

Custom Linear Motor Stage Designs: Success Story from Parker

CUSTOM
DESIGNS

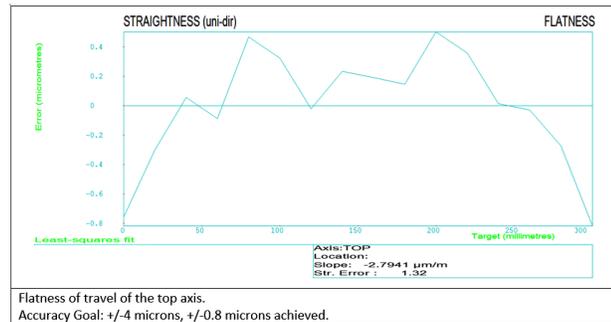
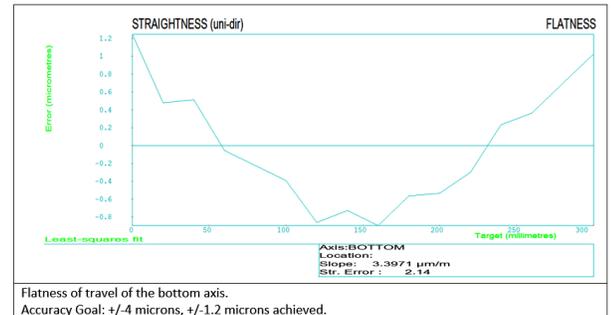
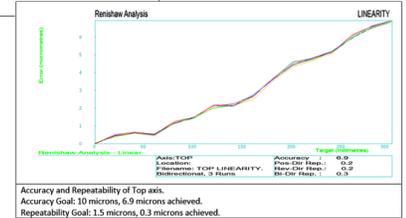
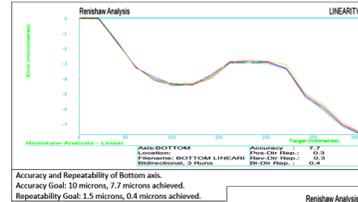
Parker provides engineering designs to customers requiring custom linear motor stage solutions with all critical specs considered for the application. Working with the customer, we develop motion and control solutions that seamlessly integrate to your finished products. Here's an example of Parker working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

CUSTOM MOTION SOLUTIONS: SUCCESS STORY #1

Application: Laser Line scanning, Digital Inspection / Metrology

Standard solution: Good choice for accuracy and repeatability

Custom solution: Provided accuracy and repeatability, plus the optimal flatness and cable management outcomes that the customer needed.



Performance graphs for custom XY system.

Application Requirements vs Design Outcome

Application Requirements	Design Outcome	
	Bottom Axis	Top Axis
Flatness and Straightness less than +/- 4.0 μm over 300 mm x 300 mm travel zone	+/- 1.2 μm	+/- 0.8 μm
Repeatability of 1.5 μm	0.4 μm	0.3 μm
Total Accuracy of 10.0 μm	7.7 μm	6.9 μm
Additional room inside cable management	Internal cable management on X axis to maximize bearing spread	

Design Benefits

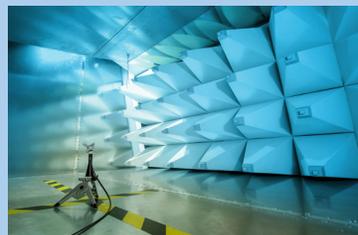
- High stiffness machined base plates
- No sealing to optimize carriage stiffness
- Monolithic design to reduce part count and increase stiffness
- Planar cable management on Y to allow for pass through of customer cables and provide large bend radius

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:

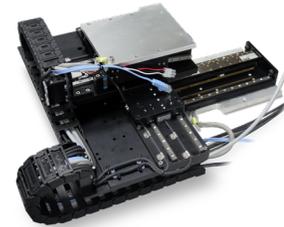
- Stability to sub 100nm
- Move and settling times in under 100msec
- Sub-micron repeatability (500nm)



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