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CHARGING SYSTEM DIAGNOSIS WITH EXP-800 NI OR GR8-1200 NI
To test the charging system, use the following special service tools:
• EXP-800 NI Battery and electrical diagnostic analyzer
• GR8-1200 NI Multitasking battery and electrical diagnostic station

NOTE:
Refer to the applicable Instruction Manual for proper charging system diagnosis procedures.
CHG DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

OVERALL SEQUENCE

1. Preliminary inspection.
2. Stop the operation of the power generation voltage variable control.
3. Perform charging system test with Battery and electrical diagnostic analyzer EXP-800 Ni or Multitasking battery and electrical diagnostic station GRB-1200 Ni.

NO PROBLEMS

NO VOLTAGE

Inspection end.

4. When turning ignition switch ON, is charging lamp ON?

YES

NG

OK

Repair as needed.

5. Check "L" terminal circuit (open).

12. Check "B" terminal circuit.

OK

NG

Repair as needed.


OK

NG

Repair as needed.

6. When running engine at idle is charging lamp OFF?

YES

NG

OK

Repair as needed.

7. Check "L" terminal circuit (short).

6. Check "S" terminal circuit.

OK

NG

Repair as needed.

9. While maintaining engine speed at 3,000 rpm. Is charging lamp off?

YES

NG

OK

Repair as needed.

10. Check generator pulley.

13. Check generator pulley.

OK

NG

Repair as needed.

11. Check "B" terminal circuit.

Replace generator

NOTE:
To ensure a complete and thorough diagnosis, the battery, stater and generator test segments must be done as a set from start to finish.

1. PRELIMINARY INSPECTION

Perform the preliminary inspection. Refer to CHG-10, "Diagnosis Procedure".

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CHG-3 2012 Maxima
2. STOP POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM

Stop the operation of the power generation voltage variable control in either of the following procedures.

• After selecting “ENGINE” using CONSULT, set the DUTY value of “ALTERNATOR DUTY” to 0 % by selecting “ALTERNATOR DUTY” of “Active Test”. Continue “Active Test” until the end of inspection. (When the DUTY value is 0 or 100 %, the normal power generation is performed according to the characteristic of the IC regulator of the generator.)

• Turn the ignition switch OFF, and disconnect the battery current sensor connector. [However, DTC (P1550–P1554) of the engine might remain. After finishing the inspection, connect the battery current sensor connector and erase the self diagnosis results history of the engine using CONSULT.]

3. DIAGNOSIS WITH EXP-800 NI OR GR8-1200 NI

Perform the charging system test using Multitasking battery and electrical diagnostic station GR8-1200 NI or Battery and electrical diagnostic analyzer EXP-800 NI. Refer to the applicable Instruction Manual for proper testing procedures.

Test result
- NO PROBLEMS: Charging system is normal and will also show “DIODE RIPPLE” test result.
- NO VOLTAGE: GO TO 4.
- LOW VOLTAGE: GO TO 12.
- HIGH VOLTAGE: GO TO 14.
- EXCESSIVE RIPPLE, OPEN PHASE, OPEN DIODE or SHORTED DIODE: Replace the generator. Refer to CHG-28, "Removal and Installation". Perform “DIODE RIPPLE” test again using Multitasking battery and electrical diagnostic station GR8-1200 NI or Battery and electrical diagnostic analyzer EXP-800 NI to confirm repair.

4. INSPECTION WITH CHARGE WARNING LAMP (IGNITION SWITCH IS ON)

Turn the ignition switch ON.

Does the charge warning lamp illuminate?
- YES: GO TO 6.
- NO: GO TO 5.

5. “L” TERMINAL CIRCUIT (OPEN) INSPECTION

Check “L” terminal circuit (open). Refer to CHG-14, "Diagnosis Procedure".

Is the “L” terminal circuit normal?
- YES: Replace generator. Refer to CHG-28, "Removal and Installation".
- NO: Repair as needed.

6. INSPECTION WITH CHARGE WARNING LAMP (IDLING)

Start the engine and run it at idle.

Does the charge warning lamp turn OFF?
- YES: GO TO 9.
- NO: GO TO 7.

7. “L” TERMINAL CIRCUIT (SHORT) INSPECTION

Check “L” terminal circuit (short). Refer to CHG-16, "Diagnosis Procedure".

Is the “L” terminal circuit normal?
- YES: GO TO 8.
- NO: Repair as needed.

8. “S” TERMINAL CIRCUIT INSPECTION

Check “S” terminal circuit. Refer to CHG-17, "Diagnosis Procedure".

Is the “S” terminal circuit normal?
- YES: GO TO 10.
DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

NO >> Repair as needed.

9. INSPECTION WITH CHARGE WARNING LAMP (ENGINE AT 3,000 RPM)

Increase and maintain the engine speed at 3,000 rpm.

Does the charge warning lamp remain off?

YES >> GO TO 11.
NO >> GO TO 10.

10. INSPECTION OF GENERATOR PULLEY

Check generator pulley. Refer to CHG-28, "Removal and Installation".

Is generator pulley normal?

YES >> Replace generator. Refer to CHG-28, "Removal and Installation".
NO >> Repair as needed.

11. "B" TERMINAL CIRCUIT INSPECTION

Check "B" terminal circuit. Refer to CHG-13, "Diagnosis Procedure".

Is "B" terminal circuit normal?

YES >> Replace generator. Refer to CHG-28, "Removal and Installation".
NO >> Repair as needed.

12. "B" TERMINAL CIRCUIT INSPECTION

Check "B" terminal circuit. Refer to CHG-13, "Diagnosis Procedure".

Is "B" terminal circuit normal?

YES >> GO TO 13.
NO >> Repair as needed.

13. INSPECTION OF GENERATOR PULLEY

Check generator pulley. Refer to CHG-28, "Removal and Installation".

Is generator pulley normal?

YES >> Replace generator. Refer to CHG-28, "Removal and Installation".
NO >> Repair as needed.

14. "S" TERMINAL CIRCUIT INSPECTION

Check "S" terminal circuit. Refer to CHG-17, "Diagnosis Procedure".

Is the "S" terminal circuit normal?

YES >> Replace generator. Refer to CHG-28, "Removal and Installation".
NO >> Repair as needed.

Work Flow (Without EXP-800 NI or GR8-1200 NI)

OVERALL SEQUENCE

Before performing a generator test, make sure that the battery is fully charged. A 30-volt voltmeter and suitable test probes are necessary for the test.

• Before starting, inspect the fusible link.
< BASIC INSPECTION >

- Use fully charged battery.

**DIAGNOSIS AND REPAIR WORKFLOW**

**1. PRELIMINARY INSPECTION**

Perform the preliminary inspection. Refer to CHG-10, "Diagnosis Procedure".

>> GO TO 2.

**2. STOP POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM**

Stop the operation of the power generation voltage variable control in either of the following procedures:

- After selecting “ENGINE” using CONSULT, set the DUTY value of “ALTERNATOR DUTY” to 0 % by selecting “ALTERNATOR DUTY” with “Active Test”. Continue “Active Test” until the end of inspection. (When the DUTY value is 0 or 100 %, the normal power generation is performed according to the characteristic of the IC regulator of the generator.)
- Turn the ignition switch OFF, and disconnect the battery current sensor connector. [However, DTC (P1550 - P1554) of the engine might remain. After finishing the inspection, connect the battery current sensor connector and erase the self-diagnostic results history of the engine using CONSULT.]

>> GO TO 3.

**3. INSPECTION WITH CHARGE WARNING LAMP (IGNITION SWITCH IS TURNED ON)**

When ignition switch is turned ON.

Does the charge warning lamp illuminate?
< BASIC INSPECTION >

YES >> GO TO 4.
NO >> GO TO 10.

4. INSPECTION WITH CHARGE WARNING LAMP (IDLING)

Start the engine and run it at idle
Does the charge warning lamp turn OFF?
YES >> GO TO 5.
NO >> GO TO 6.

5. INSPECTION WITH CHARGE WARNING LAMP (ENGINE AT 2,500 RPM)

Increase and maintain the engine speed at 2,500 rpm.
Does the charge warning lamp illuminate?
YES >> GO TO 8.
NO >> Inspection End.

6. “L” TERMINAL CIRCUIT (SHORT) INSPECTION

Check terminal “L” circuit for (short). Refer to CHG-16, "Diagnosis Procedure”.
Is the inspection result normal?
YES >> GO TO 7.
NO >> Repair as needed.

7. “S” TERMINAL CIRCUIT INSPECTION

Check terminal “S” circuit. Refer to CHG-17, "Diagnosis Procedure”.
Is the inspection result normal?
YES >> GO TO 8.
NO >> Repair as needed.

8. MEASURE “B” TERMINAL VOLTAGE

Start engine. With engine running at 2,500 rpm, measure “B” terminal voltage.
What voltage does the measurement result show?
Less than 13.0 V>>GO TO 9.
More than 16.0 V>>Replace generator. Refer to CHG-28, "Removal and Installation”.

9. “B” TERMINAL CIRCUIT INSPECTION

Check “B” terminal circuit. Refer to CHG-13, "Diagnosis Procedure”.
Is the inspection result normal?
YES >> Replace generator. Refer to CHG-28, "Removal and Installation”.
NO >> Repair as needed.

10. INSPECTION WITH CHARGE WARNING LAMP (IGNITION SWITCH IS ON)

1. Disconnect generator connector and apply ground to “L” terminal.
2. Turn the ignition switch ON.
Does the charge warning lamp illuminate?
YES >> Replace generator. Refer to CHG-28, "Removal and Installation”.
NO >> GO TO 11.

11. CHECK “L” TERMINAL CIRCUIT (OPEN)

Check “L” terminal circuit (OPEN). Refer to CHG-14, "Diagnosis Procedure”.

>> Repair as needed.
System Description

The generator provides DC voltage to operate the vehicle's electrical system and to keep the battery charged. The voltage output is controlled by the IC regulator.

Component Description

<table>
<thead>
<tr>
<th>Component part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal “1”</td>
<td>Refer to CHG-13, &quot;Description&quot;.</td>
</tr>
<tr>
<td>Terminal “2”</td>
<td>Refer to CHG-14, &quot;Description&quot;.</td>
</tr>
<tr>
<td>Terminal “3”</td>
<td>Refer to CHG-17, &quot;Description&quot;.</td>
</tr>
<tr>
<td>Terminal “4”</td>
<td>Used for the power generation voltage variable control system. Refer to CHG-9, &quot;System Description&quot;.</td>
</tr>
</tbody>
</table>
| Combination meter (Charge warning lamp) | The IC regulator warning function activates to illuminate the charge warning lamp if any of the following symptoms occur while generator is operating:  
- Excessive voltage is produced.  
- No voltage is produced. |
| IPDM E/R        | Used for the power generation voltage variable control system. Refer to CHG-9, "System Description". |
Power generation variable voltage control system has been adopted. By varying the voltage to the generator, engine load due to power generation of the generator is reduced and fuel consumption is decreased.

**NOTE:**
When any malfunction is detected in the power generation variable voltage control system, power generation is performed according to the characteristic of the IC regulator in the generator.

## Component Description

<table>
<thead>
<tr>
<th>Component part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery current sensor</td>
<td>The battery current sensor is installed on the battery cable at the negative terminal. The battery current sensor detects the charging/discharging current of the battery and sends a voltage signal to the ECM according to the current value detected.</td>
</tr>
<tr>
<td>ECM</td>
<td>The battery current sensor detects the charging/discharging current of the battery. The ECM judges the battery condition based on this signal.</td>
</tr>
<tr>
<td></td>
<td>The ECM judges whether to request more output via the power generation voltage variable control according to the battery condition.</td>
</tr>
<tr>
<td></td>
<td>When performing the power generation voltage variable control, the ECM calculates the target power generation voltage according to the battery condition and sends the calculated value as the power generation command value to the IPDM E/R.</td>
</tr>
<tr>
<td>IPDM E/R</td>
<td>The IPDM E/R converts the received power generation command value into a pulse width modulated (PWM) command signal and sends it to the IC regulator.</td>
</tr>
<tr>
<td>Generator (IC regulator)</td>
<td>The IC regulator controls the power generation voltage by the target power generation voltage based on the received PWM command signal.</td>
</tr>
<tr>
<td></td>
<td>When there is no PWM command signal, the generator performs the normal power generation according to the characteristic of the IC regulator.</td>
</tr>
</tbody>
</table>
Diagnosis Procedure

1. CHECK BATTERY TERMINALS CONNECTION

Check if battery terminals are clean and tight.

Is the inspection result normal?

YES  >> GO TO 2
NO   >> Repair battery terminals connection. Confirm repair by performing complete Charging system test using EXP-800 NI or GR8-1200 NI (if available). Refer to applicable Instruction Manual for proper testing procedures.

2. CHECK FUSE

Check for blown fuse and fusible link.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Power source (Power supply terminals)</th>
<th>Fuse or Fusible Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generator</td>
<td>Battery (terminal 3)</td>
<td>Fuse 29</td>
</tr>
<tr>
<td></td>
<td>Battery (terminal 1)</td>
<td>Fusible Link A</td>
</tr>
<tr>
<td>Combination meter</td>
<td>Ignition switch ON (terminal 2)</td>
<td>Fuse 4</td>
</tr>
</tbody>
</table>

Is the inspection result normal?

YES  >> GO TO 3
NO   >> Be sure to eliminate cause of malfunction before installing new fuse or fusible link.

3. CHECK GENERATOR GROUND TERMINAL CONNECTION

Check if connector E230 terminal 5 (generator ground harness) is clean and tight.

Is the inspection result normal?

YES  >> GO TO 4
NO   >> Repair connection.

4. CHECK DRIVE BELT TENSION

Check drive belt tension. Refer to CHG-29, "Inspection".

Is the inspection result normal?

YES  >> Inspection End.
NO   >> Repair as needed.
POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM OPERATION
INSPECTION

< DTC/CIRCUIT DIAGNOSIS >

POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM OPER-
ATION INSPECTION

Diagnosis Procedure

Regarding Wiring Diagram information, refer to CHG-18, "Wiring Diagram".

CAUTION:
When performing this inspection, always use a charged battery that has completed the battery inspec-
tion. (When the charging rate of the battery is low, the response speed of the voltage change will
become slow. This can cause an incorrect inspection.)

1. CHECK ECM (CONSULT)

Perform ECM self-diagnosis with CONSULT. Refer to EC-137, "CONSULT Function".

Self-diagnostic results content

No malfunction detected>> GO TO 2
Malfunction detected>> Check applicable parts, and repair or replace corresponding parts.

2. CHECK OPERATION OF POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM

1. Connect CONSULT and start the engine.
2. The selector lever is in “P” or “N” position and all of the electric loads and A/C, etc. are turned OFF.
3. Select “ALTERNATOR DUTY” in "Active Test" of “ENGINE”, and then check the value of “BATTERY
   VOLT” monitor when DUTY value of “ALTERNATOR DUTY” is set to 40.0 %.

   “BATTERY VOLT”
   2 seconds after setting the DUTY value of “ALTERNA-
   TOR DUTY” to 40.0 %
   : 12 - 13.6 V

4. Check the value of “BATTERY VOLT” monitor when DUTY value of “ALTERNATOR DUTY” is set to
   80.0%.

   “BATTERY VOLT”
   20 seconds after setting the DUTY value of “ALTERNA-
   TOR DUTY” to 80.0 %
   : +0.5 V or more against the value of “BATTERY
   VOLT” monitor when DUTY value is 40.0 %

Is the measurement value within the specification?

YES  >> Inspection End.
NO   >> GO TO 3

3. CHECK IPDM E/R (CONSULT)

Perform IPDM E/R self-diagnosis with CONSULT. Refer to PCS-13, "CONSULT Function (IPDM E/R)").

Self-diagnostic results content

No malfunction detected>> GO TO 4
Malfunction detected>> Check applicable parts, and repair or replace corresponding parts.

4. CHECK HARNESS BETWEEN GENERATOR AND IPDM E/R

1. Turn ignition switch OFF.
2. Disconnect generator connector and IPDM E/R connector.
3. Check continuity between generator harness connector F7 (A) terminal 4 and IPDM E/R harness connector F10 (B) terminal 76.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>F7</td>
<td>4</td>
<td>F10</td>
</tr>
</tbody>
</table>

4. Check continuity between generator harness connector F7 (A) terminal 4 and ground.

<table>
<thead>
<tr>
<th>A</th>
<th>Terminal</th>
<th>Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>F7</td>
<td>4</td>
<td>Ground</td>
</tr>
</tbody>
</table>

Is the inspection result normal?

**YES**  >> Replace IPDM E/R. Refer to PCS-35, "Removal and Installation".

**NO**   >> Repair harness or connector between IPDM E/R and generator.
The terminal “1” (B) circuit supplies power to charge the battery and operate the vehicle’s electrical system.

Description

The terminal “1” (B) circuit supplies power to charge the battery and operate the vehicle’s electrical system.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to CHG-18, "Wiring Diagram".

1. CHECK TERMINAL “1” CONNECTION

   1. Turn ignition switch OFF.
   2. Check if terminal “1” is clean and tight.
   Is the inspection result normal?
   YES >> GO TO 2
   NO >> Repair terminal “1” connection. Confirm repair by performing complete Charging system test using EXP-800 NI or GR8-1200 NI (if available). Refer to applicable Instruction Manual for proper testing procedures.

2. CHECK TERMINAL “1” CIRCUIT

   Check voltage between generator connector F6 terminal 1 and ground.

   1 - ground
   Battery voltage

   Is the inspection result normal?
   YES >> GO TO 3
   NO >> Check harness for open between generator and fusible link.

3. CHECK TERMINAL “1” CONNECTION (VOLTAGE DROP TEST)

   1. Start engine, then engine running at idle and warm.
   2. Check voltage between battery positive terminal and generator connector F6 terminal 1.

   1 - B+ Less than 0.2V

   Is the inspection result normal?
   YES >> Terminal “1” circuit is normal. Refer to CHG-2, "Work Flow (With EXP-800 NI or GR8-1200 NI)" or CHG-5, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".
   NO >> Check harness between battery and generator for high resistance.
L TERMINAL CIRCUIT (OPEN)

Description

The "2" (L) terminal circuit controls the charge warning lamp. The charge warning lamp turns ON when the ignition switch is set to ON or START. When the generator is providing sufficient voltage with the engine running, the charge warning lamp turns OFF. If the charge warning lamp illuminates with the engine running, a malfunction is indicated.

Diagnosis Procedure

Regarding Wiring Diagram information. Refer to CHG-18, "Wiring Diagram".

1. CHECK "2" TERMINAL CONNECTION

1. Turn ignition switch OFF.
2. Check if "2" terminal is clean and tight.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair "2" terminal connection. Confirm repair by performing complete Charging system test using EXP-800 NI or GR8-1200 NI (if available). Refer to applicable Instruction Manual for proper testing procedures.

2. CHECK "2" TERMINAL CIRCUIT (OPEN)

1. Disconnect the generator connector.
2. Apply ground to generator harness connector terminal.
3. Check condition of the charge warning lamp with the ignition switch in the ON position.

Does it illuminate?

YES >> "2" terminal circuit is normal. Refer to CHG-2, "Work Flow (With EXP-800 NI or GR8-1200 NI)" or CHG-5, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".
NO >> GO TO 3.

3. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the battery cable from the negative terminal.
2. Disconnect the combination meter connector.
3. Check continuity between generator harness connector and combination meter harness connector.

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace the harness or connectors.

4. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check continuity between combination meter harness connector and fuse block (J/B).

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CHG-14
2012 Maxima
L TERMINAL CIRCUIT (OPEN)

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES  >> GO TO 5.
NO    >> Repair or replace the harness or connectors.

5. CHECK POWER SUPPLY CIRCUIT

1. Connect the battery cable to the negative terminal.
2. Check voltage between combination meter harness connector and ground.

<table>
<thead>
<tr>
<th>(+)</th>
<th>Combination meter</th>
<th>(-)</th>
<th>Condition</th>
<th>Voltage (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector</td>
<td>Terminal</td>
<td>Ground</td>
<td>When the ignition switch is in ON position</td>
<td>Battery voltage</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>M24</td>
<td>2</td>
<td></td>
<td>Ground</td>
<td>Battery voltage</td>
</tr>
</tbody>
</table>

Is the inspection result normal?

YES  >> Replace the combination meter. Refer to MWI-121, "Removal and Installation".
NO   >> Repair or replace the harness or connectors.
The terminal “2” (L) circuit controls the charge warning lamp. The charge warning lamp turns ON when the ignition switch is set to ON or START. When the generator is providing sufficient voltage with the engine running, the charge warning lamp turns off. If the charge warning lamp illuminates with the engine running, a malfunction is indicated.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to CHG-18, "Wiring Diagram".

1. CHECK “2” TERMINAL CIRCUIT (SHORT)

   1. Turn ignition switch OFF.
   2. Disconnect generator connector.
   3. Turn ignition switch ON.

   Does charge warning lamp illuminate?
   
   YES  >> GO TO 2.
   NO  >> Refer to CHG-2, "Work Flow (With EXP-800 NI or GR8-1200 NI)" or CHG-5, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".

2. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

   1. Turn ignition switch OFF.
   2. Disconnect the battery cable from the negative terminal.
   3. Disconnect combination meter connector.
   4. Check continuity between the combination meter harness connector and ground.

<table>
<thead>
<tr>
<th>Combination meter</th>
<th>Connector</th>
<th>Terminal</th>
<th>Ground</th>
<th>Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M24</td>
<td>25</td>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

   Is the inspection result normal?
   
   YES  >> Replace the combination meter. Refer to MWI-121, "Removal and Installation".
   NO  >> Repair or replace the harness or connectors.
S TERMINAL CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

S TERMINAL CIRCUIT

Description

The output voltage of the generator is controlled by the IC regulator at terminal “3” (S) detecting the input voltage. Terminal “3” circuit detects the battery voltage to adjust the generator output voltage with the IC regulator.

Diagnosis Procedure

Regarding Wiring Diagram information, refer to CHG-18, "Wiring Diagram".

1. CHECK TERMINAL “3” CONNECTION

Check to see if connector F7 terminal 3 is clean and tight.

Is the inspection result normal?

YES >> GO TO 2
NO >> Repair terminal “3” connection. Confirm repair by performing complete Charging system test using EXP-800 NI or GR8-1200 NI (if available). Refer to applicable Instruction Manual for proper testing procedures.

2. CHECK VOLTAGE REGULATOR CIRCUIT

Check voltage between generator harness connector F7 terminal 3 and ground.

Does battery voltage exist?

YES >> Refer to CHG-2, "Work Flow (With EXP-800 NI or GR8-1200 NI)" or CHG-5, "Work Flow (Without EXP-800 NI or GR8-1200 NI)".
NO >> Check harness for open between generator and fuse.
< WIRING DIAGRAM >

CHARGING SYSTEM

Connector No. E10
Connector Name ECM
Connector Color BLACK

Terminal No. 97 98
Color of Wire P L
Signal Name CAN-L CAN-H

Connector No. E21
Connector Name JOINT CONNECTOR-E03
Connector Color WHITE

Terminal No. 1 2
Color of Wire L L
Signal Name _ _

Connector No. E3
Connector Name WIRE TO WIRE
Connector Color WHITE

Terminal No. 10 12
Color of Wire W LG
Signal Name _ _

Connector No. E18
Connector Name IPDM ER (INTELLIGENT POWER DISTRIBUTION MODULE)
Connector Color WHITE

Terminal No. 37 38 39 40 41
Color of Wire _ _ _ _ B
Signal Name _ _ _ _ GND (POWER)

Connector No. M34
Connector Name COMBINATION METER
Connector Color WHITE

Terminal No. 25 26
Color of Wire BR IGN
Signal Name CHG _

Revision: August 2012
CHG-20
2012 Maxima
### CHARGING SYSTEM

#### CHG-22

### Wiring Diagram

<table>
<thead>
<tr>
<th>Connector No.</th>
<th>Connector Name</th>
<th>Connector Color</th>
<th>Terminal No.</th>
<th>Color of Wire</th>
<th>Signal Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>E230 GENERATOR</td>
<td>WHITE</td>
<td>10</td>
<td>Y/B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>BR</td>
<td></td>
</tr>
<tr>
<td>F6</td>
<td>E47 JUNCTION BLOCK</td>
<td>WHITE</td>
<td>5</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>F5</td>
<td>F4 FUSE LINK BOX (BATTERY)</td>
<td>BLACK</td>
<td>1</td>
<td>RY</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>GB</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>BR</td>
<td></td>
</tr>
</tbody>
</table>

Revision: August 2012

2012 Maxima
CHARGING SYSTEM

< WIRING DIAGRAM >
**SYMPTOM DIAGNOSIS**

CHARGING SYSTEM

Symptom Table

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery discharged</td>
<td>Refer to CHG-2, &quot;Work Flow (With EXP-800 Ni or GR8-1200 Ni)&quot; or CHG-5, &quot;Work Flow (Without EXP-800 Ni or GR8-1200 Ni)&quot;.</td>
</tr>
<tr>
<td>The charge warning lamp does not illuminate when the ignition switch is set to ON.</td>
<td></td>
</tr>
<tr>
<td>The charge warning lamp does not turn OFF after the engine starts.</td>
<td></td>
</tr>
<tr>
<td>The charging warning lamp turns ON when increasing the engine speed.</td>
<td></td>
</tr>
</tbody>
</table>
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

**WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

**PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS**

**WARNING:**

- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution for Power Generation Voltage Variable Control System

**CAUTION:**

For this model, the battery current sensor that is installed to the battery cable at the negative terminal measures the charging/discharging current of the battery, and performs various controls. If the electrical component or the ground wire is connected directly to the battery terminal, the current other than that being measured with the battery current sensor is charging to or discharging from the battery. This condition causes the malfunction of the control, and then the battery discharge may occur. Do not connect the electrical component or the ground wire directly to the battery terminal.
Special Service Tool

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

<table>
<thead>
<tr>
<th>Tool number (Kent-Moore No.)</th>
<th>Tool name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>—</td>
<td>Model GR8-1200 NI Multitasking battery and electrical diagnostic station</td>
<td>Tests batteries, starting and charging systems and charges batteries. For operating instructions, refer to diagnostic station instruction manual.</td>
</tr>
<tr>
<td>—</td>
<td>Model EXP-800 NI Battery and electrical diagnostic analyzer</td>
<td>Tests batteries and charging systems. For operating instructions, refer to diagnostic analyzer instruction manual.</td>
</tr>
</tbody>
</table>

Commercial Service Tool

<table>
<thead>
<tr>
<th>Tool name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power tool</td>
<td>Loosening nuts, screws and bolts</td>
</tr>
</tbody>
</table>
REMOVAL AND INSTALLATION
GENERATOR

Exploded View

Removal and Installation

REMOVAL
1. Remove hoodledge covers (RH and LH).
2. Remove cooling fan assembly. Refer to CO-15, "Removal and Installation".
3. Remove the A/C compressor. Refer to HA-42, "Removal and Installation for Compressor".
4. Remove A/C idler pulley Refer to EM-15, "Removal and Installation of Drive Belt Auto-tensioner".
5. Disconnect the oil pressure switch Refer to EM-36, "Exploded View".
6. Disconnect the generator harness connectors.
7. Remove the generator bolt and nuts, using power tools.
8. Remove generator bracket.
9. Slide the generator out and remove.

INSTALLATION
Installation is in the reverse order of removal. Refer to CHG-28, "Exploded View"
• Temporarily tighten bolts and nut, then finish tightening in the specified numerical order.

CAUTION:
Be sure to tighten "B" terminal nut carefully.
• Install generator and check tension of belt. Refer to EM-14, "Checking Drive Belts".
• For this model, the power generation voltage variable control system that controls the power generation voltage of the generator has been adopted. Therefore, the power generation voltage variable control system
operation inspection should be performed after replacing the generator, and then make sure that the system operates normally. Refer to CHG-11, "Diagnosis Procedure".

Inspection

GENERATOR PULLEY INSPECTION
Perform the following.
• Make sure that generator pulley does not rattle.
• Make sure that generator pulley nut is tight.

NOTE:
Replace the generator as an assembly if necessary.
## Generator

<table>
<thead>
<tr>
<th>Application</th>
<th>VQ35DE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type*</td>
<td>A003TJ3691ZC</td>
</tr>
<tr>
<td>Ground polarity</td>
<td>Negative</td>
</tr>
<tr>
<td>Minimum revolution under no-load</td>
<td>1,000 rpm</td>
</tr>
<tr>
<td>Hot output current (when 13.5 volts are applied)</td>
<td>More than 66A/1,500 rpm</td>
</tr>
<tr>
<td></td>
<td>More than 108A/2,500 rpm</td>
</tr>
<tr>
<td></td>
<td>More than 124A/5,000 rpm</td>
</tr>
<tr>
<td>Regulated output voltage</td>
<td>14.1 - 14.7V @ 20°C (68°F)</td>
</tr>
<tr>
<td>Adjustment range of power generation voltage variable control</td>
<td>11.4 - 15.6 V</td>
</tr>
</tbody>
</table>

*: Always check with the Parts Department for the latest parts information