ES

DTC CHECK / CLEAR

NOTICE:
When the diagnosis system is changed from normal mode to check mode or vice versa, all DTCs and freeze frame data recorded in normal mode are erased. Before changing modes, always check and make a note of DTCs and freeze frame data.

HINT:
- DTCs which are stored in the ECM can be displayed on the intelligent tester. The intelligent tester can display current and pending DTCs.
- Some DTCs are not set if the ECM does not detect the same malfunction again during a second consecutive driving cycle. However, malfunctions detected on only 1 occasion are stored as pending DTCs.
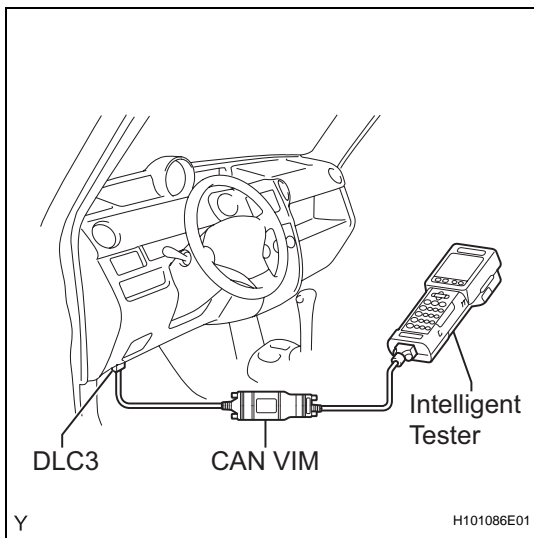
1. **CHECK DTC (Using the intelligent tester)**
    (a) Connect the intelligent tester to the DLC3.
    (b) Turn the ignition switch ON and turn the tester ON.
    (c) Enter the following menus: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.
    (d) Check the DTC(s) and freeze frame data, and then write them down.
    (e) See page ES-48 to check the details of the DTC(s).

2. **CLEAR DTC (Using the intelligent tester)**
    (a) Connect the intelligent tester to the DLC3.
    (b) Turn the ignition switch ON and turn the tester ON.
    (c) Enter the following menus: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CLEAR CODES.
    (d) Press the YES button.

3. **CLEAR DTC (Without using intelligent tester)**
    (a) Perform either one of the following operations.
        (1) Disconnect the negative (-) battery cable for more than 1 minute.

        (2) Remove the EFI fuse from the engine room relay block located inside the engine compartment for more than 1 minute.
        NOTICE:
        When disconnecting the battery cable, perform the initialization procedure.

DLC3   CAN VIM   Intelligent Tester

Y   H101086E01

Engine Room Relay Block

EFI Fuse

P   A120531E01
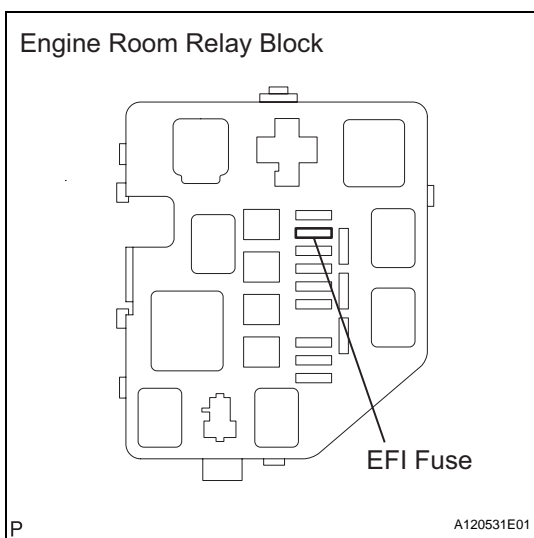
FREEZE FRAME DATA

1. DESCRIPTION

Freeze frame data records the engine conditions (fuel system, calculated 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 running or stopped, 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.
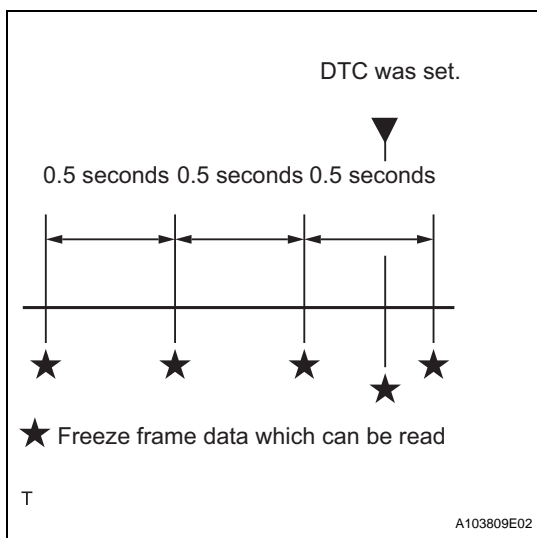
HINT:

If it is impossible to replicate the problem even though a DTC is detected, confirm the freeze frame data.

The ECM records engine conditions in the form of freeze frame data every 0.5 seconds. Using the intelligent tester, 5 separate sets of freeze frame data, including the data values at the time when the DTC was set, can be checked.

– 3 data sets before the DTC was set.
– 1 data set when the DTC was set.
– 1 data set after the DTC was set.

These data sets can be used to simulate the condition of the vehicle around the time of the occurrence of the malfunction. The data may assist in identifying of the cause of the malfunction, and in judging whether it was temporary or not.

2. LIST OF FREEZE FRAME DATA

LABEL (Intelligent Tester Display)	Measure Item/Range	Diagnostic Note
INJECTOR	Injector	-
IGN ADVANCE	Ignition advance	-
CALC LOAD	Calculated load	Calculated load by ECM
VEHICLE LOAD	Vehicle load	-
MAF	Mass air flow volume	If value approximately 0.0 g/sec.: • Mass air flow meter power source circuit open or short • VG circuit open or short If value 160.0 g/sec. or more: • E2G circuit open
ENGINE SPD	Engine speed	-
VEHICLE SPD	Vehicle speed	Speed indicated on speedometer
COOLANT TEMP	Engine coolant temperature	If value -40°C, sensor circuit open If value 140°C or more sensor circuit shorted
INTAKE AIR	Intake air temperature	If value -40°C, sensor circuit open If value 140°C or more sensor circuit shorted
AIR-FUEL PATIO	Air-fuel ratio	-
PURGE DENSITY	Learning value of purge density	-
EVAP PURGE FLOW	EVAP purge flow	-
EVAP PURGE VSV	EVAP purge VSV duty ratio	-
KNOCK CRRT VAL	Correction learning value of knocking	-
KNOCK FB VAL	Feedback value of knocking	-

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LABEL (Intelligent Tester Display)	Measure Item/Range	Diagnostic Note
THROTTLE POS	Throttle position	Read value with ignition switch ON (Do not start engine)
THROTTLE POS	Throttle sensor positioning	Read value with ignition switch ON (Do not start engine)
O2S B1 S1	Heated oxygen sensor output	Performing INJ VOL or A/F CONTROL function of ACTIVE TEST enables technician to check output voltage of sensor
O2S B1 S2	Heated oxygen sensor output	Performing INJ VOL or A/F CONTROL function of ACTIVE TEST enables technician to check output voltage of sensor
TOTAL FT #1	Total fuel trim	-
SHORT FT #1	Short-term fuel trim	Short-term fuel compensation used to maintain air-fuel ratio at stoichiometric air-fuel ratio
LONG FT #1	Long-term fuel trim	Overall fuel compensation carried out in long-term to compensate a continual deviation of short-term fuel trim from central valve
FUEL SYS #1	Fuel system status (bank 1)	• OL (Open Loop): Has not yet satisfied conditions to go closed loop • CL (Closed Loop): Using heated oxygen sensor as feedback for fuel control • OL DRIVE: Open loop due to driving conditions (fuel enrichment) • OL FAULT: Open loop due to detected system fault • CL FAULT: Closed loop but heated oxygen sensor, which used for fuel control malfunctioning
O2FT B1 S1	Fuel trim at heated oxygen sensor	Same as SHORT FT #1
O2FT B1 S2	Fuel trim at heated oxygen sensor	Same as SHORT FT #1
O2 LR B1 S1	Heated oxygen sensor response time (lean to rich)	-
O2 RL B1 S1	Heated oxygen sensor response time (rich to lean)	-
CAT TEMP B1 S1	Catalyst temperature	-
CAT TEMP B1 S2	Catalyst temperature	-
INI COOL TEMP	Initial engine coolant temperature	-
INI INTAKE TEMP	Initial intake air temperature	-
INJ VOL	Injection volume	-
PS PRESSURE	Power steering signal (history)	This signal status usually ON until ignition switch turned OFF
STARTER SIG	Starter signal	-
PS SW	Power steering switch signal	-
PS SIGNAL	Power steering signal (history)	-
CTP SW	Closed throttle position switch	-
A/C SIGNAL	A/C signal	-
PNP SW [NSW]	Neutral position switch signal	-
ELECT LOAD SIG	Electrical load signal	-
STOP LIGHT SW	Stop light switch	-
BATTERY VOLTAGE	Battery voltage	-
ATM PRESSURE	Atmospheric pressure	-
EVAP (Purge) VSV	EVAP purge VSV	-
FUEL PUMP / SPD	Fuel pump/speed status	-
VVT CTRL B1	VVT control status (bank 1)	-
VACUUM PUMP	Key-off EVAP system pump status	See page ES-272

LABEL (Intelligent Tester Display)	Measure Item/Range	Diagnostic Note
EVAP VENT VAL	Key-off EVAP system vent valve status	-
FAN MOTOR	Electric fan motor	-
TC/TE1	TC and TE1 terminals of DLC3	-
FC IDL	Idle fuel cut	ON: when throttle valve fully closed and engine speed over 1,500 rpm
FC TAU	FC TAU	Fuel cut being performed under very light load to prevent engine combustion from becoming incomplete
VVTL AIM ANGL#1	VVT aim angle (bank 1)	-
VVT CHNG ANGL#1	VVT change angle (bank 1)	-
VVT OCV DUTY B1	VVT OCV operation duty (bank 1)	-
IGNITION	Ignition	-
CYL #1	Cylinder #1 misfire rate	Displayed only when idling
CYL #2	Cylinder #2 misfire rate	Displayed only when idling
CYL #3	Cylinder #3 misfire rate	Displayed only when idling
CYL #4	Cylinder #4 misfire rate	Displayed only when idling
CYL ALL	All cylinder misfire rate	Displayed only when idling
MISFIRE RPM	Misfire RPM	-
MISFIRE LOAD	Misfired load	-
MISFIRE MARGIN	Misfire monitoring	-
ENG RUN TIME	Accumulated engine running time	-
TIME DTC CLEAR	Cumulative time after DTC cleared	-
DIST DTC CLEAR	Accumulated distance after DTC cleared	-
WU CYC DTC CLEAR	Warm-up cycle after DTC cleared	-

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