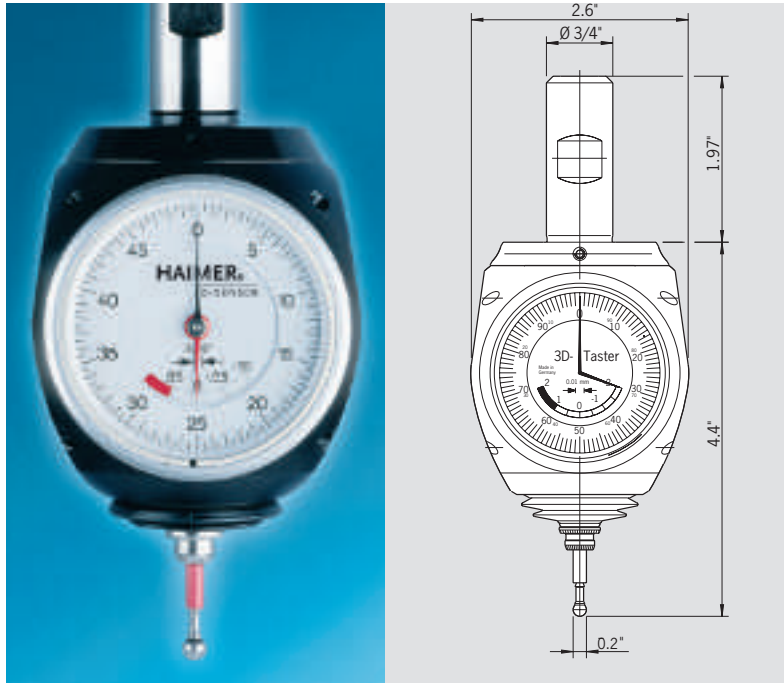


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Sensors

MEASURING INSTRUMENTS



Universal 3D-Sensor

The Universal 3D-Sensor is a very precise and versatile edge-finding, measuring instrument for milling and EDM machines (insulated probe). Made entirely at the HAIMER Germany facility, it is an instrument that no shop can do without. The 3D-Sensor is clamped into a tool holder and inserted into a milling spindle. Once clamped into the machine spindle, the run-out (T.I.R) is fully adjustable to Zero. Then, you are able to find exact positioning of the spindle axis on the edges of the workpiece. This allows for zeros to be set and the length to be measured quickly and easily. You may approach in any direction (X-, Y-, Z- axis – hence the name „3D-Sensor“). When the dial gage shows zero, the spindle axis is exactly on the workpiece edge. Only the HAIMER 3D-Sensor allows for the edge to be found on the first attempt. No calculating of the probe's ball diameter is necessary – just Zero it out!

Problems with mathematics or calculations are eliminated, allowing for fewer operator errors. Our 3D-Sensor is quick and easy, reducing the extra time needed with most edge-finders, increasing the productivity and accuracy of the operator.

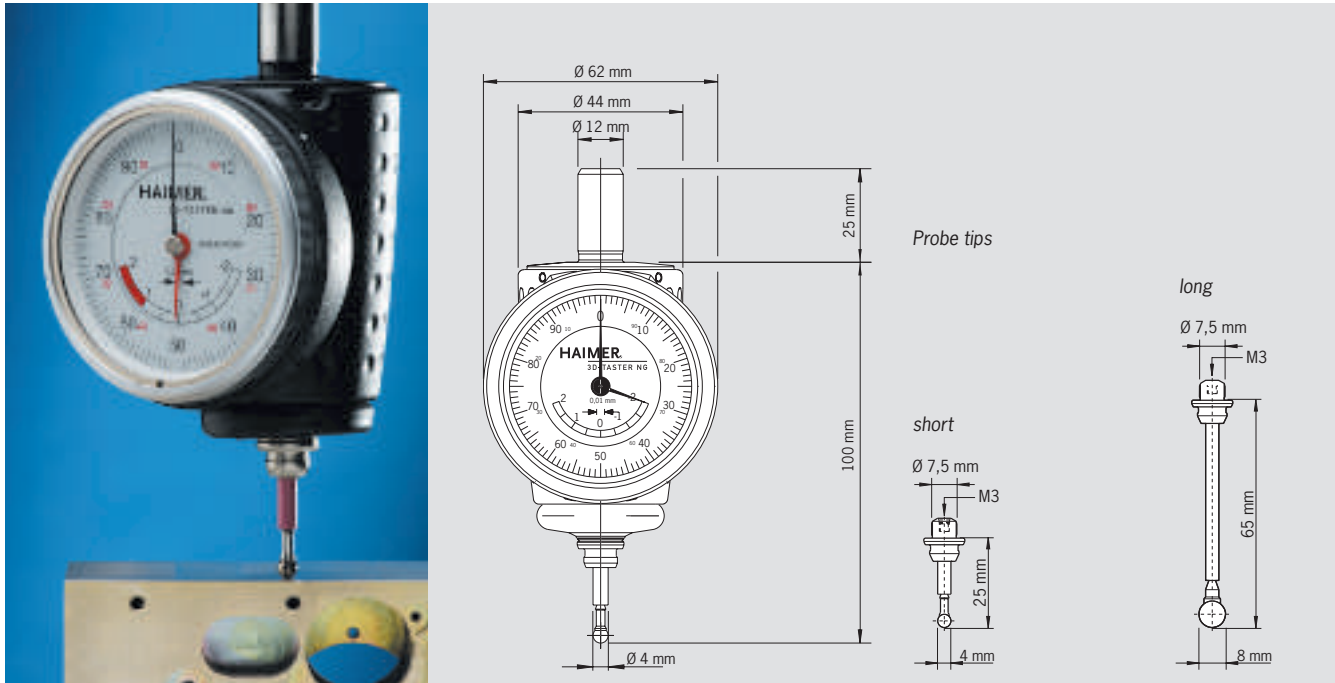
Short and long probes are available. The sensor probes may be changed without any tool. No re-calibration of the unit is needed during a sensor probe change over. Simply bring the needle to Zero, and that is your edge with any probe. The accuracy is such that you are able to inspect your parts right on the machine. Tram vises, find the center of your bore, find your edge and inspect parts - it is all possible with the HAIMER 3D-Sensor. The unit has a large overrun distance in connection with the fully tested preset breaking points giving the sensor long life. All Universal 3D-Sensors are individually tested and adjusted when being assembled in order to achieve a maximum of measuring precision.

Technical details	
Universal 3D-Sensor including clamping shank Ø 3/4" short sensor insert	
Order number 80.360.00.IN	
accuracy	0.0004"
Accessoires	
short probe Ø	0.2"
Order number 80.365.20	
long probe Ø	0.4"
Order number 80.365.30	

Technical data subject to change without prior notice

Recommended HAIMER Tool Holders for Universal 3D-Sensor-INCH version		
CAT40	Order number:	40.720.32
CAT50		50.720.32
HSK63A		A63.020.32
HSK100A		A10.020.32
Please order ER collet along with above holders: ER32-3/4" collet Order number: 81.320.20		
(additional taper styles please see ER or HG collet chuck section)		

3D-SENSOR NEW GENERATION



3D-Sensor New Generation

The 3D-Sensor NG is a further development of our worldwide accepted and proven Universal 3D-Sensor. Its distinguishing features are improved mechanics and a new and compact design.

Advantages:

- Compact and easy to grip casing, no restriction to working area
- Precise display of spindle position with large 1/100 mm dial gauge (2 hands)
- Utmost precision of 0,01 mm (when using original Haimer probe tips)
- Marked overrun distance (safety distance)

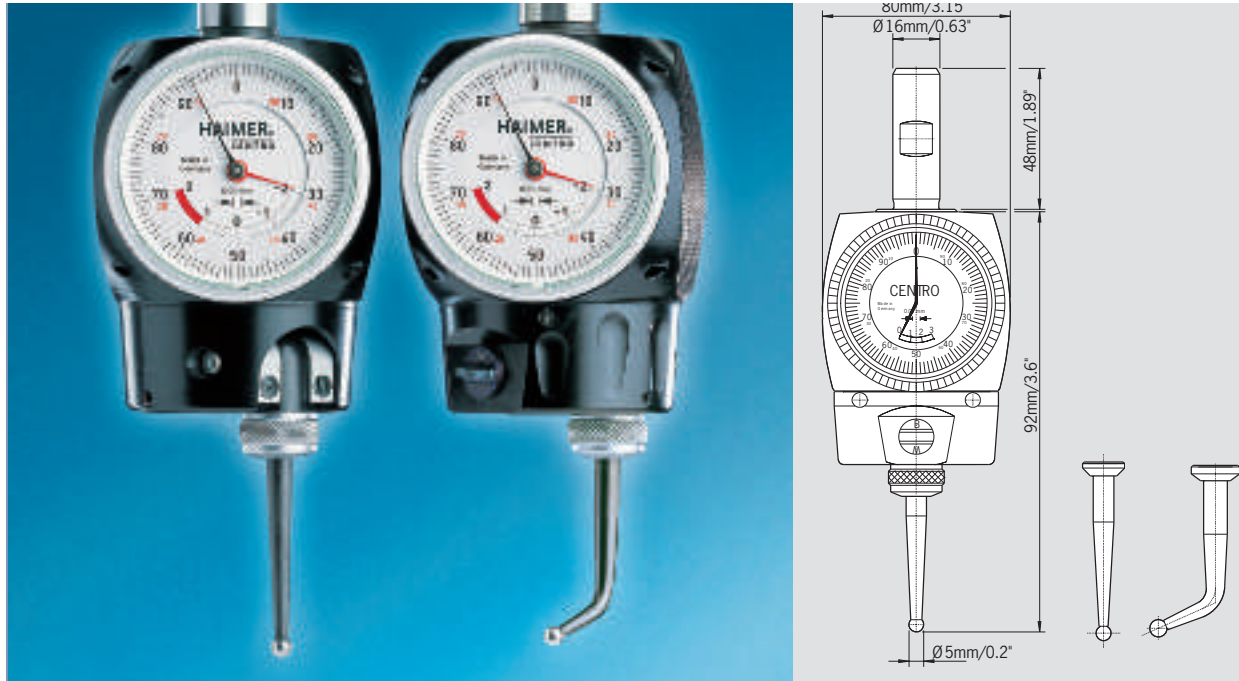
Functions:

- Aligning machine spindles to work piece edges and reference edges (x-, y-, z-axis)
- Set zeros
- Centre borings and shafts
- Measuring lengths and depths
- Checking straightness and levelness of surfaces
- Aligning work pieces and vices
- Quick, without calculations, no mistakes with algebraic signs

Technical details

3D-Sensor NG with clamping shank, diam. 12 mm including short probe tip		Order No.
Accuracy	0,01 mm	
Length without clamping shank	100 mm	80.360.00NG
Accessories		
Short Probe tip Ø 4 mm		80.362.00
Long Probe tip Ø 8 mm		80.363.00

Technical data subject to change without prior notice



CENTRO provides quick and precise location of the centers of bores and shafts.

With the CENTRO, bores and shafts can be easily and precisely centered. The CENTRO is clamped into a tool holder and inserted into the spindle of the milling machine. The machine spindle is then positioned near the bore or shaft that is to be measured, and rotates at low speed. The probe tip of the CENTRO then slides along the inside or outside surface of the diameter. Initially, the probe tip will be deflected and the amount of deflection is registered on the large dial. The stationary dial face does not turn with the spindle and therefore can always be seen by the operator. The position of the spindle must be corrected until the hands of the dial indicator stop moving. The spindle axis is now perfectly aligned with the diameter center.

The perpendicularity of a surface to the spindle may be inspected or adjusted in the same way. Concentricity errors of the spindle may be controlled or adjusted as well. Trimming of lathe turrets is also possible with the CENTRO.

Shafts and bores can be measured with the same CENTRO, with a simple switch of a button, adjusting the direction of tension.

Concentricity errors of the spindle or the clamping are compensated without the need of adjustment. The large easy to read dial face makes quick and accurate readings possible. The probe tips are interchangeable. There are several different probe tips to choose from for multiple applications.

Technical details

Centro with straight probe tip, Ø 5 mm/0.2", clamping shank Ø 16 mm/0.63"

centering accuracy	0,003 mm/0.0001"
max. rotation speed	150 rpm
measuring range interior diameter (drill hole)	3-125 mm/0.1"-5"
measuring range exterior diameter (shaft, with probe tip bent)	0-125 mm/0-5"

Order number 80.300.00

Accessories

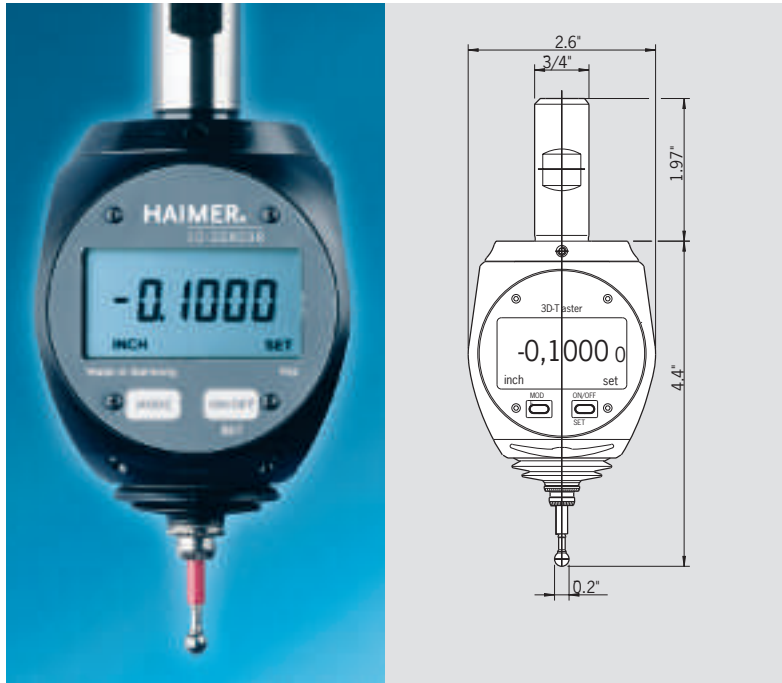
probe tip straight with diameter of ball	5 mm/0.2"
Order number 80.301.00	
probe tip bent with diameter of ball	5 mm/0.2"
Order number 80.302.00	
probe tip straight with diameter of ball	2 mm/0.08", for small bores
Order number 80.303.00	

Technical data subject to change without prior notice

Recommended HAIMER Tool Holders for Centro

	Order Number	
CAT40		40.720.25
CAT50		50.720.25
Please order ER collet along with above holders:		
ER25-16mm collet	Order number:	81.250.16
BT40		40.500.16
BT50		50.500.16
SK40		40.300.16
SK50		50.300.16
HSK40A		A40.000.16
HSK40E		E40.000.16
HSK50A		A50.000.16
HSK50E		E50.000.16
HSK63A		A63.000.16
HSK100A		A10.000.16

3D-SENSOR DIGITAL



Digital 3D-Sensor

The Digital 3D-Sensor is a further development of the time proven Mechanical 3D-Sensor. It serves for approaching workpiece edges on milling and EDM machines. The spindle may be positioned quickly and safely on the references edge. The approaching operation can be exactly monitored on the digital display. The 0-position is found on the first try. The machine coordinate system can be set without any calculations because the spindle axis is positioned exactly on the approached edge.

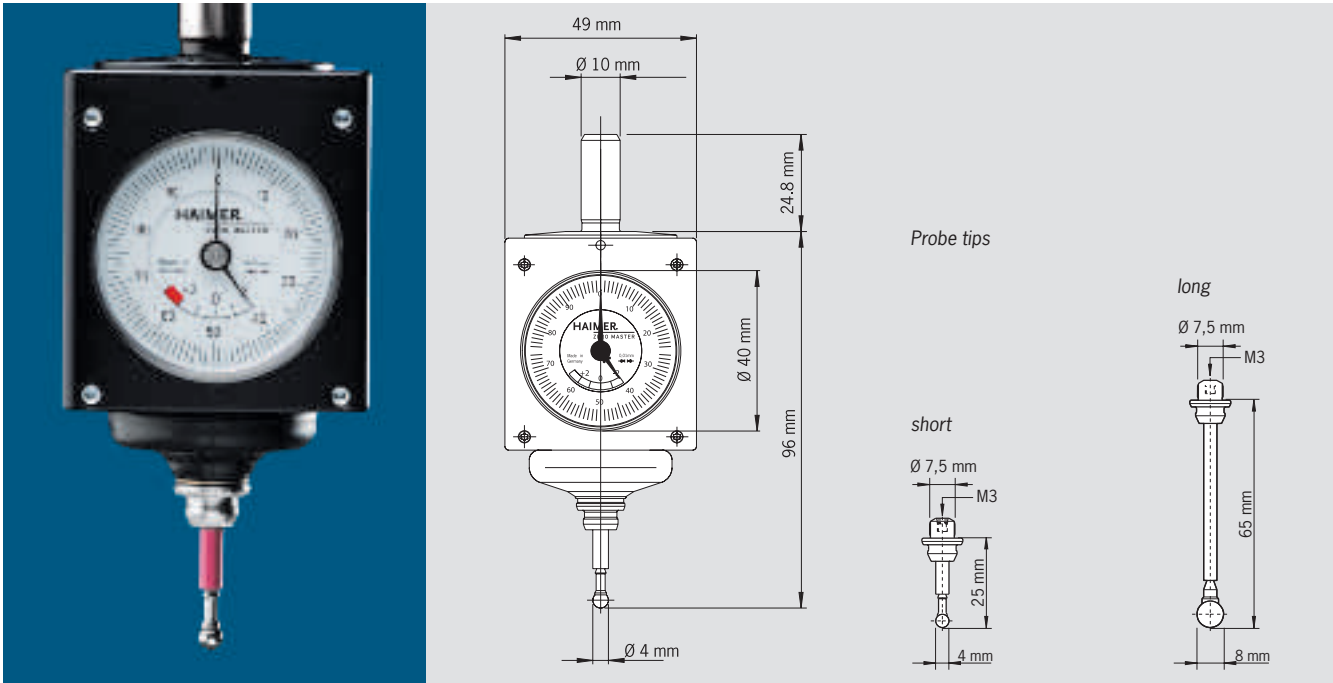
The digital display has large numbers that measure in increments of 0,001mm. It can be easily read from a long distance (i.e. when mounted on a large machining center). The digital display is splash-proof and dust-proof and can be stored in the tool magazine of the machine.

Technical details	
Digital 3D-Sensor with probe tip 0.2"	
Order number 80.460.00.IN	
Smallest unit of measure	0.00005"
Repeatability	0.00005"
Measuring accuracy	0.0002"
Display	
Display mode	may be switched to inch or metric
Display size	1.8" x 0.9"
Height of numbers	0.3"
Service life of battery (continuous operation) approx.	3000 hrs
Accessories	
Short probe tip	Length 1" – ball tip Ø 0.2"
Order number 80.365.20	
long probe tip length	Length 2.6" – ball tip Ø 0.4"
Order number 80.365.30	

Recommended HAIMER Tool Holders for Digital 3D-Sensor-INCH version	
CAT40	Order number: 40.720.32
CAT50	50.720.32
HSK63A	A63.020.32
HSK100A	A10.020.32
Please order ER collet along with above holders: ER32-3/4" collet Order number: 81.320.20	
(additional taper styles please see ER or HG collet chuck section)	

Technical data subject to change without prior notice

ZERO MASTER ANALOG



Zero Master Analog

Small but nice

The Zero Master is the smallest 3D-Sensor worldwide. Usage, function and accuracy are equal to the Universal 3D-Sensor. The size of the Zero Master is adapted to small machines. The clamping shank has a diameter of 10 mm. Thus it can be also used on machines with ISO 30 or with small HSK spindles. The housing is shortened and does not protrude far out of the spindle so that even big work pieces can be measured. The Zero Master can be read with a small analog dial gauge.

The Zero Master can be equipped with a short (ball diam. 4 mm) and a long (ball diam. 8 mm) probe tip. The probe tips of course are compatible to all other Haimer 3D-Sensors.

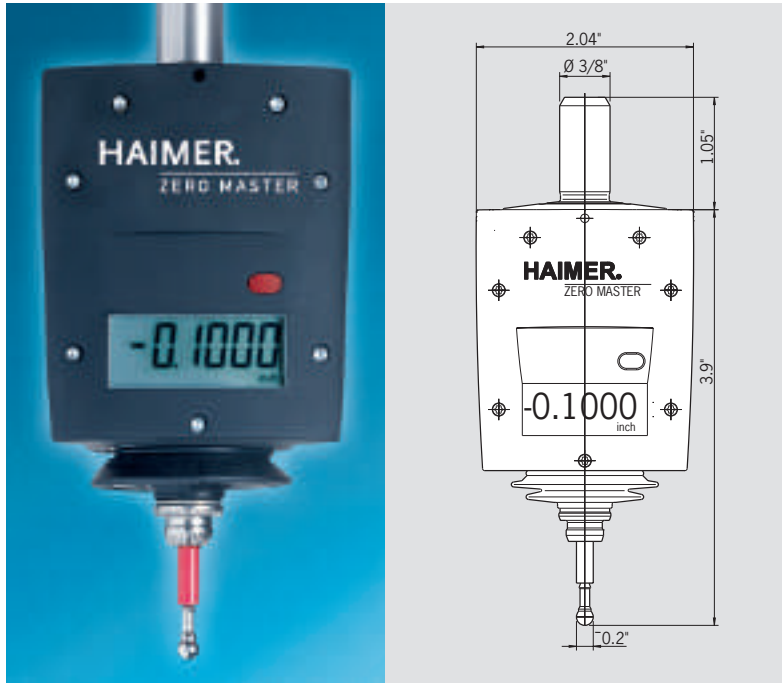
Please take note:

The given measuring precision of 0.01 mm only applies if the original Haimer probe tips are used.

Technical details		Order No.
Zero Master Analog with clamping shank Ø 10 mm including short probe tip		
Accuracy	0,01 mm	
Length without clamping shank	96 mm	80.960.00
Accessories		
Short Probe tip Ø 4 mm		80.362.00
Long Probe tip Ø 8 mm		80.363.00

Technical data subject to change without prior notice

ZERO MASTER DIGITAL



Zero Master – the precise and versatile measuring instrument for milling and EDM machines (insulated probe)

It is clamped into the milling spindle or the electrode head and makes possible an exact positioning of the spindle axis on the edges of the workpiece or jig set and the length to be measured quickly and easily. You may measure in any direction (X-, Y-, Z-axis). Once clamped in the machine spindle the runout (T.I.R.) is fully adjustable to zero.

Easy handling

The dial gauge indicates the distance between spindle axis and workpiece edge. As soon as the gauge shows zero, the spindle axis is exactly on the

workpiece edge on the first attempt. This eliminates calculating or problems with positive or negative signs.

The Zero Master reduces the extra costs, increases the productivity and offers a relief to the staff

The digital display has large numbers that measure in increments of 0,01mm. It can be easily read from a long distance. (i.e. when mounted on a large machining center.) The digital display is splash-proof and dust-proof and can be stored in the tool magazine of the machine. The extended overrun distance in connection with the proven preset breaking point of the probe give additional security.

Technical details	
Zero Master inch with probe tip 0.2"	
Order number 80.560.00.IN	
Smallest unit of measure	0.0004"
Repeatability	0.0004"
Measuring accuracy	0.0004"
Display	
Display size	1.2" x 0.5"
Height of numbers	0.3"
Service life of battery (continuous operation) approx.	3000 hrs
Housing length (w/short probe tip, excluding clamping shank)	3.9"
Accessories	
Short probe tip	Length 1" – ball tip \varnothing 0.2"
Order number 80.365.20	
long probe tip length	Length 2.6" – ball tip \varnothing 0.4"
Order number 80.365.30	

Technical data subject to change without prior notice

Recommended HAIMER Tool Holders for Zero-Master sensor-INCH version	
CAT40	Order number: 40.720.16
CAT50	50.720.16
HSK63A	A63.020.16
HSK100A	A10.020.16
Please order ER collet along with above holders: ER16-3/8" collet Order number: 81.160.10	
(additional taper styles please see ER or HG collet chuck section)	

Decide on Quality.

Since 1977 we have produced ultra-precise tool holders and special machines designed for many industries. Products from Haimer are made of the highest quality, based on the most modern engineering and perfect construction. This follows our corporate philosophy: **Quality wins!**

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**Made by Haimer:
Tool Holders**

- Highest precision at fair prices
- ASME B5.50 – CAT 40, CAT 50
- DIN 69871 – SK 40, SK 50
- JIS B 6339 – BT 40, BT 50
- DIN 69893 – HSK-A, HSK-E, HSK-F, HSK-C
- Shrink fit chucks, ER/HG collet chucks and face-mill arbors
- Shrink fit extensions
- Specials available upon request



**Made by Haimer:
Balancing Machines**

- Modular balancing machine for tool holders, grinding wheels, and cutting tools
- Measuring in one or two planes
- Fast and easy handling



**Made by Haimer:
Shrink Fit Machines**

- Inductive shrink fit machine for the shortest tool changes
- Tool change by just pressing a button
- For shrinking steel and carbide tools from diam. 3 to diam. 32 mm



**Made by Haimer:
3 Dimensional Edge Finders**

- For centering bores and shafts
- Different versions available
- High measuring accuracy