

μ-PRECISE CNC MACHINING

Flexible Prototype Production, Micro Precision, CNC Programming, Optical and Tactile CNC Measurement



CNC Swiss-type Automatic Lathe

Prototype and serial production of complex turned parts with diameter from 0.5 up to 23 mm.

Micro precision machining of parts with very high length-to-diameter ratio.

Complex machining functions: turning, milling, drilling and threading in one machine.

CNC Lathe Capabilities:

- Main spindle and sub spindle for complex machining
- Maximum machining diameter: 23 mm
- Up to 12 axis of control
- 5-axis simultaneous machining
- The 27-position tool station, up to 41 tool
- The power-driven tool units for frontal and lateral milling, drilling, threading
- The power-driven tool unit with adjustable angle for both spindles
- Deep-hole drilling
- Additional high-speed spindles with up to 80 000 rpm

Machined Materials

Wide range of machined materials including difficult-to-machine materials: e.g. stainless steels, titanium, Kovar, Inconel, ARCAP, brass, aluminum alloys...

Multitasking Machine

Combining turning and milling capabilities in one machine. Prototype production of complex turned and milled parts with diameter up to 300 mm.

Multitasking capabilities

- Bar capacity of main spindle and sub spindle: 65 mm
- Standard turning diameter: 300 mm
- Maximum turning length: 1150 mm
- Axis travels: X / Y / Z: 700 / 250 / 1100 mm
- Tool spindle with swiveling range 225° and speed 12 000 rpm
- 5-axis simultaneous machining
- Varied range of clamping systems for turning and milling
- ATC with 40 places

High Precision Milling Center

Highest accuracy, rigidity, and dynamics.

Ultra precise finishing, milling of mirror surfaces.

3-axis machine with additional rotary axes for simultaneous 5-axis machining.

Milling centre capabilities

- Axis travels: X / Y / Z: 300 / 300 / 300 mm
- Tool spindle with 80 000 rpm, aerostatic bearing
- Cross grid measuring system in the XY axes with resolution 0.01 μm
- Position uncertainty (X and Y axis) ± 0.5 μm
- Position accuracy (X and Y axis) ± 0.4 μm
- Smallest programmable steps 0.01 μm
- Laser tool monitoring
- ATC with 30 places

Measurement Capabilities

Coordinate Measuring Machine (CMM)

- Contact and optical measurements in one machine
- Max. measuring range: X / Y / Z: 300 / 200 / 200 mm
- Scanning and single-point sensor
- Probing error: 0.9 μm
- Optical 2D camera sensor with image procession
- Optical length-measuring error for max. zoom: 0.13 μm

Contour and Surface Measuring Machine

- Contact scanning
- Horizontal indication accuracy: ± (1.0 + L/1000) μm
- Detectors resolution: from 0.8 nm to 80 nm
- Scale resolution: 0.016 μm

Optical 3D Measurement System

- Micro coordinate measurement and surface finish measurements
- Measurement principle of focus-variation
- Objective magnification: 5x, 10x, 20, 50x, 100x
- Objective specific features (magnification 100x):
- Vertical resolution 10 nm
- Min. measurable roughness Ra 0.03 μm
- Min. measurable roughness Sa 0.015 μm
- Min. measurable radius 1 μm

Accuracy

- Max. deviation of a height: from 0.15 μm (height step 1 μm) to 0.8 μm (height step 10 mm)
- Distance measurement XY: from 2.0 μm (XY up to 20 mm) to 0.7 μm (XY up to 1 mm)

