

iCruise® X Intelligent Rotary Steerable System

FOR PRECISE WELL PLACEMENT AND REDUCED WELL TIME IN HARSH ENVIRONMENTS AND LONG WELLS

OVERVIEW

In today's drilling environment, operators are looking for new ways to drill long laterals faster to lower costs per BOE. The iCruise® X intelligent rotary steerable system (RSS) from Sperry Drilling is an automation-enabled platform designed specifically for longer well applications in harsh environments. This new generation of RSS is built around the proven ability of the iCruise® RSS to reduce well time and accurately place the wellbore. The robust mechanical design and higher strength materials optimize performance in geologically complex wells and harsh environments.

ROBUST DESIGN FOR ANY RESERVOIR

Innovative enhancements of the iCruise X intelligent RSS help operators achieve predictable, reliable results in the most challenging conditions including higher temperatures, variable quality mud chemistry, and when a high dogleg severity (DLS) is needed. The tough, rugged RSS incorporates a new steering head with a collar design that can withstand high-frequency torsional oscillations and stronger connections for added bending strength. These advancements extend the life of the collar while drilling high dogleg sections. An advanced sealing system, built using the latest material science, deliver long lasting durability in all formation types and in conventional, extended reach, and multilateral wells. The new seals withstand higher internal pressures while delivering more force enabling vertical curve lateral (VCL) sections to be drilled with stiffer bottom hole assemblies (BHA).

AUTOMATION ENABLED FOR QUALITY AND CONTROL

The iCruise X intelligent RSS drills smoother laterals with less human intervention with automation enabled by the CruiseControl® technology leveraging the LOGIX® autonomous drilling platform from Halliburton Sperry Drilling.

ACHIEVING PREDICTABLE RESULTS

The iCruise X intelligent RSS is integrated with automated drilling advisory commands calculated from physics-based models, a BHA digital twin, and machine learning from real-time data analytics:

- » Steering advisory commands help plan, project the well path, optimize wellbore trajectory, and avoid hazards and collisions.
- » Vibration advisory commands provide optimal drilling parameter ranges to manage downhole vibration and allow better directional control.

By automating the drilling process, Sperry Drilling can help operators maximize asset value through reduced well time, fewer rig site personnel, and lower costs per BOE, while delivering predictable, dependable, and consistent results.



FEATURES

- » Six high-speed processors
- » Three tool face measurements
- » 1,000 measurements per second
- » High mechanical specifications (6.75 in. tool size) to reduce well time:
 - 400 RPM
 - 65,000 lbf (28 913 daN) weight on bit (WOB)
 - 18,500 ft-lbf (2,508 daN.m) of torque
 - Doglegs of up to 21°/100 feet
- » Precise tool face control
- » CruiseControl technology and LOGIX platform supporting autonomous drilling
- » Advanced metal-to-metal seals
- » High-strength materials and connections
- » Greater pad force

BENEFITS

- » Longer runs in tough conditions
- » Precise well placement
- » Smooth VCL wells
- » Reduced well time

Technical Specifications: iCruise® X Intelligent RSS

Nominal Tool OD	4.75 in. (121 mm)	6.75 in. (171 mm)
Nominal Hole Size	5.875 to 6.75 in. (149 to 171 mm)	8.375 to 9.5 in. (213 to 241 mm)
Maximum Housing OD	5.25 in. (133 mm)	7 in. (178 mm)
Length	No Flex: 35.1 ft (10.70 m) Super Flex: 41.0 ft (12.50 m)	No Flex: 26.65 ft (8.12 m) Flex: 34.9 ft (10.63 m)
Inside Diameter	1.40 in. (36 mm)	1.88 in. (48 mm)
Nominal Tool Weight	No Flex: 1,979 lb (898 kg) With Flex: 2,115 lb (959 kg)	No Flex: 2,362 lb (1071 kg) With Flex: 2,775 lb (1259 kg)
Top Collar Connection	3.5 in. IF Box (HAL 40 BOX option)	NC-50 Box
Bottom Collar Connection	3.5 in. REG Box	4.5 in. REG Box
Minimum Steering Inclination	0°	
Maximum Dogleg Severity (Non-Rotating)	30°/100 ft	21°/100 ft
Maximum Dogleg Severity Capability	No Flex: 10°/100 ft Flex: 15°/100 ft	
Maximum Drilling or Operating Rotary Torque	10,000 ft-lbf (1356 daN·m)	18,500 ft-lbf (2508 daN·m)
Bit Makeup Torque	8,000 ft-lbf (1085 daN·m)	16,000 ft-lbf (2169 daN·m)
Maximum Overpull	340,000 lbf (151 240 daN)	822,684 lbf (365 948 daN)
RPM Range	30–400 RPM	
Maximum Weight on Bit	30,000 lbf (13,344 daN)	65,000 lbf (28 913 daN)
Vibration	As Per the Sperry Drilling Logging-While-Drilling Vibration Limits (Available Upon Request)	
Mud Type	Compatible with All Fluid Systems Including: WBM, OBM, SBM, and Silicates.	
Maximum Sand Content	2%	
Pressure Loss Through Tool in Water	145 psi (275 gpm)	150 psi (575 gpm)
Maximum LCM Limit*	50 lb/bbl WAL-NUTT® Medium	
Maximum Operating Temperature**	302°F (150°C)	
Maximum Pressure	20,000 psi (137.9 MPa)	
Power Supply	Turbine	
Flow Range	150 to 350 gpm	250 to 750 gpm
Makeup Torque Range***	11 to 12 kft-lb (1491 to 1627 daN)	30 to 33 kft-lb (4067 to 4474 daN)
Geo-Span® Downlink Service	Surface pulser provides rapid communication and confirmation via InSite® control screen.	
Uplink	MudPulse, EM Telemetry, and Wired pipe	
Inclinometer Accuracy Inclinometer Span	± 0.1° 10 G (x and y) and 5 G (z)	

* Higher LCM limits available upon request.

** 320°F (160°C) with iCruise X Plus

*** With 1.15 x pipe dope

For more information, contact your local Halliburton representative
or visit us on the web at www.halliburton.com

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