



## Technical – Diagnostic fault codes can be misleading...

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For reasons unknown, Vauxhall chose to locate this 2009 Corsa's Electronic Control Unit (ECU) immediately beneath the scuttle, where it can so easily become waterlogged...



Running problems with your car? Accurate diagnostic assessment is vital...

Kim Henson reports.

A modern motor car is a complex machine, and in every case, like it or not, it relies on a computer-controlled electronic management system in order to keep running. That's usually fine when the vehicle is new-ish and everything is working as it should. However, as we know computer systems are not infallible and it only takes one link in the chain to break for the whole operating system to fail, or at least not to perform as designed. Inevitably too as electronic systems age they become prone to breakdown and/or poor performance associated with moisture ingress, deteriorating cables/connections and in some cases because of time and mileage-related disintegration! This all becomes even more of a problem due to the odd choices by some manufacturers in the locations of some of the components in the system, also, often, to poor quality from the outset...

Typically when such faults arise, the vehicle may refuse to start (perhaps intermittently, to begin with), or it may hesitate/misfire, or come to a halt unexpectedly (of course, this can be downright dangerous), etc, etc.

When such problems occur, it is essential that the faults are correctly diagnosed, or a huge amount of time and money can be wasted in terms of renewing components that in fact are not at fault. Due to the complexities of modern vehicles, unless the correct/relevant diagnostic equipment is available, and the operator is skilled at its use, and working through the requisite diagnostic steps in a logical manner, it can be easy to be led up the wrong path when trying to sort out the various symptoms.

It is always worrying for a car owner to be told that the problem MAY lie in this or that area, but that the only way forward is to renew the components within the system, one at a time. Usually that's a recipe for a great deal of garage labour time and expense for the owner, in addition to which the actual fault may not even be discovered! It might be time to get a second opinion...



## FAULT CODES

Built into modern electronic management systems is the ability of the Electronic Control Unit (ECU) to store or hold fault codes relating to running problems that arise. In theory the plugging-in (via the vehicle's diagnostic socket) of suitable diagnostic equipment then reveals the codes that have been stored, directing the operator to the relevant area within the system. (For some cars, especially those a few years old, a fairly basic fault code reader is a helpful and relatively inexpensive aid).

However, this arrangement is not infallible, since often the fault code may indicate the general area but not the specific fault. For example, as happened to me with my own Zafira, a stored code may direct the operator to the electronic throttle control system. It might then be assumed that the throttle sensor unit has failed, so as a result a new one might then be obtained and installed, only to find that, several hundred pounds later, the problem still exists - because in fact the fault was due to a low voltage cable in the system intermittently shorting to earth via chafed insulation...

In every case it is therefore vital to have the car correctly diagnosed, by a competent electronic diagnostic specialist using the most appropriate equipment. Such specialists are found around the country, and they will work through each system in a logical manner, independently checking each aspect rather than just 'assuming' and renewing components, as can sometimes happen. Of course, the servicing departments of main dealers should also be able to work through systems in a similar manner...

## VAUXHALL CORSA PROBLEMS

I am greatly indebted to colleague and diagnostic specialist Edward Haggard, who kindly sent to me the accompanying photographs taken on a 2009 Vauxhall Corsa. The vehicle's owner had experienced running problems with the vehicle, and when it had been diagnostically-interrogated, a variety of spurious fault codes were revealed. As a result of what the misleading codes were saying, the owner had renewed (at huge cost) the fuel

injectors, the Exhaust Gas Recirculation (EGR) valve, and the electronic throttle pedal assembly. Yet still the problems remained, because... in fact the Electronic Control Unit (ECU) was full of rainwater! Ultimately the ailing ECU (pictured) was sent away for rebuild,



to fix the actual problem.

This true story underlines the fact that in diagnostic work on any modern vehicle, NOTHING can be assumed; it's essential that each aspect of each system is carefully and fully checked, rather than just believing the stored fault codes. Of course this can take a specialist time which has to be paid for, but this approach is still more cost-effective than simply renewing a string of components in the hope that the problem will go away...

Of course, one wonders why, in the case of the Corsa, Vauxhall chose to locate the car's main electronic 'brain' in a position immediately beneath the scuttle, where rainwater can inevitably drip onto and into it...

If you have a Corsa (or any other car) with the ECU similarly-located, take a close look at it. If the unit's not already waterlogged, it might be worth considering installing a shield to keep it dry.

Incidentally, while this story concerns a Vauxhall, such problems can occur on many other makes and models of vehicle, from compact hatchback to luxury sportscar – they all have





their own problems (which tend to get more difficult and more costly to fix, the more 'sophisticated' the vehicle)!

## THESE NOTES MAY HELP YOU KEEP MOTORING:

1. If your car has a running problem that seems difficult to cure, despite having many components renewed, it might be worth seeking a second opinion from a reputable independent diagnostic specialist.
2. If your car has an underbonnet-mounted fusebox/electrical centre, make sure that its cover/lid is fully and correctly fitted – moisture ingress via an ill-fitting cover is a major factor in many electrical breakdowns.
3. Wherever the ECU is located, ensure that it is kept dry. Some cars have them fitted in underbonnet situations, whereas in other vehicles they may be mounted inside the car – but water leaks into a car's interior are not unknown, and in some cases if the footwell (for example) is flooded, the ECU or other electrical gear located in this area can suffer, or may even be destroyed.
4. Avoid having your vehicle's engine bay power-washed, and if at all possible, do not drive a modern vehicle (especially) through flood water, or indeed (and especially!) sea water; the result will be water ingress that very likely will spell the end of the sensitive electronic components/systems. Salt water is particularly damaging.
5. Even if you are not mechanically/electrically minded, periodically it is worth taking a close look around the engine bay of your car, looking for signs of loose or split vacuum hoses (which can have a major impact on how the vehicle runs), corroded/loose electrical connections (including the main ones at the battery) and earthing (ground) points that appear to be dirty or corroded.
6. Don't tinker! Modern car electrical components and systems can be very expensive to renew/repair, and it is easy to cause damage to delicate components if you really don't know



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what you are doing. If in doubt, engage a competent professional.