

GLÖTZL Baumeßtechnik

PLASTIC ROD EXTENSOMETERS

Type: GKSE 16 Type: GKSE 12
Art. No.: 60.01 Art. No.: 60.02

The plastic rod extensometer, system GLÖTZL. type GKSE 16 (12), is a further development of the conventional rod extensometer.

A new technology and mainly plastics as material have been used to develop an instrument which is adapted to the operation on site.

Construction: The plastic rod extensometer mainly consists of the following components:

- Measuring head with adjustable connection
- Measuring rods, glass fibre rod with plastic coating, PEHD casing tube
- Anchor point of ribbed steel (standard)
- Optional fleece packer anchor or hydraulic anchor system Super Swellex



Figure.: Single extensometer GKSE 16

Function: The relative movement between anchor point and measuring head is measured. For this, these parts are normally anchored in the borehole by means of an injection.

Application: Measurement of settlements, displacements and deformations in

- Tunnel construction
- Mining
- Slope stabilization
- Dam construction
- Underground control
- Construction control

Advantages: Delivered in completely assembled condition

- No assembling work at the extensometer necessary on site
- Low costs for installation
- Very short installation time
- No transport problems
- Detachable measuring head for recovery
- High measuring accuracy by small friction losses of the glass fibre rod and insensitivity against differential settlements
- Measuring head foldaway in borehole
- Elongations and shortenings, e.g. for expansion in tunnel construction
- Small weight, e.g. for overhead assembly

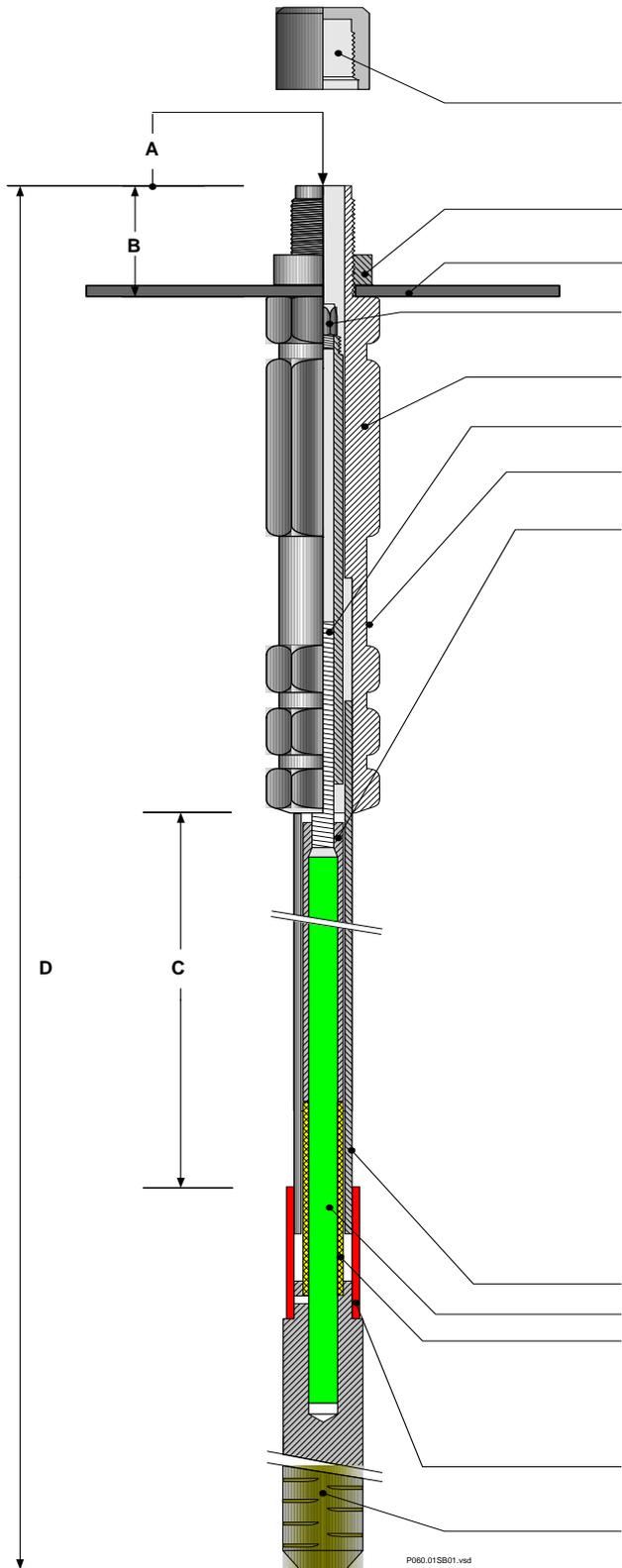


Figure.:
Extensometer in packed cond.,
mounted for installation, wound
up in a reel of approx. 1.2 m dia.



Figure: Measuring head

Construction of Plastic Rod Extensometer



	GKSE 16	GKSE 12
Protection cap	Ø 26 mm	Ø 20 mm

Meas. head:

1. Counter nut		
2. Assembl. plate for single-/ multiple heads		
3. Measuring connection, adjustable with adjustment sleeve	+/- 60 mm	+/- 25 mm
4. Extensometer head, hexagon, SW =	27 mm	17 mm
5. Threaded rod	M 8	M 5
6. Grooves for concrete compound		
7. Connection sleeve		

A. Meas. point

Measurement manual	
1. Depth gauge with nonius, resolution	+/- 0.1 mm
2. Mechanical dial gauge, resolution	+/- 0.01 mm
3. Electric displacement transducer with digital measuring device	0 - 250 mm
Remote control	
4. Electric remote control with displacement transducer	50 / 100 and 250 mm 0 - 1000 mm standard

B. Measuring length adjustable with threaded rod

Glass fibre rod and PEHD casing tube winding diameter 1 m	+/- 60 mm
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C. Measuring rods

Total length = measuring length Min. length 1 m, max. length =	50 m	30 m
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D. Dimension

Measuring rods		
1. PEHD casing tube	Ø 16 mm	Ø 12 mm
2. Glass fibre rod	Ø 9 mm	Ø 5 mm
3. Protection cover	Ø 11 mm	Ø 7 mm

Anchor point

1. Elastic connection casing tube - anchor		
2. Anchor rod Ø = length = of ribbed steel	Ø 22 mm 500 mm	Ø 14 mm 500 mm

1. Technical data – Rod Extensometer

		GKSE 16	GKSE 12
Recommended installation position max. executed		100 (250)	30 (50)
1.1	Extensometer rods glass fibre core with plastic covering, thermal expansion coefficient $5 \times 10^{-6} / K$	Ø11 mm	Ø7 mm
1.2	Casing tube PEHD	Ø16x2 mm	Ø12x2 mm
1.3	Measuring length standard min. 1 m	max. 100 m	max. 30 m
1.4	Adjusting range of measuring connection	+/-60 mm	+/-25 mm
1.5	Transmission accuracy		
	1–20 m	0.02 mm	0.02 mm
	up to 50 m	0.10 mm	-
	up to 100 m	0.30 mm	-
1.6	Extensometer head	SW 27	SW 17
1.7	Assembly plates 2–13-fold in foldaway and placed-on execution		
1.8	Necessary borehole diameter (clear installation diameter) without consideration of injection and aeration lines		
	1	≥ 35 mm	≥ 25 mm
	2-3	≥ 60 mm	≥ 50 mm
	4	≥ 86 mm	≥ 60 mm
	5-7	≥ 101 mm	≥ 75 mm
	8-13-fold	≥ 131 mm	≥ 110 mm
1.9	Weight of extensometer rods, PEHD casing tube and glass fibre core, 1 m	0.3 kg	0.2 kg

2. Technical Data – Readout Units

- 2.1 Depth gauge with nonius, meas. range 50 mm
resolution 0.1 mm

Accessories: Key for counter nut, adjusting tool for measuring connection

- 2.2 Mechanical dial gauge, meas. range 30 mm
resolution 0.01 mm

Accessories: Calibration standard, key for counter nut, adjusting tool for measuring connection, transport case

- 2.3 Digital readout unit, meas. range 50 mm
resolution 0.01 mm

Accessories: Calibration standard, key for counter nut, adjusting tool for measuring connection, transport case



Figure: 6-fold extensometer with assembly plate and plastic holders



Figure: 6-fold extensometer GKSE 6/16, consisting of 6 single extensometers with assembly plate



Figure: 6-fold extensometer head, type GKSE 6/16, consisting of single extensometers with assembly plate for installation in boreholes



Figure: 6-fold extensometer head, type GKSE 6/16, consisting of inclination measuring tube with 6 single extensometers, foldaway assembly plate for installation in boreholes. For fixing the extensometers around the inclination measuring tubes, corresponding plastic holders are available.

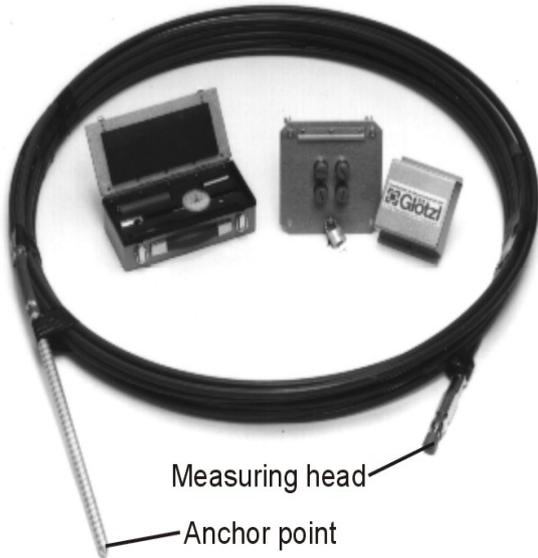


Fig: Head plate for extensometer GKSE16 with assembled displacement transducer GWW (single extensometer) with protection tube cover \varnothing 90 mm, length = 46 cm



Fig: Head plate with displacement transducer GWW for multiple extensometer with protection tube cover \varnothing 126 mm, length = 53 mm (up to 5-fold extensometer)

Extensometer and Accessories



Extensometer ready for delivery, wound up with a diameter of 1–1.2 m

Figure: Shows complete extensometer, ready for installation, length 30 m, weight 12 kgs



Assembly plate, lockable in sizes for:
1 - 6 heads
7 - 9 heads



Standard Measuring Equipment GEM 30

- Mechanical dial gauge, resolution 1/100 mm
- Measuring range 0–30 mm
- Calibration standard, adjusting tool for measuring connections
- Key for attachment of measuring head
- Key for protection cap

Transport case of aluminium with foamed plastic inlet

Digital measuring device GED 50

The digital readout unit is battery-operated and equipped with a LCD display. The main advantages, compared with a mechanical dial gauge, are:

- Reading errors are avoided.
- At difficultly accessible places, the position of the measuring connection is recorded, the instrument is removed and read.

Technical data: Measuring range 0–50 mm, resolution 1/100 mm

Accessories: Calibration standard, adjusting tool for measuring connection and protection cap, transport case of aluminium



Subject to technical alternations