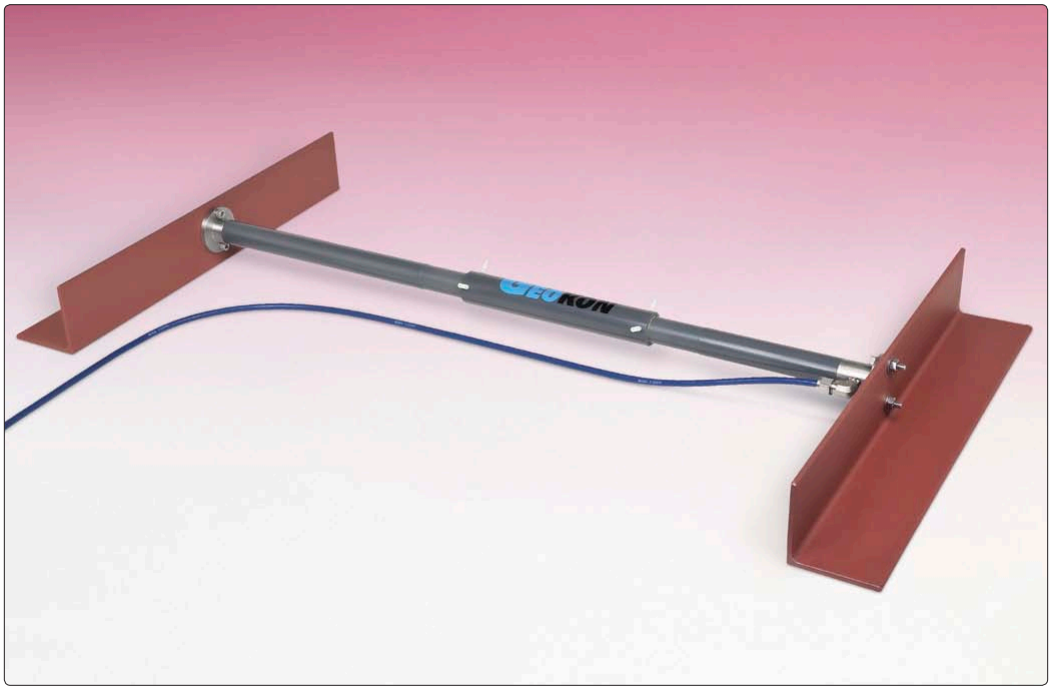
Vibrating Wire Soil Extensometer

Applications

The 4435 Soil Extensometer is designed to measure…

- **Horizontal strains and settlements in earthfill and rockfill dams**
- **Deformation in roadways, embankments, and surcharges**

Attaching the end flange.



The Model 4435 Vibrating Wire Soil Extensometer.

Description

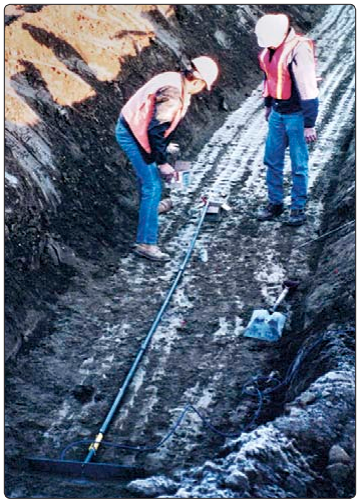
The Model 4435 Vibrating Wire Soil Extensometer is designed to be installed, in series, to measure horizontal strain and settlements in earthfill or rockfill dams. Versions are also available for the measurement of strains in boreholes and RCC dams (please see the Model 4430 data sheet).

The Soil Extensometer is designed to be installed in trenches, excavated in the surface of the fill of an embankment dam, to measure lateral deformation as the dam is constructed, and to monitor continued deformations during operation of the dam.

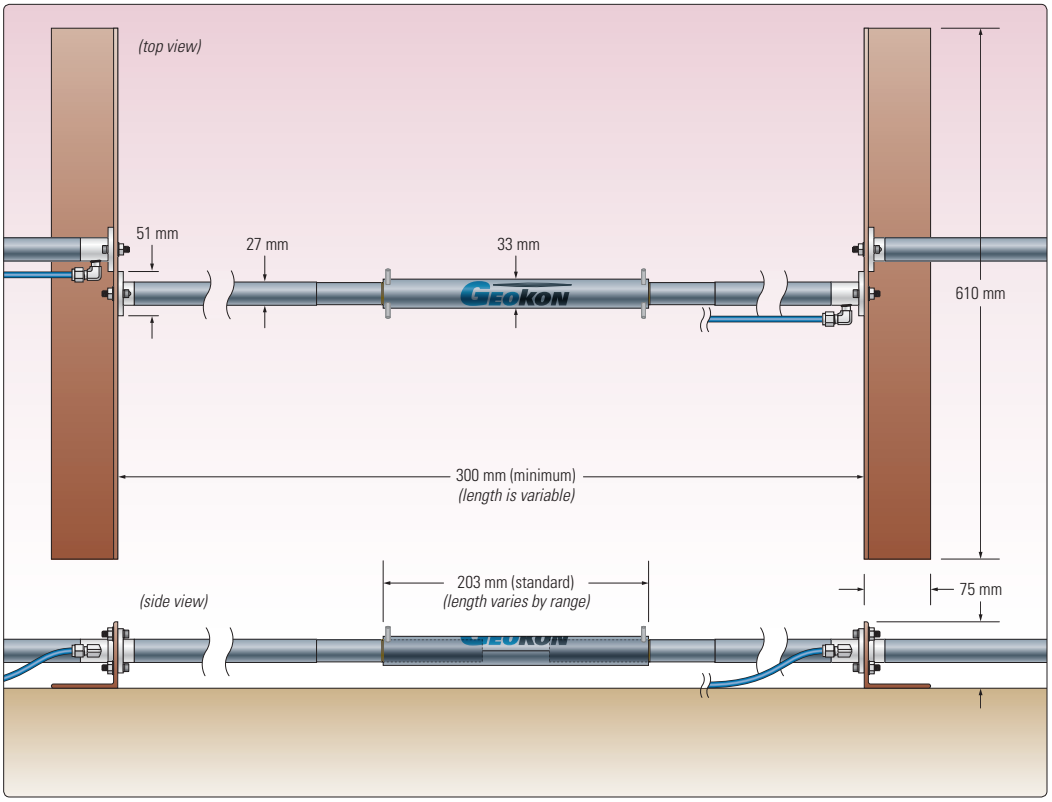
Construction

The Model 4435 Vibrating Wire Soil Extensometer has flanges on either end which enable a series of extensometers to be bolted together forming long strings of sensors so that complete profiles of deformation or settlement can be monitored.

Each extensometer contains a Model 4450 Vibrating Wire Displacement Transducer which converts extensions between flanges into an electrical signal. The vibrating wire element is subject to increasing tensions as the flanges separate. This causes the fundamental frequency of vibration of the element to increase. The frequency is transmitted through long cables to the readout location where a vibrating wire readout box (Geokon Models GK-403 or GK-404) or datalogger (Geokon Micro-800 or Micro-1000) measures the frequency and displays and/or stores the values of Hz^2. These values when multiplied by a calibration constant yield the displacement of the flanges in millimeters or inches.



● *Installation of Model 4435 sensors.*



● *Model 4435 dimensions.*

The vibrating wire sensor is housed inside a protective PVC pipe. A second protective PVC pipe of larger diameter telescopes over the housing and the sliding joint is sealed with 'O'-rings (steel or stainless steel pipes, instead of PVC pipes, can be used in rockfill dams for added robustness). One end of the vibrating wire sensor is connected to one flange and the other end is connected to the other flange by a stainless steel rod inside the protective PVC pipes. The gage length of the 4435 is specified by the customer at the time of order. The minimum gage length is 300 mm. Gage lengths can be adjusted in the field by the addition of PVC pipe sections and additional rods. The actual range of movement between flanges, which can be accommodated, depends on the choice of transducer range. Standard ranges are 25-300 mm. Other ranges are available on request.

Specifications

Standard Ranges[1]	25, 50, 100, 150, 300 mm
Resolution[2]	0.025% F.S.
Accuracy	±0.1% F.S.
Nonlinearity	< 0.5% F.S.
Temperature Range[1]	–20°C to +80°C
Minimum Gage Length	300 mm
Pipe Diameter	27 mm
Slip Coupling Diameter	33 mm
Flange Dimensions (L × W × H)	610 × 75 × 75 mm

[1] Other ranges available on request.
[2] Resolution depends on readout equipment.

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