



Piezometers installation specifications



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WARNINGS



This instrument must be utilized only for the application it has been designed for, OTR declines all responsibility for any improper use.



Do not let the instrument fall into the hole quickly.



Do not put the instrument in flammable liquids or potentially explosive gases.



Do not use the instrument in water where an electric dissipation is in progress.



Use protective gloves.

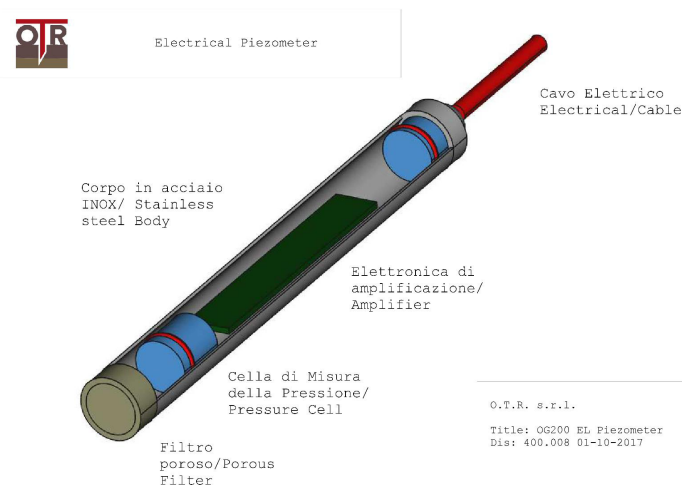
Furthermore

- Do not open the instrument, contact the manufacturer for checks and repairs;
- Keep out of reach of children;
- Do not connect the instrument to the readout unit with wet hands;
- Clean the instrument and its cable with alcohol or water, do not use acetone or aggressive liquids for plastics or labels;
- Use surge arresters for installations with unprotected cables longer than 30 meters.

Installation

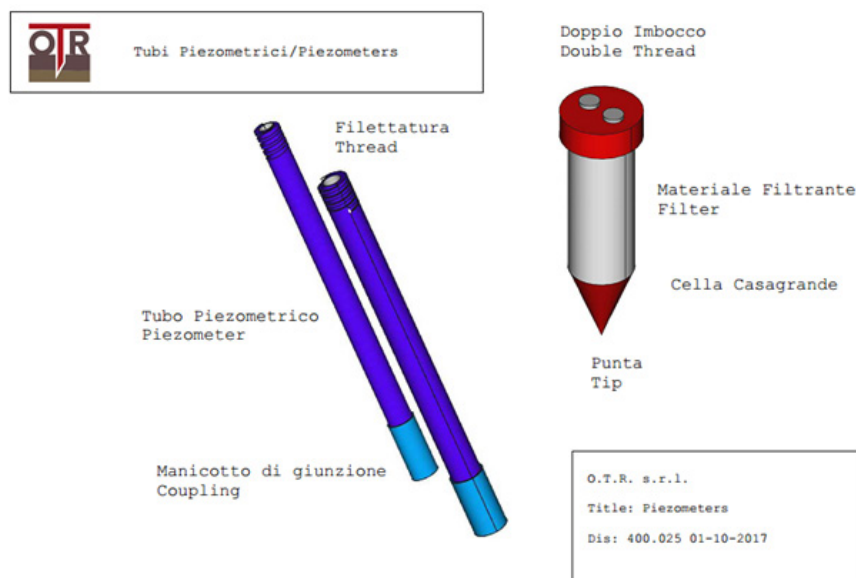
Installation Electric Piezometers (4-20 mA, Vibrating Wire)

- a) Place the piezometer in a cloth bag surrounding it with saturated fine monogranular silica sand. Place it in a container filled with de-aerated water, taking care that the instrument remains in the water for a few hours.
- b) Take a test reading and write it in the appropriate installation form (the form must contain all the data of the borehole and the piezometer).
- c) Check the deepness of the hole with a sounder.
- d) Lay a 0.5 m thick layer of clean sand (1 : 4 mm).
- e) Check the roof elevation of the sand layer with a sounder.
- f) Put the piezometer inside his shield and drop it till the end with his cable
- g) Take the control readout (sign it in the dedicated sheet like we have sayed in b point)
- h) Put in and round the piezometer clean sand (0,5m), retreating the coating column without rotation, if the coating is present, in this case you must also check that the piezometer does not rise with the coating with the help of the sounder.
- i) Lay the upper waterproof cap consisting of pre-packaged bentonite pellets in layers of ~ 20 cm alternating with gravel (4-5 cm), for a total thickness of ~ 1 meter, compacting if possible the whole with an annular pestle placed around the control cable. Perform control measurements by marking them on the appropriate form.
- j) Seal the hole with a mixture of cement and bentonite up to the hole mouth (the mixture will be made of 100 parts of water, 50 parts of pozzolanic cement or similar, 5 parts of bentonite.
- k) When sealing is complete, take a control reading and mark it on the appropriate form.
- l) Lay the well and insert the cable with the terminals well protected.



Casagrande cell's installation

- a) Check the deepness of the hole with a sounder.
- b) Lay a 0.5 m thick layer of clean sand (1 : 4 mm).
- c) Check the roof elevation of the sand layer with a sounder.
- d) Descend the casagrande cell to height by assembling the pipes (pipe sections have known length). It is recommended to use Teflon tape or glue / PVC welding adhesive to seal all joints.
- e) Place clean sand around and above (0.5m) the cell, gradually withdrawing the column of lining without rotation, if the lining is present, in this case you must also check that the cell does not rise with the lining with the help of the sounder.
- f) Lay the upper waterproof cap consisting of pre-packaged bentonite pellets in layers of ~20 cm alternating with gravel (4-5 cm), for a total thickness of ~1 meter, compacting if possible with an annular pestle placed around the control cable.
- g) Seal the hole with a mixture of cement and bentonite up to the mouth of the hole (the mixture will consist of 100 parts water, 50 parts pozzolanic cement or similar, 5 parts bentonite).
- h) When sealing is complete, take a control reading and mark it on the appropriate form.
- i) Lay the well and insert the protective caps if required.



Ceramic filter saturation

Prepare the following materials:

- o A bucket full of water;
- o A small flat screwdriver;
- o A metal pot and field stove;
- o The bag for laying the electric piezometer;

Proceed in the following way:

- (1) Prepare the saturation bag of the electric piezometer with $\frac{1}{2}$ of the sand content inside;
- (2) Close the bag and immerse it in the bucket of (cold) water;
- (3) Dismantle the stainless steel filter holder with the filter stuck inside from the piezometer;
- (4) Place the electric piezometer without filter holder in the bucket of (cold) water;
- (5) Remove the sealing Oring with a flat screwdriver and set it aside;
- (6) Place the filter holder and filter in a small pot with enough water to cover it;
- (7) Bring the pot to a boil with a camp stove;
- (8) Wait 10-20 minutes from boiling;
- (9) Submerge the saucepan in the bucket of water, preventing the filter holder/filter from coming into contact with air;

The following steps must be performed with the piezometer immersed in the bucket

- (10) Reassemble the Oring while immersed in the bucket after the piezometer has cooled down;
- (11) Reassemble the filter holder on the electric piezometer;
- (12) Insert the electric piezometer into the bag and fill the bag completely with sand;
- (13) Leave the bag with the electric piezometer inside in the bucket until it is laid (avoid exposing it to air for too long to maintain saturation).



Documentazione al committente

Documentation shall include:

- The stratigraphy of the borehole in the 10 feet straddling the piezometer;
- Type serial number and calibration certificate of the piezometer installed (if electric or vibrating string);
- The model and characteristics of the tubes and of the casagrande cell (if casagrande);
- The control readings and the first readings until delivery.

