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 increases 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).
# Revolution® Heat Rotary-Steerable System

## Specifications

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