EC09U–02

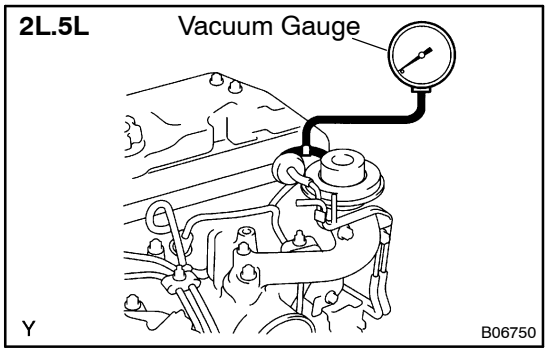
INSPECTION

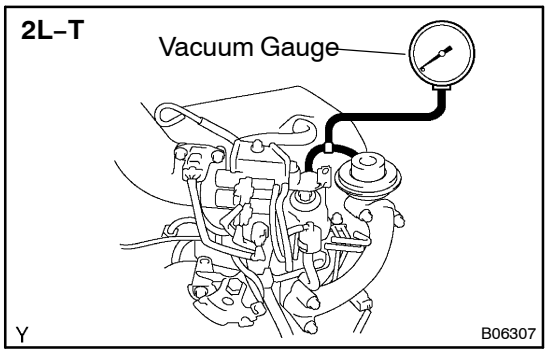
HINT:

In a malfunction where the EGR system is always on, black smoke or white smoke may be output from the exhaust pipe. If this occurs, inspect the EGR system also.

NOTICE:

Always stop the engine when installing or removing the vacuum gauges, or removing the vacuum hoses





1. INSPECT EGR SYSTEM

(a) Using a 3–way connector, connect a vacuum gauge to the hose between the EGR valve and E–VRV.

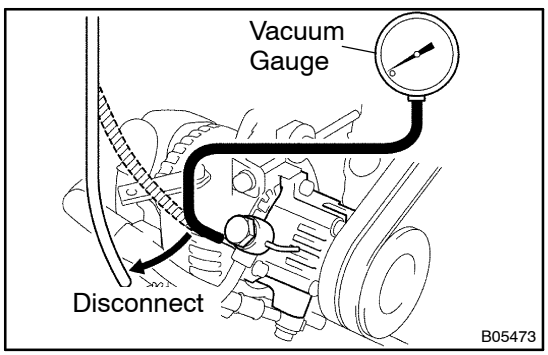
(b) Inspect the seating of the EGR valve.
Start the engine, and check that the engine starts and runs at idle.

(c) Inspect the cold engine condition.
  (1) The coolant temperature should be below 40°C (104°F).
  (2) Check that the vacuum gauge indicates zero at idle.

(d) Inspect the hot engine condition.
  (1) Warm up the engine. The coolant temperature should be above 70°C (158°F).
  (2) Check that the vacuum gauge indicates 24 kPa (180 mmHg, 7.09 in.Hg) under idling condition.
  (3) If increasing the engine speed gradually, the negative pressure goes up more and check that it becomes approx. 40 kPa (300 mmHg, 11.81 in.Hg) at 1,200 rpm.
  (4) Quikly turn the adjusting lever of the injection pump to "FULL OPEN", and check that the needle of the vacuum gauge momentarily indicates zero.
  (5) Keep the engine speed at 4,200 rpm or more, and check that the needle of the vacuum gauge needle momentarily indicates zero.

If no problem is found with this inspection, system is normal; otherwise inspect each part.

(e) Remove the vacuum gauge.



2. INSPECT VACUUM PUMP

(a) Disconnect the vacuum hose from the outlet pipe.

(b) Connect a vacuum gauge to the outlet pipe.

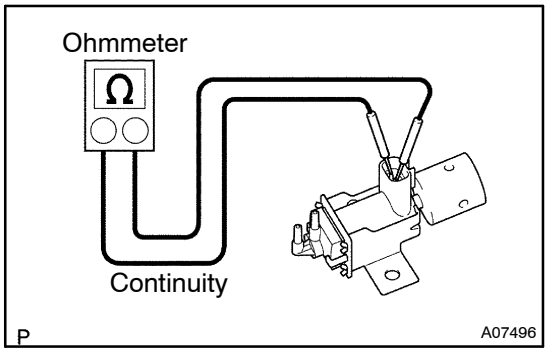
(c) Warm up the engine and check that the vacuum gauge indicates above 86.7 kPa (650 mmHg, 25.59 in.Hg).

If a problem is found, repair the vacuum pump.

(d) Reconnect the vacuum hose to the outlet pipe.

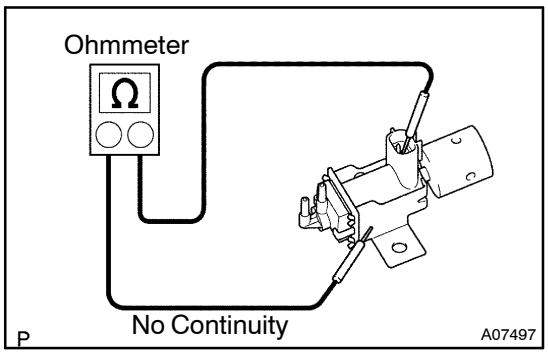
3. INSPECT E–VRV

(a) Remove the emission control valve set.
  (1) Disconnect the connector.
  (2) Disconnect the 2 vacuum hoses.
  (3) Remove the bolt and the emission control valve.



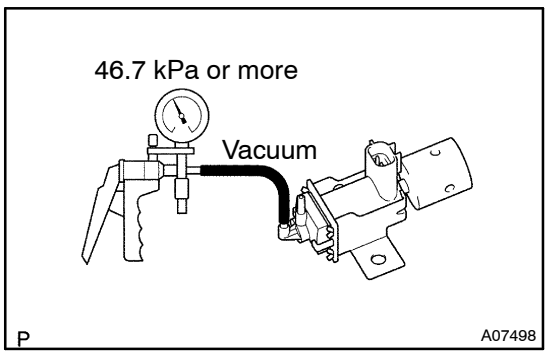
(b) Inspect the E–VRV.
  (1) Inspect the E–VRV for open circuit.
  Using an ohmmeter, check that there is continuity between the terminals.
  Resistance: 11 – 13 Ω at 20°C (68°F)

If there is no continuity, replace the E–VRV.



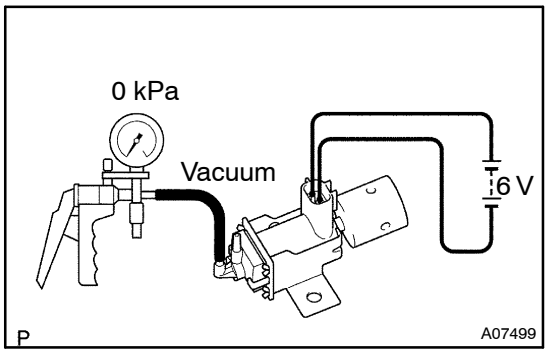
  (2) Inspect the E–VRV for ground.
  Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the E–VRV.



  (3) Inspect the E–VRV for air tightness.
  Check that when vacuum is applied to the vacuum outlet port shown, the needle of the vacuum pump indicates an increase of 46.7 kPa (350 mmHg, 13.79 in.Hg) or more.

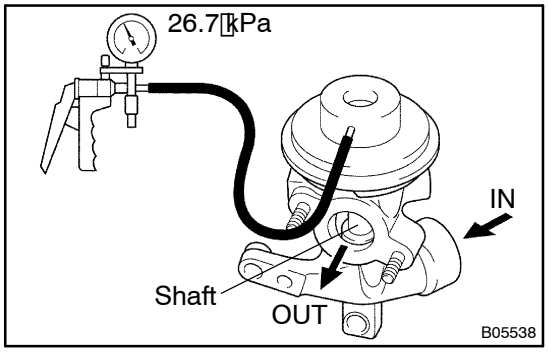
If a problem is found, replace the E–VRV.



  (4) Inspect the E–VRV operation.
    - Apply about 6 V of DC power to the terminals.
    - Check that when vacuum is applied to the vacuum outlet port shown, the needle of the vacuum pump does not move.

If operation is not as specified, replace the E–VRV.

(c) Reinstall the emission control valve set.
  (1) Install the emission control valve set with the 2 bolts.
  (2) Connect the 6 vacuum hoses.
  (3) Connect the 3 connectors.



4. INSPECT EGR VALVE

(a) Remove the EGR valve. (See page EC–6)

(b) Inspect the EGR valve.

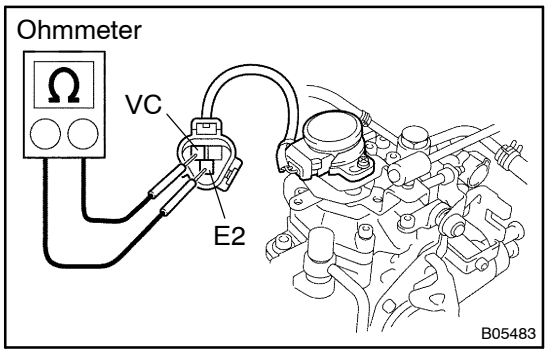
(1) When a vacuum of 26.7 kPa (200 mmHg, 7.88 in.Hg) is applied to the diaphragm chamber, check that the shaft rises up and that air flows from IN to OUT.

(2) Maintain the above conditions, and check again that there are no leaks.

(3) Check the valve for sticking and heavy carbon deposits.

If a problem is found, replace EGR valve.

(c) Reinstall the EGR valve. (See page EC–6)



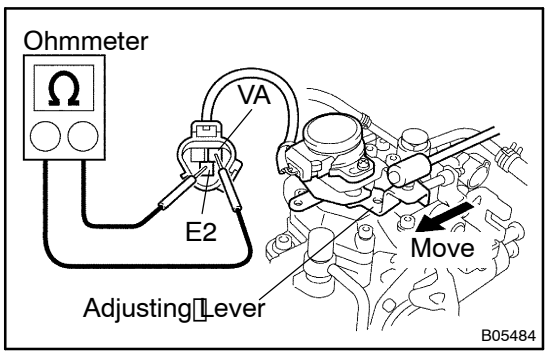
5. INSPECT THROTTLE POSITION SENSOR

(a) Disconnect the throttle position sensor connector.

(b) Inspect the throttle position sensor.

(1) Using a ohmmeter, measure the resistance between terminals VC and E2.

Resistance: 1.84 – 3.42 kΩ at 20°C (68°F)

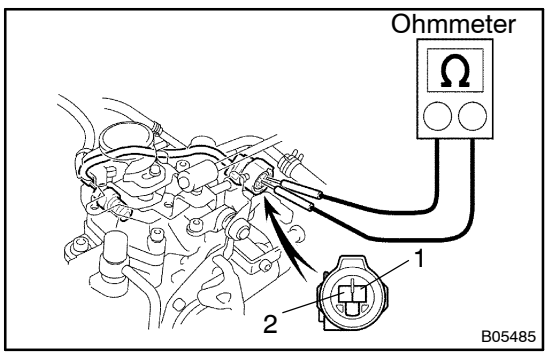


(2) Check the decrease in resistance between terminals VA and E2 when the ajusting lever is moved from the closed to the open position.

HINT:

After removal or replacement of the throttle position sensor, have minute adjustments done at a specially equipped service shop.

(c) Reconnect the throttle position sensor connector.



6. INSPECT PICKUP SENSOR

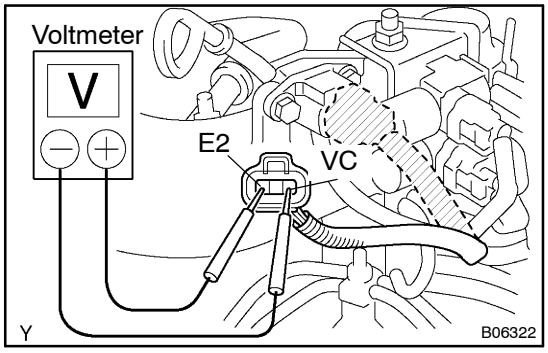
(a) Disconnect the pickup sensor connector.

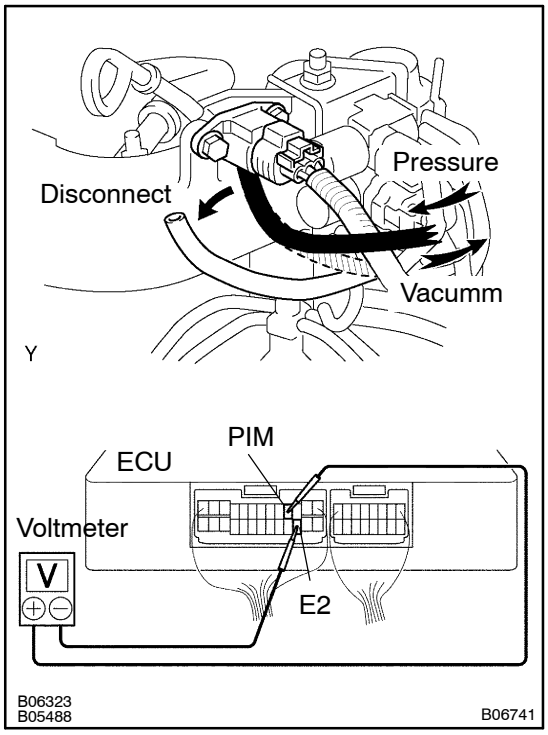
(b) Using a ohmmeter, measure the resistance between terminals 1 and 2.

Resistance: 650 – 970 Ω at 20°C (68°F)

If the resistance is not as specified, replace the pickup sensor.

(c) Reconnect the pickup sensor connector.





7. INSPECT VACUUM SENSOR

(a) Inspect the power sourse voltage of the vacuum sensor.

(1) Disconnect the vacuum sensor connector.

(2) Turn the ignition switch ON.

(3) Using a voltmeter, measure the voltage between connector terminals VC and E2 of the wiring harness side.

Voltage: 4.5 – 5.5 V

(4) Turn the ignition switch OFF.

(5) Reconnect the vacuum sensor connector.

(b) Inspect the power output of the vacuum sensor.

(1) Turn the ignition switch ON.

(2) Disconnect the vacuum hose from the vacuum sensor.

(3) Connect a voltmeter to terminals PIM and E2 of the emission ECU, and measure the output voltage under these conditions:

- Apply vacuum (40 kPa (300 mmHg, 11.8 in.Hg)) to the vacuum sensor.

Voltage: 0.2 – 0.8 V

- Release the vacuum from the vacuum sensor.

Voltage: 1.3 – 1.9 V

- Apply pressure (69 kPa (0.7 kgf/cm², 10 psi)) to the vacuum sensor.

Voltage: 3.2 – 3.8 V

(4) Turn the ignition switch OFF.

(5) Reconnect the vacuum hose to the vacuum sensor.

8. INSPECT WATER TEMPERATURE SENSOR
(See page ST–1)

9. INSPECT EMISSION ECU

(a) Disconnect the emission ECU from the body panel. (See page EC–6)

(b) Inspect the emission ECU. (See page DI–15)

(c) Reinstall the emission ECU to the body panel.