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# MICROSET

WERKZEUGVOREINSTELLGERÄTE  
TOOL PRESETTERS



100%  
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GERMANY**  
MADE BY HAIMER

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# VOREINSTELLTECHNIK

# PRESETTING TECHNOLOGY



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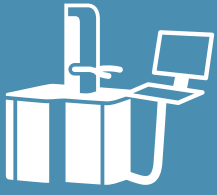
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## Die Top 10 Gründe für die HAIMER Microset Voreinstelltechnik

1

### Erhöhte Maschinenauslastung

Reduzierung der Rüstzeiten um mehr als 70 % führt zu einer erhöhten Maschinenauslastung.

2

### Verkürzung der Rüstzeiten und -prozesse

Selbst wenn die Voreinstellung hauptzeitparallel erfolgt, verbessern Einstellgeräte die Rüstgeschwindigkeit signifikant im Vergleich zum manuellen oder lasergestützten Voreinstellen in der Maschine.

3

### Ausschussreduktion

Microset Voreinstellgeräte verwenden zur Vermessung optische Kameras, welche einen höheren Grad an Genauigkeit und Präzision gegenüber manuellen Einstellmethoden aufweisen. Messoptionen wie automatisches Fokussieren und Vermessen reduzieren Messabweichungen zusätzlich und bedienerunabhängig.

4

### Steigerung der Werkzeugstandzeit

Der Rundlauf kann auch bei unkritischen Werkzeugen einfach gemessen und ermittelt werden. Daraus resultieren erhöhte Werkzeugstandzeiten, da unpräzise Werkzeuge gar nicht erst in die Werkzeugmaschine eingewechselt werden.

5

### Reduzierte Kollisionsgefahr

Durch optionale Datentransfermöglichkeiten wie RFID oder Post-Prozessoren kann der manuelle Eintrag von Werkzeugmaßen in die Maschine verhindert und Falscheingaben durch den Bediener vorgebeugt werden.

6

### Kostengünstiger als die Laservermessung

Werkzeugmaschinen sind produktiv wenn sie unter Span stehen und nicht als Messinstrument missbraucht werden. Ein einziges Einstellgerät kann für 10–30 Werkzeugmaschinen genutzt werden und ist dadurch günstiger als ein Laser für jede Maschine.

7

### Konstanz

Sicherheit und Gewissheit, dass Ihre Werkzeuge ordnungsgemäß in den vorgegebenen Toleranzen gerüstet werden – und das immer wieder aufs Neue bei jedem Werkzeug!

8

### Benutzerfreundlich und selbsterklärend

Einfache und intuitive Software macht den Einstellprozess unkompliziert für die unterschiedlichen Bedienergruppen. Microset hat keine überladenen Softwareoptionen, die ohnehin häufig nicht verwendet werden.

9

### Universelle Einsatzmöglichkeiten

Einfachstes Vermessen und Einstellen von Fräswerkzeugen, Feinbohrköpfen, komplizierten Wendplattenwerkzeugen, PKD Formwerkzeugen, Drehwerkzeugen, Stufenwerkzeugen etc. aller Marken und Hersteller.

10

### Industrie 4.0-Vorsprung

Industrie 4.0 dreht sich um die Erhebung und automatische Echtzeit-auswertung von Daten, um den Bearbeitungsprozess zu optimieren. Die Fertigung der Zukunft benötigt Technologien, die Daten empfangen und senden können. HAIMER Microset Einstellgeräte können bereits heute mit einer Vielzahl an Maschinensteuerungen, CAD/CAM und Werkzeug-managementsystemen kommunizieren.

## Top 10 Reasons to use HAIMER Microset Presetting Technology

### Increased Machine Utilization

Reducing set-up time by as much as 70% or more translates to more machine "up-time" and productivity.

### Faster Set-ups

Even if set-ups are not being performed offline, using a tool presetter is significantly faster than setting tools in the machine manually or with a laser.

### Reduced Scrap

Microset presetters use optical cameras for measurement, which provide higher degrees of accuracy versus manual setting methods. Options like automatic focusing and measuring further reduce deviations in measurement, regardless of the operator.

### Longer Tool Life

Rundout that is not often inspected for non-critical assemblies can be measured and accounted for easily with a presetter, thereby extending tool life by preventing inaccurate tools from ever entering the machine.

### Fewer Collisions

With optional data transmission methods like post-processing or RFID, the manual entry of offsets into the machine can be eliminated. This reduces errors that occur from operators accidentally mistyping offset values.

### More Cost-Effective than Lasers

Machines make money when they are making chips and not being used as measuring devices. Furthermore, one presetter can manage 10–30 machines which is more cost-effective than purchasing a laser for each machine.

### Consistency

Confirmation that tools are set properly, within specified tolerances, every time.

### Ease of use

Simple software makes the process as easy as possible for all users. No software engineering degrees needed!

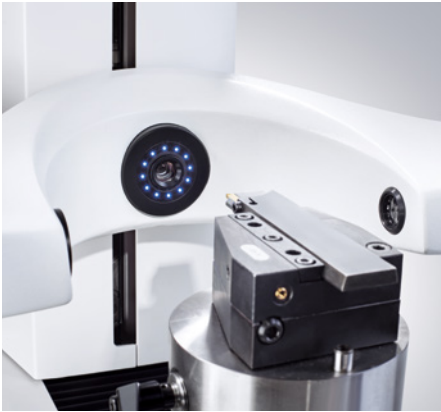
### Universal

Easy to preset milling tools, adjustable boring heads, complex multi-inserted face-mills, PCD form tools, step-drills, etc. from all makes and manufacturers.

### Industry 4.0 success

Industry 4.0 is all about using gathered data to automate changes on the fly that optimize the machining process. The future smart factory will require technologies that can receive and transmit such data. HAIMER Microset tool presetters are able to communicate with a variety of machine controls, CAD/CAM systems and tool management systems.

## Präzision und Produktivität in der Fertigung Precision and productivity in production



**Ob Voreinstellen, Schrumpfen, Wuchten oder Prüfen und Messen – wir bieten Ihnen perfekte Lösungen für alle Werkzeuggrößen und Maschinenumgebungen.** Steigern Sie mit unserem Know-how und einer breiten Produktpalette die Qualität und Präzision Ihrer Werkstücke.

**Whether presetting, shrinking, inspecting and correcting balance, or measuring – we offer the perfect solution for all tool sizes and work environments.** Improve the quality and precision of your work pieces with our know-how and wide range of products.



UNO-Baureihe – einzigartige Hightech-Features in der Einstiegsklasse der Werkzeugvoreinstellgeräte.  
UNO series – unique high-tech features in entry level tool presettters.

## Zeit und Kosten reduzieren, Werkstückqualität steigern Save time and money, improve work piece quality

### Die effizienten Werkzeugvoreinstellgeräte von HAIMER Microset optimieren Ihre Bearbeitungsprozesse von Grund auf.

Erhöhen Sie Ihre Werkzeugstandzeiten, erzielen Sie bessere Oberflächengüten und steigern Sie damit die gesamte Prozesssicherheit in Ihrer Fertigung.

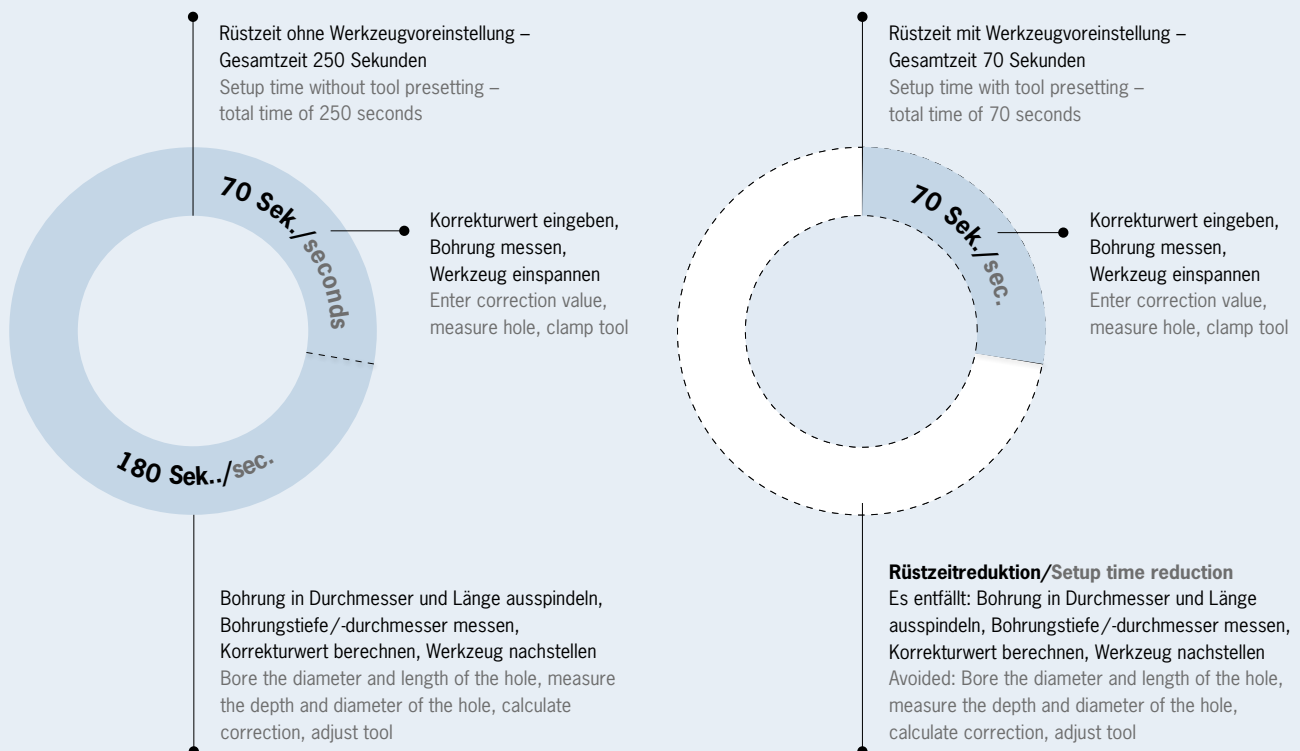
- Minimieren Sie die Stillstandszeit Ihrer Maschinen
- Reduzieren Sie Ausschuss und Werkzeugkosten
- Erhöhen Sie die Prozesssicherheit in Ihrer Fertigung
- Steigern Sie die Werkzeugstandzeit
- Erreichen Sie gleichbleibende Qualität Ihrer Produkte

### The efficient tool presetting equipment from HAIMER Microset optimizes your machining processes from the ground up.

Improve your tool life, achieve better surface finishes and boost overall process reliability in your production.

- Minimise the idle time of your machines
- Reduce scrap and tooling costs
- Increase process reliability in your production
- Improve your tool life
- Generate consistent quality in your products

## Reduzieren Sie bis zu 70 % Ihrer Rüstzeit! Reduce up to 70 % of your setup time!



### UNO-Baureihe – einzigartige Hightech-Features in der Einstiegsklasse / UNO series – entry level tool presettters include high-tech options as standard



1

**Neben Präzision, Geschwindigkeit und Zuverlässigkeit punktet die UNO-Baureihe mit zahlreichen Features in der Ausstattung.**

Das neue Design und die verbesserte Ergonomie setzen neue Standards. Es werden hochwertige Komponenten, z. B. von Festo/SMC, Bosch Rexroth/THK, Heidenhain, IDS eingesetzt.

**In addition to its precision, speed and reliability, the UNO series also includes numerous features in hardware.** The new design and improved ergonomics set the standard by using high-quality components from Festo/SMC, Bosch Rexroth/THK, Heidenhain, and IDS.



2



4



3

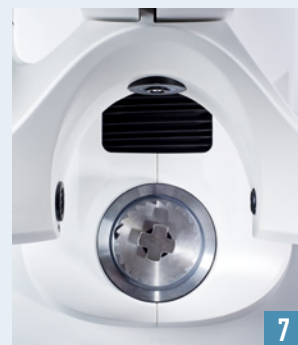


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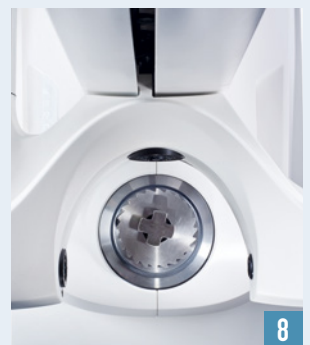


6

- 1: Kamerasystem zum Messen der Drehmitte/Camera system for setting the centre of rotation  
 2: Taktiles Messen der Drehmitte/Tactile measurement of the centre of rotation  
 3: Release-by-Touch Funktion, einfaches Verfahren ohne Knopf- oder Tastenbedienung/Release-by-touch function, easy to operate without buttons  
 4: System Unterschrank mit drei Auszügen, Türe und innen liegender Ölwanne. Zusätzlich drei Wartungsöffnungen (allseitig)/Useful system cabinet with 3 drawers, 1 door and internal oil tray. Also includes 3 maintenance doors (on all sides)  
 5: Folientastatur und μm-genaue Feinverstellung/Keypad and μm-precise adjustment  
 6: 150° schwenkbare Adapterablage/150° swivelling adapter storage  
 7+ 8: Messen nach Rachenlehrenprinzip bis Ø 100 mm/Measuring based on the snap gauge principle for diameters up to 100 mm



7



8



## UNO-BAUREIHE – NEUE FEATURES AUTOFOCUS UND AUTOMATIC DRIVE UNO SERIES – NEW AUTOFOCUS AND AUTOMATIC DRIVE FEATURES

# UNO autofocus & automatic drive – effizient und präzise UNO autofocus & automatic drive – efficient and precise



Die UNO-Baureihe bietet Ihnen in den Ausbaustufen autofocus und automatic drive entscheidende Pluspunkte für die Werkzeugvermessung auf höchstem Niveau.

Wählen Sie Ihr Gerät – ganz nach Ihren Anforderungen.

### Highlights

Verringern Sie die Arbeitslast des Bedieners durch die Automatisierung des Voreinstellprozesses mit voll- oder teilautomatischen Messfunktionen.

The autofocus and automatic drive models of the UNO series provide unique advantages for tool measurement at the highest level.

Choose the presetter that meets your needs.

### Highlights

Reduce the work load of the operator through the automation of presetting, with full or partially automated measuring functions.

### autofocus

Zum automatischen Scharfstellen der Schneide. Motorisch betriebene Spindel. Mit Komfort-Systemschrank und 24", 10-Punkt-Touch-Display im Standard.

Automatically focuses on the cutting edge. Motorised spindles with convenient system cabinet and 24", 10 point touchscreen as standard.



### automatic drive

Zur vollautomatischen, bedienerunabhängigen Werkzeugvoreinstellung und -vermessung (CNC-gesteuert, 3 Achsen). Mit Komfort-Systemschrank und 24" Touch-Display im Standard.

Fully automatic tool presetting and measurement independent of the operator (CNC-controlled, 3-axis), with convenient system cabinet and 24" touch display as standard.

# VIO *linear* – höchster Komfort und Funktionalität

## VIO *linear* – maximum ease of use and functionality

**Optimieren Sie die Prozesssicherheit in Ihrer Fertigung durch den Einsatz vollautomatischer Messabläufe.** Das ganzheitliche Gerätekonzept ermöglicht die Integration in alle, auch bereits vorhandene, Produktionsabläufe.

### Höchste Stabilität und Präzision

Die FEM-optimierte und thermostabile Grauguss-Konstruktion der VIO *linear*-Baureihe ermöglicht auch langfristig präzise Messergebnisse. Zudem sorgen hochdynamische, verschleißfreie Linearantriebe für präzise Langzeitqualität. Das parallel angeordnete Antriebs- und Führungssystem sorgt für optimale Kräfteverteilung und garantiert eine Messwiederholgenauigkeit von  $\pm 2 \mu\text{m}$ .

### Highlights

- Verwindungssteif auch bei höchsten Belastungen
- FEM-optimierte und thermostabile Grauguss-Konstruktion
- Maximales Werkzeuggewicht 160 kg
- Schnelles, geräuschloses und hochgenaues Positionieren durch einzigartigen Linearantrieb

**Optimise process reliability in your production with fully automatic measurement capabilities.** The open device platform allows for the integration of both new and existing production processes.

### Maximum stability and precision

The FEM-optimised, thermally stable cast iron construction of the VIO *linear* series ensures accurate measuring results and equipment longevity. Additionally, highly dynamic, wear-free linear drives ensure accurate long-term quality. The parallel drive and guidance system ensures optimal distribution of forces and guarantees  $\pm 2 \mu\text{m}$  measurement repeatability.

### Highlights

- Torsionally stiff even under the highest loads
- FEM-optimised and thermally stable cast iron construction
- Maximum tool weight 160 kg
- Fast, silent and highly accurate cutting edge approach via unique linear drive

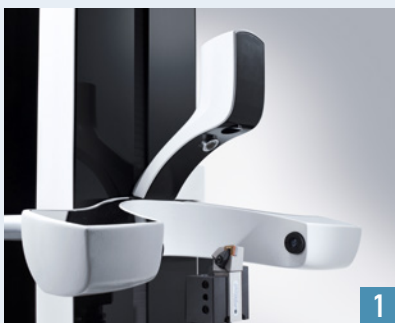


### Weltweit führend durch:

- Vollautomatische Messzyklen für höchsten Bedienkomfort
- Hochwertige Komponenten Heidenhain, Bosch Rexroth/THK
- Wartungsfreie Linearantriebe für höhere Geschwindigkeit, geringe Lautstärke und hochgenaue Positionierung
- Bedienpult ergonomisch und anwenderfreundlich
- Hochleistungs-Software Microvision VIO
- Release-by-touch
- Measure-by-touch (optional)

### Worldwide leader in innovation:

- Fully automatic measuring cycles for maximum operating convenience
- High quality components from Heidenhain, Bosch Rexroth/THK
- Maintenance free linear drives for higher speed, low noise and highly accurate positioning
- User-friendly operating panel ensures ultimate ergonomics
- High power software Microvision VIO
- Release-by-touch
- Measure-by-touch (optional)



1: Zweite Kamera zum Messen der Drehmitte (optional)/Second camera for measuring the centre of rotation (optional)  
2 + 3: Vollautomatischer Achsenantrieb durch modernste Lineartechnologie/Fully automatic axis drive via modern linear technology

## DATENAUSTAUSCH UND DATENÜBERTRAGUNG DATA EXCHANGE AND DATA TRANSFER

# Datenaustausch und Datenübertragung zur Maschine Data exchange and transfer to the machine tool

### Postprozessor / Ethernet / USB

Die postprozessierten Daten werden via USB Datenspeicher oder Ethernet LAN an das jeweilige Datenaustauschlaufwerk übertragen.

### Schnittstellen

Alle Geräte können nahezu jede Software (Tool Management, Datenbanken, CAD/CAM) mit Werkzeugdaten über eine bidirektionale Schnittstelle versorgen – egal ob als Standardlösung oder individuell angepasst. (Nicht verfügbar für UNO smart)

### Postprozessor und Schnittstelle\*

HAIMER Microset Werkzeugvoreinstellgeräte sind kompatibel zu Werkzeugmaschinen sämtlicher Hersteller. (Nicht verfügbar für UNO smart)

### HQR

Einfache Dateneingabe über HQR USB-Plug-in. Geben Sie Ihre Daten an der Werkzeugmaschine per Scan eines Codes auf einem Etikett ein, welches zuvor auf dem Voreinstellgerät gedruckt wurde, ohne jegliche manuelle Bedienung.

\*Die gemessenen Werkzeugdaten werden schnell und direkt zur Werkzeugmaschine übertragen. Steuerungen von Siemens, Heidenhain, FANUC, MAPPS und vielen weiteren werden via USB Datenspeicher oder Ethernet LAN verbunden.

### Post-processor / Ethernet / USB

Post-processed data is transferred to the relevant data exchange drive either via USB or Ethernet LAN.

### Interfaces

All presetting units can send and receive tool data to nearly all software (tool management, databases, CAD/CAM) via a bidirectional interface – regardless of whether it is a standard or a customized solution. (Not available for UNO smart)

### Post-processor and interface\*

HAIMER Microset tool presetting devices are compatible with machine tools from all manufacturers. (Not available for UNO smart)

### HQR

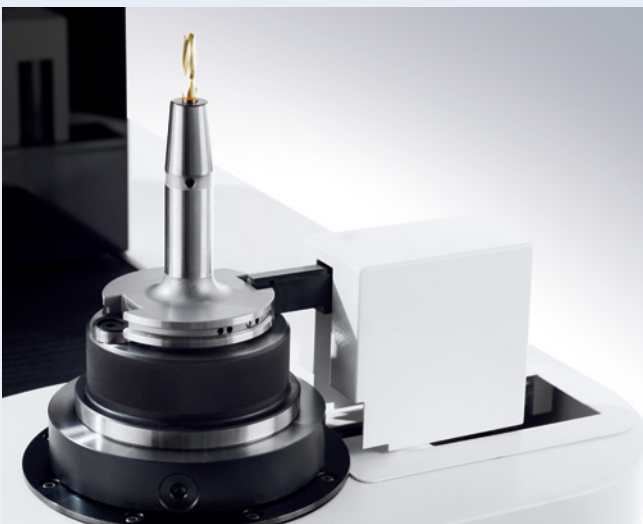
Easy data input via HQR USB plug in. Input your data at the machine tool via scan of a code on the label, printed on the presetter before, without manual operation of the operator.

\*The measured data is quickly transferred directly to the machine tool. Control systems from Siemens, Heidenhain, FANUC, MAPPS and many others can be connected by USB data storage or Ethernet LAN.

## RFID – Datenträger-System RFID – data carrier system

- Kundenspezifische Datenspeicherung
- Messabläufe mit integrierter Datenabfrage und Speicherung
- Integration aller gängigen RFID Systeme
- Automatisches und manuelles Positionieren des Schreib-/Lesekopfes bei allen gängigen Werkzeughalteraufnahmesystemen möglich (z. B. Balluff, Euchner, Mazak, Pepperl & Fuchs, Turck)

- Customer-specific data storage
- Measurement processes with integrated data retrieval and storage
- Integration of all popular RFID systems
- The read/write head can be positioned automatically and manually for all popular tool holder systems (e.g. Balluff, Euchner, Mazak, Pepperl & Fuchs, Turck)



Automatische Positionierung des Schreib-/Lesekopfes  
Automatic positioning of the read/write head



Manuelle Positionierung des Schreib-/Lesekopfes  
Manual positioning of the read/write head

## HQR-Connect

Mit HQR-Connect können Werkzeugdaten am Einstellgerät als QR-Code ausgegeben und gedruckt werden. Die Werkzeugdaten können dann über einen Scanner an der Werkzeugmaschine ausgelesen und in die Steuerung übertragen werden.

Ein am Einstellgerät erstellter QR-Code enthält die notwendigen IST-Werte und weitere Merkmale des Werkzeuges. Die im QR-Code auf dem Etikett gespeicherten Daten werden durch HQR-Connect automatisch in die Datenfelder der Werkzeugmaschine übertragen. Das HQR-Connect-System wird via USB mit der Maschinensteuerung verbunden. An der Maschinensteuerung wird dann mit einem Scanner der erstellte QR-Code gelesen und die Daten übertragen.

### Ihre Vorteile:

- Es ist keine Netzwerkverbindung notwendig
- Bis zu 45% Zeitersparnis gegenüber manueller Eingabe
- Ausschluss von manuellen Eingabefehlern oder Zahlendrehern
- Eine Nachrüstung ist jederzeit möglich

(Nicht verfügbar für UNO smart)

With HQR-Connect tool data can be edited and printed as QR Code on the presetter, then be read by a scanner at the machine tool and directly sent to the machine control.

The tool presetter creates a QR code which contains all the necessary actual values and other features of the tool. Through HQR-Connect the data stored in the QR code is automatically transferred into the data fields of the machine tool. The HQR-Connect System is connected to the machine control via USB. At the machine control, the generated QR code is read with a scanner and the data is transmitted.

### Your benefits:

- Network connectivity is not necessary
- Up to 45% time savings compared to manual entry
- Elimination of manual input errors or transposed digits
- Upgrades are possible at any time

(Not available for UNO smart)

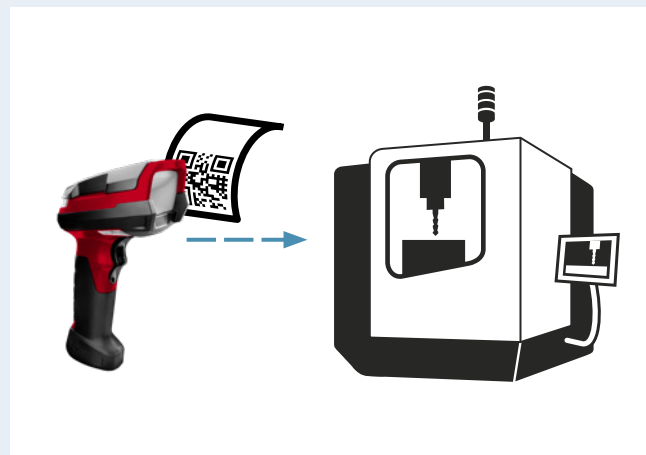
## HQR-Connect – Funktionsweise HQR-Connect – Operating Principle

- Das HQR-System funktioniert wie ein externes USB-Keyboard an der Steuerung der Werkzeugmaschine
- Die Daten werden automatisch in die Steuerung eingelesen, somit entstehen keine Lese- oder Tippfehler
- Konfiguration des HQR-Code Systems erfolgt mit einer Windows basierenden Software
- Das System besteht aus einer Elektronik und dem QR-Code Scanner
- Verfügbar für alle Steuerungen mit USB Anschluss, bei denen die Dateneingabe über eine externe Tastatur möglich ist

- The HQR-system works like an external (USB) keyboard
- The data is automatically sent to the control system, therefore reading or typing errors are eliminated
- The configuration of the HQR-system is done with a Windows based software
- The system consists of electronics and the QR code scanner
- Available for all control units with USB ports that allow data input via an external keyboard



Nach dem Messen des Werkzeuges wird ein Etikett mit QR-Code gedruckt  
After measuring the tool, a label with the QR code is printed



Das an der Maschinensteuerung angeschlossene HQR-System liest den QR-Code und übermittelt die Werkzeugdaten direkt in die Steuerung der Maschine/The HQR system is connected to the control system of the machine. It reads the QR code and transmits the tool data directly to the control system

## DATENAUSTAUSCH UND DATENÜBERTRAGUNG DATA EXCHANGE AND DATA TRANSFER

### HRFID-Connect

Mit HRFID-Connect können Werkzeugdaten am Einstellgerät auf einen RFID-Datenträger geschrieben werden, die dann wiederum über einen RFID-Leser an der Werkzeugmaschine ausgelesen und an die Steuerung übertragen werden.

Die am Einstellgerät gemessenen IST-Werte und weitere Merkmale des Werkzeuges werden auf den RFID-Datenträger geschrieben. Das HRFID-Connect-System wird via USB mit der Maschinensteuerung verbunden. Die auf dem Datenträger gespeicherten Daten werden durch HRFID-Connect automatisch in die Datenfelder der Werkzeugmaschine übertragen.

#### Ihre Vorteile:

- Es ist keine Netzwerkverbindung notwendig
- Bis zu 45% Zeitersparnis gegenüber Handeingabe
- Ausschluss von manuellen Eingabefehlern oder Zahlendrehern
- Eine Nachrüstung ist jederzeit möglich

(Nicht verfügbar für UNO smart)

With HRFID-Connect tool data can be written on a RFID-data carrier by the presetter, then be read by a RFID reader at the machine tool and directly sent to the machine control.

The actual values measured on the tool presetter and other features of the tool are saved on the RFID data carrier. The HRFID-Connect System is connected to the control system of the machine via USB. The data stored on the data carrier is automatically entered into the data fields of the machine tool via HRFID-Connect transfer.

#### Your benefits:

- Network connectivity is not necessary
- Up to 45% time savings compared to manual entry
- Elimination of manual input errors or transposed digits
- Upgrades are possible at any time

(Not available for UNO smart)

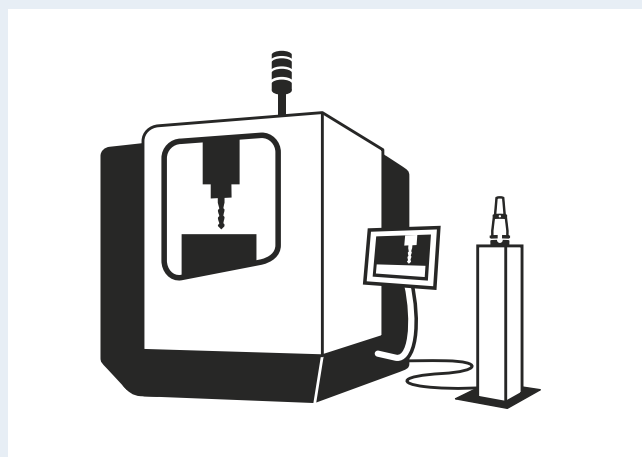
## HRFID-Connect – Funktionsweise HRFID-Connect – Operating Principle

- Das HRFID-System funktioniert wie ein externes USB-Keyboard
- Die Daten werden automatisch in die Steuerung übertragen und in die korrekten Felder eingetragen, somit entstehen keine Lese- oder Tippfehler
- Konfiguration des HRFID-Systems erfolgt mit einer Windows basierenden Software
- Das System besteht aus einer Elektronik und dem RFID-Leser
- Verfügbar für alle Steuerungen mit USB Anschluss, bei denen die Dateneingabe über eine externe Tastatur möglich ist

- The HRFID-system works like an external (USB) keyboard
- The data is automatically sent to the control system, therefore reading or typing errors are eliminated
- The configuration of the HRFID-system is done with a Windows based software
- The system consists of an electronic and the RFID reader
- Available for all control units with USB ports that allow data input via an external keyboard



Nach dem Messen des Werkzeuges werden die Daten auf den Balluff Datenträger geschrieben  
After measuring the tool, the data is transferred to the Balluff data carrier



Der an der Maschinensteuerung angeschlossene RFID-Leser liest den Balluff Datenträger und übermittelt die Werkzeugdaten direkt in die Steuerung der Maschine  
The RFID reader is connected to the machine control. It reads the Balluff data carrier and transmits the tool data directly into the control system of the machine

# UNO smart

Smarter Einstieg in die Werkzeugvoreinstellung  
Smart entry into tool presetting



Abbildung zeigt UNO smart 20|40 mit optionaler Indexierung  
Picture shows UNO smart 20|40 with optional locking indexing

## WERKZEUGVOREINSTELLGERÄTE – MANUELL TOOL PRESETTERS – MANUAL

**Das UNO smart ist unser Einstiegsgerät mit geringem Platzbedarf und einfacher Bedienung bei gleichzeitig hoher Präzision.** Besonders geeignet für Messaufgaben direkt in der Fertigung, und das zu einem unschlagbaren Preis-Leistungs-Verhältnis.

**The UNO smart is our entry-level machine featuring a small footprint, user-friendly operation and high precision.** It is particularly well suited for measurements right on the shop floor and has all this at an unbeatable price-performance ratio.

### Standard-Ausstattung/Standard Equipment

- |  |   |
|--|---|
| ■ Bildverarbeitungssystem Microvision SMART                              | ■ Microvision SMART image processing system                           |
| ■ SK50 Präzisionsspindel, manuell  | ■ SK50 high-precision spindle, manual                                 |
| ■ Robuste, langlebige Grauguss-Konstruktion                              | ■ Robust, long-life cast iron construction                            |
| ■ Thermooptimierte Werkstoffkombination für bessere Wiederholgenauigkeit | ■ Thermally optimised material combination for improved repeatability |
| ■ Manuelle Bedienung   | ■ Manual operation  |
| ■ Energiesparmodus   | ■ Energy-saving mode  |
| ■ 7" Multi-Touch Display   | ■ 7" multi-touchscreen  |
| ■ Speicher für 99 Nullpunkte   | ■ Memory for 99 zero points   |
| ■ Wiederholgenauigkeit $\pm 5 \mu\text{m}$                               | ■ $\pm 5 \mu\text{m}$ repeatability                                   |

### Messbereich/Measurement Range

- |  |                                  |
|--|----------------------------------|
| ■ Max. Werkzeugdurchmesser X-Achse/<br>Maximum tool diameter on X-axis | 400 mm                           |
| ■ Max. Werkzeuglänge Z-Achse/<br>Maximum tool length on Z-axis         | 400/700 mm                       |
| ■ Max. Werkzeuggewicht/Maximum tool weight                             | 20 kg                            |
| ■ Gewicht/Weight   | 20 40: 95 kg<br>20 70: 105 kg    |
| ■ Bestell-Nr./Order No.  | 20 40: M-G1111<br>20 70: M-G1116 |

### Optionen/Options

- Paket Technologie: Auflicht, Edgefinder, Release-by-Touch/  
Technology package: Tool inspection light, edgefinder, release-by-touch
- Paket Smart Pro: Auflicht, Edgefinder, Release-by-Touch, Systemunterschrank smart inkl. Adapterablage für drei Einsätze/"Smart Pro" package: tool inspection light, edgefinder, release-by-touch, base cabinet smart incl. adapter tray for 3 tools or adapters
- Indexierung  $4 \times 90^\circ$  und Spindelbremse/Indexing  $4 \times 90^\circ$  and spindle brake
- Manuelle Feinverstellung/Manual fine adjustment
- Etikettendrucker/Label printer
- Ausricht- und Kalibriereset/Alignment and calibration-set
- Sigma Funktion/Sigma function

Abbildung zeigt UNO smart mit Paket Smart Pro (optional)  
Picture shows UNO smart with Smart Pro package (optional)



# UNO premium

Bestseller mit Top-Komponenten als passende Ergänzung zur Werkzeugmaschine

The bestseller with high-quality components that complement your machine tool





## WERKZEUGVOREINSTELLGERÄTE – MANUELL TOOL PRESETTERS – MANUAL

**UNO premium – Für nahezu alle Anwender die richtige Lösung. Der höchste Standard für die manuelle Werkzeugvoreinstellung.** Bedienerunabhängige Ergebnisse, einfach zu benutzen mit der Möglichkeit der digitalen Datenübertragung.

**UNO premium – The right solution for almost every user. The highest standard of manual tool presetting.** Operator independent measuring results, easy to use with digital data transfer capabilities.

### Standard-Ausstattung/Standard Equipment

- |  |   |
|--|---|
| ■ Bildverarbeitungssystem Microvision UNO                                | ■ Microvision UNO image processing system                             |
| ■ SK50 Ultra-Präzisionsspindel, manuell                                  | ■ SK50 ultra-high precision spindle, manual                           |
| ■ Robuste, langlebige Grauguss-Konstruktion                              | ■ Robust, long-life cast iron construction                            |
| ■ Thermooptimierte Werkstoffkombination für bessere Wiederholgenauigkeit | ■ Thermally optimised material combination for improved repeatability |
| ■ Manuelle Bedienung   | ■ Manual operation  |
| ■ 24" Touchscreen  | ■ 24" touchscreen   |
| ■ Windows 10   | ■ Windows 10  |
| ■ Premium Unterschrank inkl. Ablage für 6 Adapter                        | ■ Premium base cabinet incl. storage for six adapters                 |
| ■ Sigma Funktion   | ■ Sigma function  |
| ■ Speicher für 1.000 Nullpunkte und Werkzeuge                            | ■ Memory for 1,000 zero points and tools                              |
| ■ USB/LAN Datenausgabe   | ■ USB/LAN data output   |
| ■ Wiederholgenauigkeit $\pm 2 \mu\text{m}$                               | ■ $\pm 2 \mu\text{m}$ repeatability                                   |

### Messbereich/Measurement Range

- |  |                                  |
|--|----------------------------------|
| ■ Max. Werkzeugdiameter X-Achse/<br>Maximum tool diameter on X-axis                        | 400 mm                           |
| ■ Max. Werkzeugdiameter Rachenlehre X-Achse/<br>Maximum snap gauge tool diameter on X-axis | 100 mm                           |
| ■ Max. Werkzeuglänge Z-Achse/<br>Maximum tool length on Z-axis                             | 400/700 mm                       |
| ■ Max. Werkzeuggewicht/Maximum tool weight   | 30 kg                            |
| ■ Gewicht/Weight   | 20 40: 140 kg<br>20 70: 155 kg   |
| ■ Bestell-Nr./Order No.  | 20 40: M-G1185<br>20 70: M-G1190 |



### Optionen/Options

- Paket Technologie: Auflicht, Edgefinder, Release-by-Touch/  
Technology package: Incident light, Edgefinder, release-by-touch
- Paket Drehen: Indexierung  $4 \times 90^\circ$  und  $3 \times 120^\circ$ , zweite Kamera/  
Turning package:  $4 \times 90^\circ$  and  $3 \times 120^\circ$  indexing, second camera
- Manuelle Feinverstellung/Manual fine adjustment
- Etikettendrucker/Label printer
- Bedienerverwaltung/User management
- RFID-System manuell (nur in Verbindung mit Premium-Pro Paket)/  
Manual RFID system (only combined with Premium-Pro package)
- Bidirektionelle Schnittstelle/Bidirectional interface
- Post Prozessor/Post-processor
- Manuelle ISS Spindel/Manual ISS spindle
- HQR-Connect/HQR-Connect
- HRFID-Connect/HRFID-Connect

# UNO autofocus

Bestens geeignet für mehrschneidige Werkzeuge  
Ideal for multi-edge tools



## WERKZEUGVOREINSTELLGERÄTE – HALBAUTOMATISCH TOOL PRESETTERS – SEMI AUTOMATIC

**UNO autofocus – Das richtige Gerät für anspruchsvolle Messaufgaben.** Profitieren Sie von der vollautomatischen Drehung der Spindel und Fokussierung der Werkzeuge bei vielen Messungen auf einer Ebene.

**UNO autofocus – The right presetter for demanding measurements.** Take advantage of full-automatic spindle operation with multiple tool measurements on one plane.

### Standard-Ausstattung/Standard Equipment

- Bildverarbeitungssystem Microvision UNO
- SK50 Ultra-Präzisionsspindel, autofocus mit Drehgeber
- Robuste, langlebige Grauguss-Konstruktion
- Thermooptimierte Werkstoffkombination für bessere Wiederholgenauigkeit
- Motorische Feinverstellung der C-Achse
- 24" Touch-Screen
- Motorische Indexierung 4 × 90° und 3 × 120°
- Pneumatische Spindelbremse
- Vakuumspannung
- Premium Unterschrank inkl. Ablage für 6 Adapter
- Sigma Funktion
- Speicher für 1.000 Nullpunkte, Werkzeuge und Werkzeuglisten
- USB/LAN Datenausgabe
- Release-by-Touch
- Edgefinder
- Auflicht
- Rundlaufgenauigkeit an der Spindel 2 µm
- Wiederholgenauigkeit ± 2 µm
- Etikettendrucker
- Windows 10

- Microvision UNO image processing system
- SK50 ultra-high precision spindle, autofocus
- Robust, long-life cast iron construction
- Thermally optimised material combination for improved repeatability
- Motorised fine adjustment of the C-axis
- 24" touch screen
- 4 × 90° and 3 × 120° motor-driven indexing
- Pneumatic spindle brake
- Vacuum clamping
- Premium base cabinet incl. storage for six adapters
- Sigma function
- Memory for 1,000 zero points, tools and tool lists
- USB/LAN data output
- Release-by-touch
- Edgefinder
- Incident light
- 2 µm spindle runout
- ± 2 µm repeatability
- Label printer
- Windows 10

### Messbereich/Measurement Range

■ Max. Werkzeugdurchmesser X-Achse/ Maximum tool diameter on X-axis	400 mm
■ Max. Werkzeugdurchmesser Rachenlehre X-Achse/ Maximum snap gauge tool diameter on X-axis	100 mm
■ Max. Werkzeuglänge Z-Achse/ Maximum tool length on Z-axis	400/700 mm
■ Max. Werkzeuggewicht/Maximum tool weight	30 kg
■ Gewicht/Weight	20 40: 240 kg 20 70: 255 kg
■ Bestell-Nr./Order No.	20 40: M-G1140 20 70: M-G1150

### Optionen/Options

- ISS-U Universal-Ultra-Präzisionsspindel mit automatischer Adaptererkennung/  
ISS-U universal ultra-high precision spindle with automatic adapter identification
- Manuelle Feinverstellung/Manual fine adjustment
- Paket Drehen: 2. Kamera inkl. Indexierung, 4 × 90°, und 3 × 120° motorisch  
Turning package: Second camera incl. indexing, 4 × 90°, and 3 × 120° motor driven
- Bidirektionale Schnittstelle/Bidirectional interface
- RFID-System manuell/Manual RFID system
- Post Prozessor/Post-processor
- HQR-Connect/HQR-Connect
- HRFID-Connect/HRFID-Connect



Automatisches Scharfstellen der Schneide  
Automatic focus on the cutting edge

# UNO automatic drive

Vollautomatisches Messen für maximalen Komfort

Fully automatic measuring for unrivalled convenience



## WERKZEUGVOREINSTELLGERÄTE – VOLLAUTOMATISCH TOOL PRESETTERS – FULLY AUTOMATIC

**UNO automatic drive als High-End-Variante bietet dank der vollautomatischen Messvorgänge beste Bedienerfreundlichkeit und kann nahezu ohne Anwenderkenntnisse genutzt werden.** Das garantiert maximale Qualität und Zeitersparnis, auch bei der Messung komplexer Werkzeuge auf mehreren Ebenen.

**With fully automated measurement capabilities, the UNO automatic drive is the high-end model in the UNO series.** The UNO automatic drive is fully independent of the operator and can be used with minimal user expertise. This guarantees maximum quality and time savings, even with complex tools on multiple planes.

### Standard-Ausstattung/Standard Equipment

- Bildverarbeitungssystem Microvision UNO
- Automatische Werkzeugvermessung in 3 Achsen
- SK50 Ultra-Präzisionsspindel, autofocus
- Motorische Feinverstellung aller Achsen
- 24" Touch-Screen
- Motorische Indexierung 4 × 90° und 3 × 120°
- Pneumatische Spindelbremse
- Vakuumspannung
- Premium Unterschrank inkl. Ablage für 6 Adapter
- Sigma Funktion
- Speicher für 1.000 Nullpunkte, Werkzeuge und Werkzeuglisten
- USB/LAN Datenausgabe
- Release-by-Touch
- Edgfinder
- Auflicht
- Rundlaufgenauigkeit an der Spindel 2 µm
- Wiederholgenauigkeit ± 2 µm
- Etikettendrucker

- Microvision UNO image processing system
- Automatic tool measurement in 3 axes
- SK50 ultra-high precision spindle, autofocus
- Motorised fine adjustment of all axes
- 24" touch screen
- 4 × 90° and 3 × 120° motor-driven indexing
- Pneumatic spindle brake
- Vacuum clamping
- Premium base cabinet includes storage for 6 adapters
- Sigma function
- Memory for 1,000 zero points, tools and tool lists
- USB/LAN data output
- Release-by-touch
- Edgfinder
- Incident light
- 2 µm spindle runout
- ± 2 µm repeatability
- Label printer

### Messbereich/Measurement Range

- |   |                                  |
|---|----------------------------------|
| ■ Max. Werkzeugdurchmesser X-Achse/<br>Maximum tool diameter on X-axis                        | 400 mm                           |
| ■ Max. Werkzeugdurchmesser Rachenlehre X-Achse/<br>Maximum snap gauge tool diameter on X-axis | 100 mm                           |
| ■ Max. Werkzeuflänge Z-Achse/<br>Maximum tool length on Z-axis                                | 400/700 mm                       |
| ■ Max. Werkzeuggewicht/Maximum tool weight  | 30 kg                            |
| ■ Gewicht/Weight  | 20 40: 240 kg<br>20 70: 255 kg   |
| ■ Bestell-Nr./Order No.   | 20 40: M-G1160<br>20 70: M-G1170 |

*Vollautomatische, bedienerunabhängige Werkzeugvoreinstellung und -vermessung  
Fully automatic tool presetting and measurement – independent of the operator*



### Optionen/Options

- ISS-U Universal-Ultra-Präzisionsspindel mit automatischer Adaptererkennung/ISS-U universal ultra-high precision spindle with automatic adapter identification
- Paket Drehen: 2. Kamera inkl. Indexierung, 4 × 90°, und 3 × 120° motorisch/Turning package: Second camera incl. indexing, 4 × 90° and 3 × 120° motor driven
- Bidirektionale Schnittstelle/Bidirectional interface
- RFID-System manuell/Manual RFID system
- X/Z-Achse einzeln lösen/individual release of X/Z-axis
- Post Prozessor/Post-processor
- HQR-Connect/HQR-Connect
- HRFID-Connect/HRFID-Connect
- Reibahlen Softwaremodul für geführte Reibahlen  
Reamer softwaremodule for guided reamers
- Historie der Messwerte/Measured value history

## VIO *linear*

Perfekt für schnelles Messen, auch für hochkomplexe Werkzeuge

Perfect for rapid measurements, even on highly complex tools



## WERKZEUGVOREINSTELLGERÄTE – VOLLAUTOMATISCH TOOL PRESETTERS – FULLY AUTOMATIC

**VIO linear – Die Komplettlösung im Bereich der voll-automatischen High-End-Geräte, mit individuellen Möglichkeiten der Werkzeugvoreinstellung.** Das modulare Konzept ermöglicht das Voreinstellen von Werkzeugen mit bis zu 1.000 mm Durchmesser und Länge.

**VIO linear – The complete solution: for fully automatic high-end tool presetting with individual options.**

The modular concept makes it possible to preset tools up to 1,000 mm in length and diameter.

### Standard-Ausstattung/Standard Equipment

- Bildverarbeitungssystem Microvision VIO
- Hochgenaue und schnelle Achspositionierung durch Linearantriebe
- ISS-U Universal-Ultra-Präzisionsspindel mit automatischer Adaptererkennung, mechanischer Klemmung und motorische Indexierung 4 × 90° und 3 × 120°
- Elektronische Indexierung 4 × 90° und 3 × 120°
- Pneumatische Spindelbremse
- Robuste, langlebige Grauguss-Konstruktion
- Thermooptimierte Werkstoffkombination für bessere Wiederholgenauigkeit
- Motorische Feinverstellung aller Achsen
- 24" Multi-Touch-Screen
- System VIO inkl. Ablage für bis zu 9 Adapter
- Sigma Funktion
- Speicher für 1.000 Nullpunkte
- Unbegrenzter Werkzeugspeicher
- Bedienerverwaltung
- Schwenkbares Bedienpult
- Edgefinder
- Auflicht
- Rundlaufgenauigkeit an der Spindel 2 µm
- Wiederholgenauigkeit ± 2 µm

- Microvision VIO image processing system
- High precision and fast axis-positioning via linear motion
- ISS-U universal ultra-high precision spindle with automatic adapter identification, mechanical clamping and motorised indexing 4 × 90° and 3 × 120°
- 4 × 90° and 3 × 120° electronic indexing
- Pneumatic spindle brake
- Robust, long-life cast iron construction
- Thermally optimised material combination for improved repeatability
- Motorised fine adjustment of all axes
- 24" multi-touch screen
- System VIO incl. storage for up to 9 adapters
- Sigma function
- Memory for 1,000 zero points
- Unlimited tool memory
- User management
- Swivelling operating panel
- Edgefinder
- Incident light
- 2 µm spindle runout
- ± 2 µm repeatability

### Messbereich/Measurement Range

■ Max. Werkzeugdurchmesser X-Achse/ Maximum tool diameter on X-axis	420/700/1000 mm
■ Max. Werkzeugdurchmesser Rachenlehre X-Achse/ Maximum snap gauge tool diameter on X-axis	100 mm
■ Max. Werkzeuglänge Z-Achse/ Maximum tool length on Z-axis	500/700/1000 mm
■ Max. Werkzeuggewicht/Maximum tool weight	160 kg
■ Gewicht/Weight	400 kg – 550 kg
■ Bestell-Nr./Order No.	<b>M-G1035*</b>



### Optionen/Options

- 2. Kamera zur Überprüfung der Drehmittenhöhe  
Second camera for measuring the centre of rotation
- Bidirektionale Schnittstelle/Bidirectional interface
- RFID-System manuell oder automatisch/Manual or automatic RFID system
- 27" Multi-Touch-Screen/27" multi-touchscreen
- Post Prozessor/Post-processor
- VIO Fit/Scan/VIO Fit/Scan
- Winkelkopf System/Angular head system
- HQR-Connect/HQR-Connect, HRFID-Connect/HRFID-Connect
- Softwareschnittstelle zur Integration des Voreinstellprozesses in eine manuelle Automatisierungszelle mit Roboter/Robot-ready software interface for integration of a robot cell to preset tools without operator
- Anschlagssystem zur automatischen Längeneinstellung für Hydrodehn- oder Spannzangenfutter/Length stop system for automatic length adjustment for hydraulic or ER collet chucks
- Direkter Fotospeicher zur einfachen direkten Speicherung einer Fotoaufnahme in den Werkzeugdaten/Direct photo storage for easy integration of tool data
- Schwenkbarer Optikträger "Gear Skyving"/Gear Skyving System
- Y-Achse zur Vermessung von außermittigen Drehwerkzeugen  
Y-axis for measurement of multi-tool turning holders
- Reibahlen Softwaremodul für geführte Reibahlen  
Reamer software module for guided reamers

\* Die Bestellnummer entspricht dem kleinsten Voreinstellgerät in X- und Z- Länge, bitte kontaktieren Sie HAIMER für die Bestellnummer der größeren Voreinstellgeräte  
\* This order number is for the smallest unit in X and Z, please contact HAIMER for the order numbers of the larger machines

# V10 *linear* toolshrink

Schrumpfen und Voreinstellen in Kombination  
Shrinking and presetting combined





## SCHRUMPFEN / VOREINSTELLEN SHRINKING / PRESETTING

Die Kombination aus Schrumpf- und Voreinstelltechnologie mit  $\mu\text{m}$ -genauen Längeneinstellungen macht das VIO *linear* auch in der toolshrink Ausführung zu einem Top-Gerät in seiner Klasse. Insbesondere bei der Verwendung von Schrumpfwerkzeugen, Schwesterwerkzeugen oder beim Einsatz von Mehrspindelmaschinen ist das VIO *linear* toolshrink erste Wahl.

The combination of shrinking and presetting technology with precise length adjustment on the  $\mu\text{m}$  scale makes the VIO *linear* top of its class, including the toolshrink variant. The VIO *linear* toolshrink is the ideal choice, especially when using shrink fit holders, duplicate assemblies, or multi-spindle machines.

### Standard-Ausstattung/Standard Equipment

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>■ Bildverarbeitungssystem Microvision VIO</li> </ul>   | <ul style="list-style-type: none"> <li>■ Microvision VIO image processing system</li> </ul>   |
| <ul style="list-style-type: none"> <li>■ ISS-U Universal-Ultra-Präzisionsspindel mit automatischer Adaptererkennung, mechanischer Klemmung und motorische Indexierung <math>4 \times 90^\circ</math> und <math>3 \times 120^\circ</math></li> </ul> | <ul style="list-style-type: none"> <li>■ ISS-U universal ultra-high precision spindle with automatic adapter identification, mechanical clamping and motorised indexing <math>4 \times 90^\circ</math> and <math>3 \times 120^\circ</math></li> </ul> |
| <ul style="list-style-type: none"> <li>■ Beste Schrumpfergebnisse unabhängig vom Halterfabrikat</li> </ul>  | <ul style="list-style-type: none"> <li>■ Best shrinking results, regardless of the holder brand</li> </ul>  |
| <ul style="list-style-type: none"> <li>■ Hochgenaue und schnelle Achspositionierung durch Linearantrieb</li> </ul>  | <ul style="list-style-type: none"> <li>■ High precision and fast axis-positioning through linear motion</li> </ul>  |
| <ul style="list-style-type: none"> <li>■ Vollautomatische HAIMER Induktionseinheit 13 kW Spule</li> </ul>   | <ul style="list-style-type: none"> <li>■ Fully automatic HAIMER induction unit 13 kW coil</li> </ul>  |
| <ul style="list-style-type: none"> <li>■ Automatische Überwachung der Schrumpfparameter</li> </ul>  | <ul style="list-style-type: none"> <li>■ Automatic monitoring of shrinking parameters</li> </ul>  |
| <ul style="list-style-type: none"> <li>■ Automatische Längeneinstellung mit <math>\pm 10 \mu\text{m}</math></li> </ul>  | <ul style="list-style-type: none"> <li>■ Automatic length adjustment within <math>\pm 10 \mu\text{m}</math></li> </ul>  |
| <ul style="list-style-type: none"> <li>■ Absaugeinrichtung mit Filter</li> </ul>  | <ul style="list-style-type: none"> <li>■ Extractor with filter</li> </ul>   |
| <ul style="list-style-type: none"> <li>■ HAIMER Kontaktkühlung</li> </ul>   | <ul style="list-style-type: none"> <li>■ HAIMER contact cooling</li> </ul>  |
| <ul style="list-style-type: none"> <li>■ 24" Touch-Screen</li> </ul>  | <ul style="list-style-type: none"> <li>■ 24" touchscreen</li> </ul>   |
| <ul style="list-style-type: none"> <li>■ Ideal in Kombination mit HAIMER Schrumpffuttern für beste Ergebnisse: Einschrumpfen auf <math>\pm 5 \mu\text{m}</math></li> </ul>  | <ul style="list-style-type: none"> <li>■ Ideally used with HAIMER shrink fit holders for best results: shrink in on <math>\pm 5 \mu\text{m}</math></li> </ul>   |
| <ul style="list-style-type: none"> <li>■ Dynamisches Schrumpfen für kurze Prozesszeiten</li> </ul>  | <ul style="list-style-type: none"> <li>■ Dynamic shrinking for short process times</li> </ul>   |
| <ul style="list-style-type: none"> <li>■ Vorinstallierte HAIMER Datenbank</li> </ul>  | <ul style="list-style-type: none"> <li>■ Pre-installed HAIMER data base</li> </ul>  |

### Messbereich/Measurement Range

- |  |                 |
|--|-----------------|
| <ul style="list-style-type: none"> <li>■ Max. Werkzeugdurchmesser X-Achse/<br/>Maximum tool diameter on X-axis</li> </ul>                        | 420 mm          |
| <ul style="list-style-type: none"> <li>■ Max. Werkzeugdurchmesser Rachenlehre X-Achse/<br/>Maximum snap gauge tool diameter on X-axis</li> </ul> | 100 mm          |
| <ul style="list-style-type: none"> <li>■ Werkzeuglänge Z-Achse Schrumpfen/<br/>Tool length on Z-axis shrinking</li> </ul>                        | 60 – 650 mm     |
| <ul style="list-style-type: none"> <li>■ Max. Werkzeuglänge Z-Achse Messen/<br/>Maximum tool length on Z-axis measuring</li> </ul>               | 500/700/1000 mm |
| <ul style="list-style-type: none"> <li>■ Max. Werkzeuggewicht/Maximum tool weight</li> </ul>   | 160 kg          |
| <ul style="list-style-type: none"> <li>■ Gewicht/Weight</li> </ul>   | 720 kg – 800 kg |
| <ul style="list-style-type: none"> <li>■ Bestell-Nr./Order No.</li> </ul>  | <b>M-G1061*</b> |



### Optionen/Options

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>■ 2. Kamera zur Überprüfung der Drehmittenhöhe/<br/>Second camera for rotation centre measuring</li> </ul>   | <ul style="list-style-type: none"> <li>■ HQR-Connect/HQR-Connect, HRFID-Connect/HRFID-Connect</li> </ul>   |
| <ul style="list-style-type: none"> <li>■ Postprozessor/Post-processor</li> </ul>  | <ul style="list-style-type: none"> <li>■ Anschlagssystem zur automatischen Längeneinstellung für Hydrodehn- oder Spannzangenfutter/Length stop system for automatic length adjustment for hydraulic or ER collet chucks</li> </ul> |
| <ul style="list-style-type: none"> <li>■ Bidirektionale Schnittstelle/Bidirectional interface</li> </ul>  | <ul style="list-style-type: none"> <li>■ Direkter Fotospeicher zur einfachen direkten Speicherung einer Fotoaufnahme in den Werkzeugdaten/Direct photo storage for easy integration of tool data</li> </ul>                        |
| <ul style="list-style-type: none"> <li>■ VIO FIT/VIO FIT, VIO Scan/VIO Scan</li> </ul>  | <ul style="list-style-type: none"> <li>■ Reibahlen Softwaremodul für geführte Reibahlen<br/>Reamer software module for guided reamers</li> </ul>   |
| <ul style="list-style-type: none"> <li>■ RFID-System manuell/Manual RFID system</li> </ul>  | <ul style="list-style-type: none"> <li>■ Quick-in/out, Schrumpfen wie mit Power Clamp i4.0 (kein Anlegen nötig)/Quick-in/out, shrinking like a Power Clamp i4.0 (no setup)</li> </ul>  |
| <ul style="list-style-type: none"> <li>■ RFID-System automatisch/Automatic RFID system</li> </ul>   | <ul style="list-style-type: none"> <li>■ Scan-Funktion für Schrumpfcodes/Scan function for shrinking parameters</li> </ul>   |
| <ul style="list-style-type: none"> <li>■ Etikettendrucker/Label printer</li> </ul>  |  |
| <ul style="list-style-type: none"> <li>■ TME Kühlsystem mit aktiver Temperaturüberwachung/<br/>TME cooling system with active temperature monitoring</li> </ul>   |  |
| <ul style="list-style-type: none"> <li>■ 27" Multi-Touch-Screen/27" multi-touchscreen</li> </ul>  |  |
| <ul style="list-style-type: none"> <li>■ Softwareschnittstelle zur Integration des Voreinstellprozesses in eine mannlose Automatisierungszelle mit Roboter/Robot-ready software interface for integration of a robot cell to preset tools without operator</li> </ul> |  |

\* Die Bestellnummer entspricht dem kleinsten Voreinstellgerät in X- und Z-Länge, bitte kontaktieren Sie HAIMER für die Bestellnummer der größeren Voreinstellgeräte  
\* This order number is for the smallest unit in X and Z, please contact HAIMER for the order numbers of the larger machines

# Microvision – einfach und intuitiv

## Microvision – easy and intuitive

**Die Microvision Software ermöglicht Anwendern, bereits nach äußerst kurzer Zeit, hohe Einsparpotenziale bei der Arbeitsvorbereitung zu generieren.**

Dies erfolgt durch schnelles, genaues und bedienerunabhängiges Messen und Einstellen von Werkzeugen. Diese moderne Bildverarbeitung sorgt für schnelles und präzises Vermessen der Werkzeuge und somit für maximale Qualität in Ihrem Fertigungsprozess. Mit neuesten Messverfahren können auch komplexe Werkzeuge innerhalb kürzester Zeit vermessen werden.

**Microvision software enables fast and easy inspection of complex shapes and features, creating even more time savings potential during setup.**

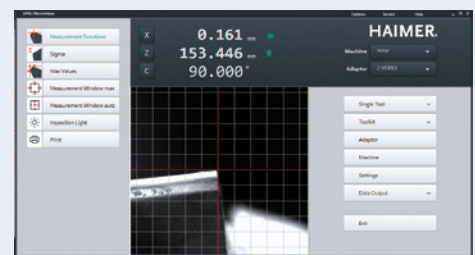
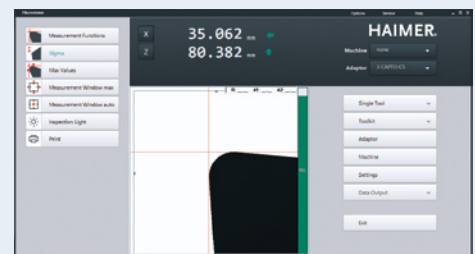
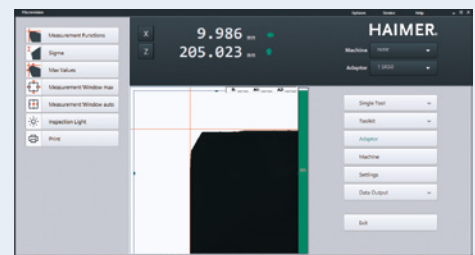
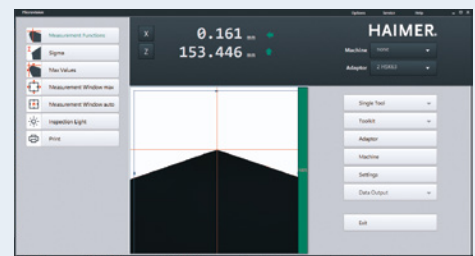
These savings are achieved due to the machine's ability to quickly and precisely measure and set tools, independent from the operator. Modern image processing ensures that the tools are quickly and accurately measured and in turn guarantees the highest quality in your production processes. Complex tools can be measured within an incredibly short period of time with the latest measuring techniques.

### Highlights

- Schnelle und präzise Messergebnisse dank intuitiver Bedienung
- Genaue Messwerte bei komplexen Werkzeugen durch exaktes Fokusfenster
- Benutzerverwaltung und Rechtevergabe
- Darstellung im aktuellen 16:9 Format
- Fadenkreuz fest/fliegend mit automatischen Messlinien und automatischer Kontur- auswertung
- Identisches Design für die Software aller Geräteklassen
- Windows basiert
- Messmakros für schnelles Anlegen von automatischen Messabläufen
- Erstellen von kundenspezifischen Master- messzyklen möglich
- Template Softwaremodul zum einfachen Kopieren des Messmakros auf gleichartige Werkzeug- typen, z. B. Bohrer von einer Größe auf die nächste
- Historie der Messwerte zur Sicherung der Mess- ergebnisse und Prozessoptimierung
- HQRID Scanner ready, zum Scannen und Identi- fizieren eines Werkzeugs und Abrufen des Messprogramm für das gleiche Werkzeug
- QR-Code ausdrucken für einfaches Schrumpfen mittels Schrumpfparameter-Code für nicht-HAIMER Werkzeugaufnahmen
- Druck-Editor für das einfache Anpassen des Ausdrucks
- Direkter Fotospeicher zur direkten Erstellung und Speicherung eines Fotos in den Werkzeug- daten, direkt am Voreinstellgerät
- Remote Zugriff, legen Sie Ihre Werkzeugdaten komfortabel am Schreibtisch an
- Messregeln, die eine Berechnung von theo- retischen Messpunkten ermöglichen

### Highlights

- Intuitive operation ensures quick and precise measurement results
- Accurate measurement of complex cutters with the precise focus window
- User administration and access privileges
- Display currently in 16:9 format
- Cross hair fixed/floating with automatic measurement lines and automatic contour evaluation
- Identical software design for all Microset models
- Windows based
- Measuring macros for fast creation of auto- matic measuring sequences
- Creation of customised master measuring cycle of identical tool types, e.g. drill from one size to the next
- History of measured data for security of meas- uring results and process optimisation
- HQRID scanner ready, to scan and ID tools and to find the measuring cycle of that specific tool
- QR code parameter print for easy shrink parameter identification for non-HAIMER holders
- Print Editor for easy adjustment of printouts
- Direct photo storage to easily add pictures to the database, right at the presetter
- Remote access, program your tool from your desk
- Measurement rules that allow calculation of theoretical measurement points



## Adapter und Spindeln für alle Anforderungen Adapters and spindles for all requirements

**Hochwertige und präzise Adapter und Spindeln sind für die genaue Werkzeugvoreinstellung wichtige Elemente.**

Wir bieten Ihnen in diesem Segment ein außerordentlich breites Spektrum, damit Sie einfach und schnell zum gewünschten Ergebnis gelangen. Wir beraten Sie gerne zu Ihren individuellen Anforderungen und Anwendungen.

Besonders die ISS-U Universal-Ultra-Präzisionsspindel sorgt für höchstgenaue Direktspannung ohne Adaptierung bei größter Spannkraft und bester Rundlaufgenauigkeit < 0,002 mm.

**High-quality, precise adapters and spindles are important elements for precise tool presetting.**

We offer an extraordinarily wide range of adapters and spindles so that you can quickly and easily get the results you need. We will gladly provide consultation regarding your individual requirements and applications.

The ISS-U universal ultra-high precision spindle enables incredibly high-precision direct clamping. The ISS-U spindle utilizes the highest clamping forces with runout accuracy < 0.002 mm, all without need for adapters.

### Beispiele für Adapter/Examples of Adapters



SK50 Ultrapräzisionsadapter/SK50 Ultra precision adapter  
1: HSK 63-Adapter mit integrierter Klemmung/HSK 63 adapter with integrated clamping  
2: VDI 40-Adapter mit manueller Klemmung/VDI 40 adapter with manual clamping  
3: PSC-Adapter mit integriertem Spannsystem/PSC adapter with integrated manual clamping system

Vom Standardwerkzeughalter bis hin zum kundenspezifischen Sonderwerkzeughalter bieten wir Ihnen die Lösung für jeden Fall. Dabei profitieren Sie von unserer jahrelangen Erfahrung im Bereich der Sonderkonstruktion.

We offer solutions for all requirements, from standard tool holders to customer-specific special tool holders. You benefit from our many years of experience in tool design.

### Beispiele für Spindeln/Examples of spindles



Universalspannsystem/Universal clamping system  
1: ISS-U Universal-Ultra-Präzisionsspindel/ISS-U universal ultra-high precision spindle  
2: Vorsatzhalter (SK, HSK, PSC, VDI)/Attachment holder (SK, HSK, PSC, VDI)  
3: Komplettsystem/Complete system

Unser Angebot: Universalspannsysteme, die Werkzeuge unabhängig von der Kopfbolzengeometrie präzise und zuverlässig spannen. Ebenso Vorsatzhalter für alle marktüblichen Werkzeugaufnahmesysteme.

Our offer: the Universal clamping system clamps tools precisely and reliably, regardless of the tool holder's geometry. This also applies to the attachment holder (2), which was designed for all common tool holder systems on the market.

## WERKZEUGVOREINSTELLUNG – ADAPTER MIT INTEGRIERTER KLEMMUNG TOOL PRESETTING – ADAPTER WITH INTEGRATED CLAMPING



### Adapter mit integrierter Klemmung.

Erhältlich in den Kegelgrößen  
HSK-ACET 32/BDF 40 – HSK-ACET 100/BDF 125, HSK-F80  
Makino, PSC 32 – PSC 80, KM 32 – KM 80, VDI 16 – VDI 60,  
VDI 25 mit Trifix – VDI 50 mit Trifix, BMT 40 – BMT 75

### Adapter with integrated clamping.

Available in taper sizes  
HSK-ACET 32/BDF 40 – HSK-ACET 100/BDF 125, HSK-F80  
Makino, PSC 32 – PSC 80, KM 32 – KM 80, VDI 16 – VDI 60,  
VDI 25 with Trifix – VDI 50 with Trifix, BMT 40 – BMT 75

### Reduzierhülsen von SK50 auf SK/BT/CAT/PSC/KM/VDI/BMT mit Spannsystem

Reduction sleeves from SK50 to SK/BT/CAT/PSC/KM/VDI/BMT adapter with clamping system

Für Kegelgröße/For taper size	Höhe H/Height H	Bestell-Nr./Order No.
■ HSK-ACET 25	50 mm	MR1055
■ HSK-ACET 32/BDF 40	50 mm	MR1034
■ HSK-ACET 40/BDF 50	60 mm	MR1035
■ HSK-ACET 50/BDF 63	70 mm	MR1036
■ HSK-ACET 63/BDF 80	80 mm	MR1037
■ HSK-ACET 80/BDF 100	90 mm	MR1038
■ HSK-ACET 100/BDF 125	110 mm	MR1039
■ HSK-F80 Makino	80 mm	MR4071
■ PSC 32	70 mm	MR1040
■ PSC 40	80 mm	MR1046
■ PSC 50	90 mm	MR1047
■ PSC 63	120 mm	MR1048
■ PSC 80	140 mm	MR1049
■ KM 32	40 mm	MR3200
■ KM 40	40 mm	MR3210
■ KM 50	60 mm	MR3220
■ KM 63	60 mm	MR3230
■ KM 80	80 mm	MR3240
■ VDI 16	70 mm	MR1027
■ VDI 20	70 mm	MR1028
■ VDI 25	70 mm	MR1029
■ VDI 30	80 mm	MR1030
■ VDI 40	80 mm	MR1031
■ VDI 50	110 mm	MR1032
■ VDI 60	115 mm	MR1033
■ VDI 25 mit Trifix/with Trifix	70 mm	MR1200
■ VDI 30 mit Trifix/with Trifix	80 mm	MR1210
■ VDI 40 mit Trifix/with Trifix	80 mm	MR1220
■ VDI 50 mit Trifix/with Trifix	110 mm	MR1230
■ BMT 40	95 mm	MR3100
■ BMT 45	95 mm	MR3104
■ BMT 50	95 mm	MR3107
■ BMT 55	95 mm	MR3103
■ BMT 60	95 mm	MR3101
■ BMT 65	95 mm	MR3105
■ BMT 75	95 mm	MR3106
■ Adapter SK50 : ER11		MR5010
■ Adapter SK50 : ER16		MR5011
■ Adapter SK50 : ER20		MR5012
■ Adapter SK50 : ER25		MR5013
■ Adapter SK50 : ER32		MR5014

## WERKZEUGVOREINSTELLUNG – ADAPTER MIT MANUELLER KLEMMUNG TOOL PRESETTING – ADAPTER WITH MANUAL CLAMPING



### Adapter ohne Spannsystem.

Erhältlich in den Kegelgrößen  
SK/BT/CAT/ANSI 20 – SK/BT/CAT/ANSI 45, HSK-ACET 25  
BDF 32 – HSK-ACET 100/BDF 125, PSC 32 – PSC 80,  
VDI 16 – VDI 60

### Adapter without clamping system.

Available in taper sizes  
SK/BT/CAT/ANSI 20 – SK/BT/CAT/ANSI 45, HSK-ACET 25  
BDF 32 – HSK-ACET 100/BDF 125, PSC 32 – PSC 80,  
VDI 16 – VDI 60

### Reduzierhülsen von SK50 auf SK/BT/CAT/BBT\*/PSC/KM ohne Spannsystem

Reduction sleeves from SK50 to SK/BT/CAT/BBT\*/PSC/KM adapter without clamping system

Für Kegelgröße/For taper size	Höhe H/Height H	Bestell-Nr./Order No.
■ SK/BT/CAT/ANSI 20	45 mm	MR1004
■ SK/BT/CAT/ANSI 25	45 mm	MR1003
■ SK/BT/CAT/ANSI/BBT* 30	25 mm	MR1001
■ SK/BT/CAT/ANSI/BBT* 40	20 mm	MR1000
■ SK/BT/CAT/ANSI 45	25 mm	MR1002
■ HSK-ACET 25/32 BDF	50 mm	MR1070
■ HSK-ACET 32/40 BDF	40 mm	MR1010
■ HSK-ACET 40/50 BDF	40 mm	MR1011
■ HSK-ACET 50/63 BDF	40 mm	MR1012
■ HSK-ACET 63/80 BDF	55 mm	MR1013
■ HSK-ACET 80/100 BDF	60 mm	MR1014
■ HSK-ACET 100/125 BDF	90 mm	MR1015
■ PSC 32	30 mm	MR1063
■ PSC 40	30 mm	MR1064
■ PSC 50	30 mm	MR1065
■ PSC 63	30 mm	MR1066
■ PSC 80	70 mm	MR1067
■ VDI 16	60 mm	MR1020
■ VDI 20	60 mm	MR1021
■ VDI 25	40 mm	MR1022
■ VDI 30	40 mm	MR1023
■ VDI 40	40 mm	MR1024
■ VDI 50	50 mm	MR1025
■ VDI 60	130 mm	MR1026



**ISS Adapter mit automatischem Spannsystem.**

- Geringer Messwegverlust durch standardisierte Adapterhöhe
- Bedienerunabhängiges Spannen der Werkzeuge
- Hohe Adapter-Wechselgenauigkeit

**ISS Adapter with automatic clamping system.**

- Minimal loss of measuring range (in Z-axis) due to standardized adapter height
- Constant tool clamping regardless of the operator
- High change accuracy of the adapter

**ISS Adapter mit automatischem Spannsystem**  
**ISS Adapter with automatic clamping system**

Für Kegelgröße/For taper size	Bestell-Nr./Order No.
<b>HSK</b>	
■ HSK-E25	MR4070
■ HSK-ACET 32/BDF 40	MR3024
■ HSK-ACET 40/BDF 50	MR3025
■ HSK-ACET 50/BDF 63	MR3026
■ HSK-ACET 63/BDF 80	MR3027
■ HSK-ACET 80/BDF 100	MR3028
■ HSK-ACET 100/BDF 125	MR3029
■ HSK 125	MR4076
■ HSK-F80 Makino	MR3050
<b>PSC</b>	
■ PSC 32	MR3048
■ PSC 40 - IKZ	MR3030
■ PSC 50 - IKZ	MR3031
■ PSC 63 - IKZ	MR3032
■ PSC 80 - IKZ	MR3033
■ PSC 100 - IKZ	MR3010
<b>VDI</b>	
■ VDI 16 mm mit manueller Klemmung/with manual clamping	MR3034
■ VDI 20 mm mit manueller Klemmung/with manual clamping	MR3035
■ VDI 25 mm mit manueller Klemmung/with manual clamping	MR3036
■ VDI 30 mm mit manueller Klemmung/with manual clamping	MR3037
■ VDI 40 mm mit manueller Klemmung/with manual clamping	MR3038
■ VDI 50 mm mit manueller Klemmung/with manual clamping	MR3039
■ VDI 60 mm mit manueller Klemmung/with manual clamping	MR3040
<b>SK/BT/ANSI/CAT/BBT</b>	
■ SK, BT, ANSI, CAT, BBT*30	MR3044
■ SK, BT, ANSI, CAT, BBT*40	MR3045
■ SK, BT, ANSI, CAT 45	MR3022
■ SK, BT, ANSI, CAT, BBT*50	MR3046
■ SK, BT, ANSI, CAT, BBT*60	MR3060



**ISS Adapter mit automatischem Spannsystem.**

- Geringer Messwegverlust durch standardisierte Adapterhöhe
- Bedienerunabhängiges Spannen der Werkzeuge
- Hohe Adapter-Wechselgenauigkeit

**ISS Adapter with automatic clamping system.**

- Minimal loss of measuring range (in Z-axis) due to standardized adapter height
- Constant tool clamping regardless of the operator
- High change accuracy of the adapter

**ISS Adapter mit automatischem Spannsystem**  
**ISS Adapter with automatic clamping system**

Für Kegelgröße/For taper size	Bestell-Nr./Order No.
<b>KM</b>	
■ KM32	M-R3047
■ KM40	M-R3061
■ KM50	M-R3062
■ KM63	M-R3063
■ KM80	M-R3064
■ KM32 mit manueller Klemmung/with manual clamping	M-R3091
■ KM40 mit manueller Klemmung/with manual clamping	M-R3092
■ KM50 mit manueller Klemmung/with manual clamping	M-R3093
■ KM63 mit manueller Klemmung/with manual clamping	M-R3094
■ KM80 mit manueller Klemmung/with manual clamping	M-R3095
<b>BMT</b>	
■ BMT40	M-R3121
■ BMT45	M-R3122
■ BMT55	M-R3124
■ BMT60	M-R3125
■ BMT65	M-R3126
■ BMT75	M-R3127
<b>Nikken</b>	
■ Nikken 3 Lock ISS Adapter 40	M-R4072
■ Nikken 3 Lock ISS Adapter 50	M-R4073
<b>Toolshrink</b>	
■ HSK-32 A/E toolshrink	M-R1077
■ HSK-40 A/E toolshrink	M-R1075
■ HSK-50 A/E toolshrink	M-R1074
■ HSK-63 A/E toolshrink	M-R1073
■ HSK-80 A/E toolshrink	M-R1088
■ HSK-100 A/E toolshrink	M-R1076
■ PSC 40 - IKZ/toolshrink	M-R1080
■ PSC 50 - IKZ/toolshrink	M-R1078
■ PSC 63 - IKZ/toolshrink	M-R1079

# Technische Daten Technical data

		UNO smart	UNO premium
<b>Messbereich/Measurement Range</b>			
Max. Werkzeugdurchmesser/Maximum tool diameter	mm	400	400/(420 optional)
Max. Werkzeugdurchm. für Messung nach Rachenlehrenprinzip/Max. tool diameter for measuring using the snap gauge principle	mm	–	100
Max. Werkzeuglänge Z-Achse/Maximum tool length on Z-axis	mm	400/700	400/700
Max. Werkzeuglänge Schrumpfen/Maximum tool length shrinking	mm	–	–
<b>Bedienung/Operation</b>			
Manuell/Manual		•	•
Autofocus/Autofocus		–	–
Vollautomatisch/Fully automatic		–	–
Schrumpfen/Shrinking		–	–
<b>Unterschrank/Base cabinet</b>			
System Unterschrank smart inkl. Ablage für 3 Adapter/System base cabinet smart including storage for 3 adapters		◦	–
System Unterschrank Premium inkl. Ablage für 6 Adapter/System base cabinet premium including storage for 6 adapters		–	•
System VIO <sup>1)</sup> inkl. Ablage für bis zu 9 Adapter/System VIO <sup>1)</sup> including storage for up to 9 adapters		–	–
<b>Spindel/Spindle</b>			
SK50 Präzisionsspindel, manuell/SK50 high precision spindle, manual		•	–
SK50 Ultra-Präzisionsspindel, manuell/SK50 ultra-high precision spindle, manual		–	•
SK50 Ultra-Präzisionsspindel, autofocus/SK50 ultra-high precision spindle, autofocus		–	–
ISS-U Universal-Ultra-Präzisionsspindel, manuell/ISS-U universal ultra-high precision spindle, manual		–	◦
ISS-U Universal-Ultra-Präzisionsspindel, autofocus/ISS-U universal ultra-high precision spindle, autofocus		–	–
Automatische Adaptererkennung/Automatic adapter recognition		–	–
Mechanische Spannung/Mechanical clamping		–	–
Vakuumspeisung/Vacuum clamping		–	•
Spindelbremse/Spindle brake		◦	•
Indexierung 4 × 90° und 3 × 120°/4 × 90° and 3 × 120° indexing		◦	◦
<b>Genauigkeit/Accuracy</b>			
Rundlaufgenauigkeit an der Spindel/Spindle runout	µm	3	2
Wiederholgenauigkeit/Repeatability	µm	± 5	± 2
<b>Drehmittelmessung/Turning centre measurement</b>			
Messuhr inkl. Indexierung 4 × 90°/Dial gauge incl. 4 × 90° indexing		◦	–
Kamera inkl. Indexierung 4 × 90°/Camera incl. 4 × 90° indexing		–	◦
<b>Sonstiges/Miscellaneous</b>			
Auflicht/Incident light		◦	◦
Edgefinder/Edgefinder		◦	◦
Magnetboard/Magnet board		–	◦
7" Touch-Screen/7" touchscreen		•	–
24" Touch-Screen/24" touchscreen		–	•
27" Touch-Screen/27" touchscreen		–	–
Measure-by-Touch/Measure-by-touch		–	–
Release-by-Touch/Release-by-touch		◦	◦
X/Z-Achse einzeln lösen und spannen/Individual release and clamping of X/Z-axis		–	◦
Joystick/Joystick		–	–
<b>Software/Software</b>			
Bildverarbeitung/Image processing		Microvision SMART	Microvision UNO
Nullpunkte/Zero points		99	1000
Werkzeugspeicher/Tool storage unit		–	1000
Sigma Funktion/Sigma function		◦	•
Bedienerverwaltung/User management		–	◦
<b>Datenausgabe/Data output</b>			
Etikettendruck/Label printing		◦	◦
USB/USB		–	•
LAN/Netzwerk/LAN/network		–	•
Postprozessor/Post-processor		–	◦
Bidirektionale Schnittstelle/Bidirectional interface		–	◦
RFID-System manuell/Manual RFID system		–	◦
RFID-System automatisch/Automatic RFID system		–	–
HQR-Connect/HQR-Connect		–	◦
HRFID-Connect/HRFID-Connect		–	◦

• Standard/Standard ◦ Option/Optional – Nicht verfügbar/Not available

<sup>1)</sup> Systemunterschrank bei VIO linear toolshrink inkl. 3 Adapterablagen/<sup>1)</sup> System base cabinet VIO linear toolshrink including storage for 3 adapters



UNO autofocus	UNO automatic drive	VIO <i>linear</i>	VIO <i>linear</i> toolshrink
400/(420 optional)	400/(420 optional)	420/700/1000	420/700/1000
100	100	100	100
400/700	400/700	500/700/1000	500/700/1000
-	-	-	650
•	•	•	•
•	•	•	•
-	•	•	•
-	-	-	•
-	-	•	•
•	•	-	-
-	-	•	•
-	-	-	-
•	•	-	-
-	-	-	-
◦	◦	•	•
◦	◦	◦	◦
◦	◦	◦	•
•	•	•	-
•	•	•	•
◦	◦	•	•
2	2	2	2
± 2	± 2	± 2	± 2
-	-	-	-
◦	◦	◦	◦
•	•	•	•
•	•	•	•
•	•	-	-
-	-	-	-
•	•	•	•
-	-	◦	◦
-	-	◦	◦
•	•	•	•
◦	◦	•	•
-	-	•	•
Microvision UNO	Microvision UNO	Microvision VIO	Microvision VIO
1000	1000	1000	1000
1000	1000	unbegrenzt/unlimited	unbegrenzt/unlimited
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
◦	◦	◦	◦
◦	◦	◦	◦
◦	◦	◦	◦
-	-	◦	◦
◦	◦	◦	◦
◦	◦	◦	◦

## 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

- 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.
- 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.
- 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.
- As far as can be reasonably expected on the part of the customer, partial shipments are permissible.

### III. Payment

- The goods are to be paid in full, no deductions, within 30 calendar days of date of invoice.
- 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.
- 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.
- 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.
- 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

- 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.
- 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 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 majeure, 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, etc., 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

- 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%.
- All goods delivered to the customer remain our property until all claims arising from the business relationship with the customer are paid in full.
- 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.
- 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.
- 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.
- 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, tortious 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.
- 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.
- 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

- Delivery dates and delivery periods are only binding if they are confirmed by us explicitly in writing.
- 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 particular 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 confidentially and may not be used or applied in any manner without our prior written consent.

## XV. Export and Compliance, confidentiality

- 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.

- 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

- 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.
- 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.
- 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.
- 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.
- 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

- 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](https://www.haimer.com/shop/catalog/downloads/files/22_06_CodeOfConduct_210x297/22_06_CodeOfConduct_210x297_EN.pdf)
- 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.

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