

High-precision Five-axis Machining for Titanium

1. Machining with one chucking by five-axis machining center

Through machining processing from chucking of a work to finishing, holding the work with one chucking is crucial for machining in high precision.

The **high-precision five-axis machining center** enables us to process a hard-to-machining material with one chucking for making a complicated shape such as a propeller shape or an artificial bone by sending the data from **three-dimensional CAD/CAM** system.

2. Processed sample

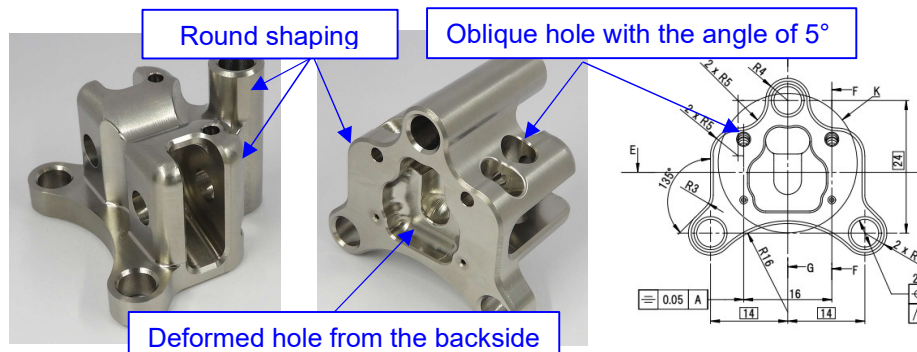
FUTA-Q engineers conversant with the machine utilize their skill to process a work having six processing surfaces with one chucking. The heat generated with machining affects the process accuracy. By taking measures to prevent the heat conducting into the material, the machining can process in high precision, resulting in the whole surface having the **finishing roughness of 0.8 μm** .

Material: Pure titanium (JIS second grade), a hard-to-machining material having high corrosion resistance and low thermal conductivity,

Size: 32 × 28 × 25 mm

Holes: five of 5 mm, two of 0.8 mm, two slant holes with 5° of 2 mm in diameter

Surface roughness: Ra 0.8 (0.8 μm)



3. Specification of our five-axis machining centers

- The mechanism for **thermally separation** giving the **minimum thermal effect** to a work
- Three-axis positioning in XYZ and two-axis positioning in rotation
- Spindle revolution speed: 30,000 rpm
- Jig replacing accuracy: 1 μm (actual value)
- The number of tools: 40



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