Supercharged Hayabusa from TTS
283bhp and 168ftlb £5000 for 62% power increase 
Retains original machine’s excellent tractability

Suzuki’s 195bhp Hayabusa has never been a wallflower. But compared to this latest supercharged example, which has been built by tuning experts TTS of Silverstone and puts out a massive 283bhp with no loss of usability, it certainly feels like one.

Richard Alans is the man behind the Northants-based tuning shop and has long been convinced that supercharging is the way forward for cheap, reliable power (see page 24 for more analysis). His new Hayabusa has been built to showcase TTS’s latest wares.

It uses the latest Rotaex supercharger which is considerably more compact, lighter and able to deal with the engine speeds of more motorcycles than previous examples. While TTS has also redesigned the charger mounting systems to make them tidier. CNC-machined external mounting cases, plenum chamber and pre-formed air ducts, meanwhile, are works of art, which means not much bodywork has to be removed and only minor exhaust pipe rerouting is required, if at all on some models.

Supercharger is easy to fit
All of which means the whole shebang is now sold as a kit that anyone can fit. The only sticking point is that the bike’s fuelling/ignition will need to be re-maped to boost fuel input to match the increase in pressurised air charge fed into to the throttle bodies (see how it works, right). But as Alans says: “Any dyno tuner worth his salt will have the equipment to do this.”

The 2008-onwards Busa also features an increased compression ratio of 12.5:1, meaning low boost pressure is required from the latest C30 Rotaex supercharger to net a high level of performance from the engine: even so, it’s still kicking out 283bhp and 168ftlb of torque at 11,000rpm – a higher than normal increase to suit Alans’ thirst for drag racing. It also necessitates an aftermarket fuel additive to avoid detonation. Not that this matters when dealt with the sort of drive that could spin the earth the opposite way.

Wheel goes skywards
So what’s it like? Well, with a fistful of throttle in first gear and the tacho hovering around 5000rpm mark the front wheel simply went skyward. A hurried shout off left me with bruised nadders and wondering if the front tyre had blown off the rim because of the savage way it went from vertical back to horizontal.

That is, there was no real warning. Up to that point the Hayabusa had been an everyday 180bhp poser with only a subdued growl from the Akrapovic silencer. Normal riding hadn’t suggested hell could be unleashed in an instant.

So I tried again. And again the front wheel went vertical. Third gear... exactly the same, but at 130mph this was bordering on the insane. No wonder Alans had to bolt 10kg of dead weight to the front wheel spindle at a recent drag event and even then he struggled to keep the wheel down...

In short: normal throttle abuse anywhere in the rev range causes massive forward momentum, yet it happens so, so smoothly the bike feels stock. Not until you look in the mirror and find no trace of the car you’ve just overtaken do you comprehend how devastatingly beautiful a supercharged motorcycle is.

Supercharging by stealth...
With only an air filter for the inlet side of the supercharger poking out through the left side of the fairing and the external mounting case for the drivebelt on the lower right, there’s little that shouts “warning, supercharger fitted.” It is indeed a subdual affair that catches out the unwary sports bike. Or Porsche.

What’s more, apart from the occa...
Real wolf in sheep's clothing... the kit is so neat the bike looks almost standard

WHAT IS A SUPERCHARGER?

A bolt-on device that forces air by means of a high-speed impeller into the inlet manifolds at greater pressure than a normal air inlet and airbox system will allow. This 'boosted' air charge, together with increased petrol delivery, results in a bigger bang in the cylinder. More bang equates to more power. More power results in more heat produced and the more power produced may necessitate the need for an intercooler to cool the incoming charge of compressed air, plus a separate oil cooler for the supercharger itself. A supercharger does the same job as a turbo but works by being driven by the crankshaft, whereas a turbocharger is a turbine driven by exhaust gasses.

THE FACTS

TTS SUPERCHARGED SUZUKI GSX1300 HAYABUSA

Engine: 1,340cc, BS13/14 valve Nissin cooled, in-line four-cylinder, 6-speed gearbox. Belt final drive. TTS/Street Supercharger

Chassis: Aluminium double ell frame, Aluminium swingarm

Rake/trail: 25/19mm

Dry weight: 220kg

Fuel capacity: 21 litres

Suspension: Fully-adjustable USD forks, fully-adjustable monoshock rear

Brakes/tyres: Dual 320mm front discs with 6-piston calipers, 255mm rear disc with 2-piston caliper. 130/70x17. 180/55x17 rear

Info: www.twostates.co.uk

GET YOUR BIKE INSURANCE WITH

MCNcompare.com

TTS plenum chamber – a normal airbox would be blown apart

Air is filtered before it enters the TTS Hayabusa’s supercharger

HOW IT WORKS

A supercharger has an air inlet and outlet, and between them an impeller, gearbox and oil pump. The impeller is driven by a pulley wheel, in turn driven by the end of the rotating crankshaft. A ribbed polymer belt connects the two. The crankshaft pulley is supported by a bearing inset in a TTS designed and built external casing that cleverly mounts the original starter motor. With both pulleys identical in size to give a ratio of 1:1, even if the engine revved to 12,000rpm it wouldn’t be enough to pressurise (boost) the air needed to produce any additional power to talk of. An internal gearbox within the supercharger spins the impeller at a higher speed. This gearbox ratio is approximately 10:1. So, every revolution of the crank means the impeller’s shaft spins 10 times. That means an engine speed of 10,000rpm spins the impeller at 100,000rpm! The impeller is mounted within bearings and an oil pump ensures they are lubricated and kept cool.

Incoming air, via a filter, enters...