Rod Extensometers Single & Double Point

The behavior and stability of soil and rock masses can be determined using borehole extensometers. A typical borehole extensometer consists of a reference head, usually installed at the collar of a drill hole, and one or more in-hole anchors, each of which is fixed in place at a known depth in the bore hole. As the rock or soil deforms, the distances between adjacent in-hole anchors change, as do the distances between the individual in-hole anchors and the reference head. These changes are measured, and the resulting data used to compute the distribution, magnitude, rate and acceleration of deformation in the rock or soil mass intersected by the extensometer drill hole.

The Single Point Model EX-1 is an inexpensive, simple, rugged, and reliable device to monitor deformation in under ground workings. The entire instrument is recessed in the borehole, providing maximum protection against mechanical damage. In situations where boreholes may be easily drilled, it may be preferable to install several EX-1 extensometers rather than a multiposition extensometer.

Where manual readout is not feasible, electrical head assemblies employing linear potentiometers LVDT's or vibrating wire sensors are available. The extensometer consists of modified expanding shell rockbolt anchors set with a standard socket wrench. A rod extends from the borehole anchor to the collar anchor, which is set in the mouth of the borehole.

Deformation measurement is accomplished by using either an analog or digital depth indicator to measure the position of the rod tip relative to the collar anchor reference surface.

The Double Point Model EX-2 is similar to the Single Point EX-1 although two anchors are employed. The use of two points allows the engineer to distinguish between dangerous deep seated movements and more trivial surficial spalling.

The extensometer assembly consists of modified expanding shell rockbolt anchors set with a socket wrench. The downhole anchor is connected to a 1/4 inch rod which moves inside the uphole anchor's 1/2 inch pipe. Both anchor rods terminate in the collar anchor, which is set in the mouth of the borehole. Anchor position is measured with either an analog or digital depth indicator to measure the position of each rod tip relative to the collar anchor reference surface.

specifications

DESCRIPTION	MODEL EX-1	MODEL EX-2
Measurement Points	1	2
Range	100 mm (4 in.)	150 mm (6 in.)
Resolution	.02 mm (.001 in.)	.02 mm (.001 in.)
Borehole Diameter	35 mm (1 3/8 in.), 44 mm (1 3/4in.), 50 mm (2 in.), 64 mm (2 1/2 in.)	41 mm to 44 mm (1 5/8 in. to 1 3/4 in.), 50 mm to 57 mm (2 in. to 2 1/4 in.)
Maximum Borehole Diameter Deviation	-0 mm, +10 mm (-0 in., +3/8 in.)	-0 mm, +6.4 mm (-0 in., +1/4 in.)
Maximum Length	30 m (100 ft.)	15 m (50 ft.)
Weight	0.90 kg/m (0.60 lb./ft)	0.90 kg/m (0.60 lb./ft)

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features

- Accurate and reliable.
- Rugged.
- Easy to install and simple to operate.
- Low cost.
- Recoverable.

ordering info

- Model number.
- Borehole diamter.
- Anchor type.
- Depth of deep anchor.
- Depth of middle anchor.
- Accessories required.
- Manual or remote readout.

optional equipment

- Setting tools.
- Electrical readouts.
- Tip extension kits.
- Analog or digital depth micrometer.
- Data Trapper Logger.