

# iQ™ Magnetic Properties Tool



The iQ™ Intelligent Quantitative Magnetic Properties Tool is a unique segmented electromagnetic thickness tool that accurately measures casing thickness, internal diameter and material properties.

The iQ™ is a mandrel tool which dramatically increases its reliability and cost effectiveness when compared to other electromagnetic thickness tools in the market. The tool also incorporates a unique patented design with a segmented receiver and additional new features that yield quantitative casing thickness, caliper and casing magnetic properties measurements.

The 4 segment receiver 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, that yield a quantitative casing thickness and internal diameter measurements.

Pipe defects result in a disruption of the eddy currents that are detected by the far-field detector as increases in amplitude and shorter transit times. The differential thickness measurements are made by 4 receiver coils positioned close to the far-field detector that provides an enhanced resolution of small defects within the casing wall.

An electronic caliper measures the internal diameter of the casing which can be used in conjunction with a mechanical caliper to determine the magnetic properties of an identified defect.

The iQ Magnetic Properties Tool enables calculation of thickness and identification of defects in a wide range of casing sizes. The tool works in high-pressure well bores up to 20,000 psi, and in wells with temperatures up to 175°C.



2 3/4" iQ Magnetic Properties		3 1/2" iQ Magnetic Properties (COMING SOON!)
<b>Mechanical Specifications</b>		
Outside diameter, in [cm]	2.750 [6.98]	3.500 [8.89]
Length, ft [cm]	6.25 [1.92]	5.87 [1.79]
Weight, lb [kg]	70 [31.75]	130 [58.97]
Temperature rating, °F [°C]	350 [177]	350 [177]
Pressure rating, psi [MPa]	20,000 [137.89]	20,000 [137.89]
<b>Measurement Specifications</b>		
Output	Casing and Differential Thickness Map, and Caliper	
Logging speed, ft/min [m/min]	Recommended: 30 [9.14] Maximum: 60 [18.28]	
Measurement range, in [cm]	Thickness: 0.0 – 1.50 [0.0 – 3.81]	Thickness: 0.0 – 1.50 [0.0 – 3.81]
	MagCal: 3.5 – 7.0 [8.89 – 17.78]	MagCal: 4.5 – 9.625 [11.43 -24.45]
Vertical resolution, in [cm]	Thickness: 1.5 [3.81]	Thickness: 1.5 [3.81]
	MagCal: <1.0 [2.54]	MagCal: <1.0 [2.54]
Accuracy	±1%	
Casing O.D. range, in [cm]	Up to 7.000 [17.78] casing	Up to 9.625 [24.45] casing
<b>Electrical Specification (While Logging)</b>		
Voltage, V	+130	+130
Current, mA	45	45

