R-4 - Magnetic Probe Extensometer

Extensometer / Settlement

VERSATILE,
EASY TO USE
MAGNETIC REED SWITCH PROBE

The R-4 is used to manually measure settlement or heave of soils at various depths, allowing the end user to create settlement/heave.

Description

The **R-4** consists of a magnetic reed switch mounted on a graduated tape and reel. The switch is activated by magnetic targets installed at different elevations along an access pipe in a borehole or within an embankment or fill.

The **R-4** detects the position of the magnetic anchors outside the riser pipe when it is lowered down the access pipe. The probe is suspended by a single graduated tape that incorporates the electrical leads. The tape graduation is used to determine the probe's precise position relative to the magnets. Comparison of these locations allows heave and settlement determination.

The magnetic anchors are available in three configurations: leaf spring anchor for borehole installation, plate anchor for embankment or fill installation and datum magnet that is fixed directly to the bottom section of access pipe. The leaf spring anchor can be pushed in place or lowered with the access pipe and released with an external draw wire.

The plate magnet is a plate with a central hole. The plate magnets are installed over the riser pipe and between the layers of placed fill, as the filling operation proceeds.

Telescoping couplings are used where deformations exceeding 1% are expected. The **R-4** system is compatible with standard inclinometer casings. The use of a probe centralizer is recommended for repeatable readings.

Key Features

- Easy to use
- Versatile

Applications

- Bearing capacity estimation of shallow and deep foundations
- Settlement estimation of all types of foundations
- Deformation of laterally loaded piles and sheet piles

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Specifications

Probe: Stainless steel, 14.3 x 227mm

Cable: Epoxy coated steel tape with medium density polyethylene jacket
Metric cables have 1mm graduations and imperial cable have 0.01ft graduation

Reel: 263 or 300mm in diameter depending on cable length

Battery: The readout operates on with one 9-Volt alkaline cell.

Material: Magnet body in PVC

Temperature range: -30°C to +80°C

Plate magnet dimensions: 200 x 200 x 9.5 mm standard, 300 x 300 x 9.5 mm optionnal

Access tube: -Standard 1'' pipe sch.80 flush-coupled PVC pipe (33mm)
(telescoping sections available if large settlementss are anticipated)
- 70mm or 85mm inclinometric casing
- optional 1.5'' pipe sch.80 flush-coupled PVC pipe (48mm)

Readout Unit and Magnet model

READOUT UNIT (probe and reel)

Model No.	Cable length	Resolution
FR-1013E50100A	30m	1 mm
FR-1013E50100B	50m	1 mm
FR-1013E50100C	100m	1 mm
FR-1013E50100D	150m	1 mm

PLATE MAGNET

Model No.	Casing
FR-1131A50200	33 mm
FR-1131A50200C	48 mm
FR-1131A50200A	70 mm
FR-1131A50200B	85 mm

LEAF SPRING MAGNET

Model No.	Min. borehole diameter	Released Outside diameter	Casing
FR-1131A50100	101 mm	222 mm	33 mm
FR-1131A50100C	101 mm	254 mm	48 mm
FR-1131A50100A	127 mm	279 mm	70 mm
FR-1131A50100B	152 mm	305 mm	85 mm

DATUM RING MAGNET

Model No.	Casing
FR-1131A50300	33mm
FR-1131A50300C	48mm
FR-1131A50300A	70mm
FR-1131A50300B	85mm

Note: Probe with 100 or 300ft of cable also available

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Smartec SA reserves the right to make any changes in the specifications without prior notice

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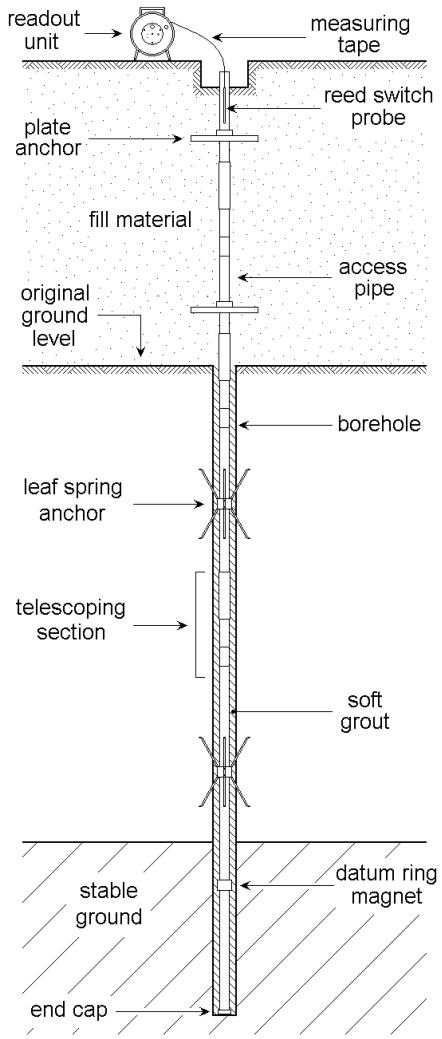
Probe and Anchor Typical Installation



Ordering Information

Please specify:

- Borehole diameter and depth
- Access tube model and length (For more information about 70 and 85 mm O.D. access tube, please refer to standard inclinometer casing data sheets)
- Telescoping section
- Anchor model number
- Readout instruments model no.

Optional Accessories

- Probe centralizer
- Collar tape guide

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