



Helicheck Pro/Plus

Optical CNC measuring machines

Helicheck, the standard for measuring technology

The non-contact complete measurement of rotationally symmetrical tools and production parts with the highest precision has become the standard in tool measuring technology. Leading toolmakers and users around the world value the precision, flexibility and ergonomic handling of WALTER measuring technology.



Helicheck Pro and Helicheck Plus 4-axis-CNC measuring machines with 3 or 4 CCD cameras



▣ Non-contact complete measurement

The 4-axis CNC measurement machines with 3 (Pro) or 4 (Plus) permanently-installed CCD cameras are high-performance precision measurement machines for the non-contact complete measurement of rotationally symmetrical tools and production parts, as well as grinding wheels. All relevant tool parameters are automatically measured with back-light and top-light camera technology. Once they are generated, the measuring routines can be repeated as often as desired. Reliable measurement results are absolutely guaranteed and independent of the machine operator. This saves new routine measurements, time and money.

The **Helicheck Pro** is equipped with one back-light camera (50x enlargement). This enables measurements in the standard range of 1 to 150 mm, as well as in an expanded measurement range for tool diameters from 150 to 200 mm. Enlargement is at 200x for measuring reflected light.

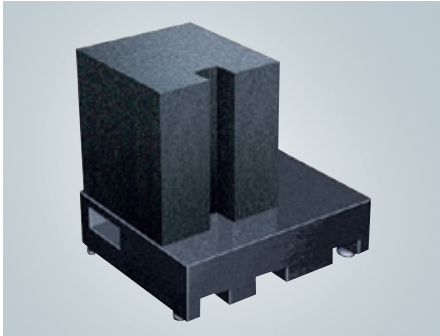
The **Helicheck Plus** is equipped with a second back-light camera (400x enlargement) for micro tools, for a diameter range of 0.1 to 25.4 mm. Measurements under 0.1 mm have been successfully carried out many times, but they should be rechecked in specific cases. Enlargement is at 400x for measuring reflected light.

The length deviation according to VDI/VDE 2617 is $E_1 = (1,4 + L/300 \text{ mm}) \mu\text{m}$ (L=measuring length in mm). It ensures the process reliable quality assurance, even if the production tolerance is $< 10 \mu\text{m}$. Optimal length deviations of up to $E_1 = (0,6 + L/300 \text{ mm}) \mu\text{m}$ can be assured.

▣ Range of applications

Non-contact complete measurement of precision tools such as cylindrical and tapered end-mills, drills, close tolerance step tools, special tools such as fir tree root form cutters, PCD tools, reamers, HSS tools, turbine-blade tools, tools for aerospace industries as well as rotationally symmetrical parts and grinding wheels.

Innovative WALTER measurement technology



☑ Solid granite base

The great weight of the solid granite base optimally reduces vibration and thermal expansion, and thus ensures the highest degree of accuracy.



☑ Optimal machine operation

The workplace is integrated into the Helicheck, based on ergonomic considerations. In connection with the high-resolution TFT screen and graphical user interface, this provides ideal conditions for safe machine operation.



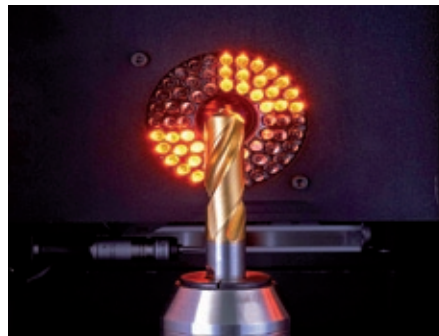
☑ Certified accuracy

According to VDI/VDE 2617, the accuracy of a measuring machine is evaluated by various measurements at various clearances to a certified measurement standard. WALTER uses a certified adjustable plug gauge or optionally a glass scale for increased precision. According to the norm, at least three measurements are called for. WALTER carries out ten measurements. The high accuracy of the glass scales is certified by the calibration certification of the German national metrology institute (Physikalisch-Technischen Bundesanstalt).



☑ 3C-Direct View – directly to the result with 3 permanently-installed cameras

Since no moving parts are used, stability and the measuring accuracy are optimised. The linear axes of the measuring machines are fitted with glass scales, in order to ensure the best-possible precision in positioning, which is essential for the most precise measurement results. The positioning resolution based on the corresponding control unit is 0,004 µm.



☑ Ideal measuring illumination

A special lighting concept with segmented LED illumination for front light and top light captures all geometries down to the smallest detail. The measurement area is protected against dust and the influence of ambient light. Segmented LED illumination for all cameras provides the ideal preconditions for precision measurement. The Helicheck Plus is enhanced by an additional special unit for reflected lighting and a diffuser specially optimised for small tools.

Helicheck Pro/Plus

Options for special requirements

+ “Measuring probe” option

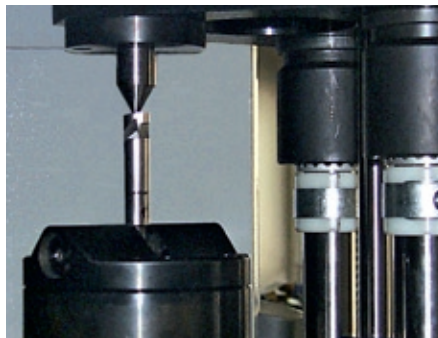
A special measuring probe is available for special measuring tasks, for example measuring the flute profile on drills. Especially for drills, flute profile is a parameter which is relevant to performance, and one that you can optimise using the probe. Other applications include two-point rake angle measurement or the measurement of the clearance angle for micro-bevels. The additional special unit for reflected lighting is not needed for use with the Helicheck Plus.



Measuring probe with probe ball

+ “Opposite tip” option

Some tools or rotationally symmetrical parts are produced between tips because of the technical requirements involved, in order to achieve a high level of concentricity accuracy. This also applies to the measuring process. A high-precision opposite tip holder is available for this purpose and can be configured with positive or negative tips. It is mounted on the A-axis involving a short setup and presetting procedure, and ensures the best possible concentricity properties on the measuring machine.



Precision opposite tip holder

+ “Interchangeable spindle” option

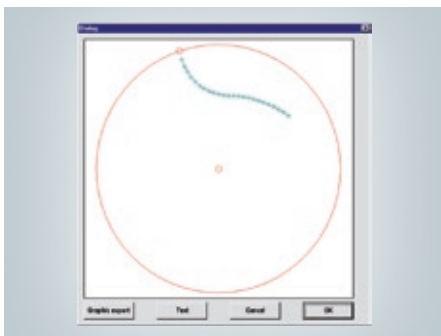
A precision adapter measuring spindle is available for different clamping system tapers. The adapter can easily be changed in seconds without additional setup time.

The following adapters are available:

- ISO 50/40/30
- HSK 100/80/63/50/40/32



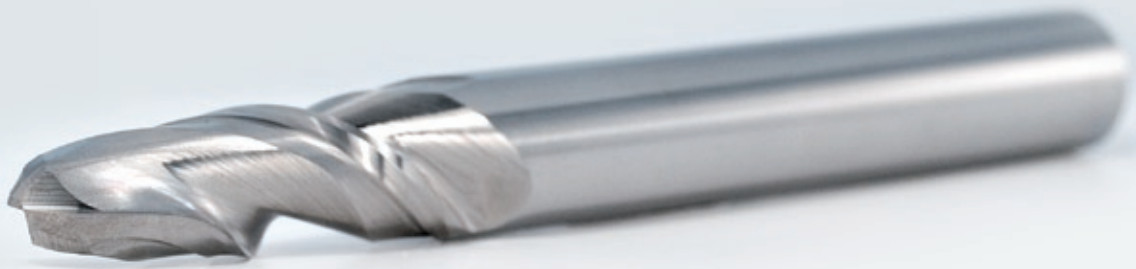
Precision adapter measuring spindle



Measurement of flute profile



Spindle insert, e.g. HSK 63

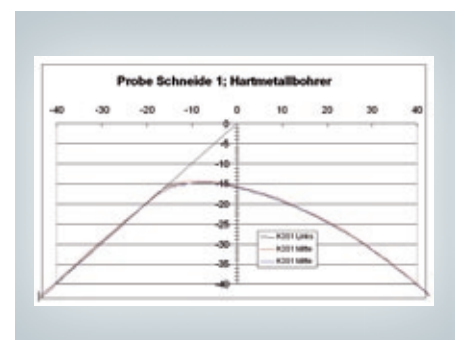
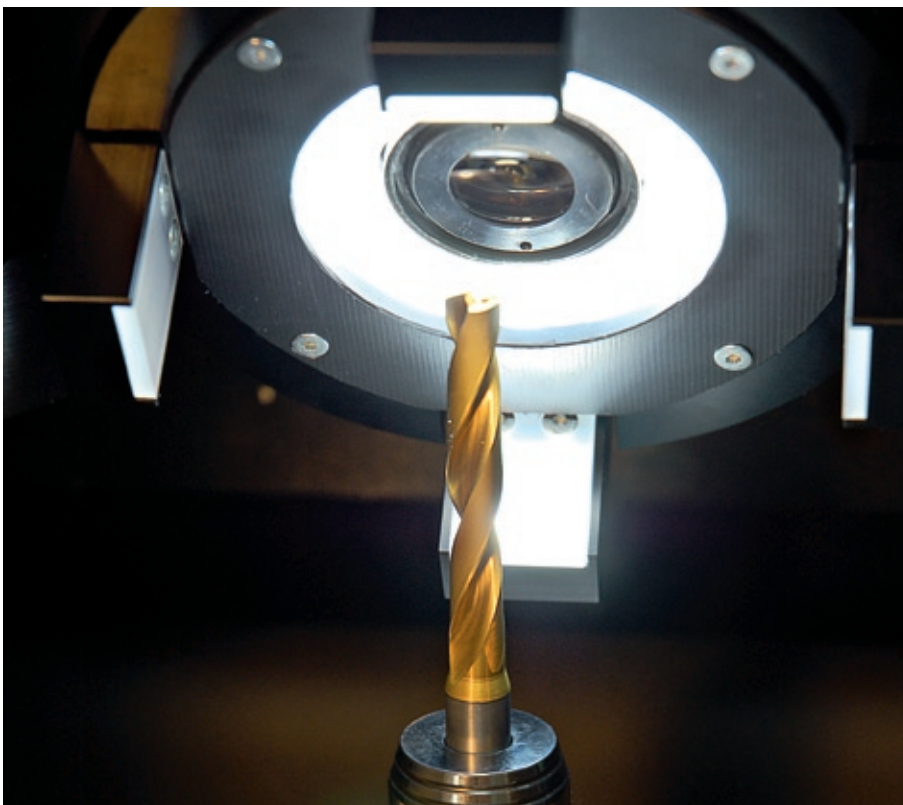


⊕ “Cutting-edge rounding sensor CER” option

The logical further development towards complete measurement, including the micro-geometries of precision tools. Cutting-edge rounding is an important parameter for optimising tools with regard to machine life and metal removal rates. The CER option, with its own segmented LED illumination and precision CNC spindle angle for any desired measurement point, determines the complete micro-geometry of an edge and all other profiles for micro-components. It is furthermore suitable for any

geometry measurements of extremely small structures, for which standard sensors have reached their limits (e.g. clearance and front rake angles).

Both measuring machines can be equipped with the CER. As a result, WALTER measuring technology is breaking new ground in the field of micro-technology.



Measurement of the form and dimensions of cutting-edge rounding.

Helicheck Pro/Plus

Technical Data, Dimensions

Helicheck Pro

Paintwork	RAL 9003/7011
Axes	
X-axis	260 mm
Y-axis	330 mm
Z-axis	250 mm
A-axis	360°
Accuracy	
Diameter measurement ¹⁾ , Repeat accuracy	≤ 1 μm
Length of measurement ¹⁾ , Repeat accuracy	≤ 1 μm
Positioning resolution for all linear axes X, Y, Z	0,004 μ
Positioning resolution for rotational axis A	0,0025 degrees
Measuring resolution	0,25 μm
Enlargement²⁾	
Transmitted-light camera	50x
Reflected light camera	200x
Forehead camera	200x
Power requirement	
at 230 V/50 Hz	2 kVA
Weight	
	approx. 2,500 kg

Helicheck Plus

Paintwork	RAL 9003/7011
Axes	
X-axis	260 mm
Y-axis	330 mm
Z-axis	250 mm
A-axis	360°
Accuracy	
Diameter measurement ¹⁾ , Repeat accuracy	≤ 1 μm
Length of measurement ¹⁾ , Repeat accuracy	≤ 1 μm
Positioning resolution for all linear axes X, Y, Z	0,004 μ
Positioning resolution for rotational axis A	0,0025 degrees
Measuring resolution	0,25 μm
Enlargement²⁾	
Transmitted light 1	50x
Transmitted light 2	400x
Reflected light camera	400x
Forehead camera	400x
Power requirement	
at 230 V/50 Hz	2 kVA
Weight	
	approx. 2,500 kg

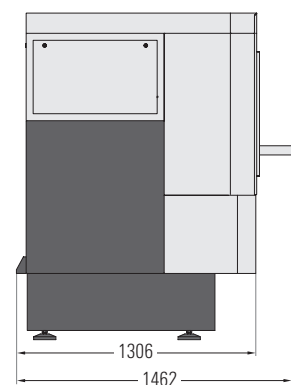
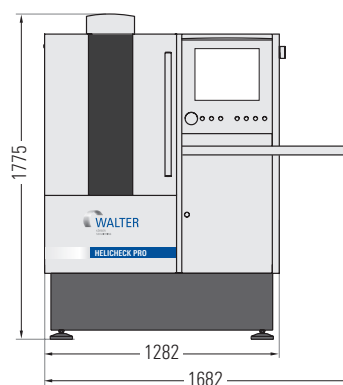
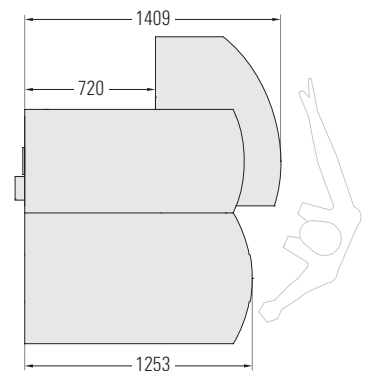
Tool data

Max. Diameter	200 mm
Diameter (calliper gauge principle)	
Helicheck Pro	150 mm
Helicheck Plus	110 mm
Max. length	300 mm
Max. weight	20 kg

¹⁾ Measured with certified stepped plug gauge at constant environmental conditions.

²⁾ Enlargements are based on a 17" monitor

Dimensions in mm. Specifications subject to changes in the interests of technical progress. No liability is accepted for any information provided.



Helicheck Pro/Plus

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Machine programme

☒ Regrinding

Economically efficient solutions for regrinding and the small batch production.



Helitronic Basic

☒ Production

Universal grinding machines for production and/or regrinding of micro-tools all the way to large roughing cutters. High flexibility through tailored automation solutions.



Helitronic Micro



Helitronic Mini Power



Helitronic Power



Helitronic Vision

☒ Erosion

Maximum flexibility even for PCD tools – grinding and eroding with one setting.



Helitronic Power Diamond
two-in-one



Helitronic Diamond
two-in-one

☒ Measuring

The standard for measuring cutting tools and grinding wheels. High-precision granite enables measurement accuracy of up to $E_r = (0.6 + L/300) \mu\text{m}$ (L = gage length in mm, according to VDI/VDE 2617).



Helicheck Pro/Plus



Helicheck Basic



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