

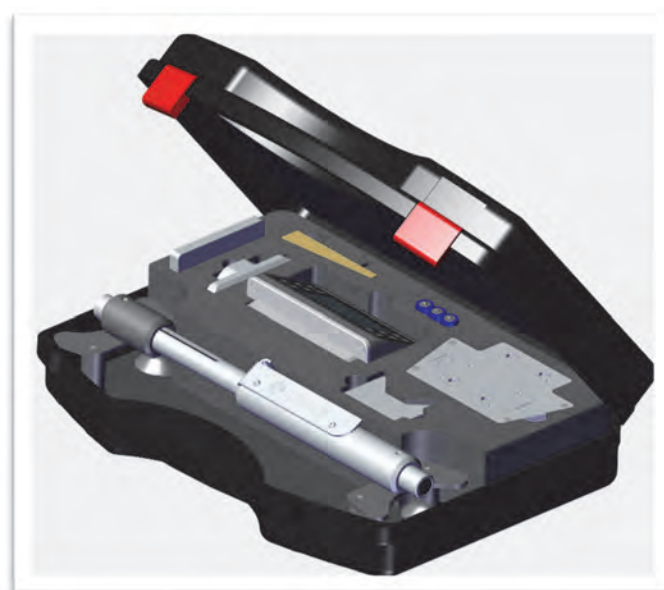
Operating instructions

Inclinometer MB

Item No. 913 009 084 / 098



Optional with inclinometer bracket
(electronic steering wheel balance)



(Translated from original operating instructions)

GEB 001 302

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Subject to technical modifications.

Version 1.0 / 2025

Figures: **HAWEKA GmbH** / 30938 Burgwedel

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1. User information



- Use this measuring device with care.
- Before working with the device, carefully and completely read the User Instructions.



- Protect the device from moisture.
- Care should be taken that the storage location is dry and dust-free.



- Used batteries have to be disposed of into special recycling containers.



- Magnetic fields can impact or destroy electronic devices.
- Keep the magnetic adapters away from all devices which may be damaged by magnetic fields.



Check the inclinometer MB before use!
(s. point 5 p. 10)

2. Product description

Furthermore, the **inclinometer MB** is referred to as **inclinometer** in this description.

2.1 Intended use

The inclinometer is used to record angle values!

This device enables determination of the angle of the wishbone or the drive shaft to the horizontal in a motor vehicle.

The determined values are used for further entry of the vehicle data on electronic wheel alignment systems. Depending on the contact surface on the vehicle, angles can be measured in the horizontal plane.

In connection with the optionally available inclinometer bracket (s. p. 11), the inclinometer can be used to check the correct alignment of the steering wheel (the straight-ahead position) during a complete wheel alignment.

2.2 Technical data

Measuring range:	+/- 45° to the horizontal
Accuracy:	0.1° in the range between 0° and +/- 45°
Reproducibility:	± 0.1°
Operating temperature range	0 °C – 50 °C
Electrical power supply:	3 x 1.5 Volt AA battery / 20 hr. service life during normal operation at approx. 50% display illumination
Bluetooth:	5.2 low energy connectivity
Weight:	550 grams (without adapter)

2.3 Description of device

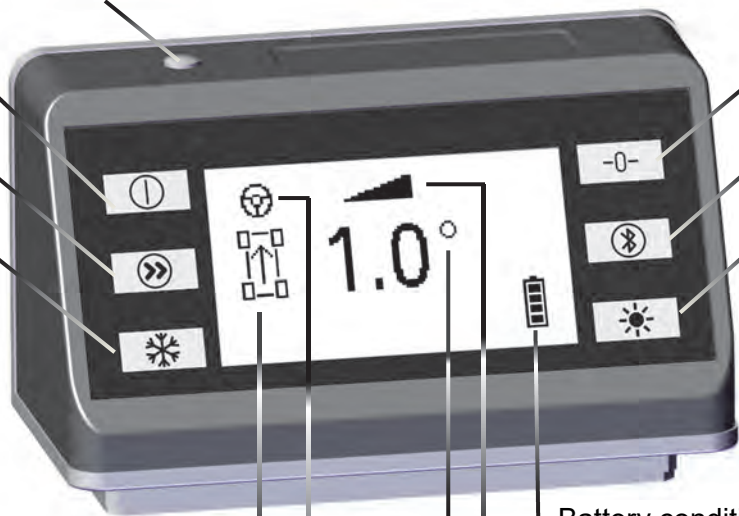
ON/OFF

- Spokes
- Steering wheel live measurement

Selection

Hold

LED display (s. page 6)



Tara

Bluetooth

Light

Battery condition

Direction of inclination

Degree display angle

Steering wheel measuring point

Measuring points on the vehicle

ON/OFF button:

Keep the **ON/OFF button** pressed for approx. 2 seconds to switch on or off.



The inclinometer switches off automatically after 10 minutes of inactivity.

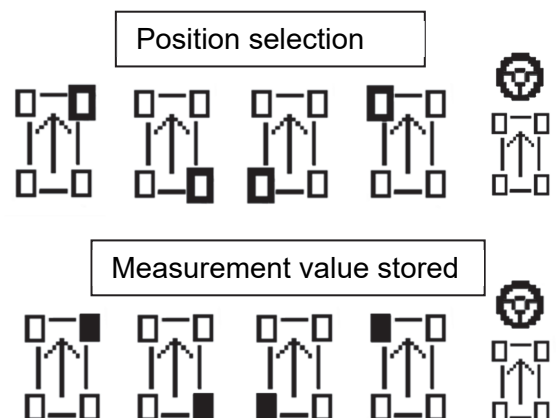
Selection button:

A measuring position is selected and starts flashing by repeatedly pressing the **selection button** briefly.

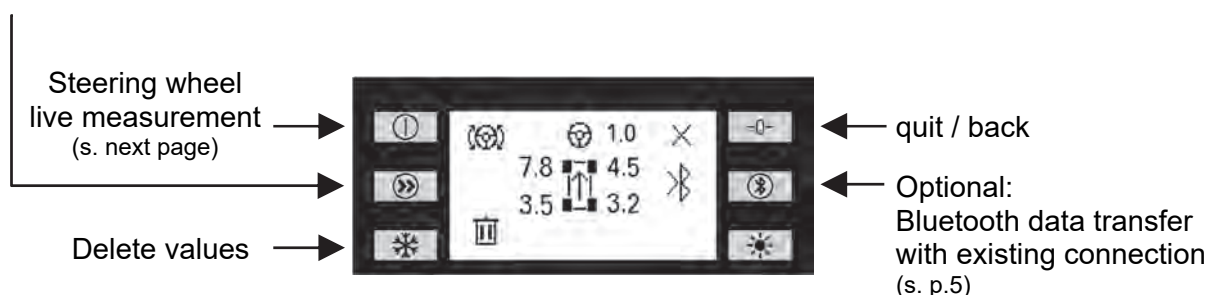
The determined measurement value can be stored for the selected position by short pressing of the **ON/OFF button**.

Once the measurement value has been stored, this position is marked by a filled square.

(If the measurement value was stored for the steering wheel position, the steering wheel icon is shown in bold)

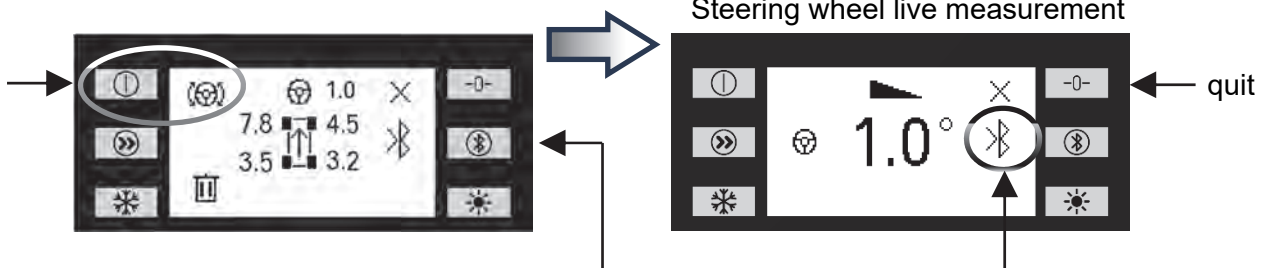


If the **selection button is pressed for longer**, an overview of the recorded measurement values is shown.



Steering wheel live measurement

The steering wheel live measurement can only be started in the overview display (long press of the **selection button**) with the **ON/OFF button**.



Bluetooth button

The **Bluetooth symbol** is only shown in the display when a Bluetooth coupling was successful with another device (e.g. a wheel alignment system). Only then can the measurement values be transferred by pressing the **Bluetooth button**. (Bluetooth device name: *Inclinometer*)

Optional:
With an existing Bluetooth connection, the measurement value is transferred automatically every 5 sec.

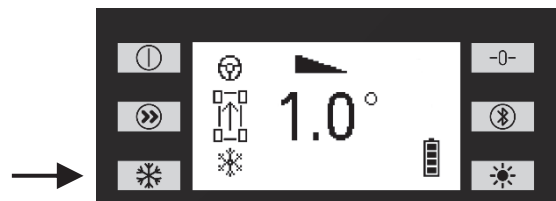
Hold button

Temporary “Freezing” of the display screen.

By pressing the **HOLD button**, the geometric angle is shown in the display.

The active hold status is displayed by a snowflake in the display.

The value remains in the display until the **HOLD button** is pressed again.



Tare button

The **Tare button** can be used to specify a reference angle. You can determine any angle from which you want to take a measurement as 0.0 reference angle.

Place the inclinometer on the reference surface, and then press the **Tare button** (the display shows **-0-** as a note).

The normal mode is restored by pressing the **Tare button** again.

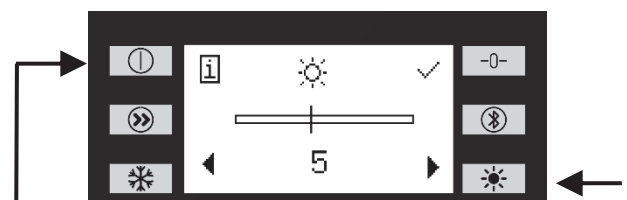


Light button

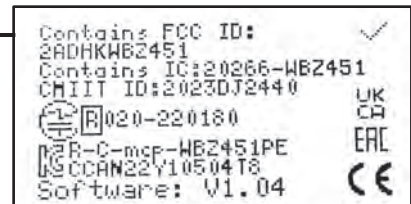
The display illumination is switched on and off with the **Light button**.

With a **long press of the Light button**, the brightness can be adjusted with the Hold and the Light button.

The setting is saved with the Tare button.



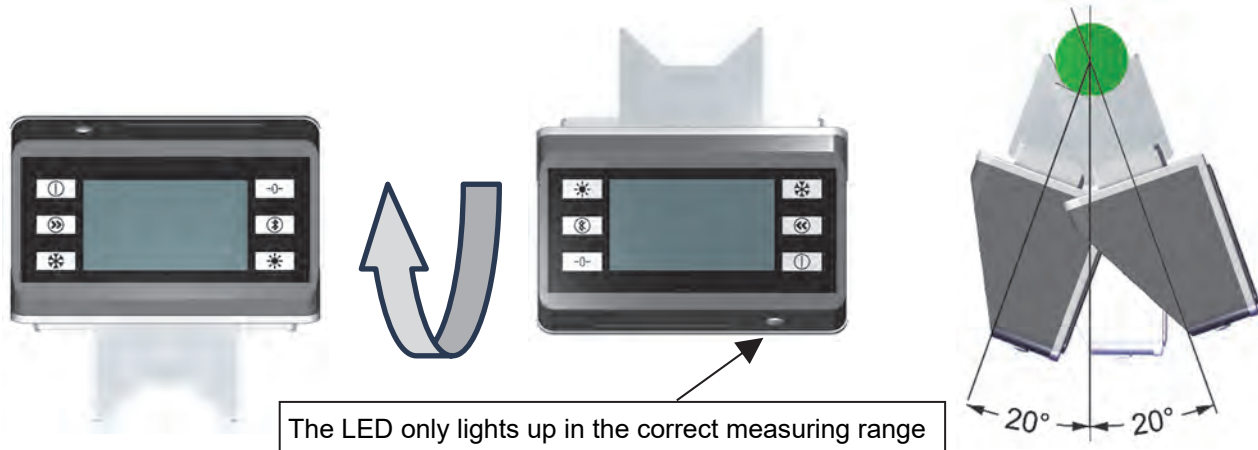
In this mode, information on the device compliance and software version can be requested by pressing the **ON/OFF button**.



LED display

The LED function is only activated once the inclinometer is rotated by 180°. What is shown in the display is also rotated.

This is needed to determine the angle of the wishbones or the drive shafts below the vehicle.



It is possible on the drive shaft to place the inclinometer at too much of an angle, which would falsify the measurement value.

The LED lit up signals to the user that the inclinometer can perform an error-free angle measurement in this position.

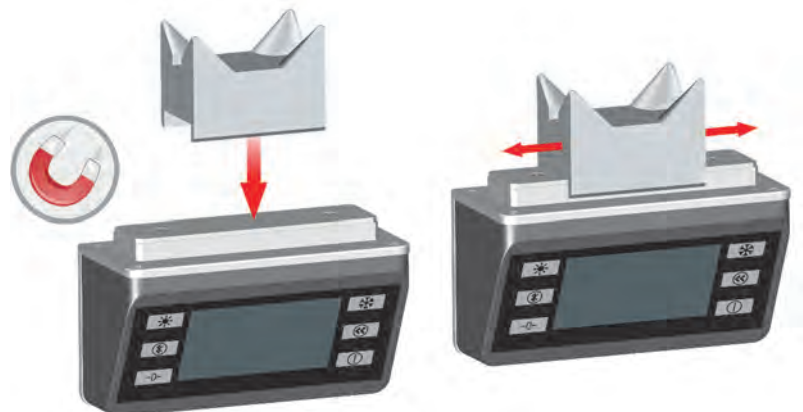
3. Using the different adapters

Depending on the vehicle type, different position adapters are required for the angle determination on the front and rear axles. A defined contact surface for measurement is described by the vehicle manufacturer.

Due to its geometry, the crown adapter is suited to a large part of measurements on drive shafts and wishbones of different vehicles.

The crown adapter:

The adapter is held on the inclinometer by a magnet and is laterally movable.



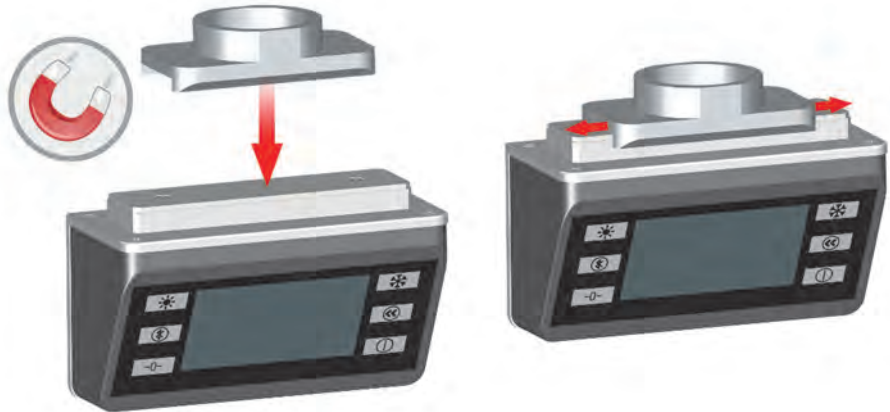
Suitable for Mercedes-Benz:

A-Class	Series 168, 169, 176
B-Class	Series
C-Class	Series 117
E-Class	Series 212
S-Class	Series 220, 221
and more	

The cavity adapter:

The cavity adapter is specifically designed for measurement on the wishbone. Depending on the vehicle type, there are recesses or indentations on the wishbone where this adapter is positioned.

The adapter is held on the inclinometer by a magnet and is laterally movable.

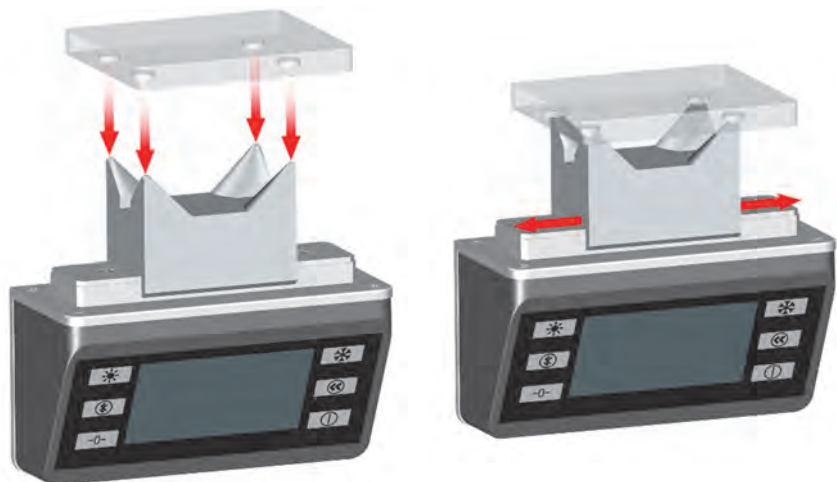


Suitable for Mercedes-Benz:

A-Class	Series
B-Class	Series
C-Class	Series
E-Class	Series 210, 211
S-Class	Series

Crown adapter with adapter plate:

This adapter combination is used for older coupés / convertibles of the C-Class. The adapter plate is aligned and fitted to the four contact points of the crown adapter.



Suitable for Mercedes-Benz:

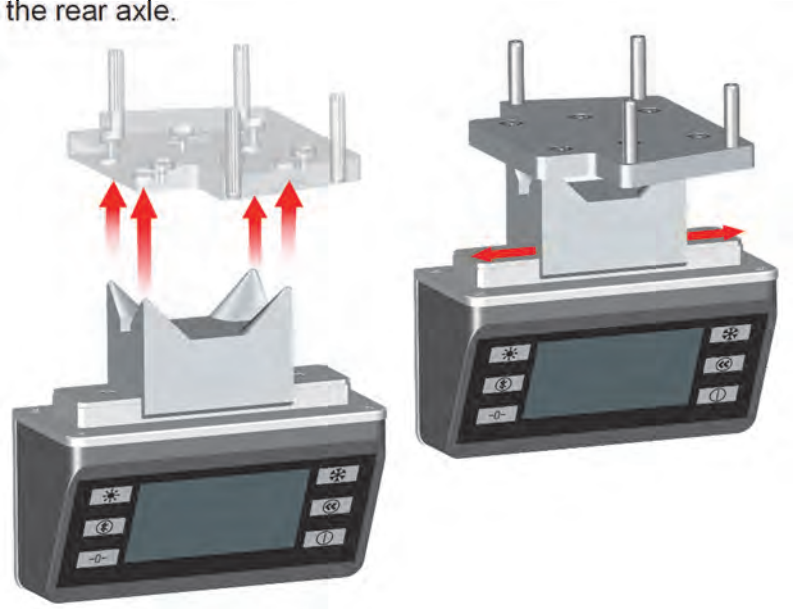
A-Class	Series
B-Class	Series
C-Class	Series 170, 202, 208, 209
E-Class	Series
S-Class	Series

Crown adapter with magnetic plate:

This combination is used for the Mercedes Citan box wagon.

For measurement on the front axle, first of all the magnetic plate is positioned on the wishbone, and the inclinometer is then placed onto the four contact points of the magnetic plate with the crown adapter.

Only the crown adapter is required for the rear axle.



Suitable for Mercedes-Benz:
T-Class Series 415

Crown adapter with angle piece:

This adapter combination is used for the Mercedes Vaneo (mini transporter based on the A-Class).



Suitable for Mercedes-Benz:
A-Klasse Series 414



Always make sure that the sliding surface on the inclinometer is clean, and there are no metallic foreign objects on the magnets.

4. Calibration of the inclinometer

If a deviation of the angle values $>0.2^\circ$ was detected after verification (s. point 5), the device must be recalibrated.

Press the buttons **-0-** and hold them for approx. 3 seconds until the calibration setting is shown in the display. To cancel the calibration process, press the **-0-** button again (the cross in the display).

Calibration occurs in 4 steps.

-  **1** Place the device on a clean, horizontal plane. You can use any horizontal plane with a max. deviation up to 10° . The front of the device faces forward. Confirm the step by pressing the **Bluetooth** button.



wait for approx. 5 sec.

-  **2** Rotate the device by 180° , so that you now see the rear of the device. Play close attention that the device is positioned in the same place! Then press the **Bluetooth** button.



wait for approx. 5 sec.

-  **3** Now place the device onto the short right side. The device faces forward. You look vertically onto the edge of the housing. Then press the **Bluetooth** button.



wait for approx. 5 sec.

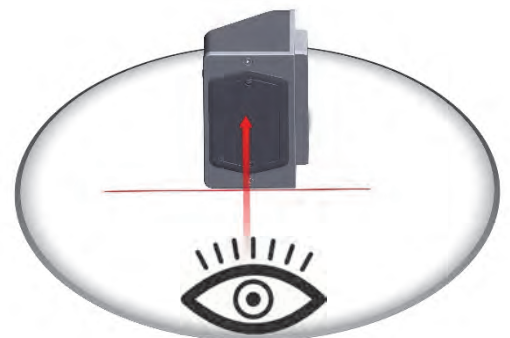
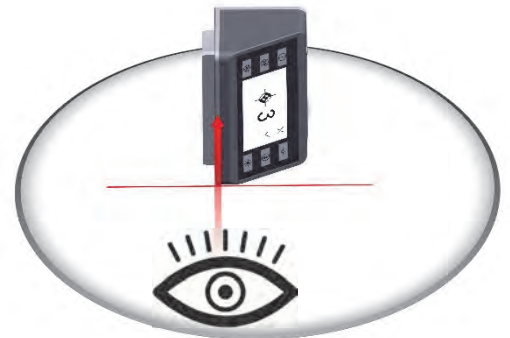
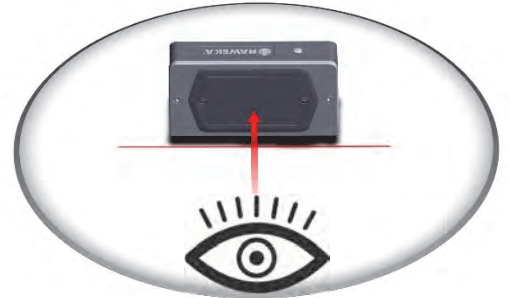
-  **4** Rotate the device by 180° again, so that you now look vertically onto the rear of the device. Make sure the contact is in the same position. Then press the **Bluetooth** button.



wait for approx. 5 sec.



Calibration is complete when there is an OK tick in the display. The device automatically switches back to the measurement recording.



5. Checking the inclinometer

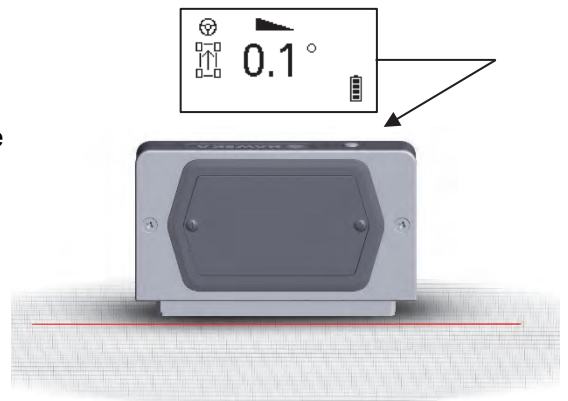


The measuring accuracy must be checked once calibration is complete and at regular intervals, but in any case if the device fell down or if a temperature difference between the last check and the place of use is larger than 5 °C.

- Switch on the inclinometer and place the device on a clean, almost horizontal plane, e.g. on a tabletop. You can use any horizontal plane with a max. deviation of 10°. Make a note of the value displayed.



- Rotate the device by 180°, so that you now see the rear of the device. Pay close attention that the device is positioned in the same place, and make a note of the value.



If the values deviate by more than 0.2° from each other, the inclinometer must be recalibrated! (s. point 4)

If a deviation is found again that is too high, please contact your sales partner.

6. The steering wheel balance

(optional accessory)

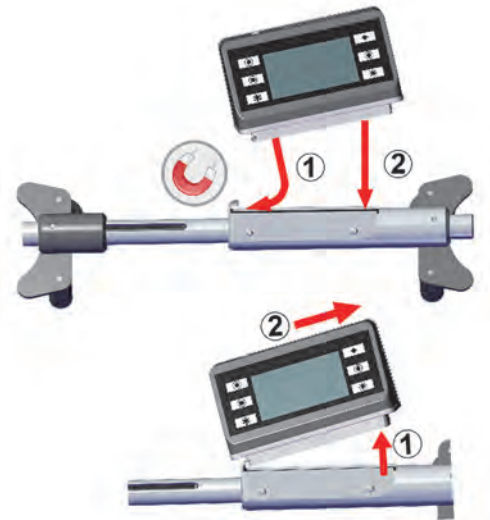
Inclinometer bracket
Item No. 913 009 085

The inclinometer, in connection with the bracket, forms the electronic steering wheel balance.

Observe the correct order -> 1 -> 2 for mounting and dismounting the inclinometer.

The steering wheel balance is used in the upper area of the steering wheel rim.

Once the steering wheel balance is mounted and the inclinometer is switched on, the inclination of the steering wheel can be determined immediately.



Steering wheel live measurement

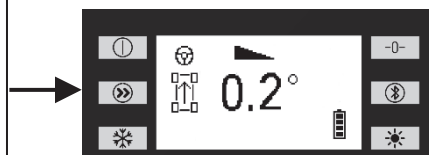


If the inclinometer is coupled with a wheel alignment system via Bluetooth, the determined steering wheel measurement values are automatically sent to the system every 5 seconds.

Activation of the steering wheel live measurement occurs in 2 steps.

Step 1

Long press the **selection button** until the view changes.



Press the **ON/OFF button**, to switch to the steering wheel live measurement

Step 2



If a Bluetooth connection is present, the Bluetooth symbol is shown in the display and the measurement values are transferred automatically.

Press the Tare button to stop the steering wheel live measurement.



7. Maintenance and care

The inclinometer is maintenance-free. If required, clean the device with a soft, lint-free cloth.



Do not use any solvents for cleaning the inclinometer!

7.1 Replacing the battery

The service life closely depends on the display illumination.

During normal operation, the service life is approx. 20 hours at 50% display illumination.

100 %  → 0 %



Depending on the battery capacity, a respective symbol is shown in the display. The device works correctly even if only one charging bar is displayed. If the capacity of the batteries is no longer sufficient, the device switches off automatically.

3 commercially available 1.5 V type AA batteries are required. To replace them, open the housing cover at the rear of the device.



Used batteries should not be disposed of with the residual waste. They are to be disposed of into special recycling containers!



8. Conversion table degrees / angular minutes

Degrees = angular minutes	
0,01°	0°0'36"
0,02°	0°1'12"
0,03°	0°1'48"
0,04°	0°2'24"
0,05°	0°3'00"
0,06°	0°3'36"
0,07°	0°4'12"
0,08°	0°4'48"
0,09°	0°5'24"
0,10°	0°6'00"
0,11°	0°6'36"
0,12°	0°7'12"
0,13°	0°7'48"
0,14°	0°8'24"
0,15°	0°9'00"
0,16°	0°9'36"
0,17°	0°10'12"
0,18°	0°10'48"
0,19°	0°11'24"
0,20°	0°12'00"
0,21°	0°12'36"
0,22°	0°13'12"
0,23°	0°13'48"
0,24°	0°14'24"
0,25°	0°15'00"
0,26°	0°15'36"
0,27°	0°16'12"
0,28°	0°16'48"
0,29°	0°17'24"
0,30°	0°18'00"
0,31°	0°18'36"
0,32°	0°19'12"
0,33°	0°19'48"

Degrees = angular minutes	
0,34°	0°20'24"
0,35°	0°21'00"
0,36°	0°21'36"
0,37°	0°22'12"
0,38°	0°22'48"
0,39°	0°23'24"
0,40°	0°24'00"
0,41°	0°24'36"
0,42°	0°25'12"
0,43°	0°25'48"
0,44°	0°26'24"
0,45°	0°27'00"
0,46°	0°27'36"
0,47°	0°28'12"
0,48°	0°28'48"
0,49°	0°29'24"
0,50°	0°30'00"
0,51°	0°30'36"
0,52°	0°31'12"
0,53°	0°31'48"
0,54°	0°32'24"
0,55°	0°33'00"
0,56°	0°33'36"
0,57°	0°34'12"
0,58°	0°34'48"
0,59°	0°35'24"
0,60°	0°36'00"
0,61°	0°36'36"
0,62°	0°37'12"
0,63°	0°37'48"
0,64°	0°38'24"
0,65°	0°39'00"
0,66°	0°39'36"

Degrees = angular minutes	
0,67°	0°40'12"
0,68°	0°40'48"
0,69°	0°41'24"
0,70°	0°42'00"
0,71°	0°42'36"
0,72°	0°43'12"
0,73°	0°43'48"
0,74°	0°44'24"
0,75°	0°45'00"
0,76°	0°45'36"
0,77°	0°46'12"
0,78°	0°46'48"
0,79°	0°47'24"
0,80°	0°48'00"
0,81°	0°48'36"
0,82°	0°49'12"
0,83°	0°49'48"
0,84°	0°50'24"
0,85°	0°51'00"
0,86°	0°51'36"
0,87°	0°52'12"
0,88°	0°52'48"
0,89°	0°53'24"
0,90°	0°54'00"
0,91°	0°54'36"
0,92°	0°55'12"
0,93°	0°55'48"
0,94°	0°56'24"
0,95°	0°57'00"
0,96°	0°57'36"
0,97°	0°58'12"
0,98°	0°58'48"
0,99°	0°59'24"
1,00°	0°60'00"

9. EU Declaration of Conformity

The manufacturer:

**HAWEKA GmbH
Kokenhorststrasse 4
D-30938 Burgwedel**

hereby declares that the
below-mentioned product

Inclinometer MB

complies with the following directives
or standards and regulations of the
European Union respectively.

RED Directive	2014/53/EU
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU
Battery Directive (EU BattVO)	2023/1542/EU

	Applicable European standards:
Standard for radio equipment	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-3 V2.3.2 (2023-01)
Interference immunity and interference emission	DIN EN 55035:2018-04 DIN EN 55032:2022-08

Product modifications which affect the technical data provided in the Operating Instructions and the intended use invalidate this Declaration of Conformity!

Burgwedel, 14/02/2025



CEO
Dirk Warkotsch


(Signature)



HAWEKA GmbH

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