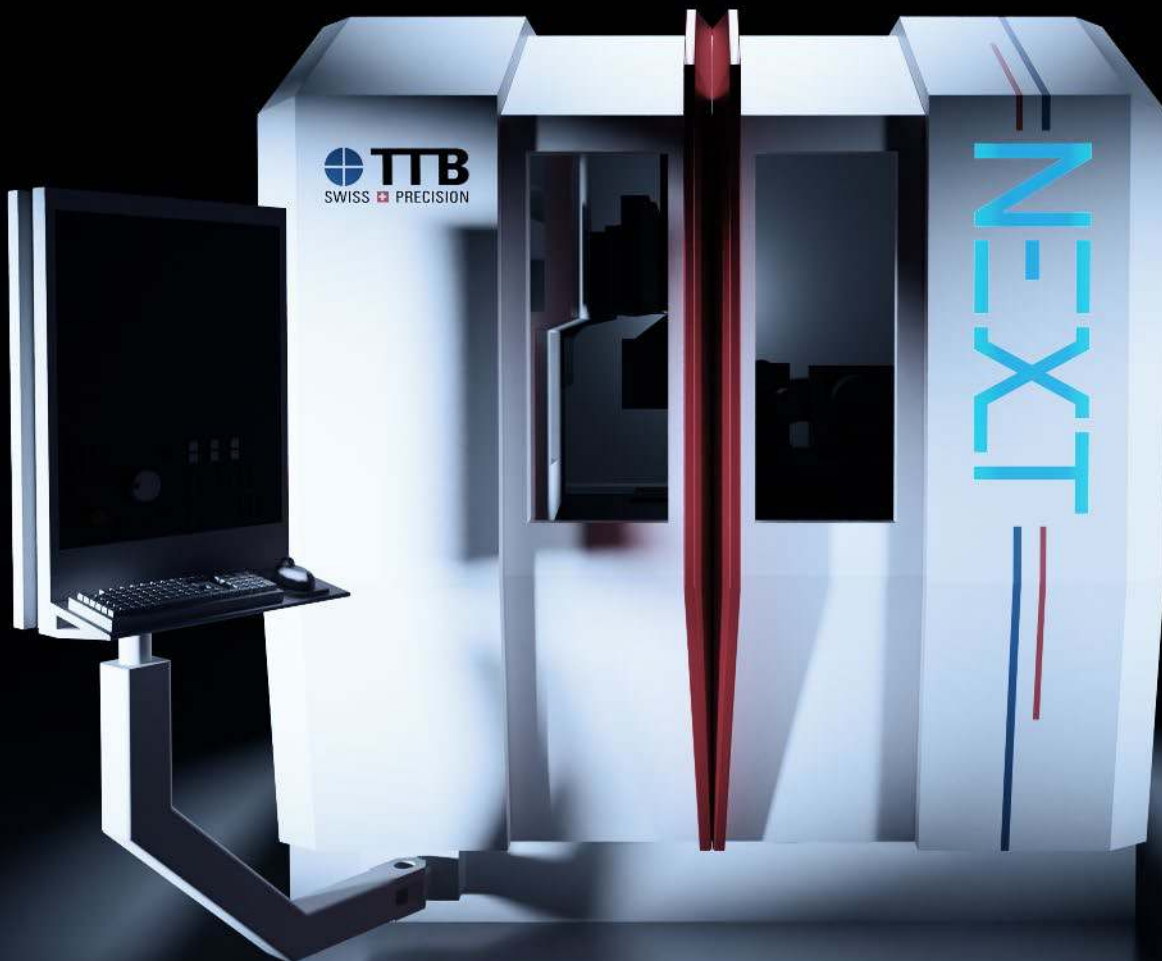


TTB NEXT

CNC GRINDING CENTER



HIGHEST PRECISION WITH A SMALL FOOTPRINT

CONTINUITY IN KINEMATICS - REFINED AND OPTIMIZED IN THE DETAILS

Stability, accuracy, productivity and reliability are the most important attributes for the NEXT model.

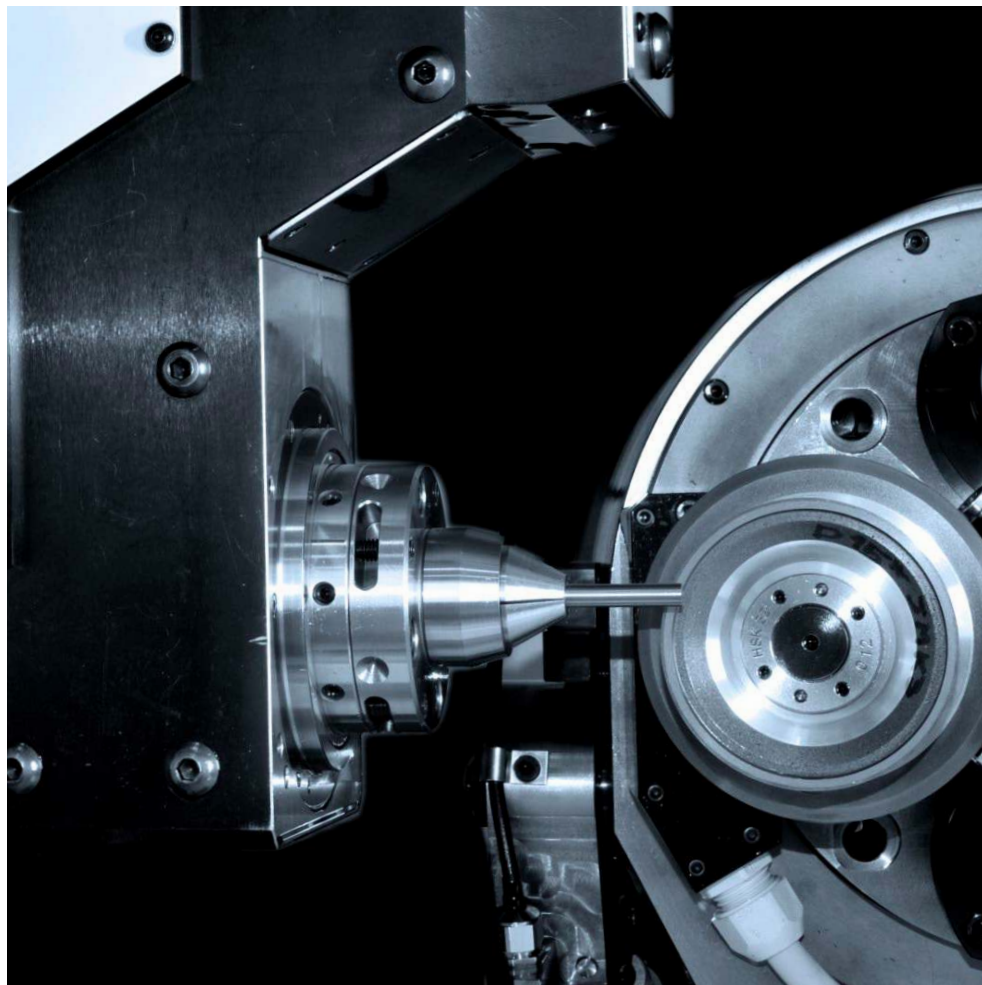
The machine is suitable for large quantities or long cycle times, thanks to the continuously high quality in the μm range and the fast-loading operations. Due to particularly short set-up times, this machine is also suitable for small batch sizes and special tools.

In an automatic mode of grinding, drills and milling-type tools are easily managed without difficulty.

An extensive array of accessories is available for your production needs (e.g. tailstock, steady rest, shank guide, HF spindles, push-on and turning units), allowing gear cutting tools, blades, punches and inserts to be produced.

Due to the new placement of the automatic loading unit, the footprint is a square consisting of 4 m².





INNOVATIVE CONCEPTS

Dynamics: The previous and proven TTB drive concept of a calibrated pre-load and hydrodynamically lubricated axes integrated into the new NEXT has been further optimized. By doubling the rapid traverse speed and incorporating a newly developed direct-drive swivelling axis, the productivity result of the machine is increased even more. The U axis can be equipped with belt drive or, as option, with direct drive.

PM (Predictive Maintenance) System: The monitoring and control by integrated temperature and vibration sensors allow the highest quality of tools to ever be produced. A new energy concept brings with it a lower overall heat input. Thus, reducing the warm-up and stabilization period of the machine to reach the initial opera-

ting temperature. Using the data from the WebVisu, predictive maintenance can be easily customized to Customer liking.

HP transmission: The new power transmission concept for the grinding spindles results in increased power that is transferred to the wheels with simultaneous reduction of vibrations. This allows the production of tools up to Ø 14 mm with excellent surface finish.

The grinding wheel turret has an indexing accuracy of only 1/3 of a micron. It is equipped with up to 5 spindles, and with each spindle capable of having up to 4 grinding wheels.

The grinding wheel turret is still the core component of the NEXT.

CREATING NEW MARKETS WITH THE TTB NEXT

Tools with diameters between 0.02 mm up to Ø 25 mm is also effective without any issues. The resharping of tools

TOOLS:

- Hobs, shaper cutters and power skiving (gearing tools)
- End Mill Cutters
- Form Cutters
- Drills, step drills
- Taps
- Turning tools
- Cutting blades
- Indexable inserts
- Stamps, punching tools
- Burrs



FLEXIBLE EXTENSION OPTIONS

A WIDE RANGE OF OPTIONS

Various versions of tool collets, chucking systems, grinding spindles and grinding wheel adapters are available for the NEXT.

This means that the NEXT can be individually configured and optimally adapted to fit Customer needs. Replacing the

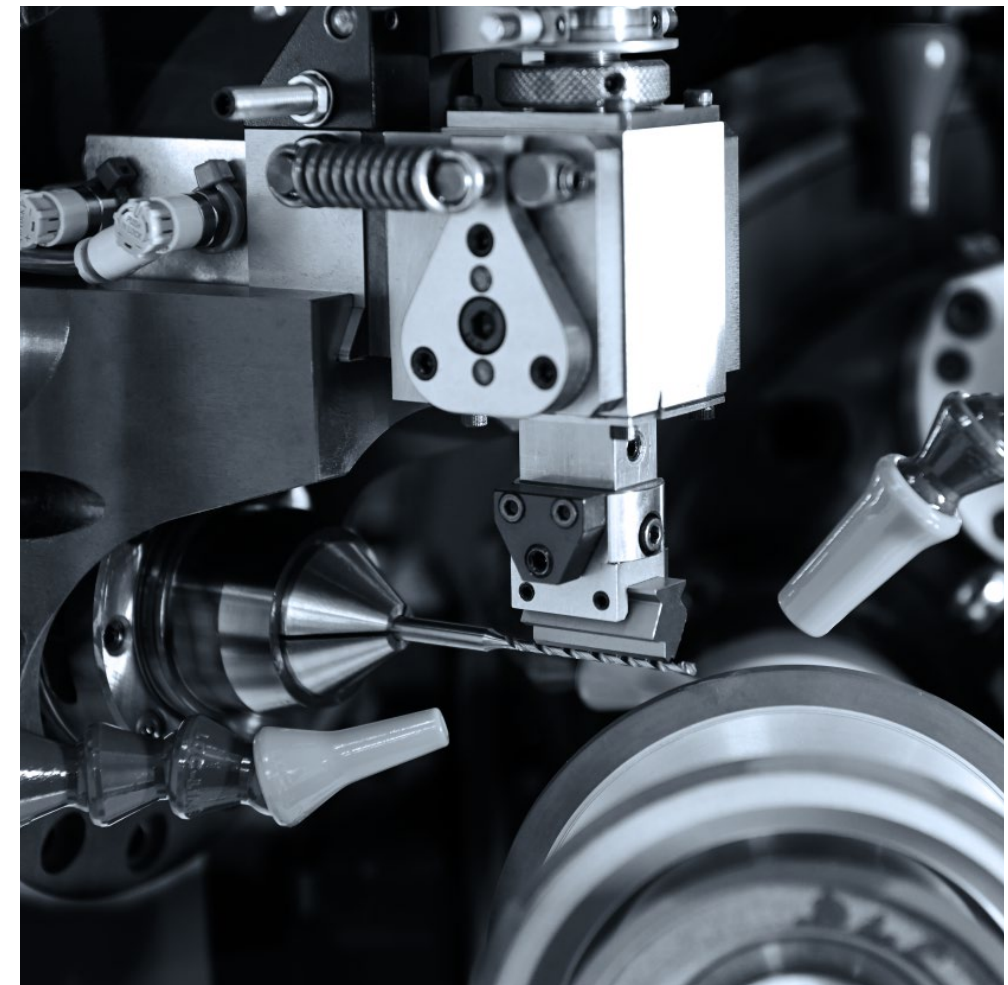
modular components is also quick and easy. The tool probe is always part of the standard equipment.

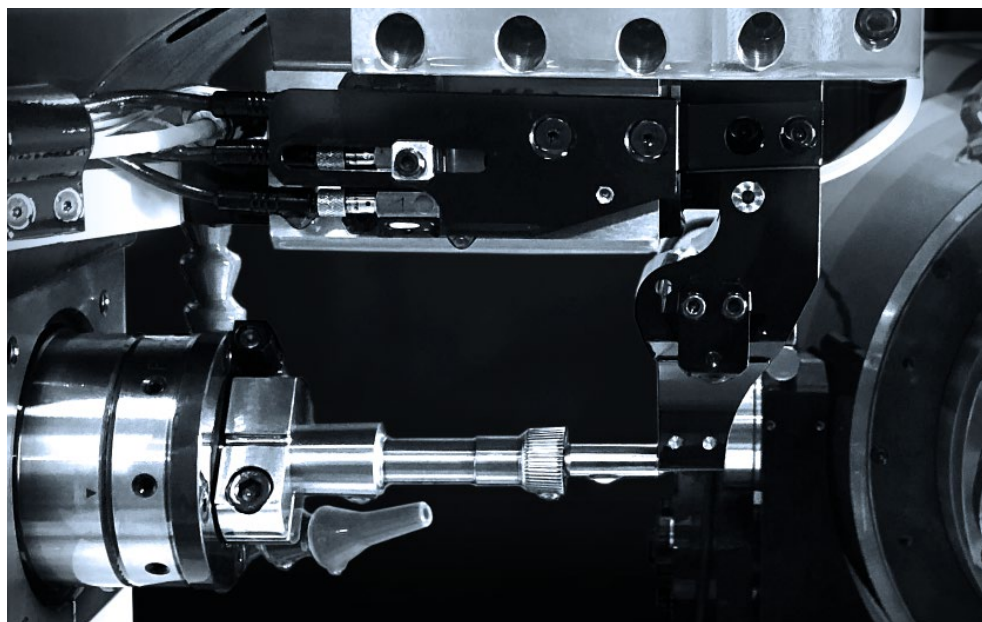
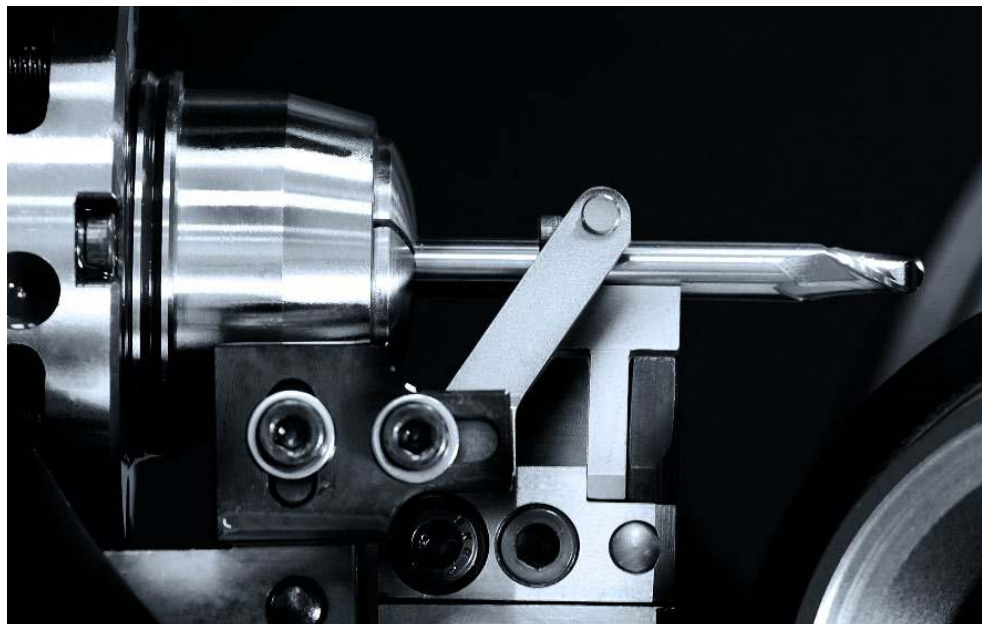
The grinding wheels can be dressed, regenerated and measured in the machine, even during automatic production mode.

STEADY REST V3

The fully automatic steady rest is designed for tools having grind lengths bigger than 10x to 15x of the diameter. The radial mounting position of the steady rest can be adjusted in 15° incre-

ments, this in order to find the optimal position. The support prisms and bushings are clamped by a quick clamping system and can be aligned according to the tool taper.





LONG OR SHORT WITH OR WITHOUT

SHAFT GUIDE

The shaft guide system optimizes the concentricity of the tools. A prismatic support is used as the primary centering device, while an opposing finger

clamps to neutralise the runout. The finger clamp can be mounted on the left or right side.

REMOVABLE TAILSTOCK

The removable tailstock is used in the production and regrinding of hobs, shaper cutters and reamers. In case of hobs, it is used in combination with a 6th axis. Tools can be held between centers or with a collet.

The positioning of the tailstock (back mounting) is done by high precision needle bearings. The tailstock can also be used with the automatic loading of such tools. The clamping pressure is precisely adjustable.

SOLUTIONS FOR ALMOST EVERY NEED

6TH AXIS (TILTING OF THE GRINDING WHEELS)

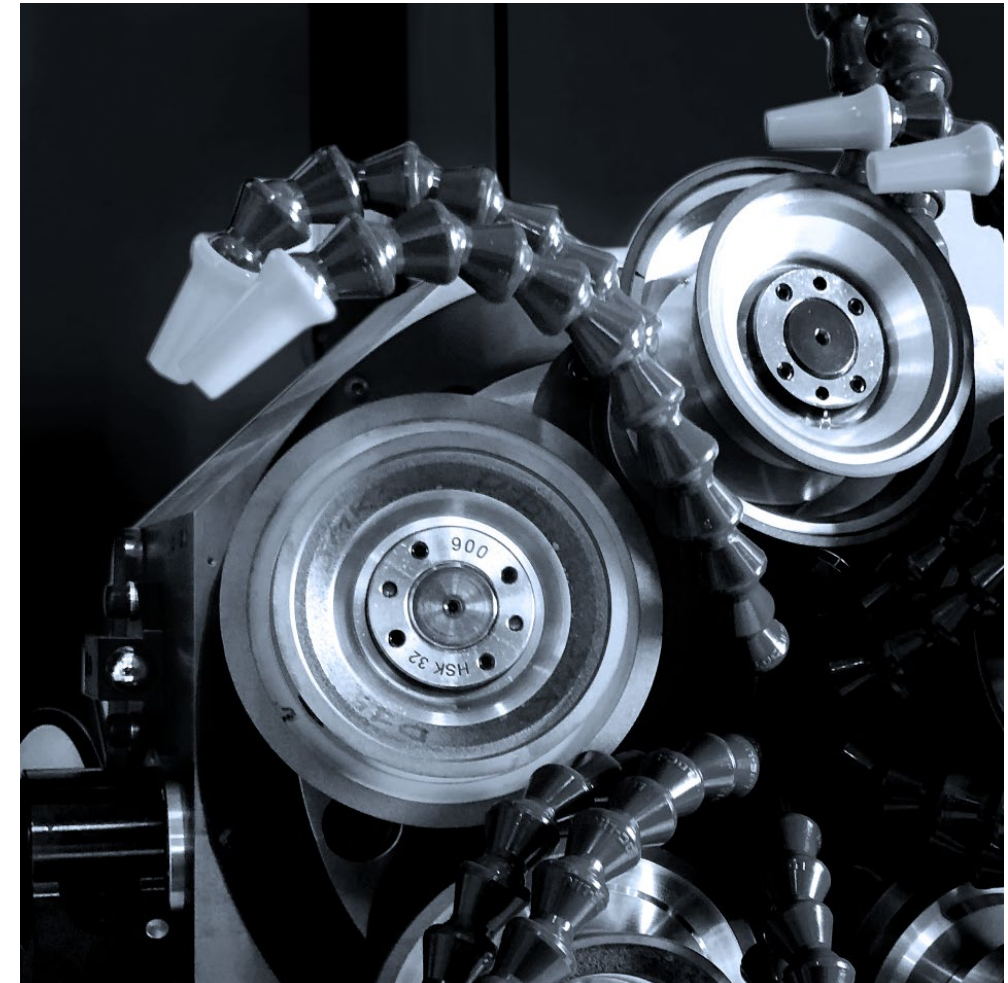
The W-axis (also called 6th axis) tilts the grinding wheel turret in the range of +/- 15° degrees, for the manufacturing of hobs, ballnose cutters and turning tools. It sets the angle of the grinding wheel

to the pitch angle of the cutter or for the first clearance of the cutting tool. The axis is equipped with a brake and a high-precision encoder.

TURRET WITH 4 OR 5 GRINDING SPINDLES

The turret can optionally be supplied with 4 or 5 spindle positions. Short or long spindles with steel or ceramic bearings can be used, depending on the grinding operation. The exchange of a spindle can be done in less than two minutes.

HF-Spindle: For specific operations, small grinding wheels are required with correspondingly high speeds. TTB provides HF spindles with 60.000, 100.000 and 150.000 RPM. Several HF spindles can be installed at the same time.





PERFECTLY CONNECTED TO THE FUTURE!

IC-DETECT - CAMERA UNIT FOR ORIENTATION OF THE INTERNAL COOLANT

iC-Detect camera unit is installed in the clean side (loading unit compartment). As it is integrated into the loading cycle, the measuring/alignment process occurs simultaneously while grinding

the tools. The camera unit allows the automatic alignment of internal coolant holes of various shapes all the way down to 0.05mm diameter and the control of their position and size.

INDUSTRY 4.0

Several variations are available for integrating the NEXT machine into an Industry 4.0 system.

TTB creates the optimal solution together with the Customer.

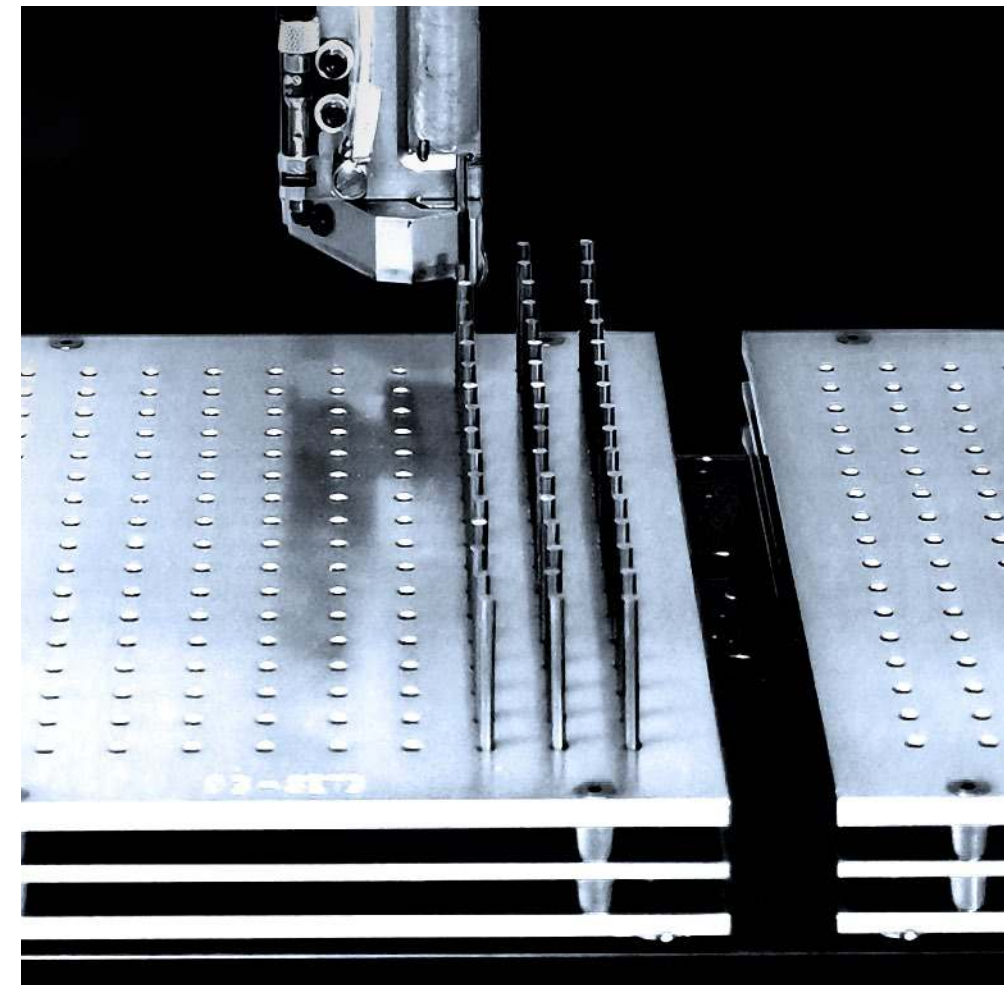
AUTOMATION ORIENTED TOWARDS FLEXIBILITY AND PROFITABILITY

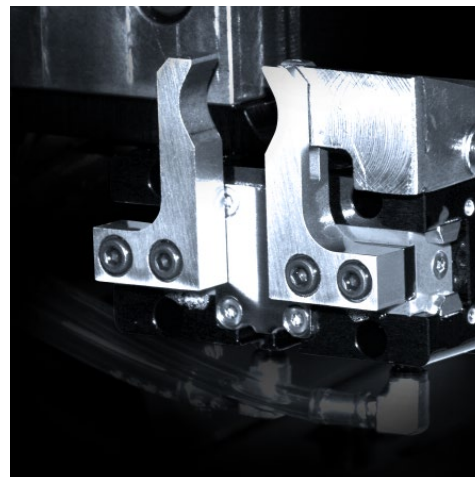
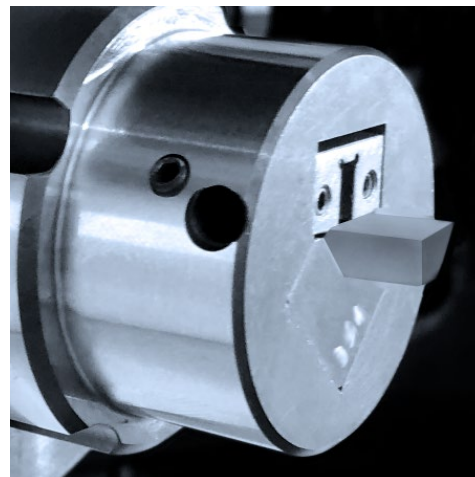
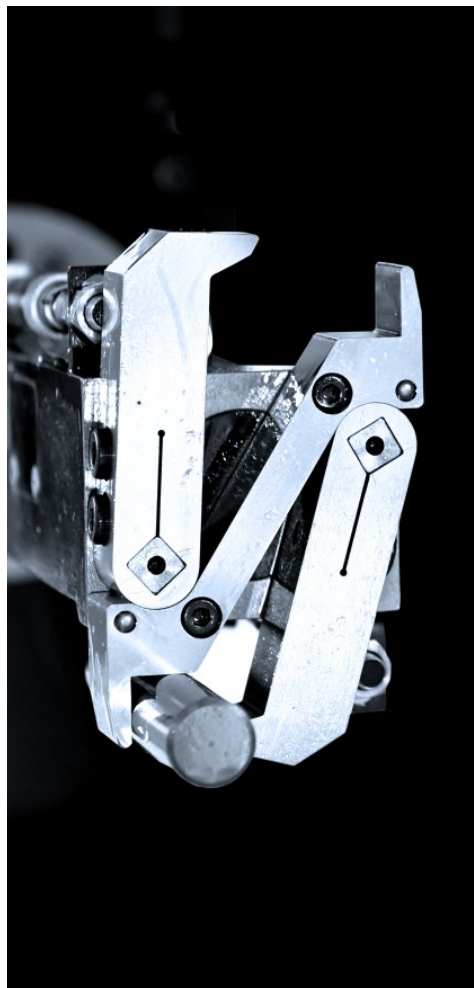
LOADER WITH SHORT CYCLE TIME AND HIGH CAPACITY

Thanks to the newly developed automatic loader, loading time has been extremely improved and it is down to 13 seconds. For this purpose, the new double gripper clamps round shafts from 1,5 to 16 mm.

The standard version of the loader has

2 pallets for Ø 1-16 mm. Optionally, up to 4 pallets is also possible. Depending on the shank diameter, the pallets can hold up to 814 tools. Specific solutions such as special pallets or special loading operations can be provided upon request.





READY FOR EVERY SPECIAL REQUEST

SYSTEM SOLUTIONS

Additional units for dressing, sorting, ejecting, turning, etc. are also available. This allows tools such as knives, turning

and grooving tools, indexed tools, punches, flow drills to be produced efficiently and precisely.

NUMROTOplus® PROGRAMMING SYSTEM

The programs for the NEXT model are prepared with the flexible and proven

NUMROTOplus® programming system.

PERIPHERAL DEVICES

TTB also offers many systems such as coolant filtration, chillers, oil mist, fire

protection, measuring, balancing and loading systems.

TECHNICAL SPECIFICATIONS

Feedrates

Linear Axes (X, Y, Z Axes)
6 m/min

Swivel of Tool Spindle
(V Axis)
100 1/Min

Rotary speed of U Axis as a positioning
Axis
200 1/Min

Minimum Positioning Increment

Linear Axes (X, Y, Z Axes)
0,0001 mm

Rotary Axes (U, V)
0,0001°

Measuring systems

Resolution Linear Axes
(X, Y, Z Axes)
0,01 µ

Accuracy Swivel Axis
(V Axis)
+/- 2"

Accuracy Rotary Axis
(U Axis)
+/- 20"

Application Technology

Grinding from Solid Material
Ø 0,02 – 14 mm

Resharpening
Ø 3 – 25 mm

Grinding Length
max. 150 mm

Turret and Wheel Grinding Spindles

Number of Grinding Wheel Spindles
(HSK C32)
4 (or 5 Option)

Nominal power grinding motor (Pn-S1)
10,0 kW

Programmable Speed of Grinding
Spindles
up to 12.000 1/min

Number of possible Wheels per Spindle
1 – 4

Positioning Time of Turret
2 sec.

High Frequency Spindles
60/100/150.000 1/min

Positioning accuracy from grinding
wheel to grinding wheel axial + radial
max 0,3µ

Tool Clamping

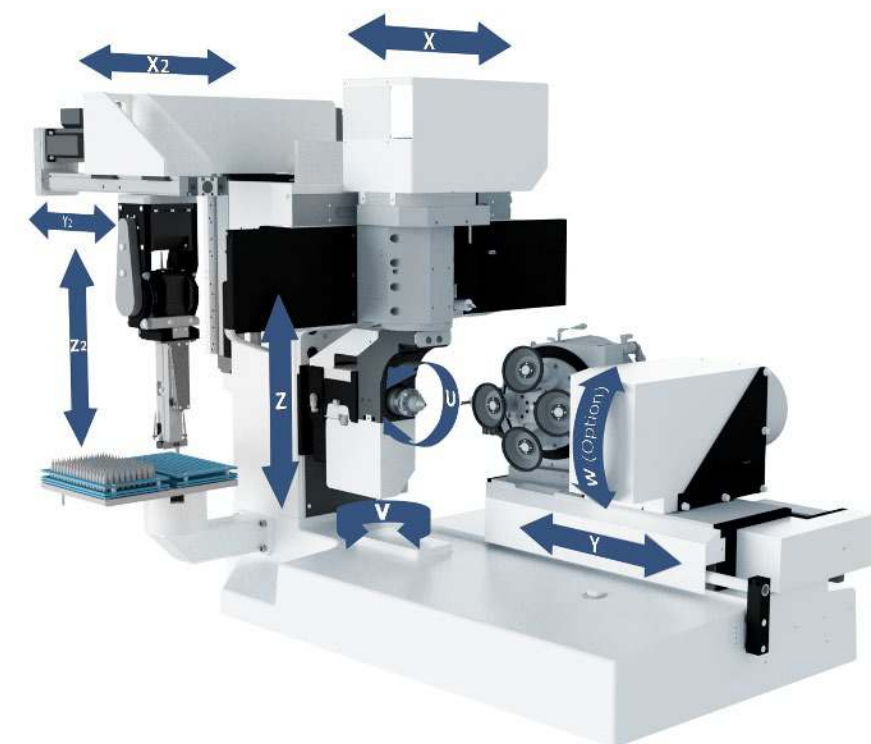
Clamping Systems
W25, W20, B15 or Hydraulic Collet

Clamping Diameter Range
1 – 25,4 mm

Clamping Length
Up to 250 mm

Optional Clamping Systems
Upon request

TECHNICAL SPECIFICATIONS



Linear Axes

Longitudinal Travel (X Axis)
290 mm

Cross Travel (Y Axis)
250 mm

Vertical Travel (Z Axis)
155 mm

Swiveling Axis

Swiveling Range of
Workhead (V Axis)
270 °

Swiveling Range of the
Turret (W Axis) Option
+/-15°

Rotary Axes

Rotation Range of
Workhead (U Axis)
Infinite

Rotary Speed (U Axis)
for cylindrical grinding
0 – 1.500 1/min



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