

VIBRATION AND JITTER MITIGATION



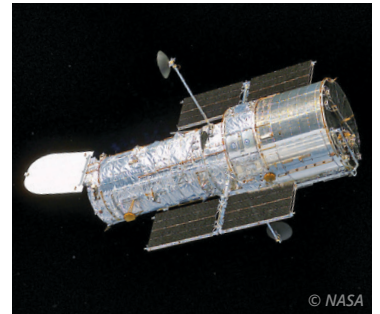
Moog ensures your mission's success by reducing vibration and vibration-induced jitter for satellite observation, science, reconnaissance, and communication payloads. We offer a variety of vibration mitigating products, including mounts for vibration sources such as reaction wheels and cryocoolers, isolators for sensitive payloads, like optical imagers, and dampers for structural resonances and for large appendages such as solar arrays. Our isolation and damping devices function effectively at low vibration levels.

Our space-proven vibration control components draw on experience with hundreds of terrestrial and airborne applications and our SoftRide launch load alleviation product line. We combine established component families with satellite-level jitter models and analyses to tailor mitigation devices to geometry and mission constraints.

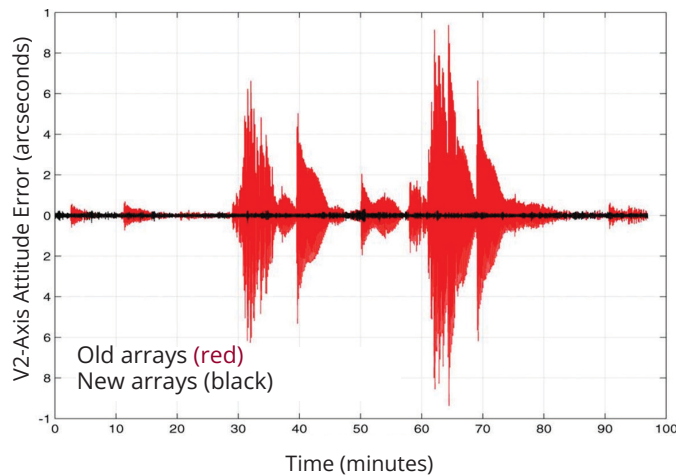
Vibration isolation systems also help enable supplemental or hosted payloads in two ways:

- The most sensitive payloads, including optical instruments, can fly on relatively noisy satellite busses
- Vibration-producing payloads fly without negatively influencing primary payloads or other hosted payloads

Earth observing systems are our main focus, but outward-looking systems can also benefit. For instance, the Hubble Space Telescope solar arrays connect to the main telescope body through Moog vibration dampers. Our dampers continue to reduce jitter, enable higher performance attitude control, and make Hubble's instruments more effective.



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Reduction in Hubble Space Telescope jitter after installation of solar arrays with Moog vibration dampers



VIBRATION SOURCE ISOLATION

Satellites and their payloads require mechanisms and other devices to function. For example, platform attitude control may use multiple rotating components, and payloads with infrared detectors often employ mechanical coolers. Our isolation systems separate the spacecraft and its payloads from vibration sources such as:

- Reaction wheel assemblies
- Control moment gyros
- Cryocoolers
- Stepping and scanning mechanisms



SENSITIVE PAYLOAD ISOLATION

Sometimes it is more practical to reduce vibration at one instrument, sensor, or payload. This may be because there are multiple vibration sources on the satellite or because that particular payload has extremely tight jitter specifications. Payloads that benefit from our vibration isolation include:

- Imaging systems
- Science instruments
- Optical communication nodes



VIBRATION DAMPERS

When one or more resonances contribute significantly to jitter, a damper can reduce vibration for a specific payload or for the whole satellite bus. Our customers also use vibration dampers for low frequency modes, including those of solar arrays, to extend the bandwidth of attitude control systems.

MOOG

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