

K-Jet Hot Start

Help For Hot Starts—K-Jetronic

Hot start assist pulse relays were installed on late 1970s and early 1980s European cars equipped with K-Jetronic fuel injection. These relays were first installed as a retro-fit cure for hard-start-hot conditions, and later installed by different manufacturers during production.

Since K-Jetronic injectors are mechanically operated, heat soak conditions sometimes caused vapor to build at the injector tip. This compressible vapor was sometimes unable to open the injectors. Long engine cranking periods sometimes resulted after a long heat soak condition.

The pulse relays worked by pulse firing the cold start injector on a warm engine. Since the cold start injector is electrically operated, it is not dependent on fuel pressure to open it. Voltage was still supplied to the cold start injector by the ignition starting circuit. And on a cold engine, injector ground was still supplied by the thermo-time switch.

But on a warm engine that did not start within a second or so, the pulse relay was designed to provide a pulsed injector ground—a fraction of a second at a time.

This pulsed the injector, firing it in tiny bursts to help the engine start. The extra fuel in the intake speeded engine cranking. The extra engine vacuum lifted the sensor a little higher, increasing the amount of fuel in the injector lines. This reduced the time

needed to purge the air from the injectors.

The pulse relay was not intended to correct a loss of system rest pressure caused by a bad fuel pump check valve, leaking accumulator, or any other leak that would cause a drop in rest pressure.

When checking hard-start-hot conditions, start with fuel pressure tests. A quick loss of rest pressure reduces the temperature at which the fuel will percolate or vapor lock. Also check for vacuum leaks between the sensor plate and the intake. Any loss of vacuum means less lift at the sensor plate.

A quick check for pulse relay operation is to remove the cold start injector from the intake plenum. Do not disconnect the fuel line or electrical connector. Ground the coil wire. Place the tip of the injector in a suitable, clear container and then crank the engine.

Look for a pulsed spray from the injector tip. Simply checking for cranking voltage and pulsed ground without removing the injector will not tell you if the injector tip is plugged.

If the injector doesn't fire as it should, check for cranking voltage and pulsed ground at the injector with the engine warm.

We have included a generic diagram labeling the basic components of the system and different wire values. It may help you diagnose and repair a pulse relay system that no longer works as it should.

This can be a big help when you're trying to figure out why a car that used to start hot doesn't anymore.

