



New TDCi is more potent than the old TDDi rattler, but a further worthwhile improvement can still be extracted

Ford did not make life easy, but Superchips' codebusters have found ways to tap the TDCi's reserves

Power and torque graphs are projected on to the wall to enable programmers to make real-time adjustments

Rewritten management program produces a much quicker Mondeo, which is also more flexible and frugal



Code cracker

A breakthrough interface can now tweak Ford's ECU. **Bob Cooke** stokes up a quicker common-rail Mondeo

The twitter from the front tyres as the clutch went in confirmed what the dynamometer had told us, even before the stopwatch revealed an 8.8-second 0-60mph time. This turbodiesel Mondeo is quicker than the 2.0-litre 16-valve petrol version, and almost as quick out of the blocks as the 2.5-litre V6. It also confirmed that running a turbodiesel does not demand a dull and boring driving style.

When we drove the Mondeo with the recently-introduced,

second-generation, common-rail turbodiesel, we could not help but sing its praises, because that high-efficiency injection system not only boosted the performance of the 'old' Mondeo's rotary pump-fed engine, it also quietened it, making it a much easier car to live with. However, though the lift from 115bhp to 130bhp is a significant enough hike in power, it still trails its similarly-priced petrol stablemate in ultimate urge.

That need no longer be the case, though. A short visit to your nearest Superchips dealer will not only give your TDCi a useful accelerative edge by upping output to over 150bhp, but will quite likely improve the overall fuel consumption if you do not allow the power boost to go to your head.

Superchips performs its power-boosting tweaks by upgrading the fuelling map programmed into the engine management

computer. Generally speaking, manufacturers build in some slack to allow for low quality fuel or poor maintenance, by tuning the engine to run some way below its full potential. The Superchips approach is to read the original program, work out where more fuel can be added without adversely affecting emissions or engine reliability, and thoroughly test the findings on the dynamometer.

Traditionally, the new program is physically inserted into the engine management computer by replacing the original microchip with an upgraded item. For the current Ford range, however, Superchips has developed a far simpler, quicker and more reliable method, a straightforward reprogramming via the car's own service diagnostic port. The operation is so easy that the programming technician does not even have to lift the bonnet. This form of enhancement –

called serial reprogramming – has already been perfected for other cars where a diagnostic port allows direct access to the computer. We have already experienced BMW and Peugeot upgrades using this method.

But the system for reprogramming Fords is something of a breakthrough for Superchips, because Ford uses a unique programming language which makes a straightforward upgrade difficult to achieve. The first task facing the Superchips team was to crack the Ford code. Next, it had to find a way of translating its own code into the Ford system, and a way of feeding the new information into the Ford computer. The result is its new SPA module, which simply plugs into its existing serial reprogramming system to interface with the Ford computer. As on other serial port upgrades, the car's owner is given a 'customer key' chip containing the

original management program, so the car can be returned to standard at any time – when selling it on, for instance – at any of the Superchips agencies throughout the country.

We watched as the team adjusted the fuel map on a Mondeo TDCi, checking the results in real-time on the dynamometer. With the torque and power graph projected directly on to the wall ahead of the car, the operator was able to tell immediately how the new instructions keyed in through a laptop were affecting the engine. Traditionally the team has

been able to coax around 30% more torque from a turbodiesel, but the task is getting more and more difficult as the engines become more sophisticated and efficient. The second-generation, common-rail Delphi system on the latest Mondeo is pretty much state-of-the-art, so the power-hungry reprogrammers knew from the start that they would have to settle for less. But the result of their development work is still a significant improvement, with torque rising from 243 lb ft to a beefy 285 lb ft, peaking at slightly lower revs. Most impressive is that the

improvement is constant virtually throughout the engine's rev range, beginning to tail off only after 4,000rpm. Power rises from the original 130bhp to an easy 153bhp, albeit at a slightly higher engine speed.

The effect is instantly discernible out on the road, where the Mondeo pulls strongly from just over idle and spins much more freely towards the redline. Shifting quickly at just over 4,200rpm produced that 8.8-second 0-60mph time, nearly half a second quicker than the standard car. But more practically, the stronger mid-range torque reduced overtaking times to an even greater degree, the 30-50mph dash in fourth dropping from 5.9 seconds to 5.1 seconds, the 50-70mph time in fifth falling from 7.2 seconds to 6.5 seconds.

In normal driving the Mondeo, already quite lively in standard form, felt distinctly sporty in the way it powered through bends and exited roundabouts, usually in a higher gear than we would normally have used.

This ability to hold on longer to higher gears is the key to potential fuel savings as well as

improved performance. Naturally, using the extra 23bhp to put hot hatches in their place will not help your overall fuel bill, though the 46.2mpg measured after our brief hot-foot test already compares favourably with the standard car's 45.8. But the fact that the Mondeo can simply be left in fifth at almost any speed above 30mph, accelerating easily without requiring a downshift, suggests that in more circumspect use the fuel consumption should improve significantly.

The best news of all is that the new reprogramming system devised by Superchips does the job so subtly that the tweak is invisible to Ford technicians when the time comes for regular service attention. Not only that, the £511 all-inclusive fee now includes a peace-of-mind warranty, applicable to all Superchips conversions on the wider range of makes and models covered by their performance enhancement service.

To see if your car is suitable for a performance boost, visit www.superchips.co.uk or telephone Superchips on 01280 816781.

