

DTC P1637

CIRCUIT DESCRIPTION

The powertrain control module (PCM) or engine control module (ECM) uses the generator turn ON signal circuit to control the generator. A high side driver within the PCM/ECM allows the PCM/ECM to turn the generator ON and OFF. When generator operation is desired, the PCM/ECM sends a **5-volt** signal to the voltage regulator via the generator turn ON signal circuit. This causes the voltage regulator to begin controlling the generator field circuit. Once the generator is enabled by the PCM/ECM, the voltage regulator controls generator output independently of the PCM/ECM. Under certain operating conditions, the PCM/ECM can turn OFF the generator by turning OFF the **5-volt** signal on the generator turn ON signal circuit. The PCM/ECM has fault detection circuitry which monitors the state of the generator turn ON signal circuit. If the fault detection circuit senses a voltage other than what is expected, this DTC will set. The voltage regulator also contains fault detection circuitry. If the regulator detects a problem, the regulator will ground the generator turn on signal circuit, pulling the voltage low. This also causes the PCM/ECM to set the DTC.

DTC DESCRIPTOR

This diagnostic procedure supports the following DTC:
DTC P1637 Generator L-Terminal Circuit

CONDITIONS FOR RUNNING THE DTC

Key ON Test

- The key is in the ON position for **5 seconds** .
- The engine is OFF.

Engine Run Test

- The engine is running.
- The engine speed is less than **3,000 RPM** .

CONDITIONS FOR SETTING THE DTC

Key ON Test

- The PCM/ECM detects a high signal voltage on the generator turn on signal circuit for at least **5 seconds** .
- The engine must be started.

During the RUN test, the PCM/ECM detects a low signal voltage on the generator turn on signal circuit for at least **5 seconds** .

ACTION TAKEN WHEN THE DTC SETS

- The PCM/ECM sends a class 2 message to the instrument panel cluster (IPC) to illuminate the charge indicator and/or turn on a message.
- The PCM/ECM will not illuminate the malfunction indicator lamp (MIL).
- The PCM/ECM will store the conditions present when the DTC set as Fail Records data only.

CONDITIONS FOR CLEARING THE MIL/DTC

- The history DTC will clear after 40 consecutive warm-up cycles have occurred without a malfunction.
- The DTC can be cleared by using the scan tool Clear DTC Information function.

TEST

Step	Action	Value	Yes	No
1	Did you perform the Diagnostic System Check – Vehicle?	—	Go to Step 2	Go to Diagnostic System Check - Vehicle
2	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. Wait 5 seconds. 4. Start the engine. 5. With a scan tool, monitor the DTC information for DTC P1637 in Computers and Control Systems. Does the scan tool indicate that DTC P1637 has passed?	—	Go to Diagnostic Aids for Circuit Testing and Wiring Repair Procedures	Go to Step 3
3	<ol style="list-style-type: none"> 1. Turn OFF the engine. 2. Disconnect the generator harness connector. 3. Start the engine. 4. Measure the voltage between the generator turn ON signal circuit and ground. Does the voltage measure near the specified value?	5 V	Go to Step 5	Go to Step 4
4	Test the generator turn on signal circuit for a short or open. Did you find and correct the condition?	—	Go to Step 11	Go to Step 5
5	Test the generator battery positive voltage sense circuit for a high resistance or open. Did you find and correct the condition?	—	Go to Step 11	Go to Step 6
6	Test the generator battery positive voltage output circuit for a high resistance or open. Did you find and correct the condition?	—	Go to Step 11	Go to Step 7
7	Inspect for poor connections at the harness connector of the generator. Did you find and correct the condition?	—	Go to Step 11	Go to Step 9
8	Inspect for poor connections at the harness connector of the powertrain control module (PCM) or engine control module (ECM) Did you find and correct the condition?	—	Go to Step 11	Go to Step 10
9	Replace the generator. Did you complete the replacement?	—	Go to Step 11	—
10	Replace the PCMECM. Did you complete the repair?	—	Go to Step 11	—
11	<ol style="list-style-type: none"> 1. Use the scan tool in order to clear the DTCs . 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	—	Go to Step 3	System OK