



Pendulums Model 7220-SG-S910 Series

FEATURES

- Simple and reliable in long-term monitoring.
- Measurements can be taken at different locations.
- Measuring range of ± 75 mm in both X-Y axes, extendable to 500 mm.
- Movements can be monitored either by manual or automatic readings.

General

Pendulums are designed to monitor the horizontal movements in dams, dam foundations, abutments and to determine the structural and foundation movements of bridge piers towers and tall buildings.

The direct pendulum consists of a steel wire anchored at the upper end to the structure, with a tensioning weight suspended at the lower end which is free to move in a tank filled by a damping fluid.

The inverted pendulum uses an identical wire anchored in firm soil beneath the structure, with a floating unit at its upper end. The float is free to move in a water tank, tensioning the wire and keeping it vertical.

The Sisgeo floating unit allows installation of two or more inverted pendulums in the same vertical shaft, having their anchors grouted at different depths in a single borehole.



Component Descriptions

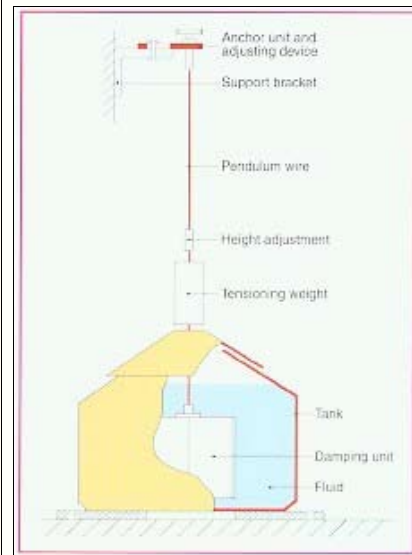
S911 DIRECT PENDULUM

Tank consists of a stainless steel cylindrical tank 410 mm diameter and 390 mm height. It is filled by fluid for damping the wire oscillations and covered by a stainless steel conic cap fixed to the wire. Damping unit is suspended to the wire and immersed in the fluid tank for damping the wire oscillations. Tank is supplied without liquid.

Tensioning weight is a 30 kg stainless steel tube filled with lead, clamped to the lower part of the wire. A height adjustment allows to set the vertical position of the damping unit in the range of 100 mm.

Anchor unit and adjusting device consists of a zinc-plated saddle with two fixing nuts which has a stainless steel setting unit fitted to the upper end of the wire to adjust the tension. The saddle is fitted to a zinc-plated support bracket anchored to the structure.

Pendulum wire is supplied in lengths required with fitting parts for anchor and damping unit connections. It is a stainless steel single wire 2.0 mm diameter.



S912 INVERTED PENDULUM

Floating unit consists of a stainless steel annular chamber 615 mm diameter and 495 mm height with an internal stainless steel float. The float is fixed to the pendulum wire by an adjustable tie bar, 100 mm vertical

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FOR FURTHER INFORMATION

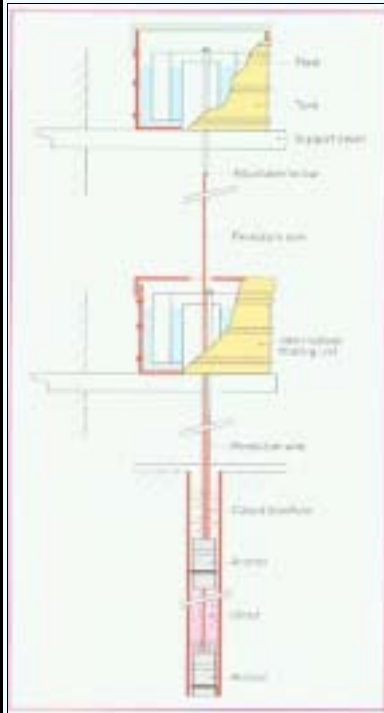
environmental systems & services | 8 River Street, Richmond VIC 3121 Australia
T + 61 3 8420 8999 | F + 61 3 8420 8900 | geotechnical@esands.com | www.geosystems.com.au

stroke. Standard float 465 mm diameter allows ± 75 mm movement in any direction. Tank is usually filled by water and has a stainless steel top cover. Externally, a tube allows to check water level inside the tank and re-filling. Sisgeo floating unit has been designed to allow the installation of one or more intermediate inverted pendulum lines on the same vertical. Cover of the intermediate floating unit has a centre hole 170 mm diameter for the crossing of the other pendulum wire. The floating units are usually positioned on two steel support beams anchored to the structure.

Anchor for inverted pendulums consists of a steel tube either filled with lead or with concrete on-site prior installation. It has centralising pins for installation in cased boreholes. Standard anchor has a clamping unit for the pendulum wire and two eye bolts for the installation in cased boreholes. The anchor for the intermediate pendulum is a special unit which allows to the other pendulum wire to go through. Installation must be made by its proper installation tool. Single anchor is grouted in a cased borehole having a minimum diameter of 150 mm.

Installation of two pendulum anchors need a 300 mm diameter cased borehole and stainless steel setting unit fitted to the upper end of the wire to adjust the tension. The saddle is fitted to a zinc-plated support bracket anchored to the structure.

Pendulum wire is supplied in lengths required with fitting parts for anchor and float connections. It is a stainless steel single wire 2.0 mm diameter.



Readout Systems

Horizontal pendulum wire displacement can be detected by optical table reading 100 mm range in each X-Y horizontal direction, accuracy ± 0.05 mm. Table reading consists of a painted steel frame equipped with two microscopes mounted on two linear ball slides in the orthogonal directions. Measurements are carried out by a removable digital gauge. The gauge has zero set and 0.01 mm resolution.

Telecoordinometer performs continuous readings and transmit data to a remote data acquisition system for the automatic monitoring of the pendulum wire movements. Different types of telecoordinometer are available to suit the engineer requirements.

Due to on-going design improvements and reviews, we reserve the right to amend product and specifications without prior notice



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