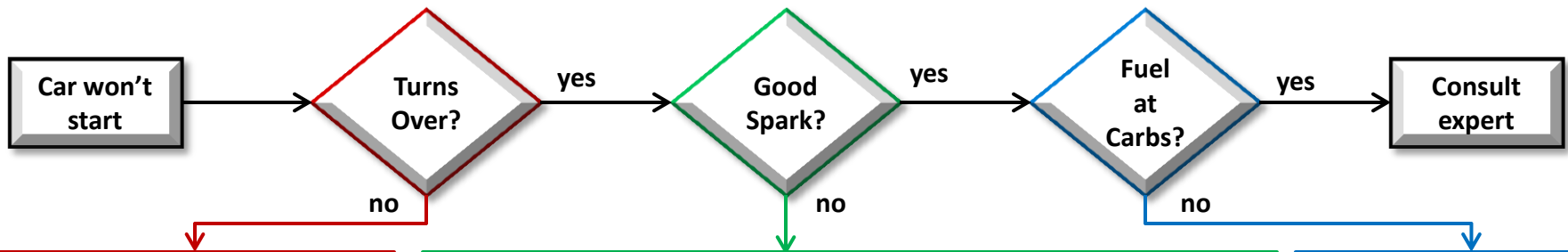


The following two pages are a diagnostic flow chart to help if you find you are in the unfortunate situation where your British car won't start. You may want to print out the pages, put them in a sheet protector and keep it in your car just in case you need it some day.



Example of a home-made spark plug tester



A. Starter System Problems

1. Have you remembered to close the battery master switch (if equipped)?
No – close the switch and try again
Yes or not applicable – continue on
2. Have you left your lights on, the key on, a door ajar or has the car been sitting for >2 months?
Yes – recharge battery and try again
No – continue on
3. Is the battery low on water or are the battery cable connections corroded or loose? *(Check both ends of each cable, twist clamps to see if they are loose, pull cables to make sure they are secure at clamps, check connections at starter and the engine grounding strap.)*
Yes – top up battery with distilled water, attempt to recharge, jump start or replace battery. Clean, tighten or replace cables, clamps or ground straps as needed. Try again.
No – continue on
4. Do you hear a single click or a series of clicks when you engage the starter but it doesn't crank?
Yes – Check the starter relay or solenoid (not present on all cars). To test the relay, turn the key on and connect a jumper wire across the relay from the hot lead (usually a white wire) to the starter solenoid wire (usually white w/red stripe) and see if starter cranks. If it does, the relay is bad. If you have a solenoid at the starter, jump across the large terminals with an old screwdriver and see if the starter spins.
(over)

B. Check Basic Problems first – then Ignition Problems

1. Do you have gas in the tank?
(Don't rely on your gauge – physically check level with a stick or hose.)
No – fill the tank and try again
Yes – continue on
2. Did you remember to pull out the choke knob if your car has a manual choke?
No – pull out choke and try again
Yes – continue on
3. On cars with a separate starter knob or button, did you remember to turn key on before activating starter?
No – turn key on and try again
Yes – continue on
4. Do you have a spark at the spark plugs?
(To check for spark, pull off a spark plug wire and hold it near the engine block or push it onto a spark plug tester. Clamp the spark tester onto the engine block or head and have a friend try to start the engine while you check for a spark at the tester gap. The spark should jump the tester gap easily and should be bluish in color. Check the spark from several wires – all should look the same.)
Yes – remove spark plugs and check for fouling or wear. Clean, gap or replace as necessary. If plugs are OK, and it still doesn't start, go to number 7.
No (or spark is weak) – continue on
5. Do you have a spark at the coil wire?
(To check for a spark at the coil wire, remove the coil wire at the distributor cap and hold it near the engine block (or using the spark tester as described in Number 4) as a friend tries to start the engine. The spark should be strong and jump at least a quarter inch gap. If the spark is weak or nonexistent, check the resistance of the coil wire with an ohmmeter – it should be 5,000 to 10,000 ohms per foot of wire. Replace if necessary.)
Yes – Your distributor cap, rotor or spark plug wires are bad. Check the rotor. Check the spring-loaded carbon post in the center of your distributor cap. If it is bad, no spark can reach the rotor or the spark plug wires. Check the cap and rotor by replacing with known good spares. Check the resistance of the spark plug wires with an ohmmeter – it should be approximately 5,000 to 10,000 ohms per foot of wire.
No (or spark is weak) – continue on if you have points. If you have electronic ignition and you are not getting spark at the coil wire, consult a professional.
6. Do you get a spark when the points open and close?
(Hook up your spark tester to the end of the coil wire as described above, remove the distributor cap, turn the key on, and open and close the points with a small screwdriver. You should see a spark at the tester gap whenever the points come open.) *(over)*

C. Fuel Problems

1. Is fuel reaching the carburetor(s)?
(Disconnect the fuel line where it connects to the carburetor(s) and hold the end over a small can. Have a friend attempt to start the engine – you should see fuel pulse out of the end of the fuel line.)
No – check for a clogged fuel filter, clogged fuel line, or inoperative fuel pump. If you have an electric fuel pump, turn the key on and tap on the side of the pump with a small hammer – see if the pump starts. If it does, the fuel pump points need replacement, cleaning or adjustment.
Yes – continue on
2. Is fuel entering the carburetor(s)?
(Take the top off your float chamber and make sure there is fuel inside the chamber (this is not always possible on late style carbs).)
No – check the needle and seat valve at the top of the float chamber, make sure it's not clogged or stuck closed, also make sure the float is not stuck and can move freely on its pivot. Replace the float chamber lid and reattempt to start the engine. You can also try to tap on the float chamber with a screwdriver handle to free up the needle and seat valve, then reattempt to start the car.
Yes – continue on
(over)

A. Starter System Problems (cont'd)

If it does, check that all wiring connections to the starter or solenoid are clean and tight, and then see if engine cranks. If it doesn't, check if the bolts holding the starter to the engine are tight. If it still doesn't crank, remove starter and get it bench tested by a professional.

No – continue on

5. Do the headlights come on when you turn them on?

Yes – Engage starter with the headlights on and see if they dim or go out. If they do, check that all battery/ starter/ solenoid connections are clean and tight. Also check to see if starter pinion is jammed in the flywheel (some British starters have a square boss on the end that you can move with a wrench to free the pinion, others require that you put the car in gear and rock it back and forth). Try starting the car again after making sure the pinion is free.

If the headlights do not dim or go out when you engage the starter, use a 12 volt test lamp to check that you have power to the ignition key switch (usually a large brown wire). If you do not get power at this brown wire, check that both ends of all battery cable connections are clean and tight, then see if the engine cranks over. If you have a key starter, have a friend hold the key in the start position while you use a 12 volt test lamp to check for power at the key switch connection to the starter or relay (usually a white wire with a red stripe). If you have a starter knob, have a friend pull out the knob while you check for power on both sides of the starter switch under the hood. If you do not get power at these locations after cleaning and tightening all connections, replace the key switch or starter switch.

No – Totally dead battery – recharge, jump start or replace battery and see if it cranks over. If not, consult expert.

B. Ignition Problems (continued)

No – disconnect the wire leading to the points (usually white with a black stripe) and check for 6-12 volts when the key is on. If there is no power at the wire, check the ignition switch and ignition coil connections. If all connections are good, then replace the ignition switch and then the coil with known good spares. If there is power at the wire, make sure the flexible low tension wire to the points inside the distributor is not broken or grounding against the distributor housing. It is very common to hook up this wire incorrectly on Lucas distributors when replacing the points – make sure the end of the wire attached to the points is insulated from grounding by a plastic or fiber washer. If the wire is attached directly under the nut on the points without the washer, the power to the points will ground out and the engine will not start. If you still don't get a spark after checking the low tension lead, replace the points and condenser with known good spares. If you still don't get a spark after replacing the points and condenser, replace the ignition coil with a known good spare.

Yes – the point gap is incorrect. Check your point gap, readjust (a piece of thin cardboard can double as a feeler gauge in an emergency) and start the engine. If it doesn't start, continue on

7. Are your plug wires hooked up properly in the correct firing order? *(This can happen when the engine has been worked on and the plug wires installed out of order. Remove the number one spark plug, put your finger over the spark plug hole and crank the engine over slowly until you can feel air pressure against your finger (you can put the car in second gear and have a friend nudge the car forward to turn the engine). Continue to turn the engine until the timing marks line up at the "top dead center" position. Remove your distributor cap and check that the rotor is pointing toward the wire location for the number one spark plug. If not, the firing order is incorrect.)*

No – check the workshop manual for the proper firing order for the engine, reconnect the plug wires in the proper order and attempt to restart the engine.

Yes – continue on

8. Is your distributor loose?

(Grab the distributor and attempt to turn it from side to side. If it moves easily your ignition timing will need to be reset.)

Yes – have a friend crank the engine while you slowly turn the distributor from side to side. To avoid getting shocked, grab it down low rather than by the top of the distributor cap. If the timing was off, the engine should fire. Adjust the distributor by hand until the engine is running smoothly, then time the ignition with a timing light as described in the workshop manual.

No – continue to Fuel Problems – C.1.

C. Fuel Problems (continued)

3. Is the choke working?

(If you have a manual choke, pull out the knob and check that the linkage is moving on the carburetor(s). On early SU carbs, you should see the jet at the bottom of the carb drop when the choke is pulled out. On Xenith or Solex carbs, you should see the choke flap close at the top of the carb. If you have an automatic choke like those on late MGB's, you will not be able to observe the choke in operation.)

No – spray WD40 or other lubricant on the choke linkage at the carburetor(s). If necessary, replace the choke cable.

Yes – continue on

4. Do you have old or contaminated gasoline in the tank?

(This is common on cars that have been idle for one year or more, and cars that have been stored outside.)

Yes – drain and refill the gas tank. Make sure to add fuel stabilizer to the tank if the car is to be stored for a long period. Also make sure the fuel tank is filled completely when storing the car outside to prevent water condensation buildup in the tank.

No – continue on

5. Consult an expert

If by now the car still won't start and you've confirmed the starter, spark and fuel are not the problem, then the problem is most likely in the mechanical parts of the engine (valves, pistons, etc.) Check the compression and the valve timing if you have the tools to do so.

If you've gotten all the way to this point and the car still won't start, you will have to take it to a professional. However, you will at least have the knowledge that you've tried everything obvious before giving up!