

DATA SHEET

Automatic Computerized Oedometer ACE EmS



ACE EmS - Electromechanical Servoactuation, automatic oedometer machine (26-WF31E20) complete with consolidation cell (26-WF0320)

General description

The ACE EmS is a versatile and fully automatic Oedometer soil consolidation testing machine that comes loaded with the new environmentally friendly Electromechanical Servoactuation (EmS) technology. Silent, compact and highly performing, the ACE EmS testing system can be run with our ingenious software that can connect up to 60 units with just one PC, enabling you to expand your laboratory gradually and seamlessly.

Oedometric soil test description

The Oedometric test determines the rate and magnitude of soil consolidation when restrained laterally and loaded axially.

Fully automatic

The ACE EmS can complete the whole test in fully automatic mode by selecting the load (stress), offering a practical and accurate way to obtain reliable results without any need for manual intervention, reducing the risk of human error.

Totally new and ingenious software

- Can pilot up to 60 ACE EmS units from one single PC with user able to select single or multiple unit batches.
- Once the software is installed and linked to the first ACE EmS, it is easy to add more units by enabling the associated LAN communication (IP address) without complications or costs.
- Calibrations of displacement transducers and load cells are stored as txt file and easy to recall, up to 10 calibration points can be recorded for each channel.

Clarity in results

- Oedometer test results are saved and displayed in real-time, speeding data capture.
- Results are then processed using Wykeham Farrance (WF)'s easy-to-use Geo-Analysis templates, written by experts around international standards allowing you to concentrate on analyzing your materials; not on programming your testing machine.

Interchangeable consolidations cells

- Standard WF consolidation cells from 50.47 to 112.80mm dia. normally used with front loading oedometer can also be used with the ACE EmS.

Standard test method

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- ASTM D2435 - *Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading*
- ASTM D4546 - *Standard Test Methods for One-Dimensional Swell or Collapse of Soils*
- ASTM D3877 - *Standard Test Methods for One-Dimensional Expansion, Shrinkage, and Uplift Pressure of Soil-Lime Mixtures*
- BS 1377:5 - *Methods of test for soils for civil engineering purposes. Compressibility, permeability and durability tests*
- EN 17982:5 - *Geotechnical investigation and testing. Laboratory testing of soil. Incremental loading oedometer test*

Complete configuration is composed by:

- ACE EmS
- PC software or Touch screen display (see accessories)
- Consolidation cell (see accessories)
- Template for data processing (see accessories)

Main features

- **Versatile fully automatic Oedometer soil consolidation testing machine** featuring incremental loading, swelling, CRS (constant rate of strain), CHG (controlled hydraulic gradient) and unconfined test.
- **Environmentally friendly and quiet** – the ACE EmS benefits from the new Electromechanical Servoactuation (EmS) technology requiring no dead weights or large & noisy air compressors, thus drastically reducing noise levels.
- **Modular and expandable**, gradually connect up to 60 units via LAN port using the same PC software allowing you to build your laboratory without interruption – resulting in excellent return on investments.
- **Small footprint** featuring a benchtop shorter than 50 cm.
- **Highly performant with load capacity of up to 20 kN**, equivalent to 10,000 kPa on 50.47mm Oedometer consolidation cell.
- **Optimized PID closed-loop control** delivering fast, smooth and accurate loading and precise load holding through the multiple test steps.
- **Optional local user interface with 6" touch screen high resolution color** display allowing full control of a single unit, without a PC, including full test execution. USB pen drive included for unlimited storage, TXT format data output.

Standards

- BS 1377:5
- ASTM D2435
- ASTM D3877
- ASTM D4546
- NF P94-091
- EN 17892-5

Specifications

Maximum vertical force: 20 kN

Ram travel: 25 mm

Minimum testing speed: 0.00001 mm/min

Maximum testing speed: 50.00000 mm/min

Horizontal clearance: 175 mm

Vertical Clearance: 185 mm (265 mm with extension columns)

Dimension: 285 x 390 x 590 mm

Weights 40 kg (approx.)

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Power: 220-110 V, 50-60 Hz, 1 ph

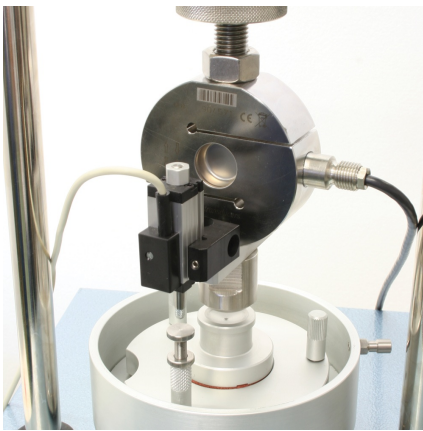
Power consumption: 200 W



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Consolidation cell, suitable for incremental loading test, swelling and permeability tests



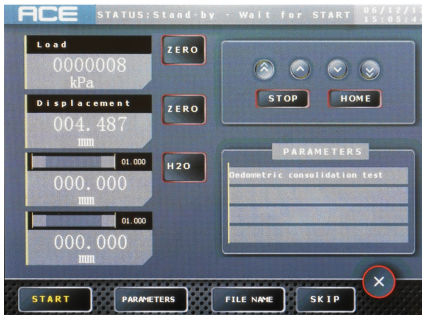
Detail for load cell, displacement transducer and consolidation cell



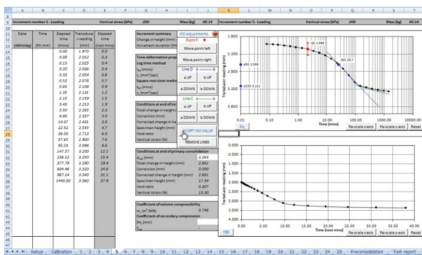
Calibration and verification facilities via software. Txt files are automatically generated for calibration reports. Each system is factory

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calibrated.



Real time data of load and displacement using touchscreen display (26-WF31E20/T)



Test files can be easily uploaded on the Geo-Analysis templates for data processing; the above screenshot shows the calculation of t_{50} through the graphical setting of the primary and secondary consolidation fitting lines.

Products

26-WF31E20

ACE EmS - Electromechanical Servoactuation, automatic oedometer machine. 220-100 V / 50-60 Hz / 1 PH.

Accessories and consumables

26-WF0338/C

Permeability attachment with 50ml graduated burette suitable for ACE EmS

26-WF31E20/SW

ACE EmS PC software activation code. For remote control and data acquisition from up to 60 ACE EmS.

26-WF31E20/T

Optional local user interface with 6" touch screen high resolution color display

26-WF4645

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LAN Hub with 8 ports for Wykeham Farrance devices. LAN cable from hub to PC is included.

30-WF6016/T1

Consolidation Geo-Analysis for MS EXCEL Template according to BS 1377:5

30-WF6016/T8

Consolidation Geo-Analysis template conforming to ASTM D2435

30-WF6016/T8A

Consolidation Geo-Analysis template conforming to ASTM D4546