



# Blue-chip tuning

**The Superchips bluefin conversion for the new GTI offers a DIY download, providing an extra 40 bhp in just 20 minutes...**

IT WAS OF COURSE inevitable that the new GTI would attract a lot of attention from tuning companies, with the 200 PS turbocharged 2.0-litre FSI engine offering plenty of potential for performance improvement. Indeed, sister marque Audi has already modified this engine to produce 265 PS in the new S3, SEAT has tuned it to 240 PS for the new Leon Cupra and of course Volkswagen itself has just released a 230 PS version for the 30th Anniversary GTI, which we'll be test-driving for a feature next month.

Especially so with a turbocharged engine, revising the engine management

system for increased power output is very rewarding, simply involving carefully co-ordinated modifications to the maps for boost pressure, fuelling and ignition timing. Often the only real problem for the tuning companies is holding back on the amount of extra power which is possible. While customers may clamour for the biggest numbers, the tuners know that the upgrade has to remain both tractable and safe for the engine and drivetrain in the long term.

One of the first to market with a software upgrade for the new GTI was Superchips. Based in Buckingham, the company has a long pedigree; with over 27 years working in



this area of endeavour and having modified over 500,000 cars, it is one of the leaders in the electronic performance tuning industry. Indeed, Superchips is the official tuning partner to Volkswagen Racing, with all the cars which race in the VW Cup series definitively tested on the Superchips rolling-road dynamometer. Most recently, though, Superchips has combined its traditional tuning technology with a new system for downloading the software.

Previously the Superchips performance upgrade involved removing the engine management unit (ECU) and either fitting a new performance-programmed chip



**'SUPERCHIPS HAS COMBINED ITS TRADITIONAL TUNING TECHNOLOGY WITH A NEW SYSTEM FOR DOWNLOADING THE SOFTWARE...'**

or using special workshop equipment to copy off the original software and load the new high-performance mapping in its place. While producing a welcome 20-30 per cent increase in power and torque on most turbo'd petrol and TDI engines, it was a permanent alteration, with the owner unable to switch back to standard unless they returned to the Superchips dealer for another workshop session.

But now that has all changed. Although we think of it as associated primarily with the Volkswagen Group model range, Superchips has developed upgrades for almost all marques and it was for the Ford market, several years ago, that it first introduced its switchable 'bluefin' system for those models which used the EEC-V engine management system.

The beauty of bluefin is that the owner can download the new performance software themselves, without having to take the car to a dealer, and they can also easily revert back to the standard software by plugging the device into the on-board diagnostic (OBD) port and following a few simple procedures.

The advantages of being able to readily switch the software upgrade on and off are all too obvious but it's not just about warranty or insurance issues, because there are genuine operational considerations. For instance, an enthusiastic driver might need to share his car with a wife or colleague who isn't so comfortable with the extra power output, or they might want to reserve the extra performance for track days, or conversely tone it down for driving in slippery winter conditions.

But the new engine management system used for the 2.0 T-FSI engines offered much more of a challenge when it came to making the software upgrade switchable. After a lot of development work, though, Superchips has now extended the bluefin concept to include applications for many current Volkswagen Group models, first of all the 2.0-litre 16-valve TDI and most recently a conversion for the 2.0 T-FSI engine. An upgrade for the 140 PS 1.4-litre TSI engine is also imminent, although the much more sophisticated software system used for the 170 PS versions of the TSI is proving even more of a challenge...



The bluefin upgrade involves using a hand-held module, a stylish handset about the size and shape of a slipper, finished in the corporate Superchips colours of black, silver and dark blue. This is supplied by post, neatly packaged in a tailored box and coming complete with a comprehensive instruction manual and software CD.

The procedure involves plugging the bluefin unit into the car's OBD port, the fixture which is used by Volkswagen workshop staff for on-board diagnostics, interrogating the ECU for fault codes during servicing and troubleshooting. It is located in the driver's side footwell just below and to the right of the steering column.

This first connection makes a copy of the standard software, which is then sent to Superchips by internet, using the PC software supplied. With so many permutations of ECU and original software now in use, it is no longer sensible for any tuning company to supply software on spec.

After careful checks, the relevant high-performance software is subsequently returned, by internet connection, usually within an hour or so. In the very rare event that the exact map isn't available 'off the shelf', Superchips staff will work on a suitable upgrade, guaranteeing a result

**'THE STANDARD SOFTWARE IS SENT TO SUPERCHIPS BY INTERNET, USING THE PC SOFTWARE SUPPLIED. AFTER CAREFUL CHECKS, THE RELEVANT HIGH-PERFORMANCE SOFTWARE IS SUBSEQUENTLY RETURNED...'**

before the end of the next full working day. Either way, the original software remains intact and the car is usable in the meantime. The new software is then loaded from the customer's PC into the bluefin handset and transferred to the car's ECU, again using the device plugged into the OBD port.

The download itself takes about 20 minutes for the GTI (the simpler software for the 2.0 TDI is much quicker), following the instructions given on the display panel on the module and responding by pressing the keys on the handset as and when required. The owner can now switch easily between standard and high-performance programs using the bluefin module. →



**'THE OWNER CAN NOW SWITCH  
EASILY BETWEEN STANDARD  
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PROGRAMS USING THE  
BLUEFIN MODULE'**



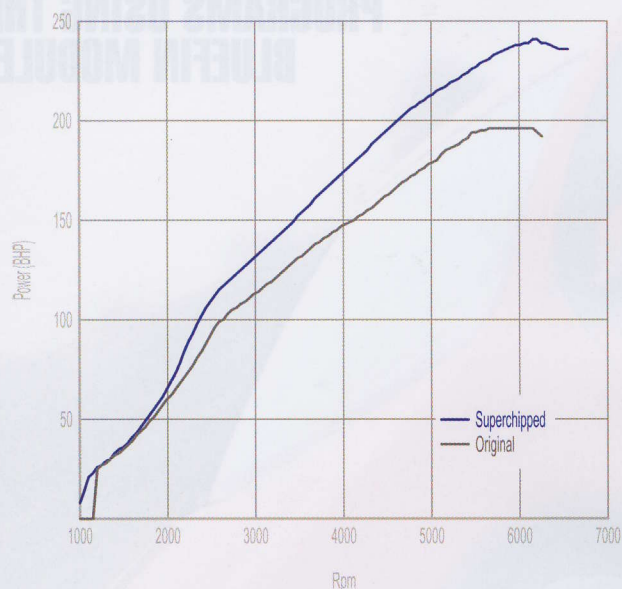


## Power

**41 BHP increase @ 5894 Rpm**

Superchipped Max 241 BHP @ 6183 Rpm

Original Max 196 BHP @ 6142 Rpm

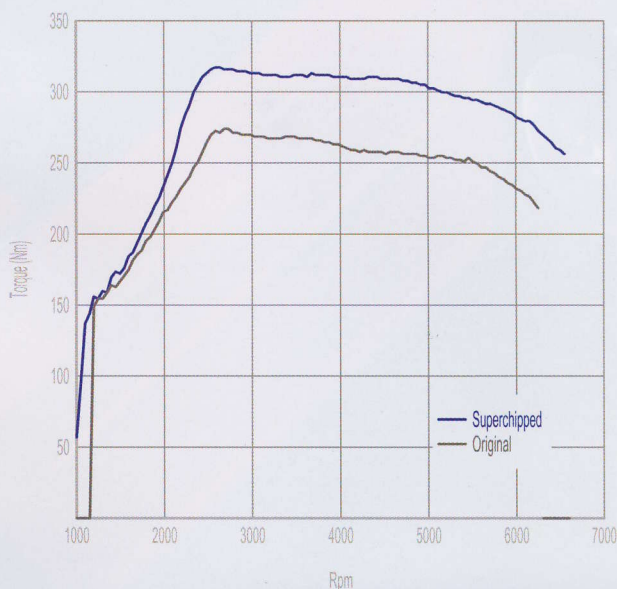


## Torque

**54 Nm increase @ 2377 Rpm**

Superchipped Max 317 Nm @ 2572 Rpm

Original Max 273 Nm @ 2674 Rpm



We recently spent a day with Superchips, trying out the new bluefin applications for the Mk 5 GTI and the new Audi S3. With both cars initially driven in totally standard form, we were left to carry out the procedure for ourselves and it really is quite straightforward. The handset has all the design simplicity of a child's toy – it plugs in easily, and the instructions are easy to follow.

With the download completed and the high-performance software enabled, the performance of the GTI was transformed. Bearing in mind that the Superchips rolling-road dynamometer measures in bhp, rather than the PS (Pferdestärke) system\* used by the factory, the standard car was right on the button with a maximum figure of 196 bhp in standard form.

As the power-plot graphs show, the improvement in engine performance is dramatic. Both power and torque are


increased significantly above 2000 rpm, with the Superchipped software developing an extra 45 bhp above 6,100 rpm and producing a huge increase in torque all the way from 2500 to over 6000 rpm. Like all the best performance improvements, the graphs maintain much the same shape and profile as the standard engine, but with much higher figures at any given point in the range.

Cold, wet and slippery road conditions on the day of our test drive prevented us from recording any meaningful comparative performance figures, simply because the extra power provided by the conversion was so ready to break traction. That's not to say that it was unmanageable, the revised software also provides a very smooth and progressive power delivery for driving on part throttle. But there's no doubt that, on dry roads, the Superchipped GTI would be much more satisfying, not only more muscular and eager in its acceleration but also smooth and seamless in delivery.

The conditions also showed the advantage of bluefin's switchability, with a straightforward reversion to standard power output beneficial for wet and wintry conditions. We can only hope that, one day, Volkswagen will give us a four-wheel-drive GTI, because the Superchipped Audi S3 we drove the same day, for a feature in sister title *Audi Driver*, with bluefin increasing its power output to 306 bhp, was simply sensational.

But, with a bluefin module tucked away in the GTI's glovebox, it only takes 20 minutes during the lunchbreak to turn the wick back up for an enjoyable drive home from work as soon as the sun shines again and the roads dry out. As such, the bluefin

**'THE IMPROVEMENT IN ENGINE PERFORMANCE IS DRAMATIC...'**

upgrade offers a very appealing conversion, effortlessly endowing the car with a substantial increase in power and torque, just by pressing the right buttons... 

While concentrating mainly on the current Volkswagen Group model range, Superchips is also working on retro-engineering the bluefin principle to apply to the older models, with plans to incorporate diagnostic functions and a degree of adjustability into the device in the near future. For further information on Superchips bluefin, telephone 01280 816 781 or log on at [www.mybluefin.co.uk](http://www.mybluefin.co.uk)

\* It's a subtle distinction, but for several years now Volkswagen has officially quoted figures for power output in PS, rather than bhp. German manufacturers primarily express power output in kilowatts (kW), but before kilowatts were adopted a measure of power output called the PS (Pferdestärke i.e. 'horsepower' in German) was used. PS, though, is measured according to DIN (Deutsche Industrie Norm) standards, while bhp is measured according to ISO (International Standards Organisation) criteria. When power output measurements are taken on a dynamometer, ISO brake horsepower (bhp) readings are corrected to a temperature of 25°C and a pressure of 990 mbar, while DIN measurements of PS are corrected to 20°C and 1013 mbar. Because of this there is a slight difference between bhp and PS. 1 bhp = 1.10139 PS (1 PS = 0.9863 bhp). In the case of the standard 2.0-litre T-FSI GTI engine 147 kW = 197 bhp = 200 PS.

