

TO TUNE OR NOT TO TUNE: THAT IS THE QUESTION

Every day I get questions from customers who are confused about tuning their Mustangs. They want to know how to do it, are there any risks, what hardware to buy, what are the benefits, and the list goes on. Tuning your Mustang is a critical decision, which needs to be made wisely with the correct information. Once you decide to tune your Mustang, you will have to swim through all of the choices of hardware and methods for refining your tune.

One of the most popular questions I get is: If my simple bolt-on aftermarket components provide more power, why doesn't the original factory just provide the same tune? The answer is really quite simple. Automotive manufacturers need to provide one calibration that works for the whole vehicle line produced with the same engine and transmission combination. This calibration has to work well in every operating climate (sunshine or rain), at every altitude (sea level and in the mountains), under every driving condition (rough roads or freeways), and use the full range of fuel quality (octane levels). It is a huge task to optimize a good, safe, reliable calibration for all these conditions. The aftermarket, however, can provide you with a personalized tune using your hardware, using your fuel choice, focusing on your driving duty cycle, etc., and usually an increase in performance!

So when is it "time" to tune your Mustang? The rule of thumb I use is if you add any components to your Mustang which change how your engine control system "sees" how your engine is running, you should have a custom tune. If significant power adders (such as nitrous, supercharger, turbo) are added to your Mustang, you will absolutely need a new tune. Tuning is a process of commanding engine controls to allow the air, fuel, and spark to be optimized during the entire driving range. This allows your engine to have the best chance of surviving the new performance level you are asking it to deliver.

Many people forget that if you haven't added the right complement of hardware to match your new performance level, you will not be able to tune the engine correctly. For example, if you add 100 horsepower to your engine, you need to change your injector size and possibly your fuel rails or fuel pump. The reason is simple—if you make significantly more horsepower, your engine needs more air and fuel to perform. A tuner's job is to make sure air and fuel are being delivered to the engine in the correct proportions through the entire operating range of the engine.

On the other hand, if you add a cold air induction kit or catback exhaust, you should not have to re-tune your Mustang since these items usually do not significantly affect fuel/air mixtures in the engine. If you can spend extra money at the gas pump, you can realize increased performance by having your

car tuned for premium fuel, even if you have not made any physical changes to your powertrain.

So, if you're ready to tune your Mustang, what product (technology) do you use? There are many hand-held devices and many "piggy back" chips (a chip that plugs onto your car's on board computer) available in the aftermarket today and they pretty much do the same things. When you buy a tuning product, you are really buying the calibrator's experience, transcribed on the chip or hand held programmer. Companies develop expertise for specific applications, so do some research

to determine which company has the best standard tune for your Mustang. If you are planning to have your Mustang tuned on a dyno you should purchase the hardware that your calibrator is most familiar with; this will save you time and money in the long run.

It's possible to dynamically calibrate your Mustang by one of two methods. First, you can have your Mustang calibrated on the street. This method requires specific hardware and software to measure and record performance data. As the name implies, this is done

on the street, which can be legally risky for the vehicle operator—my guess is your Mustang might reach speeds in an excess of 65 mph during the data-gathering phase, (just a guess!).

The second method, and the best tool to calibrate your Mustang, is on a chassis dynamometer (dyno). The dyno safely allows your Mustang to run through its operating range and allows the calibrator to gather data without running over a Toyota (though running over Toyotas can be fun, the dyno is still preferred). For tuning purposes, seek out a "load bearing" dyno because this type of dyno will best emulate actual driving conditions which represent your experience on the road.

In the end, remember—the right tune is like music to your ears (and puts the "P" in performance)!

"... IF YOU ADD ANY COMPONENTS TO YOUR MUSTANG, WHICH CHANGE HOW YOUR ENGINE CONTROL SYSTEM "SEES" HOW YOUR ENGINE IS RUNNING, YOU SHOULD HAVE A CUSTOM TUNE."



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