

Fault 1

AILING NEGATIVE TERMINAL AT BATTERY

This fault results in non-starting, with the engine not even cranking, and when the key is turned to crank, the dash lights will dim (this is the same for a flat battery). In this instance, it indicates resistance in the circuit. Usually you won't even have to reach for a tool, but looking at the battery terminal you will see excessive corrosion.

Our Yaris had only covered 30,000 miles but corrosion was forming already. However, a light wire brush and a sparing coat of battery terminal grease will do the trick.

Corrosion in modern vehicles can cause all sorts of faults. If a diagnostic check is carried out, it probably won't show any useful codes. However, a basic multimeter can be used to carry out a volt drop check.

The correct new terminal is only available from Toyota, but there are other companies that can make them up.

If changing the battery, there are a lot of choices available for this model, for example a stop-start EFB battery. However, you have to fit like-for-like to avoid electrical problems.

Fault 2

DEFECTIVE COIL PACK

When our second fault arises, the engine will run roughly and will stutter when being revved. It is likely that a smell of fuel will be evident from the exhaust, and you definitely will have an engine management warning light illuminated, showing a 'P0301' fault code for cylinder 1, 'P0302' for cylinder 2, etc.

You can do a quick test by swapping a coil pack from one cylinder to another and see if the fault moves with it. Another test, if available, is to apply a hand-held temperature sensor towards the exhaust manifold to see which cylinder is colder (ie, not firing). If required, an oscilloscope can be used to identify glitches.

Some heavy-handed mechanics will

Technical specs

Actual values

Component	Value
Injector resistance	14-16 ohms
Cam sensor	Five-volt supply
Oxygen sensor heater circuit	1.5-2.1 ohms
Oxygen sensor signal	0.2-0.9 volts fluctuating
Coolant temperature sensor	Cold 2000-3000 ohms; Hot 200-400 ohms
Crank sensor	Cold 1500-2500 ohms

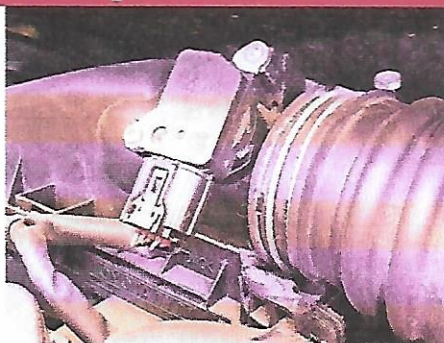
force the coil pack connector on or off, damaging the pins. If this happens, a secondhand connector will need to be spliced in. The connectors aren't available from Toyota so the alternative is that a complete loom would have to be ordered.

Replace all the spark plugs at the same time as a new coil, and if finances allow change all the coils and plugs together.

Typical Toyota Yaris components (continued)



7 Here, we are highlighting the sensors serving the inlet and exhaust camshafts. Both are Hall-type, three-wire units. The ECU relies on camshaft position to determine the exact timing for fuel mixture injection/ignition.



8 The mass air flow (MAF) sensor (incorporating an air temperature sensor) sits within the intake trunking. The sensor assesses the level of airflow and relays the information to the ECU to determine fuelling requirements. Always fit a quality filter to avoid contamination.



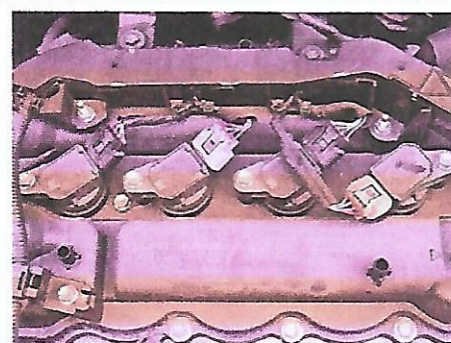
9 Somewhat buried in the engine bay is the exhaust gas recirculation (EGR) valve, which is located on the side of the cylinderhead. The valve's function is to reduce nitrous oxides (NOx) emissions into the atmosphere by redirecting them into the engine for a second burn.



10 Hidden away at the left-hand end of the cylinderhead, adjacent to and just in front of the top hose connection to the head, is the coolant temperature sensor. This relays engine temperature to the ECU, so that correct fuelling levels can be calculated/applied.



11 Hidden away at the rear of the engine bay, on the left-hand side, is the vehicle's crucially important main ECU. It is imperative that the unit is in good structural condition and that its cables and electrical connections are clean and sound. Yaris ECUs are very reliable (see Preparation).



12 The four pencil-type ignition coils are situated at the top of the engine, making them easy to reach once the cover panel has been removed. Each is secured by a single bolt (10mm spanner); don't overtighten it. Use genuine Denso coils (available from aftermarket outlets).