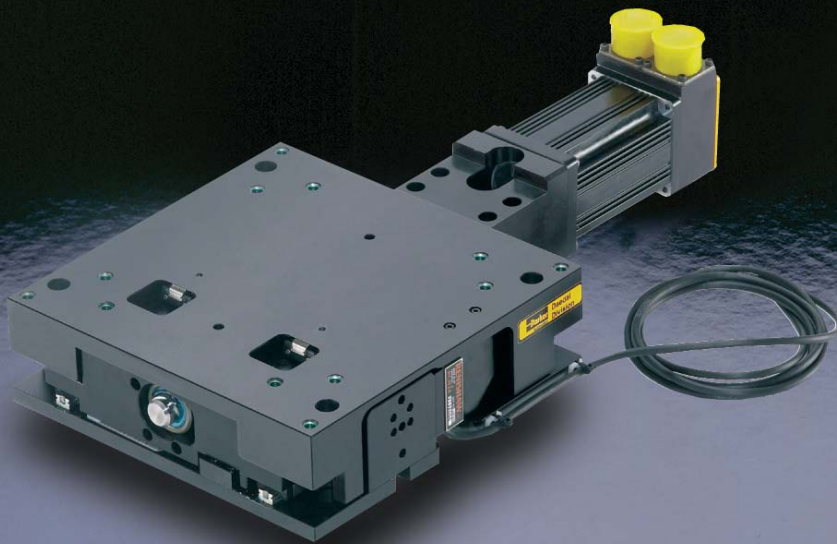
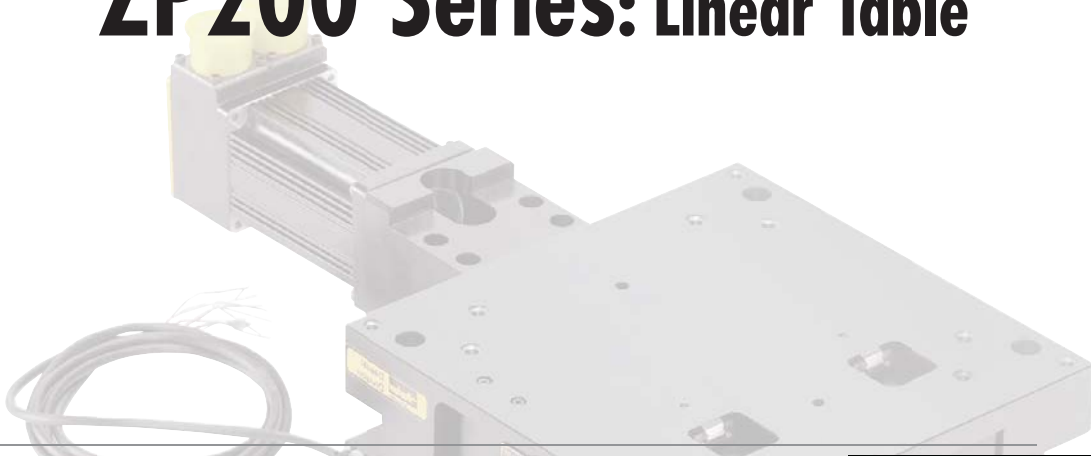


# ZP200 Series: Linear Table



Square Rail Linear Tables



## ZP200 Series: Overview

### Features

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



ZP200 utilized in a laser test set-up

### Quality Design and Construction

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

#### Options:

- Linear encoder option with selectable resolutions of 0.1, 0.5, 1.0  $\mu\text{m}$ .
- Fail-safe brake (field installable - mounts directly to the ballscrew drive).
- Class 10 cleanroom preparation.
- Selectable motor mounting and couplings for SM16 or NEMA 23 servo or stepper motors.
- Easily adjusted travel “limit” and “home” sensors are provided in an enclosed sensor pack.

# Z Wedge Series

## Specifications:

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

1 Measured 38mm directly above the true center of the top mounting surface.

2 Measured using calibrated lead value (provided).

3 Slope correction value provided.

4 Lift per 1 motor shaft revolution. Lift lead listed is nominal. All units are provided with calibrated lead value.

5 Torque ratings are measured with unit unloaded, traveling upward.

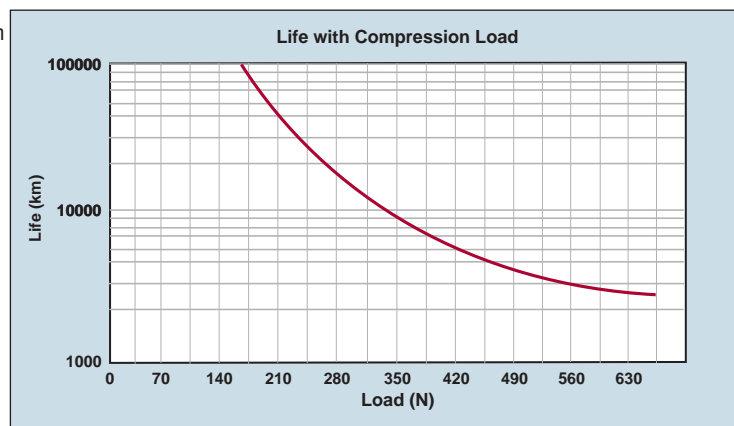
6 Measured directly over encoder on outer edge.

7 Pitch and Roll Specifications are with no load, addition of load increases Pitch and Roll error by 10 Arc seconds per 5 Kg of load assuming the load CG is located in the center of the stage platform. Cantilevered loading increases these errors further.

## Table/Life Load Chart

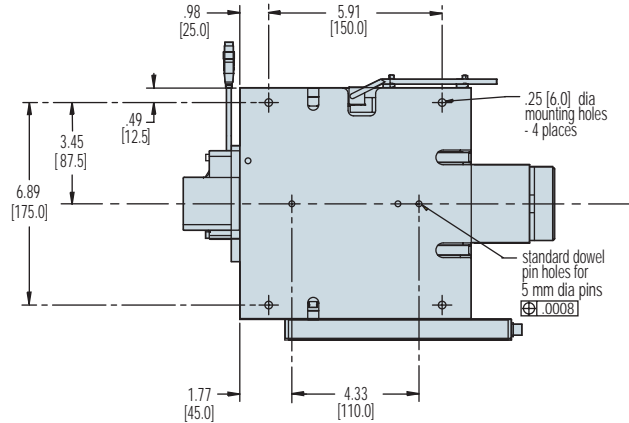
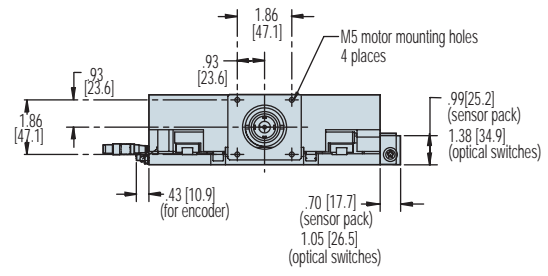
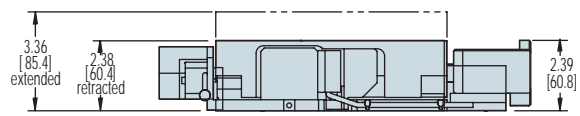
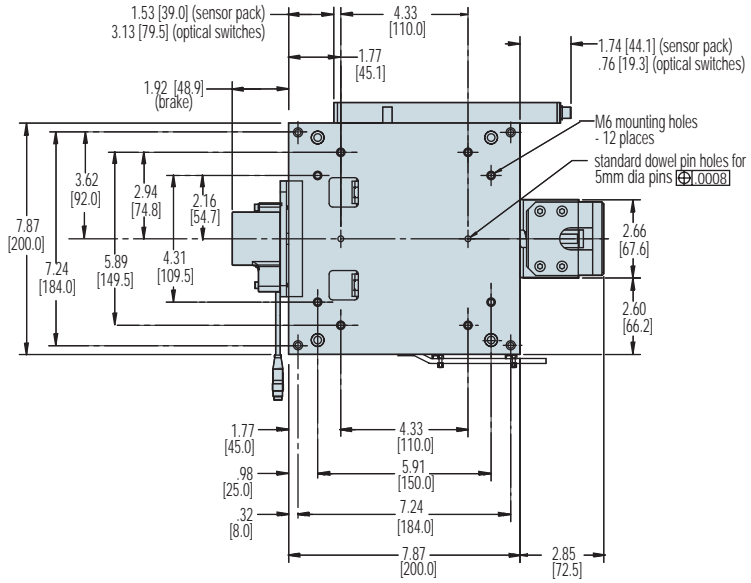
### Compression (normal load)

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





## Dimensions inch (mm)

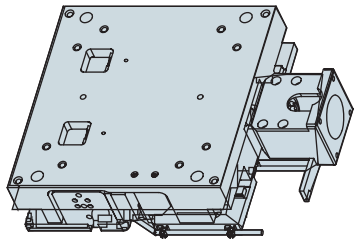


### 100-9274-01 XR Adapter Plate

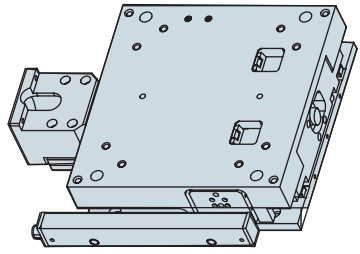
A multi-axis adapter plate is available to mount the ZP200 to an XR/LXR table or, mount an XR/LXR table to the ZP200. This plate is 9.53 mm thick and includes standard dowel pin holes for repeatable alignment.

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

\*Not recommended - consult factory.



Encoder



Sensor Pack

# Z Wedge Series

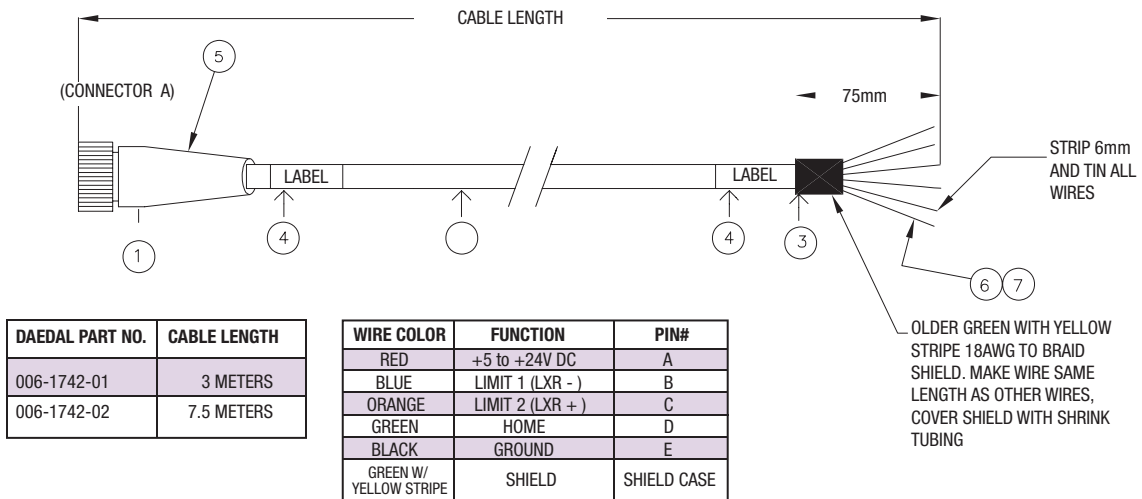
## LIMIT & HOME SENSORS

Switch Type	Proximity			
Input Power	5-30VDC, 20mA			
Output	100mA (max)			
Repeatability	+/- 10 microns (unidirectional)			
Wire Color Code	3 Wire Sensor		4 Wire Sensor	
	(+) Supply	Brown	(+) Supply	Brown
	Output	Black	(N.O.) Normally Open Output	Black
	(-) Supply	Blue	(N.C.) Normally Closed Output	White
			(-) Supply	Blue
LED Color	Yellow			
Sensor Pack Switch Location	The L11-L14, H11-H14 Limit/Home options are enclosed in a sensor pack that is bolted to the side of the table. These sensors are adjustable along the length of the sensor pack. (Wire terminates in a 5-pin connector; extension cable included)			
N.O./N.C. Options	Normally Open (N.O.) switches are typically used as home sensors and are typically located between the limit sensors. Normally Closed (N.C.) switches are generally used as defense circuits to prevent damage to components caused by over-travel.			
Sinking/Sourcing Options	Sinking Switches (a.k.a. NPN): The output lead of this switch provides an electrical path to ground when activated. Sourcing Switches (a.k.a. PNP): The output lead of this switch provides a positive (+) voltage potential relative to ground. Note: refer to the controller's manual for input compatibility.			
Temperature Range <sup>1</sup>	+41° F to +158° F			
Vacuum Rating	1 x 10 <sup>-3</sup> Torr			

1. This range represents the maximum allowable temperature. Catalog specifications are guaranteed only at 20o C.

**CAUTION: REVERSING SUPPLY POTENTIAL WILL DESTROY SENSOR**  
 Brown: +5 to +30VDC Supply  
 Blue: Ground Supply  
 Black: Signal Output

### Sensor Pack Cable Wiring Diagram



NOTE: LIMIT 2 IS THE LIMIT SWITCH ON THE CONNECTOR END OF THE SENSOR PACK HOUSING.



## Order Example

	ZP200	T01	M	S	D2	H12	L12	C3	M3	E3	B2	R1	P1
<b>Model Series</b> .....	ZP200												
<b>Travel</b>													
25 mm .....		T01											
<b>Mounting</b>													
<b>Metric</b> .....			M										
<b>Grade</b>													
Precision .....				P									
Standard .....				S									
<b>Drive Screw</b>													
5 mm lead .....					D2								
10 mm lead .....					D3								
20 mm lead .....					D4								
<b>Home Sensor</b>													
No sensor .....						H1							
N.C. current sinking - sensor pack .....						H11							
N.O. current sinking - sensor pack .....						H12							
N.C. current sourcing - sensor pack .....						H13							
N.O. current sourcing - sensor pack .....						H14							
<b>Travel Limit Sensors</b>													
No sensor .....						L1							
N.C. current sinking - sensor pack .....						L11							
N.O. current sinking - sensor pack .....						L12							
N.C. current sourcing - sensor pack .....						L13							
N.O. current sourcing - sensor pack .....						L14							
<b>Coupling</b>													
No coupling .....								C1					
0.25" bore Bellows .....								C3					
0.38" bore Bellows .....								C5					
9.0 mm (0.35") bore Bellows .....								C23					
<b>Motor Mount</b>													
No motor mounts .....								M1					
SM16/BE16 motor .....								M2					
NEMA 23 and SM23 motors .....								M3					
BE23 motor mount .....								M61					
<b>Linear Encoder Option</b>													
No encoder .....								E1					
1.0 micron .....								E2					
0.5 micron .....								E3					
0.1 micron .....								E4					
5.0 micron .....								E5					
Sine/cosine encoder .....								E7					
<b>Brake option</b>													
No brake .....								B1					
Shaft brake .....								B2					
<b>Environmental</b>													
Class 1000 .....								R1					
Class 10 .....								R2					
<b>Place Holder</b> .....													P1