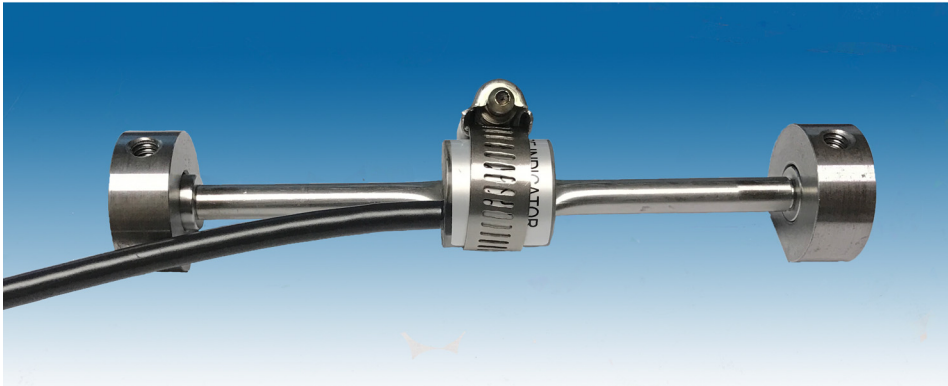


VW Arc-Weldable Strain Gauge



Installation on Steel

The arc-weldable strain gauge is supplied with two mounting blocks. The mounting blocks are attached to a spacer bar and welded to the structural member.

After the welds cool, the spacer bar is removed and the strain gauge is inserted in its place. The clip-on pickup sensor is attached to the gauge and is then connected to a readout. The gauge can be adjusted to measure tension, compression, or both.

Installation on Concrete

The strain gauge can also be used with groutable mounting blocks, which are anchored into holes drilled into the concrete structure.

Advantages

Removable Sensor: The coils used to excite and read the vibrating wire are separate from the gauge. This allows the sensor to be re-used on future projects or future phases of the same project.

Install on Steel or Concrete: Use the weldable mounting blocks for steel and the groutable mounting blocks for concrete.

Field Adjustable: The strain gauge can be adjusted so that most of its range is available to measure compression or tension, as required by the application.

Reliable Signal Transmission: The arc-weldable strain gauge provides a strong signal which can be transmitted reliably over long distances with properly shielded cable.

Accurate readings: All arc-weldable strain gauges are tested and provided with a batch factor to provide the user with the most accurate reading possible without the additional cost of individually calibrating the gauges.

Applications

Arc-weldable strain gauges are used to measure strain in steel. With the use of groutable anchors, the strain gauges can also be mounted to concrete surfaces. Typical applications include:

- Monitoring strain in structural members of buildings and bridges, during and after construction.
- Monitoring load in struts used to brace deep excavations.
- Measuring strain in tunnel linings and supports.
- Monitoring areas of concentrated stress in pipes.

Operation

The strain gauge operates on the principle that a tensioned wire, when plucked, vibrates at its resonant frequency. The square of this frequency is proportional to the strain in the wire.

The gauge is constructed so that a wire is held in tension between two mounting blocks that are welded to the structural member. Loading of the structural member changes the distance between the two mounting blocks and results in a change in the tension of the wire.

An electromagnet is used to pluck the wire and measure the frequency of vibration. A change in strain is the difference between the current reading and the initial reading multiplied by a gauge factor.

An electromagnet is used to pluck the wire and measure the frequency of vibration. Strain is then calculated by applying calibration factors to the frequency measurement.

ARC-WELDABLE STRAIN GAUGE**Strain Gauge**52641360

Strain gauge with thermistor. Anchors, clip-on pickup and signal cable are ordered separately.

Range: 3,000 microstrain. User can set tension to maximize range for the application.**Resolution:** 1 microstrain with VW Indicator.**Accuracy:** $\pm 0.5\%$ FS.**Thermal Coefficient:** 11ppm / °C.**Length:** 150 mm (5.875").**Operating Temperature:** -20°C to +80°C.**Temperature Accuracy:** $\pm 0.5^\circ\text{C}$ (at 0°C to 70°C).**ANCHORS****Weldable Anchors**52641320

Two mounting-blocks with set-screws. Used if welding strain gauge to steel structures.

Groutable Anchors52641325

Two mounting blocks with 3" long groutable anchors attached. Used to mount strain gauge to concrete.

INSTALLATION ACCESSORIES**Installation Kit**52641330

Kit includes one spacer rod, an allen wrench, and two spare set-screws.

PICKUP AND SIGNAL CABLE**VW Standard Clip-on Pickup** 52641110

Standard clip-on pickup includes 10 feet (3 m) of signal cable and a hose clamp.

VW Custom Length Clip-on Pickup 52641100

Custom clip-on pickup includes the pickup and a hose clamp. Signal cable must be ordered separately and will be installed at the factory.

Signal Cable50613824

Shielded cable with four 22-gauge tinned-copper conductors and flexible polyvinyl chloride (PVC) jacket.

Terminal Box for 6 sensors57711606**Terminal Box for 12 Sensors** 57711600**Terminal Box for 24 Sensors** 97711624

Provides terminals for signal cable from 6, 12, or 24 sensors. Sensors are selected by rotary switch. Dimensions of 6-sensor box are 240 x 190 x 120 mm (9.5 x 7.5 x 4.75"). Dimensions of 12 and 24-sensor boxes are 290 x 345 x 135 mm (11.5 x 13.5 x 5.25").

Universal Connector57705001

For terminating a single cable. Connector not required when sensors are connected to a terminal box, a data logger, or to the terminal posts on the VW Data Recorder.

READOUT**VW Data Recorder**52613500**Jumper Cable for Terminal Box** . . .52613557The VW Data Recorder displays VW sensor readings in Hz or $\text{Hz}^2/1000$ and thermistor data in degrees C. It can also record the readings. See separate datasheet.

The jumper cable is required when the VW Data Recorder is to be connected to a terminal box or to a connector attached to signal cable.

DATA LOGGERS**VW MiniLogger**52613310

The VW MiniLogger is a compact, low-cost data logger for one sensor. See separate datasheet.

4-Channel V-Logger52615140**8-Channel V-Logger**52615180**Campbell Scientific Data Loggers**

Campbell data loggers with a VW interface and the AM16/32 multiplexer can accommodate 16 sensors with temperature readings or 32 sensors without temperature readings.