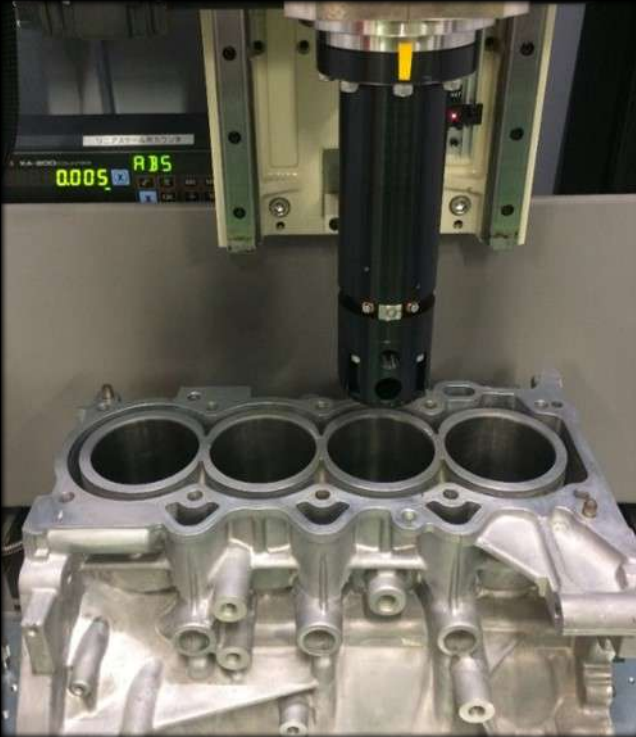


Laser Honing Contract Processing

with an Ultra-short Pulse Laser



- Feature 1 Possible to process grooves at the order of several μm on the inner surfaces of cylinders
- Feature 2 Possible to control the groove length and interval at \pm several μm
- Feature 3 1 μm or less of burr on the edges of the grooves

What is an ultra-short pulse laser?

It is possible to process at the order of several μm with the thermal impact suppressed to the minimum compared to regular nanosecond lasers. This is done by using a laser with a pulse width shortened to picoseconds or femtoseconds for the processing. It has excellent depth control and wavelength dependence is relatively short.

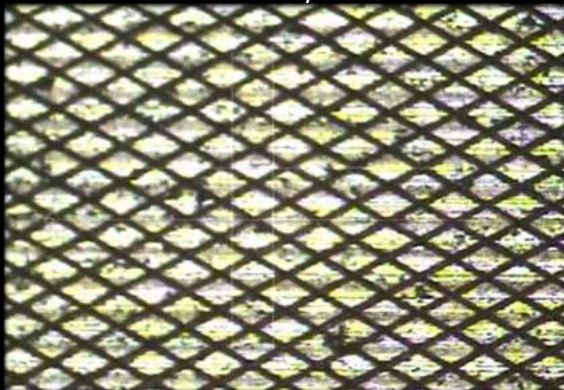
Therefore, it is possible to process diverse materials (e.g., various metals including cemented carbide, fine ceramics, resins and glass).

Usage Examples

Control of tribological performance and reduction in energy loss from friction by adding texture to sliding parts (e.g., cylinder liner and cylinder blocks)

Liner Inner Surface Processing Examples

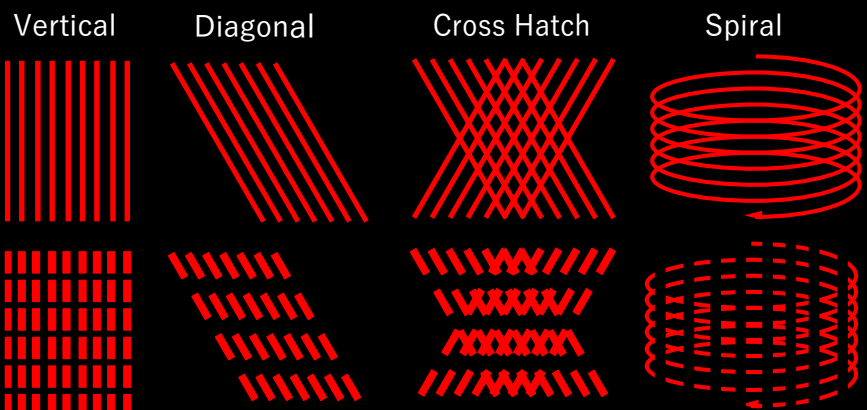
Groove Width of 30 μm : Cross Hatch



Groove Width of 30 μm : Broken Line Processing



Processing Pattern Examples



Device Specifications

- Processable cylinder inner diameter: Up to about $\Phi 75$ to 105 mm
- Processable cylinder length: Up to 250 mm
- Maximum operation speed: θ rotational speed of 1,500 rpm (continuous) and the Z-axis of 500 mm/sec
- Helical set angle: $0^\circ < \text{Set angle} < 90^\circ$
- Processable width: About 15 μm to 40 μm
- Processable groove depth: About half the width or diameter



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