

LAUNCH LOCK ISOLATION



Moog has decades of experience with on-orbit isolation. Launch lock isolators have several acronyms in the industry, including LLI (Launch Lock Isolator), ISA (Isolated Strut Assembly), and V-Strut (Viscoelastic damped strut). An arrangement of LLIs can rigidly support payloads during launch and unlock on orbit to provide isolation over the required mission life. Lock release is a zero shock release event to the system. LLI is a scalable product that allows for tailoring to the customer's specific geometry and on-orbit isolation performance.

Moog structural dynamics experts are available every step of the way to cater the LLI units to specific mission objectives.

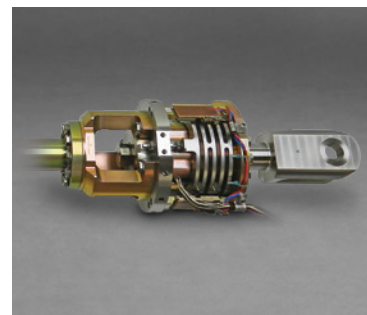
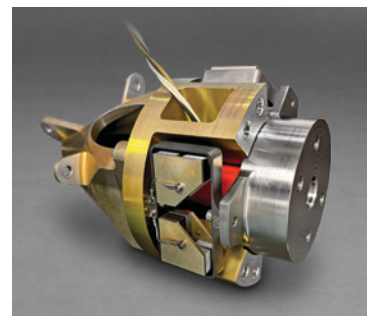
Our special in-house tools and processes allow the team to effectively solve disturbance problems quickly and offer both custom and COTS hardware solutions. We have close relationships with a mature supply chain and an in-house test facility for a wide variety of environments. Our group of experts are easy to work with and are known throughout the industry for our customer service.

LOCKED CONFIGURATION

The LLI Locked configuration provides a primary completely metallic load path during launch and matches the stiffness in the elements it replaced in the spacecraft's structure. The LLI units can be designed as an entire strut or a drop in module with existing planned architecture. Our design team can also assist with the design of the strut's pinned joints. Pinned connections can be simple or preloaded to ensure minimal to zero slop. Strut may be specified to a static length or made variable with adjustability built in.

UNLOCKED CONFIGURATION

The LLI unlocked configuration is the secondary load path activated electronically using a special actuator during the on-orbit phase. Unlocking triggers a zero shock event that transfers the load to a secondary path. Once unlocked the strut becomes a single degree of freedom member. This secondary load path incorporates a passive damper turning the array of struts into a compliant low frequency isolation system.



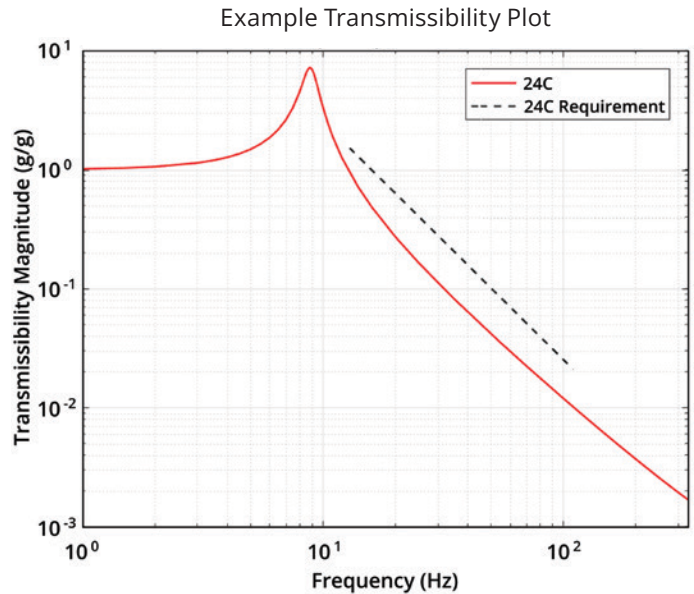
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LAUNCH LOCK ISOLATION TECHNOLOGY CAN BE USED FOR THE FOLLOWING APPLICATIONS:

- Optical Payloads
- Component Isolation
 - Sensitive Electronics
 - Cryocoolers
 - Reaction Wheels
 - Control Moment Gyroscope

LAUNCH LOCK ISOLATION TECHNOLOGY HAS THE FOLLOWING ATTRIBUTES:

- Inherently simple
- Very low part count
- Low weight solution
- On-Orbit Passive isolation
- Remove Release
- Redundant Release mechanism
- Zero shock release event
- No Fluids, No Leaks
- Viscoelastic Damper
- Locked stiffness sufficient to replace structural elements
- Made with Low Outgassing materials ASTM E-595
- Mission Life > 12 years
- 24V-34V DC input
- Technology Readiness Level 9 – Flight Proven



Example Random Response Plot

MOOG

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Form 500-1449 101024