A TROUBLESHOOTING GUIDE FOR THE OLD CAR DRIVER

As pointed out in the previous pages, it is not only frustrating but could be embarrassing to have your car conk out on you, especially when you open the hood looking around for something wrong with a puzzled look on your face. It generally isn't something that obvious. If you could have some idea of where to start looking, at least you would have a chance.

Although not cast in stone, there are a couple of rules-of-thumb that can point you in the right direction. And frankly, there is little that is as satisfying as diagnosing a problem and actually solving it!

Rule of thumb 1: if the car has been running well and suddenly shuts off, like the key was turned off, there is a better-than-even chance that it is electrical. Rule-of-thumb 2: if the engine begins to sputter, falter, burp, and cough, there is a good chance that it is fuel related.

ENGINE TROUBLESHOOTING GUIDE

Engine shuts down or stops suddenly

Most probably electrical. Look for a disconnected wire.

Attempt restarting: after checking for disconnected wires if it doesn't start, begin tracing electrical. Does anything electrical operate? Starter, headlights, horn? The horn is a good place to start. If it sounds weak and feeble, it very well may be a low battery. A cable may have come loose. Or there may be a charging system problem. If it sounds strong and loud, move on.

If it cranks but will not start, check for a spark. Remove one wire from a sparkplug and hold it about ¼" from the engine block or a good ground (expose the brass contact inside the sparkplug boot). Have someone crank the engine with the ignition switch on. If the insulation on the spark wires is good, there will be no problem, but if the insulation is leaking, you may get a shock. It's not dangerous. It is high voltage but extremely low amperage. And a sparkplug shock is a rite of passage.

If you get a good spark jumping from the wire to the ground, then you know that your distributor, coil, and secondary circuit are working properly.

If you do not get a good, strong spark, start checking backwards, component by component.

Make sure that all electrical connections are solid and without corrosion, that the center wire is firmly inserted into both the coil and the distributor, that the rotor is not broken and that the carbon button at the center of the inside of the distributor cap is in place.

Make sure that the rotor is rotating. If not, it may be a damaged distributor gear (many early cars used a pot metal distributor gear).

Normally a coil will not fail suddenly, but it has been known to happen, especially as it gets warm. A condenser often fails (internal electrical leakage), and the symptoms will be a sputtering and faltering engine, similar to a gas problem. Confirm that current to the distributor (points) is present, and check that you have a strong spark coming from the coil.

This is a good time to have a VOM (Volt Ohm Meter - See On The Fritz, page 31) - in your tool kit. You can check each wire for continuity. This test will help pinpoint an internal break in the wire, voltage at terminals, and good connections. Do not use the VOM to check the secondary circuit from the distributor. The voltage is far too high for the meter, and you will burn it out. The secondary circuit consists of the secondary windings in the coil, the high tension lead between the distributor and the coil (commonly called the coil wire) on external coil distributors, the distributor cap, the distributor rotor, the spark plug leads and the spark plugs.

Engine falters, sputters or loses power

Although not impossible to be electrical, more than likely engine failure following sputtering, coughing or other irregular engine operation is probably fuel related. Sounds pretty simplistic, but check your gas level. Are you out of gas? Embarrassing but not fatal.

Like the electrical system, the gas from the tank to the carburetor takes a pretty direct path, and although there are a number of things that can go wrong, they are (relatively) easy to diagnose.

Do a visual check first. Any signs of a gas leak?

Is there gas in the fuel pump bowl? The fuel filter bowl? If you do not see gas in the clear fuel pump bowl it may mean:

1. no gas in the tank
2. gas not making it into the fuel pick-up line
3. a blockage in the fuel line from the tank to the fuel pump
4. a defective fuel pump

On a downdraft carburetor remove the air cleaner, and, with the motor off, look down the throat of the carb. When you activate the throttle linkage does gas spurt from the jet down the carburetor throat? (Protect your eyes. Don't allow gas to splash into them.)

If gas is not getting to the carburetor it could indicate:

1. a plugged fuel filter
2. a mechanical problem with the
    a. carb inlet valve
    b. float assembly
    c. plugged jets

Vapor-lock, a blockage of fumes preventing liquid gasoline from passing through the line, often occurs in hot weather. Another cause of vapor lock is a fuel line passing too close to the exhaust manifold or another particularly hot component of the engine.

If the car has a vacuum tank, check all the fittings as well as the eight screws on the top of the tank. All should be tight.

Check the float bowl (generally very accessible on an updraft carburetor). It should have plenty of gas in it. If it does, you probably have a carburetor problem.

If the jets are accessible (and they are on many models of up-draft carburetors), remove each (don't lose the seal that fits around the threads of the jet) and blow through it to make sure that it is not blocked.

If there is no (or little) gas in the float bowl, work your way backwards to isolate the problem. Is there an in-line filter that could be clogged? Did a shut-off valve vibrate closed?

Loosen the gas line at the bottom of the vacuum tank. Gas should run out freely.

If gas does not run out of the bottom of the vacuum tank, disconnect the line from the gas tank, and blow through it. You (or a listener) should hear bubbles in the gas tank. If not you may:

1. be out of gas
2. have a plugged pick-up filter or fuel line

If you can hear air bubbles in the gas tank when you blow through the line, the problem is probably with the vacuum tank.

1. check that the vacuum line at the engine/manifold is tight and the line is not broken.
2. remove the lines at the top of the tank, remove the eight screws and very carefully (so that you don't break the gasket[s]) remove the top. Check that the two springs are attached to the valve assembly.
3. check that the valves open and close with a 'snap' when the float is manually raised and lowered. Make sure that the vent tube is open. (Packards, and perhaps other marques, had a vent tube that extended beyond the line of sight. Make sure that that line is not plugged.)
4. carefully remove the inner tank and check the flapper valve. Is it sticking? Old

gas/gum/varnish will do that. It must work freely.

5. look into the bottom of the inner tank and the outer tank to be sure that no sediment is blocking the outlet.

If everything seems to be in order, reassemble (if the gasket is broken, use a new one or temporarily repair with a gasket sealant), pour about 8-12 ounces of gas into the vacuum tank to prime it (and get the car started), carefully tighten all fittings and the top screws - the top is fragile pot metal. Don't break it! Start the car and disconnect the vacuum line to check for vacuum. Just a slight sucking against the tip of your finger is adequate. Reconnect the line. In checking you may have dislodged some dirt in the vacuum tank, and it will probably run well until you can properly rebuild it.

The few instructions above indicate that your tool kit should have a couple of screwdrivers, a pair of pliers, wrenches (open-end and a small ratchet set and a medium adjustable [Crescent] wrench), a VOM, a container of gasket sealant, rags, a pair of heavy gloves, and a flashlight with extra batteries. On-the-road repairs should be double checked as soon as you get the car to your shop.

While on the subject of tools, when you purchase tools for your car's tool kit, buy good ones. Cheap tools will often give you more problems than they solve. Pliers that slip, adjustable wrenches that do not hold their adjustment, and even screwdriver blades that bend or break off can make an on-the-road repair even more frustrating and difficult.

It's not a bad idea to familiarize yourself with the major components of an engine before you start a tour. At least you'll have an idea of what you are looking for when a problem occurs.

Temperature gauge climbs suddenly or Radiator boils over.

DO NOT ATTEMPT TO REMOVE THE RADIATOR CAP UNTIL THE ENGINE COOLS.

First check that the fan belt has not broken. While you are at it, check that a large piece of paper or debris is not blocking the front of the radiator. It may have blown up from the street.

Allow the engine to cool. Then, while wearing gloves, s-l-o-w-l-y open the radiator cap allowing pressure to escape. PROTECT YOUR EYES FROM SCALDING STEAM.

If the water level is low, start the engine (to allow the water to circulate), and add fresh water to the radiator. A spare gallon of water carried in the car along with the tool kit is always a good idea. In most cars (although not all) you can see the water circulating at the top of the radiator. If the engine doesn't cool down with the fresh water, your water pump may have failed. A broken impeller, a broken or displaced impeller shaft pin, or any one of a number of other problems may have occurred internally.

A stuck (closed) thermostat will cause the same problem. Thermostats are built with bypass openings, but they are generally not large enough to allow an adequate flow of water through the system. Removal of the closed thermostat will generally allow you to drive the car, but the thermostat should be replaced with a new one at the earliest opportunity.

Do not run the engine if the cooling system is not working perfectly. The engine will soon overheat and serious damage can occur.

When you are sitting at the side of the road with a car that just won't run, and you open the hood and are mystified by the wires, lines, hoses and metal seemingly in a jumble, stop and back off a little. Our old, carbureted, breaker-point ignition engines are really fairly simple. Stop, think and analyze. Chances are it is nothing very serious. And, as mentioned earlier, there will be a tremendous sense of satisfaction for you and your friends when you again get the car running. And you'll have stories to discuss over drinks that evening.

S.K.