

RIDING ALONG IN MY AUTOMOBILE ...OR NOT



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There you are, riding along merrily, when the car lurches and you lose power.

The solution to most faults is the simplest one, but on opening the bonnet, where do you start? The intention here is for a "get you home" roadside repair within 45 minutes: more complex or longer requires a further tool; a mobile phone and the recovery service. This article makes a few assumptions: you carry a plug spanner, screwdriver, length of wire and test lamp (bulb with wires or similar). Additional spares could be the condenser for external mounting. Points adjusting tool, or feeler gauge, spare points. If you also carry a set of the appropriate points and a condenser, a recovery service might be able to fit them. Similarly, if you run an electronic under cap trigger, a spare one of those. Even if you decide that the circumstances are such that an immediate call to the recovery service is in order, the tests outlined should help when you have time and inclination to trace the fault.

For an engine to run, you need air, fuel and ignition and somewhere for it all to meet – the cylinders. To lose compression on all cylinders is almost unheard of, so we will put that to the back as a probable cause. Similarly, carburettors don't just go out of tune, so carb adjustment is unlikely. So that leaves ignition and fuel as the more likely causes.

If you were able to see what the tachometer did as the car slowed you have a major clue. If it fell like a stone, it is the LT (12v) side of the ignition. If it dropped at the same rate as the car slowed, it is either HT or fuel. Did you notice if the ignition warning light came on? If it did whilst the engine is still spinning you have lost the power to the ignition switch or ignition relay (77 and later cars).

However, as you were probably trying to find a safer place to stop you didn't notice.

The first thing to note is that the fuel filter (if you have one) can be empty, full or half full and have no bearing on the ability to run. Unless of course it is blocked. Next undo the fuel filler cap. A large "whoosh" of air indicates insufficient air has entered the tank as the fuel has been used. The car might now start. At this point check you do have fuel in the tank and on the gauge... A small "hiss" is normal. If the pump chatters like crazy-then either an air leak on the pump inlet side or fuel is coming out somewhere it shouldn't. Check the carb overflows for instance. If when repeating the test a second time it chatters away then a poor positive feed connection or poor earth is a likely culprit.

- 1 Remove a plug and rest it on the engine. Turn on the ignition and crank the engine: do you have a spark at that plug resting on the engine? If you do then we can be fairly sure the whole ignition system is working. It could be a fault with a single plug or lead but this will cause bad running, not total stoppage. So now you can skip the next bit and go on to "Fuel".
- 2 If not, remove the fat lead that goes to the top of the distributor cap (the other end is on the coil) and push the spark plug that you removed from the engine, in the end. Rest the plug on the engine. Disconnect the wire that goes from the spade terminal on the coil (CB or -ve) to the distributor. Turn on the ignition, and then touch the end of the wire to a good earth point and lift off, and on lifting you break the circuit. You should get a spark from your plug. If so, you have successfully eliminated the LT and HT as a cause as far as the coil. If not we need to check further.
- 3 Turn off the ignition and replace the CB /-ve lead on the spade terminal on the coil and the fat lead from the coil to the distributor. Find your test light-often a probe with a crocodile clip on a bit of wire. -(see pic) Use the test lamp to see if there is 12v (with the ignition on,) on the coil SW or +ve. wire. (Croc clip to earth: probe on the removed wire) If yes, replace it.
- 4 If no, connect your trusty piece of wire from this terminal (+ or SW), to the fuse box-radiator side- brown wires. Try to start the car. If it does start, the only way to now stop it is to disconnect this piece of wire as you have effectively bypassed the ignition switch and wiring-providing power direct to coil and fuel pump. You can now get home and start to trace the loss of 12v in the original wiring. If you have a ballasted ignition system (usually a R/B car as this was a standard fit), you are now feeding the coil with 12v, as opposed to the usual 6v. It will get hot, until the engine starts misfiring and stops. You might prefer to ring the recovery service...
- 5 The only remaining cause can be the distributor. This may be traceable but fixing it may require parts. First check for obvious signs of broken wires particularly near connectors.

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Connect your trusty test lamp between the coil -ve and earth as you crank the engine. If the light goes off and on or glows about half brightness, the trigger /points are operating as they should. If no light or continuous full bright light there is a fault. With an electronic trigger, you can substitute it, or you may call the recovery service to do so. Variable dwell triggers and fully programmable systems are beyond the scope of this guide.

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A further test for points, remove the cap and the rotor arm, then rotate the engine (push the car in 4th) until the points are closed. Switch on the ignition and with an insulated screwdriver separate the points. A good spark is indicative of condenser failure. Do you carry a spare and do you want to try fitting it? ...an alternative is shown in the photo: it can be fitted externally (see later section). Check also in your usual way, that the points 'gap' has not closed up. Again, see photo for a useful tool.

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Within the distributor is a small flexible earth wire from the body of the distributor to the plate on which the points (or undercap trigger) are mounted. This can break (so the distributor loses its connection to earth). It is unlikely you will carry a spare: you may be able to see if this has broken, though it has a fabric cover. Similarly you may be able to fabricate a substitute but it is beyond the scope of a quick (ish) roadside repair.

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The points themselves are unlikely to fail so badly that they need replacing: but if they do, you have a set.
The final option is the fuel supply. Different types of pumps have differing characteristics, but all need to deliver fuel, the standard SU about 1-2 pints per minute. Remember there are hot exhaust pipes below the fuel pipes and that if the ignition has been on recently most pumps have residual pressure in the line that will give a squirt of fuel.

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Disconnect the fuel pipe from the carburettor and direct it in to a suitable container (perhaps a water bottle - but drink the water first). Turn on the ignition. If there is no fuel the electric pump/supply looks to be faulty. The pump was originally unfused and other than a tap with a screwdriver handle or an obvious broken wire at the pump, there is not much that can be done. It may chatter in to life and will then probably get you home. But it is indicative of a failing pump, so repair /replace when you get home.

Earlier you tested for 12v at the coil. The same circuit (through the ignition switch) powers the fuel pump, so a fault at say the ignition switch will cause loss of power to both the coil and the pump. Bypassing the original fuel pump wiring is possible but beyond the scope of a get you home repair. In addition, damage to the fuel pump wiring can cause other damage to the loom so for later diagnosis a fuse should be fitted (and subsequently left in) the pump circuit.

Of course in many cases it is not total failure but bad running that is the problem. Causes of this are similar but often intermittent, though the same basic tests apply.

Helpful Tools

Points

Whilst many people have switched to electronic under cap triggers, there are plenty of people still using points. Points have the great advantage of warning you that all is not well but the disadvantage of needing periodic adjustment. Adjustment can more easily be carried out by removing the distributor and working on the bench. But what about if a running repair is needed at the roadside?

The conventional method is to rock the car back and forth in top gear till the heel of the points rests neatly on the rounded edge of the cam. Then get out your feeler gauge and set at say 15 thou.

However, if you root about in your junk box you may come across a piece of 18-19mm -3/4" diameter tube. Measure its wall thickness -hopefully no more than 1/32".

If you slip this over the cam (remove the rotor arm) you no longer need to push the car as the cam has become a circle of constant diameter. Add the thickness of the wall of the tube to the required points gap, and use the appropriate feeler gauge.

Circuit Tester

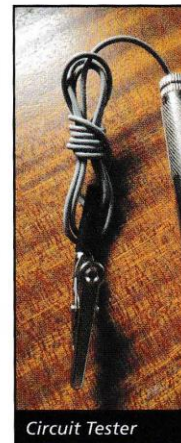
To ensure that you have a power supply to a suspect component.

Condensers

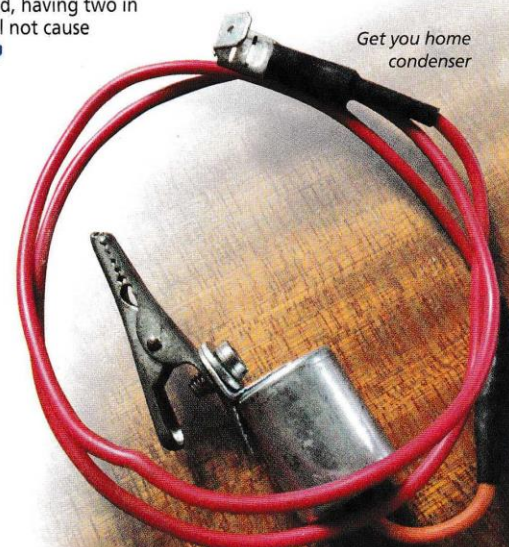
Still on the theme of points, condensers can prove difficult to eliminate in fault finding. If your condenser is over 20 years old it will probably last forever, but younger ones seem more prone to failing. Condensers are more likely to fail 'open circuit'. Rather than trying to replace one at the side of the road, modifying one as shown can 'get you home'.

Most condensers have a small tag on the body: attach a small crocodile clip to this. The wire from the condenser needs extending, so now is the time to try out your soldering and heatshrink skills (or an old bit of connector strip).

Check the type of terminal on your coil and attach a similar one to the end of the extended wire. Many are spade terminals. A piggy back type of terminal is available. To use, do not remove the suspect condenser: attach the wire to the CB or negative terminal on the coil and the croc clip to an earth. If the condenser has failed having this 'outside' one restore normal service. If the condenser has not failed, having two in 'parallel' will not cause any harm. 🛠️



Circuit Tester



Get you home condenser

