

Frozen Nuts... and bolts

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I hate it when that happens... you know, you're working on the car and some nut or bolt is frozen in place? Whether some gorilla (me) over-tightened it, or rust has been working its metallurgical magic, it can bring the simplest tasks to a screeching halt! If you're lucky, it's just stuck and you haven't broken it off yet. If you break it off... well, that's a whole 'nother article!

There are any number of strategies for dealing with a frozen nut or bolt. The first line of defense is to not let them get that way in the first place! Keep the car clean, including the underside and the engine compartment. When replacing a fastener, make sure the threads are clean, use a copper-based anti-seize compound on the threads and torque it to the correct specs (if specified). You can find anti-seize compound at any auto parts or hardware store. Apply it sparingly. It is especially needed when threading two dissimilar metals together, such as the steel of a spark plug into the aluminum of the cylinder head.

The most common ways to deal with a stuck fastener is to apply shock, heat, penetrating oil or some combination of the three. Applying shock means employing the BFH (Big Fat Hammer). How's the old saying go? *"That's nothing that a big ol' hammer won't fix"*. Sometimes, in the course of working on your car, you've just got to hit something really hard. You can start by whacking the head of the bolt itself to try to break the bond of the corrosion. When that doesn't work, you apply the ratchet or wrench to the fastener and hit that. Remember, lefty-loosey, righty-tighty... you don't want to be trying to loosen a bolt by tightening it! Also, keep the ratchet or wrench held securely on the fastener so it doesn't go flying across the floor and round off the head of the nut or bolt in the process! It's best to use a dead-blow hammer if you have one handy. It won't bounce and will deliver more impact. Don't forget eye protection either!

Penetrating oil... and lots of it should be in everyone's tool box. What a great little chemical invention. You spray it on, it penetrates the rust and corrosion and your fastener magically comes loose. There are plenty of penetrating agents on the market and most work very well. It's hard to beat *PBlaster* or *Seafoam's Deep Creep* and both can be found at the auto parts store. I hear that *Kroil* works where others don't, but it's hard to find. CRC even has a new one called *Freeze-Off* that uses refrigerant to flash freeze the corrosion to break it up and allow the penetrant to work better.

There are a few key points to keep in mind when using penetrating oil. First, it needs time to work. Give it at least 10 minutes, preferably more. If you know you're going to be working on a project, the best favor you can do yourself is to spray the nuts and bolts the day before you start! On the exhaust, you should start spraying a few days in advance, especially header bolts and fasteners on the catalytic converter. Also, clean the rust off the fastener before using the spray. Use a wire brush, or my personal favorite: Naval Jelly. The spray will penetrate MUCH faster if it doesn't have to soak through a layer of rust and gunk first. If the spray doesn't work, spray again and give it more time to act.

If you're still stuck, grab the torch. Yup, strike up the blow-torch and apply some heat directly to the bolt head or nut only. Use caution and be careful... don't blow up the car or burn down the garage. Having a fire-extinguisher handy is also a good idea. The idea is that the heat will cause the fastener to expand at a different rate than the surrounding material, breaking the corrosion bond. Get it red hot and let it cool a little before trying to loosen it. Another slick idea is to spray it with penetrating oil while it's still hot but cooling down. It'll wick more easily beneath the bolt head and into the threads.

Lastly, use decent tools and use the correct one for the job. The Miata uses metric fasteners, so don't try to cheat by using an SAE tool that's "almost" the same size. Get 6-point sockets and wrenches if you can, they fit more securely and thus transfer more torque to the fastener.

Remember, lots of leverage is a good thing, but it's also a great way to snap bolts. Sometimes it's better to go with a shorter tool and the BFH to get things started.

As always, there are a gazillion ways to deal with this kind of stuff. If you have any ideas you'd like to share, drop me an email and I'll be sure to mention it in an article! In any project, be careful, use proper protection, raise the car securely, use the right tool and take your time.

Now, the fine print: NOT responsible for accidents. The ideas and instructions stated above are not entirely original and are provided for your information and convenience. Use at your own risk. Your results may vary. Contents may settle during shipment. See dealer for details.