

## Feature Summary

- Precision vertical travel up to 25mm
- Loads up to 10 kg
- Sub-micron resolution
- Compact design; the PZA25 has a low profile and is slim enough to give easy access to all sides of the load.
- Precision rolled ballscrew drivetrain.
- Integrated brushless servo motor
- Smooth, precise motion; ballscrew location minimizes roll and pitch errors during travel.
- Rotary encoder feedback
- PLG160 mounting configurations
- Class 10 cleanroom option

## Overview

Primatics PZA25 Series elevator tables offer an ideal solution for applications that require small incremental vertical movements. The design and components ensure sub-micron resolution in a compact profile and make the PZA ideal for semiconductor inspection, fiber optics assembly and machine vision applications requiring smooth motion, exceptional stiffness, and high resolution.

## Smart Design

The PZA accomplishes its vertical motion with a moving wedge design. The wedge converts horizontal movement from a ballscrew into vertical elevation of the PZA's tabletop. A high quality linear bearing system eliminates motion in the horizontal plane. The PZA series stages feature a preloaded, precision rolled ballscrew drivetrain, giving the PZA micron sensitivity, high repeatability and long life. A brushless frameless motor is built around the ballscrew, eliminating the motor coupler. This design approach minimizes the overall stage footprint as well as system windup.

## Superior Vertical Motion

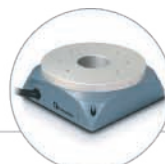
The PZA offers a higher performance, space-saving alternative to traditional Z-axis stages: The inclined plane approach offers superior performance through use of our reliable ballscrew drivetrain while minimizing the overall height. Since the center of the carriage is centered over the bearings, deflections from a cantilevered load are minimized.

## Additional Standard Features

The PZA Series elevator table come standard with integral limit switches, mechanical hard stops, and a home index. The stage tabletop is protected with a clear anodize finish and metric mounting patterns are standard.



Linear Positioning



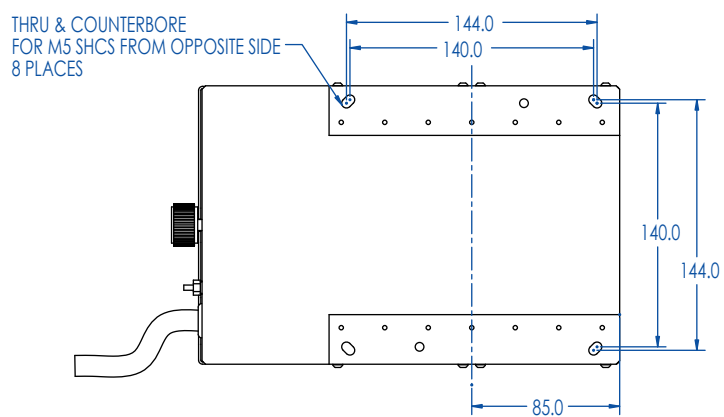
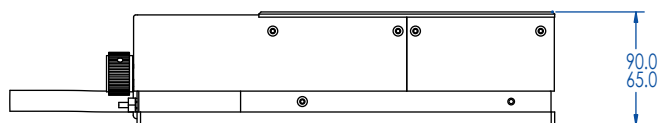
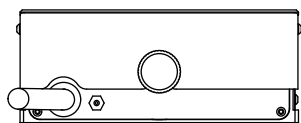
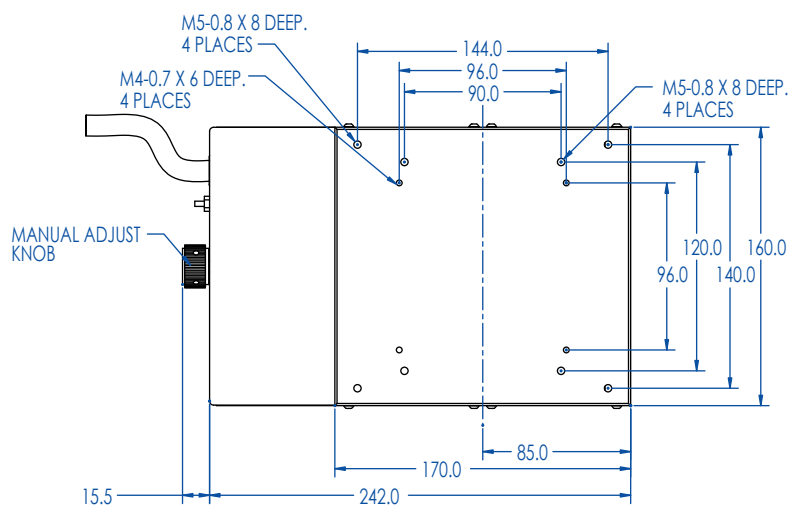
Rotary Positioning



Motion Controls



OEM Solutions



All dimensions subject to change w/o notice.

Performance Specification	PZA25
Travel (mm)	25
Mechanical Drive System	2mm Lead Ballscrew w/ Brushless, Frameless Motor
Resolution ( $\mu\text{m}$ )	0.1
Accuracy ( $\mu\text{m}$ ) <sup>1,2</sup>	+/- 2.5
Repeatability ( $\mu\text{m}$ ) <sup>2</sup>	+/- 0.75
Max Speed (mm/s)	20
Maximum Load (kg)	10
Pitch, Roll & Yaw (arc-seconds) <sup>2</sup>	30
Finish	Tabletop & Base Clear Anodize
Weight (kg)	5.8

<sup>1</sup> Using measured slope correction data

<sup>2</sup> Specifications based on load COG within 25 mm or centerline of stage

All specifications subject to change w/o notice.

## TECHNICAL DATA

Frameless Motor Spec	PZA25
Torque Constant (N-m/Amp)	0.10
Back EMF Constant (Volts/Krpm)	10.3
Terminal Resistance ( $\Omega$ )	1.6
Terminal Inductance (mH)	1.5
Continuous Torque (N-m) <sup>1</sup>	0.23
Continuous Current (Amp)	2.3
Peak Torque (N-m) <sup>2</sup>	2.9
Peak Current (Amp)	29
Rotor Inertia (g-cm <sup>2</sup> )	78.6
Number of Poles	6

<sup>1</sup> At 25°C temp rise

<sup>2</sup> At 10% duty cycle and 1 second maximum

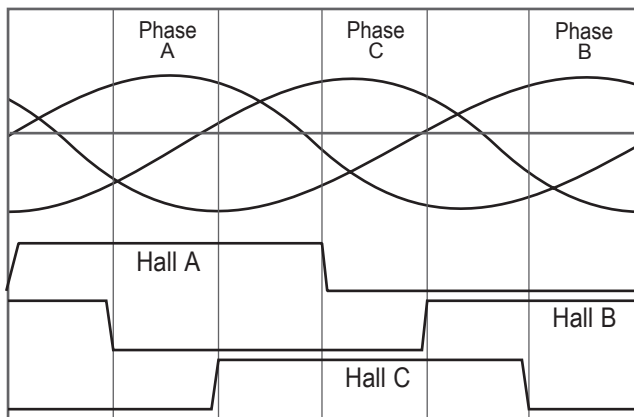
All specifications subject to change without notice

Encoder Specifications	Specification
Input Power (ma)	5 VDC +/- 5%, 150 ma
Output	Square wave differential line driver
Reference (Z channel)	Synchronized pulse, duration equal to one resolution bit

Limit & Home Specifications	Specification
Input Power	+12 to +24 VDC, 50 ma
Output	NC Current Sinking, Sink current maximum of 100 ma

Hall Effect Specifications	Specification
Input Power	+5 to +12 VDC, 30 ma
Output	Open collector, Current sinking, 20 ma Max

### Commutation Chart



# CONNECTOR PIN OUTS

## Servo Axis connector

Mating Connector: FCI (Burndy) Male, circular connector, 28 contacts, size 20 shell pin-out

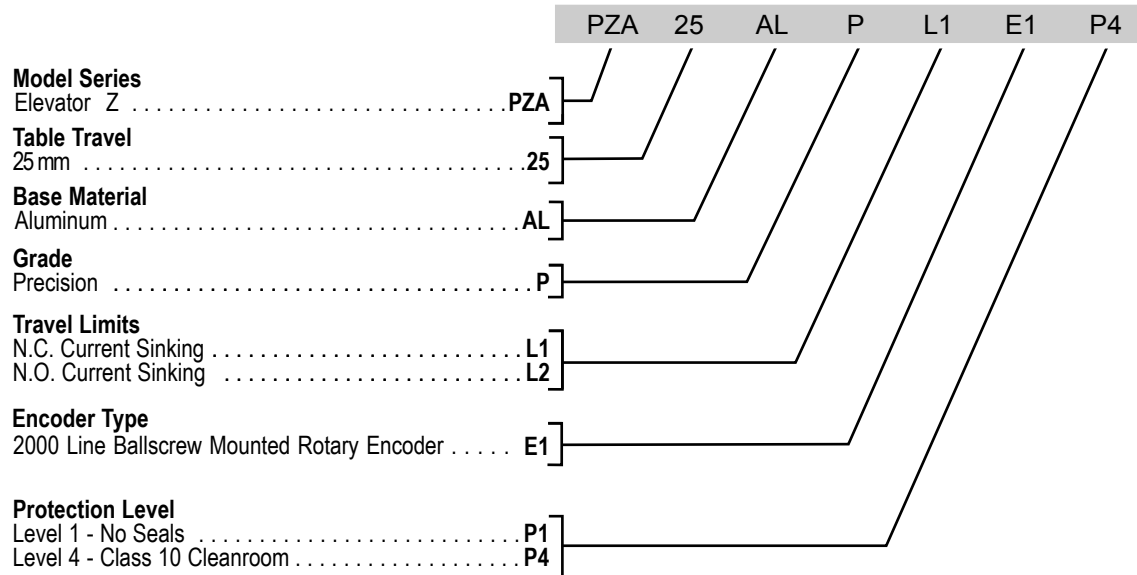
Pin	Function
A	Motor A
B	Motor B
C	Motor C
D	Motor Shield
E	Encoder 5V - power for encoder
F	Encoder A+ output
G	Encoder A- output
H	Encoder B+ output
J	Encoder B- output
K	Encoder Shield
L	12VDC - for limit, home, and temp sensor
M	DCCOM
N	NC
P	NC
R	NC
S	Chassis

Pin	Function
T	Hall V+
U	Hall V-
V	Encoder Common
W	Encoder Index +
X	Encoder Index -
Y	Forward Limit Switch - switch to DCCOM in normal operation
Z	Reverse Limit Switch - switch to DCCOM in normal operation
a	NC
b	Hall A
c	Hall B
d	Temperature monitor - connect to DCCOM for temperature OK
e	Hall C

## MODEL NUMBER CONFIGURATION

OPTIONS:

SAMPLE MODEL NUMBER:



Last Updated 08/13/10