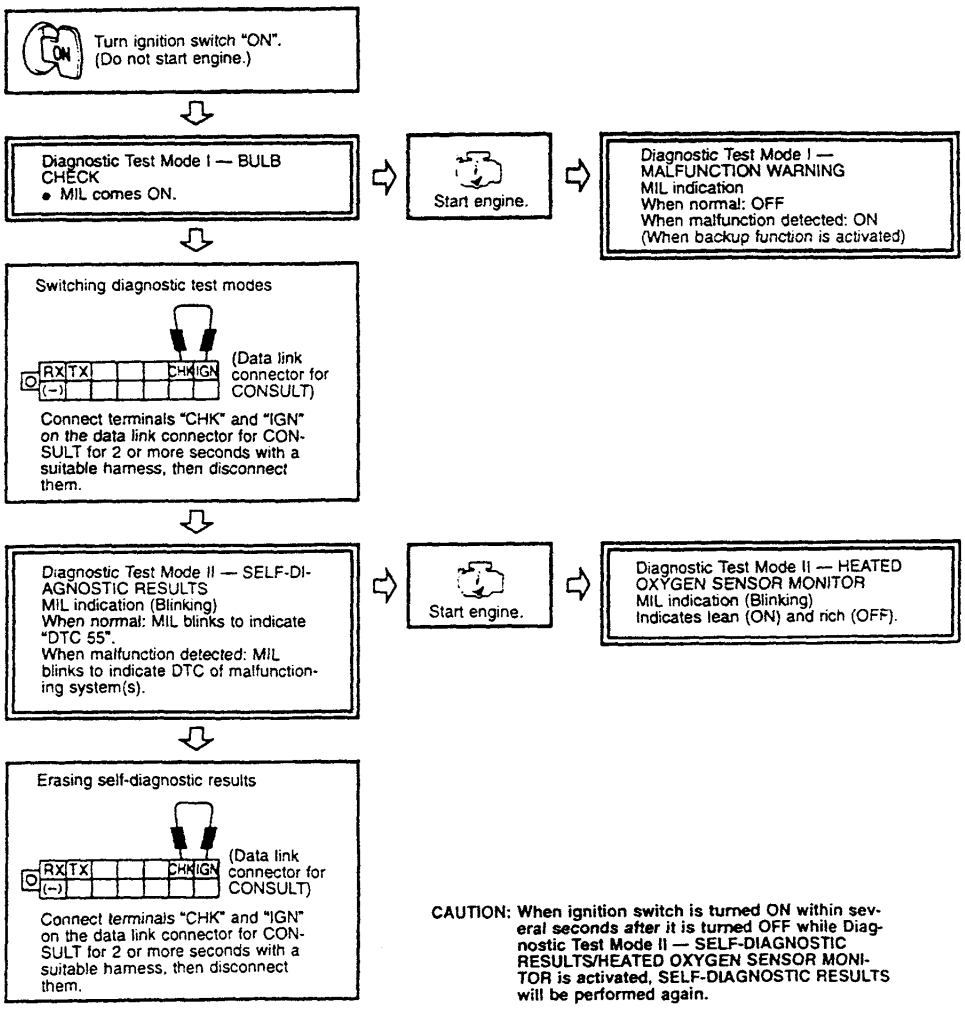
Self-diagnosis

DESCRIPTION

- In self-diagnosis, when any of the critical sensors in the engine control system fails and the self-diagnostic malfunction detection conditions are satisfied, the malfunctioning system is stored in the control unit for easier trouble diagnosis.
  There are two methods to indicate the presence of a malfunction: By illuminating the malfunction indicator lamp (MIL) on the combination meter or by displaying on the CONSULT screen. Here describes indication by the malfunction indicator lamp.
- There are two types of diagnostic test modes: Mode I and Mode II. Mode I is normal status. Mode II is either SELF-DIAGNOSTIC RESULT or HEATED OXYGEN SENSOR MONITOR function.

SELF-DIAGNOSIS OPERATION PROCEDURE

- To activate Diagnostic Test Mode II self-diagnosis, with the ignition witch turned ON (engine not running), connect terminals CHK and IGN on the data link connector for 2 or more seconds with a suitable harness, then disconnect them.
- Perform self-diagnosis with the ignition switch remain in ON position. [Mode II SELF-DIAGNOSTIC RESULTS]
- When engine is started in the above status, the heated oxygen sensor monitor function will be activated. [Mode II HEATED OXYGEN SENSOR MONITOR]
- When ignition switch is turned off during diagnosis, the diagnosis will automatically returns to Diagnostic Test Mode I. [Normal status]



CAUTION: When ignition switch is turned ON within several seconds after it is turned OFF while Diagnostic Test Mode II — SELF-DIAGNOSTIC RESULTS/HEATED OXYGEN SENSOR MONITOR is activated, SELF-DIAGNOSTIC RESULTS will be performed again.

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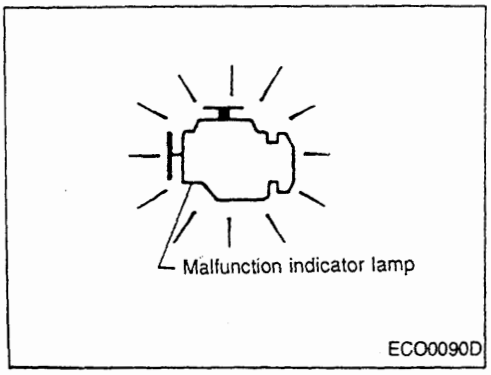
Self-diagnosis (Cont'd)

MALFUNCTION INDICATOR LAMP (MIL) INDICATION



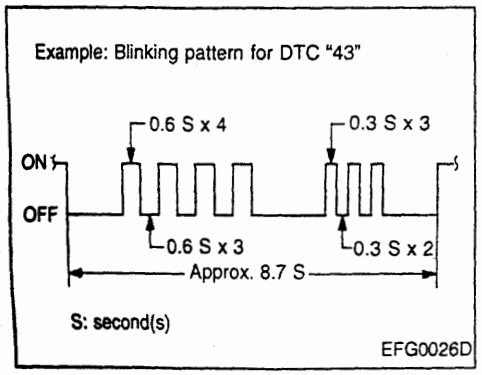
Diagnostic test mode I — BULB CHECK

- The malfunction indicator lamp bulb check is carried out when the ignition switch is turned ON (engine not started).
- The malfunction indicator lamp should come ON when the ignition switch is turned ON, and go OFF when the engine is started.

Diagnostic test mode I — MALFUNCTION WARNING

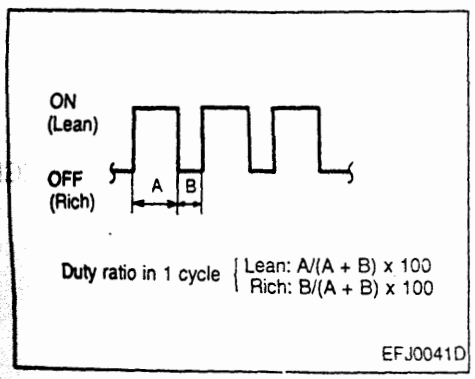
The system goes into the malfunction warning mode when any of the following conditions is satisfied, and warns the driver by lighting up the malfunction indicator lamp in the combination meter.

- Microcomputer in the ECM control unit (CPU) is malfunctioning.
- Malfunction is detected during mass airflow sensor circuit self-diagnosis.
- Malfunction is detected during engine coolant temperature sensor circuit self-diagnosis.
- Malfunction is detected during vehicle speed sensor circuit self-diagnosis.
- Malfunction is detected during ignition signal circuit self-diagnosis.
- Malfunction is detected during overheat self-diagnosis.
- Malfunction is detected during heated oxygen sensor circuit self-diagnosis.
- Malfunction is detected during throttle position sensor circuit self-diagnosis.
- Malfunction is detected during Turbo pressure sensor circuit self-diagnosis. [RB25DET model]
- Malfunction is detected during throttle motor sensor circuit self-diagnosis. [RB25DET model]



Diagnostic test mode II — SELF-DIAGNOSTIC RESULTS

- This mode indicates the malfunctioning system(s) by the malfunction indicator lamp blinking pattern (indicating the DTC).
- When no malfunction is detected, DTC "55" is indicated.



Diagnostic test mode II — HEATED OXYGEN SENSOR MONITOR

- This mode indicates status of the air/fuel ratio by blinks of the malfunction indicator lamp.
- Warm up the engine and increase and maintain the engine speed at 2,000 rpm. Check that the malfunction indicator lamp blinks at least five times in 10 seconds.
- During air/fuel ratio feedback control,
  when heated oxygen sensor output is high (rich): MIL goes OFF.
  when heated oxygen sensor output is low (lean): MIL comes ON.
- When air/fuel ratio feedback control is clamped: Status just before clamp is maintained.
- When air/fuel ratio feedback control is stopped: MIL goes OFF.

SELF-DIAGNOSTIC INDICATION ITEMS

DTC No.	Self-diagnostic test items	Malfunction (DTC No.) indication conditions (Malfunction is detected when ...)	MIL indication
11	Crankshaft position sensor signal circuit	● 1° (POS) signal or 120° (REF) signal is not input for predetermined time while the engine is running. ● Abnormal correlation is detected between 1° (POS) signal and 120° (REF) signal.	—
12	Mass air flow sensor signal circuit	● Mass air flow sensor output voltage is 4.9V or greater for predetermined time when ignition switch is turned from OFF to ON, or after the engine is stalled. ● Mass air flow sensor output voltage is less than 0.3V for predetermined time while the engine is running.	MIL lights up.
13	Engine coolant temperature sensor signal circuit	• Engine coolant temperature sensor output voltage is approx. 4.8V or greater (open circuit) or less than 0.06V (short circuit) for predetermined time.	MIL lights up.
14	Vehicle speed sensor signal circuit	● No vehicle speed signal is input for predetermined time while the vehicle is being driven after warm up.	MIL lights up.
16	Motor throttle switch signal circuit [RB25DET]	● Abnormal correlation is detected between input voltages from the throttle motor sensor and from the motor throttle switch for predetermined time.	—
17	ABS-TCS control unit circuit [RB25DET]	● Throttle control unit detects malfunction in the system. (Open throttle sensor harness, etc.) ● TCS/ABS control unit detects malfunction.	—
21	Ignition signal circuit	● No consecutive ignition signal while the engine is running.	MIL lights up.
26	Turbo pressure sensor signal circuit [RB25DET]	● Turbo pressure sensor output voltage is approx. 4.8V or greater (open circuit) or less than 0.06V (short circuit) for predetermined time.	MIL lights up.
28	Overheat	● Engine coolant temperature sensor output voltage is approx. 0.35V or less (sensor normal) for predetermined time.	MIL lights up.
33	Heated oxygen sensor signal circuit	• Heated oxygen sensor output voltage is approx. 0.2V or greater and less than approx. 0.4V for predetermined time while the vehicle is being driven after warm up. ● Heated oxygen sensor output voltage is approx. 2V or greater for predetermined time.	MIL lights up.
34	Knock sensor signal circuit	• At least one knock sensor indicates the output voltage of approx. 4V or greater (open circuit) or less than approx. 1V (short circuit).	—
43	Throttle position sensor signal circuit	● Throttle position sensor output voltage is approx. 4.7V or greater (open circuit) or less than 0.06V (short circuit) for predetermined time while park/neutral position switch is OFF and vehicle speed is 4 km/h or higher.	MIL lights up.
44	ABS-TCS communication circuit [RB25DET]	• Malfunction (open/short circuit, etc.) is detected in multiplex communication line between engine and TCS/ABS.	—
46	Throttle motor sensor signal circuit [RB25DET]	• Throttle motor sensor input voltage is approx. 4.8V or greater (open circuit) or less than 0.3V (short circuit) for predetermined time.	MIL lights up.
54	A/T communication circuit	● Malfunction is detected in A/T communication circuit in ECM (-TCM). [RB20DE (L/B), RB25DET] • Malfunction (open circuit, short circuit, etc.) is detected in multiplex communication line between ECM and TCM. [RB25DE]	—
55	No malfunction	● No malfunction is detected in all the above circuits.	—

Some of the above self-diagnostic test items can cause related malfunctions to be detected in A/T, throttle control, and ABS self-diagnosis when malfunction is detected. Therefore, malfunctions should also be checked in self-diagnostic tests for systems other than engine.

CONDITIONS TO TURN OFF MALFUNCTION INDICATOR LAMP

Vehicle speed sensor signal circuit: Correct the sensor signal, then drive the vehicle at 4 km/h or higher.
Overheat: Check for causes of overheat, then erase self-diagnostic results.
Other items: Malfunction indicator lamp turns OFF when the vehicle returned to normal condition.

HOW TO ERASE SELF-DIAGNOSTIC RESULTS

In Diagnostic Test Mode II, with the engine stopped (ignition switch ON), connect terminals "CHK" and "IGN" on the data link connector for 2 or more seconds with a suitable harness, then disconnect them.