

Spark Problems

Work through each point below to find your problem.

1. First ensure that the installation is done according to the manuals. This is explained in the **Precautions** manuals and **Connecting the ECU for the first time** of each product. Common mistakes made is that new products are connected to old products harnesses. All the new harnesses comes with added spike protection diodes in the harness close to the relay. These diodes also protect the ECU against high voltage interference.
2. Secondly ensure that the setup in Hyperspace is done according to the [Startup procedure](#). Spark can easily be influenced by setting up the ECU incorrectly. You can select the wrong type of coils or Coil Combination due to all the variations offered by Spitronics. This point should be done before you connect the outputs to the ECU as it may damage the ECU drivers or coils.
3. If step 1 and 2 was done correctly then you came to a point where you want to start and there is no spark or weak spark. When you crank the engine the real-time timing should read around 10 degrees on Hyperspace and there should be no errors.
4. Ensure that the coils are correctly powered from the ECU relay. Do not connect them from the original vehicle power. This may damage the coils during startup of the ECU. Ensure that relay power pin 30 goes directly to battery pos and no other wires is joint in on this line.
5. Coils require a constant battery supply on their positive or supply terminal. This power is switched via a relay so that it is disconnected during an accident or power off condition. To check that this power is present put your multi-meter on DC volts at a scale of 20 or higher. Measure on battery negative pole and the coil positive terminal. Now switch the ignition on. The power relay will come on for 3 seconds then switch off. During this time, you must read around 12 volts on these points. If there are no volts or less than battery voltage, check the wiring for bad connections. This is no load power testing.
6. If you have basic coils (coils without drivers) do the same test as above but this time measure on coil negative. You should see 12 volts on this point too. If not, it means the coil is dead or open circuit. Replace. Smart coils (coils with built in drivers) cannot be tested like this.
7. Sometimes bad connections will indicate that the power is present but during load conditions the power will drop due to high resistance that is formed by bad connections. So, for load testing switch the meter to AC volts and measure at the same points as point 5 above. Crank the engine. During cranking there should be close to zero volts. If there are any volts above 2 it means that the power to the coils is fluctuating which could not happen because it is connected to the battery directly via the relay. This will indicate a bad connection in the power supply line to the relay 30 or from 87 to the coil positive, during load conditions. Sometimes a bad fuse connection makes this voltage drop. With the same test procedure, it could be tested backwards to the source of the problem. It could also be due to too thin supply wires that cannot hold the current that flows through them.

8. The next problem could be in the earth line of the coil current. Normally the coil driver supply earth to the coil momentarily to charge the coil and then break the earth connection to fire the coil. For basic coils the earth is switched in the ECU via the thick black earth strap. For smart coils the coil earth is usually strapped on the engine. Same with external coil driver. To test this put the meter on AC volts like above and measure between the ECU earth wire on the chassis or the external coil driver's earth. Again, crank the engine and see if you measure any volts. It should be close to zero volts. Above 2 volts means a bad connection in the negative earth line during load conditions.
9. Now you have established that power and earth is present at the coil or driver but there is still no spark. This means that the trigger pulse is not coming from the ECU or driver. For basic coils put the meter on the highest AC volts scale and measure on coil negative and battery negative. Crank the engine. You should read a voltage above 100 volts. This means the driver and primary coil works. If you put a sparkplug on the HT lead and let the plug earth against the engine you should be able to see the spark. If not, then the coil secondary is dead or open circuit. If you did not see any volts during cranking it means the ECU driver is dead or it is not pulsed by the ECU for some reason in the setup maybe. Never lift a coil lead away from the engine to see spark distance. This may create flyback spikes that may damage the ecu or driver or other electronics on the network.
10. For intelligent coils measure the trigger signal to the driver side. Here you should measure 12 volts on AC meaning that the ECU driver is pulsing the coil. If no spark then the coil driver is dead. If you did not see any volts during cranking it means the ECU driver is dead or it is not pulsed by the ECU for some reason in the setup maybe.
11. If you use an external coil driver and basic coil then measure the trigger signal on the ECU side. Again, it should be 12 volts on AC during cranking. If not, it means the ECU driver is dead or it is not pulsed by the ECU for some reason in the setup maybe. If there is a pulse measure the coil negative side for the hi-voltage pulse around 100 volts. Remember to put the meter on the higher voltage scale. If there is no pulse it means the driver is dead. Replace. In some cases, OEM Smart coils require 5V and not 12V. In these cases, a resistor divider may be employed.
12. There may be 2 faults present. So, finding one may only then present the other. Test from the beginning again.