2) Axial load for parallel mounts is limited by a maximum input torque of 2.5Nm for 5,10, & 20 mm lead drives, and 5.1Nm for 25 mm lead drives.
(3) Axial load for parallel mount units with a 25 mm lead = 104kgf (230lb)
(4) Ratings established @ 2 rps

Travel Dependent Characteristics

Travel (mm)	Positional[4][5] Accuracy (µm) Prec.	Std.	Straightness & Flatness Accuracy (µm) Prec./Std.	Input Inertia 10^{-5} kg-m² 5 mm	10 mm	20 mm	25 mm	Max Screw Speed[6] (Revs Per Second) Prec./Std.	Total Table Weight (kg) Prec./Std.
100	8	12	6	3.34	3.85	5.90	–	60	8.7
200	12	20	10	3.92	4.43	6.48	–	60	10.0
300	14	24	13	4.50	5.01	7.06	–	60	11.3
400	16	26	16	5.08	5.59	7.64	–	60	12.6
500	21	34	19	5.65	6.17	8.22	–	55	13.9
600	25	40	22	6.23	6.75	8.80	–	44	15.2
700	–	92	25	36.51	37.02	–	40.61	47	19.2
800	–	94	29	39.96	40.47	–	44.07	47	20.7
900	–	103	32	43.41	43.93	–	47.52	47	22.2
1000	–	105	35	46.87	47.38	–	50.97	47	23.7
1250	–	118	42	55.50	56.01	–	59.61	35	27.6
1500	–	134	50	64.14	64.65	–	68.24	26	31.4
1750	–	154	57	72.77	73.28	–	76.88	20	35.2
2000	–	159	65	81.40	81.92	–	85.51	16	39.1

(4) Positional accuracy applies to in-line motor configurations only. Contact factory for parallel motor specifications.
(5) Consult factory for specs with linear encoder.
(6) Consult factory for higher screw speeds.

412XR Series
(285 mm wide profile)

The 412XR is a rugged heavy duty linear table (285 mm x 105 mm profile) that enables massive loads (up to 1470 kgf) to be precisely positioned over distances up to two meters. Single point "easy lube" port is standard on carriage assembly for simple servicing and a convenient adapter plate (#100-6784-01) is available for easy X-Y configuration.
An unrivaled array of options combined with mounting compatibility with the smaller 400XR tables makes the 412XR ideal as the base unit for multi-axis positioning of heavier payloads.

General Table Specifications

Common Characteristics		
Screw Lead	5, 10, 25 mm	32 mm
Performance		
Bidirectional Repeatability (µm)	±5	±5
Duty Cycle	100%	100%
Max Acceleration – m/sec² (in/sec²)	20 (773)	20 (773)
Rated Capacity(1)		
Normal load – kgf (lbs)	1470 (3241)	1470 (3241)
Axial load – kgf (lbs)	200 (441)	460 (1014)
Motor Sizing		
Drive Screw Efficiency	90%	80%
Max Break-Away Torque – Nm (in-oz)	0.61 (86)	0.76 (108)
Max Running Torque(2) – Nm (in-oz)	0.55 (78)	0.69 (98)
Linear Bearing – Coefficient of Friction	0.01	0.01
Ballscrew Diameter	25	32
Carriage Weight kg (lbs)	12 (27)	13 (28)

(1) Refer to life/load charts found on page B13.
(2) Ratings established @ 2 rps

Travel Dependent Characteristics

Travel (mm)	Positional(4)(5) Accuracy (µm)	Straightness & Flatness Accuracy (µm)	Input Inertia 10^{-5} kg-m² 5 mm	10 mm	25 mm	32 mm	Max Screw Speed(6) (Revs Per Second) 5,10,25 mm	32 mm	Total Table Weight (kg) 5,10,25 mm	32 mm
150	64	9	27.20	29.45	46.76	98.20	47	42	39.6	41.5
250	66	12	30.21	32.46	49.78	106.28	47	42	42.9	45.0
350	71	15	33.23	35.48	52.79	114.37	47	42	46.2	48.5
650	91	24	42.27	44.52	61.83	138.63	47	42	56.1	59.0
800	94	29	46.79	49.04	66.35	150.76	47	42	61.0	64.2
1000	105	35	52.81	55.06	72.37	166.94	45	42	67.6	71.2
1250	118	42	58.84	61.09	78.40	183.11	34	41	74.2	78.2
1500	134	50	67.87	70.12	87.44	207.38	24	31	84.1	88.7
1750	154	57	75.41	77.66	94.97	227.59	18	24	92.4	97.5
2000	159	65	82.94	85.19	102.50	247.81	15	19	100.6	106.2

(4) Positional accuracy applies to in-line motor configurations only. Contact factory for parallel motor specifications.
(5) Consult factory for specs with linear encoder.
(6) Consult factory for higher screw speeds.

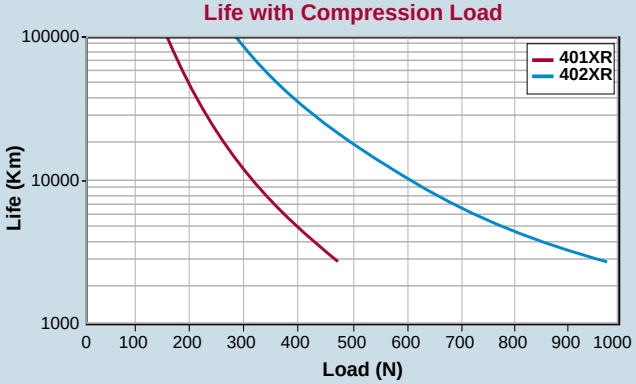
400XR Series Engineering Reference

The following performance information is provided as a supplement to the product specifications pages. The following graphs are used to establish the table life relative to the applied loads. The useful life of a linear table at full catalog specifications is dependent on the forces acting upon it. These forces include both static components resulting from payload weight, and dynamic components due to acceleration/deceleration of the load. In multi-axes applications, the primary positioner at the bottom of the stack usually establishes the load limits for the combined axes. When determining life/load, it is critical to include the weight of all positioning elements that contribute to the load supported by the primary axis.

Table Life/Load Chart
Compression (normal load)

These graphs provide a "rough cut" evaluation of the support bearing life/load characteristics. The curves show the life/load relationship when the applied load is centered on the carriage, normal (perpendicular) to the carriage mounting surface.
For final evaluation of life vs load, including off center, tension, and side loads refer to the charts and formulas found on our web site www.parkermotion.com.

Life with Compression Load



Life with Compression Load

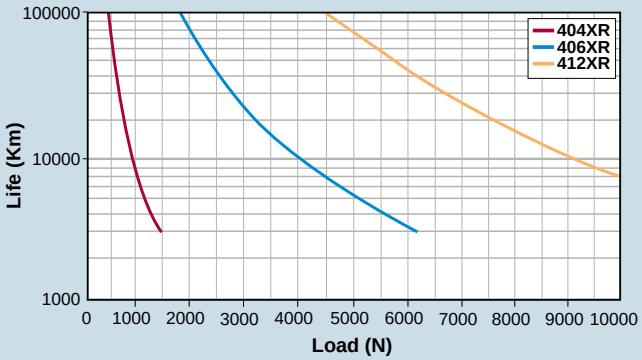
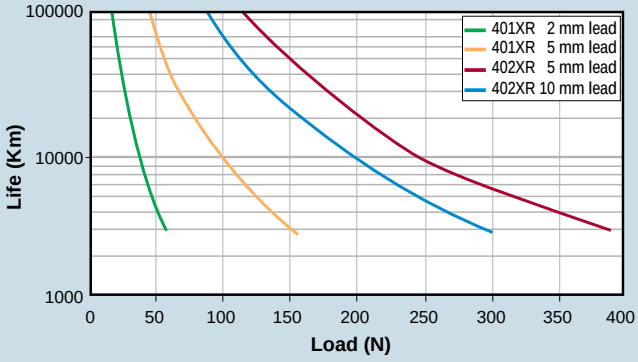


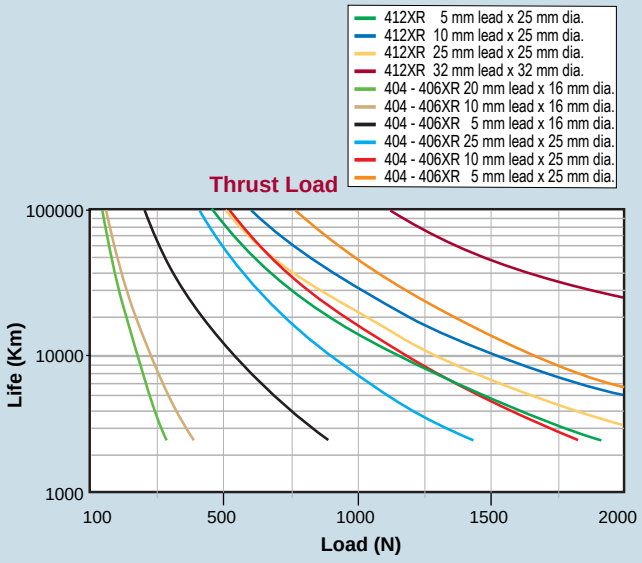
Table Life/Load Chart
Thrust (axial) load

These graphs illustrate table ballscrew life relative to the axial load.

Thrust Load



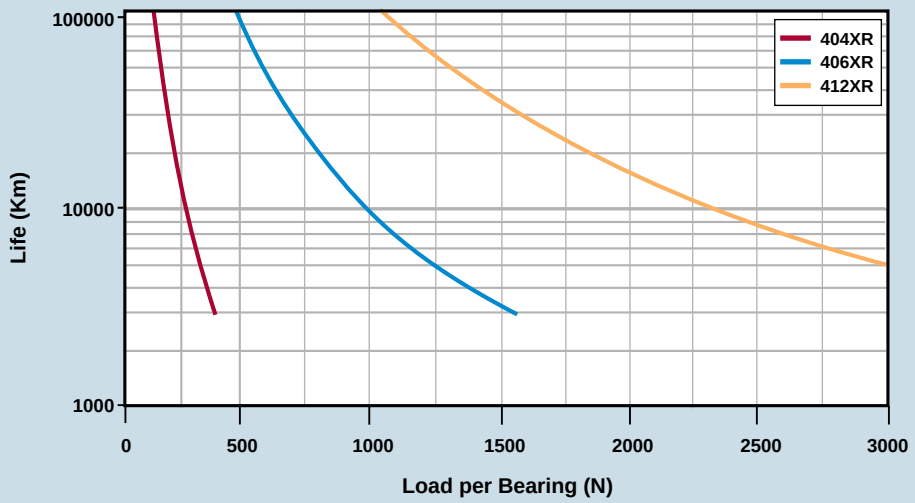
Thrust Load



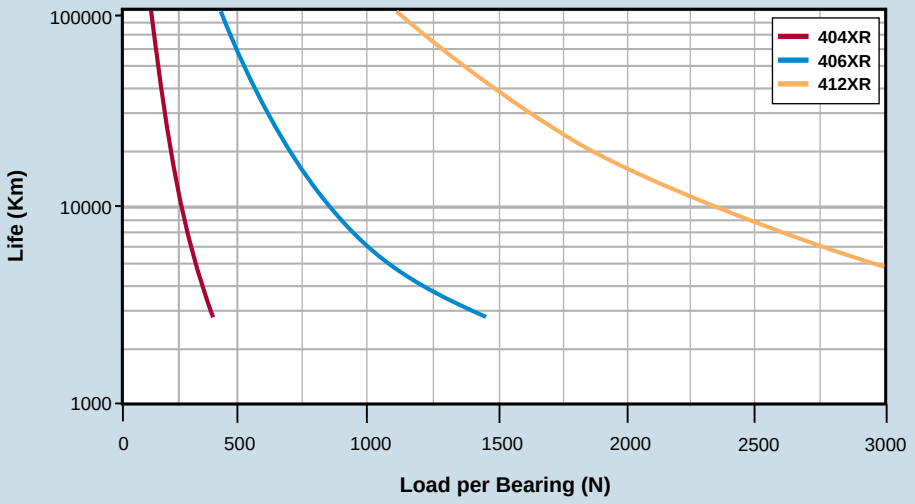
400XR Series Engineering Reference

Bearing Life/Load Charts
Compression (normal load)

Life with Compression or Tension Load



Life with Side Load



These charts are to be used in conjunction with the corresponding formulas found in the product manuals at www.parkermotion.com to establish the life/load for each bearing (4 per table).

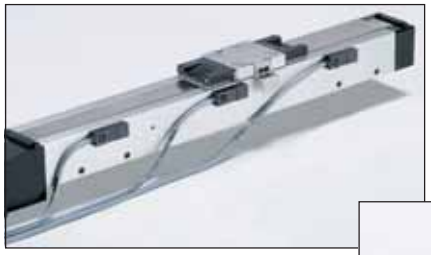
Several dimensions, which are specific to each linear positioning table model, and the load geometry are required for these computations. These dimensions are supplied in the catalog information for each positioner. The dimensions are referenced as follows:

- d1 – bearing block center-to-center longitudinal spacing
- d2 – bearing rail center-to-center lateral spacing
- da – Rail center-to-carriage mounting surface

	d1	d2	da
404XR	80	57	28
406XR	114	90.3	42.5
412XR	205	192	43

Refer to Parker's website www.parkermotion.com for moment loading and other engineering data.

400XR Series Options and Accessories (mm)



401XR Limits and Home Sensor

401XR with Linear Encoder plus Sensor Pack

404XR with Lube Option

406XR with Limit and Home Sensor Pack

404XR with Brake Option

404XR with Air Purge - Standard on all 404XR, 406XR and 412XR units

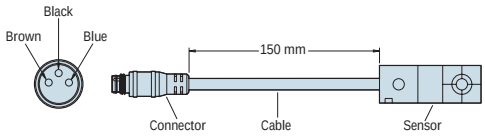
Home H_ or Limit Sensor L_

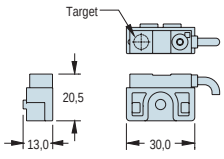
End of Travel and Home Sensors for the 400XR series are available in a variety of styles. The sensors can be ordered as part of the table or as separate components with the associated mounting hardware or in an enclosed sensor pack. A 5 meter "hi-flex" extension cable (Part No. 003-2918-01) is available for use with the 401XR thru 406XR models having the locking connector option.

- NPN (Sinking) or PNP (Sourcing)
- Normally Closed (N.C.) or Normally Open (N.O.)
- Flying Leads or Locking Connector

Input Power	5-30VDC, 20mA
Output	100mA max
Wire Color Code	(+) Supply: Brown (-) Supply: Blue NO Output: Black NC Output: White

Order Code	Part No.** (Includes Mounting Bracket)	Switch Type	Logic	Cable Length	Connector Option
H2 or L2	006-1639-01	N.C.	Sinking	2,0 m	Flying Leads
H3 or L3	006-1639-02	N.O.	Sinking	2,0 m	Flying Leads
H4 or L4	006-1639-03	N.C.	Sourcing	2,0 m	Flying Leads
H5 or L5	006-1639-04	N.O.	Sourcing	2,0 m	Flying Leads
H6 or L6	006-1639-09	N.C.	Sinking	150 mm	Locking Connector
H7 or L7	006-1639-08	N.O.	Sinking	150 mm	Locking Connector
H8 or L8	006-1639-11	N.C.	Sourcing	150 mm	Locking Connector
H9 or L9	006-1639-10	N.O.	Sourcing	150 mm	Locking Connector





Sensor / Bracket Detail

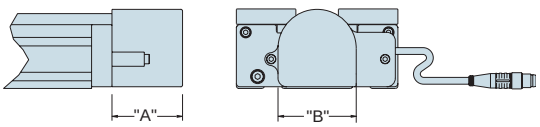
* Applies to 401XR thru 406XR models. 412XR models have limits and homes internally mounted with a connector termination.

**Sensor triggers (targets) ordered separately.

Brake Assembly B2

Electromagnetic brake assembly used to prevent "backdriving" in vertical applications.

Table Series	Part No.	Input Power	Holding Torque	A Dim.	B Dim.
401/402XR	NA	NA	NA	NA	NA
404XR	006-1627-01	24VDC, 0.46A	2.0 N-m	41,5	46,0
406XR	006-1656-01	24VDC, 0.5A	4.5 N-m	49,9	57,5
412XR	002-1916-01	24VDC, 0.75A	9.0 N-m	54,0	72,0



400XR Series Options and Accessories* (mm)

Rotary Encoder E5

Modular rotary encoder couples directly to the drive screw for position feedback.

Input Power	5VDC, 135mA
Output	A/B quadrature and reference mark, differential line drive output
Resolution	1250 lines/rev equals 5000 counts post quadrature (1µm with 5 mm lead ballscrew)

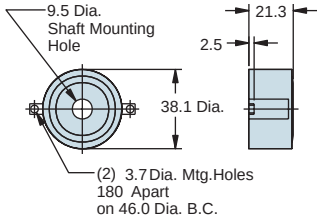


Table Series	Part No.
401/402XR	NA
404XR	006-1629-01
406XR	006-1657-01
412XR	002-1917-01

Note: Dimensions shown apply to 404XR and 406XR models. Consult factory for 412XR dimensions.

Linear Encoder (Tape Scale) E_

A linear position feedback device which mounts directly to the table carriage. (Factory installation required.)

1.0 µm resolution
0.5 µm resolution
0.1 µm resolution

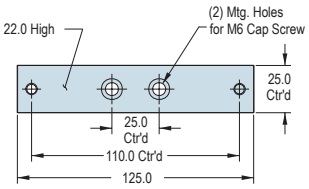
Input Power:	5VDC, 150mA
Output:	A/B quadrature and reference mark, differential line drive output
Resolution:	1.0, 0.5, 0.1 micron

Riser Plate

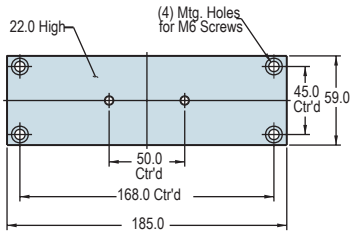
Used to raise the table base to provide clearance for motors.

Table Series	Part No.
401XR	002-2063-01
402XR	002-2064-01
404XR	002-3619-01
406XR	002-3625-01
412XR	NA

002-3619-01
(404XR)



002-3625-01
(406XR)



002-2063-01
002-2064-01

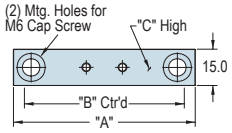


Table Series	"A"	"B"	"C"
401XR	65.0	50.4	17.0
402XR	90.0	75.4	10.0

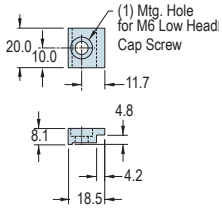
Toe Clamp

Used for convenient outboard mounting of table to a base plate, riser plates, Z-axis bracket, or other 400XR table.

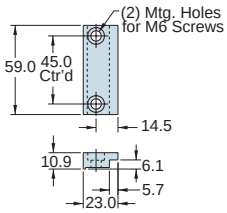
Table Series	Part No.
404XR	002-3618-01*
406XR	002-3624-01*
412XR	002-2160-01*

*All hardware included

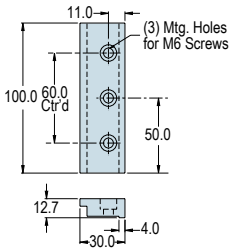
002-3618-01
(404XR)



002-3624-01
(406XR)



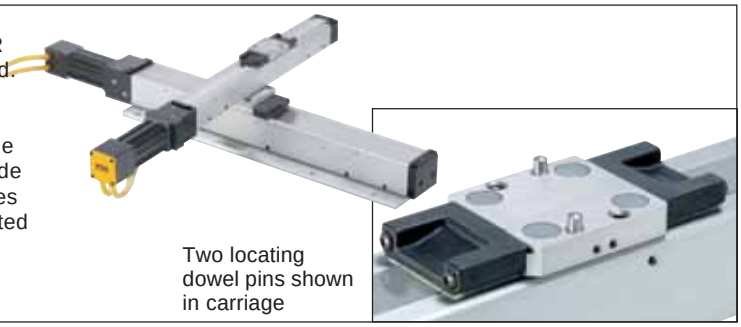
002-2160-01
(412XR)



Dowel Pinning P_

Standard dowel pin locating holes are offered on all 400XR units to facilitate repeatable mounting of tooling or payload. In addition, pinning options (P2 & P3)* are offered for precise orthogonal mounting of the second axis in a multi-axis system. In this case, the bottom side of the table base is match drilled and reamed to the first axis to provide exact orthogonal location. This convenient option eliminates concerns regarding contamination or damage often associated with machining for locating pins in an assembled unit.

*Not available with 401XR or 402XR.



Two locating dowel pins shown in carriage

Multi-Axis Configurations

Base Axis (X) Models		Orientation	Second Axis (Y or Z) Models: 401050XR	401XR >50mm	402XR	404XR	404LXR	406XR	406LXR	412XR/LXR	Wedge
	401XR	X-Y	002-2126-01	002-2065-01	–	–	–	–	–	–	–
		X-Y Cartesian	002-2123-01	002-2068-01	–	–	–	–	–	–	–
		X-Z	–	101-0955-01	–	–	–	–	–	–	–
		X-Z Side Mount	002-2123-01	101-0955-01	–	–	–	–	–	–	–
	402XR	X-Y	002-2130-01	002-2066-01	002-2066-01	–	–	–	–	–	–
		X-Y Cartesian	002-2069-01	002-2069-01	002-2069-01	–	–	–	–	–	–
		X-Z	–	002-2069-01	002-2069-01	–	–	–	–	–	–
		X-Z Side Mount	002-2125-01	002-2069-01	002-2069-01	–	–	–	–	–	–
	404XR/LXR	X-Y	100-9193-01	100-9193-01	100-9193-01	Direct Mount*	100-9584-01	–	–	–	100-9274-01
		X-Y Carriage to Carriage	–	–	–	100-3945-01	100-3945-01	–	–	–	–
		X-Y Cartesian Right Hand	002-2162-01	002-2162-01	002-2162-01	–	–	–	–	–	–
		X-Y Cartesian Left Hand	002-2162-02	002-2162-02	002-2162-02	–	–	–	–	–	–
		X-Z	–	–	–	002-1839-01	–	–	–	–	–
		X-Z Side Mount	–	–	–	002-1840-01	–	–	–	–	–
	406XR/LXR	X-Y	100-9194-01	100-9194-01	100-9194-01	Direct Mount	Direct Mount	Direct Mount	Direct Mount	–	100-9274-01
		X-Y Carriage to Carriage	–	–	–	100-4191-01	100-4191-01	100-4191-01	100-4191-01	–	–
		X-Y Cartesian	–	–	–	002-2163-01	002-2163-01	–	–	–	–
		X-Z	–	–	–	002-1823-01	–	002-1817-01	–	–	–
		X-Z Side Mount	–	–	–	002-1824-01	–	002-1818-01	–		
	412XR/LXR	X-Y	–	–	–	Direct Mount or Toe Clamp	Direct Mount or Toe Clamp	Direct Mount or Toe Clamp	Direct Mount or Toe Clamp	000-67484-01	
		X-Y Cartesian	–	–	–	–	–	002-2164-01	002-2164-01	–	–
	ZP200 Wedge	X-Y	–	–	–	100-9274-01	100-9274-01 or Toe Clamp	100-9274-01 or Toe Clamp	100-9274-01	–	–

* An adaptor plate (100-3945-01) is required whenever the X-axis is a parallel motor mount model.

400XR Series Multi Axis Configurations

These diagrams show the most popular variations of multi-axis configurations.
Both standard and custom brackets are available.

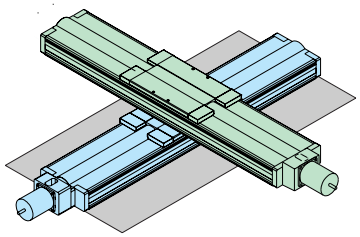


Figure 1
Two Axis (X-Y)
Horizontal Mounting

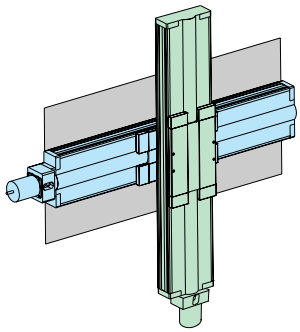


Figure 2
Two Axis (X-Y)
Vertical Mounting

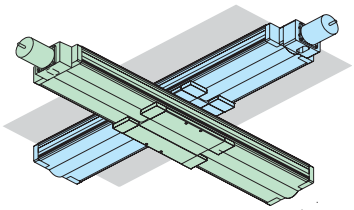


Figure 3
Two Axis (X-Y)
Inverted Mounting

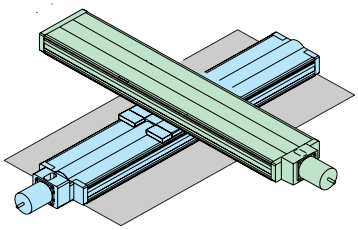


Figure 4
Two Axis-Carriage to Carriage
(Y Axis Inverted)

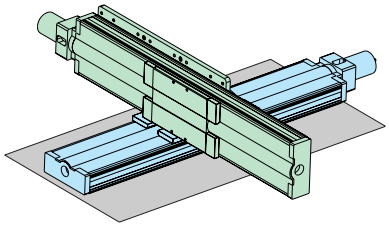


Figure 5
Two Axis Cartesian
Horizontal Mounting

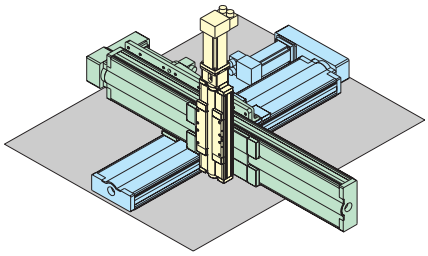


Figure 6
Three Axis Cartesian
Horizontal Mounting

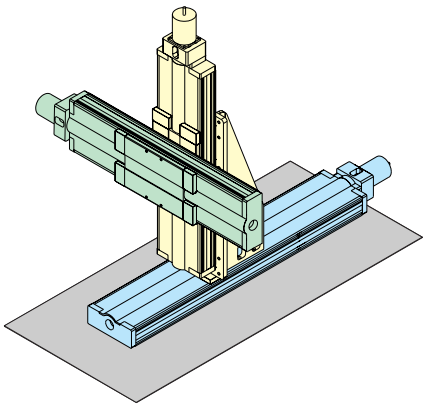


Figure 7
Three Axis (X-Z-Y)
Horizontal Mounting

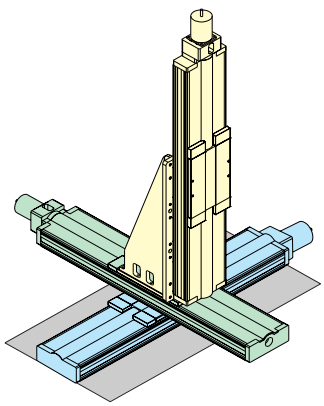


Figure 8
Three Axis (X-Y-Z)
Horizontal Mounting

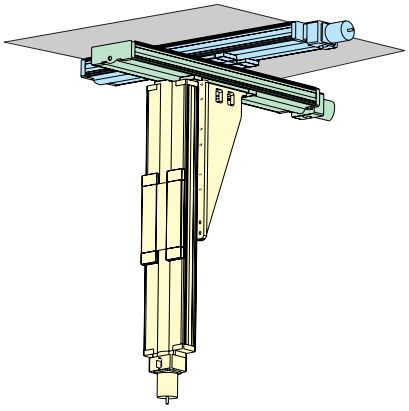
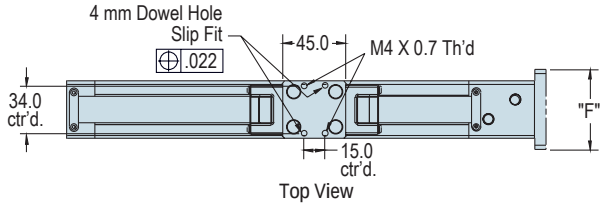
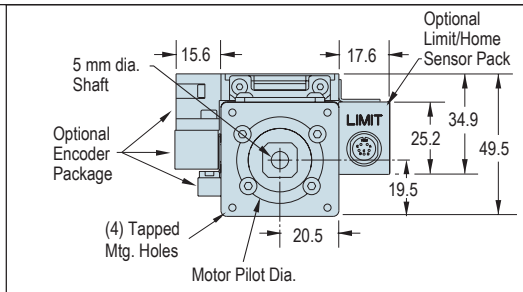


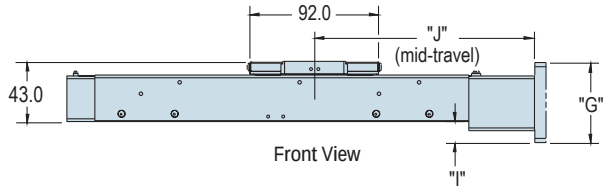
Figure 9
Three Axis (X-Y-Z)
Inverted Mounting

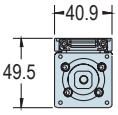
401XR Series - Dimensions (mm)

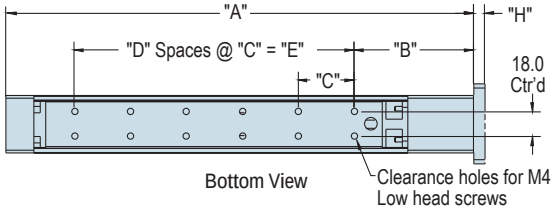




Enlarged End View
(with Encoder and Limit/Home Sensor Pack Option)





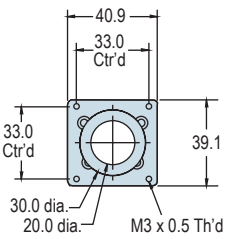


Travel	A	B	C	D	E	J
50	209.3	82.8	80.0	1	80.0	123.0
100	284.3	80.3	40.0	4	160.0	160.0
150	334.3	85.3	40.0	5	200.0	185.0
200	384.3	90.3	40.0	6	240.0	210.0
300	509.3	92.8	40.0	9	360.0	260.0

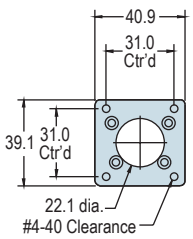
Motor Size	Order Code	F	G	H	I
SM 16	M2	40.9	39.1	0	6.5
NEMA 23/SM 23	M3	57.2	57.2	4.0	15.6
NEMA 17	M37	40.9	39.1	0	6.5
BE 23	M61	57.2	57.2	8.0	15.6

In-Line Motor Adapters

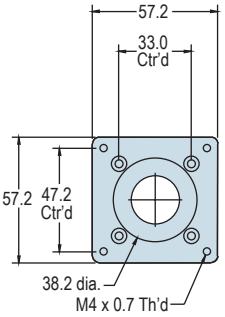
Used to easily accommodate the mounting of different servo or stepper motors.



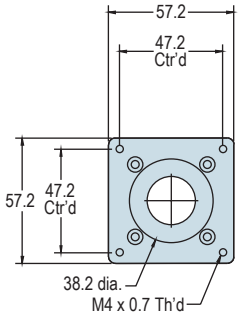
SM 16



NEMA 17

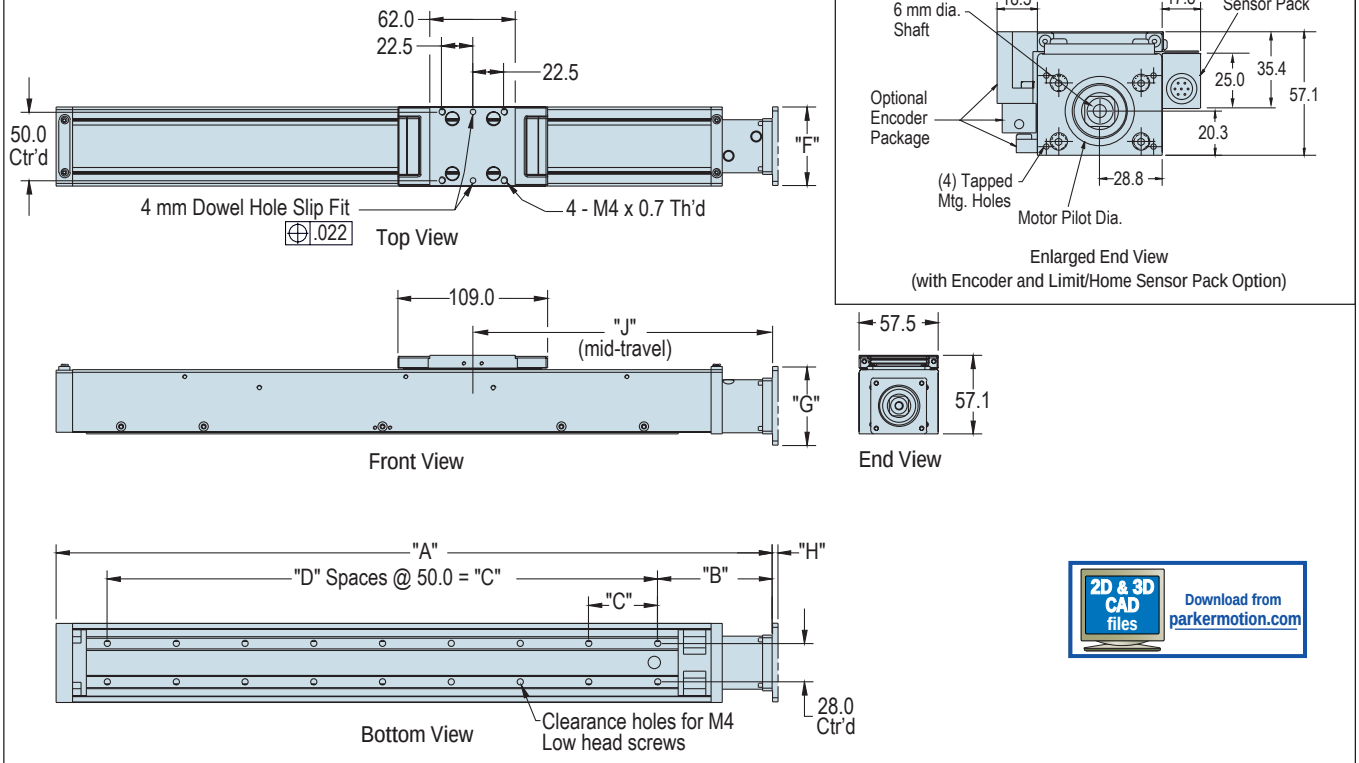


SM 23 or NEMA 23



BE 23

402XR Series - Dimensions (mm)

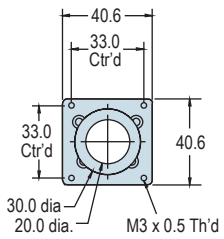


Travel	A	B	C	D	J
100	320.5	83.5	200.0	4	184.0
150	370.5	83.5	250.0	5	214.0
200	420.5	83.5	300.0	6	234.0
300	520.5	83.5	400.0	8	284.0
400	620.5	83.5	500.0	10	334.0
600	820.5	83.5	700.0	14	434.0

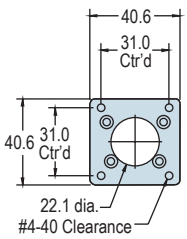
Motor Size	Order Code	F	G	H
SM 16	M2	40.6	40.6	0
NEMA 23/SM 23	M3	57.2	57.2	4.0
NEMA 17	M37	40.6	40.6	0
BE 23	M61	57.2	57.2	8.0

In-Line Motor Adapters

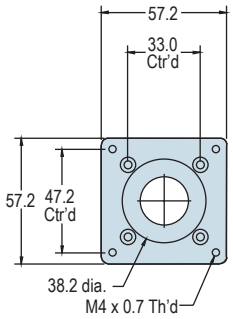
Used to easily accommodate the mounting of different servo or stepper motors.



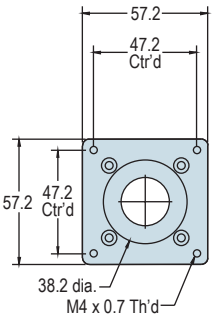
SM 16



NEMA 17

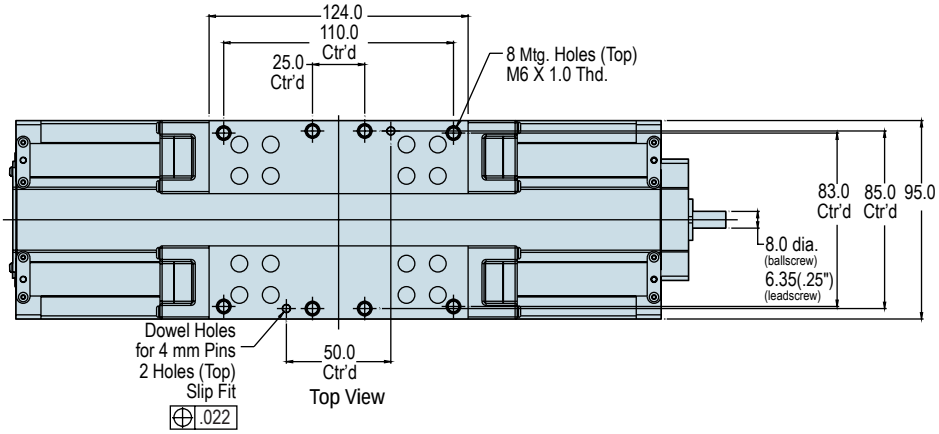


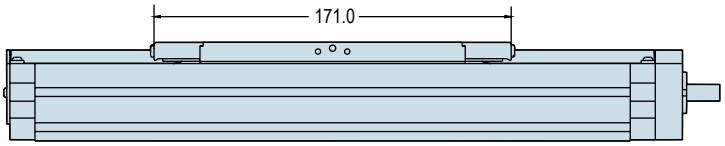
SM 23 or NEMA 23

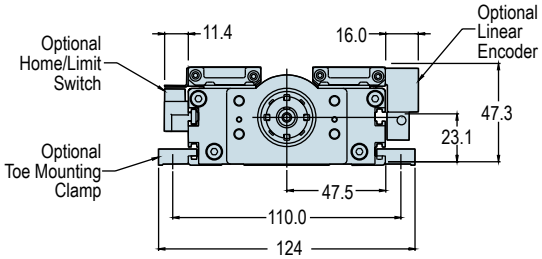


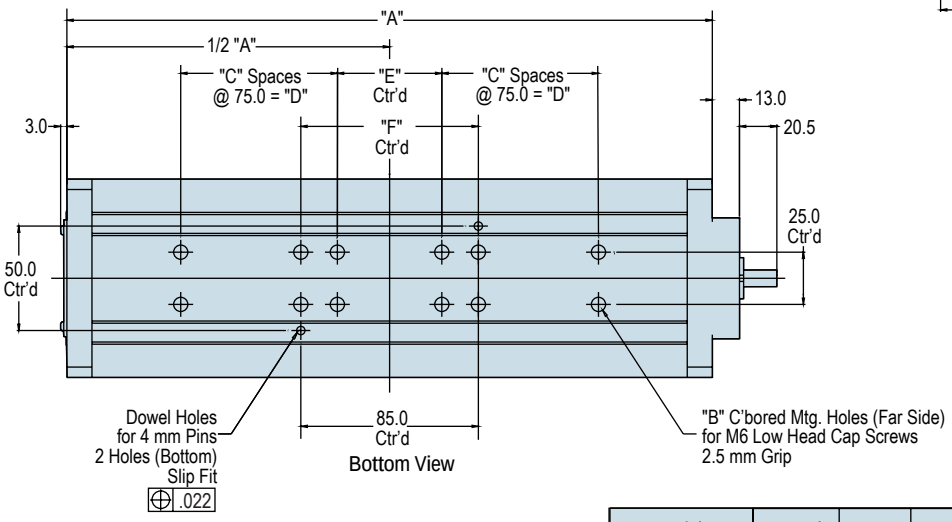
BE 23

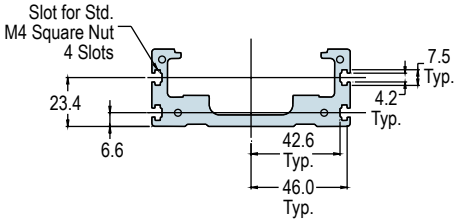
404XR Series Dimensions (mm)











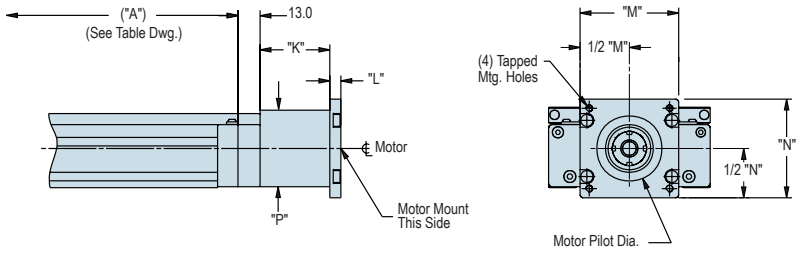
View showing slots in extruded base

Model	Travel	A	B	C	D	E	F
404050XR	50	259	4	-	-	150.0	-
404100XR	100	309	12	1	75.0	50.0	85.0
404150XR	150	359	12	1	75.0	50.0	85.0
404200XR	200	409	12	1	75.0	50.0	85.0
404250XR	250	459	16	2	150.0	50.0	85.0
404300XR	300	509	16	2	150.0	50.0	85.0
404350XR	350	559	16	2	150.0	50.0	85.0
404400XR	400	609	20	3	225.0	50.0	85.0
404450XR	450	659	20	3	225.0	50.0	85.0
404500XR	500	709	20	3	225.0	50.0	85.0
404550XR	550	759	24	4	300.0	50.0	85.0
404600XR	600	809	24	4	300.0	50.0	85.0

404XR Series Motor Mount - Dimensions (mm)

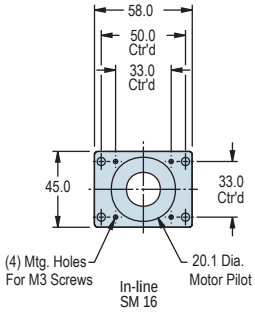
In-line motor mounting allows the motor to be mounted directly to the drive screw via the selected motor coupling.

Used to easily accommodate the mounting of different frame sizes. These adapter plates can be ordered separately by part number below.

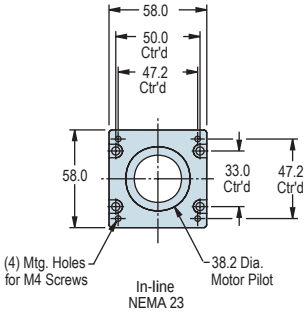


Motor Size	Order Code	Max. Motor Shaft Dia.	"K"	"L"	"M"	"N"	"P"
SM 16	M2	9.5	41.0	4.3	58.0	45.0	45.0
NEMA 23	M3	9.5	41.0	6.5	58.0	58.0	45.0
NEMA 34	M4	9.5	41.0	12.5	83.0	83.0	45.0
NEOMETRIC 70	M21	11.0	53.0	0.0	69.9	69.9	69.9

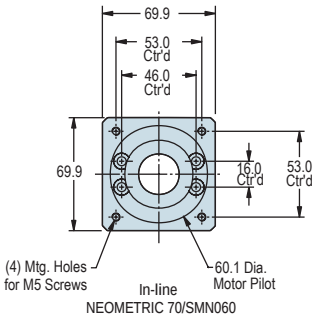
Part No. 002-3614-01
SM 16



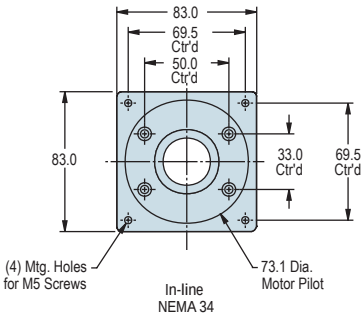
Part No. 002-3615-01
NEMA 23



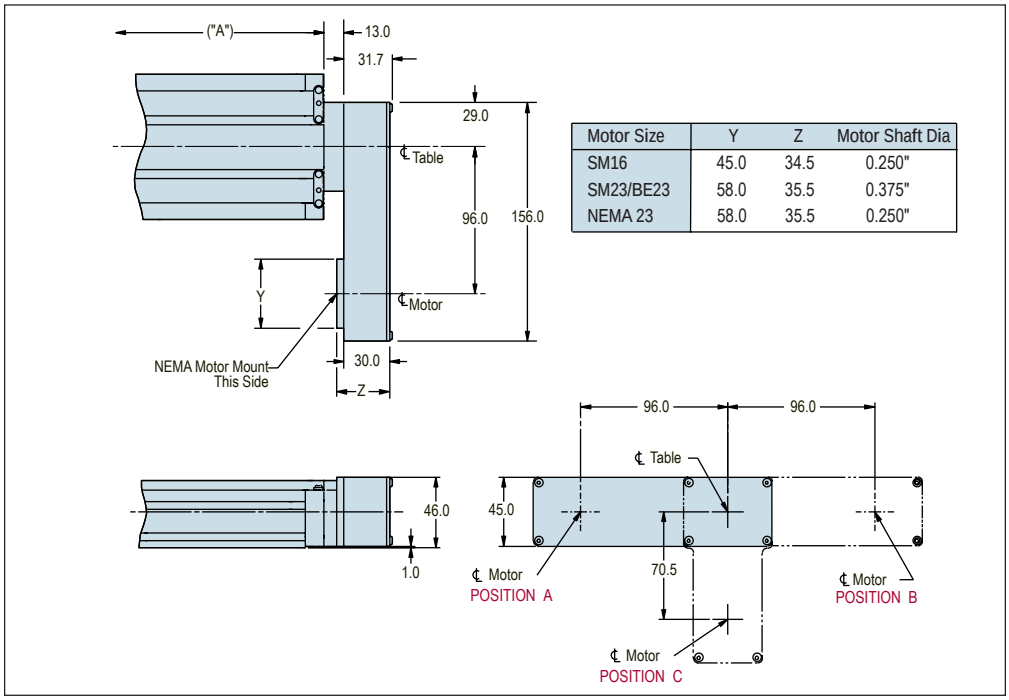
Part No. 002-3616-01
NEOMETRIC 70/SMN060



Part No. 002-3617-01
NEMA 34

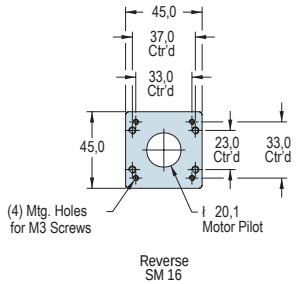


Parallel motor mounting is employed whenever a shorter overall unit length is needed. The motor is positioned along the sides or bottom of the table as designated by position A, B, or C. (No coupling required)

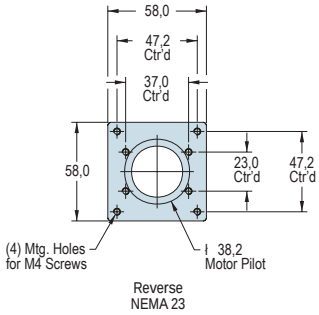


Motor Size	Y	Z	Motor Shaft Dia
SM16	45.0	34.5	0.250"
SM23/BE23	58.0	35.5	0.375"
NEMA 23	58.0	35.5	0.250"

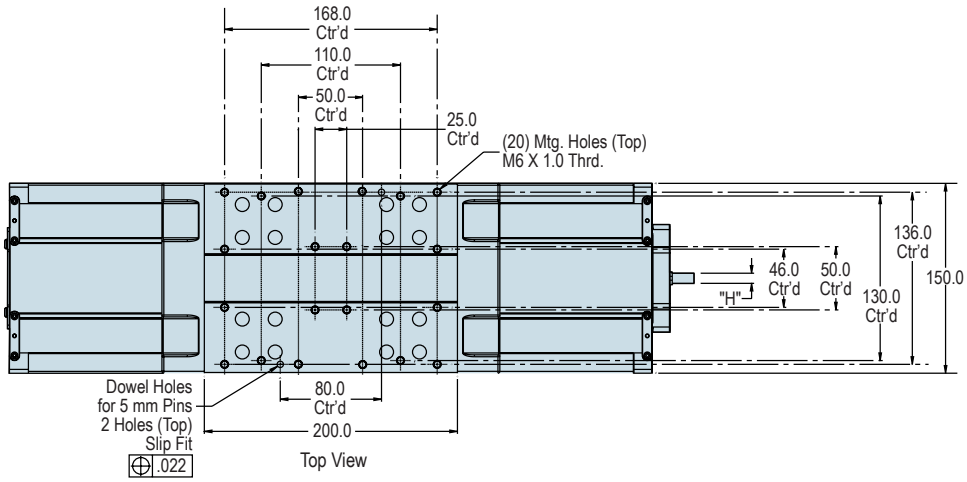
SM 16



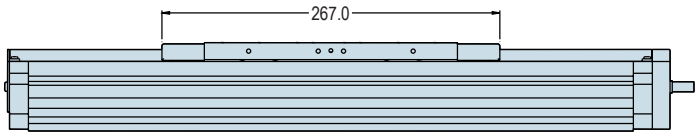
NEMA 23



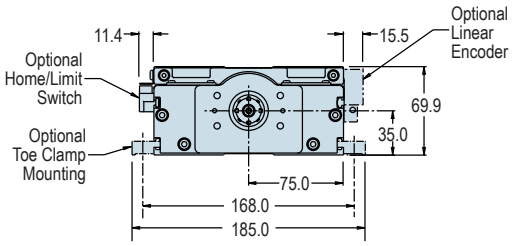
406XR Series Dimensions (mm)



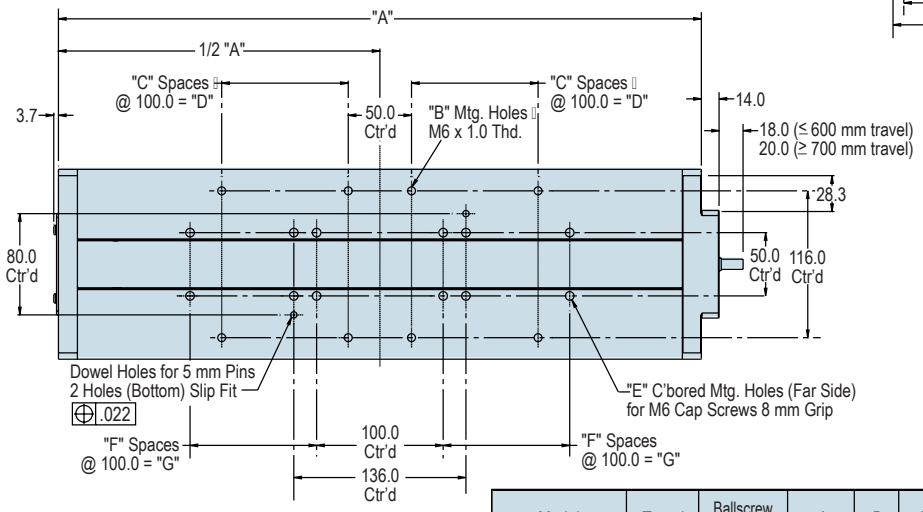
Top View



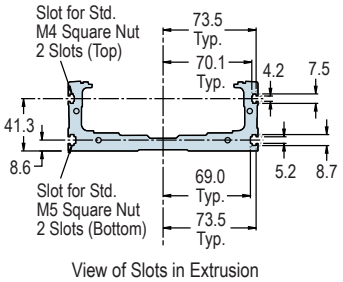
Front View



End View



Bottom View



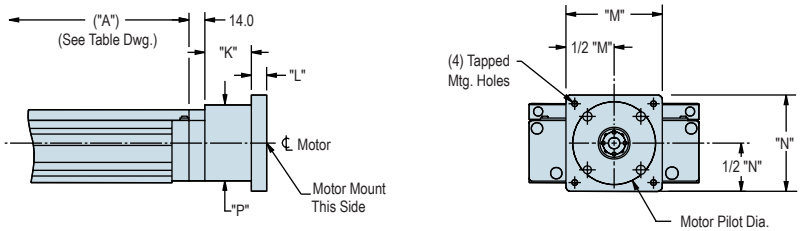
View of Slots in Extrusion

Model	Travel	Ballscrew Diameter	A	B	C	D	E	F	G	H
4060100XR	100	16	408	8	1	100.0	12	1	100.0	8.0
4060200XR	200	16	508	8	1	100.0	12	1	100.0	8.0
4060300XR	300	16	608	12	2	200.0	16	2	200.0	8.0
4060400XR	400	16	708	12	2	200.0	16	2	200.0	8.0
4060500XR	500	16	808	16	3	300.0	20	3	300.0	8.0
4060600XR	600	16	908	16	3	300.0	20	3	300.0	8.0
4060700XR	700	25	1008	20	4	400.0	24	4	400.0	10.0
4060800XR	800	25	1108	20	4	400.0	24	4	400.0	10.0
4060900XR	900	25	1208	24	5	500.0	28	5	500.0	10.0
4061000XR	1000	25	1308	24	5	500.0	28	5	500.0	10.0
4061250XR	1250	25	1558	32	7	700.0	32	6	600.0	10.0
4061500XR	1500	25	1808	36	8	800.0	40	8	800.0	10.0
4061750XR	1750	25	2058	40	9	900.0	44	9	900.0	10.0
4062000XR	2000	25	2308	44	10	1000.0	48	10	1000.0	10.0

406XR Series - Motor Mount Dimensions (mm)

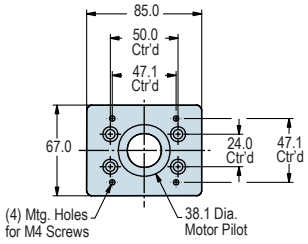
In-line motor mounting allows the motor to be mounted directly to the drive screw via the selected motor coupling.

Used to easily accommodate the mounting of different frame sizes. These adapter plates can be ordered separately by part number below.



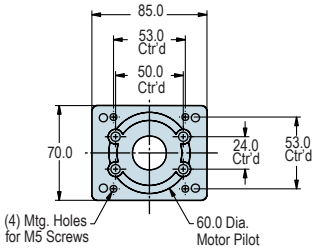
Motor Size	Order Code	Max Motor Shaft Dia.	K	L	M	N	P
NEMA 23/SM 23	M3	9.5	41.0	0.0	85.0	67.0	67.0
NEMA 34 NEOMETRIC 34	M4. M17	16.0	53.0	13.5	85.0	85.0	70.0
NEOMETRIC 70	M21	16.0	53.0	0.0	85.0	70.0	70.0
NEOMETRIC 92	M29	16.0	53.0	12.5	92.0	92.0	70.0

Part No. 002-3620-01
NEMA 23 or SM 23



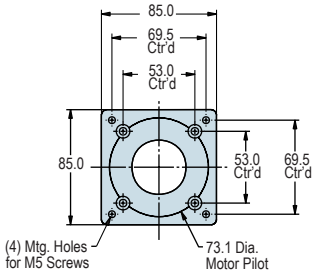
In-line NEMA 23/SM 23
Coupling Housing

Part No. 002-3621-01
NEO 70 / SMN060



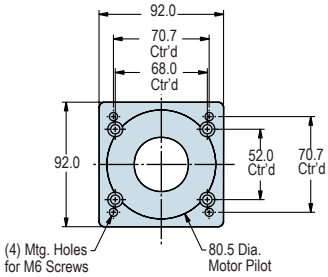
In-line
NEOMETRIC 70 / SMN060
Coupling Housing

Part No. 002-3622-01
NEMA 34 or NEO 34



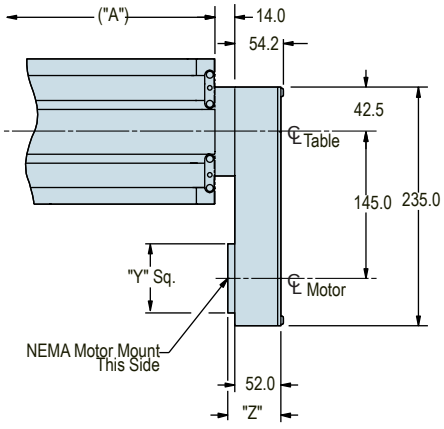
In-line NEMA 34
NEOMETRIC 34
Adaptor Plate

Part No. 002-3623-01
NEO 92 / SMN082

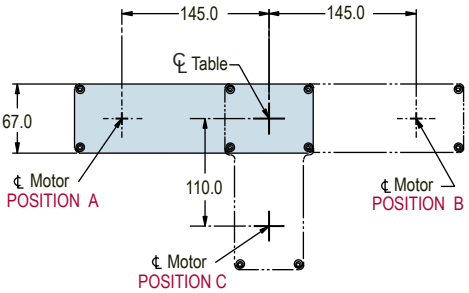


In-line
NEOMETRIC 92 / SMN082
Adaptor Plate

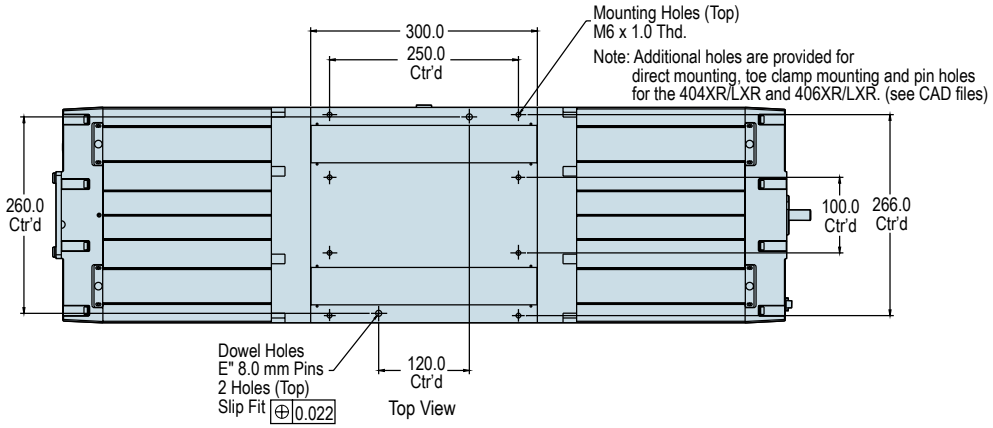
Parallel motor mounting is employed whenever a shorter overall unit length is needed.
The motor is positioned along the sides or bottom of the table as designated by position A, B, or C.
(No coupling required.)

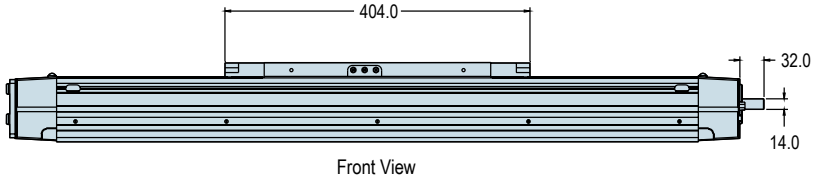


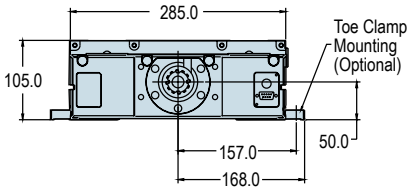
Motor Size	Y	Z	Motor Shaft Dia
SM23/BE23	70.0	57.5	0.375"
NEMA 34	83.0	62.0	0.375"
NEOMETRIC 34	83.0	62.0	0.500"
NEOMETRIC 70	70.0	62.0	11mm

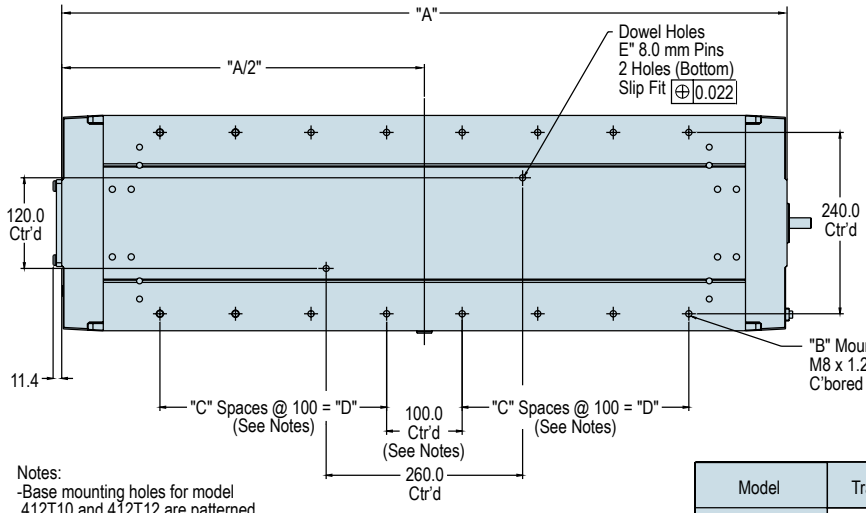


412XR Series - Dimensions (mm)

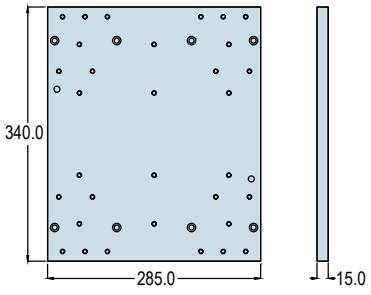








Notes:
-Base mounting holes for model 412T10 and 412T12 are patterned from one hole on centerline

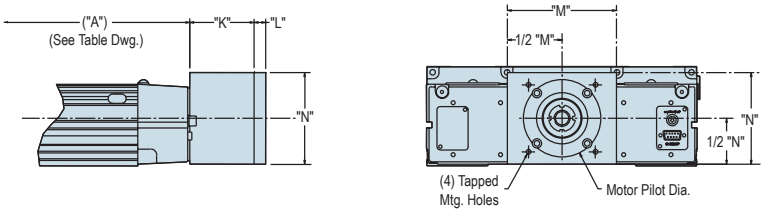


Model	Travel	A	B	C	D
412T01	150.0	764.0	12	2	200.0
412T02	250.0	864.0	16	3	300.0
412T03	350.0	964.0	16	3	300.0
412T04	650.0	1264.0	24	5	500.0
412T05	800.0	1414.0	24	5	500.0
412T06	1000.0	1614.0	28	6	600.0
412T07	1200.0	1814.0	32	7	700.0
412T08	1500.0	2114.0	40	9	900.0
412T09	1750.0	2364.0	44	10	1000.0
412T10	2000.0	2614.0	50	12*	1200.0

412XR Series Motor Mount Dimensions (mm)

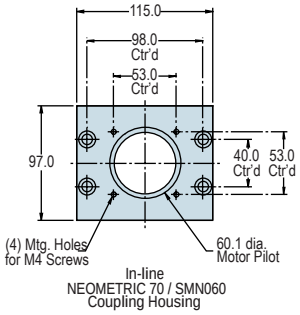
In-line motor mounting allows the motor to be mounted directly to the drive screw via the selected motor coupling.

Used to easily accommodate the mounting of different frame sizes. These adapter plates can be ordered separately by part number below.

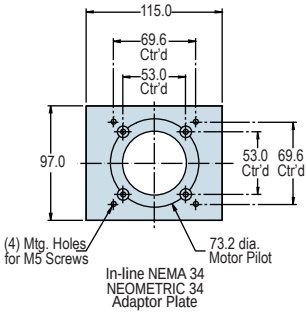


Motor Size	Order Code	K	L	M	N
NEMA 34	M4	68.0	12.0	115.0	97.0
NEO 34	M17	68.0	12.0	115.0	97.0
NEO 70	M21	68.0	-	115.0	97.0
NEO 92	M29	68.0	12.0	115.0	97.0
M105,SMN100	M33	100.0	-	115.0	115.0

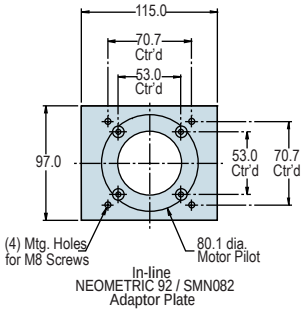
Part No. 002-1907-01
NEO 70 / SMN060



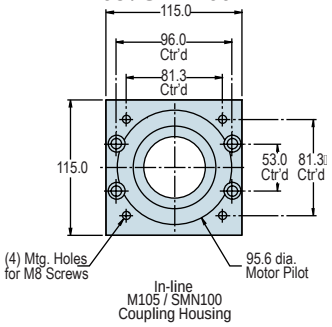
Part No. 002-1907-02
NEMA 34 or NEO 34



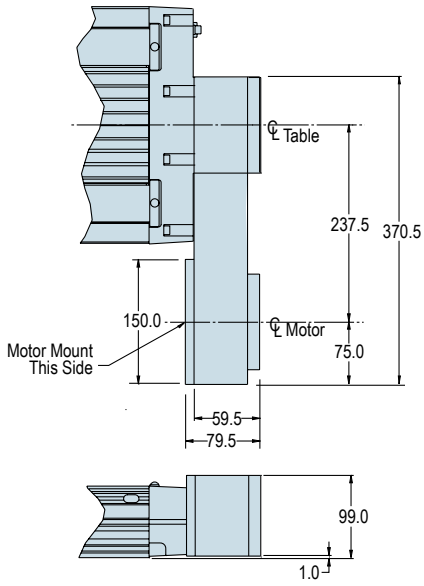
Part No. 002-1907-03
NEO 92 / SMN082



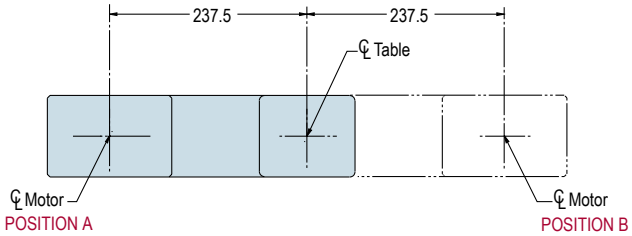
Part No. 002-1907-04
M105 / SMN100



Parallel motor mounting is employed whenever a shorter overall unit length is needed. The motor is positioned along the sides or bottom of the table as designated by position A, B, or C. (No coupling required.)



Motor Size	Part Number	Bolt Circle	Pilot Dia.	Shaft Dia.
NEO 70	002-1908-01	75.0	60.1	11.0mm
NEMA 34	002-1908-02	98.4	73.2	0.375"
NEO 34	002-1908-02	98.4	73.2	0.500"
NEO 92	002-1908-03	100.0	80.1	14.0mm



401/402XR Series - How to Order

Order Example: 401 | 100 | XR | M | S | D9 | H3

Series
- 401
- 402

Travel (mm)
- 50 050
- 100 100
- 150 150
- 200 200
- 300 300
- 400 400
- 600 600

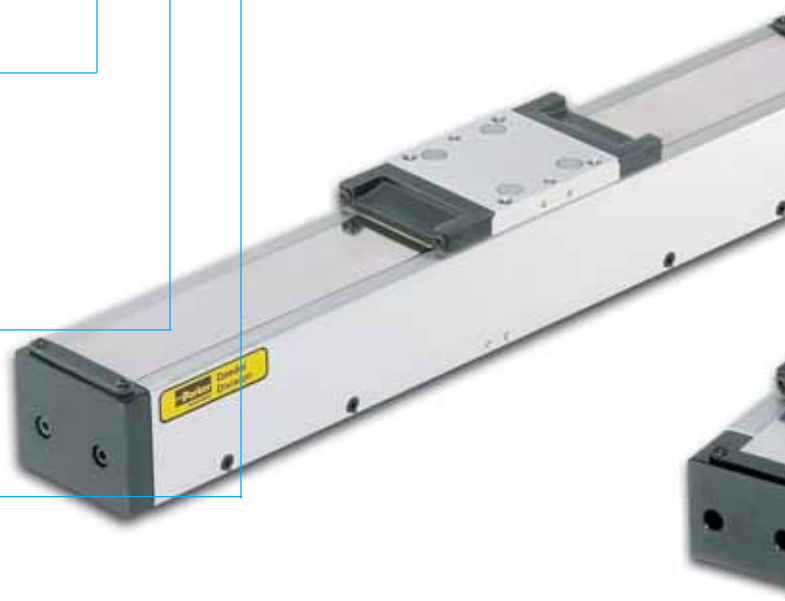
Model ..... XR

Mounting (metric) ..... M

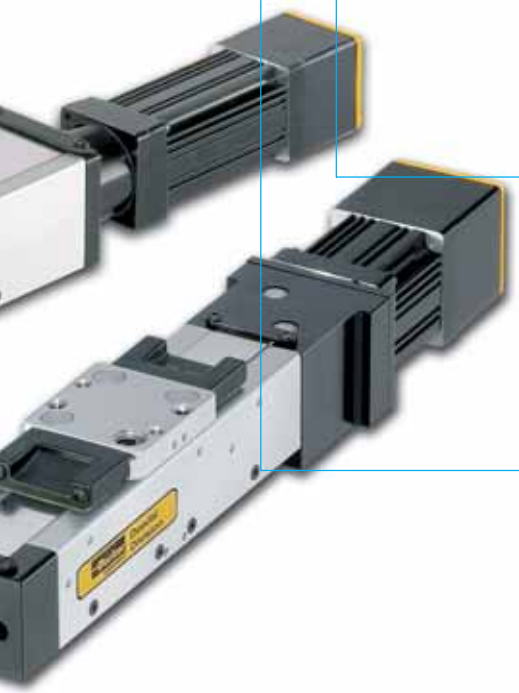
Grade
- Standard ..... S
- Precision (E3 or E4 encoder option required) ..... P

Drive Screw
- 5 mm Lead D2
- 10 mm Lead D3
- 2 mm Lead D9

Home Sensor
- No sensor H1
- N.C. current sinking flying leads H2
- N.O. current sinking flying leads H3
- N.C. current sourcing flying leads H4
- N.O. current sourcing flying leads H5
- N.C. current sinking locking connector H6
- N.O. current sinking locking connector H7
- N.C. current sourcing locking connector H8
- N.O. current sourcing locking connector H9
- N.C. current sinking-sensor pack H11
- N.O. current sinking-sensor pack H12
- N.C. current sourcing-sensor pack H13
- N.O. current sourcing-sensor pack H14



L2 C3 M2 E2 R1



R1 Required Designator

Encoder Option

E1 No encoder
E2 1 µm resolution linear
E3 0.5 µm resolution linear
E4 0.1 µm resolution linear

Motor Mount

M2 SM16 - Inline mounting
M3 NEMA23 - Inline mounting
M37 NEMA17 - Inline mounting
M61 BE23 - Inline mounting

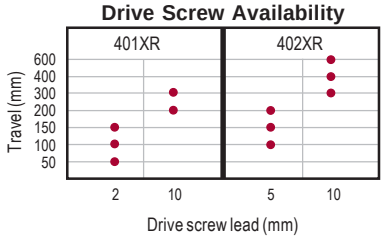
Motor Coupling

C1 No coupling
C2 6,3 mm (.25 in) bore Oldham
C3 6,3 mm (.25 in) bore Bellows
C4 9,5 mm (.38 in) bore Oldham (402XR only)*
C5 9,5 mm (.38 in) bore Bellows*
C24 5 mm (.20 in) bore Oldham
C25 5 mm (.20 in) bore Bellows
*NEMA 23 frame size only (M3, M61)

Limit Sensors

L1 No sensor
L2 N.C. current sinking flying leads
L3 N.O. current sinking flying leads
L4 N.C. current sourcing flying leads
L5 N.O. current sourcing flying leads
L6 N.C. current sinking locking connector
L7 N.O. current sinking locking connector
L8 N.C. current sourcing locking connector
L9 N.O. current sourcing locking connector
L11 N.C. current sinking-sensor pack
L12 N.O. current sinking-sensor pack
L13 N.C. current sourcing-sensor pack
L14 N.O. current sourcing-sensor pack

Drive Screw Availability



404XR Series - How to Order

Order Example: 404 | 450 | XR | M | S | – | D33 | – | H4 | L9

Model Series 404

Table Travel

50 mm	50	350 mm	350
100 mm	100	400 mm	400
150 mm	150	450 mm	450
200 mm	200	500 mm	500
250 mm	250	550 mm	550
300 mm	300	600 mm	600

Table Style ..... XR

Mounting (Metric) ..... M

Grade

Precision grade ..... P

Standard grade ..... S

Drive Screw

Free travel	D1	1 mm V thread leadscrew	D31
5 mm ballscrew	D2	2 mm V thread leadscrew	D32
10 mm ballscrew	D3	5 mm V thread leadscrew	D33
20 mm ballscrew		.10" V thread leadscrew	D34
(standard grade only)	D4	.10" acme thread leadscrew	D35

Home Sensor Ass'y. (one sensor)

No home sensor H1

N.C. current sinking, flying leads H2

N.O. current sinking, flying leads H3

N.C. current sourcing, flying leads H4

N.O. current sourcing, flying leads H5

N.C. current sinking, w/locking connector H6

N.O. current sinking, w/locking connector H7

N.C. current sourcing, w/locking connector H8

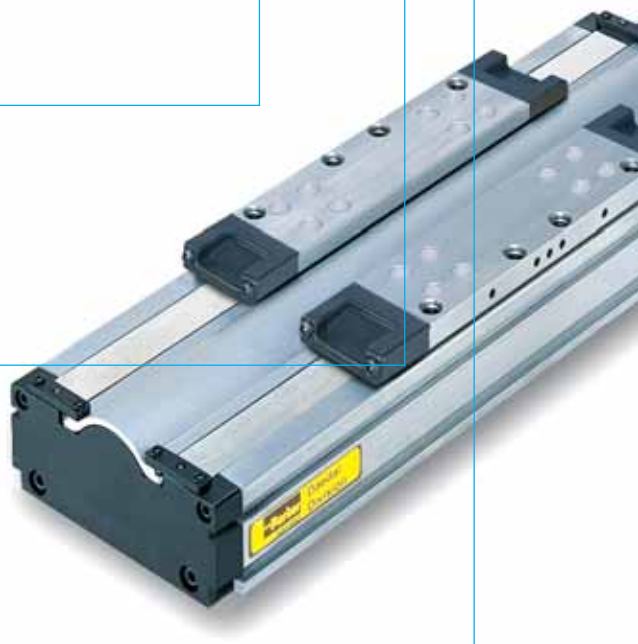
N.O. current sourcing, w/locking connector H9

N.C. current sinking-sensor pack H11

N.O. current sinking-sensor pack H12

N.C. current sourcing-sensor pack H13

N.O. current sourcing-sensor pack H14



Travel Limit Sensor Ass'y (two sensors)

No limit sensors L1

N.C. current sinking, flying leads L2

N.O. current sinking, flying leads L3

N.C. current sourcing, flying leads L4

N.O. current sourcing, flying leads L5

N.C. current sinking, w/locking connector L6

N.O. current sinking, w/locking connector L7

N.C. current sourcing, w/locking connector L8

N.O. current sourcing, w/locking connector L9

N.C. current sinking-sensor pack L11

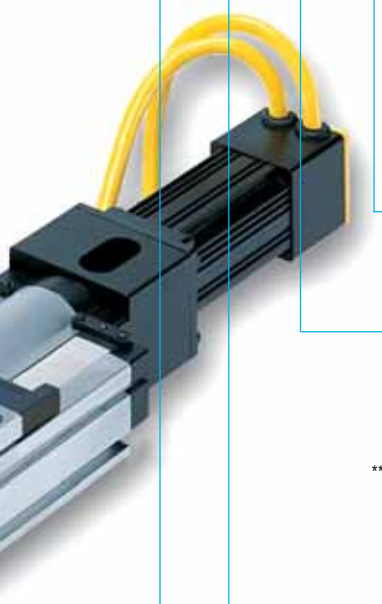
N.O. current sinking-sensor pack L12

N.C. current sourcing-sensor pack L13

N.O. current sourcing-sensor pack L14

Note: Sensors with locking connector include 5 meter extension cable.

C3 M4 E1 B1 R1 P1



Pinning Options

P1	No multi-axis pinning
P2	X axis transfer pinning to Y or Z axis - 30 arc seconds
P3	Y axis transfer pinning to X axis - 30 arc seconds
P4	Z axis transfer pinning to X axis - 30 arc seconds
P5	X axis standard pinning to Y axis - 125 arc seconds
P6	Y axis standard pinning to X axis - 125 arc seconds

Cleanroom Preparation

R1	Class 1000 compatible (standard)
R2	Class 10 compatible (consult factory for details)
R5	Class 1000 (Std.) with easy lube system
R7	Class 1000 with external stainless hardware
R8	Class 10 with external stainless hardware
R9	Class 1000 with easy lube system & external stainless hardware

Brake Option

B1	No brake
B2	Shaft brake**

**Brake option cannot be used in conjunction with Rotary encoder option. Refer to holding torque chart (page B15) to confirm maximum load.

Encoder Option

E1	No encoder
E2	Linear encoder (tape scale) 1 micron
E3	Linear encoder (tape scale) 0.5 micron
E4	Linear encoder (tape scale) 0.1 micron
E5	Rotary shaft encoder**

Motor Mount***

*** See page B22 for maximum allowable motor shaft diameter. Parallel motor mounts are not available with leadscrew drives.

M1	No motor mount
M2	SM 16 - In-line mounting
M3	NEMA 23 & SM 23 - In-line mounting
M4	NEMA 34 - In-line mounting
M5	SM16 - Parallel mounting, "A" location
M6	SM16 - Parallel mounting, "B" location
M7	SM16 - Parallel mounting, "C" location
M8	NEMA 23 - Parallel mounting, "A" location
M9	NEMA 23 - Parallel mounting, "B" location
M10	NEMA 23 - Parallel mounting, "C" location
M11	SM23 - Parallel mounting, "A" location
M12	SM23 - Parallel mounting, "B" location
M13	SM23 - Parallel mounting, "C" location
M21	Neometric 70 - In-line mounting
M37	NEMA 17 - In-line mounting
M42	SM232AQ-NPSN Servo motor - In-line mtg.
M46	HV232-02-10 Stepper Motor - In-line mtg.
M49	Handcrank / no read out
M50	Handcrank w/ read out (0.10 or 1 mm leads only)
M61	BE23 - In-line mounting
M62	BE23 - Parallel mounting, "A" location
M63	BE23 - Parallel mounting, "B" location
M64	BE23 - Parallel mounting, "C" location
M71	SGM01 - In-line mounting
M75	SGM02 - In-line mounting

Motor Coupling

C1	No coupling (req. for parallel mounting)
C2	0.250" Oldham
C3	0.250" Bellows (required for prec.grade)
C4	0.375" Oldham
C5	0.375" Bellows (required for prec.grade)
C6	11 mm Oldham
C7	11 mm Bellows (req. for prec.grade)
C10	14 mm Oldham (M75 motor option)
C11	14 mm Bellows (M75 motor option)
C22	9 mm Oldham
C23	9 mm Bellows
C24	5 mm Oldham (M37 NEMA 17 w/5mm shaft)
C25	5 mm Bellows (M37 NEMA 17 w/5mm shaft)
C26	8 mm Oldham (M71 motor option)
C27	8 mm Bellows (M71 motor option)
C28	0.188" Oldham (M37 NEMA 17)
C29	0.188" Bellows (M37 NEMA 17)
C30	0.250" Oldham†
C31	0.250" Bellows†
C32	0.375" Oldham†
C33	0.375" Bellows†
C39	9mm Bellows†

†Couplings for leadscrew drive

406XR Series - How to Order

Order Example: 406 | 900 | XR | M | S | – | D3 | H4 | L8

Model Series 406

Table Travel

100 mm	100	800 mm	800
200 mm	200	900 mm	900
300 mm	300	1000 mm	1000
400 mm	400	1250 mm	1250
500 mm	500	1500 mm	1500
600 mm	600	1750 mm	1750
700 mm	700	2000 mm	2000

Table Style ..... XR

Mounting (Metric) ..... M

Grade

Precision grade (max travel 600 mm) ..... P

Standard grade (max travel 2000 mm) ..... S

Drive Screw

Free travel D1

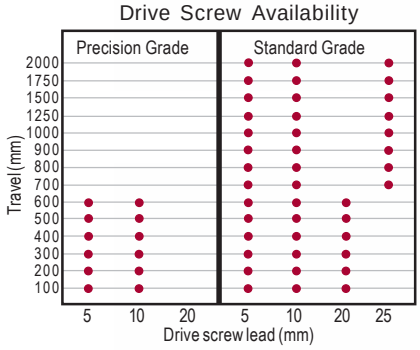
5 mm ballscrew D2

10 mm ballscrew D3

20 mm ballscrew D4

25 mm ballscrew D5

Drive Screw Availability



Home Sensor Assembly (one sensor)

No home sensor H1

N.C. current sinking, flying leads H2

N.O. current sinking, flying leads H3

N.C. current sourcing, flying leads H4

N.O. current sourcing, flying leads H5

N.C. current sinking, w/locking connector H6

N.O. current sinking, w/locking connector H7

N.C. current sourcing, w/locking connector H8

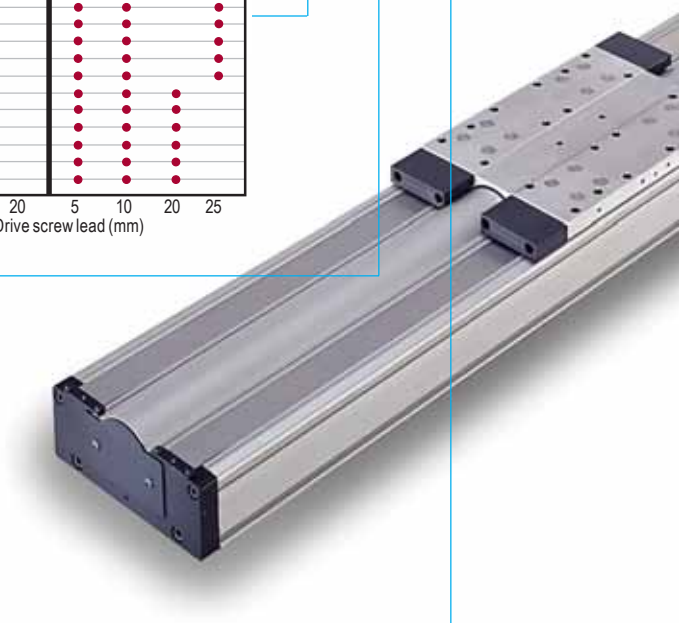
N.O. current sourcing, w/locking connector H9

N.C. current sinking-sensor pack H11

N.O. current sinking-sensor pack H12

N.C. current sourcing-sensor pack H13

N.O. current sourcing-sensor pack H14



Travel Limit Sensor Assembly (two sensors)

No limit sensors L1

N.C. current sinking, flying leads L2

N.O. current sinking, flying leads L3

N.C. current sourcing, flying leads L4

N.O. current sourcing, flying leads L5

N.C. current sinking, w/locking connector L6

N.O. current sinking, w/locking connector L7

N.C. current sourcing, w/locking connector L8

N.O. current sourcing, w/locking connector L9

N.C. current sinking-sensor pack L11

N.O. current sinking-sensor pack L12

N.C. current sourcing-sensor pack L13

N.O. current sourcing-sensor pack L14

Note: Sensors with locking connector include 5 meter extension cable.

C7 M4 E1 B1 R1 P1

** See page B24 for maximum allowable motor shaft diameter.
*** SM23 motor requires long shaft option.

Pinning Option

P1	No multi-axis pinning
P2	X axis transfer pinning to Y or Z axis - 30 arc seconds
P3	Y axis transfer pinning to X axis - 30 arc seconds
P4	Z axis transfer pinning to X axis - 30 arc seconds
P5	X axis standard pinning to Y axis - 125 arc seconds
P6	Y axis standard pinning to X axis - 125 arc seconds

Cleanroom Preparation

R1	Class 1000 compatible (standard)
R2	Class 10 compatible (consult factory for details)

Brake Option

B1	No brake
B2	Shaft brake*

* Brake option cannot be used in conjunction with Rotary encoder option. Refer to holding torque chart(page B15) to confirm maximum load.

Encoder Option

E1	No encoder
E2	Linear encoder (tape scale) 1 micron
E3	Linear encoder (tape scale) 0.5 micron
E4	Linear encoder (tape scale) 0.1 micron
E5	Rotary shaft encoder*

Motor Mount**

M1	No motor mount
M3	NEMA 23 & SM23 - In-line mounting
M4	NEMA 34 In-line mounting
M11	SM23 - Parallel mounting, "A" location***
M12	SM23 - Parallel mounting, "B" location***
M13	SM23 - Parallel mounting, "C" location***
M14	NEMA 34 - Parallel mounting, "A" location
M15	NEMA 34 - Parallel mounting, "B" position
M16	NEMA 34 - Parallel mounting, "C" position
M17	Neometric 34 - In-line mounting
M18	Neometric 34 - Parallel mounting, "A" location
M19	Neometric 34 - Parallel mounting, "B" location
M20	Neometric 34 - Parallel mounting, "C" location
M21	Neometric 70 - In-line mounting
M22	Neometric 70 - Parallel mounting, "A" location
M23	Neometric 70 - Parallel mounting, "B" location
M24	Neometric 70 - Parallel mounting, "C" location
M29	Neometric 92 - In-line mounting
M61	BE23 - In-line mounting
M62	BE23 - Parallel mounting, "A" location
M63	BE23 - Parallel mounting, "B" location
M64	BE23 - Parallel mounting, "C" location
M75	SGM02 - In-line mounting

Motor Coupling

C1	No coupling (required for parallel mounting)
C2	0.250" Oldham
C3	0.250" Bellows (required for precision grade)
C4	0.375" Oldham
C5	0.375" Bellows (required for precision grade)
C6	11.0 mm Oldham
C7	11.0 mm Bellows (required for precision grade)
C8	0.500" Oldham
C9	0.500" Bellows (required for precision grade)
C10	14.0 mm Oldham
C11	14.0 mm Bellows (required for precision grade)

412XR Series - How to Order

Order Example: 412 | T03 | XR | M | S | – | D2 | H3 | L3

Model Series 412

Table Travel (mm)

150	T01
250	T02
350	T03
650	T04
800	T05
1000	T06
1200	T07
1500	T08
1750	T09
2000	T10

Table Style ..... XR

Mounting (Metric) ..... M

Grade

Standard grade ..... S

Drive Screw

Free travel	D1
5 mm lead	D2
10 mm lead	D3
25 mm lead	D5
32 mm lead	D6

Home Sensor*

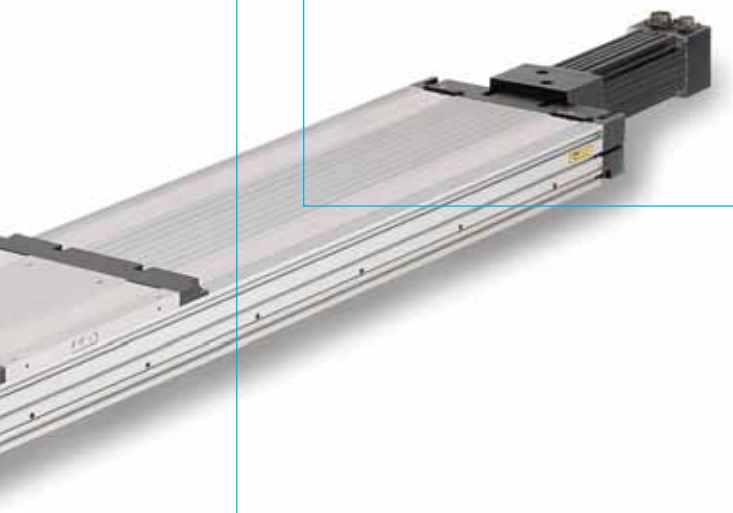
No home sensor	H1
N.C. current sinking	H2
N.O. current sinking	H3
N.C. current sourcing	H4
N.O. current sourcing	H5

Travel Limit Sensor*

No limit sensor	L1
N.C. current sinking	L2
N.O. current sinking	L3
N.C. current sourcing	L4
N.O. current sourcing	L5

* Includes a 3 meter extension cable with flying lead termination.
A 7,5 meter extension cable can be ordered seperately.

C15 M4 E3 B1 R1 P1



Pinning Option

- P1 No multi-axis pinning
- P2 X axis transfer pinning to Y axis - 30 arc seconds
- P3 Y axis transfer pinning to X axis - 30 arc seconds*

* P3 option includes a required 15 mm thick adapter.

Cleanroom Preparation

- R1 Class 1000, strip seals
- R2 Class 100, no strip seals

Brake Option

- B1 No brake
- B2 Shaft brake**

** Brake option cannot be used in conjunction with Rotary encoder option. Refer to holding torque chart (page B14) to confirm maximum load.

Encoder Option

- E1 No encoder
- E2 Linear encoder (tape scale) 1 micron
- E3 Linear encoder (tape scale) 0.5 micron
- E4 Linear encoder (tape scale) 0.1 micron
- E5 Linear encoder (tape scale) 5.0 micron
- E6 Rotary encoder **
- E7 Sine encoder

Motor Mount

- M1 No motor mount
- M4 NEMA 34 - In-line mounting
- M14 NEMA 34 - Parallel mounting, "A" position
- M15 NEMA 34 - Parallel mounting, "B" position
- M17 Neometric 34 - In-line mounting
- M18 Neometric 34 - Parallel mounting, "A" position
- M19 Neometric 34 - Parallel mounting, "B" position
- M21 Neometric 70 - In-line mounting
- M22 Neometric 70 - Parallel mounting, "A" position
- M23 Neometric 70 - Parallel mounting, "B" position
- M29 Neometric 92 - In-line mounting
- M30 Neometric 92 - Parallel mounting, "A" position
- M31 Neometric 92 - Parallel mounting, "B" position
- M33 M105, SMN100 - In-line mounting

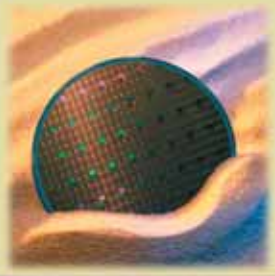
Motor Coupling

- C1 No coupling
- C4 0.375" bore Oldham
- C5 0.375" bore Bellows
- C6 11.0 mm Oldham
- C7 11.0 mm Bellows
- C8 0.50" Oldham
- C9 0.50" Bellows
- C10 14.0 mm Oldham
- C11 14.0 mm Bellows
- C14 0.750" (19.0mm) Oldham
- C15 0.750" (19.0mm) Bellows

Parker's XRS Systems

"standard" Cartesian robot modules for cost effective automation

Life Sciences



Semiconductor

Electronics

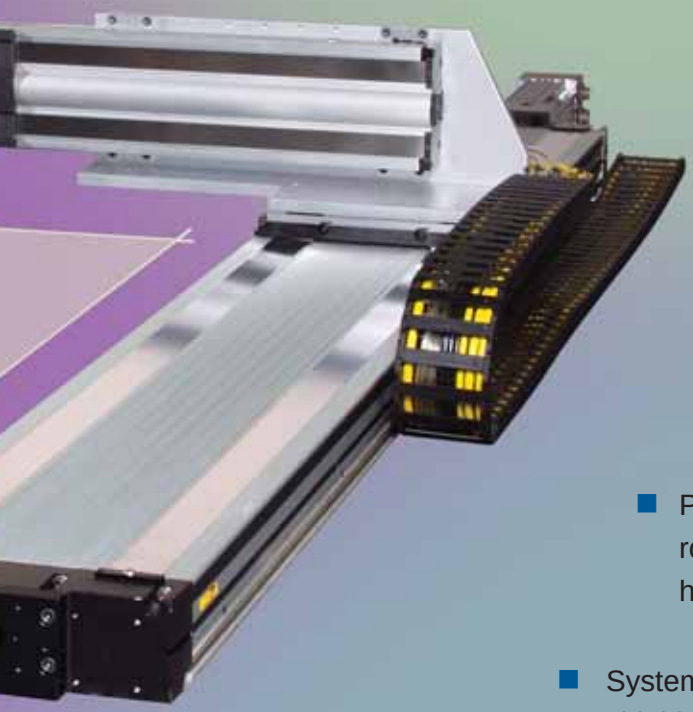
Automated Assembly & Dispensing

"*Standard*" XRS Systems are pre-engineered to optimize work-space, simplify selection, shorten delivery and lower costs.

Scalability - With 3 size platforms and 124 standard systems you can find a standard solution for your application.

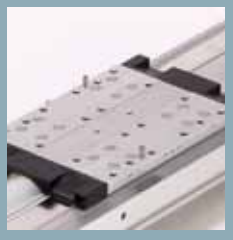
Technology - A unique mix of linear servo motor and ballscrew drive technology provides optimized dynamic performance for today's demanding automation applications.

Reliability - XRS Systems are built from Parker's XR / LXR linear modules, time tested and proven in thousands of applications world-wide.



- Innovative strip seal design provides IP30 protection to interior components as well as enhance the overall appearance.
- Inertia matched brushless servo motors provide compatibility with Parker and other industry standard drives and controls.
- Pre-installed air, power and signal lines routed to moving payload for convenient hook-up and long life operation.

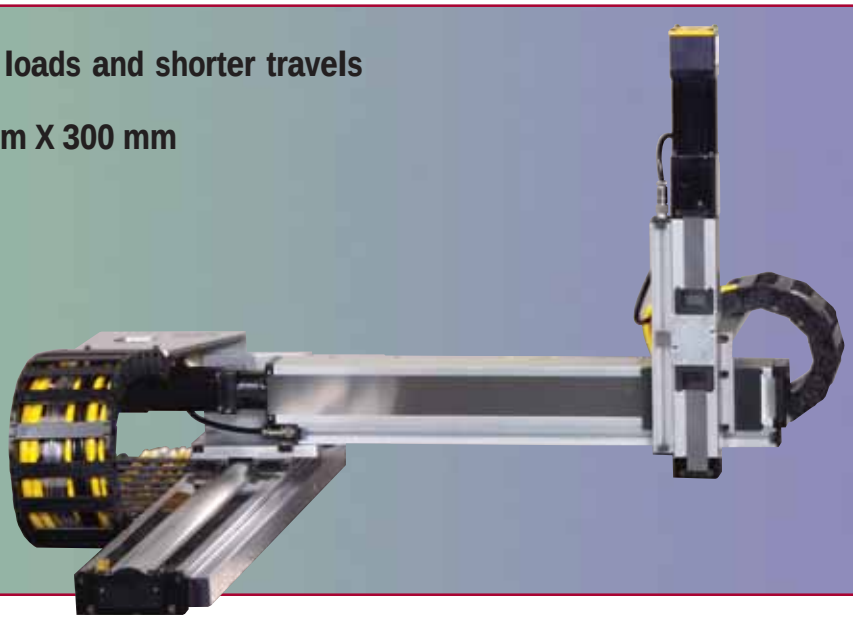
- System cable management features "high-flex" shielded cables with quick disconnect convenience.
- Precision dowel holes in carriage surface allows repeatable mounting of tooling to robot. Precision dowel holes in base allows repeatable mounting of entire robot module into machine.



- All axes are aligned and pinned orthogonal so that axes may be removed and re-attached with factory precision.
- Cleanroom preparation and other options are available for easy selection

XR Cartesian Systems - Small Platform

- Smaller footprint for light loads and shorter travels
- Max. X-Y work area: 600mm X 300 mm
- Maximum load: 5 kg



Specifications

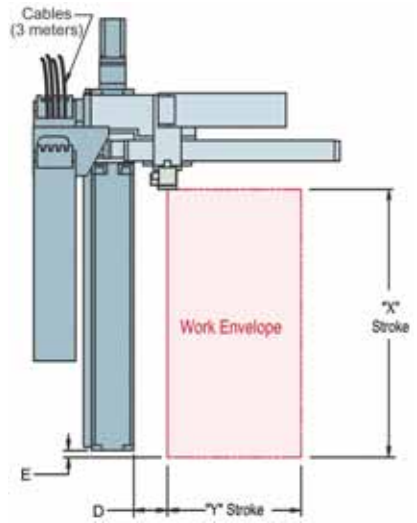
System No.	Style	System No.	Style	Max. Load (kg)	Work Envelope (mm) X	Y	Z	Velocity (mm/s.) X	Y	Z	Resolution (µm) X	Y	Z	Repeatability** (µm) X	Y	Z
XRS-0001	RH	**XRS-0009**	LH	5	300	300	n/a	600	700	n/a	2.5	2.5	n/a	16	15	n/a
XRS-0002	RH	**XRS-0010**	LH	5	300	300	100	600	700	140	2.5	2.5	0.5	16	15	10
XRS-0003	RH	**XRS-0011**	LH	5	600	300	n/a	600	700	n/a	2.5	2.5	n/a	16	15	n/a
XRS-0004	RH	**XRS-0012**	LH	5	600	300	100	500	700	140	2.5	2.5	0.5	16	15	10
XRS-0005	RH	**XRS-0013**	LH	5	300	300	n/a	1500	700	n/a	1	2.5	n/a	16	15	n/a
XRS-0006	RH	**XRS-0014**	LH	5	300	300	100	1500	700	140	1	2.5	0.5	16	15	10
XRS-0007	RH	**XRS-0015**	LH	5	600	300	n/a	2250	700	n/a	1	2.5	n/a	16	15	n/a
XRS-0008	RH	**XRS-0016**	LH	5	600	300	100	2250	700	140	1	2.5	0.5	16	15	10

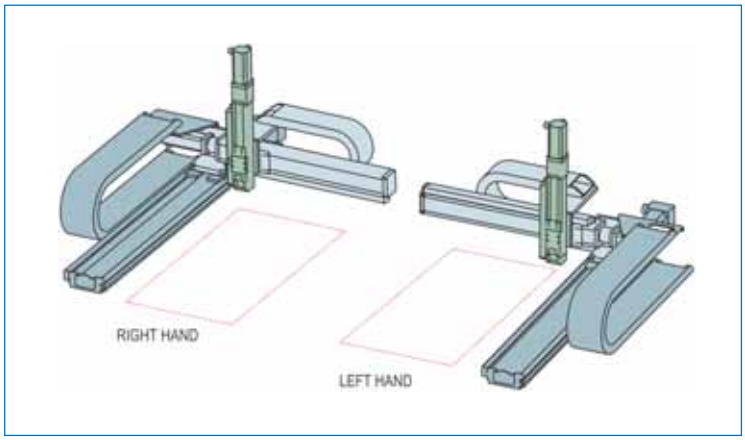
** Repeatability established at maximum load - fully extended stroke

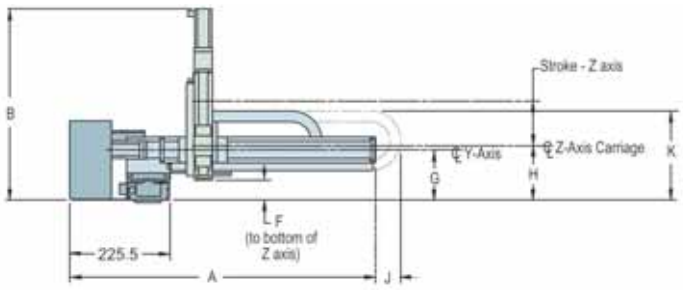
Linear Motor driven actuator
Ballscrew driven actuator

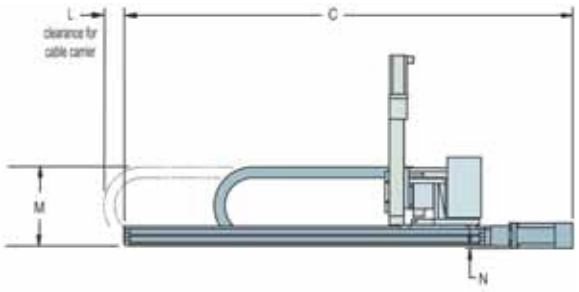
Recommended Parker Servo Drive: X axis: AR-02_E Y axis: AR-02_E Z axis: AR-02_E

Dimensions - Small Platform





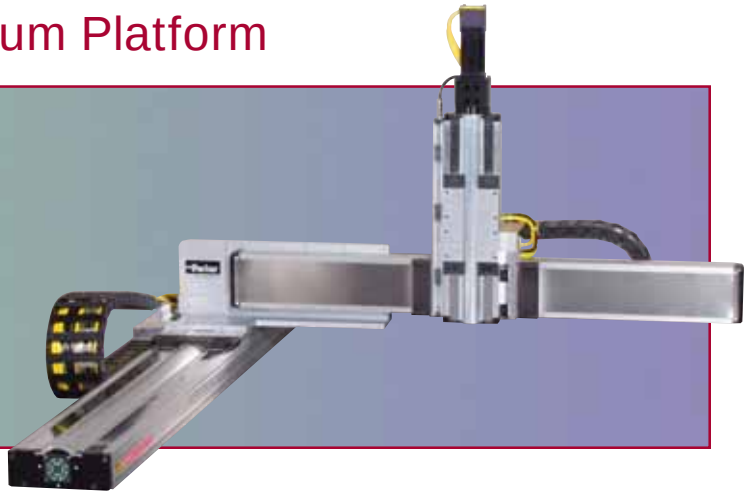




System		System		A	B	C	D	E	F	G	H	J	K	L	M	N	X	Y	Z
XRS-0001	RH	XRS-0009	LH	688.0	n/a	707.1	75.5	-27.7	n/a	112.0	n/a	35	198.7	50	198	6	300	300	n/a
XRS-0002	RH	XRS-0010	LH	688.0	463.4	707.1	75.5	15.3	46.7	112.0	120	35	198.7	50	198	6	300	300	100
XRS-0003	RH	XRS-0011	LH	688.0	n/a	1000.1	75.5	-27.7	n/a	112.0	n/a	35	198.7	50	198	6	600	300	n/a
XRS-0004	RH	XRS-0012	LH	688.0	463.4	1000.1	75.5	15.3	46.7	112.0	120	35	198.7	50	198	6	600	300	100
XRS-0005	RH	XRS-0013	LH	689.5	n/a	596.0	74.0	-71.2	n/a	124.7	n/a	35	211.5	50	211	n/a	300	300	n/a
XRS-0006	RH	XRS-0014	LH	689.5	476.1	596.0	74.0	-28.3	59.5	124.7	133	35	211.5	50	211	n/a	600	300	100
XRS-0007	RH	XRS-0015	LH	689.5	n/a	896.0	74.0	-71.2	n/a	124.7	n/a	35	211.5	50	211	n/a	300	300	n/a
XRS-0008	RH	XRS-0016	LH	689.5	476.1	896.0	74.0	-28.3	59.5	124.7	133	35	211.5	50	211	n/a	600	300	100

XR Cartesian Systems - Medium Platform

- For mid range loads and travels
- Max. X-Y work area: 1000mm X 600 mm
- Maximum load: 12 kg



Specifications

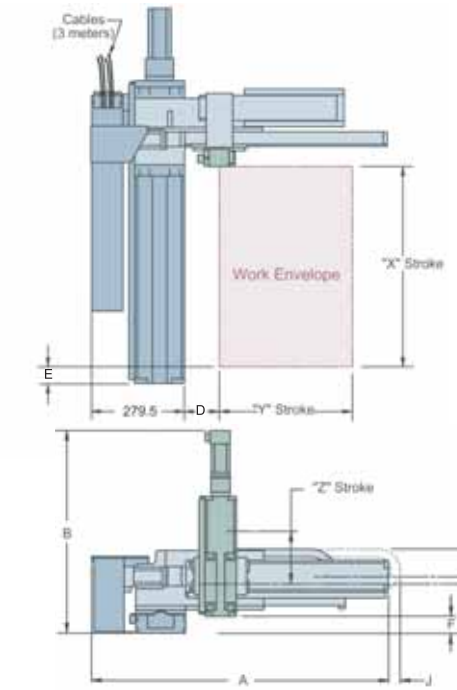
System No.	Style	System No.	Style	Max. Load (kg)	Work Envelope (mm) X	Y	Z	Velocity (mm/s.) X	Y	Z	Resolution (µm) X	Y	Z	Repeatability** (µm) X	Y	Z
XRS-0017	RH	XRS-0053	LH	12	600	400	n/a	500	600	n/a	2.5	2.5	n/a	45	7	n/a
XRS-0018	RH	XRS-0054	LH	5	600	400	100	500	600	140	2.5	2.5	0.5	45	7	10
XRS-0019	RH	XRS-0055	LH	12	600	400	150	500	600	600	2.5	2.5	2.5	45	7	6
XRS-0020*	RH	XRS-0056*	LH	12	600	400	150	500	600	600	2.5	2.5	2.5	45	7	6
XRS-0021	RH	XRS-0057	LH	12	600	600	n/a	500	500	n/a	2.5	2.5	n/a	45	7	n/a
XRS-0022	RH	XRS-0058	LH	5	600	600	100	500	500	140	2.5	2.5	0.5	45	7	10
XRS-0023	RH	XRS-0059	LH	12	600	600	150	500	500	600	2.5	2.5	2.5	45	7	6
XRS-0024*	RH	XRS-0060*	LH	12	600	600	150	500	500	600	2.5	2.5	2.5	45	7	6
XRS-0025	RH	XRS-0061	LH	12	1000	600	n/a	350	500	n/a	2.5	2.5	n/a	45	7	n/a
XRS-0026	RH	XRS-0062	LH	5	1000	600	100	350	500	140	2.5	2.5	0.5	45	7	10
XRS-0027	RH	XRS-0063	LH	12	1000	600	150	350	500	600	2.5	2.5	2.5	45	7	6
XRS-0028*	RH	XRS-0064*	LH	12	1000	600	150	350	500	600	2.5	2.5	2.5	45	7	6
XRS-0029	RH	XRS-0065	LH	12	600	400	n/a	500	2000	n/a	2.5	1	n/a	45	5	n/a
XRS-0030	RH	XRS-0066	LH	5	600	400	100	500	2000	140	2.5	1	0.5	45	5	10
XRS-0031	RH	XRS-0067	LH	12	600	400	150	500	2000	600	2.5	1	2.5	45	5	6
XRS-0032*	RH	XRS-0068*	LH	12	600	400	150	500	2000	600	2.5	1	2.5	45	5	6
XRS-0033	RH	XRS-0069	LH	12	600	600	n/a	500	2000	n/a	2.5	1	n/a	45	5	n/a
XRS-0034	RH	XRS-0070	LH	5	600	600	100	500	2000	140	2.5	1	0.5	45	5	10
XRS-0035	RH	XRS-0071	LH	12	600	600	150	500	2000	600	2.5	1	2.5	45	5	6
XRS-0036*	RH	XRS-0072*	LH	12	600	600	150	500	2000	600	2.5	1	2.5	45	5	6
XRS-0037	RH	XRS-0073	LH	12	1000	600	n/a	350	2000	n/a	2.5	1	n/a	45	5	n/a
XRS-0038	RH	XRS-0074	LH	5	1000	600	100	350	2000	140	2.5	1	0.5	45	5	10
XRS-0039	RH	XRS-0075	LH	12	1000	600	150	350	2000	600	2.5	1	2.5	45	5	6
XRS-0040*	RH	XRS-0076*	LH	12	1000	600	150	350	2000	600	2.5	1	2.5	45	5	6
XRS-0041	RH	XRS-0077	LH	12	650	400	n/a	2000	2000	n/a	1	1	n/a	45	5	n/a
XRS-0042	RH	XRS-0078	LH	5	650	400	100	2000	2000	140	1	1	0.5	45	5	10
XRS-0043	RH	XRS-0079	LH	12	650	400	150	2000	2000	600	1	1	2.5	45	5	6
XRS-0044*	RH	XRS-0080*	LH	12	650	400	150	2000	2000	600	1	1	2.5	45	5	6
XRS-0045	RH	XRS-0081	LH	12	650	600	n/a	2000	2000	n/a	1	1	n/a	45	5	n/a
XRS-0046	RH	XRS-0082	LH	5	650	600	100	2000	2000	140	1	1	0.5	45	5	10
XRS-0047	RH	XRS-0083	LH	12	650	600	150	2000	2000	600	1	1	2.5	45	5	6
XRS-0048*	RH	XRS-0084*	LH	12	650	600	150	2000	2000	600	1	1	2.5	45	5	6
XRS-0049	RH	XRS-0085	LH	12	850	600	n/a	2000	2000	n/a	1	1	n/a	45	5	n/a
XRS-0050	RH	XRS-0086	LH	5	850	600	100	2000	2000	140	1	1	0.5	45	5	10
XRS-0051	RH	XRS-0087	LH	12	850	600	150	2000	2000	600	1	1	2.5	45	5	6
XRS-0052*	RH	XRS-0088*	LH	12	850	600	150	2000	2000	600	1	1	2.5	45	5	6

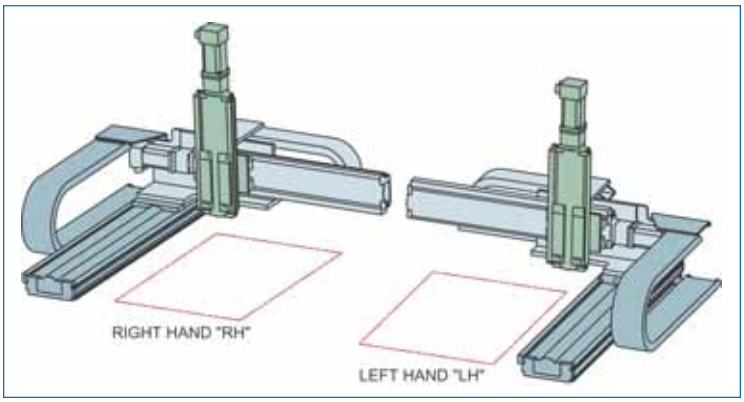
* Models indicated have the Z-axis mounted to the Y-axis "carriage to carriage", hence the Z-axis will extend & retract vertically. The F dimension is established when the Z-axis is at the top of the stroke.
** Repeatability is established at maximum load - fully extended stroke.

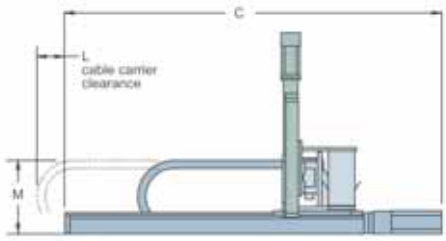
Linear Motor driven actuator
Ballscrew driven actuator

Recommended Parker Servo Drive: X axis: AR-04_E Y axis: AR-02_E Z axis: AR-02_E

Dimensions - Medium Platform



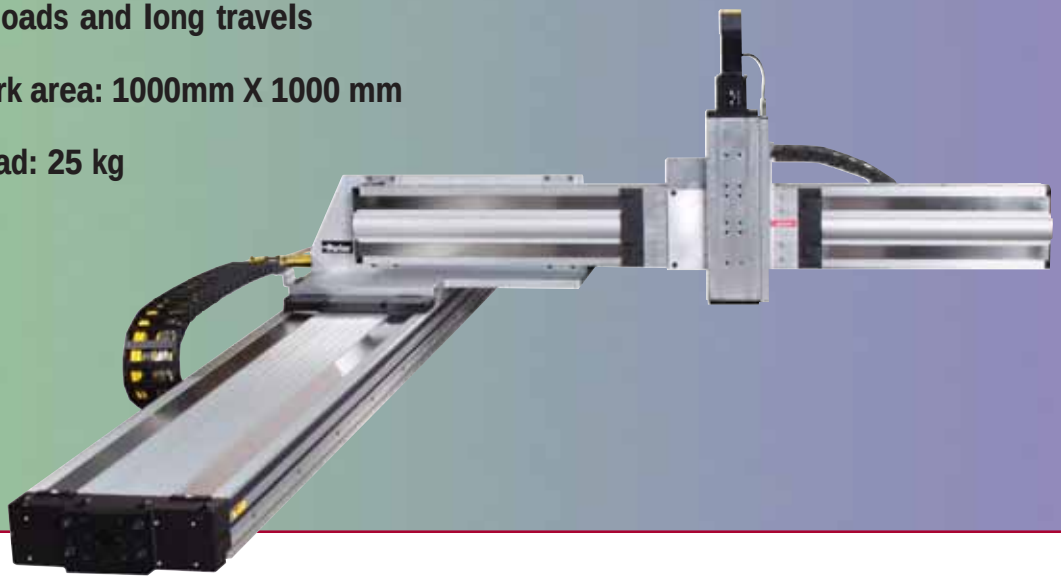




System	System	A	B	C	D	E	F	G	H	J	K	L	M	X	Y	Z
XRS-0017 RH	XRS-0053 LH	892.5	n/a	1127.5	105	-99.0	n/a	170.1	n/a	60	261	80	225	600	400	n/a
XRS-0018 RH	XRS-0054 LH	892.5	530.8	1127.5	105	-56.0	82.6	170.1	156	60	261	80	225	600	400	100
XRS-0019 RH	XRS-0055 LH	892.5	646	1127.5	105	-51.7	64.1	170.1	170	60	261	80	225	600	400	150
XRS-0020*RH	XRS-0056*LH	892.5	646	1127.5	105	-51.7	64.6*	170.1	170	60	261	80	225	600	400	150
XRS-0021 RH	XRS-0057 LH	1092.5	n/a	1127.5	105	-99.0	n/a	170.1	n/a	60	261	80	225	600	600	n/a
XRS-0022 RH	XRS-0058 LH	1092.5	530.8	1127.5	105	-56.0	82.6	170.1	156	60	261	80	225	600	600	100
XRS-0023 RH	XRS-0059 LH	1092.5	646	1127.5	105	-51.7	64.1	170.1	170	60	261	80	225	600	600	150
XRS-0024*RH	XRS-0060*LH	1092.5	646	1127.5	105	-51.7	64.6*	170.1	170	60	261	80	225	600	600	150
XRS-0025 RH	XRS-0061 LH	1092.5	n/a	1527.5	105	-99.0	n/a	170.1	n/a	60	261	80	225	1000	600	n/a
XRS-0026 RH	XRS-0062 LH	1092.5	530.8	1527.5	105	-56.0	82.6	170.1	156	60	261	80	225	1000	600	100
XRS-0027 RH	XRS-0063 LH	1092.5	646	1527.5	105	-51.7	64.1	170.1	170	60	261	80	225	1000	600	150
XRS-0028*RH	XRS-0064*LH	1092.5	646	1527.5	105	-51.7	64.6*	170.1	170	60	261	80	225	1000	600	150
XRS-0029 RH	XRS-0065 LH	934.5	n/a	1127.5	105	-86.3	n/a	170.1	n/a	30	281	80	225	600	400	n/a
XRS-0030 RH	XRS-0066 LH	934.5	530.8	1127.5	105	-43.4	82.6	170.1	156	30	281	80	225	600	400	100
XRS-0031 RH	XRS-0067 LH	934.5	646	1127.5	105	-39.0	64.1	170.1	170	30	281	80	225	600	400	150
XRS-0032*RH	XRS-0068*LH	934.5	646	1127.5	105	-39.0	64.6*	170.1	170	30	281	80	225	600	400	150
XRS-0033 RH	XRS-0069 LH	1134.5	n/a	1127.5	105	-86.3	n/a	170.1	n/a	30	281	80	225	600	600	n/a
XRS-0034 RH	XRS-0070 LH	1134.5	530.8	1127.5	105	-43.4	82.6	170.1	156	30	281	80	225	600	600	100
XRS-0035 RH	XRS-0071 LH	1134.5	646	1127.5	105	-39.0	64.1	170.1	170	30	281	80	225	600	600	150
XRS-0036*RH	XRS-0072*LH	1134.5	646	1127.5	105	-39.0	64.6*	170.1	170	30	281	80	225	600	600	150
XRS-0037 RH	XRS-0073 LH	1134.5	n/a	1527.5	105	-86.3	n/a	170.1	n/a	30	281	80	225	1000	600	n/a
XRS-0038 RH	XRS-0074 LH	1134.5	530.8	1527.5	105	-43.4	82.6	170.1	156	30	281	80	225	1000	600	100
XRS-0039 RH	XRS-0075 LH	1134.5	646	1527.5	105	-39.0	64.1	170.1	170	30	281	80	225	1000	600	150
XRS-0040*RH	XRS-0076*LH	1134.5	646	1527.5	105	-39.0	64.6*	170.1	170	30	281	80	225	1000	600	150
XRS-0041 RH	XRS-0077 LH	934.5	n/a	1117.6	105	-158.3	n/a	170.1	n/a	30	281	35	225	650	400	n/a
XRS-0042 RH	XRS-0078 LH	934.5	530.8	1117.6	105	-115.3	82.6	170.1	156	30	281	35	225	650	400	100
XRS-0043 RH	XRS-0079 LH	934.5	646	1117.6	105	-111.0	64.1	170.1	170	30	281	35	225	650	400	150
XRS-0044*RH	XRS-0080*LH	934.5	646	1117.6	105	-111.0	64.6*	170.1	170	30	281	35	225	650	400	150
XRS-0045 RH	XRS-0081 LH	1134.5	n/a	1117.6	105	-158.3	n/a	170.1	n/a	30	281	35	225	650	600	n/a
XRS-0046 RH	XRS-0082 LH	1134.5	530.8	1117.6	105	-115.3	82.6	170.1	156	30	281	35	225	650	600	100
XRS-0047 RH	XRS-0083 LH	1134.5	646	1117.6	105	-111.0	64.1	170.1	170	30	281	35	225	650	600	150
XRS-0048*RH	XRS-0084*LH	1134.5	646	1117.6	105	-111.0	64.6*	170.1	170	30	281	35	225	650	600	150
XRS-0049 RH	XRS-0085 LH	1134.5	n/a	1317.6	105	-158.3	n/a	170.1	n/a	30	281	35	225	850	600	n/a
XRS-0050 RH	XRS-0086 LH	1134.5	530.8	1317.6	105	-115.3	82.6	170.1	156	30	281	35	225	850	600	100
XRS-0051 RH	XRS-0087 LH	1134.5	646	1317.6	105	-111.0	64.1	170.1	170	30	281	35	225	850	600	150
XRS-0052*RH	XRS-0088*LH	1134.5	646	1317.6	105	-111.0	64.6*	170.1	170	30	281	35	225	850	600	150

XRS Cartesian Systems - Large Platform

- For heavier loads and long travels
- Max. X-Y work area: 1000mm X 1000 mm
- Maximum load: 25 kg



Specifications

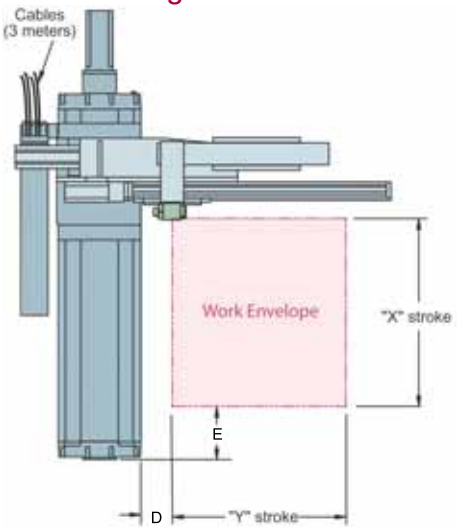
System No.	Style	System No.	Style	Max. Load (kg)	Work Envelope (mm) X	Y	Z	Velocity (mm/s.) X	Y	Z	Resolution (µm) X	Y	Z	Repeatability** (µm) X	Y	Z
XRS-0089	RH	**XRS-0107**	LH	25	650	600	n/a	470	500	n/a	2.5	2.5	n/a	50	7	n/a
XRS-0090	RH	**XRS-0108**	LH	25	650	600	150	470	500	600	2.5	2.5	2.5	50	7	6
XRS-0091*	RH	**XRS-0109***	LH	25	650	600	150	470	500	600	2.5	2.5	2.5	50	7	6
XRS-0092	RH	**XRS-0110**	LH	25	1000	600	n/a	450	500	n/a	2.5	2.5	n/a	50	7	n/a
XRS-0093	RH	**XRS-0111**	LH	25	1000	600	150	450	500	600	2.5	2.5	2.5	50	7	6
XRS-0094*	RH	**XRS-0112***	LH	25	1000	600	150	450	500	600	2.5	2.5	2.5	50	7	6
XRS-0095	RH	**XRS-0113**	LH	25	1000	1000	n/a	450	350	n/a	2.5	2.5	n/a	50	7	n/a
XRS-0096	RH	**XRS-0114**	LH	25	1000	1000	150	450	350	600	2.5	2.5	2.5	50	7	6
XRS-0097*	RH	**XRS-0115***	LH	25	1000	1000	150	450	350	600	2.5	2.5	2.5	50	7	6
XRS-0098	RH	**XRS-0116**	LH	25	650	650	n/a	2000	2000	n/a	1	1	n/a	50	7	n/a
XRS-0099	RH	**XRS-0117**	LH	25	650	650	150	2000	2000	600	1	1	2.5	50	7	6
XRS-0100*	RH	**XRS-0118***	LH	25	650	650	150	2000	2000	600	1	1	2.5	50	7	6
XRS-0101	RH	**XRS-0119**	LH	25	1000	650	n/a	2000	2000	n/a	1	1	n/a	50	7	n/a
XRS-0102	RH	**XRS-0120**	LH	25	1000	650	150	2000	2000	600	1	1	2.5	50	7	6
XRS-0103*	RH	**XRS-0121***	LH	25	1000	650	150	2000	2000	600	1	1	2.5	50	7	6
XRS-0104	RH	**XRS-0122**	LH	25	1000	850	n/a	2000	2000	n/a	1	1	n/a	50	7	n/a
XRS-0105	RH	**XRS-0123**	LH	25	1000	850	150	2000	2000	600	1	1	2.5	50	7	6
XRS-0106*	RH	**XRS-0124***	LH	25	1000	850	150	2000	2000	600	1	1	2.5	50	7	6

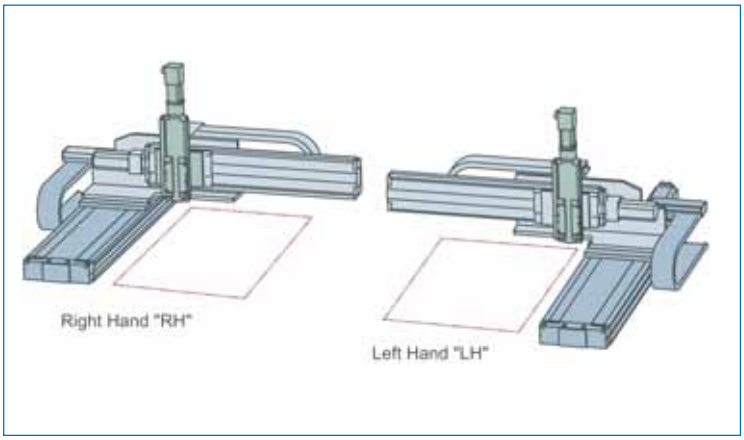
* Models indicated have the Z-axis mounted to the Y-axis "carriage to carriage", hence the Z-axis will extend & retract vertically. The F dimension is established when the Z- axis is at the top of the stroke.
** Repeatability is established at maximum load - fully extended stroke.

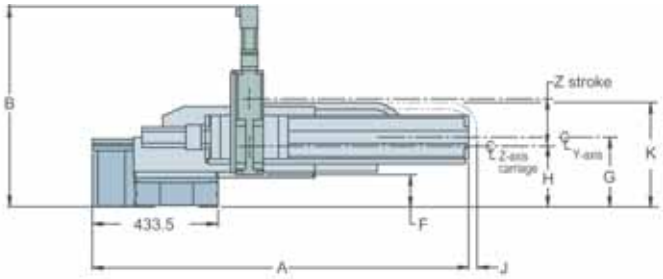
Linear Motor driven actuator
Ballscrew driven actuator

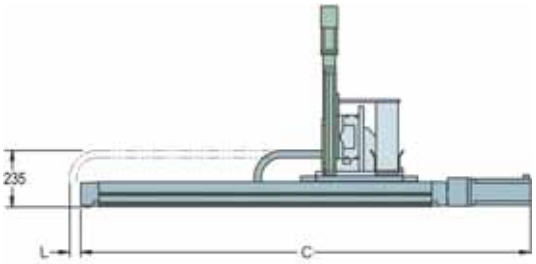
Recommended Parker Servo Drive: X axis: AR-08_E Y axis: AR-04_E Z axis: AR-02_E

Dimensions - Large Platform









System		System		A	B	C	D	E	F	G	H	J	K	L	X	Y	Z
XRS-0089	RH	XRS-0107	LH	1299.0	n/a	1553.5	108.5	-222.3	n/a	239.9	n/a	80	389.9	0	650	600	n/a
XRS-0090	RH	XRS-0108	LH	1299.0	690.3	1553.5	108.5	-175.0	108.9	239.9	214.9	80	389.9	0	650	600	150
XRS-0091*	RH	XRS-0109*	LH	1299.0	715.3	1553.5	108.5	-175.0	133.9*	239.9	239.9	80	389.9	0	650	600	150
XRS-0092	RH	XRS-0110	LH	1299.0	n/a	1553.5	108.5	-222.3	n/a	239.9	n/a	80	389.9	0	1000	600	n/a
XRS-0093	RH	XRS-0111	LH	1299.0	690.3	1553.5	108.5	-175.0	108.9	239.9	214.9	80	389.9	0	1000	600	150
XRS-0094*	RH	XRS-0112*	LH	1299.0	715.3	1553.5	108.5	-175.0	133.9*	239.9	239.9	80	389.9	0	1000	600	150
XRS-0095	RH	XRS-0113	LH	1699.0	n/a	1903.5	108.5	-222.3	n/a	239.9	n/a	80	389.9	0	1000	1000	n/a
XRS-0096	RH	XRS-0114	LH	1699.0	690.3	1903.5	108.5	-175.0	108.9	239.9	214.9	80	389.9	0	1000	1000	150
XRS-0097*	RH	XRS-0115*	LH	1699.0	715.3	1903.5	108.5	-175.0	133.9*	239.9	239.9	80	389.9	0	1000	1000	150
XRS-0098	RH	XRS-0116	LH	1392.5	n/a	1264.0	100.0	-222.3	n/a	239.9	n/a	80	389.9	0	650	650	n/a
XRS-0099	RH	XRS-0117	LH	1392.5	690.3	1264.0	100.0	-175.0	108.9	239.9	214.9	80	389.9	0	650	650	150
XRS-0100*	RH	XRS-0118*	LH	1392.5	715.3	1264.0	100.0	-175.0	133.9*	239.9	239.9	80	389.9	0	650	650	150
XRS-0101	RH	XRS-0119	LH	1392.5	n/a	1264.0	100.0	-222.3	n/a	239.9	n/a	80	389.9	0	1000	650	n/a
XRS-0102	RH	XRS-0120	LH	1392.5	690.3	1264.0	100.0	-175.0	108.9	239.9	214.9	80	389.9	0	1000	650	150
XRS-0103*	RH	XRS-0121*	LH	1392.5	715.3	1264.0	100.0	-175.0	133.9*	239.9	239.9	80	389.9	0	1000	650	150
XRS-0104	RH	XRS-0122	LH	1592.5	n/a	1614.0	100.0	-222.3	n/a	239.9	n/a	80	389.9	0	1000	850	n/a
XRS-0105	RH	XRS-0123	LH	1592.5	690.3	1614.0	100.0	-175.0	108.9	239.9	214.9	80	389.9	0	1000	850	150
XRS-0106*	RH	XRS-0124*	LH	1592.5	715.3	1614.0	100.0	-175.0	133.9*	239.9	239.9	80	389.9	0	1000	850	150

* Models indicated have the Z-axis mounted to the Y-axis “carriage to carriage”, hence the Z-axis will extend & retract vertically. The F dimensio is established when the Z- axis is at the top of the stroke.
** Repeatability is established at maximum load - fully extended stroke.

404XE Series (95 mm wide profile)

Features

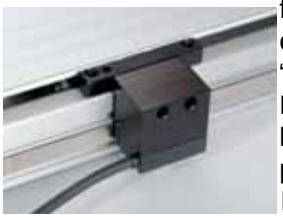
- ❑ Economy Grade Positioning
- ❑ 100% Duty Cycle
- ❑ High Strength Design
- ❑ Easy Multi-Axis Mounting
- ❑ Locating Dowel Holes

Reliable and Cost Effective Positioning

The 404XE positioners combine versatility with rugged construction in a compact motion platform that is ideal for 24/7 process automation. A high efficiency ballscrew drive, recirculating square rail bearings and high strength aluminum body are the result of innovative engineering that has reduced costs while improving performance.

Unmatched options and features

A vast assortment of “designer friendly” options and features simplify the engineering challenges often confronted with “base model” positioning devices. Features like precision dowel holes, linear feedback, sensor packs, parallel motor mounting, brakes, and cleanroom preparation simplify and speed your machine design process.



Multi-Axis Systems

XY and XYZ systems are easily configured and pinned so that factory orthogonality can be reproduced in the field. Motors and cable management systems connect to the XE tables in a straight-forward and simple manner.

Technology Evolution

The XE is direct mounting compatible with our precision series XR ballscrew tables and our LXR linear motor tables. It is possible to mix-and-match various levels of technology on a ‘per axis’ basis allowing the most cost effective optimized application solutions.

404XE Series Specifications

Common Specifications

Bidirectional Repeatability	
T01 to T11 models	±20 micron
T12 to T15 models	±30 micron
Duty Cycle	100%
Max Acceleration(1)	20 m/sec² (773 in/sec²)
Normal load capacity(2)	
NL (short carriage)	61.3 kgf (135 lbs)
VL (long carriage)	122.6 kgf (270 lbs)
Axial load capacity(1)	
5 mm lead ballscrew	60 kgf (132 lbs)
10 mm lead ballscrew	70 kgf (154 lbs)
20 mm lead ballscrew	70 kgf (154 lbs)
Drive Screw Efficiency	90%
Max Break-Away Torque	0.25 Nm (35in-oz)
Max Running Torque (rated @2 rps)	0.21 Nm (30in-oz)
Linear Bearing – Coefficient of Friction	0.01
Ballscrew Diameter	
5 & 10 mm lead	16 mm
20 mm lead	15 mm
Carriage Weight	
NL (short carriage)	0.215 kg (0.47 lbs)
VL (long carriage)	0.495 kg (1.09 lbs)

(1) Applies to units with VL carriage
(2) Refer to life/load charts.

Travel Dependent Characteristics

Code	Travel (mm) NL	Travel (mm) VL	Positional(3)(4) Accuracy (µm)	Input Inertia NL carriage units (10^{-5} kg-m²) 5 mm	10 mm	20 mm	Input Inertia VL carriage units (10^{-5} kg-m²) 5 mm	10 mm	20 mm	Max.Screw Speed (rps)	Max. Velocity (meters/sec.) 5 mm	10 mm	20 mm	Total Table Weight (kg) NL	VL
T01	25	n/a	42	.81	n/a	n/a	n/a	n/a	n/a	72	0.36	0.73	1.50	1.42	1.70
T02	50	n/a	50	.94	.98	n/a	n/a	n/a	n/a	72	0.36	0.73	1.50	1.61	1.89
T03	100	33	58	1.19	1.23	1.12	1.21	1.30	1.4	72	0.36	0.73	1.50	1.95	2.23
T04	150	83	66	1.44	1.48	1.32	1.46	1.55	1.6	72	0.36	0.73	1.50	2.35	2.63
T05	200	133	74	1.69	1.73	1.51	1.71	1.80	1.79	72	0.36	0.73	1.50	2.59	2.87
T06	250	183	82	1.94	1.99	1.70	1.96	2.06	1.99	72	0.36	0.73	1.50	2.97	3.25
T07	300	233	90	2.20	2.24	1.90	2.21	2.31	2.18	72	0.36	0.73	1.50	3.34	3.62
T08	350	283	98	2.45	2.49	2.09	2.47	2.56	2.37	72	0.36	0.73	1.50	3.50	3.78
T09	400	333	106	2.70	2.74	2.29	2.72	2.81	2.57	72	0.36	0.73	1.50	3.83	4.11
T10	450	383	114	2.95	2.99	2.48	2.97	3.07	2.76	72	0.36	0.73	1.50	4.09	4.37
T11	500	433	122	3.21	3.25	2.67	3.22	3.32	2.96	72	0.36	0.73	1.50	4.22	4.50
T12	550	483	130	3.46	3.50	2.87	3.48	3.57	3.15	72	0.36	0.73	1.50	4.55	4.83
T13	600	533	138	3.71	3.75	3.06	3.73	3.82	3.34	69	0.34	0.68	1.32	4.87	5.15
T15	700	633	154	4.21	4.25	3.45	4.23	4.33	3.73	52	0.26	0.52	1.00	5.12	5.40

(3) Positional accuracy applies to in-line motor configurations only. Contact factory for parallel motor specifications. Positional specifications are based on "no-load" conditions and apply to individual axes only.
(4) Consult factory for specs with linear feedback.

404XE Series - Engineering Reference

The following performance information is provided as a supplement to the product specifications pages. The useful life of a linear table at full catalog specifications is dependent on the forces acting upon it. These forces include both static components resulting from payload weight, and dynamic components due to acceleration/deceleration of the load. In multi-axes applications, the primary positioner at the bottom of the stack usually establishes the load limits for the combined axes. When determining life/load, it is critical to include the weight of all positioning elements that contribute to the load supported by the primary axis. The following graphs and formulas are used to establish the table life relative to the applied loads.

Table Life/Load Chart
Thrust (axial) load

This graph illustrates table ballscrew life relative to the axial load.

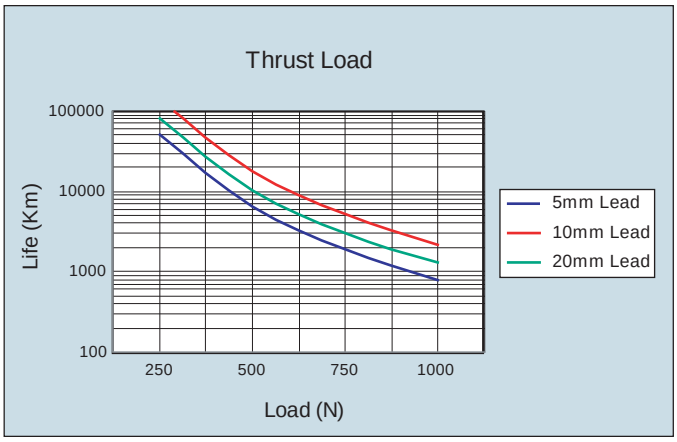


Table Life/Load Chart
Compression (normal load)

This graph provides an evaluation of the support bearing life/load characteristics. The curves show the life/load relationship when the applied load is centered on the carriage, normal (perpendicular) to the carriage mounting surface.
For final evaluation of life vs load, including off center, tension, and side loads refer to the pitch/moment chart for the NL carriage units or the bearing load charts (next page) for the VL carriage units.

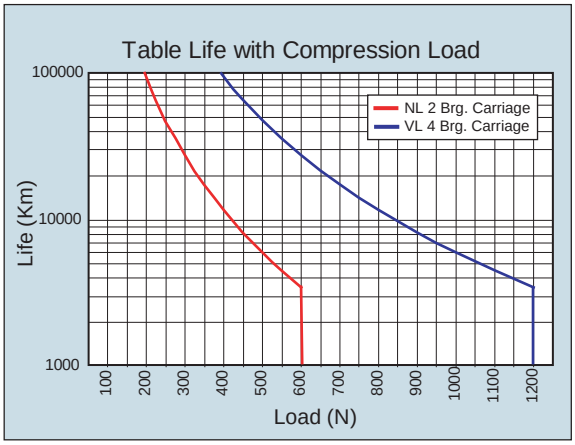
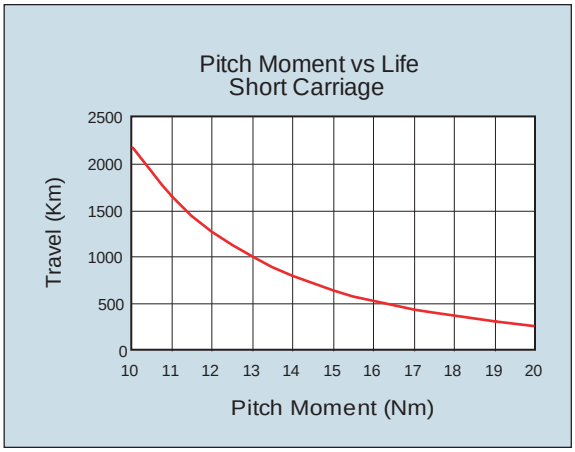


Table Life/Load Chart
Pitch Moment - NL (Short Carriage)

This graph illustrates table linear bearing life as a result of pitch moment.



404XE Series - Engineering Reference

Bearing Life/Load Chart
for VL Long Carriage units

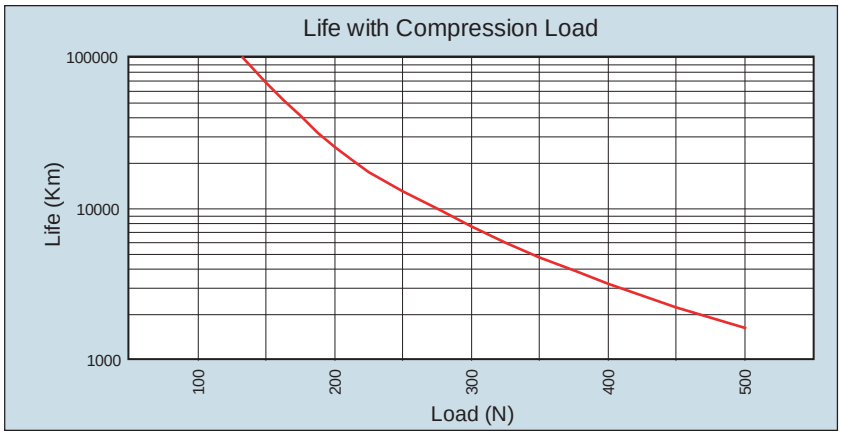
These charts are to be used to evaluate the VL Carrige units. They should be used in conjunction with with the corresponding formulas (found under "Product Information" at www.parkermotion.com) to establish the life/load for each bearing (4 per table).

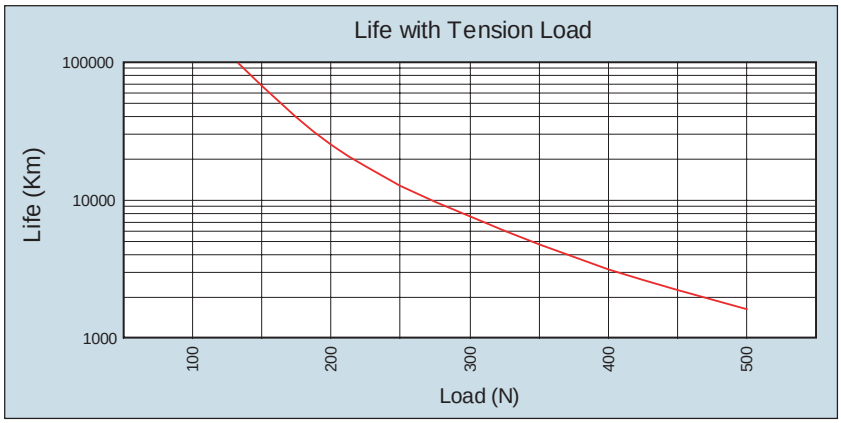
Several dimensions, which are specific to each linear positioning table model, and the load geometry are required for these computations. These dimensions are supplied in the catalog information for each positioner. The dimensions are referenced as follows:

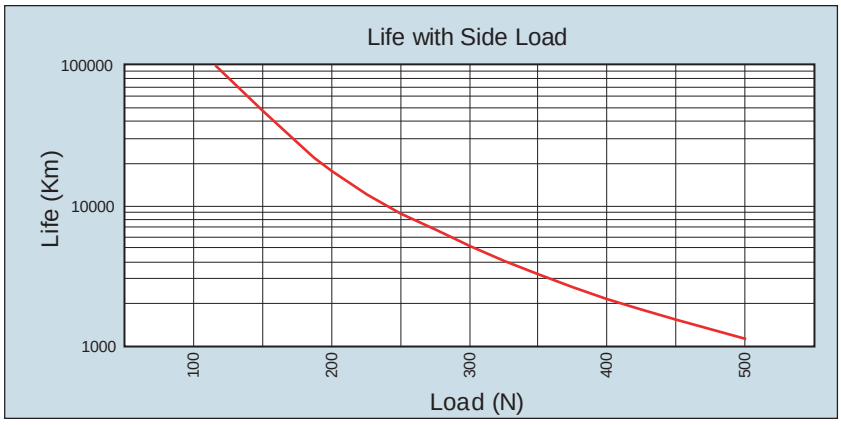
- **d1** – bearing block center-to-center longitudinal spacing
- **d2** – bearing rail center-to-center lateral spacing
- **da** – Rail center-to-carriage mounting surface

	d1	d2	da
404XE	80	57	28

Refer to Parker's website www.parkermotion.com for moment loading and other engineering data.







400XE Series - Options and Accessories (mm)

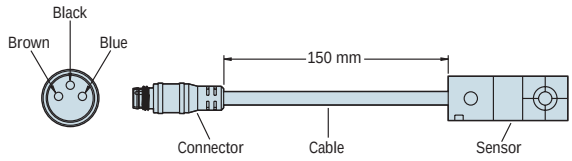
Home H_ or Limit Sensor L_

With Limits and Home Sensor

With Limit and Home Sensor Pack

End of Travel and Home Sensors for the 404XE series are available in a variety of styles. The sensors can be ordered as part of the table or as separate components with the associated mounting hardware or in an enclosed sensor pack. A 5 meter “hi-flex” extension cable (Part No. 003-2918-01) is available for use with models having the locking connector option.

- NPN (Sinking) or PNP (Sourcing)
- Normally Closed (N.C.) or Normally Open (N.O.)
- Flying Leads or Locking Connector



Order Code	Part No.* (Includes Mounting Bracket)	Switch Type	Logic	Cable Length	Connector Option
H2 or L2	006-1639-01	N.C.	Sinking	2.0 m	Flying Leads
H3 or L3	006-1639-02	N.O.	Sinking	2.0 m	Flying Leads
H4 or L4	006-1639-03	N.C.	Sourcing	2.0 m	Flying Leads
H5 or L5	006-1639-04	N.O.	Sourcing	2.0 m	Flying Leads
H6 or L6	006-1639-09	N.C.	Sinking	150 mm	Locking Connector
H7 or L7	006-1639-08	N.O.	Sinking	150 mm	Locking Connector
H8 or L8	006-1639-11	N.C.	Sourcing	150 mm	Locking Connector
H9 or L9	006-1639-10	N.O.	Sourcing	150 mm	Locking Connector

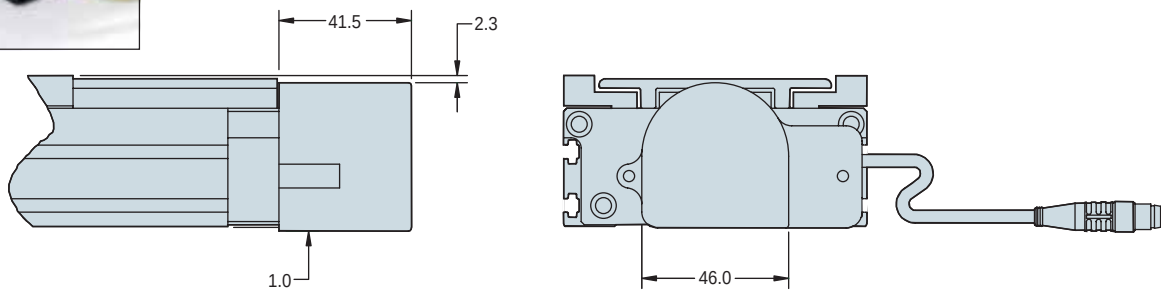
*Sensor triggers (targets) ordered seperately.

Input Power	5-30VDC, 20mA
Output	100mA max
Wire Color Code	(+) Supply: Brown (-) Supply: Blue NO Output: Black NC Output: White

Brake Assembly B_

Electromagnetic brake assembly used to prevent “backdriving” in vertical applications.

Table Series	Part No.	Input Power	Holding Torque
404XE	006-1627-01	24VDC, 0.46A	2.0 N-m

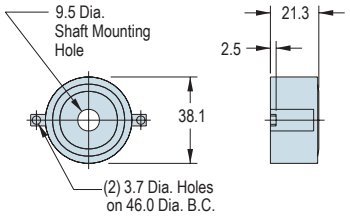


400XE Series - Options and Accessories (mm)

Rotary Encoder E5

Modular rotary encoder couples directly to the drive screw for position feedback.

Input Power	5VDC, 135mA
Output	A/B quadrature and reference mark, differential line drive output
Resolution	1250 lines/rev equals 5000 counts post quadrature (1µm with 5 mm lead ballscrew)

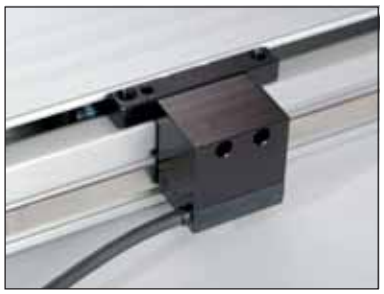


Part No.06-1629-01

Linear Feedback E_

A magnetic linear position feedback device which mounts directly to the table carriage. (Factory installation required.)

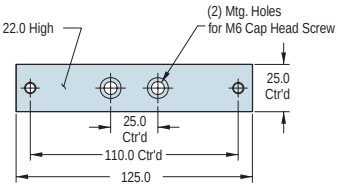
5.0 µmm resolution



Input Power	5VDC, 240mA
Output	A/B quadrature and reference marks, differential line drive output

Riser Plate

Used to raise the table base to provide clearance for motors larger than NEMA 23 frame size.

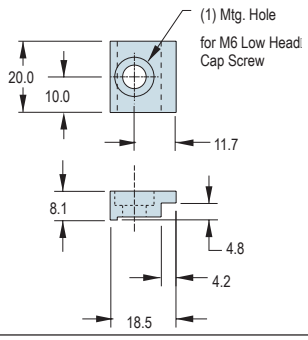


Part No.002-3619-01
(All hardware included)

Toe Clamp

Used for convenient mounting of 404XE to a base plate, or riser plates.

Part No.002-3618-01



Dowel Pinning P_

Standard dowel pin locating holes are offered on all 400XE units to facilitate repeatable mounting of tooling or payload.

Multi-axis options are offered with P20 for the base 'X' Axis and P33-59 for the 'Y' orientation and mounting method. "Clock position" call-outs refer to the position of the motor end of the table. The multi-axis option allows the user to choose the motor orientation and mounting style.

P43 & P49, provide toe clamp mounting.

P33 & P39, offers standard pins on the carriage in addition to the toe clamps.

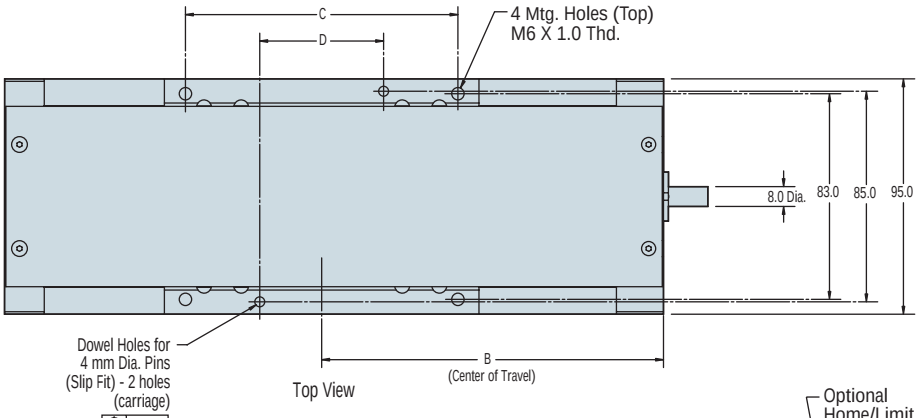
P53 & P59, offers uniquely pinned and toe clamp mounting to ensure the best orthogonality.This is offered for precise orthogonal mounting of the second axis in a multi-axis system. In this case, the bottom side of the table base is match drilled and reamed to the first axis to provide exact orthogonal location. This convenient option eliminates concerns regarding contamination or damage often associated with machining an assembled unit.

Two locating dowel pins shown in carriage

XY showing 12:00 and 9:00 positions

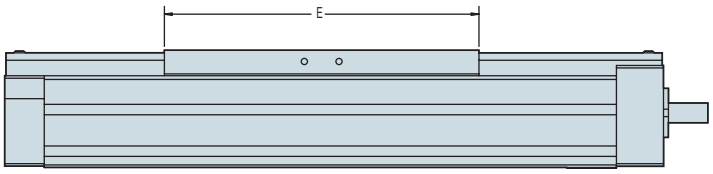
400XE Series - Dimensions (mm)

2D & 3D CAD files — Download from parkermotion.com

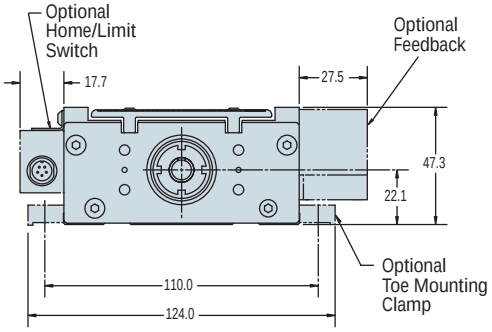


Top View

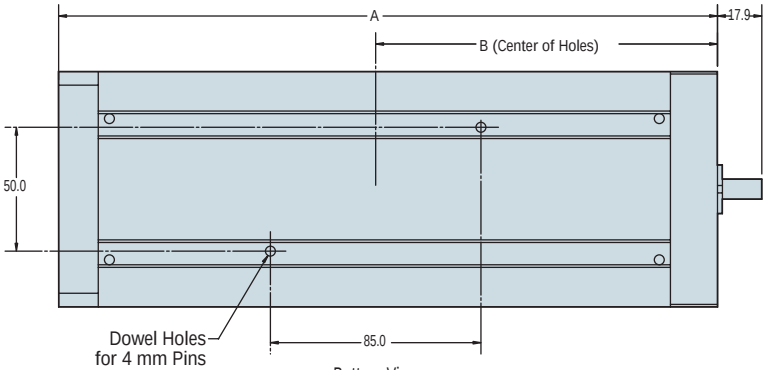
Carriage Type	C	D	E
NL	50.0	36.0	60.0
VL	110.0	50.0	127.0



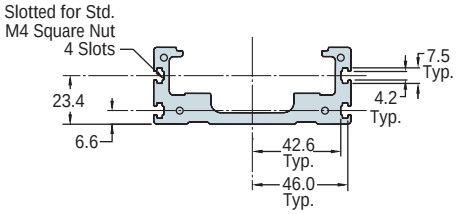
Front View



End View



Bottom View



View showing slots in extruded base

Designation	Carriage Travel NL(short)	VL(long)	A	B
T01	25	N/A	141.0	75.5
T02	50	N/A	166.0	88.0
T03	100	33	216.0	113.0
T04	150	83	266.0	138.0
T05	200	133	316.0	163.0
T06	250	183	366.0	188.0
T07	300	233	416.0	213.0
T08	350	283	466.0	238.0
T09	400	333	516.0	263.0
T10	450	383	566.0	288.0
T11	500	433	616.0	313.0
T12	550	483	666.0	338.0
T13	600	533	716.0	363.0
T15	700	633	816.0	413.0

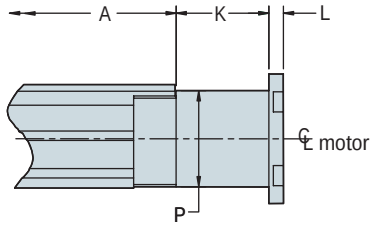
400XE Series - Motor Mount Dimensions (mm)

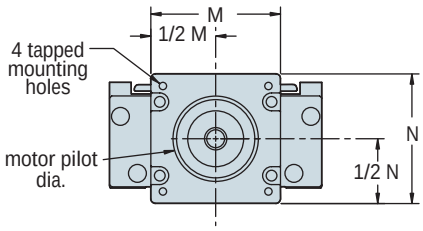
In-Line Motor Mount

In-line motor mounting allows the motor to be mounted directly to the drive screw via the selected motor coupling.

In-Line Adaptor Plates

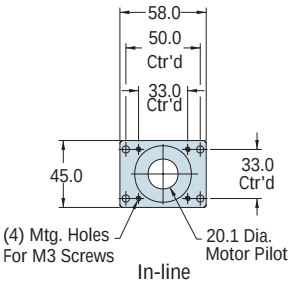
Used to easily accommodate the mounting of different frame sizes. These adapter plates can be ordered separately by part number below.





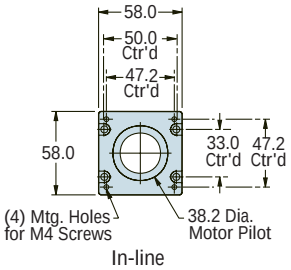
Motor Size	Order Code	Max. Motor Shaft Dia.	K	L	M	N	P
SM16	M2	9.5	41.0	4.3	58.0	45.0	45.0
NEMA 23	M3	9.5	41.0	6.5	58.0	58.0	45.0
NEMA 34	M4	9.5	41.0	12.5	83.0	83.0	45.0
Neometric 70	M21	11.0	53.0	0.0	69.9	69.9	69.9

Part No. 002-3614-01
SM 16



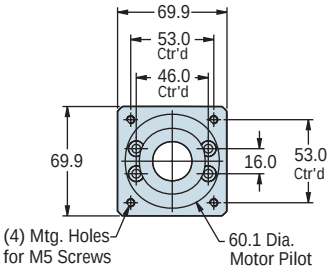
In-line
SM 16

Part No. 002-3615-01
NEMA 23



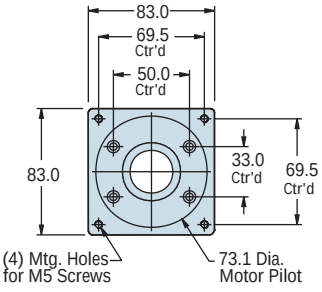
In-line
NEMA 23

Part No. 002-3616-01
NEOMETRIC 70 / SMN060



In-line
NEOMETRIC 70 /SMN060

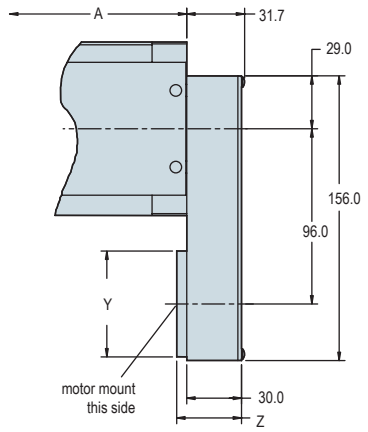
Part No. 002-3617-01
NEMA 34

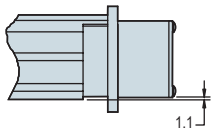


In-line
NEMA 34

Parallel Motor Mounting

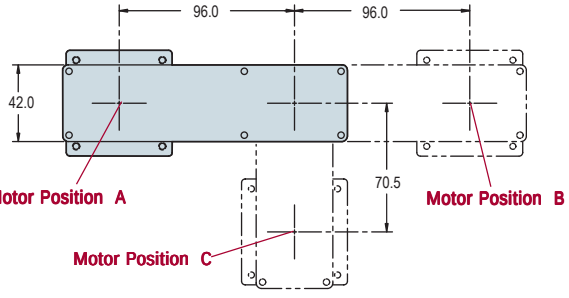
Parallel motor mounting is employed whenever a shorter overall unit length is needed. The motor is positioned along the sides or bottom of the table as designated by position A, B, or C. (No coupling required)

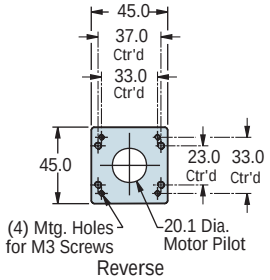




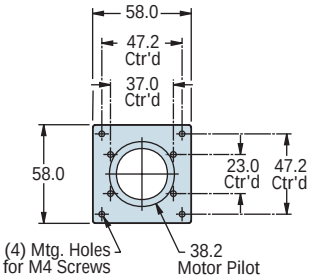
Note: Some sensor pack and encoder restriction apply when mounting motors larger than NEMA 23 in the A or B positions. Please consult factory.

Motor Size	Y	Z	Motor Shaft Dia
SM16	45.0	34.5	0.250"
SM23/BE23	58.0	35.5	0.375"
NEMA 23	58.0	35.5	0.250"





Reverse
SM 16



Reverse
NEMA 23

Parker Hannifin Corporation
Electromechanical Automation Division
Irwin, Pennsylvania

404XE Series - How to order

Order Example: 404 T08 XE M S – VL D4 H8 L8

Model Series 404

Table Travel (mm)

NL Short Carriage	VL Long Carriage		NL Short Carriage	VL Long Carriage	
25	n/a	T01*	350	283	T08
50	n/a	T02**	400	333	T09
100	33	T03	450	383	T10
150	83	T04	500	433	T11
200	133	T05	550	483	T12
250	183	T06	600	533	T13
300	233	T07	700	633	T15

* VL carriage, D3 & D4 drives, and Limit/Home Sensor Pack option are not offered with T01 travel models.

** VL carriage, D4 drive options are not offered with T02 travel models.

Table Style ..... XE

Mounting (Metric) ..... M

Grade

Standard grade ..... S

Carriage Style

NL - Short ..... NL

VL - Long VL

Drive Screw

Free travel D1

5 mm ballscrew D2

10 mm ballscrew D3*

20 mm ballscrew D4*

* D3 & D4 Drives are not available with T01 travel.

** D4 Drives are not available with T02 travels.

Home Sensor Assembly (one sensor)

No home sensor	H1	N.C. current sourcing, w/locking connector	H8
N.C. current sinking, flying leads	H2	N.O. current sourcing, w/locking connector	H9
N.O. current sinking, flying leads	H3	N.C. current sinking-sensor pack	H11
N.C. current sourcing, flying leads	H4	N.O. current sinking-sensor pack	H12
N.O. current sourcing, flying leads	H5	N.C. current sourcing-sensor pack	H13
N.C. current sinking, w/locking connector	H6	N.O. current sourcing-sensor pack	H14
N.O. current sinking, w/locking connector	H7		

Travel Limit Sensor Ass'y. (two sensors)

No limit sensors	L1	N.C. current sourcing, w/locking connector	L8
N.C. current sinking, flying leads	L2	N.O. current sourcing, w/locking connector	L9
N.O. current sinking, flying leads	L3	N.C. current sinking-sensor pack	L11
N.C. current sourcing, flying leads	L4	N.O. current sinking-sensor pack	L12
N.O. current sourcing, flying leads	L5	N.C. current sourcing-sensor pack	L13
N.C.current sinking, w/locking connector	L6	N.O. current sourcing-sensor pack	L14
N.O. current sinking, w/locking connector	L7		

Note: Sensors with locking connector include 5 m extension cable.

C3 M4 E1 B1 R11 P1

Muti-Axis Selections

- P1 X axis - for single axis use
- P20 X axis - for X-Y assembly (VL carriage units only) - motor@ 12:00
- P33 Y axis, standard dowel pinned & toe clamped to X axis - motor@ 3:00
- P39 Y axis, standard dowel pinned & toe clamped to X axis - motor@ 9:00
- P43 Y axis, toe clamped to X axis motor@ 3:00
- P49 Y axis, toe clamped to X axis motor@ 9:00
- P53 Y axis, precision dowel pinned & toe clamped to X axis - motor@ 3:00
- P59 Y axis, precision dowel pinned & toe clamped to X axis - motor@ 9:00

Environmental Protection

- R11 Hard Cover
- R12 Hard Cover, Cleanroom prep.
- R13 No cover
- R14 No Cover, Cleanroom prep.

Brake Option

- B1 No brake
- B2 Shaft brake (cannot be used with rotary encoder option)

Feedback Option

- E1 None
- E2 Linear feedback - 5 micron magnetic
  (Not available on T01 units with H2-H9 “home” & L2-L9 “limit” sensors.)
- E5 Rotary shaft encoder
  (Cannot be used with brake option.)

Motor Mount **

- M1 No motor mount
- M2 SM 16 - In-line mounting
- M3 NEMA 23 & SM 23 - In-line mounting
- M4 NEMA 34 - In-line mounting
- M5 SM16 - Parallel mounting, "A" location
- M6 SM16 - Parallel mounting, "B" location
- M7 SM16 - Parallel mounting, "C" location
- M8 NEMA 23 - Parallel mounting, "A" location
- M9 NEMA 23 - Parallel mounting, "B" location
- M10 NEMA 23 - Parallel mounting, "C" location
- M11 SM23 - Parallel mounting, "A" location
- M12 SM23 - Parallel mounting, "B" location
- M13 SM23 - Parallel mounting, "C" location
- M21 Neometric 70 - In-line mounting
- M37 NEMA 17 - In-line mounting
- M42 SM232AQ-NPSN Servo motor - In-line mtg.
- M46 HV232-02-10 Stepper Motor - In-line mtg.
- M49 Handcrank/no read out
- M51 HDY55 - In-line mounting
- M61 BE23 - In-line mounting
- M62 BE23 - Parallel mounting, “A” location
- M63 BE23 - Parallel mounting, "B" location
- M64 BE23 - Parallel mounting, "C" location
- M71 SGM01 - In-line mounting
- M72 SGM01 - Parallel mounting, “A” location
- M73 SGM01 - Parallel mounting, "B" location
- M74 SGM01 - Parallel mounting, "C" location
- M75 SGM02 - In-line mounting

**Refer to “Motor Mounting Dimensions” for maximum allowable motor shaft diameter.

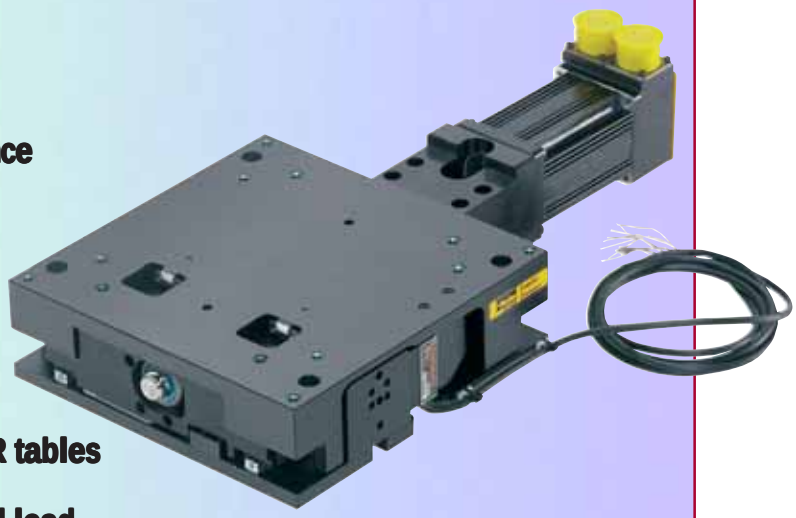
Motor Coupling

- C1 No coupling (req.d for parallel mtg.)
- C2 0.25" Oldham
- C3 0.25" Bellows
- C4 0.375" Oldham
- C5 0.375" Bellows
- C6 0.43" Oldham
- C7 0.43” Bellows
- C10 14 mm Oldham (M75 motor option)
- C11 14 mm Bellows (M75 motor option)
- C22 9 mm Oldham
- C23 9 mm Bellows
- C24 5 mm Oldham (M37 NEMA 17)
- C25 5 mm Bellows (M37 NEMA 17)
- C26 8 mm Oldham (M71 NEMA motor option)
- C27 8 mm Bellows (M71 motor option)
- C28 0.19” Oldham (M37 NEMA 17)
- C29 0.19” Bellows (M37 NEMA 17)

ZP200 Vertical Lift “Wedge” Table

Features

- Precision platform for vertical (Z-axis) positioning
- Continuous duty - High dynamic performance
- Precision straightness (+/- 15 arc sec.) throughout range of motion
- Precision ground ballscrew drive - 5, 10, or 20 mm lead
- Multi-axis compatibility with XR and LXR tables
- Laser tested and certified with calibrated lead value



Quality Design and Construction

The ZP200 Z axis lift table is a stable support platform which provides precise vertical translation and positioning, while maintaining X-Y integrity. Recirculating square rail bearings are incorporated into a unique variation of “wedge” mechanics to enable reliable high dynamic performance without the potential loss of travel encountered with crossed roller bearings. The ZP200 is compatible with XR and LXR tables for multi-axis systems, and it can be utilized as the system base axis or top axis to fit the motion requirements of the application. Standard mounting holes and dowel pin holes accommodate repeatable mounting.

Options:

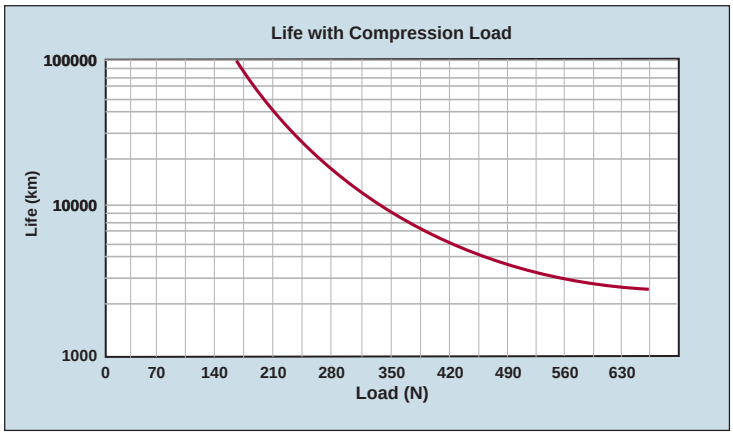
- Linear Encoder option with selectable resolutions of 0.1, 0.5, 1.0 µm.
- Fail-safe brake (field installable - mounts directly to the ballscrew drive).
- Class 10 Cleanroom Preparation.
- Selectable motor mounting and couplings for SM16 or NEMA 23 servo or stepper motors.
- Easily adjusted travel “limit” and “home” sensors are provided in an enclosed sensor pack.

ZP200 utilized in a laser test set-up

Specifications:

	Precision	Standard
Travel (Z-axis)	25 mm(limit to limit)	25 mm(limit to limit)
Positional Accuracy		
with no encoder [1,2,7]	8 µm	20 µm
with linear encoder [3,6,7]	8 µm	n/a
Positional Repeatability		
with no encoder [1,7]	± 3 µm	± 10 µm
with 1.0 µm linear encoder [6,7]	± 5 µm	n/a
with 0.5 µm linear encoder [6,7]	± 4 µm	n/a
with 0.1 µm linear encoder [6,7]	± 3 µm	n/a
Lift Lead Ratio[4]		
5 mm lead ballscrew drive	1.8199 mm/rev	
10 mm lead ballscrew drive	3.6397 mm/rev	
20 mm lead ballscrew drive	7.2794 mm/rev	
Lift Velocity		
5 mm lead ballscrew drive	110 mm/sec	
10 mm lead ballscrew drive	220 mm/sec	
20 mm lead ballscrew drive	440 mm/sec	
Load Capacity (normal)	15 kg(33 lb)	75 kg (165 lb)
Duty Cycle	100%	
Max Acceleration	7.2 m/sec^2	
Efficiency	90%	
Max Breakaway Torque[5]	0.15 Nm	
Max Running Torque[5]	0.13 Nm	
Linear Bearing – Coeff. Of Friction	0.01	
Ballscrew Diameter	16 mm	
Unit Weight	5.82 kg	
Top Plate Weight	2.25 kg	
Pitch[7]	± 15 Arc Sec.	± 45 Arc Sec.
Roll	± 15 Arc Sec.	± 25 Arc Sec.
Input Inertia		
5 mm lead ballscrew drive	2.32x10^{-5} Kg-m^2	
10 mm lead ballscrew drive	2.51x10^{-5} Kg-m^2	
20 mm lead ballscrew drive	3.12x10^{-5} Kg-m^2	

1 Measured 38mm directly above the true center of the top mounting surface.
2 Measured using calibrated lead value (provided).
3 Slope correction value provided
4 Lift per 1 motor shaft revolution. Lift lead listed is nominal. All units are provided with calibrated lead value.
5 Torque ratings are measured with unit unloaded, traveling upward.
6 Measured directly over encoder on outer edge.
7 Measured with15 kg load for precision grade.

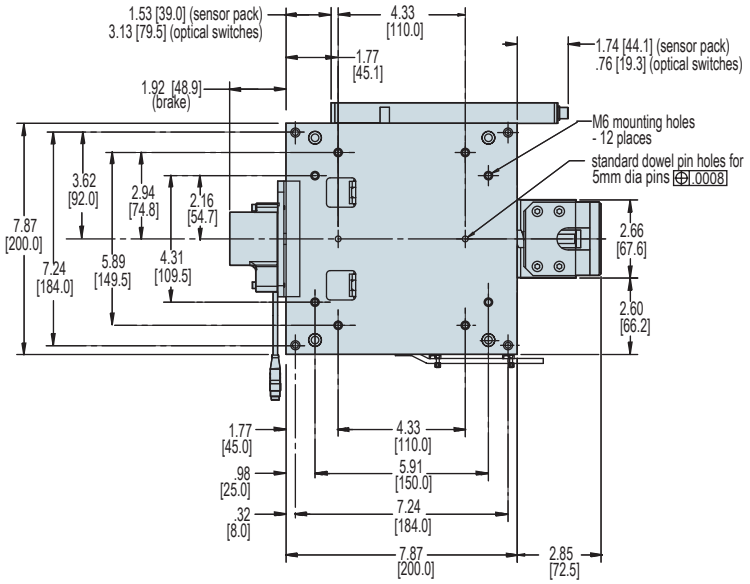


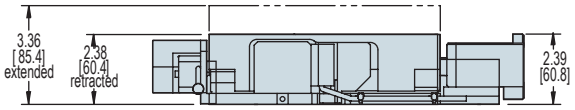
Table/Life Load Chart

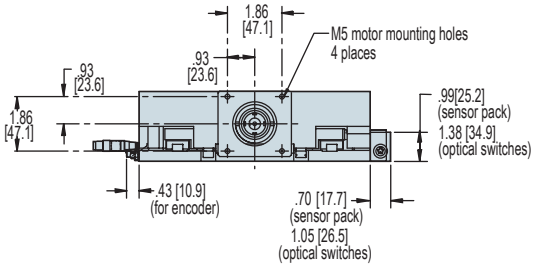
Compression (normal load)

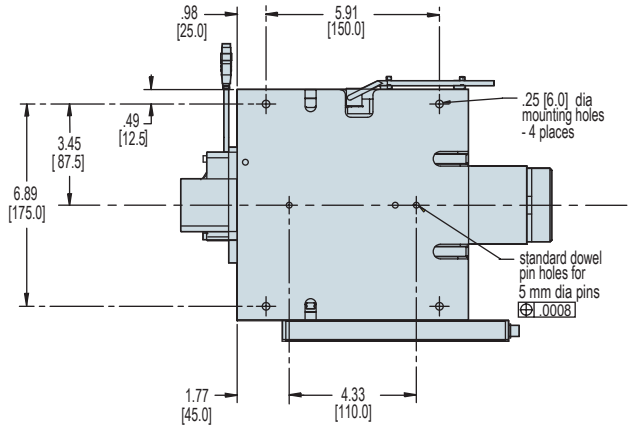
The graph provides a preliminary evaluation of the support bearing life/load characteristics. The curves show the life/load relationship when the applied load is centered on the carriage, normal (perpendicular) to the carriage mounting surface. For final evaluation of life vs load, including off center, tension, and side loads contact Parker Applications Engineering at 800-245-6903

ZP200 Series - Dimensions inch (mm)







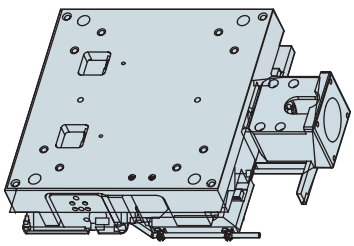


100-9274-01 XR Adapter Plate

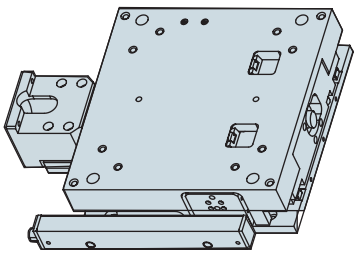
A multi-axis adapter plate is available to mount the ZP200 to an XR/LXR table or, mount an XR/LXR table to the ZP200. This plate is 9.53 mm thick and includes standard dowel pin holes for repeatable alignment.

	ZP200 as Base	ZP200 as Top Axis
404XR	Yes	n/a*
404LXR	Yes	n/a*
406XR	Yes	Yes
406LXR	Yes	Yes
206 Rotary	Yes	n/a*

***Not recommended - consult factory.**

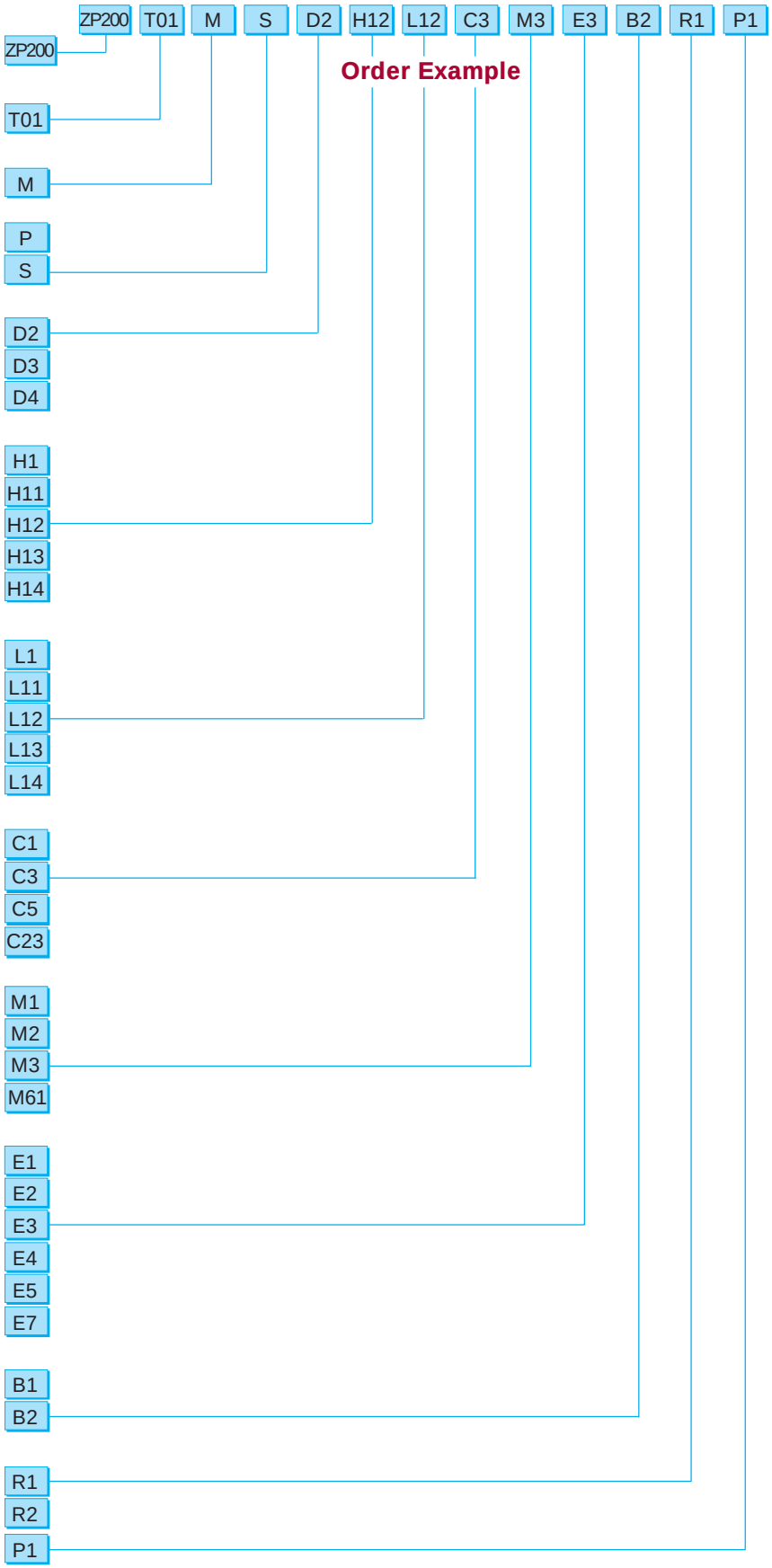


Encoder



Sensor Pack

ZP200 - How to Order



Model Series ZP200

Travel

25 mm T01

Mounting

Metric ..... M

Grade

Precision ..... P
Standard ..... S

Drive Screw

5 mm lead D2
10 mm lead D3
20 mm lead D4

Home Sensor

No sensor H1
N.C. current sinking - sensor pack H11
N.O. current sinking - sensor pack H12
N.C. current sourcing - sensor pack H13
N.O. current sourcing - sensor pack H14

Travel Limit Sensors

No sensor L1
N.C. current sinking - sensor pack L11
N.O. current sinking - sensor pack L12
N.C. current sourcing - sensor pack L13
N.O. current sourcing - sensor pack L14

Coupling

No coupling C1
0.25" bore Bellows C3
0.38" bore Bellows C5
9.0 mm (0.35") bore Bellows C23

Motor Mount

No motor mounts M1
SM16/BE16 motor M2
NEMA 23 and SM23 motors M3
BE23 motor mount M61

Linear Encoder Option

No encoder E1
1.0 micron E2
0.5 micron E3
0.1 micron E4
5.0 micron E5
Sine/cosine encoder E7

Brake option

No brake B1
Shaft brake B2

Environmental

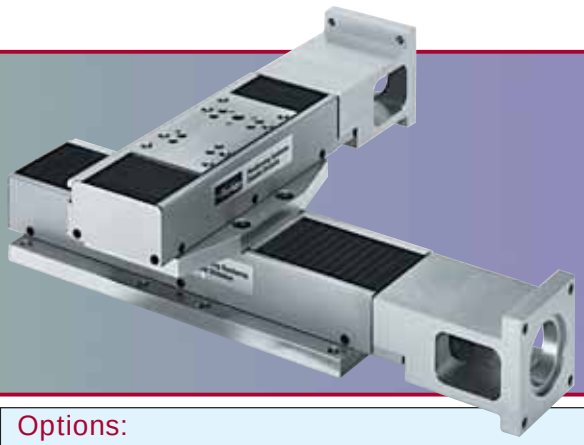
Class 1000 ..... R1
Class 10 ..... R2

Place Holder P1

402LN Series Miniature Tables

Features

- Compact size
- Ballscrew or leadscrew drive
- New 8 mm lead ballscrew
- High strength square rail bearing system
- Life rating: 10 million inches (ballscrew)
- Protective bellow style way cover



This series of compact tables are the smallest motorized linear positioners in the Parker line. These all metric units are designed for repeatable positioning of light payloads over relatively short distances. A dual track square rail bearing system, a ballscrew or leadscrew drive mechanism, and integral protective way covers are all contained within a table housing having a cross section of only 33 mm X 60 mm. The 402LNs are utilized in applications requiring horizontal, inverted, or vertical translation, and they are offered in two grades (precision or standard) to provide cost vs performance alternatives.

Options:

Motor Mounts and Couplings
Selectable motor mounting for NEMA size 17 or 23 stepper motor or a size 16 servo motor. Motor shaft couplings available to match motor requirements.

Limit and Home Sensors
End of Travel and home reference sensors are offered in both Hall Effect and Optical versions. The Hall Effect sensors allow easy adjustment while the Optical sensors provide a higher repeatability option.

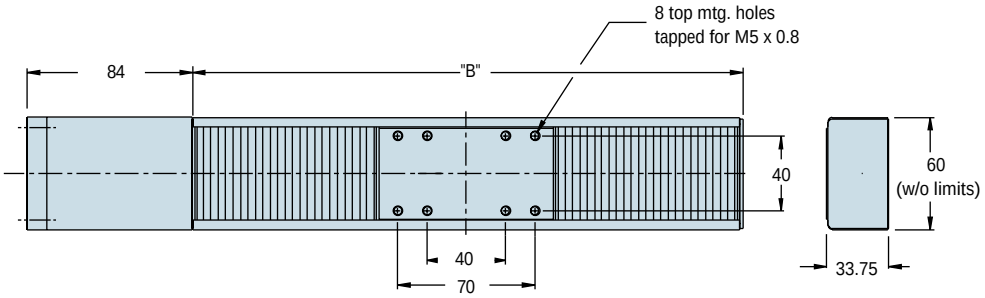
Mounting Brackets
Convenient Brackets offer easy installation for vertical and multi-axis mounting of the tables.

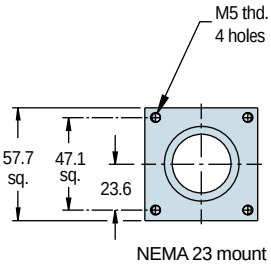
Specifications

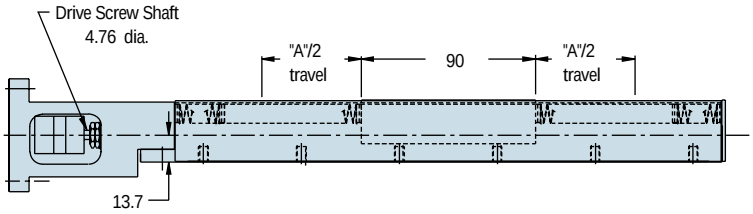
			Leadscrew Drive			Ballscrew Drive*	
Travel		Units inch (mm)	402002 2 (50)	402004 4 (100)	402006 6 (150)	402002 2 (50)	402004 4 (100)
Performance							
Life (@ rated specification)		x 1 million in (km)	10 (250)	10 (250)	10 (250)	100(2500)	100(2500)
Positional Repeatability (bidirectional)	Std. Grade	x 0.001 in (µm)	±0.47 (±12)	±0.47 (±12)	±0.47 (±12)	±0.2 (±5)	±0.2 (±5)
	Prec. Grade		±0.12 (±3)	±0.12 (±3)	±0.12 (±3)	±0.12 (±3)	±0.12 (±3)
Positional Accuracy over total travel	Std. Grade	x 0.001 in (µm)	3.0 (75)	3.0 (75)	3.0 (75)	1.2 (30)	1.3 (32)
	Prec. Grade		0.8 (20)	0.9 (22)	0.9 (24)	0.8 (20)	0.9 (22)
Straight & Flatness Accuracy over total travel	Std. Grade	x 0.001 in (µm)	0.8 (20)	0.9 (22)	0.9 (24)	0.8 (20)	0.9 (22)
	Prec. Grade		0.24 (6)	0.24 (6)	0.31 (8)	0.24 (6)	0.24 (6)
Max Screw Speed	Std. Grade	rps	15	15	15	70	70
	Prec. Grade		25	25	25	70	70
Max Acceleration	Both Grade	in/sec² (mm/sec²)	386(9800)	386(9800)	386(9800)	386(9800)	386(9800)
Duty Cycle	Std. Grade	%	50	50	50	100	100
	Prec. Grade		75	75	75	100	100
Rated Capacity**							
Direct Loading	Normal	lbs (Nf)	160 (711)	160 (711)	160 (711)	160 (711)	160 (711)
	Inverted		40 (178)	40 (178)	40 (178)	40 (178)	40 (178)
Load per Bearing (both grades)	Normal	lbs (Nf)	40 (178)	40 (178)	40 (178)	40 (178)	40 (178)
	Inverted		10 (44)	10 (44)	10 (44)	10 (44)	10 (44)
Axial Loading	Std. Grade	lbs (Nf)	10 (44)	10 (44)	10 (44)	28 (124)	28 (124)
	Prec. Grade		28 (124)	28 (124)	28 (124)	28 (124)	28 (124)
Motor Sizing							
Drive Screw diameter		in (mm)	0.375 (9.5)	0.375 (9.5)	0.375 (9.5)	0.315 (8)	0.315 (8)
Input Inertia***		10^{-3} oz-in-sec² (10^{-6} N-m-sec²)	0.412(2.91)	0.612(4.32)	0.812(5.73)	0.314(2.22)	0.343 (2.42)
Running Torque - Max		oz-in (N-m)	12(.085)	12(.085)	12(.085)	12(.085)	12 (.085)
Breakaway Torque - Max		oz-in (N-m)	13(.094)	13(.094)	13(.094)	13(.094)	13 (.094)
Drive Screw Efficiency	Both Grades	%	30	30	30	90	90
Coefficient of Friction - Linear Bearing			0.01	0.01	0.01	0.01	0.01
Carriage Weight		lbs (kg)	0.14 (.06)	0.14 (.06)	0.14 (.06)	0.14 (.06)	0.14 (.06)
Table Weight		lbs (kg)	1.84 (.83)	2.54(1.15)	3.12(1.42)	1.84 (.83)	2.54 (1.15)

*Specifications apply to 2 mm lead option. Consult Parker applications engineer for 8 mm lead option specifications.
**Refer to Parker's web site for complete Life/Load and moment load calculation formulas and specifications.
***Based on 5 mm leadscrew.

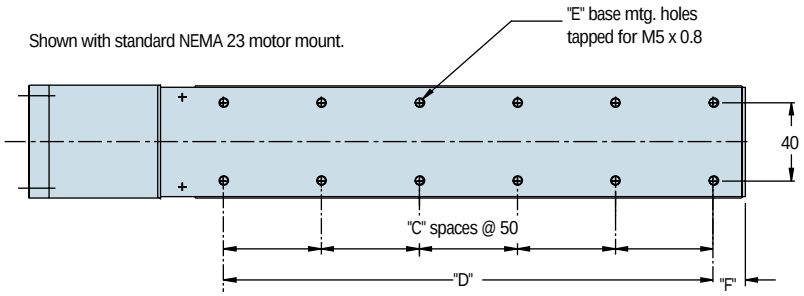
402LN Series Dimensions (mm)

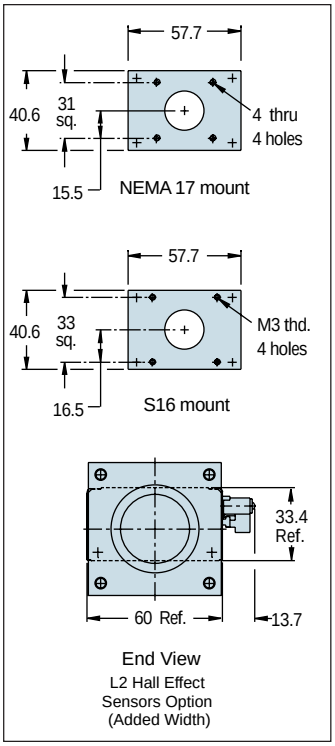






Shown with standard NEMA 23 motor mount.





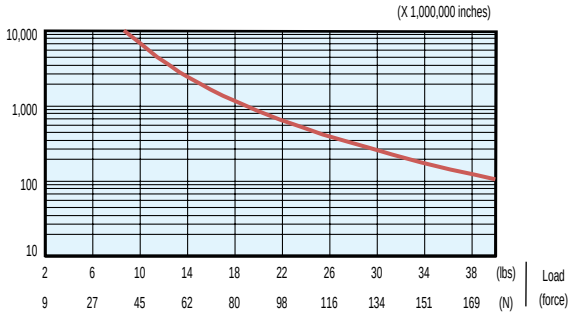
Model Number	A Travel	B	C (Qty)	D	E (Qty)	F
402002LN	50 mm	167 mm	3	150 mm	8	8 mm
402004LN	100 mm	240 mm	3	150 mm	8	45 mm
402006LN	150 mm	312 mm	5	250 mm	12	31 mm

2D & 3D CAD files
Download from parkermotion.com

Life/Load Performance (per Bearing*)

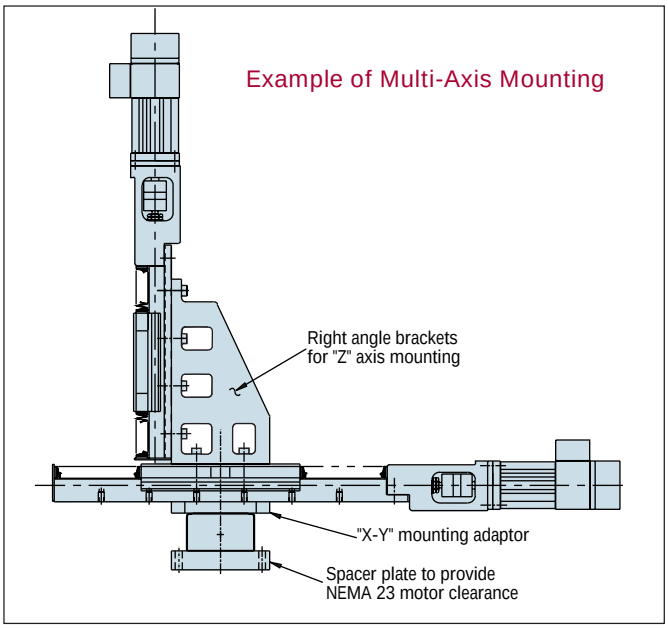
Life for Compression, Tension, or Side Load

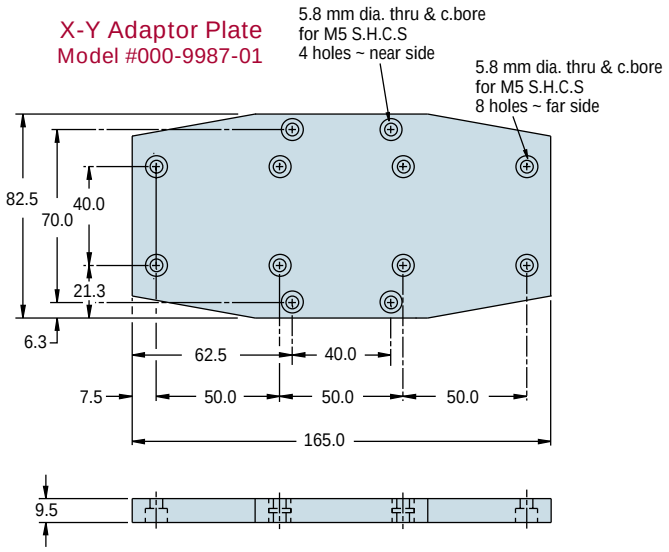
*Four bearings per unit.



Refer to parkermotion.com for complete Life/Load calculation formulas and specifications.

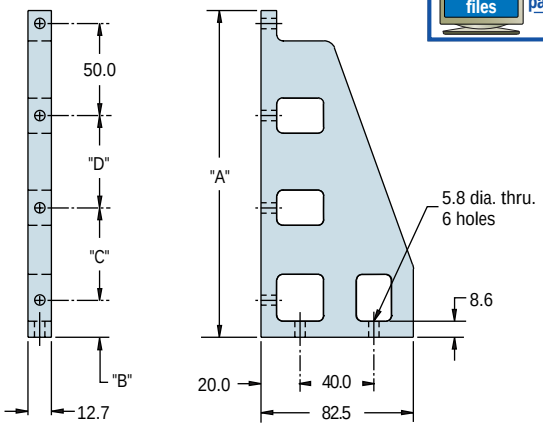
402LN Series Miniature Accessories (mm)





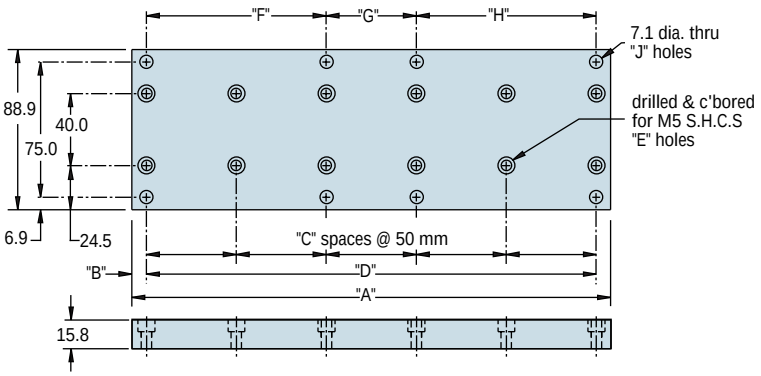
Vertical Brackets

Model Number	A	B	C	D	Used On:
100-0160-01	180	20	50	50	402002
100-0160-03	210	50	50	50	402004
100-0160-04	296	36	100	100	402006



Base Axis Spacer Plate

Model Number	A	B	C Qty.	D	E Qty.	F	G	H	J	Used On:
100-0248-01	165 mm	7.5 mm	3	150 mm	8	150 mm	—	—	4	402002/402004
100-0248-02	267 mm	8.5 mm	5	150 mm	12	100 mm	50 mm	100 mm	8	402006



402LN Series How to Order

Order Example

402	002	LN	–	M	P	–	D1	L2	C1	M2

Model Series 402

Table Travel

50 mm	002
100 mm	004
150 mm	006

Table Style ..... LN

Mounting

Metric	M

Grade

Standard Grade	S
Precision Grade	P

Drive Screw

1 mm Leadscrew (Prec. Grade Only)	D1
2 mm Leadscrew	D2
5 mm Leadscrew	D3
12 mm Leadscrew (Std. Grade Only)	D4
25 mm Leadscrew (Std. Grade Only)	D5
2 mm Ground Ballscrew	D6
8 mm Ground Ballscrew	D7 (Consult factory for specifications.)

Limit/Home

No Limit/Home Switches	L1
Hall Effect Sensors	L2
Fixed Optical Limit/Home Switches	L3

Motor Coupling

No Coupling	C1
0.25 in Bore, Oldham	C2
5 mm Bore, Oldham	C3
0.25 in Bore, Bellows	C4
5 mm Bore, Bellows	C5
0.375 in Bore, Bellows	C6

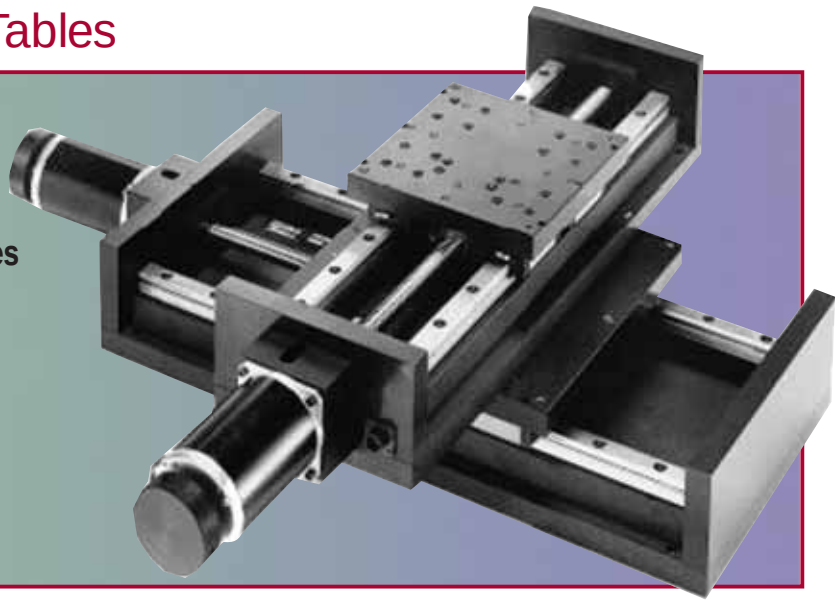
Motor Mount

NEMA 23	M1
SM16 Motor	M2
NEMA 17	M3

400ST Square Rail Linear Tables

Features

- Load capacity to 2300 pounds
- Repeatability of +/-0.0001 inches (bidirectional)
- Large moment capacity
- Travels up to 60 inches
- Standard widths to 24 inches
- 100% duty cycle



High Accuracy and High Load Capacity

Tables in the 400ST Series, Parker's most rugged and durable table line, are designed for precise positioning of very heavy loads (up to 1,500 pounds). By combining a high strength square rail bearing system with highly accurate precision ground ballscrew drives, these units provide the best solution for demanding applications in the high precision and precision automation markets.

Tables in this series are offered in widths of 8, 12, 18 and 24 inches, and can be equipped with heavy-duty protective bellows for dirty or dusty environments. Typical applications include X-ray Scanning, Laser Machining, Laser Welding, and surface inspection. They have found popularity in a wide range of industries including Machine Tool, Automotive, Bio-Medical and Aerospace.

Quality Design and Construction

The top and base are constructed of high quality aluminum alloy and are protected with a black anodized surface finish. The top and bottom mounting surfaces are precision ground to assure flatness and all mounting holes are fitted with locking steel threaded inserts to prevent mounting bolts from working loose.

The linear guide ways utilize 1 inch square hardened steel rails, with four bearing trucks on the 8" and 12" wide units and six bearing trucks on the 18" and 24" wide units. The carriage is driven by a 0.2 inch lead (5 pitch) precision ground ballscrew secured at both ends by precision grade angular contact bearings.

Options:

Motor Couplings
Bellows couplings are available for both 3/8" motor shafts (NEMA 34) and 0.625" motor shafts (NEMA 42). These couplings provide very little radial windup and compensate for motor to screw shaft misalignment.

Motor Mounts
The standard motor mount is designed for an industry standard NEMA 34 motor flange with shaft lengths between 1.0 and 1.25 inches. An optional NEMA 42 frame motor mount is available, accepting motors with an industry standard NEMA 42 flange and shafts with lengths between 1.0 and 1.4 inches or shafts between 2.0 and 2.3 inches long. Refer to short and long motor coupling selections in How to Order section.

Limit and Home Switches
Limit switches provide a signal when the table is approaching its end of travel and are used to command the motor to stop. The Home sensor provides a fixed reference point to which the table can always return. Either mechanical reed switch or optical sensor type limit and home switch assemblies are available. The mechanical reed switch option can be supplied either inboard (mounted inside the nominal table width) or outboard (mounted on the side of the table). The inboard version does not increase table width; however, it is more difficult to adjust. While the outboard style adds approximately 1.5" to the width, it is easy to adjust. The optical sensor limit and home option is mounted outboard and provides excellent repeatability.

Linear Encoders
This option mounts to the side of the table and is used to give direct positional feedback of the carriage. English resolution of 0.0001 inch and Metric resolution of 0.001 mm are available.

NOTE: Refer to www.parkermotion.com or contact a Parker applications engineer for additional detailed information pertaining to 400ST options or accessories.

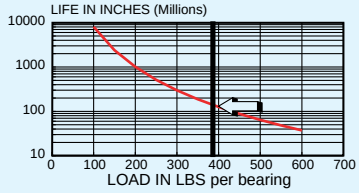
Common Characteristics

	Units	408, 412 Series	418, 424 Series
Performance			
Positional Repeatability	x 0.001 in (µm)	+/-0.1 (+/-2.5)	+/-0.1 (+/-2.5)
Life @ Rated load Cap.[1]	x 1 million in (km)	100 (2540)	100 (2540)
Duty Cycle	%	100	100
Acceleration (Max.)	in/sec² (m/sec²)	772 (20)	772 (20)
Rated Capacity			
Load Capacity (Table)[2]	lbs (N)		
Normal		1560 (6934)	2340 (10400)
Inverted		1560 (6934)	2340 (10400)
Side		1360 (6045)	2040 (9067)
Axial	lbs (N)	240 (1068)	240 (1068)
No. of Bearings		4	6
Moment Load		Note 2	Note 2
Motor Sizing			
Drive Screw Efficiency	%	90	90
Breakaway Torque (Max.)	oz - in (N-m)		
0 to 24"		27.5 (0.19)	27.5 (0.19)
30 to 60"		49.0 (0.35)	49.0 (0.35)
Running Torque (Max.)	oz - in (N-m)		
0 to 24"		25.0 (0.18)	25.0 (0.18)
30 to 60"		45.0 (0.33)	45.0 (0.33)
Coefficient of Friction - Linear Brg.		0.01	0.01
Carriage Weight	lbs (kgf)		
408 Series		6.4 (2.9)	–
412 Series		14.4 (6.5)	–
418 Series		–	31.75 (14.4)
424 Series		–	56.4 (25.6)

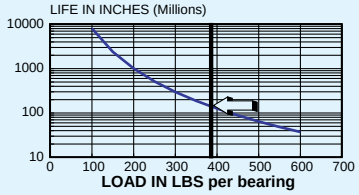
Note 1: Refer to Life vs load-per-bearing charts for applicable life rating.

Note 2: For moment load calculations, refer to the technical section of Parker's web site www.parkermotion.com

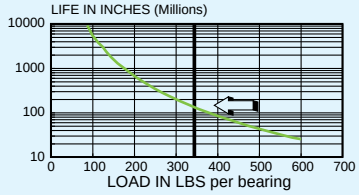
Compression Load



Tension Load



Side Load

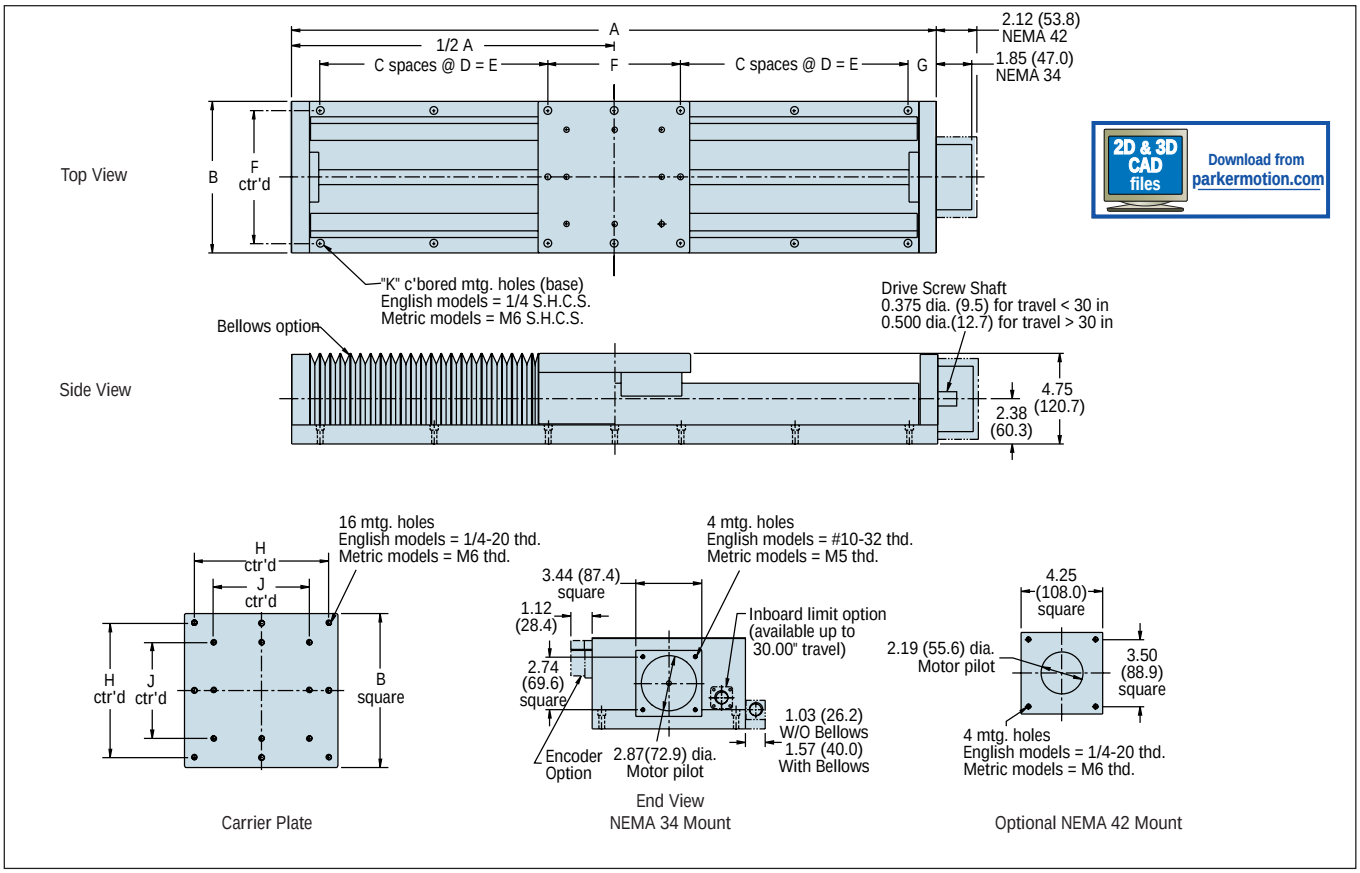


Life vs Load (Per Bearing)

Travel Dependent Characteristics

Width	Model	Travel inches (mm)	Positional Accuracy x 0.001 in (µm)	Straight & Flatness Accuracy x 0.001 in (µm)	Input Inertia 10^{-3} oz-in-sec² 10^{-5} kg-m²	Maximum Screw Speed rps	Table Weight lbs (kgf)	Ballscrew Diameter in (mm)
8 inch	408004ST	4.0 (100)	0.32 (8)	0.4 (10)	7.4 (5.23)	50	42.3 (19)	0.787 (20)
	408006ST	6.0 (150)	0.48 (12)	0.6 (15)	8.3 (5.85)	50	45.5 (20.6)	0.787 (20)
	408012ST	12.0 (300)	0.60 (15)	0.8 (20)	10.0 (7.73)	50	55.1 (25)	0.787 (20)
	408018ST	18.0 (450)	1.08 (27)	1.4 (36)	13.6 (9.61)	50	64.6 (29.3)	0.787 (20)
	408024ST	24.0 (600)	1.2 (31)	1.6 (40)	16.3 (11.53)	40	73.7 (33.4)	0.787 (20)
	408030ST	30.0 (750)	1.7 (43)	2.2 (56)	18.9 (13.37)	25	83.8 (38)	0.787 (20)
	408036ST	36.0 (900)	1.8 (46)	2.4 (60)	136.8 (96.6)	30	103.3 (46.9)	1.26 (32)
	408048ST	48.0 (1200)	2.4 (61)	3.2 (80)	171.4 (121)	30	113.5 (51.5)	1.26 (32)
	408060ST	60.0 (1500)	3.0 (76)	4.0 (100)	206.7 (145.9)	20	143.3 (65)	1.26 (32)
12 inch	412004ST	4.0 (100)	0.32 (8)	0.4 (10)	9.6 (6.76)	50	66.7 (30.3)	0.787 (20)
	412006ST	6.0 (150)	0.48 (12)	0.6 (15)	10.4 (7.34)	50	70.7 (32.1)	0.787 (20)
	412012ST	12.0 (300)	0.60 (15)	0.8 (20)	9.9 (7.02)	50	82.5 (37.4)	0.787 (20)
	412018ST	18.0 (450)	1.08 (27)	1.4 (36)	13.3 (9.41)	50	94.4 (42.8)	0.787 (20)
	412024ST	24.0 (600)	1.2 (31)	1.6 (40)	16.6 (11.74)	40	106.4 (48.3)	0.787 (20)
	412030ST	30.0 (750)	1.7 (43)	2.2 (56)	18.1 (12.77)	25	118.4 (53.7)	0.787 (20)
	412036ST	36.0 (900)	1.8 (46)	2.4 (60)	128.5 (90.7)	30	139.8 (63.4)	1.26 (32)
	412048ST	48.0 (1200)	2.4 (61)	3.2 (80)	164.2 (116)	30	166.3 (75.4)	1.26 (32)
	412060ST	60.0 (1500)	3.0 (76)	4.0 (100)	199.1 (140.6)	20	192.8 (87.5)	1.26 (32)
18 inch	418004ST	4.0 (100)	0.32 (8)	0.4 (10)	13.0 (9.19)	50	116.7 (52.9)	0.787 (20)
	418006ST	6.0 (150)	0.48 (12)	0.6 (15)	13.9 (9.82)	50	121.8 (55.2)	0.787 (20)
	418012ST	12.0 (300)	0.60 (15)	0.8 (20)	12.1 (8.57)	50	137.4 (62.3)	0.787 (20)
	418018ST	18.0 (450)	1.08 (27)	1.4 (36)	14.8 (10.44)	50	152.8 (69.3)	0.787 (20)
	418024ST	24.0 (600)	1.2 (31)	1.6 (40)	15.8 (11.16)	40	168.3 (76.3)	0.787 (20)
	418030ST	30.0 (750)	1.7 (43)	2.2 (56)	21.8 (15.36)	25	183.8 (83.4)	1.26 (32)
	418036ST	36.0 (900)	1.8 (46)	2.4 (60)	130.0 (91.8)	30	208.8 (94.7)	1.26 (32)
	418048ST	48.0 (1200)	2.4 (61)	3.2 (80)	165.1 (116.6)	30	242.4 (110)	1.26 (32)
	418060ST	60.0 (1500)	3.0 (76)	4.0 (100)	200.0 (141.2)	20	276.1 (125.2)	1.26 (32)
24 inch	424004ST	4.0 (100)	0.32 (8)	0.4 (10)	16.7 (11.81)	50	180.2 (81.7)	0.787 (20)
	424006ST	6.0 (150)	0.48 (12)	0.6 (15)	17.7 (12.48)	50	186.6 (84.6)	0.787 (20)
	424012ST	12.0 (300)	0.60 (15)	0.8 (20)	15.2 (10.75)	50	204.8 (92.9)	0.787 (20)
	424018ST	18.0 (450)	1.08 (27)	1.4 (36)	15.2 (10.75)	50	224.0 (101.6)	0.787 (20)
	424024ST	24.0 (600)	1.2 (31)	1.6 (40)	17.4 (12.29)	40	243.1 (110.3)	0.787 (20)
	424030ST	30.0 (750)	1.7 (43)	2.2 (56)	119.5 (84.4)	25	271.8 (123.3)	1.26 (32)
	424036ST	36.0 (900)	1.8 (46)	2.4 (60)	151.6 (107)	30	292.2 (132.5)	1.26 (32)
	424048ST	48.0 (1200)	2.4 (61)	3.2 (80)	186.5 (131.7)	30	332.9 (151.0)	1.26 (32)
	424060ST	60.0 (1500)	3.0 (76)	4.0 (100)	221.5 (156.3)	20	372.7 (169.1)	1.26 (32)

408000/412000 Series Dimensions - inch (mm)



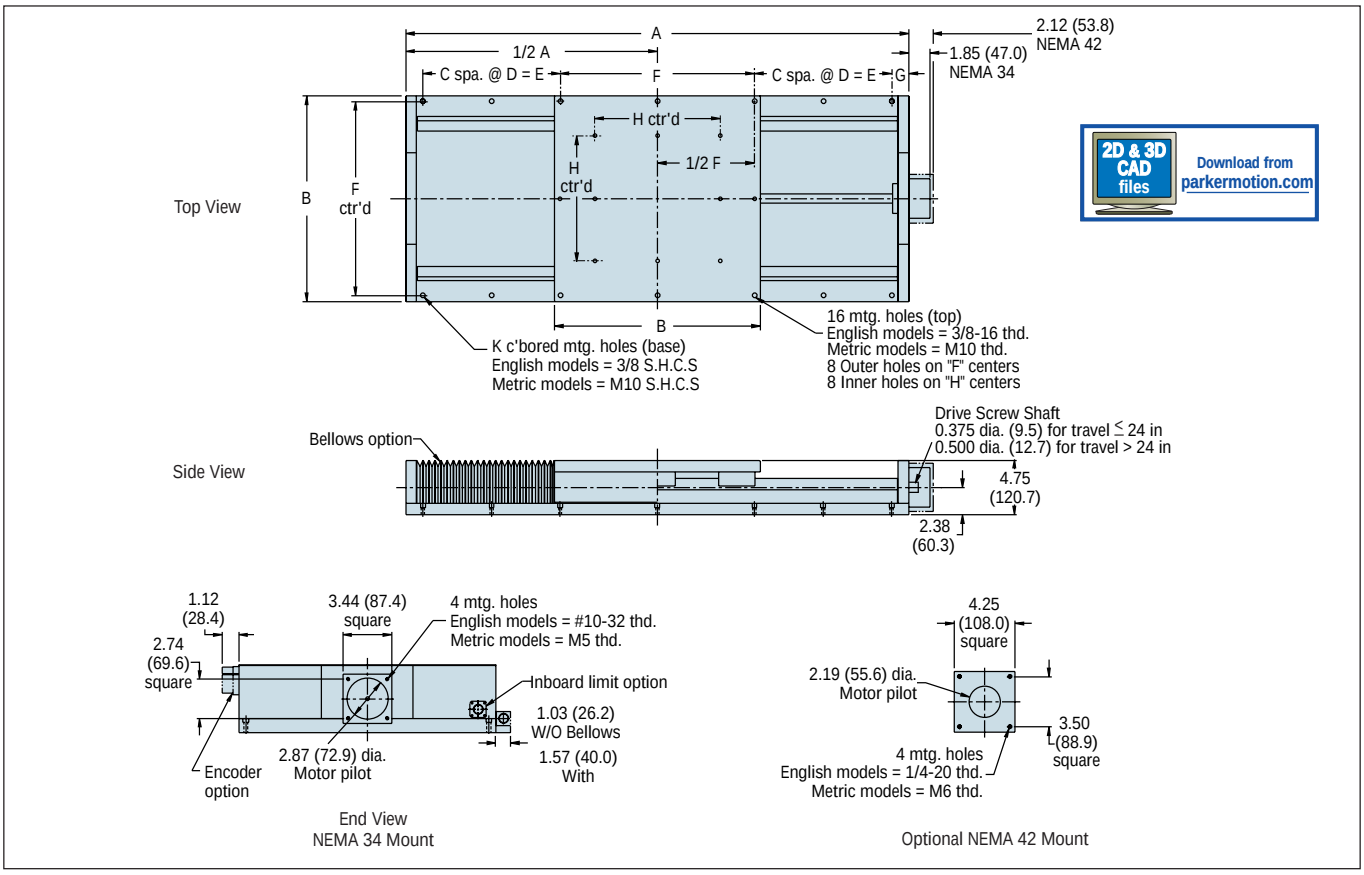
408000 Series (English Measurement)

Model	Travel	Travel w/ Bellows	A	B	Quantity C	D	E	F	G	H	J	Quantity K
408004ST-E	4 in	2.1 in	14.0 in	8.0 in	1	2.0 in	2.0 in	7.0 in	1.5 in	7.0 in	5.0 in	10
408006ST-E	6 in	3.7 in	16.0 in	8.0 in	1	3.0 in	3.0 in	7.0 in	1.5 in	7.0 in	5.0 in	10
408012ST-E	12 in	8.3 in	22.0 in	8.0 in	1	6.0 in	6.0 in	7.0 in	1.5 in	7.0 in	5.0 in	10
408018ST-E	18 in	13.0 in	28.0 in	8.0 in	2	4.0 in	8.0 in	7.0 in	2.5 in	7.0 in	5.0 in	14
408024ST-E	24 in	17.7 in	34.0 in	8.0 in	2	6.0 in	12.0 in	7.0 in	1.5 in	7.0 in	5.0 in	14
408030ST-E	30 in	22.3 in	40.0 in	8.0 in	2	7.0 in	14.0 in	7.0 in	2.5 in	7.0 in	5.0 in	14
408036ST-E	36 in	27.0 in	46.0 in	8.0 in	3	6.0 in	18.0 in	7.0 in	1.5 in	7.0 in	5.0 in	18
408048ST-E	48 in	36.3 in	58.0 in	8.0 in	4	6.0 in	24.0 in	7.0 in	1.5 in	7.0 in	5.0 in	22
408060ST-E	60 in	45.7 in	70.0 in	8.0 in	4	7.0 in	28.0 in	7.0 in	3.5 in	7.0 in	5.0 in	22

412000 Series (English Measurement)

Model	Travel	Travel w/ Bellows	A	B	Quantity C	D	E	F	G	H	J	Quantity K
412004ST-E	4 in	2.1 in	18.0 in	12.0 in	1	2.0 in	2.0 in	11.0 in	1.5 in	11.0 in	7.0 in	10
412006ST-E	6 in	3.7 in	20.0 in	12.0 in	1	3.0 in	3.0 in	11.0 in	1.5 in	11.0 in	7.0 in	10
412012ST-E	12 in	8.3 in	26.0 in	12.0 in	1	6.0 in	6.0 in	11.0 in	1.5 in	11.0 in	7.0 in	10
412018ST-E	18 in	13.0 in	32.0 in	12.0 in	2	4.0 in	8.0 in	11.0 in	2.5 in	11.0 in	7.0 in	14
412024ST-E	24 in	17.7 in	38.0 in	12.0 in	2	6.0 in	12.0 in	11.0 in	1.5 in	11.0 in	7.0 in	14
412030ST-E	30 in	22.3 in	44.0 in	12.0 in	2	7.0 in	14.0 in	11.0 in	2.5 in	11.0 in	7.0 in	14
412036ST-E	36 in	27.0 in	50.0 in	12.0 in	3	6.0 in	18.0 in	11.0 in	1.5 in	11.0 in	7.0 in	18
412048ST-E	48 in	36.3 in	62.0 in	12.0 in	4	6.0 in	24.0 in	11.0 in	1.5 in	11.0 in	7.0 in	22
412060ST-E	60 in	45.7 in	74.0 in	12.0 in	4	7.0 in	28.0 in	11.0 in	3.5 in	11.0 in	7.0 in	22

418000/424000 Series Dimensions - inch (mm)



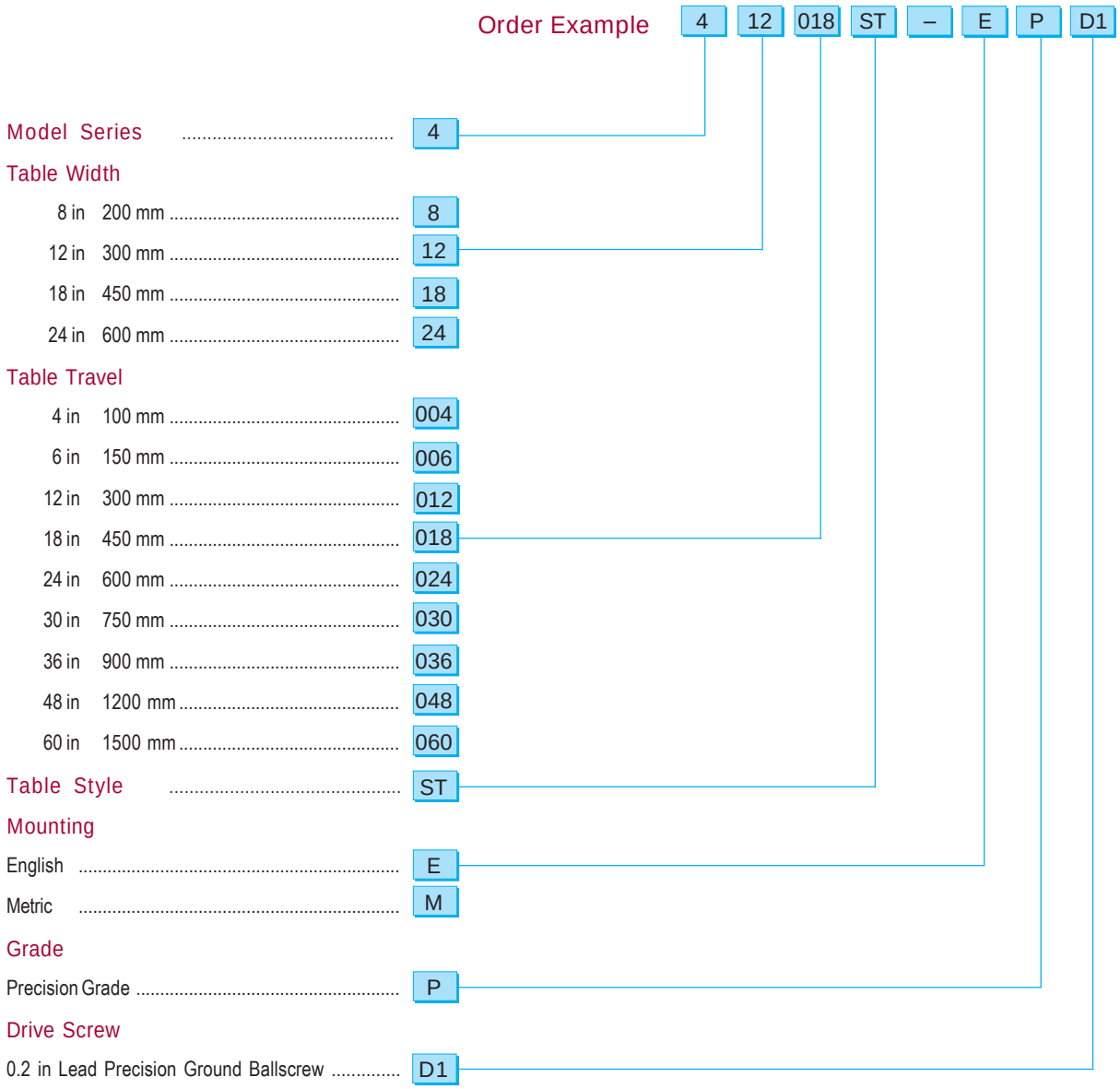
418000 Series (English Measurement)

Model	Travel	Travel w/ Bellows	A	B	Quantity C	D	E	F	G	H	Quantity K
418004ST-E	4 in	2.1 in	24.0 in	18.0 in	1	2.0 in	2.0 in	17.0 in	1.5 in	11.0 in	10
418006ST-E	6 in	3.7 in	26.0 in	18.0 in	1	3.0 in	3.0 in	17.0 in	1.5 in	11.0 in	10
418012ST-E	12 in	8.3 in	32.0 in	18.0 in	1	6.0 in	6.0 in	17.0 in	1.5 in	11.0 in	10
418018ST-E	18 in	13.0 in	38.0 in	18.0 in	2	4.0 in	8.0 in	17.0 in	2.5 in	11.0 in	14
418024ST-E	24 in	17.7 in	44.0 in	18.0 in	2	6.0 in	12.0 in	17.0 in	1.5 in	11.0 in	14
418030ST-E	30 in	22.3 in	50.0 in	18.0 in	2	7.0 in	14.0 in	17.0 in	2.5 in	11.0 in	14
418036ST-E	36 in	27.0 in	56.0 in	18.0 in	3	6.0 in	18.0 in	17.0 in	1.5 in	11.0 in	18
418048ST-E	48 in	36.3 in	68.0 in	18.0 in	4	6.0 in	24.0 in	17.0 in	1.5 in	11.0 in	22
418060ST-E	60 in	45.7 in	80.0 in	18.0 in	4	7.0 in	28.0 in	17.0 in	3.5 in	11.0 in	22

408000 Series (English Measurement)

Model	Travel	Travel w/Bellows	A	B	Quantity C	D	E	F	G	H	Quantity K
424004ST-E	4 in	2.1 in	30.0 in	24.0 in	1	2.0 in	2.0 in	23.0 in	1.5 in	17.0 in	10
424006ST-E	6 in	3.7 in	32.0 in	24.0 in	1	3.0 in	3.0 in	23.0 in	1.5 in	17.0 in	10
424012ST-E	12 in	8.3 in	38.0 in	24.0 in	1	6.0 in	6.0 in	23.0 in	1.5 in	17.0 in	10
424018ST-E	18 in	13.0 in	44.0 in	24.0 in	2	4.0 in	8.0 in	23.0 in	2.5 in	17.0 in	14
424024ST-E	24 in	17.7 in	50.0 in	24.0 in	2	6.0 in	12.0 in	23.0 in	1.5 in	17.0 in	14
424030ST-E	30 in	22.3 in	56.0 in	24.0 in	2	7.0 in	14.0 in	23.0 in	2.5 in	17.0 in	14
424036ST-E	36 in	27.0 in	62.0 in	24.0 in	3	6.0 in	18.0 in	23.0 in	1.5 in	17.0 in	18
424048ST-E	48 in	36.3 in	74.0 in	24.0 in	4	6.0 in	24.0 in	23.0 in	1.5 in	17.0 in	22
424060ST-E	60 in	45.7 in	86.0 in	24.0 in	4	7.0 in	28.0 in	23.0 in	3.5 in	17.0 in	22

400ST Series How to Order



L2 C1 M2 E2 W1

Way Covers

- **W1** No Covers (Open)
- **W2** Bellows*

*Installing Bellows option (W2) reduces table travel; refer to dimension table on page B63 and B64 for table travel with bellows.

Encoder

- **E1** No Encoder
- **E2** Linear Encoder, English , 0.0001 in Resolution
- **E3** Linear Encoder, Metric 1.0 µm Resolution

Motor Mount

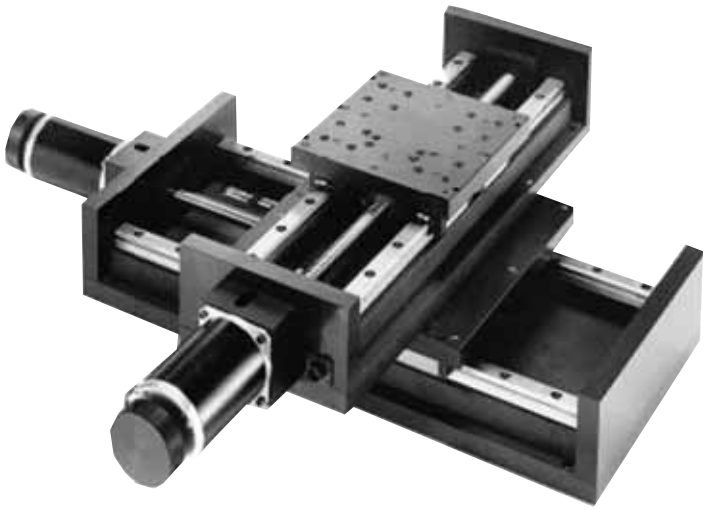
- **M1** 34 Frame Size
- **M2** 42 Frame Size

Motor Coupling

- **C1** No Coupling
- **C2** 0.375 in Bore, Bellows
- **C3** 0.625 in Bore, Bellows (short shaft 106-178 & 106-250 motors)
- **C4** 0.625 in Bore, Bellows (long shaft 106-205 motor)

Limit/Home

- **L1** No Limit/Home Switches
- **L2** Magnetic Limit/Home Switches - Inboard (Not available for 4", 6",48", or 60" travel models)
- **L3** Magnetic Limit/Home Switches-Outboard
- **L4** Optical Limit/Home Switches-Outboard



100BT Series

Features

- Nonrecirculating linear ball bearing for smoothest linear translation
- Precision ground leadscrew drive for accurate, repeatable positioning of +/-0.00012 in (bidirectional)
- Selectable drive screw leads to match speed and resolution requirements
- Travels up to 12 inches

Quality Design and Construction

The 100BT Series Linear Tables incorporate a nonrecirculating linear ball bearing system to produce extremely smooth linear translation with excellent straightline and flatness accuracy. The drive mechanism is a precision ground leadscrew which is pre-loaded to provide highly precise positional accuracy and repeatability. Offered in English or Metric versions, these tables are utilized in high to ultra high-end applications requiring accurate positioning over a relatively short distance at slow to moderate speeds and accelerations. In addition to the precision grade models, this series is also offered in standard grade models which permit cost savings to be realized in less demanding applications.

Table housings are constructed of high quality aluminum alloy and are protected with a black anodized surface finish. The top and bottom mounting surfaces are precision ground to assure flatness. The low-profile design and lightweight construction make the 100BT well suited for multi-axis applications. These tables are designed for use in clean environments and are typically found in the semiconductor, aerospace, instrumentation, and scientific industries. Typical applications include: Parts Inspection, Vision Systems, and Gauging. Scanning and Crystal Growing are also popular uses for these tables since they require extremely smooth and very precise motion.

Options:

Motor Couplings
A wide range of coupling styles and bores are available to match motor requirements. Bellows-style couplings are required for all precision grade tables and have the lowest torsional windup, while the aluminum and stainless steel helix couplers offer good windup characteristics and high durability at a lower cost.

Motor Mount
The motor mount is designed for an industry standard NEMA 23 motor flange with shaft lengths between 0.65 and 0.85 inches.

Limit and Home Switches
All styles of the 100BT series can be equipped with mechanical reed switch or optical sensor type limit and home switch assemblies. The limit switches provide a signal when the table approaches its end of travel which is used to command the motor to stop. The Home sensor provides a fixed reference point to which the table can always return.

Linear Encoders
This option mounts to the side of the table and is used to give direct positional feedback of the carriage. English resolution of 0.0001 inch and Metric resolution of 0.001 mm are available.

Z Axis Brackets
Brackets for vertical mounting of these units are offered as a standard accessory.

NOTE: Refer to www.parkermotion.com or contact a Parker applications engineer for additional detailed information pertaining to any of these options or accessories.

100BT Series Characteristics

Common Characteristics	Units	Precision	Standard
Performance			
Positional Repeatability (bidirectional)	x 0.001 in (µm)	+/-0.12 (+/-3.0)	+/-0.47 (+/-12)
Life @ rated Load Capacity	x 1 million in (km)	10 (254)	10 (254)
Duty Cycle	%	75	75
Acceleration (Max.)	in/sec² (m/sec²)	48 (1.2)	24 (0.6)
Maximum Screw Speed	rps	25	25
Motor Sizing			
Leadscrew Diameter 105BT	in (mm)	0.375 (9.5)	0.375 (9.5)
106BT	in (mm)	0.500 (12.7)	0.500 (12.7)
Drive Screw Efficiency	%	30	30
Breakaway Torque (Max.)	oz-in (N-m)	16.5 (0.117)	16.5 (0.117)
Running Torque (Max.)	oz-in (N-m)	15.0 (0.106)	15.0 (0.106)
Coefficient of Friction - Linear Brg.		0.003	0.003

Travel Dependent Characteristics

Precision Grade Specifications

Model	Travel inches (mm)	Load Capacity* lbs (kgf) Normal	Inverted	Axial	Positional Accuracy x 0.001 in (µm)	Straightness & Flatness Accuracy x 0.001 in (µm)	Input Inertia 10^{-3}oz-in-sec² 10^{-5} kg-m²	Carriage Weight lbs (kgf)	Table Weight lbs (kgf)
105002BT	2.0 (50)	60 (27)	30 (13)	28 (13)	0.6 (16)	0.16 (4)	0.31 (0.22)	2.4 (1.1)	4.0 (1.81)
106004BT	4.0 (100)	100 (45)	50 (23)	55 (25)	0.6 (16)	0.32 (8)	0.767 (0.54)	5.1 (2.3)	7.2 (3.3)
106006BT	6.0 (150)	110 (50)	55 (25)	55 (25)	0.9 (24)	0.48 (12)	0.978 (0.69)	7.2 (3.3)	10.2 (4.6)
106008BT	8.0 (200)	120 (54)	60 (27)	55 (25)	1.3 (32)	0.6 (16)	1.175 (0.83)	9.2 (4.2)	13.2 (6.0)
106010BT	10.0 (250)	130 (59)	65 (29)	55 (25)	1.6 (40)	0.6 (16)	1.368 (0.97)	11.1 (5.0)	16.0 (7.3)
106012BT	12.0 (300)	140 (64)	70 (32)	55 (25)	1.9 (48)	0.6 (16)	1.561 (1.10)	13.0 (5.9)	19.1 (8.7)

*For moment load calculations, refer to the technical reference section of Parker's web site www.parkermotion.com

Standard Grade Specifications

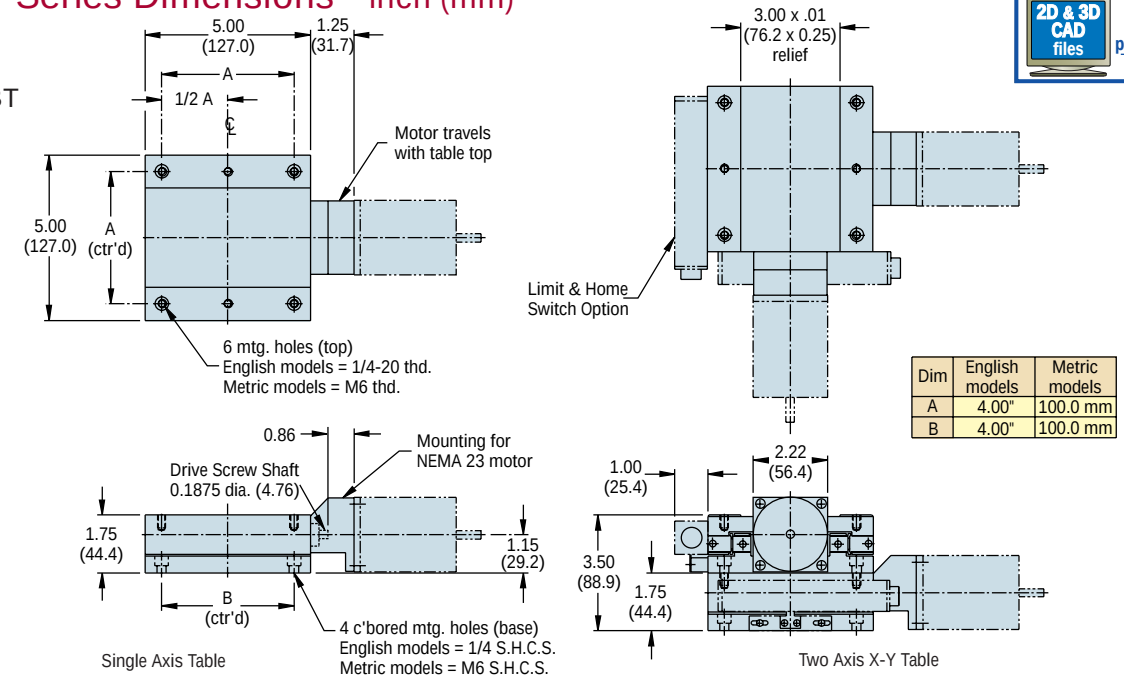
Model	Travel inches (mm)	Load Capacity* lbs (kgf) Normal	Inverted	Axial	Positional Accuracy x 0.001 in (µm)	Straightness & Flatness Accuracy x 0.001 in (µm)	Input Inertia 10^{-3}oz-in-sec² 10^{-5} kg-m²	Carriage Weight lbs (kgf)	Table Weight lbs (kgf)
105002BT	2.0 (50)	60 (27)	30 (13)	28 (13)	0.8 (20)	0.4 (10)	0.31 (0.22)	2.4 (1.1)	4.0 (1.81)
106004BT	4.0 (100)	100 (45)	50 (23)	55 (25)	0.8 (20)	0.8 (20)	0.767 (0.54)	5.1 (2.3)	7.2 (3.3)
106006BT	6.0 (150)	110 (50)	55 (25)	55 (25)	1.2 (30)	1.2 (30)	0.978 (0.69)	7.2 (3.3)	10.2 (4.6)
106008BT	8.0 (200)	120 (54)	60 (27)	55 (25)	1.6 (40)	1.6 (40)	1.175 (0.83)	9.2 (4.2)	13.2 (6.0)
106010BT	10.0 (250)	130 (59)	65 (29)	55 (25)	2.0 (50)	2.0 (50)	1.368 (0.97)	11.1 (5.0)	16.0 (7.3)
106012BT	12.0 (300)	140 (64)	70 (32)	55 (25)	2.4 (60)	2.4 (60)	1.561 (1.10)	13.0 (5.9)	19.1 (8.7)

*For moment load calculations, refer to the technical reference section of Parker's web site www.parkermotion.com

Refer to www.parkermotion.com for additional technical information.

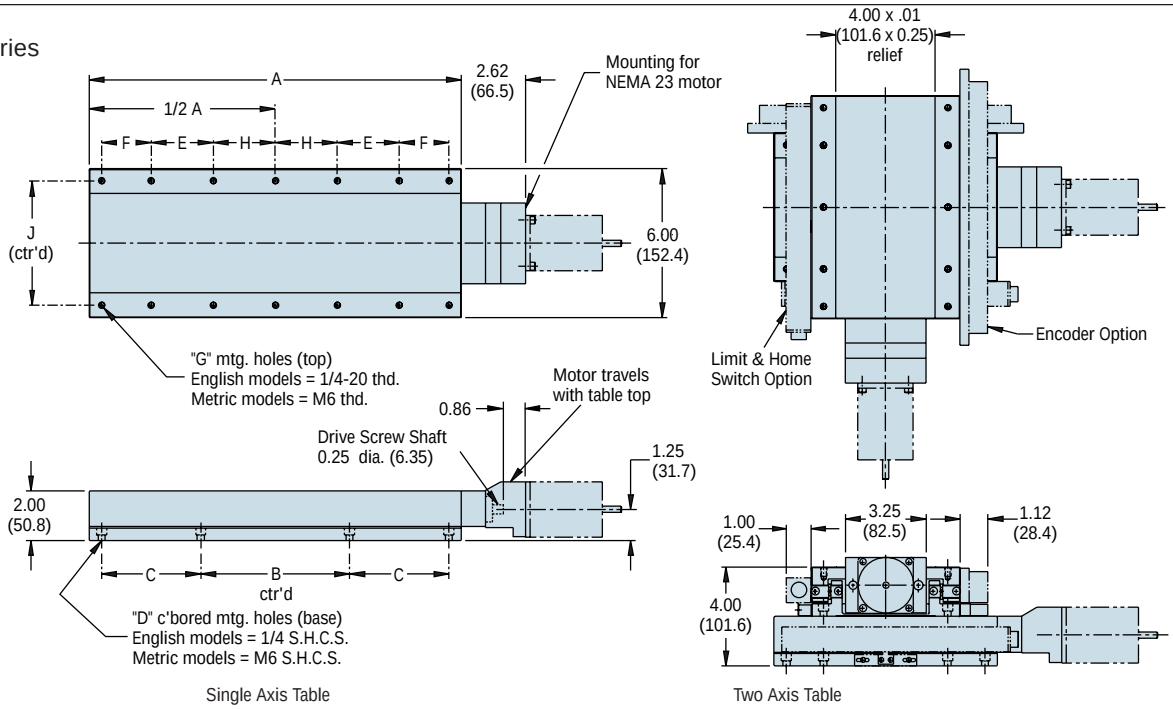
100BT Series Dimensions - inch (mm)

105002BT



Dim	English models	Metric models
A	4.00"	100.0 mm
B	4.00"	100.0 mm

106000BT Series



Model		Travel	A	B	C	Quantity D	E	F	Quantity G	H	J
106004	English	4 in	6 in	5 in	—	4	—	—	6	2.5 in	5.00 in
106006		6 in	9 in	5 in	1.5 in	8	1.5 in	—	10	2.5 in	5.00 in
106008		8 in	12 in	5 in	3 in	8	2.5 in	—	10	2.5 in	5.00 in
106010		10 in	15 in	6 in	4 in	8	2.5 in	2 in	14	2.5 in	5.00 in
106012		12 in	18 in	7 in	5 in	8	5 in	1 in	14	2.5 in	5.00 in
106004	Metric	100 mm	152.4 mm	125.0 mm	—	4	—	—	6	62.5 mm	125.0 mm
106006		150 mm	228.6 mm	125.0 mm	37.5 mm	8	37.5 mm	—	10	62.5 mm	125.0 mm
106008		200 mm	304.8 mm	125.0 mm	75.0 mm	8	62.5 mm	—	10	62.5 mm	125.0 mm
1060010		250 mm	381.0 mm	150.0 mm	100.0 mm	8	62.5 mm	50.0 mm	14	62.5 mm	125.0 mm
1060012		300 mm	457.2 mm	175.0 mm	125.0 mm	8	125.0 mm	25.0 mm	14	62.5 mm	125.0 mm

100BT Series How to Order

Order Example

1	06	008	BT	M	P	D1	L3	C1	M1	E1

Model Series
1

Table Width
- 5 in 125 mm — 05
- 6 in 150 mm — 06

Table Travel
- 2 in 50 mm — 002 (105 only)
- 4 in 100 mm — 004
- 6 in 150 mm — 006
- 8 in 200 mm — 008
- 10 in 250 mm — 010
- 12 in 300 mm — 012

Table Style
- Ball Bearing — BT

Mounting
- English — E
- Metric — M

Grade
- Standard Grade — S
- Precision Grade — P

Drive Screw
- 0.02 in Lead (50 Pitch) — D1
- 0.10 in Lead (10 Pitch) — D2
- 0.20 in Lead (5 Pitch) — D3
- 1.0 mm Lead — D4
- 2.0 mm Lead — D5
- 5.0 mm Lead — D6
- 0.1 in Lead (ACME)-for vertical applications, motor up — D7 (Available on 106 only)
- 0.1 in Lead (ACME)-for vertical applications, motor down — D8 (Available on 106 only)

Limit/Home
- No Limit/Home Switches — L1
- Mechanical/Reed Switches — L2
- Optical Sensors — L3

Motor Coupling
- No Coupling — C1
- 0.25 in Bore, Helix, Aluminum — C2
- 0.25 in Bore, Helix, Stainless Steel — C3 (Available on 106 only)
- 0.25 in Bore, Bellows, required for precision grade — C4
- 0.375 in Bore, Helix, Aluminum — C5
- 0.375 in Bore, Helix, Stainless Steel — C6 (Available on 106 only)
- 0.375 in Bore, Bellows, required for precision grade — C7

Motor Mount
- 23 Frame Size — M1

Encoder
- No Encoder — E1
- Linear Encoder, English, 0.0001 in Resolution — E2 (Available on 106 only)
- Linear Encoder, Metric, 1.0 µm Resolution — E3 (Available on 106 only)

300AT Series

Features

- Large clear aperture
- Travel ranges up to 24 in x 24 in
- Nonrecirculating linear ball bearing for smoothest linear translation
- Precision ground leadscrew drive for accurate, repeatable positioning (+/-0.00012 in)
- Single and dual axis models

Quality Design and Construction

The 300AT Series Linear Tables, like the 100BT Series Tables incorporate a non-recirculating linear ball bearing system to produce extremely smooth linear translation with excellent straightline and flatness accuracy. They also offer a precision ground leadscrew drive mechanism which is preloaded to provide highly precise positional accuracy and repeatability.

The 300AT, however, has the drive mechanism located on the side of the unit to allow for a clear opening through the center of the table(s). This center opening (aperture) enables these tables to be utilized in a variety of applications where light or objects can pass through the table. These include component insertion and assembly, back-lit inspection, and scanning applications.

Table elements are constructed of high quality aluminum alloy and are protected with black anodized surface finish. The top and bottom mounting surfaces are precision machined to assure flatness, and fixturing holes are fitted with locking steel threaded inserts. These units are offered in English or Metric versions, and in two grades: precision grade and standard grade which permit cost savings to be realized in less demanding applications.

Options:

Motor Couplings
A wide range of coupling styles and bores are available to match motor requirements. Bellows-style couplings are required for all precision grade tables and have the lowest radial windup, while the aluminum and stainless steel helix couplers offer good windup characteristics and high durability at a lower cost.

Motor Mounts
The motor mount is designed for an industry standard NEMA 23 motor flange with shaft lengths between 0.65 and 0.85 inches.

Limit and Home Switches
All styles can be equipped with either mechanical reed switch or optical sensor type limit and home switch assemblies. The limit switches provide a signal when the table is approaching its end of travel which is used to command the motor to stop. The Home sensor provides a fixed reference point to which the table can always return.

Linear Encoders
This option is used to give direct positional feedback of the carriage. English resolution of 0.0001 inch and Metric resolution of 0.001 mm are available. These units mount to the inside of the table for improved performance. This causes the aperature to be reduced by approximately 1 inch.

NOTE: Refer to www.parkermotion.com or contact a Parker applications engineer for additional detailed information pertaining to options or accessories.

300AT Series Characteristics

Common Characteristics

	Units	Precision	Standard
Performance			
Positional Repeatability (bidirectional)	x 0.001 in (µm)	+/- 0.12 (+/- 3.0)	+/- 0.47 (+/- 12)
X-Y Squareness*	Arc Seconds	30	60
Life @ rated Load Cap.	x 1 million in (km)	10 (254)	10 (254)
Duty Cycle	%	75	50
Acceleration (Max.)	in/sec (m/sec)	48 (1.2)	24 (0.6)
Maximum Screw Speed	less than 16 inch travels	25	15
	16 inch & higher travels	15	15
Motor Sizing			
Leadscrew Diameter	in (mm)	0.5 (12.7)	0.5 (12.7)
Drive Screw Efficiency	%	30	30
Breakaway Torque (Max.)	oz-in (N-m)	16.5 (0.117)	16.5 (0.117)
Running Torque (Max.)	oz-in (N-m)	15 (0.106)	15 (0.106)
Coefficient of Friction - Linear Brg.		0.003	0.003

*Two Axis (X-Y) Units

Travel Dependent Characteristics

Precision Grade Specifications

Model	Travel inches (mm) X-Axis	Travel inches (mm) Y-Axis	Load Capacity* lbs (kgf) Normal	Load Capacity* lbs (kgf) Inverted	Load Capacity* lbs (kgf) Axial	Positional Accuracy** x 0.001 in (µm)	Straightness & Flatness Accuracy** x 0.001 in (µm)	Input Inertia*** 10^{-3}oz-in-sec^2 10^{-5} kg-m^2	Weight lbs (kgf) Carriage	Weight lbs (kgf) Total
310062AT	6.0 (150)	6.0 (150)	160 (72)	80 (36)	55 (24.9)	0.9 (24)	1.2 (31)	1.20 (0.85)	4.9 (2.2)	25 (11.3)
315081AT	8.0 (200)	—	245 (111)	122 (56)	55 (24.9)	1.3 (32)	1.6 (41)	1.75 (1.23)	8.3 (3.8)	36 (16.3)
315082AT	8.0 (200)	8.0 (200)	210 (95)	105 (47)	55 (24.9)	1.3 (32)	1.6 (41)	2.56 (1.81)	44.3 (20.1)	72 (32.7)
315101AT	10.0 (250)	—	245 (111)	122 (56)	55 (24.9)	1.6 (40)	2.0 (51)	1.75 (1.23)	8.3 (3.8)	36 (16.3)
315102AT	10.0 (250)	10.0 (250)	210 (95)	105 (47)	55 (24.9)	1.6 (40)	2.0 (51)	2.56 (1.81)	44.3 (20.1)	72 (32.7)
318121AT	12.0 (300)	—	300 (136)	150 (68)	55 (24.9)	1.9 (48)	2.4 (61)	2.03 (1.43)	10.2 (4.6)	43 (19.5)
318122AT	12.0 (300)	12.0 (300)	260 (118)	130 (59)	55 (24.9)	1.9 (48)	2.4 (61)	3.02 (2.13)	53.2 (24.1)	86 (39)
324161AT	16.0 (400)	—	370 (168)	185 (84)	55 (24.9)	2.5 (66)	3.2 (81)	2.60 (1.84)	14.2 (6.4)	58 (26.3)
324162AT	16.0 (400)	16.0 (400)	310 (141)	155 (70)	55 (24.9)	2.5 (66)	3.2 (81)	3.94 (2.78)	72.2 (32.7)	116 (52.6)
330241AT	24.0 (600)	—	440 (200)	220 (100)	55 (24.9)	3.9 (98)	4.8 (122)	3.43 (2.42)	27.7 (12.6)	72 (32.7)
330242AT	24.0 (600)	24.0 (600)	380 (172)	119 (86)	55 (24.9)	3.9 (98)	4.8 (122)	5.30 (3.47)	99.7 (45.2)	145 (65.8)

Standard Grade Specifications

Model	Travel inches (mm) X-Axis	Travel inches (mm) Y-Axis	Load Capacity* lbs (kgf) Normal	Load Capacity* lbs (kgf) Inverted	Load Capacity* lbs (kgf) Axial	Positional Accuracy** x 0.001 in (µm)	Straightness & Flatness Accuracy** x 0.001 in (µm)	Input Inertia*** 10^{-3}oz-in-sec^2 10^{-5} kg-m^2	Weight lbs (kgf) Carriage	Weight lbs (kgf) Total
310062AT	6.0 (150)	6.0 (150)	160 (72)	80 (36)	55 (24.9)	1.2 (30)	3.0 (76)	1.2 (0.85)	4.9 (2.2)	25 (11.3)
315081AT	8.0 (200)	—	245 (111)	122 (56)	55 (24.9)	1.6 (40)	4.0 (102)	1.75 (1.23)	8.3 (3.8)	36 (16.3)
315082AT	8.0 (200)	8.0 (200)	210 (95)	105 (47)	55 (24.9)	1.6 (40)	4.0 (102)	2.56 (1.81)	44.3 (20.1)	72 (32.7)
315101AT	10.0 (250)	—	245 (111)	122 (56)	55 (24.9)	2.0 (50)	5.0 (127)	1.75 (1.23)	8.3 (3.8)	36 (16.3)
315102AT	10.0 (250)	10.0 (250)	210 (95)	105 (47)	55 (24.9)	2.0 (50)	5.0 (127)	2.56 (1.81)	44.3 (20.1)	72 (32.7)
318121AT	12.0 (300)	—	300 (136)	150 (68)	55 (24.9)	2.4 (61)	6.0 (152)	2.03 (1.43)	10.2 (4.6)	43 (19.5)
318122AT	12.0 (300)	12.0 (300)	260 (118)	130 (59)	55 (24.9)	2.4 (61)	6.0 (152)	3.02 (2.13)	53.2 (24.1)	86 (39)
324161AT	16.0 (400)	—	370 (168)	185 (84)	55 (24.9)	3.2 (81)	8.0 (203)	2.6 (1.84)	14.2 (6.4)	58 (26.3)
324162AT	16.0 (400)	16.0 (400)	310 (141)	155 (70)	55 (24.9)	3.2 (81)	8.0 (203)	3.94 (2.78)	72.2 (32.7)	116 (52.6)
330241AT	24.0 (600)	—	440 (200)	220 (100)	55 (24.9)	4.8 (122)	12.0 (305)	3.43 (2.42)	27.7 (12.6)	72 (32.7)
330242AT	24.0 (600)	24.0 (600)	380 (172)	119 (86)	55 (24.9)	4.8 (122)	12.0 (305)	5.3 (3.47)	99.7 (45.2)	145 (65.8)

* Refer to www.parkermotion.com for moment load graph.
** Measured over centerline of drive screw.

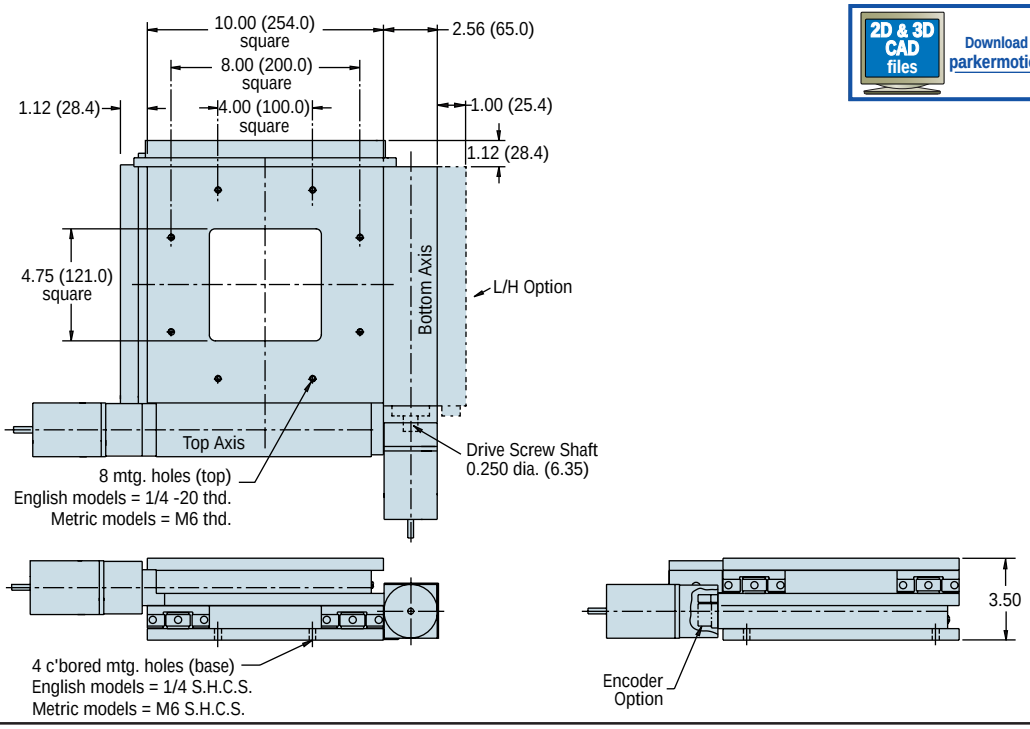
*** Based on 0.2 in lead drive screw (D3 option).

**** 2 axis units: Inertia and Carriage weight are shown for Base axis sizing. For sizing top axis use single axis specifications.

Refer to www.parkermotion.com for additional technical information.

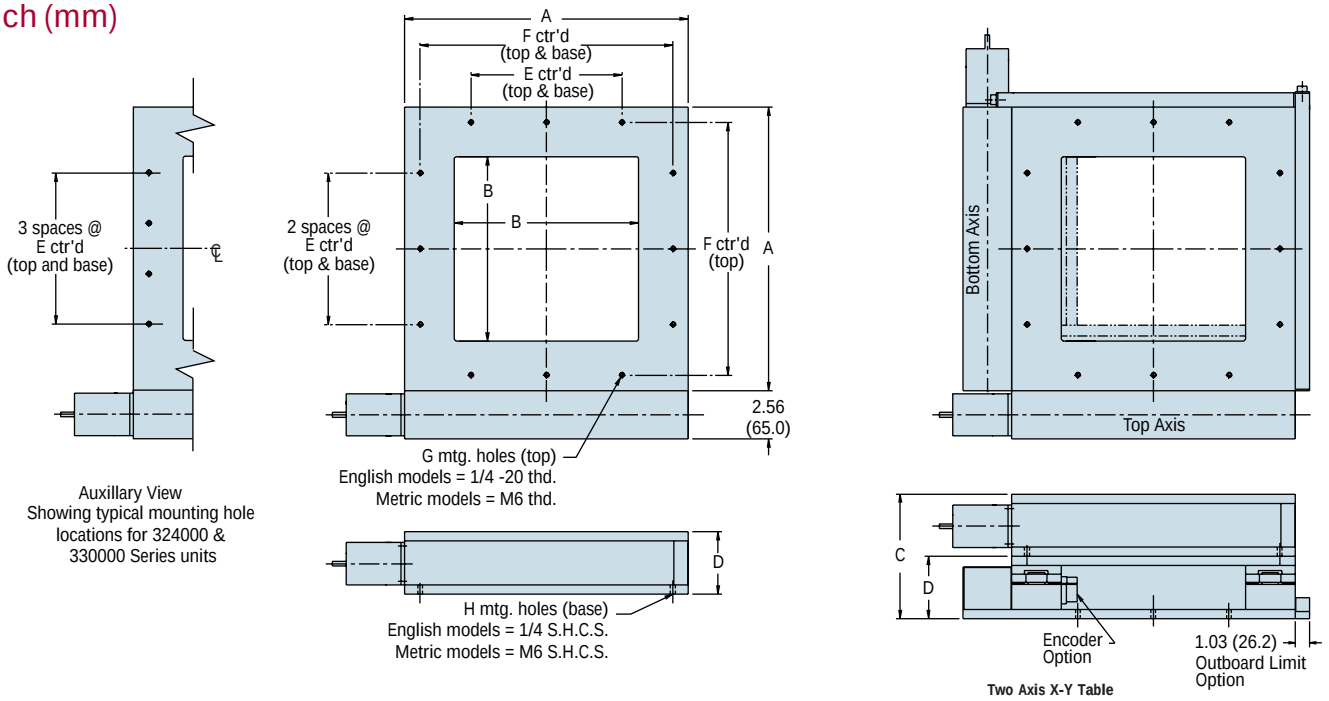
310000AT Series Dimensions

inch (mm)



315000AT/318000AT/324000/330000AT Dimensions

inch (mm)



Model	Width A	Opening B	X-Y Axis C	X Axis D	Mounting E	F	G	H	
315000AT-E	15 in	9.75 in	6.5 in	3.25 in	8 in	13.38 in	12	6	English
318000AT-E	18 in	12.75 in	6.5 in	3.25 in	10 in	16.38 in	12	6	
324000AT-E	24 in	18.75 in	6.5 in	3.25 in	15 in	22.38 in	16	8	
330000AT-E	30 in	24.75 in	6.5 in	3.25 in	22.5 in	28.38 in	16	8	
315000AT-M	381 mm	248 mm	165.1 mm	82.5 mm	200 mm	325 mm	12	6	mm
318000AT-M	457 mm	324 mm	165.1 mm	82.5 mm	250 mm	400 mm	12	6	

300AT Series How to Order

Order Example: 3 | 1510 | 2 | AT | E | S | D2 | L2 | C2 | M1 | E2

Model Series

Width/Travel	Width	Travel		
	10 in	250 mm	6 in 150 mm	1006 Two Axis only
	15 in	375 mm	8 in 200 mm	1508
	15 in	.....	10 in	1510 English only
	18 in	450 mm	12 in 300 mm	1812
	24 in	.....	16 in	2416 English only
	33 in	.....	24 in	3024 English only

Number of Axes

One Axis	1
Two Axis	2

Table Style

AT	AT

Mounting

English	E
Metric	M

Grade

Standard Grade	S
Precision Grade	P

Drive Screw

0.02 in Lead (50 Pitch)	D1
0.10 in Lead (10 Pitch)	D2
0.20 in Lead (5 Pitch)	D3
1,0 mm Lead	D4
2,0 mm Lead	D5
5,0 mm Lead	D6

Limit/Home

No Limit/Home Switches	L1
Magnetic Limit/Home Switches	L2
Optical Limit/Home Switches (outboard)	L3
Magnetic Limit/Home Switches (outboard)	L4

Motor Coupling

No Coupling	C1
0.25 in Bore, Helix, Aluminum	C2
0.25 in Bore, Helix, Stainless Steel	C3
0.25 in Bore, Bellows, required for precision grade	C4
0.375 in Bore, Helix, Stainless Steel	C6
0.375 in Bore, Bellows, required for precision grade	C7

Motor Mount

23 Frame Size	M1

Encoder

No Encoder	E1
Linear Encoder, English, 0.0001 in Resolution	E2
Linear Encoder, Metric, 1,0 µm Resolution	E3

100CT & 800CT Series

Features

- Twice as strong as the same size ball bearing table
- Nonrecirculating bearing design for the smoothest linear translation
- Leadscrew drive for smooth motion or ballscrew drive for 100% duty cycle
- Highly repeatable positioning (+/-0.00005")
- Precision ground top and bottom mounting surfaces

Quality Design and Construction

The 100CT and 800CT linear tables employ a non-recirculating cross roller bearing system to provide smooth linear translation of heavier loads where mechanical disturbance cannot be tolerated. They are offered in two styles – the 100CT and 800CT. The 100CT is a low profile light duty cross roller table. It is similar in size and shape to the 100BT ball bearing table and utilizes the same pre-loaded leadscrew drive. It is designed to fit those applications whose load requirements exceed the 100BT and whose duty cycle is less than 75%. The 800CT is a rugged table rated at 100% duty cycle. It has a larger cross roller bearing system and an efficient (90%) ballscrew drive, and should be considered in high to ultra high-end applications that require accurate positioning over a relatively short distance at slow to moderate speeds and accelerations.

Options:

Motor Couplings
A wide range of coupling styles and bores are available to match motor requirements. Bellows-style couplings are required for all precision grade tables and have the lowest radial windup, while the aluminum and stainless steel helix couplers offer good windup characteristics and high durability at a lower cost.

Motor Mounts
The motor mount is designed for an industry standard NEMA 23 motor flange with shaft lengths between 0.65 and 0.85 inches.

Limit and Home Switches
All styles can be equipped with either mechanical reed switch or optical sensor type limit and home switch assemblies. The limit switches provide a signal when the table is approaching its end of travel which is used to command the motor to stop. The Home sensor provides a fixed reference point to which the table can always return.

Linear Encoders
This option mounts to the side of the table and is used to give direct positional feedback of the carriage. English resolution of 0.0001 inch and Metric resolution of 0.001 mm are available.

Z-Brackets
Brackets for vertical mounting of these units are offered as a standard accessory.

NOTE: Refer to www.parkermotion.com or contact a Parker applications engineer for additional detailed information pertaining to any of these options or accessories.

800CT Series Characteristics

Common Characteristics

	Units	Precision	Standard
Performance			
Positional Repeatability (bidirectional)	x 0.001 in (µm)	+/-0.05 (+/-1.3)	+/-0.2 (+/-5)
Life @ rated Load Cap.	x 1 million in (km)	100 (2540)	100 (2540)
Duty Cycle	%	100	100
Acceleration (Max.)	in/sec² (m/sec²)	96 (2.4)	96 (2.4)
Maximum Screw Speed	rps	50	50
Motor Sizing			
Ballscrew Diameter	in (mm)	0.625 (15.9)	0.625 (15.9)
Drive screw Efficiency	%	90	80
Breakaway Torque (Max.)	oz-in (N-m)	17.6 (0.12)	26.4 (0.19)
Running Torque (Max.)	oz-in (N-m)	16.0 (0.11)	24.0 (0.17)
Coefficient of Friction - Linear Brg.		0.003	0.003

Travel Dependent Characteristics

	Travel Inches (mm)	Load Capacity* lbs (kgf) Normal	Inverted	Axial	Accuracy x 0.001 in (µm) Positional	Straightness	Input Inertia** 10^{-3} oz-in.-sec² (10^{-5} kg-m²) 6" wide	8" wide	Weight lbs (kgf) Carriage 6" wide	8" wide	Total 6" wide	8" wide
Precision Grade	4.0 (100)	200 (90)	100 (45)	200 (91)	0.32 (8)	0.32 (8)	2.33 (1.65)	2.38 (1.68)	5.4 (2.5)	7.2 (3.3)	12.4 (5.6)	16.6 (7.5)
	6.0 (150)	220 (100)	110 (50)	200 (91)	0.48 (12)	0.48 (12)	2.73 (1.93)	2.80 (1.98)	6.6 (3.0)	9.2 (4.2)	14.6 (6.6)	20.0 (9.1)
	8.0 (200)	240 (108)	120 (54)	200 (91)	0.60 (15)	0.64 (16)	3.14 (2.22)	3.23 (2.28)	7.6 (3.5)	10.8 (4.9)	15.8 (7.2)	23.3 (10.6)
	10.0 (250)	260 (118)	130 (59)	200 (91)	0.60 (15)	0.80 (20)	3.55 (2.51)	3.64 (2.57)	8.7 (3.9)	12.5 (5.7)	19.8 (8.6)	26.7 (12.1)
	12.0 (300)	280 (128)	140 (64)	200 (91)	0.60 (15)	0.96 (24)	3.95 (2.79)	4.06 (2.87)	10.0 (4.5)	14.1 (6.4)	21.6 (9.8)	30.0 (13.7)
Standard Grade	4.0 (100)	200 (90)	100 (45)	200 (91)	0.60 (15)	0.32 (8)	2.33 (1.65)	2.38 (1.68)	5.4 (2.5)	7.2 (3.3)	12.4 (5.6)	16.6 (7.5)
	6.0 (150)	220 (100)	110 (50)	200 (91)	0.9 (23)	0.48 (12)	2.73 (1.93)	2.80 (1.98)	6.6 (3.0)	9.2 (4.2)	14.6 (6.6)	20.0 (9.1)
	8.0 (200)	240 (108)	120 (54)	200 (91)	1.0 (25)	0.64 (16)	3.14 (2.22)	3.23 (2.28)	7.6 (3.5)	10.8 (4.9)	15.8 (7.2)	23.3 (10.6)
	10.0 (250)	260 (118)	130 (59)	200 (91)	1.0 (25)	0.80 (20)	3.55 (2.51)	3.64 (2.57)	8.7 (3.9)	12.5 (5.7)	19.8 (8.6)	26.7 (12.1)
	12.0 (300)	280 (128)	140 (64)	200 (91)	1.0 (25)	0.96 (24)	3.95 (2.79)	4.06 (2.87)	10.0 (4.5)	14.1 (6.4)	21.6 (9.8)	30.0 (13.7)

* For moment load calculations, refer to the technical section of Parker's web site www.parkermotion.com
**Input Inertia based on 0.2 inch lead ballscrew.

100CT Series Characteristics

Common Characteristics

	Units	Precision	Standard
Performance			
Positional Repeatability (bidirectional)	x 0.001 in (µm)	+/-0.12 (+/- 3.0)	+/-0.47 (+/- 12)
Life @ rated Load Cap.	x 1 million in (km)	10 (254)	10 (254)
Duty Cycle	%	75	75
Acceleration (Max.)	in/sec² (m/sec²)	48 (1.2)	24 (0.6)
Maximum Screw Speed	rps	25	25
Motor Sizing			
Leadscrew Diameter	in (mm)	0.50 (12.7)	0.50 (12.7)
Drive screw Efficiency	%	30	30
Breakaway Torque (Max.)	oz-in (N-m)	16.5 (0.117)	16.5 (0.117)
Running Torque (Max.)	oz-in (N-m)	15 (0.106)	15 (0.103)
Coefficient of Friction - Linear Brg.		0.003	0.003

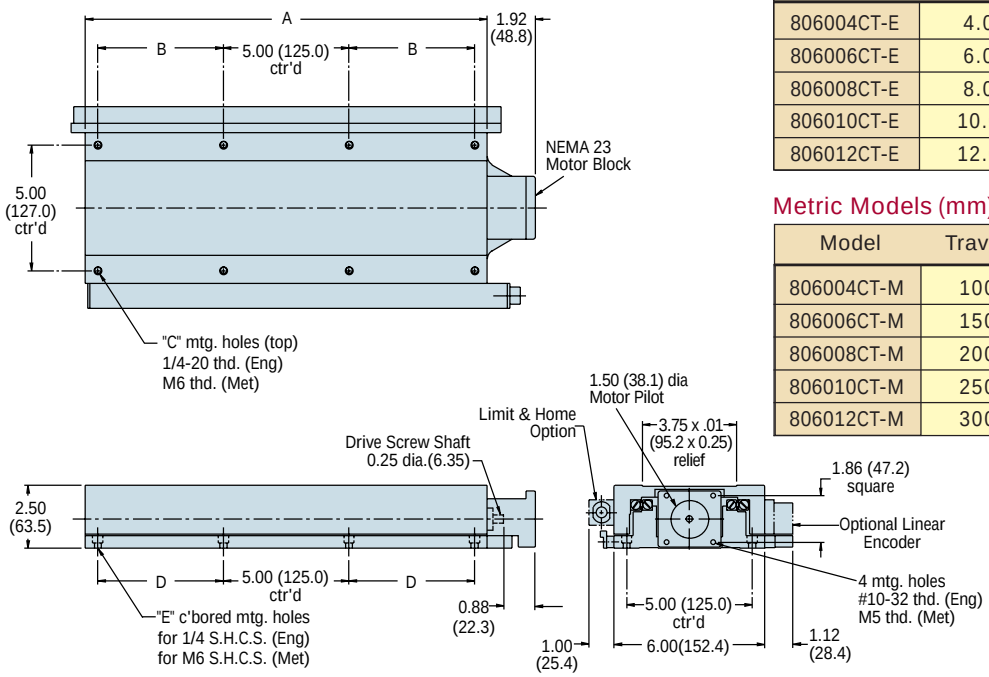
Travel Dependent Characteristics

	Travel Inches (mm)	Load Capacity* lbs (kgf) Normal	Inverted	Axial	Accuracy x 0.001 in (µm) Positional	Straightness	Input Inertia** 10^{-3} oz-in.-sec² (10^{-5} kg-m²)	Weight lbs (kgf) Carriage	Total
Precision Grade	4 (100)	200 (90)	100 (45)	55 (25)	0.6 (16)	0.32 (8)	0.79 (0.56)	5.4 (2.4)	7.6 (3.4)
	6 (150)	220 (100)	110 (50)	55 (25)	0.9 (24)	0.48 (12)	1.02 (0.72)	7.4 (3.4)	10.5 (4.8)
	8 (200)	240 (108)	120 (54)	55 (25)	1.3 (32)	0.64 (16)	1.22 (0.86)	10.5 (4.8)	13.6 (6.2)
	10 (250)	260 (118)	130 (59)	55 (25)	1.6 (40)	0.64 (16)	1.43 (1.01)	11.6 (5.3)	16.7 (7.6)
	12 (300)	280 (128)	140 (64)	55 (25)	1.9 (48)	0.64 (16)	1.63 (1.15)	13.5 (6.1)	19.8 (9)
Standard Grade	4 (100)	200 (90)	100 (45)	55 (25)	0.8 (20)	0.8 (20)	0.79 (0.56)	5.4 (2.4)	7.6 (3.4)
	6 (150)	220 (100)	110 (50)	55 (25)	1.2 (30)	1.2 (30)	1.02 (0.72)	7.4 (3.4)	10.5 (4.8)
	8 (200)	240 (108)	120 (54)	55 (25)	1.6 (40)	1.6 (40)	1.22 (0.86)	10.5 (4.8)	13.6 (6.2)
	10 (250)	260 (118)	130 (59)	55 (25)	2.0 (50)	2.0 (50)	1.43 (1.01)	11.6 (5.3)	16.7 (7.6)
	12 (300)	280 (128)	140 (64)	55 (25)	2.4 (60)	2.4 (60)	1.63 (1.15)	13.5 (6.1)	19.8 (9)

* For moment load calculations, refer to the technical section of Parker's web site www.parkermotion.com
**Input Inertia based on 0.2 inch lead ballscrew.

806CT Series Dimensions inch (mm)*

* metric values are actual dimensions - not converted values.



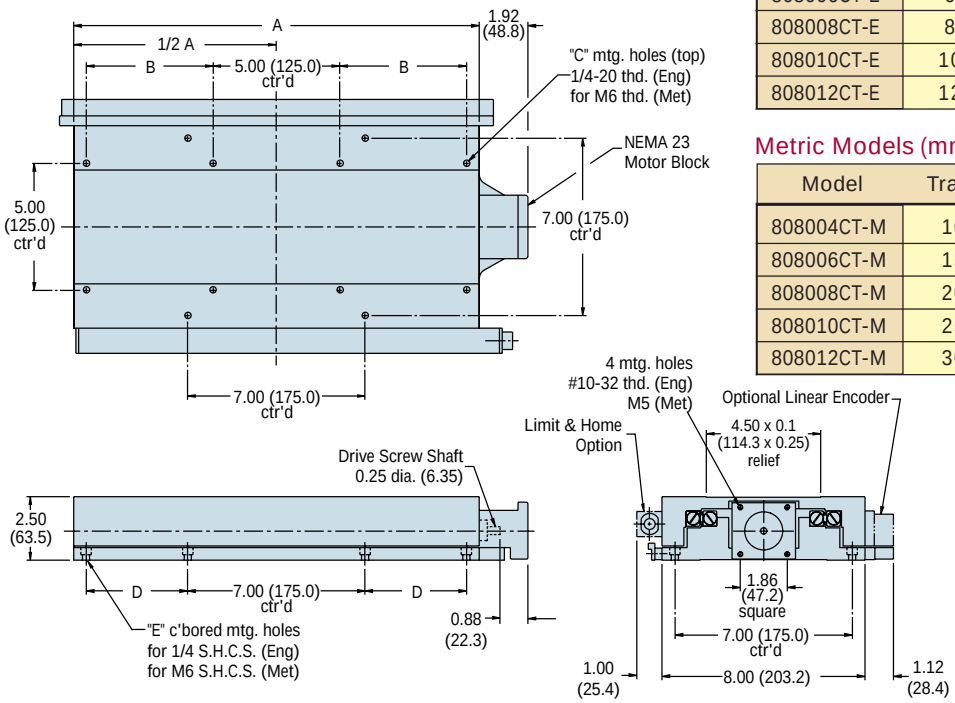
English Models (inch)

Model	Travel	A	B	C	D	E
806004CT-E	4.0	8.0	—	4	—	4
806006CT-E	6.0	10.0	2.0	8	2.0	8
806008CT-E	8.0	12.0	3.0	8	3.0	8
806010CT-E	10.0	14.0	4.0	8	4.0	8
806012CT-E	12.0	16.0	5.0	8	4.0	8

Metric Models (mm)

Model	Travel	A	B	C	D	E
806004CT-M	100	203.2	—	12	—	4
806006CT-M	150	254.0	—	12	50	8
806008CT-M	200	304.8	75	16	75	8
806010CT-M	250	355.6	100	16	100	8
806012CT-M	300	406.4	125	16	100	8

808CT Series Dimensions



English Models (inch)

Model	Travel	A	B	C	D	E
808004CT-E	4.0	8.0	—	4	—	4
808006CT-E	6.0	10.0	2.0	8	2.0	8
808008CT-E	8.0	12.0	3.0	8	3.0	8
808010CT-E	10.0	14.0	4.0	8	4.0	8
808012CT-E	12.0	16.0	5.0	8	5.0	8

Metric Models (mm)

Model	Travel	A	B	C	D	E
808004CT-M	100	203.2	—	12	—	4
808006CT-M	150	254.0	—	12	50	8
808008CT-M	200	304.8	75	16	75	8
808010CT-M	250	355.6	100	16	100	8
808012CT-M	300	406.4	125	16	125	8

106CT Series Dimensions

NOTE: 106CT Series dimensions are identical to those of the 106BT on page B69.

100CT & 800CT Series How to Order

Order Example: 8 | 08 | 006 | CT | M | P | D2 | L1 | C2 | M1 | E2

Model Series

100CT	1
800CT	8

Table Width

6 in ..... 150 mm	06
8 in ..... 200 mm (800 Series)	08

Table Travel

4 in ..... 100 mm	004
6 in ..... 150 mm	006
8 in ..... 200 mm	008
10 in ..... 250 mm	010
12 in ..... 300 mm	012

Table Style

Cross Roller Bearing	CT

Mounting

English	E
Metric (800CT only)	M

Grade

Standard Grade	S
Precision Grade	P

Drive Screw

100CT Series Designators		800CT Series Designators	
0.02 in Lead (50 Pitch)	D1	0.20 in Lead Ballscrew	D1
0.10 in Lead (10 Pitch)	D2	5,0 mm Lead Ballscrew	D2
0.20 in Lead (5 Pitch)	D3		
1,0 mm Lead	D4		
2,0 mm Lead	D5		
5,0 mm Lead	D6		
0.1 in Lead (ACME)	D7	-for vertical applications, motor up	
0.1 in Lead (ACME)	D8	-for vertical applications, motor down	

Limit/Home

No Limit/Home Switches	L1
Magnetic Limit/Home Switches	L2
Optical Limit/Home Sensors	L3

Motor Coupling

No Coupling	C1
0.25 in Bore, Helix, Aluminum	C2
0.25 in Bore, Helix, Stainless Steel	C3
0.25 in Bore, Bellows, required for precision grade	C4
0.375 in Bore, Helix, Aluminum	C5
0.375 in Bore, Helix, Stainless Steel	C6
0.375 in Bore, Bellows, required for precision grade	C7

Motor Mount

23 Frame Size	M1

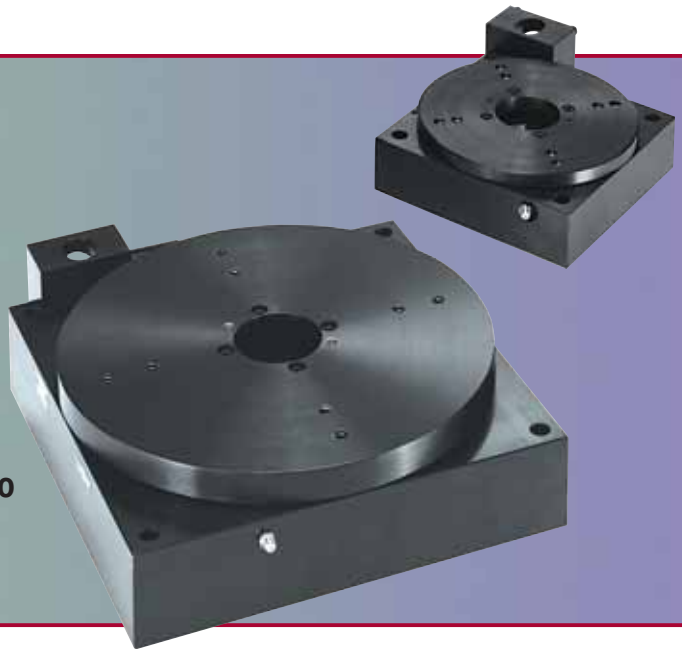
Encoder

No Encoder	E1
Linear Encoder, English, 0.0001 in Resolution	E2
Linear Encoder, Metric, 1.0 µm Resolution	E3

200RT Series

Features

- Highly repeatable indexing (12 arc sec.)
- Load capacities to 200 lbs
- 360 degrees continuous travel
- Performance tested worm gear drive
- Selectable table sizes and drive ratio
- Dual race angular contact support bearing



Quality Design and Construction

The 200RT Series Rotary Tables are designed for precise motor-driven rotary positioning and indexing. These tables are designed to function independently or in conjunction with linear tables used in the high precision and precision automation applications. Their low profile design minimizes stack height in multi-axis configurations and enables them to fit in many places where other motorized rotary devices cannot.

Models are available in 5, 6, 8, 10, or 12 inch diameters and are offered with four gear ratios making it convenient to match size, speed, and load requirements. They can be selected in either English or Metric mounting. They are found in virtually all industries where intermittent part indexing, part scanning, skew adjustment, or precise angular alignment is required.

At the heart of these tables is a rugged main support bearing which is comprised of two preloaded angular contact bearing races. It is designed for high load capacity and smooth, flat rotary motion. The drive is a precision worm gear assembly which is preloaded to remove backlash. The top and base are constructed of high quality aluminum with an attractive black anodized finish. The top and bottom mounting surfaces are precision ground to assure flatness.

Options:

Motor Couplings
A wide range of coupling styles and bores are available to match motor requirements. Bellows-style couplings, offering the lowest windup are required for all precision grade tables, while the aluminum and stainless steel helix couplers offer good windup characteristics and high durability at a lower cost.

Motor Mounts
The motor mount is designed for an industry standard NEMA 23 motor flange and a maximum shaft length of 0.85".

Home Sensor
The Home sensor provides a fixed reference point to which the table can always return. This is a mechanical reed switch which is mounted the body of the rotary table and is activated by a magnet imbedded on the table top.

Rotary Encoders
High accuracy rotary encoders can be added for direct positional feedback of the table top postition.

Seals
Custom designed sealed units are offered to prevent excessive wear or internal damage resulting from dust and contaminates.

Motors, Drives & Controls
Micro-step motors with drives are available for direct mounting to the rotary tables. Motion controllers can also be added to provide systems with seamless connectivity.

NOTE: Refer to www.parkermotion.com or contact a Parker applications engineer for additional detailed information pertaining to any of these options or accessories.

200RT Series Characteristics

Common Characteristics	Units	Precision	Standard
Performance			
Positional Repeatability (unidirectional)	arc min	0.2	0.5
Duty Cycle	%	50	50
Table Runout (Max.)	in (µm)	±0.001 (±25)	±0.003 (±75)
Concentricity	in (µm)	±0.001 (±25)	±0.005 (±127)
Wobble	arc sec.	30	60
Input Velocity (Max.)	revs./sec.	15	15

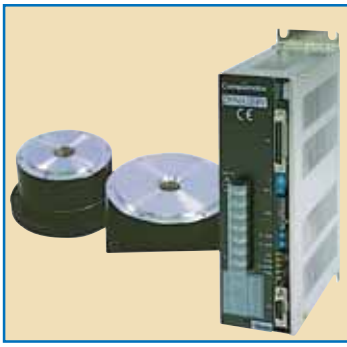
Travel Dependent Characteristics

Table Diameter inches	Drive Ratio	Load Capacity lbs. (kgf)	Accuracy Prec. arc min	Accuracy Std. arc min	Output Torque in-lb (N-m)	Inertia 10^{-3} oz-in.-sec^2 (10^{-6} kg-m-sec^2)	Input Breakaway Torque (max) oz-in (N-m)	Running Torque (max) oz-in (N-m)	Weight Std. Top lb (kgf)	Weight Total lb (kgf)
5.0	180:1	25 (11)	3	10	25 (2.8)	0.14 (0.102)	22 (0.16)	20 (0.13)	0.67 (0.3)	6.0 (2.7)
5.0	90:1	25 (11)	3	10	25 (2.8)	0.15 (0.112)	22 (0.16)	20 (0.13)	0.67 (0.3)	6.0 (2.7)
5.0	36:1	25 (11)	5	12	25 (2.8)	0.24 (0.173)	22 (0.16)	20 (0.13)	0.67 (0.3)	6.0 (3.6)
6.0	180:1	150 (68)	3	10	40 (4.5)	0.16 (0.112)	22 (0.16)	20 (0.13)	0.91 (0.42)	8.0 (2.7)
6.0	90:1	150 (68)	3	10	40 (4.5)	0.20 (0.132)	22 (0.16)	20 (0.13)	0.91 (0.42)	8.0 (3.6)
6.0	45:1	150 (68)	5	12	40 (4.5)	0.29 (0.204)	22 (0.16)	20 (0.13)	0.91 (0.42)	8.0 (3.6)
8.0	180:1	150 (68)	3	10	40 (4.5)	0.24 (0.163)	28 (0.19)	25 (0.18)	2.23 (1.01)	15.0 (6.8)
8.0	90:1	150 (68)	3	10	40 (4.5)	0.66 (0.459)	28 (0.19)	25 (0.18)	2.23 (1.01)	15.0 (6.8)
8.0	36:1	150 (68)	5	12	40 (4.5)	0.90 (0.642)	28 (0.19)	25 (0.18)	2.30 (1.05)	15.0 (6.8)
10.0	180:1	200 (90)	3	10	190 (21.5)	0.74 (0.530)	33 (0.22)	30 (0.21)	5.26 (2.30)	29.0 (13.1)
10.0	90:1	200 (90)	3	10	190 (21.5)	1.02 (0.734)	33 (0.22)	30 (0.21)	5.26 (2.30)	29.0 (13.1)
10.0	45:1	200 (90)	5	12	190 (21.5)	2.13 (1.53)	33 (0.22)	30 (0.21)	5.26 (2.30)	29.0 (13.1)
12.0	180:1	200 (90)	3	10	190 (21.5)	0.99 (0.713)	33 (0.22)	30 (0.21)	7.67 (3.49)	32.0 (14.5)
12.0	90:1	200 (90)	3	10	190 (21.5)	1.59 (1.12)	33 (0.22)	30 (0.21)	7.67 (3.49)	32.0 (14.5)
12.0	45:1	200 (90)	5	12	190 (21.5)	3.83 (2.75)	33 (0.22)	30 (0.21)	7.67 (3.49)	32.0 (14.5)

NOTE: For moment load calculations, refer to the technical section of Parker's web site www.parkermotion.com

Rotary Encoder Option:

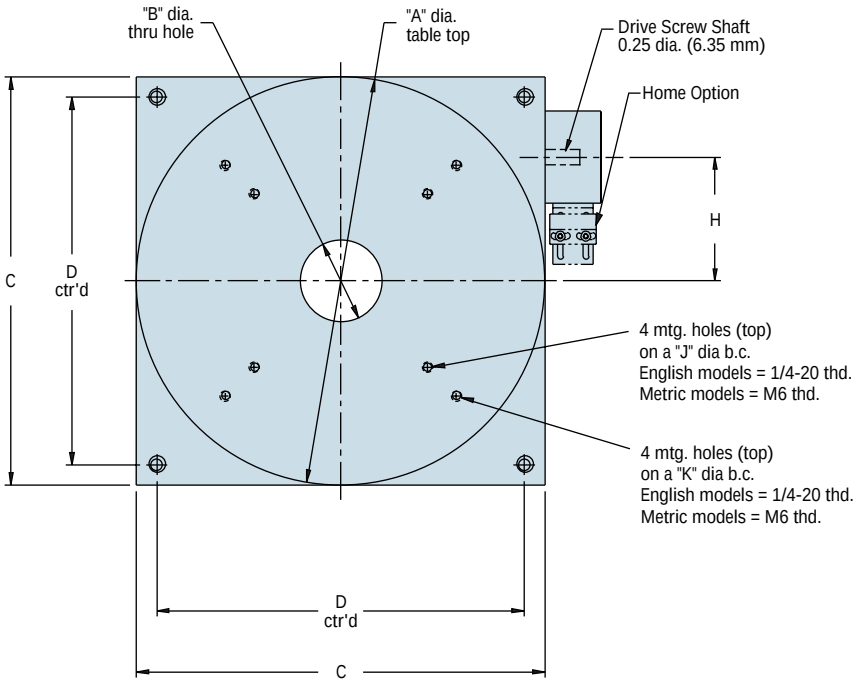
High resolution, high accuracy ring encoders can be mounted to the base of the rotary table. The encoder is coupled directly to the rotary table top, providing positional feedback with no drive train errors. 314,880 or 3,148,800 post quadrature counts per revolution are available, and an encoder housing is included to enclose and protect the encoder.

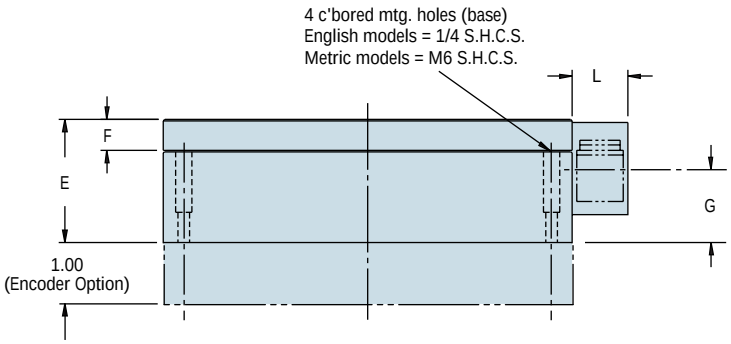


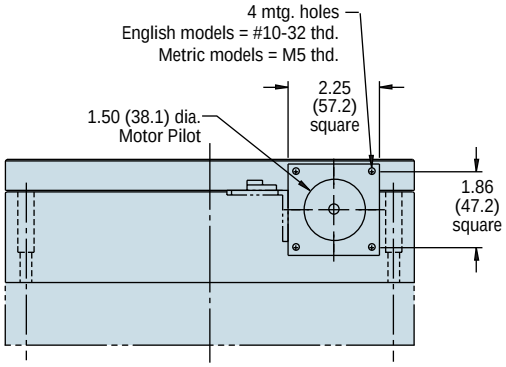
High Performance Direct Drive Rotary Tables

Parker's DM1004 direct drive brushless servo motor tables offer high throughput precision indexing. Refer to Section A of this catalog for complete information.

200RT Series Dimensions inch (mm)







	A	B	C	D	E		F		G	H	J	K	L
					Std. (T2)	Option (T3)	Std. (T2)	Option (T3)					
English	5.0	1.0	5.0	4.0	1.8	2.42	0.38	1.00	1.11	1.66	3.0	4.0	1.38
	6.0	1.75	6.0	5.0	2.0	2.62	0.38	1.00	1.23	2.04	4.0	5.0	1.38
	8.0	1.75*	8.0	6.0	2.5	3.00	0.50	1.00	1.57	2.04	4.0	6.0	1.38
	10.0	2.0	10.0	9.0	3.0	3.25	0.75	1.00	1.81	3.03	6.0	8.0	1.38
	12.0	2.0	10.0	9.0	3.0	3.25	0.75	1.00	1.81	3.03	8.0	10.0	2.38
Metric	127.0	25.4	127.0	100	46.0	61.5	9.6	25.0	28.1	42.1	75	100	35
	152.4	44.5	152.4	125	50.8	66.5	9.6	25.0	31.4	51.8	100	125	35
	203.2	44.5*	203.2	175	63.5	76.2	12.7	25.0	39.8	51.8	100	150	35
	254.0	50.8	254.0	225	76.2	82.6	19.0	25.0	45.9	76.9	150	200	35
	304.8	50.8	254.0	225	76.2	82.6	19.0	25.0	45.9	76.9	200	250	60.4

*On the 8.0" (203,2) diameter table with 36:1 ratio, this dimension is 1.0" (25,4).

200RT Series How to Order

Order Example

2	08	01	RT	M	S	H1	C1	M1	E1	T1

Model Series

	2

Table Diameter

5 in 125 mm	05
6 in 150 mm	06
8 in 200 mm	08
10 in 250 mm	10
12 in 300 mm	12

Gear Ratio

180:1 (Avail. on all dia.)	01
90:1 (Avail. on all dia.)	02
45:1 (Avail. on 6", 10" and 12" dia. only)	04
36:1 (Avail. on 5" and 8" dia. only)	05

Table Style

	RT

Mounting

English	E
Metric	M

Grade

Standard Grade	S
Precision Grade	P

Home

No Home Switches	H1
Magnetic Home Switches	H2

Motor Coupling

No Coupling	C1	
0.25 in Bore, Helix, Aluminum	C2	
0.25 in Bore, Helix, Stainless Steel	C3	(Not Available on 205 Model)
0.25 in Bore, Bellows, required for precision grade	C4	
0.375 in Bore, Helix, Aluminum	C5	
0.375 in Bore, Helix, Stainless Steel	C6	(Not Available on 205 Model)
0.375 in Bore, Bellows, required for precision grade	C7	

Motor Mount

23 Frame Size	M1

Encoder

No Encoder	E0
Ring Encoder - 314,880 post quad. counts/rev.	E8
Ring Encoder - 3,148,800 post quad. counts/rev.	E9

Table Top

No Top	T1
Standard Top	T2
Oversized Top (Raises height to clear NEMA 23 Motor)	T3

In addition to the precision tables previously described in this section, Parker also offers additional products which enhance the overall capability of this product family. The table products shown are offered to expand performance features of the group, and are used extensively as the mechanical subsystem in OEM applications. The motor, drive and controls are presented to increase awareness of Parker's electrical subsystems which are incorporated into the control element of a system. Detailed information and specifications pertaining to these mechanical and electrical subsystems can be found at www.parkermotion.com

406LN Square Rail Linear Tables

The 406LNs are proven performers where aggressive acceleration and exceptional accuracy are required in moving light to heavy loads over travels up to 24 inches. They have been the tables of choice for OEMs and integrators involved with semiconductor processing, PCB staking, and part insertion. They can be provided with or without linear encoder feedback, and are ready for direct hook-up with NEMA 23 or 34 frame size motors.

Features:

Travel Range:	24 inches
Load Capacity:	600 pounds
Maximum Speed:	12 in./sec.
Duty Cycle:	100%
Repeatability:	+/-0.00005 in.
Drive Type:	Ground ballscrew

Low Profile X-Y Inspection Positioners

These two axis units provide a very low profile (under 2 inches) making them ideal for height restricted applications such as microscope inspection. They have a square rail bearing system and precision ballscrew drive and have been utilized in other applications including wafer inspection and handling, mask & die inspection, and cell counting & analysis.

Features:

Travel Range:	12 in x 12 in
Load Capacity:	30 pounds
Maximum Speed:	10 in./sec.
Duty Cycle:	100%
Repeatability:	+/-0.00008 in.
Drive Type:	Ground ballscrew

500ET, 500ST Round Rail Tables

Are low-cost, multi-functional linear tables for applications having a load requirement of 200 lb or less. With a round rail bearing system, rolled ballscrew drive and either hard cover or bellows protection, the 500ET and 500ST tables are well suited for industrial and automation applications. Applications include parts transfer, cutoff machines, part loading, fluid dispensing, and light duty machining.

Features:

Travel Range:	60 inches
Load Capacity:	200 pounds
Maximum Speed:	25 in./sec.
Duty Cycle:	100%
Repeatability:	+/-0.0006 in.
Drive Type:	Rolled Ballscrew

500PD Round Rail Tables

The 500PD combines a round rail bearing system with a steel reinforced timing belt drive to high speed linear translation up to 120 in/sec and positional repeatability of +/- 0.004 inches. They have been utilized by OEMs for uses in part transfer, pick-and-place, and high speed scanning.

Features:

Travel Range:	60 inches
Load Capacity:	200 pounds
Maximum Speed:	120 in./sec.
Duty Cycle:	100%
Repeatability:	+/-0.004 in.
Drive Type:	Belt

Motors, Drives and Controls

Aries Digital Drives provide a robust and cost-effective servo drive by power matching the drive with the application requirements. Unlike the competition, the Aries family is designed with an open architecture in mind, so it can also be configured for use with any manufacturer's motion controller. Offered solely in a drive only configuration, the Aries provides a great value.

- 4 power levels available
- 120/240VAC input
- 20 MHz (post-quadrature) encoder input
- Sinusoidal commutation with hall sensors ensure proper phase shifting
- Integrated encoder feedback ensures precise positioning
- Approvals: UL compliant, CE for LVD, CE for EMC
- +/-10 V torque control for use with any controller with a standard analog command output. Step and direction input available as an option.
- Standard high-density D-sub connectors for easy connectivity in any system
- Simplified tuning and configuration with easy to use front-end software
- Compact Design
- Status/fault LED indicators to confirm proper operation

The **ACR1505** is Parker's PCI Bus performance leader. The ACR1505 is a half-slot PCI card capable of operating four axes of servo or stepper motion control with four encoder inputs at up to 30 MHz (post-quadrature). The ACR1505, with its 120 Mega Floating Point Operations per Second (MFLOPS), brings new levels of performance to the OEM marketplace. The ACR1505 can be equipped with eight analog inputs using 12- or 16-bit analog-to-digital converters for general purpose inputs or for closing a servo loop. Other ACR variants are available providing additional axes of control, or expanded I/O. All of the ACR products use the same system software and programming language; this assures users complete flexibility when upgrading hardware while maintaining investments in program development.

The revolutionary **6K Controller** is an embedded motion controller or stand-alone motion controller built into one convenient package. The 6K is a multi-axis motion controller capable of solving basic to complex motion control applications including: pick-and-place, packaging, following, cam profiling and hundreds of others. The 6K utilizes Ethernet communications to allow high speed connections to many different products such as PLCs, HMIs, I/O modules and vision systems.