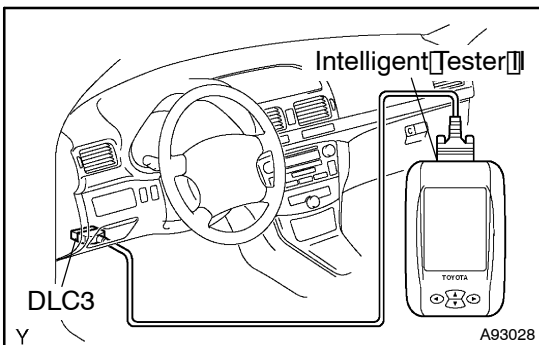


DIAGNOSIS SYSTEM

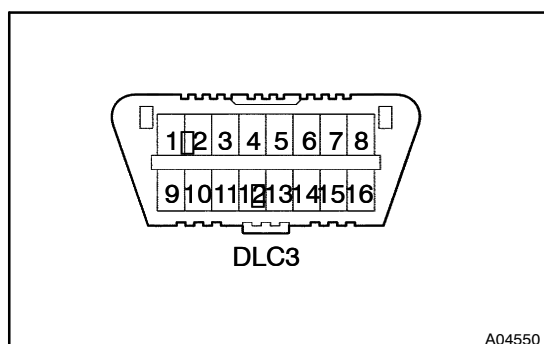
1. DESCRIPTION for M-OBD

- When troubleshooting Multiplex OBD (M-OBD) vehicles, the only difference from the usual troubleshooting procedure is that you connect the Intelligent Tester II to the vehicle, and read the various data output from the vehicle's ECM.
- The vehicle's on-board computer illuminates the MIL (Malfunction Indicator Lamp) on the instrument panel when the computer detects a malfunction in the computer itself or in the drive system components. In addition, the applicable DTCs (Diagnostic Trouble Codes) are recorded in the ECM memory (see page 05-277).

If the malfunction does not reoccur in 3 consecutive trips, the MIL goes off automatically but the DTCs remain recorded in the ECM memory.



- To check the DTCs, connect the Intelligent Tester II to the DLC3 (Data Link Connector 3) on the vehicle or connect terminals TC and CG on the DLC3 (DTCs will be displayed in the combination meter).
- 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 to technicians as an option. 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 II only) (see page 05-277).
- *2 trip detection logic:
When a malfunction is first detected, the malfunction is temporarily stored in the ECM memory (1st trip). If the ignition switch is turned to OFF and then to ON again, and the same malfunction is detected again, the MIL will illuminate (2nd trip).
- Freeze frame data:
The freeze frame data record the engine condition (fuel system, calculated engine load, engine coolant temperature, fuel trim, engine speed, vehicle speed, etc.) when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was moving or stationary, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, and other data from the time the malfunction occurred.



2. CHECK DLC3

- (a) The vehicle's ECM uses the ISO 14230 (M-OBD) communication protocol. The terminal arrangement of the DLC3 complies with ISO 15031-03 and matches the ISO 14230 format.

Symbol	Terminal No.	Name	Reference Terminal	Result	Condition
SIL	7	Bus "+" line	5 - Signal ground	Pulse generation	During transmission
CG	4	Chassis ground	Body ground	1 Ω or less	Always
SG	5	Signal ground	Body ground	1 Ω or less	Always
BAT	16	Battery positive	Body ground	9 to 14 V	Always

HINT:

When you use the Intelligent Tester II, first connect the cable of the tester to the DLC3. Next, turn the ignition switch to ON. Finally turn the tester ON. If the screen displays NO INFORMATION AVAILABLE and bus check is also failed, a problem exists in the vehicle, the tester or the tester cable.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem is probably in the tester or the cable, so consult the Service Department listed in its instruction manual.

3. INSPECT BATTERY VOLTAGE

Battery voltage: 11 to 14 V

If the voltage is below 11 V, recharge the battery before proceeding.

4. CHECK MIL

- (a) The MIL illuminates when the ignition switch is turned to ON and the engine is not running.

HINT:

If the MIL is not illuminated, check the MIL Circuit ([see page 05-426](#)).

- (b) When the engine is started, the MIL should turn off. If the lamp remains on, the diagnosis system has detected a malfunction or abnormality in the system.