

Magnus[®] Rotary Steerable System

Combines reliable, high-performance drilling with precise directional control

Applications

- Single-run vertical, curve, and lateral drilling
- High dogleg-severity (DLS) applications
- Extended-reach drilling
- High-performance, motorized rotary-steerable drilling when combined with the Weatherford HyperLine[™] drilling motor
- Geosteering applications when combined with the Weatherford Wave[™] suite of logging-while-drilling (LWD) sensors

Features and Benefits

- Tri-actuator design with independent pad control increases reliability through redundancy, achieves a true-inclination hold, and creates a smooth wellbore.
- Fully rotating design and optimized junk slot area reduce risk of stuck pipe events.
- Rugged yet simple construction facilitates servicing, even in remote locations.
- Sensors located just 6 ft behind the bit provide accurate inclination and gamma readings for effective wellbore placement and geosteering changes.
- High-frequency control system provides rapid sample rate to verify location and optimize control in high-rpm applications and adverse vibrational drilling environments.
- On-the-fly downlinking using the DownLink Commander[®] bidirectional communication technology quickly confirms information and makes immediate steering adjustments.
- High-dogleg capability increases pay-zone contact.

Tool Description

Using push-the-bit technology, the Weatherford Magnus rotary steerable system (RSS) delivers high-performance drilling with precise directional control. In nearly any environment or application, the RSS offers rugged design elements to sustain reliability and drilling efficiencies to deliver a quality wellbore ahead of time.

The RSS is compatible with the Weatherford Wave suite of LWD sensors to fulfill formation-evaluation or geosteering requirements. It also combines with RipTide[®] tools for underreaming while drilling.



Magnus Rotary Steerable System

Specifications

System	Magnus 475	Magnus 675	Magnus 825	Magnus 950	Magnus 1100	
BIAS collar size	5 in.	7 in.	8 3/8 in	9 1/2 in.	11 in.	
Hole size range	5-7/8" to 6 3/4" in.	8-3/8 to 9-1/4 in.	9 7/8" to 10 5/8 in.	12 to 14-1/2 in.	14-3/4 to 18-1/2 in.	
Minimum Overall Tool Length	17.0 ft (5.2 m)	17.0 ft (5.2 m)	17.45 ft (5.3m)	18.2 ft (5.5 m)	18.2 ft (5.5 m)	
Overall Tool Weight (Standard Configuration)	900 lb (408 kg)	1,850 lb (840 kg)	2,850 lb (1,293 kg)	3,750 lb (1,700 kg)	5,275 lb (2,600 kg)	
Top connection	3-1/2 in. IF (NC 38) box	4-1/2 in. IF (NC 50) box	5-1/2 in. IF box	5-1/2 in. IF box	5-1/2 in. IF box (8-1/4 in. barrel collar)	7-5/8 in. API Reg box (9-1/2 in. barrel collar)
Makeup torque (top)	9,900 to 10,900 ft-lb (13,424 to 14,780 N·m)	30,000 to 33,000 ft-lb (40,675 to 44,740 N·m)	53,000 to 56,000 ft-lb (71,860 to 75,925 N·m)	53,000 to 56,000 ft-lb (71,860 to 75,925 N·m)	53,000 to 56,000 ft-lb (71,860 to 75,925 N·m)	75,000 to 78,000 ft-lb (101,690 to 105,755 N·m)
Bottom connection	3-1/2 in. API Reg Box	4-1/2 in. API Reg box	6-5/8 in. API Reg box	6-5/8 in. API Reg box	7-5/8 in. API Reg box	
Makeup torque (bottom)	6,300 to 6,900 ft-lb (8,500 to 9,400 N·m)	20,000 to 22,000 ft-lb (27,115 to 29,830 N·m)	28,000 to 32,000 ft-lb (37,960 to 43,385 N·m)	28,000 to 32,000 ft-lb (37,960 to 43,385 N·m)	58,000 to 64,000 ft-lb (78,635 to 86,770 N·m)	
Maximum tension	528,000 lbf (234,866 daN)	978,000 lbf (435,036 daN)	1,450,000 lbf (644,992 daN)	1,870,000 lbf (831,817 daN)	1,870,000 lbf (831,817 daN)	
Maximum Operating Torque (at bit)	8,840 ft-lbs	17,850 ft-lbs	25,500 ft-lbs	25,500 ft-lbs	51,850 ft-lbs	
Maximum rpm	350	300	300	300	300	
Maximum weight on bit	Limited based on bit specifications					
Dogleg severity (DLS) capability (* per 100 ft, 30 m)	12°	10°	6°	6°	5°	
Minimum kickoff angle vertical	No limit, kick off from vertical					
Maximum operating pressure	30,000 psi (206.8 MPa)	30,000 psi (206.8 MPa)	25,000 psi (172.4 MPa)	25,000 psi (172.4 MPa)	25,000 psi (172.4 MPa)	
Maximum operating temperature	302°F (150°C)	302°F (150°C)	302°F (150°C)	302°F (150°C)	302°F (150°C)	
Maximum flow rate	350 gal/min (1,325 L/min)	700 gal/min (2,650 L/min)	1,200 gal/min (4,542 L/min)	1,200 gal/min (4,542 L/min)	1,400 gal/min (5,300 L/min)	
Maximum pass-thru dogleg rotating (* per 100 ft, 30 m)*	15°	14°	7°	6°	6°	
Maximum pass-thru dogleg sliding (* per 100 ft, 30 m)*	30°	17°	14°	12°	12°	
Maximum sand content	2%					
Maximum LCM Content	50 lb/bbl (Non-fibrous)					
Near-bit Inclination sensor to bit box	5.5 ft (1.7m)	6.0 ft (1.8 m)	6.1 ft (1.9m)	6.85 ft (2.1 m)	6.85 ft (2.1 m)	
Azimuthal Gamma Ray (Optional)						
Gamma ray sensor to bit box	6.0 ft (1.8m)	6.4 ft (1.9 m)	6.5 ft (2.0m)	7.2 ft (2.2 m)	7.2 ft (2.2 m)	
Measurement range, AAP1	0 to 500 API		0 to 750 API			
Accuracy at 100 API	±2.5 API					
Vertical resolution	14.5 in. (370 mm)	15.0 in. (380 mm)	16.0 in. (410 mm)	16.5 in. (420 mm)	19 in. (480 mm)	
Drilling Dynamics						
Measurements	Axial Vibration, Lateral Vibration, RPM, LFTO (Stick-Slip), HFTO					
Vibration Measurement Range (axial, lateral & tangential)	0-250g					
Sample Rate	1024 Hz					
RPM Measurement Range	0-833 RPM					
Identifiable Frequency Range	0-350 Hz					

* May require high DL specific BHA configuration

