13056–01

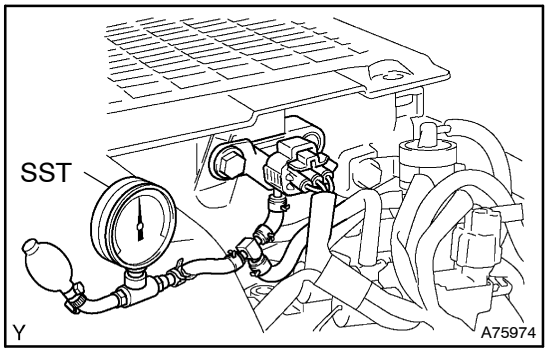
ON–VEHICLE INSPECTION

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 element
  (2) Hoses collapsed or deformed...Repair or replace
  (3) Leakage from connections...Check each connection and repair
  (4) Cracks in components...Check and replace

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
  (2) Foreign material in passages...Remove
  (3) Leakage from components...Repair or replace
  (4) Cracks in components...Check and replace



3. CHECK TURBOCHARGER PRESSURE

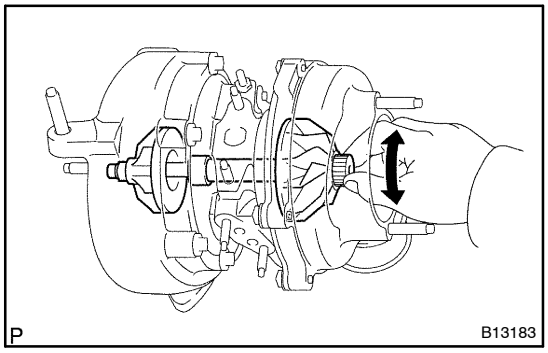
(a) Warm up engine.

(b) Using a 3–way connector, connect SST (turbocharger pressure gauge) to the hose leading to the intake manifold.
  SST 09992–00242

(c) Depress in the clutch pedal, then press the accelerator pedal down as far as it will go. Measure the turbocharging pressure at maximum speed (4500 – 4700 rpm).
  Standard pressure:
  110 kPa (1.1 kgf/cm^2, 15.6 psi) or more

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

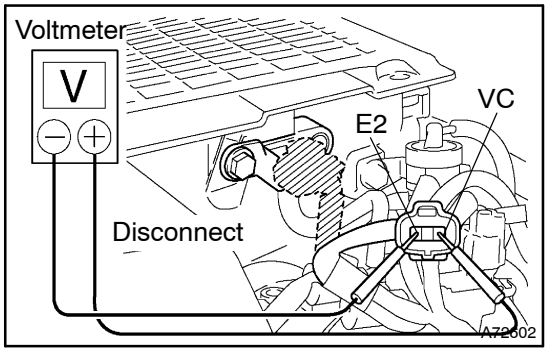
If there is no leakage, check the turbocharger operation.

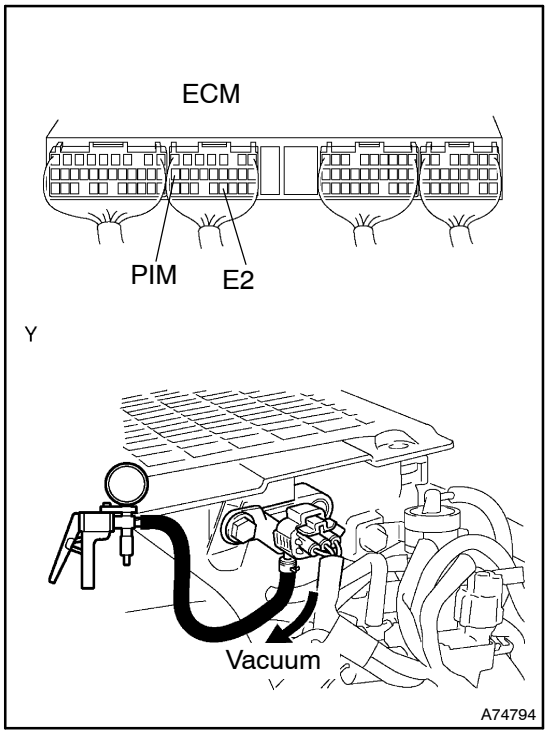


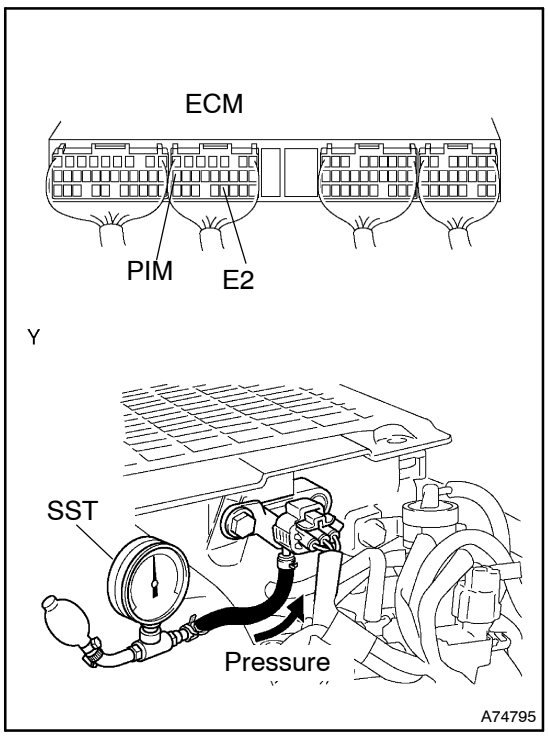
4. INSPECT TURBINE SHAFT ROTATION

(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 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 turbo pressure sensor connector.

(b) Inspect supply power
  (1) Turn the ignition switch ON.
  (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) segments to 40.0 kPa (300 mmHg, 11.81 in.Hg).
  (5) Measure the voltage drop from step (3) above for each segment.

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) segments to 98.0 kPa (1.00 kgf/cm^2, 14.2 psi).

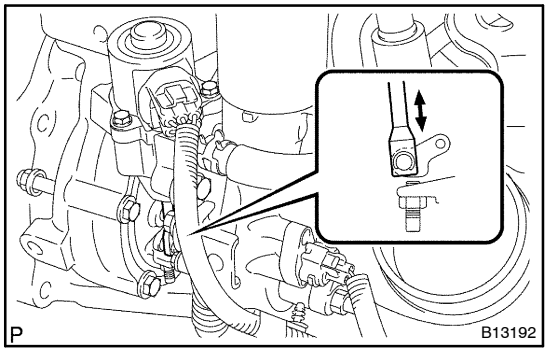
SST 09992–00242

  (7) Measure the voltage up from step (3) above for each segment.

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. CHECK STEP MOTOR FOR TURBOCHARGER CONTROL OPERATION

(a) Warm up engine.

(b) Make sure that the connector is properly connected.

(c) Turn the ignition switch OFF. Then turn the ignition switch ON again.

(d) Start the engine and make it idle.

(e) At this time, check visually that the step motor rod strokes.

Reference:

Rod stroke range: 11 ± 0.03 mm (0.43 ± 0.0012 in.)