Surface Probes

# Sharck™ — Carbon Steel Weld Probe

## *Fast Inspection of Surface-Breaking Cracks without Surface Preparation*

## Benefits and Features

- Ergonomic design
- Embedded control buttons
- Detection and sizing of surface-breaking cracks with tangential ECA (TECA) technology
- Designed for butt welds: Independent, spring-loaded fingers adapt to weld geometries
- Robust and durable
- High-precision encoder for easy flaw positioning
- Compatible with the Reddy® and Ectane®
- Complies with ASTM E3052

The innovative design of Sharck™ probes is capable of addressing the inspection needs of several industries relying heavily on carbon steel welds, such as the onshore and offshore oil and gas, wind power, and structural industries.

Sharck is specifically developed for cracking in carbon steel, using tangential eddy current array (TECA™) technology. This probe is capable of positioning cracks, measuring their length, and sizing them as deep as 7 mm (0.28 in). This can be achieved without removing paint or protective coatings, unlike more conventional inspection techniques.

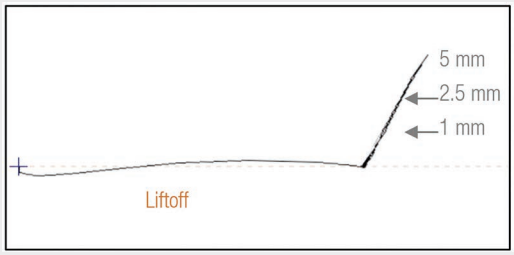
The spring-loaded fingers of the Sharck probe enable scanning the weld cap, the toe area, and the heat affected zone in a single pass — at up to 200 mm/s (8 in/s) with full data recording. The advanced 2D and 3D C-scan imaging generated from the probe's data offers the most intuitive inspection results.

The probe also features embedded control buttons to enable performing a few select operations remotely (e.g., balancing the probe elements; starting, stopping, and saving an acquisition). The probe's ergonomic design guarantees an excellent grip, even when wearing work gloves. Finally, Sharck's active area is marked to make it easier to position the probe when scanning.

## *TECA Technology Overview*

TECA technology incorporates coils that yield a very specific eddy current signal for surface-breaking cracks in carbon steel.

Induced eddy currents flow perpendicular to the scan direction. They are forced to dive under cracks they meet. The generated liftoff signal is horizontal and crack-like defects are 90° with an vertical amplitude proportional to the defect's depth.



## Weld Probe Specifications

| | SHARCK-BW053-G2-R-N05S<br>SHARCK-BW053-G2-E-N05S |
|---|---|
| Casing | Medium |
| Coverage | 53 mm (2.1 in) |
| Fingers | 22 (11 × 2 rows) |
| Minimum number of required channels | 64 |
| Encoder | Built-in, IP68 rated, 20.53 counts/mm |
| Cable | Standard, 5 m (16.4 ft) |
| Maximum surface temperature | 100 °C (212 °F) |
| Minimum pipe diameter for circumferential weld scan | 25.4 cm (10 in) |
| Minimum pipe diameter for axial weld scan | 40.6 cm (16 in) |

## Pencil Probe Specifications

| | SHARCK-PEN-ST-N05TE<br>SHARCK-PEN-ST-N05TR | SHARCK-PEN-RA-N05TE<br>SHARCK-PEN-RA-N05TR |
|---|---|---|
| Casing | Straight | Right angle |
| Coverage | Approximately 7 mm (0.3 in) at –6 dB | |
| Finger | 1 | |
| Minimum number of required channels | 32 | |
| Cable | Standard, 5 m (16.4 ft) | |
| Maximum surface temperature | 100 °C (212 °F) | |

## Performances

| Item | Value | Note |
|---|---|---|
| Minimum detectable longitudinal crack length | 2 mm (0.08 in) | Results may vary according to crack location, liftoff, etc. |
| Minimum detectable longitudinal crack depth | 0.5 mm (0.02 in) | Results may vary according to crack location, liftoff, etc. |
| Maximum measurable crack depth | 7 mm (0.28 in) | Typical, with good accuracy, but can detect deeper cracks |
| Length sizing accuracy | ±2 mm (0.08 in) | Typical when using 0.5 mm (0.02 in) scan resolution |
| Depth sizing accuracy | 20 % to 40 % | Typical for a wide range of crack length-to-depth ratios and alloys |
| Scan speed | Up to 200 mm/s (7.9 in/s) | With full data recording |
| Liftoff tolerance | Up to 3 mm (0.12 in) | Non-conductive coatings and paints, with monitoring and auto-correction |
| Materials | Wide variety of carbon steels | Tested on:<br>• AISI 1018, 1020, 1045, 1117, 4140<br>• SA516, 537, 387<br>• API 2W60<br>• ABS A131<br>• Others |

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2017-04-04