



Mighty Mouse!

The Superchips Bluefin software upgrade for the Polo 1.0 TSI produces a very worthwhile improvement in performance and driveability...



There was a time when large displacement / high capacity engines were 'the way to go' for high performance, and the American tuning manuals, wall posters and T-shirts bore slogans like 'There is just no substitute for cubic inches' or 'There's no replacement for displacement'...

But bigger is not always better; those were the 'days of the dinosaur', long before turbocharging, variable valve timing, electronic fuel-injection systems and sophisticated engine management had a say in it. These days it's more about 'downsizing', with smaller, lighter and more efficient engines that can produce just as much power – sometimes more so – with a lot less mass to move around, and quite often with much better reliability, longevity and fuel efficiency.

There are plenty of examples of this policy

within the Volkswagen Group model range, not least with high-performance models like the Audi RS4 and RS5, now powered by a twin-turbo 2.9 V6 rather than a 4.2 V8 and all the better for it, with more power and torque and less fuel consumption. Here in the Volkswagen range, the Golf GTI has remained at 2.0-litres for several generations while more than doubling its power output, and we're now seeing 1.4 and 1.5-litre engines with just as much power as the GTIs of old, and 2.0-litre four-cylinder diesels where once a 2.5 5-cylinder or 3.0 V6 would have been necessary.

But probably the most impressive example of downsizing in the modern Volkswagen Group range is the EA211 range of three-cylinder 1.0-litre (actually 999 cc) 12-valve double overhead cam engines that are used in cars like the up!, Polo and Golf (including the

Golf SV and Estate) and have even made an appearance in the Touran MPV.

With standard power outputs ranging from 60, 65, 75, 80 and 95 right up to 115 PS and with healthy torque figures to match, these small engines punch well above their weight in just about every category, while also performing smoothly and relatively quietly, and with excellent fuel efficiency.

Perhaps the most impressive example is the unit in the up! GTI, producing the same 115 PS that the Mk 3 Golf GTI needed 2.0 litres for; good for a 0-60 mph time of 8.5 seconds along with the capability to easily average 40-45 mpg and return as much as 60 to 70 mpg when driven conservatively.

The intriguing possibility arises, therefore, that the lower-powered three-cylinder engines could also be easily

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modified to achieve this sort of power output, maybe even more, without seriously undermining their reliability. The advantage is that these small displacement engines have lighter components, so that the stresses and strains incurred are significantly reduced. Far from being weaker, they are actually less likely to suffer stress-induced failures than larger displacement engines which have bigger, heavier components.

Suitably reassured that the 1.0 TSI engine can take the strain, some of the tuning companies are already turning their attentions to improving the power output, by re-mapping the engine management system, and we recently took up an invitation by Superchips to drive their New Polo 1.0 TSI.

This is powered by the smallest TSI (turbocharged) version of the 1.0-litre engine and it is rated at 95 PS at 5000 rpm as standard, along with a torque figure of 175 Nm between 2000 and 3500 rpm. In conjunction with the 6-speed manual gearbox, it is

claimed to be capable of 0-62 mph in 10.8 seconds and a top speed of 116 mph, which is already pretty close to the actual performance of the original Mk 1 Golf GTI.

Combined fuel consumption for this engine is rated at 62.8 mpg for the manual, while the 7-speed DSG version has a combined figure of 60.1 mpg, although as these mpg figures are tested in laboratory conditions we'll take those actual numbers with a pinch of salt. In our experience, you usually have to drive deliberately for maximum economy to achieve those sort of returns in the real world.

As usual, though, while the official mpg figures are rather optimistic, the standard power output is somewhat healthier than Volkswagen claims. When Superchips dyno-tested the standard car, to establish a baseline before re-mapping the engine management, it recorded 100 bhp at 5771 rpm, even allowing for the slight 'translation' difference in values between PS and bhp.

After manipulating the mapping by

optimising the fuelling, ignition and turbo boost in the Bosch MED17.5.21 engine management, Superchips was able to safely increase the power output to 132 bhp at 5627 rpm and improve the torque from 164 Nm to 219 Nm at 2813 rpm.

Worth noting here is that, due to the shape of the power and torque curves, there is a slightly larger improvement in power than the maximum figures might suggest, with an extra 35 bhp at 4609 rpm and a 59 Nm increase in torque at 2765 rpm.

Just as important as the actual numbers, though, is that the graphs show how the improved maximum power is produced at a slightly lower engine speed, and the stronger torque figure is developed over a greater range than that of the standard engine. Indeed, it's the total area under the graph which makes itself felt in terms of real-life performance out on the open road, and it was all looking good for a modification that is not only much more powerful but also more flexible.

Armed with the VI Monitor performance tester, which we use for all our detailed road tests, we headed out onto the open road to see how the extra power translates into real-life performance figures. A slight proviso here,

because the cold and wet road conditions at the time were not exactly conducive to optimum acceleration, often hampered by front-wheel drive wheelspin even in standard form, and shifting with the manual gearbox is inevitably less consistent than a DSG auto. Nevertheless, we were able to record several sets of 0-60 times in the low tens, with a very best of 10.19 seconds recorded with the engine in its standard form.

The comparative testing was made easier by the fact that the Superchips re-map is applied using the Bluefin system. This employs a handheld module which is plugged in to the onboard diagnostic (OBD) port under the right-hand side of the dash opanel, to enable the mapping in the ECU to be swapped between standard and high-performance versions.

Once set up, it takes about 20 minutes for Bluefin to make the data transfer, following the simple menu instructions which appear in the digital screen. It's not quite as quick and convenient as some switching systems,

but it is designed to be as reliable as possible, and rather than running a permanent high-performance re-map it means that the owner can return the car to standard form whenever they might need to. We can think of a few reasons for that, but having sampled the Polo 1.0 TSI in its modified form we doubt that many owners will ever want to revert to standard.

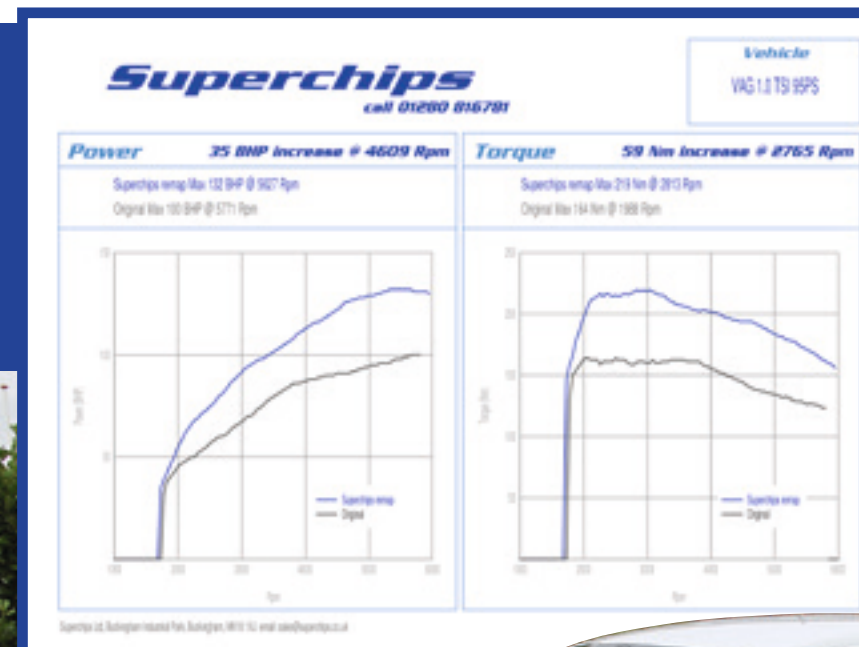
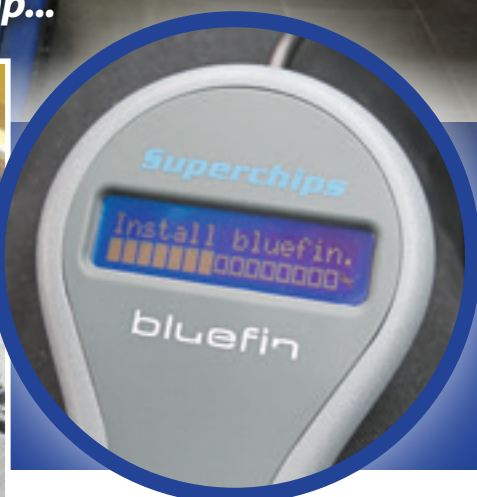
With the revised mapping downloaded, the car instantly felt much more eager in its power delivery, noticeably so almost as soon as you let the clutch up to pull away. But this was not because it was in any way fierce or abrupt; rather because it was smoother and much more muscular and flexible than before. Particularly noticeable once well under way was the much stronger mid-range surge as the greater swell of the torque curve makes itself felt, such that the car almost feels as if it is being floated along on an invisible tidal wave.

This time we clocked a best time of 8.68 seconds for the 0-60 mph dash, a full second

and a half faster than standard, while the 0-80 time was nearly three seconds quicker and the 50 to 70 mph time was a full one second faster. Bear in mind the previous proviso about the road conditions; on a perfectly dry road surface, and with greater familiarity with the car's improved characteristics, it could be quite possible to improve even further on these times.

PERFORMANCE COMPARISON

	STANDARD (95 PS 1.0 TSI)	SUPERCHIPPED 1.0 TSI
Power:	100 bhp @ 5771 rpm	132 bhp @ 5627 rpm
Torque:	164 Nm @ 1988 rpm	219 Nm @ 2813 rpm
Acceleration (secs):		
0-30 mph:	3.28	2.98
0-40 mph:	5.45	4.74
0-50 mph:	7.57	6.49
0-60 mph:	10.19	8.68
0-70 mph:	14.20	12.13
0-80 mph:	18.49	15.62





'The Superchips Polo 1.0 TSI is very satisfying to drive, thanks to its strong mid-range response...'

We'd need to have driven the car for much longer in order to run our usual exhaustive fuel consumption tests, but even after conducting the full-bore performance tests and considering the cold, damp ambient conditions at the time, the readout was still showing an average figure of 44.7 mpg.

Previous experience with properly tuned engines like this, optimised for greater efficiency rather than all-out performance figures, shows that they can also be just as fuel-efficient as the standard engine. Genuine improvements in mpg figures can also be achieved when the car is driven with suitable restraint, making full use of the extra torque to stay in a higher gear at the same road speed, for instance.

The Superchips conversion certainly doesn't transform the modest 1.0 TSI into a Polo GTI-beater, but it does provide a very healthy improvement in performance – very satisfying to drive thanks to its strong mid-range response and much smoother and more tractable than the standard car.

While not essential, because the standard suspension and brakes of the new Polo are more than adequate for normal road use, it would also be worth considering a set of firmer dampers and anti-roll bars, maybe also some uprated disc pads if the the superior performance was to be exploited to the full. But the point is not to try and turn the Polo 1.0 TSI into a trackday car – you'd be much better off starting

with the Polo GTI for that – but to apply the Superchips upgrade as a significant enhancement for normal road use. Suffice it to say that a standard-looking Polo 1.0 TSI with this sort of performance could provide quite a surprise for other road users.

For anyone worried about warranty, Superchips offers a lifetime guarantee on the Bluefin product and can provide a supplementary warranty covering the parts deemed to be excluded from the manufacturer's cover, as well as comprehensive insurance cover options.

Of course, Superchips is also just about to release a Bluefin upgrade for the 115 PS 1.0-litre TSI engine that is used in the up! GTI, but that's another story...



CONTACT

Superchips Ltd,
Buckingham Industrial Park,
Buckingham MK18 1XJ
Tel: 01280 816 781
www.superchips.co.uk
www.mybluefin.co.uk