SOIL > SHEAR STRENGTH

DIRECT SIMPLE SHEAR TESTING MACHINE (Large, Electromechanical)

Code : T521 (Large)



- Large-scale simple shear apparatus for monotonic (static) shearing of saturated or unsaturated soils under constant normal stress (CD) or constant height (CU constant-volume) control.
- Designed for 300 mm diameter specimens (larger diameters on request) to represent field-scale behavior for embankments, foundations, and ground-improvement evaluations.
- Rigid upper platen and precision-guided shear carriage maintain plane simple-shear kinematics; stacked wire-reinforced membranes suppress barreling.
- Automatic one-dimensional consolidation under vertical load control prior to shearing; vertical actuator can hold constant stress or maintain constant height during CU tests while logging σv and vertical displacement.
- Closed-loop shear control in stress or displacement (strain) modes with ultra-fine micro-increments for accurate peak/residual strength capture, dilation, and post-peak behavior.

- High-capacity, high-resolution transducers on shear load, vertical load, horizontal displacement, and vertical displacement; optional pore-pressure channel for saturation checks and consolidation tracking.
- Software provides live plots (τ–γ, σ′v–t, H/V), secant/tangent moduli, peak/residual shear strength, and automatic report generation with CSV/PDF export.
- Robust steel frame with low-friction linear guides, overload/over-travel safety interlocks, and emergency stop; quiet bench/floor-standing operation with single-phase power

STANDARDS

ASTM D6528 • ASTM D8296 • ASTM D2435 • 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 (ring stack, membrane-confined)
- Vertical (Z) load capacity: 22 ton.f (≈216 kN, ≈48.5 kip)
- Horizontal (X) shear capacity: 22 ton.f (≈216 kN)
- Shear axis: Single (X), monotonic
- Horizontal travel (stroke): ±75 mm standard (option: ±100 mm extended)
- Control modes: Shear stress-controlled or displacement/strain-controlled; vertical constant-stress (CD) or constant-height (CU)
- Test conditions: Drained (constant vertical load) or undrained (constant volume via active/passive height control)
- Consolidation: Automatic 1D consolidation under vertical load control (pre-shear)
- Sensors: High-capacity vertical & horizontal load cells; horizontal & vertical LVDTs (≤0.001 mm resolution, model-dependent); optional pore-pressure transducer
- Drive system: High-precision servo motor with encoder and closed-loop controller for quasi-static shearing
- 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

- Heavy-duty frame with precision linear guides and DSS ring stack (Ø300 mm)
- Servo shear drive (X) with closed-loop stress/displacement control
- Servo vertical actuator for constant-stress or constant-height operation
- Shear & vertical load cells, horizontal & vertical LVDTs
- Filter papers, drainage/vent manifold, saturation accessories
- Control and acquisition software with monotonic CD/CU templates and auto-report

SUPPLIED WITH

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

ORDERING INFORMATION

To be added soon ...