HELITRONIC MICRO

The high precision system for small tools

Key parameters

The HELITRONIC MICRO from the HELITRONIC family produces and sharpens rotationally symmetrical tools and production parts with smaller diameters. From 0.1 mm diameter in production, from 3 mm diameter when resharpening, maximum diameter 12.7 mm, tool length up to 120 mm, maximum weight up to 12 kg.

WALTER
KÖRBER SOLUTIONS

Walter Maschinenbau GmbH

WALTER has produced tool grinding machines since 1953. With the introduction to the market of the HELITRONIC series for the complete machining of rotationally symmetrical tools, WALTER became the leader of the world market. Today, our product range is supplemented by fully automated CNC measuring machines in the HELICHECK series for contactless complete measurement of tools and production parts.

Walter Maschinenbau GmbH is part of the UNITED GRINDING Group within Körber AG which has significant financial strength and well tested processes. Together with our sister company, Ewag AG, 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, rotary eroding, laser machining, measurement and software.

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

HELITRONIC MICRO

Grinding complex geometries on rotationally symmetrical tools, in the growth market 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.


Grinding


Software

The HELITRONIC MICRO at a glance

Application

- Grinding rotationally symmetrical tools with small to the very smallest diameters for innovative industries such as in the medical area, precision engineering, automotive engineering, avionics etc.
- For production and/or regrinding
- Fully automated, complete machining with only a single clamping cycle
- Machinable materials include HSS, carbide, cermet, ceramic

The machine

- Low vibration, solid mineral cast, gantry type construction
- X, Y, Z linear axes with linear drives
- X' linear axis with ball-type linear drive
- 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
- FANUC, the global standard for control equipment
- Integrated FANUC robot loader
- Numerous efficiency options

HELITRONIC MICRO with an integrated FANUC robot loader.

Software

- 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

Small tools represent a growing market – a market for you to exploit

With the HELITRONIC MICRO, WALTER extends your product range for the production and regrinding of the smallest tool diameters. 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 resharpening.

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 its rotating workpiece axis A with a fast max. speed of 1,000 rpm, the HELITRONIC MICRO can precisely grind cylindrical shapes, particularly for multi-step tools.

WALTER gantry design

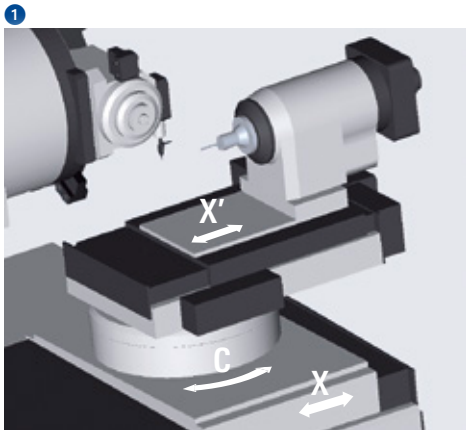
The HELITRONIC MICRO with its mineral cast machine bed was especially designed for this range of applications. This CNC machine offers you optimum damping of vibrations, it is insensitive to temperature fluctuations, it has a dynamic drive system and ultimately offers precision grinding.

Standard equipment for peak performance

1

1 With 3 motor spindles for up to 12 grinding wheels, the HELITRONIC MICRO is designed for flexible use

1



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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 robotic loader into the machine which reduces the loading time to a minimum. Capacity for up to 1,500 tools.

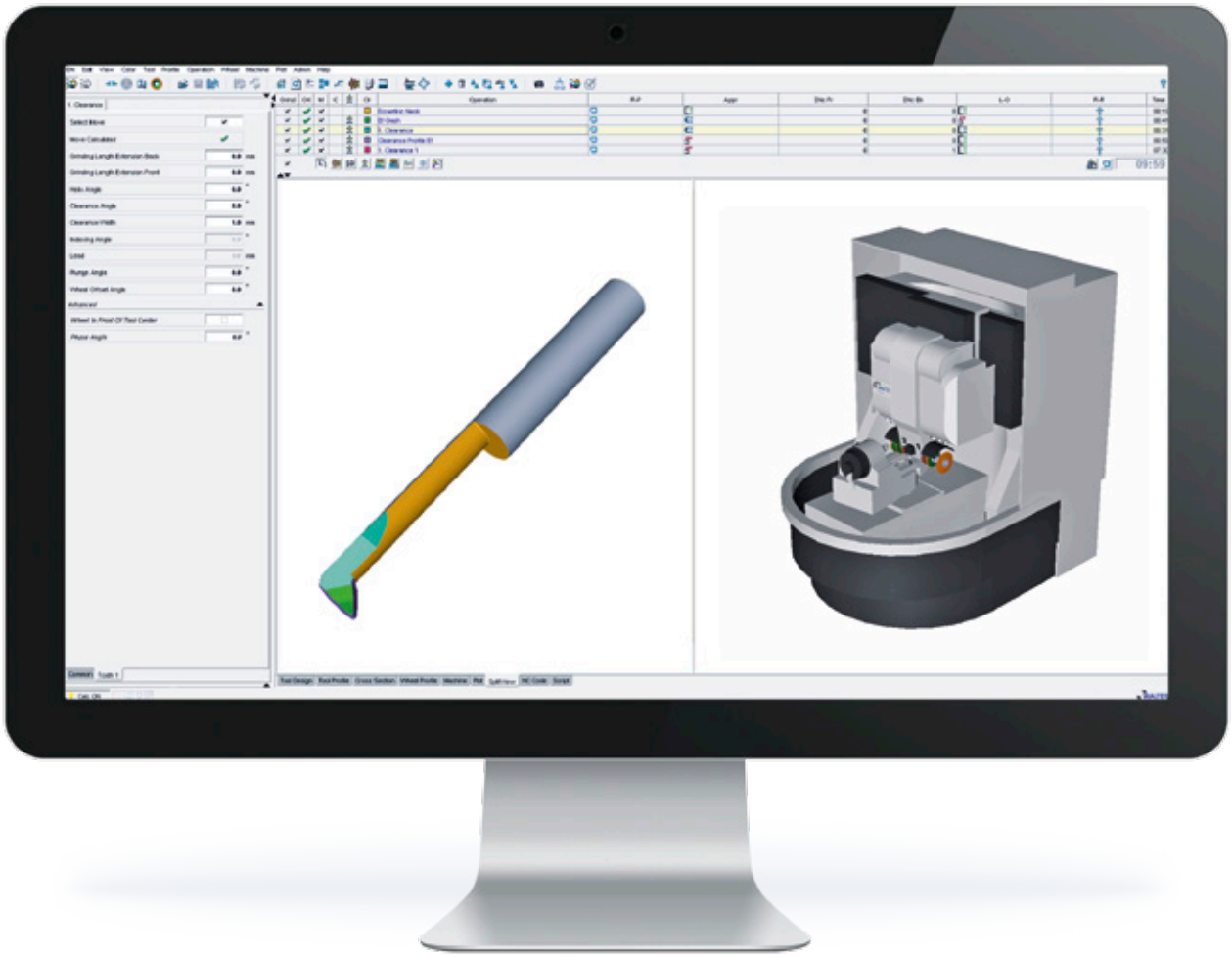
Automatic positioning and measurement system "Heli-Probe"
This records important tool parameters and positions the tool in the shortest possible time. This is a vital requirement for productivity and quality.

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

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

1 CNC controlled X´ axis
2 Integrated FANUC robot loader
3 Automatic positioning and measurement system "Heli-Probe"
4 "Shank/support steady" option

Application software for tool machining



HELITRONIC TOOL STUDIO adds operational convenience to 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 minimum complexity, machining steps and movement sequences for both rotationally symmetrical standard tools and for special tools can be programmed by the operator. 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 measuring system IMS, 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.

Global standard of control technology

- Multi-processor system – high system security
- FANUC bus for digital drives – fault-free communication
- CNC and robots from a single manufacturer – no interface problems

With the FANUC control unit, WALTER relies on the global standard of control technology. For the user, this means the highest degree of reliability, availability and operating comfort.

WALTER, the No. 1 in tool machining and FANUC, the No. 1 in CNC control units, together make an unbeatable team.

Customer Care

WALTER and EWAG deliver systems and solutions worldwide for all areas of tool machining. Our leadership is based on ensuring maximum availability of our machines over their entire service life. For this we have thus bundled numerous services in our customer care program.

From “Start up” through “Prevention” to “Retrofit”, our customers enjoy tailor made services for their particular machine configuration. Around the world, our customers can use helplines, which can generally solve a problem using remote service. In addition to that, you will also find a competent service team in your vicinity around the world. For our customers, this means:

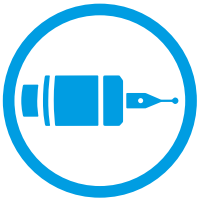
- Our team is close by and can quickly be with you.
- Our team will support you to improve your productivity.
- Our team works quickly, focuses on the problem and its work is transparent.
- Our team solves every problem in the field of machining tools, in an innovative and sustainable manner.

Start up
Commissioning
Extension of the guarantee

Qualification
Training
Support for production

Prevention
Maintenance
Inspection

Service
Customer service
Customer advice
Helpline
Remote service



Material
Spare parts
Replacement parts
Accessories

Rebuild
Machine overhauling
Refurbishing of assemblies

Retrofit
Conversions
Retrofitting parts
Taking machines back

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	± 200 °
A axis	1,000 rpm
B axis	± 140 °
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

Others

Machine weight	approx. 6,000 kg
Power consumption at 400 V/50 Hz	approx. 25 kVA

Tool data [1)]

Min. tool diameter production/resharpening	0.1/3 mm
Max. tool diameter	12.7 mm
Max. workpiece length, peripheral grinding [2)]	120 (300) mm
Max. workpiece length, end face grinding [2)]	120 (300) mm
Max. workpiece weight	12 kg

Robot loader

Tool capacity (depending on the diameter)	up to 1,500

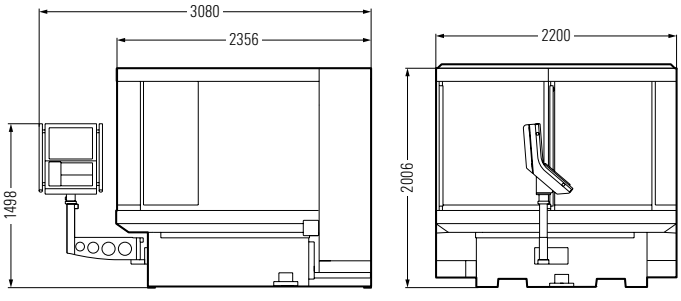
Options

Coolant system

On request – several types are possible

Others

Automatic support steady, software etc.



HELITRONIC MICRO with integrated robot loader

[1)] The maximum tool dimensions depend on the type of tool and its geometry, as well as the type of machining.

[2)] From the theoretical taper diameter of the workpiece holder.

Creating Tool Performance

WALTER and EWAG are globally leading market-oriented technology and service companies, and are system and solution partners 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 rotationally symmetrical tools and workpieces

WALTER machines	Use	Materials	Tool dimensions [1] max. length [2] / diameter
HELITRONIC ESSENTIAL	P R	HSS TC C/C CBN	255 mm / Ø1 – 100 mm
HELITRONIC MINI POWER	P R	HSS TC C/C CBN	255 mm / Ø1 – 100 mm
HELITRONIC MINI AUTOMATION	P R	HSS TC C/C CBN	255 mm / Ø1 – 100 mm
HELITRONIC BASIC	P R	HSS TC C/C CBN	350 mm / Ø3 – 320 mm
HELITRONIC POWER	P R	HSS TC C/C CBN	350 mm / Ø3 – 320 mm
HELITRONIC VISION 700 L	P R	HSS TC C/C CBN	700 mm / Ø3 – 200 mm
HELITRONIC VISION 400 L	P R	HSS TC C/C CBN	420 mm / Ø3 – 315 mm
HELITRONIC VISION 400	P R	HSS TC C/C CBN	370 mm / Ø3 – 315 mm
HELITRONIC MICRO	P	HSS TC C/C CBN	120 mm / Ø0.1 – 12.7 mm
	R	HSS TC C/C CBN	120 mm / Ø3 – 12.7 mm

EWAG machines	Use	Materials	Tool dimensions [1] max. length / diameter
EWAMATIC LINEAR	P R	HSS TC C/C CBN PCD	200 mm / Ø0.2 – 200 mm
WS11/WS11-SP	P R M	HSS TC	- / up to Ø25 mm
RS15	P R M	HSS TC C/C CBN PCD	- / up to Ø25 mm

Eroding – Electrical discharge machining and grinding of rotationally symmetrical tools

WALTER machines	Use	Materials	Tool dimensions [1] max. length [2] / diameter
HELITRONIC DIAMOND EVOLUTION	P R	HSS TC C/C CBN PCD	185/255 mm / Ø1 – 165 mm
HELITRONIC POWER DIAMOND	P R	HSS TC C/C CBN PCD	350 mm / Ø3 – 320(400) mm
HELITRONIC DIAMOND	P R	HSS TC C/C CBN PCD	370 mm / Ø3 – 320(400) mm

Software – The intelligence of tool machining and measuring for production and regrinding

Customer Care – Comprehensive range of services

Grinding – Grinding of indexable inserts

EWAG machines	Use	Materials	Indexable inserts [1] Inscribed / circumscribed circle
EWAMATIC LINEAR	P R	HSS TC C/C CBN PCD	Ø3 mm / Ø50 mm
COMPACT LINE	P R	HSS TC C/C CBN PCD	Ø3 mm / Ø50 mm
INSERT LINE	P R	HSS TC C/C CBN	Ø3 mm / Ø75 mm
RS15	P R M	HSS TC C/C CBN PCD	- / up to Ø25 mm

Laser – Laser machining of indexable inserts and/or rotationally symmetrical tools

EWAG machines	Use	Materials	Tool dimensions [1] max. length / diameter
LASER LINE ULTRA	P R	TC C/C CBN PCD CVD-D MCD/ND	250 mm / Ø0.1 – 200 mm
LASER LINE PRECISION	P R	CBN PCD CVD-D	250 mm / Ø0.1 – 200 mm

EWAG machines	Use	Materials	Indexable inserts [1] Inscribed / circumscribed circle
LASER LINE ULTRA	P R	TC C/C CBN PCD CVD-D MCD/ND	Ø3 mm / Ø50 mm
LASER LINE PRECISION	P R	CBN PCD CVD-D	Ø3 mm / Ø50 mm

Measuring – Contactless measurement of tools, workpieces and grinding wheels

WALTER machines	Use	Tool dimensions [1] max. length [2] / diameter
HELICHECK PRECISION	M	420 mm / Ø1 – 320 mm
HELICHECK ADVANCED	M	420 mm / Ø1 – 320 mm
HELICHECK PRO	M	300 mm / Ø1 – 200 mm
HELICHECK PRO LONG	M	730 mm / Ø1 – 200 mm
HELICHECK PLUS	M	300 mm / Ø0.1 – 200 mm
HELICHECK PLUS LONG	M	730 mm / Ø0.1 – 200 mm
HELICHECK 3D	M	420 mm / Ø3 – 80 mm
HELISET UNO	M	400 mm / Ø1 – 350 mm
HELISCALE	M	300 mm / Ø1 – 50 mm

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

[1] Maximum tool dimensions are dependent on the tool type and geometry, as well as the type of machining.
[2] From the theoretical taper diameter of the workpiece holder.

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HELITRONIC MICRO · Subject to alterations · Printed in Germany · 133 · V4 · 03/2015 · en