

P8 VIBRATING WIRE JACK OUT PRESSURE CELL



Description

The Vibrating Wire Jack Out Pressure Cells are used to measure pressures on diaphragm walls during excavation. They are installed within the diaphragm wall cage. An optional piezometer within the unit allows the measurement of pore water pressure and therefore the derivation of effective pressure.

The cell is mounted onto one end of a hydraulic ram via a swivel joint and at the other end is a reaction plate.

The cells are normally used to validate design assumptions and to give adequate warning of soil pressures in excess of those which a structure is designed to withstand.

Features

- Uses proven Vibrating Wire technology
- Accurate, reliable and robust design
- Various ranges of size and pressure available
- Suitable for manual or remote monitoring

Benefits

- Accurate, repeatable readings over long cable lengths
- Long working life with long-term stability
- Design prevents case stresses from affecting readings
- Over-voltage surge arrestor protects against electrical damage



Comprehensive information about this product and our full range is available at 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



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 ram and cell assembly is installed into the reinforcement cage with the cell and reaction plate positioned on either side of the cage with the ram passing through the reinforcement. The assembly is loosely supported in the cage by tie wires and/or locally welded rods to form a cradle to provide free lateral movement of the unit. This arrangement allows the ram and cell assembly to centralise itself within the trench when the ram is extended. When the cage is lowered into the slurry-filled trench to the specified level, the ram is hydraulically pressurised to force the cell and reaction plate outwards to bear onto the sides of the trench.

The ram pressure is increased to ensure good embedment into the trench wall. The swivel joint behind the cell allows for some misalignment.

Ram pressure is maintained throughout the pour and curing of the concrete.

Applications

Vibrating Wire Jack Out Pressure Cells are installed within diaphragm walls to determine the distribution, magnitude and directions of total pressure. They can also be installed with a integrated piezometer to calculate effective pressure

Typical applications include:

- Diaphragm walls



Associated products

For details on:

Catalogue code:

VWnote

RO-1-VW-NOTE

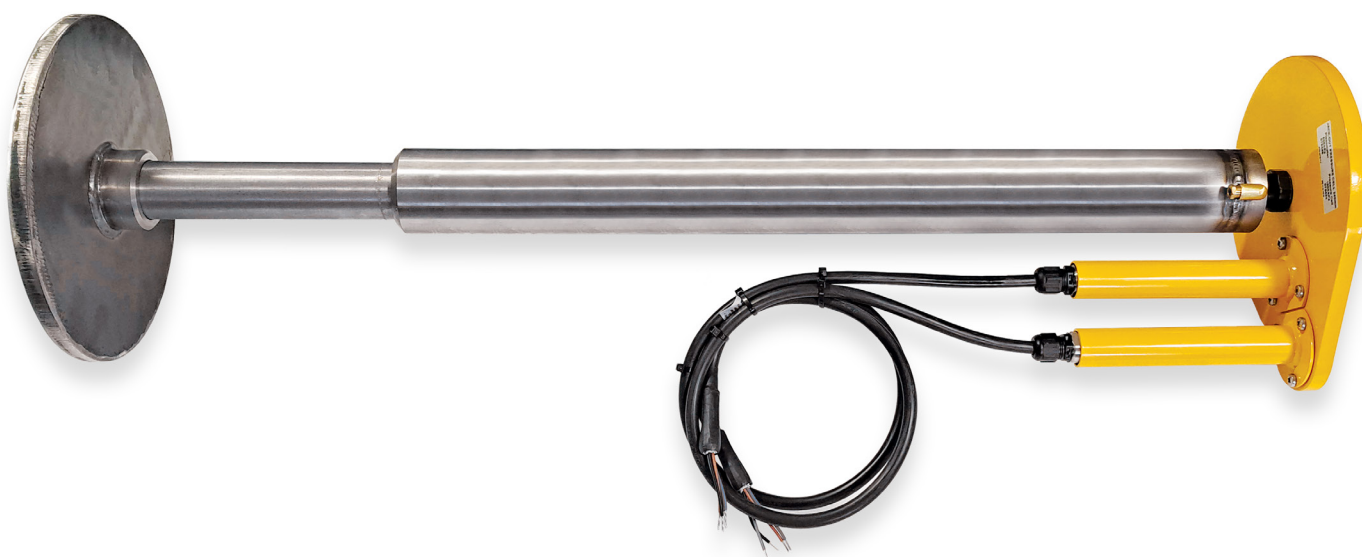
Dataloggers

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

Cell/Piezometer

Standard ranges (kPa)	300 500 700 1000 1500 2000 3000 4000
Frequency range	1700 – 2800Hz
Resolution ¹	0.025% FS (minimum)
Accuracy ²	±0.1% FS
Linearity ²	±0.1% FS
Temperature range	-20°C to +80°C
Over-range capacity	150% FS
Excitation method	Pluck or sweep

Thermistor

Type	NTC 3K Ω
Accuracy	0.5°C
Resolution ¹	0.1°C

Weights, Dimensions and Materials

Type	Single active face – 240mm	Single active face – 345mm
Active face diameter	176mm	276mm
Length excluding cable	670mm	765mm
Weight excluding cable	5.4Kg	9.1Kg
Material	Powder coated steel	Powder coated steel

Cable

Type	4 core Armoured PVC outer sheath
Diameter	13mm
Weight	336g

Ram

Trench Width mm	1000	1200
Overall retracted length mm	850	1050
Maximum extended length mm	1250	1450
Ram o.d. mm	76	76
Reaction plate diameter mm	300	300
Weight kg	28	30

¹ Dependent on readout ² Of the pressure transducer

Ordering information

Vibrating Wire Jack Out Pressure Cell - 240mm

	Cell	Piezometer
P8-1.1-3	300kPa pressure range with thermistor	n/a
P8-1.1-5	500kPa pressure range with thermistor	n/a
P8-1.1-10	1000kPa pressure range with thermistor	n/a
P8-1.1-20	2000kPa pressure range with thermistor	n/a
P8-1.1-40	4000kPa pressure range with thermistor	n/a
P8-1.1-3-3	300kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.1-5-3	500kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.1-10-3	1000kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.1-20-3	2000kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.1-40-3	4000kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.1-5-5	500kPa pressure range with thermistor	500kPa pressure range with thermistor
P8-1.1-10-5	1000kPa pressure range with thermistor	500kPa pressure range with thermistor
P8-1.1-20-5	2000kPa pressure range with thermistor	500kPa pressure range with thermistor
P8-1.1-40-5	4000kPa pressure range with thermistor	500kPa pressure range with thermistor
P8-1.1-10-10	1000kPa pressure range with thermistor	1000kPa pressure range with thermistor
P8-1.1-20-10	2000kPa pressure range with thermistor	1000kPa pressure range with thermistor
P8-1.1-40-10	4000kPa pressure range with thermistor	1000kPa pressure range with thermistor

Ordering information

Vibrating Wire Jack Out Pressure Cell - 345mm

	Cell	Piezometer
P8-1.2-3	300kPa pressure range with thermistor	n/a
P8-1.2-5	500kPa pressure range with thermistor	n/a
P8-1.2-10	1000kPa pressure range with thermistor	n/a
P8-1.2-20	2000kPa pressure range with thermistor	n/a
P8-1.2-40	4000kPa pressure range with thermistor	n/a
P8-1.2-3-3	300kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.2-5-3	500kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.2-10-3	1000kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.2-20-3	2000kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.2-40-3	4000kPa pressure range with thermistor	300kPa pressure range with thermistor
P8-1.2-5-5	500kPa pressure range with thermistor	500kPa pressure range with thermistor
P8-1.2-10-5	1000kPa pressure range with thermistor	500kPa pressure range with thermistor
P8-1.2-20-5	2000kPa pressure range with thermistor	500kPa pressure range with thermistor
P8-1.2-40-5	4000kPa pressure range with thermistor	500kPa pressure range with thermistor
P8-1.2-10-10	1000kPa pressure range with thermistor	1000kPa pressure range with thermistor
P8-1.2-20-10	2000kPa pressure range with thermistor	1000kPa pressure range with thermistor
P8-1.2-40-10	4000kPa pressure range with thermistor	1000kPa pressure range with thermistor

Connecting Cable and Fittings

CA-1.1-4-A	Armoured cable, 4 cores, 1.5mm ² , PVC jacket, for instruments with thermistors, 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.
W6-6.1	Nylon ties; priced each, 150mm x 3.5mm, pack of 100No.
ST1-3.5	Nylon ties; priced each, 370mm x 4.7mm, pack of 100No.

Rams and Auxiliary Equipment

P8-3.1	Ram 1000mm long
P8-3.2	Ram 1200mm long
W6-2.10	Hydraulic tubing 1/4"Ø in 30m coils
W6-3.7	Straight coupling
W6-3.20	Male quick release coupling
E10-3.17	Hydraulic hand pump
W6-3.5	Spare nut and olive for coupling

Manual

MAN - 273	Vibrating Wire Jack Out Pressure Cell
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INSTRUMENTS



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