

PRODUCT SPEC SHEET

HIGH-SPEED KEEPER GYRO

The high-speed Keeper gyro is Scientific Drilling's fourth-generation North-Seeking gyro surveying system.

This innovative system allows continuous surveying from vertical through horizontal with wireline speeds up to 400 feet per minute, ensuring significant rig time savings.

It has been engineered to provide definitive surveys, orientations, and gyro steering with high accuracy at all inclinations and orientations.

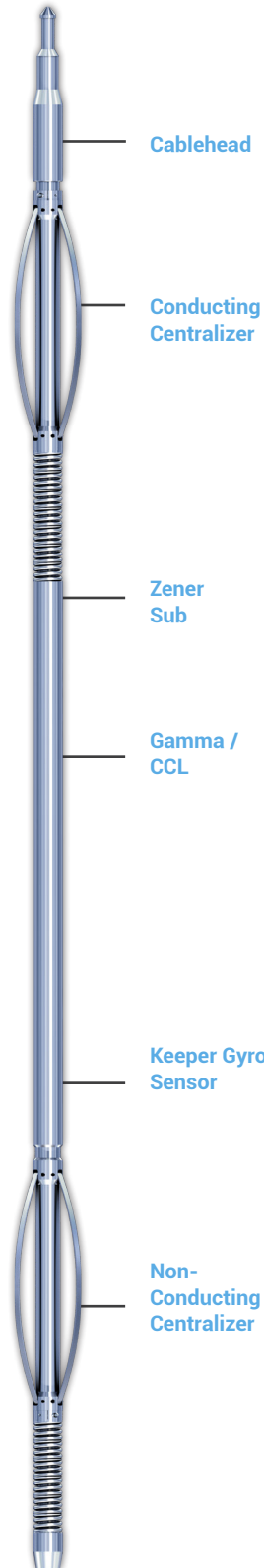
DELIVERING THE ULTIMATE VALUE

Keeper surveys are performed by Scientific Drilling's highly-trained and experienced Directional Surveyors and support teams. Strict pre and post job quality assurance and calibration checks, strong adherence to ISCWSA validated error models ensure we deliver the ultimate reliability.

Keeper's small diameter and adaptable running gear provide configurations for surveying in drillpipe and tubing as small as two inches internal diameter. Keeper performs casing, high angle pump down, and pipeline surveys. Keeper's unique versatility enables individual solutions to diverse survey requirements.

Keeper's durable and rugged sensors allow for steering-while-drilling. Continuous directional information is available from vertical even in the presence of magnetic interference. Keeper's versatile and fast space-stabilized servo system reports real-time gyro tool face continuously to a rig floor display.

The Keeper can also combine with a temperature logging tool for locating "cement tops" after running casing or with a Gamma Ray / CCL Logging tool to aid in depth correlation.



TARGET APPLICATIONS

- WIRELINE KEEPER GYRO**
 (Multi-Well/Pad Drilling, Collision Avoidance, Steering & Orientation, Horizontal & Directional Wells, Short Interval Surveys, and Relief Wells)
- MEMORY KEEPER GYRO**
 (Slickline Gyro Surveys, Drop Gyro Surveys, Top Hole Surveys, Survey Validation, Rod Guide Placement, High Pressure Production Wells, and Government Compliance)
- ALL-ATTITUDE DROP KEEPER**
 (Improved Geological Models, High Density Well Spacing, Survey Validation, High Temperature Surveying, and Extended Reach Wells)
- SIGHTLINE KEEPER GYRO**
 (Floating Vessels, Jackup Rigs, Extreme Latitude Surveying, Whipstock Orientation, Motor Orientation, Kickoff Assurance (near or at seabed), and Template of Wellhead Surveys)

TECHNICAL SPECIFICATIONS				
System Accuracy*	Subject to well profile			
Pressure Rating	20,000 psi (137,900 kPa)			
Survey Speed	Maximum 400 ft/min			
Diameter	1.75 in (4.45 cm)	1.85 in (4.70 cm)	2.13 in (5.40 cm)	3.00 in (7.62 cm)
Length	18 ft (5.5 m)	19 ft (5.8 m)	19 ft (5.8 m)	28 ft (8.5 m)
Weight	110 lbs (50 kg)	120 lbs (54 kg)	140 lbs (63 kg)	500 lbs (227 kg)
Temperature Rating	300°F (149°C)	400°F (204°C)	400°F (204°C)	400°F (204°C)
Battery Power	Alkaline = 12 hours Lithium = 30 hours			
Rotational Limit	50 RPM			
Vibration Rating	8 g _{rms}			
Measurement Range	0-180° Inclination 0-360° Azimuth			

*SPE WPTS compliant error ellipse calculations available upon request for individual well profiles.

INSTRUMENT ACCURACY	
Inclination	± 0.1° (all angles)
Azimuth	± 0.1° (> 3° inclination)
Tool Face	± 0.1° (> 3° inclination)

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