

Revolution[®] Core Rotary-Steerable System

Drills precisely in conventional and offshore extended-reach wells

Applications

- Drilling extended-reach, underbalanced, and tangent wells
- Drilling from vertical and building to horizontal
- Drilling in formations that require reduced slide intervals

Features and Benefits

- The point-the-bit design improves hole quality, which increases cuttings removal speed and enables smooth casing and liner running.
- 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.
- Near-bit sensors provide critical logging-while-drilling (LWD) measurements for more accurate geosteering.
- Near-bit stabilizers improve hole quality and bottomhole assembly (BHA) stability.
- A motorized option is available to further improve rate of penetration.
- The rotary-steerable system (RSS) is compatible with all Weatherford LWD systems.
- The tool drills with a high build rate in deviated wellbores, yet it can be configured to maintain low tortuosity in lateral and tangent applications.

Tool Description

The Revolution Core RSS provides precision drilling in extended-reach wells through use of point-the-bit technology, which improves borehole quality, rates of penetration, and bit life. The short, compact design reduces the complexity of rotary-steerable drilling technology and places critical LWD measurements close to the bit.

The RSS uses a pivot stabilizer to orient the drill-bit axis with the axis of the planned well path, which optimizes the directional-drilling process and maximizes drilling efficiency. The relative rotation between the center shaft, which carries torque to the bit, and a nonrotating outer housing drive a hydraulic pump. This pump generates the motive force to deflect the drillstring as programmed in the well plan.

The RSS 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 Core 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)		24.89 ft (7.6 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 Reg 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	300°F (149°C)						
Maximum pressure	25,000 psi (172 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)		19.5 ft (6 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)

