



Peter's 911 before the phase 2 modifications

# Building the Ultimate

## Part 2

**Peter Bell** continues the story of creating his ultimate 911

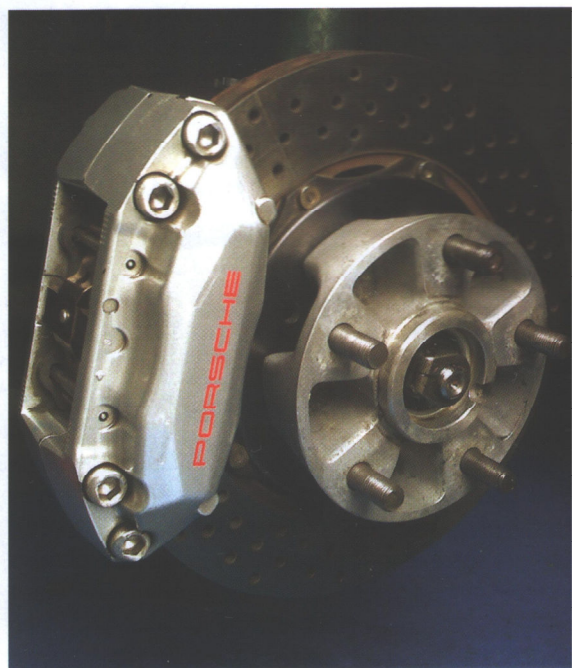
Photos courtesy of the Author

In the February '09 issue of *Porsche Post* I discussed my passion for building my ultimate 911. After general restoration work my focus had been on increasing power. Starting as a 1974 2.7 911 Coupé, I used a donor engine from a 3.2 Carrera to build a 3.5 litre, twin-spark engine with throttle bodies, GTII camshafts and MoTeC engine management. When you push the noisy 'pedal' the engine now produces almost 330bhp and she's a pure pleasure to drive.

With all this new-found power comes a need for upgrading the brakes, traction, transmission and suspension. Since the last article I have now completed the next phase of the car's development. To help tame the engine she's been equipped with bigger Fuchs alloys, Brembo GTPL brakes, a G50 transmission, RSR coil-over suspension and RSR spring plates.

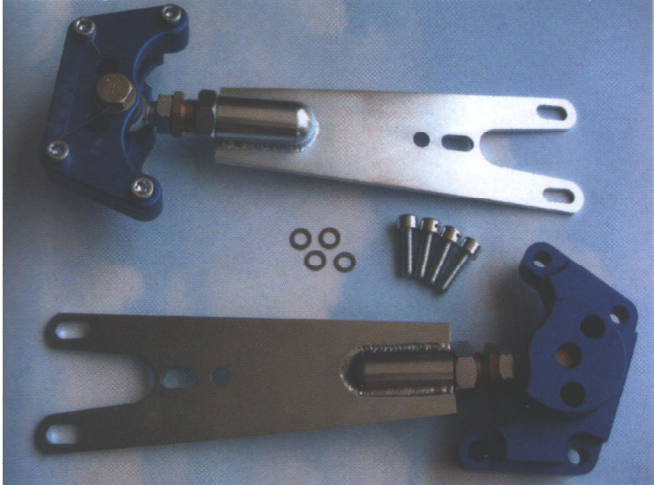
I had previously upgraded the brakes from the stock 2.7 to those for a 3.2 Carrera, but stopping the car with this much power needs a little more punch. I chose to go with Brembo Gran Turismos, or GTPLs. These were designed by Brembo to fit behind the 16-inch Fuchs alloys and are truly enormous when you compare them to the 3.2 Carrera brakes. Despite being made to fit a stock car, it didn't turn out to be that straightforward. First of all, the callipers at the front will not fit behind a standard offset Fuchs alloy. I needed to source a pair of 951 offset Fuchs which have a few mms of extra offset. I managed to get a pair of 951 8x16s, which took a while as it turns out they are as abundant as hens' teeth! While I was at it, I took the opportunity to put a pair of 9x16s on the back, giving the car a bigger rubber footprint. The next problem to overcome was the bigger diameter Brembo discs rubbing on the wishbone flange when on full lock. This was cured by machining 0.5mm off the hub.

The bigger brakes were accompanied by Brembo high-pressure hoses that replaced the rubber originals. More braking pressure was provided courtesy of a master cylinder from a 930 Turbo. My first experience of the system was to promptly lock up the rears, which was made scarier when the rear of the



The Brembo GTPL brakes – petite they are not





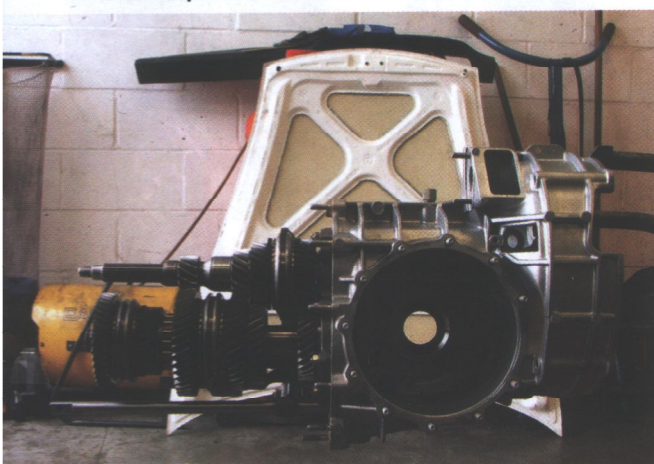
**RSR spring plates**



**The front coil-over RSR suspension**



**Front suspension rebuilt and assembled onto the car**



**The G50 mid-rebuild**

car tried to catch the front. Not something you want to experience on the public roads too often. This problem was solved by installing a brake bias valve from a Porsche 964 RS. Finally, I treated the braking system to some Castrol SRF brake fluid – expensive, but probably one of the better fluids you can use in high-stress conditions.

Next came a need for a change in transmission. The 915 gearbox, although slightly lighter than the later gearboxes with which Porsche replaced it, didn't have the capacity to deal with the increased bhp and torque. In my opinion, the 915 has never been the best gearbox at delivering a smooth gear change. So, I decided that the best replacement was a G50 gearbox from a 1987 3.2 Carrera. The biggest issue when installing a G50 in an early 911 is the space required into which to squeeze the larger gearbox. To solve this it is necessary to alter the profile of the rear torsion tube and slightly modify the gearbox mounting cross member. You also need to change the pedal box to upgrade from the original cable system to a hydraulic system.

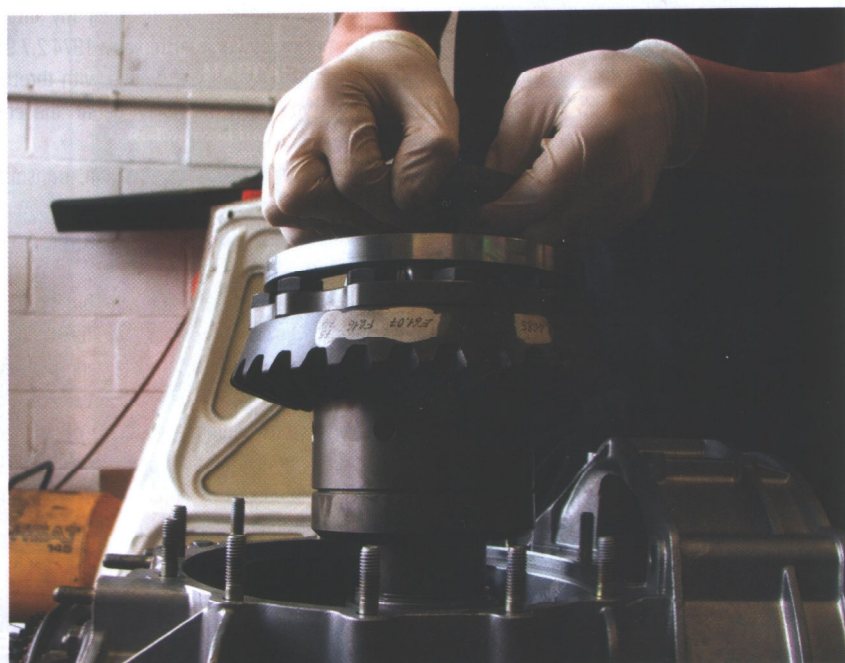
The gearbox was a second-hand unit that had been lying around in the corner of a garage for many years. As I need a G50/00 (a shorter unit than the later years of G50), which was only produced for about a year, I had to take what I could get. The gearbox was completely stripped and rebuilt. It wasn't re-assembled however until the casing was ultrasonically cleaned and all the usual suspects replaced, including springs, bearings, nuts, bolts and washers.

I also treated the gearbox to a limited slip differential from Quaife. The Quaife unit wasn't cheap, but something I felt strongly about adding to the car to help with handling and traction. Luckily the ratios were original and all in perfect condition.

Inevitably, this G50 conversion wasn't plain sailing either. I had to replace the flywheel with a G50 unit and the clutch had to be upgraded to one from a Turbo to provide the extra clamping force. Naturally, the speedo was no longer compatible. I found a good second-hand one which I had refurbished, colour coded to match my existing white dials and recalibrated to 180mph. If you do the maths, with the original ratios, tyre diameter and new redline of 7,400rpm, the theoretical maximum speed is 185mph.

Last but not least was the suspension upgrade. Here I adopted for the tried and tested RSR Bilstein coil-overs with added helper springs. In order to ensure the rear shock towers could cope with the additional forces of the coil-over set-up, I also strengthened them with the addition of welded ribs. Additionally, with the removal of the torsion bars I decided to play with the rear spring plates. I opted for RSR spring plates, which completely replace the original ones. These are based on a much more solid design, removing the rubber bushing of the original and replacing it with a rose joint. The RSR spring plates also provide more dexterity when it comes to setting up the suspension geometry and allows camber and toe at the rear to be set independently of one another, unlike the original set-up.

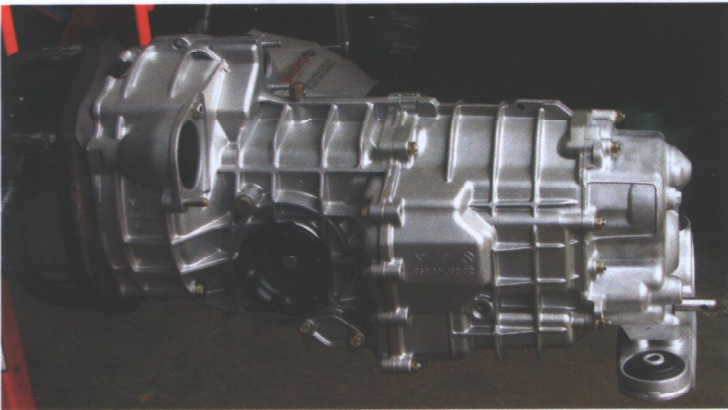
Cosmetically, the only change has been to remove the original 'flag' door mirrors and replace them with the more aerodynamic teardrop mirrors from a 993. They also have the advantage of being some 1.45kg lighter than the originals.



**The Quaife LSD going in**



# Building the Ultimate



G50 all finished



The aero mirrors repainted and ready for assembly

So, how have all the changes affected the car? Well, the change in drive and feel is a dramatic improvement over the original. For starters, braking is amazing; the speed bleeds off quickly and evenly with the car behaving itself under heavy braking from higher speeds. Fatter tyres on the wider Fuchs also provide that little extra bit of contact between the car and the road. The suspension, though, has made the bigger difference. The car sits more firmly and confidently on the road. The suspension is harder than the 3.2 set-up, but not overly so. You have the benefit of both feeling the road and a huge reduction in body roll. Accelerating out of corners is also a new experience; less energy is wasted in the soft suspension and more power transferred to where it's supposed to be. The Quaife LSD is also a great addition and helps the car accelerate hard from a standing start as well as assisting in the twisty bits.

Overall I'm really pleased with the result. All the changes seem to have teased out the hidden potential of the car without taking away the very essence that remains truly 911.

So what's next? Well, I'll probably start to put the car on a diet and remove some of the unnecessary weight to improve the car's bhp per tonne and, hopefully, improve acceleration a little more, along with the overall feel. Initial thoughts are to remove the rear seats, replace the rear spoiler with a lightweight fibreglass one, remove the heavy front and rear bumper assemblies and replace them with lightweight ones from a RUF Yellowbird. Nothing too extreme, but enough to make her a little more lively. 8



The 993 aero mirrors fitted

You can read more about Peter's 911 at his website: [www.myporsche911.co.uk](http://www.myporsche911.co.uk)

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