

200 mm VW Displacement Sensor 52636499

Copyright ©2006 Slope Indicator Company. All Rights Reserved.

This equipment should be installed, maintained, and operated by technically qualified personnel. Any errors or omissions in data, or the interpretation of data, are not the responsibility of Slope Indicator Company. The information herein is subject to change without notification.

This document contains information that is proprietary to Slope Indicator company and is subject to return upon request. It is transmitted for the sole purpose of aiding the transaction of business between Slope Indicator Company and the recipient. All information, data, designs, and drawings contained herein are proprietary to and the property of Slope Indicator Company, and may not be reproduced or copied in any form, by photocopy or any other means, including disclosure to outside parties, directly or indirectly, without permission in writing from Slope Indicator Company.

SLOPE INDICATOR

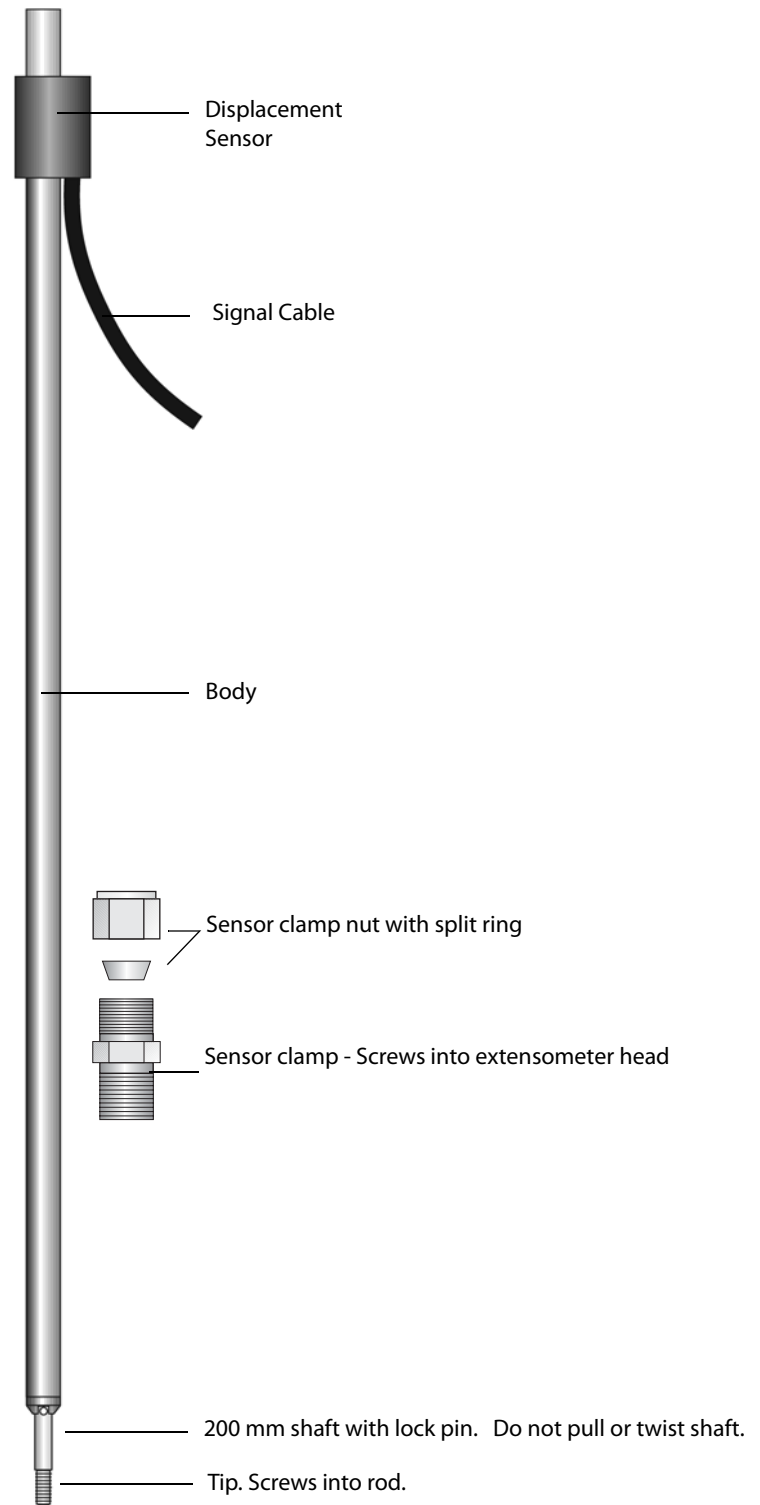
12123 Harbour Reach Drive
Mukilteo, Washington, USA, 98275
Tel: 425-493-6200 Fax: 425-493-6250
E-mail: solutions@slope.com
Website: www.slopeindicator.com

Contents

Introduction.....	1
Installation	2
Taking Readings.....	3
Data Reduction.....	5

Introduction

Components

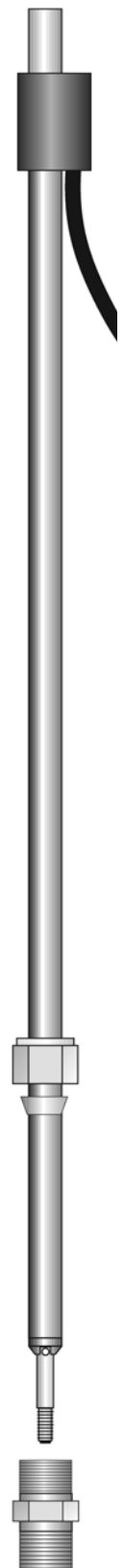
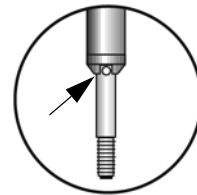


Installation

Overview

First install the extensometer anchors, rods, and head, and finish grouting the borehole. Then:

1. Install sensor clamp. It may already be installed.
2. Slide sensor clamp nut and split ring onto sensor body.
3. Check tip of sensor. Lock pin should be in the slot, as shown in the drawing.
4. Insert sensor into sensor clamp.
5. Screw sensor into top of rod.
Do not over tighten.
6. Screw sensor clamp nut down part way. Do not tighten.
7. Adjust starting position of sensor. You may find it convenient to mark the body of the sensor where it exits the sensor clamp. Then pull the sensor outwards to extend the shaft. Use the mark on the body to measure how far you have extended the shaft.
8. Tighten the sensor clamp nut. Do not over-tighten.



Taking Readings

Test Readings

- Check that the sensors are working before you install them. It is not necessary to extend the shaft or test the full range of the sensor. Just check that the sensor returns a suitable frequency reading in its closed position. (Refer to the calibration sheet for a zero reading).
- Take readings immediately after sensors are installed to check that they are still working.

Initial Readings

1. You should take a set of initial readings to serve as the baseline readings. All subsequent readings will be compared to the baseline readings, so these initial readings are especially important.
2. Take some measures to prevent heating by the direct sunlight. Then, when the sensors have cooled to the ambient air temperature, obtain the initial readings.
3. Note the time, temperature, weather conditions. These should be as close to typical as possible.

Using Portable Readouts

These instructions tell how to read Vibrating Wire (VW) sensors with Slope Indicator's portable readouts. Instructions for reading VW sensors with a Campbell Scientific loggers can be found in the support - technotes section of at www.slopeindicator.com.

Reading with the VW Data Recorder

1. Connect signal cable to the data recorder:

Binding Posts	Wire Colors	
VW	Orange	Red
VW	White & Orange	Black
TEMP	Blue	White
TEMP	White & Blue	Green
SHIELD	Shield	Shield

2. Choose Hz + Thermistor.
3. Select the 1400-3500 Hz range.
4. The recorder displays sensor reading in Hz and a temperature reading in degrees C.

**Reading with the
VWP Indicator**

1. Connect signal cable to the VWP indicator as shown in the table below.
2. Select the 1.4-3.50 kHz range with the Sweep key.
3. Select Hz with the Data key.
4. Read the RTD: Select °C with the Data key. Note that the VWP Indicator cannot read thermistors.

Standard Jumper 52611950

Connect alligator clips as shown:

Clips	Wire Colors		Function
Red	Orange	Red	VW
Red	White & Orange	Black	VW
Black	Blue	White	TEMP
Black	White & Blue	Green	TEMP

Data Reduction

- Find the Calibration Factors**
1. Use the sensor serial number to match the sensor with its calibration sheet. Each sensor has unique calibration factors.
 2. Find the A, B, and C coefficients for this sensor.
- Convert Hz Readings to Engineering Units**
1. Apply the coefficients as follows:
$$\text{Reading}_{\text{Engineering Units}} = AF^2 + BF + C$$
where F is the reading in Hz.
 2. The resulting value is the position of the sensor shaft. Values increase as the shaft extends. The sensor is typically calibrated in mm.
- Calculate Changes**
- Subtract the initial value from the current value. Values increase as the shaft extends.
- Temperature**
- We recommend that you record temperature. Temperature data can help you understand movement due to temperature changes. Currently, we do not apply a temperature correction to displacement sensor readings.