

Engine Tune-up Preparation**Note**

- If the accelerator pedal is depressed continuously for a specified time, the engine speed may decrease to the idle speed. This is due to the fuel cut control operation, which prevents overheating, and it does not indicate a malfunction. The engine speed returns to normal control when the accelerator pedal is released.

1. Connect the M-MDS to the DLC-2.
2. Shift the selector lever (ATX) or shift lever (MTX) to the following position:
 - MTX: Shift lever is in neutral position.
 - ATX: Selector lever is in P or N position.

Note

- The engine coolant temperature and oil temperature can be verified by M-MDS PID "ECT" and "OIL_TEMP".

3. Run the engine speed at a constant **2,500 to 3,000 rpm** and warm up the engine (engine coolant temperature: **80 °C {176 °F}** or more, oil temperature: **60 °C {140 °F}** or more).
4. Turn off all electrical loads with the engine idling.
5. If the cooling fan is operating, wait until it stops.

Idle Speed Inspection**Note**

- The idle speed cannot be adjusted.
- The M-MDS is required to verify the idle speed.

1. Complete the engine tune-up preparation. (See Engine Tune-up Preparation.)
2. Verify that the idle speed (M-MDS PID: RPM) is within the specification using the PID/data monitor function of the M-MDS. (See PCM INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
 - If there is a malfunction, refer to "ENGINE SYMPTOM TROUBLESHOOTING". (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)

Idle speed (MTX: Neutral position, ATX: P, N position) [SKYACTIV-G 2.0]**MTX: 500—600 rpm****ATX: 550—650 rpm****Idle speed (MTX: Neutral position, ATX: P, N position) [SKYACTIV-G 2.5]****MTX: 560—660 rpm****ATX: 550—650 rpm****Ignition Timing Inspection****Note**

- The ignition timing cannot be adjusted.
- The M-MDS is required to verify the ignition timing.

1. Complete the engine tune-up preparation. (See Engine Tune-up Preparation.)
2. Verify the ignition timing (M-MDS PID: SPARKADV) using the PID/data monitor function of the M-MDS. (See PCM INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)

Ignition timing [SKYACTIV-G 2.0]**MTX: Approx. BTDC 14°****ATX: Approx. BTDC 12°****Ignition timing [SKYACTIV-G 2.5]****Approx. BTDC 12°**

3. Verify that ignition timing advances when the engine speed increases gradually.
 - If there is a malfunction, refer to "ENGINE SYMPTOM TROUBLESHOOTING". (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)

Idle Mixture Inspection

1. Verify that the idle speed and ignition timing are within the specification. (See Idle Speed Inspection.) (See Ignition Timing Inspection.)
2. Insert an exhaust gas analyzer into the tailpipe.
3. Verify that the CO and HC concentrations are within regulation.
 - If there is a malfunction, refer to "ENGINE SYMPTOM TROUBLESHOOTING". (See SYMPTOM DIAGNOSTIC INDEX [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
 - If no malfunction is detected, replace the catalytic converter. (See EXHAUST SYSTEM REMOVAL/ INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)

CO concentration

Within the regulation

HC concentration

Within the regulation

Idle-up Speed Control Inspection

Note

- The idle speed cannot be adjusted.
- The M-MDS is required to verify the idle speed.

1. Complete the engine tune-up preparation. (See Engine Tune-up Preparation.)
2. Verify that the idle speed according to each load (M-MDS PID: RPM) is within the specification using the PID/ data monitor function of the M-MDS (except idle speed decrease after applying load). (See PCM INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
 - If the engine speed is not within the specification when a specified load is applied, inspect the related input parts, wiring harnesses, and connectors.

Idle-up speed (MTX: Neutral position, ATX: P, N position)

A/C on: 650—800 rpm

Electrical loads on: 600—750 rpm