

Compact™ Cross-Dipole Sonic Tool

Delivers accurate and advanced acoustic reservoir measurements

Applications

- Velocity calibration with time/depth conversion
- Amplitude variation with offset (AVO) calibration
- Porosity estimation and lithology
- Gas identification
- Geomechanical properties
- Anisotropic presence, magnitude, and orientation
- Elastic properties
- Hydraulic-fracture design and sanding potential

Features and Benefits

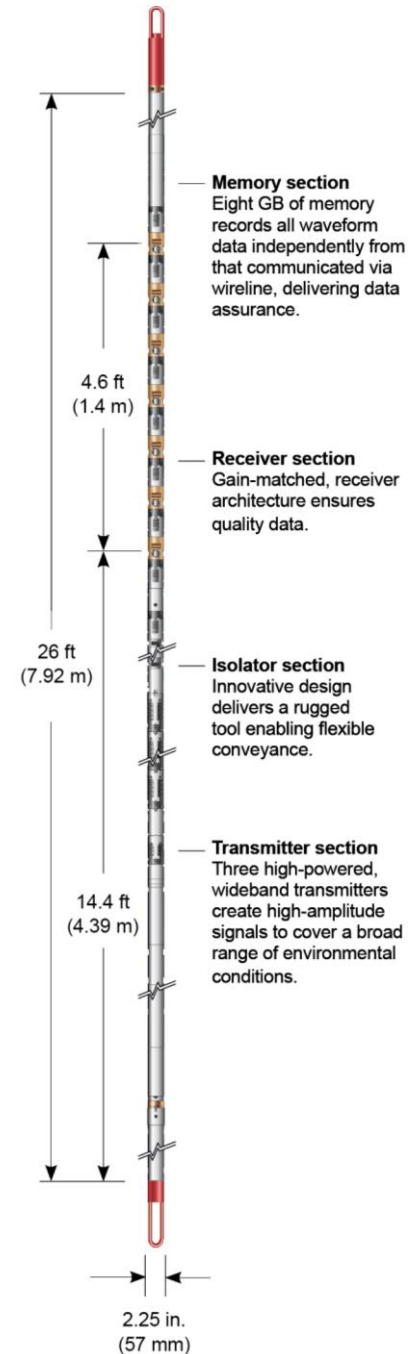
- The tool features a propriety transmitter and receiver design that obtains high-quality data in a broad range of environments.
- For data assurance, the tool records all waveform data into flash memory, independently from the data communicated by wireline.
- The small diameter of the tool facilitates deployment in wireline or memory mode to mitigate the risk of bridging events and to reduce nonproductive time.

Tool Description

The Weatherford Compact cross-dipole sonic (CXD) tool combines monopole and cross-dipole sonic technology to provide acoustic data for a wide variety of geophysical, petrophysical, and geomechanical applications. The data obtained by the CXD tool assists in improving reservoir characterization and ultimately maximizes well and reservoir productivity.

The tool has three high-powered transmitters: one monopole and two wideband, low-frequency, dipole transmitters perpendicular to each other. The receiver section has an array of eight receiver stations. Each receiver station consists of four gain-matched, piezoelectric hydrophones that are aligned with the dipole transmitters. The tool records 96 high-fidelity, wideband waveforms, which provides excellent quality control.

Patented isolator technology prevents direct flexural wave transmission to the receivers through the tool body and provides a rugged tool for flexible conveyance. The CXD tool can provide anisotropic orientation data when run with the Compact borehole navigation (MBN) tool or Compact microimager (CMI) tool.



The Compact cross-dipole sonic (CXD) tool enables confident decision making on acoustic reservoir properties using advanced acoustic measurements.



Compact™ Cross-Dipole Sonic Tool

Specifications

Measurement

Data	Compressional (P-wave), shear (S-wave) slowness, fast shear azimuth
Logging speed	3,600 ft/hr (18 m/min)
Measurement range - compressional slowness	40 to 250 $\mu\text{s}/\text{ft}$ (130 to 820 $\mu\text{s}/\text{m}$)
Measurement range - shear slowness	70 to 900 $\mu\text{s}/\text{ft}$ (230 to 2,960 $\mu\text{s}/\text{m}$)
Vertical resolution	4.6 ft (1.4 m) Enhanced = 0.7 ft (200 mm)
Accuracy	$\pm 2\%$
Depth of investigation	1.5 ft (46 cm) shear slowness in soft formations
Borehole fluids	WBM, OBM, air

Mechanical

Maximum outer diameter	2.25 in. (57 mm)
Length	26 ft (7.9 m)
Weight (air)	239 lb (109 kg)
Maximum temperature	320°F (160°C)
Maximum pressure	15,000 psi (103 MPa)
Maximum borehole diameter	18 in. (457.2 mm)
Minimum borehole diameter	3 in. (76 mm)

