

Check List

Cranks, But Does Not Start

By the ALLDATA Tech-Assist Team

We often receive calls from techs trying to diagnose a problem where the starter turns the engine over, but it will not start and run. Today we are going to talk about some of the most common tests you can do to quickly diagnose this problem.

First, Check the Basics - The very first step to diagnose a “cranks but won’t start” problem is to find if something’s missing – Spark, Fuel and Compression (which includes cam timing). These three things are required for an engine to start. **Tip:** We have seen completely blocked exhaust systems cause an engine not to start. If the three basics all check out good, remove one or two front O2 sensor(s) from the exhaust manifold and try to start it (Not a rear O2 behind the catalyst).

Spark test – Install a wide-gap spark tester. Crank the engine over. It should have a good hot white/blue spark with a good rhythm, not yellow or just one snap.

Fuel test – Add some type of auxiliary fuel into the intake – propane, starting fluid, carburetor spray etc. If it starts, you’ll know it is a fuel delivery problem.

If it doesn’t start, check the following:

- Injector pulse – Disconnect an injector and use a test light or Noid light. The injector’s pulse signal should be strong and have a good rhythm and not miss a beat.
- Fuel pressure and volume – Look up the pressure and volume specifications. Use a good quality fuel pressure gauge with a “bleed-off” valve to test pressure and volume. If no volume specification is available, use 7 ounces of fuel in 10 seconds with the engine idling as a general guideline.

Mechanical – Check cranking vacuum with a vacuum gauge. It should show 4-5 inches on the vacuum gauge while cranking the engine. Also, check engine compression. Some engines won’t start if the compression is too low in all cylinders - especially cold.

Aftermarket Equipment - Look to see if any aftermarket equipment is installed or if something is plugged into the DLC. Remove or disable those components until the problem is diagnosed. Even if the equipment was installed a while ago, problems can arise when those parts fail. There’s been numerous times we’ve seen an aftermarket remote start, alarm or sound system cause a problem. Make sure your service writer asks customers on the service drive if they have had aftermarket equipment installed.

Security Light ON or Flashing – It’s a good idea to check for fault codes (DTCs). Also, look closely at the PIDs for a “Start Enable” or “Fuel Enable” permission PID. Many OEM alarm systems will disable the fuel or ignition to stop the engine from starting.

Start Signals – The PCM needs to know if you are trying to start the engine. Use your scan tool to check the PIDs for the “Ignition Switch Start” signal to the PCM. Also, look for RPM signal on the “engine speed” PID while cranking. If either one of these signals are missing, the engine won’t start.

Armed with the above test results, you should be able to find and fix most “cranks but won’t start” issues. If not, give the ALLDATA Tech-Assist team a call and we will create a diagnostic strategy to help you solve the problem.