

SOIL MECHANICS TESTING MADE EASY

# SHEARMATIC

Advanced Automatic Direct/Residual  
Shear Testing Machine

**Standards** ASTM D3080 | AASHTO T236 | BS 1377:7 | CEN-ISO/TS 17892-10 | NF P94-07



The Shearmatic EmS is a fully automatic shear testing machine that benefits from the low maintenance, efficient and environmentally-friendly Electromechanical Servoactuation (EmS) technology.

Silent, compact and high-performing, the Shearmatic EmS testing system can run stand-alone or via our ingenious software that can connect up to six units with just one computer, enabling you to expand your laboratory gradually and seamlessly.



**Save time and ensure test accuracy** with straight horizontal transmission of force facilitated by high stiffness load chain shear box, driving head and load cell, eliminating horizontal load measurement inaccuracies.



**High-performing** with maximum vertical and horizontal force of up to 10 kN, infinite variable speed from 0.00001 to 15.00000 mm/min and adjustable number of cycles from 1 to 99.



**Environmentally friendly and quiet** the Shearmatic EmS benefits from the new EmS technology. It requires no dead weights or large and noisy air compressors, drastically reducing noise levels.



**Modular and expandable with optional dedicated software** gradually connects up to six units via LAN port using the same PC software allowing you to build your laboratory without interruption — resulting in excellent return on investments.



**Fully automatic, standalone Direct / Residual Shear soil testing system** managed by local user interface with 6" touch screen high resolution color display, it can also accurately perform Oedometeric Soil Consolidation tests using appropriate consolidation cells.



**Long-life and low maintenance** with corrosion-free, techno-polymeric shear box carriage. Lightweight and easy to clean, the top-quality techno-polymeric material offers excellent resistance to corrosion, wear and tear and to chemicals often mixed with soil specimens.



**Fast, smooth and accurate loading delivered by integrated optimized PID closed-loop control**, precise load measurement from the load cell mounted directly on the loading tip and test procedures minimize inconsistencies stemming from operator variables and other unpredictable external factors.

# SHEARMATIC

## Shear testing at its best



- ✓ **GROUND BREAKING, LOW MAINTENANCE AND ENVIRONMENTALLY FRIENDLY EMS TECHNOLOGY**, with automatic “next step” time-driven actuation. No dead weights or compressor required.
- ✓ **10 MM AND 25 MM DISPLACEMENT TRANSDUCERS** available for measuring vertical settlement and horizontal displacement (supplied with traceable calibration certificates).
- ✓ **FAST, SMOOTH AND ACCURATE** loading delivered by integrated optimized PID closed-loop control with precise load ensured by a load cell directly mounted on the loading tip.
- ✓ **SAVE SPACE** with its small footprint shorter than 1 m.
- ✓ **HIGH PERFORMING** 10 kN capacity load cells to measure vertical and horizontal force (supplied with traceable calibration certificates).

### Technical Specifications

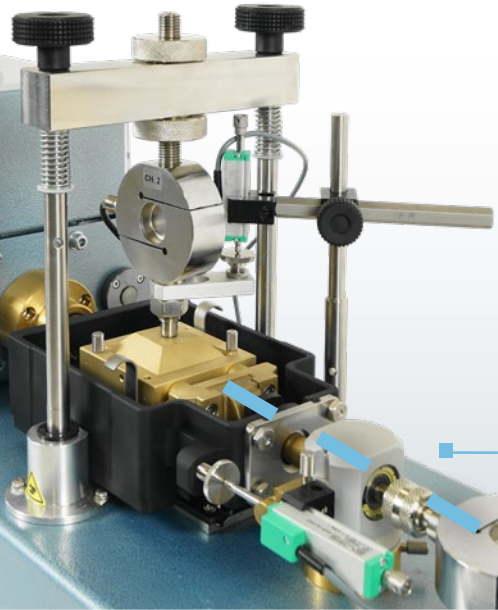
**Maximum vertical force:** 10 kN  
**Maximum horizontal force:** 10 kN  
**Max horizontal travel:** 23 mm  
**Max vertical travel:** 12 mm  
**Test speed:** from 0.00001 to 15.00000 mm/min.  
**Maximum number of consolidation steps:** 99  
**Maximum number of shear cycles:** 50  
**Weight approx.:** 60 kg  
**Sample type and size:** up to 100 mm square or round  
**Dimensions approx. [l x h x d]:** 990 x 550 x 350 mm  
**Multivoltage – Multifrequency power supply** 230 V, 50 Hz or 110 V, 60 Hz

### Ordering Information

**27-WF21E80 SHEARMATIC EmS**  
 Electromechanical Servoactuation technology, automatic direct and residual shear testing machine.  
 220-100 V / 50-60 Hz / 1 PH



## High stiffness and sturdy design



The accurate axial transmission of the horizontal force is facilitated by a straight connection between shear box, shaft and load cell. This design avoids load measurement errors occurring with the commonly used basic “swan neck” design.

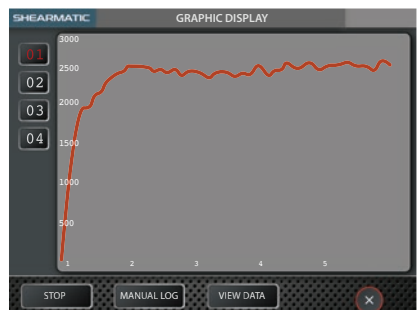
Light weight and easy to clean, the shear box carriage is made of high quality techno-polymeric material, offering excellent resistance to corrosion and wear and tear caused by presence of chemicals often mixed with soil specimens.

## Complete stand-alone system

Total control of a single unit, including full test execution is achieved without the need of a PC. The large 6” touchscreen color display and intuitive user interface will allow you to start, pause and stop the test, choose the data recording mode, show the readings during the test execution and carry out the transducers calibration with ease.



Full control of all the necessary setting before starting the test.



Live graphical display of Channel 1 – horizontal force. These data can be also shown listed in a table.

## Versatile machine with consolidation option

Shearmatic can be easily reconfigured to automatically perform oedometric consolidation tests by adding the following optional accessories:

- › Consolidation cell
- › Base adapter
- › Tip



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Apply axial force steps instantaneously, using a pre-defined load sequence.

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Ability to skip time, consolidation rate and swelling monitoring and move straight to the next step, even in automatic mode.

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Vertical force load cell directly mounted on the loading tip delivers highly accurate readings and control signal.

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Benefit from the use of standard consolidation cells.



## PC controlled – network option



### Totally new and ingenious software (optional)

- ✓ Allows the remote control, from a single PC, of multiple Shearmatic EmS machines. When using the Remote control mode, the PC software becomes the user interface and manages the main functions as well as the channels calibration by linear, polynomial and multi-coefficient curves.
- ✓ Can pilot up to **six** Shearmatic EmS units from **one single PC** with the user able to select single or multiple unit batches.
- ✓ Easily add more units by enabling the associated LAN communication (IP address) without complications or costs.
- ✓ Store calibrations of displacement transducers and load cells as txt file and easily recall up to 10 calibration points for each channel.



# Accessories

## Shear box – accessories

The shear box comes complete with:

- Adapter loading pad
- Retaining plate
- Two grids
- Two perforated grids
- Two porous plates

Please see Shear box assemblage below.

<b>Sample size</b>	60 mm	100 mm	50 mm	60 mm	63.5 mm	100 mm
<b>Shape</b>	Square	Square	Round	Round	Round	Round
<b>Box model</b>	WF0215/B	WF0216/B	WF0217/B	WF0218/B	WF0219/B	WF0222/B
<b>Sample cutter*</b>	WF0215/B7	WF0216/B7	WF0217/B7	WF0218/B7	WF0219/B7	WF0222/B7
<b>Extrusion dolly*</b>	WF0215/8	WF0216/8	WF0217/8	WF0218/8	WF0219/8	WF0222/8

## Optional software

### 27-WF21E80/SW

PC Software for remote control and data acquisition obtained from Shearmatic EmS machines with multiple units able to connect to a single PC.

**Key features:** remote control of the main functions, sensors calibration, numerical and graphical display of results, storage of test and calibration data.

## Upgrading kit

### 27-WF21E80/C

Accessories for the automatic performance of the consolidation test with the electro-mechanical direct and residual shear apparatus SHEARMATIC EmS. Consolidation cell not included (to be ordered separately)

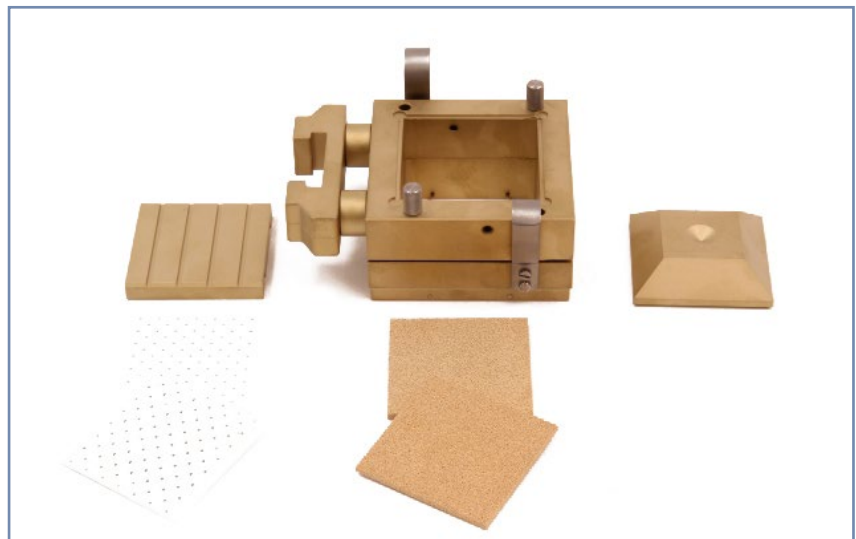
## Data processing templates

### 30-WF6016/T2

Direct and residual Shear Geo-Analysis template conforming to BS 1377:7

### 30-WF6016/T9

Direct and residual Shear Geo-Analysis template conforming to ASTM D3080



Shear box assemblage



\* Round and square cutting tool and extrusion dolly

**ACE** EMS

Automatic Computerized Oedometer System

**AUTOTRIAX** EMS

Automatic Triaxial Tests System

## ▶ Wykeham Farrance Customer Care

**At Wykeham Farrance, we are proud of our products.**

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

For support from our expert Customer Care Team, contact your local Wykeham Farrance distributor or email [wfsupport@controls-group.com](mailto:wfsupport@controls-group.com).

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## ▶ Contact Us

### Wykeham Farrance

E [wfsales@controls-group.com](mailto:wfsales@controls-group.com) [www.controls-group.com/wf](http://www.controls-group.com/wf)



### Controls Group USA

2521 Technology Drive, Suite 203, Elgin, IL 60124, USA T +1 847 551 5775 E [info@controls-usa.com](mailto:info@controls-usa.com) [www.controls-usa.com](http://www.controls-usa.com)

[www.controls-group.com/wf](http://www.controls-group.com/wf)



### Controls Group

T +39 02 92184 1

F +39 02 92103 333

E [sales@controls-group.com](mailto:sales@controls-group.com)

[www.controls-group.com](http://www.controls-group.com)

### Italy (HEAD OFFICE)

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