

iQ™ Magnetic Properties Tool

Measures the casing in 90° sections

Applications

- Casing inspection
- Casing thickness
- Scale determination
- Casing ID

Features and Benefits

- Compact and robust tool design provides the azimuthal casing thickness (map) without delicate arms, pads, or bow springs
- Unique measurement algorithm and new digital electronics generate:
 - Quantitative EM casing ID and properties through multi-frequency measurements and inversion
 - Quantitative quadrant casing thickness corrected by measured casing properties
 - Simple and reliable calibration procedures
- Provides an electromagnetic ID
- Compatible and works with the HD platform

Tool Description

The Weatherford 4-segment receiver of the iQ magnetic properties tool measures the casing in 90° sections (quadrants).

The tool produces a magnetic field that opposes the primary field casing attenuation and phase shift. The magnitude of the measured phase shift is a function of the electrical conductivity, magnetic permeability, and metal thickness of the field being measured.

Multiple coil spacing and frequencies control the depth of investigation and measure the electromagnetic properties of the casing, yielding a quantitative casing thickness and internal diameter measurements.



iQ™ Magnetic Properties Tool

Specifications—Standard, PTX, HD

Ratings and Dimensions

	2-3/4 in.	3-1/2 in.
Maximum temperature	350°F (177°C)	
Maximum pressure	20,000 psi (138 MPa) 15,000 psi (103.42 MPa)*	
Outside diameter	2.75 in. (69.85 mm)	
Length	75 ft (1,905 m)	68.4 ft (1,737.36 m)
Weight	70 lb (31.75 kg)	130 lb (177 kg)
Casing/tubing OD	Min: 3.5 in. (89 mm) Max: 7 in. (178 mm)	Min: 4.5 in. (114.3 mm) Max: 9.625 in. (244.46 mm)
Tensile strength	Tension: 15,000 lb (6,803 kg) Compression: 15,000 lb (6,803 kg)	
Measure points	Casing Thickness: 24.5 in. (639 mm) Caliper: 25.0 in. (635 mm) Diff'l Thickness: 32.7 in. (828 mm)	Thickness: 32.66 in. (829.6 mm) Caliper: 25.62 in. (650.8 mm)

*HD only

Borehole Conditions

	2-3/4 and 3-1/2 in.
Tool positioning	Centralized
Logging speed*	Recommended: 30 ft (9.1 m)/min Max: 60 ft (318.2 m)/min

*Standard and PTX only

Hardware Characteristics

	2-3/4 and 3-1/2 in.
Source type	Single and multi-frequency AC coils
Sensor type	Azimuthal thickness gauge with quadrant sensitivity multi-frequency caliper and casing properties
Connections	E-Line 'GO' Type
Combinability	GR, CCL, MAC, Radii Bond Tool
Acquisition mode*	SRO with TCU Mem with MLT

*HD only



iQ™ Magnetic Properties Tool

Electrical

	2-3/4 and 3-1/2 in.
Current	+ 45 mA at 130 V

Calibration

	2-3/4 and 3-1/2 in.
Primary and wellsite	Sections of API casing in different weights

Measurements

	2-3/4 and 3-1/2 in.	
	Casing Thickness	Casing Caliper
Principle	Remote-field EC	Near-field EC
Range	0 to 1.50 in. (0 to 38.1 mm)	3.50 to 7.00 in. (88.9 to 177.8 mm)
Azimuthal resolution	4 sectors	NA
Vertical resolution	1.56 in. (39.6 mm)	1.00 in. (25.4 mm)
Sensitivity	1% (2-in. through-hole)	1%
Accuracy	±1%	
Primary curves	Casing and differential thickness	Casing ID
Secondary curves	3-axis accelerometer, internal temperature, casing electrical properties	

