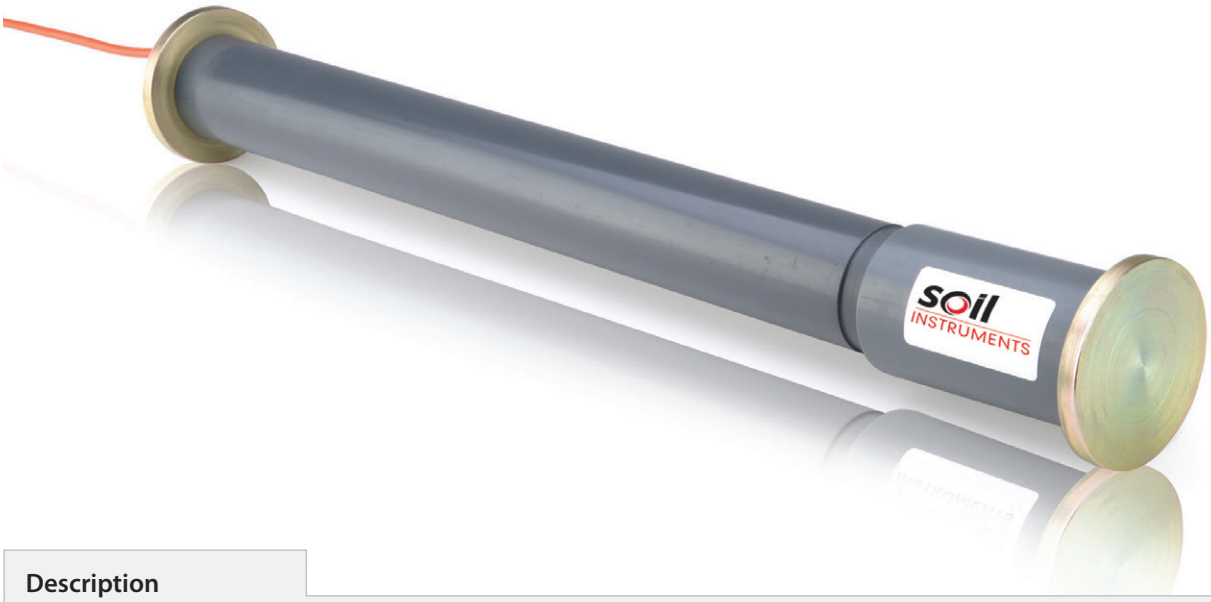
J1 VIBRATING WIRE EMBEDMENT JOINTMETER

Datasheet J1



Description

The Vibrating Wire Embedment Jointmeter is designed to monitor movement of joints in mass concrete structures.

The jointmeter comprises two parts; a socket and a main body.

The socket is a detachable end that is cast into the first concrete lift. The main body is a protective outer case which houses a Vibrating Wire displacement transducer and screws into the socket. Once screwed into the socket, it is cast into the second lift of concrete.

The transducer has a Vibrating Wire sensing element which is anchored at one end and connected to a spring loaded push rod at the other end.

Any movement applied to the push rod causes the spring to contract or elongate, causing an increase or decrease in the Vibrating Wire tension. This tension is directly proportional to the movement applied and therefore the opening or closing of the joint.

Features

- **Highly accurate and robust; accuracy unaffected by cable length**
- **Connecting cable is strong, screened and flexible and can be used in lengths in excess of 1000m**
- **Option to fit a thermistor**
- **Over-voltage surge arrestor fitted to protect against electrical damage**
- **Waterproof and sealed to 7 bar pressure**
- **Accommodates shear movement**

Benefits

- **Very good long-term stability**
- **Suitable for remote reading and data logging**
- **Thermistor option enables examination of temperature effects**

Comprehensive information about this product and our full range is available at www.soilinstruments.com
If you would like to speak with someone directly please call +44 (0)1825 765044 or email sales@soilinstruments.com

VIBRATING WIRE PRINCIPLE

VW

A high carbon steel wire is held in tension between a fixed point and a movable point within the sensor.

The physical changes measured by the sensor result in small changes to the position of the movable point which results in a change to the tension of the wire.

The wire may be excited by either plucking or sweeping via a coil adjacent to the wire. The resulting resonant frequency (which is relative to the tension of the wire) is then recorded by the same coil. The reading can be displayed by instrument readout or recorded by data logging equipment.

Operation

The socket is installed in the first lift of concrete, using an installation plug to prevent concrete entering the socket.

Before the second lift of concrete is cast, the main body is screwed into the installed socket, extended sufficiently (most commonly to its mid-point) to allow for expected joint movement, welded or tied to the rebar and then the second lift of concrete is cast.

When both lifts of concrete are complete, the jointmeter is now firmly anchored into each concrete lift and will measure opening or closing 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.

Applications

The Vibrating Wire Embedment Jointmeter is ideal for monitoring movements of joints in mass concrete structures.

Typical applications include:

- Abutments, slabs, foundations and retaining walls
- Tunnels or shaft linings; arch, gravity and buttress dams
- Monitoring construction joints

Associated products

For details on:	Catalogue code:
VWnote	RO-1-VW-NOTE
Dataloggers	D1
Terminal and Junction Boxes	RO-TB/JB/TJ

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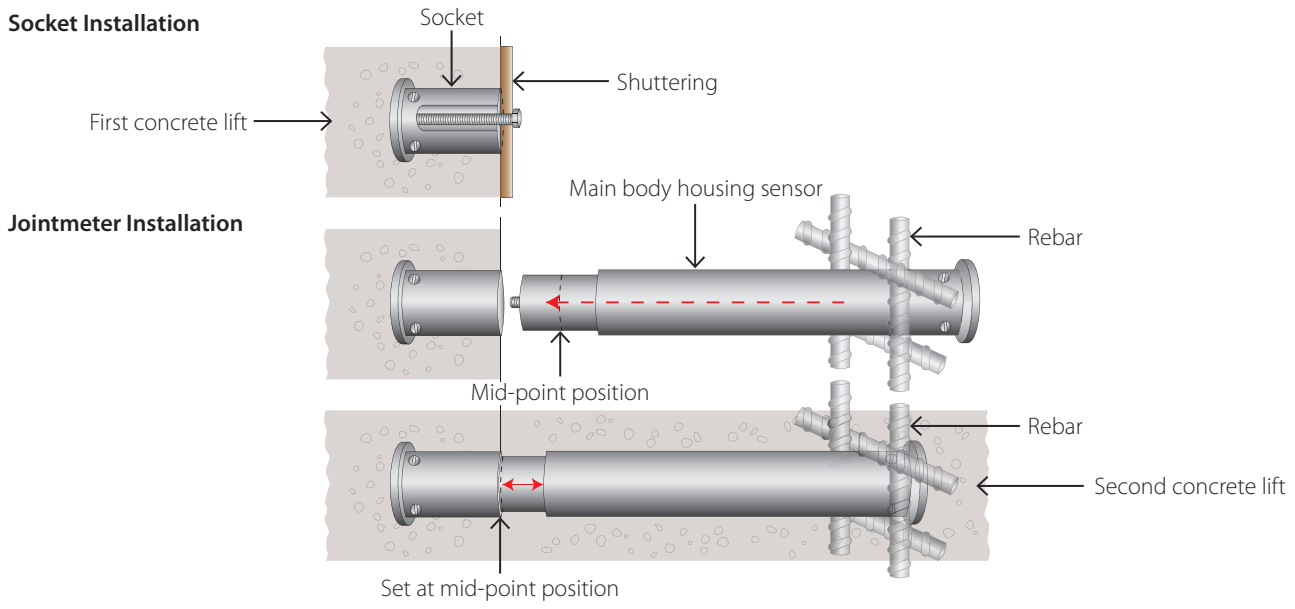

THE TECHNICAL RATING FOR THIS PRODUCT: INTERMEDIATE

As the correct installation of any monitoring sensor or system is vital to maximise performance and accuracy, Soil Instruments makes the following recommendations, for the skill level of the installation contractor.

ADDITIONAL SUPPORT

We offer installation and monitoring services to support this system. For more information please email : **sales@soilinstruments.com** or call : **+44 (0) 1825 765044**

ADVANCED	The installer is trained and experienced in the installation of this type of instrument or systems, and is ideally a specialist Instrumentation and Monitoring contractor.
INTERMEDIATE	The installer already has previous experience and/or training in the installation of this instrument or system.
BASIC	As a minimum the installer has read and fully comprehends the manual, and if possible has observed these instruments or systems being installed by others.

Specifications

Sensor		
Ranges	30mm | 50mm | 100mm	
Resolution[1]	0.025% full scale	
Accuracy	±0.2% full scale	
Temperature range	-20 to +80°C	
Excitation method	Pluck or sweep	
Material	PVC/316 grade Stainless Steel	
Ingress protection	IP68 to 1700kPa	

Cables		
Construction	4 core, PUR sheath, foil screen & drain wire	
Diameter	4mm	
Weight/m	30g	

Thermistor		
Type	NTC 3k Ω	
Accuracy	±0.5°C	
Resolution[1]	0.1°C	

Housing		
Type	Standard	Long Base
Flange diameter	63mm	90mm
Gauge length[2]	450mm	1000mm

[1] Dependent on readout
[2] In closed position

Ordering Information

Vibrating Wire Embedment Jointmeters

Armoured cable can only be fitted on site with joint sealing kit CA-4.1

J1-1-50	50mm range
J1-1-100	100mm range
J1-1-50-T	50mm range with thermistor
J1-1-100-T	100mm range with thermistor

Connecting Cable and Fittings

CA-3.1-4-IC	Instrument cable, 4 core, 7/0.20; screened, polyurethane jacket, priced per metre
CA-4.1	Joint sealing kit
CA-4.2	Coloured adhesive tapes; set of 10No
CA-4.3	Crimping tool
CA-4.4	Crimping sleeves; set of 100No
W6-6.1	Nylon ties; 150mm x 3.5mm, pack of 100No
ST1-3.5	Nylon ties; 370mm x 4.7mm, pack of 100No

Manual

MAN-37	Vibrating Wire Embedment Jointmeter

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