Measuring/testing technology

- Vernier calipers
- Micrometers
- Thread measuring wires
- Setting gauges
- Universal measuring instruments

- Gauge blocks
- Gauges
- Measuring ball sets
- Optical flats
- Measuring and test pins
- Keyway gauge bodies

- Dial gauges and measuring probes • Sensors and display units • Depth measuring instruments • External and internal measuring instruments
- Roughness measuring devices
- Physical measuring instruments

- Gauge stands
- Magnetic holders
- Measuring stands
- Feet for measuring stands
- Measuring tables
- Measuring and control plates

- Height measuring and marking devices
- Multi-coordinate measuring instruments
- Measurement data recording systems • Connection cables
- Marking tools

- Rulers and squares • Clamping elements • V-block pairs and clamping V-blocks • Parallel rests
- Measuring, control, marking-off and surface plates • Marking paint and surface contact paste
- Concentricity test devices

- Goniometers
- Film strips
- Feeler gauge strips
- Gauges and templates
- Thread indicators
- ISO tolerance keys

- Inclinometers
- Levels and spirit levels
- Laser systems
- Rangefinders • Scales
- Tensile and compressive force measuring units
- Pressure load cells

- Stopwatches
- Tachometers/stroboscopes
- Thickness measuring devices
- Hardness testers
- Magnification and viewing devices
- Scales/tape measures • Batteries

Test equipment monitoring service

- Test equipment monitoring service and calibration service

Our suppliers
for MEASURING/TESTING TECHNOLOGY:

ATORN®

HHW

amf

BAHCO

BMI®

BOSCH

Deumo

DIATEST

ESCHENBACH

FISSO
Swiss Made

GEDORE
WERKZEUGE FÜRS LEBEN

hanhart
CHRONOGRAPHEN 1882

Hartig

HAZET®

HELIOS · PREISSER

JENOPTIK

KERN®

Kroeplin
Längenmesstechnik

Leica DISTO™
The original laser distance meter

Magnescale
SPEED X PRECISION

Mahr

MICROTEST
Swiss Made

NOGA
SIMPLY SOPHISTICATED

Pica
Tools for Professionals

PLANOLITH®

QNIX®
QUALITY BY EXCELLENCE

RIDGID

ROECKLE®
Neigungsmesstechnik e.K.

RUGOTEST

SAUTER

Schwenk

STABILA®

STANLEY

STEINWALD
datentechnik

sylvac

TESA

testo

TICOM

Waldmann W
ENGINEER OF LIGHT.

wiha
Tools that work for you

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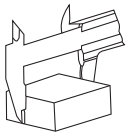
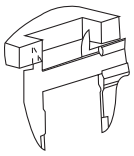
Info — Uses for pocket vernier calipers

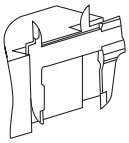
External measurement



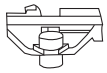
Internal measurement



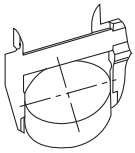
Contact or collar measurement



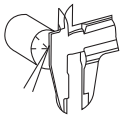
Recess measurement



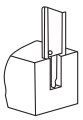
Diameter measurement



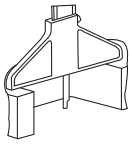
Centre marking



Depth measurement



Depth measurement with depth measuring bridge



31007 - 31009 Precision pocket vernier calipers

HHW

Design
- Measuring surfaces ground and finely lapped
- With depth measuring rod
- **Brushed chromium-plated scale**
- **Accuracy in accordance with DIN 862**
- **Lowered mm and inch graduations**
- **Reading 0.05 mm and 1/128 inch**
- Thread table on the reverse
- Supplied in a case

Applications
For external, internal, depth **and contact or collar measurements.**

Quality
Stainless steel, rail and slide hardened.

31007

31008

31009

Measuring range mm	Jaw length mm	Reading mm	Locking screw, top 31007	...	Torque clamp 31008	...	Locking screw, bottom 31009	...
100	27	0.05		101				
150	40	0.05		102		101		101
200	50	0.05		104		102		
300	60	0.05		103				

31010 Precision pocket vernier calipers for left-handed users

HHW

Design
- Pocket vernier calipers for left-handed users
- With locking screw
- 4 measurements
- **Reading 0.05 mm and 1/128 inch**

Quality
Stainless steel, hardened.

31010

Measuring range mm	Jaw length mm	Reading mm	Locking screw 31010	...
150	40	0.05		101

31011 - 31012 Precision pocket vernier calipers

ATORN®

Design
- Measuring surfaces ground and finely lapped
- **Brushed chromium-plated scale**
- **Accuracy in accordance with DIN 862**
- **Reading 0.05 mm and 1/128 inch**
- Supplied in a case

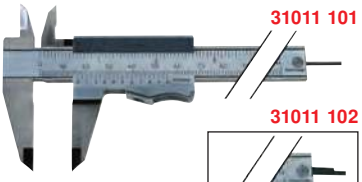
Applications
For external, internal, depth **and contact or collar measurements.**

Quality
Stainless steel, rail and slide hardened.

31011 101 + 31012 101
Design
- Depth measuring rod round

31011 102 + 31012 102
Design
- Depth measuring rod flat

31011 101



31011 102

31012 101

31012 102

Measuring range mm	Jaw length mm	Reading mm	Depth measuring rod	Torque clamp 31011	...	Locking screw 31012	...
150	40	0.05	Round Ø 1.8		101		101
150	40	0.05	Flat		102		102

Pocket vernier calipers | Depth gauge stops | Vernier caliper case

31013 Precision pocket vernier calipers, MarCal 16 FN

Mahr

Design
- Vernier scale and rail graduations brushed chromium-plated for glare-free reading
- Measuring surface hardened
- Stepped measuring device
- Raised guideways to protect the scale
- **Accuracy in accordance with DIN 862**
- Thread table
- In case

Applications
For external, internal, depth **and contact or collar measurements.**

Quality
Stainless steel, rail and slide hardened.

31013

Measuring range mm	Jaw length mm	Reading mm	Reading inch	Depth gauge	Locking screw, top 31013	...
150	40	0.05	1/128	Angular		**101**
200	50	0.05	1/128	Angular		**102**
300	64	0.05	1/128	Angular		**103**

31017 Depth gauge stops

Quality
Stainless steel, hardened and ground.

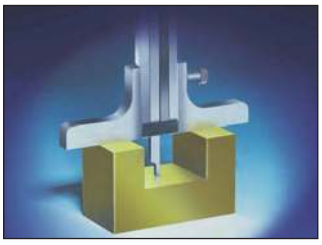
31017 201
TESA

Applications
For TESA **digital pocket vernier calipers** (measuring range 150 mm) and **dial vernier calipers** (measuring range 150 mm)**.**

31017 102
HHW

Applications
For ATORN, HHW and TESA **vernier scale pocket vernier calipers** (measuring range 150 mm)**, digital pocket vernier calipers** (measuring range 150, 200 and 300 mm) and **dial vernier calipers** (measuring range 150 mm).

31017 102



Contact surface mm	31017 ...
75 x 6	**201**
75 x 6	**102**

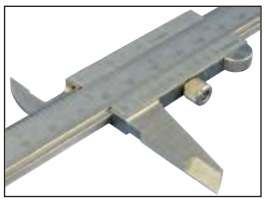
31026 - 31027 Precision pocket vernier calipers

HHW

Design
-**With parallax-free reading**
- Ground measuring surfaces
- With depth measuring rod
- **Brushed chromium-plated scale**
- **Accuracy in accordance with DIN 862**
- **Reading 0.05 mm and 1/128 inch**
- Thread table on the reverse
- Supplied in a case

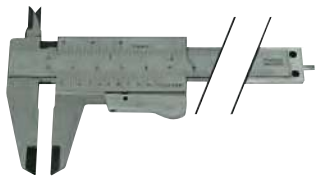
Applications
For external, internal, depth **and contact or collar measurements.**

Quality
Stainless steel, hardened.

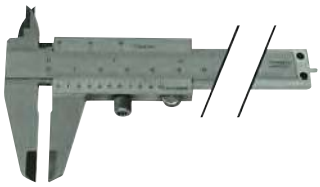


Flat vernier scale enables **parallax-free reading**

31026



31027



Measuring range mm	Jaw length mm	Reading mm	Torque clamp 31026	...	Locking screw 31027	...
150	40	0.05		**101**		**101**

31030 Precision pocket vernier calipers

HHW

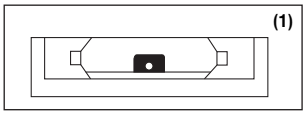
Design
- **With parallax-free reading and double V-guide (1)**
- Measuring surfaces ground and lapped
- With depth measuring rod
- **Brushed chromium-plated scale**
- **Accuracy in accordance with DIN 862**
- **Reading 0.05 mm and 1/128 inch**
- Thread table on the reverse
- Supplied in a case

Applications
For external, internal, depth **and contact or collar measurements.**

Quality
Stainless steel, hardened.

Flat vernier scale enables **parallax-free reading**

31030



Measuring range mm	Jaw length mm	Reading mm	Locking screw 31030	...
150	40	0.05		**101**

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31031 Vernier caliper case

Design
- Vernier caliper case made of synthetic leather
- Black

For vernier caliper measuring range mm	31031 ...
150	102

31033 Digital pocket vernier calipers

IP 67 | Typ J | Typ K | Typ L | swiss made

Design
- **With data output via proximity RS-232/USB**
- Measuring system insensitive to dirt, water and coolant
- **Degree of protection IP 67**
- Additional mm graduation on the rail
- LC display (digit height 6 mm)
- **Accuracy in accordance with DIN 862**
- **One-time adjustment of the zero position and the unit of measurement until the next battery change**
- **Includes battery,** 3 V (type CR 2032), designed for long-term operation

Functions:
- Transmission of measured values
- mm/inch switching
- HOLD function (measured value storage)
- Automatic/manual switch-off

Applications
For external, internal, depth **and contact or collar measurements.**
Also suitable for use in workshops (IP 67).

Quality
Stainless steel, hardened and ground.

Note:
For test gauge, see art. no. 32060 201.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

Measuring range mm	Jaw length mm	Reading mm	Repeat accuracy mm	Rail cross section mm	Depth measuring rod mm	Data output proximity/USB	31033 ...
150	40/20	0.01	0.01	16 x 3	4 x 1.4	x	201
200	40/20	0.01	0.01	16 x 3	4 x 1.4	x	202
300	65/24	0.01	0.01	16 x 3	-	x	203

31034 Digital pocket vernier calipers

IP 67

Design
- **Accuracy in accordance with DIN 862**
- **Degree of protection IP 67**
- **With locking screw**
- With KEEPTRONIC (blocking of the set reference value)
- Supplied in a case **including battery**, 3 V (type CR 2032)

Functions:
- Zero setting at any position
- mm/inch switching
- Switch-on/switch-off
- Energy-saving function (auto-OFF after approx. 10 minutes)

Applications
For external, internal, depth **and contact or collar measurements.**

Note:
For test gauge, see art. no. 32060 201.
Replacement batteries, see art. no. 39900 102.

Measuring range mm	Jaw length mm	Length of cross jaws mm	Reading mm	Depth measuring rod mm	31034 ...
150	40	16	0.01	Ø 1.5	301
150	40	16	0.01	Flat	302

31035 Digital pocket vernier calipers

IP 40 | Typ M | Typ N | Typ O

Design
- **Accuracy in accordance with DIN 862**
- Protection class IP 40
- With locking screw
- **With KEEPTRONIC** (blocking of the set reference value)
- Supplied in a case **including battery,** 3 V (type CR 2032)

Functions:
- Zero setting at any position
- Switching between mm/inch
- Switch-on/switch-off
- Energy-saving function (auto-OFF after approx. 10 minutes)

Applications
For external, internal, depth **and contact or collar measurements.**

Note:
For test gauge, see art. no. 32060 201.
For connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31035 301-302
- **Without data output**

31035 303-305
- **With data output via multiCOM (either RS-232, USB or Digimatic)**

31035 303+305
- **Also with PRESET function (measurement pre-setting)**

Measuring range mm	Jaw length mm	Length of cross jaws mm	Reading mm	Depth measuring rod mm	Data output multiCOM	31035 ...
150	40	16	0.01	Ø 1.5	-	301
150	40	16	0.01	Flat	-	302
150	40	16	0.01	Ø 1.5	x	303
150	40	16	0.01	Flat	x	304
300	64	18	0.01	-	x	305

Pocket vernier callipers

31036 Digital pocket vernier calipers

wiha Tools that work for you

digiMax®

Design
- **Made of non-metallic high-tech material with 50% fibre-glass content,** therefore non-corrosive, non-magnetic, electrically insulating and with minimal thermal conductivity
- Chemical-resistant
- With depth measuring rod
- Measuring faces protect sensitive surfaces against damage
- 5-digit LC display (digit height 7.5 mm)
- CE-compliant
- Supplied in a case

Functions:
- mm/inch switching
- Automatic switch-on/switch-off

Applications
For external, internal, depth **and contact or collar measurements.**

Note:
For test gauge, see art. no. 32060 201.
Replacement batteries, see art. no. 39900 101.
Cannot be calibrated!

31036

Measuring range mm	Jaw length mm	Reading mm	31036	...
150	40	0.01		101

31038 Digital pocket vernier calipers, MarCal 16 ER/EWRi

Mahr

Design
- ON/OFF function
- Auto ON/OFF function
- mm/inch switching
- Reference lock/unlock function (keyboard lock)
- High-contrast LCD display (digit height 11 mm)
- Locking screw on top
- Lapped guideways
- Stepped measuring device
- Ready for immediate measurements with **reference system**
- Raised guideways to protect the scale
- Dirt scraper in the slide

Scope of delivery:
- 3 V battery (type CR 2032)
- Operating instructions
- In case

Applications
For external, internal, depth and contact or collar measurements.

Quality
Stainless steel, rail and slide hardened.

Note:
Replacement batteries, see art. no. 39900 102.

31038 105-106
Type ER
Design
- RESET function (resetting the display)
- Power supply: Battery, service life approx. 3 years

31038 101-104
Type EWRi
Design
- Counting direction reversal
- HOLD function (measured value storage)
- PRESET function (measurement presetting)
- DATA function (data transfer)
- Excellent resistance against dust, coolants and lubricants
- **Data interface: Integrated wireless**
- Power supply: Battery, service life approx. 3 years (approx. 0.5 years with wireless enabled)

Note:
- Wireless receiver, see art. no. 35200 410.

31038

Lapped guide surfaces

31038 101-104

IP 67

Wireless connection, integrated wireless + IP67

Measuring range mm	Type	Jaw length mm	Length of cross jaws mm	Reading mm	Depth gauge	Degree of protection	Standard	31038	...
150	ER	40	16	0.01	Round	-	DIN 862		105
150	ER	40	16	0.01	Angular	-	DIN 862		106
150	EWRi	40	16	0.01	Round	IP 67	DIN 862		101
150	EWRi	40	16	0.01	Angular	IP 67	DIN 862		102
200	EWRi	50	19	0.01	Angular	IP 67	DIN 862		103
300	EWRi	64	19	0.01	-	IP 67	Factory standard		104

Info MarCal - the innovative Reference system

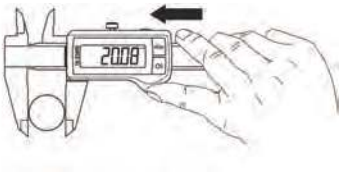
Mahr

All Mahr vernier calipers with the Reference logo are equipped with the innovative **Reference system**. Once the zero position has been set, it remains stored for all further measurements. This means that the instrument is ready to measure immediately after pressing the ON button or simply moving the slide. There is now no need to reset the device to zero after switching on, as with conventional vernier calipers.

1. Switch on

Press or ON button

2. Measurement result



Move slide

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31039 Digital pocket vernier calipers, MarCal 16 ER/EWR

Typ V | Typ W | Typ X

Mahr

Design
- ON/OFF function
- Auto ON/OFF function
- RESET function (resetting the display)
- mm/inch switching
- Reference lock/unlock function (keypad lock)
- DATA function (in conjunction with data connection cable)
- High-contrast LCD display (digit height 8.5 mm)
- Locking screw on top
- Lapped guideways
- Stepped measuring device
- Ready for immediate measurements with **reference system**
- Raised guideways to protect the scale
- Dirt scraper in the slide
- **Data interface: USB, Opto RS-232C, Digimatic**
- Power supply: Battery, service life approx. 3 years

Scope of delivery:
- Operating instructions
- 3 V battery (type CR 2032)
- In case

Applications
For external, internal, depth **and contact or collar measurements.**
Quality
Stainless steel, slide and rail hardened.

Note:
Connection cable, see art. no. 35200 404-406.
Replacement batteries, see art. no. 39900 102.

31039 105–106+201–204
Design
- Excellent resistance against dust, coolants and lubricants

31039 105
Applications
Outer measuring surfaces made of ceramic, for measuring hard materials.

31039 106
Applications
Outer measuring surfaces made of cemented carbide, for measuring hard materials.

31039

Measuring range mm	Type	Jaw length mm	Length of cross jaws mm	Reading mm	Depth gauge	Degree of protection	Standard	31039	...
150	ER	40	16	0.01	Round	-	DIN 862		**101**
150	ER	40	16	0.01	Angular	-	DIN 862		**102**
200	ER	50	19	0.01	Angular	-	DIN 862		**103**
300	ER	64	19	0.01	-	-	Factory standard		**104**
150	EWR	40	16	0.01	Round	IP 67	DIN 862		**201**
150	EWR	40	16	0.01	Angular	IP 67	DIN 862		**202**
200	EWR	50	19	0.01	Angular	IP 67	DIN 862		**203**
300	EWR	64	19	0.01	-	IP 67	Factory standard		**204**
150	EWR-C	40	16	0.01	Round	IP 67	DIN 862		**105**
150	EWR-H	40	16	0.01	Round	IP 67	DIN 862		**106**

31050 - 31051 Digital pocket vernier calipers, TWIN-CAL

Typ T | Typ U

TESA

Design
- Inductive measuring system
- LCD display (digit height 11 mm)
- **With integrated output channel**
- Service life of more than 12,000 hours
- Cover with PVD coating for best possible protection
- 3 V battery (type CR 2032)
- Supplied in a case

Functions:
- DIFF/ABS measuring mode
- Zero setting at any position
- mm/inch switching
- Device switch-off after 2 hours and standby after 10 minutes

Note:
For test gauge, see art. no. 32060 201.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31051
- **Degree of protection IP 40**

31050
- **Degree of protection IP 67**
- **Soft-touch equipment** for comfortable handling

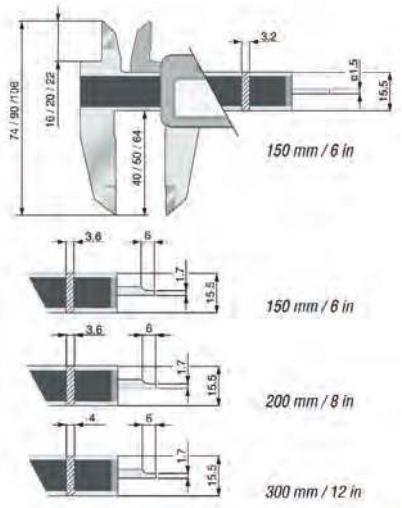
IP 40

31051

IP 67

31050

Soft-touch equipment (art. no. 31050)



Measuring range mm	Jaw length mm	Length of cross jaws mm	Reading mm	Drive	Depth measuring rod mm	Data output TLC	IP 40 31051	...	IP 67 31050	...
150	40	16	0.01	-	6 x 1.7	x				**101**
150	40	16	0.01	-	Ø 1.5	x				**102**
150	40	16	0.01	-	6 x 1.7	x		**101**		
150	40	16	0.01	x	Ø 1.5	x		**102**		**103**
200	50	20	0.01	x	6 x 1.7	x		**103**		**104**
300	64	22	0.01	x	6 x 1.7	x		**104**		**105**

31053 Digital pocket vernier calipers

IP 54 | Typ B | Typ C | Typ D | swiss made

sylvac

Design
- **With data output via Opto RS-232/USB**
- Repeat accuracy 0.01 mm
- **Accuracy in accordance with DIN 862**
- LC display (digit height 6 mm)
- **Degree of protection IP 54**
- Includes battery, 3 V (type CR 2032), designed for long-term operation
- Supplied in a case

Functions:
- Switch-on/switch-off
- Zero setting at any position
- Transmission of measured values
- HOLD function (measured value storage)
- Single-handed switching between mm/inch

Applications
For external, internal, depth **and contact or collar measurements.**

Quality
Stainless steel, hardened and ground.

Note:
For test gauge, see art. no. 32060 201.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31053

Measuring range mm	Jaw length mm	Reading mm	Depth measuring rod mm	Data output Opto RS-232/USB	31053	...
150	40	0.01	4 x 1.4	x		**201**
150	40	0.01	Ø 1.5	x		**204**
200	40	0.01	4 x 1.4	x		**202**
300	65	0.01	-	x		**203**

31229 Accessory set for digital vernier calipers

HHW

Design
- Accessory set suitable for all digital vernier calipers with a jaw thickness of up to 3.5 mm
- Two pairs of probe holders are available in different lengths for mounting different probes (thread M 2.5)
- Six different pairs of probes are available for a wide range of applications for which standard vernier calipers are unsuitable
- The accessory set includes a spring system for constant measuring force
- This simplifies the inspection of serial parts; the parts are always measured with the same contact force
- The distance between the vertical bores on the underside of the probe holder is 10 mm

31229

	Set contents
1	pair of probe holders, short
1	pair of probe holders, long
1	pair of disc probes, Ø 6 mm
1	pair of disc probes, Ø 10 mm
1	pair of disc probes, Ø 12.5 mm
1	pair of taper probes, 9 mm, 60°
1	pair of taper probes, 12 mm, 60°
1	pair of cylinder probes, Ø 1.5 x 9 mm
1	spring system for constant measuring force
1	hexagon key
1	robust plastic box

Content	31229	...
19 pieces		**101**

= The specified prices are unit prices. Only sold in the specified packing units. Always specify number of units in order information.

31075 - 31078 Precision workshop vernier calipers

HELIOS·PREISSER

Design
- **Measuring surfaces and guideways finely ground**
- **Vernier scale brushed chromium-plated and with high-precision laser-engraved graduations**
- Offset jaw ends for measuring internal dimensions
- Bevelled blade tips for measuring narrow points
- With secure locking screw at the top and an adjustable bronze sliding spring
- **Accuracy in accordance with DIN 862**
- Main graduation lowered slightly to prevent damage and wear
- **Reading 0.05 mm at bottom, 1/128 inch at top (measuring range 500 mm without inch indication)**

Quality
Stainless steel.

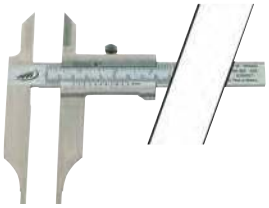
31075
Design
- Without blade tips
- Without fine adjustment

31076
Design
- With blade tips
- Without fine adjustment

31078
Design
- With blade tips
- With fine adjustment

31075

31076



31078

Measuring range mm	Jaw length mm	Reading mm	31075	...	31076	...	31078	...
250	80	0.05		202		202		202
300	90	0.05		203		203		203
500	150	0.05		204		204		204

31080 - 31081 Precision workshop vernier calipers

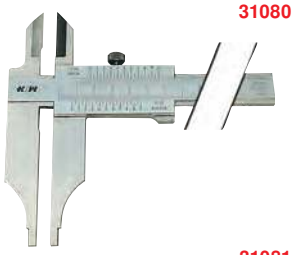
Design
- **With parallax-free reading**
- Measuring surfaces finely ground
- Offset jaw ends for internal measurements
- **With locking screw** and adjustable sliding spring
- **Accuracy in accordance with DIN 862**
- Graduations: mm at top and bottom, for direct reading of the external and internal measured values
- **Reading: 0.05 mm at top and bottom (vernier scale extended to 39 mm)**
- **High-precision laser-engraved vernier scale and graduations, brushed chromium-plated**

Quality
Stainless steel, hardened and ground.

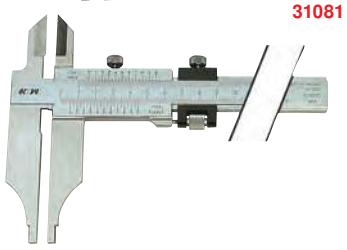
31080
Design
- With blade tips
- Without fine adjustment

31081
Design
- With blade tips
- With fine adjustment

31080



31081



Measuring range mm	Jaw length mm	Reading mm	31080	...	31081	...
300	90	0.05		103		103

Workshop vernier callipers

31115 - 31118 Precision digital workshop vernier calipers

IP 40 | Typ M | Typ N | Typ O

ATORN®

Design
- Wear-resistant, inductive measuring system, without mechanical transmission elements
- **Data output via multiCOM (either RS-232, USB or Digimatic)**
- 6-digit LCD display (digit height 10 mm for 300 mm and 12.5 mm for 500 mm and above)
- **With KEEPTRONIC (blocking of the set reference value)**
- Repeat accuracy 0.01 mm
- **Accuracy in accordance with DIN 862**
- Battery, 3 V (type CR 2032), designed for long-term operation, can be switched off
- Supplied in a wooden case

Functions:
- mm/inch switching
- Zero setting at any position
- Switch-on/switch-off
- PRESET function (measurement pre-setting)

Applications
For differential, comparison and tolerance measurements, with no additional complex arithmetic operations.

Quality
Stainless steel, guide surfaces hardened and ground, measuring surfaces inductively hardened and ground.

Note:
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31115
Design
- Without blade tips
- With fine adjustment

31115

31116
Design
- With blade tips
- Without fine adjustment

31116

31118
Design
- With blade tips
- With fine adjustment

31118

Measuring range mm	Jaw length mm	Hole measuring attachment mm	Reading mm	Data output multiCOM	31115	...	31116	...	31118	...
300	90	10	0.01	x		301		301		301
500	125	20	0.01	x		302		302		302
800	150	20	0.01	x		303		303		303
1000	150	20	0.01	x		304		304		304

31120 Precision digital workshop vernier calipers, TWIN-CAL

IP 67 | Typ T | Typ U

TESA

Design
- With rounded measuring surfaces for internal dimensions and blade tips
- **Degree of protection IP 67**
- **Integrated output channel**
- 6-digit LC display (digit height 11 mm)
- **Accuracy in accordance with DIN 862**
- Operating temperature 10°C…40°C
- Battery, 3 V (type CR 2032), designed for long-term operation
- Supplied in a case with test report and declaration of conformity

Functions:
- mm/inch switching
- Zero setting at any position
- Switch-on/switch-off
- HOLD function (measured value storage)
- Automatic energy-saving mode after 10 minutes, switch-off after 2 hours

Applications
For absolute, differential, comparison and tolerance measurements, with no additional complex arithmetic operations.

Quality
Stainless steel, hardened.

Note:
Other designs available on request.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

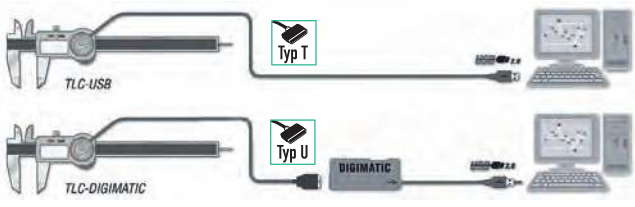
31120

Measuring range mm	Dimensions A x B x C mm	Data output TLC	31120	...
300	5 x 90 x 37	x		201
500	10 x 150 x 60	x		202
800	10 x 150 x 56	x		203

Info Twin & Link connectivity solution

TESA

All TWIN-CAL vernier calipers are equipped with an integrated output channel. Simply connect the plug-and-play TESA link connection (TLC) to the TWIN-CAL and the other end to a computer to retrieve all your data for optimum SPC monitoring. If SPC is not yet required, the upgradeable TWIN-CAL allows you to set up the option later. The unique TLC connector also guarantees the IP 67 degree of protection of the TWIN-CAL IP 67 vernier calipers.



= The specified prices are unit prices. Only sold in the specified packing units. Always specify number of units in order information.

31121 Digital workshop vernier calipers, MarCal 18 EWR

IP 65 | Typ V | Typ W | Typ X

Mahr

Design
- ON/OFF function
- Auto ON/OFF function
- PRESET function (measurement presetting)
- RESET function (resetting the display)
- mm/inch switching
- Reference lock/unlock function (keypad lock)
- DATA function (in conjunction with data connection cable)
- High-contrast LCD display
- Locking screw on top
- Ready for immediate measurements with **reference system**
- Raised guideways to protect the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt scraper in the slide
- Company standard
- **Data interface: USB, Opto RS-232C, Digimatic**
- Power supply: Battery, service life approx. 3 years

Scope of delivery:
- 3 V battery (type CR 2032)
- Operating instructions
- In case

Applications
For differential, comparison and tolerance measurements, with no additional complex arithmetic operations.

Quality
Stainless steel, slide and rail hardened.

Note:
Connection cable, see art. no. 35200 404-406.
Replacement batteries, see art. no. 39900 102.

31121

Measuring range mm	Jaw length mm	Hole measuring attachment mm	Length of cross jaws mm	Reading mm	LCD display mm	31121	...
300	90	10	40	0.01	10.0		101
500	150	20	55	0.01	12.5		102
750	150	20	55	0.01	12.5		103
1000	150	20	60	0.01	12.5		104

31122 Digital workshop vernier calipers, MarCal 18 ESA

Typ B | Typ C | Typ D

Mahr

Design
- ON/OFF function
- HOLD function (measured value storage)
- PRESET (measurement pre-setting) for measuring range of 500 mm and above
- RESET function (resetting the display)
- mm/inch switching
- **Weight-saving slide and rail made of aluminium, hard anodised (1100 HV)**
- **Measuring surfaces made of stainless steel, hardened**
- High-contrast LCD display
- Locking screw on top
- V-guide for light, smooth running
- Dirt scraper in the slide
- Company standard
- **Data interface: Opto RS-232C (300 mm version only)**
- Power supply: Battery, service life approx. 2 years

Scope of delivery:
- 3 V battery (type CR 2032)
- Operating instructions
- In case

Applications
For differential, comparison and tolerance measurements, with no additional complex arithmetic operations.

Note:
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31122

Measuring range mm	Jaw length mm	Hole measuring attachment mm	Length of cross jaws mm	Reading mm	LCD display mm	31122	...
300	90	10	33	0.01	6.0		101
500	150	15	42	0.01	10.5		102
800	150	15	42	0.01	10.5		103
1000	150	15	42	0.01	10.5		104

Workshop vernier calipers | Vernier calipers with round scale

Info — IP ratings

In accordance with EN 60529, protection against the ingress of foreign bodies and moisture is indicated according to a defined key. This key consists of the letters IP followed by two digits. The **first digit** indicates the protection against dust and the **second digit** indicates the protection against water. The degree of protection can be read using these digits and the table below.

Example: A device with a rating of **IP54** is protected against dust to level **(5)** and against splashing water to level **(4)**.
The higher the number, the better the protection.

In the catalogue, the protection classes are identified by pictograms.

First digit

Protection against Foreign bodies and dust	Foreign bodies > 50.0 mm	**IP 1.**
	Foreign bodies > 12.0 mm	**IP 2.**
	Foreign bodies > 2.5 mm	**IP 3.**
	Foreign bodies > 1.0 mm	**IP 4.**
	Dust protected	**IP 5.**
	Dustproof	**IP 6.**

Second digit

Protection against Wet conditions	No protection	**IP .0**
	Dripping water, vertical	**IP .1**
	Dripping water, slanted	**IP .2**
	Water spray	**IP .3**
	Splashing water	**IP .4**
	Water jets	**IP .5**
	Strong water jets	**IP .6**
	Temporary immersion	**IP .7**

31127 Digital workshop vernier calipers (ultra-light)

sylvac

Design
- **With data output via PROXIMITY**
- Repeat accuracy 0.02 mm
- External measuring jaws 175 mm long, 8 mm thick, made of hardened steel, titanium-coated
- Cylindrical probe tips for internal measurement made of cemented carbide, Ø 8 mm, 30 mm long
- With sliding and lockable left-hand measuring jaw
- Constant measuring force for external and internal measurement (5–10 N)
- The measuring rail is a hollow aluminium profile reinforced by four steel rods, hardened and ground. This ensures perfect guidance of the slide and protection of the rail against impacts
- Scale made of steel, coolant-resistant
- LCD display (digit height 20 mm)
- Low weight for easier handling and increased measurement reliability
- Battery, 3 V (type CR 2032), **with adapter,** designed for long-term operation

Functions:
- Internal and external measurement with PRESET function for both types of measurement
- Min./max. function
- Tolerance limit display

Note:
For test gauge, see art. no. 32060 201.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.
Accessories deliverable on request.

31127

Measuring range external mm	Measuring range internal mm	Total length mm	Error limit mm	Data output PROXIMITY	Weight kg	31127	...
0–620	26–646	1001	0.04	x	1.6		301
0–1030	26–1056	1411	0.05	x	1.9		302
0–1545	26–1571	1926	0.09	x	2.3		303

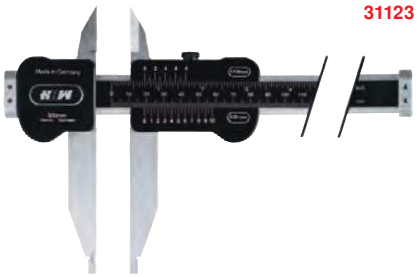
31123 Workshop vernier calipers (lightweight)

HHW

Design
- With parallax-free reading and interchangeable measuring jaws
- Internal dual V-guide for optimum sliding properties
- High contrast due to white graduations on black surface
- Flat vernier scale
- **Accuracy in accordance with DIN 862**
- Reading 0.05 mm and 1/128 inch
- Supplied in plastic box

Quality
Measuring jaws made of hardened stainless steel, precision ground.

31123



Measuring range mm	Jaw length mm	Reading mm	Total length mm	Weight approx. g	31123	...
200	90	0.05	350	1000		101
300	90	0.05	450	1500		102
500	90	0.05	650	2000		103
700	90	0.05	850	2200		104
900	90	0.05	1050	2500		105

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31191 - 31194 Workshop vernier callipers

ATORN®

Design
- Vernier scale and scale, brushed chromium-plated
- With locking screw
- **Accuracy in accordance with DIN 862**
- Main graduation lowered
- High-precision laser-engraved graduations for external and internal measurements

Quality
Stainless steel.

31191
- Without blade tips, without fine adjustment

31192
- Without blade tips, with fine adjustment

31193
- With blade tips, without fine adjustment

31194
- With blade tips, with fine adjustment


31194

Measuring range mm	Jaw length mm	Internal measurement attachments mm	Reading mm	Reading inch	31191	...	31192	...	31193	...	31194	...
300	90	10	0.05	1/128		**101**				**101**		**101**
500	150	20	0.05	-		**102**				**102**		**102**
800	150	20	0.05	-		**103**				**103**		**103**
1000	150	20	0.05	-						**104**		**104**
1500	200	30	0.05	-				**105**				**105**
2000	200	30	0.05	-				**106**				**106**

31200 Vernier calipers with round scale (dial vernier calipers)

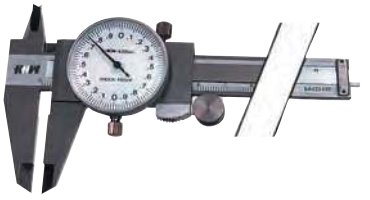
H&W

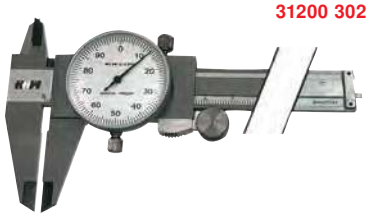
Design
- With cross jaws
- Bevelled jaw ends for thread core measurements
- Depth measuring rod, fine adjustment roller and **locking screw**
- Dial with clear graduations and scaling
- Brushed chromium-plated adjusting ring
- Zero point adjustable and lockable
- **Graduations laser engraved and brushed chromium-plated**
- Impact-resistant
- **Accuracy in accordance with DIN 862**
- Supplied in a case

Applications
For external, internal, depth **and contact or collar measurements.**

Quality
Stainless steel, hardened.

Note:
Art. no. 31200 302: one pointer revolution = 1 mm to avoid false readings.
For test gauge, see art. no. 32060 201.


31200 301


31200 302

Measuring range mm	Jaw length mm	Reading mm	1 pointer revolution mm	31200	...
150	40	0.02	2		**301**
150	40	0.01	1		**302**
200	50	0.02	2		**303**
300	60	0.02	2		**304**

31224 - 31228 Vernier calipers with round scale (dial vernier calipers)

TESA

Design
- Rotatable dial **with locking screw**
- Patented impact protection
- High precision due to hardened and ground measuring rack
- **Accuracy in accordance with DIN 862**
- Supplied in a case **with test report and declaration of conformity**

Applications
For external, internal, depth **and contact or collar measurements.**

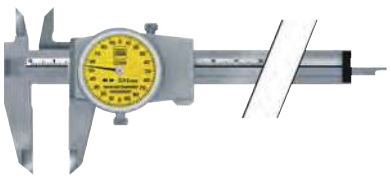
Quality
Stainless steel, hardened.

Note:
For test gauge, see art. no. 32060 201.

31224
Design
One pointer revolution = 1 mm to avoid false readings.

31228
Design
One pointer revolution = 2 mm.


31224 101


31228 201


31228 202

Measuring range mm	Jaw length mm	Reading mm	1 pointer revolution mm	31224	...	31228	...
150	40	0.01	1		**101**		
150	40	0.02	2				**201**
200	50	0.02	2				**202**
300	64	0.02	2				**203**

Groove vernier calipers | Universal vernier calipers

31235 Precision internal safety groove vernier calipers

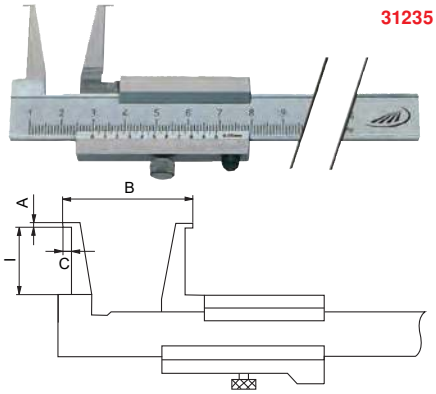
HELIOS·PREISSER

Design
- With offset cross internal measuring jaws
- Measuring surfaces hardened and precision ground
- **Brushed chromium-plated scale**
- Lowered graduations on the measuring rail
- Main graduation and vernier scale laser engraved for high precision
- Slide with locking screw and adjustable phosphor bronze sliding spring
- Accuracy according to factory standard

Applications
For measuring internal safety grooves in bores.

Quality
Stainless steel.

31235



Measuring range B mm	Jaw length l mm	Reading mm	Offset C x A mm	Rod T mm	Total length mm	31235	...
10–160	25	0.05	3 x 0.9	16 x 3.5	250		101
20–160	40	0.05	5 x 2.0	16 x 3.5	250		102
26–200	60	0.05	7 x 3.0	20 x 5.0	284		103
35–300	100	0.05	10 x 5.0	20 x 5.0	386		104

31241 Digital internal groove vernier calipers

IP 40 | Typ M | Typ N | Typ O

ATORN®

Design
- With locking screw
- Offset cross internal measuring jaws
- **Data output via multiCOM (either RS-232, USB or Digimatic)**
- **With KEEPTRONIC (blocking of the set reference value)**
- Battery, 3 V lithium (type CR 2032), designed for long-term operation
- Supplied in a case

Functions:
- Zero setting at any position
- mm/inch switching
- PRESET function (measurement pre-setting)
- Energy-saving function (auto-off after approx. 10 minutes)

Applications
For measuring internal safety grooves in bores.

Quality
Stainless steel.

Note:
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31241

Measuring range mm	Jaw length mm	Reading mm	Offset mm	Data output multiCOM	31241	...
10–160	25	0.01	3.0 x 0.9	x		301
20–160	40	0.01	5.0 x 2.0	x		302

31242 Digital universal pocket vernier caliper set

IP 67 | Typ M | Typ N | Typ O

ATORN®

Design
- Specially designed vernier calipers for measuring a wide variety of workpiece shapes
- **With KEEPTRONIC (blocking of the set reference value)**
- Can be individually adapted using interchangeable measuring inserts and extension pieces for dial gauges
- Suitable for internal and external measurements
- With locking screw
- For measuring insert thread M 2.5
- **Data output via multiCOM (either RS-232, USB or Digimatic)**

Functions:
- Zero setting at any position
- mm/inch switching
- PRESET function (measurement pre-setting)

Scope of delivery:
- Vernier calipers
- Measuring inserts (ball inserts Ø 5.0 mm, face inserts Ø 4.8 mm)
- Setting gauge, 50 mm
- Battery, 3 V lithium (type CR 2032)
- In case

Quality
Stainless steel.

Note:
For measuring inserts, see art. no. 33114.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31242

Measuring range mm	Jaw length mm	Reading mm	Data output multiCOM	31242	...
150	40	0.01	x		101

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31255 - 31256 Digital universal vernier calipers, Multimar 25 EWR

IP 65 | Typ V | Typ W | Typ X

Mahr

31255

Design
- Interchangeable measuring arms
- The patented option for mounting the measuring elements on the upper and lower longitudinal sides of the measuring arm supports means the digital display can always be read from the operator's side
- The application range can be extended by turning the measuring arms
- Both measuring arm supports can be moved on the rail, resulting in uniform weight distribution with small dimensions
- Ready for immediate measurements with **reference system**
- **Data interface: USB, Opto RS-232C, Digimatic, wireless**
- Power supply: Battery, service life approx. 3 years

Functions:
- ON/OFF
- Auto-ON/OFF
- DATA (in conjunction with data connection cable)
- PRESET (measurement presetting)
- RESET (setting the display to zero)
- Lock/unlock
- mm/inch switching

Scope of delivery:
- 3 V battery (type CR 2032)
- Mounting and storage blocks
- Operating instructions
- In a wooden box
- **Without** measuring arms/mounting attachments and measuring inserts

31255

Applications
For measuring external and internal diameters, centring edges, narrow shoulders, external and internal cones, dovetails, recesses and hole spacings.

Quality
Stainless steel, rail and slide hardened.

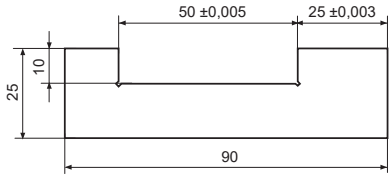
Note:
Connection cable, see art. no. 35200 404-406.
Replacement batteries, see art. no. 39900 102.

31256
Accessories for digital universal vernier calipers art. no. 31255 101-104.

Note:
Further accessories deliverable on request.

31256 101-102

31256 103



Measuring range mm	Reading mm	31255 ...
300	0.01	101
600	0.01	102
1000	0.01	103
1250	0.01	104

Accessories	31256 ...
Measuring tips for hole spacings 25 Eba Ø 2–20 mm	101
Measuring tips for hole spacings 25 Eba Ø 10–40 mm	102
Setting gauge 25 Eel, internal 50 mm/external 25 mm	103

31243 Universal vernier caliper set, digital

IP 65 | Typ M | Typ N | Typ O

ATORN®

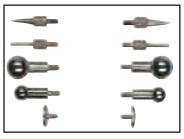
Design
- Specially designed vernier calipers for measuring a wide variety of workpiece shapes
- **With KEEPTRONIC (blocking of the set reference value)**
- Can be individually adapted using interchangeable measuring inserts and extension pieces for dial gauges
- Suitable for internal and external measurements
- With locking screw
- For measuring insert thread M 2.5
- **Data output via multiCOM (either RS-232, USB or Digimatic)**
- 10 mm LCD display for 300 mm
- 12.5 mm LCD display for 500 mm

Functions:
- Zero setting at any position
- mm/inch switching
- PRESET function (measurement pre-setting)
- Memory for 2 reference values
- Energy-saving function (auto-off after approx. 10 minutes)

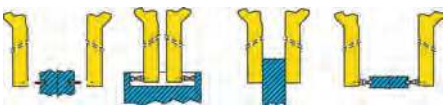
Scope of delivery:
- Vernier calipers
- Measuring inserts
- Battery, 3 V lithium (type CR 2032)
- In case

Note:
For measuring inserts, see art. no. 33114.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31243



Measuring range mm	Reading mm	Measuring arm length mm	Data output multiCOM	31243 ...
300	0.01	90	x	301
500	0.01	100	x	302



Universal vernier calipers | Marking calipers | 3- and 5-point vernier calipers | Depth callipers

31244 Digital universal vernier calipers, MarCal 16 EWR-V

IP 67 | Typ V | Typ W | Typ X

Mahr

Design
- ON/OFF function
- Auto ON/OFF function
- HOLD function (measured value storage)
- PRESET function (measurement presetting)
- RESET function (resetting the display)
- mm/inch switching
- Reference lock/unlock function (keypad lock)
- DATA function (in conjunction with data connection cable)
- High-contrast LCD display (digit height 8.5 mm)
- Locking screw on top
- Lapped guideways
- Measuring edges for internal measurements
- Stepped measuring device
- Ready for immediate measurements with **reference system**
- Raised guideways to protect the scale
- **Data interface: USB, Opto RS232C, Digimatic**
- Excellent resistance against dust, coolants and lubricants
- Dirt scraper in the slide
- **Accuracy in accordance with DIN 862**

Applications
Can be used as standard vernier calipers (quadruple measuring device), with standard accessories for measuring recesses, grooves etc. and with special accessories for measuring threads, bores, gearing.

Quality
Stainless steel, slide and rail hardened.

Note:
Connection cable, see art. no. 35200 404-406.
Replacement batteries, see art. no. 39900 102.

31244 101-102

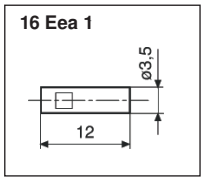
31244 101
Scope of delivery:
- **Setting gauge for internal measurement** 16 Eel (art. no. 31244 208)
- **Measuring force adjustment device** 16 Ec (art. no. 31244 209)
- Depth measuring bridge 16 Em3
- **Measuring inserts for external measurement** 16 Eea 1–3 (art. no. 31244 201-203)
- **Measuring inserts for internal measurement** 16 Eei 1–3 (art. no. 31244 204–206)
- **Measuring bridge** 16 Em 75 x 7 mm
- Operating instructions
- 3 V battery (type CR 2032)
- In case

31244 102
Scope of delivery:
- 3 V battery (type CR 2032)
- Operating instructions
- In case

Measuring range mm	Jaw length mm	Length of cross jaws mm	Reading mm	Depth gauge	31244 ...
200	48	16.5	0.01	Angular	101
200	48	16.5	0.01	Angular	102

31244 201-211
Accessories for digital universal vernier calipers
Art. no. 31244 101–102

31244 201



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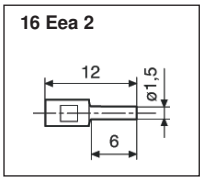
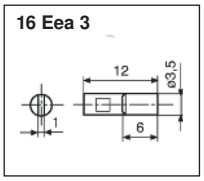


31244 203



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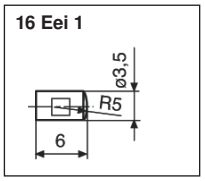

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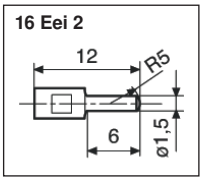

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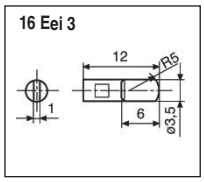

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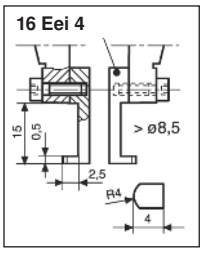
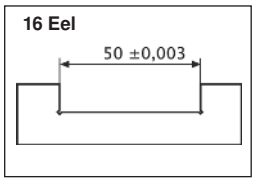
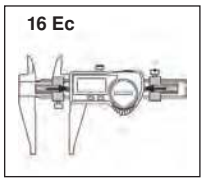


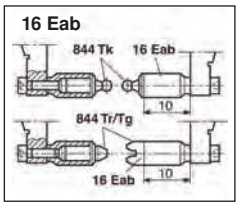
31244 208



31244 209



31244 210



Accessories	31244 ...
Measuring insert for external measurement, 16 Eea 1	201
Measuring insert for external measurement, 16 Eea 2	202
Measuring insert for external measurement, 16 Eea 3	203
Measuring insert for internal measurement, 16 Eei 1	204
Measuring insert for internal measurement, 16 Eei 2	205
Measuring insert for internal measurement, 16 Eei 3	206

Accessories	31244 ...
Measuring insert for internal measurement, 16 Eei 4	207
Setting gauge for internal measurement, 16 Eel	208
Measuring force adjustment device, 16 Ec	209
Mounting bush for thread and ball measuring inserts, 16 Eab	210
Cheese head, rust-proof M 2 x 8	211

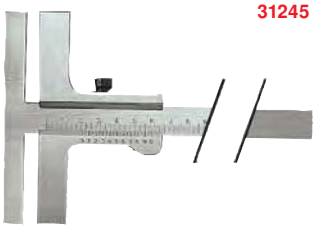
= The specified prices are unit prices. Only sold in the specified packing units. Always specify number of units in order information.

31245 Marking calipers

Design
- **With locking screw**
- Graduations: mm, on rod and rail
- **Reading 0.05 mm** (vernier scale extended to 39 mm)

Quality
Special steel, hardened marking rail.

31245



Measuring range mm	Reading mm	Marking rail mm	31245	...
160	0.05	100		**101**
250	0.05	120		**102**
300	0.05	160		**103**
500	0.05	160		**105**

31247 Precision 3- and 5-point vernier calipers

Design
- **Parallax-free reading** with mm/inch graduations, brushed chromium-plated
- **Reading 0.05 mm** (vernier scale extended to 39 mm)

Applications
For measuring the diameter of cutters, reamers, screw taps, splined shafts, gear wheels etc.
Quality
Stainless steel.

31247 101
For **3-edged** tools.

31247 102
For **5-edged** tools.

31247 101

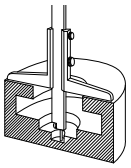
For measuring range Ø mm	31247	...
5 - 40		**101**
5 - 40		**102**

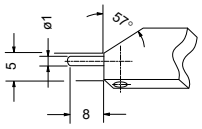
31305 Precision depth calipers

Design
- **Brushed chromium-plated scale**
- Graduations in mm
- Measuring bar fully hardened
- With interchangeable hardened measuring pin and graduations on one side
- **Ø of the measuring pin: 1.0 mm**
- Measuring surfaces hardened
- **Accuracy in accordance with DIN 862**
- Supplied in a case

Applications
For measuring small and offset bores.
Quality
Stainless steel.

31305





Measuring range mm	Bridge length mm	Measuring rod T mm	Reading mm	31305	...
80	50	8 x 3	0.05		**101**

Depth calipers | Measuring bridges

31306 - 31327 Precision depth calipers

Design
- Graduations in mm
- Measuring surfaces inductively hardened
- **With locking screw**
- **Brushed chromium-plated scale**

Quality
Stainless steel.

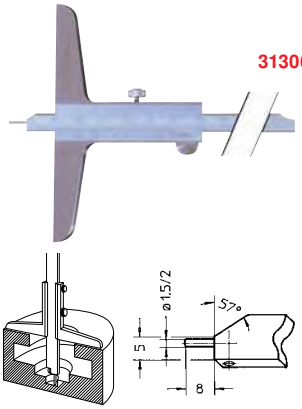
31306
Design
- **Accuracy in accordance with DIN 862**
- Graduations on two sides for repositioning the scale
- Measuring bar fully hardened
- With interchangeable hardened measuring pin
- **Ø of the measuring pin: 1.5 mm** (for a measuring bar 8 x 3 mm)
  Ø of the measuring pin: 2.0 mm (for a measuring bar 12 x 4 mm)

31321
Design
- **Accuracy in accordance with DIN 862**
- With straight, bevelled measuring rod

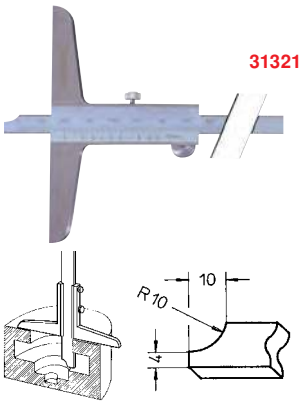
31326
Design
- **Accuracy in accordance with DIN 862**
- Graduations on two sides for repositioning the scale
- **Length x width of the angle offset: 12.5 x 5 mm for bores from Ø 22 mm** (for a measuring bar 8 x 3 mm) **or 16 x 10 mm for bores from Ø 28 mm** (for a measuring bar 12 x 4 mm)

31327
Design
- **Accuracy in accordance with DIN 862**
- Graduations on two sides for repositioning the scale
- Measuring rod with double offset at a right angle, for width and distance measurements in bores or grooves from Ø 20 mm

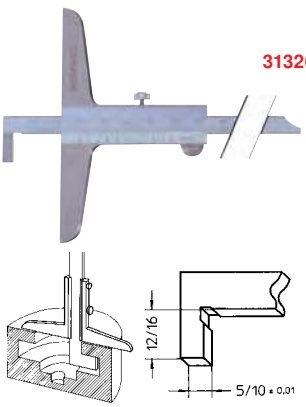
31306



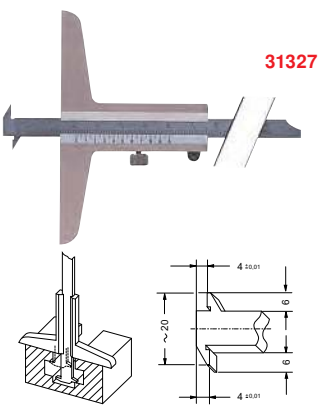
31321



31326



31327



Measuring range mm	Bridge length mm	Measuring rod T mm	Reading mm	31306 ...	31321 ...	31326 ...	31327 ...
150	100	8 x 3	0.05	101	101	101	
200	100	8 x 3	0.05	102	102	102	102
300	100	12 x 4	0.05				104
300	150	12 x 4	0.05	104	104	104	
500	150	12 x 4	0.05		106	106	
1000	250	20 x 5	0.05		107		

31303 - 31304 Digital depth calipers, MarCal 30 EWRi

IP 67 | Typ Y

Design
- ON/OFF function
- Auto ON/OFF function
- HOLD function (measured value storage)
- PRESET function (measurement presetting)
- RESET function (resetting the display)
- mm/inch switching
- Counting direction reversal
- Reference lock/unlock function (keypad lock)
- DATA function (data transfer)
- High-contrast LCD display (digit height 11 mm)
- Locking screw on top
- Lapped guideways
- Measuring surfaces hardened
- Ready for immediate measurements with **reference system**
- Raised guideways to protect the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt scraper in the slide
- Company standard
- **Data interface: Integrated wireless**
- Power supply: Battery, service life approx. 3 years (approx. 0.5 years with wireless enabled)

Scope of delivery:
- 3 V battery (type CR 2032)
- Operating instructions
- In case

Applications
For universal depth, width, step and distance measurements.

Quality
Stainless steel, slide and rail hardened.

Note:
Wireless receiver, see art. no. 35200 410.
Replacement batteries, see art. no. 39900 102.

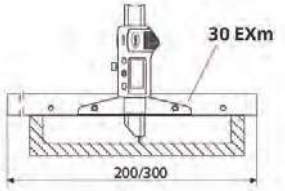
31303

Measuring range mm	Bridge length mm	Reading mm	31303 ...
150	100	0.01	101
200	100	0.01	104 NEW
300	150	0.01	102
500	150	0.01	103

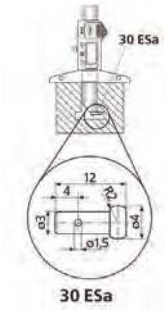
Accessories

	Length mm	31304 ...
Extended measuring bridge, 30 EXm	200	101
Extended measuring bridge, 30 EXm	300	102
Measuring insert, 30 ESa	-	103

31304 101-102



31304 103



= The specified prices are unit prices. Only sold in the specified packing units. Always specify number of units in order information.

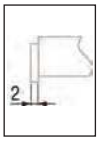
31301 Digital depth calipers, TWIN-CAL

IP 67 | Typ T | Typ U

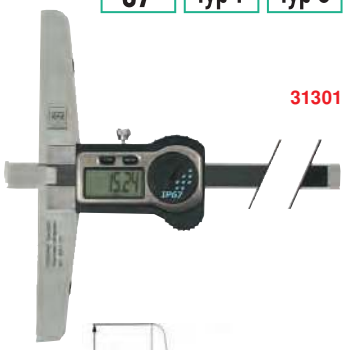
Design
- **With rotating stop plate**
- **Degree of protection IP 67**
- **Integrated output channel**
- 6-digit LC display (digit height 11 mm)
- **Accuracy in accordance with DIN 862**
- Operating temperature 10°C…40°C
- Battery, 3 V (type CR 2032), designed for long-term operation
- Supplied in a case with test report and declaration of conformity

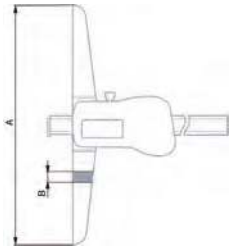
Functions:
- Zero setting at any position
- mm/inch switching
- HOLD function (measured value storage)
- Switch-on/switch-off
- Automatic energy-saving mode after 10 minutes, switch-off after 2 hours

Note:
Other designs deliverable on request.
For measuring bridges, see art. no. 31302.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.



31301





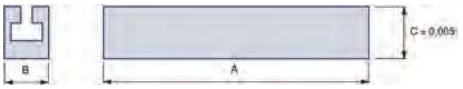
Measuring range mm	A mm	B mm	Data output TLC	31301	...
250	150	8.5	x		**201**
350	150	8.5	x		**202**
500	150	8.5	x		**203**

31302 Attachable measuring bridge

Design
- Manufactured to factory standard
- With declaration of conformity
- Supplied with fastening material

Applications
For depth calipers art. no. 31301.

31302



A mm	B mm	C mm	Max. error µm	31302	...
300	8	16	5		**102**

31350 Digital depth calipers

IP 67 | Typ M | Typ N | Typ O

Design
- With 3 interchangeable measuring inserts
- High-contrast LCD display (digit height 7.5 mm)
- **Data output via multiCOM (either RS-232, USB or Digimatic)**
- Disc measuring insert particularly suitable for measuring groove spacing and groove widths
- **With KEEPTRONIC (blocking of the set reference value)**
- Battery, 3 V lithium (type CR 2032), designed for long-term operation
- Supplied in a case

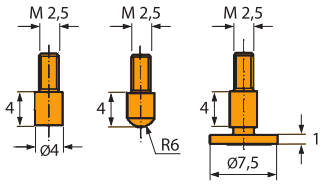
Functions:
- Zero setting at any position
- mm/inch switching
- Switch-on/switch-off
- PRESET function (measurement pre-setting)
- Energy-saving function (auto-off after approx. 10 minutes)

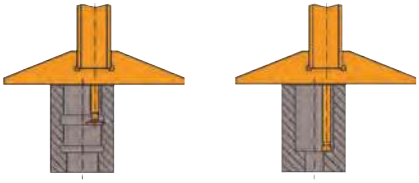
Applications
For universal depth, width, step and distance measurements.

Quality
Stainless steel.

Note:
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31350





Measuring range mm	Reading mm	Bridge length mm	Depth measuring rod Ø mm	Data output multiCOM	31350	...
100	0.01	85	4	x		**301**

31340 - 31344 Digital depth calipers

IP 67 | Typ M | Typ N | Typ O

ATORN®

Design
- Wear-resistant, inductive measuring system, without mechanical transmission elements
- **Data output via multiCOM (either RS-232, USB or Digimatic)**
- LCD display 7.5 mm to 500 mm
- LCD display 12.5 mm at 1000 mm
- With KEEPTRONIC (blocking of the set reference value)
- Repeat accuracy 0.01 mm
- With locking screw
- Battery, 3 V (type CR 2032), designed for long-term operation, can be switched off
- Supplied in a wooden case

Functions:
- Zero setting at any position
- mm/inch switching
- Switch-on/switch-off
- PRESET function (measurement pre-setting)

Applications
For absolute, differential, comparison and tolerance measurements, with no additional complex arithmetic operations.

Quality
Stainless steel.
Guide surfaces hardened and ground, measuring surfaces inductively hardened and ground.

Note:
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31340
Design
- With measuring rod offset at a right angle
- **Accuracy in accordance with DIN 862**

Applications
For measuring recesses, e.g. in bores (from Ø 28 mm) and shoulders.

31341
Design
- With straight, bevelled measuring rod
- **Accuracy in accordance with DIN 862**

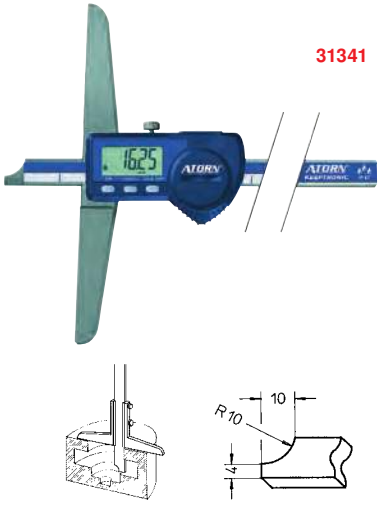
Applications
For measuring depths and distances.

31344
Design
- With measuring rod offset on both sides
- **Accuracy according to factory standard**

Applications
For measuring widths and distances, grooves and recesses in bores from Ø 24 mm.

31340

31341



31344

Measuring range mm	Bridge length mm	Reading mm	Data output multiCOM	31340	...	31341	...	31344	...
200	100	0.01	x				**300**		
300	150	0.01	x		**301**		**301**		**301**
500	150	0.01	x		**302**		**302**		
1000	250	0.01	x				**303**		

31353 Digital small depth calipers

IP 67 | Typ M | Typ N | Typ O

ATORN®

Design
- Stainless steel
- Round measuring pin, Ø 2 mm
- LCD display (digit height 7.5 mm)
- **KEEPTRONIC (blocking of the set reference value)**
- **Data output via multiCOM (either RS-232, USB or Digimatic)**
- Company standard
- Battery, 3 V lithium (type CR 2032)
- Supplied in a case

Functions:
- Zero setting at any position
- mm/inch switching
- Switch-on/switch-off
- PRESET function (measurement pre-setting)

31353

Measuring range mm	Bridge length mm	Reading mm	Data output multiCOM	31353	...
25	48	0.01	x		**101**

= The specified prices are unit prices. Only sold in the specified packing units. Always specify number of units in order information.

31355 - 31357 Measuring instrument sets

Design
In wooden box.

31355 301
Standard measuring instrument set
2 pieces, set contents:
1 x pocket vernier calipers, 150 mm (art. no. 31008 101),
1 x micrometer, 0–25 mm (art. no. 31502 101).

31355 501
Wooden case, empty, for art. no. 31355 301.

31357 301
Large measuring instrument set
6 pieces, set contents:
1 x pocket vernier calipers, 150 mm (art. no. 31008 101),
1 x micrometer, 0–25 mm (art. no. 31502 101),
1 x scale, 200 mm (art. no. 39800 102),
1 x flat square, 100 x 70 mm (art. no. 36115 102),
1 x straight edge, 100 mm (art. no. 36060 102),
1 x spring dividers, 125 mm (art. no. 35630 102).

31357 501
Wooden case, empty, for art. no. 31357 301.

31355

31357

	2 pieces		6 pieces	
	31355	...	31357	...
Measuring instrument set		301		301
Wooden case		501		501

31500 - 31502 Precision micrometers

Design
- Measuring surfaces carbide-tipped and lapped
- Brushed chromium-plated scale
- Spindle fully hardened and ground
- With locking lever, adjusting nut and ratchet tool
- **Accuracy in accordance with DIN 863**
- Insulation to protect against heat from the hands
- **Reading 0.01 mm**
- Spindle pitch 0.5 mm
- Measuring spindle Ø 6.5 mm
- Measuring drum Ø 18 mm
- Sets and individual micrometers include keys and setting gauges; supplied in a storage box

Applications
For external measurements.

31500 101

31500 102

Measuring range mm	1 micrometer each mm	Set 31500	...
0–100	0–25 / 25–50 / 50–75 / 75–100		101
0–150	0–25 / 25–50 / 50–75 / 75–100 / 100–125 / 125–150		102

31502

Measuring range mm	Individual 31502	...
0 - 25		101
25 - 50		102
50 - 75		103

Measuring range mm	Individual 31502	...
75 - 100		104
100 - 125		105
125 - 150		106

Micrometers

31505 Precision micrometers

Hartig

Design
- **50 mm measuring range**
- **Carbide-tipped measuring surfaces,** plane-parallel lapped
- Spindle thread hardened and ground
- **Accuracy exceeds DIN 863**
- Zero setting and spindle nut adjustable
- Clamping ring for locking the spindle
- Coupling (ratchet tool) enables constant measuring pressure
- **Anti-glare, brushed chromium-plated scale**
- Reading without addition due to **1 mm thread pitch and 100 mm graduations** (thereby excluding false measurements by 0.5 mm)
- Reading drum Ø 24 mm
- Scale spacing 0.65 mm
- **Reading per scale mark 0.01 mm**
- Supplied with certificate of conformity, in a wooden case

Applications
Particularly suitable for precise measurement on machine tools and for general use in workshops.

On grinding machines, for cast iron machining and continuous use.

Note:
For setting gauges, see art. no. 31579.

31505 098-103
Design
- With sturdy semi-circular **frame made of high-quality spheroidal graphite iron**
- With insulation against heat from the hands, with effect coating
- **Spindle and measuring surfaces Ø 8 mm**

31505 104-107
Design
- With semi-circular **frame made of light metal,** with effect coating
- **Spindle and measuring surfaces Ø 10 mm**

Note:
Insulation against heat from the hands deliverable on request.

31505 098

31505 104

Measuring range mm	Max. error µm	31505 ...
0 - 50	3	098
50 - 100	4	099
100 - 150	4	100
150 - 200	5	101
200 - 250	5	102

Measuring range mm	Max. error µm	31505 ...
250 - 300	5	103
300 - 350	6	104
350 - 400	6	105
400 - 450	7	106
450 - 500	7	107

31510 Precision micrometers

Hartig

Design
- **Includes 50 mm screw-on extension, carbide-tipped and lapped along the length of the gauge block**
- **The extension doubles the measuring range of the 50 mm adjustable spindle**
- Reading without addition due to **1 mm thread pitch and 100 mm graduations**, ideal for large measuring ranges
- **Reading per scale mark 0.01 mm**
- **Spindle Ø 10 mm**
- **Carbide measuring surfaces**
- Thimble Ø 24 mm
- **Accuracy exceeds DIN 863**
- Sturdy light metal frame
- With clamping device and friction coupling
- Supplied without wooden case

Applications
Extension screws on and off easily. Much **easier handling with greater measurement reliability** compared to micrometers with interchangeable anvil inserts.

Note:
For setting gauges, see art. no. 31579.
100 mm and 150 mm extensions for increasing the measuring range deliverable on request.
Larger measuring ranges available on request.

31510

Measuring range mm	Max. error µm	31510 ...
200 - 300	6	097
300 - 400	7	098
400 - 500	8	099

31513 Precision micrometers

ATORN®

Design
- Measuring surfaces carbide-tipped and lapped
- **Brushed chromium-plated scale,** spindle fully hardened and ground
- With locking lever, adjusting nut and ratchet tool
- **Accuracy in accordance with DIN 863-1**
- Insulation to protect against heat from the hands
- **Reading 0.01 mm**
- Spindle pitch 0.5 mm
- Measuring spindle Ø 6.5 mm
- Measuring drum Ø 18 mm
- Sets and individual micrometers **include keys and setting gauges**
- In a storage box

31513 101-104
Micrometers, individual.

31513 301
Set consisting of:
1 x precision micrometer each: measuring range
0 - 25 mm,
25 - 50 mm,
50 - 75 mm,
75 - 100 mm.
Includes setting gauges, 25, 50 and 75 mm.

31513 301

	Set	
Measuring range mm	31513	...
0 - 100		301

	Individual	
Measuring range mm	31513	...
0 - 25		101
25 - 50		102

	Individual	
Measuring range mm	31513	...
50 - 75		103
75 - 100		104

= The specified prices are unit prices. Only sold in the specified packing units. Always specify number of units in order information.

31514 Precision micrometers, Micromar 40 A/SA

Mahr

Design
- Brushed chromium-plated control and display elements
- Hard-lacquered steel frame
- Measuring spindle and anvil made of hardened steel, carbide-tipped
- Thermal insulation panels
- Quick drive with integrated coupling
- Locking device
- **Accuracy in accordance with DIN 863-1**
- Operating instructions
- In case

31514 101-108
Micrometers, individual
- Setting gauge (measuring range 25–50 mm and above)

31514 101-108

Measuring range mm	Reading mm	Error limit µm	Spindle pitch mm	Frame depth mm	Frame width mm	Standard	Individual 31514	...
0–25	0.01	4	0.5	25.5	31	DIN 863-1		101
25–50	0.01	4	0.5	34.5	56	DIN 863-1		102
50–75	0.01	5	0.5	47.5	81	DIN 863-1		103
75–100	0.01	5	0.5	58.5	106	DIN 863-1		104
100–125	0.01	6	0.5	71.5	131	DIN 863-1		105
125–150	0.01	6	0.5	83.5	156	DIN 863-1		106
150–175	0.01	7	0.5	95.5	182	DIN 863-1		107
175–200	0.01	7	0.5	108.5	207	DIN 863-1		108

31514 201
Set consisting of:
1 x precision micrometer each: measuring range
0 - 25 mm
25 - 50 mm
50 - 75 mm
75 - 100 mm
Setting gauges, 25 mm/75 mm

31514 202
Set consisting of:
1 x precision micrometer each: measuring range
100 - 125 mm
125 - 150 mm
150 - 175 mm
175 - 200 mm
Setting gauges, 125 mm/175 mm

31514 201-202

Measuring range mm	Reading mm	No. of micrometers	Set 31514	...
0–100	0.01	4		201
100–200	0.01	4		202

31515 - 31516 Precision micrometers

TESA

ISOMASTER
Design
Full and half millimetres displayed via graduation marks on the scale sleeve; hundredths displayed on the thimble, which has 50 graduation lines. The friction effect can be cancelled by repositioning the measuring force limiter built into the thimble.
Carbide-tipped measuring surfaces. Accuracy in accordance with DIN 863 Part 1. Reading 0.01 mm, spindle pitch 0.5 mm, **measuring spindle Ø 6.5 mm** (measuring range 0–100 mm) **or 8.0 mm** (measuring range 100–300 mm). **Test report with declaration of conformity.**
Labelled with individual production number.
Supplied in a case.
Applications
For external measurements.

Note:
The spindle is clamped using a clamping ring to guarantee high precision. For setting gauges, see art. no. 31579.

31515
Design
Set consisting of:
1 x precision micrometer each: measuring range
0 – 25 mm,
25 – 50 mm,
50 – 75 mm,
75 – 100 mm.

31516
Micrometers, individual.

31515

31516

Measuring range mm	Set 31515	...
0 - 100		201

Measuring range mm	Individual 31516	...
0–25		201
25–50		202
50–75		203
75 - 100		204
100 - 125		205
125 - 150		206

Measuring range mm	Individual 31516	...
150 - 175		207
175 - 200		208
200 - 225		209
225 - 250		210
250 - 275		211
275 - 300		212

Micrometers | Precision pointer micrometers

31517 Precision micrometers

Hartig

Design
- Direct reading 5 µm
- Maximum precision — exceeds DIN 863
- Thread pitch 0.5 mm
- Measuring spindle Ø 8 mm, carbide measuring surfaces
- Friction coupling Ø 25 mm pulled forward onto the thimble
- With clamping device

Applications
The direct reading of 5 µm makes this micrometer suitable for the most precise measurements, e.g. in quality control.

Note:
For setting gauges, see art. no. 31579.

NEW

31517

Measuring range mm	Max. error µm	31517	...
0 - 25	1.5		101
25 - 50	1.5		102
50 - 75	2.0		103
75 - 100	2.0		104

31525 Precision micrometers

TESA

TESAMASTER
Design
- With extremely small measurement deviations
- Counter for tenths of a millimetre; **reading errors of half a millimetre are therefore excluded**
- Thousandths of a millimetre are indicated parallax-free by a vernier scale on a ball bearing-mounted sleeve
- Friction coupling on the end of the measuring spindle
- Knurled ring on the thimble enables one-handed measurements without a measuring force limiter
- Measuring force max. 10 N
- **Reading 0.001 mm via vernier scale, parallax-free**
- Measuring thread pitch 0.5 mm
- Measuring surface Ø: 6.5 mm
- **Accuracy approx. 50% better than required by standards**

- Supplied in a case, including 2 adjusting keys and **test report with declaration of conformity**
- Labelled with individual production number
- **Accuracy in accordance with DIN 863/1**

Applications
For external measurement.

Quality
Carbide-tipped measuring surfaces.

Note:
Other sizes deliverable up to 250 mm.
For setting gauges, see art. no. 31579.

31525

Measuring range mm	Max. deviation span f_{max} µm	Max. parallel deviation µm	31525	...
0–25	2	1.0		201
25–50	2	1.5		202
50–75	3	1.5		203
75–100	3	1.5		204

31529 Precision pointer micrometers

ATORN®

Design
- Measuring surfaces carbide-tipped and finely lapped
- Measuring drum and measuring sleeve brushed chromium-plated, frame fully brushed chromium-plated
- Thermal insulation via plastic insulation plates
- **Accuracy in accordance with DIN 863-3**
- Spindle pitch 0.5 mm
- **Measuring spindle Ø 7.5 mm**

- Measuring drum Ø 17.5 mm
- Supplied in a case

Applications
For direct measurement or differential measurement. Ideal for series testing of small precision parts.

Note:
Larger measuring ranges and version with display value +/- 140 µm and scale value 2 µm deliverable on request.
For setting gauges, see art. no. 31579.

31529

Measuring range mm	Error limit, micrometer mm	Error limit, precision pointer mm	Display area, precision pointer mm	Scale value, precision pointer mm	31529	...
0–25	0.002	0.001	+/- 0.065	0.001		301
25–50	0.002	0.001	+/- 0.065	0.001		302

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31558 - 31559 Digital micrometers, Micromar 40 EWR / EWRi

IP 65

Mahr

Design
- RESET function (resetting the display)
- ABS (display can be set to zero without losing the reference to the ORIGIN)
- mm/inch switching
- ORIGIN (measurement pre-setting)
- LOCK function (keypad lock)
- TOL (input of tolerance and warning limits)
- DATA (in conjunction with data connection cable)
- HOLD (measured value storage)
- High-contrast LCD display (digit height 10 mm)
- Measuring spindle, rust-proof, fully hardened and ground
- Measuring spindle and anvil carbide-reinforced
- Quick drive
- Ratchet tool at the front
- Painted steel frame, thermally insulated
- Power supply: Battery, service life up to 2 years (reduced when the integrated wireless interface is used, art. no. 31559 101–108 + 301)

Note:
For radio receiver i-Stick see art. no. 35200 410.
For connection cable see art. no. 35200 415–416.
Replacement batteries, see art. no. 39900 102.

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface).

Typ P Typ Q

31558 101-108

31558 101-108
Micromar 40 EWR, individual
Design
- Data interface: Digimatic, USB

31559 101-108

31559 101-108
Micromar 40 EWRi, individual
Design
- Data interface: Integrated wireless
- Additionally with TOL (tolerance and warning limit input)

Scope of delivery:
- 3 V battery (type CR 2032)
- Operating instructions
- In case
- Setting gauge (measuring range 25–50 mm and above)

Measuring range mm	Reading mm	Error limit µm	Spindle pitch mm	Measuring force N	Frame depth mm	Frame width mm	Type 40 EWR 31558	...	Type 40 EWRi 31559	...
0–25	0.001	+/- 2	0.5	5–10	24	32		101		101
25–50	0.001	+/- 2	0.5	5–10	36	57		102		102
50–75	0.001	+/- 3	0.5	5–10	45	82		103		103
75–100	0.001	+/- 3	0.5	5–10	57	107		104		104
100–125	0.001	6	0.5	5–10	73	132		105 NEW		105 NEW
125–150	0.001	6	0.5	5–10	82	157		106 NEW		106 NEW
150–175	0.001	7	0.5	5–10	95	182		107 NEW		107 NEW
175–200	0.001	7	0.5	5–10	106	207		108 NEW		108 NEW

31558 301
Micromar 40 EWR, set
Comprising:
1 x digital micrometer each: measuring range 0–25 mm, 25–50 mm, 50–75 mm, 75–100 mm and setting gauges

31559 301
Micromar 40 EWRi, set
Comprising:
1 x digital micrometer each: measuring range 0–25 mm, 25–50 mm, 50–75 mm, 75–100 mm and setting gauges

REFERENCE

31558 301 + 31559 301

Measuring range mm	Reading mm	No. of micrometers	Type 40 EWR 31558	...	Type 40 EWRi 31559	...
0–100	0.001	4		301		301

Micrometers

31560 Digital micrometers, Micromar 40 EWR-L/EWRi-L

IP 65

Mahr

Design
- High-contrast LCD display (digit height 10 mm)
- Measuring spindle, rust-proof, fully hardened and ground
- Measuring spindle and anvil carbide-reinforced
- QUICK DRIVE quick adjustment
- Non-rotating spindle
- Ratchet tool at the front
- Painted steel frame, thermally insulated
- Power supply: Battery, service life up to 2 years (reduced when the integrated wireless interface is used, art. no. 31560 501–504)

Functions:
- RESET (setting the display to zero)
- ABS (display can be set to zero without losing the reference to the ORIGIN)
- mm/inch switching
- ORIGIN (measurement pre-setting)
- LOCK function (keypad lock)
- TOL (input of tolerance and warning limits)
- DATA (in conjunction with data connection cable)
- HOLD (measured value storage)

Scope of delivery:
- 3 V battery (type CR 2032)
- Operating instructions
- In case
- Setting gauge (measuring range 25–50 mm and above)

Applications
- Avoidance of workpiece damage: The non-rotating spindle has a touching contact which can prevent scratch marks, e.g. due to grinding dust residues on sensitive and finely machined surfaces
- Ideal for measuring thin metal foils without twisting and bending them
- Thread flank measurement using thread measuring wires: Both measuring wire holders always remain in the engaged position with each other due to the non-rotating spindle

Note:
For radio receiver i-Stick see art. no. 35200 410.
For connection cable see art. no. 35200 415–416.
Replacement batteries, see art. no. 39900 102.

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and radio systems with USB and RS-232 interface).

31560 401-404
Micromar 40 EWR-L
Design
- Data interface: Digimatic, USB

31560 501-504
Micromar 40 EWRi-L
Design
- Data interface: Integrated wireless

NEW

31560 401-404

Typ P Typ Q

31560 501-504

							Type 40 EWR-L		Type 40 EWRi-L	
Measuring range mm	Reading mm	Error limit µm	Spindle pitch mm	Measuring force N	Frame depth mm	Frame width mm	31560	...	31560	...
0–25	0.001	2	5	5–10	24	32		**401**		**501**
25–50	0.001	2	5	5–10	36	57		**402**		**502**
50–75	0.001	3	5	5–10	45	82		**403**		**503**
75–100	0.001	3	5	5–10	57	107		**404**		**504**

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31561 Digital micrometers, Micromar 40 EWV

IP 52 | Typ V | Typ W | Typ X

Mahr

Design
- Reference lock/unlock function (keypad lock)
- High-contrast LCD display (digit height 8.5 mm)
- Measuring spindle, rust-proof, fully hardened and ground
- Measuring spindle and anvil carbide-reinforced
- Quick drive
- Chrome-plated steel frame, thermally insulated
- Non-rotating spindle
- With drive arbor for measuring inserts D = 3.5 mm
- **Accuracy in accordance with DIN 863-3**
- **Data interface: USB, Opto RS-232C, Digimatic**
- Power supply: Battery, service life approx. 2 years

Scope of delivery:
- Battery (3 V, type CR 2032)
- Operating instructions
- In case

31561 101
Supplied without measuring inserts

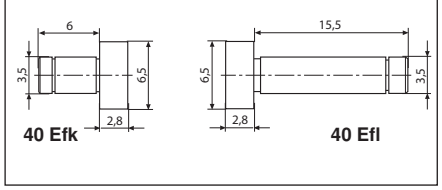
31561 102
Supplied with measuring inserts
- **Measuring inserts, 40 Eak and 40 Eal** (art. no. 31561 207 and 31561 206)
- **Measuring inserts, 40 Efk and 40 Efl** (art. no. 31561 202 and 31561 201)
- **Measuring inserts, 40 Etk and 40 Etl** (art. no. 31561 204 and 203)
- **Measuring insert, 40 Epk** (art. no. 31561 208)
- **Measuring insert, 40 Esk** (art. no. 31561 205)

Note:
Connection cable, see art. no. 35200 404-406.
Replacement batteries, see art. no. 39900 102.

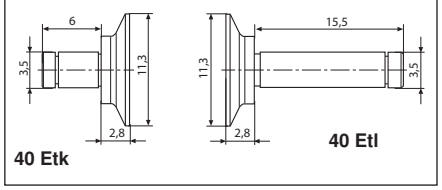
31561 102

Measuring range mm	Reading mm	Error limit µm	Spindle pitch mm	Measuring force N	Frame depth mm	Frame width mm	Without measuring inserts 31561 €	...	With measuring inserts 31561 €	...
25	0.001	4	0.635	5–10	23.0	31.5	**(414.00)**	101	**(830.00)**	102

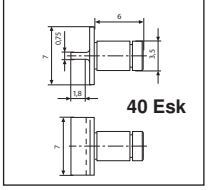
31561 202 | 31561 201



31561 204 | 31561 203



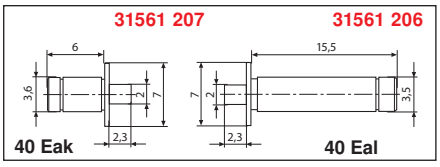
31561 205



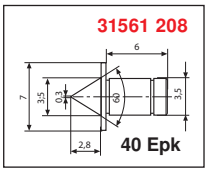
Accessories

	31561 ...
Flat measuring insert, 40 Efl	201
Flat measuring insert, 40 Efk	202
Measuring insert, plate, 40 Etl	203
Measuring insert, plate, 40 Etk	204
Measuring insert with blade, 40 Esk	205
Measuring insert with reduced measuring surface, 40 Eal	206
Measuring insert with reduced measuring surface, 40 Eak	207
Measuring insert with tip (60°), 40 Epk	208
Measuring insert with convex measuring surface, 40 Erk	209

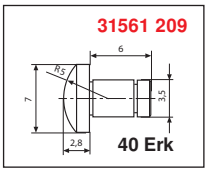
31561 207 | 31561 206



31561 208



31561 209



Micrometers | Setting gauges | Thread measuring inserts

31555 - 31557 Precision digital micrometers, capa µ system

Typ B Typ C Typ D

MICROMASTER

Design
- Ergonomic shape for ease of use
- Complete control of the measuring force via **friction coupling**
- **Patented capa µ system**
- Large LC display (digit height 7 mm)
- Measuring range 0–30 mm has **20% more range**
- Convenient one-handed operation
- Digit increment 0.001 mm/0.0005 inch
- Measuring spindle Ø 6.5 mm
- Cemented carbide measuring surfaces
- Measuring force max. 10 N
- **Accuracy in accordance with DIN 863/1**
- Battery, 3 V (type CR 2032), designed for long-term operation

Functions:
- PRESET (measurement pre-setting)
- Differential measurement
- HOLD function (measured value storage)
- mm/inch switching
- Zero setting at any position
- Automatic shut-off

Scope of delivery:
- 3 V battery (type CR 2032)
- Instructions for use and **test report with declaration of conformity**
- **Up to measuring range of 100 mm with SCS certificate**
- In case

Applications
For external measurements.

Note:
For setting gauges, see art. no. 31579.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31555
Design
- **Degree of protection IP 40**

31556
Design
- Moisture-resistant in accordance with **degree of protection IP 54**

31557
Design
- Moisture-resistant in accordance with **degree of protection IP 54**
- **With data output via Opto RS-232**
- If it is connected to an evaluation unit, the degree of protection is IP 40

31556

Measuring range mm	Standard 31555	...	IP 54 31556	...	Opto RS-232 31557	...
0–30	201		201		201	
25–50			202		202	
50–75			203		203	
75–100			204		204	
100–125					205	
125–150					206	

Measuring range mm	Standard 31555	...	IP 54 31556	...	Opto RS-232 31557	...
150–175					207	
175–200					208	
200–225					209	
225–250					210	
250–275					211	
275–300					212	

31579 Metric setting gauges

Design
- Measuring surfaces plane-parallel lapped
- Parallelism less than or equal to 1 µ
- Accuracy in accordance with DIN 863 (js2) up to 175 mm; exceeds DIN 863 from 200 mm
- With insulated grip to protect against heat from the hands, and serial identification number

Applications
For micrometers with 2 flat and parallel measuring surfaces.

Quality
Measuring surfaces made of steel, hardened and aged.

Note:
Other lengths in 25 mm increments up to 1500 mm deliverable at short notice.
Set combinations in a case, as well as special lengths, deliverable on request.

31579

Length mm	Max. error +/- µm	Measuring surface Ø mm	31579	...
25	1.25	6.5	101	
50	1.25	6.5	102	
75	1.50	6.5	103	
100	2.00	6.5	104	
125	2.50	6.5	105	
150	2.50	6.5	106	
175	2.50	6.5	107	
225	3.00	6.5	109	
275	3.00	6.5	111	
350	3.50	10.0	114	
450	3.50	10.0	118	

Length mm	Max. error +/- µm	Measuring surface Ø mm	31579	...
550	3.50	10.0	122	
650	4.00	10.0	126	
750	4.00	10.0	130	
850	4.00	10.0	134	
950	5.00	10.0	138	
1050	5.00	10.0	142	
1150	6.00	10.0	146	
1250	7.00	10.0	150	
1350	7.00	10.0	154	
1450	7.00	10.0	158	

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31585 Precision micrometers

ATORN®

Design
- Frame made of high-quality malleable iron, painted, with insulation against heat from the hands
- Spindle thread hardened and ground
- Adjustable spindle nut
- With clamping ring and friction coupling (ratchet tool)
- **Anti-glare, brushed chromium-plated scale**
- **Reading 0.01 mm,** spindle pitch 0.5 mm
- Thimble Ø 20 mm
- **Accuracy in accordance with DIN 863, Part 3**
- Supplied in a case with adjusting key and certificate of conformity

Applications
For measuring the flank diameter of male threads using interchangeable thread measuring inserts, art. no. 31592 and 31593.

Note:
Precision micrometers for female thread measurements deliverable on request.

31585

Measuring range mm	Max. error µm	31585 ...
0 - 25	3	101
25 - 50	3	102
50 - 75	4	103
75 - 100	4	104

Measuring range mm	Max. error µm	31585 ...
100 - 125	4	105
125 - 150	4	106
150 - 200	5	107

31592 - 31593 Thread measuring inserts

ATORN®

Design
- Drive arbor Ø 3.5 mm, **length 13.5 mm**
- Supplied in pairs (notch and anvil)

Applications
For measuring the flank diameter of male threads (not to be used for female thread measurements). For precision micrometers art. no. 31585.

Quality
Hardened steel, ground.

31592
Applications
For 60° male thread (metric ISO thread).
Adjustment with setting gauges art. no. 31595.

31593
Applications
For 55° male thread (Whitworth thread).
Adjustment with setting gauges art. no. 31596.

Note:
Thread measuring inserts for 30° trapezoidal thread deliverable on request.

31592 - 31593

Metric 60°

Pitch mm	31592 ...
0.35 - 0.5	101
0.6 - 0.8	102
0.9 - 1.25	103
1.5 - 2.0	104
2.5 - 3.5	105
4.0 - 6.0	106

Whitworth 55°

Threads per inch	31593 ...
60 - 48	101
40 - 32	102
28 - 22	103
20 - 16	104
14 - 11	105
10 - 7	106
6 - 4	107

31595 - 31596 Setting gauges for thread measuring inserts

ATORN®

Design
- Finely ground and lapped
- With thermal insulation
- **Accuracy in accordance with DIN 863, Part 3**
- Rounded, lapped bore on one side, to place on the tip for easier adjustment.

Applications
For precision micrometers art. no. 31585.

Quality
Hardened steel.

31595
Applications
For 60° male thread (metric ISO thread).

31596
Applications
For 55° male thread (Whitworth thread).

Note:
Setting gauges for 30° trapezoidal thread deliverable on request.

31595

31596

Metric 60°

Length mm	31595 ...
25	101
50	102
75	103
100	104
125	105
175	106

Whitworth 55°

Length mm	31596 ...
25	101
50	102
75	103

31599 Micrometer base stand

Design
- Sturdy cast-iron base plate
- Clamping jaws with adjustable angle of inclination

Applications
Provides a secure stand for a clamped micrometer with a measuring length of up to 100 mm.
For holding micrometers for external measurements.

31599

	31599	...
		101

31614 Precision micrometers

HHW

Design
With non-rotating spindle. **Anti-glare, brushed chromium-plated scale.** The friction coupling enables a constant measuring pressure. Frame made of high-quality malleable cast iron or spheroidal graphite iron, with effect coating, with insulation against heat from the hands. **Reading 0.01 mm,** measuring surface Ø 8 mm, spindle pitch 0.5 mm, thimble Ø 20 mm, **accuracy exceeds DIN 863.** Supplied in a case with adjusting key.

Applications
For measuring narrow recesses, e.g. for circlips. For checking the wire diameter on wire coils or springs.

Note:
For setting gauges, see art. no. 31579.

31614

Measuring range mm	Measuring surface W x D mm	Max. error µm	31614	...
0–25	0.75 x 6.5	3		101
25–50	0.75 x 6.5	3		102

31620 Precision micrometers

HHW

Design
2 plane-parallel lapped gauge discs, continuous plane without recesses, scale sleeve and thimble brushed chromium-plated, friction coupling, spindle clamp with clamping ring. **Accuracy exceeds DIN 863,** spindle pitch 0.5 mm, **reading 0.01 mm,** thimble Ø 20 mm, in a case with adjusting key.

Applications
For tooth width measurements on module 0.8 and above, and for measuring recess distances and centring edges.

Note:
For setting gauges, see art. no. 31579.

31620

Measuring range mm	Gauge disc Ø mm	Max. error µm	31620	...
0 - 25	20	4		201
25 - 50	20	4		202
50 - 75	20	5		203
75–100	20	5		204
100 - 125	30	6		205
125–150	30	6		206

31661 Precision micrometer

HHW

Design
Measuring spindle with hardened measuring surface Ø 6.5 mm, gauge stop made of hardened steel Ø 6.5 mm, measuring force max. 10 N, but higher surface pressure than for micrometers in standard design with the same measuring force, **reading 0.01 mm, accuracy in accordance with DIN 863,** Part 3. Supplied in a case with adjusting key.

Applications
Spherical measuring anvil for measuring wall thicknesses on pipes and other curved parts.

31661

Measuring range mm	31661	...
0 - 25		401

Info Precision tooth width micrometer

- For measuring tooth widths Wk, recess distances and centring wheels
- Large discs - ideal for reliable measurement of rollers
- Gauge disc Ø either 25, 35 or 50 mm, hardened steel, continuous plane without recesses
- Reading 0.01 mm without addition due to 1 mm thread pitch and 100 mm graduations

Deliverable on request. Please contact us!

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31672 3- and 5-point micrometers

Design
With prismatically arranged measuring surfaces, carbide-tipped. **Reading 0.01 mm. Accuracy in accordance with DIN 863.** Painted frame, brushed chromium-plated thimble/scale sleeve. With sensing ratchet. Supplied in a case **with setting gauge.**
Applications
For test specimens such as unevenly grooved cutters, reamers and screw taps, as well as splined shafts and uneven polygons. Detection of roundness deviations on cylindrical surfaces.

31672 101-107
Design
3 measuring points, opening angle of the prism 60°.
Applications
For 3-part test specimens.

31672 108-112
Design
5 measuring points, opening angle of the prism 108°.
Applications
For 5-part test specimens.

31672 101-107

3-point/60°

Measuring range mm	31672 ...
1 - 15	101
5 - 20	102
20 - 35	103
35 - 50	104
50 - 65	105
65 - 80	106
80 - 95	107

5-point/108°

Measuring range mm	31672 ...
5 - 25	108
25 - 45	109
45 - 65	110
65 - 85	111
85 - 105	112

31690 Precision depth micrometers

Design
With friction coupling, scale sleeve and thimble, brushed chromium-plated, with clamping ring, **interchangeable measuring needles with 25 mm increments.** Measuring bridge and measuring needle ends (Ø 4 mm) hardened and lapped.

Accuracy exceeds DIN 863, reading 0.01 mm, measuring range 25 mm.
Spindle pitch 0.5 mm, in a case, with adjusting key and certificate of conformity.

31690

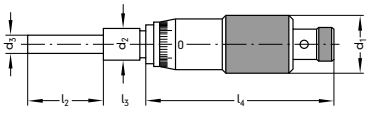
Measuring range mm	Bridge length x width mm	Number of measuring needles	Max. error µm	31690 ...
0–75	50 x 17	3	5	301
0–150	50 x 17	6	6	302
0–150	100 x 17	6	6	304
0–300	100 x 17	12	9	305

31721 Precision micrometer head

Design
Measuring spindle fully hardened, thread ground, measuring drum and measuring sleeve brushed chromium-plated. With ratchet tool and rotating spindle; **accuracy exceeds DIN 863.**

Measuring drum Ø 20 mm, measuring surface carbide-tipped Ø 6.5 mm, spindle pitch 0.5 mm, **reading 0.01 mm.** Supplied with certificate of conformity.

31721



Measuring range mm	d_1 mm	d_2 h_6 mm	d_3 mm	l_2 mm	l_3 mm	l_4 mm	31721 ...
0–25	20	12	6.5	27.5 (at 0)	16	73.5 (at 0)	301

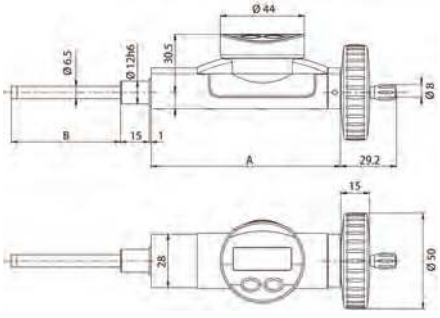
Typ C Typ G Typ H Typ I swiss made

31725 Precision digital micrometer head

sylvac

- **With data output via RS-232/USB,** combined with external feed
- Patented SYLVAC measuring system
- LC display (digit height 6 mm)
- **Dial Ø 44 mm, rotatable over 270°**
- Simplex transmission, non-rotating spindle, cemented carbide measuring surface
- Clamping shaft 12 h6 15 mm long
- Spindle Ø 6.5 mm

Note:
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.



31725

Measuring range mm	Measuring range inch	Error limit mm	Repeatability mm	Data output RS-232/US	31725 ...
0–25	0–1	0.005	0.002	x	201

Internal micrometers | Comparison measuring instrument

31749 - 31750 Precision 2-point internal micrometers

Design
Reading 0.01 mm, spindle pitch 0.5 mm. Thimble Ø: Measuring range 35–50 mm = 15 mm, measuring range 50–75 mm = 16 mm, measuring range 75–100 mm = 17 mm, measuring range 100–300 mm = 20 mm. Body made of steel, fully brushed chromium-plated for **glare-free reading.** Spindle thread hardened and ground. **Accuracy exceeds DIN 863.** With adjusting key and certificate of conformity.
Applications
For measuring internal dimensions in the form of cylindrical bores, diameters of turned grooves, the distance between two plane-parallel surfaces etc.

Quality
Measuring surfaces carbide-tipped and spherically lapped.

Note:
Other set combinations, extensions and holders deliverable on request.

31749
Sets consisting of: 1 internal micrometer 50–75 mm with end piece and **extensions** (see table): Steel, hardened and lapped, with insulated grips to protect against heat from the hands. Connecting thread M7. Supplied in a case.

31750 201-203
Individual internal micrometers, measuring range 35–100 mm: Without clamping ring. Stiff spindle thread to prevent unwanted movement of the thimble during measurement. Measuring surface Ø 6 mm.

31750 204-211
Individual internal micrometers, measuring range 100–300 mm: With clamping ring and insulation against heat from the hands. Smooth-running spindle thread for fast adjustment to the desired dimension. Clamping ring for locking the reading drum during measurement. Measuring surface Ø 6 mm.

Measuring range mm	Max. error µm	Gauge block extension lengths mm	Set 31749	...
50–300	9	25/50/50/100		201
50–450	10	25/50/100/200		202
50–850	12	25/50/100/200/400		203
50–1450	15	25/50/100/200/400/600		204

Measuring range mm	Max. error µm	Individual 31750	...
35 - 50	3		201
50 - 75	3		202
75 - 100	3		203
100 - 125	3		204
125 - 150	3		205
150 - 175	4		206

Measuring range mm	Max. error µm	Individual 31750	...
175 - 200	4		207
200 - 225	4		208
225 - 250	4		209
250 - 275	4		210
275 - 300	4		211

31749

31750 202

31750 205

31754 Internal micrometers

Design
- **With measuring jaws on one side,** measurement depth 5 mm
- Measuring sleeve, measuring drum and measuring jaws brushed chromium-plated
- Convex cemented carbide measuring surfaces
- Sensing ratchet
- Locking screw

- **Reading 0.01 mm**
- **Accuracy in accordance with DIN 863**
- Spindle pitch 0.5 mm, measuring drum Ø 17 mm
- Supplied in a case

Applications
For internal measurements.

Measuring range mm	Max. error µm	Setting ring mm	31754	...
5 - 30	5	5		101
25 - 50	6	25		102
50–75	7	-		103
75–100	8	-		104

31754 101

31754 102

31754 103

31754 104

31770 Precision internal micrometers

Design
- Measuring surfaces cylindrical, **carbide-tipped**
- Small jaws made of sturdy semi-circular cemented carbide to ensure minimal bending
- Easy operation due to ball bearing-mounted spindle
- **Reading 0.01 mm,** thread pitch 0.5 mm, repeat accuracy less than or equal to 2 µm
- Friction coupling Ø 21 mm pulled forward onto the thimble for sensitive measuring
- **Accuracy exceeds DIN 863**
- Supplied in a case

Applications
Ideal for measuring bores during turning, milling and grinding tasks. Precise measurements due to easy handling. Cost-effective alternative to 3-point internal measuring instruments with the same measuring accuracy.

Note:
Also deliverable with measuring range of up to 600 mm on request.

31770 201
Design
With jaws on both sides with 2 separate inner scale sleeves for easy reading (5–55 mm measuring range).

31770 202-203
Design
With measuring jaws on one side.

Measuring range mm	Max. error µm	31770	...
5 - 55	2.5		201
50 - 75	3.0		202
75 - 100	3.0		203

31770 201

31770 203

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31780 - 31781 Universal comparison measuring instrument, UNICHECK

ATORN®

31780 101
Basic unit
Design
- **Measuring range of basic unit 5–220 mm (external)/15–230 mm (internal); can be extended up to 2000 mm via extensions, see art. no. 31781 101–103**
- Measurement display via dial gauge (preferably 25 mm measuring range), precision pointer or electronic measuring probe (not included in scope of delivery, see art. no. 33001 ff.)
- Sturdy, torsion-resistant tube construction
- 1 adjustable fixed measuring arm
- 1 movable measuring arm for internal and external measurement, measuring direction reversible, measurement path 18 mm
- Universally applicable and adaptable system due to a wide range of measuring arms, measuring contacts and stop elements, see art. no. 31781 104–115)
- Adjustment via setting device, master gauge, gauge block combination, ring gauge or micrometer (**not** included in scope of delivery)

Scope of delivery:
- Basic unit in wooden case
- **Without dial gauge and stop elements**

Applications
This measuring instrument is a universal solution for a wide range of precise measuring tasks.
Examples: External and internal measurements of bores and parallel surfaces, threads, gearing, recesses, grooves etc.

Note:
Further comparison measuring instruments from other manufacturers are deliverable on request.

31781 101-115
Accessories
Applications
For universal comparison measuring instrument UNICHECK, see art. no. 31780 101.

UNICHECK in use

31780 101 + 31781 103

31781 101-103

31781 104

31781 105

31781 106

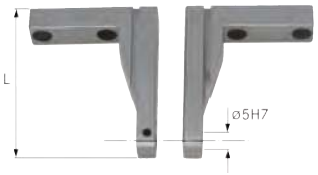
31781 107-108

31781 109

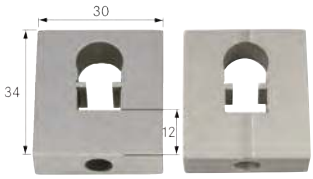
31781 110

31781 111

31781 112-113



31781 114



31781 115

Designation	Design/applications	31780 ...	31781 ...
Basic unit	Measuring range 5–220 mm (external)/15–230 mm (internal)	101	
Extension	Length 100 mm		101
Extension	Length 200 mm		102
Extension	Length 500 mm		103
Mounting attachment (pair)	For measuring probe		104
Shoulder measuring inserts (pair)	For external measurements		105
Shoulder measuring inserts (pair)	For internal measurements		106
Measuring inserts (pair)	With spherical contact surfaces, length 23 mm, Ø 6 mm		107
Measuring inserts (pair)	With spherical contact surfaces, length 53 mm, Ø 6 mm		108
Measuring inserts (pair)	Cylindrical, length 52 mm		109
Measuring inserts (pair)	Depressed centre, with spherical contact surfaces, length 41 mm, Ø 6 mm		110
Measuring inserts (pair)	With gauge disc, length 42 mm, Ø 12 mm		111
Measuring arms (pair)	Length 40 mm		112
Measuring arms (pair)	Length 80 mm		113
Depth stops (pair)	For measuring arms		114
Adapter (pair)	5 mm for special probes, M 2.5 (see art. no. 33114)		115

3-point internal micrometers

31899 3-point internal micrometers

ATORN®

Design
- Measuring surfaces with measuring range 12 mm and above carbide-tipped
- With measuring pins at the front for measurements to the base of the hole (Ø 12 mm and above)
- Measuring head from Ø 40 mm in lightweight construction made of anodised aluminium
- **Anti-glare, brushed chromium-plated scale**
- Friction coupling for consistently repeatable measuring force
- Pitch 0.5 mm
- **Accuracy in accordance with DIN 863-4**

Applications
For through-bores and blind holes (Ø 12 mm and above), and for short centring shoulders. Larger measurement depths are achieved via standard extensions, art. no. 31899 122–125.

31899 101-117
Internal micrometers, individual
Scope of delivery:
- In case

31899 118-121
Internal micrometer sets
Scope of delivery:
- Individual devices with setting rings in a case

31899 101-117

31899 118-121

Application range mm	Scale interval mm	Measurement depth mm	Error limit µm	Individual 31899	...
* 6–8	0.001	58	4		101
* 8–10	0.001	58	4		102
* 10–12	0.001	58	4		103
12 - 16	0.001	64	4		104
16–20	0.001	64	4		105
20–25	0.005	68	4		106
25–30	0.005	68	4		107
30–40	0.005	76	4		108
40–50	0.005	76	4		109
50–60	0.005	79	5		110
60–70	0.005	79	5		111
70–85	0.005	97	5		112
85–100	0.005	97	5		113
100 - 125	0.005	132	6		114
125–150	0.005	132	6		115
150–175	0.005	132	7		116
175–200	0.005	132	7		117

* Not suitable for borehole base measurements.

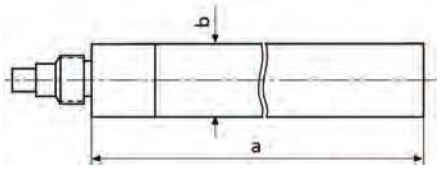
Application range mm	Scale interval mm	Application ranges of individual devices mm	Setting rings mm	Sets 31899	...
* 6–12	0.001	6-8/8-10/10-12	8/10		118
12–20	0.001	12-16/16-20	16		119
20–50	0.005	20-25/25-30/30-40/40-50	25/40		120
50–100	0.005	50-60/60-70/70-85/85-100	60/85		121

* Not suitable for borehole base measurements.

31899 122-125
Measurement depth extensions
Design
- To achieve larger measurement depths

Applications
For 3-point internal micrometers art. no. 31899 101-121.

31899 122-125



For application ranges mm	Length a mm	Ø b mm	Measurement depth extensions 31899	...
6 - 12	75	5.8		122
12 - 20	75	11.6		123
20 - 30	150	18.5		124
30 - 200	150	21.4		125

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31900 - 31902 Precision 3-point internal micrometers, XT

Design
- Measuring range 2–6 mm with 2-point measuring head
- Measuring jaws up to measuring range 12.5 mm made of cemented carbide, from measuring range 12.5 mm with cemented carbide inserts
- Sensing ratchet for constant measuring force
- High-precision hardened and ground measuring spindle
- Vernier scale value 0.005 mm
- Brushed chromium-plated scale display
- **Accuracy in accordance with DIN 863**
- **Includes UKAS calibration certificate**

Applications

Measuring range 2 to 6 mm:
For through-bores and blind holes.
Measurements can extend to the base of the hole.

From measuring range 6 mm to 12.5 mm:
For through-bores and blind holes.
Measurements can extend to 1.9 mm above the base of the hole.

Measuring range 12.5 mm and above:
For through-bores and blind holes.
Measurements can extend to the base of the hole.

31900
Sets
- Supplied in a case **with setting rings** and adjusting key

31902
Individual internal micrometers
- Supplied in a case with adjusting key, **without setting ring**

31900 204

31902

Measuring range mm	Internal micrometer measuring range mm	Sets 31900 ...
6–10	6-8/8-10	202
10–20	10-12.5/12.5-16/16-20	203
20–50	20-25/25-35/35-50	204
50–100	50-65/65-80/80-100	205

Individual

Measuring range mm	31902 ...
2 - 2.5	201
2.5 - 3	202
3 - 4	203
4 - 5	204
5 - 6	205

Individual

Measuring range mm	31902 ...
6 - 8	206
8 - 10	207
10 - 12.5	208
12.5 - 16	209
16 - 20	210

Individual

Measuring range mm	31902 ...
20 - 25	211
25 - 35	212
35 - 50	213
50 - 65	214
65 - 80	215

Individual

Measuring range mm	31902 ...
80 - 100	216
100 - 125	217
125 - 150	218
150 - 175	219
175 - 200	220

31923 3-point internal micrometers

Design
- DIN 863/4
- Extension provides large measurement depth
- Brushed chromium-plated scale and control elements
- Measuring spindle fully hardened and ground
- Ratchet coupling for repeatable measuring force
- Self-centring measuring head with three measuring probes on the side
- Measuring range 12 mm and above carbide-tipped
- Clearance a for 6–12 mm = 1.4 mm, for 12–100 mm = 0.5 mm
- Scale graduation up to measuring range 12 mm = 0.001 mm, from measuring range 16 mm = 0.005 mm
- Supplied in a sturdy transport case, including setting ring and extension

Applications
For measuring through-bores and blind holes.

31923 101-113

31923 201-204

Measuring range mm	Error limit µm	Setting ring mm	Measurement depth without (with) extension mm	Individual 31923 ...
6–8	4	6	55 (155)	101
8–10	4	8	55 (155)	102
10–12	4	10	55 (155)	103
12–16	4	16	81 (231)	104
16–20	4	16	81 (231)	105
20–25	4	25	91 (241)	106
25–30	4	25	91 (241)	107
30–40	4	40	101 (251)	108
40–50	5	40	101 (251)	109
50–63	5	62	101 (251)	110
62–75	5	62	115 (265)	111
75–88	5	87	115 (265)	112
87–100	5	87	115 (265)	113

Measuring range mm	Internal micrometer measuring range mm	Setting rings mm	Extensions mm	Sets 31923 ...
6–12	6-8/8-10/10-12	6/8/10	100	201
12–20	12-16/16-20	16	150	202
20–50	20-25/25-30/30-40/40-50	25/40	2 x 150	203
50–100	50-63/62-75/75-88/87-100	62/87	150	204

3-point internal micrometers | 3-point internal measuring pistols

31935 - 31936 Digital 3-point internal micrometers, XT3D

IP 67 | Typ J | Typ K | Typ L

sylvac

Design
- **With data output via PROXIMITY**
- Measuring jaws up to measuring range 12.5 mm made of cemented carbide, from measuring range 12.5 mm with cemented carbide inserts
- Interchangeable measuring heads
- Sensing ratchet for constant measuring force
- High-precision hardened and ground measuring spindle
- LC display (digit height 6 mm) for error-free reading
- Battery, 3 V (type CR 2032), designed for long-term operation
- mm/inch switching
- Input of 2 preset values
- **Reading can be switched from 0.01 mm to 0.001 mm**
- Hold value function for the last value measured
- Tolerance input
- Max./min. function
- Zero value setting and preset setting
- Supplied in a case with adjusting key

Applications
Up to measuring range 12.5 mm:
For through-bores.
Measurements can extend to 1.9 mm above the base of the hole.

Measuring range 12.5 mm and above:
For through-bores and blind holes.
Measurements can extend to the base of the hole.

Note:
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

31935
Sets consisting of:
- Digital display unit
- Measuring heads
- **Setting rings, including UKAS calibration certificate**

31936
Individual internal micrometers
- Includes digital display unit, **without setting rings**

31936

Measuring range mm	Data output PROXIMITY	Sets 31935	...	Individual 31936	...
6–10	6-8/8-10	8	x	301	
10–20	10-12.5/12.5-16/16-20	12.5/20	x	302	
20–50	20-25/25-35/35-50	20/35	x	303	
50–100	50-65/65-80/80-100	65/80	x	304	
6–8	x			301	
8–10	x			302	
10–12.5	x			303	
12.5–16	x			304	
16–20	x			305	
20–25	x			306	
25–35	x			307	
35–50	x			308	
50–65	x			309	
65–80	x			310	
80–100	x			311	
100–125	x			312	
125–150	x			313	
150–175	x			314	
175–200	x			315	

31906 Digital 3-point internal measuring pistol sets, Micromar 844 AS

Typ V | Typ W | Typ X

Mahr

Design
- Connecting thread for changing the measuring heads
- **Self-centring measuring head** with three measuring probes on the side, offset by 120°
- Measuring probe from 12 mm carbide-tipped
- From 12 mm: measuring probe for measurement to the base of the hole
- From 40 mm: weight-saving aluminium measuring head
- Company standard

Scope of delivery:
- Display unit MarCator 1086 R
- Setting rings
- Key for changing the measuring heads
- Operating instructions
- In case

Applications
Measurement of through-bores, blind holes and centring edges.

Note:
Connection cable, see art. no. 35200 404-406.
Replacement batteries, see art. no. 39900 202.
For display units, see art. no. 33086.

31906

Measuring range mm	Number of heads	Setting rings mm	Reading mm	Display unit	31906	...
6–12	3	8/10	0.001	MarCator 1086 R	101	
12–20	2	16	0.001	MarCator 1086 R	102	
20–50	4	25/40	0.001	MarCator 1086 R	103	
50–100	4	60/85	0.001	MarCator 1086 R	104	

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31925 Digital 3-point internal micrometers, Micromar 44 EWR

IP 52 | Typ V | Typ W | Typ X

Mahr

Design
- Connecting thread for changing the measuring heads
- Self-centring measuring head with three measuring probes on the side, offset by 120°
- Ready for immediate measurements with **reference system**
- Measuring probe from 12 mm carbide-reinforced
- Measuring head from 40 mm made of weight-saving aluminium
- LCD display (digit height 8.5 mm)
- **Data interface: Digimatic, Opto RS-232C, USB**
- Power supply: Battery, service life approx. 2 years
- Accuracy in accordance with DIN 863-4

Functions:
- RESET (setting the display to zero)
- ABS (display can be set to zero without losing the reference to the preset)
- mm/inch switching
- PRESET (measurement presetting)
- DATA (in conjunction with data connection cable)
- LOCK function (keypad lock)

Applications
Measurement of through-bores, blind holes and centring edges.

31925 101-117
Internal micrometers, individual
Scope of delivery:
- Basic unit, 44 EWg
- Measuring head, 44 Ak
- 3 V battery (type CR 2032)
- Operating instructions
- In case

31925 201-204
Internal micrometer sets
Scope of delivery:
- Basic unit, 44 EWg
- Measuring heads, 44 Ak
- Setting rings
- 3 V battery (type CR 2032)
- Operating instructions
- In case

REFERENCE 31925 101-117

REFERENCE 31925 203

Measuring range mm	Reading mm	Error limit µm	Measurement depth mm	Individual 31925	...
6–8	0.01	4	58		**101**
8–10	0.01	4	58		**102**
10–12	0.01	4	58		**103**
12–16	0.01	4	64		**104**
16–20	0.01	4	64		**105**
20–25	0.01	4	68		**106**
25–30	0.01	4	68		**107**
30–40	0.01	4	76		**108**
40–50	0.01	4	76		**109**
50–60	0.01	5	79		**110**
60–70	0.01	5	79		**111**
70–85	0.01	5	97		**112**
85–100	0.01	5	97		**113**
100–125	0.01	6	132		**114**
125–150	0.01	6	132		**115**
150–175	0.01	7	132		**116**
175–200	0.01	7	132		**117**

Measuring range mm	Internal micrometer measuring range mm	Setting rings mm	Sets 31925	...
6–12	6-8/8-10/10-12	8/10		**201**
12–20	12-16/16-20	16		**202**
20–50	20-25/25-30/30-40/40-50	25/40		**203**
50–100	50-60/60-70/70-85/85-100	60/85		**204**

3-point internal micrometers

31907 - 31909 Precision 3-point internal micrometers

MICROTEST

31907
Internal micrometers, individual
Design
- **Oversized measuring range Ø 30–1150 mm with only 9 internal micrometers**
- Maintenance-free thanks to Microtest system, brushed hard chromium-plated housing, clearly engraved scale graduations
- Automatic self-centring
- 1 µm parallax-free direct full reading (1 mm, 1/10 mm, 1/100 mm, 1/1000 mm)
- One pointer revolution = 1 mm, so no reading errors and no calculation
- **Accuracy: Factory standard exceeds DIN 863**
- Minimised bevel gear play
- Optimised forced retraction of the probes
- Insulation protection against contamination and thermal expansion
- Equipped for digital technology
- Supplied in a case
- Made in Switzerland

Applications
Blind holes can be measured to the base of the hole. **High-precision measurement even in a large measuring range.** Optimised extensions for large measurement depths.

31908
Extensions
- Can be extended up to **10 metres** without loss of accuracy (up to 15 metres possible)

31909
Control gauge
Design
- Ø 40–240 mm, measuring surfaces hard-chromium plated
- In case

Applications
For adjusting 6 internal micrometers, 30–400 mm. Replaces numerous setting rings.

Note:
Further control gauges up to max. Ø 1100 mm deliverable on request, saving on calibration and certification costs.

31907

31908

31909

					Internal micrometer		Extension		Control gauge	
Measuring range mm	Measurement depth mm	Length mm	Linear precision +/- µm	Repeat accuracy +/- µm	31907	...	31908	...	31909	...
30–40	110	-	2	1.5		101				
40–60	110	-	2	1.5		102				
60–90	110	-	2	1.5		103				
90–140	140	-	2	1.5		104				
140–240	210	-	3	1.5		105				
240–400	300	-	3	1.5		106				
400–650	520	-	5	2.5		107				
650–900	520	-	7	3.5		108				
900–1150	520	-	8	4.5		109				
30–400	-	200	-	-				101		
30–400	-	500	-	-				102		
30–400	-	1000	-	-				103		
30–400	-	-	-	-						101

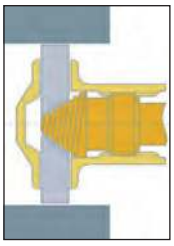
31916 Precision 3-point internal micrometers

TESA

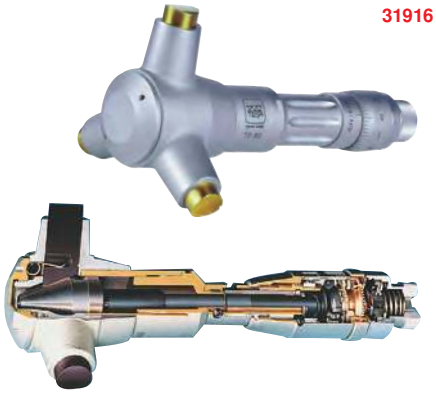
IMICRO
Design
- **Self-centring and self-aligning micrometers** with high measurement reliability
- Measuring pins coated all over with diamond-like carbon (ADLC, hardness HV 0.05 4000 to 6000 = measuring range 11–100 mm), or carbide-tipped (hardness HV 1300 = measuring range 100–300 mm)
- **Accuracy in accordance with DIN 863/4**
- Includes ratchet tool
- Supplied with installation key and test report with declaration of conformity

Applications
For measuring cylindrical bores, for large measuring ranges and measurement depths.

Note:
For extensions, see art. no. 31948.



31916



Measuring range mm	Reading mm	Measurement depth mm	31916	...
3.5–4	0.001	20		101
4 - 4.5	0.001	20		102
4.5 - 5.5	0.001	25		103
5.5 - 6.5	0.001	25		104
6 - 8	0.001	52		105
8 - 10	0.001	52		106
10 - 12	0.001	52		107
11 - 14	0.005	77		108
14 - 17	0.005	77		109
17 - 20	0.005	77		110
20 - 25	0.005	78		111
25 - 30	0.005	78		112
30 - 35	0.005	78		113
35 - 40	0.005	78		114

Measuring range mm	Reading mm	Measurement depth mm	31916	...
40 - 50	0.005	84		115
50 - 60	0.005	84		116
60 - 70	0.005	84		117
70 - 80	0.005	84		118
80 - 90	0.005	84		119
90 - 100	0.005	84		120
100 - 125	0.01	100		121
125 - 150	0.01	100		122
150 - 175	0.01	100		123
175 - 200	0.01	100		124
200 - 225	0.01	100		125
225 - 250	0.01	100		126
250 - 275	0.01	100		127
275 - 300	0.01	100		128

= The specified prices are unit prices. Only sold in the specified packing units. Always specify number of units in order information.

31948 Extensions

Applications
For digital 3-point internal micrometers:
- **TESA IMICRO** (art. no. 31916)
- Supplied **without** micrometer and centring device

Note:
Lengths up to 1000 mm and centring devices deliverable on request.

31948

For measuring range mm	Length mm	31948	...
6 - 12	100		**101**
11 - 20	150		**102**
20 - 40	150		**103**
40 - 100	150		**104**