

Clinometer BL200B

Clinometer BL200B,
base length 200 mm



Portable bracket (placed
on seating bolts only
during measurements)

Seating bolts type KSB

The electronic Clinometer BL200B is a portable handy and highly sensitive measuring device to detect changes inclinations. It permits to identify at an early stage exposures on structures, such as tilts so that adequate provisions can be taken in order to protect the constructions.

The Clinometer BL200B is especially used in the following fields:

- Tunnelling
- Building Construction
- Bridges
- Concrete Dams
- Excavations

Portable instrument for high precision measurements of the change in inclination of structures

A development of the Rock Engineering and Tunnelling Department of the Swiss Federal Institute of Technology Zurich (ETHZ)

Measurement Equipment

The measurement equipment consists of these components:

- portable Clinometer instrument with high-resolution «electronical» pendulum
- measurement portable console which can be hung to measurement point of KSB type
- transport case

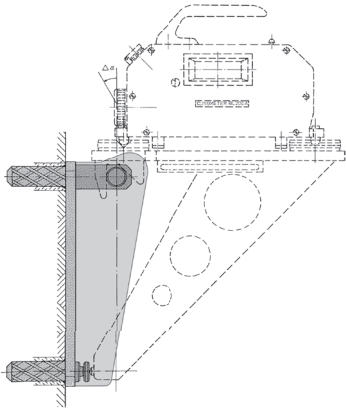
The measurements can be taken at inconvenient places thanks to LCD display which is integrated in the Clinometer.

Measurement

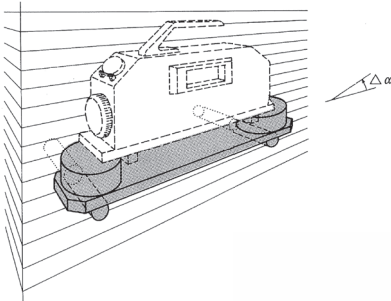
The Clinometer is placed on special seating bolts permanently mounted on the structure to be measured. The placement of the instrument is statically determined without any constraints, enabling high reproducibility of the readings. The change in inclination of structures is determined by calculating the difference between measurement and zero reading. At every measurement, readings separated by 180 degrees are taken.

The liquid crystal display shows the result about 5 seconds after the instrument is set.

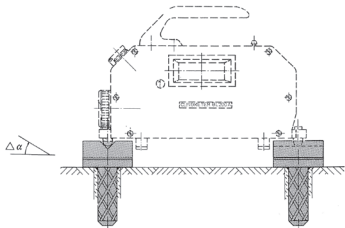




Seating bolts KSB, for measuring change in inclination in the vertical plane normal to the wall



Seating bolts VB, for measuring change in inclination in the vertical plane parallel to the wall



Seating bolts HB, for measuring change in inclination in the horizontal plane



Protective Cover for Seating bolt KSB



Portable bracket

Calibration device

The Clinometer calibration device is used for the periodic control of the sensitivity, linearity and the zero shift of the Clinometer. The levelling of the calibration device is achieved by a highly sensitive coincidence level, exhibiting long-term stability.

Seating bolts

Depending on the application, various types of seating bolts are used so that rotations of a horizontal and vertical plane may be determined. The seating bolts are cemented to concrete, brickwork or rock. Steel structures require the bolts to be welded or screwed into place.

The placement of the instrument on the seating bolts is highly accurate ($< + 2/1000$ mm/m) as a result of the special seating principle employed.

Protection of seating bolts

To protect the seating bolts against damage, protective covers made of stainless steel are used.



Clinometer calibration device KMK-1000 for periodic control of sensitivity, linearity and zero drift of the instrument

Technical Specifications

Clinometer

- Base length: 200 mm / 1000 mm
- Measuring range: ± 17.5 mm/m ($\pm 1^\circ$)
- Sensitivity per Digit: ± 0.001 mm/m
- Accuracy: $< \pm 0.2\%$ (full scale)
- Linearity: $< \pm 0.2\%$ (full scale)
- Operating temperature: -10° to $+40^\circ\text{C}$
- Battery life (3x1.5V): 20 to 30 hrs

BL200B / BL1000B

Clinometer calibration device KMK-1000

- Base length: 1000 mm
- Measuring range: 20 mm/m
- Sensitivity of coincidence level: 0.005 mm/m
- Accuracy: ± 0.005 mm/m
- Thermal coefficient: 0.002 to 0.004 mm/m/ $^\circ\text{C}$
- Operating temperature: * $+18^\circ\text{C}$ to $+22^\circ\text{C}$

* Constant room temperature

Technical specifications subject to change

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