DTC was set.

0.5 seconds 0.5 seconds 0.5 seconds

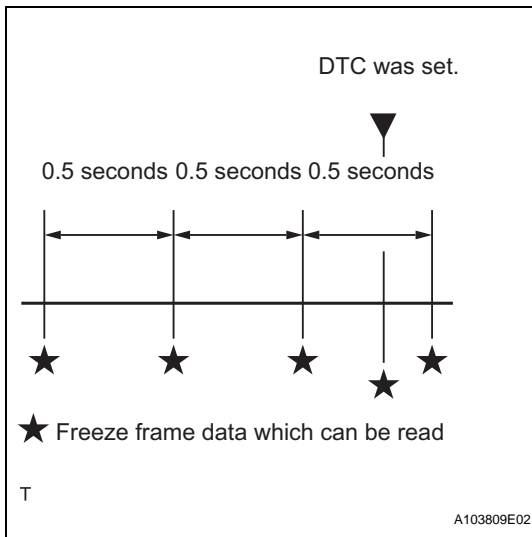★ Freeze frame data which can be read

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FREEZE FRAME DATA

1. DESCRIPTION

Freeze frame data record the engine conditions (fuel system, calculated load, engine coolant temperature, fuel trim, engine speed, vehicle speed, etc.) when a malfunction is detected. When troubleshooting, it can help determine if the vehicle was running or stopped, the engine was warmed up or not, 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 an intelligent tester, five 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 conditions 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	Calculate 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 RATIO	Air-fuel ratio	-
PURGE DENSITY	Learning value of purge density	-
PURGE FLOW	Purge flow	-
EVAP PURGE VSV	EVAP purge VSV duty ratio	-
EVAP VAPOR PRES	EVAP vapor pressure	-
KNOCK CRRT VAL	Correction learning value of knocking	-
KNOCK FB VAL	Feedback value of knocking	-
ACCEL POS #1	Absolute Accelerator Pedal Position (APP) No. 1	-

LABEL (Intelligent Tester Display)	Measure Item/Range	Diagnostic Note
ACCEL POS #2	Absolute APP No. 2	-
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)
THROTTLE POS #2	Throttle sensor positioning #2	-
THROTTLE MOT	Throttle motor	-
O2S B1 S2	Heated oxygen sensor output	Performing INJ VOL or A/F CONTROL function of ACTIVE TEST enables technician to check voltage output of sensor
O2S B2 S2	Heated oxygen sensor output	Performing INJ VOL or A/F CONTROL function of ACTIVE TEST enables technician to check voltage output of sensor
AFS B1 S1	A/F sensor output	Performing INJ VOL or A/F CONTROL function of ACTIVE TEST enables technician to check voltage output of sensor
AFS B2 S1	A/F sensor output	Performing INJ VOL or A/F CONTROL function of ACTIVE TEST enables technician to check voltage output 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 (Bank1)	• 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 S2	Fuel trim at heated oxygen sensor	Same as SHORT FT #1
O2FT B2 S2	Fuel trim at heated oxygen sensor	Same as SHORT FT #1
AF FT B1 S1	Fuel trim at A/F sensor	-
AF FT B2 S1	Fuel trim at A/F sensor	-
CAT TEMP B1 S1	Catalyst temperature	-
CAT TEMP B2 S1	Catalyst temperature	-
CAT TEMP B1 S2	Catalyst temperature	-
CAT TEMP B2 S2	Catalyst temperature	-
INI COOL TEMP	Initial engine coolant temperature	-
INI INTAKE TEMP	Initial intake air temperature	-
INJ VOL	Injection volume	-
STARTER SIG	Starter signal	-
PS SW	Power steering signal	-
PS SIGNAL	Power steering signal (history)	This signal status usually ON until battery terminals disconnected
CTP SW	Closed throttle position switch	-
A/C SIG	A/C signal	-
ELECT LOAD SIG	Electrical load signal	-
STOP LIGHT SW	Stop light switch	-

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LABEL (Intelligent Tester Display)	Measure Item/Range	Diagnostic Note
BATTERY VOLTAGE	Battery voltage	-
ATM PRESSURE	Atmospheric pressure	-
ACT VSV	A/C cut status for Active Test	-
EVAP VSV	EVAP purge VSV	VSV for EVAP controlled by ECM (ground side duty control)
FUEL PUMP / SPD	Fuel pump speed status	-
VVT CTRL B1	VVT control status	-
VACUUM PUMP	Key-off EVAP system pump status	-
EVAP VENT VAL	Key-off EVAP system vent valve status	-
TC/TE1	TC and TE1 terminals of DLC3	-
VVTL AIM ANGL #1	VVT aim angle	-
VVT CHNG ANGL #1	VVT change angle	-
VVT OCV DUTY B1	VVT OCV operation duty	-
FC IDL	Idle fuel cut	ON: when throttle valve fully closed and engine speed over 2,800 rpm
FC TAU	FC TAU	Fuel cut being performed under very light load to prevent engine combustion from becoming incomplete
IGNITION	Ignition	-
CYL #1	Cylinder #1 misfire rate	Displayed in only idling
CYL #2	Cylinder #2 misfire rate	Displayed in only idling
CYL #3	Cylinder #3 misfire rate	Displayed in only idling
CYL #4	Cylinder #4 misfire rate	Displayed in only idling
CYL #5	Cylinder #5 misfire rate	Displayed in only idling
CYL #6	Cylinder #6 misfire rate	Displayed in only idling
CYL ALL	All cylinder misfire rate	Displayed in only idling
MISFIRE RPM	Misfire RPM	-
MISFIRE LOAD	Misfire load	-
MISFIRE MARGIN	Margin to detect engine misfire	-
ENG RUN TIME	Accumulated engine running time	-
TIME DTC CLEAR	Cumulative time after DTC cleared	-
DIST DTC CLEAR	Accumulated distance from DTC cleared	-
WU CYC DTC CLEAR	Warm-up cycle after DTC cleared	-
MODEL CODE	Identifying the model code	GRN2###
FAN MOTOR	Electric fan motor	-
VAPOR PRESS	Vapor pressure	EVAP system pressure as read by canister pressure sensor
ENG OIL PRES SW	Engine oil pressure switch signal	Always ON while engine is running
ENGINE TYPE	Identifying the engine type	1GR
CYLINDER NUMBER	Identifying the cylinder number	6
DESTINATION	Identifying the destination	A (America)
MODEL YEAR	Identifying the model year	200#
SYSTEM	Identifying the engine system	GASLIN (gasoline engine)