VIBRATING WIRE DEFORMATION METER

GEOKON®

MODEL 4430



Model 4430 Vibrating Wire Deformation Meter.

APPLICATIONS

The 4430 Deformation Meter is designed to measure or monitor the:

- Expansion or contraction of joints
- Borehole elongation or shortening
- Closures in underground excavations, tunnels, etc.
- Displacements associated with landslides
- Movement of boulders, snow, etc., on unstable slopes



GeoNet Vibrating Wire Data Logger.

OPERATING PRINCIPLE

The Model 4430 Vibrating Wire Deformation Meter is a long-base strain gauge, designed to measure axial strains or deformations in rock, concrete or soil. It can also be embedded in soils in embankments such as earth dams and highway fills (see Model 4435 Vibrating Wire Soil Extensometer data sheet). Base lengths of the gauge can vary from a minimum of 0.3 meter to over 25 meters.

When used in rock, in horizontal or inclined downward boreholes, grouting is the most common method of installation. In overhead boreholes, a special grouting apparatus or hydraulic anchors (see inset at left) are required.

For direct placement into concrete, the deformation meter can be easily tied to the rebar cage.

ADVANTAGES & LIMITATIONS

The Model 4430 Vibrating Wire Deformation Meter has flanges on either end which enable a series of sensors to be bolted together forming long strings so that complete profiles of deformation or settlement can be monitored.

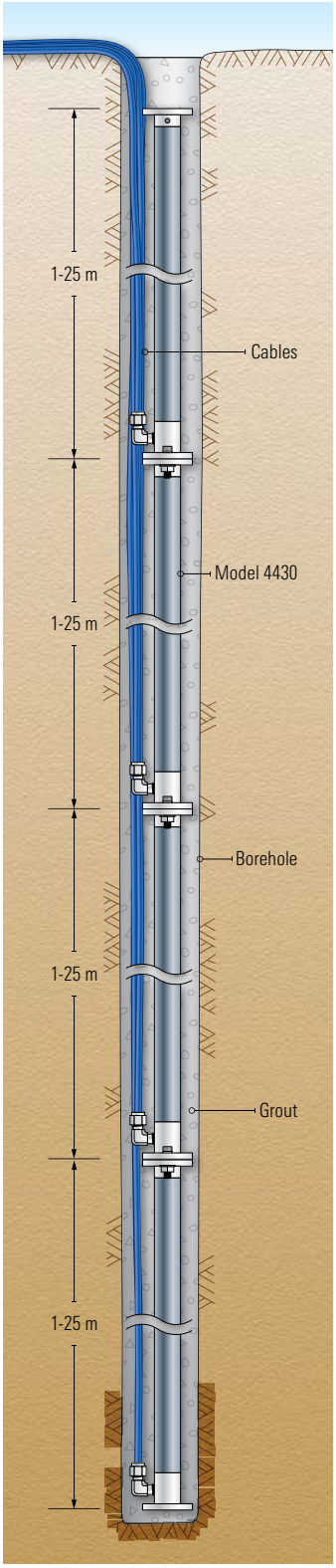
Each extensometer contains a Model 4450 Vibrating Wire Displacement Transducer which converts extensions between flanges into an electrical signal. The vibrating wire element is subject to increasing tensions as the flanges separate. This causes the fundamental frequency of vibration of the element to increase. The frequency signal is transmitted through the cable to the readout location, conditioned, and displayed on portable readouts or dataloggers.

The vibrating wire sensor is housed inside a protective PVC pipe. 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 gauge length of the 4430 is specified by the customer at the time of order. Gauge 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.

Deformation meters can be customized to meet your needs. Our staff will work with you throughout the process. Common customizations include waterproofing, high-temperature operation, corrosion resistance, specialty cables, etc.

COMPATIBLE READOUTS AND DATA LOGGERS

GK-404: Handheld Readout
GK-406: Vibrating Wire Analyzer
8600 Series: Multi-Channel Data Loggers
8910 Series: GeoNet Wireless LoRa® Data Acquisition System
8940 Series: GeoNet Data Loggers
8920/8930/8950 Series: GeoNet Cellular, Satellite, and Wi-Fi Network Data Loggers



Series of Model 4430 Deformation Meters, installed as an incremental extensometer.



Model 4430 Vibrating Wire Deformation Meter installation.



Model 4430 Vibrating Wire Deformation Meter with hydraulic anchors.

TECHNICAL SPECIFICATIONS	
Standard Ranges[1]	25, 50, 100, 150, 300 mm
Resolution	0.025% F.S.
Accuracy[2]	±0.1% F.S.
Nonlinearity	< 0.5% F.S.
Temperature Range[1]	–20 °C to +80 °C
Min. Gauge Length | Range[3]	341 mm | 25 mm 421 mm | 50 mm 575 mm | 100 mm 670 mm | 150 mm 890 mm | 200 mm 930 mm | 250 mm 1210 mm | 300 mm
Pipe Diameter	27 mm
Flange Diameter	51 mm
Slip Coupling Diameter	42 mm

[1] Other ranges available on request.
[2] Accuracy established under laboratory conditions.
[3] With transducer at midrange.



Model 4430 dimensions.

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