TAC-series TRIAXIAL ACOUSTIC CELL

APPLICATIONS

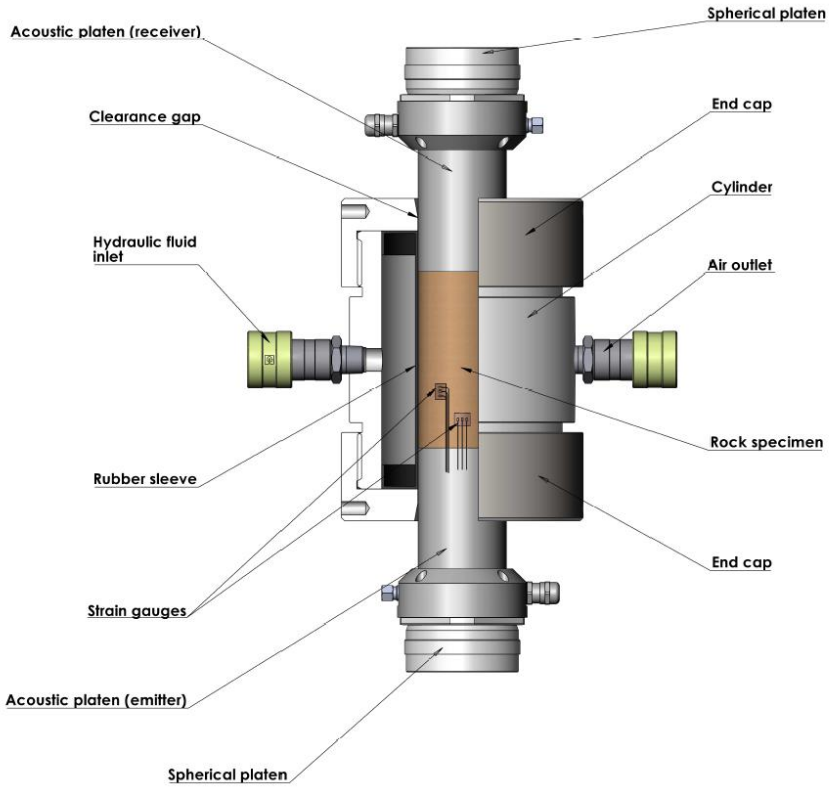
Tests performed on a series of rock specimens under different confining pressures allow the user to determine:

- Compression and two orthogonal shear wave velocities
- Dynamic elastic constants

DESCRIPTION

The triaxial acoustic cell is designed to transmit compressional (P) and shear waves (S1/S2) through rock samples under conditions of overburden pressure and room temperature. The sample is positioned between two adjustable loading pistons and compressed using a load frame. A specialized sleeve serves to isolate the sample from the hydraulic confining fluid. A distinct advantage of this setup is the ability for quick sample loading and unloading, eliminating the need to drain the confining fluid or remove the core sleeve.

The cell consists of a hollow steel cylinder with screw-on, detachable ends, along with two high-resistance spherically seated acoustic loading platens, a pair of female spherical seats, and an isolating sleeve. To apply the axial force to the sample, an external compression testing frame is necessary. Additionally, a high-pressure pump is required to produce the confining pressure.



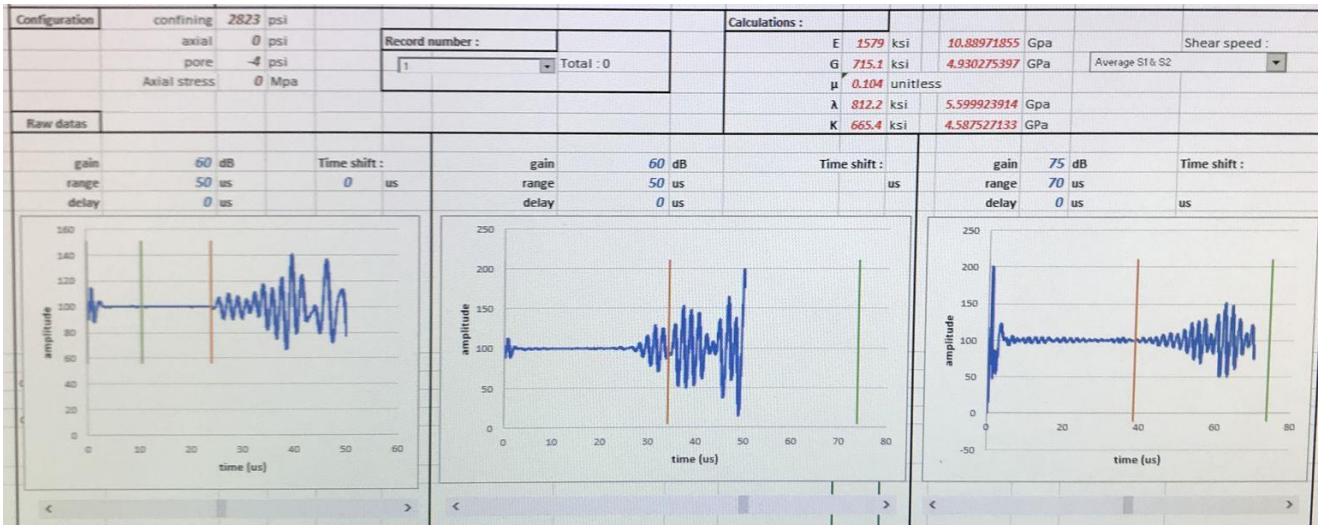
TEST PROCEDURE

The sample, along with the acoustic emitter and receiver platens, is encased in a specialized sleeve. Both spherical seats are strategically positioned to align the cylindrical specimen's longitudinal axis with the cell chamber's own axis. A minimal confining pressure is initially applied to secure the sleeve tightly against the rock. Following this, the cell, complete with its spherical seats, is positioned in a suitable loading frame, where axial and confining pressures are then administered. The acoustic platens are linked to a pulser-receiver system. This system generates an electrical pulse that stimulates a piezoelectric transducer, resulting in the emission of an acoustic pulse. This acoustic pulse journeys through the rock core to a second transducer, which serves as a receiver. The received pulse is converted back into an electrical signal, which is subsequently amplified and conditioned by the receiver unit. Acoustic signals are then automatically captured by a computer, displaying both compressional (P) and shear (S1 & S2) waveforms. From these readings, both compressional and shear acoustic velocities are calculated, along with dynamic elastic constants.

FEATURES

Standard:	ASTM (D2845)
Confining pressure:	70 MPa (10,000 psi)
Temperature:	Ambient
Waves:	P, 1 & S2
Frequency:	1 Mhz
Specimen diameter:	25.4 mm (1.0 inch)
	38.1 mm (1.5 inches)
	42.0 mm (1.654 inches)
	54.7 mm (2.154 inches)
	63.5 mm (2.5 inches)
Specimen length:	twice the diameter
Wetted part material:	stainless steel
Pore port:	1/8 inch
Confining port:	3/8 inch

TEST RESULTS



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