

LEADING THE INDUSTRY IN PERFORMANCE, EFFICIENCY AND RELIABILITY

Altitude's FUSION RP (rotary pulse) is a positive pulse, rotary valve assembly with a rotor-on-bottom configuration. FUSION RP (in combination with FUSION EM) provides clients with a reliable dual telemetry system suitable for use in today's deeper, longer wells.

- The rotary pulse tool uses a high torque direct drive rotary valve assembly driven by a brushless DC motor as opposed to the traditional hydraulic assist (pilot valve) assembly of linear pulse tools.
- Lower erosional materials have been incorporated in the flow gear of this custom designed, proprietary tool.
- The rotary valve has an anti-jam feature that automatically reverses to clean debris and remove jammed material. Combined with the higher power rotary motor, this reduces the jamming tendency of typical linear pulse systems — particularly in high viscosity or lost circulation applications.
- Operating modes are programmable on surface, and once downhole, the modes can be changed by cycling pumps in a pre-determined manner.

WHY CHOOSE FUSION RP?



Reduce NPT with fewer moving parts and anti-jam capability



Improve rig hydraulics by reducing pressure drop across the BHA



Improve pulse transmission performance in high LCM mud applications

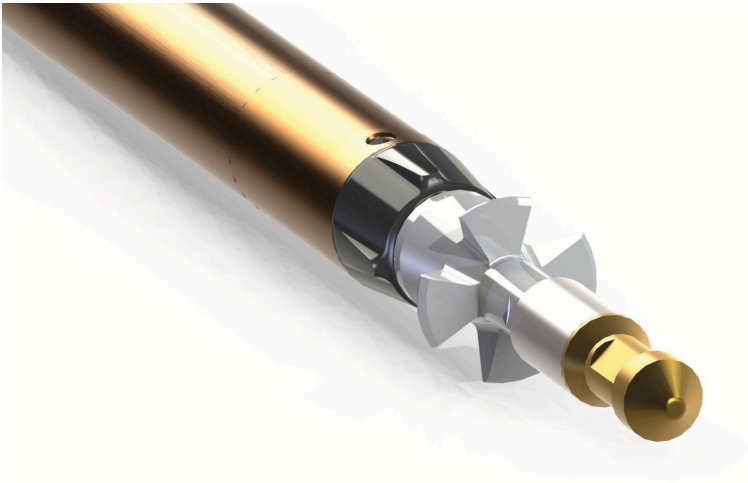
BENEFITS

Altitude supports the use of the FUSION EM system wherever possible to ensure that operators capture the time and cost savings available through the survey-on-connection capabilities of EM. However, when telemetry redundancy is desired, the FUSION RP tool offers operators unique benefits versus hydraulic-assist linear pulse tools and is the pulse component in our dual telemetry offering.

- **Increases run times** since the RP tool has a higher MTBF as a result of having: no downhole screens; a wear resistant flow gear; fewer moving parts; and self-cleaning, anti-jam capabilities.
- **Reduces impact on rig hydraulics** due to the lower pressure drop across the tool in an open position.
- **Reduces the risk of plugging** in LCM applications or high viscosity muds.

APPLICATIONS

- Dual telemetry programs in long, deep wells particularly where there is a plan to use high LCM content.
- In extremely deep applications where dual telemetry redundancy is desired.



Sensor Parameter	Range	Absolute Accuracy
Inclination	0-180 Deg	+/- 0.1 Deg
Azimuth	0-360 Deg	+/- 1.0 Deg
Azimuth at Toolface	0-360 Deg	+/- 1.0 Deg
Magnetic Toolface	1-100 m3	+/- 1.0 Deg
Gravity Toolface	0-360 Deg	+/- 0.5 Deg
Gamma	0-511 cps	+/- 1 AAPI
Temperature	302°F (0-150°C)	1.8°F (+/- 1°C)

HIGH TORQUE ROTARY VALVE MOTOR REDUCES THE INDUSTRY-WIDE JAMMING TENDENCY OF ROTARY PULSE SYSTEMS IN **HIGHER FLOW, DEEPER APPLICATIONS**

GENERAL SPECIFICATIONS

	Imperial	Metric
Max. Operating Temperature	302°F	150°C
Max. Operating Pressure	20,000 PSI	137 MPa
Vibration	RMS	Cumulative Time Limit
Sand Content	<1% by volume recommended	
Sensor Accuracy	± 0.1° Inclination ± 1.0° Azimuth ± 1.0° Toolface	
Pulse Width	0.5 s to 1.2 s	
Wireline Retrievalability	No	
Flow Sensor	Vibration (programmable)	
Flow Ranges	4.75" 0.8-1.4m ³ /min 6.5" 1.3-3.0 ³ /min	
LCM Tolerance	Granular below 0.06" at max rate of 50lb/bbl	
Operating Voltage	28V	
Memory and Diagnostics	High density logging integrated on each PCB	
Gamma Probe	Stand alone	
OD-Housing	1.875"	4.76 cm
Total Length	97"	246.4 cm

Contact Altitude Today

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FUSION RP