Ask Ronny
by Ronny Shaver @ Ronny's Garage
Answering Your Questions About Classic Car Care Service And Restoration

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Why Is My 1985 Corniche So Hard To Start When Warm?

by Ronny Shaver

In 1980, Rolls-Royce started using fuel injection on cars destined for California to meet the strict emissions standards. They used injection on all cars destined for the US and certain other global destinations from 1981 on. The system used was a mechanical continuous type until the later 90's cars. Continuous means that the injectors are spraying continuously when the car is running instead of pulsed with the engine firing order. The system is fairly simple and reliable except when the car ages or sits for very long periods of time.

Over the years, our gasoline formulas have changed drastically and often. This constant changing of fuel formulas, along with age, causes damage to many rubber parts in the fuel system. The part that is affected most often is the "fuel accumulator". The "fuel accumulator" has a spring loaded diaphragm that helps retain residual pressure in the system when the car is shut off for a predetermined time. It is most often the cause of the hard starting when warm problem.

The system works on a "differential pressure" principle that uses two separate pressure systems to control the fuel mixture during all conditions to keep emissions down and maintain engine performance. The two pressure systems are the "main" and "control". The "main" supplies high pressure at all times and the "control" supplies varying pressure according to engine temperature.

The fuel distributor has an air flap connected to a valve inside that senses air flow coming into the engine. As air flow increases, more volume of fuel is supplied to the injectors to compensate for the extra air. The tension on the air flap is controlled by the two system pressures working against each other. So when the car starts up cold, the control pressure is lower so that the air flap moves easier to provide a richer mixture and keep the car running. As the car warms up, the "control" pressure rises to lean out the mixtures. When the car starts up warm, the control pressure needs to be higher so the mixture is not too rich and flood the engine. This is where the "fuel accumulator" comes in. The "fuel accumulator" helps maintain the higher control pressure after the car is shut off so that proper mixture is supplied on warm starts. After the car cools down for about 30 to 40 minutes, this pressure reserve is no longer needed, so the accumulator is designed to gradually lose pressure.

The most common symptom is when car is turned off after running up to full temperature, it cranks for a long time before starting, then runs rough for a few moments gradually smoothing out. Other possible causes are a bad fuel pump check valve, fuel distributor diaphragm and leaking fuel injectors. In my experience, 9 times out of 10, the "fuel accumulator" is the problem.

The "fuel accumulator" is located under the car near the gas tank and fuel pump. It can be a messy and dangerous job because since it is connected to the fuel tank will leak lots of fuel when disconnected. This is one job that I do not recommend for the "do-it-yourself" people.

Thank you for the questions and keep them coming. Please send your questions to Ronny at ronnyshaver@ronnysgarage.com.

Happy Motoring!
Ronny