

PowerDrive X6

Rotary steerable system

APPLICATIONS

- Onshore and offshore drilling
- Elimination of sliding

BENEFITS

- Optimized well placement
- Increased wellbore smoothness and decreased tortuosity
- Prolonged life of well for further interventions

FEATURES

- 5½-in to 28-in borehole size coverage
- Geostopping with near-bit gamma ray package
- Dual impeller control
- Chassis-mounted resilient electronics
- Optional hybrid configuration

PowerDrive X6* RSS is part of the PowerDrive* RSS family of fully rotating steerable systems that minimize the risk of sticking. The entire family has a complete direction and inclination sensor package close to the bit for precise well placement and independently generates power for 3D steering and control.

In any drilling environment, the PowerDrive RSS family delivers the power required to place wells accurately with superior borehole quality while ensuring maximum drilling efficiency.

Maximized recovery and reliability

The PowerDrive X6 RSS maximizes each well's productive potential, putting wells in the best place in less time. Because it delivers smoother wellbores, postdrilling operations such as running casing and wireline logging are simplified.

Higher efficiency and greater accuracy than motors

In applications where RSSs were not previously viable, a fully rotating steering system is now available with the PowerDrive X6 RSS. It delivers 3D well profiles and drills high-angle wells more efficiently compared with positive displacement motors. Near-bit measurements, available in real time, ensure accurate, productive drilling and wellbore placement.

Increased confidence from full directional control

The PowerDrive X6 RSS is designed for full directional control while rotating the drillstring. Efficient downlink systems and automatic inclination hold provide a smooth tangent section and improve true vertical depth accuracy in the horizontal section—critical for maximizing recoverable reserves and the well's production potential. A triaxial sensor package facilitates fast, responsive directional control in either automatic or manual operation mode. Optional near-bit azimuthal gamma ray sensor enables fast response to formation changes.



PowerDrive X6

Specifications	PowerDrive X6 475 RSS	PowerDrive X6 675 RSS	PowerDrive X6 825 RSS	PowerDrive X6 900 RSS	PowerDrive X6 1100 RSS	
Mechanical	Nominal OD, in [mm]	4¾ [120.7]	6¾ [171.5]	8¾ [209.6]	9 [228.6]	11 [279.4]
	Overall length, ft [m]	13.65 [4.16]	13.47 [4.10]	13.84 [4.21]	13.84 [4.21]	15.22 [4.63]
	Dogleg severity (DLS) capability, °/100 ft [°/30 m] [†]	10 [10]	8 [8]	6 [6]	5 [5]	2 [2]
	Hole sizes, in [mm]	5½–6¾ [139.7–171.5]	7¾–9¾ [200.0–250.8]	10¾–11¾ [269.9–295.3]	12–18½ [304.8–469.9]	20–28 [508–711.2]
	Bit speed, rpm	0–220	0–220	0–220	0–220	0–125
	Maximum weight on bit, lbf [N] [‡]	31,000 [137,894]	180,000 [800,679]	270,000 [1,201,019]	370,000 [1,645,841]	225,000 [1,000,849]
	Maximum torque on bit, ft.lbf [N.m] [§]	9,000 [12,202]	18,500 [25,082]	45,000 [61,011]	45,000 [61,011]	70,000 [94,907]
	Maximum overpull, 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]	2,500,000 [11,120,554]
	Passthrough (DLS sliding), °	30	16	12	10	4
	Bit connection (box)	3½ Reg	4½ Reg or 6¾ Reg	6¾ Reg	6¾ Reg or 7¾ Reg	7¾ Reg
Hydraulics ^{††}	Flow range, galUS/min [L/min] ^{†††}	170–310 [643–1,173]	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]
	Maximum mud density, lbm/galUS [kg/L]	24 [2.88]	24 [2.88]	24 [2.88]	24 [2.88]	24 [2.88]
	Maximum sand content, %	1	1	1	1	1
	Lost circulation material (LCM), lbm/bbl [kg/L] ^{§§}	35 [0.13]	50 [0.19]	50 [0.19]	50 [0.19]	50 [0.19]
	Acidity level, pH	9.5–12	9.5–12	9.5–12	9.5–12	9.5–12
Pressure and temperature	Oxygen, ppm	1	1	1	1	1
	Maximum temperature, degF [degC]	302 [150]	302 [150]	302 [150]	302 [150]	302 [150]
Measurements ^{†††}	Maximum pressure, psi [MPa]	20,000 [137.9]	20,000 [137.9]	20,000 [137.9]	20,000 [137.9]	20,000 [137.9]
	Inclination offset to tool bottom, ft [m]	6.76 [2.06]	7.13 [2.17]	7.60 [2.32]	7.70 [2.35]	9 [2.74]
	Azimuth offset to tool bottom, ft [m]	8.86 [2.70]	9.33 [2.84]	9.80 [2.98]	9.90 [3.02]	11.20 [3.41]
	Azimuthal gamma ray	Four bin	Four bin	Four bin	Four bin	Four bin
	Average gamma ray	Yes	Yes	Yes	Yes	Yes
	Gamma ray offset to tool bottom, ft [m]	5.86 [1.79]	6.33 [1.93]	6.80 [2.07]	6.90 [2.10]	8.20 [2.50]
	Vibration range (axial), g _n	0–35	0–35	0–35	0–35	0–35
	Vibration range (radial), g _n	0–75	0–75	0–75	0–75	0–75
	Shock range, g _n	625	625	625	625	625
	Shock and vibration axis	Triaxial	Triaxial	Triaxial	Triaxial	Triaxial
Specifics	Magnetic field cone of exclusion	None	None	None	None	None
	Automated loop	Inclination	Inclination	Inclination	Inclination	Inclination
	Downlinking method	Flow	Flow	Flow	Flow	Flow

[†] Value dependent on application—bit, BHA, parameters, formation type, etc.

[‡] Maximum at 0-ft.lbf torque on bit; bit recommendations should be considered.

[§] Maximum at 0-lbf weight on bit.

^{††} Dependent on mud density.

^{†††} Special configuration available for silicate muds.

^{§§} Depends on the type of LCM.

^{††††} Sensor offsets and tool weight vary depending on hole size configuration.

Refer to the Schlumberger Shock and Vibration references for details regarding axial, lateral, and torsional limits of tools.

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