Details of Technology

Name of Technology	High Precision Lapping Machine Using 3D Fine Oscillation	Machinery
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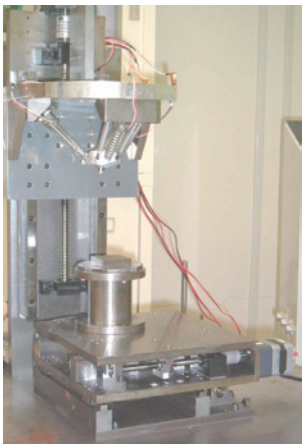
Key words	lapping, 3D fine oscillation, Surface finish of small areas	

What kind of technology is this?

Outline

A lapping machine that can provide finished surfaces without linear polishing marks left behind, even on small polishing areas

Existing finishing technologies such as honing and super-finishing give fine cross hatches on well finished surfaces. However, the surfaces that can be finished using these processes are limited to simple shapes such as cylindrical, flat, and spherical, and furthermore, finishing areas are limited to comparably wide areas. Also, although polishing methods such as barrel polishing, viscoelastic fluid polishing, magnetic fluid polishing and magnetic polishing are effective to improve surface roughness of parts having complex shapes in a short period of time, they present problems including low form accuracy in edge areas and inability to polish corner sections where it is hard for polishing particles to reach.



What are its applications?

This machine has a tool oscillating system that can give 3D fine oscillation (oscillation frequency is several hundred Hz) to the point of lapping tool. It can change the oscillation mode (linear oscillation, elliptical oscillation, “8” -shaped 3D oscillation, etc.) and the orientation of the tool motion in 3D space by computer control. This makes it possible to finish small areas that cannot be finished with rotating tools.

Related patents	Japanese Patent Application No. 2007-274793
Related materials	

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