

DATA LIST/ACTIVE TEST

1. DATA LIST

HINT:

Using the DATA LIST displayed by the hand-held tester or the OBD II scan tool, you can read the value of the switches, sensors, actuators and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one method to shorten diagnostic time.

NOTICE:

The values given below for "Normal Condition" are representative values. A vehicle may still be normal even if its value differs from those listed here. Do not solely depend on the "Normal Condition" here when deciding whether a part is faulty or not.

- Warm up the engine.
- Turn the ignition switch OFF.
- Connect the hand-held tester or the OBD II scan tool to the DLC3.
- Turn the ignition switch ON.
- Push the "ON" button of the hand-held tester or the OBD II scan tool.
- Select the item "DIAGNOSIS / ENHANCED OBD II / DATA LIST".
- According to the display on tester, read the "DATA LIST".

Hand-held tester display	Measurement Item/Range (Display)	Normal Condition*1	Diagnostic Note
INJECTOR	Injection period of the No. 1 cylinder/ Min.: 0 ms, Max.: 32.64 ms	Idling: 1.0 to 3.0 ms	—
IGN ADVANCE	Ignition timing advance for No. 1 cylinder/ Min.: -64 deg., Max.: 63.5 deg.	Idling: BTDC 2 to 14°	—
IAC DUTY RATIO	Intake Air Control Valve duty ratio Opening ratio rotary solenoid type ISC valve Min.: 0%, Max.: 99%	Idling: 20 to 40 % Running without load (2,500rpm)	—
CALC LOAD	Calculated load by ECM/ Min.: 0 %, Max.: 100 %	Idling: 10 to 30 % Running without load (2,500 rpm): 10 to 30 %	—
MAF	Air flow rate from MAF sensor/ Min.: 0 gm/s, Max.: 655 gm/s	Idling: M/T 0.54 to 4.33 gm/sec. A/T 0.58 to 4.67 gm/sec. Running without load (2,500 rpm): 3.33 to 9.17 gm/sec.	If the value is approximately 0.0 gm/s: • Mass air flow meter power source circuit open • VG circuit open or short If the value is 160.0 gm/s or more: • E2G circuit open
ENGINE SPD	Engine speed/ Min.: 0 rpm, Max.: 16383 rpm	Idling: M/T 600 to 700 rpm A/T 650 to 750 rpm	—
COOLANT TEMP	Coolant temperature/ Min.: -40 °C, Max.: 140 °C	After warming up: 80 to 100 °C (176 to 203 °F)	• If the value is -40 °C (-40 °F): sensor circuit is open.
INTAKE AIR	Intake air temperature/ Min.: -40 °C, Max.: 140 °C	Equivalent to Ambient Temp.	• If the value is 140 °C (284 °F or more): sensor circuit is shorted.
THROTTLE POS	Absolute throttle position sensor/ Min.: 0 %, Max.: 100 %	Throttle Fully Closed: 0 to 10 % Throttle Fully Open: 70 to 100 %	Read the value with the ignition switch ON (Do not start engine)
CTP SW	Closed throttle position switch/ ON or OFF	Throttle Fully Closed: ON Throttle Fully Open: OFF	—
VEHICLE SPD	Vehicle speed/ Min.: 0 km/h, Max.: 255 km/h	Actual vehicle speed	—

Hand-held tester display	Measurement Item/Range (Display)	Normal Condition*1	Diagnostic Note
O2S B1 S1	Heated oxygen sensor output voltage for bank 1 sensor 2/ Min.: 0 V, Max.: 1.0 V	Idling: 0 to 1.0 V	Performing the INJ VOL or A/F CONTROL function of the ACTIVE TEST enables the technician to check the voltage output of each sensor.
O2S B1 S2	Heated oxygen sensor output voltage for bank 2 sensor 2/ Min.: 0 V, Max.: 1.0 V	Idling: 0 to 1.0 V	
VAPOR PRESS	Vapor Pressure/ Min.: -4.125 kPa, Max.: 2.125 kPa	Fuel tank cap removed: 0 kPa	Pressure inside of fuel tank as read by the vapor pressure sensor
SHORT FT #1	Short term fuel trim of bank 1/ Min.: -100 %, Max.: 100 %	0 ± 20%	—
LONG FT #1	Long term fuel trim of bank 1/ Min.: -100 %, Max.: 100 %	0 ± 20%	This item is the overall fuel compensation carried out in long-term to compensate for a continual deviation of the short-term fuel trim from the central value.
TOTAL FT #1	Total fuel trim of bank 1: Average value for fuel trim system of bank 1/ Min.: 0.5, Max.: 1.496	Idling: 0.5 to 1.4	—
O2FT B1 S1	Short term fuel trim associated with the bank 1 sensor 2/ Min.: -100 %, Max.: 100 %	0 ± 20 %	Same as SHORT FT #1
O2FT B1 S2	Short term fuel trim associated with the bank 1 sensor 2/ Min.: -100 %, Max.: 100 %	0 ± 20 %	Same as SHORT FT #2
FUEL SYS #1	Fuel system status (Bank1) / OL or CL or OL DRIVE or OL FAULT or CL FAULT	Idling after warming up: CLOSED	<ul style="list-style-type: none"> • OL: Open Loop—has not yet satisfied conditions to go closed loop. • CL: Closed Loop—using heated oxygen sensor(s) as feed back 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 one of heated oxygen sensors, which is used for fuel control, is functioning improperly.
FC IDL	Fuel cut idle/ ON or OFF	Fuel cut operating: ON	FC IDL = "ON" when throttle valve fully closed and engine speed is over 1,500 rpm.
MIL	MIL status/ ON or OFF	MIL ON: ON	—
O2 LR B1 S1	Responsetime of the heated oxygen sensor, lean to rich (bank 1 sensor 1)/ Min.: 0 ms, Max.: 16,711 ms	Idling after warming up: 0 to 1,000 msec.	—
O2 RL B1 S1	Responsetime of the heated oxygen sensor, rich to lean (bank 1 sensor 1)/ Min.: 0 ms, Max.: 16,711 ms	Idling after warming up: 0 to 1,000 msec.	—
STARTER SIG	Starter signal/ ON or OFF	Cranking: ON	—
A/C SIG	A/C signal/ ON or OFF	A/C ON: ON	—
PNP SW [NSW] *2	Park/neutral position switch signal/ ON or OFF	P or N position: ON	—
ELECTLOAD SIG	Electrical load signal / ON or OFF	Defogger switch ON: ON	—

DIAGNOSTICS – SFI SYSTEM

Hand-held tester display	Measurement Item/Range (Display)	Normal Condition*1	Diagnostic Note
STOP LIGHT SW	STOP LIGHT SW/Stop light switch/ ON or OFF	• Brake pedal depressed: ON • Brake pedal released: OFF	—
PS OIL PRESS SW	Power steering signal/ ON or OFF	Steering position is; Center: OFF Except center: ON	—
PS SIGNAL	Power steering signal/ ON or OFF	When the steering wheel is turned	This signal is usually ON status until the IG switch is turned OFF.
FUEL PUMP / SPD	Fuel pump / speed status / ON/H or OFF/H	Idling: ON	—
A/C MAG CLUTCH	A/C magnet clutch status / ON or OFF	A/C magnet clutch ON: ON	—
EVAP VSV	VSV status for EVAP control/ ON or OFF	VSV operating: ON	VSV for EVAP is controlled by the ECM (ground side duty control)
VVT CTRL B1	VVT control status (bank 1)/ ON or OFF	VVT system operation: ON	—
INT AIR CTL VSV *2	VSV status for intake air control / ON or OFF	—	—
IGNITION	Ignition counter/ Min.: 0, Max.: 400	0 to 400	—
CYL #1, #2, #3, #4	Misfire ratio of the cylinder 1 to 4/ Min.: 0 %, Max.: 50 %	0 %	This item is displayed in only idling
MISFIRE LOAD	Engine load for first misfire range/ Min.: 0 g/rev, Max.: 3.98 g/rev	Misfire 0: 0 g/rev	—
MISFIRE RPM	Engine RPM for first misfire range/ Min.: 0 g/rpm, Max.: 6,375 rpm	Misfire 0: 0 rpm	—
FC TAU	Fuel Cut TAU: Fuel cut during very light load	Fuel cut operating: ON	The fuel cut is being performed un- der very light load to prevent the engine combustion from becoming incomplete.
# CODES	Number of memorised DTC codes	0	—
CHECK MODE	Check mode/ ON or OFF	Check mode ON: ON	See page 05-11

*1: If no conditions are specifically stated for "Idling", it means the shift lever is in the N or P position, the A/C switch is OFF and all accessory switches are OFF.

*2: A/T only

2. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the hand-held tester or the OBD II scan tool allows the relay, VSV, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one method to shorten diagnostic time.

It is possible to display the DATA LIST during the ACTIVE TEST.

- (a) Warm up the engine.
- (b) Turn the ignition switch OFF.
- (c) Connect the hand-held tester or the OBD II scan tool to the DLC3.
- (d) Turn the ignition switch ON.
- (e) Push the "ON" button of the hand-held tester or the OBD II scan tool.
- (f) Select the item "DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST".
- (g) According to the display on tester, perform the "ACTIVE TEST".

Hand-held Tester Display	Test Details	Diagnostic Note
INJ VOL	[Test Details] Control the injection volume Min.: –12.5 %, Max.: 25 % [Vehicle Condition] Engine speed: 3,000 rpm or less	<ul style="list-style-type: none"> • All injectors are tested at once. • Injection volume is gradually changed between –12.5 and 25%.
A/F CONTROL	[Test Details] Control the injection volume –12.5 or 25 % (Change the injection volume –12.5 % or 25 %.) [Vehicle Condition] Engine speed: 3,000 rpm or less	The following A/F CONTROL procedure enables the technician to check and graph the voltage outputs of both the A/F sensor and heated oxygen sensor. For displaying the graph indication, enter "ACTIVE TEST/A/F CONTROL/USER DATA", then select "AFS B1S1 and O2S B1S2" or "AFS B2S1 and O2S B2S2" by pressing "YES" button and push "ENTER" button before pressing "F4" button.
IAC DUTY RATIO	[Test Details] Control the ISC duty ratio 0 to 90 % [Vehicle Condition] <ul style="list-style-type: none"> • Engine speed: 3,000 rpm or less • Vehicle speed: 0 mph (0 km/h) • Battery voltage: 8.5 V or more 	—
CAN CTRL VSV	[Test Details] Activate the VSV for canister control ON or OFF	—
TANK BYPASS VSV	[Test Details] Activate the VSV for tank bypass ON or OFF	—
EVAP VSV (ALONE)	[Test Details] Activate the VSV for EVAP control ON or OFF	—
A/C MAG CLUTCH	[Test Details] Control the A/C magnet clutch ON or OFF	—
FUEL PUMP / SPD	[Test Details] Control the fuel pump ON or OFF	—
VVT CTRL B1	[Test Details] Active the VVT system (Bank 1) ON or OFF	<ul style="list-style-type: none"> • ON: Rough idle or engine stall. • OFF: Normal engine speed.
TC/TE1	[Test Details] Connect the TC and TE1 ON or OFF	—
FC IDL PROHBT	[Test Details] Control the idle fuel cut prohibit ON or OFF	—