

# Service Information

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Category <b>G</b>	<b>Technical</b>	Ref. No. E015/11A	Page 1 of 3
Coverage <input type="checkbox"/> Distributor only <input checked="" type="checkbox"/> Please inform your dealers		Date Issued August 8, 2011	
Please convey this information to your <input type="checkbox"/> Director <input checked="" type="checkbox"/> General Manager <input checked="" type="checkbox"/> Warranty Dept. <input checked="" type="checkbox"/> Parts Dept. <input checked="" type="checkbox"/> Training Dept. <input checked="" type="checkbox"/> Field Rep.		Date Revised October 13, 2011	
Applicable Model  All models	Applicable Countries or Specifications  Worldwide (except North America)		

**[Revised]**

**Note: "3. Battery inspection at scheduled maintenance" has been revised.  
This information supersedes "E002/98".**

## Subject: Tips for Battery Maintenance

### DESCRIPTION

This Service Information is to make sure of some maintenance points of car battery, in order to prevent unnecessary battery replacement which is caused by lack of proper maintenance or wrong way of battery charging. **The purpose of this Service Information is not to detail required downstream work and necessary further diagnosis on the vehicle caused by the symptoms.**

1. Battery maintenance of vehicle in inventory
  - (1) To prevent dead battery due to parasitic draw, be sure to disconnect the negative battery terminal.
  - (2) With referring to "4. Battery inspection", check the condition of battery once a month.
  - (3) For demo/display vehicle, with referring to "4. Battery inspection", check the condition of battery once a week.  
For vehicle equipped with i-stop, always follow Workshop Manual "BATTERY REMOVAL / INSTALLATION" when re-connecting negative cable.
  - (4) For display vehicle, connect battery charger (with output voltage 12-15V) when demonstrating the operation of electric equipments with the engine stopped.
2. Battery inspection at PDI
  - (1) With referring to "4. Battery inspection", check the condition of battery.

Caution: Vehicle may crank even if the battery voltage is less than 12.40V, but due to this it may be misjudged that the battery is OK.  
Especially for the vehicles equipped with i-stop, be sure to check the voltage of both "main" and "sub" batteries. As the sub battery runs the starter, no trouble occurs even if the main battery is low when starting the engine so please be aware of the necessity of main battery inspection.

Note: Always perform PDI within 2 days prior to the day of vehicle delivery.  
For vehicle equipped with i-stop, always follow Workshop Manual "BATTERY REMOVAL / INSTALLATION" when re-connecting negative cable.  
Low battery due to poor maintenance during inventory is not eligible for warranty.

### 3. Battery inspection at scheduled maintenance

(1) With referring to "4. Battery inspection", check the condition of battery.

For vehicle equipped with i-stop, always follow Workshop Manual "BATTERY REMOVAL / INSTALLATION" when re-connecting negative cable.

(2) **Verify if any of the following symptoms are present:**

- **The frequency of topping up the battery electrolyte level increases.**
- Cranking speed is **slower than usual but yet stable.**
- Room lamps and/or headlight flickers when engine load is high.
- Battery electrolyte level differs among cells.
- Blinking cycle of turn signal is slow.

**This symptoms are reflecting a damaged battery but may also simply an aged battery. Start to confirm the specific gravity of electrolyte.** Specification of specific gravity of electrolyte is 1.220 or more at 20°C (for vehicles with i-stop: main battery).

When the ambient temperature is far beyond or below 20°C, threshold gravity becomes differed. Refer to the formula below for temperature compensation.

<b>Specific gravity at 20°C = Measured specific gravity + (Temperature (°C) - 20) x 0.0007</b>
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Example 1: Temperature: 2°C, Measured specific gravity: 1.230

$$\begin{aligned} \text{Specific gravity at 20°C} &= 1.230 + (2 - 20) \times 0.0007 \\ &= 1.230 - 18 \times 0.0007 \\ &= 1.230 - 0.0126 \\ &= 1.2174 \end{aligned}$$

The specific gravity at 20°C is 1.2174, which is less than 1.220 so battery charge is required.

Example 2: Temperature: 38°C, Measured specific gravity: 1.210

$$\begin{aligned} \text{Specific gravity at 20°C} &= 1.210 + (38 - 20) \times 0.0007 \\ &= 1.210 + 18 \times 0.0007 \\ &= 1.210 + 0.0126 \\ &= 1.2226 \end{aligned}$$

The specific gravity at 20°C is 1.2226, which is more than 1.220 so the battery is good.

### 4. Battery inspection

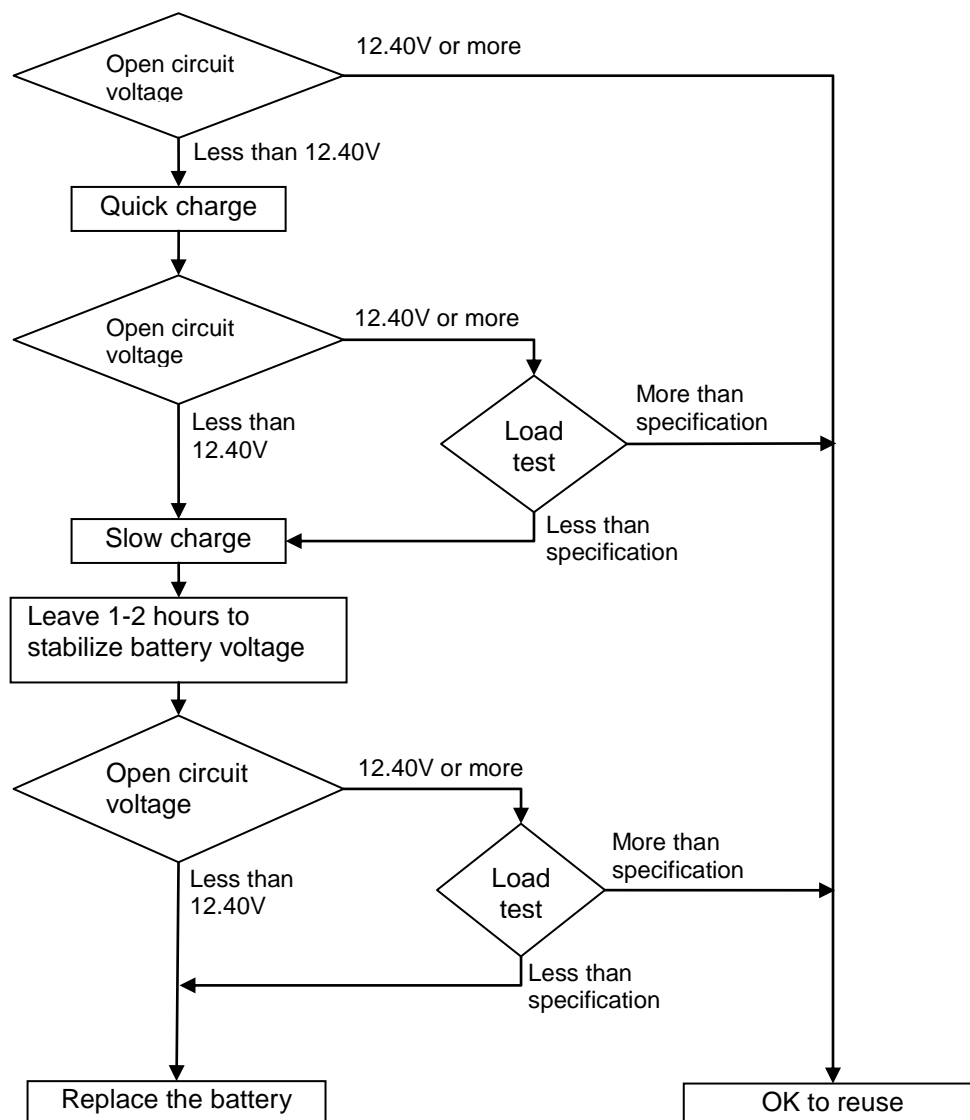
(1) Visual inspection

- 1) Verify the battery exterior is clean. If not, wipe off as necessary.
- 2) Verify there's no deformation / damage on the battery exterior. If any deformation or damage is found, immediately replace the battery.
- 3) Verify the battery terminals are clean and battery leads are securely connected. Use wire brush to clean the battery terminals.
- 4) Verify the fluid level is in between upper and lower level. If it's low, remove the caps and top up distilled water.

(2) Voltage inspection

Follow the flowchart shown below.

For procedure of "quick charge", "slow charge" and "load test", refer to Workshop Manual and instruction of battery charger.



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