LAP 24 – HOW TIGHT IS "TIGHT?"

How many times have you started a relatively simple maintenance task and had it take all day? What about finishing one job but creating another during the process because of a rounded bolt head, a stripped thread or worse, a broken bolt in a blind hole? These common problems cause some Mustang owners to defer needed maintenance because of the risk of breaking something while trying to fix something else. It's important to remember, your Mustang was made on an assembly line with specialized tooling and fixtures designed for rapid assembly to ensure the line keeps moving. On a race car, the opposite is needed, quick and reliable disassembly and re-assembly are paramount. If you came to my garage 10 days after a race weekend you'd hardly recognize the Shelby because it would be fully disassembled. The front grille, valence and fenders are off, the drive train is removed and the transmission is on the workbench so the clutch can be inspected. While this might be an extreme example, it can be easily done if you prepare for it.

There are several things to consider when modifying your Mustang to make it more maintenance friendly. Some of these modifications are subtle and will be hardly noticeable while others are more obvious so you'll need to choose what suits your taste. One of the best things you can do is replace bolts with studs. A common performance upgrade is replacing engine bolts with studs but there are many more good places to do this on your Mustang. The beauty of a stud is that is can be used to protect soft metal like aluminum. A great place to start is the bell housing, where bolts are used to attach the transmission. Replace these with studs and no longer will you need to worry about damaging the threads in the bell housing. Automotive studs use threads of a different pitch thread on each end, a course thread on one and a fine thread on the other. This means they tend to stay put when loosening the attaching nut because it's on the fine threaded end. Studs need not be tightened more than hand tight when being installed. Other good places for studs are: at the starter because it threads into the aluminum bell housing, the fuel pump because it threads into the aluminum timing chain cover, and the oil pan because of the same. A side benefit of using studs is the gasket alignment it provided during reassembly which can be particularly important when installing an oil pan.

A common problem many Mustangers have is loosening header bolts. There are many aftermarket solutions designed to address the issue, some are expensive and most are complicated. A good idea that is also inexpensive is to use pre-drilled bolts and just safety wire them. Did you know most header bolts can be purchased pre-drilled for safety wire? Why not take advantage of this and safety wire them together in pairs? A good set of safety wire pliers will produce professional looking twists and are a good investment. Make sure you properly orient the wire as it leaves the head of the bolt so that it tightens as the bolt loosens. For those bolts used in other locations that cannot be obtained pre-drilled, a simple drill fixture is available that will make the job much easier. The nice thing about a safety wired bolt is that it can't come loose, even if it's not tight. By the way, is your oil pan drain plug safety wired to the pan? It should be.

For those applications where safety wire won't work, or for preventing nuts from loosening, locknuts are preferred. Try to avoid the "Nylock" style that uses a nylon insert and instead opt for the all-metal design that uses what appear to be slots cut through a portion of the threaded area. This style clamps the threads without the possibility of damage that can be caused by interference fit designs. You can find them at most hardware suppliers.

So how tight is "Tight?" It depends, while it's easy to see fasteners don't really need to be very tight if they've been properly retained, applications exposed to millions of fatigue cycles, especially in tension like engine components, require proper preload to remain trouble free. The majority of fasteners on your Mustang only need be just tight enough to prevent relative movement. This means you only need to tighten them enough to hold but not too much, because you're only concerned with the need to hold the components together without worrying about them loosening. A very common mistake is tightening valve cover and oil pan fasteners too tight. It's hard to resist the urge to add just that additional ½ turn because the nut just doesn't "feel" that tight and must be liable to loosen. A good trick is to use some non-permanent locking compound (usually blue in color) applied to the threads just to provide some resistance. It can be in advance applied sparingly and left to dry in the threads.

By building your Mustang in this manner, the odds are in your favor that you'll have no problems the next time something needs disassembly and you'll feel more confident the next time you have to dive deep into a corner to make that pass?

See you next lap!

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