

## DATA LIST/ACTIVE TEST

### 1. DATA LIST

#### HINT:

Using the Data List displayed on the intelligent tester II, you can read values including those of the switches, sensors, and actuator, without removing any parts. Reading the Data List as the first step of troubleshooting is one method to shorten diagnostic time.

#### NOTICE:

**In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.**

- Warm up the engine.
- Turn the ignition switch to OFF.
- Connect the intelligent tester II to the DLC3.
- Turn the ignition switch to ON.
- Turn the intelligent tester II ON.
- Select the following menu items: Powertrain / Engine and ECT / Data List.
- Check the results by referring to the following table.

Intelligent Tester II Display (Abbreviation)	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
Injection Volume (INJ VOLUME)	Injection volume/ Min.: 0 mm <sup>3</sup> , Max.: 1279.98 mm <sup>3</sup>	Idling: 3 to 10 mm <sup>3</sup>	—
Injection Timing (INJ TIMING)	Injection timing/ Min.: 0°C, Max.: 51°C	Idling: -1 to 5°C (Camshaft Angle)	—
Engine SPD (ENGINE SPD)	Engine speed/ Min.: 0 rpm, Max.: 16383.75 rpm	Idling: 700 to 800 rpm	—
MAF (MAF)	Air flow rate from MAF meter status/ Min.: 0 gm/s, Max.: 655.35 gm/s	<ul style="list-style-type: none"> <li>Idling: 7.7 to 10.6 gm/s</li> <li>Running without load (2,500 rpm): 26.3 to 43.8 gm/s</li> </ul>	If the value is approximately 0.0 gm/s: <ul style="list-style-type: none"> <li>Mass air flow meter power source circuit is open</li> <li>VG circuit is open or shorted</li> </ul> If the value is 135 gm/s or more: <ul style="list-style-type: none"> <li>E2G circuit is open</li> </ul>
PIM (PIM)	Absolute pressure inside intake manifold/ Min.: 0 kPa, Max.: 255 kPa	<ul style="list-style-type: none"> <li>Idling: 85 to 110 kPa</li> <li>Engine running at 2,000 rpm: 80 to 110 kPa</li> <li>Engine running at 3,000 rpm: 90 to 130 kPa</li> </ul>	—
Coolant Temp (COOLANT TEMP)	Engine coolant temperature/ Min.: -40°C, Max.: 215°C	After warming up the engine: 80° to 95°C (176° to 203°F)	If the value is "-40°C" or "140°C", sensor circuit is open or shorted
Intake Air (INTAKE AIR)	Intake air temperature/ Min.: -40°C, Max.: 215°C	Equivalent to temperature at the intake manifold	
Fuel Temp. (FUEL TEMP)	Fuel temperature status/ Min.: -40°C, Max.: 215°C	Actual fuel temperature	
Accel Position (ACCEL POSITION)	Accelerator position status/ Min.: 0 %, Max.: 100 %	<ul style="list-style-type: none"> <li>Accelerator pedal released: 0 %</li> <li>Accelerator pedal depressed: 100 %</li> </ul>	Read the value with ignition switch ON (Do not start engine)
Vehicle SPD (VEHICLE SPD)	Vehicle speed/ Min.: 0 km/h, Max.: 255 km/h	Actual vehicle speed	Speed indicated on speedometer

Intelligent Tester II Display (Abbreviation)	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
Throttle POS (THROTTLE POS)	Throttle step position/ Min.: 1 step, Max.: 255 step	<ul style="list-style-type: none"> <li>• Throttle fully closed: 162 step</li> <li>• Throttle fully open: 0 step</li> </ul>	Read the value with ignition switch ON (Do not start engine)
Common Rail Pressure (COMN RAIL PRESS)	Common rail pressure/ Min.: 0 MPa, Max.: 255 MPa	Idling: 20 to 40 MPa	—
Ambient Temperature (AMBI TEMP SENS)	Ambient temperature sensor/ Min.: -40°C, Max.: 215°C	Actual atmospheric air temperature	If the value is "-40°C" or "140°C", sensor circuit is open or shorted
Accel Open SW (ACCEL OPEN SW)	Accelerator pedal open switch/ ON or OFF	Accelerator pedal fully depressed: ON	—
Revised Injection Volume #1 (INJ VOL FB #1)	Injection volume correction for cylinder 1/ Min.: -10 mm <sup>3</sup> , Max.: 10 mm <sup>3</sup>	Idling: -3.0 to 3.0 mm <sup>3</sup>	—
Revised Injection Volume #2 (INJ VOL FB #2)	Injection volume correction for cylinder 2/ Min.: -10 mm <sup>3</sup> , Max.: 10 mm <sup>3</sup>	Idling: -3.0 to 3.0 mm <sup>3</sup>	—
Revised Injection Volume #3 (INJ VOL FB #3)	Injection volume correction for cylinder 3/ Min.: -10 mm <sup>3</sup> , Max.: 10 mm <sup>3</sup>	Idling: -3.0 to 3.0 mm <sup>3</sup>	—
Revised Injection Volume #4 (INJ VOL FB #4)	Injection volume correction for cylinder 4/ Min.: -10 mm <sup>3</sup> , Max.: 10 mm <sup>3</sup>	Idling: -3.0 to 3.0 mm <sup>3</sup>	—
M-INJ/PILOT ON (M-INJ/PILOT ON)	M-INJ/PILOT ON/ Min.: 0 μs, Max.: 65,535 μs	Idling: 600 to 1,200 μs	—
M-INJ/PILOT OFF (M-INJ/PILOT OFF)	M-INJ/PILOT OFF/ Min.: 0 μs, Max.: 65,535 μs	Idling: 0 μs	—
Pilot-Injection (PILOT-INJ)	Pilot-Injection/ Min.: 0 μs, Max.: 65,535 μs	Idling: 400 to 700 μs	—
Stop Light SW (STOP LIGHT SW)	Stop lamp switch/ ON or OFF	<ul style="list-style-type: none"> <li>• Brake pedal depressed: ON</li> <li>• Brake pedal released: OFF</li> </ul>	—
Starter SIG (STARTER SIG)	Starter signal/ ON or OFF	Cranking: ON	—
A/C SIG (A/C SIG)	A/C signal/ ON or OFF	A/C ON: OFF	—
A/C Cut SIG (A/C CUT SIG)	A/C cut signal/ ON or OFF	A/C ON: OFF	—
Check Mode (CHECK MODE)	Check mode/ ON or OFF	Check mode ON: ON	—
MIL ON Distance (MIL ON RUN DIST)	Travel distance after MIL illuminated/ Min.: 0 km, Max.: 65,535 km	Actual travel distance after MIL illuminated	—

\*: If no conditions are specifically stated for "Idling," the shift lever is in the neutral position, the A/C switch is OFF and all accessory switches are OFF.

## 2. ACTIVE TEST

### HINT:

Performing an Active Test using the intelligent tester II enables components including the relay, VSV and actuator, to be operated without removing any parts. Performing Active Test as a first step of troubleshooting is one method to shorten diagnostic time.

Data List is displayed during Active Test.

- (a) Warm up the engine.
- (b) Turn the ignition switch to OFF.
- (c) Connect the intelligent tester II to the DLC3.
- (d) Turn the ignition switch to ON.
- (e) Turn the intelligent tester II ON.
- (f) Select the following menu items: Powertrain / Engine and ECT / Active Test.
- (g) Perform Active Test by referring to the following table.

Intelligent Tester II Display (Abbreviation)	Test Details	Diagnostic Note
TE1 (TC) (TC/TE1)	[Test Details] Same condition as the connection of TC and TE1 ON or OFF	—
Fuel leak test (FUEL LEAK TEST)	[Test Details] Maintain the engine speed at 2,000 rpm, and pressurize the common rail internal fuel pressure to 115 MPa ON or OFF	Confirm that there is no leak in the fuel system when the common rail internal fuel pressure is pressurized high
Turbo pressure sensor VSV (TURBO PRESS VSV)	[Test Details] Activate the VSV for turbo pressure sensor ON or OFF	—
Injector cut #1 (INJECTOR CUT #1)	[Test Details] Injector cut #1 ON or OFF	—
Injector cut #2 (INJECTOR CUT #2)	[Test Details] Injector cut #2 ON or OFF	—
Injector cut #3 (INJECTOR CUT #3)	[Test Details] Injector cut #3 ON or OFF	—
Injector cut #4 (INJECTOR CUT #4)	[Test Details] Injector cut #4 ON or OFF	—