

# HELITRONIC MICRO

THE HIGH PRECISION SYSTEM FOR SMALL TOOLS



# HELITRONIC MICRO

## APPLICATION

- Grinding of rotationally symmetrical tools with diameters ranging from 0.1 to 12.7 mm (production) and 3 to 12.7 mm (regrinding)
- Fully automated, complete machining with only a single clamping cycle
- Materials include HSS, carbide, cermet, ceramic

## MACHINE

- Low-vibration, solid mineral cast
- X, Y, Z linear axes with linear drives
- X' linear axis with ball-type linear drive
- Glass scales
- Rotating A, C axes with high torque motors
- Motor driven spindle with three spindle ends
- Each spindle end can take up to three grinding wheels
- 24" Full HD multitouch display
- FANUC, the global standard for control equipment
- Integrated FANUC robot loader (standard)
- Numerous efficiency options

## SOFTWARE

- C.O.R.E. OS operating system
- HELITRONIC TOOL STUDIO, CAD/CAM software for design, programming, simulation and production
- Numerous software options to extend the system's performance and to increase its efficiency

« Grinding complex geometries on rotationally symmetrical tools of small to the smallest diameter, is the core capability of the HELITRONIC MICRO. High mechanical process stability and sophisticated kinematics with five interpolation axes and two positioning axes ensure excellent grinding results in production or regrinding. »

SIMON KÜMMERLE, PRODUCT MANAGER DEVELOPMENT

## YOUR BENEFIT

Thanks to the solid mineral casting, the machine has high vibration damping and temperature insensitivity for maximum grinding precision. It also handles precise profile grinding, particularly for multi-step tools.



HELITRONIC MICRO with an integrated FANUC robot loader and C.O.R.E. panel

# C.O.R.E. – CUSTOMER ORIENTED REVOLUTION

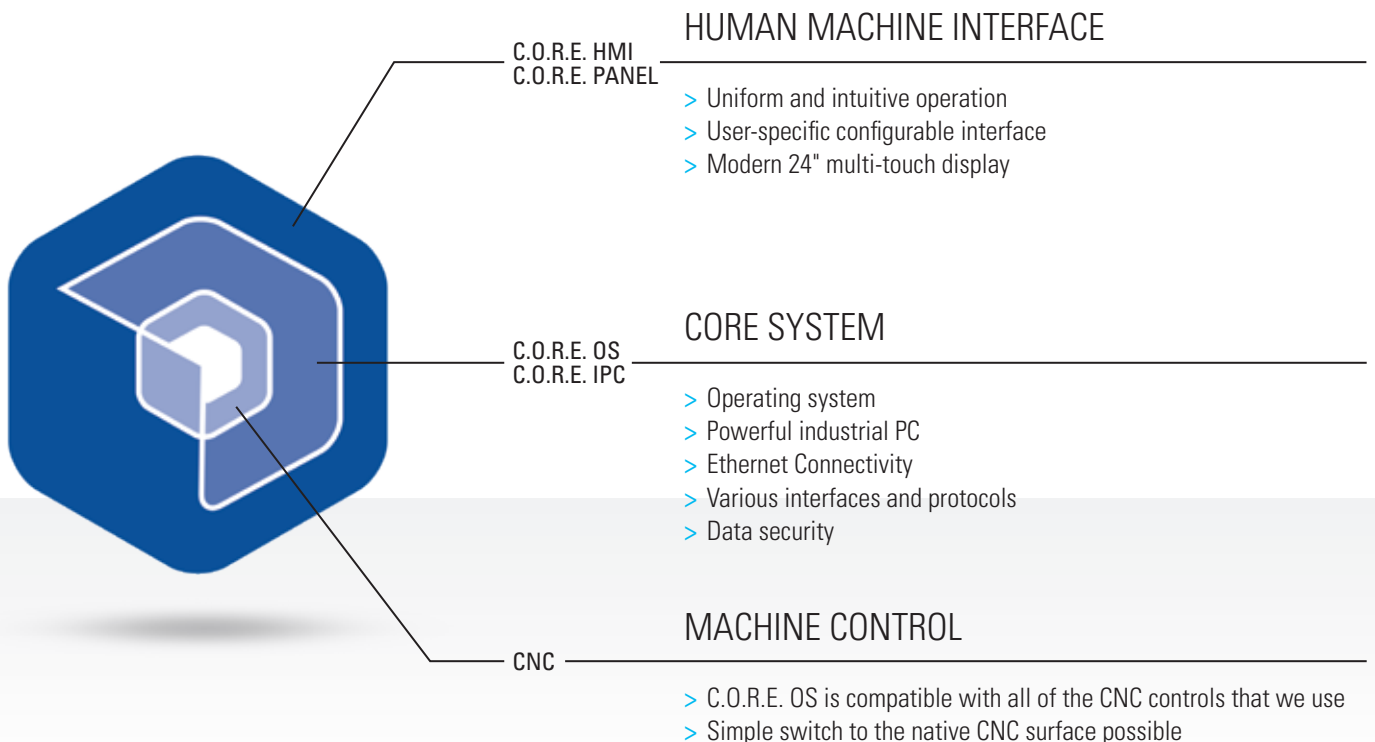
## C.O.R.E. helps us make your production fit for the digital future.

It's based on a new operating system, C.O.R.E. OS, that equips the machine with intelligence. Thanks to the uniform C.O.R.E. software architecture, exchanging data between UNITED GRINDING machines is easy. The integrated umati API can be used to communicate with third-party systems as well. It also offers access to UNITED GRINDING Digital Solutions™ products directly on the machine. C.O.R.E. not only establishes the technical foundation for this and other IoT and data applications, it also forms the basis of revolutionary yet uniform operation.

### What does this mean for you?

- The user-friendly, intuitive, and uniform operation makes work easier for machine setters, machine operators, and maintenance staff
- Standardized data collection and intelligent processing of data creates transparency and supports process optimization
- The uncomplicated and consistent use of modern digital software solutions is guaranteed – directly on the machine
- The technical platform for the use of modern IoT and data applications has been established

## C.O.R.E. ELEMENTS



# C.O.R.E. PANEL – THE FUTURE OF OPERATION

## Intuitive

Thanks to intuitive design with self-explanatory icons, navigation through the machine menu and process steps is quick and easy. Instead of buttons, the user is presented with a modern and clearly arranged multi-touch display.

## User-friendly

Each user configures their own user interface individually. This is called up automatically with the RFID chip after logging in. When the user leaves the machine, the panel switches to "Dark Factory Mode." Production progress and the machine state are also clearly visible from

a distance. And thanks to the ergonomic design, the panel can be tilted and individually adjusted easily.

## Efficient

The uniform and intuitive operating philosophy reduces training time. The configurable and role-specific interface helps prevent errors and increases the efficiency and quality of programming. Information can be exchanged quickly and in real-time via the front camera and Bluetooth headset. UNITED GRINDING Digital Solutions™ products can be used directly on the panel.

INDUSTRIAL MULTI-TOUCH DISPLAY

INTEGRATED FRONT CAMERA

SELF-EXPLANATORY ICONS

USER-CONFIGURABLE DISPLAY

STANDARDIZED FUNCTION KEYS

ERGONOMIC OVERRIDE SWITCH



## Technical Specifications

- 24" Full HD multi-touch display
- 16-position rotary override switch
- Electronic key switch (RFID)
- Integrated front camera
- Bluetooth V4.0 for headset connection
- 2x USB 3.0 ports
- Adjustable tilt

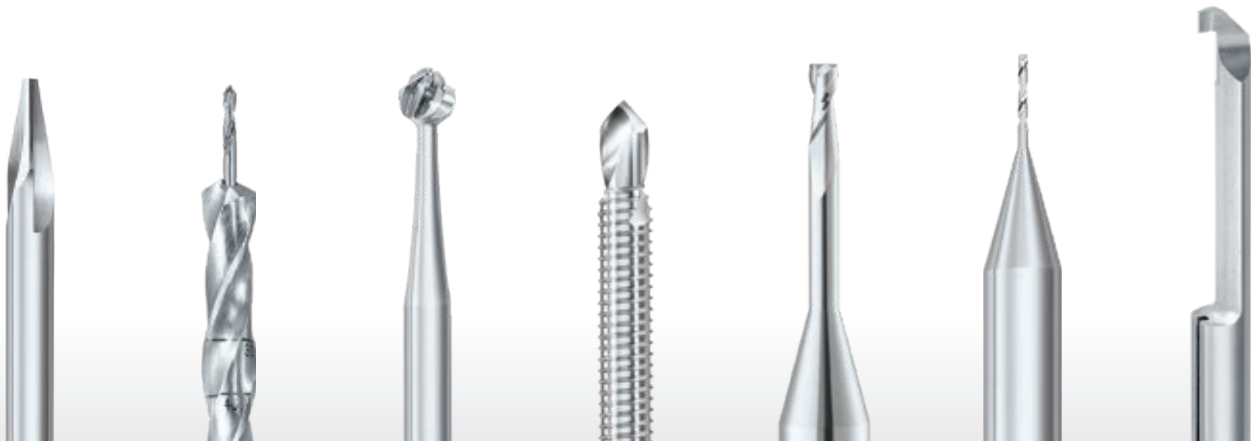
## EFFICIENT AND EASY TO USE

The HELITRONIC MICRO grinding machine produces very precise results for tools in the diameter range from 0.1 to 12.7 mm when producing new tools and from 3 to 12.7 mm when sharpening.

As an automatic 5-axis CNC machine with two additional positioning axes, the HELITRONIC MICRO is predestined for the complete machining of demanding geometries for micro tools in a single clamping cycle. All seven axes are equipped with linear / torque drives and are controlled via the integrated high resolution measurement system. This produces exact movements while maintaining very dynamic performance. Due to the fast rotating workpiece axis A with a max. speed of 3,000 rpm, the HELITRONIC MICRO can accomplish precise profile grinding, particularly for multi-step tools.

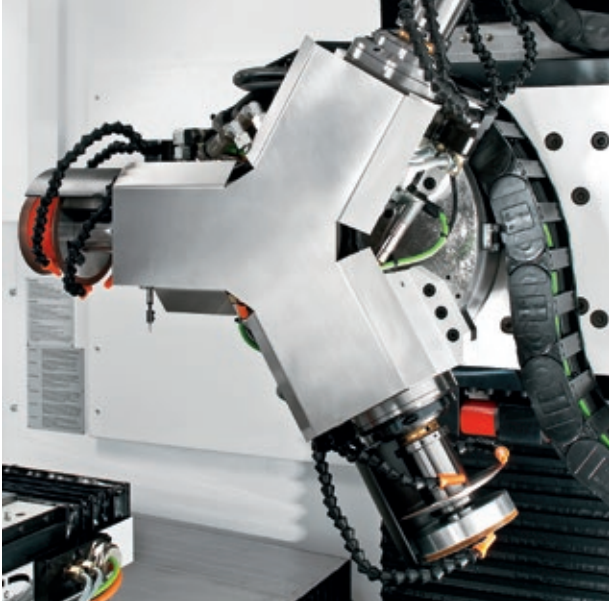


Examples of tools (from top left to bottom right):  
Conical end mill, bone drill, medical milling tool, medical drill,  
micromilling tool, microdrill, internal turning tool, burr, blade, drill



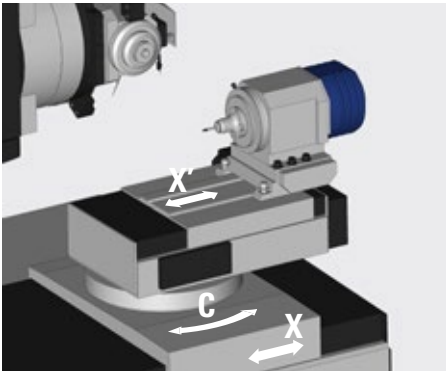


## STANDARD EQUIPMENT FOR PEAK PERFORMANCE



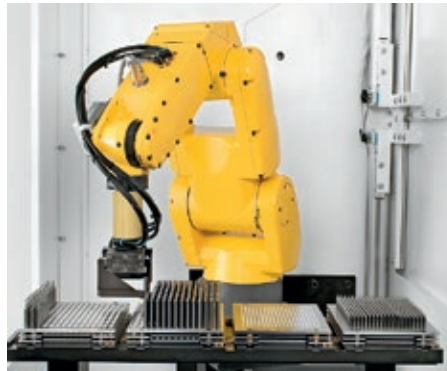
### 3 motor spindles for up to 12 grinding wheels

The grinding head of the HELITRONIC MICRO has an NC-controlled swivel axis (B axis) and is equipped with 3 fluid-cooled, asynchronously controlled motor spindles. 2 spindles have a peak power of 4.3 kW and 1 spindle has a peak power of 6.5 kW. The maximum grinding wheel diameter is 150 mm. This means that the HELITRONIC MICRO is designed for flexible use.



### CNC controlled X axis

The X' axis is used to automatically and precisely move the tools to be machined to the centre of rotation. This leads to short traverses and increases the precision.



### Integrated FANUC Robot loader

The grinding times for micro tools are normally short. All the more important is thus the set-up times for tool changing. For the HELITRONIC MICRO, WALTER has integrated a 6-axis robot loader into the machine which reduces the loading time to a minimum. Capacity for up to 1,500 tools.



### Automatic positioning and measuring system "Heli-Probe"

This records important tool parameters and positions the tool in the shortest possible time. This is a vital requirement for productivity and quality.

## OPTIONS

The HELITRONIC MICRO offers many options for optimising your production – from software solutions to hardware adaptations.

### Tool Vision System

Take advantage of the revolutionary benefits of automatic capturing and tool alignment for correct positioning of the tools prior to machining.

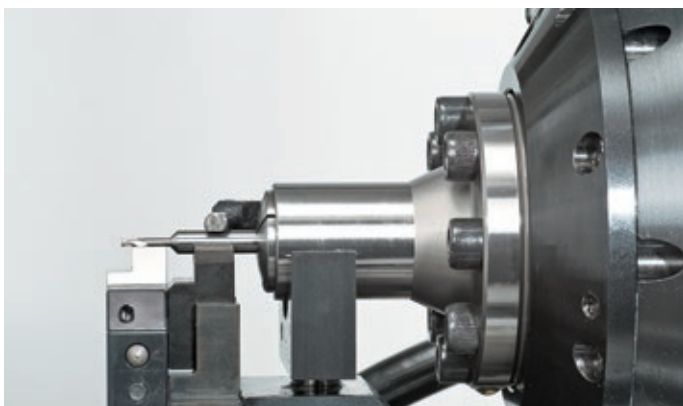
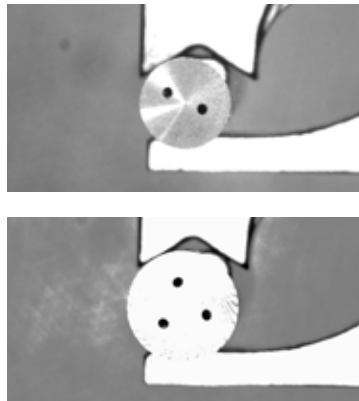
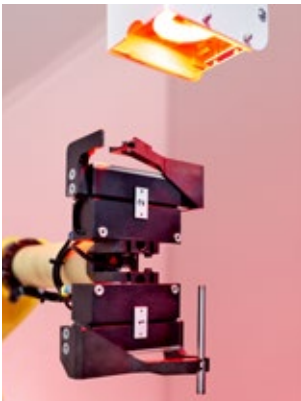
#### Main applications:

- For automated capture of blanks/tools
- With cooling channels
- And others

#### Technical details:

- Camera system permanently installed in the robot cell
- Lens for tool diameters of 1.7 mm to 12 mm

- Significant time savings with automated processes in comparison to the manual measurement method
- Valuable working time of the employees can be used for other tasks
- Eliminates errors caused by the human factor
- Teaching of new tool geometries is easy and can be done by trained machine operators themselves
- No damage to the tool, thanks to non-contact method
- Camera system works during off-time



### Sharpening stone holder

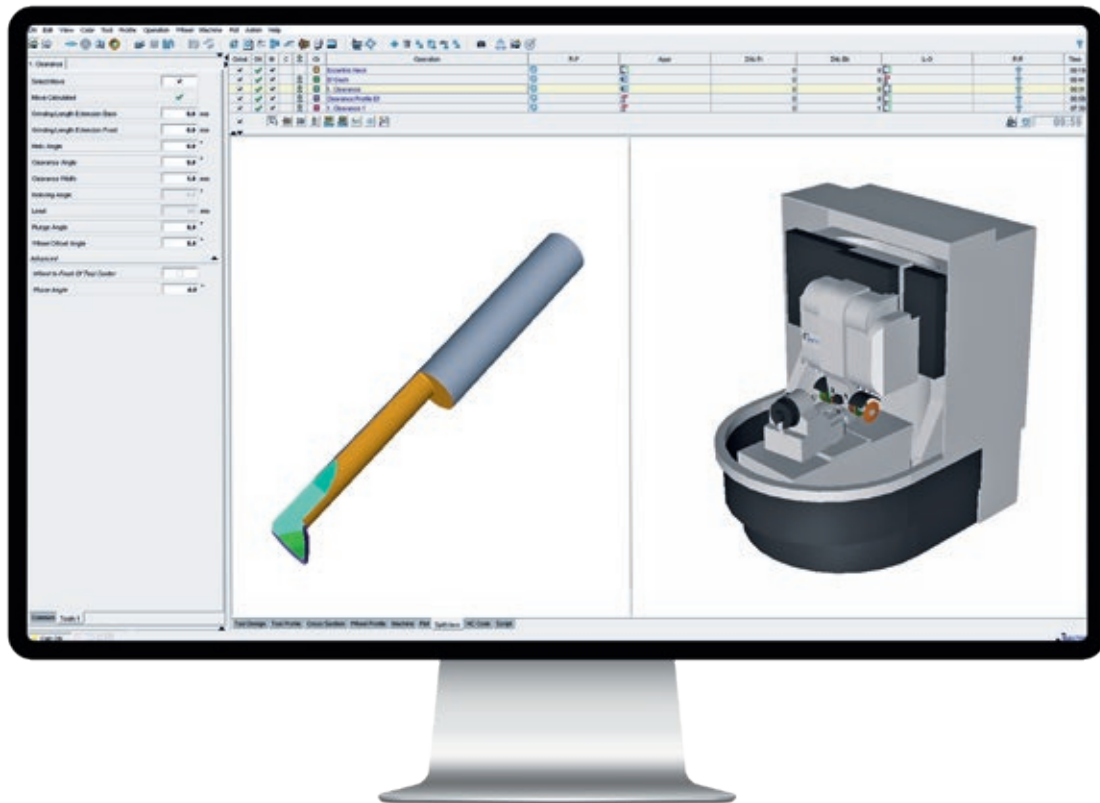
With the permanently installed sharpening stone holder, WALTER enables the automatic opening of the wheel bond during production. The HELITRONIC TOOL STUDIO software controls the process and enables the operator to open the bond at the appropriate time according to the grinding wheel condition.

### Shank/support steady

High precision V blocks and the fine adjustability ensure precise and reliable grinding results for longer tools. A tool's bending during the grinding is reduced to a minimum.



# APPLICATION SOFTWARE FOR TOOL MACHINING



## HELITRONIC TOOL STUDIO –

### Operating convenience with all grinding applications

HELITRONIC TOOL STUDIO is the WALTER way to the perfect tool. According to the tried and tested method of “What you see is what you grind”, just a few mouse clicks are all that separate you from producing the perfect precision tool: Design, programming, simulation and production.

HELITRONIC TOOL STUDIO: This combines ease of programming with the greatest possible flexibility. With the HELITRONIC TOOL STUDIO, only a little work is needed by the user to program machining steps and movement sequences for both rotationally symmetrical standard tools and for special tools.

The tool shown on the screen corresponds exactly to the tool which will then be produced. This means that, as early as the design phase, the result can be checked and, if necessary, corrected thanks to the true-to-life 3D simulation.

The operator can quickly find the tool type, the parameters to be entered and the tool by using the assistant. WALTER provides programme packages for all standard tool families, which make handling significantly easier.

## EFFICIENCY OPTIONS

- Up to 30 % time saved
- Optimum feed rate
- Optimize existing IDNs

### Feedrate Optimizer

This enhancement to the HELITRONIC TOOL STUDIO provides the ideal options for feed control and for monitoring the grinding wheel and machine load. Depending on the tool type, the time savings can be up to 30 %. Feed optimisation uses the findings entered into the HELITRONIC TOOL STUDIO in relation to grinding movements, and the grinding wheel and tool simulation model in order to calculate the current grinding wheel and machine loads and set the optimum feed at any time. Movements with low wheel loads will be accelerated and, this is particularly important, movements where the desired wheel load is exceeded are slowed down. Even existing IDNs can be conveniently optimised with just one click. First, the profile of the grinding wheel load is determined via a progressive simulation analysis. Then, the feed is optimised in such a way that the wheel load remains constant during the entire processing run.

- Permanent set-actual comparison for the torque

### Adaptive control

By permanently comparing the machine loading, grinding can be made more efficient and simultaneously safer. If the load increases, the feed will be decelerated accordingly. If the load decreases, the speed is increased accordingly. With AC grinding, alternating loads on the grinding wheels will be prevented by a continual load. Any possible overloading of the grinding wheels is excluded.

- Analysis of the centre of gravity
- Balancing the tool

### Tool Balancer

The "Tool Balancer" is an easy way to analyse, and balance out if necessary, centre-cutting tools with an odd number of flutes (unevenly divided tools) or special tools. The efficiency-increasing method has two core functions: One is to analyse the centre of mass and the other is to automatically balance the tool using different techniques. The approach is simple and can be mastered with just a few mouse clicks. Analysis during the development phase means that the process of prototype production can be significantly shortened. Balanced tools have a longer tool life, can machine at higher speeds, produce higher-quality surfaces and result in less wear-and-tear. Asymmetrical tools are well-suited to machining processes with high rotation speeds up to a point where significant imbalance forces occur.

- Determination of the rake angle, the outer diameter and the core diameter for cylindrical tools

### Integrated Measuring System IMS

With the integrated IMS measurement system, the outside diameter, rake angle and core diameter can be measured using the probe ball without having to unclamp the tool. By setting the tolerances, HELITRONIC TOOL STUDIO can compensate for any deviation of the measured values, e.g. by thermal growth or wheel wear-and-tear, and adjust to the nominal measure and thus prevent scrap. The operator no longer needs to make active adjustments and the dressing cycle of the grinding wheels remains constant. Both increase the efficiency, especially when it comes to large-volume production.



# WE ARE HERE FOR YOU!

Our products are designed to meet customer demands for as long as possible, they are intended to operate efficiently, reliably, and be available at any time.

From “Start up” through to “Retrofit” – our Customer Care is there for you throughout the working life of your machine. For this reason, you can rely on competent HelpLines worldwide and Service Engineers near you:

- We will provide you with fast, straight-forward support.
- We will help to increase your productivity.
- We work professionally, reliably and transparently.
- We will provide a professional solution to your problems.



**Start up**  
Commissioning  
Extension of the guarantee



**Qualification**  
Training  
Product support



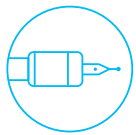
**Prevention**  
Maintenance  
Inspection



**Service**  
Customer service  
Customer advice  
Helpline



**Digital Solutions**  
Remote Service  
Service Monitor  
Production Monitor



**Material**  
Spare parts  
Replacement parts  
Accessories



**Rebuild**  
Machine overhauling  
Refurbishing of assemblies



**Retrofit**  
Conversions  
Retrofitting parts

## UNITED GRINDING DIGITAL SOLUTIONS™

We develop solutions to support you in simplifying processes, boosting your machines’ efficiency and increasing overall productivity under the “UNITED GRINDING Digital Solutions™” brand. Find out more about

UNITED GRINDING Digital Solutions™ services on our website in the Customer Care section.



CUSTOMER CARE

# TECHNICAL DATA, DIMENSIONS

## MECHANICAL AXES

X axis	385 mm
Y axis	320 mm
Z axis	320 mm
X' axis	110 mm
Rapid traverse speed X, Y, Z	max. 30 m/min
C axis (revolving range)	+ 200°/- 20°
A axis (max. speed)	3.000 rpm
B axis (revolving range)	± 150 °
Linear resolution	0,0001 mm
Radial resolution	0,0001 °

## GRINDING SPINDLE DRIVE

Max. grinding wheel diameter	150 mm
Grinding spindle speed	0 – 10.500 rpm

### HELITRONIC MICRO with motor spindle

Spindle ends	3
Tool holder	HSK 40
Peak power	2 x 4,3 and 1 x 6,5 kW

## OTHER

Weight of machine including coolant system	approx. 6.100 kg
Power consumption at 400 V/50 Hz	approx. 25 kVA

## TOOL DATA <sup>1)</sup>

Min. tool diameter	
Production/resharpening	0,1/3 mm
Max. tool diameter	12,7 mm
Max. workpiece length, peripheral grinding <sup>2)</sup>	220 mm
Max. workpiece length, end face grinding <sup>2)</sup>	220 mm
Max. workpiece weight	12 kg

## ROBOT LOADER

Tool capacity (depending on the diameter)	up to 1.500
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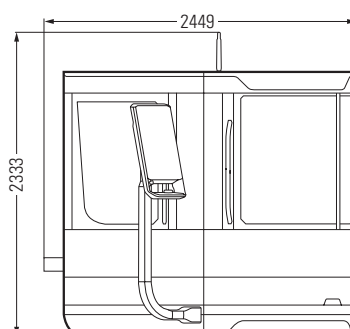
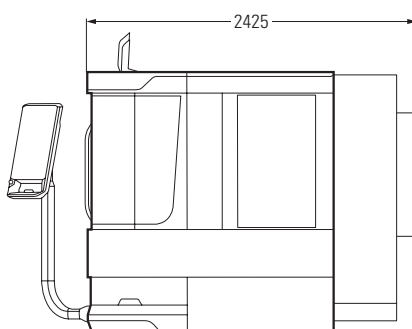
## OPTIONS

### Coolant system

On request – several types are possible

### Others

Automatic support steady, software, fire extinguisher, sharpening stone holder, tool vision system, etc.



## HELITRONIC MICRO

Dimensions in mm. Options, accessories or open doors can increase the dimensions of the machine. Subject to modifications due to technical progress and errors. No guarantee is provided for this information.

<sup>1)</sup> The maximum tool dimensions depend on the type of tool and its geometry, as well as the type of machining.

<sup>2)</sup> From theoretical taper diameter of the workpiece holder.

# CREATING TOOL PERFORMANCE

We are a global leader among market-oriented technology and service companies, and a system and solution partner for all areas of tool machining. Our range of services is the basis for innovative machining solutions for practically all tool types and materials typical for the market with a high degree of added value in terms of quality, precision, durability and productivity.



## GRINDING

Grinding of rotation-symmetrical tools and workpieces, as well as indexable inserts

Machines	Use   Materials	Tool dimensions <sup>1)</sup> max. length <sup>2)</sup> / diameter
HELITRONIC G 200	<b>P R HSS HM C/K</b>	235 mm / Ø 1 – 125 mm
HELITRONIC MINI PLUS	<b>P R HSS HM C/K CBN</b>	255 mm / Ø 1 – 100 mm
HELITRONIC RAPTOR	<b>P R HSS HM C/K CBN</b>	280 mm / Ø 3 – 320 mm
HELITRONIC POWER 400	<b>P R HSS HM C/K CBN</b>	520 mm / Ø 3 – 315 mm
HELITRONIC VISION 400 L	<b>P R HSS HM C/K CBN</b>	420 mm / Ø 3 – 315 mm
HELITRONIC MICRO	<b>P HSS HM C/K CBN</b> <b>R HSS HM C/K CBN</b>	220 mm / Ø 0.1 – 12.7 mm 220 mm / Ø 3 – 12.7 mm

Machines	Use   Materials	Indexable insert <sup>1)</sup> Inscribed circle/ circumscribed circle
COMPACT LINE	<b>P R HSS HM C/K CBN PCD</b>	Ø 3 mm / Ø 50 mm



## EROSION

Eroding and grinding of rotation-symmetrical tools

Machines	Use   Materials	Tool dimensions <sup>1)</sup> max. length <sup>2)</sup> / diameter
HELITRONIC DIAMOND EVOLUTION	<b>P R HSS HM C/K CBN PCD</b>	185/255 mm / Ø 1 – 165 mm
HELITRONIC RAPTOR DIAMOND	<b>P R HSS HM C/K CBN PCD</b>	270 mm / Ø 3 – 400 mm
HELITRONIC POWER DIAMOND 400	<b>P R HSS HM C/K CBN PCD</b>	520 mm / Ø 3 – 380 mm
HELITRONIC VISION DIAMOND 400 L	<b>P R HSS HM C/K CBN PCD</b>	420 mm / Ø 3 – 315 mm



## LASER

Production of tools with laser

Machines	Use   Materials
VISION LASER	<b>P HM PCD CVD-D MKD/ND</b>



## MEASURING

Contact-free measurement of tools, workpieces and grinding wheels

Machines	Use   E <sub>UX,MPE</sub> -value	Tool dimensions <sup>1)</sup> max. length <sup>2)</sup> / diameter
HELICHECK ADVANCED	<b>M</b> (1.8 + L/300) µm	420 mm / Ø 1 – 320 mm
HELICHECK PRO	<b>M</b> (1.2 + L/300) µm	300 mm / Ø 1 – 200 mm
HELICHECK PRO LONG	<b>M</b> (1.2 + L/300) µm	730 mm / Ø 1 – 200 mm
HELICHECK PLUS	<b>M</b> (1.2 + L/300) µm	300 mm / Ø 0.1 – 200 mm
HELICHECK PLUS LONG	<b>M</b> (1.2 + L/300) µm	730 mm / Ø 0.1 – 200 mm
HELICHECK NANO	<b>M</b> (1.2 + L/300) µm	120 mm / Ø 0.1 – 16 mm
HELICHECK 3D	<b>M</b> (1.8 + L/300) µm	420 mm / Ø 3 – 80 mm



## AUTOMATION

Solutions for complete tool production: From loading systems that are integrated into the machine's working area to robot loaders and ATP- Automated Tool Production, our innovative solution for networking grinding, eroding and measuring machines from WALTER.



## SOFTWARE

The intelligence of tool machining and measuring for production and regrinding



## CUSTOMER CARE

Comprehensive range of services

<sup>1)</sup> The maximum tool dimensions depend on the type of tool and its geometry, as well as the type of machining.

<sup>2)</sup> From theoretical taper diameter of the workpiece holder.

**Use:** **P** Production **R** Regrinding **M** Measuring

**Materials:** **HSS** High speed steel **TC** Tungsten carbide **C/C** Cermet/ceramics **CBN** Cubic boron nitride **PCD** Polycrystalline diamond

**CVD-D** Chemical vapour deposition **MCD/ND** Monocrystalline diamond/natural diamond



# WALTER MASCHINENBAU GMBH

WALTER has produced tool grinding machines since 1953. Today, our product range is supplemented by tool eroding machines and fully automated CNC measuring machines of the HELICHECK series for contactless complete measurement of tools and production parts.

Our customer focus and our global sales and service network of company-owned locations and employees has been appreciated by our customers for decades.

Walter Maschinenbau GmbH is a company of the UNITED GRINDING Group. Together with EWAG, we consider ourselves to be a supplier of systems and solutions for the complete machining of tools and can offer a wide range of products, including grinding, eroding, laser machining, measurement and software.



Grinding



Eroding



Laser



Measuring



Automation



Software



Customer Care



## ABOUT US

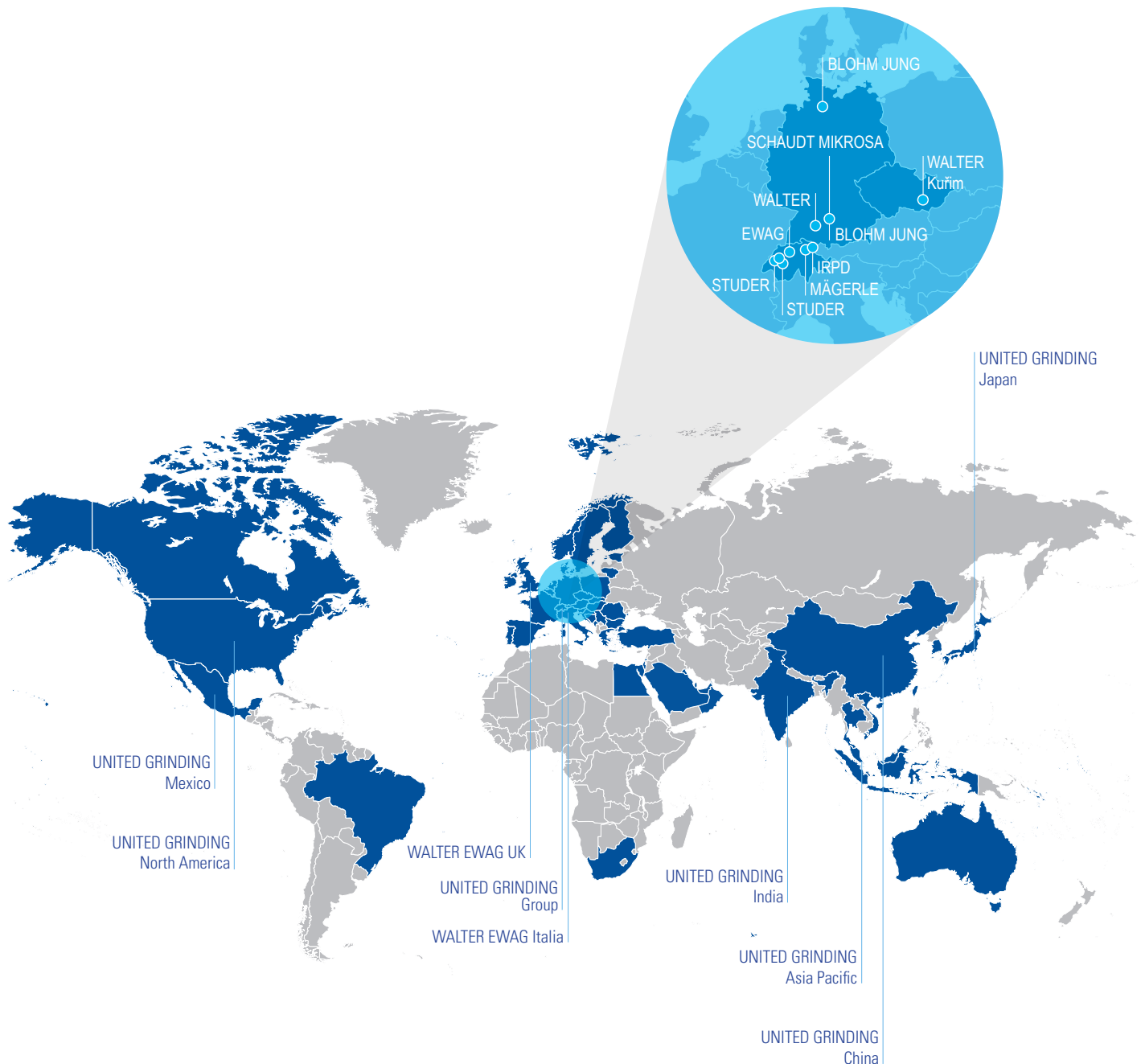


# UNITED GRINDING GROUP

UNITED GRINDING Group is one of the world's leading manufacturers of grinding, eroding, laser, and measuring machines, as well as machine tools for additive manufacturing. With roughly 2.300 employees at more than 20 manufacturing, service, and sales locations, the group is organized in a customer-oriented and efficient way.

Through its MÄGERLE, BLOHM, JUNG, STUDER, SCHAUDT, MIKROSA, WALTER, EWAG, and IRPD brands, as well as competence centers in America and Asia, UNITED GRINDING offers broad application expertise, a large product portfolio, and a full range of services for the production of high-precision components.

“We want to make our customers even more successful – UNITED FOR YOUR SUCCESS”





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