Soft Inclusion Stress Cell (SISC)

Applications

The Model 4360 Soft Inclusion Stress Cells are designed to measure stress changes in elastic rocks and are especially suited for…

- **Mine openings**
- **Tunnels**
- **Support pillars**
- **Shafts**

Model 4360-2-2 Soft Inclusion Stress Cell (mechanically activated).

Model 4360-1-1 Soft Inclusion Stress Cell (hydraulically activated), in setting tool assembly.

Operating Principle

The Model 4360 Vibrating Wire Soft Inclusion Stress Cells are designed primarily for long-term measurements of stress changes in rock. The SISC is pre-loaded by wedging it into a large size diamond drill hole using an integral screw mechanism or hydraulic piston, and can be set to measure both tensile or compression stress changes. The changing rock stresses impose changing loads on the steel ring causing it to deflect, which produces a change in tension and resonant frequency of vibration of a vibrating wire strain gauge element fixed across one diameter.

Advantages and Limitations

The 4360 SISCs provide high sensitivity, high range and long-term stability making them suitable for extended monitoring periods. They are corrosion resistant, waterproof, easily installed and suitable for remote readout.

The 4360 SISC has been used successfully in 152 mm diameter overcoring holes (drilled to measure in situ stresses) to measure Aggregate/Alkali Reactions (AAR) in concrete dams.

The Model 4360 is a uniaxial device, and so to completely evaluate stress changes in a given plane, three cells are required to be installed at specific orientations.

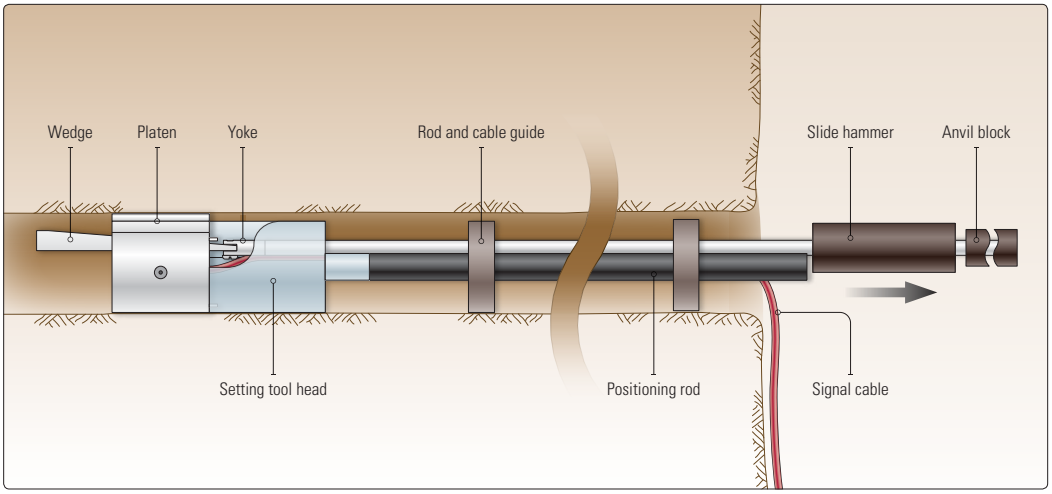
The calibration of the cell depends upon factors including the modulus of the host rock, the pre-stress, the orientation with respect to direction of principal stress and the platen contact area. Thus the accuracy is largely indeterminate and the measured stress levels can only be approximate.

A thermistor is located inside the stressmeter to enable simultaneous measurement of temperatures.

High temperature versions (up to 200 °C) are also available (please contact **GEOKON®** for details).

● *Model 4360-1-1 Soft Inclusion Stress Cell (hydraulically activated).*

● *Model 4360-1-2 Soft Inclusion Stress Cell (mechanically activated).*



● *Model 4360-1-2 Soft Inclusion Stress Cell shown with mechanical installation tools.*

System Components

The Model 4360 SISC is designed for use primarily in diamond drill holes, which can range in diameter from 76 mm to 150 mm when using the standard wedge and platen assembly. Installation is performed using a Slide Hammer Setting Tool, a Torque Type Setting Tool or with Hydraulic Installation Tools, depending on the model used.

The 4360 SISC can be read using the Model GK-404 or GK-405 Readouts, or the LC-2 Series or Model 8600 Dataloggers.

Technical Specifications

Standard Range[1]	±35 MPa
Sensitivity[1]	35 kPa
Accuracy[2]	0.5% F.S.
Temperature Range[3]	–20 °C to +80 °C
Borehole Diameter[3]	76 mm, 150 mm, NX, HQ, PQ

[1]Proportional to rock modulus; figures given are for E = 0.03 × 106 MPa.
[2]Accuracy established under laboratory conditions.
[3]Other ranges and diameters available on request.

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