HELICHECK PRO/PRO LONG
HELICHECK PLUS/PLUS LONG

for the macro and micro ranges

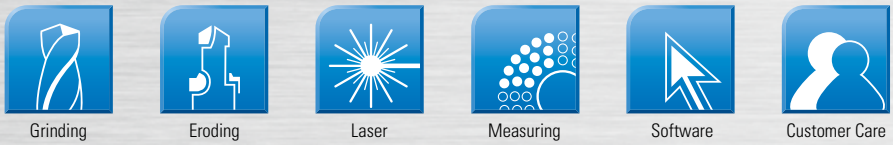
NEW
Performance Package
$E1 = (1{,}2 + L/300)$ µm
Ask our team for details

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 25 kg.

E_1-value = (1,2 resp. 1,4 + L/300) µm.

WALTER



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.

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 ideal solution for the fully automated complete measurement of complex geometries. 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.

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 $E_1 = (1{,}4 + L/300)$ µm resp. $E_1 = (1{,}2 + L/300)$ µm as option
- Repetition accuracy ≤ 1.0 µm
- Use in production process or measuring area
- Numerous options

HELICHECK PRO and HELICHECK PRO LONG

Software

- 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

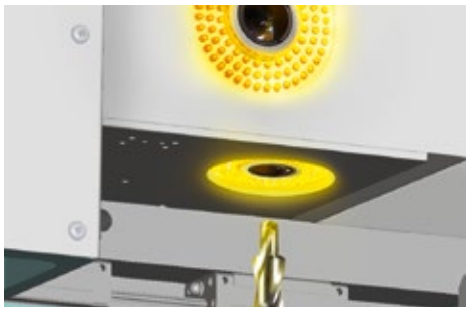
WALTER: superior measuring technology

Reference E_1: Standard for real precision
The E_1 value is the key machine-specific characteristic value for evaluating a measuring machine. It defines the one-dimensional axially parallel length deviation in coordinate measurement systems. The lower the E_1 value, the smaller the range of the measurement deviation and the greater the accuracy to the actual value of the measurement result.

In the HELICHECK PRO and HELICHECK PLUS, $E_1 = (1.4 + L/300)$ µm resp. $E_1 = (1,2 + L/300)$ µm optionally and enables reliable quality assurance, even with production tolerances of ≤ 10 µm, e.g. ± 5 µm.

In the HELICHECK PRO and HELICHECK PLUS, the repeating accuracy of ≤ 1 µm is also impressively high. (Note: the repeating accuracy alone does not provide a reliable statement on the performance of a machine, but it is an important prerequisite!)

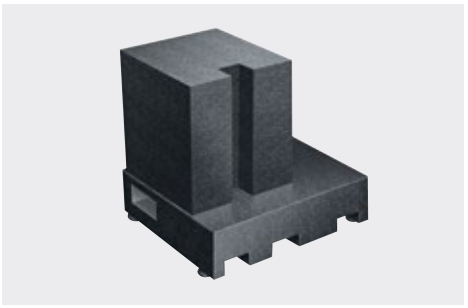
The lower the E_1 value, the more accurate the measurement results.



- 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).



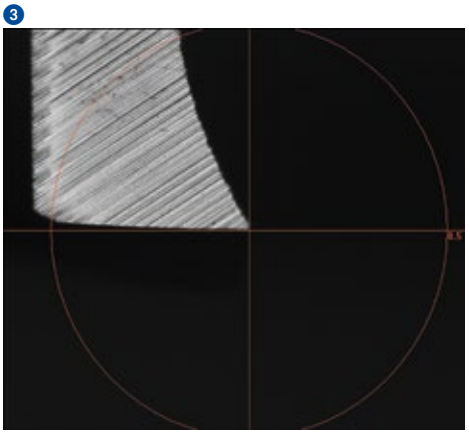
Solid granite base
The high mass of the solid granite base forms the basis for accuracy and precision. It works to absorb vibration and is thermostable. These are the requirements for maximum measuring accuracy and reliable measuring results.

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

1

3



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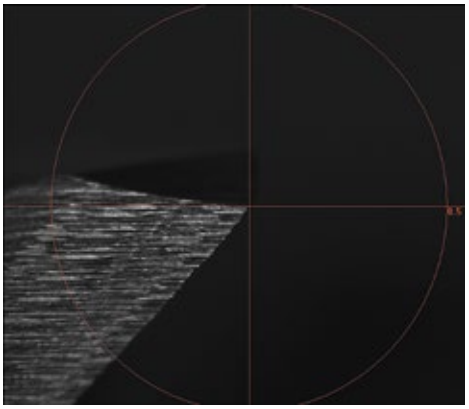

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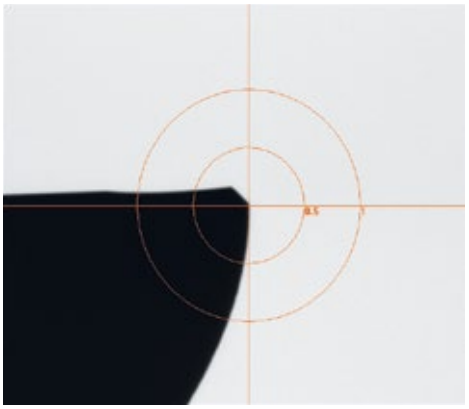


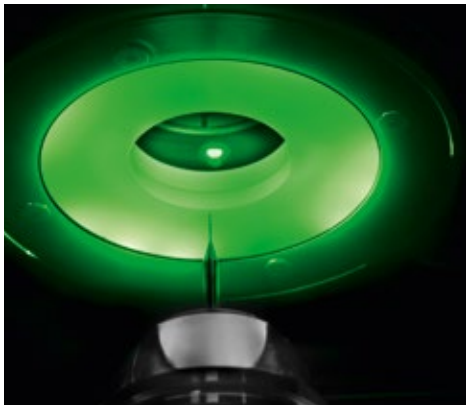
- Contactless
- Fully automatic
- No-wear

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

1 Optimised lighting via LEDs at the sides and in the door
2 "Front light" measurements: CCD camera with 200x magnification
3 "Top light" measurements: CCD camera with 200x magnification
4 "Back light" transmitted light measurement: CCD camera with 50x magnification

HELICHECK PLUS: the plus for micro-tools

1


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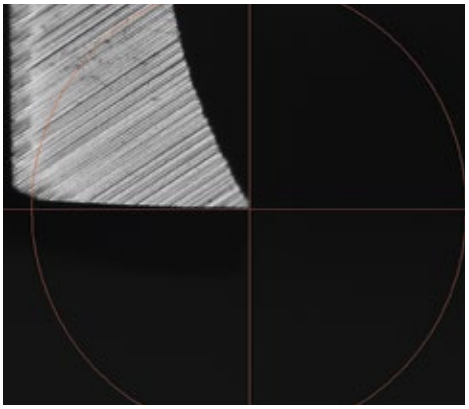
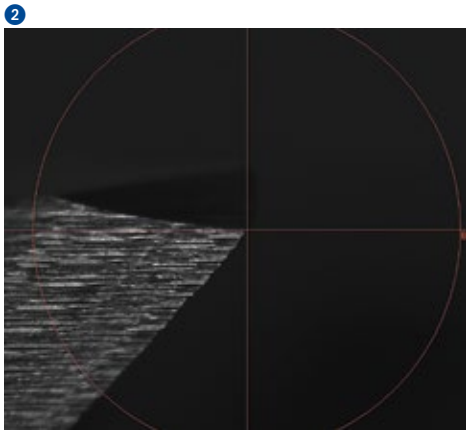


- Optimum illumination
- Exact contour detection

2


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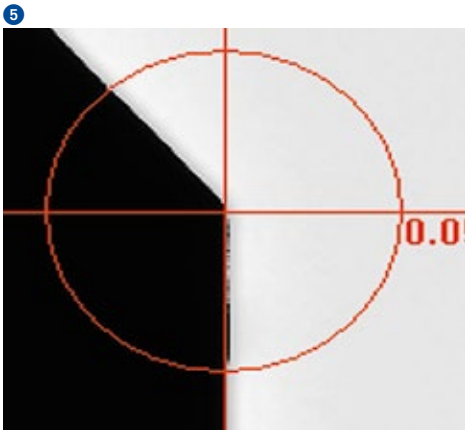


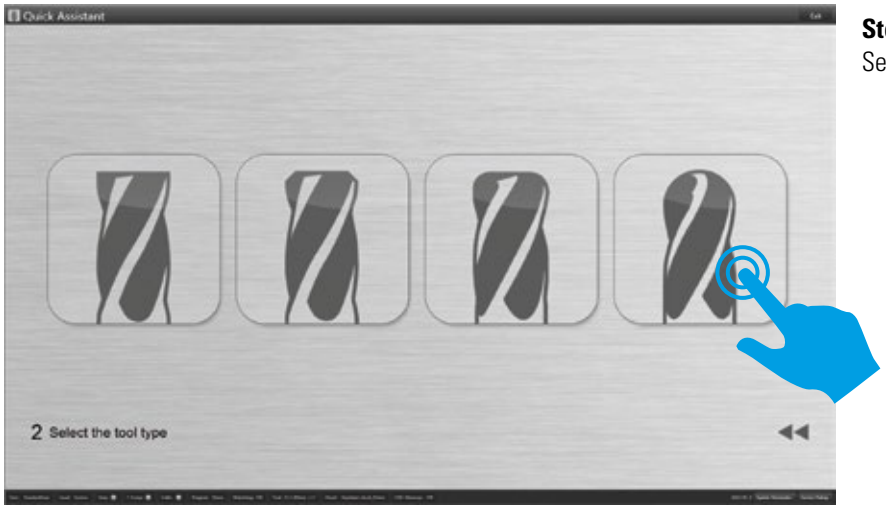
Optical, contactless measurement technology is ideal for sensitive materials and small parts. The fourth camera in the HELICHECK PLUS with 400x magnification delivers the crucial plus and expands the range of applications for micro-tools down to a minimum diameter of 0.1 millimetres.

- 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: Quick Assistant – target reached in only three steps

Step 1
Select tool family



Step 2
Select tool type

Step 3
Select/deselect required measurement parameters and start measurement

Quick Assistant – incredibly easy to use

- Measurement in only three steps
- Simple, graphic user interface
- For cylindrical and conical milling cutters and drills
- No need to measure nominal values
- No need for records

Example icons of "Cylindrical end mills" tool family
It's never been so simple to use WALTER measuring machines. The clearly arranged icons allow the software to be used easily. No prior knowledge necessary.


Square end


Chamfer


Corner radius


Ball nose

Options expand the available applications

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.

- Numerous adapters
- Runout accuracy
- Flat objects

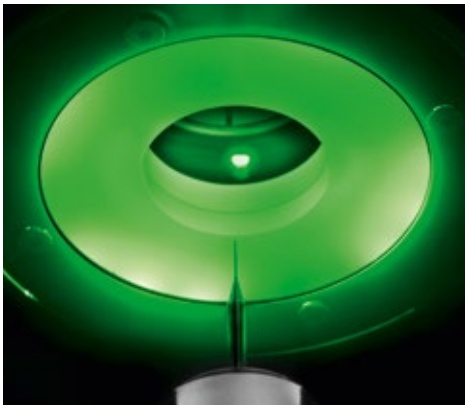
Modular adapter spindle
Vertical tool holder, rapid change of the spindle type with a constant measurement range, no adapter solutions with cumulative runout errors and different heights. The spindle insert adapter can be changed simply in seconds, without additional tooling-up time.

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



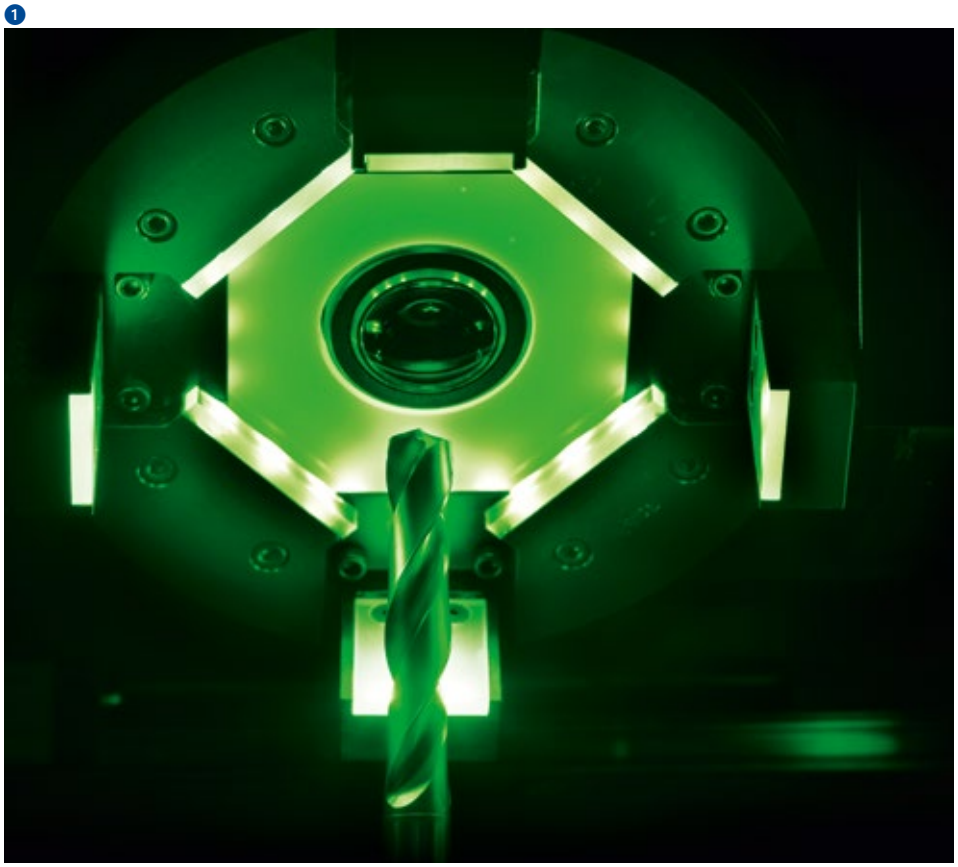
Front light illumination/diffuser
A special front light system and a diffuser with a positioning unit are available for the HELICHECK PLUS (Standard) and the HELICHECK PRO (optional). This is ideal equipment for non-contact measurement of drills or micro-tools, for example, via homogenous, diffuse illumination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

1



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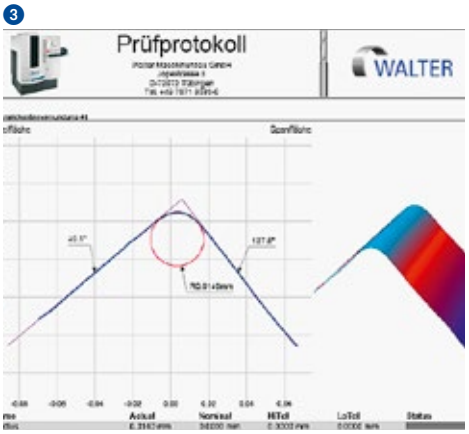


- Easy and rapid complete measurement of extremely fine structures
- Significant increase in durability and cutting performance
- Greatest accuracy
- A complete system for all measurement tasks on one tool

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!

1 Power LED illumination of the cutting edge round sensor SKV

2 The SKV records edge rounding in the microgeometry range

3 Test report

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

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_1 value	$E_1 = (1.4 + L/300)$ µm resp.
	$E_1 = (1,2 + L/300)$ µm as option
Diameter measurement/length measurement [1]	
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 [2]

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

Weight

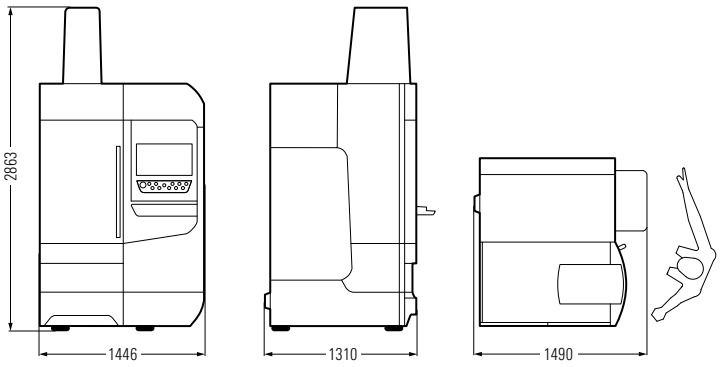
HELICHECK PRO/PLUS	approx. 2,500 kg
HELICHECK PRO LONG/PLUS LONG	approx. 3,000 kg

Tool data

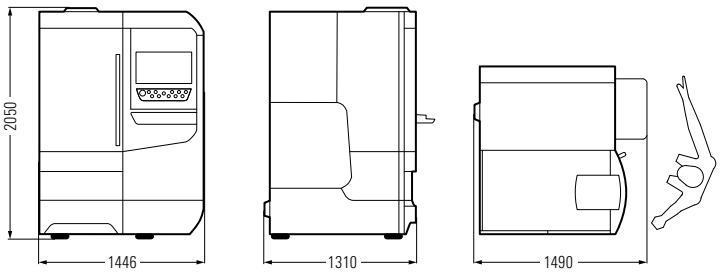
Max. tool diameter	200 mm
Diameter (snap gauge principle)	
HELICHECK PRO	150 mm
HELICHECK PLUS	110 mm
Max. tool length [3]	330 mm
Max. tool length [3]	730 mm
(HELICHECK PRO LONG/PLUS LONG only)	
Max. tool weight	25 kg

Options

Performance Package $E_1 = (1,2 + L/300)$ µm, 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



HELICHECK PRO LONG/PLUS LONG



HELICHECK PRO/PLUS

[1] Measured on certified stepped plug gauge with constant ambient conditions.
[2] The magnifications are relative to a 22" screen.
[3] From the theoretical taper diameter of the workpiece holder.

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	HSS TC C/C CBN	120 mm / Ø0.1 – 12.7 mm
	R	HSS TC C/C CBN	120 mm / Ø3 – 12.7 mm

EWAG machines	Use	Materials	Tool dimensions [1] max. length [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.

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BLUECOMPETENCE
Alliance Member
Partner of the Engineering Industry Sustainability Initiative

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