P0727 TCM detects an unrealistic drop in output shaft speed

Circuit Description

Engine speed information is sent to the transmission control module (TCM) by the engine control module (ECM) through a communication network called the controller area network (CAN). Two circuits are used to communicate CAN data between the ECM and TCM. A fault in the CAN will not cause DTC P0727 to set by itself. If a CAN fault occurs, other DTCs will set before DTC P0727. When the ECM sends the TCM an invalid engine speed, then DTC P0727 will set. DTC P0727 is a type B DTC.

Conditions for Running the DTC

The engine is running.

Conditions for Setting the DTC

The engine speed is invalid for 2.0 seconds.

Action Taken When the DTC Sets

- The TCM illuminates the malfunction indicator lamp (MIL) during the second consecutive trip in which the Conditions for Setting the DTC are met.
- The TCM commands maximum line pressure.
- The TCM freezes transmission adaptive functions.
- At the time of the first failure, the TCM records the operating conditions when the Conditions for Setting the DTC are met. The TCM stores this information as a Failure Record.
- At the time of the second failure, the ECM records the operating conditions when the Conditions for Setting the DTC are met. The ECM stores this information as a Freeze Frame.
- The TCM stores DTC P0727 in TCM history.

Conditions for Clearing the MIL/DTC

- The ECM turns OFF the MIL after the sixth consecutive drive trip in which the TCM does not send a MIL illumination request.
- A scan tool can clear the MIL/DTC.
- The TCM clears the DTC from TCM history if thevehicle completes 40 warm-up cycles without an emission related diagnostic fault occurring.
- The TCM cancels the default actions when the ignition is OFF long enough in order to power down the TCM.

DTC P0727

Step	Action	Value(s)	Yes	No
1	Did you perform the Diagnostic System Check – Vehicle?	—	Go to Step 2	Go to Diagnostic System Check -Vehicle in Vehicle DTC Information
2	1).Install a scan tool. 2).Turn ON the ignition, with the engine OFF. Important: ● Before clearing the DTC, use the scan tool in order to record the ECM Freeze Frame and the TCM Failure Records. Using the Clear Info function erases the Freeze Frame and Failure Records from the ECM and the TCM. ● Using the Clear Info function erases stored DTCs in both the ECM and TCM. 3). Record the DTC Failure Records. Did you record any ECM Failure Records?	—	Go to Diagnostic Trouble Code (DTC) List -Vehicle in Vehicle DTC Information	Go to Step 3

Step	Action	Value(s)	Yes	No
3	Did you record a TCM Failure Record for DTC U0100?	—	Go to U 100 in Data Link Communications	Go to Step 4
4	1).Clear the DTC. 2).Turn the ignition OFF for at least 30 seconds. 3).Start and idle the engine. 4).Observe the Engine Speed on the scan tool. Is the Engine Speed within the specified range?	500–1,000 RPM	Go to Step 5	Go to Step 6
5	Road test the vehicle using various engine speeds. Did DTC P0727 reset?	—	Go to Step 7	Go to Intermitten Conditions in Engine Controls – 4.6L
6	1).Select Engine Data on the scan tool. 2).Observe the scan tool Engine Speed parameter. Is the Engine Speed value within the specified range?	500–1,000 RPM	Go to Step 7	Go to Step 8
7	Did any other DTCs set?	—	Go to Diagnostic Trouble Code (DTC) List -Vehicle in Vehicle DTC Information	Go to Step 8
8	Replace the TCM. Is the action complete?	—	Go to Step 9	—

Step	Action	Value(s)	Yes	No
9	Perform the following procedure to verify the repair: 1).Select DTC on the scan tool. 2).Select Clear Info. 3).Turn ON the ignition with the engine OFF. 4).Operate the engine at varying speeds. 5).Select Specific DTC. 6).Enter DTC P0727. Has the test run and passed?	—	Go to Step 10	Go to Step 2
10	With the scan tool, observe the stored information, capture info and DTC info. Does the scan tool display any DTCs that you have not diagnosed?	—	Go to Diagnostic Trouble Code (DTC) List -Vehicle in Vehicle DTC Information	System OK