The PROBEX borehole dilatometer (rock pressuremeter) is a radially expandable borehole probe mainly used to determine in situ the modulus of deformation of soft and hard rocks.

### Description

The dilatometer test is a loading test run inside a borehole with a radially expandable cylindrical probe. It is used to determine in situ the deformability of rock and the creep properties of very soft rock.

The PROBEX determines the deformations by measuring the total volume change of the probe. This method is the same well-proven method used with the pressuremeter. It provides a mean modulus value of a large volume of rock, contrary to the use of callipered probes which can be affected by local heterogeneities. The volume changes of the probe are measured by monitoring the displacement of a piston. This configuration eliminates the parasitic expansion of the tubing and pumping system.

The PROBEX consists of:

- An inflatable membrane mounted on a steel core
- A hydraulic module comprising a dual piston and cylinder assembly, to inflate and deflate the membrane
- A measuring module containing a linear transducer, which monitors the injected volume
- The hydraulic and electrical lead lines
- A hydraulic hand pump and pressure gauge
- A digital readout
- A pressure transducer

### Key Features

- May be used in deep borehole
- Test in “N” size boreholes
- Easy to operate
- Very high capacity

### Applications

- Deformations estimation of tunnel linings, concrete dam foundations, and bridge supports
- Settlement and end bearing capacity estimation of deep foundations like caissons
- P-Y curves for lateral deflection analysis of drilled shaft

www.telemac.fr
PROBEX - Rock Pressuremeter / Dilatometer

Specifications

PROBE

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum pressure</td>
<td>30 000 kPa</td>
</tr>
<tr>
<td>Diameter</td>
<td></td>
</tr>
<tr>
<td>Minimum (deflated)</td>
<td>73.7 mm</td>
</tr>
<tr>
<td>Maximum (inflated)</td>
<td>85.5 mm</td>
</tr>
<tr>
<td>Effective length</td>
<td>460 mm</td>
</tr>
<tr>
<td>Probe upper threads</td>
<td>BW Casing and NQ rod female</td>
</tr>
</tbody>
</table>

READOUT – PROBOX

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Function</td>
<td>Volume and pressure indicator</td>
</tr>
<tr>
<td>User interface</td>
<td>Keyboard and graphical LCD, 64 x 128 pixels with backlight</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Rechargeable battery pack</td>
</tr>
<tr>
<td>Resolution</td>
<td>Diametrical change 0.001 mm (0.05 cc)</td>
</tr>
<tr>
<td></td>
<td>Pressure 0.25 % F.S.</td>
</tr>
<tr>
<td>Logging capacity</td>
<td>Up to 20 000 readings</td>
</tr>
<tr>
<td>Communication interface</td>
<td>Serial port (USB adapter included)</td>
</tr>
<tr>
<td>Power supply interface</td>
<td>Universal AC wall plug with US/Euro adapter + adapter cable for car (lighter) and for external battery</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-5 to +60 deg. C</td>
</tr>
<tr>
<td>Autonomy</td>
<td>&gt; 8 hours</td>
</tr>
<tr>
<td>Battery</td>
<td>12 V 2.3 A, rechargeable</td>
</tr>
</tbody>
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Test & Interpretation:

The leads are threaded inside a B size casing or equivalent that is used to lower the probe to test depth. The tests are stress controlled. Increments of pressure are applied in stages using the hand pump. The compressibility of the probe is determined by calibration tests run in a thick-wall cylinder. The method used to interpret the data is the same one used to reduce pressuremeter data. It is based on Lame’s equations and yields a mean modulus of deformation for the rock mass tested.

Ordering Information

<table>
<thead>
<tr>
<th>Please specify:</th>
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<tbody>
<tr>
<td>• Cable length</td>
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<tr>
<td>• Tubing length</td>
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</table>

Optional Accessories

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>• Membranes</td>
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Telemac SAS reserves the right to make any changes in the specifications without prior notice