

# FULL-BORE SPINNER FLOWMETER



Bi-directional sensitive to the flow, Full-Bore Spinner (FBS) Flowmeter is designed to measure a wide range of flow rates. It is available in memory as well as SRO modes.

## Applications

- The solution for the low flowrate wells
- Accurate fluid flow measurement in 4 1/2" - 9 5/8" casings
- Detailed production/injection profiling
- Leak detection

## Advantages

- Needle-type diamond bearings for extra low friction and easy rotation of the impeller
- Changeable impeller for a range of casings to cover a maximum of wellbore
- Durable rubber impeller and collapsible arms from 6.5" to 1.65" OD for passing through the well's ID restrictions
- Bi-directional record
- Extra low flowrate threshold



## Tool Specifications

Threshold	0.03 ft/min (0.6 m/hr)
Detectable flowrate range	5-7,550 bpd (1-1,200 m <sup>3</sup> /d)
Bi-directional measurements	Yes
Impeller diameter	2.4/3.9 in (60/100 mm)
Maximum operating pressure	14,500 PSI (100 MPa)
Maximum operating temperature	150°C (304°F)
Tool OD	1.50/1.65 in (38/42 mm)
Tool length	3.2 ft (0.97 m)
Tool weight	11 lbs (5.0 kg)
Connections	15/16 SR
Operational time in memory mode	Over 100 hrs
H <sub>2</sub> S resistance	6% standard (25% optional)
Surface read-out / Memory	Both

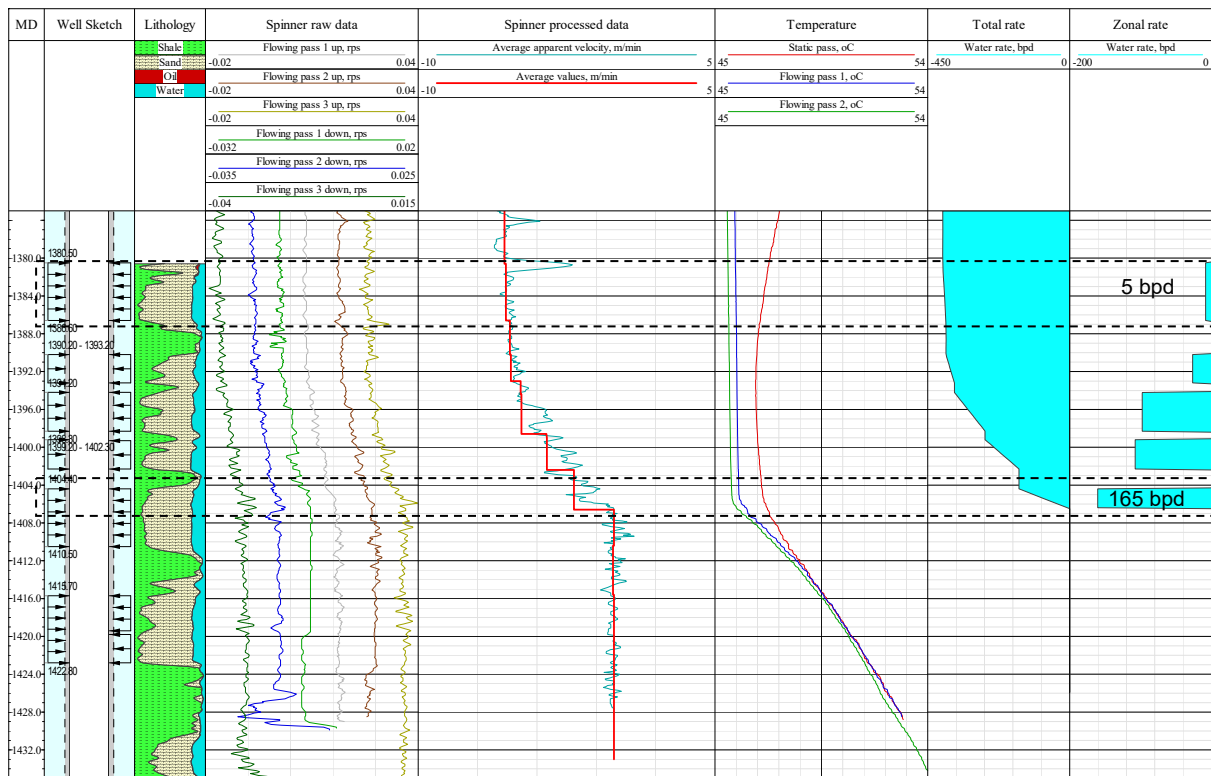
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The FBS has rigid collapsible arms as well as a collapsible impeller to pass through the tubing and other wellbore ID restrictions during RIH/POOH operations, and then expand across the cased hole reservoir section to evaluate the flow of a larger cross-sectional area.

A changeable impeller of different diameters enables to fit the tool with a particular well configuration and covers the maximum cross-section of the wellbore across the required logging interval to improve the survey accuracy.

With needle-type diamond bearings, the FBS allows measuring ultra-low rates from 5 bpd, making the tool a suitable solution for low-rate wells.



Normally run at the bottom of MPLT string the FBS tool is combinable with a full spectrum of North Side PL tools depending upon the survey objective. The FBS bullnose could be also replaced with the High Resolution Temperature Tool (HRT).