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When Resistance is Futile...

A recent call to the Helpline involved a Ford Mondeo misfire. The 2007 Mondeo 1.8 TDCi had a misfire on cylinder 1, with a code present for Injector circuit failure. On investigation, the injector circuit was shorted within the injector. A new injector was sourced from a local supplier and replaced, codes were cleared and the injector was coded into the PCM.

As soon as the vehicle was started, the fault code returned. The injector signal was checked with the Picoscope and found to be a flat line as soon as the vehicle started. The circuit was then tested from the PCM connector. As this is a Piezo system, the injector resistance was expected to be 200 kOhms. The circuit resistance was 198 kOhms, without any shorts to ground. All three of the other injectors were tested and all was in good order. So the PCM was suspected as being faulty. It was removed and was sent for testing. No faults were found.



The Bosch FSA 050 and the Merlin S300-1 Injector Tester both showed that the replacement injector was defective

A substitute PCM was fitted and coded to the vehicle, but showed exactly the same symptoms as before. So the Helpline was called on to solve this unusual fault.

The workshop replaced the loom from the PCM to Injector 1 as a last resort, but the problem persisted. We suggested the injector be bench tested with an Insulation Meter. If available, we have used a dedicated injector test tool S300-1 made by Merlin Diesels. Also a Bosch FSA Insulation tester, primarily used in hybrid insulation testing, has proved successful in testing injectors. An insulation tester passes a

voltage into a component as it tests the resistance. The injector immediately failed at 37 kOhms when the voltage was 100 volts. The test was repeated using the injector tester. The injector failed immediately.

A new injector was fitted from a different supplier, and the vehicle started with no misfire, and without any fault code. A scope trace was taken to prove the signal.

This showed that a basic resistance test has failed to provide the correct diagnosis. You can't always trust testing methods that we have used in the past for components such as Piezo crystals. It seems these injectors are fragile, and can be damaged easily, even before they are fitted. Even by simply dropping them in transit!

Join our growing team of members today, who all have access to 1000's of answers to tech questions on demand. Call us now on 01-905-9500 to join or for more information.