DIRECT / RESIDUAL SHEAR TEST APPARATUS, DIGITAL TOUCH-SCREEN

STANDARDS: ASTM D3080 I BS 1377:7 I NF P94-071-1, NF P094-071-2 I AASHTO T235 I CEN-ISO-TS 17892-10

This apparatus is used to determine the resistance to shearing of all types of soil specimens including both consolidated and drained, undisturbed or remolded. The machine can accommodate round specimens Ø 50, 60, 63.5, 100 mm and square 60x60, 10x100 mm.
The machine has an integral closed loop control motor with epicycloid reducers.
At the beginning of each test the machine performs an automatic and complete internal check including a position reset resulting in the elimination of all position errors.
A user-friendly microprocessor controlled touch screen is used to input all test patterns providing an efficient and flexible interface.
(All data are input and stored when the machine is in stand-by, without affecting the specimen under test with quick machine setting.)
Facility for shear box maximum extension detection, to automatically stop the test.
Facility to input a different return speed (residual shear) in relation to the one used for the shear test, thus allowing a quick playback of the residual shear test, saving a lot of time.
The effects of the primary consolidation can be identified directly on the consolidation curve, only with data acquisition version. Automatic calculation of the appropriate shear velocity with selection of optimal consolidation parameters for t50, t90 and t100 (only with data acquisition version). This provides efficiency and cost effectiveness.

Frame Specifications:

- Maximum shear load: 5000 N possible on the whole speed range.
- Shear speed: 0.00001 to 15,0000 mm/min.
- Display of both speed and displacement with 0.00001 mm resolution.
- Possibility of direct vertical load, or with a lever arm ratio 10:1
- Max vertical direct load: 500N; lever arm: 5500N
- Box group mounted on ball track with high quality antifriction system.
- Extremely easy and practical use, not requiring qualified staff.

Firmware:

- Electronic control unit Cyber-plus Evolution with Touch-Screen color graphic display ¼ VGA, that runs like a standard PC based on Windows operating system, for the management of the data. (Analysis of the data, test results, graphs with S277-40N Software; optional accessory).
- The Touch-Screen icon interface allows an easy set-up of all the parameters and prompt execution of the test. Read value results are immediate and of extreme accuracy.
- The machine can perform the tests without any external PC, because of the Cyber-Plus grants performances like a PC.
- Direct connection to Intranet (connection to a LAN network) and Internet to establish a remote communication and receive an immediate diagnosis from Matest technicians, or for upgrades of the Firmware.
- Unlimited memory storage with: 2 USB ports, 1 SD card.
- Possibility to select different languages.
- Hardware technical details: see page 24
- The machine is equipped with 8 connectors for the acquisition and data processing system (3 analogical/digital channels are activated with the S277-31 optional firmware for load cell and transducers; and 5 channels can be activated with the S277-32 optional firmware).

Power supply: 230V 1ph 50-60Hz 200W
Dimensions: 1040x420xh1350 mm
Weight: 120 kg approx.

Detail of the 8 connectors

MAIN FEATURES

- Automatic calculation of the appropriate shear velocity based on optimal consolidation parameters.
- Shear speed: 0.00001 to 15,0000 mm/min
- Different return speed facility for residual shaer test.
- Integral closed loop control motor.
- User-friendly microprocessor controlled touch screen.
- 8 connectors for acquisition and data processing system.

S276 KIT + S284

THE DIRECT/RESIDUAL SHEAR TESTING MACHINE IS AVAILABLE IN THREE VERSIONS

S276 KIT
SHEARLAB DIGITAL BASIC VERSION
DIGITAL SHEAR TESTING MACHINE

comprising:

S276-10 Shear Frame, with digital Touch-Screen microprocessor, complete with beam loading device, shear box case with adaptors, dial gauge supports.
S370-03S Load Ring, 3000N capacity with electric safety stop device (load rings of different capacities up to 5000N available on request).
S377 Dial indicator 25mm x 0.01mm for horizontal displacement.
S376 Dial indicator 10mm x 0.01mm for vertical displacement.
S273 KIT Set of 50 kg of slotted weights.

Note: Shear box, hollow punch, tamper **are not included** and have to be ordered separately (see accessories)

S276-01
AUTO SHEARLAB DATA ACQUISITION VERSION
DIGITAL SHEAR TESTING MACHINE WITH INCORPORATED DATA ACQUISITION SYSTEM AND BASIC FIRMWARE

comprising:

S276-10 Shear Frame with digital Touch-Screen microprocessor, complete with beam loading device, shear box case with adaptors, transducers supports.
S277-20 Load Cell, electric, 3000N capacity, complete with cable.
S336-11 Linear vertical transducer, 10 mm travel.
S336-12 Linear horizontal transducer, 25 mm travel.
S277-31 Firmware activating 3 connectors for basic data acquisition.
S273 KIT Set of 50 kg of slotted weights.

Note: Shear box, hollow punch, tamper and Software (see next pages) **are not included** and have to be ordered separately.

S276-01 + S284

ACCESSORIES

S277-40N SOFTWARE SHEAR-LAB REPORTS - MATEST MADE
Technical data: see p. 539

S277-32 FIRMWARE activating 5 connectors foreseen on the shear frame S276-10. They can be used as data acquisition and processing system for geotechnical tests. Technical data: see S334 p. 559

Note: these 5 channels can be used alternatively (not simultaneously) to the 3 channels of the shear frame.

GAUGE BLOCKS. Grade 1
Used to calibrate the linear displacement transducers (see p. 541)

SPARES

S335-15 Universal coupling pliers for dial gauge/transducer. It accepts all Matest displacement transducers and dial gauges (Ø from 8 to 20 mm)

S280-15 Mounting device between the universal coupling pliers S335-15 and the shear machine to fix the vertical displacement transducer or dial gauge.

S280-16 Mounting device between the universal coupling pliers S335-15 and the shear machine to fix the horizontal displacement transducer or dial gauge.