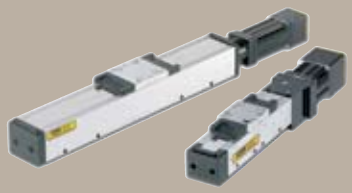
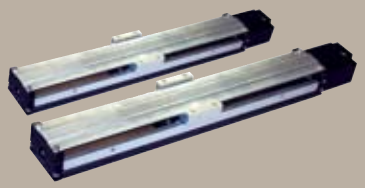
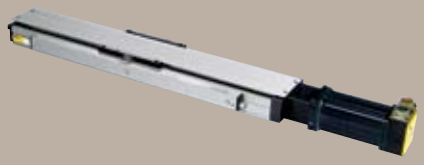
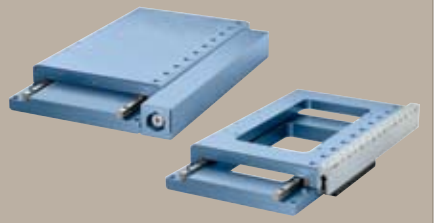
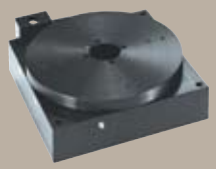










Screw Driven
automation tables

Precise multi-axis positioning systems play an integral part in today's semiconductor, computer peripheral, solar power, flat panel, life sciences, lab automation, 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 forty 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.

Contents

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)

Product Comparisons: Parker high-precision screw driven tables are divided into families (or groups) which are distinguished by the primary bearing style and precision. 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.

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

400XR Series Precision Linear Positioners

Page 34-63

The key attributes of the XR Series Positioners are high strength, long travel range, and high precision utilizing square rail technology. These tables can satisfy the vast majority of high-precision positioning applications in high-technology markets.

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

XRS Cartesian Systems

Page 64-69

Utilizing our standard and precision XR series positioning tables, Parker has developed the XRS family of Cartesian systems. These systems offer broad range of scalability, a unique mix of technology, and a rugged long lasting product.

Travel Range: 300 x 300 mm to 1000 x 600 x 150 mm
Load Capacity: 25 kg
Maximum Speed: 2 m/s on one axis
Duty Cycle: 100%
Repeatability: ±6 to ±50 micron per axis

402/403XE Series Ballscrew Positioners

Page 70-79

The steel base constructed 402/403XE series offers rigid compact positioning for the cost conscious motion applications. A highly integrated ballscrew, bearing retainer system results in a very low overall height and high payload capacities.

Travel Range: 655 mm
Load Capacity: 160 kg
Maximum Speed: 0.8 m/s
Duty Cycle: 100%
Repeatability: ±5 µm

HD Series Industrial Linear Positioners

Page 90-111

By incorporating a deep channel design, coupled with a belt seal and industrial grade ballscrews, the HD series offers an economical solution for industrial positioning. Perfect for use in many industries from packaging to liquid dispensing, the HD series is a robust, rigid, industrial grade positioner, without the precision of the XR, for a lower cost.

Travel Range: 2 m
Load Capacity: 1470 kg
Maximum Speed: 1.5 m/s
Duty Cycle: 100%
Repeatability: ±8 µm

404XE Series Series Ballscrew Positioners

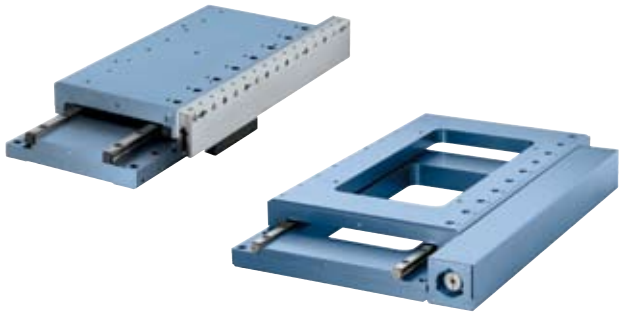
Page 80-89

The 404XE is an economy version of the 404XR. This product is ideal for applications where the precision of the XR is not needed, but the wide flat stance of the XR family benefits the application details.

Travel Range: 700 mm
Load Capacity: 125 kg
Maximum Speed: 1.4 m/s
Duty Cycle: 100%
Repeatability: ±30 µm

Ultra Series Precision Stages

Page 112-127

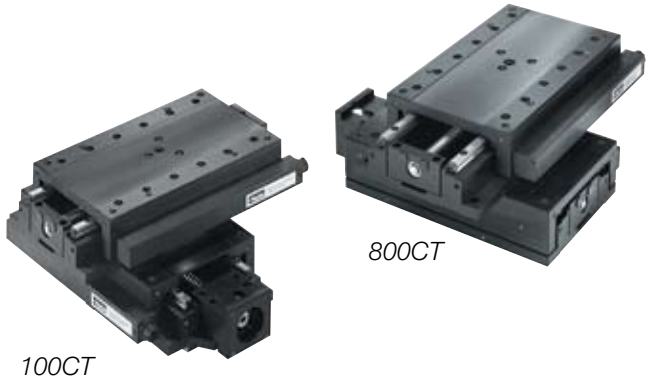


The Ultra Series features precision cross roller bearings, an optional open frame design, and lead screw, ballscrew, or linear motor drive options.

Travel Range: 0.5 m
Load Capacity: 2187 kg
Maximum Speed: 1.5 m/s
Duty Cycle: 100%
Repeatability: ±0.5 µm

100CT & 800CT Series Ballscrew Positioners

Page 128-133



800CT

100CT

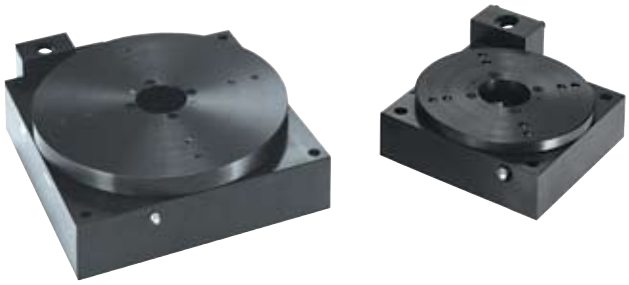
These tables offer ultra-smooth highly precise motion and positioning. They are much stronger – providing higher load carrying capability and offer a 100% duty cycle.

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

200RT Series Rotary Tables

Page 134-137

Rotary Tables provide continuous motor driven rotary

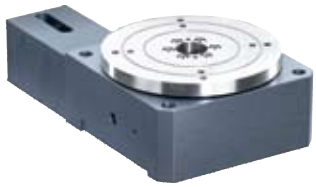


motion and precise positioning. They are offered in 5, 6, 8, 10, and 12 inch diameters. Their low profile and light weight make them ideal indexing units for multi-axis combination with high-precision linear tables.

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

R Series Worm Drive Rotary Tables

Page 138-141



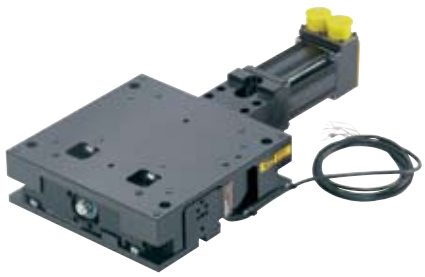
- Unique self-compensating preload to limit backlash
- Solid or thru bore construction
- Robust bearing design for high-load capacity
- Built-in limit switches
- Aluminum construction with stainless steel top plate

The Rotary Stage Series offers an unparalleled combination of high accuracy and high-load capacity. These rotary stages utilize a precision worm gear with the worm “flexed” against the gear to ensure a proper mesh. This feature provides high repeatability with very smooth operation. Additionally, the rotary stages incorporate an oversized preloaded cross roller bearing, offering exceptional stiffness and load capacity.

Travel Range: continuous
Load Capacity: 600 kg
Maximum Speed: 30 RPM
Duty Cycle: 50%
Repeatability: 12 arc-sec

ZP200 Vertical Lift “Wedge” Stages

Page 142-145



The ZP200 is a unique vertical lift stage providing up to 25 mm lift with no horizontal translation in a small package. The ZP200 uses ballscrew technology and a square rail bearing design.

Travel Range: 25 mm
Load Capacity: 75 kg
Maximum Speed: 0.4 m/s
Duty Cycle: 100%
Repeatability: ±3 µm

Additional Capabilities

Page 146-150

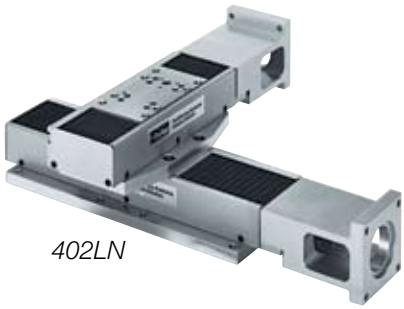
These pre-engineered tables are utilized primarily by OEMs for requirements which exceed Parker's standard catalog offering. They include high-precision square rail units, belt driven round rail units, heavy duty cross roller units, and high-speed rotary units.

An overview of these products is provided at the end of this section. Visit our website at **www.parkermotion.com** for complete specifications on these products, PDF data sheets and CAD drawing downloads.

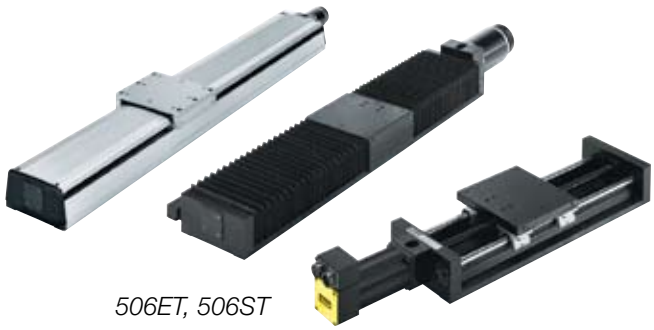
100BT

300AT

Motor Drives and Controls
(See pages 281-295)



402LN



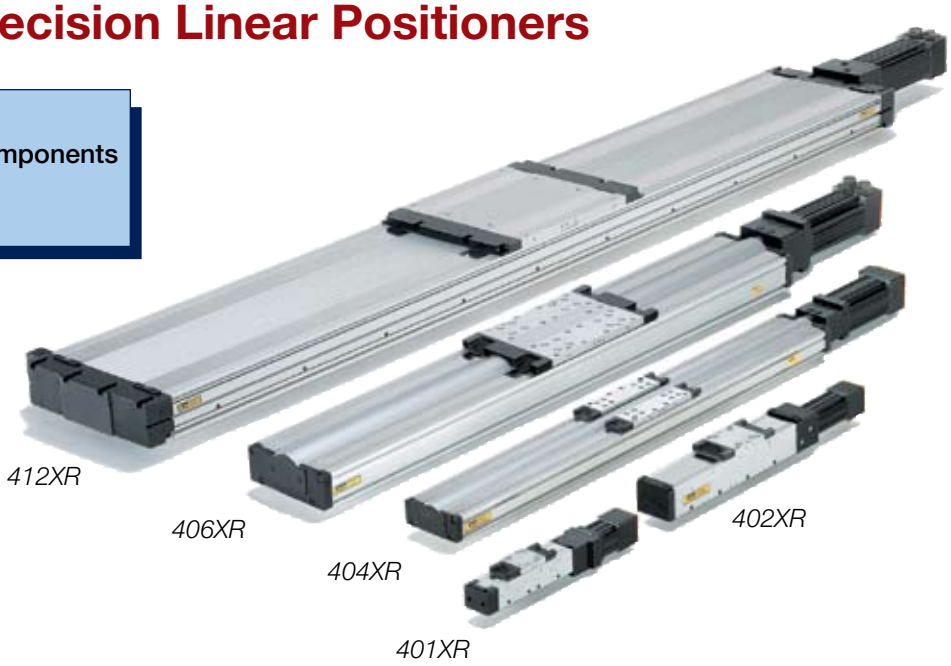
506ET, 506ST

406LN

400ST

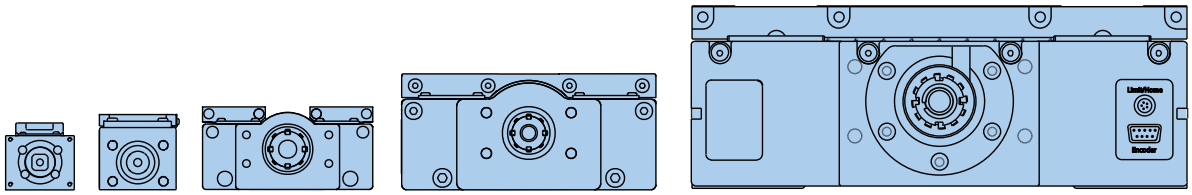
400XR Series Precision Linear Positioners

- Pre-engineered package
- Performance matched components
- Environmental protection
- Laser certified precision



Typical Enhancements

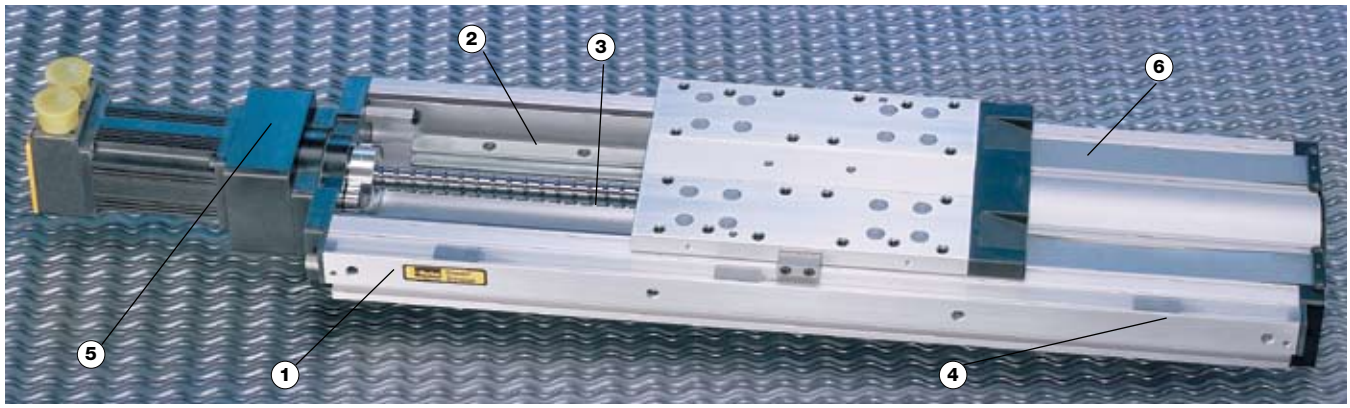
- Limit/home position sensors
- Linear encoder feedback
- Cleanroom preparation
- Multi-axis brackets & adapters
- Selectable motor mounts
- Servo motors and drives
- Programmable controls
- Cable management system



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 industries such as life sciences, fiber optics and instrumentation, 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 precision multi-axis systems.

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



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/Home Sensors

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

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

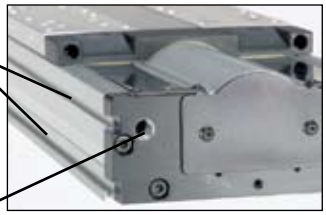
The linear encoder option offers direct positional feedback of the carriage location. The rotary shaft encoder couples directly to the drive shaft to nullify any incurred mechanical error (particularly useful with the parallel motor mount). Not shown.

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.



Positive Pressure Port

A standard port (1/8 NPT) for pressurizing the interior to prevent particle intrusion. (Standard on 404XR, 406XR, 412XR units.)

Easy Lube System

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

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 at **1.800.245.6903**

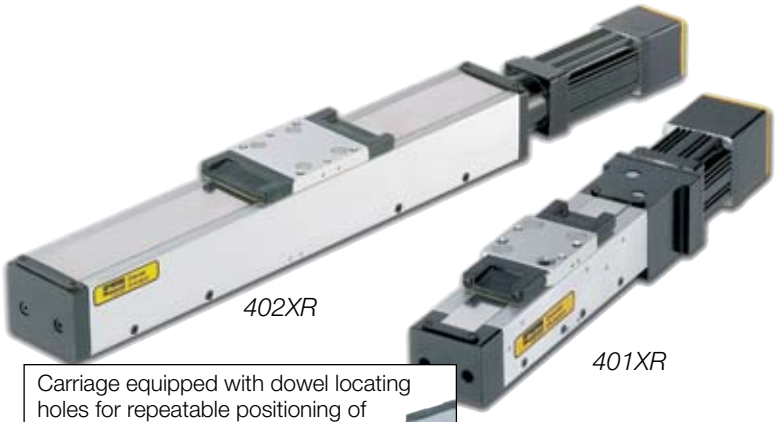
401XR and 402XR Specifications

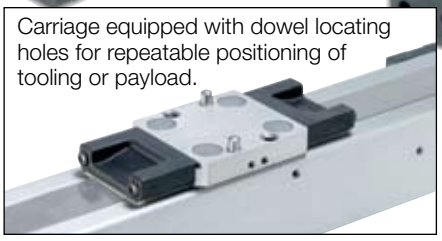
401XR (41 mm wide profile)

402XR Series (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.

Common Specifications

		Precision*		Standard	
		401XR	402XR	401XR	402XR
Bidirectional Repeatability					
2 mm lead	µm	±1.3	–	±5	–
5 or 10 mm lead		±1.3	±1.3	±12	±12
Duty Cycle	%	100	100	100	100
Maximum Acceleration	m/sec² (in/sec²)	20 (773)	20 (773)	20 (773)	20 (773)
Normal Load Capacity (1)	kgf (lbs)	50 (110)	100 (220)	50 (110)	100 (220)
Axial Load Capacity (1)					
2 mm lead	kgf (lbs)	5.5 (12.1)	–	5.5 (12.1)	–
5 or 10 mm lead		15.5 (34.2)	38 (84)	15.5 (34.2)	38 (84)
Drive Screw Efficiency	%	80	80	80	80
Maximum Breakaway Torque	Nm (in-oz)	0.03 (4.2)	0.086 (12.0)	0.03 (4.2)	0.086 (12.0)
Maximum 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					
2 mm lead	mm	6	–	6	–
5 or 10 mm lead		8	12	8	12
Carriage Weight	kg (lbs)	0.045 (0.1)	0.11 (0.25)	0.045 (0.1)	0.11 (0.25)

* Requires linear encoder option E3 or E4. (1) Refer to life load charts found later in this section. (2) Ratings established at 2 rps.

Travel/Screw Lead Dependent Specifications

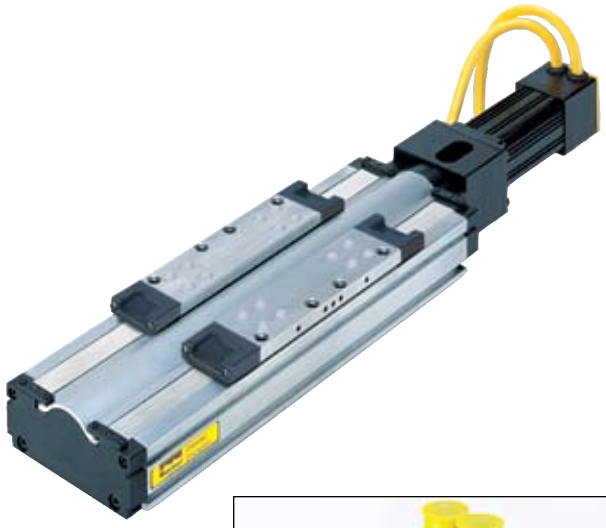
Travel (mm)	Positional Accuracy* (µm)				Straightness & Flatness		Input Inertia (10^{-5} kg-m²)				Max Screw Speed (revs/sec)		Unit Weight (kg)	
	401XR		402XR				401XR		402XR					
	Precision	Standard	Precision	Standard	401XR	402XR	2 mm	10 mm	5 mm	10 mm	401XR	402XR	401XR	402XR
50	10	20	–	–	20	–	0.6	–	–	–	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)

The 404XR is a sleek compact positioner (47.3 x 95 mm profile) capable of carrying 170 kg loads up to a distance of 700 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.



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

Common Specifications

		Precision	Standard
Bidirectional Repeatability (5)	µm	±1.3	±3
Duty Cycle			
Ballscrew	%	100	100
Leadscrew		–	75
Maximum Acceleration	m/sec² (in/sec²)	20 (773)	20 (773)
Normal Load Capacity (1)	kgf (lbs)	170 (375)	170 (375)
Axial Load Capacity (2)			
Ballscrew	kgf (lbs)	90 (198)	90 (198)
Leadscrew		–	25 (55)
Drive Screw Efficiency			
Ballscrew	%	90	90
Leadscrew		30	30
Maximum Breakaway Torque	Nm (in-oz)	0.13 (18)	0.18 (26)
Maximum 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)

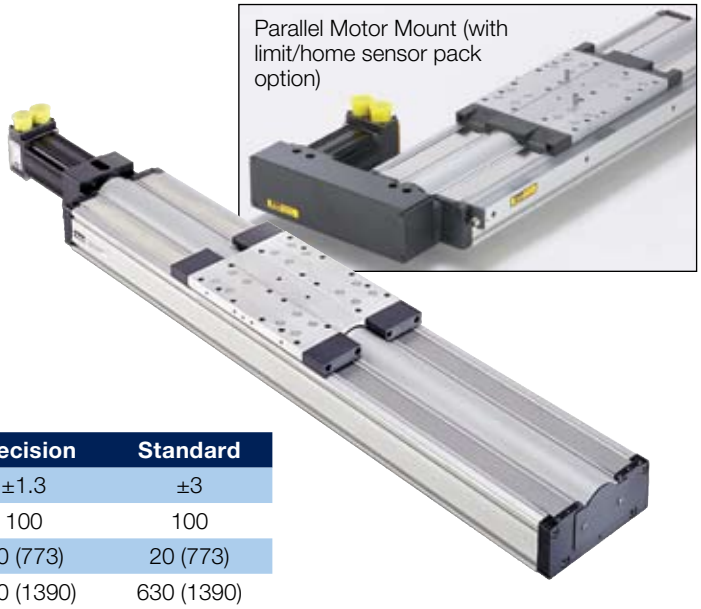
(1) Refer to life load charts found later in this section.
(2) Axial load for parallel mount is limited by a maximum input torque of 25 Nm.
(3) Ratings established at 2 rps.
(4) Positional accuracy applies to in-line motor configurations only. Contact factory for parallel motor specifications.
(5) Consult factory for specifications with linear encoder.
(6) Consult factory for higher screw speeds.

Travel/Screw Lead Dependent Specifications

Travel (mm)	Positional Accuracy (4) (5) (µm)		Straightness & Flatness	Input Inertia (10^{-5} kg-m²)			Max Screw Speed (6) (revs/sec)	Unit Weight (kg)
	Precision	Standard		5 mm	10 mm	20 mm		
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

406XR Series (150 mm wide profile)

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 Specifications

		Precision	Standard
Bidirectional Repeatability (5)	µm	±1.3	±3
Duty Cycle	%	100	100
Maximum Acceleration	m/sec² (in/sec²)	20 (773)	20 (773)
Normal Load Capacity (1)	kgf (lbs)	630 (1390)	630 (1390)
Axial Load Capacity (2) 0 to 600 mm Travel 700 to 2000 mm Travel	kgf (lbs)	90 (198) –	90 (198) 200 (440)
Drive Screw Efficiency	%	90	90
Maximum Breakaway Torque 0 to 600 mm Travel 700 to 2000 mm Travel	Nm (in-oz)	0.13 (18) –	0.18 (26) 0.39 (55)
Maximum Running Torque (3) 0 to 600 mm Travel 700 to 2000 mm Travel	Nm (in-oz)	0.11 (16) –	0.17 (24) 0.34 (48)
Linear Bearing Coefficient of Friction		0.01	0.01
Ballscrew Diameter 0 to 600 mm Travel 700 to 2000 mm Travel	mm	16 –	16 25
Carriage Weight	kg (lbs)	2.7 (5.94)	2.7 (5.94)

(1) Refer to life load charts found later in this section.
(2) Axial load for parallel mount is limited to: 140 lbs for the 5, 10 and 20 mm lead drives:
104 kg (230 lbs) for 25 mm lead drives
(3) Ratings established at 2 rps.
(4) Positional accuracy applies to in-line motor configurations only. Contact factory for parallel motor specifications.
(5) Consult factory for specifications with linear encoder.
(6) Consult factory for higher screw speeds.

Travel/Screw Lead Dependent Specifications

Travel (mm)	Positional Accuracy (4) (5) (µm)		Straightness & Flatness	Input Inertia (10^{-5} kg-m²)				Max Screw Speed (6) (revs/sec)	Unit Weight (kg)
	Precision	Standard		5 mm	10 mm	20 mm	25 mm		
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

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.

Common Specifications

		Standard	
Screw Lead	mm	5, 10, 25	32
Bidirectional Repeatability (4)	µm	±5	±5
Duty Cycle	%	100	100
Maximum Acceleration	m/sec² (in/sec²)	20 (773)	20 (773)
Normal Load Capacity (1)	kg (lbs)	1470 (3241)	1470 (3241)
Axial Load Capacity	kg (lbs)	200 (441)	460 (1014)
Drive Screw Efficiency	%	90	80
Maximum Breakaway Torque	Nm (in-oz)	0.61 (86)	0.76 (108)
Maximum Running Torque (2)	Nm (in-oz)	0.55 (78)	0.69 (98)
Linear Bearing Coefficient of Friction		0.01	0.01
Ballscrew Diameter	mm	25	32
Carriage Weight	kg (lbs)	12 (27)	13 (28)

(1) Refer to life load charts found later in this section.
(2) Ratings established at 2 rps.
(3) Positional accuracy applies to in-line motor configurations only. Contact factory for parallel motor specifications.
(4) Consult factory for specifications with linear encoder.
(5) Consult factory for higher screw speeds.

Travel/Screw Lead Dependent Specifications

Travel (mm)	Positional Accuracy (3) (4) (µm)	Straightness & Flatness	Input Inertia (10^{-5} kg-m²)				Max Screw Speed (5) (revs/sec)		Unit Weight (kg)	
			5 mm	10 mm	25 mm	32 mm	5, 10, 25 mm	32 mm	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

400XR Series Life/Load

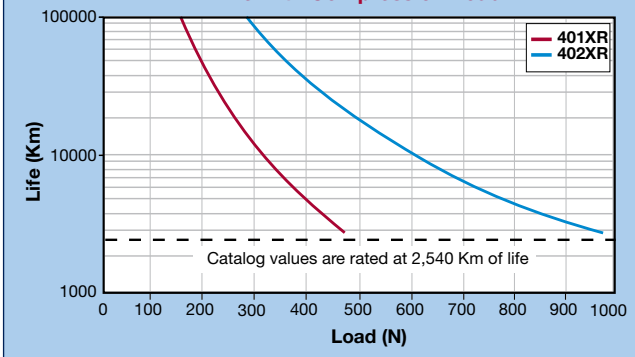
The following performance information is provided as a supplement to the product specifications pages. The following graphs are used to establish the table life relative to the applied loads. The useful life of a linear table at full catalog specifications is dependent on the forces acting upon it. These 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. ***Catalog load specifications are rated for 100 million inches of travel or 2,540 km.***

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 at www.parkermotion.com.

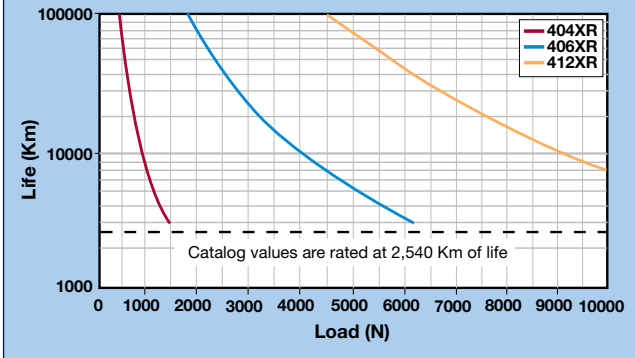
Normal Load (Compression)

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.

Life with Compression Load



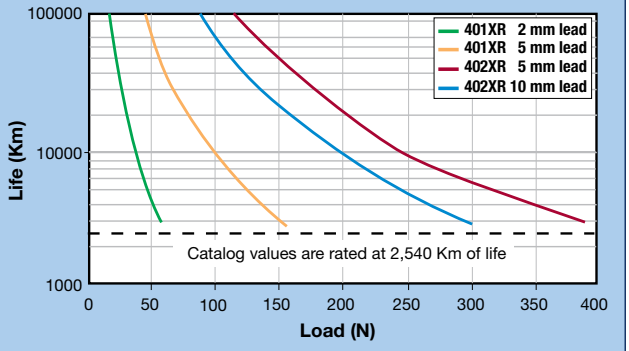
Life with Compression Load



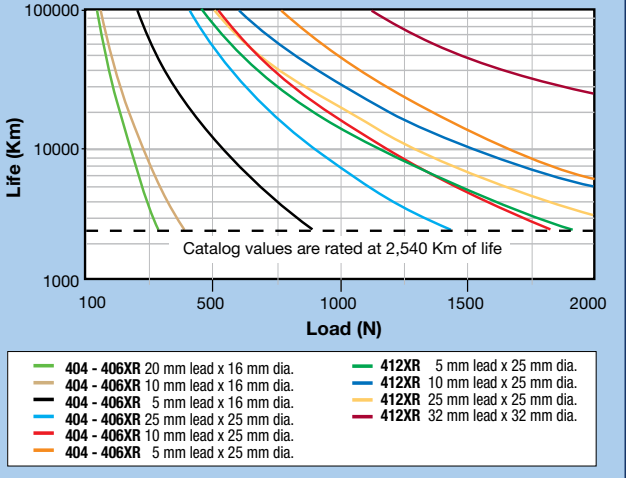
Axial Load (Thrust)

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

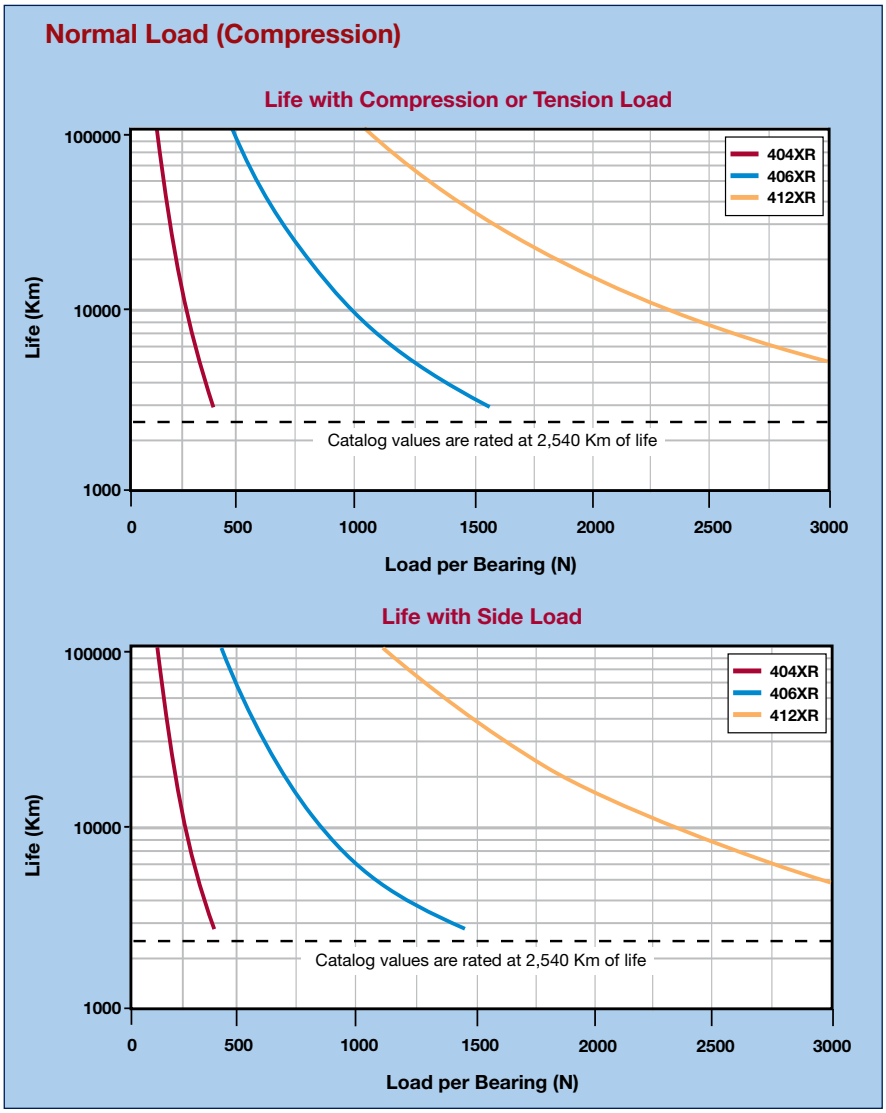
Thrust Load



Thrust Load



400XR Series Bearing Life/Load*



**For 401XR and 402XR moment loading capacities, please refer to the maintenance manual.*

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

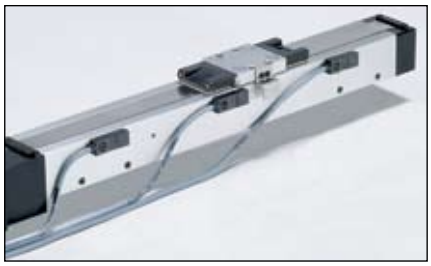
	d1	d2	da
404XR	80	57	28
406XR	114	90.3	42.5
412XR	205	192	43

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

Home or Limit Sensor Options

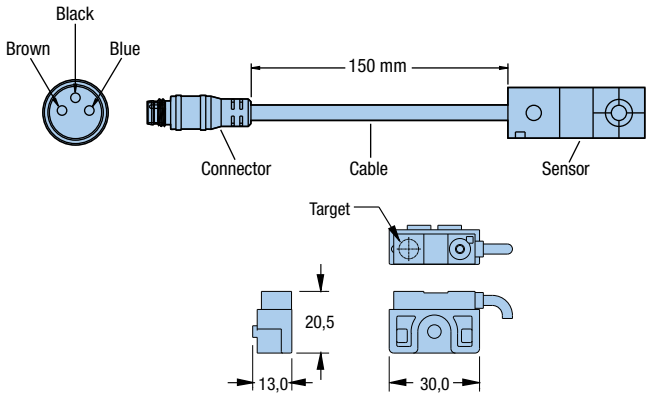
End of Travel and Home Sensors for the 400XR series are available in a variety of styles. The sensors can be ordered as part of the table or as separate components with the associated mounting hardware or in an enclosed sensor pack. A 5 meter high-flex extension cable (Part No. 003-2918-01) is included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



401XR Limits and Home Sensor

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



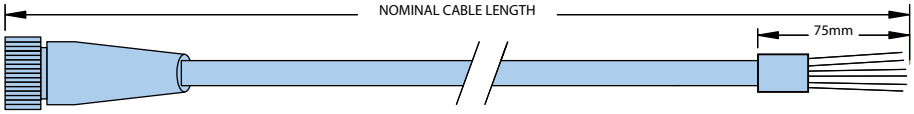
Sensor / Bracket Detail

Order Code	Part Number*	Switch Type	Logic	Cable Length	Connector Option
H2 or L2	006-1639-01	N.C.	Sinking	3.0 m	Flying Leads
H3 or L3	006-1639-02	N.O.	Sinking	3.0 m	Flying Leads
H4 or L4	006-1639-03	N.C.	Sourcing	3.0 m	Flying Leads
H5 or L5	006-1639-04	N.O.	Sourcing	3.0 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
H11 or L11	See chart below	N.C.	Sinking	See chart below	Sensor Pack
H12 or L12	See chart below	N.O.	Sinking	See chart below	Sensor Pack
H13 or L13	See chart below	N.C.	Sourcing	See chart below	Sensor Pack
H14 or L14	See chart below	N.O.	Sourcing	See chart below	Sensor Pack

* Applies to 401XR thru 406XR models. 412XR models have limits and homes internally mounted with a connector termination. Sensor triggers (targets) ordered separately.

Sensor Pack Cable

406XR with Limit and Home Sensor Pack



Description	Part Number
3 Meters	006-1742-01
7.5 Meters	006-1742-02

Wire Color	Function	Pin Number
Red	+5 to +24 VDC	A
Blue	Limit 1 (LXR –)	B
Orange	Limit 2 (LXR +)	C
Green	Home	D
Black	Ground	E
Green/Yellow	Shield	Shield Case

Linear Encoder Options (Tape Scale)

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

Specifications	
Input Power	5 VDC, 150mA
Output	A/B quadrature and reference mark, differential line drive output
Resolution	1.0, 0.5, 0.1 micron
Cable Length	3 m

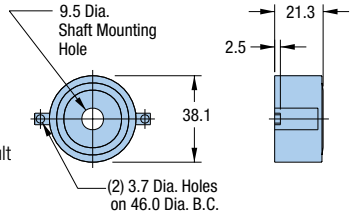
401XR with Linear Encoder plus Sensor Pack

Rotary Encoder Option

Modular rotary encoder couples directly to the drive screw for position feedback and is easily field installed. The rotary encoder cannot be installed with the brake assembly option.

- 5000 counts/rev

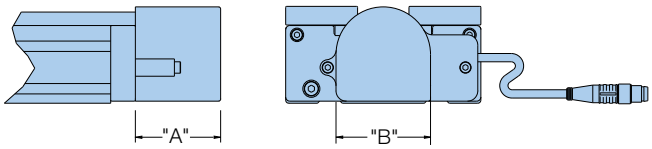
Note: Dimensions shown apply to 404XR and 406XR models. Consult factory for 412XR dimensions.



Specifications	
Input Power	5 VDC, 135 mA
Output	A/B quadrature and reference mark, differential line drive output
Resolution	1250 lines/rev equals 5000 counts post quadrature (1 µm with 5 mm lead ballscrew)
Cable Length	150 mm

Brake Assembly Option

Electromagnetic brake assembly used to prevent "backdriving" in vertical applications. The brake option includes a 5 m extension cable. The brake option is easily field installed. The brake option cannot be installed with the rotary encoder option.



404XR with Brake Option

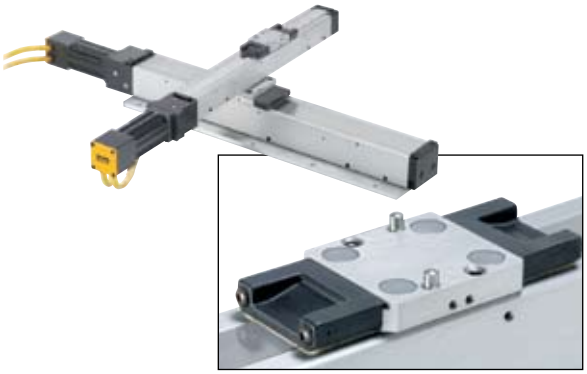
Table Series	Part Number	Input Power	Holding Torque	Dimensions (mm) A	Dimensions (mm) B
401XR/402XR	—	—	—	—	—
404XR	006-1627-01	24 VDC, 0.46 A	2.0 Nm	41.5	46.0
406XR	006-1656-01	24 VDC, 0.5 A	4.5 Nm	49.9	57.5
412XR	002-1916-01	24 VDC, 0.75 A	9.0 Nm	54.0	72.0

Dowel Pinning Options*

Standard dowel pin locating holes are offered on most 400XR units to facilitate repeatable mounting of tooling or payload.*

In addition, pinning options 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 or 50 mm travel 404XR.



Two locating dowel pins shown in carriage

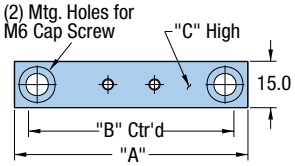
400XR Series Accessories

Riser Plate Accessory

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

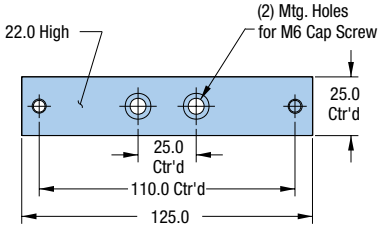
Model	Part Number
401XR	002-2063-01
402XR	002-2064-01
404XR	002-3619-01
406XR	002-3625-01
412XR	—

401XR/402XR
Part Number: 002-2063-01/ 002-2064-01

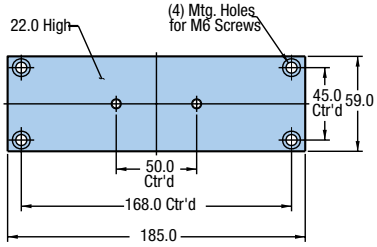


	Dimensions (mm)		
Table Series	A	B	C
401XR	65.0	50.4	17.0
402XR	90.0	75.4	10.0

404XR
Part Number: 002-3619-01



406XR
Part Number: 002-3625-01

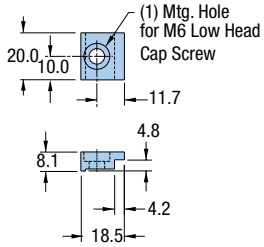


Toe Clamp Accessory

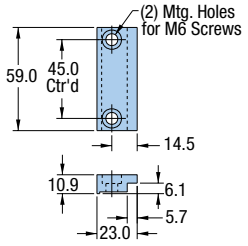
Used for convenient outboard mounting of table to a base plate, riser plates, Z-axis bracket, or other 400XR table. All hardware is included.

Model	Part Number
404XR	002-3618-01
406XR	002-3624-01
412XR	002-2160-01

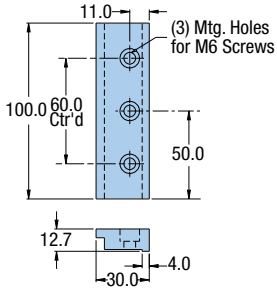
404XR
Part Number: 002-3618-01



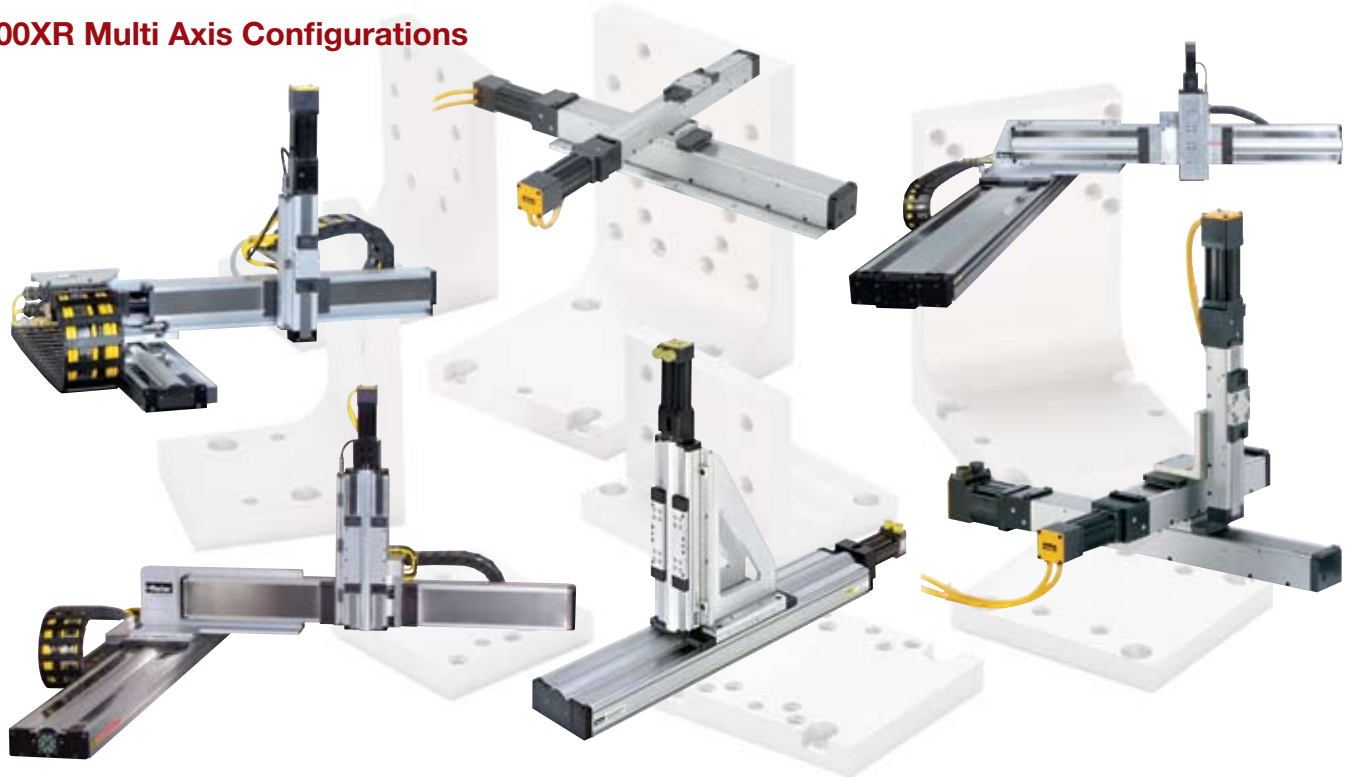
406XR
Part Number: 002-3624-01



412XR
Part Number: 002-2160-01



400XR Multi Axis Configurations



Base Axis (X) *	Orientation	Second Axis (Y or Z)* 401XR 50 mm	401XR >50 mm	402XR	404XR	404LXR	406XR	406LXR	412XR 412LXR	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 404LXR	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	002-2162-02	002-2162-02	002-2162-02	—	—	—	—	—	—
	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 406LXR	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 412LXR	X-Y	—	—	—	Direct Mount* or Toe Clamp	Direct Mount* or Toe Clamp	Direct Mount* or Toe Clamp	Direct Mount* or Toe Clamp	100-6784-01	—
	X-Y Cartesian	—	—	—	—	—	002-2164-01	002-2164-01	—	—
ZP 200 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.
If the Y-axis is 404XR with 50 mm stroke, a special plate or toe clamp option is required.

400XR Multi Axis Configurations

These diagrams show the most popular variations of multi-axis configurations. Both standard and custom brackets are available. Standard X-Y orientation will place the X axis motor at the 6 o'clock position and the Y axis motor at the 3 o'clock position.

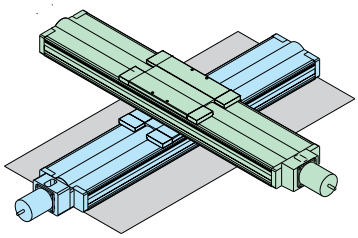


Figure 1
Two Axis (X-Y) Horizontal Mounting

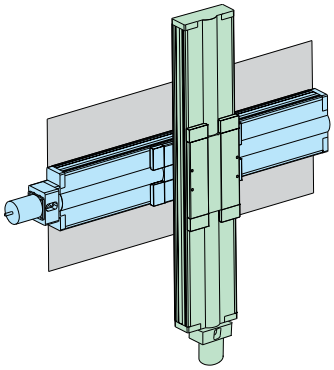


Figure 2
Two Axis (X-Z) Vertical Mounting

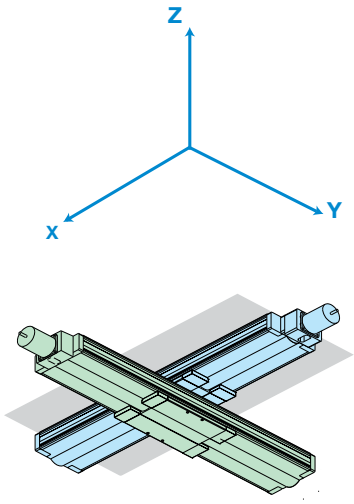


Figure 3
Two Axis (X-Y) Inverted Mounting

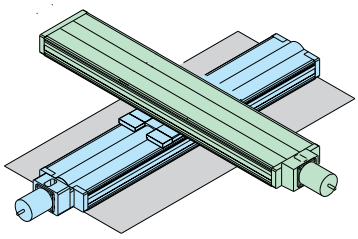


Figure 4
Two Axis-Carriage to Carriage (Y Axis Inverted)

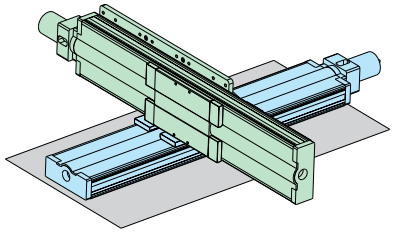


Figure 5
Two Axis (X-Y) Cartesian Horizontal Mounting

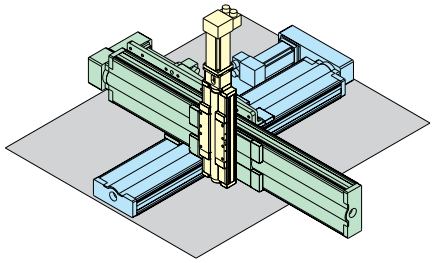


Figure 6
Three Axis (X-Y-Z) Cartesian Horizontal Mounting

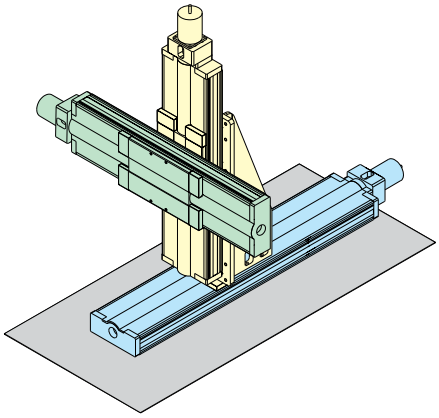


Figure 7
Three Axis (X-Z-Y) Horizontal Mounting

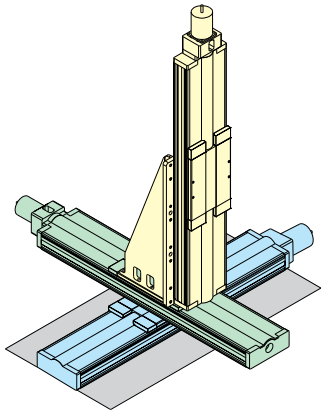


Figure 8
Three Axis (X-Y-Z) Horizontal Mounting

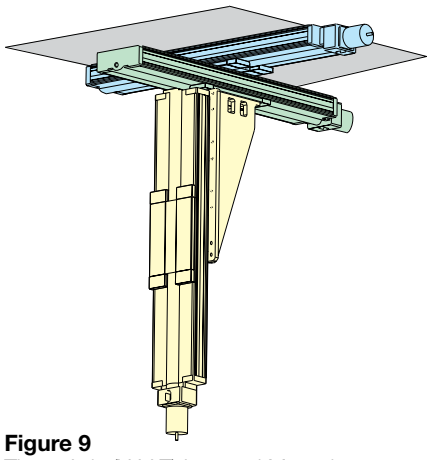
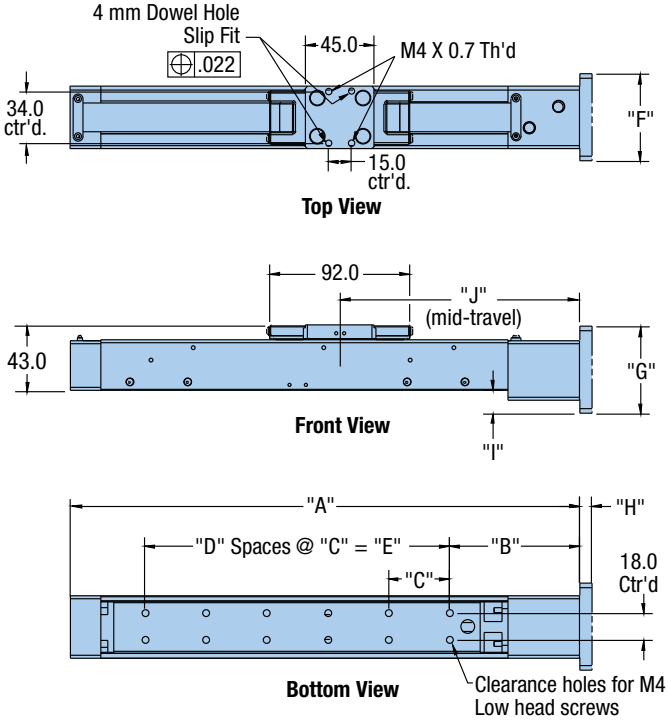


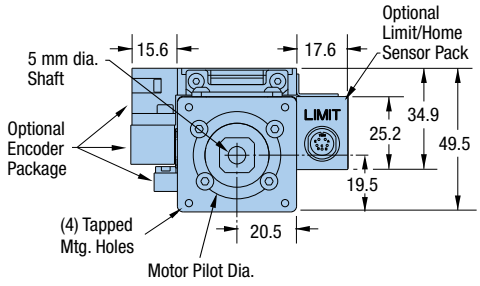
Figure 9
Three Axis (X-Y-Z) Inverted Mounting

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

401XR Dimensions

Dimensions (mm)





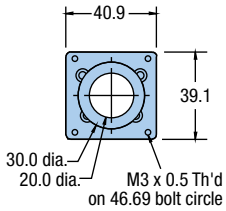
Enlarged End View
(with Encoder and Limit/Home Sensor Pack Option)

Model	Travel (mm)	Dimensions (mm) A	B	C	D	E	J
401050XR	50	209.3	82.8	80.0	1	80.0	123.0
401100XR	100	284.3	80.3	40.0	4	160.0	160.0
401150XR	150	334.3	85.3	40.0	5	200.0	185.0
401200XR	200	384.3	90.3	40.0	6	240.0	210.0
401300XR	300	509.3	92.8	40.0	9	360.0	260.0

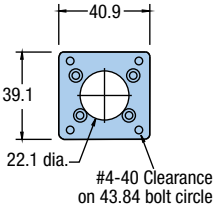
Motor Size	Order Code	Dimensions (mm) F	G	H	I
SM 16	M2	40.9	39.1	–	6.5
NEMA 23/SM 23	M3	57.2	57.2	4.0	15.6
NEMA 17	M37	40.9	39.1	–	6.5
BE 23	M61	57.2	57.2	8.0	15.6

In-Line Motor Adapters

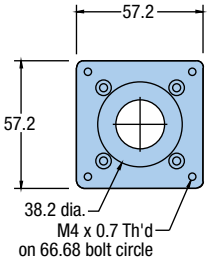
Used to easily accommodate the mounting of different servo or stepper motors.



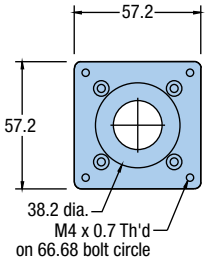
SM 16



NEMA 17



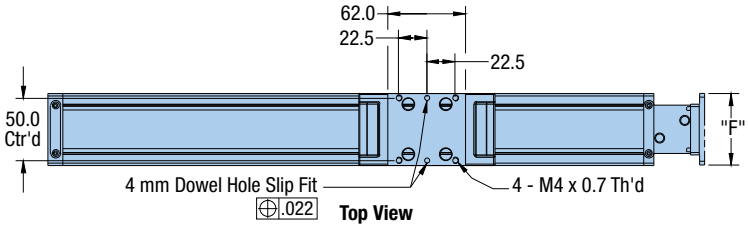
SM 23 or NEMA 23



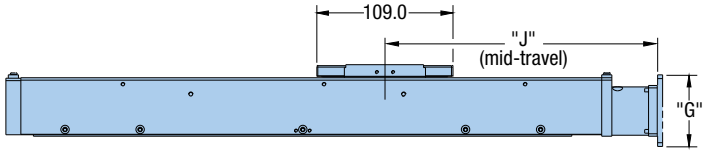
BE 23

402XR Dimensions

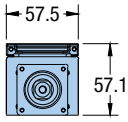
Dimensions (mm)



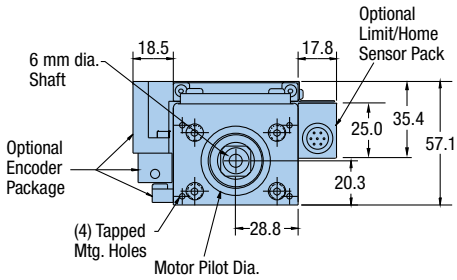
Top View



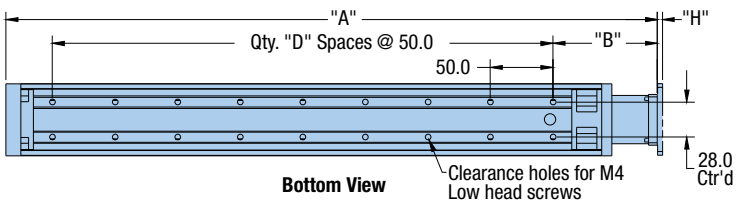
Front View



End View



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



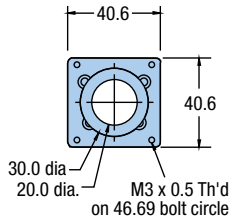
Bottom View

Model	Travel (mm)	Dimensions (mm) A	B	D	J
402100XR	100	320.5	83.5	4	184.0
402150XR	150	370.5	83.5	5	214.0
402200XR	200	420.5	83.5	6	234.0
402300XR	300	520.5	83.5	8	284.0
402400XR	400	620.5	83.5	10	334.0
402600XR	600	820.5	83.5	14	434.0

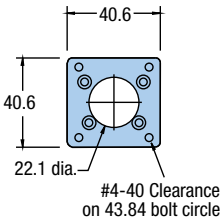
Motor Size	Order Code	Dimensions (mm) F	G	H
SM 16	M2	40.6	40.6	–
NEMA 23/SM 23	M3	57.2	57.2	4.0
NEMA 17	M37	40.6	40.6	–
BE 23	M61	57.2	57.2	8.0

In-Line Motor Adapters

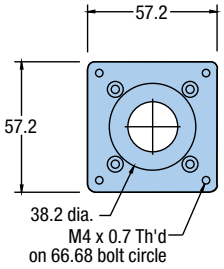
Used to easily accommodate the mounting of different servo or stepper motors.



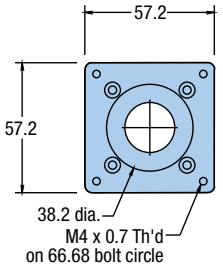
SM 16



NEMA 17



SM 23 or NEMA 23



BE 23

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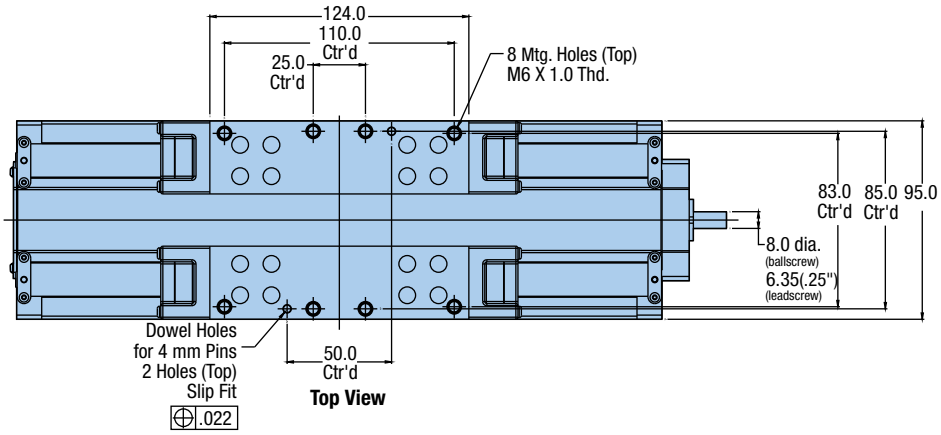
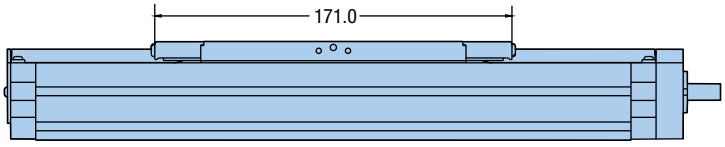
404XR Dimensions

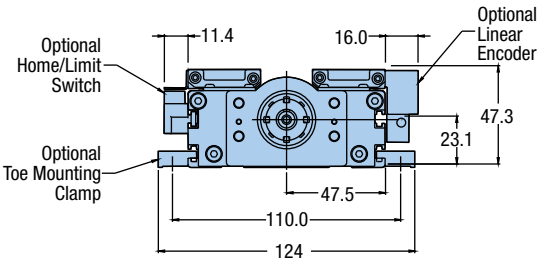
Dimensions (mm)



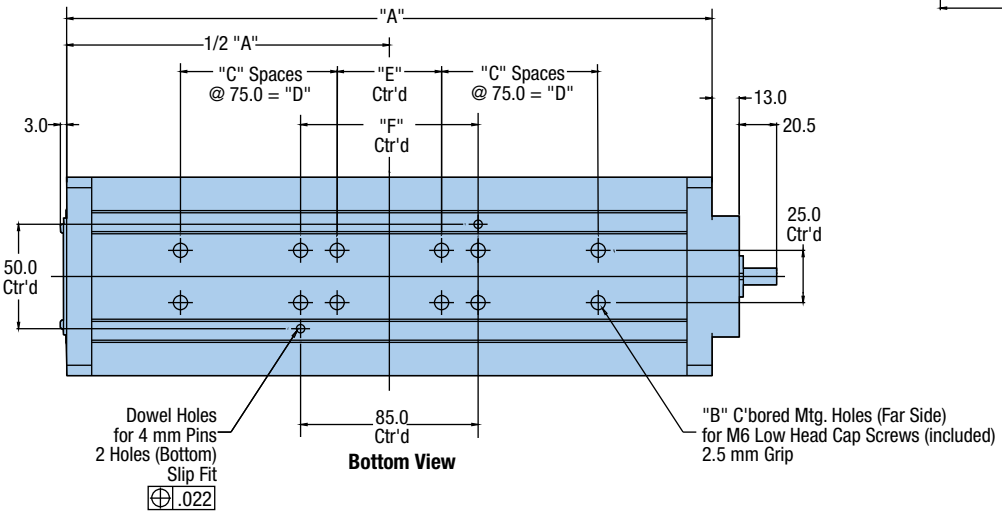
Top View



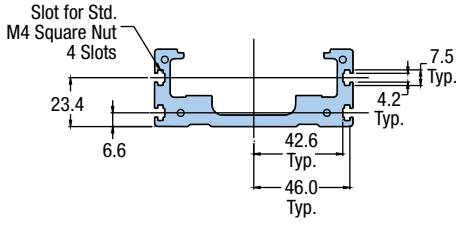
Front View



End View



Bottom View



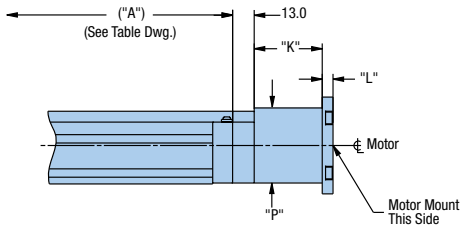
View showing slots in extruded base

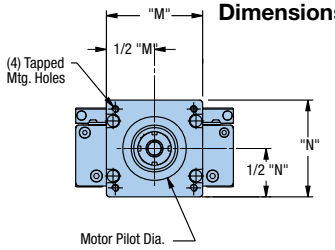
Model	Travel (mm)	Dimensions (mm) A	B	C	D	E	F
404050XR	50	259	4	–	–	–	–
404100XR	100	309	12	1	75.0	50.0	85.0
404150XR	150	359	12	1	75.0	50.0	85.0
404200XR	200	409	12	1	75.0	50.0	85.0
404250XR	250	459	16	2	150.0	50.0	85.0
404300XR	300	509	16	2	150.0	50.0	85.0
404350XR	350	559	16	2	150.0	50.0	85.0
404400XR	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 In-Line Motor Mounting

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

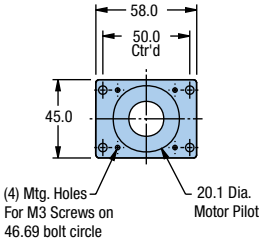
Used to easily accommodate the mounting of different frame sizes. These adapter plates can be ordered separately by part number below.



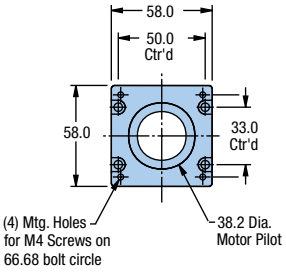


Dimensions (mm)

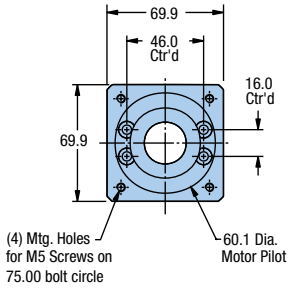
Motor Size	Order Code	Max. Motor Shaft Ø	K	L	M	N	P
SM 16	M2	9.5	41.0	4.3	53.0	45.0	45.0
NEMA 23	M3	9.5	41.0	6.5	83.0	58.0	45.0
NEMA 34	M4	9.5	41.0	12.5	83.0	83.0	45.0
NEO 70	M21	11.0	53.0	–	69.9	69.9	69.9



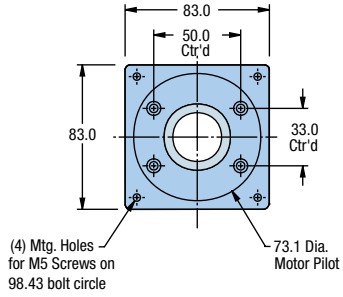
SM 16



NEMA 23



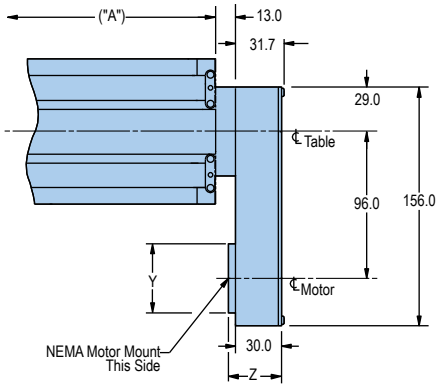
NEOMETRIC 70/SMN060



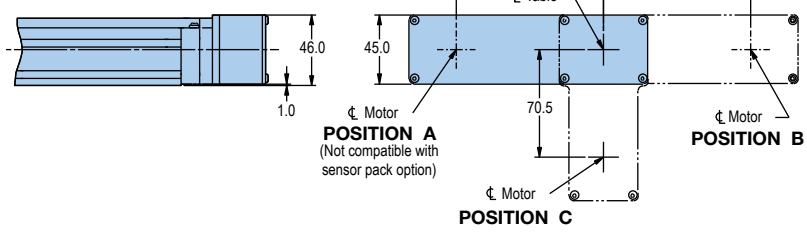
NEMA 34

404XR Parallel Motor Mounting

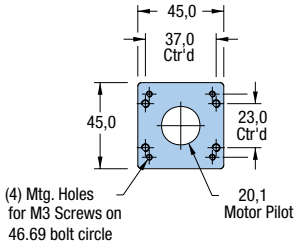
Parallel motor mounting is employed whenever a shorter overall unit length is needed. The motor is positioned along the sides or bottom of the table as designated by position A, B, or C. (No coupling required.)



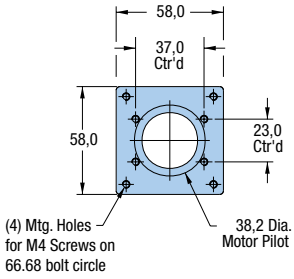
Motor Size	Dimensions Y (mm)	Z (mm)	Motor Shaft Ø
SM 16	45.0	34.5	0.250"
SM 23/BE 23	58.0	34.5	0.375"
NEMA 23	58.0	34.5	0.250"



SM 16



NEMA 23



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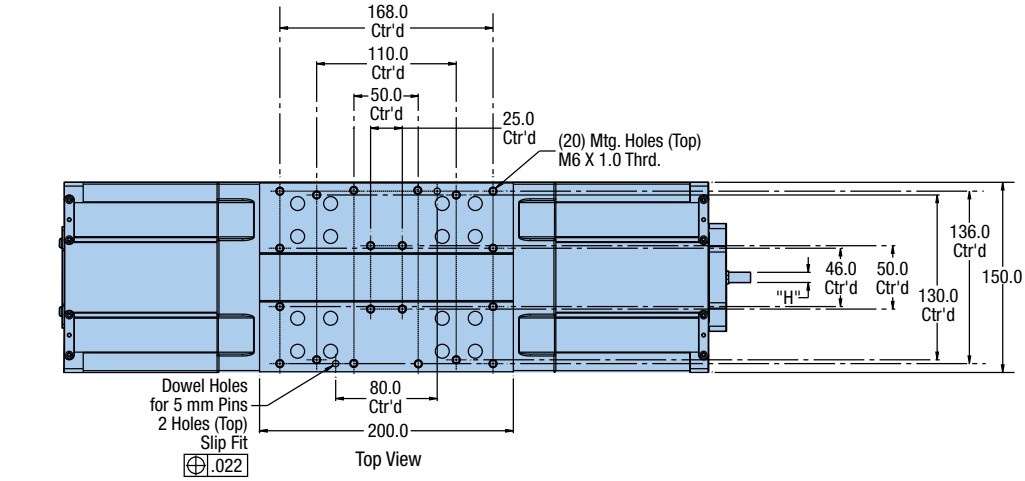
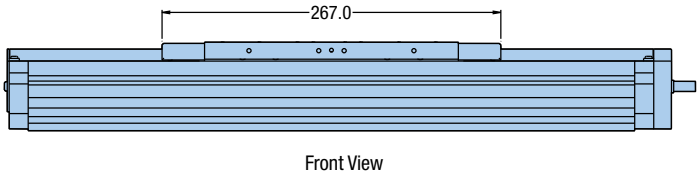
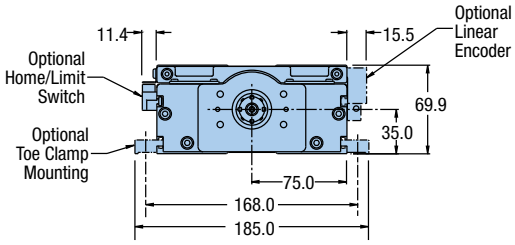
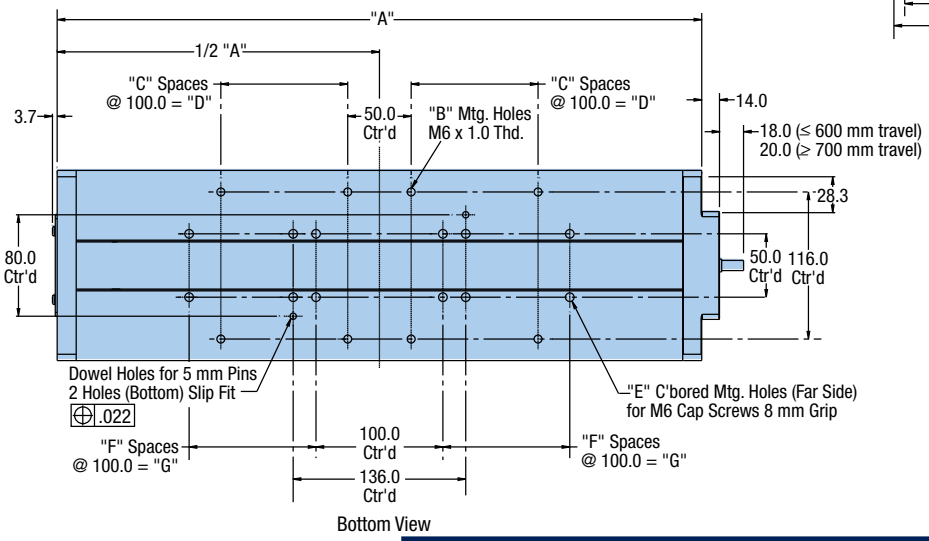
406XR Dimensions

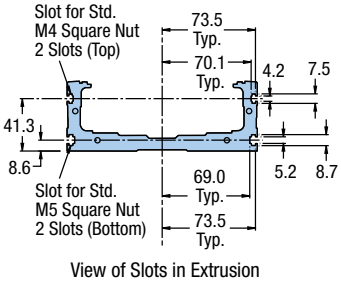
Dimensions (mm)











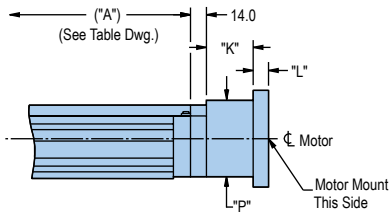
View of Slots in Extrusion

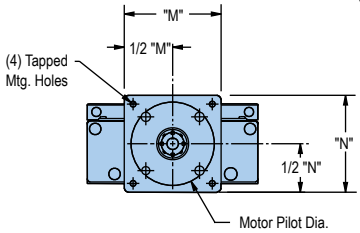
Model	Travel (mm)	Ballscrew Ø	Dimensions (mm) A	B	C	D	E	F	G	H
4060100XR	100	16	408	8	1	100.0	12	1	100.0	8.0
4060200XR	200	16	508	8	1	100.0	12	1	100.0	8.0
4060300XR	300	16	608	12	2	200.0	16	2	200.0	8.0
4060400XR	400	16	708	12	2	200.0	16	2	200.0	8.0
4060500XR	500	16	808	16	3	300.0	20	3	300.0	8.0
4060600XR	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	2050	25	2308	44	10	1000.0	48	10	1000.0	10.0

406XR In-Line Motor Mounting

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

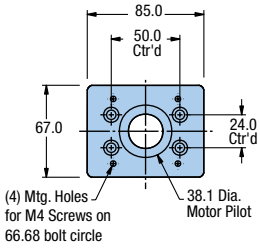
Used to easily accommodate the mounting of different frame sizes. These adapter plates can be ordered separately by part number below.



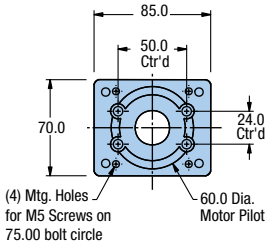


Dimensions (mm)

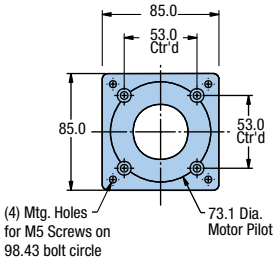
Motor Size	Order Code	Max. Motor Shaft Ø	Dimensions (mm) K	L	M	N	P
MPP092	M90	16.0	53.0	12.5	92.0	92.0	69.0
NEMA 23/SM 23	M3	9.5	41.0	–	85.0	67.0	67.0
NEMA 34	M4	16.0	53.0	13.5	85.0	85.0	70.0
NEO 34	M17	16.0	53.0	13.5	85.0	85.0	70.0
NEO 70	M21	16.0	53.0	–	85.0	70.0	70.0
NEO 92	M29	16.0	53.0	12.5	92.0	92.0	70.0



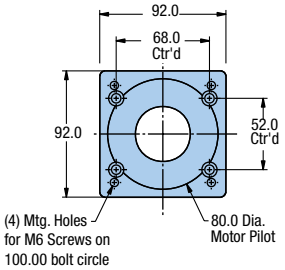
NEMA 23 or SM 23



NEO 70 / SMN060



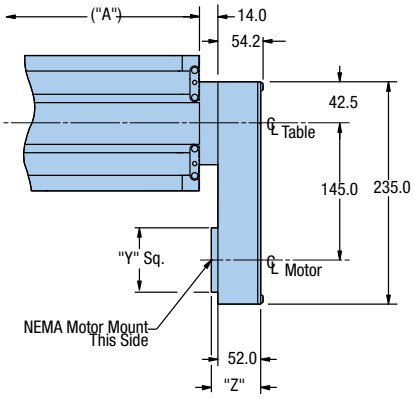
NEMA 34 or NEO 34

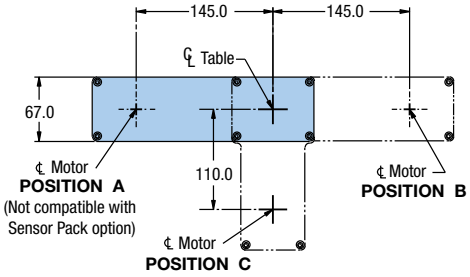


MPP092

406XR 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.)





Motor Size	Dimensions Y (mm)	Z (mm)	Motor Shaft Ø
MPP092	92.0	65.7	16.0 mm
NEMA 34	83.0	62.0	0.375”
NEO 34	83.0	62.0	0.500”
NEO 70	70.0	60.0	11.0 mm
SM23/BE23	70.0	57.5	0.375”

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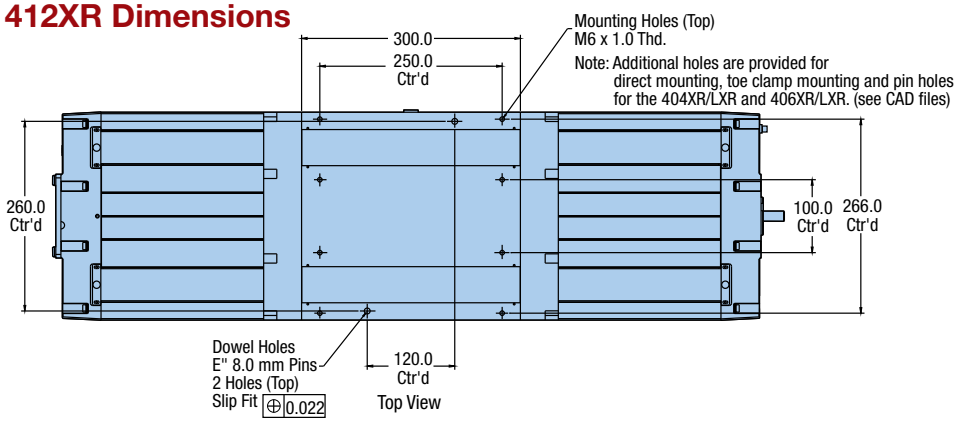
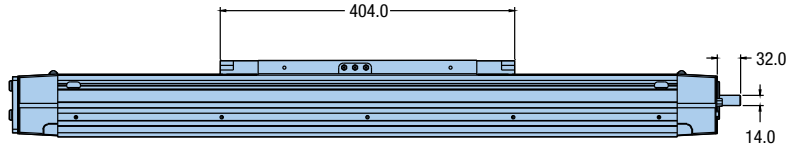
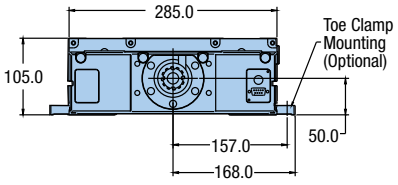
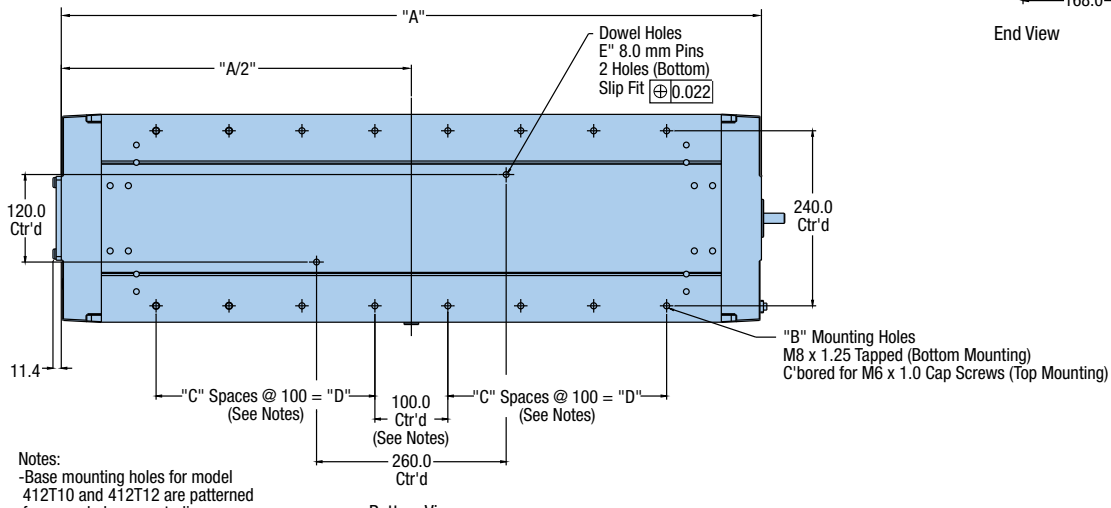
412XR Dimensions

Dimensions (mm)

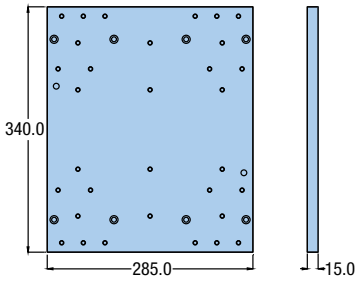








Notes:
-Base mounting holes for model 412T10 and 412T12 are patterned from one hole on centerline



X-Y Adapter Plate #100-6784
(Used to mount any 404XR, 406XR or 412XR with toe clamps)

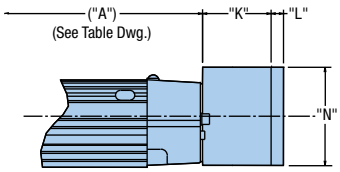
Model	Travel (mm)	Dimensions (mm) A	B	C	D
412T01	150	764	12	2	200
412T02	250	864	16	3	300
412T03	350	964	16	3	300
412T04	650	1264	24	5	500
412T05	800	1414	24	5	500
412T06	1000	1614	28	6	600
412T07	1200	1814	32	7	700
412T08	1500	2114	40	9	900
412T09	1750	2364	44	10	1000
412T10	2000	2614	50	12	1200

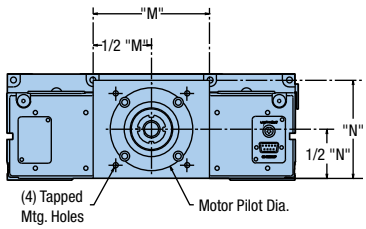
412XR In-Line Motor Mounting

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

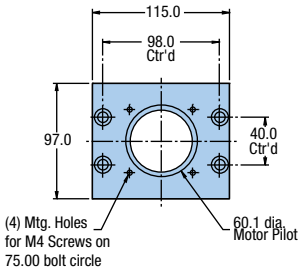
Used to easily accommodate the mounting of different frame sizes. These adapter plates can be ordered separately by part number below.

Dimensions (mm)

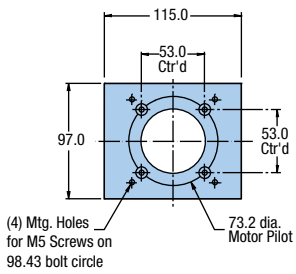




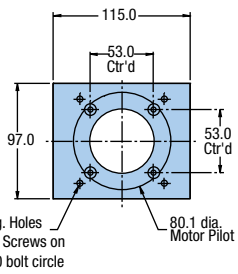
Motor Size	Order Code	Dimensions (mm) K	L	M	N
MPP092	M90	68.0	12.0	115.0	97.0
M105, SMN100	M33	100.0	–	115.0	115.0
NEMA 34	M4	68.0	12.0	115.0	97.0
NEO 34	M17	68.0	12.0	115.0	97.0
NEO 70	M21	68.0	–	115.0	97.0
NEO 92	M29	68.0	12.0	115.0	97.0



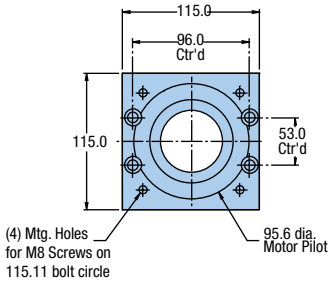
NEO 70 / SMN060



NEMA 34 or NEO 34



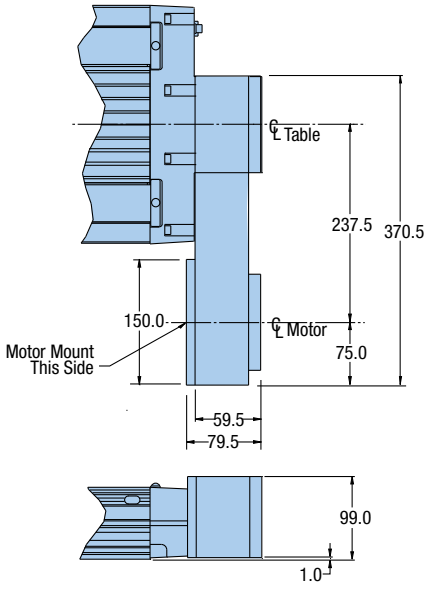
MPP092



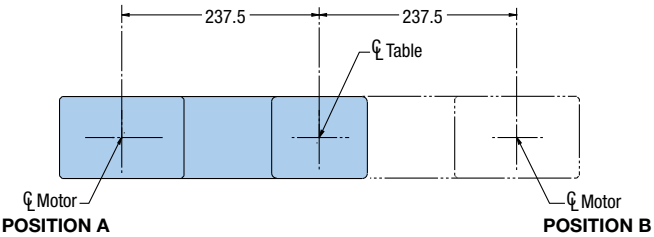
M105 / SMN100

412XR 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.)



Motor Size	Dimensions Bolt Circle (mm)	Pilot Ø (mm)	Shaft Ø
MPP092	100.0	80.0	16.0 mm
NEMA 34	98.4	73.2	0.375”
NEO 34	98.4	73.2	0.500”
NEO 70	75.0	60.1	11.0 mm
NEO 92	100.0	80.1	14.0 mm



POSITION A **POSITION B**

401XR Ordering Information

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

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
Order Example:	401	100	XR	M	S	D9	H3	L2	C3	M2	E2	R1

① Series *

401

② Travel – mm *

050	50
100	100
150	150
200	200
300	300

③ Model

XR	Linear Table

④ Mounting

M	Metric

⑤ Grade

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

⑥ Drive Screw *

D3	10 mm Lead
D9	2 mm Lead

⑦ Home Sensor **

H1	None
H2	N.C. Current Sinking Flying Leads
H3	N.O. Current Sinking Flying Leads
H4	N.C. Current Sourcing Flying Leads
H5	N.O. Current Sourcing Flying Leads
H6	N.C. Current Sinking Locking Connector
H7	N.O. Current Sinking Locking Connector
H8	N.C. Current Sourcing Locking Connector
H9	N.O. Current Sourcing Locking Connector
H11	N.C. Current Sinking Sensor Pack
H12	N.O. Current Sinking Sensor Pack
H13	N.C. Current Sourcing Sensor Pack
H14	N.O. Current Sourcing Sensor Pack

⑧ Limit Sensor **

L1	None
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

⑨ Motor Coupling

C1	No Coupling
C2	6.3 mm (0.25 in) Bore Oldham
C3	6.3 mm (0.25 in) Bore Bellows
C5	9.5 mm (0.375 in) Bore Bellows
C24	5 mm (0.20 in) Bore Oldham
C25	5 mm (0.20 in) Bore Bellows

⑩ Motor Mount

M2	SM 16 In-Line Mounting
M3	NEMA 23 In-Line Mounting
M37	NEMA 17 In-Line Mounting
M61	BE 23 In-Line Mounting

⑪ Encoder Option

E1	None
E2	1.0 µm Resolution
E3	0.5 µm Resolution
E4	0.1 µm Resolution

⑫

R1	Required Designator

*** Drive Screw Lead Availability**

Travel	401XR	
	2 mm	10 mm
50	•	
100	•	
150	•	
200		•
300		•

**** 50 mm stroke 401XR may only allow room for 2 sensors in sensor pack.**

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

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
Order Example:	402	100	XR	M	S	D9	H3	L2	C3	M2	E2	R1

① Series *

402

② Travel – mm *

100	100
150	150
200	200
300	300
400	400
600	600

③ Model

XR	Linear Table

④ Mounting

M	Metric

⑤ Grade

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

⑥ Drive Screw *

D2	5 mm Lead
D3	10 mm Lead

⑦ Home Sensor

H1	None
H2	N.C. Current Sinking Flying Leads
H3	N.O. Current Sinking Flying Leads
H4	N.C. Current Sourcing Flying Leads
H5	N.O. Current Sourcing Flying Leads
H6	N.C. Current Sinking Locking Connector
H7	N.O. Current Sinking Locking Connector
H8	N.C. Current Sourcing Locking Connector
H9	N.O. Current Sourcing Locking Connector
H11	N.C. Current Sinking Sensor Pack
H12	N.O. Current Sinking Sensor Pack
H13	N.C. Current Sourcing Sensor Pack
H14	N.O. Current Sourcing Sensor Pack

⑧ Limit Sensor

L1	None
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

⑨ Motor Coupling

C1	No Coupling
C2	6.3 mm (0.25 in) Bore Oldham
C3	6.3 mm (0.25 in) Bore Bellows
C4	9.5 mm (0.375 in) Bore Oldham*
C5	9.5 mm (0.375 in) Bore Bellows
C24	5 mm (0.20 in) Bore Oldham
C25	5 mm (0.20 in) Bore Bellows

*NEMA 23 frame size only (M3, M61)

⑩ Motor Mount

M2	SM 16 In-Line Mounting
M3	NEMA 23 In-Line Mounting
M37	NEMA 17 In-Line Mounting
M61	BE 23 In-Line Mounting

⑪ Encoder Option

E1	None
E2	1.0 µm Resolution
E3	0.5 µm Resolution
E4	0.1 µm Resolution

⑫ R1

Required Designator

*** Drive Screw Lead Availability**

Travel	402XR	
	5 mm	10 mm
100	•	
150	•	
200	•	
300		•
400		•
600		•

404XR Ordering Information

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

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
Order Example:	404	450	XR	M	S	– D33	H4	L2	C3	M4	E1	B1	R1	P1

① Series

404

② Travel – mm *

050	50 (no pinning available)
100	100
150	150
200	200
250	250
300	300
350	350
400	400
450	450
500	500
550	550
600	600

③ Model

XR	Linear Table

④ Mounting

M	Metric

⑤ Grade

S	Standard
P	Precision (only available with D2, D3, D4 drive screws)

⑥ Drive Screw

D1	Free Travel
D2	5 mm Ballscrew
D3	10 mm Ballscrew
D4	20 mm Ballscrew (standard grade only)
D31	1 mm V Thread Leadscrew
D32	2 mm V Thread Leadscrew
D33	5 mm V Thread Leadscrew
D34	0.10” V Thread Leadscrew
D35	0.10” Acme Thread Leadscrew

⑦ Home Sensor Assembly (one sensor)

H1	None-Free Travel (only)
H2	N.C. Current Sinking Flying Leads
H3	N.O. Current Sinking Flying Leads
H4	N.C. Current Sourcing Flying Leads
H5	N.O. Current Sourcing Flying Leads
H6	N.C. Current Sinking Locking Connector*
H7	N.O. Current Sinking Locking Connector*
H8	N.C. Current Sourcing Locking Connector*
H9	N.O. Current Sourcing Locking Connector*
H11	N.C. Current Sinking Sensor Pack**
H12	N.O. Current Sinking Sensor Pack**
H13	N.C. Current Sourcing Sensor Pack**
H14	N.O. Current Sourcing Sensor Pack**

⑧ Travel Limit Sensor Assembly (two sensors)

L1	None-Free Travel (only)
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 w/Locking Connector*
L7	N.O. Current Sinking w/Locking Connector*
L8	N.C. Current Sourcing w/Locking Connector*
L9	N.O. Current Sourcing w/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**

⑨ 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 mm Oldham
C7	11 mm Bellows (required for precision 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 motor option)
C25	5 mm Bellows (M37 motor option)
C26	8 mm Oldham (M71 motor option)
C27	8 mm Bellows (M71 motor option)
C28	0.1875” Oldham (M37 motor option)
C29	0.1875” Bellows (M37 motor option)
C30	0.250” Oldham (couplings for leadscrew grade)
C31	0.250” Bellows (couplings for leadscrew grade)
C32	0.375” Oldham (couplings for leadscrew grade)
C33	0.375” Bellows (couplings for leadscrew grade)
C39	9 mm Bellows (couplings for leadscrew grade)

* Sensors with locking connector include 5 m extension cable.
** Sensor Pack includes 3 m cable.

⑩ 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	SM 16 Parallel Mounting, “A” Location*
M6	SM 16 Parallel Mounting, “B” Location*
M7	SM 16 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	SM 23 Parallel Mounting, “A” Location*
M12	SM 23 Parallel Mounting, “B” Location*
M13	SM 23 Parallel Mounting, “C” Location*
M21	Neometric 70 In-Line Mounting
M37	NEMA 17 In-Line Mounting
M42	SM232AQ NPSN Servo Motor In-Line Mounting
M46	HV232-02-10 Stepper Motor In-Line Mounting
M49	Handcrank without Readout
M50	Handcrank with Readout (0.10” or 1 mm leads only)
M61	BE 23 In-Line Mounting
M62	BE 23 Parallel Mounting, “A” Location*
M63	BE 23 Parallel Mounting, “B” Location*
M64	BE 23 Parallel Mounting, “C” Location*
M71	SGM01 In-Line Mounting
M75	SGM02 In-Line Mounting

* See 404XR dimensions for maximum allowable motor shaft diameter. Parallel motor mounts not available with leadscrew drives.

⑪ Encoder Option

E1	No Encoder
E2	1.0 µm Resolution Linear Encoder (tape scale)
E3	0.5 µm Resolution Linear Encoder (tape scale)
E4	0.1 µm Resolution Linear Encoder (tape scale)
E5	Rotary Shaft Encoder (not available with brake)

⑫ Brake Option

B1	No Brake
B2	Shaft Brake (Refer to 404XR holding torque specifications to confirm maximum load. Not available with rotary encoder)

⑬ Cleanroom Preparation

R1	Class 1000 Compatible
R2	Class 10 Compatible (consult factory)
R5	Class 1000 with Easy Lube System
R8	Class 10 with Easy Lube System

⑭ Pinning Option *

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

* Pinning option is for pinning to other 404XR and 406XR tables. Transfer pinning is not available on some XR to LXR models. Contact factory for more information. Pinning XY orientation standard with Y motor at 3 o’clock position.
** Z pinning uses bracket (see figures 7, 8 and 9 on page 47)

406XR Ordering Information

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

	①	②	③	④	⑤		⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
Order Example:	406	900	XR	M	S	–	D3	H4	L1	C7	M4	E1	B1	R1	P1

① Series

406

② Travel – mm *

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

③ Model

XR	Linear Table

④ Mounting

M	Metric

⑤ Grade *

S	Standard
P	Precision

⑥ Drive Screw *

D1	Free Travel
D2	5 mm Ballscrew
D3	10 mm Ballscrew
D4	20 mm Ballscrew
D5	25 mm Ballscrew

⑦ Home Sensor Assembly (one sensor)

H1	None
H2	N.C. Current Sinking Flying Leads
H3	N.O. Current Sinking Flying Leads
H4	N.C. Current Sourcing Flying Leads
H5	N.O. Current Sourcing Flying Leads
H6	N.C. Current Sinking Locking Connector**
H7	N.O. Current Sinking Locking Connector**
H8	N.C. Current Sourcing Locking Connector**
H9	N.O. Current Sourcing Locking Connector**
H11	N.C. Current Sinking Sensor Pack***
H12	N.O. Current Sinking Sensor Pack***
H13	N.C. Current Sourcing Sensor Pack***
H14	N.O. Current Sourcing Sensor Pack***

⑧ Travel Limit Sensor Assembly (two sensors)

L1	None
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 w/Locking Connector**
L7	N.O. Current Sinking w/Locking Connector**
L8	N.C. Current Sourcing w/Locking Connector**
L9	N.O. Current Sourcing w/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 ***

⑨ 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 mm Oldham
C7	11 mm Bellows (required for precision grade)
C8	0.500" Oldham
C9	0.500" Bellows (required for precision grade)
C10	14 mm Oldham
C11	14 mm Bellows (required for precision grade)
C12	16 mm Oldham
C13	16 mm Bellows (required for precision grade)

*** Drive Screw Lead Availability**

Travel	Precision Grade		Standard Grade			
	5 mm	10 mm	5 mm	10 mm	20 mm	25 mm
100	•	•	•	•	•	
200	•	•	•	•	•	
400	•	•	•	•	•	
400	•	•	•	•	•	
500	•	•	•	•	•	
600	•	•	•	•	•	
700			•	•		•
800			•	•		•
900			•	•		•
1000			•	•		•
1250			•	•		•
1500			•	•		•
1750			•	•		•
2000			•	•		•

** Sensors with locking connector include 5 m extension cable.
*** Sensor Pack includes 3 m cable.

⑩ Motor Mount *

M1	No Motor Mount
M3	NEMA 23 & SM 23 In-Line Mounting
M4	NEMA 34 In-Line Mounting
M11	SM 23 Parallel Mounting, “A” Location*
M12	SM 23 Parallel Mounting, “B” Location*
M13	SM 23 Parallel Mounting, “C” Location*
M14	NEMA 34 Parallel Mounting, “A” Location
M15	NEMA 34 Parallel Mounting, “B” Location
M16	NEMA 34 Parallel Mounting, “C” Location
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
M25	Neometric 70 Parallel Mounting, “C” Location
M29	Neometric 92 In-Line Mounting
M61	BE 23 In-Line Mounting
M62	BE 23 Parallel Mounting, “A” Location
M63	BE 23 Parallel Mounting, “B” Location
M64	BE 23 Parallel Mounting, “C” Location
M75	SGM02 In-Line Mounting
M90	MPP092 In-Line Mounting
M91	MPP092 Parallel Mounting, “A” Location
M92	MPP092 Parallel Mounting, “B” Location
M93	MPP092 Parallel Mounting, “C” Location

* See 406XR dimensions for maximum allowable motor shaft diameter. SM 23 parallel motor mounts not available with leadscrew drives.

⑪ Encoder Option

E1	No Encoder
E2	1.0 µm Resolution Linear Encoder (tape scale)
E3	0.5 µm Resolution Linear Encoder (tape scale)
E4	0.1 µm Resolution Linear Encoder (tape scale)
E5	Rotary Shaft Encoder (not available with brake)

⑫ Brake Option

B1	No Brake
B2	Shaft Brake (Refer to 406XR holding torque specifications to confirm maximum load. Not available with rotary encoder)

⑬ Cleanroom Preparation

R1	Class 1000 Compatible
R2	Class 10 Compatible (consult factory)
R5	Class 1000 with Easy Lube System
R8	Class 10 with Easy Lube System

⑭ Pinning Option *

P1	No multi-axis pinning
P2	X axis transfer pinning to Y or Z axis - 30 arc-sec **
P3	Y axis transfer pinning to X axis - 30 arc-sec
P4	Z axis transfer pinning to X axis - 30 arc-sec

* Pinning option is for pinning to other 404XR and 406XR tables. Transfer pinning is not available on some XR to LXR models. Contact factory for more information. Pinning XY orientation standard with Y motor at 3 o’clock position.
** Z pinning uses bracket (see figures 7, 8 and 9 on page 47)

412XR Ordering Information

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

	①	②	③	④	⑤		⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
Order Example:	412	T03	XR	M	S	–	D2	H3	L3	C15	M4	E3	B1	R1	P1

① Series

412

② Travel – mm

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

③ Model

XR	Linear Table

④ Mounting

M	Metric

⑤ Grade

S	Standard

⑥ Drive Screw

D1	Free Travel
D2	5 mm Leadscrew
D3	10 mm Leadscrew
D5	25 mm Leadscrew
D6	32 mm Leadscrew

⑦ Home Sensor *

H1	None
H2	N.C. Current Sinking Flying Leads
H3	N.O. Current Sinking Flying Leads
H4	N.C. Current Sourcing Flying Leads
H5	N.O. Current Sourcing Flying Leads

* Includes a 3 meter extension cable with flying lead termination. A 7.5 meter extension cable can be ordered separately.

⑧ Travel Limit Sensor *

L1	None
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

* Includes a 3 meter extension cable with flying lead termination. A 7.5 meter extension cable can be ordered separately.

⑨ Motor Coupling

C1	No Coupling
C4	0.375” Oldham
C5	0.375” Bellows
C6	11 mm Oldham
C7	11 mm Bellows
C8	0.500” Oldham
C9	0.500” Bellows
C10	14 mm Oldham
C11	14 mm Bellows
C12	16 mm Oldham
C13	16 mm Bellows
C14	0.750” (19 mm) Oldham
C15	0.750” (19 mm) Bellows

⑩ Motor Mount

M1	No Motor Mount
M4	NEMA 34 In-Line Mounting
M14	NEMA 34 Parallel Mounting, “A” Location
M15	NEMA 34 Parallel Mounting, “B” Location
M17	Neometric 34 In-Line Mounting
M18	Neometric 34 Parallel Mounting, “A” Location
M19	Neometric 34 Parallel Mounting, “B” Location
M21	Neometric 70 In-Line Mounting
M22	Neometric 70 Parallel Mounting, “A” Location
M23	Neometric 70 Parallel Mounting, “B” Location
M29	Neometric 92 In-Line Mounting
M30	Neometric 92 Parallel Mounting, “A” Location
M31	Neometric 92 Parallel Mounting, “B” Location
M33	M105 & SMN100 In-Line Mounting
M90	MPP092 In-Line Mounting
M91	MPP092 Parallel Mounting, “A” Location
M92	MPP092 Parallel Mounting, “B” Location
M93	MPP092 Parallel Mounting, “C” Location

⑪ Encoder Option

E1	No Encoder
E2	1.0 µm Resolution Linear Encoder (tape scale)
E3	0.5 µm Resolution Linear Encoder (tape scale)
E4	0.1 µm Resolution Linear Encoder (tape scale)
E5	5.0 µm Resolution Linear Encoder (tape scale)
E6	Rotary Shaft Encoder (not available with brake)
E7	Sine Encoder

⑫ Brake Option

B1	No Brake
B2	Shaft Brake (Refer to 412XR holding torque specifications to confirm maximum load. Not available with rotary encoder)

⑬ Cleanroom Preparation

R1	Class 1000 with Strip Seals
R2	Class 100 without Strip Seals

⑭ Pinning Option *

P1	No multi-axis pinning
P2	X axis transfer pinning to Y or Z axis - 30 arc-sec **
P3	Y axis transfer pinning to X axis - 30 arc-sec (includes a required 15 mm thick adapter)
P4	Z axis transfer pinning to X axis - 30 arc-sec

* Pinning option is for pinning to other 404XR and 406XR tables. Transfer pinning is not available on some XR to LXR models. Contact factory for more information. Pinning XY orientation standard with Y motor at 3 o’clock position.
** Z pinning uses bracket (see figures 7, 8 and 9 on page 47)