SOIL > CYCLIC

CYCLIC DIRECT SIMPLE SHEAR TESTING MACHINE

Code : T821



- Designed to characterize soil response under one-dimensional constrained simple shear for seismic, offshore, and transportation loading scenarios, quantifying cyclic strength, cycles-to-liquefaction, modulus reduction, and damping ratio.
- Executes cyclic shearing in stress or strain control while maintaining constant volume for saturated specimens via active height control, enabling undrained behavior representation and reliable excess-pore-pressure equivalence.
- Supports programmable loading scripts with amplitude, frequency, dwell/hold, ramp, and multi-stage sequences, enabling repeatable research workflows and project-specific protocols.
- Provides a broad waveform set periodic and user-defined sequences to replicate regular and irregular field loading histories with precise synchronization across channels.
- Automates pre-shear consolidation with incremental loading, creep/hold timing, and end-of-primary detection to establish well-defined initial effective stress conditions.

- Acquires shear force and displacement, vertical load and displacement, and (optionally) pore water pressure with high resolution; software generates τ–γ loops, G/Gmax–γ and D–γ curves, CSR, and Nliq with cycle counting and peak/valley tracking.
- Uses NGI-type rings and sand-tight membranes to test sands, silts, and clays; interchangeable rings allow specimen optimization for material type and research aims.
- Built on a rigid, low-compliance frame with backlash-free drives and low-friction guidance to minimize parasitic forces and enhance repeatability across small- to large-strain ranges.
- Integrates template-based setup, real-time plotting, and auto-report export (CSV/PDF) to streamline training, routine testing, and advanced research.
- Incorporates safety interlocks, overload/overtravel protections, and soft/hard limits to protect specimens, sensors, and operators during high-cycle programs.

STANDARDS

ASTM D6528 • ASTM D8296 • ASTM D2435 • AASHTO T216 • ASTM D4186 • ASTM D4546 • BS 1377-5 • BS 1377-6 • EN ISO 17892-5

TECHNICAL SPECIFICATIONS

- Vertical Load Capacity: 12 kN (customized up to 300 kN)
- Shear Load Capacity: ±12 kN(customized up to 300 kN)
- Shear Displacement Range: ±25 mm (larger on request)
- Frequency Range: 0.001–10 Hz (higher on request, actuator-dependent)
- Control Modes: Stress control, strain/displacement control, mixed control; monotonic and cyclic
- Constant-Volume Control: Active Height Control with closed-loop vertical actuator
- Consolidation: Automatic staged 1-D consolidation with creep/hold timing and end-of-primary detection
- Specimen Size: Ø38–100 mm (standard Ø67.5 mm)

- Transducers: Shear load cell; vertical load cell; horizontal LVDT (≤0.001 mm resolution); vertical LVDT for AHC (≤0.001 mm); optional pore pressure transducer
- Data & Results: τ–γ loops; G and D vs γ; CSR and Nliq; consolidation curves; cycle counters; peak/valley detection
- Software: Template-based test setup; waveform editor; real-time multi-channel plotting; CSV/PDF reporting; calibration utilities
- Safety: Soft/hard limits; overload/overtravel protection; emergency stop; safe-start interlocks
- Optional ALFA Cloud integration for secure, real-time data upload, centralized storage, and web access to results.

EQUIPPED WITH

- Rigid load frame with integrated vertical and horizontal servo actuators
- Rings set and membranes
- Shear and vertical load cells; horizontal and vertical high-resolution LVDTs
- Active Height Control module for constant-volume shearing
- Multi-channel signal conditioning and data acquisition unit
- Control and analysis software with waveform editor and report generator

SUPPLIED WITH

- Specimen preparation kit for DSS (membranes/rings and O-rings)
- Alignment and assembly tools
- Cabling and interface accessories for DAQ/control

ORDERING INFORMATION

Item Name	Item Code

CYCLIC DIRECT SIMPLE SHEAR TESTING MACHINE T821A012U