

DTC P0742 the TCM detects low torque converter slip

Circuit Description

The transmission control module (TCM) controls the torque converter clutch (TCC) solenoid valve pulse width modulation (PWM). The solenoid directs the hydraulic fluid for TCC apply and release. When the TCC is released, the engine is coupled by fluid to the transmission and TCC slip speeds of 300 RPM to +1,500 RPM, during heavy acceleration, are normal. If the TCM detects low torque converter slip when the TCC is commanded OFF, then DTC P0742 sets. DTC P0742 is a type B DTC.

Conditions for Running the DTC

- No TP sensor DTC P0120.
- No ISS DTCs P0716 or P0717.
- No OSS DTCs P0722 or P0723.
- No TCC performance DTC P0741.
- No IMS DTCs P1815, P1820, P1822, P1823, P1825 or P1826.
- No engine torque signal circuit DTC P2637.
- No TCC solenoid electrical DTCs P2763 or P2764.
- The engine run time is greater than 5 seconds.
- The IMS range is D5.
- The transmission fluid temperature is 20–130°C (68–266°F).
- The engine torque is greater than 80 N·m (59 lb ft).
- The throttle position is 15–90 percent.
- The transmission is not in 1st gear and the gear ratio is 0.73:1 to 2.27:1.
- The vehicle speed is greater than 15 km/h (9 mph).

Conditions for Setting the DTC

The following conditions occur 4 times in the same ignition cycle:

- The TCM commands the TCC OFF.
- The TCC slip is between ~20 to +20 RPM for greater than 2.8 seconds.

Action Taken When the DTC Sets

- The TCM requests the ECM to illuminate the malfunction indicator lamp (MIL) during the second consecutive drive trip in which the Conditions for Setting the DTC are met.

- 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 P0742 in TCM history.

Conditions for Clearing the 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 DTC.
- The TCM clears the DTC from TCM history if the vehicle completes 40 warm-up cycles without a non emission related diagnostic fault occurring.
- The TCM cancels the DTC default actions when the ignition is OFF long enough in order to power down the TCM.

Diagnostic Aids

- Rapid fluctuation in line pressure may set DTC P0742. Refer to Line Pressure Check Procedure on page 7-240.
- The customer may notice an engine stalling condition.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2. This step verifies that the PCM commanded the TCC PWM solenoid valve OFF and the slip speed is ~ 20 to $+150$ RPM.
3. This step inspects and repairs the components that caused the DTC to set.

DTC P0742

Step	Action	Value	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

Step	Action	Value	Yes	No
2	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. <p>Important:</p> <ul style="list-style-type: none"> • 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. <ol style="list-style-type: none"> 3. Record the DTC Freeze Frame and Failure Records. 4. Clear the DTC. 5. Select TCC Duty Cycle and TCC Slip Speed on the scan tool. 6. Drive the vehicle in D5, with the throttle position angle greater than 15 percent. Allow the transmission shift to 5th gear. <p>While the TCC duty cycle is 0 percent, does the scan tool display a TCC slip speed within the specified range?</p>	-20 to +20 RPM	Go to Step 3	Go to Intermittent Conditions Engine Controls – 4.6L
3	<ol style="list-style-type: none"> 1. Inspect for the following conditions: <ul style="list-style-type: none"> • The TCC PWM solenoid valve (352) is stuck ON due to sediment. • The TCC regulator apply valve (348) is stuck due to sediment. Refer to Torque Converter Clutch (TCC) Solenoid 2. Repair or replace components as necessary. Did you find and correct a condition? 	—	Go to Step 4	—

Step	Action	Value	Yes	No
4	<p>Perform the following procedure in order to verify the repair:</p> <ol style="list-style-type: none"> 1. Select DTC. 2. Select Clear Info. 3. Operate the vehicle under the following conditions: <ul style="list-style-type: none"> • Drive the vehicle in D5 with a throttle position of 15–90 percent and a vehicle speed greater than 15 km/h (9 mph). • The TFT is 20–130°C (68–266°F). • The engine torque is greater than 80 N·m (59 lb ft). • The TCC slip speed must be 130–1,500 RPM for 2.5 seconds. 4. Select Specific DTC. 5. Enter DTC P0742. <p>Has the test run and passed? With the scan tool, observe the stored information, capture</p>	—	Go to Step 5	Go to Step 2
5	<p>info and DTC info. Does the scan tool display any DTCs that you have not diagnosed?</p>	—	<p>Trouble Code (DTC) List -Vehicle in Vehicle DTC Information</p>	System OK