SOIL > CYCLIC

LARGE CYCLIC DIRECT SIMPLE SHEAR TESTING MACHINE

Code : T821 (Large)

- Purpose-built for large-specimen cyclic simple shear on sands and mixed soils with coarse particles, enabling realistic field loading on oversized materials using a single horizontal axis.
- Operates in stress- or displacement/strain-control, with programmable amplitude, frequency, cycle count, and termination criteria.
- Maintains undrained conditions via constant-height (active/passive) control or performs drained tests under constant vertical load; suitable for modulus/damping evaluation, cyclic strength, and liquefaction studies on large samples.
- Integrates high-capacity vertical and horizontal load cells with paired LVDTs for closed-loop control through consolidation, monotonic positioning, and cyclic shearing, ensuring stable, high-fidelity measurements at large strokes.
- Includes automated one-dimensional consolidation under vertical load control prior to shear with programmable increments and dwell times for consistent preconditioning of coarse and mixed soils.

- Seamlessly connects to ALFA Cloud for live plotting, cycle statistics, backbone curves, traceable data archiving, and standards-aligned reporting.
- Standards

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

- Specimen Size: Ø300–1000 mm (standard Ø300 mm)
- Specimen height (typical): 120 mm
- Vertical (Z) load capacity: 210 kN (≈22 t, ≈48.5 kip)
- Horizontal (X) shear capacity: 210 kN (≈22 t, ≈48.5 kip)
- Shear axis: Single (X), cyclic
- Frequency range: up to 5 Hz (system/test-dependent)
- Horizontal travel (cyclic stroke): ±75 mm standard; ±100 mm (option)
- Shear strain range: up to ~10% (specimen/test-dependent)
- Waveforms: Sine, triangular, square, trapezoidal, user-defined (CSV)
- Control modes: Stress-controlled; displacement/strain-controlled; constant-height (active/passive)
- Test conditions: Drained (constant vertical load); undrained (constant volume with passive or active vertical stress control)
- Consolidation: Automatic 1D consolidation under vertical load control (pre-shear)
- Sensors: High-capacity vertical & horizontal load cells; vertical & horizontal LVDTs
- Drive system: High-precision servo motor with closed-loop control
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- Power supply: 110/220 V, 50/60 Hz, single phase

- Optional ALFA Cloud integration for secure, real-time data upload, centralized storage, and web access to results.

EQUIPPED WITH

- High-stiffness large DSS frame with single horizontal and vertical servo actuator
- Constant-height control assembly (active/passive)
- In-line vertical and horizontal load cells
- Vertical and horizontal LVDTs for displacement/strain feedback
- Large DSS ring set with pedestal and top cap (Ø300 mm)
- PC software, closed-loop control, and data acquisition
- Safety interlocks and emergency stop

SUPPLIED WITH

- Large-specimen preparation kit
- Alignment and assembly tools
- DAQ/control cables and interface accessories