

Large Openhole Logging

To meet the special challenges of large openhole logging, selected modified tools are available.

- **Resistivity logging:** For all resistivity tools, borehole correction and resolution selection are important. The AIT* Array Induction Imager Tool borehole forward model is based on a cylindrical borehole and depends on the measured values of mud resistivity, formation resistivity, borehole diameter, and tool standoff. Large-hole kits consist of big standoffs and a special nonconductive bow spring to maintain a constant standoff throughout logging.
- **Neutron porosity logging:** The large-hole neutron logging kit for the CNL* Compensated Neutron Logging tool (CNT) has spring shoes and a custom

bow spring that fasten to the CNT. The large-hole kit must be run with a powered caliper, which acts as an additional eccentralizer for the bow spring and shoes. The short arm of the powered caliper measures the standoff.

- **Density logging:** The large-hole kit enables density logging in borehole sizes from 16 to 30 in. [40.64 to 76.20 cm].
- **Sonic logging:** The large-hole kit for sonic tools contains centralizers that are placed either above or below the sonic transmitters or receivers. Because the minimum outer diameter (OD) for the fully compressed kit is 11 in. [27.94 cm], the sonic large-hole kit should be used only in boreholes larger than 14 in. [35.56 cm].

- **Sampling:** Large-hole kits are available for the use of sampling tools in large holes. The MRLH-AA kit for the MDT* Modular Formation Dynamics Tester enables running the MDT tool in holes as large as 19 in. [48.26 cm]. Shoe extenders for the Mechanical Sidewall Coring Tool (MSCT) extend the range of coring operations to holes as large as 19 in.
- **Seismic logging:** The large-hole kit for the CSI* Combinable Seismic Imager increases the operating range of the tool to 22 in. [55.88 cm], with a minimum borehole diameter of 7 in. [17.78 cm].

Borehole Size Specifications for Large-Hole Tool Kits

	Borehole Size—Min.	Borehole Size—Max.
Resistivity		
Platform Express* AIT* Array Induction Imager Tool (AIT-H)	9½ in. [24.13 cm]	20 in. [50.80 cm]
Powered Caliper Device (PCD-B)	7 in. [17.78 cm]	25 in. [63.50 cm]
Neutron porosity		
Platform Express Highly Integrated Gamma Ray Neutron Sonde (HGNS)	15 in. [38.10 cm]	22 in. [55.88 cm]
Compensated Neutron Tool (CNT-H)	14 in. [25.56 cm]	22 in. [55.88 cm]
Density		
Litho-Density* tool (LDT-D)	14 in. [25.56 cm]	30 in. [76.20 cm]
Platform Express High-Resolution Mechanical Sonde (HRMS)	16 in. [40.64 cm]	28 in. [71.12 cm]
Sonic		
Digital Sonic Logging Tool (DSLTL)	14 in. [35.56 cm]	30 in. [76.20 cm]
DSI* Dipole Shear Sonic Imager	14 in. [35.56 cm]	20 in. [50.80 cm]
Sampling		
MDT tool with MRLH-AA	7½ in. [19.05 cm]	19 in. [48.26 cm]
MSCT with shoe extender	5½ in. [13.97 cm]	19 in. [48.26 cm]
Seismic		
CSI Combinable Seismic Imager	7 in. [17.78 cm]	22 in. [55.88 cm]