

# ENGINE MECHANICAL SYSTEM (3SZ-VE)

## OPERATION CHECK

1. CHECK COOLANT (Ethylene glycol based anti-freeze solution)  
(See page CO-1)

2. CHECK ENGINE OIL QUALITY (See page LU-1)

3. INSPECT BATTERY SPECIFIC GRAVITY

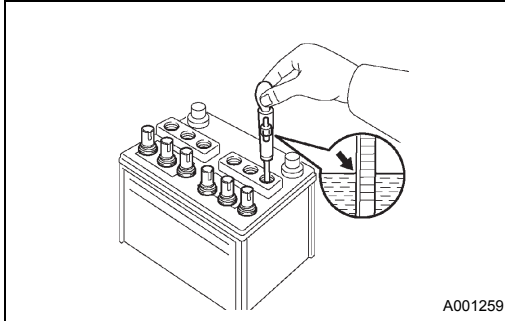
- (a) Check the specific gravity of each cell.

**Standard:**

**1.25 to 1.29 (Liquid temperature: 20°C)**

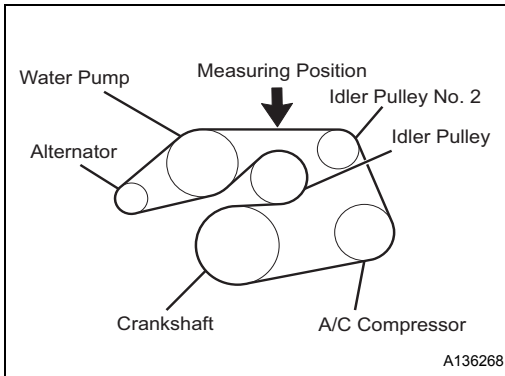
**HINT:**

If the specific gravity is not as specified, charge the battery.



4. CHECK AIR CLEANER FILTER ELEMENT

- (a) Check for dirt and blockage in the air cleaner pipe.



5. CHECK V-BELT TENSION AND DEFLECTION

- (a) Check the V-belt tension and deflection using the belt tension gauge.

**Standard**

Item	When Installing New Part	When Inspecting
Tension [N (kgf)]	883±49{90±5}	441±98{45±10}
Deflection (Thrust power: 100 N (10.2 kg)) (mm)	9-11	13-15

### NOTICE:

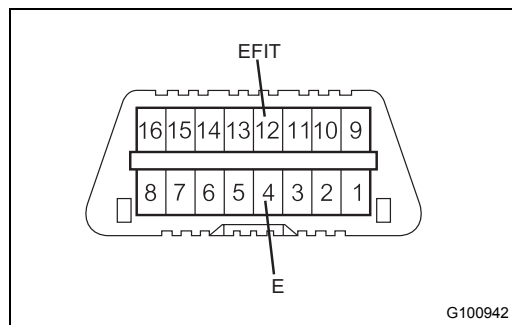
- Measure the belt deflection between the specified pulleys.
- Crank the engine 2 times before measuring the tension.
- To install a new belt, adjust the belt so that the tension is in the middle of the specified value given for WHEN INSTALLING NEW PART in the table above.
- When installing a new belt, check the tension within 2.5 minutes after installation.
- For the belt that has been used for 5 minutes or more, check the tension using the specified value in WHEN INSPECTION in the table above.
- To reassemble the belt that has been used for 5 minutes or more, adjust the belt so that the tension is in the middle of the specified value given for WHEN INSPECTING in the table above.
- To use a belt tension gauge, check its accuracy with the master gauge before measuring the tension.

6. CHECK IGNITION TIMING

- (a) Check the timing with the DS-II.
  - (1) Connect the DS-II to the DLC.



EM



- (2) Follow the prompts on the screen to display the DATA LIST / IGNITION TIMING #1 screens, and measure the ignition timing.

**Standard:**

**BTDC 0-15°CA**

**NOTICE:**

**Check the ignition timing with the A/C off, the electrical fan off, and the shift lever in the N and P positions.**

- (3) Check that the ignition timing advances immediately when the engine speed is increased.
- (b) Check the timing with commonly-used gauges.
  - (1) Using the diagnosis check wire, short-circuit between terminals 12 (EFIT) and 4 (E) of the DLC.

**NOTICE:**

- **Do not short-circuit the wrong terminals. Doing so may cause malfunctions.**
- **Check the ignition timing with the A/C off, the electrical fan off, and the shift lever in the N and P positions.**

- (2) Connect the timing light clip to the coil connector wire harness for the cylinder No. 1.

**NOTICE:**

**Use a timing light that can detect the first signal.**

- (3) Check that the ignition timing is as the specified value.

**Standard:**

**BTDC 4 to 8°**

- (4) Open the circuit between terminals 12 (EFIT) and 4 (E) of the DLC.
- (5) Check that the ignition timing advances immediately when the engine speed is increased.
- (6) Remove the timing light.

## 7. CHECK IDLE SPEED

- (a) Connect the DS-II to the DLC.
- (b) Follow the prompts on the screen to display the DATA LIST / IGNITION TIMING #1 screens, and measure the engine speed (r/min).

**Specified value:**

**600 to 750 r/min**

**NOTICE:**

**Check the ignition timing with the A/C off, the electrical fan off, and the shift lever in the N and P positions.**

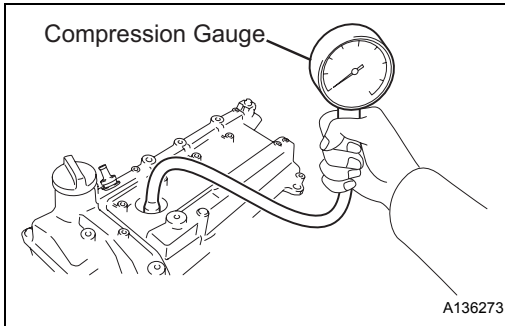
## 8. CHECK COMPRESSION

- (a) Fully warm up the engine and then stop it.

**NOTICE:**

**A warmed up engine should have an engine coolant temperature of over 85°C, have an engine oil temperature of 60°C, and the engine rpm should be stabilized.**

- (b) Remove the air cleaner assembly.
- (c) Remove all the ignition coils.
- (d) Remove all the spark plugs.



- (e) Disconnect all the injector connectors.

**NOTICE:**

**Stop fuel injection to prevent unburned fuel from damaging the catalyst.**

- (f) Check the compression.

- (1) Install a compression gauge to the plug hole.
- (2) Fully open the throttle.
- (3) Crank the engine, then check the compression.

**Standard:**

**1471 kPa (15.0 kgf/cm<sup>2</sup>)**

**Maximum limit:**

**1079 kPa (11.0 kgf/cm<sup>2</sup>)**

**Reference value:**

**Maximum difference between cylinders: 147 kPa**

**(1.5 kgf/cm<sup>2</sup>)**

**NOTICE:**

- The measurement must be done as quickly as possible.
- After all work is completed, be sure to clear all DTCs and check that a normal code is output.

**9. CHECK DENSITY OF CO AND HC**

- (a) Keep the engine speed at 2,500 r/min for 2 minutes and then check the density of CO and HC at idle.

**Standard:**

**CO density: 0.2%**

**HC density: 200 ppm**

**NOTICE:**

**As the specified value is used for reference only, no adjustment is required.**

