KAWASAKI NINJA 250
‘THIS BIKE WILL SAVE MOTORCYCLING!’

«LIGHTS, CAMERA, PB MOVIE!
FROM YAMAHA TO YOUTUBE IN A DAY»

PLUS
ULTIMATE BOLT-ON
SUZUKI GSX-R1000
SUPERCHARGE
MY BIKE – NOW!
MORIWAKI 250
HONDA SP-3: PLEASE
SHAKEY, BAYLISS, YOU...
FLAT-OUT ON THE 1098R

KTM RC8
TO HELL AND BACK IN EIGHT HOURS

ITS TOUGHEST TEST EVER! V FIREBLADE
V HP2 SPORT V GSX-R V BRITISH ROADS

PLUS PB RACES THE RC8 AT OULTON PARK
Why we need superchargers

Free power? Let us at it... If only if it was that simple. PB investigates the attraction — and the expense — of supercharging

B E F O R E - A N D - A F T E R diagrams are hardly a new thing. And of course, interesting as they are, they rarely tell you the whole story. But these ones do. Whatever your bike, just imagine what it would be like with 50 per cent more torque. No, imagine what it would be like with that grunt delivered in a single-toren at that just went up and up in a gravity-defying dead-straight line.

Welcome to the world of modern supercharging. It's powerful, it has made a mark in the UK and — if you can stump up the four plus grand — it's very practical. Here's why.

Once you lift an engine out of the emission-controlled jacket and start tuning it, you quickly realize that anything you gain in power you pay for in cooler. It's where we've come to except, from CP, or from Honda, to expect you to turn the bolt on their trickier L2A. It fits with their latest sense to trade power for weight and economy. You get what you put in. Everyone stands in a queue. You can't have the cream until you've finished the yoghurt.

Forced induction is alicked the week after that. You don't have to wait for a carefully tuned setup your high up in the range, when the intake, exhaust and valve timing get to achieve maximum cylinder filling efficiency. You can just turn the bolt and have it right now. In spite of As Richard Albury, builder of his supercharged Rocket III puts it: "Supercharging makes your engine feel big."

In a way a 2.3 litre Triumph is the worst engine you could use to demonstrate supercharging. The only thing is has arguably the flattest, straightest torque curve of any bike. It's a Richard's view you can never have too much of a good thing. Which is why his trick engine now makes as much power as a WSB front runner.

How to describe what 230hp feels like? Let's start with the bike on a shut throttle. It weighs far more than a third of the tonne and when you start to push it, you know it. But it has got up, and it's direct ahead and in a quarter inch of wrist movement — about 0.1 seconds — the entire bike becomes weightless. Richard says he uses it to creep up behind riders on motorways and annihilate them from 80-140 mph. Experiencing this yourself is one of those things that makes no sense like an elephant out turning...
The guts of a supercharger

1. Impeller housing
2. Impeller
3. Volute
4. Compressor outlet duct
5. Shaft holder
6. Oil seal
7. Main housing cover
8. Input shaft
9. Oil inlet and return tube
10. Input shaft bearing
11. Drive pulley

This is a Danish Rotex supercharger suitable for bikes. The two black blocks at 1 and 2 are the rotor pulley (11), which is driven by a belt off the crankshaft, and the impeller (12), which is actually installed into the engine underneath.

The components in between act as a sort of compact gearbox, stepping up the speed of the rotor pulley by a factor of 1:2 to drive the impeller. Obviously you will notice the extra weight. Instead, the Rotex devices use a sun and planet rotor design. You can visualise how the world of imaginary clunking and clattering.

Now add the fact that all of this comes on a small control panel in the middle of the three rollers. The idea is to make it easy to move this heavy shaft (the 'sun'), driven by the three rollers (the 'planets'), which rotate much more quickly than the wide outer ring. The overall ratio is 1:2, and the impeller can achieve speeds of up to 20,000 rpm.

Thus, even as the pulley, the supercharger on the Rocket III engine produces maximum boost when in use in its rpm range. No lag, just pure power.

If you are pondering this kind of technology, the supercharger manufacturer, Rotex, has the answer. You can see an animation of the supercharger under "Design and production" on rotex.com.

COSTS AND CONTACTS
Rocket III Rotex supercharger £3,525 (fully fitted) www.tpxperformance.co.uk
Tunetboy fuel and ignition modifier £280 www.tunetboy.com.au
Supercharger manufacturer www.rotex.com

Oil cooler

The oil cooler is fixed to the engine block and is cooled by the water in the radiator. The oil passes through the cooler, and the temperature is reduced. The oil then returns to the engine to be circulated again.

 Blow-off valve

The blow-off valve is a valve that opens when the supercharger pressure exceeds a certain threshold. When the pressure drops, the valve closes, allowing the pressure to equalise. This prevents the engine from being damaged by over-pressure.