

Applications

The measurement of cracks on:

- Construction joints in concrete dams.
- Rock.
- Tunnel and shaft linings.
- Masonry structures.
- Bridge construction.
- Superficial cracks.

Operating Principle

The vibrating wire displacement transducer used for crackmeters consists of a vibrating wire sensing element anchored at one end and connected to a spring loaded rod at the other end. As the rod is moved out from the transducer body the spring is elongated causing an increase in the vibrating wire tension. This tension is directly proportional to the spring extension and therefore the joint opening or closing.

Vibrating Wire Crackmeter

For details on vibrating wire read-out units please refer to data sheet RO-1. The VW Crackmeters can also be connected to a CR10X datalogger please refer to data sheet D1.

Installation

The crackmeter is mounted across joints or cracks by installing a pair of anchor stems. Pre-positioned holes are drilled each side of the crack or joint. The crackmeter is assembled onto the pair of anchors and extended to allow for the expected direction and magnitude of movement.

The groutable anchors are carefully pushed into the drill holes, which are pre-filled with grout or resin cement. Expanding shell anchors are carefully pushed into clean pre-drilled holes and expanded by tightening the anchor bolt.

Advantages and Limitations

- Accurate, robust and very good long term stability.
- Accuracy unaffected by cable length.
- Suitable for remote reading and data-logging.
- Over-voltage surge arrestor fitted to protect against electrical damage.
- Connecting cable is strong screened and flexible and can be used in lengths in excess of 1000m.
- Waterproof and sealed to 7 bar pressure.

Performance

- Crackmeters are available with ranges up to 100mm
- Resolution 0.025% of range
- Accuracy $\pm 0.2\%$ of range
- Temperature effect $-0.02\text{mm}/^\circ\text{C}$ (typical)
- Operating temperature -30 to $+70^\circ\text{C}$
- Cable: 2 and 4 Core screened



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**DATA SHEET
J2**

Specification

Vibrating Wire Crackmeter

Comprising a stainless steel vibrating wire displacement transducer fitted at each end with universal joints, which can be mounted onto anchor stems or metal structures. The transducer incorporates a vibrating wire element, with over-voltage surge arrestor, displacement rod and tension spring.

J2-1-50-T VW Crackmeter
50mm Range with Thermistor.
Overall Length 350mm.

J2-1-100-T VW Crackmeter
100mm Range with Thermistor.
Overall Length 405mm.

Note: If no thermistor is required drop the T on the part number.

Mounting Anchors and Fixings

J2-2.1 Groutable Anchor
Comprising 12mm diameter zinc plated high yield steel ribbed anchor threaded at one end to receive universal joint of the crackmeter. The anchors are grouted into pre-drilled holes of a minimum 16mm diameter. Two anchors required for each crackmeter. Dimensions 12mm diameter, 100mm long, weight 100g.

J2-2.2 Expanding Shell Anchor
Comprising central steel bolt with expanding shell. The bolt head is threaded to receive universal joint of the crackmeter. The anchors are expanded into 16mm diameter pre-drilled holes. Two anchors required for each crackmeter. Dimensions: 16mm diameter, 75mm long, weight 90g.

W6-4.4 Resin Cartridge
To fix anchor stems in drillholes. Comprising two part resin and catalyst hardener in duplex cartridge. Curing time approximately 30-40minutes depending on ambient temperature. Supplied c/w mixing nozzle and extension tube. Dimensions: 180mm x 70mm, weight 470g.

W6-4.5 Cartridge Injection Gun
For dispensing resin from cartridge. Comprising robust steel mechanical lever operated dispenser. Dimensions: 300mm x 200mm, weight 1kg.

J2-2.5 Installing Spanner
For use with J2-2.2

Connecting Cable and Fittings

CA-3.1-4-IC-4
4 Core screened cable Supplied by the metre

CA-4.6 Cable End Plug & Cap
For 2 Core Screened Cable

CA-4.1 Joint Sealing Kit

Vibrating Wire Logger

RO-1-VW-1 Vibrating Wire Logger
Capable of reading Thermistors

RO-1-VW-2 Vibrating Wire Logger
Unable to read Thermistors

RO-1-VW-3 Hand Held Vibrating Wire Readout
Unable to read Thermistors

Ordering Information

J2-1-50T VW Crackmeter

J2-1-100T VW Crackmeter

J2-2.1 Groutable Anchor

J2-2.2 Expanding Shell Anchor

W6-4.4 Resin Cartridge

W6-4.5 Cartridge Injection Gun

J2-2.5 Installing Spanner

CA-2.2-2-SC 2 Core screened cable

CA-3.1-4-IC 4 Core screened cable

CA-4.6 Cable End Plug & Cap
CA-4.1 Joint Sealing Kit

