TURBO CHARGER SYSTEM (1KD–FTV)(From August, 2004)

130AU–02

ON–VEHICLE INSPECTION

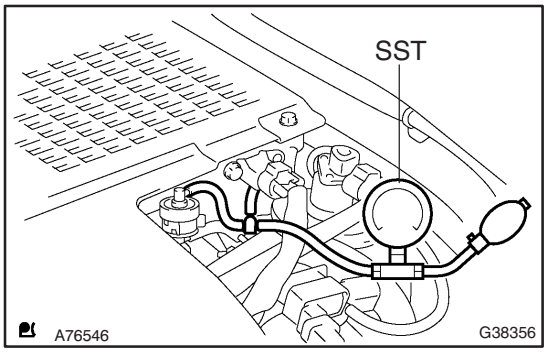
1. INSPECT INTAKE AIR SYSTEM

(a) Check for leakage or clogging between the air cleaner housing and turbocharger inlet and between the turbocharger outlet and cylinder head.
  (1) Clogged air cleaner...Clean or replace the element.
  (2) Collapsed or deformed hoses...Repair or replace them.
  (3) Leakage from connections...Check each connection and repair.
  (4) Cracks in components...Check and replace them.

2. INSPECT EXHAUST SYSTEM

(a) Check for leakage or clogging between the cylinder head and turbocharger inlet and between the turbocharger outlet and exhaust pipe.
  (1) Deformed components...Repair or replace them.
  (2) Foreign material in passages...Remove it.
  (3) Leakage from components...Repair or replace them.
  (4) Cracks in components...Check and replace them.

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3. CHECK TURBOCHARGER PRESSURE

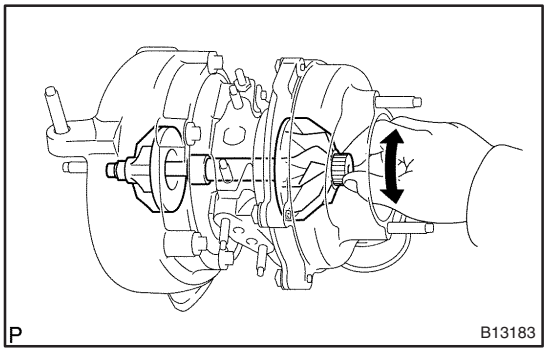
(a) Warm up the engine.
(b) Using a 3–way connector, connect SST (turbocharger pressure gauge) to the hose connected to the intake manifold.
  SST 09992–00242
(c) Depress the brake pedal, then depress the accelerator pedal down as far as possible. Measure the turbocharging pressure at maximum engine speed (4,500 to 4,700 rpm).
  Standard pressure:
  100 kPa (1.0 kgf/cm^2, 14.5 psi) (absolut pressure) or more at sea level

NOTICE:

At location adove sea level, the turbocharging pressure lowers due to a reduction in atmospheric pressure.

If the pressure is not the specification, check the intake air and exhaust systems for leakage.

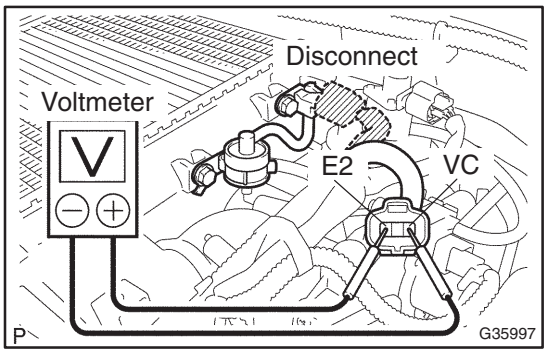
If there is no leakage, check the turbocharger operation.

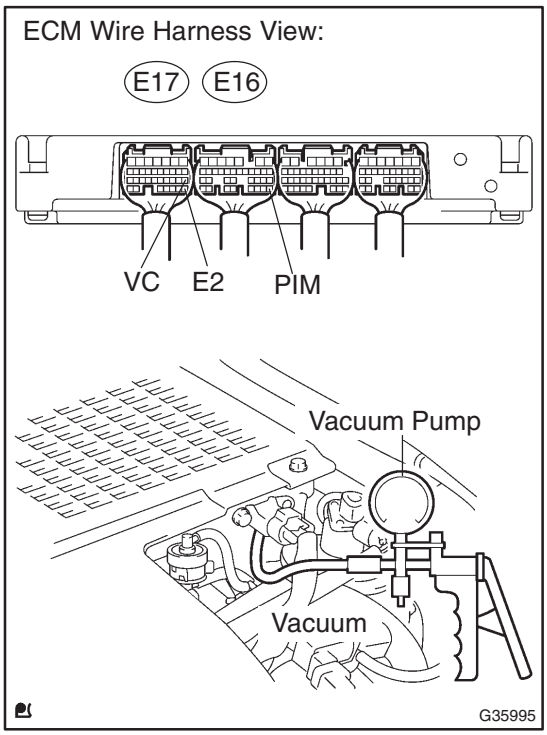


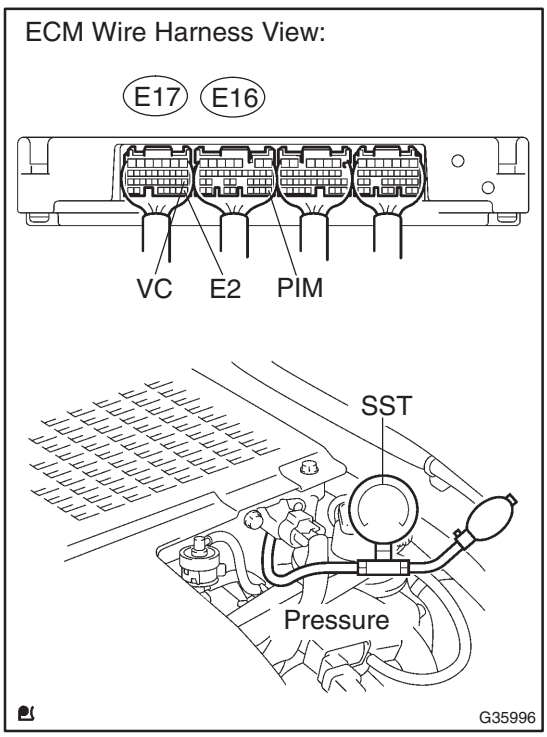
4. INSPECT TURBINE SHAFT ROTATION

(a) Grasp the edge of the turbine shaft, and turn it. Check that the turbine shaft turns smoothly.

If the turbine shaft does not turn or if it turns with a heavy drag, replace the turbocharger.







5. INSPECT TURBO PRESSURE SENSOR

(a) Inspect power source voltage.

(1) Disconnect the turbo pressure sensor connector.

(2) Turn the ignition switch to the ON position.

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

Voltage: 4.5 to 5.5 V

(4) Turn the ignition switch off.

(5) Reconnect the turbo pressure sensor connector.

(b) Inspect power supply.

(1) Turn the ignition switch to the ON position.

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

(3) Connect a voltmeter to terminals PIM and E2 of the ECM and measure the output voltage under ambient atmospheric pressure.

(4) Apply vacuum to the turbo pressure sensor in 13.3 kPa (100 mmHg, 3.94 in.Hg) increments to 40.0 kPa (300 mmHg, 11.81 in.Hg).

(5) Measure the voltage drop from the value measured in step (3) for each increment.

Voltage drop:

Apply vacuum [kPa (mmHg, in.Hg)]	Voltage drop [V]
13.3 (100, 3.94)	0.1 – 0.3
26.7 (200, 7.87)	0.3 – 0.5
40.0 (300, 11.81)	0.5 – 0.7

(6) Using SST (turbocharger pressure gauge), apply pressure to the turbo pressure sensor in 19.6 kPa (0.20 kgf/cm^2, 2.84 psi) increments to 98.0 kPa (1.00 kgf/cm^2, 14.2 psi).

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(7) Measure the voltage increase from the value measured in step (3) for each increment.

Voltage up:

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

(c) Reconnect the vacuum hose to the turbo pressure sensor.

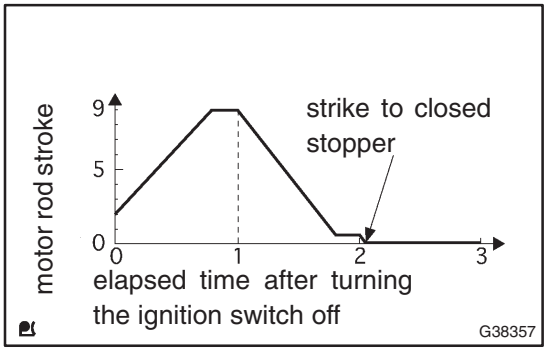
6. DC MOTOR CHECK

(a) Remove the turbo insulator.

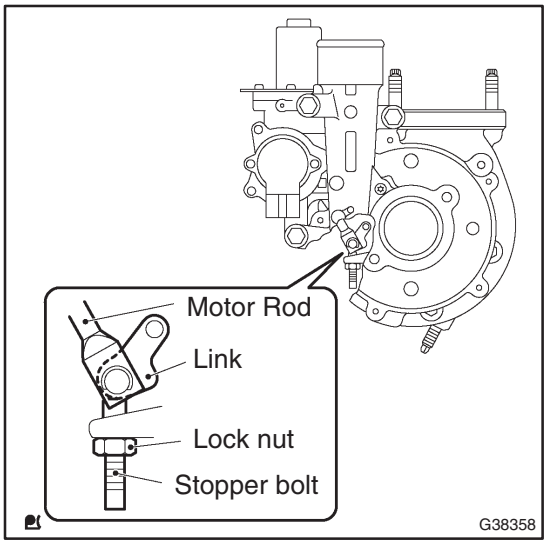
(b) Check stroke.

(1) Make sure that the connector is connected to the DC motor securely.

(2) Turn the ignition switch to the ON position, and then turn it off.



(3) Check that the DC motor operates as shown in the graph on the left.

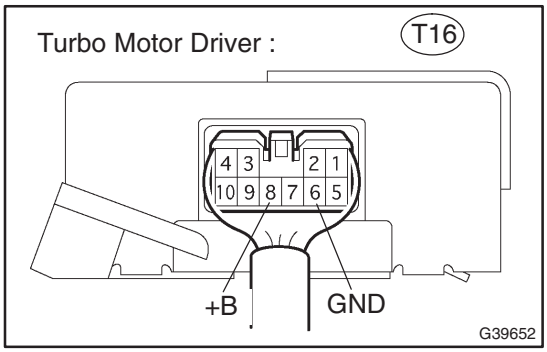


(4) Visually check that the link to activate the variable nozzle strikes the closed turbo stopper.

NOTICE:

Do not loosen or tighten the lock nut of the closed turbo stopper.

(c) Install the turbo insulator.



7. TURBO MOTOR DRIVER FUNCTION CHECK

(a) Check voltage.

(1) Turn the ignition switch to the ON position.

(2) Using an electrical tester, measure the voltage between terminals 8 (+B) and 6 (GND).

Standard: 11 to 14 V

(b) Check output waveform.

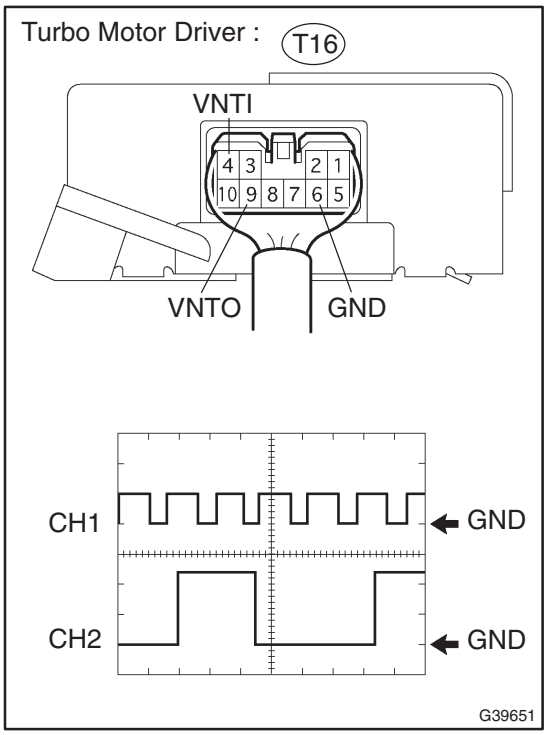
(1) Turn the ignition switch to the ON position.

(2) Set the intelligent–tester II to the oscilloscope function.

HINT:

Refer to the intelligent–tester II operator's manual for setting method.

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(3) Using the intelligent–tester II, check the output waveform between terminals 4 (VNTI) and 6 (GND), and terminals 9 (VNTO) and 6 (GND).

SST 09991–60101, 09991–60300

Standard:

Item	Content
Measured terminal	CH1: VNTO⇔GND CH2: VNTI⇔GND
Measure set	5V/DIV, 20ms/DIV
Condition	Ignition switch ON

HINT:

An example of the oscilloscope waveform is shown on the left. Waveforms of noise and chattering are not shown.