

# A Pumpe Duese Problem on a Discovery II

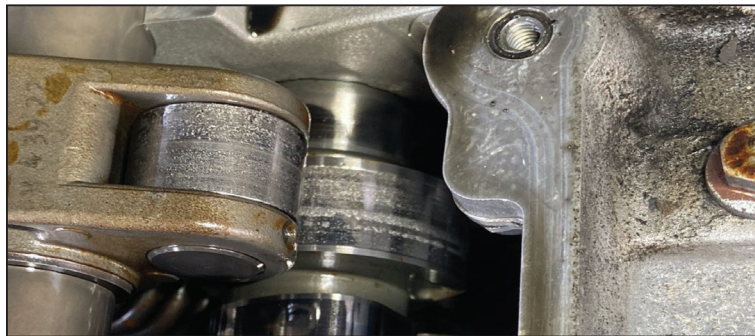
A recent call to the Helpline concerned a misfire issue on a Land Rover Discovery II fitted, with a TD5 engine. The initial scan revealed a misfire code for cylinder 5, and the misfire was evident at idle. The first step we asked the technician for was a compression test, but recommended a relative test with the Picoscope to help save some diagnostic time. The results came back with no apparent compression issues. The test was performed across the battery terminals with Pico Diagnostics and only took 5 minutes to set up.

The next process was to look at the injector smooth running values on serial data, another non-intrusive test that would save valuable time in the diagnosis. You are looking for injection quantity deviations, both positive or negative. A reading that is far above or below other injectors indicates a problem with that cylinder. The injector on cylinder 5 injector

gave reason for concern, as the deviation was completely off range.

As Pumpe Duese style injectors are both mechanical and electrically controlled, we need to gain access to the injector inside the top cover of the engine. These injectors have a mechanical preload setting that can be checked and adjusted to confirm the fault. Pumpe Duese injectors are common on VAG vehicles, and have been known to be an issue in the past.

The preload adjustment is a simple process of moving the injector into its full depression position, and then adjusting the preload screw



**Extensive wear on the cam lobe caused the engine misfire**

to the correct specification for the engine. But when we opened this engine to gain access, it became evident the issue with cylinder 5 was that the cam lobe for that injector had significant wear and required replacement.

We have found this level of engine wear on other vehicles fitted with Pumpe Duese style injectors, and it must be noted that a specific grade of engine oil is available for PD engine. When this grade of oil is not used, the resulting wear can cause this failure.