

Frozen Dynamic Hollow Cylinder Testing System (FHCA-300)



- Closed-loop digital servo control
- $\pm 1,000$ N-m torsional loads & up to ± 100 kN axial loads at up to 50 Hz
- Confining, back/pore, and internal pressure servo control up to 20,000 kPa
- Temperature control from -30 °C to $+80$ °C
- Angular displacement sensor with a deflection range of $\pm 45^\circ$ to measure large shear strains
- Non-contacting deformation sensors with a ± 2.5 mm range to detect small shear strains
- Standard systems to test 100 mm outside diameter & 63.5 mm inside diameter (custom sizes available)
- Systems also available to test 100 mm OD 50 mm ID, 150 mm OD and 75 mm ID, 200 mm OD 100 mm ID, 300 mm OD 150 mm ID
- Optional unsaturated soils testing system package available
- Internal high-speed torque motor for resonant column testing, ultrasonic platens, and temperature controller options available
- Complete "turn-key" system

DESCRIPTION

Direct digital servo control of axial load, torque, temperature, confining pressure, internal pressure, and back pressure are achievable using the GCTS Frozen Dynamic Hollow Cylinder Testing System for performing "true triaxial" tests. This system is capable of simulating most field stress/strain path tests (static or dynamic) including plane strain, simple shear, and small shear strains. Other possible tests include: measurement of dynamic shear strength & deformation, liquefaction potential, shear modulus and damping ratio, all at controlled temperature conditions. The system is versatile in allowing the user to design custom procedures with operating frequencies of up to 50 Hz.

The system software advises the user on how to perform testing tasks and also reminds the user of important steps that may need to be executed (such as opening or closing a valve at required test stages). The program helps the user to select proper testing parameters and provides the necessary information to automatically execute the test. The Graphical User Interface with context sensitive on-line help and intuitive color windows help minimize the learning time and enables laboratory personnel to conduct more sophisticated testing programs at an economical price. The system manages all the instrumentation and continuously monitors sensor outputs to accurately account for uplift pressures acting on the loading piston, area changes, deformation and volume change sensor setup, re-positioning, etc.