



NOTHING PERFORMS BETTER

## Security Locknut – Standards and Performance Evaluation

The Security Locknut conforms to the following standard international specifications for nuts.

### Dimensional

UN (English) nut body dimensions conform to ANSI/ASME B.18.2.2 for standard hex, hex thin, heavy hex, heavy hex thin, and heavy hex square style products.

Metric nut body dimensions conform to ISO 4032 or DIN934 for standard hex products and DIN6915 for heavy/structural hex products

### Material/Chemical

Material composition, material hardness, proof load, and tensile strength conform to SAE J995 and ASTM A563 for UN size nuts and ISO 898 for metric size nuts.

### Prevailing Torque (for locknuts only)

The Security Locknut exceeds the IFI-100/107 standard for prevailing torque locknuts.

This standard sets a minimum requirement for first installation, first removal, and third removal prevailing torque. The standard only requires minimum performance for 3 installations. The Security Locknut far exceeds this standard for 50 or more installations without damaging the mating bolt making it the most re-usable product on the market.

### Vibration loosening - quantifying product differences

The Security Locknut has been tested against several other commonly used products and fastening methods using the US military standard MIL-STD-1312-A. This is a national standard that establishes a procedure for conducting accelerated vibration tests on any fastener system capable of providing a clamp-up load.

**The results of this test demonstrate the superior performance of the Security Locknut compared to other products and methods.**

### MIL-STD-1312-A: Summary of test results

The Security Locknut Company commissioned an independent test lab (Rexnord Engineering, Milwaukee, WI) to perform a test comparing the resistance to loosening of Security Locknut to several other locknut products under simulated vibration conditions. The tests were performed in accordance with the military test standard MIL-STD-1312-A. Illustrations of the test fixture are shown on page 3.

Generally speaking, the bolt/nut combination is installed in the fixture, the fixture is subjected to a controlled vibration and times/cycles are recorded when the assembly fails.

The test procedure was done with a 3/4-10 Grade 5 bolt and nut assembly installed to a torque of 140 ft-lbs (similar results on other sized products are also verified). The test was run ten times for each product tested with new bolts and nuts used for each separate test. The results (on average) from this sequence are shown in the table on the next page.

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Security Locknut LLC  
999 Forest Edge Drive  
Vernon Hills, IL 60061  
Phone: 847.970.4050  
Fax: 847.970.4059  
www.securitylocknut.com



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Product	Cycles to loosen	Cycles to fall completely off
Security Locknut	55,000	Never **
Nylon Locknut	15,000	25,000
Flexloc	8,000	22,000
Conical (deformed) Locknut	2,000	6,000
Standard + split washer	100	500

\*\* Test stopped after 90,000 cycles

Conclusions:

1. To ensure a bolted joint stays tight under vibration conditions it is important that the assembly (mating parts, bolt, and nut) are optimally designed and the proper torque is achieved during installation.
2. A prevailing torque locknut helps prevent an assembly from loosening.
3. The Security Locknut performs better than the other tested prevailing torque locknuts and methods at preventing joint loosening.
4. The Security Locknut out performs all other locknuts by staying securely connected the bolt after the initial tension is lost. This has proved to be a significant benefit on installations where complete separation of the nut and bolt would cause machinery down time or a potential safety issue.

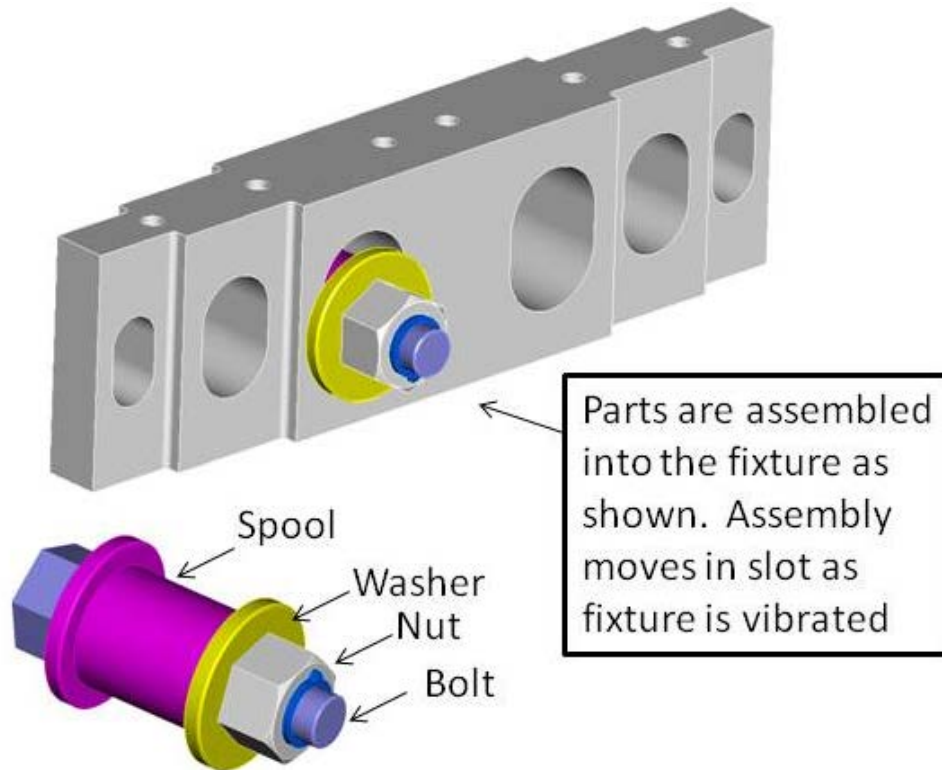
Additional Field Testing

In addition to the laboratory testing, the Security Locknut has been field tested in real world applications for more than 40 years in diverse industries including rail track works, mining, crushing and pulverizing, and vibration conveyors.

# SECURITY LOCKNUT

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Illustration of fixture used in vibration test



Picture of fixture used in vibration test

