

Custom Linear Motor Stage Designs: Success Story from Parker

CUSTOM
DESIGNS

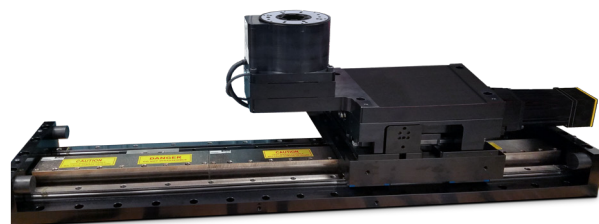
Parker provides engineering designs to customers requiring custom linear motor stage solutions with all critical specs considered for the application. Working with the customer, we develop motion and control solutions that seamlessly integrate to your finished products. Here's an example of Parker working with a customer to find a custom solution when standard products would not work.

CUSTOM MOTION SOLUTIONS: SUCCESS STORY #5

Application: Semiconductor inspection, testing, and metrology
Suitable for laser scanning applications requiring rotation

Standard solution: Did not meet customer's footprint and precision specification requirements

Custom solution: Provided the optimal accuracy, flatness, and straightness, along with field replaceable cable management and the small footprint that the customer needed.



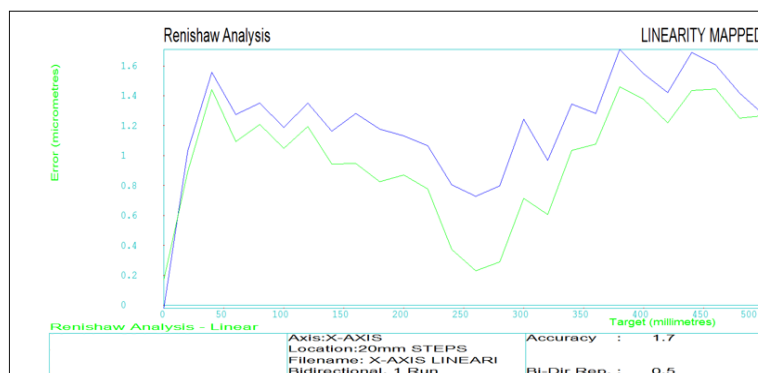
Application Requirements

Design Outcome X Axis

Repeatability of +/- 6.0 μm	0.5 μm
Mapped accuracy of 15.0 μm	1.7 μm
Flatness and straightness of 15.0 μm	15.0 μm
Form factor of Z axis	Achieved
Precision rotation needed	Achieved

Design Benefits

High stiffness machined parts
Precision miniature rotary stage
System-level cable management with replaceable cables



MAPPED Accuracy, required 15 microns, achieved 1.7 microns.
Repeatability required +/- 6 microns, achieved 0.5 microns

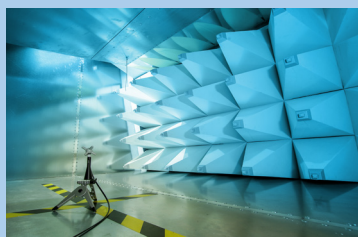
Mapped accuracy performance for linear motor stage (X-axis) of custom X-Z- Θ system.

Custom Linear Motor Stage Options Parker Provides

Parker offers product and service unrivalled in the electromechanical field. Contact our application engineering department early in your design cycle to discuss your requirements. We'll help you find the right solution and help shorten your design and product cycles.



Precision Metrology



EMI Testing



Clean Room Testing

Partner with Parker for Your Custom Linear Motor Stage Requirements

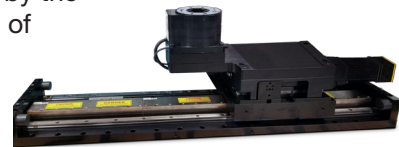
Key applications across various markets all require certain types of precision specifications to obtain the desired results. While there are some variances, the types of applications can be classified into categories. No matter the type, Parker has the ability to provide industry leading specifications required by the customer.

Parker engineering designs custom linear motor stage solutions with all critical specs considered for the application, such as those listed below.

STATIC METROLOGY

Static Metrology is when the sample is not in motion while being measured by the metrology instrument. Key factors for these applications are precise control of settling time and stability. Parker has designed custom linear stages to specifications meeting these requirements including:

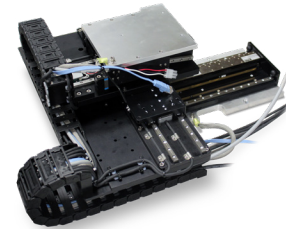
- Stability to sub 100nm
- Move and settling times in under 100msec
- Sub-micron repeatability (500nm)



DYNAMIC METROLOGY

Dynamic Metrology is when the sample is in motion while being measured by the metrology instrument. Key factors for these applications are precise control of velocity and the stage's profile (flatness, stiffness, etc). Parker has designed custom linear stages to specifications meeting these requirements including:

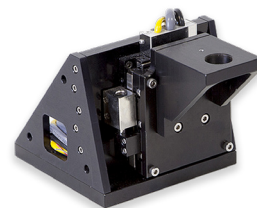
- Sub 20 arc-sec Abbe Errors (roll, pitch, yaw)
- Straightness & Flatness (+/- 3 microns)
- Constant Velocity to meet application needs



FOCUSING

The final type are applications requiring a motion of axis for focusing on the sample being measured. Usually, this axis has a vertical orientation. Key factors for these applications are having high resolution and stability. Parker has designed custom linear stages to specifications meeting these requirements including:

- Resolution down to 50nm
- Stability to sub 100nm
- Move and settling times in under 100msec



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Life/Reliability Testing



Stage/System Burn-in



Test Stand Development