Clinometer BL200B

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 «electronic» 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.

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
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.

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**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°C
- Operating temperature: + 18°C to + 22°C

* Constant room temperature

Technical specifications subject to change

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