

# NeoSteer CL

## Curve and lateral at-bit steerable system

Drill both the curve and lateral sections in a faster single run

**Emissions Reduction:**  
Simple CO<sub>2</sub> emissions reduction  
by drilling more sections in one run.

### Where it is used

The NeoSteer CL\* curve and lateral at-bit steerable system (ABSS) is specifically designed to enable drilling the curve and lateral in a faster single run where other methods require multiple trips. It achieves high build rates, increases on-bottom drilling speed, and extends lateral lengths. Especially where vertical, curve, and lateral sections are the same hole size, the NeoSteer CL ABSS not only reduces NPT by eliminating the need to change out the BHA for every section, it also lowers CO<sub>2</sub> emissions.

### How it works

The NeoSteer CL ABSS uses piston technology to push against the borehole wall for propulsion; the pistons are placed next to the cutting structure for greater curvature leverage.

The NeoSteer CL ABSS uses this leverage to achieve higher build rates with no additional application of hydraulic force. This provides the ability to meet both the build requirements in the curve section and the directional control requirements in the lateral section.

The NeoSteer CL ABSS steering unit incorporates metal-to-metal hydraulic seals which reduce erosion and increase hydraulic design capability for improved performance. In addition, the ABSS can be adapted with XPC\* extreme-profile single shoulder connections to increase reliability during high-DLS drilling. These connectors also enable compatibility with Smith Bits PDC application-specific cutting structures. The NeoSteer CL ABSS and customizable bits work in concert to provide single-run drilling with greater drilling efficiency.

### Additional information

The NeoSteer CL ABSS includes comprehensive six-axis continuous inclination and azimuth measurements. The multiaxial component enables automatic hold inclination and azimuth measurements for precise well positioning. This feature, along with self-steering capabilities, helps provide smooth tangents with minimized tortuosity. Near-bit extended-range gamma ray measurements provide additional well positioning data for improved real-time decision making.

The NeoSteer CL ABSS can be configured with an onboard azimuthal image gamma ray cartridge to improve in-zone percentage and enable steering within the reservoir sweet spot. With an azimuthal gamma ray cartridge just 6 ft behind the cutting structure, operators can identify signs of changing lithology earlier to enact instant steering corrections. Additionally, the NeoSteer CL ABSS is configurable with iQ\* autonomous solutions.

### The takeaways

Drill the curve and lateral in a faster single run while reducing drilling time and minimizing CO<sub>2</sub> emissions.



NeoSteer CL ABSS.

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Specifications	NeoSteer CL ABSS
Nominal OD (API)	6¾ in
Hole size	8½ in
Overall length	13.92 ft [4.24 m]
Weight of assembly in air	1,464 lbm [664 kg]
Max. collar dogleg	Sliding 16°/100 ft [16°/30 m]
	Rotating 15°/100 ft [15°/30 m]
Max. operating torque <sup>†</sup>	16,000 ft.lbf [21,700 N.m]
Max. operating load	1,100,000 lbf [4,900,000 N]
Max. weight on bit	As per cutting structure specifications
Max. lost circulation material	1.5 lbm/galUS [179.74 kg/m <sup>3</sup> ] medium nut plug
Flow range <sup>‡</sup>	210–970 galUS/min [794–3,671 L/min]
Lateral vibrations	Shock level <sup>†</sup> (greater than 10 counts/s above 50-g <sub>n</sub> threshold), 30-min limit
Stick/slip	±100% mean rotational speed, 30-min limit
Max. rotational speed	350 rpm
Max. temperature <sup>§</sup>	302 degF [150 degC]
Max. hydrostatic pressure	20,000 psi [138 MPa]
Recommended pressure drop across bit	300–1,200 psi [2,068–8,274 kPa]
Mud sand content	1% by volume
<b>Rotary connections</b>	
Collar upper connection	4½ IF box
Bit box	Bit cutting structure is incorporated into the tool
<b>Sensors</b>	
Bit face to gamma ray <sup>††</sup>	6.23 ft [1.89 m]
Bit face to accelerometers <sup>††</sup>	7.16 ft [2.18 m]
Bit face to magnetometers <sup>††</sup>	9.25 ft [2.82 m]
Inclination accuracy	0.11 (at 1 sigma level)
Azimuth accuracy	1.8 at 90° inclination (at 1 sigma level)
Gamma ray accuracy, azimuth 4-quadrant	±5% (30-s averaging window)
Shock detector threshold, radial	50 g <sub>n</sub> ±5 g <sub>n</sub> (±500 g <sub>n</sub> max peak)

Engineered BHA and bit design is required to deliver optimal system performance.

Configurable with autonomous solutions.

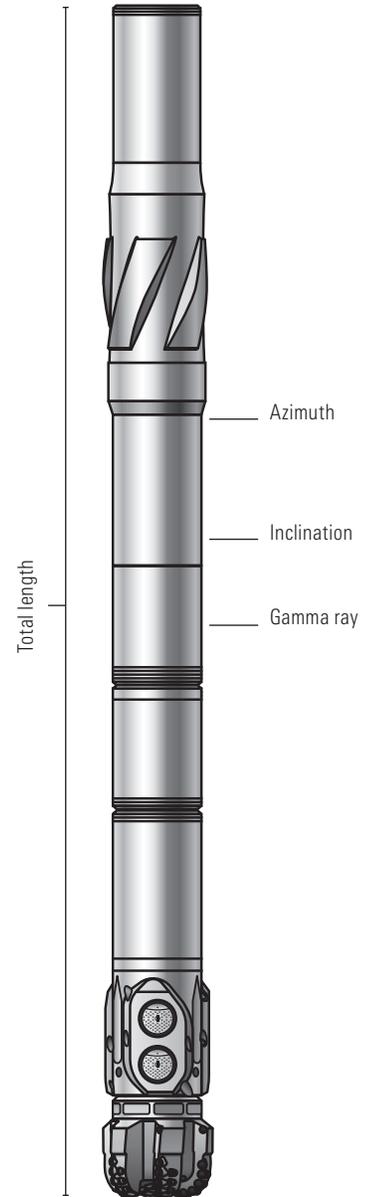
Reference point for the pistons is the welded connection between the bit and tool body.

<sup>†</sup> Depending on weight on bit (WOB).

<sup>‡</sup> Depending on mud weight values.

<sup>§</sup> Optional 350 degF [175 degC] available.

<sup>††</sup> Measurements will vary slightly depending upon the cutting structure used.



[slb.com/NeoSteerCL](http://slb.com/NeoSteerCL)

**Schlumberger**