Electronik Repair, Inc. *We rebuild your 928 LH controller*
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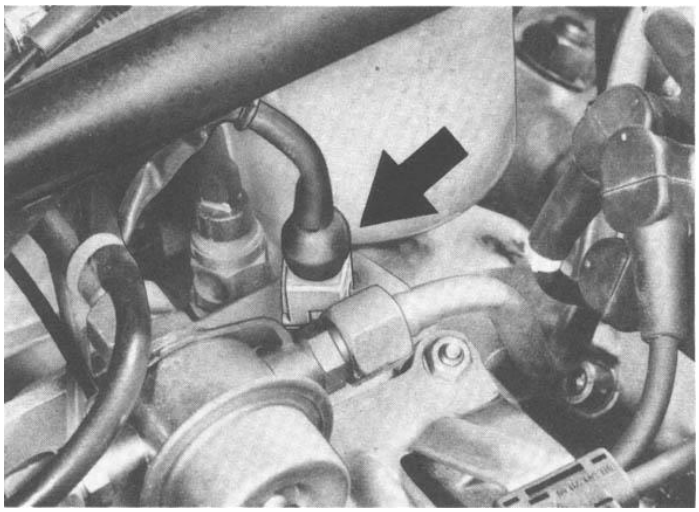
Porsche 928 Temperature Sensor Testing

If the fuel injection controller doesn't know that the engine is cold, it does not provide cold start enrichment and it will not start. Eventually after cranking enough, there may be enough “raw” fuel sprayed into the intake to start the engine. However, there would be smoky exhaust after starting because the fuel wasn’t metered properly. In addition, if the fuel injection and spark controller are provided improper temperature information, the engine will not run properly at warm engine temperature.

This document provides hints for hard starting conditions under hot and cold conditions.



Location of Temp Sensor II, 16 Valve Engine

The Temp Sensor II is located in the front center of the engine just to the right of the fuel pressure damper in 16 Valve engine.

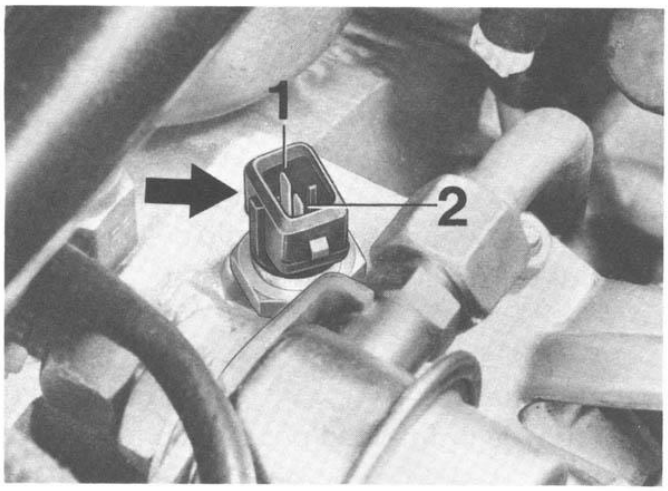
1) Check the plug to the sensor. Is it on tight? Are the contacts clean? If not, clean the connectors and clip it on tightly. Check engine starting now. If it starts and runs OK, you’re done. If not got to step 2.

2). Temp Sensor II testing.

To check the Temp Sensor II, you’ll need an ohm meter.

Remove the connector to the Temp Sensor II. There are two prongs on the sensor. There are two separate temperature sensors housed in the one sensor body (in LH fuel injected 928s, one sensor is for the LH and the other for the spark module).

If the ambient engine temperature is too warm to check the Ohm reading at colder temperatures (0C/32F), remove the Temp II sensor from the engine and immerse it in cold ice water. A failure mode of the sensor is to go open circuit (infinite resistance) at cold temperature. A cold test is necessary to confirm functionality of the temperature sensor for cold start.



1 – Electronic ignition
2 – LH fuel injection

Note the orientation of the protruding alignment notch on the outside of the sensor. Prong 1 is the sensor for the Electronic Ignition and prong 2 is the sensor for the LH fuel injection. Clip one of the ohm meter leads to prong 2 (LH) and clip the other lead to a ground point [Do NOT connect the ohm meter leads between the two prongs of the sensor]. Repeat the resistance measurements for prong 1 (Electronic Ignition). The proper Temp Sensor II resistance measurements are:

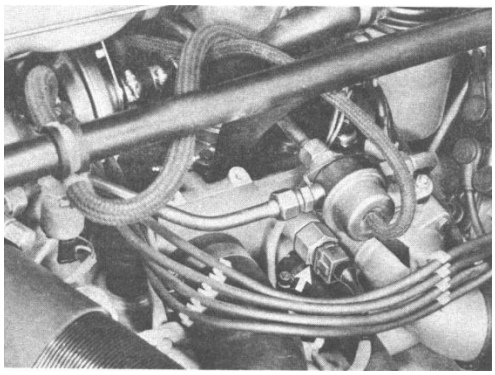
0 C / 32 F:	4.4 - 6.0k Ω (Ohm)
15 – 30 C / 59 - 86 F:	1.4 to 3.6k Ω
40 C / 104 F:	0.9 – 1.3k Ω
60 C / 140 F:	480 – 720 Ω
80 C / 176 F:	250 – 390 Ω

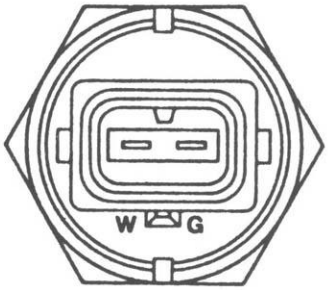
If the resistance readings are not correct range, the temperature sensor must be replaced.

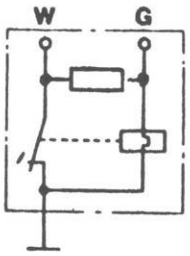
If the resistance readings are in the correct range at the sensor, there could be a problem with wiring to the LH controller or the connector itself could be corroded. Measure the resistance from the Temp II sensor connector to the LH and spark controller connectors to confirm the circuit is good.

3) 1980 – 1984 L-Jetronic fuel injected US Spec Porsche 928s. These models have a separate cold start system. The cold start valve, auxiliary air regulator, and cold start valve need to be tested in addition to the Temp Sensor II.

There are two terminals on the cold start valve sensor (brown plug). Resistance is measured between terminals G and W and ground and also between G and W.







The resistance values are:

Terminal “G” and “ground”
below 30 C / 86 F: 0 Ω
above 40 C / 104 F: 100 – 160 Ω

Terminal “W” and “ground”
below 30 C / 86 F: 0 Ω
above 40 C / 104 F: 100 – 160 Ω

Terminal “G” and terminal “W”
below 30 C / 86 F: 25 – 40 Ω
above 40 C / 104 F: 50 – 80 Ω

Checking the Auxiliary air regulator

The resistance value of the Auxiliary air regulator is 40 to 75 Ω.

Check the power supply. Bridge fuel pump relay socket terminals 30 and 87. Disconnect the plug, there should be battery voltage at the plug.

Checking the Cold Start Valve

Check the power supply of the cold start valve. Pull off the plug and connect a test lamp to the connectors of the plug. Start the engine. The test lamp should be illuminated (closed circuit) when coolant temperature is below 30C / 86F and should not be illuminated when coolant temperature is above 40 C/ 104F.

The resistance of the cold start valve is approximately 4 Ω. Check the power supply

4) Other potential cold start problem causes

If replacing the sensor doesn’t fix the cold start problem, check the fuel filter, fuel line pressure, injectors, idle speed regulator (LH models only). Fuel injectors can be removed and tested for flow and flow pattern. The problem could also be attributed to bad ground connections. Also, don’t overlook potential weak spark conditions, so battery condition, spark plug wires, coils may be at fault.

If you’ve eliminated all other areas, a failing fuel injection controller could be the problem.