

Vapor Lock Diagnosis and Cure

The re-formulation of gasoline to suit new computer controlled systems has helped our Corvairs (ethanol excepted) as we all have noticed that running on regular in most engines is possible. New cars also benefit from electric pumps that are located in cool fuel tanks and always push gas, as opposed to our cars which have pumps heated by the engine and which have to create vacuum all the way from the tank to the engine when the lines are empty. A vapor lock occurs when the fuel in the inlet line to the pump (or in the pump) is heated to the point that the fuel vaporizes in the line and forces the fuel back towards the tank. A diaphragm/valve design pump like ours will not pump efficiently enough to evacuate an actual pressurized area and then create a vacuum which would allow the atmospheric pressure in the tank to force fuel to the carburetors. For this same reason it is not a good idea to put a fuel filter between the tank and the pump – the pump is much more efficient at pushing than it is at pulling, and there is a pickup filter in the tank. And don't forget you must have a vented gas cap.

Key items leading to vapor lock would be very hot ambient temperature, a hotter than normal running engine, large dose of ethanol which has a lower vapor point, and a steel inlet line to the pump which is touching the head. Then the driver shuts down the engine which heat soaks the fuel pump when the fan stops. Startup later would exhaust the fuel in the carburetor bowls with out the pump being able to create a vacuum and find liquid gasoline, resulting in the engine shutting down after a block or two of driving.

Factors that could mimic (or influence) vapor lock would be a marginal fuel pump, plugged tank pickup filter, badly cracked rubber line at the tank outlet or by the starter, and getting a tank full of winter blend gasoline in the early summer.

If you are pretty sure you have encountered a vapor lock situation, my suggestion would be to unhook the steel inlet line at the pump to allow any pressure out, reattach the line, remove the bolt that secures the pump, bump the engine over slightly until the fuel pump push rod is up (the pump pops up), and then use the palm of your hand to stroke the pump up and down. You can do that faster than cranking the engine and it will save the battery. Usually 5 to 10 seconds will be all that it takes. You could loosen a carburetor inlet line to verify fuel delivery. Once fuel is present, reattach the pump correctly.

Another suggestion I have heard is to pour cold water on the pump, causing the vapor to condense back to liquid. I have used a piece of rubber hose stuck in the filler pipe with a rag packed around it to blow in the tank and force fuel through the line. As I found out recently, this only works when you have a full tank of gas with the weight of the gas added to less space plus your inflation effort.

As I mentioned above, vapor lock is not as common now as it used to be (again, ethanol exception because of a lower vapor point), so if you suspect it happening, you might want to consider the following: check the tank filter by pulling the rubber hose off of the fuel tank outlet and observe the flow, check the condition of both rubber fuel line connectors, do a cranking check of your pump (1 pint in 30 seconds according to the book), and I like to carefully check the suction side of the pump with a finger while cranking with a

remote starter. For this check the outlet line has to be open somewhere or the carburetors empty; you get no suction if there is no place to put the fuel. Also check that the steel inlet line to the pump is not touching metal on the engine. And if you have an engine that runs hot all the time you are going to get a lot of heat soak when you shut the car off.