Vibrating Wire Embedment Jointmeter

Applications

The measurement of surface and mass movement on:

- Construction joints in mass concrete dams and other structures.

Operating Principle

The vibrating wire displacement transducer used for jointmeters consists of a vibrating wire sensing element anchored at one end and connected to a spring loaded push rod at the other end. As the push 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.
For details on vibrating wire read-out units please refer to data sheet RO-1. The VW Jointmeters can also be connected to a CR10X datalogger please refer to data sheet D1.

Installation

The jointmeter is installed in two parts, a socket and the main body. During the first lift of concrete the socket is fixed to the framework with an installation plug and bolt. When the concrete has hydrated the formwork is withdrawn leaving the exposed end of the installed socket ready to accept the main body of the jointmeter. Before the second lift of concrete is cast the jointmeter is screwed into the installed socket, extended sufficiently to allow for expected joint movement and then tied securely onto rebar supports.

When both lifts of concrete are complete the jointmeter now firmly anchored into each lift will measure opening or closure of the joint. The sensing transducer is smaller than the protective body of the Jointmeter, therefore a degree of shearing motion is accommodated by universal joint connections within the unit.

Jointmeter
(Cross Section)

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.

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DATA SHEET J1

Specification

Vibrating Wire Jointmeter

Comprising a stainless steel vibrating wire displacement transducer within a rigid P.V.C. housing with universal joint and connecting socket. The outer body and joint socket incorporate end flanges for keying into concrete.

J1-1-50-T VW Jointmeter
50mm Range with Thermistor
Overall Length 420mm
Weight 1.7kg including 5m cable

J1-1-100-T VW Jointmeter
100mm Range with Thermistor
Overall Length 485mm
Weight 1.9kg including 5m cable

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

Connecting Cable and Fittings

CA-3.1-4-IC 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

Performance

- Jointmeters are available with ranges up to 100mm
- Resolution 0.025% of range
- Accuracy ± 0.2% of range
- Temperature effect –0.02mm/°C (typical)
- Operating temperature –30 to +70°C
- Cable: 2 Core screened

Ordering Information

J2-1-50-T VW Crackmeter

J2-1-100-T VW Crackmeter

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

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