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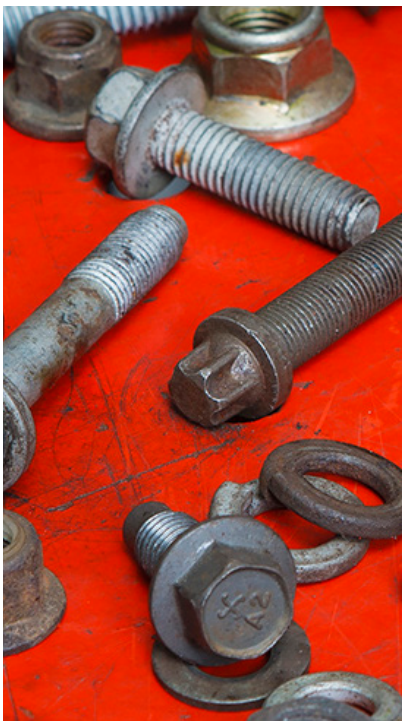
PROVIDING INNOVATIVE SOLUTIONS WHICH OPTIMIZE SPACE & ORDER FULFILLMENT WITHIN THE SUPPLY CHAIN

In This Issue

Threadlocker 101 – Keeping Assemblies Assembled



We're all familiar with good ol' split lock and star/toothed washers, as well as fastener alternatives like self-locking nuts. And we know that the performance of various types of lock washers and nuts over the years has been adequate, but not typically exceptional. As times have changed, so has the technology available to OE engineers and service technicians. In today's challenging and competitive environment, wise shop owners and technicians take advantage of the most current improvements in products and procedures to enhance productivity and profitability.

Enter Threadlockers

Chemical threadlockers have seen greatly increased use in recent years, both on assembly lines and in service bays. According to Nick Seferi, Product Manager for Permatex, a leading supplier of chemical threadlockers, advances in chemistry have made threadlockers more versatile than ever before, and are able to meet a wide variety of fastening needs.

Chemical threadlockers offer many benefits compared to common lock washers and lock nuts.They provide more secure fastening, and also have additional attributes that enhance their value, which is why automakers are using them in more places than ever.

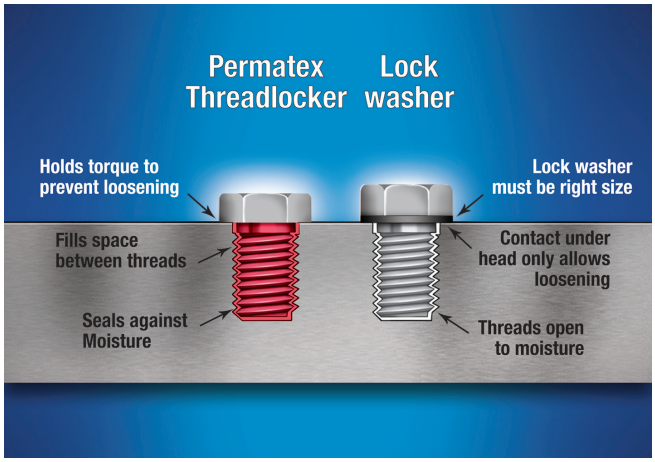
The most significant benefit of chemical threadlockers is that they provide better torque retention than mechanical methods. Lock washers only provide holding strength at the point of contact, whether it is under the head of the bolt or at the nut. They can lose their elasticity due to heat, vibration and time and cause the fastener to loosen.

Chemical threadlockers work differently. They fill in the spaces between the male and female threads and harden into a tough plastic that locks the entire fastener in place. This not only prevents vibration loosening but also seals out moisture, dirt and other contaminants that can cause corrosion and compromise the integrity of the assembled joint.

"In addition," observes Seferi, "gaskets can compress over time, which can compromise the torque retention of lock washers. Similarly, soft materials like aluminum and other alloys, and even the plastic-like materials used in today's vehicles, can compress over time. This can make lock washers less effective and reduce the reliability of the clamped joint."

Enter Threadlockers... (Continued)

But as automakers have found and service technicians continue to learn, chemical threadlockers offer other distinct advantages over traditional lock washers, advantages that contribute to today's vehicles being more durable and reliable. This is especially important since cars, trucks, and SUVs are now expected to perform better and last longer than ever before.



Here are some of the features that make chemical threadlockers superior to conventional lock washers and other fastening devices:

• By coating both male and female threads, threadlockers establish a protective coating to prevent rust and corrosion from forming on the threads over time. Such rust and corrosion can compromise the integrity of the fastened joint, as well as allowing erosion and damage to the threads themselves.

• Similarly, threadlockers help form a protective barrier to seal fluids when bolts or studs enter or pass through wetted passages.

• Using threadlockers eliminates the need to inventory various sizes and configurations of lock washers and lock nuts, in a multiplicity of SAE and metric sizes.

• Likewise, threadlockers are not "size-sensitive," as are bolts and nuts. In the pressure of moving a vehicle through a service bay, a technician could be tempted to use an SAE lock washer when a proper metric lock washer is not readily available. But the incorrect lock washer may very well not perform its torque retention role properly, potentially resulting in a costly come-back.

Size Does Matter

Permatex Medium Strength Threadlocker is ideal for locking and sealing water pump mounting bolts removed when the brakes need servicing.

"Innovations in threadlocker chemistry have allowed us to develop different formulations to fit a wide variety of fastener sizes and types in many applications," explains Permatex's Nick Seferi, "Some formulations allow for easy disassembly and some make for a tighter seal. Some resist high temperatures better, and some seal fluids and fluid pressures better. So how is a technician to choose which type of threadlocker is best for a particular application?"

Four key factors that technicians need to consider to make the right threadlocker choice: the size of the fastener; the torque specification; the nature of the parts being assembled; and the expected need for future disassembly.

For example, bolts used on water pumps or other accessories may only be 5/16" or M8, so the torque spec for such fasteners would be a modest 20 ft-lbs., which is about 27 Nm. A water pump is something that can be expected to be replaced once or even several times in the life of a vehicle, so a medium-strength threadlocker would be a good choice for the attaching bolts.

On the other hand, a structural fastener on a truck chassis might be ¾" or even an inch in diameter, and is unlikely to be removed during the normal life of the vehicle. So a high strength threadlocker coincides with the larger bolt and the more permanent life expectancy of the assembled joint.

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It's important to note that, while a high-strength threadlocker does its job very well, disassembly will likely require special tools, procedures, and perhaps heat as well, where assemblies using low- and medium-strength threadlockers typically require only everyday hand tools for disassembly.

Here are some general guidelines to help technicians choose the best threadlocker for particular tasks:

Low strength threadlocker – commonly used for fuel injection and carburetor fasteners, relay lock screws, body panel mounting fasteners. Typically for fasteners up to ¼" or 6mm.

Medium-strength threadlocker – a good choice for oil pan fasteners, timing covers, starter and alternator bolts, intake manifold and valve cover bolts, C-V and u-joint bolts and nuts, other fasteners for engine-mounted accessories, offering good vibration resistance. Suitable for fasteners from ¼" up to ¾" (6mm to 20mm).

High-strength threadlocker – recommended where assemblies are expected to be permanent, or nearly so, like flywheel and engine block bolts, truck bed mounting bolts, axle bolts and nuts, construction equipment fasteners. Balancer bolts, ring gears and torque converter bolts are other common application locations. Suggested for fasteners larger than ¾" (20mm).

Permatex Medium Strength Threadlocker is strong enough to hold caliper abutment bracket bolts in place while the brake system is in operation but can easily be removed when the brakes need servicing.

Permatex High Strength Threadlocker provides required holding strength in critical drivetrain applications.

A threalocker such this Permatex Medium Strength Threadlocker Gel allows easy and accurate application with no mess or waste.

Permatex High Temperature Thread Sealant creates an effective seal for parts like this oil pressure sending unit.

Take Your Choice

Thanks to the innovative chemistry developed recently, auto repair technicians can now choose from a helpful assortment of threadlocking compounds to suit the job at hand. As discussed above, the size of the fastener plays a major role in the selection of the appropriate chemical threadlocker. But there are other attractive options available to service technicians.

Most technicians are familiar with liquid threadlockers since they've been around the longest," says Permatex's Nick Seferi, "They're helpful because just a drop or two will flow freely onto and around threads. But, increasingly, we're finding that shop owners and technicians are opting for gel threadlockers because they prefer the thicker viscosity. Many find this gel easy to apply, reducing drips and waste, especially in overhead or hard-to-reach places."

"These gels work as well as the original formulations and deliver all the same performance benefits. The gels are available in both high- and medium-strengths to suit specific applications."

Threadlockers also come with formulations designed to handle special applications, such as those requiring tolerance of oil residue. A good example would be valve cover or cam cover bolts, where it may be awkward or even impossible to clean all the oil film out of a tapped hole in an engine or cylinder head. There's also a compound that's ideal for sealing freeze plugs/core plugs in engine blocks and cylinder heads and even a threadlocker made with a wicking formula that allows it to flow easily into difficult-to-access threads and fasteners that have already been assembled.

And What About Sealants?

There are many places on today's cars where fasteners and fittings must contain fluids, and therefore can benefit from supplemental sealing materials. Historically technicians have used white tape to promote sealing of such joints. And, just as historically, the tape has deformed or slipped out of place during installation, or shredded or torn in use, leading to the very kinds of leaks they were hoping to prevent. Furthermore, pieces of torn tape can migrate into passages and clog precision orifices, causing damage or system malfunction.

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This article was provided courtesy of Permatex.

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- Bottle of Theadlocker (valued at $25)

To receive your free Bottle of Threadlocker please contact us at: (877) 638-8002 or email info@associated-solutions.com

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