

TECH
FEATURE

**FORD'S 335KW
SUPERCHARGED 5-LITRE**
HUGE POWER / MASSIVE TORQUE / MINIMAL COST
WORDS AND PHOTOS: PAUL ISAAC - ISAAC PERFORMANCE VEHICLES (IPV)



Miami Power Up

Paul Isaac runs us through the ways to extract even more power from the latest supercharged 5.0L FPVs



As we saw last issue, Ford's US engineers designed a fantastic package with plenty of room for future development with their new Coyote 5.0-litre V8 engine. It was this solid foundation that provided the platform for FPV Australia to create a supercharged version for the FPV FG V8, which would soon become known as the 'Miami' engine. This new model platform has provided a great opportunity for aftermarket performance companies to enhance the vehicles further for those wanting extra performance, and of course, the sound that should come with a performance V8 engine. So how exactly do we get even more power out of them? Read on and find out.

Baseline

With the FPV FG range that come factory-fitted with the Miami engine still being relatively new to the market, we used a GT-P 6-speed auto with just 2000km on the clock to perform our development work. Unlike the old Boss 5.4L engines, the Miami's are cheap and comparably easy to get huge amounts of power out of. Due to them being supercharged already, the fuel systems already feature a high-volume, high-pressure pump and large injectors, and the drivelines are also upgraded by Ford to suit the supercharged application. To get an idea of what power the car was making standard as a baseline for the coming modifications,

we ran it up on the dyno. After warming the dyno and vehicle to normal operating temperatures and stabilising the air control in our dyno cell, we ran a couple of back-to-back power runs. The result was an impressive and constant 341.4rkw (rear wheel kilowatts) at 5710rpm and 2050.5rwnm of torque at 4120 rpm. This was all as the car rolled off the showroom floor with just 8.27psi boost. Using a standard drivetrain loss figure of 15-percent those figures equate to 392kW and 732Nm at the flywheel (see breakout box for an explanation of torque calculation). While we knew the cars were under-rated from the factory, the power figures still blew us away.

Stage 1

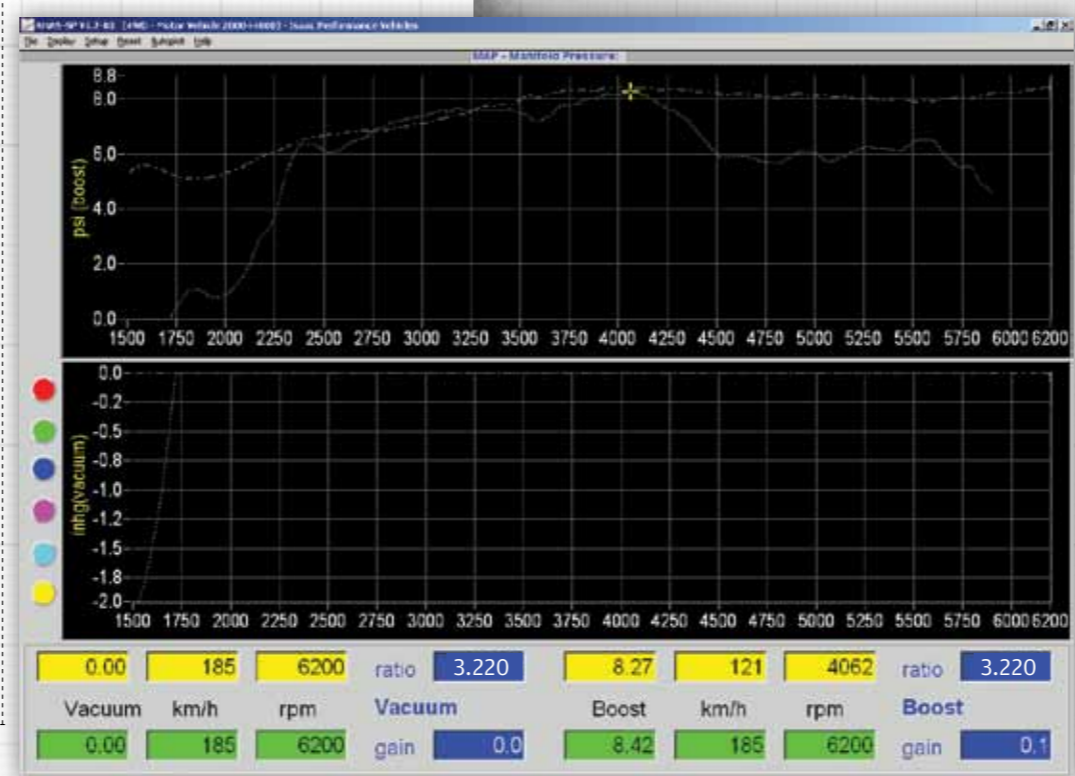
Thanks to the already impressive engines offered in the vehicles from factory, the only mechanical elements that require changing to get a substantial power and torque gain is the air filter and a cat back exhaust. Not only will this combination give an increase of around 15kW, it will also substantially improve the sound of the vehicle. Due to the complexities involved with the tight space in the undercarriage of the vehicles, it's recommended that a specialist technician fits the exhaust system.

Stage 2

If you were to have a custom mapped dyno tune done with the above package, you could expect to see up to 34kW up from the factory rear-wheel figure and a massive increase in mid-range torque. Not a bad outcome for minimal outlay! It's also worth noting that the only differences between the 315kW GS and the 335kW GT and GT-P is in the ECU's tune. So if you've got a GS, factory GT/GT-P power figures are easily achievable with a custom mapped dyno tune. >



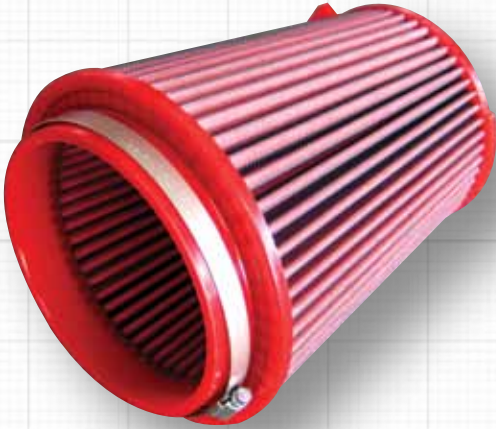
The dyno graphs show increased torque and power across the rev range, while maintaining the factory peak boost level. Unlike the factory tune where boost begins to drop at 4000rpm, we continue that level right through to the top end of the rev range which makes a huge difference to the high rpm performance of the car.



Stage 3

For stage 3 we added a set of IPV's ceramic coated 4-1 high performance headers and retained the BMC air filter and quad big bore exhaust system. As per the previous model Falcons, the easiest way to do this is to actually drop the entire engine and gearbox subframe assembly out of the car. It's easy to see the difference between the 1-7/8th-inch aftermarket headers with their long primary tubes and merge collector when compared to the short factory manifolds. As well as an increase in power and torque, the sound from a system like this is well worth the asking price on its own.

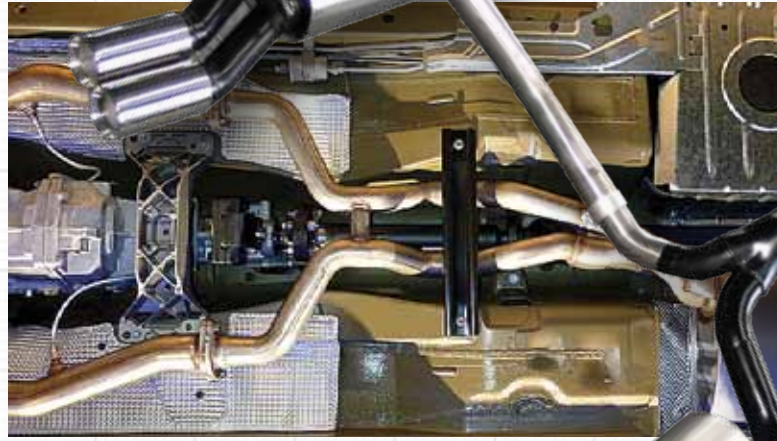
With the new IPV exhaust package and BMC filter but with no change to the tune, the car made an



incredible 379.5kW at the wheels, an increase of 38rkw over stock. Once the ECU was custom tuned that figure increased even more to a final result of 413.1rkw at 6200rpm and 2193.2rNm of torque at 4945rpm. That's an increase of 71.7kW at the wheels just by adding headers, an exhaust and air filter, along with a tune to suit. Torque is increased by 142.6Nm at the wheels also, and this is with minimal changes to the factory boost levels.

Stage 4 And beyond

There is far greater power and torque potential available from the Miami engine. However, with the stock engine internals we mapped the tune to a sensible limit while maintaining boost levels similar to those of the factory tune.



OLD

For those who want to take things to the next level though, we'd recommend the fitment of higher strength forged billet conrods and forged pistons along with race quality rings and bearings. Add to this billet steel oil pump gears and an-air-to water intercooler (which are now available - see breakout) and you'd be able to fit a smaller supercharger pulley to increase boost. However, such an increase will push power figures to the upper limits of the factory fuel injectors.

Keep in mind outright power isn't everything. Overall driveability must also be taken into consideration, which is why we recommend having your vehicle custom dyno tuned by an experienced Ford tuner. The SCT flash tuner required for tuning is the same as that used on previous model Falcons, Mustangs and F150s, obviously with the appropriate software added.

Real World Figures

While the owner of the test vehicle has no intention of taking it to the drag strip, there are plenty of Australians who have been doing exactly that.



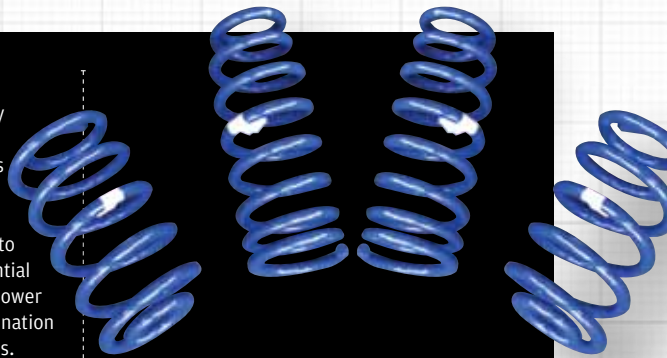
NEW

Completely stock cars have been recording times as quick as 12.39 at 113.97mph, with the factory automatics being around half a second quicker than their manual siblings. Those mile-per-hour speeds alone are enough to indicate the cars are producing more power than the badge on the bootlid would lead you to believe.

The quickest Miami powered FG to date has run an impressive 10.92 second quarter mile at 128.75mph, although it's had a slightly larger supercharger fitted along with some serious rear suspension work. **v8**

Intercooling

As many people are predicting to be factory fitted to the next incarnation of the supercharged FGs, aftermarket intercoolers are now available that fit into the vehicle's factory air core. Results indicate an intake temperature drop from around 70°C, down to 42°C. Intercooling will give even more potential for further performance enhancements as lower intake temperatures reduce the risk of detonation as well as increase power and torque figures.



Driving Enhancement

With Ford's reengineering of the FG's suspension geometry the turn-in is greatly improved, however on some of our twisty New Zealand roads with off-camber corners, the car has a slight tendency to introduce body roll. To compensate for this we fitted progressive-rate lowered front and rear springs, which lowered the vehicle by approximately 25mm overall. More importantly, when combined with a K-Mac ratchet adjustable castor/camber kit, the handling was substantially improved and body roll eliminated.

Torque Calculation

The Dynapack chassis dyno directly couples to and measures torque and power from the wheel hubs, with no wheel slip due to its direct couple design. With that there is no tyre inertia to mask the results giving you greatly improved sensitivity and repeatability. To calculate the rear axle torque of 2050.5 Nm to real world figures, it is divided by the diff ratio of 3.220 and multiplied by the driveline correction factor of 1.15% (termed driveline loss) which calculates to 732Nm of torque at the flywheel.

To view the car in action on the dyno and street, scan these QR codes with your smartphone or visit www.v8.co.nz

