Revolution® Heat Rotary-Steerable System

Enables precision drilling in high-pressure, high-temperature (HPHT) environments

Applications

- Extended-reach drilling in HPHT wells
- Directional drilling and logging while drilling (LWD) in HPHT wells
- Real-time measurements of near-bit inclination and gamma ray
- Formations that require reduced slide intervals

Features and Benefits

- On-the-fly downlinking reduces nonproductive time and enables precise steering control.
- On-board sensors measure vibrations, whirl, and stick-slip, which enables real-time mitigation strategies.
- High-viscosity oils and Kalsi Seals® help to maintain the integrity of the hydraulic systems and fluid in HPHT environments.
- A motorized option is available to further improve rate of penetration.
- The Revolution Heat rotary-steerable system (RSS) is compatible with all Weatherford LWD systems.
- Paired with LWD technologies, the RSS delivers complete evaluation capabilities in HPHT drilling environments.
- Near-bit sensors provide critical LWD measurements for more accurate geosteering.
- The point-the bit design improves hole quality, which increses cuttings removal speed and enables smooth casing and liner running.
- The RSS drills with a high build rate in deviated wellbores, yet it can maintain low tortuosity in lateral and tangent applications.

Tool Description

The Revolution Heat RSS enables extended-reach drilling in wells with temperatures up to 347°F (175°C). The RSS improves hole quality and cuttings removal while increasing drilling rates.

The RSS Heat has a short, compact design that reduces the complexity of rotary-steerable drilling technology and places critical LWD measurements close to the bit. It can be combined with a comprehensive range of advanced Weatherford HPHT LWD sensors to deliver a complete drilling and evaluation service in extreme well conditions.

The RSS Heat is available in multiple sizes ranging from 5-3/4 to 18-1/4 in. The 4 3/4-, 6 3/4-, and 8 1/4-in. models are available with either standard stroke or reduced stroke (RS).

The Revolution Heat RSS includes a near-bit pivot stabilizer, nonrotating housing, and near-bit inclination and gamma ray sensors.

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Specifications

RSS size	4-3/4 in. RS	4-3/4 in.	6-3/4 in. RS	6-3/4 in.	8-1/4 in. RS	8-1/4 in.	9-1/2 in.
Hole size	5-3/4 to 5-7/8 in.	5-7/8 to 6-3/4 in.	7-7/8 in.	8-3/8 to 10-5/8 in.	10-5/8 in.	12-1/4 to 18-1/4 in.	12 to 18-1/4 in.
Assembly length	12.90 ft (3.90 m)		14.80 ft (4.53 m)		17.80 ft (5.40 m)		20.08 ft (6.12 m)
Top connection	3-1/2 in. API IF box		4-1/2 in. API IF box		5-1/2 in. API IF box		7-5/8 in. API IF box
Bottom connection	3-1/2 in. API Reg box		4-1/2 in. API Reg box		6-5/8 in. API Reg box or 7-5/8 in. API Reg box		
Makeup torque	9,900 to 10,900 ft-lb (13,423 to 14,778 N•m)		24,000 to 25,200 ft-lb (32,539 to 34,166 N•m)		40,000 to 70,000 ft/lb (54,233 to 94,920 N•m)		53,000 to 70,000 ft-lb (71,858 to 94,920 N•m)
Maximum torque	10,000 ft-lb (13,558 N•m)		20,000 ft-lb (27,116 N•m)		40,000 ft-lb (54,233 N•m)		53,000 ft-lb (71,858 N•m)
Maximum reusable tension	105,000 lb (47,627 kg)		125,000 lb (56,700 kg)		205,000 lb (92,986 kg)		325,000 lb (147,417 kg)
Maximum survivable tension	250,000 lb (113,398 kg)		350,000 lb (158,757 kg)		495,000 lb (224,528 kg)		760,000 lb (344,730 kg)
Maximum weight on bit	25,000 lb (11,340 kg)		50,000 lb (22,680 kg)		90,000 lb (40,823 kg)		
Maximum dogleg severity per 100 ft (30 m)	6°	10°	6°	10°	5°	7.5°	6°
Minimum kickoff angle	None; can kick off from vertical						
Maximum temperature	347°F (175°C)						
Maximum pressure	30,000 psi (207 mPa)						
Maximum flow rate	350 gal/min (1,325 L/min)		750 gal/min (2,839 L/min)		1,500 gal/min (5,678 L/min)		1,800 gal/min (6,814 L/min)
Maximum sand content	2%						
Distance from bit, near-bit inclination	9 ft (2.7 m)		12 ft (3.7 m)		14 ft (4.3 m)		19 ft (5.8 m)
Distance from bit, near-bit gamma	16 ft (4.9 m)		14 ft (4.3 m)		16 ft (4.9 m)		21 ft (6.4 m)

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