



# NOVARENT

LOCATION ET VENTE DE MATÉRIEL DE MESURE

## SINGLE POINT BOREHOLE EXTENSOMETER (MECHANICAL) MODEL EDS-64U/D



### OVERVIEW

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The Encardio-rite model EDS-64U/D single position mechanical borehole extensometer is suitable for 50 mm upward, downward or inclined boreholes. It is a precision mechanical instrument designed to help civil engineers and geologists in the measurement of deformation of rock mass and adjacent or surrounding soil. Together with anchor bolt load cell and tape extensometer, it is essential equipment for investigation and monitoring of foundations, slopes & embankments and for studying the behavior of rock around underground cavities, tunnels and mines. The borehole extensometer is an important instrument especially in investigation of underground cavities and landslides.

### APPLICATION

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- To determine how roof or wall of an underground cavity or tunnel behaves during excavation operation and to study the effectiveness of the support system.

- To measure and monitor settlement in a foundation due to excavation of underground cavities or due to construction of a heavy structure like concrete, rock-fill, masonry or earth dam over the foundation.

## DESCRIPTION

The borehole extensometer measures the extension (displacement) which takes place with time in a bored hole or in several bored holes in a rock mass. It essentially consists of an anchor grouted in a borehole and a reference plate. They help to accurately measure the distance between the anchor with respect to the reference plate and monitor their relative displacement with passage of time. The change in displacement between the anchor and reference plate is accurately monitored with passage of time. It is usually assumed that the anchor is in stable ground and so any change in the anchor spacing gives information about the settlement of foundation taking place.

### Measurement method

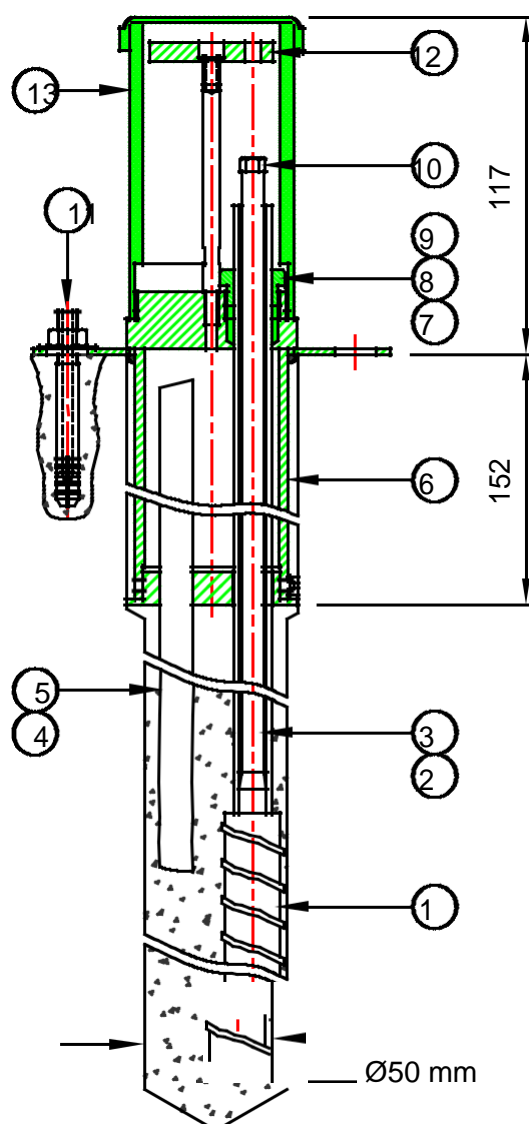
The measurement with model EDS-64U/D single point borehole extensometer is economical, reliable and is essentially preferred at locations where access to the mouth of the borehole is easily available. Displacement readings are taken by measuring the depth of the near end of the connecting rod from a reference plate provided at the mouth of the borehole. A digital caliper/micrometer depth gage with a resolution of 0.01 mm is used to take the readings.

## EXTENSOMETER ASSEMBLY

The model EDS-64U/D single position borehole extensometer can be installed in a 2"Ø NX (50 mm Ø) borehole.

### Groutable anchor

At locations where the rock formation is soft or lots of water exists, it is not possible to install expandable anchor effectively. Groutable anchor is ideally suited for such applications. In a borehole, it is usual to use a 20 mm Ø, 500 mm long groutable anchor.



Sl #	Description	Qty	Sl #	Description	Qty
1	Anchor ( 20 mm Ø x 500 mm length)	1	9	Hollow bolt for air vent/grout tube	3
2	Connecting rod (SS Ø 8 mm /fiberglass Ø 6.3 mm assembly with protective tube)	#	10	Reference button	1
3	PVC protective tube for SS connecting rod (o.d.-14 mm x 2 mm thick)	#	11	Expandable anchor M12x145 with washer & nut	4
4	Air vent tube (o.d.-12 mm x 1 mm thick)	•	12	Reference plate with mounting accessories	1
5	Grout tube (o.d.-12 mm x 1 mm thick)	•	13	Protective cover assembly	1
6	Reference head assembly	1	#	Quantity depends upon number of positions and depth of anchors	
7	Rubber bush for air vent/grout tube/connecting rod	3	•	Length varies from application to application	
8	Washer	3			

### System description

The groutable reinforced bar anchor (1) is attached to SS 410 stainless steel ( $\Phi$  8 mm) or fiberglass ( $\Phi$  6 mm) connecting rods (2) of appropriate length, as specified in the design.

The anchor is inserted into borehole along with the connecting rod and fixed in position by cement grout. The connecting rod is protected from the cement grout by enclosing in heavy duty PVC protective tube (3), thus allowing for free movement and displacement.

The extension head consists of a reference head assembly (6) and a protective cover assembly (13). The reference head assembly is grouted concentric with the borehole. The reference head assembly has four expandable grouting anchors (11) for fastening the extensometer head to the surface of the borehole.

The PVC protective tube (3), grout tube (5) and air vent tube (4) are secured to the reference head with rubber washers (7 & 8) and hollow bolts (7 & 9) to make the system leak proof. A reference plate (12) is used to measure the displacement of the anchor from the reference button (10) fixed on the connecting rod (2). Encardio-rite uses convention that depth of anchor is calculated as distance from the mouth of the hole to the near end of anchor.

### ORDERING CODE & INFORMATION

**EDS-64 U/D-X-Y-Z**

- Depth of anchor in meter
- Range of Digital caliper/depth gage
- S: Stainless steel connecting rod
- F: Fiberglass connecting rod
- U: Upward mounting
- D: Downward or near horizontal mounting