LOCTITE® THREADLOCKERS & WAYS TO REMOVE THEM FOR MAINTENANCE PURPOSE

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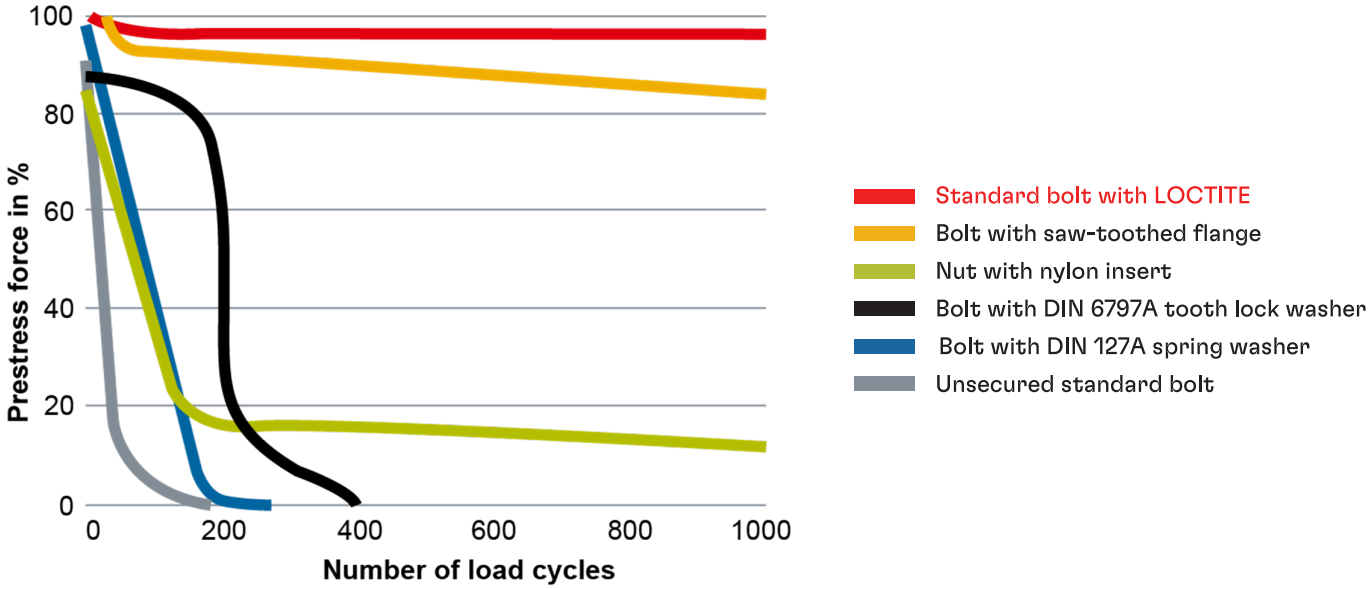
Threaded fasteners - nuts and bolts - are integral components in any mechanical assembly and design. They continue to be integral because they maintain the required clamp load for keeping the machine parts together as well as allow the opening of those parts easily for service and maintenance purposes when required.

However, the very design clearance/gap between the nut and bolt that allows them to be opened on demand also becomes the reason for the self-loosening of nuts and bolts under vibration and external forces, threatening the overall reliability of the machine. To prevent this, we use many mechanical locking methods - washers, locking bolts, nylock nuts etc. - which somewhat diminish the degree of failure, but they can't eliminate the threat of loosening entirely as they don't eliminate the root cause which is the gap.

LOCTITE® offers a more effective alternative - 'chemical threadlocking adhesives'. LOCTITE® Threadlockers which work on anaerobic technology are one of the most reliable and inexpensive ways to make sure a threaded assembly remains locked and secured for the entirety of its service life. Usually applied drop-wise to fastener threads, liquid LOCTITE® Threadlockers can fill all the gaps between the mating threads. Post application, they solidify to form a hard-thermoset plastic which locks the threads together and prevents unwanted loosening under the impact of any vibrations, leakage, and corrosion. This keeps the nut-bolt united under the impact of any vibrations and they don't loosen by themselves.

DIFFERENT SUCCESS LEVELS IN VIBRATION TESTING (TRANSVERSE SHOCK TEST)



We have done Clamp Load Retention tests as shown in the above graph. Transverse shocks are given on nut & bolt assemblies to simulate the vibrational loosening. LOCTITE® Threadlocker has the best clamp load retention performance among those tested. Most traditional locking devices fail this test, resulting in loss of clamp load.

While LOCTITE® Threadlockers are reliable, they are removable as well. So the nut-bolt will not come off by itself but will be opened when you want it to.

HOW CAN YOU REMOVE THREADLOCKERS?

Since LOCTITE® Threadlockers solidify into a thermoset plastic, it is easy to break this plastic by applying the right amount of external force using the classic wrench and the right technique. The external force depends on the strength of the Threadlocker that has been used for locking the nut & bolt.

How to Remove Low & Medium strength LOCTITE® Threadlockers or Purple, Blue, and Green Threadlockers?

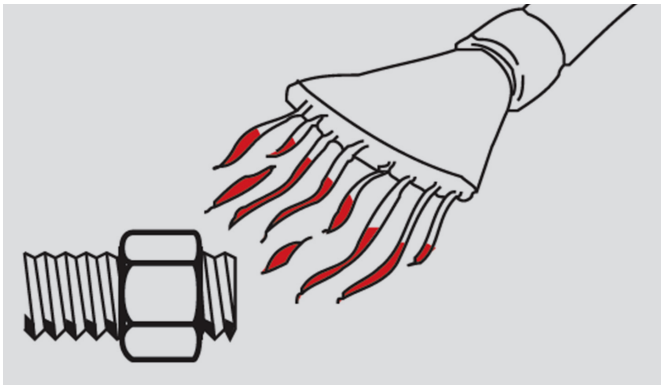
These can be opened up easily using your regular hand wrench during maintenance of machine. Just apply 25 to 30% more torque than the original tightening torque and the thread-locked nut will open up.

Note: As low strength & medium strength Threadlockers can be easily opened by hand tools, does not mean that they will open during vibrations. Threadlockers of any grade will never open during the vibration as the nut & bot assembly is unified addressing the root cause of gap elimination.

How to Remove High Strength LOCTITE® Threadlockers or Red Threadlockers (e.g. LOCTITE® 263)?

LOCTITE® high strength thread lockers are majorly recommended where either the vibration intensity is too high or the bolt size is very large or the need to open up the nut bolt is almost negligible. Still if needed you can open nut-bolts tightened with high strength LOCTITE® Threadlockers by applying localized heat.

Apply heat to the head of the fastener. Warm it up for 3-4 minutes while simultaneously using the wrench to slacken the fastener. The heat will soften the thermoset plastic of the Threadlocker. If the fastener begins to loosen up, apply more heat and keep working the wrench side-by-side. Make sure to use a correctly sized wrench or socket. A tool with a long breaker bar will allow you to apply the right amount of torque. Keep the gloves and safety glasses on at all times when working with the flame.



If applying heat doesn't work, switch to the chemical release method for better results. Methylene Chloride will offer optimum results.

SUMMARY / CONCLUSION

LOCTITE®'s Threadlockers increase reliability & prevent threaded assembly failure with some impressive bond strengths and clamp load retention during vibrational cycles.

However, you can easily disassemble fasteners assembly when the need arises using proper tools and correct techniques. For persistent durability and reliability, you can also reapply LOCTITE®'s industry-leading Threadlockers during reassembly.

REFERENCES

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