GEOTEST - ROCK TRIAXIAL COMPRESSION TEST SYSTEM

SCAN ME

ASTM

D7012
D7070
D5084

LOAD CAPACITY

1,000 KN
2,000 KN
Other upon request

CELL PRESSURE

70 MPa
140 MPa
210 MPa

CELL DIAMETER

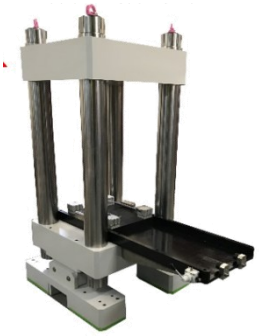
D1: Up to 55mm
D2: Up to 100mm

ROCK MECHANICS TESTERS

LOAD-FRAME TRIAXIAL SYSTEMS

GEOTEST - components

LOAD FRAME



The hydraulic compression frame, built with four high-stiffness columns, ensures maximum rigidity and alignment accuracy while applying precise axial loads to specimens mounted in a triaxial cell. A servo-controlled hydraulic actuator, integrated in the upper crosshead provides great loading capacity. The frame can be operated under both static and dynamic testing conditions.

KEY FEATURES

- Servo-valve-controlled axial actuator which operates in force, stress, displacement and strain control)
- Four high-stiffness column frame with 1,000 or 2,000kN capacity

TRIAXIAL CELL

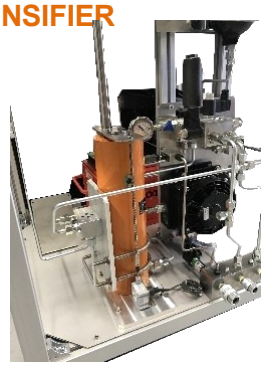
The triaxial cell is a high-pressure vessel designed to provide precise confinement and axial loading for triaxial and unconfined compression tests.

The cell body is lowered and locked into position by turning a nut on the cell base until it is completely screwed, and the complete assembly is then aligned under the loading piston.

KEY FEATURES

- Pressure ratings of 70, 140 or 210 MPa
- Two cell sizes for specimens up to 55mm or 100mm
- Wetted parts in stainless steel or Inconel

CONFINING PRESSURE INTENSIFIER



The confining pressure intensifier is a high-precision, servo-controlled pressure system designed to apply and maintain stable confining pressure during triaxial testing.

It provides rapid pressure ramping, accurate closed-loop control, and excellent pressure stability for both static and dynamic test conditions

KEY FEATURES

- Servo-valve-controlled operation in pressure or displacement mode
- Confining pressure ratings of 70, 140, 210MPa.
- Wetted parts in stainless steel

PORE PRESSURE PUMP

The pore pressure pump is a high-precision, servo-controlled unit designed to apply and regulate pore pressure with high accuracy during triaxial testing.

It enables stable pressure control, rapid response, and precise measurement for reliable drained and undrained test conditions.

KEY FEATURES

- Operate in pressure or flow-rate control mode
- Working pressure up to 70 MPa,140 MPa, 210 MPa
- Flow rate up to 60 cc/min
- Wetted parts stainless steel, Hastelloy

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ACOUSTIC VELOCITY FIXTURE

The ultrasonic velocity system is an integrated measurement module designed to determine P- and S-wave velocities in rock specimens during triaxial testing.

It provides high-resolution, synchronized ultrasonic acquisition under load and pressure, enabling continuous monitoring of dynamic elasticity

KEY FEATURES

- In-vessel-P- and S1-S2-wave ultrasonic measurement at 1MHz
- Operates up to 120°C under triaxial stress conditions

HEATING JACKET

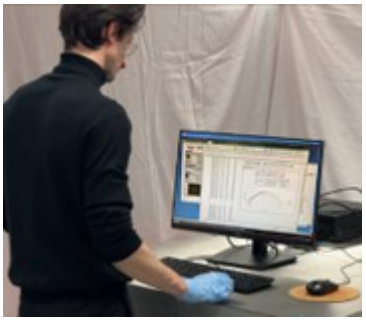
The heating jacket is a precision-controlled thermal system designed to uniformly heat rock specimens during triaxial testing.

It ensures stable and homogeneous temperature distribution under pressure, enabling accurate simulation of in-situ thermal conditions.

KEY FEATURES

- Operating range up to 150 °C (standard) or 200°C (high-temperature option)

GEOTEST SOFTWARE



The GEOTEST software is an advanced analysis platform designed for automated processing and interpretation of triaxial test data.
It provides precise calculation of mechanical parameters, real-time visualization, and standardized reporting to ensure accurate and repeatable test interpretation.

KEY FEATURES

- Automated analysis of stress-strain, strength, creep and petrophysical properties
- Integrated interpretations of acoustic velocity, acoustic emission and damage evolution

ACOUSTIC EMISSION

The acoustic emission system is a high-sensitivity monitoring module designed to detect and locate microcracking and fracture events during triaxial testing.

It provides real-time, high-frequency data acquisition and advanced signal processing for accurate damage evolution and failure analysis.

KEY FEATURES

- Six lateral AE sensors – full radial coverage
- Signal amplification – 40 dB, 32–1000 kHz filters
- High-resolution acquisition – 16-bit, 10 MHz, 8 channels
- Precise event location – ~2 mm accuracy
- Real-time fracture reconstruction – live morphology mapping

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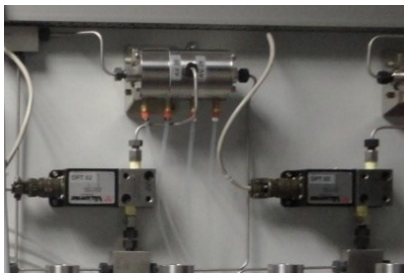
HYDRAULIC FRACTURING

The hydraulic fracturing system is a precision-controlled module designed to initiate and propagate fractures under controlled pressure conditions within rock specimens.
It enables accurate regulation of injection pressure and flow, with synchronized data acquisition for detailed fracture initiation and propagation analysis.

KEY FEATURES

- For specimens 50-100mm in diameter
- Borehole diameter: 6.35-mm
- Wetted parts in stainless steel or Inconel

PERMEABILITY



The permeability system is a high-precision module designed to measure fluid flow through rock specimens under controlled stress and pressure conditions.

It provides accurate permeability determination using the Darcy law method, fully synchronized with triaxial loading and pore pressure control.

KEY FEATURES

- Permeability range: 0.01 mD to 10 Darcy
- Pressure: up to 70 MPa

ELECTRICAL RESISTIVITY

The electrical resistivity system is an integrated measurement module designed to evaluate the electrical properties of rock specimens under triaxial stress conditions.
It supports both two-point and four-point measurement configurations, providing precise, synchronized resistivity data correlated with mechanical loading and microstructural evolution.

KEY FEATURES

- 2-point resistivity with two axial electrodes
- Upgradeable to 4-point with two lateral and two axial electrodes
- LCR meter (12Hz -10kHz)

HYDRAULIC POWER UNIT

The hydraulic power unit is a high-efficiency system providing stable, low-noise hydraulic flow for precision servo-controlled testing.

Two versions are available: one optimized for static testing and a second designed to support both static and dynamic loading modes with enhanced flow and response capacity.

KEY FEATURES

- Static version:
  Constant pressure, constant flow pump
  Flow: up to 5 lpm
  Reservoir fluid: 20 Liters
- Statiic & Dynamic version:
  Constant pressure, variable flow pump
  Flow: up to 20 lpm
  Reservoir fluid: 100 Liters
  Frequency up to 10 Hz

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