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THE HORSE

BACK STREET CHOPPERS

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38
MARCH
2004

COVER BIKE

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**"GOTHIKA"
THE BIKE**

**PAUL COX'S
"BERSERKER"
LEATHER COVERED
STUNT CHOPPER**

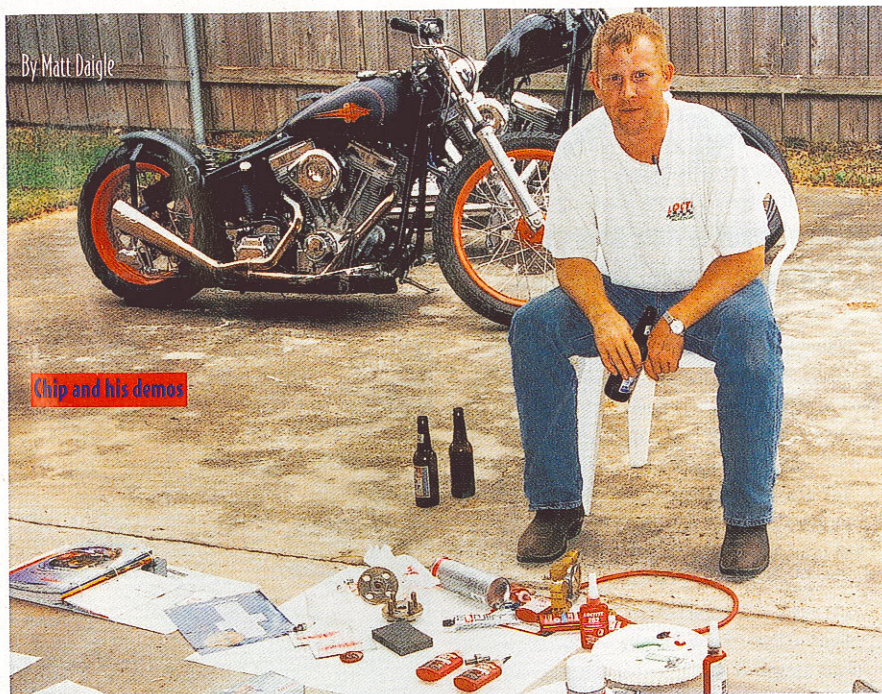
PLUS: DO YOU KNOW YOUR LOCTITE?, ENGLISHMAN'S ORDEAL,
THE CHEAPEST WAY TO LOWER THAT SPRINGER AND MORE **SHOVELHEADS**
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By Matt Daigle

Chip and his demos

"Apply loctite or antisize as appropriate" (The Loctite motto)



The One Piece Chopper

Or what's holding your bike together?

Those of you who suffered all the way through my Nuts and Bolts article in The Horse #37 may have wondered why I left such an open ended remark. Well... I planned to torture you with more of the basics. It may seem simple, but these fundamentals are the basis for mechanical reliability.

While perusing www.loctite.com for plagiarizable information, I found their contact page, with an option for sample requests. However, what started out as a simple product request turned into a three hour seminar by an official Henkel Loctite Manufacturer's Representative. Actually it was more of a beer-fed shoot-the-shit between a couple of motor-heads.

As a Loctite Rep in Baton Rouge, LA Chip Warfield deals primarily with end-users, i.e. he talks to a lot of mechanics. Also, Chip rebuilds and races Vespa scooters and is very familiar with the practical applications of their products in relation to internal combustion machines. Armed with his demos, my beer, and questions from our readers, we delved into the world of thread lockers, lubricants, and sealers.

Thread Lockers

A local reader, Evan, asked about the different grades of threadlockers and their respective applications. Although LOCTITE® is a registered trade name, it is also the common name for threadlocking compounds in garages across the USA. Most mechanics are familiar with blue and red, but Henkel Loctite has over ten variations of threadlockers for the consumer.

Helping to maintain a one piece chopper, threadlockers unitize assemblies. The anaerobic compounds cure when in contact with active (oxidizing) metal surfaces, when no air is present. Although it starts the process in about 10-20 minutes, full cure takes about 24 hours, forming a hard plastic, and locking the threads together. A threadlocker fills the air gap between a nut and bolt, eliminating any side-slip or rocking action. The cured compound also serves as a sealer on the threads, resisting corrosion.

Manufacturer's sometimes use production oriented DRI-LOC®, applying it to parts in stock inventory. You may notice it on fasteners obtained with parts through a dealership. The dry threadlocker still cures the same when assembled, and comes in varying strengths, similar to the liquids.

Henkel Loctite is famous for their high strength red and medium strength blue liquids, but is also available in green and purple (no it's not red and blue mixed together).

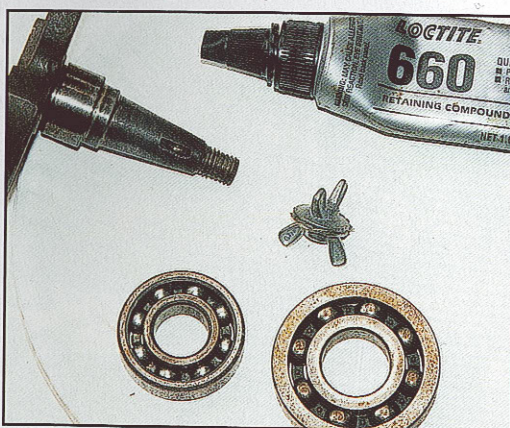


er). 222 MS Purple threadlocker is the low-strength variety, mostly used on parts smaller than a quarter inch. On small fasteners the higher strength red and blue would have too high of a breakaway torque for disassembly, potentially causing pulled threads or deformed fasteners that cannot handle the extra torque.

Medium strength Blue 242 is the most common threadlocker found on my bikes. Designed for fasteners from one .25 to .75 inch, it has about twice the breakaway and prevailing torque of the purple stuff. I have successfully used it on some smaller screws, but I will be switching to Purple on the small screws now that I know about it. Blue threadlocker can be taken apart with proper hand tools.

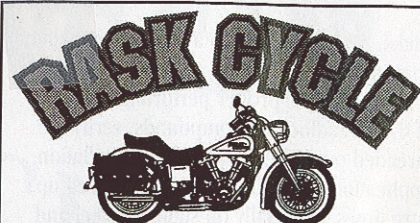
Loctite's Red 262 threadlocker is its high strength compound, having almost twice the breakaway torque and six times the prevailing torque of the blue compound. This means it is essentially permanent, one step away from welding the components together. Disassembly requires application of heat, as hand tools would just round off the bolt heads, possibly even snapping them off. The manual says 450 degrees for five minutes... enough heat to make it smoke is usually sufficient, and disassemble while hot.

For preassembled parts use 290, a green wicking threadlocker. This liquid is listed as a med/high strength compound and creeps itself into the threads before curing. Chip's wicking demo showed it easi-



ly creeping upward over an inch. Green is most useful in applications where a fastener requires several adjustments or torquing during initial assembly.

Once you break the bond between parts, a threadlocker is not as strong. Lock it and leave it... definitely do not walk around your bike thinking you are helping yourself, checking everything is tight, when you are actually breaking all the bonds you meticulously applied during assembly. Also,



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if you have to take something apart, clean and relock it, the threadlocking compounds are not reusable once they cure.

MP and Marcel had questions about storing the various compounds. Refrigeration is not necessary, but do recap it. While they will not cure in the bottle, threadlockers can dry up a bit, changing the viscosity. If you are having problems with the tip clogging up, it is probably from touching it to a bolt during application. Some of the metal ions can cause localized curing in the tip of the bottle.

Marcel also asked about high heat and oil environment applications. Henkel Loctite does make high-temp threadlockers that can handle up to 450 degrees F, where the normal stuff is only rated up to 300, although neither can take care of those Shovelhead exhaust flange bolts. For oily environments use 243, a special grade of the Blue stuff, with added oil tolerance; this will probably become the most used stuff in my garage now.

Loctite's newest product is their thread treatment sticks. These semi-solid compounds are available in medium blue and high strength red sticks. The sticks can be swiped across the threads and have the same properties of their liquid counterparts. The sticks are also available in thread sealants and anti-seize compounds. Chip gave me a set of the big

sticks, but some are also available in smaller chapstick sizes, good for a tool bag.

To ensure proper performance of any of the threadlocking compounds, verify the threaded parts are clean before installation. Application of a primer spray will speed up cure times, especially on stainless steel and aluminum. After cleaning, apply a few drops of threadlocker, assemble the component, and let it cure before use if possible.

Anti-Seize and Dielectric Grease

A combination of grease and metal dust, Anti-seize protects against corrosion, seizing and galling, and provides lubrication in extreme environments. The most common application is Spark Plug threads, ensuring good grounding and ease of removal without pulling threads. The grease will essentially cook-off, leaving the metal dust as the lubricant.

The metal dust is usually a combination with graphite; either aluminum, copper or nickel. The silver grade aluminum base is good to 1600 F, the copper 1800, and the nickel a scorching 2400 degrees. Use anti-seize on all fasteners connected to the heads, such as head bolts, exhaust flanges, and intake manifolds.

On the opposite end of the Spark plug I use Dielectric grease. The grease seals and protects the contacting surfaces, ensuring trouble free service. Corrosion products can act as an electrical insulator, causing hidden problems with your charging and ignition systems. Use dielectric grease on all electrical connections, including lights, ignition, and grounds.

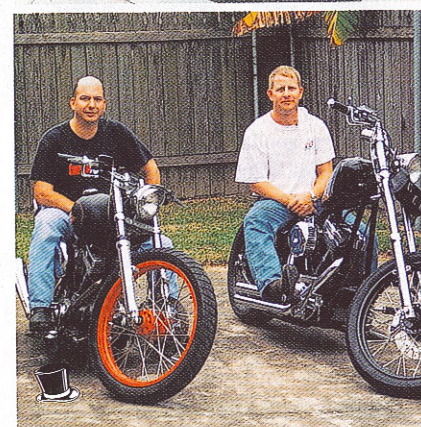
Thread Sealant

Loctite PST® is a thread sealing paste, also available in stick form. Virtually replacing white tape, it is also an anaerobic compound, curing when devoid of air, and in contact with active metal surfaces. Cure time is a bit longer than thread lockers, with 72 hrs for maximum strength. Cure time can be reduced with the use of a primer spray, same as with Threadlocking compounds.

Use PST® on all tapered thread oil line fittings, applying a thin band completed around the fitting one or two threads from the end. The connection is workable till full cure, helping to ensure proper orientation of components. Chip had a good demo piece, holding 600 psi when only hand tight, and still maintained pressure when loosened almost one full turn.

Other Products

Although not as widely used by the average rider, retaining compounds have their place...on bearings and keyed assemblies.



Loctite manufactures several different compounds, including 660 QUICK METAL® for holding together worn coaxial parts without machining. Again, an anaerobic compound, it provides excellent resistance to the shear stress exerted on tapered and keyed components.

The other retaining compounds are similar in appearance to the green wicking threadlocker, providing shear strength as high as 4,000 psi. Not sure what exactly that means, but I could not twist apart the demo pieces that Chip showed me, after only five minutes of curing. If you get into internal work on your motor or transmission it is worth learning more about retaining compounds.

One of the more impressive demo's that Chip had was their 518 GASKET ELIMINATOR® product. A small bead of the Anaerobic (yet again) red liquid sealed up a cut flange easily. The red compound cured between the flanges, resisting blowout, even with the bolts loosened. It can easily be used anywhere that a gasket is not required as a shim for component positioning.

For larger gap applications, Silicone products can be used. Silicone generally comes in two forms, the clear acetic acid vinegary smelling variety, and the oxime cure black stuff. The black silicone will not corrode parts, and is usually listed as 'sensor-safe.'

Unitized Assembly and The One Piece Chopper

After a few hours of training, Chip and I decided to put my mechanical abilities and his riding capabilities to the test. We pounded out a few quick miles on the Invisible Chopper and Chunky Love, testing the limits of both. Chip was dragging the Floorboards on Chunky Love, and grinning ear to ear the whole time. I was relieved that nothing fell off, including Chip. It was a good afternoon of bench-racing and beer. I learned a few things about lockers and sealants, and Chip got an insight on the Chopper world.

Unless you like telling stories of how something falls off your bike every time you ride, learn to use threadlockers. If you like to say your bike marks its spot, stay away from thread sealers and gasket eliminators. Also, if you base your mechanical expertise on the ability to use a helicoil in a spark plug hole, maybe anti-seize isn't for you.

These products don't make a bike any cooler, but they do keep them together and working right. A properly assembled Chopper should be able to handle a 500 mile day as well as a 120 mph blast down the track. Day to day cruising should never be a problem.

One Piece Choppers Rule.