



TECH METHANOL INSTALL

METHANOL MYSTERIES PART 2

There may not be anything such as blinker fluid, but there surely is boost juice.

STORY BY DON ROY PHOTOS BY THE MANUFACTURERS AND TRACY STOCKER

Last month, we took a look at water/methanol injection from the more theoretical side in an attempt to separate some portion of wheat from a whole bunch of chaff. As we continued our work to bring the practical side to you in this issue, we found that there is more than one performance-oriented way to use these products. In the interest of providing all the relevant information, we'll present both viewpoints for your evaluation, along with the considerations involved in each.

The term 'chemical intercooling' is often used in promotional literature for these kits and, indeed, it is more than just hyperbole. Cooling the intake charge increases the air density, which then allows for more fuel to be added... resulting in more power out. Well, if it's all done right, that is.

The available potential is the intriguing part. According to Lidio Iacobelli from Alternative Auto Performance in Mount Clemens, MI, he took a 2003 Cobra that was already pulled for 18 psi, pushing 560 HP to the rear wheels and

While it is tempting to say that these kits are inexpensive, there can be more involved than just buying the parts.

jumped it to 24 psi supplemented with methanol injection. The dyno results showed 630 RWHP, reportedly without a hint of detonation.

Snow Performance of Woodland Park, CO, is a well-known manufacturer of methanol injection kits for automotive use. According to the owner, Matt Snow, drivers of supercharged, non-intercooled cars can benefit from this approach as it enables the use of increased boost levels without the complexity and cost of adding an intercooler.

While it is tempting to say that these kits are inexpensive, there can be more involved than just buying the parts. A dyno tune is highly recommended, even mandatory. In addition, you'll want to engage some further modifications to take best advantage of the cooler intake temperatures. That said, when you add up the total and compare it to what alternatives are available, the bang-for-the-buck meter is pegged. Only a nitrous install is anywhere in the same territory.

A SNOW JOB YOU'LL LOVE

Snow Performance provides a wide array of water/methanol injection systems that are optimized for particular setups. There are separate kits for naturally aspirated, positive displacement superchargers, centrifugal superchargers and turbocharged engines. If you have a diesel tow vehicle, they can look after that too. At the entry level, a boost pressure switch that you adjust to tell the pump when to kick in manages injection control. Stage 2 kits include a variable controller that varies the liquid quantity injected according to the boost level. This allows maximum power in all situations, as just the right amount is injected at all times.

While entry level kits are well priced and simple to install, the Snow Performance product line demonstrates a well-developed maturity through additional, optional components. For example, there is an upgraded pump with 220 psi capacity, which is recommended for engines developing more than 1500 HP. An optional check valve is also available for use in very high boost situations, so that the boost juice doesn't get blown back down the supply line.

Another recent development is the release of their Safe Injection module, which happens to answer one of the nasty questions about these injection systems - "What happens if I run out of juice in the middle of a run?" The Safe Injection module

includes a flow sensor that monitors the amount of liquid going to the nozzle. Once flow drops to a predetermined level, the module will raise a signal that can be acted on by other equipment - for example, an ignition controller, a solenoid-activated wastegate or blow-off valve.

While the Boost Cooler product is compatible and can be run with 100 percent methanol, the company doesn't recommend it for reasons of personal safety. Methanol, of course, is flammable and when burning, it doesn't produce a visible flame. The liquid is quite a bit more toxic than gasoline and can cause blindness if ingested. As well, Matt Snow told us that, from personal experience, methanol that is spilled and doesn't evaporate quickly can damage paint.

Still, you do have an array of options with these systems. According to the company, testing done on a 500 RWHP 5.0 Mustang running 15 psi boost, with 93 octane fuel after maximizing timing for available detonation control showed a 40 RWHP increase using 100 percent water. Believe it or not, you can also use -20°F windshield washer fluid, which is 30 to 33 percent methanol and, with it, they recorded a 57 RWHP increase. Using the recommended 50 percent methanol and 50 percent water solution, their results showed a 70 RWHP bump, while jumping to 75 percent methanol added 105 RWHP.

With the company's kits starting at the \$300 mark, it is hard to ignore those kinds of results. Even if you took every option and invested in a couple of hours of dyno time, your total might still be under a grand. Does it get any better than this?

THE ALTERNATIVE WAY

When we visited Alternative Auto Performance in Mt. Clemens MI, the techs were starting their 26th installation, this one in a 2006 Mustang. The shop owner, Lidio Iacobelli, must be from Missouri because he's very much a 'show me' kind of guy. He came late into the methanol craze and applies it a little differently for his customers. Lidio uses 100 percent methanol, sprayed into a supercharger's discharge tube solely for the purpose of dropping the temperature of air delivered to the engine.

Coupled with additional modifications and safe tuning, Lidio says that he and his customers are "very happy" with the results. On his own car, the first one to be modified this way, Lidio reported that adding methanol injection and jumping the supercharger input by one more psi (from 12.5 to 13.5) added 65 RWHP and dropped six-tenths off his quarter mile time. Race methanol from VP Fuels and 93-octane gas are mandatory for his customers. Using the same approach, he has taken customers with non-intercooled Vortech installations into the 12 to 13 psi range without detonation. His components are supplied by Alky Alcohol Injections Systems.

As you'll see in the photo sequence, Lidio's approach provides a nice, clean installation but at the cost of losing the windshield washer function. Daily drivers are going to have to find an alternate place to store that particular fluid. Weekend warriors, of course, could care less. The methanol injection system is operational all the time, but only activates on wide-open throttle. A float level in the reservoir bottle will signal when the go-juice is low and appropriate actions are taken.

DIFFERENT STROKES

There is more than one approach when it comes to applying methanol injection (ALKYCONTROL's system shown).





INSTALLATION STEPS ALTERNATIVE AUTO



1

1. This bad boy Mustang is already fitted out with a supercharger, but the owner wants more boost.



2

2. Our technician Jay gets ready for this install. Having done more than a dozen so far, this is getting to be comfortable ground.



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4. The injection system's controller and sensitive electronics are kept inside the passenger compartment. Since the system is wired to be active all the time, these modules are mounted behind the passenger's kick panel.



5

5. A modified windshield washer reservoir is used to hold the methanol supply.



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7. Being careful to orient the float switch correctly, it goes into the reservoir.



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8. Here's the big bruiser methanol pump. Don't try and do this with a standard windshield washer pump.

3



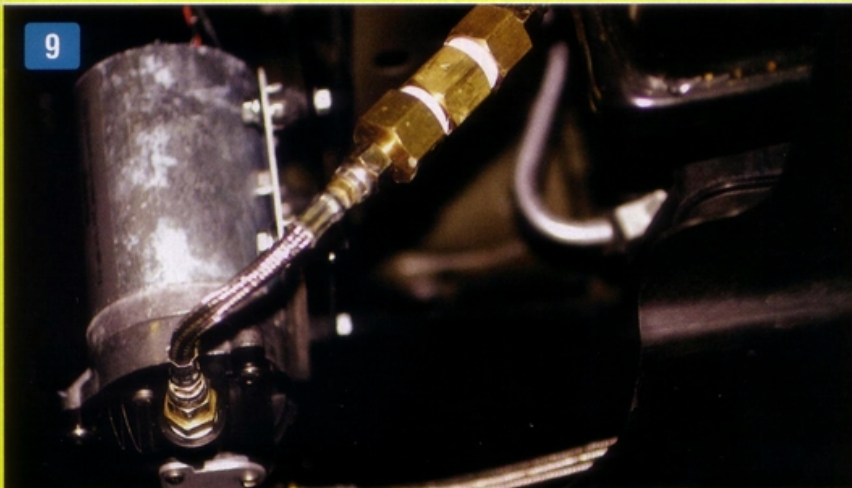
3. Clear passage is needed from inside the Mustang to the outside. The easiest place to do this is in the passenger side fender well.

6

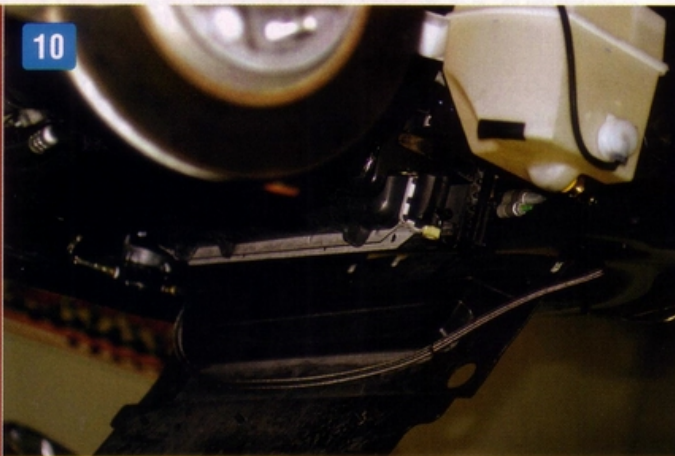


6. This fitting feeds the high-pressure pump. All materials have been verified for chemical compatibility when exposed to methanol.

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9. The pump gets mounted low on the drivers side of the engine bay along with the associated plumbing.



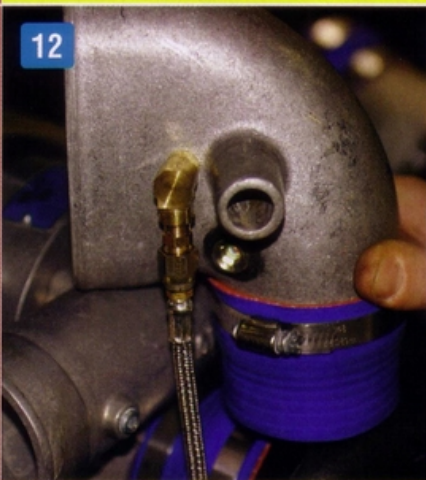
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10. Here, you can see the general layout of components. Our man, Jay, has routed the crossover line under an existing shield to keep everything neat and tidy.



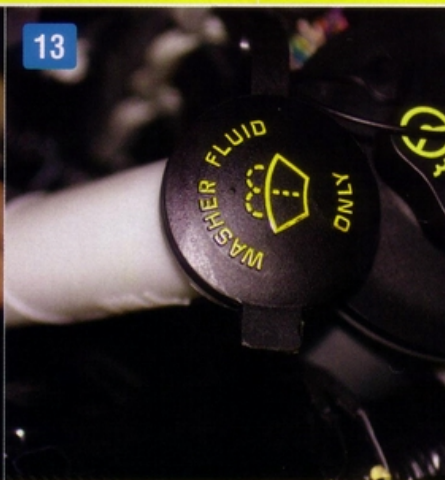
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11. Moving topside, the discharge tube is removed from the supercharger. A little modification allows the methanol line to be connected.



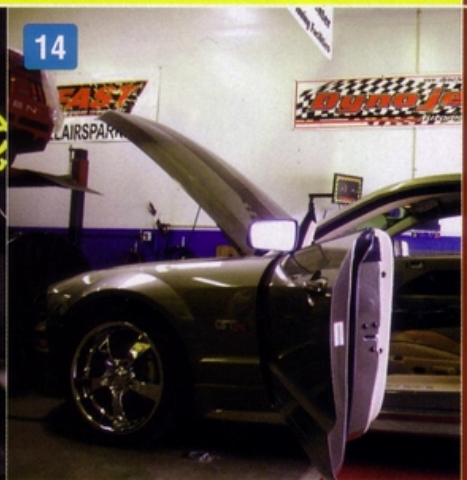
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12. In Lidio's testing, he found it far better to place the methanol jet in the discharge tube, rather than any earlier in the intake path.



13

13. Here's where you fill'er up now. Premium unleaded still goes in the back, but VP Fuels' race methanol goes in here.



14

14. Now it's time to strap this Mustang on to the dyno for a little tuning session.



15

15. Like a symphony conductor, Lidio Iacobelli guides the output of the machinery to new highs.

SOURCE

Alternative Auto Performance

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