33001 Dial gauges (reading 0.1 mm)

Design
- Accuracy according to factory standard
- Metal housing, nickel-plated
- Line scales with knurled outer ring, rotatable by 360° to the point zero position
- 2 adjustable tolerance marks
- Clamping shank Ø 8 mm h 6 hardened and ground
- Interchangeable gauge slides
- Dimensions in accordance with DIN EN ISO 463, June 2006 edition

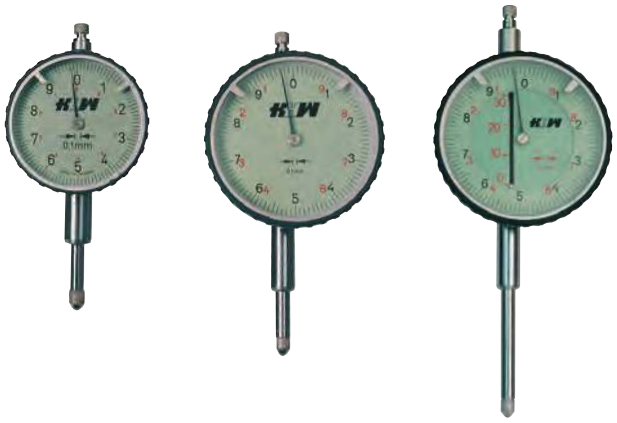
Note:
For special probe see art. no. 33114.

33001 101
Small dial gauge

33001 102
Normal dial gauge

33001 103
Normal dial gauge
- Also with linear, absolute mm display.

33001 101 33001 102 33001 103



Reading mm	Housing Ø mm	Measuring range mm	1 pointer revolution mm	Dial graduation	33001 ...
0.1	40	10	10	0–10	101
0.1	58	10	10	0–10	102
0.1	58	30	10	0–10	103

33003 - 33007 Small dial gauges (reading 0.01 mm)

Design
- Line scales with knurled outer ring, rotatable by 360° to the point zero position
- 2 adjustable tolerance marks
- Dial with black advancing and red returning numbers
- 2 pointers (small pointers for absolute mm display)
- Clamping shank Ø 8 mm h 6 hardened and ground
- Interchangeable gauge slides
- Dimensions in accordance with DIN EN ISO 463, June 2006 edition

Note:
For special probe see art. no. 33114.

33003
- **Accuracy in accordance with DIN 878,** June 2006 edition
- Metal housing, nickel-plated
- Measuring pin lapped and made of stainless steel

33004
- **Accuracy in accordance with DIN 878,** June 2006 edition
- Housing made of pressed brass, matt nickel-plated
- Measuring pin made of stainless steel

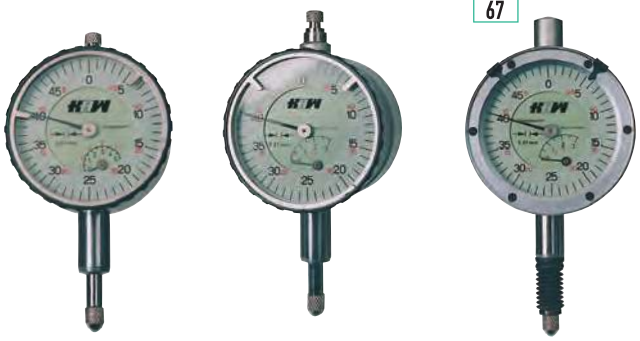
33005
- **Accuracy in accordance with DIN 878,** June 2006 edition
- **With shock protection,** measuring gear protected against hard impacts, display precision is maintained virtually unlimited
- Housing made of pressed brass
- Measuring pin and clamping shank made of stainless steel

33006
- **Accuracy in accordance with DIN 878,** June 2006 edition
- **Back wall designed as an adhesive magnet**
- Round magnet (adhesion 120 N) affects neither the mechanism nor accuracy
- Can be used without a holder or base
- Metal housing, nickel-plated

33007
- Accuracy according to factory standard
- **Water-tight and oil-tight, in accordance with IP 67**
- Measuring gear protected against liquids, contamination and hard impacts, display accuracy is maintained with practically no limitations
- Metal housing, nickel-plated

33003 33004

33005 33006 IP 67 33007



Reading mm	Housing Ø mm	Measuring range mm	1 pointer rotation mm	Dial graduation	33003 ...	33004 ...	33005 ...	33006 ...	33007 ...
0.01	32	3	0.5	0–50	101				
0.01	40	5	0.5	0–50		101		101	
0.01	40	3	0.5	0–50					101
0.01	44	3	0.5	0–50					101

Dial gauges

33009 - 33017 Dial gauges (reading 0.01 mm)

Design
- Line scales with knurled outer ring, rotatable by 360° to the point zero position
- 2 adjustable tolerance marks
- 2 pointers (small pointers for absolute mm display)
- Clamping shank Ø 8 mm h 6 hardened and ground
- Interchangeable gauge slides
- Dimensions in accordance with DIN EN ISO 463, June 2006 edition

Note:
For special probe see art. no. 33114.

33009
- **Accuracy in accordance with DIN 878,** June 2006 edition
- Stable metal housing
- Clamping shank made of stainless steel

33010
- **Accuracy in accordance with DIN 878,** June 2006 edition
- Metal housing, nickel-plated
- Clamping shank and lapped measuring pin made of stainless steel
- Dial with black advancing and red returning numbers

33011
- **Accuracy in accordance with DIN 878,** June 2006 edition
- **With shock protection,** measuring gear protected against hard impacts, display precision is maintained virtually unlimited
- Metal housing, nickel-plated
- Clamping shank and lapped measuring pin made of stainless steel
- Dial with black advancing and red returning numbers

33015
- **Accuracy DIN 878,** June 2006 edition
- **Waterproof**
- **Shadow-free reading**
- Cover plate made of clear, impact-resistant plastic, rotatable by 360° to the pointer zero setting
- Dial with black advancing and red returning numbers

33017
- **Accuracy analogous to DIN 878**
- **Water-tight and oil-tight IP 67**
- **With impact protection**
- Measuring gear protected against liquids, contamination and hard impacts, display accuracy is maintained with practically no limitations
- Metal housing, nickel-plated
- Dial with black advancing and red returning numbers

33009

33010

33011

33015

IP 67

33017

Reading mm	Housing Ø mm	Measuring range mm	1 pointer rotation mm	Dial graduation	33009 ...	33010 ...	33011 ...	33015 ...	33017 ...
0.01	58.0	10	1	0–100	101	101	101	101	
0.01	61.5	10	1	0–100					101

33024 Dial gauges (reading 0.01 mm)

Design
- Practical, large lifting sleeve with additional dust-protection function
- Ceramic-tipped gauge slide (minimal wear, electrically non-conductive)
- Coloured tolerance marks for optimal identification
- **Accuracy according to factory standard**
- Dimensions in accordance with DIN EN ISO 463, June 2006 edition

Note:
For special probe see art. no. 33114.

33024 099-101
Design
- With **concentric mm display** for large and clear reading

33024 101
Design
- Just as compact housing as with a 10 mm dial gauge

33024 097

33024 098

33024 099

33024 100

33024 101

Reading mm	Housing Ø mm	Measuring range mm	1 pointer rotation mm	Dial graduation	Impact protected	33024 ...
0.01	40	5	0.5	0–50	x	097
0.01	58	10	1.0	0–100	x	098
0.01	40	10	1.0	0–100	-	099
0.01	58	10	1.0	0–100	x	100
0.01	58	25	1.0	0–100	x	101

33025 Dial gauges – large measuring ranges – (reading 0.01 mm)

Design
- **With large measuring range**
- Accuracy according to factory standard
- Metal housing, nickel-plated
- Line scales with knurled outer ring, rotatable by 360° to the point zero position
- 2 adjustable tolerance marks
- 2 pointers (small pointer is arranged concentrically as an absolute mm display for clear reading)
- **Essential points of the measuring element are embedded in sapphire, ruby or ceramic jewel bearings**
- Hardened and ground clamping shank and measuring pin made of stainless steel, interchangeable gauge slides

Note:
For special probe see art. no. 33114.

33025 104
Applications
The dial gauge with a 100 mm measuring range is designed for use in a vertical position. When used in other positions, the measuring force must be increased due to the high weight of the measuring pin. Please enquire separately.

33025 105
Design
Also water-tight and oil-tight, with impact protection. Measuring gear protected against liquids, contamination and hard impacts.

33025 101

33025 105

Reading mm	Housing Ø mm	Measuring range mm	1 pointer revolution mm	Dial graduation	Clamping shank Ø mm	33025	...
0.01	58.0	30	1	0–100	8 h 6		**101**
0.01	58.0	50	1	0–100	8 h 6		**102**
0.01	58.0	80	1	0–100	8 h 6		**103**
0.01	58.0	100	1	0–100	**10 h 6**		**104**
0.01	61.5	30	1	0–100	8 h 6		**105**

33035 - 33055 Dial gauges -special designs- (reading 0.01 mm)

Design
- Line scales with knurled outer ring, rotatable by 360° **(art. no. 33035 only by 36°)** to the pointer zero setting
- 2 adjustable tolerance marks
- Clamping shank Ø 8 mm h 6 hardened and ground
- Interchangeable gauge slides
- Dimensions in accordance with DIN EN ISO 463, June 2006 edition

Note:
For special probe see art. no. 33114.

33035
Safety dial gauges
Design
- **Accuracy in accordance with DIN 878,** June 2006 edition
- **With large free stroke and impact protection device**
- **Display range limited to less than 1 pointer revolution to prevent incorrect readings**
- Metal housing nickel-plated, clamping shank and measuring pin made of stainless steel
- With metal lifting sleeve

Applications
The free stroke makes it easier to insert the specimens in the measuring device because the measuring pin can be lifted far beyond the measuring range.

33040
Large dial gauges
Design
- Accuracy according to factory standard
- Housing made of pressed brass, brushed chromium-plated
- 2 pointers (small pointer functions as a mm display for clear reading)
- Clamping and measuring pin lapped, made of hardened stainless steel

33050
Design
- Accuracy according to factory standard
- **With a rear probe**
- Metal housing, nickel-plated, dial with black advancing and red returning numbers
- 2 pointers (small pointers for absolute mm display
- Mounting on the clamping shank or on the chamfer Ø 28 mm h 6

Applications
Particularly suitable in connection with gauges or for installation in devices, tools and machines when good readability from above is required.

33055
Magnetic dial gauge
Design
- **Accuracy in accordance with DIN 878,** June 2006 edition
- **Back wall designed as an adhesive** magnet, round magnet (adhesion 220 N) does not affect either the mechanism or accuracy, can be used without a holder or base
- Metal housing, nickel-plated
- Dial with black advancing and red returning numbers
- 2 pointers (small pointers for absolute mm display)

33035

33040

33050

33055

Reading mm	Housing Ø mm	Measuring range mm	1 pointer revolution mm	Dial graduation	Free stroke mm	33035	...	33040	...	33050	...	33055	...
0.01	40	0.4	0.5	20–0–20	4.5		**101**						
0.01	58	0.8	1.0	40–0–40	9.0		**102**						
0.01	80	10.0	1.0	0–100	-				**101**				
0.01	100	10.0	1.0	0–100	-				**102**				
0.01	40	5.0	0.5	0–50	-						**101**		
0.01	58	10.0	1.0	0–100	-								**102**

Dial gauges | Precision pointers

33060 - 33064 Fine dial gauges (reading 0.001 mm)

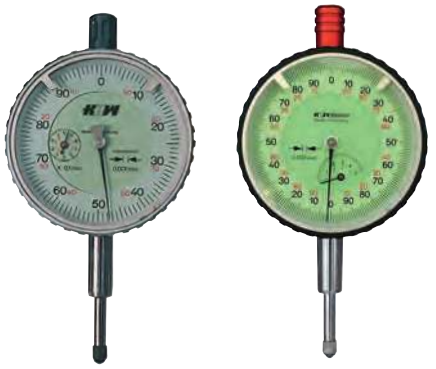
Design
- Line scales with knurled outer ring, rotatable by 360° to the point zero position
- 2 adjustable tolerance marks
- 2 pointers (small pointers for absolute mm display)
- Clamping shank Ø 8 mm h 6 hardened and ground
- Interchangeable gauge slides

Note:
For special probe see art. no. 33114.

33060
Design
- Accuracy according to factory standard
- **Design principle of the measuring element similar to that of precision pointers**
- Measuring pin path is increased via a lever and transferred to a pointer
- Due to its overrun, the measuring element offers **effective impact protection**
- Metal housing, nickel-plated
- Dial with black advancing and red returning numbers
- With lifting sleeve

33064
Design
- Accuracy according to factory standard
- **Essential points of the gear measuring element are embedded in sapphire, ruby or ceramic jewel bearings**
- Metal housing, nickel-plated
- Dial with black advancing and red returning numbers
- With metal lifting sleeve

33060 33064



Reading mm	Housing Ø mm	Measuring range mm	1 pointer revolution mm	Dial graduation	33060 ...	33064 ...
0.001	58	1	0.1	0–100	101	
0.001	40	1	0.1	0–100	102	
0.001	58	2	0.2	0–100/0–100		101
0.001	58	5	0.2	0–100/0–100		102

33068 - 33070 Lifting lever, wire lifter and spare glasses

33068
Lifting lever
For lifting the probe bolt.
Applications
For dial gauges with 58 mm Ø and maximum measuring range of 10 mm.

33069
Wire lifter
Design
Length 10 mm, overall length incl. pressure piece 160 mm.
Applications
For lifting the probe rod.
For precision pointer art. no. 33074.

33070
Spare glasses for dial gauges
Applications
For dial gauges art. no. 33001–33064.

33068

33069

33070

For housing Ø mm	33068 ...	33069 ...	33070 ...
-	101	101	
57/58			103

33071 Precision pointers

Design
- **Impact-protected** thanks to mechanically decoupled measuring mechanism
- Compact dimensions, only 18.6 mm high
- 7 bearing jewels for the highest accuracy
- **Ball-guided probe rode with bellows** for protection against oil and other contaminants
- Clamping shank Ø 8 mm (h6)
- Adjustable tolerance marks
- Fine adjustment screw accessible from above, lockable

Note:
For special probe see art. no. 33114.

33071 101
Mytast
Accuracy in accordance with DIN 879-1

33071 102
Centitast
Accuracy according to factory standard

33071 101 33071 102

Type	Reading mm	Measuring range mm	Free stroke mm	Display accuracy mm	Measuring force N	33071 ...
Mytast	0.001	0.1	3.0	0.001	1	101
Centitast	0.01	0.5	2.5	0.005	1	102

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

IP 54

33073 Precision pointer Millimess

Mahr

Design
- Large high-contrast dial
- Adjustable tolerance marks
- Lockable fine adjustment
- Shock-resistant measuring mechanism
- Clamping shank and measuring pin made of stainless, hardened steel
- Insensitive to forces acting laterally on the measuring pin
- High touch sensitivity and accuracy thanks to mounting of the measuring mechanism axes in stones and precision-toothed wheels and pinions
- Self-contained measuring mechanism can be easily replaced as a unit
- Box-shaped protective housing
- Constant measuring force
- Measuring pin lifting by screwable wire lifter or lifter button
- In case

Note:
For precision pointer snap gauge MaraMeter 840 F art. no. 32341.

33073 101-103
Design
- Precision ball guide of the measuring pin for low reversal error

33073 101

33073 102

33073 103

33073 201

Measuring range mm	Type	Scale interval mm	Scale numbering	Repeatability mm	Reversal error mm	Free stroke mm	Measuring force N	Standard	33073	...
0.50	1002	0.0005	25–0–25	0.0003	0.0003	2.8	1	factory standard		**101**
0.10	1003	0.001	50–0–50	0.0005	0.0005	2.8	1	DIN 879-1		**102**
0.26	1004	0.005	130–0–130	0.001	0.001	2.5	1	factory standard		**103**
0.50	1010	0.01	25–0–25	0.002	0.002	2.5	1	factory standard		**201**

33074 Precision pointers

ATORN®

Design
- Measuring mechanism supported on rubies
- Precision-guided measuring pin
- Highly robust and wear resistant
- With pointer fine adjustment (a protective cap prevents unintentional adjustment)
- Shadow-free reading
- Clearly visible red tolerance marks
- Impact-protected, free stroke
- With threaded hole for wire lifting
- In case

Note:
For special probe see art. no. 33114.
For wire lifter see art. no. 33069 101.

33074 102+104
Design
Protection class IP 53

33074

Measuring range mm	Scale interval mm	Scale numbering	Free stroke mm	Error limit mm	Repeatability limit mm	Reversal error mm	Degree of protection	Clamp shank Ø mm	33074	...
0.1	0.001	50–0–50	3	0.0012	0.0005	0.0005	None	8		**101**
0.1	0.001	50–0–50	3	0.0012	0.0005	0.0005	IP 53	8		**102**
0,5	0.01	25–0–25	2.5	0.012	0.003	0.003	None	8		**103**
0.5	0.01	25–0–25	2.5	0.012	0.003	0.003	IP 53	8		**104**

Digital dial gauges

33077 Digital small dial gauges

IP 65 | Typ G | Typ H | Typ I

ATORN®

Design
- Sealed according to **degree of protection IP 65** against dust, metal particles, spraying water and oil
- ABS plastic housing Ø 44 mm
- Dovetail mount, shaft mount 8 mm (h6)
- Inductive measuring system
- **With data output RS 232/USB, combined with external feed**
- mm/inch switching
- Zero setting at any position (RESET)
- Auto-off
- Multi-functional LC display (digit height 6 mm)
- Supplied **with 3 V battery**, (type CR 2032), in case

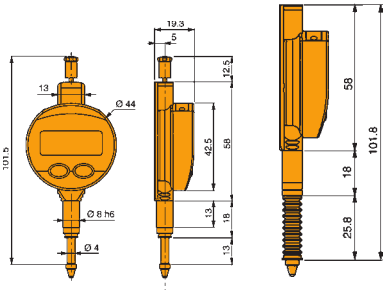
Note:
For special probe see art. no. 33114.
Clamping accessories for dovetail mount, see art. no. 33255.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.

33077 201

Combined scale/ digital display (only for art. no. 33077 202)

Technical data:	33077 200	33077 201	33077 202
mm/inch switching:	x	x	x
Zero setting at any position (RESET):	x	x	x
Reading reversible (0.001/0.01 mm):	-	x	x
Preset function:	x	x	-
HOLD function:	x	x	-
ABS (comparative measurement):	x	x	-
Measuring mode: MIN/MAX/MAX-MIN:	-	-	x
Auto-off:	x	x	x
Data output RS 232/USB:	x	x	x
Measuring spindle with bellows:	-	-	x

Measuring range mm	Reading mm	Repeatability mm	Error limit mm	Measuring force N	33077	...
12.5	0.01	0.005	0.02	0.5–0.9		200
12.5	0.001	0.002	0.005	0.5–0.9		201
5.0	0.001	0.002	0.004	0.6–0.65		202



33082 Digital dial gauges

IP 51 | Typ J | Typ K | Typ L

ATORN®

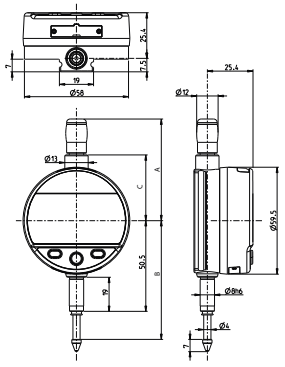
Design
- Aluminium housing
- Front panel made of polyamide, rotatable through 270°
- Inductive measuring system
- Data output proximity, RS/USB
- LC digital display, 11 mm digit height protection class IP 51
- Repeatability 0.002 mm (+/- 2 s) (for cat. no. 33082 301–304)
- Measuring spindle made of stainless steel, hardened and ground
- Supplied **with 3 V battery** (type CR 2032)
- Dial gauges with 0.001 mm resolution with calibration certificate

Functions:
- ABS/Set (switch between absolute and comparative measurement)
- Switch the counting direction
- Min./max./delta storage
- Choice of tolerance limits, colour display when exceeding tolerance limits, read-out of display values and read-in of preset and tolerance values
- Zero setting
- mm/inch switching
- Hold (HOLD)
- Data transfer
- Ref I/Ref II
- Preset value

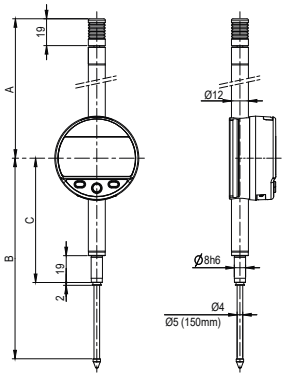
Note:
For special probe see art. no. 33114.
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.
Lifting lever available on request.

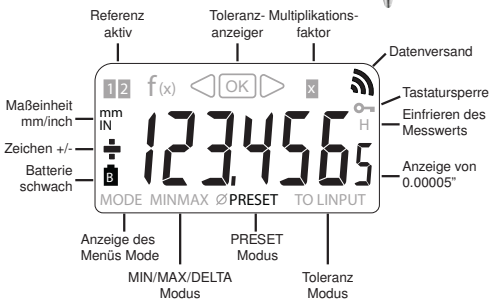
33082

Measuring range 12.5 and 25 mm



Measuring range 50 and 100 mm





Measuring range mm	Reading mm	Error limit mm	A mm	B mm	C mm	Measuring force N	Proximity	33082	...
12.5	0.01	0.01 +/- 1 digit	56.6	66.1	36.6	0.65–0.9	x		297
25.0	0.01	0.01 +/- 1 digit	69.3	79.0	49.4	0.65–1.15	x		298
50.0	0.01	0.02 +/- 1 digit	121.0	142.0	88.0	1.0–2.6	x		299
100.0	0.01	0.02 +/- 1 digit	172.0	244.0	139.0	1.8–3.0	x		300
12.5	0.001	0.003	56.6	66.1	36.6	0.65–0.9	x		301
25.0	0.001	0.004	69.3	79.0	49.4	0.65–1.15	x		302
50.0	0.001	0.005	121.0	142.0	88.0	1.0–2.6	x		303
100.0	0.001	0.006	172.0	244.0	139.0	1.8–3.0	x		304

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

33085 Digital dial gauges

IP 52 | Typ M | Typ N | Typ O

ATORN®

Design
- Capacitive measuring system
- **KEEPTRONIC (blocking of the set reference value)**
- High-contrast 12 mm high LC digital display
- **multiCOM data output (optionally RS 232, USB or Digimatic)**
- Traverse rate 1.5 m/s
- Operating temperature 10–40 °C
- **Degree of protection IP 52** in accordance with IEC 60529
- Supplied **with 3 V battery** (type CR 2032) and operating instructions

Functions:
- **ON/OFF**
- **RESET** (resetting the display)
- mm/inch switching
- Counting direction reversal
- **PRESET** (measurement presetting)
- **DATA** (in conjunction with data connection cable)
- **LOCK function:** Keys are locked
- **Auto-OFF** (selectable)

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

33085

Measuring range mm	Reading mm	Error limit mm	Measuring force N	Data output multiCOM	33085 ...
12.5	0.01	0.02	0.5–1	x	**201**
12.5	0.001	0.005	0.5–1	x	**202**

Info KEEPTRONIC system

ATORN®

Switching on the measuring system:
Pressing the ON button or simply pushing the display causes it to switch on immediately. The electronics have a memory function for the last displayed value, ensuring the **last saved zero position is always guaranteed.**

Locking:
To prevent accidental adjustment of the zero position or measurement unit (mm/inch), the operating keys can also be locked. This means that the measuring instrument **cannot be changed, just like an analogue measuring instrument.**

33090 Digital dial gauge TESA DIGICO

Typ B | Typ C | Typ D

TESA

Design
- Dimensions in accordance with DIN 878
- Housing diameter 57 mm
- LC display, digit height 10 mm
- Zero setting of the display in any position within the entire measuring range
- Measuring force less than 2 N
- Data output Opto RS 232
- ON/OFF
- Switch the counting direction
- Scale display
- Tolerance marks
- Preset function
- Keypad locking
- mm/inch conversion
- Rotating display
- Numerical tolerances
- Measuring mode for testing holes
- Measuring mode ABS/REL
- Full reset to default setting
- Dynamic measurements (Min/Max/Max-Min)
- Measurement of internal dimensions (Min/Max)
- 3 V battery (type CR 2032)
- Supplied with test report in storage box

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

Metric-only versions and versions with standard inch display are also available.

33090

Type	Measuring range mm	Reading mm	Error limit mm	Data output Opto RS 232	33090 ...
DIGICO 705 MI	12.5	0.001	0.004	x	**601**

Digital dial gauges | Special probes for dial gauges and precision pointers

33086 Digital dial gauges MarCator

Typ V Typ W Typ X

Mahr

33086 097-099
MarCator 1075 R
Design
- ON/OFF function
- RESET function (resetting the display)
- mm/inch switching
- Counting direction reversal
- PRESET function (measurement presetting)
- DATA function (in conjunction with data connection cable)
- LOCK function (keypad lock)
- Auto ON/OFF function
- High-contrast LCD display (digit height 12 mm)
- Protective cap on the end of the measuring pin
- Clamping shank and measuring pin made of stainless, hardened steel
- **Data interface: USB, Opto RS232C, Digimatic**
- Power supply: Battery, service life approx. 2 years
- Company standard

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

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

33086 097-099

IP 52

1075 R

Measuring range mm	Reading mm	Error limit mm	Measuring force N	1075 R 33086	...
12.5	0.01	0.02	0.5–1.0		097
12.5	0.005	0.015	0.5–1.0		098
12.5	0.001	0.005	0.5–1.0		099

33086 101-201 + 301-302
MarCator 1086 Ri
Design
- ON/OFF function
- RESET function (resetting the display)
- mm/inch switching
- Counting direction reversal
- PRESET function (measurement presetting)
- TOL function (tolerance input)
- ABS function (display can be set to zero without losing the reference to the preset)
- <0> function (tolerance display mode)
- DATA function (in conjunction with data connection cable)
- Factor (adjustable)
- LOCK function (keypad lock)
- **Integrated wireless transmitter**
- High-contrast LCD display (digit height 11 mm)
- **Control and display unit can be rotated by 280°**
- Lifting cap on the end of the measuring pin
- Clamping shank and measuring pin made of stainless, hardened steel
- Ready for immediate measurements with **reference system**
- **Data interface: USB, Opto RS232C, Digimatic, Integrated Wireless**
- Company standard

Scope of delivery:
- 3 V battery (type CR 2450)
- Operating instructions

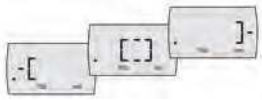
Note:
Wireless receiver, see art. no. 35200 410.
Connection cable, see art. no. 35200 404-406.
Replacement batteries, see art. no. 39900 202.
Other sizes deliverable on request.

33086 101-202 + 301-302

IP 42 Typ Y

1086 Ri

Clear display
Tolerance representation with measurement display. Display of the current value and tolerance position.



Tolerance representation without measurement display
Tolerance overshooting or undershooting is indicated exclusively by symbols.

Measuring range mm	Reading mm	Repeatability mm	Error limit mm	Measuring force N	1086 Ri 33086	...
50.0	0.0005	0.001	0.007	1.25–2.7		101
100.0	0.0005	0.001	0.008	1.8–3.5		102
12.5	0.0005	0.001	0.004	0.65–0.9		201
25.0	0.0005	0.001	0.004	0.65–1.15		202
12.5	0.01	0.01	0.02	0.65–0.9		301
25.0	0.01	0.01	0.02	0.65–1.15		302

33086 203
MarCator 1087 Ri
Design
- With dynamic measurement functions MAX/MIN/MAX-MIN
- 0 function (set analogue display to zero)
- ABS function (display can be set to zero without losing the reference to the preset)
- Auto ON/OFF function
- DATA function (in connection with data connection cable)
- Factor (adjustable)
- LOCK function (keypad lock)
- Max./Min. memory for reversal point search
- ON/OFF function
- PRESET function (measurement presetting)
- RANGE function (switching the measuring range and the scale interval)
- RESET function (resetting the display)
- TIR (max.-min.) for concentricity and evenness test
- TOL function (tolerance input)
- Counting direction reversal
- mm/inch switching
- **Integrated wireless transmitter**
- High-contrast LCD display (digit height 8.5 mm)
- **Control and display unit can be rotated by 280°**
- Lifting cap on the end of the measuring pin
- Clamping shank and measuring pin made of stainless, hardened steel
- Ready for immediate measurements with **reference system**
- **Data interface: USB, Opto RS232C, Digimatic, Integrated Wireless**
- Power supply: battery operation
- Company standard

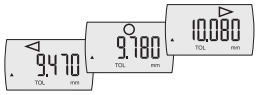
Scope of delivery:
- 3 V battery (type CR 2450)
- Operating instructions

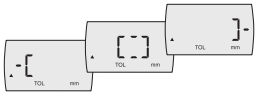
Note:
Wireless receiver, see art. no. 35200 410.
Connection cable, see art. no. 35200 404-406.
Replacement batteries, see art. no. 39900 202.

33086 203

IP 42 Typ Y

1087 Ri





Measuring range mm	Reading mm	Repeatability mm	Error limit mm	Measuring force N	1087 Ri 33086	...
12.5	0.0005	0.001	0.005	0.65–0.85		203

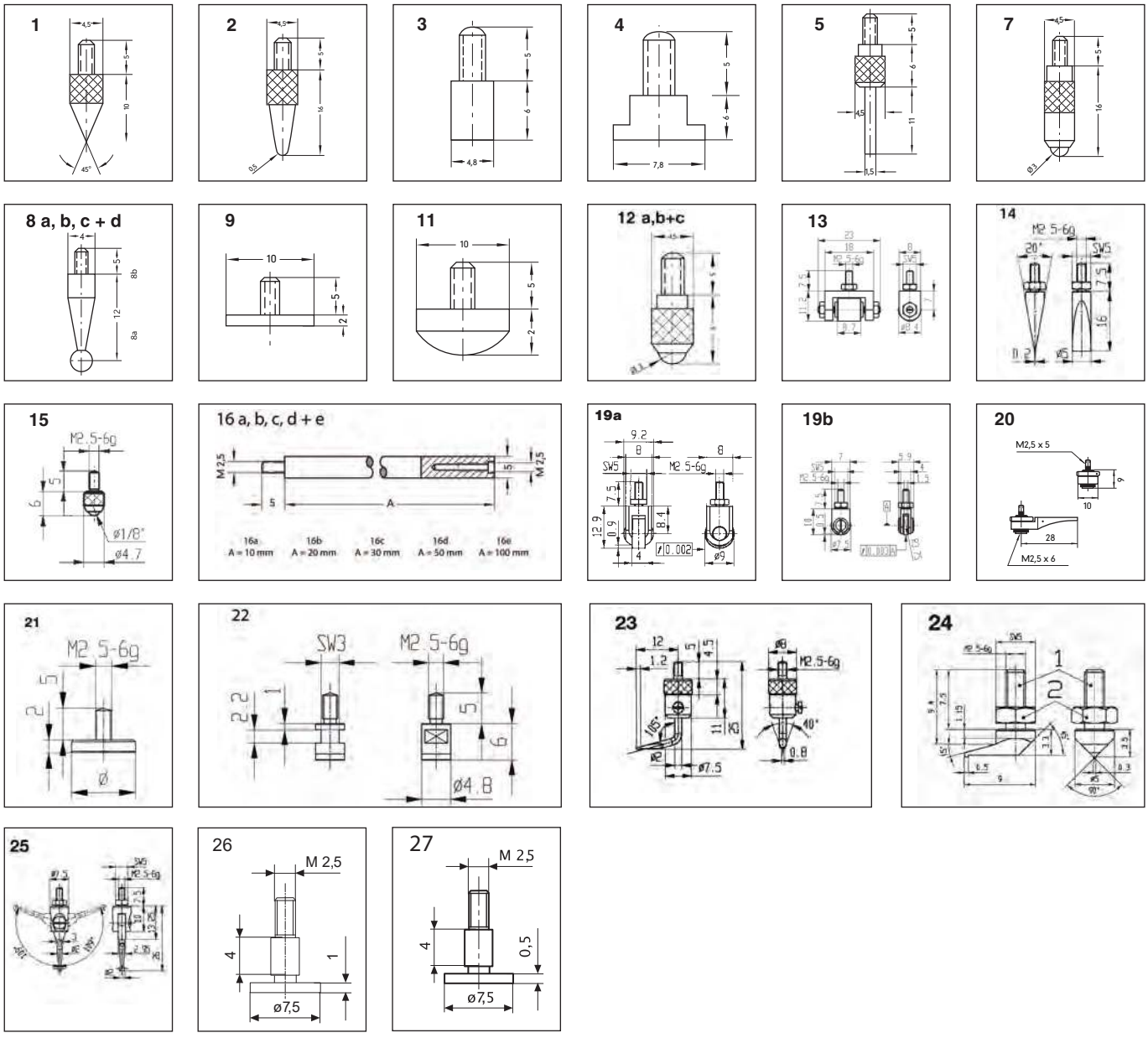
= The specified prices are unit prices. Only sold in the specified packing units. Always specify number of units in order information.

33114 Special probes for dial gauges, precision pointers

Design
Connecting thread **M 2.5.**

Applications
For special measuring tasks, can be replaced with normal probe bolt.

33114



Probe			33114 ...
1	Sharp probe	45°	**101**
2	Sharp probe	0.5 radius	**102**
3	Flat probe	4.8 mm Ø	**103**
4	Flat probe	7.8 mm Ø	**104**
5	Stylus	1.5 mm Ø	**105**
7	Ball probe	3 mm Ø	**107**
8a	Ball probe	2 mm Ø	**108**
8b	Ball probe	4 mm Ø	**109**
8c	Ball probe	cemented carbide insert 2 mm Ø	**110**
8d	Ball probe	cemented carbide insert 4 mm Ø	**111**
9	Flat probe	10 mm Ø	**112**
11	Measuring cone	-	**114**
12a	Ball probe	cemented carbide insert 3 mm Ø	**115**
12b	Ball probe	ceramic insert 3 mm Ø	**127**
12c	Ball probe	plastic insert 3 mm Ø	**128**
13	Roller probe	concentricity deviation 0.007 mm	**116**
14	Sharp probe	-	**117**

Probe			33114 ...
15	Normal probe	-	**118**
16a	Extension	10 mm long	**119**
16b	Extension	20 mm long	**120**
16c	Extension	30 mm long	**121**
16d	Extension	50 mm long	**122**
16e	Extension	100 mm long	**123**
19a	Roller sensor	concentricity deviation 0.002 mm	**124**
19b	Roller sensor	concentricity deviation 0.005 mm	**125**
20	Lifting lever	-	**126**
21	Flat probe	flat 20 mm Ø	**129**
22	Flat probe	cemented carbide insert 4.8 mm Ø	**130**
23	Gauge slide	cropped needle	**131**
24	Gauge slide	laterally offset	**132**
25	Gauge slide	swivels through 210°	**133**
26	Flat probe	Ø 7.5 x 1.0 mm	**134**
27	Disc measuring insert	Ø 7.5 x 0.5 mm	**135**

Digital display unit | Inductive measuring probes

33100 Digital display unit Millimar C1200

IP 42 | Typ V | Typ W | Typ X

Mahr

Design
- Compact housing
- High-resolution, high-contrast colour display
- Display has infinite tilting options to allow the best possible viewing angle
- Very simple to operate
- Mains or battery operation possible
- Also suitable for mobile use thanks to battery operation
- Wall mounting possible

Functions:
- ON/OFF
- mm/inch switching
- Counting direction reversal
- Measuring range switching
- TOL (tolerance input)
- PRESET (measurement presetting)
- Factor (adjustable)
- DATA (data transfer)
- Dynamic measurement functions MIN/MAX/ MAX-MIN

Scope of delivery:
- Plug-in power supply unit
- Operating instructions

Note:
Connection cable, see art. no. 35200.

33100

Technical data:	
Display:	TFT colour display 11 cm (4.3 inches), 480x272 pixels
Display range of digital display:	+/- 5000 µm
Display range of scale display:	+/- 5000 µm, +/- 2000 µm, +/- 1000 µm, +/- 300 µm, +/- 100 µm, +/- 30 µm, +/- 10 µm, +/- 3 µm
Digit increment:	0.1 µm
Scale interval:	200 µm, 100 µm, 20 µm, 10 µm, 2 µm, 0.2 µm
Probe inputs:	1
Compatibility:	Mahr
Error limit of digital display:	0.3% (min. 0.2 µm)
Error limit of scale display:	0.25% of the final scale value/0.3% of the displayed value
Data interface:	Opto RS232C, USB, Digimatic, Wireless
Power supply:	Plug-in power supply unit, 230 V/115 V, 50/60 Hz, battery operation
Protection rating:	IP 42

Dimensions W x H x D mm	33100	...
130 x 170 x 150		101

33105 Inductive measuring probe Millimar P2004

IP 64

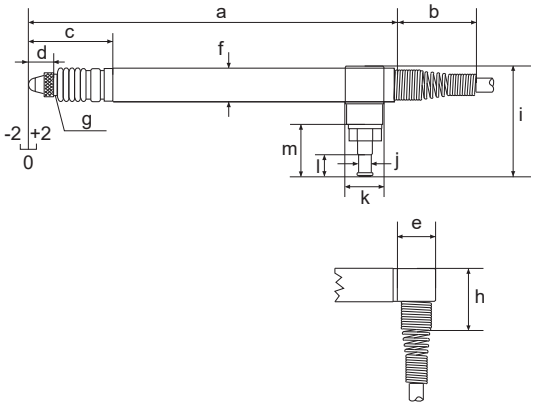
Mahr

Design
- Measuring pin supported in ball-bearing guide
- Excellent linearity over entire measuring range
- Excellent electromagnetic shielding (EMC)
- Can be converted from axial to radial cable output using the supplied cap

Scope of delivery:
- Measuring probe
- Cap for lateral cable output
- Key for pre-stroke adjustment
- Operating instructions

33105

Technical data:	
Upper stop distance:	+2.2 to 4.4 mm
Lower stop distance:	-2.2 to 0 mm
Measuring force:	0.75 N +/- 0.15 N
Measuring force increase:	0.2 N/mm
Sensitivity deviation:	0.3 %
Repeatability fw:	0.1 µm
Measured value reversal error fu:	0.5 µm
Linearity deviation in the range +/- 0.5 mm:	0.4 µm
Linearity deviation in the range +/- 1.0 mm:	1.5 µm
Linearity deviation in the range +/- 2.0 mm:	3.0 µm
Protection rating:	IP 64
Cable length:	2.5 m
Temperature coefficient:	0.15 µm/°C
Compatibility:	Mahr-VLDT



Measuring range mm	a mm	b mm	c mm	d mm	e mm	f mm	h mm	g	33105	...
+/- 2	88.7	28	21.3	6	9.2	8	14	M 2.5		101

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

33106 Inductive measuring probe Millimar 1318

IP 50

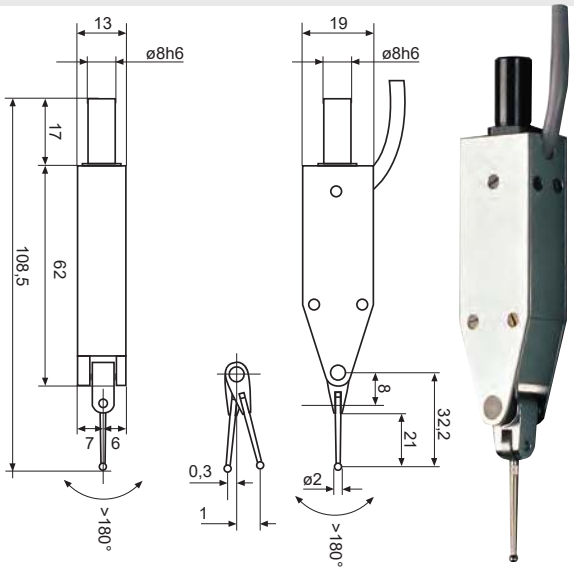
33106

Mahr

Design

- Lever gauge inductive probe
- Angle of probe can be flexibly adapted to the measuring object surface
- High operational robustness as the measuring system is separate from the guide and clamping shank
- Excellent clamping properties
- Information on chemical resistance: resistant to oil, petrol, water and aliphates. Moderately resistant to acids, bases, solvents and ozone

NEW



Technical data:	
Upper stop distance:	+1.6 mm
Lower stop distance:	-0.37 mm
Measuring force:	0.25 N +/- 0.05 N
Measuring force increase:	0.04 N/mm
Sensitivity deviation:	0.5
Repeatability fw:	0.03 µm
Measured value reversal error fu:	0.5 µm
Linearity deviation in the range +/- 0.3 mm:	0.9 µm
Protection rating:	IP 50
Cable length:	1.5 m
Temperature coefficient:	0.15 µm/°C
Compatibility:	Mahr-VLDT

Measuring range mm	33106 ...
-0.3 to 1	101

33107 Measuring computer Millimar C 1700 PC

Mahr

33107 101-102
Design
- Interactive, touch-capable software
- Very easy and intuitive operation
- User-friendly setup of measuring tasks
- Simple operation by accessing predefined formula templates
- Management of measuring tasks (memory and charging function)
- Linking the measuring task with pictures or drawings
- Static and dynamic logging of measurements
- Support by means of graphical operating controls
- Live visualisation of measured values
- Digital and scale displays of up to 128 characteristics simultaneously
- Connection of Millimar N 1700 modules in conjunction with inductive measuring probe and Mahr measuring instruments with data interface
- Connection of Mahr measuring instruments with integrated wireless
- Data export in MS-Excel or in qs-Stat format (dfq or dfx or dfd format)
- Password-protected user levels (3-stage)
- Online help (operating instructions) can be called up directly from the software

33107 101
Millimar Cockpit software
Scope of delivery:
- Mahr license key
- Installation memory stick
- 16 GB recovery stick
- Operating instructions (online help)

NEW

33107 101

33107 102
Millimar C 1700 measuring computer incl. Millimar Cockpit software
Scope of delivery:
- Millimar Cockpit software incl. 10.1 inch touch PC with preinstalled Windows 10 IoT Enterprise
- Mahr license key
- Installation memory stick
- 16 GB recovery stick
- Operating instructions (online help)
- Plug-in power supply unit
- VESA 100 standard bracket

33107 102

Millimar N 1700 modules

33107 103-106
Design
- Bus modules that can be combined flexibly
- Powerful connection modules for evaluating measuring sensors
- Synchronous data query of several connected measuring probes
- Connection of the N 1700 modules via USB interface to the smart, universal evaluation and configuration software Millimar Cockpit
- Connection of all compatible measuring probe types via one and the same module
- Flexible and modular combination of products for solving specific measuring tasks
- Maximum theoretical bus data rate of 4149 values/s (depending on the number of connected channels)

Scope of delivery:
- Operating instructions

33107 103

33107 104

33107 105

33107 106

Technical data:	33107 103 (N 1702 M)	33107 104 (N 1701 USB)	33107 105 (N 1701 PS)	33107 106 (N 1704 I/O)
Digit increment:	0.1 µm	-	-	-
Measuring range of inductive probe:	+/- 2000 µm, +/- 5000 µm	-	-	-
Probe inputs:	Mahr, Mahr 1340, Mahr half-bridge, Mahr LVDT, Mahr VLDT	-	-	-
Data transfer rate values/sec.:	4189	-	-	-
Error limit:	0.3% (min. 0.2 µm)	-	-	-
Data interface:	RS485	RS485	RS485	RS485
Power supply:	-	-	230 V/115 V, 50/60 Hz	-
Power supply:	-	430 mA	2000 mA	-
Power consumption:	110 mA	-	-	70
Control inputs:	-	-	-	4 inputs, 10–30 V
Control outputs:	-	-	-	4 outputs

Type	33107 ...
Millimar Cockpit software	101
Measuring computer Millimar C 1700 incl. Millimar Cockpit software	102
Millimar N 1702 M (module for 2 inductive probes)	103
Millimar N 1701 USB (USB connection module)	104
Millimar N 1701 PS (power supply module)	105
Millimar N 1704 I/O (input/ output module)	106

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33115 Digital display unit TWIN-T10

IP 63

Design
- Large, high-contrast display (66 x 57 mm)
- Combined scale and digital display
- One measuring probe input for single measurement function
- Clear and error-free reading
- Functions MAX, MIN, MAX-MIN and TOL
- Auto-calibration
- Exceptionally long operating time
- Battery level indicator

Scope of delivery:
- Display unit TWIN-T10
- 4 batteries (type AA)
- Operating instructions

Applications
For intensive use in workshops.
Ideally suited for measuring straightness, run-out errors or geometric shapes during adjustment, alignment or configuration of mechanical components.

Note:
Replacement batteries, see art. no. 39900 303.

NEW

33115

Technical data:	
Measuring range:	+/- 5 µm–+/- 5000 µm
Display range of scale display:	+/- 5000 µm, +/- 2000 µm, +/- 500 µm, +/- 200 µm, +/- 50 µm, +/- 20 µm, +/- 5 µm
Digit increment:	0.1 µm
Scale interval:	0.1 µm, 1 µm
Probe inputs:	1
Compatibility:	TESA
Data interface:	RS232 via TLC connection
Operating time:	340–400 hours
Power supply:	4 batteries (type AA)
Protection rating:	IP 63

Dimensions W x H x D mm	33115 ...
100 x 170 x 38	101

33116 Electronic measuring probes

IP 65

Design
- Half-bridge measuring probe with 2 induction coils
- Robust design, **degree of protection IP 65**
- Resistant to temperature fluctuations and disruptive electromagnetic influences
- Ball-guided measuring pins
- Replaceable gauge slide with cemented carbide ball Ø 3 mm
- Ground and chrome-plated cylindrical shaft Ø 8 mm (h 6)
- **Supplied in case incl. installation key and test report with declaration of conformity**

Note:
Type GT 21 HP and type GT 22 HP in high-precision design or with other measuring force and measuring probe with 3 induction coils available on request. Universal measuring probes for multi-point measuring equipment, machine tools and other equipment are available on request as in-process test instruments.
Display units and other probes available on request.

33116

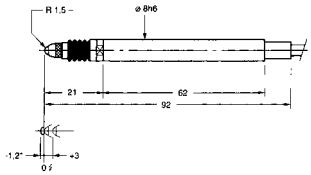
33116 101
GT 21
- Cable output, axial

33116 102
GT 22
- Cable output angled 90°
- Measuring pin lifting by vacuum

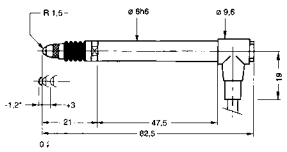
33116 103
GT 27
- Cable output, axial
- With large return stroke

33116 104
GT 28
- Cable output angled 90°
- Measuring pin lifting by vacuum
- With large return stroke

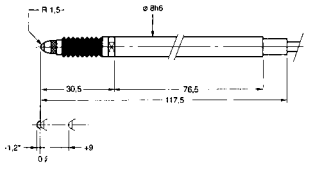
33116 101



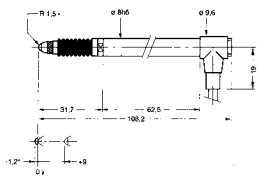
33116 102



33116 103



33116 104



Type	Measuring range mm	Measuring force max. N	33116 ...
GT 21	4	0.63	101
GT 22	4	0.63	102
GT 27	4	0.63	103
GT 28	4	0.63	104

USB measuring probes | Depth gauges | Depth measuring bridges

33110 - 33112 USB measuring probes and software

33110
USB measuring probe
Design
- High accuracy over entire measuring range
- Easy to use
- Broad range of applications
- Direct connection via the USB interface
- Increased compatibility
- RS 232 protocol without adjustment
- The simple communication protocol is compatible with the DATA-DIRECT (art. no. 33112 101) and STAT-EXPRESS (art. no. 33112 102) software and also offers a high level of user-friendliness

Applications
For highly accurate classical or multi-point measurements.

33110 101
GTL 21 USB
- Cable output, axial

33110 102
GTL 22 USB
- Cable output angled 90°

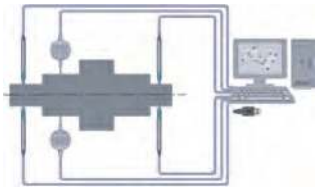
33112 101
DATA-DIRECT Advanced software
Applications
Software for data transfer. In combination with USB measuring probes art. no. 33110.

33112 102
STAT-EXPRESS software
Applications
Software for data collection and statistical data processing. In combination with USB measuring probes art. no. 33110.

33110 101

33112 101

33112 102



Examples when using 1 TESA USB measuring probe and multi-point measurements with multiple TESA USB measuring probes in conjunction with dial gauges.

Type	Measuring range mm	Error limit* µm	Error limit MPE µm	Repeatability (2s) µm	33110 ...	33112 ...
GTL 21 USB	+/- 2	0.2 + 0.2 · L	1.2	0.10	101	
GTL 22 USB	+/- 2	0.2 + 0.2 · L	1.2	0.10	102	
DATA-DIRECT software	-	-	-	-		101
STAT-EXPRESS software	-	-	-	-		102

*** L: Measurement path in mm**

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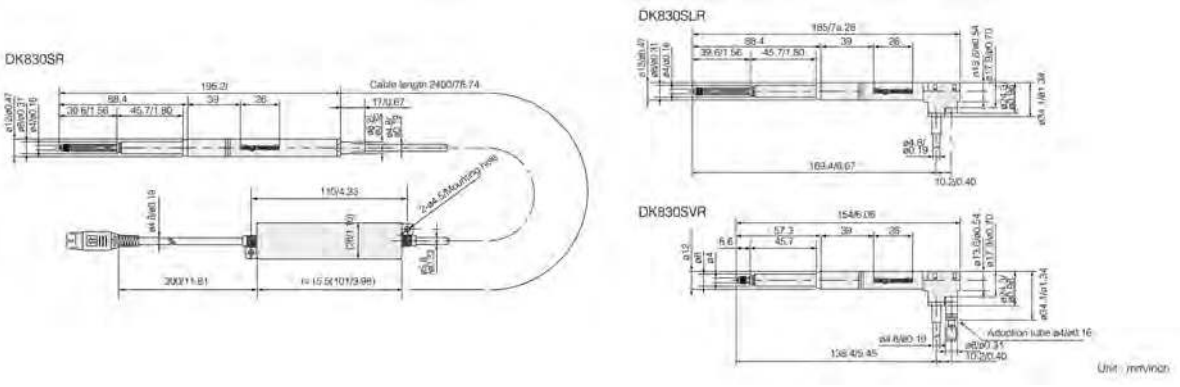
Info — Measuring probe DK series

Magnescale
SPEED X PRECISION

- Highly accurate, compact and slim measuring probe
- Suitable for installation in machines
- Magnetic principle
- Excellent resistance under workshop conditions
- Resistant to dust, liquids **(IP 67)** and vibrations
- **Accuracy:** from +/- 0.6 µm to +/- 3 µm
- **Resolution:** from 0.1 µm to 10 µm
- **Measuring range:** 2 mm to 205 mm
- Up to 30 mm measuring range, compact and slim
- 8 mm clamping diameter
- Low measuring force
- Spindle with push type can be extended with compressed air
- Dust- and watertight bellows
- Easy installation
- Measuring probe also available with flange.

Dimensions DK 830



33230 Depth gauge with dial gauge

Design
Complete with special dial gauge and depth measuringbridge. Location hole for dial gauge Ø 8 mm H7. Measuring bridge bronzed, surface hardened, ground and finely lapped. Evenness in accordance with DIN 874/0. Supplied in a case.

Applications
For checking the depths of blind holes, recesses and grooves of all kinds,
e.g. measuring engravings with sharp probe (art. no. 33114 101).

Measuring range mm	Reading mm	Measuring force N	Contact surface mm	33230	...
10	0.01	1.2	80 x 16		101

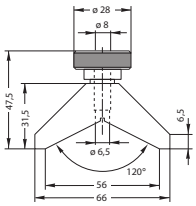
33230

33236 Depth measuring bridges, individual

33236 201
Design
With prismatically arranged measuring surfaces. Opening angle of the measuring faces 120°, hardened steel, brushed chromium-plated measuring bridge, measuring surface finely lapped, 16 mm wide, mount with clamping equipment for **Ø 8 mm H7.**
Applications
For measuring the depth of keyways in cylindrical shafts of 10 to 100 mm Ø, roundness deviations etc.

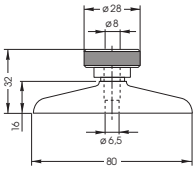
33236 202-203
Design
With level measuring surface. Location hole for dial gauge **Ø 8 mm H7**. Measuring bridge bronzed, surface hardened, ground and finely lapped. Evenness in accordance with DIN 874/0.

33236 201

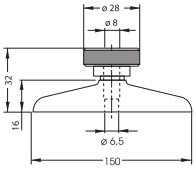


33236 201

33236 202



33236 203



33236 202-203

Measuring surfaces	33236	...
Prismatic		201
Level		202
Level		203

Lever gauge probes and accessories

33245 Lever gauge probes with µm reading or 10 µm reading

ATORN®

Design
Maximum precision in new XXL format: The first ever gauge probes with reading accurate to the nearest µm-!
- Anti-magnetic display (common magnetic fields have no effect)
- Chrome-plated housing with 3 milled dovetail guides for holding the clamping shank and/or directly on the measuring stand with corresponding dial gauge holder
- Automatic switching of the measuring direction
- Essential points of the measuring element are embedded in ruby, sapphire or ceramic jewel bearings
- Swivel range of the measuring probe 240°
- **Accuracy in accordance with DIN 2270**

Scope of delivery:
- Lever gauge probe
- Measuring probe with carbide ball Ø 2 mm
- Clamping shank Ø 8 mm for mounting on measuring stands
- Measuring probe key
- In case

33245 101
Design
With large dust and water-protected protective glass (IP 53). Scale ring made of plastic.

33245 102
Design
With extra large dial and extra large digits for optimal reading. Scale ring made of metal.

33245 105

33245 107

IP 53

33245 101

33245 102

Measuring range mm	Reading mm	Scale graduation	Housing Ø mm	Measuring probe length mm	33245	...
1.0	0.01	0–50–0	32	16.6		105
1.0	0.01	0–50–0	40	16.6		106
0.5	0.01	0–25–0	32	35.7		107
0.5	0.01	0–25–0	40	35.7		108
0.2	0.002	0–100–0	32	12.8		103
0.2	0.002	0–100–0	40	12.8		104
0.2	0.001	0–100–0	40	12.8		101
0.2	0.001	0–100–0	58	12.8		102

33240 Lever gauge probes MarTest 800

Mahr

Design
- High-contrast dial, sealed by O-ring
- Brushed chromium-plated protective housing with 3 integrated dovetail strips
- Shock-resistant measuring mechanism
- Anti-magnetic design
- Automatic adaptation to the sensing direction, resulting in error-free reading
- Double lever supported by ball bearings, overload protection through friction clutch
- Gauge slide with cemented carbide ball

Scope of delivery:
- Gauge slide Ø 2 mm
- Clamping shank 800a8
- Key for changing the gauge slides
- Operating instructions
- In case

Applications
Measuring deviations in concentricity, axial run-out, parallelism and flatness. Centring of shafts or holes and parallel or perpendicular alignment of workpieces.

Note:
Measuring probe, see art. no. 33243.

33240 101-105
Design
- Standard design

33240 201-203
Design
- **With long probe insert**
- 6 and 8 mm clamping shank

33240 301-303
Design
- With a high level of accuracy

33240 101-105

33240 201-203

33240 301-303

Measuring range mm	Version	Type	Reading mm	Scale Ø mm	Scale graduation	Measuring force N	Cemented carbide ball Ø mm	Measuring probe length mm	Standard	33240	...
0.80	standard	800 SR	0.01	38	40–0–40	0.15	2	14.5	factory standard		103
0.40	standard	800 S	0.01	28	40–0–40	0.15	2	14.5	DIN 2270		101
0.40	standard	800 SG	0.01	38	40–0–40	0.15	2	14.5	DIN 2270		102
0.25	standard	800 SA	0.01	28	25–0–25	0.1	2	14.5	factory standard		104
0.25	standard	800 SGA	0.01	38	25–0–25	0.1	2	14.5	factory standard		105
0.50	long probe insert	800 SGB	0.01	38	50–0–50	0.07	2	32.3	factory standard		201
0.25	long probe insert	800 SL	0.01	28	25–0–25	0.07	2	41.24	factory standard		202
0.25	long probe insert	800 SGL	0.01	38	25–0–25	0.07	2	41.24	factory standard		203
0.20	high precision	800 SRM	0.002	38	10–0–10	0.15	2	14.5	factory standard		303
0.10	high precision	800 SM	0.002	28	100–0–100	0.15	2	14.5	DIN 2270		301
0.10	high precision	800 SGM	0.002	38	100–0–100	0.15	2	14.5	DIN 2270		302

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

33241 Lever gauge probes MarTest 800

Mahr

Design
- High-contrast dial, sealed by O-ring
- Brushed chromium-plated protective housing with 3 integrated dovetail strips
- Shock-resistant measuring mechanism
- Anti-magnetic design
- Automatic adaptation to the sensing direction, resulting in error-free reading
- Double lever supported by ball bearings, overload protection through friction clutch
- Gauge slide with cemented carbide ball

Scope of delivery:
- Gauge slide Ø 2 mm
- Clamping shank 800a8
- Key for changing the gauge slides
- Operating instructions
- In case

Applications
Measuring deviations in concentricity, axial run-out, parallelism and flatness. Centring of shafts or holes and parallel or perpendicular alignment of workpieces.

Note:
Measuring probe, see art. no. 33243.

33241 101
Design
- With large measuring range

33241 102
Design
- Vertical design

33241 101 33241 102

33241 103
Design
- Vertical design with high accuracy

33241 104
Design
- Horizontal design

33241 103 33241 104

Measuring range mm	Version	Type	Reading mm	Scale Ø mm	Scale graduation	Measuring force N	Cemented carbide ball Ø mm	Measuring probe length mm	Standard	33241 ...
0.07	larger measuring range	800 SGE	0.001	38	70–0–70	0.2	2	9.1	factory standard	**101**
0.4	vertical	800 V	0.01	28	40–0–40	0.2	2	14.5	DIN 2270	**102**
0.1	vertical, high prec.	800 VGM	0.002	38	100–0–100	0.25	2	14.5	DIN 2270	**103**
0.4	horizontal	800 H	0.01	28	40–0–40	0.25	2	14.5	DIN 2270	**104**

33243 Measuring probes for lever gauge probes MarTest

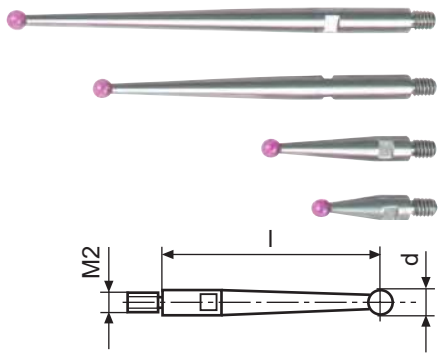
Mahr

Design
- M2 thread

Applications
For lever gauge probes art. no. 33240–33241.

Cemented carbide

Ruby



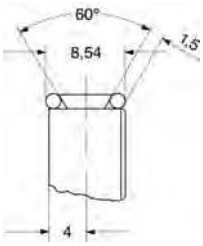
Type	Probe ball Ø mm	Gauge slide Length mm	Probe ball made of	33243 ...
800 ts	1	14.50	cemented carbide	**101**
800 ts	2	14.50	cemented carbide	**102**
800 ts	3	14.50	cemented carbide	**103**
800 tsr	2	14.50	ruby	**104**
800 tb	1	32.30	cemented carbide	**105**
800 tb	2	32.30	cemented carbide	**106**
800 tb	3	32.30	cemented carbide	**107**
800 tbr	2	32.30	ruby	**108**
800 tl	1	41.24	cemented carbide	**109**
800 tl	2	41.24	cemented carbide	**110**
800 tl	3	41.24	cemented carbide	**111**
800 tlr	2	41.24	ruby	**112**
800 te	1	9.10	cemented carbide	**113**
800 te	2	9.10	cemented carbide	**114**
800 te	3	9.10	cemented carbide	**115**
800 ter	2	9.10	ruby	**116**
Key	-	-	-	**117**

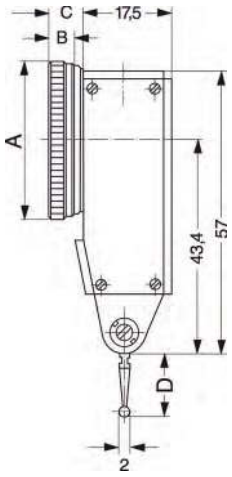
33243 117

Lever gauge probes and accessories

33246 For lever gauge probes with replaceable cemented carbide measuring probe

Standard model
Design
- **Measuring accuracy in accordance with DIN 2270**
- Clockwise pointer direction of rotation with automatic switching of the measuring direction
- Housing with three milled dovetail guides for secure clamping
- Chrome-plated to protect against damage
- Essential points of the measuring element are embedded in ruby, sapphire or ceramic jewel bearings
- Insensitive to shocks
- Line scale on profiled outer ring rotatable
- **With replaceable measuring probe Ø 2 mm made of cemented carbide**
- Delivered in a case with clamping shaft Ø 8 mm h 6 and key for replacing the measuring probe.



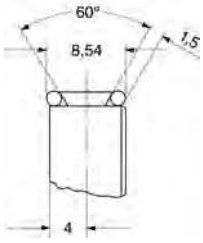


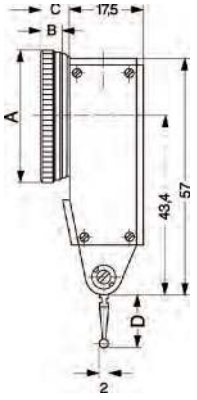
33246

Measuring range mm	Reading mm	Scale graduation	A mm	B mm	C mm	D mm	33246	...
0.8	0.01	0–40–0	32	5.6	7.1	12.8		101
0.8	0.01	0–40–0	40	6.0	7.5	12.8		102
0.5	0.01	0–25–0	32	5.6	7.1	35.7		103
0.5	0.01	0–25–0	40	6.0	7.5	35.7		104
0.2	0.002	0–100–0	32	5.6	7.1	12.8		105
0.2	0.002	0–100–0	40	6.0	7.5	12.8		106

33247 Lever gauge probes with replaceable ruby measuring probe

Standard model
Design
See art. no. 33246, however **with replaceable ruby measuring probe Ø 2 mm.**



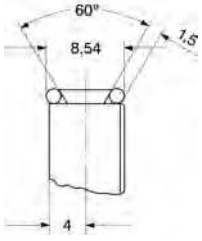


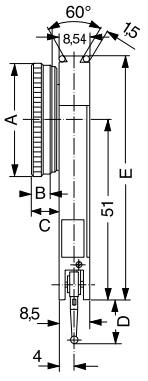
33247

Measuring range mm	Reading mm	Scale graduation	A mm	B mm	C mm	D mm	33247	...
0.8	0.01	0–40–0	32	5.6	7.1	12.8		101
0.2	0.002	0–100–0	40	6.0	7.5	12.8		102

33248 For lever gauge probes with replaceable cemented carbide measuring probe

Parallel model
Design
See art. no. 33246, however the **dial is** arranged laterally on the housing.



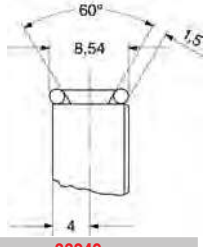


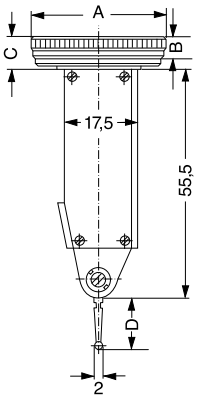
33248

Measuring range mm	Reading mm	Scale graduation	A mm	B mm	C mm	D mm	E mm	33248	...
0.8	0.01	0–40–0	32	5.6	7.7	12.8	69.5		101
0.8	0.02	0–100–0	40	6.0	8.1	35.7	73.5		102
0.2	0.002	0–100–0	32	5.6	7.7	12.8	69.5		103

33249 For lever gauge probes with replaceable cemented carbide measuring probe

Vertical model
Design
See art. no. 33246, however the **dial is** arranged perpendicularly on the housing axis.





33249

Measuring range mm	Reading mm	Scale graduation	A mm	B mm	C mm	D mm	33249	...
0.8	0.01	0–40–0	32	5.6	7.5	12.8		101
0.5	0.01	0–25–0	32	5.6	7.5	35.7		102
0.2	0.002	0–100–0	40	6.0	7.9	12.8		103

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

33253 Measuring probes for lever gauge probes

Design
- **Thread M 1.6**

Applications
For lever gauge probes
Art. no. 33245–33249.

Note:
If the length is incorrect, the angular movement can result in measurement errors.

Probe ball Ø mm	Gauge slide length mm	Probe ball made of	For lever gauge measuring instruments art. no.	ATORN 33253 ...	HHW 33253 ...
1	12.3	cemented carbide	33246–33249 (without measuring range 0.5 mm)		201
1	35.2	cemented carbide	33246–33249 (only measuring range 0.5 mm)		204
2	12.8	cemented carbide	33245 (measuring range 0.2 mm)	202	
2	12.8	ruby	33245 (measuring range 0.2 mm)	207	
2	16.6	cemented carbide	33245 (measuring range 1.0 mm)	208	
2	16.6	ruby	33245 (measuring range 1.0 mm)	209	
2	35.7	cemented carbide	33245 (measuring range 0.5 mm)	205	
2	35.7	ruby	33245 (measuring range 0.5 mm)	210	
3	13.3	cemented carbide	33246–33249 (without measuring range 0.5 mm)		203
3	36.2	cemented carbide	33246–33249 (only measuring range 0.5 mm)		206

33255 Accessories for lever gauge probes

HHW

33255 101-102
Clamping shanks
With dovetail clamping.

33255 103
Clamping shank
Cylindrical, with clamping spigot Ø 6 mm.

33255 105
Holder
Short, can be swivelled, with cylindrical shaft and dovetail clamping.

33255 106
Holder
Long, can be swivelled, with cylindrical shaft and dovetail clamping.

33255 107
Angle bracket
Cylindrical shank, location hole Ø 8 mm.

33255 108
Centring clip
Cylindrical shank, with clamping point for clamping shank Ø 4 mm and dovetail.

33255 109
Double clamp
With clamping point and dovetail.

33255 110
Key
For gauge slides.

33255 111
Reducing sleeve
For art. no. 33260, from Ø 4 mm to Ø 8 mm clamping shank.

	Ø mm	Length mm	33255 ...
Clamping shank	4.0	-	101
Clamping shank	8.0	-	102
Clamping shank	8.0	80	103
Holder	8.0	25	105
Holder	8.0	90	106
Angle bracket	8.0	25	107
Centring clip	8.0	25	108
Double clamp	6.0	-	109
Key	-	-	110
Reducing sleeve	4/8	-	111

33255 101-102

33255 103

33255 106

33255 105

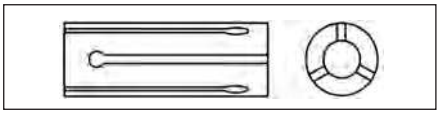
33255 108

33255 107

33255 109

33255 110

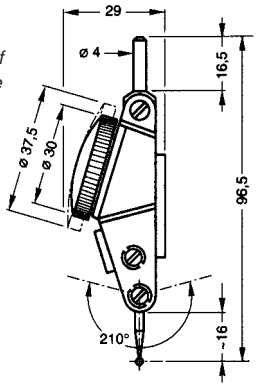
33255 111



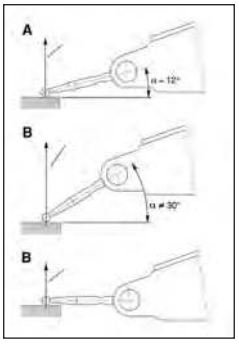
33260 Lever gauge probes with large measuring range

Design
Measure in 2 directions thanks to automatic switching in measuring mechanism. Reliable reading due to constant running direction of the pointer and an additional second pointer. Rotating scale dial. Robust monobloc metal housing with 3 milled dovetail strips and an additional permanently mounted, swivelling clamping shank with Ø 4 mm. Insensitive to magnetic fields. Precision measuring mechanism with 7 ruby bearings. Ball-bearing lever system with 210° swivel range of the replaceable gauge slide. Friction coupling for protection against overload. **Measuring force 0.12 N (0.01 mm) or 0.25 N (0.002 mm).** Supplied with 1 cemented carbide gauge slide Ø 2 mm **(connecting thread M 1.7), 1 key and declaration of conformity.**

Note:
Reducing sleeve, see art. no. 33255 111.
Measured value correction zero at 12° pitch angle of the gauge slide: At a pitch angle of 12° of the gauge slide to the workpiece surface, the measured value is accurate without correction (Figure A). At any other angle of the gauge slide to the workpiece surface (Figure B), including the parallel position, the measured values that are read must be corrected (see instruction manual).
Perpendicular version is available upon request.



33260



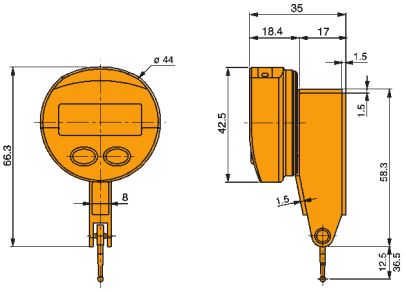
Measuring range mm	Housing Ø mm	Reading mm	Scale graduation	Gauge slide length mm	33260	...
1.6	30.0	0.01	0–40–0	16.5		**201**
1.6	37.5	0.01	0–40–0	16.5		**202**
0.4	30.0	0.002	0–10–0	15.2		**203**
0.4	37.5	0.002	0–10–0	15.2		**204**

33265 Digital lever gauge probes

IP 65 | Typ G | Typ H | Typ I

Design
Sealed according to **degree of protection IP 65** against dust, metal particles, splashing water and oil. Rotating display unit. Probe with carbide ball Ø 2 mm, can be swivelled 270°. Digit increment reversible (0.001/0.01 mm). **Data output RS 232/USB combined with external feed.** 3 dovetail mounting surfaces, clamping shank Ø 8 mm. mm/inch switching. Combined scale and digital display. Zero setting at any point, factor preselection of the scale interval: 1/2/5/10/20/50 µm. **Measuring mode:** Normal, MIN, MAX, MAX-MIN. Automatic power off, 3 V battery, type CR 2032.

Note:
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900 102.
Compatible with all TESATAST accessories.



33265 301

Combined scale-/ digital display

Measuring range mm	Measuring probe length mm	Cemented carbide ball Ø mm	Digit increment mm	Display unit Ø mm	Measuring force N	33265	...
0.8	12.5	2.0	0.001	44	0.13 (+/- 15%)		**301**
0.5	36.5	2.0	0.001	44	0.07 (+/- 15%)		**302**

33300 Thickness measuring device

Design
- With lifting device, therefore with a pressure independent of the user
- Handy low-weight bow
- Gauge slides can be replaced with special gauge slides with other diameters
- Together with the adjustable bow that is available on request, the hand tool can be turned into a standing tool quickly and easily

Note:
Replacement dial gauges available on request.

33300

Reading mm	Measuring range mm	Bow depth mm	Gauge slide Ø mm	Contact force N	33300	...
0.01	10	50	10 flat	0.8		**101**

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

33413 External quick callipers, digital

IP 67 | Typ R | Typ S

Kroeplin
Längenmesstechnik

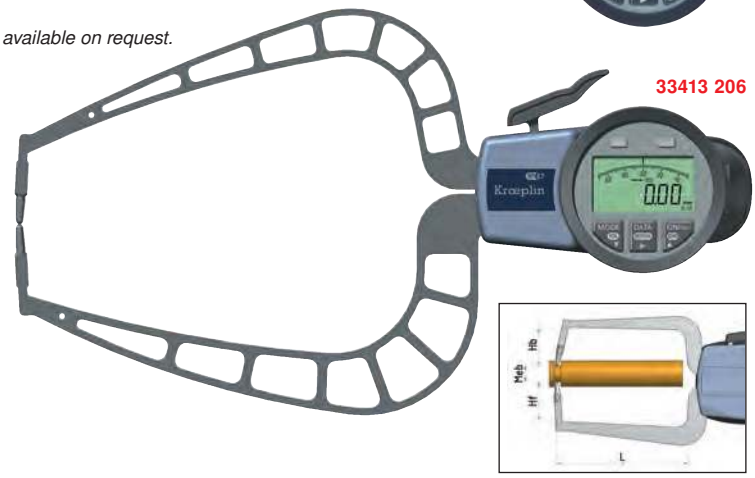
Design
- External quick callipers with **digital display**
- **Dust and splash-proof in accordance with I 67,** suitable for workshops
- Application-specific measurement programmes and measuring contacts
- Absolute and relative measurement programme
- Red/green display for tolerance measurements
- Switching from mm to inches
- Independent battery operation
- Switching of the digital increments
- Supplied **with factory calibration certificate,** battery and operating instructions

Applications
For thickness and outer grooves measurements.

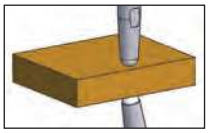
Note:
Connection cable, see art. no. 35200 307-308.
Replacement batteries, see art. no. 39900 303.
Devices **with long probe arms** *available on request.*
Wireless interface available on request.

33413 201-204

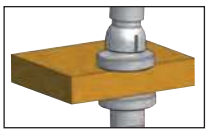
33413 206



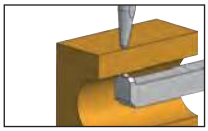
C110/C220/C450



C110T



C2R20/C4R50



C450T

Type	Measuring range mm	Scale graduation value mm	Measuring (L) depth max. mm	Measuring contact length Hb/Hf mm	Error limit mm	Repeatability mm	Measuring force incl. tolerance N	Measuring contact shape	33413	...
C110	0–10	0.005	35	19.1/18.6	0.015	0.005	0.8–1.2	ball Ø 1.5		201
C110T	0–10	0.005	35	21.7/14.8	0.02	0.005	0.8–1.2	plate Ø 6		202
C220	0–20	0.01	85	24.6/24.6	0.03	0.01	1.1–1.6	ball Ø 1.5		203
C2R20	0–20	0.01	85	24.6/2.5	0.03	0.01	1.1–1.6	ball Ø 1.5		204
C450	0–50	0.02	167	30.0/30.0	0.06	0.04	0.8–1.7	ball Ø 3		206
C4R50	0–50	0.02	169	30.0/4.3	0.06	0.04	0.8–1.7	ball Ø 3		207
C450T	0–50	0.02	167	36.0/24.0	0.08	0.04	0.8–1.7	plate Ø 50		208

33416 External quick callipers, analogue

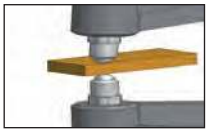
Kroeplin
Längenmesstechnik

POCO 2 K

Design
- Handy absolute measuring instrument with steel cord transmission for greater precision and longer service life
- Clear, easy-to-read scales, protected against dirt and dripping water
- Supplied in sturdy cardboard with operating instructions

Applications
Universal pocket device.

33416



Type	Measuring range mm	Scale graduation value mm	Measuring contact length mm	Error limit mm	Repeatability mm	Measuring depth mm	Measuring force incl. tolerance N	Measuring contact shape	33416	...
POCO 2K	0–10	0.1	5	0.1	0.05	36	0.3–1.3	ball Ø 2		402

33430 External quick callipers, analogue

IP 65

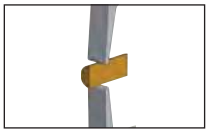
Kroeplin
Längenmesstechnik

D220S

Design
- Handy absolute measuring instrument
- **50% higher display resolution** compared to earlier generations
- Reliable reproducibility of the display
- Clear, easy-to-read scales and tolerance marks
- Protected against dirt and dripping water
- **Degree of protection IP 65**
- Supplied in sturdy cardboard **including factory test certificate** and operating instructions

Applications
For thickness and outer grooves measurements.

33430



Type	Measuring range mm	Scale graduation value mm	Measuring contact length mm	Error limit mm	Repeatability mm	Measuring depth mm	Measuring force incl. tolerance N	Measuring contact shape	33430	...
D220S	0–20	0.01	24.6	0.03	0.01	85	1.1–1.6	cutting edge R 0.4		201

External quick callipers | Internal quick callipers

33435 External quick callipers, analogue

IP 65

Kroeplin
Längenmesstechnik

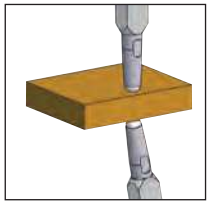
Design
- Absolute measuring instrument with damped drive and steel cord transmission for greater precision and longer service life
- Clear, easy-to-read scales
- Two easy adjustable tolerance marks
- Protected against dirt and dripping water
- Supplied in sturdy cardboard **including factory test certificate** and operating instructions

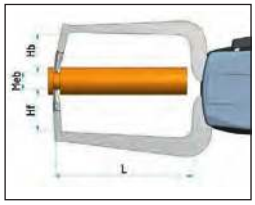
Applications
For rugged use in workshops for thickness measurement and external measurement.

33435 201-202

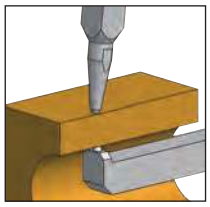
33435 203-204

D220/D450





D2R20/D4R50



Type	Measuring range mm	Scale graduation value mm	Measuring L depth max. mm	Measuring contact length Hb/Hf mm	Error limit mm	Repeatability limit mm	Measuring force incl. tolerance N	Measuring contact shape	33435	...
D220	0–20	0.01	85	24.7/24.6	0.03	0.01	1.1–1.6	ball Ø 1.5		**201**
D2R20	0–20	0.01	85	24.7/2.5	0.03	0.01	1.1–1.6	ball Ø 1.5		**202**
D450	0–50	0.05	167	30.0/30.0	0.05	0.025	0.8–1.7	ball Ø 3.0		**203**
D4R50	0–50	0.05	169	30.0/4.3	0.05	0.025	0.8–1.7	ball Ø 3.0		**204**

33438 3-point internal quick callipers, digital

IP 67

Kroeplin
Längenmesstechnik

Design
- Large digital display with analogue scale
- Better centring thanks to 3-point probing, resulting in fast measured value determination, reliable measurement, accurate measurement results
- Application-specific measurement programmes and measuring contacts
- **Degree of protection IP 67**, suitable for workshop use
- mm/inch switching
- Red/green display for tolerance measurements
- Absolute and relative measurement programme

Applications
For direct measurement of drill holes, recesses and inside slots on difficult-to-access positions.

33438 101

33438 103

33438 106

Ball Ø 0.6 mm

Ball Ø 1.0 mm

Type	Measuring range mm	Scale interval mm	Measuring max. mm	Groove depth/width mm	Error limit mm	Repeatability mm	Measuring force incl. tolerance N	Measuring contact length mm	Measuring contact shape	33438	...
G107P3	7–14	0.002	34	2.2/0.8	0.01	0.004	1.0–1.4	2.5	ball Ø 0.6		**101**
G210P3	10–20	0.005	75	3.5/1.6	0.02	0.01	1.1–1.6	4.6	ball Ø 1.0		**102**
G215P3	15–30	0.005	77	5.0/1.6	0.02	0.01	1.1–1.6	5.8	ball Ø 1.0		**103**
G225P3	25–45	0.005	84	7.0/1.6	0.02	0.01	1.1–1.6	7.3	ball Ø 1.0		**104**
G240P3	40–60	0.005	84	8.0/1.6	0.02	0.01	1.1–1.6	12.2	ball Ø 1.0		**105**
G255P3	55–75	0.005	84	8.0/1.6	0.02	0.01	1.1–1.6	12.2	ball Ø 1.0		**106**
G270P3	70–90	0.005	84	8.5/1.6	0.02	0.01	1.1–1.6	12.2	ball Ø 1.0		**107**
G285P3	85–105	0.005	84	9.0/1.6	0.02	0.01	1.1–1.6	12.2	ball Ø 1.0		**108**

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

33439 Internal quick callipers, digital

IP 67 | Typ R | Typ S

Kroeplin
Längenmesstechnik

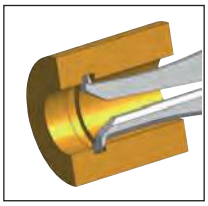
Design
- Internal quick callipers with **analogue and digital display**
- **Dust and splash-proof in accordance with IP 67,** suitable for use in workshops
- Application-specific measurement programmes and measuring contacts
- Absolute and relative measurement programme
- Red/green display for tolerance measurements
- Switching from mm to inches
- Independent battery operation
- Switching of the digital increments
- **Supplied with factory calibration certificate,** battery and operating instructions

Applications
For holes and internal groove measurements.

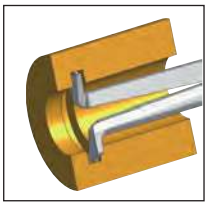
Note:
Connection cable, see art. no. 35200.
Replacement batteries, see art. no. 39900.
Devices with long probe arms available on request.
Wireless interface available on request.

33439

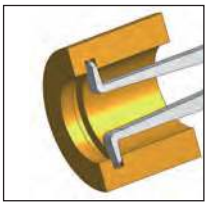
Cutting edge R 0.1 mm



Ball Ø 0.6 mm



Ball Ø 1.0 mm



Type	Measuring range mm	Scale interval mm	Measuring depth max. mm	Groove depth/width mm	Error limit mm	Repeatability mm	Measuring contact length mm	Measuring force incl. tolerance N	Measuring contact shape	33439	...
G102	2.5–12.5	0.005	12	0.7/0.4	0.015	0.005	0.9	0.8–1.2	cutting edge R 0.1		**201**
G105	5.0–15.0	0.005	35	2.3/0.8	0.015	0.005	2.5	0.8–1.2	ball Ø 0.6		**202**
G210	10.0–30.0	0.01	85	5.2/1.2	0.03	0.01	5.3	1.1–1.6	ball Ø 1.0		**203**
G220	20.0–40.0	0.01	85	7.0/1.2	0.03	0.01	7.3	1.1–1.6	ball Ø 1.0		**204**
G230	30.0–50.0	0.01	85	7.0/1.2	0.03	0.01	7.3	1.1–1.6	ball Ø 1.0		**205**
G240	40.0–60.0	0.01	85	8.3/1.2	0.03	0.01	8.5	1.1–1.6	ball Ø 1.0		**206**
G250	50.0–70.0	0.01	85	8.3/1.2	0.03	0.01	8.5	1.1–1.6	ball Ø 1.0		**207**
G260	60.0–80.0	0.01	85	8.3/1.2	0.03	0.01	8.5	1.1–1.6	ball Ø 1.0		**208**
G270	70.0–90.0	0.01	85	8.3/1.2	0.03	0.01	8.5	1.1–1.6	ball Ø 1.0		**209**

33449 Internal quick callipers, analogue

IP 65

Kroeplin
Längenmesstechnik

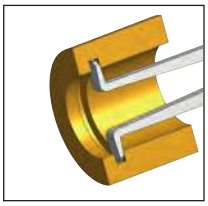
Design
- Handy absolute measuring instrument
- **50% higher display resolution** compared to earlier generations
- Reliable reproducibility of the display
- Clear, easy-to-read scales and tolerance marks
- Protected against dirt and dripping water
- **Degree of protection IP 65**
- Supplied in sturdy cardboard **including factory test certificate** and operating instructions

Applications
For groove and hole measurements.

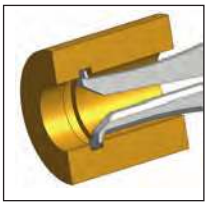
33449 201

33449 203

Ball Ø 0.6 mm
Ball Ø 1.0 mm



Cutting edge R 0.1 mm



Type	Measuring range mm	Scale interval mm	Measuring depth max. mm	Groove depth/width mm	Error limit mm	Repeatability mm	Measuring contact length mm	Measuring force incl. tolerance N	Measuring contact shape	33449	...
H102	2.5–12.5	0.005	12	0.7/0.5	0.015	0.005	0.9	0.8–1.2	cutting edge R 0.1		**201**
H105	5.0–15.0	0.005	35	2.3/0.8	0.015	0.005	2.5	0.8–1.2	ball Ø 0.6		**202**
H210	10.0–30.0	0.01	85	5.2/1.2	0.03	0.01	5.3	1.1–1.6	ball Ø 1		**203**
H220	20.0–40.0	0.01	85	7.0/1.2	0.03	0.01	7.3	1.1–1.6	ball Ø 1		**204**
H230	30.0–50.0	0.01	85	7.0/1.2	0.03	0.01	7.3	1.1–1.6	ball Ø 1		**205**
H240	40.0–60.0	0.01	85	8.3/1.2	0.03	0.01	8.5	1.1–1.6	ball Ø 1		**206**

Internal quick callipers | Internal comparison measuring instruments | Internal precision measuring instruments

33454 Internal quick callipers, analogue

IP 65

Kroeplin
Längenmesstechnik

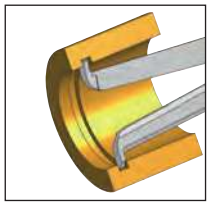
Design
- Absolute measuring instrument with steel cord transmission for greater precision and a longer service life
- Clear, easy-to-read scales
- Two easy adjustable tolerance marks
- Protected against dirt and dripping water Supplied in sturdy cardboard **including factory test certificate** and operating instructions

Applications
For rugged use in workshops for groove and hole measurement.

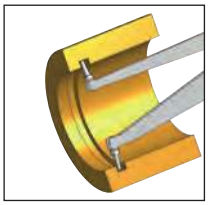
33454 201

33454 202-203

H415



H440/H470



Type	Measuring range mm	Scale interval mm	Measuring depth max. mm	Groove depth/ width mm	Error limit mm	Repeatability mm	Measuring contact length mm	Measuring force incl. tolerance N	Measuring contact shape	33454 ...
H415	15–65	0.05	188	5.5/1.9	0.05	0.025	6.0	0.9–1.9	ball Ø 1.5	201
H440	40–90	0.05	192	8.3/2.4	0.05	0.025	8.5	0.9–1.9	ball Ø 2.0	202
H470	70–120	0.05	192	8.3/2.4	0.05	0.025	8.5	0.9–1.9	ball Ø 2.0	203

33455 Digital internal/external quick callipers with Li-ion battery charging pad

IP 67 | Typ R1 | Typ S1

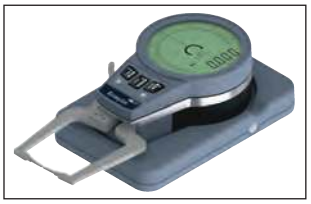
Kroeplin
Längenmesstechnik

Design
- Quick probe in the smallest design
- **Li-ion battery** with inductive charging concept
- Improved display for optimum readability:
- New display with 250° analogue display area
- Longer analogue pointer
- USB and Digimatic interface
- Suitable for workshop use, IP 67
- 20% larger DATA logger (100 measured values)
- Application-specific measurement programmes and measuring contacts
- mm/inch switching

Scope of delivery:
- Charging pad
- Qualified test certificate
- Operating instructions

Note:
Connection cable, see art. no. 35200 317+318.

NEW

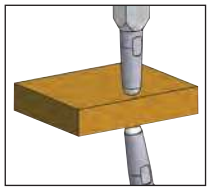


Wireless charging
thanks to inductive charging concept

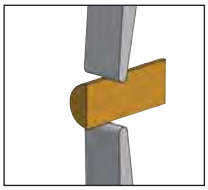
33455 101-102

33455 103

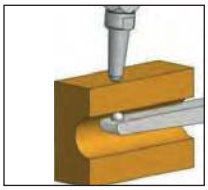
C015



C015S

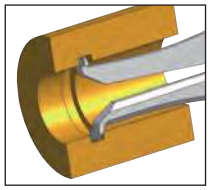


C0R15

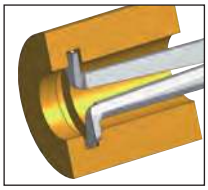


33455 104-106

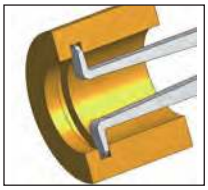
G002



G005



G010



Type	Measuring range mm	Scale interval mm	Measuring depth max. mm	Groove depth/ width mm	Error limit mm	Repeatability mm	Measuring contact length mm	Measuring force incl. tolerance N	Measuring contact shape	33455 ...
C015	0–15	0.001	45	15/2.5	0.010	0.005	17	1.3–1.5	ball Ø 1.5	101
C015S	0–15	0.001	45	11/1.5	0.015	0.005	12	1.3–1.5	cutting edge R 0.4	102
C0R15	0–15	0.001	45	-	0.010	0.005	0.9	1.3–1.5	ball Ø 1.5	103
G002	2.5–12.5	0.001	12	0.7/0.6	0.010	0.005	0.9	0.8–1.3	cutting edge R 0.12	104
G005	5–20	0.001	44	2.2/0.8	0.010	0.005	2.2	0.8–1.3	ball Ø 0.6	105
G010	10–25	0.001	46	4/1.5	0.010	0.005	4.4	0.8–1.3	ball Ø 1.0	106

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

33466 2-point internal comparison measurement instruments set IRA 2

Design
- **Integrated precision pointer with 0.01 mm scale interval**
- **Especially large measuring range 10–150 mm thanks to** measuring arms with adjustable angles
- Safe handling when measuring thanks to low weight and optimal shaping
- Automatic centring for 3-point measurements and centring aids for 2-point measurements.

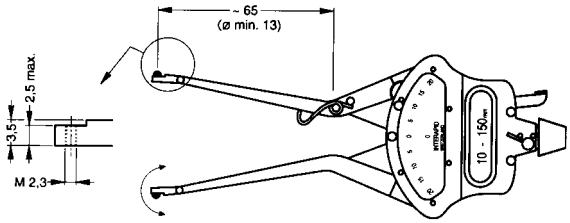
Display setting:
- Adjustment of the measuring arms using a bolt (locking device) and fine adjustment device on the precision pointer
- **Repeatability f_w:**
  10–30 mm = 6 µm,
  30–80 mm = 8 µm,
  80–120 mm = 10 µm,
  120–150 mm = 12 µm
- **Error limits:**
  10–90 mm = +/- 10 µm,
  100 mm = +/- 15 µm,
  120 mm = +/- 24 µm,
  150 mm = +/- 54 µm.
- Supplied in case incl. normal accessories, operating instructions and **declaration of conformity**
- Each measuring instrument is labelled with an individual production number.

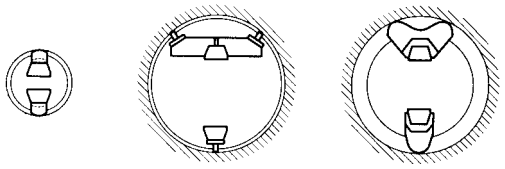
Applications
Ideal for measuring through holes and blind holes, recesses and turned grooves. Internal measurements on workpieces with plane-parallel surfaces, e.g. groove widths. Recording of shape and position deviations.

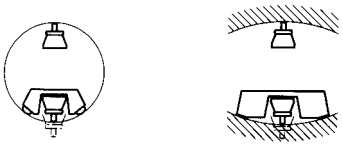
Quality
Steel measuring surfaces, hardened.

Note:
Special accessories available on request.

33466







Standard accessories:	
3	gauge slides Ø 3.0 mm, spherical measuring surfaces, r = 2 mm
3	gauge slides Ø 1.0 mm on 2.5 mm length, spherical measuring surfaces, r = 0.9 mm
3	gauge slides Ø 1.4 mm on 5.0 mm length, spherical measuring surfaces, r = 0.9 mm
2	swivelling gauge slides for measurements from Ø 7 mm
1	small gauge slide holder for 3-point contact
1	large gauge slide holder for 3-point contact
1	centring bridge for Ø 15–30 mm
1	centring bridge for Ø 30–150 mm
1	special screwdriver

Measuring range mm	Scale interval mm	Display range mm	Lifting path of the measuring arm mm	Measuring force approx. N	33466 ...
10–150	0.01	+/- 0.20	10	3.5	102

33820 - 33821 Internal precision measuring instrument sets

33820
Probe head sets
Design
Scope of delivery: Probe heads, drive needles and dial gauge holder, **without** dial gauge. Supplied in wooden case with recesses for the corresponding probe heads, drive needles, holders and setting rings.

Applications
Indicating hole measuring instruments **for determining bore diameters and identifying bore errors.** The modular DIATEST device system enables measurement of most holes that occur in practice. A comprehensive range of accessories allows for the use of probe heads for manual measurements, the use of measuring stands and installation in measuring devices as needed. The measuring instruments can therefore be used for series and individual inspection of holes in the measuring room, for incoming and interim inspection and preferably directly on the production machine during operation.

Quality
Probe heads hardened and hard-chrome-plated (approx. 1000 HV), drive needles as a transmission element made of hardened special steel (approx. 63–65 HRC).

Note:
Additional devices and accessories available on request. DIATEST probe head sets are also available in the same measuring ranges in carbide-tipped design and in blind hole hard-chrome-plated design.

33821
Setting ring sets
Applications
Enable the reliable zero setting of the probe head measuring instruments.

Quality
Extremely wear-resistant gauge steel (approx. 63 HRC). Production accuracy in accordance with factory standard (better than DIN 2250, sheet 2).

33820

33821

Measuring range mm	Number of heads/rings	Probe heads 33820 ...	Setting rings 33821 ...
1.5–3.95	9	101	101
3.7–9.80	12	102	102
9.4–20.60	11	103	103

Internal chamfer gauges | Internal precision measuring instruments

33826 Internal chamfer gauge

DIATEST

Design
- Measuring surfaces and measuring cone made of hardened steel
- Impact-protected dial gauges
- Scale graduation of the dial gauge 0.01 mm
- Factory calibration or with setting master

Scope of delivery:
- IKT device incl. shock-resistant mechanical special dial gauge with certificate
- Wooden case
- Operating instructions

Applications
The internal chamfer gauge directly measures the greatest diameter of a conical hole or of a conical groove. As a result, this measuring instrument often replaces difficult or time-consuming measuring methods.

Functional principle:
The measuring cone is introduced into the hole and the measuring instrument is pressed onto the surface of the workpiece until the stop. The measured diameter can be read directly on the special dial gauge.

Caution:
IKT dial gauges are special dial gauges with a transmission ratio. The transmission ratio depends on the measuring cone used. The dial gauge is checked in accordance with the factory standard.

Note:
Other designs available on request.

33826

NEW

Measuring range mm	Cone	33826	...
0.5–20	90°		101
10–30	90°		102
20–40	90°		103

33828 Internal precision measuring instrument sets

ATORN®

Design
- Repeatability limit 0.002 mm
- Fixed measuring pins made of hardened steel
- Movable probe bolt made of cemented carbide
- Supplied in wooden case **(without precision pointer)**

Easy to use:
The ATORN internal precision measuring instrument centres itself in the hole using the spring-loaded centring plate. The repeatable reversal point (measurement result) is determined precisely by the oscillation of the instrument in the hole. By simply replacing the measuring pins and discs, the devices can be quickly converted for other diameters.

Determination of shape deviations:
Turning and/or moving the device in the hole makes it possible to collect information about deviations in roundness or cylindricity.

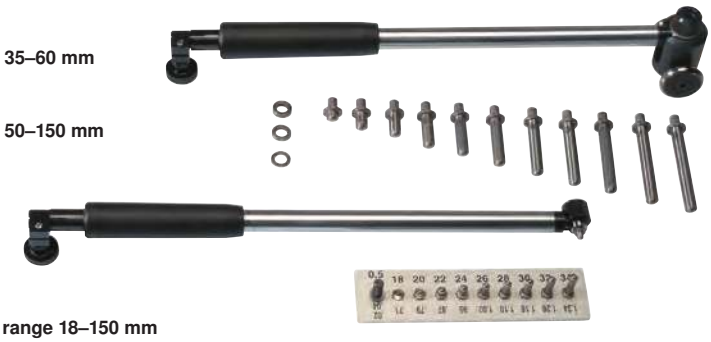
Applications
For determining bore diameters using the 2-point comparison measuring method.

33828 101
Set, measuring range 18–35 mm

33828 102
Set, measuring range 35–60 mm

33828 103
Set, measuring range 50–150 mm

33828



33828 201
Large set, measuring range 18–150 mm
Design
Consisting of 2 basic devices.
Measuring range extensions
cover the entire measuring range.

Note:
Precision pointer, see art. no. 33074.

Application area mm	Measurement depth (probe bolt centre to bottom edge of the handle) mm	33828	...
18–35	176		101
35 - 60	178		102
50 - 150	178		103
18–150	176/178		201

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

33830 - 33835 Internal precision measuring instrument sets

Schwenk

Type SU
Design
With automatic centring and play-free transfer of the probe bolt movement to the dial gauge, temperature-stabilised. Setting to nominal dimension with setting device art. no. 33845, setting rings art. no. 32492 using the measuring pins and measuring discs supplied. Measuring discs, replaceable measuring pins and carbide-tipped probe bolts are used to record all intermediate sizes. Reading 0.01 or 0.001 mm depending on the dial gauge used. Dial gauges, see art. no. 33001–33064, precision pointers, art. no. 33071–33074 (special probe art. no. 33114 no. 7 is required as a measuring pin extension for this). Deviation range max. 0.002 mm, repeatability max. 0.0005 mm (for measuring range up to 290 mm), **without dial gauge,** in wooden box.
Applications
For rapid determination of the diameter and for checking for deviations in shape.

Note:
Measuring range 18–100 mm, includes measuring pins of the sizes 18–35/35–60 and 50–100 mm.
Measuring range 50–160 mm includes measuring pins of the sizes 50–100 and 100–160 mm.
Measuring range 160–290 also includes a 70 mm extension.
ESU setting device, see art. no. 33845.
A detailed leaflet is available on request.
Other versions, e.g. for internal teeth and other measurement depths as well as angled versions, are available on request.

33830
Complete set,
measuring pins with steel balls.

33831
Complete set,
measuring pin, carbide-tipped.

33834
Measuring range extension
Only for measuring ranges 18–100 mm and 50-100 mm, for occasional measurements over 100 mm.

33835
Measurement depth extension
Clamping shank Ø 8 mm, usable from hole Ø 35 mm. 33830 - 33831

						Steel	Cemented carbide		Range ext.		Depth ext.	
Measuring range mm	Measuring depth mm	Number of measuring pins	Number of measuring discs	Thickness mm	Length mm	33830	...	33831	...	33834	...	33835	...
4.5–6	80	9	-	-	-				101				
6–8	100	7	-	-	-				102				
8–12	100	9	-	-	-				103				
12–20	110	9	1	0.5	-				104				
18–35	110	9	2	0.5/1	-		105		105				
35–60	177	6	3	1/2	-		106		106				
50–100	177	11	3	1/2/3	-		107		107				
18–100	110–177	28	8	-	-		108		108				
100–160	234	7	4	1/2/3/6	-		109		109				
50–160	180–234	18	7	-	-		110		110				
160–290	234	7	4	1/2/3/6	-		111		111				
280–510	417	7	4	1/2/3/6	-		112		112				
400–800	417	11	4	5	-		113		113				
-	-	-	-	-	50						101		
-	-	-	-	-	70						102		
-	-	-	-	-	250								101
-	-	-	-	-	500								102
-	-	-	-	-	750								103
-	-	-	-	-	1000								104

33837 - 33838 Internal precision measuring instrument sets

Schwenk

Design
See art. no. 33830–33835, however with 2 replaceable bottom parts, carbide-tipped probe bolts, fixed measuring pins for size 1 as standard, for size 2 optionally carbide-tipped, deviation range ≤ 0.002 mm, repeatability ≤ 0.0005 mm. Complete set consisting of top part, 2 measuring heads, measuring pins, measuring discs, measuring range extensions (for size 2) and various wrenches, **without dial gauge,** in wooden box.
Applications
Ideal for workplaces in which holes of all types must be measured in frequent alternation.

33837
Type SV
Complete set, fixed measuring pins with steel balls.

33837 103
Type SVS
Also with blind hole heads for measuring blind holes.

33838
Type SV
Complete set, fixed measuring pins, carbide-tipped.

33838 103
Type SVS
Also with blind hole heads for measuring blind holes.

Note:
ESU setting device, see art. no. 33845.

33837 103

							Steel		HM	
Size	Measuring range mm	Blind hole measuring range mm	Measuring depth mm	Number of measuring pins	Measuring disc thickness mm	Extension length mm	33837	...	33838	...
1	6–18	-	100	17	0.25/0.5	-				101
2	18–160	-	145	20	0.5/1/2/3	16/55		102		102
2	18–160	20–140	145	20	0.5/1/2/3	15/55		103		103

Internal precision measuring instruments | Setting devices | Length measuring devices | Surface specimen plates

Info

Spare parts and exploded drawings of Schwenk internal precision measuring instruments available on request.

33840 Internal precision measuring instruments

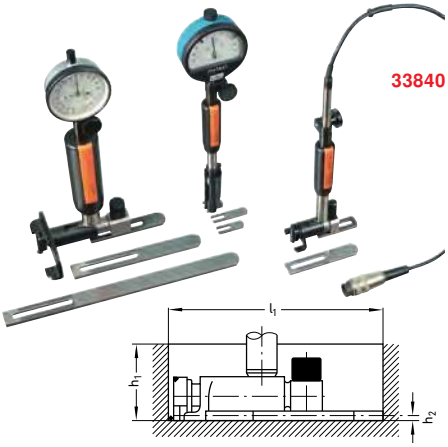
Schwenk

Type SS
Design
See art. no. 33830–33834. The instrument can determine diameters up to 1.5 mm (h2) at the base of a hole. The diameter to be tested is pre-set via the carbide-tipped vernier callipers with millimetre pitch. The slide is toothed and replaceable. For each device, several vernier callipers, divided into specific measuring ranges, are included in the standard equipment. The fine adjustment of the hole test dimension is then carried out using the setting device (see art. no. 33845 107) or setting rings.

The dial gauges art. no 33009–33025 are suitable for reading 0.01 mm, the dial gauges art. no. 33060–33064 or 33071 174 are suitable for reading 0.001 mm (special probe art. no. 33114, no. 7 is required as an extension), deviation range ≤ 0.004 mm (measuring range up to 50 mm) and ≤ 0.0025 mm (measuring range up to 110 mm), repeatability ≤ 0.001 mm, **without** dial gauge, in wooden box.
Applications
For determining the diameter of blind holes and centring shoulders.

Note:
ESU setting device, see art. no. 33845 107.
Measuring range 110 mm and design with h2 = 1.0 mm available on request.

33840



Measuring range (l_1) mm	Measuring depth (h_1) mm	Measuring ranges of vernier callipers (l_1) mm	33840	...
20–50	77	20-30/30-40/40-50		101
50–110	55	50-80/80-110		102
110–300	45	-		103

33845 ESU setting devices

Schwenk

Design
Scope of delivery: Frame with adjustable jaw holder, adjustable jaw pair, measuring arm made of solid carbide in gauge block quality, clamping element, **without** base, **without** gauge blocks.
Applications
Can be used horizontally and (vertically with base). For accurate fine adjustment of internal measuring instruments type SU/SK/SW/SMT/SP/SV to the desired nominal dimension with the help of gauge blocks.

33845 107
For type SS.

Note:
Measuring range 4.5–30 mm available on request.
Wooden case available on request.

33845

Measuring range mm	33845	...
4.5–160		101
18–160		103
18 - 290		104

Measuring range mm	33845	...
160 - 510		105
160 - 800		106
20 - 300		107

Info

Measuring instruments for special applications

Schwenk

Type KT: **For measuring internal teeth,**

Type SN: For measuring grooves and recesses,
Type ST: For measuring pedestal bearing housings, grooves and recesses,
Type SL: For measuring holes with retracted boring bar.

Delivery on request, please contact us.

Type KT

Type SN

Type ST

Type SL

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

33846 Length measuring bench Precimar SM 60

Mahr

Design

- The Precimar SM 60 is an easy-to-use small lengths measuring bench for fast, precise external measurements on workpieces
- Simple design of the device
- Quick adaptation to new workpieces
- Freely selectable measuring equipment (e.g. digital dial gauge)
- Integrated coupling protects the measuring equipment
- Use of a wide range of different measuring attachments

Note:

Optional accessories available on request.

33846

Technical data:	
Application range:	0 - 60 mm
Measuring range movable sleeve:	25 mm
Measuring surfaces Ø:	6 mm H7
Measuring force (without dial gauge or measuring probe):	1 N +/- 0.2 N
Parallelism of the measuring surfaces:	< 1 µm
Large support table, infinite height adjustment:	dia. 60 mm
Mount for dial gauge or measuring probe:	dia. 8 mm

Type	33846	...
Precimar SM 60		101

33890 Surface specimen plate sets

RUGOTEST

Design

The roughness is divided into 12 classes - N0 to N11.

Applications

For comparative test of the surface quality by visual and tactile examination (with fingernail), in accordance with the standards **ISO/R468, ISO 2632/1 1975 and NFE 05-051.**

Note:

These specimen plates rationally illustrate the various surface types that are achieved with machines that are used in industry.

33890 101

Applications

For the full range of machining methods: roll milling, grinding, face milling, lapping, planing/lathing, honing. Incl. tables for the various machining types.

33890 101

33890 107

33890 110

Area of application	Number of Reference sample	Dimensions of the specimen plates mm	Comparison ranges Ra µm	ISO roughness categories	33890	...
General	27	120 x 90	0.05–12.5	N 2–N 10		101
Blasting	18	120 x 90	0.80–25.0	N 6–N 11		103
Planing	6	110 x 50	0.80–25.0	N 6–N 11		106
Lathing	6	110 x 50	0.40–12.5	N 5–N 10		107
Face milling	6	110 x 50	0.40–12.5	N 5–N 10		108
Flat-sanding	8	130 x 50	0.025–3.2	N 1–N 8		109
Round grinding	8	130 x 50	0.025–3.2	N 1–N 8		110
Spark erosion	6	110 x 50	0.40–12.5	N 5–N 10		111