Revolution® High-Dogleg Rotary-Steerable System

Enables deep kickoffs and high-dogleg builds up to 16°/100 ft (30 m) for maximum reservoir exposure

Applications

- High-build-rate wells
- Single-run drilling from vertical and building to horizontal
- Real-time monitoring for geological control

Features and Benefits

- The Revolution high-dogleg (HDL) rotary-steerable system (RSS) enables deep kickoffs in high-build-rate wells to maximize reservoir exposure.
- The RSS achieves a high build rate in curved applications, yet it can be configured to maintain low tortuosity in lateral and tangent applications.
- The RSS performs high-dogleg turns.
- The RSS can be fully integrated with any Weatherford logging-while-drilling (LWD) system.
- The point-the-bit design of the RSS improves hole quality, which makes cuttings removal more efficient and enables casing and liner systems to run smoothly to bottom.
- The near-bit inclination and gamma ray sensor facilitate real-time monitoring and geologic control.
- On-the-fly downlinking reduces rig nonproductive time and enables precise steering control.
- On-board sensors measure vibrations, whirl, and stick-slip, which enables operators to implement mitigation strategies in real time.
- The compact design of the RSS positions critical LWD measurements close to the bit for more accurate geosteering.
- The pivot is optimized for high-build-rate wells.
- The optional dual-battery configuration of the RSS extends operational performance.

Tool Description

The Weatherford Revolution HDL RSS enables precision drilling in complex build sections to deliver greater reservoir exposure and faster drilling. The Revolution HDL RSS has a short, compact design that reduces the complexity of rotary-steerable drilling while placing critical LWD measurements close to the bit for better trajectory control and wellbore placement. The HDL RSS can drill complex wellbores with full bottomhole-assembly (BHA) rotation at the rate of up to 16°/100 ft (30 m). The RSS enables complete shoe-to-shoe drilling in a single run to achieve previously unattainable well trajectories and reduce overall drilling time. The RSS also features continuous string rotation that reduces drilling torque and drag, provides better hole cleaning, and improves borehole quality.

The Revolution high-dogleg rotary-steerable system includes a sleeve-type pivot stabilizer, nonrotating housing, near-bit inclination and gamma ray sensors, and an LWD interface.

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Specifications

Tool size	6-3/4 in.
Hole size	8-3/8 to 9-7/8 in.
RSS assembly length	20.18 ft (6.15 m)
Top connection	4-1/2 API IF box
Bottom connection	4-1/2 API Reg box
Makeup torque	24,000 to 25,200 ft-lb (32,539 to 34,166 N•m)
Maximum torque	20,000 ft-lb (27,116 N•m)
Maximum reusable tension	125,000 lb (56,700 kg)
Maximum survivable tension	350,000 lb (158,757 kg)
Maximum weight on bit	50,000 lb (22,680 kg)
Maximum dogleg severity per 100 ft (30 m)	16°
Minimum kickoff angle	No limit; can kick off from vertical
Maximum operating temperature (standard)	300°F (149°C)
Maximum operating temperature (optional)	347°F (175°C)
Maximum operating pressure	25,000 psi (172 MPa)
Maximum flow rate	750 gal/min (2,839 L/min)
Maximum sand content	2%
Distance from bit, near-bit inclination	16 ft (4.9 m)
Distance from bit, near-bit gamma	18 ft (5.5 m)

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