Colly VerkstadsTeknik

HAIMER
Quality Wins.

TASTER SENSORS

MESSGERÄTE
MEASURING INSTRUMENTS

100%
MADE IN GERMANY
MADE BY HAIMER

www.haimer.com

MESSTECHNIK

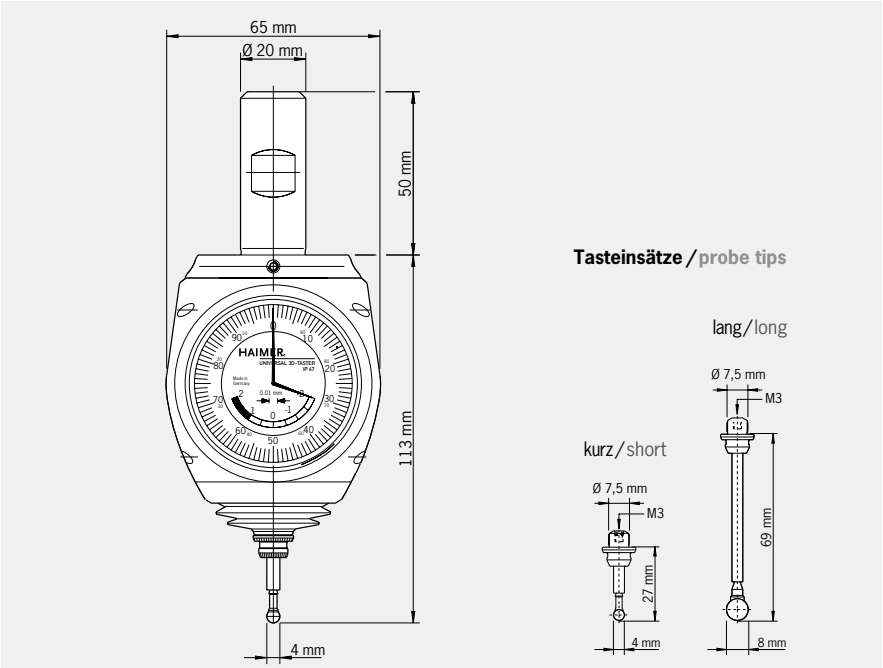
MEASURING TECHNOLOGY

INHALT / CONTENT

HAIMER

Universal 3D-Taster
Universal 3D-Sensor

UNIVERSAL 3D-TASTER
UNIVERSAL 3D-SENSOR



Universal 3D-Taster

Der Universal 3D-Taster ist ein sehr präzises und vielseitiges Messgerät für Fräs- und Erodiermaschinen (isolierter Tasteinsatz). Er wird in die Frässpindel bzw. in den Senkkopf eingespannt und ermöglicht es, die Spindelachse exakt an Werkstück- oder Vorrichtungskanten zu positionieren. Somit können schnell und einfach Werkstück-Nullpunkte gesetzt und Längenmessungen durchgeführt werden. Die Antastrichtung ist beliebig (X-, Y-, Z-Achse). Die Messuhr schlägt immer in die gleiche Richtung aus und zeigt den Abstand zwischen Spindelachse und Werkstück an. Sobald die Anzeige auf Null steht, befindet sich die Spindelachse genau an der Werkstückkante. Auf Anhieb, ohne langes Probieren, ohne zu Rechnen, ohne Vorzeichenprobleme. Das reduziert die Nebenkosten, steigert die Produktivität und entlastet die Mitarbeiter.

Es sind kurze wie auch lange Tasteinsätze verfügbar, die ohne Werkzeug gewechselt werden können. Nach Wechsel eines Tasteinsatzes ist keine Neukalibrierung des Tasters erforderlich.

Zusätzliche Sicherheit bieten der vergrößerte Überfahrweg in Verbindung mit der bewährten Soll-Bruchstelle im Tasteinsatz. Für höchste Messgenauigkeit und Präzision werden alle Universal 3D-Taster bei der Montage einzeln vermessen und abgestimmt.

- IP 67 spritzwassergeschützt

Universal 3D-Sensor

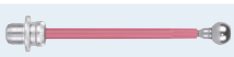
The Universal 3D-Sensor is a very precise and versatile measuring instrument for milling and EDM machines (insulated probe). Once clamped into the machine spindle, the run-out (T.I.R) is fully adjustable to Zero. Then, it can be used to bring the spindle axis on the edges of the workpiece. This allows to set zeros and to measure quickly and easily. approachability in any direction (X-, Y-, Z- axis). When the dial gage shows zero, the spindle axis is exactly on the edge of the workpiece. No calculating of the probe's ball diameter is necessary – just Zero it out! Problems with mathematics or calculations are eliminated. It helps 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.

Additional safety, 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.

- IP 67 waterproof

Technische Daten / Technical details	
Universal 3D-Taster mit Einspannschaft Ø 20 mm inkl. kurzem Tasteinsatz Ø 4 mm **Universal 3D-Sensor with clamping shank Ø 20 mm including short probe tip Ø 4 mm**	
Genauigkeit / Accuracy	0,01 mm
Länge ohne Einspannschaft / Length without clamping shank	113 mm
Bestell-Nr. / Order No. 80.360.00.FHN	

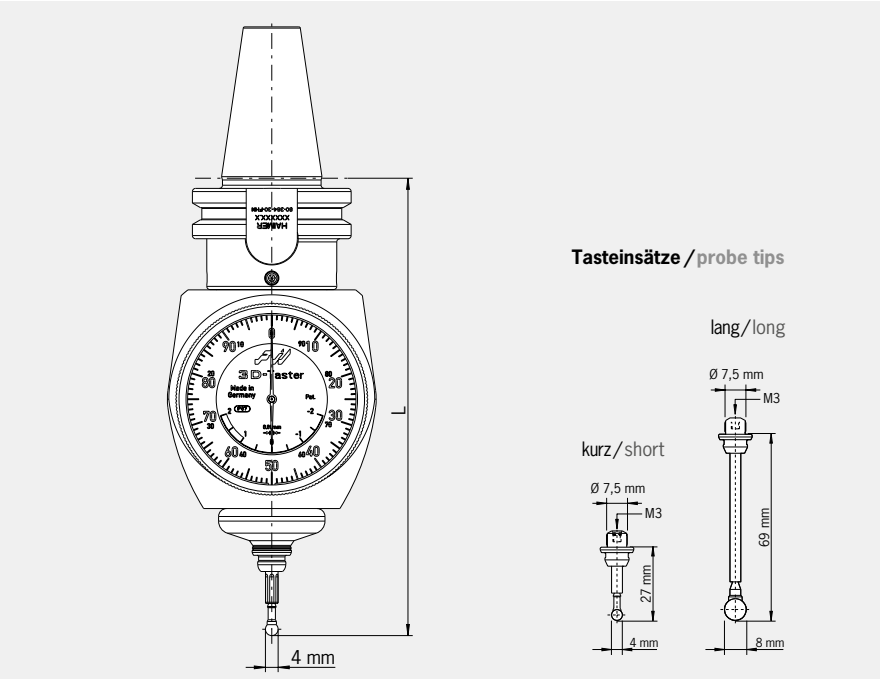
Zubehör / Accessories	
Kurzer Tasteinsatz Ø 4 mm / Short probe tip Ø 4 mm **Bestell-Nr. / Order No. 80.362.00**	
Langer Tasteinsatz Ø 8 mm / Long probe tip Ø 8 mm **Bestell-Nr. / Order No. 80.363.00**	

Empfohlene HAIMER Werkzeugaufnahmen **Recommended HAIMER tool holders**	**Bestell-Nr. / Order No.**
Kurzes Flächenspannfutter / short chuck SK40	**40.305.20**
Kurzes Flächenspannfutter / short chuck SK50	**50.300.20**
Kurzes Flächenspannfutter / short chuck BT40	**40.500.20**
Kurzes Flächenspannfutter / short chuck BT50	**50.500.20**
Kurzes Flächenspannfutter / short chuck HSK-A50	**A50.000.20**
Kurzes Flächenspannfutter / short chuck HSK-E50	**E50.000.20**
Kurzes Flächenspannfutter / short chuck HSK-A63	**A63.000.20**
Kurzes Flächenspannfutter / short chuck HSK-A80	**A80.000.20**
Kurzes Flächenspannfutter / short chuck HSK-A100	**A10.000.20**

Universal 3D-Taster
Mit integrierter Aufnahme

Universal 3D-Sensor
with integrated adapter

UNIVERSAL 3D-TASTER MIT INTEGRIERTER AUFNAHME
UNIVERSAL 3D-SENSOR WITH INTEGRATED ADAPTER



Universal 3D-Taster mit integrierter Aufnahme

Für einfachste Handhabung mit einer integrierten Steilkegelaufnahme – Steilkegel und Universal 3D-Taster bilden eine Einheit (DIN 69871, SK40 oder JIS B6339, BT40).

Der Universal 3D-Taster ist ein sehr präzises und vielseitiges Messgerät für Fräs- und Erodiermaschinen (isolierter Tasteinsatz). Er wird in die Frässpindel bzw. in den Senkkopf eingespannt und ermöglicht es, die Spindelachse exakt an Werkstück- oder Vorrichtungskanten zu positionieren. Somit können schnell und einfach Werkstück-Nullpunkte gesetzt und Längenmessungen durchgeführt werden. Die Antastrichtung ist beliebig (X-, Y-, Z-Achse). Die Messuhr schlägt immer in die gleiche Richtung aus und zeigt den Abstand zwischen Spindelachse und Werkstück an. Sobald die Anzeige auf Null steht, befindet sich die Spindelachse genau an der Werkstückkante. Auf Anhieb, ohne langes Probieren, ohne zu Rechnen, ohne Vorzeichenprobleme. Das reduziert die Nebenkosten, steigert die Produktivität und entlastet die Mitarbeiter.

Es sind kurze wie auch lange Tasteinsätze verfügbar, die ohne Werkzeug gewechselt werden können. Nach Wechsel eines Tasteinsatzes ist keine Neukalibrierung des Tasters erforderlich.

Zusätzliche Sicherheit bieten der vergrößerte Überfahrweg in Verbindung mit der bewährten Soll-Bruchstelle im Tasteinsatz. Für höchste Messgenauigkeit und Präzision werden alle Universal 3D-Taster bei der Montage einzeln vermessen und abgestimmt.

- IP 67 spritzwassergeschützt

Universal 3D-Sensor with integrated adapter

The integrated taper (DIN 69871, SK40 or JIS B6339, BT40) guarantees easiest handling and a maximum of comfort.

The Universal 3D-Sensor is a very precise and versatile measuring instrument for milling and EDM machines (insulated probe). Once clamped into the machine spindle, the run-out (T.I.R) is fully adjustable to Zero. Then, it can be used to bring the spindle axis on the edges of the workpiece. This allows to set zeros and to measure quickly and easily. approachability in any direction (X-, Y-, Z- axis). When the dial gage shows zero, the spindle axis is exactly on the edge of the workpiece.

No calculating of the probe's ball diameter is necessary – just zero it out! Problems with mathematics or calculations are eliminated. It helps 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.

Additional safety, 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.

- IP 67 waterproof

Technische Daten / Technical details

Universal 3D-Taster mit integrierter Aufnahme inkl. kurzem Tasteinsatz Ø 4 mm
Universal 3D-Sensor with integrated adapter including short probe tip Ø 4 mm

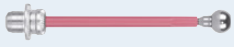
Genauigkeit / Accuracy	0,01 mm
Länge ohne Einspannschaft / Length without clamping shank	113 mm

Artikel / Article	Bestell-Nr. / Order No.	L [mm]
Mit integrierter Aufnahme SK 30 / with integrated adapter SK 30	**80.364.30.FHN**	**144,0**
Mit integrierter Aufnahme SK 40 / with integrated adapter SK 40	**80.364.40.FHN**	**143,9**
Mit integrierter Aufnahme BT 30 / with integrated adapter BT 30	**80.365.30.FHN**	**143,5**
Mit integrierter Aufnahme BT 40 / with integrated adapter BT 40	**80.365.40.FHN**	**143,9**

Zubehör / Accessories

Kurzer Tasteinsatz Ø 4 mm / Short probe tip Ø 4 mm
Bestell-Nr. / Order No. 80.362.00

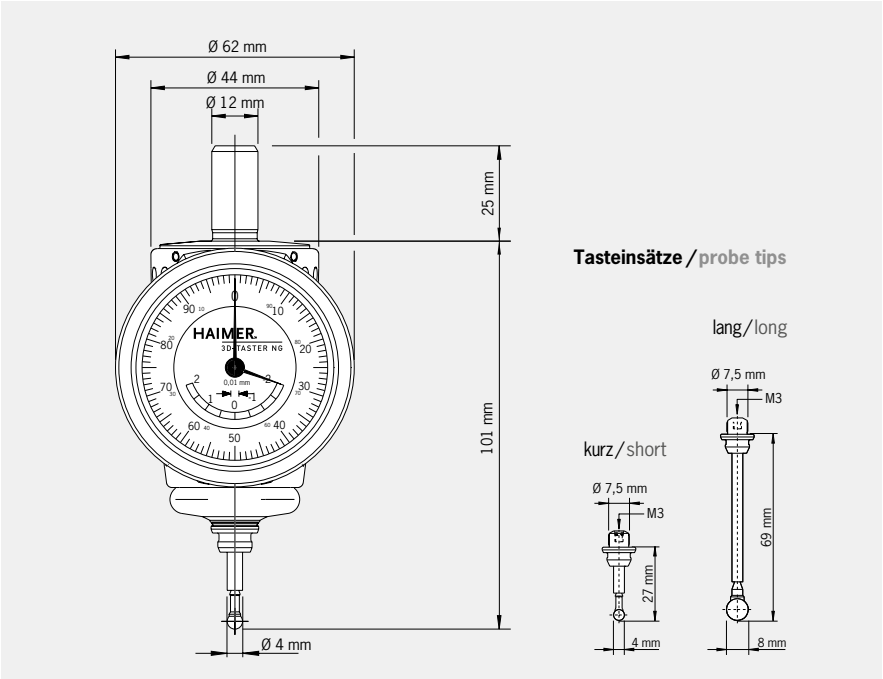
Langer Tasteinsatz Ø 8 mm / Long probe tip Ø 8 mm
Bestell-Nr. / Order No. 80.363.00



HAIMER

3D-Taster New Generation
3D-Sensor New Generation

3D-TASTER NEW GENERATION
3D-SENSOR NEW GENERATION



3D-Taster New Generation

Der 3D-Taster NG ist die Weiterentwicklung unseres weltweit bewährten Universal 3D-Tasters. Er zeichnet sich besonders durch eine verbesserte Mechanik und ein neues kompakteres Design aus.

Vorteile
- Kompaktes und griffiges Gehäuse, keine Beschränkung des Arbeitsraumes
- Genaue Anzeige der Spindelposition mit großer 1/100 mm Messuhr (2 Zeiger)
- Höchste Genauigkeit von 0,01 mm (mit den original HAIMER Tasteinsätzen)
- Gekennzeichneter Überfahrweg (Sicherheitsweg)
- IP 67 spritzwassergeschützt

Funktionen
- Maschinenspindel an Werkstücks- und Bezugskanten ausrichten (x-, y-, z-Achse)
- Nullpunkte setzen
- Bohrungen und Wellen ausmitteln
- Längen und Tiefen messen
- Prüfen der Geradheit und Ebenheit von Flächen
- Ausrichtung von Werkstücken und Spannmitteln
- Schnell, ohne zu Rechnen, ohne Vorzeichenfehler

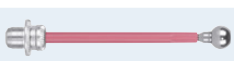
3D-Sensor New Generation

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)
- IP 67 waterproof

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

Technische Daten / Technical details	
3D-Taster NG mit Einspannschaft Ø 12 mm inkl. kurzem Tasteinsatz Ø 4 mm **3D-Sensor NG with clamping shank Ø 12 mm including short probe tip Ø 4 mm**	
Genauigkeit / Accuracy	0,01 mm
Länge ohne Einspannschaft / Length without clamping shank	101 mm
Bestell-Nr. / Order No. 80.360.00NG	

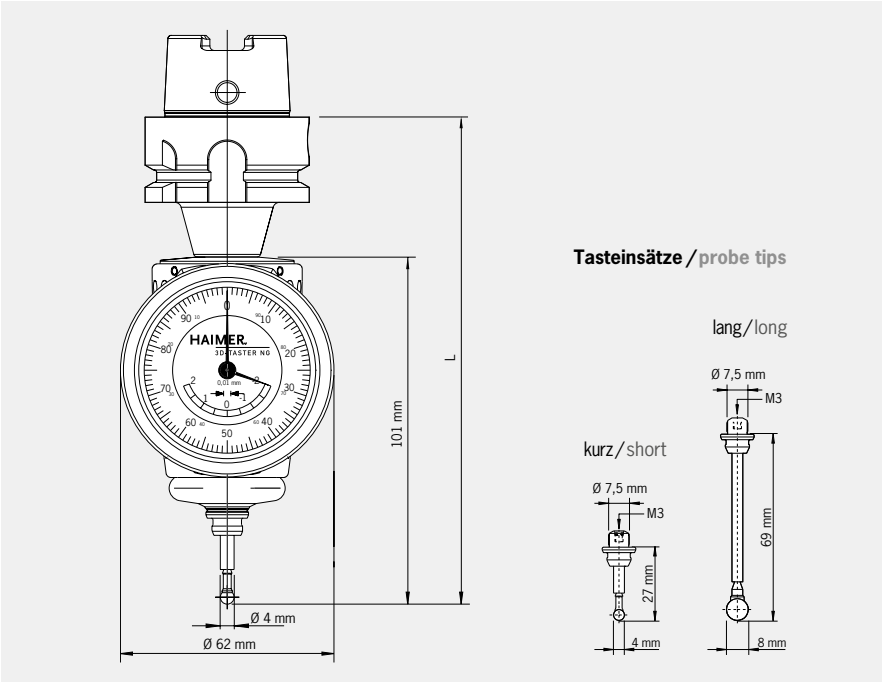
Zubehör / Accessories	
Kurzer Tasteinsatz Ø 4 mm / Short probe tip Ø 4 mm **Bestell-Nr. / Order No. 80.362.00**	
Langer Tasteinsatz Ø 8 mm / Long probe tip Ø 8 mm **Bestell-Nr. / Order No. 80.363.00**	

HAIMER

3D-Taster New Generation
Mit integrierter Aufnahme

3D-Sensor New Generation
with integrated adapter

3D-TASTER NEW GENERATION MIT INTEGRIERTER AUFNAHME
3D-SENSOR NEW GENERATION WITH INTEGRATED SHORT ADAPTER



Für Schnittstellen SK30, BT30, HSK-25/32/40/50/63

Einfache Werkstückvermessung bei wenig Platz im Maschinenraum.

Ausführung
- Mit integriertem Kurzadapter in Ausführung SK30, BT30, HSK-A32/40/50/63, HSK-E25/32/40/50
- Kein weiteres manuelles Einstellen des Rundlaufs mehr nötig! Auslieferung mit voreingestellter Rundlaufgenauigkeit an der Tastspitze von 0,01 mm
- Messgenauigkeit: 0,01 mm
- Kurze und lange Tasteinsätze verfügbar, kein Werkzeugwechsel
- Keine Neukalibrierung des Tasters erforderlich
- Vergrößerter Überfahrweg
- IP 67 spritzwassergeschützt

Verwendung
- Für kleine Fräs- und Erodiermaschinen (isolierter Tasteinsatz)
- Zu Werkstück-Nullpunktesetzungen und Längenabmessungen
- Beliebige Antastrichtung (X-, Y-, Z-Achse)

For interfaces SK30, BT30, HSK-25/32/40/50/63

Simple workpiece measuring with less space in the machine.

Version
- With integrated short adapter in version SK30, BT30, HSK-A32/40/50/63, HSK-E25/32/40/50
- No further manual runout adjustment necessary! Delivery with preset runout accuracy at the probe tip of 0.01 mm
- Measuring accuracy: 0.01 mm
- Short and long probe tips available, no tool change necessary
- No re-calibration of the sensor is needed
- Enhanced overrun distance
- IP 67 waterproof

Application
- For small Milling and EDM machines (isolated probe)
- For workpiece-reset and length measuring
- Any direction approach (X-, Y-, Z-axis)

Technische Daten / Technical details

3D-Taster NG mit integriertem Kurzadapter inkl. kurzem Tasteinsatz Ø 4 mm
3D-Sensor NG with integrated short adapter including short probe tip Ø 4 mm

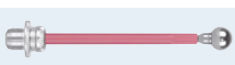
Genauigkeit / Accuracy: 0,01 mm

Artikel / Article	Bestell-Nr. / Order No.	L [mm]
3D-Taster NG mit Kurzadapter / with short adapter HSK-E25	**80.363.E25NG**	**126,5**
3D-Taster NG mit Kurzadapter / with short adapter HSK-E32	**80.363.E32NG**	**136,5**
3D-Taster NG mit Kurzadapter / with short adapter HSK-E40	**80.363.E40NG**	**136,5**
3D-Taster NG mit Kurzadapter / with short adapter HSK-E50	**80.363.E50NG**	**143,5**
3D-Taster NG mit Kurzadapter / with short adapter HSK-A32	**80.363.A32NG**	**136,5**
3D-Taster NG mit Kurzadapter / with short adapter HSK-A40	**80.363.A40NG**	**136,5**
3D-Taster NG mit Kurzadapter / with short adapter HSK-A50	**80.363.A50NG**	**143,5**
3D-Taster NG mit Kurzadapter / with short adapter HSK-A63	**80.363.A63NG**	**147,0**
3D-Taster NG mit Kurzadapter / with short adapter SK30	**80.364.30NG**	**136,1**
3D-Taster NG mit Kurzadapter / with short adapter BT30	**80.365.30NG**	**135,5**

Zubehör / Accessories

Kurzer Tasteinsatz Ø 4 mm / Short probe tip Ø 4 mm
Bestell-Nr. / Order No. 80.362.00

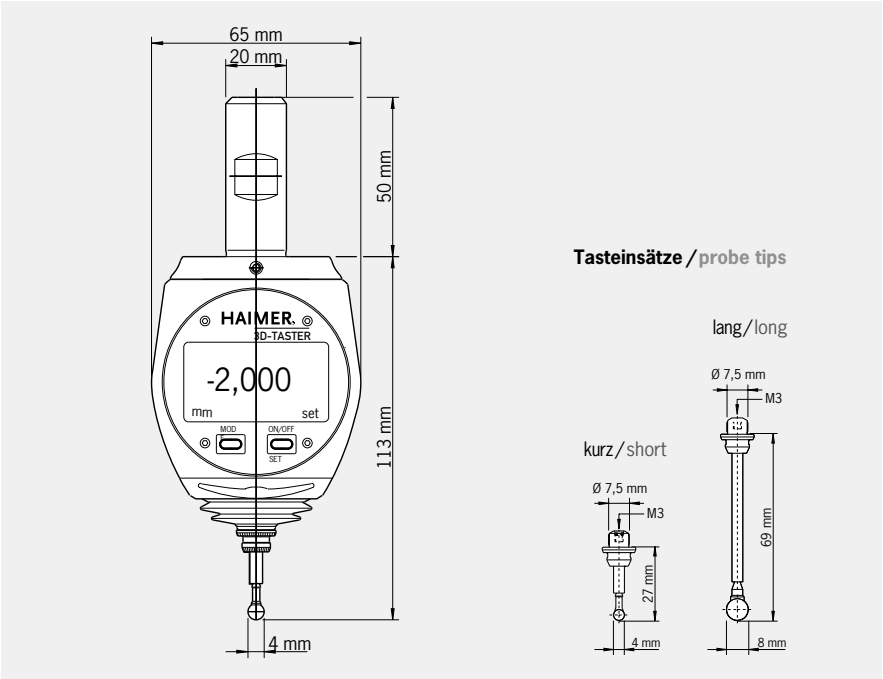
Langer Tasteinsatz Ø 8 mm / Long probe tip Ø 8 mm
Bestell-Nr. / Order No. 80.363.00



HAIMER

3D-Taster Digital
3D-Sensor Digital

3D-TASTER DIGITAL
3D-SENSOR DIGITAL



3D-Taster Digital

Hoch präzise – sicher in der Handhabung
Der digitale 3D-Taster ist eine Weiterentwicklung des bewährten mechanischen 3D-Tasters. Er ist ein hoch präzises Instrument zum Antasten von Werkstückkanten auf Fräs- und Erodiermaschinen. Die Spindel bzw. der Senkkopf können schnell und sicher an Bezugskanten positioniert werden. Der Anfahrvorgang kann auf der Digitaluhr genau verfolgt werden und die 0-Stellung wird auf Anhieb gefunden. Ohne zu Rechnen kann das Messsystem der Maschine genullt werden, da die Spindelachse direkt an der angetasteten Kante steht.

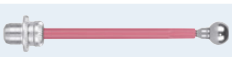
Besonders praxisgerecht
Die Digitaluhr verfügt über eine 0,001 mm Anzeige mit großen Ziffern. Sie ist auch auf großen Bearbeitungszentren aus der Entfernung noch eindeutig und fehlerfrei ablesbar. Die Uhr ist gegen Spritzwasser und Staub geschützt (IP 64) und kann im Werkzeugmagazin der Maschine abgelegt werden.

3D-Sensor Digital

Highly accurate – safe handling
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 zero points can be set without any calculations because the spindle axis is positioned exactly on the approached edge.

Especially practical
The digital display has large numbers that measure in increments of 0.001 mm. It can be easily read from a long distance (i. e. when mounted on a large machining center). The digital display is water- and dust-proof (IP 64) and can be stored in the tool magazine of the machine.

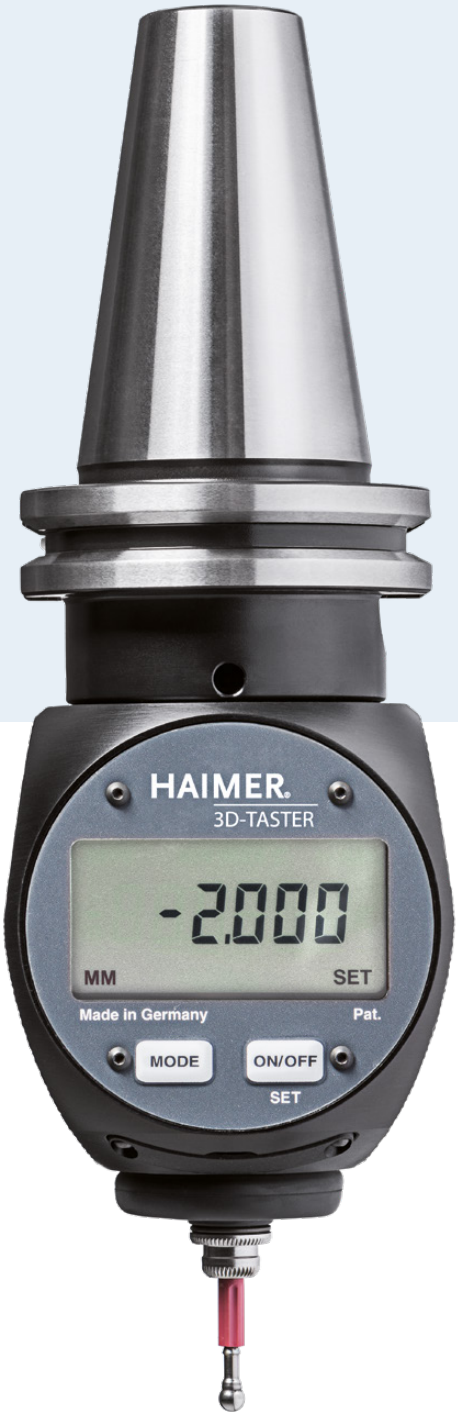
Technische Daten / Technical details	
3D-Taster Digital mit Einspannschaft Ø 20 mm inkl. kurzem Tasteinsatz Ø 4 mm **3D-Sensor Digital with clamping shank Ø 20 mm incl. short probe tip Ø 4 mm**	
Anzeigengenauigkeit / Smallest unit of measure	0,001 mm
Wiederholgenauigkeit / Repeatability	0,005 mm
Messgenauigkeit / Measuring accuracy	0,005 mm
Display / Display	
Display Modus	mm/inch umschaltbar
Display mode	May be switched to inch or metrich
Display Größe / Display size	45 mm × 23 mm
Höhe der Ziffern / Hight of numbers	8,5 mm
Batterielebensdauer (bei Dauerbetrieb) ca.	3.000 Stunden
Service life of battery (continuous operation) approx.	3,000 hrs
Bestell-Nr. / Order No.	**80.460.00.FHN**

Zubehör / Accessories	
Kurzer Tasteinsatz Ø 4 mm / Short probe tip Ø 4 mm **Bestell-Nr. / Order No. 80.362.00**	
Langer Tasteinsatz Ø 8 mm / Long probe tip Ø 8 mm **Bestell-Nr. / Order No. 80.363.00**	

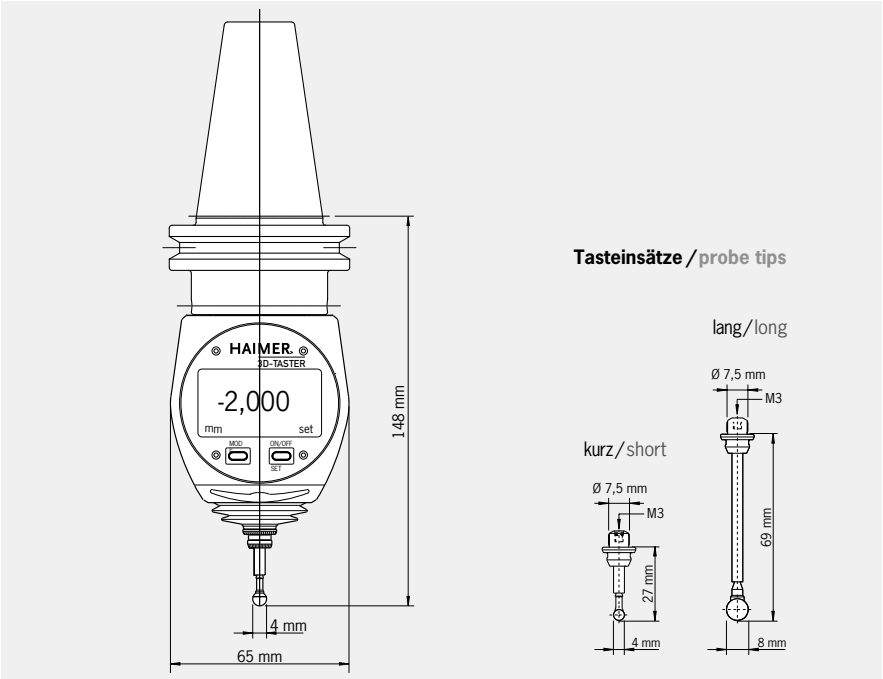
Empfohlene HAIMER Werkzeugaufnahmen Recommended HAIMER tool holders	Bestell-Nr. / Order No.
kurzes Flächenspannfutter / short chuck SK40	**40.305.20**
kurzes Flächenspannfutter / short chuck SK50	**50.300.20**
kurzes Flächenspannfutter / short chuck BT40	**40.500.20**
kurzes Flächenspannfutter / short chuck BT50	**50.500.20**
kurzes Flächenspannfutter / short chuck HSK-A50	**A50.000.20**
kurzes Flächenspannfutter / short chuck HSK-E50	**E50.000.20**
kurzes Flächenspannfutter / short chuck HSK-A63	**A63.000.20**
kurzes Flächenspannfutter / short chuck HSK-A80	**A80.000.20**
kurzes Flächenspannfutter / short chuck HSK-A100	**A10.000.20**

3D-Taster Digital
Mit integrierter Aufnahme

3D-Sensor Digital
with integrated adapter



3D-TASTER DIGITAL MIT INTEGRIERTER AUFNAHME
3D-SENSOR DIGITAL WITH INTEGRATED ADAPTER



3D-Taster Digital mit integrierter Aufnahme

Für einfachste Handhabung sorgt die integrierte Steilkegelaufnahme – Steilkegel und 3D-Taster Digital bilden eine Einheit (DIN ISO 7388-1, SK40 oder JIS B6339, BT40).

Hoch präzise – sicher in der Handhabung
Der digitale 3D-Taster ist eine Weiterentwicklung des bewährten mechanischen 3D-Tasters. Er ist ein hoch präzises Instrument zum Antasten von Werkstückkanten auf Fräs- und Erodiermaschinen. Die Spindel bzw. der Senkkopf können schnell und sicher an Bezugskanten positioniert werden. Der Anfahrvorgang kann auf der Digitaluhr genau verfolgt werden und die 0-Stellung wird auf Anhieb gefunden. Ohne zu Rechnen kann das Messsystem der Maschine genullt werden, da die Spindelachse direkt an der angetasteten Kante steht.

Besonders praxisgerecht
Die Digitaluhr verfügt über eine 0,001 mm Anzeige mit großen Ziffern. Sie ist auch auf großen Bearbeitungszentren aus der Entfernung noch eindeutig und fehlerfrei ablesbar. Die Uhr ist gegen Spritzwasser und Staub geschützt (IP 64) und kann im Werkzeugmagazin der Maschine abgelegt werden.

3D-Sensor Digital with integrated adapter

The integrated taper (DIN ISO 7388-1, SK40 or JIS B6339, BT40) guarantees easiest handling and a maximum of comfort.

Highly accurate – safe handling
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 zero points can be set without any calculations because the spindle axis is positioned exactly on the approached edge.

Especially practical
The digital display has large numbers that measure in increments of 0.001 mm. It can be easily read from a long distance (i.e. when mounted on a large machining center). The digital display is water- and dust-proof (IP 64) and can be stored in the tool magazine of the machine.

Technische Daten / Technical details

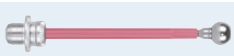
3D-Taster Digital mit integrierter Aufnahme inkl. kurzem Tasteinsatz Ø 4 mm
3D-Sensor Digital with integrated adapter incl. short probe tip Ø 4 mm

Anzeigengenauigkeit / Smallest unit of measure	0,001 mm
Wiederholgenauigkeit / Repeatability	0,005 mm
Messgenauigkeit / Measuring accuracy	0,005 mm
Display / Display	
Display Modus	mm/inch umschaltbar
Display mode	May be switched to inch or metrich
Display Größe / Display size	45 mm × 23 mm
Höhe der Ziffern / Hight of numbers	8,5 mm
Batterielebensdauer (bei Dauerbetrieb) ca.	3.000 Stunden
Service life of battery (continuous operation) approx.	3,000 hrs
Mit integrierter Aufnahme SK 40 / with integrated adapter SK 40	
Bestell-Nr. / Order No.	**80.464.40.FHN**
Mit integrierter Aufnahme BT 40 / with integrated adapter BT 40	
Bestell-Nr. / Order No.	**80.465.40.FHN**

Zubehör / Accessories

Kurzer Tasteinsatz Ø 4 mm / Short probe tip Ø 4 mm
Bestell-Nr. / Order No. 80.362.00

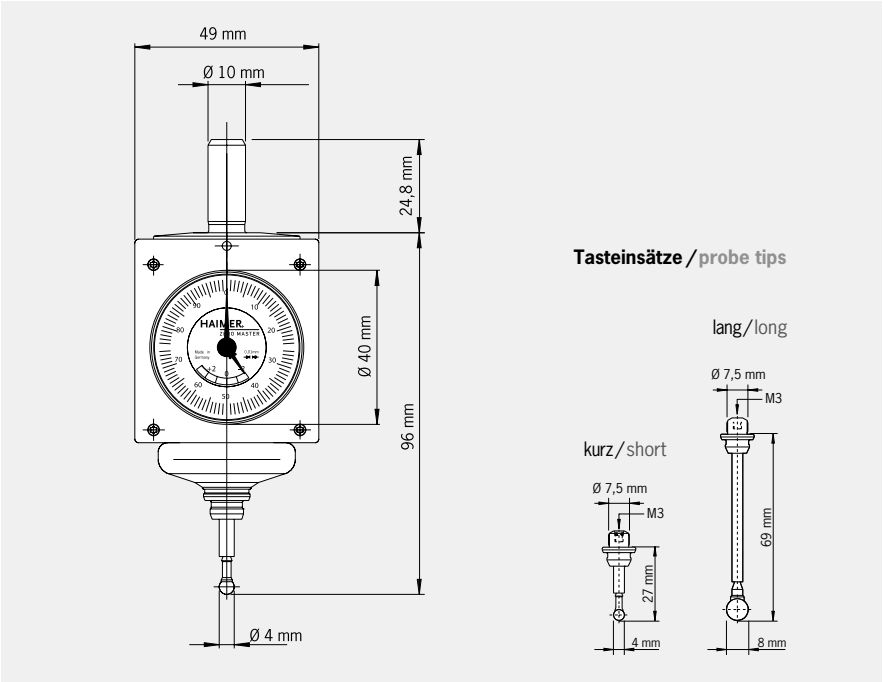
Langer Tasteinsatz Ø 8 mm / Long probe tip Ø 8 mm
Bestell-Nr. / Order No. 80.363.00



HAIMER

3D-Taster Zero Master
3D-Sensor Zero Master

3D-TASTER ZERO MASTER
3D-SENSOR ZERO MASTER



Zero Master

Klein aber fein
Der Zero Master ist der kleinste 3D-Taster der Welt. Verwendung, Funktionsweise und Genauigkeit entsprechen denen des Universal 3D-Tasters. Die Größe des Zero Masters ist aber auf kleine Maschinen abgestimmt. Der Einspannschaft hat einen Durchmesser von 10 mm und kann dadurch auch auf Maschinen mit SK 30 oder mit kleinen HSK-Spindeln eingesetzt werden. Das verkürzte Gehäuse ragt nur wenig aus der Spindel und erlaubt auch das Vermessen von großen Werkstücken. Der Zero Master wird über eine kleine analoge Messuhr abgelesen.

Der Zero Master kann mit einem kurzen (Kugel-Ø 4 mm) und mit einem langen (Kugel-Ø 8 mm) Tasteinsatz bestückt werden. Die Tasteinsätze sind natürlich kompatibel zu allen anderen HAIMER 3D-Tastern.

Bitte beachten
Die angegebene Messgenauigkeit von 0,01 mm gilt nur mit den originalen Tasteinsätzen von HAIMER.

- IP 67 spritzwassergeschützt

Zero Master

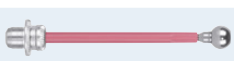
Small but nice
The Zero Master is the smallest 3D-Sensor worldwide. Usage, function and accuracy are equal to the Universal 3D-Sensor. The size of the Zero Master is adapted to small machines. The diameter of the clamping shank is 10 mm. Thus it can be also used on machines with ISO 30 or small HSK spindles. The housing is shortened and does not protrude far out of the spindle so 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.

- IP 67 waterproof

Technische Daten / Technical details	
Zero Master mit Einspannschaft Ø 10 mm inkl. kurzem Tasteinsatz Ø 4 mm **Zero Master with clamping shank Ø 10 mm including short probe tip Ø 4 mm**	
Genauigkeit / Accuracy	0,01 mm
Länge ohne Einspannschaft / Length without clamping shank	96 mm
Bestell-Nr. / Order No. 80.960.00	

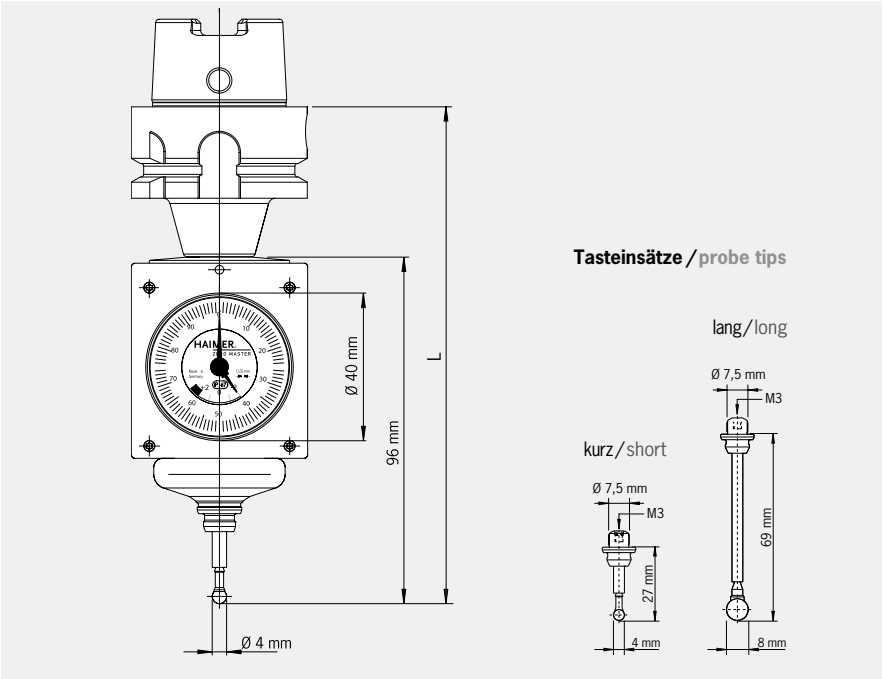
Zubehör / Accessories	
Kurzer Tasteinsatz Ø 4 mm / Short probe tip Ø 4 mm **Bestell-Nr. / Order No. 80.362.00**	
Langer Tasteinsatz Ø 8 mm / Long probe tip Ø 8 mm **Bestell-Nr. / Order No. 80.363.00**	

HAIMER

3D-Taster Zero Master
Mit integriertem Kurzadapter

3D-Sensor Zero Master
with integrated short adapter

3D-TASTER ZERO MASTER MIT INTEGRIERTEM KURZADAPTER
3D-SENSOR ZERO MASTER WITH INTEGRATED SHORT ADAPTER



Für Schnittstellen SK30, BT30, HSK-25/32/40/50/63

Einfache Werkstückvermessung bei wenig Platz im Maschinenraum.

Ausführung
- Mit integriertem Kurzadapter in Ausführung SK30, BT30, HSK-25/32/40/50/63
- Kein weiteres manuelles Einstellen des Rundlaufs mehr nötig! Auslieferung mit voreingestellter Rundlaufgenauigkeit an der Tastspitze von 0,01 mm
- Messgenauigkeit: 0,01 mm
- Kurze und lange Tasteinsätze verfügbar, kein Werkzeugwechsel
- Keine Neukalibrierung des Tasters erforderlich
- vergrößerter Überfahrweg
- IP 67 spritzwassergeschützt

Verwendung
- Für kleine Fräs- und Erodiermaschinen (isolierter Tasteinsatz)
- Zu Werkstück-Nullpunktesetzungen und Längenabmessungen
- Beliebige Antastrichtung (X-, Y-, Z-Achse)

For interfaces SK30, BT30, HSK-25/32/40/50/63

Simple workpiece measuring with less space in the machine.

Version
- With integrated short adapter in version SK30, BT30, HSK-25/32/40/50/63
- No further manual runout adjustment necessary! Delivery with preset runout accuracy at the probe tip of 0.01 mm
- Measuring accuracy: 0.01 mm
- Short and long probe tips available, no tool change necessary
- No re-calibration of the sensor is needed
- Enhanced overrun distance
- IP 67 waterproof

Application
- For small Milling and EDM machines (isolated probe)
- For workpiece-reset and length measuring
- Any direction approach (X-, Y-, Z-axis)

Technische Daten / Technical details

3D-Taster Zero Master mit integriertem Kurzadapter inkl. kurzem Tasteinsatz Ø 4 mm
3D-Sensor Zero Master with integrated short adapter including short probe tip Ø 4 mm

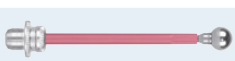
Genauigkeit / Accuracy: 0,01 mm

Artikel / Article	Bestell-Nr. / Order No.	L [mm]
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter HSK-E25	**80.963.E25**	**121,6**
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter HSK-E32	**80.963.E32**	**132,6**
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter HSK-E40	**80.963.E40**	**131,6**
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter HSK-E50	**80.963.E50**	**138,6**
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter HSK-A32	**80.963.A32**	**131,6**
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter HSK-A40	**80.963.A40**	**131,6**
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter HSK-A50	**80.963.A50**	**138,6**
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter HSK-A63	**80.963.A63**	**142,1**
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter SK30	**80.964.30**	**131,2**
3D-Taster Zero Master mit Kurzadapter / Zero Master with short adapter BT30	**80.965.30**	**130,7**

Zubehör / Accessories

Kurzer Tasteinsatz Ø 4 mm / Short probe tip Ø 4 mm
Bestell-Nr. / Order No. 80.362.00

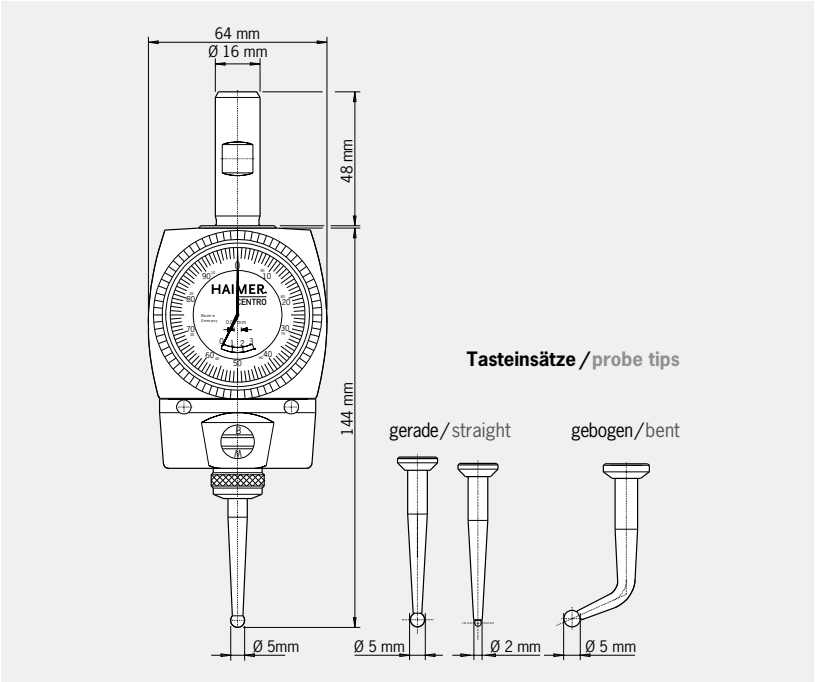
Langer Tasteinsatz Ø 8 mm / Long probe tip Ø 8 mm
Bestell-Nr. / Order No. 80.363.00



HAIMER

Zentriergerät Centro
Coaxial Indicator Centro

ZENTRIERGERÄT CENTRO
COAXIAL INDICATOR CENTRO



Centro

Mit Centro schnell und exakt Bohrungen und Wellen ausmitteln
Der Centro wird in die Spindel der Fräsmaschine eingespannt und in die Nähe der gesuchten Achse gebracht. Der Tasteinsatz wird so eingestellt, dass die Tastkugel die Wand der Bohrung oder Welle berührt.

Messuhr immer im Blick
Der Tasteinsatz gleitet bei kleiner Spindeldrehzahl am Werkstück entlang und überträgt die Bewegung auf die Zeiger der Uhr. Das Gehäuse des Centro dreht sich nicht mit der Spindel und damit bleibt die Messuhr immer im Blickfeld des Bedieners.

Centro findet die gesuchte Achse – sicher und zuverlässig
Solange Spindel und gesuchte Achse nicht übereinstimmen, schlagen die Zeiger während der Drehung aus. Die Position der Spindel kann nun so lange korrigiert werden, bis die Zeiger der Messuhr still stehen. Jetzt ist die gesuchte Achse erreicht.

Weitere Vorteile:
- Überprüfung des Planlaufs einer Fläche zur Spindel
- Rundlauffehler einer Spindel oder Einspannung werden ausgeglichen
  → Justierung ist nicht notwendig!
- Die ungewöhnlich große Messuhr schafft Klarheit
- Tasteinsatz auswechselbar

Centro

Center bores and arbors quick and precise
The Centro is clamped in a tool holder and positioned close the sought axis. The probe tip is adjusted and touches the bore or arbor all the way around.

Dial gauge always in field of vision
With low rpm the probe slides along the bore or arbor.
Its movement is transferred to the dial gauge. By using an antenna the Centro does not spin around and stays in field of vision.

By using the Centro you find the axis of bores or arbors – reliably
As long as the spindle is out of the center of the bore or arbor the hands of the dial gauge stay in movement. By changing the position of x- and y- axis at the machine you can jibe the axis of the spindle and the work piece.

Further advantages
- Check the axial run-out of the work piece to the spindle
- Compensation of the run-out errors of the spindle and tool holder
  → no adjustment necessary!
- Even in bigger distance the unusual size of the dial gauge is helpful to finish the job
- Replaceable probes

Technische Daten / Technical details	
Centro mit Einspannschaft Ø 16 mm inkl. geradem Tasteinsatz Ø 5 mm **Centro with clamping shank Ø 16 mm incl. straight probe tip Ø 5 mm**	
Zentriergenauigkeit / Centering accuracy	0,003 mm
Max. Drehzahl / Max. rotation speed	150 1/min
Messbereich Innen Ø (Bohrung) / Measuring range interior diameter (drill hole)	3–125 mm
Messbereich Außen Ø (Welle, mit Tasteinsatz gebogen) Measuring range exterior diameter (shaft, with probe tip bent)	0–125 mm
Bestell-Nr. / Order No.	**80.300.00.FHN**

Zubehör / Accessories	
Tasteinsatz gerade mit Kugel Ø 5 mm Probe tip straight with diameter of ball 5 mm **Bestell-Nr. / Order No. 80.301.00**	
Tasteinsatz gebogen mit Kugel Ø 5 mm Probe tip bent with diameter of ball 5 mm **Bestell-Nr. / Order No. 80.302.00**	
Tasteinsatz gerade mit Kugel Ø 2 mm, für kleine Bohrungen Probe tip straight with diameter of ball 2 mm, for small bores **Bestell-Nr. / Order No. 80.303.00**	

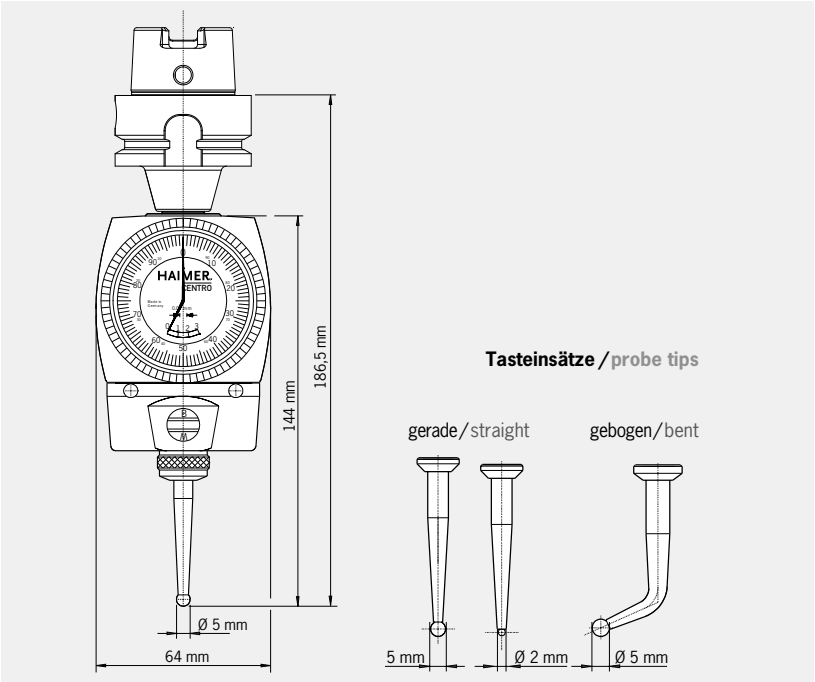
Empfohlene HAIMER Werkzeugaufnahmen **Recommended HAIMER tool holders**	**Bestell-Nr. / Order No.**
Kurzes Flächenspannfutter / short chuck SK40	**40.305.16**
Kurzes Flächenspannfutter / short chuck SK50	**50.300.16**
Kurzes Flächenspannfutter / short chuck BT40	**40.500.16**
Kurzes Flächenspannfutter / short chuck BT50	**50.500.16**
Kurzes Flächenspannfutter / short chuck HSK-A40	**A40.000.16**
Kurzes Flächenspannfutter / short chuck HSK-A50	**A50.000.16**
Kurzes Flächenspannfutter / short chuck HSK-E50	**E50.000.16**
Kurzes Flächenspannfutter / short chuck HSK-A63	**A63.000.16**
Kurzes Flächenspannfutter / short chuck HSK-A100	**A10.000.16**

HAIMER

Zentriergerät Centro
Mit integriertem Kurzadapter

Coaxial Indicator Centro
with integrated short adapter

ZENTRIERGERÄT CENTRO MIT INTEGRIERTEM KURZADAPTER
COAXIAL INDICATOR CENTRO WITH INTEGRATED SHORT ADAPTER



Centro mit integrierter Aufnahme

Für einfachste Handhabung mit einer integrierter Aufnahme –
Kegel und Centro bilden eine Einheit.

Mit Centro schnell und exakt Bohrungen und Wellen ausmitteln
Der Centro wird in die Spindel der Fräsmaschine eingespannt und in die Nähe der gesuchten Achse gebracht. Der Tasteinsatz wird so eingestellt, dass die Tastkugel die Wand der Bohrung oder Welle berührt.

Messuhr immer im Blick
Der Tasteinsatz gleitet bei kleiner Spindeldrehzahl am Werkstück entlang und überträgt die Bewegung auf die Zeiger der Uhr. Das Gehäuse des Centro dreht sich nicht mit der Spindel und damit bleibt die Messuhr immer im Blickfeld des Bedieners.

Centro findet die gesuchte Achse – sicher und zuverlässig
Solange Spindel und gesuchte Achse nicht übereinstimmen, schlagen die Zeiger während der Drehung aus. Die Position der Spindel kann nun so lange korrigiert werden, bis die Zeiger der Messuhr still stehen. Jetzt ist die gesuchte Achse erreicht.

Weitere Vorteile
- Überprüfung des Planlaufs einer Fläche zur Spindel
- Rundlauffehler einer Spindel oder Einspannung werden ausgeglichen
  → Justierung ist nicht notwendig!
- Die ungewöhnlich große Messuhr schafft Klarheit
- Tasteinsatz auswechselbar

Centro with integrated adapter

The integrated adapter guarantees easiest handling and a maximum of comfort.

Center bores and arbors quick and precise
The Centro is clamped in a tool holder and positioned close the sought axis.
The probe tip is adjusted and touches the bore or arbor all the way around.

Dial gauge always in field of vision
With low rpm the probe slides along the bore or arbor.
Its movement is transferred to the dial gauge. By using an antenna the Centro does not spin around and stays in field of vision.

By using the Centro, you find the axis of bores or arbors – reliably
As long as the spindle is out of the center of the bore or arbor, the hands of the dial gauge stay in movement. By changing the position of x- and y- axis at the machine, you can align the axis of the spindle and the work piece.

Further advantages
- Check the axial run-out of the work piece to the spindle
- Compensation of the run-out errors of the spindle and tool holder
  → no adjustment necessary!
- Even in bigger distance the unusual size of the dial gauge is helpful to finish the job
- Replaceable probes

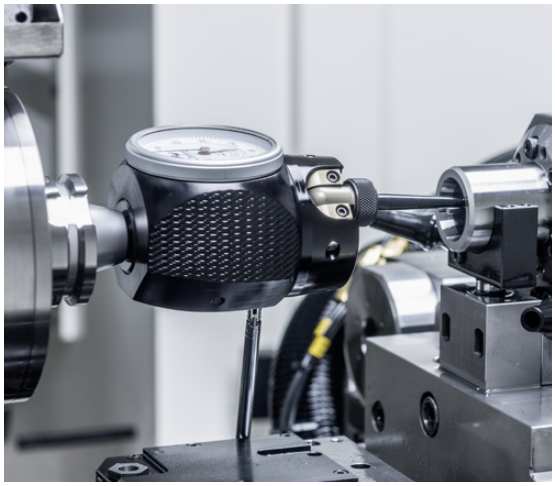
Technische Daten / Technical details	
Centro mit integrierter Aufnahme HSK-A50 und geradem Tasteinsatz Ø 5 mm **Centro with integrated adapter HSK-A50 and straight probe tip Ø 5 mm**	
Zentriergenauigkeit / Centering accuracy	0,003 mm
Max. Drehzahl / Max. rotation speed	150 1/min
Messbereich Innen Ø (Bohrung) / Measuring range interior diameter (drill hole)	3–125 mm
Messbereich Außen Ø (Welle, mit Tasteinsatz gebogen) Measuring range exterior diameter (shaft, with probe tip bent)	0–125 mm
Bestell-Nr. / Order No.	**80.300.00.FHN**

Zubehör / Accessories

Tasteinsatz gerade mit Kugel Ø 5 mm
Probe tip straight with diameter of ball 5 mm
Bestell-Nr. / Order No. 80.301.00

Tasteinsatz gebogen mit Kugel Ø 5 mm
Probe tip bent with diameter of ball 5 mm
Bestell-Nr. / Order No. 80.302.00

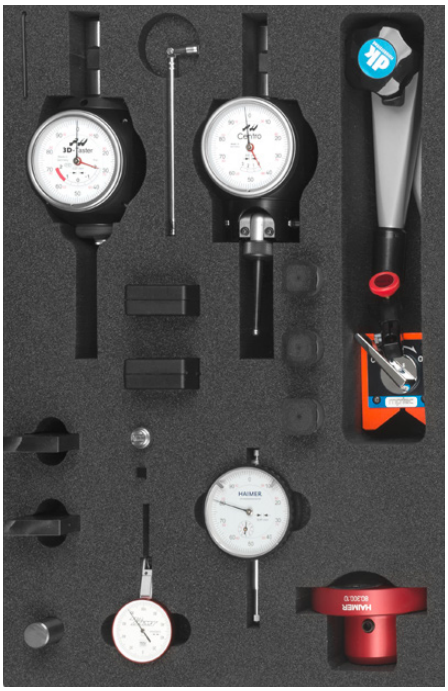
Tasteinsatz gerade mit Kugel Ø 2 mm, für kleine Bohrungen
Probe tip straight with diameter of ball 2 mm, for small bores
Bestell-Nr. / Order No. 80.303.00



HAIMER

Werkzeugmaschinen-Kalibrierungskoffer
Machine tool calibration set

WERKZEUGMASCHINEN-KALIBRIERUNGSKOFFER
MACHINE TOOL CALIBRATION SET



- Bruchsicheres, staub- und wasserdichtes Plastik-Case sorgt für perfekten Schutz Ihrer Messmittel
- Zwei hochwertige, präzise und vielseitig einsetzbare HAIMER Messtaster inklusive Zubehör
- Verschiedene Endmaße zur Prüfung und Kalibrierung der Messgeräte und zum individuellen Messeinsatz
- Adapterreduzierung zum vielseitigen Einsatz der Taster in allen Maschinentypen
- Zwei hochsensible Messuhren mit dazugehörigem Messstativ

- Stable, dust proof and water proof plastic-case provides perfect protection of your measuring equipment
- Two high quality, precise and universal HAIMER sensors incl. accessories
- Adapter for versatile use of the HAIMER sensors in all types of metal cutting machines
- Several gauge blocks for checking and calibrating your measuring equipment and for individual measurements
- Two high quality dial indicators with corresponding gauge stand

Schnelle und zuverlässige Inbetriebnahme und Überprüfung Ihrer Werkzeugmaschine

- Exakte, hochgenaue Ausrichtung von Dreh- und Fräsmaschinen zur Sicherstellung Ihres Qualitätslevels
- Schnelles, punktgenaues Anfahren der Achsen und Werkstücke zur Überprüfung der Positioniergenauigkeit
- Schnellere und präzisere Einrichtung der Achsen und Spindeln Ihrer Maschine zur Ausschussreduktion und Vermeidung von unnötigen Werkzeugkosten
- Einfache und zuverlässige Überprüfung der Maschinengeometrie für gleichbleibende Bearbeitungsergebnisse

Lieferumfang

- Koffer: Schwarzes Plastik-Case, staub- und wasserdicht nach IP 67, stoßfest
  Außenmaß: 464 × 366 × 176 mm, Innenmaß: 426 × 290 × 159 mm
- Schwarze Schaumstoffeinlage mit 18 Aussparungen
- HAIMER Universal 3D-Taster
- Kurzer Tasteinsatz Ø 4 mm, langer Tasteinsatz Ø 8 mm
- HAIMER Centro
- Tasteinsatz gerade, Ø 5 mm
- Tasteinsatz gebogen, Ø 5 mm
- Tasteinsatz gerade, Ø 2 mm
- Centro Halterung und Ausrichtungshilfe
- Prüfbolzen, Ø 16 × 93 mm
- KÄFER Messuhr M2TopS:
  Messbereich 10 mm, Stoßschutz, Robustes Metallgehäuse, Umlaufzähler
- Fühlhebelmessgerät, TESA Swisstast: Tastarmlänge 12,5 mm mit Rubinkugel
- Messuhrenstativ, DK Fixiersysteme
  Aktionsradius 345 mm, Magnethaltekraft 900 N, Einspannschaft Ø 8 h 6
- Endmaß, 50 × 35 × 9 mm

Fast and easy installation and inspection of your machine tool

- Highly accurate alignment of lathe and milling machines to secure your quality level
- Quick and very precise positioning of your axis and workpieces to check the machine accuracy
- Faster and more precise installation of axis and spindles of your machine tool to reduce scrap and avoid unnecessarily high tool costs
- Simple and reliable inspection of the machine geometry for consistent machining results

Included in delivery

- Suitcase: Black plastic-case, dust- and water proof according to IP67,
  collision protection external dimension: 464 × 366 × 176 mm,
  internal dimension: 426 × 290 × 159 mm
- Black foam inlay with 18 recesses
- HAIMER Universal 3D-Sensor
- Short probe tip Ø 4 mm, long probe tip Ø 8 mm
- HAIMER Centro
- Straight probe tip, Ø 5 mm
- Bent probe tip, Ø 5 mm
- Straight probe tip, Ø 2 mm
- Centro fixture and ajustment help
- Test bolt, Ø 16 × 93 mm
- KÄFER dialindicator M2TopS:
  Measuring range 10 mm, collision protection, robust metal housing, rotation counter
- Lever gauge, TESA Swisstast: Length probe arm 12.5 mm with ruby ball
- Dial indicator tripod, DK fixturing systems
  Radius of action 345 mm, magnetic holding power 900 N, clamping shaft Ø 8 h 6
- Gauge block, 50 × 35 × 9 mm

HAIMER

TERMS OF DELIVERY AND PAYMENT (FEBRUARY 2024)

I. Generalities

The following conditions apply to all business transactions – also those in the future – with the customer. Our sales and shipping conditions apply exclusively; we do not recognize other conditions as well as especially contrary or otherwise differing conditions on the part of the customer, unless we explicitly approve of the validity of those conditions. Our sales and shipping conditions also apply in the event that we acknowledge contrary or differing conditions on the side of the customer and unreservedly fulfil the order. All agreements reached between ourselves and the customer must be in written form in order to be valid. Our sales and shipping conditions apply exclusively towards registered businessmen/businesswomen if the contract is integrated in operating their business and towards legal entities under public law and separate estates or assets under public law.

II. Prices/Price changes, shipping

1. Our prices offered are Euro prices, and do not include value-added tax. Therefore, value-added tax must be added to the prices at the rate determined by the law applicable at the time. If not agreed specifically otherwise, our prices are ex works, excluding costs for packaging, postage, and shipping. All offered prices are subject to change.
2. Our prices offered are applicable only for the dates of order upon which the offers are based. Subsequent changes or additions upon request or at the instigation of the customer, including additional costs incurred by the above, shall be charged additionally. The same applies for additional costs which might arise as the result of the above from machine down-time. In the event of changes in wages or material costs which arise either between making the offer and the placing of the order, or at any time exceeding four months following completion of contract, we reserve the right to adjust the price accordingly.
3. Shipping of goods occurs at expense and risk of the customer and always plus cost of packaging following to the at any one time valid price list of HAIMER or the relevant valid offer. Inasmuch as goods are shipped at cost and risk of the customer at the customer's request, our liability, as far as is legally permissible, is limited to damage caused intentionally or by gross negligence. At the customer's written request, and at his own expense, goods may be shipped insured by ourselves against theft, breakage, damage to or loss of goods in transit, fire and water damage, or against such other risks as may be expressed explicitly by the customer insofar as such are insurable.
4. As far as can be reasonably expected on the part of the customer, partial shipments are permissible.

III. Payment

1. The goods are to be paid in full, no deductions, within 30 calendar days of date of invoice.
2. Bills of exchange are only accepted upon special agreement and on account of performance without allowance for discount. Discounting and bill charges shall be borne by the customer and become due for payment immediately. We are not liable for the timely presentation of a bill of exchange, its due protest, due notice, or the return of an unpaid bill, unless we or our vicarious agents are guilty of damage by intention or gross negligence.
3. The customer is only entitled to set-off claims if his counterclaims have become res judicata, are uncontested or recognized by ourselves. In the event of contested counterclaims, the customer has no right of retention.
4. In the case of uncontested counterclaims, the customer can only claim a right of retention regarding asserted claims which are based upon the same contractual relationship.
5. With respect to this order the customer is obligated to confirm the receipt of the goods in cases of the delivery from Germany to the foreign countries of Europe; the confirmation has to comply with the regulation concerning turnover tax.

IV. Delay in Payment

1. In the event of delay in payment, we are entitled to charge the legal rate of interest on overdue payments, i.e. the rate of 9% plus the basic annual interest rate current at the time in question and a lump sum of 40.00 € per overdue amount; this notwithstanding, we explicitly reserve the right to assert claims regarding additional damages. If the rate of interest is not claimed firstly this shall not exclude a later enforcement in the frames of the legal limitation; in this regard a forfeiture is excluded.
2. Should we become aware of circumstances which call into question the customer's creditworthiness and therefore deem our claim for payment to be at risk, particularly if the initiation of insolvency proceedings are filed for – or if insolvency proceedings are opened against the customer's property, or if a cheque is not honoured, or the customer stops payments respectively is in extensive default of the payment with collection threat, then we are entitled to declare the residual debt due immediately and to demand immediate payment. Further, we are then entitled to demand advance payment or provisions of security, and to retain the goods until payment, advance payment, or provisions of security are made, and to discontinue processing running orders until the same. If a change of the order required by the customer affects the production time, we can claim for a new delivery time adjusted to the new circumstances. Delay of delivery or performance caused by force majeur, caused by circumstances that are beyond our control and caused by incidents which do make the delivery not only temporary difficult or impossible – this is especially strike, lock out, intervention of public administration, act of war, riots, lack of energy, destruction or damage of our production and operating units, which were beyond our control as well as stoppage of transportation means, restrictions of work, aso., even though this occurs at our supplier or their sub-supplier we are not responsible for even if we agreed on binding delivery deadlines. You allow us to prolong the delivery respectively performance time for the time of interference and an additional initial period. Additionally in such cases we have the right to adjust the price. The above mentioned circumstances do also fall beyond our control if they occur during a already existing delay. Begin and end of such interference will be communicated to the customer as soon as possible. The delivery time is observed in case the product left the premise or we communicated the readiness of shipment to the customer at the end of the delivery time.

V. Reservation of title

1. Until all claims arising from the business relationship with the customer are fulfilled, the customer is required to grant the following securities, which we will release at the customer's request and at our own free will if the securities' value consistently exceeds that of the claims by more than 10%.
2. All goods delivered to the customer remain our property until all claims arising from the business relationship with the customer are paid in full.
3. The object delivered may be neither pledged nor transferred for security to a third party before it is paid in full. In the event of attachment by a third party to the object of delivery, particularly as a pledge, the customer shall refer to our ownership and inform us in writing immediately, so that we can enforce our rights of ownership. The customer is liable for costs which arise judicially or extra-judicially should the third party not be in a position to repay us such costs as arise in relation to the abovementioned.
4. The customer is permitted to sell and process the goods within the context of proper business transactions, as long as he is not in arrears with fulfilling the claims which he owes. We can revoke this permission if the customer is overdue in payments or comes into a state of forfeiture of assets, particularly if insolvency proceedings are opened against his property.
5. The processing or transforming of the goods by the customer shall always be done for us. In the event that the goods are joined, mixed, or blended with other items, we acquire co-ownership in proportion with the value of the goods (sum total of invoice including legal value-added tax) to the remaining items which were joined, mixed, or blended together at the time when they were joined, mixed, or blended together. For the event that ownership of the goods be lost inasmuch as the goods become an integral or necessary part of another item, the customer hereby concedes to us now, in advance, co-ownership of the main item equal to the share which corresponds with the proportion of the value of the goods delivered (sum total of invoice including legal value-added tax) to the value of the main item at the time of said joining, mixing, or blending.
6. In the event that the goods are sold, the customer now and hereby, for the security of our claims arising from the whole of the business relationship, assigns all claims which arise for the customer from resale or from other legal grounds (insurance, tortius act, or the like) against the buyer or third parties, independently of whether the goods, of which we have (partial) ownership, are resold with or without processing. Upon our request, which may be made at any time, the customer must inform us regarding the state of the claim, and allow us or anyone authorized by us to inspect those business records relevant to the above. We grant the customer permission, subject to revocation, to collect the sums due for the claims we assigned, to his own account and in his own name. This direct debit authorization can only be revoked if the customer does not meet his financial obligations in a proper manner. Our authority to collect ourselves the sums due remains unaffected by the above. However, we bind ourselves not to collect the sums due as long as the customer meets his financial obligations with the collected sales revenue, is not overdue for payments, and especially if no initiation for insolvency proceedings has been filed or cessation of payments has been noted. If this is the case, however, we can require that the customer makes known to us immediately the claims assigned and their debtors, including all information required for collection purposes, providing us with all records necessary therefore, and informing the debtors (third parties) of the assignment of claims. We as well have the right of disclosure of assignments against debtors. The customer, however, is not entitled to assign this claim to third parties.
7. Contrary to position 3, the customer is not entitled to sell the goods, even within the context of proper, standard business transactions, if the customer excludes assigning claims based on the sale of the goods to us.
8. In the event of actions contrary to the terms of contract, particularly in the case of delay of payment, we are entitled to rescission of the contract. Following rescission, we can demand return of the goods from the customer.

VI. Delivery time

1. Delivery dates and delivery periods are only binding if they are confirmed by us explicitly in writing.
2. The confirmed delivery dates and delivery periods start when the following cumulative conditions are met: the clarification of all technical questions; the fulfilment of the customer's contractual obligations, particularly that of furnishing records, authorizations, and release statements. When alterations ordered by the customer have an influence upon the duration of production time, we are entitled to insist upon agreeing to a new delivery time which is adjusted to the changed circumstances. We are not liable for delays in delivery and performance, even if binding dates and times have been agreed upon, in case of acts of God, in case of circumstances which we are not responsible for, and in the event of incidents which not only temporarily substantially impede delivery or make it impossible – this includes in particular strike, lock-out, sovereign intervention, acts of war, riots, electrical shortage, destruction or damage to our production or works fixtures for which we are not liable, as well as transportation failure, work limitations etc., also when the above affect our suppliers or their sub-suppliers. Such circumstances entitle us to postpone delivery or performance for the duration of the impediment plus a reasonable starting-up time. Furthermore, such a case entitles us, for our part, to adjust the price accordingly. We are also not liable for the circumstances mentioned if they arise during an already existing delay. Delivery periods shall be subject to correct and timely delivery of goods from our supplier if we have concluded a congruent covering contract and, after careful examination, may assume that our supplier is able to honor the contract properly and on time. In important cases, we will inform the customer as soon as possible regarding the beginning and end of such hindrances. The delivery deadline is met if by date of its expiry the goods have left the works or the customer has received notice of readiness of dispatch.

VII. Sample

Samples of all kinds, whether designs, models, etc., are prepared especially for the customer according to his instructions and only by prior written commission for the same. In every case, these samples will be billed separately to the customer.

VIII. Storage of documents and items for further use

The storage of the customer's papers and other objects such as may serve some future purpose is undertaken only upon prior written agreement and in exchange for special compensation beyond the date of delivery of the goods ordered. The abovementioned goods a/o objects, if they are placed at our disposal by the customer, shall be handled with care up to the delivery date. In this case as well, storage beyond the delivery date is only granted upon prior written agreement and in return for special compensation. Should the abovementioned documents a/o objects be insured against water, fire, theft, or other dangers, the customer must provide the necessary insurance himself. Further, within legally permissible limits, we are exempt from liability for the loss of, damage to, or destruction of these documents a/o objects.

IX. Company print

On objects of our manufacture, we can, with the customer's permission, make reference to our company in an appropriate manner. The customer can only withhold his permission in the event that he has a justifiable interest in so doing.

X. Time limit for making a claim

Upon delivery, the customer must inspect the goods without delay, and in the event that the goods have obvious defects, these must be reported to us within a period of two weeks following receipt of the goods, in the case of shipping from the point of taking delivery from the shipper or carrier; otherwise, the customer's claims regarding defects are excluded. Claims for non-obvious defects can only be asserted within a period of one year upon receipt of the goods, in the case of shipping upon taking delivery from the shipper or carrier.

XI. Warranty

The warranty period is 1 year after passing of the risk. In the event of defects, we are entitled to choose between rectifying the defects or delivering a substitute, up to the amount of the contractual value, unless we or our vicarious agents are guilty of damage by intent or gross negligence, or if we have given a guarantee for the condition of the goods. If two attempts at rectifying the defects or at delivering a substitute fail, or if rectification or substitution is not possible, not to be reasonably expected for the customer, or finally refused by ourselves, then the customer can demand a reasonable reduction in price or withdraw from the contract. For substantial third-party products, our liability is limited initially to the assignment of liability claims to which we are entitled against the supplier of the third-party products. Any liability ensuing on our part in this instance can only be secondary and requires prior recourse to the courts for the supplier of the third-party product. We will reimburse such costs as may arise if they cannot be collected from the supplier and if they were necessary for prosecution. Guarantee and damage claims which exceed the above are excluded, so far as is permissible by law.

XII. Compensation for Damages

The following liability limits apply for damage claims, within the parameters of the law: For all damages arising from culpable breach of contract, we are liable if we ourselves or our vicarious agents are at fault, but only in case of damage by intention or gross negligence. Within the limits of the law, this also applies in cases of default or when performance becomes impossible. Insofar as we are considered liable for damages due to breach of contract which results from a slight degree of negligence on our part or on the part of our vicarious agents, liability for indirect damages is excluded. In each case of damage, our liability shall be limited to a maximum of the respective individual order value. In particlar delay damages arise due to delay in our performance, we are only liable to the extent of contractual value (our own work excluding advance performance and material) if we or our vicarious agents are only at fault for slight negligence. This limitation of liability also applies for damages in connection with services of HAIMER for goods of customers (e.g. Balancing, Cool Jet, Cool-Flash, Duo-Lock or Safe-Lock), whereupon the liability is limited to the extent of the contractual value of the service by HAIMER. In any case, to the extent permissible by law, our liability shall be limited to the amount of damages typically foreseeable at the time of the conclusion of the contract.

XIII. Taking Delivery; Passing of Risk

The customer must take delivery of the goods at the completion time agreed upon if the goods are ready for acceptance. If the customer is in default of acceptance, regardless of article **III. 1** the price agreed upon is due immediately. If the customer does not meet this obligation, we are entitled to withdraw from the contract and to make other use of the goods, whereby the sales revenues gained in this case are credited to the price agreed upon. We must be compensated for profit lost. If the buyer is in default of acceptance or fails to perform other participation duties, then we are entitled to demand compensation for damages thus caused, including any additional expenditures which may arise. We reserve the right to further claims on our behalf. In case of default or delay in acceptance by the buyer, or other failure to perform participation duties on the part of the buyer, then the risk of accidental loss of the goods or of accidental worsening of the state of the goods passes over to the buyer from the point in which he entered into the state of default in acceptance or debtor's delay.

XIV. Ownership, Copyright, Duty of Secrecy

Those articles of the trade which we use to manufacture the product of the contract, in particular special means of operation (tools, devices) remain our property and shall not be delivered. We reserve for ourselves the ownership and copyrights of estimates of cost, drawings, and other documents. They may only then be made available to unauthorized third parties if we give our prior explicit written permission. The customer is solely liable if, in the process of executing orders, any rights, particularly copyrights, trademarks, or patents of third parties are infringed upon. The customer indemnifies us against claims of third parties in the event of such violations of rights. All ideas and documents drawn up by ourselves, in particular samples, sketches, designs, technical information, models, technical drawings etc. are under the protection of our intellectual property, have to be treated confidential and may not be used or applied in any manner without our prior written consent.

XV. Export and Compliance, confidentiality

1. The customer (Buyer) confirms if he resales HAIMER products that he complies with all provisions and regulations of german and international export controls as well as with the US re-export regulations. The customer (Buyer) declares with his order his compliance with this kind of laws and regulations. Additionally the customer (Buyer) confirms with his order that the products will remain in the delivery country respectively will not be delivered out of the European Union.
   In addition, the following applies:
   Our fulfillment of the contract is subject to the proviso that it is not affected by obstacles arising from national or international foreign trade regulations, embargoes and/or other sanctions, which may in particular result in penalties or other adverse measures by authorities of the United Nations, the European Union, the United States of America or other countries.
   The customer (buyer) shall comply with the applicable provisions of national and international (re-)export control law when passing on to third parties the goods delivered by us or the work and services performed by us (including technical support of any kind).
   In any case, he shall comply with the (re-)export control regulations of the Federal Republic of Germany, the European Union, the United States of America and other countries when passing on such goods, works and services to third parties.
2. The customer (buyer) agrees to comply with all national and international anti-bribery and anti-corruption laws and international ethical standards. In particular, both parties commit to show mutual respect, good conduct and loyalty. The parties will keep the details of the cooperation (including price, quantity, number of units) confidential and will not publish them without the consent of the other party. At no time will they make negative public statements about the person, products or services of the other or damage the reputation and prestige of the other. If we notice that the customer (buyer) is in breach of anti-corruption regulations, relevant laws or ethical standards, we shall be entitled to rescind the contract and/or hold ourselves harmless.

XVa. Affairs with the Russian Federation

1. The customer (Buyer) shall not sell, supply, transfer, export or re-export, directly or indirectly, to the Russian Federation or for use in the Russian Federation any goods supplied that fall under the scope of Article 12g of Council Regulation (EU) No 833/2014.
2. The customer (Buyer) shall undertake its best efforts to ensure that the purpose of nr. 1 is not frustrated by any third parties further down the commercial chain, including by possible resellers.
3. The customer (Buyer) shall set up and maintain an adequate monitoring mechanism to detect conduct by any third parties further down the commercial chain, including by possible resellers, that would frustrate the purpose of nr. 1.
4. Any violation of nr. 1, 2 or 3 shall be entitled to seek appropriate remedies, including, but not limited to the rescission of the contract.
5. The customer (Buyer) shall immediately inform us about any problems in applying nr. 1, 2 or 3, including any relevant activities by third parties that could frustrate the purpose of nr. 1. The customer (Buyer) shall make available to us information concerning compliance with the obligations under nr. 1, 2 and 3 within two weeks of the simple request of such information.

XVI. Sustainability Guidelines

1. Our company is committed to sustainability guidelines and expects a similar commitment and application from all business partners. Our sustainability guidelines can be accessed via the following link: https://www.haimer.com/shop/catalog/downloads/files/22_06_CodeOfConduct_210x297/22_06_CodeOfConduct_210x297_EN.pdf
2. We reserve the right to review this at our business partners after consultation as part of quality audits.

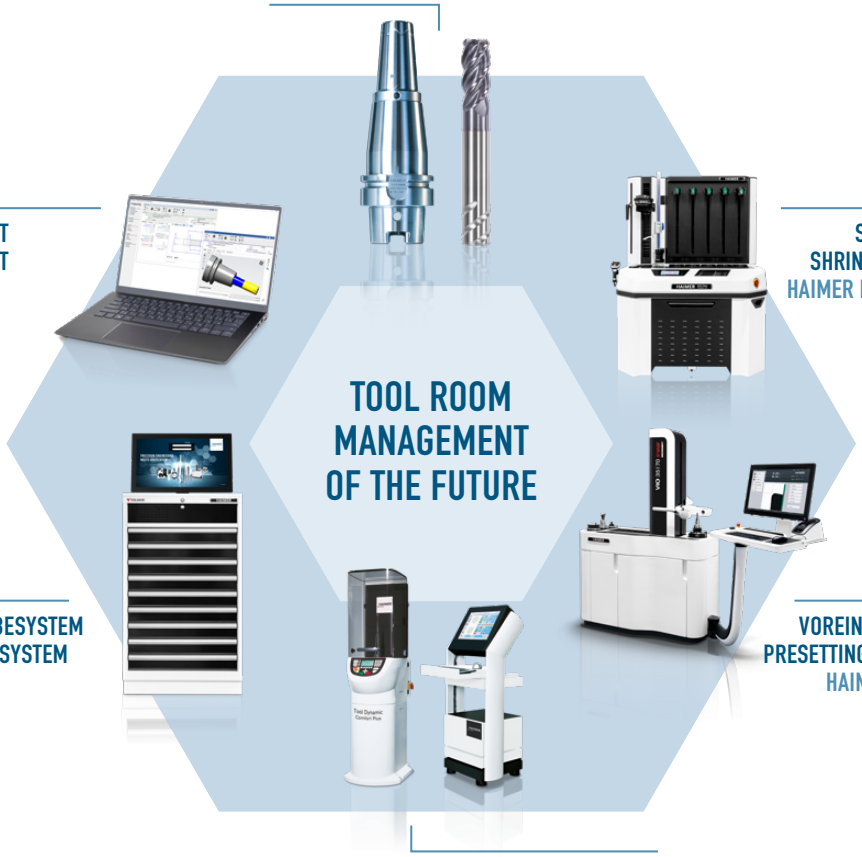
XVII. Applicability of German Law

The law of the Federal Republic of Germany is exclusively applicable. Application of the UN Convention on Contracts for the International Sale of Goods, dated January 1, 1991, is precluded.

XVIII. Place of Performance, Place of Jurisdiction, and Validity

The place of performance for all claims arising from this contractual relationship is place of business of the seller. The place of business of the seller is also the place of jurisdiction for all legal disputes arising from this business connection. We are, however, entitled to bring grievances before the legal place of jurisdiction as well. The partial or complete invalidity of any provision in these terms of sales and delivery, or of any provision within the context of other agreements, whether now or in the future, shall not affect the validity of any part of the remaining provisions or agreements. The invalid provision is then replaced by that lawfully permissible provision which is closest to the meaning of the invalid provision.

HAIMER
Quality Wins.



Haimer GmbH | Weiherstrasse 21 | 86568 Igenhausen | Germany
☎ +49 (0) 8257-9988-0 ✉ haimer@haimer.de 🌐 www.haimer.com

DE/EN ▪ 09/25 ▪ 1.5 (HI) ▪ Technische Änderungen vorbehalten
DE/EN ▪ 09/25 ▪ 1.5 (HI) ▪ Technical data subject to change without prior notice

Colly Verkstadsteknik AB
Raseborgsgatan 9, 164 74 Kista
Tel: 08-703 01 00 | Mail: info@vt.colly.se
collyverkstadsteknik.se