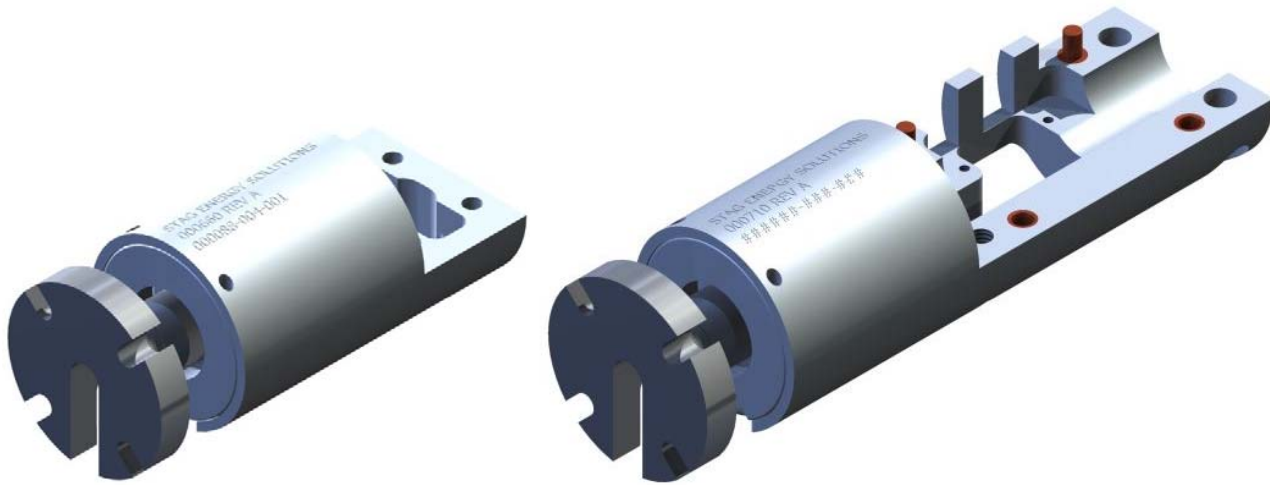


Downhole Shock & Vibration Snubber

Sensor & Circuit Board Protection



*Patent Pending

Q: Do the circuit boards and sensors within your Measurement While Drilling (MWD) tool string become damaged by exposure to wells with higher levels of shock and vibration?

A: Stag's Snubber, which is installed adjacent to the circuit boards and sensors, between the source of shock and vibration, mitigates this damage and prolongs the life of these costly parts. Maintenance intervals can also be extended, resulting in less upkeep costs.

A compliant and flexible material, integral to the design of the Snubber, breaks-up, and significantly diminishes potentially detrimental percussions generated by the interaction of the BHA (Bottom Hole Assembly) with the formation. Shock and vibration transmits easily through metal parts; the compliant material creates a "break" in the Snubber assembly which inhibits the transmission of shock and vibration. No metal-to-metal contact between parts occurs across this break, yet the break is fully captured and will not mechanically pull or twist apart.

Our Snubber works by minimizing shock and vibrations travelling through the drill collar into the MWD tool string which contains sondes (the individual building blocks of an MWD tool string which typically contain electronics and sensors

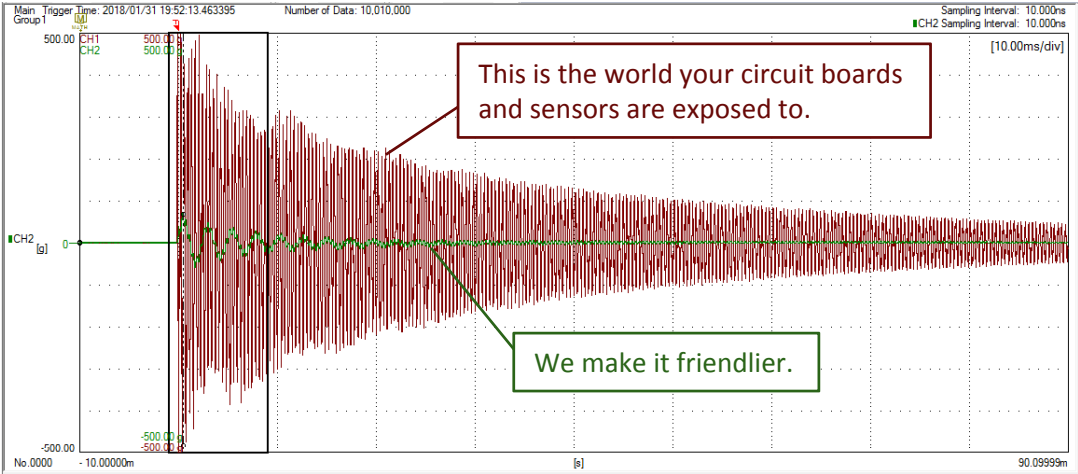
and/or batteries). Installing our Snubber in each sonde adjacent to susceptible components significantly reduces physical agitation in this area. Our Snubber helps prevent equipment failure caused by damage and as such, reduces costly disruptions in your operations and reduces the frequency of equipment repair.

Features and Benefits

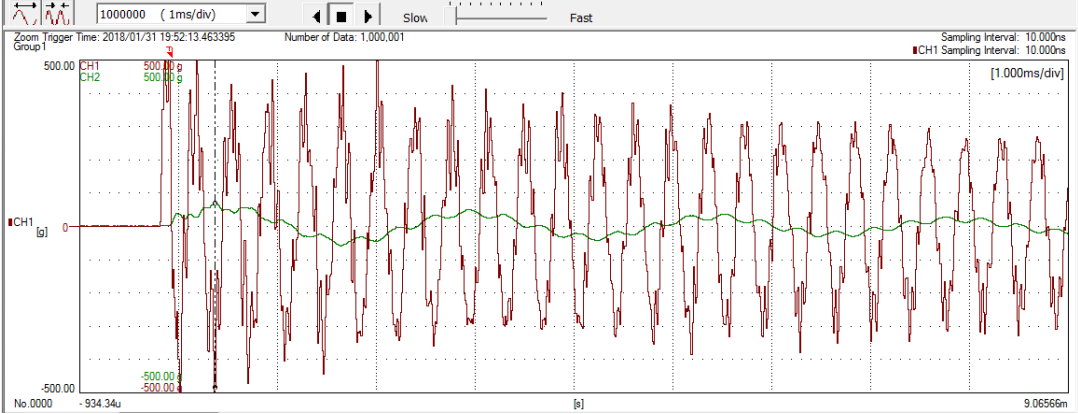
- Prolongs the life of expensive sensors and circuit boards.
- Extends repair and maintenance intervals.
- Allows for the use of the MWD assembly in harsher drilling environments.
- End connections can be customized to fit your equipment.

Downhole Shock & Vibration Snubber Sensor & Circuit Board Protection

Single Impact
in the Axial
Direction



Zoomed View
of Initiation of
Single Impact
in the Axial
Direction



— Shock Input — Snubber Output

We worry about the downhole environment so you don't have to. Contact us to discuss current Snubber configurations that will fit your MWD, or let us customize a solution for you.

