Holistic solutions for efficient tool logistics

SETTING | MEASURING | DISPENSING

Tool and process solutions combined with comprehensive services

We see ourselves as a technology partner ready to support you in the development of efficient and resource-saving manufacturing processes with standard tools, individual tool concepts and tool detail optimisation. Our tools meet the requirements for process reliability, offer high levels of precision and are easy to handle. How do we achieve this? Through advanced development and construction methods and production at state-of-the-art manufacturing facilities.

You're looking for the perfect tool for your task but also want to find a partner who can take over and manage the entire planning stage of your process? If that sounds familiar, we're here for you. We support you during all phases of production and keep your manufacturing processes at the highest level – by being highly productive, economical and process-reliable. We also offer you complete networked solutions for all peripheral tasks related to the actual machining process.
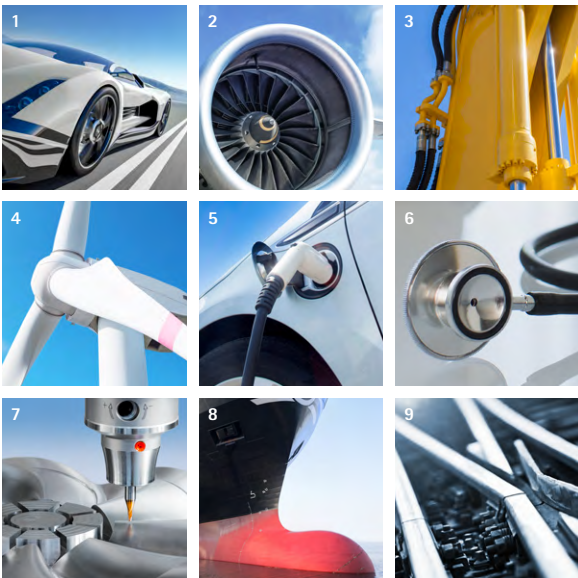
Sectors

1. Automotive
2. Aerospace
3. Fluid technology
4. Energy production
5. Electric mobility
6. Medical technology
7. Die & mould sector
8. Shipbuilding
9. Rail transport

Subsidiaries offering production, sales and service in 25 countries
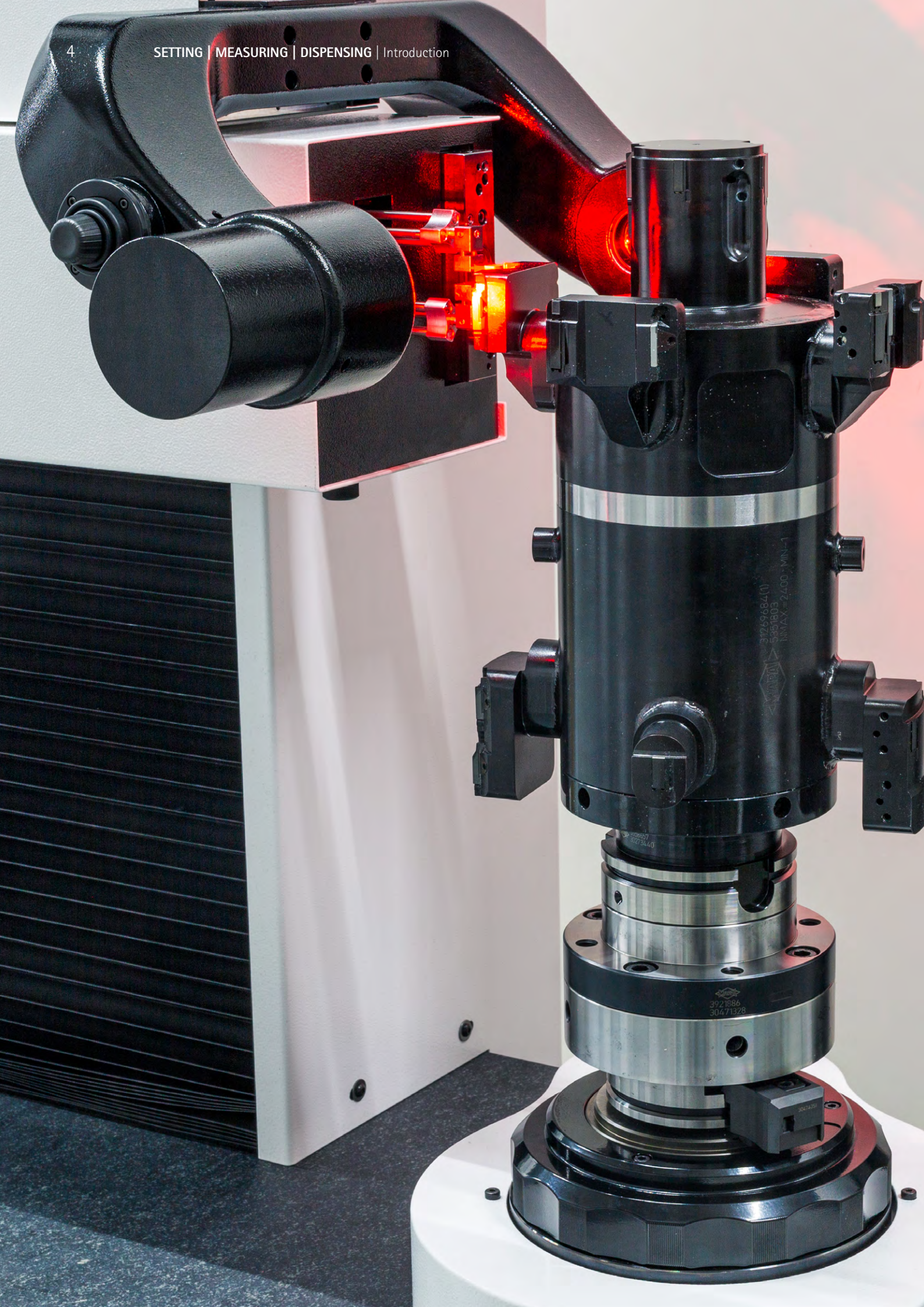
Representatives in over 19 countries

Over
5,000
employees worldwide

No. 1
technology leader
for the machining
of cubic parts

Product lines

1 Reaming and fine boring
2 Drilling from solid, boring and countersinking
3 Milling
4 Turning
5 Actuating
6 Clamping
7 Setting, measuring and dispensing
8 Services

CONTENTS

HISTORY

MAPAL setting fixtures – a success story from the start

MAPAL is the recognised specialist for fine bore machining using adjustable tools. The exact setting and measurement of these tools is a prerequisite for high part quality. The lack of suitable equipment for setting tools with guide pads led MAPAL to get involved in the development and manufacture of mechanical and electronic setting fixtures over 30 years ago. MAPAL has always placed the utmost importance on meeting the tightest of tolerances of < 2 µm and on an extraordinarily long service life for its devices.

MAPAL setting fixtures are extremely exact thanks to the combination of a precise basic mechanical set-up and a tactile measuring method. Among other aspects, measuring errors due to vibrations or oscillations are almost completely eliminated by the solid mechanical construction with a granite slab and the vibration-damped adjustable feet. Errors caused by temperature fluctuations are also prevented through the use of high-quality materials.

MN 520
The vertical setting fixture MN 520 has an additional guide tower for even more stability and accuracy during the setting process.

MN 500
The first electronic setting fixture from MAPAL with a horizontal arrangement of the tool.

MAPAL guide pad technology

At the time, there were no suitable setting fixtures available for reamers and fine boring tools with guide pads and inserts. In order to be able to tackle a setting process with high precision, MAPAL decides to develop its own high-quality setting fixtures.

1991

1988

1983

1978

70er

First setting fixture
The centre cradle is the first manual setting fixture from MAPAL for setting tools with guide pads with a high level of precision.

MN 510
The first electronic setting fixture from MAPAL with a vertical arrangement of the tool.

2023

UNISET–V expert

MN 540

The vertical setting fixture MN 540 is equipped with a solid low-vibration granite slab that improves precision during the setting process. A camera system for optical setting is also fitted to this device for the first time.

2009

2008

2001

CNC and optical measuring method

Starting in 2009, the first setting fixtures are equipped with a CNC controller. At the same time, it is also possible to set tools using an optical measuring method.

Administering and dispensing items

The first version of the UNIBASE-M tool dispensing system reaches market maturity. All stored tools are neatly arranged and intuitively manageable.

MN 530

Compared to its predecessor in the series, the MN 530 has even larger measuring ranges and a revised measuring unit.

From necessity to strategic business area
With the market launch of MAPAL setting fixtures, it became possible to set tools with guide pads with a high level of precision.

COMPETENCE
# SETTING | MEASURING | DISPENSING

Holistic solutions for efficient tool logistics

In modern production, components such as setting fixtures and storage systems are vital for the technical and logistical processing of tools. The efficiency of these processes depends to a large extent on a targeted data structure as well as the reliability and intuitive usability of the devices. MAPAL products and services provide holistic solutions for this purpose.

All the essential elements for the setting and logistics area are available for planning the tool-setting area and equipping it with tool management software and hardware components related to setting, measuring and dispensing.
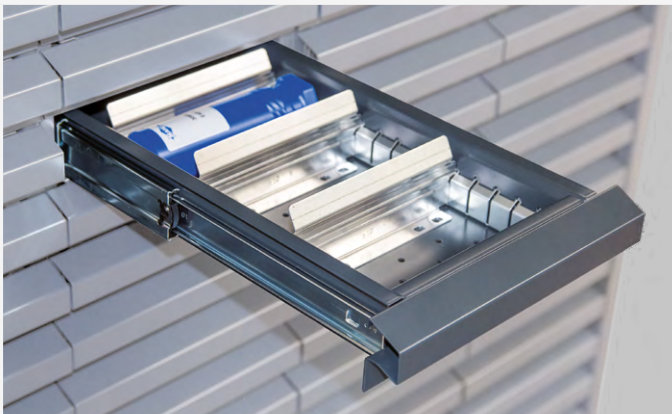

Setting and measuring
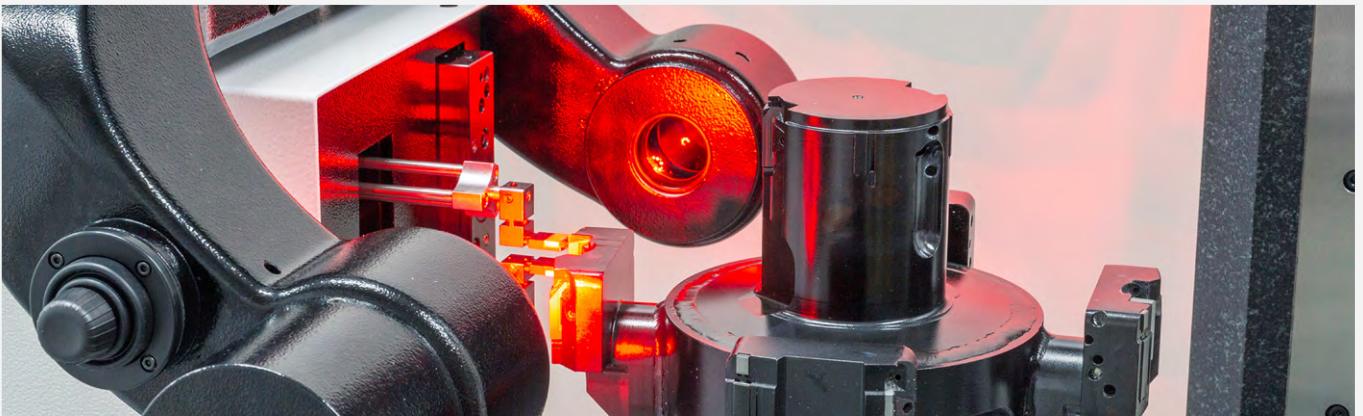
Setting and measuring

- Mechanical and electronic setting fixtures
- µ-precise setting and measuring for every type of drill, milling cutter or reamer
- The right setting fixture is available for every tool and every setting requirement
- Electronic data transfer of tool data

Dispensing

Dispensing

- Flexibly configurable tool dispensing systems to suit requirements
- Optimised day-to-day work thanks to continuous tool availability and an overview of the tools
- Optional integration into existing cabinet system and inventory control system
- Management possible from any end device and operating system
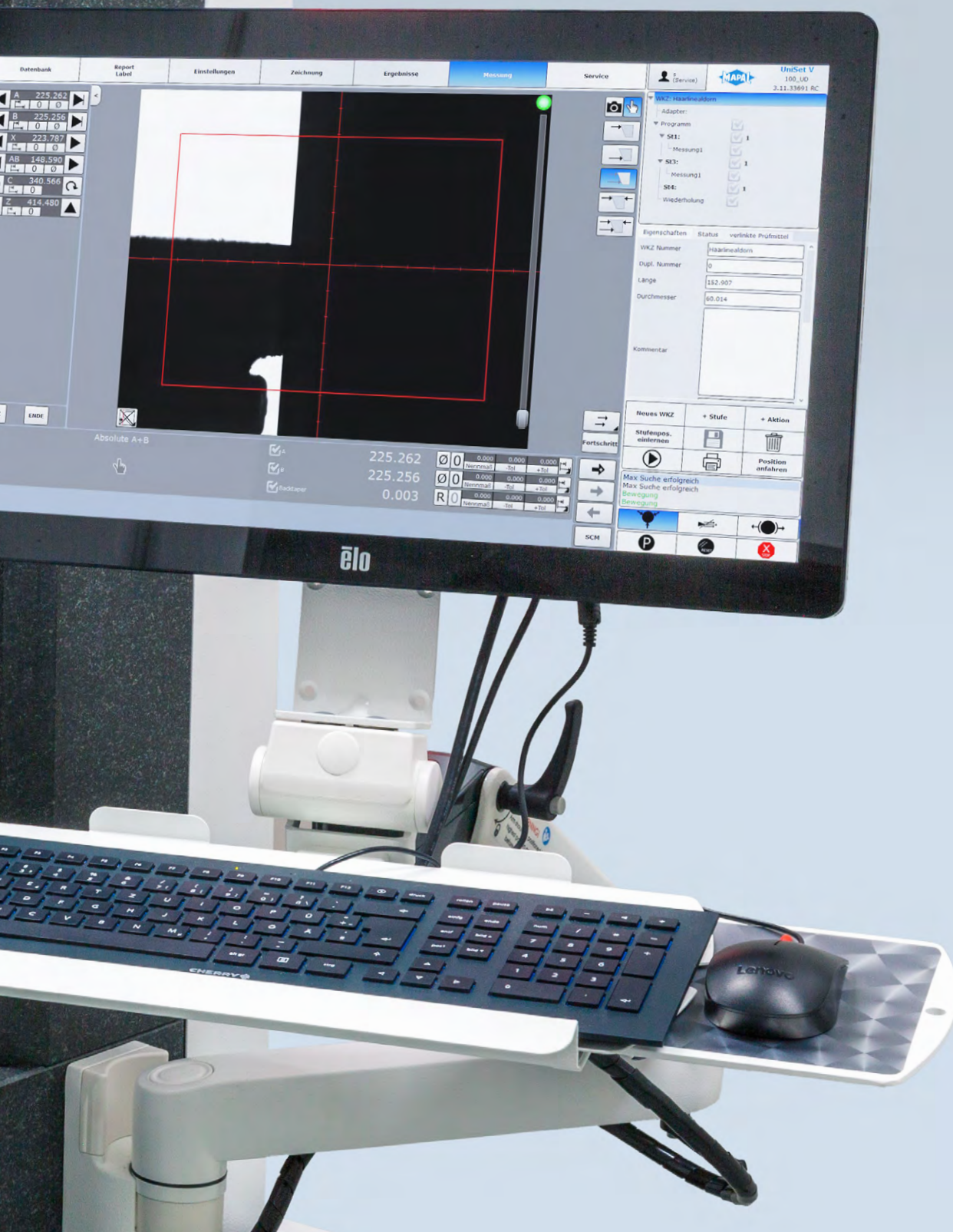- UNIBASE software is being continuously extended

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Services

Services

- Customisation
- Installation
- Training
- Maintenance

Page 74

+ X -

+ AB -

MAXIMUM PRECISION, PERFECT ERGONOMICS

Mechanical and electronic setting fixtures

MAPAL SETTING FIXTURES

Reliable setting of the tools thanks to accuracy and ease of use

Fine machining tools play a crucial role in the design of tools for complete machining. As the tools are often used for the last manufacturing step, all tolerance requirements on the part in relation to surface finish, dimensional, contour and positional accuracy must be reliably met. Production on modern high-performance machines requires tools that guarantee these tolerances over a long tool life, which can be achieved again and again with every tool.

Thanks to the setting features on the tool, it is possible to flexibly address any special aspects related to the workpiece material or the machine. Exact measurement and setting of these tools are prerequisites for high process reliability and part quality. This is achieved using a precise setting fixture. To meet all requirements as far as possible, MAPAL offers a broad portfolio of setting fixtures. While the designs of the setting fixtures may vary widely, they are all the same in one respect: in their precision.
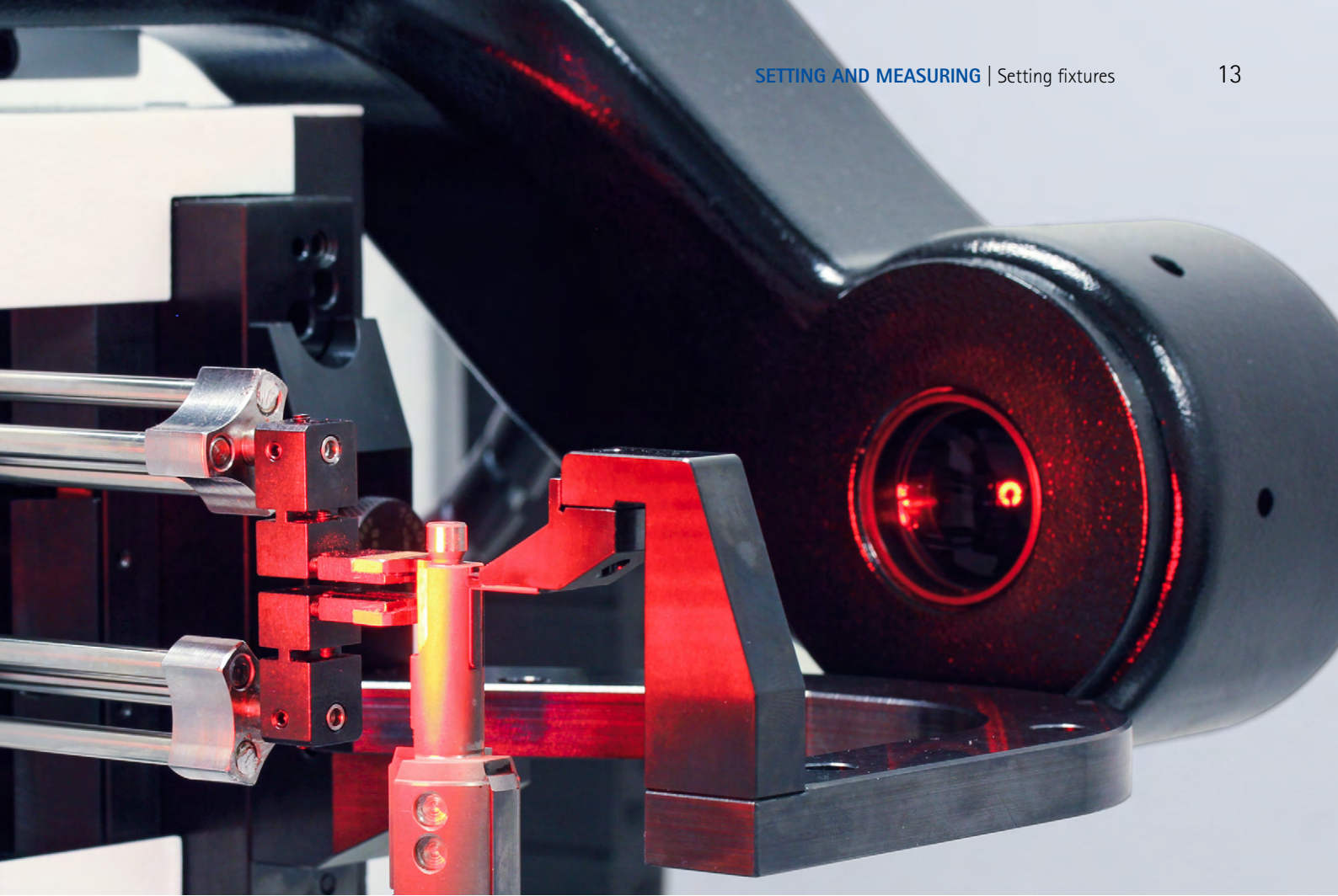
Mechanical

MASTERSET

- Manual setting
- Horizontal and vertical tool position
- Suitable for tools with guide pads

Page 16

UNISET–V basic

- Manual setting
- Tactile measurement
- Modular system
- Robust design

Page 24

Electronic

UNISET–H

- Setting at constant working height
- Tactile setting
- Suitable for long tools with guide pad
- Optical measurement
- Graphical user interface
- Tool chip for individually reading and recording measured values

UNISET–V expert

- Flexible configuration thanks to modular system
- Tactile measurement
- Device versions with or without heel
- Universal, automated setting
- Optical setting and measurement
- CNC controller
- Graphical user interface
- Incident light for inspection of cutting edge
- Tool management
- Tool chip for individually reading and recording measured values

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SETTING FIXTURES SELECTION AID

Example tools and parts

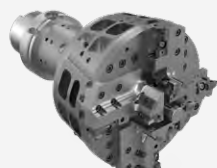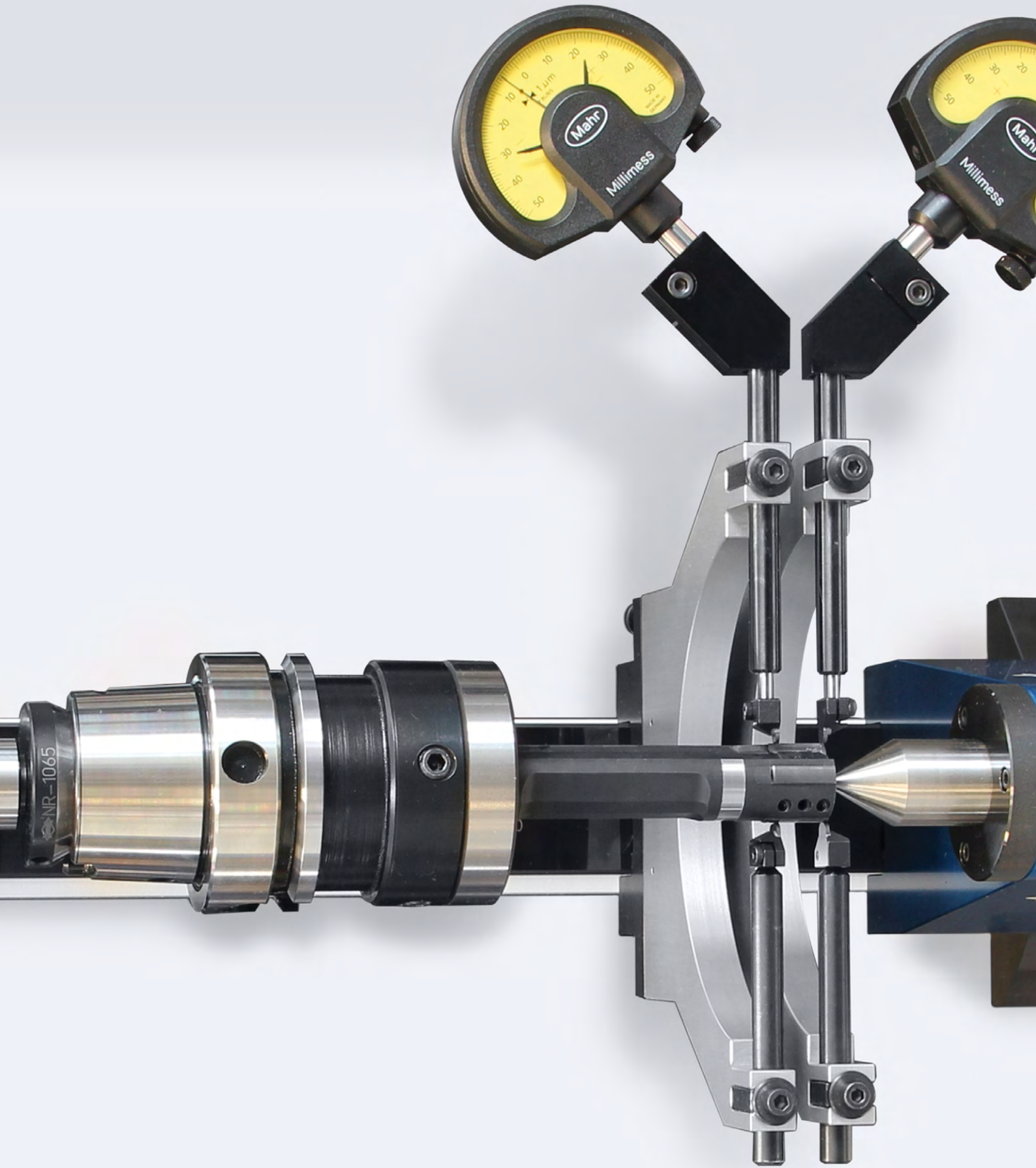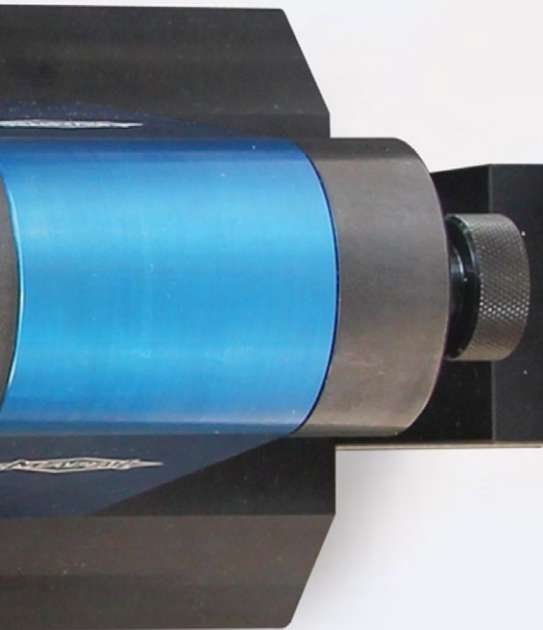|		
Machining features: – Valve bore – Spool bore – Cylinder bore – Transmission housing bore		– Tools with guide pads – Valve guide tools
Machining features: – Valve bore – Spool bore – Cylinder bore – Transmission housing bore – Axle journal		– Tools with guide pads – Valve guide tools – External reamers
Machining features: – Camshaft bearing bore – Crankshaft bearing bore – Cylinder bore		– Slender and long tools with guide pads

Machining features:
– Electric motor housing:
  Bearing/position bore
– Compressor housing rotor
  bore
– Cylinder bore
– Face milling/finishing
		– Tools with guide pads
		– Multi-stage fine boring tools
		– Small to medium-sized face
		  milling cutters
		– Cylinder drilling tool

Machining features:
– Electric motor housing: Stator
  bore; fine machining inner
  contour
– Transmission housing trans-
  ducer bore
– Face milling/finishing
		– Heavy tools with guide pads
		– Large multi-stage fine boring
		  tools
		– Small to medium-sized face
		  milling cutters

Possible applications	Setting fixture		Properties

Properties legend: Process reliability/handling, Tool flexibility, Setting, Measuring and inspecting, Investment

| Possible applications	Setting fixture		Properties (scale − to +)
Setting and correcting close to the machine	MASTERSET	MECHANICAL	Process reliability/handling, Tool flexibility, Setting, Measuring and inspecting, Investment
Setting and correcting close to the machine	UNISET–V basic	MECHANICAL	Process reliability/handling, Tool flexibility, Setting, Measuring and inspecting, Investment
Series production for components in the automotive, e-mobility and fluid power field	UNISET–H	ELECTRONIC	Process reliability/handling, Tool flexibility, Setting, Measuring and inspecting, Investment
Series production for components in the automotive, e-mobility and fluid power field	UNISET–V expert without heel	ELECTRONIC	Process reliability/handling, Tool flexibility, Setting, Measuring and inspecting, Investment
Series production for components in the automotive, e-mobility and fluid power field	UNISET–V expert with heel	ELECTRONIC	Process reliability/handling, Tool flexibility, Setting, Measuring and inspecting, Investment

MASTERSET

MASTERSET

MASTERSET

Manual setting, horizontally or vertically

The MASTERSET is designed for setting tools with guide pads. Due to the modular layout, the basic unit can be equipped with a large number of optional assemblies. The MASTERSET can be changed to an upright device in a vertical stand in just a few steps. This is advantageous for fitting heavy, long tools and because tools can be clamped directly in the hollow shank taper adapter.
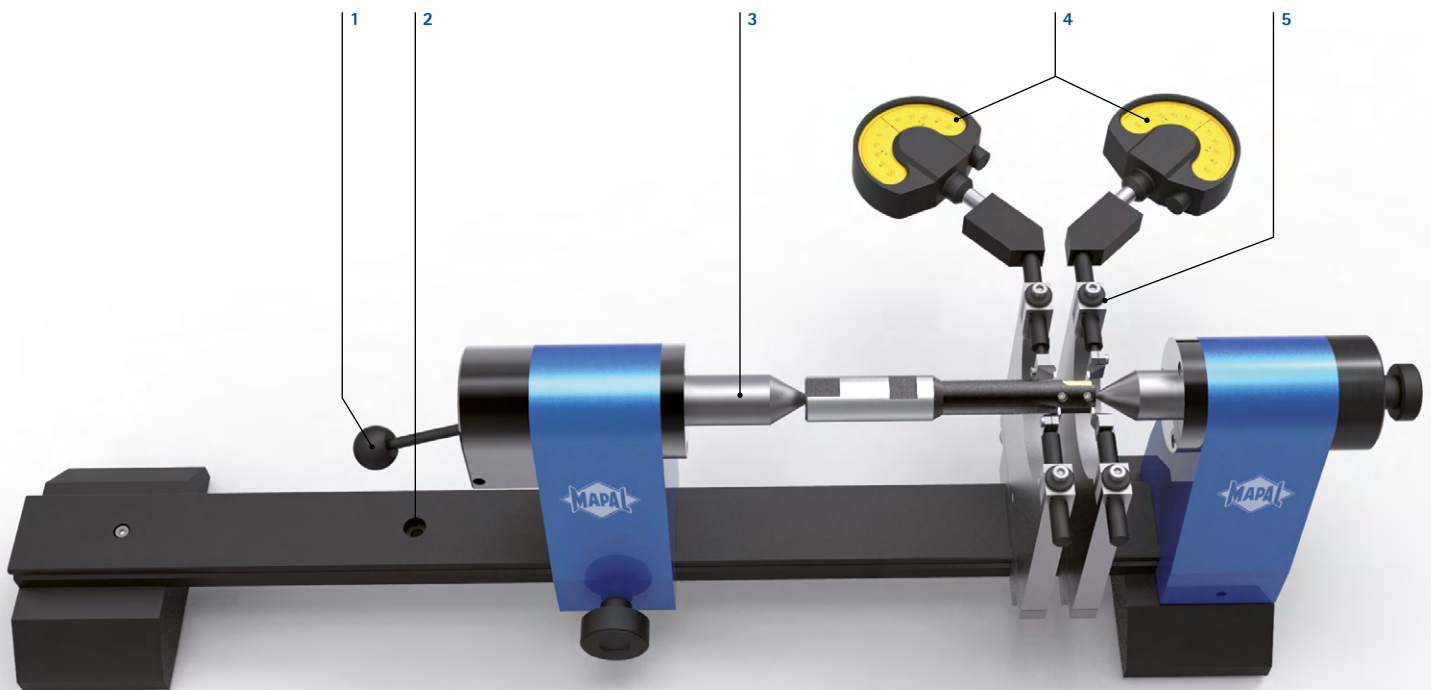
1 Hand lever retraction
Easy clamping of tools using the hand lever retraction of the sleeve.

2 Fastening screw for vertical stand
If set up vertically, the MASTERSET is connected to the vertical stand using the fastening screw.

3 Sleeve
Sleeve for replaceable inserts for mounting different centre points, for example for HSK (hollow shank taper) shanks.

4 Double measuring position
Fast axial positioning of the measuring position on multi-stage tools with identical indexable inserts.
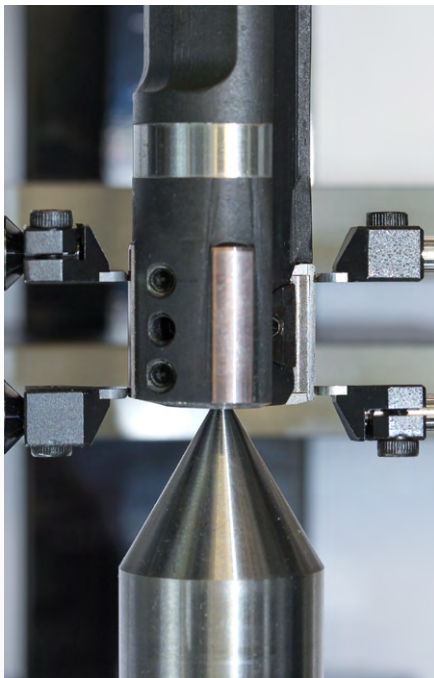
5 Lockable swinging lever
The lockable swinging lever is suitable for the "caliper gauge" and "protrusion" measuring principle.

Vertical stand for MASTERSET

For long or heavy tools with guide pads, the MASTERSET is changed from the horizontal position to the vertical position. The horizontal variant can be converted into a vertical stand in just a few steps. The vertical stand supports the MASTERSET stably without vibration and ensures precise tool setting.

Detailed view of swinging lever measurement

The measuring sensors are located on the cutting edge and the opposing guide pad.

PERFORMANCE FEATURES

- Tool weight up to 7 kg (horizontally arranged)
- Tool weight up to 15 kg (with vertical stand)
- Measuring lengths up to max. 750 mm
- Diameter up to 200 mm with protrusion measurement
- Diameter up to 150 mm with swinging lever measurement
- Connection between centres (customer-specific inserts possible)
- Rotating centre point for setting heavy tools easily (see accessories)

ADVANTAGES

- Easy clamping of the tools using hand lever and withdrawal of the sleeve
- Lockable swinging lever for "caliper gauge" and "protrusion" measuring principle
- Vertical stand compatible with all MASTERSET variants
- Double measuring position – fast axial positioning of the measuring position on multi-stage tools with adjustable inserts
- MASTERSET variant with sleeve for replaceable inserts for mounting different centre points, for example for HSK (hollow shank taper) shanks
- Fine axial adjustment for setting the highest axial cutting point

MASTERSET configuration

Procedure during configuration

1 Tool length

The length of the tool defines the clamping length.

Clamping length variants:

MS250
(0–250 mm)

MS350
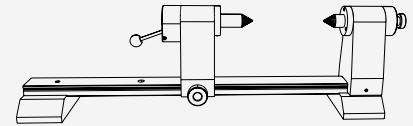(0–350 mm)

MS550
(0–550 mm)

MS750
(0–750 mm)

2 Tool connection

The tool connection defines the device design.

Device design variants:

–1
For tools with
cylindrical shank:
two centre points

–2
For large tools with
HSK shank:
one sleeve and one
centre point

Selection of centre insert:
- HSK32/40, 50/63, 80/100, 125
- Pointed ø 25 mm, ø 40 mm

Configuration example

1st step	**2nd step**
Tool length	Tool with cylindrical shank or HSK shank

Tool data:

- Tool length: 250 mm
- Connection with cylindrical shank
- Tool with guide pad opposite (swinging lever measurement)
- Diameter = 20 mm

MS250
(0–250 mm)

MS350
(0–350 mm)

MS550
(0–550 mm)

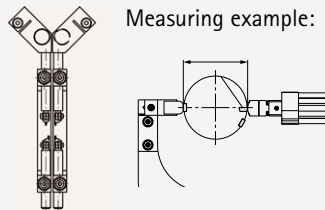**MS750**
(0–750 mm)

–1

–2

3 Measuring method

The position of the guide pad on the tool defines the measuring method. Dial gauges and setting gauge must be ordered separately.
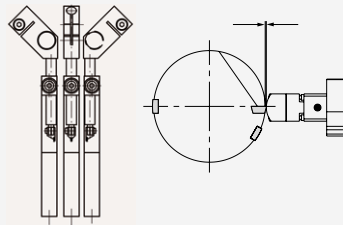
MN347
Swinging lever:
For tools with guide pad opposite the insert.

Measuring example:

MN348
Taper reamers:
For tools with guide pads opposite or behind the insert. For more than three adjustments, a measuring arm and dial gauge must be ordered for each additional adjustment.

MN349
Protrusion:
For tools with guide pad in any position.
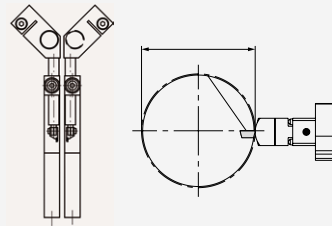
4 Tool diameter

The size of the tool diameter defines the diameter range.

Diameter range variants:

–0
(0-55 mm)

–1
(55–110 mm)

–2
(0–110 mm)

–3
(15–150 mm)

3rd step

Measuring method

| MN347 |
| Swinging lever |

| MN348 |
| Taper reamer |

| MN349 |
| Protrusion |

4th step

Tool diameter

| **–0** |
| (0-55 mm) |

| **–1** |
| (55–110 mm) |

| **–2** |
| (0–110 mm) |

| **–3** |
| (15–150 mm) |

Specification:
MS250–1/MN347–0

MASTERSET accessories

Measuring arm
Measuring position

Diameter	Measuring arm position	Order no.
0 – 55 mm	Centred	MN347-0M-01
0 – 55 mm	Right	MN347-0R-02
0 – 55 mm	Left	MN347-0L-02
55 – 110 mm	Centred	MN347-1M-01
55 – 110 mm	Right	MN347-1R-02
55 – 110 mm	Left	MN347-1L-02
0 – 110 mm	Centred	MN347-2M-01
0 – 110 mm	Right	MN347-2R-02
0 – 110 mm	Left	MN347-2L-02
10 – 150 mm	Centred	MN347-3M-01
10 – 150 mm	Right	MN347-3R-02
10 – 150 mm	Left	MN347-3L-02

Double measuring arms

Diameter	Order no.
0 – 55 mm	MN349-0D
55 – 110 mm	MN349-1D
0 – 110 mm	MN349-2D
10 – 150 mm	MN349-3D
For HX128 0 – 110 mm	MN349-2D-HX128
For HX138 0 – 110 mm	MN349-2D-HX138

Fixed measuring position

Diameter	Measuring arm position	Order no.
0 – 55 mm	Centred	MN349-0M-01
0 – 55 mm	Right	MN349-0R-02
0 – 55 mm	Left	MN349-0L-02
55 – 110 mm	Centred	MN349-1M-01
55 – 110 mm	Right	MN349-1R-02
55 – 110 mm	Left	MN349-1L-02
0 – 110 mm	Centred	MN349-2M-01
0 – 110 mm	Right	MN349-2R-02
0 – 110 mm	Left	MN349-2L-02
10 – 150 mm	Centred	MN349-3M-01
10 – 150 mm	Right	MN349-3R-02
10 – 150 mm	Left	MN349-3L-02

Angle

Diameter	Angle position	Order no.
0 – 110 mm	Left	NR-1192-1
0 – 110 mm	Centred	NR-1192-2
0 – 110 mm	Right	NR-1192-3

Clock holder

Variant	with 45° Order no.	with 90° Order no.
Right 15 mm	30018369	30018385
Right 25 mm	30018370	30018386
Right 50 mm	10024882	30018387
Right 75 mm	10024884	30018388
Right 100 mm	30018371	30018389
Left 15 mm	30018372	30018390
Left 25 mm	30018373	30018391
Left 50 mm	10024890	30018392
Left 75 mm	10024891	30018393
Left 100 mm	30018374	30018394

Sleeves

Variant	Order no.
Centre point	K12449-013
Sleeve for inserts	K12450-033
Fine adjustment centre cradle	K12449-003
Lever clamping centre cradle	K12450-003
Centre cradle with lever clamping	K12448-003L
Centre cradle with fine adjustment	K12448-003R

Centre point inserts

Centre insert for	Order no.
HSK32 / 40	NR-1064
HSK50 / 63	NR-1065
HSK80 / 100	NR-1066
HSK125	NR-1067
D25 / carbide point	K2140-24
D40 / steel point	K2140-34
HSK50 / 63 carbide version	30622623

Face insert measuring point

Variant	Order no.
1 measuring position T-slot rail 100 mm	K13761-003-1
1 measuring position T-slot rail 150 mm	K13761-003-2
1 measuring position T-slot rail 200 mm	K13761-003-3
2 measuring positions T-slot rail 100 mm	K13762-003-1
2 measuring positions T-slot rail 150 mm	K13762-003-2
2 measuring positions T-slot rail 200 mm	K13762-003-3

Clamps

Variant	Order no.
Short design 50 mm	NR-1121
Long design 80 mm	NR-1122
Long design 100 mm	NR-1123

Linear tracks

Measuring length	Order no.
250 mm	K12448-073
350 mm	K12448-083
550 mm	K12448-093
750 mm	K12448-103

Vertical stand

	Order no.
Vertical stand	K13757-001
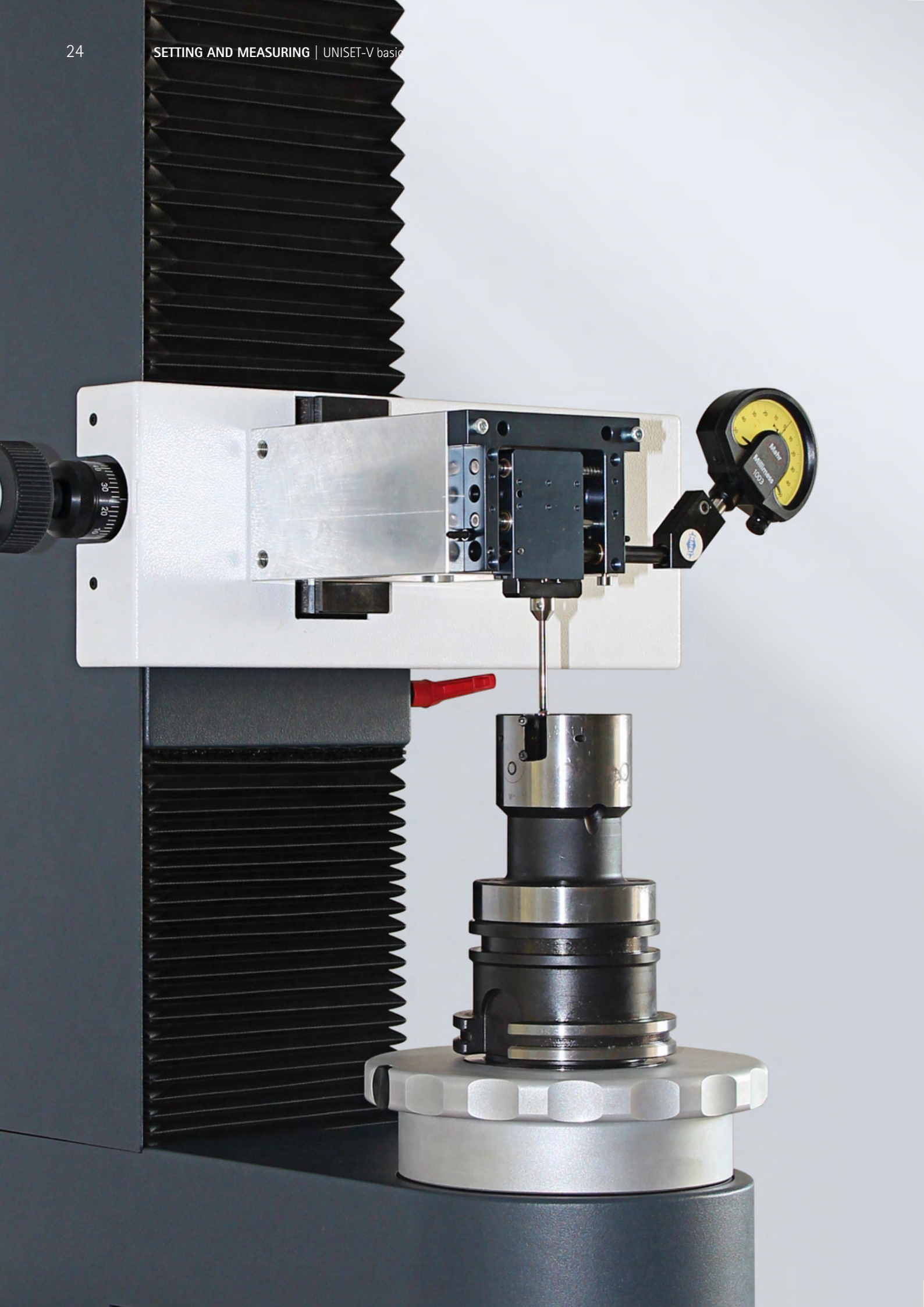
Measuring shoes

Variant	Order no.
centred	NR-1151
centred, carbide 2 mm wide	NR-1151-1
2.5 mm offset	NR-1161
2.5 mm offset, carbide 2 mm wide	NR-1161-1
7.5 mm offset	NR-1164
7.5 mm offset, carbide 2 mm wide	NR-1164-1
5 mm offset	NR-1165
5 mm offset, carbide 2 mm wide	NR-1165-1
10 mm offset	NR-1166
10 mm offset, carbide 2 mm wide	NR-1166-1
15 mm offset	NR-1167
15 mm offset, carbide 2 mm wide	NR-1167-1
20 mm offset	NR-1168

Dial gauges

Dial gauges for	Order no.
Carbide	NR-1181
PCD, PcBN	10102791

UNISET-V basic

UNISET-V basic

UNISET-V basic

Compact construction and robust design

The UNISET-V basic is a compact and robust setting fixture that enables precise tactile setting and measurement of tools. Its modular design enables it to be flexibly configured for different applications. Using the quick-change system, measuring positions can be easily changed or the fixture can be converted for use with external machining tools. The vertical design and the stable mechanical construction enable μ-accurate settings even for long and heavy tools, which means it can also be used in workshops. Moreover, the compact design of the device ensures comfortable working in a seated position.

1 Vertical main tower
The vertical main tower is equipped with a high-precision linear roller guide, which is protected by a bellows cover.

2 Heel
Optionally, a heel can be used on the tactile UNISET-V basic. Longer tools in particular can be centred from two ends for maximum measuring precision.

3 Measuring sensor and dial gauge
Different measuring sensors are available for absolute, protrusion and swinging lever measurement.

4 Handwheel with fine adjustment
The measuring axes can be moved in steps using a handwheel.

5 SK50 precision spindle
Optionally, the precision spindle for SK50 shanks is equipped with a mechanical clamping device for pull studs.
The SK50 setting gauge for calibrating the setting fixture is included.
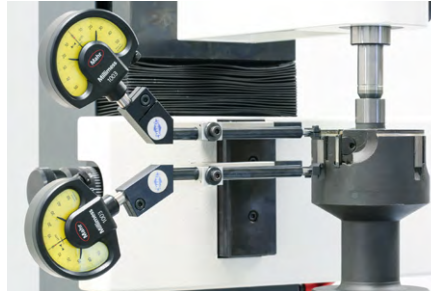
6 Base
The base also enables working from a seated position and offers enough stability so that the tools can be set without vibration.
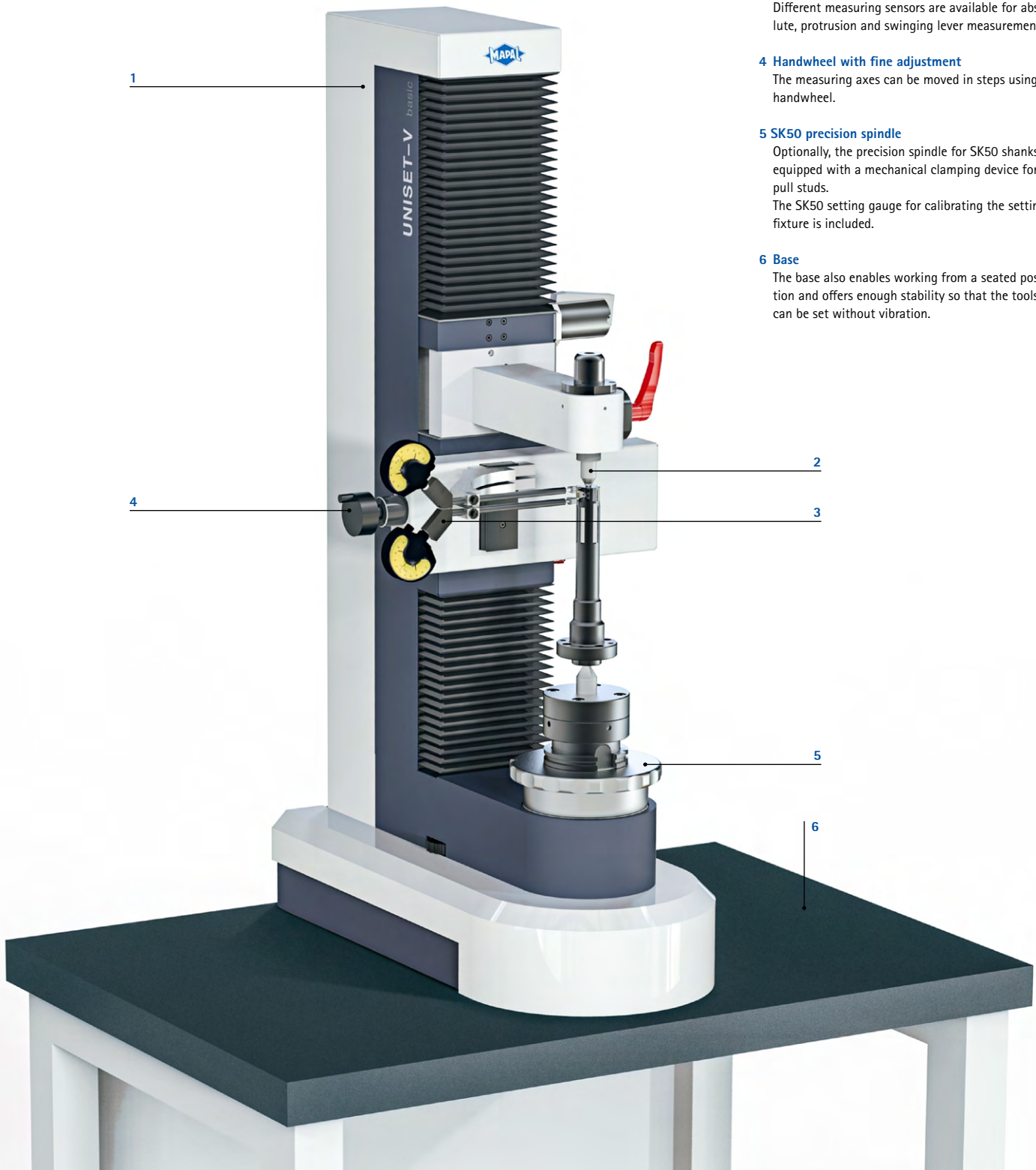
Application example

Tactile setting

A multi-stage fine boring tool with guide pads is set using the measuring sensors and dial gauges on the UNISET-V basic by means of protrusion measurement.


1 The tool is clamped between mounting spindle and heel. The measuring sensors are placed on the guide pad and the dial gauges zeroed. Then the adjustable insert is placed in position and the highest diameter point is sought.

2 The protrusion of the insert in relation to the guide pad and the back taper on the insert are set with µ-precision. The tolerance range on the protrusion is checked and set using the dial gauges.

Tactile setting – external reamer

A tool for external machining is set on the UNISET-V basic using an optional additional measuring sensor. The additional measuring sensor is integrated in just a few steps.
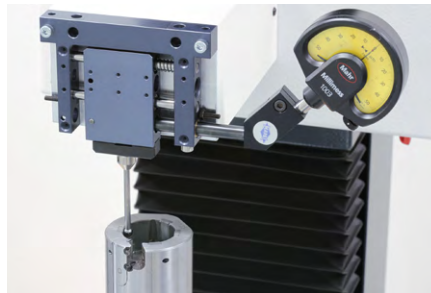
1 The additional measuring sensor is positioned axially on the guide pad on the external machining tool. The dial gauge is zeroed. Then the spindle together with the tool are rotated until the adjustable insert is in position.

2 The highest diameter point on the insert is sought. Now the protrusion of the insert in relation to the guide pad and the back taper on the insert can be set with µ-precision. The tolerance range on the protrusion is checked and set using the dial gauge.

| PERFORMANCE FEATURES	ADVANTAGES
- Tool weight up to 50 kg - Tools up to diameter 400 mm and length 700 mm can be set - Setting precision < 2 µm - Radial run-out accuracy ≤ 5 µm - Accuracy of repetition 2 µm - Manual tool clamping on base or using adapter - Footprint maximum 600 x 300 mm - Arm diameter 250 mm or 400 mm	- Tactile absolute measurement, protrusion measurement and swinging lever measurement using various measuring arms and measuring sensors - Quick-change system saves time and allows the measuring positions to be changed easily - Optional heel for measurements on long tools between centres - Saves space thanks to compact design - Possible to work in seated position

Options for custom configuration

Base

- The robust base provides the necessary stability and is optimally designed for the UNISET-V basic and for working in a seated position.

Mounting point

- The mounting point is the economical alternative to the spindle mount. Particularly suitable for short tools and tools with a small diameter.
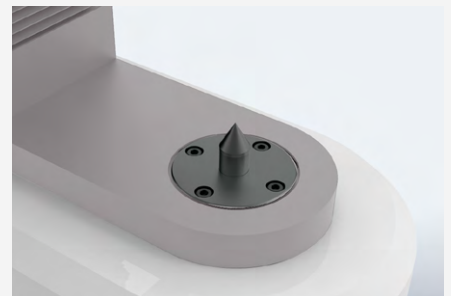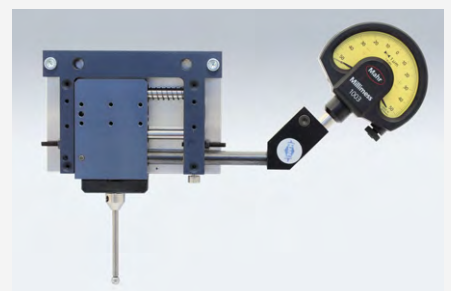

Heel

- The heel centres the tool and is particularly suitable for long, heavy tools.

Additional measuring sensor

- For external machining tools, an additional measuring sensor can be integrated quickly and easily.

UNISET-V basic accessories

Measuring arm
Swinging lever

Diameter	Measuring arm position	Order no.
0 - 280 mm	Left	MN349-4L-02
0 - 280 mm	Right	MN349-4R-02
0 - 400 mm	-	30636689

Additional measuring point for external machining tools

	Order no.
Additional measuring point	30591960

Face inserts

Variant	Order no.
1 measuring position T-slot rail 100 mm	K13761-003-1
1 measuring position T-slot rail 150 mm	K13761-003-2
1 measuring position T-slot rail 200 mm	K13761-003-3
2 measuring positions T-slot rail 100 mm	K13762-003-1
2 measuring positions T-slot rail 150 mm	K13762-003-2
2 measuring positions T-slot rail 200 mm	K13762-003-3

Measuring shoes

Variant	Order no.
centred	NR-1151
centred, carbide 2 mm wide	NR-1151-1
2.5 mm offset	NR-1161
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7.5 mm offset, carbide 2 mm wide	NR-1164-1
5 mm offset	NR-1165
5 mm offset, carbide 2 mm wide	NR-1165-1
10 mm offset	NR-1166
10 mm offset, carbide 2 mm wide	NR-1166-1
15 mm offset	NR-1167
15 mm offset, carbide 2 mm wide	NR-1167-1
20 mm offset	NR-1168

Centre point holder and centre point inserts
Centre point holder is required for centre point inserts.

Centre point holder	K3033-34
Centre insert for	Order no.
HSK32 / 40	NR-1064
HSK50 / 63	NR-1065
HSK80 / 100	NR-1066
HSK125	NR-1067
D25 / carbide point	K2140-24
D40 / steel point	K2140-34
HSK50 / 63 carbide version	30622623

Clock holder

Variant	with 45° Order no.	with 90° Order no.
Right 15 mm	30018375	30018339
Right 25 mm	30018376	30018360
Right 50 mm	30018377	30018361
Right 75 mm	30018378	30018362
Right 100 mm	30018379	30018363
Left 15 mm	30018380	30018364
Left 25 mm	30018381	30018365
Left 50 mm	30018382	30018366
Left 75 mm	30018383	30018367
Left 100 mm	30018384	30018368

Dial gauges

Dial gauges for	Order no.
Carbide	NR-1181
PCD, PcBN	10102791
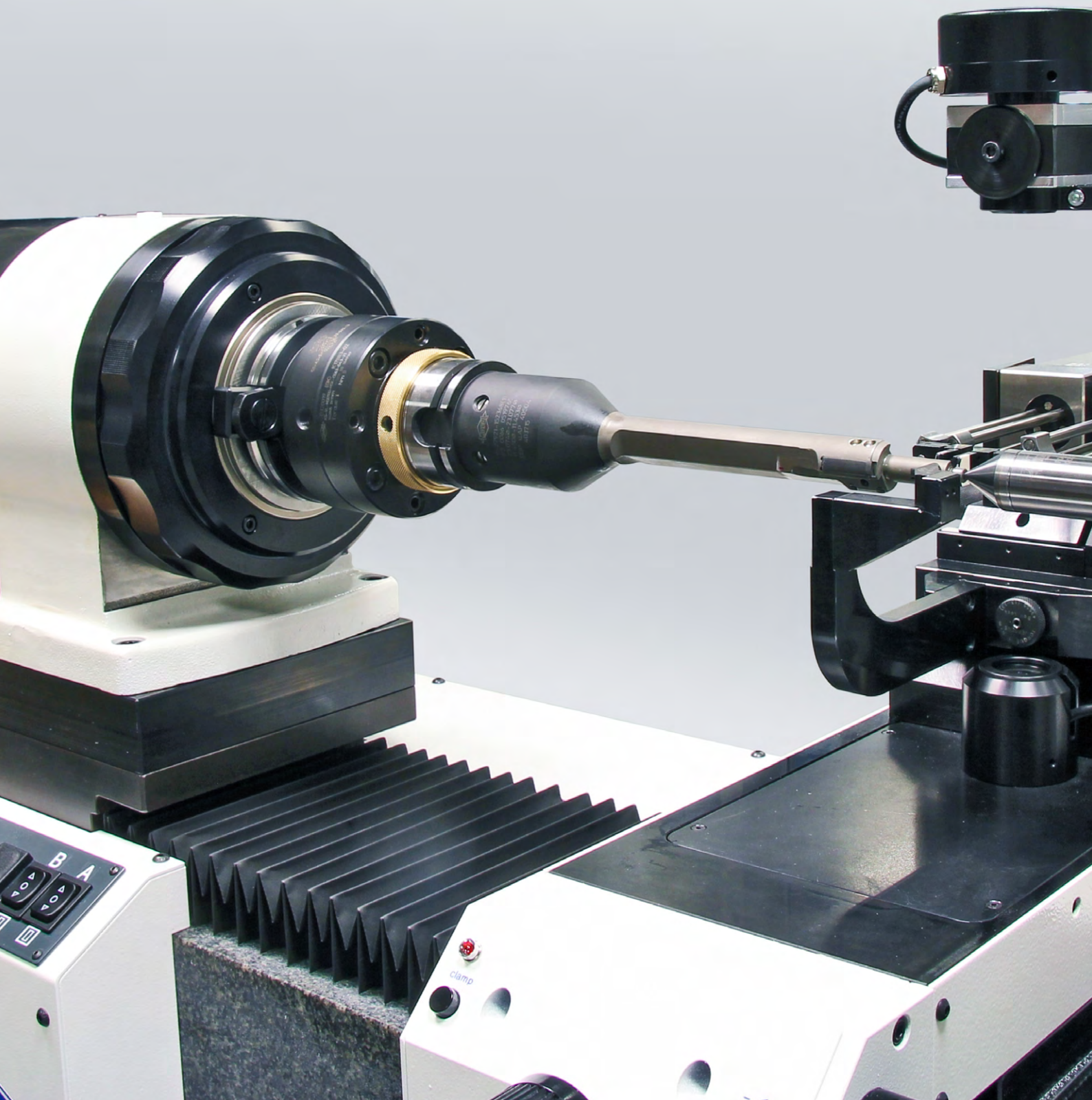
UNISET-H

UNISET-H

UNISET-H

Optimal setting in horizontal direction

The electronic setting fixture UNISET-H has a horizontal layout. Ergonomic setting procedures are thus possible at a constant working height. Both slender and long tools with guide pads are particularly suitable for the setting procedure using the UNISET-H. Along with the tactile method of setting tools with its high degree of precision, optical setting using an optional camera is also possible. With this extension, it is also possible to inspect cutting edges quickly and straightforwardly.

1 Software
The MAPAL software enables menu-based measuring and setting and includes database functions. Operation is very easy with the optional 19" TFT flat touch panel. If internet access is allowed, it is also possible to undertake remote maintenance.

2 Precision spindle SK50
The precision spindle with roller bearings for SK50 shanks is equipped with a pneumatic clamping mechanism for pull studs. The SK50 setting gauge for calibrating the setting fixture is included.

3 Optional camera
Using the optional camera, the tool can also be set optically or the camera can be used for inspecting cutting edges.

4 Measuring sensors
The measuring sensors enable tools to be set with μ-precision and, due to measuring forces ≤ 150 mN, are also highly suitable for PCD-tipped inserts.

5 Heel
The tool is clamped between the spindle and the heel. The heel can be moved along the axis and as such can be flexibly adjusted to the tool length.

6 Base
The optional base is optimally adapted to the size of the UNISET-H and supports low-vibration setting. Accessories and tools can be housed in the integrated tool cabinet.

Application example

Tactile setting

A fine boring tool with guide pads for machining the camshaft bearing axis in cylinder heads is set with μ-precision using the measuring sensors on the UNISET-H by means of protrusion measurement.

1 The tool is clamped between the spindle with HSK adapter and a heel. The heel is moved along the axis and adjusted to the length of the tool.
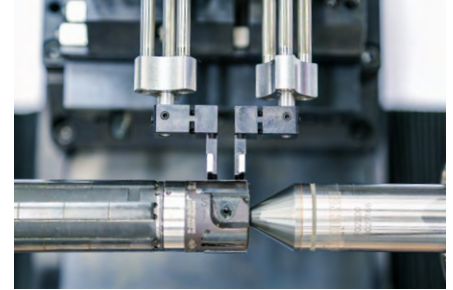
2 The measuring sensors A and B move separately and automatically against the guide pad when the relevant button is pressed on the control panel. Here, the measuring sensor spacing to the insert that is being set can be adjusted flexibly and continuously. The measuring range is then zeroed at this position.

3 The adjustable insert is placed in position and the highest diameter point on the insert is sought. The operator now sets the protrusion of the insert in relation to the guide pad and the back taper on the insert with μ-precision. During this process, the operator can always see the current measurement of the protrusion live on the display.

PERFORMANCE FEATURES

- Economical entry-level variant for setting tools with guide pads in particular
- Tools up to a diameter of 190 mm and length of 900 mm can be set
- Precision spindle with roller bearings
- Spindle with SK50 and heel (optional HSK adapter)
- Continuously adjustable measuring sensor spacing from 4-20 mm
- Measuring sensors have a collision protection system
- Optional measuring method with swinging lever
- Accuracy of repetition: 2 μm

ADVANTAGES

- Tool insert is always at one level
- Constant ergonomic working height for optimal ease of use
- Guide slides for fast, finely adjustable positioning of the measuring units in the axial and radial direction with pneumatic clamping
- Optional camera system for purely optical measurement of tools and inspection of cutting edges

Options for custom configuration

Base

- The base is optimally designed for the UNISET-H and provides the necessary stability.
- A small tool cabinet is integrated.

Custom spindle

- Spindle with HSK (hollow shank taper) adapter and pneumatic clamping.
- SK50 precision spindle is replaced with HSK spindle.
- Includes HSK setting gauge for calibrating the setting fixture:
  - HSK63
  - HSK100

Optical measuring method

- Image processing system on bracket comprising electronic measuring equipment and PC system.
- Regulated transmitted light for inspection of cutting edge.

Balluff tool identification system

- Tool identification software for reading out the current measured values and for writing the measured values to the Balluff code carrier.
- Includes provision of a data format.
- BIS handheld reader for reading out the data from the tool chip.
- Manual data entry no longer necessary prior to each setting procedure.

Label printer

- Printer connected to the base device for editable data output via the MAPAL software.
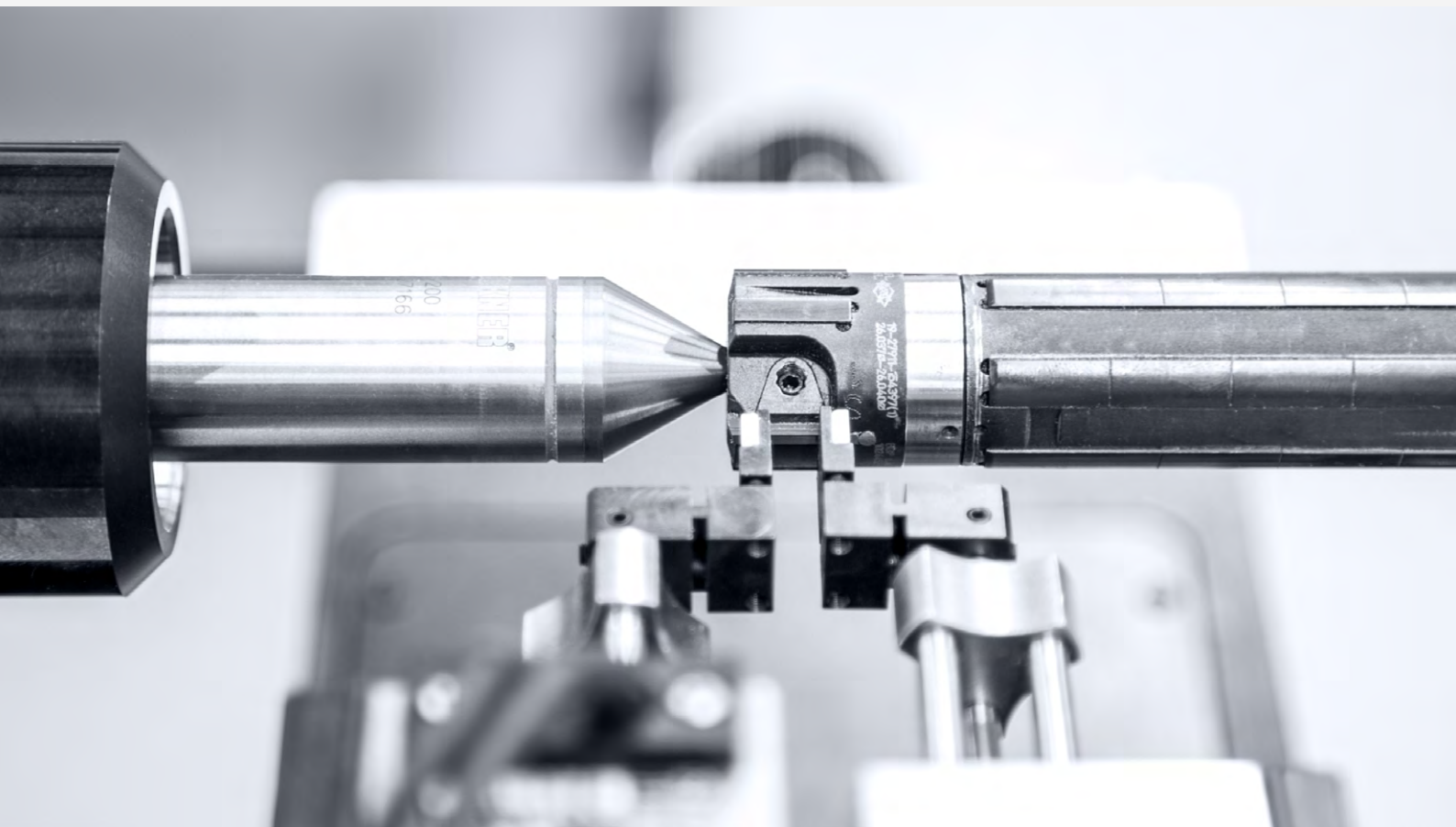
UNISET-V expert

UNISET-V expert

UNISET-V expert

High flexibility and precision when setting tools

The new MAPAL setting fixture UNISET-V expert provides optimal configuration options thanks to its modular system. Various tactile measuring sensors can be integrated into the device in addition to the standard optical measuring function in order to achieve setting results with µ-precision.

1 Tactile measuring sensor
- High precision tool settings down to < 2 µm
- Various sensor versions available

2 Optical measurement
- Part of the basic configuration
- With image processing system on carbon bracket comprising electronic measuring equipment and PC system
- With regulated transmitted light for the inspection of cutting edges

3 Vertical main tower
- With high precision linear roller guide with bellows cover

4 Additional guide tower
- Made of granite with continuously adjustable heel

5 Heel
- High degree of stability for long tools
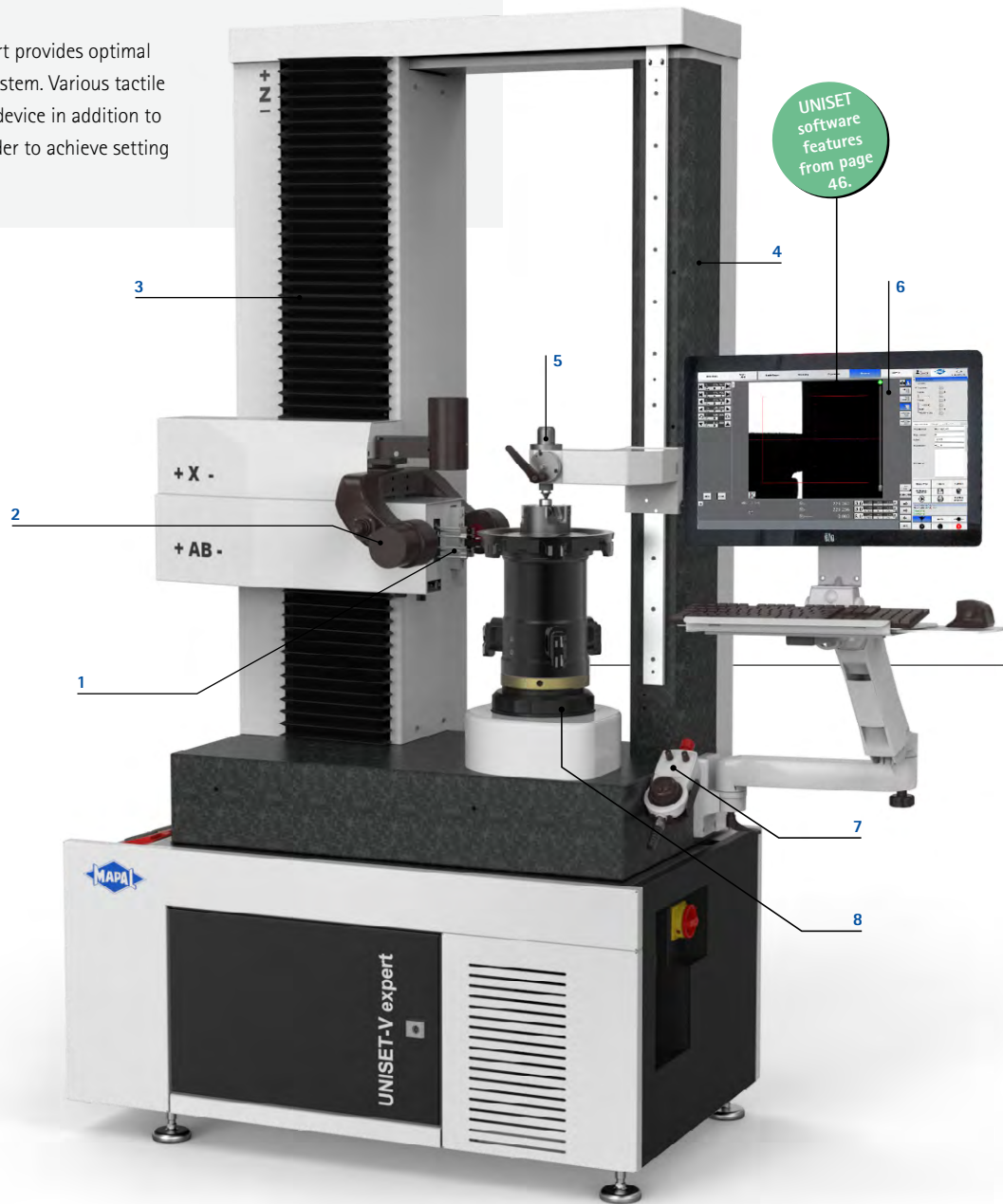- For high-precision setting procedures

6 Monitor
- Enables menu-based measuring and setting including database function

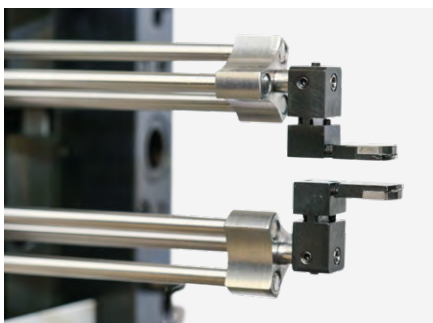**7 Manual control unit/rotary switch**
- For gradual motorised movement of the measuring axes

8 Precision spindle SK50
- Clamping tools with SK50 shank
- With pneumatic clamping mechanism for pull studs

UNISET software features from page 46.

Tactile measuring sensors

Measuring sensor for fine boring tools with guide pads

Z measuring sensor for face surfaces

Z measuring sensor for external machining

Application solution

The requirements for e-mobility show just how important a high degree of setting precision is: Compared to a regular transmission housing, the stator housing of an electric motor must be manufactured with substantially lower tolerances, as accuracy has a decisive influence on the motor's efficiency.

Device without heel

The UNISET-V expert is also available in a simplified design without heel. This design is ideal for setting procedures with short tools.

| FEATURES	ADVANTAGES
- Tools with measuring lengths up to 1,000 mm and a weight up to 50 kg can be measured - Optical measuring range: Maximum diameter 400 mm - Tactile measuring range: Maximum diameter 400 mm Maximum diameter of calliper gauge 95 mm - Measuring sensor suitable for contact with highly sensitive inserts such as PcBN or PCD - Ultramodern camera with CNC controller and optical measurement	- High degree of measuring accuracy due to moving tactile measuring sensor - Modular system enables flexible device configuration - Versatile: virtually all tool types can be set - Resilient to vibration and oscillations due to gantry setup - Additional stability and precision provided by heel

Application example

## Tactile setting with measuring sensors

A fine boring tool with guide pads for the stator machining of an electric motor housing requires highly accurate setting of the finely adjustable indexable inserts for fine machining. The setting procedure is carried out with the measuring sensors of the UNISET-V expert with µ-precision by means of protrusion measurement.


1 The tool is clamped between the adapter and heel. The heel helps provide the best possible tool stability and exact setting results during the setting procedure.
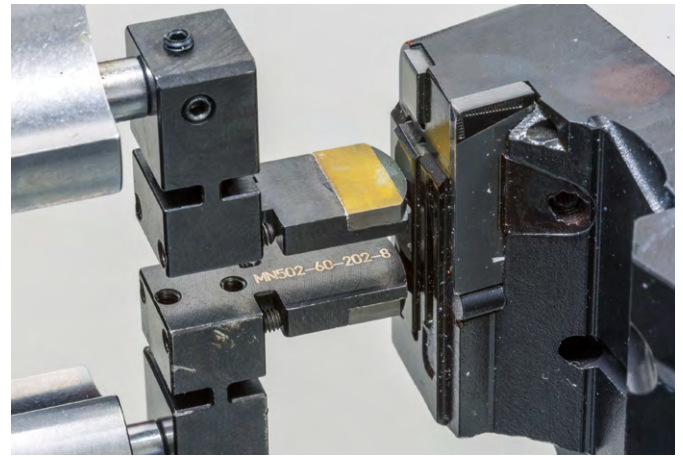

2 The measuring sensors automatically move to the guide pad on the tool at the press of a button on the display. The measuring range is zeroed at this position.
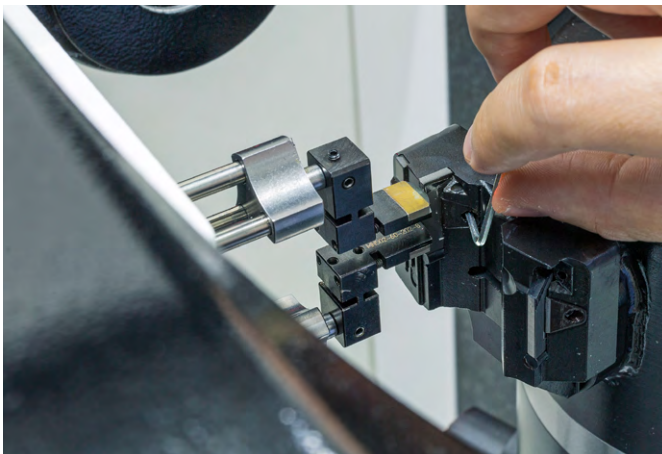
3 The adjustable insert is placed in position and the highest diameter point on the insert is sought. The operator now sets the protrusion of the insert in relation to the guide pad and the back taper on the insert with µ-precision. During this process, the operator can always see the measurement of the protrusion live on the display. Once the insert is set in the pre-defined tolerance range, the protrusion is indicated on the display in green. The program saved for this tool can be retrieved quickly for future setting procedures.
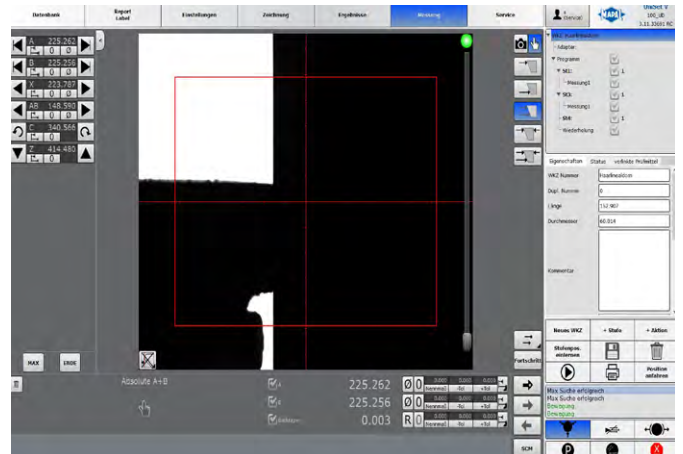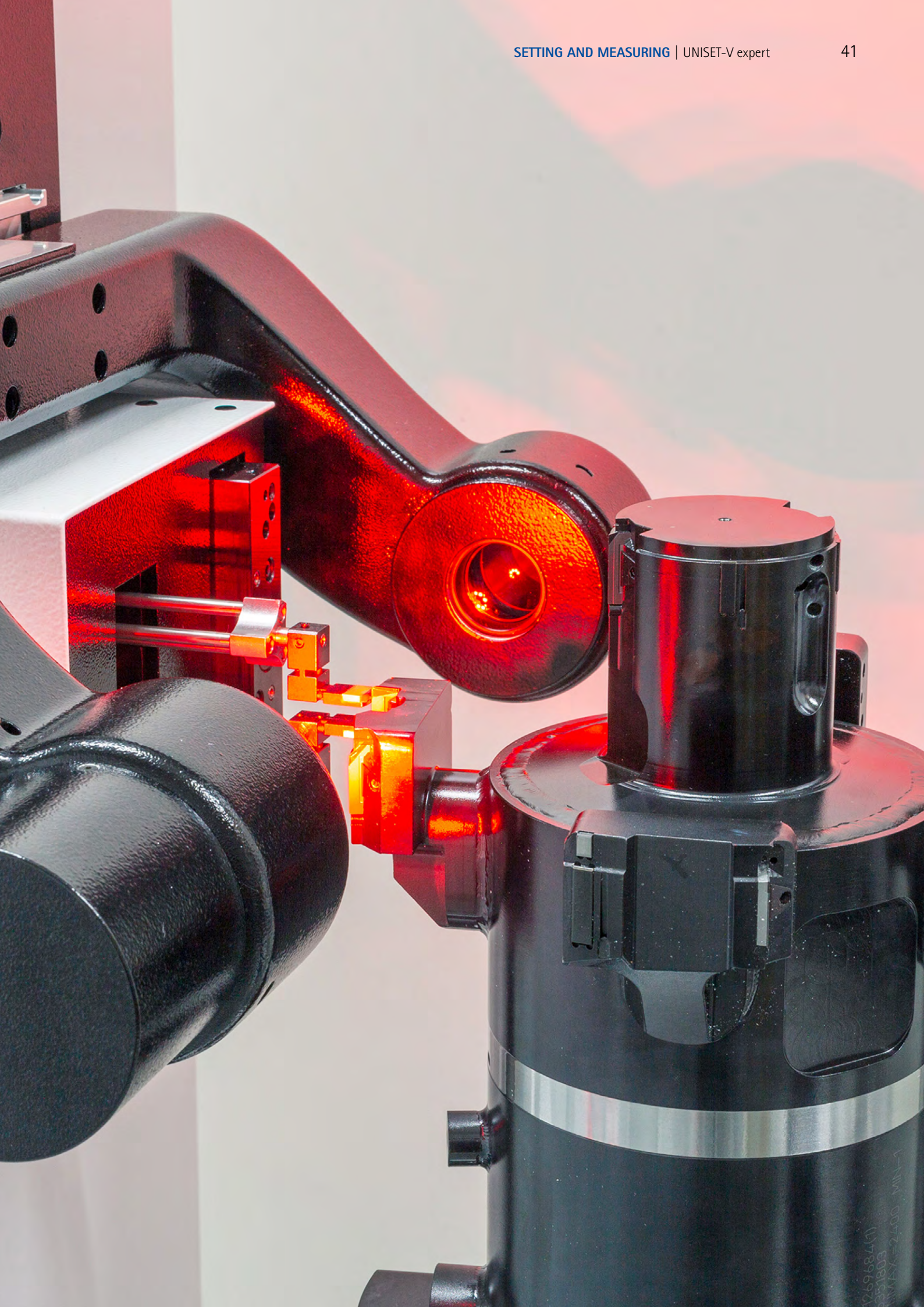
Options for custom configuration

Tactile measuring method

1
- Two electronic measuring units with reduced measuring force, in particular for contact with highly sensitive cutting materials.
- Measuring sensor spacing continuously adjustable from 4 to 20 mm.
- Additional swinging lever measuring method, can be mounted on measuring unit.

Measuring range:
Maximum diameter:
400 mm
Maximum length:
800 mm
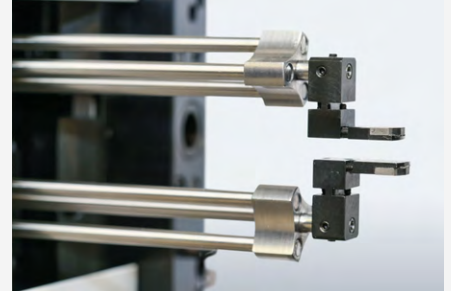
2
- High-precision length measurement and setting option with the integrated Z measuring sensor.
- Face milling cutters, for example, can be set with a high degree of precision using the additional measuring sensor.

3
- For external machining tools, an additional Z measuring sensor can be integrated quickly and easily.

CNC controller

- Fully automatic measuring processes without operator intervention.
- Mechanics, hardware and software for CNC-controlled adjustment of all six axes.
- Positioning accuracy ± 1 μm.
- Autofocus integrated.

Balluff tool identification system

- Tool identification software for reading out the current measured values and for writing the measured values to the Balluff code carrier.
- Includes provision of a data format.
- BIS handheld reader for reading out the data from the tool chip.
- Manual data entry no longer necessary prior to each setting procedure.

Second camera system (SCM)

- Additional SCM module for optical measurement from above, especially of turning tools. Can be positioned manually.
- Suitable for general inspection tasks on tools.
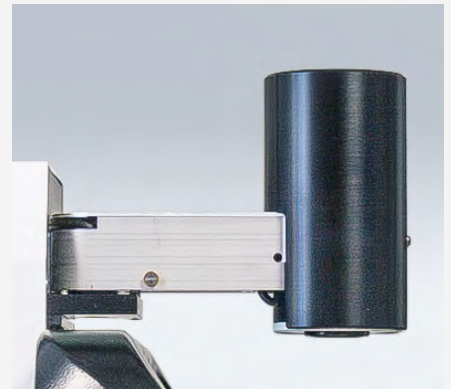
Custom spindle

Attention!
Custom spindle HSK63 not available with "CNC controller" option.

- Spindle with HSK (hollow shank taper) adapter and pneumatic clamping.
- SK50 precision spindle is replaced with HSK spindle.
- Includes HSK setting gauge for calibrating the setting fixture:
  - HSK63
  - HSK100

Label printer

- Printer connected to the base device for editable data output via the MAPAL software.

Accessories for setting fixtures

Accessories für UNISET–V basic, UNISET–H and UNISET–V expert

Reducing adapters incl. taper wiper, suitable for headstock SK50
Adapter can be aligned axially and radially.*

Adapters	Measuring length reduction	Order no.
SK50 / HSK32	76 mm	30479379
SK50 / HSK40	80 mm	30479380
SK50 / HSK50	85 mm	30479381
SK50 / HSK63	103 mm	30479383
SK50 / HSK80	110 mm	30479384
SK50 / HSK100	130 mm	30479386

Reducing adapters incl. taper wiper, suitable for headstock HSK63*

Nominal size HSK63	Measuring length reduction	Order no.
Reducer HSK63 / HSK32	70 mm	30479358
Reducer HSK63 / HSK40	80 mm	30479359
Reducer HSK63 / HSK50	80 mm	30479361

Reducing adapters, suitable for headstock SK50
Adapter cannot be aligned.*

Reducing adapters	Measuring length reduction	Order no.
SK50 / PSK40	Eccentric clamping	30614556
SK50 / PSK50	80 mm	30525299
SK50 / PSK63	90 mm	30610883
SK50 / PSK80	105 mm	30640859

Reducing adapters incl. taper wiper, suitable for headstock HSK100*

Nominal size HSK100	Measuring length reduction	Order no.
HSK100 / HSK32 Reducer	81 mm	30479388
HSK100 / HSK40 Reducer	85 mm	30479389
HSK100 / HSK50 Reducer	90 mm	30479394
HSK100 / HSK63 Reducer	108 mm	30479437
HSK100 / HSK80 Reducer	115 mm	30120549

Reducing adapters incl. taper wiper, suitable for headstock SK50
With automatic clamping, adapter can be aligned axially and radially. *

HSK Adapter	Measuring length reduction	Order no.
SK50 / HSK32	51 mm	30396033
SK50 / HSK40	51 mm	30396029
SK50 / HSK50	51 mm	30396019
SK50 / HSK63	51 mm	30369855
SK50 / HSK80	101 mm	30523963
SK50 / HSK100	111 mm	30471329

Adapters with centre point
Clamping tools between centres.*

Connection	Measuring length reduction	Order no.
SK50 with sleeve	variable	30222475
SK50 with centre Ø 24 mm	109 mm	10008175
HSK63 with centre Ø 24 mm	102 mm	30504212
HSK100 with centre Ø 24 mm	103.5 mm	30402344

Reducing adapters, suitable for headstock SK50*

Reducing adapters	Measuring length reduction	Order no.
SK50 / SK30 Reducer	16 mm	30429933
SK50 / SK40 Reducer	16 mm	10096796
SK50 / VDI30 Reducer	80 mm	30372833
SK50 / VDI40 Reducer	80 mm	30372834
SK50 / VDI50 Reducer	80 mm	30416485
SK50 / VDI60 Reducer	–	
SK50 / KM50 Reducer	–	
SK50 / KM60 Reducer	–	

Torque wrenches and bits
For clamping KS clamping cartridges.

Torque wrenches and bits	Order no.
Torque wrench for HSK32-40	10040125
Torque wrench for HSK50-80	10040126
Torque wrench for HSK100	10074788
Hex bit for HSK32-40	10040122
Hex bit for HSK50	10040123
Torx bit for HSK63	MN5215-17
Torx bit for HSK80	MN5215-18
Torx bit for HSK100	MN5215-19

* The measuring range is limited by these accessories.

Taper wipers

For cleaning and protecting adapter shanks.

Taper wiper for	Order no.
HSK32	30325980
HSK40	30325981
HSK50	30325982
HSK63	30325983
HSK80	30325984
HSK100	30325985

Setting gauge with straightedge fitted for calibration

Setting gauge for	Order no.
HSK32	30610432
HSK40	30610431
HSK50	30610430
HSK63	30610428
HSK80	30610426
HSK100	30524631
SK30	30459723
SK40	30459725
SK50	30459727
PSK32	30641033
PSK40	30640923
PSK50	30538282
PSK63	30641097
PSK80	30641099

PSK test arbors

Test arbor for	Diameter	Measuring length reduction	Order no.
PSK32	25 mm	175 mm	30640878
PSK40	25 mm	180 mm	30640879
PSK50	32 mm	235 mm	30525297
PSK63	40 mm	322 mm	30640880
PSK80	40 mm	330 mm	30640881

Tool trolley

Catalogued temporary storage of tools and systematic storage of accessories, such as torque wrenches, hex wrenches, Torx wrenches, swinging levers and calibrating mandrels.

	Order no.
Tool trolley	30433276

Cutting edge cleaner

For removing fine particles of dirt on the cutting edge.

	Order no.
Cutting edge cleaner	10074844

Cleaning paper

Paper for cleaning the tool adapter and the spindle.

	Order no.
Cleaning paper	30563007
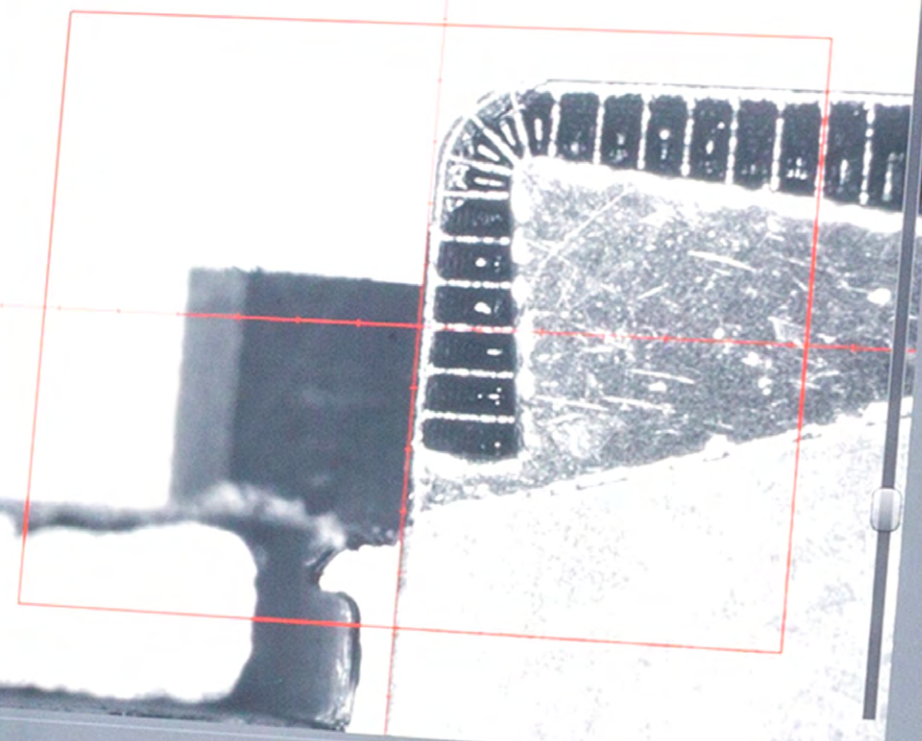
Labels for label printer

- One roll contains 3,315 labels
- Label dimensions: 57x19 mm

	Order no.
Labels for label printer	10097457

Software UNISET

Software UNISET

Software UNISET

The software for all measuring and setting requirements

All electronic setting fixtures in the UNISET series are equipped with the user-friendly software UNISET. For the different requirements for measuring and setting tools, the software provides appropriate measuring functions and the option to connect to existing peripherals.

The comprehensive software not only includes intuitive features, it also enables adjustments to be made in advance based on individual needs. Along with this flexibility in the application content, the software UNISET is also extremely user-friendly.

Some of the software features in detail

**Insert configuration
by means of geometric elements**

In total there are five basic geometries. Using one basic geometry or the combination of two basic geometries, every cutting edge form can be clearly represented. In the figure for example, the tool cutting edge is measured using the basic geometries "diameter" and "length" and supplemented with a radius measurement and an angle measurement. The measuring range (ROI) can also be configured as required for each cutting edge form.
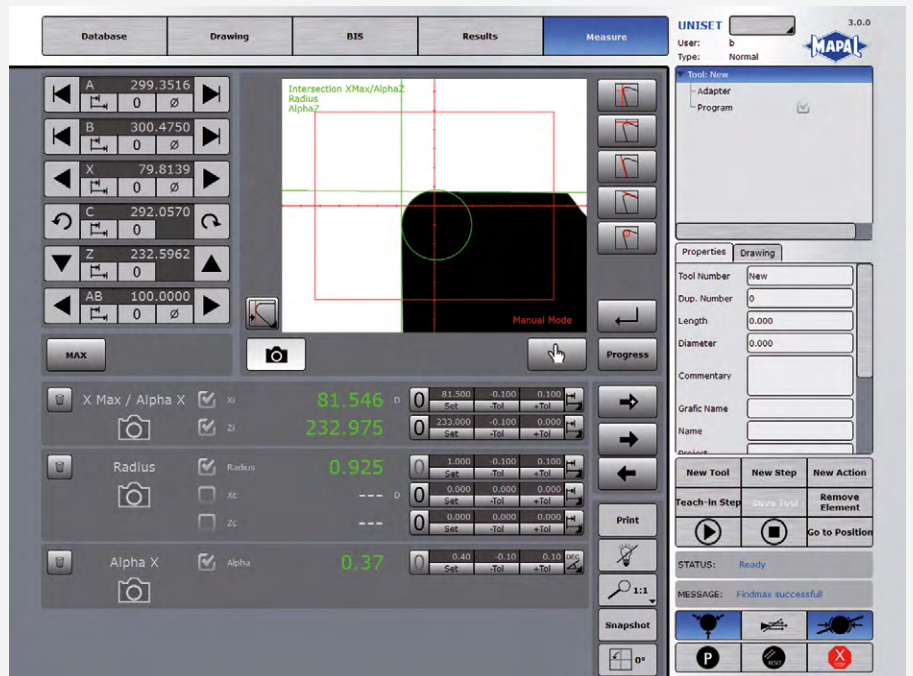
"Teach in" programming

A complete tool program can be created in just a few clicks thanks to the intuitive software operation. For example, by clicking on a new tool step, all axis positions can be saved automatically and then moved to in the program (see figure).
The insert configurations are assigned to these measuring step.
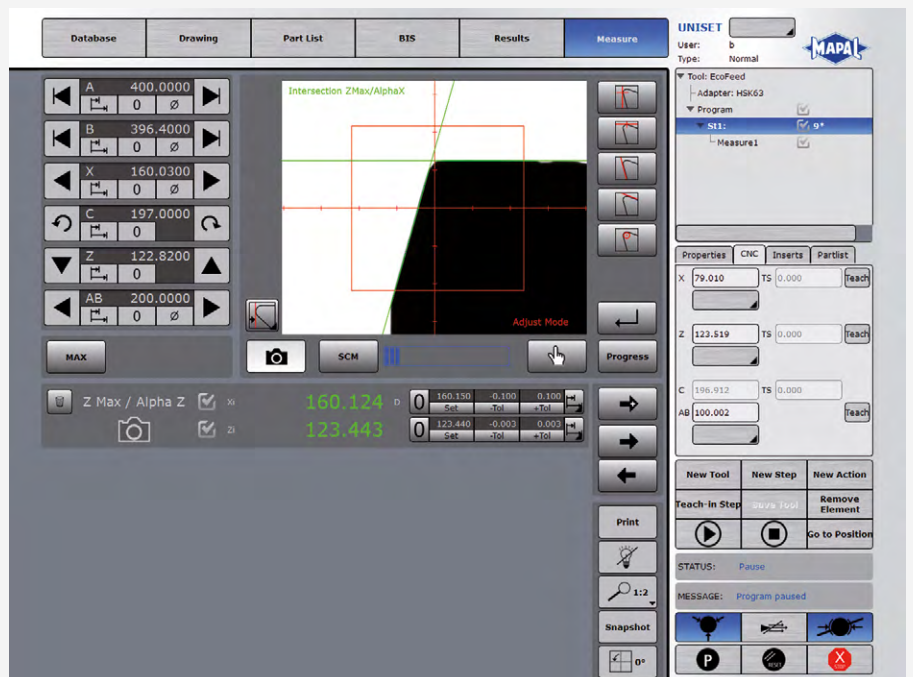
Measuring and setting features

The software package contains numerous standardised measuring functions. If further functions are required, a custom solution can be prepared with MAPAL as your partner.

- Straightforward, intuitive insert configuration by means of geometric elements (diameter, length, angle)
- Measurement of small circle sectors
- Measurement of inner contours
- Straightforward setting of the measuring range
- Combined image to display the actual contour of the tool in rotation
- Beam measurement for measuring a

- defined point on the contour
- User-friendly programming for custom program runs ("Teach in" programming)
- Programming of protrusion measurements including back taper
- Automatic radial run-out measurement (optical or tactile)
- Swinging lever measurements can be programmed
- Setting or measuring mode per tool step (with tolerance check)

### Re-measuring inserts without risk of mix-ups

After a measuring process, the measured values are displayed graphically on the monitor as a bar chart (see figure). Individual inserts may vary from the setpoint, either because they are damaged or set incorrectly (red bar in the figure). Re-adjustment is necessary for the inserts with a red bar.

Clicking on the insert in the bar chart automatically moves to the selected insert. As such, it is impossible to mix up the inserts.

Programming protrusion measurements and automatic back taper

Using the functional elements for the tactile measurement, automatic measuring functions for protrusion measurements and swinging lever measurements can be integrated into a tool program quickly and easily. Depending on the measuring function, the software automatically outputs the protrusion, back taper or absolute dimension as the result with µ-precision.
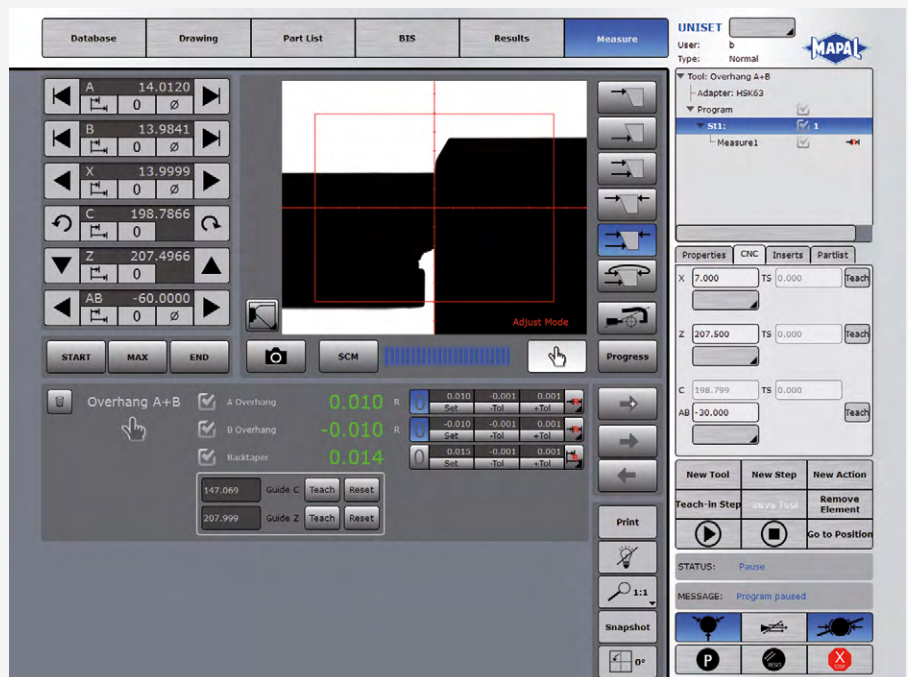
Software UNISET

Environment and additional options

Along with the measuring functions, the software UNISET also provides extensions for connecting to the customer's existing peripherals or additional measurement and management tasks. Measurements and settings are optimally supported and simplified by these features.

Environment and additional options, features

- Flexible user management and user rights (for example with RFID chip)
- Tool search in three directions for connections with an undefined or re-adjustable cutting-edge position
- Freely configurable label and report templates
- Flexible results management (CSV, PDF, label printing)
- Individual settings in relation to customer requirements on the machine (translation, software parameters)
- Machine-specific adapter management

Some of the software features in detail

Second camera system (SCM)

Using the second camera system, various measurements can be taken from the top view. The main function of the second camera system is a rotation centre measurement. This measurement is very practical for precisely setting the insert height of turning tools. An inspection of the cutting edge can also be carried out on any tool.
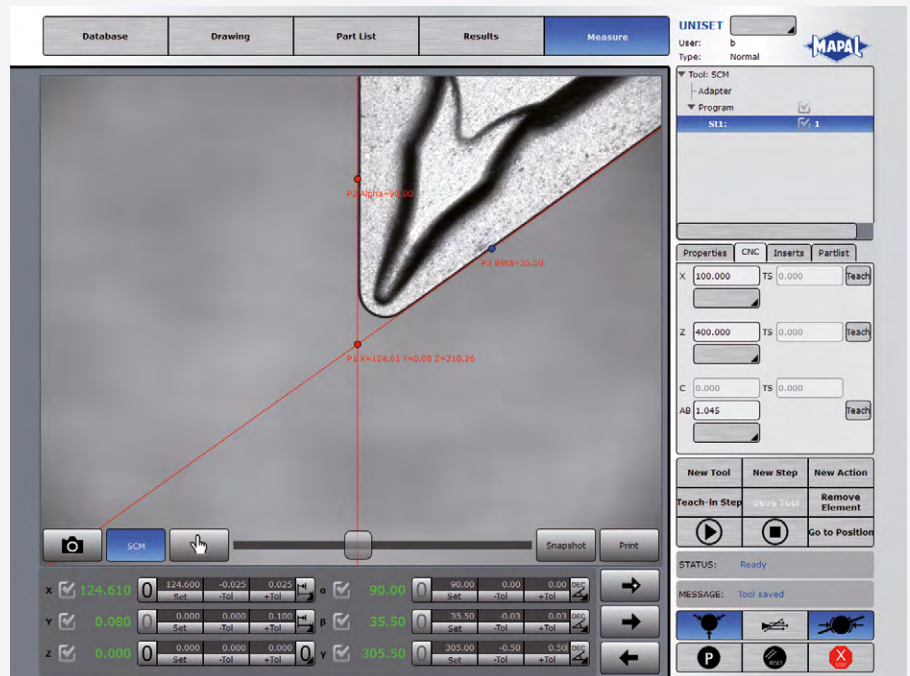
Individual settings

Customisation options cover, for example, the customer-specific editing of label and report templates. Among other things, the customer logo can be integrated into the report. A further special feature is the flexible measurement results management or the measurement of special tools, for example angular milling heads. These and other custom solutions can be adapted to your individual needs using the software.

Database

Tool data sets are managed simply and clearly in a database. The folder structure in the database can be defined to suit your requirements. All data added and modified are listed with the date and can be clearly assigned to different departments or machines.


Tool chip (BIS)

Tool information on a tool chip can be read out automatically and rewritten at the end of a program.

The tool chip (BIS) can be configured as required for several different machines. The chip is embedded directly in the tool and in this way ensures the error-free allocation of the tool data, such as:

- Tool identification number
- Geometric length
- Wear length/radius
- Target/actual tool life (also step-related)
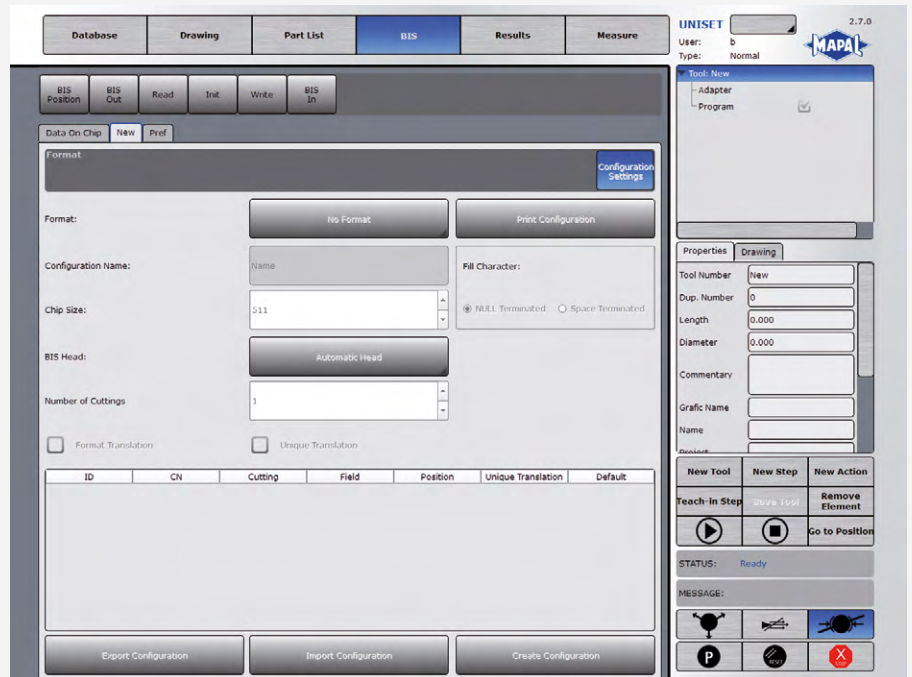
Flexible interface system

The flexible interface system ensures communication between the UNISET software and the customer's superordinate systems. Among other things, this enables tool metadata as well as target-value and tolerance data to be imported from MES/CAM systems. For common tool types, the measuring programs can be generated completely automatically based on this data. Data can also be exported: Measurement results are output according to customer-specific requirements after the end of the measuring program and passed on to leading systems. Status changes (e.g. "Tool is now measured") can also be initiated here.

UNIBASE-M

CONTROLLED TOOL DISPENSING, CONTINUOUS INVENTORY MONITORING

Dispensing and managing with UNIBASE dispensing systems

DISPENSING

For the upright storage of tools that are already completely assembled, MAPAL is introducing the new UNIBASE-V additional cabinets with up to four electronically locked vertical drawers.

The UNIBASE-C cabinet manages tools and dispenses them individually. It completes the portfolio of the storage modules. A very large number of small and individual parts can be

stored in a UNIBASE-C cabinet over a relatively small area. Selecting an item only opens its specific compartment, meaning that this single tool dispensing solution also offers advantages in terms of theft protection.

In addition, the software UNIBASE has been completely overhauled. It is more user friendly and remote access is now possible from any end device.

Dispensing

UNIBASE-M

- All-round system for tools, parts and accessories
- Dispensing limit enables secure and managed dispensing of items
- Custom configuration of the requirement profile
- Straightforward expansion with other M, C or V cabinets

UNIBASE-V additional cabinet

- Ideal storage system for connections and complete tools
- Proven in use for tool management projects
- Automatic opening of drawers
- Load-bearing capacity per drawer up to 600 kg
- Can be integrated into existing systems
- Storing long tools vertically
- No risk for inserts

UNIBASE-C

- – Controlled individual dispensing
- – Increased protection against theft
- – Safe, optimal storage of small parts
- – Up to 640 compartments

UNIBASE software

- – Keyword-based search
- – User-specific customisation of the software user interface
- – Remote access from any end devices
- – Connection to the customer network or ERP system
- – Open web interface – Internet of Things support
- – Items dispensed quickly with shopping basket
- – Just a few clicks to retrieve an item – one navigation direction
- – Comprehensive assessment possibilities
- – Visualisation of how the drawers are divided helps you retrieve the correct item

Page 66

Page 72

UNIBASE-M

UNIBASE-M

UNIBASE-M

Controlled dispensing and management

The UNIBASE-M automatic tool dispensing system provides optimal storage and management of tools, components and accessories. It ensures the quick, efficient and controlled supply of items and has many innovative, user-friendly characteristics. The dispensing limit ensures even greater security in relation to stock differences and incorrect withdrawals. Starting from a basic module with a computer unit, the so-called master cabinet, UNIBASE-M can be specifically configured to suit your requirement profile.

1 Monitor
With the 22" touch screen monitor and the tool software, items can be managed clearly and directly.

2 Master cabinet
The master cabinet is the basic module of the UNIBASE-M and contains the monitor and the computer unit for automatic tool dispensing.

3 Barcode scanner
For quick, straightforward searching or stocking, the tools can be read conveniently using a barcode scanner. Alternatively, system login by barcode is also possible.

4 Additional cabinet (slave unit)
The additional cabinet can be connected to any UNIBASE master system.
The drawers can be divided however you like in order to accommodate different items. Up to 30 additional cabinets can be added.

Application example

Dispensing items
A tool stored in the UNIBASE-M is dispensed by a user with withdrawal and return rights.

1 First, the user logs onto the system securely using their RFID chip. In this way, all withdrawals and returns are automatically logged to the user's name.

2 As a barcode for the tool is already saved in the stocklist in the system, the barcode for the related tool can be read out conveniently using the barcode scanner. The tool is then found directly in the system, displayed on the monitor and selected.

3 The tool quantity required is entered on the monitor, as is the other defined withdrawal information, such as the cost centre for the user making the withdrawal. The tool is dispensed at the press of a button immediately afterwards.

4 The drawer containing the tool in question opens automatically, avoiding tedious searching through the drawers. The relevant drawer number and the compartment number are displayed graphically on the monitor for quick orientation. The user can now open the drawer fully and remove the tool.

SOFTWARE FEATURES

- Automatic, continuous inventory monitoring
- Connection to customer network or ERP systems
- Cost centre management (part, machine)
- Visualisation of how the drawers are divided

More software features from page 72.

PERFORMANCE FEATURES

- Simple commissioning and robust design
- Practical withdrawal as the relevant drawer is opened; software provides visualisation
- Limited dispensing for the targeted withdrawal of individual parts
- Integrated evaluation features for effective procurement management
- Compatible with existing storage systems
- Communication with tool management and ERP systems, tool pre-setting devices and storage systems

ADVANTAGES

- 24-hour tool availability
- Automatic tool dispensing
- Simple and intuitive to use
- Continuous inventory monitoring
- Cost transparency due to cost control and cost reduction
- Individual customer assessments are automatically sent to a defined group of persons
- Multiple supplier capability
- Process optimisation (procurement effort/order processing)
- Easy to maintain due to electronic units

Options for custom configuration

The configuration options for the UNIBASE-M offer enough freedom for bespoke system configuration or system expansion. Additional cabinets, software and interfaces are available in various basic configurations.
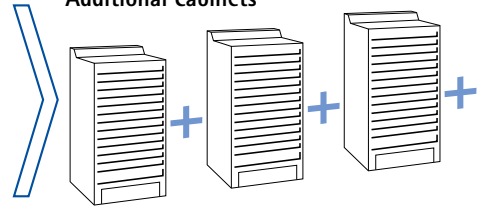
A customised system configuration is recommended so that the individual components in a system environment will be perfectly in tune with each other.
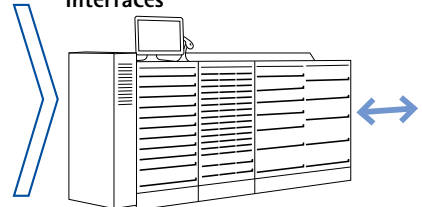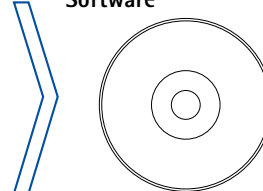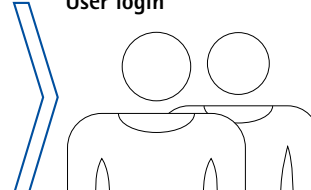
Barcode scanner
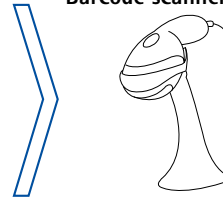
Additional cabinets

Interfaces

Software

User login

Additional cabinets

MAPAL not only offers a standard range of additional cabinets, but also provides the option of configuring the cabinets as required. The number and height of drawers can be custom arranged according to individual requirements. Subsequent expansion can also be easily implemented by the customer.

Standard designs:

Cabinet features	Additional cabinet with 13 drawers	Additional cabinet with 54 drawers	Additional cabinet with 90 drawers
Number of drawers x drawer height	12 x 75 mm	48 x 50 mm	80 x 50 mm
	1 x 150 mm	6 x 100 mm	10 x 100 mm
Housing dimensions (WxDxH)	717 x 750 x 1,390 mm	717 x 750 x 1,390 mm	1,159 x 750 x 1,390 mm
Load capacity per drawer	75 kg	25 kg	25 kg
Useable height	1,050 mm	1,000 mm	1,000 mm
Storage area	4.68 m^2	4.63 m^2	7.72 m^2
Dispensing limit	–	✓	✓

Individual drawers for master cabinet and additional cabinet

	Drawer width	Drawer height	Drawer raster	Useable height
	612 mm (wide)	75 – 300 mm (variable)	25 mm	1,050 mm
	153 mm (narrow)	50 – 200 mm (variable)	25 mm	1,000 mm
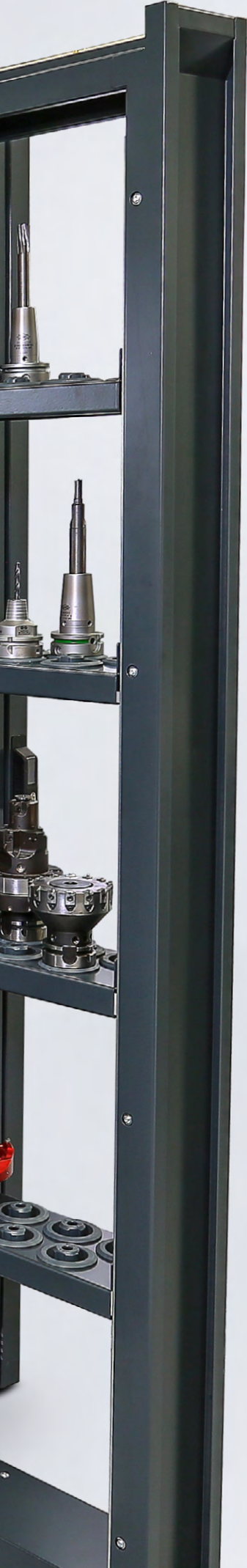
UNIBASE-V
ADDITIONAL CABINET

UNIBASE-V additional cabinet

UNIBASE-V additional cabinet

Vertical cabinets for storing fully assembled tools

If large, heavy tools are already assembled in the tool-setting area but are not yet needed on the machine, they must be stored temporarily. For these situations, MAPAL has introduced the new UNI-BASE-V additional cabinets with up to four electronically locked vertical drawers. Each of the automatically opening drawers has a maximum load-bearing capacity of 600 kg and is equipped with tool holders that can be fitted on the inside to suit the specific customer requirements. The vertical drawers are compatible with existing UNIBASE-M systems and are controlled via the master unit.

1 Master cabinet
The master cabinet is the basic module of the UNI-BASE-M and contains the monitor and the computer unit for automatic tool dispensing.

2 UNIBASE-V additional cabinet
The vertical cabinet is controlled via the master unit and has a maximum of four electronically locking vertical drawers.

3 Vertical drawer
The vertical drawers that open automatically can be individually equipped with tool holders. Up to 600 kg can be stored in each roller-guided drawer.

4 Tool holder
The tool holders are configurable and can be loaded with large, fully assembled and pre-set upright tools.

5 Cabinet lock
The cabinet lock is used to activate and deactivate the emergency unlocking of the vertical drawers.

UNIBASE-V additional cabinets

MAPAL offers the UNIBASE-V additional cabinet in various standard designs which differ in the division of the vertical drawers. For the purpose of meeting individual requirements, the drawer tool holders can be configured as desired. Subsequent expansion can be easily implemented by the customer.

Additional cabinets – vertical cabinet
Standard designs:

Cabinet features	Additional cabinet with 2 vertical drawers	Additional cabinet with 3 vertical drawers	Additional cabinet with 4 vertical drawers
Height	2,000 mm	2,000 mm	2,000 mm
Width	717 mm	717 mm	717 mm
Depth	725 mm	725 mm	725 mm
Storage area	1.085 m^2	1.085 m^2	1.085 m^2

Individual vertical drawers for vertical cabinet

Vertical drawer	Width	Raster	Height	Useable height	Usable depth
	155 mm	40 mm	1,960 mm	1,750 mm	628 mm
	315 mm	40 mm	1,960 mm	1,750 mm	628 mm

UNIBASE-C

UNIBASE-C

UNIBASE-C

Single tool dispensing machines for safe storage of small parts

The new UNIBASE-C cabinet manages tools and dispenses them individually. It completes the portfolio of the storage modules. A very large number of small and individual parts can be stored in a UNIBASE-C cabinet over a relatively small area. Selecting an item only opens its specific dispensing compartment, meaning that this single tool dispensing solution also offers advantages in terms of theft protection. The UNIBASE-C is available in standard designs, can be used as an individual solution or can be connected to existing UNIBASE-M systems.

1 UNIBASE-C master system
The UNIBASE-C can be used as an independent system with a computer unit and touch monitor. Further slave systems can also be subsequently integrated into existing systems.

2 Dispensing compartment
The dispensing compartments open automatically after item dispensing. The single dispensing solution allows only one compartment to be opened at a time, therefore supporting a safe and controlled removal procedure for individual items.
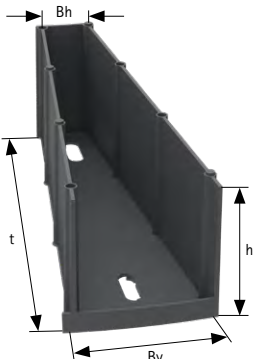
3 Software UNIBASE
The revised and user-friendly UNIBASE software can be conveniently operated via touch monitor. You will find more information on the software features from page 72.

UNIBASE-C single dispensing system

MAPAL offers the UNIBASE-S single dispensing system in various designs. For the purpose of meeting individual requirements, the number and arrangement of the dispensing compartments can be configured. Different drum designs are available for this purpose. The UNIBASE-C is available as a primary and secondary system.

UNIBASE–C compartment designs

Compartment features	UNIBASE-C compartment designs			
	Compartment A	Compartment B	Compartment C	Compartment D
Height (h)	68 mm	68 mm	136 mm	136 mm
Front width (Bv)	68 mm	140 mm	68 mm	140 mm
Rear width (Bh)	23 mm	60 mm	23 mm	60 mm
Depth (t)	237 mm	237 mm	237 mm	237 mm

UNIBASE–C drum designs

Total number of compartments	640 compartments	448 compartments	320 compartments	160 compartments
Quantity, compartment A	640	320		
Quantity, compartment B		32	160	
Quantity, compartment C		64	160	
Quantity, compartment D		32		160

Cabinet features

Cabinet feature	Size information
Height	2,000 mm
Width	1,080 mm
Depth	875 mm
Weight	275 kg

Software and interfaces

UNIBASE-M includes a tool management software. It is possible to expand the software or the interfaces at anytime, including retrospectively. In this way, the tool dispensing system can be integrated into existing working environments.

A wide range of interfaces ensures the smooth integration of the UNIBASE-M into the system environment – with other UNIBASE-M units, existing operating equipment and ERP systems.

Examples of software and interfaces

Software for external operation

The software for the UNIBASE-M makes it possible to maintain the master data via an interface. All settings on the system can be made from the user's own workplace. Five users can utilise the external operation at the same time. This number can be increased.
Advantages and possibilities of external operation:
• Several users can access the system at the same time.
• Items can continue to be withdrawn and stocked on the UNIBASE-M during external operation.
• No additional software is required for external operation.
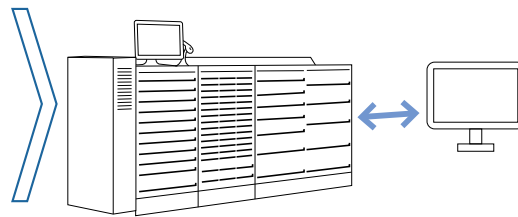
### Interface to other UNIBASE-M units with central data management

If there are several UNIBASE-M units, the interface ensures smooth networking of the cabinets. All data is stored centrally on a server and transferred to all UNIBASE systems.
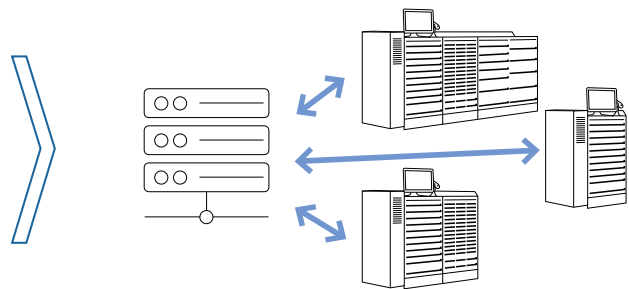
Interface to existing operating equipment

Existing third-party devices, for example Kardex or Hänel lifts, can be connected to the UNIBASE-M cabinet system. Additional interfaces for orders or item creation include the following:
• Import / export (items, users, etc.)
• Order via email (CSV or XLSX file)
• Connection via API interface
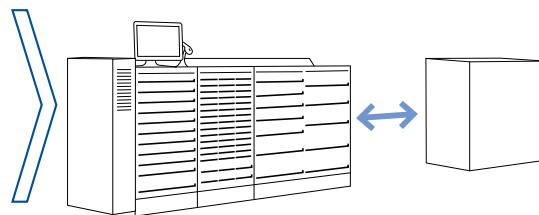
ERP interfaces

Numerous variants are available for connection to an ERP system. Here, above all, the inventory synchronisation and the transmission of master data play an important role so that two systems do not need to be maintained separately.
Implemented ERP interfaces:
• Send booking file (CSV file)
• Goods movements via JSON REST interface
• IoT REST interface:
  - Filling the shopping basket (item reservation)
  - Stock query
  - Query of goods movements
  - User data query
  - Measuring equipment status query
• c-Com connection
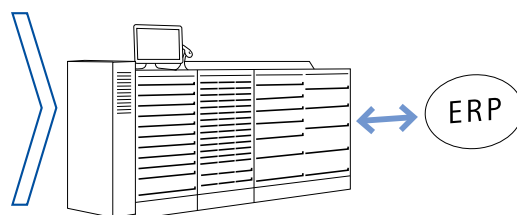
Interface to cloud-based tool management systems

The interface provides data exchange between the UNIBASE-M cabinet system and the cloud-based c-Com platform. This provides real-time evaluations, a current overview of tool stock and automatic material requirement planning. Central data management of item, part and technology data, for example, is always guaranteed.
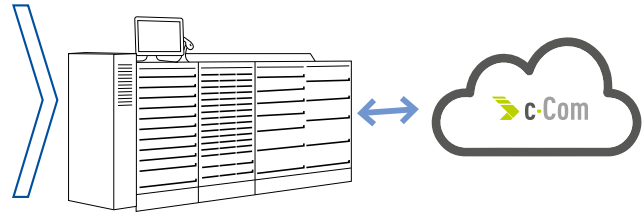
Accessories

1D barcode scanner
For scanning barcodes.

	Order no.
1D barcode scanner	30551669

2D barcode scanner
For scanning barcodes and 2D codes, for example QR codes.

	Order no.
2D barcode scanner	30607281

User login – readers
The user can log in to UNIBASE-M using an RFID chip or a fingerprint system. All common RFID standards are supported.

	Order no.
RFID reader 1 – Admitto 1200	30599972
RFID reader 2 – Admitto 3100	30604647
RFID reader 3 – Admitto 2000	30604649
USB fingerprint reader	30606059

Additional cables
Additional cables for adding cabinets on both sides of the master unit or for installing cabinets variably. For this purpose, cables are available for the power supply and data transmission.

Cables for power supply

Cable length	Order no.
3 metres	30610211
5 metres	30610212
7 metres	30610213

Cables for data transmission

Cable length	Order no.
3 metres	30610214
5 metres	30610215
7 metres	30610216

Monitor
Monitor permanently fastened to the housing.

	Order no.
Monitor	30619253

Arrangement material for large drawers
Standard arrangement material for large drawers for dividing the drawers into nine compartments.

Drawer height	Order no.
50 mm	30638414
75 mm	30638416
100 mm / 125 mm	30638420
150 mm / 175 mm	30638422
200 mm	30638426
250 mm	30638428
300 mm / 400 mm	30638429

Licence for external administration
A licence is valid for one user.
An additional installation is not necessary.

	Order no.
Licence for external administration	30600938

Interface licence to other UNIBASE-M units
One licence is valid for one controller.

	Order no.
Interface licence to other UNIBASE-M units	30604686

Software UNIBASE

MAPAL has developed new software for UNIBASE-M tool dispensing systems: UNIBASE. In the new version, the search logic has been completely revised to significantly enhance ease of use. The search function was previously transaction-based and it often required several selection steps to reach the item you were looking for. The focus is now on the article sought instead of a transaction. The search function is now much more convenient and faster due to the simple entry of one or more keywords.

The second major innovation of the new software is the open web interface. The software is based on the Internet of Things and can be accessed remotely. It can be controlled by any end device and operating system. Master data and movement data can be exchanged via the open, cloud-based c-Com platform without restriction. UNIBASE-M tool dispensing systems have been supplied with the in-house software since October 2017. The software is being continuously developed, and updates are provided. Existing customer systems can optionally be updated to the new software.

UNIBASE software in detail

1 Main menu

The user interface can be set up and designed to suit the specific needs of the system user. The most recent withdrawals and user-related reports can be arranged and opened on the main menu.

Software Features

- Keyword-based search
- User-specific customisation of the software user interface
- Remote access from any end devices
- Connection to the customer network or ERP system
- Open web interface – Internet of Things support
- Just a few clicks to retrieve an item – one navigation direction
- Comprehensive assessment possibilities
- Visual display of how the drawers are divided
- Multiple supplier capability
- Multi-lingual operation
- Automatic material requirement planning
- Management of new tools
- User management
- Cost centre management
- Product group hierarchy
- Configurable import
- Several login options
  (RFID, fingerprint, username/password)

- Shopping basket management
- Measuring equipment management
- Loan tool management
- Order number management
- Parts list management
- Re-grinding management
- Return of blunt tools
- Buffer storage management
- Key cabinet management
- Withdrawal limit
- Networking several systems

② Item selection

The keyword search can be used to find the items you are looking for more quickly and efficiently through individual item information. After selecting the item, the system user decides which action is to be carried out. Depending on the user's authorisation, the item can be dispensed, stored or processed.

③ Remote access

Reports can be opened and evaluated at any-time from anywhere using any end device. Various evaluations are available.

④ Shopping basket withdrawals

Selected items can be dispensed in a defined manner using the shopping basket withdrawal feature. During this process, the drawers for the individual items open one after the other, reducing the time required for withdrawal. The visualisation of the compartment on the display ensures withdrawals are clearly defined.
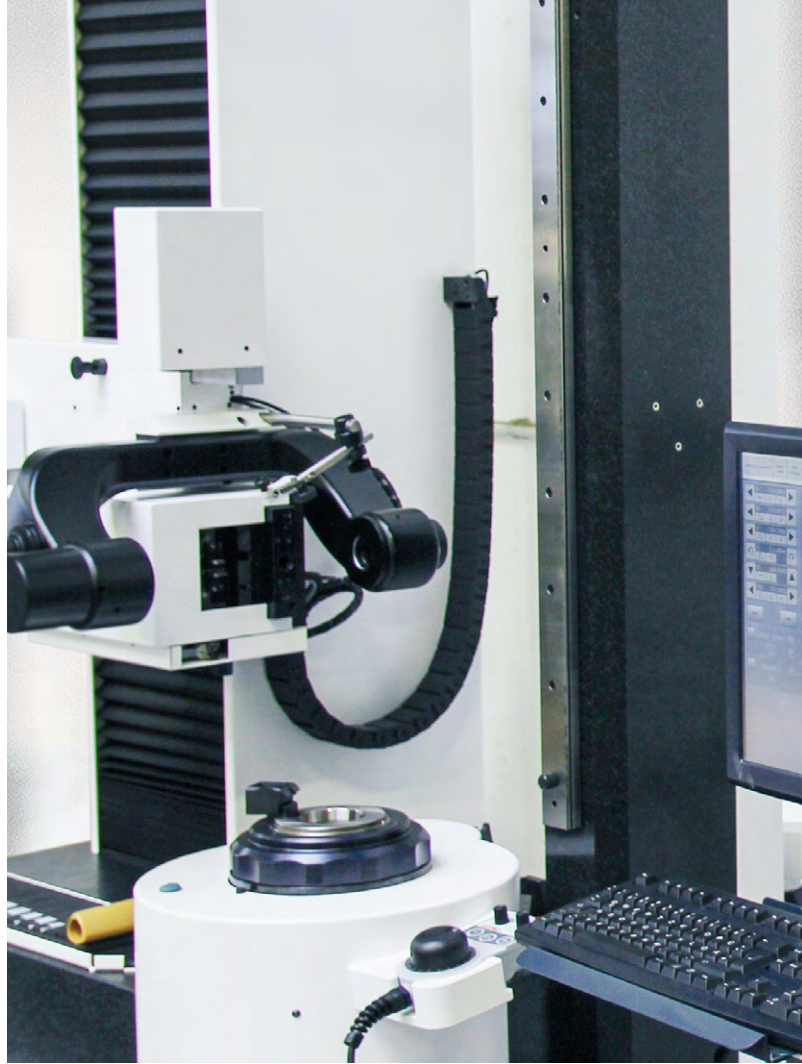
CUSTOMISATION
INSTALLATION
TRAINING
MAINTENANCE

MAPAL services

SERVICES

MAPAL provides comprehensive services for all setting, measuring and dispensing devices. From advice on selecting the right device, to installation and training on-site as well as regular preventive maintenance and servicing – MAPAL is always ready to provide support with its services.

Customisation

In the areas of setting, measuring and dispensing, MAPAL provides comprehensive advice on the complete product portfolio. Requirements and preferences are elucidated during initial discussions in order to find a product that meets the customer's needs. This enables customers to fulfil their ever-increasing requirements with a consistently high standard of quality.

- Modular design of the devices enables individual product configuration
- Customised production and adjustments
- Measuring tasks can also be subsequently extended for setting fixtures in the "hardware" and "software" areas

Installation
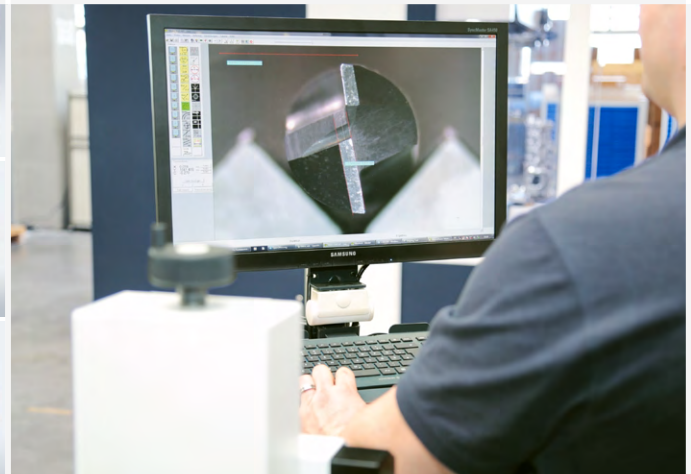
Qualified service personnel undertake the comprehensive installation of the hardware and software components on-site. During this process, specific settings are tailored to the customer. For example, during the installation of setting fixtures, measuring data from other fixtures can be transferred to the software UNISET.

- Reporting and definition of measuring, setting or order data during device commissioning
- Possibility of measuring equipment capability check using the Cg/Cgk, CMR or R&R methods to demonstrate whether tools can be measured to the required tolerance
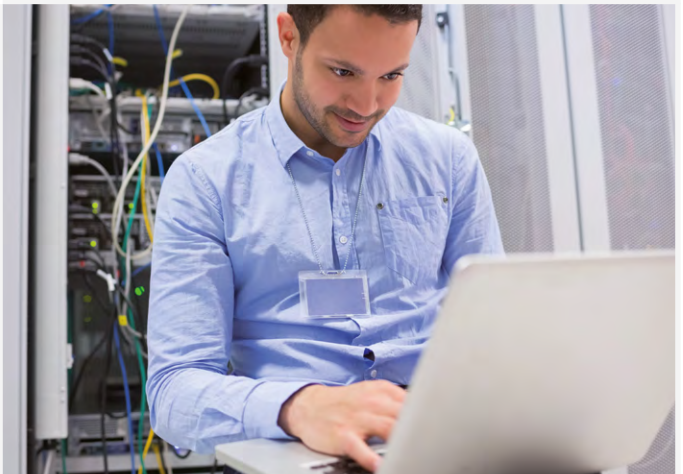
Training

With its training service, MAPAL provides comprehensive training courses and further training on how to use MAPAL products efficiently. Training courses can be held on-site or at MAPAL as required.

- Defined training packages for
  - Programmers
  - Specialist personnel for tool setting
  - Administrators

Maintenance

To plan servicing and maintenance dates to suit the customer and to keep the service costs as low as possible, an individually adaptable maintenance contract can be concluded. The service team checks the devices at a defined inspection interval. Free software updates are also installed during the annual maintenance appointment or remote maintenance.

- Software add-ons
- New developments and problem resolution

- Service hotline
  (Mon – Fri 7 a.m. to 5 p.m.)
  Tel. +49 7361 585 3636
 Email: service-ms@de.mapal.com

SERVICES

Tool Management 4.0

THE FUTURE
FOR YOUR PRODUCTION
TOOL MANAGEMENT 4.0

MAPAL now provides its tool management services based on the c-Com platform. This "Tool Management 4.0" ensures the highest possible transparency with regard to all data and goods flows as well as costs.

Digitalisation is creating completely new possibilities for tool management. Data and information can be provided in a much more transparent and consistent manner for all parties involved – manufacturing, purchasing, planning, tool manager and supplier. In this way, the overall process is more efficiently structured. For this purpose, MAPAL relies on the c-Com open cloud platform, a product of c-Com GmbH, and provides digital tool management based on this. This creates a cross-functional and group-wide technology database for companies. Redundant structures are a thing of the past.
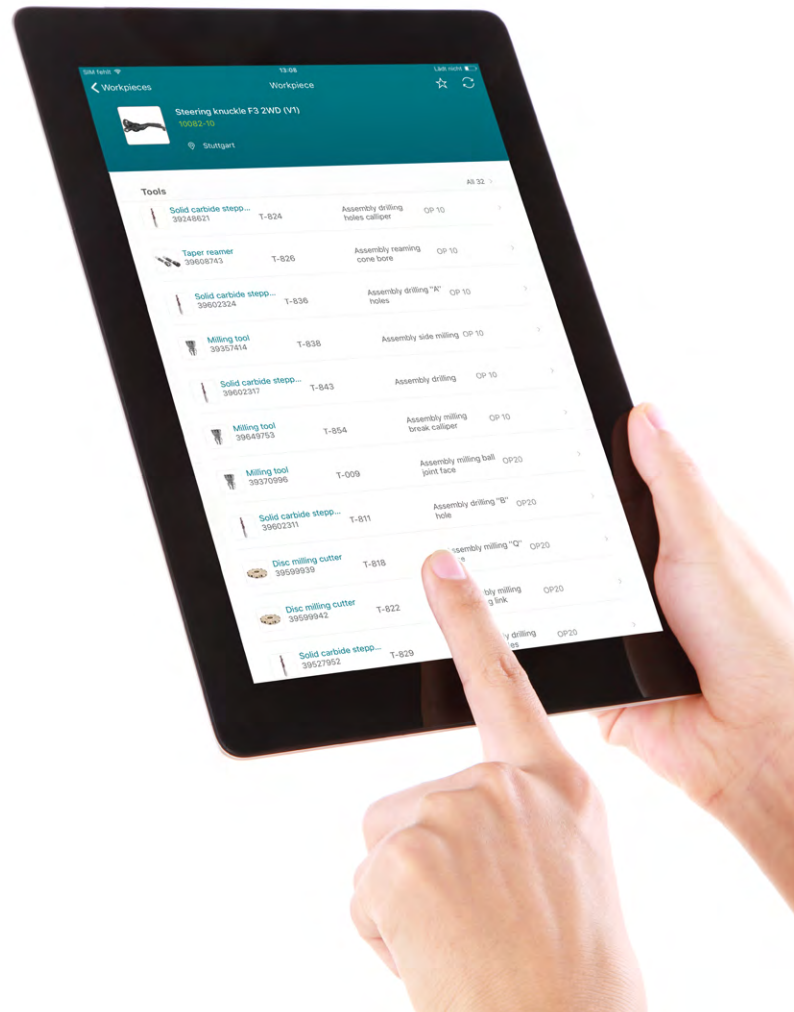
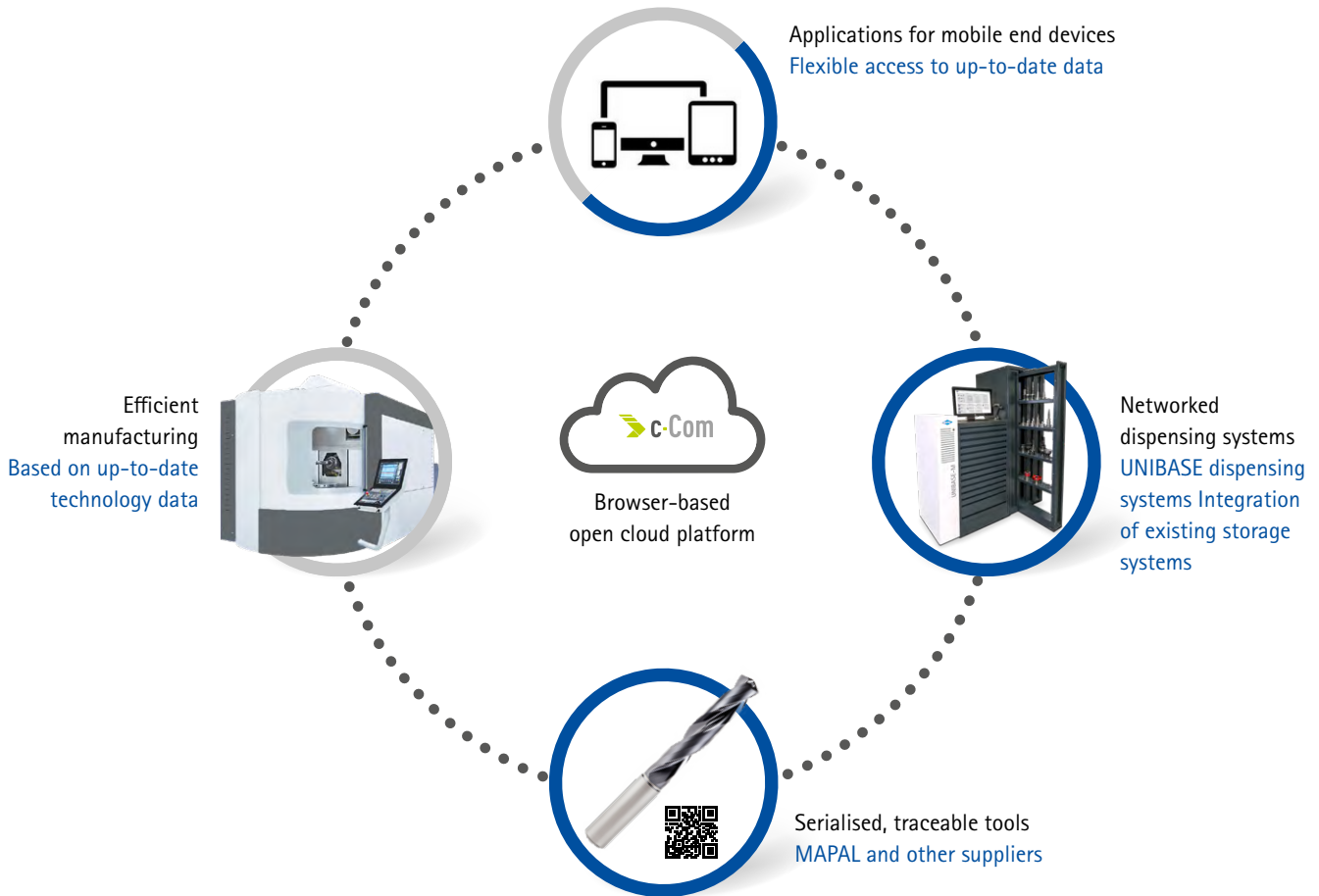## YOUR INITIAL SITUATION

YOU WANT
TO SAVE COSTS

Using Tool Management 4.0, your processes are simpler, more transparent and quicker. Up-to-date technology data ensure efficient manufacturing around the world. You have access to all relevant data at all times and therefore retain complete control of costs.

YOU WANT
MORE TRANSPARENCY

You have access to all data related to your tool management project at all times. All data changes, such as changes to the cutting parameters or the tool drawings, are documented and are available and can be viewed in full by all involved.

YOU WANT
UP-TO-DATE DATA

Tool Management 4.0 makes working together easier than ever before. All data are only recorded once. Duplicate data sets are a thing of the past. Information is available to everyone involved and is always up-to-date.

Applications for mobile end devices
Flexible access to up-to-date data

Efficient
manufacturing
Based on up-to-date
technology data

c·Com

Browser-based
open cloud platform

Networked
dispensing systems
UNIBASE dispensing
systems Integration
of existing storage
systems

Serialised, traceable tools
MAPAL and other suppliers

◯ **CUSTOMER**   ● **TOOL MANAGER**

With Tool Management 4.0, you benefit from our comprehensive know-how as a complete supplier for machining. Along with leading tool solutions and services related to the machining process, MAPAL offers highly accurate setting fixtures, as well as intelligent dispensing systems developed in-house. The browser-based open cloud platform c-Com networks tools, warehouse and production and ensures you can access your data in real time wherever you are. You therefore have full control of all costs incurred at all times. Technology data are entered and managed centrally. In this way, it is ensured that all employees at all sites have access to the same up-to-date data at all times. You benefit from everyone's accumulated knowledge and know-how. As a result, your manufacturing is more efficient and costs can be reduced.
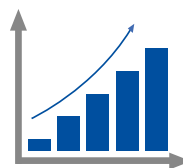
YOUR BENEFITS

MORE networking

MORE transparency

MORE efficiency

MORE cost control

Discover tool and service solutions now that give you a lead:

BORE MACHINING
REAMING | FINE BORING
DRILLING FROM SOLID | BORING | COUNTERSINKING

MILLING

CLAMPING

TURNING

ACTUATING

SETTING | MEASURING | DISPENSING

SERVICES

FOLLOW US