

Diagnosis and Testing

Diagnostic Strategy

Overview

The diagnostic process for each transmission concern will vary depending on the symptoms and condition of the vehicle. The diagnostic process below is an efficient method to collect as much data as possible about the concern before performing a repair or removing the transmission from the vehicle for teardown and further inspection. Intermittent concerns and concerns that result in default or fail-safe operations can be difficult to diagnose.

Automatic Transmission Diagnosis

Many transmission faults will set one or more diagnostic trouble codes (DTCs) in the PCM/ TCM. In some instances a group of diagnostic trouble codes (DTCs) may indicate a particular fault. The transmission may only operate in default or failsafe modes while certain diagnostic trouble codes (DTCs) are set.

Begin diagnosis by carrying out the PCM self-tests:

1. KOEO and CMDTC
2. KOER and CMDTC

Record all diagnostic trouble codes (DTCs) and related freeze frame data. Clear the diagnostic trouble codes (DTCs) after recording the information.

Preliminary Inspection

The preliminary inspection will:

1. Find obvious causes for a concern by performing under hood and under vehicle visual inspections.
2. Adjust the selector lever linkage. (if equipped)
3. Collect a fluid sample.

PID Monitor/record on Road Test

Using the diagnostic trouble codes (DTCs) and freeze frame data as a guide, prepare the scan tool to make a recording of the event. Select the transmission parameter identifications (PIDs) that are related to the concern as well as parameter identifications (PIDs) for general automatic transmission operation. Since you may only get one or two chances to duplicate the concern, it is better to have more data on the recording. If possible, set datalogger to automatically start recording when a PID reaches a certain value. For example, you might want the recording to start 6 seconds before a fault PID changes from No Fault to Fault.

The PCM/ TCM may set a DTC after the first occurrence of the fault. Some diagnostic trouble codes (DTCs) may require up to 5 consecutive occurrences before setting. Drive the vehicle in a manner similar to the freeze frame data conditions if possible. If no freeze frame data is available, then perform this road test:

- Drive vehicle normally for 1-3 minutes to warm up the fluid.
- From a stop, accelerate the vehicle to 100 kph (62 mph) with the shifts occurring at approximately 2000 rpm. Stay in 10th gear for 30 seconds or until the TCC applies. Repeat this two times.
- From a stop, accelerate the vehicle to 100 kph (62 mph) with the shifts occurring at approximately 3000 rpm. Stay in 10th gear for 30 seconds or until the TCC applies. Repeat this two times.

After the road test, review the recording and check for newly set diagnostic trouble codes (DTCs). Electrical fault diagnostic trouble codes (DTCs) are diagnosed in pinpoint tests. Hydraulic, mechanical, and performance fault diagnostic trouble codes (DTCs) are diagnosed in component tests. Use the DTC chart for detailed diagnosis:

REFER to: Diagnostic Trouble Code (DTC) Charts and Pinpoint Tests - 2.3L EcoBoost (201kW/273PS) (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R60, Diagnosis and Testing).

REFER to: Diagnostic Trouble Code (DTC) Charts and Pinpoint Tests - 3.0L EcoBoost (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R60, Diagnosis and Testing).

REFER to: Diagnostic Trouble Code (DTC) Charts and Pinpoint Tests - 3.3L Duratec-V6 (307-01A Automatic Transmission, Transfer Case and Power Transfer Unit - 10-Speed Automatic Transmission â€“ 10R60, Diagnosis and Testing).

REFER to: Diagnostic Trouble Code (DTC) Charts and Pinpoint Tests - 3.0L EcoBoost (307-01B Automatic Transmission, Transfer Case and