HELITRONIC POWER DIAMOND

Two-in-one, rotary eroding and grinding machine

Key parameters

Rotary eroding of CBN/PCD tools and grinding of HSS/carbide tools, switching as you wish, is the particular strength of the HELITRONIC POWER DIAMOND system within the HELITRONIC family. Tool diameters from 3 to 320 (400) mm, tool lengths up to 350 mm, each item can weigh up to 50 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 POWER DIAMOND

Available either with a belt-driven spindle for max. 6 electrodes/grinding wheels or with a motor spindle for max. 3 electrodes/grinding wheels. Made to measure for frequently changing tools or for large series. This tailoring to customer requirements shows how productive the HELITRONIC POWER DIAMOND can be. Over a wide range of materials, it is the benchmark for the quality of finish and for precision.


Grinding


Eroding


Software

The HELITRONIC POWER DIAMOND at a glance

Application

- Rotary eroding and grinding of rotationally symmetrical tools for metalworking and woodworking industries
- For production and/or regrinding
- Fully automated, complete machining with only a single clamping cycle
- Machinable materials include PCD, CBN, HSS, carbide, cermet, ceramic

The machine

- Low vibration, solid grey cast iron, gantry type construction
- X, Y, Z linear axes with ball-type linear drive
- A, C rotating axes with worm drives
- Belt-driven spindle with two ends or motor spindle with one end
- Each spindle end can take up to three rotating electrodes/grinding wheels
- 3-stage rotary eroding process for highest quality finish
- FANUC, the global standard for control equipment
- A variety of automatic loading systems
- Numerous efficiency options

HELITRONIC POWER DIAMOND – the basic version with a belt-driven spindle and two ends.

Software

- HELITRONIC TOOL STUDIO, CAD/CAM software for design, programming, simulation and production
- Walter Window Mode WWM
- Numerous software options to extend the system's performance and to increase its efficiency

HELITRONIC POWER DIAMOND with chain loader and electrode/grinding wheel changer – the top, high-performance version for minimally-staffed multi-shift operation.

New performance class for PCD tools

1

1 Rotary eroding a high performance side-trimming tool

With the up to 3-stage rotary eroding procedure as standard, the HELITRONIC POWER DIAMOND sets new benchmarks for quality for PCD tools. The HELITRONIC POWER DIAMOND is an economic investment for both the production and resharpening of PCD/CBN and HM/HSS tools in the diameter range of 3 to 320 (400) mm.

Time-saving processing of complex geometries in a single clamping becomes possible using the single-spindle concept with electrode/grinding wheel changer. The combination provides a real step forward in terms of flexibility and quality. For example, the optimum rotary electrode with the corresponding radius can be applied for each radius when working with PCD multi-step tools and wood profiles with varying concave step radii.

Furthermore, thanks to its Two-in-one principle, the HELITRONIC POWER DIAMOND can be used as a grinding machine for the production and resharpening of HM/HSS tools. The tool change is "on the fly". Changes from PCD/CBN to HM/HSS tools and back again can take place automatically.

Optimal erosion process with DIAMOND-PLUS

The latest generator development "DIAMOND-PLUS" which is delivered as standard in all EDM machines, offers through the new variable acceleration factor an optimal erosion process, independent of disturbances such as differences in material, electrode shape, stock removal, tool profile, etc. This means that the erosion process is continuously controlled to ensure constant quality. Such a process behavior is unique on the market. In addition, the new contour acceleration increases the eroding speed up to 40 %, and with the fine finishing operation an optimal surface quality is simultaneously obtained.

Example tools (from top left to bottom right): PCD end mill, high performance side trimming tool, high performance end mill, PCD reamer, PCD drill, 2 x PCD stepped drill bits, PCD stepped drill bit, PCD end mill, PCD twist drill, PCD step drill, dual cut tool

Innovative WALTER grinding and rotary eroding equipment

1

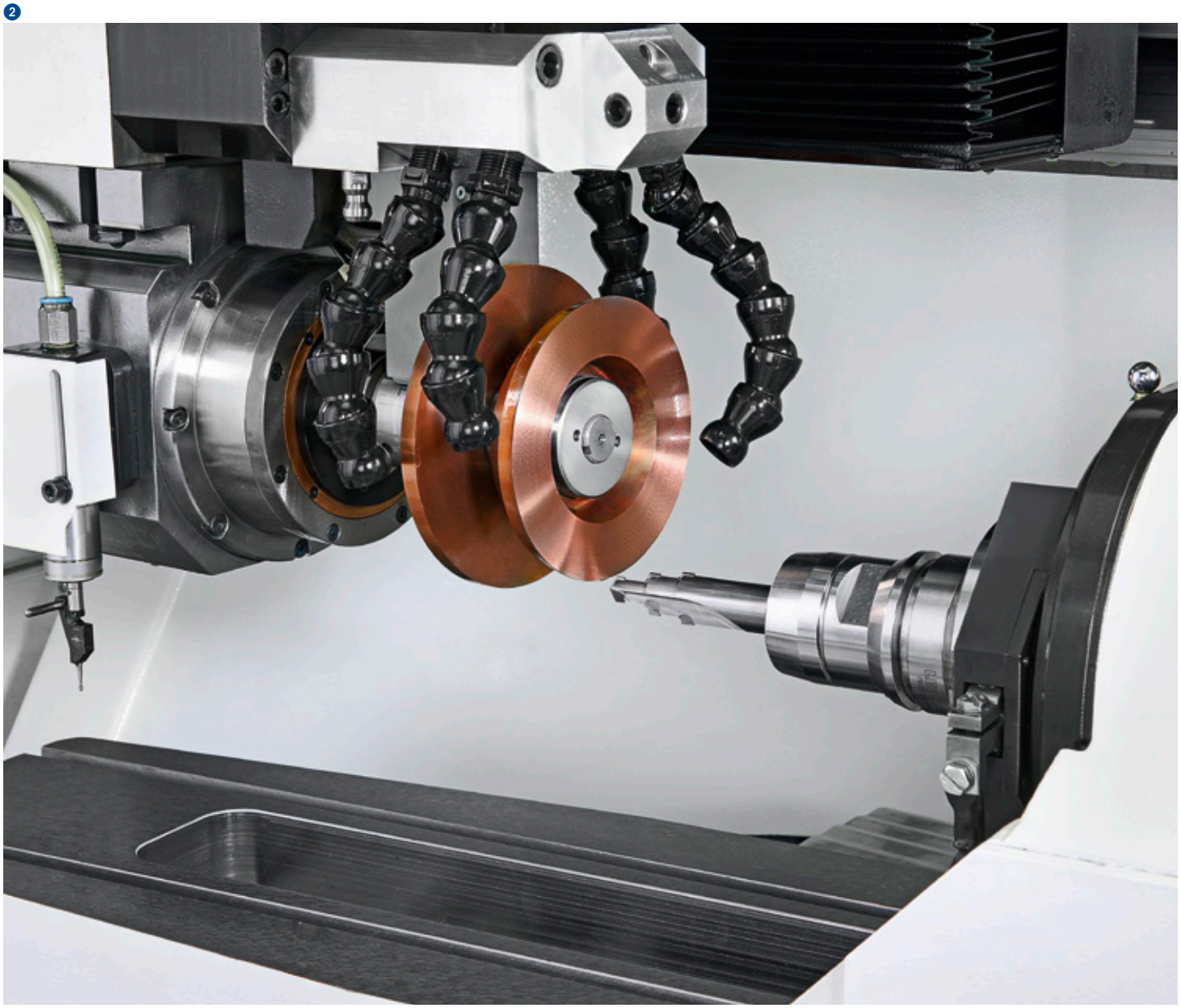
WALTER gantry design
The WALTER gantry design with its excellent stability properties and extreme rigidity converts the high dynamism of the digital drives into low-vibration grinding precision.

Motor spindle
The spindle directly driven by a powerful motor has one end for the electrode holder/grinding wheel holder. The holder can take up to 3 electrodes or 3 grinding wheels. With the grinding wheel changer option, up to 8 holders, for a total of 24 electrodes/grinding wheels can be introduced into the process. The result is a whole range of efficiency and productivity.

Belt-driven spindle
The belt-driven spindle has two ends for up to 3 electrodes and up to 3 grinding wheels or alternatively, for up to 6 grinding wheels. With this range, even complex geometries can be machined with just one clamping cycle for the workpiece. The complete sets of electrodes and grinding wheels are assigned to the spindle end concerned and are saved together with all of their data.

1 HELITRONIC POWER DIAMOND with robot loader and electrode/grinding wheel changer

2



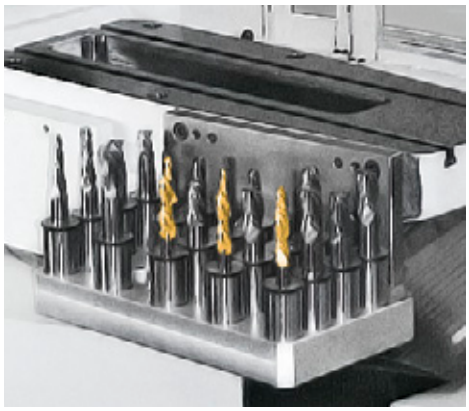
Automatic positioning and measurement system “Heli-Probe”
Heli-Probe records important tool parameters for a perfectly positioned tool in the shortest space of time. This is the best precondition for quick and accurate grinding, quality and productivity.

Outstanding surface quality, longer service life, more precision
With the 3-stage rotary eroding process, the process is so tightly controlled that excellent quality finishes are achieved. This also results in a parallel vast improvement in chipping. For the user, the improved PCD quality offers longer service life and increased precision.

Glass scales
All linear axes are equipped with glass scales. The greater precision that results is fully implemented into grinding precision.

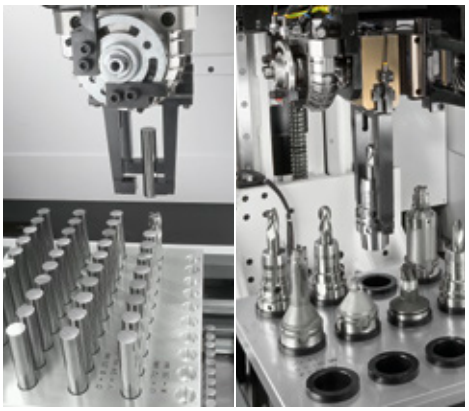
2 Directly driven single spindle grinding head with high drive power

Automation options



Eco loader/Eco loader plus
With up to 20 tools as an Eco loader. Also possible as an Eco loader plus with up to 165 tools. The Eco loader is mounted on the work table. The gripper is integrated into the grinding head. Preferred use is with single pieces and small series. This proximity to the grinding unit means short auxiliary process times. The machine's control system controls all of the loading functions. An effective automation measure for large and small businesses.

Disc loader
Up to 40/56/90/120 tools. The compact, machine-integrated loading system. Preferred use is with single pieces or frequent small series. Efficiency of the grinding operation increases considerably with the option of random loading with different tools.



Pallet loader/HSK loader
Up to 280 tools. With the pallet loader, short tool change times are a given. All loader movements are controlled and monitored by the machine's control unit. A large diameter range is covered without changing the gripper with a one-range gripper. Preferred application is for production and regrinding series. Also available as an HSK loader.

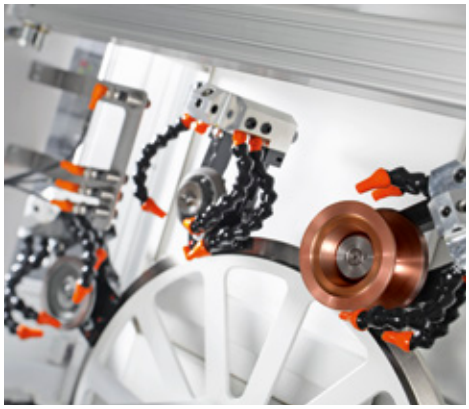
Robot loader
The robot improves accessibility to the workpieces and makes special applications possible. Depending on the type of workpiece or the workpiece diameter, up to 3,500 workpieces can be loaded using the robot.

- Top technology from WALTER: grinding wheel changer
- Take measurements with no additional clamping cycle
- Precision even for long tools

Profile blade loader
Up to 76 tools. A flexible loader system for tapping the market niche of profile blade grinding. The storage cassette is mounted on the work table. The workhead axis is equipped with a clamping fixture for profile blades. The loader automates the grinding of profile blades especially used in the wood industry.

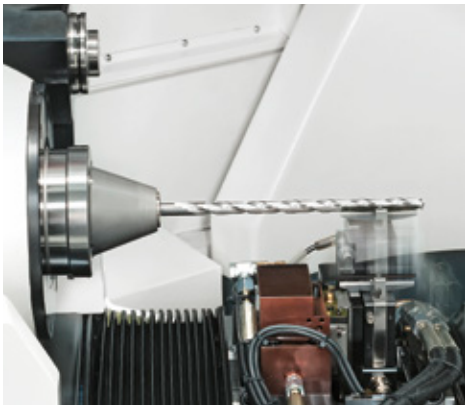
Chain loader 300plus
The chain loader with an HSK interface is designed for 35 tools up to a diameter of 160 mm, or 21 tools up to a diameter of 320 mm. This is a globally unique system for the production and resharpening of rotationally symmetrical tools.

- A flexible loading system for all requirements
- 20 to 3,500 tools
- Also for profiled blades



Electrode/grinding wheel changer
A real machine enhancement from WALTER. With a holding capacity of up to 24 electrodes/grinding wheels, it quadruples the grinding wheel capacity of the HELITRONIC POWER DIAMOND. In combination with loading systems, the flexibility of the CNC machine increases enormously. This applies primarily to complex geometries and large volumes. The coolant supply and the grinding set form a single unit. This means quick wheel set changes and that an optimum cooling is always maintained.

Heli Contour Check HCC
Machine-integrated camera measurement system for measuring the tool contour directly after grinding, without re-chucking the tool for very high degrees of accuracy. This way the measured contour errors can be directly adjusted.



Automated work table
The automated work table option can be equipped with up to two upper slides: one automatic and one permanent. This way, long tools can be supported by a moveable steady rest and/or a tailstock. The surface quality and tool precision is increased thanks to the constant support at the contact point of the grinding wheel.

WALTER grinding and rotary eroding software

Walter Window Mode WWM
The Walter Window Mode WWM is the proven software for the rotary eroding and grinding of a wide variety of tool types.

The WWM comprises packages for the rotary eroding of rotationally symmetrical tools, e.g. end milling cutters, profile cutters and multi-step tools, in addition to profiled blades and straight cutting tools, etc. In addition to which software packages for grinding cylindrical milling cutters, conical milling cutters, drills, stepped drill bits, etc.

With the option of combining the two different machining methods of rotary eroding and grinding in a single piece of software, the WWM complements the Two-in-one concept. Ideal prerequisites for flexibility, productivity and maximum quality expectations.

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

- This provides a simple entry into the complex world of PCD profiled tools
- New user interface
- Innovative touchscreen operation

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

- Analysis of the centre of gravity
- Balancing the tool

WWM package 52 “PCD profile tools”
The revised WWM package 52 “PCD profiled tools” simplifies your entry into the complex world of this type of tool. By focusing on clearly structured menus, simplified windows to make entries, plentiful help and innovative touchscreen operation, the machine operator can more quickly and easily program PCD profiled tools.

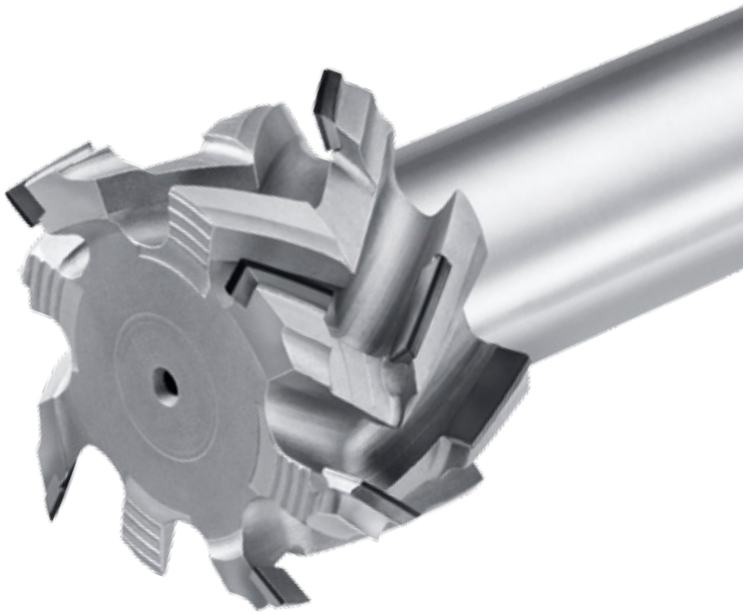
User interface
- Optimised data entry screens – only the most important parameters are shown, which makes programming easier
- Fields can be preset with default values
- New help screens support the operator
- Individually assembled input screens

Navigation
- Quick scrolling via wipe movement
- Simplified menus make navigation easier
- A variety of shortcuts allow auxiliary programs to be called up more quickly

Wheel explorer
- Access to all parameters via the innovative touchscreen operation
- Increased clarity thanks to revised design
- Automatic creation of electrode dressing profiles

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.

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.



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:

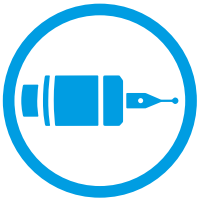
- Our team is close by and can quickly be with you.
- Our team will support you to improve your productivity.
- Our team works quickly, focuses on the problem and its work is transparent.
- Our team solves every problem in the field of machining tools, in an innovative and sustainable manner.

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	460 mm
Y axis	320 mm
Z axis	660 mm
Rapid traverse speed X, Y, Z	max. 15 m/min
C axis	± 200°
A axis	∞
Linear resolution	0.0001 mm
Radial resolution	0.0001°

Grinding spindle drive

Max. grinding wheel diameter	200 mm
Max. diameter of rotating electrode	6 – 200 mm
Grinding spindle speed	0 – 10,500 rpm

HELITRONIC POWER DIAMOND with belt-driven spindle

Spindle ends	2
Tool holder	NCT
Peak power	11.5 kW
Spindle diameter	80 mm

HELITRONIC POWER DIAMOND with motor spindle

Spindle ends	1
Tool holder	HSK 50
Peak power	14.5 kW

Others

Weight of machine including coolant system	approx. 4,600 kg
Power consumption at 400 V/50 Hz	approx. 25 kVA

Coolant system

Tank capacity	approx. 480 l
Frequency-controlled pump	max. 100 l/min at 3.5–7 bar

Tool data [1)]

Min. tool diameter	3 mm
Max. tool diameter	320 (400) mm
Max. workpiece length, peripheral grinding [2)]	350 mm
Max. workpiece length, end face grinding [2)]	280 mm
Max. workpiece weight	50 kg

Options

Coolant system

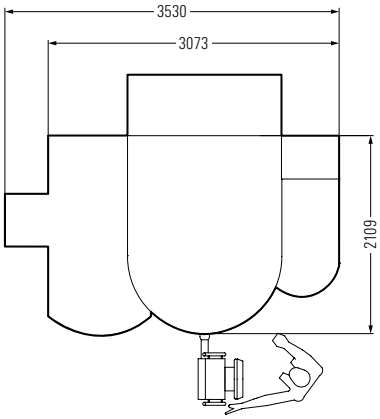
On request – several types are possible

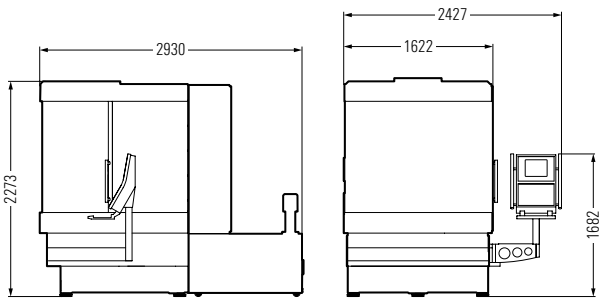
Loading systems

Eco loader/Eco loader plus, Disc loader, Pallet loader/HSK loader, Profiled blade loader, Chain loader 300plus, Robot loader

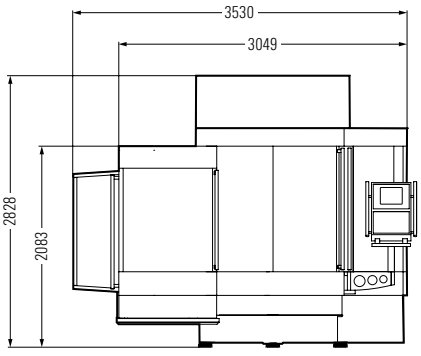
Others

Electrode/grinding wheel changer, frequency controlled pump 80 – 120 l/min at 7 – 20 bar, motor spindle 24 kW peak power with one spindle end, high frequency spindle, high torque motor 750 rpm, Heli Contour Check HCC, automated work table, software etc.





HELITRONIC POWER DIAMOND



HELITRONIC POWER DIAMOND with pallet loader and grinding wheel changer

[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.

WALTER
KÖRBER SOLUTIONS

Walter Maschinenbau GmbH
Jopestr. 5 · D-72072 Tübingen
Tel. +49 7071 9393-0
Fax +49 7071 9393-695
info@walter-machines.com

For worldwide contact details, please visit
www.walter-machines.com

HELITRONIC POWER DIAMOND · Subject to alterations · Printed in Germany · 169 · V4 · 03/2015 · en