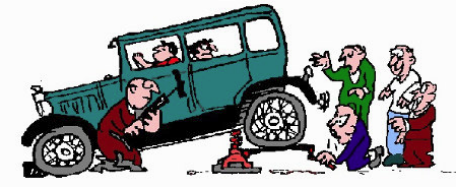
From the Garage -

by Paul Hunter



BOLTS & NUTS

How often do you grab a wrench and tighten a bolt or "over tighten" a bolt with little or no thought about what the intended job of the bolt you are tightening is? I know most of us are guilty! We are under the assumption if tight is good then tighter is better! So we grab a wrench and pull that bolt down nice and tight, completely unaware of the fact we may have overstressed the bolt and it is now only capable of holding a portion of its designed load! All bolts have a design load or said another way they are manufactured with a maximum stress load in their design.

When the Model "A" was built there wasn't any industry standard for marking bolts. An "old timer" could tell the hardness by using a grinder, the whiter the sparks the harder the bolt. Today however we do have a standard, for our purpose the harder the bolt the more "hash marks" it will have on the head of the bolt. Grade #1 & #2 don't have any marks on the head. They are the least expensive and also have the least "tensile strength". You can use these bolts to mount sheet metal parts or in light duty applications. They should not be used to mount mechanical parts or in other heavy duty applications. Grade #3 & #4 are seldom used in automobiles and are pretty much specialized stainless or some other alloy. A Grade #3 will have 1 hash mark on the head and a Grade #4 will have 2 hash marks on the head. Grade #5 is the most common in automotive applications. A Grade #5 bolt will have 3 hash marks on the head of the bolt. They are used to assemble and mount mechanical parts, engines, transmissions, steering components, etc. Grade #6 & #7 again are specialized service and I don't expect you to ever see one in automotive applications. They would have 4 or 5 hash marks on the head. A Grade #8 bolt will have 6 hash marks on the head and they are used for extremely heavy applications such as mounting the fly wheel to the crank shaft on an engine. Generally speaking you should replace any bolt with the same grade that was removed. Remember the more hash marks the stronger the bolt and it is capable of more load.

When you tighten a bolt refer to a "Torque Chart" to see how tight it should be. If you have used grease, oil, or anti seize on the threads the torque should be reduced by about 40%. When you tighten a bolt the bolt is actually "stretched" and it's easy to weaken it, so don't over tighten! When you have a bolt and nut assembly, if you can, you should ALWAYS tighten the nut and hold the bolt from turning. When lock washers are required, be sure to use a new lock washer, most lock washers that have been used, have lost their ability to do the job and should be replaced. This is especially true on an 80 plus year old car! The next time before you tighten a bolt on your Model "A" stop and think about the intended purpose of the bolt, i.e. does it hold on a fender? does it seal a gasket? does it keep the transmission attached to the engine? Does it keep the wheel from falling off? How tight should it be? Bolts have many jobs to do and each one should be tightened according to not only its size but also its intended job. Also be sure to use the proper wrench. If I catch you using pliers or vice grips on a bolt, I'll yell at you!

Reprinted from the original article by Claude Sipe - Hangtown A's Technical Advisor