~~[redacted] COPY~~ VAN COPY (under Seat)

Stand_By_Your_Van

Remember : Most of the things that go wrong with any vehicle are electrical. With the Yellow Van, this goes squared.

O.K., so the van's conked out. Has it:

1) Refused to start ?
2) Stopped suddenly on the move ?
3) Got sicker and sicker and then stopped ?

If it's (3) you've probably got bad problems, unless the 'sicker and sicker' is overheating. Well, you shouldn't have let it get that bad. Wait till the temp. gauge reads something normal, add more cold water, proceed with caution. Find out A.S.A.P. why it overheated. Probably the ignition timing is off, or a radiator leak. for the former, see below; for the latter, buy some radseal, follow the instructions. Check the oil level while you're at it.

The only other (identifiable) common sickness is if the vacuum advance hose has fallen off. In this case, the van will run OK at low revs, but won't respond well to the accelerator. The hose connects a bellows on the distributor to a nozzle under the carburettor (NOT to the overflow nozzle on top of the carb!).

Other possibilities: Brakes binding (nasty smell & very hot brake drum); water on the plug leads / distributor (clean with cloth and WD40, leave it to air if the weather's cleared & you've got time).

I'll assume you can tell if the engine's not running on all four cylinders (It'll badly lack power, and sound like an offbeat helicopter). In which case go directly to taking the plugs out, and look for the one(s) that haven't being pulling their weight.

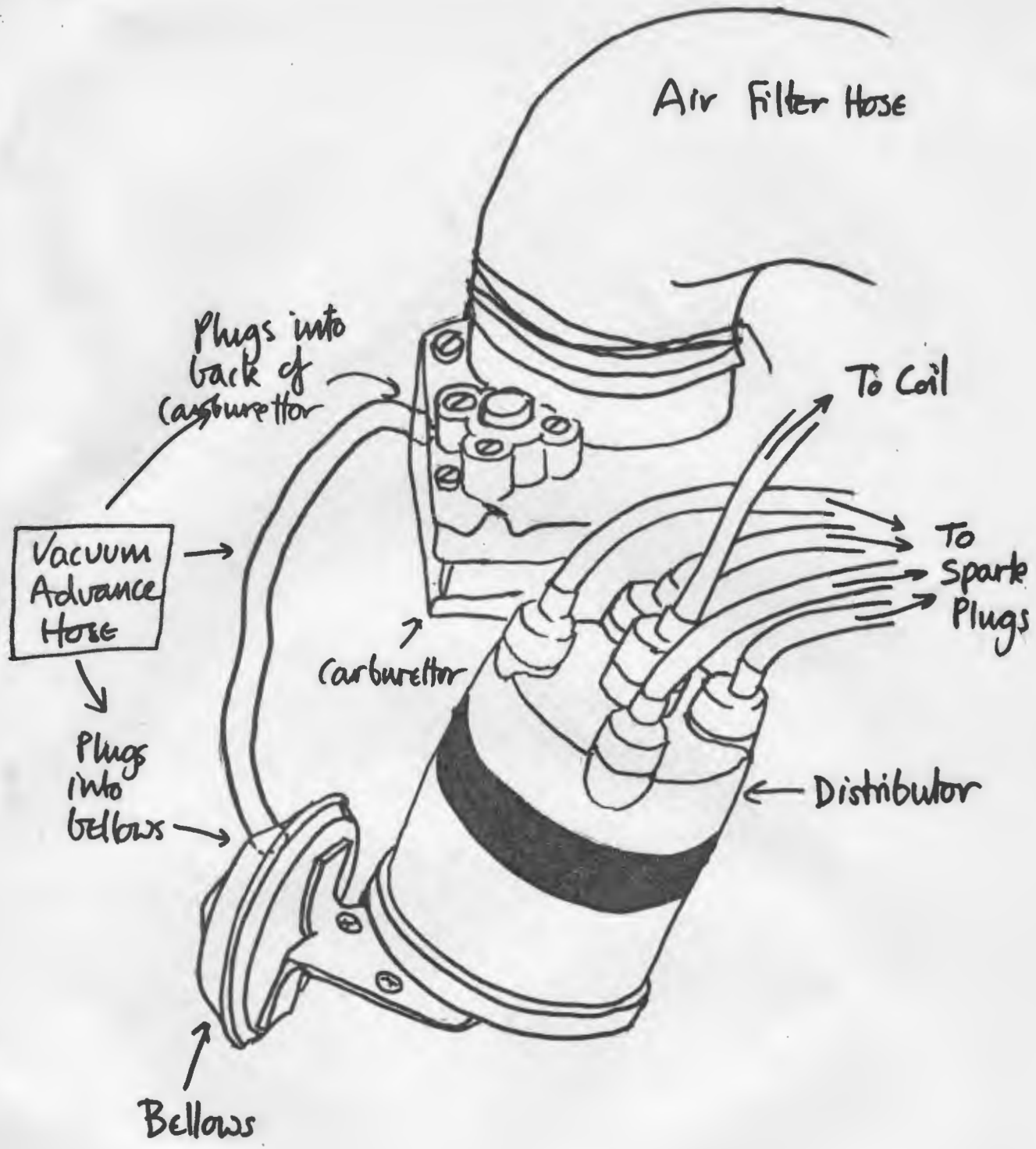
Let's assume (1) or (2) for the moment.

Before embarking on dismantling the ignition system:

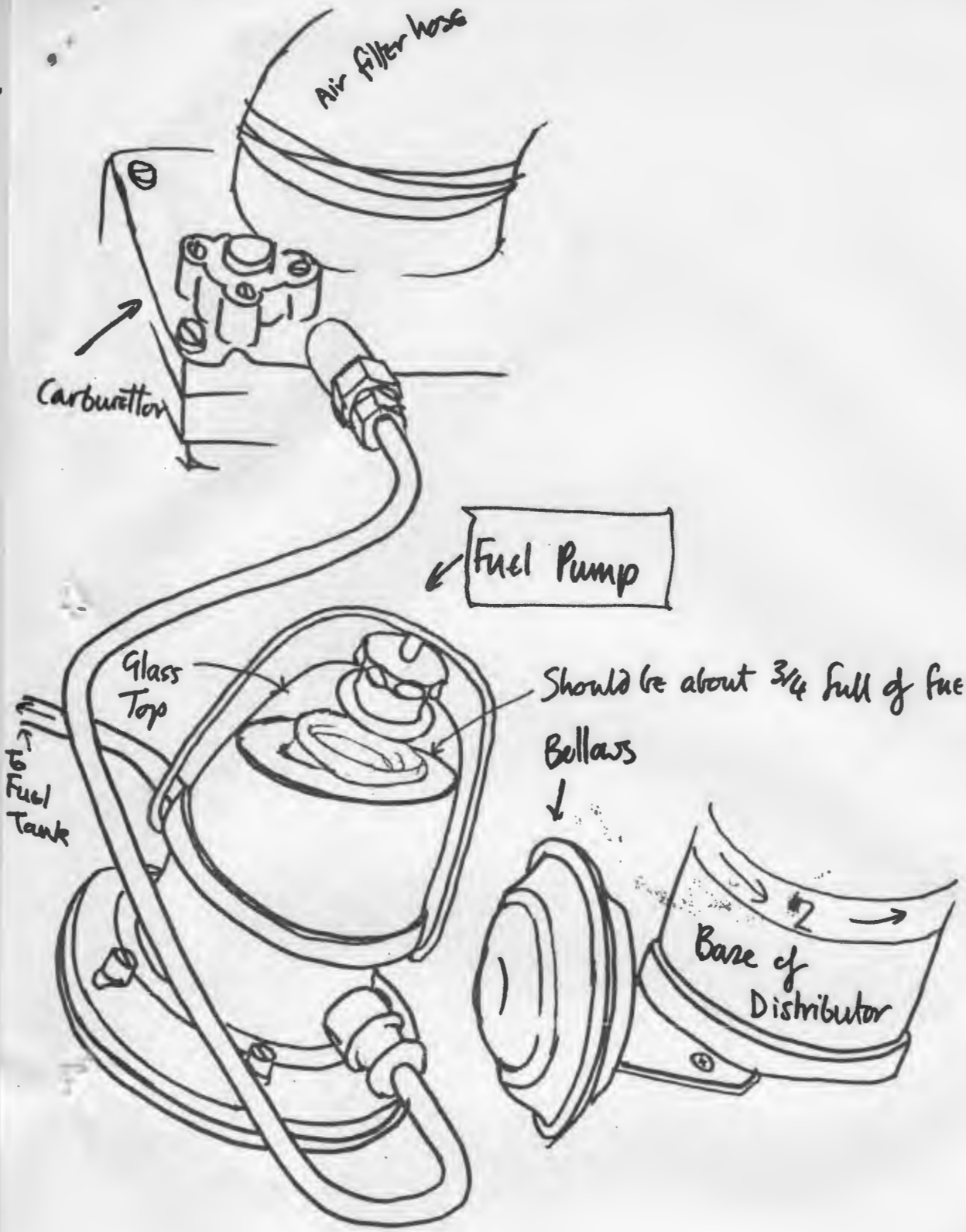
HAVE YOU RUN OUT OF PETROL ?

Obvious if you've been driving along - but if stationary, remember that the van's fuel tank is shallow and flat, and that the fuel pick-up is at the front, towards the centre of the van, so if it's been parked leaning toward the left and/or pointing (or driven) uphill, all the fuel may be where it can't be got at, whatever the gauge says. Remedy - never let the tank get less than 1/4 full.

A good way of checking this is to look at the fuel pump. It's on the left side of the engine (as you look under the bonnet - all lefts/rights labelled this way, OK?), next to the distributor, and has a glass dome on the top. This should be ~3/4 full of petrol. If there's more than 1/2" of air in it, you're out of gas. Put some more in! Remember that the pump will have to refill the carburettor before the engine will start; if the battery is suspect, you may flatten it before this. Solution: take the spark plugs out (see below). The engine is now easier to turn over, and the battery has an easier life. If all else fails, you can probably (eventually) bump start it! (Put the plugs back in first, dummy.)



HOW TO FIND VACUUM ADVANCE HOSE
(another hose lying above advance hose has been omitted for clarity!)



HOW TO FIND THE FUEL PUMP
(Some hoses omitted for clarity)

SOMETHING'S WRONG WITH THE BATTERY

Three possibilities:

1) Battery has become disconnected. In this case, you'll get very little out of the electrical system at all. It must be said that the battery connections aren't too great. Graunch them around a bit. Use a file.

2) Battery is flat. Obviously, only if it won't start from cold. A good test is to put the lights on, and then try to start. If they go very dim as the engine turns over (or fails to) then the battery is flat or shot. Check fluid (see below) and recharge - preferably at one amp. or less, or you might damage it - or bump start. If you do bump start it, recharging is a good idea anyway.

3) Battery fluid low, or battery is otherwise buggered. You should check the fluid often - as often as you remember to do it! It should cover the plates. If it doesn't, top up with distilled water. If the fluid is really low, and the battery has been 'cooked', sorry, but it's new battery time.

OK. There's fuel, and the battery is OK.

SOMETHING'S WRONG WITH THE IGNITION

Next stage is to take the plugs out, because you've almost certainly got an ignition problem. Note that the van uses smaller than standard plugs: there should be an appropriate hand spanner and two sockets of the right size in the van tool kit. First, take the engine panel inside the cab off.

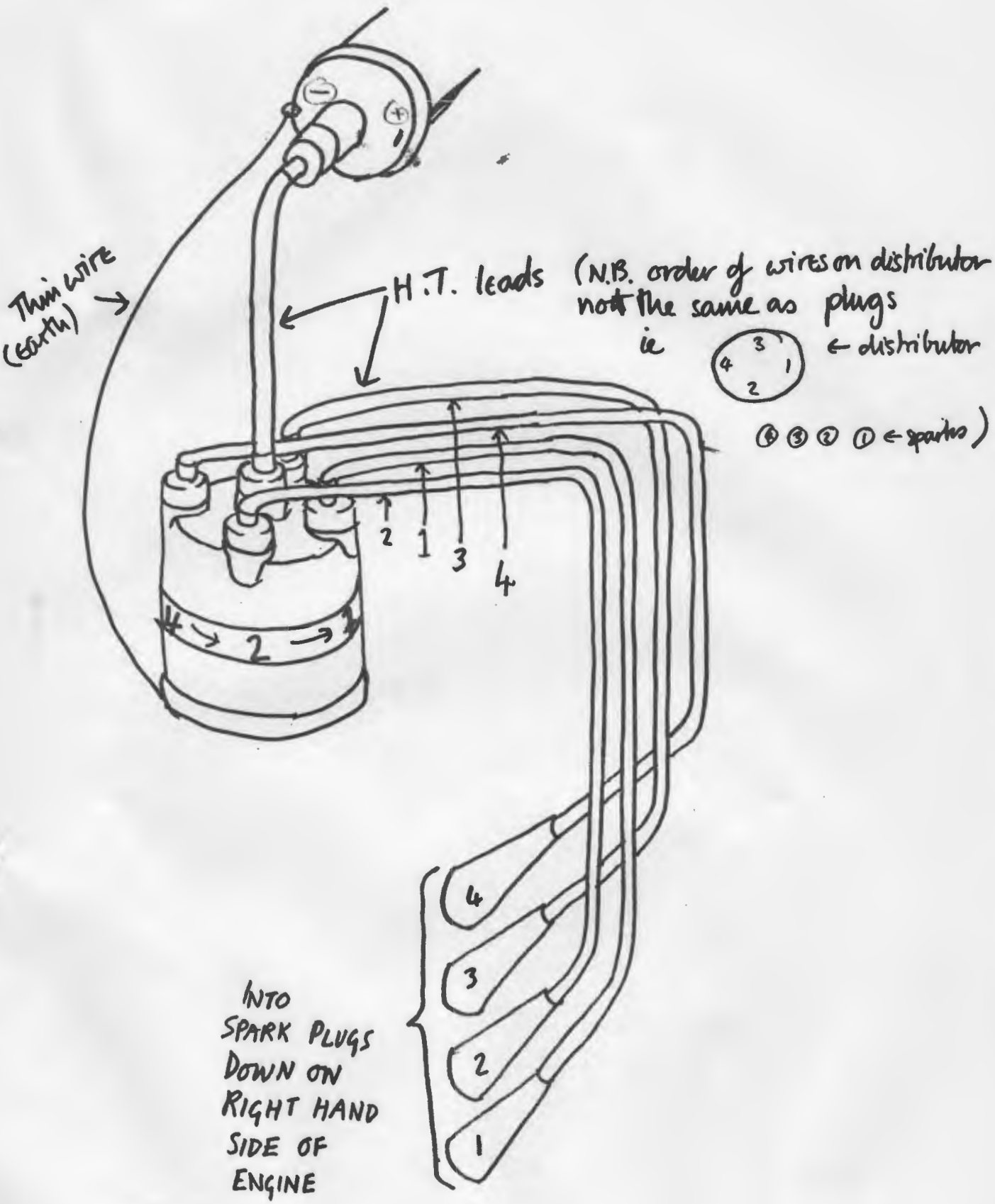
Plug removal is not as easy as it might be... Plugs 1 and 2 are easy enough (Plugs are numbered from the front going back): use the socket set from under the bonnet. 4 is not too bad: use the hand spanner to loosen it, then use the sockets to get it out. 3 is a bit of a sod. It's very easy to break the plug on getting it out or (worse) back in. The best method is to put the socket over the plug, and put the extension bar loosely just in the end, trying not to twist the plug sideways as you get it out.

Check the condition of the plugs. - see the Haynes Manual for pictures. If all the plugs are sooty, then the engine is running rich (choke stuck on?), or the ignition timing is badly retarded. If the plugs look white (not brown) and have stuff burnt on, then the engine's been running too hot; ignition too far advanced. You should have spotted this, it sounds like marbles being shook in a can, especially on acceleration or uphill. If the plugs are oily and wet, then they haven't been firing at all. (If one plug looks like wet... probably that plug's duff. Swop it for a new one. No different? Probably the lead. Swop it for a new one, or clean it, and check the connections at each end. Check for plugs firing as below.)

Now put the plugs back into the ends of the plug leads (check they 'snick' into place - if they don't, pliers applied to the ends of the plug leads may help). Do the following for each plug in turn.

Get a mug. The mug holds the plug against the top of the engine while you 'start' the engine. You should see a good spark as the engine turns over. If it doesn't spark, make sure that (i) the plug is correectly in the lead, (ii) the end of the plug is earthing properly against some clean bit of metal. If one plug doesn't work - duff plug or (less likely) duff lead or (quite likely) duff connections at one end of the lead or other. If all the plugs fail to spark, the problem is probably inside the distributor, or

WHERE THE H.T. LEADS GO



something to do with the coil. Now things start to get heavy, and it's a good idea to know how the ignition works before fiddling with it.

Incidentally, as the engine is spinning over for the spark plug test, you should be able to see and smell petrol vapour coming out of the spark plug holes. If it isn't, there may be a fuel blockage (see below for how to fix this).

YET MORE ON THE IGNITION.

Before you start wielding spanners, check all the connections (see figure). If you have a multimeter, you can see whether there are volts in the appropriate places (Volts only if the points are open, clot!). The coil should have two thin wires (peripheral) and one thick cable (central) attached to it. One of the thin wires goes into the distributor, the other (eventually) to the battery. The thick (H.T.) cable goes to the central socket on the distributor cap. The four peripheral sockets on the distributor cap are labelled as to which plug they connect to. Wiggle all the connections to make sure they're good'n'proper and try the plug test again.

No good? Take the distributor cap off (spring clips). Note that it will only fit on properly one way round. Look inside the cap. Are all the electrodes clean? Is there any moisture? Clean and dry as appropriate, put the cap back on, try the plug test.

If it's still no go, it's time to look at the contact breaker points. Owing to the perverse design of the distributor, these are under the centrifugal advance unit, which gets in the way. Things are easier if you take the rotor 'arm' off (two screws); this will also only fit on one way round. Turn the ignition on, and poke the points gap with a screwdriver, either flicking them open and shut (if they're closed) or using the screwdriver to make contact between them (if they're open). Small sparks should fly. If not, no electricity is getting to the points - check connections (You could see if the lead to the points generates sparks if brushed against an earth).

Is the battery side of the coil getting any electricity? (pull off the connection and brush this against an earth). If it isn't, then either (i) you haven't turned the ignition on properly (clot) (ii) fuse has blown (in box above the pedals, lots of spares in the lid) (iii) there is some mysterious break in the circuit somewhere. The last one is very unlikely (I've never known it happen), but if it does happen, and you can't trace the break, you can at a pinch use a long piece of wire to connect that side of the coil to anything that's live - the battery, for example! - if the plugs now go you can (bump?) start and get home.

ALL ABOUT THE POINTS

You may need to adjust these. If the ignition doesn't work despite their being volts provided to the distributor, then checking the timing and the points gap is the next reasonable step. Get somone to use the starter motor to turn the engine over while you look at the points. Do they open and close ? If not, well, there's your problem; if they appear to, the gap may still be wrong. The best way to check it is:
1) Get your assistant to crawl under the front with a large adjustable spanner, and fit it to the big nut on the front of the crankshaft (Right at the front bottom of the engine).
2) Assistant should then rotate the engine while you watch for the maximum opening of the points. This is when the 'heel' of the contact breaker cam

is riding up on one of the (four) lobes of the central camshaft in the distributor; this is quite difficult to see! The gap between the contact breaker points should then be about 15 thou (a bit less than 1/2 a millimetre).
3) If the 15 thou feeler gauge doesn't slide smoothly in between the gap, then loosen off the two scews that hold the earthed side of the contact breaker, and use the a screwdriver in the little slotted bits provided to adjust the gap till it does (diagram).
4) While you're at it, fold a bit of fine emery paper over, put it in the gap, and clean the points up a bit.
[4a) You could do the timimg at this stage if you want. see below.]
5) Put the rotor arm back on, and the distributor lid.

Now see if the plug test works.

If it doesn't, and the lead to the distributor is definitely live, make sure that the bits of plastic and metal where all the leads fit together in the distributor haven't got themselves re-arranged so that all your lovely volts are earthed all the time (i.e., is the springy bit on the points live - try and earth it with a screwdriver and make sparks).

If none of the plugs fire up, suspect the H.T. lead to the coil. The coil itself is very unlikely to collapse (though it may do, just to be perverse - you could try a multimeter to see if the windings are intact; primary across the two spade connectors, secondary is H.T. connector to earth).

Recheck all connections. Right. You must have got the plugs going now!

Do the timing while you've got all the bits off.

IGNITION TIMING

Get your faithful assistant to rotate the engine (clockwise) until the little pointer on the back face of the crankshaft pulley is opposite the first (lowest) of the ridged marks on the plastic casing behind (best done by feel). This is when the sparks should be flying.

Now turn on the ignition. Wiggle the rotor arm; you should hear a little crackle from the points as they open. If you do, all is OK, put all the bits back on the engine and drive off.

If no crackle, either the points are definitely open, or definitely closed. Loosen the three bolts that hold the distributor down, and rotate the distributor body one way or the other until wiggling the rotor arm does produce the little crackle... tighten up the holding bolts and hey presto! You are now a master of the ignition system.

REASSEMBLY

MAKE SURE THE RIGHT LEADS GO ON THE RIGHT PLUGS. It's all labelled up, so you can't go wrong; it will only fit together one way.

If the labelling has fallen off, the one you've just timed is either no. 4 or no. 1. Make sure the lead that the rotor arm points to goes to plug one or four. The firing order is 1 - 3 - 4 - 2, so the plugs leads should go in that order anticlockwise around the lid. if the plugs all fire, but the engine runs only on two cylinders (or none), try swopping leads 1 & 4 or 2 & 3. If two cylinders only are working, pulling off each plug lead in turn will show which are the offending ones!