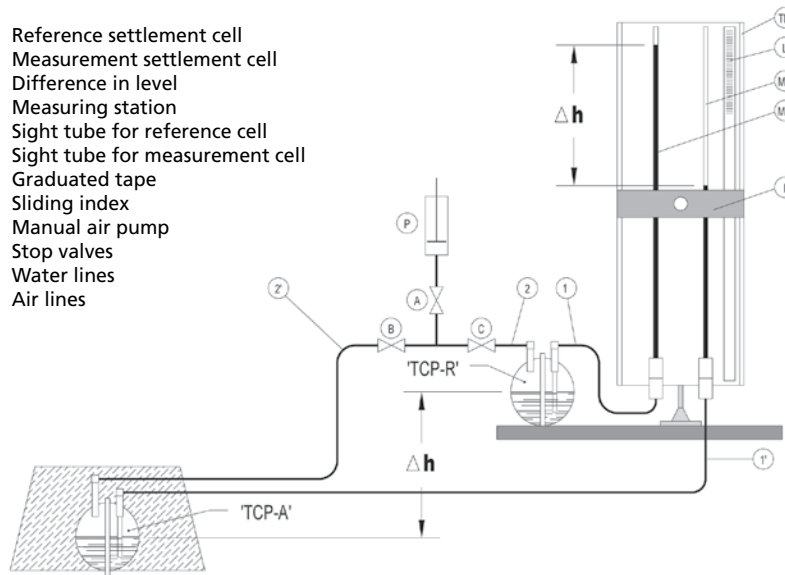


# CELL SETTLEMENT SYSTEM

## Model TCP

- TCP-R Reference settlement cell
- TCP-A Measurement settlement cell
- $\Delta h$  Difference in level
- TM Measuring station
- MR Sight tube for reference cell
- MA Sight tube for measurement cell
- L Graduated tape
- I Sliding index
- P Manual air pump
- A/B/C Stop valves
- 1/1 Water lines
- 2/2 Air lines



### APPLICATIONS

The TCP cell settlement system is used for the measurement and control of vertical movements including:

- Construction control of road embankments and earth dams
- Study of the displacement of individual soil layers (with the use of special depth cells TCP-F)

### DESCRIPTION

The standard TCP system comprises two spherical cells half-filled with an anti-freeze solution and connected to a reading panel. A hand pump is used to push back the anti-freeze solution to the reading panel. The difference in elevation between the two cells can then be read directly on the two sight tubes mounted on the reading panel.

The TCP-A cell is installed directly in the fill whereas the TCP-R cell and reading panel are usually mounted on a stable concrete platform.

A second type of cell is also available: the depth cell TCP-F. Its cylindrical shape allows it to be inserted into a borehole at a specific depth in order to study vertical displacement of soil layers.

One of the cells is placed in the ground under the working area and experiences the vertical displacement caused by the settlement in the soil. The reference cell and the reading panel must be at a fixed point above the first cell. It is important that neither of these move during the measurement process to ensure an accurate reading. For this purpose they are usually mounted on a concrete slab above the ground.

The reading panel is a panel with two (or more) hydraulic scales that read the difference in level between the measurement cell in the fill, and a similar cell, outside the fill, known as the reference cell.

The hydraulic scale is comprised of a reference sphere, two tubes mounted on an aluminum plate and a measuring scale with a sliding cursor. The tubes are made of Teflon to avoid having a meniscus in the water column and to insure a more accurate reading.

The installed valves and manual pump make it possible to establish an equilibrium of pressure in both cells and to insure a measurement.

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## SPECIFICATIONS

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### READING STATION

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Accuracy	±2 mm
Repeatability	Less than 1 mm
Measuring range	1.8 m
Panel material	Aluminum

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### STANDARD SPHERICAL CELL

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Diameter	203 mm
Inside volume	2.8 liters
Outside volume	4.4 liters
Diameter of the center hole for fixing	22 mm
Weight	1.5 kg
Internal inlet water pipe	4 × 6 mm, copper

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These specifications are valid when the distance separating the cells from the reading station does not exceed 80 m. On longer distances, the use of greater capacity cells is required. Cells are half-filled with an anti-freeze solution.

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### DEPTH CYLINDRICAL CELL

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Diameter	90 mm
Height	300 mm
Inside volume	1.5 dm <sup>3</sup>

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### CONNECTION TUBING

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Material	Plastic, translucent (water system) and red (air system)
Diameter	4 × 6 mm

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