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Model Year: 2007	Model: Camry	Doc ID: RM000000PDJ01NX
Title: 2GR-FE ENGINE CONTROL SYSTEM: SFI SYSTEM: DIAGNOSIS SYSTEM (2007 Camry)		

DIAGNOSIS SYSTEM

1. DESCRIPTION

When troubleshooting OBD II (On-Board Diagnostics) vehicles, the intelligent tester (complying with SAE J1987) must be connected to the DLC3 (Data Link Connector 3) of the vehicle. Various data in the vehicle's ECM (Engine Control Module) can be then read.

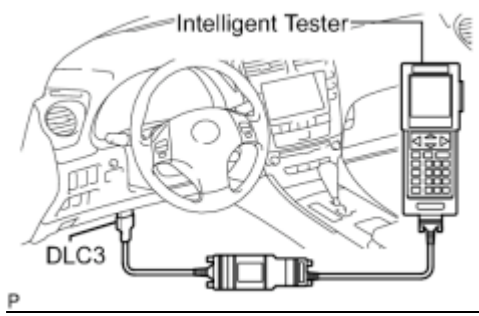
OBD II regulations require that the vehicle's on-board computer illuminates the MIL (Malfunction Indicator Lamp) on the instrument panel when the computer detects a malfunction in:



- a. The emission control systems and components.
- b. The power train control components (which affect vehicle emissions).
- c. The computer itself.

In addition, the applicable DTCs (Diagnostic Trouble Codes) prescribed by SAE J2012 are recorded on 3 consecutive trips, the MIL turns off automatically but the DTCs remain recorded in the ECM memory.

To check for DTCs, connect the intelligent tester to the DLC3. The tester displays DTCs, freeze frame data, and a variety of the engine data. The DTCs and freeze frame data can be erased with the tester. In order to enhance OBD function on vehicles and develop the Off-Board diagnosis system, CAN communication is introduced in this system (CAN: Controller Area Network). It minimizes a gap between technician skills and vehicle technology. CAN is a network, which uses a pair of data transmission lines, spanning multiple computers and sensors. It allows a high speed communication between the systems and simplification of the wire harness connection. Since this system is equipped with the CAN communication, connecting the CAN VIM (VIM: Vehicle Interface Module) with the intelligent tester is necessary to display any information from the ECM. (Also the communication between the intelligent tester and the ECM uses CAN communication signal). When confirming the DTCs and any data of the ECM, connect the CAN VIM between the DLC3 and the intelligent tester.



2. NORMAL MODE AND CHECK MODE

The diagnosis system operates in normal mode during normal vehicle use. In normal mode, 2 trip detection logic is used to ensure accurate detection of malfunctions. Check mode is also available as an option for technicians. In check mode, 1 trip detection logic is used for simulating malfunction symptoms and increasing the system's ability to detect malfunctions, including intermittent problems (intelligent tester only).

3. 2 TRIP DETECTION LOGIC

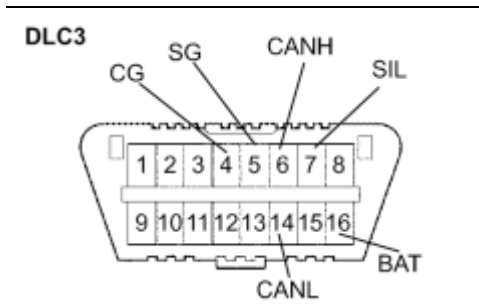
When a malfunction is first detected, the malfunction is temporarily stored in the ECM memory (1st trip). If the same malfunction is detected during the next subsequent drive cycle, the MIL is illuminated (2nd trip).

4. FREEZE FRAME DATA

The ECM records vehicle and driving condition information as freeze frame data the moment a DTC is stored. When troubleshooting, freeze frame data can be helpful in determining whether the vehicle was running or stopped, whether the engine was warmed up or not, whether the air-fuel ratio was lean or rich, as well as other data recorded at the time of a malfunction.

5. DLC3 (Data link Connector 3)

The vehicle's ECM uses ISO 15765-4 for communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



SYMBOLS (TERMINAL NO.)	TERMINAL DESCRIPTION	CONDITION	RESULT
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω

SYMBOLS (TERMINAL NO.)	TERMINAL DESCRIPTION	CONDITION	RESULT
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	11 to 14 V
CANH (6) - CANL (14)	CAN bus line	Ignition switch off	54 to 69 Ω
CANH (6) - CG (4)	HIGH-level CAN bus line	Ignition switch off	200 Ω or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Ignition switch off	200 Ω or higher
CANH (6) - BAT (16)	HIGH-level CAN bus line	Ignition switch off	6 k Ω or higher
CANL (14) - BAT (16)	LOW-level CAN bus line	Ignition switch off	6 k Ω or higher

The DLC3 is the interface prepared for reading various data from the vehicle's ECM. After connecting the cable of an intelligent tester, turn the ignition switch on (IG) and turn the tester on. If a communication failure message is displayed on the tester screen (on the tester: UNABLE TO CONNECT TO VEHICLE), a problem exists in either the vehicle or tester. In order to identify the location of the problem, connect the tester to another vehicle.

If communication is normal: Inspect the DLC3 on the original vehicle.

If communication is still not possible: The problem is probably in the tester itself. Consult the Service Department listed in the instruction manual.

6. BATTERY VOLTAGE

Standard Voltage:
11 to 14 V

If voltage is below 11 V, replace or recharge the battery before proceeding to the next step.

7. MIL (Malfunction Indicator Lamp)

- The MIL is illuminated when the engine switch is first turned on (the engine is not running).
- The MIL should turn OFF when the engine is started. If the MIL remains illuminated, the diagnosis system has detected a malfunction or abnormality in the system.

If the MIL is not illuminated when the engine switch is first turned on, check the MIL circuit  .

