

Diagnostic Trouble Code (DTC) Charts and Descriptions

P050B - Cold Start Ignition Timing Performance

Description:	The monitor compares commanded spark timing to the spark timing desired by the powertrain control module (PCM). When the difference between desired and commanded spark timing exceeds the calibrated threshold, the DTC sets.
Possible Causes:	<ul style="list-style-type: none"> • Intake air restriction • Exhaust restriction • Engine mechanical concern • Damaged or sludged electronic throttle body (ETB) • Vacuum leaks • Damaged PCM
Diagnostic Aids:	<p>Disregard the freeze frame data. Freeze frame data does not apply to the cold start monitor. This DTC is informational only and may be accompanied by other DTCs. Diagnose other DTCs first. If no other DTCs are present, inspect the intake air system for air restrictions, vacuum leaks, and damage. If no concerns are present, clear the DTCs and verify the engine coolant temperature (ECT) is below 37.8°C (100°F). Allow the vehicle to soak for 2-3 hours if necessary for the ECT to fall below 37.8°C (100°F).</p> <p>Start the engine without touching the accelerator pedal and allow the engine to idle for 6 minutes in park. If no DTCs are present and the malfunction indicator lamp (MIL) is not illuminated after idling for 6 minutes, carry out the key ON engine running (KOER) self-test to confirm that no DTCs are present and the repair is complete.</p>

Application	Key On Engine Off	Key On Engine Running	Continuous Memory
All	Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P050E - Cold Start Engine Exhaust Temperature Out of Range

For Vehicles With An Idle Air Control (IAC) Valve	
Description:	The powertrain control module (PCM) attempts to control engine speed during the key ON engine running (KOER) self-test. The test fails when the desired RPM could not be reached or controlled during the self-test.
Possible Causes:	<ul style="list-style-type: none"> • IAC circuit open • VPWR to IAC solenoid open • B+ or VPWR to IAC solenoid open • Air inlet is plugged • IAC circuit short to voltage • Damaged IAC valve
Diagnostic Aids:	
For All Others	
Description:	The powertrain control module (PCM) calculates the actual catalyst warm up temperature during a cold start. The PCM then compares the actual catalyst temperature to the expected catalyst temperature model. The difference between the actual and expected temperatures is a ratio. When this ratio exceeds the calibrated value this DTC sets and the malfunction indicator lamp (MIL) illuminates.
Possible Causes:	<ul style="list-style-type: none"> • Intake air restriction • Exhaust restriction • Engine mechanical concern • Damaged or sludged electronic throttle body (ETB) • Vacuum leaks • Damaged PCM

(Continued)

Diagnostic Trouble Code (DTC) Charts and Descriptions

P050E - Cold Start Engine Exhaust Temperature Out of Range

Diagnostic Aids: Disregard the freeze frame data. Freeze frame data does not apply to the cold start monitor. This DTC is informational only and may be accompanied by other DTCs. Diagnose other DTCs first. If no other DTCs are present, inspect the intake air system for air restrictions, vacuum leaks, and damage. If no concerns are present, clear the DTCs and verify the engine coolant temperature (ECT) is below 37.8°C (100°F). Allow the vehicle to soak for 2-3 hours if necessary for the ECT to fall below 37.8°C (100°F). Start the engine without touching the accelerator pedal and allow the engine to idle for 6 minutes in park. If no DTCs are present and the malfunction indicator lamp (MIL) is not illuminated after idling for 6 minutes, carry out the key ON engine running (KOER) self-test to confirm that no DTCs are present and the repair is complete.

Application	Key On Engine Off	Key On Engine Running	Continuous Memory
Ranger	Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		
All others	Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P0511 - Idle Air Control (IAC) Circuit

Description: This DTC sets when the powertrain control module (PCM) detects an electrical load failure on the IAC output circuit.

- Possible Causes:**
- IAC circuit open
 - VPWR to IAC solenoid open
 - B+ or VPWR to IAC solenoid open
 - IAC circuit short to voltage
 - Damaged IAC valve
 - IAC circuit short to ground

Diagnostic Aids:

Application	Key On Engine Off	Key On Engine Running	Continuous Memory
All	GO to Pinpoint Test KE.		

P0512 - Starter Request Circuit

Description:

Possible Causes:

Diagnostic Aids: Refer to the Workshop Manual Section 303-06 Starting System, PCM DTC Chart, to continue diagnosis.

Application	Key On Engine Off	Key On Engine Running	Continuous Memory
All	Refer to the Description, Possible Causes and Diagnostic Aids for the DTC.		

P0528 - Fan Speed Sensor Circuit No Signal

Description: The powertrain control module (PCM) uses the fan speed sensor (FSS) input to monitor the cooling fan clutch speed. If the indicated fan speed is lower than the calibrated value during the key ON engine running (KOER) self-test, the DTC is set.

- Possible Causes:**
- FSS VPWR circuit open in the harness
 - FSS PWRGND circuit open in the harness
 - FSS circuit open in the harness
 - FSS circuit short to voltage or ground in the harness
 - Damaged FSS sensor
 - Damaged PCM

Diagnostic Aids: Visually inspect the cooling fan clutch for damage or obstruction.

Application	Key On Engine Off	Key On Engine Running	Continuous Memory
All	GO to Pinpoint Test HV.		