

Helitronic Vision – No-compromise productivity and precision



Top-of-the-range version of the Helitronic Vision featuring an integrated grinding wheel changer

▣ Helitronic Vision highlights

- Maximum flexibility and productivity for precision tools
- 5 CNC axes for complete machining of complex tool geometries in a single clamping operation
- Direct drive systems on every axis with integrated cooling – optimum speed and precision
- Direct path measurement system with glass scales on every linear axis for maximum positioning accuracy
- Encoder on the rotational axes
- Automatic measurement sensor for precise workpiece positioning
- Stable gantry design with mineral cast machine bed
- Swivel-mounted coupled-motion control desk featuring a high-resolution touchscreen for outstanding operating convenience
- Modem for remote diagnostics and fast application support

Investing in a Helitronic Vision 5-axis CNC grinder means buying into grinding technology that offers a unique package of attributes. It can be used to produce practically any tool geometry. Compare for yourself:

WALTER gantry design with mineral cast machine bed

The patented gantry design, heavyweight and the use of mineral casting all add up to optimum vibration damping, insensitivity to temperature fluctuations and, in the final reckoning, grinding precision. The mineral cast bed, developed using the Finite Element Method (FEM), literally provides a solid foundation for outstanding quality and productivity: optimum vibration damping, insensitivity to changing temperatures, resistance to high acceleration and traversing speeds, freedom from corrosion.

Direct drive systems on every axis

Highly dynamic drive systems plus extremely short response times add up to high grinding output levels and impressive grinding results. This is achieved in the Helitronic Vision using linear motors and glass scales for the X, Y and Z axes, and with gearless torque drives for the rotary axes A and C. The result: maximum positioning accuracy and fast traversing movements. Both ensure optimum quality and maximum productivity.

"Helitronic Tool Studio"

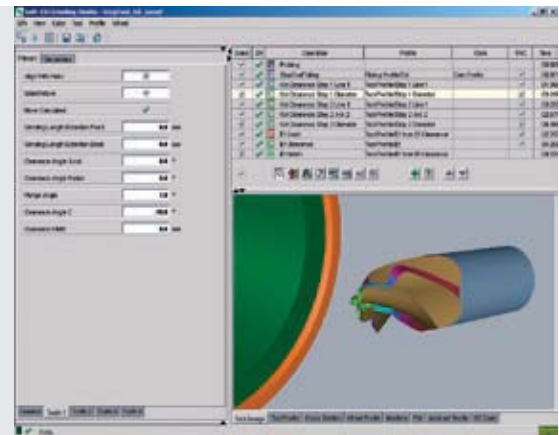
Helitronic Tool Studio sets whole new standards in the design and production of non-standard tools. This software visualises the effect of any data modification immediately using high-resolution 3D graphics: What you see is what you grind. Thanks to the simplicity of the operating philosophy, tool generation is child's play. For details, see pages 26 and 27. The Helitronic Vision is naturally also equipped with the Walter Window Mode.



Mineral cast machine bed – solid, dependable quality, non-corroding, minimal vibration, temperature stability.



Linear drive systems – fast, dynamic, precise, wear-free.



Helitronic Tool Studio: "What you see is what you grind" – superb operating methodology for grinding non-standard tools.



+ Important options
to optimise the flexibility and productivity
of your Helitronic Vision.



Grinding wheel changer with
the Helitronic Vision



The grinding wheel set, including coolant feed, can be changed in less than 10 seconds.



Lift loader: The machine can be loaded with up to three pallets stacked with blanks or tools of different lengths and dimensions for automatic machining.



IMS – Rake angle measurement example.

⊕ "Grinding wheel and coolant feed changer" option

This optional feature provides access to as many as 12 wheel sets including coolant feed, or up to 36 individual grinding wheels. This means enhanced flexibility and productivity both for complete machining of highly complex tools and also production grinding in large-scale series.

⊕ "Flexible automation" option

A machine-integrated pallet loader is optionally available for automated grinding operation. The pallet loader permits automatic loading and unloading, details on pages 16, 17.

⊕ "Internal Measurement System – IMS" option

Measures the most important grinding parameters and automatically compensates for them in-process – for enhanced precision and quality.





Helitronic Vision



Helitronic Diamond

Lift loader

We have developed a machine-integrated lift loader designed to allow automatic multiple-shift operation. Because the unit is integrated in the CNC grinding machine, distances and changeover times are minimised. All loader movements are controlled and monitored by the HMC 600 machine control system. The loader program can be externally defined at the PC using an Excel spreadsheet or at the machine using the clipboard when creating the ident numbers. The loader offers outstanding flexibi-

lity in terms of the tool range. Even tools with different chucking positions can be loaded on a single pallet. The loader features a transport system with servo drive for three cassettes serving as a tool magazine. The number of cassettes used depends on the tool length. Tools of different lengths can also be stored on a single pallet.



Helitronic Vision with machine-integrated lift loader.



The pallets can also be fitted with tools of different lengths.

The double gripper for fast changeover of the blank and finished part helps cut out machine downtimes. The pallets are programmed in-process.



☒ Specifications

For Helitronic Vision, Helitronic Diamond

Min. tool diameter:
3 mm with cylindrical tools

Max. tool diameter:
32 mm with cylindrical tools
70 mm cutting edge diameter
with mushroom-shaped tools

Max. tool weight: 3 kg

Max. workpiece length:
120 mm when using 3 loader cassettes
180 mm when using 2 loader cassettes
300 mm when using 1 loader cassette

☒ Storage capacity per cassette

Cylindrical tools:	
3,0 – 10 mm Ø	168 tools
10,1 – 20 mm Ø	90 tools
20,1 – 32 mm Ø	60 tools

To reduce the set-up work required, a standard gripper is optionally available for the diameter range from 6 to 25 mm.

Mushroom-shaped tools:	
up to 20 mm cutting edge dia.	72 tools
up to 40 mm cutting edge dia.	28 tools
up to 70 mm cutting edge dia.	12 tools

CNC control system HMC 600

The digital control and drive system HMC 600 is the nerve centre of every Helitronic machine. It transforms the highly dynamic response of the digitally controlled linear and servo motors into high grinding outputs and high grinding precision without delay, keeping machine downtimes to a minimum.

- Control unit with swivel-mounted control panel, PC keyboard and 15" TFT touchscreen monitor
- PC control unit featuring PC Pentium 4 with 2.4 GHz or higher and WINDOWS XP operating system
- Data input optionally via the touchscreen, control unit or PC keyboard



Internal Measurement System IMS – Automatic compensation in series operation

⊕ "IMS Software" option

This option in conjunction with the integrated measurement sensor measures the five most important quality parameters of cylindrical tools in series operation and automatically compensates in case of non-conformance. To be precise:

- + Diameter 1
- + Diameter 2 (taper)
- + Flute depth (core diameter)
- + Rake angle
- + Helical angle / helical pitch

The frequency of measurements – every 2nd to nth part - is stipulated by the operator on the basis of empirical values, as are the tolerances. If a measurement result is above or below the set tolerance range, the system automatically compensates to centre tolerance. All measurement results are displayed in a test record on screen – meaning you are always in the picture about production quality.



IMS – Diameter measurement.

Substanz	Elektron	HT	HT	HT	HT	HT	HT	Status
Ergebnisse								
Bolzhmesser D1 Parameter								
36.6000	mm	0.1000	0.0800	36.6205	0.2500	0.0205	0.0000	OK
Durchmesser D1								
36.6000	mm	0.1000	---	36.6205	0.2500	0.0205	0.0000	OK
Spiralwinkel								
27.3481	°	1.0000	---	27.1648	2.5000	-0.2415	0.0000	OK
Spannwinkel Parameter								
10.0000	°	1.0000	0.0000	0.0125	2.5000	-10.9128	0.0000	OK
Abstand D1								
1.0000	mm	---	---	---	---	---	---	N.A.
Abstand D2								
10.0000	mm	---	---	---	---	---	---	N.A.

IMS – Measurement record on the TFT display.



IMS – Rake angle measurement.

WALTER Windows Mode WWM

Concentrated grinding intelligence for standard and non-standard tools

There are thousands of practising grinding specialists around the world using the intelligent operator software WALTER Windows Mode WWM hands-on in both small workshops and large production environments. WWM encompasses software programs for all customarily used tool types, based on practical grinding expertise gathered over many years in both production and sharpening. With its many decades of experience, WALTER is able to draw on a unique pool of expertise. Even the standard versions of all Helitronic machines are equipped with wide-ranging grinding software for both cylindrical and conical tools as well as drills and step drills. As a practical grinding specialist, this is a benefit you are certain to appreciate.

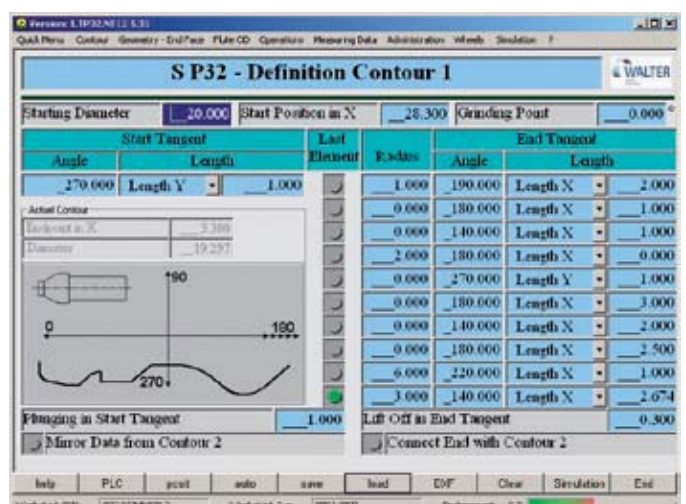
Offering operator guidance in plain text, supported by meaningful graphic displays, WALTER Windows Mode has set the standard for convenience and security for many years. This is a system which stands for wide-ranging application possibilities, both with standard and non-standard tools.



Package 1 – "Cylindrical tools"
Only operation-relevant data is displayed.



"Tool grinding" starting mask: Use function keys F1 to FX to select the required program: P1 Cylindrical milling cutters, P2 Tapered helical milling cutters, P3 Drills and step drills, P4 Multi-step tools, P5 Side milling cutters, P6 Woodworking tools, P7 Profile tools, P8 Thread taps. Using the "Continue" key, additional programs can be accessed, e.g.: P11 Crest-cut milling cutters, P13 Reamers.



Package 32 – "Definition contour 1".

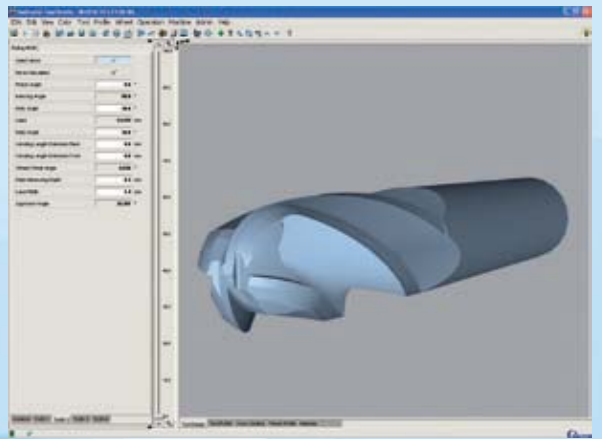
Helitronic Tool Studio – Efficient software for all your design and grinding needs

Helitronic Tool Studio works according to the proven "What you see is what you grind" method. This software can be used to develop and if necessary optimise machining and movement sequences for highly complex non-standard tools with minimal time, labour and cost outlay. Helitronic Tool Studio conceives the machine as an integral unit comprising software and hard-

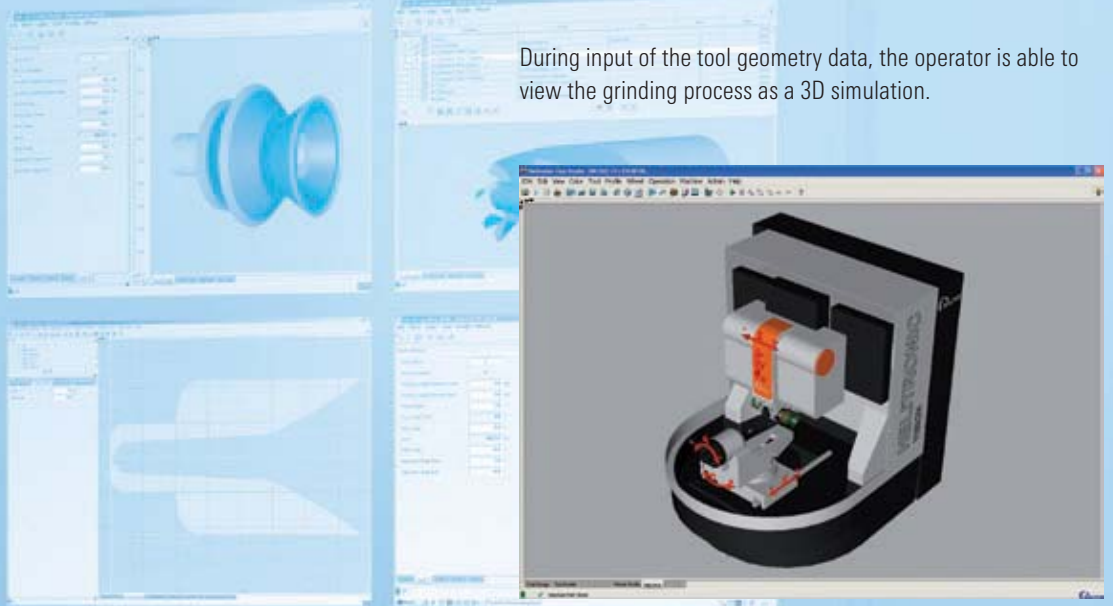
ware. The new software implements its functions from three different viewpoints: Beginner, Advanced user, Expert.

Helitronic Tool Studio highlights

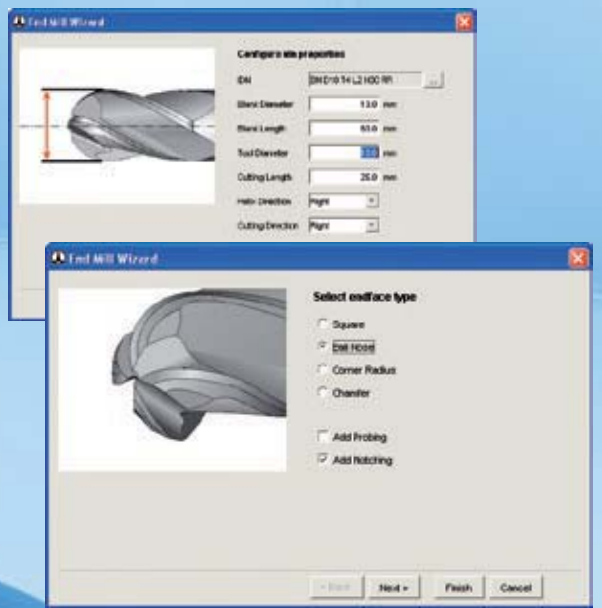
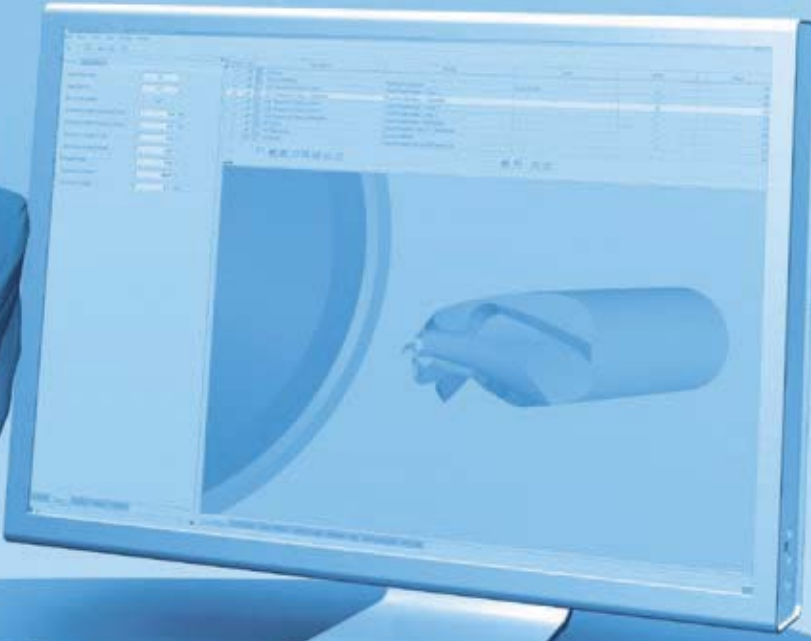
- "What You See Is What You Grind" indicates the repercussions of every data modification immediately in high-resolution 3D graphics.
- Unlimited flexibility through the use of software tools which allow any tool, right through to the non-standard bespoke tool, to be generated using only a few parameters.
- The number of grinding operations per tool is unlimited, i.e. your operator is able to add new operations and so generate tools of any optional complexity.
- The operator is able to keep control of all important information – grinding parameters, grinding operations, 3D simulation – on-screen.
- By breaking down the grinding operations into separate modules, Helitronic Tool Studio ensures at-a-glance transparency, including individual and overall grinding times for calculation purposes.
- 3D simulation provides a scaled indication of grinding processes and of the "ground" tool as produced by the simulation. This allows any errors to be detected and remedied before actual grinding begins.
- The Wizard technology used by the new software guides the user quickly and reliably in the required tool, as exclusively relevant information is displayed. After starting the ToolWizard, the operator is asked to specify the tool family and the characteristic data of the chosen tool. Using these inputs, the software quickly generates the grinding program.



During input of the tool geometry data, the operator is able to view the grinding process as a 3D simulation.



The grinding process is also displayed at the machine.



The Tool Wizard guides the operator quickly and reliably to the required tool family.

Automated Toolroom – Automatic grinding, measurement, optimisation. Up to 50% lower set-up times.

WALTER is the world's only tool grinding machine manufacturer to offer the whole range of technologies required for seamless automation of production processes for tools and rotationally symmetrical production parts – from the first setting through tool grinding, wheel wear compensation through to tool monitoring. WALTER is also unique in supplying both grinding and measuring machines from a single source. This exclusive range of products and services goes by the watchword "Automated Toolroom".

The Automated Toolroom reduces set-up times by up to 50 per cent:

- The integrated simulation software "Cyber Grinding", which simulates the entire grinding process from the first setting with a blank through to the finished tool, helps cut set-up time by up to 30 per cent.
- Automatic grinding wheel and tool measuring using WALTER measuring machines means a further 10 per cent reduction in set-up time.
- The network for fast data exchange can cut set-up time by a further 10 per cent.

- 1 PC workstation with Cyber Grinding, time-saving tool programming and 3D real-time simulation.
- 2 Heli Toolcheck-4-axis CNC measuring machine for non-contact complete measurement using 3 CCD cameras in a single clamping operation.
- 3 File server.
- 4 Helitronic tool grinding machine.

30%



1

10%



2

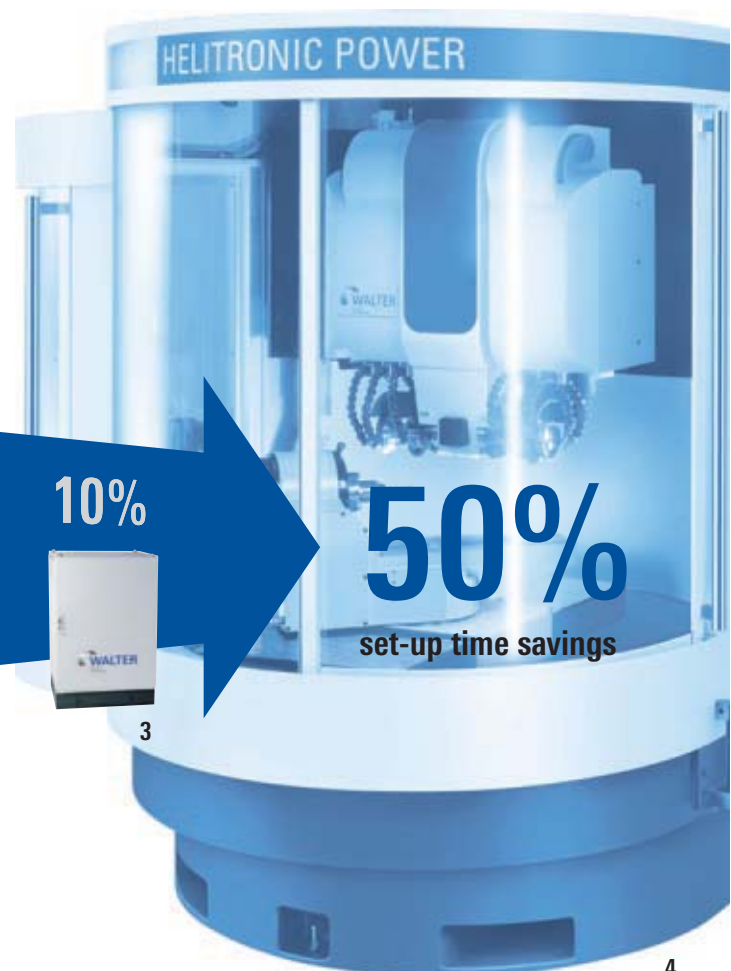
10%



3

50%

set-up time savings



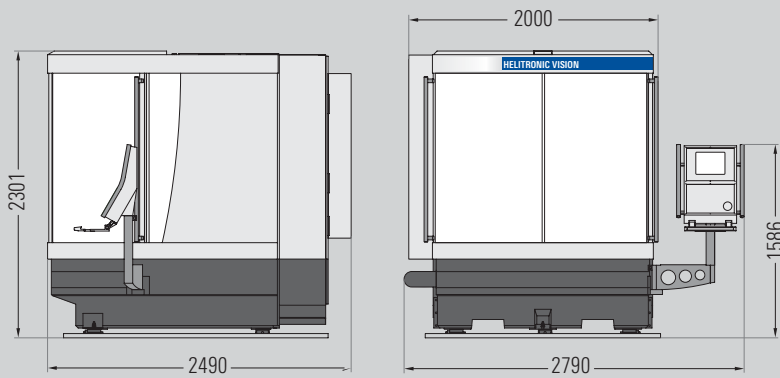
4

Specifications

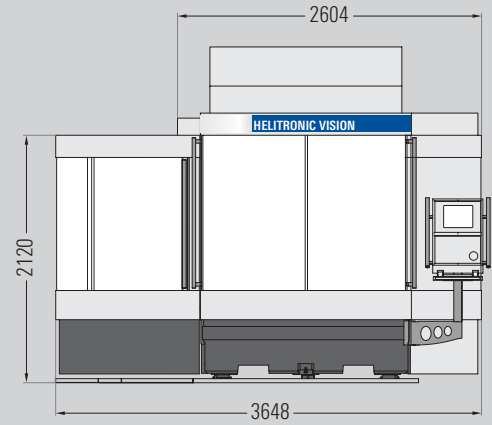
	Helitronic Vision	Helitronic Diamond	Helitronic Power	Helitronic Power Diamond	Helitronic Mini Power
Paintwork	RAL 9003/7011	RAL 9003/7011	RAL 9003/7011	RAL 9003/7011	RAL 9003/7011
Axes					
X axis	480 mm	480 mm	470 mm	470 mm	350 mm
Y axis	320 mm	320 mm	320 mm	320 mm	200 mm
Z axis	700 mm	700 mm	660 mm	660 mm	470 mm
Rapid traverse X,Y, Z	50 m/min	50 m/min	15 m/min	15 m/min	15 m/min
C axis rotary indexing table	± 200 degrees	± 200 degrees	± 200 degrees	± 200 degrees	± 200 degrees
A axis	∞	∞	∞	∞	∞
Tool data:					
Max. diameter	320 mm ¹⁾	320 mm ¹⁾	320 mm ¹⁾	320 mm ¹⁾	100 mm ¹⁾
Max. workpiece length Peripheral grinding	370 mm ²⁾	370 mm ²⁾	350 mm ²⁾	350 mm ²⁾	270 mm ²⁾
Max. workpiece length Face grinding	300 mm ²⁾	300 mm ²⁾	280 mm ²⁾	280 mm ²⁾	200 mm ²⁾
Max. workpiece weight	50 kg	50 kg	50 kg	50 kg	30 kg
Accuracy					
Linear resolution	0,0001 mm	0,0001 mm	0,0001 mm	0,0001 mm	0,0001 mm
Radial resolution	0,0001 degrees	0,0001 degrees	0,0001 degrees	0,0001 degrees	0,0001 degrees
Grinding head with twin grinding spindle					
Spindle diameter	100 mm	100 mm	80 mm	80 mm	70 mm
Max. grinding wheel dia.	200 mm	200 mm	200 mm	200 mm	150 mm
Rotary electrode dia.		6 – 200 mm		6 – 200 mm	
Maximum output	30 kW	30 kW	11,5 kW (24 kW Option)	11,5 kW	9 kW
Grinding spindle speed	0 – 10.000 rpm	0 – 10.000 rpm	0 – 9.500 rpm ³⁾	0 – 9.500 rpm	0 – 9.500 rpm
Weight					
Grinding machine incl. coolant system	appr. 7.100 kg	appr. 7.200 kg	appr. 4.500 kg	appr. 4.600 kg	appr. 3.600 kg
Connected load					
At 400 V/50 Hz	appr. 35 kVA	appr. 35 kVA	appr. 25 kVA	appr. 25 kVA	appr. 25 kVA
Cooling system					
Capacity	appr. 800 l	appr. 800 l	appr. 400 l	appr. 400 l	appr. 350 l
Pump output	80/120 l/min at 7/20 bar	80/120 l/min at 7/20 bar	120 l/min at 6 bar	Stepless: 40-120 l/min at 3-20 bar 2-step: 80/120 l/min at 6/20 bar	120 l/min at 6 bar

¹⁾ Depending on tool type, ²⁾ From the theoretical taper diameter of the workpiece holder, ³⁾ With 24 KW drive option, the grinding spindle speed is 7,000 rpm. Subject to changes in the interests of technical progress. No liability is accepted for any information provided.

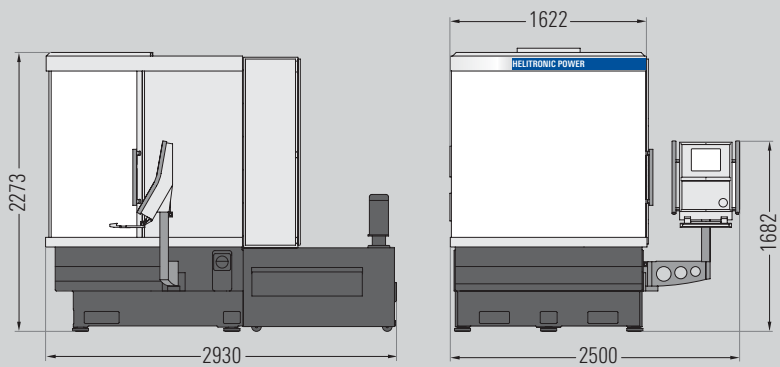
Dimensions



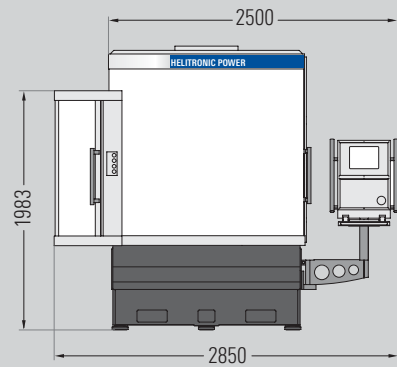
Helitronic Vision / Helitronic Diamond



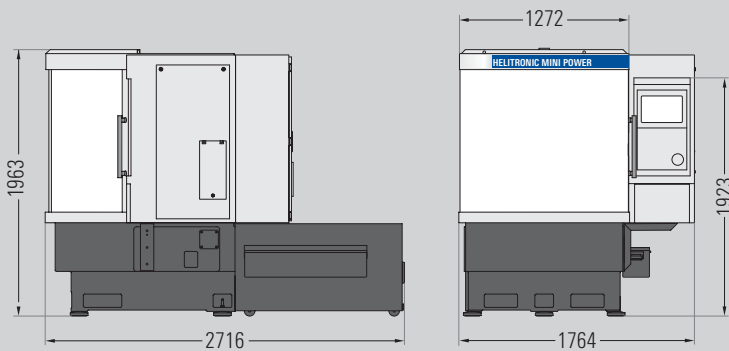
Helitronic Vision with Production Loader option (left) and grinding wheel changer option (right)



Helitronic Power / Helitronic Power Diamond with integrated coolant system (standard)



Helitronic Power with Disc Loader option



Helitronic Mini Power with integrated coolant system (standard)

Dimensions (measurements in mm)

Subject to changes in the interests of technical progress. No liability is accepted for any information provided.

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