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Subject: BATTERY MAINTENANCE	Bulletin No: 01-004/16
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BULLETIN NOTE

This bulletin supersedes the previously issued bulletin(s) listed below. The changes are noted below in Red beside the change bars.

Previously Issued TSBs:	Date(s) issued
01-017/12	05/23/12
01-003/11	01/12/11
01-009/10	08/24/10, 06/11/10, 02/15/10, and 02/02/10
01-029/06	07/28/06

APPLICABLE MODEL(S)/VINS

1995-2009 B-Series	1997-2002 626	2004- 16 Mazda3	2007-12 CX-7	2016 CX-3
1997-2003 Protege	1997-2006 MPV	2006- 15 Mazda5	2007- 16 CX-9	
1997-2005 Miata	2001-11 Tribute	2003- 16 Mazda6	2006- 16 MX-5	
1997-2002 Millenia	2011- 14 Mazda2	2013- 16 CX-5	2004-11 RX-8	

DESCRIPTION

This service bulletin provides testing and charging procedures in order to promote proper battery maintenance, to deliver new vehicles with fully charged batteries, and to reduce unnecessary battery replacement cost.

For new vehicles in stock at the dealer, inspect and maintain the battery periodically according to the repair procedure.

CONSUMER NOTICE: The information and instructions in this bulletin are intended for use by skilled technicians. Mazda technicians utilize the proper tools/equipment and take training to correctly and safely maintain Mazda vehicles. These instructions should not be performed by "do-it-yourselfers." Customers should not assume this bulletin applies to their vehicle or that their vehicle will develop the described concern. To determine if the information applies, customers should contact their nearest authorized Mazda dealership. Mazda North American Operations reserves the right to alter the specifications and contents of this bulletin without obligation or advance notice. All rights reserved. No part of this bulletin may be reproduced in any form or by any means, electronic or mechanical---including photocopying and recording and the use of any kind of information storage and retrieval system ---without permission in writing.

REPAIR PROCEDURE

BATTERY VISUAL INSPECTION

Visually check battery for the following:

- The surface of the battery should be dry and clean (no dirt). If it is not, wipe away the dirt and moisture with a damp cloth. If a dry cloth is used, static electricity could ignite the battery vapor gas.
- Ensure there is no corrosion (rust) or dirt on the battery terminals and that the connections are tight.
 - If the battery terminals are loose, tighten them.
 - If there is any corrosion (rust), use a wire brush to remove it.
- Check the liquid level (non-sealed battery).
 - Make sure that the liquid level in each cell is between the upper and lower level.
 - If the liquid level is low, remove the cap and fill with distilled water to the upper level.
 - If any other water than distilled is used, it could cause the battery to discharge.
 - Do not overfill the battery. If the battery is overfilled, liquid will leak.
- Verify the battery case is not damaged or deformed. If the battery case is deformed, it is recommended to replace the battery, as the inside of the battery may also be damaged.
- Install the battery securely in the vehicle using the battery clamp.

The following are indications the battery is nearly dead and may need to be replaced soon:

- The battery liquid level requires topping off more often.
- The need to recharge the battery becomes more frequent.
- The engine cranking speed is insufficient to start engine.
- When you press/depress the accelerator pedal, the intensity of the headlight/interior lights changes.
- The electrolyte liquid levels between the cells varies.
- The electrolyte liquid becomes dirty.
- The turn signals blink slower than normal.

BATTERY INSPECTION AND RECHARGE PROCEDURE

NOTE:

- Some batteries may be equipped with a "battery eye". The battery eye color simply indicates the battery state-of-charge, not its condition. Do not replace a battery based solely on the indication given by the battery eye. Always follow the procedure shown below for proper inspection of the battery condition.
- This procedure should be performed using the Mazda GR8-1291 battery management system. Refer to TSB 01-054/10 on how to use the Mazda GR8-1291.

Step	Inspection	Result	Action
1	Inspect the battery with the GR8-1291.	"GOOD BATTERY"	Return vehicle to inventory
		"GOOD-RECHARGE"	Refer to the following "Discharged Battery Inspection" and "Discharged Battery Troubleshooting Procedure" and check if there is any problem on vehicle side. If not, perform "Diagnostic Charge" on the battery using the GR8-1291.
		"CHARGE AND RETEST"	Refer to the following "Discharged Battery Inspection" and "Discharged Battery Troubleshooting Procedure" and check if there is any problem on vehicle side. If not, perform "Diagnostic Charge" on the battery using the GR8-1291.
		"REPLACE BATTERY"	Replace battery.
		"BAD CELL - REPLACE"	Replace battery.

DISCHARGED BATTERY INSPECTION

Possible Factors

- Battery discharging current is exceeding charging current.
 - Engine idling too long with high electric load (i.e. traffic jam at nighttime or in the rain).
 - Excessive use of electric devices with engine off (generator not working).
 - Generator problem (i.e. loose drive belt, internal failure, damage).
 - Poor or no contact between battery and generator.
 - Generator control problem (i.e. short circuit or contact loss of field coil control circuit / generator output voltage signal circuit).
 - Electric load too high, especially due to aftermarket equipments.
- Too much electric consumption while vehicle is not in use.
 - Electric devices left on.
 - Excessive use of electric devices with engine off (generator not working).
 - Vehicle not in use for long periods of time.
 - Excessive parasitic draw, especially due to aftermarket equipments.
- Weak battery.
 - Low electrolyte, electrode plate deterioration.

DISCHARGED BATTERY TROUBLESHOOTING PROCEDURE

NOTE: If needed, use the “System Test” of the Mazda GR8-1291 to test the charging and starting systems by following the on-screen instructions to enter the appropriate information. Refer to the Mazda GR8-1291 Instruction Manual for more information.

Step	Inspection	Result	Action
1	Measure the parasitic draw of the vehicle. Refer to Workshop Manual (section 01-17 BATTERY INSPECTION/Parasitic Draw.) Is it within spec? Note: The following are considered normal parasitic draw values for aftermarket accessories. <ul style="list-style-type: none"> • Remote engine starter - up to 15 mA • Radar detector - up to 15 mA • Anti-theft alarm - up to 15 mA • Navigation system - up to 15 mA • Cell phone charger - 0-60 mA • Video cassette recorder - up to 5mA • DVD player - up to 5 mA 	YES	Go to next step.
		NO	Repair or replace the malfunctioning part.
2	Check the connection of harness & connectors between PCM field coil control and generator. Are all items OK? Refer to Workshop Manual (section 01-17 BATTERY INSPECTION/ GENERATOR INSPECTION)	YES	Go to next step.
		NO	Repair or replace the malfunctioning part.
3	Measure the generator voltage. Is it within spec? Refer to Workshop Manual (section 01-17 BATTERY INSPECTION/ GENERATOR INSPECTION)	YES	Go to next step.
		NO	Inspect generator according to workshop manual “section 01-17 BATTERY INSPECTION/ GENERATOR INSPECTION”. If anything is wrong, repair or replace the malfunctioning part.
4	Ask customer’s usage of electric devices and check if any of following conditions apply. <ul style="list-style-type: none"> - Engine idling too long with high electric load (i.e. traffic jam at nighttime or in the rain). - Excessive use of electric devices with engine off (generator not working). - Electric devices left on. - Vehicle not in use for long periods. Do they apply? Note: Even if the battery is dead, it may be recovered just with normal driving after a jump start as long as the charging system is working properly.	YES	Advise customer of proper usage of electric devices.
		NO	Refer to the appropriate troubleshooting procedure in the Workshop Manual. (It may not be a “dead battery”). Refer to Workshop Manual (section 01-03 SYMPTOM TROUBLESHOOTING / NO.3 WILL NOT CRANK and NO.4 HARD TO START/LONG CRANK/ERRATIC START/ERRATIC CRANK).

BATTERY MAINTENANCE PROCEDURE AND WARRANTY POLICY

NOTE:

- Remove the room fuse while the vehicle is in inventory.
 - Disconnect the battery negative cable if the vehicle is in inventory for more than 1 month.
 - Remember, batteries continue discharging by parasitic draw and self-discharging even though the vehicle is in inventory.
 - If the battery discharges for a long period of time and becomes sulfated, the battery may be difficult to recover.
 - If the battery is discharged, the battery is hard to recover by road driving.
 - In some cases, even if the battery is discharged (less than 12.4 V voltage and 1.22 specific gravity), cranking is still possible. Therefore, do not judge the battery as good/bad by cranking only.
 - It is the dealer's responsibility to maintain batteries on inventory vehicles. Failure to provide documentation that proper maintenance was performed may result in denial of battery warranty claims.
 - Battery failure due to lack of maintenance is not a warrantable repair. Refer to Mazda Warranty Policies and Procedures 2.5 and 2.6 for details.
1. For DEALER INVENTORY vehicles, follow the appropriate procedure below.
- Vehicles Arriving from Port:
 - Battery should be inspected and recharged (if necessary) within 2 days from date of delivery to dealer. Refer to the BATTERY INSPECTION AND RECHARGE PROCEDURE. Recharge and replace battery as necessary.
 - Recharging and replacement for vehicles arriving from ports IS covered by warranty (within 2 days). To be covered by warranty, the following information is required to be completed and submitted with the claim:
 - Properly documented Section 1 of the New Vehicle Inventory Battery Maintenance Record
 - GR8-1291 Test Result Printout
 - 10 character Warranty code is required in the text field of the claim
 - Inventory Vehicles:
 - As PDI step 2 indicates, inspect battery voltage every 10 days for showcase or forefront vehicles and every 30 days for inventory vehicles. Refer to the BATTERY INSPECTION AND RECHARGE PROCEDURE.
 - Make sure to properly document Section 2 of the New Vehicle Inventory Battery Maintenance Record.

2. For RETAIL vehicles within 90 days of in-service, follow the appropriate procedure below.
 - Retail Vehicles (Within Warranty Period):
 - Battery should be inspected and recharged (if necessary). Refer to the BATTERY INSPECTION AND RECHARGE PROCEDURE. Recharge and replace battery as necessary.
 - If battery tests GOOD, diagnose charging and electrical system for problem.
 - Recharging and replacement for customer retail vehicles IS covered by warranty. To be covered by warranty, the following information is required to be completed and submitted with the claim:
 - Authorization approval from the DCSM
 - Properly documented Sections 1, 2, and 3 of the New Vehicle Inventory Battery Maintenance Record attached to the repair order
 - GR8-1291 Test Result Printout attached to the repair order
 - 10 character Warranty code is required in the text field of the warranty claim
3. For RETAIL vehicles after 90 days of in-service, follow the appropriate procedure below.
 - Retail Vehicles (Within Warranty Period):
 - Battery should be inspected and recharged (if necessary). Refer to the BATTERY INSPECTION AND RECHARGE PROCEDURE. Recharge and replace battery as necessary.
 - If battery tests GOOD, diagnose charging and electrical system for problem.
 - Recharging and replacement for customer retail vehicles IS covered by warranty. To be covered by warranty, the following information is required to be completed and submitted with the claim:
 - GR8-1291 Test Result Printout attached to the repair order
 - 10 character Warranty code is required in the text field of the warranty claim