05JXJ–01

DATA LIST/ACTIVE TEST

1. DATA LIST

HINT:

Using the DATA LIST displayed by the hand–held tester, 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.

(a) Warm up the engine.
(b) Turn the ignition switch OFF.
(c) Connect the hand–held tester to the DLC3.
(d) Turn the ignition switch ON.
(e) Push the "ON" button of the hand–held tester.
(f) Enter the following menus: DIAGNOSIS / OBD/MOBD / DATA LIST.
(g) According to the display on tester, read the "DATA LIST".

Hand–held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
INJECTOR	Injection period of the No. 1 cylinder/ Min.: 0 ms, Max.: 32.64 ms	Idling: 1.5 to 2.8 ms	—
IGN ADVANCE	Ignition timing advance for No. 1 cylinder/ Min.: –64 deg., Max.: 63.5 deg.	Idling: BTDC 5 to 25˚	—
CALC LOAD	Calculated load by ECM/ Min.: 0 %, Max.: 100 %	• Idling: 10.4 to 15.6 % • Running without load (2,500 rpm): 12.1 to 18.2 %	—
MAF	Air flow rate from MAF metor/ Min.: 0 gm/s, Max.: 655 gm/s	• Idling: 2.0 to 3.7 gm/s • Running without load (2,500 rpm): 2.4 to 4.3 gm/s	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: 580 to 750 rpm	—
COOLANT TEMP	Coolant temperature/ Min.: –40 °C, Max.: 140 °C	After warming up: 80 to 97˚C (176 to 207˚F)	• If the value is –40°C (–40°F): sensor circuit is open. • If the value is 140°C (284°F): sensor circuit is shorted.
INTAKE AIR	Intake air temperature/ Min.: –40 °C, Max.: 140 °C	Equivalent to Ambient Temp.	
THROTTLE POS	Absolute throttle position sensor/ Min.: 0 %, Max.: 100 %	• Throttle fully closed: 10 to 24 % • Throttle fully open: 64 to 96 %	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 open: OFF	—
VEHICLE SPD	Vehicle speed/ Min.: 0 km/h, Max.: 255 km/h	Actual vehicle speed	Speed indicated on speedometer
ACCEL POS #1	Accelerator pedal position sensor No.1 output voltage/ Min.: 0 V, Max.: 5 V	• Accelerator pedal released: 0.5 to 1.1 V • Accelerator pedal depressed: 2.6 to 4.5 V	Read the value with the ignition switch ON (Do not start engine).

Hand–held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
ACCEL POS #2	Accelerator pedal position sensor No.2 output voltage/ Min.: 0 V, Max.: 5 V	• Accelerator pedal released: 1.2 to 2.0 V • Accelerator pedal depressed: 3.4 to 5.3 V	Read the value with the ignition switch ON (Do not start engine).
THROTTLE POS #2	Throttle position sensor No.2 output voltage/ Min.: 0 V, Max.: 5 V	• Throttle fully closed: 2.1 to 3.1 V • Throttle fully open: 4.5 to 5.5 V	Read the value with the ignition switch ON (Do not start engine).
THROTTLE TARGT	Target position of throttle valve/ Min.: 0 V, Max.: 5 V	Idling: 0.4 to 1.1 V	—
THROTTLE OPN DUTY	Throttle motor opening duty ratio/ Min.: 0 %, Max.: 100 %	Throttle fully closed: 0 %	• When accelerator pedal is depressed, duty ratio is increased. • Read the value with the ignition switch ON (Do not start engine)
THROTTLE CLS DUTY	Throttle motor closed duty ratio/ Min.: 0 %, Max.: 100 %	Throttle fully closed: 0 %	• When accelerator pedal is released quickly, duty ratio is increased. • Read the value with the ignition switch ON (Do not start engine)
THROTTLE MOT	Whether or not throttle motor control is permitted/ ON or OFF	Idling: ON	Read the value with the ignition switch ON (Do not start engine)
+BM	Whether or not electric throttle control system power is inputted/ ON or OFF	Idling: ON	—
ACCEL IDL POS	Whether or not accelerator pedal position sensor is detecting idle/ ON or OFF	Idling: ON	—
THROTTLE IDL POS	Whether or not throttle position sensor is detecting idle/ ON or OFF	Idling: ON	—
FAIL #1	Whether or not fail safe function is executed/ ON or OFF	ETCS has failed: ON	—
FAIL #2	Whether or not fail safe function is executed/ ON or OFF	ETCS has failed: ON	—
THROTTLE INITIAL	Throttle fully closed (learned value) Min.: 0 V, Max.: 5 V	0.5 to 0.9 V	—
ACCEL LEARN VAL	Accelerator fully closed (learned value) Min.: 0 V, Max.: 5 V	0.4 to 0.8 V	—
THROTTLE MOT	Throttle motor current Min.: 0 A, Max.: 20 A	Idling: 0 to 3.0 A	—
O2S B1 S2	Heated oxygen sensor output voltage for bank 1 sensor 2/ Min.: 0 V, Max.: 1.0 V	Driving (31 mph, 50 km/h): 0.1 to 0.9 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 B2 S2	Heated oxygen sensor output voltage for bank 2 sensor 2/ Min.: 0 V, Max.: 1.0 V	Driving (31 mph, 50 km/h): 0.1 to 0.9 V	
AFS B1 S1	A/F sensor output voltage for bank 1 sensor 1/ Min.: 0 V, Max.: 7.999 V	Idling 2.8 to 3.8 V	
AFS B2 S1	A/F sensor output voltage for bank 2 sensor 1/ Min.: 0 V, Max.: 7.999 V	Idling 2.8 to 3.8 V	

Hand–held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
SHORT FT #1	Short term fuel trim of bank 1/ Min.: –100 %, Max.: 100%	0 ± 20 %	This item is the short–term fuel compensation used to maintain the air–fuel ratio at stoichiometric air–fuel ratio
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.
SHORT FT #2	Short term fuel trim of bank 2/ Min.: –100 %, Max.: 100 %	0 ± 20 %	This item is the short–term fuel compensation used to maintain the air–fuel ratio at stoichiometric air–fuel ratio
LONG FT #2	Long term fuel trim of bank 2/ 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.
O2FT B1 S2	Short term fuel trim associated with the bank 1 sensor 2/ Min.: –100 %, Max.: 100 %	0 ± 20 %	Same as SHORT FT #1
O2FT B2 S2	Short term fuel trim associated with the bank 2 sensor 2/ Min.: –100 %, Max.: 100 %	0 ± 20 %	Same as SHORT FT #2
AF FT B1 S1	Short term fuel trim associated with the bank 1 sensor 1/ Min.: 0, Max.: 1.999	• Value less than 1 (0.000 to 0.999) = Lean • Stoichiometric Air–Fuel Ratio=1 • Value greater than 1 (1.001 to 1.999) = RICH	—
AF FT B2 S1	Short term fuel trim associated with the bank 2 sensor 1/ Min.: 0, Max.: 1.999	• Lean: 0 ≦ AF FT B2 S1 < 1 • Stoichiometric Air–Fuel Ratio=1 • Rich: 1 ≦ AF FT B2 S1< 1.999	—
FUEL SYS #1	Fuel system status (Bank1) / OL or CL or OL DRIVE or OL FAULT or CL FAULT	Idling after warming up: CL	• 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.
FUEL SYS #2	Fuel system status (Bank2) / OL or CL or OL DRIVE or OL FAULT or CL FAULT		
FC IDL	Fuel cut idle/ ON or OFF	Fuel cut operation: ON	FC IDL = "ON" when throttle valve fully closed and engine speed is over 1,500 rpm.
MIL	Check engine warning light status/ ON or OFF	CHK ENG ON: ON	—
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]	Park/neutral position switch signal/ ON or OFF	P or N position: ON	—

Hand–held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
ELECT LOAD SIG	Electrical load signal/ ON or OFF	• Tail light switch ON: ON • Defogger switch ON: ON	—
STOP LIGHT SW	Stop light switch/ ON or OFF	• Brake pedal depressed: ON • Brake pedal released: OFF	—
PS OIL PRESS SW	Power steering oil pressure switch signal/ ON or OFF	• While turning the steering wheel: ON • While not turning the steering wheel: OFF	The idle–up control is performed when PS is 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.
INTAKE CTL VSV1	VSV status for intake control (bank1)/ ON or OFF	VSV operation: ON	—
FUEL PUMP / SPD	Fuel pump/speed status/ ON/H or OFF/M,L	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)
FC TAU	Fuel Cut TAU: Fuel cut during very light load/ ON or OFF	Fuel cut operating: ON	The fuel cut is being performed under very light load to prevent the engine combustion from becoming incomplete.
CHECK MODE	Check mode/ ON or OFF	Check mode ON: ON	See step 3

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. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the hand–held tester 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.
(d) Turn the ignition switch ON.
(e) Push the ”ON” button of the hand–held tester.
(f) Enter the following menus: DIAGNOSIS / OBD/MOBD / 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	• 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 procedure of A/F CONTROL 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.
INTAKE CTL VSV1	[Test Details] Activate the VSV for intake control. 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	• ON: Rough idle or engine stall. • OFF: Normal engine speed.
VVT CTRL B2	[Test Details] Active the VVT system (Bank 2). ON or OFF	• ON: Rough idle or engine stall. • OFF: Normal engine speed.
ACM INHIBIT	[Test Details] Control the ACM inhibit ON or OFF	—

Hand–held Tester Display	Test Details	Diagnostic Note
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	—