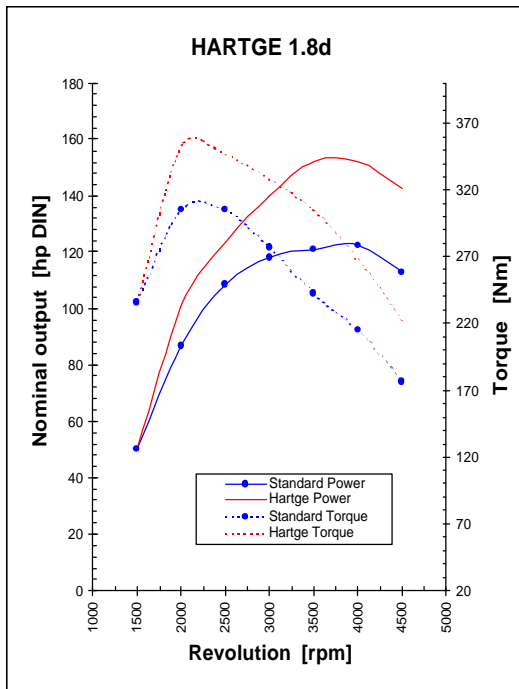




## Hartge Motronic Tuning for Diesels

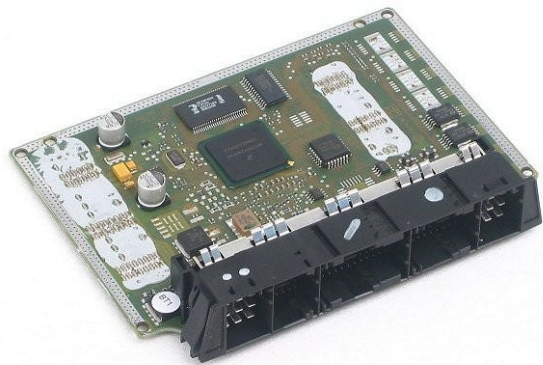
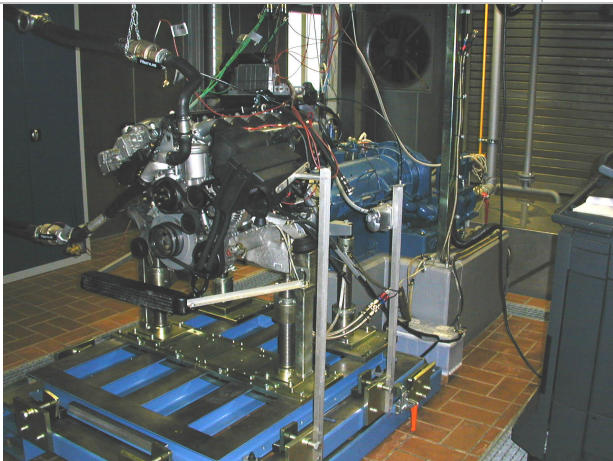


Hartge's Motronic tuning for BMW turbo diesel models were a world first for a major BMW tuner - The result of considerable road and bench testing, the Hartge Motronic Modification system provides a much larger power band, with massive improvements in in-gear acceleration and responsiveness.

Economy and engine longevity are preserved by the adoption of advanced fuelling maps which retain the standard driving characteristics in normal driving, but switch into much higher performance fuelling when the driver flexes his right foot. Unlike other "tuning" solutions, Hartge do not increase the fuel rail pressure, but modify the injector duration, preserving the standard fuel pump life.

The system utilised requires that each individual vehicle is interrogated, and the original Motronic files are transmitted to Germany via email. Hartge's technicians analyse each map, then modify certain areas which affect only the power output. The file is then encrypted, and transmitted back to our technicians, who then download the revised software into the original ECU.

The Hartge Motronic Modification is guaranteed for a period matching the BMW manufacturers guarantee, and does not invalidate the BMW Manufacturers warranty. For vehicles outside of Manufacturers warranty, the guarantee period is one year. In all cases, a maximum of 60,000 miles applies.



Hartge develop all engine versions on their own engine test cell, before carrying out full durability testing at high speeds on Germany's Autobahn. No UK based tuners currently have this capability.



## Engine Management Modification, Questions And Answers.

**What is it?** It is a series of complex changes to the code held in the BMW Engine Management Control Unit (ECU)

**How does it work?** The changes affect the parameters such as ignition timing, fuel delivery and boost levels controlled by the ECU.

**Why don't BMW offer the same power?** They often do! In the case of diesel engines, we can give you similar or better performance than current development engines, but offer them to owners much sooner than BMW, via the sale of a new car.

**Why is it so expensive (compared with other "similar" products)?** We take performance modification very seriously. Modifications are not offered until lengthy durability trials have been concluded. These tests include dynamometer trails and serious road testing. Due to UK speed restrictions, this invariably has to be carried out in Germany. The cost of this process is significant and substantial and has to be funded in the sale price. Suppliers who do not test in this way will always have a clear price advantage.

**Will my BMW Dealer know about it?** There is no such thing as an invisible modification. If BMW want to find it they will. However, our modifications are invisible during routine diagnosis and service.

**Can a BMW Dealer overwrite it?** Our software is protected, and it is not normally possible for Dealers to overwrite our modifications. Changes in BMW processes cannot be predicted, so it cannot be guaranteed that this would always be the case.

**Will it affect other components or systems on the car?** No. Our testing procedures and the outputs we offer should not exceed the design limits of any other component or system on the car.

**Could it affect my manufacturer warranty?** Yes. It is always possible to make a mistake in the programming code, which could cause a BMW component to fail. If this occurs, our warranty will cover it. Otherwise, the manufacturers warranty stands.

**Can I have it done at my home or place of work?** No. Unlike other cheaper products, we believe it is not possible to guarantee performance or quality if done away from our technical centre. Roadside conversions are to be avoided.