Screw-Driven Positioners

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. Parker offers the most comprehensive array of products in the industry and advanced product development. Screw-driven products integrate seamlessly with other Parker components including servo motors, motor drives, controls, interfaces, actuators, pneumatics, and structural components. Products are available with modular construction from standard catalog tables or custom systems designed and built to specification for any application.

Parker Screw-Driven Industrial Systems

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

XR Series Precision Screw-Driven Positioners

The XR product family offers consistent accuracy, reliable performance, high strength, and unmatched versatility.
Page 22.

HMR High Moment Rodless Series Industrial Screw Driven Positioners

The user-friendly and versatile HMR has enormous moment and payload capacity bundled in a low-profile, yet sleek package. The HMRS is powerful and precise.
Page 56.

XE Series Economy Screw-Driven Positioners

Rugged steel body construction, integrated precision ballscrew, and bearing guide in a highly accurate, cost-effective line of positioners.
Page 91.

404XE Series Screw-Driven Positioners

The 404XE positioners combine versatility with rugged construction in a compact motion platform that is ideal for 24/7 process automation.
Page 107.

OSPE-SB and OSPE-ST Medium-Capacity Screw Driven Positioners

The OSPE offers reliability, performance, easy handling, and optimized design flexibility. Ballscrew for precise positioning and Trapezoidal Screw for zero backdrive.
Page 118.

LCR Series Light-Capacity Screw Driven Positioners

The LCR Series is a completely pre-engineered, pre-tested, ready-to-use positioner solution for unmatched, easy-to- use flexibility.
Page 142.

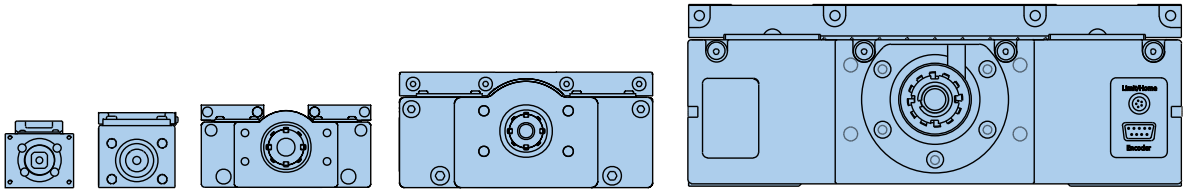
The 400XR Series

Screw Driven Positioners for Precision, High Force Applications

- 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**
- **Numerous selectable motor mounts**
- **Servo motors and drives**
- **Programmable controls**
- **Cable management system**

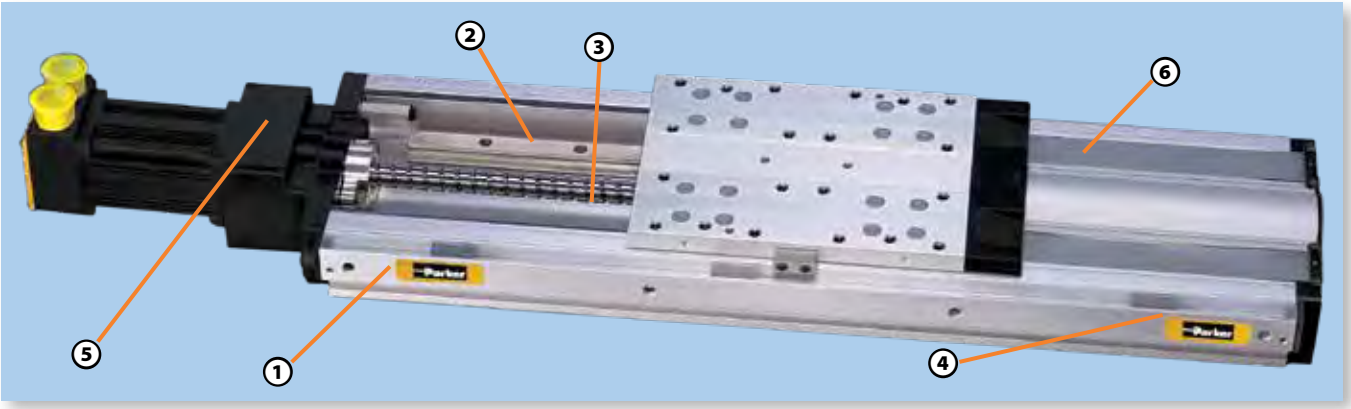


	401XR	402XR	404XR	406XR	412XR
Maximum Travel (mm)	300	600	600	2000	2000
Maximum Payload (N)	50	100	170	630	1470
Maximum Acceleration (m/sec²)	20	20	20	20	20

The **400XR** precision linear positioner 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 such as packaging, automotive, and more.

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.



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 **hundreds** 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 and enhance the overall appearance.

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**

Encoders

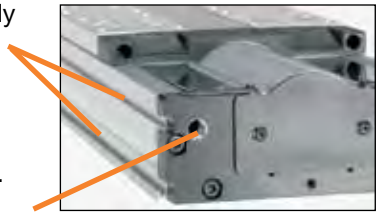
The linear encoder option offers direct positional feedback of the carriage location. The rotary shaft encoder couples directly to the drive shaft to nullify any incurred mechanical error (particularly useful with the parallel motor mount). Not shown.

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.

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.

Common Specifications

		Precision*		Standard	
		401XR	402XR	401XR	402XR
Bidirectional Repeatability **2 mm lead** **5 or 10 mm lead**	µm	 ±5 ±5	 – ±5	 ±8 ±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** **5 or 10 mm lead**	kgf (lbs)	 5.5 (12.1) 15.5 (34.2)	 – 38 (84)	 5.5 (12.1) 15.5 (34.2)	 – 38 (84)
Drive Screw Efficiency	%	80	80	80	80
Maximum Breakaway Torque	Nm (in-oz)	0.07 (9.7)	0.12 (17.0)	0.07 (9.7)	0.12 (17.0)
Maximum Running Torque (2)	Nm (in-oz)	0.065 (9.0)	0.11 (15.8)	0.065 (9.0)	0.11 (15.8)
Linear Bearing Coefficient of Friction		0.01	0.01	0.01	0.01
Ballscrew Diameter **2 mm lead** **5 or 10 mm lead**	mm	 6 8	 – 12	 6 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)				Maximum 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	18	26	–	–	20	–	0.6	–	–	–	100	–	1.0	–
100	18	26	18	26	20	20	0.9	–	12.0	–	100	90	1.2	2.3
150	20	26	20	26	20	20	1.1	–	15.0	–	100	90	1.3	2.6
200	24	36	24	36	25	25	–	4.7	20.0	–	100	90	1.5	2.8
300	26	46	26	46	25	25	–	5.2	–	25.0	100	90	1.7	3.2
400	–	–	29	50	–	30	–	–	–	29.0	–	95	–	3.8
600	–	–	33	60	–	30	–	–	–	39.0	–	50	–	4.8

*Consult factory for higher accuracy capabilities via slope correction or stage mapping via laser interferometry.

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 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 Specifications

		Precision	Standard
Bidirectional Repeatability [5]			
Ballscrew	µm	±1.3	±3
Leadscrew		—	±12
Duty Cycle			
Ballscrew	%	100	100
Leadscrew [7]		–	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 - Inline Motor Mount		90	90
Ballscrew - Parallel Motor Wrap		N/A	81
Leadscrew - Inline Motor Mount [7]		30	30
Leadscrew - Parallel Motor Wrap [7]		N/A	27
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
Screw Diameter			
Ballscrew	mm	16	16
Leadscrew [7]		—	12.7
Carriage Weight	kg (lbs)	0.70 (1.55)	0.70 (1.55)

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

(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 2.5 Nm.
(3) Ratings established at 2 rps.
(4) Consult factory for higher accuracy capabilities via slope correction or stage mapping via laser interferometry.
(5) Consult factory for specifications with linear encoder.
(6) Consult factory for higher screw speeds.
(7) Leadscrew is available only in custom builds.

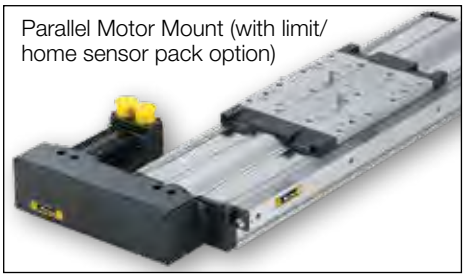
Travel/Screw Lead Dependent Specifications

Travel (mm)	Positional Accuracy [4] [5] (µm)			Straightness & Flatness		Input Inertia (10^{-5} kg-m²)			Max Screw Speed [6] (revs/sec)		Unit Weight (kg)
	Ballscrew		Leadscrew [7]	Ballscrew	Leadscrew [7]	5 mm	10 mm	20 mm	Ballscrew	Leadscrew [7]	
	Precision	Standard									
50	8	12	20	6	8	1.68	1.81	2.34	60	25	2.8
100	8	12	20	6	8	1.93	2.07	2.60	60	25	3.0
150	10	14	30	9	12	2.19	2.32	2.85	60	25	3.3
200	12	20	40	10	16	2.44	2.57	3.11	60	25	3.6
250	12	22	50	12	16	2.69	2.83	3.36	60	25	3.9
300	14	24	60	13	18	2.95	3.08	3.61	60	25	4.2
350	14	26	70	15	23	3.20	3.33	3.87	60	25	4.5
400	16	26	80	16	27	3.46	3.59	4.12	60	25	4.8
450	19	28	90	18	30	3.71	3.84	4.37	60	25	5.1
500	21	34	100	19	30	3.96	4.10	4.63	60	20	5.4
550	23	36	110	21	30	4.22	4.35	4.88	60	20	5.7
600	25	40	112	22	30	4.47	4.60	5.14	54	20	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.


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

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]	kg (lbs)	630 (1390)	630 (1390)
Axial Load Capacity [2] **0 to 600 mm Travel** **700 to 2000 mm Travel**	kg (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) Consult factory for higher accuracy capabilities via slope correction or stage mapping via laser interferometry.
(5) Consult factory for specifications with linear encoder.
(6) Consult factory for higher screw speeds.

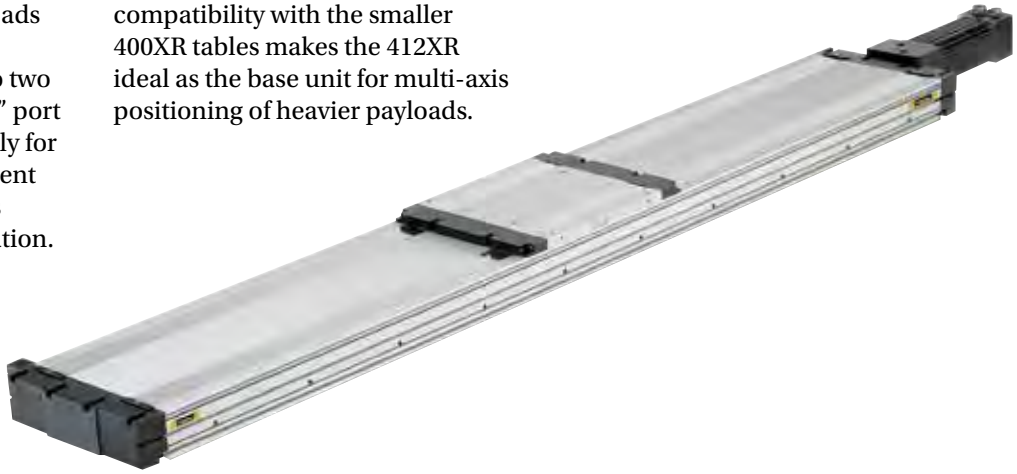
Travel/Screw Lead Dependent Specifications

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) Consult factory for higher accuracy capabilities via slope correction or stage mapping via laser interferometry.
(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.

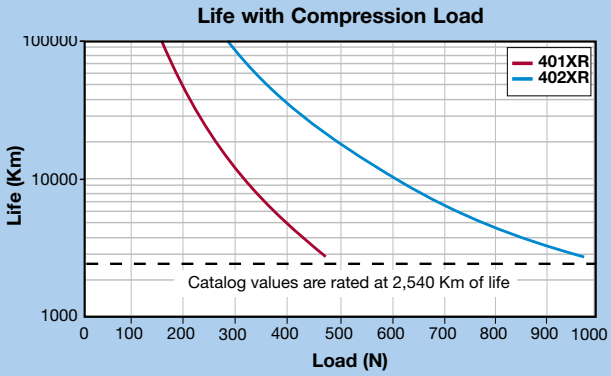
The useful life of a linear table at full catalog specifications is dependent on the forces acting upon it. These forces include both static components resulting from payload weight, and dynamic components due to acceleration/deceleration of the load. In multi-axes applications, the primary positioner 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.

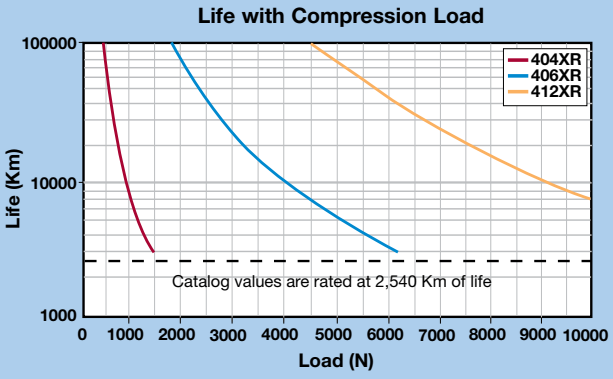
Catalog load specifications are rated for 100 million inches of travel or 2540 km.

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 **parker.com/emc**

Normal Load (Compression)

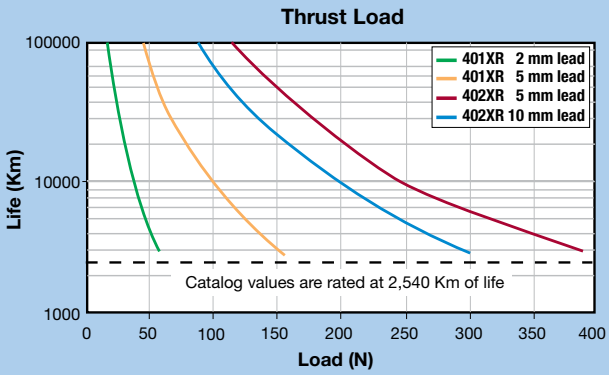
These graphs provide a "rough cut" evaluation of the support bearing life/load characteristics. The curves show the life/load relationship when the applied load is centered on the carriage, normal (perpendicular) to the carriage mounting surface.

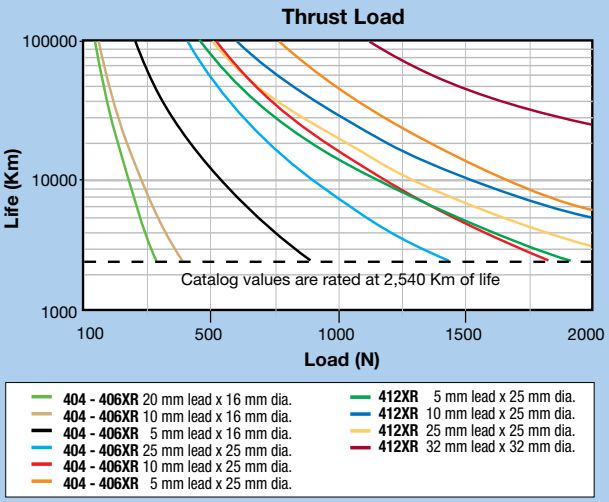




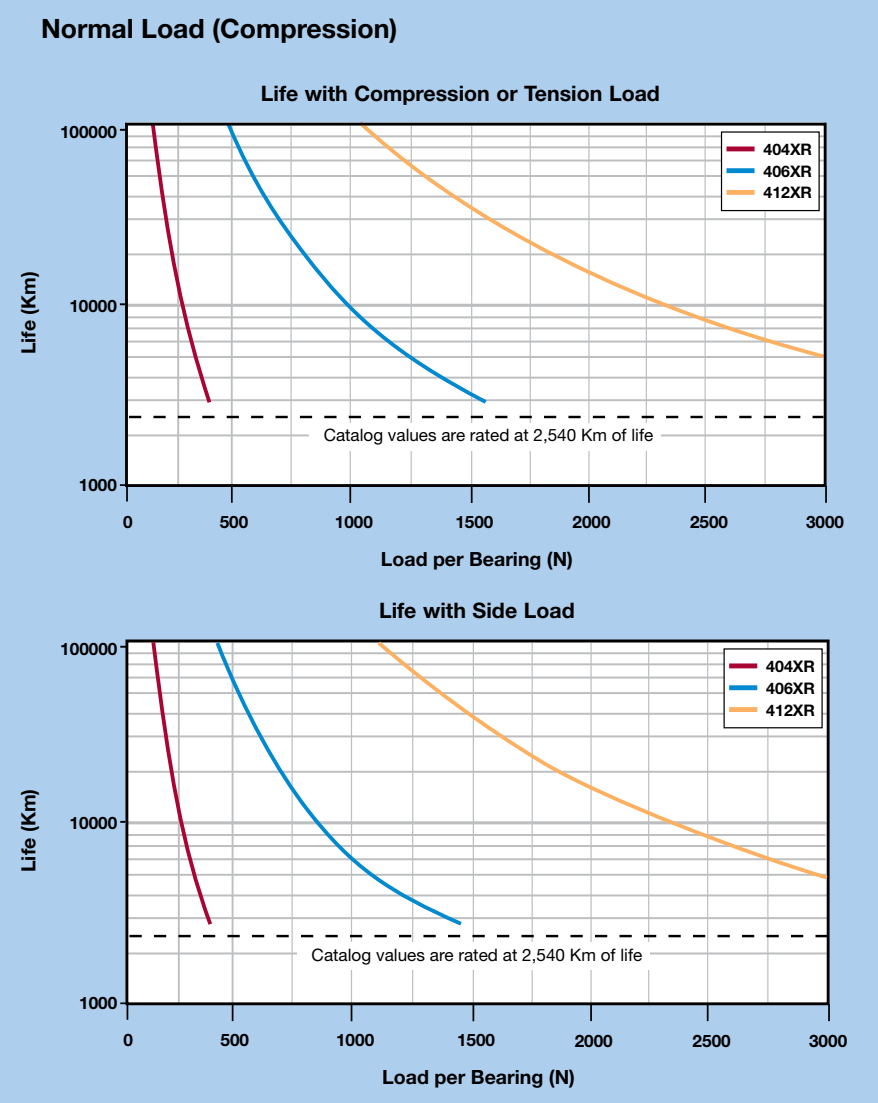
Axial Load (Thrust)

These graphs illustrate table ballscrew life relative to the axial 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 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:

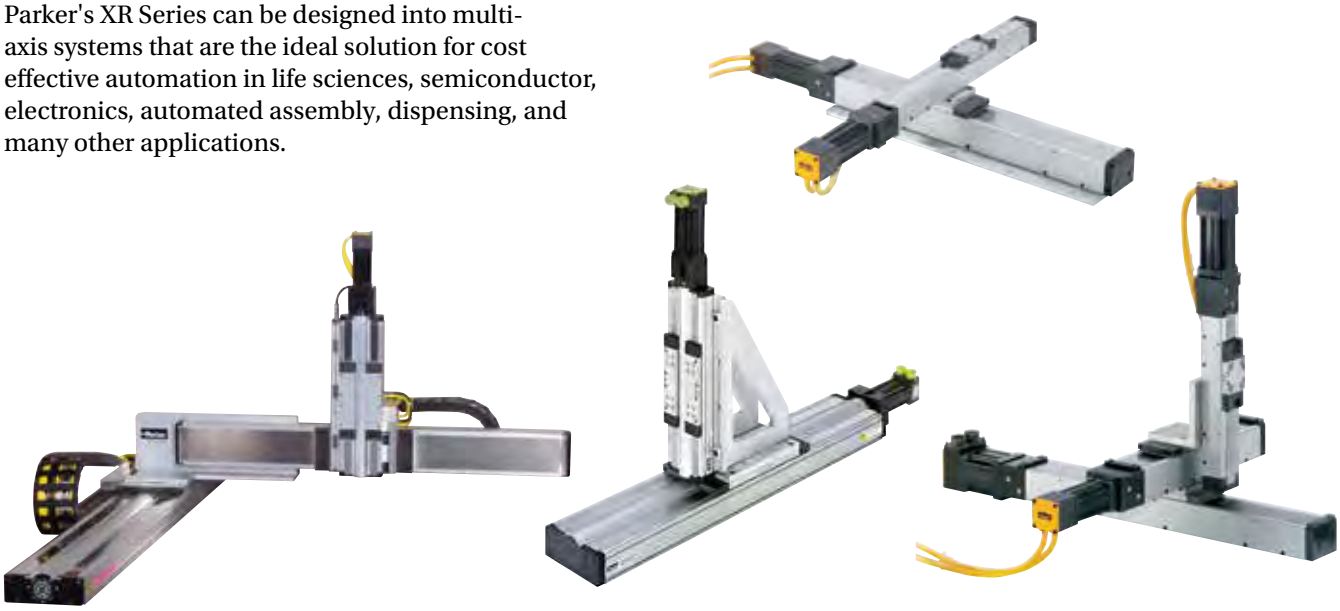
d1 bearing block center-to-center longitudinal spacing
d2 bearing rail center-to-center lateral spacing
da Rail center-to-carriage mounting surface

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

CONFIGURATIONS

400XR Multi-Axis Cartesian Robot Configurations

Parker's XR Series can be designed into multi-axis systems that are the ideal solution for cost effective automation in life sciences, semiconductor, electronics, automated assembly, dispensing, and many other applications.



XR Mounting Plate Options

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	—	—	—	002-1840-01	—	—	—	—	—
	X-Z Side Mount	—	—	—	002-1839-01	—	—	—	—	—
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 adapter 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.

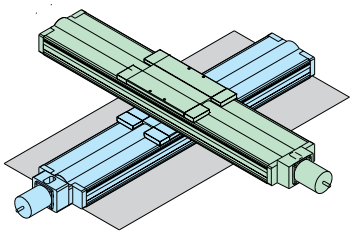


Figure 1
Two Axis (X-Y) Horizontal Mounting

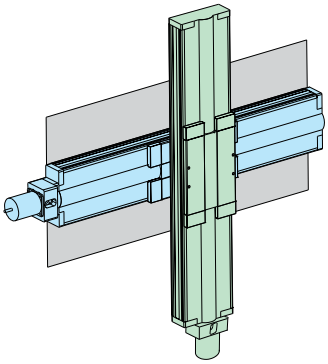


Figure 2
Two Axis (X-Z) Vertical Mounting

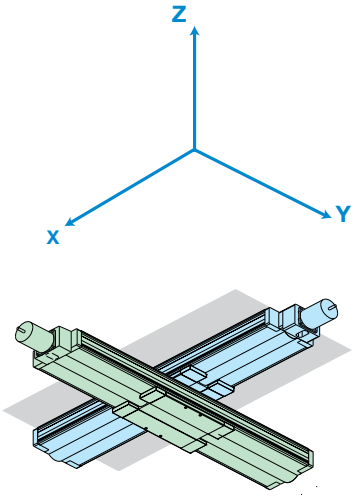


Figure 3
Two Axis (X-Y) Inverted Mounting

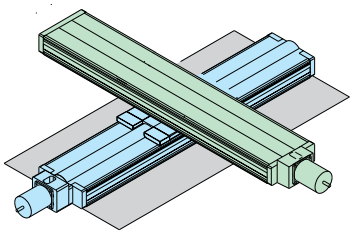


Figure 4
Two Axis-Carriage to Carriage (Y Axis Inverted)

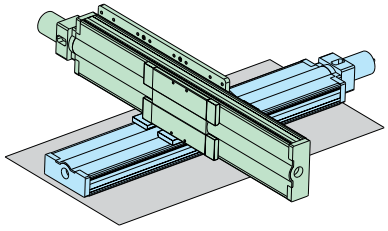


Figure 5
Two Axis (X-Y) Cartesian Horizontal Mounting

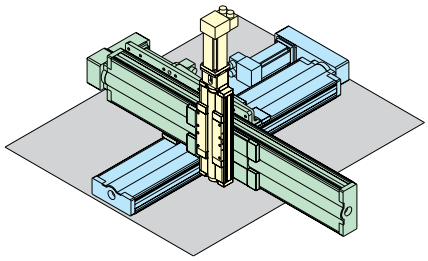


Figure 6
Three Axis (X-Y-Z) Cartesian Horizontal Mounting

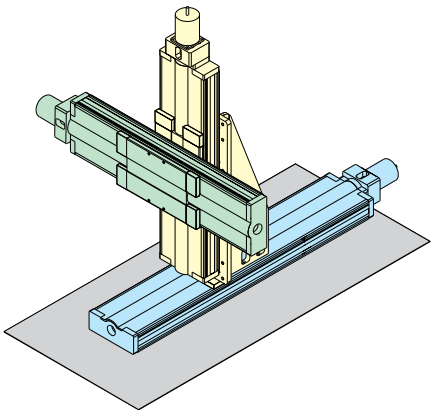


Figure 7
Three Axis (X-Z-Y) Horizontal Mounting

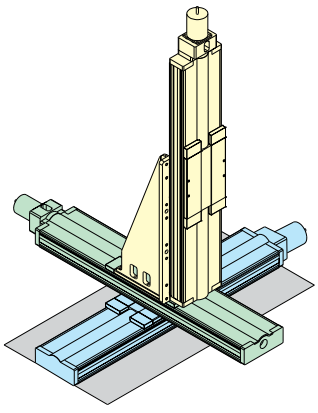


Figure 8
Three Axis (X-Y-Z) Horizontal Mounting

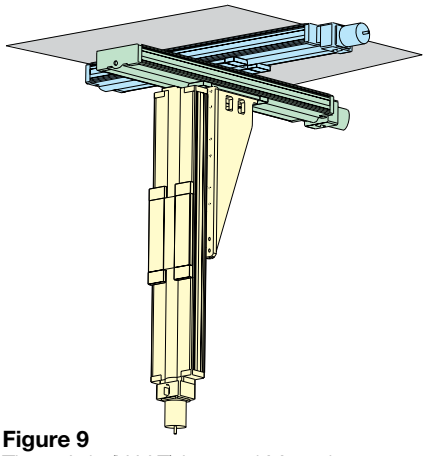
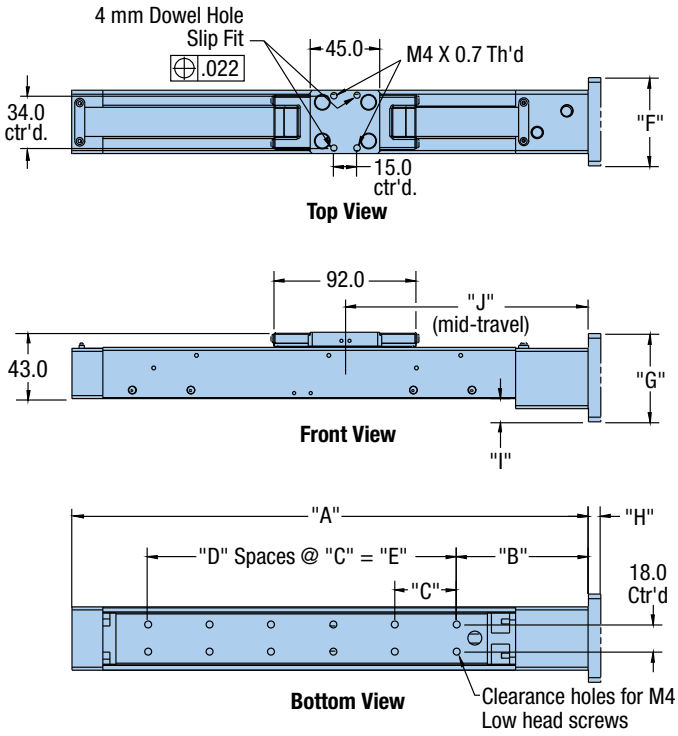


Figure 9
Three Axis (X-Y-Z) Inverted Mounting

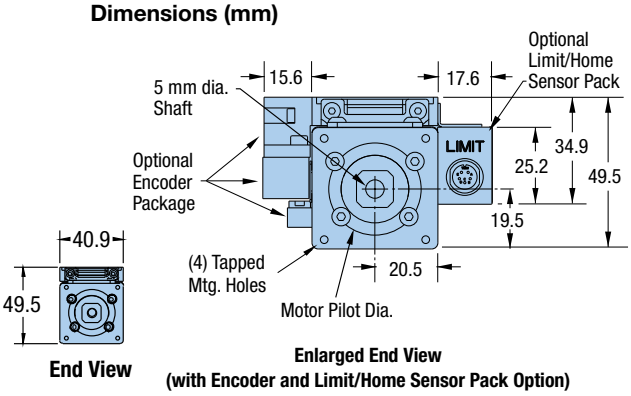
DIMENSIONS

401XR Dimensions

Download 2D & 3D files from parker.com/emc



Dimensions (mm)

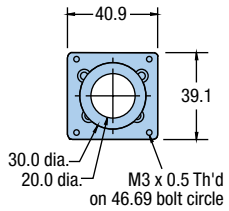


Model	Travel (mm)	Dimensions (mm) A	B	C	D	E	J
401050XR	50	209.3	82.8	80.0	1	80.0	123.0
401100XR	100	284.3	80.3	40.0	4	160.0	160.0
401150XR	150	334.3	85.3	40.0	5	200.0	185.0
401200XR	200	384.3	90.3	40.0	6	240.0	210.0
401300XR	300	509.3	92.8	40.0	9	360.0	260.0

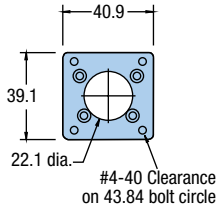
Motor Size	Order Code	Dimensions (mm) F	G	H	I
SM 16	M2	40.9	39.1	–	6.5
NEMA 23/SM 23	M3	57.2	57.2	4.0	15.6
NEMA 17	M37	40.9	39.1	–	6.5
BE 23	M61	57.2	57.2	8.0	15.6

In-Line Motor Adapters

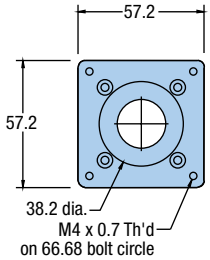
Used to easily accommodate the mounting of different servo or stepper motors.



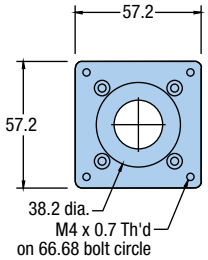
SM 16



NEMA 17



SM 23 or NEMA 23



BE 23

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Virtual Engineer

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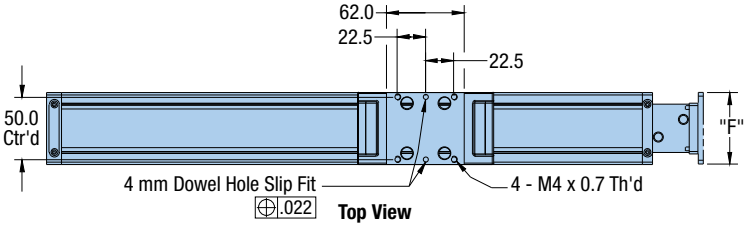
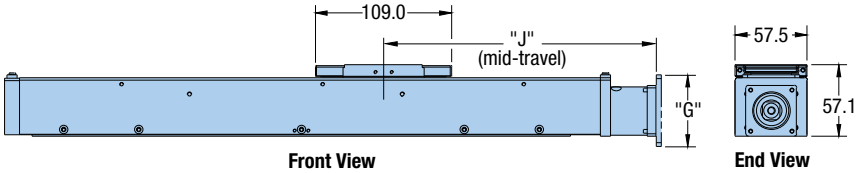
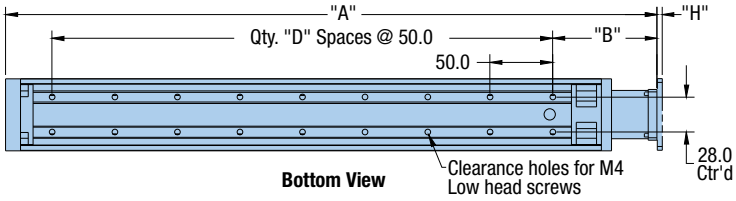
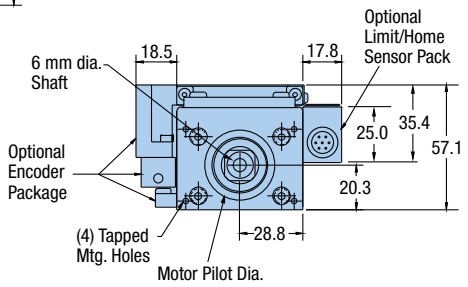
402XR Dimensions







Dimensions (mm)



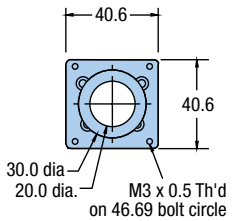
Enlarged End View
(with Encoder and Limit/Home Sensor Pack Option)

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

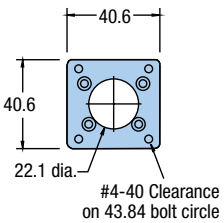
Motor Size	Order Code	Dimensions (mm) F	G	H
SM 16	M2	40.6	40.6	–
NEMA 23/SM 23	M3	57.2	57.2	4.0
NEMA 17	M37	40.6	40.6	–
BE 23	M61	57.2	57.2	8.0

In-Line Motor Adapters

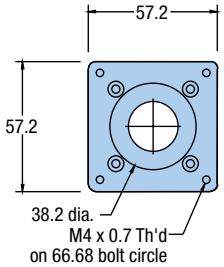
Used to easily accommodate the mounting of different servo or stepper motors.



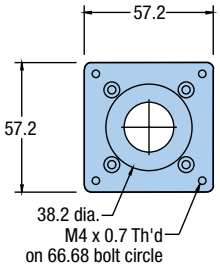
SM 16



NEMA 17



SM 23 or NEMA 23



BE 23

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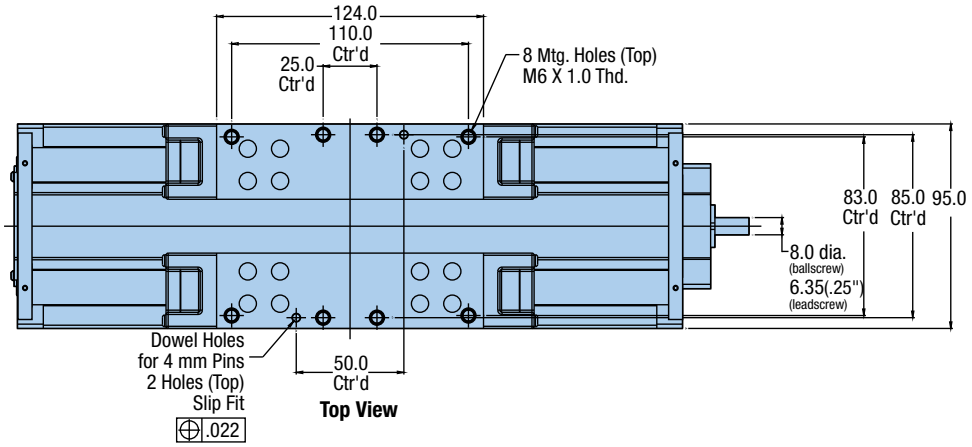
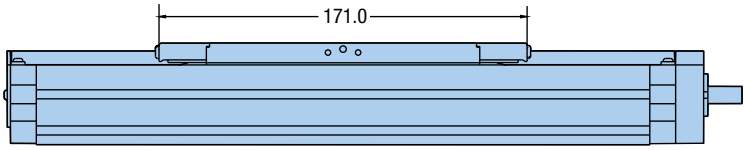
Virtual Engineer

404XR Dimensions

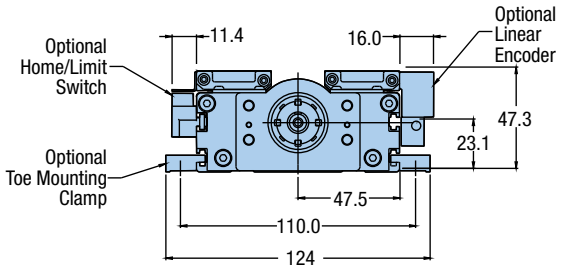


Top View

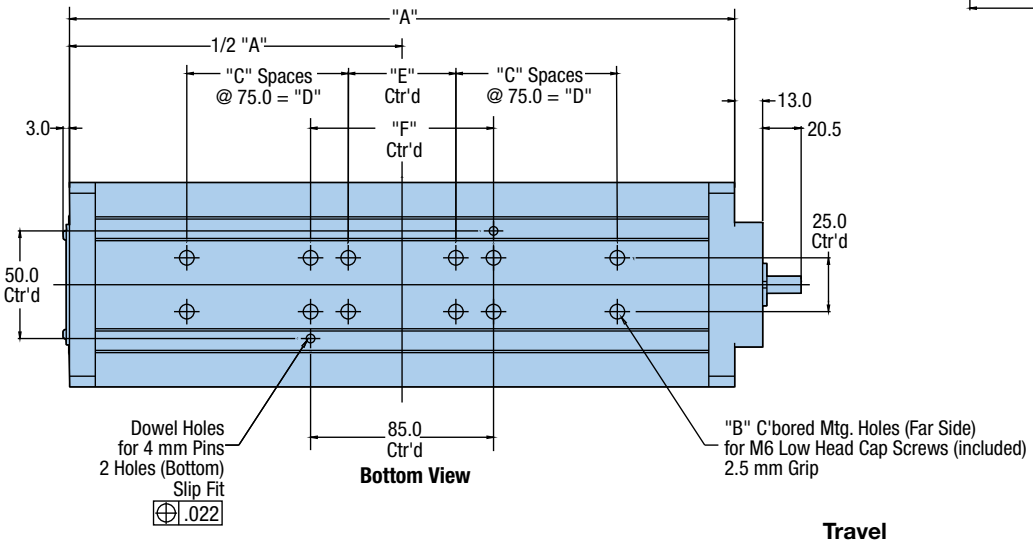
Dimensions (mm)



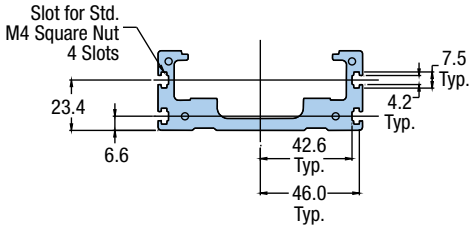
Front View



End View



Bottom View



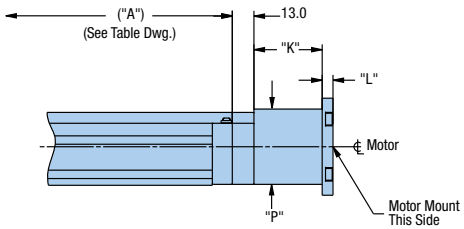
View showing slots in extruded base

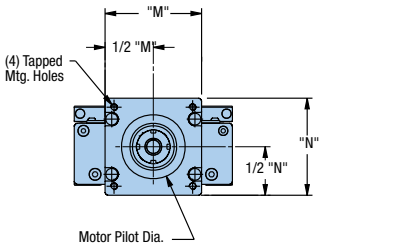
Model	Travel (mm)	Dimensions (mm) A	B	C	D	E	F
404050XR	50	259	4	–	–	–	–
404100XR	100	309	12	1	75.0	50.0	85.0
404150XR	150	359	12	1	75.0	50.0	85.0
404200XR	200	409	12	1	75.0	50.0	85.0
404250XR	250	459	16	2	150.0	50.0	85.0
404300XR	300	509	16	2	150.0	50.0	85.0
404350XR	350	559	16	2	150.0	50.0	85.0
404400XR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

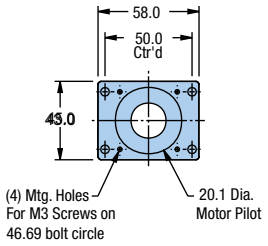




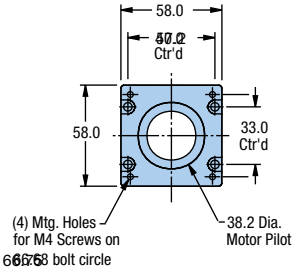
Dimensions (mm)

Dimensions (mm)

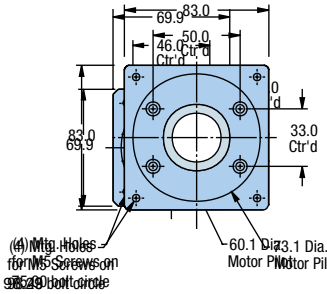
Motor Size	Order Code	Max. Motor Shaft Ø	K	L	M	N	P
SM 16	M2	9.5	41.0	4.3	58.0	43.0	42.7
NEMA 23	M3	9.5	41.0	6.5	58.0	58.0	42.7
NEMA 34	M4	9.5	41.0	12.5	83.0	83.0	42.7
NEO 70	M21	11.0	55.0	–	69.9	69.9	69.9



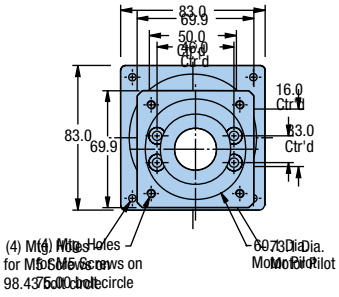
SM 16



NEMA 23



NEMA 34



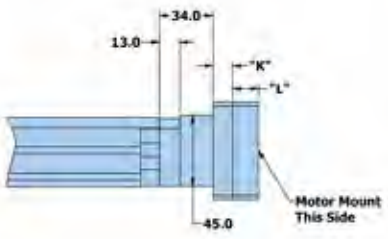
NEOMETRIC 70/SMN060

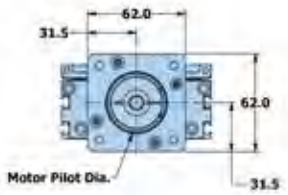
404XR Universal Motor Mounting

The new Universal Motor Adapter (UMA) makes adapting 3rd party motors to the 404XR easier than ever. The Universal Motor Adaptor option allow for the coupling of motor frame sizes from 62 mm on down, accommodating motor shaft diameters up to 16 mm. To determine if a 404XR has a mount to your preferred motor please visit **parker.com/emc,** navigate to the 404XR, and launch the online eConfigurator (note that these adapter kits establish fit to the actuator only, proper actuator sizing should still be conducted to ensure application performance).

Coupling Style	"K"
Oldham	12.5
Bellows	12.5

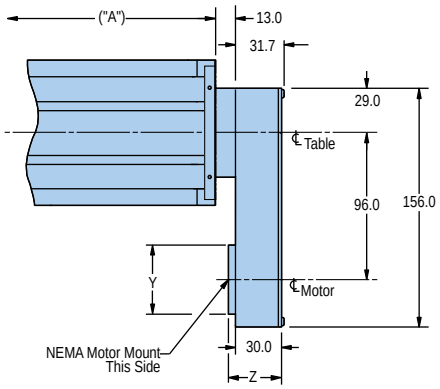
Motor Shaft Length	"L"
16 – 35	16.5
35.1 – 41	22.5





404XR Parallel Motor Mounting

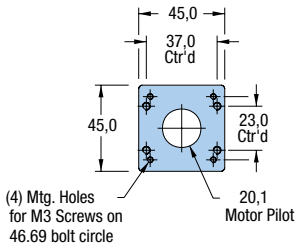
Parallel motor mounting is employed whenever a shorter overall unit length is needed. The motor is positioned along the sides or bottom of the table as designated by position A, B, or C. (No coupling required.)



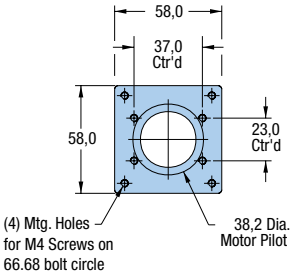
Dimensions

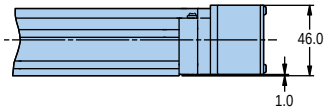
Motor Size	Y (mm)	Z (mm)	Motor Shaft Ø
SM 16	45.0	34.5	0.250”
SM 23/BE 23	58.0	34.5	0.375”
NEMA 23	58.0	34.5	0.250”

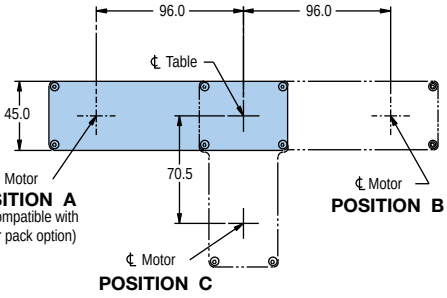
SM 16



NEMA 23







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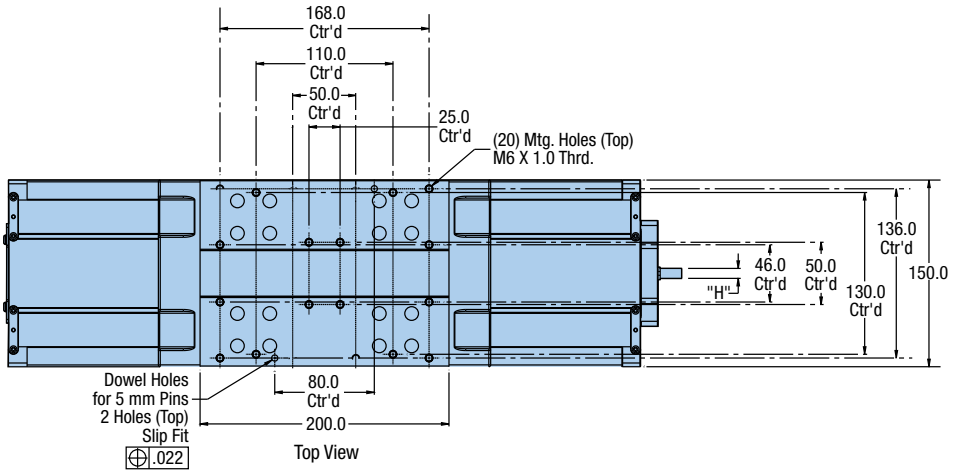
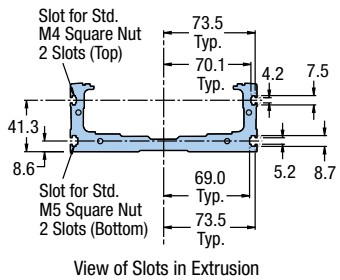
406XR Dimensions



Dimensions (mm)



View of Slots in Extrusion

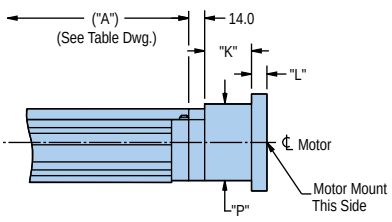
Model	Travel (mm)	Ballscrew Ø	Dimensions (mm) A	B	C	D	E	F	G	H
4060100XR	100	16	408	8	1	100.0	12	1	100.0	8.0
4060200XR	200	16	508	8	1	100.0	12	1	100.0	8.0
4060300XR	300	16	608	12	2	200.0	16	2	200.0	8.0
4060400XR	400	16	708	12	2	200.0	16	2	200.0	8.0
4060500XR	500	16	808	16	3	300.0	20	3	300.0	8.0
4060600XR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

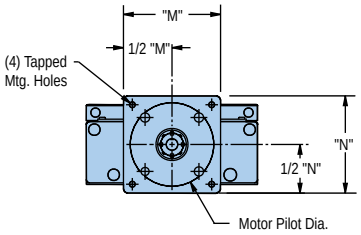
406XR In-Line Motor Mounting

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

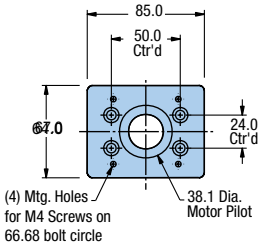
Used to easily accommodate the mounting of different frame sizes. These adapter plates can be ordered separately by part number below.

Dimensions (mm)

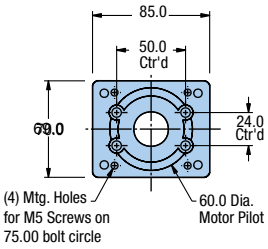




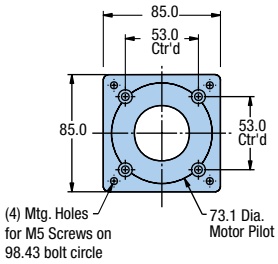
Motor Size	Order Code	Max. Motor Shaft Ø	Dimensions (mm) K	L	M	N	P
MPP092	M90	16.0	53.0	12.5	92.0	92.0	69.0
NEMA 23/SM 23	M3	9.5	41.0	–	85.0	64.0	64.0
NEMA 34	M4	16.0	53.0	13.5	85.0	85.0	69.0
NEO 34	M17	16.0	53.0	13.5	85.0	85.0	69.0
NEO 70	M21	16.0	53.0	–	85.0	69.0	69.0
NEO 92	M29	16.0	53.0	12.5	92.0	92.0	69.0



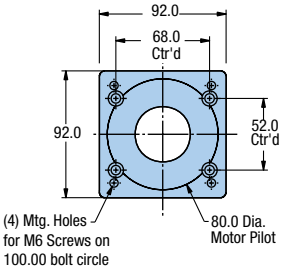
NEMA 23 or SM 23



NEO 70 / SMN060



NEMA 34 or NEO 34



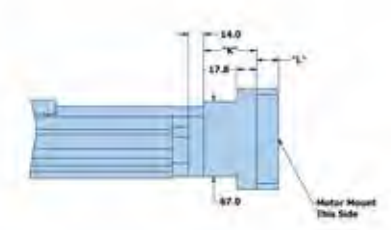
MPP092

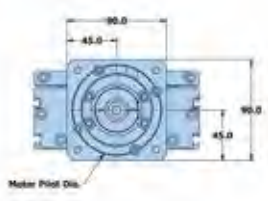
406XR Universal Motor Mounting

The new Universal Motor Adapter (UMA) makes adapting 3rd party motors to the 406XR easier than ever. The Universal Motor Adaptor option allow for the coupling of motor frame sizes from 90 mm on down, accommodating motor shaft diameters up to 20.5 mm. To determine if a 406XR has a mount to your preferred motor please visit **parker.com/emc,** navigate to the 406XR, and launch the online eConfigurator (note that these adapter kits establish fit to the actuator only, proper actuator sizing should still be conducted to ensure application performance).

Coupling Style	"K"
Oldham	35.8
Bellows	47.8

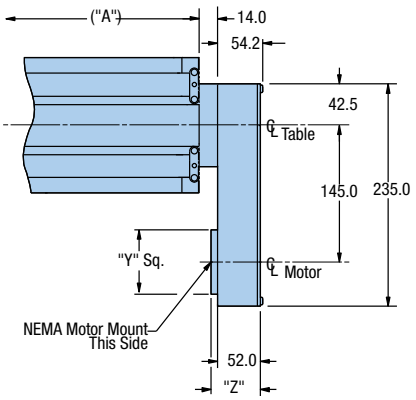
Motor Shaft Length	"L"
20 – 40	20.0
40.1 – 28.5	28.5

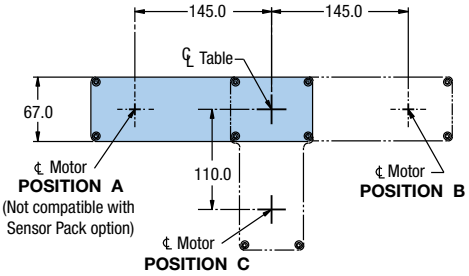




406XR Parallel Motor Mounting

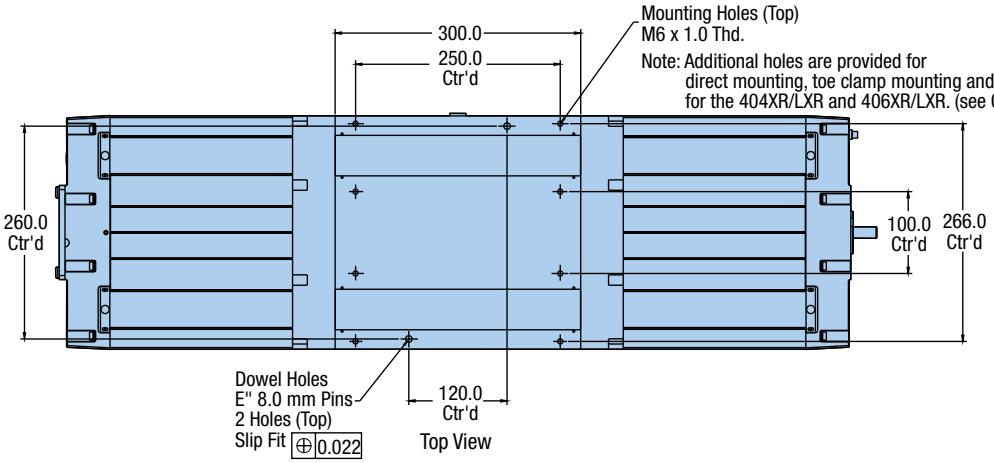
Parallel motor mounting is employed whenever a shorter overall unit length is needed. The motor is positioned along the sides or bottom of the table as designated by position A, B, or C. (No coupling required.)

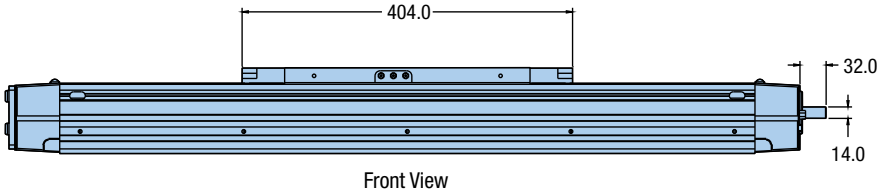


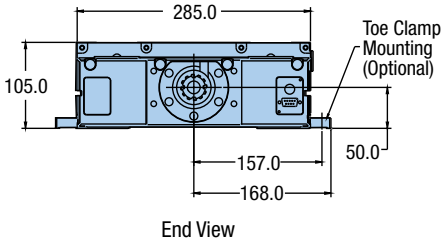


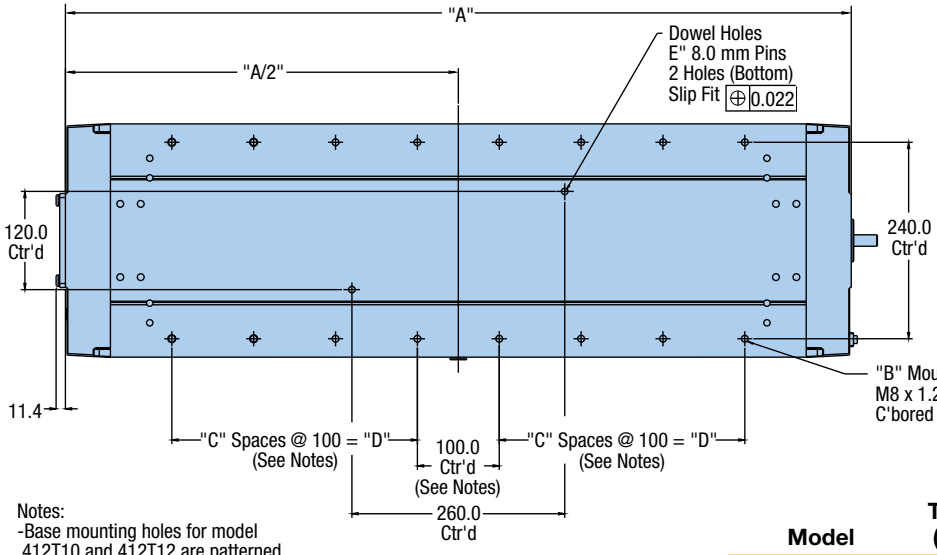
MPP092	92.0	65.7	16.0 mm
NEMA 34	83.0	62.0	0.375”
NEO 34	83.0	62.0	0.500”
NEO 70	70.0	60.0	11.0 mm
SM23/BE23	70.0	57.5	0.375”

412XR Dimensions

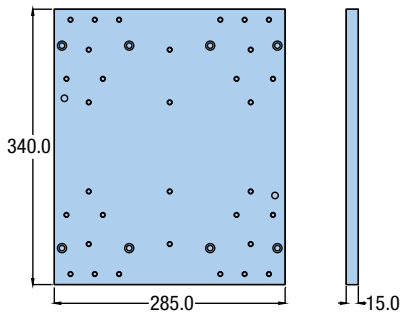








Notes:
-Base mounting holes for model 412T10 and 412T12 are patterned from one hole on centerline



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

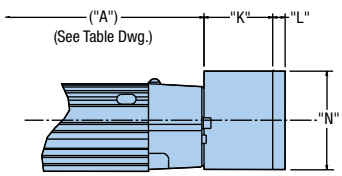
Dimensions (mm)

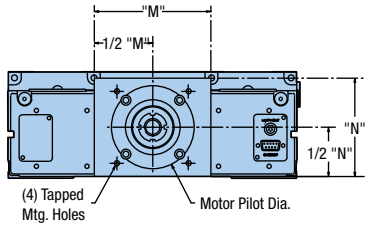
Model	Travel (mm)	Dimensions (mm) A	B	C	D
412T01	150	764	12	2	200
412T02	250	864	16	3	300
412T03	350	964	16	3	300
412T04	650	1264	24	5	500
412T05	800	1414	24	5	500
412T06	1000	1614	28	6	600
412T07	1200	1814	32	7	700
412T08	1500	2114	40	9	900
412T09	1750	2364	44	10	1000
412T10	2000	2614	50	12	1200

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.

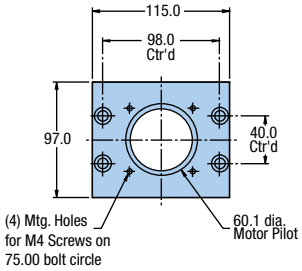
Used to easily accommodate the mounting of different frame sizes. These adapter plates can be ordered separately by part number below.



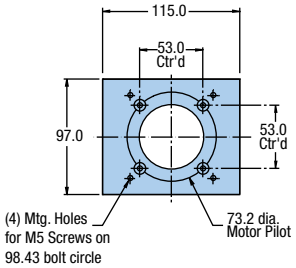


Dimensions (mm)

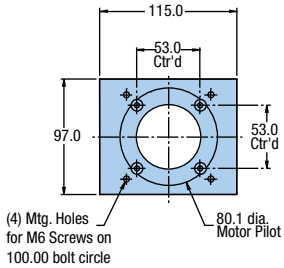
Motor Size	Order Code	K	L	M	N
MPP092	M90	68.0	12.0	115.0	97.0
M105, SMN100	M33	100.0	–	115.0	115.0
NEMA 34	M4	68.0	12.0	115.0	97.0
NEO 34	M17	68.0	12.0	115.0	97.0
NEO 70	M21	68.0	–	115.0	97.0
NEO 92	M29	68.0	12.0	115.0	97.0



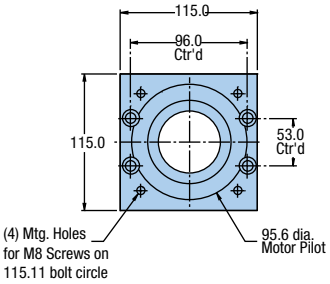
NEO 70 / SMN060



NEMA 34 or NEO 34



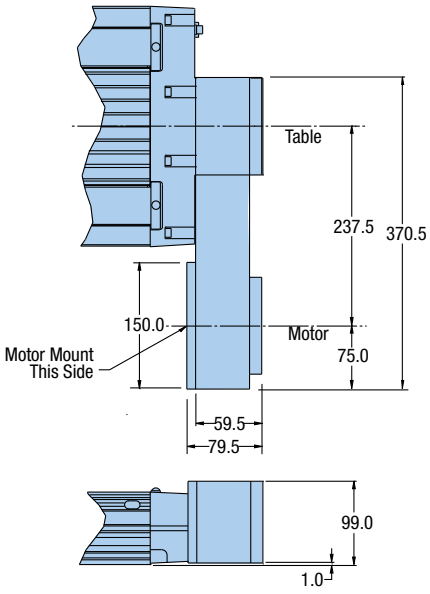
MPP092



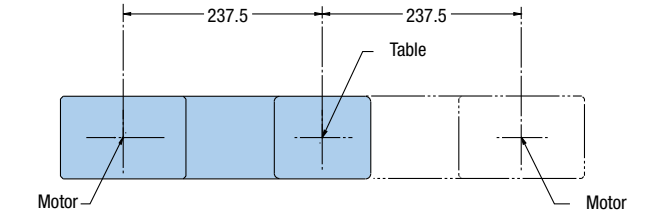
M105 / SMN100

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**

OPTIONS & ACCESSORIES

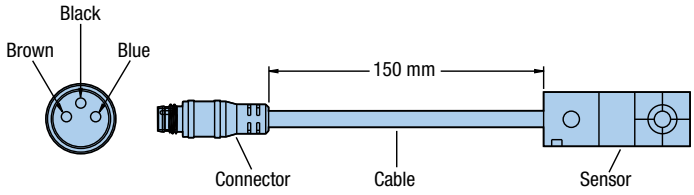
400XR Series Options

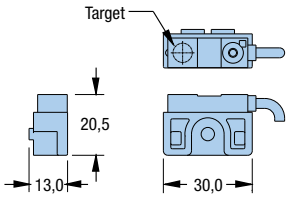
Home or Limit Sensor Options

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





Sensor / Bracket Detail

Specifications

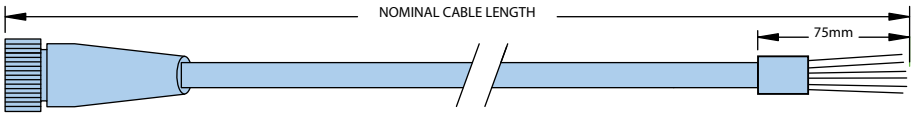
Input Power	5-30 VDC, 20 mA
Output	100mA max
Wire Color	(+) Supply: Brown
Code	(–) Supply: Blue NO Output: Black NC Output: White

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

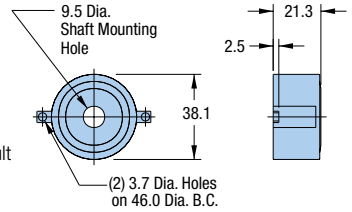
401XR with Linear Encoder plus Sensor Pack

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.

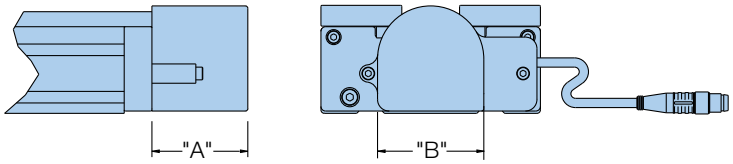


Specifications

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 is used to prevent "backdriving" in vertical applications. The brake option includes a 5 meter 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

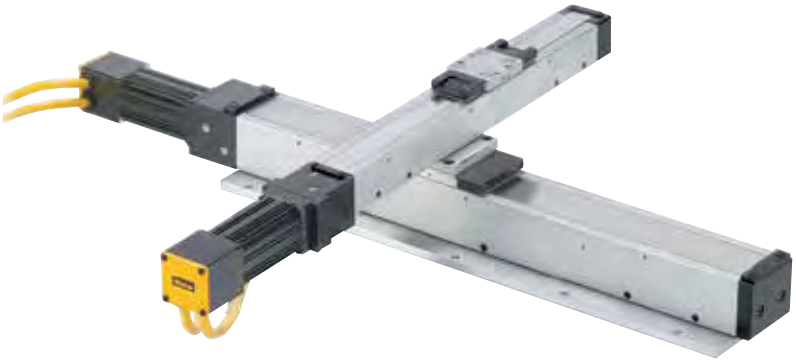
Dowel Pinning Options*

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 of a 401XR.

Standard pinning of XY axes will achieve 125 arc-sec of orthogonality. Through transfer pinning, 30 arc-sec is achievable. For high degrees of orthogonality consult the factory.

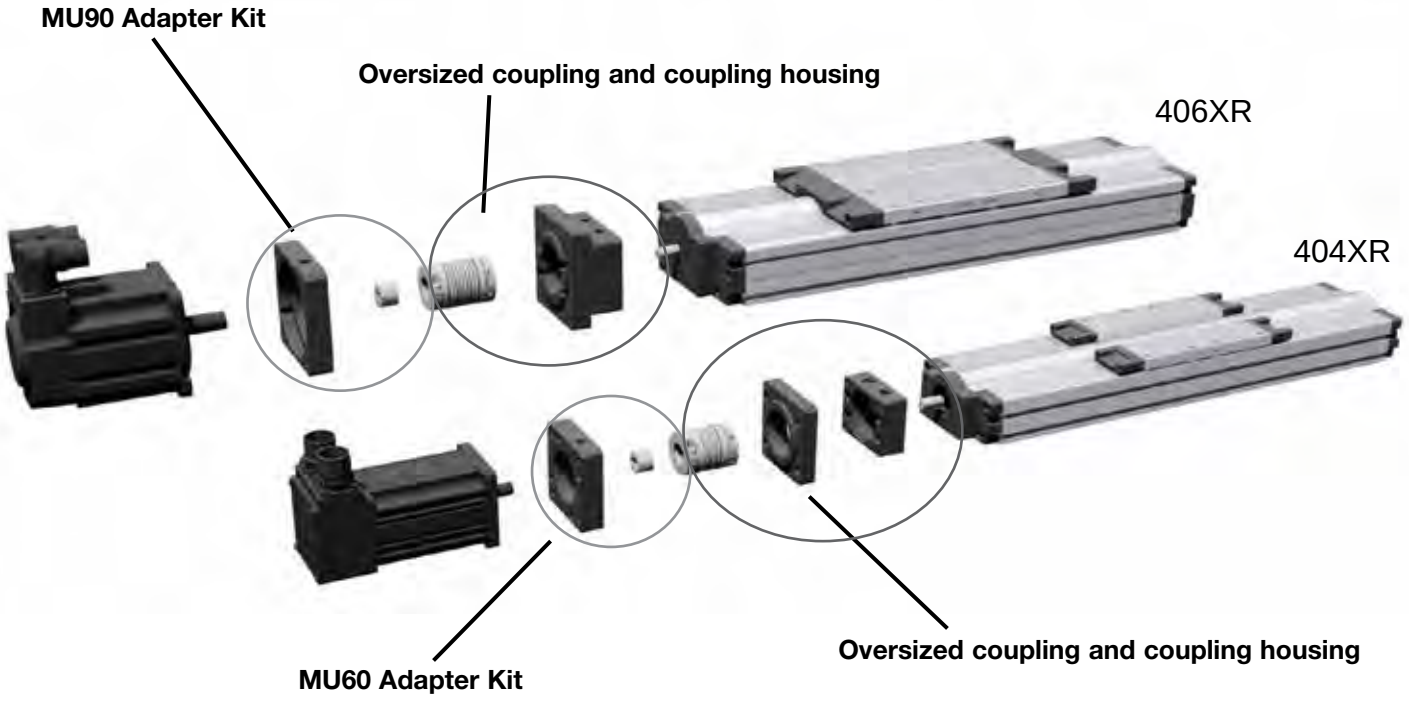
400XR Universal Motor Adapter (inline only)

The UMA is designed to make it easier than ever for our machine designers to specify their linear stage with whatever motor they'd like, while avoiding the often drawn out "customization" process.

Quick Motor Integration
The Universal Motor Adapter (UMA) is an innovative motor mount component that allows for simple configuration of the 404XR or 406XR to a variety of servo or steppers from a plethora of manufacturers. Utilizing a vast database of motor mounting flanges, the UMA allows for rapid integration of hundreds of motors from numerous manufacturers.

Convenient Ordering
For customers choosing to mount a third party, non-Parker motor, the UMA alleviates the hassle and lead time of having to create a "customized" motor mount. Typically, designers would have to place an additional custom motor request for a specific mount, but now designers can simply configure the motor manufacturer right into the XR part number

Easy Selection with Our Online e-Configurator
Now with the UMA, you can easily choose the right option for your motor through our online e-Configurator, saving time and money. With the UMA integrated into the e-Configurator, simply selecting the desired motor manufacturer and model type will configure the actuator with the appropriate selected motor.

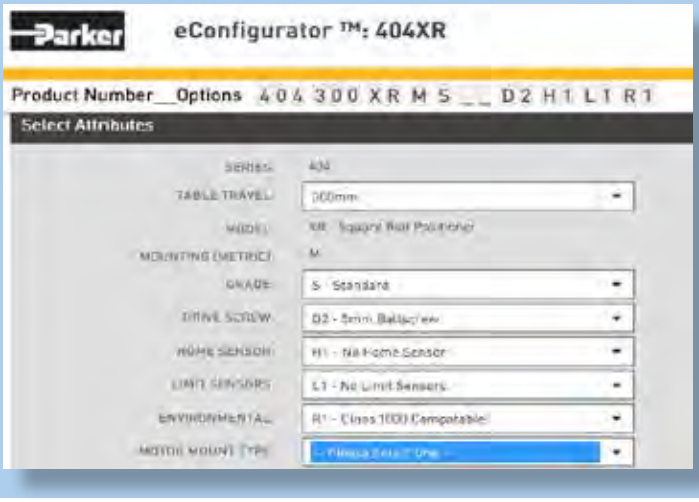


How to Order the Right Motor Mount

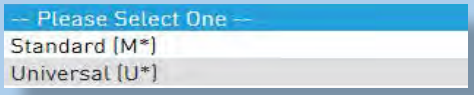
Motor mount configuration to 3rd party motors is now easier than ever through use of the universal motor adapter (UMA), and our online product configuration tool. Consult the online e-Configurator for a complete listing of supported motors.

If you do not find a specific motor you would like use in your application, please call our application's team at 1-800-358-9070.

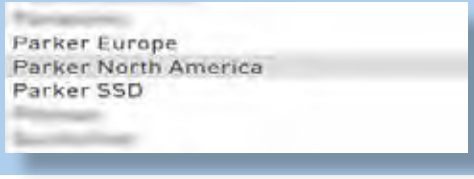
STEP 1
In order to specify a 404 or 406 XR with a third party motor mount, launch the online configurator tool from **parker.com/emc** for the appropriate 404 or 406 XR.



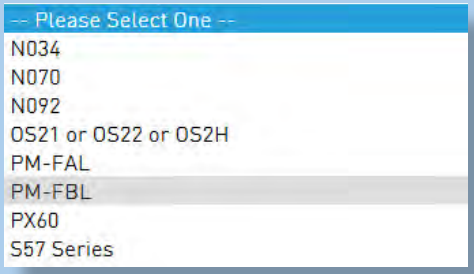
STEP 2
Configure the XR with all desired options and then specify the motor mount type. Select Standard for Parker motors or Universal for other motors.



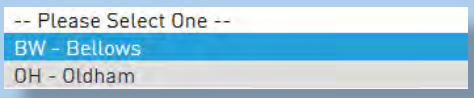
STEP 3
Select the motor manufacturer.



STEP 4
After motor manufacturer, choose the exact motor series from that manufacturer. This will automatically select the appropriate motor mount for the 400 XR stage.



STEP 5
Finally, select from either Bellows or Oldham style coupling options.

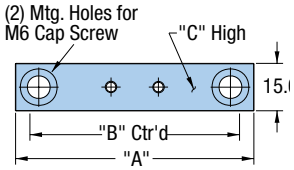


Riser Plate Accessory

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	—

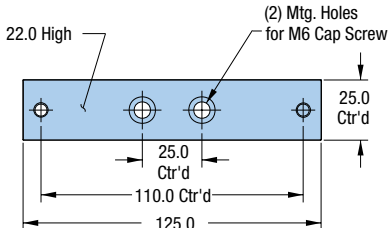
401XR/402XR
Part Number: 002-2063-01/ 002-2064-01



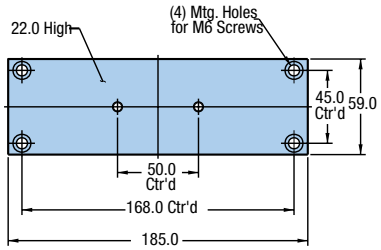
Dimensions (mm)

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

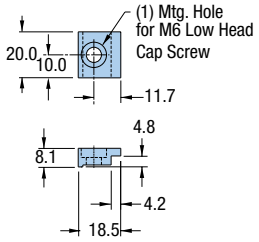


Toe Clamp Accessory

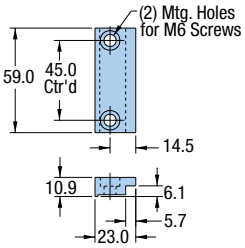
Used for convenient outboard mounting of table to a base plate, riser plates, Z-axis bracket, or other 400XR table. All hardware is included.

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

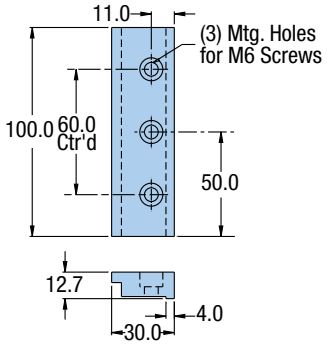
404XR
Part Number: 002-3618-01



406XR
Part Number: 002-3624-01



412XR
Part Number: 002-2160-01



ORDERING INFORMATION
401XR

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 (0.375" dia. shaft)
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.**

Free sizing and selection support from Virtual Engineer at virtualengineer.com

Virtual Engineer

ORDERING INFORMATION
402XR

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	D3	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

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	–	D3	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, screws)

⑥ **Drive Screw**

D1	Free Travel
D2	5 mm Ballscrew
D3	10 mm Ballscrew
D4	20 mm Ballscrew (standard grade only)

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**

Motor Interface Option
- Standard Parker Motor Adapters (go to Standard Parker options in **blue**)

–OR–

- Universal Motor Adapter for other motors (go to Universal Motor Adapter in **grey**)

Standard Parker Motor Adapters

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)

(Motor Coupling continued next page)

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

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

Standard Parker Motor Adapters

(Motor Coupling continued)

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)

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)
M51	HDY55 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*
M71	PM-FAL In-Line Mounting
M72	PM-FAL In-Line Mounting, “A” Location*
M73	PM-FAL In-Line Mounting, “B” Location*
M74	PM-FAL In-Line Mounting, “C” Location*
M75	PM-FBL In-Line Mounting

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

► **Continue to step ⑪ for Encoders in the order process.**

Universal Motor Adapter

⑨ Motor Coupling

BW	Bellows coupling option
OH	Oldham coupling option

⑩ Motor Mount

U###	Consult the online eConfigurator at **parker.com/emc** to create a complete part number for the desired 404XR with motor mounting to a 3rd party motor. For more details on how to use the online configurator, see "How to Order the Right Motor Mount" in this product catalog

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	Standard Environment
R2	Class 10 Compatible (consult factory)
R5	Standard Environment 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

† Sensor pack options L11-L14 cannot be ordered with R5 option on 404XR. Linear encoder options E2-E4 cannot be ordered with R5 option on 404XR. R5 option not available for 50mm travel 404XR units. Consult factory if required.
* 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 in "400XR Multi Axis Configurations")
***Consult factory for multi-axis pinning options and quotation

Free sizing and selection support from Virtual Engineer at virtualengineer.com

Virtual Engineer

406XR

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 ***

*** 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.

Motor Interface Option

- Standard Parker Motor Adapters (go to Standard Parker options in **blue**)

–OR–

- Universal Motor Adapter for other motors (go to Universal Motor Adapter in **grey**)

Standard Parker Motor Adapters

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)

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
M24	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	PM-FBL 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.

Continue to step ⑪ for Encoders in the order process.

Universal Motor Adapter

⑩ **Motor Coupling**

BW	Bellows coupling option
OH	Oldham coupling option

Motor Mount

U###	Consult the online eConfigurator at **parker.com/emc** to create a complete part number for the desired 404XR with motor mounting to a 3rd party motor. For more details on how to use the online configurator, see "How to Order the Right Motor Mount" in this product catalog.

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	Standard Environment
R2	Class 10 Compatible (consult factory)
R5	Standard Environment 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

†Please consult factory if selecting option R5.
* 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 in "400XR Multi Axis Configurations")
***Consult factory for multi-axis pinning options and quotation

412XR

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

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

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 in "400XR Multi Axis Configurations")
***Consult factory for multi-axis pinning options and quotation

The HMRS Series

Screw-Driven Actuators
for Industrial, High-Thrust, High Payload Positioning Applications

- **High dynamic control for precision positioning**
- **High thrust capacity**
- **High payload and moment load capacity**
- **Highly configurable design**
- **Ideal in multi-axis applications**

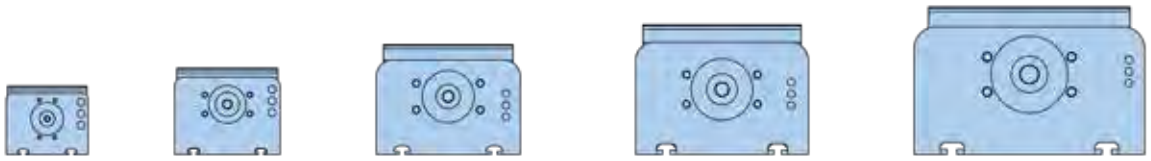
Features

- **5 different frame sizes to choose from**
- **Basic or reinforced profiles for supported or unsupported applications**
- **Tandem carriage with second carriage for higher load capabilities**
- **Long available strokes**
- **Complete motor and drive packages**
- **Easy lube feature for reduced maintenance**
- **Ambient operating temperature range -20˚C to +80˚C**
- **IP54 Rating**

Standard Profile

HMRS08 HMRS11 HMRS15 HMRS18 HMRS24

Reinforced Profile

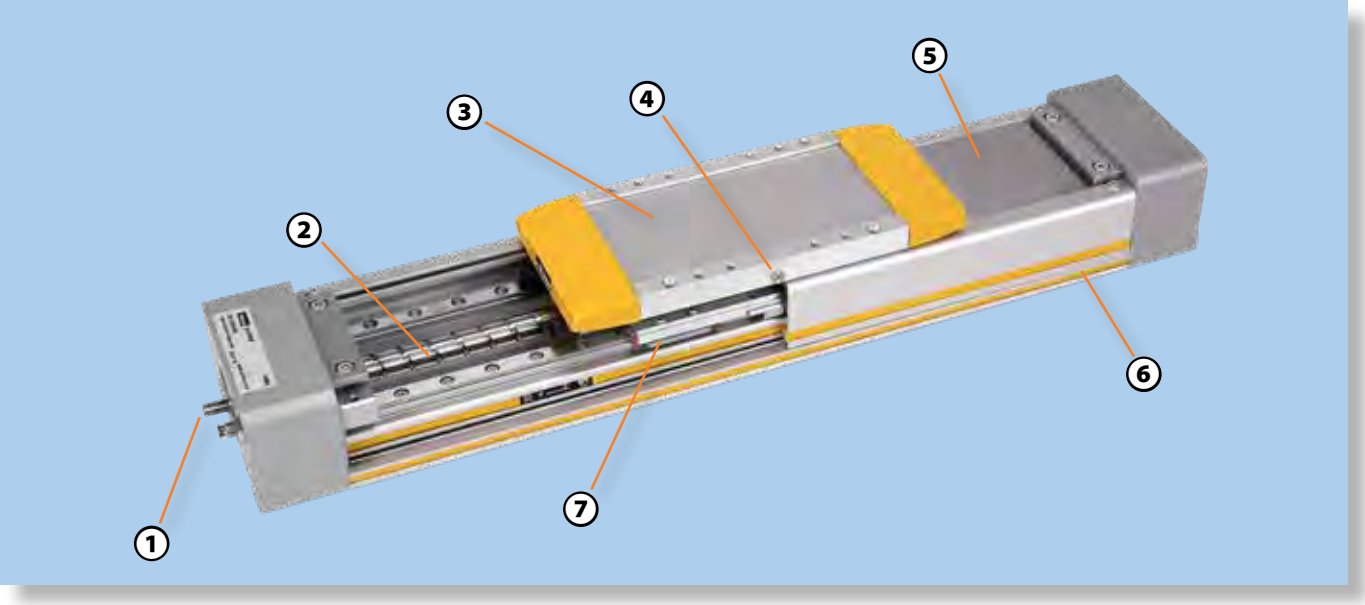


	HMRS08	HMRS11	HMRS15	HMRS18	HMRS24
Maximum Travel (mm)	1200	1500	2000	2100	2300
Maximum Payload (N)	1800	4450	8800	16200	26600
Maximum Acceleration (m/sec^2)	10	10	10	10	10

The HMRS is the screw driven version of the HMR family. The large diameter ball screw assembly allows this positioner to achieve very high thrust force capacity.

Having multiple screw lead options for every frame size promotes flexibility for diverse application demands. The HMRS can also achieve greater positional precision than the belt driven counterpart.

The compact design allows integration of the HMRS into any machine layout, providing superior dynamic performance with minimal space utilization.



① **Drive shaft**
Designed to pair with a large assortment of motor and gearhead options

② **High force ball screw**
Multiple lead options for every frame size, offering high thrust and high throughput

③ **Carriage assembly**
Low profile, high strength aluminum construction with threaded and pinning mounting options

④ **Lubrication ports**
Easy access maintenance (1x per side) allows for single point lubrication for all bearing trucks and the ball nut at any location along travel

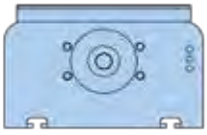
⑤ **Corrosion resistant steel sealing band**
Magnetically fastened to the actuator body and provides IP54 sealing

⑥ **Slotted profile**
Dovetail grooves for actuator & sensor mounting

⑦ **Recirculating profile rail bearing**
Two rails and four bearing trucks total for maximized payload capacity

Profile Options

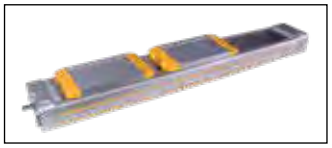
Basic profile - for applications where actuator is fully supported, this option provides a lower profile option.



Reinforced profile - for long un-supported spans (i.e. gantry style applications).

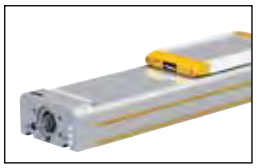
Carriage Options

Standard carriage or tandem carriage for higher load capabilities



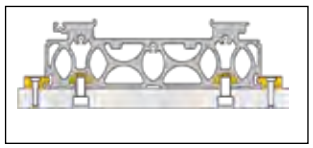
Cover Options

IP20 rated without protective cover, or IP54 rated protective cover with seal strip cover assemblies—ideal for harsh environments



Actuator Mounting Options

HMR actuators can be mounted from the underside into t-nuts in the bottom t-slots or via toe clamps into the t-slots on the side of the extrusion.



Pinning options are also available for mounting, carriage to base and carriage to carriage. Consult factory for additional information.

Multi-axis Systems

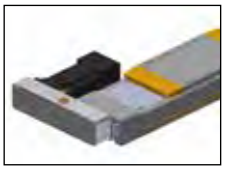
A wide range of adapter plates and intermediate drive shafts simplifies engineering and installation.

**Please consult factory for your individual system design.*

Other Options & Accessories

HMRS actuators can be outfitted with a variety of different options.

In addition to the standard configurable options highlighted in Options & Accessories, a list of commonly used non-standard options are highlighted below. Please contact us for assistance in choosing any of these or any other unique configurations.



- **Purge ports**
- **Parallel motor mount**
- **Longer than cataloged stroke**
- **...and many more**

SPECIFICATIONS

HMRS Series (HMRS08 and HMRS11)

Parker's High Moment Rodless (HMR) Series electric linear actuator is one of the most user friendly and versatile actuator lines on the market today.

Guided by two square rail bearings, the HMR has enormous moment and payload capacity bundled in a low-profile, yet sleek package. With five different frame sizes, two different drive train options, multiple mounting, carriage and sensor options, and an IP54 protective cover option—along with a multitude of other customizable features—the HMR was truly designed with flexibility in mind.

Common Specifications

Actuator Size			HMRS08				HMRS11			
Screw Type			12 x 5		12 x 12		16 x 5		16 x 16	
Screw Lead	s_{lin}	mm	5		12		5		16	
Screw Diameter		mm	12				16			
Duty Cycle		%	100				100			
Linear Speed (Max)	v_{max}	m/s	0.25		0.6		0.25		0.8	
Acceleration (Max)	a_{max}	m/s^2	10							
Repeatability (unidirectional)		µm	± 20							
Order Stroke (Max) (1)		mm	1200				1500			
Thrust Force (Max)	$F_{A_{max}}$	N lbs	820 185				2200 495			
Thrust Force @ 2540 km Life	$F_{A_{max}}$	N lbs	820 185		650 146		1550 349		1150 259	
Torque on Drive Shaft (Max)	$M_{A_{max}}$	Nm in-lb	0.7 6.2		1.7 15.0		1.9 16.8		6.1 54.0	
Torque on Drive Shaft @ 2540 km Life	$M_{A_{max}}$	Nm in-lb	0.7 6.2		1.3 11.5		1.3 11.5		3.1 27.4	
Torque — No Load	M_0	Nm in-lb	0.2 1.8		0.2 1.8		0.3 2.7		0.4 3.5	
Inertia										
@ Zero Stroke	J_0	$kgmm^2$	4				13			
Per Meter of Stroke	J_{OS}	$kgmm^2/m$	14				45			
Per 1 kg Moved Mass	J_m	$kgmm^2/kg$	0.6		3.7		0.6		6.5	
Unit Weight (by Order Code Option)			**B**	**C**	**R**	**S**	**B**	**C**	**R**	**S**
@ Zero Stroke	m_0	kg	1.8	2.1	2.2	2.5	3.5	3.9	4.6	5.0
Per Meter of Stroke	m_{OS}	kg/m	3.7	4.7	4.8	5.7	6.6	7.6	8.8	9.9
Carriage (by Order Code Option) (2)	m_C	kg	**0** 1.0		**1** 0.7		**0** 1.6		**1** 1.3	
Ambient Temperature Range		°C	-20 to +80							
IP Rating(3)			IP 54							

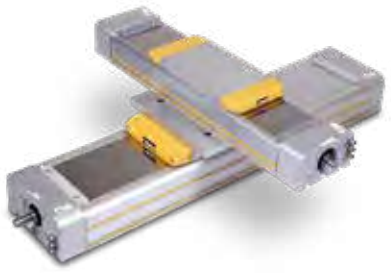
Note- For force and moment load specifications, see HMRS Loading Conditions

(1) Longer lengths available - please consult factory

(2) For tandem carriage weight add mass from column '0' and '1'

(3) For unit with protective covers - IP20 without covers

HMRS Series (HMRS15, HMRS18, and HMRS24)



Common Specifications

Actuator Size			HMRS15		HMRS18		HMRS24	
Screw Type			20 x 5	20 x 20	25 x 10	25 x 25	32 x 10	32 x 32
Screw Lead		mm	5	20	10	25	10	32
Screw Diameter		mm	20		25		32	
Duty Cycle		%	100		100		100	
Linear Speed (Max)	v_{max}	**m/s**	0.25	1	0.5	1.25	0.5	1.6
Acceleration (Max)		**m/s²**	10					
		µm	± 20					
		mm	2000		2100		2300	
		N	2600		4800		5500	
		lbs	585		1,080		1,238	
		N	1800	2160	3300	3960	3500	4880
		lbs	405	486	743	891	788	1098
		Nm	2.2	9	8.3	20.8	9.5	30.4
		in-lb	19.5	79.7	73.5	184.1	84.1	269.0
		Nm	1.6	7.5	5.7	17.1	6.1	27
		in-lb	14.2	66.4	50.4	151.3	54.0	239.0
		Nm	0.7	0.9	0.9	1	1	1.1
		in-lb	6.2	8.0	8.0	8.9	8.9	9.7
		kgmm²	14		35		96	
		kgmm²/m	107		245		639	
		kgmm²/kg	0.6	10.1	2.5	15.8	2.5	25.9

		B	C	R	S	B	C	R	S	B	C	R	S
	kg	5.2	6.1	7.1	7.9	8.9	10.0	11.2	12.3	16.5	18.1	20.5	22.2
	kg/m	12.1	13.9	15.5	17.2	15.5	17.7	19.1	21.4	25.6	28.3	30.7	33.4
	kg	**0** 2.6		**1** 1.8		**0** 4.7		**1** 3.7		**0** 9.2		**1** 7.3	
	°C	-20 to +80											
		IP 54											

Note- For force and moment load specifications, see HMRS Loading Conditions

(1) Longer lengths available - please consult factory

(2) For tandem carriage weight add mass from column '0' and '1'

(3) For unit with protective covers - IP20 without covers

HMRS Loading Specifications (Max) - HMRS08 and HMRS11

Life and loading characteristics shown for both belt and screw driven units.

Rated Life			HMR08	HMR11
2540 km	F_Y / F_Z	N (lb)	1800 (405)	4450 (1001)
2540 km Tandem	F_Y / F_Z	N (lb)	2700 (608)	6675 (1508)
8000 km	F_Y / F_Z	N (lb)	1250 (281)	3000 (675)
8000 km Tandem	F_Y / F_Z	N (lb)	1875 (422)	4500 (1013)
2540 km	M_X	Nm (in-lb)	45 (398)	155 (1372)
	M_Y	Nm (in-lb)	80 (708)	200 (1770)
	M_Z	Nm (in-lb)	80 (708)	200 (1770)
2540 km Tandem	M_X	Nm (in-lb)	68 (602)	235 (2080)
	M_Y	Nm (in-lb)	120 (1062)	300 (2655)
	M_Z	Nm (in-lb)	120 (1062)	300 (2655)
8000 km	M_X	Nm (in-lb)	30 (266)	105 (929)
	M_Y	Nm (in-lb)	55 (487)	135 (1195)
	M_Z	Nm (in-lb)	55 (487)	135 (1195)
8000 km Tandem	M_X	Nm (in-lb)	45 (398)	160 (1416)
	M_Y	Nm (in-lb)	80 (708)	205 (1814)
	M_Z	Nm (in-lb)	80 (708)	205 (1814)

HMRS Stroke dependent speed - HMRS08 and HMRS11

Actuator Size			HMRS08		HMRS11	
Screw Diameter (mm)			12		16	
Screw Lead (mm)			5	12	5	16
Max. permissible speed at order stroke (mm/s)	200	[mm]	250	600	250	800
	400	[mm]	250	600	250	800
	600	[mm]	152	366	197	631
	800	[mm]	102	245	132	424
	1000	[mm]	73	176	95	304
	1200	[mm]	55	132	71	228
	1400	[mm]	-	-	56	178
	1600	[mm]	-	-	45	143
	1800	[mm]	-	-	-	-
	2000	[mm]	-	-	-	-
	2200	[mm]	-	-	-	-
	2400	[mm]	-	-	-	-
	2600	[mm]	-	-	-	-
	2800	[mm]	-	-	-	-
	3000	[mm]	-	-	-	-
	3200	[mm]	-	-	-	-
	3400	[mm]	-	-	-	-
	3600	[mm]	-	-	-	-
	3800	[mm]	-	-	-	-
	4000	[mm]	-	-	-	-

HMRS Loading Specifications (Max) - HMRS15, HMRS18, HMRS24

Life and loading characteristics shown for both belt and screw driven units.

Rated Life			HMR15	HMR18	HMR24
2540 km	F_Y / F_Z	N (lb)	8,800 (1,980)	16,200 (3,645)	26,600 (5,985)
2540 km Tandem	F_Y / F_Z	N (lb)	13,200 (2,970)	24,300 (5,468)	39,900 (8,978)
8000 km	F_Y / F_Z	N (lb)	6,000 (1,350)	11,000 (2,475)	18,200 (4,095)
8000 km Tandem	F_Y / F_Z	N (lb)	9,000 (2,025)	16,500 (3,713)	27,300 (6,143)
2540 km	M_X	Nm (in-lb)	430 (3,806)	940 (8,320)	2,150 (19,029)
	M_Y	Nm (in-lb)	560 (4,956)	1,230 (10,886)	2,430 (21,507)
	M_Z	Nm (in-lb)	560 (4,956)	1,230 (10,886)	2,430 (21,507)
2540 km Tandem	M_X	Nm (in-lb)	645 (5,708)	1,410 (12,480)	3,225 (28,544)
	M_Y	Nm (in-lb)	840 (7,435)	1,845 (16,330)	3,645 (32,261)
	M_Z	Nm (in-lb)	840 (7,435)	1,845 (16,330)	3,645 (32,261)
8000 km	M_X	Nm (in-lb)	290 (2,567)	640 (5,664)	1,460 (12,922)
	M_Y	Nm (in-lb)	380 (3,363)	840 (7,435)	1,660 (14,692)
	M_Z	Nm (in-lb)	380 (3,363)	840 (7,434)	1,660 (14,692)
8000 km Tandem	M_X	Nm (in-lb)	435 (3,850)	960 (8,497)	2,190 (19,383)
	M_Y	Nm (in-lb)	570 (5,045)	1,260 (11,152)	2,490 (22,038)
	M_Z	Nm (in-lb)	570 (5,045)	1,260 (11,152)	2,490 (22,038)

HMRS Stroke dependent speed - HMRS15, HMRS18, HMRS24

Actuator Size			HMRS15		HMRS18		HMRS24	
Screw Diameter (mm)			20		25		32	
Screw Lead (mm)			5	20	10	25	10	32
Max. permissible speed at order stroke (mm/s)	200	[mm]	250	1,000	500	1,250	500	1,600
	400	[mm]	250	1,000	500	1,250	500	1,600
	600	[mm]	250	1,000	500	1,250	500	1,600
	800	[mm]	169	678	382	956	423	1,354
	1000	[mm]	122	486	277	694	312	997
	1200	[mm]	91	366	211	526	239	765
	1400	[mm]	71	285	165	413	189	605
	1600	[mm]	57	228	133	333	153	491
	1800	[mm]	47	187	109	274	127	406
	2000	[mm]	39	156	92	229	107	342
	2200	[mm]	33	132	78	195	91	291
	2400	[mm]	28	113	67	167	79	251
	2600	[mm]	-	-	58	145	68	219
	2800	[mm]	-	-	51	128	60	193
	3000	[mm]	-	-	45	113	53	171
	3200	[mm]	-	-	40	100	48	152
	3400	[mm]	-	-	-	-	43	137
	3600	[mm]	-	-	-	-	39	123
	3800	[mm]	-	-	-	-	35	112
	4000	[mm]	-	-	-	-	32	102

HMRS Weight, Mass, and Inertia

Weight and mass HMRS

Product size			**HMRS08**				**HMRS11**				**HMRS15**			
			Weight of actuator											
Version of actuator (see order code)			B	C	R	S	B	C	R	S	B	C	R	S
Weight actuator. 0 - order stroke	m_0	[kg]	1.8	2.1	2.2	2.5	3.5	3.9	4.6	5.0	5.2	6.1	7.1	7.9
Weight actuator per 1 meter	m_{mt}	[kg/m]	3.7	4.7	4.8	5.7	6.6	7.6	8.8	9.9	12.1	13.9	15.5	17.2
			Moving mass											
Version of carriage (see order code)			0		1		0		1		0		1	
Weight carriage*	m_c	[kg]	1.0		0.7		1.6		1.3		2.6		1.8	

Weight and mass HMRS

Product size			**HMRS18**				**HMRS24**			
			Weight of actuator							
Version of actuator (see order code)			B	C	R	S	B	C	R	S
Weight actuator. 0 - order stroke	m_0	[kg]	8.9	10.0	11.2	12.3	16.5	18.1	20.5	22.2
Weight actuator per 1 meter	m_{mt}	[kg/m]	15.5	17.7	19.1	21.4	25.6	28.3	30.7	33.4
			Moving mass							
Version of carriage (see order code)			0		1		0		1	
Weight carriage*		[kg]	4.7		3.7		9.2		7.3	

*For tandem carriage weight add mass from column '0' and '1'

Total mass HMRS: $m_{tot} = m_0 + m_C$ + order stroke * m_{mt}

Inertia HMRS

Product size			**HMRS08**		**HMRS11**		**HMRS15**	
Pitch (see order code)			**5**	**12**	**5**	**16**	**5**	**20**
Inertia actuator. 0 - order stroke	J_0	[kgmm²]	4		13		14	
Inertia actuator per 1 meter	J_{mt}	[kgmm²/m]	14		45		107	
Inertia per 1 kg moving mass	J_{kg}	[kgmm²/kg]	0.6	3.7	0.6	6.5	0.6	10.1

Inertia HMRS

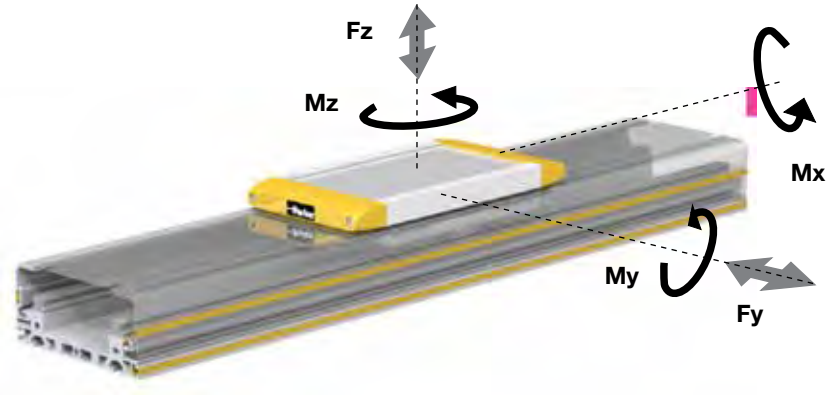
Product size			**HMRS18**		**HMRS24**	
Pitch (see order code)			**10**	**25**	**10**	**32**
Inertia actuator. 0 - order stroke	J_0	[kgmm²]	35		96	
Inertia actuator per 1 meter	J_{mt}	[kgmm²/m]	245		639	
Inertia per 1 kg moving mass	J_{kg}	[kgmm²/kg]	2.5	15.8	2.5	25.9

Total inertia HMRS: $J_{tot} = J_0$ + order stroke * $J_{mt} + m_C * J_{kg} + m * J_{kg}$

HMR Loading Conditions

Loading conditions, including external forces and moment loading, are application dependent. The center of gravity for the mass/payload attached to the carriage must be determined in order to properly size the ideal actuator for your application. Please note that when selecting the proper HMR actuator for your system the sum of all loading should not exceed "1" as per the formula below.

Loads, forces and bending moments



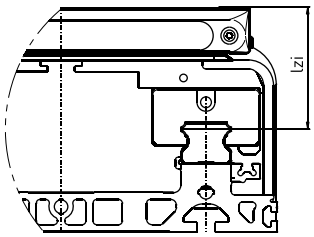
Calculating Load Factors - Combined Normal and Moment Load

The sum of combined loads (static and dynamic) must not exceed "1" at any time as shown in the formula below:

$$L = \frac{F_y}{Fy_{(max)}} + \frac{F_z}{Fz_{(max)}} + \frac{M_x}{Mx_{(max)}} + \frac{M_y}{My_{(max)}} + \frac{M_z}{Mz_{(max)}} \leq 1$$

$M = F \times d$ (Nm)
$M_x = M_{x\ static} + M_{x\ dynamic}$
$M_y = M_{y\ static} + M_{y\ dynamic}$
$M_z = M_{z\ static} + M_{z\ dynamic}$

Internal lever arm l_{zi}



Dimensions - Internal lever arm l_{zi}

Product size		l_{zi}
HMRx085	[mm]	33.0
HMRx110	[mm]	39.5
HMRx150	[mm]	50.0
HMRx180	[mm]	57.5
HMRx240	[mm]	68.0

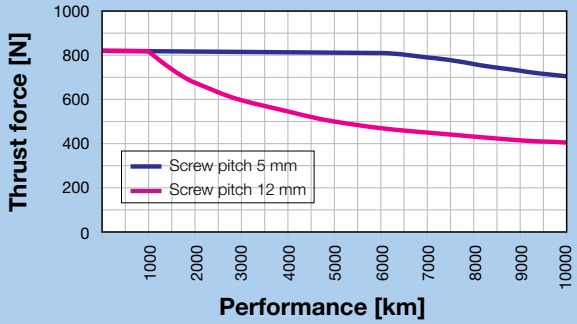
Free sizing and selection support from Virtual Engineer at virtualengineer.com

Virtual Engineer

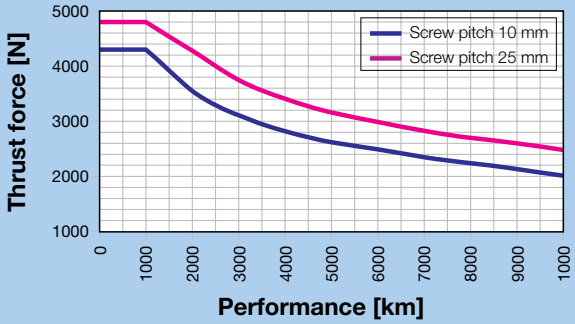
HMRS Thrust/Life Curve

Performance expectancy depends on the application's required force. An increase in force will reduce performance.

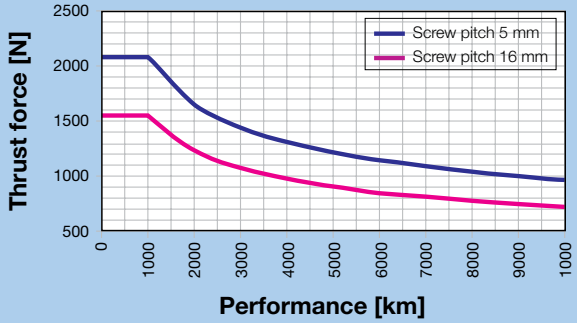
HMRS08 Performance / Thrust force



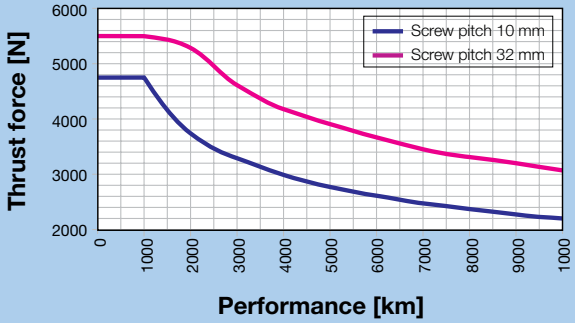
HMRS18 Performance / Thrust force



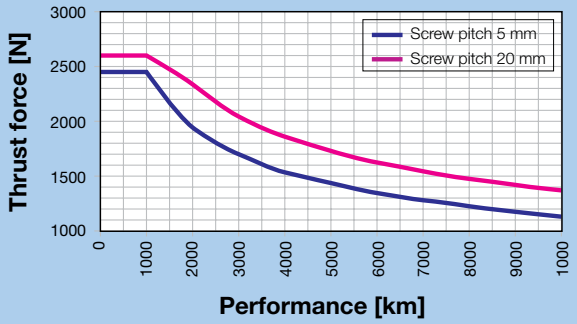
HMRS11 Performance / Thrust force



HMRS24 Performance / Thrust force



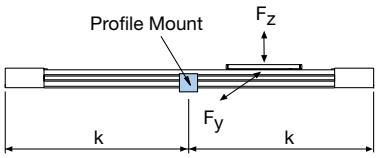
HMRS15 Performance / Thrust force



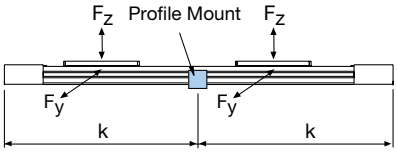
DIMENSIONS

HMRS Maximum Permissible Unsupported Length — *Determining actuator mounting placement*

HMR Series actuators need to be mounted onto a solid machine base or frame structure using appropriately positioned actuator mounts. This ensures that the actuator will not undergo excessive deflection based on the application's load and length requirements.

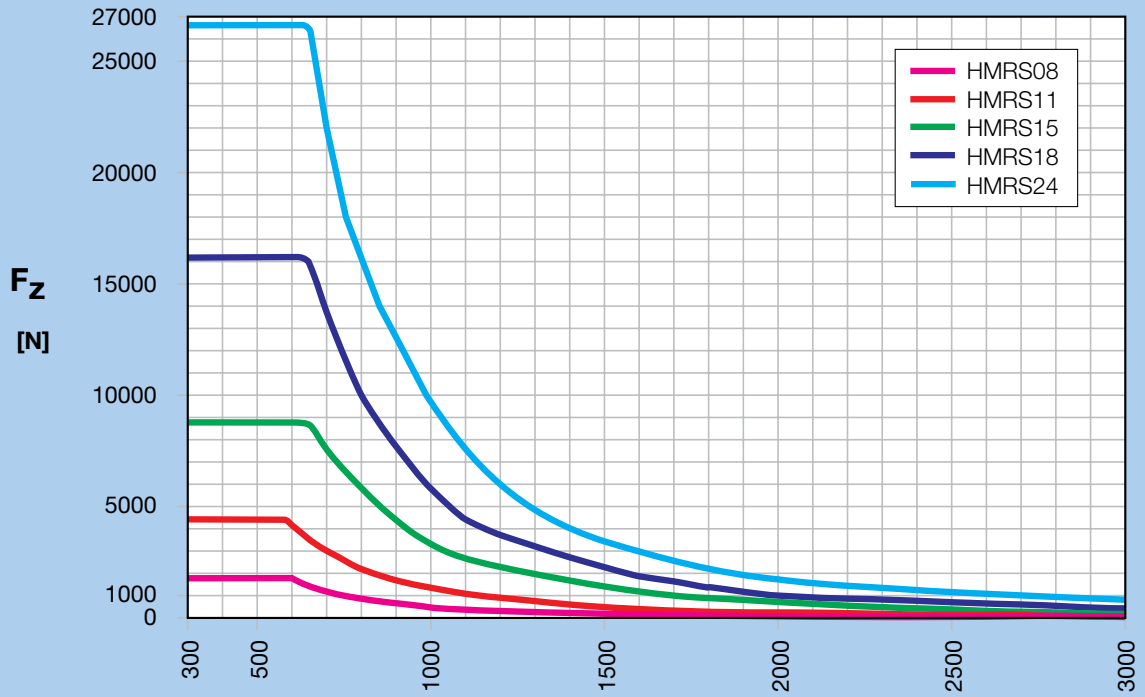


The greater the load and/or the longer the unsupported length between mounts, the more the actuator is susceptible to deflection.



Deflection is also dependent on the carriage orientation (F_Z for standard mounted actuator or F_y for a side mounted actuator).

Max. admissible loads [N] and supporting distances [mm] (self-supporting- *reinforced profile only*)



Example F_z HMR 11:

For a 3160 N load the distance "d" between supporting elements is 700 mm.
For mounting accessories see "Actuator Mounting" in Options & Accessories.

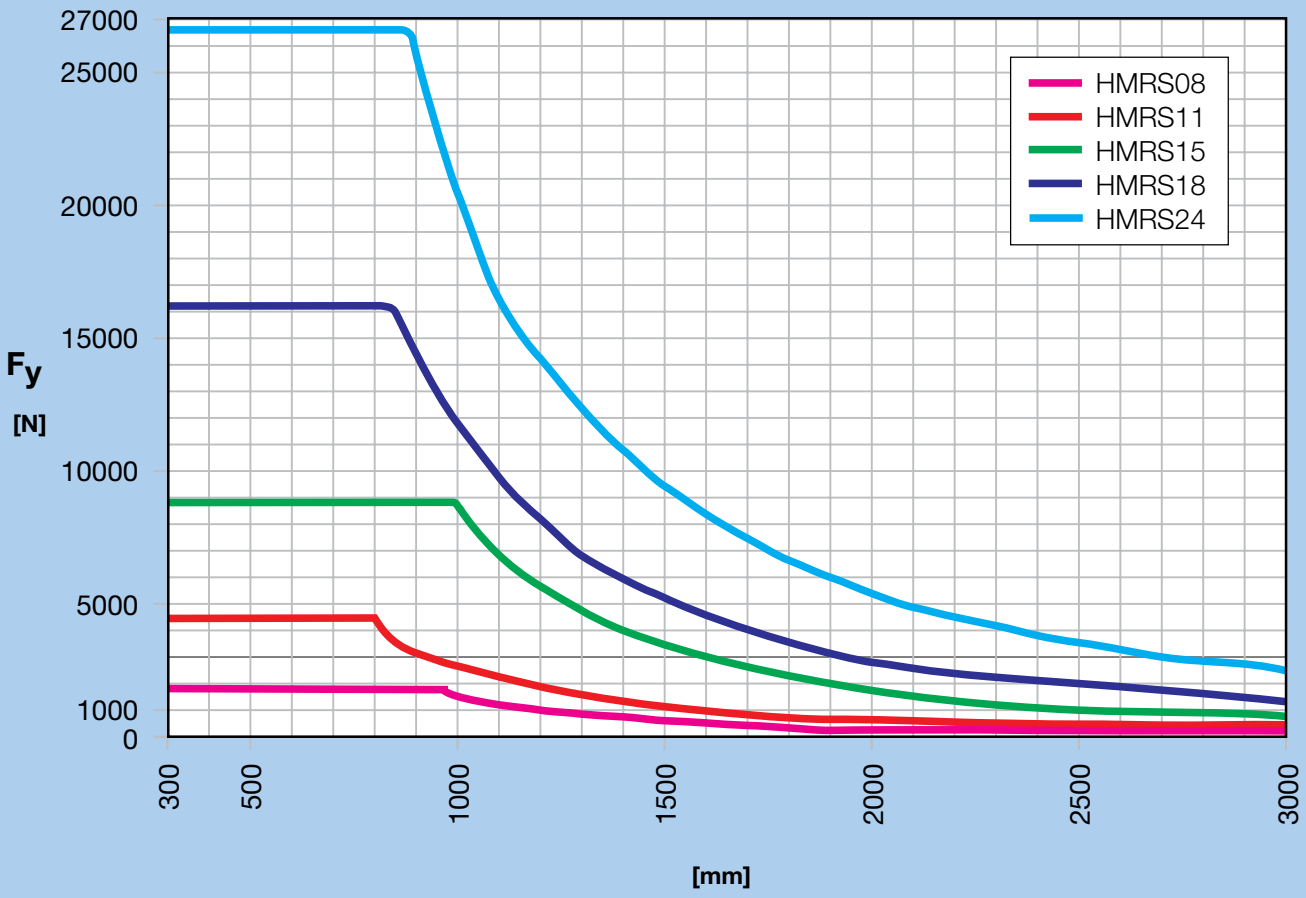
Maximum Permissible Unsupported Length

Determining actuator mounting placement

Use the appropriate deflection graph to ensure that the application load does not exceed the deflection curve. Supporting the actuator within the recommended maximum distance "k" will ensure that the installation will have a maximum deflection equal to 0.01% of distance "k."

To further reduce deflection, simply reduce the distance between actuator mounts as described in the examples below.

Max. admissible loads [N] and supporting distances [mm] (self-supporting- *reinforced profile only*)



Example F_y HMR 11:

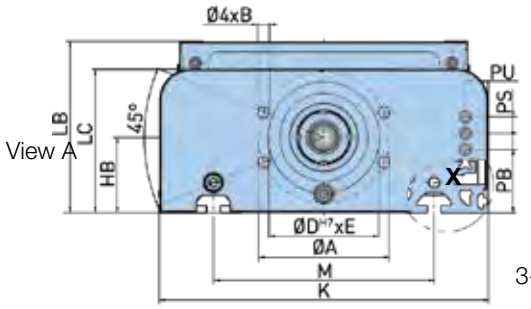
For a 3160 N load the distance "d" between supporting elements is 900 mm.
For mounting accessories see "Actuator Mounting" in Options & Accessories.

HMRS Dimensions – (mm)

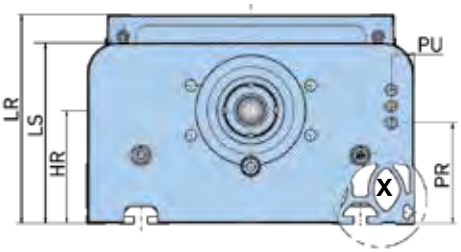
HMR actuators can be configured with either "Basic" or "Reinforced" profiles based on application demands. Basic profiles are suitable for applications where the actuator is secured to a machine base and constantly supported. Reinforced profiles can be utilized in applications with unsupported spans. See Maximum Permissible Unsupported Length for mounting support requirements.

Dimensions

"Basic" profile



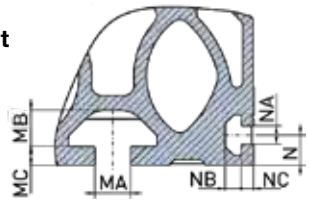
"Reinforced" profile



3-PIN M8 connections

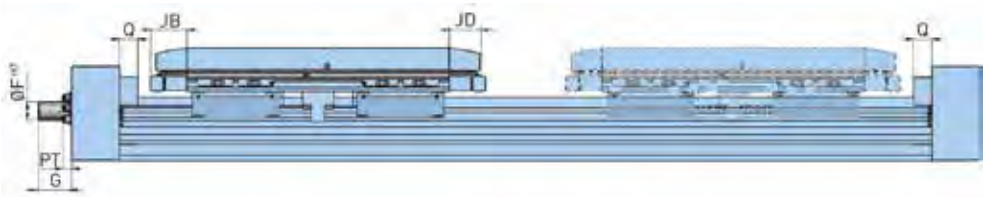
View X

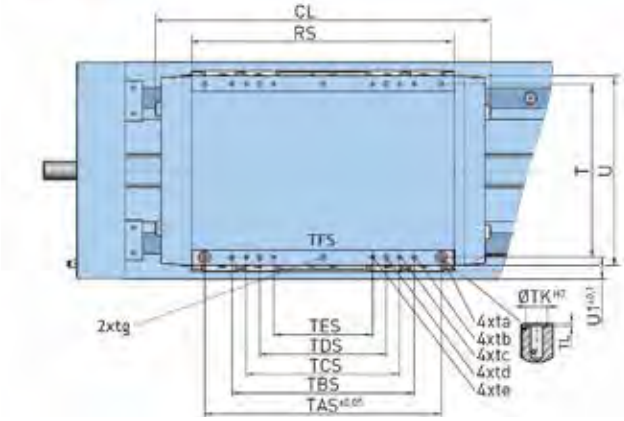
T-slot attachment



Note: The same T-slot profile is used for both profile types

A▶





Carriage pinning option
See Options & Accessories for dowel sleeve information.

Download 2D & 3D files from parker.com/emc

Dimension table - HMRS

Product size		ØA	B	ØD^{H7}	E	ØF^{H7}	G	HB	HR	K	LB	LC	LR	LS
HMRS08	[mm]	42.0	M4	34.0	3.0	6.0	11.0	26.0	37.0	85.0	60.0	52.5	71.0	63.5
HMRS11	[mm]	51.0	M6	39.0	5.0	10.0	18.0	32.0	52.0	110.0	69.5	60.5	89.5	80.5
HMRS15	[mm]	72.0	M8	54.0	4.0	12.0	31.0	36.0	60.0	150.0	90.0	74.0	114.0	98.0
HMRS18	[mm]	80.0	M8	64.0	2.5	15.0	33.0	44.0	67.5	180.0	111.5	93.5	134.5	116.5
HMRS24	[mm]	95.0	M10	80.0	2.5	20.0	37.0	55.0	83.0	240.0	125.0	104.5	153.0	132.5

Dimension table - HMRS

Product size		M	MA	MB	MC	N	NA	NB	NC	PB	PR	PS	PT	PU	Q
HMRS08	[mm]	50.0	5.2	4.5	1.5	4.5	3.4	3.0	2.5	19.3	30.3	12.0	9.0	7.1	16.0
HMRS11	[mm]	70.0	5.2	4.5	1.8	4.5	3.4	3.0	2.5	23.5	43.5	12.0	9.0	8.5	20.0
HMRS15	[mm]	96.0	6.2	6.8	3.0	6.5	5.2	4.6	3.5	15.0	39.0	12.0	9.0	15.0	20.0
HMRS18	[mm]	116.0	8.0	7.8	4.5	8.5	5.2	4.5	3.5	28.0	51.0	12.0	9.0	18.0	20.0
HMRS24	[mm]	161.0	10.0	10.2	5.3	8.5	5.2	4.5	3.5	46.0	74.0	12.0	9.0	16.5	20.0

Dimension table - carriage standard HMRS

Product size		JB	JD	CL	RS	T	TAS	ta	TBS	tb	TCS	tc	TDS	td	TES
HMRS08	[mm]	33.5	30.0	195.0	128.0	74.0	97.0	M4x12	70.0	M4x12	40.0	M4x12	-	-	-
HMRS11	[mm]	37.5	34.0	225.0	150.0	96.0	122.0	M5x12	97.0	M5x12	65.0	M5x12	25.0	M5x12	-
HMRS15	[mm]	37.5	34.0	266.0	191.0	120.0	170.0	M5x12	122.0	M5x12	110.0	M5x12	70.0	M5x12	-
HMRS18	[mm]	40.0	34.0	311.0	231.0	150.0	202.0	M6x12	170.0	M5x10	122.0	M5x10	110.0	M5x12	90.0
HMRS24	[mm]	40.0	34.0	371.0	291.0	192.0	262.0	M8x16	202.0	M6x12	170.0	M5x10	140.0	M8x16	122.0

Dimension table - carriage standard HMRS

Product size		te	TFS	tf	tg	ØTKH7	TL	U	U1
HMRS08	[mm]	-	-	-	-	7.0	1.5	83.0	5.5
HMRS11	[mm]	-	-	-	-	7.0	1.5	105.0	7.0
HMRS15	[mm]	-	-	-	M5x12	7.0	1.5	135.0	15.0
HMRS18	[mm]	M6x12	-	-	M6x12	9.0	1.5	165.0	15.0
HMRS24	[mm]	M5x10	110.0	M5x12	M8x16	12.0	1.5	210.0	24.0

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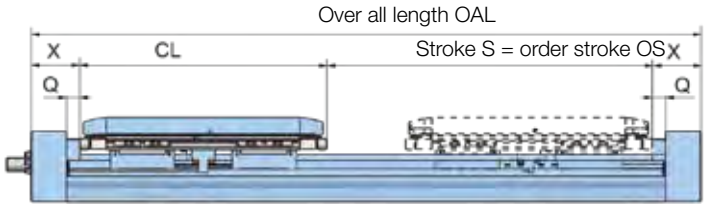
Virtual Engineer

HMRS Order Stroke – (mm)

Order stroke dependent dimensions

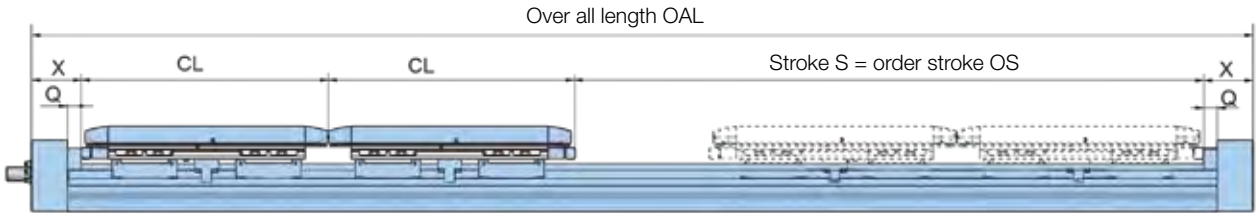
- ES = Effective Stroke
- SS = Safety Stroke
- CD = Carriage distance
- CL = Carriage length Standard
- S = Stroke
- OS = Order Stroke
- OAL = Over All Length

Standard design with one carriage



Order stroke OS = Effective stroke ES + 2 x Safety stroke SS
Over all length OAL = order stroke OS + carrier length CL + 2 x dimension end cap X

Tandem design with two carriages



Order stroke OS = Effective stroke ES + 2 x Safety stroke SS + Carrier distance CD (not shown)
Over all length OAL = Order stroke OS + 2 x carrier length CL + 2 x dimension end cap X

Dimensions - Carriage and end cap HMRS

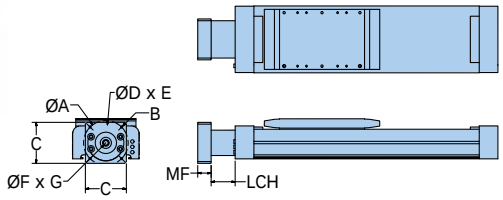
Product size		CL	Q	X
HMRS08	[mm]	195.0	16.0	54.0
HMRS11	[mm]	225.0	20.0	65.0
HMRS15	[mm]	266.0	20.0	62.0
HMRS18	[mm]	311.0	20.0	66.0
HMRS24	[mm]	371.0	20.0	73.0

Order Stroke Safety Distance:
The mechanical end position should not be used as a mechanical end stop, thus an additional ***Safety Distance*** at both ends of travel must be incorporated into the Order Stroke. The safety distance for servo-driven systems is equivalent to the travel distance per one revolution of the drive shaft. AC motor-driven systems with VFDs require a larger safety distance than servo systems. For further information and design assistance, please consult factory.

OPTIONS & ACCESSORIES

HMRS Screw Driven Actuators
Gearhead Mounting Kit Options

Gearhead Mounting Kits include a coupling housing, coupling, and flange.



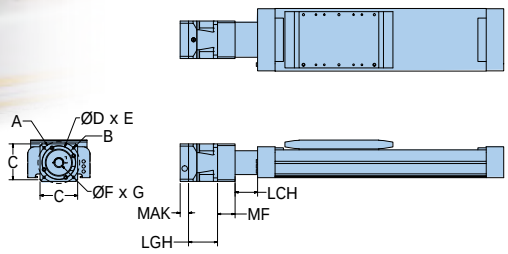
A = Bolt circle diameter
B = Screw for bolt circle
C = Square dimension
D = Pilot diameter
E = Pilot depth
F = Input drive shaft diameter
G = Input drive shaft length
LCH = Length coupling housing
MF = Motor flange

Actuator Size	⓪ Order Code [1]	Dimensions								
		A	B	C	D	E	F	G	LCH	MF
HMRS08	**C0**	44	M4x0.7	60	35	6	12	25	28	20
HMRS11	**A7**	70	M5x0.8	60	50	15	16	40	37	35
	C0	44	M4x0.7	60	35	6	12	25	37	20
	C1	62	M5x0.8	80	52	8	16	40	37	35
	BX	70	M5x0.8	60	50	10	16	25	37	20
HMRS15	**A7**	70	M5x0.8	85	50	15	16	40	54	30
	A8	100	M6x1	90	80	20	22	52	54	42
	C1	62	M5x0.8	84	52	12	16	40	54	30
	C2	80	M6x1	92	68	5	22	46	54	36
	BX	70	M5x0.8	85	50	5	16	25	54	20
	BY	100	M6x1	92	80	15	20	40	54	30
HMRS18	**A8**	100	M6x1	100	80	30	22	52	70	40
	C2	80	M6x1	92	68	6	22	46	70	30
	BY	100	M6x1	92	80	15	20	40	70	30
	BZ	130	M8x1.25	115	110	25	24	50	70	40
HMRS24	**A9**	130	M8x1.25	115	110	25	32	68	85	40
	C3	108	M8x1.25	125	90	17	32	70	85	40
	BZ	130	M8x1.25	115	110	5	24	50	85	20

[1] When ordering with actuator, use order code ⓪ to specify appropriately sized gearhead mounting kit. See Ordering Information.

HMRS Screw Driven Actuators
Mounted Gearhead with Motor Mounting Kit Options

Mounted Gearhead with Motor Mounting Kits include a coupling housing, coupling, flange, and gearhead with coupler and flange.



A = Bolt circle diameter
B = Screw for bolt circle
C = Square dimension
D = Pilot diameter
E = Pilot depth of the flange
F = Input drive shaft diameter
G = Input drive shaft length
LCH = Length coupling housing
LGH = Length gearhead
MAK = Motor adapter
MF = Motor flange

Actuator Size	⑨ Order Code [1]	⓪ Order Code [2]	Dimensions A	B	C	D	E	F	G	LCH	LGH	MAK	MF
HMRS08	Jx	AB	66.68	M4x0.7	55	38.10	3.5	6.35	20.8	28	48.5	15.7	20
	Jx	AC	66.68	M5x0.8	57	38.11	6	9.53	20.8		48.5	26	20
	Jx	AD	66.68	M5x0.8	57	38.11	6	9.53	31.8		48.5	26	20
	Jx	B6	63	M5x0.8	55	40	8	9	23	8	48.5	19	20
HMRS11	Fx	A3	100	M6x1	82	80	5	14	30	37	59.8	18	35
	Fx	AB	66.68	M4x0.7	62	38.10	4	6.35	20.8	37	59.8	16.5	35
	Fx	AC	66.68	M5x0.8	62	38.15	4	9.53	20.8	37	59.8	16.5	35
	Fx	AD	66.68	M5x0.8	62	38.15	4	9.53	31.8	37	59.8	16.5	35
	Fx	AE	98.43	M5x0.8	86.8	73.03	7	12.70	37.1	37	59.8	22.5	35
	Fx	AF	98.43	M5x0.8	86.8	73.03	7	12.70	31.8	37	59.8	22.5	35
	Fx	AH	63	M5x0.8	62	40	4	9	23	37	59.8	16.5	35
	Fx	AN	70	M5x0.8	62	50	4	14	30	37	59.8	16.5	35
	Fx	B6	63	M4x0.7	62	40	4	9	23	37	59.8	16.5	35
	Jx	AB	66.68	M4x0.7	55	38.10	3.5	6.35	20.8	37	48.5	15.7	20
	Jx	AC	66.68	M5x0.8	57	38.11	6	9.53	20.8	37	48.5	26	20
	Jx	AD	66.68	M5x0.8	57	38.11	6	9.53	31.8		48.5	26	20
	Jx	B6	63	M5x0.8	55	40	8	9	23	37	48.5	19	20
	Kx	AB	66.68	M4x0.7	62	38.10	4	6.35	20.8	37	67	16.5	35
	Kx	AC	66.68	M4x0.7	62	38.10	4	9.53	20.8	37	67	16.5	35
	Kx	AD	66.68	M5x0.8	62	38.10	8.5	9.53	31.8	37	67	22.5	35
	Kx	AE	98.43	M6x1	85	73.05	10	12.70	37.1	37	67	30	35
	Kx	AF	98.43	M5x0.8	80	73.05	7	12.70	31.8	37	67	22.5	35
	Kx	AH	63	M5x0.8	62	40	4	9	23	37	67	16.5	35
	Kx	AN	70	M5x0.8	62	50	11	14	30	37	67	22.5	35
	Kx	B6	63	M4x0.7	62	40	4	9	23	37	67	16.5	35

[1] When ordering with actuator, use order code ⑨ (see Ordering Information) to specify mounted gearhead size, ratio and orientation:
Gearhead size example: **F** = PS60 **G** = PS90 **H** = PS115 **J** = PV040TA **K** = PV60TA **L** = PV090TA **M** = PV115TA
Gearhead ratio and mounting orientation: (Replace "x" to specify)
1 = ratio 3:1 * **2** = ratio 5:1 **3** = ratio 10:1
* 3:1 ratio not available on "J" PV040TA gearhead

[2] Use order code ⓪ (see Ordering Information) to specify appropriately sized motor mounting kit.

Mounted Gearhead with Motor Mounting Kit Options

(continued from previous page)

Actuator Size	⑨ Order Code [1]	⓪ Order Code [2]	Dimensions										
			A	B	C	D	E	F	G	LCH	LGH	MAK	MF
HMRS15	Fx	A3	100	M6x1	82	80	5	14	30	54	59.8	18	30
	Fx	AB	66.68	M4x0.7	62	38.10	4	6.35	20.8	54	59.8	16.5	30
	Fx	AC	66.68	M5x0.8	62	38.15	4	9.53	20.8	54	59.8	16.5	30
	Fx	AD	66.68	M5x0.8	62	38.15	4	9.53	31.8	54	59.8	16.5	30
	Fx	AE	98.43	M5x0.8	86.8	73.03	7	12.70	37.1	54	59.8	22.5	30
	Fx	AF	98.43	M5x0.8	86.8	73.03	7	12.70	31.8	54	59.8	22.5	30
	Fx	AH	63	M5x0.8	62	40	4	9	23	54	59.8	16.5	30
	Fx	AN	70	M5x0.8	62	50	4	14	30	54	59.8	16.5	30
	Fx	B6	63	M4x0.7	62	40	4	9	23	54	59.8	16.5	30
	Gx	A2	63	M5x0.8	90	40	3	11	23	54	69.5	20	42
	Gx	A3	100	M6x1	90	80	10	14	30	54	69.5	20	42
	Gx	A4	115	M8x1.25	100	95	10	19	40	54	69.5	28.5	42
	Gx	AB	66.68	M5x0.8	90	38.15	3	6.35	20.8	54	69.5	20	42
	Gx	AC	66.68	M5x0.8	90	38.15	3	9.53	20.8	54	69.5	20	42
	Gx	AD	66.68	M5x0.8	90	38.15	3	9.53	31.8	54	69.5	20	42
	Gx	AE	98.43	M5x0.8	90	73	10	12.70	37.1	54	69.5	20	42
	Gx	AF	98.43	M5x0.8	90	73	10	12.70	31.8	54	69.5	20	42
	Gx	AH	63	M5x0.8	90	40	3	9	23	54	69.5	20	42
	Gx	AL	100	M6x1	90	80	10	16	40	54	69.5	20	42
	Gx	AN	70	M5x0.8	90	50	10	14	30	54	69.5	20	42
	Gx	AP	90	M6x1	90	70	10	19	40	54	69.5	20	42
	Gx	B1	90	M5x0.8	90	60	10	11	23	54	69.5	20	42
	Gx	B3	95	M6x1	90	50	10	14	30	54	69.5	20	42
	Gx	B6	63	M4x0.7	90	40	3	9	23	54	69.5	20	42
	Kx	AB	66.68	M4x0.7	62	38.1	4	6.35	20.8	54	67	16.5	30
	Kx	AC	66.68	M4x0.7	62	38.1	4	9.53	20.8	54	67	16.5	30
	Kx	AD	66.68	M5x0.8	62	38.1	8.5	9.53	31.8	54	67	22.5	30
	Kx	AE	98.43	M6x1	85	73.05	10	12.70	37.1	54	67	30	30
	Kx	AF	98.43	M5x0.8	80	73.05	7	12	31.8	54	67	22.5	30
	Kx	AH	63	M5x0.8	62	40	4	9	23	54	67	16.5	30
	Kx	AN	70	M5x0.8	62	50	11	14	30	54	67	22.5	30
	Kx	B6	63	M4x0.7	62	40	4	9	23	54	67	16.5	30
	Lx	A2	63	M5x0.8	90	40	3	11	23	54	85.5	20	36
	Lx	A3	100	M6x1	90	80	10	14	30	54	85.5	20	36
	Lx	A4	115	M8x1.25	100	95	10	19	40	54	85.5	28.5	36
	Lx	AB	66.68	M4x0.7	90	38.15	3	6.35	20.8	54	85.5	20	36
	Lx	AC	66.68	M5x0.8	90	52	10	9.53	20.8	54	85.5	20	36
	Lx	AD	66.68	M5x0.8	90	52	10	9.53	31.8	54	85.5	20	36
	Lx	AE	98.43	M5x0.8	90	73.03	10	12.70	37.1	54	85.5	28.5	36
	Lx	AF	98.43	M5x0.8	90	73	10	12.70	31.8	54	85.5	20	36
	Lx	AH	63	M5x0.8	90	40	10	9	23	54	85.5		36
	Lx	AL	100	M6x1	90	80	10	16	40	54	85.5	28.5	36
	Lx	AN	70	M5x0.8	90	50	10	14	30	54	85.5	20	36
	Lx	AP	90	M6x1	90	70	10	19	40	54	85.5	28.5	36

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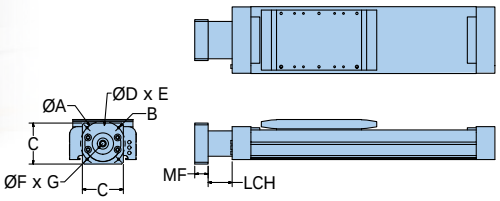
Actuator Size	⑨ Order Code [1]	⓪ Order Code [2]	Dimensions A	B	C	D	E	F	G	LCH	LGH	MAK	MF
HMRS18	Gx	A2	63	M5x0.8	90	40	3	11	23	70	69.5	20	40
	Gx	A3	100	M6x1	90	80	10	14	30	70	69.5	20	40
	Gx	A4	115	M8x1.25	100	95	10	19	40	70	69.5	28.5	40
	Gx	AB	66.68	M5x0.8	90	38.15	3	6.35	20.8	70	69.5	20	40
	Gx	AC	66.68	M5x0.8	90	38.15	3	9.53	20.8	70	69.5	20	40
	Gx	AD	66.68	M5x0.8	90	38.15	3	9.53	31.8	70	69.5	20	40
	Gx	AE	98.43	M5x0.8	90	73	10	12.70	37.1	70	69.5	20	40
	Gx	AF	98.43	M5x0.8	90	73	10	12.70	31.8	70	69.5	20	40
	Gx	AH	63	M5x0.8	90	40	3	9	23	70	69.5	20	40
	Gx	AL	100	M6x1	90	80	10	16	40	70	69.5	20	40
	Gx	AN	70	M5x0.8	90	50	10	14	30	70	69.5	20	40
	Gx	AP	90	M6x1	90	70	10	19	40	70	69.5	20	40
	Gx	B1	90	M5x0.8	90	60	10	11	23	70	69.5	20	40
	Gx	B3	95	M6x1	90	50	10	14	30	70	69.5	20	40
	Gx	B6	63	M4x0.7	90	40	2.5	9	23	70	69.5	20	40
	Lx	A2	63	M5x0.8	90	40	3	11	23	70	85.5	20	30
	Lx	A3	100	M6x1	90	80	10	14	30	70	85.5	20	30
	Lx	A4	115	M8x1.25	100	95	10	19	40	70	85.5	28.5	30
	Lx	AB	66.68	M4x0.7	90	38.15	3	6.35	20.8	70	85.5	20	30
	Lx	AC	66.68	M5x0.8	90	52	10	9.53	20	70	85.5	20	30
	Lx	AD	66.68	M5x0.8	90	52	10	9.53	31	70	85.5	20	30
	Lx	AE	98.43	M5x0.8	90	73.03	10	12.70	37.1	70	85.5	28.5	30
	Lx	AF	98.43	M5x0.8	90	73	10	12.70	31.8	70	85.5	20	30
	Lx	AH	63	M5x0.8	90	40	10	9	23	70	85.5		30
	Lx	AL	100	M6x1	90	80	10	16	40	70	85.5	28.5	30
	Lx	AN	70	M5x0.8	90	50	10	14	30	70	85.5	20	30
	Lx	AP	90	M6x1	90	70	10	19	40	70	85.5	28.5	30
HMRS24	Hx	A4	115	M8x1.25	115	95	10	19	50	85	90.2	24	40
	Hx	AF	98.40	M5x0.8	115	73.03	10	12.70	31.8	85	90.2	24	40
	Hx	AK	130	M8x1.25	115	110	10	19	40	85	90.2	24	40
	Hx	AL	100	M6x1	115	80	10	16	40	85	90.2	24	40
	Hx	AQ	165	M10x1.5	140	130	10	28	60	85	90.2	35	40
	Hx	AP	90	M6x1	115	70	10	19	40	85	90.2	24	40
	Mx	A4	115	M8x1.25	115	95.05	10	19	50	85	110	24	40
	Mx	AF	98.40	M5x0.8	115	73	10	12.70	31.8	85	110	24	40
	Mx	AK	130	M8x1.25	115	110.05	10	24	40	85	110	35	40
	Mx	AL	100	M6x1	115	80	10	16	40	85	110	24	40
	Mx	AP	90	M6x1	115	70	10	19	40	85	110	35	40

[1] When ordering with actuator, use order code ⑨ (see Ordering Information) to specify mounted gearhead size, ratio and orientation:
Gearhead size example: **F** = PS60 **G** = PS90 **H** = PS115 **J** = PV040TA **K** = PV60TA **L** = PV090TA **M** = PV115TA
Gearhead ratio and mounting orientation: (Replace "x" to specify)
1 = ratio 3:1 * **2** = ratio 5:1 **3** = ratio 10:1
* 3:1 ratio not available on "J" PV040TA gearhead

[2] Use order code ⓪ (see Ordering Information) to specify appropriately sized motor mounting kit.

Motor Mounting Kit Options

Gearhead Mounting Kits include a coupling housing, coupling, and flange.



A = Bolt circle diameter
B = Screw for bolt circle
C = Square dimension
D = Pilot diameter
E = Pilot depth
F = Input drive shaft diameter
G = Input drive shaft length
LCH = Length coupling housing
MF = Motor flange

Actuator Size	⓪ Order Code [1]	Dimensions								
		A	B	C	D	E	F	G	LCH	MF
HMRS08	A2	63	M5x0.8	60	40	10	11	23	28	20
	AB	66.68	M4x0.7	60	38.10	10	6.35	20.8	28	20
	AC	66.68	M5x0.8	60	38.10	10	9.53	20.8	28	20
	AD	66.68	M5x0.8	60	38.10	15	9.53	31.8	28	27
	AE	98.43	M6x1	85	73.03	15	12.70	37.1	28	33
	AF	98.43	M5x0.8	85	73.03	15	12.70	31.8	28	27
	AG	75	M5x0.8	70	60	10	11	23	28	20
	AH	63	M5x0.8	60	40	10	9	23	28	20
	AN	70	M5x0.8	60	50	15	14	30	28	25
	B0	75	M6x1	70	60	15	14	30	28	25
	B1	90	M5x0.8	75	60	10	11	23	28	20
	B2	90	M5x0.8	75	60	15	14	30	28	25
	B3	95	M6x1	80	50	15	14	30	28	25
	B6	63	M4x0.7	60	40	10	9	23	28	20
	B7	70	M5x0.8	60	50	15	8	30	28	25
	B8	70	M5x0.8	60	50	15	12	30	28	25
HMRS11	A2	63	M5x0.8	60	40	5	11	23	37	15
	AB	66.68	M4x0.7	60	38.10	10	6.35	20.8	37	15
	AC	66.68	M5x0.8	60	38.10	10	9.53	20.8	37	15
	AD	66.68	M5x0.8	60	38.10	15	9.53	31.8	37	25
	AE	98.43	M6x1	85	73.03	20	12.70	37.1	37	33
	AF	98.43	M5x0.8	85	73.03	15	12.70	31.8	37	27
	AG	75	M5x0.8	70	60	10	11	23	37	20
	AH	63	M5x0.8	60	40	5	9	23	37	15
	AL	100	M6x1	92	80	15	16	40	37	36
	AN	70	M5x0.8	60	50	15	14	30	37	25
	B0	75	M6x1	70	60	15	14	30	37	25
	B1	90	M5x0.8	80	60	10	11	23	37	20
	B2	90	M5x0.8	80	60	15	14	30	37	25
	B3	95	M6x1	80	50	15	14	30	37	25
	B7	70	M5x0.8	60	50	15	8	30	37	25
	B8	70	M5x0.8	60	50	15	12	30	37	25

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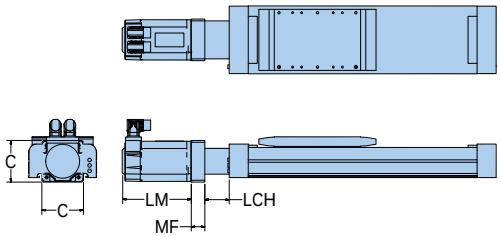
HMRS15	**A2**	63	M5x0.8	84	40	3	11	23	54	20
	A3	100	M6x1	92	80	5	14	30	54	20
	A4	115	M8x1.25	100	95	15	19	40	54	30
	AE	98.43	M6x1	85	73.03	15	12.70	37.1	54	25
	AF	98.43	M5x0.8	85	73.03	10	12.70	31.8	54	20
	AL	100	M6x1	92	80	15	16	40	54	30
	AN	70	M5x0.8	85	50	5	14	30	54	20
	AP	90	M6x1	84	70	15	19	40	54	30
	B0	100	M6x1	85	60	5	14	30	54	20
	B2	90	M5x0.8	85	60	5	14	30	54	20
HMRS18	**A3**	100	M6x1	92	80	5	14	30	70	20
	A4	115	M8x1.25	100	95	15	19	40	70	30
	AF	98.43	M5x0.8	90	73.03	10	12.70	31.8	70	20
	AK	130	M8x1.25	115	110	25	24	40	70	40
	AL	100	M6x1	92	80	15	16	40	70	30
	AP	90	M6x1	90	70	15	19	40	70	30
	B0	75	M6x1	90	60	10	14	30	70	20
	B2	90	M6x1	90	60	10	14	30	70	20
HMRS24	**A4**	115	M8x1.25	110	95	5	19	50	85	20
	AK	130	M8x1.25	115	110	5	24	40	85	20

[1] When ordering with actuator, use order code ⓪ to specify appropriately sized motor mounting kit. See Ordering Information.

Direct Motor Mount Options

Direct Motor Mounting options include a coupling housing, coupling, and flange.



C = Square dimension
LCH = Length coupling housing
LM = Length motor
MF = Mounting flange

Actuator Size	⑨ Order Code [1]	⓪ Order Code [1]	Mounted Motor	C	LCH	LM	MF
HMRS08	00	K0	BE233FJ-KPSN	60	28	143.2	27
	00	K1	BE233FJ-KPSN with Brake (CM233FJ-115027)	60	28	178	27
	00	K2	BE344LJ-KPSN	85	28	188	27
	00	K3	BE344LJ-KPSB	85	28	231	27
	00	K4	PM-FBL04AMK	60	28	108.2	25
	00	K5	PM-FBL04AMK2 (w/ Brake)	60	28	148.2	25
HMRS11	00	K0	BE233FJ-KPSN	60	37	143.2	25
	00	K1	BE233FJ-KPSN with Brake (CM233FJ-115027)	60	37	178	25
	00	K2	BE344LJ-KPSN	85	37	188	27
	00	K3	BE344LJ-KPSB	85	37	231	27
	00	K4	PM-FBL04AMK	60	37	108.2	25
	00	K5	PM-FBL04AMK2 (w/ Brake)	60	37	148.2	25
	00	M0	MPP0923D1E-KPSN	92	37	178	36
	00	M1	MPP0923D1E-KPSB	92	37	212.5	36
HMRS15	00	K2	BE344LJ-KPSN	85	54	188	20
	00	K3	BE344LJ-KPSB	85	54	231	20
	00	K4	PM-FBL04AMK	85	54	108.2	20
	00	K5	PM-FBL04AMK2 (w/ Brake)	85	54	148.2	20
	00	K6	PM-FCL10AMK	84	54	152.7	30
	00	K7	PM-FCL10AMK2 (w/ Brake)	84	54	193	30
	00	M0	MPP0923D1E-KPSN	92	54	178	30
	00	M1	MPP0923D1E-KPSB	92	54	212.5	30
	00	M2	MPP1003D1E-KPSN	100	54	174.5	30
	00	M3	MPP1003D1E-KPSB	100	54	223	30
	00	M4	MPP1003R1E-KPSN	100	54	174.5	30
	00	M5	MPP1003R1E-KPSB	100	54	223	30

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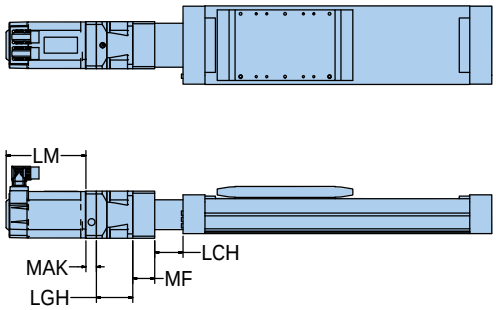
HMRS18	00	K2	BE344LJ-KPSN	90	70	188	20
	00	K3	BE344LJ-KPSB	90	70	231	20
	00	K6	PM-FCL10AMK	90	70	152.7	30
	00	K7	PM-FCL10AMK2 (w/ Brake)	90	70	193	30
	00	M0	MPP0923D1E-KPSN	92	70	178	30
	00	M1	MPP0923D1E-KPSB	92	70	212.5	30
	00	M2	MPP1003D1E-KPSN	100	70	174.5	30
	00	M3	MPP1003D1E-KPSB	100	70	223	30
	00	M4	MPP1003R1E-KPSN	100	70	174.5	30
	00	M5	MPP1003R1E-KPSB	100	70	223	30
	00	M6	MPP1154B1E-KPSN	115	70	203.2	40
	00	M7	MPP1154B1E-KPSB	115	70	251.7	40
	00	M8	MPP1154P1E-KPSN	115	70	203.2	40
	00	M9	MPP1154P1E-KPSB	115	70	251.7	40
HMRS24	00	M2	MPP1003D1E-KPSN	110	85	174.5	20
	00	M3	MPP1003D1E-KPSB	110	85	223	20
	00	M4	MPP1003R1E-KPSN	110	85	174.5	20
	00	M5	MPP1003R1E-KPSB	110	85	223	20
	00	M6	MPP1154B1E-KPSN	115	85	203.2	20
	00	M7	MPP1154B1E-KPSB	115	85	251.7	20
	00	M8	MPP1154P1E-KPSN	115	85	203.2	20
	00	M9	MPP1154P1E-KPSB	115	85	251.7	20
	00	MA	MPP1424C1E-KPSN	142	85	223.7	30
	00	MB	MPP1424C1E-KPSB	142	85	275.3	30
	00	MC	MPP1424R1E-KPSN	142	85	223.7	30
	00	MD	MPP1424R1E-KPSB	142	85	275.3	30

[1] When ordering with actuator, use order code ⑨ to specify no gearhead mounting kit, and order code ⓪ to specify mounted motor. See Ordering Information.

Mounted Gearhead and Motor Options

Mounted Gearhead and Motor options include a coupling housing, flange, and gearhead with coupler, flange, and motor.



C = Square dimension
LCH = Length coupling housing
LGH = Length gearhead
LM = Length motor
MAK = Motor adapter kit
MF = Mounting flange

Actuator Size	⑨ Order Code [1]	⓪ Order Code [2]	Mounted Motor	Dimensions C	LCH	LGH	LM	MAK	MF
HMRS08	Jx	K0	BE233FJ-KPSN	60	28	48.5	143.2	26	20
	Jx	K1	BE233FJ-KPSN with Brake (CM233FJ-115027)	60	28	48.5	178	26	20
HMRS11	Fx	K0	BE233FJ-KPSN	60	37	59.8	143.2	16.5	35
	Fx	K1	BE233FJ-KPSN with Brake (CM233FJ-115027)	60	37	59.8	178	16.5	35
	Fx	K2	BE344LJ-KPSN	60	37	59.8	188	22.5	35
	Fx	K3	BE344LJ-KPSB	60	37	59.8	231	22.5	35
	Fx	K4	PM-FBL04AMK	60	37	59.8	108.2	16.5	35
	Fx	K5	PM-FBL04AMK2 (w/ Brake)	60	37	59.8	148.2	16.5	35
	Jx	K0	BE233FJ-KPSN	60	37	48.5	143.2	26	20
	Jx	K1	BE233FJ-KPSN with Brake (CM233FJ-115027)	60	37	48.5	178	26	20
	Kx	K0	BE233FJ-KPSN	80	37	67	143.2	22.5	35
	Kx	K1	BE233FJ-KPSN with Brake (CM233FJ-115027)	80	37	67	178	22.5	35
	Kx	K2	BE344LJ-KPSN	80	37	67	188	22.5	35
	Kx	K3	BE344LJ-KPSB	80	37	67	231	22.5	35
	Kx	K4	PM-FBL04AMK	80	37	67	108.2	22.5	35
	Kx	K5	PM-FBL04AMK2 (w/ Brake)	80	37	67	148.2	22.5	35

[1] When ordering with actuator, use order code ⑨ (see Ordering Information) to specify mounted gearhead size, ratio and orientation:
Gearhead size example: **F** = PS60 **G** = PS90 **H** = PS115 **J** = PV040TA **K** = PV60TA **L** = PV090TA **M** = PV115TA
Gearhead ratio and mounting orientation: (Replace "x" to specify)
1 = ratio 3:1 * **2** = ratio 5:1 **3** = ratio 10:1
* 3:1 ratio not available on "J" PV040TA gearhead

[2] Use order code ⓪ (see Ordering Information) to specify appropriately sized motor mounting kit.

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Actuator Size	⑨ Order Code [1]	⓪ Order Code [2]	Mounted Motor	Dimensions C	LCH	LGH	LM	MAK	MF
HMRS15	Fx	K0	BE233FJ-KPSN	85	54	59.8	143.2	16.5	30
	Fx	K1	BE233FJ-KPSN with Brake (CM233FJ-115027)	85	54	59.8	178	16.5	30
	Fx	K2	BE344LJ-KPSN	85	54	59.8	188	22.5	30
	Fx	K3	BE344LJ-KPSB	85	54	59.8	231	22.5	30
	Fx	K4	PM-FBL04AMK	85	54	59.8	108.2	16.5	30
	Fx	K5	PM-FBL04AMK2 (w/ Brake)	85	54	59.8	148.2	16.5	30
	Gx	K2	BE344LJ-KPSN	90	54	69.5	188	20	42
	Gx	K3	BE344LJ-KPSB	90	54	69.5	231	20	42
	Gx	K6	PM-FCL10AMK	90	54	69.5	152.7	20	42
	Gx	K7	PM-FCL10AMK2 (w/ Brake)	90	54	69.5	193	20	42
	Gx	M0	MPP0923D1E-KPSN	90	54	69.5	178	20	42
	Gx	M1	MPP0923D1E-KPSB	90	54	69.5	212.5	20	42
	Gx	M2	MPP1003D1E-KPSN	90	54	69.5	174.5	28.5	42
	Gx	M3	MPP1003D1E-KPSB	90	54	69.5	223	28.5	42
	Gx	M4	MPP1003R1E-KPSN	90	54	69.5	174.5	28.5	42
	Gx	M5	MPP1003R1E-KPSB	90	54	69.5	223	28.5	42
	Kx	K0	BE233FJ-KPSN	84	54	67	143.2	22.5	30
	Kx	K1	BE233FJ-KPSN with Brake (CM233FJ-115027)	84	54	67	178	22.5	30
	Kx	K2	BE344LJ-KPSN	84	54	67	188	22.5	30
	Kx	K3	BE344LJ-KPSB	84	54	67	231	22.5	30
	Kx	K4	PM-FBL04AMK	84	54	67	108.2	22.5	30
	Kx	K5	PM-FBL04AMK2 (w/ Brake)	84	54	67	148.2	22.5	30
	Lx	K2	BE344LJ-KPSN	92	54	85.5	188	20	36
	Lx	K3	BE344LJ-KPSB	92	54	85.5	231	20	36
	Lx	K6	PM-FCL10AMK	92	54	85.5	152.7	28.5	36
	Lx	K7	PM-FCL10AMK2 (w/ Brake)	92	54	85.5	193	28.5	36
	Lx	M0	MPP0923D1E-KPSN	92	54	85.5	178	28.5	36
	Lx	M1	MPP0923D1E-KPSB	92	54	85.5	212.5	28.5	36
	Lx	M2	MPP1003D1E-KPSN	92	54	85.5	174.5	28.5	36
	Lx	M3	MPP1003D1E-KPSB	92	54	85.5	223	28.5	36
	Lx	M4	MPP1003R1E-KPSN	92	54	85.5	174.5	28.5	36
	Lx	M5	MPP1003R1E-KPSB	92	54	85.5	223	28.5	36

[1] When ordering with actuator, use order code ⑨ (see Ordering Information) to specify mounted gearhead size, ratio and orientation:
Gearhead size example: **F** = PS60 **G** = PS90 **H** = PS115 **J** = PV040TA **K** = PV60TA **L** = PV090TA **M** = PV115TA
Gearhead ratio and mounting orientation: (Replace "x" to specify)
1 = ratio 3:1 * **2** = ratio 5:1 **3** = ratio 10:1
* 3:1 ratio not available on "J" PV040TA gearhead

[2] Use order code ⓪ (see Ordering Information) to specify appropriately sized motor mounting kit.

(continued next page)

Mounted Gearhead and Motor Options

(continued from previous page)

Actuator Size	⑨ Order Code [1]	⓪ Order Code [2]	Mounted Motor	Dimensions C	LCH	LGH	LM	MAK	MF
HMRS18	Gx	K2	BE344LJ-KPSN	100	70	69.5	188	20	40
	Gx	K3	BE344LJ-KPSB	100	70	69.5	231	20	40
	Gx	K6	PM-FCL10AMK	100	70	69.5	152.7	20	40
	Gx	K7	PM-FCL10AMK2 (w/ Brake)	100	70	69.5	193	20	40
	Gx	M0	MPP0923D1E-KPSN	100	70	69.5	178	20	40
	Gx	M1	MPP0923D1E-KPSB	100	70	69.5	212.5	20	40
	Gx	M2	MPP1003D1E-KPSN	100	70	69.5	174.5	28.5	40
	Gx	M3	MPP1003D1E-KPSB	100	70	69.5	223	28.5	40
	Gx	M4	MPP1003R1E-KPSN	100	70	69.5	174.5	28.5	40
	Gx	M5	MPP1003R1E-KPSB	100	70	69.5	223	28.5	40
	Lx	K2	BE344LJ-KPSN	92	70	85.5	188	20	30
	Lx	K3	BE344LJ-KPSB	92	70	85.5	231	20	30
	Lx	K6	PM-FCL10AMK	92	70	85.5	152.7	28.5	30
	Lx	K7	PM-FCL10AMK2 (w/ Brake)	92	70	85.5	193	28.5	30
	Lx	M0	MPP0923D1E-KPSN	92	70	85.5	178	28.5	30
	Lx	M1	MPP0923D1E-KPSB	92	70	85.5	212.5	28.5	30
	Lx	M2	MPP1003D1E-KPSN	92	70	85.5	174.5	28.5	30
	Lx	M3	MPP1003D1E-KPSB	92	70	85.5	223	28.5	30
	Lx	M4	MPP1003R1E-KPSN	92	70	85.5	174.5	28.5	30
	Lx	M5	MPP1003R1E-KPSB	92	70	85.5	223	28.5	30
HMRS24	Hx	M6	MPP1154B1E-KPSN	115	85	90.2	203.2	24	40
	Hx	M7	MPP1154B1E-KPSB	115	85	90.2	251.7	24	40
	Hx	M8	MPP1154P1E-KPSN	115	85	90.2	203.2	24	40
	Hx	M9	MPP1154P1E-KPSB	115	85	90.2	251.7	24	40
	Hx	MA	MPP1424C1E-KPSN	115	85	90.2	223.7	35	40
	Hx	MB	MPP1424C1E-KPSB	115	85	90.2	275.3	35	40
	Hx	MC	MPP1424R1E-KPSN	115	85	90.2	223.7	35	40
	Hx	MD	MPP1424R1E-KPSB	115	85	90.2	275.3	35	40
	Mx	M6	MPP1154B1E-KPSN	125	85	110	203.2	35	40
	Mx	M7	MPP1154B1E-KPSB	125	85	110	251.7	35	40
	Mx	M8	MPP1154P1E-KPSN	125	85	110	203.2	35	40
	Mx	M9	MPP1154P1E-KPSB	125	85	110	251.7	35	40

[1] When ordering with actuator, use order code ⑨ (see Ordering Information) to specify mounted gearhead size, ratio and orientation:
Gearhead size example: **F** = PS60 **G** = PS90 **H** = PS115 **J** = PV040TA **K** = PV60TA **L** = PV090TA **M** = PV115TA
Gearhead ratio and mounting orientation: (Replace "x" to specify)
1 = ratio 3:1 * **2** = ratio 5:1 **3** = ratio 10:1
* 3:1 ratio not available on "J" PV040TA gearhead

[2] Use order code ⓪ (see Ordering Information) to specify appropriately sized motor mounting kit.

Limit & Home Sensors

The HMR uses Parker's Global Sensor line, which can be mounted in the longitudinal t-slots running along the actuator body. These sensors mount flush to the extrusion body, minimizing the overall width of the actuator.

Parker's Global Sensors feature short circuit protection, power up pulse protection, and reverse polarity protection.

The sensor cable can be concealed under the yellow T-slot covers which are provided with each unit.

For internally configured sensors, the cables are routed internally and exit and the end cap of the unit through industrially hardened M8 connectors.

In the event internal sensors are configured, they cannot be re-positioned in the field. The pre-set location is configured in the part number model code. Please consult factory for further assistance.

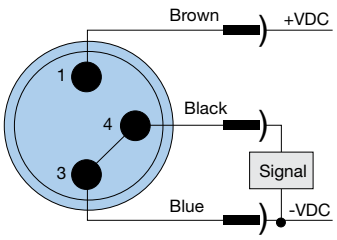
Permanent magnets integrated into the carriage assembly actuate the sensors as the carriage traverses it linear travel.

All actuators pre-configured with a sensor pack, come pre-configured with a 5 meter extension cable, with flying leads.

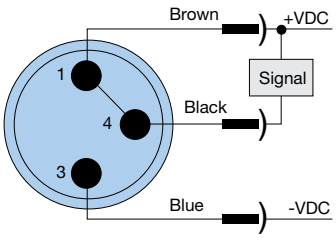
Common Specifications:

Electric current drain: 100 mA (max)
Switching current: 10 mA (max)
Supply voltage: 10 – 30 VDC
Switching Frequency: 1 kHz

PNP Wiring



NPN Wiring

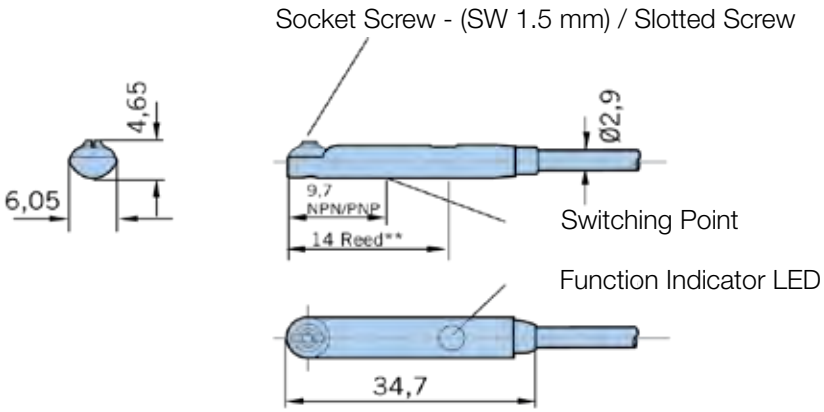


Magnetic LED Cylinder Sensors

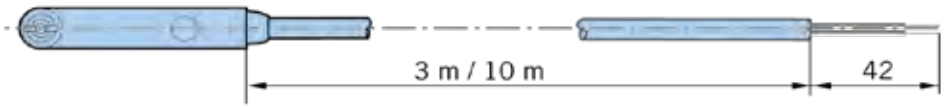
Model Number	Function	Logic	Cable
P8SAGPFAX	N.O.	PNP	3 m
P8SAGNFAX		NPN	
P8SAGPCHX		PNP	0.3 m cable with M8 connector*
P8SAGNCHX		NPN	
P8SAGQFAX	N.C.	PNP	3 m
P8SAGMFAX		NPN	
P8SAGQCHX		PNP	0.3 m cable with M8 connector*
P8SAGMCHX		NPN	

* 003-2918-01 is a 5 m extension cable to flying leads for these cables

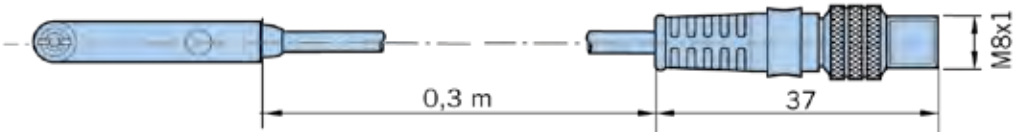
Limit & Home Sensor Dimensions



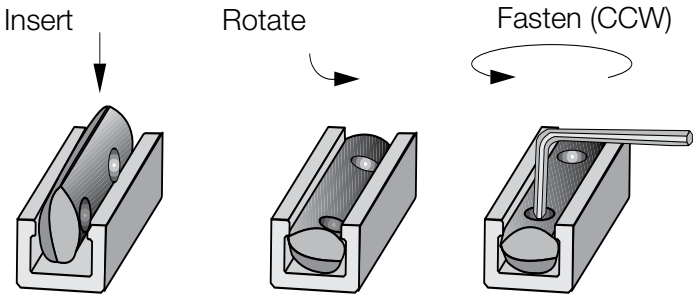
P8S-... cable with flying leads



P8S-... cable with M8 rotable



Installation for Magnetic T-Slot Sensors

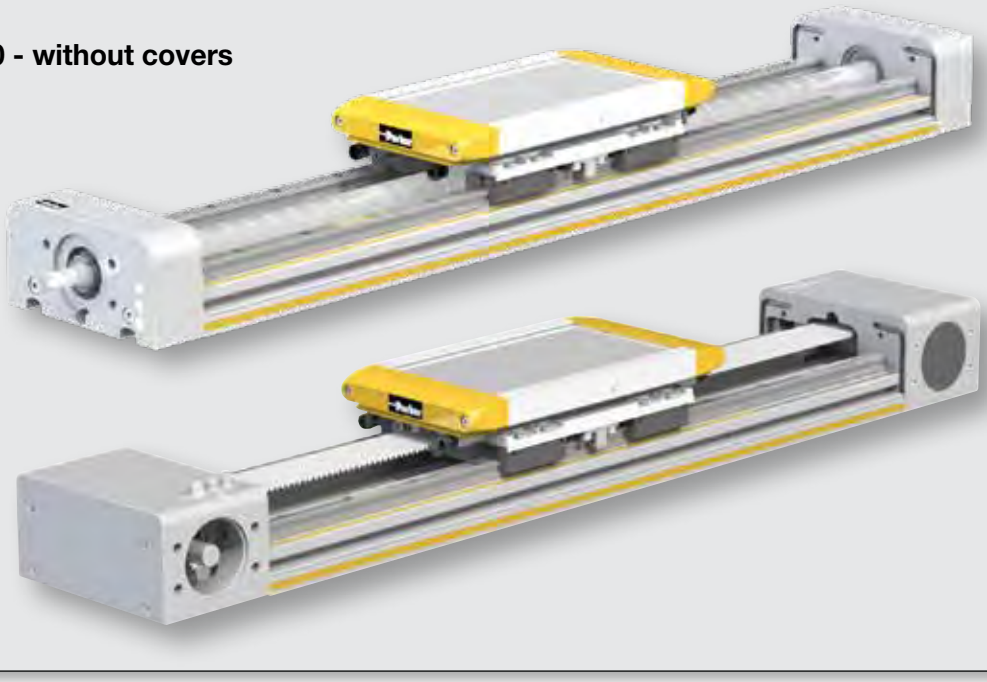


Protective Cover Options

Two versions available: Covers can be field retrofitted if initially configured without covers.

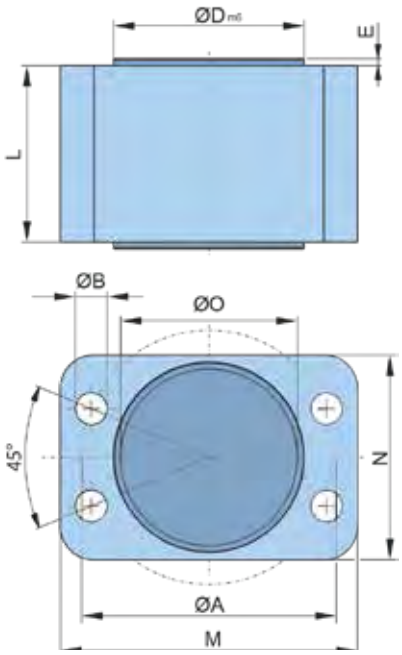
Consult maintenance manual or factory support for assistance in specifying replacement covers and installation procedures.

IP20 - without covers



IP54 - with covers

Coupling Housing



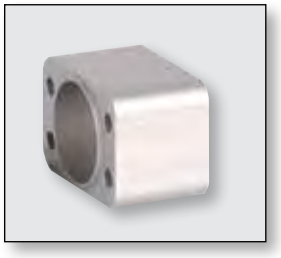
Dimension table - Coupling housing long HMRS / HMRB [mm]

Product size	Ø A	Ø B	Ø D_{m6}	E	Ø O	L	M	N	Order no.
HMRx08 (1)	42	4.5	34	2	30	28	49	37	56568FIL
HMRx11 (1)	51	6.6	39	1	35	37	60	42	56566FIL
HMRx15 (1)	72	9.0	54	2	50	54	84	58	50353FIL
HMRx18 (1)	80	9.0	64	2	60	70	90	68	50655FIL
HMRx24 (1)	95	11.0	80	2	77	85	107	85	56415FIL

(1)Suitable for all types of HMRS

(1)Suitable for HMRB with motor orientation 000° top (HMRBxxxAP; HMRBxxxAD)

(1)Suitable for HMRB with motor orientation 180° bottom and profile version Basic (HMRBxxBCP; HMRBxxBCD; HMRBxxCCP; HMRBxxCCD)



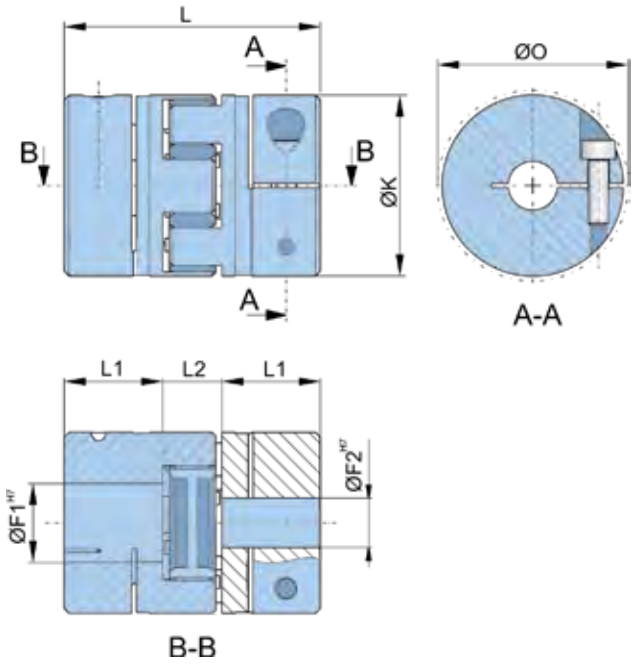
Dimension table - Coupling housing short HMRB [mm]

Product size	Ø A	Ø B	Ø D_{m6}	E	Ø O	L	M	N	Order no.
HMRB08 (1)	42	4.5	34	2	30	13	49	37	56567FIL
HMRB08 (2)	42	4.5	34	2	30	17	49	37	56569FIL
HMRB11 (1) (2)	51	6.6	39	1	35	15	60	42	56565FIL
HMRB15 (1) (2)	72	9.0	54	2	50	30	84	58	56412FIL
HMRB18 (1) (2)	80	9.0	64	2	60	42	90	68	56413FIL
HMRB24 (1) (2)	95	11.0	80	2	77	60	107	85	56414FIL

(1)Suitable for HMRB with motor orientation 090° front and 270° rear (HMRBxxxBD; HMRBxxxDD)

(2)Suitable for HMRB with motor orientation 180° bottom re-inforced profile (HMRBxxRCP; HMRBxxRCD; HMRBxxSCP; HMRBxxSCD)

Coupling



Ball screw

Dimension table - motor coupling HMRS [mm]

Product size	F_1	F_2	F	K	L	L_1	L_2	Ø O	Order no.
HMRS08	6	9	5 - 12	25	34	11	12	27.5	56562FIL
HMRS11	10	9	6 - 16	30	35	11	13	32.5	13210FIL
HMRS15	12	9	8 - 24	40	66	25	16	58.0	56400FIL
HMRS18	15	14	10 - 28	55	78	30	18	68.0	56402FIL
HMRS24	20	14	14 - 38	65	90	35	20	73.0	56510FIL

Belt

Dimension table - motor coupling HMRB [mm]

Product size	F_1	F_2	F	K	L	L_1	L_2	Ø O	Order no.
HMRB08	10	9	5 - 12	25	34	11	12	27.5	56563FIL
HMRB11	12	9	6 - 16	30	35	11	13	32.5	56560FIL
HMRB15	15	10	8 - 24	40	66	25	16	58.0	16239FIL
HMRB18	18	14	10 - 28	55	78	30	18	68.0	56411FIL
HMRB24	24	15	14 - 38	65	90	35	20	73.0	16260FIL

Shock Absorbing Bumper

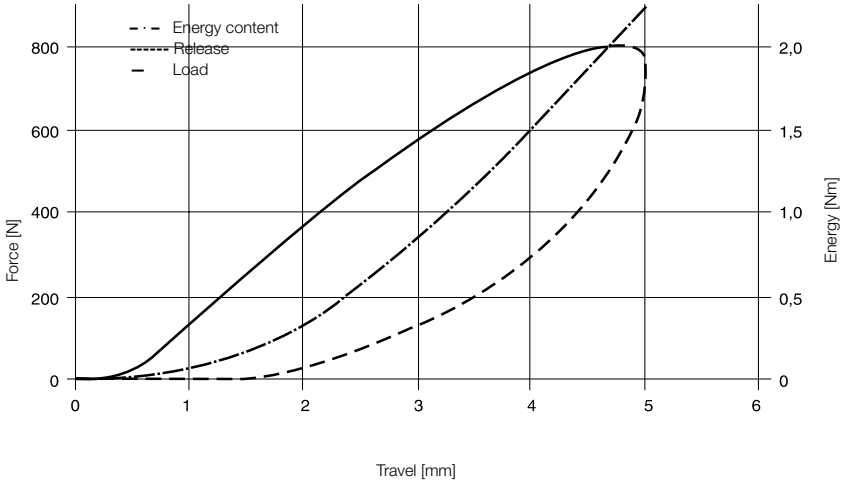
HMR actuators come factory installed with impact protection bumpers. These carriage-mounted bumpers can compensate the energy released by unintentional impact and afford some protection against mechanical damage.

Two bumpers (four total) are fitted to each side of the carriage.

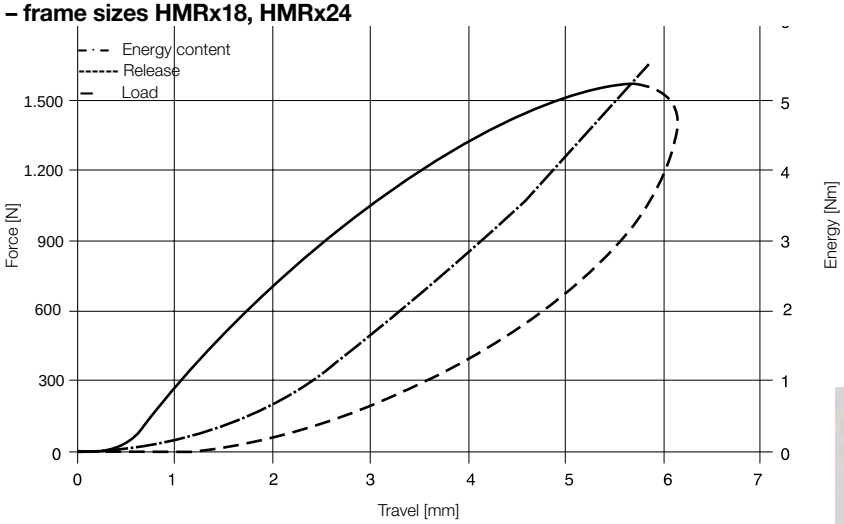
Shock absorbers for impact protection

Product size	HMRx08	HMRx11	HMRx15	HMRx18	HMRx24
Shock absorber	TA12-5	TA12-5	TA12-5	TA17-7	TA17-7
Energy absorption [Nm/stroke]	3.0	3.0	3.0	8.5	8.5

Distance-force and energy-distance characteristic curve (dynamic) – frame sizes HMRx08, HMRx11, HMRx15



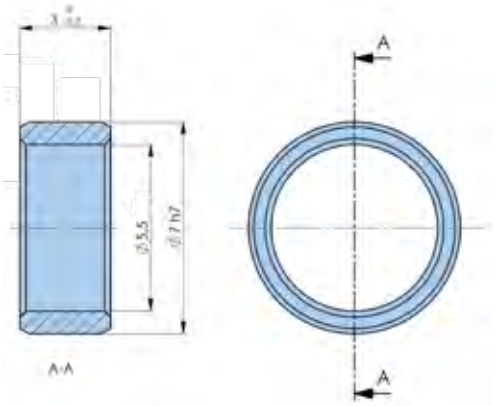
Distance-force and energy-distance characteristic curve (dynamic) – frame sizes HMRx18, HMRx24



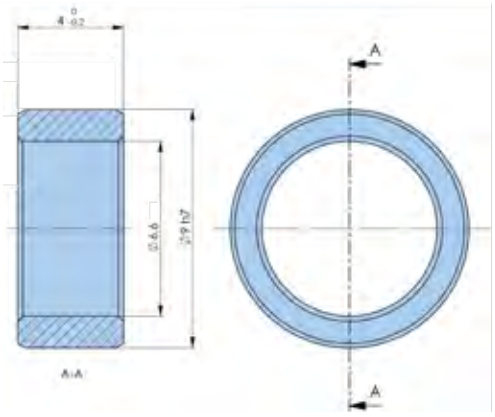
Dowel Sleeves

Dowel sleeves can be used to provide pinning functionality between the carriage mounting surface and the payload. These sleeves have a tightly toleranced outer diameter to accurately locate between the bore in the carriage and the end effector, but have a hollow center granting access to the threaded hole in the carriage underneath the pin bore. This means that these dowel pin bore can additionally function as a threaded connection to the carriage. See Dimensions for carriage mounting detail.

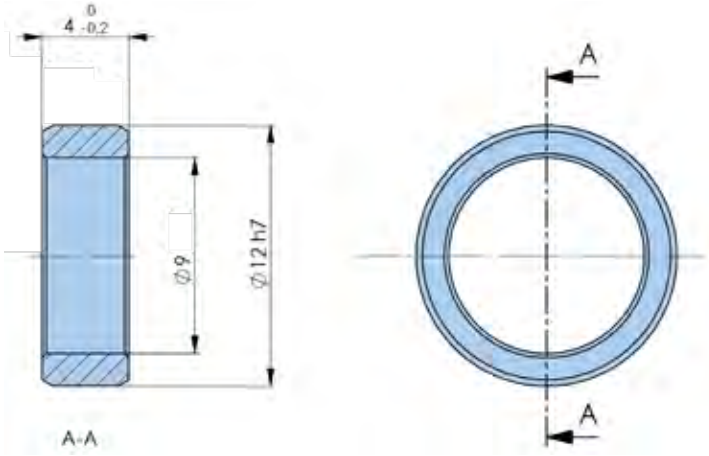
7mm Outer Diameter Dowel Sleeve



9mm Outer Diameter Dowel Sleeve

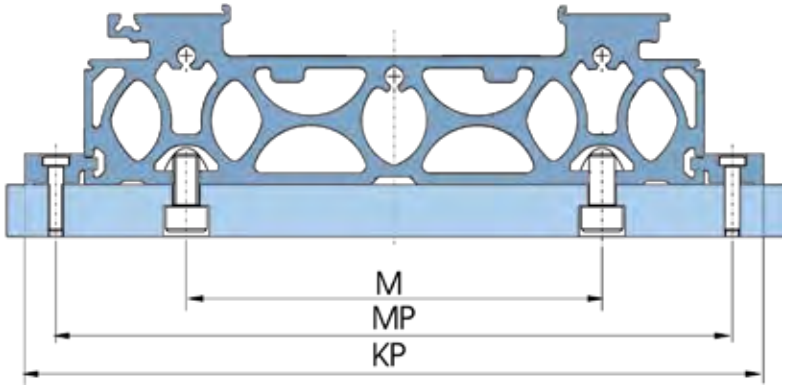


12mm Outer Diameter Dowel Sleeve



Part Number	Description	HMR Frame Size
56455FIL	7mm Dowel Sleeve- 4 Pack	HMRx08, HMRx11, HMRx15
56456FIL	7mm Dowel Sleeve- 10 Pack	HMRx08, HMRx11, HMRx15
56457FIL	9mm Dowel Sleeve- 4 Pack	HMRx18
56458FIL	9mm Dowel Sleeve- 10 Pack	HMRx18
56459FIL	12mm Dowel Sleeve- 4 Pack	HMR24

Actuator Mounting



Dimension table - Product width HMR [mm]

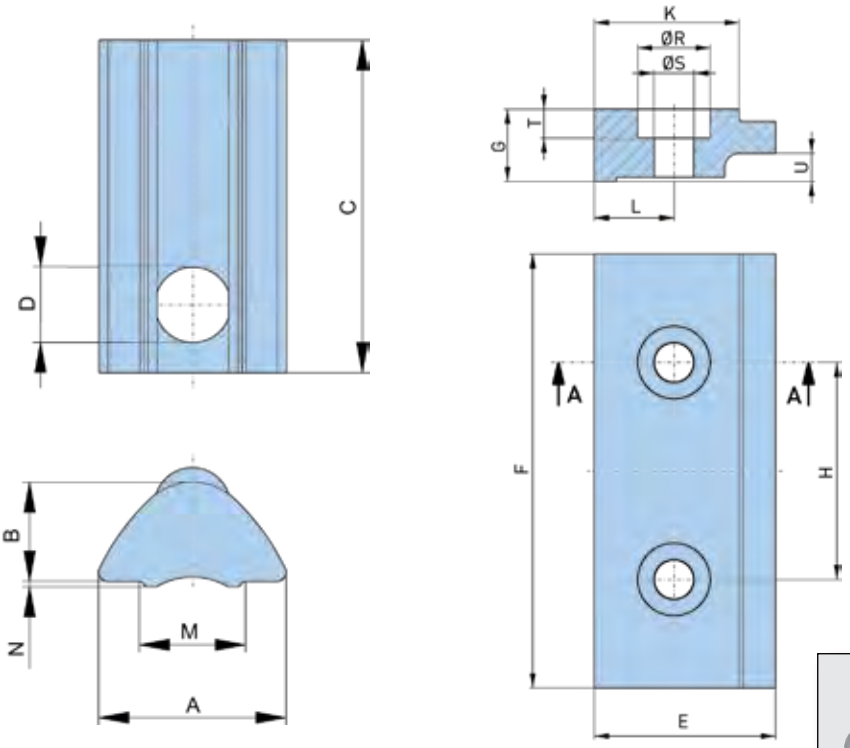
	Toe-clamp mounting (mm)		T-nut mounting (mm)
Product size	**MP**	**KP**	**M**
HMRx08	97	115	50
HMRx11	122	140	70
HMRx15	170	190	96
HMRx18	202	226	116
HMRx24	262	286	161

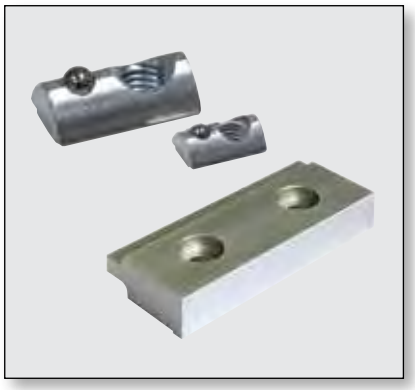
Holding force per mounting set [N]

	Toe-clamp				T-nut			
Product size	In longitudinal direction of the actuator*	Screw 2x	Tightening torque [Nm]	Max. load per screw	In longitudinal direction of the actuator*	Screw 1x	Tightening torque [Nm]	Max. load per screw
HMRx08	800	M4	3	900	1,000	M5	6	1,200
HMRx11	800	M4	3	900	1,000	M5	6	1,200
HMRx15	1,820	M5	6	1,200	1,600	M6	10	1,700
HMRx18	2,610	M6	10	1,700	2,700	M8	20	3,400
HMRx24	2,610	M6	10	1,700	3,200	M10	40	5,500

*A friction factor of 0.15 between profile and mounting surface was taken as a basis for the calculation of the forces that can be transmitted in longitudinal direction, Screw property class 8.8.

Actuator Mounting





Dimension table - T-nut mounting HMR [mm]

Product size	A	B	C	Ø D	M	N	Order no. *
HMRx08	8.0	4.0	11.5	M5	5.0	0.5	56351FIL
HMRx11	8.0	4.0	11.5	M5	5.0	0.5	56351FIL
HMRx15	10.5	6.4	22.5	M6	6.4	0.6	56352FIL
HMRx18	13.5	6.7	22.5	M8	8.5	1.0	56353FIL
HMRx24	16.5	8.9	28.5	M10	10.5	1.0	56354FIL

* Packing unit 10 pc

Dimension table - Toe-clamp mounting HMR [mm]

Product size	E	F	G	H	K	L	Ø R	Ø S	T	U	Order no. *
HMRx08	18.0	40.0	7.5	20.0	15.0	9.0	0.0	4.5	0.0	2.8	56363FIL
HMRx11	18.0	40.0	7.5	20.0	15.0	9.0	0.0	4.5	0.0	2.8	56363FIL
HMRx15	25.0	60.0	10.0	30.0	20.0	10.0	10.0	5.5	4.0	3.9	56355FIL
HMRx18	28.0	80.0	12.0	40.0	23.0	12.0	11.0	6.6	4.7	5.9	56356FIL
HMRx24	28.0	80.0	12.0	40.0	23.0	12.0	11.0	6.6	4.7	5.9	56356FIL

* Packing unit 1 pair (2 toe-clamps) and associated hardware

ORDERING INFORMATION
HMRS

Select an order code from each of the numbered fields to create a complete HMR screw-driven model order number. Include hyphens and non-selective characters as shown in example below.

			①	②	③	④		⑤		⑥	⑦	⑧			⑨	⑩
Order Number Example:	HMR	S	15	B	05	0	–	1000	–	A	B	1	0	0	F1	A7

① Frame Size (Profile Width)

08	85 mm
11	110 mm
15	150 mm
18	180 mm
24	240 mm

② Actuator Design (see Dimensions for further detail)

B	Basic Profile with Ball Bearing Guide, No Outer Cover
C	Basic Profile with Ball Bearing Guide, IP54 with Outer Cover
R**	Reinforced Profile with Ball Bearing Guide, No Outer Cover
S**	Reinforced Profile with Ball Bearing Guide, IP54 with Outer Cover

③ Screw lead by Frame Size (w/plain drive shaft)

05	5 mm lead for size 08, 11, 15
10	10 mm lead for size 18, 24
12	12 mm lead for size 08
16	16 mm lead for size 11
20	20 mm lead for size 15
25	25 mm lead for size 18
32	32 mm lead for size 24

④ Carriage Design

0	Standard
1	Tandem

⑤ Order Stroke

xxxx	4 digit input in mm (see max stroke by frame size in Specifications)

NOTE: If travel is less than 75mm either Home or Limit Sensors can be used, not both. If travel is less than 20mm, only a Home Sensor can be used.

⑥ Home Sensor* (one sensor)

0	No home sensor
A**	PNP, 3 Wire, N.O., Internal Mounting
K**	NPN, 3 Wire, N.O., Internal Mounting
C	PNP, 3 Wire, N.O., M8 Plug, 0.3 m Cable, External Mounting (P8S-GPCHX)
M	NPN, 3 Wire, N.O., M8 Plug, 0.3 m Cable, External Mounting (P8S-GNCHX)

*P/N 003-2918-01, 5 M extension cable included
***If internal switches are selected they cannot be manually re-positioned in the field.**
****Indicates longer lead time options**

⑦ Limit Sensor* (two sensors)

0	No home sensor
B**	PNP, 3 Wire, N.C., Internal Mounting
L*/*	NPN, 3 Wire, N.C., Internal Mounting
D	PNP, 3 Wire, N.C., M8 Plug, 0.3 m Cable, External Mounting (P8S-GQCHX)
N	NPN, 3 Wire, N.C., M8 Plug, 0.3 m Cable, External Mounting (P8S-GMCHX)

*P/N 003-2918-01, 5 M extension cable included
***If internal switches are selected they cannot be manually re-positioned in the field.**

⑧ Limit/Home Sensor Position*

0	No Home Sensor
1	10 mm
2	20 mm
3	30 mm
4	40 mm
5	50 mm
6	60 mm
7	70 mm
8	80 mm
9	90 mm
A	100 mm
B	110 mm
C	120 mm
D	130 mm
E	140 mm
F	150 mm
G	160 mm
H	170 mm
J	180 mm
K	190 mm
L	200 mm

*If limit and home sensors selected, this is the distance that limit sensors are positioned from both ends, home sensor positioned 50mm from limit sensor at drive end. If only home sensor selected, it is positioned this distance from the drive end.

⑨ Mounted Gearheads

(see Options & Accessories for frame size availability and dimensions)

⑩ Gearhead and Motor Mounting Kits

Gearhead Mounting Kit
(see Options & Accessories for availability and dimensions)

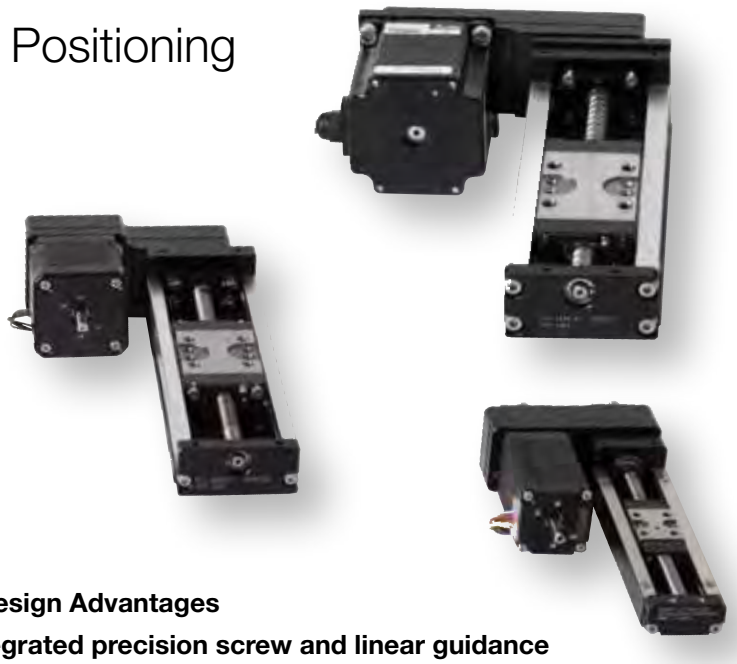
Motor Mounting Kit (Including Flange and Coupling For Direct Drive Motor or Flange on Mounted Gearhead
(see Options & Accessories for availability and dimensions)

Mounted Motor (Mated to Mounted Gearhead
(see Options & Accessories for availability and dimensions)

XE Series Positioners

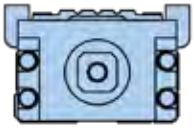
Dependable, Cost-Effective Positioning

- **Integrated bearing and carriage assembly**
- **Rigid U-channel, steel body**
- **High force per dollar value**
- **Easily adapted into multi-axis configuration**
- **Small package size as compared to actuators with separate bearing arrangements**

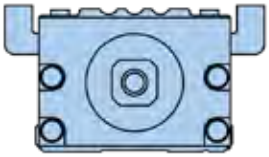


Key Design Advantages

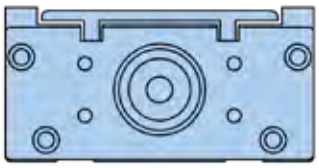
- **Integrated precision screw and linear guidance**
- **Flexible motor mounting options**
- **Rigid steel U-Channel body**
- **Packaged adjustable limit sensors**
- **Precision ballscrew drive train**



401XE



402XE



403XE

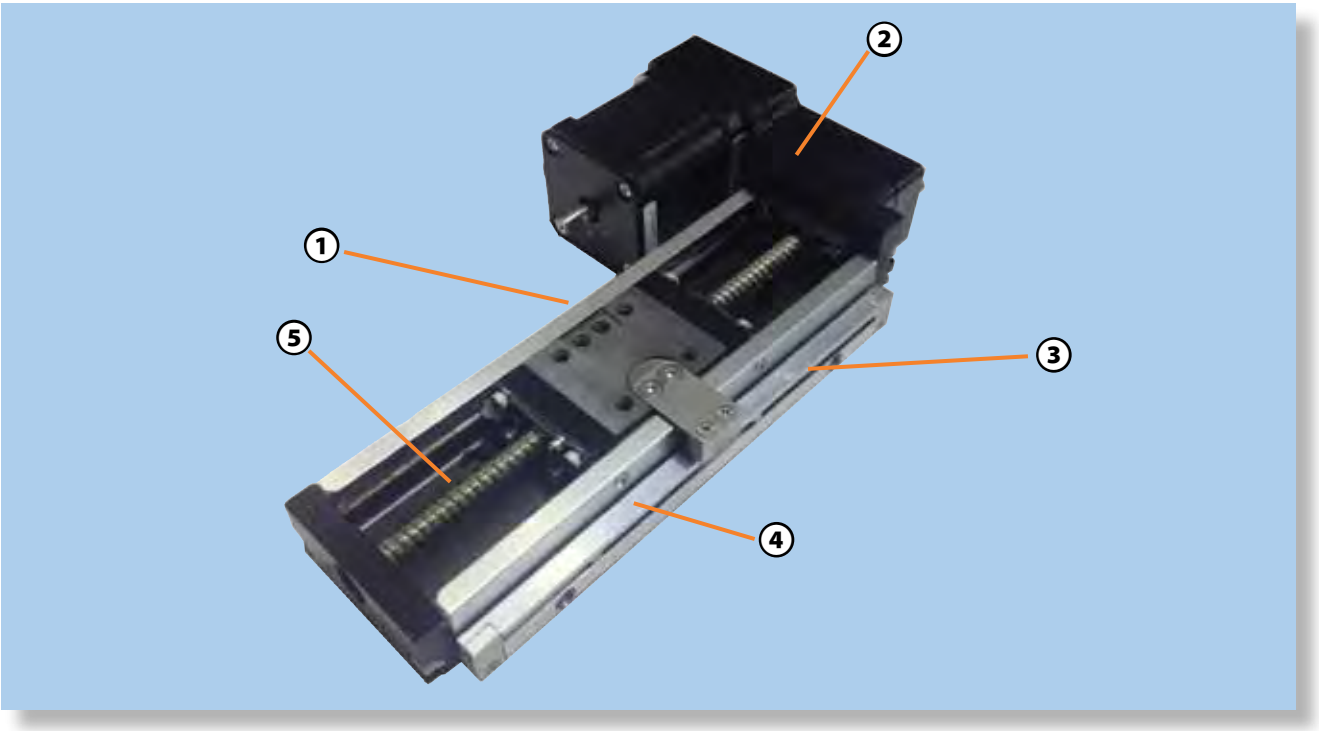
	401XE	402XE	403XE
Maximum Travel (mm)	160	220	655
Maximum Payload (N)	156	882	1,569
Maximum Acceleration (m/s²)	20	20	20

Parker's XE series, mono-carrier style linear positioners combine a rugged steel body with an integrated precision ball screw and bearing guide – producing a highly accurate, cost-effective line of linear positioners.

The XE series is the ideal linear positioner for applications in the manufacturing of electronics, semi-conductors, or life science applications requiring high precision, long life and compact packaging.

OEM's looking to produce machines that position moderate payloads with tight space constraints should look no further than the XE series of linear positioners. The XE series has superior load-life characteristics

The XE Series offers complete flexibility, from motor-mounting options to cleanroom compatibility and a variety of offerings in between. Whether the application calls for a hardcover protection for the linear guide, cleanroom compatible solutions, custom motors mounted at the factory, or an aesthetically appealing engineered limit sensor package, the 401/402/403XE can be customized to fit the task at hand. when compared to a lead screw driven positioner in similar packaging. The mono-carrier style arrangement of the XE series gives it the highest payload per packaging of any Parker ball screw driven linear stage.



1 Integrated Precision Screw and Linear Guidance

Bearing provides a low profile, high accuracy, smooth motion, and robust adjustment free design over the life of the actuator.

2 Flexible Motor Mounting Options

Provides a variety of motor drive options, including servo and stepper motors, which can either be mounted inline or parallel to the stage.

3 Rigid Steel U-Channel Body

Provides structural rigidity for minimal deflection. With the steel U channel body and integrated bearing design, the structural rigidity of the 401/402/403XE is significantly stiffer than most aluminum body positioners. The increased stiffness results in reduced overall cost due to the elimination of support structures.

4 Packaged Adjustable Limit Sensors

Provide adjustable stroke lengths, easily connected, fewer cables to manage, and no pinch points in an aesthetically pleasing manner.

5 Precision Ballscrew Drive Train

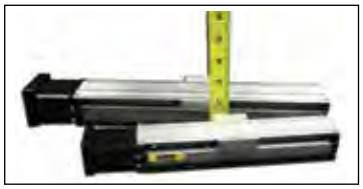
Provides smooth motion with high accuracy and high mechanical efficiency.

Motor Mounting Flexibility

With standard inline and parallel motor mounting options for the NEMA 11, NEMA 17, NEMA 16, NEMA 23, and other Parker Automation motors, the XE Series allows the user to select the motor of their choice without being restricted to one model. To further customize the application solution, the 401/402/403XE can be ordered ready to mount onto most other manufacturers' motors as well.

Low-Profile Design

The highly integrated ballscrew and guide bearing design allows for a greatly reduced overall height when compared to traditional stacking of a bearing and screw assembly. This results in a more compact footprint.



Hardcover Protection

or added protection to the bearing system and drive train, an optional hardcover is available. This will bring the positioner to an IP20 rating and prevent large particles from entering and damaging the screw or bearings.

SPECIFICATIONS

The XE series combines a rugged steel body construction with an integrated precision ball screw and bearing guide producing a highly accurate, cost effective line of tables ideal for applications in the hard disk, semiconductor, medical, machine building and many other industries.

		401	402		403	
Series	**Units**	**2 mm lead**	**2 mm lead**	**5 mm lead**	**5 mm lead**	**10 mm lead**
Travel (max)	mm	160	220	220	655	655
Repeatability						
Inline Motor Mount	µm	±10	±5	±5	±5	±5
Parallel Motor Mount		±30	±15	±30	±30	±60
Breakaway Torque	Nm	0.012	0.06	0.06	0.15	0.15
Maximum Input Speed	rev/sec	50	50	50	50	50
Maximum Velocity	mm/sec	100	100	250	250	500
Maximum Load (Normal and Inverted)	kg	16	90	90	160	160
Maximum Moment						
Pitch	Nm	10	46	46	101	101
Yaw		11	51	51	120	120
Roll		28	134	134	260	260
Screw Diameter	mm	6	8	8	10	10
Screw Efficiency						
Inline Motor Mount	%	90	90	90	90	90
Parallel Motor Mount		86	86	86	86	86
Linear Bearing Coefficient of Friction	-	0.01	0.01	0.01	0.01	0.01
Running Torque	Nm	0.011	0.05	0.05	0.1	0.1
Maximum Axial Load	kg	5	13	17	31	27
Moment of Inertia						
I_x of Guide Rail	mm^4	2710	14,400	14,400	38,800	38,800
I_y of Guide Rail		23,600	137,000	137,000	314,000	314,000
Weight of Carriage	kg	0.05	0.26	0.26	0.3	0.3
Maximum Acceleration	G's	2	2	2	2	2
Rated Duty Cycle	%	100	100	100	100	100

Travel-Dependent Performance Specifications

401 XE

			Travel Length (Order Option Code)		
	Performance Specification	**Units**	**01**	**02**	**03**
2 mm Lead	**Travel**	mm	60	110	160
	Flatness	µm	15	15	15
	Straightness	µm	15	15	15
	Accuracy				
	Inline Motor Mount	µm	65	70	75
	Parallel Motor Mount		95	100	105
	Input Inertia				
	Inline Motor Mount	kg-m^2 x 10^{-6}	0.122	0.171	0.224
	Parallel Motor Mount		0.327	0.376	0.429
	Weight				
	Inline Motor Mount*	kg	0.41	0.49	0.58

* Adding the parallel motor mount option adds 0.08 kg for the NEMA 11 option, and 0.10 kg for the NEMA 17 option.

402 XE

			Travel Length (Order Option Code)			
	Performance Specification	**Units**	**01**	**02**	**03**	**04**
2 mm Lead	**Travel**	mm	70	120	170	220
	Flatness	µm	15	15	15	15
	Straightness	µm	15	15	15	15
	Accuracy					
	Inline Motor Mount	µm	70	75	85	90
	Parallel Motor Mount		85	90	100	105
	Input Inertia					
	Inline Motor Mount	kg-m^2 x 10^{-6}	0.615	0.772	0.929	1.090
	Parallel Motor Mount		0.820	0.977	1.134	1.295
	Weight					
	Inline Motor Mount*	kg	1.19	1.40	1.60	1.81
5 mm Lead	**Travel**	mm	70	120	170	220
	Flatness	µm	15	15	15	15
	Straightness	µm	15	15	15	15
	Accuracy					
	Inline Motor Mount	µm	70	75	85	90
	Parallel Motor Mount		85	90	100	105
	Input Inertia					
	Inline Motor Mount	kg-m^2 x 10^{-6}	0.741	0.898	1.060	1.210
	Parallel Motor Mount		0.946	1.103	1.265	1.415
	Weight					
	Inline Motor Mount*	kg	1.19	1.40	1.60	1.81

* Adding the parallel motor mount option adds 0.11 kg for the NEMA 17 option, 0.15 kg for the NEMA 23 option, and 0.12 kg for the SM16 option.

Travel-Dependent Performance Specifications

403 XE

			Travel Length (Order Option Code)							
	Performance Specification	**Units**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**
5 mm Lead	**Travel**	mm	55	105	205	305	405	505	605	655
	Flatness	µm	15	15	15	15	25	25	25	25
	Straightness	µm	15	15	15	15	25	25	25	25
	Accuracy									
	Inline Motor Mount	µm	70	80	90	95	100	110	120	130
	Parallel Motor Mount		100	110	120	125	130	140	150	160
	Input Inertia									
	Inline Motor Mount	$kg\text{-}m^2 \times 10^{-6}$	1.720	2.100	2.870	3.630	4.400	5.170	5.930	6.690
	Parallel Motor Mount		1.925	2.305	3.075	3.835	4.605	5.375	6.135	6.900
	Weight									
	Inline Motor Mount*	kg	1.85	2.25	2.85	3.55	4.25	4.85	5.55	6.20
10 mm Lead	**Travel**	mm	55	105	205	305	405	505	605	655
	Flatness	µm	15	15	15	15	25	25	25	25
	Straightness	µm	15	15	15	15	25	25	25	25
	Accuracy									
	Inline Motor Mount	µm	70	80	90	95	100	110	120	130
	Parallel Motor Mount		130	140	150	155	160	170	180	190
	Input Inertia									
	Inline Motor Mount	$kg\text{-}m^2 \times 10^{-6}$	2.500	2.880	3.650	4.420	5.180	5.950	6.700	7.100
	Parallel Motor Mount		2.705	3.085	3.855	4.625	5.385	6.155	6.905	7.305
	Weight									
	Inline Motor Mount*	kg	1.85	2.25	2.85	3.55	4.25	4.85	5.55	6.20

* Adding the parallel motor mount option adds 0.11 kg for the NEMA 17 motor option, 0.15 kg for the NEMA 23 option, and 0.12 kg for the SM16 option.

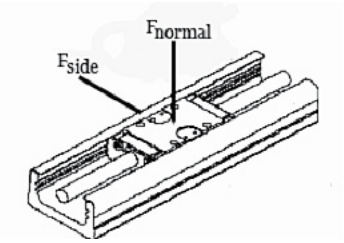
Standard XY Mounting Configurations with other XE products

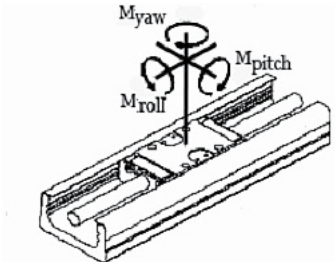
	Top Stage			
Bottom Stage	**401XE**	**402XE**	**403XE**	**404XE**
401XE	X			
402XE	X	X		
403XE	X	X	X	
404XE		X	X	X

XE Series Load-Life Performance

The following performance information is provided as a supplement to the product specification pages. The useful life of a linear table at full catalog specifications is dependent on the forces acting upon it.

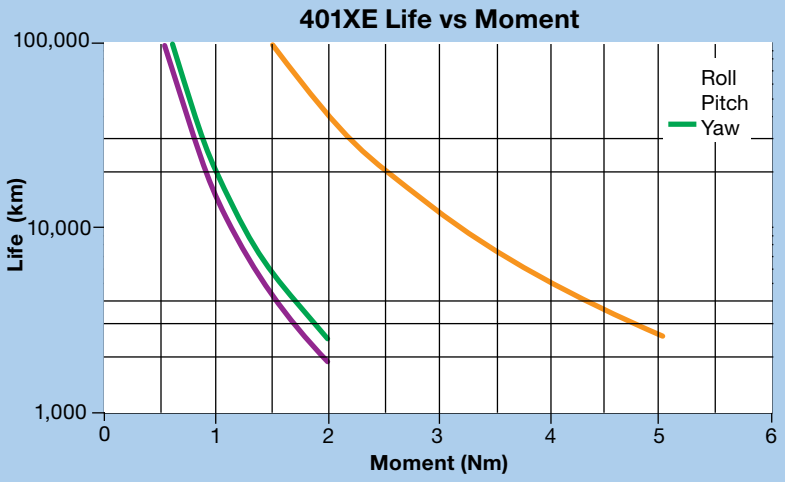
These forces include both static components resulting from payload weight, and dynamic components due to acceleration/deceleration of the load. In multi-axis applications, the primary positioner at the bottom of the stack usually establishes the load limits for the combined axes.

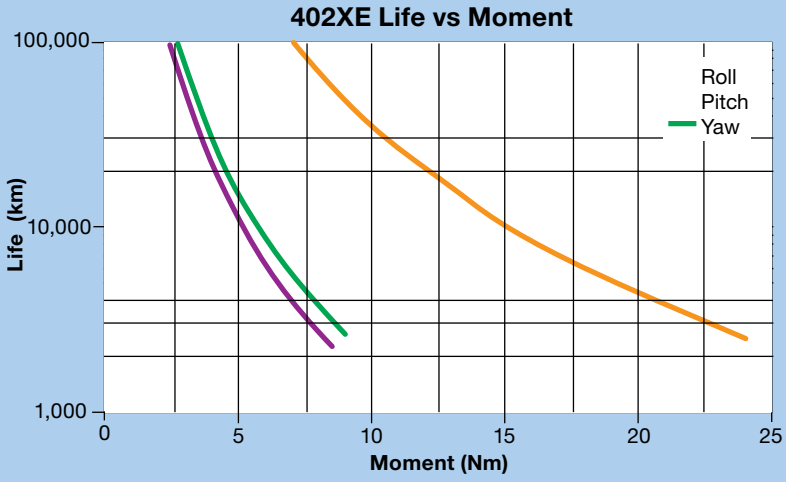


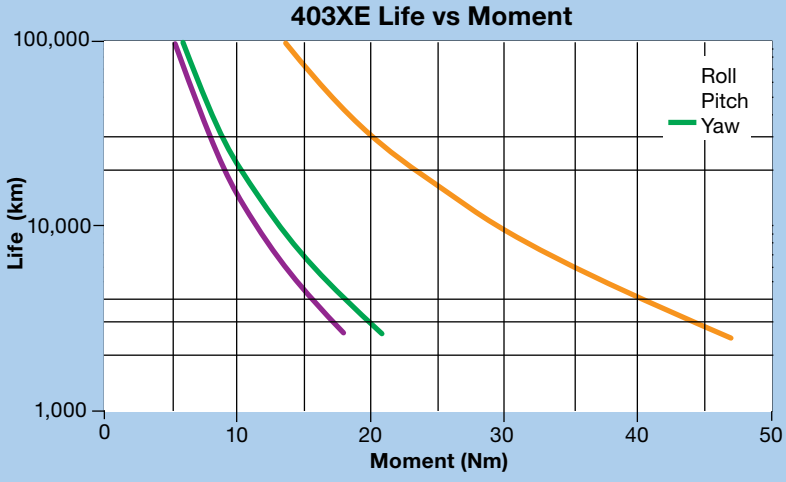


When evaluating life versus load, it is critical to include the weight of all positioning elements that contribute to the load supported by the primary axis. The following graphs are used to establish the table life relative to the applied loads. For more information, download the product manual at **parker.com/emc** or contact our applications department at (800) 245-6903.

Carriage Life with Moment

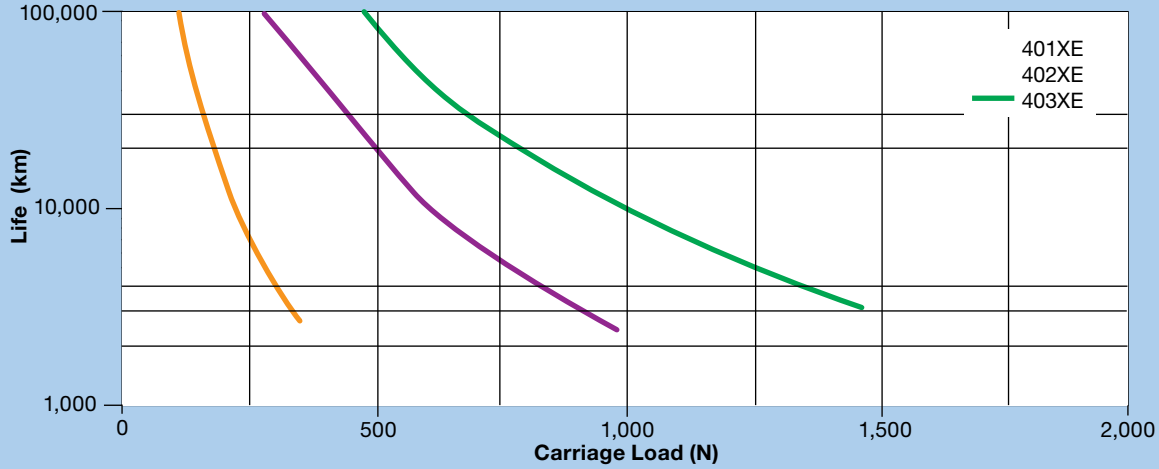




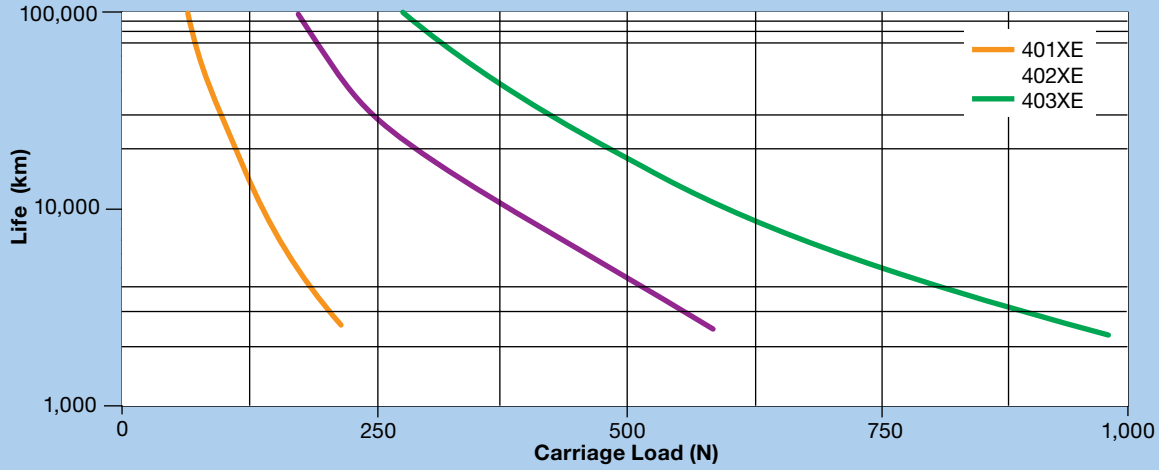


XE Series Load-Life Performance

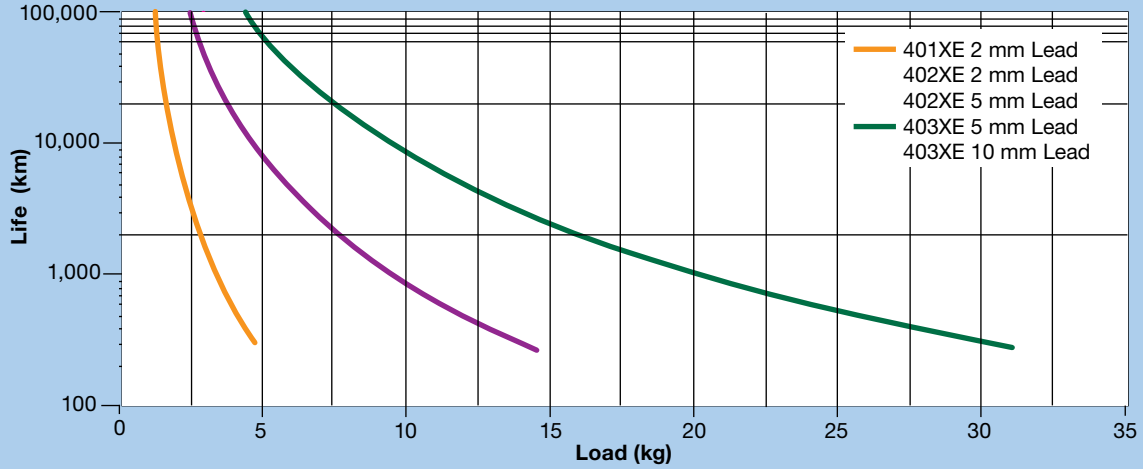
Carriage Life with Normal or Inverted Load



Carriage Life with Side Load



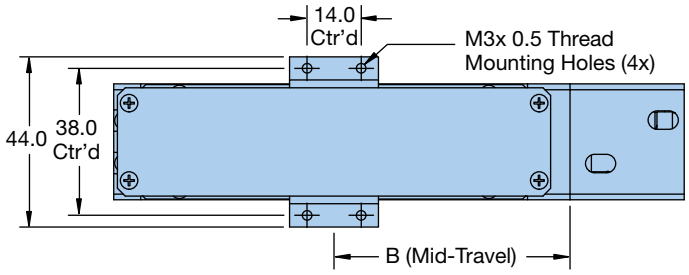
Ballscrew Life with Axial Load

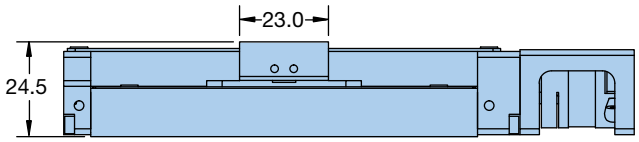


DIMENSIONS

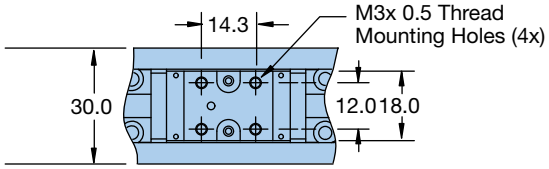
401XE Dimensions (mm)

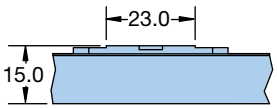
401XE with Hard Cover

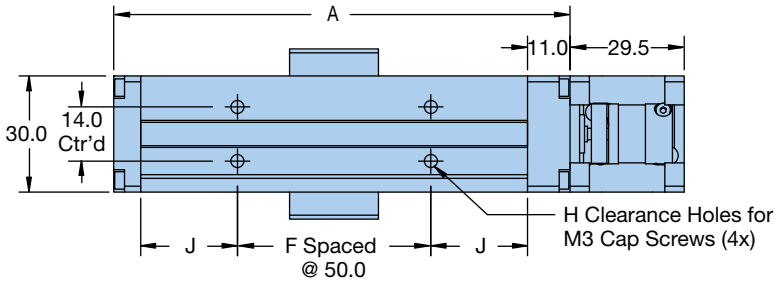




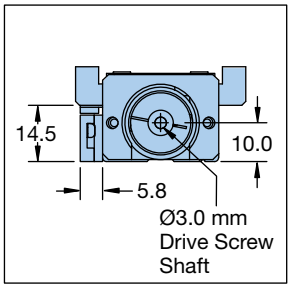
401XE without Hard Cover





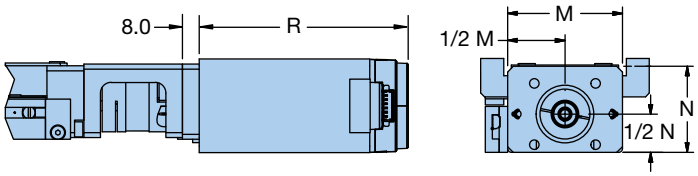


Optional Limit/Home Sensor



Order Code	Travel (mm)	A	B	F	H	J
01	60	118	61	1	4	25
02	110	168	86	2	6	25
03	160	218	111	3	8	25

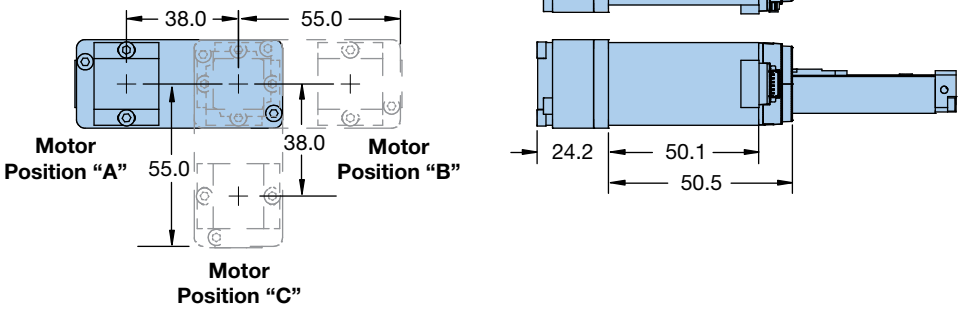
401XE with NEMA 11 & 17 Inline Motor



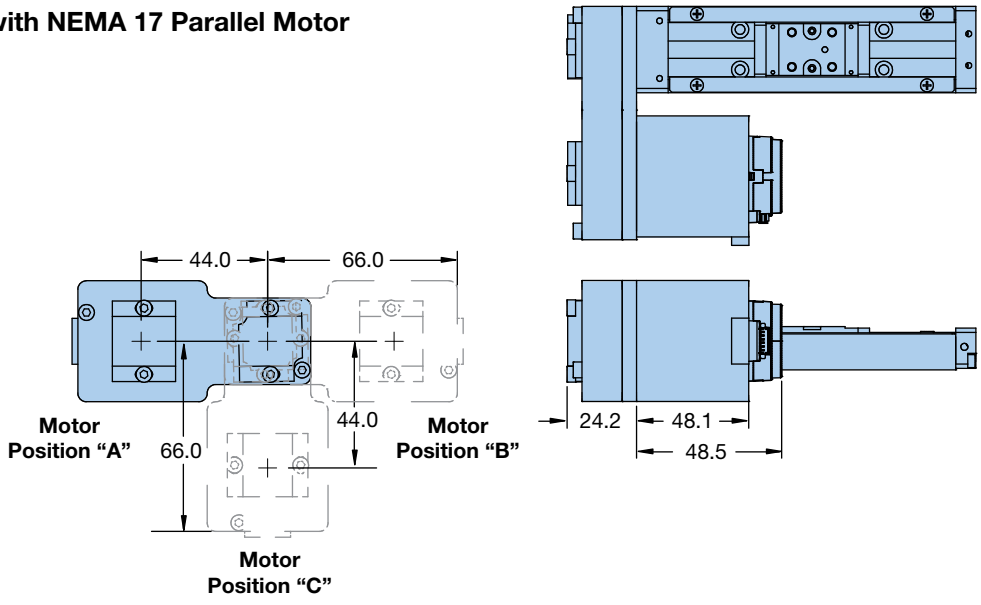
Motor Option*	Motor Size	M	N	R
M11	NEMA 11	28.2	28.2	50.5
M17	NEMA 17	43.0	37.0	48.5

***When configuring an XE stage and selecting your motor option in Ordering Information, note that the "M" motor options come with motors while "N" options are only prepped for those motors.**

401XE with NEMA 11 Parallel Motor

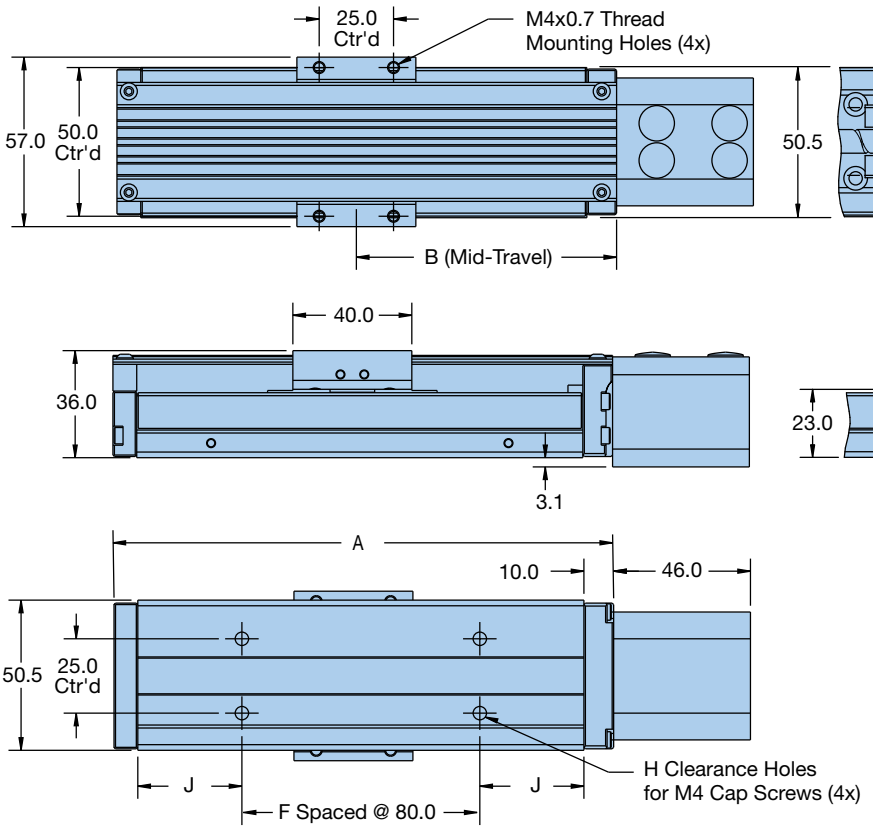


401XE with NEMA 17 Parallel Motor

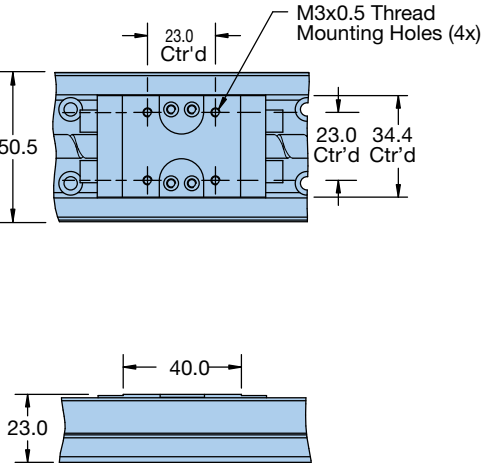


402XE Dimensions (mm)

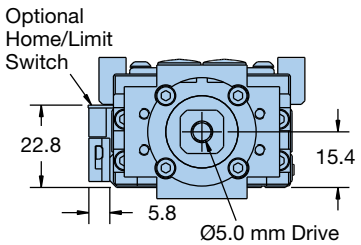
402XE with Hard Cover



402XE without Hard Cover

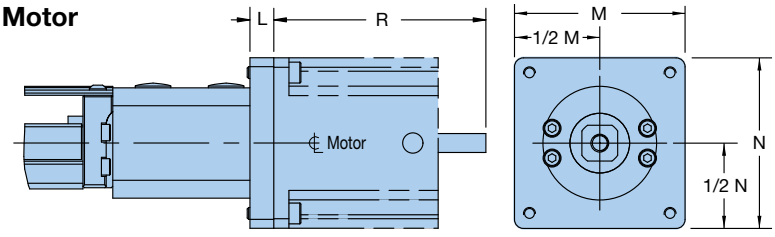


Optional Limit/Home Sensor



Order Code	Travel (mm)	A	B	F	H	J
01	70	168.0	87.5	1	4	35.0
02	120	218.0	112.5	2	6	20.0
03	170	268.0	137.5	2	6	45.0
04	220	318.0	162.5	3	8	30.0

402XE with Inline Motor



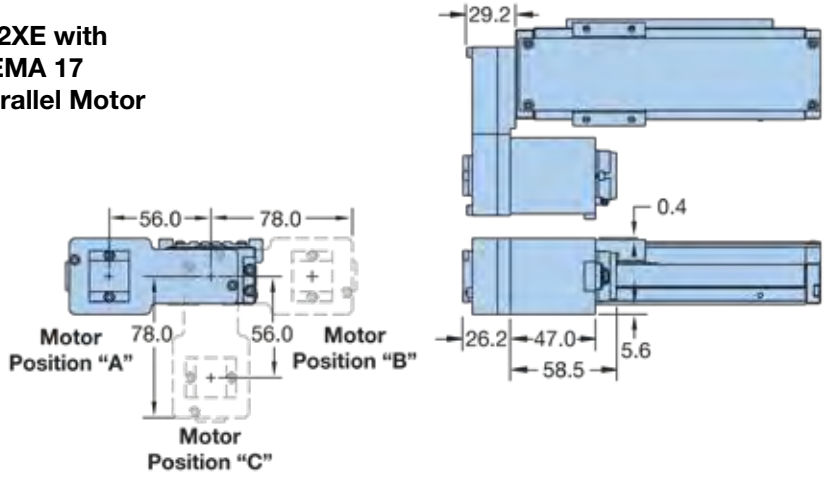
Rear shaft not available on SM162

Motor Option*	Motor Size	L	M	N	R
M17	NEMA 17	8.0	43.0	37.0	58.5
M16	SM162AE-N10N	8.0	42.2	42.2	136.5
M23	NEMA 23	8.0	57.2	57.2	51.2

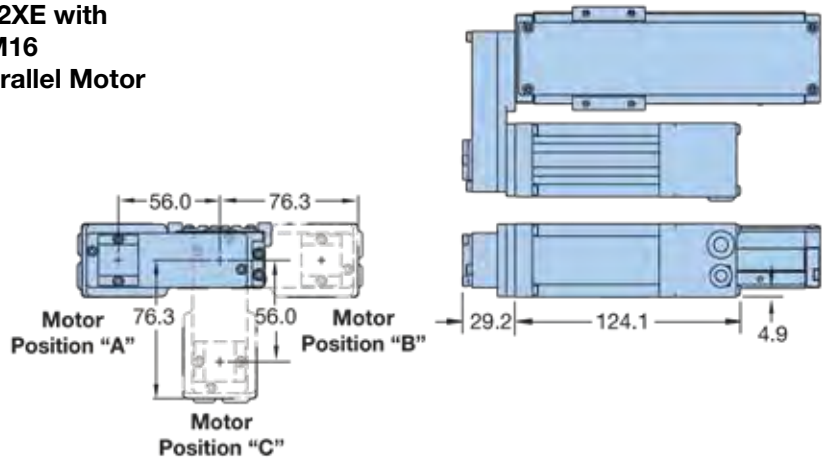
***When configuring an XE stage and selecting your motor option in Ordering Information, note that the "M" motor options come with motors while "N" options are only prepped for those motors.**

402XE Dimensions (mm)

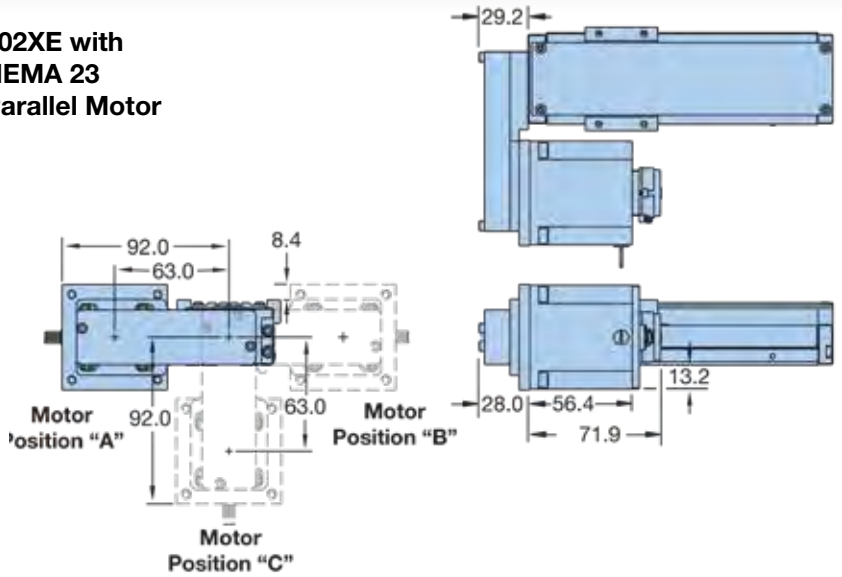
402XE with NEMA 17 Parallel Motor



402XE with SM16 Parallel Motor



402XE with NEMA 23 Parallel Motor

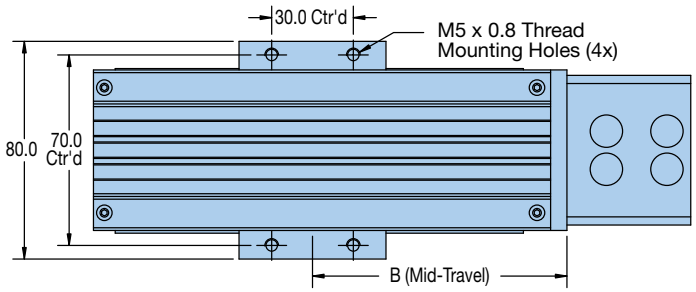


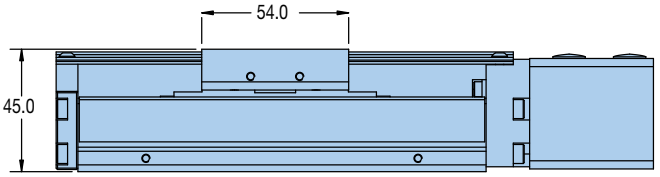
Free sizing and selection support from Virtual Engineer at virtualengineer.com

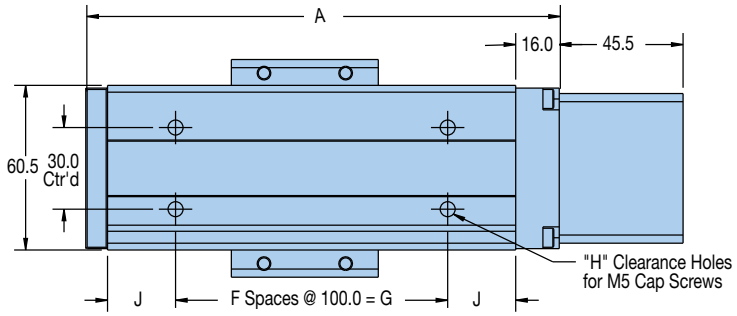
Virtual Engineer

403XE Dimensions (mm)

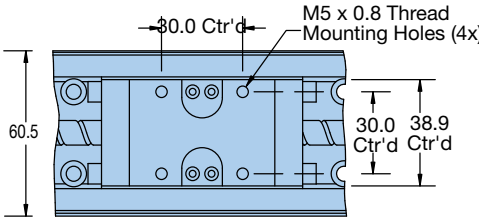
403XE with Hard Cover

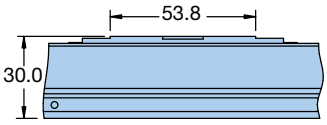




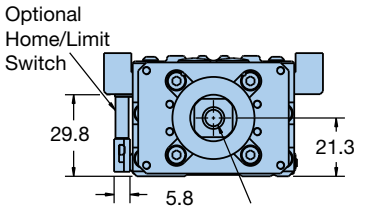


403XE without Hard Cover



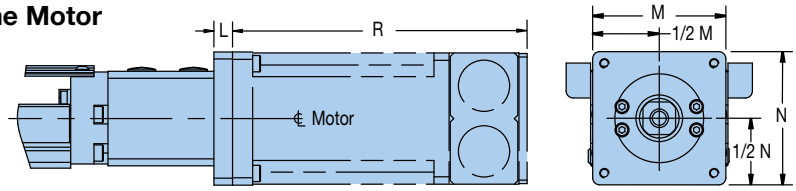


Optional Limit/Home Sensor



Order Code	Travel (mm)	A	B	F	G	H	J
01	55	174.0	93.5	1	100.0	4	25.0
02	105	224.0	118.5	1	100.0	4	50.0
03	205	324.0	168.5	2	200.0	6	50.0
04	305	424.0	218.5	3	300.0	8	50.0
05	405	524.0	268.5	4	400.0	10	50.0
06	505	624.0	318.5	5	500.0	12	50.0
07	605	724.0	368.5	6	600.0	14	50.0
08	655	774.0	383.5	7	700.0	16	25.0

403XE with Inline Motor

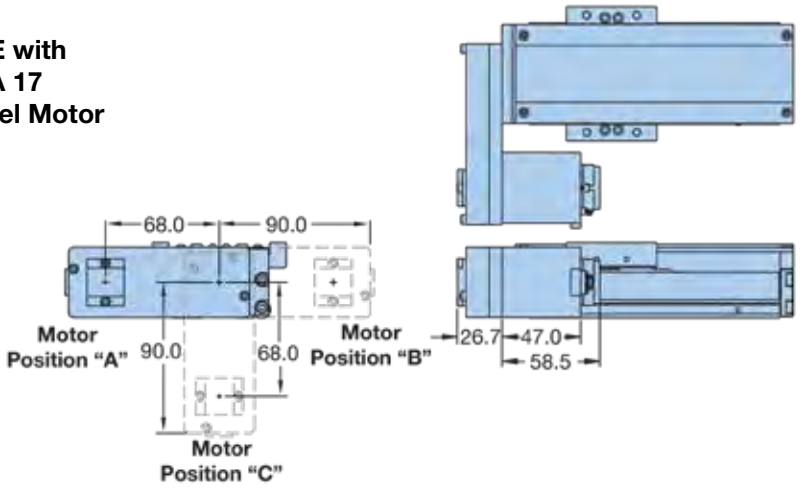


Motor Option*	Motor Size	L	M	N	R
M17	NEMA 17	8.0	43.0	37.0	58.5
M16	SM162AE-N10N	8.0	42.2	42.2	136.5
M23	NEMA 23	9.5	57.2	57.2	51.2

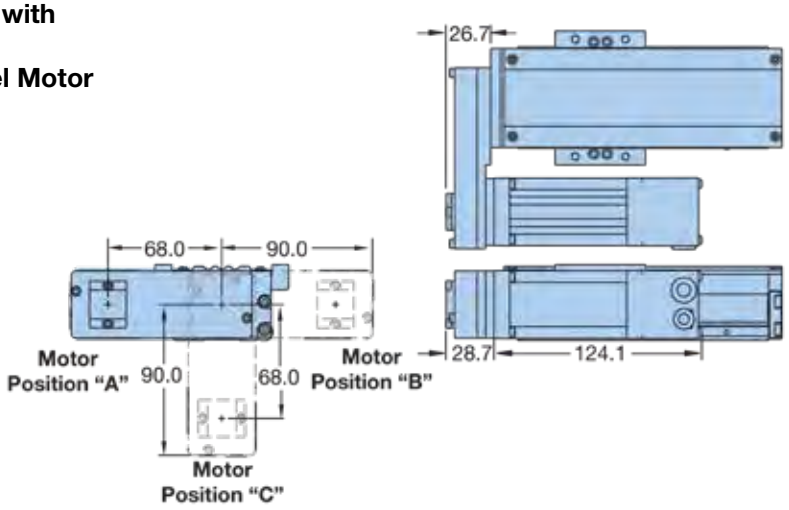
***When configuring an XE stage and selecting your motor option in Ordering Information, note that the "M" motor options come with motors while "N" options are only prepped for those motors.**

403XE Dimensions (mm)

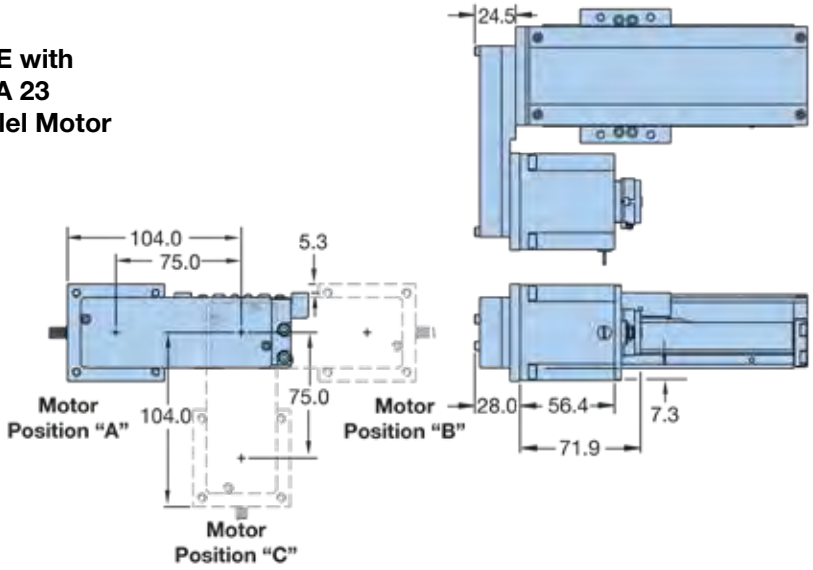
403XE with NEMA 17 Parallel Motor



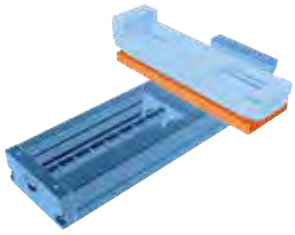
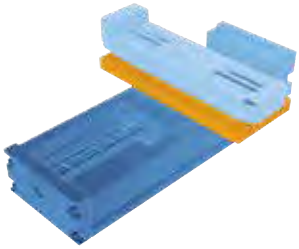
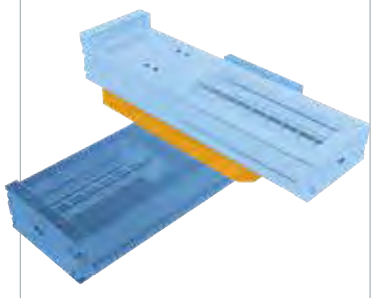
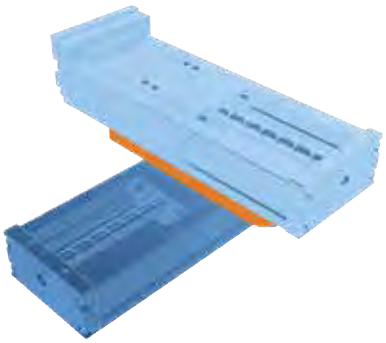
403XE with SM16 Parallel Motor



403XE with NEMA 23 Parallel Motor



Design Flexibility with Standard X-Y Bracket Options

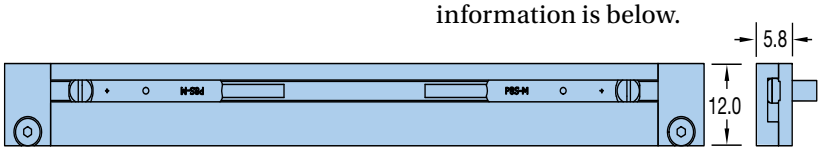
X-Axis	Y-Axis					
	401XE		**402XE**		**403XE**	
	Y-Axis Travel Length Order Code	**X-Y Bracket Part Number**	**Y-Axis Travel Length Order Code**	**X-Y Bracket Part Number**	**Y-Axis Travel Length Order Code**	**X-Y Bracket Part Number**
401XE						
	01 – 03	002-2975-01				
402XE						
			01	002-2819-01		
	01 – 03	002-2976-01	02 – 04	002-2820-01		
403XE						
			01	002-2821-01	01	002-2821-01
	01 – 03	002-2977-01	02 – 04	002-2822-01	02 – 04	002-2822-01
404XE						
			02 – 08	002-2823-01	02 – 08	002-2823-01

OPTIONS & ACCESSORIES

Packaged Limit Sensors

The XE series uses the Parker global mini sensors for home and limit sensing. These sensors are packaged within a miniature sensor housing which allows the flying-leads style cables to exit with 3 meters of cable from the point of the sensor. To further accommodate each application's unique needs, the sensors can be specified as either NPN, PNP, normally open, or normally closed varieties. The unmatched design of the sensor pack on the XE series, allows for fully adjustable sensors along the travel length of the positioner, which creates no pinch points for other cables or hoses to be sliced.

The limit/home switch installed on the XE series is a Hall effect sensor tripped by a magnet located on a flag which is attached to the moving carriage. On the switch body an LED indicates activation. Normally open sensors are typically used for home sensing and normally closed are typically used for limits. With a current sinking sensor, the output lead provides a path to ground when activated, and with a current sourcing sensor, the output lead provides a positive (+) voltage potential relative to ground. Refer to your controller's manual for sensor compatibility. Limit/home switch information is below.



Limit sensor mounting screws are reverse-thread style so tightening the screw loosens the limit sensor in the track and vice versa.

Specifications

Operating Voltage: 10-30 VDC
Repeatability: ≤±0.1 mm
EMC: EN 60 947-5-2
Short circuit protections: Yes
Reverse Polarity Protection: Yes
Enclosure Rating: IP 67
Operating Temperature Range: -25° to 75° C (-13° to 167° F)

Spare Limit/Home Sensors

Part Number	Switching Type	Logic	Cabling
P8SAMMFAZ	NPN	NC	3 Meter, Flying Leads
P8SAMNFAZ	NPN	NO	
P8SAMPFAZ	PNP	NO	
P8SAMQFAZ	PNP	NC	

Wiring Connection

Pin	Wire	Function
1	Brown	+ VDC
4	Black	NO
3	Blue	– VDC

Riser Plates

Most of the motors used with the 401/402/403XE and some of the 404XE motors have a taller profile than the positioner. Thus the motor can interfere with the positioner mounting surface.

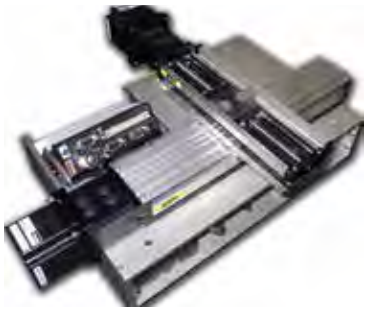
To accommodate riser plates can be provided to space the unit above the mounting surface. See XE product manual for dimensional details and part numbers. Also available are X-Y transition plates for XE to XE mounting.

Cleanroom & Raydent Coatings

Cleanroom ratings are possible with the XE product. The actual cleanroom rating will be dependent upon such variables as the location of the sniffer device, the velocity of the table, etc. Consult the factory for specific cleanroom-capability details or test results.

Demo Units

Order 803-0346 for a multi-axis demo unit to learn the product and display for shows and presentations. The demo will come in a watertight pelican carrying case and will be ready for demonstration programmed from the factory.



ORDERING INFORMATION
XE Series

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	01	XE	S	D9	H0	L0	L	N00	C1	E0	R0

① Series

401	
402	
403	

② Travel (mm)

	401XE	402XE	403XE
01	60	70	55
02	110	120	105
03	160	170	205
04	—	220	305
05	—	—	405
06	—	—	505
07	—	—	605
08	—	—	655

③ Family

XE	XE Series

④ Grade

S	Standard

⑤ Drive Screw Q

D9	2 mm lead (401, 402 only) 1)
D2	5 mm lead (402, 403 only) 2)
D3	10 mm lead (403 only) 3)

1) D9 is a quick ship option for all 401XE travel options and 01 – 02 options for the 402XE.

2) D2 is a quick ship option for the 03 – 04 for the 402XE, and the 01, 02 and 03 option for the 403XE.

3) D3 is a quick ship option for the 04 – 06 options for the 403XE

⑥ Home Sensor (Qty 1)

H0	No home sensor Q
HA	NPN, N.C., flying leads Q
HB	NPN, N.O., flying leads Q
HC	PNP, N.C., flying leads Q
HD	PNP, N.O., flying leads Q

⑦ Limit Sensors (Qty 2)

L0	No limits sensors Q
LA	NPN, N.C., flying leads Q
LB	NPN, N.O., flying leads Q
LC	PNP, N.C., flying leads Q
LD	PNP, N.O., flying leads Q

⑧ Motor Mount Orientation

L	Inline motor mounting Q
A	Parallel motor mounting*
B	Parallel motor mounting*
C	Parallel motor mounting*

* Refer to dimension drawings for orientation

⑨ Motor option

N00	No motor mountQ
N11	NEMA 11 motor mount1) Q
N17	NEMA 17 motor mountQ
N16	SM 16 servo motor mount2) Q
N40	PM-FAL servo motor mount2) Q
N23	NEMA 23 inline motor mount2)
M11	NEMA 11 stepper motor1)
M17	NEMA 17 stepper motor
M16	SM162AE-N10N servo motor, 1000 line encoder2)
M40	MPE 0402A4E-KC1N2)
M23	NEMA 23 stepper motor2)

1) 401XE only
2) Not available on 401XE

⑩ Motor Coupling

C1	No coupler
C2	0.25" Oldham
C3	0.25" Bellows
C4	0.375" Oldham
C5	0.375" Bellows
C6	5 mm Oldham
C7	5 mm Bellows
C8	8 mm Oldham
C9	8 mm Bellows

⑪ Motor Encoder

E0	No encoder
E2	500 line encoder (Available only with M11, M17, M23 motor options)

⑫ Environmental Option

R0	No cover Q
R1	Hard cover Q

Q Need an XE in a Hurry?

The Q above designates quick ship options, that will give fastest delivery possible. These options are only good for the stroke and screw combinations denoted above, with any home and limit sensor option, inline motor mounts only, and are available with or without the hard cover option.

Free sizing and selection support from Virtual Engineer at virtualengineer.com

Virtual Engineer

404XE Series Positioners

(95 mm wide profile)

Versatile Compact Motion Platform

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

Key Design Advantages

- **Three leadscrew options**
- **Two carriage options**
- **Standard inline and parallel motor mounting**
- **Optional hardcover available**
- **LXR and XR mounting compatible (toe clamp only)**

	404XE
Maximum Travel (mm)	700
Maximum Payload (N)	1,202
Maximum Acceleration (m/s²)	20

404XE

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

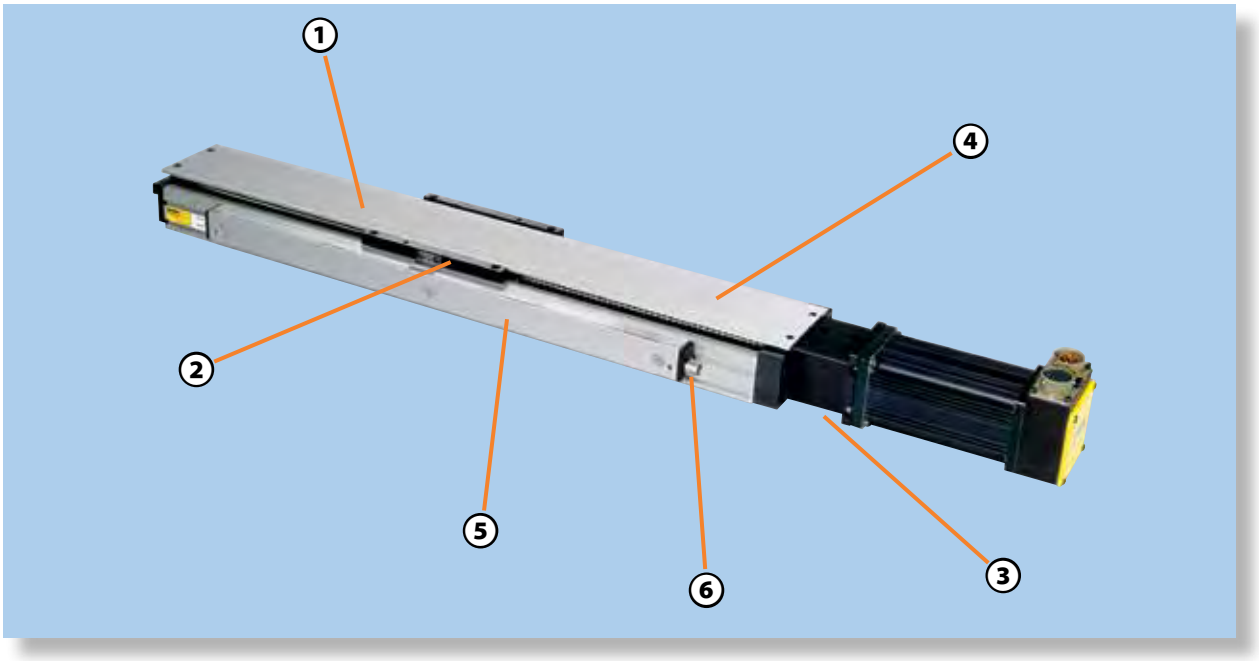
A vast assortment of "designer friendly" options and features simplify the engineering challenges often confronted with "base model" positioning devices. Features like precision dowel holes, linear feedback, sensor packs, parallel motor mounting, brakes, and cleanroom preparation simplify and speed your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



1 Three leadscrew options
Providing travel up to 700mm

2 Two carriage options
Two choices available – short (2 bearing trucks) and long (4 bearing trucks)

3 Standard inline and parallel motor mounting
Options for Parker and non-Parker Automation motors

4 Optional hardcover
An optional hardcover is available. This will bring the positioner to an IP20 rating and prevent large particles from entering and damaging the screw or bearings.

5 Standard mounting
Compatible with XR and LXR Series (Toe Clamp Only)

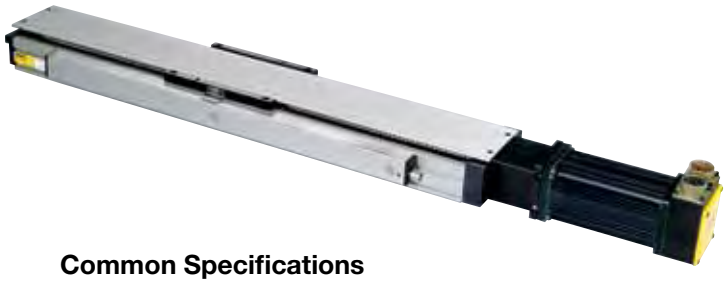
6 End of travel and home sensors
Sensors for the 404XE series are available in a variety of styles.

Standard XY Mounting Configurations with other XE products

Bottom Stage	Top Stage 401XE	402XE	403XE	404XE
401XE	X			
402XE	X	X		
403XE	X	X	X	
404XE		X	X	X

SPECIFICATIONS

The 404XE is the largest of the XE positioning table line, with a width of approximately 4" and travel length up to 700mm depending on selected carriage size. Ballscrew options range from 5mm lead to 20mm lead, and several motor mount and limit/home switch options are available, as well as feedback and brake options.



Common Specifications

Bidirectional Repeatability	
T01 to T11 models	±20 micron
T12 to T15 models	±30 micron
Duty Cycle	100%
Max Acceleration(1)	20 m/sec^2 (773 in/sec^2)
Normal Load Capacity(2)	
NL (short carriage)	61.3 kgf (135 lbs)
VL (long carriage)	122.6 kgf (270 lbs)
Axial load capacity(2)	
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

	Travel (mm)		Positional Accuracy (3) (4)	Input Inertia NL Carriage Units (10^{-5} kg-m^2)			Input Inertia VL Carriage Units (10^{-5} kg-m^2)			Max. Screw Speed	Max. Velocity (meters/sec.)			Total Table Weight (kg)	
Code	**NL**	**VL**	**(µm)**	**5 mm**	**10 mm**	**20 mm**	**5 mm**	**10 mm**	**20 mm**	**(RPS)**	**5 mm**	**10 mm**	**20 mm**	**NL**	**VL**
T01	25	–	42	.81	–	–	–	–	–	72	0.36	0.73	1.50	1.42	1.70
T02	50	–	50	.94	.98	–	–	–	–	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. Positional specifications are based on "no-load" conditions and apply to individual axes only.
(4) Consult factory for specs with linear feedback.

404XE Life/Load Performance

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. **Catalog load specifications are rated for 100 million inches of travel or 2.540 km.**

Table Life/Thrust (Axial) Load

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

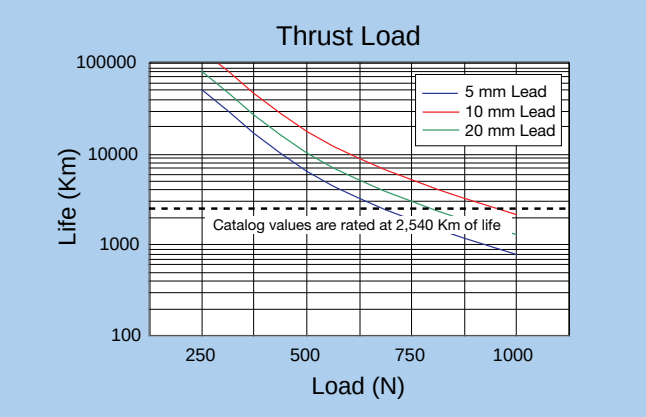


Table Life/Load Chart
Pitch Moment - NL (Short Carriage)

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

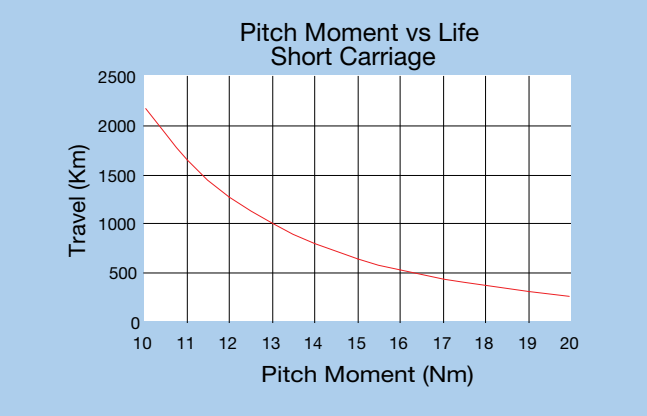
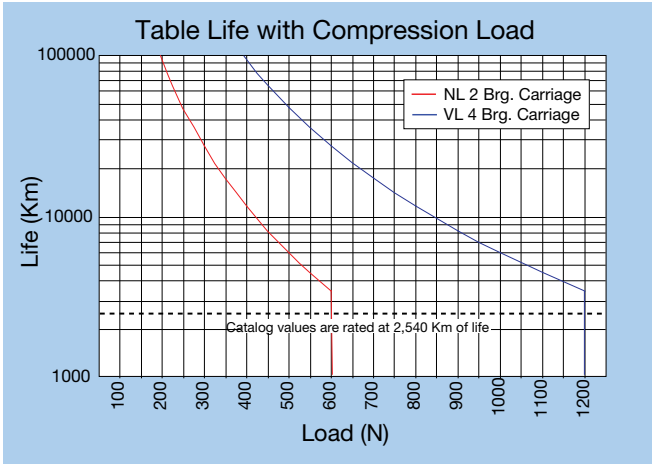


Table Life/Compression (Normal) Load

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 versus 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.



404XE Life/Load Performance

Bearing Life/Load for VL Long Carriage Units

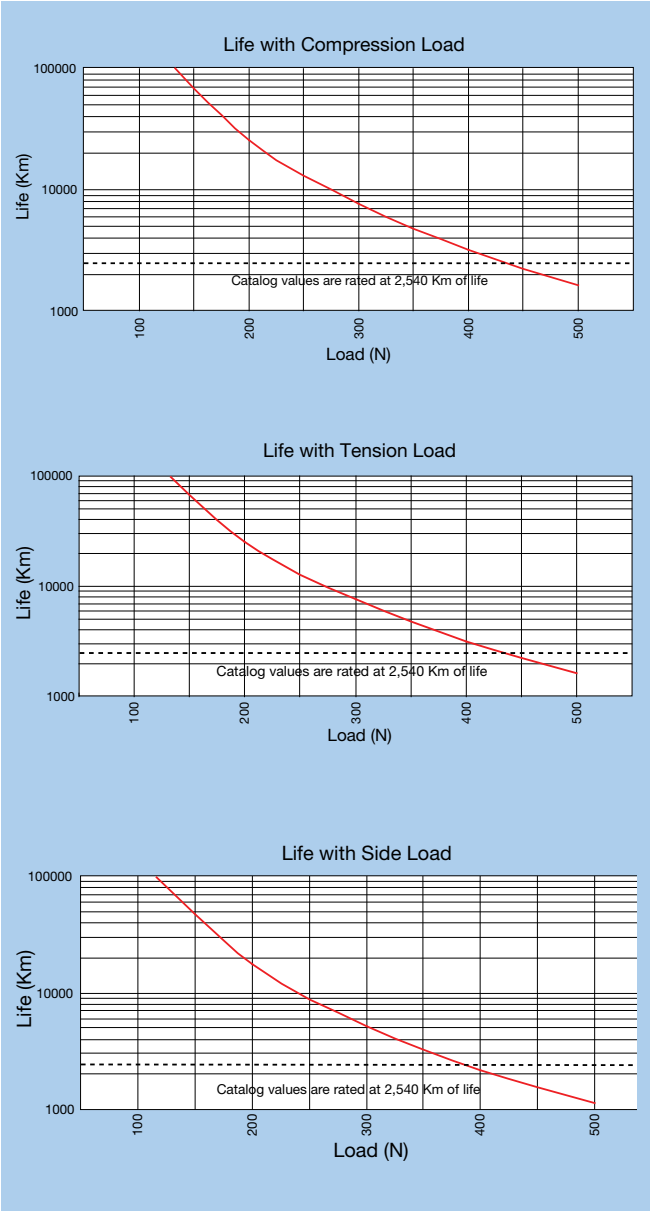
These charts are to be used to evaluate the VL Carriage units. They should be used in conjunction with the corresponding formulas (found under "Product Information" at parkermotion.com) to establish the life/load for each bearing (4 per table).

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

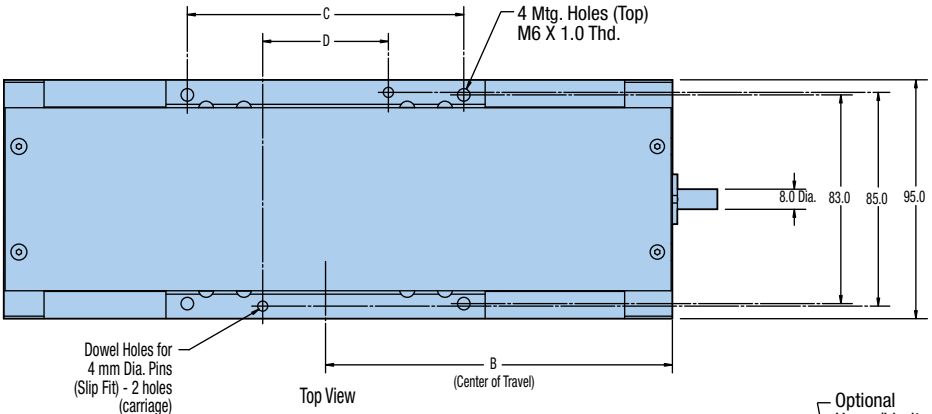
	d1	d2	da
404XE	80	57	28

Refer to Parker's website **parker.com/emc** for moment loading and other engineering data.

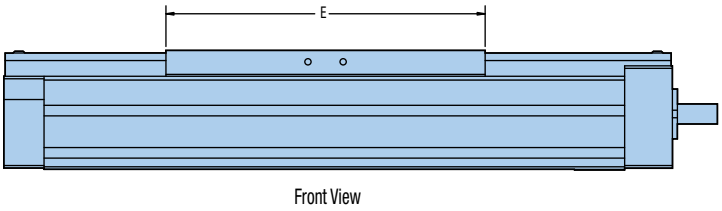


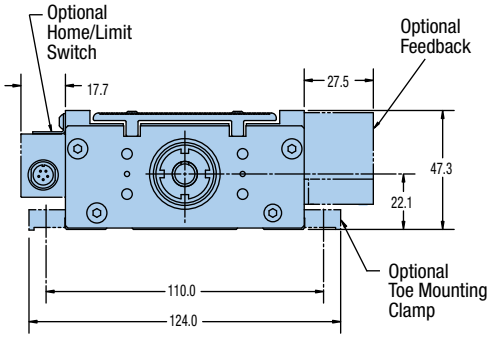
DIMENSIONS

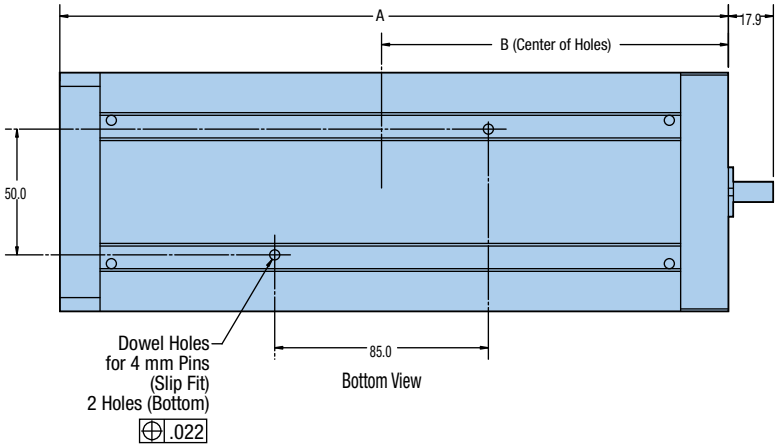
Download 2D & 3D files from parker.com/emc

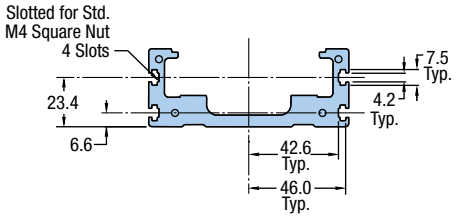


Carriage Type	C	D	E
NL	50.0	36.0	60.0
VL	110.0	50.0	127.0









View showing slots in extruded base

Carriage Travel

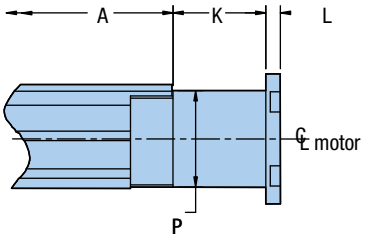
Designation	NL (short)	VL (long)	A	B
T01	25	–	141.0	75.5
T02	50	–	166.0	88.0
T03	100	33	216.0	113.0
T04	150	83	266.0	138.0
T05	200	133	316.0	163.0
T06	250	183	366.0	188.0
T07	300	233	416.0	213.0
T08	350	283	466.0	238.0
T09	400	333	516.0	263.0
T10	450	383	566.0	288.0
T11	500	433	616.0	313.0
T12	550	483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

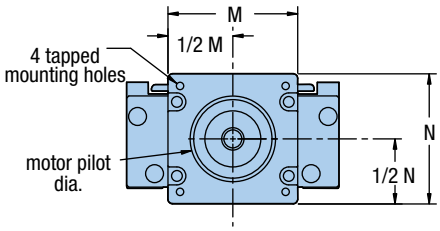
400XE Series Motor Mount Dimensions

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.

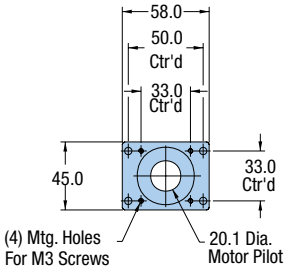




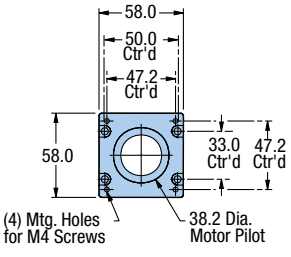
In-Line Adaptor Plates

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

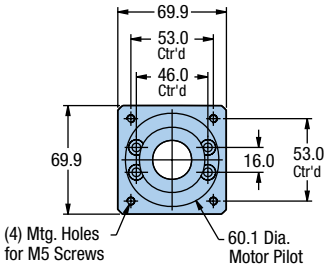
SM16	M2	9.5	41.0	4.3	58.0	45.0	45.0
NEMA 23	M3	9.5	41.0	6.5	58.0	58.0	45.0
NEMA 34	M4	9.5	41.0	12.5	83.0	83.0	45.0
Neometric 70	M21	11.0	53.0	0.0	69.9	69.9	69.9



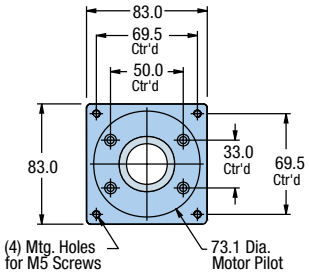
In-line SM 16



In-line NEMA 23

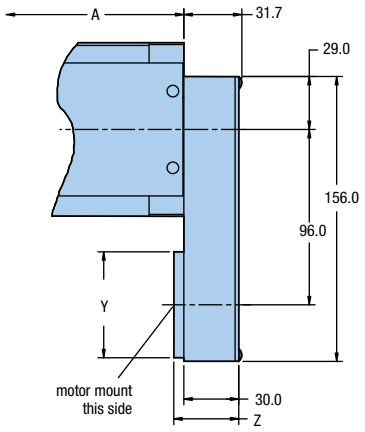


In-line NEOMETRIC 70 /SMN060

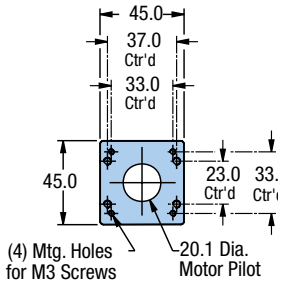


In-line NEMA 34

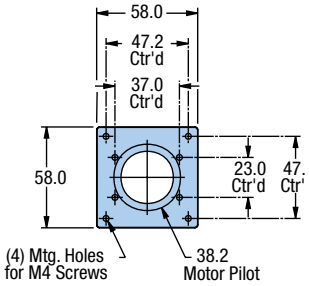
Parallel Motor Mounting



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)

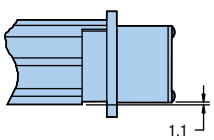


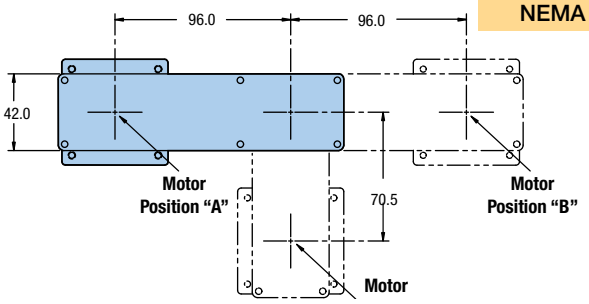
Reverse SM 16



Reverse NEMA 23

Motor Size	Y	Z	Motor Shaft Dia.
SM 16	45.0	34.5	0.250”
SM 23 / BE 23	58.0	35.5	0.375”
NEMA 23	58.0	35.5	0.250”





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

OPTIONS AND ACCESSORIES

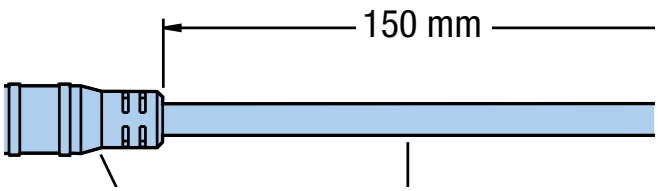
Home or Limit Sensor

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 high-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

With Limits and Home Sensors

With Limits and Home Sensor Pack



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

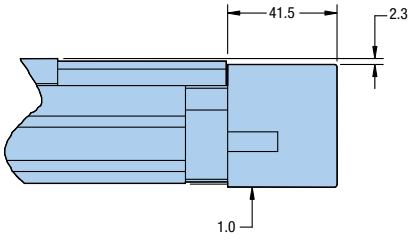
Order Code	Part No.* (Includes Mounting Bracket)	Switch Type	Logic	Cable Length	Connection Option
H2 or L2	006-1639-01	N.C.	Sinking	3.0 m	Flying Leads
H3 or L3	006-1639-02	N.O.	Sinking	3.0 m	Flying Leads
H4 or L4	006-1639-03	N.C.	Sourcing	3.0 m	Flying Leads
H5 or L5	006-1639-04	N.O.	Sourcing	3.0 m	Flying 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

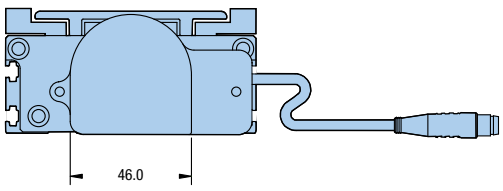
*Sensor triggers (targets) ordered separately.

Brake Assembly

Electromagnetic brake assembly used to prevent "backdriving" in vertical applications. Includes 5 meter cable.

Table Series	Part Number	Input Power	Holding Torque
404XE	006-1627-01	24 VDC, 0.46 A	2.0 N-m

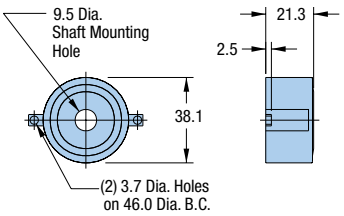




404XE

Rotary Encoder

Modular rotary encoder couples directly to the drive screw for position feedback. 150 mm cable included.

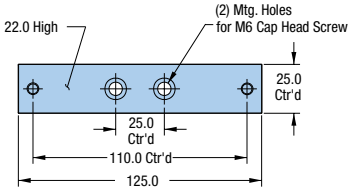


Part Number 06-1629-01

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)

Riser Plate

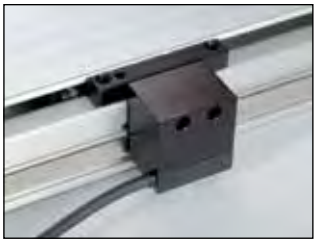
Used to raise the table base to provide clearance for motors larger than NEMA 23 frame size.



Part Number 002-3619-01
(All hardware included)

Linear Feedback

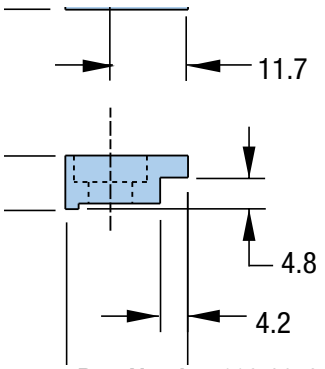
A magnetic linear position feedback device which mounts directly to the table carriage. (Factory installation required.)



Input Power	5 VDC, 240 mA
Output	A/B quadrature and reference marks, differential line drive output
Resolution	5.0 µmm

Toe Clamp

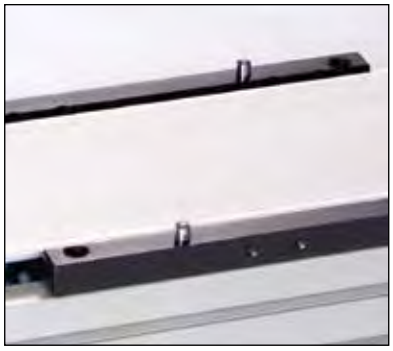
Used for convenient mounting of 404XE to a base plate, or riser plates.



Part Number 002-3618-01

Dowel Pinning

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



Two locating dowel pins shown in carriage

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.

X-Y showing 12:00 and 9:00 positions

ORDERING INFORMATION
404XE

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	⑮
Order Example:	404	T08	XE	M	S	–	VL	D4	H8	L8	C3	M4	E1	B1	R11	P1

① Series
404

② Table Travel (mm)

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

* 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.
*** If selecting T03 travel model with VL carriage, H1 must be chosen and options L11-L14 are not available; Consult factory if required.

③ Table Style
XE XE Series

④ Mounting
M Metric

⑤ Grade
S Standard Grade

⑥ Carriage Style
NL Short
VL Long

⑦ Drive Screw
D1 Free travel
D2 5 mm ballscrew
D3* 10 mm ballscrew
D4* 20 mm ballscrew

* D3 & D4 drives are not available with T01 travel. D4 drives are not available with T02 travels.

⑧ Home Sensor (one sensor)
H1 No home sensor
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, with locking connector
H7 N.O. current sinking, with locking connector
H8 N.C. current sourcing, with locking connector
H9 N.O. current sourcing, with 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*

* Must be ordered with L11-L14 sensor option.

⑨ Travel Limit Sensor Assembly (two sensors)
L1 No limit sensors
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 with locking connector*
L7 N.O. current sinking with locking connector*
L8 N.C. current sourcing with locking connector*
L9 N.O. current sourcing with 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

* Sensors with locking connector include 5 m extension cable.

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	⑮
Order Example:	404	T08	XE	M	S	–	VL	D4	H8	L8	C3	M4	E1	B1	R11	P1

⑩ Motor Coupling

C1	No coupling (required for parallel mounting)
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 NEMA motor option)
C28	0.19" Oldham (M37 NEMA 17)
C29	0.19" Bellows (M37 NEMA 17)

⑪ 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 mounting
M46	HV232-02-10 Stepper motor – In-line mounting
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.

⑫ Feedback Option

E1	None
E2	Linear feedback – 5 micron magnetic (not available on T01 units with H2-H9 "home" and L2-L9 "limit" sensors)
E5	Rotary shaft encoder (cannot be used with brake option)

⑬ Brake Option

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

⑭ Environmental Protection

R11	Hard cover
R12	Hard cover, cleanroom prep
R13	No cover
R14	No cover, cleanroom prep

⑮ Multi-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

***Consult factory for multi-axis pinning options and quotation**

OSPE..SB/ST Screw-Driven Actuators

OSPE..SB Ball Screw Actuators for Precise Positioning
OSPE..ST Trapezoidal Screw Actuators for Zero Backdrive

- Medium precise and highly repeatable position control
- High thrust force output
- Easy installation
- Excellent low speed characteristics
- No back-drive with OSPE..ST
- Integrated drive train and glider bearing
- Complete motor, gearhead and control packages
- Diverse range of accessories and mountings
- Clean room option on request
- Ambient temperature range -20°C to +80°C
- IP54 rated

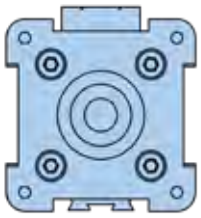
EXTERNAL GUIDE BEARING OPTIONS:

PowerSlide
- Designed for harsh environments
- Hardened steel guide rail
- Carriage with steel v-wheels
- Tough roller cover with wiper and grease access point

ProLine
- Designed for high-speed, precise, smooth and quiet operation
- Aluminum rail with ground and calibrated steel trucks
- Carriage supported by needle bearing rolls
- Integrated wipers to keep bearing system clean
- Lifetime lubricated bearing system

OSPE-25SB/ST

OSPE-32SB/ST



OSPE-50SB/ST

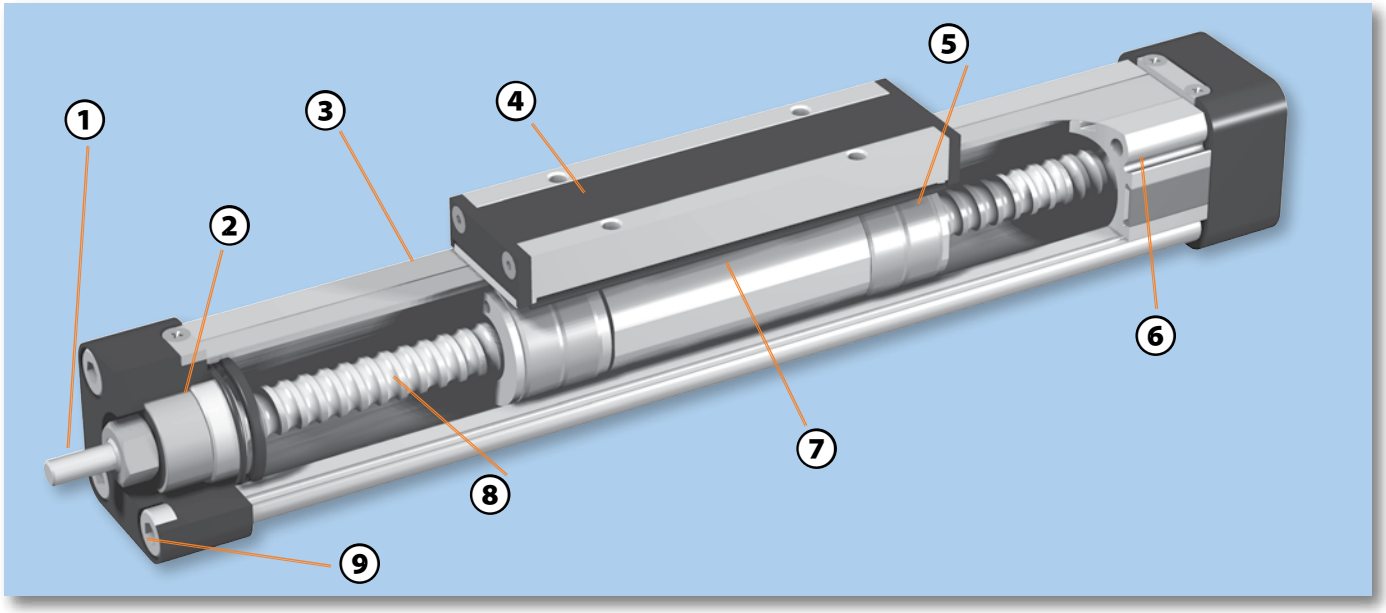
	OSPE 25SB	OSPE 32SB	OSPE 50SB	OSPE 25ST	OSPE 32ST	OSPE 50ST
Maximum Travel (mm)	1000	2000	3200	1000	2000	2400
Maximum Payload (N)	500	1200	3000	500	1000	1500
Maximum Acceleration (m/s²)	10	10	10	2	2	2

*** SB = Ball Screw, ST = Trapezoidal Screw**
**** Does not include external guide rail in values**

The field-proven OSPE..SB/ST design is the industry standard for medium precise positioning with a ball screw or intermittent duty positioning without back-drive with a trapezoidal screw. Compact size and maximum configurability make the OSPE..SB/ST easy to integrate into any machine layout simply and neatly.

The OSPE..SB design utilizes a ball screw which is ideal for medium precise applications requiring a 50 micron unidirectional repeatability. A ball screw is used in machines requiring reliable positioning with continuous and medium to high thrust force output at 100% duty cycle.

The OSPE..ST design utilizes a trapezoidal screw, which is ideal for low-speed and high-thrust applications with a maximum duty cycle of 10%. The trapezoidal screw has no back drive and therefore can hold loads in position without a motor brake, even in vertical orientations.



① **Drive shaft**
Designed to pair with a large assortment of motor and gearhead mounting options

② **Double row angular contact ball bearing**
Optimized for high thrust force transmission

③ **Corrosion resistant steel sealing band**
Magnetically fastened to the actuator body and provides sealing to IP54

④ **Carriage**
Low profile, high strength aluminum carriage with threaded holes for ease of mounting

⑤ **Low friction support rings**
Polymer glider bushing to provide an economical guidance system with optimum performance

⑥ **Slotted profile**
With dovetail grooves for strength, actuator mounting, and mounting of sensor and other accessories

⑦ **Fastening**
SB actuators with hardened ball screw nut;
ST actuators with low friction plastic nut

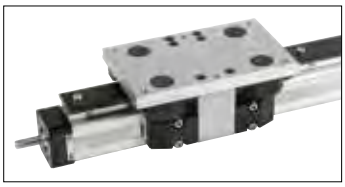
⑧ **Lead screw**
Ball screw or trapezoidal

⑨ **End housing mounting**
Threaded mounting holes allow for a multitude of mounting options

Carriage Options
Standard or
Tandem carriage — for higher load capabilities (OSPE..SB only)

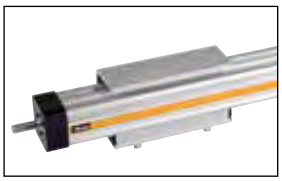
Actuator Mounting Options
End cap mounting — allows actuator to be anchored by the end caps
Profile mounting — supports long travel actuators or for direct mounting (as shown)

Carriage Bearing Design Configurations



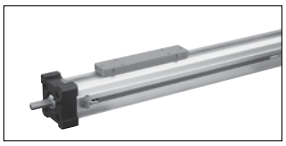
Standard carriage (with internal glider bearing), PowerSlide (externally mounted steel roller guide for higher load capabilities specifically in harsh environments), and ProLine (externally mounted aluminum roller guide for higher load capabilities and precision positioning)

Carriage Mounting



Standard, clevis (provides compensation between actuator and external guide rails in machine designs), and Inversion mounting (allows outer band to be on the bottom, while keeping payload on top, for better actuator protection in dirty environments)

Market Specific Options



Cleanroom version — Specific scraper system and vacuum suction ports to operate in clean environments (OSPE.. SB only). Certified according to DIN EN ISO 146441-1. Please consult factory for more information.

Multi-axis Systems
A wide range of adapter plates and intermediate drive shafts simplifies engineering and installation. Please consult factory for your individual system design.

Options and Accessories
Information on all OSPE..SB/ST Series options are detailed in Options & Accessories. Simply select all the options needed to solve your application requirements, then order with the actuator using convenient order codes (see Ordering Information). To order an option separately as an upgrade to an existing system or as a replacement part, use the individual option part numbers provided.

SPECIFICATIONS

OSPE..SB/ST General Specifications

Actuator Size			OSPE25		OSPE32			OSPE50			
Screw Type (SB-Ball; ST-Trapezoidal)			**SB**	**ST**	**SB**	**SB**	**ST**	**SB**	**SB**	**SB**	**ST**
Screw Lead	s_{lin}	mm	5	4	5	10	4	5	10	25	6
Screw diameter		mm	12	16	16	16	20	25	25	25	30
Duty cycle*		%	100	10	100	100	10	100	100	100	10
Efficiency	η	%	90	40	90	90	40	90	90	90	40
Linear Speed (Max)	v_{max}	mm/s	250	100	250	500	100	250	500	1,250	150
Radial Speed (Max)		rpm	3,000	1,500	3,000	3,000	1,500	3,000	3,000	3,000	1,500
Acceleration (Max)	a_{max}	m/s^2	2	2	2	4	2	2	4	10	2
Repeatability (unidirectional)		µm	± 50	± 500	± 50	± 50	± 500	± 50	± 50	± 50	± 500
Thrust Force (Max)	F_{Amax}	N	250	600	1,100	800	1,300	1,300	1,450	1,350	2,500
		lbs	56	135	247	180	292	292	326	303	562
Torque on Drive Shaft (Max)	M_{Amax}	Nm	0.4	1.3	1.2	1.7	2.5	1.5	3.1	6.7	6.6
		in-lb	3.7	11.1	10.4	15.2	21.9	13.7	27.1	59.0	58.1
Inertia											
@ Zero Stroke	J_0	$kgmm^2$	2	6	8	8	22	84	84	84	152
Per Meter of Stroke	J_{OS}	$kgmm^2/m$	11.0	30.0	32.0	32.0	81.0	225.0	225.0	225.0	400.0
Per 1 kg Moved Mass	J_m	$kgmm^2/kg$	0.6	0.4	0.6	2.5	0.4	0.6	2.5	15.8	0.9
Ambient Temperature Range		°C	-20 to +80 (OSPE..SB); -20 to +70 (OSPE..ST)								
IP Rating			IP54								

* Due to the friction between the plastic nut and trapezoidal screw, the duty cycle must not exceed 10% to avoid early wear and increased noise emission.

Calculating Load Factors - Combined Normal and Moment Load

The sum of combined loads (static and dynamic) must not exceed "1" at any time as shown in the formula below:

$$\frac{F_z}{F_{z\,(max)}} + \frac{M_x}{M_{x\,(max)}} + \frac{M_y}{M_{y\,(max)}} + \frac{M_z}{M_{z\,(max)}} \leq 1$$

$M = F \times l$ (Nm)

$M_x = M_{x\,static} + M_{x\,dynamic}$

$M_y = M_{y\,static} + M_{y\,dynamic}$

$M_z = M_{z\,static} + M_{z\,dynamic}$

OSPE25SB/ST Performance

				Standard Carriage		PowerSlide			ProLine
Carriage (Bearing System)				**SB**	**ST**	**PS25/25**	**PS25/35**	**PS25/44**	**PL32**
Part Number [1]				—	—	20015	20016	20017	20856
Max Order Stroke [2]		OS_{max}	mm	1100	1100	1100	1100	1100	1100
Normal Load [3] **(Max)**		F_Y / F_Z	N (lbs)	500 (112)	500 (112)	297 (67)	330 (74)	575 (129)	1236 (278)
Moment Load [3] **(Max)**		M_X	Nm (in-lb)	2 (18)	2 (18)	5 (44)	6 (53)	10 (89)	24 (212)
		M_Y		12 (106)	24 (212)	21 (186)	23 (204)	85 (752)	55 (487)
		M_Z		8 (71)	7 (62)	21 (186)	23 (204)	85 (752)	55 (487)
Torque — No Load [4]	**SB – 5 mm lead**	M_0	Nm (in-lb)	0.2 (1.8)	—	0.3 (2.7)	0.3 (2.7)	0.3 (2.7)	0.3 (2.7)
	ST – 4 mm lead	M_0		—	0.3 (2.7)	0.4 (3.5)	0.4 (3.5)	0.4 (3.5)	0.4 (3.5)
Weight									
SB	**@ 0 Stroke**	m_0	kg (lbs)	0.6 (1.32)	—	0.9 (1.98)	1.0 (2.20)	1.2 (2.64)	0.8 (1.76)
	Per Meter of Stroke	m_{OS}		2.3 (5.06)	—	3.7 (8.14)	4.1 (9.02)	4.9 (10.78)	4.0 (8.80)
	Carriage [4]	m_C		0.2 (0.44)	—	0.9 (1.98)	1.0 (2.20)	1.7 (3.74)	1.0 (2.20)
ST	**@ 0 Stroke**	m_0		—	0.7 (1.54)	1.0 (2.20)	1.1 (2.42)	1.3 (2.86)	0.9 (1.98)
	Per Meter of Stroke	m_{OS}		—	1.6 (3.52)	4.2 (9.24)	4.6 (10.12)	5.4 (11.88)	4.5 (9.90)
	Carriage [4]	m_C		—	0.2 (0.44)	0.9 (1.98)	1.0 (2.20)	1.7 (3.74)	1.0 (2.20)

OSPE32SB/ST Performance

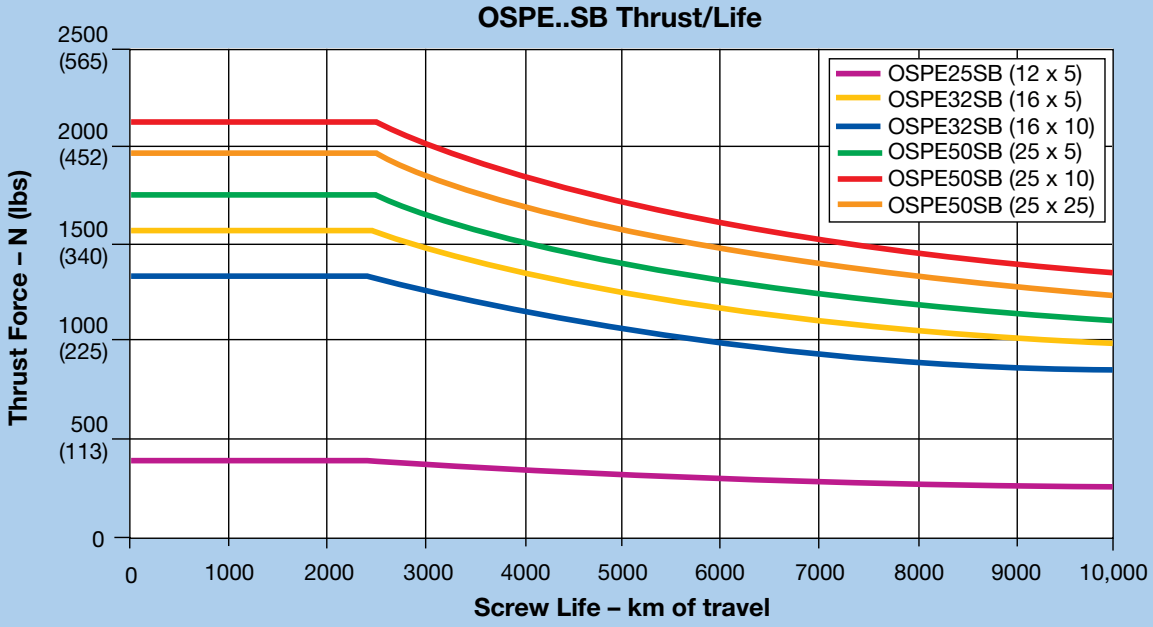
Carriage (Bearing System)					Standard Carriage SB	Standard Carriage ST	PowerSlide PS32/35	PowerSlide PS32/44	ProLine PL32
Part Number [1]					—	—	20286	20287	20857
Max Order Stroke [2]		OS_{max}	mm		2000	2000	2000	2000	2000
Normal Load [3] (Max)		F_Y / F_Z	N (lbs)		1200 (270)	1000 (225)	458 (103)	1111 (250)	1689 (380)
Moment Load [3] (Max)		M_X	Nm (in-lb)		8 (71)	6 (53)	7 (62)	24 (212)	41 (363)
		M_Y			25 (221)	65 (575)	23 (204)	85 (752)	105 (929)
		M_Z			16 (142)	12 (106)	23 (204)	85 (752)	105 (929)
Torque — No Load [4]	**SB – 5 mm lead**	M_0	Nm (in-lb)		0.3 (2.7)	—	0.4 (3.5)	0.4 (3.5)	0.4 (3.5)
	SB – 10 mm lead	M_0			0.4 (3.5)	—	0.5 (4.4)	0.5 (4.4)	0.5 (4.4)
	ST – 4 mm lead	M_0			—	0.6 (5.3)	0.7 (6.2)	0.7 (6.2)	0.7 (6.2)
Weight	**@ 0 Stroke**	m_0	kg (lbs)		1.6 (3.52)	—	2.0 (4.40)	2.2 (4.84)	2.1 (4.62)
SB	**Per Meter of Stroke**	m_{OS}			4.4 (9.68)	—	6.3 (13.86)	7.0 (15.40)	7.0 (15.40)
	Carriage [4]	m_C			0.4 (0.88)	—	1.2 (2.64)	1.9 (4.18)	1.6 (3.52)
ST	**@ 0 Stroke**	m_0			—	1.6 (3.52)	2.6 (5.72)	2.8 (6.16)	2.1 (4.62)
	Per Meter of Stroke	m_{OS}			—	5.0 (11.00)	6.9 (15.18)	7.6 (16.72)	7.6 (16.72)
	Carriage [4]	m_C			—	0.5 (1.10)	1.3 (2.86)	2.0 (4.40)	1.7 (3.74)

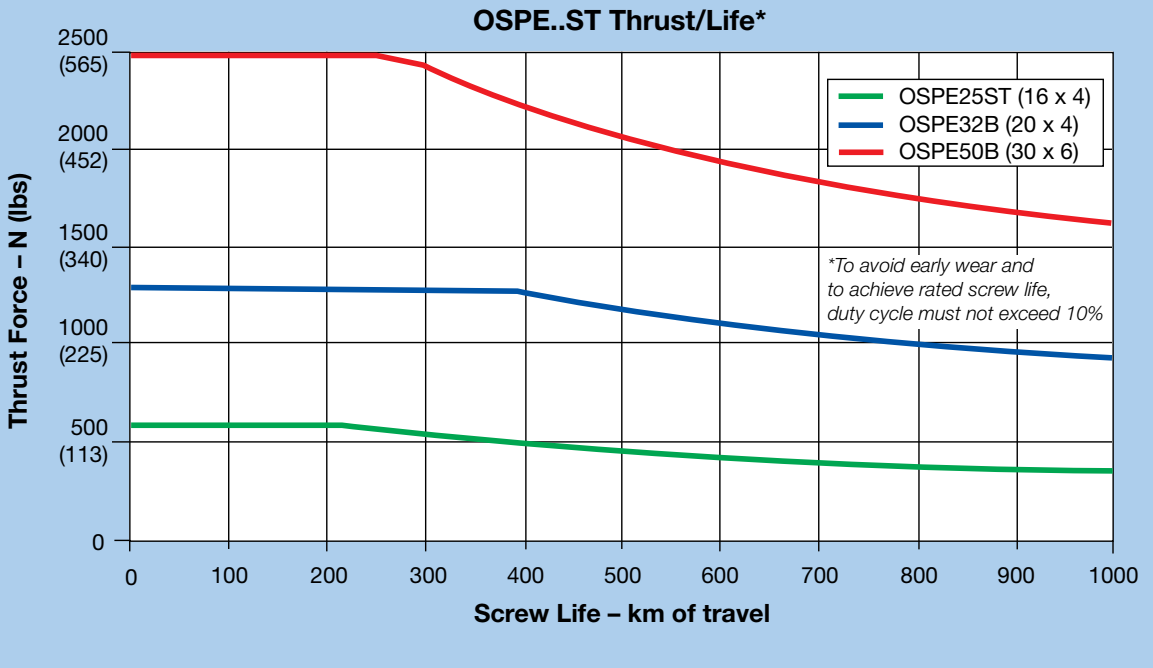
OSPE50SB/ST Performance

Carriage (Bearing System)					Standard Carriage SB	Standard Carriage ST	PowerSlide PS50/60	PowerSlide PS50/76	ProLine PL50
Part Number [1]					—	—	20288	20289	20859
Max Order Stroke [2]		OS_{max}	mm		2000	2000	2000	2000	2000
Normal Load [3] (Max)		F_Y / F_Z	N (lbs)		3000 (674)	1500 (337)	1449 (326)	2518 (566)	4489 (1009)
Moment Load [3] (Max)		M_X	Nm (in-lb)		16 (142)	13 (115)	43 (381)	88 (779)	160 (1416)
		M_Y			80 (708)	155 (1372)	121 (1071)	220 (1947)	360 (3186)
		M_Z			32 (283)	26 (230)	121 (1071)	220 (1947)	360 (3186)
Torque — No Load [4]	**SB – 5 mm lead**	M_0	Nm (in-lb)		0.6 (5.3)	—	0.8 (7.1)	0.8 (7.1)	0.8 (7.1)
	SB – 10 mm lead	M_0			0.7 (6.2)	—	0.9 (8.0)	0.9 (8.0)	0.9 (8.0)
	SB – 25 mm lead	M_0			0.9 (8.0)	—	1.2 (10.6)	1.2 (10.6)	1.2 (10.6)
	ST – 6 mm lead	M_0			—	0.7 (6.2)	1.9 (16.8)	1.9 (16.8)	1.9 (16.8)
Weight	**@ 0 Stroke**	m_0	kg (lbs)		4.0 (8.80)	—	5.2 (11.44)	5.9 (12.98)	5.2 (11.44)
SB	**Per Meter of Stroke**	m_{OS}			9.4 (20.68)	—	13.6 (29.92)	16.0 (35.20)	13.2 (29.04)
	Carriage [4]	m_C			1.2 (2.64)	—	3.5 (7.70)	6.1 (13.42)	3.7 (8.14)
ST	**@ 0 Stroke**	m_0			—	3.8 (8.36)	5.0 (11.00)	5.7 (12.54)	5.0 (11.00)
	Per Meter of Stroke	m_{OS}			—	10.6 (23.32)	14.8 (32.56)	17.2 (37.84)	14.4 (31.68)
	Carriage [4]	m_C			—	1.3 (2.86)	3.6 (7.92)	6.2 (13.64)	3.8 (8.36)

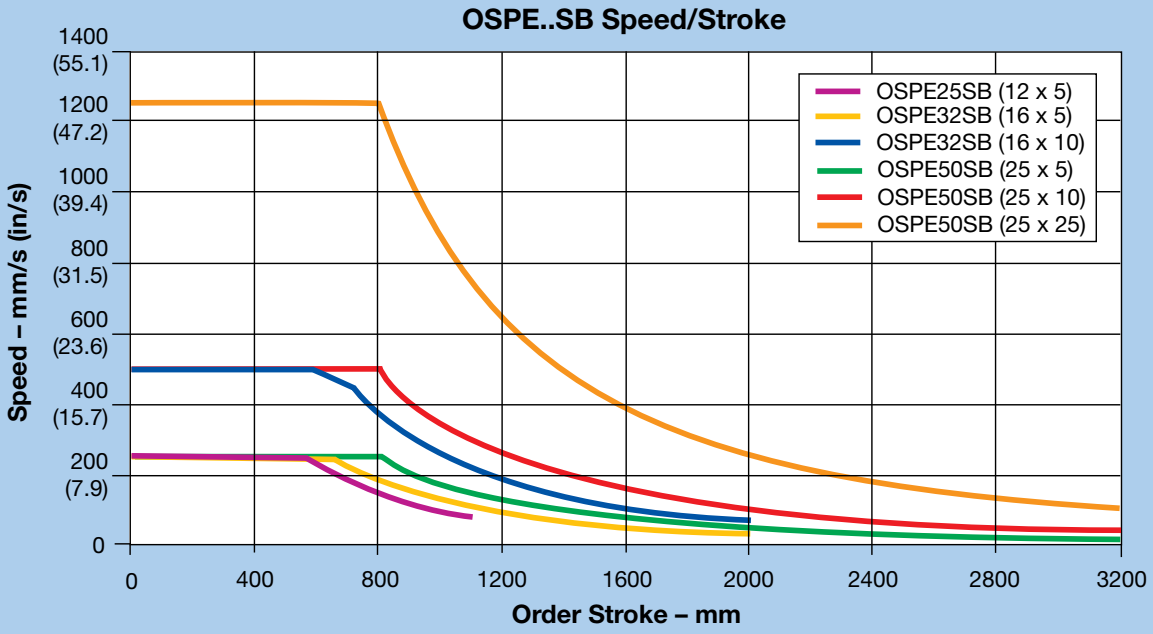
[1] PowerSlide or ProLine bearings can be ordered individually with assigned part number in the table and specified, five digit order stroke value (mm), following the part number (-nnnnn) to designate the appropriate length guide rail. To order PowerSlide or Proline bearing with the actuator, use the appropriate order code in item (10) of Ordering Information.
[2] Longer strokes available upon request. Contact factory.
[3] Load and moment based on 8000 km performance Refer to “Calculating Load Factors” for additional information.
[4] For tandem option (OSPE..SB), double the values listed.

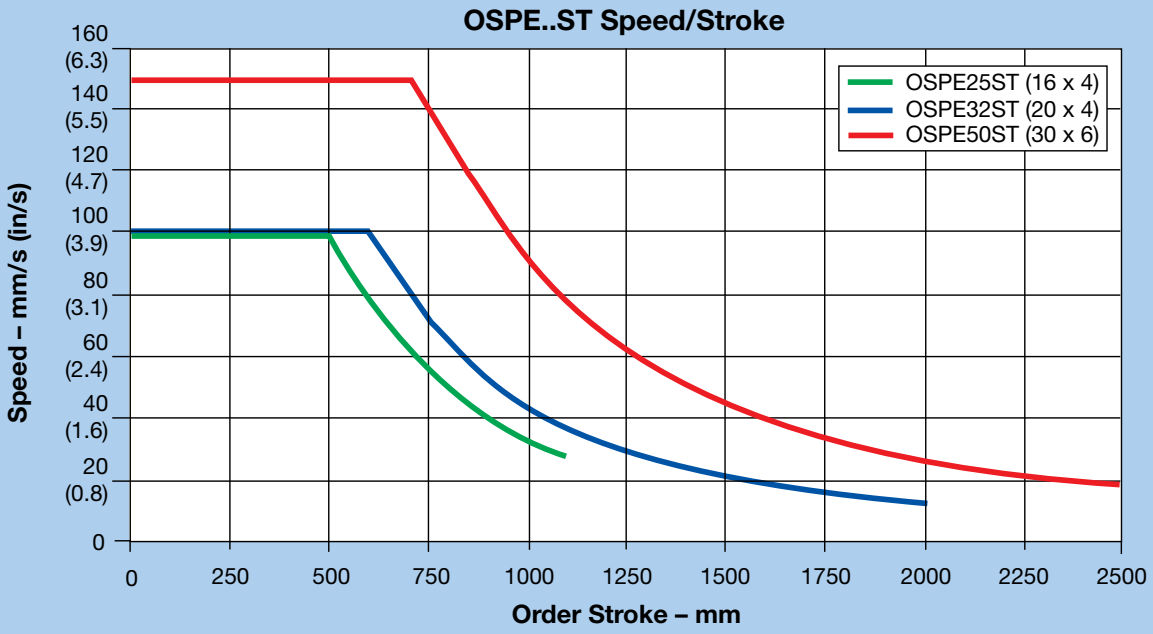
OSPE..SB/ST Life Performance





Speed Performance





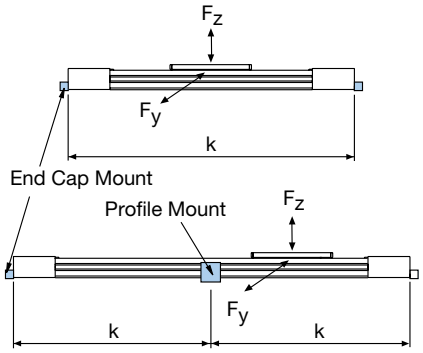
DIMENSIONS

Maximum Permissible Unsupported Length —
Determining end cap and profile mounting placement

OSPE..SB/ST Series actuators need to be mounted onto a solid machine base or frame structure using appropriately positioned end cap and profile mounts. This ensures that the actuator will not undergo excessive deflection based on the application's load and length requirements.

The greater the load and/or the longer the unsupported length between mounts, the more the actuator is susceptible to deflection. Loading is also dependent on the carriage orientation (F_Z for top oriented carriage or F_Y for a side mounted carriage).

Standard Carriage, Tandem Carriage, PowerSlide or ProLine



To determine correct end cap and profile mount placement, please follow the steps shown in the example below.

Use the deflection graphs on the next page to ensure that the load will not exceed the maximum allowed deflection.

Example:

A horizontal application uses an OSPE32B with a top oriented carriage. The maximum load to the carriage is 80 kg and the order stroke is 1,550 mm (see previous section to calculate order stroke).

Therefore, the overall length of the actuator will be 1,800 mm:

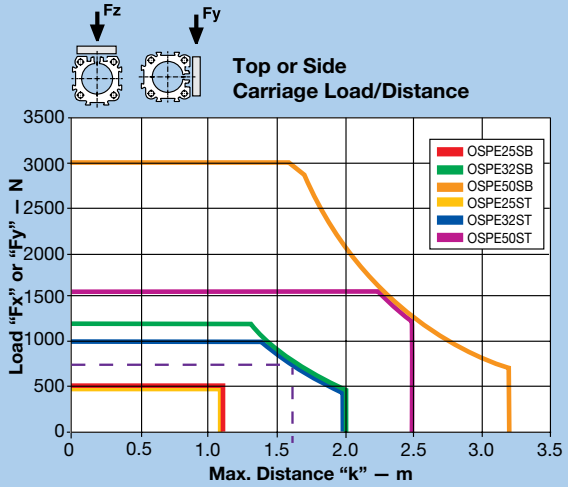
1,550 mm + 2 x Dim "X" (125 mm) = 1,800 mm

1) Use the appropriate Fz graph) for a top loaded carriage. (Note: with the standard carriage, top loaded Fz and side loaded Fy values are the same).
2) Calculate the Load "F" in Newtons based on the 80 kg application load requirement:

   80 kg x 9.81 kg/ms^2 = 784.8 N
3) Draw a line from 785 N on the Y-axis to the OSPE32B curve, then down to the X-axis.
4) The value of "k" is approximately 1,600 mm.
5) Since the overall length (1,800 mm) is greater than this value "k", the actuator will require an additional third fixture point — one end cap mount and two profile mounts — equally spaced to create a distance "k" of 800 mm in between.
6) Maximum deflection of the actuator with this mounting configuration will be less than 1.6 mm:

   0.2% of 800 mm = 1.6 mm

Standard Carriage Load-Distance

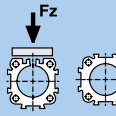


To further reduce deflection:

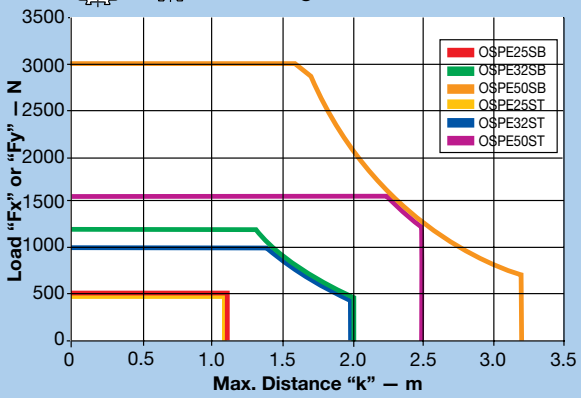
If the application requires less deflection, then simply reduce the distance "k" appropriately. In this example, for instance, the application must not exceed 1 mm (1/2 the maximum deflection calculated). Therefore, "k" must also be 1/2, or 400 mm.

To achieve this reduced maximum deflection, the actuator will require five fixture points — one end cap mount and four profile mounts — equally spaced with a distance "k" of 400 mm in between.

Standard Carriage Load-Distance



Top or Side Carriage Load/Distance



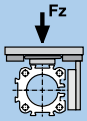
Maximum Permissible Unsupported Length

Determining end cap and profile mounting placement

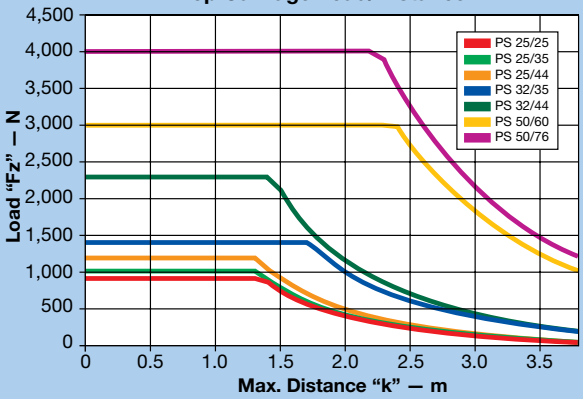
Use the appropriate deflection graph to ensure that the application load does not exceed the deflection curve. Supporting the actuator within the recommended maximum distance "k" will ensure that the installation will have a maximum deflection equal to 0.2% of distance "k."

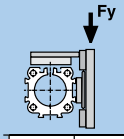
To further reduce deflection, simply reduce the distance between end cap and profile mounts as described in the example on the previous page.

PowerSlide Carriage Load-Distance

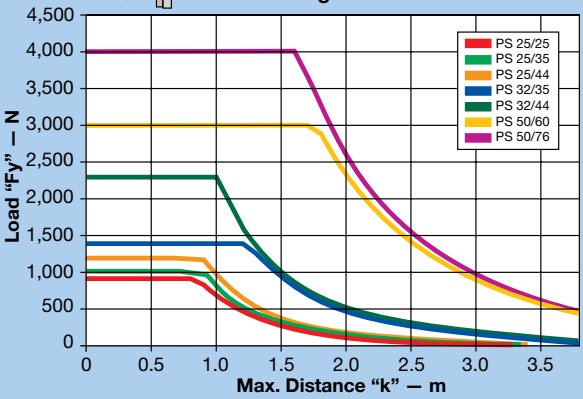


Top Carriage Load/Distance

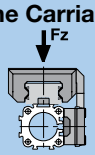




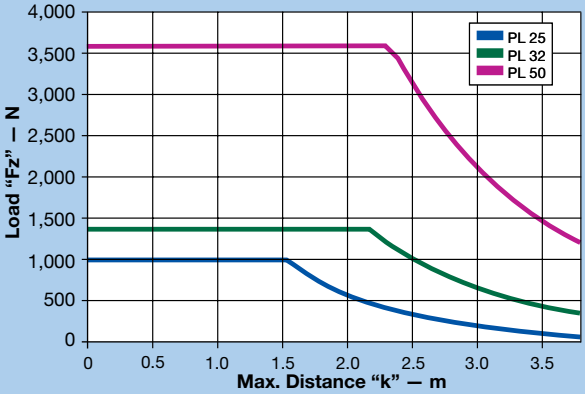
Side Carriage Load/Distance

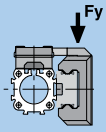


ProLine Carriage Load-Distance

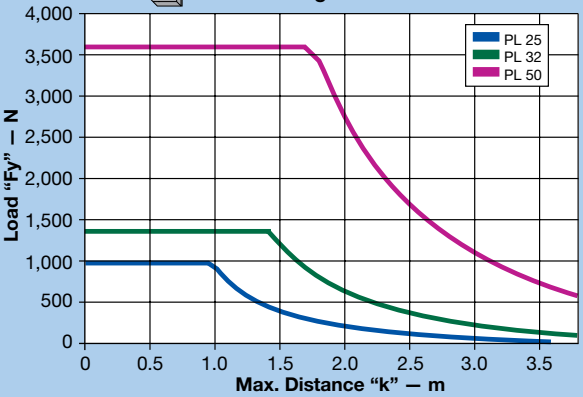


Top Carriage Load/Distance





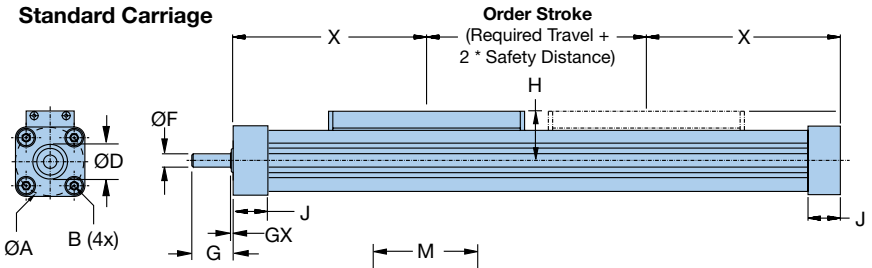
Side Carriage Load/Distance



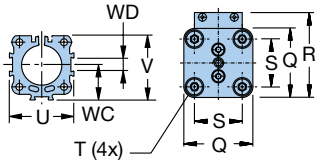
Base Unit Dimensions w/Standard Carriage — mm

Download 2D & 3D files from parker.com/emc

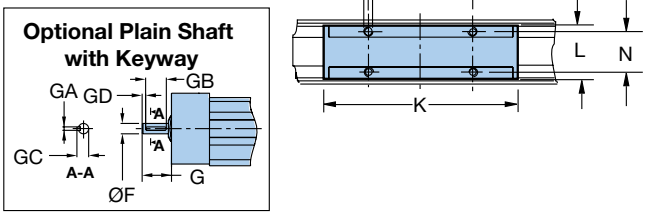
Standard Carriage



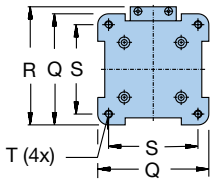
Size 25 & 32 End Cap



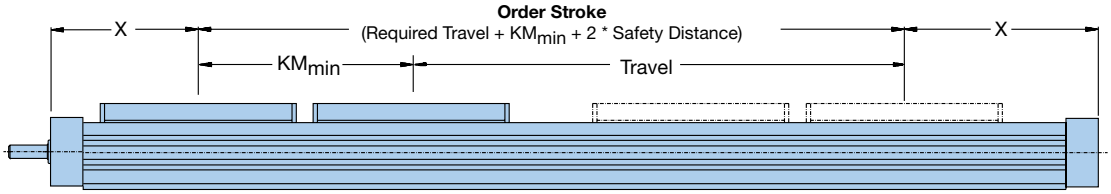
Optional Plain Shaft with Keyway



Size 50 End Cap



Tandem Carriage (SB models only)



Actuator Size	A	B	D	F	G*	GA	GB	GC	GD	GX	H	J	K
OSPE25SB/ST	38.2	M5 x 10	19^{H7}	6_{h7}	17	2^{P9}	12	6.8	2	2	31	22.0	117
OSPE32SB/ST	50.9	M6 x 12	26^{H7}	10_{h7}	31	3^{P9}	16	11.2	5	2	38	25.5	152
OSPE50SB/ST	65.0	M6 x 12	40^{H7}	15_{h7}	43	5^{P9}	28	17.0	6	3	49	33.0	200

	L	M	N	P	Q	R	S	T	U	V	WC	WD	X
OSPE25SB/ST	33	65	25	M5 x 8	41	52.5	27	M5 x 10	40	39.5	21.5	10.4	100
OSPE32SB/ST	36	90	27	M6 x 10	52	66.5	36	M6 x 12	52	51.7	28.5	10.4	125
OSPE50SB/ST	36	110	27	M6 x 10	87	92.5	70	M6 x 12	76	77.0	43.0	10.4	175

* With optional long drive shaft with keyway, dimension "G" is 24 mm for OSPE25SB/ST; 41 mm for OSPE32SB/ST; 58 mm for OSPE50SB/ST (See Ordering Information, order code ⑦, option "4 –")

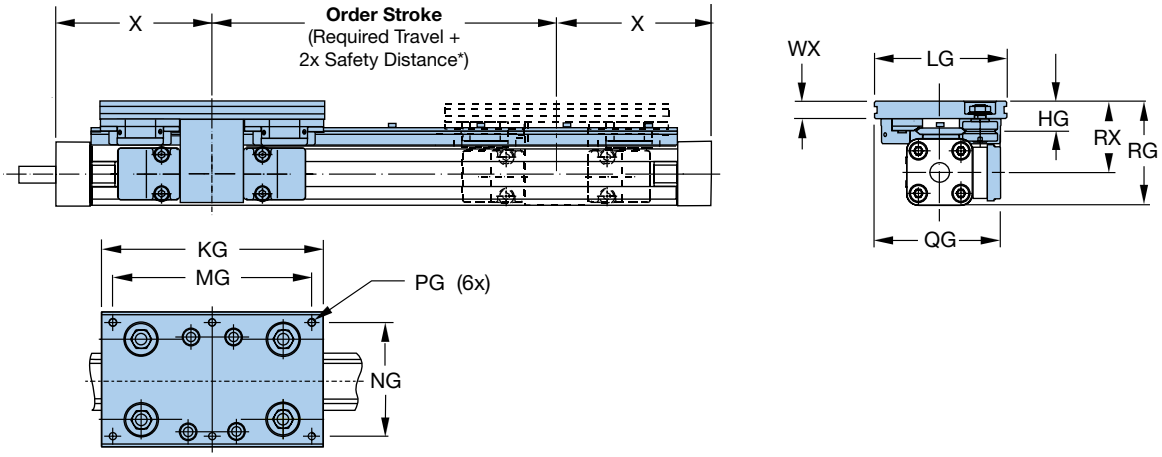
Order Stroke Dimensional Requirements

Actuator Size	KM_{min}	KM_{rec}
OSPE25SB/ST	120	190
OSPE32SB/ST	165	230
OSPE50SB/ST	235	320

KM_{min} is the minimum distance between two carriages possible; KM_{rec} is the recommended distance for optimal performance.

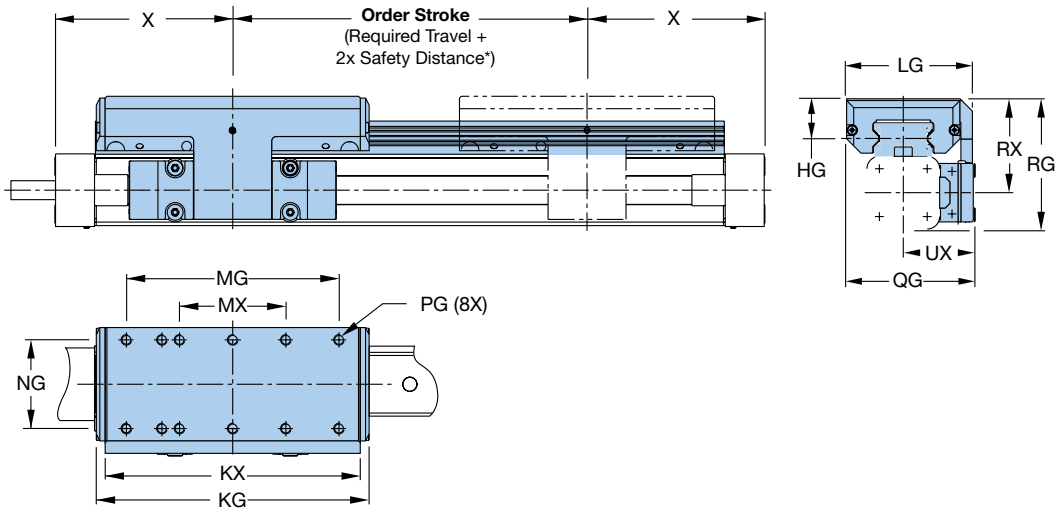
*** Order Stroke Safety Distance:**
The mechanical end position should not be used as a mechanical end stop, thus an additional ***Safety Distance*** at both ends of travel must be incorporated into the Order Stroke. The safety distance for servo-driven systems is equivalent to the travel distance per revolution of the drive shaft. AC motor-driven systems with VFD require a larger safety distance than servo systems. For further information and design assistance, please consult factory.

PowerSlide Dimensions — mm



Guide Rail Size	HG	KG	LG	MG	NG	PG	QG	RG	RX	WX	X
PS25/25	20.0	145	80	125	64	M6 x 11	79.5	73.5	53.0	11.0	100
PS 25/35	21.5	156	95	140	80	M6 x 12	89.5	73.0	52.5	12.5	100
PS25/44	26.0	190	116	164	96	M8 x 15	100.0	78.5	58.0	15.0	100
PS32/35	21.5	156	95	140	80	M6 x 12	95.5	84.5	58.5	12.5	125
PS 32/44	26.0	190	116	164	96	M8 x 15	107.0	90.0	64.0	15.0	125
PS50/60	28.5	240	135	216	115	M8 x 17	130.5	123.5	81.0	17.0	175
PS 50/76	39.0	280	185	250	160	M10 x 20	155.5	135.5	93.0	20.0	175

ProLine Dimensions — mm

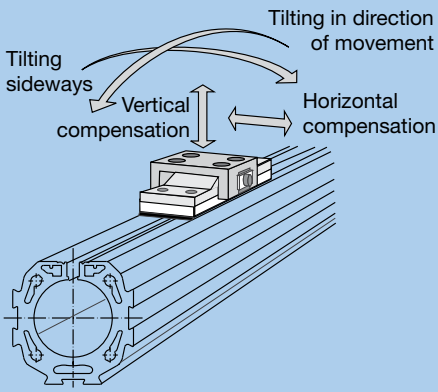


Guide Rail Size	HG	KG	KX	LG	MG	MX	NG	PG	QG	RG	RX	UX	X
PL 25	23	154	144	64	120	60	50	M6 x 12	72.5	74	53	40.5	100
PL 32	25	197	187	84	160	80	64	M6 x 12	91.0	88	62	49.0	125
PL 50	31.6	276	266	110	240	120	90	M6 x 16	117.0	118	75	62.0	175

OPTIONS & ACCESSORIES

Order Code

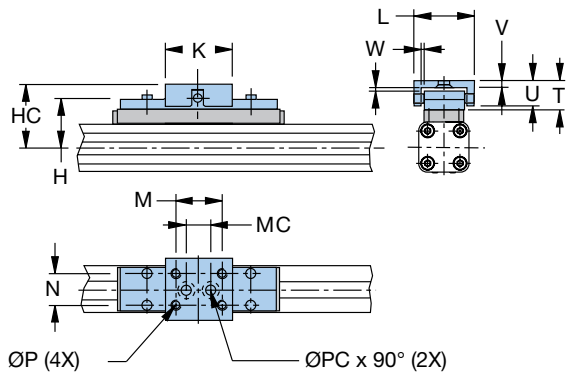
R Clevis Mounting Option for Standard Carriage



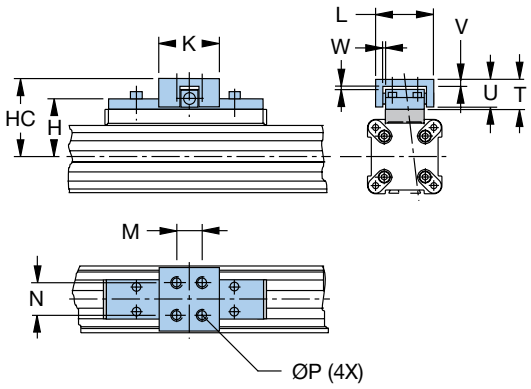
When external guides are involved in the application, slight parallelism deviations can lead to mechanical strain on the carriage and actuator. This can be avoided by the use of a clevis mount that provides freedom of movement compensation on several axes.

The aluminum clevis mount option bolts directly to the standard carriage to eliminate parallelism deviations and strain to the carriage when the actuator is mounted onto machine guide rails. Clevis mounting provides compensation for misalignment in Z and Y directions and can tilt around the X and Y axis.

OSPE25 and OSPE32



OSPE50



Actuator Size	Part Number	Weight* (kg)	Dimensions — mm												
			H	HC	K	L	M	MC	N	P	PC	T	U	V	W
OSPE25SB/ST	20005FIL	0.091	39	52	40	38	30	16	16	M5	5.5	21	19	3.5	2
OSPE32SB/ST	20096FIL	0.091	50	68	60	62	46	40	25	M6	6.6	30	28	6.0	2
OSPE50SB/ST	20097FIL	0.308	61	79	60	62	46	—	25	M6	—	30	28	6.0	2

*Part number and weight are for individual unit.

Order Code

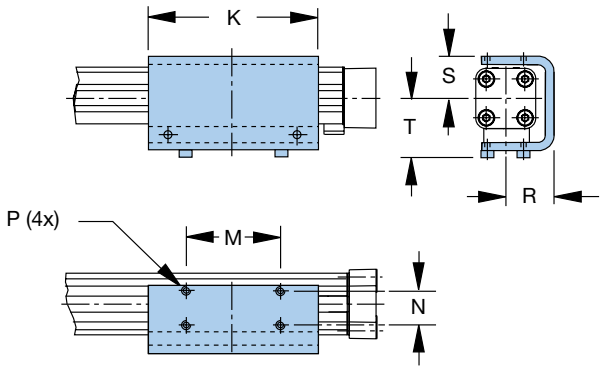
M Inversion Mounting Option for Standard Carriage

For dirty environments or space-restricted installations, inversion of the actuator is recommended.

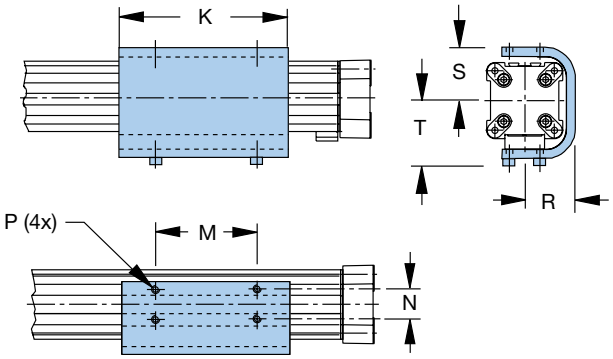
The aluminum inversion bracket transfers the driving force to the opposite side of the actuator allowing the load to be attached to the top side of the actuator while the carriage and sealing band remain protected on the bottom side. The size and position of the mounting holes are the same as on the standard carriage.

Note: Profile mounts and magnetic switches can only be used on the free side of the actuator.

OSPE25 and OSPE32



OSPE50



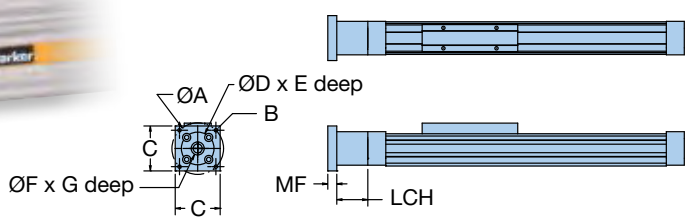
			Dimensions — mm						
Actuator Size	**Part Number**	**Weight* (kg)**	**K**	**M**	**N**	**P**	**R**	**S**	**T**
OSPE25SB/ST	20037FIL	0.302	117	65	25	M5 x 6	33.5	31	43
OSPE32SB/ST	20161FIL	0.449	150	90	27	M6 x 6	39.5	38	51
OSPE50SB/ST	20166FIL	0.947	200	110	27	M6 x 8	52.0	55	65

*Part number and weight are for individual unit.

Motor Mounting Kit Options

Motor Mounting Kits include a coupling housing, coupling and flange

Note: Screw thread to mount motor to flange plate is M3



A = Bolt circle diameter
B = Screw for bolt circle
C = Square dimension
D = Pilot diameter
E = Pilot depth
F = Input drive shaft diameter
G = Input drive shaft length
LCH = Length coupling housing
MF = Motor flange

Actuator Size	Order Code ⑥*	Order Code ⑦*	Dimensions — mm A	B	C	D	E	F	G	LCH	MF
OSPE25SB/ST	0	AA **	46.66	M3	56	20.00	1.6	6.35	24.8	38	10
	0	AB	66.67	M4	58	38.10	1.6	6.35	20.5	38	9
	0	AC	66.67	M5	58	38.10	1.6	9.53	20.8	38	9
	0	AD	66.67	M5	60	38.10	1.6	9.53	31.8	38	17
	0	B5 **	46.00	M4	56	30.00	2.5	6.00	25.0	38	10
	0	AM **	46.00	M3	56	30.00	2.5	8.00	25.0	38	10
	0	B6	63.00	M4	60	40.00	2.5	9.00	20.0	38	9
	0	AH	63.00	M5	60	40.00	2.5	9.00	20.0	38	10
	0	A2	63.00	M5	60	40.00	2.5	11.00	23.0	38	10
	0	B7	70.00	M5	60	50.00	3.0	8.00	25.0	38	15
	0	B8	70.00	M5	60	50.00	3.0	12.00	30.0	38	15
	0	AG	75.00	M5	70	60.00	2.5	11.00	23.0	38	10
	0	B1	90.00	M5	75	60.00	2.5	11.00	23.0	38	10
OSPE32SB/ST	0	AB	66.67	M5	60	38.10	1.6	6.35	20.5	54	10
	0	AC	66.67	M5	60	38.10	1.6	9.525	20.8	54	10
	0	AD	66.67	M5	60	38.10	1.6	9.525	31.8	54	17
	0	AE	98.43	M5	85	73.00	3.0	12.70	30.0	54	15
	0	AF	98.43	M6	85	73.00	3.0	12.70	37.0	54	25
	0	B6 **	63.00	M4	74	40.00	2.5	9.00	20.0	54	10
	0	AH **	63.00	M5	74	40.00	2.5	9.00	20.0	54	10
	0	A2 **	63.00	M5	74	40.00	2.5	11.00	23.0	54	10
	0	BJ	66.67	M5	60	38.10	1.6	12.70	20.0	54	10
	0	B7	70.00	M5	60	50.00	3.0	8.00	25.0	54	15
	0	B8	70.00	M5	60	50.00	3.0	12.00	30.0	54	15
	0	AN	70.00	M5	60	50.00	3.0	14.00	30.0	54	15
	0	AG	75.00	M5	70	60.00	2.5	11.00	23.0	54	10
	0	B9	75.00	M5	70	60.00	2.5	14.00	30.0	54	15
	0	BA	75.00	M5	70	60.00	3.0	16.00	40.0	54	25
	0	B0	75.00	M6	70	60.00	3.0	14.00	30.0	54	15
	0	B1	90.00	M5	75	60.00	2.5	11.00	23.0	54	10
	0	B2	90.00	M5	75	60.00	2.5	14.00	30.0	54	15
	0	BB	90.00	M6	80	70.00	3.0	14.00	30.0	54	15
	0	B4	90.00	M6	80	70.00	3.0	16.00	40.0	54	25
	0	B3	95.00	M6	80	50.00	2.5	14.00	30.0	54	15

* When ordering with actuator, use order code ⑥ (gearhead designation) and order code ⑦ to specify motor mounting kit. See Ordering Information.
** Motor mounts with 45° rotated

■ Blue order codes indicate rapid shipment availability

(continued on next page)

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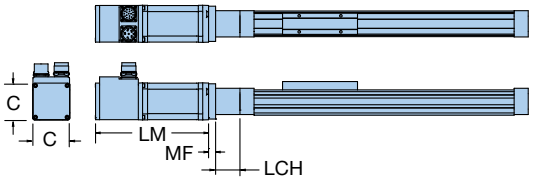
Actuator Size	Order Code ⑥*	Order Code ⑦*	Dimensions — mm A	B	C	D	E	F	G	LCH	MF
OSPE50SB/ST	0	AE	98.43	M5	88	73.0	3.0	12.70	30.0	75	14
	0	AF	98.43	M6	88	73.0	3.0	12.70	37.0	84	15
	0	B9	75.00	M5	85	60.0	2.5	14.00	30.0	75	14
	0	BA **	75.00	M5	86	60.0	3.0	16.00	40.0	84	15
	0	B0	75.00	M6	88	60.0	3.0	14.00	30.0	75	14
	0	B2	90.00	M5	80	60.0	2.5	14.00	30.0	75	14
	0	BB	90.00	M6	80	70.0	3.0	14.00	30.0	75	14
	0	B4	90.00	M6	86	70.0	3.0	16.00	40.0	84	15
	0	AP	90.00	M6	86	70.0	3.0	19.00	40.0	84	15
	0	B3	95.00	M6	85	50.0	2.5	14.00	30.0	75	14
	0	A1	99.00	M6	88	73.0	3.0	9.525	31.5	75	14
	0	A3	100.00	M6	88	80.0	3.5	14.00	30.0	75	14
	0	AL	100.00	M6	88	80.0	3.0	16.00	40.0	84	15
	0	AJ	100.00	M6	88	80.0	3.0	19.00	40.0	84	15
	0	A4	115.00	M8	100	95.0	3.5	19.00	40.0	84	15
	0	BD	130.00	M8	115	95.0	3.0	19.00	40.0	84	15
	0	BF	130.00	M8	115	110.0	3.5	19.00	40.0	84	15

* When ordering with actuator, use order code ⑥ (gearhead designation) and order code ⑦ to specify motor mounting kit. See Ordering Information.
** Motor mounts with 45° rotated

■ Blue order codes indicate rapid shipment availability

Mounted Motor Options

Mounted Motor Options include a coupling housing, coupling, flange and motor



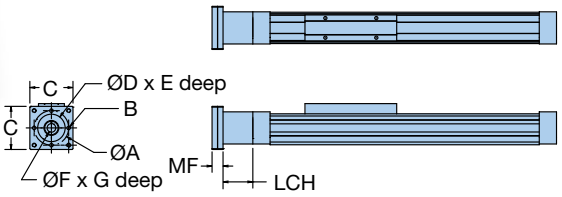
C = Square dimension
LCH = Length coupling housing
LM = Length motor
MF = Motor flange

Actuator Size	Order Code ⑥*	Order Code ⑦*	Motor description	Dimensions — mm C	LCH	LM	MF
OSPE25SB/ST	0	L0	LV233-01-10	58	38	79	9
	0	L1	HV233-01-10	58	38	79	9
	0	K0	BE233FJ-KPSN	58	38	143	17
	0	K1	BE233FJ-KPSN with brake (CM233FJ-115027)	58	38	178	17
	0	KA	PM-FAL01AM8N	40	38	95.2	10
	0	KB	PM-FAL01AM8N2 (Brake)	40	38	131.6	10
OSPE32SB/ST	0	L0	LV233-01-10	58	54	79	10
	0	L1	HV233-01-10	58	54	79	10
	0	L2	LV343-01-10	86	54	127	25
	0	L3	HV343-01-10	86	54	127	25
	0	K0	BE233FJ-KPSN	58	54	143	18
	0	K1	BE233FJ-KPSN with brake (CM233FJ-115027)	58	54	178	18
	0	K2	BE344LJ-KPSN	86	54	188	16
	0	K3	BE344LJ-KPSB	86	54	220	16
	0	KC	PM-FBL04AMK	62	54	108.2	15
	0	KD	PM-FBL04AMK2	62	54	148.2	15
OSPE50SB/ST	0	L2	LV343-01-10	86	84	127	15
	0	L3	HV343-01-10	86	84	127	15
	0	K2	BE344LJ-KPSN	86	75	188	14
	0	K3	BE344LJ-KPSB	86	75	220	14
	0	KJ	PM-FCL10AMK	80	84	152.7	15
	0	KK	PM-FCL10AMK2 (Brake)	80	84	193	15
	0	M0	MPP0923D1E-KPSN	89	84	178	15
	0	M1	MPP0923D1E-KPSB	89	84	212	15
	0	M2	MPP1003D1E-KPSN	98	84	175	15
	0	M3	MPP1003D1E-KPSB	98	84	224	15
	0	M4	MPP1003R1E-KPSN	98	84	175	15
	0	M5	MPP1003R1E-KPSB	98	84	224	15

*When ordering with actuator, use order code ⑥ (gearhead designation) and order code ⑦ to specify mounted motor. See Ordering Information.

Gearhead Mounting Kit Options

Gearhead Mounting Kits include a coupling housing, coupling and flange



A = Bolt circle diameter
B = Screw for bolt circle
C = Square dimension
D = Pilot diameter
E = Pilot depth
F = Input drive shaft diameter
G = Input drive shaft length
LCH = Length coupling housing
MF = Motor flange

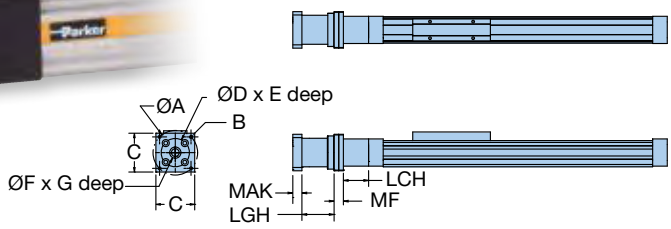
Actuator Size	Order Code ⑥*	Order Code ⑦*	Dimensions — mm A	B	C	D	E	F	G	LCH	MF
OSPE25SB/ST	**0**	**C0**	44	S4	54	35	3	12	25	38	14.0
OSPE32SB/ST	0	C0	44	S4	60	35	3	12	25	54	13.0
	0	**C1**	62	S5	75	52	8	16	36	54	20.0
OSPE50SB/ST	**0**	**C1**	62	S5	75	52	8	16	36	84	16.3
	0	C2	80	S6	95	68	10	22	46	84	23.0

*When ordering with actuator, use order code ⑥ (gearhead designation) and order code ⑦ to specify gearhead mounting kit See Ordering Information.

■ Blue order codes indicate rapid shipment availability

Mounted Gearhead with Motor Mounting Kit Options

Mounted Gearhead with Motor Mounting Kit include a coupling housing, coupling, flange, and gearhead with coupler and flange



A = Bolt circle diameter
B = Screw for bolt circle
C = Square dimension
D = Pilot diameter
E = Pilot depth
F = Input drive shaft diameter
G = Input drive shaft length
LCH = Length coupling housing
LGH = Length gearhead
MAK = Motor adapter
MF = Motor flange

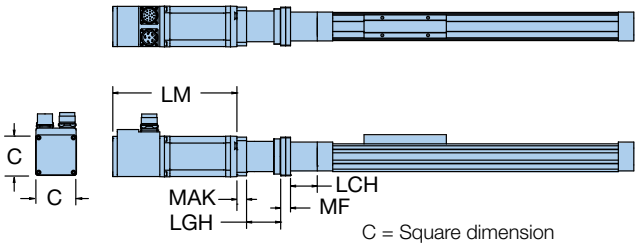
Actuator Size	Order Code ⑥[1]	Order Code ⑦[2]	Dimensions — mm A	B	C	D	E	F	G	LCH	LGH	MAK	MF
OSPE25SB/ST	A or B	AA	46.66	M3	43	20.00	1.6	6.35	24.8	38	48.5	19.0	14.0
	A or B	**AB**	66.67	M5	55	38.10	1.6	6.35	20.5	38	48.5	15.7	14.0
	A or B	B5	46.00	M4	43	30.00	2.5	6.00	25.0	38	48.5	19.0	14.0
	A or B	**AM**	46.00	M3	43	30.00	2.5	8.00	25.0	38	48.5	19.0	14.0
	A or B	B6	63.00	M4	55	40.00	2.5	9.00	20.0	38	48.5	13.7	14.0
	A or B	AH	63.00	M5	55	40.00	2.5	9.00	20.0	38	48.5	19.0	14.0
OSPE32SB/ST	**C, D or E**	**AB**	66.67	M5	62	38.10	1.6	6.35	20.5	54	67.0	16.5	20.0
	C, D or E	AC	66.67	M5	62	38.00	1.6	9.525	20.8	54	67.0	16.5	20.0
	C, D or E	**AD**	66.67	M5	62	38.10	1.6	9.525	31.8	54	67.0	22.5	20.0
	C, D or E	**AE**	98.43	M5	80	73.03	3.0	12.70	30.0	54	67.0	22.5	20.0
	C, D or E	**AF**	98.43	M6	85	73.03	3.0	12.70	37.0	54	67.0	30.0	20.0
	C, D or E	B6	63.00	M4	62	40.00	2.5	9.00	20.0	54	67.0	16.5	20.0
	C, D or E	AH	63.00	M5	62	40.00	2.5	9.00	20.0	54	67.0	16.5	20.0
	C, D or E	B8	70.00	M5	62	50.00	3.0	12.00	30.0	54	67.0	22.5	20.0
	C, D or E	**AN**	70.00	M5	62	50.00	3.0	14.00	30.0	54	67.0	22.5	20.0
	C, D or E	AG	75.00	M5	62	60.00	2.5	11.00	23.0	54	67.0	16.5	20.0
	C, D or E	B9	75.00	M5	62	60.00	2.5	14.00	30.0	54	67.0	22.5	20.0
	C, D or E	BB	90.00	M6	80	70.00	3.0	14.00	30.0	54	67.0	22.5	20.0
	C, D or E	A3	100.00	M6	89	80.00	3.5	14.00	30.0	54	67.0	22.5	20.0
OSPE50SB/ST	**C, D or E**	**AB**	66.67	M5	62	38.10	1.6	6.35	20.5	84	67.0	16.5	16.3
	C, D or E	AC	66.67	M5	62	38.00	1.6	9.525	20.8	84	67.0	16.5	16.3
	C, D or E	**AD**	66.67	M5	62	38.10	1.6	9.525	31.8	84	67.0	22.5	16.3
	C, D or E	**AE**	98.43	M5	80	73.03	3.0	12.70	30.0	84	67.0	22.5	16.3
	C, D or E	**AF**	98.43	M6	85	73.03	3.0	12.70	37.0	84	67.0	30.0	16.3
	C, D or E	B6	63.00	M4	62	40.00	2.5	9.00	20.0	84	67.0	16.5	16.3
	C, D or E	AH	63.00	M5	62	40.00	2.5	9.00	20.0	84	67.0	16.5	16.3
	C, D or E	B8	70.00	M5	62	50.00	3.0	12.00	30.0	84	67.0	22.5	16.3
	C, D or E	**AN**	70.00	M5	62	50.00	3.0	14.00	30.0	84	67.0	22.5	16.3
	C, D or E	AG	75.00	M5	62	60.00	2.5	11.00	23.0	84	67.0	16.5	16.3
	C, D or E	B9	75.00	M5	62	60.00	2.5	14.00	30.0	84	67.0	22.5	16.3
	C, D or E	BB	90.00	M6	80	70.00	3.0	14.00	30.0	84	67.0	22.5	16.3
	C, D or E	A3	100.00	M6	89	80.00	3.5	14.00	30.0	84	67.0	22.5	16.3

[1] When ordering with actuator, use order code ⑥ to specify mounted gearhead size and ratio: **A** PV40TA-005 (ratio 5:1); **B** PV40TA-010 (ratio10:1); **C** PV60TA-003 (ratio 3:1); **D** PV60TA-005 (ratio 5:1); **E** PV60TA-010 (ratio 10:1). See ordering information.
[2] When ordering with actuator, use order code ⑦ to specify motor mounting kit. See Ordering Information.

■ Blue order codes indicate rapid shipment availability

Mounted Gearhead and Motor Options

Mounted Gearhead and Mounted Motor Options include a coupling housing, coupling, flange, gearhead with coupler, flange and motor



C = Square dimension
LCH = Length coupling housing
LGH = Length gearhead
LM = Length motor
MAK = Motor adapter
MF = Motor flange

Actuator Size	Order Code ⑥[1]	Order Code ⑦[2]	Motor description	Dimensions — mm C	LCH	LGH	LM	MAK	MF
OSPE25SB/ST	A or B	KA	PM-FAL01AM8N	40	38	48.5	95.2	19.0	14.0
	A or B	KB	PM-FAL01AM8N2 (Brake)	40	38	48.5	131.6	19.0	14.0
	A or B	L0	LV233-01-10	58	38	48.5	79	15.7	14.0
	A or B	L1	HV233-01-10	58	38	48.5	79	15.7	14.0
OSPE32SB/ST	C, D or E	K0	BE233FJ-KPSN	58	54	67.0	143	22.5	20.0
	C, D or E	K1	BE233FJ-KPSN with brake (CM233FJ-115027)	58	54	67.0	178	22.5	20.0
	C, D or E	K2	BE344LJ-KPSN	86	54	67.0	188	22.5	20.0
	C, D or E	K3	BE344LJ-KPSB	86	54	67.0	220	22.5	20.0
	C, D or E	KC	PM-FBL04AMK	62	54	67.0	108.2	22.5	20.0
	C, D or E	KD	PM-FBL04AMK2	62	54	67.0	148.2	22.5	20.0
	C, D or E	L0	LV233-01-10	58	54	67.0	79	16.5	20.0
	C, D or E	L1	HV233-01-10	58	54	67.0	79	16.5	20.0
	C, D or E	L2	LV343-01-10	86	54	67.0	127	30.0	20.0
	C, D or E	L3	HV343-01-10	86	54	67.0	127	30.0	20.0
OSPE50SB/ST	C, D or E	K0	BE233FJ-KPSN	58	84	67.0	143	22.5	16.3
	C, D or E	K1	BE233FJ-KPSN with brake (CM233FJ-115027)	58	84	67.0	178	22.5	16.3
	C, D or E	K2	BE344LJ-KPSN	86	84	67.0	188	22.5	16.3
	C, D or E	K3	BE344LJ-KPSB	86	84	67.0	220	22.5	16.3
	C, D or E	KC	PM-FBL04AMK	62	84	67	108.2	22.5	16.3
	C, D or E	KD	PM-FBL04AMK2	62	84	67.0	148.2	22.5	16.3
	C, D or E	L0	LV233-01-10	58	84	67.0	79	16.5	16.3
	C, D or E	L1	HV233-01-10	58	84	67.0	79	16.5	16.3
	C, D or E	L2	LV343-01-10	86	84	67.0	127	30.0	16.3
	C, D or E	L3	HV343-01-10	86	84	67.0	127	30.0	16.3

[1] When ordering with actuator, use order code ⑥ to specify mounted gearhead size and ratio: **A** PV40TA-005 (ratio 5:1); **B** PV40TA-010 (ratio10:1); **C** PV60TA-003 (ratio 3:1); **D** PV60TA-005 (ratio 5:1); **E** PV60TA-010 (ratio 10:1). See Ordering Information.
[2] When ordering with actuator, use order code ⑦ to specify mounted motor on gearhead. See Ordering Information.

End Cap Mounting Options

See “Maximum Permissible Unsupported Length” for end cap and profile mounting placement requirements.

End Cap Mounting Selection Overview

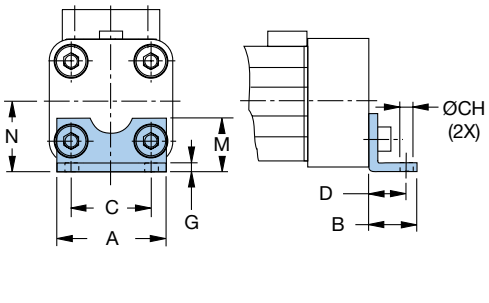
		Standard Carriage			PowerSlide							ProLine		
Type		25	32	50	25/25	25/35	25/44	32/35	32/44	50/60	50/76	25	32	50
Standard 	A1	•	•											
	A2											•	•	
	A3				•	•		•						
Reinforced 	B1	•	•		•	•	•	•	•			•	•	
	B4						•		•					
Block 	C1			•						•	•			•
	C2													•
	C3									•				
	C4										•			

• Recommended for mounting position with carriage on top • Recommended for mounting position carriage side only (3 or 9 o’clock position)

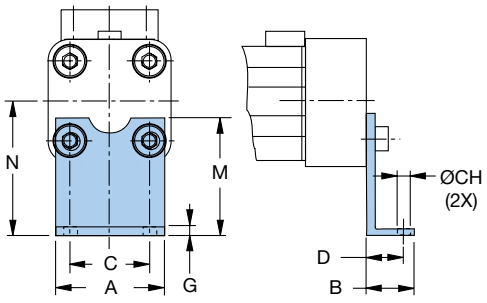
Order Code

1, 2 or 3
(1 pair)

Type A1



Type A3



Type A1, A2 and A3 – Standard End Cap

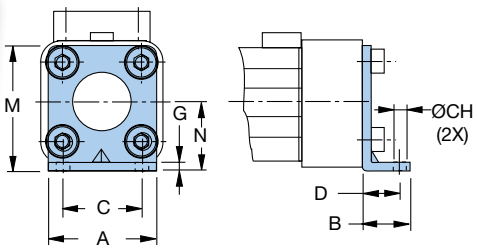
Actuator Size	Type	Part Number*	Weight* (kg)	Dimensions — mm A	B	C	CH	D	G	M	N
OSPE25SB/ST	A1	18156FIL	0.031	39	22	27	5.8	16	2.5	18	22
	A2	18157FIL	0.044							33	37
	A3	18158FIL	0.055							45	49
OSPE32SB/ST	A1	18161FIL	0.050	50	26	36	6.6	18	3.0	20	30
	A2	18162FIL	0.066							34	44
	A3	18163FIL	0.159							42	52

*Part number and weight are for individual unit.

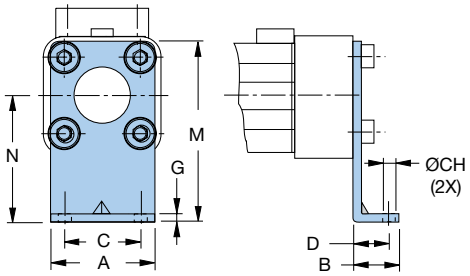
Order Code

4 or 5
(1 pair)

Type B1



Type B4



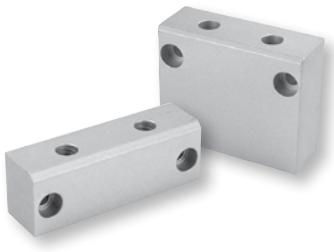
Type B1 and B4 – Reinforced End Cap

Actuator Size	Type	Part Number*	Weight* (kg)	Dimensions — mm A	B	C	CH	D	G	M	N
OSPE25SB/ST	B1	18159FIL	0.010	39	22	27	5.8	16	2.5	42	22
	B4	18160FIL	0.110							80	60
OSPE32SB/ST	B1	18164FIL	0.078	50	26	36	6.6	18	3.0	55	30
	B4	18165FIL	0.380							85	60

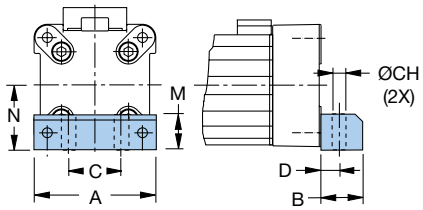
*Part number and weight are for individual unit.

Order Code

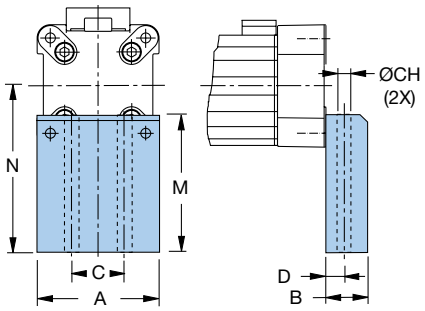
1, 2, 3 or 4
(1 pair)



Type C1



Type C4



Type C1, C2, C3 and C4 – Block End Cap

Actuator Size	Type	Part Number*	Weight* (kg)	Dimensions — mm A	B	C	CH	D	M	N
OSPE50SB/ST	C1	18166FIL	0.146	86	24	40	9.0	12.5	30	48
	C2	18167FIL	0.210						39	57
	C3	18168FIL	0.300						54	72
	C4	18169FIL	0.412						77	95

*Part number and weight are for individual unit.

Profile Mounting Options

See “Maximum Permissible Unsupported Length” for end cap and profile mounting placement requirements.

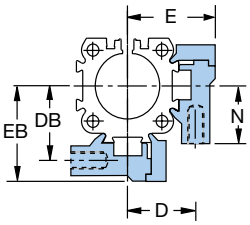
Profile Mounting Selection Overview

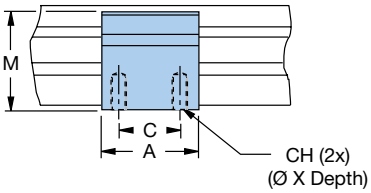
		Standard Carriage			PowerSlide							ProLine		
Type		25	32	50	25/25	25/35	25/44	32/35	32/44	50/60	50/76	25	32	50
2 Internal Threads 	D1	•	•	•	•	•	•	•	•	•	•	•	•	•
2 Thru Holes 	E1	•	•	•	•	•	•	•	•	•	•	•	•	•
	E2											•	•	•
	E3				•	•		•		•				
	E4						•		•		•			
3 Thru Holes 	MAE	•	•	•	•	•	•	•	•	•	•	•	•	•

• Recommended for mounting position with carriage on top • Recommended for mounting position carriage side only (3 or 9 o’clock position)

Order Code

2, 5 or 8
(1, 2 or 3 pair)





Type D1 (with two internal threads)

			Dimensions — mm								
Actuator Size	Part Number*	Weight* (kg)	A	C	CH	D	DB	E	EB	M	N
OSPE25SB/ST	20008FIL	0.061	50	36	M5 x 10	27	28.5	34.5	36	38	22
OSPE32SB/ST	20157FIL	0.072	50	36	M5 x 10	33	35.5	40.5	43	46	30
OSPE50SB/ST	20162FIL	0.167	60	45	M6 x 11	40	45.0	52.0	57	71	48

*Part number and weight are for individual unit.

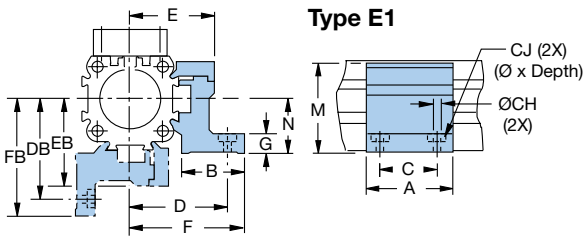
Order Code

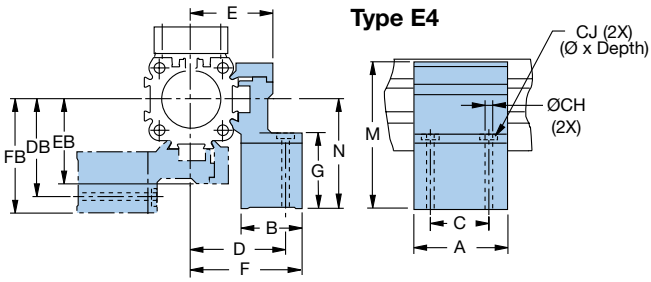
E1 1, 4 or 7 (1, 2 or 3 pair)

E2 K, N or R (1, 2 or 3 pair)

E3 L, P or S (1, 2 or 3 pair)

E4 M, Q or T (1, 2 or 3 pair)





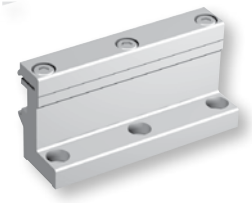
Type E1, E2, E3 and E4 (with two thru holes)

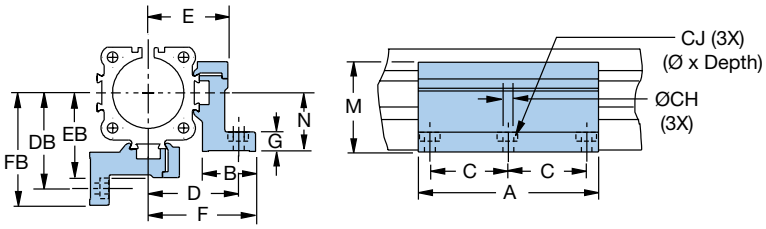
Actuator Size	Type	Part Number*	Weight* (kg)	Dimensions — mm A	B	C	CH	CJ	D	DB	E	EB	F	FB	G	M	N
OSPE25SB/ST	E1	20009FIL	0.074	50	26	36	5.5	10 x 5.7	40	41.5	34.5	36	47.5	49	8	38	22
	E2	20352FIL	0.125												23	53	37
	E3	20353FIL	0.120												35	65	49
	E4	20354FIL	0.020												46	76	60
OSPE32SB/ST	E1	20158FIL	0.092	50	27	36	5.5	10 x 5.7	46	48.5	40.5	43	54.5	57	10	46	30
	E2	20355FIL	0.141												24	60	44
	E3	20356FIL	0.140												32	68	52
	E4	20357FIL	0.197												40	76	60
OSPE50SB/ST	E1	20163FIL	0.189	60	34	45	7.0	—	59	64.0	52.0	57	67.0	72	10	71	48
	E2	20361FIL	0.235												19	80	57
	E3	20362FIL	0.338												31	95	72
	E4	20363FIL	0.442												57	118	95

*Part number and weight are for individual unit.

Order Code

3, 6 or 9 (1, 2 or 3 pair)





Type MAE (with three thru holes)

Actuator Size	Part Number*	Weight* (kg)	Dimensions — mm A	B	C	CH	CJ	D	DB	E	EB	F	FB	G	M	N
OSPE25SB/ST	12278FIL	0.271	92	26	40	5.5	10 x 5.7	40	41.5	34.5	36	47.5	49	8	38	22
OSPE32SB/ST	12279FIL	0.334	92	27	40	5.5	10 x 5.7	46	48.5	40.5	43	54.5	57	10	46	30
OSPE50SB/ST	12280FIL	0.668	112	34	45	7.0	—	59	64.0	52.0	57	67.0	72	10	71	48

*Part number and weight are for individual unit.

ORDERING INFORMATION

OSPE..SB/ST

Select an order code from each of the numbered fields to create a complete OSPE..SB or ST model order number. Include hyphens and non-selective characters as shown in example below.

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭
Order Number Example:	OSPE	25	– 1	0	0	0	0 –	00000	- P	0	0	0	0	0

① Series

OSPE Origa System Plus Electromechanical

② Actuator Bore Size

25 41 mm W x 53 mm H

32 52 mm W x 67 mm H

50 87 mm W x 93 mm H

③ Drive Train

1 SB – Ball screw actuator with internal glider bearing

2 ST – Trapezoidal screw actuator with internal glider bearing

④ Carriage

0 Standard

1 Tandem (two carriages for higher load capabilities (OSPE..SB models only)

⑤ Screw Lead

OSPE..SB		Bore Size	25	32	50
3	5 mm		•	•	•
4	10 mm			•	•
5	25 mm				•

OSPE..ST		Bore Size	25	32	50
4	4 mm		•	•	
6	6 mm				•

⑥ Mounted Gearhead Options

0 No gearhead

A PV40TA-005 (gear ratio 5:1)*

B PV40TA-010 (gear ratio 10:1)*

C PV60TA-003 (gear ratio 3:1)*

D PV60TA-005 (gear ratio 5:1)*

E PV60TA-010 (gear ratio 10:1)*

* Requires selection from "Mounted Gearhead with Motor Mounting Kit" or "Mounted Gearhead and Motor" (see Options & Accessories) for item ⑦ below.

⑦ Drive Shaft and Gearhead/Motor Mounting Options

0 – Plain drive shaft

3 – Drive shaft with keyway

4 – Long drive shaft with keyway

Motor Mounting Kits* (see Options & Accessories for available option dimensions and delivery)

Mounted Motors* (see Options & Accessories for available option dimensions and delivery)

Gearhead Mounting Kits* (see Options & Accessories for available option dimensions and delivery)

Mounted Gearhead with Motor Mounting Kits* (see Options & Accessories for available option dimensions and delivery)

Mounted Gearhead and Motor (see Options & Accessories for available option dimensions and delivery)

* All gearhead and motor mounting options are equipped with a plain drive shaft (no keyway options)

⑧ Order Stroke*

00000 5-digit input (in mm)

* See Specifications to calculate required order stroke.
Maximum catalog stroke:
OSPE25SB/ST = 01100 mm;
OSPE32SB/ST = 02000 mm;
OSPE50SB/ST = 02000 mm
Longer strokes available upon request. Consult factory.

⑨ Hardware and Dovetail Grove Covers

P Standard hardware with Parker gold cover strip

■ Blue order codes indicate rapid shipment availability

Free sizing and selection support from Virtual Engineer at virtualengineer.com

⑩ Carriage Options

0	No external guide rail
6	ProLine PL25, PL32, PL50*
E	PowerSlide PS25/25*
F	PowerSlide PS25/35 or PS32/35*
G	PowerSlide PS25/44 or PS32/44*
H	PowerSlide PS50/60*
I	PowerSlide PS50/76*
M	Inversion Mounting**
R	Clevis Mounting **

* Requires standard carriage (select order code "0" from ④). See Dimensions for additional information.
** Requires standard carriage (select order code "0" from ④). See Options & Accessories for Clevis Mounting and Inversion Mounting.

⑪ External Guide Rail Orientation

0  Guide Rail (right)

1  Guide Rail (left)

⑫ End Cap Mounting (see Options & Accessories)

0	No end cap mounting
1	1 piece A1* (standard end cap) or C1** (block end cap)
2	1 piece A2* (standard end cap) or C2** (block end cap)
3	1 piece A3* (standard end cap) or C3** (block end cap)
4	1 piece B1* (reinforced end cap) or C4** (block end cap)
5	1 piece B4* (reinforced end cap)

* For size 25 and 32
*8 For size 50

⑬ Profile Mounting (see Options & Accessories)

0	No profile mounting
2	1 pair D1 (with 2 internal threads)
5	2 pair D1 (with 2 internal threads)
8	3 pair D1 (with 2 internal threads)
1	1 pair E1 (with 2 thru holes)
4	2 pair E1 (with 2 thru holes)
7	3 pair E1 (with 2 thru holes)
3	1 pair MAE (with 3 thru holes)
6	2 pair MAE (with 3 thru holes)
9	3 pair MAE (with 3 thru holes)
K	1 pair E2 (with 2 thru holes)
N	2 pair E2 (with 2 thru holes)
R	3 pair E2 (with 2 thru holes)
L	1 pair E3 (with 2 thru holes)
P	2 pair E3 (with 2 thru holes)
S	3 pair E3 (with 2 thru holes)
M	1 pair E4 (with 2 thru holes)
Q	2 pair E4 (with 2 thru holes)
T	3 pair E4 (with 2 thru holes)

⑭ Magnetic Sensor Mounting*

0	No sensor mounting
A	1 pc. N.O., NPN, with M8 connector
B	2 pc. N.C., NPN, with M8 connector
C	1 pc. N.O., NPN, with M8 connector 2 pc. N.C., NPN, with M8 connector
D	1 pc. N.O., PNP, with M8 connector
E	2 pc. N.C., PNP, with M8 connector
F	1 pc. N.O., PNP, with M8 connector 2 pc. N.C., PNP, with M8 connector

* Extension cable with M8 plug and 5 m cable flying lead cable for Sensor with M8 connector can be ordered separately; use part number 003-2918-01

■ Blue order codes indicate rapid shipment availability

The LCR Series

Miniature Screw Driven Designs with Maximum Versatility

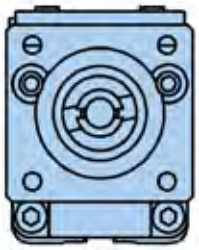
- **Miniature footprint – 30 x 40 mm cross-section**
- **Internal square rail or glider bearing design**
- **100% duty cycle**
- **IP30 stainless steel strip seal**
- **Low noise 2 and 10 mm leadscrew**
- **Travel lengths to 1000 mm**
- **Attractive black anodize finish**

Features

- **Extruded aluminum body incorporates dovetail mounting, T-slots and belt return**
- **Toe clamp mounting for easy installation**
- **Dowel pin holes in the LCR30 carriage for repeatable mounting**
- **Multiple motor mount options accommodate NEMA 11,17 and 23 steppers and NEMA 16 servo motors**
- **Flush-mounted NPN, PNP, N.O. or N.C. fully adjustable limit sensors maximize flexibility and minimize footprint impact**
- **Screw-driven version has an optional parallel motor mount for space constrained applications**

	LCR30
Maximum Travel (mm)	600
Maximum Payload (N)	500
Maximum Acceleration (m/s²)	20

***Do not exceed allowable axial and moment loading.**



LCR30

For OEMs looking to automate light payloads, the new LCR (Light Capacity Rodless) linear positioner family provides the smallest form factor with unmatched, easy-to-use flexibility.

With any "build-it-yourself" positioner, all the parts required to build a linear motion axis from scratch must be ordered, tracked, received, inventoried, assembled and tested. In contrast, the LCR Series is a completely pre-engineered, pre-tested, ready-to-use positioner solution, which allows OEMs to significantly reduce their time to market with minimized design, procurement, manufacturing, assembly and qualification time or effort.

Based on the proven life science track record of Parker's MX80 and LP28 Series, the LCR was developed specifically to provide a high-quality, easy-to-use, off-the-shelf linear actuator.

LCR solutions are ideal for Maldi-plate and micro-titer tray automation. Rated for 100% duty cycle, the LCR offers smooth, quiet motion ideal for keeping instrument noise to a minimum. With selectable travel lengths up to 1000 mm and payloads up to 100 N (25 lbs), the ability to automate laboratory instruments has never been easier.

Bottom Line Impact

The LCR's proven pre-engineered design will significantly reduce your instrument time to market and improve your ROI.

Tailored to Meet Every Requirement

The LCR is an easy-to-configure off-the-shelf solution with a virtually unlimited array of standard configurations available.

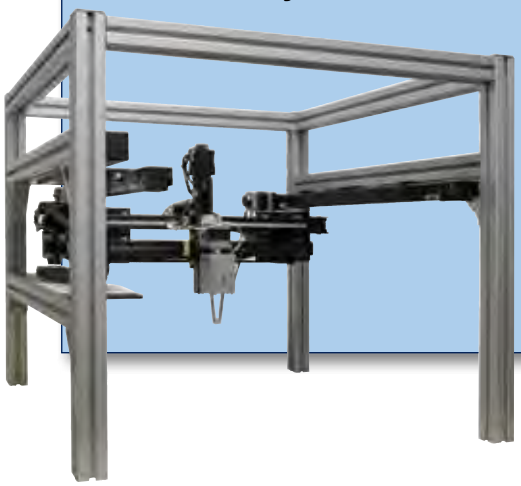
If your application demands a special design, Parker takes the next step and customizes the product to meet your required specification. Common modifications include:

- **Clean room components**
- **Special tool plates**
- **Mounts for 3rd party motors**
- **Single or parallel acting electric grippers**
- **Maximum height or length modifications for space constraints**
- **And much more**

Whether you need blue anodize or a design with a custom carriage for larger than standard payloads, or anything else, Parker excels at application solutions and will modify the LCR to fit your specific needs.

Please call us at 800-245-6903 to discuss your requirements.

Ideal for High-Volume, Light-Capacity, Electrically-Controlled Motion



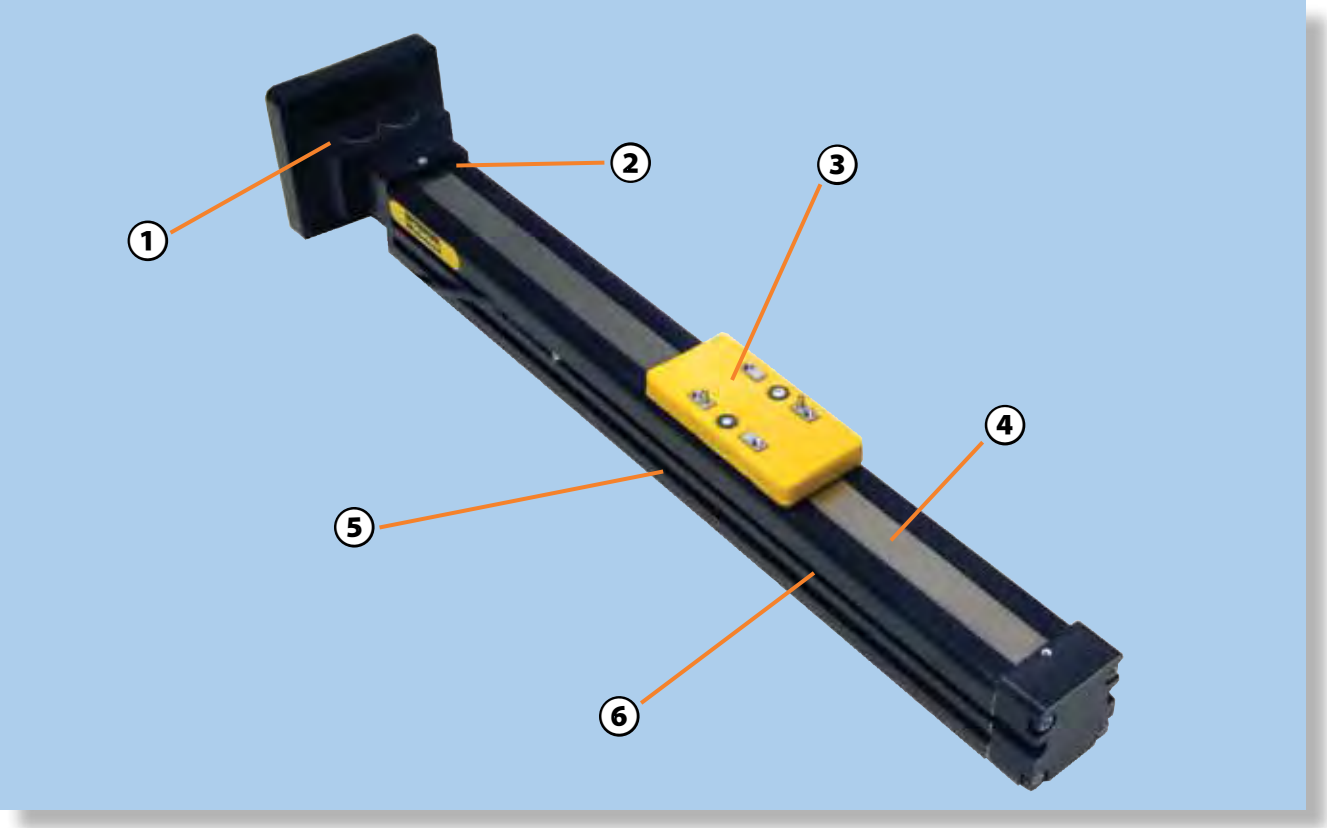
Life science applications:

- **Mass spectroscopy**
- **Course microscopy**
- **Analytical instruments**
- **Laboratory automation**
- **Micro titer automation**
- **MALDI plate automation**
- **Liquid handling**
- **Syringe pumps**

General-purpose applications:

- **Point-of-purchase kiosks**
- **Adjustable guide widths for conveyor lines**
- **Storage and retrieval**
- **Part shuttling**
- **Light payload automation conversion from rodless pneumatics to electric**
- **General automation for any ≤25 lb payload with basic repeatability requirements**

All LCR series actuators are compliant to RoHS and CE directives.



1. **Motor mounting options** - The most motor mounting options standard with more options easily available
2. **Encoder options** for position verification and position maintenance
3. **Carriage mounting surface -** Machined aluminum carriage mounting surface with locating holes
4. **Stainless steel sealing strip -** Best in class bearing and drive train protection
5. **Minimal instrument/machine size** including flush mount limit sensors
6. **Profile size** provides high rigidity for minimal deflection along with "T" and dovetail slots

Flexible drive train options with multiple screw leads for high thrust or reinforced belt drive for highest speeds

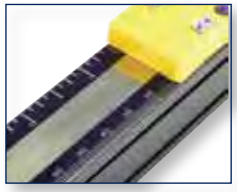
Parallel motor mounts

Stepper drive option - Simple and powerful plug and spin P2™ stepper drive option

Rugged internal square rail - Re-circulating bearing or quiet glider bearing for lighter payload needs

Quick and easy mounting options with toe clamps or standard multi-axis connection kits

Metric and Imperial graduated scales integral to the LCR body frame are among the many custom modifications available.



The P2™ Drive

An OEM-Friendly Design...
The P2 Completes the LCR as an Easy-to-Use Motion Solution

Pairing the LCR with the P2™ drive, instrument builders eliminate another costly design component and complete their motion package with a single-vendor, easy-to-use solution.

The P2 drive is only 1" x 1" x 3" in size, but packs 2 A of current at 24 VDC to provide superior power density for simple step and direction motion.

The Parker P2 Stepper Drive is a complete step and direction indexer for hybrid step motors. The P2 drive operates stepper motors in full, half, quarter, and sixteenth step modes with an output drive capacity up to 24 VDC and 2.0 amps.

Key Design Advantages

- **On board eyelets allow OEMs to measure output current and to set all drives equally**
- **Two potentiometers allow for easy adjustment of standby and run current**
- **No programming**
- **No code to learn**
- **Robust, high quality product with 100% pre-ship testing**

Key Design Features

- **Supply voltage 12 to 24 VDC**
- **2.0 amps max motor output current**
- **Adjustable run current and standby current**
- **Single or differential ended inputs**
- **Enable, step and direction inputs voltages up to ±14 VDC (low/high input): <0.8 V Low, >2 V High**
- **1.0 µs minimum step pulse width**
- **1.0 µs minimum step pulse low time**
- **0 to 40°C operating temperature with natural convection**
- **5 to 95% relative humidity, non-condensing**
- **Optional DIN rail mount**
- **Resolutions of 200, 400, 800 and 3200 steps/rev (with 1.8° step motor)**
- **Small package (80 mm x 25 mm x 25 mm)**
- **RoHS compliant**

P2 saves a lot more than space...

The P2 Series offers added value to customers who traditionally specify board level drives or design their own drives in house.

① Free up engineering, procurement, quality, and assembly resources in house. The P2 Series reduces the instrument/ machine design time by utilizing an off the shelf solution.

The result: faster time to market for new products, allowing customers to focus on core competency.

② The P2 also reduces procurement complexity by reducing the need to chase multiple vendors versus a do it yourself drive design.

The result: better return on investment.

③ The P2 Series provides the customer added flexibility to mount the enclosed, protected drive directly onto a motion axis such as the Parker LCR Series, or DIN rail mount in a convenient location.

The result: a well protected, robust drive with quick and easy installation for an easy out of box user experience.

SPECIFICATIONS

Addressing applications which involve positioning of smaller payloads within a very small space envelope, the LCR30 is the ideal solution for OEM instrument manufacturers. The LCR30 offers a reduced overall cost of ownership and a complete solution including amplifier/drive, motor, actuator, bearings, seals, and limit sensors.

LCR Screw-Driven Performance by Profile Size

Specification	Units	LCR30	
Grade		**S (Square Rail)**	**B (Bushing)**
Bidirectional Repeatability	mm	± 0.1	± 0.2
Duty Cycle	%	100	100
Max. Acceleration*	m/s^2	20	20
Normal Load	N	90	45
Moment Load			
Roll	Nm	2.6	0.3
Yaw		6.5	0.8
Pitch		8.2	1.5
Max. Axial Load	N	70	70
Screw Efficiency			
2.0 mm Lead	%	50	50
10.0 mm Lead		70	70
Breakaway Torque	mNm	30 (2 mm lead) 45 (10 mm lead)	40 (2 mm lead) 90 (10 mm lead)
Screw Diameter	mm	6.4	6.4
Coefficient of Friction		0.02	0.10
Carriage Weight	N	0.5	0.5
Base Moment of Inertia			
Ixx	mm^4	39,778	36,162
Iyy		46,273	42,066

*Do not exceed allowable axial and moment loading.

Model	LCR30
Width x Height (mm)	30 x 40
Repeatability (±mm)	0.1
Max. Speed[2] (mm/s)	150
Max. Travel Length (mm)	600
Screw Lead Options (mm/rev)	2, 10

[1] Specifications for square rail design, bushing version reduces normal load to 50% value.
[2] Specifications for fast screw lead, the fine screw lead will reduce maximum speed.

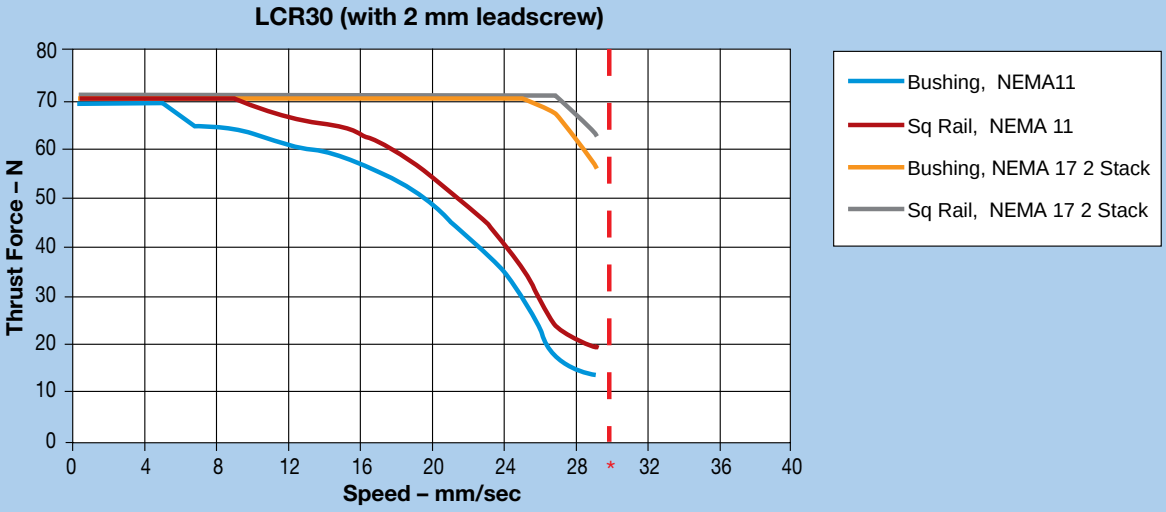
Performance by Travel Length

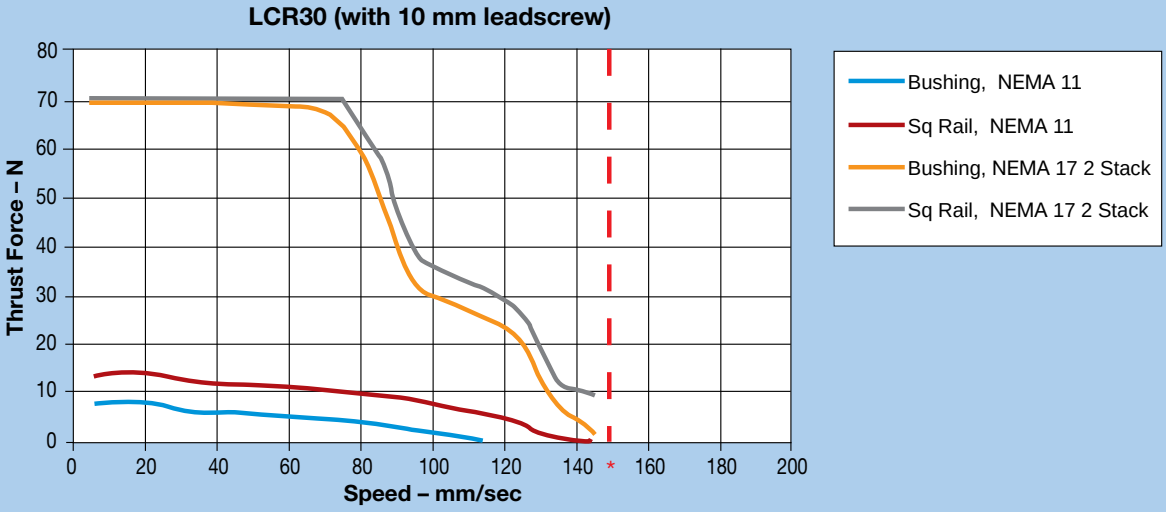
LCR30 Screw-Driven Performance by Travel Length

Travel	Max. Screw Speed* (RPS)	Max. Linear Speed (mm/s)		Table Weight **		Input Inertia 10^{-7} kg-m² ***	
		2.0 mm	10.0 mm	M11 (kg)	M17 (kg)	2.0 mm	10.0 mm
25	15	30	150	0.70	0.80	4.11	5.26
50	15	30	150	0.74	0.84	4.42	5.57
75	15	30	150	0.78	0.88	4.8	5.88
100	15	30	150	0.83	0.93	5.1	6.19
125	15	30	150	0.87	0.97	5.36	6.50
150	15	30	150	0.91	1.01	5.67	6.82
175	15	30	150	0.95	1.05	5.99	7.13
200	15	30	150	0.99	1.09	6.3	7.44
225	15	30	150	1.03	1.13	6.61	7.75
250	15	30	150	1.07	1.17	6.92	8.06
275	15	30	150	1.12	1.21	7.23	8.37
300	15	30	150	1.16	1.26	7.54	8.68
325	15	30	150	1.20	1.30	7.85	8.99
350	15	30	150	1.24	1.34	8.16	9.31
375	14	28	140	1.28	1.38	8.47	9.62
400	12	24	120	1.32	1.42	8.79	9.93
425	11	22	110	1.36	1.46	9.11	10.24
450	10	20	100	1.40	1.50	9.41	10.56
475	9	18	90	1.45	1.54	9.72	10.86
500	9	18	90	1.49	1.59	10.03	11.17
525	8	16	80	1.53	1.63	10.33	11.49
550	7	14	70	1.57	1.67	10.65	11.80
575	7	14	70	1.61	1.71	10.97	12.11
600	6	12	60	1.65	1.75	11.28	12.42

* Maximum Screw Speed of 15 rps is based upon stepper motor resonance zones, for higher speeds please consult product maintenance manual.
** For parallel motor configurations: table weight increases by 0.081 kg for NEMA 11, 0.101 kg for NEMA 17, 0.090 kg for SM 16.
*** Input inertia increases by 2.05 10^{-7} kg-m² with parallel motor mounts.

LCR30 Linear Speed-Force Performance





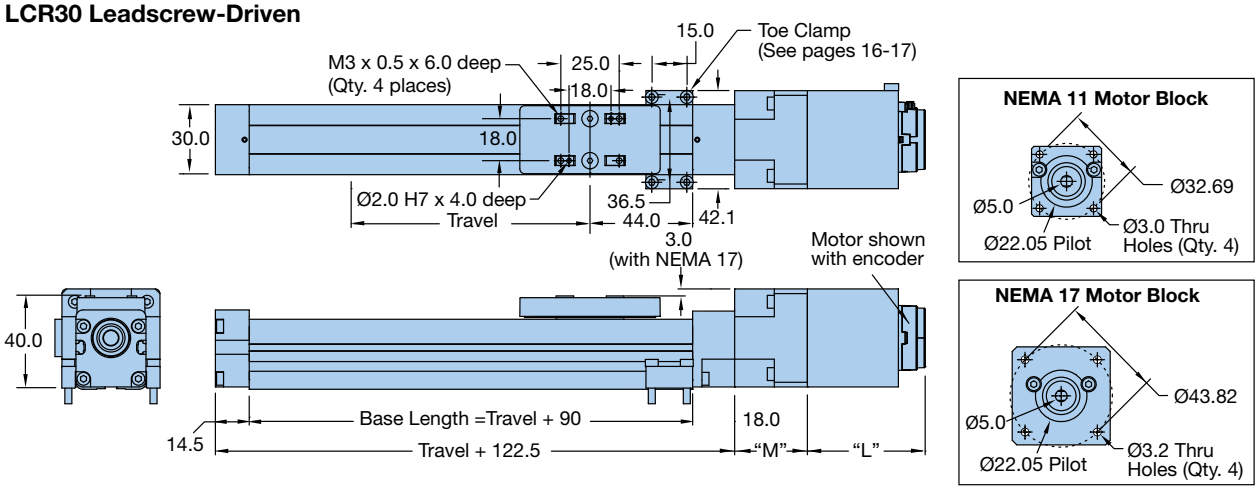
* Maximum speed with Parker P2™ stepper drive at 24VDC. To achieve faster speeds, motor must be connected to a drive with active damping, electronic viscosity, or other advanced anti-resonance zone features.

Refer to critical speed limitations for specific stroke length maximum speeds.

DIMENSIONS

LCR Series Leadscrew-Driven

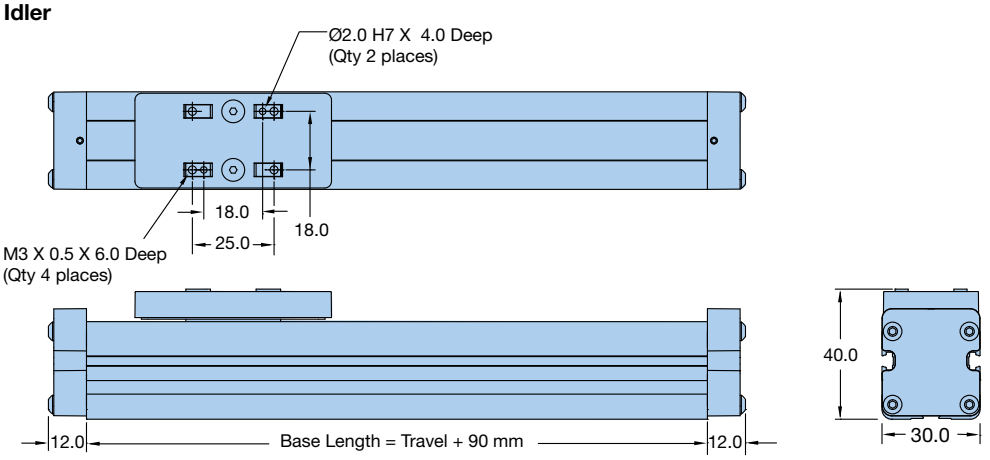
LCR30 Leadscrew-Driven



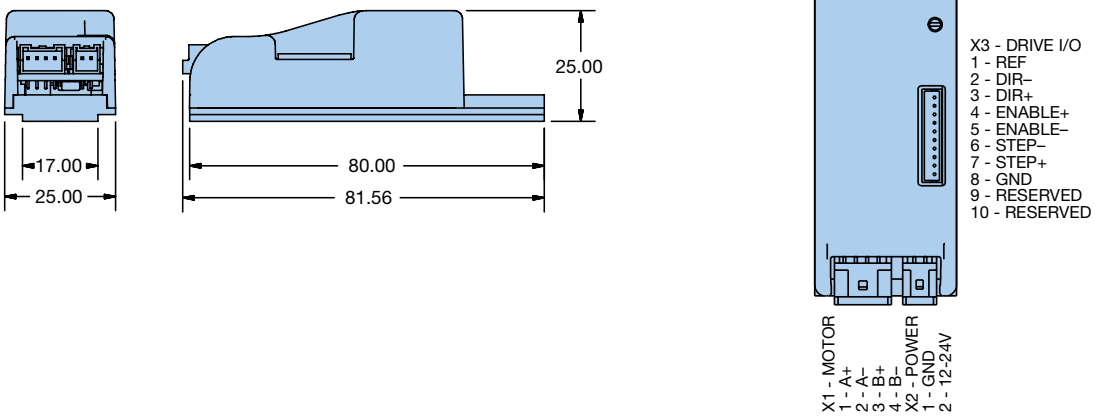
Motor Option	Encoder Option	M	L	Description
N11	**E0**	30.6	0	NEMA 11 Motor Mount
M11	**E0**	30.6	62.5	NEMA 11 Stepper Motor
M11	**E2**	30.6	62.5	NEMA 11 Stepper Motor with Encoder
N17	**E0**	31.2	0	NEMA 17 Motor Mount
M17	**E0**	31.2	51.0	NEMA 17 Stepper Motor
M17	**E2**	31.2	51.0	NEMA 17 Stepper Motor with Encoder

Idler Unit – Square Rail Models only

LCR30 Idler



P2™ Stepper Drive



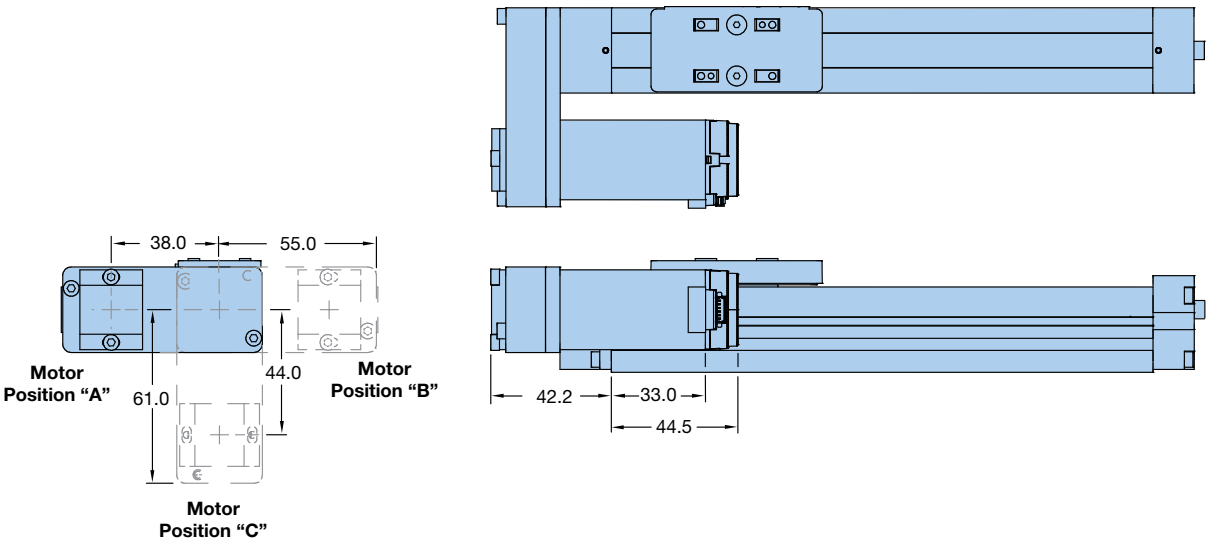
Parallel Motor Mounts

Tight on machine space?

Select a parallel motor mount to shorten the overall length of the LCR 30 per a given stroke. In using this motor mount option the motor is positioned along side the positioner in location's A, B, or C as denoted below.

LCR30 with NEMA 11 Motor

N11 Option: Mount only
M11 Option: Mounted NEMA 11 stepper

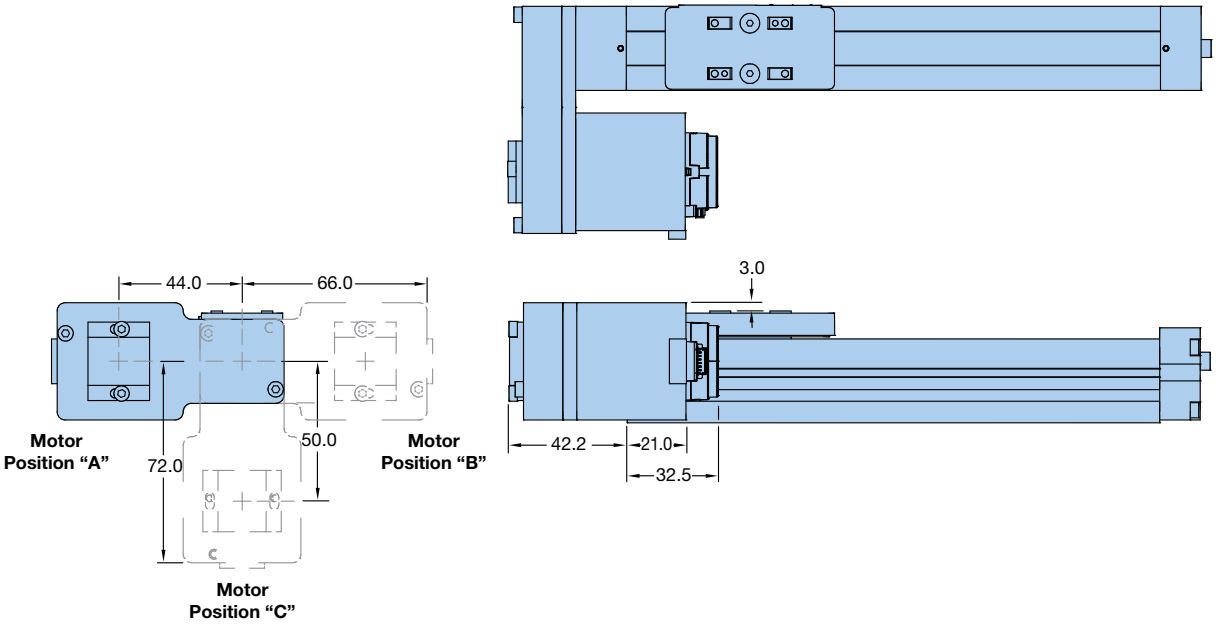


Free sizing and selection support from Virtual Engineer at virtualengineer.com

Virtual Engineer

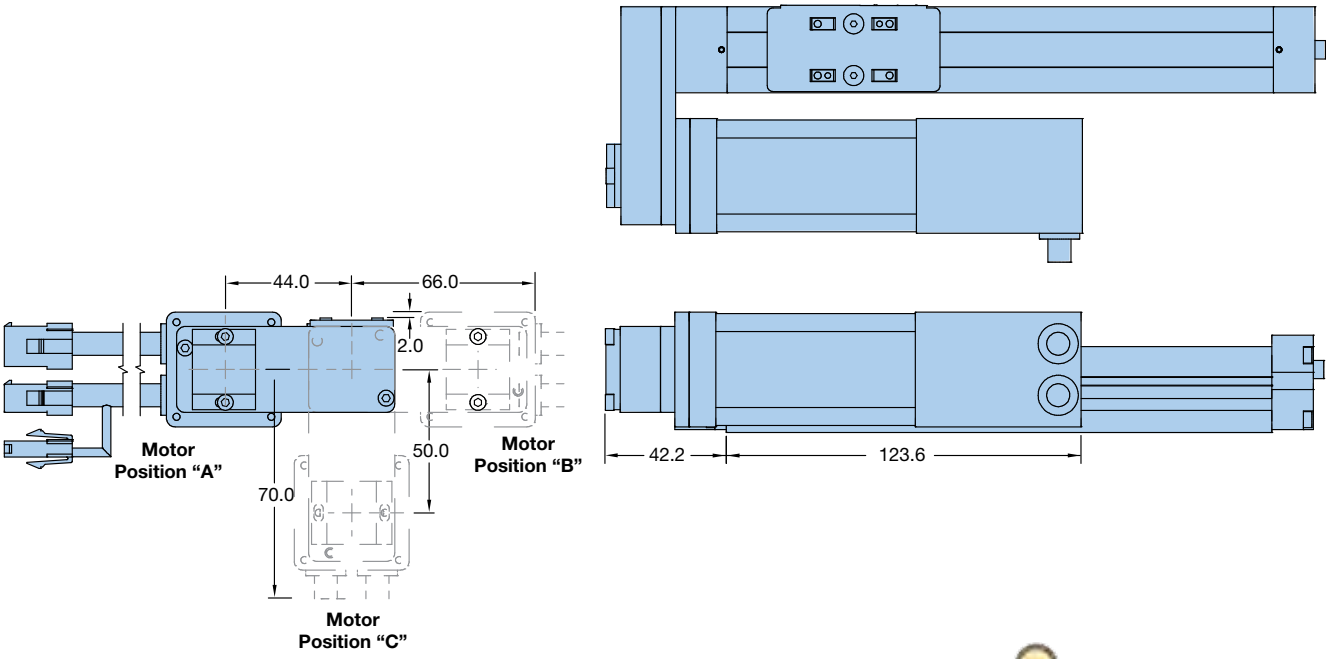
LCR30 with NEMA 17 Motor

N17 Option: Mount only
M17 Option: Mounted NEMA 17 stepper



LCR30 with SM16 Motor

N16 Option: Mount only
M16 Option: Mounted SM16 servo motor



Free sizing and selection support from Virtual Engineer at virtualengineer.com

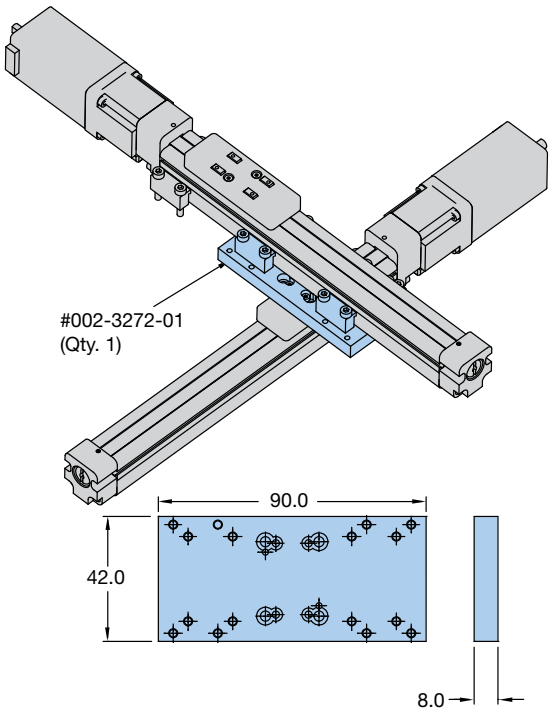
Virtual Engineer

OPTIONS & ACCESSORIES

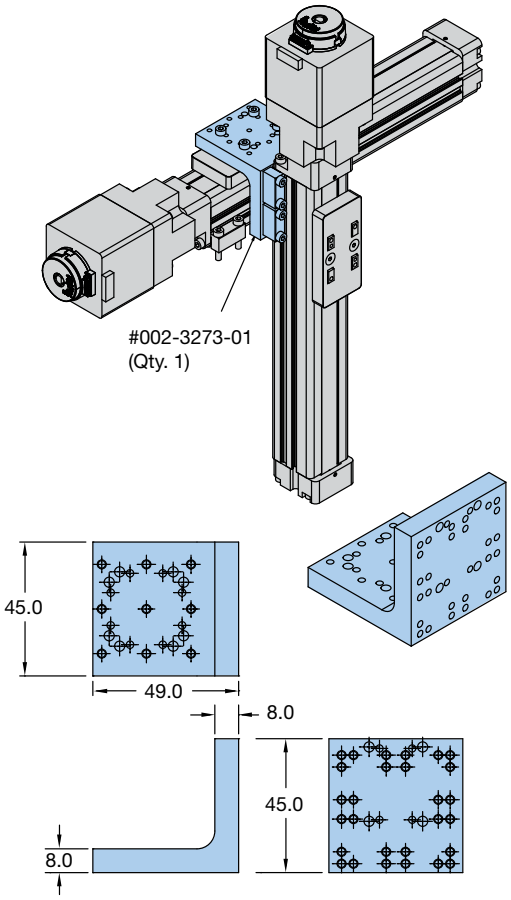
X-Y and X-Z Brackets

Dimensions — mm

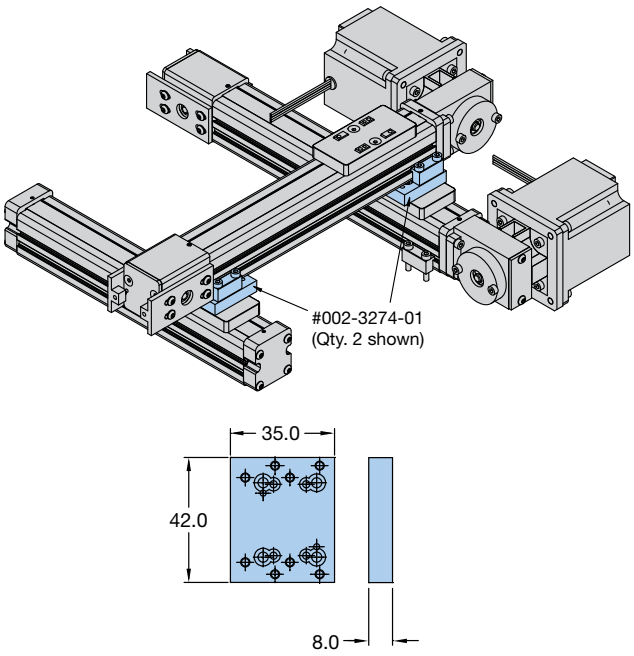
X-Y Bracket for LCR30 Screw-Driven Units
#002-3272-01
(includes four toe clamps with fasteners)



X-Z Bracket for LCR30 (All Units)
#002-3273-01
(includes four toe clamps with fasteners)



X-Y Bracket for LCR30 Belt-Driven Units
#002-3274-01
(includes two toe clamps with fasteners)



Toe Clamps

Toe clamp kits include socket head fasteners to mount clamp.

Part Number	Quantity
002-3233-01	1
002-3233-04	4
002-3233-100	100

Encoder

When using stepper motors, positional feedback is readily available with the optional rotary encoder. The robust magnetic encoder withstands vibration and provides easy in-position confirmation.

Wiring Connection

Pin	Wire	Function
1	White	Ground
2	Green	A+
3	Yellow	A–
4	Brown	+5 VDC
5	Blue	B+
6	Red	B–
7	Pink	Not used
8	Gray	Not used

Encoder

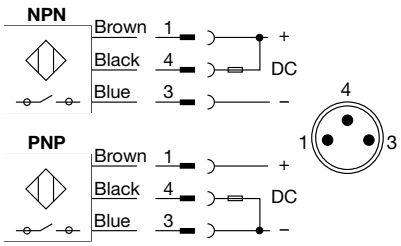
Part Number	Counts/rev	Bore
003-4590-01	400	4 mm
003-4590-02	400	5 mm
003-4590-03	500	4 mm
003-4590-04	500	5 mm
003-4590-05	400	6.35 mm
003-4590-06	500	6.35 mm

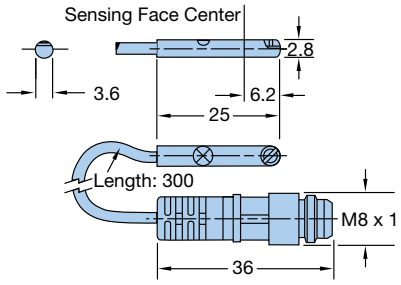
Encoder Cable (6-pin differential)

006-2398-1.0	1m high flex with flying leads
006-2398-3.0	3m high flex with flying leads

End-of-Travel Limit Sensors

Limit sensors offer home and end of travel protection in a flush mount design that minimizes the overall width of the LCR series. The limit sensors are available standard as NPN or PNP with normally open or normally closed designs.





Specifications

Operating Voltage: 10-30 VDC
Repeatability: ≤±0.1 mm
EMC: EN 60 947-5-2
Short circuit protections: Yes
Reverse Polarity Protection: Yes
Enclosure Rating: IP 67
Operating Temperature Range: -25° to 75° C (-13° to 167° F)

Wiring Connection

Pin	Wire	Function
1	Brown	+ VDC
4	Black	NO
3	Blue	– VDC

Part Number	Logic	Cabling
P8S-P8SAMQFAZ	PNP N.C.	3 meter flying leads
P8S-P8SAMQCHZ	PNP N.C.	0.3 meter with M8
P8S-P8SAMMFAZ	NPN N.C.	3 meter flying leads
P8S-P8SAMMCHZ	NPN N.C.	0.3 meter with M8
P8S-P8SAMPFAZ	PNP N.O.	3 meter flying leads
P8S-P8SAMPCHZ	PNP N.O.	0.3 meter with M8
P8S-P8SAMNFAZ	NPN N.O.	3 meter flying leads
P8S-P8SAMNCHZ	NPN N.O.	0.3 meter with M8
003-2918-01	All cabling	5 meter extension cable for M8 connections

ORDERING INFORMATION

LCR Series

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

Order Example:

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
LCR	22	LN10	0075	S	S	A	N08	E0	L1	A1

① Series

LCR Series

② Size (width in mm)

30 30 mm wide profile

③ Drive Train

IDLR Idler unit; no drive mechanism

LN02 2 mm leadscrew with in-line motor mount

LN10 10 mm leadscrew with in-line motor mount (available with LCR30 size only)

BLT0 Single axis belt drive

④ Travel Length (mm)

xxxx 25 mm increments of travel
LCR30 Screw-Driven:
25 to 600 mm
LCR30 Belt-Driven:
25 to 1000 mm

⑤ Bearing Type

S Square rail bearing

B Glider bushing bearing

⑥ Environmental Protection

S Strip seal protection (standard)

⑦ Motor Mount Position

I Inline

A Parallel mount, Position "A"*

B Parallel mount, Position "B"*

C Parallel mount, Position "C"*

R Belt drive, motor right

L Belt drive, motor left

— No motor

*Not available with size BLT0 drive train options.

⑧ Motor

N00 No motor

N11 NEMA 11 motor mount [2]

N16 SM16 motor mount [3]

N17 NEMA 17 motor mount [3]

N23 NEMA 23 motor mount [3]

M11 NEMA 11 stepper motor [2]

M16 SM162AE-N10N servo motor [3]

M17 NEMA 17 stepper motor [3]

M23 NEMA 23 stepper motor [4]

[2] Not available on BLT0 belt drive version
[4] Only available on BLT0 belt drive version

⑨ Motor Encoder Option

E0 No encoder

E2 500 line encoder*

*Only available with M11, M17, and M23 motor options

⑩ Home & End-of-Travel

L0 No home or limit sensors

L1 3 NPN sensors (1 N.O.; 2 N.C.)

L2 1 NPN sensor (N.O.)

L3 3 PNP sensors (1 N.O.; 2 N.C.)

L4 1 PNP sensor (N.O.)

L5 3 NPN sensors (2 N.O.; 1 N.C.)

L6 1 NPN sensor (N.C.)

L7 3 PNP sensors (2 N.O.; 1 N.C.)

L8 1 PNP sensor (N.C.)

⑪ Stepper Drive/Amplifier

A0 No P2 Drive

A1 P2 Stepper Drive/Amplifier

A2 P2 Stepper Drive/Amplifier with 1 meter cable set* (flying leads)

A3 P2 Stepper Drive/Amplifier with 1 meter cable set* to ACR

A4 P2 Stepper Drive/Amplifier with 1 meter cable set* to 6K

*For longer cable needs please order the A1 option and order cables separately

P2™ Ordering Information

Ordering Information

Order Example:

①	②	③	④	⑤	⑥	⑦
P2	D	2	SD	E0	FL1	K0

① Series
- **P2** Series

② Intelligence
- **D** Stepper drive

③ Power Level
- **2** 2 amps max

④ Communication
- **SD** Step and direction input

⑤ Feedback
- **E0** No encoder

⑥ Cable Set
- **FL0** No cable set
- **FL1**
- **FL3**
- **AC1**
- **AC3**
- **6K1**
- **6K3**

(See chart at left)

⑦ Mounting Kit
- **K0** Standard plate mounting kit included
- **K1** DIN Rail Mounting

P2 Options and Accessories

Part Number	Order Code	Description
006-2342-1.0	—	Power Cable – 1 m , High Flex
006-2342-3.0	—	Power Cable – 3 m , High Flex
006-2343-1.0	—	6K Control Cable – 1 m, High Flex
006-2343-3.0	—	6K Control Cable – 3 m, High Flex
006-2344-1.0	—	ACR Control Cable – 1 m, High Flex
006-2344-3.0	—	ACR Control Cable – 3 m, High Flex
006-2345-1.0	—	Control Cable – Flying Leads – 1 m, High Flex
006-2345-3.0	—	Control Cable – Flying Leads – 3 m, High Flex
006-2357-1.0	—	Motor Power Extension – 1 m
006-2357-3.0	—	Motor Power Extension – 3 m
002-3296-1.0	FL1	1 m Flying Lead Cable Set (contains power and communications cable from above list)
002-3296-3.0	FL3	3 m Flying Lead Cable Set (power and communications cable from above list)
002-3297-1.0	AC1	1 m Cable Set to ACR (power and communications cable from above list)
002-3297-3.0	AC3	3 m Cable Set to ACR (power and communications cable from above list)
002-3298-1.0	6K1	1 m Cable Set to 6K (power and communications cable from above list)
002-3298-3.0	6K3	3 m Cable Set to 6K (power and communications cable from above list)
002-3294-01	K0	DIN Rail Mounting Kit (DIN clip and screw)
002-3295-01	K1	Mounting kit to attach P2™ to LCR