

SMART Sens[®] Tool

Provides real-time, downhole, wireline tension measurement to help prevent pump-off, stuck toolstrings and expensive fishing operations

Applications

- E-Line cased-hole
- Plug and perf / pump down perforating (PDP)

Features and Benefits

- Accurately measures real-time tension, compression line voltage, and internal tool temperature
- Plug and Play—no special panels or hardware required
- Compatible with Warrior System and commercial perforating switches
- No field calibration required
- No internal seals or parts to maintain API RP-67 compliance
- Maximizes pumpdown efficiency and speed
- Minimizes lost time and fishing risk
- Deploys longer perforating guns in deviated wells
- Verifies plug setting and release
- Eliminates uncertainty when activating a cable release device

Tool Description

The Weatherford SMART Sens tool is a wireline tension monitoring device which maximizes efficiency and minimizes risk during challenging wireline operations. The tool provides a real-time downhole cable tension measurement which eliminates uncertainty and gives the operator increased control.

Maintaining safe cable tension downhole is challenging in highly deviated and lateral wells because surface measurements do not account for friction. If the cable tension is allowed to become too low, then slack cable and released torque can cause cable damage. If the tension is allowed to become too high, during pumpdown operations, for example, the weak point can be unintentionally broken. Increased visibility of downhole events such as plug setting and perforating guns firing can be valuable also where surface tension readings are inconclusive.

The SMART Sens tool is a robust and proven tool which is straightforward to use in the field. Plug and Play compatibility with Warrior means that many service companies can use this tool directly with no additional surface equipment.



SMART Sens[®] Tool

Specifications

Mechanical Specifications

Outside diameter	1.688 in. (42.86 mm)	2.125 in. (53.98 mm)	2.75 in. (69.85 mm)
Makeup length	2.46 in. (0.75 mm)	2.3 in. (0.70 mm)	2.20 in. (0.67 mm)
Weight	12.6 lb (5.7 kg)	24.5 lb (11.1 kg)	33.5 lb (15.2 kg)
Upper connection	1-3/16-12 UN Box	1-3/16-12 UN Box	1-5/8—6 ACME Pin
Lower connection	1-3/16-12 UN Pin	1-3/16-12 UN Pin	1-5/8—6 ACME Box

Measurement Specifications

Maximum tension	10,000 lbf
Maximum compression	2,000 lbf
Resolution	5 lbf
Sampling rate	10 Hz

Other Specifications

Pressure rating	20,000 psi (137.8 MPa)
Temperature rating	350°F (175°C)
Axial shock (g, ms)	5,000 g for 1.0 ms
Maximum tensile load	100,000 lbf
Maximum moment force*	7,500 lbf-ft

*Measured at lower connection

Electrical Specifications

Maximum pass-through voltage* ‡	600 VDC
Operating voltage*	20 to 50 VDC
Current draw	35 mA

*Polarity is configured to be compatible with perforating switch system used.

‡Pass-through voltage of 600V is only applicable when the SMART Sens Tension Sub is NOT powered on. When the SMART Sens Tension Sub is powered on, usually during logging, the MAX line voltage that should be applied is 150 VDC.

