SOIL > CYCLIC

CYCLIC RING SHEAR TESTING MACHINE

Code : T880

- Measures drained residual shear strength and cyclic degradation behavior of soils using a continuous-rotation ring shear mechanism under controlled normal stress. Suitable for landslide studies, reactivated slip surfaces, clay gouge, and rock–soil interfaces.
- Enables monotonic and cyclic shear programs with constant normal load (CNL) or optional constant normal stiffness (CNS), capturing large shear displacements without reversal limits (continuous rotation).
- Closed-loop control of normal stress and shear torque/rotation with real-time torque–displacement plots and auto detection of peak, post-peak, and residual states.
- Cyclic scheduler supports amplitude, mean bias, frequency, and cycle count; waveform options include sinusoidal, triangular, block/step, and user-defined sequences for service-load or seismic-style protocols.
- High-fidelity data acquisition synchronizes shear torque, rotation/displacement, normal stress/strain, and optional pore-water pressure for partially saturated materials, producing residual envelopes and degradation curves.

- Modular tooling accommodates fine- to coarse-grained soils and weak rock gouge, with interchangeable rough/smooth rings, drainage paths, and specimen spacers for repeatable boundary conditions.

STANDARDS

ASTM D6467 • BS 1377-7

TECHNICAL SPECIFICATIONS

- Shear Mode: Continuous rotation (unlimited displacement), monotonic and cyclic
- Control Modes: Shear torque or rotation; constant normal load (CNL); optional constant normal stiffness (CNS)
- Normal Stress Range: 0–600 kPa (typical laboratory range)
- Torque Capacity: 0–50 N·m (model-dependent)
- Rotation Rate: 0.005–15 °/s (programmable)
- Cyclic Frequency: Up to 2 Hz (program-dependent)
- Waveforms: Sine, triangle, block/step, user-defined sequences
- Displacement Measurement: High-resolution rotary encoder with live shear displacement
- Torque Measurement: Strain-gauge torque transducer, high stability
- Normal Displacement: LVDT/encoder for CNS mode (if equipped)
- Specimen Geometry: Annular ring, ~70 mm outer Ø / ~30 mm inner Ø (typical), replaceable ring sets
- Drainage/Back Pressure: Dual drainage ports with optional pore-pressure channel
- Software: Saturation/drainage setup, monotonic & cyclic test templates, residual strength auto-fit, exportable plots/tables
- Optional ALFA Cloud integration for secure, real-time data upload, centralized storage, and web access to results.

EQUIPPED WITH

- Ring shear drive with motorized continuous-rotation actuator and torque transducer
- Normal loading system with feedback control and displacement sensor
- Interchangeable annular rings (rough/smooth) and specimen spacers
- Drainage caps/porous inserts and tubing set
- PC software for monotonic and cyclic ring shear with reporting templates
- Optional ALFA Cloud integration for secure, real-time data upload, centralized storage, and web access to results.

SUPPLIED WITH

- Assorted porous inserts and drainage accessories
- Standard ring/spacer kit for typical specimen sizes
- Essential clamps, fittings, and quick-connects