## BODY ELECTRICAL SYSTEM

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**GENERAL INFORMATION**

**Wiring Color Code**

Wire colors are indicated by an alphabetical code.

- **B** = Black
- **L** = Blue
- **R** = Red
- **BR** = Brown
- **LG** = Light Green
- **V** = Violet
- **G** = Green
- **0** = Orange
- **W** = White
- **GR** = Gray
- **P** = Pink
- **Y** = Yellow

The first letter indicates the basic wire color and the second letter indicates the color of the stripe.

**Connector**

1. **PIN NUMBER OF FEMALE CONNECTOR**
   
   Numbered in order from upper left to lower right.

2. **PIN NUMBER OF MALE CONNECTOR**
   
   Numbered in order from upper right to lower left.
   
   **HINT:** When connectors with different or the same number of terminals are used with the same parts, each connector name (letter of the alphabet) and pin number is specified.

3. **DISTINCTION OF MALE AND FEMALE CONNECTORS**

   Male and female connectors are distinguished by shape of their internal pins.
   
   (a) All connectors are shown from the open end, and the lock is on top.
   
   (b) To pull apart the connectors, pull on the connector itself, not the wires.
   
   **HINT:** Check to see what kind of connector you are disconnecting before pulling apart.
How to Replace Terminal
(with Terminal Retainer Type)

HINT: To remove the terminal for this type of connector, please construct and use the special tool or like object shown on the left.

1. DISCONNECT CONNECTOR
Disconnect the connector according to the instructions on BE-2.

2. DISCONNECT TERMINAL FROM CONNECTOR
(a) Using the special tool, raise the retainer up to the temporary lock position.
HINT: The needle insertion position varies according to the connector's shape (number of terminals, etc.), so check the position before inserting it.
(b) Using the special tool, release the locking lug and pull the terminal out from rear.

3. INSTALL TERMINAL TO CONNECTOR
(a) Insert the terminal.
HINT:
1. Make sure the terminal is positioned correctly.
2. Insert the terminal until the locking lug locks firmly.
3. Insert the terminal with retainer in the temporary lock position.
(b) Push the retainer in as far as the full lock position.

4. CONNECT CONNECTOR
Replacement of High Current Fuse, Medium Current Fuse and Fuse

**HINT:** If replacing the fuse, be sure to replace it with a fuse with an equal amperage rating.

**NOTICE:**
1. Turn off all electrical components and the ignition switch before replacing a fuse. Do not exceed the fuse or fusible link amperage rating.
2. Always use a fuse puller for removing and inserting a fuse. Remove and insert straight in and out without twisting. Twisting could force open the terminals too much, resulting in a bad connection.

If a fuse continues to blow, a short circuit is indicated. The system must be checked by a qualified technician.

**Check for Voltage**

(a) Establish conditions in which voltage is present at the check point.

Example:
- \((A)\) — Ignition switch on.
- \((S)\) — Ignition switch and switch 1 (SW1) on.
- \((O)\) — Ignition switch, switch 1 (SW1) and relay on (switch 2 (SW2) off).

(b) Using a voltmeter, connect the negative (\(-\)) lead to a good ground point or negative (\(-\)) battery terminal and the positive (\(+\)) lead to the connector or component terminal. This check can be done with a test bulb instead of a voltmeter.
Check for Continuity and Resistance

(a) Disconnect the battery terminal or wire so there is no voltage between the check points.

(b) Contact the two leads of an ohmmeter to each of the check points.

If the circuit has diodes, reverse the two leads and check again.

When contacting the negative (—) lead to the diode positive (+) side and the positive (+) lead to the negative (—) side, there should be continuity.

When contacting the two leads in reverse, there should be no continuity.

HINT: Specifications may vary depending on the type of tester, so refer to the tester’s instruction manual before performing the inspection.

Check LED (Light Emitting Diode) in the same manner as that for diodes.

- Use a tester with a power source of 3V or greater to overcome the circuit resistance.
- If a suitable tester is not available, apply battery voltage and check that the LED that the LED lights up.

(c) Use a volt/ohmmeter with high impedance (10 kΩ minimum) for troubleshooting of the electrical circuit.

Check the Bulb

(a) Remove the bulb.

(b) There should be continuity between the respective terminals of the bulb together with a certain amount of resistance.

(c) Apply the two leads of the ohmmeter to each of the terminals.

(d) Apply battery voltage and check that the bulb light up.
Check for Short Circuit

(a) Remove the blown fuse and eliminate all loads from the fuse.

(b) Connect a test bulb in place of the fuse.

(c) Establish conditions in which the test bulb comes on.

Example:

- **A** — Ignition switch on.
- **B** — Ignition switch and switch 1 (SW1) on.
- **C** — Ignition switch, switch 1 (SW1) and relay on (connect the relay) and switch 2 (SW2) off (or disconnect switch 2 (SW2)).

(d) Disconnect and reconnect the connectors while watching the test bulb. The short lies between the connector where the test bulb stays lit and the connector where the bulb goes out.

(e) Find the exact location of the short by lightly shaking the problem wire along the body.
POWER SOURCE

Parts Location

Gasoline Engine

- Power Outer Box
- Relay Block No. 2
- Fusible Link

Diesel Engine (w/o 12/24 Volt Switchover System)

- Power Outlet Box
- Fusible Link
- Relay Block No. 2

Diesel Engine (w/ 12/24 Volt Switchover System)

- Power Outlet Box
- Relay Block No. 2
- Fusible Link

Fuse Block

Relay Block No. 1
Parts Location (Cont'd)

Relay Block No. 2

Fuses and High Current Fuses

1. HEAD (RH) 15A
   HEAD (RH-HI) 15A*1
2. HEAD (LH) 15A
   HEAD (LH-HI) 15A*1
3. HEAD (RH-LO) 15A*1
4. CHARGE 7.5A
5. HEAD (LH-LO) 15A*1
6. EFI 15A*2
   FUEL-HTR 20A*3

7. HAZ-HORN 15A
8. -
9. CDS-FAN 20A
10. DOME 10A
11. AM1 50A
12. -

Relays

A. EFI Main Relay*2
   Fuel Heater Relay*2
B. Charge Light Relay*2
C. Headlight Control Relay
D. Dimmer Relay*1
E. HORN Relay
F. Condenser Fan Relay

*1: Europe
*2: 3F-E Engine
*3: Diesel Engine
*4: Gasoline Engine w/ IC Alternator

Fuse Block

Fuses and Medium Current Fuse

1. CIG 15A
   2. TAIL 15A
      TAIL(RH) 10A*1
   3. TAIL(LH) 10A*1
2. STOP 10A
   3. DEFOG 20A
   4. WIPER 20A
   5. GAUGE 10A
   6. TURN 7.5A
   7. ECU-IG 15A
   8. ECU-B 10A
   9. REAR-HTR 20A
   10. IGN 7.5A
   11. A/C 10A
   12. DIFF 30A
   13. HEATER 30A
   14. POWER 30A
   15. Spare
   16. Spare
   17. Spare
Parts Location (Cont'd)

**Relays**

- A. Cooling Fan Relay
- B. Bulb Check Relay (Australia)
- C. Rear Fog Light Relay (Europe)
- Blower Hi Relay (G.C.C. w/ A/C)
- D. 
- E. Deffoger Relay
- F. Power Main Relay
- G. Turn Signal Flasher
- H. Heater Relay
- I. Taillight Control Relay
- J. 
- K. Circuit Opening Relay

**Power Outlet Box**

**Fuse**

1. ACC 10A
2. IG 10A
3. +B 20A

**Terminal**

<table>
<thead>
<tr>
<th>No.</th>
<th>Terminal Name</th>
<th>Connected Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ACC</td>
<td>Ignition Switch ACC</td>
</tr>
<tr>
<td>B</td>
<td>IG</td>
<td>Ignition Switch IG1</td>
</tr>
<tr>
<td>C</td>
<td>+B</td>
<td>FL MAIN</td>
</tr>
<tr>
<td>D</td>
<td>-E</td>
<td>Ground</td>
</tr>
</tbody>
</table>
Wiring Diagram

Gasoline Engine/3F-E and 3F Engine

Headlight Control Relay

- Head LH Fuse 15A
- Head RH Fuse 15A

* Dimmer Relay

- *HEAD LH-UPR Fuse 15A
- *HEAD RH-UPR Fuse 15A
- *HEAD LH-LWR Fuse 15A
- *HEAD RH-LWR Fuse 15A

Headlight Control Relay

- Tail Fuse 15A
- *TAIL LH Fuse 10A
- *TAIL RH Fuse 10A

Heater 30A

- CDS-FAN Fuse 20A
- HAZARD-HORN Fuse 15A
- Dome Fuse 10A
- ECU-B Fuse 10A
- ECU-B Fuse 10A

Am1 Fuse 50A

Power 30A

- Power Fuse 30A
- Diff Fuse 30A

Cig Fuse 15A

- Wiper Fuse 20A
- Turn Fuse 7.5A
- ECU-IG Fuse 15A
- Gauge Fuse 10A
- A.C. Fuse 10A (w/ Dual A.C.)
- Rea heater 20A
- Ign Fuse 7.5A

Ignition Switch

- To Starter (M/T)
- To Neutral Start Switch (A/T)
- To Ignition Coil

Am1

- Am1
- Ig1
- St1
- Ig2
- St2

Am2

- To Ignition Relay (w/ Single A.C.)

F.L. Main

- F.L. Main
- F.L. AM1
- F.L. AM2

Battery

- 3F Engine
- 3F-E engine
- Europe

Charge Fuse 7.5A

With IC Alternator: To Charge Light Relay
With Voltage Regulator: To Combination Meter
To Running Light Relay
(w/ Daytime Running Light System)
IGNITION SWITCH

Parts Location

LHD Vehicle

RHD Vehicle

Wiring and Connector Diagrams

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11

Parts Inspection

Ignition System

INSPECT SWITCH
(Ignition Switch/Continuity)

If continuity is not as specified, replace the switch.
Key Confine Prevention System

INSPECT SWITCHES
(Key Unlock Warning Switch/Continuity)

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<th>Terminal Switch position</th>
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<td></td>
<td></td>
</tr>
<tr>
<td>ON (Ignition Key set)</td>
<td></td>
<td></td>
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</tbody>
</table>

If continuity is not as specified, replace the switch.
Wiring and Connector Diagrams
(Headlight and Taillight System)

- Except Europe

- Europe

- Light Control Switch
- Dimmer Switch

Connector "A"  Connector "B"

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11
The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
(Headlight Beam Level Control System)

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.

(Turn Signal and Hazard Warning System)

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
(Rear Fog Light System)

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11

(Lights-On Warning System)

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11
The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11

(Illuminated Entry System)

(Stop Light System)

(Back-up Light System)

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11
System Description

(Daylight Running Light System)

Example: Ignition Switch "ON" and Light Control Switch "OFF"

Standby Operation

- Current flows from the battery to terminal 12 of the Running Light Relay.
- When the engine is started, alternator voltage is applied from terminal L of the alternator to terminal 8 of the Running Light Relay.

Operation

1. **IGNITION SWITCH "ON" AND LIGHT CONTROL SWITCH "OFF"**
   When the switches are set, current flows from the battery to terminal 1 of the Running Light Relay. Also, because continuity is made between terminal 3 of the Running Light Relay and ground, and terminal 5 of the Running Light Relay and ground, the Taillight control Relay and Headlight Control Relay are turned on. Then the taillights and headlights light up.
   HINT: Because terminal 14 of the Running Light Relay is not grounded at all times, the Headlight Dimmer Relay is off, so the headlights light up at low beam.

2. **IGNITION SWITCH "ON" AND LIGHT CONTROL SWITCH AT "TAIL"**
   When the switches are set, continuity is made between terminal 2 of the Running Light Relay and ground. Also, because continuity is made between terminal 3 of the Running Light Relay and ground at all times, the taillights light up.
   (Fog Light): Also, because continuity is made between terminal 11 of the Running Light Relay and ground, the Fog Light Relay is turned on. Then the fog lights light up on standby.

3. **IGNITION SWITCH "ON" AND LIGHT CONTROL SWITCH AT "HEAD"**
   When the switches are set, continuity is made between terminal 4 of the Running Light Relay and ground, and terminal 2 of the Running Light Relay and ground. Also, because continuity is made between terminal 5 of Running Light Relay and ground, and terminal 3 of the Running Light Relay and ground at all times, the taillights and headlights light up.
   HINT: When the Headlight Dimmer Switch is set to "HIGH", continuity is made between terminal 13 of the Running Light Relay and ground. Also, because continuity is made between terminal 14 of the Running Light Relay and Ground, the Headlight Dimmer Relay is turned on. Then the headlights go on at high beam.

4. **HEADLIGHT DIMMER SWITCH AT "FLASH"**
   When the switch is set, continuity is made between terminal 6 of the Running Light Relay and ground, and terminal 13 of the Running Light Relay and ground. Also, because the continuity is made between terminal 5 of the Running Light Relay and ground, and terminal 14 of the Running Light Relay and ground, the headlights flash.
Headlight Beam Level Control System

- Continuity always exists between terminal 5 of the Headlight Beam Level Control Actuator (hereafter called "Actuator") and the ground.
- When the light Control Switch is turned to HEAD position, continuity is made between terminal 4 of the Headlight Beam Level Control Switch (hereafter called "Level Switch") and the ground through terminals A-13 and A-11 of the Light Control Switch. Also, continuity is made between terminal 1 of the Taillight Control Relay and the ground through terminals A-2 and A-11 of the Light Control Switch, the Taillight Control Relay is turned on, then current flows from the battery to terminal 6 of the Actuator.

**LEVEL SWITCH IN "5" POSITION**
When the switch is set, current flows from terminal 6 of Actuator to terminal 8 of the Actuator, terminal 5 of the Level Switch to ground, and the Down Relay is activated. Then current flows from terminal 6 of the Actuator to Down Relay to Motor to Up Relay to terminal 5 of the Actuator to ground, and the Motor operates to lower the headlight. When the headlights are lowered, the Limit Switch operates, so that continuity between terminals 6 and 8 of the Actuator is broken. As a result, the Down Relay is open and the headlights stay in level "5" position.

**LEVEL SWITCH IN "0" POSITION**
When the switch is set, current flows from terminal 6 of Actuator to terminal 1 of the Actuator, terminal 10 of the Level Switch to ground, and the Up Relay is activated. Then current flows from terminal 6 of the Actuator to Up Relay to Motor to Down Relay to terminal 5 of the Actuator to ground, and the motor operates to raise the headlight. When the headlights are raised, the Limit switch operates, so that continuity between terminals 6 and 1 of the Actuator is broken. As a result, the Up Relay is open and the headlights stay in level "0" position.
# Troubleshooting

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<td>TAIL (RH) fuse blown</td>
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<td>GAUGE fuse blown</td>
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<td>ECU-B fuse blown</td>
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<td>Daytime running light relay faulty</td>
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<td>Light control/dimmer switch faulty</td>
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<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
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<td>Rear fog light system does not operate</td>
<td>ECU-B fuse blown</td>
<td>Replace blown fuse and check for short</td>
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<td></td>
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<td></td>
<td>Rear fog light relay faulty</td>
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<tr>
<td></td>
<td>Taillight control relay faulty</td>
<td>Check relay</td>
<td>BE-29</td>
</tr>
<tr>
<td></td>
<td>Daytime Running Light Relay faulty (w/ Daytime Running Light System)</td>
<td>Check relay</td>
<td>BE-29</td>
</tr>
<tr>
<td></td>
<td>Rear fog light switch faulty</td>
<td>Check switch</td>
<td>BE-27</td>
</tr>
<tr>
<td></td>
<td>Light control switch faulty</td>
<td>Check switch</td>
<td>BE-27</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Illuminated entry system does not operate</td>
<td>DOME fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Room light control relay faulty</td>
<td>Check relay</td>
<td>BE-32</td>
</tr>
<tr>
<td></td>
<td>Door courtesy switch faulty</td>
<td>Check switch</td>
<td>BE-32</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Headlight beam level control system does not operate</td>
<td>TAIL fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Taillight control relay faulty</td>
<td>Check relay</td>
<td>BE-27</td>
</tr>
<tr>
<td></td>
<td>Headlight beam level control actuator faulty</td>
<td>Check actuator</td>
<td>BE-30</td>
</tr>
<tr>
<td></td>
<td>Headlight beam level control switch faulty</td>
<td>Check switch</td>
<td>BE-30</td>
</tr>
<tr>
<td></td>
<td>Light control switch faulty</td>
<td>Check switch</td>
<td>BE-27</td>
</tr>
<tr>
<td>Lights-on warning system does not operate</td>
<td>CIG fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>GAUGE fuse blown</td>
<td>Check relay</td>
<td>BE-31</td>
</tr>
<tr>
<td></td>
<td>TAIL fuse blown</td>
<td>Check switch</td>
<td>BE-31</td>
</tr>
<tr>
<td></td>
<td>Light reminder relay faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Door courtesy switch faulty</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Parts Adjustment
Adjustment of Headlight Aim

HINT: Before adjusting headlights equipped with a headlight beam level control system, first return the headlights to standard position by moving the control switch to "0" position.
Disassembly of Combination Switch

1. **REMOVE WIRE HARNESS CLAMP FROM WIRE HARNESS**
   Pry loose two locking lugs and remove the clamp from the wire harness.

2. **REMOVE TERMINALS FROM CONNECTOR**
   (a) Release four tabs and open the terminal cover.
3. **REMOVE LIGHT CONTROL SWITCH**
   (a) Remove two screws and the ball set plate from the switch body.
   (b) Remove the ball and slide out the switch from the switch body with the spring.

4. **REMOVE HEADLIGHT DIMMER AND TURN SIGNAL SWITCH**
   Remove four screws and the switch from the switch body.

5. **REMOVE WIPER AND WASHER SWITCH**
   Remove two screws and the switch from the switch body.

Assembly of Combination Switch

**INSTALL PARTS OF COMBINATION SWITCH IN REVERSE SEQUENCE OF REMOVAL**

**HINT:**
- After installing the switch to the switch body, insert that the switch operates in smoothly.
- Push in the terminal until it is securely locked in the connector lug.
Parts Inspection

Headlight and Taillight System

1. INSPECT COMBINATIN SWITCH
   (Light Control Switch/Continuity)

<table>
<thead>
<tr>
<th>Terminal (Color)</th>
<th>A2</th>
<th>A11</th>
<th>A13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAIL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEAD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   (Headlight Dimmer and Turn Signal Switch/Continuity)

   Headlight Dimmer Switch

<table>
<thead>
<tr>
<th>Terminal (Color)</th>
<th>A3</th>
<th>A9</th>
<th>A12</th>
<th>A14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low beam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High beam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Turn Signal Switch

<table>
<thead>
<tr>
<th>Terminal (Color)</th>
<th>A1</th>
<th>A5</th>
<th>A8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left turn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right turn</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   If continuity is not as specified, replace the switch.

2. INSPECT RELAY
   (Headlight Control Relay/Continuity)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Apply battery voltage to terminals 1 and 2.

   (Taillight Control Relay/Continuity)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Apply battery voltage to terminals 1 and 2.

   (Headlight Dimmer Relay/Continuity)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Apply battery voltage to terminals 2 and 4.

   If continuity is not as specified, replace the relay.
Daytime Running Light System

Inspect Daytime Running Light Relay
(Relay Circuit)

Disconnect the connector from the relay and inspect the connector on the wire harness side as shown in the chart.

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Continuity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 - Ground</td>
<td>Light control switch position</td>
<td>OFF</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TAIL or HEAD</td>
<td>Continuity</td>
</tr>
<tr>
<td>4 - Ground</td>
<td>Light control switch position</td>
<td>OFF or TAIL</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HEAD</td>
<td>Continuity</td>
</tr>
<tr>
<td>6 - Ground</td>
<td>Headlight dimmer switch position</td>
<td>Low beam or High beam</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flash</td>
<td>Continuity</td>
</tr>
<tr>
<td>7 - Ground</td>
<td>Constant</td>
<td></td>
<td>No continuity</td>
</tr>
<tr>
<td>10 - Ground</td>
<td></td>
<td></td>
<td>Continuity</td>
</tr>
<tr>
<td>13 - Ground</td>
<td>Headlight dimmer switch position</td>
<td>Low beam</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High beam or Flash</td>
<td>Continuity</td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - Ground</td>
<td>Ignition switch position</td>
<td>LOCK or ACC</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ON</td>
<td>Battery voltage</td>
</tr>
<tr>
<td>3 - Ground</td>
<td>Constant</td>
<td></td>
<td>No voltage</td>
</tr>
<tr>
<td>5 - Ground</td>
<td></td>
<td></td>
<td>Battery voltage</td>
</tr>
<tr>
<td>8 - Ground</td>
<td>Engine condition</td>
<td>Stop</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Running</td>
<td>Battery voltage</td>
</tr>
<tr>
<td>11 - Ground</td>
<td>Constant</td>
<td>Ground terminal 3</td>
<td>Battery voltage</td>
</tr>
<tr>
<td>12 - Ground</td>
<td>Constant</td>
<td></td>
<td>Battery voltage</td>
</tr>
<tr>
<td>14 - Ground</td>
<td>Ground terminal 5</td>
<td></td>
<td>Battery voltage</td>
</tr>
</tbody>
</table>

If circuit is as specified, inspect relay operation.

(Relay Operation)

(a) Connect the positive (+) lead from the voltmeter to terminal 7 and negative (—) lead to terminal 10.
(b) Check that there is battery voltage with light control switch is turned on.

If operation is not as specified, replace the relay.
Rear Fog Light System

1. **INSPECT SWITCH**
   (Continuity)
   - If continuity is not as specified, replace the switch.

2. **INSPECT RELAY**
   (Rear Fog Light Relay/Continuity)
   - If continuity is not as specified, replace the relay.

Turn Signal and Hazard Warning System

1. **INSPECT SWITCHES**
   (Turn Signal Switch/Continuity)
   - See Headlight dimmer and Turn Signal Switch on page BE-27.
   (Hazard Warning Switch/Continuity)
   - If continuity is not as specified, replace the switch.

2. **INSPECT TURN SIGNAL FLASHER**
   (Operation)
   - Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to terminal 3.
   - Connect the two turn signal light bulbs parallel to each other to terminals 1 and 3, check that the bulbs flash.
   - HINT: The turn signal lights should flash 60 to 120 times per minute.
   - If one of the front or rear turn signal lights has an open circuit, the number of flashers will be more than 140 per minute.
   - If operation is not as specified, replace the flasher.
Headlight Beam Level Control System

1. INSPECT SWITCH
   (Continuity)

   If continuity is not as specified, replace the switch.

2. INSPECT ACTUATOR
   
   (a) Connect the positive (+) lead from the battery to terminal 6 and the negative (—) lead to terminal 5.
   
   (b) Ground each terminal and check that each mode operates as shown in the chart and illustration.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Headlight Beam Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 — ground</td>
<td>&quot;0&quot;</td>
</tr>
<tr>
<td>2 — ground</td>
<td>&quot;1&quot;</td>
</tr>
<tr>
<td>3 — ground</td>
<td>&quot;2&quot;</td>
</tr>
<tr>
<td>4 — ground</td>
<td>&quot;3&quot;</td>
</tr>
<tr>
<td>7 — ground</td>
<td>&quot;4&quot;</td>
</tr>
<tr>
<td>8 — ground</td>
<td>&quot;5&quot;</td>
</tr>
</tbody>
</table>

   If operation is not as specified, replace the actuator.
Lights-On Warning System

1. **INSPECT DRIVER'S DOOR COURTESY SWITCH**
   See step 2 of Open Door Warning System on page BE-64.

2. **INSPECT LIGHT REMINDER RELAY**
   (Operation)
   
   (a) Connect the positive (+) lead from the battery to terminal 3 and the negative (—) lead to terminal 4.
   
   (b) Check that the buzzer does not sound when connected terminal 1 or 2 from the positive (+) lead.
   
   (c) Check that the buzzer sounds when disconnecting terminal 1 or 2 from the positive (+) lead.
   
   If operation is not as specified, replace the relay.

(Relay Circuit)

Disconnect the connector from the relay and inspect the connector on the wire harness side as shown in the chart.

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 - Ground</td>
<td>Driver's door position</td>
<td>Closed (Courtesy switch OFF)</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Opened (Courtesy switch ON)</td>
<td>Continuity</td>
</tr>
<tr>
<td>Voltage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - Ground</td>
<td>Ignition switch position</td>
<td>LOCK or ACC</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ON</td>
<td>Battery voltage</td>
</tr>
<tr>
<td>2 - Ground</td>
<td>Ignition switch position</td>
<td>LOCK</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>Battery voltage</td>
</tr>
<tr>
<td>3 - Ground</td>
<td>Light control Switch</td>
<td>OFF</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TAIL or HEAD</td>
<td>Battery voltage</td>
</tr>
</tbody>
</table>

If circuit is as specified, replace the relay.

If circuit is not as specified, refer to BE-18 wiring diagram and inspect the circuits connected to other parts.
Illuminated Entry System

1. INSPECT FRONT DOOR COURTESY SWITCH
   See step 2 of Open Door Warning System on page BE-64.

2. INSPECT ROOM LIGHT CONTROL RELAY (Operation)
   (a) Connect the positive (+) lead from the battery to terminal 1. Connect the negative (—) lead to terminal 2.
   (b) Connect a 3.4 W bulb between terminal 3 and the battery negative (—), and then check that the bulb lights.
   (c) Disconnect the negative (—) lead from the battery, and check that the bulb goes out approx. 5 seconds later as shown in the chart.

If operation is not as specified, replace the relay.

(Relay Circuit)
Disconnect the connector from the relay and inspect the connector on the wire harness side as shown in the chart.

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td>3 — Ground</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>4 — Ground</td>
<td>Driver's door position</td>
<td>Closed (Courtesy switch OFF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>1 — Ground</td>
<td>Constant</td>
<td>Battery voltage</td>
</tr>
</tbody>
</table>

If circuit is as specified, replace the relay.
If circuit is not as specified, refer to BE-19 wiring diagram and inspect the circuits to other parts.
Stop light System

INSPECT SWITCH
(Stop Light Switch/Continuity)

<table>
<thead>
<tr>
<th>Terminals</th>
<th>1(1)</th>
<th>2</th>
<th>3(2)</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch pin free (Brake pedal depressed)</td>
<td>O</td>
<td></td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Switch pin pushed in (Brake pedal released)</td>
<td>O</td>
<td></td>
<td>O</td>
<td></td>
</tr>
</tbody>
</table>

(): w/o Cruise Control System
If continuity is not as specified, replace the switch.

Back-up Light System

INSPECT SWITCHES
(Neutral Start Switch)
See page AT-28.
(Back-up Light Switch)
See page MT-24.
HEADLIGHT CLEANER SYSTEM

Parts Location

Wiring and Connector Diagrams

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11
Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headlight cleaner do not operate</td>
<td>WIPER fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Cleaner hose or nozzle clogged</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cleaner motor faulty</td>
<td>Check motor</td>
<td>BE-35</td>
</tr>
<tr>
<td></td>
<td>Cleaner switch faulty</td>
<td>Check switch</td>
<td>BE-35</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
</tbody>
</table>

Parts Inspection

1. **INSPECT SWITCH**
   (Continuity)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>1</th>
<th>4</th>
<th>Illumination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the switch.

2. **INSPECT HEADLIGHT CLEANER RELAY**
   (a) Check that there is no continuity between terminals 4 and 5.
   (b) Connect the positive (+) lead from the battery to terminal 3 and the negative (—) lead to terminal 5.
   (c) Connect the negative (—) lead from the battery to terminal 1, check that there is continuity between terminals 4 and 5 for 0.40 — 0.58 sec, then there is no continuity.

   ![Continuity Diagram](BE176B)

   If operation is not as specified, replace the relay.

3. **INSPECT HEADLIGHT CLEANER MOTOR**

   Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 2, check that the motor operates.

   **NOTICE:** These test must be performed quickly (within 3 — 5 seconds) to prevent the coil from burning out.

   If operation is not as specified, replace the motor.
WIPER AND WASHER SYSTEM

Parts Location

- Wiper Motor (Front)
- Rear Wiper Relay (Lift-up type door)
- Front Wiper
- Rear Wiper
- Washer Switch (Front and Rear)
- Fuse Block
  - WIPER Fuse
- Wiper Motor (Front)
- Rear Wiper Motor
- Washer Motor (Front)
- Washer Tank
- Washer Motor (Rear)
- Rear Wiper Relay (Lift-up type door)
Parts Location (Cont’d)

Wiper Motor (Rear: Swing type door LH)

Wiper Motor (Rear: Swing type door RH)

Rear Wiper Relay (Swing type door)
Wiring and Connector Diagrams

(Front: Mist Type)

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11

(Front: Intermittent Type)

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11
The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11

(Rear: Lift-up type door)

(Rear: Swing type door)
Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiper do not operate or return to off position</td>
<td>WIPER fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Wiper motor faulty</td>
<td>Check motor</td>
<td>BE-44</td>
</tr>
<tr>
<td></td>
<td>Wiper switch faulty</td>
<td>Check switch</td>
<td>BE-45, 46</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td>BE-41</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BE-41</td>
</tr>
<tr>
<td>Wiper do not operate in Mist position</td>
<td>Wiper switch faulty</td>
<td>Check switch</td>
<td>BE-41</td>
</tr>
<tr>
<td></td>
<td>Wiper motor faulty</td>
<td>Check motor</td>
<td>BE-44</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Wiper do not operate in Intermittent (INT) position</td>
<td>Wiper relay faulty</td>
<td>Check relay</td>
<td>BE-42</td>
</tr>
<tr>
<td></td>
<td>Wiper switch faulty</td>
<td>Check switch</td>
<td>BE-42, 43</td>
</tr>
<tr>
<td></td>
<td>Wiper motor faulty</td>
<td>Check motor</td>
<td>BE-41</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td>BE-44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BE-45, 46</td>
</tr>
<tr>
<td>Washer do not operate</td>
<td>Washer hose or nozzle clogged</td>
<td>Repair as necessary</td>
<td>BE-44</td>
</tr>
<tr>
<td></td>
<td>Washer motor faulty</td>
<td>Check motor</td>
<td>BE-45, 46</td>
</tr>
<tr>
<td></td>
<td>Washer switch faulty</td>
<td>Check switch</td>
<td>BE-41</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td>BE-41</td>
</tr>
</tbody>
</table>

Parts Replacement

See Parts Replacement of Combination Switch on page BE-25.
# Parts Inspection

## Wiper System

1. **INSPECT SWITCHES**
   - **(Front Wiper and Washer Switch/Continuity)**
   - **(Mist Wiper)**

<table>
<thead>
<tr>
<th>Terminal (Color)</th>
<th>B4 (L-R)</th>
<th>B7 (L-B)</th>
<th>B8 (L)</th>
<th>B13 (L-0)</th>
<th>B16 (B)</th>
<th>B18 (L-W)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wiper</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
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</tr>
<tr>
<td>MIST</td>
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</tr>
<tr>
<td>LO</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>HI</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Washer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(Intermittent Wiper)*

<table>
<thead>
<tr>
<th>Terminal (Color)</th>
<th>B4 (L-R)</th>
<th>B7 (L-B)</th>
<th>B8 (L)</th>
<th>B12 (Y-B)</th>
<th>13 (L-0)</th>
<th>B16 (B)</th>
<th>B18 (L-W)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wiper</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INT</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LO</td>
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</tr>
<tr>
<td>HI</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Washer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(Rear Wiper and Washer Switch/Continuity)*

<table>
<thead>
<tr>
<th>Terminal (Color)</th>
<th>B1 (G)</th>
<th>B2 (V)</th>
<th>B10 (0)</th>
<th>B16 (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Washer</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ON</td>
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</tr>
<tr>
<td><strong>Wiper</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>INT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Washer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reference: For RHD vehicles, the switches are always symmetrically opposite to those of LHD vehicles.
2. **INSPECT FRONT WIPER RELAY**  
   (Intermittent wiper: Front)  
   (Operation at Intermittent)  
   (a) Turn the wiper switch to INT position.  
   (b) Turn the intermittent time control switch to FAST position.  
   (c) Connect the positive (+) lead from the battery to terminal B18 and the negative (—) lead to terminal B16.  
   (d) Connect the positive (+) lead from the voltmeter to terminal B7 and the negative (—) lead to terminal B16, check that the meter needle indicates battery voltage.  
   (e) After connecting terminal B4 to terminal B18, connect to terminal B16. Then, check that the voltage rises from 0 volt to battery voltage within the times as shown in the table.  

   ![Battery Voltage Table](image)

   If operation is not as specified, replace the switch.  
   
   (Operation as Washer Linked)  
   (a) Connect the positive (+) lead from the battery to terminal B18 and the negative (—) lead to terminal B16.  
   (b) Connect the positive (+) lead from the voltmeter to terminal B7 and the negative (—) lead to terminal B16.  
   (c) Push in the washer switch. Check that the voltage changes as shown in the table.

   ![Washer Switch Diagram](image)

   If operation is not as specified, replace the switch.  

3. **INSPECT REAR WIPER RELAY**  
   (Continuity/Lift-up type door)  
   (a) Check that there is no continuity between terminals 1 and 3.  
   (b) Check that there is continuity between terminals 2 and 3.  
   If continuity is not as specified, replace the relay.
(Operation/Lift-up type door)
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 6.
(b) Connect the positive (+) lead from the voltmeter to terminal 2 and the negative (—) lead to terminal 6, check that the meter needle indicates to 0 volts.
(c) Connect the positive (+) lead from the voltmeter to terminal 3 and the negative (—) lead to terminal 6, check that the meter needle indicates to battery voltage.
If operation is not as specified, replace the relay.

(Intermittent Operation/Lift-up type door)
(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to terminal 4.
(b) Connect the positive (+) lead from the voltmeter to terminal 3 and the negative (—) lead to terminal 4.
(c) After disconnecting the positive (+) lead from terminal 2, connect it to terminal 1, and then, check that the meter needle rises from 0 volts to battery voltage within 9 to 15 seconds.
If operation is not as specified, replace the relay.

(Continuity/Swing type door)
(a) Check that there is no continuity between terminals 1 and 3 (for left side wiper motor).
(b) Check that there is continuity between terminals 3 and 7 (for left side wiper motor).
(c) Check that there is no continuity between terminals 1 and 4 (for right side wiper motor).
(d) Check that there is continuity between terminals 4 and 2 (for right side wiper motor).
If continuity is not as specified, replace the relay.

(Operation/Swing type door)
(for left side wiper motor)
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 5.
(b) Connect the positive (+) lead from the voltmeter to terminal 3 and the negative (—) lead to terminal 5, check that the meter needle indicates to 0 volts.
(c) Connect the positive (+) lead from the voltmeter to terminal 7 and the negative (—) lead to terminal 5, check that the meter needle indicates to battery voltage.
If operation is not as specified, replace the relay.
(for right side wiper motor)
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 5.
(b) Connect the positive (+) lead from the voltmeter to terminal 2 and the negative (—) lead to terminal 5, check that the meter needle indicates to 0 volts.
(c) Connect the positive (+) lead from the voltmeter to terminal 4 and the negative (—) lead to terminal 5, check that the meter needle indicates to battery voltage.

If operation is not as specified, replace the relay.

(Intermittent Operation/Swing type door)
(for left side wiper motor)
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 6.
(b) Connect the positive (+) lead from the voltmeter to terminal 7 and the negative (—) lead to terminal 6.
(c) After disconnecting the positive (+) lead from terminal 3, connect it to terminal 1, and then, check that the meter needle rises from 0 volts to battery voltage within 6 to 10 seconds.

If operation is not as specified, replace the relay.

(for right side wiper motor)
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 6.
(b) Connect the positive (+) lead from the voltmeter to terminal 4 and the negative (—) lead to terminal 6.
(c) After disconnecting the positive (+) lead from terminal 1, connect it to terminal 2, and then, check that the meter needle rises from 0 volts to battery voltage within 6 to 10 seconds.

If operation is not as specified, replace the relay.

4. INSPECT FRONT WIPER MOTOR
(Operation at Low Speed)
Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to the motor body, check that the motor operates as low speed.
If operation is not as specified, replace the motor.

(Operation at High Speed)
Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to the motor body, check that the motor operation at high speed.
If operation is not as specified, replace the motor.
(Operation, Stopping at Stop Position)
(a) Operate the motor at low speed and stop the motor operation anywhere except at the stop position by disconnecting positive (+) lead from terminal 2.

(b) Connect terminals 2 and 3.
(c) Connect the positive (+) lead from the battery to terminal 4 and the negative (—) lead to the motor body, check that the motor stops running at the stop position after the motor operates again.

If operation is not as specified, replace the motor.

5. INSPECT REAR WIPER MOTOR
(Lift-up type door/Operation at Low Speed)
Connect the positive (+) lead from the battery to terminal 3 and the negative (—) lead to terminal 2, check that the motor operates at low speed.

If operation is not at specified, replace the motor.

(Lift-up type door/Operation, Stopping at Stop Position)
(a) Operate the motor at low speed and stop the motor operation anywhere except at the stop position by disconnecting positive (+) lead from terminal 3.

(b) Connect terminals 3 and 4.
(c) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 2, check that the motor stops running at the stop position after the motor operates again.

If operation is not as specified, replace the motor.
Body Electrical System  - Wiper and Washer System

(Swing type door/Operation at Low Speed)
Connect the positive (+) lead from the battery to terminal 3 and the negative (—) lead to terminal 2, check that the motor operates as low speed.
If operation is not as specified, replace the motor.

(Swing type door/Operation, Stopping at Stop Position)
(a) Operate the motor at low speed and stop the motor operation anywhere except at the stop position by disconnecting positive (+) lead from terminal 3.

(b) Connect terminals 3 and 4.
(c) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 2, check that the motor stops running at the stop position after the motor operates again.

If operation is not as specified, replace the motor.

Washer System

1. INSPECT WASHER SWITCH
   (Washer Switch)
   See Wiper and Washer Switch on page BE-41.

2. INSPECT WASHER MOTOR
   Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to terminal 1, check that the motor operates.
   NOTICE: These tests must be performed quickly (within 20 seconds) to prevent the coil from burning out.
   If operation is not as specified, replace the motor.
BODY ELECTRICAL SYSTEM - Combination Meter

COMBINATION METER

Parts Location

- Accessory Meter (Compass & Sub-Fuel Gauge)
- Fuel Filter Warning Buzzer (Diesel engine)
- Magnet Field Sensor (w/ Compass)
- Neutral Start Switch
- Door Courtesy Switch
- Seat Belt Warning Relay
- Fuse Block:
  - GAUGE Fuse
  - IGN Fuse
  - TAIL Fuse
  - TAIL(RH) Fuse
- Buckle Switch
- Parking Brake Switch
- Door Courtesy Switch
- Fuel Sender Gauge (Sub Tank)
- Fuel Sender Gauge (Main Tank)
Parts Location (Cont'd)

3F-E, 3F Engine

- Low Oil Pressure Warning Switch
- Oil Pressure Sender Gauge

1HD-T, 1 HZ Engine

- Low Oil Pressure Warning Switch
- Oil Pressure Sender Gauge

Turbo Indicator Pressure Switch (1HD-T engine)

Air Cleaner Warning Switch
**Meter Circuit**

(w/o Tachometer: Except G.C.C.)

<table>
<thead>
<tr>
<th>No.</th>
<th>Wiring connector side</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Low oil pressure warning switch</td>
</tr>
<tr>
<td>5</td>
<td>GAUGE fuse</td>
</tr>
<tr>
<td>6</td>
<td>Fuel filter warning switch and buzzer (Diesel engine)</td>
</tr>
<tr>
<td>7</td>
<td>Choke switch (Gasoline engine) or glow timer relay (Diesel engine)</td>
</tr>
<tr>
<td>8</td>
<td>Rear fog light switch (Europe)</td>
</tr>
<tr>
<td>9</td>
<td>Hazard warning light switch (Europe)</td>
</tr>
<tr>
<td>10</td>
<td>Fuel sender gauge (Sub-Tank)</td>
</tr>
<tr>
<td>1</td>
<td>CHARGE fuse (w/o IC ALT) or charge light relay (w/ IC ALT)</td>
</tr>
<tr>
<td>2</td>
<td>Headlight Lo-beam</td>
</tr>
<tr>
<td>3</td>
<td>Ground</td>
</tr>
<tr>
<td>4</td>
<td>Turn signal light switch (Left)</td>
</tr>
<tr>
<td>1</td>
<td>Water temperature sender gauge</td>
</tr>
<tr>
<td>2</td>
<td>Turn signal light switch (Right)</td>
</tr>
<tr>
<td>3</td>
<td>TAIL fuse or TAIL (RH) fuse</td>
</tr>
<tr>
<td>7</td>
<td>Speed control unit</td>
</tr>
<tr>
<td>8</td>
<td>Fuel sender gauge (Main-Tank)</td>
</tr>
<tr>
<td>9</td>
<td>Ground</td>
</tr>
<tr>
<td>10</td>
<td>Ground of rheostat</td>
</tr>
<tr>
<td>1</td>
<td>Brake fluid level warning switch (Europe) and vacuum warning switch (Diesel)</td>
</tr>
<tr>
<td>2</td>
<td>Brake fluid level warning switch (Except Europe) and parking brake switch (Except Europe) and vacuum warning switch (Diesel)</td>
</tr>
<tr>
<td>5</td>
<td>4WD indicator switch</td>
</tr>
<tr>
<td>6</td>
<td>Front diff. lock indicator switch</td>
</tr>
<tr>
<td>7</td>
<td>Rear diff. lock indicator switch</td>
</tr>
<tr>
<td>8</td>
<td>Air Filter warning switch</td>
</tr>
<tr>
<td>9</td>
<td>IGN fuse</td>
</tr>
<tr>
<td>11</td>
<td>DOME fuse</td>
</tr>
<tr>
<td>12</td>
<td>Door courtesy switch</td>
</tr>
</tbody>
</table>
(w/ Tachometer)

Connector "D"  Connector "C"  Connector "B"  Connector "A"

<table>
<thead>
<tr>
<th>No.</th>
<th>Wiring connector side</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground</td>
</tr>
<tr>
<td>2</td>
<td>A/T fluid temperature sensor (A/T)</td>
</tr>
<tr>
<td>3</td>
<td>Oil pressure sender gauge</td>
</tr>
<tr>
<td>4</td>
<td>GAUGE fuse</td>
</tr>
<tr>
<td>5</td>
<td>Fuel filter warning switch and buzzer (Diesel engine)</td>
</tr>
<tr>
<td>6</td>
<td>Glow timer relay (Diesel engine)</td>
</tr>
<tr>
<td>7</td>
<td>EFI ECU (3F-E engine)</td>
</tr>
<tr>
<td>8</td>
<td>Choke switch (3F engine)</td>
</tr>
<tr>
<td>9</td>
<td>Rear fog light switch (Europe) or seat belt warning relay (G.C.C.)</td>
</tr>
<tr>
<td>10</td>
<td>Hazard warning light switch (Europe) or cruise control ECU (w/ Cruise Control System)</td>
</tr>
<tr>
<td>11</td>
<td>Headlight Hi-Beam</td>
</tr>
<tr>
<td>12</td>
<td>Ground</td>
</tr>
<tr>
<td>13</td>
<td>Turn signal light switch (Left)</td>
</tr>
</tbody>
</table>

Connector "D"  Connector "C"  Connector "B"  Connector "A"

<table>
<thead>
<tr>
<th>No.</th>
<th>Wiring connector side</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water temperature sender gauge</td>
</tr>
<tr>
<td>2</td>
<td>Turn signal light switch (Right)</td>
</tr>
<tr>
<td>3</td>
<td>TAIL or TAIL (RH) fuse</td>
</tr>
<tr>
<td>4</td>
<td>Tacho pick sensor (Diesel engine) or Igniter (Gasoline engine)</td>
</tr>
<tr>
<td>5</td>
<td>High pressure switch (1HD-T engine)</td>
</tr>
<tr>
<td>6</td>
<td>Low pressure switch (1HD-T engine)</td>
</tr>
<tr>
<td>7</td>
<td>Speed control unit</td>
</tr>
<tr>
<td>8</td>
<td>Fuel sender gauge</td>
</tr>
<tr>
<td>9</td>
<td>Ground</td>
</tr>
<tr>
<td>10</td>
<td>Rheostat or ground</td>
</tr>
</tbody>
</table>

Connector "D"  Connector "C"  Connector "B"  Connector "A"

<table>
<thead>
<tr>
<th>No.</th>
<th>Wiring connector side</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brake fluid level warning SW (Europe) and vacuum warning switch (Diesel) or brake fluid level warning SW and parking brake SW (Except. Europe) and vacuum warning switch (Diesel)</td>
</tr>
<tr>
<td>2</td>
<td>Parking brake SW (Europe)</td>
</tr>
<tr>
<td>3</td>
<td>Neutral start switch (A/T)</td>
</tr>
<tr>
<td>4</td>
<td>Neutral position switch (A/T)</td>
</tr>
<tr>
<td>5</td>
<td>4WD indicator switch</td>
</tr>
<tr>
<td>6</td>
<td>Front diff. lock indicator switch</td>
</tr>
<tr>
<td>7</td>
<td>Rear diff. lock indicator switch</td>
</tr>
<tr>
<td>8</td>
<td>Air filter warning switch</td>
</tr>
<tr>
<td>9</td>
<td>IGN fuse</td>
</tr>
<tr>
<td>10</td>
<td>Fuel sender gauge</td>
</tr>
<tr>
<td>11</td>
<td>DOME fuse</td>
</tr>
<tr>
<td>12</td>
<td>Door courtesy switch</td>
</tr>
</tbody>
</table>
**BODY ELECTRICAL SYSTEM - Combination Meter**

### (w/o Tachometer: G.C.C.)

#### Connector "D"

<table>
<thead>
<tr>
<th>No.</th>
<th>Wiring connector side</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low oil pressure warning switch</td>
</tr>
<tr>
<td>2</td>
<td>Choke switch</td>
</tr>
<tr>
<td>3</td>
<td>Seat belt warning relay</td>
</tr>
<tr>
<td>4</td>
<td>Headlight Hi-beam</td>
</tr>
<tr>
<td>5</td>
<td>Water temperature sender gauge</td>
</tr>
<tr>
<td>6</td>
<td>Fuel sender gauge</td>
</tr>
<tr>
<td>7</td>
<td>Turn signal switch (Left)</td>
</tr>
<tr>
<td>8</td>
<td>Turn signal switch (Right)</td>
</tr>
<tr>
<td>9</td>
<td>Ground</td>
</tr>
<tr>
<td>A</td>
<td>Ground</td>
</tr>
<tr>
<td>1</td>
<td>Speed control unit</td>
</tr>
<tr>
<td>2</td>
<td>TAIL fuse</td>
</tr>
<tr>
<td>3</td>
<td>Ground</td>
</tr>
<tr>
<td>4</td>
<td>Brake fluid level warning switch and parking brake switch</td>
</tr>
<tr>
<td>5</td>
<td>IGN fuse</td>
</tr>
<tr>
<td>6</td>
<td>CHARGE fuse (w/o IC ALT) or charge light relay (w/IC ALT)</td>
</tr>
<tr>
<td>7</td>
<td>4WD indicator switch</td>
</tr>
<tr>
<td>8</td>
<td>GAUGE fuse</td>
</tr>
<tr>
<td>9</td>
<td>Air filter warning switch</td>
</tr>
<tr>
<td>10</td>
<td>DOME fuse</td>
</tr>
<tr>
<td>11</td>
<td>Door courtesy switch</td>
</tr>
</tbody>
</table>

---

### (Shift Position Indicator)

#### Connector "A"

<table>
<thead>
<tr>
<th>No.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Light control rheostat—terminal A2</td>
</tr>
<tr>
<td>2</td>
<td>Neutral start switch—terminal 6</td>
</tr>
<tr>
<td>3</td>
<td>Neutral start switch—terminal 8</td>
</tr>
<tr>
<td>4</td>
<td>Neutral start switch—terminal 1</td>
</tr>
<tr>
<td>5</td>
<td>Neutral start switch—terminal 4</td>
</tr>
<tr>
<td>6</td>
<td>Neutral start switch—terminal 3</td>
</tr>
<tr>
<td>7</td>
<td>Neutral start switch—terminal 5</td>
</tr>
<tr>
<td>8</td>
<td>Neutral start switch—terminal 7</td>
</tr>
<tr>
<td>9</td>
<td>Ground</td>
</tr>
<tr>
<td>10</td>
<td>TAIL Fuse</td>
</tr>
</tbody>
</table>

---

**Connector "D"**

- **F**: Fuel Gauge
- **W**: Water Temperature Gauge
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination meter does not operate</td>
<td>GAUGE fuse blown</td>
<td>Replace fuse and check for short</td>
<td></td>
</tr>
<tr>
<td>Speedometer does not operate</td>
<td>Speedometer cable faulty</td>
<td>Check cable</td>
<td></td>
</tr>
<tr>
<td>Speed warning chime does not sound</td>
<td>Speed warning chime faulty</td>
<td>Check speed warning chime</td>
<td></td>
</tr>
<tr>
<td>Tachometer does not operate</td>
<td>Tachometer faulty</td>
<td>Check tachometer</td>
<td></td>
</tr>
<tr>
<td>Fuel gauge does not operate (Main)</td>
<td>Receiver gauge faulty</td>
<td>Check gauge</td>
<td></td>
</tr>
<tr>
<td>Fuel level warning light does not light up</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td></td>
</tr>
<tr>
<td>Fuel filter warning light does not light,</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td></td>
</tr>
<tr>
<td>Water temperature gauge does not operate</td>
<td>Receiver gauge faulty</td>
<td>Check gauge</td>
<td></td>
</tr>
<tr>
<td>Low oil pressure warning light does not light</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td></td>
</tr>
<tr>
<td>Park warning light does not light up</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td></td>
</tr>
</tbody>
</table>

---

### Diagram

[Diagram of the accessory meter and related connections]
## Troubleshooting (Cont'd)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brake warning light does not light up</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td>BE-5</td>
</tr>
<tr>
<td></td>
<td>Level Warning switch faulty</td>
<td>Check switch</td>
<td>BE-64</td>
</tr>
<tr>
<td></td>
<td>Vacuum switch faulty</td>
<td>Check switch</td>
<td>BE-64</td>
</tr>
<tr>
<td></td>
<td>Parking brake switch faulty</td>
<td>Check switch</td>
<td>BE-63</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Seat belt warning light does not light up</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td>BE-5</td>
</tr>
<tr>
<td></td>
<td>Warning switch faulty</td>
<td>Check switch</td>
<td>BE-65</td>
</tr>
<tr>
<td></td>
<td>Warning relay faulty</td>
<td>Check relay</td>
<td>BE-66</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Open door warning light does not light up</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td>BE-5</td>
</tr>
<tr>
<td></td>
<td>Courtesy switch faulty</td>
<td>Check switch</td>
<td>BE-64</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Timing belt warning light does not light up</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td>BE-5</td>
</tr>
<tr>
<td></td>
<td>Warning switch faulty</td>
<td>Check switch</td>
<td>BE-66</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Fuel gauge does not operate (Sub)</td>
<td>Receiver gauge faulty</td>
<td>Check gauge</td>
<td>BE-58</td>
</tr>
<tr>
<td></td>
<td>Sender gauge faulty</td>
<td>Check gauge</td>
<td>BE-59</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Voltmeter does not operate</td>
<td>Battery faulty</td>
<td>Check battery</td>
<td>BE-62</td>
</tr>
<tr>
<td></td>
<td>Receiver gauge faulty</td>
<td>Check gauge</td>
<td>BE-62</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Oil pressure gauge does not operate</td>
<td>Receiver gauge faulty</td>
<td>Check gauge</td>
<td>BE-62</td>
</tr>
<tr>
<td></td>
<td>Sender gauge faulty</td>
<td>Check gauge</td>
<td>BE-62</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Meter illumination control system does not operate</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td>BE-5</td>
</tr>
<tr>
<td></td>
<td>Rheostat faulty</td>
<td>Check rheostat</td>
<td>BE-67</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Shift position indicator light does not light up (A/T)</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td>BE-5</td>
</tr>
<tr>
<td></td>
<td>Switch faulty</td>
<td>Check switch</td>
<td>AT-28</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Airfilter warning light does not light</td>
<td>Bulb burned out</td>
<td>Replace or check bulb</td>
<td>BE-5</td>
</tr>
<tr>
<td></td>
<td>Warning switch faulty</td>
<td>Check switch</td>
<td>BE-67</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Turbo indicator does not operate</td>
<td>Drive circuit faulty</td>
<td>Check drive circuit</td>
<td>BE-68</td>
</tr>
<tr>
<td></td>
<td>Pressure switch faulty</td>
<td>Check switch</td>
<td>BE-67</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Compass does not operate</td>
<td>Accessory meter faulty</td>
<td>Check meter</td>
<td>BE-69</td>
</tr>
<tr>
<td></td>
<td>Magnet field sensor faulty</td>
<td>Check sensor</td>
<td>BE-70</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
</tbody>
</table>

## Parts Adjustment

(Diesel Engine)

Adjustment of Interval Switch for Timing Belt Warning System

NOTICE: Work carefully so that components are not damaged in any way.

### RESET CANCEL SWITCH

(a) Remove the gromet from the meter glass.

(b) Push the reset switch.
**IF REPLACING TIMING BELT BEFORE WARNING LIGHT LIGHT UP**

(a) Remove the timing belt warning unit from the speedometer.

(b) When installing the timing belt warning unit to the speedometer, rotate the interval counter gear in the direction of the arrow so that the tooth at number "2" on the interval counter gear engages with the drive gear on the speedometer side.

HINT: If the tooth at number "2" on the interval counter gear does not engage with the drive gear, move the tooth at number "2" slightly in the direction of the arrow until the tooth engage.

(c) Install the timing belt warning unit to the speedometer.

HINT: If turn on the timing belt warning light, reset the cancel switch.

**IF REPLACING SPEEDOMETER**

(a) Remove the timing belt warning unit from the speedometer.

(b) Read the value in tens of thousands from the old odometer (taken to the next highest figure when the thousands column shows on thousand or more).

(c) Find the value from (b) in the table on the left, then find the corresponding number from adjustment of the interval counter gear.

Example: When the old odometer shows.

\[
\text{013251 km} \\
(\text{b}) = \text{020000} \\
(\text{c}) = \text{"0" for the interval counter gear number}. \\
\]

(d) When installing the timing belt warning unit to the speedometer, rotate the interval counter gear in the direction of the arrow so that the number (c) on the interval counter gear aligns with the cursor on the drive gear on the speedometer side.

HINT: Check that the tooth beside to number on the counter gear engages the gap on the cursor port on the drive gear.

(e) Install the timing belt warning unit to the speedometer.
Parts Inspection

Speedometer System

1. **INSPECT SPEEDOMETER (ON-VEHICLE)**
   
   (a) Using a speedometer tester, inspect the speedometer for allowable indication error and check the operation of the odometer.
   
   HINT: Tire wear and tire over or under inflation will increase the indication error.
   
   (b) Check the speedometer for pointer vibration and abnormal noise.
   
   HINT: Pointer vibration can be caused by a loose speedometer cable.

2. **INSPECT SPEED SENSOR**
   
   Check that there is continuity between terminals A and B four times per each revolution of the speedometer shaft.
   
   If operation is not as specified, replace the speedometer.

3. **INSPECT SPEED WARNING CHIME SWITCH**
   
   (a) Press down on the tabs and remove the combination meter glass from the combination meter case.
   
   NOTICE: Be careful not to dirty or damage the speedometer panel.
(b) Move the speedometer needle to the 124 km/h or 77 mph mark and fix it there.

(c) Keep on turning the speedometer shaft, check that the continuity between terminals A and B repeatedly fluctuates.

If operation is not as specified, replace the speedometer.

4. INSPECT SPEED WARNING CHIME

Apply battery voltage intermittently between terminals of the chime, check that the chime sounds.

HINT: The sound will be distorted if the chime is tilted.

If operation is not as specified, replace the chime.

Tachometer System

1. INSPECT TACHOMETER (ON-VEHICLE)

(a) Connect a tune-up test tachometer, and start the engine.

NOTICE:
- Reversing the connection of the tachometer will damage the transistors and diodes inside.
- When removing or installing the tachometer, be careful not to drop or subject it to heavy shocks.

(b) Compare the tester and tachometer indications.
If error is excessive, replace the tachometer.

2. (Diesel Engine)
INSPECT PICK-UP SENSOR

Measure the resistance between terminals 1 and 2.

Resistance: approx. 730 Ω

If resistance value is not as specified, replace the sensor.
1. **INSPECT RECEIVER GAUGE**
   **(Operation)**
   (a) Disconnect the connector from the sender gauge.
   (b) Turn the ignition switch ON, check that the receiver gauge needle indicates EMPTY.
   (c) Connect terminals 4 and 5 on the wire harness side connector through a 3.4 watts test bulb.
   (d) Turn the ignition switch ON, check that the bulb lights up and the receiver gauge needle moves towards the full side.
   **HINT:** Because of the silicon oil in the gauge, it will take a short time for needle to stabilize.
   If operation is not as specified, inspect the receiver gauge resistance.
   **(Resistance)**
   Measure the resistance between terminals,
   **(w/ Tachometer)**

<table>
<thead>
<tr>
<th>Between terminals</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGN - Sender</td>
<td>85.5 - 105.5</td>
</tr>
<tr>
<td>IGN — Ground</td>
<td>126 - 150</td>
</tr>
<tr>
<td>Sender — Ground</td>
<td>*90 - 110</td>
</tr>
</tbody>
</table>
   *: Include voltmeter resistance.

   **(w/o Tachometer)**

<table>
<thead>
<tr>
<th>Between terminals</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGN — Sender</td>
<td>49 - 61</td>
</tr>
<tr>
<td>IGN - Ground</td>
<td>99 - 121</td>
</tr>
<tr>
<td>Sender — Ground</td>
<td>148 - 182</td>
</tr>
</tbody>
</table>

   If resistance value is not as specified, replace the receiver gauge.

2. **INSPECT SENDER GAUGE**
   **(Operation)**
   (a) Connect a series of three 1.5 volts dry cell batteries.
   (b) Connect the positive (+) lead from the dry cell batteries to terminal 4 through a 3.4 watts test bulb and the negative (—) lead to terminal 5.
   (c) Connect the positive (+) lead from the voltmeter to terminal 5 and the negative (—) lead to terminal 4.
   (d) Check that the voltage rises as the float is moved from the full to empty position.
(Resistance)
Measure the resistance between terminals 4 and 5.

<table>
<thead>
<tr>
<th>Float position mm (in.)</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F approx. 15 (0.59)</td>
<td>approx. 3</td>
</tr>
<tr>
<td>E approx. 200 (7.87)</td>
<td>approx. 110</td>
</tr>
</tbody>
</table>

If resistance value is not as specified, replace the sender gauge.

Fuel Gauge System (Sub)
1. **INSPECT RECEIVER GAUGE**
   **(Operation)**
   (a) Disconnect the connector from the sender gauge.
   (b) Turn the ignition switch ON, check that the receiver gauge needle indicates EMPTY.
   (c) Connect terminals 1 and 2 on the wire harness side connector through a 3.4 watts test bulb.
   (d) Turn the ignition switch ON, check that the bulb lights up and the receiver gauge needle moves towards the full side.

   **HINT:** Because of the silicon oil in the gauge, it will take a short time for needle to stabilize.

   If operation is not as specified, inspect the receiver gauge resistance.

   **(Resistance)**
   Measure the resistance between terminals,
   **(w/ Tachometer)**

<table>
<thead>
<tr>
<th>Between terminals</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGN - Sender</td>
<td>approx. 86</td>
</tr>
<tr>
<td>IGN — Ground</td>
<td>approx. 241</td>
</tr>
<tr>
<td>Sender — Ground</td>
<td>approx. 155</td>
</tr>
</tbody>
</table>

   **(w/o Tachometer)**

<table>
<thead>
<tr>
<th>Between terminals</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGN - Sender</td>
<td>approx. 123</td>
</tr>
<tr>
<td>IGN - Ground</td>
<td>approx. 260</td>
</tr>
<tr>
<td>Sender — Ground</td>
<td>approx. 137</td>
</tr>
</tbody>
</table>

If resistance value is not as specified, replace the receiver gauge.
2. **INSPECT SENDER GAUGE**
   
   **(Operation)**
   
   (a) Connect a series of three 1.5 volts dry cell batteries.
   
   (b) Connect the positive (+) lead from the dry cell batteries to terminal 1 through a 3.4 watts test bulb and the negative (—) lead to terminal 2.
   
   (c) Connect the positive (+) lead from the voltmeter to terminal 1 and the negative (—) lead to terminal 2.
   
   (d) Check that the voltage rises as the float is moved from the full to empty position.

   **(Resistance)**

   Measure the resistance between terminals 1 and 2.

<table>
<thead>
<tr>
<th>Float position</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F approx. 53 (2.09)</td>
<td>approx. 3</td>
</tr>
<tr>
<td>E approx. 156 (6.14)</td>
<td>approx. 110</td>
</tr>
</tbody>
</table>

   If resistance value is not as specified, replace the sender gauge.

**Fuel Level Warning System**

1. **INSPECT WARNING LIGHT**
   
   (a) Disconnect the connector from the sender gauge.
   
   (b) Connect terminals 1 and 5 on the wire harness side connector.
   
   (c) Turn the ignition switch ON, check that the warning light lights up.

   If the warning light does not light up, test the bulb.

2. **INSPECT WARNING SWITCH**
   
   (a) Apply battery voltage between terminals 1 and 5 through a 3.4 watts test bulb, check that the bulb lights up.

   **HINT:** It will take a short time for the bulb to light up.

   (b) Submerge the switch in fuel, check that the bulb goes out.

   If operation is not as specified, replace the sender gauge.
Fuel Filter Warning System

1. **INSPECT WARNING LIGHT**
   (a) Disconnect the connector from the warning switch and connect terminals on the wire harness side connector.
   (b) Remove the CHARGE fuse and turn the ignition switch ON.
   (c) Check that the warning light lights up and the warning buzzer sounds.

2. **INSPECT WARNING BUZZER**
   Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to terminal 1, check that the buzzer sounds.
   If buzzer does not sound, replace the buzzer.

3. **INSPECT WARNING SWITCH**
   (a) Check that there is no continuity between terminals with the warning switch OFF (float down).
   (b) Check that there is continuity between terminals with the warning switch ON (float up).
   If operation is not as specified, replace the switch.

Water Temperature Gauge System

**INSPECT RECEIVER GAUGE**
(Operational)
   (a) Disconnect the connector from the sender gauge.
   (b) Turn the ignition switch ON, check that the receiver gauge needle indicates COOL.

   (c) Ground terminal on the wire harness side connector through a 3.4 watts test bulb.
   (d) Turn the ignition switch ON, check that the bulb lights up and the receiver gauge needle moves to the hot side.
   If operation is as specified, replace the sender gauge. Then, recheck system.
   If operation is not as specified, measure the receiver gauge resistance.
**Low Oil Pressure Warning System**

1. **INSPECT WARNING LIGHT**
   
   (a) Disconnect the connector from the warning switch and ground terminal on the wire harness side connector.
   
   (b) Turn the ignition switch ON, check that the warning light lights up.
   
   If the warning light does not light up, test the bulb.

2. **INSPECT WARNING SWITCH**
   
   (a) Disconnect the connector from the switch.
   
   (b) Check that there is continuity between terminal and ground with the engine stopped.
   
   (c) Check that there is no continuity between terminal and ground with the engine running.
   
   HINT: Oil pressure should be over 0.5 kg/cm² (7.1 psi 49 kPa)
   
   If operation is not as specified, replace the switch.
Oil Pressure Gauge System

1. **INSPECT RECEIVER GAUGE**  
   **(Operation)**  
   (a) Disconnect the connector from the sender gauge.  
   (b) Turn the ignition switch ON, check that the receiver gauge needle indicates to the low.  
   (c) Ground the terminal on the wire harness side through a 3.4 W test bulb.  
   (d) Turn the ignition switch ON, check that the bulb lights and the receiver gauge needle moves to the high side.  
   If operation is not as specified, measure the receiver gauge resistance.  

   **(Resistance)**  
   Measure the receiver gauge resistance between terminals.  
   **Resistance:** 22 - 28 0  
   If resistance value is not as specified, replace the receiver gauge.

2. **INSPECT SENDER GAUGE**  
   (a) Disconnect the connector from the sender gauge.  
   (b) Apply battery voltage to the sender gauge terminal through a test LED.  
   (c) Check that the bulb does not light when the engine is stopped.  
   (d) Check that the LED flashes when the engine is running. The number of flashed should vary with engine speed.  
   If operation is not as specified, replace the sender gauge.

Voltmeter System

**INSPECT VOLTMETER**  
**(ON-VEHICLE)**  
Compare the tester and voltmeter indications.  
If error is excessive, replace the voltmeter.
(Resistance)
Measure the resistance between terminals.

Resistances: 90 — 110 Q
If resistance value is not as specified, replace the voltmeter.

HINT: This resistance include fuel receiver gauge resistance.

Park Brake Warning System

1. **INSPECT WARNING LIGHT**
   
   (a) Disconnect the connector from the parking brake switch and ground terminal on the wire harness side connector.
   
   (b) Turn the ignition switch ON, check that the warning light lights up.

   If the warning light does not light up, test the bulb.

2. **INSPECT SWITCHES**
   
   (a) Check that there is continuity between terminal and the switch set nut with switch pin released, (parking brake lever pulled up)
   
   (b) Check that there is no continuity between terminal and the switch set nut with switch pin pushed in. (parking brake lever released)

   If operation is not as specified, replace the switch.

Brake Warning System

1. **INSPECT WARNING LIGHT**
   
   (w/o Park Brake Warning System)
   
   Disconnect the connectors from the level warning switch, parking brake switch and (Diesel Engine) vacuum warning switch.
   
   (w/Park Brake Warning System)
   
   Disconnect the connectors from the level warning switch and (Diesel Engine) vacuum warning switch.

   (b) Connect terminals on the wire harness side connector of the level warning switch connector.
   
   (c) Turn the ignition switch ON, check that the warning light lights up.

   If the warning light does not light up, test the bulb.

2. **INSPECT SWITCHES**

   (Parking Brake Switch: w/o Park Brake Warning System)

   See step 2 on page BE-63.
BE-64 BODY ELECTRICAL SYSTEM - Combination Meter

(Brake Fluid Level Warning Switch)
(a) Check that there is no continuity between terminals with the switch OFF (float up).
(b) Check that there is continuity between terminals with the switch ON (float down).
If operation is not as specified, replace the switch.

(Vacuum Warning Switch: Diesel Engine)
(a) Check that there is continuity between terminal and the switch body with a no vacuum.
(b) Apply 200 ± 40 mmHg (7.87 ± 1.57 in.Hg, 26.7 ± 5.3 kPa) of pressure.
(c) Check that there is no continuity between terminal and the switch body.
If operation is not as specified, replace the switch.

3. INSPECT RELAY
(Bulb Check Relay: Australia/Continuity)
If continuity is not as specified, replace the relay.

Open Door Warning System

1. INSPECT WARNING LIGHT
(a) Disconnect the connector from the door courtesy switch and ground terminal on the wire harness side connector.
(b) Turn the ignition switch ON, check that the warning light lights up.
If the warning light does not light up, test the bulb.

2. INSPECT COURTESY SWITCH
(a) Check that there is continuity between terminal and the switch body with the ON (switch pin released: opened door).
(b) Check that there is no continuity between terminal and the switch body with the OFF (switch pin pushed in: closed door).
If operation is not as specified, replace the switch.
1. **INSPECT WARNING LIGHT**
   
   (a) Disconnect the connector from the seat belt warning relay.
   
   (b) Ground terminal 5 on the wire harness side connector.
   
   (c) Turn the ignition switch ON, check that the warning light lights up.

   If the warning light does not light, test the bulb.

2. **INSPECT SWITCHES**
   (Buckle Switch)

   (a) Check that there is no continuity between terminals with the switch ON (belt unfastened).

   (b) Check that there is continuity between terminals with the switch OFF (belt fastened).

   If operation is not as specified, replace the seat belt inner.
3. **INSPECT SEAT BELT RELAY**  
   *(Relay Circuit)*  
   Disconnect the connector from the relay and inspect the connector on the wire harness side as shown in the chart.

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td>4 — Ground</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>6 — Ground</td>
<td>Buckle switch position</td>
<td>ON (Belt fastened)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OFF (Belt unfastened)</td>
</tr>
<tr>
<td>Voltage</td>
<td>2 — Ground</td>
<td>Ignition switch position</td>
<td>LOCK or ACC</td>
</tr>
<tr>
<td></td>
<td>5 — Ground</td>
<td>Ignition switch position</td>
<td>LOCK or ACC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If circuit is as specified, replace the relay.  
If circuit is not as specified, refer to BE-65 wiring diagram and inspect the circuits connected to other parts.

**Timing Belt Warning System**

1. **INSPECT WARNING LIGHT**
   
   (a) Remove the combination meter with connectors connected.  
   
   (b) Connect terminals A and B.  
   
   (c) Remove CHARGE fuse and turn the ignition switch ON, check that the warning light lights up.

If the warning light does not light up, test the bulb.

**Air Cleaner Warning System**

1. **INSPECT WARNING LIGHT**
   
   Check that the bulb lights up.

If the warning light does not light up, test the bulb.
2. **INSPECT VACUUM SWITCH**
   (a) With a vacuum of $29.4 \pm 3.7$ mmHg ($1.157 \pm 0.146$ in.Hg, $3.9 \pm 0.5$ kPa) or above, check that there is continuity between terminals.
   (b) Check that there is no continuity between terminals with no vacuum.
   If operation is not as specified, replace the switch.

**Meter Illumination Control System**

**INSPECT LIGHT CONTROL RHEOSTAT**
   (a) Connect terminals 1 and 3 through a 3.4 watts test bulb.
   (b) Connect the positive (+) lead from the battery to terminal 1 and the negative (−) lead to terminal 2.
   (c) Gradually turn the rheostat knob to clockwise, check that the test bulb brightness changes from dark to bright.

   If operation is not as specified, replace the rheostat.

**Turbo Indicator and Warning System**

1. **INSPECT INDICATOR AND WARNING LIGHT OPERATION**
   (Refer to EM Section of ENGINE Repair Manual)

2. **INSPECT PRESSURE SWITCH OPERATION**
   (a) At the 3-way union, disconnect the pressure hose from the compressor elbow and connect a turbocharger pressure gauge (SST).
   SST 09992-00241
   (b) Check that the low and high pressure switch are continuity between terminals as shown in the chart.

   (High Pressure Switch)

<table>
<thead>
<tr>
<th>Terminal Condition</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply 0.84 kg/cm² (11.9 psi, 82.4 kPa) of pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   (Low Pressure Switch)

<table>
<thead>
<tr>
<th>Terminal Condition</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply 0.14 kg/cm² (2.0 psi, 13.7 kPa) of pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   If operation is not as specified, replace the switch.
3. **INSPECT TURBO INDICATOR AND WARNING LIGHT DRIVE CIRCUIT**

(a) Remove the Combination Meter.

(b) Connect the positive (+) lead and negative (—) lead from the battery to combination meter terminals as shown in the chart and check that the LED operation.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Positive (+) Combination meter terminal</th>
<th>Negative (—) Combination meter terminal</th>
<th>LED condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(A5)</td>
<td>(B3, C5, C6, C9)</td>
<td>OFF OFF</td>
</tr>
<tr>
<td>2</td>
<td>(A5)</td>
<td>(B3, C5, C9)</td>
<td>ON OFF</td>
</tr>
<tr>
<td>3</td>
<td>(A5)</td>
<td>(B3, C9)</td>
<td>OFF ON</td>
</tr>
<tr>
<td>4</td>
<td>(A5)</td>
<td>(B3, C6, C9)</td>
<td>OFF ON</td>
</tr>
<tr>
<td>5</td>
<td>(A5)</td>
<td>(B1, B3, C9)</td>
<td>ON ON</td>
</tr>
</tbody>
</table>

If operation is not as specified, replace the combination meter.
Compass System

1. **INSPECT ACCESSORY METER**
   (Circuit)

   Connect connector "A" and "B" to accessory meter and inspect connectors from the back side as shown in the chart.

   **NOTICE:** Perform the inspection in a place free from magnetic influence.

<table>
<thead>
<tr>
<th>Terminal Name</th>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC</td>
<td>Voltage</td>
<td>A1 - A4</td>
<td>Ignition switch turned to ACC or ON</td>
<td>10 - 14 V</td>
</tr>
<tr>
<td>TAIL</td>
<td>A3 - A4</td>
<td>Light control switch turned to TAIL or HEAD</td>
<td>10 - 14 V</td>
<td></td>
</tr>
<tr>
<td>GROUND</td>
<td>Continuity</td>
<td>A4 - Ground</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td>GND</td>
<td>B4 - Ground</td>
<td></td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td>ACC</td>
<td>Voltage</td>
<td>B6 - B4</td>
<td>Ignition switch turned to ACC or ON</td>
<td>10 - 14 V</td>
</tr>
<tr>
<td>HX1</td>
<td>B5 - B4</td>
<td>Knob &quot;N&quot; position</td>
<td>Turned fully counter clockwise</td>
<td>6.2 - 6.8 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Neutral</td>
<td>3.7 - 4.3 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turned full clockwise</td>
<td>1.2 - 1.8 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knob &quot;E&quot; turned to clockwise and knob &quot;N&quot; turned to neutral position</td>
<td>3.7 - 4.3 V</td>
<td></td>
</tr>
<tr>
<td>HY2</td>
<td>B8 - B4</td>
<td>Knob &quot;N&quot; position</td>
<td>Turned fully counter clockwise</td>
<td>0.54 - 0.56 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Neutral</td>
<td>0.53 - 0.55 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turned fully clockwise</td>
<td>0.49 - 0.50 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knob &quot;E&quot; turned to clockwise and knob &quot;N&quot; turned to neutral position</td>
<td>0.53 - 0.55 V</td>
<td></td>
</tr>
<tr>
<td>HX2</td>
<td>B9 - B4</td>
<td>Knob &quot;N&quot; position</td>
<td>Turned fully counter clockwise</td>
<td>0.54 - 0.56 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Neutral</td>
<td>0.53 - 0.55 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turned fully clockwise</td>
<td>0.49 - 0.51 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knob &quot;E&quot; turned to clockwise and knob &quot;N&quot; turned to neutral position</td>
<td>0.53 - 0.55 V</td>
<td></td>
</tr>
<tr>
<td>HY1</td>
<td>B10 - B4</td>
<td>Knob &quot;N&quot; position</td>
<td>Turned fully counter clockwise</td>
<td>6.2 - 6.8 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Neutral</td>
<td>3.7 - 4.3 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turned fully clockwise</td>
<td>1.2 - 1.8 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knob &quot;E&quot; turned to clockwise and knob &quot;N&quot; turned to neutral position</td>
<td>3.7 - 4.3 V</td>
<td></td>
</tr>
</tbody>
</table>

If the circuit is not as specified, refer to BE-51 wiring diagram and inspect the circuits connected to other parts or wire harness.
2. **INSPECT MAGNET FIELD SENSOR**  
(Resistance)  
Measure the resistance between terminals B5 and B9.  
**Resistance**: 81 — 111 Ω  
If resistance value is not as specified, replace the sender gauge.

**(Circuit)**  
Connect connector to sensor and inspect connector from the back side as shown in the chart.

<table>
<thead>
<tr>
<th>Terminal Name</th>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
</table>
| SX            | Voltage   | 1 — 4             | Face the car north, then turn the car in a circle. | Facing North: Approx. 4.2 V  
Facing East: Approx. 4.0 V  
Facing South: Approx. 3.8 V  
Facing West: Approx. 4.0 V |
| SY            |           | 2 — 4             | Face the car north, then turn the car in a circle. | Facing North: Approx. 4.0 V  
Facing East: Approx. 3.8 V  
Facing South: Approx. 4.0 V  
Facing West: Approx. 4.2 V |
| VDD           |           | 3 — 4             | Ignition switch turned to ACC | Approx. 8.0 V |
| ACC           |           | 6 — 4             | Ignition switch turned to ACC | 10 — 14 V |
| VSS           |           | 7 — 4             | Ignition switch turned to ACC | Approx. 4.0 V |
| GND           | Continuity| 4 — Ground        | Constant | Continuity |

If circuit is not as specified, refer to BE-51 wiring diagram and inspect the circuits connected to other parts or wire harness.
DEFOGGER SYSTEM

Parts Location

Wiring and Connector Diagrams

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear window defogger system do not operate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DEFOG fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>GAUGE fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Defogger switch faulty</td>
<td>Check switch</td>
<td>BE-72</td>
</tr>
<tr>
<td></td>
<td>Defogger relay faulty</td>
<td>Check relay</td>
<td>BE-73</td>
</tr>
<tr>
<td></td>
<td>Defogger wire broken</td>
<td>Check wires</td>
<td>BE-73</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
</tbody>
</table>

Parts Inspection

1-1. (w/o Timer)

INSPECT DEFOGGER SWITCH
(Continuity)

If continuity is not as specified, check the bulb or replace the switch.

1-2. (w/ Timer)

INSPECT DEFOGGER SWITCH
(Illumination Light/Continuity)

Check that there is continuity between terminals 1 and 4.
If continuity is not as specified, check the bulb.

(Timer Operation)

(a) Connect the positive (+) lead from the battery to terminals 2 and the negative (—) lead to terminal 3.
(b) Connect the positive (+) lead from the battery to terminals 6 through a 3.4 watts test bulb.
(c) Push the defogger switch ON, check that the indicator light and test bulb lights up for 12 to 18 minutes, then the indicator light and test bulb lights goes out.
If operation is not as specified, replace the switch.
BODY ELECTRICAL SYSTEM - Defogger System

(Timer Circuit)
Disconnect the connector from the switch and inspect the connector on the wire harness side as shown in the chart.

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td>3 — Ground</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td>Voltage</td>
<td>2 — Ground</td>
<td>Ignition switch position</td>
<td>LOCK or ACC</td>
</tr>
<tr>
<td>6 — Ground</td>
<td>Ignition switch position</td>
<td>LOCK or ACC</td>
<td>No voltage</td>
</tr>
<tr>
<td>Operation</td>
<td></td>
<td>Connect the terminals 6 and 3</td>
<td>Defogger system operation is normal</td>
</tr>
</tbody>
</table>

If the circuit is as specified, replace the switch.

2. INSPECT DEFOGGER RELAY
(Continuity)

If continuity is not as specified, replace the relay.

3. INSPECT DEFOGGER WIRES

NOTICE:
- When cleaning the glass, use a soft, dry cloth, and wipe the glass in the direction of the wire. Take care not to damage the wires.
- Do not use detergents or glass cleaners with abrasive ingredients.
- When measuring voltage, wind a piece of tin foil around the top of the negative (—) probe and press the foil against the wire with your finger as shown.

(Wire Breakage)
(a) Turn the ignition switch ON.
(b) Push in the defogger switch.
(c) Inspect the voltage at the center of each heat wire as shown.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx. 5 V</td>
<td>Okey (No break in wire)</td>
</tr>
<tr>
<td>approx. 10 V or 0 V</td>
<td>Broken wire</td>
</tr>
</tbody>
</table>

HINT: If there is 10 V, the wire is broken between the center of the wire and positive (+) end. If there is no voltage, the wire is broken between the center of the wire and ground.
(Wire Breakage Point)
(a) Place the boltmeter positive (+) lead against the defogger positive (+) terminal.
(b) Place the boltmeter negative (—) lead with the foil strip against the heat wire at the positive (+) terminal end and slide it toward the negative (—) terminal end.
(c) The point where the voltmeter deflects from zero to several volts is the place where the heat wire is broken.

HINT: If the heat wire is not broken, the voltmeter indicates 0 volts at the positive (+) end of the heat wire but gradually increases to about 12 volts as the meter probe is moved to the other end.

4. REPAIR DEFOGGER WIRES
(a) Clean the broken wire tips with a grease, wax and silicone remover.
(b) Place the masking tape along both sides of the wire to be repaired.
(c) Thoroughly mix the repair agent (Dupont paste No.4817 or equivalent).
(d) Using a fine tip brush, apply a small amount to the wire.
(e) After a few minutes, remove the masking tape.
(f) Allow the repair to stand at least 24 hours.
POWER WINDOW CONTROL SYSTEM

Parts Location

Relay Block No. 1
- Power Main Relay
- Fuse Block
- GAUGE Fuse

Power Window Switch

Power Window Motor

Master Switch

Power Window Switch

Power Window Motor

Power Window Switch

Power Window Switch

Power Window Motor
HINT: The numbers in ( ) mean for RHD vehicles.

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
</table>
| Power window does not operate at all | GAUGE fuse blown  
POWER fuse blown  
Power main relay faulty  
Wiring or ground faulty | Replace fuse and check for short  
Replace fuse and check for short  
Check relay  
Repair as necessary | BE-4, 6  
BE-4, 6  
BE-82 |
| One-touch power window does not operate | Power window master switch faulty | Check switch | BE-77 |
| Only one window does not operate | Power window master switch faulty  
Power window switch faulty  
Power window motor faulty  
Wiring or ground faulty | Check switch  
Check switch  
Check motor  
Repair as necessary | BE-77  
BE-80  
BE-80 |

Parts Inspection

1. **INSPECT SWITCHES**
   (Master Switch/Continuity)

If continuity is not as specified, replace the master switch.

**Master Switch: Illumination/Operation**

**LHD:**
(a) Set the window lock switch to the unlock position.
(b) Connect the positive (+) lead from the battery to terminal 7 and the negative (—) lead to terminal 1, check that all the illuminations light up.
(c) Set the window lock switch to the lock position, check that the passenger's illumination go out. If operation is not as specified, replace the master switch.

RHD:
(a) Set the window lock switch to the unlock position.
(b) Connect the positive (+) lead from the battery to terminal 14 and the negative (—) lead to terminal 6, check that all the illuminations light up.

(c) Set the window lock switch to the lock position, check that all the passenger's illuminations go out. If operation is not as specified, replace the master switch.

(Master Switch: One Touch Power Window System/ Current of Circuit)
LHD:
Inspection using an ammeter
(a) Disconnect the connetor from the master switch.
(b) Connect the positive (+) lead from the ammeter to terminal 6 on the wire harness side connector and the negative (—) lead to negative (—) terminal of the battery.
(c) Connect the positive (+) lead from the battery to terminal 13 on the wire harness side.
(d) As the window goes down, check that the current flows approximately 7 amperes.
(e) Check that the current increases approximately 14.5 amperes or more when the window stops going down.

HINT: The circuit breaker opens some 4 — 40 seconds after the window stops going down, so that check must be made before the circuit breaker operates. If the operation is as specified, replace the master switch.
Inspection using an ammeter with a current-measuring probe.
(a) Remove the master switch with connector connected.
(b) Attach a current-measuring probe to terminal 6 of the wire harness.
(c) Turn the ignition switch ON and set the power wind switch in the down position.
(d) As the window goes down, check that the current flows approximately 7 amperes.
(e) Check that the current increases approximately 14.5 amperes or more when the window stops going down.

HINT: The circuit breaker opens some 4 — 40 seconds after the window stops going down, so that check must be made before the circuit breaker operates.
If operation is as specified, replace the master switch.

RHD:
Inspection using an ammeter
(a) Disconnect the connector from the master switch.
(b) Connect the positive (+) lead from the ammeter to terminal 1 on the wire harness side connector and the negative (—) lead to negative (—) terminal of the battery.
(c) Connect the positive (+) lead from the battery to terminal 8 on the wire harness side.
(d) As the window goes down, check that the current flows approximately 7 amperes.
(e) Check that the current increases approximately 14.5 amperes or more when the window stops going down.

HINT: The circuit breaker opens some 4 — 40 seconds after the window stops going down, so that check must be made before the circuit breaker operates.
If operation is as specified, replace the master switch.

Inspection using an ammeter with a current-measuring probe.
(a) Remove the master switch with connector connected.
(b) Attach a current-measuring probe to terminal 1 of the wire harness.
(c) Turn the ignition switch ON and set the power wind switch in the down position.
(d) As the window goes down, check that the current flows approximately 7 amperes.
(e) Check that the current increases approximately 14.5 amperes or more when the window stops going down.

HINT: The circuit breaker opens some 4 — 40 seconds after the window stops going down, so that check must be made before the circuit breaker operates.

If operation is as specified, replace the master switch.

If continuity is not as specified, replace the switch.

2. INSPECT POWER WINDOW MOTOR
   (Left Side Door Motor/Motor Operation)

Front Door:
   (a) Connect the positive (+) lead from the battery to terminal 3 and the negative (—) lead to terminal 1, check that the motor turns clockwise.
   (b) Reverse the polarity, check that the motor turns counterclockwise.

If operation is not as specified, replace the motor.

Rear Door:
   (a) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 2, check that the motor turns counterclockwise.
   (b) Reverse the polarity, check that the motor turns clockwise.

If operation is not as specified, replace the motor.

(Left Side Door Motor/Circuit Breaker Operation)

Driver’s Door:
   (a) Disconnect the connector from the master switch.
   (b) Connect the positive (+) lead from the battery to terminal 6 and the negative (—) lead to terminal 13 on the wire harness side connector and raise the window to full closed position.
   (c) Continue to apply voltage, check that there is a circuit breaker operation noise within approximately 4 to 40 seconds.
(d) Reverse the polarity, check that the window begins to descend within approximately 60 seconds. If operation is not as specified, replace the motor.

Passenger's Door:
(a) Disconnect the connector from the power window switch.
(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 4 on the wire harness side connector, and raise the window to full closed position.
(c) Continue to apply voltage, check that there is a circuit breaker operation noise within approximately 4 to 40 seconds.
(d) Reverse the polarity, check that the window begins to descend within approximately 60 seconds. If operation is not as specified, replace the motor.

(Right Side Door Motor/Motor Operation)
Front Door:
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 3, check that the motor turns clockwise.
(b) Reverse the polarity, check that the motor turns counterclockwise.
If operation is not as specified, replace the motor.

Rear Door:
(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to terminal 1, check that the motor turns counterclockwise.
(b) Reverse the polarity, check that the motor turns clockwise.
If operation is not as specified, replace the motor.
(Right Side Door Motor/Circuit Breaker Operation)

Driver's Door:
(a) Disconnect the connector from the master switch.
(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 8 on the wire harness side connector, and raise the window to full closed position.
(c) Continue to apply voltage, check that there is a circuit breaker operation noise within approximately 4 to 40 seconds.
(d) Reverse the polarity, check that the window begins to descend within approximately 60 seconds.
If operation is not as specified, replace the motor.

Passenger's Door:
See Left Side Door Motor on page BE-80.

3. INSPECT POWER MAIN RELAY

<table>
<thead>
<tr>
<th>Terminal Condition</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply battery voltage to terminals 1 and 3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the relay.
POWER DOOR LOCK CONTROL SYSTEM

Parts Location

- Junction Block No. 1
  - Power Main Relay
- Fuse Block
  - POWER Fuse
  - GAUGE Fuse
- Ignition Switch
- Key Unlock Warning Switch
- Door Lock Assembly
  - Door Lock Motor
- Door Lock Assembly
  - Door Key Lock and Unlock Switch
- Door Lock Assembly
  - Door Lock Motor
- Door Lock Assembly
  - Lift-up type door
  - Door Lock Motor
- Door Lock Assembly
  - Swing type door
  - Door Lock Motor
- Master Switch
  - Door Lock
  - Manual Switch
- Door Lock Control Relay
- Door Courtesy Switch
- Door Lock Assembly
  - Door Lock Motor
  - Door Lock
  - Manual Switch
The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
# Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power door lock do not operate</td>
<td>POWER fuse faulty</td>
<td>Check fuse</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Door lock motor faulty</td>
<td>Check motor</td>
<td>BE-86</td>
</tr>
<tr>
<td></td>
<td>Door lock switch faulty</td>
<td>Check switch</td>
<td>BE-85</td>
</tr>
<tr>
<td></td>
<td>Power main relay faulty</td>
<td>Check relay</td>
<td>BE-87</td>
</tr>
<tr>
<td></td>
<td>Door lock control relay faulty</td>
<td>Check relay</td>
<td>BE-88</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
<tr>
<td>Fault in key confine prevention operation</td>
<td>Door lock control relay faulty</td>
<td>Check relay</td>
<td>BE-88</td>
</tr>
<tr>
<td></td>
<td>Key unlock warning switch faulty</td>
<td>Check switch</td>
<td>BE-85</td>
</tr>
<tr>
<td></td>
<td>Door courtesy switch faulty</td>
<td>Check switch</td>
<td>BE-85</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
</tbody>
</table>

# Parts Inspection

1. **INSPECT SWITCHES**  
   (Master Switch: Driver's Door Lock Manual Switch/Continuity)

   ![Switch Diagram]

   If continuity is not as specified, replace the switch.

   **Door Key Lock and Unlock Switch/Continuity**

   ![Door Lock Switch Diagram]

   **Key Unlock Warning Switch/Continuity**

   ![Key Unlock Switch Diagram]

   If continuity is not as specified, replace the switch.

   **Door Courtesy Switch/Continuity**

   ![Door Courtesy Switch Diagram]

   See step 2 of Open Door Warning System on page BE-64.
2. INSPECT DOOR LOCK MOTOR
(Motor Operation)

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to terminal 4, check that the door lock link moves to UNLOCK position.

(b) Remove the polarity, check that the door lock link move to LOCK position.

If operation is not as specified, replace the door lock assembly.

(PTC Thermistor Operation)
Inspection using an ammeter.

(a) Connect the positive (+) lead from the battery to terminal 2.

(b) Connect the positive (+) lead from the ammeter to terminal 4 and the negative (—) lead to battery negative (—) terminal, check that the current changes from approximately 3.2 ampere to less than 0.5 ampere with 20 to 70 seconds.

(c) Disconnect the leads from terminals.

(d) Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 4 and the negative (—) lead to terminal 2 check that the door lock moves to LOCK position.

If operation is not as specified, replace the door lock assembly.
Inspection using an ammeter with a current-measuring probe.

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to terminal 4.
(b) Attach a current-measuring probe to either the positive (+) lead or the negative (—) lead, check that the current changes from approximately 3.2 ampere to less than 0.5 ampere within 20 to 70 seconds.

(c) Disconnect the leads from terminals.
(d) Approximately 60 seconds later, reverse the polarity, check that the door lock moves to LOCK position. If operation is not as specified, replace the door lock assembly.

HINT: Perform inspection of PTC thermistor operation of other door lock motors the same way as for the front door.

If continuity is not as specified, replace the door lock assembly.

3. INSPECT POWER MAIN RELAY

See inspect power main relay on page BE-82.
4. **INSPECT DOOR LOCK CONTROL RELAY**  
(Relay Circuit)

Disconnect the connector from the relay and inspect the connector on the wire harness side as shown in the chart.

---

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td></td>
<td>Driver's door courtesy switch position</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2—Ground</td>
<td>OFF (Door closed)</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ON (Door opened)</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>6—Ground</td>
<td>OFF (Door locked)</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ON (Door unlocked)</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>7—Ground</td>
<td>OFF (Ignition key removed)</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ON (Ignition key set)</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>10—Ground</td>
<td>Door lock manual switch position</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF or UNLOCK</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LOCK</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>11—Ground</td>
<td>Door lock manual switch position</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF or LOCK</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UNLOCK</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>12—Ground</td>
<td>Door key lock and unlock switch position</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF or UNLOCK (Door key free or turned to UNLOCK)</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LOCK (Door key turned to LOCK)</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>11—Ground</td>
<td>Door key lock and unlock switch position</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF or LOCK (Door key free or turned to LOCK)</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UNLOCK (Door key turned to UNLOCK)</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>16—Ground</td>
<td>Constant</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LOCK</td>
<td>Continuity</td>
</tr>
<tr>
<td>Voltage</td>
<td>1—Ground</td>
<td>Ignition switch position</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OFF or LOCK</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UNLOCK</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>8—Ground</td>
<td>Constant</td>
<td></td>
</tr>
</tbody>
</table>

If circuit is as specified, inspect the door lock signal.

If the circuit is not as specified, refer to BE-84 wiring diagram and inspect the circuits connected to other parts.

---

**UNLOCK**

**Door Lock Signal**

HINT: When the relay circuit is as specified, inspect the door lock signal.

(a) Connect the connector to the relay.

(b) Connect the positive (+) lead from the voltmeter to terminal 3 and the negative (—) lead to terminal 4.

(c) Set the door lock manual switch to UNLOCK, check that the voltage rises from 0 volts to battery voltage for approximately 0.2 seconds.
(d) Reverse the polarity of the voltmeter leads.
(e) Set the door lock manual switch to LOCK, check that the voltage rises from 0 volts to battery voltage for approximately 0.2 seconds.
If operation is not as specified, replace the relay.
SLIDING ROOF SYSTEM
Parts Location

Wiring and Connector Diagrams

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
System Description

Standby Operation

- Current flows from the DOME fuse to terminal 12 of the Sliding Roof Relay (hereafter called relay)
- When the ignition switch is on, the current flows from the POWER fuse to terminal 6 of the relay.

Operation

1. OPEN operation
   When the switch on the "OPEN" side of the control switch is pushed, continuity is produced between terminal 1 of the relay and body ground. Then, the relay operates, the current flows through terminal 6 of the relay → terminal 5 → terminal 1 of the sliding roof motor → terminal 3 → terminal 4 of the relay → terminal 11 → the body ground, and the motor starts to run in order to open the sliding roof.

2. CLOSE operation
   When the switch on the "CLOSE" side of the control switch is pushed, continuity is produced between terminal 2 of the relay and body ground. Then, the relay operates, the current flows through terminal 6 of the relay → terminal 4 → terminal 3 of the sliding roof motor → terminal 1 → terminal 5 of the relay → terminal 11 → the body ground, and the motor starts to run in order to close the sliding roof.

Momentary Stop
When the sliding roof reaches about 100 mm (3.94 in.) short of the fully closed position, limit switch A is turned from ON to OFF, so there is no continuity between terminal 8 of the relay and the body ground. As a result, because the relay ceases to operate, and the sliding roof stops at that position. Release the control switch, then press the "CLOSE" side of the control switch again. Then the sliding roof moves to fully closed position.

3. Tilt up operation (Fully close position)
   When the switch on the "UP" side of the control switch is pushed, continuity is produced between terminal 3 of the relay and body ground. Then, the relay operates, the current flows through terminal 6 of the relay → terminal 4 → terminal 3 of the sliding roof motor → terminal 1 → terminal 5 of the relay → terminal 11 → the body ground, and the motor starts to run in order to tilt up sliding roof.

4. Tilt Down operation (Fully close position)
   When the switch on the "DOWN" side of the control switch is pushed, continuity is produced between terminal 7 of the relay and body ground. Then the relay operates, the current flows through terminal 6 of the relay → terminal 5 → terminal 1 of the sliding roof motor → terminal 3 → terminal 4 of the relay → terminal 11 → the body ground, and the motor starts to run in order to tilt down the sliding roof.

5. Warning buzzer operation
   When the ignition switch is turned to LOCK position while the sliding roof is still in "Tilt up" position, a buzzer sounds to warn the driver that the sliding roof is in "Tilt up" position.
Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sliding roof does not operate</td>
<td>GAUGE fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>POWER fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Power main relay faulty</td>
<td>Check relay</td>
<td>BE-94</td>
</tr>
<tr>
<td></td>
<td>Control switch faulty</td>
<td>Check switch</td>
<td>BE-92</td>
</tr>
<tr>
<td></td>
<td>Limit switch faulty</td>
<td>Check switch</td>
<td>BE-92</td>
</tr>
<tr>
<td></td>
<td>Sliding roof motor faulty</td>
<td>Check motor</td>
<td>BE-92</td>
</tr>
<tr>
<td></td>
<td>Sliding roof control relay faulty</td>
<td>Check relay</td>
<td>BE-93</td>
</tr>
<tr>
<td></td>
<td>Wiring faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
</tbody>
</table>

Parts Inspection

1. INSPECT SWITCHES
   (Control Switch/Continuity)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Switch position</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLIDE</td>
<td>OPEN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CLOSE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TILT</td>
<td>DOWN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the switch.

(Limit Switch/Continuity)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Switch position</th>
<th>1</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit switch No.1</td>
<td>OFF (SW pin released)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ON (SW pin pushed in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limit switch No.2</td>
<td>OFF (SW pin released)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ON (SW pin pushed in)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the switch.

2. INSPECT SLIDING ROOF MOTOR
   (Motor Operation)
   (a) Connect the positive (+) lead from the battery to terminal 1 and the negative (−) lead to terminal 3, check that the motor turns to clockwise.
   (b) Reverse the polarity, check that the motor turns to counter clockwise.

If operation is not as specified, replace the motor.
(Circuit Breaker Operation)
(a) With the sliding roof in the fully opened position, hold the control switch in "OPEN" position and check that there is a circuit breaker operation noise within 4 to 40 seconds.

(b) With the sliding roof in fully opened position, hold the control switch in "CLOSE" position and check that the sliding roof begins to close within 60 seconds. If operation is not as specified, replace the motor.

(Motor Wire Circuit)
(a) Check that there is continuity between terminals A2 and B2.
(b) Check that there is continuity between terminals A3 and B3.
(c) Check that there is continuity between terminals A6 and B1.
If continuity is not as specified, replace the switch.

3. INSPECT SLIDING ROOF CONTROL RELAY
(Relay Circuit)
Disconnect the connector from the relay and inspect the connector on the wire harness side as shown in the chart.

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td>1 — Ground</td>
<td>Sliding roof control switch position (SLIDE)</td>
<td>OFF or CLOSE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OPEN</td>
</tr>
<tr>
<td></td>
<td>2 - Ground</td>
<td>Sliding roof control switch position (SLIDE)</td>
<td>OFF or OPEN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CLOSE</td>
</tr>
<tr>
<td></td>
<td>3 — Ground</td>
<td>Sliding roof control switch position (TILT)</td>
<td>OFF or DOWN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UP</td>
</tr>
<tr>
<td></td>
<td>4 - 5</td>
<td>Constant</td>
<td></td>
</tr>
</tbody>
</table>

*: There is resistance because this circuit include the motor.
If circuit is as specified, replace the relay.

4. **INSPECT POWER MAIN RELAY**

See power main relay on page BE-82.
POWER MIRROR CONTROL SYSTEM

Parts Location

Wiring and Connector Diagrams

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote control mirror system does not operate</td>
<td>CIG fuse faulty</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Mirror switch faulty</td>
<td>Check switch</td>
<td>BE-96</td>
</tr>
<tr>
<td></td>
<td>Mirror motor faulty</td>
<td>Check motor</td>
<td>BE-96</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground fault</td>
<td>Repair as necessary</td>
<td>BE-96</td>
</tr>
</tbody>
</table>

Parts Inspection

1. INSPECT MIRROR SWITCH
   (Continuity)

   ![Mirror Switch Diagram]

   Left/Right adjustment switch position

<table>
<thead>
<tr>
<th>Terminal</th>
<th>LEFT SIDE</th>
<th>OFF</th>
<th>RIGHT SIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 3 4 9 10</td>
<td>1 3 4</td>
<td>1 2 3 4 6</td>
</tr>
<tr>
<td>Control switch position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOWN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEFT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RIGHT</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   If continuity is not as specified, replace the switch.

2. INSPECT MIRROR MOTOR

   Connect the positive (+) lead from the battery to terminal in column “A” and the negative (−) lead to terminal in column “B”, check that the mirror operates in column “C”.

   ![Mirror Motor Diagram]

<table>
<thead>
<tr>
<th>A (+)</th>
<th>B (−)</th>
<th>C (Operation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>Mirror turns upward</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Mirror turns downward</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>Mirror turns to left side</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Mirror turns to right side</td>
</tr>
</tbody>
</table>

   If operation is not as specified, replace the mirror assembly.
POWER SEAT CONTROL SYSTEM

Parts Location

Wiring and Connector Diagrams

HINT: The numbers in ( ) mean for RHD vehicles.
The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power seat control system does not operate</td>
<td>&quot;GAUGE&quot; fuse faulty</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>&quot;POWER&quot; fuse faulty</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Power main relay faulty</td>
<td>Check relay</td>
<td>BE-98</td>
</tr>
<tr>
<td></td>
<td>Power seat switch faulty</td>
<td>Check switch</td>
<td>BE-98</td>
</tr>
<tr>
<td></td>
<td>Seat motor faulty</td>
<td>Check motor</td>
<td>BE-98</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td>BE-98</td>
</tr>
</tbody>
</table>

Parts Inspection

1. INSPECT POWER SEAT SWITCH (Continuity)

<table>
<thead>
<tr>
<th>Terminal Switch position</th>
<th>LHD</th>
<th>RHD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUSH</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>OFF</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>RELEASE</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the switch.

2. INSPECT POWER MAIN RELAY
See Power Main Relay on page BE-82.

3. INSPECT MOTORS
   (Lumber Support Motor/Motor Operation)
   (a) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 2, check that the motor moves upward.
   (b) Reverse the polarity, check that the motor moves downward.
   If operation is not as specified, replace the motor.

   (Lumber Support Motor/Circuit Breaker Operation)
   (a) Set the power seat switch to push operation and move the lumber support to the most forward position.
   (b) Continue push operation and check that there is a circuit breaker operation noise within 4 to 60 seconds.
   (c) Reverse the polarity, check that the lumber support starts to move rearward within approximately 60 seconds.
   If operation is not as specified, replace the motor.
The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
System Description

HINT: The number in ( ) is for the right side.

Standby Operation
• When the Ignition Switch is on, current flows from the battery to terminal 2 (1) of the Seat Heater Switch.

Operation
"HI" Operation
When the Seat Heater Switch is set to the "HI" position, current flows through terminal 2 (1) of the Seat Heater Switch → terminal 7 (5) of the Seat Heater Switch → terminal A2 (A2) of the seat back side → the seat back, where it is divided into a parallel circuit. Then current flows through terminal B2 (B2) of the seat back → terminal 2 (2) of the seat cushion → terminal 1 (1) of the seat cushion → terminal B1 (B1) of the seat back → terminal A3 (A3) of the seat back → ground, so that the seat cushion can be warmed. At the same time, current also flows through terminal A1 (A1) of the seat back → terminal 5 (3) of the Seat Heater Switch → terminal 6 (4) of the Seat Heater Switch → ground, so that the seat back can be warmed.

When the seat surface temperature reaches over approx. 40 °C (140 °F), current is shut off by the thermostat so that the temperature cannot increase any more. When it decreases below approx. 20 °C (68 °F), the contact is made again by the thermostat so that the seat can be warmed.

"LO" Operation
When the Seat Heater Switch is set to the "LO" position, current flows in series through terminal 2 (1) of the Seat Heater Switch → terminal 5 (3) of the Seat Heater Switch → terminal A1 (A1) of the seat back → terminal B2 (B2) of the seat back → terminal 2 (2) of the seat cushion → terminal 1 (1) of the seat cushion → terminal B1 (B1) of the seat back → terminal A3 (A3) of the seat back → ground, so that the seat cushion and back can be warmed.
Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat heater do not operate</td>
<td>REAR-HTR fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Heat wire faulty</td>
<td>Check heat wire</td>
<td>BE-102</td>
</tr>
<tr>
<td></td>
<td>Thermostat faulty</td>
<td>Check thermostat</td>
<td>BE-102</td>
</tr>
<tr>
<td></td>
<td>Seat heater switch faulty</td>
<td>Check switch</td>
<td>BE-102</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td>BE-101</td>
</tr>
</tbody>
</table>

Parts Inspection

1. **INSPECT SEAT HEATER SWITCH**  
   (Continuity)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>2 (1)</th>
<th>7 (5)</th>
<th>5 (3)</th>
<th>6 (4)</th>
<th>Illumination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch position</td>
<td>HI</td>
<td>OFF</td>
<td>LO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td></td>
</tr>
<tr>
<td>( ): Right side</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the switch.

(Indicator Light/Operation)

(a) (Left side)
   Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to terminal 6.

   (Right side)
   Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 4.

(b) Push the switch to HI or LO, check that the indicator light of the pushed side lights up.

If operation is not as specified, replace the switch.
2. INSPECT SEAT HEATER
(Seat Back Side/Continuity)

<table>
<thead>
<tr>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3 - B1</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td>A1 - B2</td>
<td>Constant</td>
<td>Continuity *1</td>
</tr>
<tr>
<td>A1 - A2</td>
<td>Heat the thermostat to approx. 45°C (113°F) or more</td>
<td>No continuity</td>
</tr>
<tr>
<td>A2 - B2</td>
<td>Cool the thermostat to approx. 15°C (59°F) or less</td>
<td>Continuity</td>
</tr>
</tbody>
</table>

*1: There is resistance in the circuit.

If operation is not as specified, replace the seat heater.

(Seat Cushion Side/Continuity)
Check that there is continuity between terminals. If continuity is not as specified, replace the seat heater.
CRUISE CONTROL SYSTEM
Parts Location
The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
Connector Diagrams

Cruise Control ECU

Control Switch (in Combination Switch)
Connector "A"
Connector "B"

Stop Light Switch
Parking Brake Switch
Speed Sensor

Actuator
O/D Solenoid (3F-E)
Throttle Position Sensor (3F-E)

Ignition Switch
Check Connector (TDCL)

EFI ECU (3F-E)
Connector "C"
Connector "B"
Connector "A"

(Vd:26-2-B V-34-2
BE0335BE1412 IS-3-2-A
Le-7-2 IS-3-2-A AC2241
BE2576
E-10-2-BHS-18-1 BE1266
R-52-2)
System Description

- When the ignition switch is turned ON, current flows from the battery to terminal 14 of the cruise control (CO ECU).
- Terminal 13 of the CC ECU is always grounded.

Basic Operation
HINT: For all explanations below, the ignition switch is in the ON position.

1. **MAIN SWITCH OPERATION**
   When the main switch is pushed ON, current flows from terminal 4 of the CC ECU → terminal B-15 of the control switch → terminal B-20 of the switch → ground.
   As a result, the CC ECU is on standby and terminal 5 of the CC ECU is grounded. Therefore the CC indicator lights up.

2. **CONTROL SWITCH OPERATION**
The control switch controls the SET, COAST, RESUME, ACCEL and CANCEL functions. When the control switch is turned to each position, current flows from terminals 19, 18 or 17 of the CC ECU → terminals B-5, B-11 or B-15 of the control switch → terminal B-20 of the switch → ground.
   In the way, the CC ECU detects each position the control switch is turned to, and starts operation.
   HINT: The SET function is detected by the CC ECU when the control switch released from SET/COAST.

3. **SPEED CONTROL OPERATION**
   When the vehicle speed is set by the control switch, the ECU sends signal from terminal 10 → terminal 2 of the stop light switch → terminal 4 of the switch → terminal 5 of the actuator → (safety magnetic clutch) → terminal 4 of the actuator → ground.
   At the same time, the CC ECU sends the signal from terminal 24 → terminal 1 of the actuator → (position sensor) → terminal 3 of the actuator → terminal 26 of the CC ECU. When the occurs, the position sensor sends the position of the actuator arm as a signal (voltage) from terminal 2 of the actuator to terminal 25 of the CC ECU.
   When the actual vehicle speed drops below the set speed, the CC ECU sends a signal (voltage) from terminal 12 → terminal 6 of actuator (motor) → terminal 7 of actuator → terminal 11 of CC ECU. This causes the motor to rotate the actuator arm in the throttle opening direction, increasing the vehicle speed. Then, when the arm reaches the prescribed angle, the CC ECU detects this at terminal 25 and stops the signal from 12.
   When the actual vehicle speed rises above the set speed, the CC ECU sends a signal from terminal 11, turning the motor in the opposite direction so that the vehicle speed is reduced.

4. **MANUAL CANCEL OPERATION**
The CC system has the following methods of cancellation:
   - **Speed Control Switch (CANCEL)**
     When the control switch is turned to CANCEL position.
   - **Parking Brake Switch**
     When the parking brake lever is pulled, the parking brake switch is turned ON and sends a cancellation signal (ground voltage) to terminal 3 of the CC ECU.
   - **Neutral Start Switch (A/T)**
     When the shift lever is set to "N" or "P" range, the neutral start switch is turned ON and sends a cancellation signal (ground voltage) to terminal 2 of the CC ECU.
   - **Stop Light Switch**
     When the brake pedal is depressed, SW B of the stop light switch is turned OFF, the safety magnetic clutch (in actuator) is released, and SW A of the stop light switch is turned ON and sends a cancellation signal (battery voltage) to terminal 16 of the CC ECU.
   When the CC ECU detects any of the above signals, it stops output of signals to the actuator, and cancels cruise control.
Diagnosis System
Output of Diagnostic Code
READ DIAGNOSTIC CODE
(Type A)

(a) Turn the ignition switch on.
(b) Turn the control switch to SET/COAST position, and keep it there.
(c) Push the main switch ON.
(d) Check that the indicator light "CRUISE" lights-up in the combination meter.
(e) Turn the SET/COAST switch off.
(f) Meet the conditions listed in the table below.
(g) Read the diagnosis code on the cruise control indicator light.

<table>
<thead>
<tr>
<th>No.</th>
<th>Conditions</th>
<th>Indication code</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Turn the control switch to SET/COAST position.</td>
<td>![ON:0.25S, 0.25S, 1S OFF]</td>
<td>SET/COAST circuit is normal. BE1931</td>
</tr>
<tr>
<td>2</td>
<td>Turn the control switch to RES/ACC position.</td>
<td>![ON, OFF]</td>
<td>RES/ACC circuit is normal. BE1932</td>
</tr>
<tr>
<td>3</td>
<td>Each cancel switch is turned ON.</td>
<td>![ON, OFF]</td>
<td>Each cancel switch is normal. BE1935</td>
</tr>
<tr>
<td></td>
<td>• Control switch (to CANCEL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Stop light switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Parking brake switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Neutral start switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(to N or P range)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Drive at approx. 40 km/h (25 mph) or below.</td>
<td>![ON, OFF]</td>
<td>Speed sensor circuit is normal. BE1938</td>
</tr>
<tr>
<td>5</td>
<td>Drive at approx. 40 km/h (25 mph) or over</td>
<td>![ON, OFF]</td>
<td>Speed sensor circuit is normal. BE1937</td>
</tr>
</tbody>
</table>

HINT:
- Indication codes appear in order from No.1.
- If there is no indication code, perform troubleshooting and inspection. (See page BE-11O)
- Indication is stopped when the MAIN switch is repushed.
(Type B)
(a) If while driving with the cruise control on, the system is canceled by a malfunction in either the actuator, speed sensor or speed control switch circuit, the cruise control indicator light "CRUISE" will blink 5 times.
(b) While stopped, connect terminals 3 and 15 of the check connector.
HINT: If the ignition switch is turned off, the diagnostic code will be erased from the computer memory.
(c) Read the diagnostic code on the indicator light "CRUISE".

<table>
<thead>
<tr>
<th>Indication code</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Excessive current flowed to motor or safety magnetic clutch drive circuit.</td>
</tr>
<tr>
<td>12</td>
<td>Open circuit in safety magnetic clutch circuit.</td>
</tr>
<tr>
<td>13</td>
<td>Position sensor circuit abnormal.</td>
</tr>
<tr>
<td>21</td>
<td>Vehicle speed signal not sent for 140 msec, or longer</td>
</tr>
<tr>
<td>23</td>
<td>Vehicle speed has decreased by 16 km/h (10 mph) or more from the set speed during cruising.</td>
</tr>
<tr>
<td>31</td>
<td>RESUME/ACCEL switch is ON always when MAIN switch is pushed ON.</td>
</tr>
<tr>
<td>33</td>
<td>SET/COAST switch signal and RES/ACC switch signal turned on simultaneously.</td>
</tr>
</tbody>
</table>

CONTINUED ON NEXT PAGE
CONTINUED FROM PREVIOUS PAGE

<table>
<thead>
<tr>
<th>Indication code</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>ECU malfunction.</td>
</tr>
</tbody>
</table>

*If the set speed can be maintained when the speed control switch is again set at SET/COAST, there is no malfunction.

HINT:
- Indication codes appear in order from No.11.
- If there is no indication code, perform troubleshooting and inspection. (See page BE-110)
# Troubleshooting

You will find the source of the trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown.

<table>
<thead>
<tr>
<th>Chart No.</th>
<th>Inspection Item</th>
<th>D</th>
<th>C</th>
<th>C</th>
<th>F</th>
<th>H</th>
<th>G</th>
<th>E</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis Code</td>
<td>Problem</td>
<td>CC ECU</td>
<td>Actuator</td>
<td>Main Switch (in Control Switch)</td>
<td>Control Switch</td>
<td>Stop Light Switch</td>
<td>Parking Brake Switch</td>
<td>Speed Sensor, or Speedometer Cable</td>
<td>OD Solenoid Circuit (3F-E engine)</td>
<td>Throttle Position Sensor (3F-E engine)</td>
</tr>
<tr>
<td>Type B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Type A | | | | | | | | | | | | *
| 11 | | 2 | 1 | 6 | 9 | | | | | |
| 12 | | 3 | 1 | 2 | 1 | | | | | |
| 21 | | 2 | 1 | 1 | | | | | | |
| 23 | | 3 | 2 | 1 | | | | | | |
| 31 | | 2 | 1 | 2 | | | | | | |
| 33 | | 2 | 1 | 2 | | | | | | |
| 41 | | 1 | 2 | 2 | | | | | | |
| Normal | | OK | 8 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 9 * | | |
| | | NG | 2 | | | | | | | | 1 | | |
| Set speed deviates on high or low side. | | 4 | 3 | 1 | | | | | | | 2 | | |
| Large speed increase or speed drop when the speed control switch turned to SET. | | 3 | 2 | 1 | | | | | | | | |
| Vehicle speed fluctuates when speed control switch turned to SET. | | 4 | 3 | 1 | 2 | | | | | | | |
| Set speed does not cancel when brake pedal depressed. | | 3 | OK | 1 | 2 | | | | | | | |
| | | NG | 2 | | | | | | | | | |
| Set speed does not cancel when parking brake lever pulled. | | 3 | OK | 1 | 2 | | | | | | | |
| | | NG | 2 | | | | | | | | | |
| Set speed does not cancel when shifted to "N" range. | | 3 | OK | 1 | 2 | | | | | | | |
| | | NG | 2 | | | | | | | | | |
| Vehicle speed does not decrease when speed control switch turned to COAST. | | 1 | OK | 4 | 1 | | 3 | 2 | | | |
| | | NG | 2 | | | | | | | | | |
| Vehicle speed does not accelerate when speed control switch turned to ACCEL. | | 2 | OK | 4 | 1 | 3 | 4 | 2 | | | |
| | | NG | 2 | | | | | | | | | |
| Vehicle speed does not return to memorized speed when control switch turned on RESUME. | | 2 | OK | 4 | 1 | 3 | 4 | 2 | | | |
| | | NG | 2 | | | | | | | | | |
| Set speed does not cancel when speed control switch turned to CANCEL. | | 3 | OK | 2 | 1 | 3 | 4 | 2 | | | |
| | | NG | 2 | | | | | | | | | |
| Speed can be set below about 40 km/h (25 mph). | | 4 | OK | 2 | 1 | 3 | 4 | 2 | | | |
| | | NG | 2 | | | | | | | | | |
| Cruise control will not disengage even at about 40 km/h (25 mph). | | 4 | OK | 2 | 1 | 3 | 4 | 2 | | | |
| | | NG | 2 | | | | | | | | | |
| Acceleration response is sluggish when speed control switch turned to "ACCEL" or "RESUME". | | 6 | OK | 2 | 1 | 3 | 4 | 2 | | | |
| | | NG | 2 | | | | | | | | | |
| *: Inspect the wire harness.
HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

**Is ECU-HG fuse normal?**

- **Yes**
  - Disconnect connector from CC ECU and inspect connector on wire harness side as follows.
  - Disconnect connectors from CC ECU.
  - Replace fuse and turn ignition switch ON.
  - Is fuse normal?
    - **Yes**
      - Replace CC ECU. The recheck system.
    - **No**
      - Short circuit in wire harness on vehicle side.

- **No**
  - Replace fuse and turn ignition switch ON.
  - Is fuse normal?
    - **Yes**
      - Replace CC ECU. The recheck system.
    - **No**
      - Fuse faulty.

**INSPECT GROUND CONNECTION**

- Is there continuity between terminal 13 and ground?
  - **Yes**
    - Replace CC ECU. Then recheck system.
  - **No**
    - 
      - Open circuit in wire harness between terminal 13 of CC ECU and ground.
      - Ground faulty.

**INSPECT POWER SOURCE**

- Turn ignition switch ON.
- Is there battery voltage between terminal 14 and ground?
  - **Yes**
    - Replace CC ECU. Then recheck system.
  - **No**
    - Open circuit in wire harness between terminal 14 of CC ECU and ground.

CC: Cruise Control
**B CRUISE CONTROL INDICATOR CIRCUIT**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

- **Is GAUGE fuse normal?**
  - No: Replace fuse and turn ignition switch ON.
  - Yes: Fuse faulty.

- **COMBINATION METER**
  - Yes: Disconnect connector "A" from combination meter and inspect connector on wire harness side as follow.
  - No: Short circuit in wire harness on vehicle side.

- **INSPECT POWER SOURCE**
  - Turn ignition switch ON.
  - Is there battery voltage between terminal A-5 and ground?
    - No: Open circuit in wire harness between terminal A-5 and GAUGE fuse.
    - Yes: Replace bulb. Then recheck system.

- **INSPECT BULB CONDITION**
  - Is bulb condition normal?
    - Yes: Install bulb and connect connector to combination meter.
    - No: Replace bulb. Then recheck system.

- **CC ECU**
  - Disconnect connector from CC ECU and inspect connector on wire harness side as follows.
  - Yes: Short circuit in wire harness between terminals 5 of CC ECU and A-9 of combination meter.
  - No: Short circuit in circuit plate of combination meter between terminal A-9 and CC indicator bulb.

- **INSPECT INDICATOR CIRCUIT**
  - Is there no continuity between terminal 5 and ground?
    - No: Short circuit in wire harness between terminals 5 of CC ECU and A-9 of combination meter.
    - Yes: Open circuit in wire harness between terminals 5 of CC ECU and A-9 of combination meter.

- **Turn ignition switch ON.**
  - Is there battery voltage between terminal 5 and ground?
    - No: Open circuit in wire harness between terminal A-9 and CC indicator bulb or between terminal A-5 and CC indicator bulb.
    - Yes: Replace CC ECU. Then recheck system.

CC: Cruise Control
HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

**CONTROL SWITCH**

Disconnect connector from control switch and inspect connector on wire harness side as follows.

**INSPECT GROUND CONNECTION**

Is there continuity between terminal B-20 and ground?

- Yes
  - Open circuit in wire harness between terminal B-20 of control switch and ground.
  - Ground faulty.

- No
  - Replace control switch. Then recheck system.

**INSPECT CONTROL SWITCH (See page BE-123)**

Is control switch operation normal?

- Yes
  - Replace control switch. Then recheck system.

- No
  - Replace control switch. Then recheck system.

**CC ECU**

Connect connector to control switch. Disconnect connectors from CC ECU and inspect connectors on wire harness side as follows.

**INSPECT MAIN SWITCH CIRCUIT**

Is there no continuity between terminal 4 and ground with main switch OFF?

- Yes
  - Open circuit in wire harness between terminals 4 of CC ECU and B-15 of control switch.

- No
  - Short circuit in wire harness between terminals 4 of CC ECU and B-15 of control switch.

Is there continuity between terminal 4 and ground with main switch ON?

- Yes
  - Short circuit in wire harness between terminals 19, 18, 17 of CC ECU and B-5, B-17, B-11 of control switch.

- No
  - Open circuit in wire harness between terminals 19, 18, 17 of CC ECU and B-5, B-17, B-11 of control switch.

**INSPECT CONTROL SWITCH CIRCUIT**

Is there no continuity between terminal 19, 18 or 17 and ground with control switch OFF?

- Yes
  - Open circuit in wire harness between terminals XX of CC ECU and YY of control switch.

- No
  - Short circuit in wire harness between terminals XX of CC ECU and YY of control switch.

Is there continuity as shown in table below between terminal XX and ground when control switch is turned to each position?

<table>
<thead>
<tr>
<th>Position</th>
<th>Terminal XX</th>
</tr>
</thead>
<tbody>
<tr>
<td>SET/COAST</td>
<td>19</td>
</tr>
<tr>
<td>RES/ACC</td>
<td>18</td>
</tr>
<tr>
<td>CANCEL</td>
<td>17</td>
</tr>
</tbody>
</table>

- Yes
  - Replace CC ECU. Then recheck system.

- No
  - Replace CC ECU. Then recheck system.

CC: Cruise Control
D | ACTUATOR CIRCUIT

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

ACTUATOR

Disconnect connector from actuator and inspect connector on wire harness side as follows.

INSPECT GROUND CONNECTION
Is there continuity between terminal 4 and ground?

No
- Open circuit in wire harness between terminal 4 of actuator and ground.
- Ground faulty.

Yes

INSPECT ACTUATOR (See page BE-124)
Is actuator operation normal?

No
Replace actuator. Then recheck system.

Yes

STOP LIGHT SWITCH

INSPECT STOP LIGHT SWITCH INSTALLATION
Is stop light switch installed properly?

No
Reinstall stop light switch properly. Then recheck system.

Yes

Connect connector to actuator.
Disconnect connector from stop light switch and inspect connector on wire harness side as follows.

INSPECT SAFETY MAGNETIC CLUTCH CIRCUIT
Is there approx. 38.5 Ω between terminal 4 and ground?

No
Open or short circuit in wire harness between terminals 4 of stop light and 5 of actuator.

Yes

INSPECT STOP LIGHT SWITCH (See page BE-123)
Is stop light switch operation normal?

No
Replace stop light switch. Then recheck system.

Yes

CONTINUED ON NEXT PAGE

CC: Cruise Control
CC ECU

Connect connector to stop light switch. Disconnect connectors from CC ECU and inspect connectors on wire harness side as follows.

INSPECT SAFETY MAGNETIC CLUTCH CIRCUIT
Is there approx. 38.5 Ω between terminal 10 and ground?

- Yes
  - Open or short circuit in wire harness between terminals 10 of CC ECU and 5 of actuator.
- No
  - Short circuit in wire harness between terminals 12 of CC ECU and 6 of actuator.

INSPECT MOTOR CIRCUIT
Is there no continuity between terminal 12 and ground?

- Yes
  - Short circuit in wire harness between terminals 11 of CC ECU and 7 of actuator.
- No
  - Short circuit in wire harness between terminals 12 of CC ECU and 6 of actuator or between terminals 11 of CC ECU and 7 of actuator.

INSPECT POSITION SENSOR CIRCUIT
Is there no continuity between terminal 24 and ground?

- Yes
  - Replace CC ECU. Then recheck system.
- No
  - Open circuit in wire harness between terminals 26 of CC ECU and 3 of actuator.
  - Open circuit in wire harness between terminals 24 of CC ECU and 1 of actuator.

Does resistance change even between terminals 26 and 25?

- Yes
  - Open or short circuit in wire harness between terminals 25 of CC ECU and 2 of actuator.
- No
  - Open circuit in wire harness between terminals 26 of CC ECU and 3 of actuator.
  - Open circuit in wire harness between terminals 24 of CC ECU and 1 of actuator.

CC: Cruise Control
E  SPEED SENSOR CIRCUIT

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

SPEED SENSOR

Disconnect connector from speed sensor and inspect connector on wire harness side as follows.

INSPECT GROUND CONNECTION

Is there continuity between terminal 3 and ground?

Yes

INSPECT SPEED SENSOR (See page BE-123)

Is speed sensor operation normal?

No

Replace speed sensor. Then recheck system.

Yes

CC ECU

Connect connector to speed sensor. Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

INSPECT SPEED SENSOR CIRCUIT

Is there continuity repeatedly between terminal 20 and ground?

No

Replace CC ECU. Then recheck system.

Yes

- Open circuit in wire harness between terminal 3 of speed sensor and ground.
- Ground faulty.

- Open or short circuit in wire harness between terminals 20 of CC ECU and 2 of speed sensor.

CC: Cruise Control
F STOP LIGHT SWITCH CIRCUIT

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

**INSPECT STOP LIGHT SYSTEM**

Is stop light system operation normal?

Yes → Inspect CC ECU on next page.

No → Is STOP fuse normal?

Yes → Disconnect connector from CC ECU and replace fuse. Is fuse normal?

Yes → Replace fuse and depress brake pedal. Is fuse normal?

Yes → Replace CC ECU. Then recheck system.

No → Replace fuse. Is fuse normal?

Yes → Fuse faulty.

No → Replace fuse normal?

No → Replace fuse and depress brake pedal. Is fuse normal?

No → Short circuit in wire harness between terminal 1 of stop light switch and STOP fuse.

Is fuse normal?

No → Short circuit in wire harness between terminal 16 of CC ECU and STOP fuse.

Yes → Reinstall stop light switch properly. Then recheck system.

No → Reinstall stop light switch properly. Then recheck system.

**CONTINUED ON NEXT PAGE**

CC: Cruise Control
STOP LIGHT SWITCH

Disconnect connector from stop light switch and inspect connector on wire harness side as follows.

INSPECT POWER SOURCE
Is there battery voltage between terminal 1 and ground?

No → Open circuit in wire harness between terminal 1 of stop light switch and STOP fuse.

Yes → INSPECT STOP LIGHT CIRCUIT
Connect terminals 1 and 3. Do stop lights light up?

No → Open circuit in wire harness between terminal 3 of stop light switch and ground.
        Ground faulty.

Yes → INSPECT STOP LIGHT SWITCH (See page BE-123)
Is stop light switch operation normal?

No → Replace stop light switch. Then recheck system.

Yes → CC ECU
Connect connector to stop light switch. Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

INSPECT STOP LIGHT SWITCH CIRCUIT
Is there battery voltage between terminal 1 and ground?

No → Open circuit in wire harness between terminal 1 of CC ECU and STOP fuse.

Yes → Is there battery voltage between terminal 16 and ground when brake pedal depressed?

No → Open circuit in wire harness between terminals 16 of CC ECU and 3 of stop light switch.

Yes → Replace CC ECU. Then recheck system.

CC: Cruise Control
G PARKING BRAKE SWITCH CIRCUIT

**HINT:** While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

**INSPECT PARKING BRAKE SWITCH**
(See page BE-63)
Is parking brake switch operation normal?

- **Yes**
  - **CC ECU**
    - Connect connector to parking brake switch.
    - Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

- **No**
  - Replace parking brake switch. Then recheck system.

**INSPECT PARKING BRAKE SWITCH CIRCUIT**
Is there continuity between terminal 3 and ground when parking brake lever is pulled?

- **Yes**
  - **CC ECU**
    - Is there no continuity between terminal 3 and ground when parking brake lever is released?
      - **Yes**
        - Replace CC ECU. Then recheck system.
      - **No**
        - Short circuit in wire harness between terminal 3 of CC ECU and parking brake switch.

- **No**
  - Open circuit in wire harness between terminal 3 of CC ECU and parking brake switch.
**H  NEUTRAL START SWITCH CIRCUIT**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

**INSPECT STARING SYSTEM**

Is starting system normal?

- **Yes**
  - Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

**INSPECT NEUTRAL START SWITCH CIRCUIT**

Is there continuity between terminal 2 and ground when shift lever is shifted to P or N range?

- **No**
  - Open circuit in wire harness between terminals 2 of CC ECU and neutral start switch.

- **Yes**
  - Is there no continuity between terminal 2 and ground when shift lever is shifted to L, 2, 3, or R range?

  - **No**
    - Short circuit in wire harness between terminals 2 of CC ECU and neutral start switch.
  
  - **Yes**
    - Replace CC ECU. Then recheck system.

- **Yes**

**CC: Cruise Control**

---

**I OD SOLENOID CIRCUIT (w/ 3F-E Engine)**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

**INSPECT ECT SYSTEM**

Is ECT system normal?

- **No**
  - Repair ECT system. Then recheck system.

- **Yes**
  - Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

**INSPECT OD SOLENOID**

(See page AT-28)

Is OD solenoid operation normal?

- **Yes**
  - Replace CC ECU. Then recheck system.

- **No**
  - Replace OD solenoid. Then recheck system.

CC: Cruise Control
J | IDL SIGNAL CIRCUIT (w/ 3F-E Engine)

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

**THROTTLE POSITION SENSOR**

**INSPECT THROTTLE POSITION SENSOR ADJUSTMENT** (Refer to FI Section of ENGINE Repair Manual.) Is throttle position sensor adjustment normal?

- **No**: Adjust position sensor position. Then recheck system.
- **Yes**: Inspect throttle position sensor operation normal?

**INSPECT THROTTLE POSITION SENSOR (Refer to FI Section of ENGINE Repair Manual.)**

- **No**: Replace throttle position sensor. Then recheck system.
- **Yes**: Connect connector to throttle position sensor. Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

**CC ECU**

- **Yes**: Connect connector to throttle position sensor. Disconnect connector from CC ECU and inspect connector on wire harness side as follows.

**INSPECT IDL SIGNAL CIRCUIT**

- **No**: Open circuit in wire harness between terminals 23 of CC ECU and 2 of throttle position sensor.
- **Yes**: Is there continuity between terminal 23 and ground when acceleration pedal is depressed? Yes → Is there no continuity between terminal 23 and ground when acceleration pedal is depressed?

- **No**: Short circuit in wire harness between terminals 23 of CC ECU and 2 of throttle position sensor.
- **Yes**: Replace CC ECU. Then recheck system.

CC: Cruise Control
Cruise Control ECU Circuit

INSPECT ECU CIRCUIT

Disconnect connector and inspect connector on wire harness side as shown in the chart.

<table>
<thead>
<tr>
<th>Check for</th>
<th>Measured item</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td>Neutral start switch</td>
<td>2 — ground</td>
<td>Shift lever position</td>
<td>N or P</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>Parking brake switch</td>
<td>3 — ground</td>
<td>Parking brake lever position</td>
<td>L, 2, D or R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td>Control switch</td>
<td>4 — ground</td>
<td>Main switch position</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No continuity</td>
</tr>
<tr>
<td>Ground connection</td>
<td></td>
<td>13 — ground</td>
<td>Constant</td>
<td></td>
</tr>
<tr>
<td>Control switch</td>
<td></td>
<td>18 — ground</td>
<td>Control switch position</td>
<td>RES/ACC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19 — ground</td>
<td>Control switch position</td>
<td>SET/COAST</td>
</tr>
<tr>
<td></td>
<td>Actuator (motor)</td>
<td>11 _ 12</td>
<td>Actuator arm position</td>
<td>max. OPEN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(12 → 11) Continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>max. CLOSE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(11 → 12) Continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>any position except</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>above position</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(12 → 11) Continuity</td>
</tr>
<tr>
<td>TDCL circuit</td>
<td></td>
<td>8 — ground</td>
<td>Constant</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Terminals Tc and E1 connected</td>
<td>Continuity</td>
</tr>
<tr>
<td>Throttle position sensor (IDL: 3F-E Engine)</td>
<td>23 — ground</td>
<td>Acceleration pedal position</td>
<td>released</td>
<td>Continuity</td>
</tr>
<tr>
<td>Speed sensor</td>
<td></td>
<td>20 — ground</td>
<td>With ignition switch ON, speedometer shaft or speed sensor shaft turned.</td>
<td>Continuity</td>
</tr>
<tr>
<td>Resistance</td>
<td>Actuator (position sensor)</td>
<td>24 - 26</td>
<td>Constant</td>
<td>Approx. 2 kΩ</td>
</tr>
<tr>
<td></td>
<td>Actuator (Safety magnetic clutch)</td>
<td>24 - 25</td>
<td>Actuator arm turned</td>
<td>Resistance change even</td>
</tr>
<tr>
<td></td>
<td>10 — ground</td>
<td>Brake pedal position</td>
<td>released</td>
<td>Approx. 38.5 Ω</td>
</tr>
<tr>
<td></td>
<td></td>
<td>depressed</td>
<td>No continuity</td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>Power source</td>
<td>14 — ground</td>
<td>Ignition switch position</td>
<td>LOCK or ACC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>STOP fuse</td>
<td>1 — ground</td>
<td>Constant</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td>Stop light</td>
<td>16 — ground</td>
<td>Brake pedal position</td>
<td>released</td>
</tr>
<tr>
<td></td>
<td></td>
<td>depressed</td>
<td>Battery voltage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>O/D solenoid valve (3F-E Engine)</td>
<td>9 — ground</td>
<td>Ignition switch position</td>
<td>LOCK or ACC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No voltage</td>
</tr>
</tbody>
</table>

*: This circuit includes the diode. If the circuit shown no continuity, change the positive and negative proves and recheck system.

If circuit is as specified, try another ECU.
If circuit is not as specified, refer to BE-104 wiring diagram and inspect the circuits connected to other parts.
Parts Inspection

1. **INSPECT SWITCHES**
   
   **(Control Switch/Continuity)**
   
<table>
<thead>
<tr>
<th>Terminal Switch position</th>
<th>B20</th>
<th>B11</th>
<th>B5</th>
<th>B17</th>
<th>B15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control RES/ACC</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SET/COAST</td>
<td>O</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CANCEL</td>
<td>O</td>
<td></td>
<td>O</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   If the continuity is not as specified, replace the control switch.

   **(Stop Light Switch/Continuity)**
   
<table>
<thead>
<tr>
<th>Terminal Switch position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

   If continuity is not as specified, replace the stop light switch.

   **(Neutral Start Switch)**
   
   See page AT-28.

   **(Parking Brake Switch)**
   
   See page BE-63.

2. **INSPECT SPEED SENSOR**

   (a) Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 3.

   (b) Check that there is continuity between terminal 2 and the battery negative (-) terminal four times per each revolution of the shaft.

   **HINT:** Connect the test leads so that the current from the ohmmeter can flow from terminal 2 to battery negative (-) terminal.

   If operation is not as specified, replace the speed sensor.
3. **INSPECT ACTUATOR**  
(Safety Magnet Clutch)

(a) Check that the arm moves smoothly by hand.

(b) Connect the positive (+) lead from the battery to terminal 5 and the negative (—) lead to terminal 4. (Safety magnet clutch turned ON)

(c) Check that the arm does not move by hand. If operation is not as specified, replace the motor.

(Motor)

(a) With the safety magnetic clutch ON, connect the positive (+) lead from the battery to terminal 6 and the negative (—) lead to terminal 7, check that the arm moves to the open side.

(b) When the arm reached to the open position, check that the motor operation stops.

(c) With the safety magnetic clutch ON, connect the positive (+) lead from the battery to terminal 7 and the negative (—) lead to terminal 6, check that the arm moves to the close side.

(d) When the arm reaches to the closed position, check that the motor operation stops.

(Position Sensor)

(a) Measure the resistance between terminals 1 and 3.  
Resistance: Approx. 2 kΩ
(b) When the arm is moving from the closed to open position, check that resistance between terminals 2 and 3 increases from approx. 0.5 to 1.7 kΩ. If operation is not as specified, replace the motor.

4. (3F-E Engine)

**INSPECT THROTTLE POSITION SWITCH**
(Refer to FI section of Engine Repair Manual)

---

### Adjustment of Control Link Assembly

#### ADJUST CONTROL LINK ASSEMBLY

(a) Connect the positive (+) lead from the battery to terminal 5 and the negative (−) lead to terminal 4 of the actuator.

(Safety magnet clutch turned ON)

**NOTICE:** Keep the safety magnet clutch ON until adjustment of control link assembly is completed.

(b) With the safety magnetic clutch ON, connect the positive (+) lead from the battery to terminal 6 and the negative (−) lead to terminal 7.

(Arm moves to the open side.)

(c) With the safety magnetic clutch ON, connect the positive (+) lead from the battery to terminal 7 and the negative (−) lead to terminal 6.

(Arm moves to the close side.)

(d) Install the control link assembly to the actuator.

(e) Rotate the control link assembly so that the catch of the control link assembly’s lower side link comes in contact with the actuator control arm (Free play 0).

**Free play: 0 mm (0 in.)**

**NOTICE:** Rotate the lower side link to the right until it touches the stopper.

(f) In condition (d), install and torque the three nuts.

(g) Disconnect lead wire from the actuator.
FUEL TRANSFER SYSTEM

Parts Location

Wiring and Connector Diagrams

The POWER SOURCE CIRCUIT has been simplified. For full details, see pages BE-10, 11.
System Description

Standby Operation
- When the Ignition Switch is on, current flows from the battery to terminal 9 of the Sub Fuel Switch.

Operation

Sub-Fuel Switch "OFF" (Fuel)
Fuel tank (Main) → Solenoid valve (Main) C port → Solenoid valve (Main) B port → Engine → Solenoid valve (Return) B port → Solenoid valve (Return) C port → Fuel tank (Sub)

Sub-Fuel Switch "ON" (Current)
When the Sub-fuel switch is set to "ON" current flows through terminal 9 of sub-fuel switch → terminal 6 → terminal 2 of solenoid valve (Main and Return) → terminal 1 → ground

(Fuel)
Fuel tank (sub) → Solenoid valve (Main) A port → Solenoid valve (Main) B port → Engine → Solenoid valve (Return) B port → Solenoid valve (Return) A port → Fuel tank (Sub)
Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Remedy</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Transfer System do not operate</td>
<td>GAUGE fuse blown</td>
<td>Replace fuse and check for short</td>
<td>BE-4, 6</td>
</tr>
<tr>
<td></td>
<td>Sub fuel switch faulty</td>
<td>Check switch</td>
<td>BE-128</td>
</tr>
<tr>
<td></td>
<td>Fuel transfer solenoid valve (Main and return) faulty</td>
<td>Check solenoid valve</td>
<td>BE-128</td>
</tr>
<tr>
<td></td>
<td>Wiring or ground faulty</td>
<td>Repair as necessary</td>
<td></td>
</tr>
</tbody>
</table>

Parts Inspection

1. INSPECT SUB FUEL SWITCH
   (Continuity)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>3</th>
<th>6</th>
<th>9</th>
<th>Illumination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Position</td>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ON</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, check the bulb or replace the switch.

2. INSPECT FUEL TRANSFER SOLENOID VALVE
   (Main)
   (a) Check that the air flows between ports B and C. Check that the air does not flow between ports A and B.

<table>
<thead>
<tr>
<th>Port</th>
<th>Condition</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>No voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Apply the battery voltage across the terminals. Check that the air flows between ports A and B. Check that the air does not flow between ports B and C.

<table>
<thead>
<tr>
<th>Port</th>
<th>Condition</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply the battery voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If operation is not as specified, replace the solenoid.

(Return)
The inspection is the same as for the main solenoid valve.
AUDI SYSTEM

Parts Location
Wiring and Connector Diagrams

Radio, 1 Speaker: Symbol R

Radio Receiver

Antenna

Ignition Switch

Fuse CIG & RAD

ACC

FR (+)

FR (-)

ACC

FR (+)

FR (-)

ACC

FR (+)

FR (-)

ACC

FR (+)

FR (-)

ACC

FR (+)

FR (-)

ACC

FR (+)

FR (-)

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FR (-)

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FR (+)
Radio - Tape Player, 5 Speaker, w/ Radio Linked Motor Antenna: Symbol [U]

*1: To Woofer Amplifier

Radio Assembly

Antenna Position Sensor
Antenna Motor Control Relay
Fuse ECU-IG
Fuse CIG & RAD
Fuse DOME
From Fuse TAIL
Battery

A2
A6
FL(+)
FL(-)
FR(+)
FR(-)
A1
A6
B2
B6
B1
B3

AMP+ ANT+ ANT A ANT B RR(+)
RL(+)
RR(-)

From AMP +
AMP+
RL(-)
RR(-)
WF +
WF +

4 1 2
3 1 2
5 1 2

Radio Assembly Connector "A"
Connect "B"
Connect "C"
Antenna Motor Control Relay
Woofer Amplifier

Front Speaker
Rear Speaker
Woofer
Motor Antenna (Except Radio Linked Type)

Battery

Fuse DOME

From Fuse TAIL

To Ground

Antenna Switch

Antenna Motor

DOWN

Pushed in

Free

Free

Pushed in

Up

1 2

M

BE5074
S-9-2 H-2-2
System Description

RADIO WAVE BAND

The radio wave bands used in radio broadcasting are as follows:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>30 kHz</th>
<th>300 kHz</th>
<th>3 MHz</th>
<th>30 MHz</th>
<th>300 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation</td>
<td>LF</td>
<td>MF</td>
<td>HF</td>
<td>VHF</td>
<td></td>
</tr>
<tr>
<td>Radio wave</td>
<td>LW</td>
<td>AM(MW)</td>
<td>SW</td>
<td>FM(UKW)</td>
<td></td>
</tr>
<tr>
<td>Modulation method</td>
<td>Amplitude modulation</td>
<td>Frequency modulation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LF: Low Frequency  MF: Medium Frequency  HF: High Frequency  VHF: Very High Frequency
HINT: In this section, the term "AM" includes LW, MW and SW, and the term "FM" includes UKW.

SERVICE AREA

There is great difference in the size of the service area for AM, FM monaural, and FM stereo broadcasting. Thus it may happen that FM broadcast cannot be received even though AM comes in very clearly.
Not only does FM stereo have the smallest service area, but it also picks up static and other types of interference ("noise") the most easily.

RECEPTION PROBLEMS

Besides the problem of static, there are also the problems called "fading", "multipath", and "fade out". These problems are caused not by electrical noise but by the nature of the radio waves themselves.

Fading
Besides electrical interference, AM broadcasts are also susceptible to other types of interference, especially at night. This is because AM radio waves bounce off the ionosphere at night. These radio waves then interfere with the signals from the same transmitter that reach the vehicle's antenna directly. This type of interference is called "fading".

Multipath
One type of interference caused by the bouncing of radio waves off of obstructions is called "multipath". Multipath occurs when a signal from the broadcast transmitter antenna bounces off of buildings and mountains and interferes with the signal that is received directly.

Fade Out
Because FM radio waves are of higher frequencies than AM radio waves, they bounce off of buildings, mountains, and other obstructions. For this reason, FM signals often seem to gradually disappear or fade away as the vehicle goes behind a building or other obstruction. This is called "fade out".
ADJUST ANTENNA TRIMMER
(Ex. Electronic Tuning Radio)
(a) Fully lengthen antenna.
(b) With volume and tone at maximum, turn the dial to around 1,400 kHz where there is no reception.
(c) Adjust the trimmer to where static is loudest.
HINT: The position of the antenna trimmer may vary according to the type of radio, but is always on the front side.

COMPACT DISC PLAYER
Compact Disc (hereafter called "CD") players use a laser beam pick-up to read the digital signals recorded on the CD and reproduce analog signals of the music, etc. There are 4.7 in. (12 cm) and 3.2 in. (8 cm) CD available.
HINT: Never attempt to disassemble or oil any part of the player unit. Do not insert any object other than a disc into the slot.
NOTICE: CD players use invisible laser beam which could cause hazardous radiation exposure if directed. Be sure to operate the player correctly as instructed.

MAINTENANCE
(Tape Player)
Head Cleaning
(a) Raise the cassette door with your finger.
Next using a pencil or like object, push in the guide.
(b) Using a cleaning pen or cotton applicator soaked in cleaner, clean the head surface, pinch rollers and capstans.

(CD Player)
Disc Cleaning
If the Disc gets dirty, clean the Disc by wiping the surfaces from the center to outside in the radial directions with a soft cloth.
NOTICE: Do not use a conventional record cleaner or anti-static record preservative.
HOW TO USE DIAGNOSTIC CHART

1. Audio system type and symbol used.
   HINT: Confirm the applicable type of audio system.

2. Symbol for type of audio system the question applies to.
   HINT: If the audio system type is not applicable, proceed to next question below.

3. Junction without black circle.
   HINT: Proceed to next question below.

4. Junction with black circle.
   HINT: Proceed to question for applicable audio system type.

5. HINT: Select question for applicable audio system type.
Anti-Theft System

The anti-theft system is only provided for audio systems equipped with an Acoustic Flavor function.

HINT: The words "ANTI-THEFT SYSTEM" are displayed on the cassette tape slot cover.

For operation instructions for the anti-theft system, please consult the audio system section in the Owner's Manual.

1. SETTING SYSTEM

   The system is in operation once the customer has pushed the required buttons and entered the customer-selected 3-digit ID number.
   (Refer to the Owner’s Manual "SETTING THE ANTI-THEFT SYSTEM").

   HINT:
   • When the audio system is shipped the ID number has not been input, so the anti-theft system is not in operation.
   • If the ID number has not been input, the audio system remains the same as a normal audio system.

2. ANTI-THEFT SYSTEM OPERATION

   If the normal electrical power source (connector or battery terminal) is cut off, the audio system becomes inoperable, even if the power supply resumes.

3. CANCELLING SYSTEM

   The ID number chosen by the customer is input to cancel the anti-theft system.
   (Refer to the Owner’s Manual, "IF THE SYSTEM IS ACTIVATED")

   HINT: To change or cancel the ID number, please refer to the Owner’s Manual, "CANCELLING THE SYSTEM".
# Troubleshooting

**NOTICE:** When replacing the internal mechanism (computer part) of the audio system, be careful that no part of your body or clothing comes in contact with the terminals of the leads from the IC, etc. of the replacement part (spare part).

**HINT:** This inspection procedure is a simple troubleshooting which should be carried out on the vehicle during system operation and was prepared on the assumption of system component troubles (except for the wires and connectors, etc.).

Always inspect the trouble taking the following items into consideration.

- Open or short circuit of the wire harness
- Connector or terminal connection fault
- For audio systems with anti-theft system, troubleshooting items marked (*) indicate that "Troubleshooting for ANTI-THEFT SYSTEM" should be carried out first.

<table>
<thead>
<tr>
<th>Problem</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No power coming in.</td>
<td>*1</td>
</tr>
<tr>
<td>Power coming in, but radio not operating.</td>
<td>*2</td>
</tr>
<tr>
<td>Noise present, but AM-FM not operating.</td>
<td>3</td>
</tr>
<tr>
<td>Either speaker does not work.</td>
<td>4</td>
</tr>
<tr>
<td>Either AM or FM does not work.</td>
<td>5</td>
</tr>
<tr>
<td>Reception poor (Volume faint).</td>
<td>5</td>
</tr>
<tr>
<td>Few preset tuning bands.</td>
<td>5</td>
</tr>
<tr>
<td>Sound quality poor.</td>
<td>6</td>
</tr>
<tr>
<td>Auto-Radio Information (ARI) not received.</td>
<td>7</td>
</tr>
<tr>
<td>Cannot set station select button.</td>
<td>8</td>
</tr>
<tr>
<td>Preset memory disappears.</td>
<td>8</td>
</tr>
<tr>
<td>Cassette tape cannot be inserted.</td>
<td>9</td>
</tr>
<tr>
<td>Cassette tape inserts, but no power.</td>
<td>*10</td>
</tr>
<tr>
<td>Power coming in, but tape player not operating.</td>
<td>11</td>
</tr>
<tr>
<td>Either speaker does not work.</td>
<td>12</td>
</tr>
<tr>
<td>Sound quality poor (Volume faint).</td>
<td>13</td>
</tr>
<tr>
<td>Tape jammed, malfunction with tape speed or auto-reverse.</td>
<td>14</td>
</tr>
<tr>
<td>APS, SKIP, RPT buttons not operating.</td>
<td>15</td>
</tr>
<tr>
<td>Cassette tape will not eject.</td>
<td>*16</td>
</tr>
<tr>
<td>CD cannot be inserted.</td>
<td>17</td>
</tr>
<tr>
<td>CD inserts, but no power.</td>
<td>18</td>
</tr>
<tr>
<td>Power coming in, but CD player not operating.</td>
<td>19</td>
</tr>
<tr>
<td>Sound jumps.</td>
<td>20</td>
</tr>
<tr>
<td>Sound quality poor (Volume faint).</td>
<td>21</td>
</tr>
<tr>
<td>Either speaker does not work.</td>
<td>22</td>
</tr>
<tr>
<td>CD will not eject.</td>
<td>23</td>
</tr>
<tr>
<td>Antenna-related.</td>
<td>24</td>
</tr>
<tr>
<td>Noise produced by vibration or shock while driving.</td>
<td>25</td>
</tr>
<tr>
<td>Noise produced when engine starts.</td>
<td>26</td>
</tr>
</tbody>
</table>
Troubleshooting for ANTI-THEFT SYSTEM

Turn ignition key from LOCK position to ACC position.

Display "A" showing? No Radio switch turned ON. Yes Refer to each malfunction item.

ID number is set.

Display "B" showing? No ID number not input. (Display D) Yes Display "B" Go to No.1.

While holding the 1, 4 and 6 buttons in. Push and hold the "PWR VOL" knob. Check display.

"SEC" display disappears after 1 second. Yes ANTI-THEFT SYSTEM operating condition. (ID number input error 4 times or less) No Normal operation when radio switch turned ON. Yes Forgot to press switch. No Cancel ID number, refer to each malfunction item.

Input ID number, check display.

Display "D" Display "A" or "B" Yes ANTI-THEFT SYSTEM not cancelled. ID number input 5 times or more? No Take to designated radio service station.

Display "D" Example: Radio Display

Display "A" Blank, No Illumination

Display "C" Error Times

Display "E"

HINT:
- Refer to Owner's Manual for operation details of ANTI-THEFT SYSTEM.
- When the ID number has been cancelled, reset the same number after completing the operation, or inform the customer that it has been cancelled.
**BODY ELECTRICAL SYSTEM  - Audio System**

**1 Radio**

**NO POWER COMING IN**

<table>
<thead>
<tr>
<th>Radio</th>
<th>Audio System</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Radio</td>
</tr>
<tr>
<td>P</td>
<td>Radio-Tape Player (Separate Power Amplifier)</td>
</tr>
<tr>
<td>U</td>
<td>Radio-Tape Player (Built-in Power Amplifier)</td>
</tr>
</tbody>
</table>

**Supplementary: Radio**

- **Is tape player operating normally?**
  - Yes: S Radio faulty.  
  - No: U P Radio assembly faulty.

- **Check if CIG & RAD fuse is OK.**
  - OK: Replace fuse.
  - NG: Replace fuse.

- **Is ACC applied to power amplifier?**
  - No: ACC wire harness faulty.
  - Yes: Is ACC for the radio assembly being output from the power amplifier?
    - No: Power amplifier faulty.
    - Yes: Check if GND (wire harness side) to power amplifier is OK.
      - NG: GND faulty.
      - OK: Power Amplifier faulty.

- **Check if GND (wire harness side) to radio is OK.**
  - OK: R S Radio faulty.
  - NG: P Power Amplifier faulty.

- **GND wire harness faulty.**
2 Radio

POWER COMING IN, BUT RADIO NOT OPERATING

R : Radio  S : Radio + Tape Player  U : Radio—Tape Player (Built-in Power Amplifier)
P : Radio—Tape Player (Separate Power Amplifier)

If radio side faulty

S  Radio faulty.
U  Radio assembly faulty.

P  Is tape player operating normally?
No  Go to No. 24.
Yes

R  Is there continuity in speaker wire harness?
No  Speaker wire harness faulty.
Yes

Temporary install another speaker. Functions OK?
No

R  Radio faulty.
S  Radio faulty.
U  Radio assembly faulty.

Yes  Speaker faulty.

Hissing sound from speaker?
No  Power amplifier faulty. Recheck system after repair.
Yes

Radio assembly faulty. Recheck system after repair.

3 Radio

NOISE PRESENT, BUT AM-FM NOT OPERATING

R : Radio  S : Radio + Tape Player  U : Radio—Tape Player (Built-in Power Amplifier)
P : Radio—Tape Player (Separate Power Amplifier)

If radio side faulty

R  Radio faulty.
S  Radio faulty.
U  Radio assembly faulty.

P  Is tape player operating normally?
No  Go to No. 24.
Yes

S  Hissing sound from speaker?
No  Power amplifier faulty. Recheck system after repair.
Yes

Radio assembly faulty.
Radio

EITHER SPEAKER DOES NOT WORK

| R | Radio | S | Radio + Tape Player | U | Radio — Tape Player (Built-in Power Amplifier) | P | Radio — Tape Player (Separate Power Amplifier) |

**SUP**

Is tape player operating normally? Yes

- S Radio faulty.
- U Radio assembly faulty.

No

**R**

**SUP**

Is hiss produced by non-functioning speaker? Yes

- R Radio faulty
- S Radio faulty
- U Radio assembly faulty
- P Radio assembly faulty. Recheck system after repair.

No

Is there continuity in speaker wire harness?

No

Speaker wire harness faulty.

Yes

Temporarily install another speaker. Functions OK? Yes

Speaker faulty.

No

R | S | Radio faulty
U | Radio assembly faulty.

P | Power amplifier faulty. Recheck system after repair.
### 5 Radio

**EITHER AM OR FM DOES NOT WORK, RECEPTION POOR (VOLUME FAINT), FEW PRESET TUNING BANDS**

<table>
<thead>
<tr>
<th><strong>R</strong></th>
<th><strong>S</strong></th>
<th><strong>U</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>Radio+Tape Player</td>
<td>Radio—Tape Player (Built-in Power Amplifier)</td>
</tr>
<tr>
<td><strong>P</strong></td>
<td>Radio—Tape Player (Separate Power Amplifier)</td>
<td></td>
</tr>
</tbody>
</table>

**Problem with radio wave signals or location?**  
(See page BE-135)

- If yes: Poor signals, poor location.
- If no: Proceed further.

**Are both AM and FM defective?**

- If yes: Go to No.24.
- If no: Proceed further.

**If radio side faulty**

**Is tape player operating normally?**

- If yes: Radio assembly faulty.
- If no: Temporarily install another speaker. Functions OK?

**If yes**

**Speaker faulty.**

**If no**

- If **R S U**: Radio faulty.
- If **R S**: Radio faulty.
- If **U**: Radio assembly faulty.

**Hissing sound from speaker?**

- If yes: Power amplifier faulty. Recheck system after repair.
- If no: Radio assembly faulty. Recheck system after repair.
### 6 Radio

**SOUND QUALITY POOR**

<table>
<thead>
<tr>
<th>R</th>
<th>Radio</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Radio+Tape Player</td>
</tr>
<tr>
<td>U</td>
<td>Radio—Tape Player (Built-in Power Amplifier)</td>
</tr>
<tr>
<td>P</td>
<td>Radio—Tape Player (Separate Power Amplifier)</td>
</tr>
</tbody>
</table>

**Diagnosis Flowchart**

- **Is sound quality always bad?**
  - **No**
  - **Yes**
    - **Is sound quality bad in certain areas only?**
      - **Yes**
        - Poor signals, poor location.
      - **No**
        - **Radio**
        - **Tape Player (Separate Power Amplifier)**

**Radio Faulty**

**Radio Assembly Faulty**

**Is tape player operating normally?**

**Radio Assembly Faulty**

**Is speaker properly installed?**

- **Yes**
  - Install properly.
- **No**
  - Temporarily install another speaker. Function OK?
    - **OK**
      - Speaker faulty.
    - **NG**
      - Radio assembly faulty.

### 7 Radio

**AUTO-RADIO INFORMATION (ARI) NOT RECEIVED**

**Is ARI being broadcast?**

- **Yes**
  - **Is radio or radio assembly operating normally?**
    - **No**
      - Refer to appropriate troubleshooting chart depending on symptoms.
    - **Yes**
      - Radio or radio assembly faulty.
CANNOT SET STATION SELECT BUTTON, PRESET MEMORY DISAPPEARS

R : Radio  S : Radio+Tape Player  U : Radio—Tape Player (Built-in Power Amplifier)
P : Radio—Tape Player (Separate Power Amplifier)

<table>
<thead>
<tr>
<th>R</th>
<th>S</th>
<th>U</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can cassette tape be inserted in tape player?</td>
<td>Yes</td>
<td>Radio assembly faulty.</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check if DOME fuse is OK?</td>
<td>NG</td>
<td>Replace fuse.</td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is +B applied to power amplifier?</td>
<td>No</td>
<td>+ B wire harness faulty.</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check if GND (wire harness side) to power amplifier?</td>
<td>NG</td>
<td>GND faulty.</td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is +B applied to radio or radio assembly?</td>
<td>No</td>
<td>+ B wire harness faulty.</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check if GND (wire harness side) to radio or radio assembly?</td>
<td>NG</td>
<td>GND faulty.</td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio or radio assembly faulty.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9 Tape Player  CASSETTE TAPE CANNOT BE INSERTED

S: Radio + Tape Player  U: Radio — Tape Player (Built-in Power Amplifier)  P: Radio — Tape Player (Separate Power Amplifier)

<table>
<thead>
<tr>
<th>S</th>
<th>U</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a foreign object inside tape player?</td>
<td>Yes</td>
<td>Remove foreign object.</td>
</tr>
<tr>
<td>Is there a foreign object inside tape player?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Is radio operating normally?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Is radio operating normally?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Tape player faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio assembly faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check if DOME fuse is OK?</td>
<td>NG</td>
<td></td>
</tr>
<tr>
<td>Replace fuse.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check if DOME fuse is OK?</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>U</td>
<td>P</td>
</tr>
<tr>
<td>Is +B applied to tape player?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Is +B applied to power amplified?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>+B wire harness faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check if GND (wire harness side) to tape player is OK?</td>
<td>NG</td>
<td></td>
</tr>
<tr>
<td>GND faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check if GND (wire harness side) to power amplifier is OK?</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>Tape player faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is +B applied to radio assembly?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>+B wire harness faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power amplifier faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is +B applied to radio assembly?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Check if GND (wire harness side) to radio assembly is OK?</td>
<td>NG</td>
<td></td>
</tr>
<tr>
<td>GND faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power amplifier faulty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check if GND (wire harness side) to radio assembly is OK?</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>Radio assembly faulty.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**CASSETTE TAPE INSERTS, BUT NO POWER**

| 10 | Tape Player |  |
|----|-------------|  |
| **S**: Radio+Tape Player | **U**: Radio—Tape Player (Built-in Power Amplifier) | **P**: Radio—Tape Player (Separate Power Amplifier) |

- Is radio operating normally?  
  - Yes:  
    - S: Tape player faulty.  
    - U|P: Radio assembly faulty.  
  - No:  
    - Check if CIG & RAD fuse is OK?  
      - NG: Replace fuse.  
      - OK:  
        - S: Is ACC applied to tape player?  
          - No: ACC wire harness faulty.  
          - Yes:  
            - P: Is ACC applied to power amplifier?  
              - No: ACC wire harness faulty.  
              - Yes:  
                - Tape player faulty.  
  - U|P: Is ACC applied to radio assembly?  
    - No:  
      - P: Is there continuity in ACC speaker wire harness?  
        - Yes: Power amplifier faulty.  
        - No: ACC wire harness faulty.  
    - Yes: Radio assembly faulty.
11 Tape Player

POWER COMING IN, BUT TAPE PLAYER NOT OPERATING

[S]: Radio+Tape Player  [U]: Radio—Tape Player (Built-in Power Amplifier)
[P]: Radio—Tape Player (Separate Power Amplifier)

Functions OK if different cassette tape inserted?

Yes → Cassette tape faulty.

No

Is radio operating normally?

Yes →

- S: Tape player faulty.
- U: Radio assembly faulty.

No

Is there, continuity in speaker wire harness?

No → Speaker wire harness faulty.

Yes

Temporarily install another speaker. Functions OK?

Yes → Speaker faulty.

No

- P: Radio assembly faulty. Recheck system after repair.

P

Hissing sound from speaker?

No → Power amplifier faulty. Recheck system after repair.

Yes → Radio assembly faulty. Recheck system after repair.
EITHER SPEAKER DOES NOT WORK

| S | Radio + Tape Player | U | Radio — Tape Player (Built-in Power Amplifier) |
| P | Radio — Tape Player (Separate Power Amplifier) |

Is radio operating normally? **Yes**

- **S** Tape player faulty.
- **U** Radio assembly faulty.
- **P** Radio assembly faulty. Recheck system after repair.

Is hiss produced by non-functioning speaker? **Yes**

- **S** Tape player faulty.
- **U** Radio assembly faulty.
- **P** Radio assembly faulty. Recheck system after repair.

Is there continuity in speaker wire harness? **No**

- Speaker wire harness faulty.

Temporarily install another speaker. Functions OK? **OK**

- Speaker faulty.

**NG**

- **S** Tape player faulty.
- **U** Radio assembly faulty.
- **P** Radio assembly faulty. Recheck system after repair.
BODY ELECTRICAL SYSTEM - Audio System

13 Tape Player

SOUND QUALITY POOR (VOLUME FAINT)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functions OK if different cassette tape inserted?</td>
<td>Cassette tape faulty.</td>
<td>Tape player faulty.</td>
</tr>
<tr>
<td>Operates normally after cleaning the heads? (See page BE-136)</td>
<td>Head dirty.</td>
<td>Tape player faulty.</td>
</tr>
<tr>
<td>Is speaker properly installed?</td>
<td>Install properly.</td>
<td>Tape player faulty.</td>
</tr>
<tr>
<td>Temporarily install another speaker. Functions OK?</td>
<td>Speaker faulty.</td>
<td>Tape player faulty.</td>
</tr>
</tbody>
</table>

Species:
- S: Radio + Tape Player
- U: Radio — Tape Player (Built-in Power Amplifier)
- P: Radio — Tape Player (Separate Power Amplifier)

14 Tape Player

TAPE JAMMED, MALFUNCTION WITH TAPE SPEED OR AUTO-REVERSE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functions OK if different tape (less than 120 mins.) is inserted?</td>
<td>Cassette tape faulty.</td>
<td>Tape player faulty.</td>
</tr>
<tr>
<td>Is there a foreign object inside tape player?</td>
<td>Remove foreign object.</td>
<td>Tape player faulty.</td>
</tr>
<tr>
<td>Operates normally after cleaning the heads? (See page BE-136)</td>
<td>Head dirty.</td>
<td>Tape player faulty.</td>
</tr>
</tbody>
</table>

Species:
- S: Radio + Tape Player
- U: Radio — Tape Player (Built-in Power Amplifier)
- P: Radio — Tape Player (Separate Power Amplifier)
15 Tape Player

**APPS, SKIP, RPT BUTTONS NOT OPERATING**

| S | Radio+ Tape Player | U | Radio—Tape Player (Built-in Power Amplifier) |
| P | Radio—Tape Player (Separate Power Amplifier) |

- Functions OK if different cassette tape inserted? **No** → Radio assembly faulty.
- Yes

Cassette tape faulty. (Less than 3 sees, of silence between songs (APS, RPT). Less than 1.5 sees, of silence (SKIP).)

16 Tape Player

**CASSETTE TAPE WILL NOT EJECT**

| S | Radio—I-Tape Player |
| U | Radio—Tape Player (Built-in Power Amplifier) |
| P | Radio—Tape Player (Separate Power Amplifier) |

- Is tape player operating normally? **No** → Cassette tape jammed.
- Yes

- Is radio operating normally? **Yes** → Tape player faulty.
  - **S** Radio assembly faulty.
  - **U P** Radio assembly faulty.

- Check if DOME fuse is OK? **NG** → Replace fuse.
- **OK**

  - Is +B applied to power amplifier? **No** → +B wire harness faulty.
  - **Yes**

  - **S** Is +B applied to tape player?
    - **P** Is +B applied to radio assembly?
      - **Yes**
        - **S** Tape player faulty.
        - **U P** Radio assembly faulty.
      - **No**

  - **Yes**

  - **No**

  - **Yes**
    - **S** Tape player faulty.
    - **U P** Radio assembly faulty.
**17 CD Player**

**CD CANNOT BE INSERTED**

- Is CD already inserted?
  - Yes: Eject CD.
  - No: 
    - Is auto search button of radio operating normally?
      - Yes: Is +B applied to CD player?
        - Yes: Check if GND (wire harness side) to CD player is OK?
          - OK: CD player is OK.
          - NG: CD player faulty.
        - No: Radio assembly faulty.
      - No: Is +B applied to power amplifier?
        - Yes: Check if GND (wire harness side) to power amplifier is OK?
          - OK: GND faulty.
          - NG: +B wire harness faulty.
        - No: Power amplifier faulty.
    - No: Check if DOME fuse is OK?
      - OK: 
        - Is +B applied to radio assembly?
          - Yes: Check if GND (wire harness side) to radio assembly is OK?
            - OK: Radio assembly faulty.
            - NG: 
              - Is +B applied to power amplifier?
                - Yes: Radio assembly faulty.
                - No: Power amplifier faulty.
              - No: ACC wire harness faulty.
      - NG: Replace fuse.

**18 CD Player**

**CD INSERTS, BUT NO POWER**

- Is radio operating normally?
  - Yes: Is ACC applied to CD player?
    - Yes: 
      - Is ACC applied to power amplifier?
        - Yes: Is there continuity in ACC wire harness between the radio assembly and the power amplifier?
          - Yes: Power amplifier faulty.
          - No: Radio assembly faulty.
        - No: ACC wire harness faulty.
    - No: ACC applied to radio assembly?
      - Yes: Radio assembly faulty.
      - No: ACC wire harness faulty.
  - No: 
    - Check if CIG & RAD fuse is OK?
      - OK: 
        - Is ACC applied to power amplifier?
          - Yes: 
            - Is ACC applied to radio assembly?
              - Yes: Power amplifier faulty.
              - No: ACC wire harness faulty.
            - No: Radio assembly faulty.
          - No: ACC wire harness faulty.
        - NG: Replace fuse.
**19 CD Player**

**POWER COMING IN, BUT CD PLAYER NOT OPERATING**

- Is CD inserted correct side up?  
  - Yes: Functions OK if different CD inserted?  
    - Yes: CD faulty.  
    - No: Is radio operating normally?  
      - Yes: Is temperature inside cabin hot?  
        - Yes: Protective circuit in operation.  
        - No: Has sudden temperature change occurred inside cabin?  
          - Yes: Formation of condensation due to temp, change.  
          - No: CD player faulty.

- Is there continuity in speaker wire harness?  
  - Yes: Temporarily install another speaker. Functions OK?  
    - Yes: Speaker wire harness faulty.  
    - No: Hissing sound from speaker?  
      - No: Radio assembly faulty. Recheck system after repair.

- Is there continuity in speaker wire harness?  
  - No: Speaker wire harness faulty.

**20 CD Player**

**SOUND JUMPS**

- Does sound jump only during strong vibration?  
  - Yes: Jumping caused by vibration.  
  - No: Is CD player properly installed?  
    - Yes: Functions OK if different CD inserted?  
      - Yes: CD faulty.  
      - No: Has sudden temperature change occurred inside cabin?  
        - Yes: Formation of condensation due to temp, change.  
        - No: CD player faulty.
21 CD Player

SOUND QUALITY POOR (VOLUME FAINT)

Functions OK if different CD inserted? Yes → CD faulty.
No

Is radio operating normally? Yes → CD player faulty.
No

Is speaker properly installed? No → Install properly.
Yes

Temporarily install another speaker. Functions OK?
Yes → Speaker faulty.
No

Radio assembly faulty. Recheck system after repair.

22 CD Player

EITHER SPEAKER DOES NOT WORK

Is radio operating normally? Yes → CD player faulty.
No

No

Is there continuity in speaker wire harness? No → Speaker wire harness faulty.
Yes

Temporarily install another speaker. Functions OK?
Yes → Speaker faulty.
No

Power amplifier faulty. Recheck system after repair.
<table>
<thead>
<tr>
<th><strong>23</strong> CD Player</th>
<th><strong>CD WILL NOT EJECT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Is auto search button of radio operating normally?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Check if DOME fuse is OK.</td>
<td>NG</td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>Is +B applied to power amplifier?</td>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Is +B applied to radio assembly?</td>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
<td>Radio assembly faulty.</td>
</tr>
<tr>
<td>No</td>
<td>+ B wire harness faulty.</td>
</tr>
</tbody>
</table>
24 Antenna ANTEENNA-RELATED

24—a: Pole Antenna

Is antenna extended?  No → Extend fully.

Yes

Temporarily install another antenna.

Functions OK?  Yes → Antenna faulty.

Yes

Radio side faulty.

24—b: Motor Antenna

M : Motor Antenna (Radio Linked Type)  N : Motor Antenna (Except Radio-Linked Type)

<table>
<thead>
<tr>
<th>M</th>
<th>Does antenna extended when radio switched ON?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Temporarily install another antenna. Functions OK?</td>
</tr>
<tr>
<td>No</td>
<td>Radio side faulty.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N</th>
<th>Does antenna extended when antenna switch pushed in?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Temporarily install another antenna. Functions OK?</td>
</tr>
<tr>
<td>No</td>
<td>Radio side faulty.</td>
</tr>
</tbody>
</table>

Inspect antenna motor. (See page BE-160)  NG → Antenna motor faulty.

OK

<table>
<thead>
<tr>
<th>M</th>
<th>Inspect antenna motor control relay. (See page BE-160)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NG</td>
<td>Relay faulty.</td>
</tr>
<tr>
<td>OK</td>
<td>Motor antenna faulty.</td>
</tr>
</tbody>
</table>

NG

Check continuity between antenna motor control relay and radio.  NG → Wire harness faulty.

OK

Radio side faulty.
### 25 Noise

#### NOISE PRODUCED BY VIBRATION OR SHOCK WHILE DRIVING

<table>
<thead>
<tr>
<th>Decision Point</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is speaker properly installed?</td>
<td>No</td>
</tr>
<tr>
<td>Is each system correctly installed?</td>
<td>No</td>
</tr>
<tr>
<td>With vehicle stopped, lightly tap each system. Is noise produced?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>
26 Noise NOISE PRODUCED WHEN ENGINE STARTS

Whistling noise which becomes high-pitched when accelerator strongly depressed, disappears shortly after engine stops.

Yes → Alternator noise.

No

Whining noise occurs when A/C is operating.

Yes → A/C noise.

No

Scratching noise occurs during sudden acceleration, driving on rough roads or when ignition switch is turned on.

Yes → Fuel gauge noise.

No

Clicking sound heard when horn button is pressed, then released. Whirring/grating sound when pushed continuously.

Yes → Horn noise.

No

Murmuring sound, stops when engine stops.

Yes → Ignition noise.

No

Tick-tick noise, occurs in co-ordination with blinking of flasher.

Yes → Turn signal noise.

No

Noise occurs during window washer operation.

Yes → Washer noise.

No

Scratching noise occurs while engine is running, continues a while even after engine stops.

Yes → Water temp, gauge noise.

No

Scrapping noise in time with wiper beat.

Yes → Wiper noise.

No

Other type of noise.
Parts Inspection
(with Motor Antenna)

1. INSPECT ANTENNA SWITCH
(Except Radio-Linked Type/Continuity)

If continuity is not as specified, replace the switch.

2. INSPECT ANTENNA MOTOR
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 2, check that the motor turns (moves upward.)
(b) Then, reverse the polarity, check that the motor turns the opposite way (moves downward.)
If operation is not as specified, replace the motor.

3. INSPECT ANTENNA MOTOR CONTROL RELAY
(Radio—Linked Type / Relay circuit)
Disconnect the connector from the relay and inspect the connector on wire harness side as shown in the chart.

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 - 5</td>
<td>Constant</td>
<td>Continuity</td>
<td></td>
</tr>
<tr>
<td>4 — Ground</td>
<td>Constant</td>
<td>Continuity</td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 — Ground</td>
<td>Constant</td>
<td>Battery voltage</td>
<td></td>
</tr>
<tr>
<td>6 — Ground</td>
<td>Ignition switch position</td>
<td>LOCK or ACC</td>
<td>Battery voltage</td>
</tr>
<tr>
<td>14 — Ground</td>
<td>Ignition switch position</td>
<td>ACC or ON</td>
<td>Battery voltage</td>
</tr>
</tbody>
</table>

Continued on Next Page.
Continued from Previous Page.

<table>
<thead>
<tr>
<th>Check for</th>
<th>Taster connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td></td>
<td>Ignition switch</td>
<td>Radio switch</td>
</tr>
<tr>
<td>Voltage</td>
<td>9 — Ground</td>
<td>LOCK</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>—</td>
</tr>
<tr>
<td>11 — Ground</td>
<td></td>
<td>LOCK</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>ON</td>
</tr>
<tr>
<td>12 — Ground</td>
<td></td>
<td>LOCK</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>ON</td>
</tr>
<tr>
<td>13 — Ground</td>
<td></td>
<td>LOCK</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACC or ON</td>
<td>ON</td>
</tr>
</tbody>
</table>
CLOCK

Troubleshooting

As shown in the illustration, those are clock circuit and connector diagrams. Inspect each terminal for applicable trouble.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EARTH</td>
<td>Constant</td>
</tr>
<tr>
<td>3</td>
<td>CLOCK</td>
<td>Constant</td>
</tr>
<tr>
<td>2</td>
<td>TAIL</td>
<td>Turn light control switch ON</td>
</tr>
<tr>
<td>4</td>
<td>ACC</td>
<td>Turn ignition switch ON or ACC</td>
</tr>
</tbody>
</table>

Allowable error: ±1.5 seconds/day