

No Start Condition

Every engine requires four basic ingredients to start: sufficient cranking speed, good compression, ignition voltage and fuel. Any time an engine fails to start, you can assume it lacks one of these four essential ingredients.

No-Crank, No-Start

If nothing happens when you turn the key, check the battery to determine its state of charge. You need at least 10 volts to turn over the starter on the PT.

If the battery is adequately charged make sure the battery terminals are tight. Check the battery terminal connections and ground for corrosion.

A low battery does not necessarily mean the battery is the problem. The battery may have been run down by prolonged cranking while trying to start the engine or may be the result of a charging system problem. The battery, charging and starting systems are interdependent. When there's an issue with one system the remaining two must be checked to determine that they're functioning correctly.

If the battery is low, try starting the engine with another battery or a charger. If the engine cranks normally and starts the problem was a dead battery, or a problem with the charging or ignition systems.

Other possible causes:

- Bad starter relay wiring connections or ground connection (Inspect, clean, tighten wiring connections).
- Bad starter relay/solenoid - check for voltage at relay, if relay has voltage but there is no "click" when key is turned to start, replace relay.
- Bad starter - Jump battery voltage direct to starter to see if it spins, or remove starter and have it bench tested at auto parts store.
- Damaged starter – faulty teeth on ring gear.
- Bad ignition switch (Check to see if voltage reaches starter relay/solenoid when turn to start. If not, check for open P/N switch and brake or clutch pedal switch. Replace ignition switch if defective).

- Open park/neutral switch on automatic PT - Bypass the switch with a jumper wire to see if engine cranks, or use test light or voltmeter to check for voltage passing through switch when ignition is turned to start.
- Open clutch pedal switch on manual PT - Bypass the switch with a jumper wire to see if engine cranks, or use test light or voltmeter to check for voltage passing through switch when ignition is turned to start.
- Engine seized or hydro-locked.
- PCM double start override output failure.

Engine Cranking Problems

If the engine won't crank or cranks slowly when you attempt to start or jump start the engine (battery is fully charged) check the starter circuit.

A quick way to diagnose cranking problems is to switch on the headlights and watch what happens when you attempt to start the engine. If the headlights go out, a poor battery cable connection may be strangling the flow of amps. All battery cable connections should be checked and cleaned along with the engine-to-chassis ground straps.

If the headlights continue to shine brightly when you attempt to start the engine and nothing happens (no cranking), voltage is not reaching the starter. The problem is likely an open or misadjusted park/neutral safety switch, a bad ignition switch, or a faulty starter relay or solenoid.

If the starter or solenoid clicks but nothing else happens when you attempt to start the engine, there may not be enough amps to spin the starter. Or the starter may be bad. A poor battery cable, solenoid or ground connection, or high resistance in the solenoid itself may be the problem. A voltage check at the solenoid will reveal if battery voltage is passing through the ignition switch circuit. If the solenoid or relay is receiving battery voltage but is not closing or passing enough amps from the battery to spin the starter motor, the solenoid ground may be bad or the contacts in the solenoid may be worn, pitted or corroded. If the starter cranks when the solenoid is bypassed, a new solenoid is needed, not a starter.

If the lights dim and there is little or no cranking when you attempt to start the engine, the starter may be locked up, dragging or suffering from high internal resistance, worn brushes, shorts or opens in the windings or armature.

If the starter motor spins but fails to engage the flywheel, the cause may be a weak solenoid, defective starter drive or broken teeth on the flywheel.

Engine Cranks, But Will Not Start

When the engine cranks normally but won't start, check for ignition, fuel and compression.

Ignition is easy enough to check with a spark tester or by positioning a plug wire near a good ground. No spark on multiple plugs? The most likely causes would be a failed ignition module or possibly a crankshaft position sensor.

Other possible causes:

- Bad ignition coil(s). - With the PT's Direct Ignition System (DIS) a bad coil will only affect one or two cylinders depending on the application. This may make the engine hard to start, but it will run on the remaining cylinders that are firing.
- Bad spark plug wires
- Fouled spark plugs

Engine Cranks and Has Spark, But Will Not Start

If you see a good spark when you crank the engine, but it won't start, check for fuel.

The problem may be a bad fuel pump or inadequate fuel pressure.

The fuel pump module on the PT is located under the rear of the vehicle above the fuel tank. If you listen closely, with the radio turned off, you should hear the fuel pump buzz for a couple of seconds when the ignition is turned on. No buzz means the pump is not running and the engine is not getting fuel.

A fuel pressure test can be conducted at the rail to check for adequate fuel pressure. Fuel pressure in the line does not necessarily mean the fuel is being injected into the engine. Listen for clicking or buzzing that would indicate the injectors are working.

If there is no injector noise or spark, check the ASD relay circuit. When energized, the ASD relay provides power to operate the injectors, ignition coil,

generator field, O2 sensor heaters, evaporative purge solenoid, EGR solenoid (if equipped) wastegate solenoid (if equipped), and NVLD solenoid (if equipped).

If the fuel tank was filled just prior to the no start issue bad gas might be causing the problem.

Vacuum leaks can also prevent the engine from starting. A large leak will lean out the air/fuel ratio to such an extent that the mixture won't ignite. An EGR valve that is stuck wide open, a disconnected PCV hose, loose vacuum hose for the power brake booster, or similar leak could be the culprit. Check all vacuum connections and listen for unusual sucking noises while cranking.

Other possible causes:

- Open in wiring anywhere in fuel pump wiring circuit.
- No gas in fuel tank.
- Plugged Fuel Filter – Filter is located inside the fuel pump module and is not serviceable. Fuel pressure test can rule out the filter.
- Plugged or Pinched Fuel Line
- Faulty Fuel Pressure Regulator

Engine Has Fuel and Spark, But Will Not Start

An engine that has fuel and spark, no serious vacuum leaks and cranks normally should start. The problem is compression.

A broken timing belt would be the most likely cause in a high mileage vehicle. The PT engine is a non-interference motor, but only to a degree. Although the pistons will not hit the valves, the valves from both camshafts can hit each other. Valves hitting each other are very bad.

If the vehicle has overheated damage can occur to the aluminum heads (warping, cracked and blown head gaskets) which can cause a no compression issue and prevent the engine from starting if the engine.

Either problem can be diagnosed by doing a compression or leak down pressure test.

Other possible causes include:

Plugged catalytic converter - Creates a restriction that causes exhaust backpressure to back up.

Tests for many of these procedures are available in the Pit area on the site.