



ZE Vertical Motion Table



Features

- :: Low profile with no cantilevering
- :: Anti-backlash friction nut
- :: Excellent Repeatability

Description

Dover's ZE Elevator Stages provide a very compact, accurate means of achieving vertical motion. Precision, non-recirculating ways in each of the four corners keep pitch and yaw below 15 arcseconds over full travel. The mechanical way configuration provides very straight, smooth, and repeatable motion which is needed to satisfy demanding inspection, scanning, and probing applications.

Multiple travel options are available from 0.5 inches up to 1.5 inches in a low profile design. The 8 inch square mount plate allows the load to be placed in line with the lift force, and eliminates the need to can-

tilever the payload. Dover's Z-Elevator Stages incorporate a 23 frame motor (either stepper or servo), coupled to a leadscrew which drives a cam-follower along a wedge. This design provides high resolution, while our anti-backlash friction nut ensures excellent repeatability.

Each stage includes precision Hall-effect limit switches, which terminate on convenient, locking D sub-mini connectors. The pitch of the leadscrew, the ratio of the wedge mechanism, the motor, and the controller together determine the resolution in Dover's Z-Elevator stages.

Stage Specifications

Base Model	ZE-05	ZE-10	ZE-15
Travel (in)	0.5	1	1.5
Travel (mm)	12.5	25	38
Positional Accuracy ($\pm \mu\text{m}$) ¹	7.5	10	12.5
Bi-directional Repeatability ($\pm \mu\text{m}$)		1.5	
Flatness & Straightness (μm TIR)	5	10	10
Load Capacity (for all, kg) ²		10	
Maximum Leadscrew Velocity (rps) ³		15	
Wedge Ratio (Z : Leadscrew)	2.5 : 1	1 : 1	2.5 : 1
Moving Mass	2.3	2.7	
Moving Mass	7.4	9.1	

¹ Stepper motor; open loop. Accuracy improves with encoder feedback or compensation

² Please contact our Applications Engineers for loads exceeding the specification

³ Multiply leadscrew velocity by lead and divide by wedge ratio to determine maximum linear velocity

Configurations (Available for all Models)

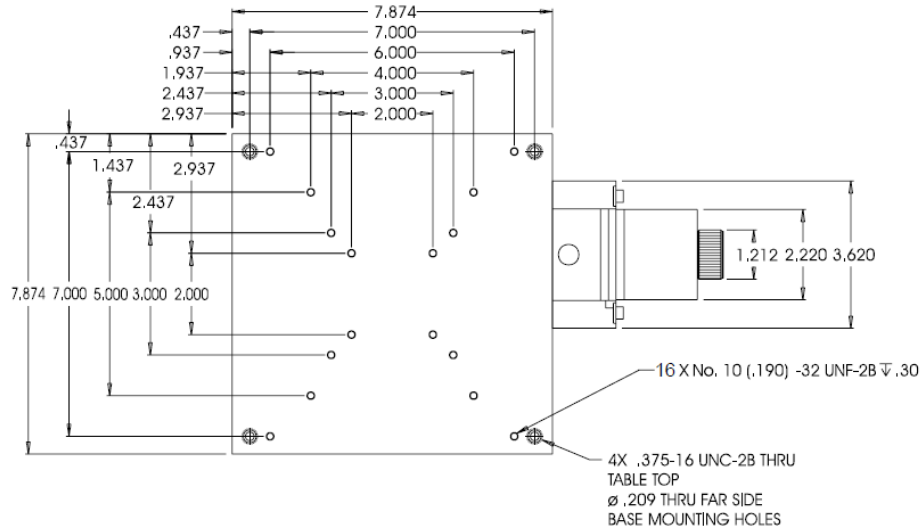
Leadscrew Lead	0.1 in Standard, also available with 0.5 in, 0.4 in, 0.2 in, 3mm, 2 mm, or 1.4 mm
Motor	200 step / rev Stepper Standard, also available with 400 step / rev or Servo
Encoder	Standard option has no encoder, options include: Rotary encoder with 2,000 or 4,000 counts/rev



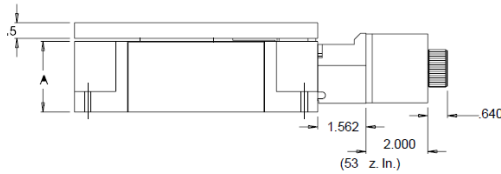
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Dimensions

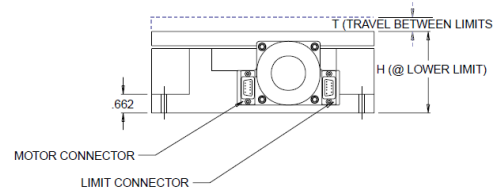
Top View



Side View



End View



MODEL	TRAVEL T	HEIGHT H	A
ZE-050-SM	0.50	2.874	2.274
ZE-100-SM	1.00	3.150	2.615

Note: All dimensions are in inches.

Note: ZE-15 is larger than the ZE-05 and ZE-10

- The ZE-15 top plate dimensions are 9.875 x 10 inches.
- The ZE-15 Height is 6.5 inches

Third Angle Projection
Note: All Dimensions in Inches

Wiring Information

Pin	Motor Connector (DE-9P)		Limit/Encoder Connector (DE-9S)	
	Stepper	Servo		
		Brushless	Brush	
1	Coil A	Motor Phase 1	Motor +V	+5 Volts
2	Coil \bar{A}	Motor phase 2	Not connected	+ Limit Output ¹
3	Not connected	Ground	Not connected	- Limit Output
4	Coil B	Hall input 1	Not connected	Index Output ²
5	Coil \bar{B}	Hall input 2	Not connected	Ground
6	Coil A, center tap	Motor phase 3	Motor -V	Encoder Channel A
7	Not connected	+5 volts	Not connected	Encoder Channel B
8	Not connected	Motor Fault Input	Not connected	Encoder Channel \bar{A}
9	Coil B, center tap	Hall input 3	Not connected	Encoder Channel \bar{B}

20130118ZE-05-A