

R100 Cone De-Airer



Description

Cones that have been carried out with pore water pressure measurement, are provided with a pressure sensor inside their cone body. This very accurate sensor is connected to the outside by a small canal and a filter.

The ambient pore water pressure can only be measured with sufficient sensitivity and accuracy, as the space between filter and sensor is completely filled with an incompressible fluid.

If not, two negative phenomena occur:

Firstly - If an air bubble is left in the system, this air is compressed when the pore water pressure increases. As a result, the pore water penetrates into the filter and the filter becomes clogged. A dirty and clogged filter is not able to pass through small variations of pore water pressure. So the pore water measurement will be poor and even unusable.

Secondly - An air bubble in the system between filter and sensor acts like a damper. Because the air bubble is not incompressible, short-term pressure differences will be damped. At the graph this is directly recognisable to the rounded maxima of the pore water pressure line.

The working principle of the Vacuum Device is to gain a very high vacuum in order to suck any air bubble out of the interior of the cone.

For this purpose, the inlet of the pore water system has to be immersed completely. By alternating vacuum and normal pressure a few times, every spot between the water filter and the pressure sensor will be completely filled with oil.

In order to prevent the oil from spilling from the cone after deaerating, the filter must be sealed off. This is done by using a rubber. At the start of a CPT when the cone is hitting the soil, the rubber is automatically pulled off the cone, thereby clearing the filter. Depending on soil conditions and speed of cone retrieving, oil can be spilled from the filter when the cone is taken above the ground. This means that the above procedure must be repeated for the next CPT.

Specifications

- Supply : 220 – 240 Vac, 50 – 60 Hz
- Operational temperature :
from 10 to 50°C
- End pressure vacuum pump : 2 mbar
- End pressure vacuum vessel : 4 mbar
- Dimensions : 435 x 325 x 745 mm
- Weight : 18 kg
- Noise level : about 59 dB(A)