

## Engine management

- ▶ Four pencil ignition coils.
- ▶ An inductive crank sensor.
- ▶ Four fuel injectors.
- ▶ Pre- and post-catalytic converter zirconia oxygen sensors.
- ▶ Two digital cam position sensors.
- ▶ Pedal-mounted position sensor.
- ▶ MAF sensor in air filter trunking.

The Denso management system used in this Yaris incorporates these primary components:

- ▶ Enhanced flooded battery.
- ▶ Coolant temperature sensor, relaying engine temperature.
- ▶ Brake position sensor mounted to pedal.
- ▶ Two variable timing sensors.
- ▶ Electric motor controlled steering.
- ▶ Catalytic converter mounted in the exhaust manifold.

## Preparation

The Yaris is arguably the most reliable small car on the market after the Honda Jazz. In general, they don't give any major issues. The engines are easy to work on and service, and they'll cover more than 150,000 miles without problems if maintained correctly.

The ECUs used in these Toyotas are especially reliable, and Edward confirms that the only time he had a problem with the wiring serving a Yaris ECU was when a rat had eaten it! Even so, it is advisable to coat the ECU with a moisture-repelling spray.

The engine has a chain rather than a belt for the camshaft drive. If poorly

## Tool of choice

▶ For this Yaris, the **Snap-on Verus Pro** is a useful, straightforward diagnostic tool. It is also suitable for many other vehicle makes and models.

maintained, these engines can suffer from a noisy timing chain, but if the oil is changed ahead of the intervals specified in the Toyota servicing schedule, quiet running will be ensured.

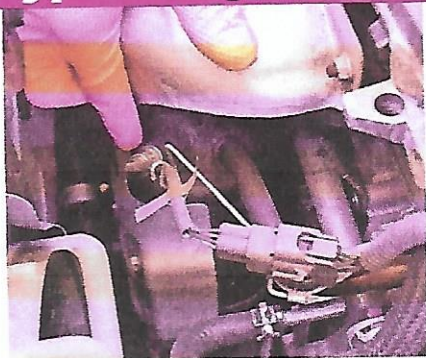
As already mentioned, everything is easily accessible in the engine bay: the air filter simply clips in place and the

spark plugs are held in by a bolt (10mm spanner size).

It is essential that quality parts are used. On one occasion, Edward was called to a broken-down Yaris in which the coil packs had failed for a third time. It turned out that cheap, poor quality spark plugs had been fitted, which made the coil work harder and eventually burn out. The same rule applies to the air filter – it's not unknown for a cheap, substandard air filter element to break up and clog the mass air flow (MAF) sensor. Genuine Toyota parts aren't an expensive option so there's no excuse to skimp.

Note that when starting the engine, it is necessary to depress and hold down the clutch pedal.

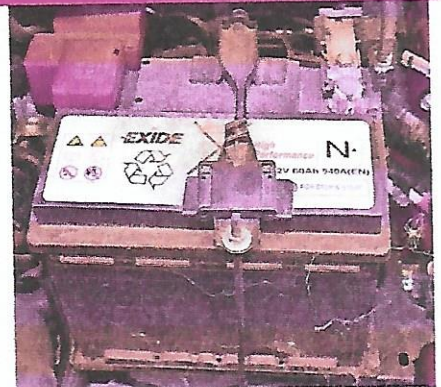
## Typical Toyota Yaris components



**1** Close to the engine's electric cooling fan is an oxygen/O<sub>2</sub>/Lambda sensor – a four-wire, Zirconia type. An open-ended 22mm spanner can be used to remove and refit the sensor. Always use a high-quality replacement and avoid multi-fit types.



**2** This Yaris features a smart-charge alternator, which regulates the level at which the battery is charged to minimise fuel consumption and emissions by not charging at full rate when not required, thus reducing the amount of power needed to turn the alternator.



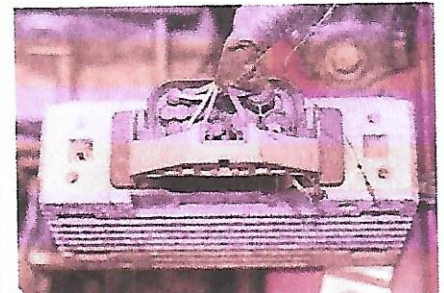
**3** It is essential that the battery fitted is designed for use with stop/start systems such as that employed in this Yaris. Enhanced flooded batteries are designed to cope with the higher demands placed on them by such systems and are generally more durable.



**4** There's an important earth connection point on the left-hand side of the bulkhead. The terminal must be clean and the crimped connector must not be loose. Check both and, if in any doubt, detach the cable and clean and reattach the connector.



**5** The vitally-important underbonnet fusebox is located on the left-hand side of the engine bay, just behind the headlamp. It is protected by a plastic lid; always ensure that the lid is correctly and fully fitted to prevent moisture ingress.



**6** Just behind the front panelwork, ahead of the battery, is the ECU which controls the two cooling fans. Ensure that the multiple cable connections are clean and sound and the cables undamaged. Corrosion can affect the unit; when servicing, coat with a water-repelling spray.