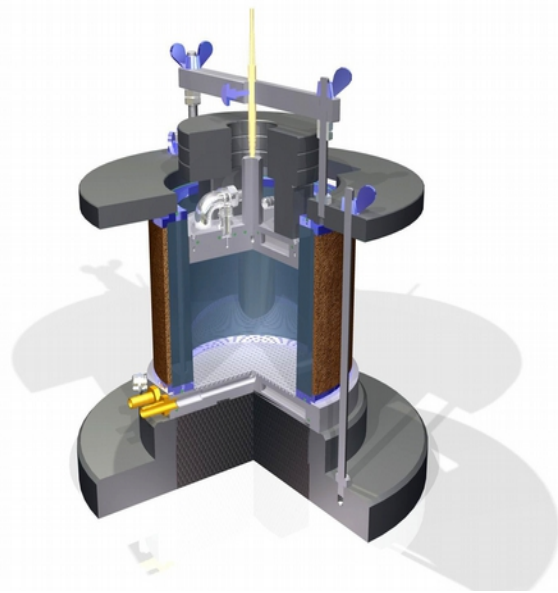


## Soil Freeze / Thaw Chamber

### for soil tests according to the Swiss Standard SN 670 321a (2001)

The use of various building materials is particularly important in road construction. For a long service life of traffic routes it is necessary that the road surface and substructure have the same load bearing capacity. The bearing layers are exposed to large temperature fluctuations and thus also to frost. The assessment of the construction materials used with regards to their frosting properties can be carried out by means of the frost-lifting test according to the Swiss standard SN 670 321a (2001).

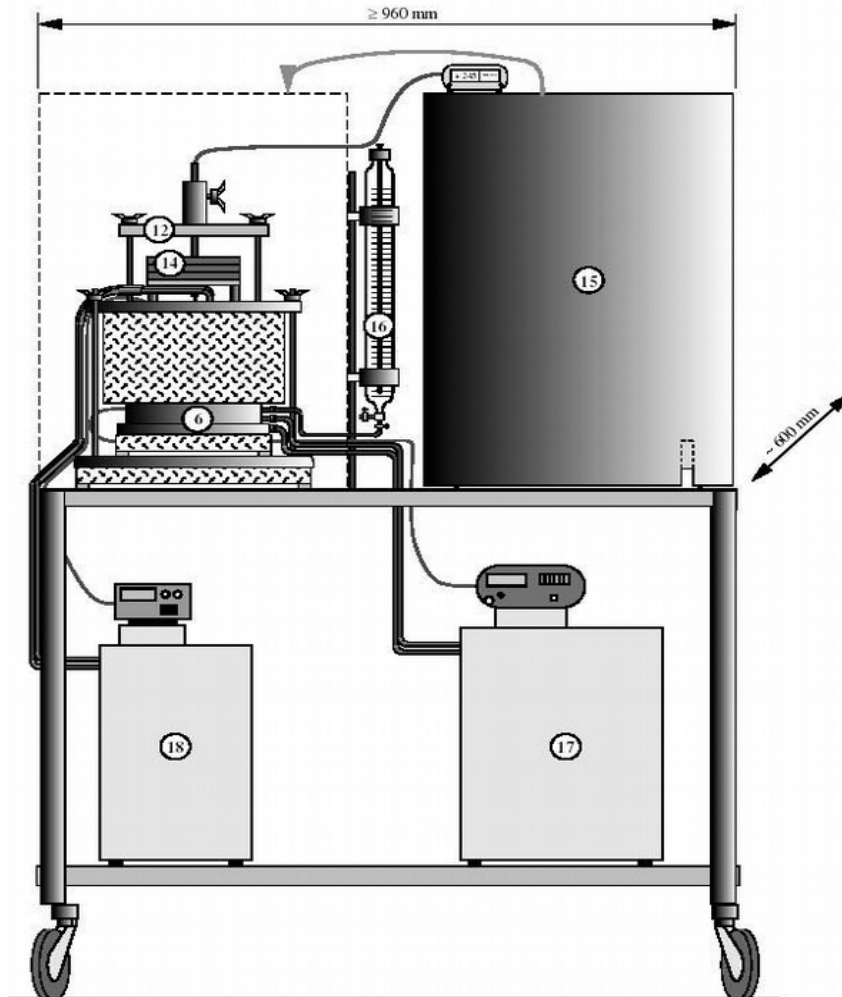
Before starting the test, the optimal water content of the soil sample is set. The simple 5-day test includes a complete freeze-thaw cycle with realistic temperature gradients. The sample container is constructed of an insulating material, so that a thermal bridge formation is prevented. The uplift is determined continuously and with micrometer accuracy by means of a high precision LVDT gauge. In addition, the temperatures are recorded on the ground and on the surface of the soil sample.



The purpose of the investigation is to determine:

- the maximum of expansion during freezing
- lifting coefficient
- the decrease in load bearing capacity after thawing (CBR-Wert = "California Bearing Ratio").

A digital precision measuring probe (LVDT sensor) is used as a displacement transducer. As an absolute measuring means, the LVDT sensor also supplies e.g. after a power failure always the correct measured value.



Picture of complete equipment taken from SN 670 321a.

Schleibinger supplies not only the ground-freeze-thaw cell for your experiment, but the complete experimental set-up as follows (positions according to the Swiss standard indicated in brackets):

- CBR freeze / thaw cell (the outer size is 220 mm instead of 210 mm as described in the standard) (item 1...7)
- cover plate (item 9)
- Thermometers for both temperature controlled slabs for recording the temperature
- Thermometer integrated in cooling device
- insulation plate (item 11)

- holder for the LVDT sensor (item 12)
- Compaction weights (item 14)
- insulating housing (item 15)
- Mariotte bottle (item 16)
- 2 cooling units with pumps (item 17, 18)
- LVDT sensor with an accuracy better than 3  $\mu\text{m}$
- transport socket
- Data logger
- optional: table and CBR stamp

The data is recorded by an autonomous data logger. The data logger has a network interface (Ethernet) and can be directly integrated into your lab network. A current internet browser like Firefox, Chrome or Internet Explorer can be used. If no network is available, the data logger can be connected directly to the computer via a network cable.

## Technical data:

Temperature range	-20...+100 °C
cooling capacity at -10°C	0.25 kW
heating capacity	2.00 kW
measuring range	5 mm
resolution	0.3 $\mu\text{m}$

**Order number: B0100**