

ACE EmS

Advanced Automatic Oedometer System for Soil Consolidation





The ACE EmS is a versatile and fully automatic Oedometer soil consolidation testing system that benefits from the new low maintenance, efficient and environmentally friendly Electromechanical Servoactuation (EmS) technology.

Silent, compact and high performing, the ACE EmS can be run via our ingenious software that can connect up to 60 units with just one PC, enabling you to expand your laboratory gradually and seamlessly.



Save time and ensure test accuracy and repeatability

The Fully automatic ACE EmS can complete the whole test in 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.



Clarity in results

The Oedometer test results are saved and displayed in real-time, speeding data capture. Results are processed with our easy-to-use Soilmaster P&R, written by experts around international standards allowing you to concentrate on analyzing your materials.



Environmentally friendly and quiet

Equipped with the new Electromechanical Servoactuation (EmS) technology requiring no dead weights or large and noisy air compressors, thus drastically reducing noise levels.



Future-proof – modular and expandable

Connect up to 60 units via LAN port using the one PC software allowing you to build your laboratory without interruption — resulting in excellent return on investment.



Low maintenance and easy installation

with Electromechanical Servoactuation (EmS) technology requiring single phase power and almost zero maintenance.



High capacity

High performance with load capacity up to 50 kN, equivalent to 25,000 kPa on 50.47mm Oedometer consolidation cell.



A Compact System of Unparalleled Value

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

Robust, versatile load frame, with adjustable vertical clearance using dedicated extension rods.

High performing 20 kN or 50 kN capacity load cell to measure vertical force (supplied with traceable calibration certificate).

Multisize standard fixed ring cell for soil specimen are available with diameter ranging from 50.47 mm to 112.80 mm.

Small footprint less than 300 mm wide.



10 mm displacement transducers measuring vertical settlement (supplied with traceable calibration certificate). Optional transducers with different travels also available.

Ground breaking, low maintenance and environmentally friendly EmS technology, with automatic “next step” time-driven actuation. No dead weights or compressor required.

Optimized PID closed-loop control delivering fast, smooth and accurate loading and precise load holding through multiple test steps.

Technical Specifications

	Standard	High
Maximum vertical force [kN]	20	50
Ram travel [mm]	24	27
Minimum testing speed [mm/min]	0.00001	
Maximum testing speed [mm/min]	50.00000	
Horizontal clearance [mm]	179	184
Vertical clearance [mm] w/o extension column	235	250
Vertical clearance [mm] w extension column	380	395
Dimension [mm]	285 x 390 x 590	325 x 450 x 677
Weights [mm]	40	50
Power supply	220-110V, 50-60Hz, 1ph	

Ordering Information

26-WF31E20

Automatic computerized Oedometer ACE EmS

26-WF31E50

High capacity Automatic Computerized Oedometer ACE50 EmS

Consolidation cells

The cell is constructed in aluminum and comes complete with two porous stones, load pad, cutter and clamping ring (see all the parts in the exploded view p 7).



Wide range of Consolidation Tests

ACE EmS is a versatile fully automatic Oedometer soil consolidation testing machine, perfectly equipped to perform a wide range of consolidation tests.

→ **Incremental loading test – BS 1377:5 | ASTM D2435 | EN 17892:5**

Determines the magnitude and rate of soil consolidation when restrained laterally and drained axially whilst being subjected to increasing controlled-stress loading.

→ **Swelling test – ASTM D4546***

Measures the magnitude of one-dimensional wetting-induced swell or collapse under different vertical (axial) pressures, as well as the magnitude of swell pressure and free swell.

→ **Unconfined compression test – ASTM: D2166/ BS 1377:7**

Ascertains the unconfined compressive strength of cohesive soils using strain-controlled application of the axial load. The soil is subjected to a rate of strain whilst the axial force and axial deformation are measured during compression.

→ **CRS (Constant Rate of Strain) – ASTM D4186**

Measures the magnitude and rate-of-consolidation of saturated cohesive soils using axial strain-controlled conditions, when the soil specimen is restrained laterally and drained axially to one surface. The soil is subjected to uniform deformation and axial force; axial deformation and base excess pressure are measured during this consolidation process.

Two model with different capacity

In case of compact and stiff material, the 50 kN capacity version is also available. It means about 25,000 kPa on 50.47 diameter sample.

Ace 50 EmS is also the ideal solution for:

- CRS: constant rate of strain test
- Unconfined test



ACCESS TO VARIOUS STANDARD CONFIGURATIONS

PC Controlled Configuration

ACE EmS modular and expandable configuration connects up to 60 units via LAN port, using the one PC software allowing you to build your laboratory without interruption — increasing productivity and profitability.

SOILMASTER T&A

Testing & Acquisition

WAKEHAM
FARRANCE



Easy-to-Use Software

The ACE EmS software has been expertly designed by Geotechnical specialists who run the tests, not just software engineers.

The intuitive graphical interface is customizable and will enable you to perform all test procedures with ease. The ability to preset all test conditions and let each oedometer unit perform the entire test independently and automatically gives you consistency across testing procedures and the flexibility to perform other tasks while the test is still running.



- Fully customizable graphical interface
- Ability to preset all test conditions
- Entire test performed independently and automatically by each oedometer unit

CRS Test Configuration



CRS cell

- Continuous monitoring of test parameters (axial load, pore pressure, axial compression)
- Sample dimension 63.5 x 25.4mm
- Max. working pressure 3,500 kPa
- Relatively short time to perform consolidation test

Additional accessories required for this configuration:

- CRS cell
- Extension rods
- Pressure transducers
- One water pressure line
- Hydromatic Standalone or existing pressure system

Extension rods and centering pin for CRS (Constant rate of strain) and Unconfined (UC) test



Pressure transducer with de-airing block for pore pressure measurement

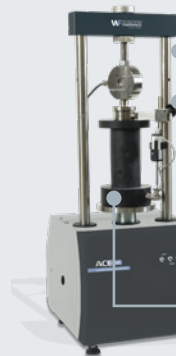


Hydromatic Stand-alone

Hydromatic standalone is a compact and general-purpose water pressure source that also enables the ACE unit to measure volume change:

- Powers up-to two hydraulic pressure lines and measures the associated volume changes
- Generates water pressure regulated under closed-loop control up to either 3,500 kPa or 1,700 kPa
- High resolution measurement of pressure (0.1 kPa)
- High volume capacity, 250 cc
- Lightweight with a small footprint
- No air compressor required

Unconfined Configuration



Extension rods and centering pin for CRS (Constant Rate of Strain) and Unconfined (UC) test

Additional **displacement transducers** 25 mm travel

Upper and lower platens with mounting bracket

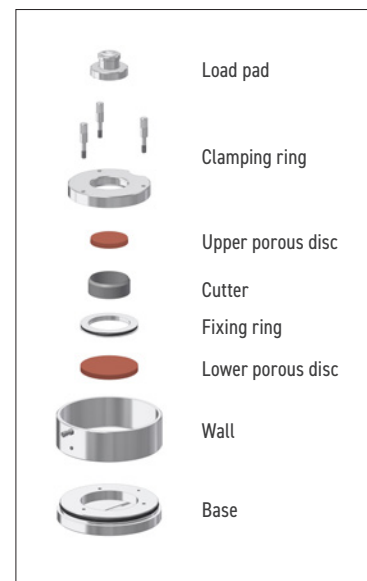
For a complete test configuration, visit our web site or contact our dedicated team of experienced geotechnical engineers on info@controls-group.com.

Accessories

Consolidation cells

The cell is constructed in aluminum and comes complete with two porous stones, load pad, cutter and clamping ring (see all the single parts below).

Model	Specimen dia. x h, mm	Area (cm ²)	Calibration disk	Additional kit for 50 kN cap.
26-WF0320	50.47 x 20	20.00	26-WF0320/9	26-WF0320/50
26-WF0321	63.50 x 20	31.67	26-WF0321/9	26-WF0321/50
26-WF0325	71.40 x 20	40.00	26-WF0325/9	26-WF0325/50
26-WF0326	75.00 x 20	44.16	26-WF0326/9	-
26-WF0335	112.80 x 25	100.00	26-WF0335/9	-



Software / Touch Screen Controller

30-WF9000/TA

SOILMASTER T&A, Testing and Acquisition.



26-WF31E20/T

Optional local user interface with 6" touch screen high resolution color display allowing full control of a single ACE EmS including full test execution. (Local user configuration)

Important: Please note that either the software or local user interface (see sections to the right) are mandatory for running the consolidation tests on the ACE EmS.



Upgrading kit

26-WF31E20/E

ACE EmS extension rods and centering pin for Constant Rate of Strain (CRS) and Unconfined (UC) test.

26-WF31E50/E

ACE 50 EmS extension rods for Constant Rate of Strain (CRS) and Unconfined (UC) test.

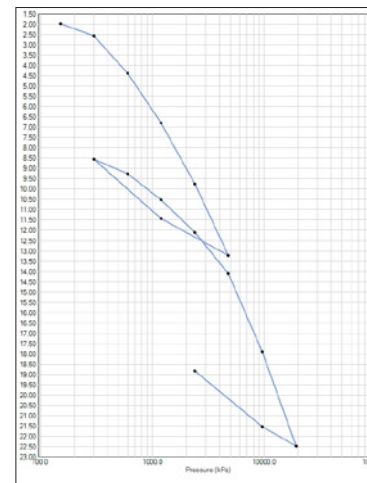
26-WF31E20/U

Upper and lower platens with mounting bracket for Unconfined (UC) test with ACE EmS.

Data Processing template

30-WF9000/PR

SOILMASTER Processing and Reporting - Activation for a single template.



Wykeham Farrance Customer Care

Wykeham Farrance is the Soil and Rock Testing Division of CONTROLS. As one of the longest established manufacturing companies in the world of Construction Materials Testing solutions, we are dedicated to supplying high quality, accurate, affordable, easy to use systems.

As a valued customer of CONTROLS, you will receive continuous, expert support and advice for your Wykeham Farrance equipment. Furthermore, we can offer full installation and training in the correct operation of your equipment.

For support from our expert Customer Care Team, contact your local CONTROLS office / distributor or email info@controls-group.com.

For more information, please visit www.controls-group.com.

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