

# THE NEW DRIVING FORCE IN ULTRA HIGH SPEED MACHINING

## Tomorrow's Technology - Today



### ULTRA HIGH SPEED MACHINING

Rapid Traverse & Feedrate(X/Y/Z)  
**90 m/min (3,543in/min)**

Rapid Traverse Acc./Dec.(X/Y/Z)  
**1.5 G**

Feedrate Acc./Dec.(X/Y/Z)  
**1 G**

### ULTRA HIGH PRECISION

Max. spindle speed  
**60,000 min<sup>-1</sup>**

#20 flange and taper contact tooling  
Max. high speed synchronized tapping

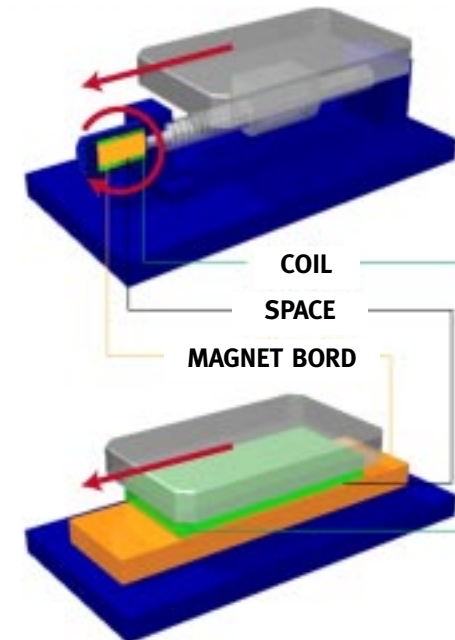
**6,000 min<sup>-1</sup>**

Roundness <Actual results>

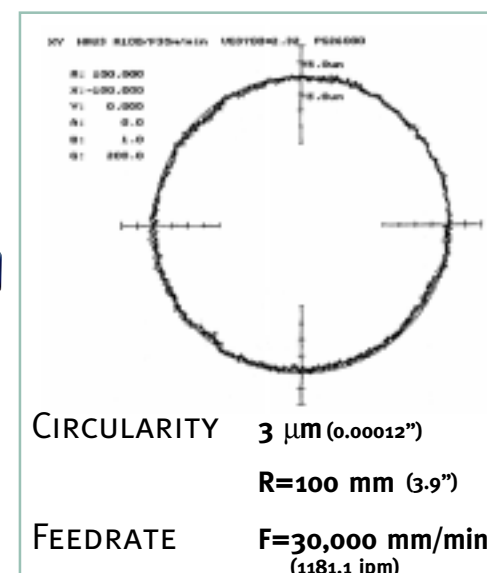
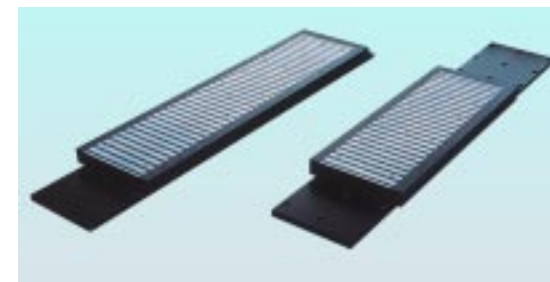
**3 μm (0.00012in)**



CURRENT MOTOR DRIVE :Linear movement converted by rotary motor drive



LINEAR MOTOR DRIVE :Linear movement used by directly

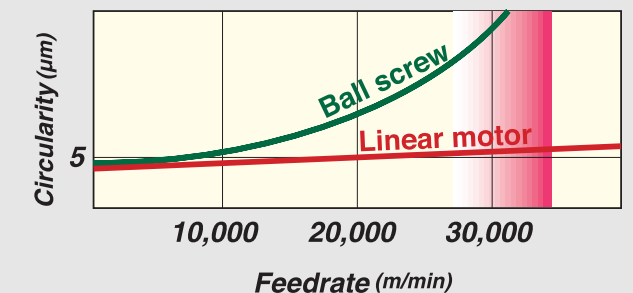


### LINEAR MOTOR TECHNOLOGY

The result of more than two years exhaustive development work with linear motor and ultra-high speed spindle technology, the LX-1 is the first of a new line-up of linear motor drive machines from Matsura. Offering gains in cycle time over more 'conventional' high speed machines of, typically, 60% or more, the LX-1 is ideally suited to the machining of intricate and complex 3D shapes such as those found in the mould & die industry where high accuracy and excellent surface finish is the normal requirement.

### STABLE ACCURACY

Relationship of Feedrate and Circularity



Linear motors, utilized on all three axes, provide major advantages, not just with regard to their high speed of operation but in terms of reducing the number of machine elements required and increasing precision. With no ballscrews, couplings, bearings, etc to contend with, backlash is eliminated while maintenance requirements are reduced. To overcome the yawing effect associated with gantry type structures, Matsura has configured the Y axis with two linear motors, each synchronized with the other. The resultant accuracy is testimony to the success of this design with circularity, for example, being an impressive 3 microns.