

Accepted Manuscript

Title: Positioning Behavior Resulting from the Application of Ultrasonic Oscillation to a Linear Motion Ball Bearing during Step Motion

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PII: S0141-6359(17)30539-1
DOI: <http://dx.doi.org/10.1016/j.precisioneng.2017.09.007>
Reference: PRE 6657

To appear in: *Precision Engineering*

Received date: 9-9-2017
Accepted date: 11-9-2017

Please cite this article as: Tanaka Toshiharu, Oiwa Takaaki, Syamsul Hashim. Positioning Behavior Resulting from the Application of Ultrasonic Oscillation to a Linear Motion Ball Bearing during Step Motion. *Precision Engineering* <http://dx.doi.org/10.1016/j.precisioneng.2017.09.007>

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Positioning Behavior Resulting from the Application of Ultrasonic Oscillation to a Linear Motion Ball

Bearing during Step Motion

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Highlights:

Appropriate oscillation pattern for step motion is proposed.

Average displacement of positioning is improved from 1.0097 mm to 1.0030 mm.

Delay time of movement is improved from 14.975 ms to 14.65ms.

Ultrasonic oscillation reduces the frictional force of a linear motion ball bearing.

Ultrasonic oscillation is able to improve the positioning performance.

ABSTRACT:

In general, positioning accuracy of precision machineries equipped with a moving table is strongly influenced by friction encountered by linear motion rolling bearings. However, ultrasonic oscillation is

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