

VW Rebar Strain Gauge

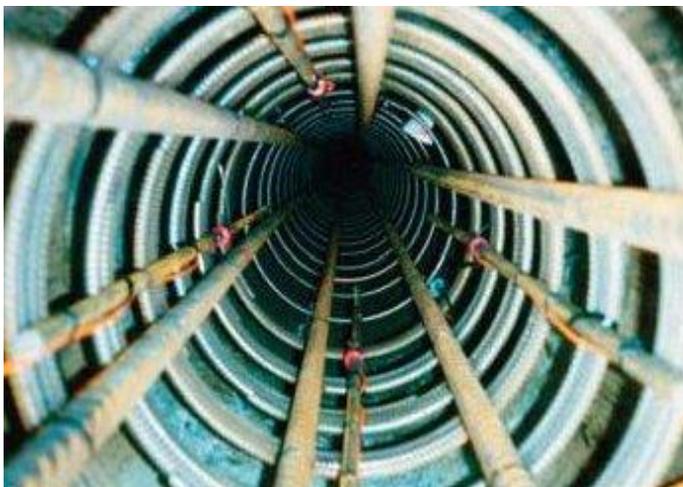
Strain gauges offer the ability to measure the effect of loads, settlement or other changes in a structure. They record strain, which is a dimensionless measure of deformation. Stress is related to strain by a material's properties and is predictable within a certain range of applied strain.

Strain gauges are useful for determining the effects of applied loads to a structure, such as the loading of post tension cables or removal of temporary supports. Piles of driven, cast or pre cast construction can also benefit from strain measurement as with sufficient strain gauges information such as the depth at which the load is transferred to the soil and the percentage of the load born as end bearing can be determined.

Geosense® VWS-4000 series vibrating wire Rebar Strain Meters (often known as 'sister bars') are designed to be embedded in concrete to measure strains due to imposed loads in mass concrete.

They comprise two lengths of ribbed rebar welded to a central gauge section. The central gauge section has a miniature stainless steel VW strain gauge, fitted along the longitudinal axis of the gauge. They are normally installed in pairs within the structure on either side of the neutral axis to separate bending moments from axial loads.

Four Sisters Bars are installed in the cage of a cast pile show below.



Features

- Reliable long-term performance
- Rugged, suitable for demanding environments
- High accuracy
- Insensitive to long cable lengths
- Direct concrete embedment
- Optional Thermistor

Applications

Measurement of stress and strain deformation in:

- Concrete Piles
- Tunnel Linings
- Mass concrete structures
- Diaphragm walls and barrettes

Technical Specifications

Models	VWS-4000, VWS-4001
Thermistor	3 kohms at 25°C
Over-Range	+20%
Resolution	0.4 $\mu\epsilon$
Accuracy	$\pm 0.5\%$ FS
Non-Linearity	<0.75% FS
Operating Range	2500 $\mu\epsilon$
Cable	2 pair PUR outer sheath
Installation	Direct Embedment
Effective Gauge Length	50 mm (nominal)
Debonded Gauge Length	175 mm
Overall Length	1.39 m
Standard Diameter	16 mm
Coefficient of Thermal Expansion	12 ppm / °C

VW Rebar Strain Gauge

Installation

VWS-4000 strain meters are dual purpose, and depending upon installation will serve a different purpose.

Sister Bar

The VWS-4000 Sister Bar is installed by tying it alongside an existing length of rebar within the cage.

Rebar Strain Meter

The VWS-4001 Rebar Strain Meter is installed by welding it into the existing rebar cage at a location within the structure where loads can be accurately passed from the concrete into the gauge.

Specifications

- VWS-4000 vibrating wire strain gauges may be read by the VW-2106 or any vibrating wire readout device and may be readily connected with data loggers with vibrating wire interface modules.
- Vibrating wire strain gauges output a frequency signal and are therefore insensitive to resistance changes in connecting cables caused by contact resistance or leakage to ground.
- Cable may be readily and simply extended on site without special precautions. Gauges may be read up to 1000 metres away from their installed location without change in calibration.

Accessories and Customisation

To order VWS-4000 series strain gauges the following information should be specified:

- Cable length
- Rebar size
- Thermistor
- Lightning protection

The accessories below will speed installation and data collection:

- In-house calibration
- Readout units
- Terminal units



About PCTE

PCTE have over 30 years' experience in the measurement and testing of construction materials. PCTE can provide more than just the equipment, they can provide expert training. PCTE have a service centre in Sydney in which they can provide calibration, repairs and warranty repairs.

Other Equipment

PCTE supply three main ranges: NDT, Lab and Geotech Instrumentation.

NDT includes: Rebound Hammers, Covermeters, Ultrasonics, GPR, Corrosion Testing, Coating Testing and Foundation Testing

Lab includes equipment for: Concrete, Cement, Aggregate, Soil, Asphalt and Metal

Geotech Instrumentation includes: Strain Gauges, Piezometers, Inclometers, Extensometers, Tiltmeters, Load Cells and Dataloggers