



400ST Series Square Rail Linear Tables

Features

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

Options

Motor Couplings

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

Motor Mounts

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

Limit and Home Switches

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

Linear Encoders

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

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



Screw Driven
Tables

High Accuracy and High Load Capacity

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

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

Quality Design and Construction

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

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

Common Characteristics

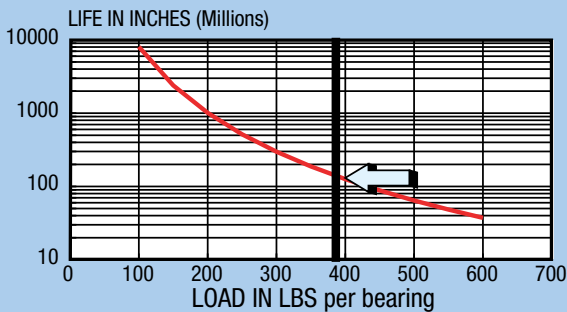
	Units	408 – 412 Series	418 – 424 Series
Performance			
Positional Repeatability	x 0.001 in (µm)	±0.1 (±2.5)	±0.1 (±2.5)
Life @ Rated Load Capacity ¹	x 1 million in (km)	100 (2540)	100 (2540)
Duty Cycle	%	100	100
Acceleration (Max.)	in/sec ² (m/sec ²)	772 (20)	772 (20)
Rated Capacity			
Load Capacity (Table) ²	lbs (N)		
Normal		1560 (6934)	2340 (10400)
Inverted		1560 (6934)	2340 (10400)
Side		1360 (6045)	2040 (9067)
Axial		240 (1068)	240 (1068)
Number of Bearings		4	6
Moment Load	lbs (N)	Note 2	Note 2
Motor Sizing			
Drive Screw Efficiency	%	90	90
Breakaway Torque (Max.)	oz - in (N-m)		
0 to 24"		27.5 (0.19)	27.5 (0.19)
30 to 60"		49.0 (0.35)	49.0 (0.35)
Running Torque (Max.)	oz - in (N-m)		
0 to 24"		25.0 (0.18)	25.0 (0.18)
30 to 60"		45.0 (0.33)	45.0 (0.33)
Coefficient of Friction - Linear Bearing		0.01	0.01
Carriage Weight			
	lbs (kgf)		
408 Series		6.4 (2.9)	—
412 Series		14.4 (6.5)	—
418 Series		—	31.75 (14.4)
424 Series		—	56.4 (25.6)

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

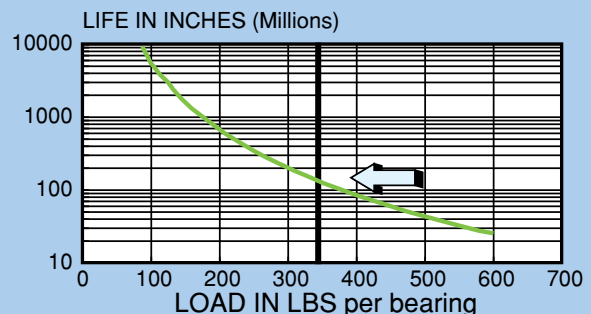
Note 2: For moment load calculations, refer to the technical section of Parker's web site www.parkermotion.com

Compression Load

Compression Load



Life vs Load (Per Bearing)



Tension Load

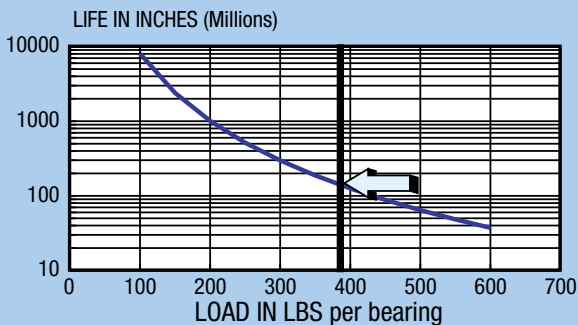




Table Dependent Characteristics

Model Number	Travel		Positional Accuracy x0.001		Straight & Flatness Accuracy x 0.001		Input Inertia		Maximum Screw Speed rps	Table Weight		Ballscrew Diameter	
	in	(mm)	in	(µm)	in	(µm)	10 ⁻³ oz-in-sec ²	10 ⁻⁵ kg-m ²		lbs	(kgf)	in	(mm)
8 Inch Width													
408004ST	4.0	(100)	0.32	(8)	0.4	(10)	7.4	(5.23)	50	42.3	(19)	0.787	(20)
408006ST	6.0	(150)	0.48	(12)	0.6	(15)	8.3	(5.85)	50	45.5	(20.6)	0.787	(20)
408012ST	12.0	(300)	0.60	(15)	0.8	(20)	10.0	(7.73)	50	55.1	(25)	0.787	(20)
408018ST	18.0	(450)	1.08	(27)	1.4	(36)	13.6	(9.61)	50	64.6	(29.3)	0.787	(20)
408024ST	24.0	(600)	1.2	(31)	1.6	(40)	16.3	(11.53)	40	73.7	(33.4)	0.787	(20)
408030ST	30.0	(750)	1.7	(43)	2.2	(56)	18.9	(13.37)	25	83.8	(38)	0.787	(20)
408036ST	36.0	(900)	1.8	(46)	2.4	(60)	136.8	(96.6)	30	103.3	(46.9)	1.26	(32)
408048ST	48.0	(1200)	2.4	(61)	3.2	(80)	171.4	(121)	30	113.5	(51.5)	1.26	(32)
408060ST	60.0	(1500)	3.0	(76)	4.0	(100)	206.7	(145.9)	20	143.3	(65)	1.26	(32)
12 inch Width													
412004ST	4.0	(100)	0.32	(8)	0.4	(10)	9.6	(6.76)	50	66.7	(30.3)	0.787	(20)
412006ST	6.0	(150)	0.48	(12)	0.6	(15)	10.4	(7.34)	50	70.7	(32.1)	0.787	(20)
412012ST	12.0	(300)	0.60	(15)	0.8	(20)	9.9	(7.02)	50	82.5	(37.4)	0.787	(20)
412018ST	18.0	(450)	1.08	(27)	1.4	(36)	13.3	(9.41)	50	94.4	(42.8)	0.787	(20)
412024ST	24.0	(600)	1.2	(31)	1.6	(40)	16.6	(11.74)	40	106.4	(48.3)	0.787	(20)
412030ST	30.0	(750)	1.7	(43)	2.2	(56)	18.1	(12.77)	25	118.4	(53.7)	0.787	(20)
412036ST	36.0	(900)	1.8	(46)	2.4	(60)	128.5	(90.7)	30	139.8	(63.4)	1.26	(32)
412048ST	48.0	(1200)	2.4	(61)	3.2	(80)	164.2	(116)	30	166.3	(75.4)	1.26	(32)
412060ST	60.0	(1500)	3.0	(76)	4.0	(100)	199.1	(140.6)	20	192.8	(87.5)	1.26	(32)
18 inch Width													
418004ST	4.0	(100)	0.32	(8)	0.4	(10)	13.0	(9.19)	50	116.7	(52.9)	0.787	(20)
418006ST	6.0	(150)	0.48	(12)	0.6	(15)	13.9	(9.82)	50	121.8	(55.2)	0.787	(20)
418012ST	12.0	(300)	0.60	(15)	0.8	(20)	12.1	(8.57)	50	137.4	(62.3)	0.787	(20)
418018ST	18.0	(450)	1.08	(27)	1.4	(36)	14.8	(10.44)	50	152.8	(69.3)	0.787	(20)
418024ST	24.0	(600)	1.2	(31)	1.6	(40)	15.8	(11.16)	40	168.3	(76.3)	0.787	(20)
418030ST	30.0	(750)	1.7	(43)	2.2	(56)	21.8	(15.36)	25	183.8	(83.4)	1.26	(32)
418036ST	36.0	(900)	1.8	(46)	2.4	(60)	130.0	(91.8)	30	208.8	(94.7)	1.26	(32)
418048ST	48.0	(1200)	2.4	(61)	3.2	(80)	165.1	(116.6)	30	242.4	(110)	1.26	(32)
418060ST	60.0	(1500)	3.0	(76)	4.0	(100)	200.0	(141.2)	20	276.1	(125.2)	1.26	(32)
24 inch Width													
424004ST	4.0	(100)	0.32	(8)	0.4	(10)	16.7	(11.81)	50	180.2	(81.7)	0.787	(20)
424006ST	6.0	(150)	0.48	(12)	0.6	(15)	17.7	(12.48)	50	186.6	(84.6)	0.787	(20)
424012ST	12.0	(300)	0.60	(15)	0.8	(20)	15.2	(10.75)	50	204.8	(92.9)	0.787	(20)
424018ST	18.0	(450)	1.08	(27)	1.4	(36)	15.2	(10.75)	50	224.0	(101.6)	0.787	(20)
424024ST	24.0	(600)	1.2	(31)	1.6	(40)	17.4	(12.29)	40	243.1	(110.3)	0.787	(20)
424030ST	30.0	(750)	1.7	(43)	2.2	(56)	119.5	(84.4)	25	271.8	(123.3)	1.26	(32)
424036ST	36.0	(900)	1.8	(46)	2.4	(60)	151.6	(107)	30	292.2	(132.5)	1.26	(32)
424048ST	48.0	(1200)	2.4	(61)	3.2	(80)	186.5	(131.7)	30	332.9	(151.0)	1.26	(32)
424060ST	60.0	(1500)	3.0	(76)	4.0	(100)	221.5	(156.3)	20	372.7	(169.1)	1.26	(32)

Screw Driven Tables

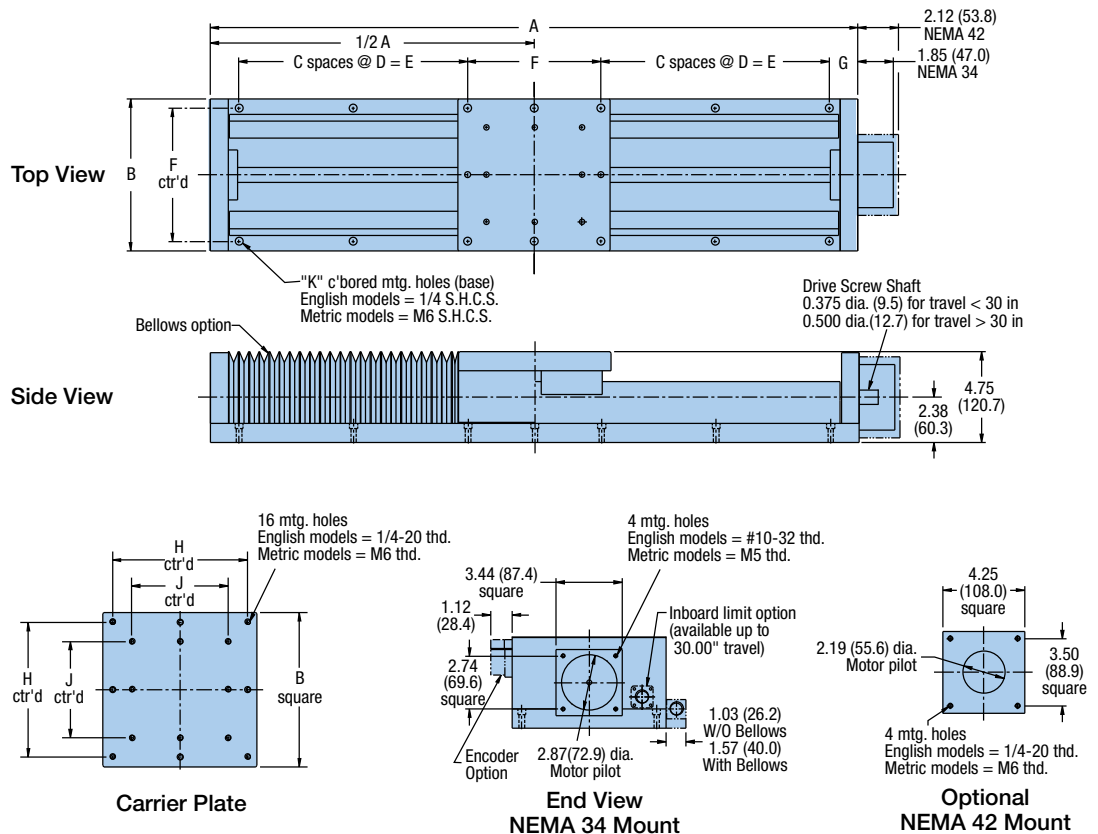
408000/412000 Series Dimensions

Dimensions – in (mm)

**English Model
Dimensions
Shown**

**Contact factory
for metric model
dimensions.**

Metric model dimensions are different than English model dimensions. Please contact factory or download metric CAD files from www.parkermotion.com.



Model No.	Travel	Travel with Bellows	A	B	Quantity C	D	E	F	G	H	J	Quantity K
408000 Series (English Measurement)												
408004ST-E	4 in	2.1 in	14.0 in	8.0 in	1	2.0 in	2.0 in	7.0 in	1.5 in	7.0 in	5.0 in	10
408006ST-E	6 in	3.7 in	16.0 in	8.0 in	1	3.0 in	3.0 in	7.0 in	1.5 in	7.0 in	5.0 in	10
408012ST-E	12 in	8.3 in	22.0 in	8.0 in	1	6.0 in	6.0 in	7.0 in	1.5 in	7.0 in	5.0 in	10
408018ST-E	18 in	13.0 in	28.0 in	8.0 in	2	4.0 in	8.0 in	7.0 in	2.5 in	7.0 in	5.0 in	14
408024ST-E	24 in	17.7 in	34.0 in	8.0 in	2	6.0 in	12.0 in	7.0 in	1.5 in	7.0 in	5.0 in	14
408030ST-E	30 in	22.3 in	40.0 in	8.0 in	2	7.0 in	14.0 in	7.0 in	2.5 in	7.0 in	5.0 in	14
408036ST-E	36 in	27.0 in	46.0 in	8.0 in	3	6.0 in	18.0 in	7.0 in	1.5 in	7.0 in	5.0 in	18
408048ST-E	48 in	36.3 in	58.0 in	8.0 in	4	6.0 in	24.0 in	7.0 in	1.5 in	7.0 in	5.0 in	22
408060ST-E	60 in	45.7 in	70.0 in	8.0 in	4	7.0 in	28.0 in	7.0 in	3.5 in	7.0 in	5.0 in	22
412000 Series (English Measurement)												
412004ST-E	4 in	2.1 in	18.0 in	12.0 in	1	2.0 in	2.0 in	11.0 in	1.5 in	11.0 in	7.0 in	10
412006ST-E	6 in	3.7 in	20.0 in	12.0 in	1	3.0 in	3.0 in	11.0 in	1.5 in	11.0 in	7.0 in	10
412012ST-E	12 in	8.3 in	26.0 in	12.0 in	1	6.0 in	6.0 in	11.0 in	1.5 in	11.0 in	7.0 in	10
412018ST-E	18 in	13.0 in	32.0 in	12.0 in	2	4.0 in	8.0 in	11.0 in	2.5 in	11.0 in	7.0 in	14
412024ST-E	24 in	17.7 in	38.0 in	12.0 in	2	6.0 in	12.0 in	11.0 in	1.5 in	11.0 in	7.0 in	14
412030ST-E	30 in	22.3 in	44.0 in	12.0 in	2	7.0 in	14.0 in	11.0 in	2.5 in	11.0 in	7.0 in	14
412036ST-E	36 in	27.0 in	50.0 in	12.0 in	3	6.0 in	18.0 in	11.0 in	1.5 in	11.0 in	7.0 in	18
412048ST-E	48 in	36.3 in	62.0 in	12.0 in	4	6.0 in	24.0 in	11.0 in	1.5 in	11.0 in	7.0 in	22
412060ST-E	60 in	45.7 in	74.0 in	12.0 in	4	7.0 in	28.0 in	11.0 in	3.5 in	11.0 in	7.0 in	22



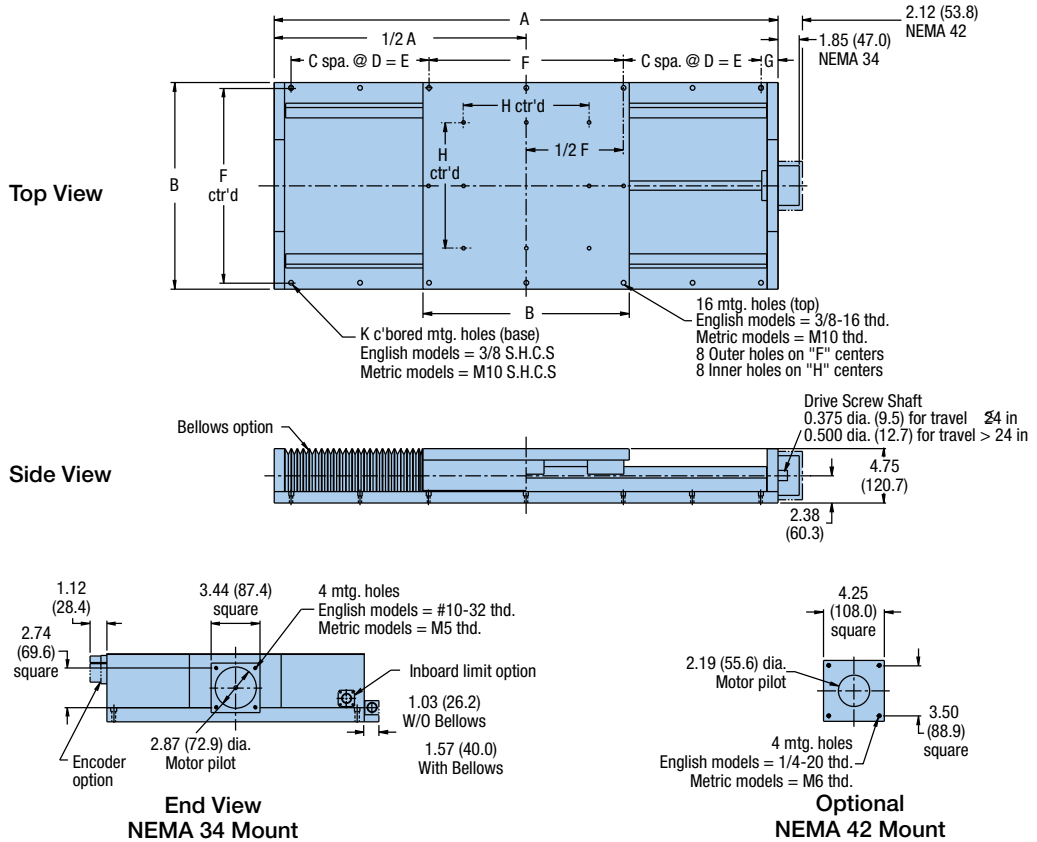


418000/424000 Series Dimensions

Dimensions – in (mm)

English Model Dimensions Shown

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Screw Driven Tables

Model No.	Travel	Travel with Bellows	A	B	Quantity C	D	E	F	G	H	Quantity K
418000 Series (English Measurement)											
418004ST-E	4 in	2.1 in	24.0 in	18.0 in	1	2.0 in	2.0 in	17.0 in	1.5 in	11.0 in	10
418006ST-E	6 in	3.7 in	26.0 in	18.0 in	1	3.0 in	3.0 in	17.0 in	1.5 in	11.0 in	10
418012ST-E	12 in	8.3 in	32.0 in	18.0 in	1	6.0 in	6.0 in	17.0 in	1.5 in	11.0 in	10
418018ST-E	18 in	13.0 in	38.0 in	18.0 in	2	4.0 in	8.0 in	17.0 in	2.5 in	11.0 in	14
418024ST-E	24 in	17.7 in	44.0 in	18.0 in	2	6.0 in	12.0 in	17.0 in	1.5 in	11.0 in	14
418030ST-E	30 in	22.3 in	50.0 in	18.0 in	2	7.0 in	14.0 in	17.0 in	2.5 in	11.0 in	14
418036ST-E	36 in	27.0 in	56.0 in	18.0 in	3	6.0 in	18.0 in	17.0 in	1.5 in	11.0 in	18
418048ST-E	48 in	36.3 in	68.0 in	18.0 in	4	6.0 in	24.0 in	17.0 in	1.5 in	11.0 in	22
418060ST-E	60 in	45.7 in	80.0 in	18.0 in	4	7.0 in	28.0 in	17.0 in	3.5 in	11.0 in	22
48000 Series (English Measurement)											
424004ST-E	4 in	2.1 in	30.0 in	24.0 in	1	2.0 in	2.0 in	23.0 in	1.5 in	17.0 in	10
424006ST-E	6 in	3.7 in	32.0 in	24.0 in	1	3.0 in	3.0 in	23.0 in	1.5 in	17.0 in	10
424012ST-E	12 in	8.3 in	38.0 in	24.0 in	1	6.0 in	6.0 in	23.0 in	1.5 in	17.0 in	10
424018ST-E	18 in	13.0 in	44.0 in	24.0 in	2	4.0 in	8.0 in	23.0 in	2.5 in	17.0 in	14
424024ST-E	24 in	17.7 in	50.0 in	24.0 in	2	6.0 in	12.0 in	23.0 in	1.5 in	17.0 in	14
424030ST-E	30 in	22.3 in	56.0 in	24.0 in	2	7.0 in	14.0 in	23.0 in	2.5 in	17.0 in	14
424036ST-E	36 in	27.0 in	62.0 in	24.0 in	3	6.0 in	18.0 in	23.0 in	1.5 in	17.0 in	18
424048ST-E	48 in	36.3 in	74.0 in	24.0 in	4	6.0 in	24.0 in	23.0 in	1.5 in	17.0 in	22
424060ST-E	60 in	45.7 in	86.0 in	24.0 in	4	7.0 in	28.0 in	23.0 in	3.5 in	17.0 in	22



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:

4 12 018 ST – E P D1 L2 C1 M2 E2 W1

① **Series**

4

② **Table Width**

8 8 in, 200 mm
12 12 in, 300 mm
18 18 in, 450 mm
24 24 in, 600 mm

③ **Table Travel**

004 4 in, 100 mm
006 6 in, 150 mm
012 12 in, 300 mm
018 18 in, 450 mm
024 24 in, 600 mm
030 30 in, 750 mm
036 36 in, 900 mm
048 48 in, 1200 mm
060 60 in, 1500 mm

④ **Table Style**

ST

⑤ **Mounting**

E English
M Metric

⑥ **Grade**

P Precision

⑦ **Drive Screw**

D1 0.2 in lead precision ground ballscrew

⑧ **Limit/Home**

L1 No limit/home switches
L2 Magnetic limit/home switches - inboard
(not available for 4", 6", 48" or 60" travel models)
L3 Magnetic limit/home switches – outboard
L4 Optical limit/home switches - outboard

⑨ **Motor Coupling**

C1 No coupling
C2 0.375 in bore, bellows
C3 0.625 in bore, bellows
(short haft 106-178 & 106-250 motors)
C4 0.625 in bore, bellows
(long shaft 106-205 motor)

⑩ **Motor Mount**

M1 34 frame size
M2 42 frame size

⑪ **Encoder**

E1 No encoder
E2 Linear encoder, English, 0.0001 in resolution
E3 Linear encoder, Metric, 1.0 um resolution

⑫ **Way Covers**

W1 No covers (open)
W2 Bellows*

*Installing bellows option (W2) reduces table travel; refer to dimension tables for table travel with bellows.