

PowerDrive Orbit G2 rotary steerable system



Delivers higher abrasion resistance and DLS for tougher, longer runs

Emissions Reduction:
Lowers CO₂ emissions by drilling more sections in one run.

Where it is used

High-performance drilling operations that require higher dogleg severity (DLS) and longer runs.

How it enhances wells

- Improves abrasion resistance
- Increases DLS capabilities
- Minimizes overall well tortuosity by leveraging closed-loop automation
- Reduces CO₂ emissions by drilling more sections in one run

Key features

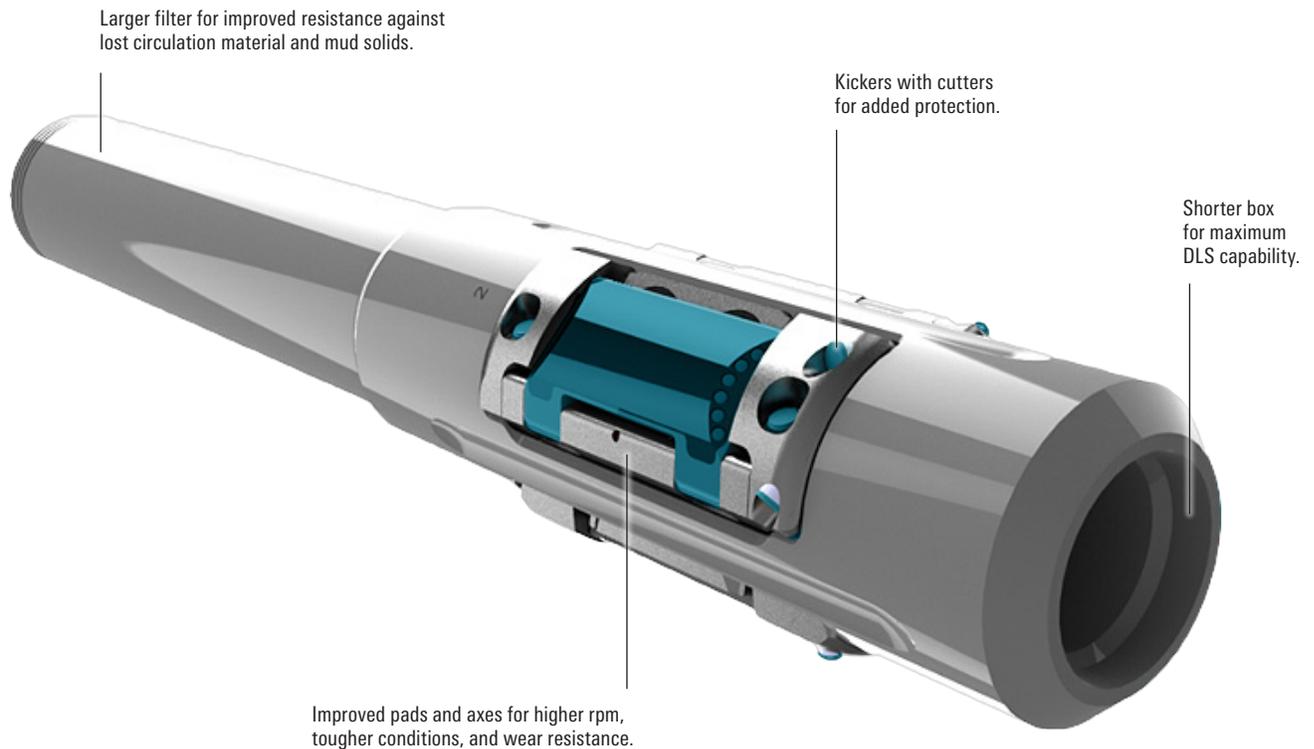
- Reduced distance from cutting structure to pad delivers greater curvature control
- Row of PDC cutters protects mechanical parts from erosion and enhances the push action of the pads

- Metal-to-metal sealing in pads handles aggressive drilling fluids and severe downhole conditions
- Hold inclination and azimuth (HIA) provide closed-loop automated tangent control
- Eight-sector near-bit azimuthal gamma ray identifies zones of interest
- Six-axis continuous HD surveys optimize well placement

What else I should know

The PowerDrive Orbit G2* RSS is part of the PowerDrive* RSS family that delivers the power required to place wells with greater accuracy and safety to minimize stuck pipe incidents, maximize drilling efficiency, and maintain borehole quality. The PowerDrive Orbit G2 RSS includes comprehensive six-axis continuous HIA measurements to enable precise well positioning. This feature, along with self-steering capabilities, provides smoother tangents with minimized tortuosity. Near-bit extended-range gamma ray measurements transmit additional well positioning data for improved real-time decision making.

Supporting operations at 350 rpm, the PowerDrive Orbit G2 RSS delivers higher ROP, minimizes stick/slip, and maximizes drilling performance in motorized RSS applications.



The PowerDrive Orbit G2 RSS features a new body design for increased abrasion resistance and DLS capability.

PowerDrive Orbit G2

Specifications	475 RSS	675 RSS	825 RSS	900 RSS	1100 RSS
General					
Nominal OD (API), in [mm]	4¾ [120.7]	6¾ [171.5]	9 [228.6]	9 [228.6]	9 [228.6]
Bit hole sizes, [†] in [mm]	5¾–6¾ [146.1–171.5]	8½–8¾ [215.9–222.3]	10½ [269.9]	12¼–18½ [311.2–460.4]	26 [660.4]
Overall length, ft [m]	13.38 [4.08]	13.43 [4.09]	13.72 [4.18]	13.94 [4.25]	15.06 [4.59]
Passthrough (DLS sliding), [‡] °/30 m	30	16	12	10	4
Max. operating torque, [§] lbf.ft [N.m]	9,000 [12,202]	18,500 [25,082]	45,000 [61,011]	45,000 [61,011]	70,000 [94,907]
Max. operating load, lbf [N]	340,000 [1,512,395]	1,100,000 [4,893,044]	1,100,000 [4,893,044]	1,800,000 [8,006,799]	2,000,000 [8,896,443]
Max. WOB, lbf [N]	31,000 [137,894]	180,000 [800,680]	270,000 [1,201,019]	370,000 [1,645,842]	225,000 [1,000,850]
Max. lost circulation material, lbm/galUS [kg/m ³]			1.5 [179.74] medium nut plug		
Flow range, ^{††} galUS/min [L/min]	120–355 [454–1,343]	210–970 [794–3,671]	280–2,000 [1,059–7,571]	280–2,000 [1,059–7,571]	280–2,000 [1,059–7,571]
Lateral vibrations		Shock level greater than 10 counts/s above 50-g _n threshold, 30-min limit			
Stick/slip		±100% mean rotational speed, 30-min limit			
Max. rotational speed, rpm			350		
Max. temperature, ^{††} degF [degC]			302 [150]		
Max. hydrostatic pressure, ^{§§} psi [MPa]			20,000 [137.9]		
Max. mud density, lbm/galUS [kg/L]			24 [2.88]		
Max. mud sand content, % by volume			1		
Sensors					
Tool bottom to gamma ray, ft [m]	5.96 [1.82]	6.31 [1.92]	7.06 [2.15]	6.92 [2.11]	8.07 [2.46]
Tool bottom to inclination, ft [m]	6.85 [2.09]	7.10 [2.16]	7.85 [2.39]	7.71 [2.35]	8.86 [2.70]
Tool bottom to azimuth, ft [m]	8.95 [2.73]	9.30 [2.83]	10.05 [3.06]	9.91 [3.02]	11.06 [3.37]
Inclination accuracy, °			±0.11 (at 1 sigma level)		
Azimuth accuracy, °			±1.8 at 90° inclination (at 1 sigma level)		
Gamma ray accuracy		Azimuthal 4-quadrant ±5% (30-s averaging window), front-back ratio of 24:1			
Shock detector threshold, radial		50 g _n ±5 g _n (±500 g _n max. peak)			

[†] PDC cutters assembly is bit-size specific. Designs for new bit sizes can be made on demand.

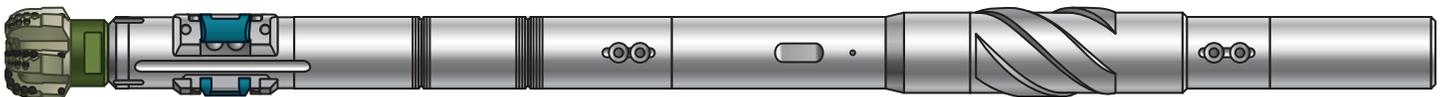
[‡] Depends on the connections used and the level of fatigue monitoring during drilling operations.

[§] Depends on WOB.

^{††} Depends on mud density.

^{†††} Optional 350 degF [177 degC] available.

^{§§} Optional 35,000 psi available.



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