Ultra Slim Lathe

USL-480

The living environment all around us is ecologically evolving in automobiles, household appliances, and construction. Even in the "mother machines" (machine tools) that form the foundation of any industry, products with "reduced energy consumption", "reduced production installation space", "reduced waste/recycling", and small environmental footprint are in demand. The current situation that production conditions are often long on waste and short of efficiency, such as working with machines with excess production capacity, production with machines just taking up factory space, etc. It is here that we present "TAKAMAZ"'s environmentally-friendly machines. The compact slim lathe "USL-480" achieves the concept of "Small item machining with small machines" in half the space of conventional machines. We promise great benefits in our customer's facility investments through reducing expenses in unseen areas such as fixed land assets, power consumption, etc., while taking maximum advantage of your existing space.

“Caring for the environment” is our standard concept.

Suppresses thermal displacement, achieving circularity of 0.2μm, surface roughness of 0.2μm

- This machine was designed with a symmetrical structure, thereby suppressing the relative displacement, and suppressing component elongation due to heat. In addition, by arranging the X- and Z-axes independently of each other, connection was possible with the least distance from the slide surface to the spindle center, and having the ball screw adopt a pre-tension structure leads to stability in machining accuracy. In actual measurement data, the positioning accuracy was marked at ±1μm or less, and the repeating accuracy was no more than 1μm.

Pursuing High Accel/Decel Speeds with Built-in Spindle

- Reductions in non-cutting time were sought with a high-responsiveness spindle structure through shaft inertia optimization and the adoption of dedicated built-in motors. The time from 0 to Max.10,000rpm was marked at 1 second or less. In addition, we are pursuing stability in temporal changes by adopting shaft motion-type zero core structure and a structure not prone to influence by heat over time, centering on the shaft.

Spindle motor output characteristics diagram

- Cross Section of Built-in Spindle

Circularity

- Temporal Change

- The holder is mounted nearby X-axis home position. (Chucking Cylinder & Colet 20Mm Cycle)
Equipped with the Newly-developed High-speed Loader "ZEU30"

- Quick switchover from unitary to linked is required for dealing with variable-type, variable-quantity production. This device can be easily moved with a forklift, and the loading system is mounted using the top space on the machine, making possible the construction of a high-efficiency transport system.
- A loading time of 4 seconds, and a minimum cycle time of 10 seconds were achieved through downsizing the transport devices, such as by minimization of the loader transport shaft up/down axis stroke, distance between processes, etc.
- Peripheral devices such as various parts feeders, washing/measuring equipment, etc., can be arranged as needed.

Environmental Improvements are Connected to Production Rationalization.

In Pursuit of Space and Energy Use Half that of Previous Machines

- The structure of this machine is a 2-axis structure where a spindle-move axis (Z-axis) and a gantry style tooling (X-axis) intersect perpendicularly. Though this perpendicular structure arrangement is a heretofore unknown body compactness is achieved. In addition, the chip disposability is improved by the vertical shape, and is even superior in operator interface, resulting in a design intended to raise productivity.

- As the case of the 2-unit linked specification, the horizontal width of a single line can be reduced by about half compared to our previous "J-WAVE Linked Machine" devices, contributing to a reduction in factory installation space. In addition, maintenance points are concentrated at the front and back of the machine, and the possibility of sharing using only one chip conveyor when linked is considered, achieving increases in working efficiency.

- Disposability of cutting chip is improved by the vertical shape.

- Holding power was reduced by optimum motor size selection for each unit. In addition, environmental protection has been taken into account by energy savings through miniaturization of the structural components, materials used, reduction of waste, and reduction of startup loss of the rotors.

Operability Improved through Touch Panels

- In pursuit of improved operability, this machine has adopted touch panel monitors. A tool counter and work counter are integrated, standard, making display possible on the touch panel screen. The operation panel is simple, without the counter boxes attached in earlier models. Chuck OP/CL select /chip conveyor intermittent timing setting, etc., can be performed in the optional setting screen.

- A 10.4-inch color monitor is used.
As a result of having pursued the increased satisfaction of our various customers, TAKAMAZ’s rate of repeat orders actually reaches 90%. Then, over 80% of the machines we manufacture are machines customized to customer specifications. Product variations are arranged from 3inches to 10inches chuck size in wide range of varieties, and TAKAMAZ considers its mission to be providing products at low prices and short lead times, as well as “Only One” products though customizing to customer needs.