A Hunt for Horsepower

WE FIND MORE THROUGH METHANOL INJECTION

Text and photography by Larry Jewett

There are few challenges when it comes to making a good thing better when that good thing is a 2003-up Mustang. Ford got plenty right with the looks and the performance, but it serves only as a solid foundation. There's no better platform for improvement and modification than a solid foundation.

The cosmetic appearances of the car that runs as the central character in this story will be detailed later. First, we're going to talk about the performance improvements because there is no shortage of that.

Matt Snow, proprietor of Snow Performance in Woodland Park, Colorado, wondered just how much a stock '05 Mustang could take and, with certain improvements, how much more it could take. The car received the Max Turbo kit, which included a DiabloSport Predator tune, Garrett turbocharger and the Snow Performance water/methanol injection system that included the boost cooler and Safe Injection. There were immediate increases in torque and horsepower. The question remained: could that increase reach 200 additional horsepower, a significant increase over stock.

There's no better way than to put the car to the test and let the dyno do the work. Snow contacted Adam Kennedy at Revolutions Tuning in nearby Colorado Springs and a baseline was set.

Matt's car is brought to the dyno at Revolutions Tuning. The goal is to push 200 horsepower past stock.
How It Works

In order to understand the pursuit of horsepower and torque, it's important to understand how a water/methanol system can facilitate the growth in those numbers. The primary function of the system is to provide a type of chemical intercooling. With this intercooling reaction, there is a suppression of detonation, which allows for more timing and more power producing boost. Water cools the intake charge and combustion. Methanol does likewise, but the chemical properties of methanol allow it to serve as a high octane fuel as well as adding more oxygen to combustion. The end result is simply more power.

Boost Benefits

Snow's Boost Cooler kit can start your horsepower hunt with an additional 60 horsepower in most applications. The real gains come in tuning, which increases engine efficiency. Timing adjustments and boost hold keys to staggering power gains through detonation control. You'll run a leaner air/fuel ratio and you will see an increase in air charge densities.

A 50/50 ratio of water and methanol is the best use. Methanol can usually be purchased wherever you find racing fuels.

Car owner Matt Snow (left) discusses options and fine-tuning choices with Kevin from DiabloSport, who assisted in the process.

The engine featuring the Max Turbo kit. The entire kit can be installed in about eight hours and cost is below $4,000.
but there are products on the market that have significant methanol content. For those in cold climates, these products include gas line drying liquids and windshield washer fluid. It's important to note that these fluids may not be completely methanol and you will have to be careful of your fluid composition.

Another important consideration is setting the amount of water/methanol in relation to gasoline. The rule of thumb is to use one gallon of water/methanol for five gallons of gasoline. Basically, you'll find you give your car as much water/methanol as it takes to eliminate detonation without quenching combustion. A number of variables must be considered. The variables include the onset rpm for injection, the octane rating of the gasoline, type of cylinder heads, even weather conditions. Fortunately, engines are somewhat tolerant of extra water vapor. Having too much water/methanol will result in the engine missing and producing less power. That will serve as a sign of needed adjustment.

**What About Safety**

There is always an element of safety to be considered. No one wants to sacrifice an engine for the sake of a few days or months of additional horsepower. In November 2005, Snow Performance introduced the Safe Injection unit. It is an addition to the standard Boost Cooler system. The Safe Injection provides a safe tune in the event there is a loss of injection. It reduces boost or timing if the injection drops below a set point (empty reservoir, for example). This allows the tune to be conservative and safe. The Safe Injection triggers a red LED to make the driver aware.

**How Did We Do?**

With the tuning, there was an immediate gain, but instinct said additional refinement of air/fuel ratio could bring even more. Adam and Kevin went to work and started seeing results with each successive pass.

The car was dyno'd three months before. It produced a peak of 240 horsepower and 256.42 on the torque scale. Sufficient for driving, but the room for improvement was as high as the Pike's Peak summit that sits outside the Snow Performance offices.

When it was all said and done, the original peak horsepower was passed before the car hit the 3,500 rpm mark.
and torque came to that mark before 4,000 rpm. There was still plenty to go as the engine roared up to 5,700 rpm. The maximum horsepower checked in at 531.1 late in the run after steady gains through the band. Torque curves were steady as well.

The idea of the exercise was to see what kind of gains could be attained without changing to larger injectors, so there was some power opportunity left on the table. For now, the hopes of 500 horsepower were achieved with flying colors, offering proof that there are ways to get more from your Mustang.
TAKE A LOOK

In the Mustang world, there is a passion that goes to greater heights for certain types of cars. The Boss cars, especially the 302, have to be among the highest of the highs on that list.

When Matt Snow started looking at the newest Mustangs, the view struck a chord with him. In many ways, the front end of the car has a distinctive Boss appeal. With that thought in mind, Snow took his car and began to enhance the feeling. The best course was the stripes that were placed on the car and some of the ancillary parts that were put in place to pay homage to the era. Matt was striving for a car that drew memories of the '69 Boss and his effort at merging eras has been successful. The 2005 GT is an attention-grabbing yellow, which serves to remind longtime owners about the beauty that was often seen in a new ‘69 Boss.

While we had the opportunity, we gathered Matt’s “new” Boss and met up with Terry Snyder of Hudson, Colorado, whose restored ‘69 Boss 302 will be the subject of an upcoming feature in Mustang Enthusiast. The folks at Sturman Industries were kind enough to let us bring the cars to their Woodland Park site for a gorgeous backdrop (thanks to Rick Dunagan and the staff for the hospitality) and we set about the business of trying to capture the essence of the Snow Boss. Along the way, you’ll see the subtle touches that transport you to the time when musclecars had muscle.

SOURCE

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