HELICHECK PRO/PRO LONG
HELICHECK PLUS/PLUS LONG

for 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 25 kg.
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.
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 $E_1 = (1.4 + L/300) \ \mu m$
- Repetition accuracy $\leq 1.0 \ \mu m$
- Use in production process or measuring area
- Numerous options
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
WALTER: superior measuring technology

Reference E₁: Standard for real precision
The E₁ 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 E₁ 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, 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!)

In the HELICHECK PRO and HELICHECK PLUS, E₁ = (1.4 + L/300) µm and enables reliable quality assurance, even with production tolerances of ≤ 10 µm, e.g. ± 5 µm.

The lower the E₁ value, the more accurate the measurement results.
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.
HELCHECK 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 HELCHECK 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

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.

Special front light unit and diffuser for micro-tools and drills
“Front light” measurements: CCD camera with 200x magnification
“Top light” measurements: CCD camera with 400x magnification
“Back light” transmitted light measurement: CCD camera with 50x magnification
“Back light” transmitted light measurement: CCD camera with 400x magnification

• Optimum illumination
• Exact contour detection
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

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

- 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.

**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.

**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 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.

**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.
μ-precision complete measurements

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 optimizing 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 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

## Axes

<table>
<thead>
<tr>
<th>Axis</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X axis</td>
<td>260</td>
</tr>
<tr>
<td>Y axis</td>
<td>330</td>
</tr>
<tr>
<td>Y axis (HELICHECK PRO LONG/PLUS LONG only)</td>
<td>795</td>
</tr>
<tr>
<td>Z axis</td>
<td>250</td>
</tr>
<tr>
<td>A axis</td>
<td>360°</td>
</tr>
</tbody>
</table>

## Accuracy

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>E₁ value</td>
<td>(1.4 + L/300) µm</td>
</tr>
<tr>
<td>Diameter measurement/length measurement</td>
<td>≤ 1 µm</td>
</tr>
<tr>
<td>Repetition accuracy</td>
<td>0.004 µm</td>
</tr>
<tr>
<td>Position resolution for rotation axis A</td>
<td>&lt; 0.00036°</td>
</tr>
<tr>
<td>Measurement value resolution</td>
<td>0.25 µm</td>
</tr>
</tbody>
</table>

## Magnification

**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

<table>
<thead>
<tr>
<th>Tool</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. tool diameter</td>
<td>200</td>
</tr>
<tr>
<td>Diameter (snap gauge principle) HELICHECK PRO</td>
<td>150</td>
</tr>
<tr>
<td>HELICHECK PLUS</td>
<td>110</td>
</tr>
<tr>
<td>Max. tool length</td>
<td></td>
</tr>
<tr>
<td>HELICHECK PLUS LONG/PLUS LONG only</td>
<td>330</td>
</tr>
<tr>
<td>Max. tool length</td>
<td></td>
</tr>
<tr>
<td>HELICHECK PLUS LONG/PLUS LONG only</td>
<td>730</td>
</tr>
<tr>
<td>Max. tool weight</td>
<td>25 kg</td>
</tr>
</tbody>
</table>

### Options

- 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

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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.

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

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Creating Tool Performance

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**Grinding – Grinding of rotationally symmetrical tools and workpieces**

| WALTER machines | Use | Materials | Tool dimensions
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HELITRONIC ESSENTIAL</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>255 mm / Ø1 – 100 mm</td>
</tr>
<tr>
<td>HELITRONIC MINI POWER</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>255 mm / Ø1 – 100 mm</td>
</tr>
<tr>
<td>HELITRONIC MINI AUTOMATION</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>255 mm / Ø1 – 100 mm</td>
</tr>
<tr>
<td>HELITRONIC BASIC</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>350 mm / Ø3 – 290 (320) mm</td>
</tr>
<tr>
<td>HELITRONIC POWER</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>350 mm / Ø3 – 290 (320) mm</td>
</tr>
<tr>
<td>HELITRONIC POWER 400</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>520 mm / Ø3 – 315 mm</td>
</tr>
<tr>
<td>HELITRONIC VISION 400 L</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>420 mm / Ø3 – 315 mm</td>
</tr>
<tr>
<td>HELITRONIC VISION 700 L</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>700 mm / Ø3 – 200 mm</td>
</tr>
<tr>
<td>HELITRONIC MICRO</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>120 mm / Ø0.1 – 12.7 mm</td>
</tr>
<tr>
<td>EWAMATIC LINEAR</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>200 mm / Ø0.2 – 200 mm</td>
</tr>
<tr>
<td>PROFILE LINE</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>255 mm / Ø1 – 100 mm</td>
</tr>
<tr>
<td>RS 15</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>– / up to Ø25 mm</td>
</tr>
</tbody>
</table>

**Grinding – Grinding of indexable inserts**

| EWAMATIC LINEAR | Use | Materials | Indexable inserts
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HELICHECK PRO / PRO LONG / PLUS / PLUS LONG</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>Ø3 mm / Ø50 mm</td>
</tr>
</tbody>
</table>

**Eroding – Electrical discharge machining and grinding of rotationally symmetrical tools**

| WALTER machines | Use | Materials | Tool dimensions
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HELITRONIC DIAMOND EVOLUTION</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>185/255 mm / Ø1 – 185 mm</td>
</tr>
<tr>
<td>HELITRONIC POWER DIAMOND</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>350 mm / Ø3 – 290 (400) mm</td>
</tr>
<tr>
<td>HELITRONIC POWER DIAMOND 400</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>520 mm / Ø3 – 380 mm</td>
</tr>
<tr>
<td>HELITRONIC VISION DIAMOND 400 L</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>420 mm / Ø3 – 315 mm</td>
</tr>
</tbody>
</table>

**Laser – Laser machining of indexable inserts and/or rotationally symmetrical tools**

| EWAMATIC LINEAR | Use | Materials | Tool dimensions
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LASER LINE ULTRA</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>250 mm / Ø0.1 – 200 mm</td>
</tr>
<tr>
<td>LASER LINE PRECISION</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>250 mm / Ø0.1 – 200 mm</td>
</tr>
</tbody>
</table>

**Measuring – Contactless measurement of tools, workpieces and grinding wheels**

| WALTER machines | Use | Materials | Tool dimensions
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HELICHECK PRO / PRO LONG / PLUS / PLUS LONG</td>
<td>F</td>
<td>HSS &lt;i&gt;TC&lt;/i&gt;</td>
<td>Ø3 mm / Ø50 mm</td>
</tr>
</tbody>
</table>

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

**Customer Care – Comprehensive range of services**

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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.