Shearmatic – Automatic Shear Testing Machine

Standards: ASTM D3080, BS 1377-7, AASHTO T 236, CEN-ISO/TS 17892-10, NF P94-071

- ULTIMATE USER-FRIENDLINESS
- LEADING DEPENDABILITY AND RELIABILITY
- STRICT COMPLIANCE WITH INDUSTRY STANDARDS
- STOCKED CONSUMABLES AND SPARES
- TRUSTED AFTER SALES TECHNICAL SUPPORT
- LIFETIME PRODUCT SUPPORT ADVANTAGE

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Description

This microprocessor-based advanced model is a stand-alone machine, driven by a high-resolution stepper motor with epicyclical reduction gear with reduced backlash. Incorporate a pneumatic closed loop system for the automatic application of the axial pressure by a high-performance pressure regulator, with the main advantage of eliminating the manual loading of the dead weights. Excellent and high-resistance techno-polymeric material has been adopted for the carriage of the shear box. It offers excellent resistance to corrosion, wear, and tear and is resistant to all chemicals found in a soil specimen. The carriage is lightweight and easy to clean.

The microprocessor system reads and processes the force, axial pressure, and displacement readings, and manages the motor, the pressure valve, the safety system, and the test steps through the closed loop system. Scratchproof membrane keyboard with large monochromatic graphic display. The machine is supplied complete with the following electronic transducers:

- ±5 kN capacity load cell, bi-directional type (compression and tension), nominal sensitivity 2mV/V, accuracy ±0.003%

- 10 mm displacement transducer, 1 kOhm nominal resistance, ±0.25% linearity, 0.002 mm repeatability
- 25 mm displacement transducer, 1 kOhm nominal resistance, ±0.25% linearity, 0.002 mm repeatability
- 1000 kPa pressure transducer, 0.1 kPa accuracy, nominal sensitivity 2mV/V

The Shear box assemblies have to be selected and ordered separately. See accessories. The machine requires compressed air, 10 bar max. Pressure. For a suitable Air compressor, laboratory model, see accessories. A more detailed description, a Schematic layout, and an example of displays are given in the Widening. The shear testing can also be performed with other traditional machines such as a Digital shear testing machine, a Digital shear testing machine with data acquisition, a large shear testing machine for 300x300 square samples, and a Bromhead ring shear apparatus.

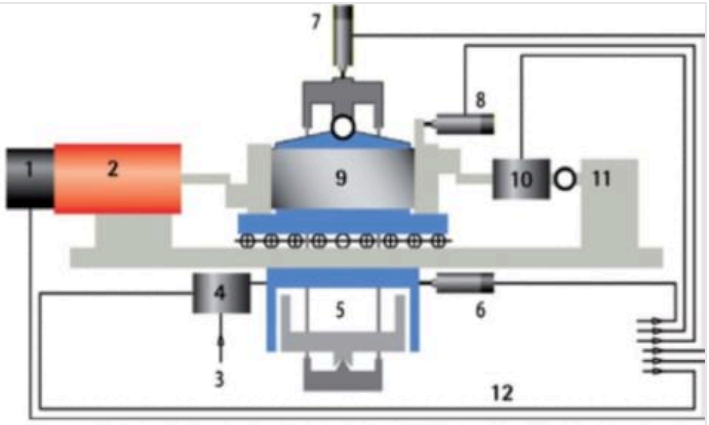
Main Features

- Automatic pneumatic application of pre-set consolidation steps (up to 50)
- Automatic test management from consolidation to failure: the operator is only requested to remove the clamping screws of the shear box
- No dead weights and lever arms are requested
- Vertical force was positively applied to the shear box without friction
- The straight connection between the shear box, drive unit, and load cell for the axial transmission of the horizontal force along the shearing plane, instead of the classic "swan neck"
- High-resistance techno-polymeric carriage
- Easy and immediate setup of the test parameters via the large digital graphic display
- Possibility to set different speeds and travel (forward and reverse) in the residual shear tests
- Each single step of axial force can be applied instantaneously or by means of a linear ramp in a pre-set time interval
- Different and independent data recording for consolidation and failure

- Different protocols of data downloading via RS 232 serial port

Specifications

NG-Shearmatic	
Motor	High-accuracy stepper motor 1/10000 resolution
Test Speed	Infinitely variable from 0.00001 to 11.00000 mm/min
Maximum Horizontal Force	5 kN
Maximum Vertical Force	8 kN = 800 kPA on 100x100 mm square specimens
Maximum Shear Cycles	10 (forward and reverse)
Maximum Travel	20 mm
Maximum Air Pressure Supply	10 bar
Maximum Working Air Pressure	8 bar
PC Connection	RS 232 Serial Port
Overall Dimensions	97 x 42 x 42 cm
Approximate Weight	100 kg



1 Stepper Motor
2 Horizontal loading assembly
3 Compresser air supply
4 Proportional valve to control vertical load
5 Vertical loading assembly
6 Vertical load air pressure transdu-
7 Vertical load displacement
8 Horizontal displacement transducers
9 Shear box
10 Load cell
11 Machine frame
12 Control console