



PRODUCT CATEGORY:  
PIEZOMETERS + TRANSDUCERS

## Vibrating Wire Piezometer

The RST Vibrating Wire Piezometer provides excellent long-term accuracy, repeatability, reading stability 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 or any Vibrating Wire type Data Loggers (see separate brochures), and can then be converted to a pressure measurement.

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 low air entry sintered stainless steel porous filter to prevent soil particles from contacting the diaphragm. A thermistor 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, tailings 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, accuracy and repeatability
- Integral lightning protection.
- Signal transmission of several kilometers.
- Data logger compatible.
- High Repeatability - i.e. a low pressure vented model will measure water level changes as small as 2mm, once corrected for barometric pressure and temperature effects.
- 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.
- Special piezometer model for highly corrosive environments is available (see separate brochure).
- Heavy case to minimize reading errors caused by overburden pressure.
- Cable lengths may be changed without affecting the calibration.
- Capable of reading negative pore pressures (suction), if a certain number of conditions are met (contact RST Instruments for details).

### > BENEFITS

- ✓ Increase Safety
- ✓ High Accuracy

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## SPECIFICATIONS + ORDERING

### SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Over range	1.5 X F.S.
Resolution	0.0025% F.S. minimum (readout dependent)
Repeatability	0.025% F.S.
Accuracy	0.1% F.S.
Linearity	<0.5% F.S. (+/- 0.1% F.S. optional)
Operating Temperature	-20 to 80°C (-4 to 176°F)
Diaphragm Displacement	<0.001 cc at F.S.
Thermal Zero Shift	<0.05% F.S./°C
Materials	Hermetically sealed stainless steel housing
Thermistor Type	NTC 3K Ohms @ 25°C
Thermistor Interchangeability	±0.2°C
Thermistor Resolution	0.1°C
Filter	50 micron sintered filter. (High air entry alumina filter 1 Bar available)

### ELECTRICAL CABLE SPECS

PART #	DESCRIPTION
EL380004	Two twisted pairs cable with polyurethane jacket
EL380004HDL	Two twisted pairs heavy duty cable with a thick polyurethane jacket mold for added protection
EL380004K	Two twisted pairs Kevlar® reinforced, non-stretch polyurethane jacketed cable for rigorous installations where the stretching of cable is a concern
Other types of cables, depending on site conditions and atmospheric reference requirements, are available upon request. These include vented, FEP, PVC, polyurethane, and armored varieties.	

### OPTIONAL EQUIPMENT

PART #	DESCRIPTION
VW2106	Vibrating wire readout
ELSPLICE4	Cable splice kits
PP0028-AW	Adapter for aw-male rod for drive-point piezometers
PP0028-1.25NPT	NPT adapter for 1-1/4" NPT pipe for drive-point piezometer
FIPS00125	1-1/4" steel pipe Sch40 x 5" threaded
FIPSC0125	1-1/4" steel pipe coupling
FIPSD125	1-1/4" steel drive shoe
Data loggers	



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

**STOCK LENGTHS!**  
Available for  
**IMMEDIATE DELIVERY**  
Contact RST for Details

### ORDERING

PART #	DESCRIPTION	PRESSURE RANGE	DIMENSION
VW2100	Standard model for general applications	0.35, 0.7, 1.0, 2.0, 3.0 MPa	19 mm Ø X 130 mm
VW2100-HD	Heavy duty piezometer for direct burial in fills and large dam embankments or for high pressure borehole installations	0.35, 0.7, 1.0, 2.0 3.0, 5.0, 7.5, 10, 20 MPa	25.4 mm Ø X 146 mm
VW2100-DPC	Drive point model with CPT thread	0.07, 0.17, 0.35, 0.7, 1.0, 2.0, 3.0, 5.0, 7.5 MPa	33.4 mm Ø X 508 mm
VW2100-DPEW	Drive point model with EW thread	0.07, 0.17, 0.35, 0.7, 1.0, 2.0, 3.0, 5.0, 7.5 MPa	34.6 mm Ø (body) X 304.8 mm
VW2100-L	Low Pressure, unvented	70, 170 kPa	25 mm Ø X 133 mm
VW2100-LV	Low Pressure vented	70, 170 kPa	25 mm Ø X 133 mm
VW2100-M	Miniature version – 17.5 mm diameter	0.35, 0.7, 1.0, 2.0, 3.0 MPa	17.5 mm Ø X 133 mm
VW2100-MM	Micro-miniature version – 11.1 mm diameter	0.35, 0.7 MPa	11.1 mm Ø X 165 mm
VW2190	Heavy duty piezometer with bladder for brine environment	See separate brochure for details.	
VW2191	Heavy duty piezometer with bladder for acidic environment with secondary corrosion protection	See separate brochure for details.	