

## Autospeed's Myth Meltdown

Ten of the Most Common Loads of Wallop Ever...

*By Michael Knowling*

### Octane Booster Instantly Gives Any Car More Power...



Pouring a little octane booster into the tank of your car WILL NOT necessarily give you more power. The only case where an increase in octane will result in more power is when the engine needs it - ie when it is verging on detonation and it requires the extra RON rating. This added octane rating gives scope for power (with additional ignition advance, etc), but not more power on its own. Note, though, in some cases engines may benefit from the injector/carb cleaning agents that are sometimes added to these formulas. This is more a basic maintenance performance increase rather than an outright enhancement.

### All Factory EFI Systems Are Crap...



Ahh yes, the old "as soon as you change (insert mod here), you must change the computer" drivel. The fact is, every EFI car made within the last 10 years has a self-learning capability and the scope for extra power built into its factory ECU. Most cars can make up to around 20 per cent more power before they start to encounter ECU problems. And cars with mass airflow meters are even more tolerant of an increase in power. Sure, a fully-mapped system to suit a specific engine is the optimal set up, but it isn't the be-all-and-end-all for most of us. In most cases, modifications to the factory management can give effective results for very little cost.

Then we can spend the money we save on some of those "fashionable" moo-cow seat covers...

## A 3-inch Exhaust on a Small Engine Is a Wank...



Not so long ago here in Australia, a "big bore" 2½ inch system was regarded as THE choice of exhaust. Sadly, many people still believe this when it comes to making big power. So when these people see a mere 2-litre turbo engine with a 3-inch system, they invariably snigger. Blissfully unaware of their mis-information...

The fact is ANY engine - especially turbos - will benefit from the highest flowing exhaust possible. This generally means the largest possible pipe diameter, with the least restrictive mufflers to boot. So long as correct air/fuel mixtures are maintained and there is no detonation, we are yet to see a genuine dyno graph showing the contrary - regardless of the theoretical reasons some people give. (In a naturally aspirated system, the large pipe should start after the tuned length part of the exhaust.)

And remember, you shouldn't have to drop off their entire exhaust system when you take your "street car" to the drags. The difference shouldn't be that big, should it? Is it?!

## Paddle/Puck/Button Clutches Are the Latest and Greatest...



STi, Nizmo, Ralliart - they all make their own style of high-performance button clutches. The aim of these relatively expensive bits of gear is to increase the force being applied onto the flywheel by reducing the contact area (force = pressure x area). This is fine for competition use but not for most road cars - as many people have discovered of late.

An alternative solution to a slipping clutch is to fit a high-clamping force pressure plate. Many of these modern cars currently being fitted with button clutches have hydraulic clutch actuation, which makes them perfect recipients for a higher-clamping force pressure plate. Because of their hydraulic actuation there won't be excessive pedal pressure, and you can even revert back to a smoother operating full-faced clutch plate.

So put an end to that embarrassing bunny-hop driving style.

## Pressure Switches Are the Way to Bring on More Fuel...



Uh,oh.

When the need arises for extra fuelling in an EFI engine, one of the most common "fixes" is to stick a pressure switch controlled extra injector (or two) into the intake system. These added squirters are simply turned on/off by this switch and there is no other form of activation control. No airflow, throttle position or any other sensor input is taken into account!

Therefore, half the time it is activated it isn't even necessary (or vice-versa). Plus having the extra injector swap from passing zero fuel, to suddenly pumping it in at full-bore, isn't going to give a smooth or even vaguely precise enrichment.

And with these more-often-than-not randomly placed injectors, who knows what the fuel distribution between cylinders will be like...

## Underbonnet Air Filters Give Stacks More Performance...



Replacing a standard EFI airbox with an aftermarket underbonnet filter will give advantages - but it can give equal-sized disadvantages as well!

In most cases, a large aftermarket air filter will easily out-flow the standard element in its plastic box. However, an exposed filter sucks up much of the car's underbonnet heat. Hot air is bad for making power, and it also increases the likelihood of detonation, which is also bad. So if you've decided you really want an aftermarket filter, make a well-sealed thermal shield between it and the underbonnet heat sources. Australia's AVO, for example, sell a carbon-fibre heat shield for underbonnet air filter equipped Subaru WRXs.

Also, make sure there is a large air delivery duct capable of supplying enough cool air for the engine to breathe at full load and rpm. That might be well over 700 cfm of air for some really big engines - so make sure it's a big-un!

## You're Mad If You Don't Have a Turbo-Timer Fitted to Your Turbocar...



Basically, a turbo timer just an elaborate egg timer with an output relay - and a lucrative price.

The idea of these timers is to keep the engine running for a pre-determined length of time after the ignition switch has been turned off. This enables the turbo to cool down more gradually and prevent oil choking up within its core.

This makes sound engineering sense, but the concept of not being on turbo boost just before you switch off seems more logical. Take the effort to drive the car gently before shutting off, and maybe let it run for another 30 seconds while you put your sunnies back in the glove-box and put the steering wheel lock on. It'll save you money, possible difficulties with alarm interfaces and, above all, it won't give car thieves an easily-accessible bypass to your vehicle's ignition system.

## Running Higher & Higher Boost Gives More & More Power...



Turbos have a wonderful thing called a wastegate diaphragm. By fooling it into thinking it is managing less boost than it really is, it tells the turbo to keep boosting. The more pressure you bleed from this diaphragm, the more boost thou shall receive - who knows, maybe up to 30-plus psi!

But it doesn't necessarily mean your engine will be producing more power than with "only" 20 psi. An engine relies on the flow (or more correctly mass) of air entering the engine, not the intake pressure. Crank turbo boost up past a certain level (different for each engine and turbo) and you won't be producing more power - just more problems. Too much boost and you'll produce detonation that might cut your power output to BELOW that of a significantly smaller boost level. The associated high back-pressure can create engine and turbo problems too, such as cracked exhaust manifolds.

So be warned - with extra-high boost, you'll kill the engine and turbo at a much quicker rate...

## Aftermarket Blow-off Valves Give Your Car More Power, Making It Go Heaps Faster...



Vehicle manufacturers fit blow-off valves to reduce turbo flutter noise (when configured in a closed-loop arrangement), and we've also heard suggestions that they improve turbo life. Perhaps so. But today in the aftermarket there are numerous dual-chamber, sequential, double-whammy super-doooper BOVs that cost upward of A\$500 - which in reality, perform no better than most humble OEM parts.

An aftermarket valve **can** perform better than OEM valves, but only with those standard valves that leak under boost. If you've replaced a BOV that used to seal perfectly, we guarantee you'll be splitting hairs trying to measure any on-road gains. On the other hand, one professional workshop we know suggested one of their cars went harder **WITHOUT** its big shiny blow-off valve...

If you really must have one, it is more than likely for the mystical sound effects and so people can be "double whammy'd" when you pop the hood. A standard BOV bought from a wrecker is the most cost-effective approach.

## Slap a Subwoofer In a Box and She'll Sound Sweet...



Subwoofers are a very complex piece of gear.

Most quality subs will come with a list of Thiele-Small woofer specs. This includes Vas, Qts, Sensitivity and Resonant Frequency - if you don't have this information, you're in trouble. A 12-inch sub in a 40 litre box can sound terrible, but the same speaker in a 100 litre box might sound pretty darn impressive.

The only way to work out what your speaker will sound like in a certain enclosure before building it, is to enter various Thiele-Small measurements into a special computer program. Luckily, most car audio shops are prepared to assist you in this area. With these programs, the frequency response of a chosen speaker in a particular enclosure can be graphed - showing you exactly where the speaker will be strong or weak (simply speaking).

If it the response curve isn't what you want, keep changing the box parameters until it is. It's a lot cheaper than splurging out on another speaker to make up for enclosure deficiencies.

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