This is a little list I've just cobbled together. At least it will help you be able to highlight a potential problem, so you can make an attempt to fix it. Or if you have to hand it over to a garage, you will know if they are speaking out of their backside, or if they are potentially overcharging you.

Firstly, any modern ECU has 'limp home' functions for the correction sensors like air and water temp, so these can be discounted as causing a 'non start/run' scenario.
If you go through stuff from 1st principles, armed only with a digital multimeter, you will be able to sort a lot of problems out.

1) Disconnect coil block plug and injector sockets.
a) Have a friend turn the ignition on and off in 10 second intervals, whilst you stick your head in the boot and listen for the fuel pump (located inside the tank).
b) The fuel pump will operate for between 2 - 8 seconds when ignition is switched on to build up fuel pressure.
c) If this doesn't happen, then the problem is related to the pump, wiring, security devices, or ECU.

2) If ok, turn ignition on, wait for pump to switch off, then crank the engine over (it won't start cause coil is disconnected). The fuel pump will operate as soon as the ECU sees a pulse from the crank, hence, if the first test made the fuel pump work, but this one didn't, suspect a crank sensor failure.

3) If no noise, remove the plug at the tank for the fuel pump (don't confuse with sender unit) and stick your voltmeter on it. Repeat the above to see if you have 12 volts. If you do, but the pump doesn't sound when re-connected, the pump is probably faulty.

4) If there is no voltage at the fuel pump plug, check the inertia switch isn't tripped or faulty. This is simple to by-pass to check if faulty, but should NEVER be left bypassed in any circumstances.

5) Next, if fuel pump is working, leave engine for an hour or so with ignition OFF, then get friend to sit in mini, whilst you stick your ear near the fuel regulator. Get them to switch the ignition on, and listen for a change in sound as the fuel line pressure builds up, before the regulator opens at the set pressure. This is clearly audible as a change in tone and volume of the hissing sound. If OK, then regulator (and fuel rail) and filter are fine.

6) If fuel pump & regulator seems OK, stick a spark indicator (£4 each or £12ish a box of 4 from Halfords), or strobe onto one of the leads, re-fit the plug to the coil block, and crank engine over. WARNING – DON’T DO THE OLD TRICK OF PULLING OFF A LEAD BY HAND OR WITH A PAIR OF PLIERS WITH THE ENGINE CRANKING. THE SPARK FROM MODERN COILS CAN KILL!!!

If no spark, but fuel pump working, highly likely to be ECU or wiring fault, as the feed to these is from the ECU, as is the fuel pump, and the coil simply switches to earth to complete the circuit, just like a contact breaker!

7) Next, again remove the plug to the coil block, and re-fit the injector sockets to check injectors are working as engine is cranked.
These can be heard to have a relatively loud 'ticking' noise. If they are making this noise, fine. If not, but fuel pump is working, and sparks are happening, it is either the wiring from the ECU to the injectors, or a definite ECU failure, as they are using the same feed to the ECU and earth circuit to the fuel pump.

8) If the engine fires up every now and then and runs fine, but not always, almost definitely to be the cam phase sensor - located in the fuel pump hole on all other A-Series engines. Depending on the failure however, this can cause the vehicle to never start. Check the wires to the sensor aren't damaged or melted by the heat from the exhaust.

9) The final area the MPi (and many modern cars) will fall over on, is the throttle pot. Depending which wires to this are broken, it will either switch to 'limp home' mode, or will not allow the car to start, as the system is a 3D, not airflow measured system (part of the reason why it is impossible to break the 90hp bracket).
a) The wires can break if routed badly, although I recall the MPi is very good in this respect. (All the following must be done with the ignition switched off).
b) A meter set to read resistance between 0-5000 ohms will show if this is working right. From memory, the middle contact is the wiper; hence if you connect one of your leads to this and fix the other lead to one of the outside terminals, you should see the resistance varying smoothly as you open and close the throttle. Swap over to the other outside contact and repeat. The max & min values should be equal, but opposed - ie when one read 3000 ohms with the throttle open, the other should read 500 and vice versa!

10) A visual check of the contacts under the rubber boot should suffice for the throttle pot and all other sensors. The most common sensor to fail however is the Air Temp sensor (green one on drivers side of manifold). This is easily checked as it goes to 'open circuit' (zero resistance) when they fail.

11) Modern electronic faults are rare (but can & do occur). Mostly, problems are down to ECUs having bad contacts / wiring problems, or being given wrong information (faulty sensors, electromagnetic interference, etc. are the most common probs.

12) However, even something so simple as a blown fuse (say to the fuel pump) can have many 'experts' perplexed. It isn't that difficult really if you treat everything from 1st principles, and go through things in a methodical manner.

Incidentally – sensors for the Mpi are shared with almost all Rovers from 1995 onwards – and the same crank sensor was first fitted to the Montego in the 1980's and is VERY reliable, still being fitted to Rovers currently. Bear this in

mind should you ever be down your local breakers yard and happen across a late Rover. A few pounds for a few sensors in advance could help you sort out a lot of potential problems in the future.

Edited by: TurboDave at: 06/12/02