Vibrating Wire Piezometer

The RST Vibrating Wire Piezometer provides excellent long-term accuracy, stability of readings, and reliability under demanding geotechnical conditions. Vibrating Wire Piezometers are the electrical piezometers of choice as the frequency output of VW devices is immune to external electrical noise and able to tolerate wet wiring common in geotechnical applications.

Vibrating Wire Piezometers contain a high tensile steel wire with a fixed anchor at one end and are attached to a diaphragm in contact with water pressure at the other end. The wire is electrically plucked, with the resonant frequency of vibration proportional to the tension in the wire. This frequency induces an alternating current in a coil which is detected by the readout unit, such as the VW2106 Vibrating Wire Readout (see separate brochure), and can then be converted to a pressure. The frequency output is immune to external electrical noise.

The frequency signal is exceptionally immune from cable effects, including length (to several kilometers), splicing, resistance, noise pickup, and moisture. The vibrating wire coil circuit contains no semiconductor devices and has built-in ionized gas discharge device protection against transient damage. As a result, the vibrating wire piezometer provides excellent reliability in typical geotechnical situations – i.e. long outdoor cables buried in saturated soil.

The piezometer is equipped with a standard sintered stainless steel porous filter to prevent soil particles from contacting the diaphragm. A thermostor is built into the piezometer body to permit temperature measurement and temperature compensation of the piezometer. Standard construction is all stainless steel. RST vibrating wire piezometers are shipped with extremely tough polyurethane-jacketed foil-shielded cable for maximum endurance in field conditions.

> APPLICATIONS

- Slope stability investigations.
- Monitoring well and standpipe water levels.
- Assessing performance and investigating stability of earth fill dams and embankments.
- Monitoring pressures behind retaining walls and diaphragm walls.
- Monitoring pore pressures during fill or excavation.
- Monitoring pore pressure in land reclamation applications.

> FEATURES

- Field proven reliability and accuracy.
- Integral lightning protection.
- Signal transmission of several kilometer.
- Data logger compatible.
- High Accuracy - IE a low pressure vented model will measure water level changes as small as 0.5 mm (0.02 in.).
- Will tolerate wet wiring common in geotechnical applications.
- Thermistor for temperature measurement is standard.
- Hermetically sealed, stainless steel construction.
- Negligible displacement of pore water during the measurement process.
- Heavy case to minimize reading errors caused by overburden pressure.
- Cable lengths may be changed without affecting the calibration.

> BENEFITS

- ✓ Increase Safety
- ✓ High Accuracy
## SPECIFICATIONS + ORDERING

### VW2100-DPC
- **Drive point model with CPT thread**
- Pressure range: 0.07, 0.175, 0.35, 0.7, 1.0, 2.0, 3.0, 5.0, 7.5 MPa
- Diameter: 33.4 mm Ø (body) X 508 mm

### VW2100-DPEW
- **Drive point model with EW thread**
- Pressure range: 0.07, 0.175, 0.35, 0.7, 1.0, 2.0, 3.0, 5.0, 7.5 MPa
- Diameter: 34.6 mm Ø (body) X 304.8 mm

### VW2100-L
- **Low Pressure, unvented**
- Pressure range: 0.7, 175 kPa
- Diameter: 25 mm Ø X 133 mm

### VW2100-LV
- **Low Pressure vented**
- Pressure range: 70, 175 kPa
- Diameter: 25 mm Ø X 133 mm

### VW2100-M
- **Miniature version – 17.5 mm diameter**
- Pressure range: 0.35, 0.7, 1.0, 2.0, 3.0 MPa
- Diameter: 17.5 mm X 133 mm

### VW2100-MM
- **Micro-miniature version – 11.1 mm diameter**
- Pressure range: 0.35, 0.7 MPa
- Diameter: 11.1 mm X 165 mm

### VW2190
- **Heavy duty piezometer with bladder for brine environment**
- Pressure range: 0.07, 0.175, 0.35, 0.7, 1.0, 2.0, 3.0, 5.0, 7.5 MPa
- Diameter: 42 mm Ø X 319 mm

### VW2191
- **Heavy duty piezometer with bladder for acidic environment with secondary corrosion protection**
- Pressure range: 0.07, 0.175, 0.35, 0.7, 1.0, 2.0, 3.0, 5.0, 7.5 MPa
- Diameter: 42 mm Ø X 319 mm

### VW2106
- Vibrating Wire Readout
- Data loggers
- Cable splice kits

### ELECTRICAL CABLE SPECS

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>EL380004</td>
<td>Two twisted pairs cable with polyurethane jacket</td>
</tr>
<tr>
<td>EL380004HDL</td>
<td>Two twisted pairs heavy duty cable with a thick polyurethane jacket for added protection</td>
</tr>
<tr>
<td>EL380004K</td>
<td>Two twisted pairs Kevlar® reinforced, non-stretch polyurethane jacketed cable for rigorous installations where the stretching of cable is a concern</td>
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### OPTIONAL EQUIPMENT

- VW2106 Vibrating Wire Readout
- Data loggers
- Cable splice kits

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Over range</td>
<td>2 x F.S.</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.025% F.S. minimum</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.1% F.S.</td>
</tr>
<tr>
<td>Linearity</td>
<td>&lt;0.5% F.S.</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-20 to 80°C (-4 to 176°F)</td>
</tr>
<tr>
<td>Diaphragm Displacement</td>
<td>&lt;0.001 cc at F.S.</td>
</tr>
<tr>
<td>Thermal Zero Shift</td>
<td>&lt;0.05% F.S./°C</td>
</tr>
<tr>
<td>Materials</td>
<td>Hermetically sealed stainless steel housing</td>
</tr>
<tr>
<td>Thermistor Type</td>
<td>NTC 3K Ohms @ 25°C</td>
</tr>
<tr>
<td>Thermistor Interchangeability</td>
<td>±0.2°C</td>
</tr>
<tr>
<td>Thermistor Resolution</td>
<td>0.1°C</td>
</tr>
<tr>
<td>Filter</td>
<td>50 micron sintered filter (High air entry alumina filter 1 Bar available)</td>
</tr>
</tbody>
</table>

**STOCK LENGTHS!**

Available for all VW2100 ranges; contact RST for available lengths and quantities.

**Contact RST for Details**

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