

ProMAC™ Multi-Arm Caliper Tools



Available with either HD (High-speed Digital) or PTX telemetry, the ProMAC series Multi-Arm Caliper tools are the latest generation of Probe electromechanical cased hole logging instruments for measuring the internal profile of the tubing, casing and completion assembly.

A multi-finger caliper log of the inside of a completion enables operators to cost-effectively plan work-over and remedial operations, and to keep historical records of the general condition of tubing and casing in order to assess any problems associated to corrosion, wear or mechanical deformation through the life of the well.

A series of independent radial measurements provided by the caliper arms, also commonly referred to as “fingers”, yields a detailed image of the inspected well that can be presented in various formats, including a cross-section of the casing and a 3-dimensional, color-enhanced visualization.

The ProMAC series tools are available in 24, 40 and 60-finger configurations with a full range of measurement. The tools come in 1-11/16 in (43.0 mm), 2-3/4 in (69.9 mm) and 3-3/4 in (95.3 mm) O.D. to log tubulars ranging from 1.75 to 11.75 in (44.5 to 298.4 mm).

As multi-arm caliper tools log the internal profile of the completion, the actuation of each finger is converted to an individual electrical signal. The signal is converted into a calibrated radial measurement that is transmitted in a data frame that consists of a frame identifier, individual finger channels, electronics temperature data and a checksum, at a rate of 50 frames per second on HD (or at 10 frames per second on PTX). Directional data is acquired simultaneously and can also be included in the log presentation.

The ProMAC series multi-arm caliper tools incorporate mechanical, electrical and electronic design features that enhance performance and reliability, ultimately reflecting on customer ROI. Simple to service and maintain, with interchangeable and common components between different sizes. The ProMAC tools also incorporate robust temperature compensation stability thanks to our patent-pending DVRTs. Surface Read-Out capable with a Warrior™ cased-hole logging panel, or Memory capable (only with HD telemetry), downhole data is plotted and processed using Warrior™ software for all telemetry options.



	MAC24	MAC40	MAC60
Mechanical Specifications			
Outside diameter, in [mm]	1.69 [43.0]	2.75 [69.85]	3.75 [95.25]
Length, ft [m]	5.1 [1.55]	5.3 [1.62]	7.46 [1.66]
Weight, lb [kg]	25 [11.3]	80 [36.3]	135 [61.2]
Temperature rating, °F [°C]	350 [177]	350 [177]	350 [177]
Pressure rating, psi [MPa]	15,000 [103]	20,000 [138]	20,000 [138]
Number of fingers	24	40	60

Measurement Specifications

Diameter Range, in [mm]	1.75 – 7.0 [44.45 – 177.8]	3.0 – 9.63 [76.2 – 244.6]	4.0 – 11.75 [101.6 – 298.4]
Output	Primary: 24, 40 or 60 Internal casing radii, inclination and rotation Secondary: Head voltage, internal temperature		
Logging speed, ft/min [m/min]	Recommended: 30 [9.14], Maximum: 60 [18.28]		
	PTX	HD	
Vertical resolution, in [mm] (at recommended logging speed)	0.3 [7.6]	0.12 [3.0]	
Radial resolution, in [mm]	0.001 [0.025]		
Radial accuracy, in [mm]	+/- 0.02 [+/- 0.5]		
Sampling rate (frames per second)	10	50	
Combinability	All PTX tools: GR, CCL, iQ, RADii	All HD tools: GR, CCL, iQ, RADii, RAS, PLT	
Sensor Type	Caliper: DVRT Inclinometer: 3-axis accelerometer		

Electrical Specifications

		PTX	HD
Voltage, V DC	SRO	120	50
	Memory	N/A	19.2