

# HELICHECK PRO/PRO LONG HELICHECK PLUS/PLUS LONG

A global leader in the  
macro and micro ranges



## Key parameters

Fully automated HELICHECK PRO/PRO LONG measuring machines for the macro range and HELICHECK PLUS/PLUS LONG for the micro range. Tool diameter 1 to 150 mm in the macro range and 0.1 to 100 mm in the micro range. Tool length up to 330/730 mm in LONG versions. Tool weight up to 35 kg.



Grinding



Eroding



Laser



Measuring



Software



Customer Care

## Walter Maschinenbau GmbH

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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.

# HELICHECK PRO / PRO LONG PLUS / PLUS LONG

The CNC measuring machines HELICHECK PRO/PRO LONG for the macro range and HELICHECK PLUS/PLUS LONG for the micro range are the global standard for the fully automated complete measurement of complex geo-metries. Featuring certified accuracy, they set standards in assuring productivity, quality and precision in modern tool production. In automated tool machining, they carry out the key in-process function of "quality control" with integrated tolerance compensation.



Measuring



Software

# The HELICHECK PRO/PLUS at a glance

## Application

- Fully automated measurement of complex profiles and shapes on rotationally symmetrical tools and production parts
- HELICHECK PRO in the macro range
- HELICHECK PLUS in the micro range
- HELICHECK PRO LONG/PLUS LONG for long tools in the given ranges
- Targeted feedback provided by measurement results
- Ideal for in-process quality control

## Machine

- Low-vibration, solid granite base for maximum measuring accuracy
- HELICHECK PRO/PRO LONG 4-axis CNC machine with 3 cameras
- HELICHECK PLUS/PLUS LONG 4-axis CNC machine with 4 cameras
- Certified accuracy  $E_1 = (1,4 + L/300) \mu\text{m}$
- Repetition accuracy  $\leq 1.0 \mu\text{m}$
- Use in production process or measuring area
- Numerous options



HELICHECK PRO and HELICHECK PRO LONG

## Software

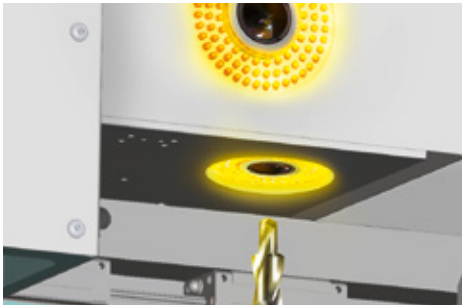
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- WALTER “Quick Check Modular QCM” measuring technology software
- “Easy Check” for automatic profile detection
- “Teach-in Mode” for freely programmable measuring
- “Quick Check Grinding Wheel” option for preparing grinding wheels for the production machine
- Numerous further options for increasing efficiency



HELICHECK PLUS and HELICHECK PLUS LONG





- Vibration-absorbing, thermostable
- Uncompromising accuracy
- Certified accuracy
- Broad application range

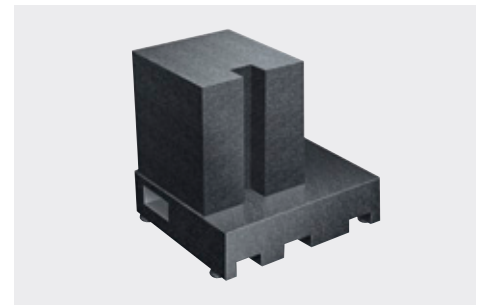
**Optics and mechanics:  
Uncompromising stability**

The absence of moving parts in the optics system forms the basis for high stability and both measuring and repeating accuracy. The installed cameras are safely protected from dust and extraneous light in the fully covered measuring area. Segmented LED light sources for all cameras create the ideal conditions for maximum accuracy. No compromises were made in the control unit and the complete axis system. Mechanically unstable manual movements have been completely replaced with innovative drive and software solutions. The linear axes of the measuring machines are equipped with glass scales in order to ensure the highest possible positioning accuracy. The results are very short positioning times and a positioning resolution of 0.004 µm by the respective control unit.



**Certified accuracy**

According to VDI/VDE 2617, the accuracy of a measuring machine is evaluated by various measurements at various positions on a certified measurement standard. WALTER uses a certified step gauge or optionally a glass scale for increased accuracy. The standard calls for at least three measurements. WALTER performs ten measurements. The high accuracy of the glass scale is certified by the calibration certificate from the Physikalisch-Technischen Bundesanstalt (Germany's national metrology institute).



**Solid granite base**

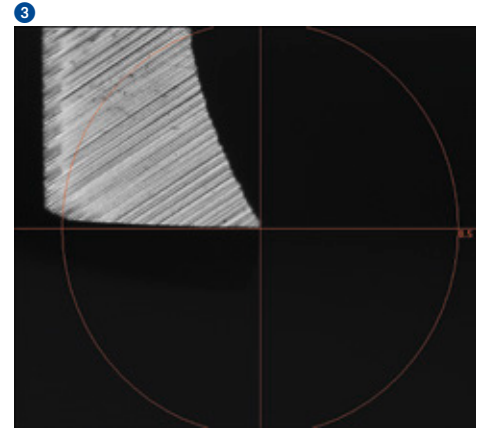
The high mass of the solid granite base forms the basis for accuracy and precision. It works to absorb vibration and is thermostable. These are the requirements for maximum measuring accuracy and reliable measuring results.

**Broad application range**

HELICHECK PRO and HELICHECK PLUS measure rotationally symmetrical tools, production parts and production equipment all the way to indexable inserts and flat parts.



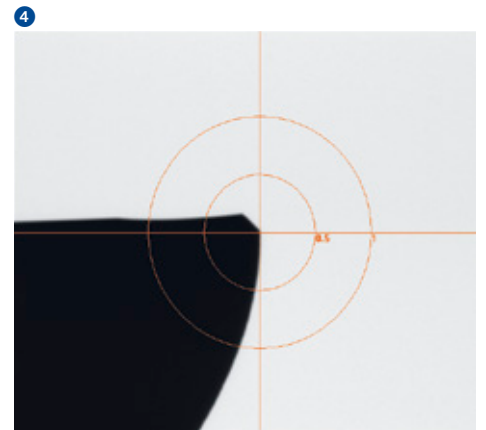
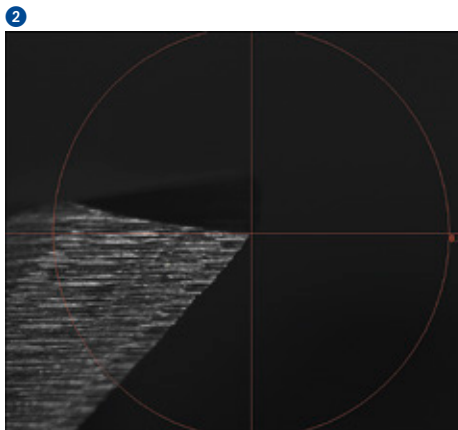
# HELICHECK PRO: high-performance precision measuring machine



- Contactless
- Fully automatic
- No-wear

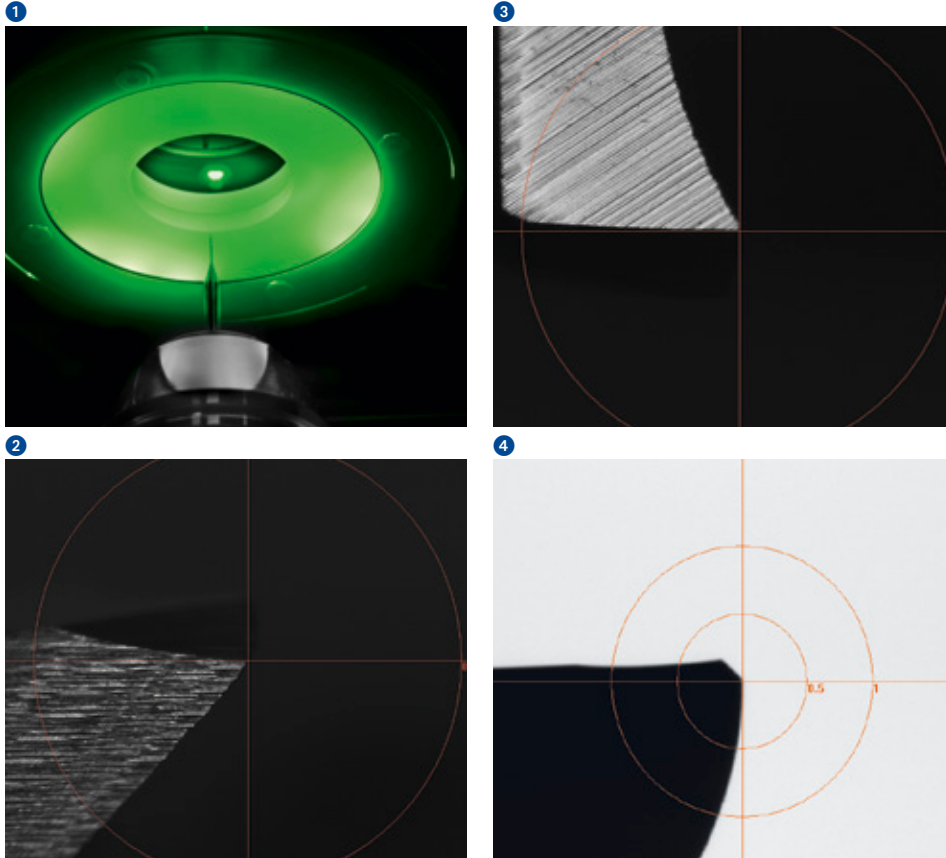
## Area of application:

- Standard tool diameter 1 – 150 mm and expanded to 150 – 200 mm
- Standard length to 300 mm, as HELICHECK PRO LONG version up to 730 mm as standard length





# HELICHECK PLUS: the plus for micro-tools



- Optimum illumination
- Exact contour detection

Optical, contactless measurement technology is ideal for sensitive materials and small parts. The fourth camera in the HELICHECK PLUS with 400x magnification delivers the crucial plus and expands the range of applications for micro-tools down to a minimum diameter of 0.1 millimetres.

- Front light and top light camera also magnify the object to 400x. Even the smallest details are made visible and measurable. Reproducible measurement of high-gloss polished, coated or matt surfaces is possible.
- Measurements of external contour under 0.1 mm have been implemented successfully in many cases, but must be tested in the specific application.

1 Special front light unit and diffuser for micro-tools and drills

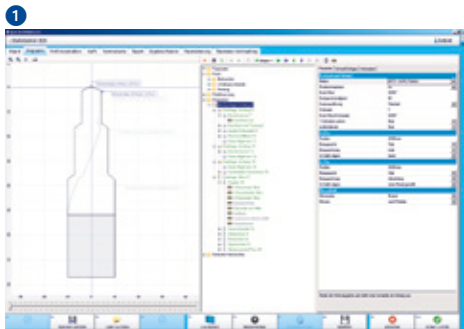
2 "Front light" measurements: CCD camera with 200x magnification

3 "Top light" measurements: CCD camera with 400x magnification

4 "Back light" transmitted light measurement: CCD camera with 50x magnification

5 "Back light" transmitted light measurement: CCD camera with 400x magnification

# WALTER measuring technology software: standard equipment



## Standard equipment

WALTER measurement technology software was developed with globally leading tool and part manufacturers and matches the WALTER HELICHECK CNC measuring machines perfectly. The coordination with all HELICHECK series machines offers optimal compatibility for every application under a wide range of requirements.

## WALTER „Quick Check Modular QCM“

“QCM” gives HELICHECK PRO and HELICHECK PLUS a powerful intelligent software as standard. The highly-flexible, individually combinable and adjustable range of functions includes the following components: “QCM Order Management” – database-backed management of order data, measurement data and measuring programs – and the “QCM Measurement Technology Software” – the fully configured software for measuring tools and creating measuring programs incl. Autocheck. The program contains a variety of preset program templates. The geometries of all renowned manufacturers are already integrated. The modular structure enables

modification of the measurement options and measurement sequences in accordance with individual requirements. New measuring programs and documentation created with “QCM” can be expanded and completed using optional software packages such as “Teach-in Mode”, “ViaScan”, “ViaFit” and “DXF-Generator”.

## WALTER „Teach-in Mode“

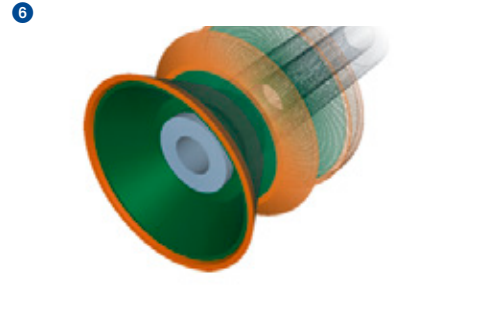
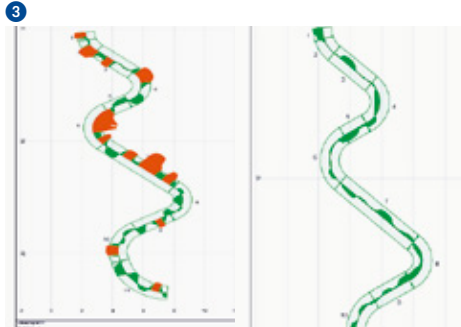
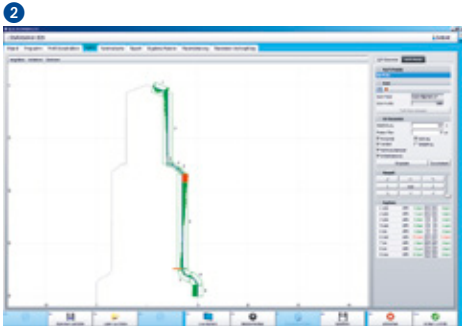
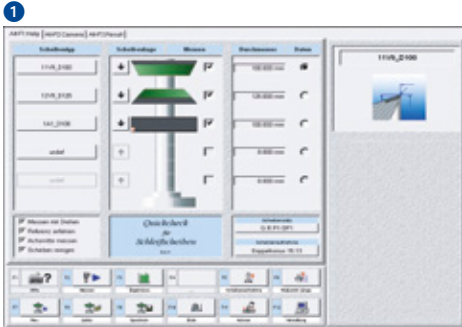
“Teach-in Mode” enables the use of custom measurement standards and freely programmable measurements of any tools and test parts. In combination with the optional “Light Table” hardware, flat test parts of any type can be measured in addition to all rotationally symmetrical parts. These include, for example, indexable inserts and profile inserts.

## The convenient solution with fully automatic profile detection: WALTER “Easy Check”

Originally developed for HELICHECK PRECISION and HELICHECK ADVANCED, the “Easy Check” software is included in the standard HELICHECK PRO and HELICHECK PLUS packages due to overwhelming demand. “Easy Check” is the highly convenient and technically sophisticated alternative to standard profile projectors and presetting devices. Incorporating digital, fully-automatic tool measurement and interactive profile detection by mouse-click. In the measuring process, the CNC axes are controlled exclusively on-screen via innovative mouse functions. They are positioned precisely and reliably fully-automatically without user influence.

The standard equipment also includes an integrated ergonomic workstation. In conjunction with the high-resolution TFT screen and the graphical user interfaces, this results in ideal conditions for safe operation.

# Options



## Perfect grinding wheels:

### WALTER "Quick Check Grinding Wheels"

The WALTER "Quick Check Grinding Wheels" software is a perfect addition to "QCM" and helps improve the quality of grinding significantly. It controls the fully automatic measurement of complete grinding wheel sets and reduces subsequent corrections to an absolute minimum.

## Contour recording:

### WALTER "ViaScan"

All tool and workpiece contours are recorded automatically. The digitised contour can be evaluated based on a range of parameters such as length, diameter and radius in other software packages.

## Rapid profile control:

### WALTER "ViaFit"

"ViaFit" compares the contour lines recorded using "ViaScan" with a DXF template and performs an actual-target comparison for Best-Fit adaptation. Tolerances can be specified to assess the discrepancies. Values which exceed the tolerances are highlighted in colour. Extremes can be marked as required, allowing even unfamiliar profiles to be reproduced quickly and reliably.

## DXF of an unknown contour:

### WALTER "DXF Generator"

After scanning the tool, a DXF file from the digitalised contour line is created. This file can be saved as a DXF and used as a basis for design and production. It is therefore ideal for use in producing prototypes.

## Option for actual-target comparison:

### WALTER "Correction Software FTC"

"Form Tool Compensation FTC" compares the target and actual contour of profiles, and automatically generates a correction DXF which can then be sent to a WALTER HELITRONIC grinding machine. This creates a closed quality control loop via automatic correction calculation – integrated in the production process.

## Option for grinding machine connection:

### WALTER "Wheel Data Connect"

The WALTER "HELITRONIC TOOL STUDIO" grinding machine software for the HELITRONIC series offers an interface for processing the measurement results of HELICHECK PRO and HELICHECK PLUS. Other interfaces are also available on request.

1 WALTER "Quick Check Grinding Wheels"

2 WALTER „ViaFit“

3 WALTER "Correction Software FTC"

4 WALTER „ViaScan“

5 WALTER „DXF-Generator“

6 WALTER „Wheel Data Connect“

## Options expand the available applications

- Numerous adapters
- Runout accuracy
- Flat objects



### Centre fixture

For all tools and rotationally symmetrical parts which are produced between centres due to their technical requirements, the high runout precision must also be maintained during the measuring process. WALTER offers a precision centre fixture, which can be designed with positive or negative centres. The centre fixture is fitted to the A axis with fast tooling-up and setup time.



### Modular adapter spindle

Vertical tool holder, rapid change of the spindle type with a constant measurement range, no adapter solutions with cumulative runout errors and different heights. The spindle insert adapter can be changed simply in seconds, without additional tooling-up time.

The following spindle insert adapters are available:

- ISO 50/40
- HSK 100/80/63/50/40/32
- Capto C4/C5/C6/C8
- VDI 30

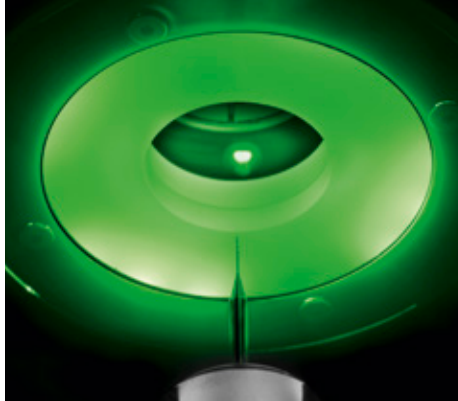
Further spindle insert adapters or other clamping systems (e.g. automatic hydro clamp chucks) and accessories are available on request.



### Light table

The light table for measuring flat parts, such as indexable inserts, profile sections, test grindings etc. provides similar functions to a conventional X-Y coordinate measuring device in the back light process. The active light surface is 170 x 70 mm and specifies the maximum useful measurement range. (If the HELICHECK PLUS is equipped with a probe and a "cutting edge rounding sensor", the light table option is not available, nor is it available if fixed HSK adapters and automatic chucks are mounted.)

- Digital measurement
- Analogue measurement
- Fourth front light camera



#### Front light illumination/diffuser

A special front light system and a diffuser with a positioning unit are available for the HELICHECK PLUS (Standard) and the HELICHECK PRO (optional). This is ideal equipment for non-contact measurement of drills or micro-tools, for example, via homogenous, diffuse illumination of the top geometry.



#### Digital measuring probe

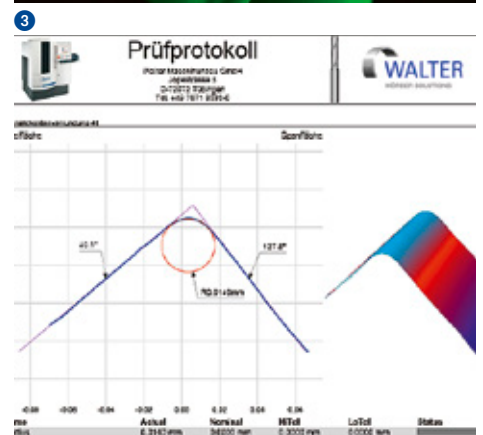
For measurement tasks like recording the flute profile for drills, rake angle measurement or clearance angle measurement on small bevels, a mechanical-electronic principle is available for HELICHECK PLUS and HELICHECK PRO. A measuring probe with a ball tip for signal transfer gradually records position by position using a switching principle. (If used in the HELICHECK PLUS, the additional top light diffuser is to be omitted.)



#### Analogue measuring probe

To scan complete surfaces or measure shapes, WALTER offers an analogue measuring probe for HELICHECK PRO and HELICHECK PLUS. Measurements can be performed continuously while the axes are in motion and all changes are recorded.

# μ-precision complete measurements



- Easy and rapid complete measurement of extremely fine structures
- Significant increase in durability and cutting performance
- Greatest accuracy
- A complete system for all measurement tasks on one tool

## Cutting edge rounding sensor SKV

SKV is the logical development towards complete measurement incl. the micro-geometries of precision tools. Edge rounding is an important parameter for optimising tools in terms of durability and cutting performance. The SKV, with its own segmented power LED illumination and precision CNC tilt axis for any measurement locations, determines the complete micro-geometry of a blade and all other profiles on microcomponents. Blade micro-geometry includes cutting edge rounding, the blade shape and the chipping of the blade edge. In addition to this, the SKV is suitable for all geometry measurements in very fine structures which challenge the limits of standard sensors (e.g. clearance and rake angles).

The cutting edge rounding sensor is contactless and operates by autofocus. A CNC-controlled precision swivel axis with an angle of 0 to 90° and a position resolution of 0.001° and 1000x magnifying precision optics measure the top and circumference blade. The system can be used for edge rounding from 3 to 50 μm. The combination of multiple cameras in conjunction with the precision axes permits simple and reproducible orientation on the tool. Time-intensive manual pre-positioning is no longer required. The measuring process takes less than 1 minute. Both the HELICHECK PRO and the HELICHECK PLUS can be equipped with the SKV. This development makes WALTER your partner for micro-geometry, too!

# 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



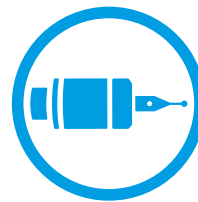
## Prevention

Maintenance  
Inspection



## Service

Customer service  
Customer advice  
Helpline  
Remote service



## Material

Spare parts  
Replacement parts  
Accessories



## Rebuilt

Machine overhauling  
Refurbishing of assemblies



## Retrofit

Conversions  
Retrofitting parts  
Taking machines back

# Technical data, dimensions

## Axes

X axis	260 mm
Y axis	330 mm
Y axis (HELICHECK PRO LONG/PLUS LONG only)	795 mm
Z axis	250 mm
A axis	360 °

## Accuracy

E <sub>I</sub> value	$E_I = (1.4 + L/300) \mu\text{m}$
Diameter measurement/length measurement <sup>1)</sup>	
Repetition accuracy	≤ 1 μm
Position resolution for all linear axes X, Y, Z	0.004 μm
Position resolution for rotation axis A	< 0.00036 °
Measurement value resolution	0.25 μm

## Magnification<sup>2)</sup>

### HELICHECK PRO / HELICHECK PRO LONG

Back light camera	50x
Front light camera	200x
Top light camera	200x

### HELICHECK PLUS / HELICHECK PLUS LONG

Back light 1	50x
Back light 2	400x
Front light camera	400x
Top light camera	400x

## Others

### Connected load

Power consumption at 230 V/50 Hz	approx. 2 kVA
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### Weight

HELICHECK PRO/PLUS	approx. 2,500 kg
HELICHECK PRO LONG/PLUS LONG	approx. 3,000 kg

## Tool data

Max. tool diameter	200 mm
Diameter (snap gauge principle)	
HELICHECK PRO	150 mm
HELICHECK PLUS	110 mm
Max. tool length <sup>3)</sup>	330 mm
Max. tool length <sup>3)</sup>	730 mm
(HELICHECK PRO LONG/PLUS LONG only)	
Max. tool weight	25 kg

## Optionen

Light table, replacement spindle, cutting edge rounding sensor SKV, centre fixture, digital measuring probe, analogue measuring probe, special optics: 200x magnification for front light and top light camera (HELICHECK PLUS/PLUS LONG only), preparation for Teach-in Mode workstation, Teach-in Mode workstation, software

<sup>1)</sup> Measured on certified stepped plug gauge with constant ambient conditions.

<sup>2)</sup> The magnifications are relative to a 22" screen.

<sup>3)</sup> From the theoretical taper diameter of the workpiece holder.

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 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 rotation symmetrical tools and workpieces

WALTER machines	Use	Materials	Tool dimensions <sup>1)</sup> max. length <sup>2)</sup> / 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	P R	HSS TC C/C CBN	370 mm / Ø3 – 320 mm
HELITRONIC VISION 700 L	P R	HSS TC C/C CBN	700 mm / Ø3 – 200 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 <sup>1)</sup> 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	- / bis Ø25 mm
RS15	P R M	HSS TC C/C CBN PCD	- / bis Ø25 mm



## Eroding – Electrical discharge machining and grinding of rotation symmetrical tools

WALTER machines	Use	Materials	Tool dimensions <sup>1)</sup> max. length <sup>2)</sup> / diameter
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

**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 <sup>1)</sup> 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	- / bis Ø25 mm



## Laser – Laser machining of indexable inserts and/or rotation symmetrical tools

EWAG machines	Use	Materials	Tool dimensions <sup>1)</sup> max. length / diameter
LASER LINE ULTRA	P	TC C/C CBN PCD CVD-D MCD/ND	200 mm / Ø0,1 – 150 mm

EWAG machines	Use	Materials	Indexable inserts <sup>1)</sup> Inscribed / circumscribed circle
LASER LINE ULTRA	P	TC C/C CBN PCD CVD-D MCD/ND	Ø3 mm / Ø50 mm



## Measuring – contactless measurement of tools, workpieces and grinding wheels

WALTER machines	Use	Tool dimensions <sup>1)</sup> max. length <sup>2)</sup> / diameter
HELICHECK PRECISION	M	420 mm / Ø1 – 220 mm
HELICHECK ADVANCED	M	420 mm / Ø1 – 100 mm
HELICHECK PRO	M	300 mm / Ø1 – 150 mm
HELICHECK PRO LONG	M	730 mm / Ø1 – 150 mm
HELICHECK PLUS	M	300 mm / Ø0,1 – 25,4 mm
HELICHECK PLUS LONG	M	730 mm / Ø0,1 – 110 mm
HELICHECK 3D	M	
HELISSET UNO	M	400 mm / Ø1 – 150 mm
HELISCALE	M	300 mm / Ø2 – 25 mm



## Customer Care – Comprehensive range of services

<sup>1)</sup> Maximum tool dimensions are dependent on the tool type and geometry, as well as the type of machining.

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







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