



STANLEY[®]
Engineered Fastening

Rivetwise[®]

Spectralock[®]
Self-Locking Bolt

OPTIA[®]

Spectralock[®]

Self-locking bolt for use with a standard 60-degree threaded hole



Loosening is one of the most critical failures in fastened joints. Vibration, preload and material strength are the most significant factors contributing to fastener loosening, especially in moving parts.

Common ancillary devices to address fastener loosening include:

- Adhesives
- Patch bolts
- Split washers, star washers
- Serrations
- Jamnuts
- Lockwire
- Castlenuts with cotter pins
- Tab locks
- Prevailing torque
 - » All metal
 - » Nylon ring
 - » Interference fit

Introducing Spectralock[®]

Spectralock modifies basic joint behavior instead of relying on thread friction. Its asymmetric thread design limits the clearance between threads to create three specific contact points engaging with the female thread form. The Spectralock patented design is an advantageous fastening solution which allows for a standard female threaded hole to utilize this self-locking bolt for consistent locking and reusability in situations where cyclic or high temperatures are present and severe vibration occurs.

Key Competitive/ Value Added Features:

- High vibration loosening performance
- High seating torque
- High off-torque
 - » Multiple contact points
- Better pull-out strength
- Critical stress intensity is shifted

Unique Selling Features:

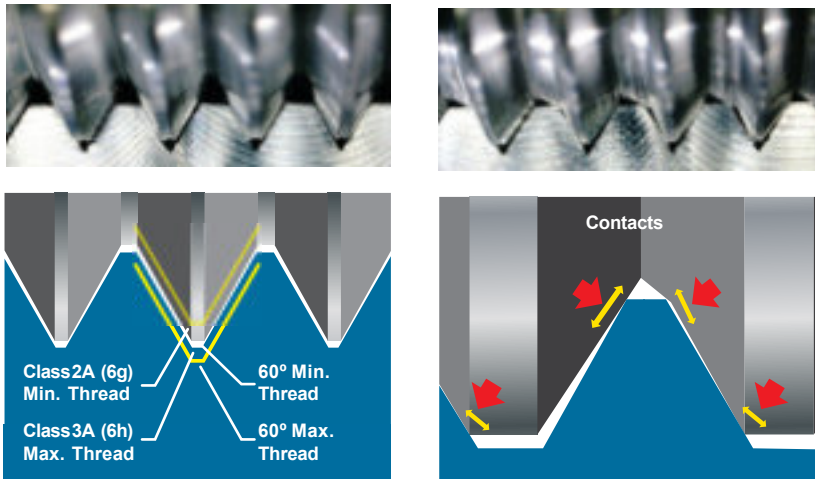
- Vibration loosening resistance
- High pre-load torque and high off-load torque
- Easy run-in
- Distribute tightened load evenly at root diameter
- Minimized fatigue failure
- Elimination of the use of patching

Thread Tolerances Restraining Design

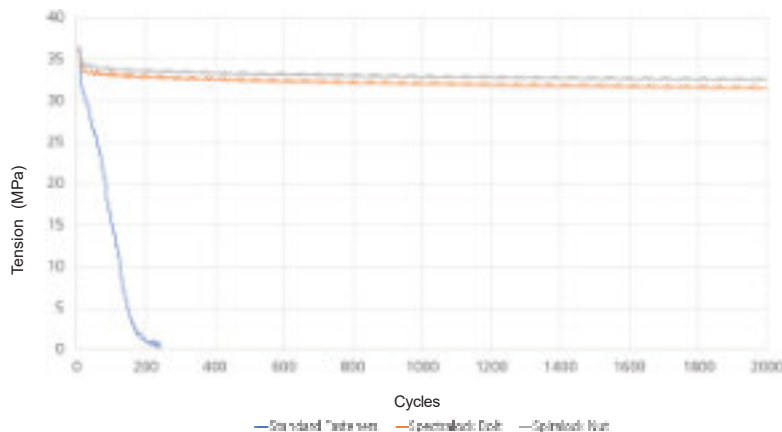
To create the anchoring points for eliminating the degree of movement under extreme vibration.

- Major thread crest locked with female thread
- Minor thread root locked with female thread
- Compatible with both metric and inch external thread tolerances
- Prevents vibration-induced movement from the 3 critical contacts points
- Unique features of the design:
 - » Higher vibration loosening performance
 - » Better pull out strength
 - » Critical stress intensity is now shifted to the minor diameter (shank)

Poly-directional thread tolerances enable multiple contact points on the female thread against the Spectralock bolt geometry to ensure a self-locking threaded assembly.



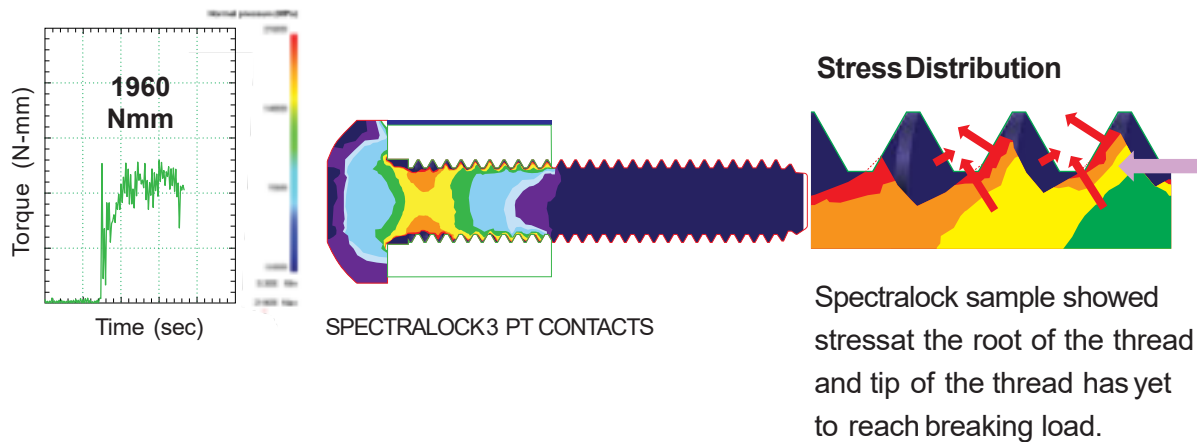
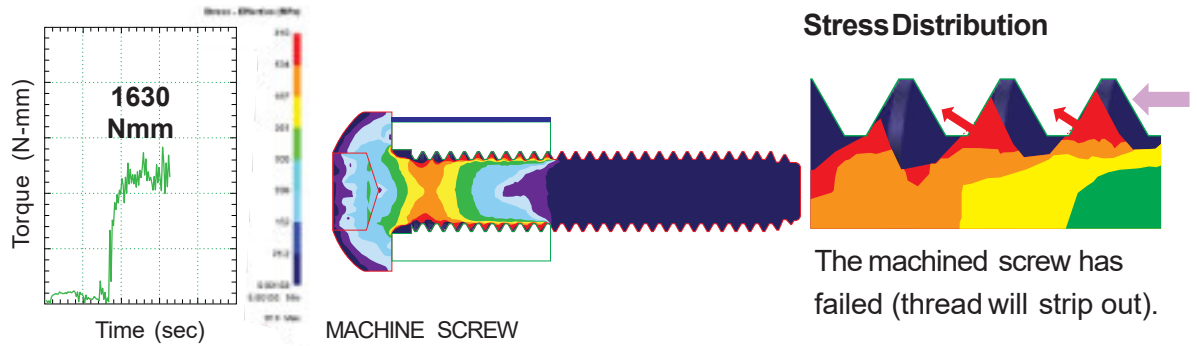
Junker Vibration Test for M10 Spirallock®, Spectralock® and Standard Fasteners



Spectralock design was proven to have superior vibration loosening resistance and performance.

Higher Thread Strength

- Stress intensity is located at the root of the thread profile, creating higher surface contact area resulting in improved fastener strength
- At the same loading condition in this simulation:



STANLEY
Engineered Fastening

Stanley Engineered Fastening — a division of Stanley Black & Decker — is the global leader in precision fastening and assembly solutions. Our industry-leading brands, Avdel®, Integra™, Nelson®, Optia®, POP®, STANLEY® Assembly Technologies®, and Tucker®, elevate what our customers create. Backed by a team of passionate and responsive problem-solvers, we empower engineers who are changing the world.

STANLEY ENGINEERED FASTENING FAMILY OF BRANDS

AVDEL

INTEGRA

NELSON

OPTIA

POP

STANLEY
Assembly Technologies

TUCKER