

ON-VEHICLE INSPECTION

1. INSPECT AIR-FUEL RATIO COMPENSATION SYSTEM

- (a) Measure the voltage between the terminals of the ECM connectors.

Standard

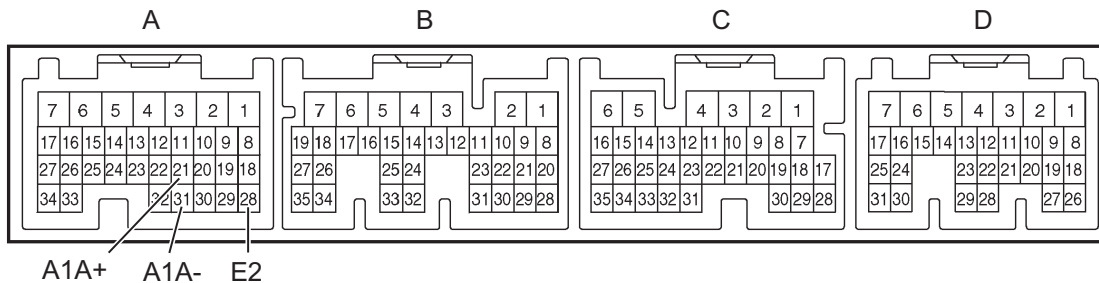
Tester Connection	Condition	Specified Condition
A21 (A1A+) -A28 (E2)	Ignition switch ON	3.3 V
A31 (A1A-) -A28 (E2)	Ignition switch ON	2.9 V

NOTICE:

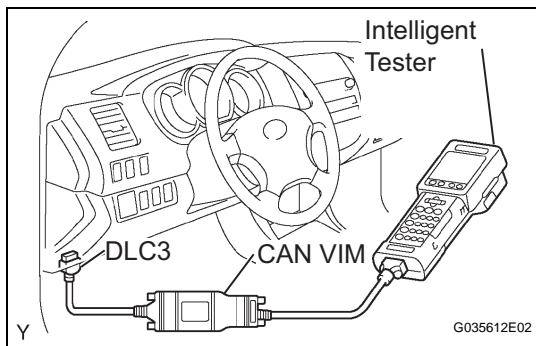
Connect test leads from the back side of the connector. The connectors should not be disconnected from the ECM.

HINT:

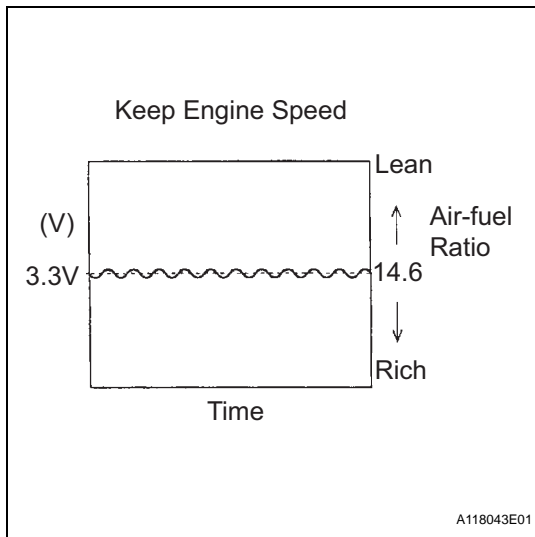
Voltage between the terminals of the ECM is kept constant regardless of the voltage of the A/F sensor.



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- (b) Connect the intelligent tester to the DLC3.
- (c) Turn the ignition switch to ON.
- (d) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DATA LIST / A/FS B1 S1 and O2S B1 S2.
- (e) Warm up the A/F sensor with the engine speed at 2,500 rpm for approximately 2 minutes.



- (f) Keep the engine speed at 2,500 rpm and confirm that the display, when A/FS B1 S1 is selected, is as shown in the illustration.

HINT:

- The illustration may slightly differ from the display on the intelligent tester.
 - Only the intelligent tester displays the waveform of the A/F sensor.
- (g) Confirm that the display, when O2S B1 S2 is selected, changes between 0 V and 1 V with the engine speed at 2,500 rpm.

OK:

The voltage output oscillates more than 8 times in 10 seconds.

CAUTION:

- **Perform the check immediately after warming up the engine.**
- **If the voltage variation could not be verified, warm up the heated oxygen sensor again. If it could not be verified even after warming up the sensor again, check the DTC No. (see page 05-61).**

2. INSPECT FUEL CUT OFF RPM

- Increase the engine speed to at least 3,500 rpm.
- Use a sound scope to check for injector operating sounds.
- Check that injector operating sounds stop momentarily and then resume when the accelerator pedal is released.

Fuel cut off rpm:

2,500 rpm

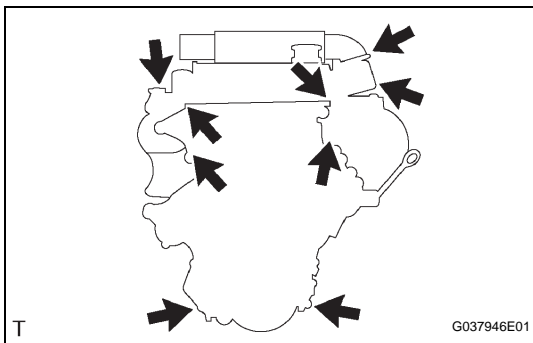
Fuel return rpm:

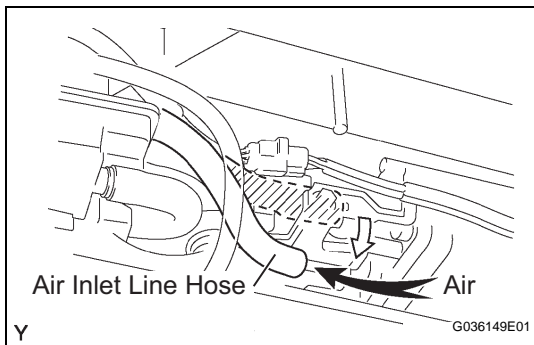
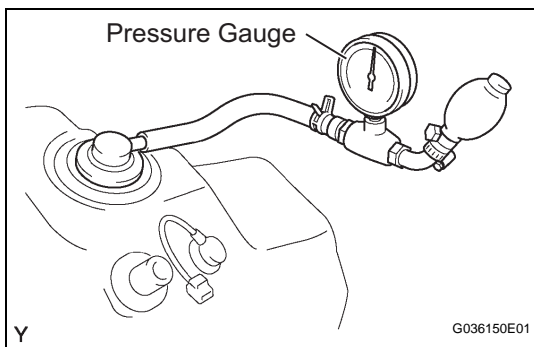
1,200 rpm

3. VISUALLY INSPECT HOSES, CONNECTIONS AND GASKETS

- Check the appearance.
 - Check if the indicated portions of the engine assembly are cracked, leaking or damaged.

HINT:
Disconnection of the engine oil level gauge, oil filler cap, PCV hose, etc. may cause the engine to run improperly. Disconnection, slack or cracks in the air induction system parts between the throttle body and cylinder head will allow air suction and cause the engine to run improperly.
If necessary, repair the engine assembly.





4. INSPECT FUEL CUTOFF VALVE AND FILL CHECK

- (a) Remove the fuel tank (see page [FU-30](#)).
- (b) Connect the pressure gauge to the vent hose port.
- (c) Install the fuel tank with the vent hose disconnected.
- (d) Fill the fuel tank with fuel.
- (e) Apply pressure of 4 kPa (41 gf/cm², 0.58 psi) to the vent port of the fuel tank.

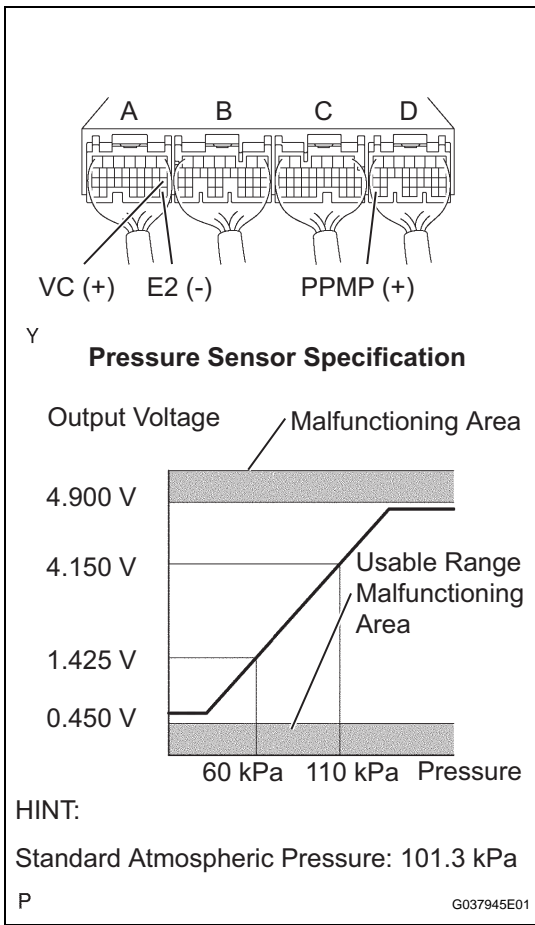
HINT:

It is necessary to check the amount of fuel in the fuel tank.

- (f) Remove the fuel tank cap, and check that the pressure drops.
If the pressure does not drop, replace the fuel tank assembly.
- (g) Reconnect the vent line hose to the fuel tank.

5. CHECK AIR INLET LINE

- (a) Disconnect the air inlet line hose from the charcoal canister.
- (b) Check that air can flow freely into the air inlet line.
If air cannot flow freely into the air inlet line, repair or replace it.
- (c) Reconnect the air inlet line hose to the charcoal canister.



6. INSPECT LEAK DETECTION PUMP (Pressure Sensor)

- (a) Measure the power source voltage of the ECM connectors.

Standard

Tester Connection	Condition	Specified Condition
A18 (VC) - A28 (E2)	Ignition switch ON	4.5 to 5.5 V

If the voltage is not as specified, check the ECM, leak detection pump and wire harness.

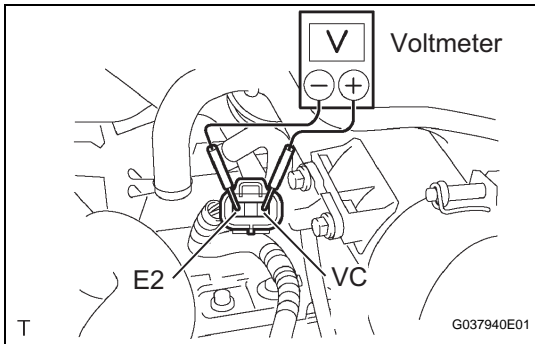
- (b) Measure the power output of the ECM connectors.

- (1) Remove the fuel tank cap.

Tester Connection	Condition	Specified Condition
D31 (PPMP) - A28 (E2)	Ignition switch ON	1.425 to 4.150 V

If the voltage is not as specified, check the ECM, leak detection pump and wire harness.

- (2) Install the fuel tank cap.

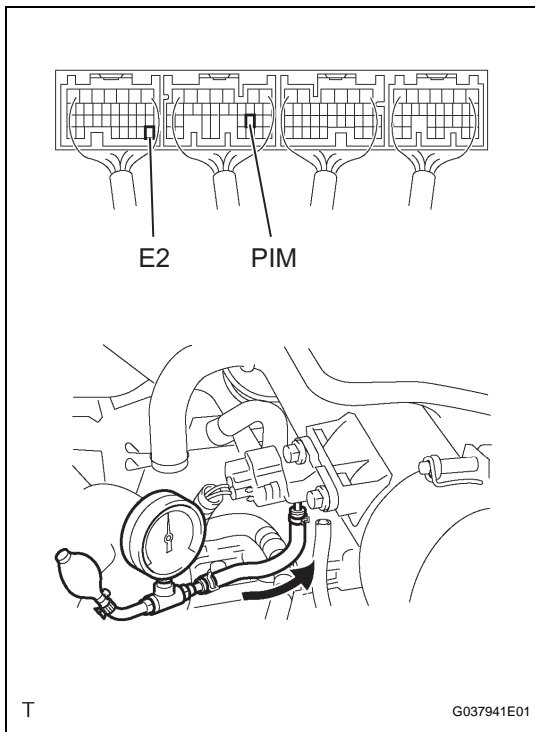


7. INSPECT PRESSURE SENSOR

- (a) Check the power source voltage.
- (1) Disconnect the pressure sensor connector.
 - (2) Turn the ignition switch to ON.
 - (3) Using a voltmeter, measure the voltage between terminals VC and E2.

Voltage:

4.5 to 5.5 V



- (b) Check the supply power.
 - (1) Using SST (turbocharger pressure gauge), apply air to the turbo pressure sensor at the pressures shown in the table below.
 - (2) Connect a voltmeter to terminals PIM and E2 of the ECM and measure the output voltage under ambient atmospheric pressure.

Voltage Increase

Applied Pressure [kPa (kgf/cm ² , psi)]	Voltage Increase [V]
19.6 (0.20, 2.84)	0.1 to 0.4
39.2 (0.40, 5.69)	0.4 to 0.7
58.8 (0.60, 8.53)	0.7 to 1.0
78.5 (0.80, 11.4)	1.0 to 1.3
98.0 (1.00, 14.2)	1.3 to 1.6

8. INSPECT AIR PUMP ASSEMBLY

- (a) Check the operation (see page 05-372).

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