



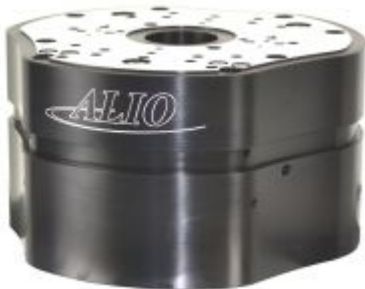
(<https://www.alioindustries.com/>)

## Z-Lift and Vertical Axis Motion Systems

ALIO Industries' Z-Lift motion platforms were created to replace the inaccuracies of the ever present Z-Wedge vertical stages as well as reduce the footprint and improve performance of linear stages mounted in the vertical orientation. Every component in a motion stage adds to the total error. Since Z-wedges have a minimum of three machined components with complex angles, three sets of bearings, a motor via a coupling and an encoder, the result is a very inaccurate stage.

ALIO answers this with a family of very high accuracy, high repeatable vertical stages.

**Click on thumbnails to enlarge**



(/application/files/5515/4509/2504/Nano\_Z\_2.jpg)

### Patented NANO Z®

Increased demands for True NANO® metrology and process lead ALIO to design and manufacture the NANO Z® patent pending Z lift air bearing stage to exceed all past design issues of tip and tilt while increasing the accuracy to less than 100 nanometers with standard Renishaw Invar encoders. The counterbalanced NANO Z® can easily hold heavy vacuum wafer chucks and still excel with nano-precision over 24 mm of travel.



(/application/files/5515/6357/6136/ficonTEC\_XYZvc\_-\_ALIO.jpg)

## Mechanical Bearing Z Stage

The advantage of this family of vertical Z-lift stages:

- Linear or voice coil motors
  - High rigidity crossed roller bearings
  - High force motors
  - Linear encoders
  - Air counter balanced
  - Motor, bearings, encoder and counterbalance all on approximate centerline of the stage
  - Payload can mount directly to the face or top surface of the stage to eliminate the weakness and resonant frequency issues associated with additional brackets
  - Excellent dynamic performance
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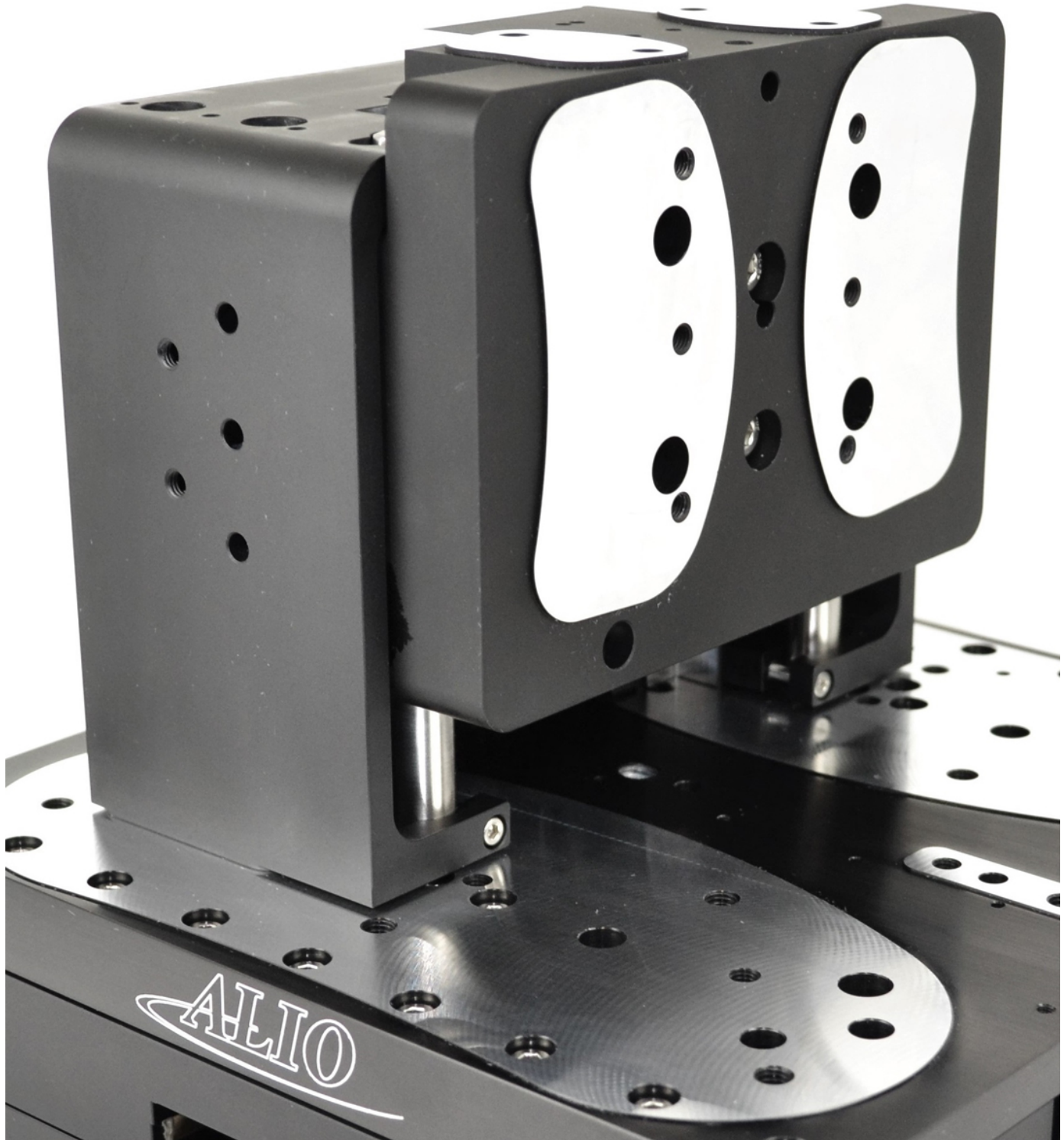


(/application/files/2515/4509/2820/AI-VC-2400Z-CB.jpg)

## Compact Voice Coil Z Stage

The advantage of this family of vertical Z-lift stages:

- Compact design, low profile height
  - Voice coil motors
  - High rigidity crossed roller bearings
  - Linear encoders
  - Air counter balanced
  - Motor, bearings, encoder and counterbalance all on approximate centerline of the stage.
  - Payload can mount directly to the face or top surface of the stage to eliminate the weakness and resonant frequency issues associated with additional brackets
  - 4X to 10X more precise than Z-wedge stages.
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(/application/files/9415/4509/3002/AI-LM-3000-Z-MCB.jpg)

## GeoSymmetric® Z Stage, Linear Motor Drive with Magnetic Counterbalance

The advantage of this family of vertical Z-lift stages:

- Sturdy design minimizing Abbé errors
- DC Servo Linear Motors
- High rigidity crossed roller bearings
- Linear encoders

- Motor, bearings, encoder and counterbalance all on approximate centerline of the stage.
  - Payload can mount directly to the face or top surface of the stage to eliminate the weakness and resonant frequency issues associated with additional brackets
  - 4X to 10X more precise than Z-wedge stages.
- 



(/application/files/4715/4509/3106/AI-LM-15000-CB\_SMALL.jpg)

## Linear Motor Counter Balanced Z Stage

The advantage of this family of vertical linear stages:

- ALIO's nano-precision design
  - Linear servo motors
  - High rigidity crossed roller bearings
  - Linear encoders
  - Counter balanced with dual frictionless cylinders balancing the load. The cylinders are in-line with the motor, bearings and encoder thus they do not create an Abbé error
  - Motor, bearings, encoder and counterbalance all on approximate centerline of the stage.
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(/application/files/3715/4509/3262/AI-LM-5000-AB-CB.JPG)

## Air Bearing Linear Motor Z Stages

The advantage of this family of vertical linear stages:

- Granite base to ensure exceptional flatness and straightness
- Linear servo motors
- High rigidity, nano-precision air bearings

- Linear encoders
  - Counter balanced with dual frictionless cylinders balancing the load. The cylinders are in-line with the motor, bearings and encoder thus they do not create an Abbé error
  - Counterbalance brackets can be changed if required to assure counterbalance force is transferred through the mass center of the load.
  - Motor, bearings, encoder and counterbalance all on approximate centerline of the stage.
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(/application/files/2715/4509/3422/Hi\_Hz\_LM\_Z.jpg)

## Linear Motor Magnetic Counter Balanced Z Stage for High Frequency and Quick Focus

The advantage of this family of vertical linear stages:

- ALIO's nano-precision design
  - Linear servo motors
  - High rigidity crossed roller bearings
  - Linear encoders
  - Removes the need for air lines to counter balance and can be designed for motion AWAY from crashing on a power-off situation
  - Motor, bearings, encoder and counterbalance all on approximate centerline of the stage.
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