



## DIAGNOSIS SYSTEM DESCRIPTION

The ECU contains a built-in self-diagnosis system by which troubles with the engine signal network are detected and a "CHECK" engine warning light on the instrument panel lights up. By analyzing various signals as shown in the later table (See page [TR-14](#)) the Electronic Control Unit (ECU) detects system malfunctions relating to the sensors or actuators.

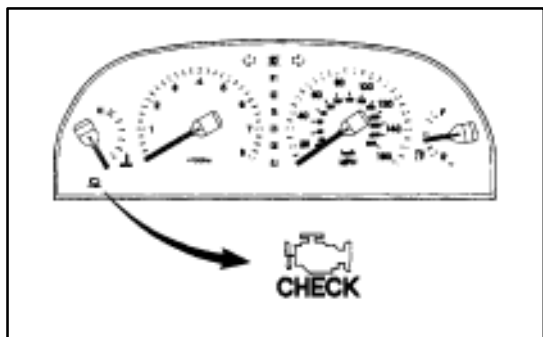
In the normal mode, the self-diagnosis system monitors 22 (USA specification vehicles with TRAC control) or 21 (USA (except for California) and Canadian specification vehicles with TRAC control) items, indicated by code No. as shown in [TR-14](#). A "CHECK" engine warning light informs the driver that a malfunction has been detected. The light goes off automatically when the malfunction has been repaired. But the diagnostic code(s) remains stored in the ECU memory (except for code Nos. 16 and 53). The ECU stores the code(s) until it is cleared by removing the EFI fuse with the ignition switch off.

The diagnostic code can be read by the number of blinks of the "CHECK" engine warning light when TE1 and E1 terminals on the TDCL or check connector are connected. When 2 or more codes are indicated, the lowest number (code) will appear first.

In the test mode, 15 (USA specification vehicles with TRAC control) or 14 (USA (except for California) and Canadian specification vehicles with TRAC control) items, indicated by code No. as shown in [TR-14](#) are monitored. If a malfunction is detected in any one of the systems indicated by code Nos. 13, 21, 22, 24, 25, 26, 27, 28, 29, 35, 41, 42, 47, 71 and 78 (USA specification vehicles) or 13, 21, 22, 24, 25, 26, 27, 28, 29, 35, 41, 42, 47 and 78 (USA (except for California) and Canadian specification vehicles) the ECU lights the "CHECK" engine warning light to warn the technician that malfunction has been detected. In this case, TE2 and E1 terminals on the TDCL should be connected as shown later. (See page [TR-12](#)).

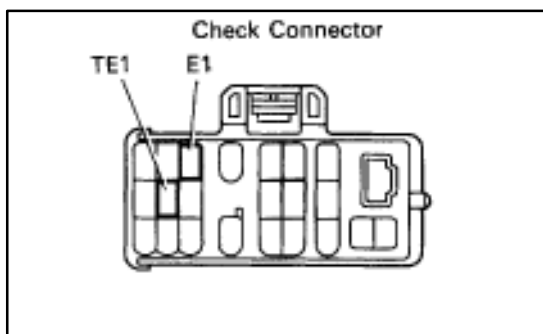
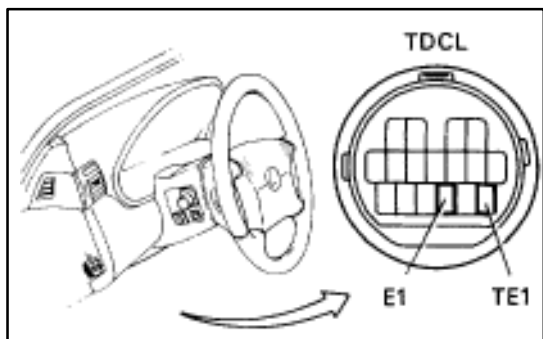
In the test mode, even if the malfunction is corrected, the malfunction code is stored in the ECU memory even when the ignition switch is off (except code Nos. 43 and 51). This also applies in the normal mode. The diagnostic mode (normal or test) and the output of the "CHECK" engine warning light can be selected by connecting the TE1, TE2 and E1 terminals on the check connector or TDCL, as shown later.

A test mode function has been added to the functions of the self-diagnosis system of the normal mode for the purpose of detecting malfunctions such as poor contact, which are difficult to detect in the normal mode. This function fills up the selfdiagnosis system. The test mode can be implemented by the technician following the appropriate procedures of check terminal connection and operation described later. (See page [TR-12](#))



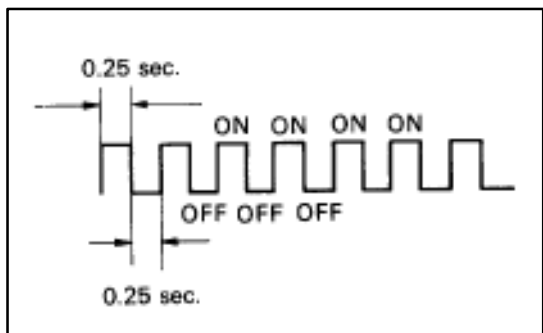
## Diagnosis Inspection (Normal Mode) "CHECK" ENGINE WARNING LIGHT CHECK

1. The "CHECK" engine warning light will come on when the ignition switch is turned ON and the engine is not running.  
HINT: If the "CHECK" engine warning light does not light up, proceed to troubleshooting of the combination meter (See page BE-146).
2. When the engine is started, the "CHECK" engine warning light should go off.  
If the light remains on, the diagnosis system has detected a malfunction or abnormality in the system.

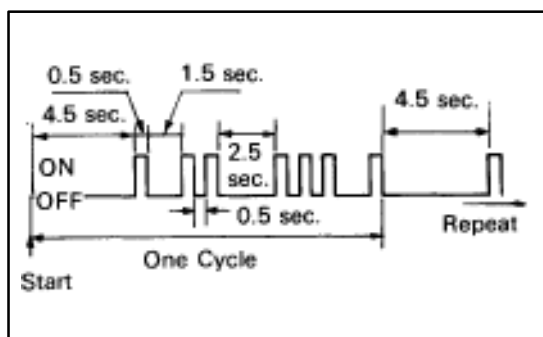


## DIAGNOSTIC CODE CHECK

1. Turn ignition switch on.
2. Using SST, connect terminals between TE1 and E1 of TDCL or check connector.  
SST 09843-18020



3. Read the diagnostic code from "CHECK" engine warning light.  
HINT: If a diagnostic code is not output, check the TE1 terminal circuit (See page [TR-146](#)).



As an example, the blinking patterns for codes; normal, 12 and 31 are as shown on the illustration.

4. Check the details of the malfunction using the diagnostic code table on page [TR-14](#).
5. After completing the check, disconnect terminals TE1 and E1, and turn off the display.  
HINT: In the event of 2 or more malfunction codes, indication will begin from the smaller numbered code and continue in order to the larger.

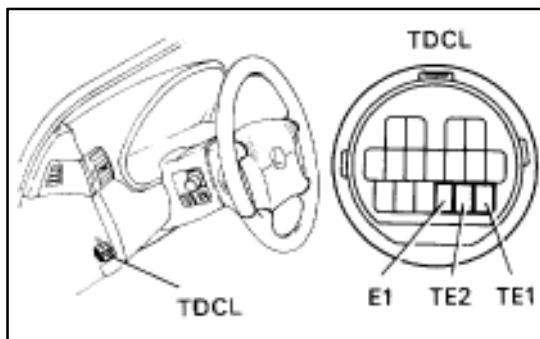
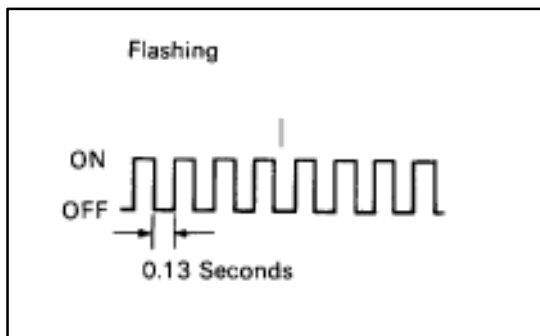
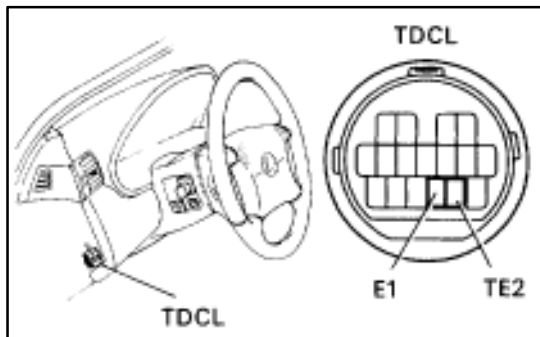
## Diagnosis Inspection (Test Mode)

Compared to the normal mode, the test mode has high sensing ability to detect malfunctions.

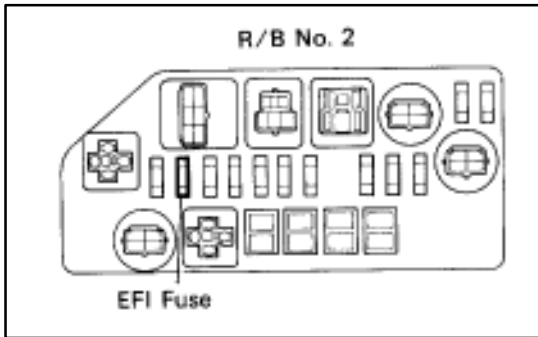
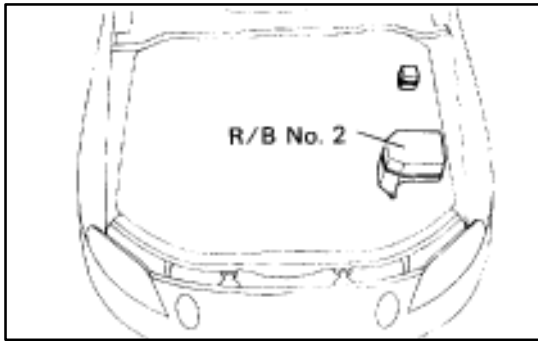
It can also detect malfunctions in the starter signal circuit, the IDL contact signal of the throttle position sensor, air conditioner signal and neutral start switch signal.

Furthermore, the same diagnostic items which are detected in the normal mode can also be detected in the test mode.

## DIAGNOSTIC CODE CHECK



1. Initial conditions.
  - (a) Battery voltage 11 V or more.
  - (b) Throttle valve fully closed (throttle position sensor IDL points closed).
  - (c) Transmission in neutral position.
  - (d) Air conditioner switched off.
2. Turn ignition switch off.
3. Using SST, connect terminals TE2 and E1 of TDCL.  
SST 09843-18020
4. Turn ignition switch on.  
HINT:
  - To confirm that the test mode is operating, check that the "CHECK" engine warning light flashes when the ignition switch is turned to ON.
  - If the "CHECK" engine warning light does not flash, proceed to troubleshooting of the TE2 terminal circuit on page [TR-146](#).
5. Start the engine.
6. Simulate the conditions of the malfunction described by the customer.
7. After the road test, using SST, connect terminals TE1 and E1 of TDCL or check connector.  
SST 09843-18020
8. Read the diagnostic code on "CHECK" engine warning light on the combination meter (See page [TR-11](#)).
9. After completing the check, disconnect terminals TE1, TE2 and E1, and turn off the display.  
HINT:
  - The test mode will not start if terminals TE2 and E1 are connected after the ignition switch is turned on.
  - When the engine is not cranked, diag. codes "43" (Starter signal) output, but this is not abnormal.
  - When the automatic transmission shift lever is in the "D", "2", "L" or "R" shift position, or when the air conditioner is on or when the accelerator pedal is depressed, code "51" (Switch condition signal) is output, but this is not abnormal.



## DIAGNOSTIC CODE CLEARANCE

1. After repair of the trouble areas, the diagnostic code retained in the ECU memory must be cleared out by removing the EFI fuse (30A) from R/B No. 2 for 10 seconds or more, with the ignition switch OFF.

### HINT:

- Cancellation can also be done by removing the battery negative (–) terminal, but in this case, other memory systems (clock, etc.) will also be cancelled out.
  - If it is necessary to work on engine components requiring removal of the battery terminal, a check must first be made to see if a diagnostic code has been recorded.
2. After cancellation, road test the vehicle to check that a normal code is now read on the "CHECK" engine warning light. If the same diagnostic code appears, it indicates that the trouble area has not been repaired thoroughly.