CGE Swedish Concrete and Grouting Equipment AB

DESCRIPTION OF ADHESION EQUIPMENT

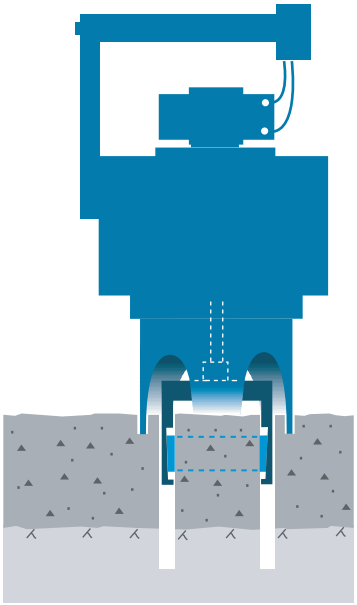
This equipment is intended for determining the adhesion strength of sprayed concrete against rock and between various concrete layers according to the Swedish Standard SS 13 72 43.

The equipment works in such a way that a bit is drilled through the layer one wishes to test and some centimetres into the underlying layer (for instance through sprayed concrete and into the rock). Around this bit, a cone-shaped ring, a so called friction grip, is applied, which is coupled to a tension equipment, which makes the grip around the drilling bit stronger at increased load.

The equipment consists of four parts
- drill bit
- core sleeve
- tension device
- recording unit

Drill bit
The drill bit consists of an inner drill bit having an inner/outer diameter of 72/86 mm and an other drill bit, variably adjustable, having an inner/outer diameter of 104/111 mm. The standard drill bit is 160 mm long

Core sleeve
Around the free-drilled core, the core sleeve is now applied with its cone-shaped ring which clutches the free-drilled core. The core sleeve has a detachable cap.



Description of drilling and pulling of core
At the start of drilling the outer bit should be moved down to approx. 2 cm abowe the inner bit. Drill down so that you obtain a pure outer cutting edge. Move up the outer bit to the upper level, drill to full depth. Take off the cap at the core-clutching device and place the core sleeve around the core sample, press down the core lifter with the three-legged tool, pull up the entire sleeve so that you can feel that the lifter clutches the core. Replace the cap, connect the power supply. After pulling loose, take of the cap and strike out the sample with a damped hammer.
ATTENTION! Thees steps are important in order to get smallest possible vibration when drilling out the core sample.

Tension device
The tension device consists of three legs, a hand driven worm gear unit run on ball bearings, a tension rod with a strain gauge so as to obtain the breaking load and a threaded sleeve which is threaded in the core sleeve. The three legs are placed in the outer groove. By the fact that the two drilling grooves are completely parallel, a pure tensile force is obtained at loading.

Recording unit
The recording unit is located in a portable bag which also contains the tension device. The signal from the strain gauge is, via electronics, connected with a digital display with peak-hold function, for reading the breaking load.

Option – Logger for the signal from the strain gauge
The recorder is trigged by the same switch that controls the motor (12 V). It is logging the force signal and storing it with a time stamp. The force is also displayed as f(t) diagram during testing. Data can later be transfered to a standard PC running Windows. The files comes in comma separated format for easy analysis in standard program like Exel. A simple program written in visual Basic for diagrams is also supplied.
The loading capacity is 10 kN which means a tensile stress of 2,5 MPa. In the recording unit, there is a chargeable battery which is enough for one normal working day.

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DESCRIPTION OF HOLE-MAKING DRILL

This equipment is primarily intended to be used at determination of adhesion strength of sprayed concrete against rock and between various concrete layers.

The equipment is constructed to be easy to handle at drilling out concrete or rock cores.

We have a very good experience from this concept which in a somewhat larger version has been used by formerly Vattenfall, Swedish National Power Board, department of concrete technology.

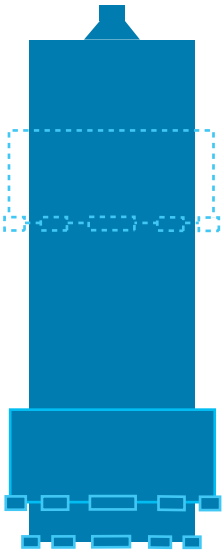
TECHNICAL SPECIFICATION

Driving unit

- Electric hydraulic drive 380 V with automatic phase inverter.
- Hydraulic pump, plunge mounting 1,5 kW electric motor. So called choke valve which opens for overload at start with closed quick couplings.
- Hydraulic motor with 1/2" spindle, fitted for a double drill bit.
- Variable speed control up to max. 300 rpm.
- Mounted on a two-wheel barrow.
- Total weight 45 kg incl. hydraulic oil.

Rock drill

- Feed rack of aluminium with an inclined blocking handle for drill feeding.
- Fastening plate with set screws, intended to be fastened with expansion screws.
- Max. drilling depth 150 mm.
- Weight 14 kg.



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