SOIL > CYCLIC

RESONANT COLUMN TESTING MACHINE

Code : T813

- Determines small-strain shear modulus (Gmax) and material damping (D) of soils using torsional (and optional longitudinal) resonance under controlled confinement and drainage conditions.
- Fixed-base architecture with electromagnetic drive and non-contact motion pickup enables clean frequency sweeps, automatic resonance tracking, and half-power bandwidth damping evaluation with high signal-to-noise.
- Supports saturated and unsaturated testing workflows with cell and back-pressure control for drained/undrained states, including B-value verification during setup.
- Wide dynamic range covers very small shear strains (~10^{-6}–10^{-4}) in resonant column mode; optional torsional shear mode extends characterization to higher strains for modulus/damping degradation curves.
- Integrated software automates saturation and consolidation staging, frequency step/sweep, amplitude control, resonance identification, and generation of Gmax and D versus shear strain plots.

STANDARDS

ASTM D4015

TECHNICAL SPECIFICATIONS

- Drive / Pickup: Electromagnetic torsional drive with non-contact motion pickup
- Frequency Range (RC): 10–300 Hz (typical)
- Shear Strain Range (RC): ~10^{-6} to 10^{-4} (typical)
- Damping Method: Half-power bandwidth
- Modes: Torsional resonance (standard); longitudinal resonance (optional); torsional shear (optional)
- Specimen Size (typical): 50 mm Ø × 100 mm H (solid cylinder)
- Confining Pressure: 0–1000 kPa
- Back Pressure: 0–1000 kPa
- Data Acquisition: High-rate logging suitable for resonance characterization and bandwidth analysis
- Software: Automated sweep/step, amplitude control, B-check, consolidation staging, Gmax & D computation, exportable plots/tables
- Optional ALFA Cloud integration for secure, real-time data upload, centralized storage, and web access to results.

EQUIPPED WITH

- Resonant column cell with fixed base, top drive/pickup assembly, and confinement system
- Pressure/volume control modules for cell and back pressure with de-airing accessories
- Axial load/displacement channel for static bias and boundary condition control
- Cabling, tubing, porous stones, and specimen tooling for standard sizes

- PC control software for resonant column (and optional torsional shear) testing

SUPPLIED WITH

- Membranes, O-rings, filter papers (assorted for standard specimen size)
- Essential fittings, hoses, and quick-connects set
- Starter consumables kit for resonant column specimens