

Gordon Technologies'
Shock Miser™ (GT-ShockMiser)

**ISOLATING MWD TOOLS FROM HARMFUL
SHOCK AND VIBRATION WHILE DRILLING**

OVERVIEW

Reduce shock from the drill string and improve pulse amplitude with Gordon Technologies' patented Shock Miser™ (GT-ShockMiser). This dual-purpose technology both protects the MWD system from shock and vibration related failures and improves performance in extended laterals by creating a larger pulse amplitude.

FEATURES

- » Improves tool reliability by protecting the MWD system from shock and vibration
- » Improves the quality of data transmission by creating a larger mud pulse amplitude by up to 300%
- » Industry leading data rates
 - » Improves real-time log quality
 - » Optimizes drilling by transmitting drilling dynamics data without sacrificing critical tool face and gamma updates
- » Filters debris from the mud system, reducing potential for MWD failures
- » Highest LCM resistance in the industry - up to 40 lb/bbl of medium/fine nut plug
- » Customizable flow ranges, including industry leading high flow range that reduces cuttings debris and improves ROP
- » Compatible with salt-saturated, water, and oil-based mud systems

MINIMIZE TOOL DAMAGE AND PRESERVE ELECTRONICS

Shock and vibration issues are the leading cause of MWD failures. The Shock Miser™ isolates the MWD from the drill string preserving MWD tool health, increasing expected run life, and reducing unplanned trips. The patented design is an industry leader because it addresses axial, lateral, and torsional shock and vibration. Mitigating damaging environmental exposure ensures that the operator has access to a young and healthy working fleet of assets.

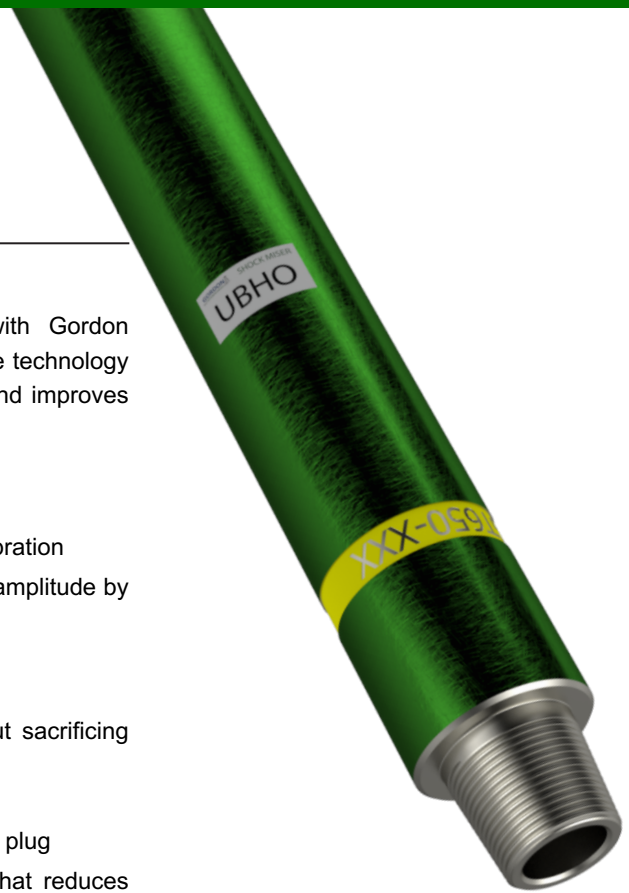
UNPARALLELED UBHO TECHNOLOGY

Decades of MWD research and development, combined with precision engineering, yield a fully inclusive solution to dampen shock and vibration from a broad band of damaging harmonics and frequencies. Lowering shock and vibrate transmissibility allows operators to have less restrictive drilling parameters, ensuring the GT-MWD system is not a limiting factor.

Increased ROP must be coupled with an increase in data speeds. The Shock Miser™ contains a fully re-designed and patented pulser and mud pulse transmission assembly generating an industry leading pulse amplitude. This provides faster and more dense data with confidence at deeper depths than the typical MWD systems. The flow configurations are flexible and work across a wide range of flowrates. The Shock Miser™ is available in all common sizes and API thread types with custom solutions available upon request.

For more information, contact us at www.gordontechnologiesllc.com

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BENEFITS

Shock and Vibration Reduction

- » Reduce axial shock and vibration by up to 80%
- » Reduce torsional and lateral shock and vibration by up to 50%

Improved MWD Efficiency

- » Increased ROP with faster data rates
- » Reduces rig site human error by providing standardized UBHO configurations
- » Minimizes wear and extends life of the pulser and UBHO sleeve
- » Industry leading LCM resistance

Extended Lateral Performance

- » Increases MWD mud pulse amplitude by up to 300% and allows operators to reliably drill longer laterals

Shock Miser™ UBHO/Pulser Sub Tool Specifications

Tool Size [inch]	Flow Rate [gpm]	Dog Leg Severity Rotating/Sliding	AVG./MAX. Pressure Drop [psi]
3-½ O.D	60-180	40/60 degrees/100 ft	350/500
4-¾ to 5 O.D.	150-350	30/40 degrees/100 ft	250/350
5-¼ O.D.	250-425	30/40 degrees/100 ft	250/350
6-½ to 6-¾ O.D.	250-1000	Drillstring Dependent	250/350
8 O.D.	350-1625	Drillstring Dependent	250/350
9-½ O.D.	700-1500	Drillstring Dependent	250/350

Shock Miser™ UBHO Sub Sizes, Flow Rate Range, TFA

Sub Size [inch]	Flow Rate (WPM) [gpm]	Flow Rate (OBM) [gpm]	TFA Open [in^2]	ΔP @ Min Flow 9 / 14 ppg mud [psi]	ΔP @ Max Flow 9 / 14 ppg mud [psi]
4-¾ & 5 ULF	150-230	150-250	0.695	100/150	150/210
4-¾ & 5 LF	180-250	180-280	0.787	100/130	150/190
4-¾ & 5 SF	220-280	220-320	0.831	120/150	180/220
4-¾ & 5 HF	250-350	250-350	0.976	110/140	200/280
5-¼ HF	280-375	280-375	0.976	140/170	180/220
5-¼ XF	300-425	300-425	1.073	140/180	210/290
6-½ & 6-¾ ULF	250-500	250-550	0.976	150/180	180/200
6-½ & 6-¾ LF	250-550	250-600	1.072	140/170	210/280
6-½ & 6-¾ SF	350-650	350-650	1.261	160/200	260/280
6-½ & 6-¾ HF	550-800	550-800	1.498	180/230	300/400
6-¾ HF SUPER	700-1000	700-1000	1.498	180/230	300/400
6-¾ XF SUPER	700-1200	700-1500	1.749	160/220	320/470
8 LF	350-550	350-690	1.072	150/200	210/280
8 SF	450-600	450-750	1.261	150/200	260/350
8 HF	550-750	550-340	1.498	180/230	300/400
8 XF	700-1200	700-1500	1.749	160/220	320/420
8 UXF	1000-1300	1000-1625	1.98	210/330	360/560
9-½ XF	700-1200	700-1500	1.98	210/330	560/870

LCM Restrictions

Tool Size	3-1/2"	4-3/4" - 5-1/4"	>6-1/2"
Max. Allowable Ball Diameter [inch]	3/16	1/4	1/2
Max. Fine/Med. Nut Plug [lb/bbl] (well mixed)	20	40	40
Glass Beads [lb/bbl]	3 coarse 5 medium	3 coarse 5 medium	3 coarse 5 medium
Quickseal/Ultraseal [lb/bbl]	20	40	40
Cottonseed Hulls/Wood Fibers [lb/bbl]	10	20	20

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