



Here, we introduce the knowledge and various knowledge about the product TAKAMAZ a variety of machine tools. I hope you will help the daily work of customers.

the 2nd

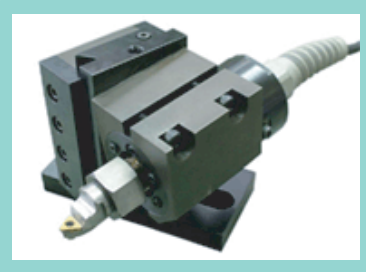
**Ultrasonic vibration cutting**  
**—Japanese excellent, unique technology—**

Recent cutting operations increasingly encounter difficult situations such as thin, ultrafine, and high-hardness workpieces or short tool life. If you handle low-rigidity or small-diameter long workpieces, you may have problems in cutting them because chattering gets out of control even when a tailstock is used. In this case, the ultrasonic vibration cutting unit (TAGE ELECTRIC CO., LTD.) should be of help to you. Ultrasound enables the cutting of materials regarded as impossible to date. Ultrasonic vibration cutting is surely a unique technique that Japan should be proud of, and gives high-value-added production.

**strong point**

1. Reduced resistance to cutting. → Cutting small-diameter workpieces with low rigidity is possible.
2. Prolonged tool life.
3. Geometrical surface roughness obtained.
4. Built-up edges form with difficulty.
5. The cutting temperature will not rise and distortion resulting from heat can be avoided.
6. The ability to cut hardened steel, hard-to-cut materials (like nickel and cobalt), tungsten alloy, etc. is expected though the cutting speed is limited.

Tailstock not required → Necessary floor space reduced



Oscillator



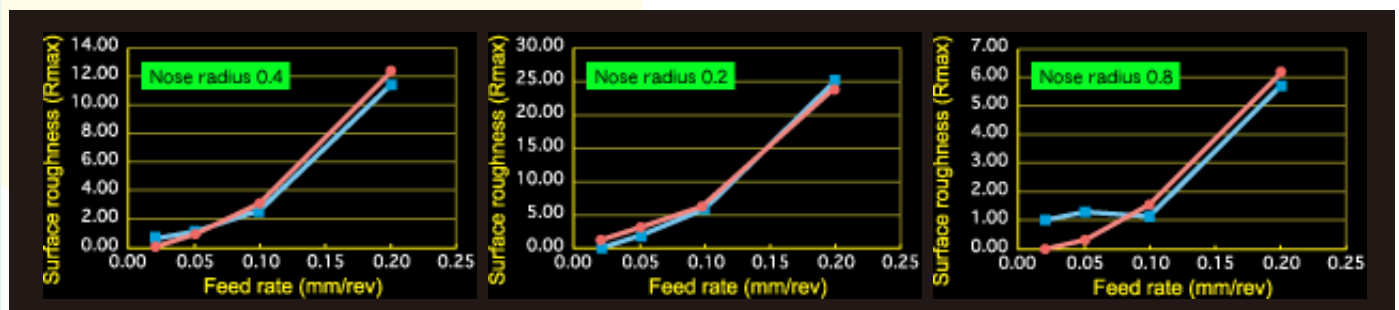
Ultrasound generator

◆Surface roughness data depending on different nose radii

Workpiece	S 4 5 C
Cutting speed	20m/min
Depth of cut	0.1mm

As shown on the next page, the finished surface roughness values (Rmax) are almost consistent with the logical values in any case of different nose radii.

—■ Logical value —● Measured value



Installing the ultrasonic vibration cutting unit on our USL-300 or A-WAVE will lead to high-value-added production.



USL-300/480



J-WAVE

- Low-viscosity oil-based coolant is required for ultrasonic vibration cutting.
- Available throw-away tips are limited.
- The cutting speed is limited. (The optimum cutting speed is 30 m/min though it varies with the kind of workpieces.)

(Reference literature)

Sonic Impulse instruction manual (TAGE ELECTRIC)

For inquiries about the ultrasonic vibration cutting unit mentioned in this site, contact your local distributor.