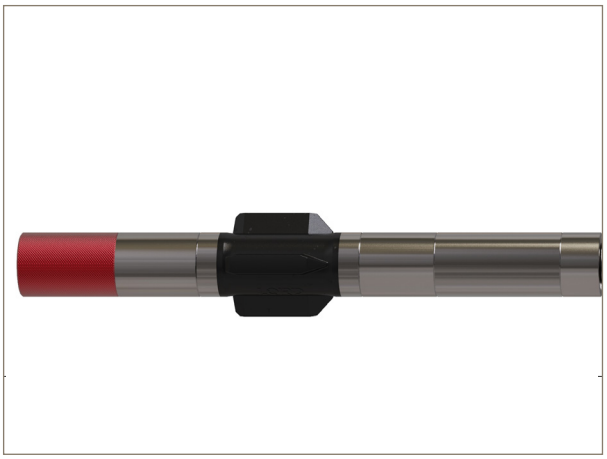
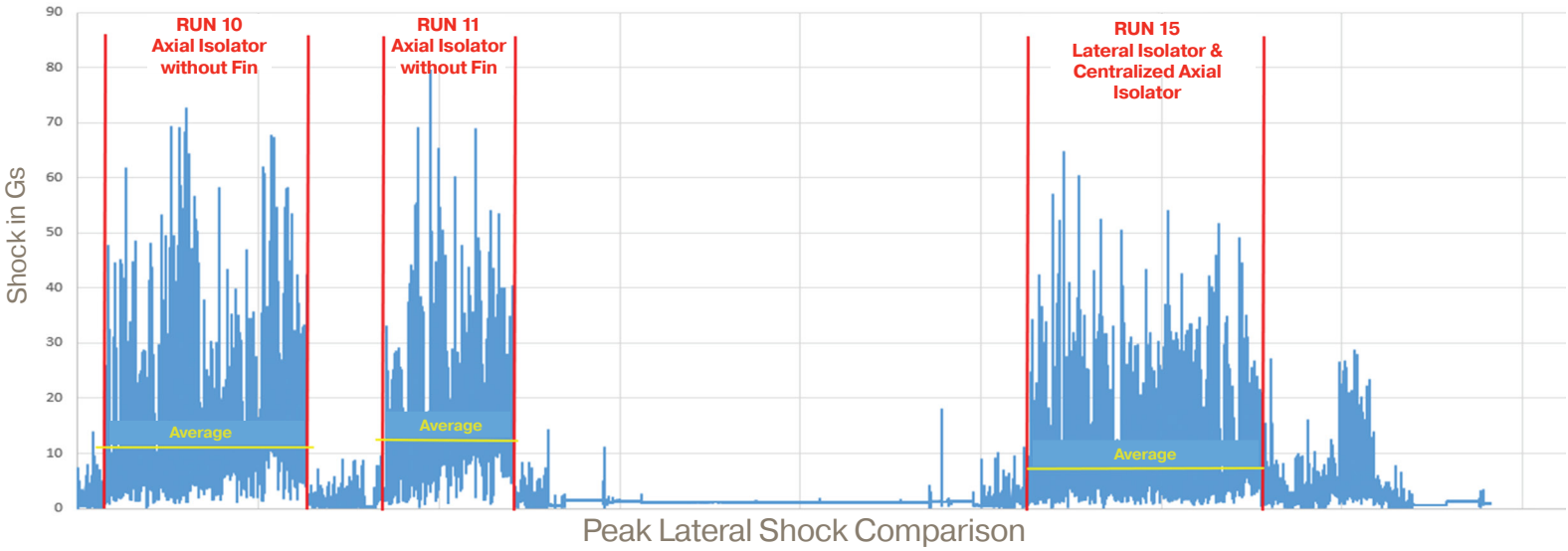
LORD ® Lateral Isolators

MWD Shock Absorber for Probe-Style MWD Tools

Patent Pending



Creating Solutions to Your Most Demanding Challenges



Peak Lateral Shock Comparison

Extend the Life of Your MWD Tools

- Substantially lower lateral shock, especially at higher shock levels: 94% reduction in above-30G shock counts at the gamma module compared to a rigid-mounted tool string
- Installs above the axial isolator to decouple lower end shock from the rest of the tool string
- Highest level of multi-stage isolation performance achieved when lateral isolator is run in series with a centralized axial isolator
- Enhanced tool string reliability from increased stabilization and decreased bending stress
- Creates an inflection point in the tool string which reduces the chance of pressure-barrel cracking or fractures
- Increases Axial Isolator anti-rotation component life by removing bending

Lateral Shock and Vibration

Lateral shock and vibration are increasing concerns in directional drilling due to longer laterals, aggressive drilling and more challenging formations. Lateral shock can reach upwards of 120Gs and cause significant damage to sensitive electronics. MWD component failures can be highly correlated to lateral accelerations.

The Parker LORD® Lateral Isolator and centralizer fins were designed to protect against lateral shock and vibration in a probe-style MWD tool string.

The Lateral Isolator decouples the lower end from the remainder of the tool string. This provides a designated inflection point that adds damping and compliance into a rigid system. The Lateral Isolator uses a pair of highly engineered elastomer elements that provide compliance in the system and is paired with an Axial Isolator that has fins installed on the body.

The fins are designed to mitigate lateral shock and vibration and provide a finely-tuned performance to the drilling environment. Both the Lateral Isolator and fin geometry are patent pending and provide shock mitigation against lateral inputs.

The major benefit of the Lateral Isolator is that it mitigates peak shock events. This graph highlights the benefits of a Centralized Axial Isolator in a tool string compared to rigid mounting. The Centralized Axial Isolator mitigates low amplitude, high frequency vibration. However, without the Lateral Isolator, high shock events are still present.

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Table 1: Pulser Module Average Lateral Shock

Lateral Shock - Pulser Module				
Setup	**Average Shock [G]**	**Average > 30 G Shock/Hr**	**Average > 20 G Shock/Hr**	**Average > 10 G Shock/Hr**
Axial Isolator	10.0	18.2	82.1	281.9
Centeralized Axial Isolator, Lateral Isolator	7.1	2.2	20.5	151.0
Shock Mitigated	29.7%	87.7%	75.1%	46.4%

Table 2: Gamma Module Average Lateral Shock

Lateral Shock - Gamma Module				
Setup	**Average Shock [G]**	**Average > 30 G Shock/Hr**	**Average > 20 G Shock/Hr**	**Average > 10 G Shock/Hr**
No Shock Isolator	31.0	329.3	537.7	635.3
Axial Isolator	15.0	84.9	179.4	422.8
Centeralized Axial Isolator	8.5	4.7	33.4	213.7
Centeralized Axial Isolator, Lateral Isolator	10.3	20.4	76.8	295.7
Shock Mitigated	66.7%	93.8%	85.7%	53.5%

Table 3: Directional Module Average Lateral Shock

Lateral Shock - Directional Module				
Setup	**Average Shock [G]**	**Average > 30 G Shock/Hr**	**Average > 20 G Shock/Hr**	**Average > 10 G Shock/Hr**
No Shock Isolator	15.4	15.9	172.0	575.0
Axial Isolator	9.5	2.9	30.4	294.1
Centeralized Axial Isolator	7.7	9.5	51.7	273.1
Centeralized Axial Isolator, Lateral with Fins	8.6	2.3	25.4	237.8
Shock Mitigated	44.3%	85.4%	85.2%	58.6%

Serviceability

Replacement elastomer kits and other components are available from Parker LORD.

Lateral Isolator Part Number	Operating Temperature	Replacement Elastomer Kit	Installation Tool
J-28732-7	< 275°F (< 135°C)	J-28460-52	J-28732-8

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