

WALTER INFO 7/2020

HELITRONIC DIAMOND EVOLUTION

Efficient rotary eroding and grinding machine, Two-in-one

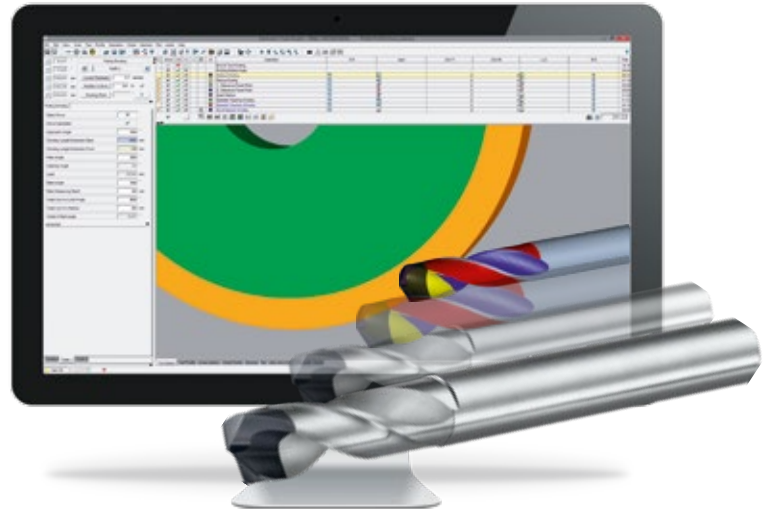
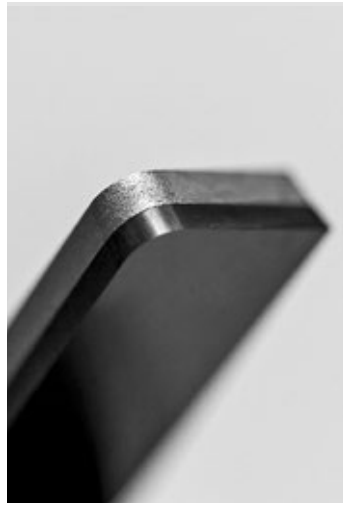
Now with
**FINE PULSE
TECHNOLOGY**



Key parameters

The HELITRONIC DIAMOND EVOLUTION is a high efficient solution within our EDM portfolio for rotary eroding of PCD/CBN tools and grinding of HSS/carbide tools in one single clamping cycle on a minimal footprint. Tool diameters from 1 to 165 mm, tool lengths up to 185 (255) mm, each item can weigh up to 30 kg.

The HELITRONIC DIAMOND EVOLUTION at a glance



Optimal erosion process with FINE PULSE TECHNOLOGY

The new eroding concept "FINE PULSE TECHNOLOGY" sets new standards in terms of surface and cutting edge quality and consequently the process reliability of PCD tools. It is now installed as standard in HELITRONIC DIAMOND EVOLUTION. The difference to other tools on the market can even be seen with the naked eye on the most common PCD types with 10 µm grain size. A tool produced with "FINE PULSE TECHNOLOGY" on a WALTER eroding machine shines on its free surface, similar to a polished (ground) tool.

Advantages

- Greatly improved surface quality
- Perfect cutting edge quality
- Increased process reliability even with difficult to erode PCD
- Maximum flexibility for different types of tools
- Short processing time
- State of the art technology
- Optimization for all generator codes
- Savings in the manufacturing chain of PCD tools

HELITRONIC TOOL STUDIO with integrated EDM functionality

"What you see is what you grind" – this is the well-known motto of HELITRONIC TOOL STUDIO for grinding – we can extend this further for the eroding functionality: "What you can grind, you can also erode"

Advantages

- CAD/CAM system for creating tools, even with complex tool geometries. CAD, design, programming, simulation and production in one software
- Simulation of grinding and/or eroding operations directly on the machine or on the PC
- Automatic collision check
- Simulation of PCDs
- Highly accurate and integrated 3D live simulation. All parameter changes are immediately displayed "live"
- Click & Edit – easy operation via selecting the operations by directly clicking on the simulation model
- Flexible modular system due to modular design. Freely combinable and expandable operations for future development





Option: Top loader



Option: Wheelchanger

Application

- Rotary eroding and grinding of rotationally symmetrical tools for metalworking and woodworking industries
- Cost-efficient production and / or re-sharpening
- 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
- Each spindle end can take up to three rotating electrodes/grinding wheels
- Robot loader for HSK and cylindrical tools (option)
- Top loader: Up to 500³⁾ tools from diameter 1 mm to 16 mm (option)
- Wheelchanger for up to 6 grinding wheels/electrodes (option)
- 3-stage rotary eroding process for highest quality finish
- FANUC, the global standard for control equipment
- Numerous efficiency options
- Cooling on the workpiece holder

Software

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

Grinding spindle drive

Max. grinding wheel diameter	150 mm
Max. diameter of rotating electrode	150 mm
Grinding spindle speed	0 – 10,500 rpm

HELITRONIC DIAMOND EVOLUTION with belt-driven spindle

Spindle ends	2
Tool holder	HSK 50
Peak power	9 kW
Spindle diameter	80 mm

Others

Paper filter

Capacity	approx. 350 l
----------	---------------

Tool data ¹⁾

Min. tool diameter	1 mm
Max. tool diameter (vertical)	165 mm
Max. tool length, complete processing ²⁾	185 mm
Max. tool length, peripheral grinding ²⁾	255 mm
Max. tool length, end face grinding ²⁾	185 mm
Max. tool weight	30 kg

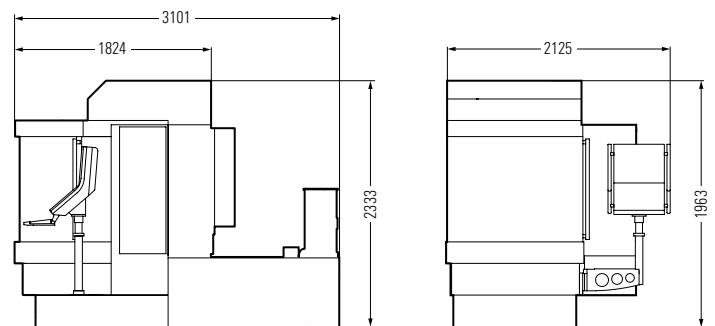
Options

Manual and automatic steady rest, manual tailstock, glass scales, extensions for robot loader, combi filter system, mist extractor, silencer, etc.

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.

³⁾ Depending on tool diameter.



HELITRONIC DIAMOND EVOLUTION



Walter Maschinenbau GmbH
Jopestr. 5 · 72072 Tübingen, Germany
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 400

Two-in-one, high performance rotary eroding and grinding machine with grinding wheel/electrode changer as standard

NEW

Now also available with
**Belt-driven spindle
with 2 spindle ends**



Key features

Switching between rotary eroding of PCD/CBN tools and grinding of HM/HSS tools is the particular strength of the HELITRONIC POWER DIAMOND 400 with a grinding wheel/electrode changer within the HELITRONIC FAMILY. Tool diameter ranges from 3 to 380 mm, machine lengths can be up to 520 mm and each item may weigh up to 50 kg.



Grinding



Eroding



Laser



Measuring



Software



Customer Care

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 in the HELICHECK series for contactless complete measurement of tools and production parts.

Walter Maschinenbau GmbH is part of the UNITED GRINDING Group. 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 400

The new generation of “Two-in-one” all-rounder: with electrode or wheel changer and motor spindle for max. 3 electrodes/grinding wheels. This tailoring to customer requirements shows how productive the HELITRONIC POWER DIAMOND 400 can be. Together with our FINE PULSE TECHNOLOGY, it is at the forefront for surface quality and precision in a wide range of materials.



Grinding



Eroding



Software

The HELITRONIC POWER DIAMOND 400 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 in a single clamping cycle
- Materials include PCD, CBN, HSS, carbide, cermet, ceramic

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 or optional torque motors
- Motor spindle with a spindle end that can take up to 3 rotating electrodes or 3 grinding wheels
- FINE PULSE TECHNOLOGY for highest surface quality
- FANUC, the global standard for control equipment
- Various loading systems
- Numerous efficiency options



HELITRONIC POWER DIAMOND 400 with "Top loader" and "Electrode/grinding wheel changer" (right) – uncompromising in productivity and precision

Software

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



HELITRONIC POWER DIAMOND 400 with the "Robot loader 25" (left) and "Electrode/grinding wheel changer" (right) options – the ultimate configuration for high performance

Efficient and easy to use

**Example tools** (from left to right):

PCD end mill, PCD reamer, PCD stepped drill bit, rim drill, 2 x PCD multi-step tool, PCD drill, shaped lathe tool, ball nose tool, thread milling drill, drill





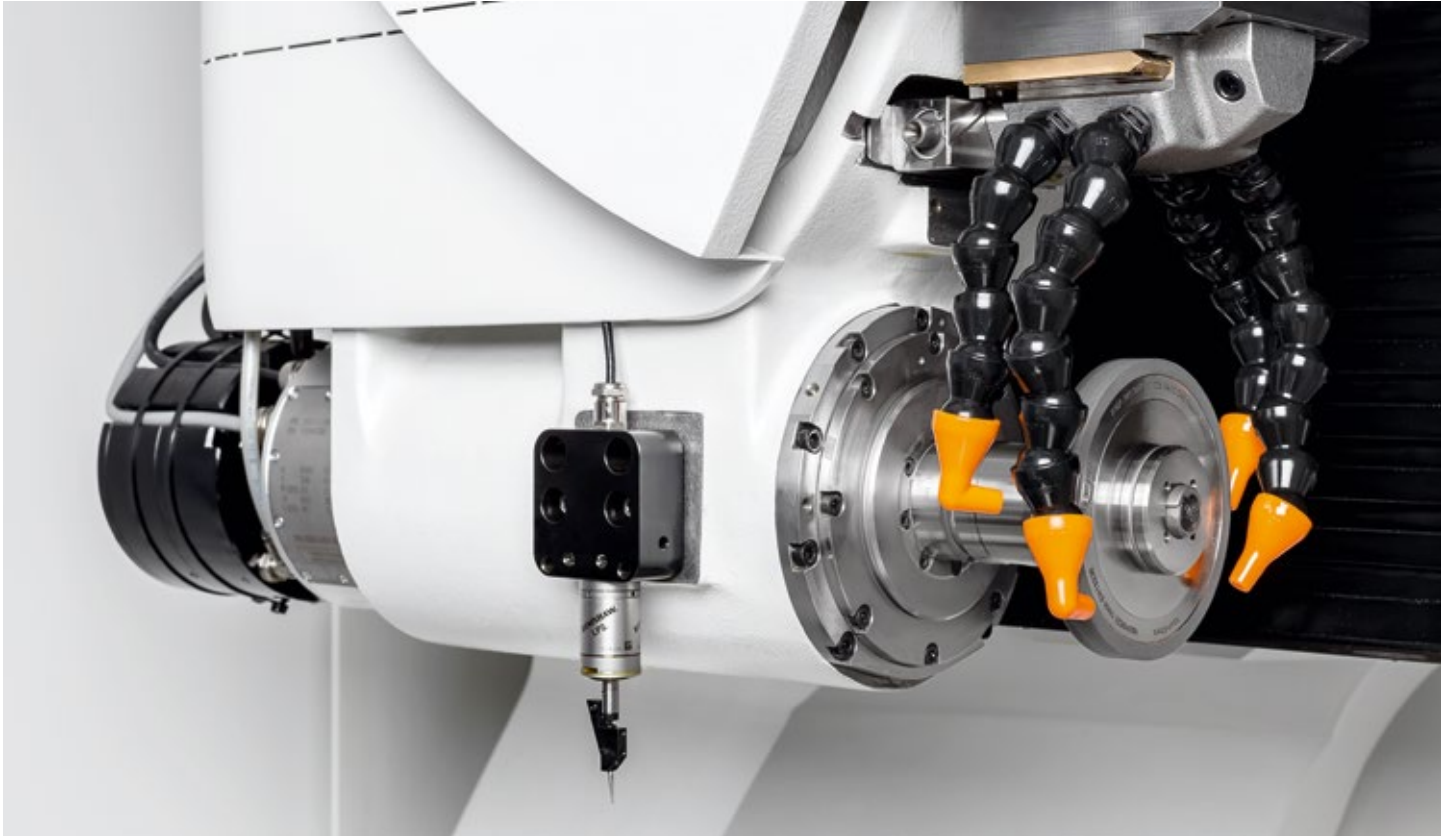
With FINE PULSE TECHNOLOGY, HELITRONIC POWER DIAMOND 400 is at the forefront when it comes to quality for PCD tools. It is an economic investment for both the production and reshaping of PCD/CBN tools in the diameter range of up to 315 mm.

It is possible to save time by machining complex geometries in a single clamping cycle. The combination of rotary eroding & grinding provides a real step forward in terms of flexibility and quality. Furthermore, thanks to its "Two-in-one" principle, the HELITRONIC POWER DIAMOND 400 can be used as a grinding machine for the production and reshaping of carbide tools. The changeover from PCD to carbide tools is "on the fly", since it is possible to automatically change between PCD and carbide tools and back again.



Innovative WALTER grinding and rotary eroding equipment

1



Motor spindle

The powerful single-ended directly driven motor spindle is equipped with a liquid cooling system. Up to 3 electrodes or grinding wheels can be mounted per electrode/grinding wheel holder. In combination with the electrode/grinding wheel changer, up to 8 holders for 24 electrodes/grinding wheels can be used in the grinding process. The result is the highest levels of efficiency and productivity.

Electrode/grinding wheel changer



Electrode/grinding wheel changer 4 x (option 8 x)

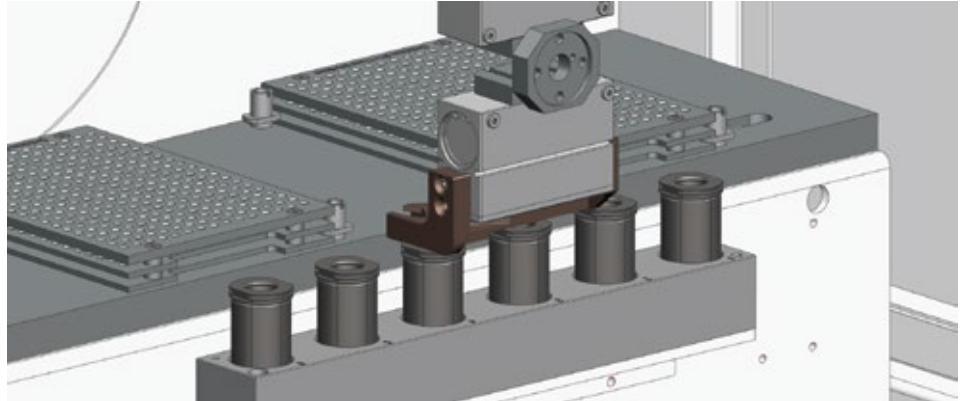
Affordable, compact, and flexible too. With a capacity of up to 24 electrode/grinding wheels, it quadruples the grinding wheel capacity of the HELITRONIC POWER DIAMOND 400. The max. grinding wheel diameter is 254 mm. The coolant supply and the grinding set form a single unit. This ensures reliable wheel set replacement and optimum coolant delivery.

Robot loader automation option



“Combi” equipment package for robot loaders

Gripper rapid replacement system for handling cylindrical tools and tools with HSK-63 mounting shank. The word “Combi” is an exact description of the contents of this equipment package: Namely the two equipment packages “Cylindrical tools” and “HSK” plus the rapid replacement interface for fast, user-friendly retooling.



“Multi-Range” equipment package for robot loaders

The Multi-Range equipment package sets new standards in terms of flexibility. Large diameter coverages with a pair of gripper fingers and a collet replacement (Schunk bayonet) are possible with this equipment package.

Advantages of the “Combi” equipment package

- Rapid replacement sequence thanks to only one cylinder head screw
- Pallets that have already been taught do not need to be taught again when grippers are replaced
- Pneumatics and teaching cable need to be connected only once (installation)
- Retrofitting at existing robots possible (software must be adapted)
- Easy handling
- Ergonomic form

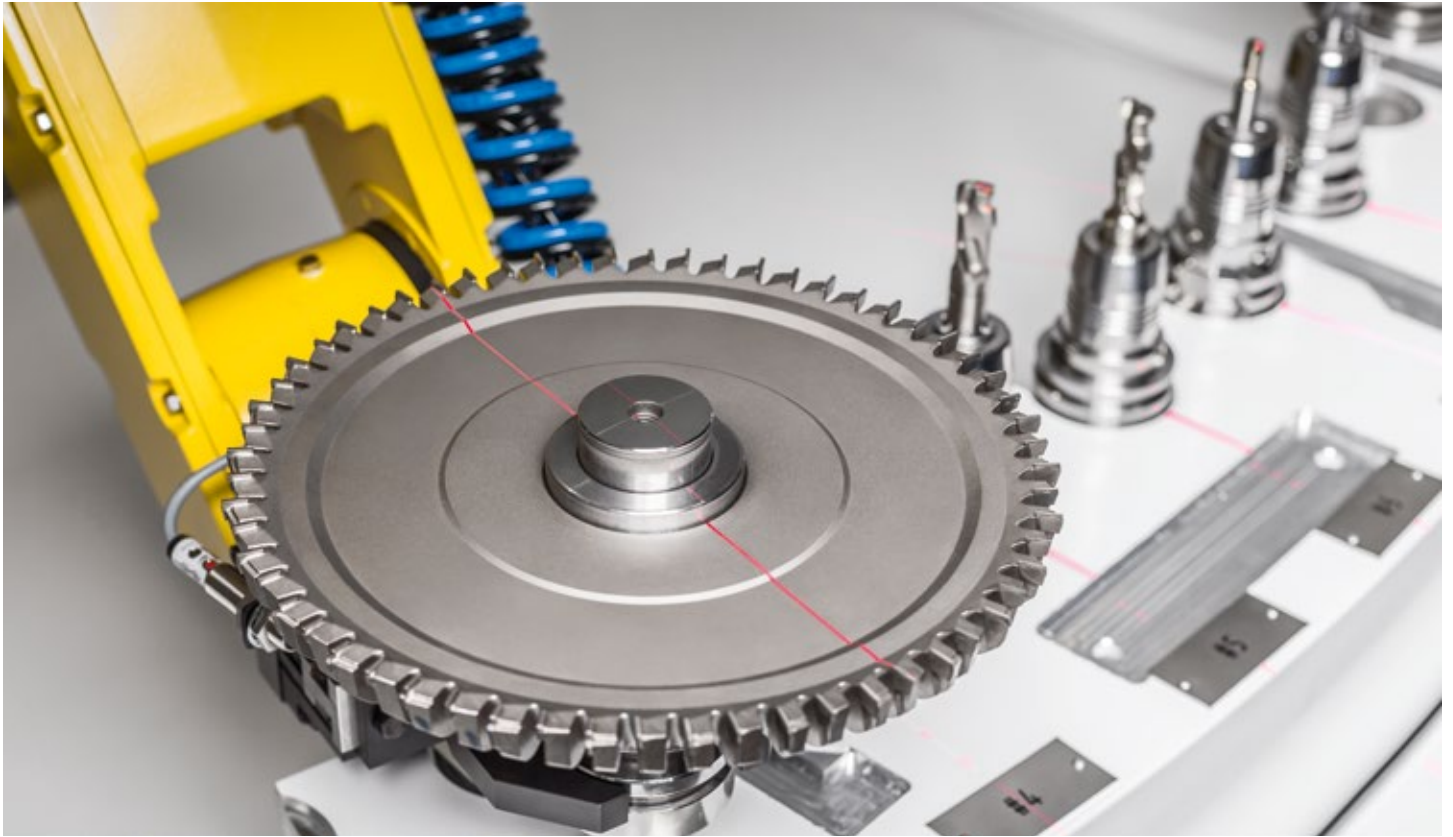


Robot loader

The robot improves accessibility to the workpieces and makes special applications possible. Depending on the type of workpiece or the workpiece diameter, up to 7,500 workpieces can be loaded using the robot.

Robot loader 25 automation option

1



Robot loader 25

For tools in an HSK holder with a total weight of up to 20 kg and a tool diameter of up to 315 mm in combination with the HELITRONIC POWER DIAMOND 400. Thanks to the innovative, recently developed loader software, "chaotic" loading on up to 7 pallet levels is now possible. An automatic diameter determination is also optionally available and ensures a smooth, automated and flexible production sequence.

Capacity of the available pallets:

- 21 tools, max. diameter 320 mm
- 28 tools, max. diameter 220 mm
- 70 tools, max. diameter 105 mm

2



Top loader automation option



Top loader

This space-saving and inexpensive automation solution is integrated directly into the machine envelope. Automatic teaching enables short setup times. Depending on the tool diameter, the Top loader offers a maximum of 500 places for tools.

Tool capacity, max. (sample diameters):

- 500 tools: diameter 3 mm
- 42 tools: diameter 20 mm
- 20 tools: diameter 32 mm

Other options

1

“Grinding wheel dresser” option

When it comes to the conditioning/dressing of grinding wheels during the production process, with subsequent software-controlled compensation, the high-performance electrical grinding wheel dresser is the perfect solution.

2

“Sharpening stone holder” option

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.

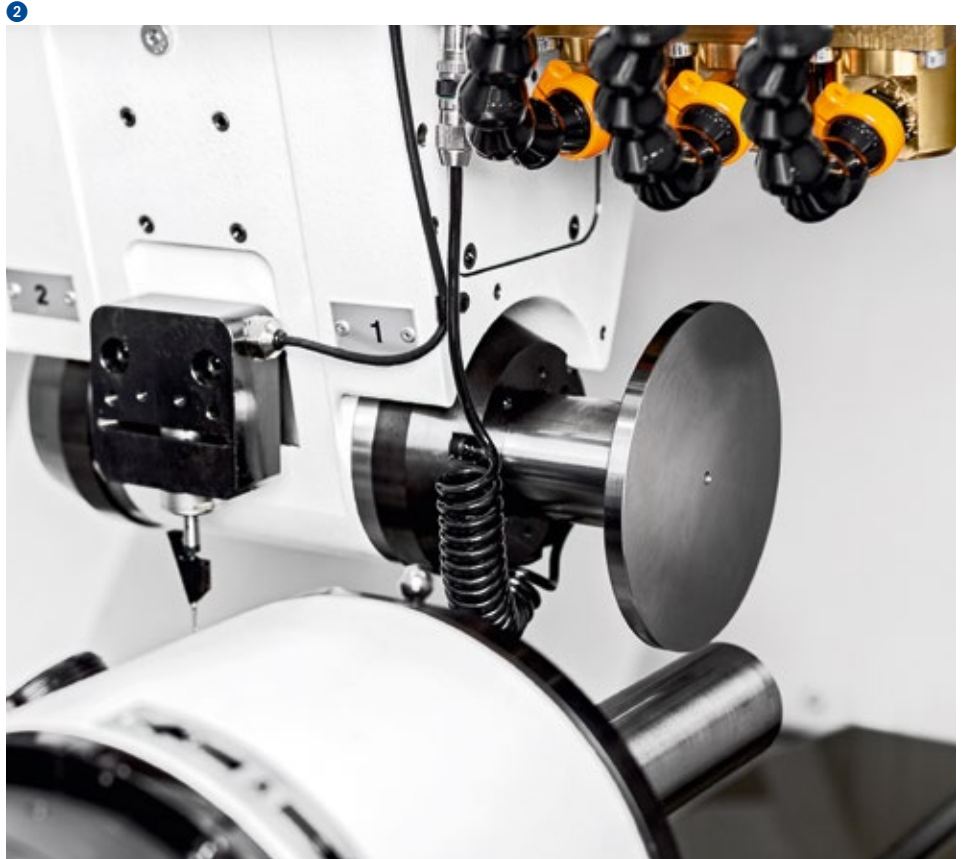
Other options



Automatic grinding wheel measurement

For even more efficient production. Normally the machine operator corrects the grinding wheel data in the production process manually so that the geometry of the tool can be maintained at its nominal dimension. With the automatic grinding wheel measurement, the wear on the bond of the grinding wheels can be determined automatically via tactile measurement, exactly documented and compensated for. The measurement is carried out during the production process. Diameter and length of the grinding wheel can be measured and compensated for. This means that the operator always has the optimum grinding wheel data at the desired time. Furthermore, the user can monitor the grinding wheel wear and thus influence the production process and optimise it.

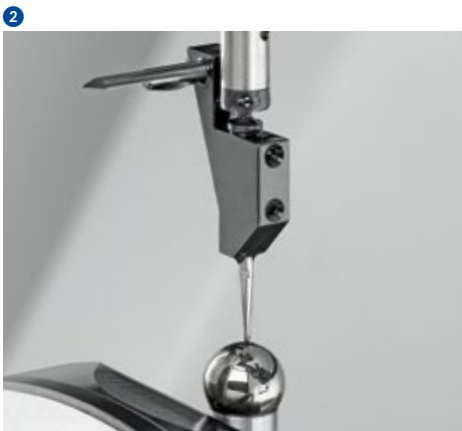
The probe for the tactile measurement is fitted on the tool carrier and is mounted in place of the electrical dresser.



Automatic, electrical measurement of the machine reference

Now use the advantages of the automatic, electrical measurement of the machine reference in the grinding and eroding machines from WALTER.

- Maximum precision of measurement results through exact positioning of the axes via electrical contact
- Significant time savings with automatic operation 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
- Short amortisation time for your investment



Automatic positioning and measurement system "Heli-Probe" (standard)

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.

Calibration (standard)

Calibration consists of a calibration ball and software. It is used to automatically calibrate the X, Y and Z axes of the machine with a loader. The calibration frequency can be freely chosen in the loader program. Machines without a loading system can be calibrated manually.

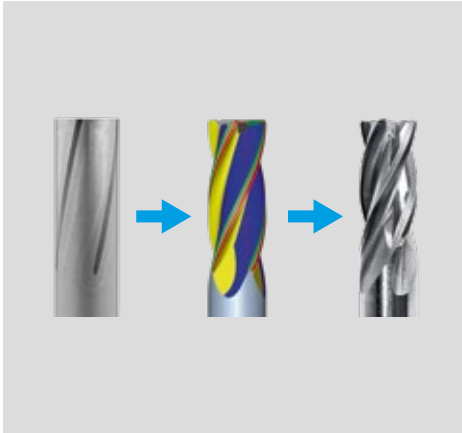
Integrated Measuring System IMS

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.

- Determination of the rake angle, the outer diameter and the core diameter for cylindrical tools
- Tactile measurement system to position the tools fully automatically
- Fully automatic thermal profile compensation for the linear axes

HELITRONIC TOOL STUDIO with Licence Erosion

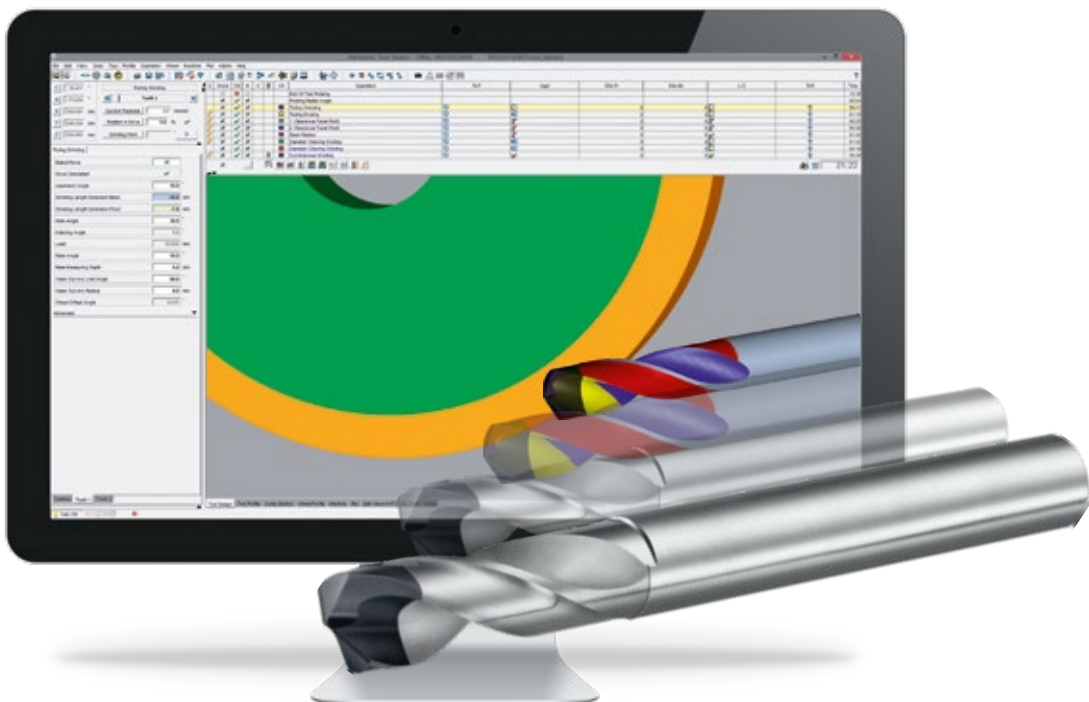
1



- Time savings through comprehensible and simple operation
- Simulation of grinding and/or eroding operations directly on the machine or at the PC workstation
- High-precision integrated 3D-Live-Simulation – Real-time depiction of all parameter changes
- Click & Edit – simple selection of operations by clicking directly on the simulation model
- Flexible modular system – freely combinable and extendible operations for future further developments

New benchmarks for tool design in PCD tools with HELITRONIC TOOL STUDIO

“What you see is what you grind” – This is the motto for grinding with the HELITRONIC TOOL STUDIO. If one would like to describe the advantages of Licence Erosion in a single sentence, then the best choice would be: “What you can grind, you can also erode”. Thanks to the wizard technology, the operator needs only a few mouse clicks for the production of a perfect PCD tool: Design, programming, simulation and production.



FINE PULSE TECHNOLOGY

New standard – new benchmark

- Greatly improved surface quality
- Perfect blade edge quality
- High process reliability even with difficult-to-erode PCD
- Maximum flexibility with different types of tools
- Short machining times
- Latest state-of-the-art technology
- Optimisation possibilities with all generator codes
- Savings potential in the production chain of PCD tools

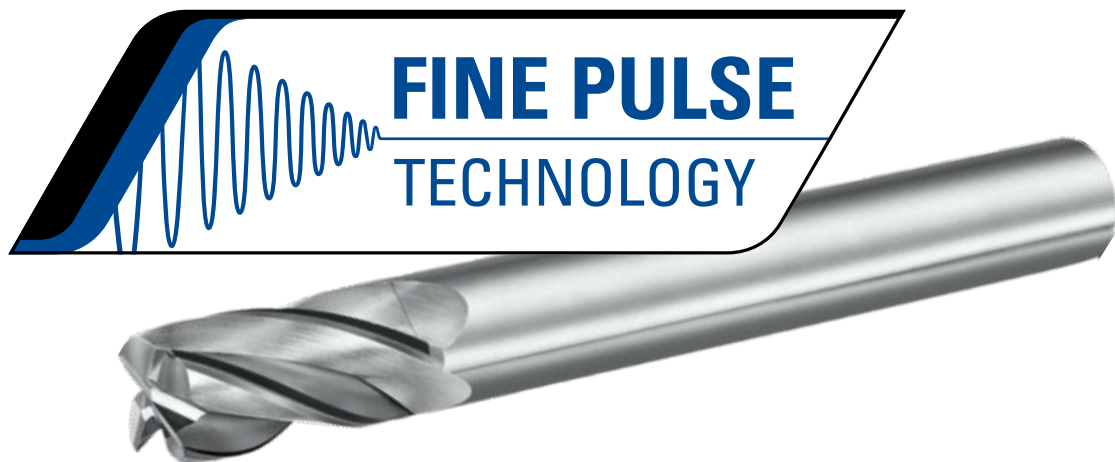


FINE PULSE TECHNOLOGY –

Visible improvement with the naked eye

The new "FINE PULSE TECHNOLOGY" eroding concept sets new standards in terms of the surface quality, cutting edge roughness and process reliability of PCD tools. The basis for this is the new liquid-cooled generator with an increased pulsation frequency. It is now standard-installed in all "Two-in-one" eroding and grinding machines from WALTER.

The difference to the other tools on the market can even be seen with the naked eye on the most common PCD types with 10 µm grain size. A tool produced with "FINE PULSE TECHNOLOGY" on a WALTER eroding machine shines on its free surface, similar to a polished (ground) tool.



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
- 19-inch touchscreen as standard

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, famous for 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 claim 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



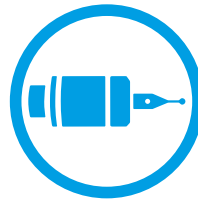
Service

Customer service
Customer advice
Helpline
Remote service



Digital Solutions

Remote Service
Service Monitor
Production Monitor



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	650 mm
Y axis	350 mm
Z axis	720 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	254 mm
Grinding spindle speed	0 – 10,500 rpm

HELITRONIC POWER DIAMOND 400 with motor spindle

Spindle ends	1
Tool holder	HSK 50
Peak power	26 kW

Others

Machine weight	approx. 5,300 kg
Power consumption at 400 V/50 Hz	approx. 25 kVA

Tool data ¹⁾

Min. tool diameter	3 mm
Max. tool diameter	315 mm
Max. workpiece length, peripheral grinding ²⁾	520 mm
Max. workpiece length, end face grinding ²⁾	380 mm
Max. workpiece weight	50 kg

Options

Coolant system

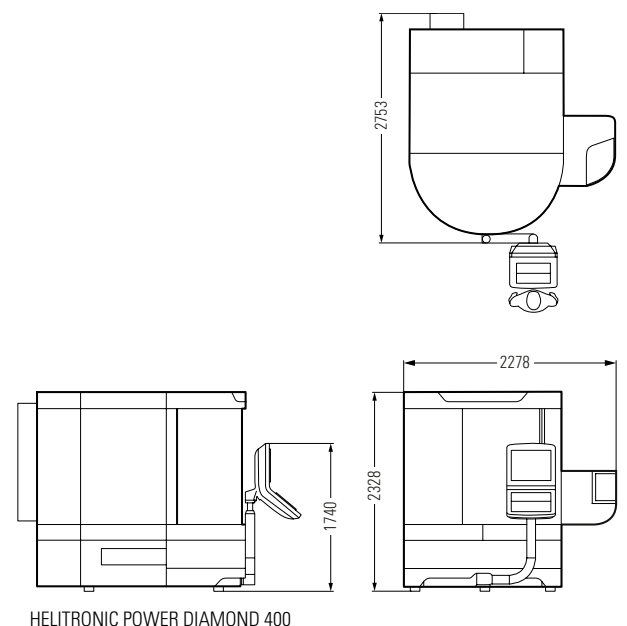
On request – several types are possible

Loading systems

Top loader, Robot loader, Robot loader 25

Others

Frequency-controlled pump 80 – 120 l/min at 7 – 20 bar, torque motor A-axis 750 rpm, torque motor C-axis, glass scales, automation upper plate, software, automatic grinding wheel measurement, automatic electrical measurement of the machine reference, etc.



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

²⁾ Starting from the theoretical taper diameter of the tool carrier.

Dimensions in mm, subject to modifications due to technical progress and errors. No guarantee is provided for this information.

Creating Tool Performance

WALTER and EWAG are globally acting 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 RAPTOR	P R	HSS TC C/C CBN	280 mm / Ø3 – 320 mm
HELITRONIC POWER 400	P R	HSS TC C/C CBN	520 mm / Ø3 – 315 mm
HELITRONIC VISION 400 L	P R	HSS TC C/C CBN	420 mm / Ø3 – 315 mm
HELITRONIC VISION 700 L	P R	HSS TC C/C CBN	700 mm / Ø3 – 200 mm
HELITRONIC MICRO	P R	HSS TC C/C CBN HSS TC C/C CBN	120 mm / Ø0.1 – 12.7 mm 120 mm / Ø3 – 12.7 mm

EWAG machines	Use	Materials	Tool dimensions ¹⁾ max. length ²⁾ / diameter
EWAMATIC LINEAR	P R	HSS TC C/C CBN PCD	200 mm / Ø0.2 – 200 mm
PROFILE LINE	P R	HSS TC C/C CBN	255 mm / Ø1 – 100 mm
WS 11/WS 11-SP	P R M	HSS TC	– / up to Ø25 mm
RS 15	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 RAPTOR DIAMOND	P R	HSS TC C/C CBN PCD	270 mm / Ø3 – 400 mm
HELITRONIC POWER DIAMOND 400	P R	HSS TC C/C CBN PCD	520 mm / Ø3 – 380 mm
HELITRONIC VISION DIAMOND 400 L	P R	HSS TC C/C CBN PCD	420 mm / Ø3 – 315 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
PROFILE LINE	P R	HSS TC C/C CBN	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
RS 15	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 MCD/ND	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 MCD/ND	Ø3 mm / Ø50 mm



Measuring – Contactless measurement of tools, workpieces and grinding wheels

WALTER machines	Use	E1-Value	Tool dimensions ¹⁾ max. length / diameter
HELICHECK ADVANCED	M	(1,8 + L/300) µm	420 mm / Ø1 – 320 mm
HELICHECK PRO	M	(1,2 resp. 1,4 + L/300) µm	300 mm / Ø1 – 200 mm
HELICHECK PRO LONG	M	(1,2 resp. 1,4 + L/300) µm	730 mm / Ø1 – 200 mm
HELICHECK PLUS	M	(1,2 resp. 1,4 + L/300) µm	300 mm / Ø0.1 – 200 mm
HELICHECK PLUS LONG	M	(1,2 resp. 1,4 + L/300) µm	730 mm / Ø0.1 – 200 mm
HELICHECK 3D	M	(1,8 + L/300) µm	420 mm / Ø3 – 80 mm
HELISET PLUS	M	-	400 mm / Ø1 – 350 mm
HELISET	M	-	400 mm / Ø1 – 350 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.



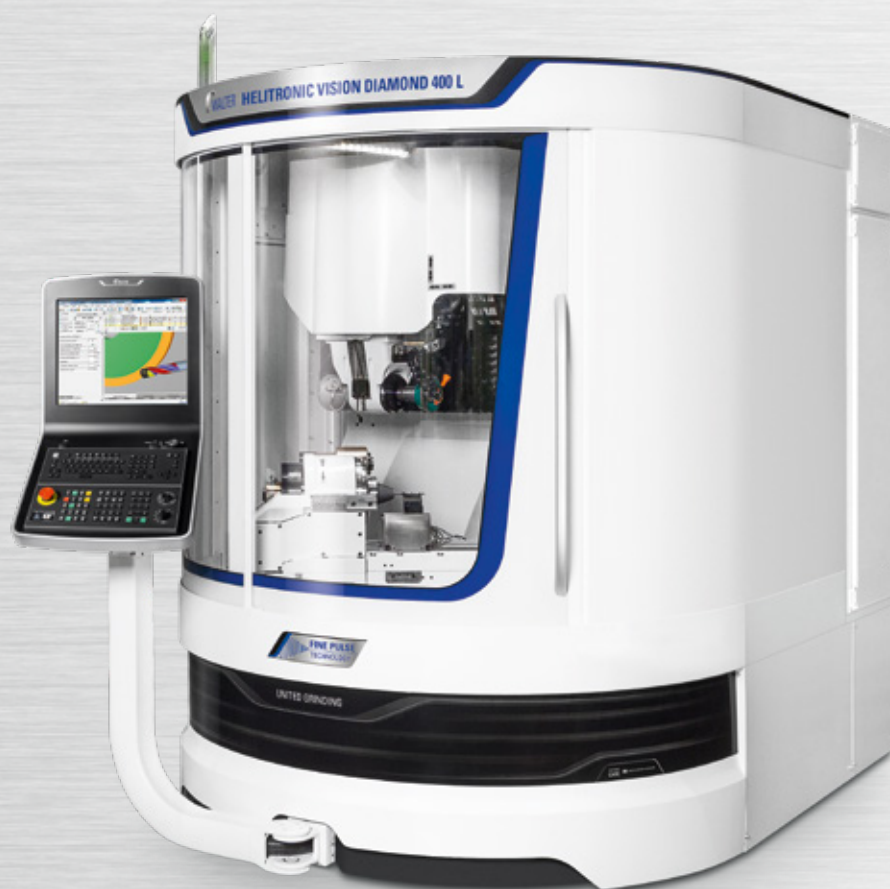
Walter Maschinenbau GmbH
Jopestr. 5 · 72072 Tübingen, Germany
Tel. +49 7071 9393-0
Fax +49 7071 9393-695
info@walter-machines.com

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



HELITRONIC VISION DIAMOND 400 L

Two-in-one, high performance rotary eroding
and grinding machine



Key features

Eroding of CBN/PCD tools and the grinding of HSS/carbide tools in volume production is the particular strength of the HELITRONIC VISION DIAMOND 400 L. Tool diameters up to 315 mm, tool lengths up to 420 mm and a weight up to 50 kg.



Grinding



Eroding



Laser



Measuring



Software



Customer Care

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 in the HELICHECK series for contactless complete measurement of tools and production parts.

Walter Maschinenbau GmbH is part of the UNITED GRINDING Group. 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 VISION DIAMOND 400 L

Two-in-one: Two machines in one for the rotary eroding of CBN/PCD tools and the grinding of HSS/carbide tools, switching as you wish. The HELITRONIC VISION DIAMOND 400 L is the only eroding machine to combine linear and eroding technologies in a single machine. It machines complex geometries fully automatically with three rotating electrodes and three grinding wheels on a belt-driven spindle in one clamping cycle. This is just right for the high requirements of volume production.



Grinding



Eroding



Software

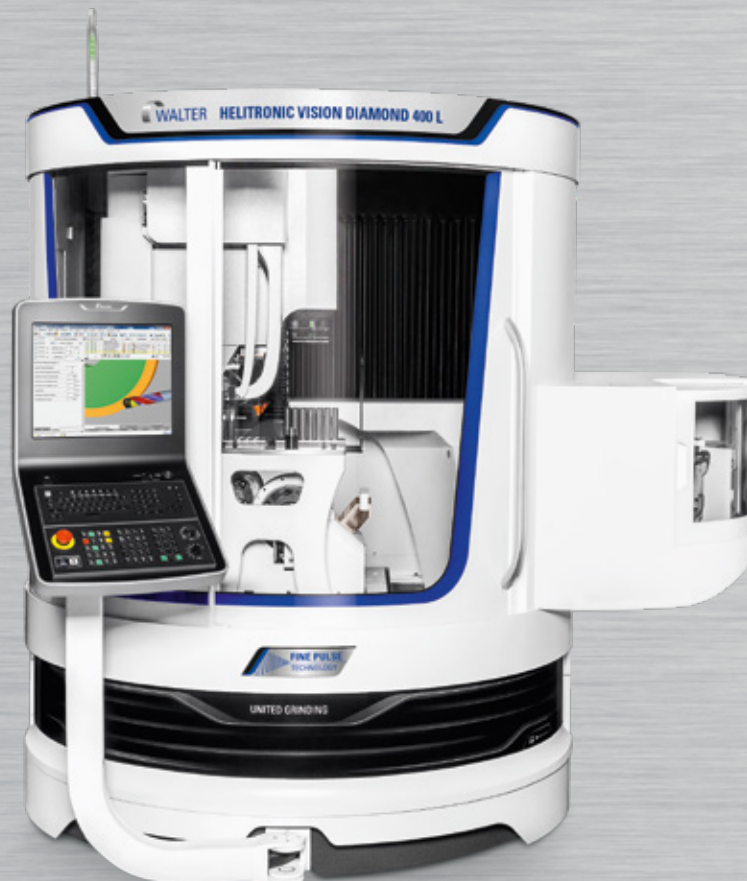
The HELITRONIC VISION DIAMOND 400 L at a glance

Application

- Eroding and grinding of rotationally symmetrical tools for metalworking and woodworking industries
- For production and/or regrinding
- Fully automated, complete machining in a single clamping cycle
- Materials include PCD, CBN, HSS, carbide, cermet, ceramic

The machine

- Optimised low-vibration solid mineral cast, gantry-type construction
- Linear X, Y, Z axes with linear drives*
- Rotating A, C axes with high torque motors
- Belt-driven spindle with two ends or motor spindle with one end
- Up to three rotation electrodes on one spindle end and up to three grinding wheels on the other spindle end or a total of six grinding wheels
- 3 stage eroding process for highest quality finish
- FANUC, the global standard for control equipment
- Various loading systems
- Numerous efficiency options



HELITRONIC VISION DIAMOND 400 L with "Top loader" and "Electrode/grinding wheel changer" (right) – uncompromising in productivity and precision

Software

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



HELITRONIC VISION DIAMOND 400 L with the "Robot loader 25" (left) and "Electrode/grinding wheel changer" (right) options – the ultimate configuration for high performance

Efficient and easy to use

**Example tools** (from left to right):

PCD end mill, PCD reamer, PCD stepped drill bit, rim drill,
2 x PCD multi-step tool, PCD drill, shaped lathe tool,
ball nose tool, thread milling drill, drill





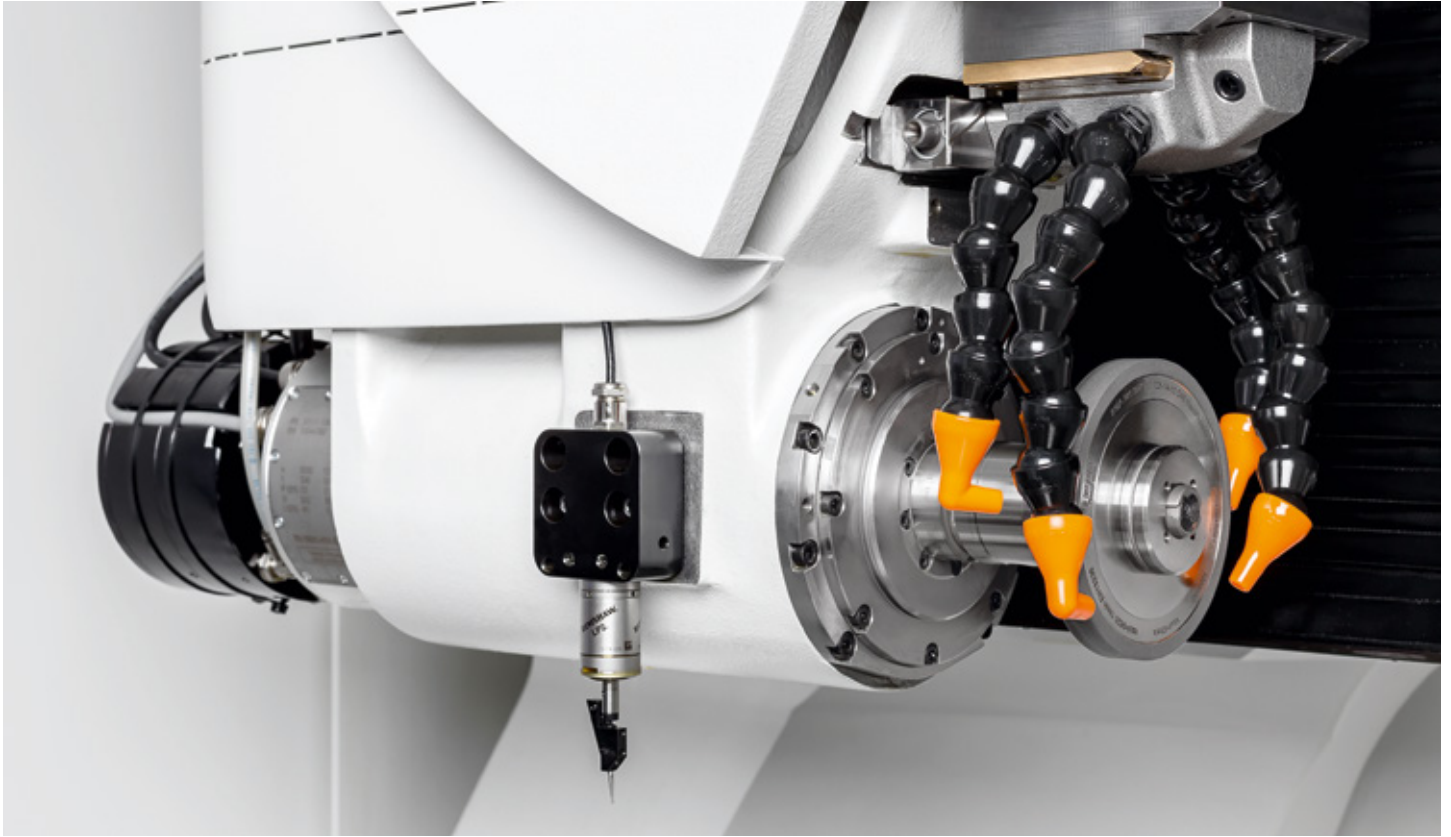
With FINE PULSE TECHNOLOGY, the HELITRONIC VISION DIAMOND 400 L sets new benchmarks for quality for PCD tools. It is an economic investment for both the production and sharpening of PCD/CBN tools in the diameter range of up to 315 mm.

It is possible to save time by machining complex geometries in a single clamping cycle. The combination of eroding and grinding provides a real step forward in terms of flexibility and quality. Furthermore, thanks to its two-in-one principle, the HELITRONIC VISION DIAMOND 400 L can be used as a grinding machine for the production and sharpening of carbide tools. The change-over from PCD to carbide tools is "on the fly", since it is possible to automatically change between PCD and carbide tools and back again.



Innovative WALTER eroding and grinding technology

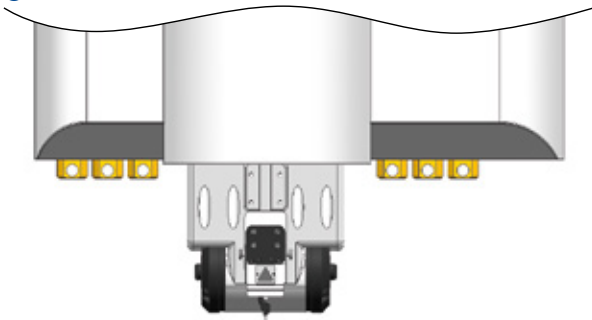
1



“Motor spindle” option

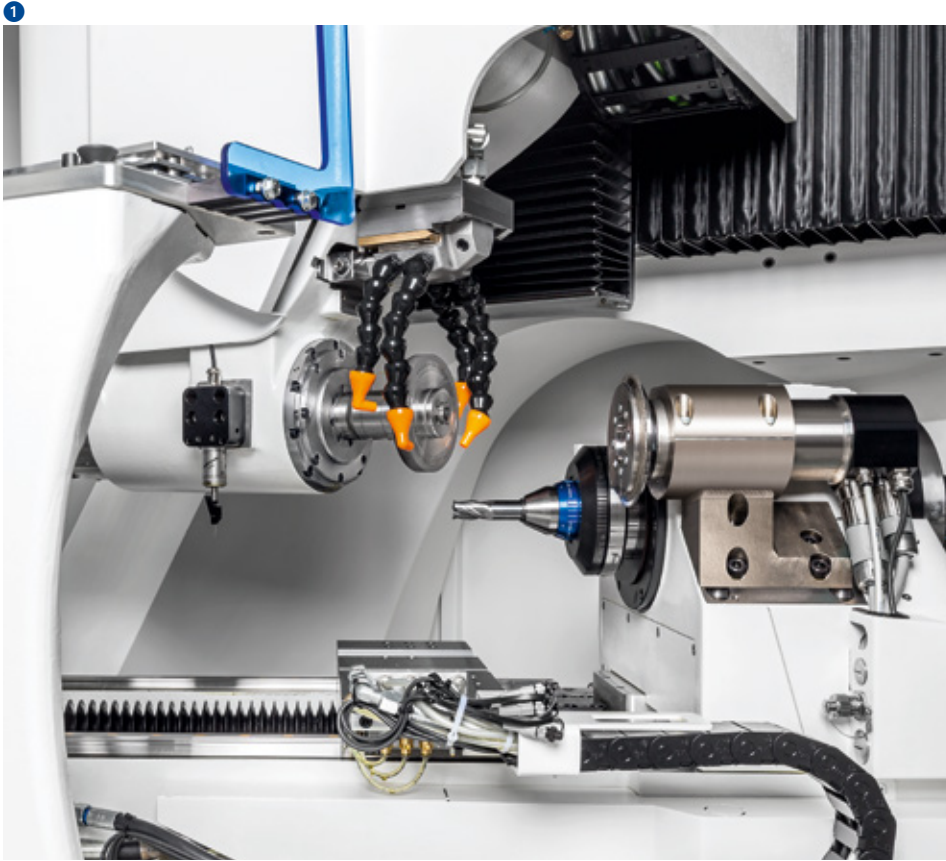
The powerful single-ended directly driven motor spindle is equipped with a liquid cooling system. Up to three electrodes/grinding wheels can be mounted per adaptor. In combination with the electrode/grinding wheel changer, up to 24 adaptors (72 electrodes/grinding wheels) can be used in the grinding process. The result is the highest levels of efficiency and productivity. Optionally available (upon request only) also as **motor spindle with 24,000 rpm.**

2



Belt-driven spindle with two spindle ends (standard)

The double-ended, belt-driven spindle is driven by a powerful motor. Each end of the spindle can take up to three electrodes/grinding wheels. The electrodes/grinding wheel sets are allocated to the spindle end and are saved, along with all data.



“Automated work table” option

This option can be equipped with up to two upper slides: one with automatic traverse and one fixed. This way, long tools can be supported by a moveable steady rest and/or a tailstock. The surface quality and tool precision are enhanced as a result.



“Grinding wheel dresser” option

When it comes to the conditioning/dressing of grinding wheels during the production process, with subsequent software-controlled compensation, the high-performance electrical grinding wheel dresser is the perfect solution.

“Sharpening stone holder” option

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.

Other options



Automatic grinding wheel measurement

For even more efficient production. Normally the machine operator corrects the grinding wheel data in the production process manually so that the geometry of the tool can be maintained at its nominal dimension. With the automatic grinding wheel measurement, the wear on the bond of the grinding wheels can be determined automatically via tactile measurement, exactly documented and compensated for. The measurement is carried out during the production process. Diameter and length of the grinding wheel can be measured and compensated for. This means that the operator always has the optimum grinding wheel data at the desired time. Furthermore, the user can monitor the grinding wheel wear and thus influence the production process and optimise it.

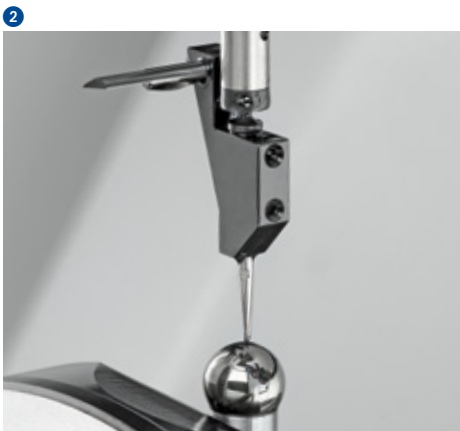
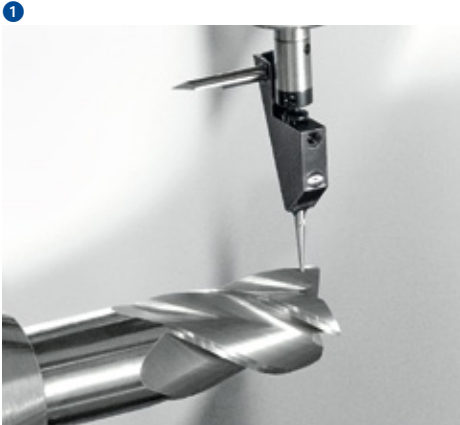
The probe for the tactile measurement is fitted on the tool carrier and is mounted in place of the electrical dresser.



Automatic, electrical measurement of the machine reference

Now use the advantages of the automatic, electrical measurement of the machine reference in the grinding and eroding machines from WALTER.

- Maximum precision of measurement results through exact positioning of the axes via electrical contact
- Significant time savings with automatic operation 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
- Short amortisation time for your investment



Automatic positioning and measurement system "Heli-Probe" (standard)

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.

Calibration (standard)

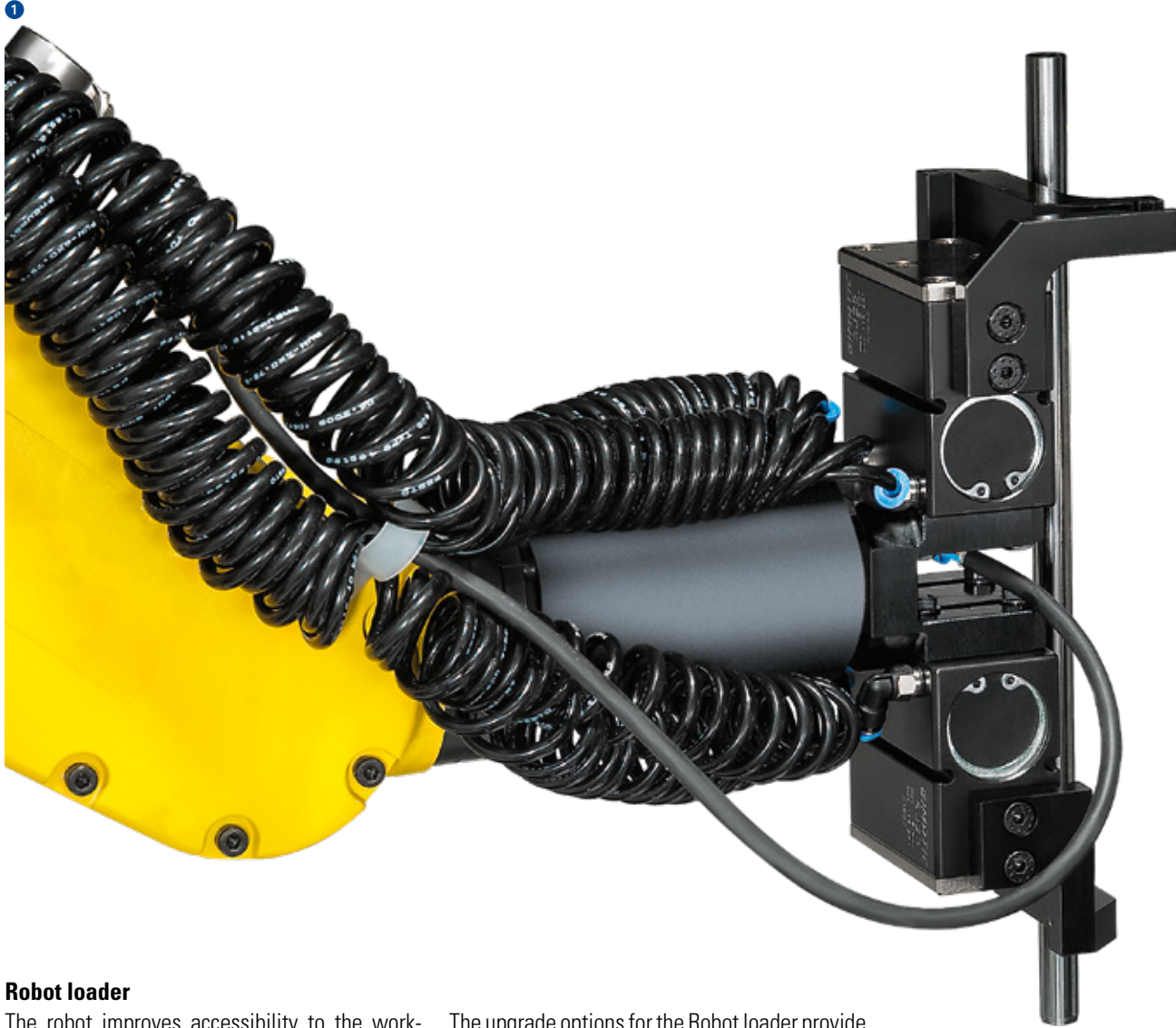
Calibration consists of a calibration ball and software. It is used to automatically calibrate the X, Y and Z axes of the machine with a loader. The calibration frequency can be freely chosen in the loader program. Machines without a loading system can be calibrated manually.

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.

- Determination of the rake angle, the outer diameter and the core diameter for cylindrical tools
- Tactile measurement system to position the tools fully automatically.
- Fully automatic thermal profile compensation for the linear axes

Automation options



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 1,500 workpieces can be loaded with the standard model using the robot.

The upgrade options for the Robot loader provide the user (depending on the type of workpiece or the workpiece diameter) with a capacity of up to 7,500 workpieces of 3 mm in diameter or the possibility of automatically loading/unloading tools with HSK holders .



Robot loader 25

For tools in an HSK adaption with a total weight of up to 20 kg and a tool diameter of up to 315 mm in combination with the HELITRONIC VISION DIAMOND 400 L. Thanks to the innovative, newly developed loader software, a «chaotic» loading of up to seven pallet levels is possible. An automatic diameter determination is also optionally available and ensures a smooth, automated production sequence.

Capacity of the available pallets:

- 21 tools, max. diameter 315 mm
- 28 tools, max. diameter 220 mm
- 70 tools, max. diameter 105 mm



Top loader

This space-saving and inexpensive automation solution is integrated directly into the machine envelope. Automatic teaching enables short setup times. Depending on the tool diameter, the Top loader offers a maximum of 500 places for tools.

Tool capacity, max. (sample diameters)

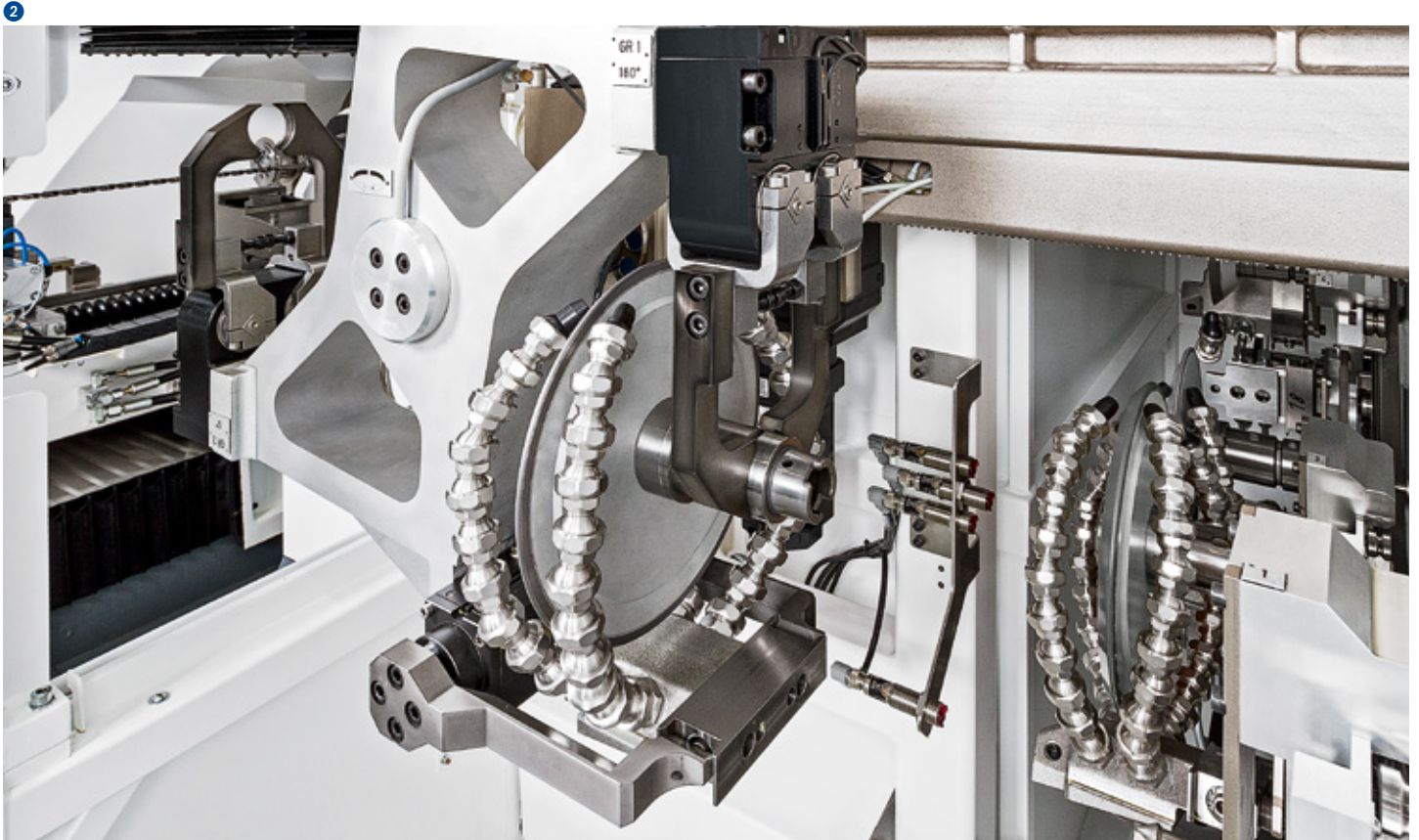
- 500 tools: diameter 3 mm
- 42 tools: diameter 20 mm
- 20 tools: diameter 32 mm

Automation options



Electrode/grinding wheel changer 4/8 x

Affordable, compact, and flexible too. With a capacity of up to 24 electrodes/grinding wheels, it quadruples the capacity of the HELITRONIC VISION DIAMOND 400 L. The max. diameter is 254 mm. The coolant supply and the electrode/grinding set form a single unit. This ensures reliable replacement and optimum coolant delivery.



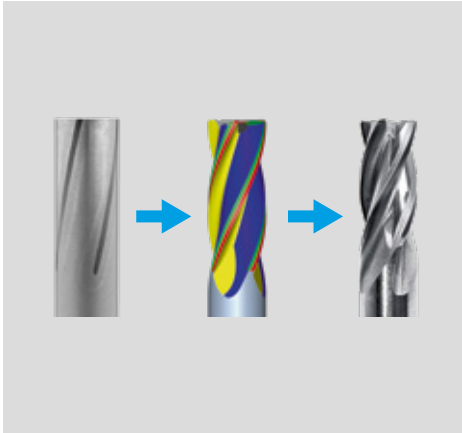
- Flexible loading systems with a capacity of up to 24 or 72 electrodes/grinding wheels

Electrode/grinding wheel changer 12/24 x

A real machine enhancement from WALTER. With a capacity of up to 72 electrodes/grinding wheels, it increases the capacity of the HELITRONIC VISION DIAMOND 400 L by a factor of twelve. The double gripper allows fast replacement times and the max. diameter is 254 mm. When used in combination with tool loading systems, the flexibility is increased significantly. This applies primarily to complex geometries and large volumes. The coolant supply and the electrode/grinding set form a single unit. This ensures reliable, fast wheel set replacement and optimum coolant delivery.

HELITRONIC TOOL STUDIO with Licence Erosion

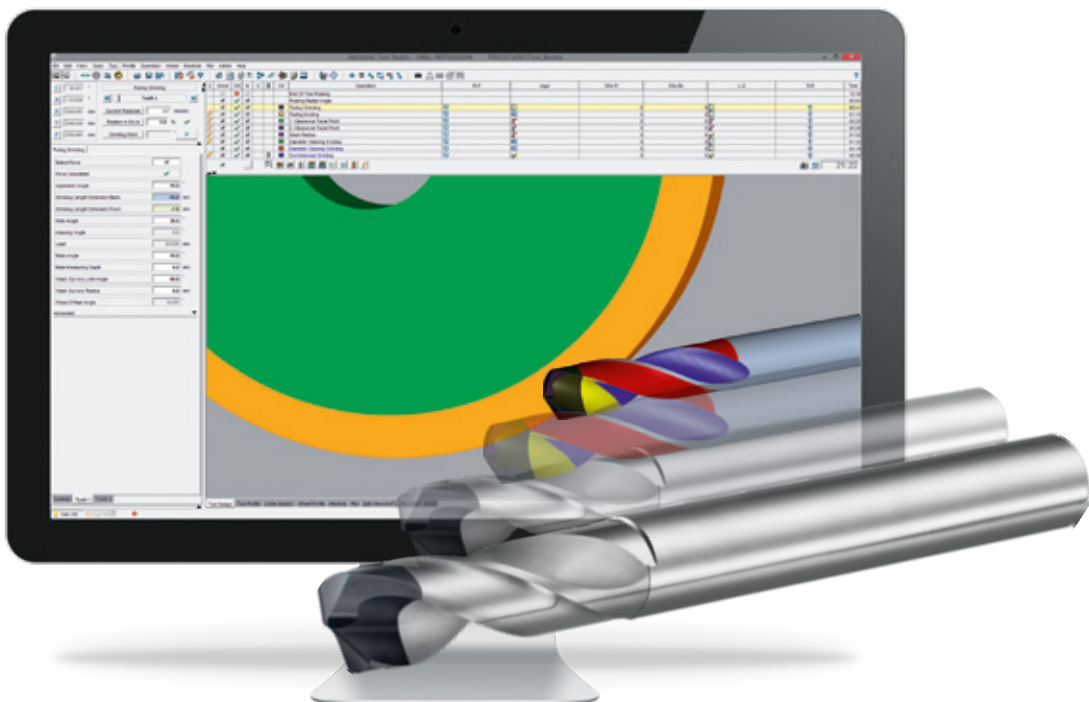
1



- Time savings through comprehensible and simple operation
- Simulation of grinding and/or eroding operations directly on the machine or at the PC workstation
- High-precision integrated 3D-Live-Simulation – Real-time depiction of all parameter changes
- Click & Edit – simple selection of operations by clicking directly on the simulation model
- Flexible modular system – freely combinable and extendible operations for future further developments

New benchmarks for tool design in PCD tools with HELITRONIC TOOL STUDIO

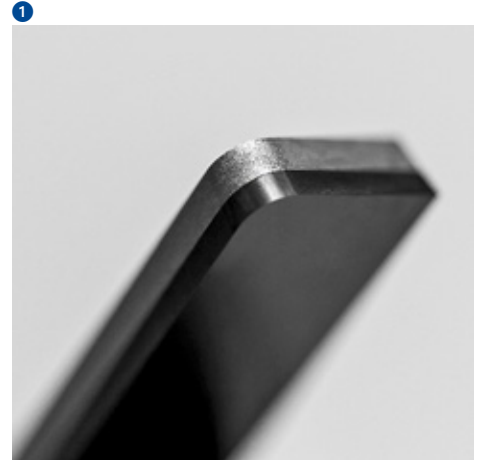
“What you see is what you grind” – This is the motto for grinding with the HELITRONIC TOOL STUDIO. If one would like to describe the advantages of Licence Erosion in a single sentence, then the best choice would be: “What you can grind, you can also erode”. Thanks to the wizard technology, the operator needs only a few mouse clicks for the production of a perfect PCD tool: Design, programming, simulation and production.



FINE PULSE TECHNOLOGY

New standard – new benchmark

- Greatly improved surface quality
- Perfect cutting edge quality
- High process reliability even with difficult-to-erode PCD
- Maximum flexibility with different types of tools
- Short machining times
- Latest state-of-the-art technology
- Optimisation possibilities for all generator codes
- Savings potential in the production chain of PCD tools

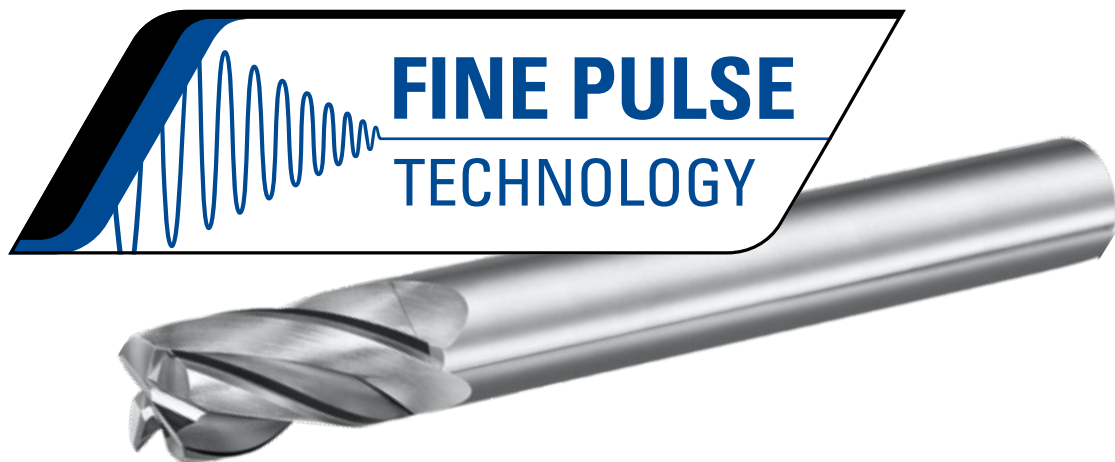


FINE PULSE TECHNOLOGY –

Improvements can be seen with the naked eye

The new "FINE PULSE TECHNOLOGY" eroding concept sets new standards in terms of the surface quality, cutting edge quality and process reliability of PCD tools. The basis for this is the new liquid-cooled generator with an increased pulsation frequency. It is now installed as standard in all Two-in-one eroding and grinding machines from WALTER.

The difference to the other tools on the market can even be seen with the naked eye on the most common PCD types with 10 µm grain size. A tool produced with "FINE PULSE TECHNOLOGY" on a WALTER eroding machine shines on its free surface, similar to a polished (ground) tool.



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
- 19-inch touchscreen as standard

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, famous for 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 claim 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



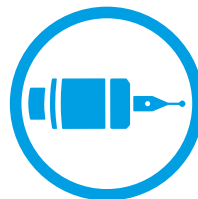
Prevention

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

Total number of axes	5
Drive X, Y, Z	Linear drive
X-axis	500 mm
Y-axis	350 mm
Z-axis	700 mm
Rapid traverse speed X	50 m/min
Rapid traverse speed Y	50 m/min
Rapid traverse speed Z	50 m/min
Drive C	Torque
C axis (swivelling range)	± 200°
Travel speed	max. 20 rpm
Drive A	Torque
A-axis speed	750 rpm
Linear resolution	0.0001 mm
Radial resolution	0.0001°

Grinding spindle drive

Belt-driven spindle with two spindle ends (standard)

Clamping	HSK 50
Peak power	30 kW
Spindle Diameter	100 mm

Motor spindle for use with grinding wheel changer (optional)

Clamping	HSK 50
Peak power	33 kW

Motor spindle with 24,000 rpm (optional, upon request only)

Clamping	HSK 50
Peak power	26 kW

Others

Base	Mineral casting
Gross load weight	approx. 7,000 kg
Connected load	35 kVA

Tool data ¹⁾

Tool holder	ISO 50
Min. / Max. workpiece diameter	3 mm / 315 mm
Max. workpiece diameter without upper plate	360 mm
Max. workpiece length ²⁾	
peripheral grinding / end face grinding	420 mm / 390 mm
Max. workpiece weight	50 kg
Space requirements, basic machine	
with opened doors (L x W x H)	4,242 x 2,428 x 2,639 mm

Options

Automation options

- Robot loader • Robot loader 25 • Top loader • Electrode/grinding wheel changer 4/8 x • Electrode/grinding wheel changer 12/24 x

Software / Efficiency options

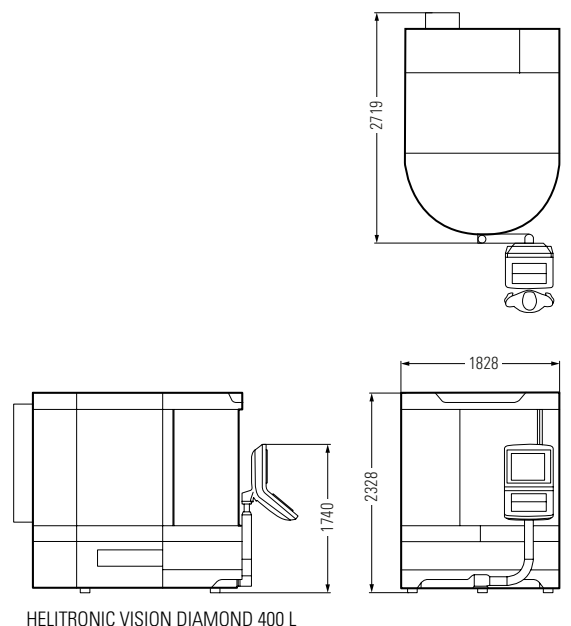
- "Sketcher" • "Feedrate Optimizer" • "Quality Assurance", etc.

Coolant system (upon request – several types are possible)

Ball screw drive (available upon request with ball screw drive instead of linear versions – HELITRONIC VISION DIAMOND 400)

Other Options

- Automated work table • Grinding wheel dresser • Sharpening stone holder
- Automatic grinding wheel measurement • Automatic, electrical measurement of the machine reference • Integrated Measurement System IMS etc.



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.

Measurements in mm. Subject to modifications due to technical progress and errors. We accept no responsibility for the correctness of any information given.

Creating Tool Performance

WALTER and EWAG are globally acting 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 – 290 (320) mm
HELITRONIC POWER	P R	HSS TC C/C CBN	350 mm / Ø3 – 290 (320) mm
HELITRONIC POWER 400	P R	HSS TC C/C CBN	520 mm / Ø3 – 315 mm
HELITRONIC VISION 400	P R	HSS TC C/C CBN	370 mm / Ø3 – 315 mm
HELITRONIC VISION 400 L	P R	HSS TC C/C CBN	420 mm / Ø3 – 315 mm
HELITRONIC VISION 700 L	P R	HSS TC C/C CBN	700 mm / Ø3 – 200 mm
HELITRONIC MICRO	P R	HSS TC C/C CBN HSS TC C/C CBN	120 mm / Ø0.1 – 12.7 mm 120 mm / Ø3 – 12.7 mm

EWAG machines	Use	Materials	Tool dimensions ¹⁾ max. length ²⁾ / diameter
EWAMATIC LINEAR	P R	HSS TC C/C CBN PCD	200 mm / Ø0.2 – 200 mm
PROFILE LINE	P R	HSS TC C/C CBN	255 mm / Ø1 – 100 mm
WS 11/WS 11-SP	P R M	HSS TC	– / up to Ø25 mm
RS 15	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 – 290 (400) mm
HELITRONIC POWER DIAMOND 400	P R	HSS TC C/C CBN PCD	520 mm / Ø3 – 380 mm
HELITRONIC VISION DIAMOND 400	P R	HSS TC C/C CBN PCD	370 mm / Ø3 – 315 mm
HELITRONIC VISION DIAMOND 400 L	P R	HSS TC C/C CBN PCD	420 mm / Ø3 – 315 mm



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



Customer Care – Comprehensive range of services

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



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
PROFILE LINE	P R	HSS TC C/C CBN	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
RS 15	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 MCD/ND	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 MCD/ND	Ø3 mm / Ø50 mm



Measuring – Contactless measurement of tools, workpieces and grinding wheels

WALTER machines	Use	Tool dimensions ¹⁾ max. length / 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 PLUS	M	400 mm / Ø1 – 350 mm
HELISET	M	400 mm / Ø1 – 350 mm

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

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

