## BATTERY CONDITION INITIALIZATION SETTING (i-stop SETTING) [SKYACTIV-G 2.0]

id0117h5801000

**Caution**

- **Verify the PCM part number (suffix) using the M-MDS.**
  **The initial setting procedure differs depending on the PCM part number (suffix). The initial setting may not be completed unless the correct procedure is used because the software update information cannot be determined by the label adhered to the PCM.**

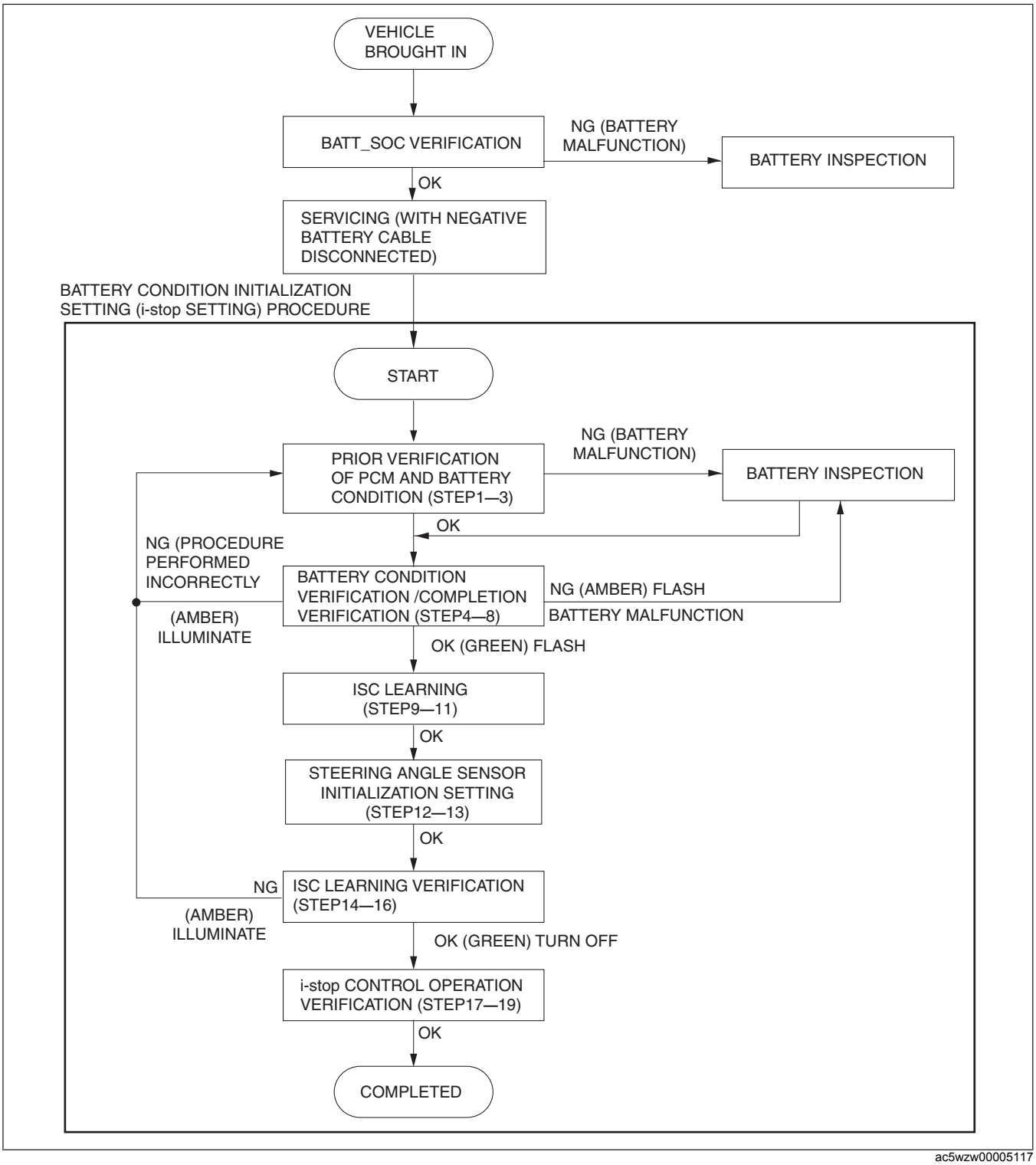
**PCM PART NUMBER (SUFFIX): After ****-18881E (European (L.H.D. U.K.) specs.) and After ****-18881D (Except for European (L.H.D. U.K.) specs.)**

**Caution**

- **If the engine is started with the bonnet open, the i-stop function will not operate until the engine is restarted with the bonnet closed (not system malfunction). If the engine is started with the bonnet open, close the bonnet and restart the engine after the ignition is switched off once.**
- **If a vehicle with an i-stop non-operation condition is brought in, the malfunction will not be resolved by simply performing the battery condition initial setting (i-stop setting). Verify the PID "BATT_SOC" value and if the value is less than 75%, recharge the battery. (See BATTERY RECHARGING [SKYACTIV-G 2.0].)**
- **If the "BATT_SOC" value has not been verified before disconnecting the negative battery cable, perform battery condition initial setting (i-stop setting) after performing the battery inspection.**
- **The "BATT_SOC" value is displayed "0%" because the battery charge condition is not stabilized after connecting the negative battery cable (it is necessary to leave battery undisturbed for approx. 6 to 48 h to stabilize battery charge condition).**

- If the negative battery cable is disconnected, specific information stored in the PCM will be erased. Therefore, perform the following procedure after reconnecting.

## Battery Condition Initial setting (i-stop setting) flow




ac5wzw00005117

| Purpose | Step | Procedure | Caution/Note |
|---|---|---|---|
| Prior verification of PCM and battery condition | 1 | Verify the value (BATT_SOC) measured before disconnecting the negative battery cable.<br>**When BATT_SOC value is 75% or more**<br>• Go to the next step.<br>**When BATT_SOC value is not verified or the value is less than 75%.**<br>• Perform battery inspection. (See BATTERY INSPECTION [SKYACTIV-G 2.0].) | — |
| | 2 | Verify that 5 min or more have elapsed since the negative battery cable was disconnected. | **Caution**<br>**• It is necessary to leave the battery undisturbed for 5 min or more because the voltage is not stabilized, depending on the battery usage condition, and the PCM cannot determine the "BATT_SOC" value correctly.** |
| | 3 | Disconnect the current sensor connector. If the current sensor connector has already been disconnected, go to the next step. | — |
| Battery condition verification / completion verification | 4 | Connect the negative battery cable and wait for 10 s or more. | **Caution**<br>**• negative battery cable terminal tightening torque: 2.9—4.9 N·m {30—49 kgf·cm, 26—43 in·lbf}**<br><br>**Note**<br>• Connect the negative battery cable before connecting the current sensor connector. If the current sensor connector is connected first, the PCM may mistakenly recognize a signal from the current sensor and learn the battery condition incorrectly. |
| | 5 | Connect the current sensor connector. | — |
| | 6 | Switch the ignition ON (engine off) and wait for 15 s or more (within 1 min.). | — |
| | 7 | **VERIFY i-stop INDICATOR LIGHT (GREEN) AND i-stop WARNING LIGHT (AMBER) FLASHING CONDITION**<br>• Press the i-stop OFF switch for 10 s and verify the flashing condition of the i-stop indicator light (green) and i-stop warning light (amber).<br>**When i-stop indicator light (green) flashes**<br>— Go to the next step.<br>**When i-stop warning light (amber) flashes**<br>— Perform the battery inspection. (See BATTERY INSPECTION [SKYACTIV-G 2.0].)<br>**When i-stop warning light (amber) illuminates**<br>— Procedure is performed incorrectly. Switch the ignition off and repeat the procedure from Step 1 (Prior verification of PCM and battery condition). | **Note**<br>• When the i-stop OFF switch is pressed, the illumination condition of the i-stop warning light (amber) changes to flashing of either the i-stop indicator light (green) or the i-stop warning light (amber). |
| | 8 | Switch the ignition off. | — |
| ISC learning | 9 | Close the bonnet. | **Note**<br>• If the engine is not warmed up completely the ISC learning will not finish.<br>— Warm-up is not completed even if the low engine coolant temperature indicator light (blue) turns off. As a guide, apply pressure to the radiator hose and if the radiator has warmed up, engine warming is complete. |
| | 10 | Start the engine. | |
| | 11 | Warm up the engine completely with no electrical load. | |

| Purpose | Step | Procedure | Caution/Note |
|---|---|---|---|
| Steering angle sensor initialization setting | 12 | Turn the steering wheel lock-to-lock. | **Note**<br>• Perform steering angle sensor initialization setting because the initial value stored in the EPS control module is reset. |
| | 13 | Switch the ignition off. | |
| ISC learning verification | 14 | Perform the following procedure within 25 s.<br>1. Switch the ignition ON (engine off) and within 5 s, long-press the i-stop OFF switch for 3 s or more. (The i-stop warning light (amber) illuminates.)<br>2. Start the engine.<br>3. Long-press the i-stop OFF switch one time.<br>4. Verify that the i-stop warning light (amber) stop illuminating and the i-stop indicator light (green) starts flashing.<br>— If the amber light continues to illuminate, the procedure was performed incorrectly, therefore repeat the procedure from Step 1. (Prior verification of PCM and battery condition) | **Note**<br>• Although the i-stop indicator light (green) may flash a few times right after the engine is started, then the i-stop warning light (amber) starts illuminating. |
| | 15 | Maintain the idle status (no electrical load) until the i-stop indicator light (green) turns off. | — |
| | 16 | After the i-stop indicator light (green) turns off, switch the ignition off. | — |
| i-stop control operation verification | 17 | Start the engine and verify that the i-stop indicator light (green) is turned off. | — |
| | 18 | Verify the i-stop control operation using the following procedure.<br>1. Vehicle is traveling at a speed of 4 km/h or more. (EC/ Russia specs.)<br>1. While the vehicle is traveling at a speed of 4 km/h or more, verify that the i-stop indicator light (green) illuminates. (Except EC/Russia specs.)<br>2. Stop the vehicle and verify that the engine stops via the i-stop control and then restarts. | — |
| | 19 | Switch the ignition off. | — |

**PCM PART NUMBER (SUFFIX): ****-18881 — ****-18881D (European (L.H.D. U.K.) specs.) and ****-18881 — ****-18881C (Except for European (L.H.D. U.K.) specs.)**

**Caution**

- **If the engine is started with the bonnet open, the i-stop function will not operate until the engine is restarted with the bonnet closed (not system malfunction). If the engine is started with the bonnet open, close the bonnet and restart the engine after the ignition is switched off once.**
- **If a vehicle with an i-stop non-operation condition is brought in, the malfunction will not be resolved by simply performing the battery condition initial setting (i-stop setting). Verify the PID "BATT_SOC" value and if the value is less than 75%, recharge the battery (6-hour normal recharge at 10A recharge current). (See BATTERY RECHARGING [SKYACTIV-G 2.0].)**

- If the negative battery cable is disconnected, specific information stored in the PCM will be erased. Therefore, perform the following procedure after reconnecting.

| Purpose | Step | Procedure | Caution/Note |
|---|---|---|---|
| Prior verification of PCM and battery condition | 1 | Verify the value (BATT_SOC) measured before disconnecting the negative battery cable.<br>**When BATT_SOC value is 75% or more**<br>• Go to the next step (basic operation for battery condition setting).<br>**When BATT_SOC value is not verified or the value is less than 75%.**<br>• Perform battery electrolyte gravity inspection. (See Battery Electrolyte Gravity Inspection.) | **Note**<br>• If the BATT_SOC value is 75% or more, the battery condition setting (step 2 to 10) can be completed smoothly. |

| Purpose | Step | Procedure | Caution/Note |
|---|---|---|---|
| Basic operation for battery condition setting | 2 | Open the hood, disconnect the negative battery cable, and wait for 1 min. or more. If the negative battery cable has been already disconnected, verify that 1 min. or more has elapsed. | **Caution**<br>**• After disconnecting the negative battery cable, it takes approx. 1 min. to clear the specific information stored in the PCM. When reconnecting the negative battery cable, wait for 1 min. or more before reconnecting.** |
| | 3 | Disconnect the current sensor connector. If the current sensor connector has already been disconnected, go to the next step. | **Note**<br>• Disconnect the current sensor connector to prevent the current sensor from being damaged by connecting the negative battery cable. |
| Operation for battery stabilization | 4 | Connect the negative battery cable. | — |
| | 5 | Perform the following procedure according to the elapsed time after disconnecting the battery or whether battery recharging was performed or not.<br>**When the elapsed time is less than 1 hour, or the battery recharging was performed**<br>1. Turn on the headlights with the ignition switched off, and wait for 30 s (within 1 min).<br>2. Turn off the headlights and wait for 5 min or more.<br>**When the elapsed time is 1 hour or more, or the battery recharging was not performed**<br>1. Connect the negative battery cable and wait for 10 s or more. | **Caution**<br>**• If the battery condition is not stabilized because of recharging, discharge the battery voltage. If the battery voltage is not discharged, battery condition setting may not complete normally.** |
| | 6 | Connect the current sensor connector. | — |
| | 7 | With the ignition switched off, verify the battery voltage.<br>**Battery voltage is 12.5 V to 12.7 V**<br>• With the battery voltage (BATT_V) in the 12.5 to 12.7 range, connect the negative battery cable.<br>**Battery voltage is other than 12.5 to 12.7 V**<br>• Perform the following procedure.<br>**Battery voltage is other than 12.5 to 12.7 V and BATT_SOC value is 75% or less**<br>— Perform battery electrolyte gravity inspection. (See Battery Electrolyte Gravity Inspection.)<br>**BATT_SOC value is 75% or more and battery voltage is less than 12.5 V**<br>1. Switch the ignition ON and idle the engine for 5 to 10 min.<br>2. Switch the ignition OFF.<br>3. Repeat the procedure from Step 1 (Prior verification of PCM and battery condition).<br>**BATT_SOC value is 75% or more and battery voltage is 12.7 V or more**<br>1. Turn the headlights on with the ignition switched off and discharge until the battery voltage (BATT_V) is 12.5 to 12.7 V.<br>2. Turn the headlights off. | — |

| Purpose | Step | Procedure | Caution/Note |
|---|---|---|---|
| Battery condition setting verification | 8 | Switch the ignition ON. | — |
| | 9 | **VERIFY i-stop INDICATOR LIGHT (GREEN) AND i-stop WARNING LIGHT (AMBER) ILLUMINATION/FLASHING CONDITION**<br>• Press the i-stop OFF switch for 10 s or more and verify the illumination/flashing condition of the i-stop indicator light (green) and i-stop warning light (amber).<br>**When i-stop indicator light (green) flashes**<br>— Go to the next step.<br>**When i-stop warning light (amber) flashes**<br>— Perform battery voltage inspection using a circuit tester. (See Battery Voltage Inspection.)<br>**When i-stop warning light (amber) illuminates**<br>— Procedure is performed incorrectly. Switch the ignition off and repeat the procedure from Step 1 (Prior verification of PCM and battery condition). | **Note**<br>• By verifying the illumination/flashing condition of the i-stop indicator light (green) and the i-stop warning light (amber), it can be verified that the procedure for battery condition setting was done correctly or not.<br>— When the i-stop indicator light (green) flashes, battery condition setting was completed.<br>— When the i-stop warning light (amber) flashes, the battery may not be recharged enough or it may be overcharged. (Battery condition setting is not completed.)<br>— When the i-stop warning light (amber) illuminates, battery condition setting may be performed incorrectly. (Battery condition setting is not completed.) |
| | 10 | Switch the ignition off. | — |
| ISC learning | 11 | Start the engine. | **Note**<br>• If the engine is not warmed up completely the ISC learning will not finish.<br>— Warm-up is not completed even if the low engine coolant temperature indicator light (blue) turns off. As a guide, apply pressure to the radiator hose and if the radiator has warmed up, engine warming is complete. |
| | 12 | Warm up the engine completely with no electrical load. | |
| Steering angle sensor initialization setting | 13 | Close the bonnet. | **Note**<br>• Perform steering angle sensor initialization setting because the initial value stored in the PCM is reset when the negative battery cable is disconnected. |
| | 14 | Turn the steering wheel lock-to-lock. | |
| | 15 | Switch the ignition off. | |

| Purpose | Step | Procedure | Caution/Note |
|---|---|---|---|
| ISC learning verification | 16 | Perform the following procedure within 25 s.<br>1. Switch the ignition ON (engine off) and within 5 s, long-press the i-stop OFF switch for 3 s or more. (The i-stop warning light (amber) illuminates.)<br>2. Start the engine.<br>3. Long-press the i-stop OFF switch.<br>4. Verify that the i-stop warning light (amber) stop illuminating and the i-stop indicator light (green) starts flashing.<br>— If the amber light continues to illuminate, the procedure was performed incorrectly, therefore repeat the procedure from Step 1. (Prior verification of PCM and battery condition) | **Note**<br>• Although the i-stop indicator light (green) may flash a few times right after the engine is started, then the i-stop warning light (amber) starts illuminating. |
| | 17 | Maintain the idle status (no electrical load) until the i-stop indicator light (green) turns off. | — |
| | 18 | After the i-stop indicator light (green) turns off, switch the ignition off. | — |
| i-stop control operation verification | 19 | Start the engine and verify that the i-stop indicator light (green) is turned off. | — |
| | 20 | Verify the i-stop control operation using the following procedure.<br>1. Vehicle is traveling at a speed of 4 km/h or more. (EC/Russia specs.)<br>1. While the vehicle is traveling at a speed of 4 km/h or more, verify that the i-stop indicator light (green) illuminates. (Except EC/Russia specs.)<br>2. Stop the vehicle and verify that the engine stops via the i-stop control and then restarts. | — |
| | 21 | Switch the ignition off. | — |

**Battery Electrolyte Gravity Inspection**

1. Using an hydrometer, verify that the electrolyte gravity of each battery cell is 1.17 or more, and perform the following procedure.

**When the electrolyte gravity is 1.17 or more**

1. Recharge the battery. (See BATTERY RECHARGING [SKYACTIV-G 2.0].)

**Note**

- For a constant charge battery recharger, adjust the current to 10 A every 30 minutes.

**Recharge time for BATT_SOC value (%)**

| "BATT_SOC" value (%) | 75 | 70 | 65 | 60 | 55 | 50 |
|---|---|---|---|---|---|---|
| Recharge time (min) | 72 | 90 | 108 | 126 | 144 | 162 |

**When the electrolyte gravity is 1.17 or less**

1. Replace the battery because it can be determined as a dendrite short. (See BATTERY REMOVAL/INSTALLATION [SKYACTIV-G 2.0].)
2. Perform the following procedure to investigate the cause of the dendrite short.
   — Verify how the customer uses the vehicle.
   — Verify the parasitic draw. (See BATTERY INSPECTION [SKYACTIV-G 2.0].)

2. Repeat the procedure from Step 1 (Prior verification of PCM and battery condition).

**Battery Voltage Inspection**

1. Switch the ignition off.
2. Inspect the battery voltage using a circuit tester.

**Note**

- The battery condition is not stabilized because of the recharging. Discharge the battery voltage.
- If the battery voltage is less than 12.5 V or 12.7 V or more, the i-stop control may not operate normally.

**When the voltage is 12.7 V or more**

1. Turn on the headlight low beams with the ignition switched off and discharge the battery so that the voltage is between 12.5 V or less or 12.7 V or more.

**When the voltage is less than 12.5 V**

1. Recharge the battery. (See BATTERY RECHARGING [SKYACTIV-G 2.0].)

**Note**

- For a constant charge battery recharger, adjust the current to 10 A every 30 minutes.

**Recharge time for BATT_SOC value (%)**

| "BATT_SOC" value (%) | 75 | 70 | 65 | 60 | 55 | 50 |
|---|---|---|---|---|---|---|
| Recharge time (min) | 72 | 90 | 108 | 126 | 144 | 162 |

3. Repeat the procedure from Step 1 (Prior verification of PCM and battery condition).