



Four Fifty From 600

Words: Glen Williams Photos: Championship Digital

Yamaha has never made a 450cc four-cylinder motorcycle, so it's taken a bit of local Kiwi ingenuity to create one. This particular bike started life as a 2006 Yamaha 600cc YZF-R6; reigning F3 champion Glen Williams brings us the story and blags a ride on the wee screamer.

Track Time

Standing beside the bike after starting her up it sounded not dissimilar to a bog stock R6, just maybe not quite as gruff or lumpy. Hopping on board and it was unsurprising to find that it felt just like an R6 (funny that), which is not a bad thing at all.

Moving out of pit lane the engine required close attention to the throttle at low revs to avoid it stalling and some slightly lower gearing may have helped here, that said it wasn't that bad and you just needed to be prepared to slip the clutch a little and keep the revs up at dawdling pit lane speeds.

Out onto the track and it was immediately obvious where this 450cc hybrid engine strengths resided – and it appeared they all lived at near stratospheric rev levels.

In its current set up the bike exhibited modest drive in the lower two thirds of its range (that being up to 12,000rpm!) From that point on it started to wake up a little and then from an indicated 14,500rpm it came on strongly to the limiter which sat a



mere 3000revs further up the scale at an indicated heady 17,500rpm.

When compared to say a Formula 3 spec Suzuki SV650 the difference is like chalk and cheese in how the power is delivered to the rear wheel and it was quite hard to acclimatise to initially. Even when compared to the Ozzy 450 triple cylinder layout (see test BRM issue 53, Nov 2008) this engine makes even further demands on the rider to keep the needle near the red zone. As long as you can do this it offers pretty respectable performance, drop out of the top 3000rpm zone at your peril though if you are seeking a

quick lap time!

It's similar in riding style to a two-stroke 125GP machine where you must keep the engine on the boil and employ extravagant use of the clutch when exiting slow corners if you wish to keep the 'go forward' motion happening with any vigour.

Needless to say the R6 chassis with Ohlins suspension fitted both front and rear, and a set of lightweight Dymag wheels thrown in for good measure, handles the reduced power of the 450cc horsepower with mind numbing ease. You can pretty much open the throttle fully from just before the apex of most corners and only need to be wary if the engine is in the very top part of its rev zone when you are fully leant over and on the very edge of the tyre. The big 190mm Pirelli rear slick was able to soak up the relatively soft demands placed on it by this engine's feeling of limited torque.

Greg had the standard R6 slipper clutch in the bike, but a bit more slip when changing down would assist in maintaining corner entry speed. The reduced inertia of the lighter 450cc crankshaft and its related spinning engine mass and lighter wheels may have been the reason for this – however its not really a problem, but worth refining for the future.

Where to From Here?

Greg says that subsequent further dyno runs completed since our test ride have shown that they are getting a modest 67 rear wheel horsepower from the bike. "We will be looking to

improve not only the maximum hp figure but of more importance is to try and spread of the power delivery over a greater range. In its current state of tune we have a number of options to make these gains and these are mainly with increased engine compression and also some air velocity solutions that will speed cylinder filling and extraction – but overall we are pretty pleased that the bike at least appears to run reliably and is staying cool. We can only expect to move forward from here especially when we start removing some weight from the bike."

There is no denying that Greg has done extremely well to get this prototype engine up and running as well as it is. He is quite confident that there is a fair bit more to come yet and he is the type of bloke that will tinker away in his shed, testing one thing at a time in the interest of making steady improvement (this is often a simple secret in the racing game – namely hard work with a bit of trial and error thrown in for good measure).

Like Chris Osborne's 'Ozzy 450' triple concept where one cylinder is deactivated from a 600cc supersport machine to create the 450cc capacity, the potential for this bike is definitely there and once again it's all offered in a very good chassis package. It is also pleasing to see yet another bit of diverse thinking with this new approach to the Formula 3 class - a class which was designed to foster and allow the design and development of novel ideas just like this.

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