

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.

## FEATURES

Accurate and reliable	Easy to install
Rugged	Low cost
Simple to operate	Recoverable

## SPECIFICATIONS

	MODEL NO. EX-1	MODEL NO. EX-2
<b>Measurement Points</b>	1	2
<b>Range</b>	100 mm (4 in.)	150 mm (6 in.)
<b>Resolution</b>	.02 mm (.001 in.)	.02 mm (.001 in.)
<b>Borehole Diameter</b>	35 mm (1 3/8 in.), 44 mm (1 3/4 in.), 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.)
<b>Maximum Borehole Diameter Deviation</b>	-0 mm, +10 mm (-0 in., +3/8 in.)	-0 mm, +6.4 mm (-0 in., +1/4 in.)
<b>Maximum Length</b>	30 m (100 ft.)	15 m (50 ft.)
<b>Weight</b>	0.90 kg/m (0.60 lb./ft)	0.90 kg/m (0.60 lb./ft)

## ORDERING INFORMATION (Specify when ordering)

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

## ANCILLARY EQUIPMENT (Specify when ordering)

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



Specifications may change without notice. EXB0006C



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**ROD EXTENSOMETERS SINGLE & DOUBLE POINT**

The RST Instruments Management System is certified to ISO 9001:2000

