

Benefits and Features

- Choose load capacity to fit user needs up to 4.4 kN (1,000 lbs.)
- Total automation, control, data collection and reporting of test results
- Prepare tables and plots of report quality within minutes of completing a test
- Geo-NET compatibility lets unit be accessed and controlled over a computer network
- Generate columns of data for easy reduction using your own spreadsheet software
- Accurate displacement rate control from 0.00003 to 15 mm per minute (0.000001 to 0.6 inches per minute)
- Select number of data points logged per cycle from 10 to 500 readings per second
- Manual control capability through front keypad and LCD menus
- Versatile system

Applicable Test Standards

- ASTM D6528 Consolidated Undrained Direct Simple Shear Testing of Cohesive Soils
- ASTM D2435 / T216 One-Dimensional Consolidation Properties of Soils

The ShearTrac II-DSS system is a universal shear system capable of performing the consolidation, static and cyclic direct simple shear phases under full automatic control. This system is of the type developed at NGI in the mid-1960's. The DSS test generates a fairly homogeneous state of shear stress throughout the specimen, which provides initial stress condition, stress path, and deformation configuration that models numerous field loading conditions more closely than any other strength tests such as triaxial. The system consists of a computer-controlled unit that utilizes micro-stepper motors to apply the vertical and horizontal loads to the soil specimen.

The system is capable of running a consolidation phase for up to 32 increments automatically. Stress controlled cyclic can be applied up to a frequency of 1 Hz that can be followed by simple shearing at a specified rate of deformation or force. The constant volume condition is maintained through a closed loop computer control with the vertical displacement sensor as the feed back. The system is capable of displaying the current status of a test and graphically portraying the progress of the test in real time. The system includes the capability for the operator to alter the test process and conditions at any stage of the test.

The system comes complete with hardware and software for recording all test input data and settings of selected test parameters, performing standard engineering calculations on the data, and producing graphically plotted and printed output.



Standard Fully-Automated
Cyclic Direct Simple Shear System

Cyclic Simple Shear ShearTrac II-DSS

TECHNICAL SPECIFICATIONS

CAPACITY

Up to 11 kN (2,500 lbs.)
vertical and horizontal

VERTICAL FORCE

Stepper motor with built-in controls for
vertical load and displacement

HORIZONTAL FORCE

Stepper motor with built-in controls for
horizontal load and displacement

SPEED RANGE

0.00003 to 15 mm per min
(0.000001 to 0.6 in.per min)

FREQUENCY RANGE

Up to 1 Hz

VERTICAL TRAVEL

25.45 mm (1.0 in.) resolved to 0.0013 mm
(0.00005 in.)

HORIZONTAL TRAVEL

±12.5 mm (±0.50 in.) resolved to 0.0013
mm (0.00005 in.)

POWER

Single Phase 208 VAC/60Hz (US) /
220 VAC/50 Hz (international)

DIMENSIONS

228 x 560 x 762 mm (9 x 22 x 30 inches)

WEIGHT

63 kg (140 lbs.)

SOFT SOIL DIMENSIONS

Diameter: 2.5 in. (63.5 mm) up to 4.0 in.
(101.5 mm)

ACCESSORIES

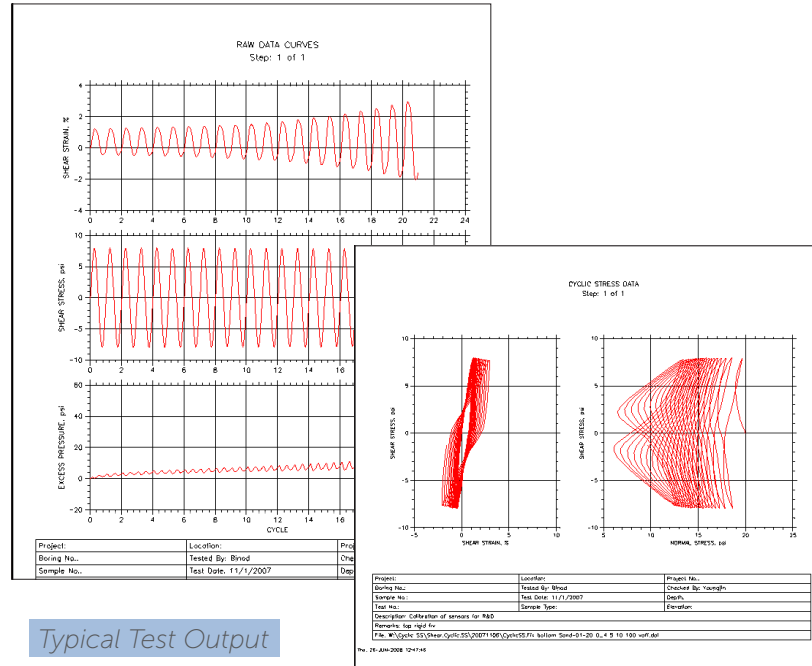
Geo-NET-PC Network / Communication
card to link ShearTrac II-DSS to PC.
Teflon-coated stacked rings, and stainless
steel trimming ring.

SOFTWARE MODULE

Cyclic DSS software package to
automatically run and edit cyclic and
static direct simple shear test.

OPTIONS

Direct / Residual Shear, Incremental
Consolidation, and CRC options available
upon request.



Typical Test Output

The figure shows the user-friendly interface of the ShearTrac II-DSS software. The window title is 'SHEAR:CYCLIC - C:\Documents and Settings\rhankour\My Documents\Active\Data\Cyclic DSS\CyclicSS...'. The interface includes a menu bar (File, View, Run, Calibrate, Control, Report, Options, Help) and several tabs: Project, Specimen, Water Content, Read Table, Test Parameters, Consolidation Table, Cyclic Table, and Shear Table. A data table is displayed with the following columns: Stress Ratio Amplitude, Maximum Peak-Peak Strain (%), Cycle Period (sec), Maximum Number of Cycles, and Number of Readings per Cycle.

	Stress Ratio Amplitude	Maximum Peak-Peak Strain (%)	Cycle Period (sec)	Maximum Number of Cycles	Number of Readings per Cycle
1	0.4	5.	10.	100	50
2	0.	0.	0.	0	0
3	0.	0.	0.	0	0
4	0.	0.	0.	0	0
5	0.	0.	0.	0	0
6	0.	0.	0.	0	0
7	0.	0.	0.	0	0
8	0.	0.	0.	0	0
9	0.	0.	0.	0	0
10	0.	0.	0.	0	0

Phase Control: Stress Strain

User-friendly Interface