

MODEL 4000

The Geotechnical Systems Australia Pty Ltd **Borehole Rod Extensometers** monitor the changing distance between points by dial gauge, digital indicator or potentiometric transducer.

APPLICATIONS

Measurement of settlements, displacements and deformations in:

- Tunnelling
- Open cut mines
- Dam construction
- Underground mines
- Large excavations
- Construction control

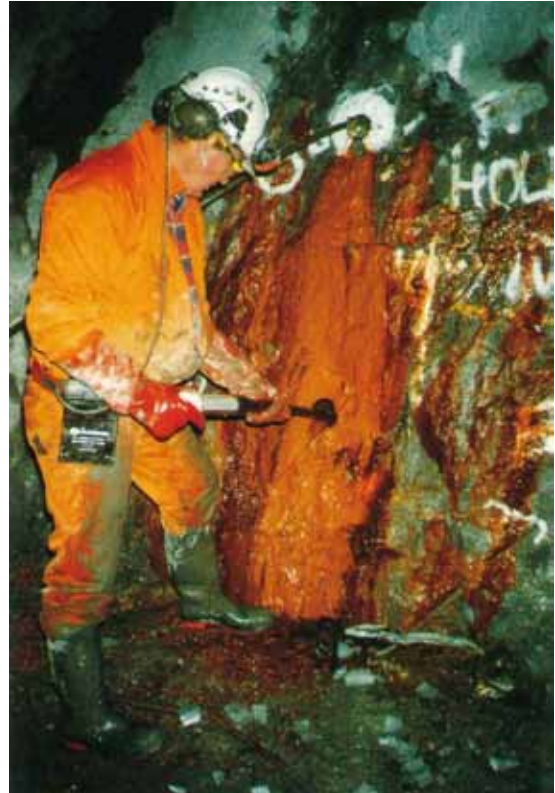
SPECIAL FEATURES

- Low cost
- Complete instruments supplied ready for installation
- One to six position for varying ground condition
- Compact design, for ease of transportation
- Potentiometric transducer head protected inside borehole
- Direct connection to linear transducers, no racks and pinions
- Transverse shear accommodation

OPERATION

A Single Point Borehole Extensometer (SPBX) essentially consists of a spring steel rod anchored at a measurement point in the borehole. As the rock deforms, the relative position of the rod changes and the variation is measured with a potentiometric transducer or dial gauge at the collar of the borehole.

If deformation monitoring is required at several levels within the rock, a Geotechnical Systems Multipoint Borehole Extensometer (MPBX) is recommended. The MPBX consists of a maximum of six oiled spring steel rods, each restrained in nylon guides at intervals of 0.5m. One end of each rod is connected to a chrome plated steel anchor; the other is connected to a brass



button in the case of manual monitoring or a potentiometric transducer in the case of remote monitoring. The steel rods are assembled around a poly tube and the whole assembly is then sheathed in another larger poly tube and sealed at each anchor point. This construction provides shear capacity, reducing the chance of rod jamming. Before coiling, the rods are locked in position by screws at the collar and are released just before the instrument is grouted in place in the borehole, in the case of a grouted potentiometric head. In the case of a manually read head they are released after grouting.

Rod Extensometer

SPECIFICATION	ROD EXTENSOMETER	Model 4000
Head Length (with transducer head):		520mm
Head Diameter:		51mm
Head Material:		Stainless Steel
Anchor Diameter:		40mm
Protective Sheath Diameter:		29mm
Protective Sheath Material:		25mm LDPE
Range of Extension:		150mm
Maximum Number of Anchors:		6
Accuracy:		0.1mm
Nominal Borehole Diameter:		75mm

INSTALLATION

The MPBX is supplied fully assembled in a 1.0m diameter coil. At the installation site, the assembly is uncoiled, fitted with a grout tube and placed into the borehole. When the MPBX has reached full depth, it is withdrawn to the rod locking screws, which are removed and the holes covered with tape, then it is pushed back to final position and grouted. If the Extensometer is a manually read type, the MPBX will be installed up to the depth of the protective cap. In the case of the remote reading type the transducer head is also installed until only the cable gland and cap is outside the borehole. All rods and connections are clearly marked.

AUXILIARY EQUIPMENT

The Rod Extensometers can be read one of three ways, that is manually, monitored remotely or logged. To monitor remotely either extensometer readout, MODEL 9600 or MODEL 9650, can be used. Should long term automated monitoring be required a multi-channel data logger (MODEL 9150) is highly recommended.

ORDERING INFORMATION

When ordering please specify the following:

- the individual lengths of rods
- the number of anchors
- whether the Extensometer will be read manually, monitored remotely or logged
- it is advisory to contact the factory for advice before ordering this product

