

HOLLOW CYLINDER TESTING MACHINE (T803)

Category: Soil



Product Code: T803

Category: SOIL

Sub-Category: CYCLIC

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- Purpose-built for investigating soil behavior under principal stress rotation with combined axial load, confining pressure, back pressure, torque, and controlled rotation.

Ideal for liquefaction studies, anisotropy assessment, non-coaxiality, and strain-path controlled research.

- Enables independent control of σ_1 , σ_2 , σ_3 directions and magnitudes through axial force, cell/back pressure, and torsional shear supporting both static and cyclic modes with precise path following.
 - Hollow specimen form reduces end restraint and facilitates uniform shear strain distribution, allowing small-strain characterization as well as large cyclic deformation programs.
 - Closed-loop control in torque, rotation, axial load, or axial strain, with configurable endpoints by cycle count, strain limit, pore-pressure ratio (ru), stress path limit, or stiffness degradation threshold.
 - High-rate acquisition with synchronized channels (axial load/displacement, torque/rotation, cell and pore pressures, volume change) for real-time plots (τ - γ , q - ϵ_a , Δu - N , stress path p' - q).
 - Flexible specimen tooling for saturated and unsaturated testing workflows, with saturation aids (CO_2 /de-aired water), B-value checks, and optional local strain measurement.
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STANDARDS

JGS 0511-2009 • JGS 0543

TECHNICAL SPECIFICATIONS

- Axial load capacity: 10–300 kN (50 kN standard)
- Torque capacity: 100–400 N·m (250 N·m standard)
- Rotation range: $\pm 20^\circ$ (typical programmable limit)
- Cyclic frequency: up to 5 Hz
- Control modes: Torque / rotation / axial load / axial strain (closed loop)
- Volume change resolution: $\leq 0.01 \text{ cm}^3$ (with digital volume controller)
- Axial displacement range: ± 25 –50 mm (LVDT, model-dependent)
- Rotation measurement: High-resolution encoder ($\leq 0.001^\circ$ typical)
- Specimen size (standard): 150 mm OD / 100 mm ID; other sizes on request
- Consolidation modes: Isotropic / anisotropic / K_0 ; strain-path control available
- Waveforms: Sinusoidal (standard), user-defined sequences for stress-rotation paths
- Software: Saturation & B-check, consolidation staging, cyclic scheduler, real-time charts, auto report templates
- Power: Single-phase 208–230 V, 50/60 Hz (region-dependent)
- Optional ALFA Cloud integration for secure, real-time data upload, centralized storage, and web access to results.

EQUIPPED WITH

- Servo-actuated load frame with axial actuator and integrated controller
- Hollow-cylinder cell with torsional drive, upper/lower pedestals and rotation bearings
- Dual pressure/volume controllers for cell and back pressure with de-airing accessories
- Axial load cell, axial LVDT, pore pressure and cell pressure transducers, torque transducer, rotation encoder

- Cabling, tubing, porous stones, membranes, and specimen tooling for standard sizes
- PC control software with cyclic torsional and static modules, plotting and reporting

SUPPLIED WITH

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

ORDERING INFORMATION

To be added soon ...

Keywords: hollow cylinder torsional shear, cyclic torsional shear, JGS 0551, stress rotation device, non-coaxial soil behavior, anisotropy testing, liquefaction research, hollow specimen shear, geotechnical laboratory equipment, pore pressure measurement, closed-loop torque control, advanced soil testing, ALFA Testing Equipment