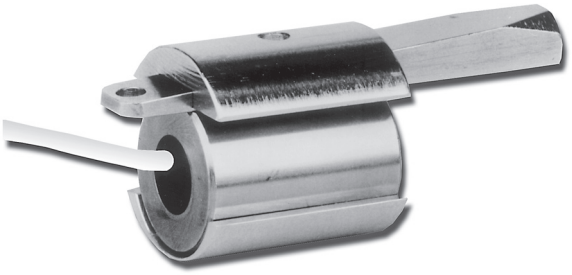
STRESSMETER

Model VBS-2

APPLICATIONS

The VBS-2 was first developed for monitoring stress changes in underground coal mining operations. Its use has since been extended to hard rock and concrete structures. The VBS-2 measures stress or load changes in:

- Mines (roof, wall and pillar)
- Tunnels (around and within their lining)
- Underground storage chambers
- Concrete structures



VBS-2 (SR) with wedge and platen

DESCRIPTION

The VBS-2 stressmeter is composed of a hollow cylindrical body sustaining a piano wire across the diameter. Both ends are vacuum sealed with small cans that are electron-beam welded. The body is electroplated to resist corrosion. For excitation and reading purposes, a coil/magnet assembly and a thermistor are encapsulated in one of the cans and are connected to an electrical cable.

A two-part wedge/platen assembly completes the VBS-2 stressmeter. Sitting on the cylindrical body of the stressmeter, this assembly is used to prestress the VBS-2 against the borehole wall at the moment of installation. The wedge/platen assembly can take two configurations depending on whether the installation is being made in hard or soft rock. In softer materials such as coal, special wide platens are used to lower the contact stresses on the borehole wall.

Stress variations in the host medium will deform the stressmeter, changing the wire tension and thus its resonant frequency.

FEATURES

- **Direct measurement of stress changes in solids**
- **Wedge/platen assembly for hard and soft materials**
- **High stress and load sensitivity**
- **Virtually insensitive to temperature changes**
- **Electroplated body to prevent corrosion**
- **Frequency signal easy to process and transmit over long distances**

INSTALLATION

The VBS-2 stressmeter is set in an "E"-size hole (38 mm), preferably diamond drilled, to provide proper seating of the gauge against the rock. When percussion drilling is done, it is of the utmost importance to incorporate a reaming shell behind the bit to obtain a smooth surface against which the gauge will be wedged.

The wedge/platen assembly can be activated from the borehole collar either with a percussion or screw setting tool depending on the depth of installation. In the first case, depths of 16 meters can be reached. The screw system permits deeper installations down to 30 meters.

The stressmeter being a uniaxial device, several units may be installed in series to resolve the change in the biaxial stress field (minimum of 3 measurements) at a particular location. Under good conditions, it is possible to recover the stressmeter from the borehole.

SPECIFICATIONS

MODEL	**VBS-2 HR (Hard Rock), VBS-2 SR (Soft Rock)**
Range	70 MPa (HR), 40 MPa (SR)
Sensitivity (depending on rock modulus)	14–70 kPa (HR), 7–60 kPa (SR)
Borehole diameter	37–40 mm (HR), 37–39 mm (SR)
Operating temperature	–20 to +80°C
Dimensions	41 × 29 mm (length x diameter)
Weight	0.45 kg
Thermistor	3kΩ (see model TH-T)
Cable	IRC-31

ACCESSORIES

- Installation tools: manual (screw or percussion)
- Readout instruments: MB-6T(L), SENSLOG

ORDERING INFORMATION

Please specify:

- Platen type (hard or soft rock)
- Installation depth or cable length
- Percussion or screw setting tool
- Accessories

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