P0350: IGNITION COIL PRIMARY/SECONDARY CIRCUIT MALFUNCTION

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$150-$300**
Can I Still Drive?	:	No

What Does The P0350 Code Mean?

If your OBD-II vehicle has stored a code P0350, it means that the powertrain control module (PCM) has detected a problem with the primary and/or secondary circuits for one or more ignition coils or ignition coil packs.

Most OBD-II equipped vehicles utilize a coil-over-plug, distributor less ignition system. In this type of system, each cylinder is outfitted with its own ignition coil which is attached to the spark plug using a short plug wire or silicon boot. Battery voltage, and a ground pulse from the PCM applied to a tightly wound induction coil, create the high-intensity spark (thousands of volts) that is required to fire the spark plug for each cylinder.

Systems which use coil packs function in a similar manner, except multiple spark plugs are fired from a coil pack which fires multiple cylinders in sequential order. This type of system typically uses longer high tension spark plug leads to transfer the high-intensity spark from the coil pack towers to the spark plugs.

Regardless of the type of ignition system with which the vehicle in question is equipped, spark timing and function are controlled by the PCM. Provided with a constant supply of switched battery voltage (with the ignition switch on), the ignition coil releases a high-intensity spark when it receives a ground pulse from the PCM.

If the PCM detects that any of the ignition coil circuits are not being completed when the ground pulse is applied, a code P0350 will be stored and a malfunction indicator lamp (MIL) may be illuminated.

What Are The Symptoms Of The P0350 Code?

Symptoms of this code may include:

- Drivability issues, including one or more ignition misfires
- Poor engine performance
- Diminished fuel efficiency
- Cylinder misfire codes will likely accompany a code P0350 (e.g. P0301, P0302, P0303, P0304, etc.)

What Are The Potential Causes Of The P0350 Code?

Potential causes for this code to set are:

- Open or shorted primary/secondary circuits
- Defective ignition coils or coil pack/s
- Bad ignition system relay
- Blown fuses or fusible links
- Faulty PCM or a PCM programming error

How Can You Fix The P0350 Code?

In order to diagnose a code P0350, I would need a diagnostic scanner, a digital volt/ohmmeter (DVOM), and a reliable vehicle information source, such as ALL DATA (DIY).

Step 1

A visual inspection of all ignition coil/pack wiring and connectors is the best place to begin your diagnosis of a code P0350. Be on the lookout for broken electrical connectors at the ignition coils or coil packs. Also check for wiring that is burned, broken, or corroded. I have personally found rodent damaged wiring to be the cause of a code P0350 in several customer cars. Ignition coil electrical connector ends are also known for becoming corroded over time.

Step 2

I would continue by connecting the scanner to the vehicle diagnostic port and retrieving all the stored codes and freeze frame data. I have found it helpful to record this information for later. Next, I'd clear the codes and test-drive the vehicle to see if the P0350 is reset.

Use your vehicle information source to search technical service bulletins (TSB) that may help with your diagnosis. TSBs with matching symptoms and codes can prove very helpful if you use the diagnostic tips found therein.

If there are cylinder specific ignition coil primary /secondary circuit codes present, they may help you to pin point the defective circuit or coil/pack.

Step 3

If there are no cylinder specific codes present, you will need to find out which coil, coil pack, or circuit is malfunctioning. This can be done by testing the coils or coil packs for the correct level of Hertz when high-intensity spark is emitted but I use a simpler method.

With the engine running and the parking brake set, I use an assistant to sit in the driver's seat. He presses the brake firmly to the floor, places the shifter in drive, and depresses the accelerator pedal slightly but gradually. When the engine begins to misfire, my assistant holds the accelerator pedal in that position, while I systematically remove each spark plug wire/boot from the spark plug (you can also unplug each coil pack electrical connector, if you'd rather, to avoid the pitfalls of being subjected to more than 50,000-volts of high-intensity spark).

When you discover a coil or coil pack tower that makes no difference in engine RPM when the plug wire/boot is removed from the spark plug; you have found the cylinder number of the coil/pack at fault. You will probably notice that the level of high-intensity spark emitted from the malfunctioning coil/pack is significantly less than those which are functioning properly. Be sure to clear codes after performing this test.

Step 4

Once you have located the coil/pack in question, use the DVOM to test for battery voltage at the coil/pack connector when the ignition is on. If there is no voltage present, use the vehicle information source to find the voltage source so that you may check blown fuses, defective relays, etc. Remember that blown fuses are a reaction to an electrical short and not the source of a malfunction. If all fuses and relays are good, use the DVOM to probe individual circuits for continuity and resistance. Disconnect all related controllers before doing this to prevent damage to the sensitive electronics found onboard. Repair or replace circuits which fail to comply with manufacturer's recommendations (found in the vehicle information source).

If the voltage signal is present at the ignition coil/pack, test the coil connector for a ground pulse from the PCM. If no ground pulse is present (when the engine is cranked or running), suspect a defective driver in the PCM if no other ignition codes (including crankshaft position and camshaft position sensor codes) are present.

Additional diagnostic notes:

- A maintenance tune-up is NOT a fix for a code P0350
- Use caution when testing high-intensity spark in the vicinity of flammable liquids

Severity Description

Ignition misfire issues will likely accompany a code P0350; therefore it should be categorized as severe.

Reference Sources

P0350: Ignition Coil Primary/Secondary Circuit Malfunction, OBD-Codes.